

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area
Proposed Resource Management Plans and Final Environmental Impact Statement



BLM Mission

It is the mission of the Bureau of Land Management to sustain health, diversity, and productivity of the public lands for use and enjoyment of present and future generations.

Volume 2 of 2

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area Proposed Resource Management Plans and Final Environmental Impact Statement

Volume 2 of 2 Appendices A-W

U.S. Department of the Interior
Bureau of Land Management
Grand Staircase Escalante National Monument, Utah

August 2019

Appendices

Appendix A, Maps

Appendix B, References

Appendix C, Glossary

Appendix D, List of Preparers

Appendix E, Grand Staircase-Escalante National Monument Objects and Resource Values

Appendix F, Laws, Regulations, Policies, and Guidance

Appendix G, Best Management Practices

Appendix H, Stipulations and Exceptions, Modifications, and Waivers

Appendix I, Monitoring Strategy

Appendix J, Cultural Resources

Appendix K, Interdisciplinary Route Evaluation Forms and Analysis

Appendix L, Coal Unsuitability Report

Appendix M, Air Quality Technical Support Document

Appendix N, Cumulative Impact Methodology and Past, Present, and Reasonably Foreseeable Future Actions

Appendix O, Biological Resources

Appendix P, Water Resources

Appendix Q, Livestock Grazing

Appendix R, Recreation Management Areas

Appendix S, Areas of Critical Environmental Concern Evaluation Report

Appendix T, Socioeconomic Baseline Report

Appendix U, Economic Assessment Report

Appendix V, Wild and Scenic Rivers

Appendix W, Draft RMPs/EIS Comment Analysis Report

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

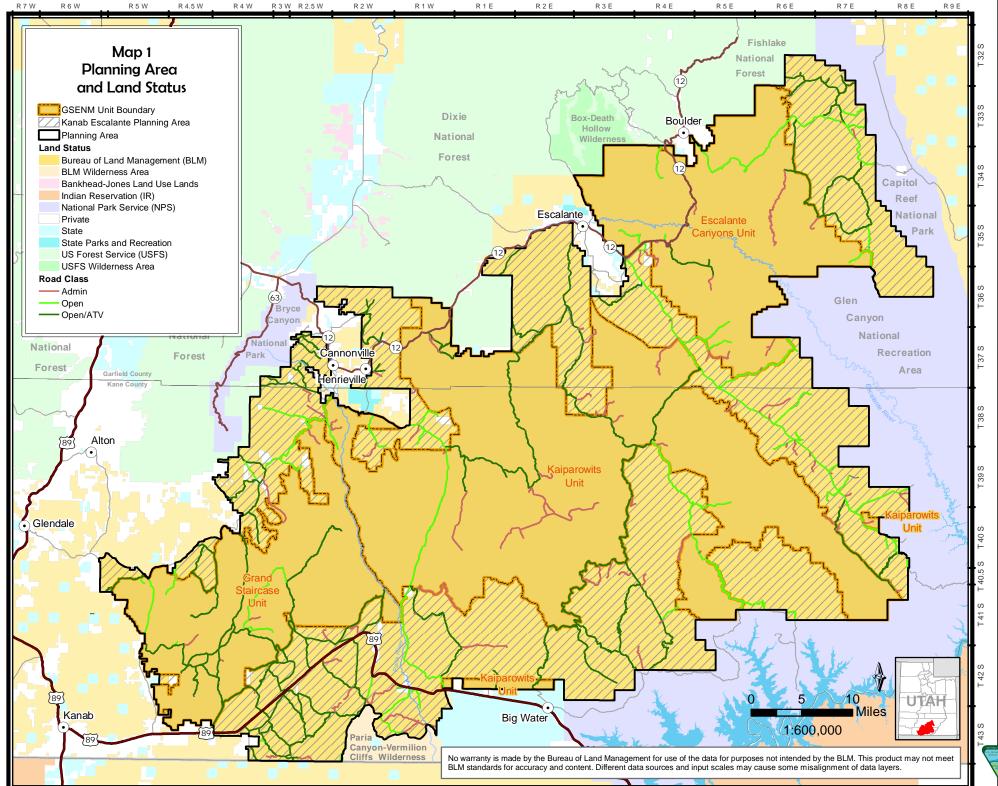
Appendix A	
Maps	
August 2019	

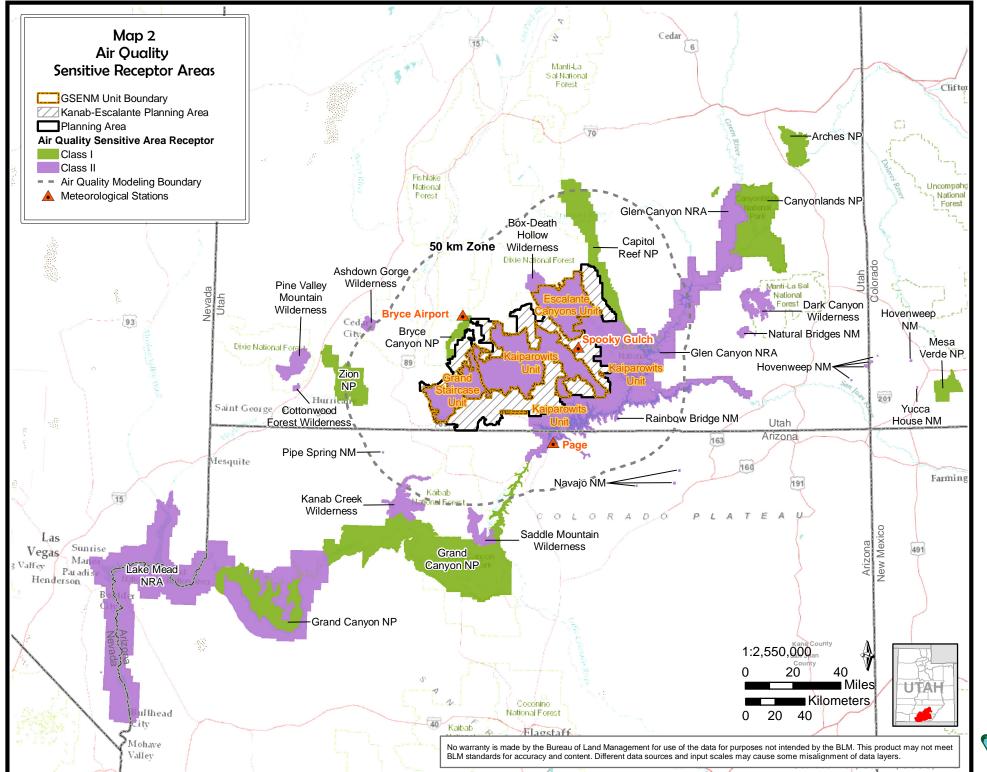
Appendix A: Maps

1	Planning Area and Land Status
2	Air Quality Sensitive Receptor Areas
3	Fish and Wildlife Big Game Crucial Winter and Year-Long Habitat
4	Special Status Species Habitat
5	Lands Inventoried for Wilderness Characteristics
6	Lands with Wilderness Characteristics Alternative B
7	Lands with Wilderness Characteristics Alternative C
8	Paleontological Resources and Geology Potential Fossil Yield Classification
9	Paleontological Resources and Geology Geologic Formations
10	Paleontological Resources and Geology Common to All Alternatives
11	Paleontological Resources and Geology Areas Available/Unavailable to Casual Collection Alternative C
12	Paleontological Resources and Geology Areas Unavailable to Casual Collection Alternative D
13	Paleontological Resources and Geology Areas Unavailable to Casual Collection Alternative E (Proposed Plans)
14	Soil Resources Sensitive Soils
15	Soil Resources Terrain Slope
16	Water Resources Surface Water
17	Water Resources Water Quality Alternatives B, C, D, and E (Proposed Plans)
18	Vegetation Riparian and Wetland Areas Alternative B
19	Vegetation Riparian and Wetland Areas Alternatives C, D, and E (Proposed Plans)
20	Vegetation Communities
21	Fire and Fuels Fire Management Units
22	Visual Resource Management Class Alternative A
23	Visual Resource Management Class Alternative B
24	Visual Resource Management Class Alternative C
25	Visual Resource Management Class Alternative D
26	Visual Resource Management Class Alternative E (Proposed Plans)
27	Visual Resource Inventory Class as Inventoried
28	Visual Resource Inventory Classes
29	Visual Resource Inventory Scenic Quality Rating
30	Visual Resource Inventory Sensitivity Level Rating

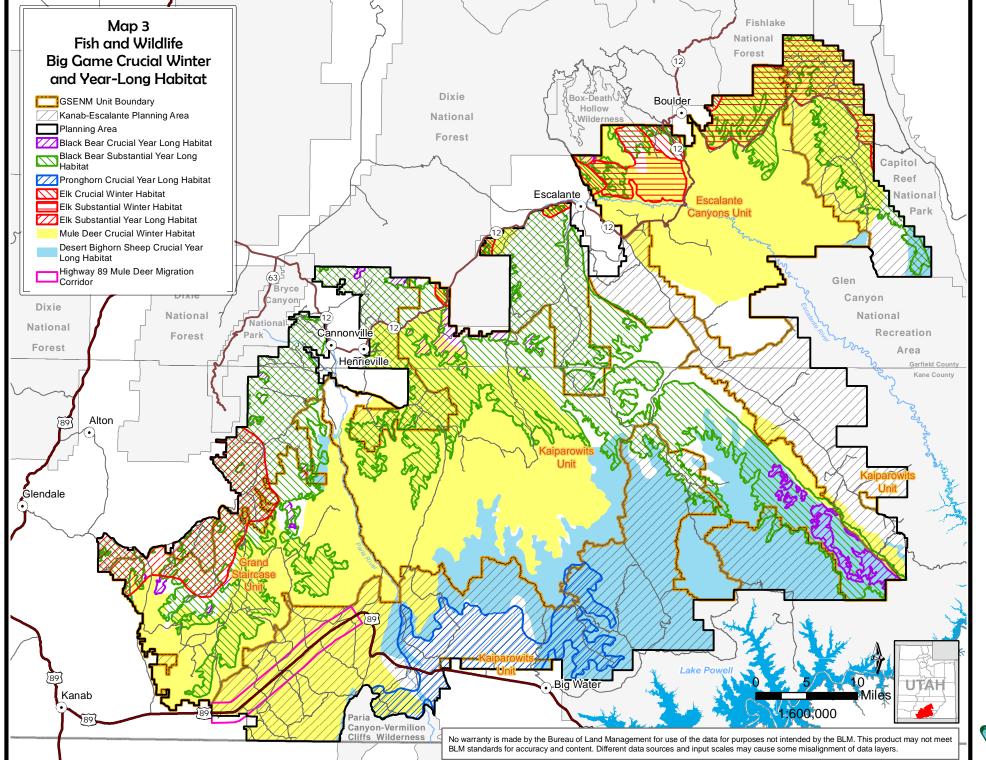
31	Visual Distance Zone Classification
32	Wild Horses Herd Areas
33	Forestry Products
34	Lands and Realty Designated ROW and Communication Sites
35	Lands and Realty ROW Avoidance and Exclusion Areas Alternative A
36	Lands and Realty ROW Avoidance and Exclusion Areas Alternative B
37	Lands and Realty ROW Avoidance and Exclusion Areas Alternative C
38	Lands and Realty ROW Avoidance and Exclusion Areas Alternative D
39	Lands and Realty ROW Avoidance and Exclusion Areas Alternative E (Proposed Plans)
40	Lands and Realty Lands Recommended for Withdrawal Alternative A
41	Lands and Realty Lands Recommended for Withdrawal Alternative B
42	Lands and Realty Lands Recommended for Withdrawal Alternative C
43	Lands and Realty Lands Recommended for Withdrawal Alternatives D and E (Proposed Plans)
44	Wind Energy Exclusion and Available Areas Alternative A
45	Wind Energy Exclusion and Available Areas Alternative B
46	Wind Energy Exclusion and Available Areas Alternative C
47	Wind Energy Exclusion and Available Areas Alternative D
48	Wind Energy Exclusion and Available Areas Alternative E (Proposed Plans)
49	Solar Energy Exclusion Areas Alternative A
50	Solar Energy Exclusion and Variance, Areas Alternative B
51	Solar Energy Exclusion and Variance Areas Alternative C
52	Solar Energy Exclusion and Variance Areas Alternative D
53	Solar Energy Exclusion and Variance Areas Alternative E (Proposed Plans)
54	Livestock Grazing Areas Unavailable for Grazing Common to All Alternatives
55	Livestock Grazing Areas Available/Unavailable to Livestock Grazing Alternative A
56	Livestock Grazing Areas Available/Unavailable to Livestock Grazing Alternative B
57	Livestock Grazing Areas Available/Unavailable to Livestock Grazing Alternative C
58	Livestock Grazing Areas Available/Unavailable to Livestock Grazing Alternatives D and E (Proposed Plans)
59	Livestock Grazing Areas Available/Unavailable to Livestock Grazing Near Escalante River Alternatives D and E (Proposed Plans)
60	Mineral Resources Leasable Minerals Alternative A
61	Mineral Resources Leasable Minerals Alternative B
62	Mineral Resources Leasable Minerals Alternative C

63	Mineral Resources Leasable Minerals Alternative D
64	Mineral Resources Leasable Minerals Alternative E (Proposed Plans)
65	Mineral Resources Coal Unsuitability
66	Mineral Materials Disposal Alternative B
67	Mineral Materials Disposal Alternative C
68	Mineral Materials Disposal Alternative D
69	Mineral Materials Disposal Alternative E (Proposed Plans)
70	Mineral Resources Coal Recovery Areas and Tar Sands Area
71	Mineral Resources Combined Hydrocarbon Lease Application Area
72	Mineral Resources Areas with High Potential for Oil and Gas
73	Recreation Management Zones Alternative A
74	Recreation Alternative A
75	Recreation Alternative B
76	Recreation Alternative C
77	Recreation Alternative D
78	Recreation Alternative E (Proposed Plans)
79	Travel and Transportation Management OHV Area Designations Alternative A
80	Travel and Transportation Management OHV Area Designations Alternative B
81	Travel and Transportation Management OHV Area Designations Alternative C
82	Travel and Transportation Management OHV Area Designations Alternative D
83	Travel and Transportation Management OHV Area Designations Alternative E (Proposed Plans)
84	Areas of Critical Environmental Concern Alternative B
85	Areas of Critical Environmental Concern Alternative C
86	Old Spanish National Historic Trail Alternatives
87	Scenic Byways and Backways Alternatives B and C
88	Wild and Scenic Rivers Alternative A
89	Wild and Scenic Rivers Alternative B
90	Wild and Scenic Rivers Alternative C
91	Wild and Scenic Rivers Alternatives D and E (Proposed Plans)
92	Wilderness Study Areas
93	Air Resources Long-Term Potential for Climate Change

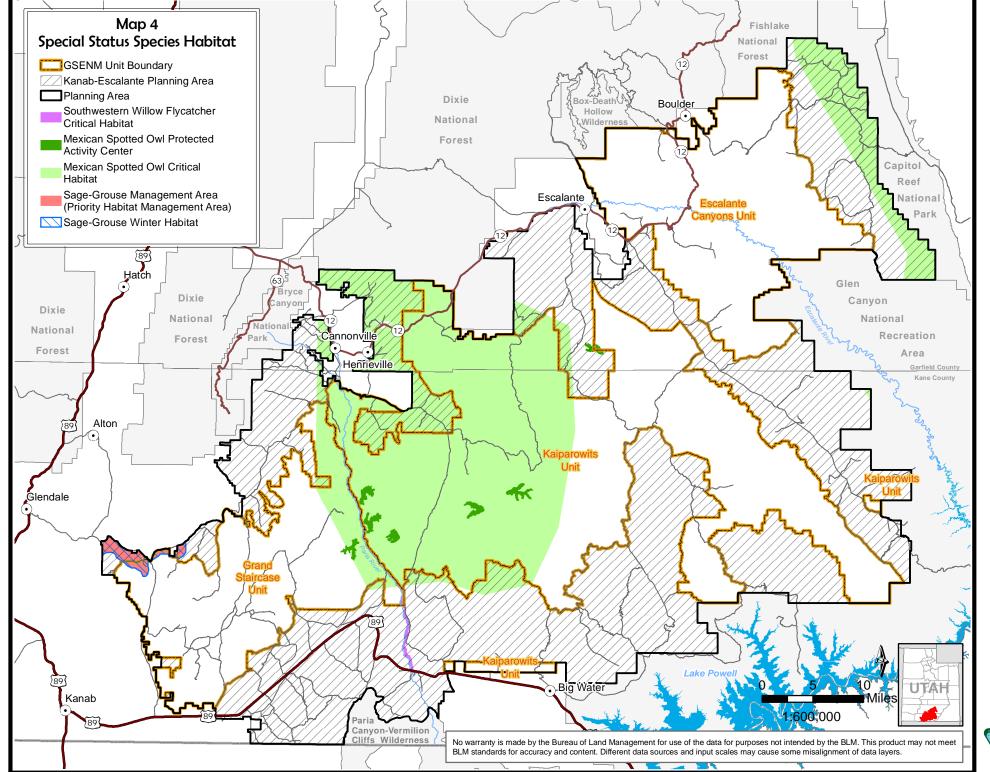




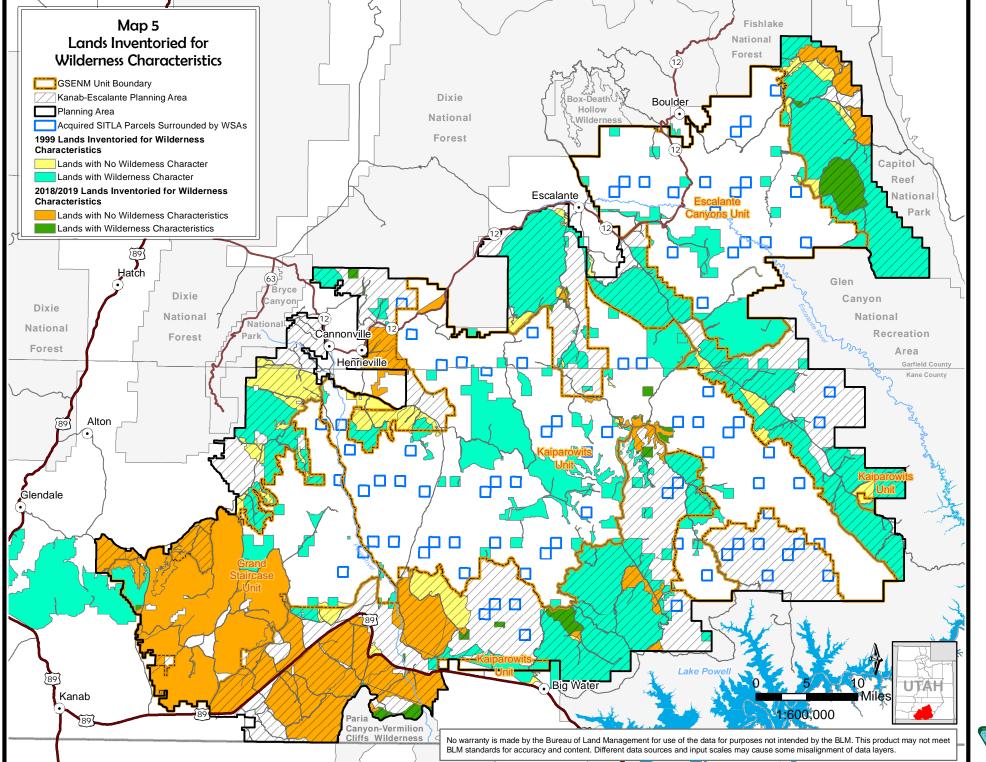




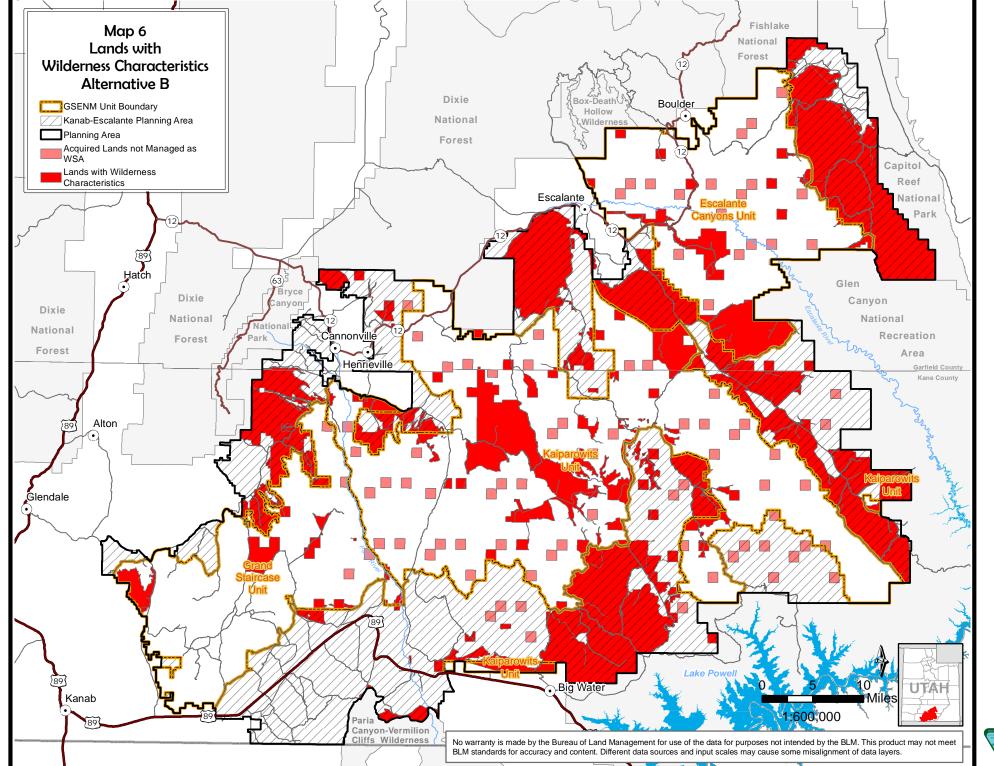




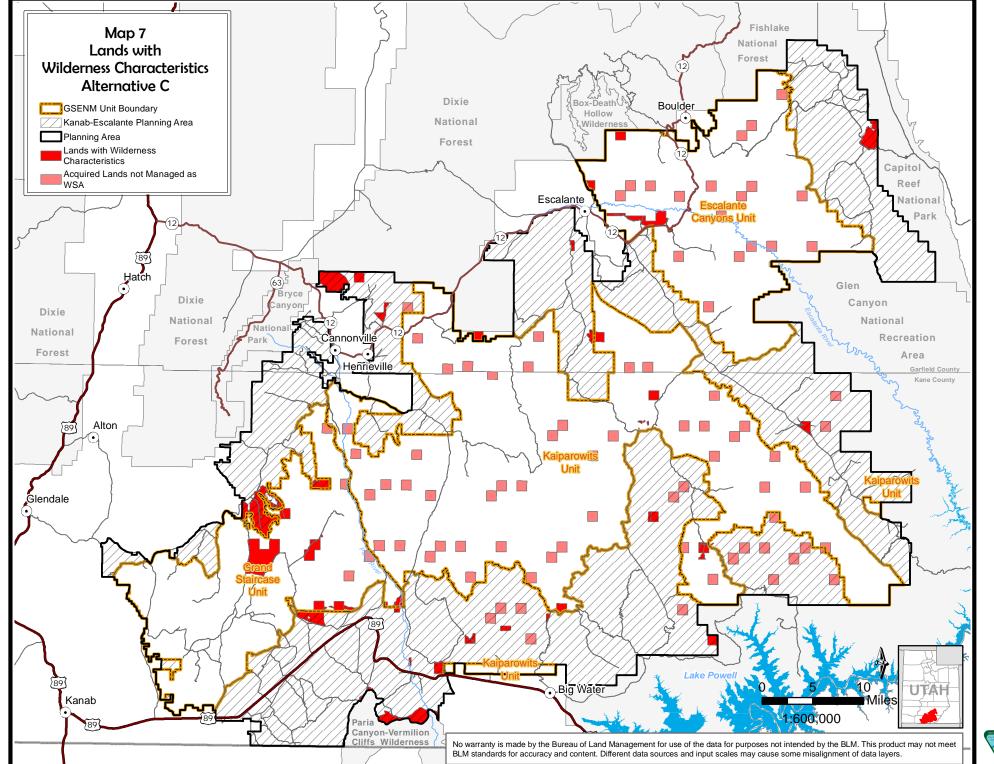




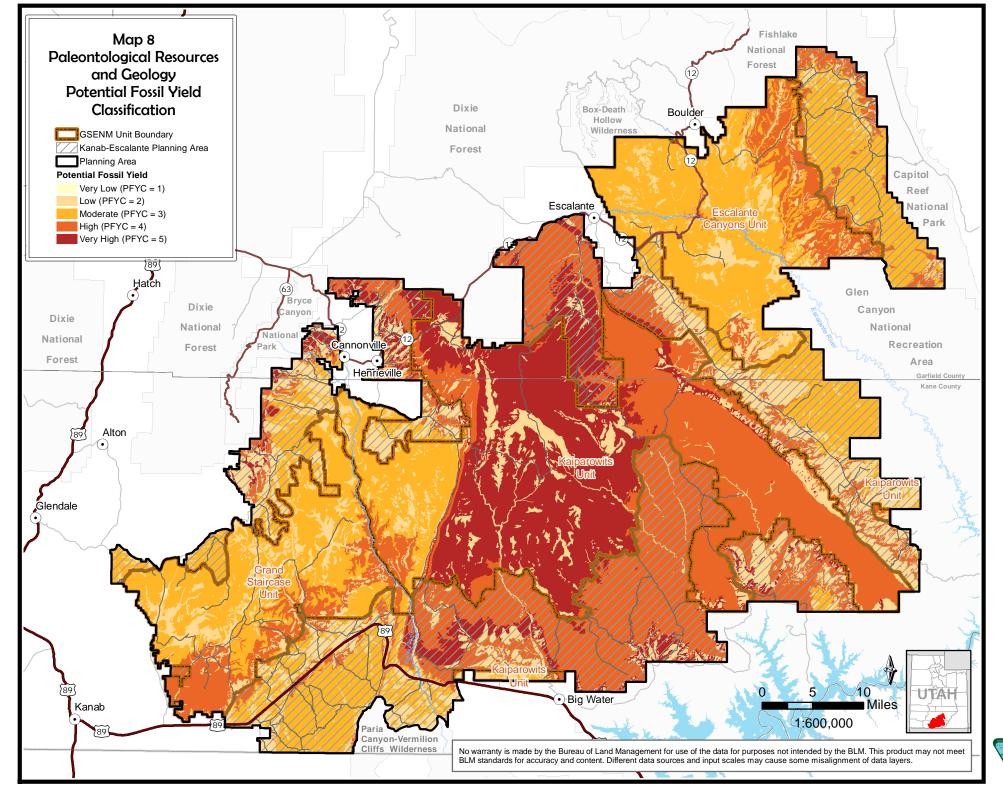




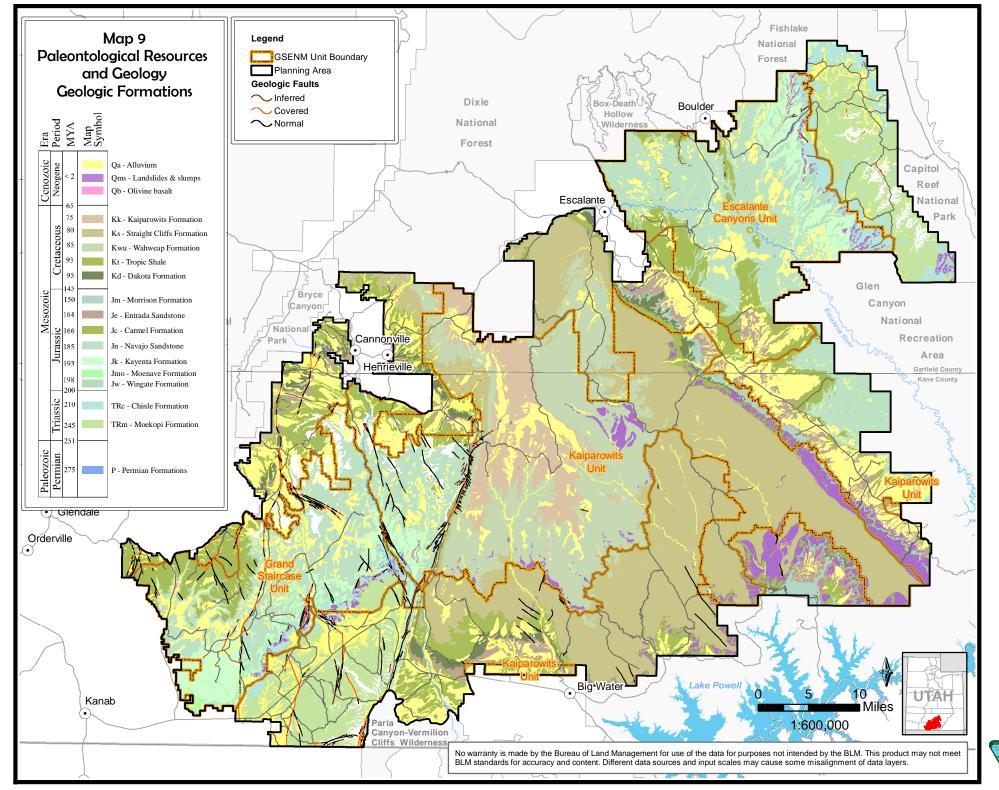




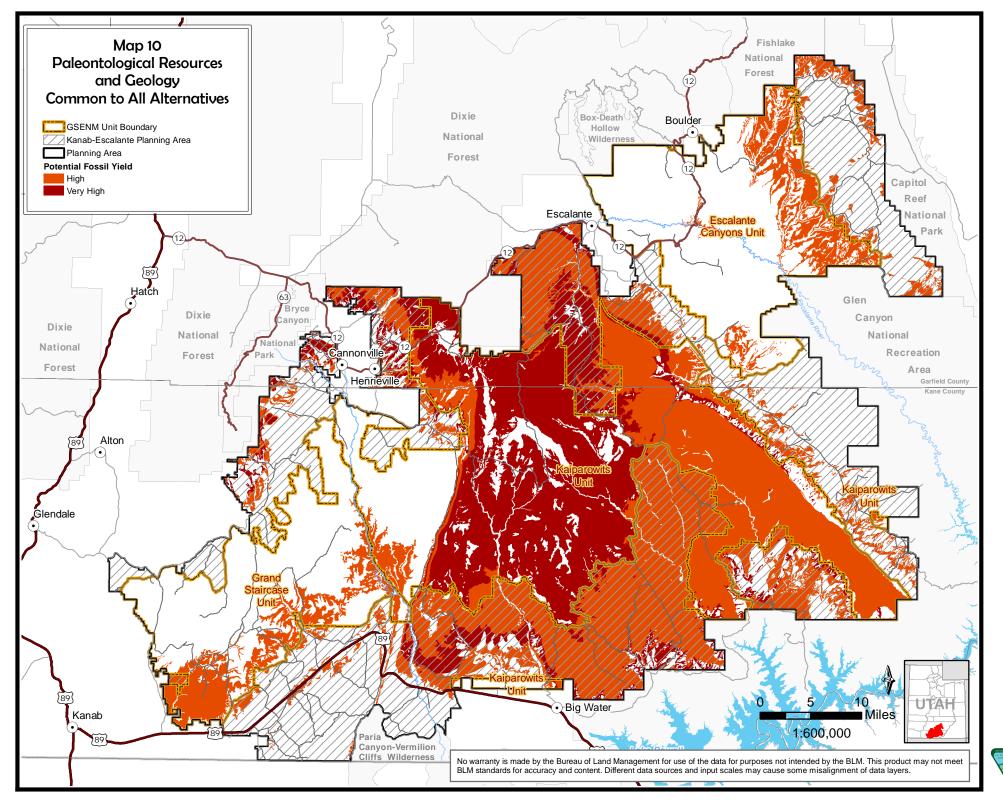




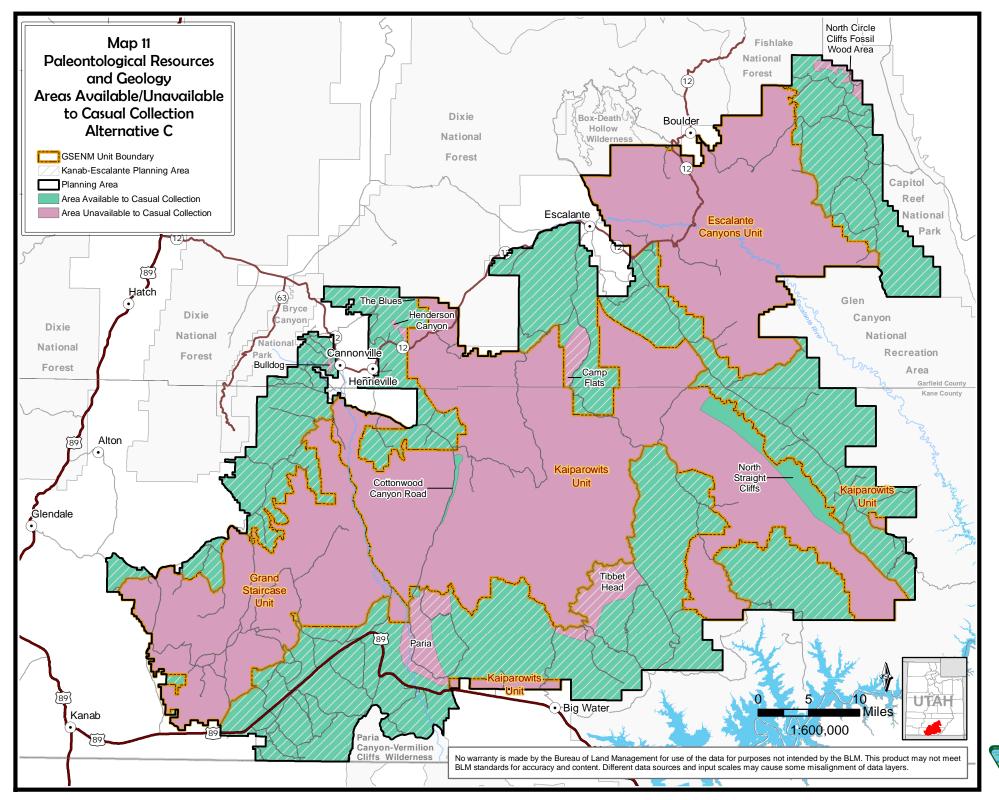




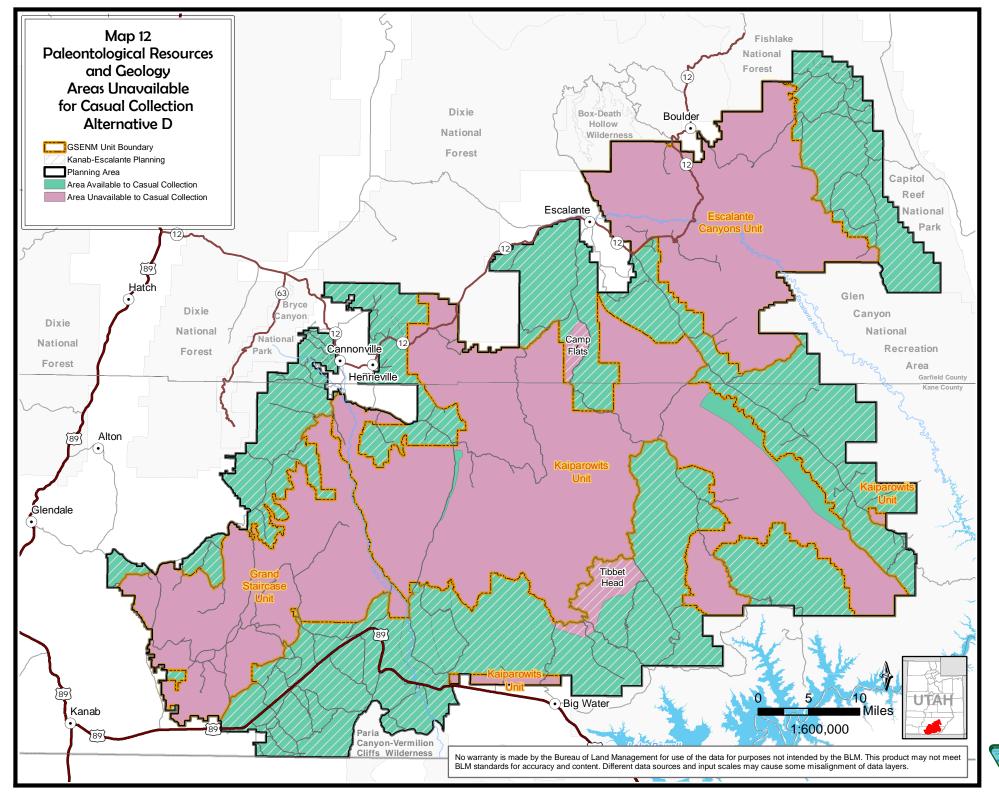




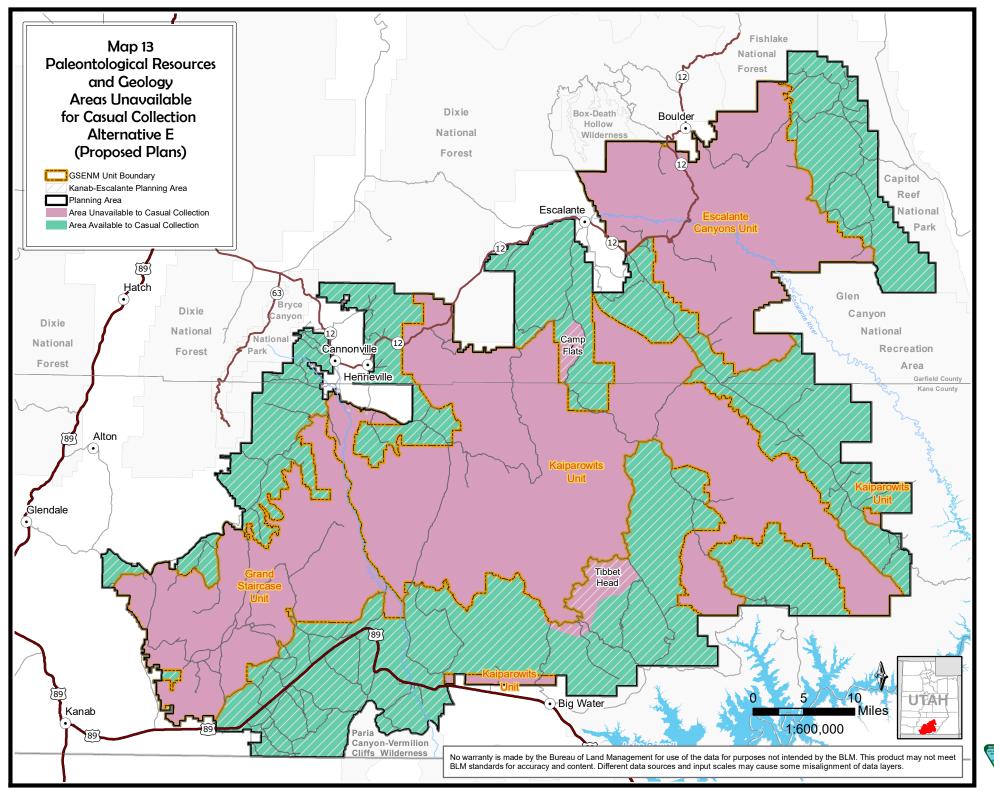




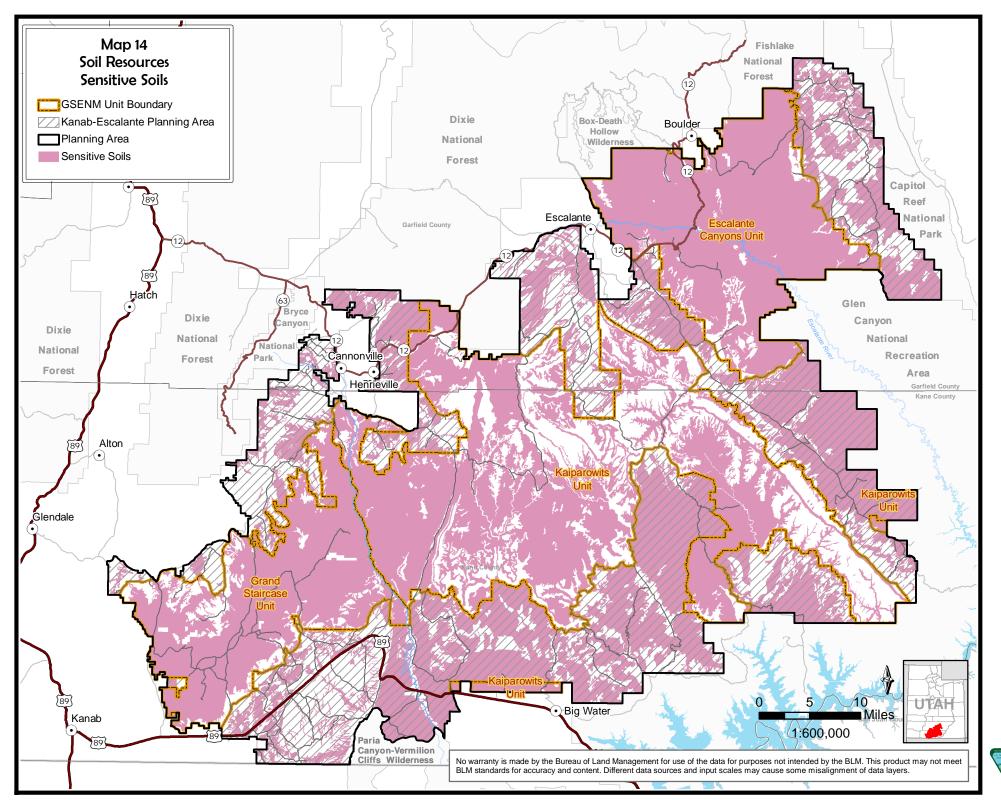




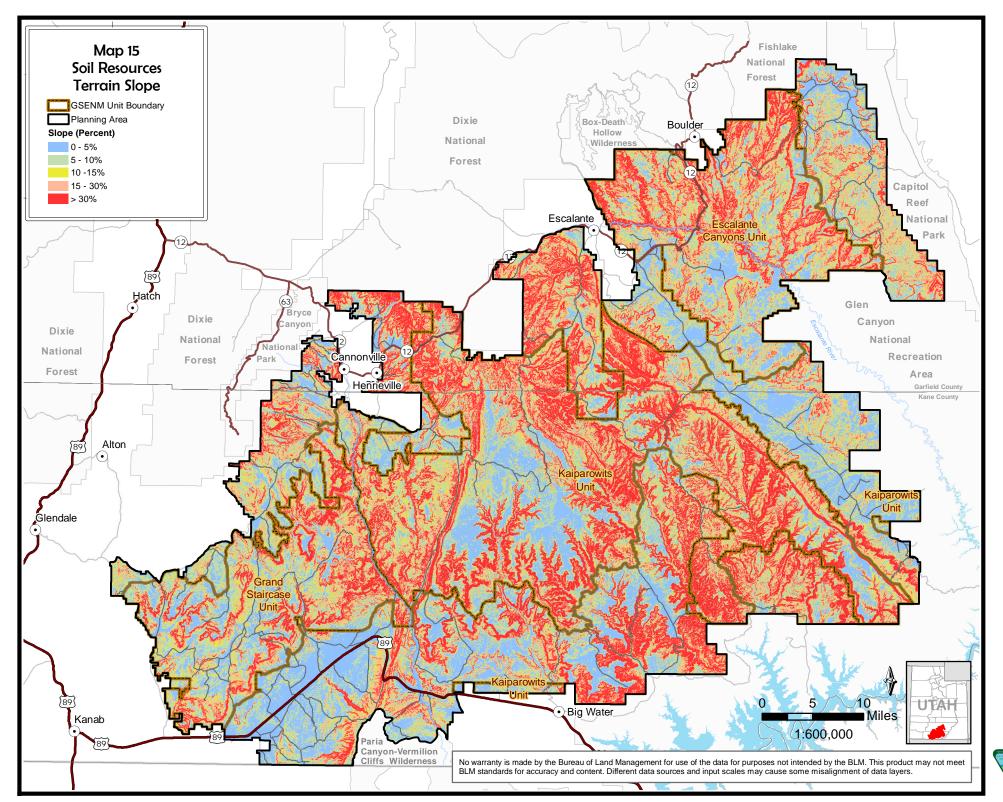




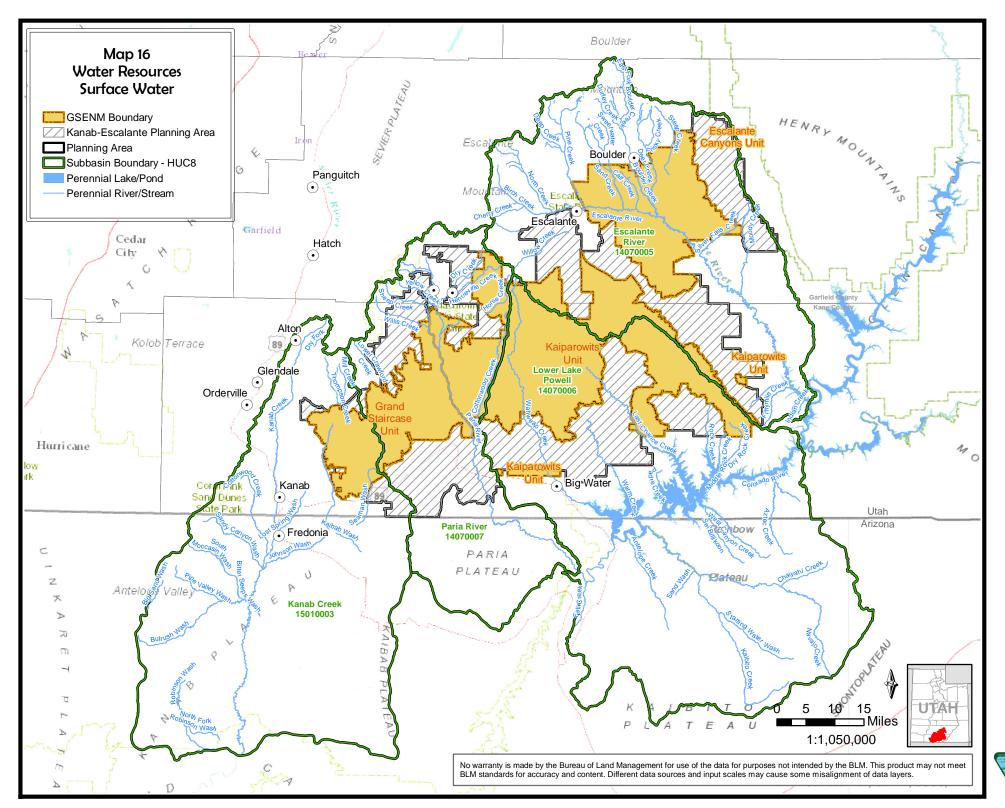




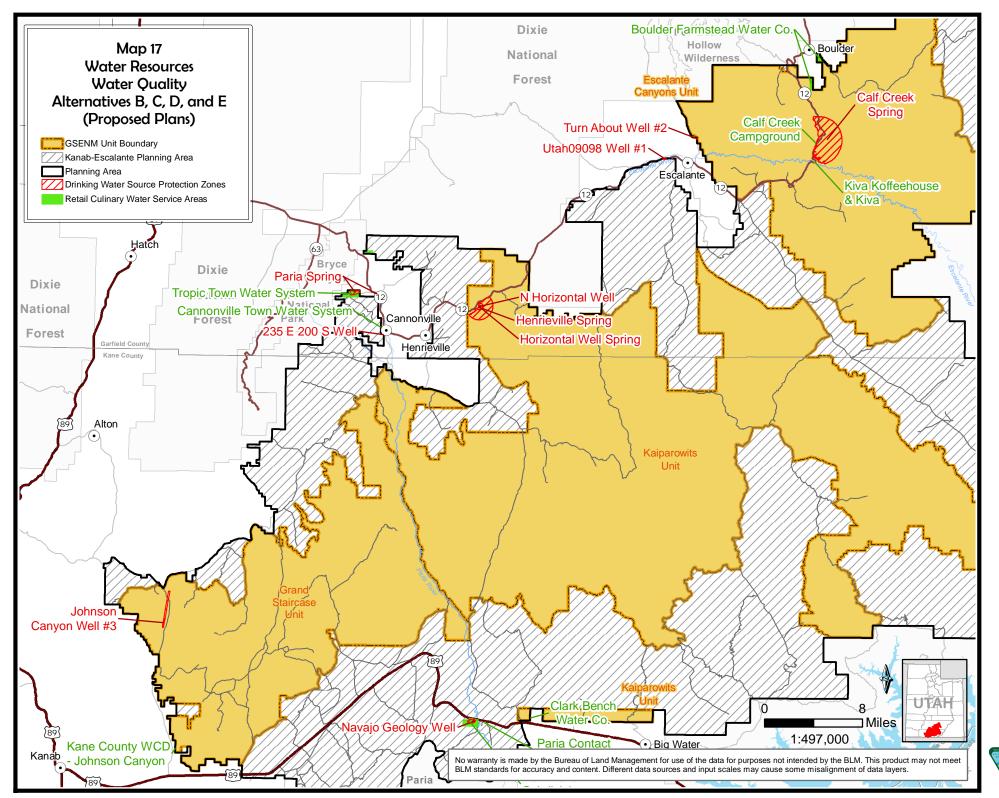




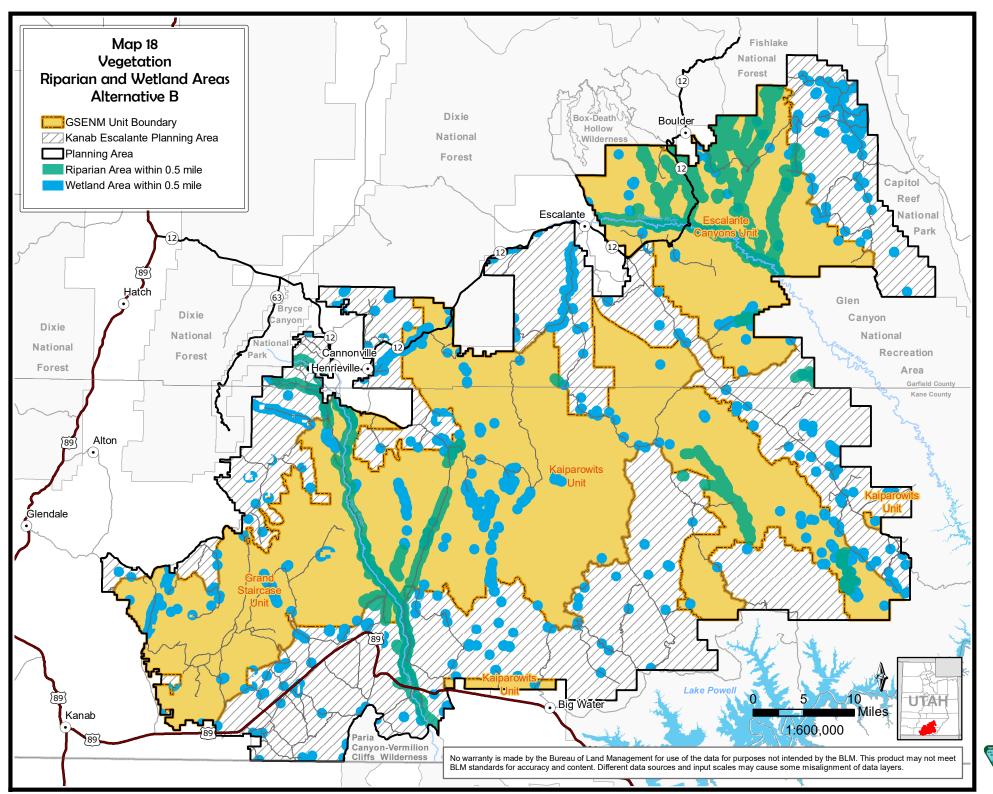




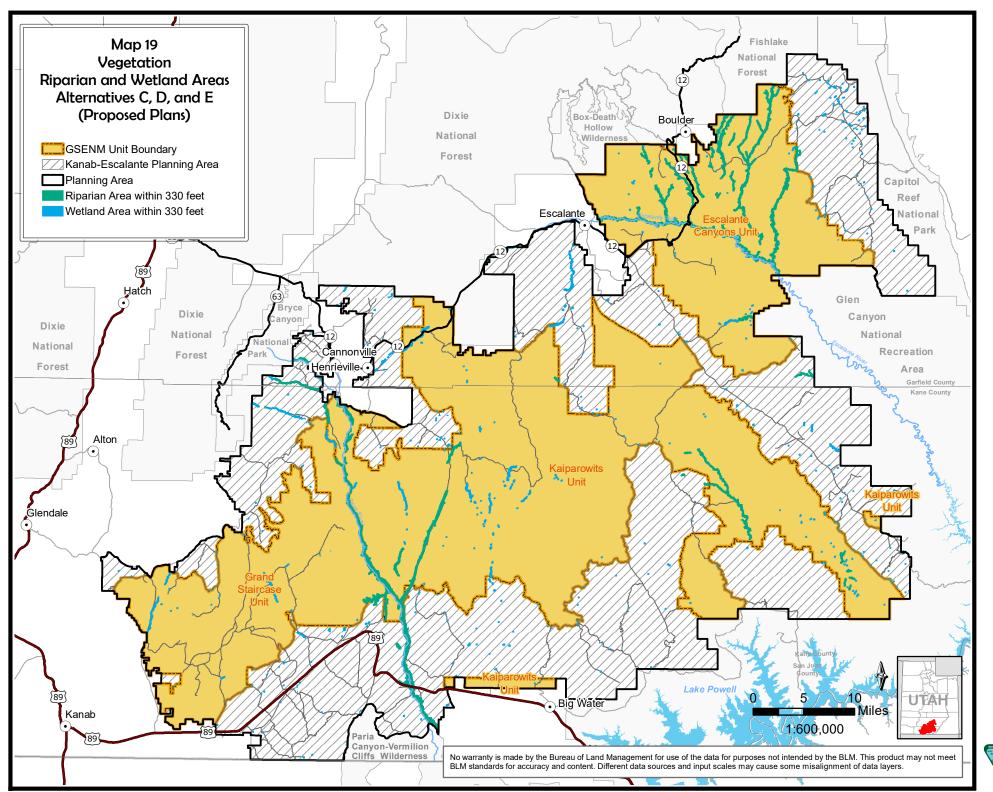




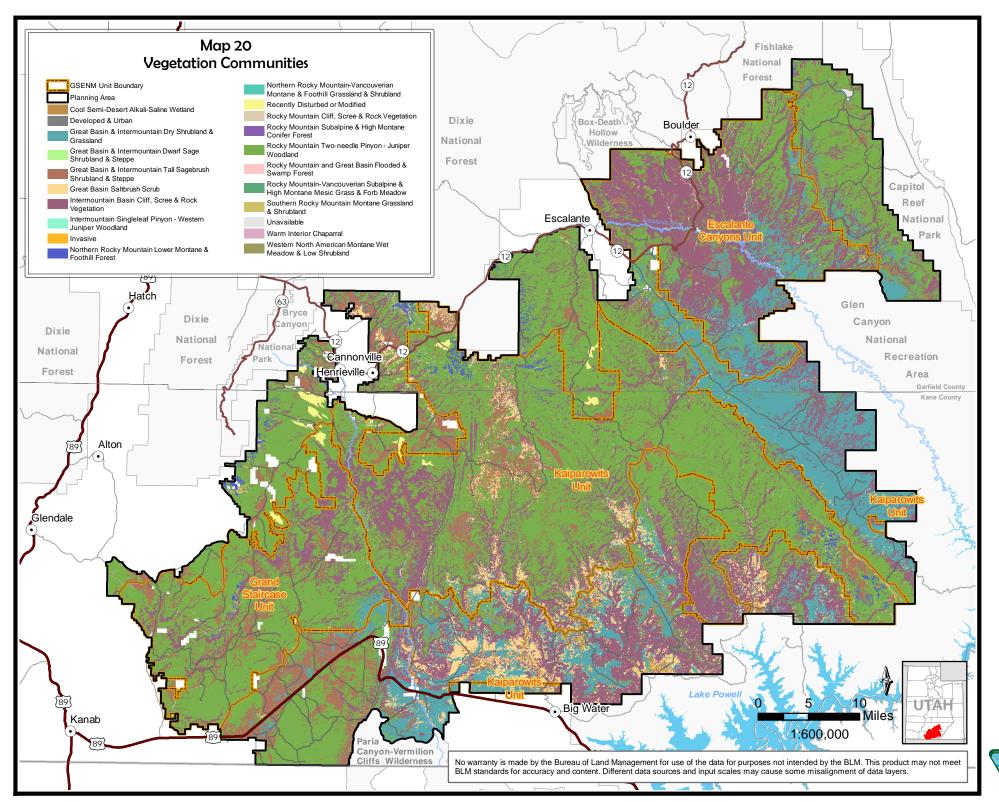




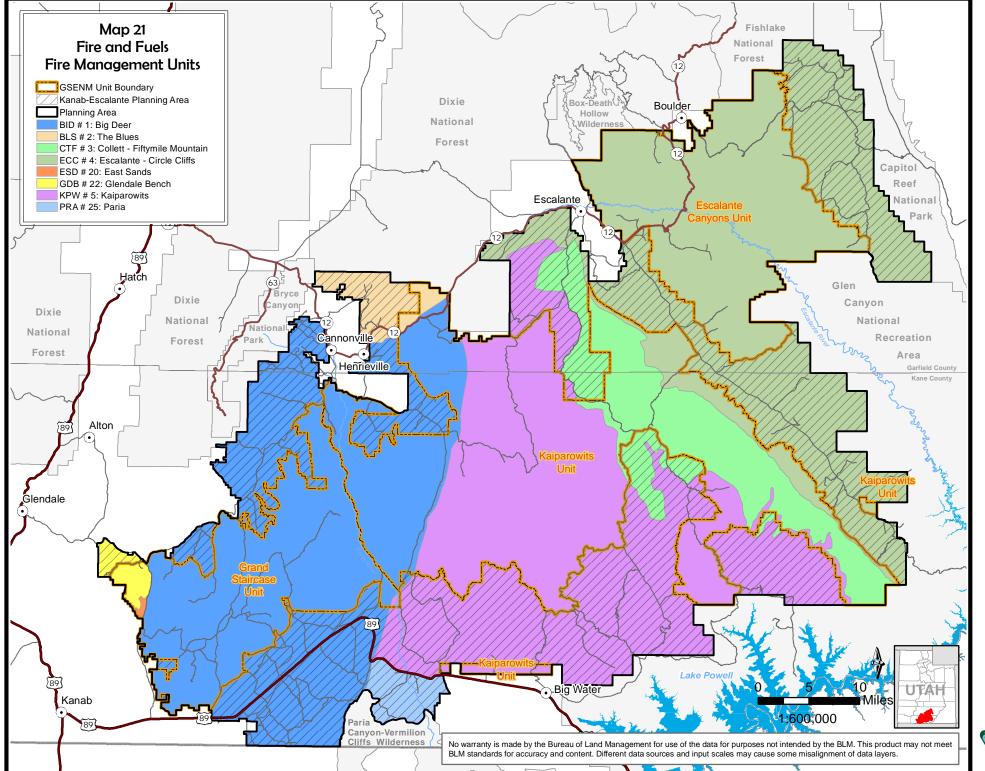




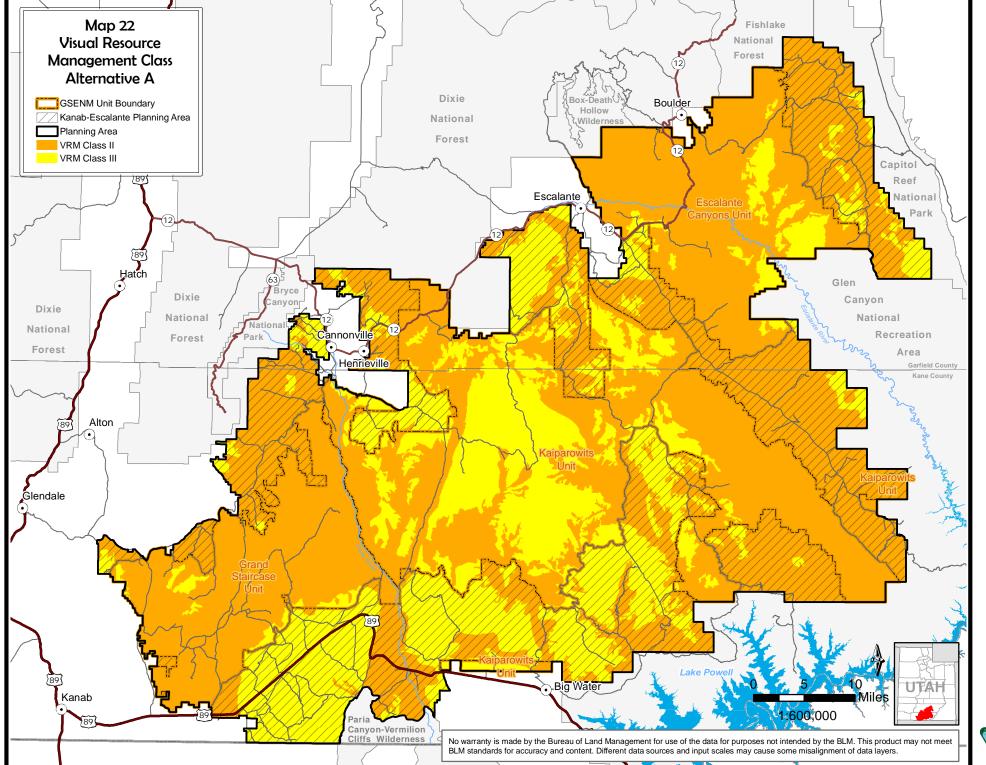




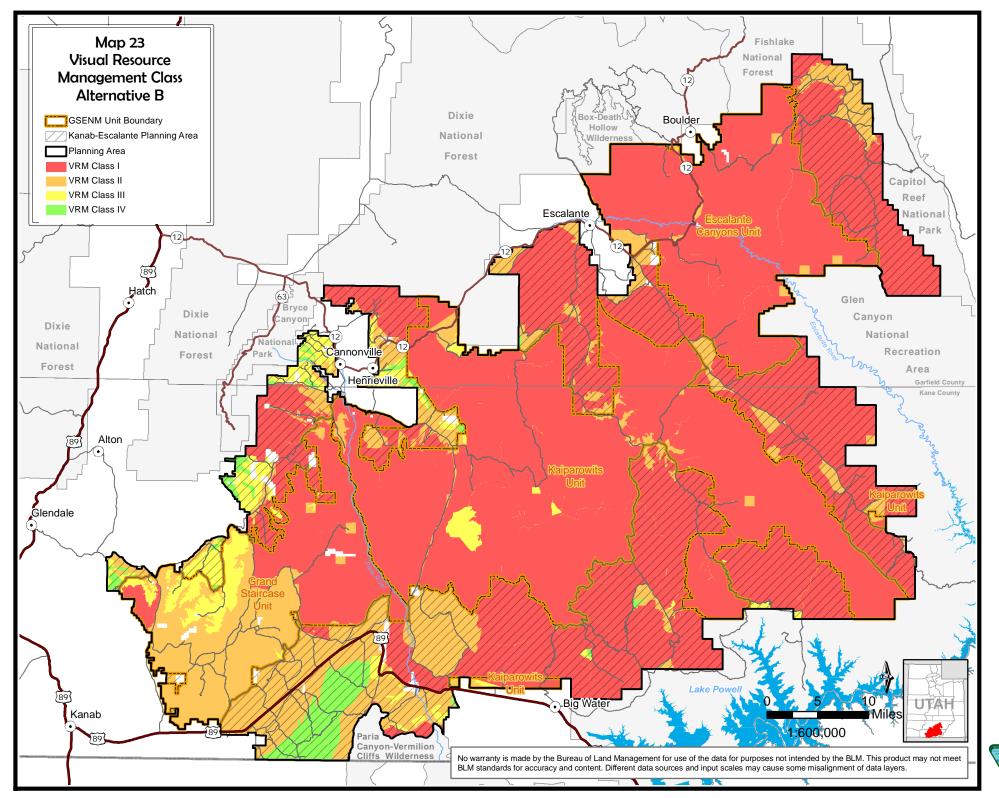




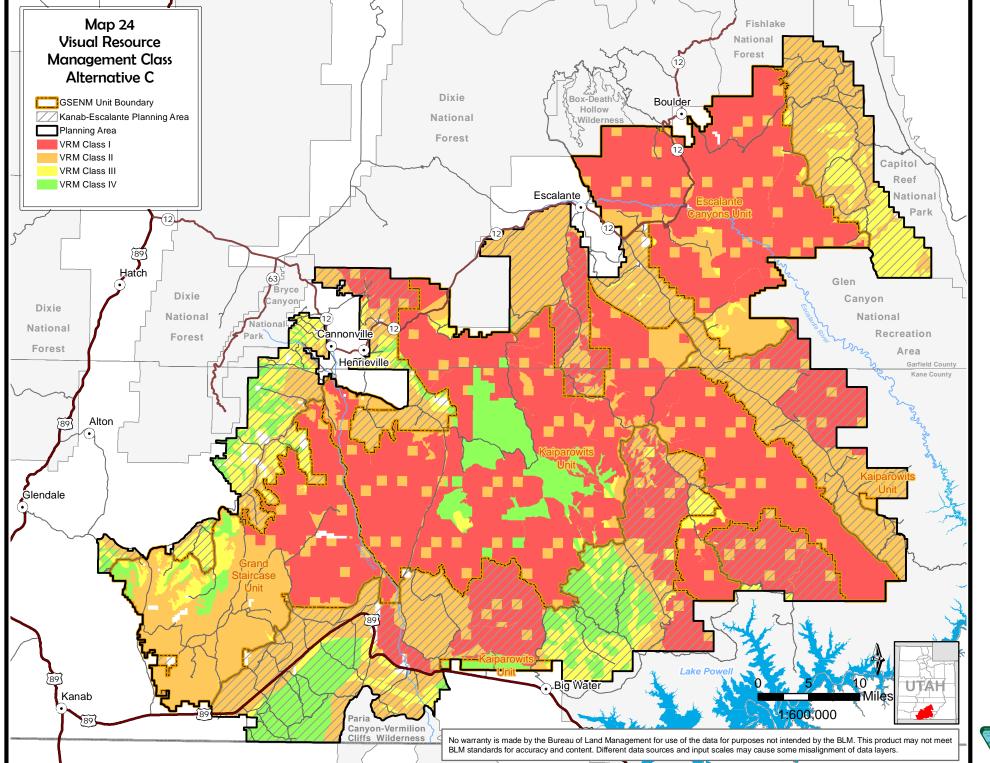




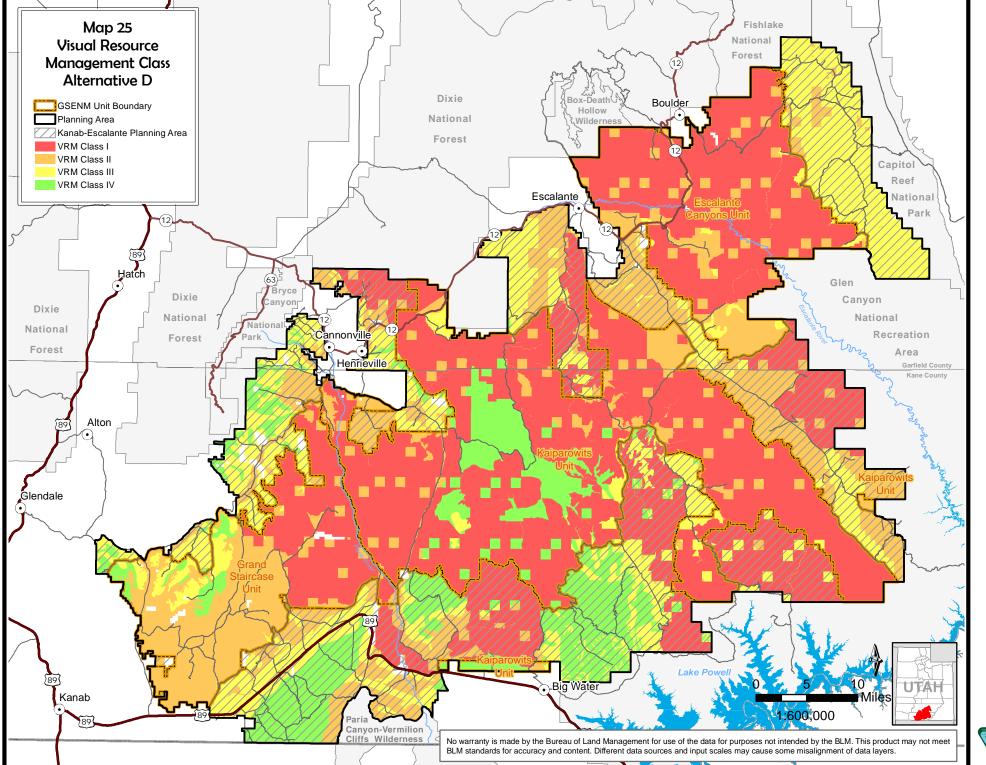




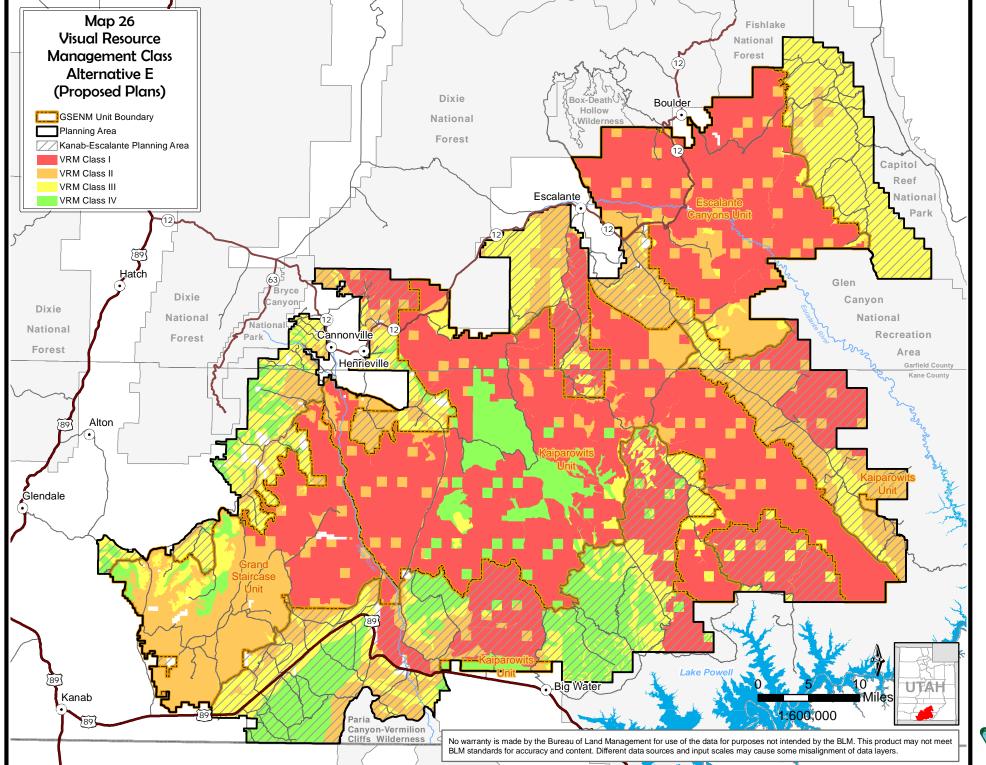




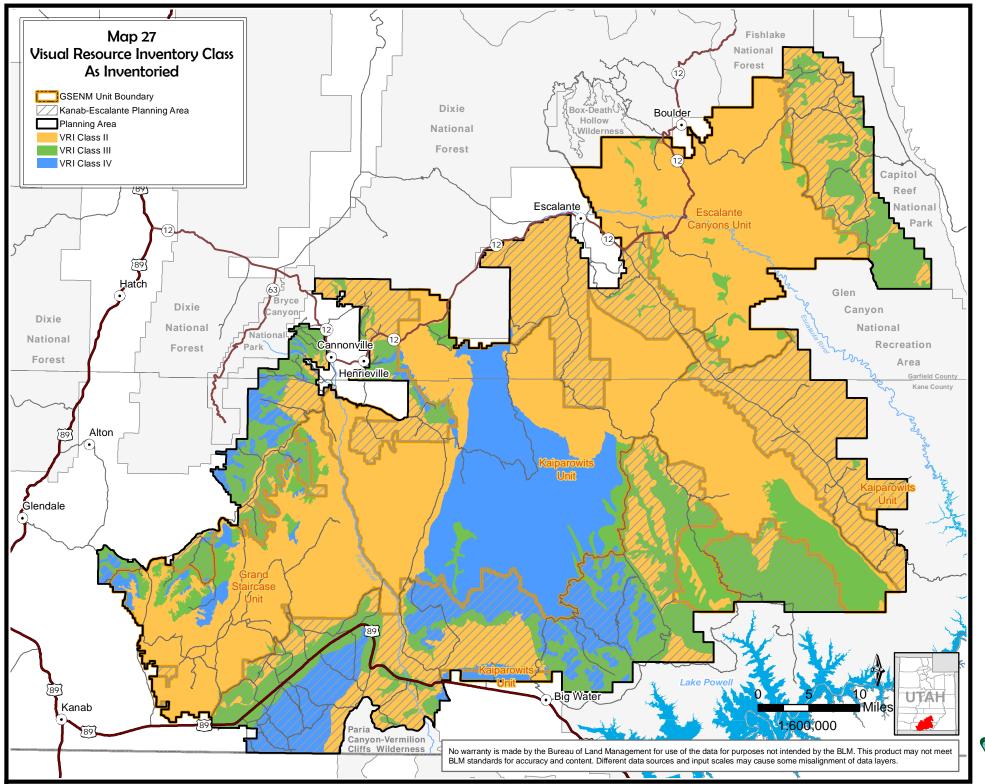




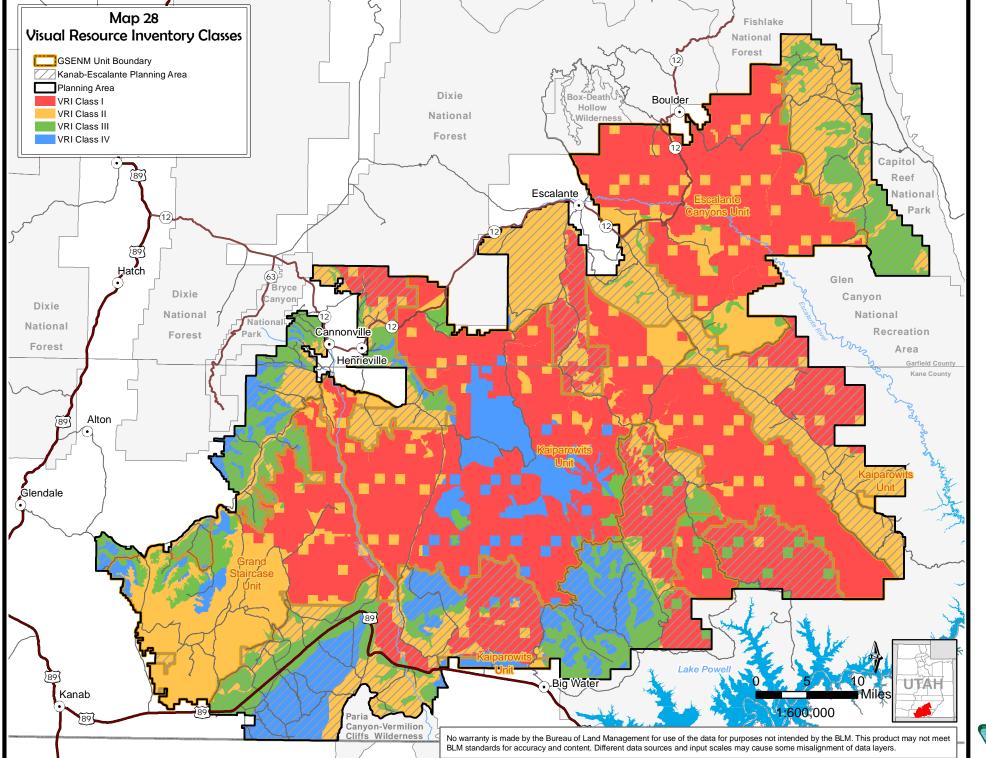




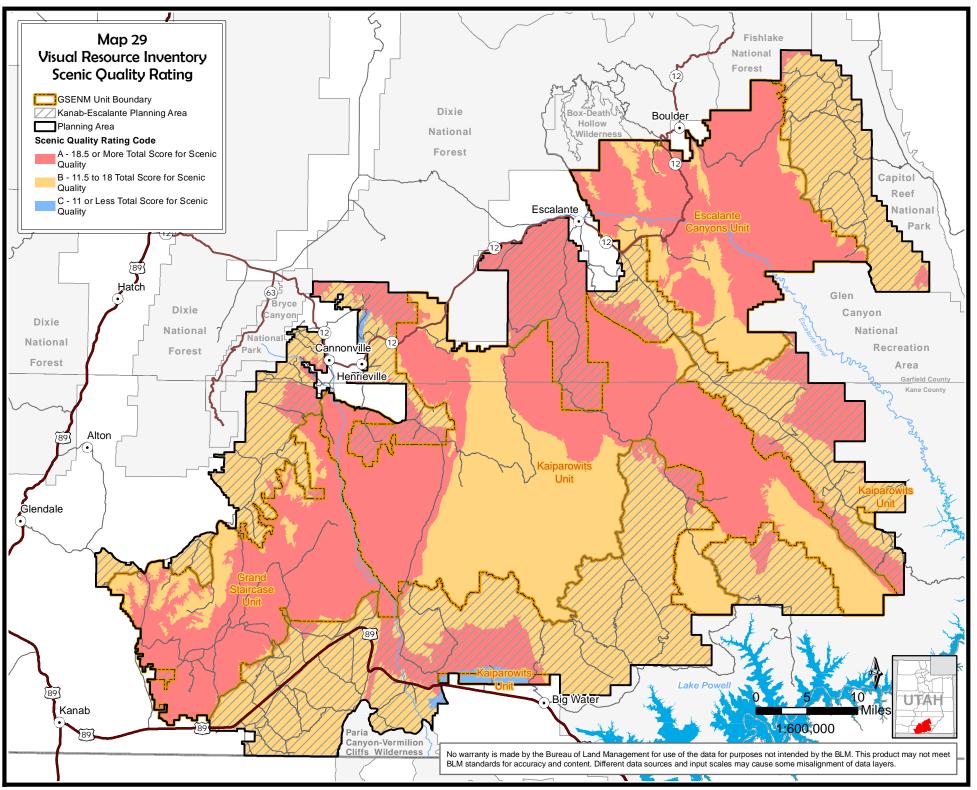




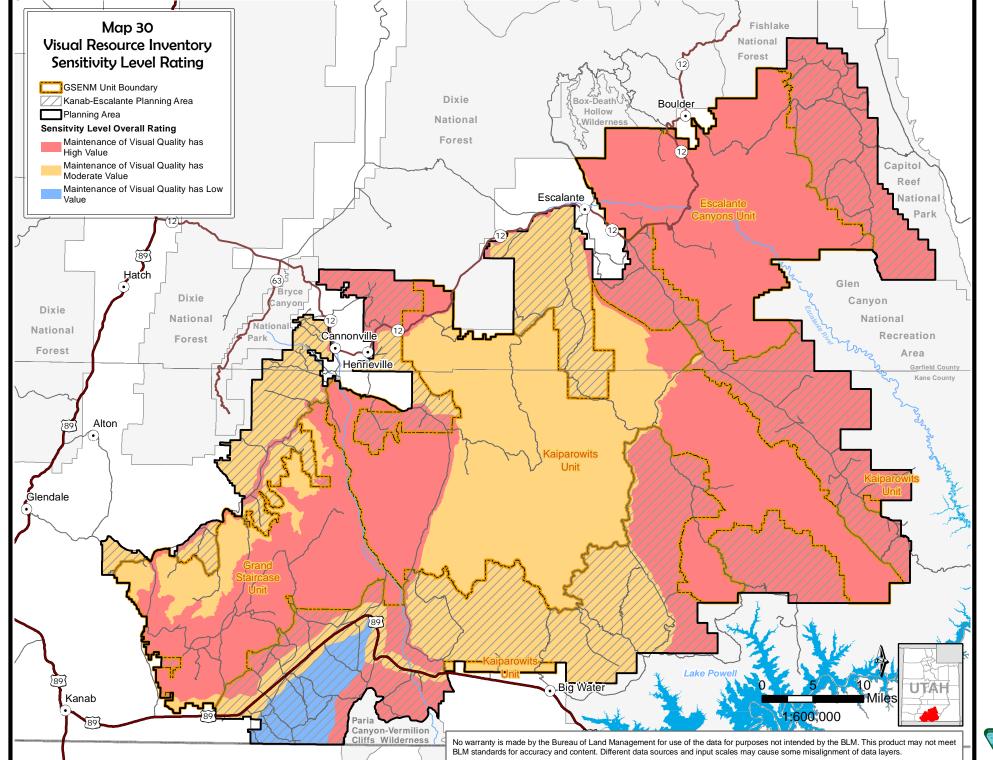




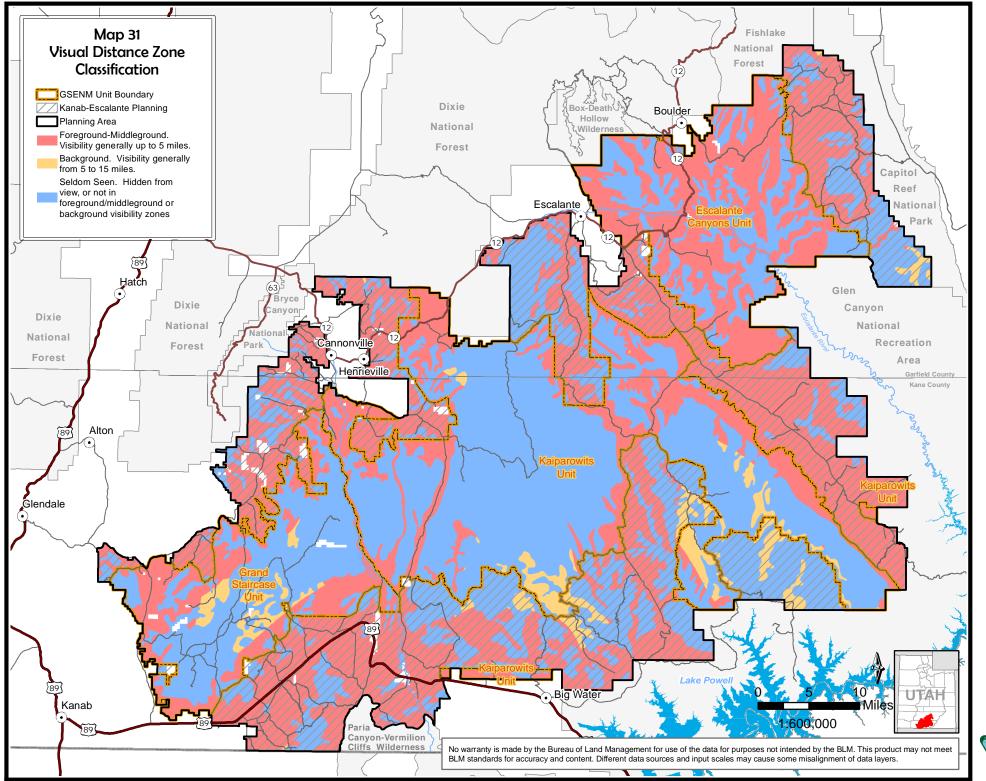




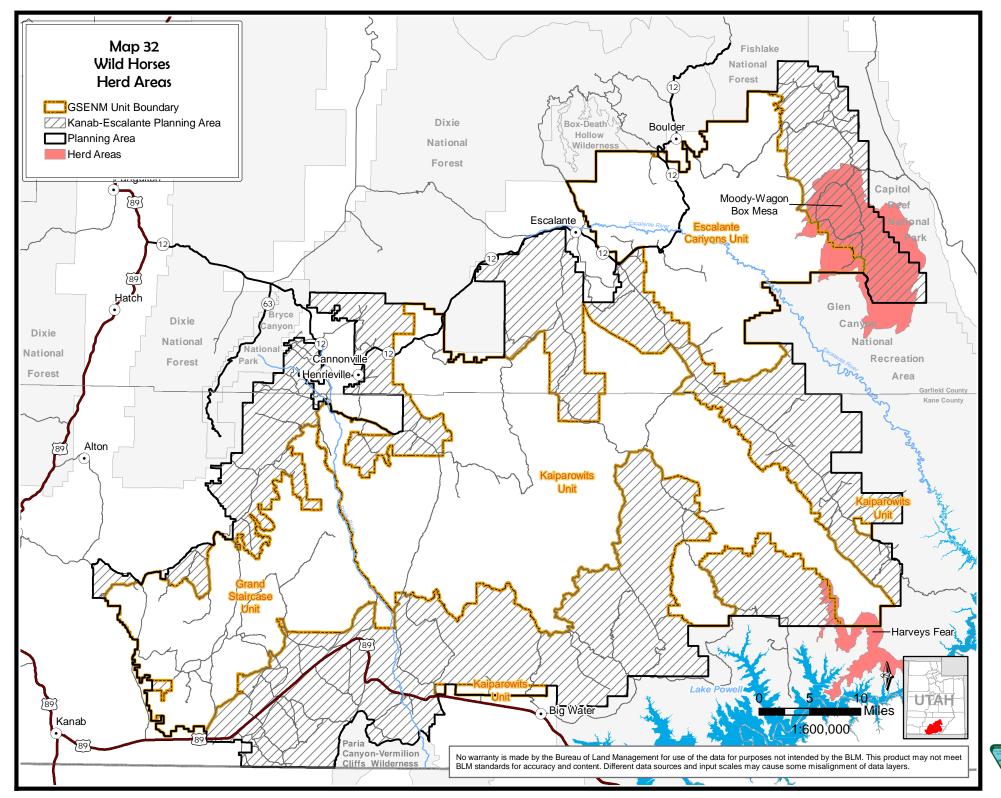




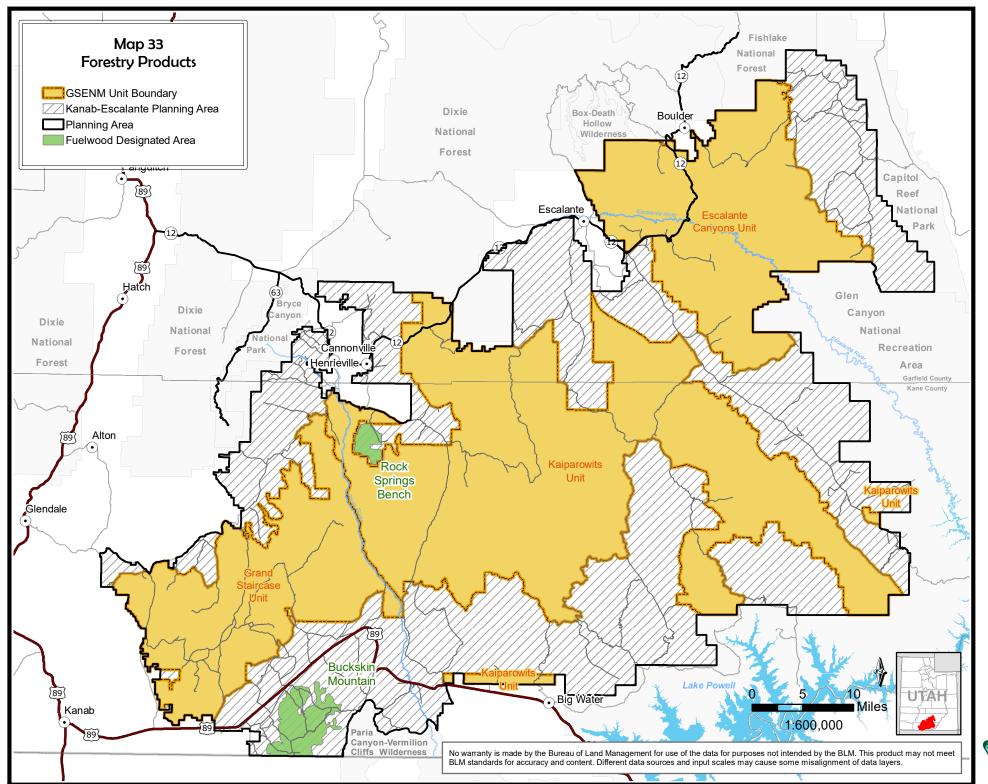




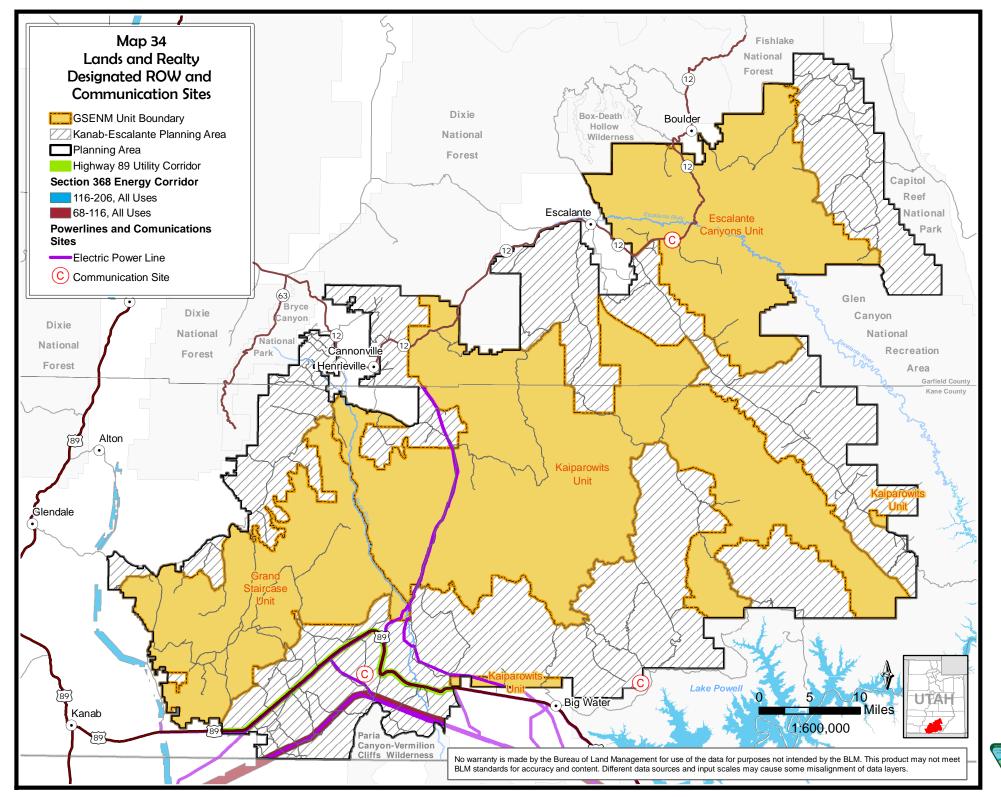




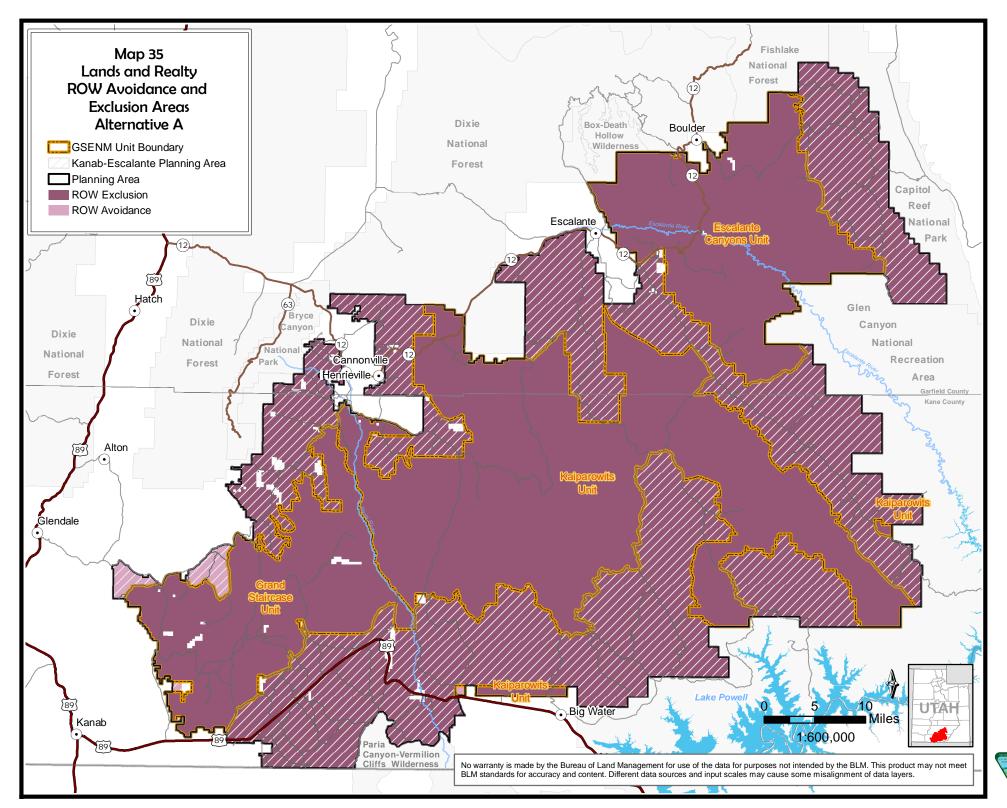




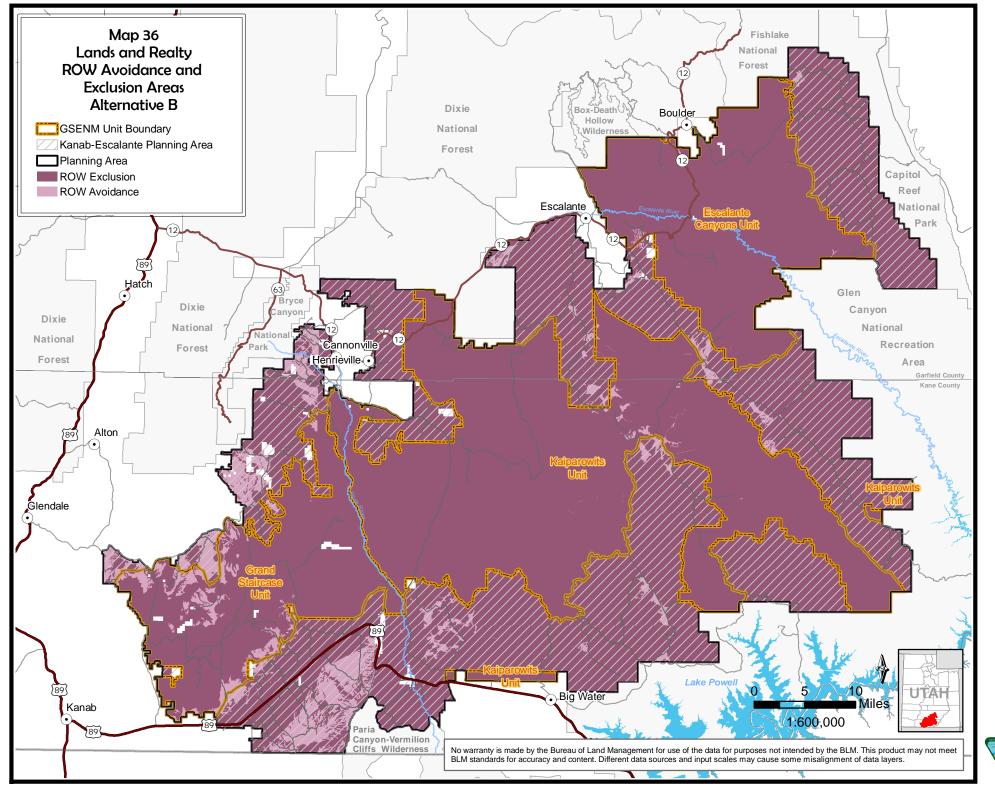




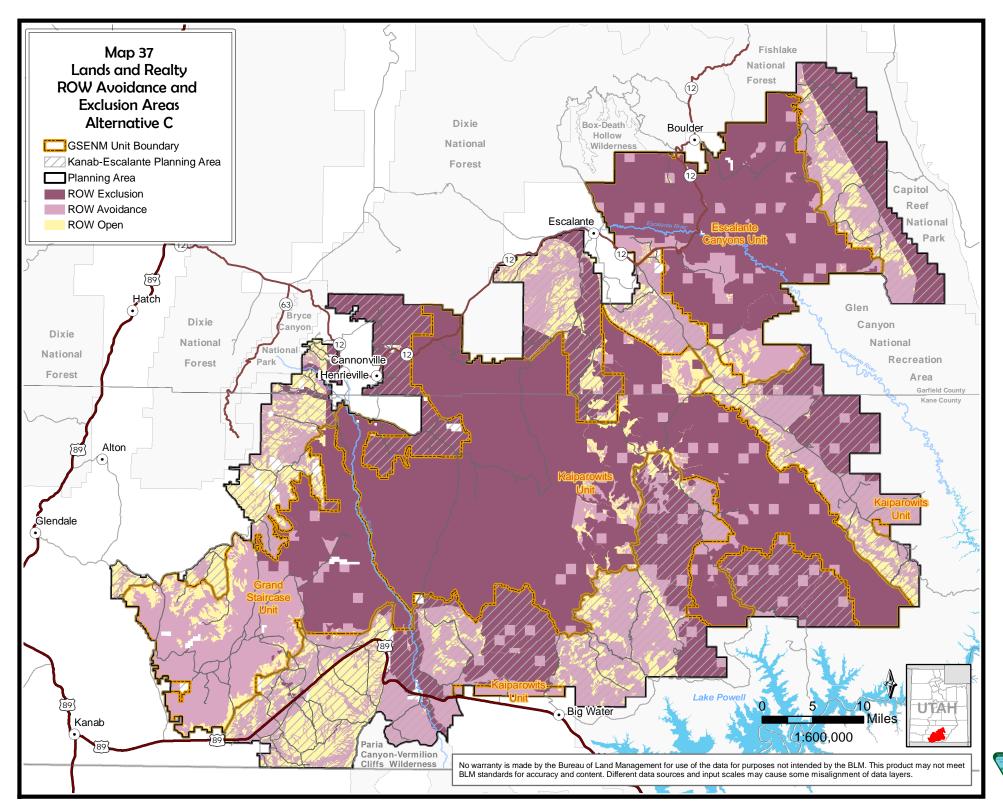




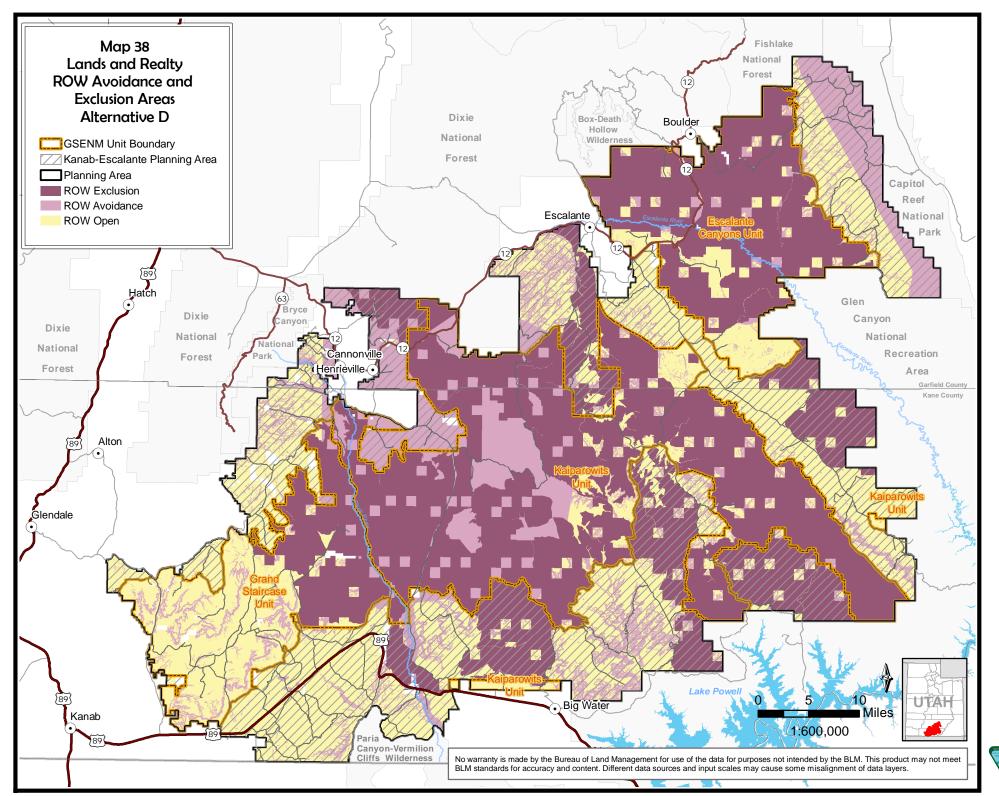




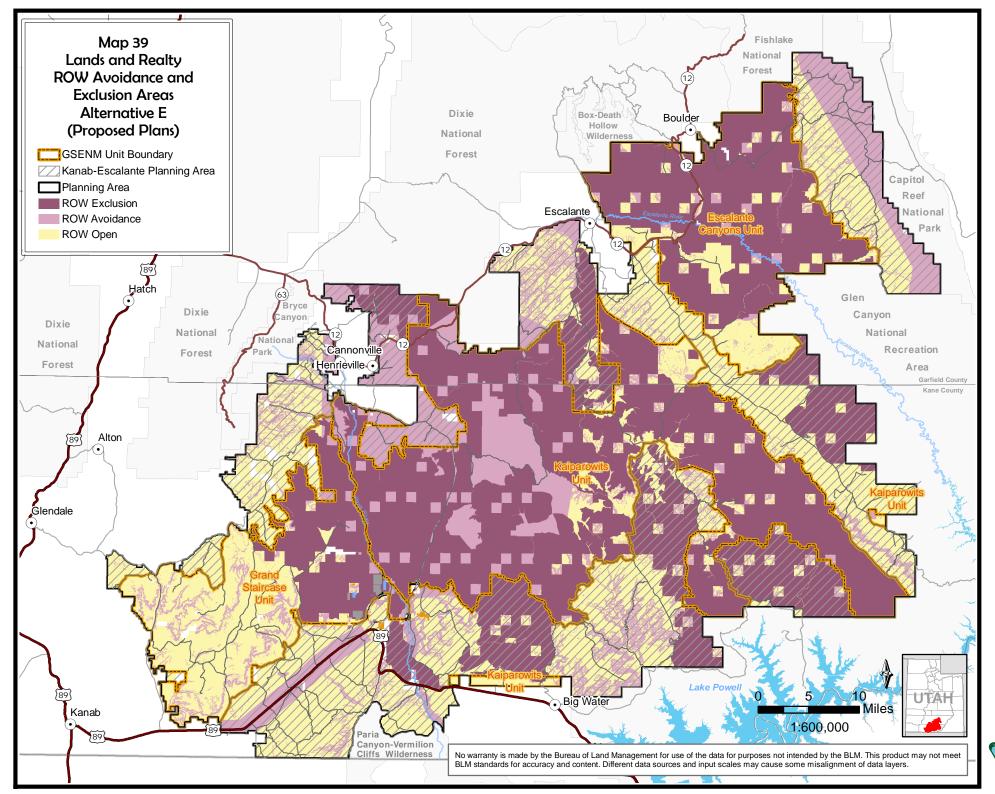




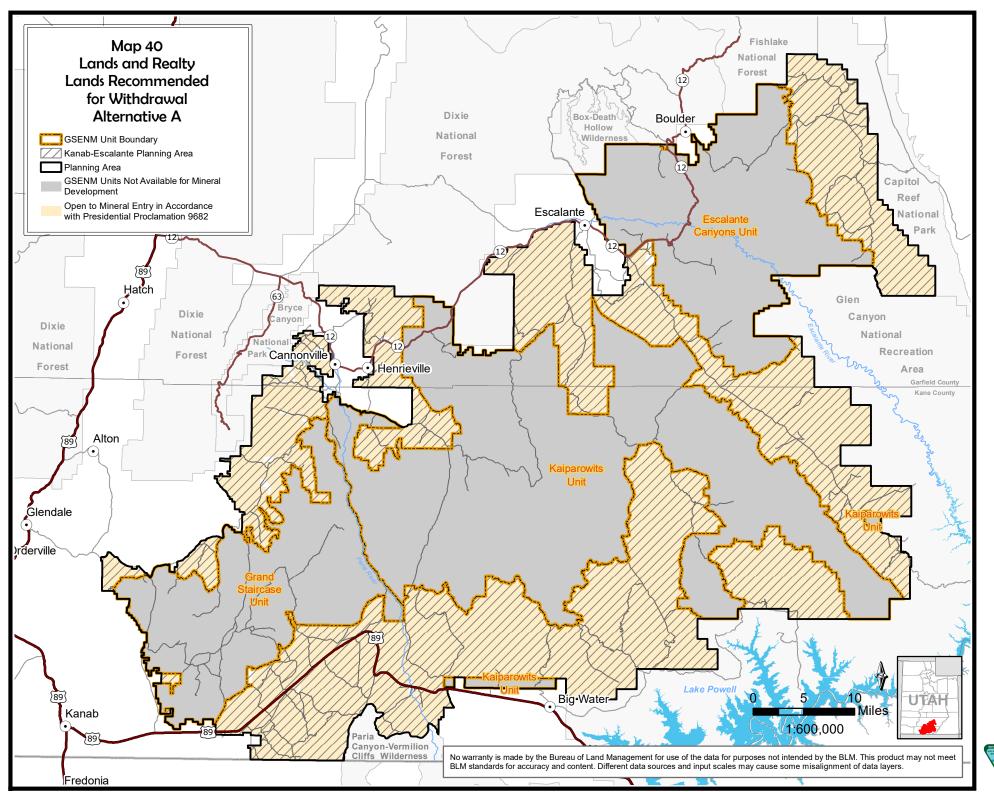




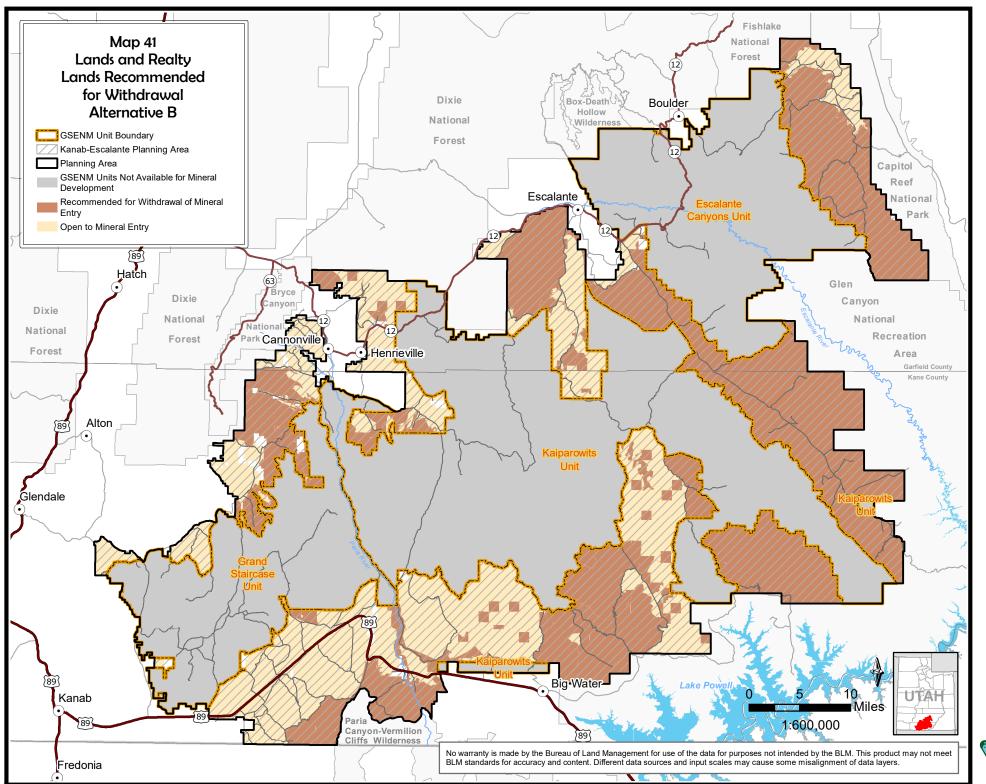




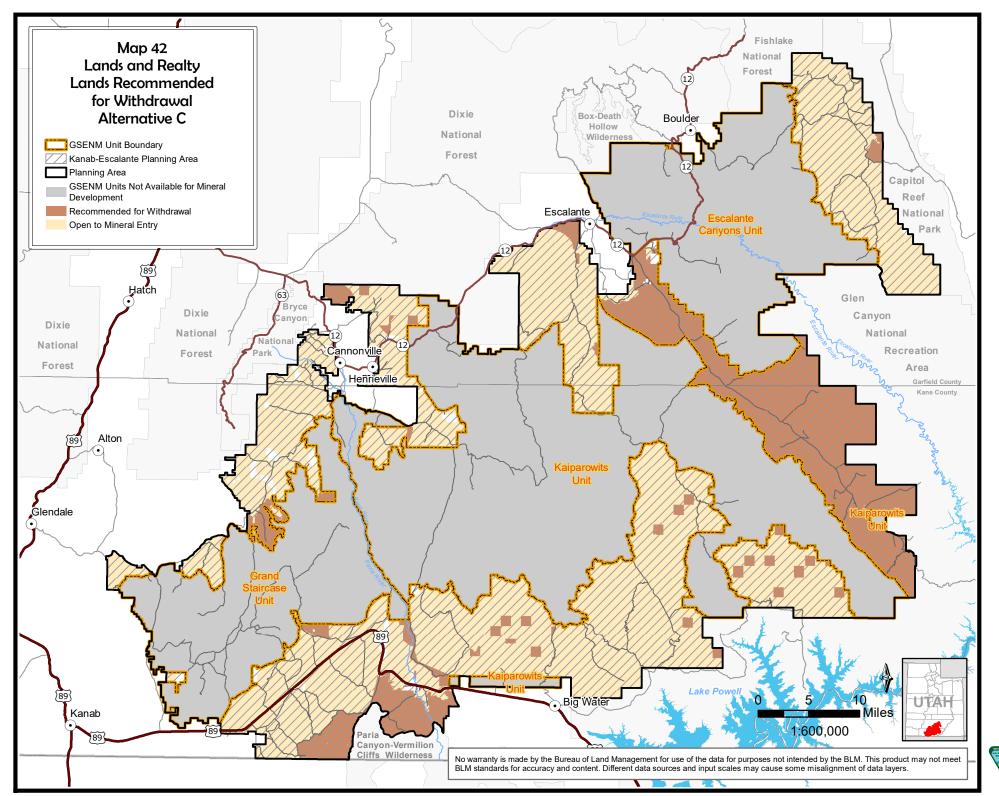




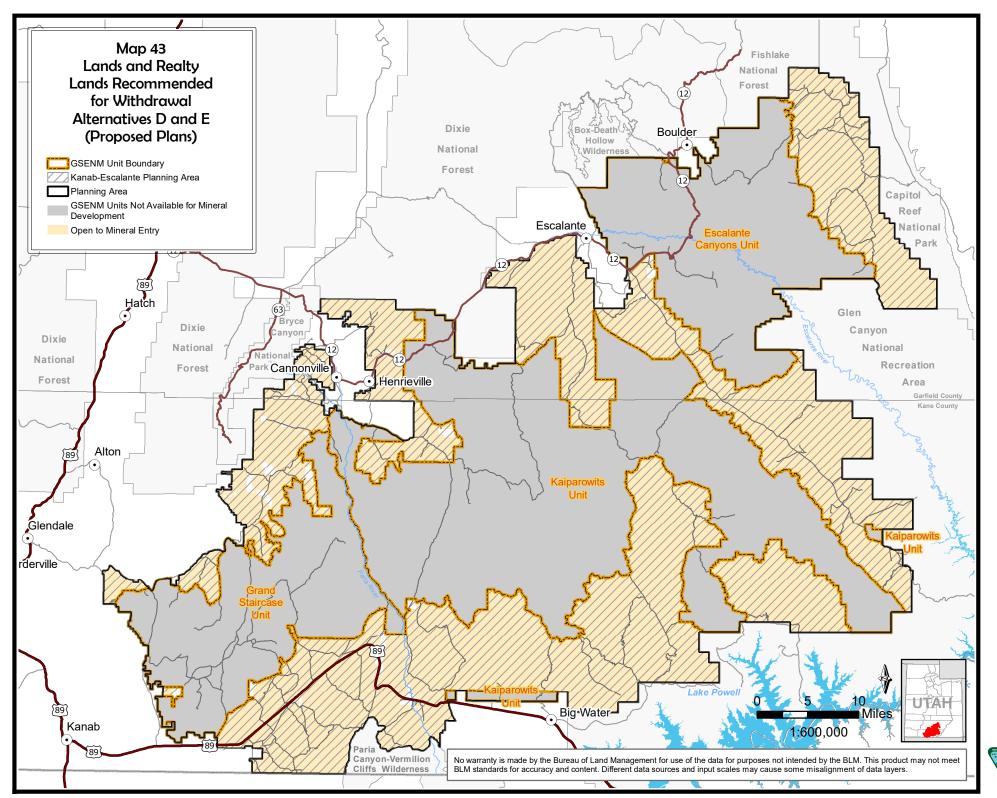




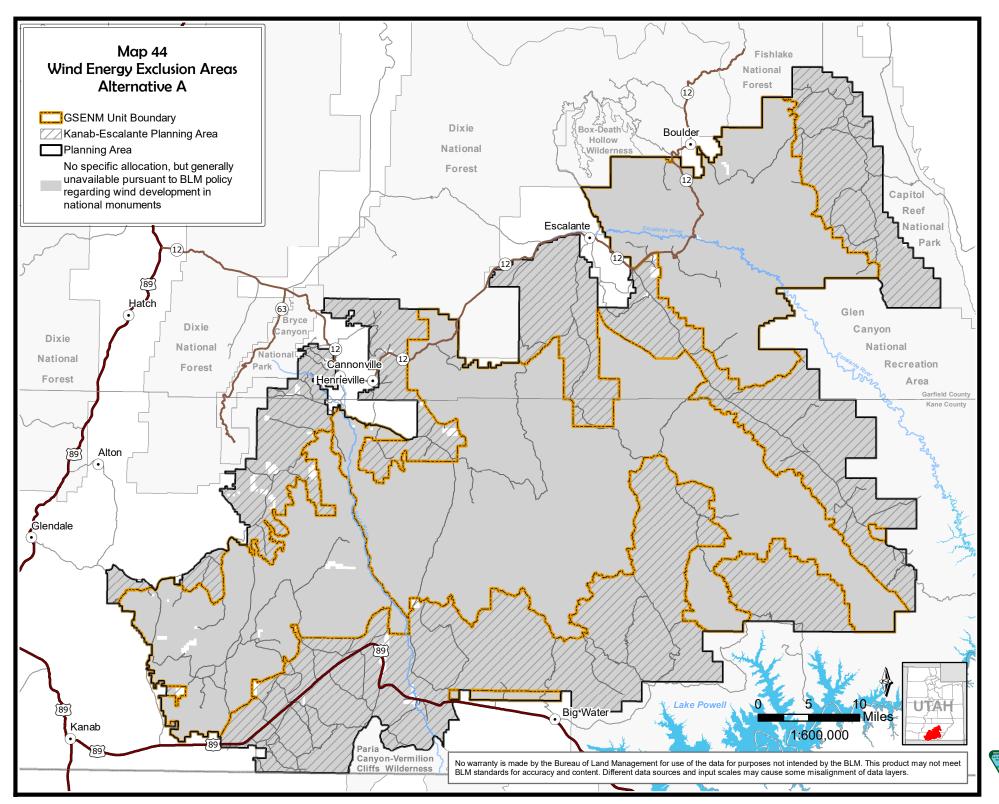




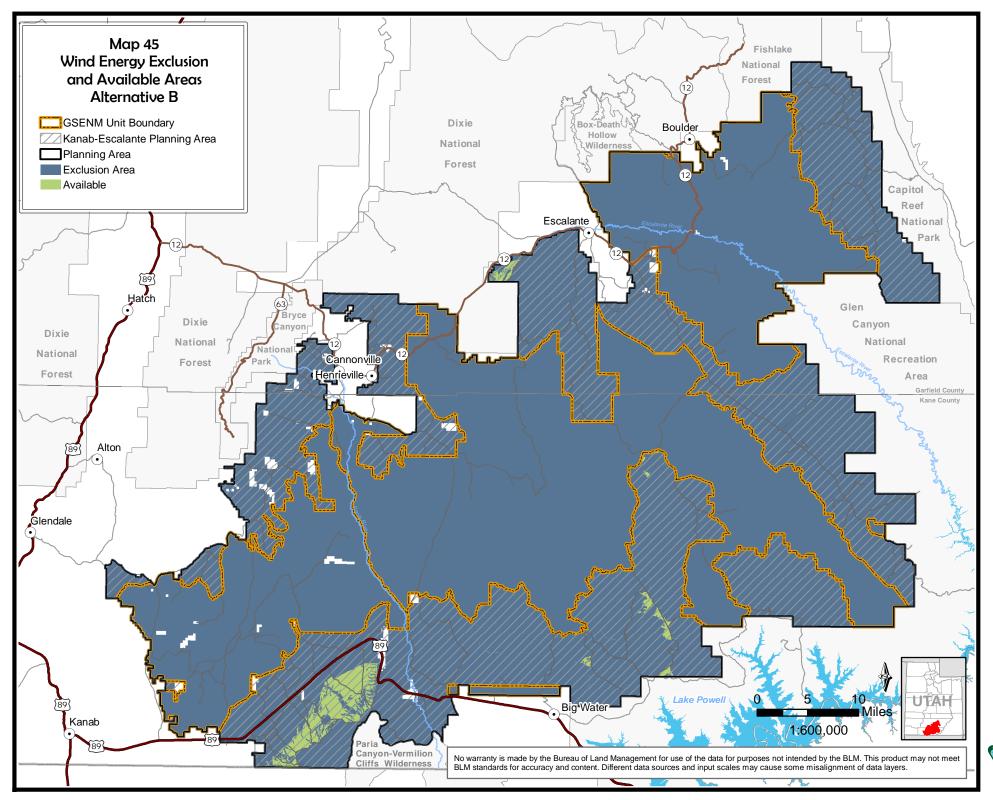




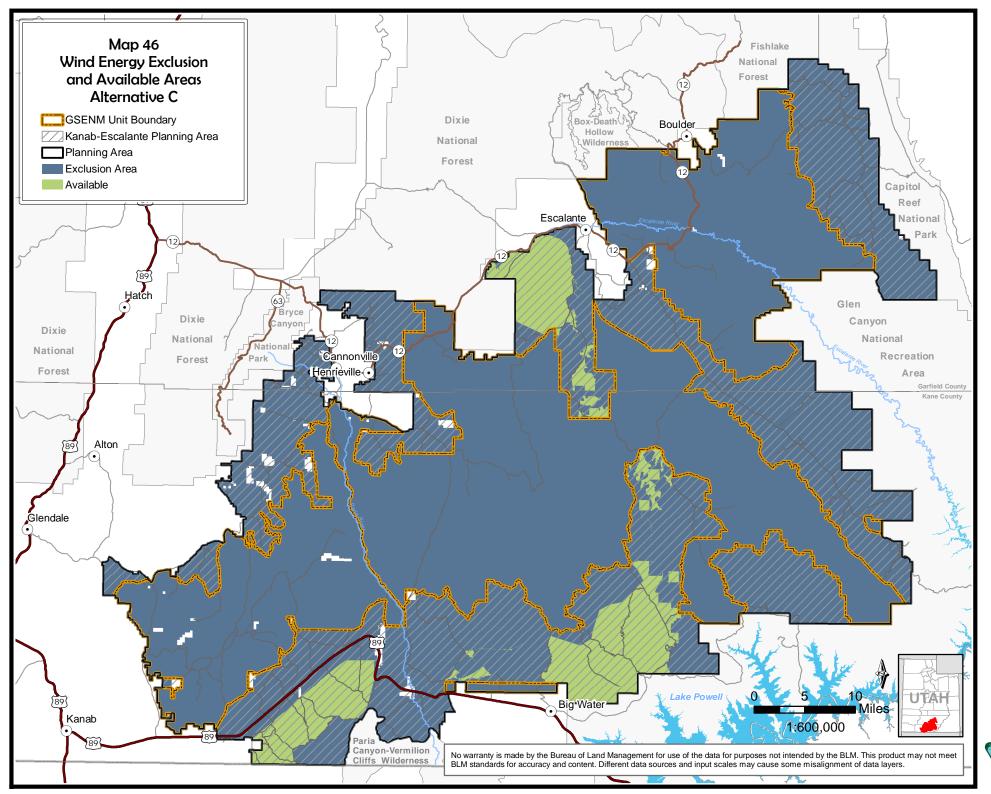




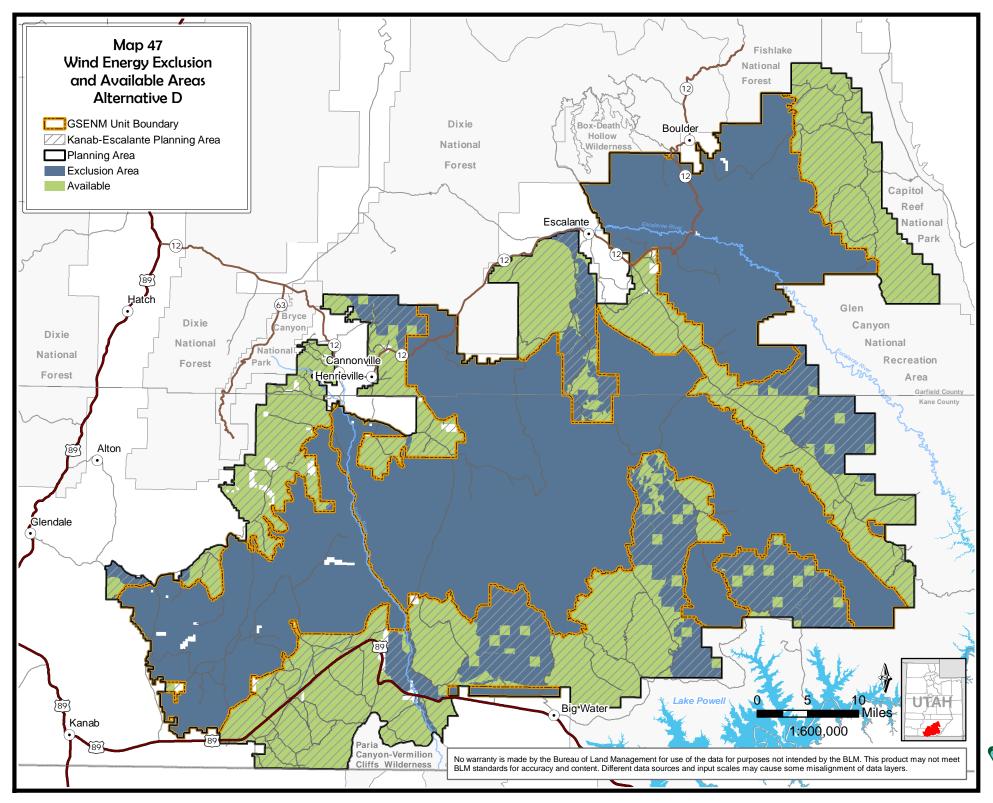




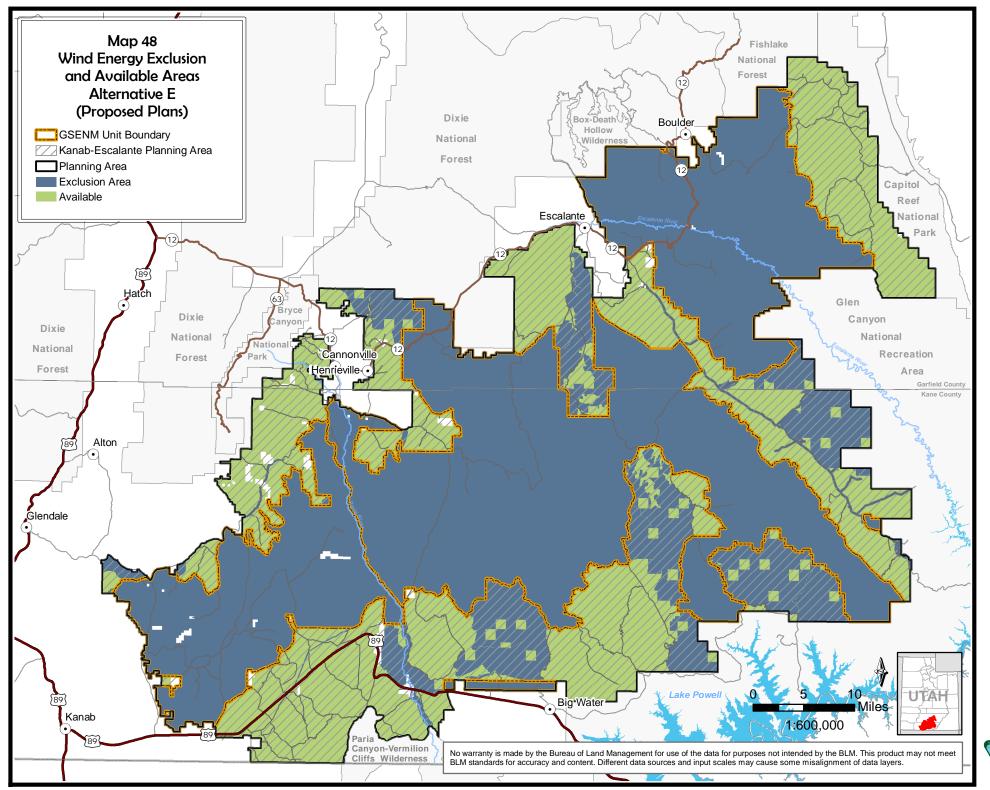




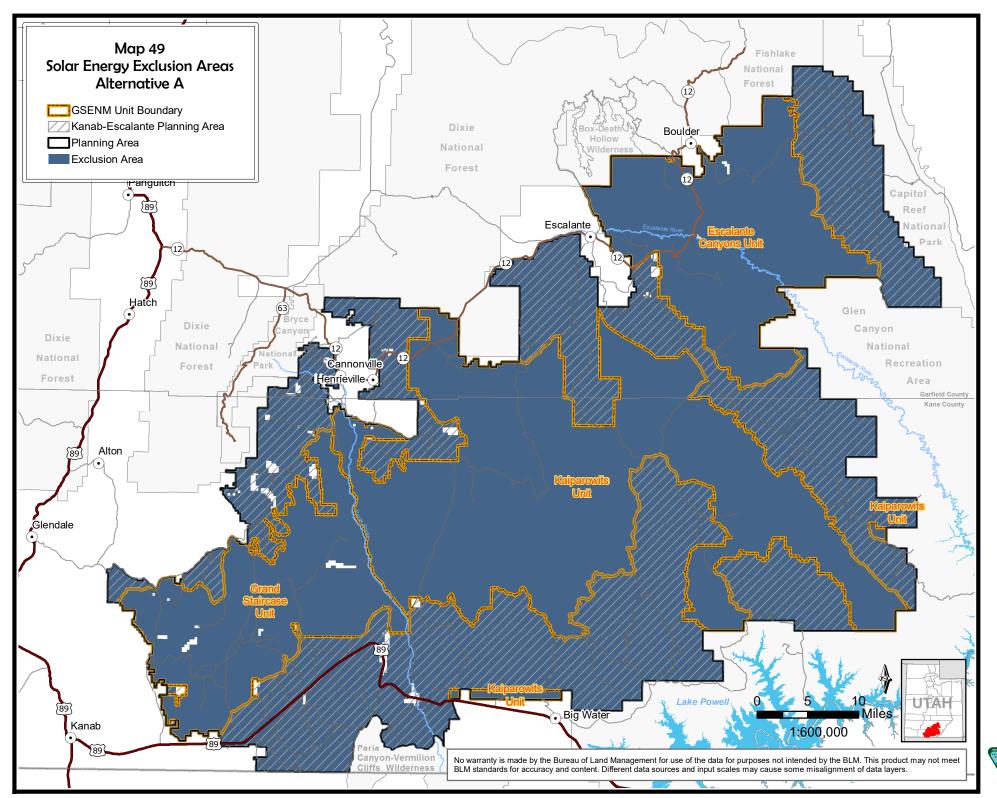




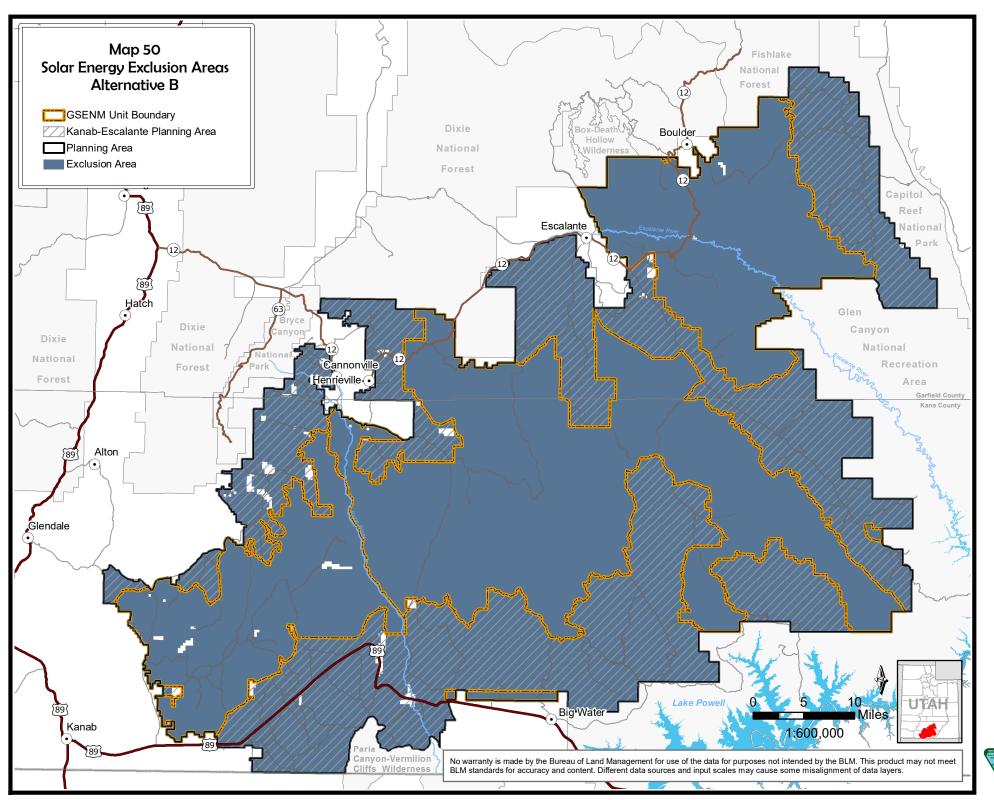




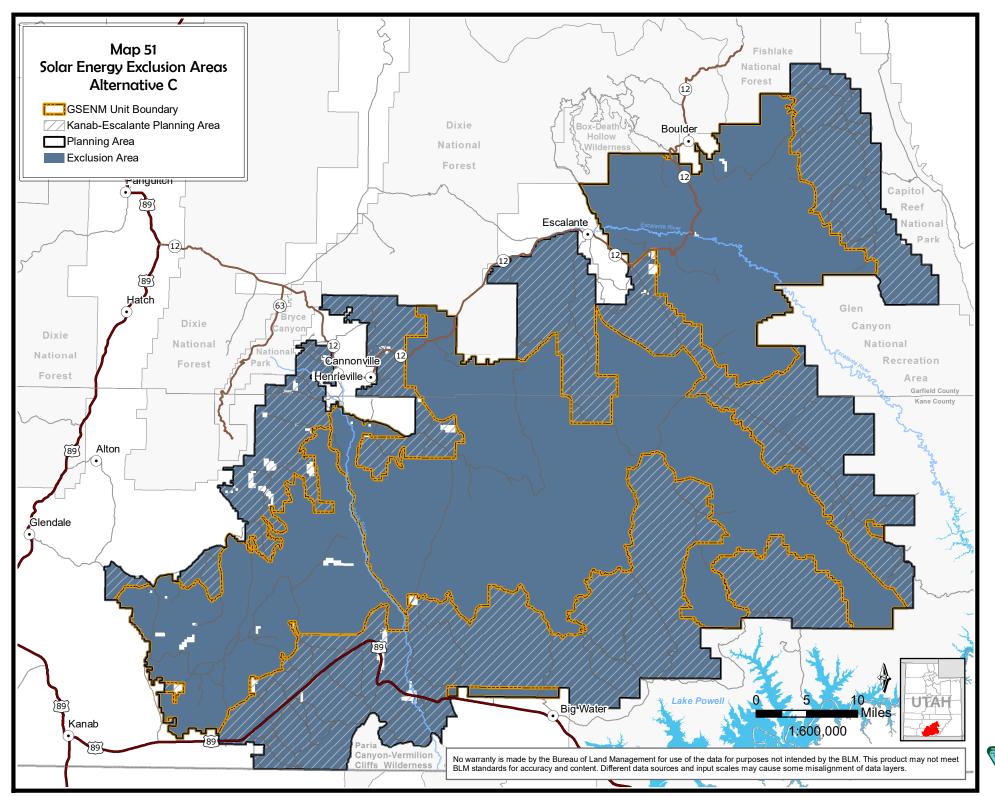




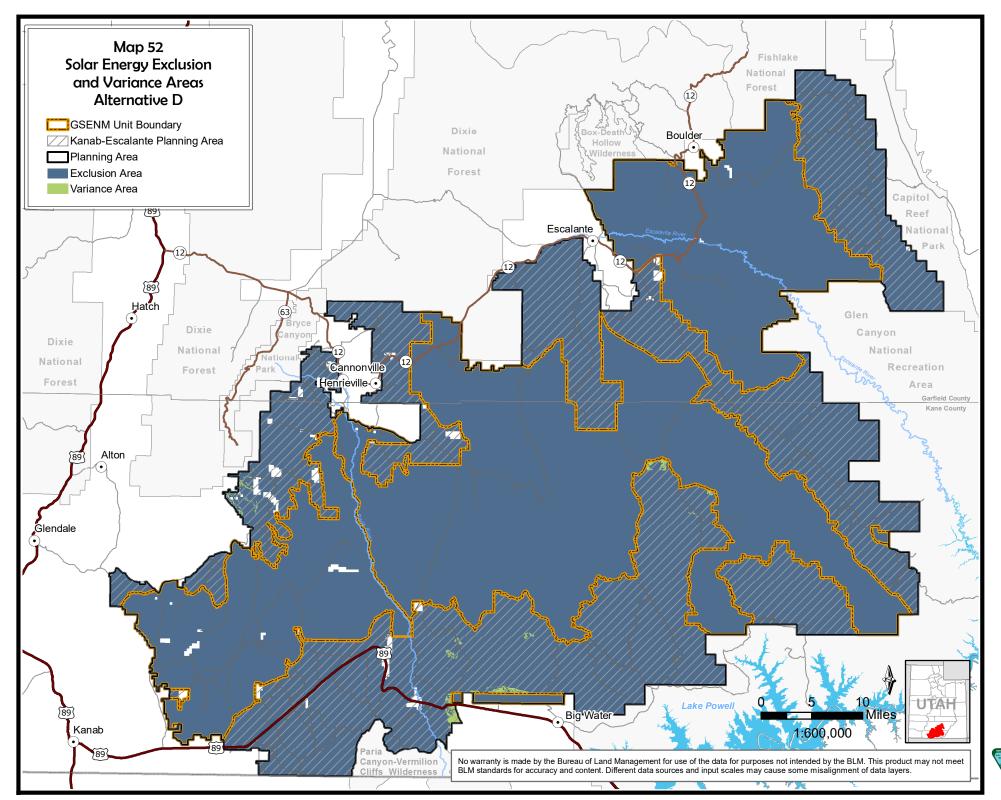




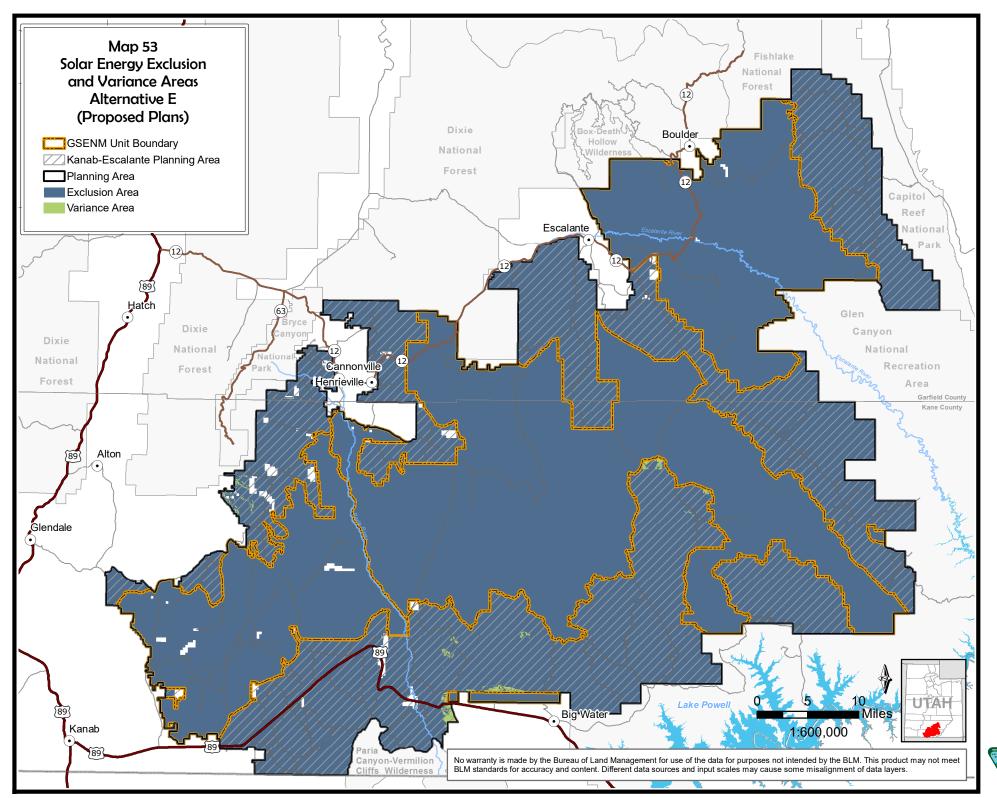




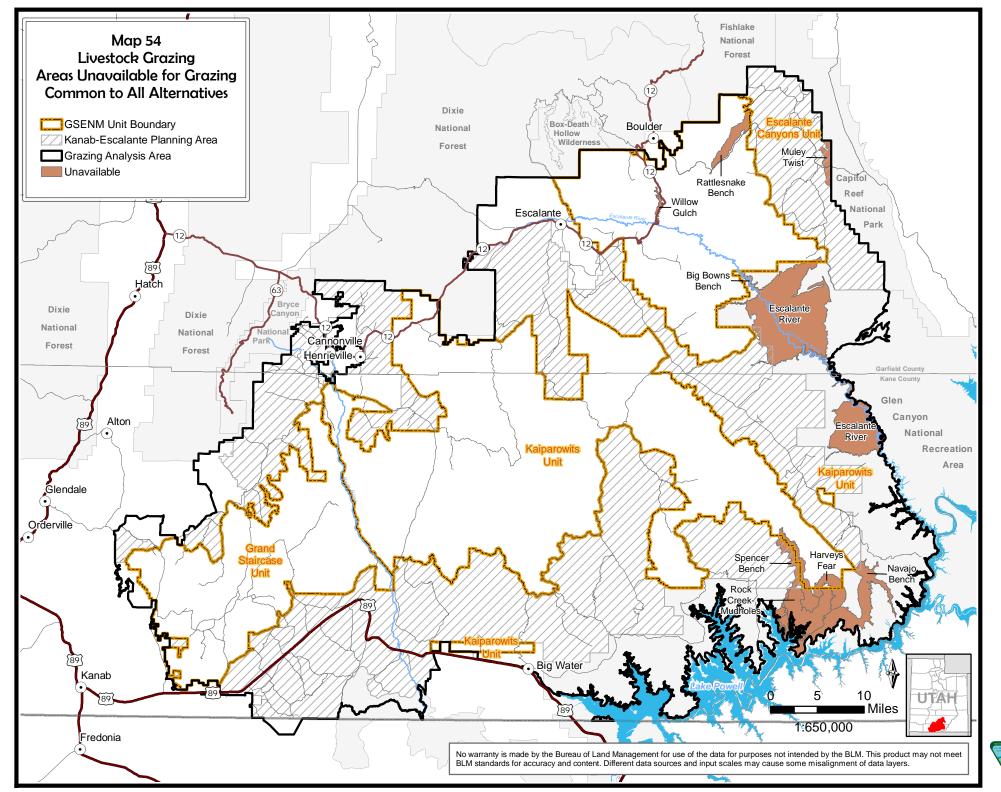




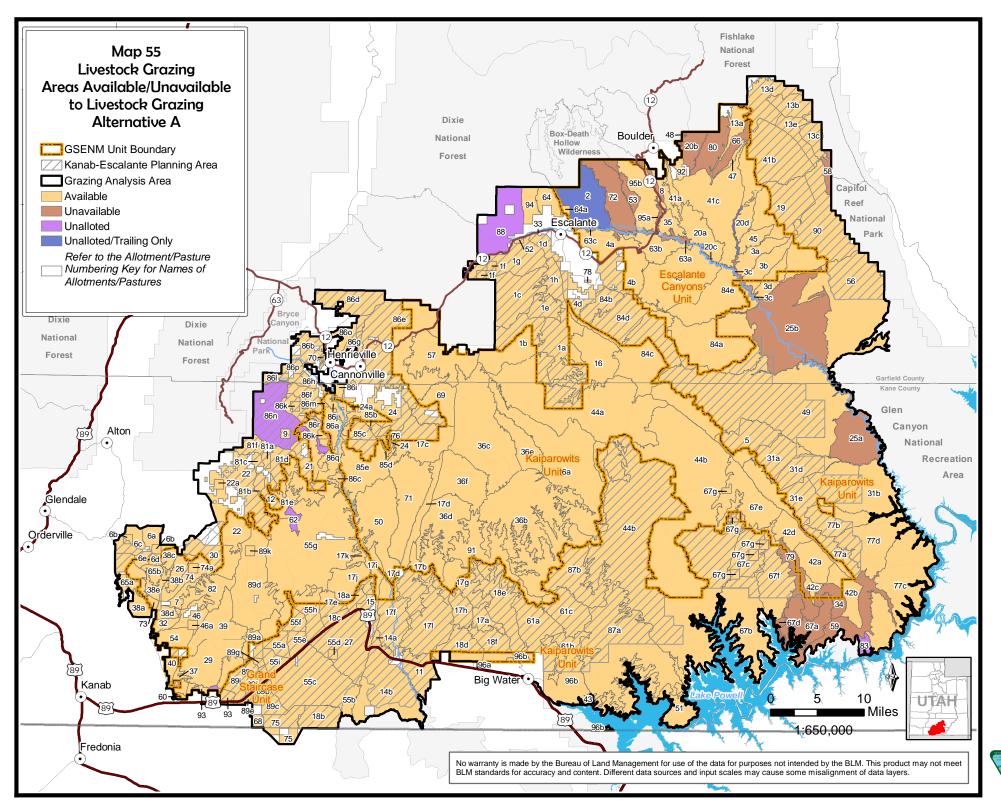




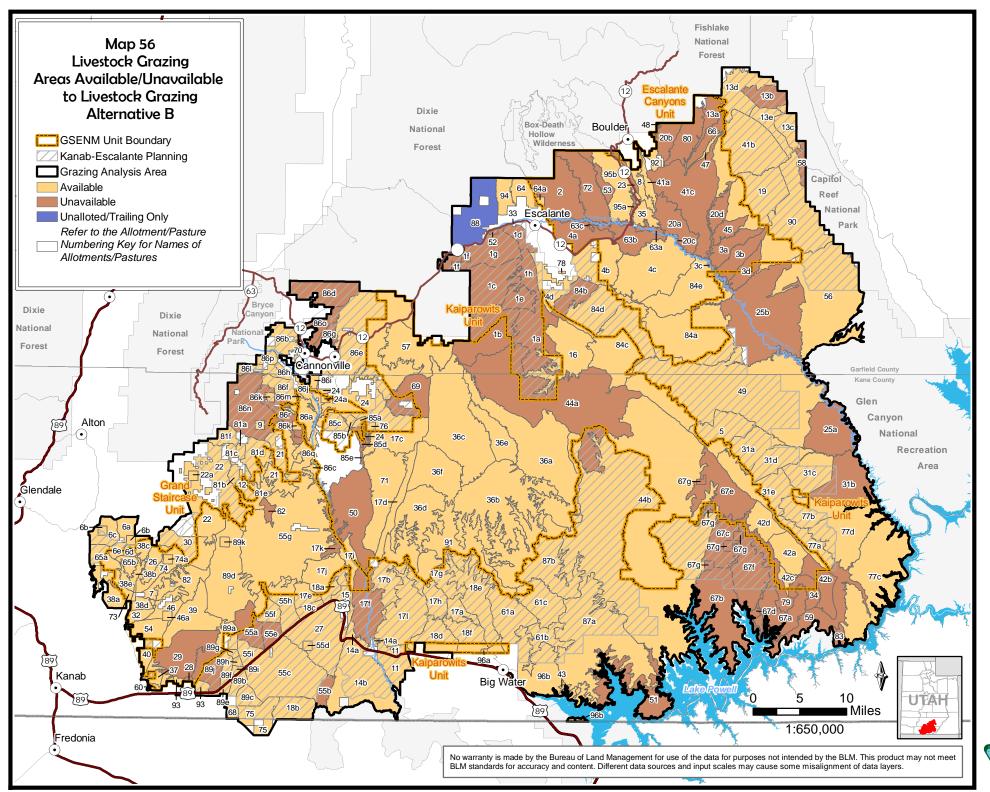




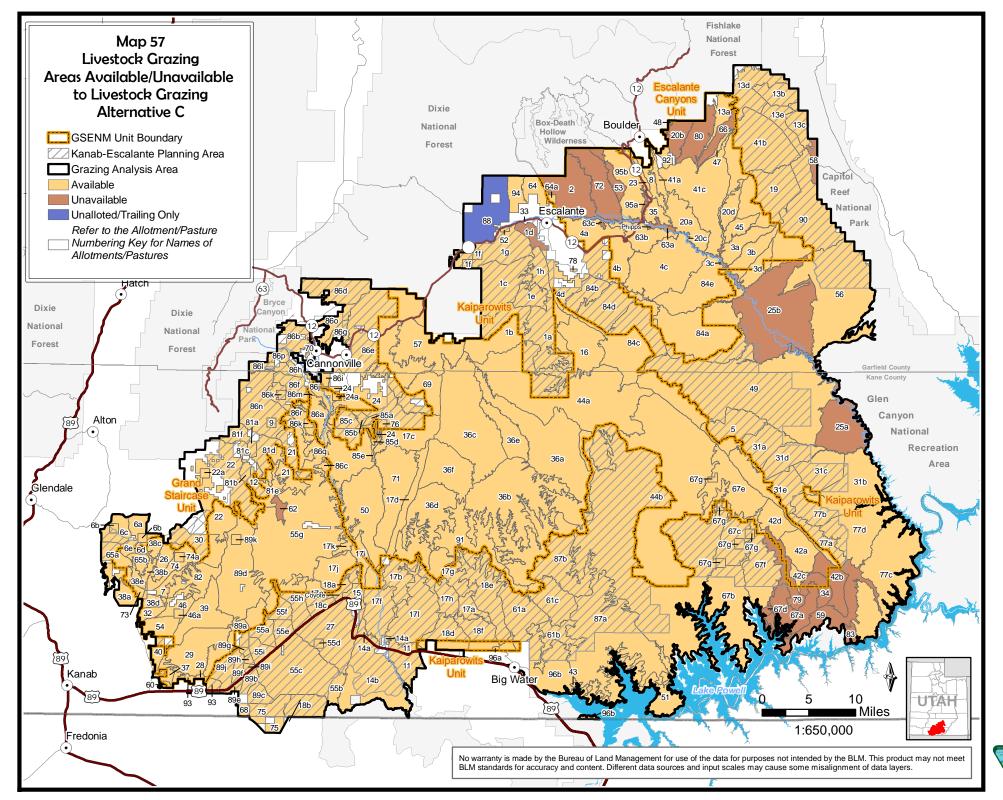




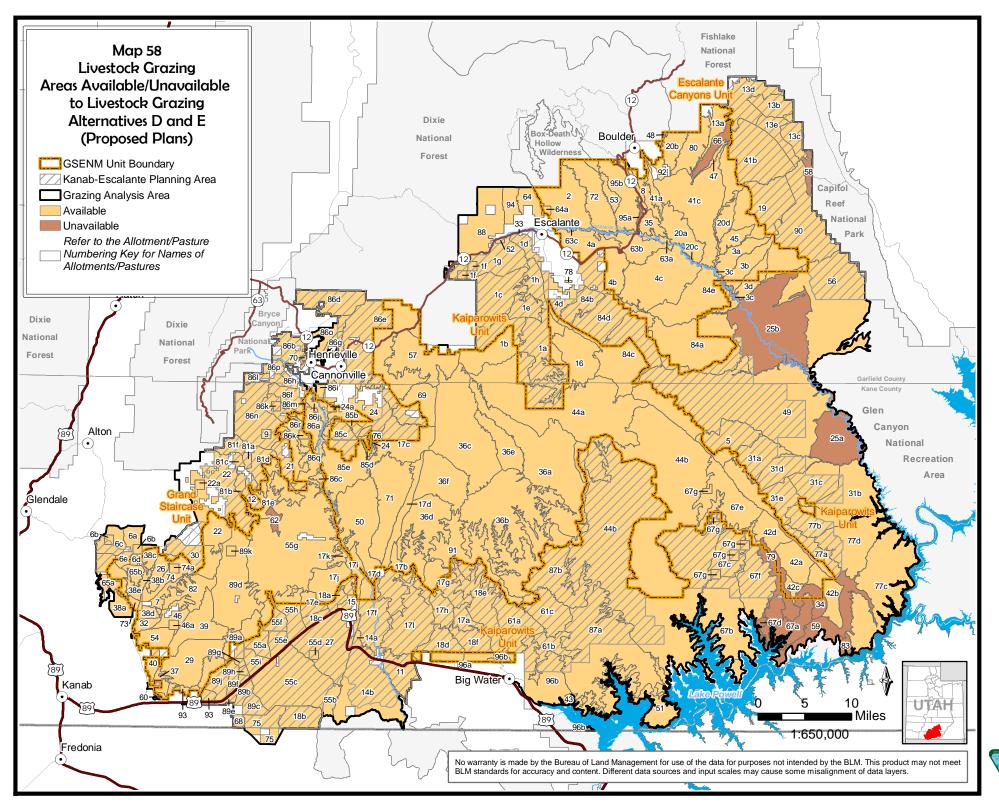




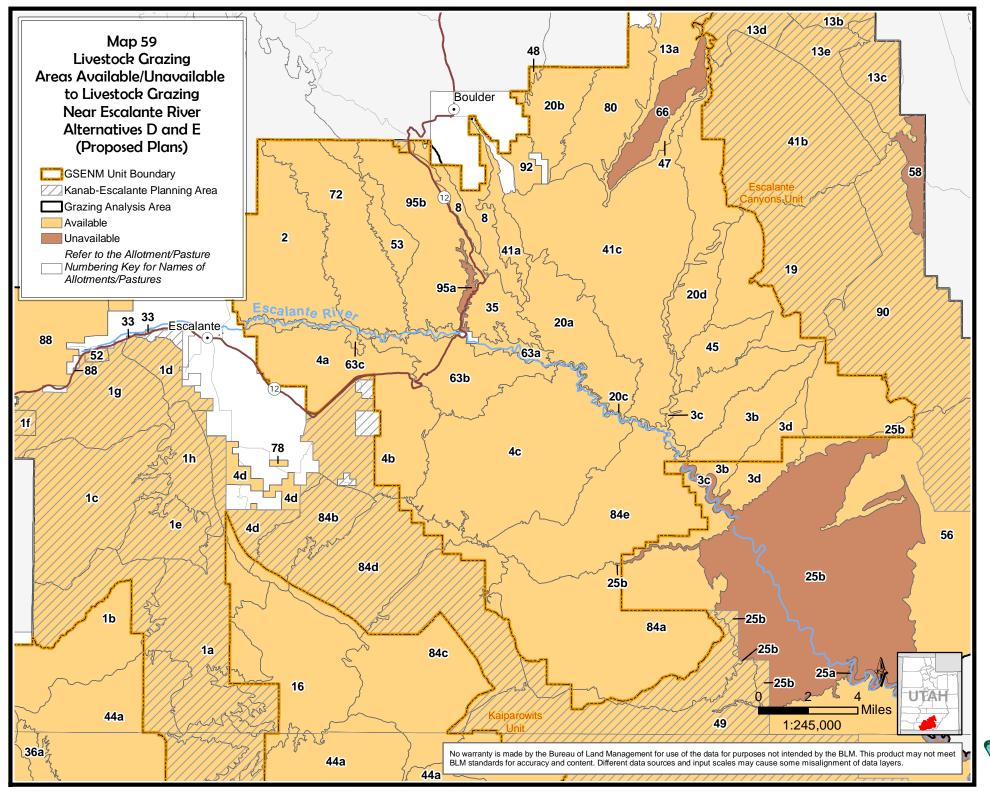








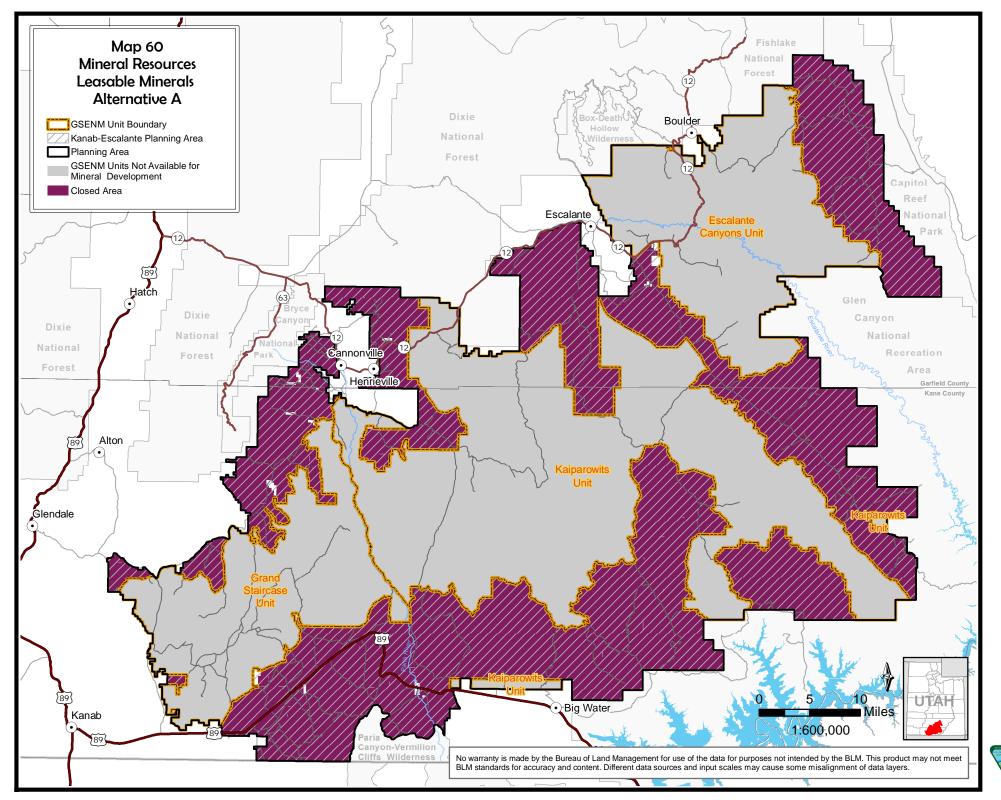




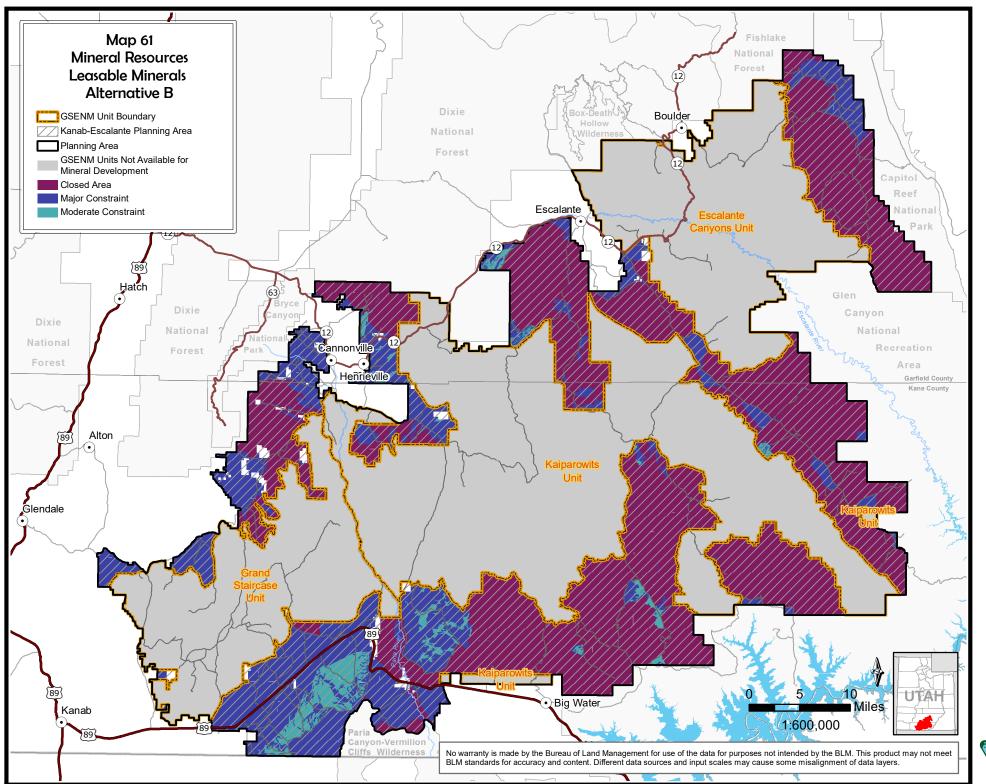


Map ID	Allotment Name	Pasture Name	Map ID	Allotment Name	Pasture Name	Map ID	Allotment Name	Pasture Name
1a	Alvey Wash	Camp Flat	17a	Cottonwood	Blue Trail	31d	Fortymile Ridge	Red Well
1b	Alvey Wash	Canaan	17b	Cottonwood	Brigham Plains	31e	Fortymile Ridge	West
1c	Alvey Wash	Horse Springs	17c	Cottonwood	Butler Valley	32	Granary Ranch	
1d	Alvey Wash	Little Desert	17d	Cottonwood	Cottonwood Wash	33	Hall Ranch	
1e	Alvey Wash	Little Valley	17e	Cottonwood	Eightmile	34	Harveys Fear	
1f	Alvey Wash	Pet Hollow (State)	17f	Cottonwood	Gravelly Hills	35	Haymaker Bench	
1g	Alvey Wash	Pet Hollow/Upper Paria	17g	Cottonwood	Jack Riggs Bench	36a	Headwaters	Drip Tank
1h	Alvey Wash	Wash	17h	Cottonwood	North Coyote	36b	Headwaters	Fourmile Bench
2	Antone Flat		17i	Cottonwood	Paria Box	36c	Headwaters	Headquarters
3a	Big Bowns Bench	Horse Canyon	17j	Cottonwood	Paria Breaks	36d	Headwaters	Horse Flat
3b	Big Bowns Bench	Middle	17k	Cottonwood	Paria River	36e	Headwaters	Horse Mt
3c	Big Bowns Bench	River	17	Cottonwood	Wiggle Rim	36f	Headwaters	Wahweap Native
3d	Big Bowns Bench	Seep Side	18a	Coyote	Fivemile	37	Hells Bellows	
3c	Big Bowns Bench	River	18b	Coyote	Pine Hollow	38a	Johnson Canyon	Dry Lake
4a	Big Horn	Big Flat North	18c	Coyote	Sand Gulch	38b	Johnson Canyon	Johnson Canyon
4b	Big Horn	Big Flat South	18d	Coyote	South Coyote	38c	Johnson Canyon	Mark Point
4c	Big Horn	Spencer Flat	18e	Coyote	Wahweap	38d	Johnson Canyon	Spring Point
4d	Big Horn	West	18f	Coyote	White Sands	38e	Johnson Canyon	Swapp Canyon
5	Black Ridge		19	Death Hollow		39	Johnson Lakes	
6a	Black Rock	Black Rock	20a	Deer Creek	Brigham Tea	40	Johnson Point	
6b	Black Rock	Black Rock (State)	20b	Deer Creek	Cottonwood	41a	King Bench	Durffey Mesa
6c	Black Rock	Chalk Ridge	20c	Deer Creek	River	41b	King Bench	Horse Canyon
6d	Black Rock	East Pine	20d	Deer Creek	Wolverine	41c	King Bench	King Bench
6e	Black Rock	West Pine	21	Deer Range		42a	Lake	Lake
7	Boot		22	Deer Spring Point		42b	Lake	Navajo Point
8	Boulder Creek		22a	Deer Spring Point	Deer Spring Point (State)	42c	Lake	Spencer Point
9	Bull Run (State)	_	23	Dry Hollow		42d	Lake	Steer Point
10	Bunting Trust (State)	_	24	Dry Valley		43	Lake Powell	
11	Bunting Well		24a	Dry Valley	Dry Valley (State)	44a	Last Chance	Summer
12	Calf Pasture		25a	Escalante River	Lower River	44b	Last Chance	Winter
13a	Circle Cliffs	Gulch	25b	Escalante River	Silver Falls (BLM or NPS)	45	Little Bowns Bench	
13b	Circle Cliffs	Lampstand	26	First Point	(52 5 (7	46	Locke Ridge	
13c	Circle Cliffs	Onion Bed	27	Five Mile Mountain		46a	Locke Ridge	Locke Ridge (State)
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					Long Canyon Stock	
13d	Circle Cliffs	Prospect	28	Flag Point		47	Driveway	
13e	Circle Cliffs	White Flat	29	Flood Canyon		48	Long Neck	
14a	Clark Bench	Bull Pasture	30	Ford Well		49	Lower Cattle	
14b	Clark Bench	West Clark	31a	Fortymile Ridge	Big hollow	50	Lower Hackberry	
15	Cockscomb		31b	Fortymile Ridge	East	51	Lower Warm Creek	
16	Collet		31c	Fortymile Ridge	Middle	52	Main Canyon (State)	

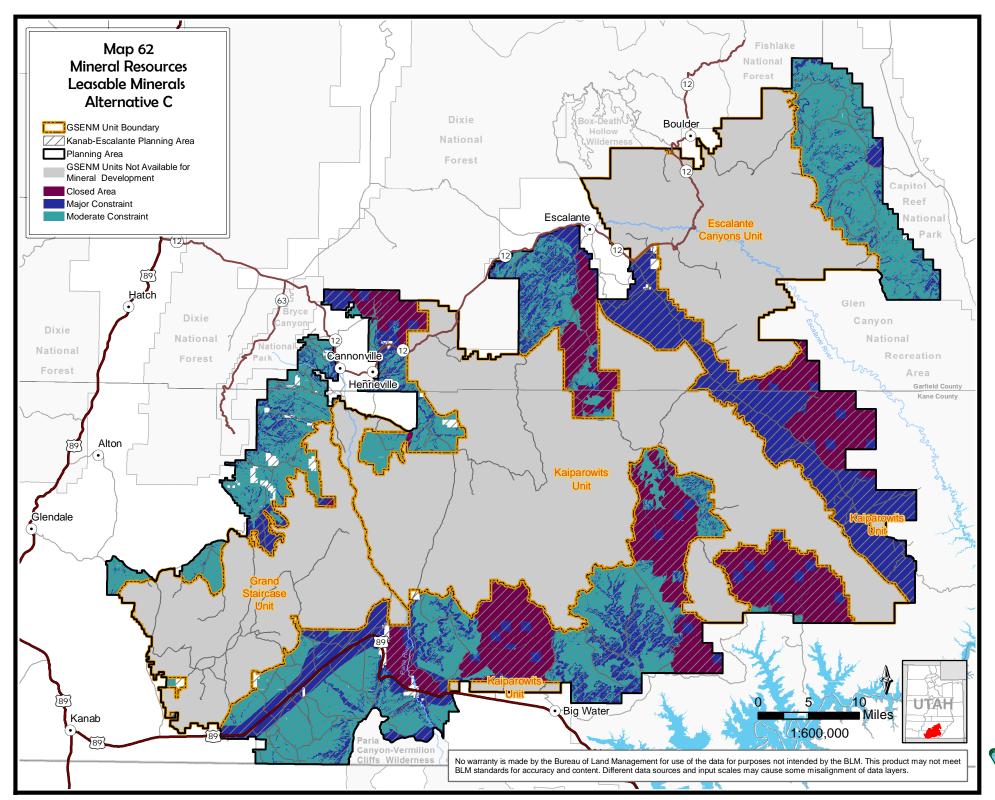
Map ID	Allotment Name	Pasture Name	Map ID	Allotment Name	Pasture Name	Map ID	Allotment Name	Pasture Name
53	McGath Point		73	School Section		86k	Upper Paria	Moyle C Johnson (State)
54	Meadow Canyon	_	74	Second Point		86I	Upper Paria	Mudholes
55a	Mollies Nipple	Blue Spring	74a	Second Point	Second Point (State)	86m	Upper Paria	Sheep Creek
55b	Mollies Nipple	Buckskin-east	75	Sink Holes	, ,	86n	Upper Paria	Unalloted - South
55c	Mollies Nipple	Buckskin-west	76	Slick Rock (State)		860	Upper Paria	Upper Coal Bench
55d	Mollies Nipple	Calvin C Johnson	77a	Soda	Bench	86p	Upper Paria	Upper Jim Hollow
55e	Mollies Nipple	Jenny Clay Hole	77b	Soda	Carcass	86q	Upper Paria	Upper River
55f	Mollies Nipple	Mine Spring	77c	Soda	Hole in the Rock	86r	Upper Paria	Willis Creek
55g	Mollies Nipple	Nipple	77d	Soda	Soda	87a	Upper Warm Creek	Ahlstrom Point
55h	Mollies Nipple	Rock House	78	South Fork		87b	Upper Warm Creek	Heads of the Creeks
55i	Mollies Nipple	Telegraph	79	Spencer Bench		88	Varney Griffin	
56	Moody		80	Steep Creek		89a	Vermilion	Clark Ranch
57	Mud Springs	_	81a	Swallow Park	Bull Rush Hollow	89b	Vermilion	Fossil Wash
58	Muley Twist	_	81b	Swallow Park	Dry Valley	89c	Vermilion	Government Reservoir
59	Navajo Bench	_	81c	Swallow Park	Dunham Flat	89d	Vermilion	Nephi Pasture
60	Neaf	_	81d	Swallow Park	Mud Point	89e	Vermilion	Paria Road
61a	Nipple Bench	Nipple	81e	Swallow Park	Park Wash	89f	Vermilion	Petrified Hollow
61b	Nipple Bench	Point	81f	Swallow Park	Podunk	89g	Vermilion	Rca1
61c	Nipple Bench	Tibbet Bench	82	Timber Mountain		89h	Vermilion	Rca2
62	No Man's Mesa		83	Unalloted (NPS)		89i	Vermilion	Rca3
63a	Phipps	Lower River	84a	Upper Cattle	Allen Dump	89j	Vermilion	Seaman
63b	Phipps	Phipps	84b	Upper Cattle	Cedar Wash	89k	Vermilion	Vermilion (State)
63c	Phipps	Upper River	84c	Upper Cattle	Seep Flat	90	Wagon Box Mesa	
64	Pine Creek		84d	Upper Cattle	Tenmile Flat	91	Wahweap	
64a	Pine Creek	Pine Creek (State)	84e	Upper Cattle	The V	92	White Rock	
65a	Pine Point	Cutler Point	85a	Upper Hackberry	Middle Jody	93	White Sage	
65b	Pine Point	Pine Point	85b	Upper Hackberry	North Jody	94	Wide Hollow	
66	Rattlesnake Bench		85c	Upper Hackberry	Rock Springs Bench	95a	Willow Gulch	Lower Calf Creek Falls
67a	Rock Creek-Mudholes	Dry Rock Creek	85d	Upper Hackberry	South Jody	95b	Willow Gulch	Upper Calf Creek Falls
67b	Rock Creek-Mudholes	Grand Bench	85e	Upper Hackberry	South Native	96a	Wire Grass	North Wire Grass
67c	Rock Creek-Mudholes	Little Valley	86a	Upper Paria	Between The Creeks	96b	Wire Grass	Wahweap Lake
67d	Rock Creek-Mudholes	Middle Rock Creek	86b	Upper Paria	Bulldog Bench			
67e	Rock Creek-Mudholes	Mudholes	86c	Upper Paria	Cad Bench			
67f	Rock Creek-Mudholes	Rock Creek	86d	Upper Paria	Henderson Canyon			
		Rock Creek-Mudholes						
67g	Rock Creek-Mudholes	(State)	86e	Upper Paria	Henrieville Creek			
68	Rock Reservoir		86f	Upper Paria	Indian Hollow			
69	Round Valley		86g	Upper Paria	Lower Coal Bench			
70	Roy Willis		86h	Upper Paria	Lower Jim Hollow			
71	Rush Beds		86i	Upper Paria	Moore Breaks			
72	Salt Water Creek		86j	Upper Paria	Moore Cove			



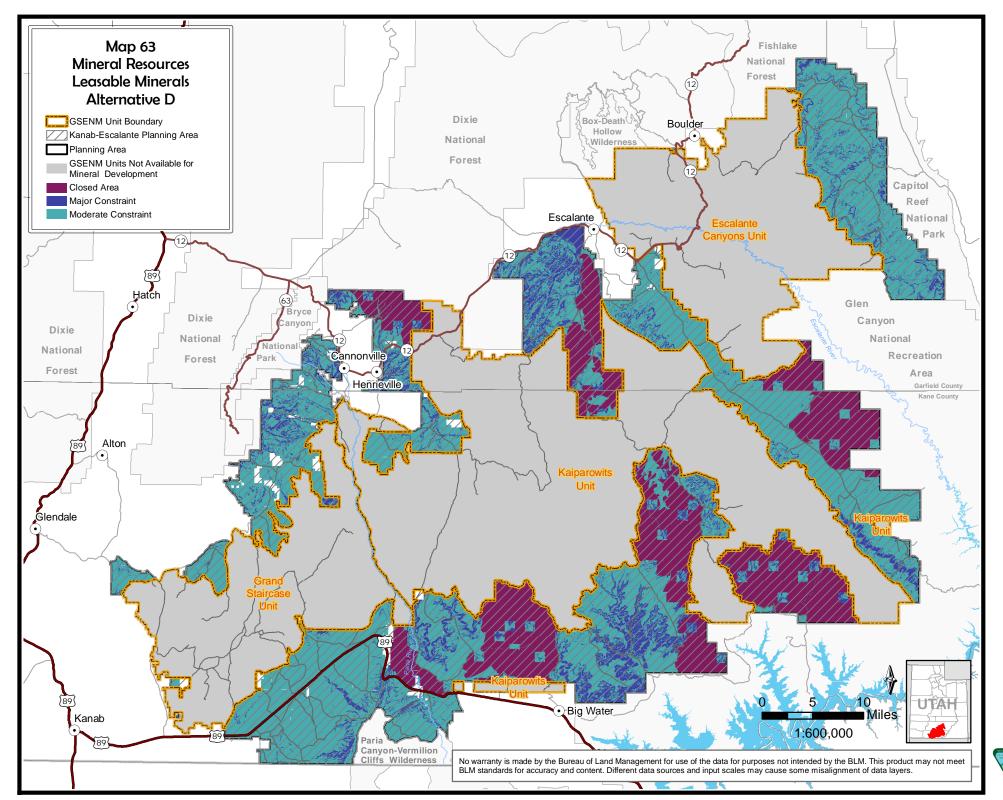




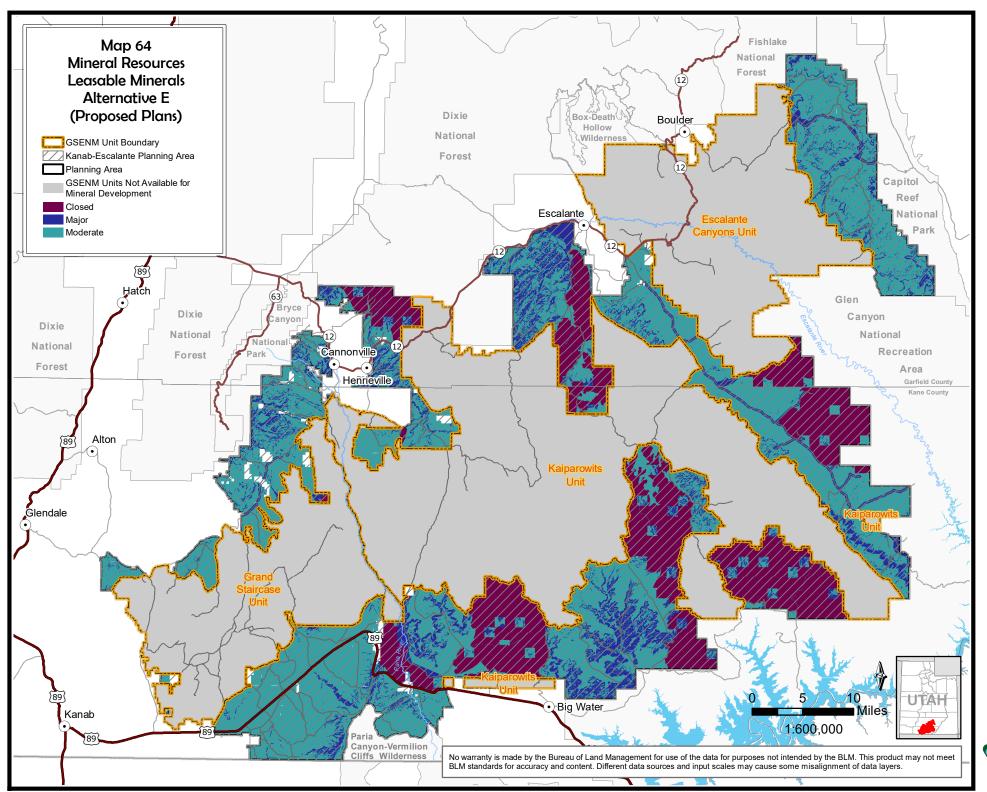




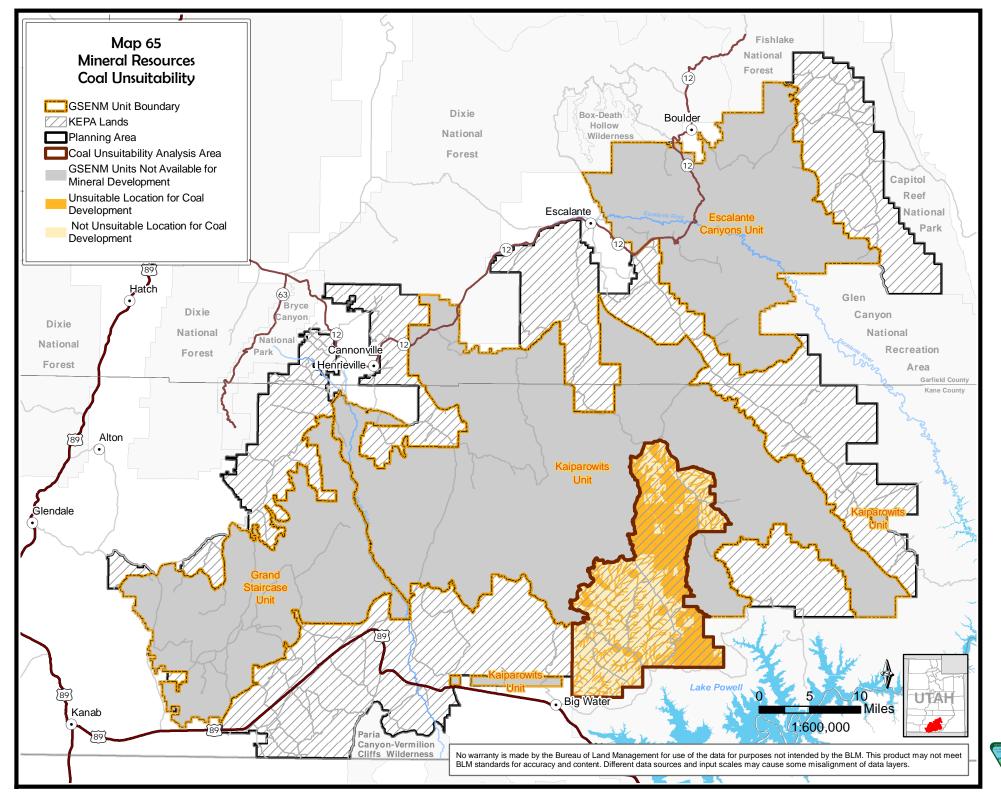




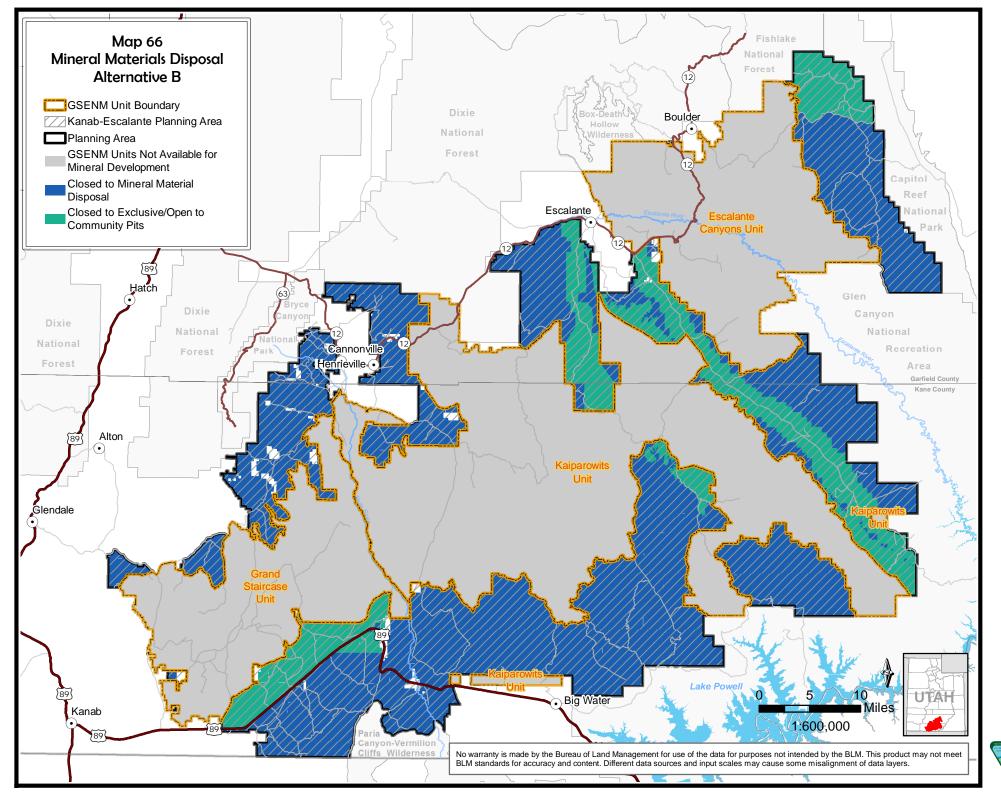




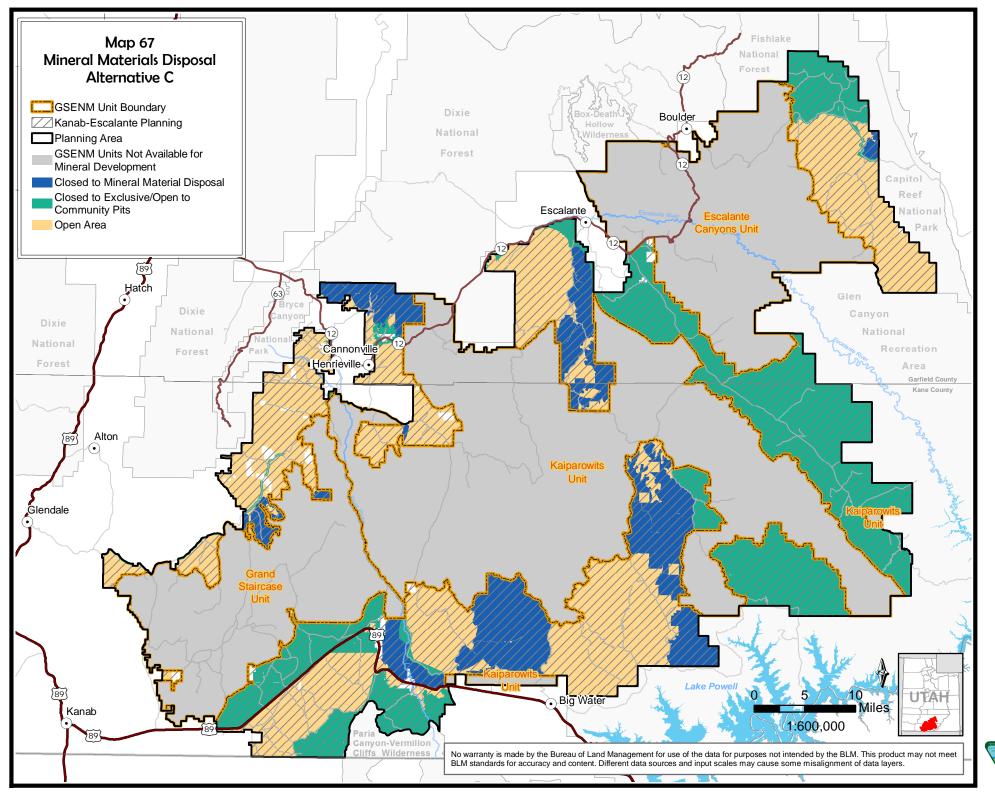




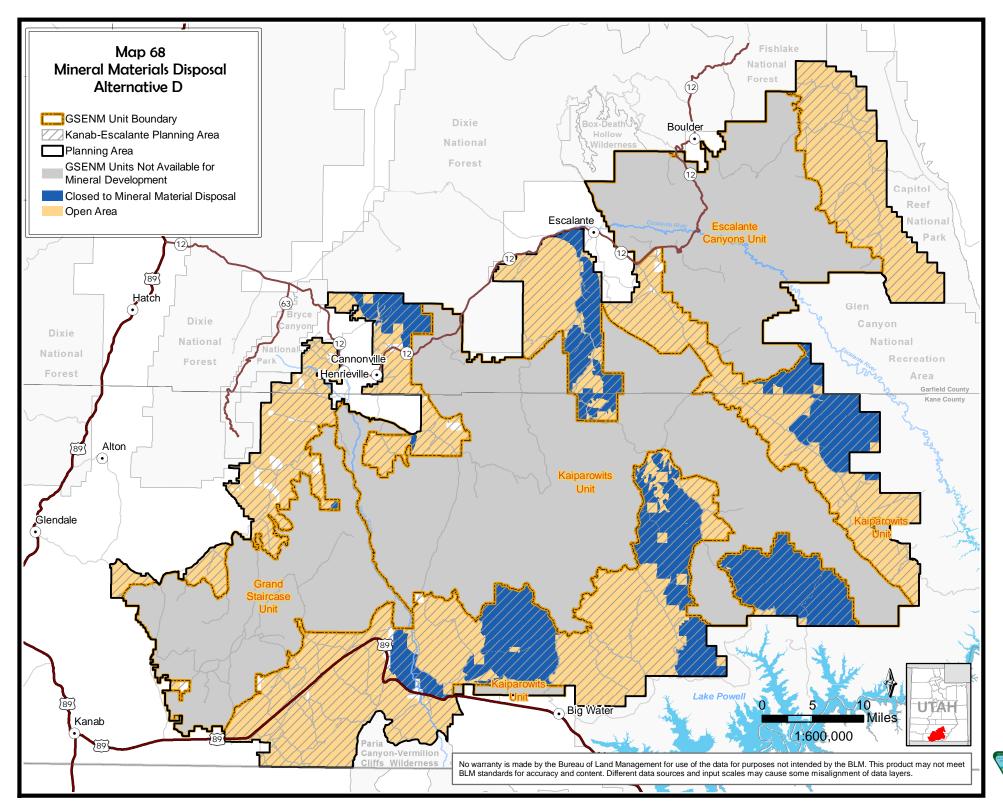




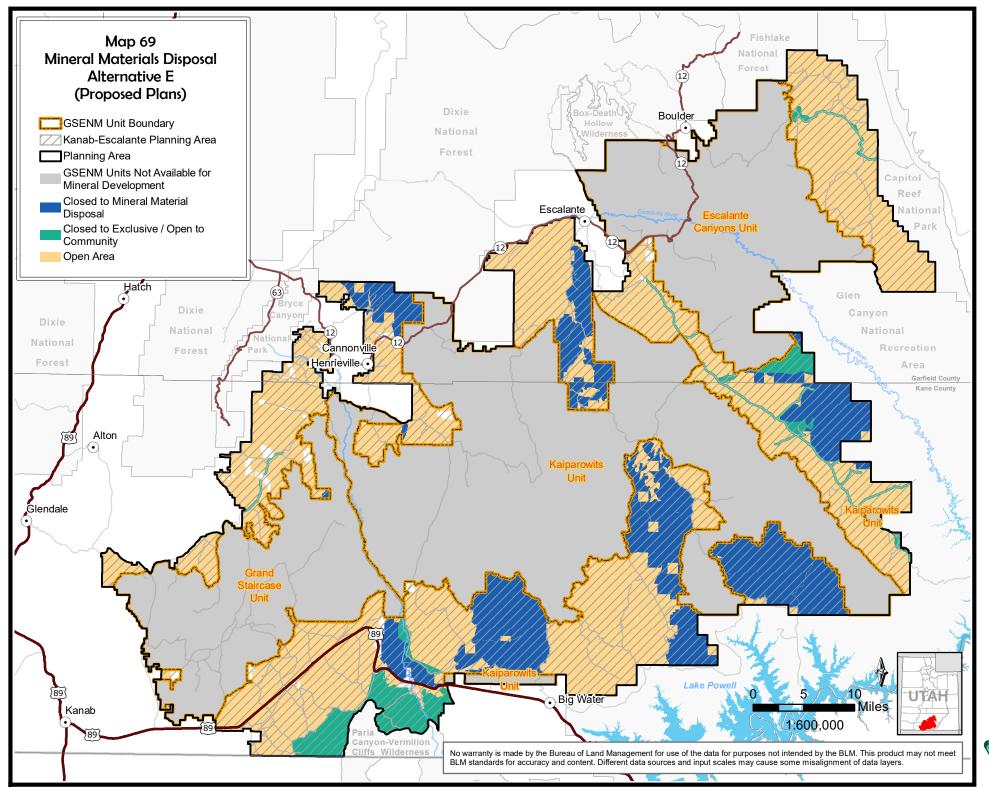




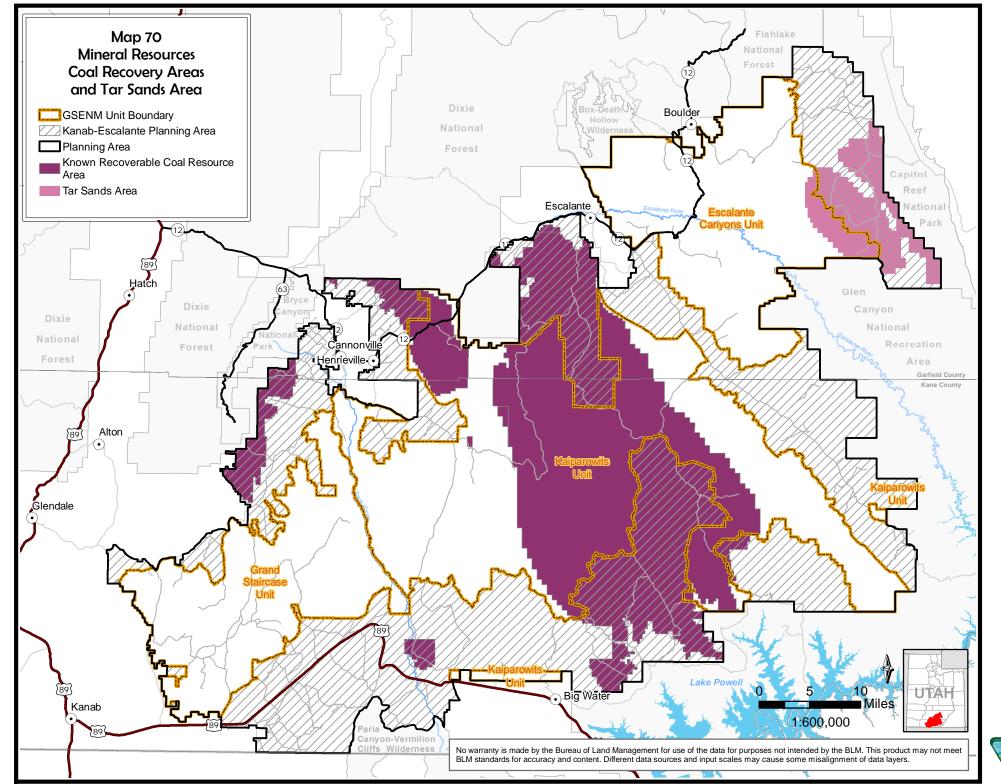




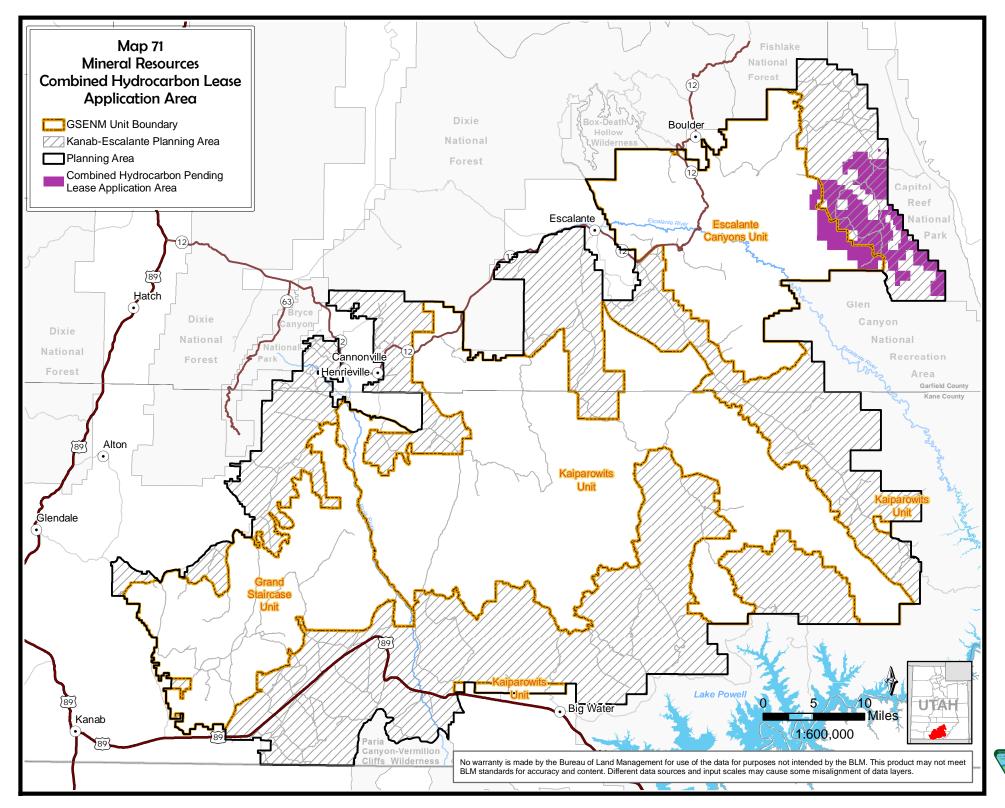




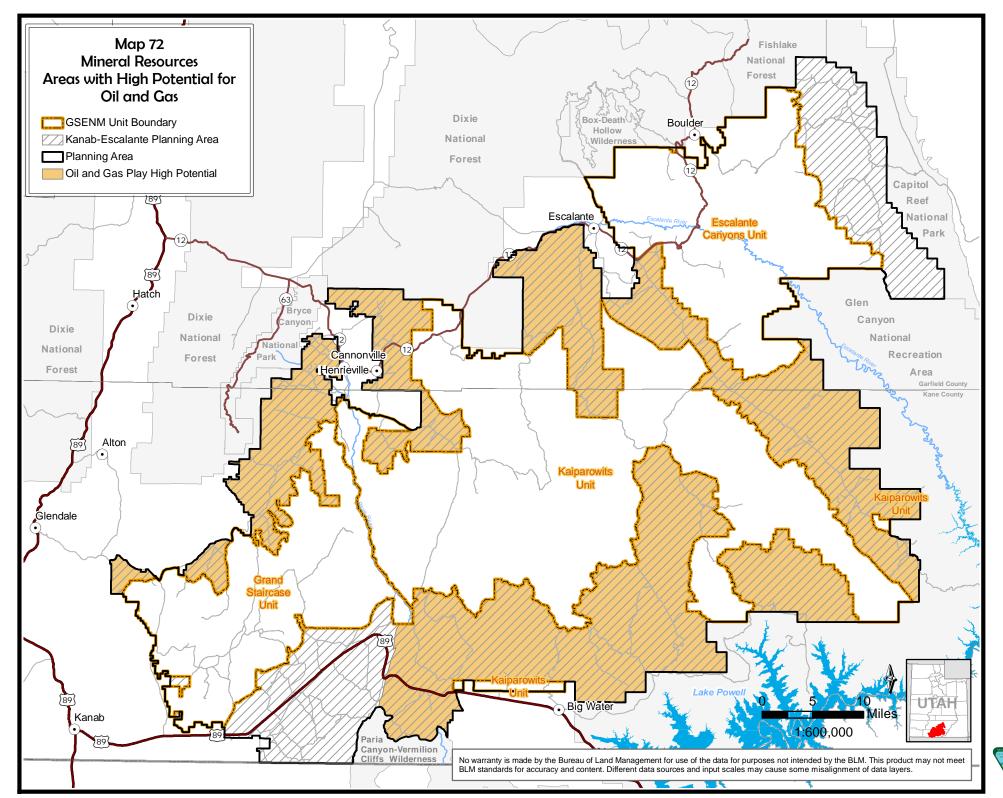




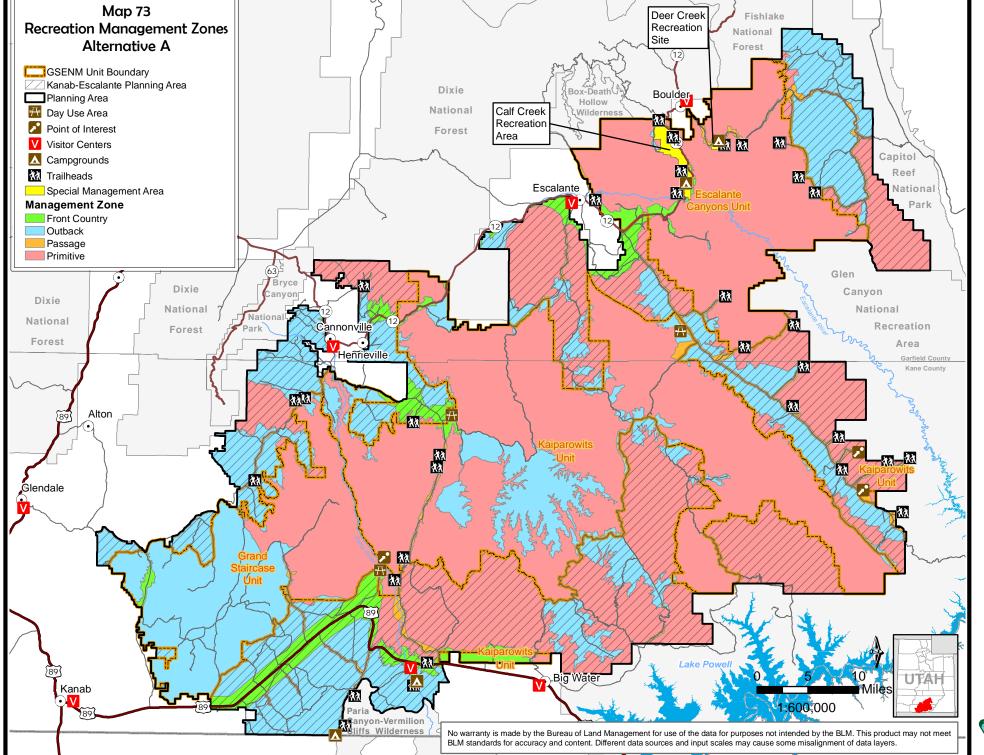




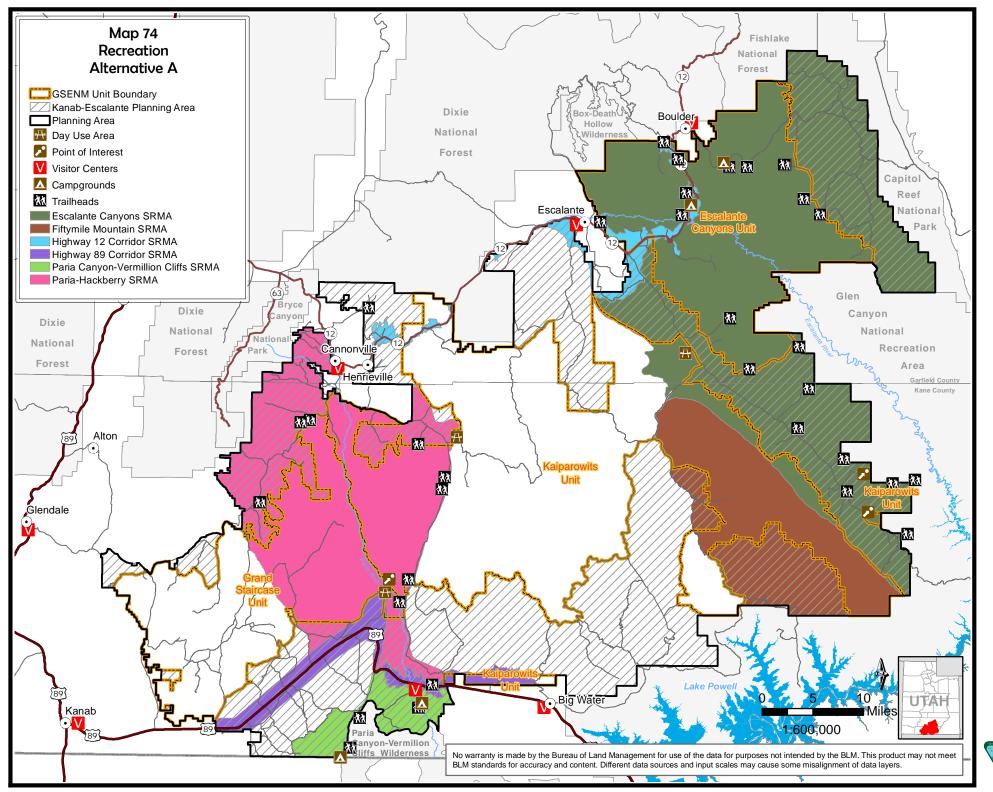




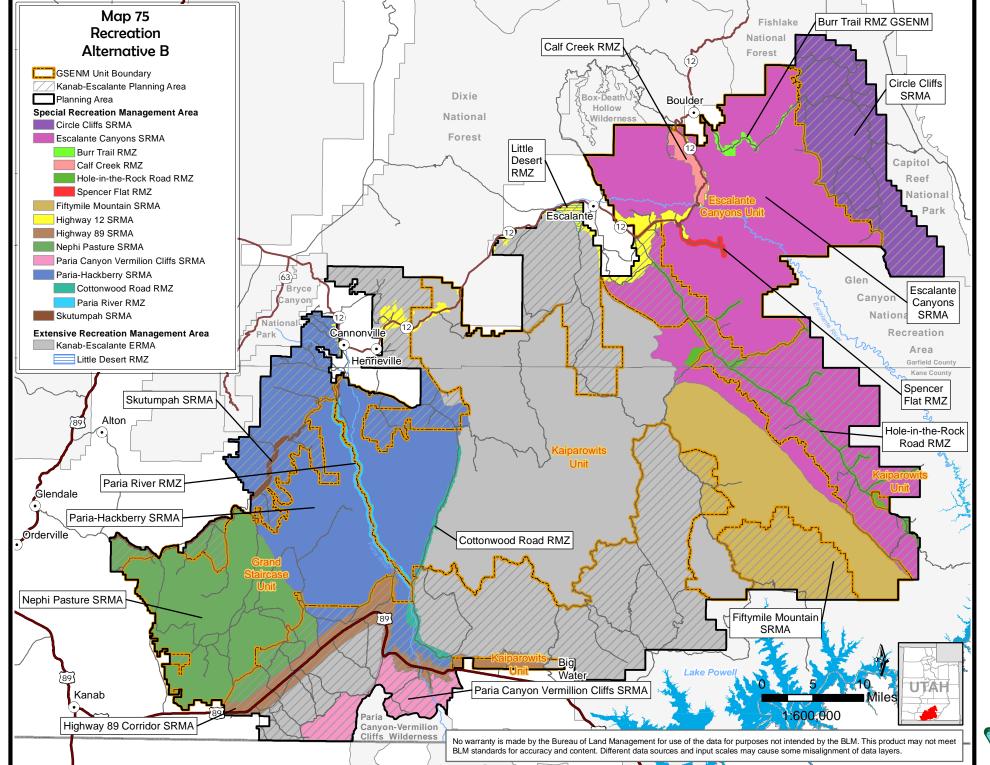




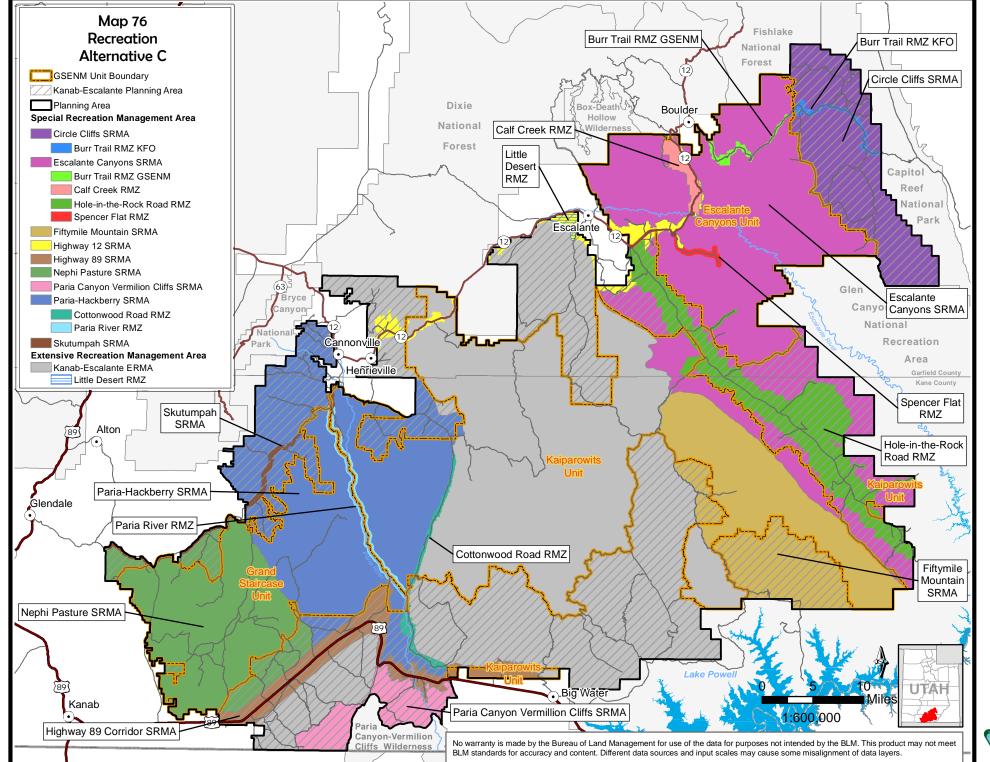




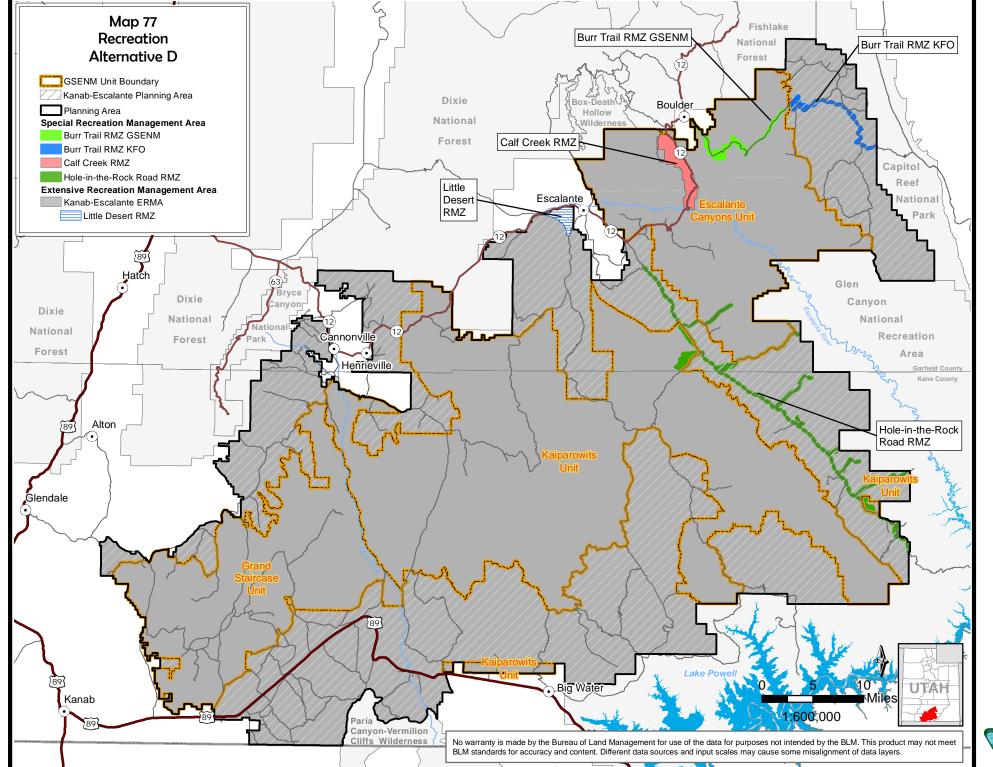




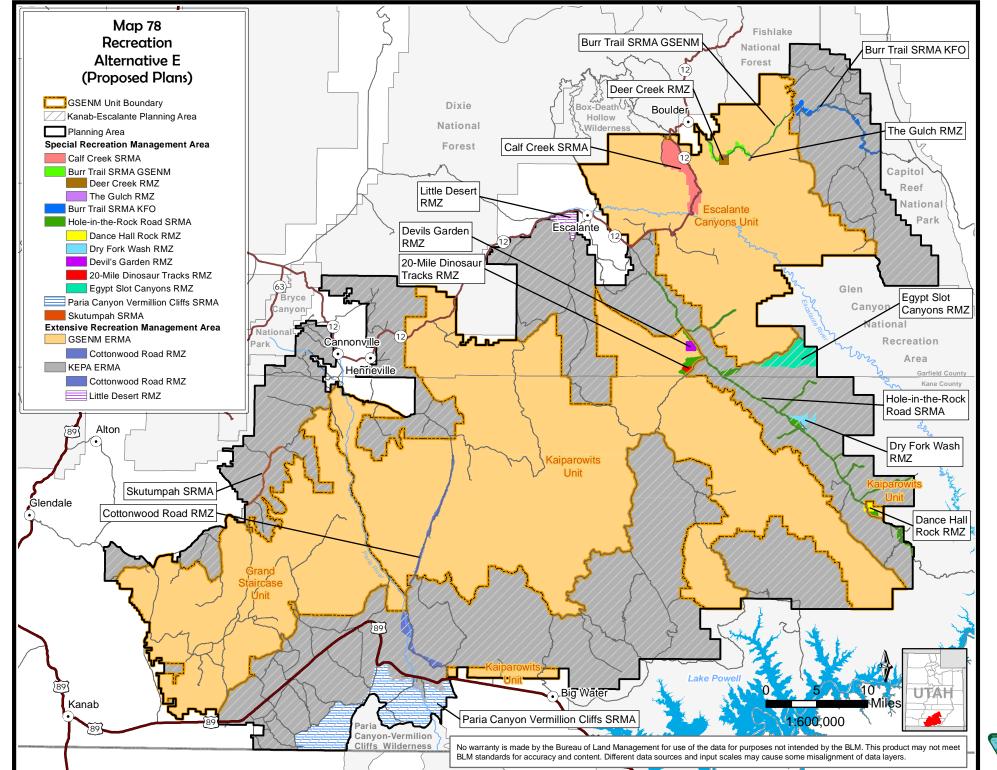




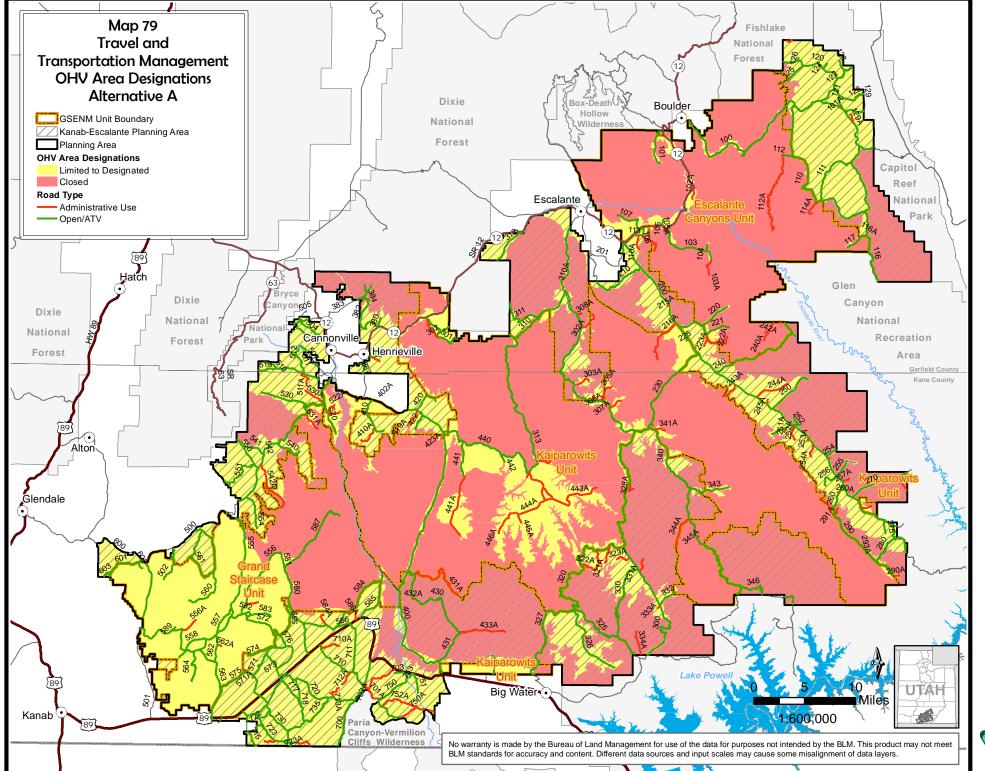




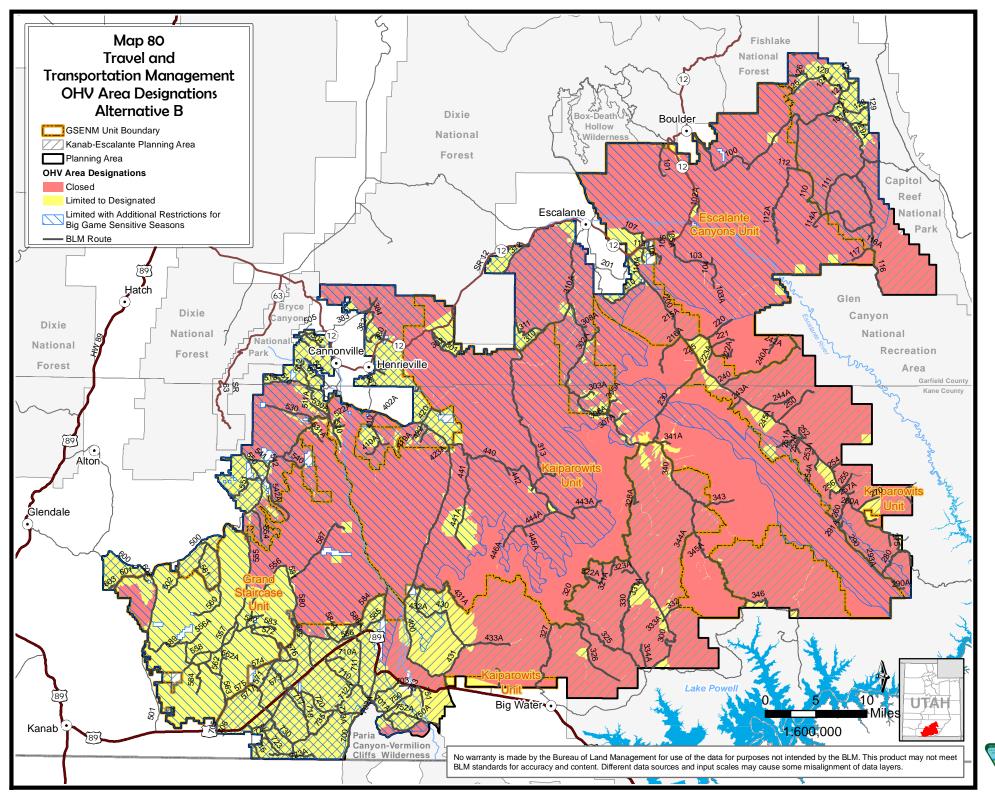




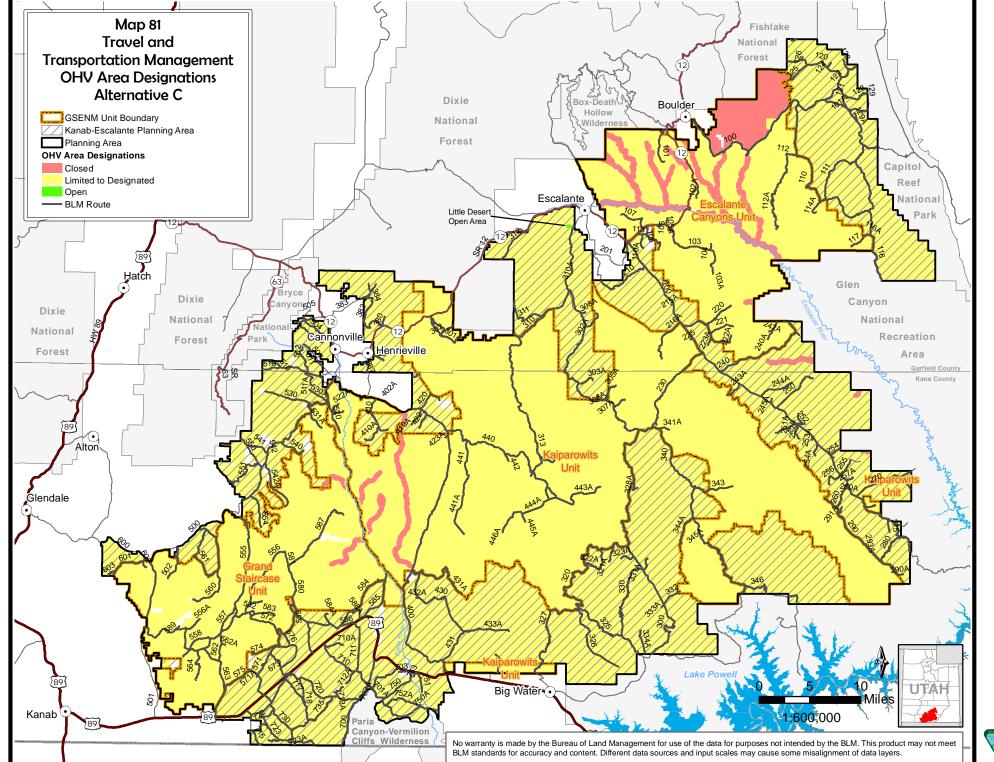




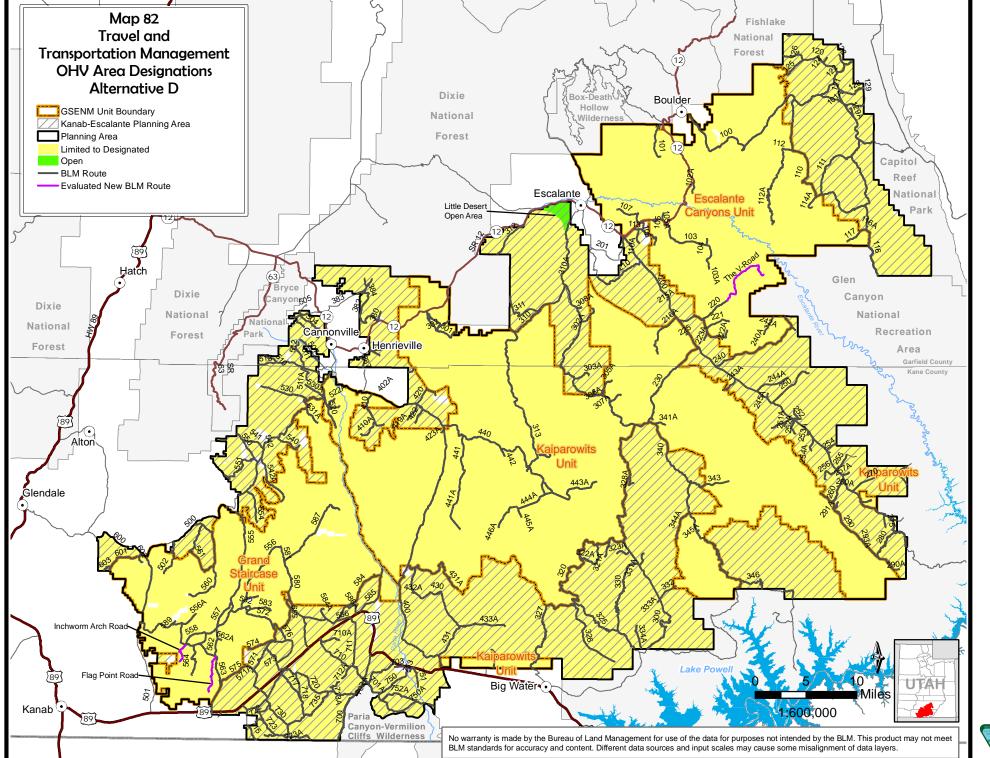




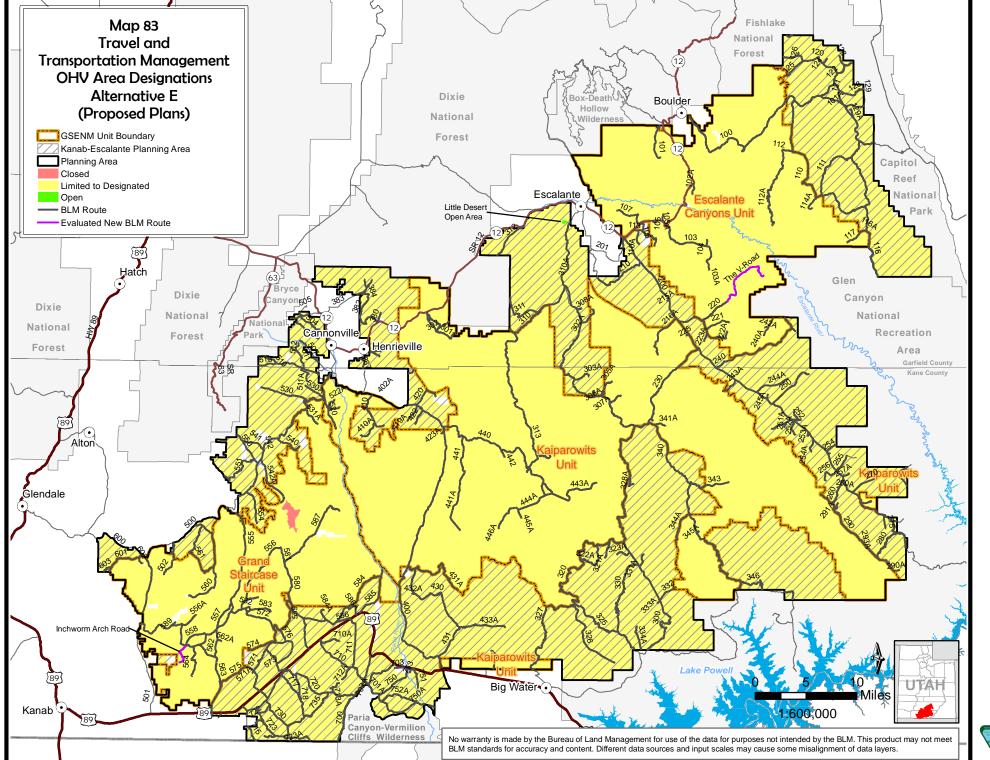




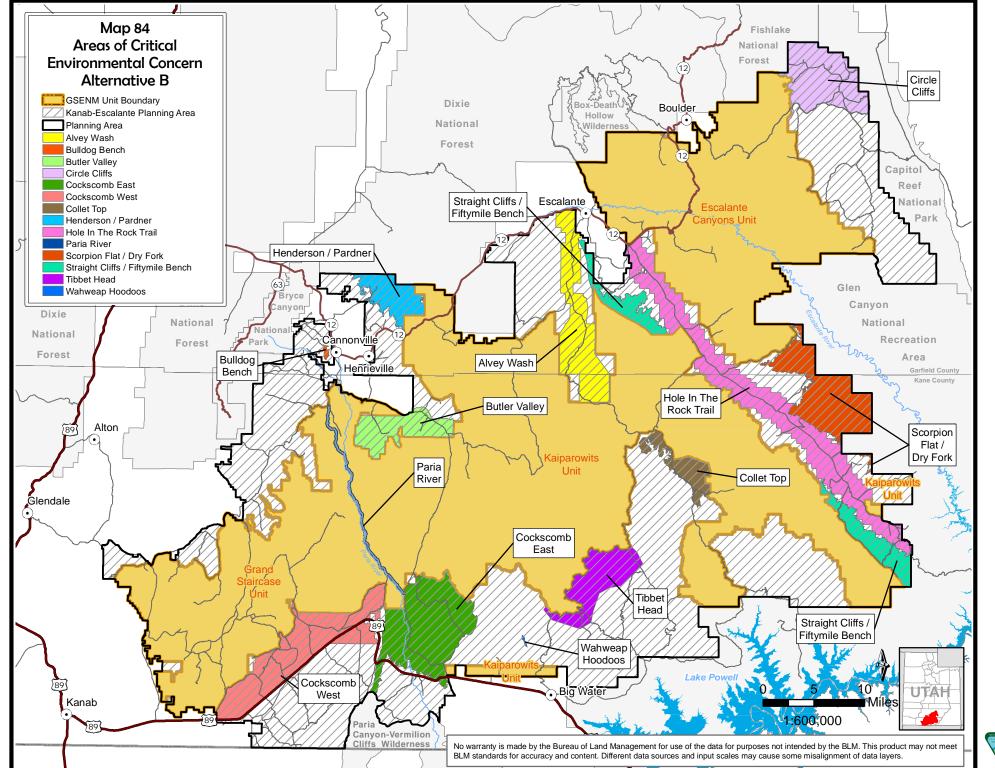




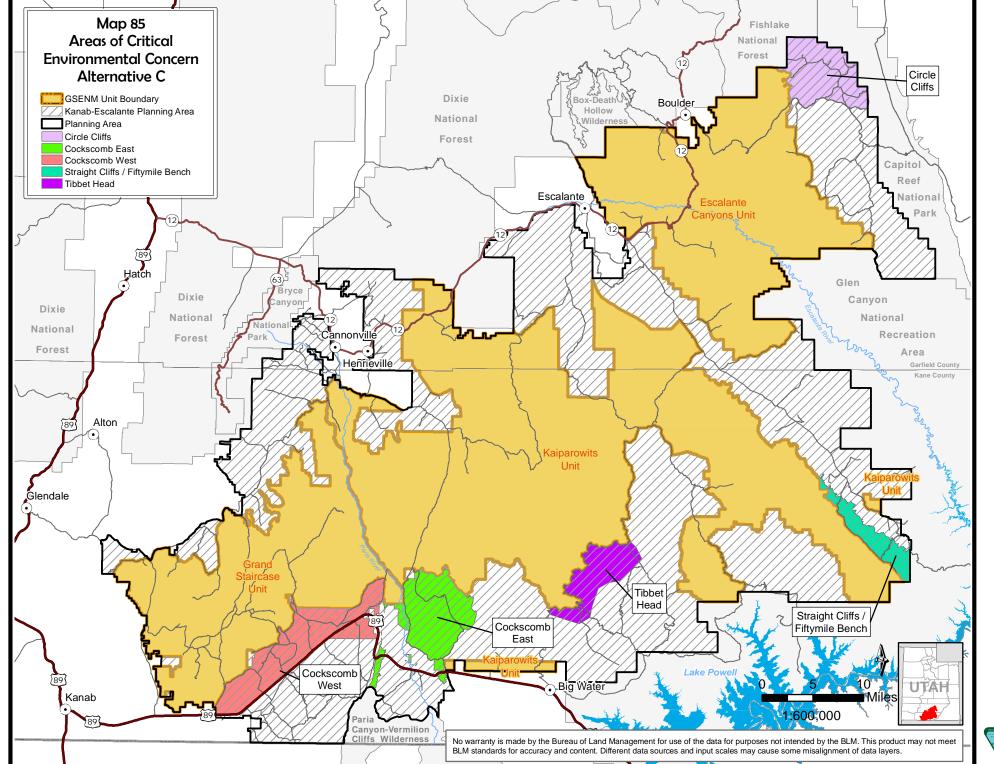




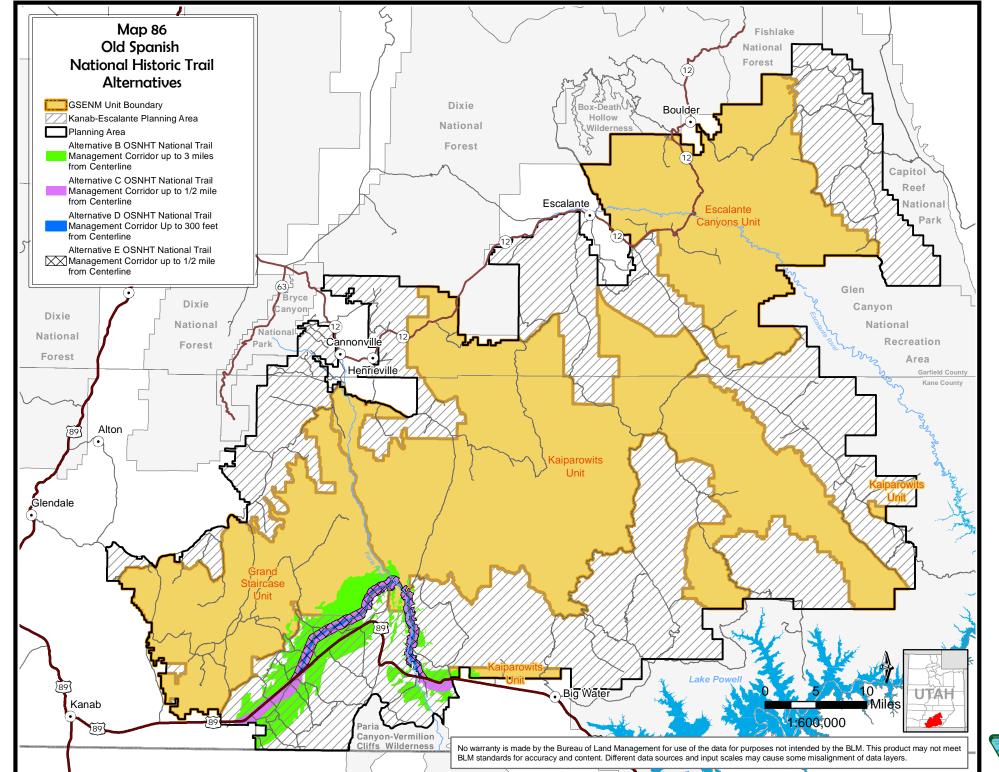




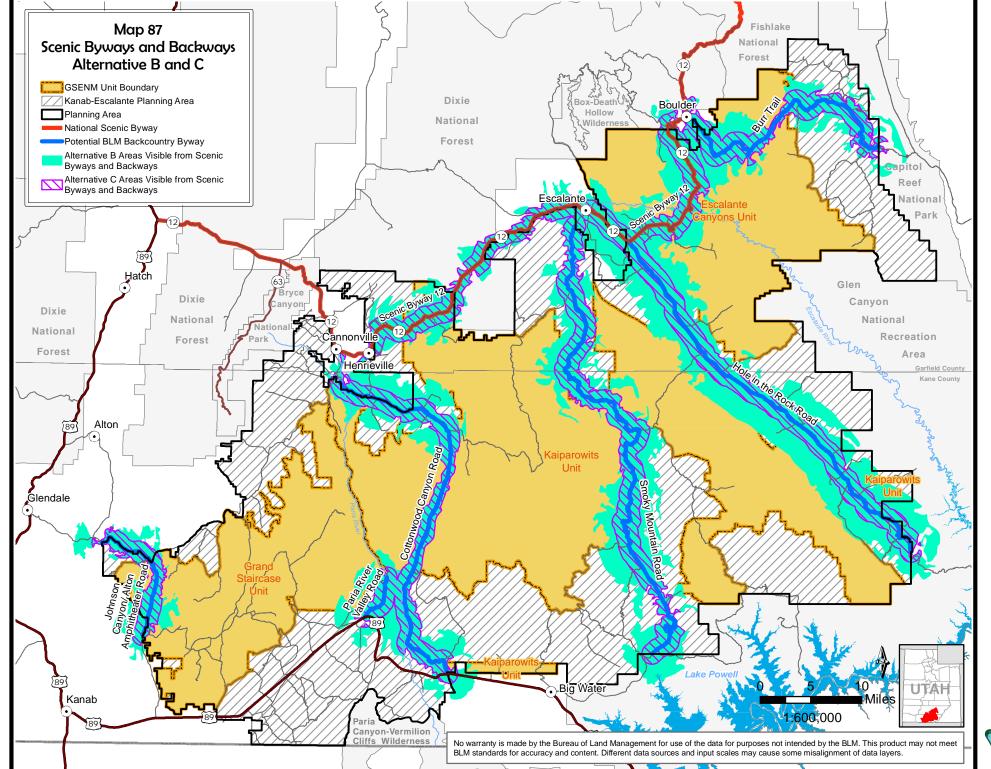




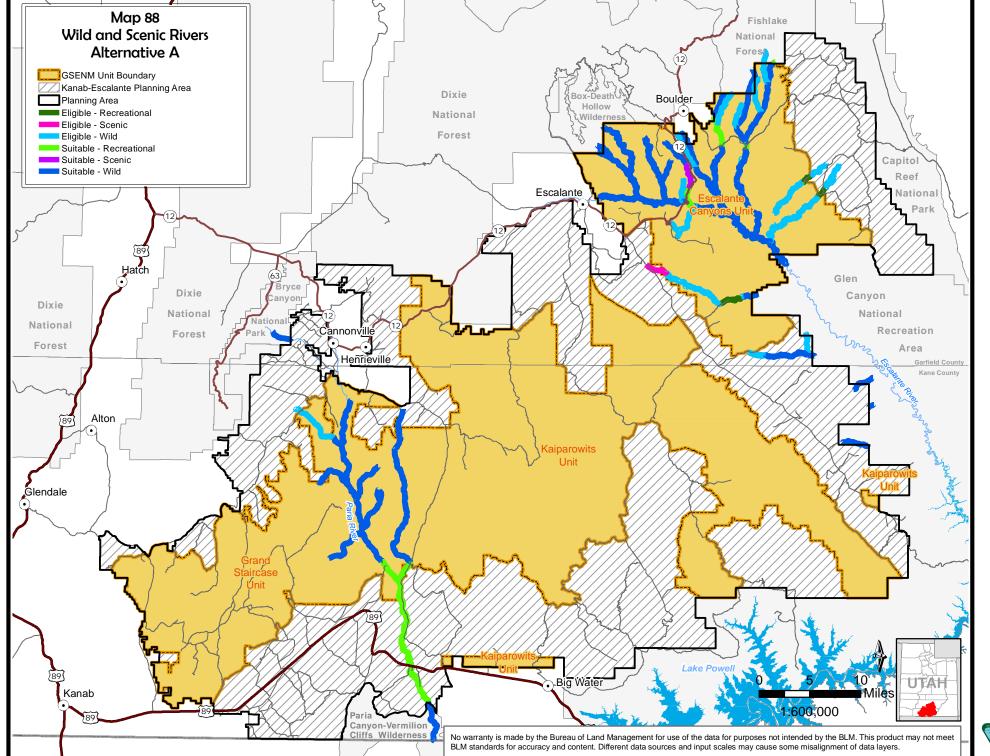




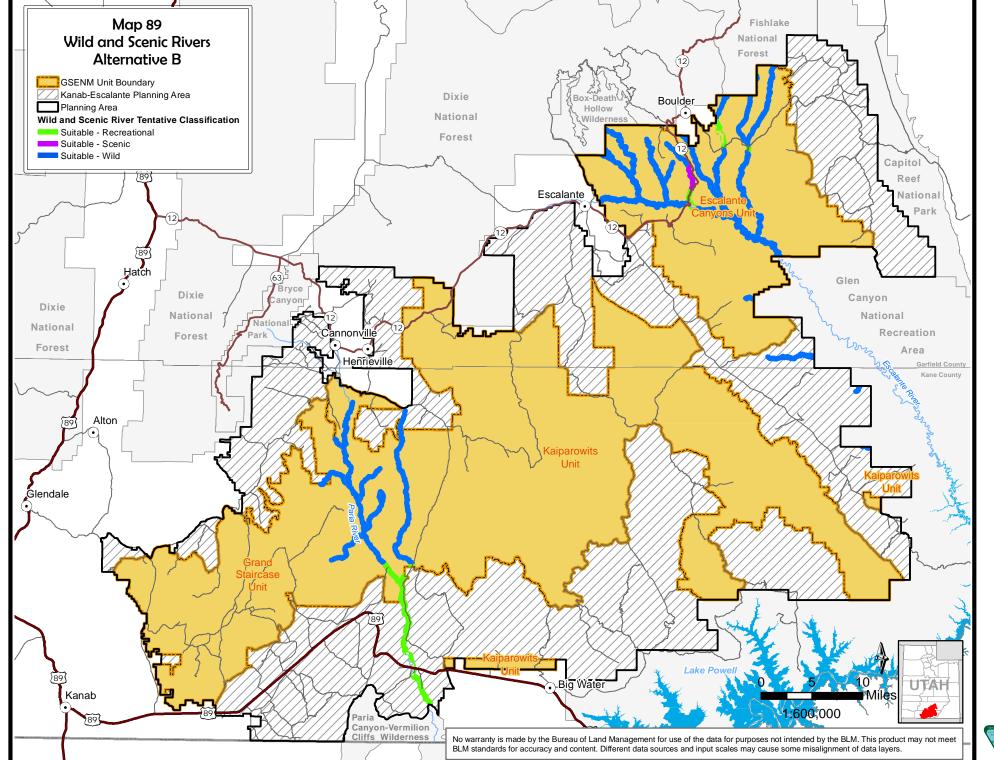




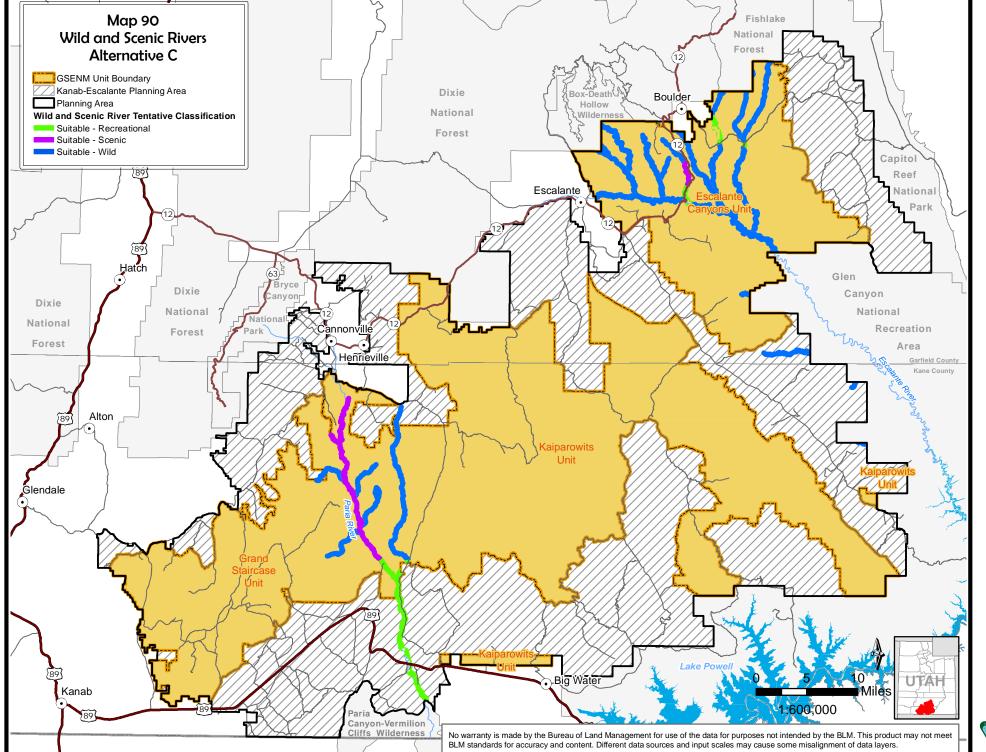




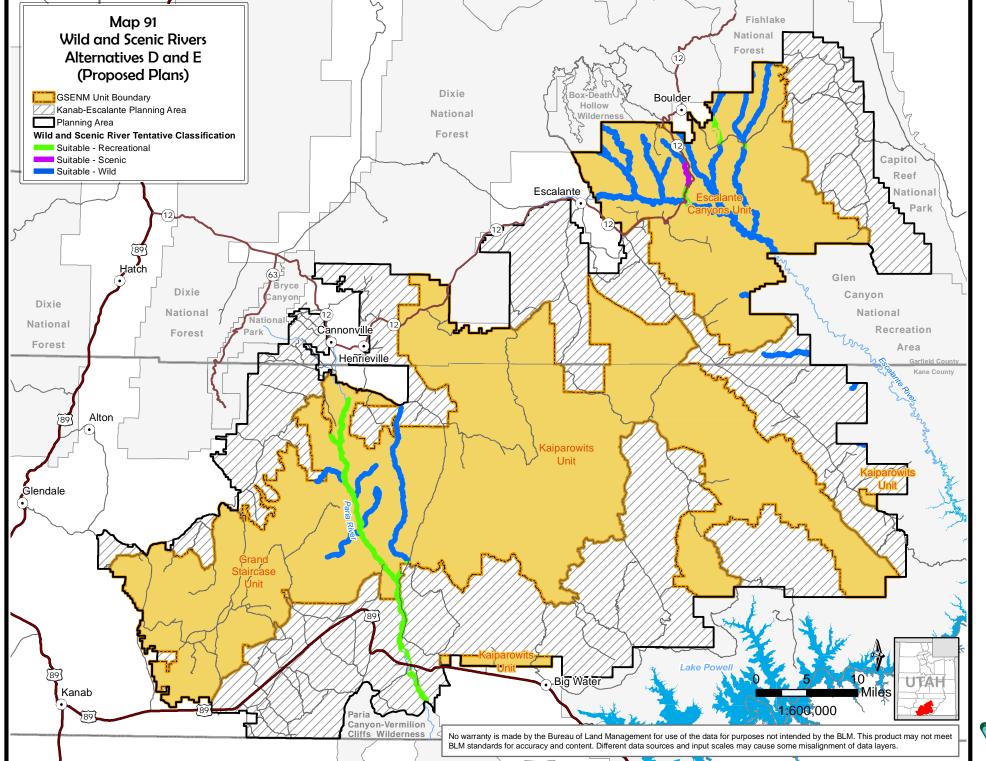




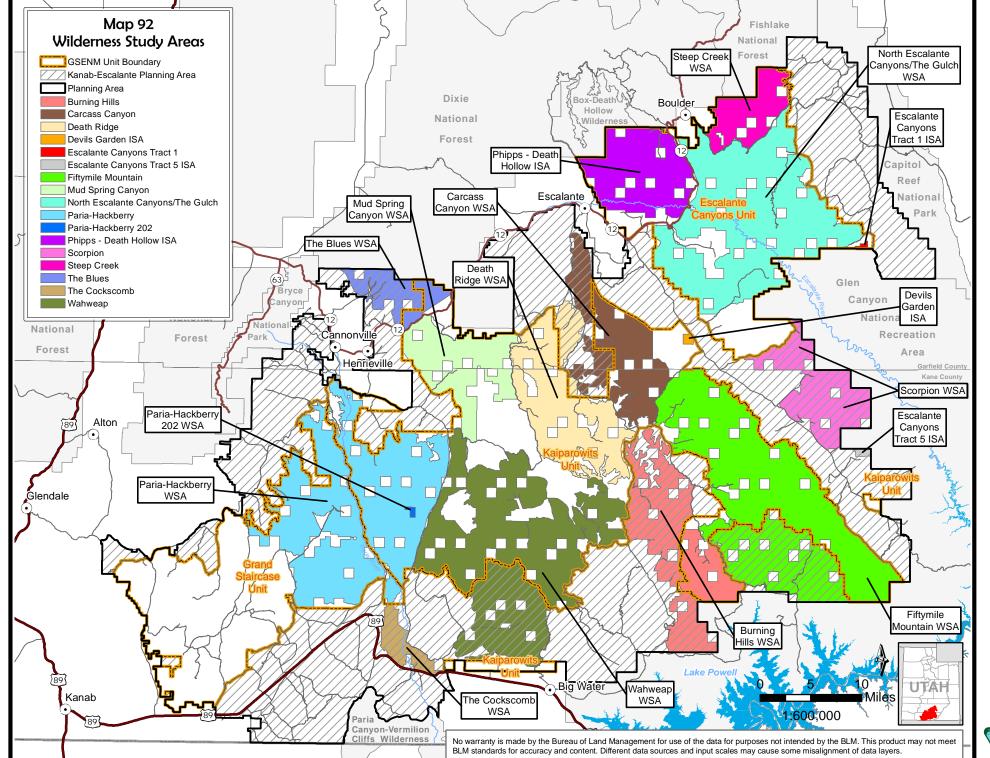




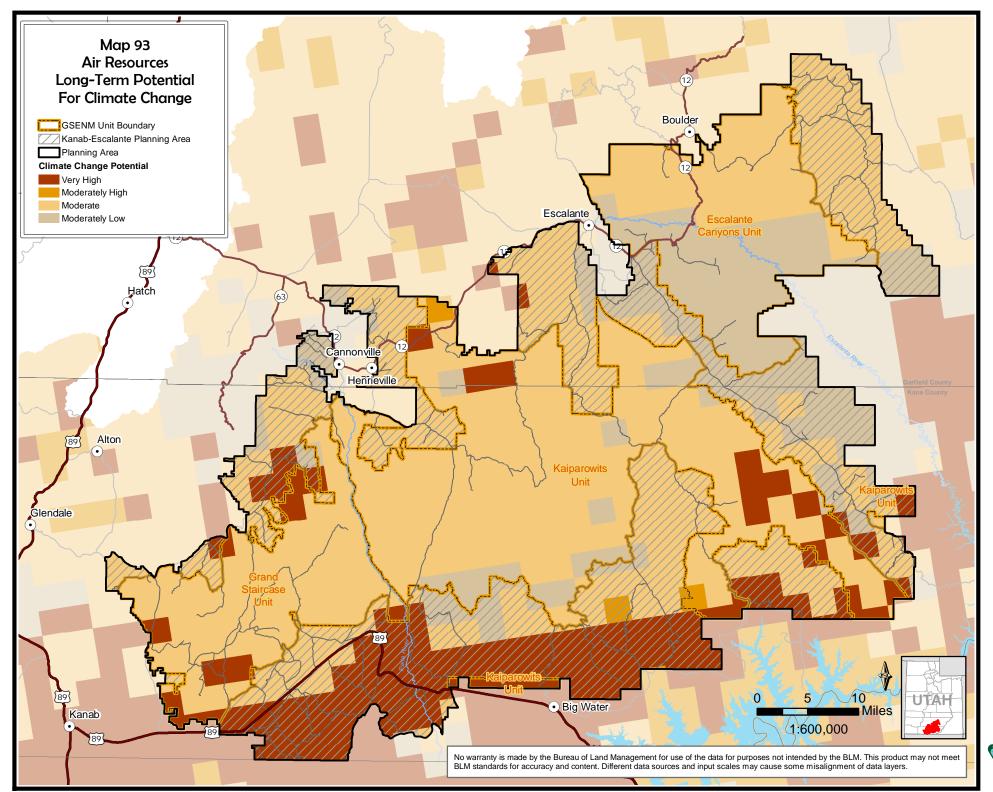














Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix B
References
August 2019

Appendix B: References

- AECOM. 2012. National Historic Trails Inventory Project. Bureau of Land Management, Washington, D.C. May 2012.
- Agouridis, C. T., S. R. Workman, R. C. Warner, and G. D. Jennings. 2005. Livestock Grazing Management Impacts on Stream Water Quality: A Review. Journal of American Water Resources Association 41(3):591–606.
- Bowker, M. A., M. E. Miller, R. T. Belote, and S. L. Garman. 2013. Ecological Thresholds as a Basis for Defining Management Triggers for National Park Service Vital Signs-Case Studies for Dryland Ecosystems. US Geological Survey Open-File Report 2013-1244. Reston, Virginia.
- Brigham Young University (BYU). 2002. Cultural Resource Inventories associated with the BYU Escalante Drainage Project: Little Desert, Main Canyon, and Escalante Desert Areas. October 2013.
- Bryce, S. A., J. R. Strittholt, B. C. Ward, and D. M. Bachelet. 2012. Colorado Plateau Rapid Ecoregional Assessment Report. Prepared for the United States Department of the Interior, Bureau of Land Management, Denver, Colorado.
- Bureau of Land Management (BLM) and National Park Service (NPS). 2017. Old Spanish National Historic Trail Comprehensive Administrative Strategy. December 2017.
- Bureau of Land Management (BLM). 1991. Utah Statewide Wilderness Study Report, Vol I-III.
- Bureau of Land Management (BLM). 1997. Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah. United States Department of the Interior, Bureau of Land Management, Utah State Office.
- Bureau of Land Management (BLM). 1998. Grand Staircase-Escalante National Monument Draft Management Plan and Draft Environmental Impact Statement. November 1998.
- Bureau of Land Management (BLM). 1999a. Grand Staircase-Escalante National Monument Proposed Management Plan and Final Environmental Impact Statement. July 1999.
- Bureau of Land Management (BLM). 1999b. Utah Wilderness Inventory.
- Bureau of Land Management (BLM). 2000. Grand Staircase-Escalante National Monument Approved Management Plan and Record of Decision. February.
- Bureau of Land Management (BLM). 2001. BLM Handbook H-4180-1, Rangeland Health Standards.
- Bureau of Land Management (BLM). 2005a. Final Programmatic Environmental Impact
 Statement on Wind Energy Development on BLM-Administered Lands in the Western
 United States. June. Retrieved from http://windeis.anl.gov/documents/fpeis/index.cfm.
- Bureau of Land Management (BLM). 2005b. Handbook H-1601-1 Land Use Planning Handbook. Rel. 1-1693. March 11, 2005. U.S. Department of the Interior, Bureau of Land Management.

- Bureau of Land Management (BLM). 2005c. Southern Utah Support Area Fire Management Plan Environmental Assessment. November. UT-040-04-054. Retrieved from https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1429&context=govdocs.
- Bureau of Land Management (BLM). 2005d. Finding of No Significant Impact and Decision Record for the Utah Land Use Plan Amendment for Fire and Fuels Management (UT-USO-04-01). September 2005.
- Bureau of Land Management (BLM). 2006. Rangeland Health Determination. BLM, Grand Staircase-Escalante National Monument. Utah.
- Bureau of Land Management (BLM). 2008a. BLM Manual 6840 (Special Status Species Management). Department of the Interior, Bureau of Land Management. Washington, D.C.
- Bureau of Land Management (BLM). 2008b. BLM Kanab Field Office Proposed Resource Management Plan and Final Environmental Impact Statement. Retrieved from https://eplanning.blm.gov/epl-front-office/projects/lup/65879/80287/93361/Kanab_Final_Plan.pdf.
- Bureau of Land Management (BLM). 2009. Approved Resource Management Plan Amendments and Records of Decision for Designation of Energy Corridors on Bureau of Land Management Administered Lands in the 11 Western States. January 2009.
- Bureau of Land Management (BLM). 2012a. Instruction Memorandum 2012-169, Resource Management Plan Alternative Development for Livestock Grazing. April 14. Retrieved from https://www.blm.gov/policy/im-2012-169. Accessed June 17, 2018.
- Bureau of Land Management (BLM). 2012b. Manual 6310 –Conducting Wilderness Characteristics Inventory on BLM Lands.
- Bureau of Land Management (BLM). 2012c. Manual 6320 Considering Lands with Wilderness Characteristics in Land Use Plans.
- Bureau of Land Management (BLM). 2012d. Final Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States. July 2012. Retrieved from https://www.energy.gov/nepa/downloads/eis-0403-final-programmatic-environmental-impact-statement.
- Bureau of Land Management (BLM). 2012e. Manual 6280 Management of National Scenic and Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation. September 2012, p. 4-1.
- Bureau of Land Management (BLM). 2012f. Manual 6400 Wild and Scenic Rivers Policy and Program Direction for Identification, Evaluation, Planning, and Management. July 2012.
- Bureau of Land Management (BLM). 2012g. Manual 6330 Management of Wilderness Study Areas (Public).
- Bureau of Land Management (BLM). 2012h. Approved Resource Management Plan Amendments/Record of Decision (ROD) for Solar Energy Development in Six Southwestern States. October 2012.

- Bureau of Land Management (BLM). 2014. Handbook 8320-1, Planning for Recreation and Visitor Services. August 22, 2014.
- Bureau of Land Management (BLM). 2015. Utah Greater Sage-Grouse Approved Resource Management Plan Amendment.
- Bureau of Land Management (BLM). 2016. BLM Instruction Memorandum No. 2016-124, Potential Fossil Yield Classification System.
- Bureau of Land Management (BLM). 2018a. Grand Staircase-Escalante National Monument and Kanab Field Office-Escalante Area Resource Management Plans and Environmental Impact Statement Scoping Report. May.
- Bureau of Land Management (BLM). 2018b. Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area Analysis of the Management Situation. BLM Utah. June 2018.
- Bureau of Land Management (BLM). 2018c. Mineral Potential Report for the Lands now Excluded from Grand Staircase-Escalante National Monument. Garfield and Kane Counties, Utah. U.S. Department of the Interior, Bureau of Land Management.
- Bureau of Land Management (BLM). 2018d. Lands with Wilderness Characteristics Inventory Forms.
- Bureau of Land Management (BLM). 2018e. Grand Staircase-Escalante National Monument Visual Resource Inventory. BLM Utah. May 2018.
- Bureau of Land Management (BLM). 2018f. BLM Geographic Information System (GIS) data.
- Bureau of Land Management (BLM). 2018g. Alton Coal Tract Lease by Application Final Environmental Impact Statement. August 30, 2018.
- Bureau of Land Management (BLM). 2018h. Section 368 Energy Corridor Regional Review Region 2. Corridor 68-116. May 2018.
- Bureau of Land Management (BLM). 2019a. Utah Greater Sage-Grouse Approved Resource Management Plan Amendment and Record of Decision. March 2019. Retrieved from https://eplanning.blm.gov/epl-front-office/projects/lup/103346/168792/205436/2019_ROD_and_Utah_Approved_GRSG_RMPA_FINAL_03-14-2019.pdf.
- Bureau of Land Management (BLM). 2019b. Final Visual Resource Inventory Report for the Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area.
- Bureau of Land Management (BLM). 2019c. Visitor and Visitor Days by Recreation Management Area from Oct 01, 2017 to Sep 30, 2018. BLM Recreation Management Information System. November 13, 2018.
- Bureau of Land Management (BLM). 2019d. Updated Lands with Wilderness Characteristic Inventories conducted by BLM staff. 2019.
- Bureau of Land Management (BLM). 2019e. 2018 BLM Utah Air Monitoring Report. Retrieved from https://go.usa.gov/xmDkx.
- Bureau of Land Management (BLM). 2019f. Specialist Report Greenhouse Gas Analysis for BLM Utah Oil and Gas Leasing. Prepared by Erik Vernon, BLM Utah State Office, May 16, 2019.

- Bureau of Reclamation. 2016. Glen Canyon Dam Long-Term Experimental and Management Plan Environmental Impact Statement. Final. U.S. Department of the Interior, Bureau of Reclamation, Upper Colorado Region National Park Service, Intermountain Region. October.
- Burr, S. W., D. J. Blahna, and D. K. Reiter. 2010. Grand Staircase-Escalante National Monument Front Country Visitors' Characteristics, Monument Management and Community Services Impressions, and Expenditures in the Monument Area.
- Council on Environmental Quality (CEQ). 1997. Environmental Justice: Guidance Under the National Environmental Policy Act. Executive Office of the President. December 10, 1997.
- Cramer, Patricia. 2018. US 89 Kanab-Paunsaugunt Wildlife Crossing and Existing Structures Research Project. Prepared for the Utah Department of Transportation. December 19, 2018.
- Darling, A. 2016. The Roles of Erosion Rate and Rock Strength in the Evolution of Canyons along the Colorado River. Dissertation. Arizona State University. December.
- Department of the Interior (DOI). 2017. Draft Grand Staircase-Escalante National Monument: Economic Values and Economic Contributions.
- DiTomaso, J. M. 2000. Invasive Weeds in Rangelands: Species, Impacts, and Management. Weed Science 48(2):255–265.
- Environmental News Network. 2016. Earth's Soils Could Play Key Role in Locking Away Greenhouse Gases. Retrieved from https://www.enn.com/articles/49460.
- Falchi, F., P. Cinzano, D. Duriscoe, C. C. M. Kyba, C. D. Elvidge, K. Baugh, B. A. Portnov, N. A. Rybnikova, and R. Furgoni. 2016. The New World Atlas of Artificial Night Sky Brightness. Science Advances. 2(6): e1600377.
- Federal Emergency Management Agency (FEMA). 2017. FEMA's National Flood Hazard Layer (NFHL) Viewer. Retrieved from https://www.fema.gov/national-flood-hazard-layer-nfhl. Accessed June 11, 2018.
- Freethey, G. W. 1997. "Hydrogeology and water resources of the Grand Staircase Escalante National Monument." In: Learning from the Land: Grand Staircase-Escalante National Monument Symposium Proceedings (Linda H. Hill and Janine J. Koslak, editors).

 November 4 and 5, 1997, Southern Utah University. Bureau of Land Management, Utah State Office, Salt Lake City, Utah.
- Gardner Policy Institute. 2016. The State of Utah's Travel and Tourism. April 2016. Retrieved from http://gardner.utah.edu/wp-content/uploads/2016/05/TourismReport-v8-May-25.pdf.
- Gottfried, G. J., and K. E. Severson. 1994. Managing Pinyon-Juniper Woodlands. Rangelands 16:234–236.
- Headwaters Economics. 2017. Grand Staircase-Escalante National Monument: A Summary of Economic Performance in the Surrounding Communities.
- McDermot, C., and S. Elavarthi. 2014. Rangelands as carbon sinks to mitigate climate change: A review. Journal of Earth Science & Climate Change 5(8).

- McFadden, D. A. 2016. Formative Chronology and Site Distribution on the Grand Staircase–Escalate National Monument: A Research Reference. Utah Cultural Resource Series No. 28, Grand Staircase-Escalate National Monument Special Publication No. 4. United States Department of the Interior, Bureau of Land Management, Salt Lake City, Utah. May 2016.
- Memmot, K. L., V. J. Anderson, and S. B. Monsen. 1998. Seasonal grazing impact on cryptogamic crusts in a cold desert ecosystem. Journal of Range Management 51(5):547-550.
- Messinger, O. 2006. A Survey of the Bees of Grand Staircase-Escalante National Monument, Southern Utah: Incidence, Abundance, and Community Dynamics. Unpublished master's thesis. Utah State University, Logan, Utah.
- Messmer, Terry, and Paul Klimack. 1999. Summer Habitat Use and Migration Movements of the Paunsaugunt Plateau Mule Deer Herd. Final Report. June 1999.
- Milchunas, D. G. 2006. Responses of plant communities to grazing in the southwestern United States. Gen. Tech. Rep. RMRS-GTR-169. Fort Collins, Colorado: US Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Miller, Gil, and Kevin Heaton. 2015. "Livestock Grazing on the Grand Staircase Escalante National Monument: Its Importance to the Local Economy." All Current Publications. Paper 765. Retrieved from https://digitalcommons.usu.edu/extension_curall/765.
- Miller, M. E. 2008. "Broad-scale assessment of rangeland health, Grand Staircase-Escalante National Monument, USA." Rangeland Ecology and Management 61:249–262.
- Mitchell, David, and Terrel Gallaway. 2015. Estimating the Potential Economic Value of the Night Skies above the Colorado Plateau. Department of Economics, Missouri State University.
- Montana Natural Heritage Program. 2014. The National Vegetation Classification Standards (NVCS). Level 5 Macrogroup. Retrieved from http://mtnhp.org/ecology/nvcs/.
- Monz, C., J. Roggenbuck, D. Cole, R. Brame, and A. Yoder. 2000. Wilderness Party Size Regulations: Implications for Management and a Decisionmaking Framework. In Cole, D. N., S. F. McCool, W. T. Borrie, and J. O'Loughlin. 2000. Wilderness Science in a Time of Change Conference Volume 4: Wilderness Visitors, Experiences, and Visitor Management. May 23–27, 1999. Missoula, MT. Proceedings RMRS-P-15-VOL-4. Ogden, UT. US. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- National Park Service (NPS). 2010. Air Quality in National Parks: 2009 Annual Performance & Progress Report. Retrieved from https://www.nature.nps.gov/air/pubs/pdf/gpra/AQ_Trends_In_Parks_2009_Final_Web.pdf.
- National Park Service (NPS). 2011. Stats Report Viewer. Retrieved from <a href="https://irma.nps.gov/Stats/SSRSReports/Park%20Specific%20Reports/Annual%20Park%20Recreation%20Visitation%20(1904%20-%20Last%20Calendar%20Year)?Park=BRCA. Accessed June 13, 2018.
- Natural Resources Conservation Service (NRCS). 2005. Soil Survey of Grand Staircase-Escalante National Monument Area, Parts of Kane and Garfield Counties, Utah. U.S. Department of Agriculture, Washington, D.C.

- Pellant, M., P. Shaver, D. A. Pyke, and J. E. Herrick. 2005. Interpreting Indicators of Rangeland Health, version 4. Technical Reference 1734-6. U.S. Department of the Interior, Bureau of Land Management, National Science and Technology Center, Denver, CO. Retrieved from https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1043944.pdf.
- Rosenberger, R. 2011. Recreation Use Value Dataset, Curated Dataset of Estimated Values for Various Recreational Activities in the Western U.S. Public Version. August 1, 2011.
- Rutherford, W. A., T. H. Painter, S. Ferrenberg, J. Belnap, G. S. Oking, C. Flagg, and S. C. Reed. 2017. Albedo feedbacks to future climate via climate change impacts on dryland biocrusts. Scientific Reports 7:44188.
- Stager's Environmental Consulting. 2014. Final Report on Riparian and Proper Functioning Condition and Standards for Rangeland Health Updated Independent Evaluation for Allotment Livestock Management for the Cottonwood, Death Hollow, Lower Cattle, Mollies Nipple, School Section, Soda, and Vermilion Allotments. January 16, 2014.
- Torell, A. L., J. A. Tanaka, N. Rimbey, T. Darden, L. V. Tassell, and A. Harp. 2002. Ranch-Level Impacts of Changing Grazing Policies on BLM Land to Protect the Greater Sage-Grouse: Evidence from Idaho, Nevada, and Oregon. (Policy Paper SG-01-02). Policy Analysis Center for Western Public Lands, Caldwell, Idaho.
- Torell, A. L., N. R. Rimbey, J. A. Tanaka, D. T. Taylor, and J. D. Wulfhorst. 2014. Ranch-Level Economic Impact Analysis for Public Lands: A Guide to Methods, Issues, and Applications. Journal of Rangeland Applications 1(2014):1–13. ISSN: 2331-5512.
- U.S. Fish and Wildlife Service (USFWS). 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, Virginia. 85 pp. Retrieved from https://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php.
- U.S. Forest Service (USFS), National Park Service (NPS), and U.S. Fish and Wildlife Service (USFWS). 2010. Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report—Revised 2010. Natural Resource Report NPS/NRPC/NRR—2010/232. Denver, CO: U.S. Department of the Interior, National Park Service.
- U.S. Geological Survey (USGS). 1999. National Hydrography Dataset for Utah. United States Geologic Survey. Retrieved from http://nhd.usgs.gov/.
- U.S. Global Change Research Program (USGCRP). 2018. Impacts, Risks, and Adaptation in the United States: Fourth National Climate [Reidmiller, D. R., C. W. Avery, D. R. Easterling, K. E. Kunkel, K. L. M. Lewis, T. K. Washington, DC, USA: U.S. Global Change Research Program.
- Utah Department of Environmental Quality (UDEQ). 2004. Paria River Watershed Water Quality Management Plan. Department of Environmental Quality, Division of Water Quality. Retrieved from https://documents.deq.utah.gov/water-quality/watershed-protection/DWQ-2004-002461.pdf.
- Utah Department of Environmental Quality (DEQ). 2016. Final 2016 Integrated Report. Water Quality Assessment Program. Utah Department of Environmental Quality, Division of Water Quality, Salt Lake City, Utah. Retrieved from https://documents.deq.utah.gov/water-quality/monitoring-reporting/integrated-report/DWQ-2017-004941.pdf.

- Utah Division of Air Quality (UDAQ). 2006. Utah Smoke Management Plan, 2006. Retrieved from https://smokemgt.utah.gov/static/pdf/SMP011606_Final.pdf.
- Utah Division of Air Quality (UDAQ). 2017. State Summary of Emissions by Sources, 2017. Retrieved from https://deq.utah.gov/legacy/programs/air-quality/emissions-inventories/inventories/docs/state-summary-of-emissions-by-source.pdf.
- Utah Division of Oil, Gas, and Mining (UDOGM). 2018. Utah Oil and Gas Monthly Production Reports by County. Retrieved from https://oilgas.ogm.utah.gov/oilgasweb/publications/monthly-rpts-by-cnty.xhtml?rptType=CNTY.
- Utah Division of Water Resources. 2014. Utah's Water Supply. Retrieved from http://www.water.utah.gov/brochures/uws_broc.htm.
- Utah Division of Water Rights. 2011a. Area 97—Escalante River. Updated April 17, 2011.

 Retrieved from https://www.waterrights.utah.gov/wrinfo/policy/wrareas/area97.asp.

 Accessed April 5, 2018.
- Utah Division of Water Rights. 2011b. Area 89—Paria River. Updated April 17, 2011. Retrieved from https://www.waterrights.utah.gov/wrinfo/policy/wrareas/area89.asp. Accessed April 5, 2018.
- Utah Division of Wildlife Resources (UDWR). 2006. Conservation and Management Plan for Three Fish Species in Utah: Addressing needs for Roundtail Chub (Gila Robusta), Bluehead Sucker (Catostomus discobolus), and Flannelmouth Sucker (Catostomus latipinnis). UDWR 06-17.
- Utah Division of Wildlife Resources (UDWR). 2015. Deer Herd Unit Management Plan, Unit 27, Paunsaugunt Mule Deer Herd. May 2015.
- Utah Governor's Office. 2013. Conservation Plan for Greater Sage-grouse in Utah. Utah's Public Lands Policy Coordination Office, Salt Lake City, UT.
- Utah Steering Committee Intermountain West Joint Venture. 2005. Coordinated Implementation Plan for Bird Conservation in Utah.
- Vollmer, J. L., and J. G. Vollmer. 2008. Controlling Cheatgrass in Winter Range to Restore Habitat and Endemic Fire. USDA Forest Service Proceedings RMRS-P-52.
- White House Archives. 1994. Executive Order 12898. Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations. Federal Register Vol. 59, No. 32. February 16, 1994.
- Wilkowske, C. D., D. V. Allen, and J. V. Phillips. 2003. Drought Conditions in Utah During 1999-2002: A Historical Perspective. USGS Fact Sheet 037–03. United States Geological Survey. April 2003.
- Zweifel, M. K. 2010. Synopsis of Impacts Reported at Cultural Resource Sites in the Groups 12, 17, 18, 22, and 25 Allotments, Kanab Field Office. Report on file at the Kanab Field Office, BLM, Kanab, UT.

Map References

Map 01 (Planning Area and Land Status)

- Bureau of Land Management (BLM). 2008. Land Ownership Status for the State of Arizona GIS data, 2018. Arizona Strip District Office.
- Bureau of Land Management (BLM). 2018. Land Ownership Status for the State of Utah GIS data, 2018. Grand Staircase-Escalante National Monument, Kanab, UT.
- Bureau of Land Management (BLM). 2018. Travel Management Plan Roads GIS data, 2018. Grand Staircase-Escalante National Monument, Kanab, UT.

Map 02 (Air Quality Sensitive Receptor Areas)

ICF. 2018. Class I and Class II Air Quality Sensitive Area Receptors, GIS data ICF derived from National Park Service and Forest Service Boundary Data.

Map 03 (Fish and Wildlife Big Game Crucial Winter and Year-Long Habitat)

- Utah Division of Wildlife Resources (UDWR). 2006. Black Bear Habitat, GIS data. Salt Lake City, UT. Retrieved from https://dwrcdc.nr.utah.gov/ucdc/downloadgis/disclaim.htm. Accessed May 16, 2018.
- Utah Division of Wildlife Resources (UDWR). 2013. Desert Bighorn Sheep Habitat, GIS data. Salt Lake City, UT. Retrieved from https://dwrcdc.nr.utah.gov/ucdc/downloadgis/disclaim.htm. Accessed May 16, 2018.
- Utah Division of Wildlife Resources (UDWR). 2014. Pronghorn Habitat, GIS data. Salt Lake City, UT. Retrieved from https://dwrcdc.nr.utah.gov/ucdc/downloadgis/disclaim.htm. Accessed May 16, 2018.
- Utah Division of Wildlife Resources (UDWR). 2014. Rocky Mountain Elk Habitat, GIS data. Salt Lake City, UT. Retrieved from https://dwrcdc.nr.utah.gov/ucdc/downloadgis/disclaim.htm. Accessed May 16, 2018.
- Utah Division of Wildlife Resources (UDWR). 2015. Mule Deer Habitat, GIS data. Salt Lake City, UT. Retrieved from https://dwrcdc.nr.utah.gov/ucdc/downloadgis/disclaim.htm. Accessed May 16, 2018.

Map 04 (Special Status Species Habitat)

- Bureau of Land Management (BLM). 2018. Mexican Spotted Owl Protected Activity Centers, GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.
- Bureau of Land Management (BLM). 2018. Sage-grouse Priority Habitat Management Areas and General Habitat Management Areas (UT_ARMPA_Map1_2_SG_PHMA_GHMA), 2015. Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region, Bureau of Land Management State Office, Salt Lake City, UT. Retrieved from https://navigator.blm.gov/data. Accessed May 21, 2018.
- U.S. Fish and Wildlife Service (USFWS). 2004. Mexican Spotted Owl Critical Habitat, GIS data, 2004. Ecological Services Division, Region 2, Albuquerque, NM. Retrieved from https://services2.arcgis.com/Uq9r85Potqm3MfRV/arcgis/rest/services/biosds174_fpu/FeatureServer. Accessed May 21, 2018.

- U.S. Fish and Wildlife Service (USFWS). 2013. Southwestern Willow Flycatcher Critical Habitat, GIS data. Ecological Services Division, Region 2, Albuquerque, NM. Retrieved from https://services2.arcgis.com/Uq9r85Potqm3MfRV/arcgis/rest/services/biosds174_fp u/FeatureServer. Accessed May 17, 2018.
- Utah Division of Wildlife Resources (UDWR). 2011. Sage Grouse Winter Habitat, GIS data. Salt Lake City, UT. Retrieved from https://dwrcdc.nr.utah.gov/ucdc/downloadgis/disclaim.htm. Accessed May 16, 2018.

Map 05 (Lands Inventoried for Wilderness Characteristics)

- Bureau of Land Management (BLM). 1999. Lands Inventoried for Wilderness Characteristics between 1996 and 1999. Grand Staircase-Escalante National Monument, Kanab, UT.
- Bureau of Land Management (BLM). 2018. Lands Inventoried for Wilderness Characteristics. Grand Staircase-Escalante National Monument, Kanab, UT.

Map 06 (Lands with Wilderness Characteristics Alternative B)

Bureau of Land Management (BLM). 2018. Lands Inventoried for Wilderness Characteristics, Alternative B, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 07 (Lands with Wilderness Characteristics Alternative C)

Bureau of Land Management (BLM). 2018. Lands Inventoried for Wilderness Characteristics, Alternative C, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 08 (Paleontological Resources and Geology Potential Fossil Yield Classification)

Bureau of Land Management (BLM). 2018. Potential Fossil Yield Classification, GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Map 09 (Paleontological Resources and Geology Geologic Formations)

Bureau of Land Management (BLM). 2018. Geologic Formations GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Map 10 (Paleontological Resources and Geology Common to All Alternatives)

Bureau of Land Management (BLM). 2018. Potential Fossil Yield Classification, GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Maps 11, 12, and 13 (Paleontological Resources and Geology Areas Available/Unavailable to Casual Collection)

Bureau of Land Management (BLM). 2018. Areas Unavailable to Casual Collection, GIS data, Alternatives C, D, and E. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 14 (Soil Resources Sensitive Soils)

Bureau of Land Management (BLM). 2014. Sensitive Soil GIS data. Grand Staircase-Escalante National Monument Management Plan Amendment, Kanab, UT.

Map 15 (Soil Resources Terrain Slope)

Natural Resources Conservation Service (NRCS). 2018. Terrain Slope, derived from National Elevation Data - 30 meter, USDA/NRCS, Fort Worth, Texas, 2000- present. Retrieved from https://datagateway.nrcs.usda.gov/. Accessed May 25, 2018.

Map 16 (Water Resources Surface Water)

U.S. Geological Survey (USGS). 2016. National Hydrography Dataset: Best Resolution for Hydrologic Unit Code 8 (Paria River, Kanab Creek, and Escalante River Subbasins), 2016. USGS National Geospatial Program, Reston, VA. Retrieved from https://nhd.usgs.gov/data.html. Accessed June 1, 2018.

Map 17 (Water Resources Water Quality Alternatives B, C, D, and E)

- Utah Department of Environmental Quality (DEQ). 2018. Drinking Water Protection Zones (Ground Water), GIS data. Retrieved from https://enviro.deq.utah.gov/. Accessed June 3, 2018.
- Utah Division of Water Resources. 2015. Retail Culinary Water Suppliers Service Areas/Public Community Water Suppliers, GIS data. Salt Lake City, UT. Retrieved from https://enviro.deq.utah.gov/. Accessed June 6, 2018.

Maps 18 and 19 (Vegetation Riparian and Wetland Areas)

Bureau of Land Management (BLM). 2018. Riparian Vegetation, GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Map 20 (Vegetation Communities)

Bureau of Land Management (BLM). 2018. Vegetation Communities, GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Map 21 (Fire and Fuels Management Units)

Color Country Interagency Fire Center. 2015. Color Country District Fire Management Units, GIS data. Cedar City, UT.

Maps 22 through 26 (Visual Resource Management Classes)

Bureau of Land Management (BLM). 2019. Visual Resource Management Classes, Alternatives A, B, C, D, and E GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 27 (Visual Resource Inventory Classes as Inventoried)

Bureau of Land Management (BLM). 2018. Visual Resource Inventory Class (as inventoried), GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 28 (Visual Resource Inventory Classes)

Bureau of Land Management (BLM). 2018. Visual Resource Inventory Class (as inventoried), GIS data and WSAs identified as VRI Class 1. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 29 (Visual Resource Inventory Scenic Quality Rating)

Bureau of Land Management (BLM). 2018. Scenic Quality Rating Units, GIS data. Draft
Resource Management Plans and Environmental Impact Statement, Grand StaircaseEscalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 30 (Visual Resource Inventory Sensitivity Level Rating)

Bureau of Land Management (BLM). 2018. Sensitivity Level Rating Units, GIS data. Draft
Resource Management Plans and Environmental Impact Statement, Grand StaircaseEscalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 31 (Visual Distance Zone Classification)

Bureau of Land Management (BLM). 2018. Visual Distance Zones, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 32 (Wild Horse Herd Areas)

Bureau of Land Management (BLM). 2018. Wild Horse Herd Areas, GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Map 33 (Forestry Products)

Bureau of Land Management (BLM). 2018. Fuelwood Designated Areas, GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Map 34 (Lands and Realty Designated ROW and Communication Sites)

- Bureau of Land Management (BLM) and U.S. Forest Service (USFS). 2018. Section 368 energy corridor areas, GIS data. West-wide Energy Corridors Project, Argonne National Laboratory, Argonne, Illinois.
- Bureau of Land Management (BLM). 2018. Communication Sites GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.
- Bureau of Land Management (BLM). 2018. Powerlines GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Maps 35 through 39 (Lands and Realty ROW Avoidance and Exclusion Areas)

Bureau of Land Management (BLM). 2019. ROW Exclusion and Avoidance Areas, Alternatives A, B, C, D, and E, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Maps 40 through 43 (Lands and Realty Lands Recommended for Withdrawal)

Bureau of Land Management (BLM). 2019. Lands Recommended for Withdrawal, Alternatives A, B, C, D, and E, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Maps 44 through 48 (Wind Energy Exclusion and Available Areas)

Bureau of Land Management (BLM). 2019. Wind Energy Avoidance and Exclusion Areas.

Alternatives A, B, C, D, and E, GIS data. Draft Resource Management Plans and
Environmental Impact Statement, Grand Staircase-Escalante National Monument and
Kanab-Escalante Planning Area, Kanab, UT.

Maps 49 through 53 (Solar Energy Exclusion, Variance, and Available Areas)

Bureau of Land Management (BLM). 2019. Solar Energy Variance and Exclusion Areas.

Alternatives A, B, C, D, and E, GIS data. Draft Resource Management Plans and
Environmental Impact Statement, Grand Staircase-Escalante National Monument and
Kanab-Escalante Planning Area, Kanab, UT.

Maps 54 through 59 (Livestock Grazing Areas Available/Unavailable to Grazing)

- Bureau of Land Management (BLM). 2018. Areas Available and Unavailable for Livestock Grazing, Alternatives A, B, C, D, and E, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.
- Bureau of Land Management (BLM). 2018. Areas Unavailable for Livestock Grazing, Common to All, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Maps 60 through 64 (Mineral Resources Leasable Minerals)

Bureau of Land Management (BLM). 2019. Leasable Mineral Area Designations (Closed, Major Constraints, Moderate Constraints), Alternatives A, B, C, D, and E. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 65 (Mineral Resources Coal Unsuitability)

- Bureau of Land Management (BLM). 2018. Mineral Potential Report for the Lands now Excluded from Grand Staircase-Escalante National Monument. Garfield and Kane Counties, Utah.
- Utah Geological Society (UGS). 2018. Locations Unsuitable and Non-Unsuitable for Coal Development.

Maps 66 through 69 (Mineral Resources Mineral Materials Disposal)

Bureau of Land Management (BLM). 2019. Areas Unavailable, Unavailable to Commercial, but Available to Community Pits, and Available to Mineral Materials Disposals, Alternatives B, C, D and E, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 70 (Mineral Resources Coal Recovery and Tar Sands Areas)

Bureau of Land Management (BLM). 2018. Mineral Potential Report for the Lands now Excluded from Grand Staircase-Escalante National Monument. Garfield and Kane Counties, Utah.

Map 71 (Mineral Resources Combined Hydrocarbon Lease Application Area)

Bureau of Land Management (BLM). 2018. Mineral Potential Report for the Lands now Excluded from Grand Staircase-Escalante National Monument. Garfield and Kane Counties, Utah.

Map 72 (Mineral Resource Areas with High Potential for Oil and Gas)

Bureau of Land Management (BLM). 2018. Mineral Potential Report for the Lands now Excluded from Grand Staircase-Escalante National Monument. Garfield and Kane Counties, Utah.

Map 73 (Recreation Management Zones Alternative A)

Bureau of Land Management (BLM). 1999. Special Management Areas, GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Bureau of Land Management (BLM). 2003. Recreation Management Zones, GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Map 74 (Recreation Alternative A)

Bureau of Land Management (BLM). 2003. Special Recreation Management Areas, GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Maps 75 through 78 (Recreation Alternatives B through E)

Bureau of Land Management (BLM). 2019. Recreation Management Areas, Alternatives B, C, and D, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 79 (Travel and Transportation Management OHV Area Designations Alternative A)

Bureau of Land Management (BLM). 2018. Grand Staircase-Escalante National Monument Travel Management Plan Routes, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 80 (Travel and Transportation Management OHV Area Designations Alternative B)

- Bureau of Land Management (BLM). 2018. Big Game Travel Restrictions, Alternative B, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.
- Bureau of Land Management (BLM). 2018. Grand Staircase-Escalante National Monument Travel Management Plan Routes, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.
- Bureau of Land Management (BLM). 2019. Travel Management, Alternative B, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Maps 81 through 83 (Travel and Transportation Management OHV Area Designations Alternatives C through E)

- Bureau of Land Management (BLM). 2018. Grand Staircase-Escalante National Monument Travel Management Plan Routes, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.
- Bureau of Land Management (BLM). 2018. Travel Management, Alternative C, D, and E, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Maps 84 and 85 (Areas of Critical Environmental Concern)

Bureau of Land Management (BLM). 2018. Areas of Critical Environmental Concern,
Alternatives B and C, GIS data. Draft Resource Management Plans and Environmental
Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante
Planning Area, Kanab, UT.

Map 86 (Old Spanish Trail National Historic Trail Alternatives)

- Bureau of Land Management (BLM). 2018. Old Spanish National Historic Trail, Alternatives B, C, D, and E, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.
- National Park Service (NPS). 2018. Old Spanish National Historic Trail, High Potential Segments GIS data. National Trails Intermountain Region, Santa Fe, NM.

Map 87 (Scenic Byways and Backways Alternatives B and C)

Bureau of Land Management (BLM). 2018. Scenic Byways and Backways Seen Areas,
Alternatives B and C, GIS data. Draft Resource Management Plans and Environmental
Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante
Planning Area, Kanab, UT.

Map 88 (Wild and Scenic Rivers Alternative A)

Bureau of Land Management (BLM). 2018. Wild and Scenic Rivers, Alternative A, GIS data.

Draft Resource Management Plans and Environmental Impact Statement, Grand
Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Maps 89 through 91 (Wild and Scenic Rivers Alternatives B through E)

Bureau of Land Management (BLM). 2018. Wild and Scenic River Corridors, Alternatives B, C, D, and E, GIS data. Draft Resource Management Plans and Environmental Impact Statement, Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area, Kanab, UT.

Map 92 (Wilderness Study Areas)

Bureau of Land Management (BLM). 2018. Wilderness Study Areas (WSAs), GIS data. State Office, Salt Lake City, UT.

Map 93 (Air Resources Long-Term Potential for Climate Change)

Bureau of Land Management (BLM). 2018. Long Term Potential for Climate Change, GIS data. Grand Staircase-Escalante National Monument, Kanab, UT.

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix C	
Glossary	
August 2019	

Appendix C: Glossary

Α

ACQUISITION: The BLM acquires land, easements, and other real property rights when it is in the public interest and consistent with approved land use plans. The BLM's land acquisition program is designed to (1) improve management of natural resources through consolidation of federal, state, and private lands; (2) increase recreational opportunities, preserve open space, and/or ensure accessibility of public lands; (3) secure key property necessary to protect habitat for threatened and endangered species, promote high-quality riparian areas, and promote biological diversity; (4) preserve archaeological and historical resources; and (5) implement specific acquisitions authorized by Acts of Congress.

ACTIVITY PLAN: A type of implementation plan (see IMPLEMENTATION PLAN); an activity plan usually describes multiple projects and applies best management practices to meet land use plan objectives. Examples of activity plans include interdisciplinary management plans, habitat management plans, recreation area management plans, and allotment management plans (from H-1601-1, BLM Land Use Planning Handbook).

ACTUAL USE: Where, how many, what kind or class of livestock, and how long livestock graze on an allotment, or on a portion or pasture of an allotment (from 43 CFR 4100.0-5).

AIR QUALITY: A measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances. Refers to standards for various classes of land as designated by the Air Pollution Control Act of 1955, the Clean Air Act of 1963, as amended, and the Air Quality Act of 1967.

AIR QUALITY CLASS I AND II AREAS: Regions in attainment areas where maintenance of existing good air quality is of high priority. Class I areas are those that have the most stringent degree of protection from future degradation of air quality. Class II areas permit moderate deterioration of existing air quality.

ALL-TERRAIN VEHICLE (ATV): A wheeled or tracked vehicle, other than a snowmobile or work vehicle, designed primarily for recreational use or for the transportation of property or equipment exclusively on undeveloped roads, trails, marshland, open country, or other unprepared surfaces (from BLM National Management Strategy for OHV Use on Public Lands).

ALLOCATION: Process to specifically assign use between and ration among competing users for a particular area of public land or related waters.

ALLOTMENT: An area of land designated and managed for grazing of livestock (43 CFR 4100.0-5).

ALLOTMENT MANAGEMENT PLAN: A documented program developed as an activity plan, consistent with the definition at 43 U.S.C. 1702(k), that focuses on, and contains the necessary instructions for, the management of livestock grazing on specified public lands to meet resource condition, sustained yield, multiple use, economic, and other objectives (from 43 CFR 4100.0-5).

ALTERNATIVE: One of at least two proposed means of accomplishing planning objectives.

ANALYSIS: The examination of existing and/or recommended management needs and their relationships to discover and display the outputs, benefits, effects, and consequences of initiating a proposed action.

ANALYSIS AREA: Any lands, regardless of jurisdiction, that the BLM uses to analyze impacts on a particular resource.

ANALYSIS OF THE MANAGEMENT SITUATION (AMS): Assessment of the current management direction. It includes a consolidation of existing data needed to analyze and resolve identified issues, a description of current BLM management guidance, and a discussion of existing problems and opportunities for solving them.

ANIMAL UNIT MONTH (AUM): The amount of forage necessary for the sustenance of one cow or its equivalent for a period of 1 month (from 43 CFR 4100.0-5).

AQUATIC: Living or growing in or on the water.

AQUIFER: Stratum or zone below the surface of the Earth capable of producing water, as from a well. A saturated bed, formation, or group of formations that yield water in sufficient quantity to be of consequence as a source of supply. An aquifer acts as a transmission conduit and storage reservoir.

ARCH: A natural opening through a narrow wall or plate of rock.

ARCHAEOLOGY: The scientific study of the life and culture of past, especially ancient, peoples, as by excavation of ancient cities, relics, artifacts, etc.

ARCHAEOLOGICAL SITE: A location that contains the physical evidence of past human behavior that allows for its interpretation (from the Advisory Council on Historic Preservation's Section 106 Archaeology Guidance).

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC): Area within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards (from FLPMA, Title 43 Chapter 35 Subchapter I 1702(a)).

ASSESSMENT: The act of evaluating and interpreting data and information for a defined purpose (from H-1601-1, BLM Land Use Planning Handbook).

AUTHORIZED OFFICER: The Federal employee who has the delegated authority to make a specific decision.

AVOIDANCE AREA: Areas with sensitive resource values where rights-of-way and Section 302 permits, leases, and easements would be strongly discouraged. Authorizations made in avoidance areas would have to be compatible with the purpose for which the area was designated and not be otherwise feasible on lands outside the avoidance area.

В

BACK COUNTRY BYWAYS: Vehicle routes that traverse scenic corridors utilizing secondary or backcountry road systems. National Back Country Byways are designated by the type of road and vehicle needed to travel the byway.

BENEFITS-BASED RECREATION: A management framework, philosophy, or approach to providing recreation and trail resources, facilities, and programs that focuses on identifying the economic, environmental, and social benefits to target recreation users. This management approach builds upon existing activity, facility, or demographic group orientations, but focuses on the outcomes or changes in the target groups.

BEST MANAGEMENT PRACTICE (BMP): A technique that guides, or may be applied to, management actions to aid in achieving desired outcomes. BMPs are often developed in conjunction with land use plans, but they are not considered a land use plan decision unless the land use plan specifies that they are mandatory. They may be updated or modified without a plan amendment if they are not mandatory (from H-1601-1, BLM Land Use Planning Handbook).

BIG GAME: Indigenous ungulate wildlife species that are hunted, such as elk, deer, bison, bighorn sheep, and pronghorn.

BIODIVERSITY: The variety of life and its processes, and the interrelationships within and among various levels of ecological organization. Conservation, protection, and restoration of biological species and genetic diversity are needed to sustain the health of existing biological systems. Federal resource management agencies must examine the implications of management actions and development decisions on regional and local biodiversity.

BIOLOGICAL SOIL CRUST OR CRYPTOBIOTIC CRUST: Biological communities that form a surface layer or crust on some soils. These communities consist of cyanobacteria (blue-green bacteria), micro fungi, mosses, lichens, and green algae and perform many important functions, including fixing nitrogen and carbon, maintaining soil surface stability, and preventing erosion. Cryptobiotic crusts also influence the nutrient levels of soils and the status and germination of plants in the desert. These crusts are slow to recover after severe disturbance.

BITUMEN: Any of various mixtures of hydrocarbons such as asphalt, tar, or petroleum.

C

CANDIDATE SPECIES: Taxa for which the U.S. Fish and Wildlife Service has sufficient information on their status and threats to support proposing the species for listing as endangered or threatened under the Endangered Species Act but for which issuance of a proposed rule is currently precluded by higher-priority listing actions. Separate lists for plants, vertebrate animals, and invertebrate animals are published periodically in the *Federal Register* (from M-6840, Special Status Species Manual).

CASUAL COLLECTING: The collecting of a reasonable amount of common invertebrate and plant paleontological resources for non-commercial personal use, either by surface collection or the use of non-powered hand tools resulting in only negligible disturbance to the Earth's surface and other resources.

CENOMANIAN-SANTONIAN AGES: Span of geologic ages including Cenomanian, Turanian, Coniacian, and Santonian during Late Cretaceous time, 98 to 84 million years ago.

CLOSED: Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 Code of Federal Regulations (CFR) 8340.0-5 sets forth the specific meaning of "closed" as it relates to off-highway vehicle use, and 43 CFR 8364 defines "closed"

as it relates to closure and restriction orders (from H-1601-1, BLM Land Use Planning Handbook).

CODE OF FEDERAL REGULATIONS (CFR): The official codification of the current, general, and permanent regulations of Federal government activities.

COLLABORATION: A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands (from H-1601-1, BLM Land Use Planning Handbook).

COLLABORATIVE PARTNERSHIPS OR COLLABORATIVE STEWARDSHIP: Refers to people working together, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks (from H-1601-1, BLM Land Use Planning Handbook).

CONCESSIONAIRE: Someone who holds a long term authorization to possess and use public lands to provide recreation facilities and services for a fixed period of time authorized under BLM regulations.

CONFORMANCE: Means that a proposed action shall be specifically provided for in the land use plan or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved land use plan (from H-1601-1, BLM Land Use Planning Handbook).

CONSERVATION AGREEMENT: A formal written document agreed to by the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service and another Federal agency, State agency, local government, or the private sector to achieve the conservation of candidate species or other special status species through voluntary cooperation. It documents the specific actions and responsibilities for which each party agrees to be accountable. The objective of a conservation agreement is to reduce threats to a special status species or its habitat. An effective conservation agreement may lower species' listing priority or eliminate the need for listing (from M-6840, Special Status Species Manual).

CONSERVATION STRATEGY: A strategy outlining current activities or threats that are contributing to the decline of a species, along with the actions or strategies needed to reverse or eliminate such a decline or threats. Conservation strategies are generally developed for species of plants and animals that are designated as BLM sensitive species or that have been determined by the U.S. Fish and Wildlife Service or National Oceanic and Atmospheric Administration Fisheries to be Federal candidates under the Endangered Species Act (from H-1601-1, BLM Land Use Planning Handbook).

CONSISTENCY: Means that the proposed land use plan does not conflict with officially approved plans, programs, and policies of tribes, other Federal agencies, and State and local governments (to the extent practical within Federal law, regulation, and policy) (from H-1601-1, BLM Land Use Planning Handbook).

CONSULTATION: A meeting to discuss, decide, or plan something.

COOPERATING AGENCY: Assists the lead Federal agency in developing an environmental assessment or environmental impact statement. The Council on Environmental Quality regulations implementing the National Environmental Policy Act (NEPA) define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA (40 Code of Federal Regulations 1501.6). Any Federal, State, or local government

jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency (from H-1601-1, BLM Land Use Planning Handbook).

COUNCIL ON ENVIRONMENTAL QUALITY: An advisory council to the President of the United States established by the National Environmental Policy Act of 1969. It reviews Federal programs to analyze and interpret environmental trends and information.

CRITICAL HABITAT: (1) The specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Endangered Species Act, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) that may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by a species at the time it is listed upon determination by the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service that such areas are essential for the conservation of the species. Critical habitats are designated in 50 Code of Federal Regulations Parts 17 and 226. The constituent elements of critical habitat are those physical and biological features of designated or proposed critical habitat essential to the conservation of the species (from M-6840, Special Status Species Manual).

CRUCIAL VALUE HABITAT: Any particular range or habitat component that directly limits a community, population, or subpopulation to reproduce and maintain itself at a certain level over the long term. Those sensitive use areas that, because of limited abundance and/or unique qualities, constitute irreplaceable critical requirements for high-interest wildlife. This may also include highly sensitive habitats, including fragile soils that have little or no reclamation potential. Restoration or replacement of these habitats may not be possible. Examples include: the most crucial summer and/or winter range or concentration areas; critical movement corridors; holdover and transitional corridors; breeding and rearing complexes; spawning areas; developed wetlands; Class 1 and 2 streams, lake, ponds or reservoirs; and riparian habitats critical to high-interest wildlife.

CRUCIAL WINTER RANGE: The portion of the winter range to which a wildlife species is confined during periods of heaviest snow cover.

CRYPTOBIOTIC CRUST: See BIOLOGICAL SOIL CRUST.

CRYPTOGAM: A plant that bears no flowers or seeds but propagates by means of spores. Cryptogamic organisms make up a cryptogamic crust or surface on certain soils.

CUBIC FEET PER SECOND (cfs): As a rate of stream flow, a cubic foot of water passing a referenced section in 1 second of time. One cfs flowing for 24 hours will yield 1.983 acre-feet of water.

CULTURAL RESOURCE OR CULTURAL PROPERTY: A definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups. Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and utilizing for public benefit (from M-8100-1, BLM Cultural Resources Management).

CULTURAL RESOURCE INVENTORY CLASSES: (See BLM Manual Section 8110.21.)

Class I: existing data inventory. A study of published and unpublished documents, records, files,

registers, and other sources resulting in analysis and synthesis of all reasonably available data. Class I inventories encompass prehistoric, historic, and ethnological/sociological elements, and are in large part chronicles of past land uses. They may have major relevance to current land use decisions. Class II: sampling field inventory. A statistically based sample survey designed to help characterize the probable density, diversity, and distribution of archaeological properties in a large area by interpreting the results of surveying limited and discontinuous portions of the target area. Class III: intensive field inventory. A continuous, intensive survey of an entire target area, aimed at locating and recording all archaeological properties that have surface indications, by walking close-interval parallel transects until the area has been thoroughly examined. Class III methods vary geographically, conforming to the prevailing standards for the region involved (from M-8100, BLM Cultural Resources Management).

CULTURAL RESOURCE MANAGEMENT PLAN: A plan designed to inventory, evaluate, protect, preserve, or make beneficial use of cultural resources and the natural resources that figured significantly in cultural systems. The objectives of such plans are the conservation, preservation, and protection of cultural values and the scientific study of those values.

CUMULATIVE EFFECT: The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (from H-1790-1, BLM NEPA Handbook).

D

DECISION AREA: The lands within the Planning Area for which the BLM has authority to make management decisions.

DESERT LAND ENTRY: The Desert Land Act (March 3, 1877) was passed by Congress to encourage and promote the economic development of the arid and semiarid public lands of the western United States. Through the act, individuals may apply for a desert-land entry to reclaim, irrigate, and cultivate arid and semiarid public lands.

DESIGNATED ROADS AND TRAILS: Specific roads and trails identified by the BLM (or other agencies) where some type of motorized vehicle use is appropriate and allowed either seasonally or year-long (from H-1601-1, BLM Land Use Planning Handbook).

DESIRED PLANT COMMUNITIES: An identified species composition that is most compatible with management objectives for a site including the desired mix of vegetative types, structural stages, and landscape and riparian functions.

DIRECT ECONOMIC IMPACTS: Impacts in the primary industries associated with activity on BLM-administered surface lands (e.g., restaurants frequented by visitors to BLM-administered surface lands in the analysis area).

DIRT BIKE: Non-street legal motorcycle.

DISPERSED OR EXTENSIVE RECREATION: Recreation activities of an unstructured type that are not confined to specific locations or dependent on recreation sites. Examples of these activities may be hunting, fishing, off-road vehicle use, hiking, and sightseeing.

DISPOSAL: Transfer of public land out of Federal ownership to another party through sale, exchange, Recreation and Public Purposes Act, Desert Land Entry, or other land law statutes.

Ε

EASEMENT: An interest in land entitling the owner or holder, as a matter or right, to enter upon land owned by another party for a particular purpose.

ECOLOGICAL SITE DESCRIPTION: Description of the soils, uses, and potential of a kind of land with specific physical characteristics to produce distinctive kinds and amounts of vegetation.

ECOLOGICAL SITE INVENTORY: The basic inventory of present and potential vegetation on BLM rangelands. Ecological sites are differentiated on the basis of significant differences in kind, proportion, or amount of plant species in the plant community. Ecological site inventory uses soils, the existing plant community, and ecological site data to determine the appropriate ecological site for a specific area of rangeland and to assign the appropriate ecological status.

ECOLOGICAL SUCCESSION: An ecosystem's gradual evolution to a stable state or climax. If through the ability of its populations and elements, an ecosystem can absorb changes, it tends to persist and become stable through time.

ECOSYSTEM: A system made up of a community of animals, plants, and bacteria and its interrelated physical and chemical environment.

ELIGIBILITY: Qualification of a river for inclusion into the National Wild and Scenic Rivers System through the determination (professional judgment) that it is free-flowing and, with its adjacent land area, possesses at least one river-related value considered to be outstandingly remarkable (from M-8351, BLM WSR Policy and Program).

ELIGIBLE RIVER SEGMENT: A section of a river that qualifies for inclusion into the National Wild and Scenic Rivers System through determination that it is free-flowing and with its adjacent land area possessing at least one river-related value considered to be outstandingly remarkable.

ENDANGERED SPECIES: Any animal or plant species in danger of extinction throughout all or a significant portion of its range. These species are listed by the U. S. Fish and Wildlife Service (from M-6840, Special Status Species Manual).

ENVIRONMENTAL ASSESSMENT (EA): (a) A concise public document for which a Federal agency is responsible that serves to: (1) briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact; (2) aid an agency's compliance with the National Environmental Policy Act when no environmental impact statement is necessary; (3) facilitate preparation of a statement when one is necessary. (b) Shall include brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted (from H-1790-1, BLM NEPA Handbook).

ENVIRONMENTAL IMPACT STATEMENT (EIS): A detailed statement prepared by the responsible official in which a major Federal action that would significantly affect the quality of the human environment is described, alternatives to the proposed action provided, and effects analyzed (from BLM National Management Strategy for OHV Use on Public Lands).

EPHEMERAL STREAM: A stream that flows only in direct response to precipitation, and whose channel is at all times above the water table. Ephemeral streams generally do not flow continuously for more than 30 days and generally have more robust upland vegetation than found outside of the ephemeral riparian-wetland area.¹

EQUESTRIAN: Of horses, horsemen, or horseback riding.

EXECUTIVE ORDER (EO): An EO is a Presidential directive with the force of law. It does not need congressional approval. The Supreme Court has upheld EOs as valid either under the general constitutional grant of executive powers to the President or if authority for it was expressly granted to the President by Congress. Congress can repeal or modify an EO by passing a new law; however, it must be signed by the President or his veto overridden.

EXTENSIVE RECREATION MANAGEMENT AREA (ERMA): A public lands unit identified in land use plans containing all acreage not identified as a Special Recreation Management Area. Recreation management actions within an ERMA are limited to only those of a custodial nature.

F

FACIES: A lateral or vertical variation in the lithologic or paleontologic characteristics of a geologic formation that differs as a group from that elsewhere in the same formation. It is caused by or reflects a change in the depositional environments.²

FAUNA: The animals of a specified region or time.

FEDERAL LAND POLICY AND MANAGEMENT ACT (FLPMA) OF 1976: Public Law 94-579, October 21, 1976, often referred to as the BLM's "Organic Act," which provides the majority of the BLM's legislated authority, direction policy, and basic management guidance (from BLM National Management Strategy for OHV Use on Public Lands).

FEDERAL LANDS: As used in this document, lands owned by the United States, without reference to how the lands were acquired or what Federal agency administers the lands. The term includes mineral estates or coal estates underlying private surface but excludes lands held by the United States in trust for Indians, Aleuts, or Eskimos (see also PUBLIC LAND).

FEDERAL PROTECTION COMPONENT (IN RELATION TO NATIONAL HISTORIC TRAILS): Segments of a trail that afford high-quality recreation experiences along a portion of the route having greater-than-average scenic values or affording an opportunity to share vicariously the experience of the original users of a historic route.

FEDERAL REGISTER: A daily publication that reports Presidential and Federal agency documents (from BLM National Management Strategy for OHV Use on Public Lands).

C-8

¹ United States Department of the Interior (DOI). 1998. *Riparian Area Management: A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas*. Technical Reference 1737-15. Bureau of Land Management, Forest Service, Natural Resources Conservation Service. Written by: Prichard, D., J. Anderson, C. Correll, J. Fogg, K. Gebhardt, R. Krapf, S. Leonard, B. Mitchell, and J. Staats. Denver:CO. BLM/RS/ST-98/001+1737. 127 pp.

² Stokes, W. L. 1986. *Geology of Utah*. Utah Museum of Natural History, University of Utah and Utah Geological and Mineral Survey, Department of Natural Resources, State of Utah. Salt Lake City, Utah; Skinner, B. J., and S. C. Porter. 1992. *The Dynamic Earth: An Introduction to Physical Geology*. John Wiley and Sons, Inc. New York: New York.

FIRE MANAGEMENT PLAN (FMP): A strategic implementation-level plan that defines a program to manage wildland fire, fuel reduction, and fire rehabilitation based on an area's approved Resource Management Plan. FMPs must address a full range of fire management activities that support ecosystem sustainability, values to be protected, protection of firefighter and public safety, public health, and environmental issues. They must be consistent with resource management objectives and activities of the area.

FLOODPLAIN: A plain along a river, formed from sediment deposited by floods.

FLORA: The plants of a specified region or time.

FLUID MINERALS: Oil, gas, coal bed natural gas, and geothermal resources.

FORAGE: Vegetation of all forms available and of a type used for animal consumption.

FORESTRY PRODUCT AREAS: Forest lands stocked with other than timber species (e.g., pinon, juniper, mountain mahogany). Uses of the products are generally limited to firewood, posts, and harvest of pinon pine nuts.

FORMATION: The primary unit in stratigraphy consisting of a succession of strata useful for mapping or description. Most formations possess certain lithologic features that may indicate genetic relationships.

FOSSIL: Any remains, traces, or imprints of prehistoric non-human organisms preserved in or on the Earth's crust that provide information about the history of life on Earth.

FOUR-WHEEL-DRIVE (4WD): Four-wheel-drive, differential transfer case disperses 50/50 front and rear displacement. Trucks, cars, buses, or sport utility vehicles with high clearance and the ability to operate off pavement as well as on highways.

FUNCTIONING AT RISK (FAR): (1) Condition in which vegetation and soil are susceptible to losing their ability to sustain naturally functioning biotic communities. Human activities, past or present, may increase the risks. (2) Uplands or riparian-wetland areas that are properly functioning, but a soil, water, or vegetation attribute makes them susceptible to degradation and lessens their ability to sustain natural biotic communities. Uplands are particularly at risk if their soils are susceptible to degradation. Human activities, past or present, may increase the risks. See also PROPERLY FUNCTIONING CONDITION (from H-4180-1, BLM Rangeland Health Standards Manual).

G

GEOGRAPHIC INFORMATION SYSTEM (GIS): A system of computer hardware, software, data, people, and applications that capture, store, edit, analyze, and graphically display a potentially wide array of geospatial information (from H-1601-1, BLM Land Use Planning Handbook).

GEOLOGY: The science that studies the Earth, the rocks of which it is composed, and the changes it has undergone or is undergoing.

GOAL: A broad statement of a desired outcome; usually not quantifiable and may not have established time frames for achievement (from H-1601-1, BLM Land Use Planning Handbook).

GRAZING ALLOTMENT CATEGORIES: Direction under which all grazing allotments are categorized for management purposes into three groups. The overall objectives are:

M: maintain the current resource conditions; **I**: improve the current resource conditions; and **C**: custodial manage the existing resource values.

GRAZING PERMIT: A document authorizing use of the public lands within an established grazing district. Grazing permits specify all authorized use including livestock grazing, suspended use, and conservation use. Permits specify the total number of animal unit months apportioned, the area authorized for grazing use, or both (from 43 CFR 4100.0-5).

GRAZING PREFERENCE OR PREFERENCE: A superior or priority position against others for the purpose of receiving a grazing permit or lease. This priority is attached to base property owned or controlled by the permittee or lessee (from 43 CFR 4100.0-5).

GRAZING SYSTEM: A prescribed method of grazing a range allotment having two or more pastures or management units to provide periodic rest for each unit.

GUIDELINE: A practice, method, or technique determined to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting the standard. Guidelines are tools such as grazing systems, vegetative treatments, or improvement projects that help managers and permittees achieve standards. Guidelines may be adapted or modified when monitoring or other information indicates the guideline is not effective, or a better means of achieving the applicable standard becomes appropriate (from H-4180-1, BLM Rangeland Health Standards Manual).

Н

HABITAT: The place where an organism (plant or animal) lives. There are four major divisions of habitat: terrestrial, freshwater, estuarine, and marine (from M-6840, Special Status Species Manual).

HABITAT MANAGEMENT PLAN (HMP): An officially approved activity plan for a specific geographic area of public land. An HMP identifies wildlife habitat and related objectives, defines the sequence of actions to be implemented to achieve the objectives, and outlines procedures for evaluating accomplishments.

HANGING GARDEN: Small pockets of vegetative associations surrounding "canyon-wall" springs that often contain a wide variety of unique plant and insect species. Hanging gardens are characteristic of flat-lying strata with deeply incised canyons of the Colorado Plateau.

HIGH-VALUE HABITAT: Any particular habitat that sustains a community, population, or subpopulation. Intensive use areas that because of relatively wide distribution do not constitute crucial values but are highly important to high-interest wildlife. This may also include moderately sensitive habitats of high-interest species that have low reclamation potential. Includes Class 3 streams, lakes, ponds, or reservoirs. Reconstruction or enhancement of these areas may be possible, but should be avoided if not possible. Examples include: less crucial (critical) but more widely distributed summer and/or winter ranges; important feeding areas; areas of high wildlife diversity and/or density of high-interest species; natural wetlands; and all other riparian areas.

HYDROCARBON: An organic compound containing only hydrogen and carbon, such as petroleum or crude oil.

HYDROLOGY: The science dealing with the properties, distribution, and circulation of water.

ı

IMPACTS (OR EFFECTS): Environmental consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable, or cumulative (from BLM National Management Strategy for OHV Use on Public Lands).

IMPLEMENTATION DECISIONS: Decisions that take action to implement land use plan decisions; generally appealable to the Interior Board of Land Appeals under 43 Code of Federal Regulations 4.410 (from H-1601-1, BLM Land Use Planning Handbook).

IMPLEMENTATION PLAN: A sub-geographic or site-specific plan written to implement decisions made in a land use plan. Implementation plans include both activity plans and project plans (they are types of implementation plans) (from H-1601-1, BLM Land Use Planning Handbook).

INDIAN TRIBE (OR TRIBE): Any Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994 (from H-1780-1, G2).

INDICATORS: Components of a system whose characteristics (presence or absence, quantity, distribution) are used as an index of an attribute (e.g., rangeland health attribute) that are too difficult, inconvenient, or expensive to measure (Interagency Technical Reference 1734-8, 2000) (from H-4180-1, BLM Rangeland Health Standards Manual).

INDIRECT ECONOMIC IMPACTS: Impacts in the industries that supply or interact with the primary industries. For example, when a restaurant expands and purchases new materials, the industry sectors supplying the materials experience indirect impacts.

INDUCED ECONOMIC IMPACTS: Impacts that represent increased spending by workers who earn money due to increased economic activity, such as when restaurant employees use their wages to purchase goods from local shops.

INHOLDING: A non-Federal parcel of land that is completely surrounded by Federal land.

INSTANT STUDY AREA (ISA): A designation of all primitive or natural areas formally identified prior to November 1, 1975, that were to be studied for wilderness suitability and recommended to the President by July 1, 1980 as mandated under Section 603 of the Federal Land Policy and Management Act.

INTERDISCIPLINARY TEAM: Staff specialists representing identified skill and knowledge needs working together to resolve issues and provide recommendations to an authorized officer (from H-4180-1, BLM Rangeland Health Standards Manual).

INTERIM MANAGEMENT POLICY (IMP): An interim measure governing lands under wilderness review. This policy protects Wilderness Study Areas from impairment of their suitability as wilderness.

INTERIOR BOARD OF LAND APPEALS: The Department of the Interior, Office of Hearings and Appeals board that acts for the Secretary of the Interior in responding to appeals of decisions on the use and disposition of public lands and resources. Because the Interior Board of Land

Appeals acts for and on behalf of the Secretary of the Interior, its decisions usually represent the Department of the Interior's final decision but are subject to the courts.

INTERMITTENT OR SEASONAL STREAM: A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas. Generally, intermittent streams flow continuously for periods of at least 30 days and usually have visible vegetation or physical characteristics reflective of permanent water influences, such as the presence of cottonwoods.³

INTERRUPTED STREAMS: Streams with discontinuities in surface flow along a streambed. These streams may have obligate wetland vegetation, hydric soils, and indicators of permanent water influences. Ephemeral streams generally lack obligate wetland vegetation and hydric soils.

INVASIVE PLANT: Plants that have been introduced into an environment where they did not evolve. As a result, invasive plants usually have no natural enemies to limit their reproduction and spread.

INVERTEBRATE SPECIES: Any animal without a backbone or spinal column.

K

KIND OR CLASS OF LIVESTOCK:

- Kind: The species of domestic livestock-cattle and sheep
- Class: The age class (i.e., yearling or cows) of a species of livestock

KNOWN GEOLOGIC STRUCTURES: Technically, the known geologic structure of a producing oil or gas field is construed by the U.S. Geological Survey to be the trap, whether structural or stratigraphic, in which an accumulation of oil or gas has taken place, and the limits of said trap, irrespective of the degree to which it may be occupied by oil or gas. Known geologic structures are frequently much more extensive than the pools of oil or gas they may contain, and the extent and place of any oil or gas accumulation therein, though influenced by structure, is finally determined by such factors as stratigraphy, hydrocarbon supply, sand conditions, and hydrostatic pressure. The U.S. Geological Survey seeks to evaluate the net effect of these several factors in terms of reasonably presumptive productive acreage and, as far as practicable, to conform the results, modified to include a fair safety margin, to the subsurface contours of the dominant structural feature involved.

L

LAND TENURE ADJUSTMENTS: Ownership or jurisdictional changes are referred as "Land Tenure Adjustments." To improve the manageability of BLM-administered surface land and improve their usefulness to the public, the BLM has numerous authorities for "repositioning" lands into a more consolidated pattern, disposing of lands, acquiring lands, and entering into cooperative management agreements. These land pattern improvements are completed primarily through

³ United States Department of the Interior (DOI). 1998. *Riparian Area Management: A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas*. Technical Reference 1737-15. Bureau of Land Management, Forest Service, Natural Resources Conservation Service. Written by: Prichard, D., J. Anderson, C. Correll, J. Fogg, K. Gebhardt, R. Krapf, S. Leonard, B. Mitchell, and J. Staats. Denver:CO. BLM/RS/ST-98/001+1737. 127 pp.

the use of land exchanges, but also through land sales, land acquisitions, jurisdictional transfers to other agencies, and use of cooperative management agreements and leases.

LAND USE ALLOCATION: The identification in a land use plan of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the Decision Area, based on desired future conditions (from H-1601-1, BLM Land Use Planning Handbook).

LAND USE PLAN (LUP): A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of the Federal Land Policy and Management Act; an assimilation of LUP-level decisions developed through the planning process outlined in 43 Code of Federal Regulations 1600, regardless of the scale at which the decisions were developed. The term includes both Resource Management Plans and Management Framework Plans (from H-1601-1, BLM Land Use Planning Handbook).

LAND USE PLAN AMENDMENT: The process for considering or making changes in the terms, conditions, and decisions of approved Resource Management Plans or Management Framework Plans. Usually only one or two issues are considered that involve only a portion of the Decision Area (from H-1601-1, BLM Land Use Planning Handbook).

LAND USE PLAN DECISION: Establishes desired outcomes and actions needed to achieve them. Decisions are reached using the planning process in 43 Code of Federal Regulations 1600. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to the Interior Board of Land Appeals (from H-1601-1, BLM Land Use Planning Handbook).

LEASE: An authorization or contract by which one party conveys the use of property to another party in return for rental payments. Section 302 of the Federal Land Policy and Management Act of 1976 provides the BLM's authority to issue leases for the use, occupancy, and development of the public lands. Leases are issued for purposes such as communication sites, parks, and other recreational facilities. The regulations establishing procedures for the processing of these leases are found in 43 Code of Federal Regulations 2920 and 2740.

LEASE STIPULATION: A modification of the terms and conditions on a lease form at the time of the lease sale.

LEASABLE MINERALS: Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920, as amended. They include coal, phosphate, asphalt, sulfur, potassium, sodium minerals, oil, and gas.

LEK: An assembly area where birds, especially sage-grouse, carry on display and courtship behavior.

LIGHT POLLUTION: The brightening of the night sky caused by street lights and other man-made sources.

LIMITED: An area restricted at certain times, in certain areas, and/or to certain vehicular use. These restrictions may be of any type, but can generally be accommodated within the following type of categories: numbers of vehicles; types of vehicles; time or season of vehicle use; permitted or licensed use only; use on existing roads and trails; use on designated roads and trails; and other restrictions (from BLM National Management Strategy for OHV Use on Public Lands).

LIMITED VALUE HABITAT: Habitat that is abundant and not essential to sustain a community, population, or subpopulation. Occasional use areas that are either sparsely populated or that show sporadic or unpredictable use by high-interest wildlife. These areas have limited reclamation potential. Wildlife may be displaced due to the common occurrence of these habitats. Examples include: year-long deer range of low habitat quality; Class 5 and 6 streams, lakes, ponds or reservoirs; and low-quality habitat in juxtaposition to areas of higher wildlife values.

LIMITS OF ACCEPTABLE CHANGE: A framework for establishing acceptable and appropriate resource and social conditions in recreation settings. A system of management planning.

LOCATABLE MINERALS: Minerals that may be extracted under the Mining Law of 1872, as amended, consistent with surface management regulations.

LOW-VALUE HABITAT: Habitat that is abundant and not essential to sustain a community, population, or subpopulation.

M

MANAGEMENT DECISION: A decision made by the BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions (from H-1601-1, BLM Land Use Planning Handbook).

MANAGEMENT-IGNITED FIRE: Controlled application of fire to natural fuels under conditions of weather, fuel moisture, and soil moisture that will allow confinement of the fire to a predetermined area and, at the same time, will produce the intensity of heat and rate of spread required to accomplish certain planned benefits to one or more objectives to wildlife, livestock, and watershed values. The overall objectives are to employ fire scientifically to realize maximum net benefits at minimum environmental damage and acceptable cost.

MANAGEMENT OPPORTUNITIES: A component of the analysis of the management situation; actions or management directions that could be taken to resolve issues or management concerns.

MECHANICAL TRANSPORT (Mechanized Vehicle): Any vehicle, device, or contrivance for moving people or material in or over land, water, snow, ice, or air that has moving parts as essential components of the transport and that has wheels or otherwise applies a mechanical advantage, regardless of power source. "Mechanical transport" includes, but is not limited to: bicycles, game carts, wagons, and wheelbarrows. It does not include devices that may provide mechanical advantage but are not used for transporting material over great distances (e.g., pulleys, pry bars, or winches), or methods of transport where the mechanical advantage is from non-moving parts (e.g., travois) or is incidental to primary means of transport (e.g., ski bindings, horse bits, or oarlocks). Wheelchairs, or other mobility devices that meet the definition of "wheelchair" in the Americans with Disabilities Act, Section 508(c), are not prohibited in Wilderness Study Areas.

MIGRATORY: A group of people or of birds, fishes, or plants that move from one region to another with the change of seasons or climate.

MINERAL: Any solid or fluid inorganic substance that can be extracted from the earth for profit.

MINERAL ENTRY: The filing of a claim on public land to obtain the right to any locatable minerals it may contain.

MINERAL MATERIALS: Minerals including common varieties of sand, stone, gravel, pumice, pumicite, cinders, and clay that the BLM may dispose of by issuing sales contracts or free use permits under the Materials Act of 1947. Mineral materials are sometimes referred to as salable minerals.

MINERAL POTENTIAL:

- High: those lands currently producing oil or gas or having high current industry interest
- Moderate: those lands that have had oil and gas shows in favorable geologic environments
- Low: those lands where either the geologic environment appears to be favorable for the
 accumulation of oil and gas, or where little or no information is available to evaluate the oil
 and gas potential

MINIMUM IMPACT FILMING: A filming activity that does not involve:

- Impact on sensitive habitat or species
- Impact on Native American Indian sacred rites
- Use of explosives or major use of pyrotechnics
- More than minimum impacts on land, air, or water
- Use of exotic species with danger of introduction into the area
- Adverse impacts on sensitive resources including historic, cultural, or paleontological sites;
 sensitive soils; relict environments; or wetlands or riparian areas
- Use of heavy equipment
- Use of vehicles off designated routes
- Set construction
- Significant restriction of public access
- Significant use of domestic livestock
- Aircraft taking off, landing, or flying lower than 1,000 feet above the site
- 15 or more production vehicles, or 75 or more people
- In excess of 10 days of production

MINING CLAIM: A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules.

MITIGATION: A method or process by which impacts from actions may be made less injurious to the environment through appropriate protective measures. 40 Code of Federal Regulations 1508.20 further defines mitigation as: (1) avoiding the impact altogether by not taking a certain action or parts of an action; (2) minimizing an impact by limiting the degree or magnitude of the action and its implementation; (3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating the impact over time by preservation and maintenance; and/or (5) compensating for the impact by replacing or providing substitute resources or environments.

MITIGATION MEASURES: Constraints, requirements, or conditions imposed to reduce the significance of or eliminate an anticipated impact on environmental, socioeconomic, or other resource values from a proposed land use. Committed mitigation measures are those

measures the BLM is committed to enforce (i.e., all applicable laws and their implementing regulations).

MODERATE VALUE HABITAT: Any particular habitat that is common or of intermediate importance.

MONITORING (PLAN MONITORING): The process of tracking the implementation of land use plan decisions and collecting and assessing data/information necessary to evaluate the effectiveness of land use planning decisions (from H-1601-1, BLM Land Use Planning Handbook).

MOUNTAIN BICYCLE: Bicycle designed for off-pavement use. Generally are multi-geared with fat, knobby tires. Frames and tire rims are stronger than road bicycles. Sometimes referred to in this document as a mechanized vehicle.

MULTIPLE USE: The management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific, and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output (from the Federal Land Policy and Management Act, Title 43 Chapter 35 Subchapter I 1702(c)).

Ν

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) OF 1969: NEPA establishes policy, sets goals (section 101), and provides means (section 102) for carrying out the policy. Section 102(2) contains "action-forcing" provisions to make sure that Federal agencies act according to the letter and spirit of the act. The President, Federal agencies, and the courts share responsibility for enforcing the act so as to achieve the substantive requirements of section 101.

NATIONAL REGISTER OF HISTORIC PLACES (NRHP): The NRHP, expanded and maintained by the Secretary of the Interior, as authorized by section 2(b) of the Historic Sites Act and section 101(a)(1)(A) of the National Historic Preservation Act. The NRHP lists cultural properties found to qualify for inclusion because of their local, State, or national significance. Eligibility criteria and nomination procedures are found in 36 Code of Federal Regulations Part 60. The Secretary's administrative responsibility for the NRHP is delegated to the National Park Service (from M-8100, BLM Cultural Resources Management).

NATIONAL WILD AND SCENIC RIVERS SYSTEM: A system of nationally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three types of streams: (1) recreation—rivers or sections of rivers that are readily accessible by road or railroad and that may have some development along their

shorelines and may have undergone some impoundments or diversion in the past; (2) scenic—rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads; and (3) wild—rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted.

NATURALNESS: Lands and resources exhibit a high degree of naturalness when affected primarily by the forces of nature and where the imprint of human activity is substantially unnoticeable. The BLM has authority to inventory, assess, and/or monitor the attributes of the lands and resources on public lands, which, taken together, are an indication of an area's naturalness. These attributes may include the presence or absence of roads and trails, fences, and other improvements; the nature and extent of landscape modifications.

NO SURFACE OCCUPANCY: A constraint in a mineral lease that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the area.

NON-FUNCTIONING: Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows.

NON-MECHANIZED TRAVEL: Moving by foot or by pack or stock animal.

NONNATIVE PLANT: An introduced plant species living outside its native distributional range that has arrived there by human activity, either deliberate or accidental.

NOXIOUS WEED: A plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the United States. A noxious weed is also commonly defined as a plant that grows out of place and is "competitive, persistent, and pernicious."

0

OBJECTIVE: A description of a desired condition for a resource. Objectives can be quantified and measured and, where possible, have established time frames for achievement (from H-1601-1, BLM Land Use Planning Handbook).

OFF-HIGHWAY VEHICLE (OHV): Any motorized vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any non-amphibious registered motorboat: (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used for national defense (from H-1601-1, BLM Land Use Planning Handbook).

OFF-HIGHWAY VEHICLE DESIGNATIONS:

- Open: designated areas where OHVs may be operated.
- Limited: designated areas and trails where the use of an OHV is subject to restrictions, such as limiting the dates and times of use (seasonal restrictions); limiting use to designated

roads and trails; or limiting use to existing roads and trails. Combinations of restrictions are possible.

 Closed: designated areas, roads, and trails where the use of an OHV is permanently or temporarily prohibited. Emergency use of vehicles is allowed.

OFFICIAL USE: Use by an employee, agent, or designated representative of the Federal government or one of its contractors, in the course of his employment, agency, or representation (from BLM National Management Strategy for OHV Use on Public Lands).

OPEN: Generally denotes that an area is available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 Code of Federal Regulations 8340.0-5 defines the specific meaning of "open" as it relates to off-highway vehicle use (from H-1601-1, BLM Land Use Planning Handbook).

OUTSTANDING: Standing out among others of its kind; distinguished; excellent.

OUTSTANDING NATURAL AREA (ONA): These are established to preserve scenic values and areas of natural wonder. The preservation of these resources in their natural condition is the primary management objective. Access roads, parking areas, and public use facilities are normally located on the periphery of the area. The public is encouraged to walk into the area for recreation purposes wherever feasible.

OUTSTANDINGLY REMARKABLE VALUES: Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act: "scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values." Other similar values that may be considered include ecological, biological or botanical, paleontological, hydrological, scientific, or research values (from M-8351, BLM WSR Policy and Program).

Ρ

PALEONTOLOGICAL RESOURCE: Any fossilized remains, traces, or imprints of organisms, preserved in or on the Earth's crust, that are of paleontological interest and that provide information about the history of life on Earth.

PALEONTOLOGY: The scientific study of prehistoric life based on fossil record.

PERCHED WATER TABLE: Water table above an impermeable bed underlain by unsaturated rocks of sufficient permeability to allow movement of ground water.

PERENNIAL STREAM: A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

PERMIT: A short-term, revocable authorization to use public lands for specific purposes, Section 302 of the Federal Land Policy and Management Act provides the BLM's authority to issue permits for the use, occupancy, and development of the public lands. Permits are issued for purposes such as commercial or non-commercial filming, advertising displays, commercial or non-commercial croplands, apiaries, harvesting of native or introduced species, temporary or permanent facilities for commercial purposes (does not include mining claims), residential occupancy, construction equipment storage sites, assembly yards, oil rig stacking sites, mining claim occupancy if the residential structures are not incidental to the mining operation, and water pipelines and well pumps related to irrigation and non-irrigation facilities. The regulations

establishing procedures for the processing of these permits are found in 43 Code of Federal Regulations 2920.

PERMITTED USE: The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease, expressed in animal unit months (43 Code of Federal Regulations 4100.0-5) (from H-4180-1, BLM Rangeland Health Standards Manual).

PERMITTEE: (Livestock Operator) A person or organization legally permitted to graze a specific number and class of livestock on designated areas of public land during specified seasons each year.

PETRIFIED WOOD: Fossilization of wood through introduction or replacement by silica (silicified wood) in such a manner that the original form and structure of the wood is preserved.

PHYSIOGRAPHIC REGION: Region of similar geologic structure and climate with a unified history of land formation.

PLAN OF DEVELOPMENT: A mandatory plan, developed by an applicant of a mining operation, rights-of-way, or construction project that specifies the techniques and measures to be used during construction and operation of all project facilities on public land. The plan is submitted for approval to the appropriate Federal agency before any construction begins.

PLAN OF OPERATIONS: A plan for mining exploration and development for locatable minerals that an operator must submit to the BLM for approval when more than 5 acres will be disturbed or when an operator plans to work in an area of critical environmental concern or a wilderness area. A plan of operations must document in detail all actions that the operator plans to take from exploration through reclamation and post-mine closure (including any post-mine economic uses) and, if necessary, long-term monitoring. Before commencing operations on an approved plan of operations, the operator must also provide the BLM with an acceptable financial guarantee.

PLANNING AREA: All lands within the boundaries of Grand Staircase-Escalante National Monument units and the Kanab-Escalante Planning Area, regardless of jurisdiction.

PLANNING CRITERIA: The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decisionmaking, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions (from H-1601-1, BLM Land Use Planning Handbook).

PRESCRIBED FIRE: Any fire ignited by management action to meet specific objectives. A written, approved prescribed fire plan must exist, and National Environmental Policy Act requirements must be met, prior to ignition (from H-9214-1, BLM Prescribed Fire Management Handbook).

PREY SPECIES: An animal taken by a predator as food.

PRIMITIVE AND UNCONFINED RECREATION: Visitors may have opportunities for primitive and unconfined types of recreation when the sights, sounds, and evidence of other people are rare or infrequent, where the use of the area is through non-motorized, non-mechanical means, and where no or minimal developed recreation facilities are encountered (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

PROJECT PLAN: A type of implementation plan (see IMPLEMENTATION PLAN). A project plan typically addresses individual projects or several related projects. Examples of project plans include prescribed burn plans, trail plans, and recreation site plans (from H-1601-1, BLM Land Use Planning Handbook).

PROPERLY FUNCTIONING CONDITION (PFC): (1) An element of the Fundamentals of Rangeland Health for watersheds, and therefore a required element of State or regional standards and guidelines under 43 Code of Federal Regulations 4180.2(b). (2) Condition in which vegetation and ground cover maintain soil conditions that can sustain natural biotic communities. For riparian areas, the process of determining function is described in BLM Technical Reference TR 1737-9. (3) Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment, capture bed load, and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is influenced by geomorphic features, soil, water, and vegetation. (4) Uplands function properly when the existing vegetation and ground cover maintain soil conditions capable of sustaining natural biotic communities. The functioning condition of uplands is influenced by geomorphic features, soil, water, and vegetation. See also FUNCTIONING AT RISK (from H-4180-1, BLM Rangeland Health Standards Manual).

PROPOSED SPECIES: Species that have been officially proposed for listing as threatened or endangered by the Secretary of the Interior. A proposed rule has been published in the *Federal Register* (from M-6840, Special Status Species Manual).

PUBLIC LAND: Land or interest in land owned by the United States and administered by the Secretary of the Interior through the BLM without regard to how the United States acquired ownership, except lands located on the Outer Continental Shelf, and land held for the benefit of Indians, Aleuts, and Eskimos (from H-1601-1, BLM Land Use Planning Handbook).

R

RANGE IMPROVEMENT: An authorized physical modification or treatment designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; and restore, protect, and improve the condition of rangeland ecosystems to benefit livestock, wild horses and burros, and fish and wildlife. The term includes, but is not limited to, structures, treatment projects, and use of mechanical devices or modifications achieved through mechanical means (43 Code of Federal Regulations 4100.0-5) (from H-4180-1, BLM Rangeland Health Standards Manual).

RANGELAND: A kind of land on which the native vegetation, climax, or natural potential consists predominantly of grasses, grass-like plants, forbs, or shrubs. Rangeland includes lands revegetated naturally or artificially to provide a non-crop plant cover that is managed like native vegetation. Rangeland may consist of natural grasslands, savannahs, shrublands, most deserts, tundra, alpine communities, coastal marshes, and wet meadows (from H-4180-1, BLM Rangeland Health Standards Manual).

RANGELAND HEALTH STANDARDS: The four standards of physical and biological condition or degree of function required for healthy sustainable rangeland in Utah are the following (from BLM's 1997 Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah):

- 1. Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian/wetland, and aquatic components; soil and plant conditions support water infiltration, soil moisture storage, and release of water that are in balance with climate and landform, and maintain or improve water quality, water quantity, and timing and duration of flow.
- Ecological processes, including the hydrologic cycle, nutrient cycles, and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.
- Water quality complies with State water quality standards and achieves, or is making progress toward achieving, established BLM management objectives such as meeting wildlife needs.
- 4. Habitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal Proposed, Federal Candidate, other special status species, native species, and for economically valuable game species and livestock.

RAPTORS: Birds of prey, such as the eagle, falcon, hawk, owl, or vulture.

REASONABLY FORESEEABLE DEVELOPMENT: A projection of potential development over a certain time period based on best available information at the time of preparation.

RECREATION AND PUBLIC PURPOSES (R&PP) ACT: The R&PP Act provided for the lease and sale of public lands determined valuable for public purposes. The objective of the R&PP Act is to meet the needs of State and local government agencies and non-profit organizations by leasing or conveying public land required for recreation and public purpose uses. Examples of uses made of R&PP lands are parks and greenbelts, sanitary landfills, schools, religious facilities, and camps for youth groups. The act provides substantial cost-benefits for land acquisition and provides for recreation facilities or historical monuments at no cost.

RECREATION OPPORTUNITY SPECTRUM: A continuum used to characterize recreation opportunities in terms of setting, activity, and experience opportunities. The spectrum covers a range of recreation opportunities from primitive to urban. With respect to river management planning, Recreation Opportunity Spectrum represents one possible method for delineating management units or zones. See BLM Manual Section 8320 for more detailed discussion (from M-8351, BLM WSR Policy and Program).

RECREATIONAL RIVER AREAS: Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past (from Section 2(b) of the Wild and Scenic Rivers Act).

RELICT PLANT COMMUNITY: A remnant or fragment of the vegetation of an area that remains from a former period when the vegetation was more widely distributed.

RESEARCH NATURAL AREA (RNA): An area where natural processes predominate and that is preserved for research and education. Research Natural Areas must meet the relevance and importance criteria of Areas of Critical Environmental Concern and are designated as Areas of

Critical Environmental Concern. A natural area established and maintained for research and education, which may include:

- Typical or unusual plant or animal types, associations, or other biotic phenomena
- Characteristic or outstanding geologic, soil, or aquatic features or processes

The public may be excluded or restricted from such areas to protect studies.

RESOURCE ADVISORY COUNCIL: A council established by the Secretary of the Interior to provide advice or recommendations to BLM management. In some States, provincial advisory councils are functional equivalents of resource advisory councils (from H-1601-1, BLM Land Use Planning Handbook).

RESOURCE MANAGEMENT PLAN (RMP): A BLM planning document, prepared in accordance with Section 202 of the Federal Land Policy and Management Act, which presents systematic guidelines for making resource management decisions. An RMP is based on an analysis of an area's resources, its existing management, and its capability for alternative uses. RMPs are issue oriented and developed by an interdisciplinary team with public participation.

RESOURCE USE LEVEL: The level of use allowed within an area, based on the desired outcomes and land use allocations in the land use plan. Targets or goals for resource use levels are established on an area-wide or broad watershed level in the land use plan. Site-specific resource use levels are normally determined at the implementation level, based on site-specific resource conditions and needs as determined through resource monitoring and assessments (from H-1601-1, BLM Land Use Planning Handbook).

RIGHT-OF-WAY (ROW): The public lands authorized to be used or occupied for the construction, operation, maintenance, and termination of a project, pursuant to a ROW authorization.

RIPARIAN AREA: A form of wetland transition between permanently saturated wetlands and upland areas. A riparian area is defined as an area of land directly influenced by permanent (surface or subsurface) water. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels. Excluded are ephemeral streams or washes that lack vegetation and depend on free water in the soil.

RIPARIAN VEGETATION: Plants adapted to moist growing conditions along streams, waterways, ponds, etc.

ROUTE: A path, way, trail, road, or other established travel corridor.

S

SCENIC BACKWAYS: Paved or unpaved routes that have roadsides or corridors of special aesthetic, cultural, or historic value in more remote, less-visited locations. The corridor may contain outstanding scenic vistas, unusual geologic features, or other intrinsic qualities such as cultural, historic, natural, recreational, and archaeological values. Scenic Backways can be designated at either the State level or by the BLM during the land use planning process.

SCENIC BYWAYS: Highway routes that have roadsides or corridors of special aesthetic, cultural, or historic value. The corridor may contain outstanding scenic vistas, unusual geologic features,

or other intrinsic qualities such as cultural, historic, natural, recreational, and archaeological values. Scenic Byways can be designated at either the State or the Federal level.

SCENIC QUALITY: The relative worth of a landscape from a visual perception point of view.

SCENIC RIVER AREAS: Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads (from Section 2(b) of the Wild and Scenic Rivers Act).

SCOPING: An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This involves the participation of affected Federal, State, and local agencies, and any affected Indian tribe, the proponent of the action, and other interested persons, unless there is a limited exception under 40 Code of Federal Regulations 1507.3I.

SEASON OF USE: The timing of livestock grazing on a rangeland area.

SECTION 106 COMPLIANCE: The requirement of Section 106 of the National Historic Preservation Act that any project funded, licensed, permitted, or assisted by the Federal government be reviewed for impacts on significant historic properties and that the State Historic Preservation Officer and the Advisory Council on Historic Preservation be allowed to comment on a project.

SECTION 7 CONSULTATION: The requirement of Section 7 of the Endangered Species Act that all Federal agencies consult with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service if a proposed action may affect a federally listed species or its critical habitat.

SEED COLLECTION: Refers to the collection of vegetative seeds from BLM-administered surface land. There are four options that allow the public to collect vegetative materials such as seed from BLM-administered surface lands. These are: (1) Recreational use, (2) personal use, (3) commercial use, and (4) free use. The forms used and fees assessed depend on which option applies to the situation and the intended use of the seed. Seed collection on BLM-administered surface land is generally administered in accordance with Instruction Memorandum No. 2013-176.

SENSITIVE SPECIES: Those species designated by a State Director, usually in cooperation with the State agency responsible for managing the species and State natural heritage programs, as sensitive. They are those species that: (1) could become endangered in or extirpated from a State, or within a significant portion of its distribution; (2) are under status review by the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service; (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that federally listed, proposed, candidate, or State-listed status may become necessary; (5) typically have small and widely dispersed populations; (6) inhabit ecological refugia or other specialized or unique habitats; or (7) are State-listed but may be better conserved through application of BLM sensitive species status (from M-6840, Special Status Species Manual).

SIGNIFICANT: An effect that is analyzed in the context of the proposed action to determine the degree or magnitude of importance of the effect, whether beneficial or adverse. The degree of significance can be related to other actions with individually insignificant but cumulatively significant impacts.

SOLITUDE: Visitors may have outstanding opportunities for solitude, or primitive and unconfined types of recreation when the sights, sounds, and evidence of other people are rare or infrequent, where visitors can be isolated, alone or secluded from others, where the use of the area is through non-motorized, non-mechanical means, and where no or minimal developed recreation facilities are encountered (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

SPATIAL MANAGEMENT: As used in this document, intensive control of the location and level of surface disturbance that is allowed in a particular area.

SPECIAL RECREATION MANAGEMENT AREA (SRMA): A public lands unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities (i.e., activity, experience, and benefit opportunities). The BLM recognizes three distinct types of SRMAs: destination, community, and undeveloped (from H-1601-1, BLM Land Use Planning Handbook).

SPECIAL STATUS SPECIES: Includes proposed species, listed species, and candidate species under the Endangered Species Act; State-listed species; and BLM State director-designated sensitive species (see BLM Manual 6840, Special Status Species Policy) (from H-1601-1, BLM Land Use Planning Handbook).

STANDARD: A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., Land Health Standards). To be expressed as a desired outcome (goal) (from H-1601-1, BLM Land Use Planning Handbook).

STATE-LISTED SPECIES: Species listed by a State in a category implying but not limited to potential endangerment or extinction. Listing is either by legislation or regulation (from M-6840, Special Status Species Manual).

STRATIGRAPHY: The branch of geology that treats the formation, composition, sequence, and correlation of stratified rocks as part of the Earth's crust.

STREET LEGAL MOTORCYCLE: Utah law defines this as a motorcycle that has a tail light, headlight, turn signal, and is registered.

STRUTTING GROUND: An area used by sage-grouse in early spring for elaborate, ritualized courtship displays. See also LEK.

SUBSTANTIAL VALUE HABITATS: Any particular habitat that is common or of intermediate importance. Existence areas used regularly by high-interest wildlife but have moderate levels with little or no concentrated use. These areas may also include moderately sensitive habitats of high-interest species with moderate reclamation potential. Wildlife uses may be displaced in response to development. Examples include: extensive summer and/or winter ranges receiving regular use well below carrying capacity having little potential for increase due to other limiting factors; Class 4 streams, lakes, ponds or reservoirs; and areas of moderate habitat quality.

SUPPRESSION: All the work of extinguishing or containing a fire, beginning with its discovery.

SURFACE DISTURBANCE: Suitable habitat is considered disturbed when it is removed and unavailable for immediate use. (A) Long-term removal occurs when habitat is physically removed through activities that replace suitable habitat with long-term occupancy of unsuitable habitat such as a road, powerline, well pad, or active mine. Long-term removal may also result from any activities that cause soil mixing, soil removal, and exposure of the soil to erosive

processes. (B) Short-term removal occurs when vegetation is removed in small areas, but restored to suitable habitat within a few (fewer than 5) years of disturbance, such as a successfully reclaimed pipeline, or successfully reclaimed drill hole or pit. (C) Suitable habitat rendered unusable due to numerous anthropogenic disturbances. (D) Anthropogenic surface disturbances are surface disturbances meeting the above definitions that result from human activities.

SURFACE-DISTURBING ACTIVITIES: An action that alters the vegetation, surface/near-surface soil resources, and/or surface geologic features, beyond natural site conditions and on a scale that affects other public land values. Examples of surface-disturbing activities may include: operation of heavy equipment to construct well pads, roads, pits and reservoirs; installation of pipelines and powerlines; and intensive vegetation treatments (e.g., prescribed fire). Surface-disturbing activities may be either authorized or prohibited.

SURFACE OCCUPANCY: Placement or construction on the land surface (either temporary or permanent) for more than 14 days requiring continual service or maintenance. Casual use is not included.

SUSPENDED: Term used when describing an administrative state of mining operations or oil, gas, and mineral leases, whereby the operation or lease is "suspended" or on standby while an administrative action is contemplated. When mineral leases are suspended, the lessee cannot explore, develop, or otherwise enjoy the benefits of the lease. Also, the term (time period) of the lease is suspended.

Т

TAKE: Harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The term applies only to fish and wildlife (from M-6840, Special Status Species Manual).

TAR SAND: A commonly used name to describe a sedimentary rock reservoir impregnated with a very heavy, viscous crude oil that cannot be produced by conventional production techniques. Tar sand implies a sandy sedimentary rock as the host, but this is not always the case, as other porous rocks such as siltstone and fractured carbonates have also been classified as tar sand.

THREATENED SPECIES: Any species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (from M-6840, Special Status Species Manual).

TIMING LIMITATION (SEASONAL RESTRICTION): A fluid minerals leasing constraint that prohibits surface use during specified time periods to protect identified resource values. The constraint does not apply to the operation and maintenance of production facilities unless analysis demonstrates that such constraints are needed and that less stringent, project-specific constraints would be insufficient.

TINAJAS: Surface depressions in rock formations, particularly sandstone, that collect water and provide habitat for specialized plant and animal species.

TOPOGRAPHY: The accurate and detailed description of a place; the arrangement of the natural and artificial physical features of an area.

TOTAL DISSOLVED SOLIDS (TDS): The total quantity (reported in milligrams per liter) of dissolved materials in water.

TOTAL MAXIMUM DAILY LOAD: An estimate of the total quantity of pollutants (from all sources: point, nonpoint, and natural) that may be allowed into waters without exceeding applicable water quality criteria (from H-1601-1, BLM Land Use Planning Handbook).

TRAVEL MANAGEMENT AREAS: Polygons or delineated areas where a rational approach has been taken to classify areas as open, closed, or limited, and have an identified and/or designated network of roads, trails, ways, and other routes that provide for public access and travel across the Planning Area. All designated travel routes within travel management areas should have a clearly identified need and purpose as well as clearly defined activity types, modes of travel, and seasons or time frames for allowable access or other limitations.

TREND IN RANGE CONDITION: An interpretation of the direction of change in range condition. These determinations may relate to ecological site or forage conditions. Also vegetation trend that is improving (upward), not changing (static), and declining (downward).

TWO-WHEEL-DRIVE (2WD): Vehicle clearance generally lower than with a four-wheel drive. Not designed to travel off pavement.

U

UNALLOTTED (GRAZING): An area that is available for livestock grazing under section 3 or section 15 permits but currently does not have a permit.

UNSUITABILITY CRITERIA: Criteria of the Federal coal management program by which lands may be assessed as unsuitable for all or certain stipulated methods of coal mining.

USER DAY: Any calendar day, or portion thereof, for each individual accompanied or serviced by an operator or permittee on the public lands or related waters; synonymous with passenger day or participant day.

UTILITY: A service provided by a public utility, such as electricity, telephone, or water.

٧

VALID EXISTING RIGHTS (VER): Any authorization or right established. VER are established by various laws, leases, and filings made with the BLM.

VEGETATION MATERIALS: Refers generally to vegetative materials such as individual plants, wood products, flowers, seeds, etc.

VEGETATION RESTORATION/TREATMENT METHODS: Mechanical, chemical, biological, and fire vegetation treatments used to restore and promote a natural range of native plant associations. Treatments are designed for specific areas and differ according to the area's suitability and potential. The most common land treatment methods alter the vegetation by spraying with pesticides, burning, or plowing, followed by seeding with native plant species. Intensive vegetation treatments include those that would fall under the definition of surface-disturbing activities (e.g., prescribed fire).

VERTEBRATE SPECIES: Any animal with a backbone or spinal column.

VISITOR DAY: Twelve visitor hours that may be aggregated by one or more persons in single or multiple visits.

VISITOR USE: Visitor use of a resource for inspiration, stimulation, solitude, relaxation, education, pleasure, or satisfaction.

VISUAL RESOURCE MANAGEMENT (VRM): The inventory and planning actions taken to identify visual values and to establish objectives for managing those values, and the management actions taken to achieve the visual management objectives.

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES: VRM classes define the degree of acceptable visual change within a characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective. There are four classes. Each class has an objective that prescribes the amount of change allowed in the characteristic landscape, as described below:

Class I: The objective for VRM Class I is to preserve the existing character of the landscape. This class provides for natural ecological changes; it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II: The objective for VRM Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III: The objective for VRM Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Any changes should repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class IV: The objective for VRM Class IV is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

VISUAL RESOURCES: The visible physical features of a landscape (topography, water, vegetation, animals, structures, and other features) that constitute the scenery of an area.

VISUAL SENSITIVITY LEVELS: Measures of public concern (i.e., high, medium, low) for the maintenance of scenic quality.

W

WATER QUALITY: The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

WATERSHED: The fifth level of the hydrologic unit delineation system. A watershed is coded with 10 numerical digits, and watersheds range in size from 40,000 to 250,000 acres (from H-4180-1, BLM Rangeland Health Standards Manual).

WETLANDS: Lands including swamps, marshes, bogs, and similar areas, such as wet meadows, river overflows, mud flats, and natural ponds.

WILD AND SCENIC RIVER (WSR): See NATIONAL WILD AND SCENIC RIVER SYSTEM.

WILD RIVER AREAS: Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America (from Section 2(b) of the Wild and Scenic Rivers Act).

WILDERNESS: A congressionally designated area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

WILDERNESS AREA: An area officially designated as wilderness by Congress. Wilderness areas will be managed to preserve wilderness characteristics and shall be devoted to "the public purposes of recreation, scenic, scientific, educational, conservation, and historical use."

WILDERNESS CHARACTERISTICS: Features of the land associated with the concept of wilderness that specifically deal with naturalness and opportunities for solitude and primitive unconfined recreation.

WILDERNESS STUDY AREA (WSA): Areas that have been inventoried and found to have wilderness characteristics as described in Section 603 of the Federal Land Policy and Management Act and Section 2(c) of the Wilderness Act of 1964. These areas are under study for possible inclusion as a Wilderness Area in the National Wilderness Preservation System.

WILDFIRE: Unplanned ignition of a wildland fire (such as a fire caused by lightning, volcanoes, unauthorized and accidental human-caused fires) and escaped prescribed fires (from 2009 Guidance for Implementation of Federal Wildland Fire Management Policy).

WILDLAND FIRE: Any fire, regardless of ignition source, that is burning outside of a prescribed fire and any fire burning on public lands or threatening public land resources, where no fire prescription standards have been prepared (from H-1742-1, BLM Emergency Fire Rehabilitation Handbook).

WILDLAND URBAN INTERFACE (WUI): The line, area, or zone in which structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

WITHDRAWAL: Removal or withholding an area of Federal land from settlement, sale, location, or entry, under some or all of the general land laws and the Mining Law of 1872 for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program; or transferring jurisdiction over an area of Federal land, other than "property" governed by the Federal Property and Administrative

Services Act, as amended (40 United States Code 472) from one department, bureau, or agency to another department, bureau, or agency (from the Federal Land Policy and Management Act, Title 43 Chapter 35 Subchapter I 1702(j)). The term *withdrawal* is also used in Presidential Proclamations 6920 and 9682 to apply to mineral leasing and mineral materials sales.

WOODLAND: A forest community occupied primarily by non-commercial species such as juniper, pinon pine, mountain mahogany, or quaking aspen groves; all western juniper forestlands are considered woodlands, because juniper is classified as a non-commercial species.

WOODLAND PRODUCTS: Woodland products generally refers to forest or woodland products that are found on public lands and may be harvested for recreation, personal use, or as a source of income such as harvesting and selling fence posts and poles.

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix D	
ist of Preparers	
August 2019	

Appendix D: List of Preparers

Table 1 lists those primarily responsible for preparing the Resource Management Plans/ Environmental Impact Statement.

Table 1 List of Preparers

Name	Project Role		
Bureau of Land Manage	ement		
Allysia Angus	Project Inspector; Visual Resources		
Tyler Ashcroft	State Office Planning		
Dana Backer	Planning and National Environmental Policy Act; Science Program		
Quincy Bahr	State Office Planning		
Harry Barber	Management		
Allan Bate	Woodland/Forestry		
Jabe Beal	Recreation; Wild and Scenic Rivers; Wilderness/Wilderness Study Areas/Outstanding Natural Areas; Transportation/Access; Natural Areas; Lands with Wilderness Characteristics		
Britt Betenson	Cultural Resources; Native American Religious Concerns; Tribal Liaison		
Matt Betenson	Project Lead, Cooperating Agency Contact Management		
Ken Bradshaw	Floodplains & Soils; Water Resources; Water Quality, Climate Change; Greenhouse Gases		
Raymond Brinkerhoff	Biological Soil Crusts; Noxious & Invasive Plant Species; Threatened & Endangered or Candidate Plant Species; Riparian		
Whit Bunting	Management		
Lisa Church	Wildlife Threatened and Endangered Animals; Riparian		
Larry Crutchfield	Public Involvement		
Julie Davenport	Areas of Critical Environmental Concern; State Office Planning		
Ikumi Doucette	State Office Planning		
Mark Foley	Lands & Access		
Allison Ginn	Contracting Officer's Representative; National Conservation Lands		
Gina Ginouves	Analysis of the Management Situation Lead		
Dan Gunn	Recreation; Wild and Scenic Rivers; Wilderness/Wilderness Study Areas/Outstanding Natural Areas; Transportation/Access; Natural Areas; Lands with Wilderness Characteristics		
Carson Grubler	Threatened and Endangered Animals; Plants; Livestock Grazing		
James Holland, (Alt)	Mineral Resources; Energy Production; Non-renewables		
Brandon Johnson	Project Lead, Planning and Environmental Coordinator		
Paul Leatherbury	Geographic Information Systems		
Cameron McQuivey	Fish and Wildlife; Threatened, Endangered or Candidate Animal Species		
Sean Peterson	Fuels/Fire Management		
John Reese	Livestock Grazing; Rangeland Health Standards; Wild Horses and Burros		
Sean Stewart	Livestock Grazing; Rangeland Health Standards; Wild Horses and Burros		
Julie Suhr-Pierce	Socioeconomics; Environmental Justice		

Name	Project Role
Alan Titus	Geology; Paleontology
Vicki Tyler	Management; Fuels/Fire Management
Erik Vernon	Air Quality
Matt Zwiefel	Cultural Resources
ICF	
Lucas Bare	Forestry
Alex Bartlett	Task Manager; Soil Resources; Vegetation
Ed Carr	Air Quality
Chris Dunne	Wild Horses; Livestock Grazing
Laura Klewicki	Water Resources
Lissa Johnson	Geographic Information Systems
John Priecko	Assistant Project Manager
Alan Rabinoff	Minerals/Geology
Kristin Salamack	Task Manager
Katie Segal	Social and Economic
Saadia Byram	Senior Lead Technical Editor
Kenneth Cherry	Senior Technical Editor
Nate Wagoner	Project Director & Management Support
Jenna Wheaton	Project Coordinator
Mikenna Wolff	Lands and Realty; Renewable Energy; Air Quality
Laura Ziemke	Project Manager
Logan Simpson Design	
Holly Ayala	Resource Assistant
Roy Baker	Geographic Information Systems
Chris Bockey	Fire and Fuels; Visual Resources
Jeremy Call	Lands with Wilderness Characteristics; Areas of Critical Environmental Concern; National Trails; Scenic Routes; Wild and Scenic Rivers; Wilderness Study Areas
Julie Capp	Fish and Wildlife; Special Status Species
William M. Graves	Cultural Resources
Kristina Kachur	Recreation; Travel Management
Erik Laurila	Cultural Resources
Kay Nicholson	Fish and Wildlife; Special Status Species
lan Tackett	Fish and Wildlife; Special Status Species
Michael Terlep	Cultural Resources
Paleo Solutions	
Paul Murphy	Paleontological Resources
Courtney Richards	Paleontological Resources

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix E

Grand Staircase-Escalante National Monument Objects and Resource Values

August 2019

Table of Contents

Presidential Proclamation 6920—Establishment of the Grand Staircase-Escalante National Monument	. E-1
Presidential Proclamation 9682 of December 4, 2017	
Grand Staircase-Escalante National Monument	
Description of Legislative Monument Boundary Modifications	
BLM Policies for National MonumentsE	E- 1 0
Objects and ValuesE	<u>:-11</u>
Grand Staircase UnitE	-11
Kaiparowits UnitE	E-12
Escalante Canyons UnitE	:- 1 5
Abbreviations-Acronyms E	E-18

Appendix E: Grand Staircase-Escalante National Monument Objects and Resource Values

Presidential Proclamation 6920—Establishment of the Grand Staircase-Escalante National Monument

September 18, 1996

By the President of the United States of America

A Proclamation

The Grand Staircase-Escalante National Monument's vast and austere landscape embraces a spectacular array of scientific and historic resources. This high, rugged, and remote region, where bold plateaus and multi-hued cliffs run for distances that defy human perspective, was the last place in the continental United States to be mapped. Even today, this unspoiled natural area remains a frontier, a quality that greatly enhances the monument's value for scientific study. The monument has a long and dignified human history: it is a place where one can see how nature shapes human endeavors in the American West, where distance and aridity have been pitted against our dreams and courage. The monument presents exemplary opportunities for geologists, paleontologists, archeologists, historians, and biologists.

The monument is a geologic treasure of clearly exposed stratigraphy and structures. The sedimentary rock layers are relatively undeformed and unobscured by vegetation, offering a clear view to understanding the processes of the earth's formation. A wide variety of formations, some in brilliant colors, have been exposed by millennia of erosion. The monument contains significant portions of a vast geologic stairway, named the Grand Staircase by pioneering geologist Clarance Dutton, which rises 5,500 feet to the rim of Bryce Canyon in an unbroken sequence of great cliffs and plateaus. The monument includes the rugged canyon country of the upper Paria Canyon system, major components of the White and Vermilion Cliffs and associated benches, and the Kaiparowits Plateau. That Plateau encompasses about 1,600 square miles of sedimentary rock and consists of successive south-to-north ascending plateaus or benches, deeply cut by steep-walled canyons. Naturally burning coal seams have scorched the tops of the Burning Hills brick-red. Another prominent geological feature of the plateau is the East Kaibab Monocline, known as the Cockscomb. The monument also includes the spectacular Circle Cliffs and part of the Waterpocket Fold, the inclusion of which completes the protection of this geologic feature begun with the establishment of Capitol Reef National Monument in 1938 (Proclamation No. 2246, 50 Stat. 1856). The monument holds many arches and natural bridges, including the 130-foot-high Escalante Natural Bridge, with a 100 foot span, and Grosvenor Arch, a rare "double arch." The upper Escalante Canyons, in the northeastern reaches of the monument, are distinctive: in addition to several major arches and natural bridges, vivid geological features are laid bare in narrow, serpentine canyons, where erosion has exposed sandstone and shale deposits in shades of red, maroon, chocolate, tan, gray, and white. Such diverse objects make the monument outstanding for purposes of geologic study.

The monument includes world class paleontological sites. The Circle Cliffs reveal remarkable specimens of petrified wood, such as large unbroken logs exceeding 30 feet in length. The thickness, continuity and broad temporal distribution of the Kaiparowits Plateau's stratigraphy provide significant opportunities to study the paleontology of the late Cretaceous Era. Extremely significant fossils, including marine and brackish water mollusks, turtles, crocodilians, lizards, dinosaurs, fishes, and mammals, have been recovered from the Dakota, Tropic Shale and Wahweap Formations, and the Tibbet Canyon, Smoky Hollow and John Henry members of the Straight Cliffs Formation. Within the monument, these formations have produced the only evidence in our hemisphere of terrestrial vertebrate fauna, including mammals, of the Cenomanian-Santonian ages. This sequence of rocks, including the overlaying Wahweap and Kaiparowits formations, contains one of the best and most continuous records of Late Cretaceous terrestrial life in the world.

Archeological inventories carried out to date show extensive use of places within the monument by ancient Native American culture. The area was a contact point for the Anasazi and Fremont cultures, and the evidence of this mingling provides a significant opportunity for archeological study. The cultural resources discovered so far in the monument are outstanding in their variety of cultural affiliation, type and distribution. Hundreds of recorded sites

include rock art panels, occupation sites, campsites and granaries. Many more undocumented sites that exist within the monument are of significant scientific and historic value worthy of preservation for future study.

The monument is rich in human history. In addition to occupations by the Anasazi and Fremont cultures, the area has been used by modern tribal groups, including the Southern Paiute and Navajo. John Wesley Powell's expedition did initial mapping and scientific field work in the area in 1872. Early Mormon pioneers left many historic objects, including trails, inscriptions, ghost towns such as the Old Paria townsite, rock houses, and cowboy line camps, and built and traversed the renowned Hole-in-the-Rock Trail as part of their epic colonization efforts. Sixty miles of the Trail lie within the monument, as does Dance Hall Rock, used by intrepid Mormon pioneers and now a National Historic Site.

Spanning five life zones from low-lying desert to coniferous forest, with scarce and scattered water sources, the monument is an outstanding biological resource. Remoteness, limited travel corridors and low visitation have all helped to preserve intact the monument's important ecological values. The blending of warm and cold desert floras, along with the high number of endemic species, place this area in the heart of perhaps the richest floristic region in the Intermountain West. It contains an abundance of unique, isolated communities such as hanging gardens, tinajas, and rock crevice, canyon bottom, and dunal pocket communities, which have provided refugia for many ancient plant species for millennia. Geologic uplift with minimal deformation and subsequent downcutting by streams have exposed large expanses of a variety of geologic strata, each with unique physical and chemical characteristics. These strata are the parent material for a spectacular array of unusual and diverse soils that support many different vegetative communities and numerous types of endemic plants and their pollinators. This presents an extraordinary opportunity to study plant speciation and community dynamics independent of climatic variables. The monument contains an extraordinary number of areas of relict vegetation, many of which have existed since the Pleistocene, where natural processes continue unaltered by man. These include relict grasslands, of which No Mans Mesa is an outstanding example, and pinon-juniper communities containing trees up to 1,400 years old. As witnesses to the past, these relict areas establish a baseline against which to measure changes in community dynamics and biogeochemical cycles in areas impacted by human activity. Most of the ecological communities contained in the monument have low resistance to, and slow recovery from, disturbance. Fragile cryptobiotic crusts, themselves of significant biological interest, play a critical role throughout the monument, stabilizing the highly erodible desert soils and providing nutrients to plants. An abundance of pack rat middens provides insight into the vegetation and climate of the past 25,000 years and furnishes context for studies of evolution and climate change. The wildlife of the monument is characterized by a diversity of species. The monument varies greatly in elevation and topography and is in a climatic zone where northern and southern habitat species intermingle. Mountain lion, bear, and desert bighorn sheep roam the monument. Over 200 species of birds, including bald eagles and peregrine falcons, are found within the area. Wildlife, including neotropical birds, concentrate around the Paria and Escalante Rivers and other riparian corridors within the monument.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431) authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

Now, Therefore, I, William J. Clinton, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), do proclaim that there are hereby set apart and reserved as the Grand Staircase-Escalante National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the document entitled "Grand Staircase-Escalante National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 1.7 million acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from entry, location, selection, sale, leasing, or other disposition under the public land laws, other than by exchange that furthers the protective purposes of the monument. Lands and interests in lands not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States.

The establishment of this monument is subject to valid existing rights.

Nothing in this proclamation shall be deemed to diminish the responsibility and authority of the State of Utah for management of fish and wildlife, including regulation of hunting and fishing, on Federal lands within the monument.

Nothing in this proclamation shall be deemed to affect existing permits or leases for, or levels of, livestock grazing on Federal lands within the monument; existing grazing uses shall continue to be governed by applicable laws and regulations other than this proclamation.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

The Secretary of the Interior shall manage the monument through the Bureau of Land Management, pursuant to applicable legal authorities, to implement the purposes of this proclamation. The Secretary of the Interior shall prepare, within 3 years of this date, a management plan for this monument, and shall promulgate such regulations for its management as he deems appropriate. This proclamation does not reserve water as a matter of Federal law. I direct the Secretary to address in the management plan the extent to which water is necessary for the proper care and management of the objects of this monument and the extent to which further action may be necessary pursuant to Federal or State law to assure the availability of water.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

In Witness Whereof, I have hereunto set my hand this eighteenth day of September, in the year of our Lord nineteen hundred and ninety-six, and of the Independence of the United States of America the two hundred and twenty-first.

WILLIAM J. CLINTON

William Telimon

Presidential Proclamation 9682 of December 4, 2017

Modifying the Grand Staircase-Escalante National Monument

By the President of the United States of America

A Proclamation

In Proclamation 6920 of September 18, 1996, and exercising his authority under the Act of June 8, 1906 (34 Stat. 225) (the "Antiquities Act"), President William J. Clinton established the Grand Staircase-Escalante National Monument in the State of Utah, reserving approximately 1.7 million acres of Federal lands for the care and management of objects of historic and scientific interest identified therein. The monument is managed by the Department of the Interior's Bureau of Land Management (BLM). This proclamation makes certain modifications to the monument.

Proclamation 6920 identifies a long list of objects of historic or scientific interest within the boundaries of the monument. In the 20 years since the designation, the BLM and academic researchers have studied the monument to better understand the geology, paleontology, archeology, history, and biology of the area.

The Antiquities Act requires that any reservation of land as part of a monument be confined to the smallest area compatible with the proper care and management of the objects of historic or scientific interest to be protected. Determining the appropriate protective area involves examination of a number of factors, including the uniqueness and nature of the objects, the nature of the needed protection, and the protection provided by other laws.

Proclamation 6920 identifies the monument area as rich with paleontological sites and fossils, including marine and brackish water mollusks, turtles, crocodilians, lizards, dinosaurs, fishes, and mammals, as well as terrestrial vertebrate fauna, including mammals, of the Cenomanian-Santonian ages, and one of the most continuous records of Late Cretaceous terrestrial life in the world. Nearly 2 decades of intense study of the monument has provided a better understanding of the areas with the highest concentrations of fossil resources and the best opportunities to discover previously unknown species. While formations like the Wahweap and Kaiparowits occur only in southern Utah and provide an important record of Late Cretaceous fossils, others like the Chinle and Morrison formations occur throughout the Colorado Plateau. The modified monument boundaries take into account this new information and, as described in more detail below, retain the majority of the high-potential areas for locating new fossil resources that have been identified within the area reserved by Proclamation 6920.

Proclamation 6920 also identifies a number of unique geological formations and landscape features within the monument boundaries. These include the Grand Staircase, White Cliffs, Vermilion Cliffs, Kaiparowits Plateau, Upper Paria Canyon System, Upper Escalante Canyons, Burning Hills, Circle Cliffs, East Kaibab Monocline, Grosvenor Arch, and Escalante Natural Bridge, all of which are retained in whole or part within the revised monument boundaries. The Waterpocket Fold, however, is located mostly within the Capitol Reef National Park and the portions within the monument are not unique or particularly scientifically significant. Therefore, the boundaries of the monument may be modified to exclude the Waterpocket Fold without imperiling the proper care and management of that formation. The more general landscape features discussed in the proclamation, such as serpentine canyons, arches, and natural bridges, are common across the Colorado Plateau both within and outside of the modified boundaries of the monument described below.

Archeological and historic objects identified within the monument are more generally discussed in Proclamation 6920, which specifically identifies only the Hole-in-the-Rock Trail, the Paria Townsite, and Dance Hall Rock as objects of historic or scientific interest, all 3 of which will remain within the revised monument boundaries, although a portion of the Hole-in-the-Rock Trail will be excluded. Proclamation 6920 also describes Fremont and Ancestral Puebloan rock art panels, occupation sites, campsites, and granaries, as well as historic objects such as those left behind by Mormon pioneers, including trails, inscriptions, ghost towns, rock houses, and cowboy line camps. These are artifacts that are known to generally occur across the Four Corners region, particularly in southern Utah, and the examples found within the monument are not, as described, of any unique or distinctive scientific or historic significance. In light of the prevalence of similar objects throughout the region, the existing boundaries of the monument are not "the smallest area compatible with the proper care" of these objects, and they may be excluded from the monument's boundaries. Further, many of these objects or examples of these objects are retained within the modified boundaries described below.

Finally, with respect to the animal and plant species, Proclamation 6920 characterizes the area as one of the richest floristic regions in the Intermountain West, but it identifies only a few specific species as objects of scientific or

historic interest. The revised boundaries contain the majority of habitat types originally protected by Proclamation 6920.

Thus, many of the objects identified by Proclamation 6920 are not unique to the monument, and some of the particular examples of those objects within the monument are not of significant historic or scientific interest. Moreover, many of the objects identified by Proclamation 6920 are not under threat of damage or destruction such that they require a reservation of land to protect them; in fact, many are already subject to Federal protection under existing law and agency management designations. The BLM manages nearly 900,000 acres of lands within the existing monument as Wilderness Study Areas, which the BLM is already required by law to manage so as not to impair the suitability of such areas for future congressional designation as Wilderness.

A host of laws enacted after the Antiquities Act provide specific protection for archaeological, historic, cultural, paleontological, and plant and animal resources and give authority to the BLM to condition permitted activities on Federal lands, whether within or outside a monument. These laws include the Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa– 470mm, National Historic Preservation Act, 54 U.S.C. 300101 et seq., Bald and Golden Eagle Protection Act, 16 U.S.C. 668–668d, Endangered Species Act of 1973, 16 U.S.C. 1531 et seq., Federal Cave Resources Protection Act of 1988, 16 U.S.C. 4301 et seq., Federal Land Policy and Management Act of 1976, 43 U.S.C. 1701 et seq., Migratory Bird Treaty Act, 16 U.S.C. 703–712, Native American Graves Protection and Repatriation Act of 1976, 25 U.S.C. 3001 et seq., and Paleontological Resources Preservation Act, 16 U.S.C. 470aaa–470aaa–11. Of particular note, the Paleontological Resources Preservation Act, enacted in 2009, imposes criminal penalties for unauthorized excavation, removal, damage, alteration, or defacement of paleontological resources. Federal land management agencies can grant permits authorizing excavation or removal, but only when undertaken for the purpose of furthering paleontological knowledge. The Archaeological Resources Protection Act contains very similar provisions protecting archeological resources. And the Migratory Bird Treaty Act and Endangered Species Act protect migratory birds and listed endangered and threatened species and their habitats.

Especially in light of the research conducted since designation, I find that the current boundaries of the Grand Staircase-Escalante National Monument established by Proclamation 6920 are greater than the smallest area compatible with the protection of the objects for which lands were reserved and, therefore, that the boundaries of the monument should be reduced to 3 areas: Grand Staircase, Kaiparowits, and Escalante Canyons. These revisions will ensure that the monument is no larger than necessary for the proper care and management of the objects.

The Grand Staircase area is named for one of the iconic landscapes in the American West. An unbroken sequence of cliffs and plateaus, considered to be the most colorful exposed geologic section in the world, has inspired wonder in visitors since the days of early western explorers.

The White Cliffs that rise more than 1,500 feet from the desert floor are the hardened remains of the largest sand sea that ever existed. The deep red Vermilion Cliffs, once the eastern shore of the ancient Lake Dixie, contain a rich fossil record from the Late Triassic period to the early Jurassic period, including petrified wood, fish, dinosaur, and other reptilian bones. Fossil footprints are also common, including those at the Flag Point tracksite, which includes dinosaur fossil tracks adjacent to a Native American rock art panel depicting dinosaur tracks. This area also contains a number of relict vegetative communities occurring on isolated mesa tops, an example of which, No Mans Mesa, was identified in Proclamation 6920.

The archaeology of the Grand Staircase area is dominated by sites constructed by the Virgin Branch of the Ancestral Puebloans—ancient horticulturalists and farmers who subsisted largely on corn, beans, and squash, and occupied the area from nearly 2000 B.C.E. to about 1250 C.E. The landscape was also the home of some of the earliest corn-related agriculture in the Southwest, and it continues to hold remnants of these early farmsteads and small pueblos. The evidence of this history, including remnants of the beginning of agriculture, development of prehistoric farming systems, and the final abandonment of the area, is concentrated in the lower levels of the Grand Staircase. The higher cliffs, benches, and plateaus hold evidence of occupation by Archaic and Late Prehistoric people, including Clovis and other projectile points and residential pit structures that indicate occupation by hunter-gatherers starting about 13,000 years ago.

The Kaiparowits area is dominated by a dissected mesa that rises thousands of feet above the surrounding terrain. These vast, rugged badlands are characterized by towering cliffs and escarpments that expose tiers of fossil-rich formations.

In addition to striking scenery, the area is world-renowned for rich fossil resources, including 16 species that have been found nowhere else. The plateau is considered one of the best, most continuous records of Late Cretaceous life in the world. It includes fossils of mollusks, reptiles, dinosaurs, fishes, and mammals, as well as the only evidence in

our hemisphere of terrestrial vertebrate fauna from the Cenomanian through Santonian ages. Since 2000, nearly 4,000 new fossil sites have been documented on the plateau. The Dakota, Tropic Shale, Wahweap, and Kaiparowits formations in the area have been found to contain numerous important fossils, including those of early mammals and reptiles (Dakota); marine reptiles, including 5 species of plesiosaur and North America's oldest mosasaur (Tropic Shale); and multiple new species of dinosaurs (Wahweap and Kaiparowits), including the Diabloceratops eatoni, a relative of the Triceratops named for its devil-like horns, and the Lythronax argestes, whose name means "Gore King of the Southwest."

The Kaiparowits area also includes objects of geologic interest, which Proclamation 6920 identified. The rugged canyons and natural arches of the Upper Paria River expose the colorful and varied Carmel and Entrada formations that draw visitors to the area. One of the most famous arches, Grosvenor Arch, is a rare double arch that towers more than 150 feet above the desert floor. The area also contains "hydrothermal-collapse" pipes and dikes that have revealed to researchers a fascinating story of a geologic catastrophe triggered by either a massive earthquake or an asteroid impact.

The western side of the Kaiparowits area includes the majority of the East Kaibab Monocline, which features an erosional "hogback" known as the "Cockscomb," as well as broad exposures of multicolored rocks and intricate canyons. It is considered one of the true scenic and geologic wonders of the area. On the east side of the plateau, the scorched earth of the Burning Hills is a geologic curiosity: a vast underground coal seam that some researchers believe has been burning for eons, sending acrid smoke up through vents in the ground and turning the hillsides brick red. Finally, along the eastern edge of the Kaiparowits Plateau is a series of oddly shaped arches and other rock formations known as the Devil's Garden.

The Kaiparowits area also contains a unique record of human history. The overall archaeology of the Kaiparowits Plateau is dominated by Archaic and Late Prehistoric era sites. There are, however, a few important sites that tell the story of occupation first by the Fremont, who came from an area to the east, and later by Virgin and Kayenta Ancestral Puebloans. These sites show new types of architecture and pottery that mixed traditional Fremont and Ancestral Puebloan styles. Prehistoric cliff structures in parts of the Kaiparowits Plateau are well preserved and provide researchers and visitors an opportunity to better understand the apparently peaceful mixture of 3 cultures starting in the early 1100s. In particular, the Fifty-Mile Mountain area contains hundreds of cultural resource sites, including Ancestral Puebloan habitations, granaries, and masonry structures.

Historical use of the Kaiparowits area plays a very important part in the rich ranching history of southern Utah, which is evidenced by a complex pattern of roads, stock trails, line shacks, attempted farmsteads, and small mining operations. Fifty-Mile Mountain, in particular, contains a number of historic cabins, as well as other evidence of pioneer living, including ruins, rip-gut fences, and historic trails. It is believed that Zane Grey used the Fifty-Mile Mountain area as a landscape reference point when he wrote "Wild Horse Mesa." There are also a number of historic signature panels across the plateau that document continued grazing and ranching use of the landscape by multiple generations of the same families.

To the east of Fifty-Mile Mountain in the Escalante Desert, Dance Hall Rock stands out as an important landmark of Mormon pioneers. While the Hole-in-the-Rock Trail was under construction in 1879, Mormon pioneers camped in this area and held meetings and dances here. Similarly, as described above, the old Paria Townsite is an important ghost town within the Kaiparowits area, as it served as the only town and post office site within the area at the turn of the 20th century.

The Escalante Canyons area likewise contains objects of significance. The canyonlands of the area provide a fantastic display of geologic activities and erosional forces that, over millions of years, created a network of deep, narrow canyons, high plateaus, sheer cliffs, and beautiful sandstone arches and natural bridges, including the 130-foot-tall Escalante Natural Bridge. Additionally, this area boasts Calf Creek Canyon, a canyon of red alcoved walls with expanses of white slickrock that is named for its use as a natural cattle pen at the end of the 19th century.

To the east of the Canyonlands, Circle Cliffs is a breached anticline with spectacular painted-desert scenery, the result of exposed sedimentary rocks of the Triassic Chinle and Moenkopi formations. The Circle Cliffs area also contains large, unbroken petrified logs up to 30 feet in length. A nearly complete articulated skeleton of Poposauras—a rare bipedal crocodilian fossil—was also found here.

The Escalante Canyons area also contains a high density of Fremont prehistoric sites, including pithouses, villages, storage cysts, and rock art. The canyon of the Escalante River and its tributary canyons contain one of the highest densities of rock art sites in southwestern Utah outside of Capitol Reef National Park, with sites dating from the

Archaic to the Historic periods. The Hundred Hands rock art panel is located in the river canyon, and is spiritually significant to all tribes that claim ancestry in the area.

There are also significant historic sites in this area related to grazing and ranching, along with the Boulder Mail Trail, which was used to ferry mail between the small desert outpost towns of Escalante and Boulder beginning in 1902. Today, much of the trail is still visible, and it has become popular with backpackers.

The areas described above are the smallest compatible with the proper care and management of the objects to be protected. The Grand Staircase-Escalante National Monument, as modified by this proclamation, will maintain and protect those objects and preserve the area's cultural, scientific, and historic legacy.

WHEREAS, Proclamation 6920 of September 18, 1996, established the Grand Staircase-Escalante National Monument in the State of Utah and reserved approximately 1.7 million acres of Federal lands for the care and management of the objects of historic and scientific interest identified therein; and

WHEREAS, many of the objects identified by Proclamation 6920 are otherwise protected by Federal law; and

WHEREAS, it is in the public interest to modify the boundary of the monument to exclude from its designation and reservation approximately 861,974 acres of land that I find are no longer necessary for the proper care and management of the objects to be protected within the monument; and

WHEREAS, the boundaries of the monument reservation should therefore be reduced to the smallest area compatible with the protection of the objects of scientific or historic interest, as described above in this proclamation;

NOW, THEREFORE, I, DONALD J. TRUMP, President of the United States of America, by the authority vested in me by section 320301 of title 54, United States Code, hereby proclaim that the boundary of the Grand Staircase-Escalante National Monument is hereby modified and reduced to those lands and interests in lands owned or controlled by the Federal Government within the boundaries described on the accompanying map, which is attached to and forms a part of this proclamation. I hereby further proclaim that the modified monument areas identified on the accompanying map shall be known as the Grand Staircase, Kaiparowits, and Escalante Canyons units of the monument. These reserved Federal lands and interests in lands cumulatively encompass approximately 1,003,863 acres. The boundaries described on the accompanying map are confined to the smallest area compatible with the proper care and management of the objects to be protected. Any lands reserved by Proclamation 6920 not within the boundaries identified on the accompanying map are hereby excluded from the monument. At 9:00 a.m., eastern standard time, on the date that is 60 days after the date of this proclamation, subject to valid existing rights, the provisions of existing withdrawals, and the requirements of applicable law, the public lands excluded from the monument reservation shall be open to:

- (1) entry, location, selection, sale or other disposition under the public land laws:
- (2) disposition under all laws relating to mineral and geothermal leasing; and
- (3) location, entry, and patent under the mining laws.

Appropriation of lands under the mining laws before the date and time of restoration is unauthorized. Any such attempted appropriation, including attempted adverse possession under 30 U.S.C. 38, shall vest no rights against the United States. Acts required to establish a location and to initiate a right of possession are governed by State law where not in conflict with Federal law.

Nothing in this proclamation shall be construed to revoke, modify, or affect any withdrawal, reservation, or appropriation, other than the one created by Proclamation 6920.

Nothing in this proclamation shall change the management of the areas designated and reserved by Proclamation 6920 that remain part of the monument in accordance with the terms of this proclamation, except as provided by the following 5 paragraphs:

Paragraph 14 of Proclamation 6920 is updated and clarified to require that the Secretary of the Interior (Secretary) prepare and maintain a management plan for each of the 3 units of the monument with maximum public involvement including, but not limited to, consultation with federally recognized tribes and State and local governments. The Secretary, through the BLM, shall also consult with other Federal land management agencies in the local area in developing the management plans.

Proclamation 6920 is amended to provide that the Secretary shall maintain one or more advisory committees under the Federal Advisory Committee Act (5 U.S.C. App.) to provide information and advice regarding the development of the above-described management plans, and, as appropriate, management of the monument. Any advisory committee maintained shall consist of a fair and balanced representation of interested stakeholders, including State and local governments, tribes, recreational users, local business owners, and private landowners.

Proclamation 6920 is clarified to provide that, consistent with protection of the objects identified above and other applicable law, the Secretary may allow motorized and non-mechanized vehicle use on roads and trails existing immediately before the issuance of Proclamation 6920 and maintain roads and trails for such use.

Paragraph 12 of Proclamation 6920 governing livestock grazing in the monument is hereby modified to read as follows: "Nothing in this proclamation shall be deemed to affect authorizations for livestock grazing, or administration thereof, on Federal lands within the monument. Livestock grazing within the monument shall continue to be governed by laws and regulations other than this proclamation."

Proclamation 6920 is amended to clarify that, consistent with the care and management of the objects identified above, the Secretary may authorize ecological restoration and active vegetation management activities in the monument.

If any provision of this proclamation, including its application to a particular parcel of land, is held to be invalid, the remainder of this proclamation and its application to other parcels of land shall not be affected thereby.

IN WITNESS WHEREOF, I have hereunto set my hand this fourth day of December, in the year of our Lord two thousand seventeen, and of the Independence of the United States of America the two hundred and forty-second.

Grand Staircase-Escalante National Monument

The Antiquities Act of 1906 grants the President authority to designate national monuments to protect "objects of historic or scientific interest." Since 1906, Presidents and Congress have designated more than 125 national monuments, 27 of which are maintained by the Bureau of Land Management (BLM). Since 1911, the Antiquities Act has also been used at least 18 times by Presidents to reduce the size of 16 national monuments to the smallest area compatible with protection of the objects. Objects identified in the Presidential Proclamation or enabling legislation, "objects of antiquity," and "objects of historic or scientific interest" may include cultural artifacts or features, historic structures, paleontological or geological features, specific plant or animal species or habitats, and other resources. The BLM has generally interpreted objects as discrete physical items. A national monument may also have less tangible values, such as provision of opportunities for research. The BLM is required to manage monuments for the proper care and management of the objects of historic and scientific interest for which they were designated. While not unlimited, courts have affirmed the BLM's discretion to determine which items listed in a Presidential Proclamation are the actual objects to be protected. The BLM has not established a process or policy on identification of monument objects; however, under standard agency practice, interdisciplinary teams analyze the Presidential Proclamation and determine the objects, usually as part of a land use planning process or in advance of an analysis under the National Environmental Policy Act.

On September 18, 1996, President William J. Clinton signed Presidential Proclamation 6920 establishing the 1.7 million-acre Grand Staircase-Escalante National Monument (GSENM). On April 26, 2017, President Donald Trump signed Executive Order 13792, which directed the Secretary of the Interior to review certain national monuments designated under the Antiquities Act, including GSENM, to ensure that certain monument designations were made in accordance with the requirements and original objectives of the act and appropriately balance the protection of landmarks, structures, and objects against the use of Federal lands and the effects on surrounding lands and communities.

Following completion of the monument review process, on December 4, 2017, President Trump signed Presidential Proclamation 9682 modifying the boundaries of GSENM to ensure that the monument boundaries were the smallest area compatible with proper care and management of the objects to be protected in accordance with the requirements of the Antiquities Act. The President also identified three separate monument units within GSENM, known as the Grand Staircase, Kaiparowits, and Escalante Canyons Units.

This document contains a summary of the scientific and historic objects within the Grand Staircase, Kaiparowits, and Escalante Canyons Units of GSENM.

Description of Legislative Monument Boundary Modifications

In May 1998, Secretary of the Interior Babbitt and Utah Governor Leavitt negotiated a land exchange to transfer all School and Institutional Trust Lands Administration lands within the original GSENM to the Federal government, as well as the trust lands in the National Forests, National Parks, and Indian Reservations in Utah. On October 31, 1998, President Clinton signed the Utah Schools and Lands Exchange Act (Public Law 105-335), which legislated this exchange. The Utah Schools and Lands Exchange Act resulted in the addition of 176,699 acres

of School and Institutional Trust Lands Administration lands and 24,000 acres of mineral interest to GSENM.

On October 31, 1998, President Clinton also signed Public Law 105-355. Section 201 of this law adjusted the boundary of GSENM by including certain lands (a 1-mile-wide strip north of Church Wells and Big Water) and excluding certain other lands around the communities of Henrieville, Cannonville, Tropic, and Boulder. This law resulted in the addition of approximately 5,546 acres to GSENM.

In 2009, Public Law 111-11, Section 2604 codified a boundary change and purchase for Turnabout Ranch, removing approximately 25 acres from GSENM.

On December 4, 2017, Presidential Proclamation 9682 modified GSENM, dividing it into three units and resulting in the exclusion of 861,974 acres from the boundaries. The modified monument encompasses approximately 1,003,863 acres. The Grand Staircase, Kaiparowits, and Escalante Canyons Units are reserved for the care and management of the objects of historic and scientific interest.

BLM Policies for National Monuments

The BLM's monuments are managed as part of the National Landscape Conservation System, whose mission is to conserve, protect, and restore nationally significant landscapes recognized by the President or Congress for their outstanding ecological, cultural, or scientific resources and values.

According to BLM policy (Manual 6220) and Federal court precedent, the Federal Land Policy and Management Act mandates the BLM to manage public lands for multiple use, and sustained yield includes managing specially designated public lands for the purposes for which they were designated.

The BLM's objective in managing a national monument is to:

- A. Comply with the Presidential Proclamations by conserving, protecting, and restoring the objects and values for which the monument was designated for the benefit of present and future generations.
- B. Effectively manage valid existing rights and compatible uses within a monument.
- C. Manage discretionary uses within a monument to ensure the protection of the objects and values for which the monument was designated.
- D. Utilize science, local knowledge, partnerships, and volunteers to effectively manage a monument.
- E. Provide appropriate recreational opportunities, education, interpretation, and visitor services to enhance the public's understanding and enjoyment of a monument.

The BLM is also required to inventory and monitor the objects and values for which a monument was designated. Identification of the location and extent of such objects and values is critically important, as the BLM must ensure the compatibility of any uses within a monument with protection of objects and values.

Objects and Values

A summary of identified objects within the Grand Staircase, Kaiparowits, and Escalante Canyons Units of GSENM are provided below.

Grand Staircase Unit

The Grand Staircase Unit is named for one of the iconic landscapes in the American West. An unbroken sequence of cliffs and plateaus, considered to be the most colorful exposed geologic section in the world, has inspired wonder in visitors since the days of early western explorers.

Archaeological, Historic, and Cultural Resources

Archaeological resources within Grand Staircase Unit encompass both prehistoric and historic sites. Prehistoric sites range in age from the Archaic period to the Late Prehistoric, but are dominated by sites associated with the Virgin Branch of Ancestral Puebloans. Among the variety of sites are abundant rock art panels, occupation sites, ceremonial sites, and countless other sites and artifacts. Historic sites include inscriptions, trails, townsites, and cowboy line shacks.

Objects

General objects

- Small pueblos
- · Clovis and other projectile points
- Residential pit structures
- Historic trails and roads
- Cowboy line shacks
- Early farmsteads
- Rock houses
- Abandoned townsites

Specific cultural, archaeological, and historic objects identified in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682 include:

- Sites constructed by the Virgin Branch of the Ancestral Puebloans
- Tribal rock art panel depicting dinosaur tracks
- Old Paria townsite and movie set

Geological Features and Landscapes

The geological features of Grand Staircase Unit are vast and austere, and include scenic panoramic views and the colorful "Grand Staircase," the high, rugged, and remote region where bold plateaus and multi-hued cliffs run for distances that defy human perspective.

Objects

Specific objects identified in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682 include:

- White Cliffs
- . The Vermilion, White, and Pink Cliffs, which contain Triassic, Jurassic, and Cretaceous formations
- Numerous unnamed arches and natural bridges
- · Petrified wood deposits
- Kaiparowits Plateau (portions that extend onto the Grand Staircase Unit)

Paleontological Resources

Many trace and skeletal fossils are found in the early Mesozoic formations of the area that record the early breakup of the supercontinent Pangea and the rise of the dinosaurs.

Objects

Specific objects identified in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682 include:

- Flag Point dinosaur tracks
- Late Triassic to Early Jurassic petrified wood, fish, dinosaur, and other reptilian bones and trackways
- Triassic vertebrate fossils in the Chinle Formation

Biological and Ecological Resources and Processes

The Grand Staircase Unit is home to two major riparian areas, the Paria River and Johnson's Creek. It is also home of the famous Paunsaugunt deer herd. The unit contains numerous relict and fragile plant communities and hosts threatened, endangered, and sensitive species.

Objects

General objects

- Diversity of unique vegetation communities
- Unique relict plant community of pinyon-juniper and sagebrush-grass vegetation assemblages
- High concentration of isolated communities: hanging gardens, tinajas, canyon bottom, dunal pockets, salt-pocket, and rock crevice communities
- Cryptobiotic soil crusts
- High abundance of packrat middens

Specific objects identified in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682 include:

- Paria River riparian corridor and associated wildlife including neo-tropical birds
- Upper Paria Watershed
 - o No Man's Mesa

Kaiparowits Unit

The Kaiparowits Unit is dominated by a dissected mesa that rises thousands of feet above the surrounding terrain. These vast, rugged badlands are characterized by towering cliffs and escarpments that expose tiers of fossil-rich formations. In addition to striking scenery, the area is world-renowned for rich fossil resources, including at least 16 species of dinosaurs that have been found nowhere else. The Kaiparowits Plateau is considered to hold one of the best, most continuous records of Late Cretaceous terrestrial life in the world.

Archaeological, Historic, and Cultural Resources

Archaeological resources within the Kaiparowits Unit encompass a wide range of sites, prehistoric and historic structures, rock art panels, ancient cliff dwellings, ceremonial sites, and countless other sites and artifacts. The overall archaeology of the Kaiparowits Unit is dominated by Archaic and Late Prehistoric era sites. The area was first occupied by the Fremont, followed by the Virgin and Kayenta Ancestral Puebloans. Hundreds of documented sites and over 8,000 years of prehistory are represented.

Objects

General objects

- Archaic era sites
- Late Prehistoric era sites
- Prehistoric cliff structures
- Cultural resource sites
- Ancestral Puebloan habitations
- Granaries
- Masonry structures
- Historic roads
- Stock trails
- Cowboy line shacks
- Attempted farmsteads
- Small mining operations
- Historic cabins
- Ruins
- · Rip-gut fences
- Historic trails
- Historical signature panels

Specific cultural, archaeological, and historic objects identified in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682 include:

- Old Paria townsite and movie set
- Dance Hall Rock
- Fiftymile Mountain archaeological district area, containing Ancestral Puebloan habitations, granaries, and masonry structures as well as a number of historic cabins, ruins, rip-gut fences, and historic trails

Geological Features and Landscapes

The geological features of Kaiparowits Units are unique and widespread throughout the Kaiparowits Plateau, including the East Kaibab Monocline in addition to hoodoos, natural arches, and other sandstone formations.

Objects

General objects

- Gray Cliffs
- Kaiparowits Badlands (The Blues)
- Straight Cliffs escarpment
- Rugged canyons, arches, and natural bridges
- "Hydrothermal-collapse" pipes and dikes that reveal a geologic catastrophe triggered by either a massive earthquake or an asteroid impact
- Upper Paria River Carmel and Entrada formations
- . Twenty-four undeveloped springs and six developed springs

Specific objects identified in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682 include:

- Petrified wood deposits
- The Cockscomb (erosional hogback) forms two parallel knife-edged ridges with a bisected V-shaped trough. Flatirons, small monoliths, and other colorful formations are present on the west ridge.
- Grosvenor Arch a double arch towering over 150 feet
- Fiftymile Mountain
- Devil's Garden oddly shaped arches and rock formations
- Burning Hills naturally occurring underground coal fires have turned steep and rugged exposed hilltops a distinctive red. The red coloration in the landscape is the result of geological changes attributed to the naturally occurring coal fires.

Paleontological Resources

The Kaiparowits Unit contains the richest fossil deposits in the entire region. It includes fossils of plants (including petrified wood), mollusks and other invertebrates, trace fossils, fishes, diverse reptiles, dinosaurs, and mammals, as well as some of the only evidence in our hemisphere of terrestrial vertebrate life from the Cenomanian through Santonian ages. The Kaiparowits Unit is of interest in understanding the evolution of dinosaurs, mammals and other terrestrial vertebrates. It contains unique evidence bearing on the early diversification of important mammalian groups of the Late Cretaceous. The thickness, continuity, and broad temporal distribution of the Kaiparowits sequence provides the opportunity to document changes in terrestrial vertebrate assemblages over a wide span of Late Cretaceous time. The fossil resources of the region are of global significance to researchers.

Objects

- Gray Cliffs a sequence of rocks that may contain one of the best and most continuous records of Late Cretaceous terrestrial life in the world
- Extremely significant fossils including marine and brackish water mollusks, turtles, crocodilians, lizards, dinosaurs, fishes, and mammals have been recovered from the Naturita (formerly Dakota) formation, Tropic Shale, Straight Cliffs Formation, Wahweap Formation, and Kaiparowits Formation.
 - Tropic Shale contains marine reptiles, including five species of plesiosaur and North America's oldest mosasaur.
 - Straight Cliffs Formation contains rare mammal and reptile (including dinosaur) fossils.
 - Wahweap and Kaiparowits formations

Biological and Ecological Resources and Processes

The elevation gradient and juxtaposition of different ecosystems and substrates supports a broad diversity of plants, animals, communities, and ecosystems. The unit contains the largest number of Mexican spotted owl protected activity centers and stands of ponderosa pines. There are several threatened, endangered, or sensitive species.

Objects

General objects

- Intact ecological values
- Diversity of unique vegetation communities
- Isolated relict vegetation communities
- Elevational gradients
- Hanging gardens, tinajas, canyon bottom, dunal pockets, salt-pocket, and rock crevice communities
- Cryptobiotic soil crusts

Specific objects identified in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682 include:

- Large number of endemic plant species
- Extremely old (1,400 years) pinyon and juniper trees
- Cockscomb hogback including high diversity of both general and endemic flora
- Fiftymile Mountain
- Wahweap special status species
- Burning Hills high density of nesting raptors
- Upper Paria River riparian corridor and associated biotic resources, including neo-tropical birds

Escalante Canyons Unit

The Escalante Canyons Unit contains a variety of objects of significance. The canyonlands of the area provide a fantastic display of geologic activities and erosional forces that, over millions of years, created a network of deep, narrow canyons, high plateaus, sheer cliffs, and beautiful sandstone arches and natural bridges. The unit contains a high density of Fremont prehistoric sites, including pithouses, villages, storage cists, and rock art panels. The unit also contains the largest amount of perennial water of the three units, providing for a wider diversity of plant and animal life.

Archaeological, Historic, and Cultural Resources

Archaeological resources within the Escalante Canyon Unit include numerous sites and several historic features. This unit contains artifacts from pioneer Mormon exploration, early homesteading, and use by the Virgin and Kayenta Ancestral Puebloans and Fremont cultures, as well as a Paleoarchaic and Late Prehistoric presence.

Objects

General objects

- Pithouses
- Villages
- Storage cists
- Rock art
- Archaic period sites
- Historic sites

Specific objects identified in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682 include:

- Hundred Hands Rock Art Panel
- Boulder Mail Trail
- Escalante River Canyon rock art sites
- Escalante Canyons known and recorded cultural sites

Geological Features and Landscapes

The geological features of the Escalante Canyons Unit are vast and rugged, including sheer cliffs, benches, entrenched canyons with perennial water, waterfalls, and significantly colorful features. These features are of outstanding scenic quality and attract large volumes of visitors.

Objects

General objects

- White Canyon cuts through the Kaibab Limestone to the Coconino Sandstone, the oldest stratum in the Upper Escalante drainage.
- Perennial streams enter entrenched canyons in white Navajo and deep-red Wingate Sandstone.
- Other deep narrow canyons, high plateaus, sheer cliffs, sandstone arches, and natural bridges
 Specific objects
- Escalante Natural Bridge
- Calf Creek Canyon is characterized by red alcoved walls, two waterfalls, and extensive expanses of white slickrock.
- Circle Cliffs contains large, unbroken logs of petrified wood
- Escalante River and its tributary canyons contain one of the highest densities of rock art sites.
- Circle Cliffs –inward-facing walls of sandstone that rim an oval depression; a breached anticline with spectacular painted desert scenery. It also contains large, unbroken petrified logs.

Paleontological Resources

The Circle Cliffs area contains large exposures of the highly fossiliferous Chinle Formation, which contains an important Late Triassic Age terrestrial fossil record that includes plants, invertebrates, reptiles, and tracks.

Objects

General objects

Terrestrial fossils in the Chinle Formation

Specific objects identified in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682 include:

Poposaurus specimen from north of the Wolverine Trailhead area.

Biological and Ecological Resources and Processes

The Escalante Canyons Unit encompasses a large portion of the Escalante River watershed and supports native fish; threatened, endangered, and sensitive plant and animal species; and gallery cottonwood riparian corridors. The unit has premier visitor destinations, which have the potential to affect some of the biological and ecological resources and processes.

Objects

General objects

- Intact ecological values
- Diversity of unique and endemic vegetation communities
- Isolated relict vegetation communities
- Elevational gradients
- Hanging gardens, tinajas, canyon bottom, dunal pockets, salt-pocket, and rock crevice communities
- Cryptobiotic soil crusts

Specific objects identified in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682 include:

Contains many different geologic substrates (and, therefore, soils with different physical and chemical
attributes) in a small area. The majority of endemic species in Utah are found on these particular
substrates; consequently, this area is expected to have a high concentration of endemic species.

Abbreviations-Acronyms

Term	Definition
BLM	Bureau of Land Management
GSENM	Grand Staircase-Escalante National Monument

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix F

Laws, Regulations, Policies, and Guidance

August 2019

Table of Contents

Introduction	F-1
Federal, State, and Local Laws, Regulations, and Policies that Apply to All Resonand Resource Uses	
Federal Laws, Regulations, Statutes, and Orders	F-1
State Laws, Regulations, and Policies	F-3
Memoranda	F-3
Local Laws, Regulations, and Policies	F-3
Federal, State, and Local Laws, Regulations, and Policies that Apply to Specific Resources and Resource Uses	F-4
Air Resources	F-4
Cultural Resources	F-5
Fish, Wildlife, and Special Status Species	F-7
Lands with Wilderness Characteristics	F-9
Paleontology	F-9
Soil and Water	F-10
Vegetation and Fire and Fuels	F-11
Visual Resources	F-14
Wild Horses	F-14
Forestry and Woodland Products	F-15
Lands and Realty and Renewable Energy	F-15
Livestock Grazing	F-1 8
Minerals	F-20
Recreation	F-20
Transportation and Access	F-21
Areas of Critical Environmental Concern	F-21
National Historic Trails	F-21
Scenic Routes	F-22
Wild and Scenic Rivers	F-22
Wilderness Study Areas	F-22
Social and Economic Conditions	F-23
Abbreviations-Acronyms	F-24

Appendix F: Laws, Regulations, Policies, and Guidance

Introduction

The foundations of public land management are in the mandates and authorities provided in statutes, regulations, and executive orders. These statements of law and policy direct the Bureau of Management (BLM) concerning management of public lands and resources. The United States Congress has acknowledged that the appropriate use of these resources requires proper planning. The sections below identify Federal, State, and local laws, regulations, and policies that apply to all resources and resource uses considered in the BLM land use planning process as well as those that apply to specific resources and resource uses.

Federal, State, and Local Laws, Regulations, and Policies that Apply to All Resources and Resource Uses

Federal Laws, Regulations, Statutes, and Orders

The BLM planning process (as described at 43 Code of Federal Regulations [CFR] 1600) is authorized and mandated by the Federal Land Policy and Management Act of 1976 (FLPMA) and performed in accordance with the National Environmental Policy Act of 1969 (NEPA).

Federal Land Policy and Management Act of 1976

FLPMA states that the BLM "shall, with public involvement...develop, maintain, and when appropriate, revise land use plans" (43 United States Code [U.S.C.] 35 1712(a)). In addition to Federal direction for planning, FLPMA declares the policy of the United States concerning the management of federally owned BLM-administered surface lands. Key to this management policy is the direction that the BLM "shall manage the public lands under principles of multiple use and sustained yield, in accordance with the [developed] land use plans" (43 U.S.C. 35 1732(a)). The commitment to multiple use will not mean that all land will be open for all uses. Some uses could be excluded on some lands to protect specific resource values or uses, as directed by FLPMA (43 U.S.C. 35 1712(c)(3)). Any such exclusion, however, will be based on laws or regulations or be determined through a planning process subject to public involvement. In writing and revising Land Use Plans, FLPMA also directs the BLM to coordinate land use activities with the planning and management of other Federal departments and agencies, State and local governments, and Native American tribes. This coordination, however, is limited "to the extent [the planning and management of other organizations remains] consistent with the laws governing the administration of the public lands" (43 U.S.C. 35 1712(c)(9)).

National Environmental Policy Act of 1969

In NEPA, Congress directs "all agencies of the Federal Government...[to]...utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment" (42 U.S.C. 55 4332 (2A)). Because the development of a new Resource Management Plan (RMP) could cause impacts on the environment, NEPA regulations require the analysis and disclosure of potential environmental impacts in the form

of an environmental impact statement (EIS). The EIS will examine a range of alternatives, including a No Action Alternative, to resolve the issues in question. Alternatives should represent complete, but alternative means of satisfying the identified purpose and need of the EIS and of resolving the issues. These RMPs/EIS are being prepared using the best available existing information and in consideration of required NEPA time frames in accordance with Secretarial Order 3355 and subsequent implementing guidance.

The National Landscape Conservation System Act

The National Landscape Conservation System Act was signed into law in March 2009. The act legislatively established the National Landscape Conservation System to "conserve, protect, and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations" and identified which BLM conservation units would be included. This marked the first new congressionally authorized public lands system in decades. The Conservation System Act was included in the Omnibus Public Land Management Act of 2009, which also added 1,200,000 acres (490,000 hectares) of new designations to the system, including a national monument, three national conservation areas, wilderness, wild and scenic rivers, and national scenic trails. Omnibus Public Land Management Act of 2009, PL 111-11, March 30, 2009, 123 Stat 991.

The John D. Dingell, Jr. Conservation, Management, and Recreation Act

The John D. Dingell, Jr. Conservation, Management, and Recreation Act became law (Public Law No: 116-9) in March 2019. The law sets forth provisions regarding various programs, projects, activities, and studies for the management and conservation of natural resources on Federal lands. The bill addresses, among other matters, land conveyances, exchanges, acquisitions, withdrawals, and transfers; national parks, monuments, memorials, wilderness areas, wild and scenic rivers, historic and heritage sites, and other conservation and recreation areas; wildlife conservation; the release of certain Federal reversionary land interests; boundary adjustments; the Denali National Park and Preserve natural gas pipeline; fees for medical services in units of the National Park System; funding for the Land and Water Conservation Fund; recreational activities on Federal or nonfederal lands; and Federal reclamation projects.

Other

Other laws, regulations, policies, and orders that support the BLM planning process include:

- Presidential Proclamation 6920 (1996)—Original Presidential Proclamation establishing
 Grand Staircase-Escalante National Monument and identifying monument objects
- Presidential Proclamation 9682 (2017)—Presidential Proclamation modifying the boundaries of Grand Staircase-Escalante National Monument, including the identification of three monument units
- 23 CFR 460—Public Road Mileage for Apportionment of Highway Safety Funds
- 43 CFR 1000–9999 contains the Federal regulations for the BLM
- 40 CFR 1500-1508 contains Council on Environmental Quality NEPA regulations
- U.S. Department of the Interior (DOI) Departmental Manual Part 516, Chapter 11, contains NEPA guidance for the BLM
- BLM Handbook H-1790-1 provides NEPA guidance
- BLM Handbook H-1601-1 contains land use planning guidance

- Executive Order 13807 "Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects"
- Secretarial Order 3355 Streamlining National Environmental Policy Act Reviews and Implementation of Executive Order 13807 "Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects"
- Deputy Secretary Memorandum Additional Direction for Implementing Secretarial Order 3355
- Zion National Park General Management Plan (2001)
- Bryce Canyon National Park Fire Management Plan and Environmental Assessment/Assessment of Effects (2004)
- Public Law 93–112, Rehabilitation Act of 1973
- Public Law 111-11, Establishment of the National Landscape Conservation System (NLCS)
- Public Law 105-335, Utah School and Land Exchange Act of 1998
- BLM Manual 6220, National Monuments, National Conservation Areas and Similar Designations

State Laws, Regulations, and Policies

- Utah Code Sections 63j-4-401 establish State planning policies in relation to management of Federal land
- Scenic Byway 12 Corridor Management Plan (2001)
- State Comprehensive Outdoor Recreation Plan (2003)
- Utah Comprehensive Wildlife Conservation Strategy (2005)
- Coral Pink Sand Dunes State Park General Management Plan (2005)
- Utah's Water Resources: Planning for the Future, Utah Division of Water Resources (2001)

Memoranda

- Master Memorandum of Understanding (MOU) with the United States Fish and Wildlife Service (USFWS), December 1986
- State Protocol Agreement Between the Utah State Director of the BLM and the Utah State
 Historic Preservation Office (SHPO) and the Programmatic Agreement Among the BLM, the
 Advisory Council on Historic Preservation, and the National Conference of SHPOs
- Interagency MOU between the DOI-BLM and the United States Department of Agriculture (USDA) in 1995 (60F26045-48)
- Supplement No. 1 to an MOU between the Utah State Offices of the National Park Service (NPS) and the BLM dated September 26, 1973

Local Laws, Regulations, and Policies

- Garfield County RMP (2017)
- Garfield County Comprehensive Plan 2030 (Adopted November 2010, last amended November 2013)
- Garfield County General Management Plan (August 2017)
- Garfield County Economic Development Plan (2007)
- Kane County RMP (2017)
- Kane County 2040 Plan (adopted May 2012)
- Kane County 2030 Land RMP (March 2011)

- Kane County General Plan (2013) and General Plan Amendment (2017)
- St. George Field Office RMP

Federal, State, and Local Laws, Regulations, and Policies that Apply to Specific Resources and Resource Uses

Air Resources

The BLM does not have direct authority to regulate air resources in the Planning Area. The U.S. Congress designated the Environmental Protection Agency (EPA) as the regulatory entity for air resources under a framework of environmental laws. EPA may also delegate regulatory authority to States, tribes, and local agencies. As a Federal agency, the BLM is required to work cooperatively with EPA and the delegated State agency in planning resource development to ensure that applicable air quality standards and regulations are met on public lands.

Federal Laws, Regulations, Statutes, and Orders

- The Clean Air Act, as amended (1990), 42 U.S.C. 7418, requires Federal agencies to comply
 with all Federal, State, and local requirements regarding the control and abatement of air
 pollution. This includes abiding by the requirements of State Implementation Plans. The
 following sections of the act apply to this planning process:
 - Applicable National Ambient Air Quality Standards (Section 109)
 - State Implementation Plans (Section 110)
 - Control of Pollution from Federal Facilities (Section 118)
 - Prevention of Significant Deterioration (PSD), including visibility impacts on mandatory
 Federal Class I Areas (Section 160 et. seq.)
 - Conformity Analyses and Determinations (Section 176(c))
- Executive Order 12088, Federal Compliance with Pollution Control Standards
- National Emission Standards for Hazardous Air Pollutants (40 CFR 61)
- Regional Haze Rule (40 CFR 51)
- Regional Haze Regulation (64 Federal Register 35714, July 1, 1999)

Policies

DOI Departmental Manual (910 DM 1.3)

State Laws and Regulations

- Utah Code, Title 19, Chapter 2, Air Conservation Act
- Utah Air Conservation Rule R307-406 (Visibility)
- Utah Air Conservation Rule R307-401-6 (Conditions for Ordering and Approval Order)
- Utah Air Conservation Rule R307-405-6 and R307-405-7 (PSD Increments and Ceilings)
- Utah Air Conservation Rule R307-405-6 (PSD Areas New Sources and Modifications)
- Utah Air Conservation Rule R307-410-3 (Modeling of Criteria Pollutants in Attainment Areas)
- Utah Air Conservation Rule R307-410-4 and R307-410-5 (Documentation of Ambient Air Impacts for Hazardous Air Pollutants)
- Utah Air Conservation Rule R307-205-5 (Emission Standards for Fugitive Dust)
- Utah Air Conservation Rule R307-205-6 (Emission Standards for Roads)

Cultural Resources

- The Antiquities Act of 1906, 16 U.S.C. 431–433, provides guidance for protecting cultural resources on Federal lands and authorizes the President to designate national monuments on Federal lands.
- The Historic Sites Act of 1935, 16 U.S.C. 461–467, established a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States.
- The National Historic Preservation Act of 1966, as amended, 54 U.S.C. 306108, directs agencies to consider the effects of proposed actions on properties eligible for or included on the National Register of Historic Places (NRHP). An "historic property" is any district, building, structure, site, or object that is eligible for listing on the NRHP because the property is significant at the national, State, or local level in American history, in its architecture, archaeology, engineering, or culture (36 CFR 60.4). In some cases, such properties can be eligible because of historical importance to Native Americans, including traditional religious and cultural importance. National Historic Preservation Act Section 110 (54 U.S.C. 306102) requires each Federal agency to establish an affirmative program to identify, evaluate, protect, and preserve historic properties in consultation with others.
- NEPA establishes national policy for protection and enhancement of the human environment. Part of the function of the Federal Government, as stated in the act, is to "preserve important ... cultural ... aspects of our national heritage and maintain whenever possible an environment which supports diversity and variety of individual choice" (42 U.S.C. 4331(b)4).
- FLPMA requires coordination with Indian tribes, and with other Federal agencies and State
 and local governments, in the preparation and maintenance of an inventory of the public
 lands and their various resource and other values as well as in the development and
 maintenance of long-range plans providing for use management of the public lands.
- The American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996, establishes a
 national policy to protect and preserve the right of American Indians to exercise traditional
 Indian religious beliefs or practices including, but not limited to, access to religious sites.
 Agencies are to avoid unnecessary interference with traditional tribal spiritual practices. In
 addition, compliance requires consultation with tribes when land uses might conflict with
 Indian religious beliefs or practices.
- The Archaeological Resources Protection Act of 1979, 16 U.S.C. 470, as amended, defines
 and provides for the protection of archaeological resources on Federal lands, irrespective of
 their eligibility for listing on the NRHP, establishes a permit system for resources more than
 100 years old, and requires agencies to provide for public education and continuing
 inventory of Federal lands.
- The Native American Graves Protection and Repatriation Act of 1990, 25 U.S.C. 3001, establishes rights to Indian tribes and Native Hawaiians to claim ownership for the repatriation of human remains, and also funerary, sacred, and other objects, controlled by Federal agencies and museums. Agency discoveries of such human remains and associated cultural items during land use activities require consultation with appropriate tribes to determine ownership and disposition.

- Executive Order 11593 (Protection and enhancement of the cultural environment; 36 Federal Register 8921, May 15, 1971) directs Federal agencies to inventory public lands and to nominate eligible properties to the NRHP.
- Executive Order 13007 (Indian Sacred Sites; 61 Federal Register 26771, May 29, 1996)
 does not explicitly create any new right for Indian tribes, but does require Federal agencies
 to the extent practicable, permitted by law, and not clearly inconsistent with essential
 agency functions, to accommodate access to and ceremonial use of Indian sacred sites by
 Indian religious practitioners; avoid adversely affecting the physical integrity of such sacred
 sites; and maintain the confidentiality of sacred sites.
- Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments; 65
 Federal Register 67249, November 9, 2000) provides, in part, that each Federal agency
 shall establish regular and meaningful consultation and collaboration with Indian tribal
 governments in the development of regulatory practices on Federal matters that
 significantly or uniquely affect their communities.
- Executive Order 13287 (Preserve America; 68 Federal Register 10635, March 5, 2003)
 directs Federal agencies to provide leadership in preserving America's heritage by actively
 advancing the protection, enhancement, and contemporary use of historic properties
 managed by the Federal Government; by promoting intergovernmental cooperation and
 partnerships for the preservation and use of historic properties; and by establishing agency
 accountability for inventory and stewardship.
- Secretarial Order 3206 (American Indian Tribal Rights, Federal-Tribal Trust
 Responsibilities, and the Endangered Species Act) requires DOI agencies to consult with
 Indian Tribes when agency actions to protect a listed species, as a result of compliance with
 the Endangered Species Act (ESA), affect or could affect Indian lands, tribal trust resources,
 or the exercise of American Indian tribal rights.
- The Tribal Forest Protection Act of 2004 (Public Law 108-278) provides a tool for tribes to
 propose work and enter into contracts and agreement with the United States Forest Service
 (USFS) or the BLM to reduce threats from catastrophic events that originate on Federal
 lands adjacent to Indian trust land and Indian communities.
- 36 CFR 60 and 63 discuss the NRHP and eligibility criteria for listing properties.
- 36 CFR 68 describes the Secretary of the Interior's standards for the treatment of historic properties.
- 36 CFR 800 outlines the National Historic Preservation Act Section 106 (54 U.S.C. 306108) process for protecting historic properties.
- 43 CFR 3 discusses the preservation of American antiquities under the Antiquities Act of 1906.
- 43 CFR 7 implements the preservation of archaeological resources under the Archaeological Resources Protection Act of 1979.
- 43 CFR 10 discusses requirements for implementing the Native American Graves Protection and Repatriation Act.

 BLM Manual 8100 Series: Cultural Resources Management provides basic information and general summary guidance for the BLM cultural resource management program. The series includes 8110 (Identifying Cultural Resources); 8120 (Tribal Consultation under Cultural

- Resource Authorities); 8130 (Planning for Uses of Cultural Resources); and 8140 (Protecting Cultural Resources).
- BLM Manual 1780, Tribal Relations, and Handbook 1780-1, Improving and Sustaining Tribal Relations
- The 1997 rangeland programmatic Memorandum of Agreement (MOA) among the BLM,
 the Advisory Council on Historic Preservation, and the National Conference of SHPOs

Local Laws, Regulations, and Policies

- Garfield County Cultural Resource Protection Ordinance 2013-1
- Resolution 2013-2 Recognizing the Cultural/Historic Value of Grazing and Placing the Escalante Historic/Cultural Grazing Region on the County Register of Cultural and Historic Resources

Fish, Wildlife, and Special Status Species

- Sikes Act of 1974, Title II (16 U.S.C. 670g et seq.), as amended: This act directs the
 Secretaries of Interior and Agriculture, in cooperation with the State agencies, to develop,
 maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish,
 and game species. Such conservation and rehabilitation programs shall include, but are not
 limited to, specific habitat improvement projects and related activities, and adequate
 protection for species considered threatened or endangered.
- The Migratory Bird Conservation Act of 1929, as amended (16 U.S.C. 715 et seq.): This act establishes Federal responsibility to protect international migratory birds and authorizes the Secretary of the Interior, through USFWS, to regulate hunting of migratory birds.
- The Migratory Bird Treaty Act of 1918, as amended: This act makes it unlawful for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations.
- The ESA (16 U.S.C. 1531 et seq.), as amended, directs the BLM to conserve threatened and
 endangered species and the ecosystems upon which they depend, and not contribute to the
 need to list a species. Provisions of the ESA, as amended, apply to plants and animals that
 have been listed as endangered or threatened, those proposed for being listed, and
 designated and proposed critical habitat.
- The Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668–668d, 54 Stat. 250, as amended), prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The act provides for criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."
- Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.)
- International Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711)
- FLPMA (43 U.S.C. 1701–1785)
- Fish and Wildlife Act of 1956 (16 U.S.C. 742a et seq.)
- Fish and Wildlife Conservation Act of 1980 (16 U.S.C. 2901–2911)
- Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712)

- Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. 528–531)
- Public Rangeland Improvement Act of 1978 (43 U.S.C. 1901–1908)
- Executive Order 13186 (Responsibilities of Federal Agencies To Protect Migratory Birds; 66
 Federal Register 3853, January 17, 2001)
- Secretarial Order 3362, Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors

- BLM Manual Section 6840.06 (Sensitive Species Policy): It is BLM policy to undertake conservation measures for sensitive species. As established in BLM Manual 6840.06, "the BLM shall designate BLM sensitive species and implement measures to conserve these species and their habitats, including ESA proposed critical habitat, to promote their conservation and reduce the likelihood and need for such species to be listed pursuant to the ESA." The sensitive species designation is normally used for species that occur on BLM-administered surface lands for which the BLM has the capability to significantly affect the conservation status of the species through management.
- Record of Decision and Approved Resource Management Plan Amendments for the Great Basin Region, Including the Greater Sage-Grouse Sub-Regions of Idaho and Southwestern Montana, Nevada and Northeastern California, Oregon, Utah, 2015, identifies and incorporates appropriate measures into existing land use plans to conserve, enhance, and restore greater sage-grouse habitat by avoiding, minimizing, or compensating for unavoidable impacts on greater sage-grouse habitat in the context of the BLM's multiple use and sustained yield mission under FLPMA.
- BLM Manual 1745, Introduction, Transplant, Augmentation, and Reestablishment of Fish,
 Wildlife, and Plants, requires use of native species unless specific conditions are met to augment, translocate, or introduce populations of desirable, nonnative species.
- BLM Handbook 1740-2, Integrated Vegetation Management, guides implementation of vegetation management planning and treatment activities to achieve the objectives set forth for the update manual, 1740 Renewable Resource Improvements and Treatments.
- IM No. 2016-013, Managing for Pollinators on Public Lands, provides direction for implementation of the 2015 Federal Strategy to Promote the Health of Honey Bees and Other Pollinators.
- National Strategy to Promote the Health of Honey Bees and Other Pollinators of 2015 outlines a comprehensive approach to tackling and reducing the impact of multiple stressors on pollinator health.

Memoranda

- USFWS and the BLM signed an MOU in April 2010 that outlines a collaborative approach to promote the conservation of migratory bird populations.
- Plant Conservation Alliance's National Seed Strategy for Rehabilitation and Restoration in 2015 (BLM/WO/GI-15/012+7400) provides a framework for actively working with the private sector in order to build a "seed industry" for rehabilitation and restoration.

Local Laws, Regulations, and Policies

Garfield County's Wildlife Habitat Zone Ordinance

Lands with Wilderness Characteristics

Federal Laws and Policies

 Section 201 of FLPMA requires the BLM to maintain on a continuing basis an inventory of all public lands and their resources and other values, which includes wilderness characteristics.

Paleontology

Federal Laws and Policies

- FLPMA (Public Law 94-579) requires that the public lands be managed in a manner that
 protects the quality of scientific and other values. The act also requires the public lands to
 be inventoried and provides that permits may be required for the use, occupancy, and
 development of the public lands.
- NEPA (Public Law 91-190) requires that "important historic, cultural and natural aspects of our national heritage" be protected, and that "a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences ... in planning and decision making" be followed.
- Archaeological Resources Protection Act of 1979, as amended (16 U.S.C. 470bb(1))
- Omnibus Public Land Management Act of 2009, Public Law 111-011, Title VI, Subtitle D on Paleontological Resources Preservation (123 Stat. 1172; 16 U.S.C. 470aaa) requires the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on Federal land using scientific principles and expertise.
- 43 CFR 8365 addresses the collection of invertebrate fossils and, by administrative extension, fossil plants.
- 43 CFR 3622 addresses the free use collection of petrified wood as mineral materials for non-commercial purposes.
- 43 CFR 3621 addresses collection of petrified wood for specimens exceeding 250 pounds in weight.
- 43 CFR 3610 addresses the sale of petrified wood as mineral materials for commercial purposes.
- 43 CFR 3802 and 3809 address protection of paleontological resources from operations authorized under the mining laws.
- 43 CFR 8200 addresses procedures and practices for the management of lands that have outstanding natural history values, such as fossils, that are of scientific interest.
- 43 CFR 1610.7-2 addresses the establishment of Areas of Critical Environmental Concern (ACECs) for the management and protection of significant natural resources, such as paleontological localities.
- 43 CFR 8364 addresses the use of closure or restriction of public lands to protect resources. Such closures or restrictions may be used to protect important fossil localities.
- 43 CFR 8365.1-5 addresses the willful disturbance, removal, and destruction of scientific resources or natural objects, and 8360.0-7 identifies the penalties for such violations.
- 36 CFR 62 addresses procedures to identify, designate, and recognize national natural landmarks, which includes fossil areas.
- 18 U.S.C. 641 addresses the unauthorized collection of fossils as a type of government property.

- Secretarial Order 3104 grants the BLM the authority to issue paleontological resource use permits for lands under its jurisdiction.
- Onshore Oil and Gas Order No. 1 and 43 CFR 3162 provide for the protection of natural resources and other environmental concerns, and is used to protect paleontological resources where appropriate.
- Federal Cave Resources Protection Act of 1988 (Public Law 100-691) and 43 CFR 37 address protection of significant caves and cave resources, including paleontological resources.

 BLM Manual Part 8270 and Handbook H-8270-1 provide uniform policy and direction for the BLM Paleontological Resource Management Program. The objective of the program is to provide a consistent and comprehensive approach in all aspects relating to the management of paleontological resources, including identification, evaluation, protection, and use.

Soil and Water

Federal Laws, Regulations, Statutes, and Orders

- Soil and Water Resources Conservation Act of 1977 (16 U.S.C. 2001)
- Soil Conservation and Domestic Allotment Act of 1935, as amended
- Executive Order 11988, as amended by Executive Order 12148, Floodplain Management
- The Clean Water Act, as amended, 33 U.S.C. 1251, establishes objectives to restore and maintain the chemical, physical, and biological integrity of the Nation's water.
- The Federal Water Pollution Control Act, 33 U.S.C. 1323, requires the Federal land manager
 to comply with all Federal, State, and local requirements regarding the control and
 abatement of water pollution in the same manner and to the same extent as any
 nongovernmental entity.
- The Safe Drinking Water Act, 42 U.S.C. 201, is designed to make the Nation's waters "drinkable" as well as "swimmable." Amendments establish a direct connection between safe drinking water, watershed protection, and management.
- Colorado River Basin Salinity Control Act of 1974 (Public Law 93-320)
- Water Resources Development Act of 1974 (Public Law 93-251)
- Water Resources Planning Act of 1965 (Public Law 89-79, as amended)
- Water Resources Research Act of 1954, as amended (42 U.S.C. 10301 et seq.)
- Watershed Protection and Flood Control Act of 1954, as amended through Public Law 106-580
- EPA Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act
- Executive Order 11507 (Prevention, control, and abatement of air and water pollution at Federal facilities; 35 Federal Register 2573, February 5, 1970)
- Executive Order 11752 (Prevention, control, and abatement of environmental pollution at Federal facilities; 38 Federal Register 34793, December 19, 1973)

State Laws and Regulations

Utah Code, Title 73, Water and Irrigation

- Utah Administrative Rule R309-605, Drinking Water Source Protection for Ground-Water Sources
- Utah Administrative Rule R317-2, Standards of Quality for Waters of the State
- Utah Administrative Rule R317-6, Ground Water Quality Protection
- Utah Administrative Rule R317-8, Utah Pollution Discharge Elimination System
- Utah Administrative Rule R68-8, Utah Seed Law
- Utah Nonpoint Source Pollution Management Plan
- Utah Nonpoint Source Management Plan for Hydrologic Modifications
- Utah Nonpoint Source Management Plan for Silviculture Activities

- The U.S. Water Resource Council published Floodplain Guidelines on February 10, 1978 (43
 Federal Register 6030), after being directed to establish guidelines for floodplain
 management and preservation.
- The Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management (65 Federal Register 62565, October 18, 2000)

Vegetation and Fire and Fuels

- Executive Order 13112 (Invasive Species; 64 Federal Register 6183, February 8, 1999) provides that no Federal agency shall authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk or harm will be taken in conjunction with the actions.
- The Carlson-Foley Act (Public Law 90-583; 43 U.S.C. 1241) establishes legal guidance and responsibility for the management of weeds on Federal lands. This law authorizes Federal agencies to allow States to take measures to control weeds on Federal lands.
- Federal Noxious Weed Act of 1974 (7 U.S.C. 2814)
- Executive Order 11987 (Exotic Organisms; 42 Federal Register 26949, May 25, 1977)
- The Protection Act of September 20, 1922 (42 Stat. 857; 16 U.S.C. 594) authorizes the Secretary of the Interior to protect and preserve from fire, disease, or the ravages of beetles or other insects timber owned by the United States upon the public lands, national parks, national monuments, Indian reservations, or other lands under DOI jurisdiction.
- The Clark-McNary Act of 1928 (45 Stat. 221; 16 U.S.C. 487) authorized technical and financial assistance to the States for forest fire control and for production and distribution of forest tree seedlings (Sections 1 through 4 were repealed by the Cooperative Forestry Assistance Act of 1978).
- The Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66; 42 U.S.C. 1856, 1856a) authorizes agencies that provide fire protection for any property of the United States to enter into reciprocal agreements with other firefighting organizations to provide mutual aid for fire protection.

- The Clean Air Act of July 14, 1955, as amended (42 U.S.C. 7401 et seq.), provides for the
 protection and enhancement of the Nation's air resources and applies to the application
 and management of prescribed fire.
- The Federal Fire Prevention and Control Act of October 29, 1974 (88 Stat. 1535; 15 U.S.C. 2201) authorizes reimbursement to State and local fire services for costs incurred in firefighting on Federal property.
- The Forest and Rangeland Renewable Resources Planning Act of August 17, 1974, as amended through Public Law 106-580
- The Supplemental Appropriation Act of September 10, 1982 (96 Stat. 837) authorized the Secretary of Agriculture and Secretary of the Interior to enter into contracts with State and local governmental entities, including local fire districts, for procurement of services in the preparedness, detection, and suppression of fires on any units within their jurisdiction.
- The Wildfire Suppression Assistance Act of April 7, 1989 (Public Law 100-428, as amended by Public Law 101-11, April 7, 1989; 42 U.S.C. 1856) authorizes the Secretary of Agriculture to enter into agreements with firefighting organizations of foreign countries for assistance in wildfire protection.
- The Healthy Forest Restoration Act, December 2003 (Public Law 108-148) was crafted to reduce the threat of destructive wildfires while upholding environmental standards and encouraging early public input during review and planning processes.
- Secretarial Order 3336, Rangeland Fire Prevention, Management, and Restoration (2015)
- Secretarial Order 3372, Reducing Wildfire Risks on Department of the Interior Land Through Active Management
- MS-9211 & H-9211-1, BLM Fire Planning Manual & Handbook, provide requirements for Fire Management Planning, including in Land Use Plans, NEPA analyses, and Fire Management Plans.

State Laws and Regulations

- The Utah Noxious Weed Act (Utah Administrative Code, Rule R68-9)
- Utah Air Conservation Rule R307-204, Smoke Management

Policies

- The 2017 Wildland Fire Directive encourages aggressive fuels reduction and presuppression techniques to prevent and combat the spread of uncharacteristic wildfires.
- Guidance for Implementation of Federal Wildland Fire Management Policy (February, 2009) serves to advise and guide implementation of the Review and Update of the 1995 Federal Wildland Fire Management Policy (2001).
- DOI Departmental Manual (910 DM 1.3)
- DOI Departmental Manual Part 620 (Wildland Fire Management), Chapter 1, (General Policy and Procedures)
- Review and Update of the 1995 Federal Wildland Fire Management Policy (2001)
- Interagency Standards for Fire and Fire Aviation Operations: As amended annually, describes policy and operations for all fire-related activities of DOI and USDA.
- BLM Manual Section 9212, Fire Prevention (1992): It is the policy of the BLM to take all
 necessary actions to protect human life, the public lands, and the resources and
 improvements thereon through the prevention of wildfires.

- BLM Manual Section 1742, Emergency Fire Rehabilitation, and BLM Handbook 1742
 provide guidance for emergency fire rehabilitation, including measures to prevent
 accelerated soil erosion, prevent the establishment of noxious and/or invasive plant
 species, and implement post-fire management of restoration areas. Fireline rehabilitation
 would include restoration of surface contours and closure to vehicles.
- BLM Manual Section 9214, Prescribed Fire Management (1988), and BLM Handbook 9214 (2000) describe the authority and policy for prescribed fire use on BLM-administered surface lands.
- BLM Manual 1740 and BLM Manual Handbook H-1740-1 provide guidance and procedures for management and treatment of renewable resources, including utilization of management-prescribed fire and emergency fire rehabilitation.
- A Report to the President in Response to the Wildfires of 2000 (September 2000),
 "Managing the Impacts of Wildfires on Communities and the Environment"
- A Collaborative Approach for Reducing Wildland Fire Risk to Communities and the
 Environment: 10-Year Comprehensive Strategy: This document provides a foundation for
 wildland agencies to work closely with all levels of government, tribes, and conservation,
 commodity, and community-based restoration groups to reduce wildland fire risk to
 communities and the environment. It also provides a suite of core principles and four goals.
 The core principles include the concepts of collaboration, priority setting, and
 accountability.
- Restoring Fire Adapted Ecosystems on Federal Lands: A Cohesive Strategy for Protecting
 People and sustaining Natural Resources, February 2002: The primary goal is to coordinate
 an aggressive, collaborative approach to reduce the threat of wildland fire to communities
 and to restore and maintain land health.
- Healthy Forests: An Initiative for Wildfire Prevention and Stronger Communities, August 2002: The Healthy Forest Initiative implements core components of A Collaborative Approach for Reducing Wildland Fire Risk to Communities and the Environment: 10-Year Comprehensive Strategy and Implementation Plan. This historic plan, which was adopted by Federal agencies and western governors in collaboration with county commissioners, State foresters, and tribal officials, calls for protecting communities and the environment through local collaboration on thinning, planned burns, and forest restoration projects. The initiative complements the National Fire Plan by reducing unnecessary regulatory obstacles and allowing more effective and timely actions.
- BLM Manual 1745, Introduction, Transplant, Augmentation, and Reestablishment of Fish,
 Wildlife, and Plants, requires use of native species unless specific conditions are met to augment, translocate, or introduce populations of desirable, nonnative species.
- BLM Handbook 1740-2, Integrated Vegetation Management, guides implementation of vegetation management planning and treatment activities to achieve the objectives set forth for the update manual, 1740 Renewable Resource Improvements and Treatments.
- IM No. 2016-013, Managing for Pollinators on Public Lands, provides direction for implementation of the 2015 Federal Strategy to Promote the Health of Honey Bees and Other Pollinators.
- National Strategy to Promote the Health of Honey Bees and Other Pollinators of 2015 outlines a comprehensive approach to tackling and reducing the impact of multiple stressors on pollinator health.

State Laws and Regulations

- Utah Administrative Code, Rule R317: Utah regulations concerning water quality
- Utah Administrative Code, Rule R307: Utah regulations concerning air quality
- Natural Hazard Mitigation Plan: 5-Year Plan 2010–2014

Memoranda

- MOU between the BLM and the Animal and Plant Health Inspection Service Addressing the Management of Grasshoppers and Mormon Crickets
- Plant Conservation Alliance's National Seed Strategy for Rehabilitation and Restoration in 2015 (BLM/WO/GI-15/012+7400) provides a framework for actively working with the private sector in order to build a "seed industry" for rehabilitation and restoration.

Other

- State of Utah Catastrophic Wildfire Reduction Strategy: This strategy and guidance
 document describes a cooperative strategy to reduce the size, intensity, and frequency of
 catastrophic wildland fires in Utah.
- Utah Division of Forestry, Forest Action Plan (2016): The Forest Action Plan provides a comprehensive analysis of the forest-related conditions, trends, threats, and opportunities within Utah and will be used to guide the division's planning efforts and project work.
- A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the
 Environment, 10-Year Comprehensive Strategy: Implementation Plan: This plan outlined a
 comprehensive approach for the management of wildland fire, hazardous fuels, and
 ecosystem restoration and rehabilitation on Federal and adjacent State, tribal, and private
 forest and rangelands in the United States, emphasizing measures to reduce the risk to
 communities and the environment.
- National Academy of Public Administration: Federal Fire Management: Limited Progress in Restarting the Prescribed Fire Program (GAO/RCED-91-42), December 5, 1990: The report reiterated that fire is beneficial and even necessary to wildlands. Where fire has been a historic component of the environment, it is essential to continue that influence, and attempts to exclude fire from such lands could result in unnatural ecological changes and increased risks created by accumulation of fuels on the forest floor. The report supported the use of prescribed burns to achieve management objectives, when the risks of such burns have been analyzed.
- Southern Utah Support Area Fire Management Plan, 2005

Visual Resources

Federal Laws, Regulations, Statutes, and Orders

 BLM Manual Section 8400 (Visual Resource Management) dictates policy and procedures for the Visual Resource Management system, and outlines procedures for the inventory, evaluation, and classification of visual resources on BLM-administered surface lands.

Wild Horses

- Public Law 92-195 (Wild Free Roaming Horse and Burro Act of 1971, as amended)
- Public Law 95-514 (Public Rangelands Improvement Act of 1978)

- Public Law 108-447 (Fiscal Year 2005 Omnibus Appropriations Act Division E, Section 142)
- 43 CFR 4700 (Protection, Management, and Control of Wild Free-Roaming Horses and Burros)

Memoranda

- MOU, BLM Cedar City, BLM Richfield Respective Area of Responsibility, signed January 2, 1981
- MOU between USDA, the State of Utah, the BLM Utah State Office, DOI, and USFS, Region 4,
 Wild and Free-Roaming Horse Responsibilities

Other

- Sulphur Wild Horse Herd Management Area Plan
- North Hills Wild Horse Management Plan
- Bible Springs, Blawn Wash, Four Mile, and Tilly Creek Wild Horse Appropriate Management Level Assessment
- Frisco Wild Horse Herd Management Area Plan

Forestry and Woodland Products

Federal Laws, Regulations, Statutes, and Orders

- The Healthy Forests Initiative
- The Healthy Forests Restoration Act of 2003 (Public Law 108-148)
- Omnibus Appropriations Bill of 2003 (Public Law 108-7) section 323 (Stewardship Contracting)
- Tribal Forest Protection Act (Public Law 108-27)

State Laws and Regulations

• Utah Code 78-38-4.5 through 4.8, Forest Products Transportation Act (1983): requires proof of ownership to harvest or transport forest products or native vegetation.

Memoranda

 The Forest Restoration and Community Capacity Building Partnership (2004, amended 2005) was established to jointly identify priority forest restoration needs, build community capacity to accomplish these needs, and expand the use of stewardship contracting on publicly owned lands (all ownerships) in the Great Basin and Colorado Plateau of Utah and Arizona.

Lands and Realty and Renewable Energy

- The Energy Policy Act of 2005 (Public Law 109-58) recommended that DOI strive to approve at least 10,000 megawatts of renewable energy projects on public lands by 2015.
- The Energy Independence and Security Act of 2007 (Public Law 110-140 [8]) requires the
 Department of Energy to assess methods to integrate electric power generated at utilityscale solar facilities into regional electricity transmission systems and to identify
 transmission system expansions and upgrades needed to move solar-generated electricity
 to growing electricity demand centers throughout the United States. In addition, this act

- requires Department of Energy to consider methods to reduce the amount of water consumed by concentrating solar power systems.
- The Mineral Leasing Act of 1920, as amended (30 U.S.C. 181 et seq.), contains the statutes
 that provide overall guidance to the BLM on mineral leasing, including geothermal
 development.
- Recreation and Public Purposes Act of 1926, as amended (43 U.S.C. 869 et seq.)
- Federal Highway Act of 1958 (23 U.S.C. 317)
- Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1971 (Public Law 91-646)
- Land and Water Conservation Fund Act of 1965, as amended through Public Law 88-578
- Federal Land Transaction Facilitation Act of 2000 (Public Law 106-248)
- Federal Power Act of 1920, as amended through Public Law 113-23
- The Biomass Research and Development Act of 2000, as amended through Public Law 107-293, established mechanisms for interagency coordination on biomass technologies, including the Biomass Research and Development Technical Advisory Committee and the Biomass Research and Development Board.
- Farm Bill 2014 included a number of authorizations related to renewable energy development and bioenergy.
- The Healthy Forests Restoration Act of 2003, as amended through Public Law 113-79, encouraged biomass energy production through grants and assistance to local communities, creating market incentives for removal of otherwise valueless forest material.
- The Food Conservation and Energy Act of 2008 provided grants and financial incentives for investment in renewable technologies to use agricultural and forestry crops for bioenergy.
- The Mining and Mineral Policy Act of 1970 (30 U.S.C. 21a) requires Federal agencies to encourage the development of mineral resources, including geothermal resources, on Federal lands.
- The Geothermal Steam Act of 1970 (30 U.S.C. 1019), which was amended and supplemented by the Energy Policy Act of 2005, provides statutory guidance for geothermal leasing by the BLM.
- The Advanced Geothermal Energy Research and Development Act of 2007 (42 U.S.C. 17191 et seq.) called for programs of research, development, demonstration, and commercial application to expand the use of geothermal energy production.
- Secretarial Order 3283 (January 2009) clarifies DOI roles and responsibilities to accomplish
 the goals for renewable energy development established in Section 211 of the Energy
 Policy Act of 2005.
- Secretarial Order 3285A1 (March 2009) set a goal of identifying and prioritizing specific locations best suited for large-scale production of solar energy on public lands. It requires DOI agencies and bureaus to work collaboratively to encourage development of renewable energy and associated transmission while protecting the environment, and to establish clear policy direction for authorizing the development of solar energy on public lands. On February 22, 2010, Secretarial Order 3285 was amended to clarify departmental roles and responsibilities in prioritizing development of renewable energy. The amended order is referred to as Secretarial Order 3285A1.
- Secretarial Order 3373, Evaluating Public Access in Bureau of Land Management Public Land Disposals and Exchanges

- Executive Order 13212 (66 Federal Register 28357, May 22, 2001) states that "[i]t is the policy of this Administration that executive departments and agencies (agencies) shall take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy."
- Executive Order 13514 (74 Federal Register 52117, October 5, 2009) requires that Federal
 agencies take efforts to align their policies to advance local planning efforts for energy
 development, including renewable energy, and states that agencies shall "advance regional
 and local integrated planning by...aligning Federal policies to increase the effectiveness of
 local planning for energy choices such as locally generated renewable energy."
- Executive Order 13134 (Developing and Promoting Biobased Products and Bioenergy; 64 Federal Register 44639, August 16, 1999) called for a comprehensive strategy to stimulate technologies to make biobased products and bioenergy cost-competitive in national and international markets.
- 43 CFR 2100 (Acquisitions)
- 43 CFR 2200 (Exchanges)
- 43 CFR 2300 (Withdrawals)
- 43 CFR 2400 (Land Classification)
- 43 CFR 2500 (Disposition: Occupancy and Use)
- 43 CFR 2600 (Disposition: Grants)
- 43 CFR 2700 (Disposition: Sales)
- 43 CFR 2800 (Use: Rights-of-Way)
- 43 CFR 2900 (Uses: Leases and Permits)
- 43 CFR 9230 (Trespass)

- BLM Handbook H-2100-1 (Acquisition Handbook)
- BLM Handbook H-2740-1 (Recreation and Public Purposes)
- BLM Manual Section 2200 (Land Exchange Handbook)
- BLM Manual Section 2880 (Mineral Leasing Act right-of-way)
- BLM Manual Section 2800 (FLPMA right-of-way)
- H-3809-1 (Surface Management Handbook)
- H-3600-1 (Mineral Materials Disposal Handbook)
- DOI Departmental Manual Part 603 (Land Withdrawals)
- Bureau of Land Management Energy and Mineral Policy: sets BLM policy for management of energy and mineral resources on public lands as part of the agency's multiple-use mission, including environmentally sound energy and mineral development.
- BLM Manual Section 2881, Mineral Leasing Act, provides overall guidance to the BLM on mineral leasing procedures.
- BLM Manual Section 3031, Energy and Mineral Resource Assessment, provides guidance and sets standards for gathering and analyzing information on energy and mineral resources, including geothermal resources, for land use decisions.
- BLM Manual 3060, Mineral Reports Preparation and Review, provides guidelines for preparation and review of energy and mineral resources reports.

Memoranda

- Wind Energy Protocol Between the Department of Defense and the BLM Concerning Consultation on Development of Wind Energy Projects (July 2008) is an interagency agreement between the Department of Defense and the BLM intended to improve communications and coordination between the two agencies in the review of right-of-way applications for wind energy projects that could have an adverse effect on adjacent or nearby Department of Defense Military Operational Areas or Airspace. For the Planning Area, this protocol would apply to the Utah Test and Training Range.
- MOU on Policy Principles for Woody Biomass Utilization for Restoration and Fuel
 Treatments on Forests, Woodlands, and Rangelands (2003) was signed by the departments
 of Agriculture, Energy, and the Interior and encouraged opportunities to provide a reliable
 sustainable supply of wood biomass and the sustainable development and stabilization of
 woody biomass markets.
- MOU, Implementation of Section 225 of the Energy Policy Act of 2005 Regarding Geothermal Leasing and Permitting (2006) established procedures for processing geothermal lease applications, a program to reduce the backlog of pending geothermal lease applications, and a data retrieval system for tracking lease and permit applications.

Other

- Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States
- Approved Resource Management Plan Amendments/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States adopted a comprehensive Wind Energy Development Program on BLM-administered surface lands in 11 western States, including Utah. The Record of Decision also established policies and best management practices to mitigate the impacts of wind energy projects. In addition, it amended 52 BLM land use plans to include the Wind Energy Development Program policies and best management practices. The amended plans included the Cedar-Beaver-Garfield-Antimony RMP.

Local Laws, Regulations, and Policies

Garfield County Land Use Management Ordinance

Livestock Grazing

- The Taylor Grazing Act of June 28, 1934, as amended (42 U.S.C. 315, 315a through 315r), provides direction to protect rangelands by preventing overgrazing and soil deterioration while providing for managed use and improvement, and to stabilize the livestock industry dependent upon public lands.
- FLPMA (43 U.S.C. 1701 et seq.) recognizes livestock grazing as one of the "principal or major uses" of the public lands. It directs that the public lands be managed on the basis of multiple use and sustained yield in a manner that will provide food and habitat for fish and wildlife and domestic animals while protecting the quality of other values (i.e., scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological).

- Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901 et seq.) provides policy to manage, maintain, and improve the condition of public rangelands to increase productivity in accordance with management objectives and the land use planning process.
- Grazing Administration, exclusive of Alaska (43 CFR 4100.0-2), provides uniform guidance for administration of grazing on the public lands. The objectives for grazing administration regulations are to "promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions; to promote the orderly use, improvement and development of the public lands; to establish efficient and effective administration of grazing of public rangelands; and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands."
- Fundamentals of Rangeland Health and Standards and Guidelines for Grazing
 Administration (43 CFR 4180 et seq.) defines the minimum resource conditions that must
 be achieved and maintained and the acceptable management practices to be applied to
 achieve those conditions.
- On Glen Canyon: NPS Organic Act (54 U.S.C. 101001 et seq.), 54 U.S.C. 100701 et seq., and Glen Canyon Enabling Legislation (16 U.S.C. 460dd)

- BLM Manual 1745, Introduction, Transplant, Augmentation, and Reestablishment of Fish,
 Wildlife, and Plants, requires use of native species unless specific conditions are met to augment, translocate, or introduce populations of desirable, nonnative species.
- BLM Handbook 1740-2, Integrated Vegetation Management, guides implementation of vegetation management planning and treatment activities to achieve the objectives set forth for the update manual, 1740 Renewable Resource Improvements and Treatments.
- IM No. 2016-013, Managing for Pollinators on Public Lands, provides direction for implementation of the 2015 Federal Strategy to Promote the Health of Honey Bees and Other Pollinators.
- National Strategy to Promote the Health of Honey Bees and Other Pollinators of 2015 outlines a comprehensive approach to tackling and reducing the impact of multiple stressors on pollinator health.
- On Glen Canyon: NPS Management Policies

Memoranda

- The 1997 rangeland programmatic MOA among the BLM, the Advisory Council on Historic Preservation, and the National Conference of SHPOs
- Plant Conservation Alliance's National Seed Strategy for Rehabilitation and Restoration in 2015 (BLM/WO/GI-15/012+7400) provides a framework for actively working with the private sector in order to build a "seed industry" for rehabilitation and restoration.

Local Laws, Regulations, and Policies

- Garfield County's 2017 Grazing Plan
- Garfield County's Sustainable Grazing Ordinance

Minerals

Federal Laws, Regulations, Statutes, and Orders

- Onshore Oil and Gas Orders Nos. 1, 2, and 7
- Mining Law of 1872, as amended, 30 U.S.C. 21 et seq., allows the location, use, and
 patenting of mining claims on sites on public domain lands of the United States.

 Amendments established a policy of fostering development of economically stable mining
 and minerals industries, their orderly and economical development, and studying methods
 for disposal of waste and reclamation.
- Combined Hydrocarbon Leasing Act of 1981 (Public Law 97–78)
- Energy Policy and Conservation Act, as amended (42 U.S.C. 6201)
- Federal Coal Leasing Amendments Act of 1976 (30 U.S.C. 201)
- Mineral Leasing Act of 1920, as amended (30 U.S.C. 181 et seq.)
- Materials Act of 1947, as amended (30 U.S.C. 601).
- Mining and Mineral Policy Act of 1970 (30 U.S.C. 21a)
- Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et seq.)
- Surface Resources Act of 1955 (69 Stat. 367)
- Consolidated Appropriations Act of 2019, Public Law No. 116-6, Sec. 408, 133 Stat 13 (2019)

Memoranda

- The Federal coal management programmatic MOA among the BLM, Office of Surface Mining, DOI, U.S. Geological Survey, and the Advisory Council on Historic Preservation
- National BLM/USFS MOU Concerning Oil and Gas Leasing and Operations, FS Agreement No. 06-SU-11132428-052

Recreation

- The Recreation and Public Purposes Act, as amended (43 U.S.C. 869 et seq.), authorizes
 the Secretary of the Interior to lease or convey BLM-administered surface lands for
 recreational and public purposes under specified conditions.
- Executive Order 11644 (37 Federal Register 2877, February 8, 1972), provided that off-highway vehicle (OHV) use will be controlled and managed to protect resource values, promote public safety, and minimize conflicts with uses of public lands. This Executive Order directed Federal agencies to designate specific areas and trails on public lands where OHV use may be permitted and areas where OHV use may not be permitted.
- On May 24, 1977, President Carter amended Executive Order 11644 with Executive Order 11989 (42 Federal Register 26959, May 25, 1977). This Executive Order further defined OHV administrative use exemptions, and directed agencies to immediately close areas and trails whenever the agency determines that the use of OHVs will cause or is causing considerable adverse effects on the soil, wildlife and wildlife habitat, or cultural or historic resources (42 U.S.C. 4321).
- The BLM National Management Strategy for Motorized OHV Use on Public Lands (BLM 2001) provides agency guidance and offers recommendations for future actions to improve OHV vehicle management.

State Laws and Regulations

• Utah State Comprehensive Outdoor Recreation Plan (Utah State Parks 2014)

Transportation and Access

Federal Laws, Regulations, Statutes, and Orders

- Executive Order 11644 (Use of off-road vehicles on the Public Lands; 37 Federal Register 2877, February 8, 1972)
- Executive Order 11989 (Use of off-road vehicles on the Public Lands; 42 Federal Register 26959, May 25, 1977)
- Off-Road Vehicles (43 CFR Part 8340)
- 23 CFR Part 460—Public Road Mileage for Apportionment of Highway Safety Funds
- Secretarial Order 3373, Evaluating Public Access in Bureau of Land Management Public Land Disposals and Exchanges

Policies

- BLM Manual Section 1626 (Travel and Transportation)
- BLM Handbook H-8342-1 (Travel and Transportation)
- BLM Manual Section 9100 Series (Engineering)

Local Laws, Regulations, and Policies

 Emergency Resolution for Roads on Federal Lands in Garfield County from January 25, 2016

Areas of Critical Environmental Concern

Federal Laws, Regulations, Statutes, and Orders

- FLPMA section 103, 201, and 202 (43 U.S.C. 1712(c)(3))
- 43 CFR 1610.7-2

Policies

 BLM Manual Section 1613: requires the BLM to consider ACECs during the land use planning process.

National Historic Trails

- The National Trails System Act of 1968 (Public Law 90-543; 16 U.S.C. 1241 et seq., as amended through Public Law 107-325, December 4, 2002) established a National Trails System to promote preservation of, public access to, travel within, and enjoyment of the open-air, outdoor areas and historic resources of the Nation. The act designated initial trail system components and established methods and standards for adding additional components.
- The Old Spanish Trail Recognition Act of 2002 (Public Law 107–325, December 4, 2002) designates the Old Spanish Trail as a National Historic Trail.
- BLM Manual Sections 6250 and 6280 provide National Scenic and Historic Trails guidance.

Scenic Routes

Federal Laws, Regulations, Statutes, and Orders

- The National Scenic Byways Program was established under the Intermodal Surface Transportation Efficiency Act of 1991, and reauthorized in 1998. The program recognizes certain roads as National Scenic Byways or All-American Roads based on their archaeological, cultural, historic, natural, recreational, and scenic qualities. All-American Roads must exhibit multiple intrinsic qualities. For a highway to be considered for inclusion in the National Scenic Byways Program, it must provide safe passage for passenger cars year-round, be designated a State Scenic Byway, and have a current corridor management plan in place. Installation of offsite outdoor advertising (e.g., billboards) is not allowed along byways.
- BLM Backcountry Byways: The Backcountry Byway Program was developed by the BLM to complement the National Scenic Byways Program. These byways highlight the spectacular nature of the western landscapes. Backcountry Byways vary from narrow, graded roads, passable only during a few months of the year, to two-lane paved highways providing yearround access.

State Laws and Regulations

- Utah Scenic Byways are similar to National Scenic Byways. Utah State Scenic Byways are
 paved highways that have been designated by official State declaration for their scenic,
 historic, recreational, cultural, archaeological, or natural qualities (Utah Administrative
 Code, Rule R926-14). The byways are paved roads that are generally safe year-round for
 passenger cars. Installation of offsite outdoor advertising (e.g., billboards) is not allowed
 along byways.
- Utah Scenic Backways have been designated by official State declaration for their scenic, historic, and recreational qualities, but do not generally meet Federal safety standards for safe year-round travel by passenger cars (Utah Administrative Code, Rule R926-15).
 Backways often require four-wheel drive and road conditions can vary due to factors such as season and weather.

Wild and Scenic Rivers

Federal Laws, Regulations, Statutes, and Orders

- The Wild and Scenic Rivers Act of 1968, as amended, 16 U.S.C. 1271 et seq., requires
 Federal land management agencies to identify river systems and then study them for
 potential designation as wild, scenic, or recreational rivers. Section 5(d)(1) of the act
 requires that Federal agencies make Wild and Scenic River considerations during planning.
- BLM Manual Section 6400 provides National Wild and Scenic Rivers guidance.

Memoranda

 MOU Concerning Wild and Scenic River Studies in Utah Among the State of Utah and Intermountain Region USFS, Utah BLM, and Intermountain Region NPS (1997)

Wilderness Study Areas

Federal Laws, Regulations, Statutes, and Orders

FLPMA Section 603

- BLM Manual Section 6330 (Management of Wilderness Study Areas)
- Federal Onshore Oil and Gas Leasing Reform Act of 1987

Social and Economic Conditions

Federal Laws, Regulations, Statutes, and Orders

 Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations; 59 Federal Register 7629, February 16, 1994) requires that each Federal agency consider the impacts of its programs on minority populations and low-income populations.

Abbreviations-Acronyms

Term	Definition
ACEC	Area of Critical Environmental Concern
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
DOI	United States Department of the Interior
EIS	Environmental impact statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act (of 1973)
FLPMA	Federal Land Policy and Management Act (of 1976)
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act (of 1969)
NPS	National Park Service
NRHP	National Register of Historic Places
OHV	Off-highway vehicle
PSD	Prevention of Significant Deterioration
RMP	Resource Management Plan (BLM land use plan under FLPMA)
SHP0	State Historic Preservation Officer
U.S.C.	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix G

Best Management Practices

August 2019

Table of Contents

Introduction	G-1
Air Quality	G-1
Cultural Resources	G-3
Fish and Wildlife and Special Status Species	G-4
Special Status Species	G-8
Geology	G-15
Paleontological Resources	G-15
Soil Resources	G-15
Water Resources	G-16
Vegetation	G-17
Fire and Fuels	G-21
Visual Resources, Dark Night Skies, and Natural Soundscapes	G-21
Forestry and Woodland Products	G-23
Lands and Realty	G-23
Livestock Grazing	G-24
Minerals	G-25
Recreation	G-25
Wild and Scenic Rivers	G-25
Wilderness Study Areas	G-26
References	G-27
Abbreviations-Acronyms	G-29

Appendix G: Best Management Practices

Introduction

The application of best management practices (BMPs) is often the first tool used to mitigate site-specific impacts in order to meet the Bureau of Land Management's (BLM's) statutory requirements for environmental protection and meet the resource-specific goals and objectives of the Resource Management Plan (RMP). The BLM will apply BMPs to modify the operations or design of authorized uses or activities to meet these obligations.

BMPs will be applied to avoid, minimize, rectify, and reduce impacts during activity and implementation-level decisions. BMPs for authorizations will be identified as part of the National Environmental Policy Act (NEPA) process, through interdisciplinary analysis involving resource specialists, project proponents, government entities, landowners, or other surface management agencies. Those measures selected for implementation will be identified in the Record of Decision or Decision Record for those authorizations and will inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered surface lands and minerals to mitigate impacts from those authorizations. Because these actions create a clear obligation for the BLM to ensure any proposed BMP adopted in the environmental review process is performed, there is assurance that mitigation will lead to a reduction of environmental impacts in the implementation stage and have binding mechanisms for enforcement (CEQ 2011).

Because of site-specific circumstances and localized resource conditions, BMPs are site- and project-specific and may not apply to some or all activities (e.g., a resource or conflict is not present on a given site) and/or may require slight variations from what is generally recommended. The BLM may add additional measures as deemed necessary during site-specific environmental analysis and as developed through coordination with other Federal, State, and local regulatory and resource agencies. In addition, many BMPs may be required by other Federal or State agencies as part of their permitting process. As such, this appendix does not attempt to list all possible BMPs or sources. During the activity or implementation-level decisions, the BLM will determine the appropriate source of BMPs and which to apply. While the overall vision embraces the use of these guidelines to reduce/minimize impacts on the environment, they are not to be considered a land use plan decision.

Air Quality

- 1. All site-specific proposals would be reviewed for compliance with existing laws and policies regarding air quality and would be designed not to degrade existing quality. Specific procedures would include:
 - a. Coordination with the Utah Department of Environmental Quality if an emission permit is required.
 - b. Prescribed fires would comply with the State of Utah Interagency Memorandum of Understanding requirements to minimize air quality impacts from resulting particulates. This procedure requires obtaining an open burning permit from the State prior to conducting a management-ignited fire (BLM 1999).

2. Fugitive Dust

- a. Water or alternative dust suppressants (i.e., surfactants or other erosion control materials) would be utilized to minimize fugitive dust during construction and applied on material (sand, gravel, soil, minerals, or other matter that may create fugitive dust) piles.
- b. Periodic watering or chemical stabilization of unpaved roads.
- c. Restrict vehicle speeds to 10 miles per hour on well pads and production facility locations.
- d. Vehicles are not to exceed a speed of 20 miles per hour on any unpaved road to discourage the generation of fugitive dust.
- e. Enclose, cover, water, or otherwise treat loaded haul trucks to minimize loss of material to wind and spillage.
- f. Cover, enclose, or stabilize excavated or inactive material piles after activity ceases.
- g. Use chip-seal or asphalt surface for long-term access where applicable.
- h. Train workers to handle construction materials and debris to reduce fugitive emissions.

3. Surface Disturbance

- a. Minimize the period of time between initially disturbance of the soil and revegetation or other surface stabilization. Utilize interim reclamation.
- b. Minimize the area of disturbed land.
- c. Prompt revegetation of disturbed lands.
- d. Revegetate, mulch, or otherwise stabilize the surface of all disturbed areas adjoining roads.

4. Engine Exhaust

- a. All vehicles and construction equipment would be properly maintained to minimize exhaust emissions.
- b. Utilize carpooling to and from sites to minimize vehicle-related emissions.
- c. Reduce unnecessary idling.
- Reduce elemental carbon, particularly from diesel-fueled engines, by utilizing controls such as diesel particulate filters on diesel engines, or using lower emitting engines (e.g., Tier 2 or better).
- e. Opportunities to reduce nitrogen oxides (NO_x), particularly from internal combustion engines, will be pursued to control impacts related to deposition and visibility in nearby Class 1 areas. This may include the use of lower-emitting engines (e.g., Tier 2 or better for mobile and non-road diesel engines), and/or add-on controls (e.g., selective catalytic reduction) where appropriate.
- f. Use of ultra-low sulfur diesel in engines when available.

5. Mineral Development

- Apply best available control technology to minimize air pollutant emissions in order to comply with applicable local, State, and Federal laws, statutes, regulations, standards, and implementation plans.
- b. Manage timing, pace, place, density, and intensity of development to reduce peak emissions of all pollutants.
- c. Utilize flareless technology to reduce volatile organic compounds and methane emission; if not feasible, flaring of natural gas is preferred to venting.

- d. To the extent possible, utilize solar or other locally renewable energy to power equipment.
- e. Use telemetry and automation to remotely monitor and control production.
- f. Use centrally stored water that is piped to the well pads through a temporary surface line.
- g. Centralize (or consolidate) oil and gas processing facilities (e.g., separation, dehydration, sweetening).
- h. Utilize directional drilling to reduce construction-related emissions and decrease surface disturbance and vegetation impacts.
- i. Install vapor recovery units on all oil and condensate tanks.
- j. Tighten connections and replace packing to minimize leaks and fugitive emissions.
- k. Install and maintain low volatile organic compound-emitting hatches, seals, and valves on production equipment.
- Minimize use of toxic materials. May include substituting organic additives, polymers, or biodegradable additives for oil-based mud, or lubricating with mineral oil and lubrabeads instead of diesel oil.
- m. Initiate an equipment leak detection and repair program.
- n. Use vapor recovery on truck loading/unloading operations at tanks.
- o. Utilize high-efficiency equipment such as compressed air, electric, or low bleed valves.
- p. To mitigate any potential impact oil and gas development emissions may have on regional ozone formation, the following BMPs would be required for any development projects:
 - Drill rig engines with Tier 2 or better emission rates, natural gas-fired drill rig engines, or electrification of drill rig engines
 - Stationary internal combustion engine standard of 2 grams NO_x/brake horsepower-hour (bhp-hr) for engines equal to or less than 300 horsepower and 1 gram NO_x/bhp-hr for engines more than 300 horsepower
 - Low-bleed or no-bleed pneumatic pump valves
 - Dehydrator volatile organic compound emission controls to +95 percent efficiency
- q. If feasible, use of Reduced Emissions Completions, aka Green Completions and Green Workovers, to capture gas produced during well completions that is otherwise vented or flared.
- r. For coal mines, an air quality permit would be required from the Utah Division of Air Quality. The permit would address allowable particulate and other emission levels and would stipulate mechanisms to be used to control emissions.
- s. The BLM would require a dust control plan during site-specific coal mine permitting.

Cultural Resources

1. Site-specific cultural resource inventories would be required for all new proposed surface disturbance. In the event that archaeological or historic artifacts are identified during the site inventories, the location of the proposed project would be moved to avoid impacts. Where avoidance is not possible, other measures to protect the sensitive resource (e.g., construction of barriers, interpretation, data documentation) would be used. Efforts to excavate and curate the resource could be taken as a last resort. Consultation with appropriate tribal communities and the State Historic Preservation Officer would be required. Consultation with local communities would also be a priority (BLM 1999).

- 2. Refer to Appendix J (*Cultural Resources*) for more information on cultural resource management, site protection, monitoring, and BMPs related to cultural resources for Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area (GSENM/KEPA).
- 3. Prioritize new field inventories (Class II or III) directed by the National Historic Preservation Act Section 110 as follows:
 - Recreation areas identified for public use (e.g., off-highway vehicle [OHV] open areas)
 - 150 feet (45 meters) (depending on topography) on either side from the centerline of designated road systems and OHV routes
 - Areas of special cultural designation (e.g., Areas of Critical Environmental Concern [ACECs], National Register of Historic Places [NRHP] sites) that have not been fully inventoried
 - Resources eligible for the NRHP at a national level of significance that have not been fully inventoried
 - Areas lacking existing inventories (large areas with no inventory data)
 - 5-mile vulnerability zones surrounding cities and towns
 - Hiking/equestrian trails
- 4. Cultural surveys and inventories in high-use areas, such as along trails and open routes, would be prioritized to ensure protection of vulnerable cultural and historic resources. Beyond these areas, inventory and research efforts would be expanded to fill in the information gaps and complete research that would contribute to protection of sites.
- 5. Prior to authorizing surface-disturbing activities in areas where cultural sites and their associated landscape contributes to eligibility for the NRHP, the BLM would conduct a viewshed analysis and consultation to inform appropriate site locations outside of the viewshed or apply mitigation to minimize impacts on the setting component.
- 6. Provide opportunities for local interpretation (for local population) of cultural resources and public education (for general resource users).

Fish and Wildlife and Special Status Species

General

- Reduce impacts on fish and wildlife resources by applying the following BMPs as appropriate when conducting mineral exploration and development. Application of these BMPs would be considered and applied during project-specific NEPA reviews, as appropriate.
 - a. Directional drilling of oil and gas wells
 - b. Drilling of multiple wells from a single pad
 - c. Closed drilling systems
 - d. Cluster development
 - e. Belowground wellheads
 - f. Remote well monitoring
 - g. Piping of produced liquids to centralized tank batteries off site to reduce traffic to individual wells
 - h. Transportation planning (i.e., to reduce road density and traffic volumes)
 - Voluntary proposals for compensatory mitigation and state-mandated compensatory mitigation in accordance with BLM IM 2018-093

- j. Noise-reduction techniques and designs
- k. Installation of raptor anti-perch devices in greater sage-grouse habitat on a case-bycase basis
- I. Monitoring of wildlife populations during drilling operations
- m. Avoidance of human activity between 8:00 p.m. and 8:00 a.m. from March through May 15 within 0.25 mile of the perimeter of occupied sage-grouse leks
- n. Onsite bioremediation of oil field waste and spills
- o. Removal of trash, junk, waste, and other materials not in current use
- p. Reclamation of all disturbed surface areas promptly, performance of concurrent reclamation as necessary, and minimization of the total amount of surface disturbance
- q. Stripping and separation of soil surface horizons where feasible and reapplication in proper sequence during reclamation
- r. Establishment of vegetation cover on soil stockpiles that are to be in place longer than 1 year
- s. Construction and rehabilitation of temporary roads, consistent with intended use, to minimize total surface disturbance
- t. Consideration of temporary measures such as silt fences, straw bales, and mulching to trap sediment in sensitive areas until reclaimed areas are stabilized with vegetation
- u. Interim reclamation of well locations and access roads after wells are put into production
- v. Reshaping of all areas to be permanently reclaimed to the approximate original contour, providing for proper surface drainage (BLM 2008)
- 2. The size of water storage tanks and troughs will accommodate the expected needs of wildlife using them (BLM 2008).
- 3. Water will be left at the site for wildlife. Wells will be cased to prevent cave-ins, and well sites will be fenced (BLM 2008).
- 4. If sensitive wildlife or wildlife habitat is identified, the location of the proposed project may be moved or the project modified to reduce impacts (BLM 1999).
- 5. Require wildlife-passable fences, consistent with the species found in the area, and essential for effective range management or other administrative functions.
- 6. Apply BMPs for bees and other pollinators described in the *Pollinator-Friendly Best Management Practices on Federal Lands* (USFWS 2015a) and the National Strategy to Promote the Health of Honey Bees and other Pollinators (Pollinator Health Task Force 2015).
- 7. Follow the guidance provided in WO IM 2016-023, Reducing Preventable Wildlife Mortalities.
- 8. Disturbance will occur outside of the migratory bird nesting season. If disturbance cannot occur outside of the entire nesting season window, disturbance will occur outside of the prime nesting season (April 1–July 31). If disturbance must occur within the nesting season, site-specific nest surveys will be conducted.

Water Developments

1. Continue to work with the Utah Division of Wildlife Resources (UDWR) and conservation organizations to establish additional water developments, subject to NEPA consideration, and maintain existing water developments to improve wildlife distribution and encourage habitat use by native wildlife species and introduced nonnative species. The BLM will file for water rights for rainwater storage over 2,500 gallons and will register with the Division

- of Water Rights for rainwater storage between 100 and 2,500 gallons per Title 73 Chapter 3 Section 1.5 of Utah Code of Water and Irrigation or as amended.
- Storage structures will be designed to provide water for wildlife. Drinking ramps will be installed, and their heights will not prohibit young wildlife from obtaining water (BLM 2008).

Big Game

- Apply timing restrictions on surface-disturbing activities. Dates for big game habitat restrictions include:
 - a. <u>Pronghorn</u>: Prohibit surface-disturbing activities in crucial pronghorn habitat from May 15 through June 15 during fawning season.
 - b. <u>Desert Bighorn Sheep</u>: Prohibit surface-disturbing activities in crucial desert bighorn sheep habitat from April 1 through June 15 for lambing and from October 15 through December 15 for rutting.
 - c. <u>Mule Deer and Elk</u>: Prohibit surface-disturbing activities in crucial mule deer and elk winter range from November 15 to April 15 unless the activity would improve mule deer or elk habitat.
 - d. <u>Highway 89 Mule Deer Migration Corridor:</u> Prohibit surface-disturbing activities in the Highway 89 mule deer migration corridor from October 1 to April 30, with exceptions considered.
- 2. Plan maintenance would accommodate future minor adjustments to crucial wildlife habitat boundaries periodically made by UDWR.
- 3. Prohibit placement of new permanent structures or roads within 1 mile of known big game migration corridors if they inhibit migration on a long-term basis.

Raptors

- 1. Implement the following BMPs (adapted from the U.S. Fish and Wildlife Service [USFWS] Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances) as Conditions of Approval to all BLM use authorizations that have the potential to adversely affect nesting raptors or would cause occupied nest sites to become unsuitable for nesting in subsequent years:
 - a. Prohibit disruptive activities to nesting raptors within 0.25 mile of a raptor nest during the following time periods (modifications of spatial and seasonal buffers for BLMauthorized actions would be permitted as long as protection of nesting raptors is ensured):
 - i. Great-horned owl: December 1-September 31
 - ii. Boreal owl: February 1-July 31
 - iii. Long-eared owl: February 1-August 15
 - iv. Screech owl: March 1-August 15
 - v. Northern saw-whet owl: March 1-August 31
 - vi. Northern pygmy owl: April 1-August 1
 - vii. Prairie falcon: April 1-August 31
 - viii. Flammulated owl: April 1–30
 - b. Prohibit disruptive activities to nesting raptors within 0.5 mile of raptor nests during the following time periods (modifications of spatial and seasonal buffers for BLM-

authorized actions would be permitted as long as protection of nesting raptors is ensured):

- i. Golden eagle: January 1-August 31
- ii. Red-tailed hawk: March 15-August 15
- iii. Cooper's hawk and sharp-shinned hawk: March 15-August 31
- iv. Swainson's hawk: March 1-August 31
- v. Northern harrier: April 1-August 15
- vi. Merlin and osprey: April 1-August 31
- vii. Turkey vulture: May 1-August 15
- c. Minimize and/or mitigate habitat loss or fragmentation both within and outside of raptor nest buffers, which can include the following measures:
 - i. Drill multiple wellheads per pad.
 - ii. Limit access roads and avoid loop roads to well pads.
 - iii. Effectively rehabilitate or restore plugged and abandoned well locations and access roads that are no longer required.
 - iv. Rehabilitate or restore areas affected by wildland fires to prevent establishment of nonnative invasive annual species.
 - v. Implement vegetation treatments and riparian restoration projects to achieve *Utah* Standards for Rangeland Health.
 - vi. Create artificial nesting structures if appropriate in areas where preferred nesting substrates are limited.
- d. Protect unoccupied raptor nests (3 years of non-use) but allow for permanent (long-term) facilities and structures to be constructed within the spatial buffer zone, outside of the breeding season as long as they would not cause the nest site to become unsuitable for future nesting. Non-permanent (short-term) activities would be allowed within the spatial buffer of nests as long as those activities are shown to not affect nesting raptors.
- e. Delay excavation and studies of cultural resources in caves and around cliff areas until a qualified biologist surveys the area to be disturbed by the activity for the presence of raptors or nest sites. If raptors are present, reschedule the project to occur outside of the seasonal buffer for the identified species.
- f. Review hazardous fuel reduction projects and shrub-steppe restoration projects for drought, and high possible impacts on nesting raptors. Avoid the removal of trees containing either stick nests or nesting cavities through prescribed fire or mechanical or manual treatments.
- g. Locate sheep camps and other temporary intrusions in areas away from raptor nest sites during the nesting season. Locate the placement of salt and mineral blocks away from nesting areas.
- h. Prioritize livestock management practices that maintain or enhance vegetative attributes that preserve raptor prey species density and diversity.
- i. Locate Special Recreation Management Areas that are developed for OHV use outside of areas that have important nesting, roosting, or foraging habitats for raptors. Limit OHV use to designated routes, trails, and managed open areas and not in areas important to raptors for nesting, roosting, and foraging. Areas for OHV events would be surveyed by a qualified wildlife biologist to determine if the area is used by raptors and

- potential conflicts would be identified and either avoided or mitigated prior to the issuance of any permit.
- j. Avoid the development of biking trails near raptor nesting areas. Authorize rockclimbing activities in areas where there are no conflicts with cliff-nesting raptors.
- k. Consider creating artificial nest structures in nearby suitable habitat (if it exists) and seasonal protection of nest sites through fencing or other restrictions in recreation high-use areas where raptor nest sites have been made unsuitable by existing disturbance or habitat alteration (BLM 2008, Appendix 2).
- 2. Prohibit disruptive activities within 1 mile of peregrine falcon nest sites from February 1 to August 31.
- 3. Comply with Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee 2006) and Avian Protection Plan (APP) Guidelines (Avian Power Line Interaction Committee and USFWS 2005) for new powerline construction (including upgrades and reconstruction) to prevent electrocution of raptors.

Special Status Species

General

- 1. Areas subject to surface disturbance would be evaluated for the presence of threatened, endangered, or candidate animal or plant species. This is usually accomplished through the completion of a biological clearance. An on-the-ground inspection by a qualified biologist is required. In cases where threatened, endangered, or candidate species are affected, the preferred response would be to modify the proposed action to avoid the species or its habitat (avoidance). If avoidance of a threatened, endangered, or candidate species or its habitat is not possible, a Section 7 consultation with USFWS would be required and a biological assessment would be prepared to recommend actions to protect the species or its habitat (BLM 2008).
- 2. Avoid, control, or regulate surface-disturbing and disruptive activities on a case-by-case basis to minimize impacts on identified crucial habitat for special status species for the purpose of protecting these species and their associated habitats.
- 3. In cases where special status species may be affected by a project, the project would be relocated or modified to avoid species or their habitat in consultation with USFWS.
- 4. Should special status species be found, temporarily stop surface-disturbing and disruptive activities until species-specific protective and/or mitigation measures are developed and implemented, in consultation with USFWS and/or UDWR when applicable.
- 5. Consider and implement the appropriate guidelines and management recommendations presented in current and future species recovery or conservation plans (as revised), or alternative management strategies developed in consultation with USFWS and/or UDWR).
- 6. Prioritize the maintenance of natural flows and flood events. The maintenance of instream flows would provide adequate water for natural structure and function of riparian vegetation, which serves as habitat for many special status animal species.
- 7. Livestock grazing allotments would be evaluated, and grazing as it relates to all endangered species would be addressed during management processes.
- 8. Apply BMPs to avoid or reduce fragmenting habitat, including:
 - Co-locating communication and other facilities
 - Employing directional drilling for oil and gas

- Using topographic and vegetative screening to reduce the influence of intrusions
- Applying compensatory and offsite mitigation during implementation-level decisions, as appropriate
- 9. Follow the BMPs established in the *Pollinator-Friendly Best Management Practices on Federal Lands* (USFWS 2015a).
- 10. Avoid surface-disturbing activities or placement of permanent facilities in areas where there are known populations of endemic plant species. Surveys for endemic plant species may be required during site-specific permitting in areas where there are known or likely occurrences of endemic plants.
- 11. Consider changes to livestock grazing season of use (or pasture rotation) so that no grazing occurs in Kodachrome bladderpod habitat during the flowering and fruiting period.

Special Status Plant Species

- Surface-disturbing projects or activities would not be allowed in identified special status plant populations (BLM 1999).
- 2. Surface-disturbing research would generally not be allowed in special status species habitat, except where deemed appropriate in consultation with USFWS (BLM 1999).
- Appropriate actions would be taken to prevent trampling of the plants by visitors in highuse areas. These actions may include replanting native vegetation or construction of barriers.
- 4. Areas may be closed if necessary to protect special status plant species. Barriers would be constructed and restoration work initiated to stabilize the soil and banks and provide the best possible habitat for these plants.

Special Status Fish Species

1. Use of chemical substances that may affect the Colorado pikeminnow or the razorback sucker downstream habitat may not be used (BLM 1999).

Special Status Raptor Species

- 1. All BMPs referenced for general raptor species under the *Fish and Wildlife* section also apply to special status raptor species (BLM 2008, Appendix 2).
- 2. Prohibit surface-disturbing activities within 0.25 mile around special status raptor species nest sites during the following time periods:
 - Short-eared owl: March 1-August 1
 - Burrowing owl: March 1-August 31
- 3. Protect unoccupied special status species raptor nests in compliance with the BLM's raptor BMPs (BLM 2008, Appendix 2).
- 4. Apply Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (USFWS 2002a) to all land use activities.
- 5. No designated climbing areas would be allowed within known special-status raptor species nesting areas (BLM 1999).

Bald Eagle

 Place restrictions on all authorized activities that may adversely affect bald eagles, their breeding habitat, roosting sites, and known winter concentration areas to avoid or minimize potential impacts. Measures include, but may not be limited to, seasonal/daily timing limitations and/or spatial buffers as follows:

- a. Restrict temporary activities or habitat alterations that may disturb nesting bald eagles from January 1 to August 31 within 1 mile of bald eagle nest sites. Exceptions may be granted where no nesting behavior is initiated prior to June 1.
- b. Restrict temporary activities or habitat alterations that may disturb bald eagle within 0.5 mile of known winter concentration areas from November 1 to March 31. Where daily activities occur within these spatial buffers and area approved through subsequent consultation, activities will also be properly scheduled to occur after 9 a.m. and terminate at least 1 hour before official sunset to ensure that bald eagles using these roosts are allowed the opportunity to vacate their roost in the morning and return undisturbed in the evening.
- c. Do not place any permanent infrastructure within 1 mile of bald eagle nest sites or within 0.5 mile of bald eagle winter concentration areas.
- Conduct appropriately timed surveys in suitable bald eagle nesting habitat or identified
 concentration areas in accordance with approved protocols prior to any activities that may
 disturb bald eagles. Surveys would be conducted only by BLM-approved individuals or
 personnel.
- 3. The BLM shall, in coordination with cooperating agencies and/or partners (e.g., UDWR and USFWS), verify annual status (active versus inactive) of all known bald eagle nests and other identified concentration areas on BLM-administered surface lands.
- 4. BLM-administered surface lands within 1 mile of bald eagle nests, or identified communal winter roosts, will not be exchanged or sold. If it is imperative that these lands be transferred out of BLM ownership, then every effort will be made to include conservation easements or voluntary conservation restrictions to protect the bald eagles and support their conservation.
- 5. Proponents of BLM-authorized actions would be advised that roadside carrion can attract foraging bald eagles and potentially increase the risk of vehicle collisions with individual bald eagles feeding on carrion. When carrion occurs on the road, appropriate officials would be notified to initiate necessary removal on a weekly basis and record the location.
- 6. The BLM would make educational information available to project proponents and the general public pertaining to the following topics:
 - a. Appropriate vehicle speeds and the associated benefit of reduced vehicle collisions with wildlife
 - b. Use of lead shot (particularly over water bodies)
 - c. Use of lead fishing weights
 - d. General ecological awareness of habitat disturbance
- 7. Because bald eagles are often dependent on aquatic species as prey items, the BLM would periodically review existing water quality records (e.g., Utah Department of Environmental Quality, UDWR, and U.S. Geological Survey) from monitoring stations on or near important bald eagle habitats (i.e., nests, roosts, and concentration areas) on BLM-administered surface lands for any conditions that could adversely affect bald eagles or their prey. If water quality problems are identified, the BLM would contact the appropriate jurisdictional entity to cooperatively monitor the condition and/or take corrective action (BLM 2008, Appendix 9).

Condor

- Disturbance activity will avoid roost sites by 0.5 mile and nest sites by 1 mile (Romin and Muck 2002).
- 2. Garbage will be properly disposed.

Mexican Spotted Owl

- 1. The BLM would place restrictions on all authorized (permitted) activities that may adversely affect Mexican spotted owl (MSO) in identified protected activity centers (PACs), breeding habitat, or designated critical habitat in order to reduce the potential for adverse impacts on the species:
 - a. Surveys, according to USFWS protocol, would be required prior to any disturbance-related activities that would have the potential to affect MSO, unless current species occupancy and distribution information is complete and available. All surveys would be conducted by USFWS-certified individuals and approved by the BLM authorized officer:
 - i. Assess habitat suitability for nesting and foraging using accepted habitat models in conjunction with field reviews. Apply the appropriate conservation measures below if project activities occur within 0.5 mile of suitable owl habitat, dependent in part on whether the action is temporary or permanent:
 - 1. For all temporary actions that may affect owls or suitable habitat:
 - a. If the action occurs entirely outside of the owl breeding season and leaves no permanent structure or permanent habitat disturbance, the action can proceed without an occupancy survey.
 - b. If the action occurs during a breeding season, survey for owls prior to commencing the activity. If owls are found, the activity will be delayed until the end of the breeding season.
 - c. Eliminate access routes created by a project through such means as raking out scars, revegetating, and gating access points.
 - 2. For all permanent actions that may affect owls or suitable habitat:
 - a. Survey for 2 consecutive years for owls according to established protocol prior to commencing the activity. If owls are found, no actions would occur within 0.5 mile of identified nest sites. If the nest site is unknown, no activity would occur within the designated PACs. Avoid placing permanent structures within 0.5 mile of suitable habitat unless it has been surveyed and is not occupied. Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 A-weighted decibels at 0.5 mile from suitable habitat, including canyon rims (Delaney et al. 1997). Placement of permanent noise-generating facilities will be determined by a noise analysis to ensure noise does not encroach upon a 0.5-mile for suitable habitat, including canyon rims. Limit disturbances to and within suitable owl habitat by staying on designated routes. Limit new access routes created by the project.
- 2. The BLM would, as a condition of approval on any project proposed within identified PACs and designated critical habitat within spatial buffers for MSO nests (0.5 mile), ensure that project proponents are notified of their responsibilities for rehabilitation of temporary access routes and other temporary surface disturbances created by their project according

to individual BLM field office standards and procedures or those determined in the projectspecific Section 7 consultation.

- a. Monitoring results will document what, if any, impacts on individuals or habitat may occur during project construction/implementation. In addition, monitoring will document successes or failures of any impact minimization or mitigation measures. Monitoring results would be considered an opportunity for adaptive management, and as such would be carried forward in the design and implementation of future projects.
- 3. For all survey and monitoring actions:
 - a. Provide reports to the affected field offices within 15 days of completion of survey or monitoring efforts.
 - b. Report any detection of MSO during survey or monitoring activities to the authorized officer within 48 hours.
- 4. The BLM would, in areas of designated critical habitat, ensure that any physical or biological factors (i.e., the primary constituent elements), as identified in determining and designating such habitat, remain intact during implementation of any BLM-authorized activity.
- 5. For all BLM actions that "may adversely affect" the primary constituent elements in any suitable MSO habitat, the BLM would implement measures as appropriate to minimize habitat loss or fragmentation, including rehabilitation of access routes created by the project through such means as raking out scars, revegetating, and gating access points.
- 6. Where technically and economically feasible, use directional drilling from single drilling pads to reduce surface disturbance, and minimize or eliminate the need to drill in canyon habitats suitable for MSO nesting.
- 7. Prior to surface-disturbing activities in MSO PACs, breeding habitats, or designated critical habitat, specific principles will be considered to control erosion. These principles include:
 - a. Conduct long-range transportation planning for large areas to ensure that roads would serve future needs. This would result in less total surface disturbance.
 - b. Avoid surface disturbance in areas with high erosion hazards to the extent possible. Avoid mid-slope locations, headwalls at the source of tributary drainages, inner valley gorges, and excessively wet slopes such as those near springs. In addition, avoid areas where large cuts and fills would be required.
 - c. Locate roads to minimize roadway drainage areas and to avoid modifying the natural drainage areas of small streams.
- 8. Project developments will be designed and located to avoid direct or indirect loss or modification of MSO nesting and/or identified roosting habitats.
- 9. Water production associated with BLM-authorized actions will be managed to ensure maintenance or enhancement of riparian habitats.
- 10. Retain, where appropriate, large down logs, large trees (generally greater than 24 inches in diameter at breast height), and snags as prey habitats in occupied and suitable habitat.
- 11. Surface-disturbing projects or activities would not be allowed within 0.5 mile of MSO nests unless USFWS consultation shows no impacts would occur (BLM 1999).
- 12. Additional restrictions for MSO include:
 - Permit no surface-disturbing activities from March 1 to August 31 in PACs, breeding habitats, or designated critical habitat to avoid disturbance to breeding owls.

- If a disruptive or surface-disturbing action occurs entirely outside of the breeding season (March 1 to August 31) and leaves no permanent structure or permanent habitat disturbance, the action may proceed without an occupancy survey. Land tenure adjustments would require breeding season surveys.
- If disruptive actions occur during the seasonal restriction period (March 1 to August 31), surveys (according to USFWS protocol for MSO) would be required prior to commencement of activities. If MSO are detected, activities will be delayed until after the seasonal restriction period.

Southwestern Willow Flycatcher and Western Yellow-billed Cuckoo

- Where possible, co-locate roads, new trails, and rights-of-way (ROWs) and develop stream
 crossings at right angles to riparian habitats used by yellow-billed cuckoo and
 Southwestern willow flycatcher to minimize impacts.
- 2. Manage for regeneration and multiple age classes in cottonwood/willow vegetation in yellow-billed cuckoo and Southwestern willow flycatcher habitat.
- 3. Identify sites where Southwestern willow flycatcher habitat restoration (i.e., occupied, suitable, and potentially suitable sites) is warranted. Prioritize riparian restoration in Southwestern willow flycatcher habitat consistent with riparian rehabilitation decisions in the *Water Resources* section.
- 4. Surveys would be required prior to operations that "may adversely affect" Southwestern willow flycatcher unless species occupancy data and distribution information are complete and available. Surveys would be conducted only by BLM-approved personnel that hold a valid permit from the USFWS to conduct protocol-level surveys. In the event species occurrence is verified, project proponents may be required to modify operational plans at the discretion of the authorized officer. Modifications may include appropriate measures for minimization of adverse effects on Southwestern willow flycatcher and habitat.
- 5. The BLM would monitor and restrict, when and where necessary, authorized or casual use activities that "may adversely affect" Southwestern willow flycatcher, including but not limited to recreation, mining, and oil and gas activities. Monitoring results will be considered in the design and implementation of future projects.
- 6. To monitor the impacts of BLM-authorized projects determined "likely to adversely affect" Southwestern willow flycatcher, the BLM will prepare a short report describing progress, including success of implementation of all associated mitigation. Reports will be submitted annually to the USFWS Utah Field Office by March 1 beginning 1 full year from the date of implementation of the proposed action. The report will list and describe the following items:
 - a. Any unforeseen adverse effects resulting from activities of each site-specific project (may also require re-initiation of formal consultation)
 - b. If and when any level of anticipated incidental take is approached (as allowed by separate Incidental Take Statements of site-specific formal Section 7 consultation efforts)
 - c. If and when the level of anticipated take (as allowed by separate Incidental Take Statements from site-specific formal consultations) is exceeded.
 - d. Results of annual, periodic monitoring that evaluates the effectiveness of the reasonable and prudent measures or terms and conditions of the site-specific consultation

- 7. The BLM will avoid granting activity permits or authorizing development actions in Southwestern willow flycatcher habitat. Unoccupied potential habitat will be protected in order to preserve it for future management actions associated with flycatcher recovery.
- 8. The BLM would ensure that the project design incorporates measures to avoid direct disturbance to populations and suitable habitats where possible. At a minimum, project designs will include consideration of water flows, slope, seasonal and spatial buffers, possible fencing, and pre-activity flagging of critical areas for avoidance.
- 9. The BLM would continue to address illegal and unauthorized OHV use and activity upon BLM-administered surface lands. To protect, conserve, and recover the Southwestern willow flycatcher in areas of heavy unauthorized use, temporary closures or use restrictions beyond those already in place may be imposed. As funding allows, the BLM will complete a comprehensive assessment of all OHV use areas that interface with Southwestern willow flycatcher populations. Comparison of Southwestern willow flycatcher populations and OHV use areas using GIS would give BLM personnel another tool to manage and/or minimize impacts.
- 10. All surface-disturbing activities will be restricted within a 0.25-mile buffer from suitable riparian habitats, and permanent surface disturbances will be avoided within 0.5 mile of suitable Southwestern willow flycatcher habitat:
 - a. Unavoidable ground-disturbing activities in occupied Southwestern willow flycatcher habitat will be conducted only when preceded by current year survey, will only occur between August 16 and April 14 (the period when Southwestern willow flycatchers are not likely to be breeding), and will be monitored to ensure that adverse impacts on Southwestern willow flycatcher are minimized or avoided and to document the success of project-specific mitigation/protection measures. As monitoring is relatively undefined, project-specific requirements would be identified.
- 11. The BLM would properly consider nesting periods for Southwestern willow flycatcher when conducting horse-gathering operations in the vicinity of habitat.
- 12. The BLM would ensure that plans for water extraction and disposal are designed to avoid changes in the hydrologic regime that would be likely to result in loss or undue degradation of riparian habitat.
- 13. Native species would be preferred over nonnative for revegetation of habitat in disturbed areas.
- 14. The BLM would coordinate with other agencies and private landowners to identify voluntary opportunities to modify current land stewardship practices that may affect the Southwestern willow flycatcher and its habitat.
- 15. Limit disturbances to within suitable habitat by staying on designated routes.
- 16. Ground-disturbing activities would require monitoring throughout the duration of the project to ensure that adverse impacts on Southwestern willow flycatcher are avoided. Monitoring results will document what if any impacts on individuals or habitat occur during project construction/implementation. In addition, monitoring will document the successes or failures of any impact minimization or mitigation measures. Monitoring results would be considered an opportunity for adaptive management and as such would be carried forward in the design and implementation of future projects.
- 17. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in Southwestern willow flycatcher habitat.

- 18. Habitat disturbances (e.g., organized recreational activities requiring special use permits or drilling activities) would be avoided within 0.25 mile of suitable Southwestern willow flycatcher habitat from April 15 to August 15.
- 19. If Southwestern willow flycatcher nests are located within the grazing allotment, the allotment would be managed with consideration for recommendations provided by the Southwestern Willow Flycatcher Recovery Plan (USFWS 2002b) and other applicable research.
- 20. Avoid surface and vegetation disturbance within Southwestern willow flycatcher designated critical habitat.

Geology

1. If geologic hazards or sensitive geomorphologic features (e.g., arches, natural bridges) are identified during site inventories, the project would be moved or modified to prevent conflicts or damage (BLM 1999).

Paleontological Resources

- Areas found to have unique paleontological resource would be avoided. In other cases
 where ubiquitous fossils are present, samples may be taken to record their presence and
 the proposed activity may be allowed. Measures would be taken to minimize impacts on
 the remaining paleontological resources (BLM 1999).
- 2. Conduct pre-disturbance paleontological surveys in areas with known fossils or in areas with high paleontological resource potential. Requirements and protocols for pre-disturbance paleontological surveys would be included in the Paleontological Resource Management Plan.

Soil Resources

- 1. Design roads to minimize total disturbance, to conform to topography, and to minimize disruption of natural drainage patterns (BLM 2008).
- Locate roads on stable terrain (such as ridgetops, natural benches, and flatter transitional slopes near ridges and valley bottoms and moderate sideslopes) and away from slumps, slide-prone areas, concave slopes, clay beds, and where rock layers are parallel to the slope. Locate roads on well-drained soil types; avoid wet area (BLM 2008).
- Construct roads for surface drainage by using outslopes, crowns, grade changes, drain dips, waterbars, and/or insloping to ditches as appropriate. Maintain drain dips, waterbars, road crowns, insloping, and outsloping, as appropriate, during road maintenance. Grade roads only as necessary (BLM 2008).
- 4. Slope the road base to the outside edge for surface drainage for local spurs or minor collector roads where low-volume traffic and lower traffic speeds are anticipated. This is also recommended in situations where long intervals between maintenance occur and where minimum excavation is wanted. Outsloping is not recommended on steep slopes. Sloping the road base to the inside edge is an acceptable practice on roads with steep sideslopes and where the underlying soil formation is very rocky and not subject to appreciable erosion or failure (BLM 2008).
- Construct roads when soils are dry and not frozen, if possible, in soil types with a low sand component. When these types of soils or road surfaces become saturated to a depth of 3 inches, BLM-authorized activities will be limited or cease unless otherwise approved by the authorized officer (BLM 2008).

- Strip and stockpile topsoil ahead of surface-disturbing activities. During restoration/reclamation, reapply topsoil after contouring to provide a seed bed for revegetation (BLM 2008).
- 7. Utilize existing roads whenever possible instead of constructing new roads (BLM 2008).
- 8. If sensitive soil resources are identified, project locations or design would be modified to minimize impacts on sensitive soil crusts (BLM 1999).
- Implement BMPs designed to improve vegetation cover and/or reduce soil erosion for surface-disturbing activities, especially with regard to sources of saline sediments in the Colorado River Basin.
- 10. Maintain and/or repair salinity and sediment collection structures as necessary for continual function of the structures.
- 11. If surface disturbances must occur on saline soils, implement BMPs from erosion and sediment control from the *Construction Stormwater Field Guide* (USDOT 2016).
- 12. Avoid placing salts or supplements in areas with a high percentage cover of biological soil crusts or near areas with fragile or sensitive soils. Do not place salt or supplements:
 - a. within 0.5 mile of a water source
 - b. within 0.5 mile of developed recreation sites or designated primitive campsites (e.g., day use area or trailhead)
- 13. Avoid implementing structural range improvements in areas with a high percentage cover of biological soil crust, areas with fragile or sensitive soils, or where removal of biological soil crust would degrade soil, hydrology, or ecosystem function, except where the range improvements would prevent or reduce degradation of soil resources.
- 14. Initiate reclamation of surface disturbances, where appropriate, during or upon completion of the authorized project.
- 15. Close and reclaim temporary roads upon completion of the project that required the roads.
- 16. Remove and reclaim facilities or improvements no longer necessary or desirable, provided no historic properties are affected.
- 17. Identify areas of "fragile soils" during preparation of project-level plans, as well as necessary mitigation measures to minimize risks and degradation.
- 18. Develop and implement site-specific restrictions and/or mitigations for activities proposed in fragile soil areas on a case-by-case basis. Surface-disturbing activities must be approved by the BLM before construction and maintenance is authorized.

Water Resources

- 1. Design roads to minimize total disturbance, to conform to topography, and to minimize disruption of natural drainage patterns (BLM 2008).
- Retain vegetation between roads and streams to filter runoff caused by roads (BLM 2008).
- 3. Use culverts that pass, at a minimum, a 50-year storm event and/or have a minimum diameter of 24 inches for permanent stream crossings and a minimum diameter of 18 inches for road crossdrains (BLM 2008).
- 4. Sediment barriers will be constructed when needed to slow runoff, allow deposition of sediment, and prevent transport from the site. Straining or filtration mechanisms also may be employed for the removal of sediment from runoff (BLM 2008).
- 5. Avoid locating roads, trails, and landings in wetlands (BLM 2008).
- Locate, identify, and mark riparian management areas during the design of projects that may cause adverse impacts on riparian management areas (BLM 2008).

- 7. Keep open water free from slash (BLM 2008).
- Avoid equipment operation in areas of open water, seeps, and springs (BLM 2008).
 However, allow equipment that does not inhibit repair and maintenance of range structures.
- 9. Utilize low-ground-pressure equipment (flotation tires or tracks) as necessary to minimize rutting and compaction (BLM 2008).
- 10. Work in springs and stream beds will be done by hand where possible. If machinery is needed in these areas, select equipment that minimizes disturbance (BLM 2008).
- 11. Original water sources will be protected, and fenced if required, and an offstream watering supply will be provided near the site (BLM 2008).
- 12. Impacts on water resources will be assessed for all projects. Specific restrictions include:
 - a. Water developments could only be used when beneficial to GSENM/KEPA resources.
 - b. Water developments could not jeopardize or de-water springs or streams.
 - c. Water could not be diverted out of GSENM/KEPA (exceptions could be made for local community culinary needs if the applicant demonstrates no effect on GSENM/KEPA resources).
 - d. Water quality protection measures would be required for all projects, including subsequent monitoring.
- No projects or activities resulting in permanent fills or diversions would be allowed in Federal Emergency Management Agency-designated special flood hazard areas (BLM 1999).
- 14. For Special Recreation Permit holders, require that human waste be buried greater than 300 feet from water sources and/or packed out. When operating in an area less than 300 feet from water sources, permittees must use a portable, self-contained toilet system and/or carry and use wag bags. All human waste that is packed out must be disposed of at a certified disposal site.
- 15. For Special Recreation Permit hunting authorizations, require entrails from field dressing of harvested animals be buried greater than 300 feet from water sources and/or packed out.
- 16. Promote Leave-No-Trace principles for protecting water resources by advising hikers to pack out or bury human waste greater than 300 feet from water sources. Require human waste to be packed out in areas where there are no areas greater than 300 feet from water.
- 17. Implement BMPs for sediment and erosion control where contamination of perennial streams or rivers may occur. Refer to the American Association of State Highway and Transportation Officials Construction Stormwater Field Guide for common BMPs for sediment and erosion control.

Vegetation

General

- 1. Fill material will be pushed into cut areas and up over back slopes. Depressions will not be left that would trap water or form ponds (BLM 2008).
- Disturbed areas within road ROWs and utility corridors will be stabilized by vegetation
 practices designed to hold soil in place and minimize erosion. Vegetation cover will be
 reestablished to increase infiltration and provide additional protection from erosion (BLM
 2008).

- 3. To reduce the potential for the introduction of noxious weeds, all equipment will be cleaned off, by pressure washing, prior to operating on BLM-administered surface lands. Removal of all dirt, grease, and plant parts that may carry noxious weed seeds or vegetative parts would be required (BLM 2008).
- 4. All seed, hay, straw, mulch, and other vegetation material transported and used on public land weed-free zones for site stability, rehabilitation, or project facilitation will be certified by a qualified Federal, State, or county officer as free of noxious weeds and noxious weed seed (BLM 2008).
- 5. For all reclamation (interim and final) activities, seed mixes will be composed of appropriate native and ecotype-adapted seed sources unless all five conditions listed in Manual 1745 and Handbook 1740-2 are met.
- Fencing, erosion control structures, and vegetation treatments would each be an option where changes in use would not meet management objectives within the desired time frame.
- 7. Maintain sufficient water, to the extent possible, to sustain native flora and fauna when developing/redeveloping springs. Return unused or overflow water to its original drainage.
- 8. Vegetation treatments may be authorized where protection of sensitive resources would be ensured.
- Focus restoration or vegetation treatment projects based on the following factors:
 - Restore areas that include noxious weed and/or nonnative invasive plants to minimize re-colonization of treated areas by noxious weed and/or nonnative invasive species.
 - Maintain previously treated areas.
 - Achieve other objectives identified in this RMP.
 - Restore special status species habitats to achieve long-term conservation and recovery objectives.
 - Achieve rangeland health objectives.
- 10. Control of noxious weeds is a priority in order to achieve the overall vegetation management objectives. Implications for weed management would be considered in all projects. Specific considerations include:
 - a. Chemical treatment methods, including aerial spraying, would generally be restricted to control noxious weed species. BLM employees or contractors with appropriate certification would be responsible for use of chemicals and would take precautions to prevent possible effects on non-target plant species. Use of such chemicals would be allowed near special status plant populations.
 - b. Biological control methods would be used only for the control of noxious or exotic weed species.
 - c. Aerial chemical applications could only be used in limited circumstances where (1) accessibility is so restricted that no other alternative means is available; (2) it can be demonstrated that non-target sensitive species or other GSENM/KEPA resources would not be detrimentally affected; and (3) noxious weeds are presenting a substantial threat to GSENM/KEPA resources.
 - d. All projects would contain restoration/revegetation protocols to minimize recolonization of treated areas by noxious weed species (BLM 1999).

- 11. The BLM will coordinate with local cooperative weed partnerships to coordinate noxious weed control efforts among Federal agencies and local groups, as well as improve control efforts for noxious and invasive weeds.
- 12. If sensitive vegetation is identified, sites may be moved to avoid impacts, or project design modified to reduce impacts. Specific restrictions on projects include:
 - a. No facilities or surface disturbance, beyond research that would benefit relict plant communities and hanging gardens, would be allowed in hanging garden or relict plant areas.
 - b. No vegetation restoration methods would be allowed in hanging gardens or relict plant areas unless needed for noxious weed removal.
 - c. Chaining and pushing would only be allowed in limited circumstances after wildfires (not for management-ignited fires) (BLM 1999).
- 13. Install shut-off valves on any new water development and consider their installation during routine maintenance of existing water developments. Shut-off valves allow the water collection system to be shut off when not needed or to protect the riparian area from dewatering.
- 14. In the GSENM/KEPA units, during routine maintenance of existing water developments and on new water developments, install float valves to allow unneeded water to remain in the riparian area. In situations where float valves are not feasible, consider overflows to return unused water to the riparian area.
- 15. Establish vegetation monitoring plots and other monitoring as deemed necessary (e.g., erosion, dust emissions) to determine the effectiveness of vegetation treatments and large-scale invasive plant treatments in achieving management objectives and to provide baseline data of overall change. Develop standard monitoring methods including pre- and post-treatment and controls and data analysis and interpretation to inform adaptive management.
- 16. Follow the BMPs established in the *Pollinator-Friendly Best Management Practices on Federal Lands* (USFWS 2015a).
- 17. Use guidance from the *National Seed Strategy for Rehabilitation and Restoration* (USFWS 2015b) to identify priority plant materials needs and actions to meet those needs.

Reclamation

- Reclamation will be implemented concurrently with construction and site operations to the fullest extent possible. Final reclamation actions will be initiated within 6 months of the termination of operations unless otherwise approved in writing by the authorized officer (BLM 2008).
- Native plants would be used as a priority for all projects in GSENM/KEPA. There are limited, emergency situations where it may be necessary to use nonnative plants in order to protect GSENM/KEPA resources (i.e., to stabilize soils and displace noxious weeds) (BLM 1999).
- 3. Each project and area would be evaluated to determine appropriate restoration or revegetation strategies. General guidelines include:
 - a. Restoration would be the goal wherever possible.
 - b. Species used in both restoration and revegetation would comply with the nonnative plant policy.

- c. Revegetation strategies would be used in areas of heavy visitation, where site stabilization is desired.
- d. Restoration/revegetation provisions would be included in all surface-disturbing projects including provisions for post-restoration monitoring in the area. Costs for these activities would be included in the overall cost of the project.
- e. Priority for restoration and revegetation would be given to projects where GSENM/KEPA resources are being affected (BLM 1999).
- f. Use guidance from the National Seed Strategy for Rehabilitation and Restoration (USFWS 2015b) to identify priority plant materials needs and actions to meet those needs.

Rangelands

- 1. Apply BLM Utah Standards for Rangeland Health to all rangelands.
- 2. Apply Guidelines for Grazing Management on BLM Lands in Utah (BLM 1997) and Guidelines for Recreation Management for Public Lands in Utah (BLM undated) for maintenance and rehabilitation of rangelands.
- 3. Use guidance from the *National Seed Strategy for Rehabilitation and Restoration* (USFWS 2015b) to identify priority plant materials needs and actions to meet those needs.

Riparian Areas

- 1. Maintain and/or enhance riparian areas through project design features and/or stipulations that protect riparian resources.
- 2. Incorporate design and operation stipulations as necessary to protect riparian and aquatic resources.
- 3. Emphasize management of uses rather than structural efforts when rehabilitating degraded riparian areas.
- 4. Existing and new water developments would be maintained and/or managed to reduce detrimental impacts on riparian areas (i.e., dewatering) and to change grazing management within riparian areas when grazing has been identified as a substantial contributing factor.
- Consult with water rights holders when ROWs are renewed or amended to determine if water necessary to prevent riparian and aquatic degradation could be left in stream through design or operation stipulations.
- 6. Specific restrictions on projects in riparian areas also include:
 - a. New recreation facilities would be prohibited in riparian areas, except for small signs for resource protection.
 - b. Trails would be kept out of riparian areas wherever possible. Where this is not possible, or where a trail is necessary to prevent the proliferation of social trails, trails would be designed to minimize impacts by placing them away from streams, using soil stabilization structures to prevent erosion, and planting native plants in areas where vegetation has been removed.
 - c. All other projects would need to avoid riparian areas wherever possible.
 - d. Vegetation restoration treatments would not be allowed in these areas, unless needed for removal of noxious weed species or restoration of disturbed sites (BLM 1999).
 - e. Use guidance from the *National Seed Strategy for Rehabilitation and Restoration* (USFWS 2015b) to identify priority plant materials needs and actions to meet those needs.

Fire and Fuels

- 1. If an aircraft is used in reseeding operations in areas with raptor species, ensure that timing is appropriate to eliminate impacts on these species.
- To reduce fire risks and to restore ecosystems, the following fuels management tools would be allowed: wildland fire use; prescribed fire; and mechanical, chemical, seeding, and biological actions. As conditions allow, the BLM would employ the least intrusive method over more intrusive methods.
- 3. Use guidance from the *National Seed Strategy for Rehabilitation and Restoration* (USFWS 2015b) to identify priority plant materials needs and actions to meet those needs.

Visual Resources, Dark Night Skies, and Natural Soundscapes

- Special design and reclamation measures may be required to protect scenic and natural landscape values. These measures may include transplanting trees and shrubs, mulching and fertilizing disturbed areas, using low-profile permanent facilities, and painting to minimize visual contrasts. Surface-disturbing activities may be moved to avoid sensitive areas or to reduce the visual effects of the activities (BLM 2008).
- Aboveground facilities requiring painting will be designed to blend in with the surrounding environment. Paint all aboveground structures not requiring safety coloration an environmental color that is two shades darker than the surrounding environment (BLM 2008).
- 3. Reduce impacts on visual resources by applying the following BMPs as appropriate when conducting mineral exploration and development:
 - a. Directional drilling of oil and gas wells
 - b. Drilling of multiple wells from a single pad
 - c. Closed drilling systems
 - d. Cluster development
 - e. Belowground wellheads
 - f. Remote well monitoring
 - g. Piping of produced liquids to centralized tank batteries off site to reduce traffic to individual wells
 - h. Transportation planning (i.e., to reduce road density and traffic volumes)
 - i. Compensation mitigation
 - j. Noise-reduction techniques and designs
 - k. Installation of raptor anti-perch devices in greater sage-grouse habitat
 - I. Monitoring of wildlife populations during drilling operations
 - m. Avoidance of human activity between 8:00 p.m. and 8:00 a.m. from March through May 15 within 0.25 mile of the perimeter of occupied sage-grouse leks
 - n. Onsite bioremediation of oil field waste and spills
 - o. Removal of trash, junk, waste, and other materials not in current use
 - p. Reclamation of all disturbed surface areas promptly, performance of concurrent reclamation as necessary, and minimization of the total amount of surface disturbance
 - q. Stripping and separation of soil surface horizons where feasible and reapplication in proper sequence during reclamation
 - r. Establishment of vegetation cover on soil stockpiles that are to be in place longer than 1 year

- s. Construction and rehabilitation of temporary roads, consistent with intended use, to minimize total surface disturbance
- t. Consideration of temporary measures such as silt fences, straw bales, and mulching to trap sediment in sensitive areas until reclaimed areas are stabilized with vegetation
- u. Interim reclamation of well locations and access roads after wells are put into production
- v. Reshaping of all areas to be permanently reclaimed to the approximate original contour, providing for proper surface drainage (BLM 2008)
- 4. All new and reconstructed utility lines (including powerlines up to 34.5 kilovolts) would be buried unless visual quality objectives can be met without burying, geologic conditions make burying infeasible, or burying would produce greater long-term site disturbance (BLM 1999). Bury distribution powerlines and flow lines in or adjacent to access roads (BLM 2008).
- 5. Repeat form, line, color, and texture elements to blend facilities with the surrounding landscape (BLM 2008).
- 6. Perform final reclamation and recontouring of all disturbed areas, including access roads, to the original contour or a contour that blends with the surrounding topography (BLM 2008).
- 7. Avoid facility placement on steep slopes, ridgetops, and hilltops (BLM 2008).
- 8. Reclaim unused well pads within 1 year (BLM 2008).
- 9. Cuts, fills, and excavations will be dressed and seeded to blend with surroundings (BLM 2008).
- 10. Where possible, place facilities in areas where there is existing surface disturbance.
- 11. In Visual Resource Management (VRM) Class I, II, III, and IV areas, complete a visual contrast rating to ensure that visual resource objectives can be met and opportunities to reduce visual contrast are fully realized.
- 12. All proposed actions will consider the importance of the visual values and will minimize the impacts the project may have on these values. All projects will be designed to be unobtrusive and follow these procedures:
 - a. The visual resource contrast rating system would be used as a guide to analyze potential visual impacts of all proposed actions. Projects will be designed to mitigate impacts and conform to the assigned VRM class.
 - b. Natural or natural-appearing materials would be used as a priority.
 - c. Restoration and revegetation objectives will be met.
 - d. The Monument Manager may allow temporary projects, such as research projects, to exceed VRM standards if the project terminates within 2 to 3 years of initiation. Phased mitigation may be required during the project to better conform with prescribed VRM standards.
 - e. Existing facilities would be brought into VRM class conformance to the extent practicable when the need or opportunity arises, such as during reconstruction (BLM 1999).
- 13. For minerals and other development projects, limit the use of artificial lighting during nighttime operations to only that necessary for the safety of operations and personnel. During operations, more lighting may be needed due to safety requirements.

- 14. For minerals and other development projects, utilize shielding and aiming techniques, as well as limiting the height of light poles to reduce glare and avoid light shining above horizon(s).
- 15. For minerals and other development projects, use lights only where needed, use light only when needed, and direct all lighting on site. Utilize alternatives to lighting where feasible (retro-reflective or luminescent markers in lieu of permanent lighting).
- 16. For minerals and other development projects, use motion sensors, timers, or manual switching for areas that require illumination, but are seldom occupied.
- 17. For minerals and other development projects, reduce lamp brightness and select lights that are not broad spectrum or bluish in color. Limit the number of lights and lumen output of each (minimum number of lights and the lowest luminosity consistent with safe and secure operation of the facility).
- 18. During site-specific permitting of minerals and other development projects, consider other BMPs that would limit light pollution and reduce potential impacts on dark night skies.
- 19. During site-specific permitting of minerals and other development projects, conduct appropriate noise monitoring and noise modeling and analysis to assess potential impacts on the natural soundscape. Consider and apply appropriate BMPs that would reduce potential impacts on the natural soundscape.
- 20. For renewable energy and other forms of development, consider BMPs in Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands (BLM 2013).

Forestry and Woodland Products

- In general, OHV restrictions apply to forestry product areas. However, because forestry product collection activities are controlled by a permit and permits are issued to further overall management objectives, the BLM could authorize access on administrative routes and, in some cases, in areas more than 50 feet away from routes. These areas/provisions would be delineated in the permit prior to its issuance.
- 2. Use guidance from the *National Seed Strategy for Rehabilitation and Restoration* (USFWS 2015b) to identify priority plant materials needs and actions to meet those needs.

Lands and Realty

- Communication site plans and evaluations for the siting and construction of communications towers will take into account potential impacts on migratory birds.
 Measures to avoid and minimize impacts would be considered during design, including the following:
 - a. Avoid known bird migration corridors.
 - b. Eliminate guy wires.
 - c. Restrict the height of towers to fewer than 200 feet.
 - d. Install minimum lighting with use of white strobe lights rather than red (strobe or non-strobe) lights.
 - e. The addition of new communications devices on existing towers would be considered where it is practical and does not present a safety or operational risk.
- Preference would be to locate ROW developments in common (within existing ROWs/disturbance areas).

- Construct powerlines greater than 230 kilovolts using non-reflective wire. Towers would be constructed using non-reflective material. Powerlines would not be high-lined unless no other location exists.
- 4. The following criteria and/or stipulations apply to the management of all ROWs in GSENM/KEPA where they are allowed:
 - a. Bury new and reconstructed utility lines (including powerlines up to 34.5 kilovolts) unless visual quality objectives can be met without burying, geologic conditions make burying infeasible, or burying would produce greater long-term site disturbance.
 - b. Construct steel towers using galvanized steel.
 - c. Prepare a GSENM/KEPA-wide feasibility study to determine the most appropriate location for new communication sites.
- 5. New and reconstructed powerlines must meet non-electrocution standards for raptors. If electrocution or line strike issues develop with existing powerlines, corrective actions to meet these non-electrocution standards would be taken.
- 6. Any transmission projects within Section 368 corridors will be sited and designed in a manner that minimizes impacts on habitat connectivity.
- Any projects within Section 368 corridors would be subject to the Interagency Operating Procedures identified in the Approved Resource Management Plan Amendments/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States (BLM 2009).

Livestock Grazing

- 1. Best practices for maintaining range improvements:
 - Aerial application of tebuthiuron (i.e., Spike) or other BLM-approved herbicides for removal or thinning of sagebrush to increase biodiversity and increase grass/forb production within nonstructural range improvements¹
 - Chemical applications for brush control (e.g., rabbit brush)¹
 - Mechanical treatments (e.g., chainings, bull hog, harrow) and hand thinning for new nonstructural range improvements or maintenance/improvements of existing nonstructural range improvements¹
 - Mechanical treatments (e.g., chainings, bull hog) or fire treatments for control of pinyon and/or juniper encroachments¹
 - Use of controlled burns for brush, pinyon, and/or juniper control (BLM ID Team)¹
 - Require that all hay used on BLM-administered surface lands be certified weed free.
 - When grazing occurs during the growing season, try to avoid grazing an area at the same time every year.
 - Follow IM 2016-147 or most current BLM policy for wildlife escape ladders. In addition, include a stipulation in new grazing permits to install and maintain functional wildlife escape ladders in water developments.
 - Where grazing occurs during winter, use rest/rotation grazing so that areas are not grazed more than 2 out of 3 years.
 - Where needed, place signs on any gate through which the public passes to indicate the current dates of livestock in the unit (e.g., allotment, riparian pasture) on either side of

¹ BMPs that would not apply on Glen Canyon.

the fence. Signs will include instructions to keep the gate closed during those times the livestock will be in one of the two adjacent units.

Livestock Grazing BMPs Specific to Glen Canyon National Recreation Area

- New structural range improvements in the Glen Canyon Natural Zone (the portion designated as proposed wilderness, approximately 575,000 acres) may be considered on a case-by-case basis.
- The National Park Service (NPS) would not allow the use of nonnative species for seeding.
 Seeding would be conducted using native species that are genetically similar strains to local native plants for ecological restoration purposes.
- All water developments must consider the needs of wildlife and recreation and will not be constructed, maintained, or utilized in such a way as to preclude the access to that source by wildlife or recreation users. Water developments will be considered on a case-by-case basis.
- Weed management activities around structural range improvements will be in accordance with NPS Management Policies.
- Livestock grazing actions proposed on Glen Canyon lands will be in accordance with applicable Memoranda of Understanding, agreements, or plans concerning livestock grazing on Glen Canyon.

Minerals

Geophysical

- 1. Limit vehicular use for necessary tasks, such as geophysical exploration including project survey and layout, to OHV designations. Exceptions may be granted by permit on a case-by-case basis.
- Allow geophysical operations consistent with existing regulations and policies and subject to constraints in areas with special designations (Wilderness Study Area, ACEC, Wild and Scenic River segments tentatively classified as "wild" or "scenic") as determined through site-specific NEPA analysis.

Recreation

- 1. Construct recreation sites and provide appropriate sanitation facilities to minimize impacts on resource values and public health and safety and to minimize user conflicts of approved activities and access within an area as appropriate (BLM 2008).
- Use public education and/or physical barriers (such as rocks, posts, and vegetation) to direct or preclude uses and to minimize impacts on resource values (BLM 2008).
- 3. Use Leave No Trace, Tread Lightly, and Respect and Protect programs to promote positive stewardship of public lands.
- 4. Work with local organizations to identify and develop recreation needs on public land.
- 5. Develop a volunteer program to assist BLM in the management of Recreation and Visitor services.

Wild and Scenic Rivers

 All proposed actions would be evaluated to determine potential impacts on outstandingly remarkable values for suitable river segments. Projects would be relocated or modified to avoid impacts on identified outstandingly remarkable values (BLM 1999).

Wilderness Study Areas

1. Existing Wilderness Study Areas would be managed under BLM Manual 6330, Management of Wilderness Study Areas.

References

- Avian Power Line Interaction Committee. 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, Avian Power Line Interaction Committee, and the California Energy Commission. Washington, D.C. and Sacramento, CA.
- Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service (USFWS). 2005. Avian Protection Plan (APP) Guidelines. Retrieved from http://www.aplic.org/uploads/files/2634/APPguidelines_final-draft_Aprl2005.pdf.
- Bureau of Land Management (BLM). Undated. Guidelines for Recreation Management for Public Lands in Utah.
- Bureau of Land Management (BLM). 1997. Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah. United States Department of the Interior, Bureau of Land Management, Utah State Office.
- Bureau of Land Management (BLM). 1999. Grand Staircase-Escalante National Monument Proposed Management Plan Final Environmental Impact Statement. July 1999.
- Bureau of Land Management (BLM). 2008. *Kanab Field Office Record of Decision and Approved Resource Management Plan*. October 2008.
- Bureau of Land Management (BLM). 2009. Approved Resource Management Plan Amendments/Record of Decision (ROD) for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States. January 2009.
- Bureau of Land Management (BLM). 2013. Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands. First Edition 2013.
- Council on Environmental Quality (CEQ). 2011. Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact.

 Memorandum for Heads of Federal Departments and Agencies. Retrieved from http://www.spd.usace.army.mil/Portals/13/docs/regulatory/qmsref/eis/CEQ%20Mem o 14%20Jan%202011 Mitigated%20F0NSIs.pdf.
- Delaney, D. K., T. G. Grubb, and L. L. Pater. 1997. Effects of helicopter noise on nesting Mexican Spotted Owls. Project Order No. CE PO. 95-4. Rep. USAF 49 CES/CEV, Holloman Air Force Base, NM.
- Pollinator Health Task Force. 2015. National Strategy to Promote the Health of Honey Bees and other Pollinators. National Pollinator Health Task Force. Retrieved from https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/Pollinator%20Health%20Strategy%202015.pdf. Accessed: July 18, 2018.
- Romin, L. A., and J. A. Muck. 2002. *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances*. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Utah Field Office, Salt Lake City, Utah.
- U.S. Department of Transportation (USDOT). 2016. Construction Stormwater Field Guide.

 American Association of State Highway and Transportation Officials. Retrieved from https://www.udot.utah.gov/main/uconowner.gf?n=29978520836858024.

- U.S. Fish and Wildlife Service (USFWS). 2002a. *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances*. U.S. Fish and Wildlife Service, Utah Field Office, January 2002 update. Retrieved from http://www.oilandgasbmps.org/docs/UT35-RAPTORGUIDE.pdf. Accessed: June 6, 2018.
- U.S. Fish and Wildlife Service (USFWS). 2002b. Southwestern Willow Flycatcher Recovery Plan.

 August. Albuquerque, New Mexico. Retrieved from

 https://www.fws.gov/carlsbad/SpeciesStatusList/RP/20020830_RP_SWWF.pdf.

 Accessed: June 7, 2018.
- U.S. Fish and Wildlife Service (USFWS). 2015a. *Pollinator-Friendly Best Management Practices*for Federal Lands. Retrieved from
 https://www.fs.fed.us/wildflowers/pollinators/BMPs/documents/PollinatorFriendlyBMPs-FederalLands05152015.pdf. Accessed: July 15, 2018.
- U.S. Fish and Wildlife Service (USFWS). 2015b. *National Seed Strategy for Rehabilitation and Restoration*. 2015-2020. Plant Conservation Alliance. Retrieved from https://www.fs.fed.us/wildflowers/Native_Plant_Materials/documents/SeedStrategy081215.pdf. Accessed: July 17, 2018.

Abbreviations-Acronyms

Term	Definition
ACEC	Area of Critical Environmental Concern
bhp-hr	Brake horsepower-hour
BLM	Bureau of Land Management
ВМР	Best management practice
GIS	Geographic information system
GSENM/KEPA	Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area
MSO	Mexican spotted owl
NEPA	National Environmental Policy Act
NOx	Nitrogen oxides
NPS	National Park Service
NRHP	National Register of Historic Places
OHV	Off-highway vehicle
PAC	Protected activity center
RMP	Resource Management Plan
ROW	Right-of-way
UDWR	Utah Division of Wildlife Resources
USFWS	U.S. Fish and Wildlife Service
VRM	Visual Resource Management

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix H

Stipulations and Exceptions, Modifications, and Waivers

August 2019

Table of Contents

Introduction	H-1
Description of Stipulations	H-1
Exceptions, Modifications, and Waivers	H-1
Standard Terms and Conditions	H-2
References	H-38
Abbreviations-Acronyms	H-38
List of Tables	
Table 1. Stipulations including Exceptions, Modifications, and Waiver	s by Alternative H-3

Appendix H: Stipulations and Exceptions, Modifications, and Waivers

Introduction

This appendix identifies stipulations for surface-disturbing activities for Grand Staircase-Escalante National Monument (GSENM) and Kanab-Escalante Planning Area Resource Management Plans (RMPs)/Environmental Impact Statement (EIS). Stipulations are generally applied to mineral development (lands excluded from GSENM only) and land use authorizations, permits, and leases issued on Bureau of Land Management (BLM)-administered surface lands. In addition to stipulations, this table includes lease notices. Lease notices are notices of an authorization or contract by which one party conveys the use of property to another party in return for rental payments. The regulations establishing procedures for the processing of these leases are found in 43 Code of Federal Regulations (CFR) 2920 and 2740. Stipulations are applied to activities that are allowed within portions of the Planning Area. Certain areas have been closed to mineral development and other surface-disturbing activities; therefore, because these areas are closed, no stipulations are necessary. However, the table does note where areas are closed so the reader can compare how resources are protected under various alternatives. As appropriate, this appendix also identifies exceptions, modifications, and waivers for these stipulations.

Surface-disturbing activities are actions that alter the vegetation, surface/near-surface soil resources, and/or surface geologic features, beyond natural site conditions and on a scale that affects other public land values. Surface-disturbing activities may include: operation of heavy equipment to construct well pads, roads, pits and reservoirs; construction of pipelines, power lines, and roads; and intensive vegetation treatments (e.g., prescribed fire).

Surface-disturbing activities would typically <u>not</u> include such activities as livestock grazing, cross-country hiking, driving on designated routes, and minimum impact filming permits.

Description of Stipulations

Table 1 identifies stipulations for surface-disturbing activities that would be applied during project implementation. The term "stipulation" is used to broadly encompass the various types of limitations that would be placed on mineral development, rights-of-way, or other surface-disturbing activities.

Exceptions, Modifications, and Waivers

In addition to identifying the stipulations by resource, Table 1 identifies exceptions, modifications, and waiver criteria for the stipulations. Stipulations could be excepted, modified, or waived by the authorized officer, under the circumstances, and in accordance with the requirements, set forth in these RMPs/EIS.

An exception is a one-time exemption for a site-specific authorization; exceptions are determined on a case-by-case basis. A modification is a change to the language or provisions of a lease stipulation, either temporarily or for the term of the lease. A waiver is a permanent exemption from a stipulation.

Exceptions, waivers, and modifications would be considered when the BLM conducts sitespecific analysis. The authorized officer may require surveys, mitigation, environmental analysis, or consultation with other government agencies when making this determination.

Table 1 specifies the circumstances under which the general exceptions, modifications, and waivers would apply. The **general** exceptions, modifications, and waivers that commonly apply to many stipulations are as follows:

Exception – The authorized officer may grant an exception to a stipulation if, after environmental review, it is determined that the factors leading to its inclusion in the lease have changed sufficiently such that the protection provided by the stipulation is no longer necessary to meet resource objectives established in the RMPs.

Modification – The authorized officer may modify a stipulation as a result of new information if: (1) the protection provided by the stipulation is no longer necessary to meet resource objectives established in the final RMPs; or (2) the protection provided by the stipulation is no longer sufficient to meet resource objectives established in the final RMPs. The modification may be subject to public review for a least a 30-day period.

Waiver – The authorized officer may waive a stipulation if it is determined that the factors leading to its inclusion in the lease no longer exist. The waiver may be subject to public review for at least a 30-day period.

When no exceptions, modifications and waivers can be granted under a specific resource or resource use (e.g., the general exceptions, modifications, and waivers do not apply for the resource), then the table will state "none." Specific exceptions, modifications, and waivers have also been developed for some of the lease stipulations or right-of-way avoidance/exclusion criteria and are provided in Table 1.

Standard Terms and Conditions

All oil and gas leases are subject to standard terms and conditions. These include the stipulations that are required in order to protect special status species and to comply with the Endangered Species Act, as well as other resources of concern.

Standard terms and conditions for oil and gas leasing provide for relocation of proposed operations up to 200 meters and for prohibiting surface-disturbing operations for a period not to exceed 60 days, in accordance with 43 CFR 3101.1-2.

Table 1. Stipulations including Exceptions, Modifications, and Waivers by Alternative

				Alternative				
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
Air Quality (1003)	Leasable Minerals	Planning Area	X	X	Х	X	X	To mitigate potential impacts that mineral development emissions may have on regional ozone formation or air quality and air quality-related values, the following BMPs would be required for any development projects; exceptions may be considered during site-specific permitting: 1. Drill rig engines with Tier 2 or better emission rates, natural gasfired drill rig engines, or electrification of drill rig engines. 2. Stationary internal combustion engine standard of 2 grams NOx/bhp-hr for engines equal to or less than 300 horsepower and 1 gram NOx/bhp-hr for engines more than 300 horsepower. 3. Low-bleed or no-bleed pneumatic pump valves. 4. Dehydrator VOC emission controls to +95 percent efficiency. 5. Tank VOC emission controls to +95 percent efficiency equivalent to New Source Performance Standards subpart 0000. Purpose: To mitigate any potential impact mineral development emissions may have on regional ozone formation. Exception: None. Modification: The authorized officer may modify the stated requirements in accordance with updated specifications to comply with the Clean Air Act, or as deemed necessary to ensure that the stipulation is sufficient to maintain air quality and protect air quality related values. Waiver: None.

			Alternative					
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
Air Quality (1003)	Leasable Minerals	Planning Area	X	X	X	Х	X	All new and replacement internal combustion gas field engines of less than or equal to 300 design rated horsepower shall not emit more than 2 grams of NOx per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower. All new and replacement internal combustion gas field engines of greater than 300 design-rated horsepower must not emit more than 1 gram of NOx per horsepower-hour.
								Purpose: To protect air quality and air quality-related values. Exception: None.
								Modification: The authorized officer may modify the stated requirements in accordance with updated specifications to comply with the Clean Air Act, or as deemed necessary to ensure that the stipulation is sufficient to maintain air quality and protect air quality related values. Waiver: None.
Air Quality (1003)	Leasable Minerals	Planning Area	Х	Х	Х	Х	Х	A Fugitive Dust Control Plan would be required for mineral activities that would disturb a surface area larger than 0.25 acre or that would involve truck traffic on unpaved or untreated surfaces.
								Purpose: To minimize the generation of fugitive dust. Exception: None. Modification: General modification applies. Walver: None.

Appendix H: Stipulations and Exceptions, Modifications, and Waivers

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
Air Quality	Leasable Minerals Lease Notice	Planning Area		х	Х	Х	X	The lessee/operator is given notice that prior to project-specific approval, additional air quality analyses may be required to comply with the National Environmental Policy Act, Federal Land Policy and Management Act, and/or other applicable laws and regulations. Analyses may include dispersion modeling for deposition and visibility impacts analysis, control equipment determinations, and/or emission inventory development. These analyses may result in the imposition of additional project-specific air quality control measures.
								Purpose: To protection air quality if changes in conditions (environmental or human-derived) differ from those used in the air analysis for these RMPs.
								Exception: None.
								Modification: None.
								Waiver: None.
Fish and Wildlife (1016 Appendix G, BMPs)	Leasable Minerals TLS ROWs Avoidance	Minerals crucial seasonal TLS ranges, birthing habitats, and migration		х				Prohibit surface-disturbing and disruptive activities in big-game crucial seasonal ranges, birthing habitats, and migration corridors during sensitive seasons (e.g., from May 15 through June 15 during fawning season). Purpose: To protect big game crucial ranges, birthing habitats, and
	Avoidance	corridors						migration corridors.
								Exception: General exception applies.
								Modification: General modification applies.
Fish and Wildlife	Leasable	Big-game		Х				Waiver: General waiver applies. Co-locate or consolidate placement of permanent facilities in big
(1016)	Minerals	crucial seasonal ranges, birthing						game habitat so as to limit surface disturbance and habitat fragmentation.
	CSU ROWs	habitats, and						Purpose: To protect big game crucial ranges, birthing habitats, and
	Avoidance	migration						migration corridors.
	Avoidance	corridors						Exception: General exception applies.
								Modification: General modification applies.
								Walver: General waiver applies.

				Alt	ernat	ive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
Fish and Wildlife (1016)	Leasable Minerals TLS ROWs Avoidance	Highway 89 mule deer migration corridor					Х	Prohibit surface-disturbing activities in the Highway 89 mule deer migration corridor from October 1 to April 30, with exceptions considered. Purpose: To protect big game migration corridors. Exception: General exception applies. Modification: General modification applies. Waiver: General waiver applies.
Fish and Wildlife (1016)	Leasable Minerals CSU ROWs Avoidance	Big-game crucial seasonal ranges, birthing habitats, and migration corridors			х			Allow placement of permanent facilities and surface-disturbing and new surface-disruptive activities during sensitive seasons if after coordination with UDWR and utilizing BMPs it is determined that (1) the activity is consistent and compatible with protection, maintenance, or enhancement of the habitat and populations, or (2) the activity is relocated or redesigned to eliminate or reduce detrimental impacts. Purpose: To protect big game crucial ranges, birthing habitats, and migration corridors. Exception: General exception applies. Modification: General modification applies. Walver: General waiver applies.
Fish and Wildlife (1016)	Leasable Minerals NSO	Crucial desert bighorn sheep habitat		Х				Prohibit surface-disturbing activities in crucial desert bighorn sheep habitat. Purpose: To protect desert bighorn sheep habitat. Exception: None. Modification: General modification applies. Waiver: General waiver applies.

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
Fish and Wildlife (1016 Appendix G,	Leasable Minerals TLS	Crucial desert bighorn sheep habitat			Х			Prohibit surface-disturbing activities in crucial desert bighorn sheep habitat from April 1 through June 15 for lambing and from October 15 through December 15 for rutting.
BMPs)								Purpose: To minimize disturbance within desert bighorn sheep lambing and rutting habitat.
								Exception: The authorized officer may grant an exception if it is determined that the animals are not present in the project area or the activity can be completed so as to not adversely affect the animals. Routine operation and maintenance are allowed.
								Modification: The authorized officer may modify the stipulation if a portion of the area is not being used for lambing or rutting if the habitat is being utilized outside of stipulation boundaries as lambing and rutting habitat and needs to be protected.
								Waiver: The authorized officer may waive the stipulation if the lambing and rutting habitat is determined to be unsuitable or unoccupied and there is no reasonable likelihood of future use of the lambing or rutting habitat.
Fish and Wildlife (1011 Appendix G, BMPs)	Leasable Minerals CSU/TLS	Occupied raptor nest sites	Х	Х	Х	Х	Х	Prohibit disruptive activities to nesting raptors within 0.25 mile of a raptor nest during the following time periods (modifications of spatial and seasonal buffers for BLM-authorized actions would be permitted as long as protection of nesting raptors is ensured).
5 1111 3)								Great-horned owl: December 1-September 31
								Boreal owl: February 1-July 31
								Long-eared owl: February 1–August 15
								Screech owl: March 1-August 15
								Northern saw-whet owl: March 1-August 31
								Northern pygmy owl: April 1–August 1
								Prairie falcon: April 1-August 31
								• Flammulated owl: April 1–30
								Purpose: To minimize disruptions to nesting raptor species.
								Exception: General exception applies.
								Modification: General modification applies.
								Walver: General waiver applies.

				Alt	ernat	ive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
Fish and Wildlife (1011 Appendix G, BMPs)	Leasable Minerals TLS	Occupied raptor nest sites	Х	Х	Х	Х	Х	Prohibit disruptive activities to nesting raptors within 0.5 mile of raptor nests during the following time periods (modifications of spatial and seasonal buffers for BLM-authorized actions would be permitted as long as protection of nesting raptors is ensured): • Golden eagle: January 1–August 31 • Red-tailed hawk: March 15–August 15 • Cooper's hawk and sharp-shinned hawk: March 15–August 31 • Swainson's hawk: March 1–August 31 • Northern harrier: April 1–August 15 • Merlin and osprey: April 1–August 31 • Turkey vulture: May 1–August 15 Purpose: To minimize disruptions to nesting raptor species. Exception: General exception applies. Modification: General modification applies. Waiver: General waiver applies.
Fish and Wildlife (1011 Appendix G, BMPs)	Leasable Minerals CSU	Peregrine falcon nest sites	Х	Х	Х	Х	Х	Prohibit disruptive activities within 1 mile of peregrine falcon nest sites from February 1 to August 31. Purpose: To minimize disruptions to nesting peregrine falcon. Exception: General exception applies. Modification: General modification applies. Waiver: General waiver applies.
Special Status Species - Raptors (1021 Appendix G, BMPs)	Leasable Minerals CSU	Special status species nest sites	х	X	х	х	Х	Prohibit surface-disturbing activities within 0.25 mile around special status raptor species nest sites during the following time periods: • Short-eared owl: March 1-August 1 • Other special status raptor species: March 1-August 31 Purpose: To protect special status raptor species. Exception: General exception applies. Modification: General modification applies. Waiver: General waiver applies.

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
Special Status Species (1024)	ROWs Exclusion	Special Status Species Conservation and Habitat Enhancement		х	Х			Prohibit new ROWs and communication sites in special status habitat and applicable buffers (as specified in Appendix G [BMPs] or current guidance) when pre-development surveys confirm species' presence or when BLM staff determine that development could inhibit species' recovery. Purpose: Protect special status species and special status species habitat. Exception: General exception applies. Modification: General modification applies. Waiver: General waiver applies.
Special Status Species (1024)	ROWs Avoidance	Special Status Species Conservation and Habitat Enhancement				х		Avoid new ROWs and communication sites in special status habitat and within applicable buffers (as specified in Appendix G [BMPs] or current guidance) where suitable alternatives exist. Purpose: Protect special status species and special status species habitat. Exception: General exception applies. Modification: General modification applies. Waiver: General waiver applies.
Special Status Species - Mexican Spotted Owl (MSO) (1021 Appendix G, BMPs)	Leasable Minerals Moderate (CSU/TLS) Lease Stipulation	MSO habitat and nest sites	X	X	X	X	Х	If project activities occur within 0.5 mile of suitable owl habitat, dependent in part on whether the action is temporary or permanent: • For all temporary actions that may affect owls or suitable habitat: • If action occurs entirely outside of the owl breeding season and leaves no permanent structure or permanent habitat disturbance, action can proceed without an occupancy survey. • If action will occur during a breeding season, survey for owls prior to commencing activity. If owls are found, the activity should be delayed until the end of the breeding season. • Eliminate access routes created by a project through such means as raking out scars, revegetating, and gating access points. For all permanent actions that may affect owls or suitable habitat: • Survey 2 consecutive years for owls according to established protocol prior to commencing activity. If owls are found, no actions will occur within 0.5 mile of identified nest site. If the nest site is unknown, no activity will occur within the designated PACs.

				Alt	ernat	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
								 Avoid placing permanent structures within 0.5 mile of suitable habitat unless it has been surveyed and is not occupied. Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 dBA at 0.5 mile from suitable habitat, including canyon rims (Delaney et al. 1997). Placement of permanent noise-generating facilities should be determined by a noise analysis to ensure noise does not encroach upon a 0.5-mile buffer for suitable habitat, including canyon rims. Limit disturbances to and within suitable owl habitat by staying on designated routes. Limit new access routes created by the project. The BLM will, as a condition of approval on any project proposed within identified PACs and designated critical habitat within spatial buffers for MSO nests (0.5 mile), ensure that project proponents are notified as to their responsibilities for rehabilitation of temporary access routes and other temporary surface disturbances created by their project according to individual BLM field office standards and procedures or those determined in the project-specific Section 7 consultation. Purpose: To protect MSO habitat. Exception: General exception applies. Modification: General modification applies. Walver: General waiver applies.
Special Status Species - Mexican Spotted Owl (MSO) (1021 1028 Appendix G, BMPs)	Leasable Minerals CSU	MSO Protected Activity Centers	X	X	X	X	Х	 Permit no surface-disturbing activities from March 1 to August 31 in PACs, breeding habitats, or designated critical habitat to avoid disturbance to breeding owls. If a disruptive or surface-disturbing action occurs entirely outside of the breeding season (March 1 to August 31) and leaves no permanent structure or permanent habitat disturbance, the action may proceed without an occupancy survey. Land tenure adjustments would require breeding season surveys. If disruptive actions occur during the seasonal restriction period (March 1 to August 31), surveys (according to USFWS protocol for MSO) would be required prior to commencement of activities. If MSO are detected, activities should be delayed until after the seasonal restriction period. In areas that contain suitable habitat for MSO or designated Critical Habitat, actions would be avoided or restricted that may cause stress

				Alternative				
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
Resource	Stipulation	Applicable Area	A		1		E	and disturbance during nesting and rearing of their young. Appropriate measures would depend on whether the action is temporary or permanent and whether it occurs within or outside the owl nesting season. A temporary action is completed prior to the following breeding season leaving no permanent structures and resulting in no permanent habitat loss. A permanent action continues for more than one breeding season and/or causes a loss of owl habitat or displaces owls through disturbances, i.e., creation of a permanent structure. Current avoidance and minimization measures include the following: • Activities may require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated, and, if necessary, Section 7 consultation reinitiated. • Any activity that includes water production should be managed to ensure maintenance of enhancement of riparian habitat. • Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in canyon habitat suitable for MSO nesting. For all temporary actions that may affect owls or suitable habitat: • If the action occurs entirely outside of the owl breeding season from March 1 through August 31, and leaves no permanent structure or permanent habitat disturbance, the action can proceed without an occupancy survey. • If the action will occur during a breeding season, a survey for owls is required prior to commencing the activity. If owls are found, the activity should be delayed until outside of the breeding season. • Rehabilitate access routes created by the project through such means as raking out scars, revegetating, gating access points, etc. For all permanent actions that may affect owls or suitable habitat: • Survey 2 consecutive years for owls according to accepted protocol
								 prior to commencing activities. If owls are found, no actions will occur within 0.5 mile of an identified site. If nest site is unknown, no activity will occur within the designated current and historic PAC.
								Avoid permanent structures within 0.5 mile of suitable habitat unless surveyed and not occupied.

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
								 Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 dBA at 0.5 mile from suitable habitat, including canyon rims. Placement of permanent noise-generating facilities should be contingent upon a noise analysis to ensure noise does not encroach upon a 0.5-mile buffer for suitable habitat, including canyon rims. Limit disturbances to and within suitable habitat by staying on designated and/or approved routes. Limit new access routes created by the project. Modifications to the Surface Use Plan of Operations may be required in order to protect the MSO and/or habitat in accordance with Section 6 of the lease terms, the Endangered Species Act, and the regulations at 43 CFR 3101.1-2. Purpose: To protect MSO habitat. Exception: General exception applies. Modification: General modification applies. Walver: General waiver applies.
Special Status Species (1029)	Leasable Minerals Moderate (CSU, TLS)	Southwestern willow flycatcher habitats		X	X	X	X	Prohibit surface-disturbing and disruptive activities within 0.25 mile of suitable habitat for southwestern willow flycatcher from April 15 to August 15. (Alternative B) Prohibit surface-disturbing activities within 0.25 mile of occupied breeding habitat for southwestern willow flycatcher from April 15 to August 15. (Alternative C) Allow surface-disturbing activities within occupied breeding habitat between April 15 and August 15 for southwestern willow flycatcher if after site-specific analysis and consultation with USFWS it is determined that the activity would not adversely affect either the birds or their habitat. (Alternatives D and E) Purpose: To protect Southwestern willow flycatcher habitat. Exception: General exception applies. Modification: General modification applies. Walver: General waiver applies.

Appendix H: Stipulations and Exceptions, Modifications, and Waivers

				Alternative				
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
Special Status Species - Plants (1037)	Leasable Minerals CSU	Special status species plant habitat		X				Prohibit surfacing-disturbing or habitat-fragmenting activities within 0.25 mile of potential, suitable, and occupied special status plant habitat. Purpose: To protect special status species plant habitat. Exception: General exception applies. Modification: General modification applies. Waiver: General waiver applies.
Special Status Species - Plants (1037)	Leasable Minerals NSO	Special status species plant habitat			X			Avoid surface-disturbing activities within 330 feet or habitat-fragmenting activities within 660 feet of potential, suitable, and occupied special status plant habitat. Allow surface-disturbing activities within 330 feet or habitat-fragmenting activities within 660 feet of potential, suitable, and occupied special status plant habitat only if (1) the activity is consistent and compatible with protection, maintenance or enhancement of the habitat and populations as outlined in recovery and conservation plans and when such actions would not lead to the need to list the plant, or (2) the activity is relocated or redesigned to eliminate or reduce detrimental impacts to acceptable limits. Purpose: To protect special status species plants. Exception: An exception could be authorized if: (1) the activity is consistent and compatible with protection, maintenance, or enhancement of the habitat and populations as outlined in recovery and conservation plans and when such actions would not lead to the need to list the plant, or (2) the activity is relocated or redesigned to eliminate or reduce detrimental impacts to acceptable limits. Modification: General modification applies. Waiver: General waiver applies.

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
Special Status Species – Plants (1037)	Leasable Minerals CSU	Special status species plant habitat				х	X	Allow surface-disturbing activities in occupied special status plant habitat with appropriate mitigation or in occupied listed species habitat after consultation with USFWS during site-specific permitting. Purpose: To protect special status species plants. Exception: An exception could be authorized with appropriate mitigation or in occupied listed species habitat after consultation with
								USFWS.
								Modification: General modification applies.
								Waiver: General waiver applies.
Special Status Species - Plants	Leasable Minerals	Federally listed plant species		Х				Manage mineral leasing as open subject to NSO in federally listed plant species occupied and suitable habitat.
(1038)	NSO	occupied and suitable habitat						Purpose: To protect federally listed plant species habitat.
		Sultuble Hubitut						Exception: None.
								Modification: None.
								Waiver: None.
Special Status Species - Plants (1038)	Leasable Minerals CSU	Federally listed plant species occupied and suitable habitat			X	Х	X	Manage mineral leasing as open subject to CSU in federally listed plant species occupied and suitable habitat. In these areas, well placement would be located to not adversely affect the species or their habitats.
								Purpose: To protect federally listed plant species.
								Exception: General exception applies.
								Modification: General modification applies.
								Walver: General waiver applies.
Special Status	Leasable	Special status		Х				Prohibit surface-disturbing and disruptive activities within 0.5 mile of
Species - Fish	Minerals	fish habitat						special status fish species habitat.
(1039)	NS0							Purpose: To protect special status fish habitat.
								Exception: General exception applies.
								Modification: General modification applies.
								Waiver: General waiver applies.

Appendix H: Stipulations and Exceptions, Modifications, and Waivers

				Alt	ernat	ive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
Special Status Species – Fish (1039)	Leasable Minerals CSU	Special status fish habitat			х	х	X	Avoid surface-disturbing and disruptive activities within 330 feet of current special status fish species habitat. Purpose: To protect special status fish habitat. Exception: An exception could be authorized only if impacts from the proposed action can be adequately mitigated, or the action would benefit the species and/or habitat. (Alternative C) An exception could be authorized only after a site-specific analysis and consultation with USFWS for listed fish species. (Alternatives D and E) Modification: General modification applies. Waiver: General waiver applies.
Lands with Wilderness Characteristics (1042)	Mineral Leasing Closed Salable Minerals Closed ROWs Exclusion Area	BLM-identified lands with wilderness characteristics and former SITLA inholdings completely surrounded by a WSA (559,521 acres)		X				Closed to mineral leasing (KEPA only). Designate as ROW exclusion areas. Closed to mineral materials sales. Purpose: To protect the size, naturalness, and outstanding opportunities for solitude and/or primitive and unconfined recreation.
Lands with Wilderness Characteristics (1042)	Mineral Leasing NSO Salable Minerals Open only to existing site expansion ROWs Avoidance Area	Lands managed for protection of wilderness characteristics (92,752 acres)			х			Allow mineral leasing subject to No Surface Occupancy (KEPA only). Salable Minerals: Allow for expansion of existing mineral materials sites. Designate as ROW avoidance areas. Purpose: To protect the size, naturalness, and outstanding opportunities for solitude and/or primitive and unconfined recreation. Exception: None. Modification: General modification applies. Walver: General waiver applies.

				Alt	ernat	ive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
Paleontological Resources (1045) Appendix G, BMPs)	Leasable Minerals CSU	Within Potential Fossil Yield Classification (PFYC) Class 4 and 5 Areas		X	X	X	Х	Surveys and monitoring (where appropriate) are required for all surface-disturbing mineral activities in PFYC Class 4 and 5 areas. Where monitoring encounters vertebrate and vertebrate trace fossils during mineral operations, all operations must cease until the BLM determines whether the site can be avoided, protected, or fully excavated. Purpose: To protect paleontological resources. Exception: None. Modification: General modification applies. Waiver: General waiver applies.
Soil Resources (1052)	Leasable Minerals NSO	Fragile or sensitive soil areas		Х				Prohibit surface-disturbing activities in fragile or sensitive soil areas. Purpose: To protect fragile or sensitive soils. Exception: For minerals related actions, the authorized officer may grant an exception if the operator can provide a plan of development demonstrating that the proposed action would be properly designed and constructed to support the anticipated types and levels of use and mitigate erosion. Roads must be designed to meet BLM road standards for drainage control and surfaced for the appropriate level and type of vehicle use. Sediment, erosion control, and reclamation plans would be required. For ROW proposed actions, the authorized officer may grant an exception if there is no reasonable alternative for relocating the ROW. Sediment and erosion control and reclamation plans would be required. For other surface-disturbing activities, the authorized officer may grant an exception to improve rangeland health so that site characteristics are trending toward those described in the respective ecological site description. Modification: The authorized officer may modify the stipulation if it is determined that the project area is not within fragile or sensitive soils. Walver: The authorized officer may waive the stipulation if areas mapped as fragile or sensitive are verified as not present on the entire project area.

Appendix H: Stipulations and Exceptions, Modifications, and Waivers

				Alternative				
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
Soil Resources (1052)	Leasable Minerals CSU	Fragile or sensitive soil areas			х	Х	X	Prior to allowing surface disturbance in fragile or sensitive soil areas (e.g., saline soils, highly erosive, late successional biological, expansive), operators would be required to submit a soil health and restoration plan that includes site-specific mitigation measures for activities proposed in fragile or sensitive soil areas. The BLM must approve the plan before surface-disturbing activities would be authorized. The BLM may allow surface disturbance in fragile or sensitive soil areas as long as impacts would be mitigated. Purpose: To protect fragile or sensitive soils. Exception: None. Modification: The authorized officer may modify the stipulation if it is determined that the project area is not within fragile or sensitive soils. Waiver: The authorized officer may waive the stipulation if areas mapped as fragile or sensitive are verified as not present on the entire project area.

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
Soil Resources (1053)	Leasable Minerals NSO	Slopes greater than 30 percent		х	х	х	X	Prohibit surface-disturbing activities on slopes greater than 30 percent. Purpose: To limit erosion and protect steep slopes. Exception: For minerals related actions, the authorized officer may grant an exception if the operator can provide a plan of development demonstrating that the proposed action would be properly designed and constructed to support the anticipated types and levels of use and mitigate erosion. Roads must be designed to meet BLM road standards for drainage control and surfaced for the appropriate level and type of vehicle use. Sediment and erosion control and reclamation plans would be required. Under Alternative B, no exceptions for leasable minerals. Under alternatives C, D, and E, exceptions would be considered. For ROW proposed actions, the authorized officer may grant an exception if there is no reasonable alternative for relocating the ROW. Sediment and erosion control and reclamation plans would be required. Under Alternative B, ROW exclusion. Under alternatives C, D, and E, avoidance. Modification: The authorized officer may modify the stipulation if it is determined that the project area does not contain slopes greater than 30 percent. Walver: The authorized officer may waive the stipulation if it is verified that steep slopes are not present on the entire project area.

				Alt	ernat	ive		
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
Water Resources (1059)	Leasable Minerals NSO	Drinking Water Source Protection Zones		х				Prohibit surface-disturbing actions in Drinking Water Source Protection Zones and culinary water sources. Develop strategies to mitigate any existing BLM-authorized activities that pose a threat to public water systems.
								Purpose: To protect drinking water.
								Exception: The authorized officer may grant an exception if the operator can provide a hydrogeologic survey and a plan of development demonstrating that the proposed action would be properly designed and constructed to support the anticipated types and levels of use without degrading the quality or quantity of water supplied by the drinking water source. A drinking water source protection plan would be required. When authorized, minimum distance of disturbance from the water source will be defined by the Water Source Protection Zone Classification (1, 2, 3, or 4). Modification: General modification applies.
								Walver: General waiver applies.
Water Resources (1059)	Leasable Minerals CSU	Drinking Water Source Protection Zones			X	X	X	Allow surface-disturbing activities within Drinking Water Source Protection Zones where the disturbance does not degrade the resource. In these areas locate permanent facilities to eliminate potential contamination or pollution sources, and design facilities to prevent contaminated discharges to groundwater.
								Purpose: To protect culinary water sources
								Exception: The authorized officer may grant an exception if the operator can provide a hydrogeologic survey and a plan of development demonstrating that the proposed action would be properly designed and constructed to support the anticipated types and levels of use without degrading the quality or quantity of water supplied by the drinking water source. A drinking water source protection plan would be required. When authorized, minimum distance of disturbance from the water source will be defined by the Water Source Protection Zone Classification (1, 2, 3, or 4). Modification: General modification applies. Waiver: General waiver applies.

				Alt	ernat	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
Vegetation (1074)	Leasable Minerals NSO	Riparian and wetland areas		X				Prohibit surface-disturbing activities and permanent facilities within 0.5 mile (2,640 feet) of riparian/wetland areas. Apply NSO stipulation and ROW avoidance. Purpose: To protect riparian and wetland areas. Exception: The authorized officer may grant an exception if the operator can provide a hydrologic assessment that includes a description of the geology and potentially affected aquifers and springs and a drilling plan showing how riparian resources would be protected. Riparian monitoring and reclamation plans would also be required. Monitoring would occur prior to, during, and after anticipated surface disturbances to detect impacts on riparian resources. Modification: General modification applies. Walver: General waiver applies.
Vegetation (1074)	Leasable Minerals NSO	Riparian and wetland areas			Х	X	х	Avoid new surface-disturbing activities within 330 feet of riparian/wetland areas unless it could be shown that (1) there are no practical alternatives (e.g., a designated utility corridor), (2) all long-term impacts could be fully mitigated, or (3) the activity would benefit and enhance the riparian area. Apply CSU on Federal mineral leasing and ROW avoidance. Purpose: To protect riparian and wetland areas. Exception: The authorized officer may grant an exception if the operator can provide a hydrologic assessment that includes a description of the geology and potentially affected aquifers and springs and a drilling plan showing how riparian resources would be protected. Riparian monitoring and reclamation plans would also be required. Monitoring would occur prior to, during, and after anticipated surface disturbances to detect impacts on riparian resources. Modification: General modification applies. Walver: General waiver applies.

Appendix H: Stipulations and Exceptions, Modifications, and Waivers

				Alt	ernat	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
Lands and Realty (2009)	Leasable Minerals NSO	R&PP leases		х	Х	Х	X	To reduce potential resource conflicts, manage R&PP Act land tenure adjustments subject to NSO stipulations for mineral leasing to ensure protection of the R&PP Act leaseholder's improvements on the leased area. If these sites are no longer required, the lease would be relinquished or terminated, and they would be managed consistent with adjacent lands. Purpose: To protect the realization of purposes for which the R&PP lease was issued. Exception: None. Modification: General modification applies. Walver: General waiver applies.
Visual Resources (1084)	Moderate CSU	VRM Class Areas		х	х	х	X	Surface-disturbing activities must conform to the VRM Class Objectives where the proposed surface disturbance is located. Purpose: To protect high-quality visual resources. Exception: None. Modification: None. Waiver: None.
Recreation and Visitor Services (2069)	Leasable Minerals (NSO)	Developed recreation sites and backcountry airstrips	Х	Х	Х	Х	Х	Apply an NSO stipulation for leasable minerals to developed recreation sites and backcountry airstrips. Purpose: Provide for safety. Exception: General exceptions applies. Modification: General modification applies. Waiver: General waiver applies.

				Alt	ernat	ive		
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
Recreation (2081 2082 2084 2085 2086 2092 2098 2099 2100 2101 2102 2103)	Leasable Minerals NSO	Escalante Canyons SRMA Circle Cliffs SRMA Fiftymile Mountain SRMA Highway 12 Corridor SRMA Little Desert RMZ Highway 89 Corridor SRMA Hole-in-the-Rock Road RMZ Nephi Pasture SRMA Paria-Hackberry SRMA Cottonwood Road RMZ Skutumpah SRMA Paria Canyon- Vermilion Cliffs SRMA		X			X	Specific SRMAs and RMZs open to mineral leasing with major constraints (NSO). Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in areas with important recreation values. Exception: None. Modification: General modification applies. Waiver: General waiver applies.
Recreation (2104)	Leasable Minerals CSU	Kanab- Escalante ERMA		X				Mineral operations would be subject to the following CSU and TLS stipulations: 1. Multiple wells per pad as appropriate. 2. Well pads would be placed no closer than 160 acres apart. 3. Construction, drilling, and completion activities restricted between March 1–June 15 and September 1–October 31. 4. Production facilities would be co-located and designed to minimize surface impacts. Pipelines and utilities would be placed within or immediately adjacent to existing roads.

				Alt	ernat	ive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
								 5. Limit unreclaimed surface disturbance to no more than 15 acres per well pad (including associated facilities, roads, pipelines, and utilities) following interim reclamation. 6. Extensive interim reclamation of roadway disturbance and reclamation of well pads to minimize long-term surface disturbance.
								7. Final reclamation fully restoring the original landform. Travel routes would be restored to their original character.
								8. This stipulation would allow for geophysical operations.
								Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in areas with important recreation values.
								Exception: Where it can be shown that the proposed operation would not cause unacceptable impacts, the authorized officer may grant an exception based on any of the factors listed below:
								a. If alternative placement of well pads would enable the operator to use areas that have been previously disturbed.
								b. If alternative placement of well pads would minimize the need for new road construction.
								c. If there is a demonstrated reduction in impacts on resources.
								d. If there is a valid safety concern.
								e. An exception to the 160-acre placement could be granted if the proponent successfully demonstrates that geologic factors preclude access to a substantial portion of the oil and gas reservoir. An exception to the 160-acre placement would still require, where practical, use of directional drilling technology and other BMPs that would result in a reduction in surface disturbance and the number of oil and gas related facilities.
								Modification: The authorized officer may modify a stipulation as a result of new information if: (1) the protection provided by the stipulation is no longer necessary to meet resource objectives established in the final RMPs; or (2) the protection provided by the stipulation is no longer sufficient to meet resource objectives established in the final RMPs. The modification may be subject to public review for a least a 30-day period.
								Waiver: The authorized officer may waive a stipulation if it is determined that the factors leading to its inclusion in the lease no

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
								longer exist. The waiver may be subject to public review for at least a 30-day period.
Recreation	Leasable	Paria River RMZ		Х				Closed to mineral leasing.
(2083 2088)	Minerals Closed	Burr Trail RMZ						Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in areas with important recreation values.
Recreation (2084	Leasable Minerals	Escalante Canyons SRMA			Х		Х	Specific SRMAs and RMZs open to mineral leasing with major constraints (NSO).
2086 2092 2099 2100 2101)	NSO	Highway 12 Corridor SRMA Little Desert RMZ Highway 89 Corridor SRMA Hole-in-the-Rock Road SRMA/RMZ Cottonwood Road RMZ						Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in areas with important recreation values. Exception: None. Modification: General modification applies. Waiver: General waiver applies.
Recreation (2081 2082 2085 2088 2098 2102 2103 2104)	Leasable Minerals CSU	Circle Cliffs SRMA Burr Trail RMZ Fiftymile Mountain SRMA Nephi Pasture SRMA Paria-Hackberry SRMA Skutumpah SRMA Kanab- Escalante ERMA			X			Open to mineral leasing subject to moderate constraints CSU, including: 1. Multiple wells per pad as appropriate. 2. Well pads would be placed no closer than 160 acres apart. In Kanab-Escalante ERMA well pads would be placed no closer than 80 acres apart. 3. Production facilities would be co-located and designed to minimize surface impacts. Pipelines and utilities would be placed within or immediately adjacent to existing roads. 4. Limit unreclaimed surface disturbance to no more than 15 acres per well pad (including associated facilities, roads, pipelines, and utilities) following interim reclamation. 5. Extensive interim reclamation of roadway disturbance and reclamation of well pads to minimize long-term surface disturbance. 6. Final reclamation fully restoring the original landform. Travel routes would be restored to their original character.

Appendix H: Stipulations and Exceptions, Modifications, and Waivers

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
		Paria Canyon-						7. This stipulation would allow for geophysical operations.
		Vermilion Cliffs SRMA						For the Kanab-Escalante ERMA: Same as above but surface spacing limited to 80 acres and construction, drilling, and completion activities restricted between March 1–June 15 and September 1–October 31.
								Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in areas with important recreation values.
								Exception: Where it can be shown that the proposed operation would not cause unacceptable impacts, the authorized officer may grant an exception based on any of the factors listed below:
								a. If alternative placement of well pads would enable the operator to use areas that have been previously disturbed.
								b. If alternative placement of well pads would minimize the need for new road construction.
								c. If there is a demonstrated reduction in the impacts on resources.
								d. If there is a valid safety concern.
								e. An exception to the restrictions on well pad density could be granted if the proponent successfully demonstrates that geologic factors preclude access to a substantial portion of the oil and gas reservoir. An exception to the restrictions on well pad density would still require, where practical, use of directional drilling technologies and other BMPs that would result in a reduction in surface disturbance and the number of oil and gas related facilities. Modification: General modification applies.
								Walver: General waiver applies.
Recreation	Leasable	Paria River RMZ			Х			Closed to mineral leasing.
(2083)	Minerals Closed							Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in areas with important recreation values.

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
Recreation (2100)	Leasable Minerals NSO	Little Desert RMZ (tied to OHV open area)				X	X	Specific SRMAs and RMZs open to mineral leasing with major constraints (NSO). Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in areas with important recreation values. Exception: General exception applies. Modification: General modification applies. Waiver: General waiver applies.
Recreation (2104)	Leasable Minerals CSU	Kanab- Escalante ERMA				х	X	Leasable mineral operations would be subject to the following requirements: 1. Multiple wells per pad as appropriate. 2. Well pads would be placed no closer than 80 acres apart. 3. Production facilities would be co-located and designed to minimize surface impacts. Pipelines and utilities would be placed within or immediately adjacent to existing roads. 4. Limit unreclaimed surface disturbance to no more than 15 acres per well pad (including associated facilities, roads, pipelines, and utilities) following interim reclamation. 5. Extensive interim reclamation of roadway disturbance and reclamation of well pads to minimize long-term surface disturbance. 6. Final reclamation fully restoring the original landform. Travel routes would be restored to their original character. 7. This stipulation would allow for geophysical operations. 8. Construction, drilling, and completion activities restricted between March 1–June 15 and September 1–October 31. Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in areas with important recreation values. Exception: Where it can be shown that the proposed operation would not cause unacceptable impacts, the authorized officer may grant an exception based on any of the factors listed below: a. If alternative placement of well pads would enable the operator to use areas that have been previously disturbed.

				Alt	ernat	ive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
								b. If alternative placement of well pads would minimize the need for new road construction.
								c. If there is a demonstrated reduction in the impacts on resources.
								d. If there is a valid safety concern.
								e. An exception to the 160-acre placement could be granted if the proponent successfully demonstrates that geologic factors preclude access to a substantial portion of the oil and gas reservoir. An exception to the 160-acre placement would still require, where practical, use of direction drilling technologies and other BMPs that would result in a reduction in surface disturbance and the number of oil and gas related facilities.
								Modification: General modification applies.
								Walver: General waiver applies
Recreation	Salable	All		Х				Close to mineral materials disposal.
(2081-2104)	Minerals Closed	SRMAs/RMZs						Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in areas with important recreation values.
Recreation	Salable	Specific			Х		Х	Closed in Paria River RMZ and Little Desert RMZ.
(2083 2084	MineralsEscalanteCanyons	SRMAs/RMZs, as noted						Closed to exclusive pits, but open to community pits 5 acres or fewer of unreclaimed area. Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts:
2085 2086	SRMA							Purpose: To minimize the amount of surface disturbance and related
2088	Burr Trail							impacts resulting from mineral development in areas with important
2092	SRMA/RMZ							recreation values. In Petrified Wood Area, avoid surface disturbance
2099 2100	Fiftymile Mountain SRMA							and placement of facilities near concentrations of wood or in situ logs.
2102 2103)	Highway 12 Corridor SRMA							
	Hole-in-the- Rock Road SRMA/RMZ							
	Cottonwood Road RMZ							

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
	Skutumpah SRMA							
	 Paria Canyon- Vermilion Cliffs SRMA 							
Recreation (2100)	Salable Minerals Closed	Little Desert RMZ				Х		Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in areas with intensive recreational use.
Recreation (2081 2082 2084 2085 2086 2088 2092 2098 2099 2102 2103 2104)	ROWs ROW Avoidance	Escalante Canyons SRMA (1/2) Burr Trail RMZ (2) Circle Cliffs SRMA (2) Fiftymile Mountain SRMA (2) Highway 12 Corridor SRMA (1/2) Hole-in-the-Rock Road RMZ (2) Nephi Pasture SRMA (2) Paria Hackberry SRMA (2) Cottonwood Road RMZ (1/2) Skutumpah Road SRMA (2) Paria Canyon Vermilion Cliffs SRMA (2) Kanab- Escalante ERMA (2)		X			X	These areas would be ROW avoidance areas and subject to the following (as indicated by numbers "1" and "2" in the "applicable area" column). (1) New ROWs would be confined to existing utility corridors. (2) Maintenance, improvement, or upgrade of existing ROWs would be allowed. New ROWs would only be granted to address issues associated with use, maintenance, or improvement of existing roads. Purpose: To prevent future placement of transportation and transmission infrastructure in important recreation areas. Exception: General exceptions applies. Modification: General modification applies. Walver: General waiver applies.

				Alt	ernat	ive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
		Dance Hall Rock RMZ Dry Fork Wash RMZ Devils Garden RMZ 20-Mile Dinosaur Track RMZ Egypt Slot Canyon RMZ						
Recreation (2083 2087 2091 2100 2101)	ROWs ROW Exclusion	Calf Creek RMZ Spencer Flat RMZ Little Desert RMZ Paria River RMZ Highway 89 Corridor SRMA		х				These areas would be ROW exclusion areas. Purpose: To prevent future placement of transportation and transmission infrastructure in important recreation areas. Exception: None. Modification: None. Waiver: None.
Recreation (2091)	ROWs ROW Avoidance	Spencer Flat RMZ			Х			Purpose: To prevent future placement of transportation and transmission infrastructure in important recreation areas. Exception: General exceptions applies Modification: General modification applies. Waiver: General waiver applies.
Recreation (2083 2087 2100)	ROWs ROW Exclusion	Calf Creek RMZ Little Desert RMZ Paria River RMZ			х			These areas would be ROW exclusion areas. Purpose: To prevent future placement of transportation and transmission infrastructure in important recreation areas. Exception: None. Modification: None. Waiver: None.
Recreation (2100)	ROWs ROW Exclusion	Little Desert RMZ				Х		These areas would be ROW exclusion areas. Purpose: To prevent future placement of transportation and transmission infrastructure in important recreation areas. Exception: None. Modification: None. Waiver: None.

				Alt	ernat	ive		
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
ACEC (3002 Appendix S, ACECs)	Leasable Minerals NSO	Alvey Wash ACEC		х				Open to mineral leasing with major constraints (NSO). Surface facilities incident to underground mining would be required to avoid known and documented archaeological sites. Stipulations would be necessary to mitigate adverse effects of subsidence. Purpose: To protect relevant and important values in the Alvey Wash ACEC. Exception: None. Modification: None. Walver: None.
ACEC (3002 Appendix S, ACECs)	Other Surface- Disturbing Activities Vegetation Treatments	Butler Valley ACEC		Х				Prohibit vegetation treatments in known suitable habitat for special status species plants. Purpose: To protect relevant and important values in the Butler Valley ACEC. Exception: None. Modification: None. Waiver: None.
ACEC (3002 Appendix S, ACECs)	Leasable Minerals NSO	Circle Cliffs ACEC		х				Open to mineral leasing with major constraints (NSO). Purpose: To protect relevant and important values in the Circle Cliffs ACEC. Exception: None. Modification: None. Walver: None.
ACEC (3002 Appendix S, ACECs)	Leasable Minerals CSU	Circle Cliffs ACEC			х			Apply CSU stipulation for fluid mineral leasing. Avoid placement of oil and gas-related facilities and structures in areas where there are known or documented archaeological sites. Where setting is a component of a site's eligibility, require a viewshed analysis and require facilities to be placed outside the viewshed, or require mitigation to avoid adversely affecting the setting (Alternative C only). Purpose: To protect relevant and important values in the Circle Cliffs ACEC. Exception: General exception applies. Modification: General modification applies. Walver: General waiver applies.

Appendix H: Stipulations and Exceptions, Modifications, and Waivers

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
ACEC (3002 Appendix S, ACECs	Other Surface- Disturbing Activities Vegetation Treatments	Cockscomb East ACEC		X				Prohibit vegetation treatments that are likely to harm or will not benefit special status plant species in known suitable habitat. Purpose: To protect relevant and important values in the Cockscomb East ACEC. Exception: None. Modification: None. Waiver: None.
ACEC (3002 Appendix S, ACECs	Leasable Minerals NSO	Cockscomb West ACEC		X				Open to mineral leasing with major constraints (NSO). Require surface facilities incident to underground mining to avoid known and documented archaeological sites. Apply stipulations to mitigate adverse effects of subsidence. Purpose: To protect relevant and important values in the Cockscomb West ACEC. Exception: Biological Soil Crusts: The authorized officer may grant an exception if the operator can provide a plan of development demonstrating that the proposed action would be properly designed and constructed to support the anticipated types and levels of use and mitigate erosion. Roads must be designed to meet BLM road standards for drainage control and surfaced for the appropriate level and type of vehicle use under the proposed action. Sediment and erosion control and reclamation plans would be required. Reclamation plans must include biological soil crust restoration. Modification: General modification applies. Walver: General waiver applies.

				Alt	ernat	ive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
ACEC (3002 Appendix S, ACECs)	Leasable Minerals CSU	Cockscomb West ACEC			Х			Open to mineral leasing with moderate constraints (CSU). Avoid placement of mineral facilities and structures in areas where there are known or documented archaeological sites. Where setting is a component of a site's eligibility, a viewshed analysis will be required and facilities would be required to be placed outside the viewshed, or mitigation would be required to avoid adversely affecting the setting. Purpose: To protect relevant and important values in the Cockscomb West ACEC. Exception: Biological Soil Crusts: The authorized officer may grant an exception if the operator can provide a plan of development demonstrating that the proposed action would be properly designed and constructed to support the anticipated types and levels of use and mitigate erosion. Roads must be designed to meet BLM road standards for drainage control and surfaced for the appropriate level and type of vehicle use under the proposed action. Sediment and erosion control and reclamation plans would be required. Reclamation plans must include biological soil crust restoration. Modification: General modification applies. Waiver: General waiver applies.
ACEC (3002 Appendix S, ACECs	Leasable Minerals NSO	Hole-in-the-Rock ACEC		х				Open to mineral leasing with major constraints (NSO). Require surface facilities incident to underground mining to avoid known and documented archaeological sites. Apply stipulations to mitigate adverse effects of subsidence. Purpose: To protect relevant and important values in the Hole-in-the-Rock ACEC. Exception: None. Modification: None. Waiver: None.

Appendix H: Stipulations and Exceptions, Modifications, and Waivers

				Alt	ernat	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
ACEC (3002 Appendix S, ACECs)	Leasable Minerals NSO	Straight Cliffs/Fiftymile Bench ACEC		х				Open to mineral leasing with major constraints (NSO). Require surface facilities incident to underground mining to avoid known and documented archaeological sites. Apply stipulations to mitigate adverse effects of subsidence.
								Purpose: To protect relevant and important values in the Straight Cliffs/Fiftymile Bench ACEC.
								Exception: None.
								Modification: None.
								Waiver: None.
ACEC (3002 Appendix S, ACECs)	Leasable Minerals CSU	Straight Cliffs/Fiftymile Bench ACEC			х			Open to mineral leasing with moderate constraints (CSU). Avoid placement of oil and gas-related facilities and structures in areas where there are known or documented archaeological sites. Where setting is a component of a site's eligibility, require a viewshed analysis and require facilities to be placed outside of the viewshed, or require mitigation to avoid adversely affecting the setting. Purpose: To protect relevant and important values in the Straight Cliffs/Fiftymile Bench ACEC. Exception: General exception applies. Modification: General modification applies.
								Waiver: General waiver applies.
ACEC (3002 Appendix S, ACECs)	Saleable Closed	Alvey Wash ACEC Circle Cliffs ACEC Cockscomb West ACEC Collet Top ACEC Hole-in-the-Rock ACEC Straight Cliffs / Fiftymile Bench ACEC		Х				Prohibit exclusive commercial mineral materials sites. Prohibit community pits larger than 5 acres in size. Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts. Purpose: To minimize the amount of surface disturbance and related impacts on relevant and important values resulting from mineral development in ACECs.

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
ACEC (3002 Appendix S, ACECs	Saleable Closed	Circle Cliffs ACEC Cockscomb West ACEC Straight Cliffs/Fiftymile Bench ACEC			X			Prohibit exclusive commercial mineral materials sites. Prohibit community pits larger than 5 acres in size. Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts. Purpose: To minimize the amount of surface disturbance and related impacts on relevant and important values resulting from mineral development in ACECs.
National Trails (3006)	Leasable Minerals NSO ROWS Exclusion Area	Old Spanish National Historic Trail (OSNHT) National Trail Management Corridor (NTMC) to include lands up to 3 miles or within the viewshed of the OSNHT, whichever is less, where there is a federal protection component		Х				Prohibit new surface-disturbing activities in the OSNHT NTMC. Within KEPA, open to mineral leasing with major constraints (NSO). Apply ROW exclusion area (including communication sites). Allow new crossings only in designated utility corridors. Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in the OSNHT NTMC and to protect the setting along the trail segments. Exception: The authorized officer may grant an exception if the proposed project is not within view of a high potential site or segment as stipulated. Modification: The authorized officer may modify the stipulation to match any changes based on updated information. Waiver: The authorized officer may waive the stipulation if it is determined that high potential sites and segments of the OSNHT do not exist within the lease area.

				Alt	ernat	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	Е	Stipulation Description
National Trails (3006)	Leasable Minerals NSO ROWS Avoidance Area (except in designated utility corridor)	OSNHT NTMC to include lands up to 0.5 mile or within the viewshed of the OSNHT, whichever is less, where there is a federal protection component			х			Within KEPA, allow mineral leasing subject to NSO unless the proposed project and its associated impacts are not visible from the OSNHT. Apply ROW avoidance area, except in designated utility corridors. Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in the OSNHT NTMC and to protect the setting along the trail segments. Exception: The authorized officer may grant an exception if the proposed project is not within view of a high potential site or segment as stipulated. Modification: The authorized officer may modify the stipulation to match any changes based on updated information. Walver: The authorized officer may waive the stipulation if it is determined that high potential sites and segments of the OSNHT do not exist within the lease area.
National Trails (3006)	Leasable Minerals CSU ROWs Open	OSNHT NTMC to include lands up to 300 feet within the viewshed of the OSNHT, whichever is less, where there is a federal protection component				х	Х	Within KEPA, allow mineral leasing with moderate constraints CSU. Purpose: To minimize the amount of surface disturbance and related impacts resulting from mineral development in the OSNHT NTMC and to protect the setting along the trail segments. Exception: The authorized officer may grant an exception if the proposed project is not within view of a high potential site or segment as stipulated. Modification: The authorized officer may modify the stipulation to match any changes based on updated information. Walver: The authorized officer may waive the stipulation if it is determined that high potential sites and segments of the OSNHT do not exist within the lease area.
Wild & Scenic Rivers (3014)	Leasable Minerals Closed Salable Minerals Closed ROWs Exclusion Area	Suitable WSR segments and associated corridors that are tentatively classified as wild or scenic		х	х	Х	X	Purpose: To protect the tentative classification and outstandingly remarkable values along suitable river corridors.

				Alt	erna	tive		
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
Wild & Scenic Rivers (3014)	Leasable Minerals Closed Salable Minerals Open ROWs Exclusion Area	Suitable WSR segments and associated corridors that are tentatively classified as recreational		X				Purpose: To protect the tentative classification and outstandingly remarkable values along suitable river corridors.
Wild & Scenic Rivers (3014)	Leasable Minerals NSO Salable Minerals Open ROWS Avoidance Area	Suitable WSR segments and associated corridors that are tentatively classified as recreational			X			 Exclude ROWs (including communication sites) in suitable WSR corridors with a tentative classification of wild or scenic, except in designated utility corridors. Avoid ROWs (including communication sites) in all suitable WSR corridors with a tentative classification of recreational, except in designated utility corridors. Recommend withdrawal of suitable WSR river corridors with a tentative classification of wild or scenic from mineral location and entry. Close all suitable WSR corridors tentatively classified as wild or scenic to mineral leasing. Open suitable WSR corridors tentatively classified as recreational to mineral leasing with an NSO stipulation. Close suitable wild or scenic river corridors to mineral materials disposal. Purpose: To protect the tentative classification and outstandingly remarkable values along suitable river corridors. Exception: None. Modification: None. Walver: None.

Appendix H: Stipulations and Exceptions, Modifications, and Waivers

				Alternative				
Resource	Stipulation	Applicable Area	Α	В	С	D	E	Stipulation Description
Wild & Scenic Rivers (3014)	Leasable Minerals NSO Salable Minerals Closed ("wild or scenic" only) Open for recreational ROWs Avoidance Area	All suitable WSR segments and associated corridors				Х	Х	Open all suitable WSR corridors to mineral leasing with an NSO stipulation. Avoid ROWs (including communication sites) in all suitable WSR corridors, except in designated utility corridors. Close suitable wild or scenic river corridors to mineral materials disposal. Purpose: To protect the tentative classification and outstandingly remarkable values along suitable river corridors. Exception: General exception applies. Modification: General modification applies. Waiver: General waiver applies.
Wilderness Study Areas (3016)	Leasable Minerals Closed Salable Minerals Closed ROWs Exclusion Area	Wilderness Study Areas	х	х	х	х	Х	Manage WSAs as ROW exclusion areas, closed to mineral leasing, and closed to mineral materials disposal. Purpose: To prevent impairment of the WSA.

ACEC – Area of Critical Environmental Concern, bhp-hr – brake horsepower-hour, BLM – Bureau of Land Management, BMP – best management practice, CFR – Code of Federal Regulations, CSU – Controlled Surface Use, dBA – A-weighted decibel, ERMA – Extensive Recreation Management Zone, MSO – Mexican spotted owl, NO_X – nitrogen oxides, NSO – No Surface Occupancy, NTMC – National Trail Management Corridor, OHV – off-highway vehicle, OSNHT – Old Spanish National Historic Trail, PAC – Protected Activity Center, PFYC – Potential Fossil Yield Classification, RMP – Resource Management Plan, RMZ – Recreation Management Zone, ROW – right-of-way, R&PP – Recreation and Public Purposes, SITLA – School and Institutional Trust Lands Administration, SRMA – Special Recreation Management Area, TLS – Timing Limitation Stipulation, UDWR – Utah Division of Wildlife Resources, U.S.C. – U.S. Code, USFWS – U.S. Fish and Wildlife Service, VOC – volatile organic compound, WSA – Wilderness Study Area, WSR – Wild and Scenic River

References

Delaney, D. K., T. G. Grubb, and L. L. Pater. 1997. Effects of helicopter noise on nesting Mexican Spotted Owls. Project Order No. CE PO. 95-4. Rep. USAF 49 CES/CEV, Holloman Air Force Base, NM.

Abbreviations-Acronyms

Term	Definition
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
EIS	Environmental Impact Statement
RMP	Resource Management Plan

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix I	
Monitoring Strategy	
August 2019	

Table of Contents

	Introduction	l-1
	Data Collection	l-1
	Data Analysis	I-2
	Adaptive Management and Plan Maintenance	I-2
	Resource Monitoring	I-2
	Monitoring Protocols	I-16
	Air Resources	I-16
	Cultural Resources	I-21
	Fish and Wildlife (Non Special Status Species)	I-21
	Special Status Species - Wildlife	I-21
	Forestry & Woodland Products	I-22
	Geological and Paleontological Resources:	I-22
	Livestock Grazing/Rangeland Management	I-22
	Recreation & Travel Management	I-23
	Soil Resources, Vegetation, Special Status Species-Plants, Fire and Fuels	I-23
	Visual Resources	I-23
	Water	I-24
	Wild Horse Management	I-24
	Wilderness Study Areas	I-24
	References	I-25
	Abbreviations-Acronyms	I-28
L	ist of Tables	
	able 1. Resource Monitoring Table	I-3

Appendix I: Monitoring Strategy

Introduction

This appendix provides an overview of Grand Staircase-Escalante National Monument (GSENM) and Kanab-Escalante Planning Area Resource Management Plan (RMP) monitoring protocol to meet the established RMP objectives for identified GSENM objects and values and resources within all four planning units. Land use plan monitoring is the process of (1) tracking the implementation of land use planning decisions (implementation monitoring) and (2) collecting data/information necessary to evaluate the effectiveness of land use planning decisions (effectiveness monitoring). Monitoring documents the Bureau of Land Management's (BLM's) progress toward full implementation of the land use plans and the achievement of desired outcomes.

Conditions may change over the life of the land use plans and such changes may require plan amendments to protect resources and minimize resource conflicts. To address changing conditions and provide management flexibility that incorporates best management practices (see also Appendix G, Best Management Practices), the BLM reviews effectiveness of management actions, assesses the current resource conditions and, if necessary, alters management actions.

The regulations in 43 Code of Federal Regulations (CFR) 1610.4-9 require that land use plans establish intervals and standards for monitoring and evaluations, based on the sensitivity of the resource decisions involved. Additionally, Manual 6220 (BLM 2012a) requires that land use plans for national monuments analyze and consider measures to ensure that objects and values are conserved, protected, and restored. Specifically, plans must include a monitoring strategy that identifies indicators of change, methodologies, protocols, data analysis, and time frames for determining whether desired outcomes are being achieved. The goals and objectives for the desired outcomes need to be explicitly stated and quantifiable. This appendix is also in accordance with Instruction Memorandum 2016-139 (BLM 2016), which provides guidance on the use of quantitative data to determine RMP effectiveness.

Data Collection

In cooperation with local, State and other Federal agencies, academia, and subject-matter experts, the BLM will establish monitoring protocols detailing the methodology, format, and frequency of data collection, including data analysis protocols and reporting of the monitoring data that allows for the determination of cause and effect, conditions, trends, and predictive modeling of land use authorizations. Monitoring methods are implemented to collect data that establish pre-activity conditions, current conditions, and detection of any change in the indicators following the activity. Monitoring protocols should be identified that include when, where, what to measure, and how often to sample. The data collected through monitoring provide a variety of information applicable to one or more resource uses. The *Resource Monitoring* of this document contains additional information on protocols for resources. To increase effectiveness, efficiency, and eliminate duplication, monitoring methods will address as many resources as possible. The BLM will collaborate with cooperating agencies, academia, and permittees to collect, analyze, interpret, and disseminate data.

Data Analysis

Data collected through this monitoring strategy will be statistically analyzed to determine whether changes occur as a result of management actions. Data analysis will be conducted according to the suggested frequency for each resource, subject to time and funding. Data will be analyzed to determine whether the resource conditions are meeting the quantifiable goals identified in the RMP and the monitoring protocols; whether a change has occurred, and, if so, identify the cause; and what appropriate action should be taken to achieve the desired outcome if the goal or objective is not being met. New technology and management methods will be reviewed to determine their applicability in modifying or replacing current management actions. The BLM will collaborate with cooperating agencies, contractors, and academia to assist in or perform this data analysis that is scientifically accurate.

Adaptive Management and Plan Maintenance

If data collection and analysis conclude that the desired outcome is not being achieved, the causal factors must be documented. A change or modification to management actions or agency actions at the implementation level (e.g., adding additional avoidance or minimization measures to a site-specific action) may be warranted to address these causes. The RMPs include adaptive management that would be implemented as part of the approved plans. This adaptive management provides for indicators that will be monitored, and, if thresholds for those indicators are exceeded, additional management that would be instituted. If those indicators, thresholds, and the subsequent management are identified in the RMPs, implementation of this adaptive management would not require a plan amendment. However, the BLM will also develop recommendations to be considered by management for continuation, modification, or replacement of management actions, subject to the National Environmental Policy Act (NEPA) and land use planning regulations. Consideration of new adaptive management that is not analyzed and disclosed through the RMPs/EIS process would require a plan amendment with accompanying NEPA analysis. Because consideration of a new management action may also require changes in the monitoring plan, the BLM will also evaluate the effectiveness of the monitoring and data collection methods and recommend continued use, modification, or elimination of the methods proposed in this appendix. New technologies or a better understanding of information may also result in changes to this monitoring strategy.

Resource Monitoring

Table 1 identifies the indicators that will be monitored to detect changes in resource conditions, the method or technique of monitoring, the locations for monitoring, the unit of measurement for monitoring, the frequency (i.e., time frames) for monitoring, and the action triggers that indicate the effectiveness of the management action. During implementation, the BLM will rely on the indicators, methods, and frequencies listed below to demonstrate that objects within GSENM are conserved, protected, and restored. Resources or programs within the table that apply to or include identified objects within GSENM are identified with bold text. Refer to Appendix E (*Grand Staircase-Escalante National Monument Objects and Resource Values*) for a detailed description of objects. Footnotes in Table 1 indicate monitoring activities that are also conducted by other entities and can be used to augment the BLM's monitoring.

Table 1. Resource Monitoring Table

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
Air Quality ⁽¹⁾	M-1	Air quality	Ambient air sampling of criteria air pollutants	Established air monitoring stations that are representative of the planning area airshed	Concentrations, varies by pollutant (parts per million, parts per billion, µg/m³).	In accordance with National Ambient Air Quality Standards	Samples of criteria air pollutants exceeding or violating National Ambient Air Quality Standards
	M-2	Emissions of gaseous and particulate criteria air pollutants and their precursors	Emission inventory	Direct and indirect emissions sources from oil and gas, coal, and other mineral development projects	Pounds per hour and tons per year	With project proposals or permit applications	Emissions exceeding the RMP emissions inventory or levels of concern established in consultation with the UDAQ or EPA
	M-3	Reasonably foreseeable development	Permits or BLM development approval (APDs etc.)	Planning Area wide	Number of oil and gas wells, and other mineral projects	With project proposals or permit applications	Development exceeding the RFD used to prepare the air analysis for these RMPs
	M-4	Pace of fluid and mineral development	Permits or BLM development approval (APDs etc.)	Planning Area wide	Number of oil and gas wells, and other mineral projects	With project proposals or permit applications	Pace of development exceeding the RFD used to prepare the air analysis for these RMPs
Cultural Resources ⁽²⁾	M-5	NRHP eligible sites, including archaeological, historic, or cultural objects within GSENM	Site inspection	Planning Area wide	Number of Sites and/or Area (acres/linear feet) of disturbance	Every 2–3 years, or more frequently and as needed if required by site- specific conditions	Disturbance as a result of land uses or vandalism, fire, and severe weather events such as flooding and erosion. Annual site monitoring, especially those with a history of problems or likely to be vandalized (rock art, shelters, alcoves).

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
Cultural Resources ⁽²⁾	M-6	Vulnerable sites and archaeological, historic, or cultural objects within GSENM Other sites may be included if monitoring information is needed for research or consultation efforts	Comprehensive monitoring utilizing archaeologists, law enforcement, rangers, and site stewards	Planning Area wide, including cultural sites that have been previously identified as being affected; cultural sites identified on maps, brochures, or other media that bring the site into public awareness; sites that are known to be popular for public visitation; a representative sample of sites known to be prone to impacts from predictable sources	Number of sites and/or Area (acres/linear feet) of disturbance	Every 2–3 years or as needed	Disturbance (e.g., from vandalism, erosion, grazing, recreation, or other); research; public concern
Fish and Wildlife ⁽³⁾	M-7	Big game seasonal habitat	Aerial and field inspections; pellet transects; use-pattern mapping	Crucial wildlife habitat areas	Habitat use during occupancy periods	Every 2–3 years to establish baseline; Every 3–5 years after baseline is established	A change in numbers of animals using seasonal habitats beyond the normal fluctuations
	M-8	Big game population numbers	Aerial and field inspections	UDWR Herd Management Units	Numbers during census counts; modeling with species classification data	Every 2–3 years	A change in numbers either above or below population objectives
	M-9	Special Status fish and wildlife abundance, occupancy, and productivity	Field Inspections	Habitat areas and established buffer zones	Numbers during occupancy periods; reproductive status	During site- specific permitting and/or as needed	Declining trend in site occupancy, reproduction, or recruitment
	M-10	Threatened and endangered species abundance, occupancy, and productivity	Aerial and field inspections	Habitat areas and established buffer zones	Numbers during occupancy period; reproductive status	During site- specific permitting and/or as needed	Declining trend in site occupancy, reproduction, or recruitment

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
	M-11	Macro- invertebrate indicator species	Collecting macro- invertebrate species	Perennial streams and springs	Species and condition of macro-invertebrates	Every 2 to 10 years	No presence of macro- invertebrates that represent good quality water in the stream
	M-12	Neo-tropical bird habitat	Site visit; breeding bird survey; point counts	Planning Area wide	Numbers during occupancy period	Every 2 to 3 years	Declining trend in habitat occupancy
	M-13	Raptors	Site visit	Planning Area wide	Nest occupancy rate; reproductive status; recruitment	Every 2 to 5 years	Declining trend in nest site occupancy, reproduction or recruitment
	M-14	Bald eagle	Surveys conducted by BLM-approved personnel	Winter raptor or bald eagle survey routes	Detection of bald eagle presence	During site- specific permitting and/or as needed	Declining trend in observations
	M-15	Mexican spotted owl	Surveys conducted by BLM-approved personnel	Designated critical habitat, potential habitat, identified PACs, or breeding habitats wherein it has been determined that there is a potential for take	Detection of Mexican spotted owl presence; active or passive monitoring techniques	During site- specific permitting and/or as needed	Adverse impacts on individuals or habitat of Mexican spotted owl
	M-16	Southwestern willow flycatcher	Surveys conducted by BLM-approved personnel	Within designated or potential habitat	Species occupancy data and distribution information	During site- specific permitting and/or as needed	Adverse effects on Southwestern willow flycatcher and habitat from ground-disturbing activities including but not limited to recreation, mining, oil and gas activities
							Species occurrence is verified
							Any level of anticipated take or incidental take

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
	M-17	Packrat middens	Survey prior to large-scale (>100 acres) soil disturbance activities and mining	GSENM	Location and size of midden	As needed	Loss or damage as a result of human or natural causes
Geology	M-18	Geological objects within GSENM	Survey	Planning Area wide	Acres of inventoried objects	As needed	Loss or damage to geologic objects as a result of human or natural causes
Lands with Wilderness Characteristics	M-19	Presence or absence of wilderness characteristics	Inventory in accordance with Manual 6310	Planning Area wide	Acres of inventoried lands	Per Manual 6310 guidance	Loss of acres of lands with wilderness characteristics that are managed for protection of wilderness characteristics
Paleontological Resources	M-20	Significant paleontological resources and paleontological objects within GSENM	Site inspection	Site	Degradation or loss of significant fossil resources. Recovery of closed, NEPA-approved fossil excavations for 3 years	During site- specific permitting and/or as needed	Loss or damage to significant fossil resources as a result of human or natural causes
Soil Resources	M-21	Soil erosion uplands	Visual observation; terrestrial AIM; IIRH	Area wide where land use activities are occurring	Low soil stability scores; increase in number and size of rills; movement of headcuts or increases in gully width or depth; tons per acre sediment and salt	3–5 years AIM or IIRH monitoring routine and on a priority basis	When soil loss is accelerated beyond natural levels Accelerated soil loss on saline soils
	M-22	Soil erosion on stream banks and floodplains.	Visual observation; aquatic AIM; PFC assessments	Area-wide where land use activities are occurring	Channel widening and/or incision; downward trend in PFC assessment; tons per acre sediment and salt	3–5 year aquatic AIM/PFC monitoring	Water table is shrinking beyond average precipitation fluctuations; downward trends in PFC ratings; loss of riparian areas

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
	M-23	Soil compaction	Penetrometer or visual inspection	Area affected by land use activities	Pounds per square inch	On a priority basis	Accelerated erosion from compaction restricting water infiltration and plant growth
	M-24	Depth to water	Monitoring wells (piezometers)	Area-wide where land use activities are occurring	Depth to water table	Every 2-3 years or as needed	Accelerated stream bank soil loss; decreased developed water availability
	M-25	Cryptobiotic soil crusts.	Visual observation and terrestrial AIM; IIRH; Vegetation Trend Monitoring	Area wide where land use activities are occurring	Area affected in square feet or acres; % cover; Soil Stability Score	3–5 years AIM; IIRH monitoring or trend monitoring and on a priority basis	Accelerated erosion due to disturbance or loss of soil crusts as a result of land use
	M-26	Carbon sequestration	Monitor soil organic carbon dynamics on surface-disturbing activities especially large-scale (>100 acres) vegetation treatments and mining	Area-wide where land use activities are occurring	Soli carbon pools: milligrams/ kilograms soli carbon; carbon dioxide flux	On a priority basis	Downward trend in soil organic carbon
Water Resources	M-27	Surface water quality ⁽⁴⁾	Water sampling.	Established monitoring stations	Contaminant concentration, load, or temperature	On a priority basis	Water quality does not meet State standards
	M-28	Groundwater quality ⁽⁴⁾	Groundwater sampling	Established monitoring stations	Contaminant concentration, load, or temperature	On a priority basis	Water quality does not meet State standards and water is migrating from one aquifer to another
	M-29	Channel geometry	Aquatic AIM; PFC assessments	Priority streams	Change in stream channel (width, depth, side channel modification, and bank sloughing)	Every 3 to 5 years	Conditions are moving away from PFC

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
	M-30	Ground and surface water quantity	Stream flow and well level monitoring	Priority streams and aquifers	Ground and surface water quantity (absolute or rate of flow)	On a priority basis	Adequacy for BLM- managed resources and cultural/traditional uses
	M-31	Rivers and streams identified as objects within GSENM	Water quality and quantity; riparian condition assessment; or aquatic AIM assessment	Where present within GSENM	Contaminant concentration; stream miles and acres along with condition rating; surface and groundwater flows	Every 3 to 5 years	Water quality does not meet state standards; conditions moving away from PFC; diminishing flows of either surface or groundwater
Vegetation	M-32	Noxious weed and invasive plant trends ⁽⁵⁾	Remote sensing or site visit	Priority areas	Acres of established weeds and potential habitat areas	Every 2–3 years or as needed	Spreading or establishment of invasive species in new areas
	M-33	Wetland/ springs/riparian condition	PFC and/or Spring Stewardship Institute protocol and/or aquatic AIM	All identified wetlands/ springs/riparian areas	Stream miles and acres along with rating	Every 3 to 5 years	Not achieving PFC or not exhibiting an upward trend
	M-34	Vegetation treatments and large-scale invasive plant treatments	Establish monitoring plots with controls; develop standard monitoring methods, including vegetation cover, frequency, ground cover, soil aggregate stability, basal and canopy gaps, and precipitation	Within vegetation treatment areas and adjacent untreated areas	Effectiveness of vegetation treatments and large scale invasive plant treatments	Monitor pre- and post-treatment every 2-3 years	Analyze data to determine if meeting objectives prescribed for treatment

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
	M-35	Riparian areas, including Paria and Escalante river riparian areas within GSENM	PFC and/or aquatic AIM	Riparian areas	Area (acres/linear feet)	On a priority basis	Conditions are moving away from PFC
	M-36	Hanging gardens, tinajas, canyon bottom, dunal pockets, salt-pocket and rock crevice communities within GSENM	Depends on indicator and resource	Where present within GSENM	Depends on indicator and resource	As needed	Disturbance or loss of these water resources as a result of human or natural causes
	M-37	Special Status Plants- federally listed, BLM Sensitive, rare and endemic plants	Establish monitoring plots; methods include number of individuals, cover, and population expansion	Known plant populations and potential new habitats	Population and trend	Every 2–3 years or as needed	A declining trend in populations
	M-38	Drought	Local and regional weather stations; rain buckets and local and regional drought indices	Representative sample across Planning Area to detect weather patterns	Various	Every 2–3 years or as needed	Decrease in monthly or annual precipitation, drought as predicted by drought indices
Fire	M-39	Wildland fuels	Site inspection	Wildland-urban interface and industrial interface areas	Tons/acre	Every 2–3 years or as needed	Presence of wildland fuels that present a risk to communities and industrial sites (i.e., fuel levels that result in flamelengths of greater than 4 feet at 80th percentile weather conditions)

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
	M-40	Vegetation condition	Ecological site condition and trend studies	Vegetation types where there is a history of fire in the ecosystem	Representative sample	Every 2–3 years or as needed	Vegetation growth trend is moving away from desired conditions for the vegetation type
	M-41	Resource and property damage	Fire behavior	Individual fire	Fire temperature, flame length, burn rate, and acres burned	While the fire is burning	Acres burned and fire intensity that exceed prescription
Visual Resources - VRM Class I Areas	M-42	Change in existing character of landscape beyond natural ecological changes or very limited management activity	Visual contrast rating documentation; site visits; remote sensing	WSAs/certain Lands with Wilderness Characteristics	Acres of altered landscape	Every 2–3 years or as needed via WSA monitoring	Projects that exceed thresholds for meeting VRM Class I objectives
Visual Resources - VRM Class II Areas	M-43	Change in existing character of landscape beyond low level of change	Visual contrast rating documentation; site visits; remote sensing	VRM Class II Areas	Acres of landscape that experience moderate to high levels of change to characteristic landscape; percentage of altered viewshed.	As projects are implemented in VRM Class II areas	Projects that exceed thresholds for meeting VRM Class II objectives
Visual Resources - VRM Class III Areas	M-44	Change in existing character of landscape beyond moderate level of change	Visual contrast rating documentation; site visits; remote sensing	VRM Class III Areas	Acres of landscape that experience high levels of change to characteristic landscape; percentage of altered viewshed.	As projects are implemented in VRM Class III areas	Projects that exceed thresholds for meeting VRM Class III objectives

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
Visual Resources - VRM Class IV Areas	M-45	Implementation of projects that do not follow BMPs, stipulations, or create unanticipated visual impacts	Visual contrast rating documentation; site visits; remote sensing	VRM Class IV Areas	Number of projects; percentage of altered viewshed	As projects are implemented in VRM Class IV areas	Projects that do not follow BMPs and/or stipulations or create unanticipated visual impacts
Wild Horses	M-46	Population numbers	Counts and HMA visits	HMAs	Number of horses	Every 2–3 years or as needed	Population exceeding targets
Forestry and Woodland Products	M-47	Forest health	Ecological site condition and trend	Forested lands	Representative sample area	Every 3 to 5 years	Disease, insect infestation, or encroachment of undesirable plant species threatens forest health
	M-48	Timber stands	Timber stand examination	Commercial forested areas	Board-feet, age class, and damages	Every 10 to 20 years	Basal area growth does not meet timber type standards
Lands and Realty	M-49	Realty authorization compliance	Site compliance inspection	Entire Planning Area	Number of site inspections	Annually if warranted; otherwise every 5 to 10 years	Non-compliance or non- use
Renewable Energy	M-50	Realty authorization compliance	Site compliance inspection	Entire Planning Area	Number of site inspections	Every 2-3 years or as needed	Non-compliance or non- use
Livestock Grazing	M-51	Vegetation condition	BLM approved monitoring methods; monitoring plans are included in AMPs	All areas being grazed	Representative sample of grazed area	Every 5 to 10 years; on a priority basis monitor allotments before livestock turnout	Conditions are not meeting goals and objectives for vegetation due specifically to livestock grazing management
	M-52	Livestock numbers	Counts and site visits; monitoring plans are included in AMPs	Varies by allotment	Number of allotments or operators inspected	Every 2-3 years or as needed or when livestock are moved on or off the allotment	Livestock numbers exceeding permitted numbers or in areas unauthorized

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
Minerals	M-53	Surface disturbance	Site inspection by field visit or remote sensing	Mineral development sites	Acres disturbed	As required by current policy	Acres disturbed exceeding the number permitted for the area
	M-54	Compliance with authorization	Site inspection	Planning Area wide	Compliance	As required by current policy	Non-compliance
Recreation	M-55	General recreation use; realization of desired beneficial outcomes	Onsite inspection, visitor use data, surveys; document user conflicts or complaints	Area-wide with emphasis on SRMAs and ERMAs with high visitation; areas not managed as recreation management areas but recognized for recreational use and resources	Changes to desired recreation setting characteristics; changes in experiences and realized desired beneficial outcomes; changes in types, seasons or levels of use	Prioritize areas and monitor higher-priority areas (SRMAs and ERMAs) every 1–3 years and lower- priority areas every 3–5 years	When visitor surveys or public comments indicate that recreation area management objectives are not met; when desired settings, experiences, and beneficial outcomes are not realized; when change is causing undue or unnecessary degradation of the site or area; when change is causing goal interference and conflicts
	M-56	Concentrated recreation use	Inspect developed recreation sites or areas that have facilities	Recreation site	Condition of recreation site, facilities, visits and visitor days	Every 2–3 years or as needed	When change is causing undue or unnecessary degradation of facilities and use areas; public complaints
	M-57	Compliance with permitted authorizations	Administrative review, site inspection	Activity site	Permit stipulations, resource conditions, and site restoration	During and after an event; annually for other commercial users	When non-compliance is determined or degradation of resources is occurring
Transportation	M-58	Roads and trails ⁽⁶⁾	Route management categories and maintenance levels; onsite inspection or remote sensing; traffic counter data	Planning Area wide	Miles	Per Facility Asset Management System Condition Assessment Plans	Conditions represent a hazard to life and property; route conditions do not meet identified road standards

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
	M-59	Seasonal closures ⁽³⁾	Aerial and field inspections	Travel Management Areas with seasonal closures for wildlife	Acres	Every 5 years	Changes in use of seasonal habitat requiring closure
	M-60	Off-highway vehicle disturbance; establishment of unauthorized vehicle routes	Remote sensing or site visit; traffic counter data	Travel Management Area; site-specific to area of disturbance	Miles of routes; acres of disturbance	Prioritize areas and monitor higher-priority areas every 1–3 years and lower- priority areas every 2–4 years	Per 43 CFR 8341.2, when the authorized officer determines that off-road vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources.
ACEC	M-61	See other resource sections for relevant and important values (e.g., cultural, wildlife)	As prescribed for affected resource	Designated ACECs	As prescribed for affected resource	During 5-year evaluations; Manual 1613 requires the State Director to prepare an annual report to the Director on progress in implementing and monitoring ACECs	Undue or unnecessary degradation or loss of relevant and important values as a result of human or natural causes

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
National Trails	M-62	Resource condition	Site visit or remote sensing	Old Spanish Trail corridor	Amount of degradation or loss of resources; impacts on important and relevant resources	BLM will monitor the impacts that RMP implementation and other approved projects have on national trail resources, qualities, values, and associated settings and the primary use or uses, including determining the effectiveness of design features, project stipulations, and mitigation measures on a regular basis as the RMP and projects are implemented	Undue or unnecessary degradation or loss of national historic trail resources as a result of human or natural causes
Wild and Scenic Rivers	M-63	Waterway- specific identified ORV	Site visits, monitoring, and project proposals	Suitable river corridors	Miles of linear human intrusions; acres disturbed, impacts on corridor-specific ORVs as observed by onsite visit, public comment, or project proposals	Every 2–3 years or as needed, or when site specific issue arises	Impacts on corridor- specific identified ORVs

Resource	Record Number	Indicator	Method or Technique	Location	Unit of Measure	Frequency	Action Triggers
Wilderness Study Areas	M-64	Wilderness Characteristics (size, naturalness, outstanding opportunities for primitive and unconfined recreation or solitude, supplemental values)	Site visits; aerial monitoring	WSAs	Miles of linear human intrusions; acres disturbed; impacts on wilderness characteristics identified by onsite visit or public comment	Every 2–3 years or as needed, unless an Alternative Monitoring Strategy is adopted	Failure to meet the non- impairment standard or other objectives outlined in Manual 6330 (BLM 2012b)

Note: Rows with **bold text** identify monitoring for resources or programs that apply to or include identified GSENM objects.

µg/m³ – micrograms per cubic meter, RMP – Resource Management Plan, UDAQ – Utah Division of Air Quality, EPA – U.S. Environmental Protection Agency, BLM – Bureau of Land Management, APD – Application for Permit to Drill, RFD – Reasonably Foreseeable Development, NRHP – National Register of Historic Places, GSENM – Grand Staircase-Escalante National Monument, UDWR – Utah Division of Wildlife Resources, PAC – Protected Activity Center, NEPA – National Environmental Policy Act, AIM – Assessment, Inventory, and Monitoring, IIRH – Interpreting Indicators of Rangeland Health, PFC – Properly Functioning Condition, WSA- Wilderness Study Area, VRM – Visual Resource Management, BMP – best management practice, HMA – Herd Management Area, AMP – Allotment Management Plan, SRMA – Special Recreation Management Area, ERMA – Extensive Recreation Management Area, ACEC – Area of Critical Environmental Concern, ORV – Outstanding Remarkable Value

¹Utah Division of Air Quality conducts data collection.

² The State Historic Preservation Officer conducts data collection.

³ Utah Division of Wildlife Resources conducts data collection.

⁴ Utah Division of Water Resources conducts data collection.

⁵ Utah Department of Agriculture and Food conducts data collection.

⁶ The County with jurisdiction conducts data collection.

Monitoring Protocols

In order to determine RMP effectiveness and the ability of the BLM to meet RMP goals and objectives (see goals and objectives for each resource in Chapter 2), the following standard protocols will be used.

Air Resources

- Emissions Tracking The BLM will establish a mechanism to track annual emissions of criteria pollutant and volatile organic compound emissions from BLM-authorized oil and gas, coal, and other mineral development activities within the Planning Area. The methods for tracking emissions may be developed in collaboration with the Utah Division of Air Quality (UDAQ) and with input from the U.S. Environmental Protection Agency (EPA) and the Utah Division of Oil, Gas and Mining. The BLM will use reported emissions data to track total emissions from BLM-authorized oil and gas and other activities within the Planning Area as a component of its adaptive management strategy.
- Review of Air Resources Data With oil and gas, coal, or other mineral extraction proposals
 or permit applications, the BLM will conduct a review of relevant air resource management
 data in order to implement the adaptive management strategy in this section. This review
 will include the following tasks:
 - a. Evaluate current air monitoring data and trends from air monitoring sites located within or representative of the Planning Area airshed or the potentially affected area to determine the status of current air quality conditions within the Planning Area including measured concentrations approaching or exceeding National Ambient Air Quality Standards (NAAQS).
 - b. Evaluate current air monitoring data and trends from air monitoring sites located within or representative of the Planning Area airshed or the potentially affected area to determine the status of current air quality conditions within the Planning Area, including measured adverse impacts on air quality-related values in Class I areas or sensitive Class II areas (as identified on a case-by-case basis by the appropriate Federal land management agency). Response to monitored exceedances may include additional modeling and mitigation requirements.
 - c. Initiate consultation with UDAQ, EPA, and other local, State, Federal, and tribal agencies with responsibility for managing air resources to address appropriate responses to monitored exceedances of a NAAQS at any regulatory air monitor located within or representative of the Planning Area airshed, or potentially affected area. Response to monitored exceedances may include additional modeling and mitigation requirements.
 - d. Review annual emissions data from BLM-authorized oil and gas activities within the Planning Area and comparison to emission levels analyzed in the RMPs/Environmental Impact Statement (EIS) and the modeling study conducted under Appendix M (Air Quality Technical Support Document), or the most recent interagency air impacts analysis.
 - e. Review BLM-authorized oil and gas activities within the Planning Area and compare to the level of development analyzed in the RMPs/EIS and the modeling study conducted under Appendix M (*Air Quality Technical Support Document*), or the most recent interagency air impacts analysis, including number of producing wells, and other supporting oil and gas facilities.

- f. Evaluate new oil and gas development projections received or identified within the Planning Area for the coming 3- to 5-year period and compare to the level of predicted future development analyzed in the RMPs/EIS and the modeling study conducted under Appendix M (Air Quality Technical Support Document), or the most recent interagency air impacts analysis.
- Review air quality modeling results from new impact analyses conducted by the BLM, UDAQ, or other agencies that affect or are affected by BLM-authorized activities within the Planning Area.
- Analysis of Current Air Resource Management Strategies Based on the review of air resources data, the BLM, with input from other agencies involved in the authorization of oil and gas development activities or the management of air resources, will determine whether the air analysis conducted for the RMPs/EIS and the modeling study conducted under Appendix M (Air Quality Technical Support Document), or the most recent interagency air impacts analysis, should be updated. Based on the emissions tracking, air monitoring data, air resources management modeling study, or other relevant air modeling data, and development projections, the BLM will determine whether current air resources management strategies are meeting the goals and objectives established in the RMPs/EIS. The BLM in collaboration with UDAQ and the EPA will adapt management strategies as necessary to effectively manage air resources within the Planning Area.
- Modification of Air Resource Management and Monitoring Protocol Based on the review of air resources management data and evaluation of current strategies, the BLM will determine whether this air resources management and monitoring protocol should be modified.
- Air Analysis for Authorized Activities The BLM will, prior to authorization of any oil and gas
 development activity or other activity with the potential to generate emissions of regulated
 air pollutants, conduct an air analysis to determine the magnitude of potential emissions
 from the activity and address potential impacts on air quality.
- Criteria for Informing Decisions The BLM will consider the following criteria and the air
 resource monitoring in Table 1 to identify pollutants of concern and inform decisions
 regarding the appropriate level of air analysis to be conducted from mineral development
 activities and may consider these criteria for other activities with the potential to generate
 emissions of regulated air pollutants:
 - a. Magnitude of potential air emissions from the proposed activity.
 - b. Duration of proposed activity.
 - c. Proximity to a federally mandated Class I area, sensitive Class II area (as identified on a case-by-case basis by UDAQ or a Federal land management agency or tribal agency), population center, or other sensitive receptor.
 - d. Location within or adjacent to a non-attainment or maintenance area.
 - e. Meteorological and geographic information.
 - f. Existing air quality conditions including measured NAAQS concentrations and measured air quality-related values.
 - g. Intensity and pace of existing and projected development in the area.
 - h. Issues identified during project scoping.
- Emissions Inventory The BLM will require the proponent of an oil and gas development
 activity as proposed in a permit application, plan of development, or Master Development

Plan to submit an emissions inventory of direct and indirect emissions associated with the proposed project. The BLM will require submittal of an emissions inventory for other proposed activities such as solid mineral development that have the potential to generate emissions of regulated air pollutants. The emissions inventory will include estimated emissions of regulated air pollutants from all sources related to the proposed activity, including fugitive emissions and greenhouse gas emissions, for each year for the life of the project. The BLM will review the emissions inventory to determine its completeness and accuracy. Emission control measures included in the emissions inventory assumptions and relied upon to determine project impacts will become Operator Committed Measures in the Record of Decision for the authorized activity. If such emission control assumptions do not lend themselves to mitigation measures that can be enforced via stipulations, the BLM will require other mitigation measures with a similar air quality benefit.

- Emissions Reduction Plan The BLM will require the proponent of an oil and gas development project that has the potential to emit any regulated air pollutant to provide an emissions reduction plan that includes a detailed description of Operator Committed Measures to reduce project-related air pollutant emissions including greenhouse gases and fugitive dust. The BLM may require submittal of an emissions reduction plan for other proposed activities such as solid mineral development that have the potential to generate emissions of regulated air pollutants. Project proponents for oil and gas development projects should refer to Appendix G (Best Management Practices) for potential emission reduction technologies and strategies. The list is not intended to preclude the use of other effective air pollution control technologies that may be proposed. Details of Operator Committed Measures submitted by the applicant will be included in and enforced as a condition of the BLM-issued authorization.
- Submission of Actual Emissions Data The BLM will include, as a Condition of Approval for an oil and gas authorization, a requirement that the proponent submit actual emissions data on a periodic basis for criteria pollutants, volatile organic compounds, hazardous air pollutants, and greenhouse gas emissions related to the authorized action if the air analysis results show that the project has the potential to cause adverse impacts. The BLM may request these data from all oil and gas authorizations to evaluate progress in meeting air quality goals. Emissions data submitted to UDAQ as required in applicable air permits, drilling and production data provided to Utah Division of Oil, Gas and Mining, and emissions data submitted to EPA under the Greenhouse Gas Reporting Rule (40 CFR 98(W)) will be accepted. The BLM may require or request actual emissions submittals from other emission-generating activities such as solid mineral development as determined on a case-by-case basis.
- Air Monitoring The BLM recognizes that ambient air monitoring provides valuable data for
 determining current and background concentrations of air pollutants, describing long-term
 trends in air pollutant concentrations, and evaluating the effectiveness of air control
 strategies. The BLM will facilitate a cooperative effort with industry, UDAQ, Federal land
 management agencies, EPA, local counties, or other entities to establish, fund, operate,
 and maintain air monitoring stations within the Planning Area and potentially affected
 areas. The BLM will facilitate the sharing of air monitoring data collected by the air
 monitoring network with other agencies and the public.
- Pre-Construction Air Monitoring The BLM may require project proponents of oil and gas
 development proposals or proponents of other emission-generating projects, such as solid
 mineral development, to submit pre-construction air monitoring data from a site within or

adjacent to the proposed development area. The purpose of this air monitoring is to establish baseline air quality conditions prior to development at the site. The requirement for monitoring will be determined by the BLM based on the absence of existing representative air monitoring data. If the BLM determines that baseline monitoring is necessary, the project proponent must provide a minimum of 1 year of baseline ambient air monitoring data for the pollutants of concern obtained from a site that meets UDAQ air monitoring standards within 50 kilometers of the project boundary, and that covers the year immediately prior to the proposed project submittal. The project proponent will be responsible for siting, installing, operating, and maintaining any air monitoring equipment in the absence of existing representative air monitoring data.

- Life-of-Project Air Monitoring The BLM may require proponents or operators of oil and gas development projects or proponents of other emission-generating projects such as solid mineral development to conduct air monitoring for the life of the project based on the absence of representative air monitoring. The purpose of this air monitoring is to determine impacts attributable to the project over time and to determine the effectiveness of the BLM's management actions related to the project. The project proponent will be responsible for siting, installing, operating, and maintaining any air monitoring equipment in the absence of existing representative air monitoring.
- Collaboration with UDAQ on Air Monitoring Data The BLM will work cooperatively with
 UDAQ to determine a mechanism to submit, track, and approve pre-construction and life-ofproject air monitoring siting and operation and monitoring data. The BLM will work with
 UDAQ to ensure that ambient air monitoring data collected as a condition of approval for
 BLM-authorized activities will be made publicly available.
- Modeling and Adaptive Management The BLM has identified air modeling as a significant
 component of its adaptive management strategy for managing air resources. The BLM will
 use regional air modeling and project-specific modeling if determined necessary in
 conjunction with other air analysis tools for developing air resource management strategies
 as part of its approach to fulfill responsibilities under the Federal Land Policy and
 Management Act and to evaluate direct, indirect, and cumulative impacts under NEPA.
- Project-specific Modeling The BLM may require that project-specific air quality modeling be conducted to analyze potential impacts from a proposed oil and gas development project or other proposed activities such as solid mineral development that have the potential to emit regulated air pollutants. Air quality modeling may be required for pollutants of concern in the absence of other available data to ensure compliance with laws and regulations or to determine the effectiveness of air emission control strategies. The BLM may allow project proponents to provide results from other modeling analyses that include the proposed project upon review and approval by the BLM. The BLM will not require an air modeling analysis when the project proponent can demonstrate that the project will result in no net increase in emissions of the pollutants of concern.
- **Modeling Protocol** The BLM will determine the parameters required for a project-specific modeling analysis through the development of a modeling protocol for each analysis.
- Mitigation The BLM recognizes that many of the activities that it authorizes, permits, or allows generate air pollutant emissions that have the potential to adversely affect air quality, either individually or cumulatively. The primary mechanism to reduce air quality impacts is to reduce emissions (mitigation). Identification and implementation of appropriate emission reduction measures is effective at the project authorization stage

where the proposed action is defined in terms of temporal and spatial characteristics and technological specifications. The project-specific information allows for the development of an emissions inventory and impact analysis, which are used to determine effective mitigation in response to identified project-specific or cumulative adverse impacts.

- Project-specific Mitigation The BLM will require air quality mitigation measures and strategies within its authority (and in consultation with local, State, and Federal agencies with responsibility for managing air resources and Federal land managers responsible for potentially affected areas) in addition to regulatory requirements and proponent-committed emission reduction measures, and for emission sources not otherwise regulated by UDAQ or EPA, if the air quality analysis shows potential future impacts on NAAQS or impacts above specific levels of concern for air quality related values in Class I or sensitive Class II areas (as identified on a case-by-case basis by UDAQ or a Federal land management or tribal agency) due to the proposed project.
- Minimizing Air Emissions The proponent of an oil and gas development project will be required to minimize air pollutant emissions by:
 - a. Complying with all applicable State and Federal regulations (including application of best available control technology)
 - b. Submitting an emissions reduction plan
 - Applying mitigation including but not limited to best management practices, emissions
 offsets, and other control technologies or strategies identified in an air quality analysis
 or comprehensive interagency air resources management strategy
- Contingency Plan The BLM may require project proponents for oil and gas development projects, or other proposed activities with the potential to generate substantial air emissions, to submit a contingency plan that provides for reduced operations in the event of an air quality episode such as a monitored exceedance. Specific operations and pollutants to be addressed in the contingency plan will be determined by the BLM on a case-by-case basis taking into account existing air quality and pollutants emitted by the project. Examples of temporary episode response control measures that would be included in operator-committed contingency plans and that may be appropriate to implement immediately after an air quality episode include:
 - Temporarily reducing drilling operations during specified periods
 - Temporarily reducing completion or well stimulation operations during specified periods
 - Limiting or controlling blowdowns during specified periods
 - Limiting other non-essential emission generating operations during specified periods

The BLM may require project proponents to include in the contingency plan emission control measures that would be implemented in the event of a monitored ozone violation. Examples of violation response control measures that may be appropriate to implement within 1 year of a monitored NAAQS violation include:

- Using Tier 4 engine technology or other improved (low emission) engine technology on drill rig, completion, compressor, and other non-road engines
- Constructing centralized gathering facilities for product treatment and storage
- Installing plunger lift systems with smart automation
- Employing a monthly FLIR program to reduce volatile organic compound emissions and leaks
- Enhancing a direct inspection and maintenance program

- Employing tank load-out vapor recovery
- Using enhanced volatile organic compound emission controls on production equipment

Cultural Resources

- National Register of Historic Places eligible sites, including archaeological, historic, or cultural objects within GSENM, will have site inspection annually, or more frequently and as needed if required by site-specific conditions.
- Site Stewards (i.e., citizens performing site stewardship) will be trained by BLM
 archaeologists. Cultural sites that are relevant and important values in Areas of Critical
 Environmental Concern and other selected sites (e.g., cultural sites that have been
 identified on maps, brochures, or other media that bring the site into public awareness;
 sites that are known to be popular for public visitation) will be monitored by the BLM or Site
 Stewards at least annually or as possible. Sites with heavier traffic will have a goal of four
 visitations per year.
- Sites that are prone to vandalism and/or unauthorized camping will receive regular patrols by BLM law enforcement rangers.
- Monitoring methodologies will be conducted as described in the Kanab Field Office Resource Management Plan (BLM 2008).

Fish and Wildlife (Non Special Status Species)

Big Game

- Training for browse study data collection will be provided by BLM specialists.
- For big game monitoring, the browse conditions protocol will be a supplemental method ("add on") generally collected by Assessment, Inventory, and Monitoring (AIM) crews.
- Browse data will only be collected if a designated shrub falls on any of the three AIM transects.
- A 1-meter belt along the transect will be read and documented by AIM crews. Pellets or animal tracks found will be noted.

Raptors

 For cliff-nesting species, the American Peregrine Falcon Monitoring Plan Protocol (USFWS 2003) will be conducted primarily through volunteers as time and funding allow.

Special Status Species - Wildlife

- Mexican Spotted Owl survey protocol (USFWS 2012)
- Southwestern Willow Flycatcher survey protocol (Sogge et al. 2010)
- Greater sage-grouse pellet transects
- If an AIM point falls on greater sage-grouse habitat, supplemental height information along with sagebrush shape will be collected following the protocols found in the Sage-Grouse Habitat Assessment Framework (Stiver et al. 2015).

For all project-related survey and monitoring actions:

- a. Provide reports to affected field offices within 15 days of completion of a survey or monitoring effort. Reports would follow field office guidance for BLM-specified formats for written and automated databases.
- b. Report any detection of bald eagle presence during survey or monitoring efforts to the authorized officer within 48 hours of detection.

Forestry & Woodland Products

- To determine forest health, the AIM core indicators would be monitored and compared to the Ecological Site Description to determine condition and trends.
- Manual 5300 Timber Measurement (BLM 2017a) and MS-5000 Forest Management (BLM 2017b)
- Timber stand examination would be conducted to determine amount of board feet and available amounts of fuelwood.

Geological and Paleontological Resources:

- Paleontological survey protocols are as follows:
 - a. Review proposed activity plans/projects and associated maps.
 - Determine location and cross reference existing geologic maps to determine Potential Fossil Yield Classification of underlying bedrock. Note if known paleontological resource localities exist near proposed activity.
 - c. If Potential Fossil Yield Classification of underlying bedrock is 4 to 5, a site survey must be completed by a BLM official or BLM-permitted paleontologist where ground will be disturbed, with a 25-meter buffer surrounding the proposed disturbance. If fossils are found, locality forms should be filed with the BLM Utah State Field Office and GSENM or BLM Kanab Field Office with all information that can be determined about the fossil (location, rock formation, type of fossil, description, map, and photos if possible).
 - d. If no significant fossils are discovered in survey, a stipulation for inadvertent discovery should be added to the proposal (basically, if a fossil is uncovered during a proposed action, all activity must cease until a BLM official or BLM-permitted paleontologist can get to the site and determine what and if any mitigation must occur; once mitigation is completed, activity can resume).
 - e. If significant fossil(s) are discovered in survey, a BLM official and/or BLM-permitted paleontologist determine what and if any mitigation must occur, and begin mitigation. This can include rerouting trails/roads/other infrastructure, or collecting/excavating the resource.
 - f. All paleontological surveys will be documented regardless of whether or not a fossil is found.

Livestock Grazing/Rangeland Management

- Frequency and Apparent Trend methods (BLM 1999a) will continue to be collected at a subset of legacy sites as time and funding allow.
- AIM core methods (MacKinnon et al. 2011) will be collected at additional points according
 to an intensified design or at targeted sites when overarching AIM sites are not sufficient for
 local data needs.
- Points will be chosen by a stratified random design to meet local data needs.
- Allotment monitoring will be prioritized by designated Improve, Custodial, and Maintain categories; land health assessments; permit renewals; and existing data, and completed as time and funding allow.
- To determine short-term grazing use, the Key Species Method (BLM 1999b) will be used.
- Utilization monitoring will be conducted at each allotment within the Planning Area, as funding and staff time allow.
- Monitoring of allotments will be prioritized based on land health assessments, permit renewals, and existing monitoring data.

- Compliance checks on allotments will be documented. Frequency of compliance checks will be determined primarily on past non-compliance.
- Qualitative methods found in Interpreting Indicators of Rangeland Health (IIRH) (see Pellant
 et al. 2005 or most recent version in draft at time of writing) will be completed at targeted
 sites and used along with AIM data to make land health assessments. IIRH methods will be
 conducted by an interdisciplinary team when a land health assessment is scheduled.
- If an allotment falls on sage-grouse habitat, AIM core methods (MacKinnon et al. 2011) in conjunction with Site-Scale (Fourth-Order) Measuring Techniques from the Sage Grouse Habitat Assessment Framework method (Stiver et al. 2015) will be collected.

Recreation & Travel Management

- Campsite monitoring, traffic counter data, and sign inventory will be conducted as time and funding allow.
- Visitor and site data collected for recreation sites will be input into the Recreation Management Information System.
- Information collected at visitor facilities will be entered into the Facilities Assessment Management System, Inventory and Deferred Maintenance Report.
- Social trail monitoring will be targeted for every 3 to 5 years, as time and funding allow.
- A baseline route inventory will be completed as part of the Travel Management Plan process. Once vetted, this baseline will serve as the basis for comparison to determine future social or unauthorized use (except in open off-highway vehicle areas).
- Monitor off-highway vehicle disturbance and establishment of unauthorized vehicle routes.
 Prioritize areas and monitor higher-priority areas every 1–3 years and lower-priority areas every 2–4 years.

Soil Resources, Vegetation, Special Status Species-Plants, Fire and Fuels

- AIM methods (MacKinnon et al. 2011) will be implemented for soil and vegetation (fuels) for routine, project-specific, and post-fire monitoring.
- To determine longer-term trends in vegetation, AIM core methods (MacKinnon et al. 2011) will replace previous methods as the baseline monitoring method.
- IIRH (Pellant et al. 2005) or most recent version will be implemented for routine monitoring of soils and vegetation.
- Frequency and Apparent Trend methods (BLM 1999a) will continue to be collected at a subset of legacy sites as time and funding allow to support soils and vegetation (fuels) monitoring.
- USFWS recovery plans for threatened and endangered plants, including:
 - Recovery Outline for the Jones Cycladenia (Cycladenia humilis var. jonesii) (USFWS 2008)
 - Ute Ladies'-tresses (Spiranthes diluvialis) Draft Recovery Plan (USFWS 1995)
 - Revised Recovery Outline for the Kodachrome bladderpod (Lesquerella tumulosa) (USFWS 2009)
 - Monitoring Plant and Animal Populations (Elzinga et al. 2001)

Visual Resources

Visual contrast ratings analysis will be conducted (using BLM Worksheet 8400-4; BLM 1985) for all surface-disturbing projects in Visual Resource Management Class I and II areas, Class III areas with high sensitivity, and Class IV areas where inventoried values could potentially

change. Exceptions to conducting visual contrast analysis in the Class I, II, and III areas noted include when scale of project is minimal (e.g., single-track trail, small pond, wire fencing) or is completely hidden from view.

Water

- AIM National Aquatic Monitoring Framework: Technical Reference 1735-1 (BLM 2015) will be used to collect hydrological data for water quality monitoring.
- Riparian Proper Functioning Condition (Prichard et al. 2003) may supplement AIM aquatic data when needed (i.e., long-term monitoring sites) with trending Proper Functioning Condition data.
- Laboratory analysis of water samples will generally follow standard methods outlined in Standard Methods for the Examination of Water and Wastewater, 23rd Edition (Rice et al. 2017) unless otherwise specified.
- Monitor riparian conditions, as needed, for any surface-disturbing activity that would affect riparian areas.
- Prioritize monitoring in functioning at risk and then non-functioning riparian areas.
 Additional monitoring would occur on an as-needed basis (e.g., to assess impacts of specific projects or to establish reference conditions).

Wild Horse Management

- Qualitative methods found in Interpreting Indicators of Rangeland Health (Pellant et al. 2005 or most recent version in draft at time of writing) will be completed at targeted sites and used along with AIM data to make land health assessments. IIRH methods will be conducted by an interdisciplinary team when a land health assessment is scheduled.
 - Manual MS-4700, Wild Free-Roaming Horses and Burros Management (BLM 2010)
 - Horse counts would be conducted periodically to determine the number of horses that are in Wild Horse Herd Unit.

Wilderness Study Areas

 Wilderness Study Areas are required to be monitored monthly when accessible by the public (Manual 6330), unless an Alternative Monitoring Strategy is adopted.

References

- Bureau of Land Management (BLM). 1985. BLM Visual Resources Contrast Rating Worksheet 8400-4. Retrieved from https://www.ntc.blm.gov/krc/uploads/768/8400-4%20Contrast%20Rating%20Form.pdf.
- Bureau of Land Management (BLM). 1999a. Utilization Studies and Residual Measurements. Interagency Technical Reference. Technical Reference 1734-3. U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, CO. Retrieved from https://www.blm.gov/nstc/library/pdf/utilstudies.pdf.
- Bureau of Land Management (BLM). 1999b. Sampling Vegetation Attributes. Interagency Technical Reference. Cooperative Extension Service. U.S. Department of Agriculture, Forest Service; U.S. Department of the Interior, Bureau of Land Management. Retrieved from https://www.blm.gov/nstc/library/pdf/samplveg.pdf.
- Bureau of Land Management (BLM). 2008. *Kanab Field Office Resource Management Plan and Environmental Impact Statement*. U.S. Department of the Interior, Bureau of Land Management, Kanab Field Office.
- Bureau of Land Management (BLM). 2010. BLM Manual 4700 Wild Free-Roaming Horses and Burros Management. U.S. Department of the Interior, Bureau of Land Management, Washington Office, Washington, DC. Retrieved from https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual4700.pdf.
- Bureau of Land Management (BLM). 2012a. BLM Manual 6220- National Monuments, National Conservation Areas, and Similar Designations. U.S. Department of the Interior, Bureau of Land Management, Washington Office, Washington, DC. Retrieved from https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual622 0.pdf.
- Bureau of Land Management (BLM). 2012b. BLM Manual 6330- Management of BLM Wilderness Study Areas. U.S. Department of the Interior, Bureau of Land Management, Washington Office, Washington, DC. Retrieved from https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual633 0.pdf.
- Bureau of Land Management (BLM). 2015. AIM National Aquatic Monitoring Framework: Introducing the Framework and Indicators for Lotic Systems. Technical Reference 1735-1. U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, CO. Retrieved from http://aim.landscapetoolbox.org/wp-content/uploads/2015/09/TR_1735-01.pdf.
- Bureau of Land Management (BLM). 2016. Instruction Memorandum 2016-139: Policy for Resource Management Plan Effectiveness Monitoring for Renewable Resources with Additional Guidance for Plans Implementing the Greater Sage-grouse Conservation Strategy. U.S. Department of the Interior, Bureau of Land Management, Washington Office, Washington, DC. Retrieved from https://www.blm.gov/policy/im-2016-139.

- Bureau of Land Management (BLM). 2017a. BLM Manual 5300 Timber Measurement. U.S. Department of the Interior, Bureau of Land Management, Washington Office, Washington, DC. Retrieved from https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual530 0.pdf.
- Bureau of Land Management (BLM). 2017b. BLM Manual 5000 Forest Management. U.S. Department of the Interior, Bureau of Land Management, Washington Office, Washington, DC. Retrieved from https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual500 0.pdf.
- Elzinga, C. E., D. W. Salzer, J. W. Willoughby, and J. P. Gibbs. 2001. *Monitoring Plant and Animal Populations*. Wiley-Blackwell.
- MacKinnon, W. C., J. W. Karl, G. R. Toevs, J. J. Taylor, M. Karl, C. S. Spurrier, and J. E. Herrick. 2011. BLM core terrestrial indicators and methods. Tech Note 440. U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, CO. Retrieved from https://www.blm.gov/nstc/library/pdf/TN440.pdf.
- Pellant, M., P. Shaver, D. A. Pyke, and J. E. Herrick. 2005. Interpreting indicators of rangeland health, version 4. Tech Ref 1734-6. U.S. Department of the Interior, Bureau of Land Management, National Science and Technology Center, Denver, CO. Retrieved from https://www.blm.gov/nstc/library/pdf/1734-6rev05.pdf.
- Prichard, D., F. Berg, S. Leonard, W. Hagenbuck, M. Manning, R. Krapf, C. Noble, R. Leinard, and J. Staats. 2003. Riparian Area Management: A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas. TR1737-15, U.S. BLM, National Applied Resource Sciences Center, Denver, CO. 126 pp. Retrieved from https://www.blm.gov/nstc/library/pdf/Final%20TR%201737-15.pdf.
- Rice, E. W., R. B. Baird, and A. D. Eaton (editors). 2017. Standard Methods for the Examination of Water and Wastewater. 23rd Edition. American Public Health Association, American Water Works Association, Water Environment Federation.
- Sogge, M. K., D. Ahlers, and S. J. Sferra. 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-10, 38 p.
- Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl, eds. 2015.

 Sage-Grouse Habitat Assessment Framework: A Multiscale Assessment Tool. Technical Reference 6710-1. Bureau of Land Management and Western Association of Fish and Wildlife Agencies, Denver, Colorado. Retrieved from https://www.fs.fed.us/sites/default/files/sage-grouse-habitat-assessment-framework.pdf.
- U.S. Fish and Wildlife Service (USFWS). 1995. *Ute Ladies'-tresses (Spiranthes diluvialis)*Recovery Plan. U.S. Fish and Wildlife Service, Denver, Colorado. 52 pp. Retrieved from https://ecos.fws.gov/docs/recovery_plan/950921.pdf.

- U.S. Fish and Wildlife Service (USFWS). 2003. *Monitoring Plan for the American Peregrine Falcon, A Species Recovered Under the Endangered Species Act*. U.S. Fish and Wildlife Service, Divisions of Endangered Species and Migratory Birds and State Programs, Pacific Region, Portland, OR. 53 pp.
- U.S. Fish and Wildlife Service (USFWS). 2008. Recovery Outline for the Jones Cycladenia (Cycladenia humilis var. jonesii). U.S. Fish and Wildlife Service. Utah Ecological Services Field Office. 11 pp. Retrieved from https://ecos.fws.gov/docs/recovery-plan/Jones%20cycladenia 123008.pdf.
- U.S. Fish and Wildlife Service (USFWS). 2009. Revised Recovery Outline for the Kodachrome bladderpod (Lesquerella tumulosa). U.S. Fish and Wildlife Service. Utah Ecological Services Field Office. 11 pp. Retrieved from https://ecos.fws.gov/docs/recovery_plan/kodachrome%20bladderpod%20recovery%2 Ooutline final Oct%2009.pdf.
- U.S. Fish and Wildlife Service (USFWS). 2012. Final Recovery Plan for the Mexican Spotted Owl (Strix occidentalis lucida), First Revision, Appendix D. U.S. Fish and Wildlife Service.

 Albuquerque, New Mexico, USA.

Abbreviations-Acronyms

Term	Definition
AIM	Assessment, Inventory, and Monitoring
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
GSENM	Grand Staircase-Escalante National Monument
IIRH	Interpreting Indicators of Rangeland Health
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
RMP	Resource Management Plan
UDAQ	Utah Division of Air Quality

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix J	
Cultural Resources	
August 2019	

Table of Contents

Cultural Resource Site Use Categories	J-1
Sites and Adverse Effects	J-8
Findings of Effect	J-9
Finding of No Adverse Effect	J-10
Finding of Adverse Effect	J-11
Tools for Site Protection and Management	J-11
Archaeological and Historical Synthesis of the Planning Area (Class I Overview)	J-12
Cultural Ethnographies	J-12
Non-Cultural Tools for Site Protection	
Avoidance	J-12
Access Restriction	J-13
Closures as a Scientific Control	J-13
Location of Facilities and Range Improvements	J-13
Off-Highway Vehicles and Related Vehicles	
Changes in Range Management Practices	
Cultural Tools for Site Protection	J-15
Inventory	J-15
Detailed Site Recording and Collection	J-16
Archaeological Testing and Data Recovery Excavation	
Monitoring	J-17
Research	J-17
Consultation	J-18
References	J-19
Abbreviations-Acronyms	J-19

Appendix J: Cultural Resources

Cultural Resource Site Use Categories

Cultural resource sites are to be categorized as to their allowable uses, as per Bureau of Land Management (BLM) Handbook H-1601-1, Appendix C, Page 9. Supplemental guidance for defining cultural resource use allocations and corresponding management actions is found at M-8130.21D and M-8130.21E. These categories include:

- A. Scientific use
- B. Conservation for future use
- C. Traditional use
- D. Public use
- E. Experimental use
- F. Discharged from management

The BLM will develop a Cultural Resources Management Plan for each Grand Staircase-Escalante National Monument (GSENM) unit and Kanab-Escalante Planning Area (KEPA), including assigning cultural sites to use categories (e.g., public, scientific, or traditional use), and managing for the protection and interpretation of these sites. The criteria below will be used to assign cultural sites to appropriate classifications. Dance Hall Rock will be assigned to the public use category. The BLM anticipates that Category F (discharged from management) would not be utilized. In addition, Category D (public use) would be further subdivided into public use, developed and public use, undeveloped. Categorization of the many sites found across the Planning Area is beyond the scope of the current document, and sites would instead be classified under the Cultural Resources Management Plan, on an as-needed basis, or when future conditions of time and personnel permit. Generalized site types, use categories, and assignment criteria are included in the following table.

Site Type	A: Scientific Use	B: Conservation for Future Use	C: Traditional Use	D: Public Use, Developed	D: Public Use, Undeveloped	E: Experimental Use
Prehistoric: Architectural (Sheltered and open)	Allow excavation or other investigative techniques subject to approved research design and consultation with appropriate Native American tribes.	Preserve until conditions for categorization and use become apparent.	Determine appropriate traditional use through consultation with Native American tribes.	Allow public use in accordance with development features. Consult with Native American tribes to find if site is appropriate for public use. Monitor site on a regular and frequent basis.	Do not suggest visitation to the site but offer information if requested. Consult with Native American tribes to find if site is appropriate for public use. Monitor site on a regular and frequent basis. Consider movement to D, Public Use, Developed, if warranted and with appropriate development.	Protect until need for use arises. Consult with Native American tribes to find if site is appropriate for experimentation. Allow experimentation following appropriate research design.
Prehistoric: Artifact/Lithic Scatter with Features	Allow excavation or other investigative techniques subject to approved research design and consultation with appropriate Native American tribes.	Preserve until conditions for categorization and use become apparent.	Determine appropriate traditional use through consultation with Native American tribes.	N/A	N/A	Protect until need for use arises. Consult with Native American tribes to find if site is appropriate for experimentation. Allow experimentation following appropriate research design.

Site Type	A: Scientific Use	B: Conservation for Future Use	C: Traditional Use	D: Public Use, Developed	D: Public Use, Undeveloped	E: Experimental Use
Prehistoric: Open Lithic/Artifact Scatter	Allow excavation or other investigative techniques subject to approved research design and consultation with appropriate Native American tribes.	Preserve until conditions for categorization and use become apparent.	Determine appropriate traditional use through consultation with Native American tribes.	N/A	N/A	Protect until need for use arises. Consult with Native American tribes to find if site is appropriate for experimentation. Allow experimentation following appropriate research design.
Prehistoric: Lithic Source/Quarry	Allow excavation or other investigative techniques subject to approved research design and consultation with appropriate Native American tribes.	Preserve until conditions for categorization and use become apparent.	Determine appropriate traditional use through consultation with Native American tribes.	N/A	N/A	Protect until need for use arises. Consult with Native American tribes to find if site is appropriate for experimentation. Allow experimentation following appropriate research design.

Site Type	A: Scientific Use	B: Conservation for Future Use	C: Traditional Use	D: Public Use, Developed	D: Public Use, Undeveloped	E: Experimental Use
Prehistoric: Rock Art	Document to Utah Archaeology Site Form standards. Allow excavation or other investigative techniques subject to approved research design and consultation with appropriate Native American tribes.	Preserve until conditions for categorization and use become apparent.	Determine appropriate traditional use through consultation with Native American tribes.	Allow public use in accordance with development features. Consult with Native American tribes to find if site is appropriate for public use. Monitor site on a regular and frequent basis.	Do not suggest visitation to the site but offer information if requested. Consult with Native American tribes to find if site is appropriate for public use. Monitor site on a regular and frequent basis. Consider movement to D, Public Use, Developed, if warranted and with appropriate development.	Protect until need for use arises. Consult with Native American tribes to find if site is appropriate for experimentation. Allow experimentation following appropriate research design.
Historic: Architectural	Document standing architectural resources to appropriate Utah Division of State History standards. Allow investigative techniques subject to approved research design.	Preserve until conditions for categorization and use become apparent.	Determine appropriate traditional use in consultation with descendant communities.	Allow public use in accordance with development features. Monitor site on a regular and frequent basis.	Do not suggest visitation to the site but offer information if requested. Monitor site on a regular and frequent basis. Consider movement to D, Public Use, Developed, if warranted and with appropriate development.	Protect until need for use arises. Consult with descendant communities to find if site is appropriate for experimentation. Allow experimentation following appropriate research design.

Site Type	A: Scientific Use	B: Conservation for Future Use	C: Traditional Use	D: Public Use, Developed	D: Public Use, Undeveloped	E: Experimental Use
Historic: Artifact Scatter	Document to scientific and applicable standards. Allow excavation or other investigative techniques as applicable.	Preserve until conditions for categorization and use become apparent.	N/A	N/A	N/A	Protect until need for use arises. Consult with descendant communities to find if site is appropriate for experimentation. Allow experimentation following appropriate research design.
Historic: Inscription or Dendroglyph	Document to scientific and applicable standards.	Preserve until conditions for categorization and use become apparent.	N/A	Allow public use in accordance with development features. Monitor site on a regular and frequent basis.	Do not suggest visitation to the site but offer information if requested. Monitor site on a regular and frequent basis. Consider movement to D, Public Use, Developed, if warranted and with appropriate development.	Protect until need for use arises. Consult with descendant communities to find if site is appropriate for experimentation. Allow experimentation following appropriate research design.

Site Type	A: Scientific Use	B: Conservation for Future Use	C: Traditional Use	D: Public Use, Developed	D: Public Use, Undeveloped	E: Experimental Use
Historic: Trail/Road	Document to scientific and applicable standards.	Preserve until conditions for categorization and use become apparent.	Open to general public use not necessarily strictly for traditional use.	Allow public use in accordance with development features. Monitor site on a regular and frequent basis.	Do not suggest visitation to the site but offer information if requested. Monitor site on a regular and frequent basis. Consider movement to D, Public Use, Developed, if warranted and with appropriate development.	Protect until need for use arises. Allow experimentation following appropriate research design.
Historic: Mining	Document to scientific and applicable standards. Allow excavation or other investigative techniques as applicable.	Preserve until conditions for categorization and use become apparent.	N/A	Allow public use in accordance with development and safety features. Monitor site on a regular and frequent basis. Visitor safety should be a priority consideration.	Do not suggest visitation to the site but offer information if requested. Monitor site on a regular and frequent basis. Consider movement to D, Public Use, Developed, if warranted and with appropriate development. Visitor safety should be a priority consideration.	Protect until need for use arises. Allow experimentation following appropriate research design.

Site Type	A: Scientific Use	B: Conservation for Future Use	C: Traditional Use	D: Public Use, Developed	D: Public Use, Undeveloped	E: Experimental Use
Historic: Artifact Scatter	Document to scientific and applicable standards. Allow excavation or other investigative techniques as applicable.	Preserve until conditions for categorization and use become apparent.	N/A	N/A	N/A	Protect until need for use arises. Consult with descendant communities to find if site is appropriate for experimentation. Allow experimentation following appropriate research design.

N/A - not applicable

The management of cultural resources on federal lands is dictated, in large part, by Federal laws and regulations. Although there are many addressing cultural resource concerns, the most applicable laws and regulations for the BLM are the following:

- National Environmental Policy Act (NEPA)
- National Historic Preservation Act (NHPA)
- Antiquities Act
- Historic Sites Act
- American Indian Religious Freedom Act
- Religious Freedom Restoration Act
- Archaeological Resources Protection Act
- Native American Graves Protection and Repatriation Act
- Federal Land Policy and Management Act
- 36 Code of Federal Regulations (CFR) Part 800

Cultural resources are nonrenewable; that is, any loss or degradation of cultural resources is permanent. Any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP) is termed a historic property. Properties of traditional religious and cultural importance to a Native American tribe that meet the NRHP criteria are also historic properties. It is important that there is no net loss of scientific information potential or integrity for historic properties and that they are managed to prevent or minimize adverse impacts on integrity or any of the qualities that are character defining. Preservation and protection are the primary goals of any Federal cultural resource program.

Chapter 3, Section 3.2, *Cultural Resources*, of this environmental impact statement (EIS) presents the background information on cultural resources in the Planning Area. A brief description of the types of properties found in the Planning Area and the various forms of impacts that could affect these sites is included in this appendix. A description of the resource types felt to be most susceptible to adverse effects is included below. Also included in this section is the criteria by which determinations of effect are made, and a discussion of potential mitigation options for sites being adversely affected.

Sites and Adverse Effects

Cultural resource concerns regarding adverse effects focus on site type and the potential for effects caused by a variety of sources. Site types within the Planning Area that may be most susceptible to adverse effects include:

1. Rock shelters. These locations often contain complex sites with a variety of features that can include delicate and perishable materials not found in open settings, and very complicated natural and cultural sedimentary stratigraphy. Shelter and alcove settings can suffer from the immediate and cumulative physical effects of livestock, and are also often subject to looting and vandalism. Grazing-related adverse effects and vandalism in rock shelters in the Kanab Field Office were noted as early as 1919 (Judd 1926:118). Currently, it is difficult to find sheltered sites in the Planning Area that have not been vandalized or looted. Although rare in rock shelters, range improvements and other recent man-made features can also adversely affect sheltered sites.

- 2. Sites with standing architecture, including historic and prehistoric sites, and sites with exposed architectural features. These sites may have architectural features that can suffer from recreational use, development projects, and livestock impacts. As with rock shelters, remains of prehistoric and historic structures are often subject to vandals and looters. Even sites with only a few courses of intact masonry or rubble mounds would be included in this category, because any adverse effects would be considered unacceptable levels of damage.
- 3. Open sites in sensitive locations, such as in erosive soils, in areas that tend to concentrate recreational use or the presence of livestock, and those sites with discreet features such as hearths, slab features, soil staining, middens, and other features that are susceptible to disturbance. Sites in erosive sediments suffer from natural weathering effects that are exacerbated by trampling, off-highway vehicle (OHV) use, and erosion. Features such as middens, hearths, and fire-cracked rock, lithic debitage, and artifact concentrations are easily disturbed, and once disturbed, they can lose integrity and scientific value. In certain contexts, cumulative effects due to disturbance and erosion can quickly and irreversibly affect these features, especially in sensitive soils and on slopes. Buried slab features, such as slab-lined hearths, storage features, and pit houses, may at first seem impervious to such impacts; however, observation has shown that this is not always the case, especially with softer sandstones. Hard sandstone slabs may help to enclose and protect some features, but softer sandstones may weather quickly. As the upper margins of soft sandstone slabs are exposed through erosion and weathering, these slabs can be quickly broken down by exposure to the elements, trampling, and vehicles. Without the slabs to help protect and define the features, they can be rapidly lost to additional direct impacts, exposure, and erosion.
 - This category may exclude sites based on their lack of potential for additional adverse effects. For example, a lithic scatter found on sandy sediments or slopes open to recreational use or cattle trailing and increased erosion would be included in this category, while a lithic scatter on stable, gravelly sediments with little depth potential, light impacts, and not prone to increased erosion might not be included.
- 4. Rock art sites and historic inscriptions. Vandalism is by far the most important factor concerning adverse impacts on rock art, but livestock can adversely affect these sites, as well. Instances of both petroglyphs and pictographs suffering from livestock rubbing have been noted in the Planning Area, and cases of dung splattering on rock art panels have been documented in the Planning Area and noted in nearby areas.

All readily accessible sites can be subject to various degrees of human or grazing-related influences, but the above sites are considered to be more easily damaged or more often targeted by looters and collectors than most other site types. These conclusions are based on field observations, reviews of literature (see for example Geib et al. 2001), and conversations with other area archaeologists. While site type is important with regard to adverse effects, site location is also a factor. Observation has shown that sites in the immediate vicinity of recreation areas, OHV routes, and range improvements that focus livestock-related activity suffer more than those in backcountry situations.

Findings of Effect

Findings of effect represent a measured analysis of the state of an archaeological or historic site in relation to the agents in question or a proposed activity. Identification of factors leading to any finding of effect will need to be based on professional observations, data collection, and

judicious application of national guidance. Direction at 36 CFR 800.5 provides criteria for the assessment of adverse effect, which may result in a finding of adverse or no adverse effect. Also considered in this appendix is one additional subcategory: a finding of no effect. This is not part of 36 CFR 800.5, but has been added to this analysis to better describe potential effects and management options. It is described under *Finding of No Adverse Effect*, below.

A finding of adverse effect means that the site is being affected or will be adversely affected by the agents in question, as defined in 36 CFR 800.5(a)(1):

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the [NRHP] in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

The BLM will make findings of effect for previously recorded sites based on existing data, at least until such time as the agencies can revisit the sites and prepare an updated site form (if necessary). The BLM will also apply findings for cultural resource sites identified in the future. Future data will come from research-driven inventories and from NHPA Section 106 inventories related to implementation actions, in addition to an active, ongoing monitoring and management program. Thresholds for making findings of effect follow the description of each category. Findings for all sites, whether previously documented or newly discovered, are made on an individual, case-by-case basis.

After more than 140 years of historic use of the Planning Area, it is often difficult to find archaeological sites that have not been affected to some degree. However, under specific conditions on some sites, any adverse effects may have reached their most detrimental levels decades before. Numbers of livestock, for example, were significantly higher prior to 1935 than they are now, suggesting that grazing-related pressures to sites were probably greater at that time. It also suggests that they have probably somewhat diminished since that time. This trend has been noted by other archaeologists (see, for example, Popelish 2001). Looting and wholesale destruction of sites were common occurrences in the past, but have diminished greatly in recent decades. While looting and vandalism have diminished, the numbers of recreationalists has recently increased dramatically and with that rise in popularity comes unintentional impacts. Specific sites in certain areas are getting "loved to death."

Finding of No Adverse Effect

At stable sites not prone to erosion or excessive visitation, additional adverse effects might not be expected. In some cases, the architectural features of a site, either through natural forces or through other impacts, may have been adversely affected to the point that additional recreational or livestock would not further damage them. Although some sites may have suffered adverse effects in the past, the basic question still revolves around site integrity. If the site is losing integrity, affecting its eligibility under the relevant NRHP criteria, it will not fit into the *no adverse effect* category. If, on the other hand, the site is not suffering adverse effects in addition to those already inflicted by earlier activities, then a determination of *no adverse effect* may be applicable.

Thresholds: Sites with a finding of no adverse effect may show indications of past or
ongoing use or visitation but will show no indications that use is contributing to adverse
effects. Care must be exercised when assigning sites to this category, making a no adverse
effect determination, as it may be difficult to determine if current use is not contributing to

ongoing adverse effects. The *no adverse effect* category should be used with caution and reserved for sites where it is demonstrated through careful analysis that current practices are not adversely affecting any of the multiple site components or its potential eligibility for listing on the NRHP.

An additional subcategory has been added to this discussion to help clarify this discussion about *no adverse effect*. While the *no effect* category is not included in 36 CFR 800 regulations, it would be included in the larger finding of *no adverse effect*. It is presented here for discussion and is described below.

- No Effect: Sites applicable to a determination of this category would primarily include those sites that are inaccessible to livestock, receive very little recreational use or visitation, or have been otherwise hardened or protected from human- or grazing-induced impacts.
 - Thresholds: Sites in this category show no evidence of ongoing disturbance, or no potential for disturbance by current use, project proposals, or predictable factors.

Finding of Adverse Effect

These findings are based on observations regarding the site type, condition, ongoing impacts, use, and compounding factors, such as increased erosion, vandalism, and visitation. Mitigation for these sites can include a variety of approaches, as outlined in the following sections.

Thresholds: Factors of site condition and ongoing effects will need to be considered prior to
a finding of adverse effect. Cultural resource specialists should focus on key points
regarding site integrity and the NRHP criteria. Because cultural resource sites are
nonrenewable resources, if potential adverse effects are suspected but not conclusively
identified, it may be prudent to assume these effects are indeed ongoing and to proceed
accordingly until such adverse effects are positively verified or refuted to preserve sites for
future research.

The following are suggestions of thresholds for a finding of adverse effect:

- Indications of actively ongoing erosion at a historic property that is caused by, or exacerbated by, human or livestock use of the site area.
- Indications of direct, indirect, or cumulative adverse effects, where it is apparent that the
 effects of humans or the environment are adversely affecting portions of the historic
 property or features within that property that were not previously adversely affected by
 earlier use of the site area.
- Indications of direct or indirect adverse effects, where it is observed through scientific
 investigation that the levels of adverse effect are beyond those previously suffered by the
 site (or portion of the site) prior to NEPA and NHPA requirements, and intact areas are now
 losing integrity and research potential, or where adverse effects are impinging on any of the
 qualities that make a site eligible for listing on the NRHP.

Tools for Site Protection and Management

Land managers must "seek ways to avoid, minimize, or mitigate ... adverse effects," as outlined at 36 CFR 800.6(b).

Following are brief discussions of Class I overviews and ethnographies, important documents that set the stage for the many of the "tools" in the cultural "toolbox." Subsequent sections are

detailed explanations of the various protective measures for cultural resources in relation to this EIS. Which option or options are chosen would depend on several factors, including site type; characteristics that relate to its eligibility for listing on the NRHP; location, access, and use for and by humans and livestock; nearby rangeland improvements; soil type; site condition; results of any tribal or other consultations; and likelihood for continued adverse effects. The tools are presented below in two primary sections: *Non-Cultural Tools for Site Protection* and *Cultural Tools for Site Protection*. Each tool is examined and detailed in regard to adverse effects. These tools may be used singly or in combination to meet the required objectives.

Archaeological and Historical Synthesis of the Planning Area (Class I Overview)

An archaeological and historical synthesis (commonly referred to as a Class I overview) is a synthesis of all known relevant information regarding the archaeology and history of a specified area. An overview of this sort is a must before the history and prehistory of an area can be understood and the area sites tied into a meaningful background. Often the archaeological and historical syntheses are produced as separate volumes, but each should be considered as important as the other. These set the stage by which sites can be evaluated in context to nearby sites as well as the larger cultural or physiographic area. While not a mitigation or protective action in itself, the development and use of these documents provides the setting in which much of the following actions should be considered.

GSENM currently has on file a prehistoric Class I written in 2000. Depending on factors such as new research, boundary changes, land tenure adjustments, and other actions, a Class I overview should be periodically updated to reflect the most recent information available. GSENM is currently in the process of updating the original Class I Overview including KEPA lands. The BLM Kanab Field Office is currently also producing a Class I Overview specifically for the Kanab Field Office non-KEPA lands. Both of these documents include cultural resource predictive models.

Cultural Ethnographies

Ethnographies document the current cultural groups that have vested interests in the Planning Area. Before meaningful government-to-government consultations can occur, the BLM must have a good knowledge of how these cultural groups utilized the landscape in the past and continue to do so, where culturally important locations such as Traditional Cultural Properties are found, where traditional practices are taking place, and what resources are utilized. Above all else, ethnographies are necessary to document the ties of a cultural group to the landscape from that culture's point of view. While usually applied to tribal groups, the need for ethnographies can be extended to other cultural groups, as well. As with the Class I overview, an ethnography is not a mitigation or protective action but a necessary source of information and reference material while considering the following actions.

Non-Cultural Tools for Site Protection

Avoidance

The simplest and most effective way to protect a historic property is to avoid any adverse effects. While this can be relatively easy in some cases (such as moving a proposed activity location to avoid a historic property), it becomes more difficult with livestock that are relatively free to move on their own or unrestricted human use of the landscape. This avoidance option is best used with fixed objects, such as a proposed corral, road, campground, water improvement,

or certain other physical improvements. Many of the following tools are more applicable and can work both in the minimization and mitigation aspects.

Access Restriction

Restricting access, as considered here, generally refers to restrictions on a site-by-site basis. In some settings, human restrictions may be accomplished with signage, or, if needed, fencing or other physical restriction barriers. Where possible, regarding livestock, brush barriers could be used. They would have the advantages of appearing more natural, would not call attention to the site, and would not generally require much in the way of tools or artificial materials. Where such natural barriers could not be used, traditional fencing or other restrictive options may be necessary. Closures through legal channels (i.e., making a location "off limits") are also an option, but such closures affect only humans and are often difficult to enforce reliably.

Closures as a Scientific Control

Closure of certain areas can act as a scientific control for comparison to areas left open to free access. This would be an important aspect when considering livestock or OHV effects, both direct (livestock or OHVs on the sites) and indirect (such as erosion exacerbated by livestock or OHV use), as compared to other adverse effects. Restrictions for scientific purposes should be planned to take full advantage of the research potential. Areas with a variety of site types should be considered, but the restricted and open portions of the research areas should be as similar in the geographic and cultural landscapes as possible. This allows the researcher to make a parallel comparison.

Location of Facilities and Range Improvements

Livestock are controlled by the use of a whole series of range improvements, such as fence lines, corrals, water sources, salt licks, and drive ways. All of these improvements have the tendency to focus livestock use into certain areas, concentrating the related adverse effects. When cultural resource sites are found in the vicinity of these improvements, the adverse impacts on these sites can rise significantly.

In many cases, these effects can be mitigated by moving through project design by relocating the range improvement prior to implementation (see *Avoidance*, above). Fences can be constructed around, rather than through, sites. Watering troughs can be constructed or moved away from sites, as can corrals and other improvements. Removing the reason for livestock congregation would have a positive effect on any site in the vicinity.

Livestock congregation at a watering source not only intensifies livestock use of the source area itself, but also increases livestock use of the surrounding area. Data from Glen Canyon National Recreation Area indicate that cattle tend to stay within a 2-mile radius of their water source (NPS 1999:22), meaning that livestock would affect sites within that 2-mile radius to a greater degree than outside that area. If a watering source or corral is found within or proposed for an area of high site density, it may be prudent to move that improvement to an area of lesser site density.

Similar issues regarding concentrations of human use in certain areas may result from placing recreational facilities such as campgrounds, parking lots, picnic areas, and trail systems near archaeological and historic sites. This is appropriate in situations where the archaeological or historic site is the focus for interpretive or educational purposes, but in other situations it would be prudent to consider moving the proposed facility to a different location.

Off-Highway Vehicles and Related Vehicles

Unregulated use of OHVs has been recognized as a serious problem on BLM-administered surface lands. Increasing accessibility to distant parts of the landscape has also increased the accessibility of cultural resource sites on that landscape. OHV use on cultural resource sites has an immediate destructive effect and increases the overall rate of secondary erosion. Limiting the use of OHVs and similar vehicles where such activities are affecting cultural resource sites removes a serious threat to these sites. Restricting OHV use to authorized, "open" routes and designated "play" areas that have appropriate Section 106 clearance will provide additional protections. Off-road livestock herding and driving should be restricted to equestrian or pedestrian methods.

Changes in Range Management Practices

Seedings and large-scale vegetation projects: Such practices as clearing and seeding to increase the forage in a given area eventually draw livestock to these areas. The clearing operations themselves, such as chaining and bulldozer pushes, can have immediate and significant adverse effects for cultural resource sites. Subsequently, as the seeding matures and cattle are drawn to the project area, additional grazing-related adverse impacts on sites in that area may increase. If cultural resource sites were protected during the clearing operations by leaving them in undisturbed tree islands, cattle may later be drawn to them for the shade they provide in an otherwise open setting. The sites are then open to adverse effects by not just a few cattle wandering by, but by larger numbers of cattle drawn by the very factors designed to protect the site. These islands could also draw unwanted human attention to cultural resource sites.

Future large-scale range improvement projects, such as seedings, should be planned in conjunction with cultural resource specialists. This should be done to ensure that cultural resource sites are taken into consideration and that potential adverse effects can be mitigated prior to project implementation. In the seeding example noted above, initial avoidance of archaeological sites followed by hand-thinning the remaining tree cover to match the surrounding vegetation density would not adversely affect the site and would leave no reason for livestock to concentrate in that location.

Consideration of animal unit months (AUMs): AUMs reflect the number of head of livestock that are permitted to graze in a certain location for a certain time span. Recent investigation and research (Zweifel 2016) has shown that stocking rates are only one of a suite of factors influencing adverse impacts on cultural resource sites. However, the amount of impact a cultural resource site might suffer from livestock is, to a certain degree, proportional to the number of livestock on that site at any given time. Reducing the number of livestock would therefore reduce livestock-related adverse effects, although direct measurements of potential adverse effect reduction would depend on a variety of factors and would be specific to the sites in question. AUM reduction would probably not completely avoid adverse effects. Although adverse effects would be minimized with the reduction of livestock, as long as some livestock remain, there is potential for adverse effects.

Area closures: Closure to livestock, either on a temporary or permanent basis, is the only mitigation strategy that would remove all potential for grazing-related adverse effects on anything above a site-by-site basis. Closures would be used as a form of mitigation only when it

is apparent that no other potential mitigation actions would meet protection requirements or where all other attempts had failed to realize the necessary levels of protection.

Closures would generally be considered as a last line of defense for areas where multiple sites or cultural landscapes are being adversely affected. Any closures of areas large enough to reduce AUMs would require a land use plan amendment and consultation with the permittees and other interested parties. Such closures, even when intended for cultural resource protection, could serve as scientific control areas for a wide variety of other resources (see Research, below, for additional details and discussion).

Changes in season of use: It is at first difficult to see how changes in season of use could be used as mitigation for a cultural resource site, but this tool should be considered as a possibility. Livestock tend to congregate in sheltered areas, such as alcoves, overhangs, and rock shelters. Part of this behavioral pattern is in response to weather conditions; in the summer, livestock "shade up" in shelters; in the winter, they move to these shelters for protection from wind, rain, and snow. In either weather extreme, livestock seek the sheltered areas. Vegetation has a stabilizing effect on sediments and soils. A change in season of use that reduces adverse effects on vegetation would also increase site stability by lessening erosion.

In wet weather, such as the monsoon season, there is a more abundant water supply in areas that might not usually have available water, such as natural tanks in slick rock areas. Under these conditions, livestock may tend to wander farther from their traditional water source than they would under normal conditions, entering areas and affecting sites that only rarely see livestock. Under such conditions, a seasonal restriction may be all that is needed to protect a whole series of sites.

Certain types of soils and sediments may also be more prone to livestock effects under specific weather conditions. Soft sediments and clay soils may be much more susceptible to the hoof action of livestock in wet conditions. Sites found in these areas, within these sediment types, would be more open to adverse effects, as the sediments themselves become more susceptible. Again, a seasonal restriction may be all that is necessary to protect sites in these settings.

Cultural Tools for Site Protection

Inventory

Approximately 5 to 7 percent of the Decision Area has been comprehensively surveyed for cultural resources. While many project areas are included in this figure, some older improvements and development projects were implemented or established prior to standard cultural resource surveys. Inventory is needed at those activity locations that have never been surveyed and would be needed at proposed project locations. Certain projects, such as campgrounds or livestock watering locations, tend to concentrate usage. With such projects, inventory should not be limited to the specific development location but must take into account the effect of recreational, development, or livestock concentration in the area surrounding the improvements.

Future inventory across the Decision Area will generally be in response to NHPA Section 106 compliance or Section 110 obligations. The extent and location of Section 106 inventories would be largely determined by the specifics of the project generating the need for inventory.

Section 110 inventories should be directed at locations or topographic features likely to harbor site types known to be at risk from adverse effects, locations that tend to attract livestock, areas of known or suspected high site density, or locations that address certain research topics and information needs. Larger areas that have seen little or no inventory should be surveyed to identify at-risk sites and to establish the cultural resource character of the area.

Detailed Site Recording and Collection

Cultural resource sites are generally documented by recording certain data on specially prepared site forms. Many factors can influence what kind and the amount of information that is included on a site form. Early site forms often lacked many categories that today are considered to be required information. An example of this is impacts on sites. Most site forms from 30 or 40 years ago did not include a category or space for noting specific adverse effects and instead may have had only a check box for site condition: good, fair, or poor. The rare comments on specific adverse effects, if any, would be added in the narrative portion of the site form, and these narratives themselves were often not as detailed as modern procedures require.

In some specific cases, detailed recording or re-recording of a site may be all that is necessary for mitigation. For example, sites that have been heavily affected in the past and retain little integrity may be adequately documented by a thorough recording process and possibly artifact collection and curation. Recording and collection as mitigation should be reserved for sites where it is apparent that these actions alone would retrieve any remaining scientific information left at those sites.

At the least, detailed site recording should be seen as the beginning of the first step of the documentation process and it is a requirement prior to any collection, testing, or full excavation. If any reasonable form of scientific monitoring is to be accomplished, a detailed record of the site before the monitoring process begins is a must. Only then can changes in site condition, artifact counts and dispersal patterns, and future adverse effects be accurately tracked.

Archaeological Testing and Data Recovery Excavation

Archaeological testing of a site refers to test excavations to determine its character, depth, cultural affiliation, and eligibility for listing on the NRHP. Test excavations are usually restricted in scope and involve a few small test plots or trenches. Testing can provide a host of information without the destruction and cost involved in larger-scale excavations. It can often provide the level of information needed to make informed decisions regarding management direction for that site. Testing and excavation can often provide information not just about that specific site, but about other nearby sites in similar settings and apparent cultural affiliation. Therefore, the testing of one site may provide insight to the management needs of numerous sites. While testing, like excavation, is a destructive process, it is performed on a scale small enough that the overall integrity of the site is not impaired.

Data recovery excavation of cultural resource sites is a destructive process, and once a site has been excavated it cannot be re-assembled and protected. Excavation is generally used in situations where the site is in imminent danger of destruction and some form of data retrieval is necessary, or in situations where important scientific research questions cannot be answered by other, non-destructive means. As a mitigation tool, excavation should be considered a last resort. Excavation can provide a host of scientific information that cannot be had otherwise, but

it is costly, can be time consuming, and results in the loss of some, or all, of the cultural resource site. Excavation may be the most suitable form of mitigation at sites that have been heavily affected or at sites that may suffer significant loss of integrity from a development project. Any proposed excavations must be preceded by tribal and State Historic Preservation Officer consultation, would include other consulting parties as appropriate, and would require the development of a specific treatment plan.

Monitoring

Monitoring is a necessary component of any cultural resource program. Cultural Resource Programs have monitoring programs in place, but these are generally site specific, are performed on an as-needed or when-possible basis, and respond to a variety of projects and effects. There is a recognized need for a more comprehensive inventory and monitoring program designed to identify, quantify, assess, and monitor impacts on cultural resource sites. Site Steward programs have become an effective tool in providing wider monitoring coverage than would otherwise be possible.

Baseline data on the condition of sites are generally collected at the time the site is recorded. However, many older site forms did not adequately address impacts on the sites. Within the past two or three decades, this has begun to change as archaeologists gain a broader understanding of the nature of various impacts. Monitoring provides baseline data where necessary and allows tracking of resource conditions over time. While inventory provides a first look and recording episode for cultural resource sites, monitoring provides the basic information by which changes to the site can be measured. Monitoring is also necessary to track the effectiveness of different mitigation measures applied to various cultural resource sites.

Management must have the information necessary to make informed decisions in the future as to what forms of mitigation may better apply to various site types, including which techniques have been shown to work and which did not prove effective. Although inventory and monitoring are not mitigation measures in themselves, they are a vital part of an overall mitigation plan. The importance of monitoring cannot be overemphasized.

Research

Continuing research is an important aspect of any cultural resource program. Effective land management is only possible if an agency has adequate knowledge of the resources being managed. This involves more than just what is present, but how the resource is affected by natural and human-induced processes and actions.

A fair amount of research has been accomplished, for example, over the past two or three decades into grazing-related adverse impacts on cultural resources, but most of these studies have been relatively small and short term. Research at GSENM includes an ongoing, long-term monitoring study, begun in 2005, comparing two specific sets of sites, one ungrazed and the other grazed annually. This is an ambitious 15-year project that, when completed, will result in the most comprehensive study of its kind to date.

Research on any given parcel of land is a local affair but can have far-reaching applications. The above-noted grazing research can provide insights that may be applied across the American Southwest and perhaps farther. Other recent GSENM research has produced archaeological reports and publications that apply to wide areas and extensive time depth, and

will prove to be extremely valuable for the next several generations of archaeologists and other researchers.

The continuing collection of local oral histories is another example of an ongoing research program. Interviews conducted with long-time area residents can address the history of the ranching and livestock industry in the Decision Area and can help describe range conditions and how they have changed over the past several decades. Also included in research is the current development a comprehensive grazing and ranching history of the Planning Area; this may be particularly important in that the ranching lifestyle of the past decades is quickly becoming a thing of the past, and no such grazing history of any detail has yet been accomplished.

Consultation

While consultation is required under several laws and regulations, some cases may require more in-depth or widespread consultation efforts. An example would be Tribal Consultation regarding the viewshed from a particular rock art site. In many instances, the placement of the rock art is in relation to its location on the landscape and the view had from that location. Likewise, prehistoric and ethnographic shrine locations are often landscape and viewshed dependent. In such cases, impacts on the surrounding landscape may be considered an impact on the site or sites in question. While regulations regarding consultations were generally crafted with United States and tribal government-to-government efforts in mind, consultation may be applied wherever special interest, ethnographic, or religious groups or political entities come into play.

References

- Geib, P. R. 1989. Archaeological Survey of Lower Glen Canyon Benches and a Descriptive Model of General Site Location. Northern Arizona University Archaeological Report No. 1011. Prepared for the National Park Service, Rocky Mountain Regional Office. Utah State Project No. U-85-NO-719n. October.
- Geib, P. R., J. H. Collette, and K. Spurr. 2001. Kaibabitsinungwu: An Archaeological Sample Survey of the Kaiparowits Plateau. Cultural Resources Series No. 25, Grand Staircase-Escalante National Monument Special Publication No. 1, USDI Bureau of Land Management, Salt Lake City, Utah.
- Judd, N. 1926. Archaeological Observations North of the Rio Colorado. Reprinted 2010, with a forward by Richard Talbot, University of Utah Press, Salt Lake City.
- Popelish. 2001. Prewitt/6A Allotment Management Plan. No Adverse Effect Determination. Report 2001-03-024.
- National Park Service (NPS). 1999. Glen Canyon National Recreation Area Grazing

 Management Plan (General Management Plan Grazing Component). Values and
 Purposes Guideline Goals and Objectives for Grazing Management. July.
- Zweifel, M. K. 2016. Cultural Resource Site Condition and Trend Analysis: Results of 2011-2016 Grazing Allotment Survey and Monitoring at Grand Staircase-Escalante National Monument, with Additional Information from Glen Canyon National Recreation Area. Report on file, Grand Staircase-Escalante National Monument, Kanab, UT.

Abbreviations-Acronyms

Term	Definition			
AUM	Animal unit month			
BLM	Bureau of Land Management			
CFR	Code of Federal Regulations			
EIS	Environmental impact statement			
GSENM	Grand Staircase-Escalante National Monument			
KEPA	Kanab-Escalante Planning Area			
NEPA	National Environmental Policy Act			
NHPA	National Historic Preservation Act			
NRHP	National Register of Historic Places			
OHV	Off-highway vehicle			

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix K

Interdisciplinary Route Evaluation Forms and Analysis

August 2019

Table of Contents

List of Tables	
Table 1. Flag Point Route Evaluation Form	K-1
Table 2. Flag Point Route Evaluation Checklist	К-3
Table 3. Flag Point RMP OHV Area Alternative Development Documentation Form	K-6
Table 4. V-Road Route Evaluation Form	K-9
Table 5. V-Road Route Evaluation Checklist	K-12
Table 6. V-Road RMP OHV Area Alternative Development Documentation Form	K-15
Table 7. Inch Worm Arch Road Route Evaluation Form	K-21
Table 8. Inch Worm Arch Road Route Evaluation Checklist	K-22
Table 9. Inch Worm Arch Road RMP OHV Area Alternative Development Documentation	on
Form	
Table 10. V-Road Affected Environment and Effects Analysis	K-30
Table 11. Inch Worm Arch Road Affected Environment and Effects Analysis	K-34
Table 12. Flag Point Trail Affected Environment and Effects Analysis	K-38
List of Figures	
List of Figures	
Figure 1. Flag Point Route Evaluation	
Figure 2. V-Road Route Evaluation	
Figure 3. V-Road Typical Condition	
Figure 4. V-Road Culvert in Place Requiring Maintenance	
Figure 5. Sandy Section Along V-Road	
Figure 6. V-Road Wash-Out Area – Old Road Bed	
Figure 7. V-Road Wash-Out Road – Old Road Bed	
Figure 8. V-Road End of Route	
Figure 9. Inch Worm Arch Road Route Evaluation	
Figure 10. Existing Inch Worm Arch Road Route	
Figure 11. Flagged Alternate Route	K-28
Figure 12 Inch Worm Arch	K-29

Appendix K: Interdisciplinary Route Evaluation Forms and Analysis

Table 1. Flag Point Route Evaluation Form

	Evaluation Form for Interdisciplinary Route Analysis									
1	Route ID	Flag Point - GAGRC347				2	Length	4.39 miles		
3	Location	ocation Flag Point Trail (OHV), Kane County				4	Date	06/20/2018		
5	ID Team		Alan Titus, Allysia Angus, Allan Bate, Cameron McQuivey, Dana Backer, Ken Bradshaw, Jason Bybee, Jabe Beal, Mark Foley, Matt Zweifel, Raymond Brinkerhoff, Sean Stewart, Brandon Johnson							
6	Route Type	Road	Primitive Road	Х	Trail			Way		

7 Purpose & Need of Motorized and Non-Motorized Travel on the Route:

While this route is currently not part of the approved travel plan, the route receives use from OHVs (primarily UTVs, with some ATV and motorcycle use). Hikers, mountain bikers, and equestrian riders also use the route. The estimated percentage of use along the route by OHV and non-motorized use is unknown. The route in its current form travels along the user-created route through a pinyon-juniper desert landscape composed of sandy benches and dry washes, making it difficult for larger vehicle access. The route winds through trees and over archaeological sites.

The purpose and need of this route is to access a paleontological and archaeological site at the end of Flag Point. At the end of the OHV route, a 500-foot user-created foot trail provides access to the paleontological site (dinosaur tracks) and archaeological site (pictograph and petroglyphs).

Additional Comments Regarding the Purpose & Need of Motorized and Non-Motorized Travel on the Route: The paleontological and archaeological sites are popular with local residents as well as tourists. It is expected that the public and commercial permit holders will continue to want access (motorized and non-motorized) to visit these resources. The trail appears to have been user created rather than designed or built using heavy equipment.

Potential Resource and/or User Conflicts from Motorized and Non-Motorized Travel on the Route: The field team started at the junction of open BLM roads #562 & #563. Hikers, bicycles, and OHV conflicts may arise, as the route is narrow, has blind spots along the trail, is sandy, and has few pullouts for passing, creating the potential for user conflicts and increased resource impacts. OHV use on the route is the primary contributor to erosion on the trail tread, has created exposed tree roots, and has caused erosion adjacent to tree trunks. The route provides access to a popular location emphasizing dinosaur tracks and an archaeological site. There is potential for vandalism, as the dinosaur track site is close to the OHV route. The close proximity and correlation between the rock art site depicting the nearby dinosaur tracks make them globally unique.

Additional Comments Regarding Potential Resource and/or User Conflicts from Motorized and Non-Motorized Travel on the Route: The route has limited camping opportunities, as only one campsite was identified at the end of the route adjacent to the foot trail. Three pullouts/passing areas were documented along the route. Trees have been limbed, and broken limbs create safety hazards along the narrow route. It can be expected that additional resource damage will continue without defining the OHV route. A user-created foot trail has also been created from Seaman Wash Road (BLM 563) along the valley floor to access these sites. In total there are two access routes to this site: one OHV and foot trail route from the OHV trail and one foot trail from Seaman Wash Road.

Evaluation Form for Interdisciplinary Route Analysis

The association of a dinosaur track depicted in prehistoric rock art with actual fossil dinosaur tracks nearby is globally unique and potentially worthy of World Heritage status. It is estimated that there are fewer than five such sites known in the entire world. Special monitoring, education, and enforcement should accompany opening any route that would increase access to this site.

Kane Country Travel Council has identified this site as a destination for the OHV community. It is expected the marketing and promotion of this site will continue.

9 Route Designation Alternatives:

Potential route designations include, but are not limited to, open to all forms of travel, open with mitigation, open to specific vehicles types, limited to non-motorized forms of travel, limited seasonally, and closed.

No Action	Defer to future TMP	Alternative B	Defer to future TMP	Alternative C	Defer to future TMP	Alternative D (Preferred Alternative)	Add route via an implementation level decision included in the	Alternative E (Proposed Plans)	Defer to future TMP
							RMP		

Comments: Under alternatives A, B, C, and E, if no additional measures are taken to close OHV access on the trail, it can be expected that OHV use will continue. Tools or infrastructure used to close the trail may include fencing, boulders, post and rail, and signage. Based on the remote location of the trail, monitoring would be intermittent, and the closures may be difficult to maintain. Additional resource impacts would likely occur by OHV riders that may try to go around or destroy physical impediments placed to limit OHV use on the trail.

10 Recommended Mitigation Measures to Minimize User and Resource Conflicts for Each Alternative:

Alternatives A, B, C, and E: Do not incorporate the route in the transportation plan at this time.

Alternative D: Flag Point trail would be open to OHV use. Mitigation measures may include: vehicle size restrictions (50 inches or less), human waste disposal systems, development of OHV parking areas and pull-outs for passing lanes, educational/interpretive signage, development of official foot trails at both access points, erosion control where needed, and route realignment around sensitive archaeological and paleontological sites.

11 | Summary Regarding the Interdisciplinary Team's Proposed Action Recommendation:

Under Alternative D, the route provides access to popular archaeological and paleontological sites. Designating the route as OHV limited (50 inches maximum vehicle width) and applying the required mitigation measures balances existing OHV uses with needed resource protection and public access needs.

Under Alternative E, Flag Point Road would not be added to the TMP at this time due to the need for special monitoring, education, and enforcement for a paleontological and archaeological site of potentially World Heritage status. Addition to the TMP but may be considered during future travel management planning route designation.

OHV – off-highway vehicle, UTV – utility task vehicle, ATV – all-terrain vehicle, BLM – Bureau of Land Management, TMP – Travel Management Plan, RMP – Resource Management Plan

Table 2. Flag Point Route Evaluation Checklist

		Evaluation Che	ecklist for Interdisciplinary Route Analysis					
Purpose & Need Criteria			Resource Criteria					
Administrative Uses	Yes	Commont	Россиисо	Potentially Affected?	Comment			
Use		Comment	Resource	Arrected?	Comment			
Compliance/Enforcement Monitoring	Х	Archaeology, paleontology; accessible by foot	* Air Quality - Dust					
Fire Suppression			* Air Quality - Non-Attainment Area					
Predator Control			* Wildlife	Х	Mule deer winter range			
Public Safety		* Special Status Species #1 Habitat	X	Peregrine falcon at Flag Point proper along cliff edge; however, a road should not cause a substantial impact because it is about 8 miles from the end of the road.				
Training Area/Facility			* Proximity to Special Status Species #1 Habitat					
Vegetation Treatment Area			* Special Status Species #2 Habitat					
Wildlife Water			* Proximity to Special Status Species #2 Habitat					
Other Administrative Uses			In a Wash					
Commercial Uses			Wash Crossing	Х				
Use	Yes	Comment	Proximity to a Wash	Х				
Ranching			Redundant Route	Х	3 sections identified			
Mining			Herd Management Area					
Mineral/Materials			* Vegetation					
Fluid Minerals			* Special Status Plant Species #1					
Renewable Energy			* Special Status Plant Species #2					
Right-of-Way			Invasive Nonnative Vegetation					
Utility			Other Vegetation					

		Evaluation Che	ecklist for Interdisciplinary Route Analysis		
Special Recreation Permits	X	Currently may hike to site by foot; no OHV	* Soils	X	Motorized use is contributing to soil instability and loss. Sandy soils with minimal pedogenic development in this area—low to moderate potential for erosion in disturbed sands.
Other Commercial Uses			Erosive Soils	X	Soils are sandy and well drained with low runoff potential.
Public Uses			Other Sensitive Soils	Х	Crypto soils—potential for moderate to high early successional crust cover (Bowker Model).
Use	Yes	Comment	* Watershed		
Property Access			Water Quality		
Class B Road			Stream Crossing		
Other Public Uses			* Cultural Resource Site	X	High density
Recreational Uses			Proximity to Cultural Resource Site	Х	High density
Use	Yes	Comment	High Probability Cultural Resource Area	Х	Very high
OHV Use	Х	Include trail in TMP	* Paleontological Resources	X	Dinosaur tracks
Trailhead Access			* Visual Resource Management Class	X	II .
Loop/Connector Trail			Known Visual Scar	Х	Trail visible/ariel
Dispersed Camping	Х	limited	* Area of Critical Environmental Concern		
Developed Camping			* Wilderness		
* Hunting	Х		* Wilderness Study Area		
* Recreational Shooting	Х		* Natural Area		
* Fishing			Wilderness Characteristics		
* Equestrian	Х		Other Wilderness Characteristic Considerations		
* Mountain Biking	Х		* Wild & Scenic River		
* Hiking	Х		* National Historic Trail		
Permitted OHV Events	Х	May occur if route opened	Special Recreation Management Area		
Wildlife Viewing	Х		Recreation Management Zone	Х	ERMA; proposed SRMA

Evaluation Checklist for Interdisciplinary Route Analysis									
Rock hounding	х		Prescribed Recreation Setting (ROS)	X	Undeveloped, primitive, self- directed accommodating motorized and non-motorized				
Picnicking	Х		* Conflicts with Other Recreational Users						
Pullouts	Х	More needed if opened	* Noise						
Woodcutting			* Adjacent Communities						
Other Recreational Uses			Other Criteria						

^{*} Signifies that there is an applicable law, regulation, Executive Order, or policy that REQUIRES this use, resource, or conflict to be considered.

Note: There is a presumption that boxes left unmarked were considered by the interdisciplinary team, and the team determined that a purpose and need is not present and/or user/resource conflicts do not exist.

OHV - off-highway vehicle, TMP - Travel Management Plan, ERMA - Extensive Recreation Management Area, SRMA - Special Recreation Management Area

Table 3. Flag Point RMP OHV Area Alternative Development Documentation Form

	RM	IP OHV Area Alt	ernative Development Documenta	ition Forn	n		
ID Team (GSEN	M)						
RMP Alternative Theme	e and			Date			
What sensitive proposals?	resources/a	areas are being	protected under this alternative by specific management				
Proposed?	Sensitive Resource/Area		Other Protective Measures Proposed for this Area Under the RMP Alternative (e.g., closed or NSO for leasing, closed to saleable minerals, Rights-of-Way Avoidance or Exclusion Area, proposed mineral withdrawal, VRM I or II, closed to woodcutting, unavailable for grazing)	Would a Closed OHV Area Proposal be Consistent with the Other Proposals for this Area Under the RMP Alternative? Why or why not?			
	Sensitive	soil areas					
	Threatened or Endangered Species Habitat Other Crucial Wildlife and Plant Habitats Areas of Critical Environmental Concern						
Site avoidance along existing route, may not be possible	Cultural Resources		If the route is added to the TMP, mitigation of sites (could be very time-consuming and expensive); road re-route (very time consuming, density of sites in this general area could be difficult to work around); selection of different route (user-created ATV route from Glass Eye Spring has been suggested, but has received no cultural resource survey to date)	conside	ute is added to the TMP, r this as an equestrian ing route.		
	Sensitive Watersheds						
	Riparian I	Habitat					
	National I	Historic Trail					
	Suitable V Scenic Riv	Vild and ver Segments	N/A	N/A			
Monthly monitoring, onsite interpretation, emphasis on special enforcement of PRPA.	Paleontological Resources (Early Jurassic Age dinosaur fossil footprints)		None other proposed.	and roc	of the route to the fossil k art sites would be ent with protection of ites under PRPA and		
	Lands wit Character	h Wilderness istics	N/A	N/A			

	RMP OHV Area A	Iternative Development Document	ation Form
	Wilderness Study Areas	N/A	N/A
	Special Recreation Management Areas	A route designation would not affect the SRMA. Identified mitigation measures are important to reduce future resource impacts.	N/A
	Others?		
			osal consistent with the goals and
•		ider the need to minimize noise, du vility of OHV use with adjacent com	st, and recreational user conflicts,
•		•	st, and recreational user conflicts,

	1									
Are Open OHV Area proposals consistent with the goals and objectives of this RMP alternative?										
Area	Why or Why Not Consistent?	If consistent, identify any mitigate built into the Open OHV Area prouser conflicts.								

RMP – Resource Management Plan, OHV – off-highway vehicle, GSENM – Grand Staircase-Escalante National Monument, NSO – no surface occupancy, VRM – Visual Resource Management, ATV – all-terrain vehicle, N/A – not applicable, PRPA – Paleontological Resources Preservation Act, ARPA – Archaeological Resources Protection Act, SRMA – Special Recreation Management Area

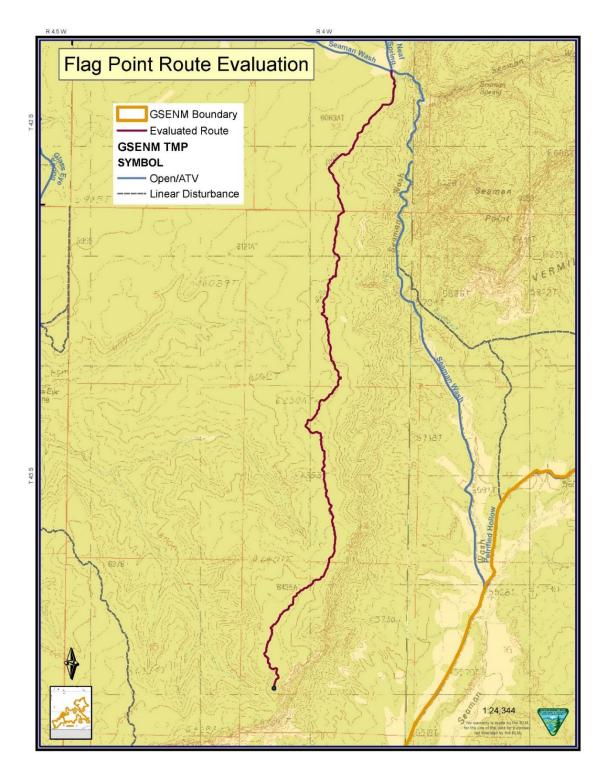


Figure 1. Flag Point Route Evaluation

Table 4. V-Road Route Evaluation Form

	Evaluation Form for Interdisciplinary Route Analysis											
1	Route ID	V-Road		2	Length	7.36 miles						
3	Location	Garfield County, SE of	f Red Breaks, Harris Wash Rd.	4	Date	6/26/2018						
5	ID Team	Jabe Beal, Allysia Ang Brandon Johnson	gus, Sean Stewart, Jason Bybee, Ke	n Bra	dshaw Alan 1	Titus, Allan Bat	e, Raymond Brinkerhoff, Matt Zweifel,					
6	Route Type	Road	Primitive Road	Х	Trail		Way					

7 Purpose & Need of Motorized and Non-Motorized Travel on the Route:

The original purpose for this road was for oil and gas exploration. There are two well pads along the old road. The well pipes are dated 1971.

Today's purpose is to provide recreational access and allow livestock operators to access their cattle without needing specific BLM authorization. One geologic feature of interest, the Eye of the Needle (a.k.a. Cosmic Vortex or Cosmic Ashtray), is approximately 1 mile off of the route.

Additional Comments Regarding the Purpose & Need of Motorized and Non-Motorized Travel on the Route:

The original road was developed with machinery and capped with local soils. Culverts and the original road bed are evident along the entire length of the road. Over many years, portions of the road have eroded, leaving culverts exposed and/or washed out. The road cap has been washed out in one area, at an approximate distance of 200 feet, leaving this section quite sandy. This section of the road is approximately 3.6 miles from Harris Wash and requires an OHV or high-clearance 4X4 to re-route in soft sand. The re-route is tricky and is only suitable for OHVs or high-clearance 4X4s capable of navigating soft sand. The last half-mile of the old road is a rough section only accessible by high-clearance 4X4s or OHVs. This section of road was blasted out by the road builders and reflects the time, energy, and resources that went into building these access roads. This section of the road was capped with local soils at one time; today those fill materials are eroded in several areas along the route. Other than the areas described above, the rest of the road remains in relatively good shape considering how long it has been since it was last maintained.

For administrative purposes, the BLM may allow livestock operators access to their cattle to place mineral supplements. Signs of cattle were documented along the road/trail. The old road/trail now provides recreational hiking access to the geologic feature the Eye of the Needle. Other recreation access needs or destinations are unknown beyond the access point to the Eye of the Needle. Adding the V-Road to the route network could potentially help disburse recreational users from other high-use areas along the Hole-in-the-Rock Road corridor. The well pads are not considered a recreational asset for access to the Escalante Canyons at this time, but could become so at some point in the future.

8 Potential Resource and/or User Conflicts from Motorized and Non-Motorized Travel on the Route:

The road has not been maintained for many years, as is evident by the wash-outs of culverts and road bed material. Considering the current condition, the route would not be considered a road, but would be defined as a trail based on BLM Handbook H-8342-1. However, if added to the road network and maintained to fix the few washout areas, the road could become passable to additional vehicle types.

The road/trail is developed in some areas on unstable erodible soils, i.e., sand. Current access by the public may pose some safety issues as the road/trail is washed out in several locations, requiring the public to drive user-created reroutes. Presently only OHVs and high-clearance 4X4 vehicles can access the end of the road due to a few areas of deep sand and erosion damage along the old roadway. The area is remote and not easily accessible at this time. In the event a public member becomes stuck or has mechanical failure, it is unlikely another party would come along to provide assistance. The party would be required to walk 5 to 10 miles to access Hole-in-the-Rock Road. During the summer months, heat exposure could be a safety concern if members of the public are not prepared for these potential hazards.

The old road/trail is located within the North Escalante Canyons Gulch WSA. The road corridor was cherry stemmed into the WSA upon designation (1984); however, the road was closed in GSENM's transportation system and has been managed for administrative use. During the road inventory, OHV use was documented off the route/trail within the WSA. The WSA boundary is not well signed, as this route has received little use due to its administrative use and difficult access. GSENM and all public lands in the region have seen increased visitation, with OHVs being one of the fastest-

Evaluation Form for Interdisciplinary Route Analysis

growing activities. With increased use on this route, it can be expected that illegal OHV use in WSAs may continue and potentially increase if not properly managed or mitigated.

There are no Range Improvements accessed from this road but it is used administratively by the Upper Cattle allotment permittees to check the condition of grazing livestock and to access and place salt and mineral supplement during the Season of Use: November 1–June 15. The road is also used by BLM Range staff to periodically access a Long-Term Range Trend site and to conduct utilization studies in the area. The potential for livestock grazing/recreational conflicts is currently minimal. Grazing Permit Holders have expressed interest in fixing the road and have also asked about the possibility of water developments on the existing drill pads. Considering range management, this trail should be considered at least as an administrative route.

Additional Comments Regarding Potential Resource and/or User Conflicts from Motorized and Non-Motorized Travel on the Route:

Signage is minimal or not present along the trail. The end of the trail/well pad is not signed. OHV tracks were documented leaving the north side of the well pad heading toward the Escalante River within the WSA. The BLM recently documented other OHV incursion from the V-road trying to access the Escalante River.

Large deposits of Moki Marbles (i.e., iron concretions) are evident immediately adjacent to some areas along the route/trail. Spencer Flat is 2.5 miles due west of the V-road and has the same deposit of Moki Marbles. Since monument designation, unauthorized collection has depleted the marbles along Spencer Flat Road. Collection of Moki Marbles may be expected along the V-road if not properly managed or mitigated. This route, managed as closed, provides for one of the largest roadless areas in GSENM, creating a 5-mile buffer from its center; managed as open, the roadless area would be reduced to a 2-mile buffer area (approximately).

As described above, the route is washed out in several locations that has led to user-created re-routes located in the WSA. The old road/trail in its current condition offers the OHV user a challenging and unique experience. It is recommended to address open access along the original line of the road to eliminate the re-routes. This may not in itself make the route easier to navigate but keep motor vehicle use in the original area of disturbance. It is recommended to perform only the needed maintenance and upgrades to make the route passable but not to rebuild the route/trail to its original condition.

The GIS layer files do not reflect that actual road alignment on the ground. In some areas the deviation/error is off by several hundred feet. It is unknown how the GIS layer was created; however, the field survey was unable to make a correlation that the GIS road layer actually followed in the disturbance on the ground in several locations.

9 Route Designation Alternatives

Action future TMP futu	Add route via an implementation-level decision included in the RMP	Alternative E (Proposed Plans)	level decision included in the			Alternative C		Alternative B		No Action
--	--	--------------------------------------	--------------------------------	--	--	---------------	--	---------------	--	--------------

Comments: The route/trail does provide limited vehicle access to the Eye of the Needle. The access point from the trail is not marked and it can be difficult to determine how to access the geologic feature. In summer months, this region is hot and dry and poses public safety concerns for becoming lost and succumbing to heat exposure. Accessing the area requires the public to pre-plan to determine the route of travel and location of the Eye of the Needle. In many instances the public has difficulty locating the site due to its location in a sandstone dome that can be challenging to locate.

The road has not been maintained for many years and was documented as "unmaintained" in 1998 in a WSA inventory report. Road work is required to make the route passable and to address current public safety issues. The route in its current condition offers a challenging OHV experience requiring moderate to advanced skills to travel the route. For many OHV users, the challenging route is a desired experience/outcome. Pre-planning is highly recommended due to the safety concerns. The only known recreational destination along this route is the Eye of the Needle. The remainder of

Evaluation Form for Interdisciplinary Route Analysis

the route does provide access to the WSA and Escalante River but is not documented as a desirable access point for backcountry visitors at this time. If the route is opened on the transportation system, this would provide another access point for the Escalante River within GSENM.

Alternatives A, B, and C: The road would not be included as an open route on the transportation system. Signage and possibly physical barriers (e.g., gate and fencing) may be installed to limit access.

Alternatives D and E: The route/trail would be added to the transportation system, allowing motorized use on the trail. The route may be left in its current state (unmaintained), requiring high-clearance 4X4s/OHVs to access the end of the road. Alternately, the BLM could fix the impassable locations and leave the rest of the route as is to provide for a more challenging experience. The BLM may limit access to the route to 4x4s/OHVs and vehicles 50 inches or less; limit access to season of use; or allow for non-motorized and mechanized use only. Signage would be required to communicate that vehicles must stay along the identified route of travel to reduce incursions into the WSA.

10 Recommended Mitigation Measures to Minimize User and Resource Conflicts for Each Alternative:

Public safety would need to be addressed, i.e., reinstall and maintain culverts, install signage along the entirety and at the end of the route, and fix and/or identify safety hazards at washout areas/drop-offs. A parking area for the Eye of the Needle would reduce multiple parking areas/user-created impacts and a trail cairn system would be required to identify a trail to the feature to reduce route proliferation and impacts. Additional facilities, e.g., toilets, would be impractical to install along this route, as access for most vehicles is not recommended unless the road bed is restored with a hardened surface. Maintenance of sections of the route may be difficult and costly.

In the route's current condition, the BLM could choose to limit access along the route to hiker/equestrian use only. This would not allow motorized access to the Eye of the Needle. Motorized access would require repairs and maintenance in order to provide access for the public and to minimize the public safety issues identified. If the route is opened in the transportation system, the BLM would need to develop route guides to support access, address public safety, and identify WSA boundaries. An open route designation would require additional management oversight, labor, and infrastructure to manage the area to mitigate potential impacts. However, it would also provide the opportunity to proactively manage ongoing impacts.

11 | Summary Regarding the Interdisciplinary Team's Proposed Action Recommendation:

The route/trail would be added to the transportation system, allowing motorized use on the trail. It is recommended to maintain open access along the original line of the road to eliminate user-created re-routes outside the original disturbance. To avoid effects on cultural sites, repairs will remain restricted to the previously disturbed roadway and be subject to archaeological monitoring when work is proposed in the vicinity of eligible sites. It is recommended to perform only the needed maintenance and upgrades to make the route passable and safe but not to rebuild the route/trail to its original condition. This would limit use of the route to OHVs and high-clearance 4X4s. Implement mitigation measures, such as signage for WSA boundaries, non-collection areas, and potential safety hazards, to manage areas of potential resource conflicts. Development of a parking area at the well site and implementation of a cairn system to access the Eye of the Needle as described above would also reduce potential impacts.

OHV – off-highway vehicle, BLM – Bureau of Land Management, WSA – Wilderness Study Area, GSENM – Grand Staircase-Escalante National Monument, GIS – geographic information system, TMP – Travel Management Plan, RMP – Resource Management Plan

Table 5. V-Road Route Evaluation Checklist

		Evaluation Check	klist for Interdisciplinary Route Analysis		
Purpose & Need Criteria			Resource Criteria		
Administrative Uses				Potentially	
Use	Yes Comment		Resource	Affected?	Comment
Compliance/Enforcement Monitoring	Х		* Air Quality - Dust	X	Potential for increased dust based on amount of OHV use.
Fire Suppression			* Air Quality - Non-Attainment Area		
Predator Control			* Wildlife		
Public Safety			* Special Status Species #1 Habitat		
Training Area/Facility			* Proximity to Special Status Species #1 Habitat		
Vegetation Treatment Area			* Special Status Species #2 Habitat		
Wildlife Water			* Proximity to Special Status Species #2 Habitat		
Other Administrative Uses			In a Wash	Yes	
Commercial Uses			Wash Crossing	Yes	
Use	Yes	Comment	Proximity to a Wash	Yes	
Ranching	X	Cattle are present but no range improvements exist, Road is used to access and place salt and mineral supplement, aiding livestock distribution. Also used to access BLM trend site	Redundant Route	Yes	In several locations
Mining			Herd Management Area		
Mineral/Materials			* Vegetation		
Fluid Minerals	Х	Claims to well pads need to be determined.	* Special Status Plant Species #1		
Renewable Energy			* Special Status Plant Species #2		
Right-of-Way			Invasive Nonnative Vegetation		
Utility			Other Vegetation		

		Evaluation Chec	klist for Interdisciplinary Route Analysis		
Special Recreation Permits		SRPs would be allowed under an open designation.	* Soils	X	Sandy soils that are well drained, but shallow so runoff and erosion potential is very high. Sand dunes present that are relatively stable with low runoff potential because they are deep (>60"); however, dunes are susceptible to shifting by wind erosion.
Other Commercial Uses			Erosive Soils	Х	Sand—shallow sands present with very high runoff potential
Public Uses			Other Sensitive Soils	Х	Crypto soils –potential for moderate to high early successional crust cover
Use	Yes	Comment	* Watershed		
Property Access			Water Quality		
Class B Road			Stream Crossing		
Other Public Uses	Х	Recreation	* Cultural Resource Site	Х	expected
Recreational Uses			Proximity to Cultural Resource Site	Х	
Use	Yes	Comment	High Probability Cultural Resource Area	Х	expected
OHV Use	Х	Currently used	* Geologic Resources	Х	Moki Marble
Trailhead Access			* Visual Resource Management Class	Х	Class 1
Loop/Connector Trail			Known Visual Scar	Х	Route is visible
Dispersed Camping	Х	Very limited an little use identified	* Area of Critical Environmental Concern		
Developed Camping			* Wilderness		
* Hunting			* Wilderness Study Area	Х	Cherry Stem in WSA
* Recreational Shooting			* Natural Area		
* Fishing			Wilderness Characteristics		
* Equestrian			Other Wilderness Characteristic Considerations		
* Mountain Biking	Х	May have use under open designation	* Wild & Scenic River		
* Hiking	Х	Currently used	* National Historic Trail		
Permitted OHV Events			Special Recreation Management Area	Х	Escalante Canyons

	Evaluation Checklist for Interdisciplinary Route Analysis							
Wildlife Viewing			Recreation Management Zone					
Rock hounding	X	Moki marbles are unique geologic features. Collection could increase if road is opened. Unauthorized collection of marbles documented in area.	Prescribed Recreation Setting (ROS)	Х	primitive			
Picnicking	Х		* Conflicts with Other Recreational Users					
Pullouts			* Noise					
Woodcutting			* Adjacent Communities					
Other Recreational Uses			Other Criteria					

^{*} Signifies that there is an applicable law, regulation, Executive Order, or policy that REQUIRES this use, resource, or conflict to be considered.

Note: There is a presumption that boxes left unmarked were considered by the interdisciplinary team, and the team determined that a purpose and need is not present and/or user/resource conflicts do not exist.

OHV – off-highway vehicle, BLM – Bureau of Land Management, SRP – Special Recreation Permit, WSA – Wilderness Study Area, TMP – Travel Management Plan, ERMA – Extensive Recreation Management Area, SRMA – Special Recreation Management Area

Table 6. V-Road RMP OHV Area Alternative Development Documentation Form

	F	RMP OHV Area A	Alternative Development Document	tation Forr	n
ID Team					
RMP Alterna Theme	itive and			Date	
What sensit proposals?	ive resources	s/areas are beir	ng protected under this alternative	by specific	management
Proposed?	Sensitive Resource/Area		Other Protective Measures Proposed for this Area Under the RMP Alternative (e.g., closed or NSO for leasing, closed to saleable minerals, Rights of Way Avoidance or Exclusion Area, proposed mineral withdrawal, VRM I or II, closed to woodcutting, unavailable for grazing)	Proposa Other Pr	Closed OHV Area I be Consistent with the oposals for this Area e RMP Alternative? Why ot?
Avoidance	Sensitive s	oil areas	Remain on designated route, as surrounding WSA would be limited to designated routes.		osed plan is to open the vehicle travel with on.
	Threatened Endangere Habitat				
Other Crucial Wildl and Plant Habitats					
	Areas of Critical Environmental Concern				
Avoidance of cultural sites	Cultural Re	sources	A Class III cultural survey has been completed for the entire route. The Utah SHPO has concurred that use of the existing road would have no effect on cultural properties.		posed plan is to open the vehicle travel with on.
	Sensitive V	/atersheds			
	Riparian Ha	abitat			
	National Hi	storic Trail	N/A	N/A	
	Suitable W River Segm	ild and Scenic nents	N/A	N/A	
	Paleontolo Resources	gical			
	Lands with Characteris	Wilderness stics	N/A N/A		
	Wilderness	Study Areas	Route is cherry-stemmed inside of the WSA. Signage for the WSA boundary along the road would be needed to prevent incursions.	N/A	
	Special Re- Manageme		Any route designation would not affect the SRMA as designated.	N/A	
	Others?				

RMP OHV Area Alternative Development Documentation Form

Are there other areas that should be considered for a Closed OHV Area proposal consistent with the goals and objectives of this RMP alternative? Consider the need to minimize noise, dust, and recreational user conflicts, promote public safety, and the compatibility of OHV use with adjacent communities.

Area	Issue	Other Protective Measures Proposed for this Area Under the RMP Alternative (e.g., closed or NSO for leasing, closed to saleable minerals, Rights of Way Avoidance or Exclusion Area, proposed mineral withdrawal, VRM I or VRM II, closed to woodcutting, unavailable for grazing)	Would a Closed OHV Area Proposal be Consistent with the Other Proposals for this Area Under the RMP Alternative? Why or why not?

Are Open OHV Area proposals consistent with the goals and objectives of this RMP alternative?						
Area	Why or Why Not Consistent?	If consistent, identify any mitigation measures that should be built into the Open OHV Area proposal to minimize resource and user conflicts.				

RMP – Resource Management Plan, OHV – off-highway vehicle, NSO – no surface occupancy, VRM – Visual Resource Management, WSA – Wilderness Study Area, SHPO – State Historic Preservation Officer, SRMA – Special Recreation Management Area

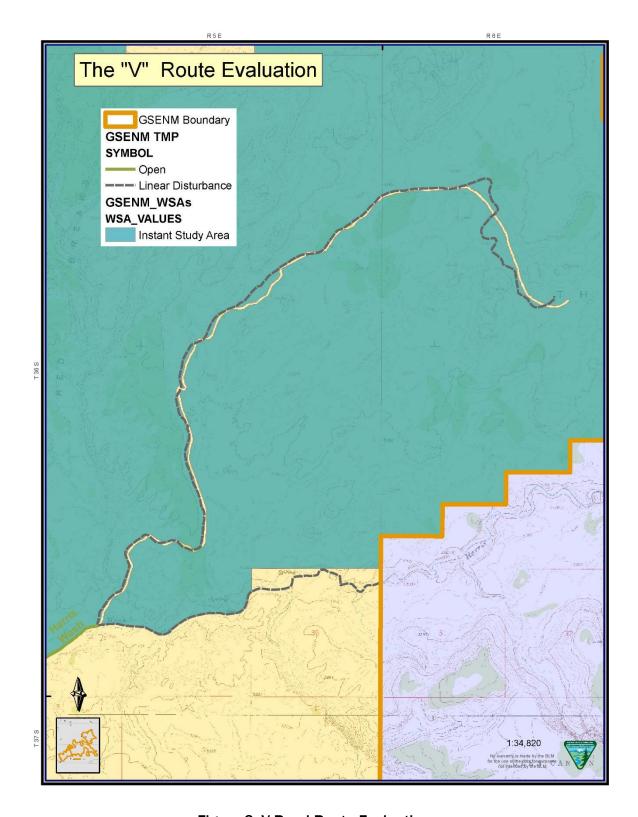


Figure 2. V-Road Route Evaluation



Figure 3. V-Road Typical Condition



Figure 4. V-Road Culvert in Place Requiring Maintenance



Figure 5. Sandy Section Along V-Road



Figure 6. V-Road Wash-Out Area - Old Road Bed



Figure 7. V-Road Wash-Out Road - Old Road Bed



Figure 8. V-Road End of Route

Table 7. Inch Worm Arch Road Route Evaluation Form

	Evaluation Form for Interdisciplinary Route Analysis												
1	Route ID	In	Inch Worm Arch Road								2	Length	2.4 miles
3	Location	In	nch Worm Arch trail (OHV), Nephi Pasture reach, Kane County 4 Date 06/20/2018								06/20/2018		
5	5 ID Team Alan Titus, Allysia Angus, Allan Bate, Cameron McQuivey, Dana Backer, Ken Bradshaw, Jason Bybee, Jabe Beal, Mark Foley, Matt Zweifel, Raymond Brinkerhoff, Sean Stewart, Brandon Johnson												
6	Route Road Primitive Road Trail Way X Transportation linear disturbance Type												

7 Purpose & Need of Motorized and Non-Motorized Travel on the Route:

While this route is currently not part of the approved travel plan, the route receives use from OHVs (primarily UTVs, with some ATV and motorcycle use). Hikers, mountain bikers, and equestrian riders also use the route to a lesser extent. The estimated percentage of use along the route by OHV and non-motorized use is unknown. The route in its current form travels along the user-created route through a pinyon-juniper desert landscape composed of sandy benches. The existing route winds through trees and portions cross archaeological sites.

The purpose and need of this route is to access a natural arch site at the end of the road. At the end of the road, a 500-foot user-created foot trail provides access to the natural arch. The foot trail continues beyond the arch, accessing the canyon bottom. The Inchworm Arch Road provides the only motorized access to Inchworm Arch.

Additional Comments Regarding the Purpose & Need of Motorized and Non-Motorized Travel on the Route: Inch Worm Arch is popular with local residents and visitors. The route receives use by the public. There is a user-created foot trail from the parking site to the arch viewing area. The trail is posted "No Vehicles," although ATV tracks were documented driving past the sign down toward the arch. It is expected the public will continue to want access (motorized and non-motorized) to visit this resource.

Potential Resource and/or User Conflicts from Motorized and Non-Motorized Travel on the Route: The Inchworm Arch Road provides the only motorized access to the arch site. Non-motorized use was documented going to, and in the immediate area of, the arch from the parking site. The foot trails are user created to access the arch and surrounding area. The existing OHV route does pass through archaeological sites.

Additional Comments Regarding Potential Resource and/or User Conflicts from Motorized and Non-Motorized Travel on the Route: Kane County Travel Council has identified this site as a destination for the OHV community. It is expected the marketing and promotion of this site will continue. The existing motorized access route travels through two identified and catalogued archaeological sites. An alternate route that bypasses/avoids the sites has been identified and flagged by the GSENM archaeologist (see Figures 9 and 11).

9 Route Designation Alternatives:

Potential routes designations include, but are not limited to, open to all forms of travel, open with mitigation, open to specific vehicles types, limited to non-motorized forms of travel, limited seasonally, and closed.

No Action	Defer to future	Alternative B	Defer to future	Alternative C	Defer to future	Alternative D (Preferred	Add route via an implementation	Alternative E (Proposed	Add route via an implementation-
	TMP		TMP		TMP	Alternative)	level decision	Plans)	level decision
							included in the		included in the
							RMP		RMP

Comments: Under alternatives A, B, and C, the route would remain absent from the transportation plan and remain closed to motorized access. It can be expected that OHV use will continue unrestricted, unless closures are put in place. Tools used to close the trail may include fencing, boulders, post and rail, and signage. Based on the remote location of the trail, monitoring would be intermittent and the closures would be difficult to maintain.

Evaluation Form for Interdisciplinary Route Analysis

Additional resource impacts would likely occur by those trying to access the site. Under alternatives D and E, the route would be open to OHV use and mitigation measures could be implemented to avoid or minimize user and resource conflicts. Alternative E would implement the re-route around archaeological sites.

10 Recommended Mitigation Measures to Minimize User and Resource Conflicts for Each Alternative:

Alternatives A, B, and C: The route would not be incorporated in the transportation plan.

Alternatives D and E: Inch Worm Arch route would be open to OHV use. Mitigation measures may include: vehicle size restrictions (50 inches or less), requirement of human waste disposal systems, development of pull-outs for passing lanes, educational/interpretive signage, development of official foot trails at access points, erosion control where needed, route realignment around archaeological sites, and closure of the route segment that crosses archaeological sites. In addition, other roads, i.e., #558 and 563, may be evaluated to open existing linear disturbances to provide a loop route that is popular with OHV users in the area. Perform archaeological clearances/evaluation to avoid sites or allow vehicle use through sites once cleared for these potential loop routes.

11 | Summary Regarding the Interdisciplinary Team's Proposed Action Recommendation:

The route provides access to a popular location emphasizing a natural arch. There is a high potential for off-route incursions, as impacts were identified on the field survey. The field team recommendations are to: keep the route with the appropriate re-route around archaeological sites; install barriers to keep OHVs in the parking area and reduce impacts at and around the arch; install educational/interpretive panels; delineate parking area; prohibit camping in parking area; and develop the foot trail and viewing location to reduce resource damages.

OHV – off-highway vehicle, UTV – utility task vehicle, ATV – all-terrain vehicle, GSENM – Grand Staircase-Escalante National Monument, TMP – Travel Management Plan, RMP – Resource Management Plan

Table 8. Inch Worm Arch Road Route Evaluation Checklist

	Evaluation Checklist for Interdisciplinary Route Analysis						
Purpose & Need Criteria			Resource Criteria				
Administrative Uses			Resource	Potentially Affected?	Comment		
Use	Yes	Comment					
Compliance/Enforcement Monitoring	Х	Archaeology, paleontology, monument object and values	* Air Quality - Dust	X	OHV use		
Fire Suppression			* Air Quality - Non-Attainment Area				
Predator Control			* Wildlife				
Public Safety	Х	SAR access to site	* Special Status Species #1 Habitat				
Training Area/Facility			* Proximity to Special Status Species #1 Habitat				
Vegetation Treatment Area			* Special Status Species #2 Habitat				

		Evaluation Ch	ecklist for Interdisciplinary Route Analysis		
Wildlife Water			* Proximity to Special Status Species #2 Habitat		
Other Administrative Uses			In a Wash		
Commercial Uses			Wash Crossing	Х	
Use	Yes	Comment	Proximity to a Wash	Х	
Ranching			Redundant Route	Х	
Mining			Herd Management Area		
Mineral/Materials			* Vegetation		
Fluid Minerals			* Special Status Plant Species #1		
Renewable Energy			* Special Status Plant Species #2		
Right-of-Way			Invasive Nonnative Vegetation		
Utility			Other Vegetation		
Special Recreation Permits	X	Currently may hike to site on foot; no OHV	* Soils		Sandy soils with minimal pedogenic development in this area—low to moderate potential for erosion in disturbed sands depending on slope
Other Commercial Uses			Erosive Soils	Х	Stabilized dunes—Soils are sandy and well drained with low runoff potential; 1 soil type in the area has high runoff potential on steeper slopes, but the route only intersects a small portion of this soil.
Public Uses			Other Sensitive Soils	х	Crypto soils—potential for moderate to high early and late successional crust cover (Bowker Model)
Use	Yes	Comment	* Watershed		
Property Access			Water Quality		
Class B Road			Stream Crossing		
Other Public Uses			* Cultural Resource Site	Х	High density
Recreational Uses		<u> </u>	Proximity to Cultural Resource Site	Х	High density

Use	Yes	Comment	High Probability Cultural Resource Area	Х	High density along ridge crest
OHV Use	Х	Include Trail in TMP	* Paleontological Resources		
Trailhead Access	Х		* Visual Resource Management Class	Х	
Loop/Connector Trail			Known Visual Scar	Х	Trail visible/ariel
Dispersed Camping	Х	limited	* Area of Critical Environmental Concern		
Developed Camping			* Wilderness		
* Hunting	Х		* Wilderness Study Area		
* Recreational Shooting	Х		* Natural Area		
* Fishing			Wilderness Characteristics		
* Equestrian	Х		Other Wilderness Characteristic Considerations		
* Mountain Biking	Х		* Wild & Scenic River		
* Hiking	Х		* National Historic Trail		
Permitted OHV Events	Х	May occur if route opened	Special Recreation Management Area	Х	ERMA; proposed SRMA alternatives B and C
Wildlife Viewing	Х		Recreation Management Zone	х	ERMA; proposed SRMA alternatives B and C
Rock hounding	Х		Prescribed Recreation Setting (ROS)	Х	Undeveloped, primitive, self- directed accommodating motorized and non-motorized
Picnicking	Х		* Conflicts with Other Recreational Users		
Pullouts	Х	More needed if opened	* Noise		
Woodcutting			* Adjacent Communities	х	Private property close to roads off main access route.
Other Recreational Uses	Х	Photography	Other Criteria		

^{*} Signifies that there is an applicable law, regulation, Executive Order, or policy that REQUIRES this use, resource, or conflict to be considered.

Note: There is a presumption that boxes left unmarked were considered by the interdisciplinary team, and the team determined that a purpose and need is not present and/or user/resource conflicts do not exist.

OHV – off-highway vehicle, SAR – Search and Rescue, TMP – Travel Management Plan, ERMA – Extensive Recreation Management Area, SRMA – Special Recreation Management Area

Table 9. Inch Worm Arch Road RMP OHV Area Alternative Development Documentation Form

	F	RMP OHV Area A	Alternative Development Documen	tation For	n
ID Team (GS	ENM)				
RMP Alterna	RMP Alternative and Theme			Date	
What sensiti proposals?	ve resources	s/areas are beir	ng protected under this alternative	by specific	c management
Proposed?	Sensitive Resource/Area		Other Protective Measures Proposed for this Area Under the RMP Alternative (e.g., closed or NSO for leasing, closed to saleable minerals, Rights-of-Way Avoidance or Exclusion Area, proposed mineral withdrawal, VRM I or II, closed to woodcutting, unavailable for grazing)	Proposa Other Pr	Closed OHV Area I be Consistent with the oposals for this Area RMP Alternative? Why oot?
	Sensitive s	oil areas			
	Threatened or Endangered Species Habitat				
	Other Crucial Wildlife and Plant Habitats				
	Areas of Cr Environme	ritical ntal Concern			
	Cultural Re	esources	Assuming Alternative D, re- route of road only at specific sites (not very feasible); mitigation of sites (would be very expensive and time- consuming)	alternati closure not nece	ng Alternative D, this live does not allow for of this road. Closure is essary as a re-route is feasible.
	Sensitive V	Vatersheds			
	Riparian H	abitat			
	National H	istoric Trail			
	Suitable W River Segn	ild and Scenic nents	N/A	N/A	
	Paleontological Resources				
	Lands with Characteris	Wilderness stics	N/A	N/A	
	Wilderness	Study Areas	N/A	N/A	
	Special Re Manageme		Any route designation would not affect the SRMA		e designation would not e SRMA
	Others?				

RMP OHV Area Alternative Development Documentation Form

Are there other areas that should be considered for a Closed OHV Area proposal consistent with the goals and objectives of this RMP alternative? Consider the need to minimize noise, dust, and recreational user conflicts, promote public safety, and the compatibility of OHV use with adjacent communities.

Area	Issue	Other Protective Measures Proposed for this Area Under the RMP Alternative (e.g., closed or NSO for leasing, closed to saleable minerals, Rights of Way Avoidance or Exclusion Area, proposed mineral withdrawal, VRM I or VRM II, closed to woodcutting, unavailable for grazing)	Would a Closed OHV Area Proposal be Consistent with the Other Proposals for this Area Under the RMP Alternative? Why or why not?

Are Open OHV Area proposals consistent with the goals and objectives of this RMP alternative?			
Area	Why or Why Not Consistent, identify any mitigation measures that should be built into the Open OHV Area proposal to minimize resource and user conflicts.		

RMP – Resource Management Plan, OHV – off-highway vehicle, GSENM – Grand Staircase-Escalante National Monument, NSO – no surface occupancy, VRM – Visual Resource Management, N/A – not applicable, SRMA – Special Recreation Management Area

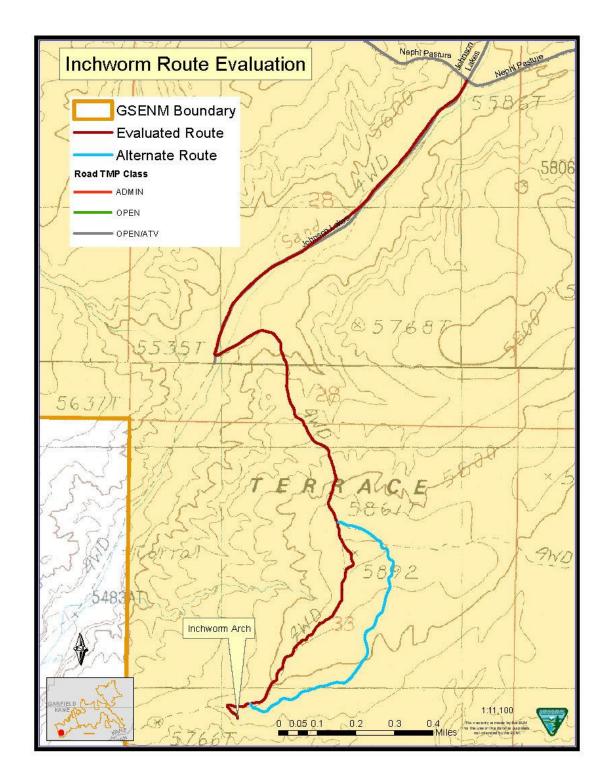


Figure 9. Inch Worm Arch Road Route Evaluation



Figure 10. Existing Inch Worm Arch Road Route



Figure 11. Flagged Alternate Route

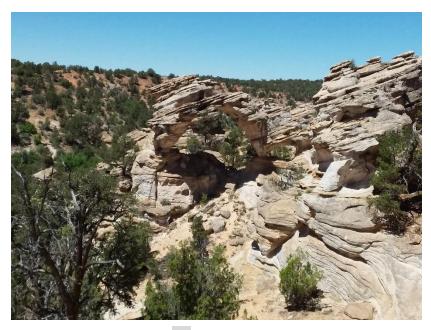


Figure 12. Inch Worm Arch

Implementation-Level Route Analysis for V-Road, Inchworm Arch Road, and Flag Point Road

The addition of specific routes to the GSENM route map for the Planning Area is an implementation-level decision. Alternatives A, B, and C do not propose changes to the GSENM route map as part of this land use planning effort. Alternatives D and E, however, would amend the current GSENM route map through implementation-level decisions to include the V-Road, Inchworm Arch Road, and Flag Point Road (Alternative D only) as open and available for off-highway vehicle use (refer to Chapter 2, Section 2.3.15, Travel and Transportation Management). These additional routes are currently used by local residents and tourists to access certain archaeological and geological sites, and their inclusion on the GSENM route map would be beneficial to these users by allowing continued and legal access. Inclusion of these routes as open and available for off-highway vehicle use, however, could result in adverse environmental effects on cultural and paleontological resources, non-motorized recreation and travel, soil and water resources, wildlife, and other resources and uses, although those impacts would be avoided or mitigated to the extent possible. All alternatives would provide for the proper care and management of monument objects. Because alternatives A, B, and C do not include these additional routes, neither the beneficial nor the adverse impacts anticipated under alternatives D and E would occur. Tables 10, 11, and 12 below include detailed analyses of the effects of inclusion of these additional routes in the GSENM route inventory.

Table 10. V-Road Affected Environment and Effects Analysis

	Affected Environment	Alternatives A, B, and C	Alternatives D and E
Route Overview	The site is located in GSENM within the Escalante Canyons Unit. The original purpose of this route was for oil and gas exploration. Two well pads are located along the road that date back to 1971. The route in its current form provides limited recreational access. One geologic feature of interest, the Eye-of-the-Needle, is located approximately 1 mile off of the route. Overall, the road has eroded over the years, leaving culverts exposed and/or washed out. One section of the road in the sand area has been washed out at an approximate distance of 200 feet. Presently, only OHVs and high-clearance 4X4 vehicles can access the end of the road due to deep sand and erosion damage along the old roadway. Scenic and geologic destinations in this area are known locally and promoted in the community, as well as by trail guides, and online.	Route would be closed to OHV use. Signage and possibly physical barriers may be used to limit access.	The route would be added to the transportation system and would remain open to OHV and high-clearance 4X4 use. The route may be left in its current state (unmaintained), requiring high-clearance 4X4s/OHVs to access the end of the road. Alternately, the BLM may fix the impassable locations and leave the rest of the route in its current state to provide for a more challenging experience. The BLM may limit access to the route to 4x4s/OHVs and vehicles 50 inches or less; limit access to season of use; or allow for non-motorized and mechanized use only. Signage would be required to communicate that vehicles must stay along the identified route of travel to reduce incursions into the WSA, protect resources, and provide for public safety.
Livestock Grazing	Resource: There are no range improvements accessed from this road but it is used administratively by the Upper Cattle allotment permittees to check the condition of grazing livestock and to access and place salt and mineral supplement during the season of use: November 1–June 15. The road is also used by BLM Range staff to periodically access a Long-Term Range Trend site and to conduct utilization studies in the area. Condition: The potential for livestock grazing/recreation conflicts is currently minimal. Grazing permit holders have expressed interest in fixing the road and have also asked about the	No additional impacts. The route would retain open administrative use in its current condition without improvement.	No additional impacts. The route would remain open to OHV and high-clearance 4X4 use. If the BLM repairs impassable locations, beneficial impacts on livestock grazing permit holders could result from increased access to the Upper Cattle allotment.

	Affected Environment	Alternatives A, B, and C	Alternatives D and E
	possibility of water developments on the existing drill pads.		
Cultural and Geologic Resources	Resource: The route traverses a high probability cultural resource area, including geologic resources (Moki Marbles). Large deposits of Moki Marbles (i.e., iron concretions) are evident immediately adjacent to, and in the entire area along, the route/trail. Spencer Flat is 2.5 miles due west of the V-road and with similar deposits and exposures of Moki Marbles. Since monument designation, unauthorized collection has depleted the marbles along Spencer Flat Road. Unauthorized collection of Moki Marbles may occur along the V-road if not properly managed or mitigated. Condition: Some cultural sites do occur along the roadway. However, this road was bladed and fill was added to allow heavy equipment to access well pad locations. Construction of the road may have affected sites, but fill material placed on the road bed would prevent any further impacts on any sites. Moki Marble deposits are intact and for the most part appear to be untouched. NHPA Section 106 status: A Class III cultural survey has been completed for the entire route. The Utah SHPO has concurred that use of the existing road would have no effect on cultural properties beyond those effects from the original road construction.	Closure to OHV use would limit new potential degradation of site directly crossed by the existing route, and would limit the potential for additional theft and vandalism from increased public access. The potential for theft of Moki Marbles would be reduced through limitations on travel and access on the route.	Allowing public access would increase the potential for theft and vandalism of Moki Marbles and cultural sites, to which the route provides access. Special monitoring, signage, education, and enforcement would likely be required to address effects from an increase in public access and would reduce effects. The current condition of the route with the added fill material decreases the potential for any further effect on cultural resources.
Monument Objects	Presidential Proclamation 6920, as modified by 9682, identifies geologic and archaeological resources in the area.	Existing visitation levels would continue to increase primarily by foot track. Effects on cultural resources in the area are addressed above.	Visitation in the area by the route is expected to be higher with a corresponding increase in effects on geologic features such as Eye-of-the-Needle. Implementation of mitigation would reduce impacts and ensure the proper care and management of monument objects.
Soil Resources	Resource: The route crosses areas sandy and well drained, with very high runoff potential. Sand dunes present are relatively stable with low runoff	Closure to OHV use would remove the primary contributor to soil loss along	Restrictions on vehicle size, designated pull-offs and signage, and erosion control measures would

	Affected Environment	Alternatives A, B, and C	Alternatives D and E
	potential because they are deep (>60 inches); however, dunes are susceptible to shifting by wind erosion. The area also has the potential for moderate to high early successional cryptobiotic soil crust. Condition: Existing OHV use is the primary contributor to areas of soil instability and loss along the route. OHV use on the route has contributed to erosion and user-created re-routes have resulted in new areas of disturbance.	the routes, reducing impacts on soil resources.	reduce potential for new impacts on soils. Potential for improving impassable segments of the route could reduce user-created re-routes and also reduce the potential for soil loss through erosion.
Visual Resources	Resource: The route corridor is currently managed as VRM Class I to preserve the existing, largely undeveloped character of the landscape from new visual contrast. Condition: The route causes visual contrast by creating a man-made linear feature on the landscape.	No additional impacts. The route would continue to create a linear feature causing visual contrast. Closing the route to OHV use could decrease the potential for route widening that would exacerbate that contrast.	The route would continue to create a linear feature causing visual contrast, the strength of which could increase over time if widening of the route by OHVs occurs.
Water	Resource: The route runs within a portion of a wash and crosses several other washes. Condition: The route was developed on unstable, erodible soils (e.g., sand). Many culverts along the route are exposed or have been washed out. One section of the route has been washed out for a distance of approximately 200 feet. User-created re-routes (i.e., not engineered to address erosions/sedimentation issues) and their use by OHV is causing soil loss.	Closure of the route to OHV use could limit potential soil erosion and sedimentation along the route and user-created re-routes.	Restrictions on vehicle size and erosion control measures would reduce potential erosions and sedimentation. Potential repairs to washed-out portions of the route would reduce potential impacts from erosion and sedimentation.
Recreational Uses and Access	Resource: The route is used primarily for recreational access to the Eye-of-the-Needle. The access point to the Eye-of-the-Needle from the route is not marked and it can be difficult to determine how to access the geologic feature. In summer months, this region is hot and dry and poses public safety concerns for becoming lost and succumbing to heat exposure. Currently, the BLM requires the public to hike to the Eye-of-the-Needle. This requires the public to pre-plan to determine the route of	In the route's current condition, the BLM may limit access along the route to hiker/equestrian use only. Closure to OHV use would likely displace recreationists who use the route for an OHV desired experience/outcome, or for those seeking access to the Eye-of-the-Needle.	Allowing OHV use would increase recreational opportunities for those seeking access to the Eye-of-the-Needle. Improvements to the road may diminish the desired experience/outcome of OHV recreationists; however, improvements could address public safety concerns. Additionally; public safety concerns, including installation

	Affected Environment	Alternatives A, B, and C	Alternatives D and E
	travel and location of the Eye-of-the-Needle. In many instances, the public has difficulty locating the site due to its location in a sandstone dome that can be challenging to locate. Recreational access is primarily via OHV, but hiking, equestrian, and mountain biking also occur. Condition: The route has not been maintained for many years and was documented as "unmaintained" in 1998 in a WSA inventory report. Road work is required to make the route passable and to address current public safety issues. The route in its current condition offers a challenging OHV experience requiring moderate to advanced skills. For many OHV users, the challenging route is a desired experience/outcome. Pre-planning is highly recommended due to the safety concerns. The only known recreational destination along this route is the Eye-of-the-Needle. The remainder of the route does provide access to the WSA and Escalante River but is currently not documented as a desirable access point for backcountry visitors. If the route is opened on the transportation system, this would provide another undeveloped access point to the Escalante River within GSENM.		and maintenance of culverts, signage along the entirety and at the end of the route, and identification of safety hazards at washout areas/drop-offs, would be beneficial. A parking area for the Eye-of-the-Needle would reduce multiple parking areas/user-created impacts and a trail cairn system would be required to identify a trail to the feature to reduce route proliferation and impacts. Additional facilities, e.g., toilets, would be impractical to install along this route, as access for most vehicles is not recommended unless the road bed is restored with a hardened surface. Maintenance of portions of the route could be difficult and costly. Adding the route to the transportation plan improving access could lead to disbursing recreation impacts on other high-use recreation sites along the Hole-in-the-Rock Road corridor.
Wilderness Study Areas	Resource: The route is located within the North Escalante Canyons Gulch WSA. Condition: The route was closed in GSENM's transportation system and has been managed for administrative use. During the road inventory, OHV use was documented off the route/trail within the WSA. The WSA boundary is not well signed, as this route has received little use due to its administrative use and difficult access. GSENM and all public lands in the region have seen increased visitation, with OHVs being one of the fastest-growing activities.	Closure of the route to OHV use could limit potential for illegal OHV use within the WSA.	Allowing OHV use would result in potential for illegal OHV use within the WSA; however, improvements to damaged portions of the route could eliminate user-created re-routes that currently extend into the WSA. Mitigation, such as signage, would also reduce the potential for incursion into the WSA.

	Affected Environment	Alternatives A, B, and C	Alternatives D and E
Socioeconomic	Limited SRP use in the region is primarily focused on hunting and sightseeing.	No additional economic benefit.	Access to destinations in the area may result in a limited increase in SRP use and a very limited potential economic benefit to the community.

GSENM – Grand Staircase-Escalante National Monument, OHV – off-highway vehicle, BLM – Bureau of Land Management, WSA – Wilderness Study Area, NHPA – National Historic Preservation Act, NRHP – National Register of Historic Places, SHPO – State Historic Preservation Officer, VRM – Visual Resource Management, SRP – Special Recreation Permit

Table 11. Inch Worm Arch Road Affected Environment and Effects Analysis

	Affected Environment	Alternatives A, B, and C	Alternatives D and E
Route Overview	The destination and route are located in the GSENM within the Grand Staircase Unit. The route in its current form travels along the user-created route through a pinyon-juniper desert landscape composed of sandy benches. The route winds through trees and over archaeological sites. The purpose of the current use of this route is to access a natural arch site at the end of the road. At the end of the OHV route, a 500-foot user-created foot trail provides access to the natural arch. The foot trail continues beyond the arch, accessing the canyon bottom. The destination is well known locally and promoted in the community, as well as by trail guides, and online.	Route remains closed to OHV use. Signage or other barriers, coupled with enforcement efforts, will be used to limit access.	Route is opened to OHV use and added to the Transportation Management Plan. As needed for resource protection and safe public access, allow development of the following: human waste disposal systems; OHV parking areas, pull-outs, or passing lanes; signage; development of official foot trails at access points; erosion control where needed; and route realignment around sensitive archaeological sites. Other roads, i.e., #558 and 563, may be evaluated in the future to open existing linear disturbances to provide a loop route that is popular with OHV users in the area.
Cultural Resources	Resource: The route traverses an area of significant cultural resource site density, within an area of the larger of the Planning Areas with previously documented high cultural resource site density. The BLM has conducted a Section 106 survey along the existing route, which identified four sites crossed by the route, as well as several other additional sites that are outside the route corridor.	Closure to OHV use would limit new potential degradation of sites directly crossed by the existing route. Non-motorized public access would occur, but such access would be unlikely to directly cause additional (new) degradation for sites crossed, although degradation from natural erosion and other	Allowing increased public access and OHV use could increase the potential for degradation of sites crossed by the route. The BLM would need to consider alternate routes (rerouting) to avoid ongoing damage or degradation, or would need to undertake a substantial archaeological excavation effort for the directly affected sites. The BLM

	Affected Environment	Alternatives A, B, and C	Alternatives D and E
	Condition: Several sites have been exposed by OHV use along the route, leading to degradation of the sites. NHPA Section 106 status: Cultural resource surveys have been completed, sites identified and recorded, and a potential bypass route flagged for further consideration. A report will be completed and forwarded to the SHPO with a finding of No Historic Properties Affected, assuming that the proposed bypass route will be adopted. If this bypass route is not adopted and current route use continues, the report will be filed with a finding of Adverse Effect, and mitigation of the sites in question will be necessary; this would likely be an expensive and time-consuming process.	factors outside of the BLM's control would continue to occur.	has initially identified several alternate routes that bypass/avoid the sites. The BLM has limited control over offroute incursions, and allowing OHV access could therefore allow effects to occur on cultural resources adjacent to the route. Alternative E would implement an alternate route to avoid damage to archaeological sites. On December 20, 2018, the BLM consulted with the Utah SHPO regarding g a finding of "no adverse effect" for Inchworm Arch Road (with realignment), as all NRHP-eligible sites will be avoided; SHPO concurred with the BLM's finding of "no adverse effect" on December 21, 2019 (letter from Merritt [SHPO] to Barber [BLM], December 21, 2019]).
Monument Objects	Presidential Proclamation 6920, as modified by 9682, identifies geologic resources including arches such as Inch Worm as objects. Archaeological resources in the area also identified as objects.	Existing visitation levels would continue to Inch Worm Arch and increase based upon non-BLM derived promotion of the area. This visitation has the potential to affect the arch through vandalism, arch swinging, or similar human-caused effects. Effect on cultural resources are addressed above.	Visitation is expected to be slightly higher with a corresponding increase in effects on Inch Worm Arch. Cultural sites would be better protected through proposed realignment of the route around sites. Alternative E would implement an alternate route to avoid damage to archaeological sites.
Visual Resources	Resource: The route approaches the Inch Worm Arch, a unique geologic feature. Condition: The route causes visual contrast by creating a man-made linear feature on the landscape.	No additional impacts. The route would continue to create a linear feature causing visual contrast. Closing the route to OHV use could decrease the potential for route widening that would exacerbate that contrast.	The route would continue to create a linear feature causing visual contrast, the strength of which could increase over time if widening of the route by OHVs occurs.

	Affected Environment	Alternatives A, B, and C	Alternatives D and E
Soil and Water Resources	Resource: The route generally crosses areas of stabilized dunes, with sandy and well drained soils with low runoff potential. Sandy soils with minimal pedogenic development occur in this area, with a low to moderate potential for erosion in disturbed sands. A small portion of the route crosses areas of steeper slopes and soils with high runoff potential. The area also has the potential for moderate to high early successional cryptobiotic soil crust. Condition: There is a high potential for off-route incursions by recreationists, and past incursions were noted during the BLM's field survey. Activity off-route can result in soil loss, especially in areas with high runoff potential. The routes cross and run adjacent to washes, which could be affected by recreationists directly (e.g., driving through washes) or via erosion in the watershed.	Closure to OHV use could reduce potential soil loss along the routes, reducing impacts on soil resources.	Restrictions on vehicle size, designated pull-offs and signage, and erosion control measures would reduce potential for new impacts on soils. However, the BLM does not anticipate improving the route, and therefore impacts from soil loss would continue to occur. The BLM has limited control over off-route incursions, and allowing OHV access could therefore allow effects on soils from such incursion to continue.
Recreational Uses and Access	Resource: Inch Worm Arch is popular with local residents and visitors, and the route receives use by the public. There is a user-created foot trail from the parking site to the arch viewing area. Recreational access occurs via OHV, hiking, equestrian, and mountain biking. Other activities along the route include hunting and fishing, recreational shooting, photography, wildlife viewing, and limited dispersed camping. The route is the only motorized access to Inch Worm Arch. The Kane County Travel Council has identified this site as a destination for the OHV community. Condition: The areas is managed as an ERMA, primarily catering to undeveloped, primitive, self-directed recreation use accommodating both motorized and non-motorized uses. Non-motorized use was documented going to, and in the immediate area of, the arch. The foot trails are user created. The user-created foot trail from the parking site is posted "No Vehicles," although OHV tracks	Closure to OHV use would likely displace recreationists who access Inch Worm Arch. Inch Worm Arch is popular with local residents and visitors, and it is expected that the public would continue to seek access to visit this resource; closure to OHV use would limit such access. The route receives use by the public. There is a user-created foot trail from the parking site to the arch viewing area. The trail is posted "No Vehicles," although ATV tracks were documented driving past the sign down toward the arch. It is expected the public will continue to want access (motorized and non-motorized) to visit this resource.	Allowing OHV use would provide recreational opportunities for those seeking access to Inch Worm Arch, as well as those seeking opportunities for hunting, shooting, and other uses. Conversely, allowing OHV access along the route could increase conflicts between hikers, mountain bikes, and OHVs; increases in OHV use would increase the potential for dust, which could adversely affect recreationists at Inch Worm Arch and along the route.

	Affected Environment	Alternatives A, B, and C	Alternatives D and E
	have been documented driving past the sign toward the arch.		
Lands with Wilderness Characteristics	This area surrounding the Inch Worm Arch route was inventoried in 2018 and no areas of lands with wilderness character occur in the vicinity.	No effect.	No effect.
Lands and Realty	Resource: The route crosses close to private property. Condition: There is a high potential for off-route incursions by recreationists, and past incursions were noted during the BLM's field survey. Such incursions could lead to trespass issues on adjacent private lands.	Closure to OHV use would decrease incursions (trespass) on adjacent private lands.	Allowing OHV use could increase incursions (trespass) on adjacent private lands. Signage and the development of pullouts and other route components would help reduce the potential for such effects by directing OHV users to remain on route and providing safe locations on BLM-administered surface land to pull off-route.
Socioeconomic	Limited SRP use in the region is primarily focused on hunting and sightseeing.	No additional economic benefit.	Access to the destination may result in a limited increase in SRP use and a very limited potential economic benefit to community.

GSENM – Grand Staircase-Escalante National Monument, OHV – off-highway vehicle, BLM – Bureau of Land Management, NHPA – National Historic Preservation Act, SHPO – State Historic Preservation Officer, NRHP – National Register of Historic Places, ERMA – Extensive Recreation Management Area, SRP – Special Recreation Permit

Table 12. Flag Point Trail Affected Environment and Effects Analysis

	Affected Environment	Alternatives A, B, C, and E	Alternative D
Route Overview	The destination and route are located in the GSENM within the Grand Staircase Unit. The route in its current form travels along the user-created route through a pinyon-juniper desert landscape composed of sandy benches and dry washes, making it difficult for larger vehicle access. The route winds through trees and over archaeological sites. At the end of the OHV route, a 500-foot user-created foot trail provides access to the paleontological site (dinosaur tracks) and archaeological site (pictograph and petroglyphs). The destination is well known locally and promoted in the community, as well as by trail guides, and online.	Route remains closed to OHV use. Signage or other barriers, coupled with enforcement efforts, will be used to limit access.	Route is opened to OHV use, and added to the Transportation Management Plan. As needed for resource protection and safe public access, allow development of the following: human waste disposal systems, OHV parking areas, pull-outs for passing lanes, signage, development of official foot trails at both access points, erosion control where needed, and route realignment around sensitive archaeological and paleontological sites.
Cultural and Paleontological Resources	Resource: The route traverses an area of very high cultural resource site density, within a portion of the Planning Areas with some of the highest cultural resource site density found in GSENM. The terminal point of the route provides access to a series of pictographs and petroglyphs depicting dinosaur tracks. The location of known fossil dinosaur tracks nearby is globally unique, with fewer than five such sites known in the world. The route also provides access to a grouping of Early Jurassic Age dinosaur fossil footprints. These resource types are not unique when compared to other paleontological and archaeological sites in the area. However, the pictographs of anthropomorphic figures apparently dancing around a dinosaur track, and anthropomorphic figures with large, three-toed feet, found on the cliff face immediately below the tracks and unquestionably associated with the tracks should be considered unique. Vandalism at these rock art sites is an ongoing problem. The Kane Country	Closure to OHV use would limit new potential degradation of the site directly crossed by the existing route, and would limit the potential for additional theft and vandalism of the dinosaur track site, pictographs, and petroglyphs from increased public access. However, a user-created foot trail from Seaman Wash Road (BLM 563) along the valley floor to access these sites currently exists and would remain regardless of whether Flag Point Trail is designated; non-motorized public access to the dinosaur track site, pictographs, and petroglyphs would therefore likely continue and the potential for theft and vandalism would remain.	Allowing public access would increase the potential for theft and vandalism of the dinosaur track site, pictographs, and petroglyphs, and other archaeological sites to which the route provides access. Special monitoring, education, and enforcement would be likely be required to address effects from an increase in public access. The density of sites directly crossed by the existing route indicates the BLM would need to consider alternate routes (rerouting) to avoid ongoing damage or degradation, or would need to undertake a substantial archaeological excavation effort for the directly affected sites.

	Affected Environment	Alternatives A, B, C, and E	Alternative D
Soil Resources	Resource: The route crosses areas of sandy and well-drained soil with low runoff potential. Sandy soils with minimal pedogenic development occur in this area, with a low to moderate potential for erosion in disturbed sands. The area also has the potential for moderate to high early successional cryptobiotic soil crust. Condition: Existing OHV use is the primary contributor to areas of soil instability and loss along the route. OHV use on the route has created trail tread erosion, exposed tree roots, and erosion adjacent to tree trunks.	Closure to OHV use would remove the primary contributor to soil loss along the routes, reducing impacts on soil resources.	Restrictions on vehicle size, designated pull-offs and signage, and erosion control measures would reduce potential for new impacts on soils. However, the BLM does not anticipate improving the route, and therefore impacts from soil loss would continue to occur.
Special Status Species	Resource: There is an existing peregrine falcon nest along the cliff edge at Flag Point. Condition: The route is 8 miles from the peregrine falcon nest, and is not known to be affecting the nest.	No additional impacts. The route would continue to be at a distance from the peregrine falcon nest such that effects are not anticipated to occur.	No additional impacts. The route would continue to be at a distance from the peregrine falcon nest such that effects are not anticipated to occur.
Monument Objects	Presidential Proclamation 6920, as modified by 9682, identifies paleontological resources and specifically classifies the Flag Point dinosaur tracks as a monument object. Archaeological resources in the area are also identified as objects.	Existing visitation levels would continue to the Flag Point site and increase based upon non-BLM-derived promotion of the area. This visitation has the potential to affect the tracks through vandalism or similar human-caused effects. Effect on cultural resources are addressed above.	Visitation is expected to be slightly higher with a corresponding increase in effects on Flag Point dinosaur tracks. Cultural sites would be better protected through proposed realignment of the route around sites or by selection of an alternative route.
Visual Resources	Resource: The route corridor is currently managed as VRM Class II to preserve the existing, largely undeveloped character of the landscape from new visual contrast. Condition: The route causes visual contrast by creating a man-made linear feature on the landscape.	No additional impacts. The route would continue to create a linear feature causing visual contrast. Closing the route to OHV use could decrease the potential for route widening that would exacerbate that contrast.	The route would continue to create a linear feature causing visual contrast, the strength of which could increase over time if widening of the route by OHVs occurs.

	Affected Environment	Alternatives A, B, C, and E	Alternative D
Water	Resource: The route crosses and runs adjacent to Seaman Wash. Condition: The route is user created (i.e., not engineered to address erosions/sedimentation issues) and its use by OHV is causing soil loss.	No additional impacts. Closure of the route to OHV use could limit potential soil erosion and sedimentation.	Restrictions on vehicle size and erosion control measures would reduce potential erosion and sedimentation. However, the BLM does not anticipate improving the route, and therefore impacts from erosion would continue to occur.
Wildlife	Resource: The route crosses through mule deer winter range. Condition: Habitat conditions for mule deer have been declining for mule deer across the Planning Area. Mule deer are vulnerable to stress caused by human activity in winter range areas, and are displaced by human activity. Refer to Chapter 2, Section 2.2.5, Fish and Wildlife (pages 39–47), and Appendix 4, Fish and Wildlife (pages 263–268), in the AMS (BLM 2018b) for information on big game populations in the Planning Area.	Closure to OHV use could reduce the potential for displacement of mule deer in winter range.	Allowing OHV use would likely increase use of the route, and would likely lead to additional opportunities for displacement of mule deer in this portion of its winter range.
Recreational Uses and Access	Resource: The route is used primarily for recreational access to popular cultural and paleontological resources. Recreational access is primarily via OHV. Hiking, equestrian, and mountain biking may occur to a lesser extent. Other activities along the route are limited and constrained. Condition: The area is managed as an ERMA, primarily catering to undeveloped, primitive, self-directed recreation use accommodating both motorized and non-motorized uses. The existing user-created route is narrow, has limited pull-outs for passing, and includes blind spots that may be creating public safety issues.	Closure to OHV use would likely displace recreationists who access sites along the route. The paleontological and archaeological sites are popular with local residents as well as tourists, and it is expected that the public and commercial permit holders would continue to seek access to visit these resources; closure to OHV use would limit such access.	Allowing OHV use would increase recreational opportunities for those seeking access to the paleontological and archaeological sites along the route, as well as those seeking opportunities for hunting, shooting, and other uses. Conversely, allowing OHV access along the route could increase conflicts between hikers, mountain bikes, and OHVs due to the narrow size of the route and lack of pull-outs. Should the BLM develop pull-outs, such conflicts could be reduced.
Lands with Wilderness Characteristics	The area surrounding the Flag Point route was inventoried in 2018 and no areas of lands with wilderness character occur in the vicinity.	No effect.	No effect.

	Affected Environment	Alternatives A, B, C, and E	Alternative D
Socioeconomic	Limited SRP use in the region is primarily focused on hunting and sightseeing.	No additional economic benefit.	Access to the destination may result in a limited increase in SRP use and a very limited potential economic benefit to the local community.

GSENM – Grand Staircase-Escalante National Monument, OHV – off-highway vehicle, BLM – Bureau of Land Management, NHPA – National Historic Preservation Act, VRM – Visual Resource Management, AMS – Analysis of the Management Situation, ERMA – Extensive Recreation Management Area, SRP – Special Recreation Permit

References

Bureau of Land Management (BLM). 2018b. Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area Analysis of the Management Situation. BLM Utah. June 2018.

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix L
Coal Unsuitability Report
August 2019

Table of Contents

Introduction	L-1
Lands Considered	L-1
Geologic Setting	L-2
Coal Resources	L-2
Evaluation of the Coal Unsuitability Criteria	L-2
Summary of the Unsuitability Evaluation	L-15

Appendix L: Coal Unsuitability Report

Introduction

Regulations regarding coal management on public lands are found in Title 43 of the Code of Federal Regulations (CFR), Part 3400. The BLM is required in Part 3420.1-4 to review Federal lands and assess whether there are areas unsuitable for all or certain stipulated methods of coal mining. Part 3461, Federal Lands Review: Unsuitability for Mining, defines the criteria to be used during this review. This report addresses the twenty criteria of coal unsuitability as defined in 43 CFR 3461.5.

Consistent with regulations outlined in 43 CFR 3461.2-1(a)(2), on January 16, 2018 the BLM published a Notice of Intent (NOI) in the Federal Register requesting information from the public regarding coal suitability for lands now excluded from Grand Staircase-Escalante National Monument (GSENM). The BLM now refers to these lands as the Kanab-Escalante Planning Area (KEPA). The scoping period formally ended on April 13, 2018. The BLM has reviewed all comments received and determined that there were no comments specifically related to coal unsuitability that would revise or augment the BLM unsuitability determination.

Lands Considered

Map 65 (Coal Unsuitability) displays the area evaluated and found to be unsuitable for certain mining methods. This evaluation provides an unsuitability determination for the 15-year BLM land use planning process.

The coal unsuitability evaluation area was formerly part of GSENM. These Federal lands were excluded from GSENM boundaries by Presidential Proclamation 9682. From September 1996 to February 2018, these lands were withdrawn from mineral location, entry, and leasing. Currently, no Federal coal leases are authorized on these public lands.

The BLM defined the evaluation area based on the coal reasonably foreseeable development scenario included in the KEPA Mineral Potential Report. If a coal lease by application is submitted for lands in KEPA that are outside of the unsuitability analysis area, the BLM would make an assessment of suitability prior to finalizing the environmental analysis for the area being studied for coal leasing.

Prior to establishment of GSENM, the BLM was considering authorization of an underground coal mine in the southern Kaiparowits area known as the Smoky Hollow Mine. This area includes high quality low-sulfur coal, nearly ideal underground mining conditions, and ready outcrop access to a world-class coal deposit. Because a configuration of this tract is the most likely area to be applied for in the term of this planning cycle, this suitability determination centers on this coal energy resource.

Because it is not yet known if a coal energy lease by application will be submitted to the BLM and if submitted, where the exact location will be, the unsuitability analysis is for the most likely area of interest. The analysis also includes a wide enough area to provide for possible competitive applications and BLM offerings.

Geologic Setting

Coal in the analysis area is located within Late Cretaceous sedimentary strata of the Dakota and Straight Cliffs formations. The Kaiparowits field is in the John Henry Member of the Straight Cliffs Formation. The depositional environment for both the Dakota and Straight Cliffs coals were a coastal plain setting along the Western Interior Seaway. The Dakota coals were deposited approximately 95 million years ago during the onset (transgression) of the Western Interior Seaway known as the Greenhorn cyclothem. Kaiparowits coals were deposited approximately 85 million years ago during the Niobrara cyclothem. Rivers originating along the Sevier mountain belt provided a steady supply of sediment for burial of the rich coastal mires.

Coal Resources

On an annualized, as-received basis, the projected coal quality for relinquished Smoky Hollow coal leases (weighted averages)¹ has relatively low sulfur (0.51 percent) and ash content (7.23 percent). The sulfur as combusted (0.82 pounds per million BTUs) is less than the level allowed of 1.2 lb/MBtu. Further, the heating value at 11,480 Btus per pound is relatively high compared to most western coals. However, in the Kaiparowits field, the coal rank does decrease from high volatile C bituminous to subbituminous B from south to north in the broader analysis area.²

Evaluation of the Coal Unsuitability Criteria

The coal resources with development potential are assessed for the unsuitability criteria as outlined at 43 CFR 3461.5. Underground mining of coal deposits is exempt from the criteria, where there would be no surface coal mining operations as stated at 3461.1(a). Surface mining operations include surface mining open-cast operations and underground mining with surface effects such as primary access ways, personnel escape ways, and servicing supply systems incident to an underground mine as stated at 43 CFR 3400.0-5(mm).

Where underground mining will include surface operations and surface impacts on Federal lands to which a criterion applies, the lands shall be assessed as unsuitable unless an exception or exemption applies (43 CFR 3461.1(b)).

Each criterion is subject to exceptions and/or exemptions as prescribed in the regulations.3

¹ "Appraisal of Andalex (AMCA Coal Leasing) Federal Coal Leasehold Rights in the Kaiparowits Coal Field, Kane County, Utah, Including 20 Federal and State leases in T. 40 & 41 South, R 3 & 4 East, as of September 17, 1996." March 16, 1999:

Heating value (Btu/lb) 11,480 (10,805 to 11,709)

[•] Sulfur: 0.51 percent (0.41 to 0.65 percent)

[•] lbSO₂/MBtu: 0.82 (0.69 to 1.09)

[•] Ash: 7.23 percent (5.13 to 11.48 percent)

[•] Moisture: 9.79 percent (9.19 to 10.96 percent)

² Kanab Field Office Mineral Potential Report (UGS 2006)

³ § 3461.2 Unsuitability assessment procedures.

^{§ 3461.2-1} Assessment and land use planning.

⁽a)(1) Each of the unsuitability criteria shall be applied to all coal lands with development potential identified in the comprehensive land use plan or land use analysis. For areas where $\bf 1$ or more unsuitability conditions are found and for which the authorized officer of the surface management

Criterion Number 1.

All Federal lands included in the following land systems or categories shall be considered unsuitable: National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, National Wild and Scenic Rivers System, National Recreation Areas, lands acquired with money derived from the Land and Water Conservation Fund, National Forests, and Federal lands in incorporated cities, towns, and villages.

Exceptions. (i) A lease may be issued within the boundaries of any National Forest if the Secretary finds no significant recreational, timber, economic or other values which may be incompatible with the lease; and (A) surface operations and impacts are incident to an underground coal mine, or (B) where the Secretary of Agriculture determines, with respect to lands which do not have significant forest cover within those National Forests west of the 100th Meridian, that surface mining may be in compliance with the Multiple-Use Sustained-Yield Act of 1960, the Federal Coal Leasing Amendments Act of 1976 and the Surface Mining Control and Reclamation Act of 1977. (ii) A lease may be issued within the Custer National Forest with the consent of the Department of Agriculture as long as no surface coal mining operations are permitted.

<u>Exemptions.</u> The application of this criterion to lands within the listed land systems and categories is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3. 1977.

There are no units of the National Park System, National Wildlife Refuge System, component of the National System of Trails, designated Wilderness areas (National Wilderness Preservation System), designated Wild and Scenic River segments, National Recreation Areas, or National Forests within the lands analyzed for coal unsuitability.

The nearest incorporated community is Big Water, Utah. There are no Federal lands in incorporated cities, towns, and villages within the south Kaiparowits coal suitability evaluation area.

After Presidential Proclamation 6920 designated the monument, the Federal government acquired coal leases within the monument with money derived from the Land and Water Conservation Fund. Some of these formerly leased areas were excluded from the monument by Presidential Proclamation 9862. The BLM interprets Criterion 1 to apply to lands actually acquired using Land and Water Conservation Funds, not leasehold interests in the coal rights.

_

agency could otherwise regard coal mining as a likely use, the exceptions and exemptions for each criterion may be applied...

⁽³⁾ The authorized officer of the surface management agency shall describe in the comprehensive land use plan or land use analysis the results of the application of each unsuitability criterion, exception and exemption. The authorized officer of the surface management agency shall state in the plan or analysis those areas which could be leased only subject to conditions or stipulations to conform to the application of the criteria or exceptions. Such areas may ultimately be leased provided that these conditions or stipulations are contained in the lease.

⁽b)(1) The authorized officer shall make his/her assessment on the best available data that can be obtained given the time and resources available to prepare the plan. The comprehensive land use plan or land use analysis shall include an indication of the adequacy and reliability of the data involved. Where either a criterion or exception (when under paragraph (a) of this section the authorized officer decides that application of an exception is appropriate) cannot be applied during the land use planning process because of inadequate or unreliable data, the plan or analysis shall discuss the reasons therefor and disclose when the data needed to make an assessment with reasonable certainty would be generated...

The BLM interprets Criterion Number 1 to apply only to "lands," not both "lands" and "interests in lands." As defined by the BLM regulations at 43 CFR 3400.0-5(r), a coal lease is a contract between the United States and the holder to explore and mine the United States' mineral estate (or coal estate). At most, a coal lease constitutes a leasehold or interest in land; therefore, if Land and Water Conservation Funds are used to acquire a coal lease, it does not make those lands subject to Criterion 1.

Summary: Under Criterion 1, 0 acres are determined to be unsuitable.

Criterion Number 2.

Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial, or other public purposes, on federally owned surface shall be considered unsuitable.

Exceptions. A lease may be issued, and mining operations approved, in such areas if the surface management agency determines that: (i) All or certain types of coal development (e.g., underground mining) will not interfere with the purpose of the right-of-way or easement; or (ii) The right-of-way or easement was granted for mining purposes; or (iii) The right-of-way or easement was issued for a purpose for which it is not being used; (iv) The parties involved in the right- of-way or easement agree, in writing, to leasing; or (v) It is impractical to exclude such areas due to the location of coal and method of mining and such areas or uses can be protected through appropriate stipulations.

<u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

One communication site lease (UTU-82085) granted to Glen Canyon National Recreation Area for 0.025 acre is authorized within the evaluation area, however, an exemption applies because all or certain types of coal development (e.g., underground mining) may not interfere with the purpose of the right-of-way.

Summary: Under Criterion 2, approximately 0.025 acre is determined to be unsuitable for surface coal mining, however, an exemption applies because all or certain types of coal development (e.g., underground mining) may not interfere with the purpose of the right-of-way.

Criterion Number 3.

The terms used in this criterion have the meaning set out in the Office of Surface Mining Reclamation and Enforcement regulations at Chapter VII of Title 30 of the Code of Federal Regulations. Federal lands affected by section 522(e) (4) and (5) of the Surface Mining Control and Reclamation Act of 1977 shall be considered unsuitable. This includes lands within 100 feet of the outside line of the right-of-way of a public road or within 100 feet of a cemetery, or within 300 feet of any public building, school, church, community or institutional building or public park or within 300 feet of an occupied dwelling.

<u>Exceptions</u>. A lease may be issued for lands: (i) Used as mine access roads or haulage roads that join the right-of-way for a public road; (ii) For which the Office of Surface Mining Reclamation and Enforcement has issued a permit to have public roads relocated; (iii) If after public notice and opportunity for public hearing in the locality, a written finding is made by the

authorized officer that the interests of the public and the landowners affected by mining within 100 feet of a public road will be protected. (iv) For which owners of occupied dwellings have given written permission to mine within 300 feet of their buildings.

<u>Exemptions</u>. The application of this criterion is subject to valid existing rights, and does not apply to surface coal mining operations existing on August 3, 1977.

No areas within the evaluation area meet the conditions identified in the criteria.

Summary: Under Criterion 3, no acres are determined to be unsuitable.

Criterion Number 4.

Federal lands designated as wilderness study areas shall be considered unsuitable while under review by the Administration and the Congress for possible wilderness designation. For any Federal land which is to be leased or mined prior to completion of the wilderness inventory by the surface management agency, the environmental assessment or impact statement on the lease sale or mine plan shall consider whether the land possesses the characteristics of a wilderness study area. If the finding is affirmative, the land shall be considered unsuitable, unless issuance of noncompetitive coal leases and mining on leases is authorized under the Wilderness Act and the Federal Land Policy and Management Act of 1976.

<u>Exemptions</u>. The application of this criterion to lands for which the Bureau of Land Management is the surface management agency and lands in designated wilderness areas in National Forests is subject to valid existing rights.

The South Kaiparowits Coal Suitability Evaluation Area includes approximately 46,071 acres of the Burning Hills WSA.

The exemptions for valid existing rights do not apply.

Summary: Under Criterion 4, approximately 46,071 acres in the Burning Hills WSA are unsuitable while under review by Congress for possible wilderness designation.

Criterion Number 5.

Scenic Federal lands designated by visual resource management analysis as Class I (an areas of outstanding scenic quality or high visual sensitivity) but not currently on the National Register of Natural Landmarks shall be considered unsuitable.

<u>Exceptions</u>. A lease may be issued if the surface management agency determines that surface coal mining operations will not significantly diminish or adversely affect the scenic quality of the designated area.

<u>Exemptions</u>. This criterion does not apply to lands: to which the operator has made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977, or which include operations on which a permit has been issued.

The only land managed as VRM Class I within the south Kaiparowits coal suitability evaluation area is the Burning Hills Wilderness Study Area. Although this area was not designated as VRM Class I in the 2000 Grand Staircase-Escalante National Monument Management Plan, subsequent updates to the BLM's policy (IM-2000-096; Manual 6330) require the agency to

manage WSAs as VRM Class I. These lands are not on the National Register of Natural Landmarks.

Summary: Under Criterion 5, approximately 46,071 acres in the Burning Hills WSA are unsuitable because these lands are managed as Visual Resource Management Class I.

Criterion Number 6.

Federal lands under permit by the surface management agency, and being used for scientific studies involving food or fiber production, natural resources, or technology demonstrations and experiments shall be considered unsuitable for the duration of the study, demonstration or experiment, except where mining could be conducted in such a way as to enhance or not jeopardize the purposes of the study, as determined by the surface management agency, or where the principal scientific user or agency gives written concurrence to all or certain methods of mining.

<u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Grand Staircase-Escalante National Monument has issued numerous research permits for scientific studies, including for lands in the evaluation area that are now managed by the Kanab Field Office. Each permit is usually valid for up to five years and can be renewed.

Within the South Kaiparowits coal suitability evaluation area, there are approximately 10,751 acres (mostly Tropic Shale and Wahweap Formations) rated as Potential Fossil Yield Class (PFYC) 5 (highest sensitivity) and 251 documented paleontological sites. Most of the significant sites in the evaluation area are vertebrate fossil sites in the Wahweap Formation along the Head of Creeks road and across Tibbett Bench, and also in the Tropic Shale. Examples of highly significant sites in the analysis area include the Pilot Knoll ceratopsian skull (new species), the Tibbett Spring Bonebed, the Tibbett Spring Deinosuchus site, and the type locality for *Palmulasaurus quadratus* (plesiosaur). Two of these sites are currently being excavated and there is ongoing scientific survey and research in this area. Most of the potential for additional significant sites is in the same two formations, but there is also potential in the Straight Cliffs and Naturita Formations.

Currently there are 7 research projects with a geology or paleontology emphasis specifically in the South Kaiparowits coal suitability evaluation area. Additionally there are 8 research projects with biological or other areas of emphasis.

Many researchers are interested in continuing similar research under permit renewals. However, currently permitted research schedules will conclude prior to the anticipated timeline for coal leasing. Therefore, lands under current permits are not considered to be unsuitable under this criterion.

Summary: Under Criterion 6, no acres are determined to be unsuitable.

Criterion Number 7.

All publicly or privately owned places listed on or eligible for the National Register of Historic Places shall be considered unsuitable. This shall include any areas that the surface management agency determines, after consultation with the Advisory Council on Historic

Preservation and the State Historic Preservation Officer, are necessary to protect the inherent values of the property that made it eligible for listing in the National Register.

<u>Exceptions</u>. All or certain stipulated methods of coal mining may be allowed if, after consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Officer, they are approved by the surface management agency, and, where appropriate, the State or local agency with jurisdiction over the historic site.

<u>Exemptions</u>. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

This criterion applies to districts, sites, objects, etc., of historical, architectural, archaeological, or cultural significance listed on or eligible for the National Register of Historic Places. No sites within the south Kaiparowits coal suitability evaluation area have been included in the National Register, although there are a large number of known and documented archaeological sites that have been determined eligible.

It is possible that Native American sacred sites are present in the analysis area, and in recent consultations for a different undertaking, the Navajo Nation have indicated that the Kaiparowits Plateau is considered a traditional cultural property. The Hopi Tribe have concerns with potential coal mining in the study area, and have stated that Ancestral Puebloan sites are considered their tribal footprints as well as traditional cultural properties (see National Register Bulletin 38). The Hopi Tribe also reiterated their concerns for springs and riparian areas. The Kaibab Band of the Paiute Indians have responded with comments based on a landscape view as to the significance of the Kaiparowits area, and placed great emphasis on the importance of water.

Summary: Under Criterion 7, no acres are determined to be unsuitable.

Criterion Number 8.

Federal lands designated as natural areas or as National Natural Landmarks shall be considered unsuitable.

<u>Exceptions</u>. A lease may be issued and mining operation approved in an area or site if the surface management agency determines that: (i) The use of appropriate stipulated mining technology will result in no significant adverse impact to the area or site; or (ii) The mining of the coal resource under appropriate stipulations will enhance information recovery (e.g., paleontological sites).

<u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which includes operations on which a permit has been issued.

There are no designated natural areas or National Natural Landmarks within the south Kaiparowits coal suitability evaluation area.

Summary: Under Criterion 8, no acres are determined to be unsuitable.

Criterion Number 9.

Federally designated critical habitat for listed threatened or endangered plant and animal species, and habitat proposed to be designated as critical for listed threatened or endangered plant and animal species or species proposed for listing, and habitat for Federal threatened or endangered species which is determined by the Fish and Wildlife Service and the surface management agency to be of essential value and where the presence of threatened or endangered species has been scientifically documented, shall be considered unsuitable.

<u>Exceptions</u>. A lease may be issued and mining operations approved if, after consultation with the Fish and Wildlife Service, the Service determines that the proposed activity is not likely to jeopardize the continued existence of the listed species and/or its critical habitat.

<u>Exemptions</u>. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

There is no federally designated critical habitat or proposed critical habitat for listed threatened or endangered plants or wildlife, including fish, or species proposed for listing within the South Kaiparowits coal suitability evaluation area. The coal suitability area is within the ranges of three listed wildlife species—Mexican spotted owl, southwestern willow flycatcher, and California condor. The habitat in the project area was evaluated for suitability for these species and was determined not to be of essential value and the presence of these species has not been scientifically documented. The coal suitability area is not within the ranges of any federally threatened or endangered plants and it does not contain the geological formations that support Utah threatened or endangered plants in southeastern Utah.

The exemption for substantial legal and financial commitments and ongoing mining operations does not apply, because there are no active leases or operations within the evaluation area.

Summary: Under Criterion 9, no acres are determined to be unsuitable.

Criterion Number 10.

Federal lands containing habitat determined to be critical or essential for plant or animal species listed by a state pursuant to state law as endangered or threatened shall be considered unsuitable.

<u>Exceptions</u>. A lease may be issued and mining operations approved if, after consultation with the state, the surface management agency determines that the species will not be adversely affected by all or certain stipulated methods of coal mining.

<u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

The State of Utah does not have a state designation of threatened, endangered or candidate (TEC) species list. The evaluation area does include approximately 16,000 wintering habitat for the Northern Goshawk, which is a conservation agreement species. Northern Goshawk are currently managed in accordance with a conservation agreement between the BLM, USFWS, USFS, and UDWR. The BLM is required to manage Goshawk habitat according to the conservation agreement.

The BLM and State of Utah have determined that certain stipulated methods of coal mining will not adversely affect the Northern Goshawk. If surface facilities incident to underground mining are proposed within mapped habitat, surveys would be required to verify the presence of goshawk and mitigation may be required to minimize effects.

As stated in Criterion 9, there are no federally designated or proposed critical habitats for plants within the south Kaiparowits coal suitability evaluation area and no suitable habitat for listed plants.

Summary: Under Criterion 10, no acres are determined to be unsuitable.

Criterion Number 11.

A bald or golden eagle nest or site on Federal lands that is determined to be active and an appropriate buffer zone of land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

<u>Exceptions</u>. A lease may be issued if: (i) It can be conditioned in such a way, either in manner or period of operation, that eagles will not be disturbed during breeding season; or (ii) The surface management agency, with the concurrence of the Fish and Wildlife Service, determines that the golden eagle nest(s) will be moved. (iii) Buffer zones may be decreased if the surface management agency determines that the active eagle nests will not be adversely affected.

<u>Exemptions</u>. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

There are no records or observations of bald eagle nests in the area. However, there are two recorded golden eagle nests and an additional 3 nests that have an undetermined species of raptor.

Summary: Under Criterion 11, there are two golden eagle nests that will require a buffer of 0.5 mile from 1/1-8/31 which is 1,005 acres. There are three additional nests that are likely golden eagles but positive species identification needs to occur. If they are golden eagles that would be an additional 1,505 for a total of 2,510 acres that would be unsuitable for surface coal mining operations.

Criterion Number 12.

Bald and golden eagle roost and concentration areas on Federal lands used during migration and wintering shall be considered unsuitable.

<u>Exceptions</u>. A lease may be issued if the surface management agency determines that all or certain stipulated methods of coal mining can be conducted in such a way, and during such periods of time, to ensure that eagles shall not be adversely disturbed.

<u>Exemptions</u>. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

There are no records of or known roosting or concentration areas.

The exemption for substantial legal and financial commitments and ongoing mining operations does not apply, because there are no active leases or operations within the evaluation area.

Summary: Under Criterion 12, no acres are determined to be unsuitable.

Criterion Number 13.

Federal lands containing a falcon (excluding kestrel) cliff nesting site with an active nest and a buffer zone of Federal land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

<u>Exceptions</u>. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the falcon habitat during the periods when such habitat is used by the falcons.

<u>Exemptions</u>. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

At that time the lands would be designated unsuitable unless exceptions or exemptions apply.

There are four recorded cliff nesting sites in the analysis area. Species identification has not occurred. They are likely golden eagles, but perhaps falcons. If they are golden eagles that would require 1,506 acres to be unsuitable for surface activity. Peregrine falcons require a one mile buffer and prairie falcons require 0.25-mile buffers. The maximum area unsuitable to surface coal mining operations would be 1,506.

Summary: Under Criterion 13, approximately 1,506 acres are determined to be unsuitable.

Criterion Number 14.

Federal lands which are high priority habitat for migratory bird species of high Federal interest on a regional or national basis, as determined jointly by the surface management agency and the Fish and Wildlife Service, shall be considered unsuitable.

<u>Exceptions</u>. A lease may be issued where the surface management agency, after consultation with the Fish and Wildlife Service, determines that all or certain stipulated methods of coal mining will not adversely affect the migratory bird habitat during the periods when such habitat is used by the species.

<u>Exemptions</u>. This criterion does not apply to lands: to which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

There are records of blue-grosbeaks, black-rosy finch, Swanson's hawks, and 24,681 acres of substantial spring and early fall band-tailed pigeon habitat. There is suitable habitat for Pinyon Jays which are an emerging concern at the national level.

Summary: Under Criterion 14, 502 acres surrounding a Swainson's hawk would be unsuitable to surface coal mining operations. The substantial band-tailed pigeon habitat is not designated as crucial. Having only observations of a black-rosy finch and a blue grosbeak does not indicate this is high priority habitat. It would be advisable to survey for nesting colonies of pinyon jays prior to construction of the surface facilities incident to underground mining, otherwise no acres would be unsuitable.

Criterion Number 15.

Federal lands which the surface management agency and the state jointly agree are habitat for resident species of fish, wildlife and plants of high interest to the state and which are essential for maintaining these priority wildlife and plant species shall be considered unsuitable. Examples of such lands which serve a critical function for the species involved include: (i) Active dancing and strutting grounds for sage grouse, sharp-tailed grouse, and prairie chicken; (ii) Winter ranges crucial for deer, antelope, and elk; (iii) Migration corridor for elk; and (iv) Extremes of range for plant species; and a lease may be issued if, after consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected.

<u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

There are no known leks for sage grouse, sharp-tailed grouse, and prairie chicken project area. There are 20,385 acres of crucial year-long habitat for pronghorn and 127,594 acres of crucial year-long habitat for desert bighorn sheep. The pronghorn habitat overlays the desert bighorn habitat. There are no elk documented in the project area. No known migration routes for any big game species. Mule deer do use the area, but the habitat is not designated.

The State of Utah does not currently have a sensitive plant species list; however, there are three plant species that the BLM, in coordination with the Utah Division of Natural Resources agree are of high interest. These species are Hole-in-the-rock prairie clover (*Dalea flavescens* var. epica), Utah spurge (*Euphorbia nephradenia*), and Smoky Mountain globemallow (*Sphaeralcea grossulariifolia* var. fumariensis). The coal suitability area contains geological formations that these species depend upon and locations have been scientifically documented within the area. Hole-in-the-rock prairie clover occurs on Straight Cliffs Formation, John Henry Member and on Mixed eolian and alluvial sand deposits (total 58,310 acres in the project area). Utah spurge occurs on Tropic Shale (7,729 acres in the project area). Smoky Mountain globemallow occurs on Straight Cliffs, Tropic Shale, and Dakota Formations and is confined to thermally modified coal-bearing members of the Cretaceous Straight Cliffs Formation, with the thermal modification resulting from natural fires in the coal seams exposed along the margins of Smoky Mountain. These geological formations for Smoky Mountain globemallow occupy the entire coal suitability area (141,173 acres).

Summary: Under Criterion 15, no area would be unsuitable to all mining methods because after consultation with the state, the BLM has determined that certain stipulated methods of coal mining will not have a significant long-term impact on wildlife or plant species of high interest. The agency has determined that the evaluation area is only suitable for underground mining. Certain surface mining types (e.g., open pit mining) would be prohibited. Surface facilities

incident to underground mining operations would be allowed so long as impacts to species of high interest could be avoided or mitigated.

For the three plant species, no acres are determined to be unsuitable for underground mining. 58,310 acres are unsuitable for surface ground disturbance for Hole-in-the-rock clover, 7,729 acres for Utah spurge, and 141,173 acres for Smoky Mountain globemallow. These species will not occur across their entire areas of suitable habitat. Since they are rare species, they likely only occur in scattered small locations; however, the BLM has not conducted surveys to narrow identify those locations. Surveys for these species would need to be conducted prior to construction of surface facilities incident to underground mining and protection measures determined by the BLM would need to be incorporated into the proposed work and implemented during project activities.

Criterion Number 16.

Federal lands in riverine, coastal and special floodplains (100-year recurrence interval) on which the surface management agency determines that mining could not be undertaken without substantial threat of loss of life or property shall be considered unsuitable for all or certain stipulated methods of coal mining.

<u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Limited special floodplains maps are available for the assessment area through FEMA's National Flood Hazard Layer Viewer. Approximately 14 stream miles of Last Chance Creek are within the assessment area and are classified as "Zone A" by FEMA. Zone A areas have a 1 percent annual chance of inundation (i.e., the 100 year floodplain). Base Flood Elevations for the area are not given, so a more detailed hydraulic analysis will be required at the time of coal leasing to adequately address this criterion.

Summary: Under Criterion 16, approximately 251 acres of Last Chance Creek floodplain are unsuitable to surface coal mining operations pending a more detailed hydraulic analysis at the time of coal leasing.

Criterion Number 17.

Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.

<u>Exceptions</u>. A lease may be issued where the surface management agency in consultation with the municipality (incorporated entity) or the responsible governmental unit determines, as a result of studies, that all or certain stipulated methods of coal mining will not adversely affect the watershed to any significant degree.

<u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

Kane County Water Conservancy District owns the deed to Water Right Number 89-1498 (01/15/1964 Priority Date) within the assessment area. Water Right 89-1498 is a 325 acre-

feet water right, proposed as four underground water wells for development of municipal water for the towns of Big Water, UT and Page, AZ. In 2015, the Kane County Water Conservancy District filed for an Extension of Time to File Proof For Beneficial Use on the water right, citing that the District will need the water right to meet future public water requirements over the next 40 years.

The proposed underground wells are located in T41S R04E Sections 19 and 30 along Smokey Hollow Road. Drawdown of the potentiometric surface in the Navajo Sandstone from mine water use was analyzed in the 1995 Warm Springs PDEIS. The cone of depression was estimated to be approximately 8 miles in diameter (50 sq. miles), with the maximum lowering of the potentiometric surface near the vicinity of the proposed wells assuming 550 acre-feet of water used per year. Because the proposed Kane County Water Conservancy District water right is an underground well that has not been drilled yet, the number of acres potentially affected by mining is unknown; therefore, a more detailed hydraulic analysis will be required at the time of coal leasing to more adequately address this criterion.

There are eight Public Water Reserve 107 withdrawals totaling approximately 325 acres within the assessment area. Order of Withdrawal, Public Water Reserve No. 107, April 17, 1926, withdrew from settlement, location, sale, or entry, and reserved the sites for public use in accordance with the provisions of Sec. 10 of the Act of December 29, 1916.

Summary: Under Criterion 17,325 acres are determined to be unsuitable due to Public Water Reserve Withdrawals, however these areas will need to be inventoried to verify if these withdrawals are still needed. Additionally, a detailed hydraulic analysis will be required at the time of coal leasing to determine unsuitability for mining operations near municipal water rights deeded to the Kane County Water Conservancy District for use in Big Water, UT and Page, AZ.

Criterion Number 18.

Federal lands with National Resource Waters, as identified by states in their water quality management plans, and a buffer zone of Federal lands ¼ mile from the outer edge of the far banks of the water, shall be unsuitable.

<u>Exceptions</u>. The buffer zone may be eliminated or reduced in size where the surface management agency determines that it is not necessary to protect the National Resource Waters.

<u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

In the State of Utah, the designation "High Quality Waters" is equivalent to National Resource Waters, and therefore receives additional regulatory protection (including all waters of the State within the designated drainage).

Consistent with Criteria 18 and State rules, the BLM has determined that protection of High Quality Waters can be achieved through the use of the unsuitability determination, BMPs, and the State permitting process. Buffers were established for springs and perennial and intermittent streams, as follows:

- Perennial streams: ¼ quarter mile (1320 feet; 402 meters) slope distance from the outer edge of the bank;
- Intermittent streams: 330 feet (100 meters) slope distance from the outer edge of the bank; and
- Springs: 330 feet (100 meters) slope distance from the edge of the saturated area.

The locations of springs and perennial and intermittent stream reaches were determined based on review of BLM GIS data. Five known lentic sites (i.e., still water/wetlands) were identified in the assessment area. The total area unsuitable for surface coal mining operations for lentic locations is approximately 39 acres for the known lentic locations. Approximately 22 stream miles of known lotic sites (i.e., flowing waters) were identified in the assessment area. The total area unsuitable for surface coal mining operations for known lotic locations is approximately 7,440 acres. Additionally, there are approximately 532 stream miles within the assessment area classified as "intermittent" by the National Hydrography Dataset. The total area unsuitable for surface coal mining operations for intermittent streams is approximately 40,939 acres based on the 330 foot buffer criteria. It is likely that additional perennial/intermittent streams and springs are present that were not mapped. In the event that such waterways are determined to exist after the publication of this report, they would be buffered and protected as identified above.

Summary: Under Criterion 18, approximately 48,418 acres are determined to be unsuitable for surface coal mining operations.

Criterion Number 19.

Federal lands identified by the surface management agency, in consultation with the state in which they are located, as alluvial valley floors according to the definition in §3400.0—5(a) of this title, the standards in 30 CFR Part 822, the final alluvial valley floor guidelines of the Office of Surface Mining Reclamation and Enforcement when published, and approved state programs under the Surface Mining Control and Reclamation Act of 1977, where mining would interrupt, discontinue, or preclude farming, shall be considered unsuitable. Additionally, when mining Federal land outside an alluvial valley floor would materially damage the quantity or quality of water in surface or underground water systems that would supply alluvial valley floors, the land shall be considered unsuitable.

<u>Exemptions</u>. This criterion does not apply to surface coal mining operations which produced coal in commercial quantities in the year preceding August 3, 1977, or which had obtained a permit to conduct surface coal mining operations.

The Office of Surface Mining Alluvial Valley Floor (AVF) guidelines (1983) provide a sequential procedure for identifying AVFs. In Phase I potential AVFs are identified using available regional or generalized data. A more detailed inventory is conducted in Phase II which involves mapping of geological, vegetation, and soils data, and test drilling to determine if an area meets the criteria of an AVF. Finally, in Phase III a more detailed analysis may be used to resolve discrepancies about the AVF determinations.

Approximately 4,343 acres of alluvium and/or alluvial gravel, located in several different drainage systems, exist within the evaluation area based on analysis of BLM GIS geologic data. Range improvements, including water developments, are also common in the analysis area and are used by livestock permittees in their operations. Additionally, impacts to water

resources (quality and quantity) cannot be adequately assessed until the locations of surface mining operations are known. Livestock grazing is dispersed within the assessment area and impacts between mining, farming operations, and AVF will need to be assessed during leasing analysis to determine unsuitability. Therefore, no lands within the area are considered unsuitable under this criterion until a more detailed analysis is conducted to evaluate the interaction between AVF and farming operations.

The exemption for ongoing mining operations does not apply because there are no active leases or operations within the analysis area.

Summary: Under Criterion 19, no acres are determined to be unsuitable. However, a more detailed analysis of AVFs will be required at the time of lease analysis.

Criterion Number 20.

Federal lands in a state to which is applicable a criterion (i) proposed by the state or Indian tribe located in the Planning Area, and (ii) adopted by rulemaking by the Secretary, shall be considered unsuitable.

Exceptions. A lease may be issued when: (i) Such criterion is adopted by the Secretary less than 6 months prior to the publication of the draft comprehensive land use plan or land use analysis, plan, or supplement to a comprehensive land use plan, for the area in which such land is included, or (ii) After consultation with the state or affected Indian tribe, the surface management agency determines that all or certain stipulated methods of coal mining will not adversely affect the value which the criterion would protect.

<u>Exemptions</u>. This criterion does not apply to lands: To which the operator made substantial legal and financial commitments prior to January 4, 1977; on which surface coal mining operations were being conducted on August 3, 1977; or which include operations on which a permit has been issued.

No new criterion proposed by the state or Indian tribes and adopted by rulemaking by the Secretary is applicable to the evaluation area.

Summary: Under Criterion 20, no acres are determined to be unsuitable.

Summary of the Unsuitability Evaluation

The coal resources with development potential within the south Kaiparowits coal unsuitability evaluation area have been evaluated in consideration of the 20 unsuitability criteria. In total, 75,075 acres are determined to be unsuitable. Approximately 66,097 acres are determined to be not unsuitable.

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix M

Air Quality Technical Support Document

August 2019

Table of Contents

Requirements	M-1
Introduction and Background	M-1
Overview of the Study	M-1
Modeling Analysis Components	M-2
Emission Inventory	M-2
Grand Staircase Escalante National Monument and Kanab-Escalante Plann Area Emission Inventory	_
GHG Cumulative Analysis	
Modeled Emissions Control Measures	
Project Emission Inventory	
Near-Field Modeling Analyses	
Air Quality Modeling Methodology	
Model Configuration	
Topographical Data	
Meteorology Data and Land-Use Data	
Background Pollutant Concentrations	
Receptor Placement	
Oil and Gas Emissions	
Coal Mine Emissions	M-48
Air Quality Modeling Impact Assessment Results	M-51
VISCREEN Modeling for Visibility Impact Assessment	
Conclusions	
References	M-74
Abbreviations-Acronyms	M-77
List of Tables	
Table 1. Existing and Foreseeable Additional Indirect GHG emissions from Downstream Combustion of Upper Valley Field Oil and Gas (2018)	
Table 2. Modeled GSENM Oil and Gas Project Emissions Control Measures	
Table 3. Production Source Categories and Scaling Surrogates	
Table 4. Activity Metric and Scaling Surrogates for Production Flaring Sources	M-21
Table 5. Meteorological Data for AERMET Processing at the Bryce Airport Site	
Table 6. Monthly Seasonal Profile at the Bryce Canyon Airport Site	M-27

Table 7. Monthly Moisture Classification at the Bryce Canyon National Park Headquarters Site	M-28
Table 8. Meteorological Data Used for AERMET Processing at Spooky Gulch Site	M-29
Table 9. Monthly Seasonal Profile for Spooky Gulch	M-30
Table 10. Monthly Moisture Classification at the Escalante Climate Site	M-31
Table 11. Background Concentrations and NAAQS	M-35
Table 12. Project Wells during Development: CAP Emissions	M-44
Table 13. Project Wells during Production - CAP Emissions Summary	M-45
Table 14a. Project Wells during Production: HAP Emissions	M-46
Table 14b. Project Wells during Development: GHG Emissions	M-47
Table 14c. Project Wells during Production: GHG Emissions	M-47
Table 15a. Well Development and Production Source Configuration for Point Source	M-47
Table 15b. Well Development and Production Source Configuration for Volume Sources	M-48
Table 15c. Well Development and Production Source Configuration for Area and Area	
Poly Sources	
Table 16a. Underground Coal Mine Operational CAP Emissions	
Table 16b. Underground Coal Mine Operational GHG Emissions	
Table 17a. Underground Coal Mine Operation Source Configuration for Point Source	M-50
Table 17b. Underground Coal Mine Operation Source Configuration for Line Area Sources	M-51
Table 17c. Underground Coal Mine Configuration for Area and Areapoly Sources	
Table 18. Near Bryce Canyon National Park Oil and Gas Scenario CAP Impacts and Comparison with the NAAQS and Class II SILs	
Table 19. Near Escalante, Utah Oil and Gas Scenario CAP Impacts and Comparison with the NAAQS and Class II SILs	
Table 20. Underground Coal Mine CAP Impacts and Comparison with the NAAQS and Class II SILs	M-58
Table 21. Underground Coal Mine Scenario CAP Maximum Impacts Within or Along the Boundary of the Glen Canyon NRA and in Comparison with the Class II SILs	M-59
Table 22. Near Bryce Canyon National Park: Oil and Gas Scenario Highest Class I Concentration in Comparison with Class I SILs	M-59
Table 23. Near Escalante, Utah: Oil and Gas Scenario Highest Class I Concentration in Comparison with Class I SILs	M-60
Table 24. Underground Coal Mine Scenario: Highest Class I Concentration in Comparison with Class I SILs	M-60
Table 25. Results of Tier I Demonstration Using MERPs for Daily and Annual Particulate Matter	M-61
Table 26. Near Bryce Canyon National Park: Oil and Gas Scenario Comparison of Highest Modeled Results with Acute RELs (1- and 24-hour Exposure)	M-61
Table 27. Near Escalante, Utah: Oil and Gas Scenario Comparison of Highest Modeled Results with Acute RELs (1- and 24-hour Exposure)	M-62
Table 28. Near Bryce Canyon National Park: Oil and Gas Scenario Comparison of Highest Modeled Results with Non-carcinogenic HAP RfCs (Annual Average)	M-62

Table 29. Near Escalante, Utah: Oil and Gas Scenario Comparison of Highest Modeled Results with Non-carcinogenic HAP RfCs (Annual Average)	M-63
Table 30. Near Bryce Canyon National Park: Oil and Gas Scenario Cancer Highest Risk Assessment: Carcinogenic HAP RfCs, Exposure Adjustment Factors, and Adjusted Exposure Risk	
Table 31. Near Escalante, Utah: Oil and Gas Scenario Cancer Highest Risk Assessment: Carcinogenic HAP RfCs, Exposure Adjustment Factors, and Adjusted Exposure Risk	
Table 32. Class I and Class II National Parks and Wilderness Areas Near the Kanab- Escalante Planning Area Lands	M-65
Table 33. Level-1 VISCREEN Modeling Results of Plume Visibility Inside Class I and Class II Areas of Interest from Oil and Gas Completion Activities near Bryce Canyon National Park	M-67
Table 34. Level-1 VISCREEN Modeling Results of Plume Visibility Inside Class I and Class II Areas of Interest from Oil and Gas Completion Activities near Escalante, Utah	M-68
Table 35. Level-1 VISCREEN Modeling Results of Plume Visibility Inside Class I and Class II Areas of Interest from Coal Mine Development	
Table 36. Level-2 VISCREEN Modeling Results of Plume Visibility from Oil and Gas Development during Completion Activities Near Bryce Canyon National Park	M-71
Table 37. Level-2 VISCREEN Modeling Results of Plume Visibility Inside Bryce Canyon National Park from Oil and Gas Development During Drilling Activities Near Bryce Canyon National Park	M-72
Table 38. Level-2 VISCREEN Modeling Results of Plume Visibility from Oil and Gas Development during Completion Activities Near Escalante	M-72
List of Figures	
Figure 1. Wind Rose for Bryce Canyon Airport, UT Monitoring Site 2013–2017	M-32
Figure 2. Wind Rose for Spooky Gulch, UT Monitoring Site 2012–2016	M-33
Figure 3. Wind Rose for Page, AZ Monitoring Site 2012–2016	M-34
Figure 4. All Receptors Near Escalante	M-37
Figure 5. Receptors Closest to Escalante	M-38
Figure 6. All Receptors Near Coal Mine Near Big Water, UT	M-39
Figure 7. Receptors Closest to Coal Mine Near Big Water, UT	M-40
Figure 8. All Receptors Near Bryce Canyon National Park	M-41
Figure 9. Receptors Closest to Bryce Canyon National Park	M-42
Figure 10. Modeled Concentrations of the 98th Percentile of the 1-hour Daily Maximum NO ₂ Concentration Averaged over 5 Years during Well Completion Near Bryce Canyon National Park	
Figure 11. Modeled Concentrations of the 98th Percentile of the 1-hour Daily Maximum NO ₂ Concentration Averaged over 5 Years during Well Completion Near Escalante	
Figure 12. Class I and Class II Areas within 50 and 100 Kilometers and Surface Meteorological Stations Used in this Analysis	M-66

Requirements

The BLM is required under the National Environmental Policy Act (NEPA) to analyze the environmental impacts on air quality and other components of the human environment from major Federal actions, which includes the development of RMPs. Other relevant laws and regulations include: the Federal Land Policy and Management Act (FLPMA); the Clean Air Act and Amendments; Council on Environmental Quality regulations for implementing NEPA; and the Utah Department of Environmental Quality (DEQ) – Division of Air Quality regulations.

Appendix M: Air Quality Support Document

Introduction and Background

This Air Quality Technical Support Document supports the assessment of impacts on ambient air quality and air quality-related values from reasonably foreseeable development on lands in the Kanab-Escalante Planning Area (KEPA) for Grand Staircase-Escalante National Monument (GSENM) and KEPA Resource Management Plans (RMPs) and Environmental Impact Statement (EIS). Impacts are assessed for the three units of GSENM (Grand Staircase, Kaiparowits, and Escalante Canyons Units), nearby Class I areas, population centers, and Class II areas of interest. The combined reasonably foreseeable development activities are referred to as the Project and the area where effects are assessed is referred to as the Planning Area. The reasonably foreseeable developments consist of one new underground coal mine and the development of a small oil field and associated infrastructure.

This Air Quality Technical Support Document outlines the procedures and analyses the Bureau of Land Management (BLM) used in conducting the air quality assessment. The impact assessment examines and quantifies the impacts from potential emissions sources that may be developed in KEPA. Under all alternatives, major emissions sources (i.e., mining activities) would generally be limited in GSENM. As a result, emissions sources and associated impacts in the GSENM units are assumed to be negligible and are therefore not addressed quantitatively.

Overview of the Study

This assessment examines potential future impacts on air quality resulting from emissions from mineral and non-mineral development activities in KEPA. Activities addressed in the air quality analysis are based on the BLM's *Mineral Potential Report* and reasonably foreseeable development scenario (BLM 2018a). As indicated in the *Mineral Potential Report* and the reasonably foreseeable development scenario, the BLM anticipates up to one new coal mine, four new exploratory oil and gas wells, and ten new oil and gas production wells during the planning period.

Because of the limited potential for development activities that could affect air quality in KEPA (BLM 2018a), the air quality study only examines a single scenario under which the maximum reasonably foreseeable development is anticipated (alternatives D and E). Alternatives D and E are most likely to result in development of all reasonably foreseeable projects within KEPA, and are therefore the only alternatives for which air quality modeling was completed. Other alternatives are anticipated to result in fewer emissions than the modeled alternative. Refer to Section 3.1, Air Resources, in the GSENM and KEPA RMPs/EIS for the comparative analysis of impacts that could result from the management alternatives.

Air quality impacts are evaluated using the Environmental Protection Agency's (EPA's) guideline model AERMOD in the near field (fewer than 50 kilometers) to evaluate criteria pollutants and hazardous air pollutants (HAPs). In addition, the VISCREEN model is used to assess the potential for near-field visibility impacts. The latest version of AERMOD (version 18081), along with the latest versions of all supporting software, are used for this application. The analysis focuses on criteria air pollutant (CAP) concentrations, HAPs, and greenhouse gas (GHG) emissions.

Modeling Analysis Components

The air quality assessment considers the near-field air quality impacts for reasonably foreseeable development projects within KEPA. The focus of the near-field air quality modeling is described below.

Criteria pollutants, including particulate matter (particulate matter less than or equal to 10 microns in size $[PM_{10}]$ and particulate matter less than or equal to 2.5 microns in size $[PM_{2.5}]$), nitrogen dioxide (NO_2) , sulfur dioxide (SO_2) , and carbon monoxide (CO). Both Federal and State regulations require that ambient concentrations for these criteria pollutants not exceed applicable National Ambient Air Quality Standards (NAAQS). Particulate matter, including dust from construction and operations, wind erosion, and traffic on paved and unpaved roads, is a criteria pollutant of particular concern for this analysis, as the region's visibility is particularly sensitive to particulate matter impacts.

The near-field assessment examines impacts on the three national monument units, Class I and Class II areas of interest that are close to KEPA, and publicly accessible areas in the immediate vicinity. All of the reasonable foreseeable development projects are from low-level emission releases, with maximum impacts expected to be close to the project. The modeling methodology is discussed below. Three Class I areas are within 50 kilometers of KEPA: Bryce Canyon, Zion, and Capitol Reef National Parks. Visibility impacts at the three Class I areas are included in the assessment using VISCREEN.

Impact analysis modeling was conducted using emissions inventory data developed for this effort. The activities included in the emissions inventory are provided in *Emission Inventory*, *Oil and Gas Emissions*, and *Coal Mine Emissions* sections of this document. The modeling scenarios were designed to capture the maximum impacts of the reasonably foreseeable development projects.

Emission Inventory

Grand Staircase Escalante National Monument and Kanab-Escalante Planning Area Emission Inventory

The Project emission inventory addresses field-wide oxides of nitrogen (NO_x), SO₂, CO, PM₁₀, PM_{2.5}, volatile organic compounds (VOCs), and HAPs (benzene, toluene, ethyl benzene, xylene, and n-hexane) for well development activities and production activities. Lead emissions are expected to be negligible and were not calculated in the inventory. In addition, methane (CH₄), nitrous oxide (N₂O), and carbon dioxide (CO₂) emissions were included in the Project inventory for the purpose of quantifying GHG emissions. CO₂ equivalents for all three GHGs are reported.

The Project emission inventory includes emissions from the following reasonably foreseeable sources:

- Well development phase (i.e., construction, drilling, and completion activities)
- Well production phase (i.e., emissions from active, producing wells)
- Underground coal mine (i.e., an active large-scale mine operation)

Key Regulations Affecting the Project Emissions Inventory Development

In the development of the emission inventory, current Federal and State regulations that would affect the emissions projections were considered in calculating the emissions. The following sections summarize key regulations affecting the estimation of Project emissions.

New Source Performance Standards

Under Section 111 of the Clean Air Act, the EPA has promulgated technology-based emissions standards that apply to specific categories of stationary sources. These standards are referred to as New Source Performance Standards (NSPS) (40 Code of Federal Regulations [CFR] Part 60). In the Project emission inventory, NSPS are assumed to apply to all stationary engines. NSPS requires new engines of various horsepower classes to meet increasingly stringent NO_X and VOC emission standards over the phase-in period of the regulations. The emission inventory was evaluated for compliance with NSPS 0000, which affects oil and gas production emissions sources at hydraulically fractured wells and was determined to comply with all applicable tenets of the regulation. It was not assumed that the Project would use new engines during the oil and gas development phase.

Non-Road Engine Tier Standards

The EPA sets emissions standards for non-road diesel engines for hydrocarbons, NO_x, CO, and particulate matter. The emissions standards are implemented in tiers by year, with different standards and start years for various engine power ratings. The new standards do not apply to existing non-road equipment. Only equipment built after the start date for an engine category (1999–2006, depending on the category) is affected by the rule. Over the life of the reasonably foreseeable development activities, the fleet of non-road equipment is expected to turn over and higher-emitting engines will be replaced with lower-emitting engines. Non-road fleet turnover is not accounted for in the Project emissions inventory; therefore, the Project emissions represent a conservative estimate for this source category.

Greenhouse Gases and Climate Change

GHGs present in the Earth's atmosphere trap outgoing longwave radiation and warm the Earth's atmosphere. Increased concentrations of GHGs in the atmosphere result in more heat being absorbed and increase global temperatures on average. Some GHGs, such as water vapor, occur naturally in the atmosphere, and some GHGs (e.g., CO₂ and CH₄) occur naturally and are also emitted by human activities. The global atmospheric concentration of CO₂ has increased by about 36 percent over the last 130 years, and far exceeds pre-industrial values determined from ice cores spanning many thousands of years (Walsh 2014).

Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years; key variables include temperature and precipitation. Climate change includes both historical and predicted climate shifts that are trends beyond occurring over longer time scales. The 2018 BLM Utah Air Monitoring Report (BLM 2019a) discusses the current climate conditions in Utah, and is incorporated by reference. The report presents the three-decade average and trends of temperature and precipitation for each of the seven climate divisions in Utah. Most of the Planning Areas falls

within the south-central climate division. South-central Utah's climate has average annual temperatures ranging between 40–56 °F and average precipitation of 10–15 inches (BLM 2019b), with higher elevations having colder temperatures. Escalante has an annual average temperatures of about 51.5 °F. Trends over the most recent climate normal period (1981–2010) show average temperatures increased 0.5 °F while precipitation decreased 0.8 inch.

In November 2018, the Fourth National Climate Assessment (NCA4) Volume II was published (USGCRP 2018). Compared to previous reports, NCA4 provides greater detail on regional scales as impacts and adaptation tend to be realized at a more local level. The Southwest region (Arizona, California, Colorado, New Mexico, Nevada, and Utah) encompasses diverse ecosystems, cultures, and economies, reflecting a broad range of climate conditions, including the hottest and driest climate in the United States. The average annual temperature of the Southwest increased 1.6 °F between 1901 and 2016. Moreover, the region recorded more warm nights and fewer cold nights between 1990 and 2016, including an increase of 4.1 °F for the coldest day of the year. Each National Climate Assessment has consistently identified drought, water shortages, and loss of ecosystem integrity as major challenges that the Southwest confronts under climate change. Since the last assessment, published field research has provided even stronger detection of hydrological drought, tree death, and wildfire increases that have been statistically different from natural variation (USGCRP 2018).

The U.S. Supreme Court ruled in 2007 that the EPA has the authority to regulate GHGs such as CH₄ and CO₂ as air pollutants under the Clean Air Act. However, there are currently no ambient air quality standards for GHGs, nor are there currently any emissions limits on GHGs that would apply to reasonably foreseeable development sources. While GHG permits may be required for sources that are permitted under the Prevention of Significant Deterioration (PSD) program, the reasonably foreseeable development sources are not anticipated to trigger the need for a PSD permit. Both the exploration/construction and production phases of the reasonably foreseeable development Project will cause emissions of GHGs. CH₄ comprises much of the chemical composition of natural gas, and N₂O, CO₂, and CH₄ are emitted by engines used for drill rigs, fracking engines, and other equipment. As part of the development of the Project emission inventory, an inventory of CO₂, CH₄, and N₂O was prepared for all emissions source categories. GHGs were not modeled in the near-field impact analyses, but the GHG emission inventory results are presented in Table 14b, Table 14c, and Table 16b for informational purposes.

GHG Cumulative Analysis

Currently, the only oil and gas activity taking place within the analysis area is from development and production activities in the Upper Valley oil field. The total current direct GHG emissions of 46,566 metric tons carbon dioxide equivalent (CO₂e) per year are associated with 23 active producing oil and gas wells as reported by the Utah Division of Oil, Gas and Mining (UDOGM 2018) at the end of 2018. In the foreseeable future, one additional oil and gas producing well is reasonably foreseeable, for which the direct GHG emissions associated with the drilling and operation is 2,832 metric tons CO₂e per year.

Indirect emissions associated with the downstream combustion of the oil and gas is summarized in Table 1 for the existing activities in Upper Valley oil field and for the foreseeable development of one additional well as reported by the BLM Utah State Office (BLM 2019b). The reported emissions are difficult to predict for future oil and gas production due to uncertainties as discussed further below. In addition, oil and gas production can vary from one well to another. For these reasons, we report a high-end emission rate for production from future wells

that is based on a rate that is the average current production rate per well plus two times the standard deviation in oil production rate per well.

Table 1. Existing and Foreseeable Additional Indirect GHG emissions from Downstream Combustion of Upper Valley Field Oil and Gas (2018)

Oil Field Name	Timeframe of Development	Total Oil Production (bbl)	GHG Oil Emissions (metric tons CO ₂ e per year)	Total Gas Production (mcf)	GHG Gas Emissions (metric tons CO₂e per year)	Total GHG Emissions (metric tons CO ₂ e per year)
Upper Valley	Existing	133,801	57,534	9,125	503	58,037
Upper Valley	Foreseeable	6,702	3,473	383	24	3,497

Source: UDOGM 2018

bbl - barrel; CO2e - carbon dioxide equivalent, GHG - greenhouse gas, mcf - thousand cubic feet

The direct and indirect emission estimates provide an estimate of the full potential for GHGs released into the atmosphere from wellsite construction, drilling and completion, production, and end use. The GHG emission estimates involve significant uncertainty due to unknown factors including future production rates, how produced oil and gas are used, and whether any additional control technologies are utilized at the upstream or downstream emission locations. Deeper wells require engines with a greater horsepower, and take longer to drill but may produce for shorter or longer periods of time. The thermal content of the oil can also vary substantially, which also affects estimates of the GHGs produced or combusted. Unforeseen changes in factors such as geologic conditions, drilling technology, and Federal, state, and local laws and policies could result in different findings than those presented in Table 1.

Modeled Emissions Control Measures

Table 2 provides the emissions control measures for each emissions source category included in the modeling analysis.

Table 2. Modeled GSENM Oil and Gas Project Emissions Control Measures

GSENM Emission Source Category	Type of Control Applied		
Construction, Drilling, and Completion of Project	Wells		
Well Pad Construction Equipment (diesel internal combustion engine) – New Pads	None (Tier 2 and Tier 3 engines assumed over the development period)		
Construction Traffic, Road and Well Pad	Change in emissions due to fleet turnover		
Construction Traffic, Road and Well Pad – Fugitive Dust	Watering		
Drilling Equipment (diesel internal combustion engine)	None (Tier 2 engines assumed over the development period)		
Drilling Traffic	Change in emissions due to fleet turnover		
Drilling Traffic – Fugitive Dust	Watering		
Completion Equipment (diesel internal combustion engine)	None (Tier 2 engines and engines certified to 2007 on-road standards assumed over the development period)		

GSENM Emission Source Category	Type of Control Applied	
Completion Traffic	Change in emissions due to fleet turnover	
Completion Traffic – Fugitive Dust	Watering	
Initial Completion Venting	100% green completions, no flaring or venting to atmosphere	
Well Pad Construction Fugitive Dust	Watering	
Construction Fugitive Dust, Wind Erosion	Watering	
Producing Project Wells		
Heaters	None, but negligible well-site emissions	
Pneumatic Devices	100% low-bleed devices	
Pneumatic Pumps	None, but negligible well-site emissions	
Tank Loadout (vapor losses)	None, but negligible well-site emissions	
Production Traffic	Change in emissions due to fleet turnover	
Production Traffic – Fugitive Dust	Watering	
Condensate Tanks	None, but negligible well-site emissions	
Dehydrators	None, but negligible well-site emissions	

Source: The control measures applied in this analysis were based on those used in the recent *Greater Chapita Wells Project Environmental Impact Statement* (Alpine Geophysics and Environ 2016). The Chapita Wells Project is a larger sized project but uses the most recent technology for oil and gas extraction.

GSENM – Grand Staircase-Escalante National Monument

Project Emission Inventory

This section describes the approach used to compile the emission inventory for the reasonably foreseeable coal mine and oil and gas wells that compose the Project.

Coal Mine Emissions

The emissions for the underground coal mine were calculated using the methodology in the Colorado Underground Coal Mine Emission Inventory Tool (V1.0), a tool sponsored by the BLM.

For the categories that are not included in the tool, the BLM completed emissions calculations in separate spreadsheets. This includes worker commute and exhaust emissions from the haul trucks and indirect operational emissions ("Emission Calculation Table" tab in Project emission inventory) and GHG emissions using an assumption that mined coal is combusted and not used for metallurgical purposes ("mining undergroundcoal ghg-calc-final" tab in Project emission inventory).

The emissions estimated from the reasonably foreseeable coal mine include the following:

- Particulate matter emissions (PM₁₀ and PM_{2.5}) from mine venting, above-ground material
 handling and coal processing operations, and fugitive road dust from transport of the coal
- Fuel combustion emissions (CO, VOCs, NO_X, sulfur oxides [SO_X], PM₁₀, PM_{2.5}, and three primary GHGs) from above- and underground equipment, as well as the transport of the coal to the unit-train loading facility
- GHG emissions from CH₄ desorption as well as reporting the GHG emissions associated with the combustion of the coal

The development of the equipment activity and duration of operation of activities at the coal mine were based on information for a proposed 3.0 million tons per year underground coal mine in Utah. The major assumptions for the 3.0 million tons per year coal mine are as follows:

- Average production of 3.0 million tons per year with 650 feet of coal seam
- 45 acres of surface disturbance
- A 400-mile round trip (200 miles direct) along designated truck routes from the proposed mine to a unit-train loading facility near Cedar City, UT with an average capacity of 46 tons of coal per truck, and a maximum of 7.3 trucks per hour
- Coal loading and hauling operations would occur 24 hours per day, 365 days per year
- Workforce commute distance is all from Page, AZ for 200 employees and is a distance of 36 miles one way; all commuting is done with personal vehicles
- All equipment below ground is electric or electric-hydraulic—no emissions
- Equipment above ground includes emissions from coal handling/unloading and the coal stockpile
- Conveyor is electrically powered and enclosed as a best practice measure—no emissions
- Coal stockpile includes emissions from wind erosion and operation of dozers for stockpile shaping; this includes emissions from tailpipe exhaust and material handling
- Crusher is electrically powered and all enclosed, so no fugitive dust emissions
- Each dozer at the mine operates 4 hours per day; a total of three dozers operate daily at the mine
- Two backup diesel generators operating two times per month for 4 hours on those 2 days as testing for these emergency backup diesel generators to support the underground mine

The Project *Mineral Potential Report* (BLM 2018a) projected a 5.5-million-tons-per-year coal mine in KEPA, so the 3.0-million-tons-per-year coal mine described above was scaled up.

Oil and Gas Construction Emissions

Based the Project *Mineral Potential Report* (BLM 2018a), the BLM assumed one new oil and gas well pad would be constructed each year for 14 years.

Emission-generating activities during field development include well pad and access road construction, vehicle traffic, and wind erosion. Fugitive PM_{10} and $PM_{2.5}$ emissions will result from (1) construction activities and (2) traffic to and from the construction site. On roads within the Planning Area, water will be used for fugitive dust control, with a control efficiency of 50 percent. Emissions of criteria pollutants will occur from exhaust due to diesel combustion from haul trucks and heavy construction equipment.

Emission sources identified for the well pad construction phases of the Project include well pad construction equipment, well pad and access road construction traffic, well pad construction fugitive dust, and construction wind erosion.

Well Pad Construction Equipment Exhaust Emissions

The BLM estimated vehicle emissions during construction using data provided in the BLM Vernal Field Office's Greater Chapita Wells Project EIS Air Quality Technical Support Document (Alpine Geophysics and Environ 2016); refer to pages 26–49 of that EIS for detailed equipment and emission information. The BLM emissions inventory incorporated the description of equipment types and engines used during well construction. Engine data for each engine type

included horsepower rating, hours of operation, fuel type, engine technology, and load factors. NOx, VOC, CO, and PM₁₀ emission rates have been assumed equivalent to applicable Federal off-road engine emission standards (40 CFR Parts 9, 69, et seq.). There are no Federal off-road emission standards for other pollutants. SO₂, CO₂, and CH₄ emission factors have been estimated consistent with methodology used in the EPA's NONROAD model (EPA 2009). PM_{2.5} emission rates were assumed to be 97 percent of PM₁₀ emission estimates, consistent with the NONROAD model. N₂O emission factors are not available in the NONROAD model and were taken from Climate Registry guidance (The Climate Registry 2008).

Emissions were estimated on a per-event (new well pads) basis for a given engine type, k, according to Equation 1:

Equation (1): Eengine k, = EF $i \times$ HP $k \times LFk \times$ tevent \times nk/907,185

where:

Eengine k, are emissions of pollutant *i* from an engine type k [tons/pad]

EFi is the emissions factor of pollutant i(gram per horsepower-hour [g/hp-hr])

HPk is the horsepower of the engine k (horsepower [hp])

LFk is the load factor of the engine k

tevent is the number of hours the engine is used for per well pad construction (hour per pad [hr/pad])

907,185 is the mass unit conversion (gram per ton [g/ton])

nk is the number of type k engines

Well Pad and Access Road Construction Traffic

Emissions were developed following the methodology of the Greater Chapita Wells EIS Emissions (Alpine Geophysics and Environ 2016, Appendix J, pp 26–49) result from light-duty and heavy-duty vehicle traffic on paved and unpaved roads during well pad construction. Emission factors were developed using the MOVES2010a model (EPA 2010) for Uintah County in the State of Utah. The emission factors were prepared for two vehicle classes: combination short-haul trucks (heavy duty) and light commercial trucks (light duty). The emission factors represent annual averages for the duration of the Project. In MOVES, running and idling emissions from evaporative, exhaust, brake wear, and tire wear processes were modeled; running emission factors were calculated using mean vehicle speeds. Paved and unpaved emissions were developed separately for in-oil field and outside-oil field road traffic. In-oil field distances primarily feature unpaved road surfaces, while outside-oil field distances are mostly on paved surfaces. The percentage of travel on each type of surface was used to estimate the overall per trip emissions for both in-oil field and outside-oil field travel. Fugitive dust emissions from vehicle travel on paved and unpaved roads were estimated based on the AP-42 technical guidance (EPA 2006a).

Road dust emission factors for PM₁₀ and PM_{2.5} for vehicles traveling on publicly accessible unpaved roads were individually estimated using Equation 2.

Equation (2): $EF = ((s/12)(S/30)^d)/(M/0.5)^c - C$

where:

EF is the size-specific emission factor (pound per mile [lb/mile])

k is the particle size multiplier or "k-factor" [lb/mile]

s is the surface material silt content (percentage)

M is the surface material moisture content (percentage)

Sis the mean vehicle speed (miles per hour [mph])

C is the emission factor for vehicle fleet exhaust, brake wear, and tire wear [lb/mile]

a, b, c and d are empirical constants

Variables k, C, a, b, c, and d may differ depending on whether fugitive dust calculations are for PM₁₀ or PM_{2.5}.

To account for natural suppression of road dust emissions due to precipitation, Equation 3 was applied.

Equation (3): EFsuppressed = $EF \times ((365-P)/365) \times ((100-CE)/100)$

where:

EFsuppressed is the annual average road dust emission factor including the effect of natural mitigation via precipitation [lb/mile]

EF is the uncontrolled road dust emission factor (from Equation 2) [lb/mile]

P is number of precipitation days (fewer than 0.01 inch rainfall) at the site (precipitation days at Escalante, UT from National Centers for Environmental Information climatology)

CE is the control efficiency for watering on unpaved roads (Cowherd 1988)

Road dust emission factors for PM_{10} and $PM_{2.5}$ for vehicles traveling on paved roads were individually estimated using Equation 4, which accounts for natural suppression of road dust emissions due to precipitation.

Equation (4): $EF = [k(sL)^{0.91} \times (W)^{1.02}](1 - P/4N)$

where:

EF is the size-specific emission factor [lb/mile]

k is the particle size multiplier or "k-factor" [lb/mile]

sL is the road surface silt loading (grams per square meter [g/m²])

W is the average weight (tons) of the vehicles traveling the road

P is number of days with at least 0.254 millimeter (0.01 inch) of precipitation, annually

N is the number of days per year (i.e., 365)

Annual vehicle miles traveled (VMT) to the well site as well as the percentage of unpaved and paved road traveled on in-field and outside-field roads were based on assumptions used in the Greater Chapita Wells EIS for each vehicle type (light duty and heavy duty) (Alpine Geophysics and Environ 2016). Exhaust emissions for each fleet type were calculated using the MOVES2010a emission factors on a grams per mile basis, as shown in Equation 5. Fugitive

dust road emissions for paved and unpaved roads were calculated using the emissions factors from Equations 3 and 4.

Equation (5): Etraffic, $i = (EFi \times VMT)/2000$

where:

Etraffic, i is traffic emissions for pollutant i per well pad [ton/pad]

EFi is the average emission factor of pollutant i [lb/mile] (estimated from MOVES for exhaust or from the AP-42 based methodology for fugitive dust)

VMT are the annual vehicle miles traveled by a fleet to a well pad site [miles/pad]

2000 is the mass conversion [lb/ton]

Construction Fugitive Dust

Fugitive dust emissions from surface disturbance due to well pad construction equipment were estimated based on the AP-42 guidance for estimation of emissions from western surface coal mining (EPA 1998b), as no estimation methodology specific to oil and gas well sites was available. Construction fugitive dust emission factors were estimated according to Equations 6 and 7.

Equation (6): $EFPM10 = ((1.0 \times s^{1.5})/M^{1.4}) \times (1 - C) \times r$

where:

EFPM10 is the emissions factor from construction dust for PM₁₀ [lb/hr]

s is the material silt content (percentage)

M is the material moisture content (percentage)

C is the control efficiency

r is the PM₁₀ scaling factor, assumed to be 0.75 lb/hr per AP-42 guidance

Equation (7): $EFPM2.5 = ((5.7 \times s^{1.2})/M^{1.3}) \times (1 - C) \times r$

where:

EFPM2.5 is the emissions factor from construction dust for PM_{2.5} [lb/hr]

r is the PM_{2.5} scaling factor, assumed to be 0.105 lb/hr per AP-42 guidance

The default AP-42 guidance values (EPA 1998b, Table 11-9.3) for material moisture content (2.4 percent) and material silt content (5.1 percent) were used. The control efficiency for watering was assumed to be 50 percent.

Fugitive dust emissions for individual construction equipment-types were estimated according to Equation 8.

Equation (8): *Edust, equipment, i* = EFix *tevent x n* / 2000

where:

Edust, equipment, i are dust emissions of pollutant i per equipment type per well pad [tons/pad]

2000 is a mass unit conversion [lb/ton]

EFi is the emissions factor from of pollutant i [lb/hr] n is the total units for the type of construction equipment being analyzed tevent is the equipment time of operation per well pad [hours/pad]

Construction Wind Erosion

Wind erosion dust emissions associated with well pad construction operations were estimated based on AP-42 guidance for estimation of emissions from industrial wind erosion (EPA 2006b). Wind erosion emissions were estimated based on Equations 9, 10, and 11.

Equation (9): *Edust, i* = $(P \times A \times r) / 907,185$

where:

Edust, i are dust emissions for pollutant *i* from construction wind erosion [ton/pad]

A is the well pad construction (disturbed) area $[m^2/pad]$

r is the particle size multiplier for PM₁₀ or PM_{2.5}

907,185 is a mass unit conversion [g/ton]

P is the erosion potential [g/m²] as calculated by Equation (10)

Equation (10): $P = 58 \times (u^* - ut)^2 + 25 \times (u^* - ut)$

where:

 u^* is the friction velocity (meter per second [m/s])

ut is the threshold friction velocity (m/s)

58 and 25 are empirical constants in units of [g s2/m4] and [g s/m3] respectively.

Equation (11): P = 0 for $u^* <= ut$

Friction velocity estimates were made by multiplying the average annual fastest wind speed from Bryce Canyon meteorological data for the years 2012–2017 by 0.053 per AP-42 guidance (EPA 2006b). Particle size multipliers of 0.5 and 0.075 were assumed for PM_{10} and $PM_{2.5}$, respectively, per AP-42 guidance.

Oil and Gas Drilling and Completion Emissions

After the well pad is prepared, well drilling and then well completions can begin. Emissions from well drilling include exhaust and fugitive dust emissions from vehicle travel to and from the drilling site on unpaved and paved roads, and exhaust emissions from drilling engines. Emissions from well completion and testing include vehicle exhaust and fugitive dust emissions from traffic, exhaust emissions from completion equipment engines, and emissions from completion venting. One new well is assumed to be constructed during each year of the 14 years of Project duration.

Drilling and Completion Equipment

Emissions associated with off-road engines used during drilling and completion activities were calculated separately but the methodology followed was consistent with Equation (1) above.

Detailed data based on the Greater Chapita Wells EIS (Alpine Geophysics and Environ 2016, Appendix J, pp 26-49) for each drilling and completion engine including horsepower rating, hours of operation, fuel type, engine technology, and load factors were used. Modifications were made to the Chapita Wells EIS data based on EPA recommendations (ICF 2018).

NOx, VOC, CO, and PM $_{10}$ emission rates have been assumed equivalent to applicable Federal off-road engine emission standards (40 CFR Parts 9, 69, et seq.) or on-road engine emission standards (40 CFR Parts 69, 80, and 86) for the 13 engines used during completions that are on-road engines. There are no Federal off-road emission standards for other pollutants. SO $_{2}$, CO $_{2}$, and CH $_{4}$ emission factors have been estimated consistent with methodology used in EPA's NONROAD model (EPA 2009). PM $_{2.5}$ emission rates were assumed to be 97 percent of PM $_{10}$ emission estimates, consistent with the NONROAD model. N $_{2}$ O emission factors are not available in the NONROAD model and were taken from Climate Registry guidance (The Climate Registry 2008).

Emissions on a per-well-pad basis for each engine type were estimated similar to construction emissions according to Equation (1) above.

Drilling and Well Completion Traffic

This section refers to traffic emissions from light-duty and heavy-duty vehicle traffic during drilling and completion operations. The method to estimate traffic emissions from these source categories was similar to that of the *Well Pad and Access Road Construction Traffic* source categories.

Average exhaust emission factors from MOVES2010a model for Uintah County in the State of Utah from calendar years 2013 to 2033 were used. Fugitive dust emissions from vehicle travel on paved and unpaved roads were estimated based on the AP-42 guidance (EPA 2006a) using Equations 2 and 3 for unpaved road distances and Equation 4 for paved road distances. The percentage of mileage on paved and unpaved roads followed the percentage distribution of the Well Pad and Access Road Construction Traffic category. In-oil field traffic travels predominantly on unpaved roads, while outside-oil field traffic distances are mostly on paved roads.

VMT to the drilling site were estimated for each vehicle type based on the in-oil field and outside-oil field travel distances (light duty and heavy duty). Exhaust emissions for each fleet type were calculated using the MOVES2010a emission factors on a grams per mile basis similar to construction traffic, as shown in Equation 5. Fugitive dust road emissions were calculated using Equation 4 for paved road traffic or the suppressed emissions factor (*EFsuppressed*) from Equation 3 for unpaved road traffic.

Initial Completion Venting

All completions were assumed to be green completions.¹ Emissions from initial completion venting were estimated using information based on the Greater Chapita Wells EIS (Alpine Geophysics and Environ 2016, Appendix J, pp 26-49) including the volume of natural gas unable to be captured by green completion technology per completion, the VOC molar fraction present in the gas, and the weight percentage of each pollutant species present in the gas. The emissions calculation for VOC is based on the ideal gas law and is shown in Equation 12.

-

¹ Green completions recover natural gas and condensate produced during well completions or workovers.

Equation (12): Eventing, $VOC = ((V \times YVOC \times 28.317) \times P)/(R \times T)) \times (MWVOC/907.185)$ where:

Eventing, VOC is **VOC** emissions per completion [tons]

V is the volume of gas vented per completion (thousand cubic feet [MCF])

YVOC is the molar fraction of VOC in the vented gas [percentage]

28.317 is the volume unit conversion (thousand liters per thousand cubic feet [1000L/MCF])

P is the pressure of the gas (atmosphere [atm])

R is the ideal gas constant (liter-atmosphere per mole-Kelvin [L-atm/mol-K])

T is the temperature of the gas (Kelvin [K])

MWVOC is the average molecular weight of VOCs in the gas (gram per mole [g/mol])

907.185 is the mass unit conversion (kilogram per ton [kg/ton])

CO₂ and CH₄ emissions were calculated based on Equations 13 and 14.

Equation (13): Eventing,CH4 = Eventing, $VOC \times weight fraction <math>CH4$ /weight fraction,VOC

Equation (14): Eventing,CO2 = Eventing, $VOC \times$ weight fractionCO2/weight fraction,VOC where:

Eventing, CO2 is the total loading CO₂ emissions per well pad [ton/well pad]

Eventing, CH4 is the total loading CH4 emissions per well pad [ton/well pad]

Weight fractions per pollutant of vapor losses were based on Chapita Wells EIS vapor loss data.

Production Emissions

Well site production activities involve dehydration units, heaters, pneumatic devices, traffic, workover equipment, pneumatic pumps, condensate load-out, condensate storage tanks, condensate combustion, associated gas flaring, and associated gas venting.

Combustion emissions of CAPs and HAPs will result from separator heaters, dehydration heaters, condensate combustion, associated gas flaring, and combustion controls on VOC emissions. In addition, fugitive VOC and HAP emissions will result from process leaks, pneumatics, dehydration overhead vents, and condensate tank flashing losses. Table 3 includes the emission sources identified for the production phase of the Project. Pollutant emissions are estimated on a per-event basis (event type varies by source category) and then scaled with the projected number of events per year to obtain Project-wide annual emissions from each source.

Table 3. Production Source Categories and Scaling Surrogates

Equipment Source Category	Event	Scaling Surrogate	
Workover Equipment	Wells	Active Well Counts	
Production Traffic (Heavy Duty)	Barrels	Annual Condensate Production & Annual Water Production	

Equipment Source Category	Event	Scaling Surrogate
Production Traffic (Light Duty)	Wells	Active Well Counts
Heaters	Wells	Active Well Counts
Fugitives	Wells	Active Well Counts
Pneumatic Devices	Wells	Active Well Counts
Chemical Injection Pneumatic Pumps	Wells	Active Well Counts
Tank Loadout	Barrels	Annual Condensate Production
Condensate Tank Flashing Flaring	Barrels	Annual Condensate Production
Dehydrator Flaring	Wells	Active Well Counts
Produced Condensate Combustion	Barrels	Annual Condensate Production
Associated Gas Flaring	Produced Natural Gas	Annual Associated Gas Production
Associated Gas Venting	Produced Natural Gas	Annual Associated Gas Production

Workover Equipment

This category refers to emissions from off-road engines used during well workover operations. The list of all engines used for this activity as well as engine-specific data such as horsepower rating, hours of operation, fuel type, engine technology, and load factors are all based on the Greater Chapita Wells EIS (Alpine Geophysics and Environ 2016, Appendix J, pp 26–49). NO_X, VOC, CO, and PM₁₀ emission rates have been assumed equivalent to applicable Federal off-road engine emission standards (40 CFR Parts 9, 69). There are no Federal off-road emission standards for other pollutants. SO₂, CO₂, and CH₄ emission factors have been estimated consistent with the methodology used in the EPA's NONROAD model (EPA 2009). PM_{2.5} emission rates were assumed to be 97 percent of PM₁₀ emission estimates, consistent with the NONROAD model. N₂O emission factors are not available in the NONROAD model and were taken with Climate Registry guidance (The Climate Registry 2008).

Emissions on a per well basis for each engine type were estimated according to Equation 15.

Equation (15):
$$E_{engine\ k,i} = \frac{EF_i \times HP_k \times LF_k \times t_{event} \times n_k}{907,185}$$

where:

 E_{engine} are emissions of pollutant *i* from an engine type k [ton/well]

 EF_i is the emissions factor of pollutant i[g/hp-hr]

 HP_k is the horsepower of the engine k [hp]

 LF_k is the load factor of the engine k

 t_{event} is the number of hours the engine is used per event [hr/well]

907,185 is the mass unit conversion [g/ton]

 N_k is the number of type-k engines

Annual emissions from well pad construction equipment by pollutant were estimated from the sum of engine emissions of various types (k) ($E_{engineTOTAL,i} = \sum E_{engine\ k,i}$) according to Equation 16.

Equation (16): $E_{workover\ equip,i} = E_{engineTOTAL,i} \times S_{well\ count}$ where:

 $E_{workover\ equip}$ are annual emissions of pollutant i from workover equipment [ton/yr]

 $E_{engineTOTAL,i}$ is sum of all engine emissions per well [ton/well]

 $S_{well\ count}$ is the scaling surrogate for workover equipment emissions [wells/yr]

Production Traffic

This section refers to on-road emissions from light-duty and heavy-duty vehicle traffic during production. The methodology for estimating traffic emissions from these source categories is based on the Greater Chapita Wells EIS (Alpine Geophysics and Environ 2016, Appendix J, pp 26–49). However, there are differences due to length of trips for vehicles traveling within each individual project site and to and from the nearest oil refinery.

Average exhaust emission factors were taken from the Chapita Wells EIS (Alpine Geophysics and Environ 2016, Appendix J, pp 26–49). Fugitive dust emissions from vehicle travel on paved and unpaved roads were estimated based on the AP-42 guidance (EPA 2006a) using Equations 2 to 4. Separate assumptions for travel in-oil field and outside-oil field were used to develop per-trip emissions for each type of vehicle and destination. Trip activity estimates were then used to estimate the annual traffic emissions.

For both light-duty and heavy-duty in-oil field traffic, a 25 mph mean vehicle speed and 10 mile round-trip distance was used to develop transit exhaust emissions per trip. An idling time of 30 minutes was also used for each vehicle in-oil field to estimate idling exhaust emissions per trip. Fugitive road dust emissions were estimated using an assumption of 95 percent of the travel occurring on unpaved roads and the remaining 5 percent occurring on paved roads.

The outside-oil field traffic emissions were estimated for light-duty traffic using a mean vehicle speed of 55 mph and a round-trip distance of 674 miles. 95 percent of outside-oil field light-duty traffic occurs on paved roads with the remaining 5 percent occurring on unpaved roads. Fugitive road dust was estimated accordingly.

For light-duty traffic, per-trip emissions estimates were multiplied by an assumed 9.125 trips per well-year to estimate annual emissions at one well. This figure was then multiplied by the total number of wells in the maximum project year to calculate the total annual light-duty traffic emissions.

Heavy-duty traffic includes trucks carrying either condensate or produced water. Trucks carrying produced water have a round-trip distance of 10 miles, with 95 percent of travel on unpaved roads and 5 percent of travel on paved roads. Trucks carrying condensate travel 674 miles round trip (nearest refinery, Eagle Springs, NV round-trip travel distance) and do so on 95 percent paved roads and 5 percent unpaved roads. Both types of trucks travel at a mean average speed of 40 mph.

Because heavy-duty traffic trips are dependent on the volume of produced water and condensate, an annual per-well emissions estimate could not be made for the reasonably foreseeable development Project wells. Instead, overall annual heavy-duty traffic emissions were estimated based on (1) the capacity that each type of truck carries per trip and (2) condensate and produced water projections based on historical production data of oil and

gas wells in the surrounding Upper Valley oil field. It was assumed that condensate trucks carry 180 barrel (bbl)/trip and water trucks carry 95 bbl/trip. The annual production of water and oil condensate was divided by the average liquid hauled per trip of the corresponding truck type to estimate the number of produced water and condensate trips needed in each Project year. These trips counts were then used to scale the per-trip emissions for each type of truck to estimate the total annual heavy-duty traffic emissions.

On-road vehicle emissions were estimated per well according to Equation 17.

Equation (17):
$$E_{traffic,i} = \frac{EF_i \times VMT}{2000}$$

where:

 $E_{traffic, i}$ are traffic emissions for pollutant i per well [ton/well]

 EF_i is the average emission factor of pollutant i [lb/mile]. For exhaust emissions, EF_i = MOVES emission factors. For fugitive dust emissions, $EF_i = EF_{suppressed}$ as in Equation 3.

VMT are the annual vehicle miles traveled by fleet to well site [miles/well]

2000 is the mass unit conversion [lb/ton]

Annual emissions for production traffic by pollutant were calculated with the appropriate scaling surrogate (active well counts) according to Equation 18.

Equation (18):
$$E_{category\ traffic,i} = E_{traffic,i} \times S_{well\ count}$$
 where:

 $E_{category\ traffic,\ i}$ are annual emissions of pollutant i from production traffic [tons/yr]

 $E_{traffic, i}$ are the emissions of pollutant i per well [tons/well]

 $S_{well\ count}$ is the scaling surrogate for production traffic [wells/yr]

Heaters

This source category refers to emissions from separator heaters and dehydrator burners located at well sites. Heater activity data are based on the Chapita Wells EIS, including local gas heating value (British thermal unit [Btu] per standard cubic foot [scf]), heater size (Btu/hr), number of units per well, usage time and cycle fraction. The Chapita Wells EIS (Alpine Geophysics and Environ 2016, Appendix J, pp 26–49) assumed that heaters would be natural gas-fired; therefore, AP-42 emission factors for an uncontrolled small boiler for natural gas were used for all inventoried pollutants (EPA 1998a). The basic methodology for estimating emissions for a single heater of type k (k= dehydrator burner or separator heater) is shown in Equation 19.

Equation (19):
$$E_{heater\ k,i} = \frac{EF_i \times Q_{heater} \times t_{annual} \times hc}{HV_{local} \times 10^6 \times 2000}$$

where:

 $E_{heater\ k}$ is the emissions from pollutant *i* from a given heater [tons/unit]

 EF_i is the emission factor for pollutant i for natural gas fired small boilers (pounds per million standard cubic feet [lbs/MMscf])

 Q_{heater} is the heater size [Btu/hr]

 HV_{local} is the local natural gas heating value [Btu_{local}/scf]

t_{annual} is the annual hours of operation of each unit [hrs/unit]

hc is a heater cycling fraction of operating hours that the heater is firing

 10^6 is a volume conversion factor [scf/MMscf] and 2000 is the conversion factor [lb/ton]

Emissions by pollutant for all heaters operated were estimated according to Equation 20.

Equation (20):
$$E_{heaterTOTAL,i} = \sum E_{heater k,i} \times N_{heaters k}$$
 where:

 $E_{heaterTOTAL, i}$ is the total per-well emissions from all heaters for pollutant i [ton/well]

 $E_{heater \ k, \ i}$ is the emissions from a single heater (of type k) [tons/unit]

 $N_{heater,k}$ is the total number of heaters (of type k) per well [units/well]

Annual heater emissions were calculated using Equation 21. The scaling surrogate was the active well count.

Equation (21):
$$E_{HEATERS,i} = E_{heaterTOTAL,i} \times S_{well\ count}$$
 where:

 $E_{HEATERS, i}$ are the annual emissions for pollutant i from heaters [tons/yr]

 $E_{heaterTOTAL, i}$ is the total emissions from all heaters operated per well [tons/well]

 $S_{well\ count}$ is the number of active wells for a particular year [wells/yr]

Fugitives

This source category refers to fugitive emissions or leaks from well equipment such as pump seals, valves, connectors, and flanges. VOC, CO₂, and CH₄ emissions were estimated using device-specific total organic carbon (TOC) emission factors for oil and gas production (EPA 1995) and equipment counts provided in the survey responses. Total device counts per well by type of equipment and by the type of service to which the equipment applies—gas, light oil, heavy oil, or water/oil mix, as well as the vented gas composition, were based on the Greater Chapita Wells EIS (Alpine Geophysics and Environ 2016, Appendix J, pp 26–49).

Fugitive VOC emissions for an individual device were estimated according to Equation 22.

Equation (22):
$$E_{fugitiveVOC,k} = EF_{TOC} \times N \times t_{annual} \times Y$$
 where:

 $E_{fugitive\ VOC,\ k}$ is the fugitive VOC emissions for a given device k [tons/well]

 EF_{TOC} is the emission factor of TOC [ton/hr/device]

N is the total number of devices type-k per well [devices/well]

tannual is the total annual hours of operation [hrs]

Y is the ratio of VOC to TOC in the vented gas

Total VOC fugitive emissions are equal to the sum of all fugitive emissions from devices per Equation 23.

Equation (23):
$$E_{fugitiveVOC} = \sum_k E_{fugitiveVOC,k}$$
 where:

 $E_{fugitive\ VOC}$ is the total fugitive VOC emissions per well [ton/well]

CO₂ and CH₄ fugitive emissions were estimated according to Equations 24 and 25.

Equation (24):
$$E_{fugitiveCH4} = E_{fugitiveVOC} \times \frac{weight\ fraction_{CH4}}{weight\ fraction_{VOC}}$$

Equation (25): $E_{fugitiveCO2} = E_{fugitiveVOC} \times \frac{weight\ fraction_{CO2}}{weight\ fraction_{VOC}}$

where:

 $E_{fugitive\ CO2}$ is the total fugitive CO₂ emissions per well [ton/well]

 $E_{fugitive\ CH4}$ is the total fugitive CH₄ emissions per well [ton/well]

Weight fractions per pollutant are based on the Chapita Wells EIS

Annual fugitive emissions were calculated using Equation 26, and the scaling surrogate was the active well count.

Equation (26):
$$E_{fugitive\ dev.,i} = E_{fugitive\ i} \times S_{well\ count}$$
 where:

 $E_{fugitive\ dev.,\ i}$ are the annual emissions for pollutant i [tons/yr]

 $E_{fugitive\ i}$ are fugitive emissions of pollutant i per well [ton/well]

 $S_{well\ count}$ is the number of active well counts for a particular year [wells/yr]

Pneumatic Devices

Pneumatic devices present at wells are assumed to be liquid level controllers, snap pilot, and trace pumps. Activity data and bleed rates (in cubic feet per hour) for each of these were based on the Greater Chapita Wells EIS (Alpine Geophysics and Environ 2016, Appendix J, pp 26–49). The snap pilot is a no-bleed device, and the trace pump emissions are routed to the heater. Therefore, emissions are only estimated for the liquid level controller. VOC emissions were estimated using the annual volume of vented gas, the VOC molar fraction present in the gas, and the weight percentage of each pollutant species present in the gas.

The emissions calculation for VOC is based on the ideal gas law and is shown in Equation 27.

Equation 27:
$$E_{pneum.device,VOC} = \frac{(V \times Y_{VOC} \times 28.317) \times P}{R \times T} \times \frac{MW_{VOC}}{907.185}$$

where:

 $E_{pneum,device,VOC}$ is the annual VOC emissions per well [tons/yr]

Vis the annual volume of gas vented per well [MCF/yr]

 Y_{VOC} is the molar fraction of VOC in the vented gas [percentage]

28.317 is the volume unit conversion [1000L/MCF]

P is the pressure of the gas [atm]

R is the ideal gas constant [L-atm/mol-K]

T is the temperature of the gas [K]

 MW_{VOC} is the average molecular weight of VOCs in the gas [g/mol]

907.185 is the mass unit conversion [kg/ton]

CO₂ and CH₄ emissions were calculated based on Equations 28 and 29.

Equation (28):
$$E_{pneum.device,CH4} = E_{pneum.device,VOC} \times \frac{weight\ fraction_{CH4}}{weight\ fraction_{VOC}}$$

Equation (29):
$$E_{pneum.device,CO2} = E_{pneum.device,VOC} \times \frac{weight\ fraction_{CO2}}{weight\ fraction_{VOC}}$$

where:

Epneum.device,CO2 is the total pneumatic device CO2 emissions per well [ton/well]

Epneum.device,CH4 is the total pneumatic device CH4 emissions per well[ton/well]

Weight fractions per pollutant of vapor losses are based on the Chapita Wells EIS

Field-wide annual pneumatic device emissions were derived using Equation 30.

Equation (30):
$$E_{pneum.device} = E_{pneum.device,i} \times S_{well\ count}$$

where:

 $E_{pneum.device}$ are the annual completion venting emissions of pollutant i [tons/yr]

*E*_{pneum.device, i} is the venting emissions of pollutant i per activity [tons/well]

S_{well count} is the scaling surrogate for initial completions [wells/yr]

Chemical Injection Pneumatic Pumps

No emissions have been estimated for chemical injection pneumatic pumps, as all pump emissions are assumed routed to the separator burner.

Tank Load-out

This source category corresponds to condensate load-out emissions, which were estimated based on the loading loss methodology outlined in AP-42 guidance (EPA 2008). Condensate is loaded to trucks for each well pad. The loading loss rate was estimated following Equation 31:

Equation (31):
$$L = 12.46 \times \left(\frac{S \times V \times M}{T}\right)$$

where:

L is the loading loss rate [lb/1000 gal]

S is the saturation factor taken from AP-42 default values based on operating mode

Vis the true vapor pressure of liquid loaded (pound per square inch absolute [psia])

M is the molecular weight of the vapor [lb/lb-mole]

T is the temperature of the bulk liquid (degrees Rankine [°R])

12.46 is an empirical factor in units of [lb-mol. °R/psia.103 gal]

VOC tank loading emissions per barrel of condensate loaded were then estimated by Equation 32.

Equation (32):
$$E_{loading,VOC} = L \times Y_{VOC} \times \frac{42}{2000}$$

where:

 $E_{loading}$ are the VOC tank loading emissions [ton/barrel]

L is the loading loss rate [lb/1000gal]

 Y_{VOC} is the molar fraction of VOC in the vapor

42 is a unit conversion [gal/bbl]

2000 is a unit conversion [lbs/ton]

 CO_2 and CH_4 emissions per barrel of condensate loaded were calculated based on Equations 33 and 34.

Equation (34):
$$E_{loading,CH4} = E_{loading,VOC} \times \frac{weight fraction_{CH4}}{weight fraction_{VOC}}$$

Equation (35):
$$E_{loading,CO2} = E_{loading,VOC} \times \frac{weight fraction_{CO2}}{weight fraction_{VOC}}$$

where:

 $E_{loading,CO2}$ is the total loading CO₂ emissions per barrel of condensate [ton/bbl]

Eloading CH4 is the total loading CH4 emissions per barrel of condensate [ton/bbl]

Weight fractions per pollutant of vapor losses are based on Chapita Wells EIS

Annual emissions per pollutant *i* from truck loading were scaled by annual condensate production using Equation 36.

Equation (36):
$$E_{tank\ loadout,i} = E_{loading,i} \times S_{bbl\ condensate}$$

where:

 $E_{tank\ loadout,\ i}$ are the annual emissions for pollutant i from tank load-out [ton/yr]

 $E_{loading, i}$ are the emissions for pollutant *i* from loading per barrel [ton/bbl]

S_{bbl condensate} is the total annual amount of barrels condensate produced for wells [bbl/yr]

Production Flaring

Production flaring emissions result from the control of losses from condensate tank flashing and dehydrators via combustion. Emissions estimations are based on AP-42 guidance (EPA 1991), condensate tank data for flashing loss rates (scf/bbl), Gas Research Institute glycol units (GLYCalc) model was used for regenerator stream losses, and venting gas heat content. Emission factors for NO $_{\rm X}$ and CO are based on AP-42, Chapter 13, Section 13.5, Table 13.5-1. The natural gas flaring speciation profile (0051) from EPA's SPECIATE database was used to determine the weight fractions of CH $_{\rm A}$ /total hydrocarbon (THC) and VOC/THC in the flared gas; emissions factors for VOC and CH $_{\rm A}$ were calculated with the AP-42 emission factor for THC multiplied by the appropriate fraction. The SPECIATE profile was also used to determine the VOC speciation. The N $_{\rm 2}$ O emission factor was obtained from the API Compendium of

Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry (API 2009). The activity or event basis differs among production flaring sources as shown in Table 4.

Table 4. Activity Metric and Scaling Surrogates for Production Flaring Sources

Flaring Source	Activity (metric)	Scaling surrogate
Condensate Tank Flashing Flaring	Barrels	Annual Condensate Production
Dehydrator Flaring	Number of dehydrators	Number of dehydrators

To estimate flaring emissions by pollutant and source, condensate tank and dehydrator losses per activity (scf/activity) were combined with the heat content of the flared gas (million British thermal units [MMBtu]/scf) and the appropriate emission factor (lb/MMBtu) to determine NOx, VOC, particulate matter, CO, CH₄, and N₂O emissions according to the AP-42 methodology, following Equation 37. Flared volume from condensate tanks was estimated based on emissions data from the E&P Tank model for condensate tanks and from Gas Research Institute GLYCalc model output for dehydrators.

Equation (37):
$$E_{source\ flare,i} = \frac{EF_i \times Q \times HV \times PC}{2000}$$

where:

 $E_{flashing\ flare}$ is the flaring emissions of pollutant *i* per activity metric [ton/activity]

 EF_i is the emissions factor for pollutant i [lb/MMBtu]

Q is the volume of gas flared per activity [scf/activity]

HV is the heating value of the gas (~ 2.0E-03) [MMBtu/scf]

2000 is a unit conversion [lbs/ton]

PC is the fraction of the production losses that are controlled by flaring

Because no flaring emission factor for CO_2 was available, CO_2 completion flaring emissions were calculated from CO_2 emissions potential of the flared gas, according to Equations 38 through 40.

Equation (38): E source flare $_{CO2} = (Total\ CO_2\ Emissions\ Potential\ of\ Entire\ Gas - <math>CO_2\ Emissions\ Potential\ of\ THC - CO_2\ Emissions\ Potential\ of\ CO) \times Production\ Control$ where:

E source flare_{CO2}, Total CO₂ Emissions Potential of Entire Gas, Total CO₂ Emissions Potential of THC and Total CO₂ Emissions Potential of CO are in units of [tons/activity]

E source flare_{CO2} is carbon dioxide emissions from a specific production flaring source

Production Control is the fraction of production gas that is flared over gas that is vented Equation (39):

$$\begin{aligned} &CO_2 \ Emissions \ Potentials \ from \ THC \ \left(\frac{tons}{activity}\right) \\ &= \sum \frac{\left(\frac{lb \ emitted \ of \ compount \ i}{activity}\right)_i \times \frac{No. \ of \ Moles \ of \ C \ in \ compound \ i}{No. \ of \ Moles \ of \ C \ in \ CO2} \times MW \ of \ CO_2 \ \left(\frac{lb}{lb - mol}\right)}{MW \ of \ compound \ (lb/lb - mol) \ \times \ 2000} \end{aligned}$$

Equation (40):

$$\begin{split} &CO_2 \ \textit{Emissions Potentials from CO} \ \left(\frac{\textit{tons}}{\textit{activity}}\right) \\ &= \frac{\textit{CO emissions from flaring} \left(\frac{\textit{lb}}{\textit{activity}}\right) \times \frac{\textit{No. of Moles of C in CO}}{\textit{No. of Moles of C in CO2}} \times \textit{MW of CO}_2 \left(\frac{\textit{lb}}{\textit{lb-mol}}\right) \\ &= \frac{\textit{MW of CO} \left(\textit{lb/lb-mol}\right) \times 2000 \end{split}$$

where:

 $Compound\ i$ refers to each compound identified in flaring gas speciation profile: (Ib emissions emitted/activity) = total organic gas emissions (Ib/activity) from flaring x weight fraction of the compound

Production flaring emissions by source were scaled according to Equation 41 to calculate annual flaring emissions.

Equation (41):
$$E_{prod.flaring,source,i} = E_{source\,flare,i} \times S_{activity}$$
 where:

 $E_{prod,flaring, source,i}$ are the annual production flaring emissions by source of pollutant i [ton/yr]

 $E_{source\ flare}$ is the flaring emissions of pollutant *i* per activity [ton/activity]

 $S_{activity}$ is the scaling surrogate for the flaring source category according to Table 4 [activity/yr]

Associated Gas Flaring

This source category refers to the emissions that would result during the flaring of associated natural gas with production. When petroleum crude oil is extracted, raw natural gas associated with the petroleum is also brought to the surface of the well. It is assumed that half (seven) of the constructed wells would flare associated gas. The volume (MCF) of gas flared per year is based on historical gas production data for the surrounding Upper Valley oil field (BLM 2018b). Emission factors for CAPs and GHGs were taken from the Wyoming Department of Environmental Quality's *Oil and Gas Production Facilities – Chapter 6, Section 2, Permitting Guidance* as well as AP-42, Table 1.4-2 (WDEQ 2013; EPA 1998a). Emission factors for these pollutants were converted to tons per MCF and then multiplied by the gas flared per well (MCF per year) to calculate the associated gas flaring emissions for each well, as shown in Equation 42.

Equation (42):
$$E_{flaring,i} = \frac{EF_i \times Q_y}{2000 \times 1.037}$$

where:

 $E_{flaring, i}$ are flaring emissions of pollutant *i* per well [tons/yr]

 EF_i is the emission factor of pollutant i [lb/MMBtu]

Q is the volume of gas flared in y year of production [MCF]

2000 is the mass unit conversion factor [lb/ton]

1.037 is the natural gas conversion factor [MMBtu/MCF]

Annual flaring emissions were calculated using Equation 43. The scaling surrogate was the active flaring well count.

Equation (43):
$$E_{flaringTOTAL,i} = E_{flaring,i} \times S_{flaring\ well\ count}$$
 where:

 $E_{flaringTOTAL, i}$ are the annual flaring emissions for pollutant i from all wells [tons/yr]

 $E_{flaring, i}$ are flaring emissions of pollutant i per well [tons/yr]

S_{flaring well count} is the number of active flaring wells for a particular year [wells/yr]

Associated Gas Venting

This source category refers to the emissions that would result during the venting of associated natural gas with production. In contrast to gas flaring, gas venting is the intentional safe release, without combustion of associated gas into the Earth's atmosphere. It is assumed that half (seven) of the constructed wells would vent associated gas. The volume (MCF) of gas vented per year is based on historical gas production data for the surrounding Upper Valley oil field (BLM 2018b). Emission factors for CAPs and GHGs were taken from the Wyoming Department of Environmental Quality's *Oil and Gas Production Facilities – Chapter 6*, Section 2, Permitting Guidance as well as AP-42, Table 1.4-2 (WDEQ 2013; EPA 1998a). Emission factors for these pollutants were converted to tons per MCF and then multiplied by the gas vented per well (MCF per year) to calculate the associated gas venting emissions for each well in a particular year, as shown in Equation 44.

Equation (44):
$$E_{venting,i} = \frac{EF_i \times Q_y}{2000 \times 1.037}$$

where:

 $E_{venting, i}$ are venting emissions of pollutant i per well [tons/yr]

 EF_i is the emission factor of pollutant i[lb/MMBtu]

Q is the volume of gas vented in y year of production [MCF]

2000 is the mass unit conversion factor [lb/ton]

1.037 is the natural gas conversion factor [MMBtu/MCF]

Annual venting emissions were calculated using Equation 45. The scaling surrogate was the active venting well count.

Equation (45):
$$E_{ventingTOTAL,i} = E_{venting,i} \times S_{venting\ well\ count}$$
 where:

E_{venting TOTAL}, i are the annual venting emissions for pollutant i from all wells [tons/yr]

 $E_{ventinging, i}$ are venting emissions of pollutant i per well [tons/yr]

 $S_{venting\ well\ count}$ is the number of active venting wells for a particular year [wells/yr]

Produced Condensate Combustion

This source category refers to the emissions that would result during the downstream consumed combustion of produced condensate. Because produced oil could be combusted

anywhere, the precise location of combustion emissions is not able to be determined. Accordingly, emissions of localized CAPs and HAPs are not calculated for produced condensate combustion. However, given that GHGs have a global impact and are non-localized pollutants, GHG emissions from produced condensate combustion are included in the GHG inventory. The amount of barrels of condensate produced per year is based on historical gas production data for the surrounding Upper Valley oil field. GHG emission factors for condensate combustion were taken from Climate Registry guidance (The Climate Registry 2017). Emission factors for these pollutants were converted to tons per bbl and then multiplied by the condensate produced per year to calculate the annual condensate combustion emissions for a particular year, as shown in Equation 46. The scaling surrogate was the annual condensate production.

Equation (46):
$$E_{condensate,i} = \frac{EF_i \times S_{bbl\ condensate,y} \times 6,287,000}{907,185}$$

where:

 $E_{condensate, i}$ are emissions of pollutant i [tons/yr]

 EF_i is the emission factor of pollutant i[g/MMBtu]

 $S_{bbl\ condensate}$ is the total annual amount of barrels condensate produced for all wells in a particular year y [bbl/yr]

6,287,000 is the residual fuel conversion factor (Btu/bbl) (Energy Information Administration 2017)

907,185 is the mass unit conversion [g/ton]

Near-Field Modeling Analyses

Air Ouality Modeling Methodology

A near-field ambient air quality impact assessment was performed to quantify maximum pollutant impacts within and near the Planning Area resulting from reasonably foreseeable development-related construction and production emissions. Air quality impacts due to CAP emissions of PM $_{10}$, PM $_{2.5}$, NOx, SO $_{2}$, and CO, and emissions of HAPs (benzene, toluene, ethyl benzene, xylene, and n-hexane), were evaluated as part of the near-field study. Potential air quality impacts resulting from emissions associated with Project drilling and production activities were compared to applicable ambient air quality standards and significance thresholds. All modeling analyses were performed in general accordance with the GSENM Air Quality Impact Assessment Modeling Protocol (ICF 2018), which was developed with input from the Utah Division of Air Quality, BLM, and other stakeholders, including the EPA.

Based on review of the emissions inventory and the relatively small estimate of oil and gas development, far-field modeling was not performed at this time. If development activity exceeds what was anticipated in the EIS, additional cumulative far-field modeling may be required per the lease notice (Appendix H, Stipulations and Exceptions, Modifications, and Waivers) and BLM's adaptive management strategy (Appendix I, Monitoring Strategy).

In accordance with the EPA's *Guidelines on Air Quality Models* (Appendix W to 40 CFR Part 51; EPA 2017), this near-field ambient air quality impact assessment was carried out using the latest available version of AERMOD (version 18081). Maximum pollutant impacts within and near the Planning Area due to emissions of CAPs were determined. These modeled near-field

Project impacts were added to background concentrations of the criteria pollutants to calculate total ambient air quality impacts for comparison with the NAAQS, which have been adopted by the State of Utah as the Utah Ambient Air Quality Standards (UAAQS).

Ozone is also a criteria pollutant and may form from NO_X , VOC, and CO emissions in the presence of sunlight. Similarly, some portion of fine particulate matter, $PM_{2.5}$ is formed in the atmosphere from the gas-phase emissions of SO_2 and NO_X forming sulfate and nitrate particles. The analyses for the ozone impacts and secondary particulate matter formation have been made following the EPA's Modeled Emissions Rates for Precursors (MERP) guidance (EPA 2016). While this guidance was developed under the PSD permitting program, the methodology is applicable as a screening level tool for this study.

Short- and long-term impacts due to HAPs (benzene, toluene, ethyl benzene, xylene, and n-hexane) were also evaluated. Emissions of each pollutant analyzed were examined to determine: (1) the maximum emissions during well/field development and (2) the maximum emissions during production. The maximum criteria pollutant (CO, NOx, SO2, PM10, and PM2.5) impacts would occur during well development and production activities and from combinations of these activities. The maximum HAP impacts would occur during production activities.

Model Configuration

AERMOD was applied using 5 years of meteorological data and incorporating emissions separately from each of the three reasonably foreseeable project locations. Modeling scenarios examine the impacts of emissions from the maximum emission for the coal mining and oil and gas development.

Within AERMOD, sources can be treated as point, volume, or area sources. For this analysis, stacks associated with equipment with an hp rating greater than 600 such as drilling rigs were modeled as point sources. Operations such as crushing and conveyor transfer are treated as volume sources. Emission sources related to construction zones, unpaved roadways, and areas subject to wind erosion (stockpiles) are treated as area or volume sources. Similarly, grading, loading, and unloading operations are treated as area or volume sources. Vehicles on roadways are modeled as line sources.

For Tier III NO_X to NO_2 screening modeling, use of hourly ozone concentrations for the same time period as the meteorological data is ideal. These data were not readily available; however, the last 6 months of hourly ozone data from 2017 were available from Escalante, along with the highest measured 4 hours per year from Zion and Capitol Reef National Park (2014–2017). In 2017, only 4 hours were higher than 70 parts per billion (ppb) at Escalante, and Zion has only 2–3 hours per year (2014–2017) that exceeded 70 ppb. We have therefore assumed that 70 ppb is a reasonably conservative ozone value to use in the Tier III NO_X to NO_2 screening modeling.

Topographical Data

The terrain in the Planning Area consists of canyons and mesas with wide variations in elevation. As locations for the sources are not known, digital topographical data (in the form of 7.5 minute Digital Elevation Model files) at 1 arc second ~ 90-meter horizontal resolution were used for the analysis region as available from the U.S. Geological Survey and processed for use in AERMOD using the AERMAP preprocessor program (version 18081) (EPA 2018a).

Meteorology Data and Land-Use Data

For the reasonably foreseeable oil and gas well development near Bryce Canyon National Park, 5 years of hourly meteorological data were used for the near-field analysis. All 5 years of surface observations were collected at the Bryce Canyon Airport National Weather Service (NWS) meteorological station (37.706° N , 112.145° W, elevation 7,585 feet) (Figure 1), and includes using 1-minute Automated Surface Observing System wind data to better account for calm wind conditions. Upper-air data for the same time period from Grand Junction, CO were used in developing the vertical atmospheric profile. This was considered more representative than the Flagstaff, AZ upper-air station. This site has a strong dominant wind direction from the west with a high percentage of calm conditions.

For the reasonably foreseeable oil and gas well development near Escalante, UT, onsite surface wind data (2012–2016) from Spooky Gulch, UT (Figure 2) (37.51468° N, 111.26189° W, elevation 5,340 feet) were used in lieu of wind data from Bryce Canyon Airport, as this site is closer to the potential oil and gas play near Escalante. Precipitation data are available for Spooky Gulch from 2014–2016. The wind rose shows two prevailing wind directions (Figure 2) from the north-northwest and southeast direction. The prevailing winds from north-northwest and southeast are likely driven by mesoscale wind patterns resulting from terrain thermal differences. There is a third mode from the southwest with higher wind speeds, which is likely synoptic winds driven by pressure gradients from storm systems.

For the reasonably foreseeable coal mine development, surface observational data (2012–2016) from Page, AZ (36.926° N, 111.448° W, elevation 4,316 feet) were used in lieu of Bryce Canyon surface data (Figure 3). This dataset was developed by Arizona DEQ for use in air quality modeling studies. The wind rose shows a very different wind flow pattern with a much less distinct prevailing wind direction.

The meteorological inputs for AERMOD were generated using the AERMOD Meteorological Processor (AERMET) program (EPA 2018b) for the Spooky Gulch and Bryce Automated Surface Observing System data. AERMET requires additional information about the land-use characteristics of the area in which the surface meteorological monitoring site is located. This information was obtained using the AERMOD preprocessor program AERSURFACE preprocessor extracting digital U.S. Geological Survey land-use National Land Cover Dataset 1992 (NLCD92) format.

Further details on the site-specific processing for Bryce Canyon Airport and Spooky Gulch are provided as follows.

Bryce Airport AERMET Processing

Meteorological data used in the creation of the Bryce Airport AERMET meteorological dataset for input to AERMOD are summarized in Table 5.

Table 5. Meteorological Data for AERMET Processing at the Bryce Airport Site

Site ID	Site Name	Latitude	Longitude	Elevation (meters)	Source of Data
23159/KBCE	Bryce Canyon Airport	37.706	-112.145	2,313	Hourly Data: 2013–2017: ftp://ftp.ncdc.noaa.gov/pub/dat a/noaa/

Site ID	Site Name	Latitude	Longitude	Elevation (meters)	Source of Data
23293/KBCE	Bryce Canyon Airport	37.706	-112.145	2313	1-minute ASOS data: ftp://ftp.ncdc.noaa.gov/pub/dat a/asos-onemin/
23066/GJT	Grand Junction	39.12	-108.53	1472	http://esrl.noaa.gov/raobs/
046336	Bryce Canyon National Park Headquarters	37.65	-112.167	2410	https://wrcc.dri.edu/cgi- bin/cliMAIN.pl?ut1008

ASOS - Automated Surface Observing System

The NWS surface data at the Bryce Canyon Airport for the period 2013–2017 were used to represent the surface meteorological conditions near Bryce Canyon modeling. The 1-minute Automated Surface Observing System (ASOS) data were processed using AERMINUTE to provide the equivalent of onsite wind data and the remaining surface meteorological data were obtained from the 1-hour standard, Integrated Hourly Surface Data files. The precipitation data from the Bryce Canyon National Park Headquarters Climate Station were used to determine surface moisture conditions to be used in AERSURFACE, and the data from the Grand Junction upper air radiosonde site were used to represent conditions aloft.

For AERSURFACE

NLCD92 was downloaded from http://landcover.usgs.gov/natllandcover.php and used with version 13016 of AERSURFACE to provide the surface parameters needed for the third stage of AERMET.

The coordinates of the Bryce Canyon Airport site were used in the determination of surface characteristics in AERSURFACE. AERSURFACE was run with the specifications that the area was not arid, there were one or more months with snow cover, and the site was at an airport. Twelve sectors were used for processing to account for variations in land cover near the measurement site.

The study radius for surface roughness was set at 1 kilometer. The monthly seasonal profile used is provided in Table 6.

Table 6. Monthly Seasonal Profile at the Bryce Canyon Airport Site

Months	Season
November, December	Late autumn after frost and harvest, or winter with no snow
January, February, March	Winter with continuous snow
April, May, June	Transitional spring with partial green coverage or short annuals
July, August	Midsummer with lush vegetation
September, October	Autumn with unharvested cropland

AERSURFACE was run separately specifying dry, average, and wet surface moisture and the results were later used to create composite surface characteristics for the third stage of AERMET.

<u>Determination of Dry, Average, and Wet Months for the Analysis Period</u>

Based on information provided in the AERSURFACE User's Guide, each month in the modeling period was classified as either dry, average, or wet, and this information was later used in Stage 3 of AERMET.

The rainfall data for the Bryce Canyon National Park Headquarters for the 30-year period ending 2017 were gathered and 30-year monthly averages were computed for each month from 2013 through 2017. The monthly statistics for a given month were not used in the average if more than 5 days were missing in a given month. The next step was to compute the ratio of the monthly precipitation total for a given month during the modeling period and the corresponding 30-year monthly average. If the ratio was less than 0.5, the month was designated as dry. If the ratio was greater than or equal to 0.5 but less than 2, then the month was designated as average. If the ratio was greater than or equal to 2, then the month was designated as wet.

Table 7 provides the information for the moisture classification of the region.

Table 7. Monthly Moisture Classification at the Bryce Canyon National Park Headquarters Site

		Moisture Classification										
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2013	dry	dry	avg	dry	avg	dry	wet	wet	wet	dry	avg	dry
2014	dry	avg	dry	dry	avg	dry	avg	avg	wet	dry	dry	dry
2015	avg	avg	avg	dry	avg	dry	avg	avg	avg	wet	avg	wet
2016	avg	avg	dry	avg	avg	avg	avg	avg	wet	dry	avg	dry
2017	avg	avg	dry	dry	dry	dry	wet	avg	avg	dry	dry	dry

avg - average

Insufficient data for January 2017 were available to compute the monthly average; as such, based on the classification of the month prior and the month following, an average classification was assigned to that month.

AERMINUTE

AERMINUTE Version 15272 was run using the 1-minute ASOS data for the Bryce Canyon Airport to create the hourly average wind data for input to AERMET in Stage 2.

AERMET

Version 18081 of AERMET was used in the analysis.

Stage 1

Data from the Grand Junction upper-air station were used for the upper air portion of the processing. Data from the Bryce Canyon Airport were used for the surface portion of the processing. Stage 1 was run for the entire period from 2013–2017.

Stage 2

This step was a simple merging of the quality assurance files produced from Stage 1 as well as the hourly wind data created by AERMINUTE. Stage 2 was run for the entire period from 2013–2017.

Stage 3

The flags for this step were set as follows:

- Substitute NWS option was turned on, which allows for the processing and substitution of NWS data.
- Wind direction was randomized when NWS wind directions were used.
- Cloud cover substitution from the NWS site was used in the analysis.
- Temperature substitution from the NWS site was used in the analysis.

Stage 3 was run separately for each of the 5 years. The surface characteristics portion of the input files was created by using the AERSURFACE output corresponding to the moisture characteristics of each month/year.

Quality Assurance/Quality Control

The message and report files were checked for error messages. The cause of any error message was corrected and the model was rerun. For the final runs, no error messages remained. Warning messages were also reviewed and noted. There were no data modifications made based on warning messages.

Spooky Gulch AERMET Processing

Meteorological data used in the creation of the Spooky Gulch AERMET data for input to AERMOD are summarized in Table 8.

Table 8. Meteorological Data Used for AERMET Processing at Spooky Gulch Site

Site ID	Site Name	Latitude	Longitude	Elevation (meters)	Source of Data
23159/KBCE	Bryce Canyon Airport	37.706	-112.145	2,313	Hourly Data: 2012-2016: ftp://ftp.ncdc.noaa.gov/pub/data/noaa/
23293/KBCE	Spooky Gulch	37.514	-112.261	1,627	Provided by BLM (5/14/2018). Data available for download from https://mesowest.utah.edu.
23066/GJT	Grand Junction	39.12	-108.53	1,472	http://esrl.noaa.gov/raobs/
422592	Escalante	37.767	-112.60	1,771	https://wrcc.dri.edu/cgi- bin/cliMAIN.pl?ut2592

BLM - Bureau of Land Management

The onsite wind speeds and wind directions at the Spooky Gulch site for the period from 2012–2016 were used to represent the onsite wind conditions. The NWS surface data at the Bryce Canyon Airport for the period from 2012–2016 were used to represent the remaining surface meteorological conditions. During the AERMET processing, these data were also used to fill in for any missing wind data from the Spooky Gulch site. The precipitation data from the Escalante climate station were used to determine surface moisture conditions to be used in AERSURFACE, and the data from the Grand Junction upper air radiosonde site were used to represent conditions aloft.

For AERSURFACE

NLCD92 was downloaded from http://landcover.usgs.gov/natllandcover.php and used with version 13016 of AERSURFACE to provide the surface parameters needed for the third stage of AERMET.

The coordinates of the Spooky Gulch site were used in the determination of surface characteristic in AERSURFACE. AERSURFACE was run with the specifications that there were one or more months with snow cover, and the site was not at an airport. Twelve sectors were used for processing to account for variations in land cover near the measurement site.

The study radius for surface roughness was set at 1 kilometer. The monthly seasonal profile used is provided in Table 9.

Table 9. Monthly Seasonal Profile for Spooky Gulch
--

Months	Season
November, December	Late autumn after frost and harvest, or winter with no snow
January, February, March	Winter with continuous snow
April, May, June	Transitional spring with partial green coverage or short annuals
July, August	Midsummer with lush vegetation
September, October	Autumn with unharvested cropland

AERSURFACE was run separately specifying dry, average, and wet surface moisture and the results were later used to create composite surface characteristics for the third stage of AERMET.

Determination of Dry, Average, and Wet Months for the Analysis Period

Based on information provided in the AERSURFACE User's Guide, each month in the modeling period was classified as either dry, average, or wet, and this information was later used in Stage 3 of AERMET.

The rainfall data for the Escalante Climate site for the 30-year period ending 2016 were gathered and 30-year monthly averages were computed for each month from 2012 through 2016. The monthly statistics for a given month were not used in the average if more than 5 days were missing in a given month. The next step was to compute the ratio of the monthly precipitation total for a given month during the modeling period and the corresponding 30-year monthly average. If the ratio was less than 0.5, the month was designated as dry. If the ratio

was greater than or equal to 0.5 but less than 2, then the month was designated as average. If the ratio was greater than or equal to 2, then the month was designated as wet.

Table 10 provides the information for the moisture classification of the region.

Table 10. Monthly Moisture Classification at the Escalante Climate Site

		Moisture Classification										
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	avg	dry	dry	dry	dry	dry	wet	avg	avg	avg	dry	avg
2013	avg	dry	avg	dry	avg	dry	avg	wet	wet	dry	wet	dry
2014	dry	dry	avg	dry	avg	dry	avg	avg	wet	dry	dry	dry
2015	avg	avg	avg	dry	avg	avg	avg	wet	avg	wet	dry	dry
2016	avg	avg	dry	avg	dry	dry	avg	avg	wet	dry	avg	avg

avg - average

AERMET

Version 18081 of AERMET was used in the analysis.

Stage 1

Data from the Grand Junction upper-air station were used for the upper air portion of the processing. Data from the Bryce Canyon Airport were used for the surface portion of the processing, and the wind data from Spooky Gulch were used for the onsite portion of the processing. Stage 1 was run for the entire period from 2012–2016.

Stage 2

This step was a simple merging of the quality assurance files produced from Stage 1. Stage 2 was run for the entire period from 2012–2016.

Stage 3

The flags for this step were set as follows:

- Substitute NWS option was turned on, which allows for the processing and substitution of NWS data.
- Wind direction was randomized when NWS wind directions were used.
- Cloud cover substitution from the NWS site was used in the analysis.
- Temperature substitution from the NWS site was used in the analysis.

Stage 3 was run separately for each of the 5 years. The surface characteristics portion of the input files was created by using the AERSURFACE output corresponding to the moisture characteristics of each month/year.

Quality Assurance/Quality Control

The message and report files were checked for error messages. The cause of any error message was corrected and the model was rerun. For the final runs, no error messages

remained. Warning messages were also reviewed and noted. There were no data modifications made based on warning messages.

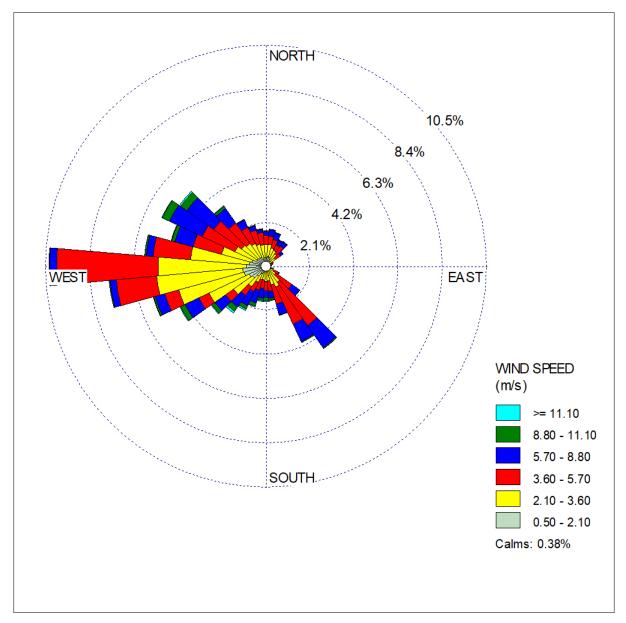


Figure 1. Wind Rose for Bryce Canyon Airport, UT Monitoring Site 2013-2017

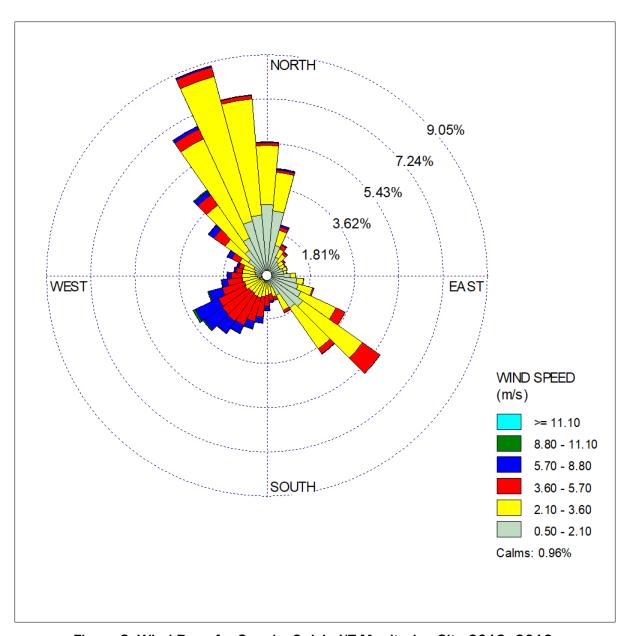


Figure 2. Wind Rose for Spooky Gulch, UT Monitoring Site 2012–2016

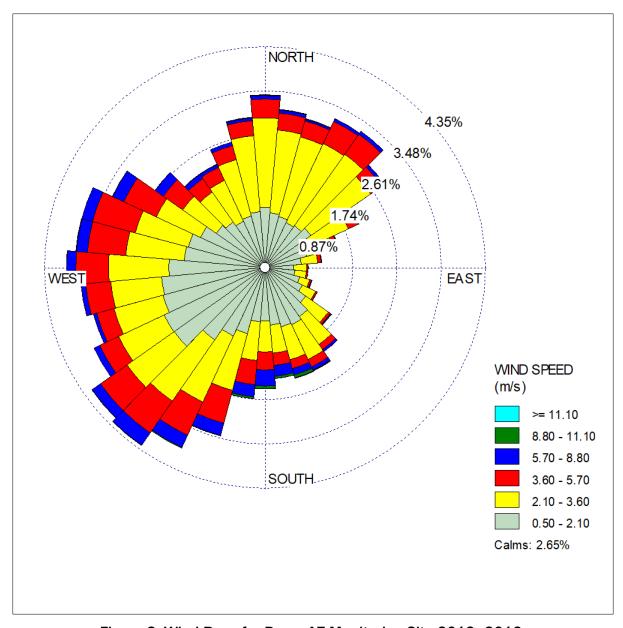


Figure 3. Wind Rose for Page, AZ Monitoring Site 2012–2016

Background Pollutant Concentrations

Total pollutant concentration is the sum of the modeled-derived impacts plus background pollutant concentrations for the region. The background concentrations include all of the sources currently existing. Background concentrations should be representative of the regional air quality in the vicinity of the Planning Area. Specification of the background monitored data was based on the following factors: (1) monitor location; (2) data quality (90 percent completeness criteria each quarter); and (3) how current the data are. Not all pollutants of interest are measured at all air quality monitoring sites. Discussed below is the underlying rationale for the selection of the representative background monitors used in this analysis. The final air quality monitoring stations selected for the background concentration levels are summarized in Table 11.

Ozone monitoring has been conducted in Escalante for at least the past 3 years. This location is the central-northern part of the Planning Area and is likely the most representative ozone monitoring for the area. These data are used in the ozone limiting method for use in AERMOD.

The background values for PM_{10} and $PM_{2.5}$ from the 3 most recent years are used from the Interagency Monitoring of Protected Visual Environments monitoring station, which is about 20 kilometers (13 miles) from KEPA. This site, located within Bryce Canyon National Park, is the most representative of the regional background particulate matter monitoring stations. The metrics are calculated consistent with the form of the standard for each pollutant and averaging period. The 24-hour PM_{10} concentration is the maximum over the 3-year period of the second-highest 24-hour average concentration. The 24-hour $PM_{2.5}$ concentration is the average over the 3-year period of the annual average concentration.

The background concentration for NO_2 is only monitored in a few locations in southern Utah. The nearest site is in Hurricane, UT and its peak values are only slightly higher than more rural locations where monitoring is done in northern Utah. This site is used as a conservative estimate of the background NO_2 concentration.

Finally, no SO₂ or CO monitoring is performed in southern Utah. Discussions with Utah DEQ recommended the following values as representative background concentration: 1 part per million (11,164 micrograms per cubic meter [μ g/m³]) for 1-hour and 8-hour CO and 25 μ g/m³ for 1-hour and 3-hour SO₂.

Pollutant	Averaging Period	NAAQS (µg/m³)	Background Concentration (µg/m³)	Background Monitor
PM ₁₀	24-hour(1)	150	18.2	Bryce Canyon National Park (2014-2016)
PM _{2.5}	24-hour ⁽²⁾	35	13.4	Bryce Canyon National Park (2014–2016)
	Annual ⁽³⁾	12	2.2	Bryce Canyon National Park (2014-2016)
NO ₂	1-hour(4)	188	45.9	Hurricane, Utah
	Annual ⁽⁵⁾	100	4.4	Hurricane, Utah
SO ₂	1-hour ⁽⁶⁾	196	66.5	Utah DEQ estimated
	3-hour ⁽⁷⁾	1,310	66.5	Utah DEQ estimated
O ₃	8-hour ⁽⁸⁾	137	135.7	Escalante, Utah (2015/2017)
СО	1-hour(9)	40,000	1,164	Utah DEQ estimated
	8-hour(10)	10,000	1,164	Utah DEQ estimated

¹ Maximum of the second highest 24-hour average PM₁₀ concentration, for the most recent 3 years (2014-2016)

² Average of the 98th percentile of the 24-hour average PM_{2.5} concentration, for the most recent 3 years (2014–2016)

³ Average of the annual average PM_{2.5} concentration, for the most recent 3 years (2014–2016, however Q4 for 2016 only 47 percent complete)

⁴ Average of the 98th percentile of the 1-hour daily maximum NO₂ concentration, for the most recent 3 years (2015–2017)

⁵ Maximum annual mean concentration NO₂ concentration, for the most recent 3 years. (Here 2015-2017)

⁶ Average of the 99th percentile of the 1-hour daily maximum concentration SO₂ concentration, for most recent 3 years

^{7 1-}hour value used

⁸ Average of the annual fourth-highest daily maximum 8-hour average ozone concentration, for the most recent 3 years (2015 and 2017 as insufficient data for 2016)

⁹ Maximum 1-hour CO concentration during the most recent 3 years (8-hour non-overlapping)
 ¹⁰ Maximum 8-hour (non-overlapping) CO concentration for the most recent 3 years
 NAAQS – National Ambient Air Quality Standard, μg/m³ – microgram per cubic meter, PM₁₀ – particulate matter 10 microns or smaller in size, PM_{2.5} – particulate matter 2.5 microns or smaller in size, NO₂ – nitrogen dioxide, SO₂ – sulfur dioxide, O₃ – ozone, CO – carbon monoxide

Receptor Placement

As discussed, the objective for this study is to estimate air quality impacts for reasonably foreseeable development on KEPA, on the three GSENM units, nearby Class I areas, nearby population centers, and Class II areas of interest. Should future development actually be proposed, the NEPA and air permitting processes would require the applicant conduct a detailed air quality analysis in the immediate vicinity using site-specific details and project specific emissions.

After reviewing the meteorological data and the potential reasonable foreseeable development types, three areas were proposed for near-field air quality modeling for this study.

- 1. The development of a coal mine is most likely to take place at the location of the former Smokey Hollow lease area. This location is at the southern end of the Kaiparowits Unit. This location is more than 50 kilometers from Escalante and wind field air flows appear are substantially different than in the Bryce Canyon or Escalante area. Therefore, a separate AERMOD simulation was performed using Page, AZ meteorological data and with a receptor grid focused on Class I and Class II areas as well as the nearby community of Big Water and along roadways in the vicinity of the reasonably foreseeable mine location.
- 2. The development of the oil and gas wells has the highest potential for recoverable oil in locations from the Permo Triassic Unconformity Play as reported in the *Mineral Potential Report* (BLM 2018a). This covers a broad number of areas surrounding the three separate monument units. The nearest Class I area to the potential oil and gas development play is close to Bryce Canyon National Park. Therefore, AERMOD using Bryce Canyon meteorological data was used to model an oil and gas development close to Bryce Canyon National Park and also look at the potential impacts for the small communities of Tropic, Cannonville, and Henrieville. Receptors were placed along roadways near the reasonably foreseeable project where the public may have access. We will also include an extensive receptor array within the Bryce Canyon National Park.² This area is not a likely location for oil and gas development, as there are no existing producing wells in the area of receptors near Bryce Canyon National Park and all previously producing wells in the area have been plugged and abandoned (BLM 2018a).
- 3. The area with the second-most potential for impact and the most potential for oil and gas development is close to Escalante. In contrast to the Bryce Canyon National Park area, this area is near existing producing wells in the Upper Valley oil field and may be a more likely location for development. Here we modeled the development of an oil and gas field close to Escalante with receptors in Escalante and along roadways near the reasonably foreseeable Project where the public may have access. Receptors were also included for nearby Class II areas of interest (Box Hollow), as well as for the Class I areas of Bryce Canyon National Park and Capitol Reef National Park.

² The National Park Service Class I receptor file for Bryce Canyon is available on the National Park Service website at: https://irma.nps.gov/DataStore/Reference/Profile/2249830.

Oil and Gas Development near Escalante

A gridded set of receptors was placed around the oil and gas field every 200 meters, and along existing roads in the vicinity of the oil and gas field. Discrete receptors were also placed in nearby Escalante. Receptors within 400 meters of the well were excluded, unless along a roadway, based on the assumption that the public would not have access to these areas during construction and drilling operations. The most distant receptor modeled, as measured from the center of the oil and gas field, was 35 kilometers. Figure 4 shows the location for all of the receptors, while Figure 5 shows the location for the receptors close to the oil and gas field and Escalante.

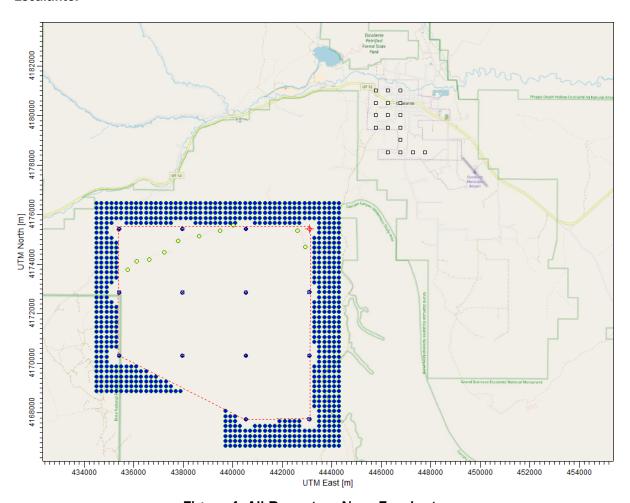


Figure 4. All Receptors Near Escalante

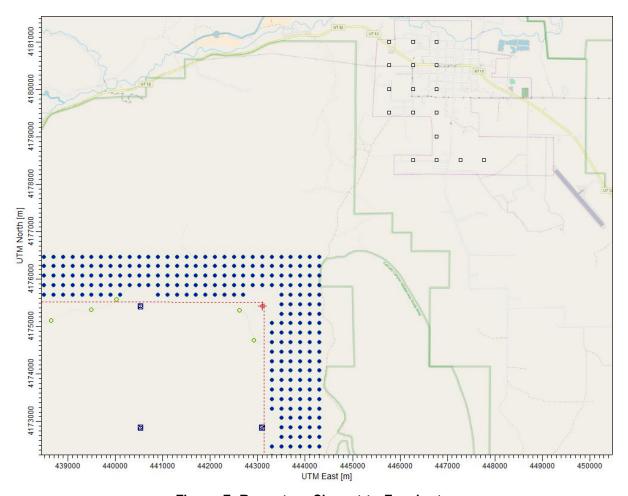


Figure 5. Receptors Closest to Escalante

Coal Mine Development Near Big Water

A gridded set of receptors was placed around the perimeter of the coal mine above-ground area every 100 meters, and along the existing roads both within the facility and along the entire length of the road back through Glen Canyon National Recreation Area (NRA) as well as along the boundary of portions of the Kaiparowits Unit of GSENM. Receptors along the roadway were placed 10 meters from the edge of the roadway and along both sides of the roadway. Receptors were placed along the roadway through Big Water to model impacts from increased truck traffic. Receptors were also placed at the closest distance to the Grand Canyon and Bryce Canyon National Park to evaluate potential Class I impacts. Figure 6 shows the location for all of the receptors, while Figure 7 shows the location for the receptors close to the underground coal mine.

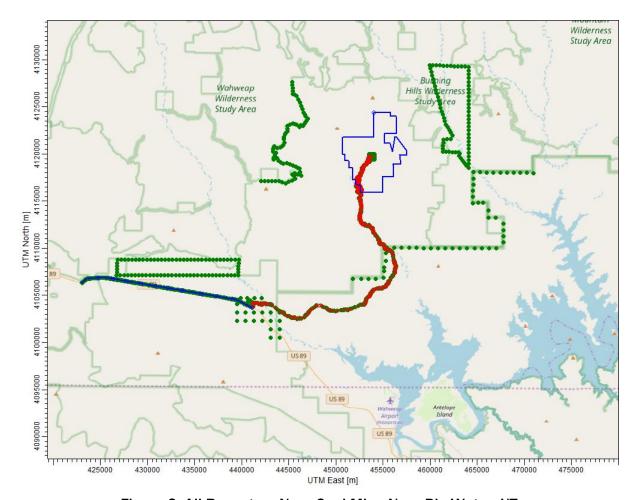


Figure 6. All Receptors Near Coal Mine Near Big Water, UT

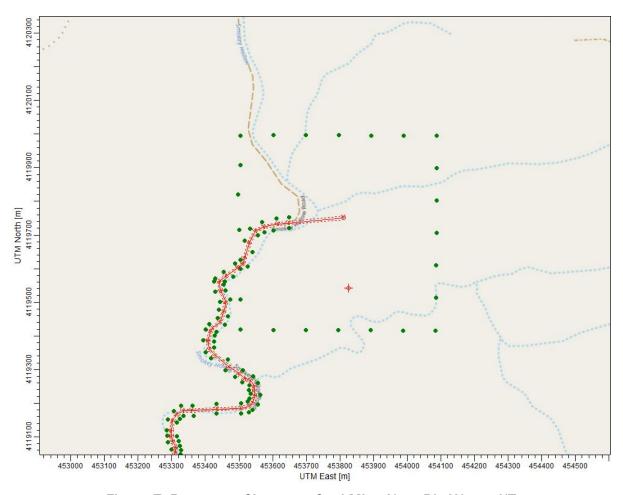


Figure 7. Receptors Closest to Coal Mine Near Big Water, UT

Oil & Gas Development Near Bryce Canyon National Park

A gridded set of receptors was placed around the oil and gas field every 200 meters, and along existing roads in the vicinity of the oil and gas field. Discrete receptors were also placed at the nearby communities of Cannonville, Henrieville, and Tropic, along the boundary of Kodachrome State Park, and along the closest boundary of Bryce Canyon National Park as well as within the entire National Park. Receptors within 400 meters of the well were excluded unless along a roadway based on the assumption that the public would not have access to these areas. The most distant receptor modeled, as measured from the center of the oil and gas field, was 21 kilometers. Figure 8 shows the location for all of the receptors, while Figure 9 shows the location for the receptors close to the oil and gas field, Bryce, and Cannonville.

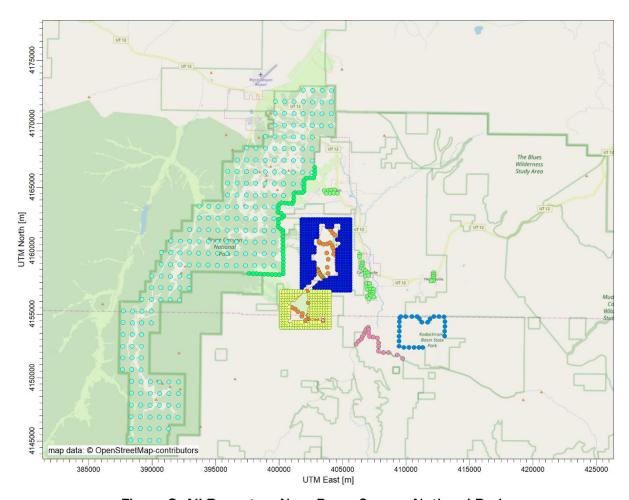


Figure 8. All Receptors Near Bryce Canyon National Park

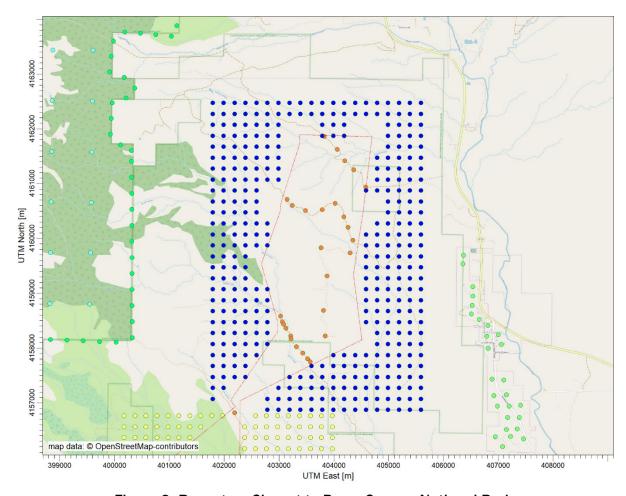


Figure 9. Receptors Closest to Bryce Canyon National Park

Oil and Gas Emissions

Long-term (annual) and short-term maximum hourly emissions as used in the air quality model were developed for well development and production scenarios. Emissions from well development activities are shown in Table 12 and Table 13.

For a well that is in the process of being drilled, there are several emissions sources operating on the pad and access road. CAP emissions result from the use of diesel internal combustion engines in mud pumps, draw works, the front-end loader, generator, and in cement pumping/casing running. There are traffic emissions from light- and heavy-duty vehicles. Vehicle traffic emissions include engine exhaust emissions as well as fugitive dust emissions from travel on unpaved and paved roads. Exhaust emissions from vehicle idling at the well pad are also modeled. Two heavy-duty vehicles (water truck and condensate truck) and one light-duty vehicle were assumed to be at the well pad for the short-term modeling scenario. Emissions from well development activities for a single well are shown in summary form in Table 12 and Table 13. Load factors for all engines were based on the Greater Chapita Wells EIS (Alpine Geophysics and Environ 2016, Appendix J, pp 26–49). Drilling emissions sources were assumed to operate 24 hours per day.

 NO_X emissions were modeled using the Tier 3 ozone limiting method given the relatively short stacks and high emission rates from the Tier 2 engines. In-stack ratios were available for the CAT 3512 engine (2,500 hp) in the EPA in-stack ratio database

(https://www3.epa.gov/scram001/no2_isr_database.htm) for comparably sized engines (1,400 hp). These engines are used for both hydraulic fracturing and drilling. The in-stack ratio database shows that the in-stack ratio for these three engines (Tok Power Generation Station in Alaska Cat 3512 model C engines) are 3.6, 2.2, and 2.7 percent based on source testing, or about an average of 3 percent. Default in-stack ratios of 50 percent were conservatively used for all other sources.

During the production phase, emissions result from dehydrators, separators, flaring of losses from dehydrators and condensate tanks, vehicle traffic, pneumatic devices and pumps, tank load-out, well workovers, well blowdowns, associated gas flaring, associated gas venting, produced condensate combustion, and fugitive emissions. CAP emissions for wells in production are shown in Table 13, HAP emissions are shown in Table 14a, and GHG emissions are shown in Tables 14b and 14c. Total emissions in each of these tables represent the nominal scenario: 13 wells in production and 1 well in development.

Emissions from drilling were modeled as point sources with emissions released vertically through the stack. Emissions from sources found at the well pad were released as volume sources with the source centered on the well pad. Emissions associated with trucks and equipment were modeled as an area source over the oil and gas field. Tables 15a through 15c show the stack parameters of oil and gas sources for point, volume, and area sources.

For the three drilling rig engines and the eight hydraulic fracturing engines, identical stacks with the same stack parameters were used in the modeling. We assumed that the stacks were all within 100 meters, which allowed us to treat the emissions as though all were coming from a single stack. This is consistent with EPA's guidance (EPA 1991).

Table 12. Project Wells during Development: CAP Emissions

Emission Source		Annı	ual Emissior	ns (Tons per	year)		Daily Peak Max Emissions (grams/second)					
Category	СО	NOx	PM _{2.5}	PM ₁₀	SO ₂	VOCs	СО	NOx	PM _{2.5}	PM ₁₀	SO ₂	VOCs
Construction Equipment	0.04	0.05	<0.01	<0.01	<0.01	0.05	0.55	0.64	0.03	0.03	<0.01	0.04
Construction On- road Vehicles	0.14	0.03	0.03	0.23	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Construction Dust Wind Erosion	0	0	0	0	0	0	0	0	0	0	0	0
Construction Fugitive Dust	0	0	0.01	0.02	0	0	0	0	<0.01	<0.01	0	0
Completion Equipment	1.31	1.94	0.06	0.07	<0.01	0.12	22.80	21.04	0.71	0.73	0.06	1.60
Completion On- road Vehicles	0.35	0.25	0.17	1.00	<0.01	0.03	0.01	0.01	0.01	0.03	<0.01	<0.01
Completion Venting	0	0	0	0	0	1.02	0	0	0	0	0	0.03
Drilling Equipment	2.86	4.98	0.16	0.16	0.01	0.28	2.95	5.14	0.16	0.17	0.01	0.29
Drilling On-road Vehicles	0.32	0.17	0.13	0.93	<0.01	0.03	0.01	0.01	<0.01	0.03	<0.01	<0.01
Total	5.03	7.41	0.57	2.41	0.02	1.49	26.32	26.84	0.91	1.00	0.07	1.96

CO – carbon monoxide, NO_x – nitrogen oxides, PM_{2.5} – particulate matter 2.5 microns or smaller in size, PM₁₀ – particulate matter 10 microns or smaller in size, SO₂ – sulfur dioxide, VOC – volatile organic compound

Table 13. Project Wells during Production - CAP Emissions Summary

Emission Source		Annua	al Emission	s (Tons pe	r year)		Daily Peak Max Emissions (grams/second)					
Category	СО	NOx	PM _{2.5}	PM ₁₀	SO ₂	VOCs	СО	NOx	PM _{2.5}	PM ₁₀	SO ₂	VOCs
Heavy Duty Traffic	2.86	0.49	0.63	3.23	0.01	0.11	0.08	0.01	0.02	0.09	<0.01	<0.01
Light Duty Traffic	0.82	0.07	0.03	0.20	<0.01	0.04	0.02	<0.01	<0.01	0.01	<0.01	<0.01
Condensate Tank Flashing/Working/Breat hing	14.88	2.74	-	-	-	3.52	0.43	0.08	-	-	-	0.10
Heaters	0.94	1.12	0.09	0.09	0.05	0.06	0.03	0.03	<0.01	<0.01	<0.01	<0.01
Tank Load-out (vapor losses)	-	-	-	-	-	13.65	-	-	-	-	-	0.39
Pneumatic Devices	-	-	-	-	-	1.87	-	-	-	-	-	0.05
Workover Equipment (diesel internal combustion engine)	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
Blowdown	-	-	-	-	-	29.05	-	-	-	-	-	0.84
Fugitive Devices	-	-	-	-	-	6.40	-	-	-	-	-	0.18
Dehydrators	32.05	5.89	-	-	-	7.58	0.92	0.17	-	-	-	0.22
Gas Flaring	0.99	3.94	0.20	0.20	-	0.28	0.03	0.11	0.01	0.01	-	0.01
Gas Venting	10.21	4.08	0.22	0.22	-	-	0.29	0.12	0.01	0.01	-	-
Total	62.75	18.36	1.16	3.93	0.06	62.56	1.81	0.53	0.03	0.11	<0.01	1.80

CO – carbon monoxide, NO_x – nitrogen oxides, $PM_{2.5}$ – particulate matter 2.5 microns or smaller in size, PM_{10} – particulate matter 10 microns or smaller in size, SO_2 – sulfur dioxide, VOC – volatile organic compound

Table 14a. Project Wells during Production: HAP Emissions

	Annual	1	Annual Em	issions (To	ns per year)	Daily	Peak Max	Emissions	(grams/se	cond)
Emissions Source Category	VOC Emissions (tons/year)	Benzene	Ethyl- benzene	N- hexane	Toluene	Xylenes	Benzene	Ethyl- benzene	N- hexane	Toluene	Xylenes
Heavy Duty Traffic	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Light Duty Traffic	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Condensate Tank Flashing/Working/ Breathing	3.52	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Heaters	0.06	<0.01	-	-	<0.01	-	<0.01	-	-	<0.01	-
Tank Load-out (vapor losses)	13.65	0.01	<0.01	0.09	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Pneumatic Devices	1.87	-	-	0.06	-	-	-	-	<0.01	-	-
Workover Equipment (diesel internal combustion engine)	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Blowdown	29.05	-	-	0.88	-	-	-	-	0.03	-	-
Fugitive Devices	6.40	-	-	0.19	-	-	-	-	0.01	-	-
Dehydrators (proposed action)	7.58	-	-	-	-	-	-	-	-	-	-
Gas Flaring	0.28	-	-	-	-	-	-	-	-	-	-
Gas Venting	-	-	-	-	-	-	-	-	-	-	-
Total	62.56	0.02	-	1.24	0.02	0.01	<0.01	<0.01	0.04	<0.01	<0.01

VOC - volatile organic compound

Table 14b. Project Wells during Development: GHG Emissions

	Annua	l Emissior	s (Tons p	er year)
Emissions Source Category	CO ₂	CH ₄	N ₂ O	CO ₂ e
Construction Equipment	9	<1	<1	9
Construction On-road Vehicles	7	<1	<1	8
Completion Equipment	235	<1	<1	237
Completion On-road Vehicles	51	<1	<1	51
Completion Venting	<1	4	<1	111
Drilling Equipment	584	<1	<1	588
Drilling On-road Vehicles	35	<1	<1	36
Total	922	4	<1	1,039

GHG – greenhouse gas, CO₂ – carbon dioxide, CH₄ – methane, N₂O – nitrous oxide, CO₂e – carbon dioxide equivalent

Table 14c. Project Wells during Production: GHG Emissions

	Annual	Emission	s (Tons pe	er year)
Emissions Source Category	CO ₂	CH ₄	N ₂ O	CO ₂ e
Heavy Duty Traffic	1,692	<1	-	1,696
Light Duty Traffic	38	<1	<1	38
Condensate Tank Flashing/Working/Breathing	4,715	1	<1	4,762
Heaters	1,348	<1	<1	1,355
Tank Load-out (vapor losses)	<1	<1	-	10
Pneumatic Devices	7	2	-	60
Workover Equipment (diesel internal combustion engine)	1	<1	<1	1
Blowdown	4	113	-	3,170
Fugitive Devices	1	25	-	698
Dehydrators (proposed action)	9,522	3	<1	9,675
Combustion of Fuel Oil	95,734	2	<1	95,893
Gas Flaring	4,888	<1	<1	4,889
Gas Venting	6,505	<1	<1	6,508
Total	124,454	147	1	128,756

GHG – greenhouse gas, CO₂ – carbon dioxide, CH₄ – methane, N₂O – nitrous oxide, CO₂e – carbon dioxide equivalent

Table 15a. Well Development and Production Source Configuration for Point Source

				arameters			
Туре	Source Group	Well Type	Release Height (m)	Temp (K)	Velocity (m/s)	Diameter (m)	
Point	Well8_stack	Development	3.86	659.3	55.1	0.20	

m - meter, K - Kelvin, m/s - meter per second

Table 15b. Well Development and Production Source Configuration for Volume Sources

				Stack F	Parameters	
Туре	Source Group	Well Type	Release Height (m)	Length of side (m)	Initial lateral dim (m)	Initial vertical dim (m)
Volume	Well5_Vol	Production	2.5	110.2	25.63	2.33
Volume	Well3_Vol	Production	2.5	110.2	25.63	2.33
Volume	Well4_Vol	Production	2.5	110.2	25.63	2.33
Volume	Well1_Vol	Production	2.5	110.2	25.63	2.33
Volume	Well2_Vol	Production	2.5	110.2	25.63	2.33
Volume	Well6_Vol	Production	2.5	110.2	25.63	2.33
Volume	Well7_Vol	Production	2.5	110.2	25.63	2.33
Volume	Well9_Vol	Production	2.5	110.2	25.63	2.33
Volume	Well11_Vol	Production	2.5	110.2	25.63	2.33
Volume	Well12_Vol	Production	2.5	110.2	25.63	2.33
Volume	Well13_Vol	Production	2.5	110.2	25.63	2.33
Volume	Well14_Vol	Production	2.5	110.2	25.63	2.33

m - meter

Table 15c. Well Development and Production Source Configuration for Area and Area Poly Sources

			Stack Parameters						
Туре	Source Group	Well Type	Release Height (m)	Length of x- side (m)/number of vertices	Length of y- side (m)	Initial vertical dim (m)			
Area	Well8_Area	Development	2.5	110.2	110.2	2.33			
Areapoly	Oil Field	Development	3.0	6		2.8			

m - meter

Coal Mine Emissions

Long-term (annual) and short-term maximum hourly emissions were developed for the operation of the coal mine. Emissions from the operation of the coal mine are shown in Table 16a. Table 16b shows the annual GHG emissions associated with the operation of the mine and the combustion of the coal.

Table 16a. Underground Coal Mine Operational CAP Emissions

Emission Source		Annual	Emission	s (Tons per	year)		Daily Peak Max Emissions (grams/second)					
Category	СО	NOx	PM _{2.5}	PM ₁₀	SO ₂	VOCs	СО	NOx	PM _{2.5}	PM ₁₀	SO ₂	VOCs
Mine Venting	-	-	1.79	17.86	-	-	-	-	0.05	0.51	-	-
Above-Ground Equipment	21.88	22.24	0.94	1.03	0.03	2.14	3.59	2.33	0.11	0.11	0.01	0.28
Underground Equipment	-	-	-	-	-	-	-	-	-	-	-	-
Above-Ground Material Handling	-	-	0.69	7.27	-	-	-	-	0.06	0.65	-	-
Fugitive Dust	-	-	0.62	4.15	-	-	-	-	0.02	0.12	-	-
On-road Vehicle: Fugitive Dust & Exhaust including Worker Commute	127.57	387.38	35.53	95.99	0.73	21.65	3.67	11.14	1.02	2.76	0.02	0.62
Total	149.45	409.62	39.57	126.31	0.75	23.79						

CAP – criteria air pollutant, CO – carbon monoxide, NO_X – nitrogen oxides, $PM_{2.5}$ – particulate matter 2.5 microns or smaller in size, PM_{10} – particulate matter 10 microns o

Table 16b. Underground Coal Mine Operational GHG Emissions

	Annu	ıal Emission	s (Tons pe	er year)
Emissions Source Category	CO ₂	CH ₄	N ₂ O	CO ₂ e
Mine Venting	13,823	49,881	-	1,061,322
Above Ground Equipment	2,528	<1	<1	2,551
Under Ground Equipment	-	-	-	-
Above Ground Material Handling	-	-	-	-
Fugitive Dust	-	-	-	-
On-road Vehicle: Fugitive Dust & Exhaust including Worker Commute	-	-	-	85,543-
Combustion of Coal	24,547,184	836	375	24,679,777
Total	24,563,535	50,717	375	25,829,193

GHG - greenhouse gas, CO₂ - carbon dioxide, CH₄ - methane, N₂O - nitrous oxide, CO₂e - carbon dioxide equivalent

Most of the onsite emissions, other than particulate matter, result from the use of diesel internal combustion engines by three bulldozers and the backup diesel generator. Particulate matter emissions on site are associated with the coal handling/transfer and the coal storage pile. However, overall most of the emissions are associated with the transport of coal from the mine to the rail loading facility. These vehicle traffic emissions include engine exhaust emissions as well as fugitive dust emissions from travel on paved roads. On-road mobile sources emissions were based on MOVES2014 for the calendar year 2022. The EPA's NONROAD engines emissions factors used the Underground Mine Modeling Tool Version 1.0 developed for the BLM by AECOM. The three bulldozers were conservatively assume to be Tier 1, Tier 2, and Tier 3 compliant.

Emissions from the two emergency backup generators (2,520 and 3,640 hp, assumed Tier 4 compliant) were modeled as a single point sources with emissions released vertically through the stack. Emissions from the bulldozers were modeled as an area source. Fugitive dust emissions were modeled as an areapoly sources over an area of 83 acres (above-ground facility boundary size) associated with the soil disturbance activity, while the coal pile itself was modeled as a volume source. All of the truck emissions along roadways were modeled as line area sources or areapoly sources. Table 17a through 17c show the stack parameters and release parameters for coal mine modeling.

Table 17a. Underground Coal Mine Operation Source Configuration for Point Source

		Stack Parameters							
Туре	Source Group	Release Height (m)	Temp (K)	Velocity (m/s)	Diameter (m)				
Point	generator	4.6	768.6	28.8	0.50				

m - meter, K - Kelvin, m/s - meter per second

Table 17b. Underground Coal Mine Operation Source Configuration for Line Area Sources

			Stack Parameters								
Туре	Source Group	Release Height (m)	Width of side (m)	Number of area sources	Total length (km)	Initial vertical dimension (m)					
Line area	Haul Trucks: Fugitive Dust	1.3	10.0	503	36.967	2.6					
Line area	Haul Trucks: Exhaust	3.4	10.0	503	36.967	6.8					
Areapoly	Haul Trucks: Fugitive Dust	1.3		27	139.391	2.6					
Areapoly	Haul Trucks: Exhaust	3.4		27	139.391	6.8					
Line area	Work Commute: Fugitive Dust	0.85	10.00	503	36.967	1.7					
Line area	Work Commute: Exhaust	1.3	10.0	503	36.967	2.6					

Note: Line area sources are for County Road, Smokey Hollow Road, and local roadways from Big Water to US Highway 89; Area polygon sources are for US Highway 89 (from Big Water to about 18 km west of Big Water); Interstate 15 (Coral Canyon to Cedar City), UT 9 (Coral Canyon to Hurricane), and UT 59.

m – meter, km – kilometer

Table 17c. Underground Coal Mine Configuration for Area and Areapoly Sources

		Stack Parameters							
Туре	Source Group	Release Height (m)	Length of x-side (m)/number of vertices	Length of y- side (m)	Initial vertical dim (m)				
Area	Dozers	6.0	201.2	201.2	2.8				
Areapoly	Exh_US89_1 Exh_US89_11	3.4	25		6.8				

m - meter

Air Quality Modeling Impact Assessment Results

A near-field criteria pollutant assessment was performed to estimate maximum potential impacts of criteria pollutants (PM₁₀, PM_{2.5}, NO_x, SO₂, and CO) from emission sources that could potentially operate in the Planning Area. These were then compared against the NAAQS and the Class II Significant Impact Level (SIL).³ Near-field HAP assessment was performed to estimate the potential impacts for both short-term (1-hour and 24-hour) and long-term exposure (annual) for both cancer and non-cancer risk.

Three emission scenarios were considered: development of an underground mine near Big Water, UT; development of a 14-well oil and gas field near Bryce Canyon National Park; and the development of a 14-well oil and gas field near Escalante. Maximum emissions from the field development and production were evaluated to determine which emissions activities produce

³ Class II SILs are provided as informational reference—the project would not be subject to a PSD permitting program where SILs are used.

the maximum pollutant impacts. Modeling scenarios were developed and evaluated for each case.

Oil and Gas: Two locations for potential oil and gas well development and operations were modeled for this impact assessment. An oil and gas field consisting of 14 wells was considered in the *Mineral Potential Report* (BLM 2018a) as a reasonably foreseeable small oil field that could be developed over the next 15 years. The largest source of NO_X and CO emissions occurs during drilling in the well development phase, but the highest-intensity NO_X emissions occurs from the engines used during hydraulic fracturing during well completion. During well production, the emission intensity is greatly reduced. Both locations examined the short-term maximum impacts with the highest emissions intensity during well development along with all other 13 wells in full production. Because of the very high NO_X emissions during hydraulic fracturing (a relatively short-duration activity), we report the maximum 1-hour NO₂ concentration during hydraulic fracturing and during drilling. It was assumed that only one well per year is developed. The long-term modeling included the emissions during development of the same year along with the production emissions from 13 activity wells in production.

Underground Coal Mine: The most likely location for the development of an underground coal mine was the proposed location for the Smoky Hollow mine within the southern part of the Kaiparowits coalfield. The development of this mine was intensely examined just prior to designation of GSENM. An underground coal mine operating at the maximum potential production rate of 5.5 million tons of coal was modeled in this study.

In accordance with averaging periods for existing ambient standards, NO_2 concentrations were calculated for 1-hour and annual averaging periods, SO_2 concentrations for 1-hour and 3-hour averaging periods, CO concentrations for 1-hour and 8-hour averaging periods, PM_{10} concentrations for a 24-hour averaging period, and $PM_{2.5}$ concentrations for 24-hour and annual averaging periods.

Criteria Pollutant Impact Assessment

Results are presented below in Table 18 and Table 19 showing the maximum affected receptor concentration in comparison to the NAAQS and Class II SILs4 for the oil and gas field development near Bryce Canyon National Park and the oil and gas field development near Escalante. The modeled values are determined based on the probabilistic form of the NAAQS as described in Table 11. For all species and averaging times, with the exception of 1-hour NO2, the modeled concentration plus background are well below the NAAQS. Due to the short duration of activities, modeled exceedances are not likely to result in NAAQS violations of the 3year average of the 98th percentile 1-hour NO_x standard. The worst-case NO_x emissions occur during the relatively short period of hydraulic fracturing, but potentially high 1-hour NO2 concentrations are possible as shown in Table 18 and Table 19. These results are illustrated in spatial gridded values of the 98th percentile of the 1-hour daily maximum NO₂ concentrations averaged over 5 years near Bryce Canyon National Park (Figure 10) and near Escalante (Figure 11). NO_x emissions are lower during drilling and the combination of maximum modeled 1-hour concentration is 147.4 µg/m³ (Bryce Canyon) and 147.2 µg/m³ (Escalante); as such, the combination with background shows that the highest 1-hour NO2 background is just slightly greater than the 1-hour NO₂ standard. This occurs within 1 kilometer of the well site. During

-

⁴ Class II SILs are provided as informational reference—the project would not be subject to a PSD permitting program where SILs are used.

production, the NO_X emissions are much lower and the modeled 1-hour NO_2 concentration is 98 and 87 $\mu g/m^3$, respectively, which, when paired with highest 1-hour background concentration, is well below the NO_2 standard. Class II SILs are exceeded for both 1-hour NO_2 and 24-hour $PM_{2.5}$ at both Bryce Canyon National Park and Escalante. In addition, 1- and 8-hour CO and 24-hour Class II SILs are exceeded at Escalante.

Results for the underground coal mine are presented below in Table 20 showing the maximum affected receptor concentration in comparison to the NAAQS and Class II SILs for the coal mine near Big Water. For all species and averaging times, with the exception of 1-hour NO₂, the modeled concentration plus background are well below the NAAQS. The 1-hour NO₂ modeling includes the operation of the two emergency electrical generators, as they may be periodically tested throughout the year. These generators, if operated during the adverse meteorological conditions and in conjunction with the routine operation of bulldozers and haul truck activity, may lead to exceedances of the 1-hour NO₂ NAAQS. Implementation of best management practices (e.g., larger property area, higher-tiered bulldozer engines) could likely mitigate this potential issue.

These results indicate that emissions from the reasonably foreseeable development activities may result in concentrations that are greater than the NAAQS and UAAQS for 1-hour NO2. These high concentrations would primarily result from engines used in hydraulic fracturing for oil and gas scenarios, and from the use of emergency electrical generators in conjunction with the routine operation of the bulldozers and haul truck activity at the coal mine during times of adverse meteorological conditions. The modeled plus background values for all other criteria pollutants and time periods are less than the NAAQS and UAAQS thresholds.

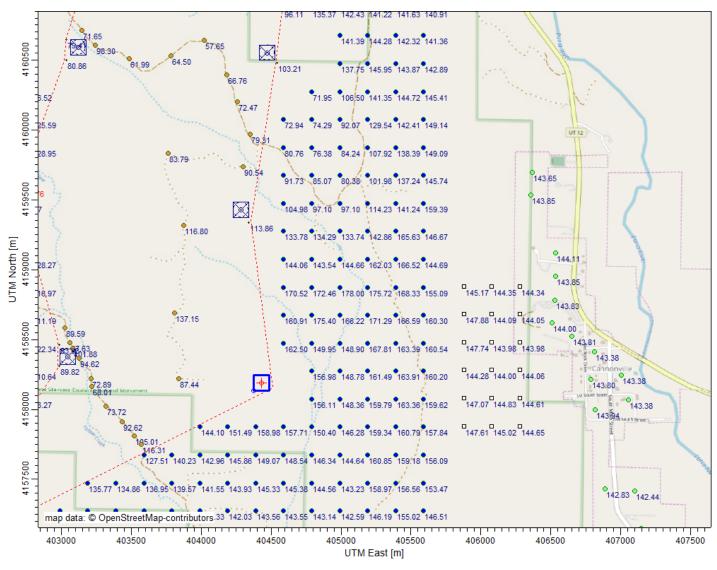


Figure 10. Modeled Concentrations of the 98th Percentile of the 1-hour Daily Maximum NO₂ Concentration Averaged over 5 Years during Well Completion Near Bryce Canyon National Park

Table 18. Near Bryce Canyon National Park Oil and Gas Scenario CAP Impacts and Comparison with the NAAQS and Class II SILs

Pollutant	Averaging Period	NAAQS (µm-3)	Background (µm-3)	Modeled Concentration (µm-3)	Class II SIL (µm-3)	Modeled Concentration + Background (µm-3)	Complies with NAAQS?	Complies with Class II SILs?	% of NAAQS
CO	8-hour	10,000	1,164	568	500	1,732	Yes	No	17%
СО	1-hour	40,000	1,164	660	2,000	1,824	Yes	Yes	5%
PM ₁₀	24-hour	150	18.2	2.2	5	20.4	Yes	Yes	14%
PM _{2.5}	Annual	12	2.2	0.12	0.2	2.3	Yes	Yes	19%
PM _{2.5}	24-hour	35	13.4	1.62	1.2	15.0	Yes	No	43%
NO ₂	Annual	100	4.4	1.39	1	5.8	Yes	No	6%
NO ₂	1-hour	188	45.9	178	7.5(1)	224	No	No	119%
SO ₂	1-hour	196	66.5	1.14	7.8(1)	67.6	Yes	Yes	35%
SO ₂	3-hour	1,310	66.5	1.14	25	67.6	Yes	Yes	5%

¹ Interim SIL value

CAP – criteria air pollutant, NAAQS – National Ambient Air Quality Standard, SIL – Significant Impact Level, μ m – micrometer, CO – carbon monoxide, PM10 – particulate matter 10 microns or smaller in size, PM2.5 – particulate matter 2.5 microns or smaller in size, NO2 – nitrogen dioxide, SO2 – sulfur dioxide, N/A – not applicable

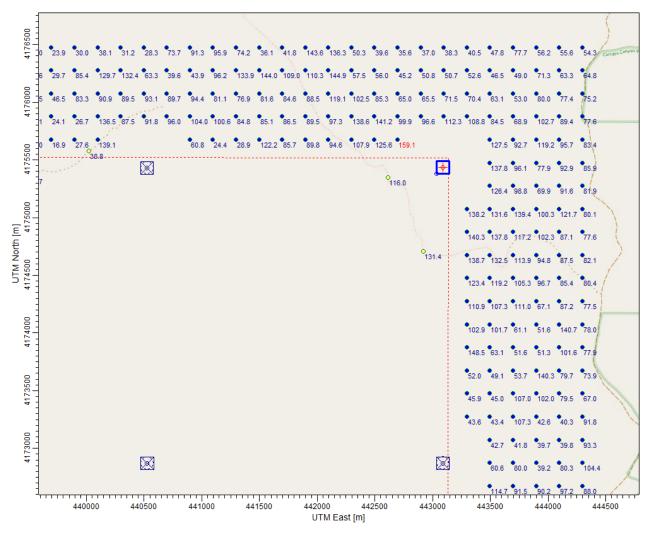


Figure 11. Modeled Concentrations of the 98th Percentile of the 1-hour Daily Maximum NO₂ Concentration Averaged over 5 Years during Well Completion Near Escalante

Table 19. Near Escalante, Utah Oil and Gas Scenario CAP Impacts and Comparison with the NAAQS and Class II SILs

Pollutant	Averaging Period	NAAQS (µm-3)	Background (µm-3)	Modeled Concentration (µm-3)	Class II SIL (µm-3)	Modeled Concentration + Background (µm-3)	Complies with NAAQS?	Complies with Class II SILs?	% of NAAQS
СО	8-hour	10,000	1,164	2,223	500	3,387	Yes	No	34%
СО	1-hour	40,000	1,164	2,323	2,000	3,487	Yes	No	9%
PM ₁₀	24-hour	150	18.2	6.1	5	24.3	Yes	No	16%
PM _{2.5}	Annuals	12	2.2	0.1	0.2	2.3	Yes	Yes	19%
PM _{2.5}	24-hour	35	13.4	5.2	1.2	18.6	Yes	No	53%
NO ₂	Annual	100	4.4	0.8	1	5.2	Yes	Yes	5%
NO ₂	1-hour	188	45.9	159.1	7.5(1)	205	No	No	109%
SO ₂	1-hour	196	66.5	7.1	7.8(1)	73.6	Yes	Yes	38%
SO ₂	3-hour	1,310	66.5	3.1	25	69.6	Yes	Yes	5%

¹ Interim SIL value

CAP – criteria air pollutant, NAAQS – National Ambient Air Quality Standard, SIL – Significant Impact Level, μ m – micrometer, CO – carbon monoxide, PM₁₀ – particulate matter 10 microns or smaller in size, PM_{2.5} – particulate matter 2.5 microns or smaller in size, NO₂ – nitrogen dioxide, SO₂ – sulfur dioxide, N/A – not applicable

Table 20. Underground Coal Mine CAP Impacts and Comparison with the NAAQS and Class II SILs

Pollutant	Averaging Period	NAAQS (µm-3)	Background (µm-3)	Modeled Concentration (µm-3)	Class II SIL (µm-3)	Modeled Concentration + Background (µm-3)	Complies with NAAQS?	Complies with Class II SILs?	% of NAAQS
CO	8-hour	10,000	1,164	509	500	1,673	Yes	No	17%
СО	1-hour	40,000	1,164	1630	2,000	2,794	Yes	Yes	7%
PM ₁₀	24-hour	150	18.2	72.1	5	90.3	Yes	No	60%
PM _{2.5}	Annual	12	2.2	1.7	0.2	3.9	Yes	No	33%
PM _{2.5}	24-hour	35	13.4	10.6	1.2	24.0	Yes	No	69%
NO ₂	Annual	100	4.4	9.7	1	14.1	Yes	No	14%
NO ₂	1-hour	188	45.9	206.7	7.5(1)	252.6	No	No	134%
SO ₂	1-hour	196	66.5	1.6	7.8(1)	68.1	Yes	Yes	35%
SO ₂	3-hour	1,310	66.5	1.00	25	67.5	Yes	Yes	5%

¹ Interim SIL value

CAP – criteria air pollutant, NAAQS – National Ambient Air Quality Standard, SIL – Significant Impact Level, μ m – micrometer, CO – carbon monoxide, PM₁₀ – particulate matter 10 microns or smaller in size, PM_{2.5} – particulate matter 2.5 microns or smaller in size, NO₂ – nitrogen dioxide, SO₂ – sulfur dioxide, N/A – not applicable

Table 21 shows the maximum impact within or at the boundary of the Glen Canyon NRA. These maximum concentrations are almost entirely due to the transport of coal by haul trucks through the Glen Canyon NRA. No concentrations are close to the NAAQS. However, the Class II SILs are exceeded for PM₁₀, PM_{2.5}, and NO₂. This is primarily due to the truck haul routes through the Glen Canyon NRA.

Table 21. Underground Coal Mine Scenario CAP Maximum Impacts Within or Along the Boundary of the Glen Canyon NRA and in Comparison with the Class II SILs

Pollutant	Averaging Period	NAAQS (µm-3)	Background (µm-3)	Modeled Concentration (µm-3)	Class II SIL (µm-3)	Complies with Class II SILs?
СО	8-hour	10,000	1,164	20	500	Yes
СО	1-hour	40,000	1,164	39	2,000	Yes
PM ₁₀	24-hour	150	18.2	7	5	No
PM _{2.5}	Annual	12	2.2	0.7	0.2	No
PM _{2.5}	24-hour	35	13.4	1.7	1.2	No
NO ₂	Annual	100	4.4	3	1	No
NO ₂	1-hour	188	45.9	34	7.5(1)	No
SO ₂	1-hour	196	66.5	0.09	7.8(1)	Yes
SO ₂	3-hour	1,310	66.5	0.07	25	Yes

¹ Interim SIL value

CAP – criteria air pollutant, NRA – National Recreation Area, SIL – Significant Impact Level, μ m – micrometer, CO – carbon monoxide, PM₁₀ – particulate matter 10 microns or smaller in size, PM_{2.5} – particulate matter 2.5 microns or smaller in size, NO₂ – nitrogen dioxide, SO₂ – sulfur dioxide, N/A – not applicable

These potential mineral resource development projects may take place in locations that are in relatively close proximity to Class I areas. While these activities will not be subject to PSD, we have included a comparison of the Class I PSD SILs for informational purposes. Table 22, Table 23, and Table 24 show the concentrations of the maximum impact on a Class I area relative to the Class I SIL. For all three development projects, none of the Class I SILs are exceeded.

Table 22. Near Bryce Canyon National Park: Oil and Gas Scenario Highest Class I Concentration in Comparison with Class I SILs

Pollutant	Averaging Period	Modeled Concentration (μm ³)	Class I SIL (µm³)	Complies with Class I SILs?
PM ₁₀	24-hour	0.051	0.2	Yes
PM _{2.5}	Annual	0.0012	0.05	Yes
PM _{2.5}	24-hour	0.02	0.27	Yes
NO ₂	Annual	0.019	0.1	Yes

SIL – Significant Impact Level, μm^3 – cubic micrometer, PM_{10} – particulate matter 10 microns or smaller in size, $PM_{2.5}$ – particulate matter 2.5 microns or smaller in size, NO_2 – nitrogen dioxide

Table 23. Near Escalante, Utah: Oil and Gas Scenario Highest Class I Concentration in Comparison with Class I SILs

Pollutant	Averaging Period	Modeled Concentration (µm³)	Class I SIL (µm³)	Complies with Class I SILs?
PM ₁₀	24-hour	0.02	0.2	Yes
PM _{2.5}	Annual	0.0001	0.05	Yes
PM _{2.5}	24-hour	0.01	0.27	Yes
NO ₂	Annual	0.002	0.1	Yes

SIL – Significant Impact Level, μ m³ – cubic micrometer, PM₁₀ – particulate matter 10 microns or smaller in size, PM_{2.5} – particulate matter 2.5 microns or smaller in size, NO₂ – nitrogen dioxide

Table 24. Underground Coal Mine Scenario: Highest Class I Concentration in Comparison with Class I SILs

Pollutant	Averaging Period	Modeled Concentration (µm³)	Class I SIL (µm³)	Complies with Class I SILs?
PM ₁₀	24-hour	0.07	0.2	Yes
PM _{2.5}	Annual	0.001	0.05	Yes
PM _{2.5}	24-hour	0.022	0.27	Yes
NO ₂	Annual	0.008	0.1	Yes

SIL – Significant Impact Level, μ m³ – cubic micrometer, PM₁₀ – particulate matter 10 microns or smaller in size, PM_{2.5} – particulate matter 2.5 microns or smaller in size, NO₂ – nitrogen dioxide

Ozone and Secondary PM_{2.5} Impact Assessment

In the EPA's guidance on the development of MERP as a Tier 1 demonstration tool for ozone and fine particulates in the PSD permitting program (EPA 2016), the investigated single-source impacts on ozone and secondary PM_{2.5} from some hypothetical sources provided the most conservative MERP values for VOCs, NO_X, and SO₂ for the western United States. For the western United States, the lowest MERPs for NO_x and VOCs are 184 tons per year and 1,049 tons per year, respectively. However, the lowest MERP of 184 tons per year for NO_X was based on the model results for a 90-meter stack in North Dakota. The EPA modeled a hypothetical near ground-level release in San Juan County, UT and Iron County, UT, which are more representative of the Planning Area, geographically and by source type release. These have a source-derived NO_x MERP of 349 tons per year and 724 tons per year, respectively. The emission rate from the oil and gas development (14 x 18.4 = 257.6 tons per year) is well below this range of MERP values, but the underground coal mine (60 kilometers to the southeast) falls in between this range, at 410 tons per year. Most of these emissions from the coal mine are not from a single location but are distributed over some 200 miles associated with the coal haul truck emissions. Based on the EPA's MERP modeling, we can conclude that the 8-hour ozone impacts due to the oil and gas emissions in the Planning Area would below the SIL of 1.0 ppb, while the emissions from the coal mine operation may need further analysis to conclude no significant ozone impacts. Both the coal mine and oil and gas projects have annual VOC emissions (62.56 tons per year and 23.79 tons per year, respectively) well below the MERP value of 1,049 tons per year.

For the western United States, the lowest MERPs for NO_X and SO_2 derived based on a daily $PM_{2.5}$ threshold of 1.2 μ g/m³ are 1,075 tons per year and 210 tons per year, respectively. The

lowest MERPs for NO_X and SO_2 derived based on an annual $PM_{2.5}$ threshold of 1.2 $\mu g/m^3$ are 3,184 tons per year and 2,289 tons per year, respectively. Both the NO_X and SO_2 emissions from the oil and gas development and the underground coal mine are below the lowest secondary $PM_{2.5}$ MERP values for both the annual and daily MERPs as shown in Table 25. Therefore, the secondary formation of $PM_{2.5}$ due to the potential mineral development in the area is expected to be less than significant.

Table 25. Results of Tier I Demonstration Using MERPs for Daily and Annual Particulate Matter

PM _{2.5} Precursor	Averaging Period	MERP (tpy)	Underground Coal Mine Potential Emissions (tpy)	Oil and Gas Project Potential Emissions(tpy)
NO _X	24-hour	1,075	409,62	18.36
	Annual	3,184		
SO ₂	24-hour	210	0.75	0.06
	Annual	2,289		

MERP – Modeled Emissions Rates for Precursors, PM_{2.5} – particulate matter less than or equal to 2.5 microns in size, tpy – tons per year, NO_X – nitrogen oxides, SO₂ – sulfur dioxide

HAP Impact Assessment

HAP emissions are expected from well site fugitives, well blowdown venting, pneumatic devices, and condensate tank losses, as well as other smaller sources, such as truck traffic. Because VOC emissions from the coal mine are poorly understood⁵ and the BLM's underground coal mine emission inventory tool does not include any HAP speciation factors, only HAP emissions from oil and gas operations were analyzed in this study.

Short-term (1-hour) maximum HAP concentrations from oil and gas activity are compared to acute (1- and 24-hour) Reference Exposure Levels (RELs), shown in Table 26 and Table 27. RELs are defined as concentrations at or below which no adverse health effects are expected. The model results indicate that neither location resulted in concentrations that exceed the 1-hour or 24-hour RELs.

Table 26. Near Bryce Canyon National Park: Oil and Gas Scenario Comparison of Highest Modeled Results with Acute RELs (1- and 24-hour Exposure)

НАР	1-hour REL (µg/m³)	24-hour REL (µg/m³)	Maximum Modeled 1-hour Concentration (µg/m³)	Maximum Modeled 24-hour Concentration (µg/m³)	Complies with 1- hour REL?	Complies with 24- hour REL?
Benzene	96	80	0.26	0.09	Yes	Yes
Toluene	7,537	5,653	0.49	0.10	Yes	Yes

⁵ While the VOC emissions from the coal mine are poorly understood, the types of air toxic emissions from fuel combustion associated with vehicle operations from mining activities would include compounds such as: 1,3 butadiene, acrolein, benzene, diesel particulate matter, ethylbenzene, naphthalene, and polycyclic organic matter. In addition, trace elements in coal dust may be of potential concern, as part of a draft EIS for the Tongue River Railroad Company the Surface Transportation Board conducted an extensive analysis on coal dust. That discussion can be found in Chapter 6 at: https://www.stb.gov/decisions/readingroom.nsf/WebDecisionID/44400?OpenDocument.

НАР	1-hour REL (µg/m³)	24-hour REL (µg/m³)	Maximum Modeled 1-hour Concentration (µg/m³)	Maximum Modeled 24-hour Concentration (µg/m³)	Complies with 1- hour REL?	Complies with 24- hour REL?
Ethylbenzene	21,712	8,685	0.04	0.02	Yes	Yes
Xylenes	8,684	400	0.68	0.08	Yes	Yes
n-Hexane(1)	6,345	N/A	19.0	4.1	Yes	N/A

 $^{^{1}}$ No REL available for these HAPs. 1-hour values shown are from Texas Commission on Environmental Quality. REL – Reference Exposure Level, HAP – hazardous air pollutant, $\mu g/m^3$ – microgram per cubic meter, N/A – not applicable

Table 27. Near Escalante, Utah: Oil and Gas Scenario Comparison of Highest Modeled Results with Acute RELs (1- and 24-hour Exposure)

НАР	1-hour REL (µg/m³)	24-hour REL (µg/m³)	Maximum Modeled 1-hour Concentration (μg/m³)	Maximum Modeled 24-hour Concentration (µg/m³)	Complies with 1- hour REL?	Complies with 24- hour REL?
Benzene	96	80	2	0.11	Yes	Yes
Toluene	7,537	5,653	3	0.16	Yes	Yes
Ethylbenzene	21,712	8,685	0.4	0.02	Yes	Yes
Xylenes	8,684	400	3	0.12	Yes	Yes
n-Hexane(1)	6,345	N/A	15	1.64	Yes	N/A

¹ No REL available for these HAPs. 1-hour values shown are from Texas Commission on Environmental Quality. REL – Reference Exposure Level, HAP – hazardous air pollutant, µg/m³ – microgram per cubic meter, N/A – not applicable

Long-term exposure to HAPs emitted by 13 wells in production and 1 well in development were compared to Reference Concentrations for Chronic Inhalation (RfCs) for the maximum receptor, as shown in Table 28 and Table 29 for the two oil and gas field locations. An RfC is defined by the EPA as the daily inhalation concentration at which no long-term adverse health effects are expected. RfCs exist for both non-carcinogenic and carcinogenic effects on human health (EPA's Integrated Risk Information System).⁶ No modeled concentration values exceed the RfCs for any HAP.

Table 28. Near Bryce Canyon National Park: Oil and Gas Scenario Comparison of Highest Modeled Results with Non-carcinogenic HAP RfCs (Annual Average)

НАР	Non-Carcinogenic RfC (µg/m³)	Maximum Modeled Concentration (µg/m³)	Complies with RFC?
Benzene	10	1.13E-02	Yes
Toluene	5,000	1.22E-02	Yes
Ethylbenzene	1,000	5.00E-04	Yes
Xylenes	100	4.52E-03	Yes
n-Hexane ⁽¹⁾	700	1.00E+00	Yes

¹ No REL available for these HAPs. Values shown are from Texas Commission on Environmental Quality.

⁶ The EPA's Integrated Risk Information System keeps a continual update database on human health risk reference concentration levels for non-cancer and cancer assessments. www.epa.gov/iris.

HAP – hazardous air pollutant, RfC – Reference Concentration for Chronic Inhalation, $\mu g/m^3$ – microgram per cubic meter, REL – Reference Exposure Level

Table 29. Near Escalante, Utah: Oil and Gas Scenario Comparison of Highest Modeled Results with Non-carcinogenic HAP RfCs (Annual Average)

НАР	Non-Carcinogenic RfC (µg/m³)	Maximum Modeled Concentration (µg/m³)	Complies with RFC?
Benzene	10	1.E-03	Yes
Toluene	5,000	1.E-03	Yes
Ethylbenzene	1,000	7.E-05	Yes
Xylenes	100	5.E-04	Yes
n-Hexane(1)	700	0.1	Yes

¹ No REL available for these HAPs. Values shown are from Texas Commission on Environmental Quality. HAP – hazardous air pollutant, RfC – Reference Concentration for Chronic Inhalation, μg/m³ – microgram per cubic meter, REL – Reference Exposure Level

Finally, long-term exposures to emissions of the human carcinogen, benzene, are evaluated based on estimates of the increased cancer risk over a 70-year lifetime. The analysis presents the potential incremental risk from the oil and gas field. The cancer risks were calculated using the maximum annual modeled concentrations and the EPA's chronic inhalation unit risk factors for carcinogenic constituents. Estimated cancer risks were evaluated based on the Superfund National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300), where a cancer risk range of 1x10-6 to 1x10-4 is generally acceptable. Two estimates of cancer risk are presented: (1) a most likely exposure (MLE) scenario; and (2) a maximum exposed individual (MEI) scenario. The estimated cancer risks were adjusted to account for duration of exposure and time spent at home.

Maximum annual modeled concentrations were multiplied by the EPA's unit risk factors (based on 70-year exposure) for those pollutants, and then the product was multiplied by an adjustment factor that represents the ratio of projected exposure time to 70 years. The adjustment factors represent two scenarios: an MLE scenario and one reflective of the MEI. The MLE duration is assumed to be 9 years, which corresponds to the mean duration that a family remains at a residence (40 CFR 300). This duration corresponds to an adjustment factor of 9/70 = 0.13. The duration of exposure for the MEI is assumed to be 60 years, corresponding to an adjustment factor of 60/70 = 0.86. A second adjustment is made for time spent at home versus time spent elsewhere. For the MLE scenario, the at-home time fraction is 0.64 (40 CFR 300), and it was assumed that during the rest of the day, the individual would remain in an area where annual HAP concentrations would be one-quarter as large as the maximum annual average concentration. Therefore, the MLE adjustment factor is $(0.13) \times [(0.64 \times 1.0) + (0.36 \times 1.0)]$ 0.25)] = 0.0949. The MEI scenario assumes that the individual is at home 100 percent of the time, for a final adjustment factor of $(0.86 \times 1.0) = 0.86$. EPA unit risk factors and adjustment factors are based on the latest data posted on the EPA's Integrated Risk Information System (www.epa.gov/iris). Finally, the cancer risk was computed by multiplying the maximum predicted annual concentration by the appropriate risk factor and overall exposure adjustment factor. The modeled cancer risks are well within the acceptable limits (1 x 10^{-6} to 1 x 10^{-4}) for all scenarios as shown in Table 30 and Table 31.

Because the modeled concentrations are much smaller than the REL and RfC values, the potential for increased acute and/or long-term health impacts resulting from HAP emissions from the reasonably foreseeable development activities are expected to be minimal. The modeled cancer risks are 0.0321 per million and 0.291 per million for the MLE and MEI, respectively.

Table 30. Near Bryce Canyon National Park: Oil and Gas Scenario Cancer Highest Risk Assessment: Carcinogenic HAP RfCs, Exposure Adjustment Factors, and Adjusted Exposure Risk

Analysis	НАР	Carcinogenic RfC (Risk Factor) 1/(µg/m³) ⁽¹⁾	Exposure Adjustment Factor	Cancer Risk	Within Acceptable Limits?
MLE	Benzene ⁽²⁾	7.8E-06	9.49E-02	8.34E-09	Yes
MEI	Benzene	7.8E-06	0.86	7.56E-08	Yes

¹ Annual Average Concentration

HAP – hazardous air pollutant, RfC – Reference Concentration for Chronic Inhalation, $\mu g/m^3$ – microgram per cubic meter, MLE - most likely exposure, MEI – maximum exposed individual

Table 31. Near Escalante, Utah: Oil and Gas Scenario Cancer Highest Risk Assessment: Carcinogenic HAP RfCs, Exposure Adjustment Factors, and Adjusted Exposure Risk

Analysis	НАР	Carcinogenic RfC (Risk Factor) 1/(µg/m³) ⁽¹⁾	Exposure Adjustment Factor	Cancer Risk	Within Acceptable Limits?
MLE	Benzene ⁽²⁾	7.8E-06	9.49E-02	7.7E-10	Yes
MEI	Benzene	7.8E-06	0.86	6.98E-09	Yes

¹ Annual Average Concentration

HAP – hazardous air pollutant, RfC – Reference Concentration for Chronic Inhalation, μg/m³ – microgram per cubic meter, MLE - most likely exposure, MEI – maximum exposed individual

VISCREEN Modeling for Visibility Impact Assessment

The initial screening criteria from the Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report (revised 2010) were used to assess whether emissions associated with resource mineral development in the Planning Area will cause or contribute to visibility impairment in Class I areas farther than 50 kilometers from the Project. As part of the EPA's Regional Haze regulation, the Federal Land Managers concluded that, based on a source's annual emission strength and distance from a Class I area, it will not cause or contribute to visibility impairments to Class I areas if the following is true:

- Sources more than 50 kilometers from any Class I area emit less than 500 tons per year of NO_X or SO₂ (or combined NO_X and SO₂), or
- Sources more than 100 kilometers from any Class I area emit less than 1,000 tons per year of NO_X or SO_2 (or combined NO_X and SO_2).

The oil and gas development Project emissions of NO_X and SO_2 are 258 tons per year, which is below the 500 tons per year threshold and therefore will not cause or contribute to visibility impairments to distant Class I areas, according to the FLAG screening criteria. The underground

² Source: EPA 2018

² Source: EPA 2018

coal mine more than 60 kilometers away from the oil and gas development would also be below the 500 tons per year threshold, at 410 tons per year.

The EPA's VISCREEN is used to assess the potential for observers in nearby (within 50 kilometers) Class I areas (National Parks and wilderness areas) of KEPA lands to perceive visible plumes from the resource development projects. Figure 12 shows the locations of National Parks and wilderness areas within 50 kilometers; VISCREEN was applied for the five areas listed in Table 32.

Table 32. Class I and Class II National Parks and Wilderness Areas Near the Kanab-Escalante Planning Area Lands

Area Name (Managing Agency)	Designation	Average Visual Range in kilometers (miles)
Bryce Canyon National Park (NPS)	Class I	273.6 (170)
Capital Reef National Park (NPS)	Class I	273.6 (170)
Zion National Park (NPS)	Class I	257.5 (160)
Box-Death Hollow Wilderness Area (USFS)	Class II sensitive	273.6 (170)
Kanab Creek Wilderness Area (USFS)	Class II sensitive	257.5 (160)

NPS - National Park Service; USFS - U.S. Forest Service

VISCREEN evaluates the plume visual effects for both inside and outside the Class I or II area for both contrast and human perceptibility against the sky background and terrain background for different sun angles. The model accounts for spatial and sun angles that affect the visibility of a plume. VISCREEN is a screening tool with three levels of screening analysis, each of which require additional input data. We first applied Level-1 screening and then, where necessary, Level-2 screening.

Level-1 screening assumes worst-case meteorology; extremely stable atmospheric conditions and low wind speeds (1 m/s); and worst-case direction. Inputs include:

- The region's background visual range (refer to Table 32) and background ozone concentration
- The emission inputs, including the maximum annual operational emission rates from all of the new sources of:
 - Particulate matter (PM₁₀)
 - NO_X
 - Primary NO₂
 - Elemental carbon
 - Primary sulfate

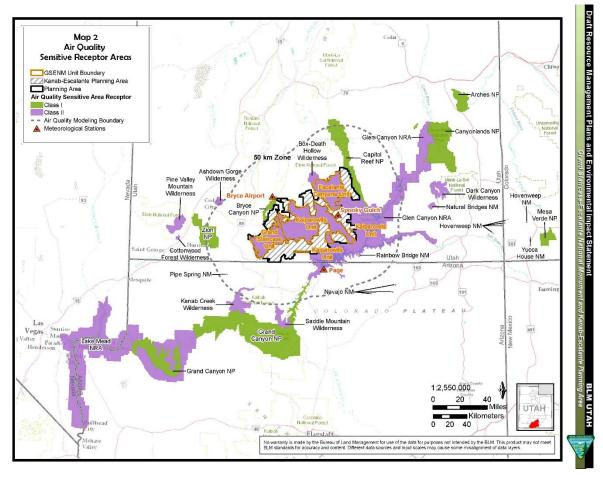


Figure 12. Class I and Class II Areas within 50 and 100 Kilometers and Surface Meteorological Stations Used in this Analysis

VISCREEN uses two threshold criteria to screen for potential impacts:

- Delta-E (L*A*B*) values greater than 2.0
- Plume contrast values of magnitude greater than 0.05

Delta-E (L*A*B*) is a plume perceptibility measure that is a combined parameter of brightness, hue, and saturation. The plume contrast is a criterion of the perceptibility of green light. If the analysis did not pass the Level-1 screening, we performed a Level-2 screening analysis. The Level-2 screening analysis works through the meteorological conditions (wind speed, direction, and stability), plus travel time, that result in a threshold criteria exceedance. Depending on the distance of the source to a Class I area and the pollutants emitted, this may be sufficient to show no potential for visibility impairment.

Visibility Impacts

Level-1 Analysis

Potential visibility impacts within the National Parks were evaluated using the single-source VISCREEN model, in accordance with the procedures provided in the EPA's *Workbook for Estimating Visibility Impairment* (EPA 1980). A Level-1 assessment was performed for each of

three considered mineral development projects, with the visibility effects assessed for all five Class I or Class II areas of interest. A Level-1 assessment is a conservative estimate of plume visual impact that assumes that extremely stable meteorological conditions persist for 12 hours with a very low wind speed of 1 m/s. VISCREEN model runs were conducted for the worst-case emissions associated with the completion phase of construction activities of the oil and gas well nearest to the Class I or Class II areas of interest, while the underground coal mine was associated with the operation of the mine at full production and with the operation of the backup generators.

Potential visibility impacts, or the maximum degree of plume visibility, from the proposed wells nearest to the parks were evaluated against Delta E criterion of 2.0 and contrast criterion of 0.05. The VISCREEN Level-1 results show one potential exceedance of the Delta E (color perceptibility parameter) criterion within Box-Death Hollow Wilderness Area, as shown in Table 33, for the oil and gas well development near Bryce Canyon National Park. In addition, Level-1 results show four potential exceedances of Delta E and two potential exceedances of contrast within Bryce Canyon National Park for the oil and gas well development near Bryce Canyon National Park. However, less than screening level impacts were found for all other emission scenarios for the oil and gas well development near Bryce Canyon National Park.

For the oil and gas well development near Escalante, screening Level-1 impacts are shown in Table 34. The VISCREEN Level-1 results show three potential exceedances of Delta E within Box-Death Hollow Wilderness Area, one potential exceedance of Delta E within Capitol Reef National Park, and three potential exceedances of Delta E within Bryce Canyon National Park. However, less than screening level impacts were found for all other emission scenarios for the oil and gas well development near Escalante.

Table 35 shows no Level-1 screening exceedances for the coal mine development scenario, indicating no adverse effect on visibility from the proposed coal mine in any of the Class I or Class II areas of interest.

As a result of the potential visibility impacts during oil and gas development near Bryce Canyon National Park and Escalante, a refined Level-2 analysis was conducted as described below.

Table 33. Level-1 VISCREEN Modeling Results of Plume Visibility Inside Class I and Class II Areas of Interest from Oil and Gas Completion Activities near Bryce Canyon National Park

Emissions		Delta E		Contrast	
Source	Assessment	Result	Criterion	Result	Criterion
Bryce Canyon Nat	ional Park				
Well 3	Sky 1	22.12	2.00	0.02	0.05
Well 3	Sky 2	16.75	2.00	-0.19	0.05
Well 3	Terrain 1	29.75	2.00	0.17	0.05
Well 3	Terrain 2	3.22	2.00	0.01	0.05
Capitol Reef Natio	nal Park				
Well 2	Sky 1	0.84	2.00	0.00	0.05
Well 2	Sky 2	0.66	2.00	-0.01	0.05
Well 2	Terrain 1	0.42	2.00	0.01	0.05

Emissions		Delta	Delta E		trast
Source	Assessment	Result	Criterion	Result	Criterion
Well 2	Terrain 2	0.20	2.00	0.00	0.05
Zion National Park	<				
Well 10	Sky 1	1.24	2.00	0.00	0.05
Well 10	Sky 2	0.96	2.00	-0.01	0.05
Well 10	Terrain 1	0.61	2.00	0.01	0.05
Well 10	Terrain 2	0.30	2.00	0.00	0.05
Box-Death Hollow	Wilderness Area				
Well 2	Sky 1	2.12	2.00	0.00	0.05
Well 2	Sky 2	1.74	2.00	-0.01	0.05
Well 2	Terrain 1	1.44	2.00	0.01	0.05
Well 2	Terrain 2	0.56	2.00	0.00	0.05
Kanab Creek Wild	erness Area				
Well 10	Sky 1	0.54	2.00	0.00	0.05
Well 10	Sky 2	0.40	2.00	-0.00	0.05
Well 10	Terrain 1	0.21	2.00	0.00	0.05
Well 10	Terrain 2	0.11	2.00	0.00	0.05

Table 34. Level-1 VISCREEN Modeling Results of Plume Visibility Inside Class I and Class II Areas of Interest from Oil and Gas Completion Activities near Escalante, Utah

Emissions		Delta E		Con	trast				
Source	Assessment	Result	Criterion	Result	Criterion				
Bryce Canyon Nat	Bryce Canyon National Park								
Well 3	Sky 1	5.17	2.00	0.00	0.05				
Well 3	Sky 2	4.10	2.00	-0.04	0.05				
Well 3	Terrain 1	2.84	2.00	0.02	0.05				
Well 3	Terrain 2	0.81	2.00	0.00	0.05				
Capitol Reef Nation	onal Park								
Well 14	Sky 1	2.23	2.00	0.00	0.05				
Well 14	Sky 2	1.71	2.00	-0.02	0.05				
Well 14	Terrain 1	1.43	2.00	0.01	0.05				
Well 14	Terrain 2	0.56	2.00	0.00	0.05				
Zion National Par	k								
Well 3	Sky 1	0.61	2.00	0.00	0.05				
Well 3	Sky 2	0.45	2.00	-0.00	0.05				
Well 3	Terrain 1	0.24	2.00	0.00	0.05				
Well 3	Terrain 2	0.13	2.00	0.00	0.05				
Box-Death Hollow	Wilderness Area								
Well 14	Sky 1	4.62	2.00	0.00	0.05				

Emissions		Delta E		Contrast	
Source	Assessment	Result	Criterion	Result	Criterion
Well 14	Sky 2	3.95	2.00	-0.03	0.05
Well 14	Terrain 1	6.58	2.00	0.03	0.05
Well 14	Terrain 2	1.00	2.00	0.00	0.05
Kanab Creek Wil	derness Area				
Well 3	Sky 1	0.36	2.00	0.00	0.05
Well 3	Sky 2	0.25	2.00	-0.00	0.05
Well 3	Terrain 1	0.13	2.00	0.00	0.05
Well 3	Terrain 2	0.06	2.00	0.00	0.05

Table 35. Level-1 VISCREEN Modeling Results of Plume Visibility Inside Class I and Class II Areas of Interest from Coal Mine Development

Emissions		De	elta E	Con	trast
Source	Assessment	Result	Criterion	Result	Criterion
Bryce Canyon	National Park				
Coal Mine	Sky 1	0.61	2.00	0.01	0.05
Coal Mine	Sky 2	0.13	2.00	-0.00	0.05
Coal Mine	Terrain 1	1.39	2.00	0.01	0.05
Coal Mine	Terrain 2	0.06	2.00	0.00	0.05
Capitol Reef N	ational Park				<u>'</u>
Coal Mine	Sky 1	0.79	2.00	0.01	0.05
Coal Mine	Sky 2	0.11	2.00	-0.00	0.05
Coal Mine	Terrain 1	1.25	2.00	0.01	0.05
Coal Mine	Terrain 2	0.05	2.00	0.00	0.05
Zion National I	Park				
Coal Mine	Sky 1	0.26	2.00	0.01	0.05
Coal Mine	Sky 2	0.04	2.00	-0.00	0.05
Coal Mine	Terrain 1	0.33	2.00	0.00	0.05
Coal Mine	Terrain 2	0.02	2.00	0.00	0.05
Box-Death Hol	low Wilderness Area				<u>'</u>
Coal Mine	Sky 1	0.49	2.00	0.01	0.05
Coal Mine	Sky 2	0.11	2.00	-0.00	0.05
Coal Mine	Terrain 1	1.09	2.00	0.01	0.05
Coal Mine	Terrain 2	0.05	2.00	0.00	0.05
Kanab Creek V	Vilderness Area	•		•	
Coal Mine	Sky 1	0.29	2.00	0.01	0.05
Coal Mine	Sky 2	0.05	2.00	-0.00	0.05
Coal Mine	Terrain 1	0.34	2.00	0.00	0.05
Coal Mine	Terrain 2	0.02	2.00	0.00	0.05

Level-2 Analysis

Because the Level-1 analysis indicates potential visibility impacts inside of Bryce Canyon National Park and Box-Death Hollow Wilderness Area from oil and gas development near Bryce Canyon National Park, an additional Level-2 screening is warranted. In addition, the Level-1 analysis indicates potential visibility impacts inside of Bryce Canyon National Park, Box-Death Hollow Wilderness Area, and Capitol Reef National Park from oil and gas development near Escalante, and a Level-2 screening is warranted. The Level-2 screening allows the use of user-specified particle size and density, and the most conservative meteorological conditions specific to the proposed oil and gas well development area. Specifically, for Level-2 screening, the VISCREEN model is used to find the maximum wind speed during the daytime (D stability or greater) where Delta E and contrast in the park could potentially be exceeded.

Meteorological data for the Level-2 screening were based on the 5 years of hourly surface data from the Bryce Canyon airport 2013-2017 meteorological dataset and the Spooky Gulch 2012-2016 wind dataset as used in the AERMOD near-field modeling. The hourly data were extracted and summarized for each of the 16 wind directions and a joint frequency and cumulative frequency was developed to summarize the most conservative meteorological combinations of stability, wind direction, and wind speed. The Level-2 screening uses the cumulative 1-percentile meteorology (occurs on approximately 4 days a year) to be indicative of worst-day plume visual impacts when the probability of meteorological conditions is coupled with the probability of other factors being ideal for maximizing plume visual impacts. In accordance with EPA guidance, dispersion conditions with transport times of more than 12 hours to reach the Class I areas of concern were not considered in the cumulative frequency. Also, the meteorological wind direction range that could potentially transport the plume to the Class I and Class II areas was utilized based on the location of the nearest well pad to the Class I and Class II areas. For the Level-2 analysis, only daylight hours from 6 a.m. to 6 p.m. are considered as potential periods when plume visual impacts could occur within the Class I and Class II areas. It should be noted that the most stable daytime stability class is considered to be slightly stable to neutral, or category D.

Using this screening for oil and gas well development near Bryce Canyon National Park, the 1percentile atmospheric stability and wind speed within Bryce Canyon National Park are determined to be stability category D with wind speed of 4 m/sec. The 1-percentile atmospheric stability and wind speed within Box-Death Hollow Wilderness Area are determined to be stability category E with wind speed of 3 m/sec. Stability category E conditions typically occur during nighttime hours or during the day under strong subsidence, and these 1-percentile conditions are assumed to be very conservative. In addition, only peak day emissions during completion activities were input into VISCREEN for the Level-2 analysis because completion emissions were highest among construction-related activities, and production activities were determined to not cause an exceedance of either Delta E or plume contrast screening criteria. The Level-2 VISCREEN visual impacts during completion activities using this most conservative dispersion category associated with oil and gas well development near Bryce Canyon National Park are summarized below in Table 36. The VISCREEN Level-2 results show three potential exceedances of Delta E (color perceptibility parameter) criteria within Bryce Canyon National Park. However, completion activities would only occur over a maximum of 14 calendar days, and those days would need to overlap with the 4 days when atmospheric conditions are ideal,

thus making the likelihood of impacts unlikely or rare. There would be no exceedances of visibility screening criteria during drilling activities, which account for the second-highest emissions among construction-related activities. The Level-2 VISCREEN visual impacts during drilling using the aforementioned conservative dispersion category inside of Bryce Canyon National Park are summarized below in Table 37.

For oil and gas well development near Escalante, the 1-percentile atmospheric stability and wind speed within Capitol Reef National Park and Box-Death Hollow Wilderness Area are determined to be stability category D with wind speed of 4 m/sec. Within Bryce Canyon National Park, the cumulative frequency of dispersion conditions associated with atmospheric stabilities D-F and wind speeds 1-8 m/s is less than the 1-percentile of the Bryce Canyon and Spooky Gulch met datasets. Consequently, the potential for visibility impacts within Bryce Canyon National Park is very low and not analyzed with a Level-2 VISCREEN analysis. In addition, only peak day emissions during completion activities were input into VISCREEN for the Level-2 analysis because completion emissions were highest among construction-related activities, and production activities were determined to not cause an exceedance of either Delta E or plume contrast screening criteria. The Level-2 VISCREEN visual impacts during completion activities using this most conservative dispersion category associated with oil and gas well development near Escalante are summarized below in Table 38. The VISCREEN Level-2 results show no exceedances of visibility screening criteria during completion activities and, consequently, there would be no visibility impacts during construction or production activities for oil and gas well development near Escalante.

The Level-2 screening results indicate that oil and gas completion activities could increase plume perceptibility in Bryce Canyon National Park, but only if completion activities occur on days with the adverse 1-percentile meteorology conditions (approximately 4 days per year). No adverse impacts on visibility are anticipated in the other Class I or Class II areas of interest based on Level-2 screening. Based on these findings, should development occur near Bryce Canyon National Park, it would be prudent to perform additional future visibility analyses and assessment and include possible mitigation measures in the plan.

Table 36. Level-2 VISCREEN Modeling Results of Plume Visibility from Oil and Gas Development during Completion Activities Near Bryce Canyon National Park

Emissions		Delta	Delta E		trast
Source	Assessment	Result	Criterion	Result	Criterion
Bryce Canyon N	ational Park				
Well 3	Sky 1	2.89	2.00	0.00	0.05
Well 3	Sky 2	2.45	2.00	-0.02	0.05
Well 3	Terrain 1	4.69	2.00	0.02	0.05
Well 3	Terrain 2	0.94	2.00	0.00	0.05
Box-Death Hollo	w Wilderness Area				
Well 2	Sky 1	0.44	2.00	0.00	0.05
Well 2	Sky 2	0.36	2.00	-0.00	0.05
Well 2	Terrain 1	0.30	2.00	0.00	0.05
Well 2	Terrain 2	0.11	2.00	0.00	0.05

Table 37. Level-2 VISCREEN Modeling Results of Plume Visibility Inside Bryce Canyon National Park from Oil and Gas Development During Drilling Activities Near Bryce Canyon National Park

Emissions		Delta E		Contrast				
Source	Assessment	Result	Criterion	Result	Criterion			
Bryce Canyon Nati	Bryce Canyon National Park							
Well 3	Sky 1	0.79	2.00	0.00	0.05			
Well 3	Sky 2	0.67	2.00	-0.00	0.05			
Well 3	Terrain 1	1.39	2.00	0.01	0.05			
Well 3	Terrain 2	0.25	2.00	0.00	0.05			

Table 38. Level-2 VISCREEN Modeling Results of Plume Visibility from Oil and Gas Development during Completion Activities Near Escalante

Emissions		Delta E		Contrast	
Source	Assessment	Result	Criterion	Result	Criterion
Box-Death Hollow	Wilderness Area				
Well 2	Sky 1	0.39	2.00	0.00	0.05
Well 2	Sky 2	0.33	2.00	-0.00	0.05
Well 2	Terrain 1	0.62	2.00	0.00	0.05
Well 2	Terrain 2	0.08	2.00	0.00	0.05
Capitol Reef Natio	nal Park				
Well 2	Sky 1	0.21	2.00	0.00	0.05
Well 2	Sky 2	0.15	2.00	-0.00	0.05
Well 2	Terrain 1	0.11	2.00	0.00	0.05
Well 2	Terrain 2	0.04	2.00	0.00	0.05

Conclusions

The modeling results indicate that the reasonably foreseeable development activities would result in some increases in criteria pollutants; however, these increases would be small and, with the exception of 1-hour NO₂, would not result in concentrations greater than the NAAQS or UAAQS. No adverse impacts on ozone are expected as a result of oil and gas activities. Further analysis may be required to quantify the impacts on ozone from the coal mine, although it should be noted that ozone impacts would primarily be attributable to the use of coal haul trucks and would be distributed across a 200-mile transport area.

Short-term exposure to HAPs is expected to be very small compared to acute RELs. Similarly, long-term exposure to HAPs is expected to be very small compared to RfCs. HAP modeling does not indicate any human health concerns, and the cancer risks from reasonably foreseeable development activities are minimal.

Potential visibility impacts would be the greatest in Bryce Canyon National Park if reasonably foreseeable development of an oil and gas field were to occur in close proximity to Bryce

Canyon National Park. VISCREEN results show that inside of the park a visible plume may be perceptible and in contrast with the sky and terrain during completion activities on days of adverse meteorological conditions. Based on the VISCREEN analyses, visibility impacts would not occur during any other phase of construction or during the production phase.

In addition to the reasonably foreseeable development projects in KEPA that are modeled and described in this air quality assessment, other reasonably foreseeable development projects in the region have the potential to affect air quality. For example, in August 2018 the BLM released the Record of Decision for the Alton Coal Tract Lease by Application for Federal coal resources on lands near Alton, Utah, approximately 8 miles from the Planning Area and within the near-field modeling boundary used for this air quality assessment. The selected alternative in the Record of Decision allows for the competitive lease sale of approximately 2,114 acres, from which an estimated 30.8 million tons of coal would be recoverable. The potential competitive lease sale and subsequent development and operation of a coal mine on the Alton Coal Tract would result in emissions of CAPs, HAPs, and potential effects on ambient air quality and air quality-related values (e.g., visibility, deposition) in the region. Air quality modeling conducted for the Alton Coal Tract Lease by Application Final EIS indicated the following results (BLM 2018c):

- Existing and future modeled emission sources would result in concentrations of criteria pollutant emissions within the NAAQS.
- Emissions of VOCs would be within regulatory limits.
- Emissions of HAPs would be below threshold exposure levels.
- The maximum visibility impacts inside of Bryce Canyon National Park from a potential mine plume would be less than the VISCREEN acceptance criteria for both color change (Delta E) and contrast.
- There were no modeled visibility extinction changes exceeding 10 percent in any of the Class I or Class II areas of interest. Zion National Park had three modeled extinction changes that exceeded 5 percent.
- Impacts for sulfur and nitrogen deposition are below the deposition analysis thresholds in all cases, except for nitrogen deposition in Bryce Canyon National Park, which exceeds the deposition analysis thresholds.
- GHG emissions (CO₂) would be approximately 0.013 percent of estimated 2014 global GHG emissions (this includes offsite end-user combustion of the coal produced from the tract).

Refer to the Air Resources Impact Assessment Technical Report in the Alton Coal Tract Lease by Application Final EIS for additional information (BLM 2018c).

In addition, decommissioning and closure of facilities in the analysis area that emit pollutants could result in reductions in cumulative regional emissions and associated air quality impacts. For example, in 2017 the Salt River Project decided to close the Navajo Coal Fired Electric Generating Station in northern Arizona or transfer ownership of the power plant to another entity. As of April 2019, a new owner for the Navajo Generating Station has not been secured. Closure of the Navajo Generating Station would result in notable reductions in criteria pollutant emissions, HAPs, and associated air quality impacts in the region.

References

- Alpine Geophysics and Environ. 2016. Greater Chapita Wells Project EIS, Air Quality Technical Support Document, Appendix J. Prepared for the Bureau of Land Management, by Alpine Geophysics and Ramboll Environ, October.
- American Petroleum Institute (API). 2009. API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry.
- Bureau of Land Management (BLM). 2018a. Mineral Potential Report for the Lands now Excluded from Grand Staircase-Escalante National Monument. Garfield and Kane Counties, Utah. U.S. Department of the Interior, Bureau of Land Management.
- Bureau of Land Management (BLM). 2018b. Annual Production Report for All Federal Wells in the Upper Valley Field. Provided by Kahindo Kamau, BLM Utah State Office, May 15.
- Bureau of Land Management (BLM). 2018c. Alton Coal Tract Lease by Application Final Environmental Impact Statement. August 30, 2018.
- Bureau of Land Management (BLM). 2019a. 2018 BLM Utah Air Monitoring Report. Retrieved from https://go.usa.gov/xmDkx.
- Bureau of Land Management (BLM). 2019b. Specialist Report Greenhouse Gas Analysis for BLM Utah Oil and Gas Leasing. Prepared by Erik Vernon, BLM Utah State Office, May 16, 2019.
- Cowherd, Jr., C. 1988. A Refined Scheme for Calculation of Wind Generated PM Emissions from Storage Piles, in Proceedings: APCA/EPA Conference on PM10: Implementation of Standards.
- Energy Information Administration. 2017. Energy Units and Calculators Explained. Retrieved from https://www.eia.gov/energyexplained/index.php?page=about_energy_units.
- ICF. 2018. Grand Staircase-Escalante National Monument and Kanab-Escalante Resource Area Resource Management Plans/EIS, Air Quality Dispersion Modeling Protocol, June.
- The Climate Registry. 2008. General Reporting Protocol v1.1. May.
- The Climate Registry. 2017. Updated Default Emission Factors for 2017. March.
- U.S. Environmental Protection Agency (EPA). 1980. Workbook for Estimating Visibility Impairment, EPA-450/4-80-031. November. Retrieved from http://www.arlis.org/docs/vol2/hydropower/APA_DOC_no._2114.pdf.
- U.S. Environmental Protection Agency (EPA). 1991. Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised, EPA-454/R-92-019, October 1992.
- U.S. Environmental Protection Agency (EPA). 1995. Protocol for Equipment Leak Emission Estimates, USEPA, EPA-453/R-95-017, November.
- U.S. Environmental Protection Agency (EPA). 1998a. Compilation of Air Pollutant Emission Factors: AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Chapter 1.4 Natural Gas Combustion. July.

- U.S. Environmental Protection Agency (EPA). 1998b. Compilation of Air Pollutant Emission Factors: AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Chapter 11.9 Western Surface Coal Mining. October.
- U.S. Environmental Protection Agency (EPA). 2006a. Compilation of Air Pollutant Emission Factors: AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Chapter 13.2.2 Unpaved Roads. November.
- U.S. Environmental Protection Agency (EPA). 2006b. Compilation of Air Pollutant Emission Factors: AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Chapter 13.2.5 Industrial Wind Erosion. November.
- U.S. Environmental Protection Agency (EPA). 2008. Compilation of Air Pollutant Emission Factors: AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Chapter 5.2.1 Transportation and Marketing of Petroleum Liquids. July.
- U.S. Environmental Protection Agency (EPA). 2009. NONROAD2008a Model. United States Environmental Protection Agency Assessment and Standards Division, Office of Transportation and Air Quality. Retrieved from http://www.epa.gov/otaq/nonrdmdl.htm.
- U.S. Environmental Protection Agency (EPA). 2010. MOVES2010a Model. United States Environmental Protection Agency Assessment and Standards Division, Office of Transportation and Air Quality. Retrieved from https://www.epa.gov/moves/previous-moves-versions-and-documentation.
- U.S. Environmental Protection Agency (EPA). 2016. Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM2.5 under the PSD Permitting Program, EPA-454/R-16-006. December.
- U.S. Environmental Protection Agency (EPA). 2017. Revisions to the Guideline on Air Quality Models: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter; Final Rule. January. Retrieved from https://www3.epa.gov/ttn/scram/appendix_w/2016/AppendixW_2017.pdf.
- U.S. Environmental Protection Agency (EPA). 2018a. AERMAP Model Version 18081. United States Environmental Protection Agency Support Center for Regulatory Atmospheric Modeling (SCRAM). Retrieved from https://www.epa.gov/scram/air-quality-dispersion-modeling-related-model-support-programs#aermap.
- U.S. Environmental Protection Agency (EPA). 2018b. User's Guide for the AERMOD Meteorological Preprocessor (AERMET). United States Environmental Protection Agency Support Center for Regulatory Atmospheric Modeling (SCRAM). EPA-454/B-18-002. April.
- U.S. Global Change Research Program. 2018. Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment [Reidmiller, D. R., C. W. Avery, D. R. Easterling, K. E. Kunkel, K. L. M. Lewis, T. K. Washington, DC, USA,: U.S. Global Change Research Program.

- Utah Division of Oil, Gas and Mining (UDOGM). 2018. *Utah Oil and Gas Monthly Production Reports by County*. Retrieved from https://oilgas.ogm.utah.gov/oilgasweb/publications/monthly-rpts-by-cnty.xhtml?rptType=CNTY.
- Walsh, J. E. 2014. Intensified warming of the Arctic: Causes and impacts on mid-latitude, Global and Planetary Change, doi:10.1016/j.gloplacha.2014.03.003.
- Wyoming Department of Environmental Quality (WDEQ). 2013. Oil and Gas Production Facilities Chapter 6, Section 2 Permitting Guidance. Retrieved from https://www.pipelinelaw.com/wp-content/uploads/sites/24/2014/04/September_2013_0il_and_Gas_Revision_UGRB.pdf.

Abbreviations-Acronyms

Term	Definition
°R	Degrees Rankine
μg/m ³	Micrograms per cubic meter
1000L/MCF	Thousand liters per thousand cubic feet
AERMET	AERMOD Meteorological Processor
ASOS	Automated Surface Observing System
atm	Atmosphere
bbl	Barrel
BLM	Bureau of Land Management
Btu	British thermal unit
CAP	Criteria air pollutant
CFR	Code of Federal Regulations
CH ₄	Methane
СО	Carbon monoxide
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DEQ	Department of Environmental Quality
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FLPMA	Federal Land Policy and Management Act
FLAG	Federal Land Managers' Air Quality Related Values Work Group
g/hp-hr	Gram per horsepower-hour
g/mol	Gram per mole
g/ton	Gram per ton
GHG	Greenhouse gas
GLYCalc	Glycol units
GSENM	Grand Staircase-Escalante National Monument
HAP	Hazardous air pollutant
hp	Horsepower
hr/pad	Hour per pad
K	Kelvin
KEPA	Kanab-Escalante Planning Area
kg/ton	Kilogram per ton
L-atm/mol-K	Liter-atmosphere per mole-Kelvin
lbs/MMscf	Pounds per million standard cubic feet
m/s	Meter per second
M-18	Pound per square inch absolute [psia
M-7	Pound per mile [lb/mile
M-8	Grams per square meter [g/m²

Term	Definition
MCF	Thousand cubic feet
MEI	Maximum exposed individual
MERP	Modeled Emissions Rates for Precursors
MLE	Most likely exposure
MMBtu	Million British thermal units
mph	Mile per hour
N ₂ O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NCA4	Fourth National Climate Assessment
NEPA	National Environmental Policy Act
NLCD92	National Land Cover Dataset 1992
NO ₂	Nitrogen dioxide
NOx	Oxides of nitrogen
NRA	National Recreation Area
NSPS	New Source Performance Standards
NWS	National Weather Service
PM ₁₀	Particulate matter less than or equal to 10 microns in size
PM _{2.5}	Particulate matter less than or equal to 2.5 microns in size
ppb	Part per billion
PSD	Prevention of Significant Deterioration
REL	Reference Exposure Level
RfC	Reference Concentration for Chronic Inhalation
RMP	Resource Management Plan
scf	Standard cubic foot
SIL	Significant Impact Level
SO ₂	Sulfur dioxide
SO _X	Sulfur oxides
THC	Total hydrocarbon
тос	Total organic carbon
UAAQS	Utah Ambient Air Quality Standards
VMT	Vehicle miles traveled
VOC	Volatile organic compound

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix N

Cumulative Impact Methodology and Past, Present, and Reasonably Foreseeable Future Actions

August 2019

Table of Contents

Introduction	N-1
Cumulative Analysis Methodology	N-1
Time Frame of Cumulative Impacts Analysis	N-2
Cumulative Impact Analysis Areas	N-2
Past, Present, and Reasonably Foreseeable Future Actions	N-5
References	N-8
Abbreviations-Acronyms	N-9
List of Tables Table 1. Cumulative Impact Analysis Areas, by Resource	N-2
Table 2. Cumulative Impact Analysis Areas, by Resource	

Appendix N: Cumulative Impact Methodology and Past, Present, and Reasonably Foreseeable Future Actions

Introduction

This appendix provides supporting and supplementary information for the analysis of cumulative impacts presented in Chapter 3 (Affected Environment and Environmental Consequences) of the Resource Management Plans (RMPs)/Environmental Impact Statement (EIS). Cumulative impacts are the effects on the environment that result from the impact of implementing RMPs alternatives in combination with other actions outside the scope of this plan that may contribute to cumulative impacts. The Council on Environmental Quality (CEQ) regulations for implementing the National Environmental Policy Act (NEPA) define cumulative impacts as, "The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (RFAs) regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7).

The analysis of cumulative impacts identifies projected incremental impacts from the RMPs alternatives in combination with impacts from past, present, and RFAs, which results in cumulative impacts. The cumulative impacts analysis included in Chapter 3 (Affected Environment and Environmental Consequences) reflects the programmatic level of analysis in the RMPs/EIS. Additional analysis of cumulative impacts would occur during site-specific/implementation-level NEPA reviews.

Cumulative Analysis Methodology

CEQ suggests cumulative impact analyses focus on meaningful impacts, and not exhaustively analyze all possible cumulative impacts. Therefore, the cumulative impacts analysis in Chapter 3 (Affected Environment and Environmental Consequences) considers the RMP alternatives in the context of the broader human environment. Because of the programmatic, broad-scale nature of these RMPs, this assessment is similarly broad and generalized to address potential effects that could occur from alternative management scenarios when combined with other activities or projects that could contribute to impacts in the same temporal and geographic scope of the direct and indirect impacts. This assessment is primarily qualitative for many resources because of the lack of detailed information that would result from project-level decisions, site-specific resource conditions, and other activities or projects.

In defining potential cumulative impacts issues for consideration, the Bureau of Land Management (BLM) paid particular attention to the following:

- 1. Issues identified during scoping
- 2. Internal scoping (i.e., the professional judgment of BLM resource specialists and cooperating agencies)
- 3. A review of other RFAs in the cumulative impact analysis areas (CIAAs)
- 4. Consideration of context and intensity of potential impacts

To focus the scope of cumulative impacts analysis, cumulative impacts issues were considered in the context of baseline conditions described in the affected environment sections of Chapter 3, Affected Environment and Environmental Consequences, the incremental impacts on individual resources described in the direct and indirect impacts analysis in Chapter 3 (Affected Environment and Environmental Consequences), the past, present, and RFAs in this appendix, and the following factors as modified from CEQ's Considering Cumulative Effects Under the National Environmental Policy Act (CEQ 1997):

- Does the affected resource have substantial value relative to legal protection and/or ecological, cultural, economic, or social importance?
- Are RFAs anticipated to have environmental impacts similar to the kinds of impacts identified for RMP alternatives?
- Have any recent or ongoing NEPA analyses of similar actions in the geographic area identified important adverse or beneficial cumulative impacts issues?
- Has the impact on the resource been historically important, such that the importance of the resource is defined by past loss, past gain, or investments to restore resources?

Time Frame of Cumulative Impacts Analysis

The time frame for the cumulative impacts analysis for each resource is based on the duration of the short-term and long-term, direct and indirect impacts of the RMP alternatives. In general, the time frame of the cumulative impacts analysis is the estimated 20-year life of the RMPs. In some cases, the cumulative impacts analysis time frame for certain resources is longer than the life of the RMPs to encompass residual effects and impacts that may last beyond the life of the plan.

Cumulative Impact Analysis Areas

This cumulative impacts analysis defines the CIAAs for each resource to delineate the geographic scope of the analysis for each resource. The CIAAs for each resource can be different than the analysis area for direct and indirect impacts, and may extend beyond the Planning Area, to encompass the full extent of cumulative impacts that would result from the incremental addition of direct and indirect impacts from the RMP alternatives when added to impacts from past actions, ongoing actions, and RFAs. Table 1 below identifies the CIAAs for each resource and the rationale.

Table 1. Cumulative Impact Analysis Areas, by Resource

Resource	Cumulative Impact Analysis Area	Rationale
Air Quality	Garfield and Kane Counties, as well as nearby Class I and Sensitive Class II areas	This area encompasses emissions from various sources within the Planning Area that may affect air quality concentrations and air quality-related values throughout the region.
Cultural Resources	The Planning Area plus a 15-mile buffer	This area encompasses cultural resources that could be directly affected by surface-disturbing activities as well as the viewshed of historic trails that could be affected by cumulative impacts.

Resource	Cumulative Impact Analysis Area	Rationale
Fish and Wildlife (including Special Status Species)	The cumulative impacts analysis area for big game species is game management units that intersect the Planning Area; for aquatic species it is the boundaries of watersheds that extend within and outside of the Planning Area; for migratory birds and non-big game terrestrial wildlife species it is the Planning Area.	These areas include the documented home range or foraging territories of species or groups of species that are present or have suitable habitat in or adjacent to the Planning Area.
Lands with Wilderness Characteristics	The identified lands with wilderness characteristics and the WSAs within the Planning Area	The cumulative impact analysis area incorporates all lands that contain wilderness characteristics in the Planning Area.
Paleontological Resources and Geology	The Planning Area	This area encompasses paleontological resources that may experience direct or indirect effects from management actions and could contribute to cumulative impacts.
Soil Resources and Water	The cumulative impacts analysis area for soil is the Planning Area and directly adjacent areas from which sedimentation and noxious weed dispersion could affect the Planning Area. The cumulative impacts analysis area for water includes all surface water features (e.g., streams, watersheds) and groundwater resources (i.e., groundwater basins and aquifers) within or crossing the boundary of the Planning Area.	This soils cumulative impact analysis area encompasses areas of surface disturbance in the Planning Area and the extent of area where surface runoff and erosion would increase due to the NPL Project. The water cumulative analysis area includes the extent of watersheds and groundwater basins that could experience cumulative impacts.
Vegetation and Fire and Fuels	The cumulative impacts analysis area for vegetation is the Planning Area and areas directly adjacent from which noxious weeds, invasive species, and pests could spread. The cumulative impacts analysis area for fire and fuels is the level four hydrologic subbasins within and immediately adjacent to the Planning Area.	The vegetation cumulative impacts analysis area encompasses the extent of vegetation communities that could experience cumulative effects. This area encompasses the range that wildland fires could burn based on fuel availability, weather, and topography that may experience direct or indirect effects from management and could experience cumulative impacts.
Visual Resources, Night Skies, and Natural Soundscape	The viewshed within 12 miles of the Planning Area	This area is near the limit of visibility of skylined energy development facilities, such as transmission towers and wind turbines, that may be readily noticeable to casual observers.
Wild Horses	The full extent of HAs that intersect the Planning Area	This area encompasses the extent of the HAs that intersect the Planning Area.

Resource	Cumulative Impact Analysis Area	Rationale
Forestry and Woodland Products	The Planning Area and watersheds that intersect the Planning Area	The analysis area encompasses the extent of forested areas and communities that could be cumulatively affected by harvesting, fires, vegetation treatments, and other activities associated with management decisions.
Lands and Realty and Renewable Energy	The Planning Area	This area includes the extent of area where land exchanges could affect the boundary of the Planning Area.
Livestock Grazing	The full extent of allotments that intersect the Planning Area	This cumulative impact analysis area encompasses the full extent of the grazing allotments that intersect the Planning Area.
Minerals	The Planning Area	This area encompasses the extent of mineral resources that could be affected by management decisions.
Recreation	The Planning Area and surrounding public land accessible to recreation users	This area includes recreation areas that could be directly affected by management decisions and surrounding public lands that could also experience recreation impacts due to management decisions in the Planning Area.
Transportation	The cumulative impact analysis area is the Planning Area, the extent of transportation routes that intersect the Planning Area, and transportation routes in areas adjacent to the Planning Area.	This area encompasses the full extent of transportation routes that could experience impacts resulting from management decisions in combination with other past, present, and RFAs.
Areas of Critical Environmental Concern	The cumulative impact analysis areas for ACECs is the Planning Area.	This area encompasses the boundaries of ACECs and other locations in the Planning Area that could be cumulatively affected by ACEC management decisions in combination with other past, present, and RFAs.
National Trails	The Old Spanish National Historic Trail and associated viewshed up to 12 miles or the horizon (whichever is closer)	This area includes the only national historic trail in the Planning Area and is near the limit of visibility of skylined energy development facilities that may be readily noticeable to casual observers.
Scenic Routes	The viewshed within a 12-mile distance of the Planning Area	This area is near the limit of visibility of skylined energy development facilities that may be readily noticeable to casual observers on scenic routes.
Wild and Scenic Rivers	Suitable river corridors in the planning area	This area includes the full extent of all suitable wild and scenic rivers that could be affected by management decisions in combination with other past, present, and RFAs.

Resource	Cumulative Impact Analysis Area	Rationale
Wilderness Study Areas	WSAs within the Planning Area	This area includes the full extent of WSAs that intersect the Planning Area that could be affected by management decisions in combination with other past, present, and RFAs.
Social and Economic Considerations	The full extent of Garfield and Kane Counties in Utah and Coconino County in Arizona	This area encompasses the entirety of the counties that intersect the Planning Area as well as the adjacent Coconino County in Arizona.
Environmental Justice	The extent of Garfield and Kane Counties in Utah and Coconino County in Arizona	This area encompass the entirety of the counties that intersect the Planning Area as well as the adjacent Coconino County in Arizona.
Hazardous Materials and Public Safety	The Planning Area and any routes used to transport hazardous materials to and from the Planning Area	This area includes the full extent of areas and routes where hazardous materials could affect other resources.

RFA – reasonably foreseeable future action, HA – herd area, WSA – Wilderness Study Area, BLM – Bureau of Land Management

Past, Present, and Reasonably Foreseeable Future Actions

The cumulative impacts analysis considers past and ongoing actions that have contributed to the conditions of resources within the geographic scope and time frame of the cumulative impacts analysis. A variety of different types of projects and actions are contributing to ongoing effects on resources and are considered in this analysis, including recreation permits (e.g., Special Recreation Permits), livestock grazing (e.g., range improvement projects), vegetation treatments, and land use authorizations (e.g., film permits, pipelines, rights-of-way). The cumulative impacts analysis also considers ongoing actions and RFAs that may result in incremental impacts or synergistic effects if implemented in combination with the RMP alternatives.

Table 2 below identifies the past, present, and RFAs considered in the cumulative impacts analysis. RFAs are those foreseeable future actions for which there are existing decisions, funding, or formal proposals, or which are highly probable, based on known opportunities or trends. In general, RFAs do not include remote or speculative actions or projects.

Table 2. Cumulative Impact Analysis Areas, by Resource

ast, Present, and Reasonably Foreseeable Actions	
LM RMPs, Programmatic NEPA Documents, and Other Federal Plans, Agreements, and De	cisions
teragency Agreement between the BLM and NPS for grazing management (1993)	
stablishment of GSENM and Presidential Proclamation 9682 (1996, 2017)	
PS Management Policies 2006 (2006)	
len Canyon General Management Plan (1979)	
and and Resource Management Plan for the Fishlake National Forest (1986)	
ixie National Forest Land and Resource Management Plan (1986)	

Past, Present, and Reasonably Foreseeable Actions

Warm Springs Resource Area Approved Resource Management Plan (1987)

House Range Resource Area Approved Resource Management Plan (1987)

St. George Field Office Resource Management Plan and Record of Decision (1999)

Glen Canyon Grazing Management Plan (1999)

Escalante Management Framework Plan (1999)

Zion National Park General Management Plan (2001)

Ely Approved Resource Management Plan and Record of Decision (2008)

Kanab Resource Management Plan (2008)

Arizona Strip Field Office Resource Management Plan and Record of Decision (2008)

Richfield Resource Management Plan and Record of Decision (2008)

Bryce Canyon National Park Foundation Document (2014)

BLM GSENM Monument Management Plan (2000; amended September 2015)

Programmatic Noxious Weed and Invasive Plant Management Plan (2015)

Glen Canyon Off-Road Vehicle Management Plan (2017)

Establishment of Glen Canyon National Recreation Area and enabling legislation (1972)

Bears Ears National Monument Management Plan (2019)

Greater Sage-Grouse Approved Resource Management Plans, Amendments, and Maintenance Actions

Geothermal Resources Leasing Programmatic EIS

Record of Decision for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic EIS (2007)

Capitol Reef National Park Livestock Grazing and Trailing Management Plan and EIS (2018)

County and State Planning Documents

Utah Code Sections 63j-4-401

Utah Code, Title 63J, Chapter 8, State of Utah Resource Management Plan for Federal Lands

State Protocol Agreement Between the Utah State Director of BLM and the Utah State Historic Preservation Office (SHPO) and the Programmatic Agreement Among BLM, the Advisory Council on Historic Preservation, and the National Conference of SHPOs

Scenic Byway 12 Corridor Management Plan (2001)

Utah's Water Resources: Planning for the Future, Utah Division of Water Resources (2001)

State Comprehensive Outdoor Recreation Plan (2003)

Coconino County Comprehensive Plan (2003)

Utah Comprehensive Wildlife Conservation Strategy (2005)

Coral Pink Sand Dunes State Park General Management Plan (2005)

Garfield County Economic Development Plan (2007)

Kane County 2030 Land Resource Management Plan (March 2011)

Garfield County Comprehensive Plan 2030 (Adopted November 2010, last amended November 2013)

Kane County Land Use Ordinance, Chapter 27, Escalante Region Multiple Use/Multiple Functions Grazing Zone (last amended September 22, 2014)

Kane County Resource Management Plan (adopted June 22, 1998; last amended November 2016)

Kane County General Plan (adopted June 22, 1998; last amended December 19, 2016)

Garfield County General Management Plan (2017)

Past, Present, and Reasonably Foreseeable Actions

Lands and Realty

Garkane Transmission Right-of-Way

South Central Buckskin to Page, Buried Fiber Optic Line

South Central Johnson Canyon to Cannonville, Buried Fiber Optic Line

Lake Powell Pipeline

Various film permits

Solar Energy Development on SITLA land near Big Water

Livestock Grazing

Cat Pasture Corral Line Shack Project

Swapp Canyon Pipeline, Water Meter, Trough, Float Box, and Fence

Various Water Catchment, Fence, and other Range Improvement Projects

Minerals

Up to 10 producing oil and gas wells and 4 exploration wells in the Planning Area

Up to 1 coal mine in the same general vicinity as the previously proposed Smoky Hollow Mine

Locatable Mine Claims for Alabaster

Additional Free-Use Permits for Sand and Gravel Mines

Ongoing oil and gas development in the Upper Valley Field

Alton Coal Tract Lease by Application Record of Decision (2018)

Berry Patch #4 Alabaster Mine

Vegetation Projects

Upper Paria Watershed Vegetation Treatments

Skutumpah Vegetation Treatments

Alvey Wash, Coal Bench, and Last Chance Vegetation Restoration

Jenny Clay - chaining and seeding project

Cockscomb Bull Hog, Harrow, and Seeding project

Deer Springs Ranch Fuel Reduction Project

Recreation

Programmatic EA for Organized Group Activities along Hole-in-the-Rock Road (2012)

Calf Creek Recreation Area Site Improvements EA (2017)

Dry Fork Facilities Development (parking lot, bathrooms, roads/trails)

Various Special Recreation Permits

Hole-in-the-Rock Road Repair Project

Various Trail Projects (e.g., trail re-routes)

Other

Various Paleontological Excavation Projects

BLM – Bureau of Land Management, NEPA – National Environmental Policy Act, NPS – National Park Service, GSENM – Grand Staircase-Escalante National Monument, EIS – Environmental Impact Statement, SHPO – State Historic Preservation Officer, EA – Environmental Assessment

References

Council on Environmental Quality (CEQ). 1997. Considering Cumulative Effects Under the National Environmental Policy Act. January 1997.

Abbreviations-Acronyms

Term	Definition
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CIAA	Cumulative impact analysis area
EIS	Environmental Impact Statement
NEPA	National Environmental Policy Act
RFA	Reasonably foreseeable future action
RMP	Resource Management Plan

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix O	
Biological Resources	
August 2019	

Appendix 0: Biological Resources

Table 1 lists the common and scientific names of special status plants and animal species mentioned in the Grand Staircase Escalante National Monument and Kanab-Escalante Planning Area Resource Management Plans and Environmental Impact Statement.

Table 1. Common and Scientific Names of Special Status Plant and Wildlife Species

Plants Atwood's pretty phacelia Chinle chia Salvia columbariae var. argillacea Chinle evening primrose Oenothera murdockii Cronquist's phacelia Phacelia cronquistiana Cutter's lupine Lupinus caudatus var. cutleri Escarpment milkvetch Astragalus striatiflorus Gumbo milkvetch Astragalus ampullarius Hole-in-the-rock prairie clover Jones's cycladenia Cycladenia humilis var. Jonesii Kanab thelypody Thelypodiopsis ambigua var. erecta Kane breadroot Pediomelum epipsilum Kodachrome bladderpod Physaria tumulosa Navajo sedge Carex specuicola Paria spurge Euphorbia nephradenia Siler pincushion cactus Pediocactus sileri ("Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytali chub Gila elegans Colorado pikeminnow Ptychochellus lucius Colorado River Cutthroat Trout Phacelias in turius Colorado River Cutthroat Trout Gila elegans Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater Desert night lizard Xantusia vigilis	Common Name	Scientific Name
Chinle chia Salvia columbariae var. argillacea Chinle evening primrose Oenothera murdockii Cronquist's phacelia Phacelia cronquistiana Cutter's lupine Lupinus caudatus var. cutleri Escarpment milkvetch Astragalus striatiflorus Gumbo milkvetch Astragalus ampullarius Hole-in-the-rock prairie clover Dalea flavescens var. epica Jones's cycladenia Cycladenia humilis var. jonesii Kanab thelypody Thelypodlopsis ambigua var. erecta Kane breadroot Pediomelum epipsilum Kodachrome bladderpod Physaria tumulosa Navajo sedge Carex specuicola Paria spurge Euphorbia nephradenia Siler pincushion cactus Pedioacctus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Weish's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychochellus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Plants	
Chinle evening primrose Cronquist's phacelia Cutler's lupine Escarpment milkvetch Astragalus striatiflorus Gumbo milkvetch Hole-in-the-rock prairie clover Jones's cycladenia Cycladenia humilis var. jonesii Kanab thelypody Kanab thelypody Fediomelum epipsilum Kodachrome bladderpod Navajo sedge Paria spurge Euphorbia nephradenia Siler pincushion cactus Pedioactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Ute ladies'-tresses Spiranthes diluvialis Weish's milkweed Bonytail chub Golorado River Cutthroat Trout Flannel mouth sucker Roundtail chub Gila cypha Razorback sucker Roundtail chub Gila robusta Amphibians Arizona toad Reptiles Common chuckwalla Sauromalus ater	Atwood's pretty phacelia	Phacelia pulchella var. atwoodii
Cronquist's phacelia	Chinle chia	Salvia columbariae var. argillacea
Cutler's lupine Escarpment milkvetch Astragalus striatiflorus Gumbo milkvetch Astragalus ampullarius Hole-in-the-rock prairie clover Jones's cycladenia Kanab thelypody Thelypodiopsis ambigua var. erecta Kane breadroot Kodachrome bladderpod Physaria tumulosa Navajo sedge Carex specuicola Siler pincushion cactus Pediocactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Polysaria tumulosa Catostomus discobolus Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Chinle evening primrose	Oenothera murdockii
Escarpment milkvetch Gumbo milkvetch Astragalus striatiflorus Gumbo milkvetch Astragalus ampullarius Hole-in-the-rock prairie clover Dalea flavescens var. epica Cycladenia humilis var. Jonesii Kanab thelypody Thelypodiopsis ambigua var. erecta Kane breadroot Pediomelum epipsilum Kodachrome bladderpod Physaria tumulosa Navajo sedge Carex specuicola Paria spurge Euphorbia nephradenia Siler pincushion cactus Pediocactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Cronquist's phacelia	Phacelia cronquistiana
Gumbo milkvetch Hole-in-the-rock prairie clover Dalea flavescens var. epica Jones's cycladenia Kanab thelypody Thelypodiopsis ambigua var. erecta Kane breadroot Rodachrome bladderpod Physaria tumulosa Navajo sedge Carex specuicola Paria spurge Euphorbia nephradenia Siler pincushion cactus Pedioactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla	Cutler's lupine	Lupinus caudatus var. cutleri
Hole-in-the-rock prairie clover Jones's cycladenia Cycladenia humilis var. jonesii Kanab thelypody Thelypodiopsis ambigua var. erecta Kane breadroot Rodachrome bladderpod Physaria tumulosa Navajo sedge Carex speculcola Paria spurge Euphorbia nephradenia Siler pincushion cactus Pediocactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Gila elegans Colorado pikeminnow Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla	Escarpment milkvetch	Astragalus striatiflorus
Jones's cycladenia Cycladenia humilis var. jonesii Kanab thelypody Thelypodiopsis ambigua var. erecta Kane breadroot Pediomelum epipsilum Kodachrome bladderpod Physaria tumulosa Navajo sedge Carex specuicola Paria spurge Euphorbia nephradenia Siler pincushion cactus Pediocactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Gumbo milkvetch	Astragalus ampullarius
Kanab thelypody Thelypodiopsis ambigua var. erecta Kane breadroot Pediomelum epipsilum Kodachrome bladderpod Physaria tumulosa Navajo sedge Carex specuicola Paria spurge Euphorbia nephradenia Siler pincushion cactus Pediocactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla	Hole-in-the-rock prairie clover	Dalea flavescens var. epica
Kane breadroot Pediomelum epipsilum Kodachrome bladderpod Physaria tumulosa Navajo sedge Carex specuicola Paria spurge Euphorbia nephradenia Siler pincushion cactus Pediocactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla	Jones's cycladenia	Cycladenia humilis var. jonesii
Rodachrome bladderpod Physaria tumulosa Navajo sedge Carex specuicola Paria spurge Euphorbia nephradenia Siler pincushion cactus Pediocactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Kanab thelypody	Thelypodiopsis ambigua var. erecta
Navajo sedge Carex specuicola Paria spurge Euphorbia nephradenia Siler pincushion cactus Pediocactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Kane breadroot	Pediomelum epipsilum
Paria spurge Euphorbia nephradenia Siler pincushion cactus Pediocactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Kodachrome bladderpod	Physaria tumulosa
Siler pincushion cactus Pediocactus sileri (=Echinocactus s., Utahia s.) Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Navajo sedge	Carex specuicola
Smoky Mountain mallow Sphaeralcea grossulariifolia var. fumariensis Ute ladies'-tresses Spiranthes diluvialis Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla	Paria spurge	Euphorbia nephradenia
Ute ladies'-tresses Welsh's milkweed Asclepias welshii Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Siler pincushion cactus	Pediocactus sileri (=Echinocactus s., Utahia s.)
Welsh's milkweed Fish Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Smoky Mountain mallow	Sphaeralcea grossulariifolia var. fumariensis
Bluehead sucker Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Ute ladies'-tresses	Spiranthes diluvialis
Bluehead sucker Catostomus discobolus Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Welsh's milkweed	Asclepias welshii
Bonytail chub Gila elegans Colorado pikeminnow Ptychocheilus lucius Colorado River Cutthroat Trout Oncorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Fish	
Colorado pikeminnow Colorado River Cutthroat Trout Concorhynchus clarki pleuriticus Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Bluehead sucker	Catostomus discobolus
Colorado River Cutthroat Trout Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Bonytail chub	Gila elegans
Flannel mouth sucker Catostomus latipinnis Humpback chub Gila cypha Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Colorado pikeminnow	Ptychocheilus lucius
Humpback chub Razorback sucker Xyrauchen texanus Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Colorado River Cutthroat Trout	Oncorhynchus clarki pleuriticus
Razorback sucker Roundtail chub Gila robusta Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Flannel mouth sucker	Catostomus latipinnis
Roundtail chub Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Humpback chub	Gila cypha
Amphibians Arizona toad Bufo microscaphus Reptiles Common chuckwalla Sauromalus ater	Razorback sucker	Xyrauchen texanus
Arizona toad Reptiles Common chuckwalla Bufo microscaphus Sauromalus ater	Roundtail chub	Gila robusta
Reptiles Common chuckwalla Sauromalus ater	Amphibians	
Common chuckwalla Sauromalus ater	Arizona toad	Bufo microscaphus
	Reptiles	
Desert night lizard Xantusia vigilis	Common chuckwalla	Sauromalus ater
	Desert night lizard	Xantusia vigilis

Common Name	Scientific Name
Birds	'
Bald eagle	Haliaeetus leucocephalus
Burrowing owl	Athene cunicularia
California condor	Gymnogyps californianus
Ferruginous hawk	Buteo regalis
Golden eagle	Aquila chrysaetos
Greater sage-grouse	Centrocercus urophasianus
Lewis's woodpecker	Melanerpes lewis
Mexican spotted owl	Strix occidentalis lucida
Northern goshawk	Accipiter gentiles
Short-eared owl	Asio flammeus
Southwestern willow flycatcher	Empidonax traillii extimus
Yellow-billed cuckoo	Coccyzus americanus
Mammals	
Allen's big-eared bat	Idionycteris phyllotis
Big free-tailed bat	Nyctinomops macrotis
Fringed myotis	Myotis thysanodes
Spotted bat	Euderma maculatum
Townsend's big-eared bat	Corynorhinus townsendii
Western red bat	Lasiurus blossevillii

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix P	
Water Resources	
August 2019	

Table of Contents

Subbasins and Surface Waterbodies	P-1
References	P-14
List of Tables	
Table 1. Subbasins and Surface Waterbodies in the Analysis Area	P-1

Appendix P: Water Resources

Subbasins and Surface Waterbodies

Table 1 includes acreages of subbasins in the Planning Area, and waterbodies within these subbasins. Waterbodies include natural creeks and rivers, natural waterbodies, linear conveyances, and artificial waterbodies.

Table 1. Subbasins and Surface Waterbodies in the Analysis Area

		Area/Length within	
Subbasin (HUC-8) / Waterbody	Name of Waterbody	Analysis Area	Unit
Kanab Creek Subbasin (15010003)	-	1,507,353	acres
Natural Creeks and Rivers			
Perennial Streams	Unnamed	81.0	km
	Big Sand Wash	0.20	km
	Birch Creek	0.78	km
	Bitter Seeps Wash	6.40	km
	Bulrush Wash	0.18	km
	Cottonwood Creek	16.2	km
	Dry Fork	0.03	km
	Johnson Wash	53.1	km
	Kaibab Wash	0.04	km
	Kanab Creek	203	km
	Lost Spring Wash	0.69	km
	Mill Creek	9.55	km
	North Fork Robinson Wash	0.11	km
	Pipe Valley Wash	0.18	km
	Robinson Wash	0.44	km
	Sandy Canyon Wash	0.41	km
	Seaman Wash	1.04	km
	Skutumpah Creek	13.3	km
	South Moccasin Wash	10.0	km
	Thompson Creek	25.0	km
	Twomile Wash	15.1	km
Intermittent streams	Unnamed	222	km
	Big Sand Wash	10.4	km
	Birch Creek	3.86	km
	Bitter Seeps Wash	6.15	km
	Bulrush Wash #1	19.1	km
	Bulrush Wash #2	32.3	km

		Area/Length within	
Subbasin (HUC-8) / Waterbody	Name of Waterbody	Analysis Area	Unit
	Cottonwood Creek	23.9	km
	Dry Fork	3.41	km
	Johnson Wash	45.3	km
	Kaibab Wash	10.5	km
	Kanab Creek	70.4	km
	Lick Creek	3.16	km
	Lost Spring Wash	15.9	km
	Lower Robinson Creek	6.76	km
	Mineral Creek	6.58	km
	North Fork Robinson Wash	12.6	km
	Pipe Valley Wash	22.7	km
	Robinson Wash	34.3	km
	Sand Wash	13.6	km
	Sandy Canyon Wash	31.3	km
	Seaman Wash	21.8	km
	South Moccasin Wash	7.90	km
	Tenny Creek	7.47	km
	Thompson Creek	1.32	km
	Twomile Wash	0.84	km
	White Sage Wash	35.4	km
	Yellowstone Wash	13.2	km
Ephemeral Streams	Unnamed	8,902	km
Natural Waterbodies	-	1	'
Perennial Waterbodies	Unnamed	2.8E-01	sq km
	Blowdown Tank	3.2E-04	sq km
	Cougar Lake	6.9E-04	sq km
	Dry Park Lakes	9.3E-04	sq km
	Earl Reservoir	2.8E-03	sq km
	East Lake	3.0E-03	sq km
	Jacob Lake	3.2E-03	sq km
	Lookout Lakes	5.6E-04	sq km
	Sims Reservoir	1.2E-02	sq km
	Spencer Number Two Reservoir	8.1E-02	sq km
	Three Lakes	1.8E-03	sq km
	Twin Tanks	2.9E-03	sq km
	V T Ridge Number Two Tank	2.2E-04	sq km

Subbasin (HUC-8) / Waterbody	Name of Waterbody	Area/Length within Analysis Area	Unit
Intermittent Waterbodies	Unnamed	1.28	sq km
	Big Cove Tank	1.5E-03	sq km
	Big Jackson Tank	2.6E-03	sq km
	Big Ridge Tank	7.1E-04	sq km
	Big Saddle Tank	6.8E-04	sq km
	Bone Hollow Tank	6.2E-04	sq km
	Buffalo Hill Tank	9.2E-04	sq km
	Burnt Corral Tank	8.6E-04	sq km
	CCC Trail Reservoir	4.1E-03	sq km
	Cedar Ridge Reservoir	2.8E-03	sq km
	Corral Lake	9.9E-04	sq km
	Deer Trail Tank	1.1E-03	sq km
	Dickie Tank	1.6E-03	sq km
	Divide Tank	1.0E-03	sq km
	Dugway Tank	2.9E-04	sq km
	East Slide Tank	2.3E-03	sq km
	Faver Tank	1.4E-03	sq km
	Filarea Tank	2.4E-03	sq km
	Findlay Tank	4.3E-04	sq km
	Flax Lakes	9.4E-04	sq km
	Fracas Canyon Tank	4.4E-04	sq km
	Government Reservoir	9.7E-04	sq km
	Gump Tank	2.0E-03	sq km
	Gunsight Tank	1.0E-03	sq km
	Hack Reservoir	2.2E-03	sq km
	Hatch Brothers Tank	4.9E-03	sq km
	Hatch Tank	3.0E-03	sq km
	Horsespring Tank	3.2E-04	sq km
	Jackson Reservoir	3.5E-03	sq km
	Jackson Tank	1.5E-03	sq km
	Jacob Canyon Tank	8.6E-04	sq km
	Jacob Reservoir	3.5E-03	sq km
	Jensen Tank	3.3E-03	sq km
	Joes Mud Hole	2.0E-03	sq km
	Joes Reservoir	3.4E-03	sq km
	Johnson Reservoir	2.5E-03	sq km
	Judd Tank	1.1E-03	sq km
	Jumpup Tank	5.0E-04	sq km

		Area/Length within	
Subbasin (HUC-8) / Waterbody	Name of Waterbody	Analysis Area	Unit
	June Heaton Tank	1.4E-03	sq km
	June Tank	6.4E-03	sq km
	Lambs Lake	3.9E-03	sq km
	Lookout Canyon Tank	7.4E-04	sq km
	Meeks Reservoir	2.2E-03	sq km
	Merle Findlay Tank	1.0E-03	sq km
	Middle Burnt Corral Tank	6.1E-04	sq km
	Middle Reservoir	6.8E-04	sq km
	Mile-and-a-half Lake	2.4E-03	sq km
	Muggins Reservoir	3.7E-03	sq km
	Nates Tank	4.0E-03	sq km
	Nininger Tank	2.6E-03	sq km
	North Big Saddle Trick Tank	2.9E-04	sq km
	North Blow Down Tank	6.1E-04	sq km
	Old Arizona Catchment	2.4E-03	sq km
	Pigeon Tank	1.1E-03	sq km
	Pine Flat Tank	1.3E-03	sq km
	Pratt Reservoir	2.2E-03	sq km
	Robinson Reservoir	8.8E-04	sq km
	Rock Canyon Reservoir #1	3.5E-04	sq km
	Rock Canyon Reservoir #2	4.3E-04	sq km
	Sawmill Tank	8.6E-04	sq km
	School Section Tank	2.1E-03	sq km
	Slide Elbow Tank	3.9E-04	sq km
	Slide Tank	1.3E-03	sq km
	Spooks Knoll Reservoir	1.3E-03	sq km
	Suttle Tank	1.3E-03	sq km
	Table Rock Tank	1.1E-03	sq km
	Tom Lamb Reservoir	3.3E-03	sq km
	Warm Springs Lake	5.3E-04	sq km
	West Blow Down Tank	7.8E-04	sq km
	White Pockets Tank	4.3E-04	sq km
	White Tank	1.6E-03	sq km
	Whiting Tank	1.8E-03	sq km
	Wildhorse Park	6.0E-04	sq km
	Winter Road Catchment	3.1E-03	sq km
Linear Conveyances	N/A	N/A	N/A
Artificial Waterbodies	Unnamed	0.39	<u> </u>
Artificial Waterboules	Ullianieu	0.38	sq km

		Area/Length	
Subbasin (HUC-8) / Waterbody	Name of Waterbody	within Analysis Area	Unit
Paria River Subbasin (14070007)	-	903,979	acres
Natural Creeks and Rivers		111111	1
Perennial Streams	Unnamed	61.1	km
	Bryce Creek	3.74	km
	Campbell Creek	1.34	km
	Cottonwood Creek	10.2	km
	Dry Creek	0.45	km
	Henrieville Creek	16.8	km
	Horse Creek	0.04	km
	Lower Crawford Creek	0.90	km
	Paria River	126	km
	Rock Springs Creek	0.02	km
	Sheep Creek	14.8	km
	Willis Creek	13.1	km
	Yellow Creek	3.71	km
Intermittent streams	Unnamed	4,890	km
	Bridge Creek	2.76	km
	Bryce Creek	6.63	km
	Bull Run	4.64	km
	Campbell Creek	9.74	km
	Cedar Fork	7.11	km
	Cottonwood Creek	38.2	km
	Coyote Wash	23.5	km
	Dry Creek	23.2	km
	Dry Valley Creek	17.8	km
	Hackberry Creek	32.3	km
	Henderson Creek	22.5	km
	Henrieville Creek	12.9	km
	Heward Creek	7.59	km
	Hogeye Creek	8.05	km
	Horse Creek	17.7	km
	Little Creek	18.1	km
	Lower Crawford Creek	10.0	km
	Lower Podunk Creek	14.3	km
	North Creek	13.5	km
	Papoose Creek	4.06	km
	Paria River	23.6	km
	Rock Springs Creek	11.2	km

		Area/Length	
Subbasin (HUC-8) / Waterbody	Name of Waterbody	within Analysis Area	Unit
	Sheep Creek	19.1	km
	Shurtz Bush Creek	9.10	km
	Snake Creek	7.65	km
	Squaw Creek	8.97	km
	Willis Creek	8.57	km
	Yellow Creek	13.3	km
Ephemeral Streams	N/A	N/A	N/A
Natural Waterbodies	,	,	,
Perennial Waterbodies	Unnamed	0.11	sq km
Intermittent Waterbodies	Unnamed	0.45	sq km
	Bush Head Tank	8.7E-04	sq km
	Butler Valley Reservoir	2.1E-03	sq km
	Johnson Storage Reservoir	3.0E-03	sq km
	Lynn Tank	5.2E-04	sq km
	Maries Reservoir	2.0E-04	sq km
	Middle Reservoir	1.8E-03	sq km
	Moquitch Tank	7.0E-04	sq km
	Nipple Lake	0.37	sq km
	Rubin Tank	2.4E-03	sq km
	Shearing Corral Reservoir	4.1E-04	sq km
Linear Conveyances	Unnamed	40.9	km
Artificial Waterbodies	N/A	N/A	N/A
Lower Lake Powell Subbasin (14070006)	-	1,914,128	acres
Natural Creeks and Rivers			
Perennial Streams	Unnamed	324	km
	Antelope Creek	16.3	km
	Aztec Creek	15.2	km
	Bridge Creek	5.74	km
	Chaiyahi Creek	6.06	km
	Colorado River	127	km
	Dry Rock Creek	5.29	km
	Fall Creek	0.06	km
	Kaibito Creek	31.0	km
	Last Chance Creek	41.4	km
		6.17	km
	Middle Rock Creek	0.11	
	Middle Rock Creek Navajo Creek	90.5	km
			km km

		Area/Length	
Subbasin (HUC-8) / Waterbody	Name of Waterbody	within Analysis Area	Unit
Subbasiii (HUC-6) / Waterbudy	San Juan River	0.67	km
	Sand Wash	0.15	km
	Sei Billikoon	10.8	km
	Starting Water Wash	0.06	km
		19.0	
	Wahweap Creek Warm Creek		km
		19.1	km
1	West Canyon Creek	27.0	km
Intermittent Streams	Unnamed	5,810	km
	Allen Creek	7.96	km
	Bear Creek	4.10	km
	Birch Creek	1.82	km
	Blue Spring Creek	0.94	km
	Calf Creek	1.62	km
	Canaan Creek	18.4	km
	Cherry Creek	4.49	km
	Clear Creek	1.94	km
	Corn Creek	2.59	km
	Deep Creek	0.89	km
	Dry Creek	1.49	km
	Dry Fork #1	8.17	km
	Dry Fork #2	5.54	km
	East Deer Creek	1.12	km
	East Fork Boulder Creek	8.29	km
	East Fork North Creek	12.2	km
	Fiftymile Creek	15.1	km
	Fortymile Creek	19.6	km
	Frisky Creek	0.75	km
	Griffin Creek	2.43	km
	Grimes Creek	1.39	km
	Hall Creek	2.82	km
	Hungry Creek	1.61	km
	Indian Creek	3.34	km
	Left Hand Allen Creek	7.71	km
	Lizzie Creek	4.81	km
	Mamie Creek	16.1	km
	Middle Deer Creek	2.21	km
	Moody Creek	39.3	km
	North Fork Silver Falls Creek	22.0	km
	NOTH FOR SIIVE FAILS CIECK	22.U	NIII

		Area/Length within	
Subbasin (HUC-8) / Waterbody	Name of Waterbody	Analysis Area	Unit
	Pine Creek	17.5	km
	Road Draw Creek	1.19	km
	Sand Creek	1.45	km
	Silver Falls Creek	20.9	km
	Steep Creek	1.30	km
	Sweetwater Creek	10.4	km
	Twitchell Creek	2.59	km
	Upper Valley Creek	24.6	km
	West Branch Pine Creek	5.66	km
	West Fork Boulder Creek	2.19	km
	Willow Creek #1	21.8	km
	Willow Creek #2	10.8	km
	Willow Patch Creek	4.14	km
	Wolverine Creek	16.7	km
Ephemeral Streams	N/A	N/A	N/A
Natural Waterbodies		<u> </u>	1
Perennial Waterbodies	Unnamed	48.3	sq km
	Lake Powell	456	sq km
	Red Mesa Reservoir	0.001	sq km
Intermittent Waterbodies	Unnamed	0.366	sq km
	Alkali Tank #1	0.009	sq km
	Alkali Tank #2	0.002	sq km
	Antelope Tank	0.003	sq km
	Bishops Tank	0.000	sq km
	Circular Tank	0.002	sq km
	Dejolie Tank	0.018	sq km
	Drip Tank	0.000	sq km
	Gunsight Tank	0.002	sq km
	Padre Tank	0.001	sq km
	Point of the Mountain Tank	0.001	sq km
	Red Dirt Tank	0.001	sq km
	White Dome Tank	0.003	sq km
	Willow Tank	0.001	sq km
	Wooded Tank	0.004	sq km
Linear Conveyances	Unnamed	75.2	km
Artificial Waterbodies	Unnamed	0.15	sq km

		Area/Length	
Subbasin (HUC-8) / Waterbody	Name of Waterbody	within Analysis Area	Unit
Escalante River Subbasin (14070005)	-	1,295,715	acres
Natural Creeks and Rivers	1-	1,293,713	acies
Perennial Streams	Unnamed	257.0	km
Perenniai Streams	Bear Creek	10.8	-
	Birch Creek	20.3	km
			km
	Blue Spring Creek	3.6	km
	Boulder Creek	40.7	km
	Calf Creek	13.1	km
	Cherry Creek	5.4	km
	Clear Creek	2.9	km
	Corn Creek	4.8	km
	Deep Creek	10.3	km
	Deer Creek	30.6	km
	Durfey Creek	3.8	km
	East Deer Creek	5.4	km
	East Fork Boulder Creek	15.5	km
	Escalante River	196.4	km
	Fiftymile Creek	4.3	km
	Frisky Creek	14.0	km
	Grimes Creek	2.5	km
	Hall Creek	5.8	km
	Hungry Creek	4.8	km
	Indian Creek	1.5	km
	Lake Creek	10.9	km
	Left Hand Allen Creek	0.0	km
	Middle Deer Creek	0.9	km
	Moody Creek	0.0	km
	North Creek	27.8	km
	Pine Creek	25.9	km
	Sand Creek	41.6	km
	Silver Falls Creek	0.0	km
	Steep Creek	24.3	km
	Sweetwater Creek	7.4	km
	Twitchell Creek	5.7	km
	West Branch Pine Creek	3.7	km
	West Deer Creek	7.5	km
	West Fork Boulder Creek	9.1	-
			km
	West Fork North Creek	5.2	km

Subbasin (HUC-8) / Waterbody	Name of Waterbody	Area/Length within Analysis Area	Unit
	White Creek	4.6	km
	Willow Creek #1	0.0	km
	Willow Creek #2	6.4	km
Intermittent Streams	Unnamed	5,810.5	km
	Allen Creek	8.0	km
	Bear Creek	4.1	km
	Birch Creek	1.8	km
	Blue Spring Creek	0.9	km
	Calf Creek	1.6	km
	Canaan Creek	18.4	km
	Cherry Creek	4.5	km
	Clear Creek	1.9	km
	Corn Creek	2.6	km
	Deep Creek	0.9	km
	Dry Creek	1.5	km
	Dry Fork #1	8.2	km
	Dry Fork #2	5.5	km
	East Deer Creek	1.1	km
	East Fork Boulder Creek	8.3	km
	East Fork North Creek	12.2	km
	Fiftymile Creek	15.1	km
	Fortymile Creek	19.6	km
	Frisky Creek	0.7	km
	Griffin Creek	2.4	km
	Grimes Creek	1.4	km
	Hall Creek	2.8	km
	Hungry Creek	1.6	km
	Indian Creek	3.3	km
	Left Hand Allen Creek	7.7	km
	Lizzie Creek	4.8	km
	Mamie Creek	16.1	km
	Middle Deer Creek	2.2	km
	Moody Creek	39.3	km
	North Fork Silver Falls Creek	22.0	km
	Pine Creek	17.5	km
	Road Draw Creek	1.2	km
	Sand Creek	1.4	km
	Silver Falls Creek	20.9	km

		Area/Length within	
Subbasin (HUC-8) / Waterbody	Name of Waterbody	Analysis Area	Unit
	Steep Creek	1.3	km
	Sweetwater Creek	10.4	km
	Twitchell Creek	2.6	km
	Upper Valley Creek	24.6	km
	West Branch Pine Creek	5.7	km
	West Fork Boulder Creek	2.2	km
	Willow Creek	21.8	km
		10.8	km
	Willow Patch Creek	4.1	km
	Wolverine Creek	16.7	km
Ephemeral Streams	N/A	N/A	N/A
Natural Waterbodies			
Perennial Waterbodies	Unnamed	14.50	sq km
	Bakeskillet Lake	0.03	sq km
	Barker Reservoir	0.04	sq km
	Barney Lake	0.01	sq km
	Bear Lake	0.06	sq km
	Black Lake	0.02	sq km
	Blue Lake	0.00	sq km
	Chriss Lake	0.02	sq km
	Circle Lake	0.02	sq km
	Crater Lake	0.03	sq km
	Cresecent Lake	0.04	sq km
	Cyclone Lake	0.33	sq km
	Deer Creek Lake	0.10	sq km
	Divide Lake	0.02	sq km
	Dry Lake	0.08	sq km
	East Boulder Lakes	0.01	sq km
	East Lake	0.01	sq km
	Elbow Lake	0.02	sq km
	Five Lakes	0.00	sq km
	Flat Lake	0.03	sq km
	Grass Lake	0.03	sq km
	Green Lake	0.01	sq km
	Halfmoon Lake	0.04	sq km
	Horseshoe Lake	0.05	sq km
	Jacobs Reservoir	1.43	sq km
		0.01	-
	Joe Lay Reservoir	0.01	sq km

P	Name of Waterbody Kings Pasture Reservoir Lake Powell Ledge Lake Long Willow Bottom Reservoir Lower Barker Reservoir McGath Lake	0.01 187.98 0.00 0.01	sq km sq km sq km sq km
L	Lake Powell Ledge Lake Long Willow Bottom Reservoir Lower Barker Reservoir	187.98 0.00 0.01	sq km sq km
L	Ledge Lake Long Willow Bottom Reservoir Lower Barker Reservoir	0.00 0.01	sq km
l L	Long Willow Bottom Reservoir Lower Barker Reservoir	0.01	-
l	Lower Barker Reservoir		∟ SU K∏
		0.02	sq km
,		0.18	sq km
- -	Moosman Reservoir	0.01	sq km
	North Creek Reservoir	0.10	sq km
	Posy Lake	0.05	sq km
	Purple Lake	0.06	sq km
	Rain Lakes	0.01	sq km
	Rim Lake	0.02	sq km
	Round Willow Bottom Reservoir	0.03	sq km
	Roundy Reservoir	0.28	sq km
	Row Lakes	0.00	sq km
	Spectacle Lake	0.13	sq km
	Steep Creek Lake	0.01	sq km
	Tall Four Reservoir	0.00	sq km
	Tule Lakes	0.02	sq km
	Twin Lakes #1	0.00	sq km
	Twin Lakes #2	0.00	sq km
	West Fork Reservoir	0.00	sq km
	West Lake	0.00	sq km
	Wide Hollow Reservoir	0.59	sq km
	Yellow Lake	0.02	sq km
	Unnamed	0.95	sq km
	Auger Hole Lake	0.06	sq km
	Barney Reservoir	1.1E-03	sq km
	Blue Grass Lake	2.6E-03	sq km
	Boulder Meadows	5.4E-04	sq km
	Cuddyback Lake	0.03	sq km
	Death Ridge Reservoir	3.3E-03	sq km
	Deer Lakes	2.4E-03	sq km
	Donkey Lake	6.9E-03	sq km
	Dry Lake	0.05	sq km
	Four Lakes	5.6E-03	sq km
	Gates Tank	3.3E-04	sq km
	Green Lake	0.04	sq km

Subbasin (HUC-8) / Waterbody	Name of Waterbody	Area/Length within Analysis Area	Unit
	Kings Pasture	1.4E-03	sq km
	Marts Pasture	6.7E-04	sq km
	Mud Lake	0.02	sq km
	Rock Lake	3.9E-03	sq km
	Rockwell Reservoir	3.4E-03	sq km
	Sawmill Lake	0.02	sq km
	Stink Flats	1.9E-03	sq km
Linear Conveyances	Unnamed	38.3	km
	Tailrace Canal	2.30	km
Artificial Waterbodies	N/A	N/A	N/A

Source: GIS Derived Data

 $HUC-Hydrologic\ Unit\ Code,\ km-kilometer,\ sq\ km-square\ kilometer,\ N/A-none\ reported/present$

References

BLM. 2018. GIS Derived Data.

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix Q	
Livestock Grazing	
August 2019	

Table of Contents

Range Improvements	Q-8
References	Q-21
Abbreviations-Acronyms	Q-22
List of Tables	
Table 1. Grazing Allotments, Acres, Animal Unit Months, and Season of Use	Q-1
Table 2. Allotment Categorization: Current	Q-4
Table 3. Allotment Management Plans and Rangeland Management Agreements Developed	0-6
Table 4. Allotment Acres as Available or Unavailable to Livestock Grazing by Alterna	_

Appendix Q: Livestock Grazing

This appendix provides an overview of livestock grazing allotments including acreage and season of use (Table 1), allotment categorization (Table 2), and allotments assessed for standards and guidelines (Table 3). In addition, it provides details of range improvement projects. Table 4 presents allotment acres available or unavailable to livestock Grazing by alternative.

Table 1. Grazing Allotments, Acres, Animal Unit Months, and Season of Use

Allotment Number	Allotment Name	Public Acres GIS	Livestock Kind	Season of Use	Public AUMs
UT06001	Alvey Wash	60,185	Cattle	May 15-September 30	1,424
UT06003	Big Bowns Bench ¹	16,839	Cattle	November 1-March 31	750
UT06002	Big Horn	50,215	Cattle	November 1-June 15	3,515
UT06006	Black Ridge	11,657	Cattle	November 1-May 31	903
UT24008	Black Rock	9,310	Cattle	June 6-October 16	408
UT05917	Black Rock (State)	1,251	Cattle	June 6-October 16	64
UT14009	Boot	2,675	Cattle	August 1–October 31	45
UT06004	Boulder Creek	3,251	Cattle	September 1-December 31	80
UT00018	Bull Run (State)	631	Cattle	July 1-February 28	5
UT05952	Bunting Trust (State)	226	Cattle	May 15-November 30	16
UT24018	Calf Pasture	2,775	Cattle	June 10-August 10 (even years) August 10-October 15 (odd years)	176
UT06007	Circle Cliffs	30,212	Cattle	November 1-March 31	1,050
UT15003	Clark Bench	25,170	Cattle	November 1-April 30	1,238
UT25055	Cockscomb	2,753	Cattle	March 1-May 31	36
UT06008	Collet	16,723	Cattle	June 16-September 15	97
UT15004	Cottonwood	103,326	Cattle	November 1-May 31	3,188
UT25034	Coyote	32,636	Cattle	November 1-May 31	2,044
UT06009	Death Hollow	19,538	Cattle	November 1-March 31 April 1-May 15	1,057
UT06010	Deer Creek	8,991	Cattle	November 1-February 28	358
UT06010	Wolverine Pasture (forage reserve) of the Deer Creek Allotment	3,816	Cattle	October 1-March 31	148
UT25005	Deer Range	11,107	Cattle	August 1–October 15	231
UT24030	Deer Spring Point	24,986	Cattle	June 10-October 17	585
UT25006	Dry Valley	11,448	Cattle	March 1-December 31 March 1-January 31 July 1-October 31	699
UT24041	First Point	3,015	Cattle	June 1-December 31	410
UT24043	Fivemile Mountain	17,848	Cattle	November 1-April 30	385
UT24044	Flood Canyon	13,576	Cattle	July 1-October 31	148
UT24047	Ford Well	9,088	Cattle	June 10-October 9	300

UT06012 Fortymile Ridge¹ 57,905 Cattle Octob UT24055 Granary Ranch 1,905 Cattle July 3 UT06036 Hall Ranch 34 Cattle Marc UT06013 Haymaker Bench 3,150 Cattle Nove UT15011 Headwaters 154,436 Cattle Nove UT24060 Hells Bellows 2,132 Cattle May UT04121 Johnson Canyon 10,121 Cattle June	ber 15-May 31 1-November 30 ch 1-February 28 ember 1-February 28 ember 1-March 15 1-October 15 1-November 30	AUMs 4,290 70 12 100 3,469 44 274
UT24055 Granary Ranch 1,905 Cattle July 3 UT06036 Hall Ranch 34 Cattle Marc UT06013 Haymaker Bench 3,150 Cattle Nove UT15011 Headwaters 154,436 Cattle Nove UT24060 Hells Bellows 2,132 Cattle May UT04121 Johnson Canyon 10,121 Cattle June	1-November 30 ch 1-February 28 ember 1-February 28 ember 1-March 15 1-October 15 1-November 15	70 12 100 3,469 44
UT06036 Hall Ranch 34 Cattle Marc UT06013 Haymaker Bench 3,150 Cattle Nove UT15011 Headwaters 154,436 Cattle Nove UT24060 Hells Bellows 2,132 Cattle May UT04121 Johnson Canyon 10,121 Cattle June	ember 1-February 28 ember 1-February 28 ember 1-March 15 1-October 15	12 100 3,469 44
UT06013 Haymaker Bench 3,150 Cattle Nove UT15011 Headwaters 154,436 Cattle Nove UT24060 Hells Bellows 2,132 Cattle May UT04121 Johnson Canyon 10,121 Cattle June	ember 1-February 28 ember 1-March 15 1-October 15 1-November 15	100 3,469 44
UT15011 Headwaters 154,436 Cattle Nove UT24060 Hells Bellows 2,132 Cattle May UT04121 Johnson Canyon 10,121 Cattle June	ember 1-March 15 1-October 15 1-November 15	3,469 44
UT24060 Hells Bellows 2,132 Cattle May UT04121 Johnson Canyon 10,121 Cattle June	1-October 15 1-November 15	44
UT04121 Johnson Canyon 10,121 Cattle June	1-November 15	
		274
TITO/06/ Tohnson Lakes 14440 Cattle 1	1-November 30	
		347
7	ember 1-March 31	135
7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ember 1-March 31	1,515
· · · · · · · · · · · · · · · · · · ·	1-September 30	1,310
	ber 15-March 15	20
UT06016 Last Chance ¹ 250,120 Cattle Marc	ch 1-February 28	4,642
UT06022 Little Bowns Bench 3,422 Cattle Octol (forage reserve)	ber 1-March 31	130
UT14071 Locke Ridge 4,456 Cattle Dece	ember 1-April 30	172
UT06017 Lower Cattle¹ 81,350 Cattle October 10	ber 1-April 15	7,488
UT25014 Lower Hackberry 20,173 Cattle Octo	ber 15-March 15	435
UT25015 Lower Warm Creek ¹ 15,920 Cattle/ Horse	ember 1-March 31	225
UT05957 Main Canyon 312 Cattle June	1-September 30	14
UT24081 Meadow Canyon 4,681 Cattle Septe	ember 1-November 30	144
UT24083 Mollies Nipple 102,361 Cattle Marc	ch 1-February 28	3,880
UT06019 Moody¹ 43,272 Cattle Nove	ember 1-March 31	909
UT25016 Mud Springs 15,652 Cattle July :	15-October 15	277
UT14086 Neaf 1,287 Cattle Marc	ch 1-November 30	9
UT25018 Nipple Bench ¹ 30,459 Cattle Dece	ember 1-April 30	1,042
UT06024 Phipps (Phipps pasture; 7,365 Cattle Octol forage reserve)	ber 1-March 31	140
UT06023 Pine Creek 3,804 Cattle Sept	ember 16-October 31	144
UT05912 Pine Creek (State) 592 Cattle Nove	ember 1-January 31	27
UT04102 Pine Point 8,828 Cattle June	16-October 15	365
UT06020 Rock Creek-Mudholes ¹ 64,873 Cattle Marc	ch 1-February 28	2,173
UT25020 Round Valley 9,920 Cattle Nove	ember 1-March 31	522
UT25054 Roy Willis 195 Cattle Nove	ember 1-March 15	9
UT25021 Rush Beds 18,765 Cattle Nove	ember 1-April 30	252
UT14105 School Section 753 Cattle May	1-April 30	102
UT04161 Second Point 5,890 Cattle Augu	ust 1-September 30	98
UT04111 Sink Holes 6,589 Cattle Nove	ember 1-April 1	154
UT05930 Slick Rock (State) 643 Cattle June	1-June 30	24
UT06026 Soda ¹ 70,445 Cattle Octo	ber 1-May 31	2,798
UT06056 South Fork 118 Cattle Marc	ch 1-February 28	12
UT14120 Swallow Park 16,494 Cattle May	1-October 31	1,076

Allotment Number	Allotment Name	Public Acres GIS	Livestock Kind	Season of Use	Public AUMs
UT04124	Timber Mountain	7,662	Cattle	June 16-October 15	426
UT06028	Upper Cattle ¹	92,420	Cattle	November 1-June 15	8,158
UT25023	Upper Hackberry	22,835	Cattle	November 1–March 31 April 16–June 15	654
UT06033	Upper Paria	94,347	Cattle	May 1–June 10 May 1–September 30	2,833
UT15024	Upper Warm Creek ¹	77,363	Cattle	November 1-May 31	1,638
UT04130	Vermilion	43,084	Cattle	February 16–February March 1–May 15 June 1–September 15 October 1–January 15	2,849
UT06029	Wagon Box Mesa ¹	28,995	Cattle	November 1-March 31	637
UT25025	Wahweap	17,222	Cattle	December 1-April 30	491
UT06032	White Rock	1,389	Cattle	December 1-January 31	60
UT04134	White Sage	2,142	Cattle	May 6-June 5	76
UT06030	Wide Hollow	3,779	Cattle	October 1-December 31	353
UT06031	Willow Gulch	12,214	Cattle	November 1–March 31 December 1–January 31	474
UT04145	Wiregrass ¹	19,865	Cattle	November 1-March 31	99

Source: BLM 2018

GIS - geographic information system, AUM - animal unit month

Table 2 presents the current and proposed allotment categorization for allotments in the Planning Area. In 1985, the Bureau of Land Management (BLM) established three categories for allotments to identify areas where management was needed, as well as to prioritize workloads and the use of range improvement dollars. The categories and criteria used to place an allotment into each category are described below.

Category I – Improve Existing Resource Conditions. Criteria for placing allotments into this category include (1) the present range condition is unsatisfactory and where range condition is expected to decline further; (2) the present grazing management is not adequate; (3) the allotment has potential for medium to high vegetative production but production is low to moderate; (4) resource conflicts/controversy with livestock grazing are evident; and (5) there is potential for positive economic return on public investment.

Category M – Maintain Existing Resource Conditions. Criteria for placing allotments into this category include: (1) the present range condition and management are satisfactory with good to excellent condition and will be maintained under present management, or fair condition and improving with improvement expected to continue under present management, or opportunities for BLM management are limited because percentage of public land is low or acreage of public lands is small; (2) the allotment has a potential for moderate or high vegetative production and is producing at or near this potential; (3) there are no significant land-use resource conflicts with livestock grazing; (4) land ownership status may or may not limit management opportunities; and (5) opportunities for positive economic return from public investment may exist.

¹ Allotment partially or wholly in Glen Canyon

Category C – Custodial Management. Criteria for placing allotments into this category include: (1) the present range condition is not in a downward trend; (2) the allotment has a low vegetative production potential and is producing near this level; (3) there may or may not be limited conflicts between livestock grazing and other resources; (4) present management is satisfactory or is the only logical management under existing conditions; and (5) opportunities for a positive economic return on public investments do not exist.

Table 2. Allotment Categorization: Current

Allotment	Allotment Name	Current Category
UT06001	Alvey Wash	M
UT06003	Big Bowns Bench ¹	M
UT06002	Big Horn	1
UT06006	Black Ridge	M
UT24008	Black Rock	l I
UT05917	Black Rock (State)	M
UT14009	Boot	С
UT06004	Boulder Creek	С
UT00018	Bull Run (State)	С
UT05952	Bunting Trust (State)	M
UT24018	Calf Pasture	M
UT06007	Circle Cliffs	1
UT15003	Clark Bench	M
UT25055	Cockscomb	С
UT06008	Collet	С
UT15004	Cottonwood	M
UT25034	Coyote	M
UT06009	Death Hollow	С
UT06010	Deer Creek	M
UT06010	Wolverine Pasture (forage reserve)	M
UT25005	Deer Range	M
UT24030	Deer Spring Point	I
UT25006	Dry Valley	M
UT24041	First Point	M
UT24043	Fivemile Mountain	С
UT24044	Flood Canyon	I
UT24047	Ford Well	С
UT06012	Fortymile Ridge ¹	1
UT24055	Granary Ranch	С
UT06036	Hall Ranch	С
UT06013	Haymaker Bench	M
UT15011	Headwaters	M
UT24060	Hells Bellows	С

Allotment	Allotment Name	Current Category
UT04121	Johnson Canyon	С
UT24064	Johnson Lakes	I
UT24065	Johnson Point	С
UT24065	King Bench	I
UT06015	Lake ¹	M
UT04135	Lake Powell ¹	M
UT06016	Last Chance ¹	1
UT06022	Little Bowns Bench (forage reserve)	С
UT14071	Locke Ridge	1
UT06017	Lower Cattle ¹	M
UT25014	Lower Hackberry	1
UT25015	Lower Warm Creek ¹	M
UT05957	Main Canyon	M
UT24081	Meadow Canyon	I
UT24083	Mollies Nipple	M
UT06019	Moody ¹	С
UT06019	Mud Springs	I
UT14086	Neaf	С
UT25018	Nipple Bench ¹	I
UT06024	Phipps (Phipps pasture; forage reserve)	I
UT06023	Pine Creek	С
UT05912	Pine Creek (State)	M
UT04102	Pine Point	I
UT06020	Rock Creek-Mudholes ¹	I
UT25020	Round Valley	I
UT25054	Roy Willis	С
UT25021	Rush Beds	I
UT14105	School Section	С
UT04161	Second Point	С
UT04111	Sink Holes	I
UT05930	Slick Rock (State)	M
UT06026	Soda ¹	1
UT06056	South Fork	С
UT14120	Swallow Park	I
UT04124	Timber Mountain	M
UT06028	Upper Cattle ¹	I
UT25023	Upper Hackberry	I
UT06033	Upper Paria	I
UT15024	Upper Warm Creek ¹	I
	1	·

Allotment	Allotment Name	Current Category
UT04130	Vermilion	M
UT06029	Wagon Box Mesa ¹	С
UT25025	Wahweap	M
UT06032	White Rock	M
UT04134	White Sage	С
UT06030	Wide Hollow	С
UT06031	Willow Gulch	M
UT04145	Wiregrass ¹	M

Source: BLM 2018

Table 3. Allotment Management Plans and Rangeland Management Agreements Developed

Allotment Number	Allotment Name	Management Plan Type	AMP Implementation Date	Public Acres
UT06001	Alvey Wash	A	07/01/1983	
UT06003	Big Bowns Bench¹	-	-	
UT06002	Big Horn	A	03/01/1984	
UT06006	Black Ridge	A	06/01/1987	
UT24008	Black Rock	A	06/01/1969	
UT05917	Black Rock (State)	-	-	
UT14009	Boot	-	-	
UT06004	Boulder Creek	-	-	
UT00018	Bull Run (State)	-	-	
UT05952	Bunting Trust (State)	-	-	
UT24018	Calf Pasture	A	06/01/1986	
UT06007	Circle Cliffs	A	07/01/1983	
UT15003	Clark Bench	A	11/01/1976	
UT25055	Cockscomb	-	-	
UT06008	Collet	-	-	
UT15004	Cottonwood	A	11/01/1978	
UT25034	Coyote	A	03/01/1981	
UT06009	Death Hollow	-	-	
UT06010	Deer Creek	-	-	
UT06010	Wolverine Pasture (forage reserve)	-	-	
UT25005	Deer Range	-	-	
UT24030	Deer Spring Point	A	11/01/1980	
UT25006	Dry Valley	_	-	
UT24041	First Point	A	03/01/1980	
UT24043	Fivemile Mountain	-	_	

¹ Allotment partially or wholly in Glen Canyon

Allotment		Management	AMP Implementation	
Number	Allotment Name	Plan Type	Date	Public Acres
UT24044	Flood Canyon	Α	09/16/1982	
UT24047	Ford Well	С	02/10/2000	
UT06012	Fortymile Ridge ¹	Α	12/01/1983	
UT24055	Granary Ranch	_	-	
UT06036	Hall Ranch	-	-	
UT06013	Haymaker Bench	N	-	
UT15011	Headwaters	Α	05/01/1977	
UT24060	Hells Bellows	_	-	
UT04121	Johnson Canyon	_	-	
UT24064	Johnson Lakes	Α	07/01/1982	
UT24065	Johnson Point	_	-	
UT06014	King Bench	Α	07/01/1970	
UT06015	Lake ¹	Α	06/01/1971	
UT04135	Lake Powell ¹	N	09/19/1982	
UT06016	Last Chance ¹	Α	07/01/1983	
UT06022	Little Bowns Bench (forage reserve)	_	-	
UT14071	Locke Ridge	Α	03/12/1981	
UT06017	Lower Cattle ¹	Α	09/01/1966	
UT25014	Lower Hackberry	Α	03/26/1981	
UT25015	Lower Warm Creek ¹	_	-	
UT05957	Main Canyon	_	-	
UT24081	Meadow Canyon	Α	03/12/1981	
UT24083	Mollies Nipple	Α	03/01/1974	
UT06019	Moody ¹	_	-	
UT06019	Mud Springs	Α	08/31/1982	
UT14086	Neaf	_	-	
UT25018	Nipple Bench ¹	_	-	
UT06024	Phipps (Phipps pasture; forage reserve)	Α	09/16/1982	
UT06023	Pine Creek	_	-	
UT05912	Pine Creek (State)	-	-	
UT04102	Pine Point	Α	09/30/1988	
UT06020	Rock Creek-Mudholes ¹	Α	07/01/1983	
UT25020	Round Valley	Α	09/07/1983	
UT25054	Roy Willis	_	-	
UT25021	Rush Beds	Α	08/31/1982	
UT14105	School Section	_	-	
UT04161	Second Point	_	_	

Allotment Number	Allotment Name	Management Plan Type	AMP Implementation Date	Public Acres
UT04111	Sink Holes	-	-	
UT05930	Slick Rock (State)	-	-	
UT06026	Soda ¹	Α	10/01/1983	
UT06056	South Fork	-	-	
UT14120	Swallow Park	Α	06/15/1983	
UT04124	Timber Mountain	-	-	
UT06028	Upper Cattle ¹	Α	05/01/1984	
UT25023	Upper Hackberry	Α	03/26/1981	
UT06033	Upper Paria	Α	04/07/1997	
UT15024	Upper Warm Creek ¹	Α	02/25/1981	
UT04130	Vermilion	A	05/01/1969	
UT06029	Wagon Box Mesa ¹	-	-	
UT25025	Wahweap	-	-	
UT06032	White Rock	-	-	
UT04134	White Sage	-	-	
UT06030	Wide Hollow	Α	07/01/1983	
UT06031	Willow Gulch	Α	11/01/1984	
UT04145	Wiregrass ¹	Α	12/28/1988	
Source: BLM 1	0018			1

Source: BLM 2018

AMP – Allotment Management Plan, A – Allotment Management Plan Implemented, C – Coordinated Management Plan Implemented, N – AMP written

Range Improvements

Existing rangeland seedings were originally completed throughout the Planning Area to provide forage for livestock, reduce erosion, and enhance watershed functionality. Typically, a rangeland seeding is a type of nonstructural range improvement where a vegetation type or community has been established through the artificial dissemination of seed and by clearing away vegetation. The original seedings were typically monocultures of crested wheatgrass or Russian wild rye. Seedings that are more recent have consisted of a mixture of native and nonnative species that include shrubs, forbs, and grasses.

In some cases, seedings were established to help improve the management of nearby resources. For example, in order to entice cattle away from riparian areas, some areas have been treated to provide palatable forage outside of the riparian zone. Currently, vegetation treatments in seedings are primarily intended to restore vegetation communities and wildlife habitat or to manage livestock use. No seedings are allowed on National Park Systemmanaged lands, except on a case-by-case basis for ecological restoration. The BLM has completed nonstructural range improvements on approximately 4 percent of the decision area. The BLM maintains these seedings, although some are no longer functioning at a desired ecological level in the Upper Paria, Last Chance, Circle Cliffs, Vermilion, Mollies Nipple, Coyote, Cottonwood, and Headwaters Allotments. The BLM has treated some of the no-longer-

¹ Allotment partially or wholly in Glen Canyon

^{-:} No activity has been proposed written, or implemented for the allotment

functioning seedings in order to restore them, with varying levels of success. The BLM bases current forage allocations on the presence and maintenance of these seedings. The failure of some of these seedings is partially responsible for actual use levels below permitted use.

The BLM authorizes most range improvements through a cooperative range improvement agreement (43 Code of Federal Regulations [CFR] 4120.3-2). Improvements authorized through such an agreement are permanent range improvements or rangeland developments (structural or nonstructural) needed to achieve management or resource condition objectives. Range improvements authorized under a cooperative range improvement agreement up to August 21, 1995, may be co-owned by the United States and the permittee; those issued after August 21, 1995, are owned by the United States alone. The costs of installing, maintaining, or modifying the improvements may be shared by the Government and the permittee, as specified in the cooperative range improvement agreement.¹

The BLM also authorizes range improvements through a range improvement permit (43 CFR 4120.3-3). Improvements authorized through such a permit are needed to achieve management objectives for the allotment in which the permit is held. Such improvements are removable or temporary, such as livestock handling facilities (e.g., corrals, handling equipment, and loading chutes) and troughs. The permittee owns range improvements issued under a range improvement permit and is generally responsible for maintaining such improvements.

In Glen Canyon, nonstructural range improvements, land treatments, and new line cabins are not permitted in accordance with applicable Memoranda of Understanding, agreements, or plans concerning livestock grazing within Glen Canyon. Other range improvements could be permitted, subject to 54 United States Code 100101(a) et seq., the Glen Canyon enabling legislation, the Glen Canyon Grazing Management Plan, the Glen Canyon General Management Plan, and National Park Service Management Policies. The Glen Canyon Superintendent first must complete a determination regarding the potential effects of the proposed action on the values and purposes of Glen Canyon.

¹On July 12, 2006, BLM promulgated new grazing regulations, but these regulations became the subject of a Federal lawsuit and were ultimately enjoined in all respects by the Federal District Court of Idaho. As a result of the court's decision, BLM applies the grazing regulations as they existed prior to the 2006 rulemaking. This has been reiterated in several Instructional Memoranda (IM) from the BLM Washington Office. See BLM-WO IM 2007-004, "Grazing Regulations Status" (October 10, 2006), IM 2007-137 "Idaho District Court Enjoins Grazing Regulations" (June 15, 2007), and IM 2009-109 "Idaho District Court Order and Judgment Enjoins Grazing Regulations" (September 30, 2010).

This page intentionally left blank.

Table 4. Allotment Acres as Available or Unavailable to Livestock Grazing by Alternative

Procession Procession Procession Procession Process Procession Proces			Alte	ernative A				Alt	ternative B				Alte	ernative C				Altern	atives D and E		
Marchan Marc	Acres		Kaiparowits		Escalante Planning	Canyon		Kaiparowits		Escalante Planning	Canyon		Kaiparowits		Escalante Planning	Canyon		Kaiparowits		Escalante Planning	Glen Canyor NRA
Arches	Alvey Wash #I	UT06001 Total Ac	res: 60,216 (56,:	169)¹																	
According Humbridge Total Across 15,033		0	12,615	0	59,424	0	0	0	0	0	0	0	12,615	0	56,534	0	0	12,615	0	59,424	0
Marian M		0	0	0	0	0	0	12,615	0	59,424	0	0	0	0	2,890	0	0	0	0	0	0
Acres	Antone Flat (U	Inalloted) Total Ac	res: 15,033					_													
Acres		_	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15,032	0	0	0	0
Available 13.148 0 0 0 0 2339 0 0 0 0 0 0 0 0 0		15,032	0	0	0	0	15,032	0	0	0	0	15,032	0	0	0	0	0	0	0	0	0
Accoss	Blg Bowns Be	nch #UT06003 To	tal Acres: 18,590	O (14,445) GO	NRA Acres: 4:	L45		_													
Acros		13,148	0	0	0	3,339	0	0	0	0	0	13,814	0	0	0	3,339	14,445	0	0	0	3,339
Mariable		1297	0	0	0	807	14,445	0	0	0	807	631	0	0	0	807	0	0	0	0	807
Acres	Blg Horn #UTO	6002 Total Acres	: 53,178 (48,498	3)																	
Mariable		38,854	553	0	9,080	0	30,715	553	0	9,013	0	38,854	553	0	9,080	0	38,854	553	0	9,080	0
Available Q	Acres			0	0	0	8,139	0	0	67	0	0	0	0	0	0	0	0	0	0	0
Acres	Black Ridge #	UT06006 Total Ad	res: 11,657					_													
Acres		0	2,487	0	9,169	0	0	2,487	0	9,169	0	0	2,487	0	9,169	0	0	2,487	0	9,169	0
Available Acres 0 0 1.243 3.239 0 0 0 1.243 3.239 0 0 0 1.243 3.239 0 0 0 1.243 3.239 0 0 0 2.487 1.243 3.239 Acres 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres	Black Rock #U	JT24008 Total Ac	res: 9,348 (4,287	7)														_			
Black Rock (State) #UT05917 Total Acres: 1,251 (236) Available 0		0	0	1,243	3,239	0	0	0	1,243	3,239	0	0	0	1,243	3,239	0	0	2,487	1,243	3,239	0
Available O O O O O O O O O	Acres	_			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres 0	Black Rock (S	tate) #UT05917 T	otal Acres: 1,251	1 (236)														_			
Acres		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Available Acres		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres	Boot #UT1400	09 Total Acres: 2,9	946															_			
Acres Mariable Mar		0	0	2,675	0	0	0	0	2,675	0	0	0	0	2,675	0	0	0	0	2,675	0	0
Available Acres 3,249 0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres	Boulder Creek	#UT06004 Total	Acres: 3,252																		
Acres		3,249	0	0	0	0	3,249	0	0	0	0	4,522	0	0	0	0	4,522	0	0	0	0
Available 0 0 0 631 0 0 0 631 0 0 0 631 0 0 631 0 0 631 0 0 631	Acres			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Bull Run (Stat	e) #UT00018 Tota	I Acres: 631																		
		0	0	0	631	0	0	0	0	631	0	0	0	0	631	0	0	0	0	631	0

		Alte	rnative A				Alte	ernative B				Alte	ernative C				Alterna	atives D and E		
Acres	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bunting Trust (State) #UT05952	? Total Acres: 226	S (O)																	
Available Acres	0	0	226	0	0	0	0	226	0	0	0	0	226	0	0	0	0	226	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bunting Well																				
Available Acres	0	152	0	7,406	0	0	152	7,406	0	0	0	152	0	7,406	0	0	152	0	7,406	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UT24018 Total A	1	-		1	T						1	1				1			
Available Acres	0	0	327	2,448	0	0	0	327	2,448	0	0	0	327	2,448	0	0	0	327	2,448	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	T06007 Total Ac	res: 31,672 (30,2	:40)									1	1				1			
Available Acres	4,400	0	0	25,825	26	353	0	0	20,196	18	4,400	0	0	25,825	26	4,400	0	0	25,825	26
Unavailable Acres	0	0	0	0	0	4,047	0	0	5,628	8	0	0	0	0	0	0	0	0	0	0
	JT15003 Total Ad	1	758)		1					1			1						T	
Available Acres	0	0	0	16,758	0	0	0	0	16,758	0	0	0	0	16,758	0	0	0	0	16,758	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	T25055 Total Ac	<u> </u>			T -		_					_			_	_	_			
Available Acres	0	0	44	2,709	0	0	0	44	2,709	0	0	0	44	2,709	0	0	0	44	2,709	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	08 Total Acres: 10		_		T -			-					_		_	_		_		
Available Acres	0	12,704	0	4,020	0	0	12,704	0	4,020	0	0	12,704	0	4,020	0	0	12,704	0	4,020	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cottonwood #l	Л15004 Total Ad	res: 103,818																		
Available Acres	0	29,368	15,739	58,219	0	0	27,750	11,253	47,624	0	0	29,368	15,739	58,219	0	0	29,368	15,739	58,219	0
Unavailable Acres	0	0	0	0	0	0	1,618	4,486	10,595	0	0	0	0	0	0	0	0	0	0	0
Coyote #UT250	034 Total Acres: 3																			
Available Acres	0	4,852	66	34,018	1	0	4,852	66	34,018	1	0	4,852	66	34,018	26	0	4,852	66	34,018	1
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Death Hollow	#UT06009 Total A	Acres: 19,538																		
Available Acres	6,668	0	0	12,870	0	6,668	0	0	12,870	0	6,668	0	0	12,870	0	6,668	0	0	12,870	0

		Alte	ernative A				Alt	ernative B				Alte	ernative C				Alterna	atives D and E		
Acres	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer Creek #U	Γ06010 Total Ac	res: 12,807 (17,9	976)																	
Available Acres	12,807	0	0	0	0	0	0	0	0	0	12,807	0	0	0	0	17,975	0	0	0	0
Unavailable Acres	5,168	0	0	0	0	17,975	0	0	0	0	5,168	0	0	0	0	0	0	0	0	0
Deer Range #U	T25005 Total Ad	res: 11,748 (11,	107)																	
Available Acres	0	0	7,287	3,820	0	0	0	7,287	3,820	0	0	0	7,287	3,820	0	0	0	7,287	3,820	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer Spring Po	int #UT24030 To	otal Acres: 33,41					I	1				I	ı					T		
Available Acres	0	0	6,393	12,738	0	0	0	6,393	12,738	0	0	0	6,393	12,738	0	0	0	6,393	12,738	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dry Hollow (Clo	sed) Total Acres:	1					T	1	1		1	T	1							
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	1,273	0	0	0	0	1,273	0	0	0	0	0	0	0	0	0	0	0	0	0	0
						ortion of Dry Vall		_		_	_		_		_			_		
Available Acres	0	3,660	0	3,306	0	0	3,552	0	3,306	0	0	3,660	0	3,306	0	0	3,660	0	3,306	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	r (Closed) Total A	1	_	_	-		_	_	_	_	_	_	_	_	_		_	_	-	
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	214	0	0	1,194	57,883	214	0	0	1,194	57,883	214	0	0	1,194	57,883	214	0	0	1,194	57,883
First Point #UT:	24041 Total Acre	es: 3,015												T				T		
Available Acres	0	0	2,990	25	0	0	0	2,990	25	0	0	0	2,990	25	0	0	0	2,990	25	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fivemile Mount	tain #UT24043 T	otal Acres: 18,08	82 (17,636)																	
Available Acres	0	0	0	17,636	0	0	0	0	17,636	0	0	0	0	17,636	0	0	0	0	17,636	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Flag Point Tota	l Acres: 322																			
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	322	0	0
Unavailable Acres	0	0	0	0	0	0	0	322	0	0	0	0	0	0	0	0	0	0	0	0
	UT24044 Total /	Acres: 13,575																		
Available Acres	0	0	13,575	0	0	0	0	0	0	0	0	0	13,575	0	0	0	0	13,575	0	0

		Alte	ernative A				Alte	ernative B				Alte	rnative C				Alterna	itives D and E		
Acres	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA
Unavailable Acres	0	0	0	0	0	0	0	13,575	0	0	0	0	0	0	0	0	0	0	0	0
Ford Well #UT2	24047 Total Acres	s: 9,089 (8,720)				I.	I .													
Available Acres	0	0	3,894	4,826	0	0	0	3,894	4,826	0	0	0	3,894	4,826	0	0	0	3,894	4,826	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fortymile Ridg	e #UT06012 Tota	al Acres: 57,728 ((39,975) GCN	RA Lands 17,7	753??															
Available Acres	0	8,081	0	31,894	17,917	0	8,010	0	29,771	4,434	0	8,081	0	31,894	17,917	0	8,081	0	31,894	17,917
Unavailable Acres	0	0	0	0	0	0	71	0	2,123	13,483	0	0	0	0	0	0	0	0	0	0
Granary Ranch	#UT24055 Total	Acres: 1,940	T				ı					1			T		ı		T	
Available Acres	0	0	1,927	0	0	0	0	1,927	0	0	0	0	1,927	0	0	0	0	1,927	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	T06036 Total Acr	1		_	1	T	T								I		I		_	
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	(Closed) Total Acr		1		1										T.					
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	0	1,921	0	0	2,368	0	1,921	0	0	2,368	0	1,921	0	0	2,368	0	1,921	0	0	2,368
-	ich #UT06013 To				1		T								I		I			
Available Acres	3,150	0	0	0	0	3,150	0	0	0	0	3,150	0	0	0	0	3,150	0	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	JT15011 Total Ad		I		ı	I	II			1					T		I		I	
Available Acres	0	152,731	0	1,706	0	0	152,731	0	1,706	0	0	152,731	0	1,706	0	0	152,731	0	1,706	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hells Bellows #	#UT24060 Total A	Acres: 2,513	1		'			'		'					<u>'</u>				1	
Available Acres	0	0	1,931	121	0	0	0	1,931	121	0	0	0	1,931	121	0	0	0	1,931	121	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Johnson Canyo	on #UT04121 Tota	al Acres: 10,489	(6,883)																	
Available Acres	0	0	6,629	0	0	0	0	6,629	0	0	0	0	6,629	0	0	0	0	6,629	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Johnson Lakes	#UT24064 Total	Acres: 11,142																		
Available Acres	0	0	11,142	0	0	0	0	11,142	0	0	0	0	11,142	0	0	0	0	11,142	0	0

		Alte	rnative A				Alte	ernative B				Alte	ernative C				Alterna	ntives D and E		
Acres	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	#UT24065 Total :	Acres: 2,344																		
Available Acres	0	0	1,719	625	0	0	0	1,719	625	0	0	0	1,719	625	0	0	0	1,719	625	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
King Bench #U	T06014 Total Ac	res: 54,329		'					'				1	1				l		
Available Acres	34,021	0	0	20,308	0	7,620	0	0	20,308	0	34,021	0	0	20,308	0	34,021	0	0	20,308	0
Unavailable Acres	0	0	0	0	0	26,401	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	.5 Total Acres: 22	1		5,705??			l	T.	<u> </u>			l	I	I				I		
Available Acres	0	17,629	0	0	5,110	0	15,255	0	0	115	0	15,255	0	0	115	0	17,629	0	0	5,110
Unavailable Acres	0	0	0	0	0	0	2,374	0	0	4,995	0	2,374	0	0	4,995	0	0	0	0	0
Lake Powell #	UT04135 Total Ad	cres: 371						T					1					ı		
Available Acres	0	0	0	0	367	0	0	0	0	367	0	0	0	0	367	0	0	0	0	367
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UT06016 Total A		-	1			Ī	Ī					I	ı						
Available Acres	0	120,436	0	107,111	22,579	0	70,434	0	92,861	22,579	0	120,436	0	107,111	22,579	0	120,436	0	107,111	22,579
Unavailable Acres	0	0	0	0	0	0	50,003	0	14,249	0	0	0	0	0	0	0	0	0	0	0
	ench (FR) #UT060	1		1			I	I		1	l	ı	I	I						
Available Acres	3,422	0	0	0	0	0	0	0	0	0	3,422	0	0	0	0	3,422	0	0	0	0
Unavailable Acres	0	0	0	0	0	3,422	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Little Desert (S	status?) Total Acro	es: 2,891						T						1						
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Locke Ridge #	UT14071 Total A	cres: 5,056 (4,45	6)																	
Available Acres	0	0	4,456	0	0	0	0	4,456	0	0	0	0	4,456	0	0	0	0	4,456	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Long Canyon S	tock Driveway (U	nalloted) Total Ad	cres: 1,043																	
Available Acres	1,043	0	0	0	0	1,043	0	0	0	0	1,043	0	0	0	0	1,043	0	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	osed) Total Acres:																			
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	224	0	0	0	0

		Alte	ernative A				Alte	ernative B				Alte	ernative C				Alterna	tives D and E		
Acres	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA
Unavailable Acres	224	0	0	0	0	224	0	0	0	0	224	0	0	0	0	0	0	0	0	0
Lower Cattle #	UT06017 Total A	cres: 81,168 (62	,891) GCNRA	LANDS 18,27	7??					'		1	'							
Available Acres	518	9,223	0	53,150	18,479	518	9,223	0	53,150	18,479	518	9,223	0	53,150	18,479	518	9,223	0	53,150	18,479
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower Hackbe	rry #UT25014 To	tal Acres: 20,312																		
Available Acres	0	20,173	0	0	0	0	0	0	0	0	0	20,173	0	0	0	0	20,173	0	0	0
Unavailable Acres	0	0	0	0	0	0	20,173	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower Warm C	reek #UT25015	Total Acres: 23,9:	15																	
Available Acres	0	0	0	0	15,920	0	0	0	0	0	0	0	0	0	15,920	0	0	0	0	15,920
Unavailable Acres	0	0	0	0	0	0	0	0	0	15,290	0	0	0	0	0	0	0	0	0	0
Main Canyon (State) #UT05957	Total Acres: 312	2 (284)	T	1							ı	1		T		ı			
Available Acres	0	0	0	284	0	0	0	0	0	0	0	0	0	284	0	0	0	0	284	0
Unavailable Acres	0	0	0	0	0	0	0	0	284	0	0	0	0	0	0	0	0	0	0	0
McGath Point	(Closed)	_																		
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,132	0	0	0	0
Unavailable Acres	3,132	0	0	0	0	3,132	0	0	0	0	3,132	0	0	0	0	0	0	0	0	0
Meadow Cany	on #UT24081 Tot	al Acres: 4,676																		
Available Acres	0	0	4,672	4	0	0	0	4,672	4	0	0	0	4,672	4	0	0	0	4,672	4	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mollies Nipple	#UT24083 Total	Acres: 103,527 (99,817)+ (1,1	L21 Private)=	(100,938)							T	1		I	T	T			
Available Acres	0	0	56,958	42,859	0	0	0	53,981	36,253 -Buckskin Portion	0	0	0	56,958	42,859	0	0	0	56,958	42,859	0
Unavailable Acres	0	0	0	0	0	0	0	2,976	6,607 +Buckskin Portion	0	0	0	0	0	0	0	0	0	0	0
	019 Total Acres: 4	13,418 (27,276 (CNRA??)					1				I	I				1			
Available Acres	290	0	0	15,840	27,134	290	0	0	15,840	27,134	290	0	0	15,840	27,134	290	0	0	15,840	27,134
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	UT25016 Total A		,652)	1								I	I				1			
Available Acres	0	15,652	0	0	0	0	15,652	0	0	0	0	15,652	0	0	0	0	15,652	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		Alte	ernative A				Alt	ernative B				Alto	ernative C				Alterna	tives D and E		
Acres	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA
Muley Twist (Cl	osed) (Data)																			
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	0	0	0	2,246	1	0	0	0	2,246	1	0	0	0	2,246	1	0	0	0	2,246	1
Navajo Bench ((Closed)																			
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	0	0	0	160	12,775	0	0	0	160	12,775	0	0	0	160	0	0	0	0	160	0
	6 Total Acres: 1,2	284 (220 Acres)																		
Available Acres	0	0	1,056	0	0	0	0	1,056	0	0	0	0	1,056	0	0	0	0	1,056	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nipple Bench #	UT25018 Total A	Acres: 30,739 (7	74 GCNRA)																	
Available Acres	0	2,785	0	27,179	494	0	2,785	0	27,179	494	0	2,785	0	27,179	494	0	2,785	0	27,179	494
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No Mans Mesa	(Closed) (Acreag	e)	1																	
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	1,464	0	0	0	0	1,464	0	0	0	0	1,464	0	0
Phipps (FR) #U	T06024 Total Acı	res: 10,432	1	I.			1		I.						l		I.			
Available Acres	7,365	0	0	0	0	0	0	0	0	0	7,365	0	0	0	0	10,431	0	0	0	0
Unavailable Acres	3,066	0	0	0	0	10,431	0	0	0	0	3,066	0	0	0	0	0	0	0	0	0
Pine Creek #UT	T06023 Total Acre	es: 5,740 (151)	<u>'</u>	1			<u>'</u>	-	1	<u> </u>								'		
Available Acres	624	0	0	0	0	624	0	0	0	0	624	0	0	0	0	624	0	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pine Creek (Sta	ate) #UT05912 To	otal Acres: 590 (513)																	
Available Acres	0	0	0	0	0	0	0	0	O	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pine Point #UT	04102 Total Acre	es: 9,728 (6,632))																	
Available Acres	0	0	4,490	2,097	0	0	0	4,490	2,097	0	0	0	4,490	2,097	0	0	0	4,490	2,097	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rattlesnake Be	ench (Closed)											·						'		
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	3,564	0	0	0	0	3,564	0	0	0	0	3,564	0	0	0	0	3,564	0	0	0	0

		Alte	rnative A				Alte	ernative B				Alte	rnative C				Alterna	tives D and E		
Acres	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA
Rock Creek-Mu	udholes #UT0602	O Total Acres: 78	3,013 (43,070) (35,327 GCN	NRA acres??) Missing Middle I	Rock Creek acres	s?												
Available Acres	0	17,253	0	25,432	22,193	0	0	0	0	0	0	17,253	0	25,432	22,193	0	17,502	0	25,563	22,193
Unavailable Acres	0	251 + Middle Rock Cr. Acres	0	133 + Middle Rock Cr. Acres	11,503	0	17,504	0	25,656	33,696	0	251 + Middle Rock Cr. Acres	0	133 + Middle Rock Cr. Acres	11,503	0	2+ Middle Rock Cr. Acres	0	3+ Middle Rock Cr. Acres	11,503
Rock Reservoi	•																			
Available Acres	0	0	0	1,075	0	0	0	0	1,075	0	0	0	0	1,075	0	0	0	0	1,075	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roy Willis #UT	25054 Total Acre	s: 195			'															
Available Acres	0	0	0	194	0	0	0	0	194	0	0	0	0	194	0	0	0	0	194	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rush Beds #U	25021 Total Acre	es: 18,765																		
Available Acres	0	0	18,765	0	0	0	0	18,765	0	0	0	0	18,765	0	0	0	0	18,765	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Salt Water Cre	ek (Closed)				'					'				<u> </u>					1	
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12,055	0	0	0	0
Unavailable Acres	12,055	0	0	0	0	12,055	0	0	0	0	12,055	0	0	0	0	0	0	0	0	0
School Section	#UT14105 Total	Acres: 754 (744	Acres)																	
Available Acres	0	0	732	0	0	0	0	732	0	0	0	0	732	0	0	0	0	732	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Second Point	UT04161 Total A	Acres: 5,891																		
Available Acres	0	0	5,437	453	0	0	0	5,437	453	0	0	0	5,437	453	0	0	0	5,437	453	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sink Holes #U	104111 Total Acre	es: 5,591 (+ 1,33	0 acres Arizo	na State Land	s)															
Available Acres	0	0	0	4,262	0	0	0	0	4,262	0	0	0	0	4,262	0	0	0	0	4,262	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Slick Rock (Sta	nte) #UT05930 To	otal Acres: 643																		
Available Acres	0	2	0	641	0	0	2	0	641	0	0	2	0	641	0	0	2	0	641	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Soda #UT0602	e Total Acres: 70),261 (51,962 GC	NRA Acres??)																
Available Acres	0	2,668	0	15,631	52,113	0	2,668	0	15,631	52,113	0	2,668	0	15,631	52,113	0	2,668	0	15,631	52,113

		Alte	ernative A				Alt	ernative B				Alte	ernative C				Alterna	atives D and E		
Acres	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Fork #U	Γ06056 Total Acr	es: 120 (Data?)																		
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spencer Bench	(Closed)	'						'				'	<u>'</u>		'					
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	0	2,256	0	2,989	3,296	0	2,256	0	2,989	3,296	0	2,256	0	2,989	3,296	0	2,256	0	2,989	3,296
Steep Creek (C	losed)																			
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,550	0	0	0	0
Unavailable Acres	7,550	0	0	0	0	7,550	0	0	0	0	7,550	0	0	0	0	0	0	0	0	0
Swallow Park	#UT14120 Total A	Acres: 16,494																		
Available Acres	0	0	6,148	10,343	0	0	0	6,148	10,343	0	0	0	6,148	10,343	0	0	0	6,148	10,343	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Timber Mounta	ain #UT04124 Tot	tal Acres: 7,742 ((these acres in	nclude Private	80 acres)															
Available Acres	0	0	7,662	0	0	0	0	7,662	0	0	0	0	7,662	0	0	0	0	7,662	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unalloted Area	s in Gien Canyon	(Data)	T	1																
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	1,608	0	0	0	0	1,608	0	0	0	0	1,608
	UT06028 Total Ad	-	NRA acres 7,3	-			T.	ı												
Available Acres	38,587	14,708		31,628	7,508	38,587	14,231	0	26,164	7,508	38,587	14,708	0	31,628	7,508	38,587	14,708	0	31,628	7,508
Unavailable Acres	0	0	0	0	0	0	477	0	5,465	0	0	0	0	0	0	0	0	0	0	0
Upper Hackbei	ry #UT25023 Tot		(Need to dete		for Upper Ha	ackberry Canyon	-													
Available Acres	0	14,742	0	8,093	0	0	904	0	4,434	0	0	14,742	0	8,093	0	0	14,742	0	8,093	0
Unavailable Acres	0	0	0	0	0	0	1,384	0	563	0	0	0	0	0	0	0	0	0	0	0
Upper Paria #U	TO6033 Total Ac	-																		
Available Acres	0	25,786	8,462	53,666	0	0	25,786	6,230	38,645	0	0	25,786	9,747	69,190	0	0	25,786	9,747	69,190	0
Unavailable Acres	0	0	0	0	0	0	0	3,517	30,545	0	0	0	0	0	0	0	0	0	0	0
Upper Warm C	reek #UT15024 T		91 (22,300 G																	
Available Acres	0	18,040	0	36,952	22,349	0	18,040	0	36,952	22,349	0	18,040	0	36,952	22,349	0	18,040	0	36,952	22,349

		Alte	rnative A				Alt	ernative B				Alte	ernative C				Alterna	atives D and E		
Acres	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA	Escalante Canyonlands	Kaiparowits	Grand Staircase	Kanab- Escalante Planning Area	Glen Canyon NRA
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vermilion #UTC	04130 Total Acre	s: 44,322 (43,24	4, without pri	vate)																
Available Acres	0	0	28,102	14,981	0	0	0	25,163	11,042	0	0	0	28,102	14,981	0	0	0	28,102	14,981	0
Unavailable Acres	0	0	0	0	0	0	0	2,939	3,939	0	0	0	0	0	0	0	0	0	0	0
Wagon Box Me	esa #UT06029 To	tal Acres: 29,157	7 (689 acres i	n GCNRA??)				'		'			'					'	-	'
Available Acres	6,089	0	0	22,216	701	6,089	0	0	22,216	701	6,089	0	0	22,216	701	6,089	0	0	22,216	701
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wahweap #UT	25025 Total Acre	s: 17,222	ı	1		ı		1				<u>'</u>	1					1		1
Available Acres	0	13,806	0	3,417	0	0	13,806	0	3,417	0	0	13,806	0	3,417	0	0	13,806	0	3,417	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White Rock #U	T06032 Total Ac	res: 1,390	ı	1		ı		1				<u>'</u>	1					1		1
Available Acres	1,388	0	0	0	0	1,388	0	0	0	0	1,388	0	0	0	0	1.388	0	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White Sage #U	TO4134 Total Ac	res: 2,142 (2062)	'			1	'	<u> </u>	'		-	'				1	<u>'</u>	<u> </u>	'
Available Acres	0	0	643	1,419	0	0	0	643	1,419	0	0	0	964	1,419	0	0	0	964	1,419	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wide Hollow #	UT06030 Total A	cres: 3,907 (KFO))	'			1	'		'		<u> </u>	'				1	'	'	'
Available Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Willow Gulch #	UT06031 Total A	cres: 12,214 (12	,885)	'			1	'		'		<u> </u>	'				1	'	'	'
Available Acres	12,045	0	0	166	0	12,045	0	0	166	0	12,045	0	0	166	0	12,045	0	0	166	0
Unavailable Acres	673	0	0	0	0	673	0	0	0	0	673	0	0	0	0	673	0	0	0	0
Wiregrass #UT	04145 Total Acre	es: 35,012 (7,379	- Need GCNR	A and State S	ections acre	s)											<u> </u>			
Available Acres	0	1,308	0	6,264	12,276	0	1,308	0	6,264	12,276	0	1,308	0	6,264	12,276	0	1,308	0	6,264	12,276
Unavailable Acres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

¹Parenthetical acreages in the table represent geographic information system-derived acreages. Acreages not in parenthesis are from the Rangeland Administration System. NRA – National Recreation Area, FR – forage reserve

References

Bureau of Land Management (BLM). 2018. BLM Rangeland Administration System Reports. Retrieved from https://reports.blm.gov/reports/RAS/. Accessed June 14, 2018.

Abbreviations-Acronyms

Term	Definition
BLM	Bureau of Land Management
CFR	Code of Federal Regulations

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix R

Recreation Management Areas

August 2019

Table of Contents

pecial Recreation Management Area, Extensive Recreation Management Area, and ecreation Management Zone Frameworks	R-1
Nephi Pasture SRMA—GSENM and KEPA	R-2
Paria Hackberry SRMA—GSENM and KEPA	R-5
Paria Hackberry SRMA / Paria River RMZ—GSENM and KEPA	R-9
Paria Hackberry SRMA / Cottonwood Road RMZ—GSENM and KEPA	R-12
GSENM and KEPA ERMAs / Cottonwood Road RMZ—GSENM and KEPA	R-12
Fiftymile Mountain SRMA—GSENM and KEPA	R-15
Escalante Canyons SRMA—GSENM and KEPA	R-18
Escalante Canyons SRMA / Calf Creek RMZ—GSENM	R-22
Calf Creek SRMA—GSENM	R-22
Escalante Canyons SRMA / Burr Trail RMZ—GSENM and KEPA	R-26
Kanab-Escalante ERMA / Burr Trail RMZ—GSENM and KEPA	R-26
Burr Trail SRMA—GSENM and KEPA	R-26
Escalante Canyons SRMA / Spencer Flat RMZ—GSENM	R-30
Burr Trail SRMA, Deer Creek RMZ	R-33
Burr Trail SRMA, The Gulch RMZ—GSENM Escalante Unit	R-36
Escalante Canyons SRMA / Hole-In-The-Rock Road RMZ—KEPA	R-39
Kanab-Escalante ERMA / Hole-In-The-Rock Road RMZ—KEPA	R-39
Hole-In-The-Rock Road SRMA—Escalante Canyon Unit and Kaiparowits Unit	R-40
Hole-In-The-Rock Road SRMA, Dance Hall Rock RMZ—GSENM and KEPA	R-44
Hole-In-The-Rock Road SRMA, Dry Fork RMZ—KEPA	R-47
Hole-In-The-Rock Road SRMA, Devils Garden RMZ—Kaiparowits Unit	R-51
Hole-In-The-Rock Road SRMA, Twentymile Dinosaur Tracksite RMZ—GSENM - Kaiparowits Unit	R-55
Hole-In-The-Rock Road SRMA, Egypt Slot Canyons RMZ—KEPA	
Circle Cliffs SRMA—KEPA	
Highway 12 SRMA—GSENM and KEPA	
Highway 12 SRMA / Little Desert RMZ—KEPA	
Kanab-Escalante ERMA / Little Desert RMZ—KEPA	
KEPA ERMA / Little Desert RMZ—KEPA	
Highway 89 SRMA—GSENM and KEPA	
Skutumpah SRMA—GSENM and KEPA	
Paria Canyons Vermilion Cliffs SRMA-KEPA	
Kanah-Escalante FRMA_CSENM and KEPA	P-86

GSENM ERMA and KEPA ERMA—GSENM and KEPA	R-86
Abbreviations-Acronyms	R-89

Appendix R: Recreation Management Areas

Special Recreation Management Area, Extensive Recreation Management Area, and Recreation Management Zone Frameworks

Special Recreation Management Areas (SRMAs) are administrative units where the existing or proposed recreation opportunities and recreation setting characteristics are recognized for their unique value, importance, and/or distinctiveness, especially compared to other areas used for recreation. Summaries of each SRMA below establish objective decisions, describe recreation setting characteristics, identify management actions and allowable use decisions, and, if necessary, identify implementation decisions. Each SRMA write-up begins with a brief description of the rationale for designating the SRMA including the unique value, importance, or distinctiveness of the area. This documents the rationale for consideration of the SRMA in the planning process and, if selected, designation of the SRMA in the record of decision.

SRMA/Recreation Management Zone (RMZ) Objective(s): SRMAs may be subdivided into RMZs with discrete objectives. SRMA/RMZ objectives must define the specific recreation opportunities (i.e., activities, experiences, and benefits derived from those experiences), which become the focus of Recreation and Visitor Services management.

Recreation Setting Characteristic (RSC) Descriptions: This section describes the desired physical, social, and operational recreation setting qualities to be maintained or enhanced.

Extensive Recreation Management Areas (ERMAs) are administrative units that require specific management consideration in order to address recreation use, demand, or Recreation and Visitor Services program investments. While generally unnecessary, ERMAs may be subdivided into RMZs to ensure Recreation and Visitor Services are managed commensurate with the management of other resources and resource uses.

Management and Allowable Use Decisions: Identify necessary management actions and allowable use decisions for recreation and visitor services and other program areas to achieve ERMA, SRMA, and RMZ objectives. *Please note*: the discharge of firearms is prohibited in all developed recreation sites (campgrounds, trailheads, picnic areas, etc.) per 43 Code of Federal Regulations (CFR) 8365.2-5(a). This prohibition applies to all ERMAs, SRMAs, and RMZs.

Grand Staircase-Escalante National Monument (GSENM) area is named for one of the iconic landscapes in the American West. The Grand Staircase, an unbroken sequence of cliffs and plateaus considered to be the most colorful exposed geologic section in the world, has inspired wonder in visitors since the days of early western explorers. The White Cliffs that rise more than 1,500 feet from the desert floor are the hardened remains of the largest sand sea that ever existed. The deep red Vermilion Cliffs, once the eastern shore of the ancient Lake Dixie, contain a rich fossil record from the Late Triassic period to the early Jurassic period, including petrified wood, fish, dinosaur, and other reptilian bones. Fossil footprints are also common, including those at the Flag Point tracksite, which includes dinosaur fossil tracks adjacent to a Native American rock art panel depicting dinosaur tracks. This area also contains a number of relict vegetative communities occurring on isolated mesa tops, an example of which, No Mans Mesa, was identified in Presidential Proclamation 6920.

The archaeology of the GSENM area is dominated by sites constructed by the Virgin Branch of the Ancestral Puebloans—ancient horticulturalists and farmers who subsisted largely on corn, beans, and squash, and occupied the area from nearly 2000 B.C.E. to about 1250 C.E. The landscape was also the home of some of the earliest corn-related agriculture in the Southwest, and it continues to hold remnants of these early farmsteads and small pueblos. The evidence of this history, including remnants of the beginning of agriculture and development of prehistoric farming systems, is concentrated in the lower levels of the Grand Staircase. The higher cliffs, benches, and plateaus hold evidence of occupation by Archaic and Late Prehistoric people, including Clovis and other projectile points and residential pit structures that indicate occupation by hunter-gatherers starting about 13,000 years ago.

Following the departure of Ancestral Puebloans, the area was re-occupied by a new population of hunter-gatherers, the people known today as the Southern Paiute Indians. The Southern Paiute Indians identify this area as part of their ancestral homeland. Still later, Mormon pioneers settled the area, as evidenced by remnants of roads, trails, line shacks, rock houses, and abandoned town sites.

Nephi Pasture SRMA—GSENM and KEPA

Alternatives B and C

Size: Alternatives B and C - 147,089 acres

The Nephi Pasture region attracts visitors from the surrounding communities and from outside the region due to the spectacular scenery, abundant wildlife, exposed geologic formations, and road network popular with the off-highway vehicle (OHV) community. The SRMA includes areas of interest that include Flag Point, Inch Worm Arch, Timber Mountain, and a portion of the Great Western Trail. OHV use is popular within the SRMA, as the road network and trailheads connect to the Bureau of Land Management (BLM) Kanab Field Office (KFO) transportation networks west of Johnson Canyon Road. The SRMA has one trailhead at the Nephi Pasture road and provides dispersed camping. The SRMA provides important wildlife habitat, hunting access, and commercial recreational opportunities in the region. These resources provide for excellent Primitive and semi-Primitive non-motorized recreation (within 0.5 mile of mechanized trails/routes) to Backcountry and Middlecountry motorized (touring) recreation (within 0.5 mile of four-wheel-drive, all-terrain vehicle [ATV], and motorcycle routes).

The area provides world-class opportunities for viewing a scenic landscape with roadside access to diverse recreation opportunities such as hiking, OHV/four-wheel-drive/auto touring, camping, hunting, and interpretation of natural, and geologic settings.

SRMA/RMZ Objective(s)

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

Activities: Hunting, wildlife viewing, hiking, photography, sightseeing, OHV, driving for pleasure.

Experiences

- Releasing or reducing mental tension
- Developing outdoor skills and abilities
- Enjoying exploring on my/our own

Enjoying the closeness of family and friends

Benefits

- Personal
 - Improved mental well-being and physical fitness and health maintenance
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Closer relationship with the natural world
 - Increased appreciation of area's natural and cultural history
- Community
 - Heightened sense of satisfaction with our area as a place to live and visit
 - More informed citizenry about where to go for different kinds of recreation experiences and benefits
 - Reduced numbers of at-risk youth
 - Enlarged sense of community dependency on public lands
- Economic
 - Positive contributions to local-regional economic stability
 - Maintenance of community's distinctive recreation/tourism market niche or character
 - Increased local tourism revenue
 - More positive contributions to local-regional economy
- Environmental
 - Increased ecologically friendly tourism operations
 - Greater community ownership and stewardship of park, recreation, and natural resources
 - Increased awareness and protection of natural resources
 - Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Primitive to Middlecountry
 - Maintain Primitive settings where lands are more than 0.5 mile from either mechanized or motorized trail or routes.
 - Within 0.5 mile of mechanized trails/routes
 - Maintain Middlecountry settings on much of the SRMA where lands are on or near fourwheel-drive roads, but at least 0.5 mile from all improved roads, though they may be in sight.
- Naturalness: Primitive to Middlecountry
 - Undisturbed natural landscapes
 - Supporting natural landscape with modification in harmony with surroundings and not visually obvious
 - Where the character of the natural landscape is retained. A few modifications contrast the character of the landscape.

- Facilities and Structures: Backcountry to Middlecountry
 - Developed trails made mostly of native materials. Facilities and structures are rare and often accessible via unimproved routes.
 - Maintained and marked trails and roads, simple trailhead developments, and basic toilets at trailheads.

Desired Social RSCs

- Contacts: Backcountry to Middlecountry
 - Usually 3–6 encounters per day off travel routes and campsites, and 7–15 encounters per day on travel routes
- Group Size:
 - Limit group size
 - Evidence of use: Primitive, Backcountry, and Middlecountry
 - No alteration of the natural terrain. Footprints only observed. Sounds of people are rare.
 - Area of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.

Desired Administrative/Operational RSCs

- Access: Primitive to Middlecountry
 - Foot and horse, and non-motorized travel
 - Four-wheel-drive vehicles, ATVs, dirt bikes, or snowmobiles, in addition to nonmotorized, mechanized use
- Visitor Services:
 - Basic maps, staff infrequently present to provide onsite assistance
- Management Controls: Backcountry to Middlecountry
 - Signs at key access points
 - Patrolled periodically by law enforcement officer and other BLM employees. Spike in BLM presence during hunting season.
 - Some use restrictions; limit motorized travel to designated roads and trails.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.
 - Develop mechanized trails where appropriate.

Competitive use

- Prohibit motorized or non-motorized competitive events (Alternative B).
- Allow motorized events except high-speed events. Allow non-motorized competitive events (Alternative C).
- Organized group events/activity use
 - Limit to 12 people or fewer. Groups over 12 require approval of the authorized officer (Alternative B).
 - Limit to 25 people or fewer. Groups over 25 require approval of the authorized officer (Alternative C).
- Motorized event/activity
 - Limited to designated routes.
- Mechanized event/activity
 - Limited on designated trails, where appropriate (Alternative B).
 - Limited on designated routes, where appropriate (Alternative C).
- Stock use event/activity
 - Allow cross-country travel for equestrian use only (Alternative B).
 - Allow cross-country travel for equestrian use (Alternative C).
- Camping
 - Allow dispersed camping.
- Campfires
 - Encourage fire pans and allow collection of dead and downed wood in areas where campfires are allowed.
- Overnight use
 - Require (Alternative B) or encourage (Alternative C) self-registered permits.
- Leasable minerals
 - KEPA: Apply No Surface Occupancy stipulation for mineral leasing (Alternative B).
 - KEPA: Apply Controlled Surface Use and Timing Limitation Stipulations for mineral leasing (Alternative C).
- Mineral materials
 - KEPA: Close to mineral materials disposal (Alternative B).
 - KEPA: Open to mineral materials disposals (Alternative C).
- ROWs
 - Manage as ROW avoidance area (Alternative B).

Paria Hackberry SRMA—GSENM and KEPA

Alternatives B and C

Size: Alternatives B and C - 273,710 acres

The massive Navajo Sandstone walls of the Paria River and its tributaries are some of the tallest in GSENM. The varied terrain includes plateaus, benches, a portion of the Cockscomb ridge, scattered sand dunes, rock knobs and domes, and natural arches. All of the SRMA has outstanding scenic qualities. The Paria River marks the eastern edge of the Grand Staircase, the southern edge of the High Plateaus of the Utah Section of the Colorado Plateau Physiographic Province. The Grand Staircase was so named by early geologists because it is an ascending series of colored cliffs and terraces. At Bull Valley Gorge and Deer Creek Canyon, in the northwestern part of the Wilderness Study Area (WSA), the eastern end of the White Cliffs of the Grand Staircase is 600 to 1,000 feet high and is cut by eight canyons. East of the Paria River, the same sandstone as the White Cliffs is exposed but is more sculpted and dissected. A portion of the terrace of the Vermillion Cliffs, the Grand Staircase below the White Cliffs, is in the southwestern portion of the WSA. Below the cliffs are multi-colored badlands.

In between are high, forested plateaus and slickrock benches, which make for excellent hiking and backpacking challenges and a topographic and geologic wonderland. The canyons are deep and routes hard to find and follow. Observant visitors may also discover evidence of past Anasazi and Fremont civilizations. Uncounted and unnamed arches abound in a maze of opportunity for exploration. A transportation system surrounds the SRMA, providing OHV opportunities and access to the canyon system for day and overnight visitors. The Paria River is a historic wagon road, used today by the equestrian community and rich with historic pioneer inscriptions and wagon grease writings.

The majority of the SRMA is currently withdrawn as a WSA by congress under Section 603 of the Federal Land Policy and Management Act. The canyons in the SRMA offer a Primitive unconfined recreational experience within the Kaiparowits Unit of GSENM, popular for its deep colorful canyons and historic and cultural sites. The SRMA offers unique Primitive recreation opportunities for day hikers, backpackers, equestrian users, and photographers. The Cottonwood Road offers access to popular trails and trailheads to Round Valley Draw, Cottonwood Narrows, Lower Hackberry Canyon, and the Paria Box. The Skutumpah Road corridor offers many day hikes to popular destinations that include Sheep Creek, Willis Creek, Bull Valley Gorge, and Lick Wash. The Paria River corridor offers hiking and equestrian use to experience a historic route.

SRMA/RMZ Objective(s)

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Hiking, backpacking, camping, canyoneering, photography, equestrian use, and auto touring along roadways.

Experiences

- Savoring the total sensory—sight, sound, and smell—experience of a natural landscape
- Developing skills and abilities
- Enjoying the need for physical exercise
- Enjoying exploring on my/our own
- Enjoying the closeness of family and friends

Benefits

- Personal
 - Improved mental well-being and physical fitness and health maintenance
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Increased appreciation of area's cultural history
- Community
 - Greater community involvement in recreation and other land use decisions
 - Enlarged sense of community dependency on public lands
- Economic
 - Positive contributions to local-regional economic stability
 - Maintenance of community's distinctive recreation/tourism market niche or character
 - Increased local tourism revenue
 - More positive contributions to local-regional economy
- Environmental
 - Increased ecologically friendly tourism operations
 - Greater community ownership and stewardship of park, recreation, and natural resources
 - Increased awareness and protection of natural resources
 - Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Primitive to Frontcountry
 - Maintain more than 0.5 mile from both mechanized or motorized trail and routes.
 - Within 0.5 mile of mechanized trail routes along the travel corridors
 - Within 0.5 mile of four-wheel-drive, ATV, and motorcycle routes
 - Within 0.5 mile of low-clearance or passenger vehicle routes (e.g., unpaved country roads, private land routes)
- Naturalness: Primitive
 - A setting maintaining an undisturbed natural landscape
- Facilities and Structures:
 - No structures; foot/horse and water trails only away from roadways
 - Facilities along roadways

Desired Social RSCs

- Contacts:
 - Primitive Fewer than 3 encounters per day at campsites and fewer than 6 encounters per day on travel routes
- Group Size: Primitive
 - 12 people or fewer in the Backcountry

- Evidence of Use: Primitive
 - No alteration of the natural terrain. Footprints only observed. Sounds of people are rare.

Desired Administrative/Operational RSCs

- Access: Primitive
 - Maintain Primitive settings for foot, horse, and non-motorized travel.
- Visitor Service/Information: Primitive
 - No maps or brochures available on site except at trailheads. Staff rarely present to provide onsite assistance.
 - Some use restrictions; limit motorized travel to designated roads and trails. No campfires within the Paria/Hackberry Canyons.
- Management Controls: Backcountry to Frontcountry
 - Basic user regulations at key access points, minimum use restrictions
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.
 - Consider development of Corridor Management Plans within high recreational use areas of the SRMA/RMZs.
- Competitive use
 - Prohibit motorized or non-motorized competitive events in WSA portion of the SRMA (Alternative B).
 - Prohibit (Alternative C).
- Organized group event/activity
 - Allow up to 12 people and 12 pack stock.
- Motorized event/activity
 - Limited to designated routes.
- Mechanized event/activity
 - Allow on designated routes (Alternative C), where appropriate. Prohibit mechanized events in WSA Portion of the SRMA (Alternative B).
- Stock use event/activity
 - Allow cross country travel for equestrian use only.

Camping

Allow dispersed camping.

Campfires

 Prohibit fires in the Paria-Hackberry Canyons. In all other areas, encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed.

Overnight use

- Require self-registered permits (Alternative B).
- Self-registered permits are not required (Alternative C).

Waste

 Require disposable, self-contained human waste management systems within 300 feet of riparian areas.

Leasable minerals

- KEPA: Apply No Surface Occupancy stipulation for mineral leasing (Alternative B).
- KEPA: Apply Controlled Surface Use and Timing Limitation Stipulation for mineral leasing (Alternative C).

Mineral materials

- KEPA: Close to mineral materials disposals (Alternative B).
- KEPA: Open to mineral materials disposals (Alternative C).

ROWs and renewable energy

- Manage as ROW avoidance area (Alternative B).
- Open to ROWs (Alternative C).

Paria Hackberry SRMA / Paria River RMZ—GSENM and KEPA

Alternatives B and C

Size: Alternatives B and C - 181 acres

The upper Paria River RMZ encompasses the river corridor from the north end of Cottonwood Road to the old Pahreah movie set just north of Highway 89. The river corridor is a historic pioneer wagon road and today is a popular with hikers, backpackers, and equestrian users. Popular destinations include Deer and Snake Creek, Kitchen Canyon, Starlite Canyon, Sam Pollock and Hogeye Canyons, Lower Death Valley Cow Trails, Hidden Cache trail, Yellow Rock Trail, the Paria Box, and old Pahreah Townsite.

The Paria River RMZ offers a Primitive to Backcountry experience to explore the Paria River corridor through the middle of the Paria Hackberry SRMA. The river corridor provides access to multiple side canyons.

SRMA/RMZ Objective(s)

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Backpacking, canyoneering, photography, and equestrian use.

Experiences

- Savoring the total sensory—sight, sound, and smell—experience of a natural landscape
- Developing skills and abilities
- Enjoying the need for physical exercise
- Enjoying exploring on my/our own
- Enjoying the closeness of family and friends

Benefits

- Personal
 - Improved mental well-being and physical fitness and health maintenance
 - Greater sensitivity to/awareness of outdoor aesthetics, and nature's art and its elegance
 - Increased appreciation of area's cultural history
- Community
 - Greater community involvement in recreation and other land use decisions
 - Enlarged sense of community dependency on public lands
- Economic
 - Positive contributions to local-regional economic stability
 - Maintenance of community's distinctive recreation/tourism market niche or character
 - Increased local tourism revenue
 - More positive contributions to local-regional economy
- Environmental
 - Increased ecologically friendly tourism operations
 - Greater community ownership and stewardship of park, recreation, and natural resources
 - Increased awareness and protection of natural resources
 - Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Primitive
 - Maintain more than 0.5 mile from both mechanized or motorized trails and routes.
- Naturalness: Primitive
 - A setting maintaining an undisturbed natural landscape
- Facilities and Structures: Primitive
 - No structures; foot/horse and water trails only

Desired Social RSCs

- Contacts: Primitive to Middlecountry
 - Fewer than 3 encounters per day at campsites and fewer than 6 encounters per day on travel routes

- 7-15 encounters per day on travel routes
- 15-29 encounters per day on travel routes
- Group Size: Middlecountry to Rural
 - 7-12 people per day along trails
 - 26-50 people per day along roadways
- Evidence of Use: Middle to Frontcountry
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - Small areas of alteration prevalent. Surface vegetation gone with compacted soils observed. Sounds of people frequently heard in high-use areas.

Desired Administrative/Operational RSCs

- Public Access: Primitive to Frontcountry
 - Maintain Primitive settings for foot, horse, and non-motorized travel in Primitive areas.
 - Two wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use along roadways
- Visitor Services: Primitive to Frontcountry
 - No onsite posts/signs of visitor regulations, interpretive info, or ethics; few use restrictions in Primitive areas
 - No maps or brochures available on site except at trailheads. Staff rarely present to provide onsite assistance.
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekdays and weekends).
- Management Controls: Backcountry to Frontcountry
 - Basic user regulations at key access points, minimum use restrictions
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
- Organized group event/activity use
 - Allow up to 12 people and 12 pack stock. Groups over 12 would require approval of authorized officer (Alternative B).
 - Allow up to 25 people and 25 pack stock. Groups over 25 would require approval of authorized officer (Alternative C).

- Mechanized event/activity
 - Prohibit mechanized events in WSA portion of the RMZ (Alternative B).
 - Allow horse-drawn wagon events (Alternative C).
- Camping
 - Allow dispersed camping.
- Campfires
 - Prohibit fires.
- Leasable minerals
 - KEPA: Close to mineral leasing.
- Mineral materials
 - KEPA: Close to mineral materials disposals.
- Locatable minerals
 - KEPA: Recommend withdrawal from mineral entry.
- ROWs and renewable energy
 - Manage as ROW exclusion area.

Paria Hackberry SRMA / Cottonwood Road RMZ—GSENM and KEPA

Alternatives B and C

Size: Alternatives B and C - 5.290 acres

GSENM and KEPA ERMAs / Cottonwood Road RMZ—GSENM and KEPA

Alternative E

Size: Alternative E - 5,290 acres

The Cottonwood Canyon RMZ encompasses the Cockscomb corridor from the north end of Cottonwood Road to Highway 89. The RMZ is a popular with hikers, backpackers, equestrian users, and auto tourists viewing scenic geologic features. Popular destinations include Grosvenor Arch, Round Valley Draw, Cottonwood Wash Narrows, Lower Hackberry Canyon, Yellow Rock, Paria River Valley, and the Paria Box.

Cottonwood Road travels along the Cockscomb, a unique geological feature. The RMZ offers a unique scenic drive and provides access to popular day hikes and access to Primitive areas within the Paria/Hackberry SRMA.

SRMA/RMZ Objective(s)

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Day hiking, camping, auto touring, photography, access for backpacking, canyoneering, photography, and equestrian use.

Experiences

- Savoring the total sensory—sight, sound, and smell—experience of a natural landscape
- Developing skills and abilities
- Enjoying the need for physical exercise
- Enjoying exploring on my/our own
- Enjoying the closeness of family and friends

Benefits

- Personal
 - Improved mental well-being and physical fitness and health maintenance
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Increased appreciation of area's cultural history
- Community
 - Greater community involvement in recreation and other land use decisions
 - Enlarged sense of community dependency on public lands
- Economic
 - Positive contributions to local-regional economic stability
 - Maintenance of community's distinctive recreation/tourism market niche or character
 - Increased local tourism revenue
 - More positive contributions to local-regional economy
- Environmental
 - Increased ecologically friendly tourism operations
 - Greater community ownership and stewardship of park, recreation, and natural resources
 - Increased awareness and protection of natural resources
 - Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Middlecountry to Frontcountry
 - Within 0.5 mile of low-clearance or passenger vehicle routes (e.g., unpaved country roads, private land routes)
- Naturalness: Frontcountry
 - Character of natural landscape partially modified but none overpower natural landscapes (e.g., structures, utilities)
- Facilities and Structures: Middlecountry to Frontcountry
 - Maintained and marked trail, simple trailhead developments, and basic toilets
 - Rustic facilities such as campsites, restrooms, trailheads, and interpretive displays

Desired Social RSCs

- Contacts: Middlecountry to Frontcountry
 - 15-29 encounters per day on travel routes
 - 30 or more encounters per day on travel routes
- Group Size: Middlecountry to Frontcountry
 - 7-12 people per group
 - 13-25 people per group
- Evidence of use: Middlecountry to Frontcountry
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - Small areas of alteration prevalent. Surface vegetation gone with compacted soils observed. Sounds of people regularly heard.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized mechanized use
- Visitor Services: Frontcountry
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekdays and weekends).
- Management Controls: Frontcountry
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.
- Competitive use
 - Prohibit competitive events (Alternative B).
 - Prohibit motorized competitive events (Alternative C).
- Organized group event/activity use
 - Allow up to 12 along the roadway. Groups over 12 would require approval of the authorized officer (Alternative B).

 Allow up to 25 along the roadway. Groups over 25 would require approval of the authorized officer (Alternative C).

Camping

- Allow in developed campgrounds or in designated camping areas (Alternative C).
 Prohibit dispersed camping once campgrounds are developed and camping areas are designated (Alternative B).
- Allow in developed campgrounds or in designated camping areas. Allow dispersed camping until designated camp sites are developed (Alternative E).

Campfires

- Allow only in designated fire grates, designated fire pits, or mandatory fire pans, and prohibit wood collection for campfires (Alternative B).
- Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed (Alternative C).

Leasable minerals

KEPA: Apply No Surface Occupancy stipulation for mineral leasing.

Mineral materials

- KEPA: Close to mineral materials disposals (Alternative B).
- KEPA: Close to exclusive pits. Open to community pits 5 acres or fewer of unreclaimed area. Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts (alternatives C and E).

Locatable minerals

- KEPA: Recommend withdrawal from mineral entry (alternatives B and C).
- KEPA: Open to mineral entry (Alternative E).

ROWs and renewable energy

- Manage as ROW avoidance area (Alternative B).
- Open to ROWs (Alternative C).

Fiftymile Mountain SRMA—GSENM and KEPA

Alternatives B and C

Size: Alternatives B and C - 157,605 acres

Fiftymile Mountain offers a unique and remote recreational experience. The SRMA offers a Primitive, uncrowded, and remote recreational experience for equestrian use, backpacking, and hunting. This WSA is bounded by the Straight Cliffs on the east and numerous southwest draining canyons on the west. Fiftymile Mountain WSA is a high-elevation island of pinyon-juniper woodland with aspen stands overlooking the sandstone expanse of southern Glen Canyon country, Lake Powell, and Navajo Mountain. The pinyon/juniper woodland of Fiftymile Mountain continues to reveal many new scientific insights into the fire history of this important habitat.

A remote and unconfined recreation experience in GSENM and the Kanab-Escalante Planning Area (KEPA) that provides a unique opportunity to view unique geologic formations and enjoy expansive views of the Colorado Plateau. This region offers a unique opportunity for the

adventurous and experienced backpacker, requiring extensive preparation and planning to travel the region.

SRMA/RMZ Objective(s)

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Hunting, extended backpacking and Backcountry camping, wildlife viewing, photography, equestrian use.

Experiences

- Savoring the total sensory—sight, sound, and smell—experience of a natural landscape
- Enjoy risk-taking adventure
- Enjoying exploring on my/our own
- Enjoying the closeness of family and friends

Benefits

- Personal
 - Personal development and growth: greater self-reliance, enhanced sense of personal freedom
 - Developing skills and abilities in a remote roadless area
 - Enjoying a risk-taking adventure
 - Experiencing a greater sense of independence
 - Savoring the total sensory—sight, sound, and smell—experience of a natural landscape

Community

- Nurturing my own spiritual values and growth
- Developing a greater understanding of the region
- Feeling good about the way our cultural heritage is being protected
- Greater cultivation of natural resource stewardship ethic

Economic

- Enhanced ability for visitors to find areas providing wanted recreation experiences and benefits
- Maintenance of community's distinctive recreation/tourism market niche or character

Environmental

- Maintenance of distinctive recreation setting character
- Greater retention of distinctive natural landscape features
- Increased awareness and protection of natural landscapes

RSC Descriptions

Desired Physical RSCs

- Remoteness: Primitive
 - More than 0.5 mile from both mechanized or motorized trails and routes

- Naturalness: Primitive to Backcountry
 - The natural landscape is undisturbed; a few locations of natural landscape with modifications in harmony with surroundings and not visually obvious
- Facilities and Structures: Primitive
 - No structures; foot and horse trails only. Some structures exist, i.e., range line shacks for grazing permittees. These structures will remain and be maintained.

Desired Social RSCs

- Contacts: Primitive
 - Fewer than 3 encounters per day at campsites and fewer than 6 encounters per day on travel routes
- Group Size: Primitive
 - Fewer than 3 encounters per day at campsites and fewer than 6 encounters per day on travel routes
- Evidence of Use: Primitive
 - No alteration of the natural terrain. Footprints only observed. Sounds of people are rare.

Desired Administrative/Operational RSCs

- Public Access: Primitive to Middlecountry
 - Foot and horse travel; no mechanized/motorized travel
 - Four-wheel-drive vehicles, ATVs, dirt bikes, in addition to non-motorized mechanized use along roadways
- Visitor Services/Information
 - No maps or brochures available on site. Staff rarely present to provide onsite assistance.
- Management Controls: Primitive
 - No onsite posts/signs of visitor regulations, interpretive info, or ethics. Few use restrictions.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.

- Organized group event/activity use
 - Limit to 12 people and 12 pack stock. Groups over 12 people would require approval of the authorized officer (Alternative B).
 - Limit to 12 people and 12 pack stock, and up to 25 people on the Fiftymile Bench.
 Groups over 25 people on the Fiftymile Bench would require approval of the authorized officer (Alternative C).
- Motorized and mechanized event/activity
 - Limited to designated routes.
- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Allow dispersed camping.
- Campfires
 - Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed.
- Overnight use
 - Require (Alternative B) or encourage (Alternative C) self-registered permits.
- Leasable minerals
 - KEPA: Apply No Surface Occupancy stipulation for mineral leasing (Alternative B).
 - KEPA: Apply Controlled Surface Use and Timing Limitation Stipulation for mineral leasing (Alternative C).
- Mineral materials
 - KEPA: Close to mineral materials disposals (Alternative B).
 - KEPA: Close to exclusive pits. Open to community pits 5 acres or fewer of unreclaimed area. Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts (Alternative C).
- Locatable minerals
 - KEPA: Recommend withdrawal from mineral entry (Alternative B).
- ROWs and renewable energy
 - Manage as ROW avoidance area (Alternative B).
 - Open to ROWs (Alternative C).

Escalante Canyons SRMA—GSENM and KEPA

Alternatives B and C

Size: Alternatives B and C - 411.766 acres

The Escalante Canyons Unit is a focal point and receives the highest recreation visitation among all the areas within GSENM. The region provides multiple canyons and streams that support a Backcountry recreational experience as well as auto touring along primary and

secondary roadways. Recreational destinations include the Escalante River Gorge, Escalante Natural Bridge, Box Death Hollow, Boulder Mail Trail, Lower Escalante River, Calf Creek Recreation Area (RMZ), the Burr Trail Scenic Byway (RMZ), Deer Creek Recreation Area, Spencer Flat (RMZ), the Gulch Outstanding Natural Area, Harris Wash, Red Breaks, and Phipps Hollow and Arch. Most locations have been published in multiple guidebooks on the region and have become destination locations in the SRMA.

The SRMA provides a Primitive and unconfined recreation experience in a unique canyon system in south-central Utah. The SRMA provides deep-walled canyons with many perennial streams/riparian areas in a high desert landscape. The canyons are separated by sandstone benches supporting a pinyon-juniper forest with the occasional ponderosa stands offering the adventurous outdoorsman opportunities for unconfined cross-country travel. The SRMA hosts wagon roads, the historic Boulder Mail Trail used to deliver mail by mule from 1902 until 1940, and the original wagon road from Escalante to Boulder. The pioneer and cattle trails offer an insight into the challenges and industrial nature of the early settlers in this country.

SRMA/RMZ Objective(s)

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Day hiking, backpacking, equestrian use, photography, wildlife viewing, canyoneering, and hunting.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people
- Enjoying a risk-taking adventure

Benefits

Personal

- Improved skills for outdoor enjoyment with others
- Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
- Stronger ties with family and friends
- Enlarged sense of personal accountability for acting responsibly on public lands

Community

- Enlarged sense of personal accountability for acting responsibly on public lands
- Feeling good about how visitors are managed
- Feeling good about how our cultural heritage is being protected

Economic

- Positive contributions to local-regional economic stability
- Maintenance of community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economy

Environmental

- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Primitive
 - More than 0.5 mile from both mechanized or motorized trails and routes
- Naturalness: Primitive to Backcountry
 - The natural landscape is undisturbed; a few locations of natural landscape with modifications in harmony with surroundings and not visually obvious
- Facilities and Structures:
 - No structures; foot and horse trails only. Some structures exist, i.e., range line shacks for grazing permittees. These structures will remain and be maintained.

Desired Social RSCs

- Contacts: Primitive to Backcountry
 - Fewer than 3 encounters per day at campsites and fewer than 6 encounters per day on travel routes
- Group Size:
 - A group size of 4 to 6 people may be encountered on occasion.
- Evidence of use:
 - No alterations of the natural terrain. Footprints only, and the sounds of people are rare.
 Areas of alteration are rare with little surface vegetation wear observed; however,
 historic vegetation treatments have occurred but would not likely be apparent to the average person.

Desired Administrative/Operational RSCs

- Public Access: Primitive
 - Foot and horse travel; no mechanized/motorized travel
- Visitor Services: Primitive
 - No maps or brochures available on site. Staff rarely present to provide onsite assistance.
- Management Controls: Primitive to Backcountry
 - No onsite posts/signs of visitor regulations, interpretive info, or ethics. Few use restrictions.
 - Basic user regulations at key access points; minimum use restrictions

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.
 - Consider development of Management Plans within high recreational use areas of the SRMA/RMZs.
- Competitive use
 - Allow organized events and non-motorized competitive events on paved and primary dirt roads.
- Organized group event/activity use
 - Limit to 12 people and 12 pack stock. Prohibit motorized group events. Groups over 12 (outside the WSA) would require approval of the authorized officer (Alternative B).
 - Limit to 12 people and 12 stock or OHVs. Groups over 12 (outside the WSA) would require approval of the authorized officer (Alternative C).
- Motorized and mechanized event/activity use
 - Limited to designated routes.
- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Allow dispersed primitive camping.
- Campfires
 - Prohibit campfires in the Escalante Canyons (Alternative B).
 - Prohibit campfires in canyon bottoms (Alternative C).
- Overnight use
 - Require (Alternative B) or encourage (Alternative C) self-registered permits.
- Leasable minerals
 - KEPA: Apply No Surface Occupancy stipulation for mineral leasing (Alternative B).
 - KEPA: Apply No Surface Occupancy stipulation for mineral leasing in KEPA portion (Alternative C).
- Mineral materials
 - KEPA: Close to mineral materials disposal (Alternative B).

- KEPA: Close to exclusive pits. Open to community pits 5 acres or fewer of unreclaimed area. Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts (Alternative C).
- Locatable minerals
 - KEPA: Recommend withdrawal from mineral entry.
- ROWs and renewable energy
 - Manage as a ROW avoidance area (Alternative B).
 - Open to ROWs (Alternative C).

Escalante Canyons SRMA / Calf Creek RMZ—GSENM

Alternatives B, C, and D

Size: Alternatives B, C, and D - 6,538 acres

Calf Creek SRMA—GSENM

Alternative E

Size: Alternative E - 6,956 acres

Calf Creek Recreation Area was created in 1970 under the act of September 19, 1964, segregating the lands from appropriation under the agricultural lands laws.

Calf Creek Recreation Area receives the highest recreation visitation of any destination in GSENM. The recreation area has become an international destination and is marketed as a destination location by the Utah Office of Travel and Tourism. The recreational area supports a campground, day use area, and a 3-mile-long trail to Lower Calf Creek Falls. The Upper Calf Creek Falls has a 1-mile-long trail to another highly visited waterfall. The remainder of the recreation area is popular for day hiking, swimming, and enjoying a riparian corridor in close proximity to Highway 12. The area has been published in multiple guidebooks and is a focal point in the region.

SRMA/RMZ Objective(s)

The objective of Calf Creek RMZ is to retain the rural and rugged flavor through designed recreation developments in key locations, reduce user-created impacts in undesirable locations, and retain the visual qualities along the highway. Calf Creek provides a unique opportunity for the public to experience a world-class destination, providing a hike in the canyons along a riparian corridor to waterfalls adjacent to Highway 12. The BLM's objectives are to:

- 1. Provide the opportunity for a high-quality recreational experience on all lands within the Calf Creek Recreation Area.
 - a. Rationale: Due to the limited size of this area and unique recreational attractions present, all management actions should be directed toward enhancement of the recreation resource.
- 2. Maximize the variety of recreational uses that may be experienced within distinct portions of the recreation area.
 - Rationale: Natural zoning presently exists within the areas due to physical features and the location of man-made facilities. Compatible recreational uses should be enhanced within the RMZ.
- 3. Protect and preserve existing resource values for present and future recreational uses.

- a. Rationale: All permitted uses should be of such a degree that natural values are not degraded.
- 4. Promote visitor safety through education, interpretation, and removal of existing and potential hazards.
 - Rationale: Hazards to public health and safety should be identified. Protective measures will be limited to those actions that produce the least impact on other resource values.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Day hiking, backpacking, campground, photography, wildlife viewing, fishing, and swimming.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people
- Enjoying a risk-taking adventure

Benefits

Personal

- Improved skills for outdoor enjoyment with others
- Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
- Stronger ties with family and friends
- Enlarged sense of personal accountability for acting responsibly on public lands

Community

- Enlarged sense of personal accountability for acting responsibly on public lands
- Feeling good about how visitors are managed
- Feeling good about how our cultural heritage is being protected

Economic

- Positive contributions to local-regional economic stability
- Maintenance of community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economy

Environmental

- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Rural
 - Within 0.5 mile of paved/primary roads and highways
- Naturalness: Primitive and Frontcountry
 - Undisturbed natural landscape
 - Character of the natural landscape partially modified but none overpower natural landscape. Highway 12 is visible along a short portion of the trail.
- Facilities and Structures: Primitive and Rural
 - No structures along the trails. Foot trails only outside of the campgrounds and trailheads.
 - Modern facilities such as campgrounds, group shelters, and occasional exhibits

Desired Social RSCs

- Contacts: Backcountry to Rural
 - 7-15 encounters per day on travel routes
 - Rural: People seem to be generally everywhere on the lower and upper Calf Creek trail.
- Group Size: Middlecountry
 - 7–12 people per group
- Evidence of Use: Frontcountry to Rural
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds
 of people frequently heard.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry to Rural
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized use
 - Ordinary highway auto and truck traffic is characteristic.
- Visitor Services/Information: Rural
 - Information materials, plus experience and benefit descriptions. Staff regularly present.
- Management Controls: Rural
 - Regulations strict and ethics prominent. Use may be limited by permit, reservation, etc.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.

- Develop mechanized trails where appropriate outside of the WSA, and prohibit other new road or trail development.
- Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
- Consider development of Management Plans within high recreational use areas of the SRMA/RMZs.

Competitive use

- Prohibit competitive events (alternatives B, C, and D).
- Allow non-motorized competitive events (Alternative E).

Vending

Allow in campgrounds (alternatives B, C, and D).

Organized group event/activity use

- Allow up to 12 people; no group size limit on the lower or upper Calf Creek Falls Trail or campground. Prohibit motorized groups in the RMZ (alternatives B, C, and D).
- Allow up to 50 people on Lower Calf Creek Falls Trail. Permits for over 50 people may be approved by the authorized officer. Outside of Lower Calf Creek Falls Trail, limit group size to 25 people. Prohibit motorized group events. Groups over 25 would require approval of the authorized officer (Alternative E).

Motorized and mechanized event/activity

- Close to motorized/mechanized activity (Alternative B).
- Limited to designated routes (alternatives C, D, and E).

Rappelling

 Prohibit rappelling from the lower and upper falls for public health and safety (alternatives B, C, and D).

Camping

- Allow in developed campgrounds or in designated camping areas. Prohibit dispersed camping (Alternative B).
- Prohibit dispersed camping along the upper and lower Calf Creek Falls Trails.
 (alternatives C and D).
- Allow in developed campgrounds or in designated camping areas. Allow dispersed camping, outside of developed campground, until designated camp sites are developed (Alternative E).

Campfires

- Allow campfires only in designated fire grates in the RMZ (Alternative B).
- Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed (alternatives C and D).
- Encourage fire pans and allow collection of dead and down wood, outside of developed campground, in areas where campfires are allowed (Alternative E).

Overnight use

Require (Alternative B) or encourage (alternatives C and D) self-registered permit.

- Encourage self-registered permits outside of developed campground. Require self-registered camping permit in developed campground fee area (Alternative E).
- ROWs and renewable energy
 - Manage as ROW exclusion area (alternatives B and C).
 - Manage as ROW avoidance area (Alternative D).
 - Open to ROWs, unless otherwise noted in other RMP prescriptions (Alternative E).

Escalante Canyons SRMA / Burr Trail RMZ—GSENM and KEPA

Alternatives B and C

Size: Alternative B - 2,833 acres; Alternative C - 5,839 acres

Kanab-Escalante ERMA / Burr Trail RMZ—GSENM and KEPA

Alternative D

Size: Alternative D - 5,839 acres

Burr Trail SRMA—GSENM and KEPA

Alternative E

Size: Alternative E - 5,839 acres

The Burr Trail RMZ encompasses the Burr Trail Road, offering a premier auto touring road in the northern region of the Escalante Canyons Unit. Deer Creek Recreation Area is within the RMZ and provides a campground and trailhead adjacent to Deer Creek, a tributary of the Escalante River. The campground is 8 miles from Boulder Town and is popular for camping, hiking, equestrian use, and picnicking in the local community and with visitors. The Burr Trail is 37 miles in length traveling through Deer Creek Recreation Area, the Gulch, Long Canyon, and the Circle Cliffs (SRMA).

SRMA/RMZ Objective(s)

- 1. Provide the opportunity for a high-quality recreational experience on all lands within the Deer Creek Recreation Area.
 - Rationale: Due to the limited size of this area and unique recreational attractions
 present, all management actions should be directed toward enhancement of the
 recreation resource while managing for wilderness characteristics within the WSAs.
- 2. Maximize the variety of recreational uses that may be experienced within distinct portions of the recreation area.
 - Rationale: Natural zoning presently exists within the areas due to physical features and the location of man-made facilities. Compatible recreational uses should be enhanced within the RMZ.
- 3. Protect and preserve existing resource values for present and future recreational uses.
 - a. Rationale: All permitted uses should be of such a degree that natural values are not degraded.
- 4. Promote visitor safety through education, interpretation, and removal of existing and potential hazards.
 - Rationale: Hazards to public health and safety should be identified. Protective measures will be limited to those actions that produce the least impact on other resource values.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Day hiking, backpacking, campground, photography, wildlife viewing, fishing, and swimming.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people
- Enjoying a risk-taking adventure

Benefits

- Personal
 - Improved skills for outdoor enjoyment with others
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Stronger ties with family and friends
 - Enlarged sense of personal accountability for acting responsibly on public lands
- Community
 - Enlarged sense of personal accountability for acting responsibly on public lands
 - Feeling good about how visitors are managed
 - Feeling good about how our cultural heritage is being protected
- Economic
 - Positive contributions to local-regional economic stability
 - Maintenance of community's distinctive recreation/tourism market niche or character
 - More positive contributions to local-regional economy
- Environmental
 - Increased ecologically friendly tourism operations
 - Greater community ownership and stewardship of park, recreation, and natural resources
 - Increased awareness and protection of natural resources
 - Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Rural
 - Within 0.5 mile of paved/primary roads and highways
- Naturalness: Primitive and Frontcountry
 - Undisturbed natural landscapes
 - Character of the natural landscape partially modified but none overpower natural landscape

- Facilities and Structures: Rural
 - Modern facilities such as campgrounds, group shelters, and occasional exhibits

Desired Social RSCs

- Contacts: Frontcountry
 - 30 or more encounters per day on travel routes
- Group Size: Middlecountry
 - 7–12 people per group
- Evidence of Use: Frontcountry to Rural
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds
 of people frequently heard.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry to Rural
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized use
 - Ordinary highway auto and truck traffic is characteristic.
- Visitor Services/Information: Frontcountry
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekdays and weekends).
- Management Controls: Frontcountry
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.
 - Consider development of Management Plans within high recreational use areas of the SRMA/RMZs.

Competitive use

- Allow organized events and non-motorized competitive events on paved roads in coordination with Garfield County (alternatives B, C, and D).
- Allow non-motorized competitive events (Alternative E).

Organized group event/activity use

- Allow 25 people or fewer. Groups over 25 could be approved by authorized officer (alternatives B, C, and D).
- Allow up to 50 people. Permits for over 50 people may be approved by the authorized officer. Within WSAs, group size will be limited to 25 people. Groups over 25 people would require approval of the authorized officer. On a case-by-case basis, group size limits, where applicable, could be adjusted in the RMZ for consistency with group size limits on adjacent lands (e.g., National Park Service [NPS] lands) (Alternative E).

Motorized and mechanized event/activity

Limited to designated routes.

Camping

 Allow in developed campgrounds or in designated camping areas. Allow dispersed camping until designated camp sites are developed.

Campfires

- Allow only in designated fire grates, designated fire pits, or mandatory fire pans and prohibit wood collection for campfires (alternatives B, C, and D).
- Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed (Alternative E).

Overnight use

Encourage self-registered permits (Alternative E).

Leasable minerals

- KEPA: Close to leasable mineral development (Alternative B).
- KEPA: Apply Controlled Surface Use stipulation for leasable mineral development (alternatives C and D).
- KEPA: Apply No Surface Occupancy stipulation for mineral leasing (Alternative E).

Mineral materials

- KEPA: Close to mineral materials disposal (Alternative B).
- KEPA-Close to exclusive pits, but open to community pits of 5 acres or fewer of unreclaimed area. Allow expansion of existing pits with application of visual mitigation measures to reduce impacts (Alternative C).
- KEPA: Open to mineral materials disposal (Alternative D).
- KEPA: Close to exclusive pits. Open to community pits 5 acres or fewer of unreclaimed area. Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts (Alternative E).

Locatable minerals

- KEPA: Recommend withdrawal from mineral entry (Alternative B).
- KEPA: Do not recommend for withdrawal (alternatives C and D).
- KEPA: Open to mineral entry (Alternative E).

ROWs and renewable energy

Manage as ROW avoidance area (alternatives B and C).

- GSENM: Manage as ROW avoidance area. KEPA: Open to ROWs (Alternative D).
- Open to ROWs, unless otherwise noted in other RMP prescriptions (Alternative E).

Escalante Canyons SRMA / Spencer Flat RMZ—GSENM

Alternatives B and C

Size: Alternatives B and C - 2,053 acres

The Spencer Flat RMZ lies within the Escalante Canyons SRMA and offers recreational access and semi-primitive camping opportunities.

SRMA/RMZ Objective(s)

The objective of the Spencer Flat RMZ is to provide close-to-town/roadside dispersed camping opportunities and access to remote areas near the Escalante River corridor. The RMZ will be managed to retain the rural and rugged flavor through designed recreation developments, reduce user-created impacts in undesirable locations, retain visual qualities along the road, and provide recreational and educational opportunities on the unique characteristics of the area.

Spencer Flat Road provides recreational access to primitive and unconfined recreation opportunities for day hiking, backpacking, canyoneering, and equestrian users.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Day hiking, backpacking, equestrian use, auto and OHV touring, photography, wildlife viewing, canyoneering, hunting, and education and interpretation of the area's historic sites.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying exploring on my/our own
- Enjoying an escape from crowds of people
- Enjoying a risk-taking adventure
- Learning more about this specific area

Benefits

- Personal
 - Improved skills for outdoor enjoyment with others
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Stronger ties with family and friends
 - Enhanced sense of personal freedom
 - Enlarged sense of personal accountability for acting responsibly on public lands
- Community
 - Enlarged sense of personal accountability for acting responsibly on public lands
 - Feeling good about how visitors are managed
 - Feeling good about how our cultural heritage is being protected

Economic

- Positive contributions to local-regional economic stability
- Maintenance of community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economy

Environmental

- Maintenance of distinctive recreation setting character
- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Backcountry to Middlecountry
 - Within 0.5 mile of mechanized trails/routes (e.g., unpaved county roads)
 - Within 0.5 mile of four-wheel-drive, ATV, and motorcycle routes
- Naturalness: Backcountry to Middlecountry
 - Natural landscape with modifications in harmony with surroundings and not visually obvious (stock ponds, historic structures)
 - Character of the natural landscape retained. A few modifications contrast with character of the landscape (fences, ditches).
- Facilities and Structures: Middlecountry to Frontcountry
 - Maintained and marked trails, simple trailhead developments, and basic toilets
 - Rustic facilities such as campsites, restrooms, trailheads, and interpretive displays

Desired Social RSCs

- Contacts and Group Size: Backcountry to Middlecountry
 - 7–15 encounters per day on travel routes
 - 15-29 encounters per day on travel routes
- Group Size: Middlecountry
 - 7–12 people per group
- Evidence of Use: Middlecountry to Rural
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - Small areas of alteration prevalent. Surface vegetation gone with compacted soils observed. Sounds of people regularly heard.
 - A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds
 of people frequently heard.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use
- Visitor Services: Backcountry to Middlecountry
 - Basic maps, staff infrequently present (e.g., seasonally high-use periods) to provide onsite assistance
 - Area brochures and maps; staff occasionally present to provide onsite assistance.
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekends and holidays).
- Management Controls: Middlecountry to Front Country
 - Some regulatory and ethics signs. Moderate use restrictions (e.g., camping, human waste).
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Manage for historic values and to provide recreational opportunities where historic and recreational uses are compatible.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop designated dispersed camping facilities, restrooms, and other recreation facilities as necessary.
 - Develop mechanized trails where appropriate; prohibit the development of other new roads and trails.
 - Consider development of Management Plans and Corridor Management Plans within high recreational use areas of the SRMA/RMZs.
- Competitive use
 - Allow non-motorized competitive use.
- Organized group event/activity use
 - Allow up to 12 people. Consider permits for over 12 people in SRMA, if the number of people and the activities proposed are consistent with resource protection (Alternative B).
 - Allow up to 25 people. Consider permits for over 25 people in the SRMA, if the number
 of people and the activities proposed are consistent with resource protection
 (Alternative C).
- Motorized and mechanized event/activity
 - Limited to designated routes.

- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Allow in developed campgrounds or in designated camping areas. Prohibit dispersed camping once campgrounds are developed and camping areas are designated.
- Campfires
 - Allow propane/non-wood fires only. Prohibit wood collection for campfires (Alternative B).
 - Allow only in designated fire grates, designated fire pits, or mandatory fire pans.
 Prohibit wood collection for campfires (Alternative C).
- Overnight use
 - Require (Alternative B) or encourage (Alternative C) self-registered permits.
- ROWs and renewable energy
 - Manage as ROW exclusion (Alternative B) or avoidance (Alternative C) area.

Burr Trail SRMA, Deer Creek RMZ

Alternative E

Size: Alternative E - 641 acres

The Burr Trail SRMA encompasses the Burr Trail Road, offering a premier auto touring road in the northern region of the Escalante Canyons Unit. Deer Creek Recreation Area is within the RMZ and provides a campground and trailhead adjacent to Deer Creek, a tributary of the Escalante River. The campground is 8 miles from Boulder Town and is popular for camping, hiking, equestrian use, and picnicking in the local community and with visitors. The Burr Trail is 37 miles in length traveling through Deer Creek Recreation Area, the Gulch, Long Canyon, and the Circle Cliffs (SRMA).

SRMA/RMZ Objective(s)

- 1. Provide the opportunity for a high-quality recreational experience on all lands within the Deer Creek Recreation Area.
 - a. Rationale: Due to the limited size of this area and unique recreational attractions present, all management actions should be directed toward enhancement of the recreation resource while managing for wilderness characteristics within the WSAs.
- 2. Maximize the variety of recreational uses that may be experienced within distinct portions of the recreation area.
 - a. Rationale: Natural zoning presently exists within the areas due to physical features and the location of man-made facilities. Compatible recreational uses should be enhanced within the RMZ.
- Protect and preserve existing resource values for present and future recreational uses.
 - a. Rationale: All permitted uses should be of such a degree that natural values are not degraded.
- 4. Promote visitor safety through education, interpretation, and removal of existing and potential hazards.

a. Rationale: Hazards to public health and safety should be identified. Protective measures will be limited to those actions that produce the least impact on other resource values.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Recreation Niche</u>: A campground and trailhead provide access to canyons that provide a primitive and unconfined recreation experience for day hiking, backpacking, canyoneering, and equestrian uses.

<u>Activities:</u> Day hiking, backpacking, campground, photography, wildlife viewing, fishing, and swimming.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people
- Enjoying a risk-taking adventure

Benefits

Personal

- Improved skills for outdoor enjoyment with others
- Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
- Stronger ties with family and friends
- Enlarged sense of personal accountability for acting responsibly on public lands

Community

- Enlarged sense of personal accountability for acting responsibly on public lands
- Feeling good about how visitors are managed
- Feeling good about how our cultural heritage is being protected

Economic

- Positive contributions to local-regional economic stability
- Maintenance of community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economy

Environmental

- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Rural
 - Within 0.5 mile of paved/primary roads and highways
- Naturalness: Primitive and Frontcountry
 - Undisturbed natural landscapes
 - Character of the natural landscape partially modified but none overpower natural landscape
- Facilities and Structures: Rural
 - Modern facilities such as campgrounds, group shelters, and occasional exhibits

Desired Social RSCs

- Contacts: Rural
 - People seem to be generally everywhere
- Group Size: Rural
 - 25–50 people per group
- Evidence of Use: Frontcountry to Rural
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds
 of people frequently heard.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry to Rural
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized use.
 - Ordinary highway auto and truck traffic is characteristic.
- Visitor Services/Information: Rural
 - Information materials, plus experience and benefit descriptions; staff regularly present (e.g., almost daily).
- Management Controls: Rural
 - Regulations strict and ethics prominent. Use may be limited by permit, reservation, etc.

Management and Allowable Use Decisions

To achieve the desired RSC:

VRM - Class 1 in WSAs, Class 3 outside WSAs

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.

- Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
- Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.
- Consider development of Management Plans within high recreational use areas of the SRMA/RMZs.
- Competitive use
 - Allow non-motorized competitive events.
- Organized group event/activity use
 - Allow up to 50 people. Permits for over 50 people may be approved by the authorized officer. Within WSAs, group size will be limited to 25 people. Groups over 25 people would require approval of the authorized officer.
- Motorized and mechanized event/activity
 - Limited to designated routes.
- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Allow in developed campgrounds or in designated camping areas. Allow dispersed camping until designated camp sites are developed.
- Campfires
 - Encourage fire pans or use of developed fire pits and allow collection of dead and down wood in areas where campfires are allowed, unless otherwise posted.
- Overnight use
 - Encourage self-registered permits. Require self-registered camping permit in developed campgrounds fee area.
- ROWs and renewable energy
 - Manage as ROW avoidance. Those parts within WSA, manage as ROW exclusion area.

Burr Trail SRMA, The Gulch RMZ—GSENM Escalante Unit

Alternative E

Size: Alternative E - 78 acres

The Gulch RMZ is within the Burr Trail SRMA, offering a recreation destination to access the upper and lower canyons of the Gulch. The Gulch is popular for camping, hiking, backpacking, equestrian use, and picnicking in the local community and with visitors. The Gulch RMZ supports the Gulch Outstanding Natural Area created in 1970 for its outstanding natural values. The RMZ also offers access to the Steep Creek WSA to the north of Burr Trail. The canyons adjacent to the RMZ offer a moderately strenuous hike along an unmarked route providing a diverse desert hiking experience that includes walking along wide, shallow canyon bottoms and negotiating a difficult section of narrows with deep pools.

RMZ Objective(s)

- Provide the opportunity for a high-quality recreational experience on all lands within the Gulch RMZ.
 - a. Rationale: Due to the limited size of this area and unique recreational attractions present, all management actions should be directed toward enhancement of the recreation resource while managing for wilderness characteristics within the WSAs.
- 2. Maximize the variety of recreational uses that may be experienced within distinct portions of the RMZ.
 - Rationale: Natural zoning presently exists within the areas due to physical features and the location of man-made facilities. Compatible recreational uses should be enhanced within the RMZ.
- 3. Protect and preserve existing resource values for present and future recreational uses.
 - Rationale: All permitted uses should be of such a degree that natural values are not degraded.
- 4. Promote visitor safety through education, interpretation, and removal of existing and potential hazards.
 - a. Rationale: Hazards to public health and safety should be identified. Protective measures will be limited to those actions that produce the least impact on other resource values.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Day hiking, backpacking, campground, photography, equestrian use, and wildlife viewing.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people
- Enjoying a risk-taking adventure

Benefits

- Personal
 - Improved skills for outdoor enjoyment with others
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Stronger ties with family and friends
 - Enlarged sense of personal accountability for acting responsibly on public lands
- Community
 - Enlarged sense of personal accountability for acting responsibly on public lands
 - Feeling good about how visitors are managed
 - Feeling good about how our cultural heritage is being protected
- Economic
 - Positive contributions to local-regional economic stability
 - Maintenance of community's distinctive recreation/tourism market niche or character
 - More positive contributions to local-regional economy

Environmental

- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Rural
 - Within 0.5 mile of paved/primary roads and highways
- Naturalness: Primitive and Frontcountry
 - Undisturbed natural landscapes
 - Character of the natural landscape partially modified but none overpower natural landscape
- Facilities and Structures: Rural
 - Modern facilities such as trailheads

Desired Social RSCs

- Contacts: Frontcountry
 - 30 or more encounters per day on travel routes
- Group Size: Middlecountry
 - 7–12 people per group
- Evidence of Use: Frontcountry to Rural
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds
 of people frequently heard.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry to Rural
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized use.
 - Ordinary highway auto and truck traffic is characteristic.
- Visitor Services/Information: Frontcountry
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekdays and weekends).
- Management Controls: Frontcountry
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, equestrian facilities, and other recreation facilities as necessary.
 - Consider development of Management Plans within high recreational use areas of the SRMA/RMZs.
- Competitive use
 - Allow non-motorized competitive events.
- Organized group events/activity use
 - Allow up to 50 people. Permits for over 50 people may be approved by the authorized officer. Within WSAs, group size will be limited to 25 people. Groups over 25 people would require a letter of agreement by the authorized officer or an SRP.
- Motorized and mechanized event/activity
 - Limited to designated routes.
- Camping
 - Allow in developed campgrounds or in designated camping areas. Allow dispersed camping until designated camp sites are developed.
- Campfires
 - Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed.
- Overnight use
 - Encourage self-registered permits.
- ROWs and renewable energy
 - Manage as ROW avoidance. Those parts within WSA, manage as ROW exclusion area.

Escalante Canyons SRMA / Hole-In-The-Rock Road RMZ—KEPA

Alternatives B and C

Size: Alternative B - 15,227 acres; Alternative C - 80,140 acres

Kanab-Escalante ERMA / Hole-In-The-Rock Road RMZ—KEPA

Alternative D

Size: Alternative D - 15,227 acres

Hole-In-The-Rock Road SRMA—Escalante Canyon Unit and Kaiparowits Unit

Alternative E

Size: Alternative E - 17,556 acres

HITRR is the most traveled road within the region, providing the only route to trailheads to access the Escalante River from the west side of the canyon system within the Escalante Canyons Unit of GSENM and Glen Canyon NRA. Key destinations and trailheads include Harris Wash, Devils Garden, 20 Miles Dinosaur Tracks, Egypt, Early Weed, Twentyfivemile Wash, Dry Fork, Red Well, Chimney Rock, Hurricane Wash, Crack in the Wall, Dance Hall Rock, Willow Gulch, and Hole-in-the-Rock historic site.

HITRR parallels the historic wagon road created by the 1879–1880 expedition and is popular today with members of the Church of Jesus Christ of Latter Day Saints (Mormons). Dance Hall Rock and Fortymile Springs are adjacent to HITRR and are locations where the pioneers camped and held social gatherings during the journey to Fort Bluff. The entirety of Hole-in-the-Rock Trail and Dance Hall Rock are on the National Register of Historic Places and are in consideration as Traditional Cultural Properties.

Considering the road's popularity for recreation access as well as its historic significance, HITRR would be managed to provide public access and to include developed and dispersed recreational use, while retaining the historic significance and pioneer character. Interpretation and recreational opportunities will be developed to educate the public on the area's cultural significance, emphasizing public health and safety and stewardship of public lands.

SRMA/RMZ Objective(s)

The objective of the HITRR SRMA/RMZ is to provide access to multiple trailheads accessing the Escalante River corridor, retain the rural and rugged flavor through designed recreation developments, reduce user-created impacts in undesirable locations, retain the visual qualities along the road, and provide recreational, educational, and interpretive opportunities on the historic values of the area.

The HITRR is historically significant to the 1879–1880 San Juan Expedition and is nominated as a Traditional Cultural Property. Dance Hall Rock and Fortymile Springs are two locations along the roadway that have significant importance in this section of the HITRR. The road also provides recreational access to trailheads for the Escalante Canyons within GSENM and Glen Canyon NRA, offering a remote and unconfined recreation experience for day hiking, backpacking, canyoneering, and equestrian users. The road also provides access to Fiftymile Bench and Fiftymile Mountain (SRMA).

All trailheads and parking areas along HITRR including the Dry Fork Slot Canyons are within the boundaries of the SRMA/RMZ.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Day hiking, backpacking, equestrian use, auto and OHV touring, photography, wildlife viewing, canyoneering, hunting, and education and interpretation of the area's historic sites.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people
- Enjoying a risk-taking adventure

Benefits

- Personal
 - Improved skills for outdoor enjoyment with others
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Stronger ties with family and friends
 - Enlarged sense of personal accountability for acting responsibly on public lands
- Community
 - Enlarged sense of personal accountability for acting responsibly on public lands
 - Feeling good about how visitors are managed
 - Feeling good about how our cultural heritage is being protected
- Economic
 - Positive contributions to local-regional economic stability
 - Maintenance of community's distinctive recreation/tourism market niche or character
 - More positive contributions to local-regional economy
- Environmental
 - Increased ecologically friendly tourism operations
 - Greater community ownership and stewardship of park, recreation, and natural resources
 - Increased awareness and protection of natural resources
 - Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Middlecountry to Frontcountry
 - Within 0.5 mile of four-wheel-drive, ATV, and motorcycle routes
 - Within 0.5 mile of low-clearance or passenger vehicle routes (e.g., unpaved county roads)
- Naturalness: Middlecountry to Frontcountry
 - Character of the natural landscape retained. A few modifications contrast with character of the landscape (fences, ditches).
 - Character of the natural landscape partially modified but none overpower natural landscape (e.g., structures, utilities).
- Facilities and Structures: Middlecountry to Frontcountry
 - Maintained and marked trails, simple trailhead developments, and basic toilets
 - Rustic facilities such as campsites, restrooms, trailheads, and interpretive displays

Desired Social RSCs

- Contacts and Group Size: Middlecountry to Rural
 - 30 or more encounters per day on travel routes
 - People seem to be generally everywhere along the roadway and at specific locations,
 e.g., Devils Garden and Dry Fork.
- Group Size: Middlecountry
 - 7–12 people per group
- Evidence of Use: Middlecountry to Rural
 - Areas of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds
 of people frequently heard.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use
- Visitor Services: Middlecountry to Rural
 - Area brochures and maps; staff occasionally present to provide onsite assistance.
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekends and holidays).
 - Information materials, plus experience and benefits descriptions. Staff regularly present.
- Management Controls: Middlecountry to Rural
 - Some regulatory and ethics signs. Moderate use restrictions (e.g., camping, human waste).
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and or closures.
 - Regulations strict and ethics prominent. Use may be limited by permit, reservation, etc.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Manage for historic values and to provide recreational opportunities where historic and recreational uses are compatible.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.

- Develop mechanized trails where appropriate; prohibit the development of other new roads and trails.
- Consider development of Management Plans and Corridor Management Plans within high recreational use areas of the SRMA/RMZs.

Competitive use

- Allow non-motorized competitive events on roads in coordination with counties (alternatives B and D).
- Allow non-motorized/non-mechanized competitive events (Alternative C).
- Allow non-motorized competitive events (Alternative E).
- Organized group event/activity use
 - Allow up to 25 people. Permits for over 25 people may be approved by the authorized officer (Alternative B).
 - Allow up to 50 people. Permits for over 50 people may be approved by the authorized officer. Encourage and promote traditional uses and trail reenactments for large groups.
 A larger group size will support the traditional uses and the Traditional Cultural Property Ethnographic study being developed by the NPS and BLM (alternatives C, D, and E).
- Motorized and mechanized event/activity
 - Limited to designated routes.
- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Allow dispersed camping (alternatives B and D).
 - Allow in developed campgrounds or in designated camping areas. Allow dispersed camping until designated camp sites are developed (alternatives C and E).

Campfires

- Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed.
- Overnight use
 - Require (alternatives B and D) or encourage (alternatives C and E) self-registered permits.
- Leasable minerals
 - Apply No Surface Occupancy stipulation for mineral leasing (alternatives B and C) unless otherwise noted in RMZ prescriptions (Alternative E).
 - Apply Controlled Surface Use stipulation for mineral leasing. Prohibit oil and gas surface facilities within viewshed of Dance Hall Rock, Hole-in-the-Rock Trail, and trailheads providing access to Escalante Canyons (Alternative D).
- Mineral materials
 - Close to mineral materials disposals (Alternative B).

- Close to exclusive pits. Open to community pits 5 acres or fewer of unreclaimed area.
 Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts (Alternative C), unless otherwise noted in RMZ prescriptions (Alternative E).
- Open to mineral materials disposals (Alternative D).
- Locatable minerals
 - Recommend withdrawal from mineral entry (alternatives B and C).
 - Open to mineral entry (Alternative D) unless already withdrawn (Alternative E).
- ROWs and renewable energy
 - Manage as ROW avoidance area (Alternative B).
 - Open to ROWS (alternatives C and D) unless otherwise noted in other RMP prescriptions (Alternative E).

Hole-In-The-Rock Road SRMA. Dance Hall Rock RMZ—GSENM and KEPA

Alternative E

Size: 639 acres

The Dance Hall Rock, located 42 miles down Hole-in-the-Rock Road (HITRR), lies along the historic wagon road created by the 1879–1880 expedition and is popular today with members of the Church of Jesus Christ of Latter Day Saints (Mormons). Dance Hall Rock and Fortymile Springs are adjacent to HITRR and are locations where the pioneers camped and held social gatherings during the journey to Fort Bluff. The entirety of Hole-in-the-Rock Trail and Dance Hall Rock are on the National Register of Historic Places and are in consideration as Traditional Cultural Properties.

Considering the road's popularity for recreation access as well as its historic significance, Dance Hall Rock would be managed to provide public access and to include developed and dispersed recreational use, while retaining the historic significance and pioneer character. Interpretation and recreational opportunities are developed to educate the public on the area's cultural significance, emphasizing public health and safety and stewardship of public lands.

RMZ Objective(s)

The objective of Dance Hall Rock RMZ is to provide access to recreational, educational, and interpretive opportunities on the historic values of the area.

Dance Hall Rock RMZ is historically significant to the 1879–1880 San Juan Expedition and is nominated as a Traditional Cultural Property. Dance Hall Rock and Fortymile Springs are two locations along the roadway that have significant importance in this section of the HITRR.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Education and interpretation of the historic values, day hiking, auto touring, photography, and wildlife viewing.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends

- Enjoying an escape from crowds of people
- Enjoy teaching others about local history

Benefits

Personal

- Improved skills for outdoor enjoyment with others
- Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
- Stronger ties with family and friends, and cultural significance to community
- Enlarged sense of personal accountability for acting responsibly on public lands

Community

- Enlarged sense of personal accountability for acting responsibly on public lands
- Feeling good about how visitors are managed
- Feeling good about how our cultural heritage is being protected

Economic

- Positive contributions to local-regional economic stability
- Maintenance of community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economy

Environmental

- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Middlecountry to Frontcountry
 - Within 0.5 mile of four-wheel-drive, ATV, and motorcycle routes
 - Within 0.5 mile of low-clearance or passenger vehicle routes (e.g., unpaved county roads)
- Naturalness: Middlecountry to Frontcountry
 - Character of the natural landscape retained. A few modifications contrast with character of the landscape (fences, ditches).
 - Character of the natural landscape partially modified but none overpower natural landscape (e.g., structures, utilities).
- Facilities and Structures: Middlecountry to Frontcountry
 - Maintained and marked trails, simple trailhead developments, and basic toilets
 - Rustic facilities such as campsites, restrooms, trailheads, and interpretive displays

Desired Social RSCs

- Contacts and Group Size: Middlecountry to Rural
 - 30 or more encounters per day on travel routes
 - People seem to be generally everywhere along the roadway and at specific locations, e.g., Dance Hall Rock.
- Group Size: Middlecountry
 - 25 people per group
- Evidence of Use: Middlecountry to Rural
 - Areas of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds
 of people frequently heard.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use
- Visitor Services: Middlecountry to Rural
 - Area brochures and maps; staff occasionally present to provide onsite assistance.
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekends and holidays).
 - Information materials, plus experience and benefits descriptions. Staff periodically present.
- Management Controls: Middlecountry to Rural
 - Some regulatory and ethics signs. Moderate use restrictions (e.g., camping, human waste).
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.
 - Regulations strict and ethics prominent. Use may be limited by permit, reservation, etc.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Manage for historic values and to provide recreational opportunities where historic and recreational uses are compatible.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, and other recreation facilities as necessary.

- Consider development of Management Plans and Corridor Management Plans within high recreational use areas of the SRMA/RMZs.
- Competitive use
 - Allow non-motorized/non-mechanized competitive events.
- Organized group event/activity use
 - Allow up to 50 people. Permits for over 50 people may be approved by the authorized officer. Encourage and promote traditional uses and trail reenactments for large groups.
 A large group size will support the traditional uses and the Traditional Cultural Property Ethnographic study being developed by the NPS and BLM.
- Motorized and mechanized event/activity
 - Limited to designated routes.
- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Allow in developed campgrounds or in designated camping areas. Allow dispersed camping until designated camp sites are developed.
- Campfires
 - Prohibit campfires.
- Overnight use
 - Encourage self-registered permits.
- Leasable minerals
 - Already closed in GSENM.
- Mineral materials
 - Already closed in GSENM.
- Locatable minerals
 - Already withdrawn in GSENM
- ROWs and renewable energy
 - Manage as ROW avoidance area.

Hole-In-The-Rock Road SRMA, Dry Fork RMZ-KEPA

Alternative E

Size: Alternative E - 1,178 acres

Dry Fork slot canyons are a highly popular visitor destination along HITRR. These canyons present an outstanding opportunity for individual exploration and discovery. They represent the canyon country as it was intended to be experienced. It was established with a special mission to preserve its frontier character and thereby the potential for personal discovery. The slot

canyons provide for an unconstrained personal spirit to climb obstacles, wade through water and sticky mud, and be adventurous in this rough and natural landscape.

Dry Fork is adjacent to HITRR, the most traveled road within the region. Key destinations and trailheads include Dry Fork, Spooky, and Peekaboo slot canyons, with Brimstone being popular with more experienced hikers. Considering Dry Fork's popularity for recreation, it would be managed to provide public access and include developed and dispersed recreational use, while retaining the geologic character. Interpretation and recreational opportunities will be developed to educate the public on the area's geologic significance, emphasizing public health and safety and stewardship of public lands.

RMZ Objective(s)

The objective of the RMZ is to provide access to three slot canyons, retain the primitive and rugged flavor through designed recreation developments, reduce user-created impacts in undesirable locations, retain the visual qualities in the canyons, and provide recreational, educational, and interpretive opportunities of the area.

Proposed trailheads and parking areas supporting Dry Fork slot canyons are not within the boundaries of the RMZ. Two proposed parking areas/trailheads lie on KEPA lands.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Day hiking, backpacking, photography, wildlife viewing, canyoneering, and education and interpretation of the area.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people
- Enjoying strenuous physical exercise

Benefits

Personal

- Improved skills for outdoor enjoyment with others
- Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
- Stronger ties with family and friends
- Enlarged sense of personal accountability for acting responsibly on public lands

Community

- Enlarged sense of personal accountability for acting responsibly on public lands
- Feeling good about how visitors are managed
- Feeling good about how recreational resources are being protected

Economic

- Positive contributions to local-regional economic stability
- Maintenance of community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economy

Environmental

- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Backcountry
 - Within 0.5 mile within mechanized trails/routes
- Naturalness: Primitive
 - Undisturbed natural landscape
- Facilities and Structures: Backcountry to Middlecountry
 - No structures; foot paths and trails only
 - Maintained and marked trails, simple trailhead developments, and basic toilets at trailheads

Desired Social RSCs

- Contacts and Group Size: Middlecountry to Rural
 - 30 or more encounters per day on travel routes
 - People seem to be generally everywhere along the roadway and at specific locations, e.g., Devils Garden and Dry Fork.
- Group Size: Frontcountry
 - 30 or more encounters per day on travel routes
- Evidence of Use: Middlecountry to Rural
 - Areas of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds
 of people frequently heard.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use
- Visitor Services: Middlecountry to Rural
 - Area brochures and maps; staff occasionally present to provide onsite assistance.
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekends and holidays).

- Information materials, plus experience and benefits descriptions. Staff regularly present.
- Management Controls: Middlecountry to Rural
 - Some regulatory and ethics signs. Moderate use restrictions (e.g., camping, human waste).
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.
 - Regulations strict and ethics prominent. Use may be limited by permit, reservation, etc.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Manage recreational opportunities.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.
 - Develop trails where appropriate; prohibit the development of other new roads and trails.
 - Consider development of Management Plans within recreational use areas of the RMZs.
- Competitive use
 - Allow non-motorized/non-mechanized competitive events.
- Organized group event/activity use
 - Limit group size to 25 people. Prohibit motorized group events. Groups over 25 would require approval of the authorized officer.
- Motorized and mechanized event/activity
 - Limited to designated routes.
- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Allow in developed campgrounds or in designated camping areas. Allow dispersed camping until designated camp sites are developed.
- Campfires
 - Prohibit campfires.
- Overnight use
 - Encourage a self-registered permit.

- Leasable minerals
 - Apply No Surface Occupancy stipulation for mineral leasing.
- Mineral materials
 - Close to mineral materials disposal.
- Locatable minerals
 - Open to mineral entry.
- ROWs and renewable energy
 - Manage as ROW avoidance area. Those parts within WSA, manage as ROW exclusion areas.

Hole-In-The-Rock Road SRMA, Devils Garden RMZ—Kaiparowits Unit

Alternative E

Size: Alternative E - 629 acres

HITRR is the most traveled road within the region, providing the only route to trailheads to access the Escalante River from the west side of the canyon system within the Escalante Canyons Unit of GSENM and Glen Canyon National Recreation Area (NRA). Key destinations and trailheads include Harris Wash, Devils Garden, 20 Miles Dinosaur Tracks, Egypt, Early Weed, Twentyfivemile Wash, Dry Fork, Red Well, Chimney Rock, Hurricane Wash, Crack in the Wall, Dance Hall Rock, Willow Gulch, and Hole-in-the-Rock historic site.

Considering the road's popularity for recreation access as well as its historic significance, HITRR would be managed to provide public access and include developed and dispersed recreational use, while retaining the historic significance and pioneer character. Interpretation and recreational opportunities will be developed to educate the public on the area's cultural significance, emphasizing public health and safety and stewardship of public lands.

RMZ Objective(s)

The objective of the Devils Garden RMZ is to provide sustainable public access to outstanding geologic and paleontological resources, retain the rural and rugged flavor of the area through designed recreation developments, reduce user-created impacts, retain the visual qualities, and provide recreational, educational, and interpretive opportunities on the historic and natural values of the area.

Devils Garden has been designated as an Outstanding Natural Area as well as an Instant Study Area, through the wilderness inventory process. Devils Garden is visited by approximately 40,000 people per year and offers visitors opportunities to engage in a variety of activities (hiking, photography, geologic interpretation, nature viewing) as well as limited amenities.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Day hiking, auto and OHV touring, photography, wildlife viewing, canyoneering, hunting, and education and interpretation of the area's natural history and geology.

Experiences

- Escaping physical pressures—feeling good about solitude, isolation, and independence
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people
- Enjoying easy access to natural landscapes
- Learning more about this specific area

Benefits

Personal

- Restored mind from unwanted stress
- Enhanced awareness and understanding of nature
- Improved skills for outdoor enjoyment with others
- Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
- Stronger ties with family and friends
- Enlarged sense of personal accountability for acting responsibly on public lands
- Closer relationship with the natural world

Community

- Heightened sense of satisfaction with our community
- Lifestyle improvement or maintenance
- Greater interaction with visitors from other cultures
- Enlarged sense of community dependency on public lands

Economic

- Positive contributions to local-regional economic stability
- Maintenance of community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economy
- Maintenance of the community's distinctive recreation/tourism market niche or character

Environmental

- Greater retention of distinctive natural landscape features
- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources

RSC Descriptions

Desired Physical RSCs

- Remoteness: Middlecountry to Frontcountry
 - Within 0.5 mile of four-wheel-drive, ATV, and motorcycle routes
 - Within 0.5 mile of low-clearance or passenger vehicle routes (e.g., unpaved county roads)

- Naturalness: Middlecountry to Frontcountry
 - Character of the natural landscape retained. A few modifications contrast with character of the landscape (fences, ditches).
 - Character of the natural landscape partially modified but none overpower natural landscape (e.g., structures, utilities).
- Facilities and Structures: Middlecountry to Frontcountry
 - Maintained and marked trails, simple trailhead developments, and basic toilets
 - Rustic facilities such as campsites, restrooms, trailheads, and interpretive displays

Desired Social RSCs

- Contacts and Group Size: Middlecountry to Rural
 - 30 or more encounters per day on travel routes
 - People seem to be generally everywhere along the roadway and at specific locations, e.g., Devils Garden and Dry Fork.
- Group Size: Middlecountry
 - 7-12 people per group
- Evidence of Use: Middlecountry to Rural
 - Areas of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds
 of people frequently heard.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use
- Visitor Services: Middlecountry to Frontcountry
 - Area brochures and maps; staff occasionally present to provide onsite assistance.
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekends and holidays).
- Management Controls: Middlecountry to Frontcountry
 - Some regulatory and ethics signs. Moderate use restrictions (e.g., camping, human waste).
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and or closures.

Management and Allowable Use Decisions

To achieve the desired RSC:

Recreation and Visitor Services

- Identify decisions to protect or preserve wilderness characteristics.
- Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
- Manage for historic values and to provide recreational opportunities where historic and recreational uses are compatible.
- Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
- Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.
- Prohibit the development of other new roads and trails.
- Consider development of Management Plans and Corridor Management Plans within high recreational use areas of the SRMA.

Competitive use

- Allow non-motorized/non-mechanized competitive events.
- Organized group event/activity use
 - Limit group size to 25 people. Prohibit motorized group events. Groups over 25 would require approval of the authorized officer.
- Motorized and mechanized event/activity
 - Limited to designated routes.
- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Allow in developed campgrounds or in designated camping areas. Allow dispersed camping until designated camp sites are developed.
- Campfires
 - Prohibit campfires.
- Overnight use
 - Encourage a self-registered permit.
- Leasable minerals
 - Already closed in GSENM.
- Mineral materials
 - Already closed in GSENM.
- Locatable minerals
 - Already withdrawn in GSENM.
- ROWs and renewable energy
 - Manage as ROW avoidance area.

Hole-In-The-Rock Road SRMA, Twentymile Dinosaur Tracksite RMZ—GSENM - Kaiparowits Unit

Alternative E

Size: Alternative E - 328 acres

GSENM was established with a special mission to preserve the frontier character and the opportunity for personal discovery. Over 800 dinosaur footprints are located in this upper part of the Entrada Sandstone. Three-toed tracks of carnivorous therapod dinosaurs and a unique herbivorous sauropod track are present. This area was quite different 170 million years ago during the Middle Jurassic, when these dinosaurs roamed. Utah was located on the western edge of a giant supercontinent known as Pangaea. A long, narrow seaway stretched into this area from present-day western Canada down through Montana, Idaho, and Wyoming. Vast coastal sand dunes (Entrada Formation) bordered the southern edge of this seaway. As the coastline moved inland and retreated, dry sand environments gave way to seasonally wet streams and tidal flats. These wet environments were perfect for preserving the steps of these giants, the only evidence we now have that they ever existed here at that time.

SRMA/RMZ Objective(s)

The objective of the Twentymile Dinosaur Tracksite RMZ is to provide access to paleontological resources that retain the geologic story while supporting designed recreation developments, reduce user-created impacts, and provide recreational, educational, and interpretive opportunities on the paleontological values of the area.

The trailhead and parking area are off the Left Hand Collet Road and are not within the boundaries of the RMZ.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Day hiking, auto and OHV touring, photography, wildlife viewing, and education and interpretation of the area's paleontological sites.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people
- Enjoying and education of paleontology

Benefits

- Personal
 - Education of paleontological and geological strata in the region
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Stronger ties with family and friends
 - Enlarged sense of personal accountability for acting responsibly on public lands
- Community
 - Enlarged sense of personal accountability for acting responsibly on public lands
 - Feeling good about how visitors are managed

Feeling good about how our geological heritage is being protected

Economic

- Positive contributions to local-regional economic stability
- Maintenance of community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economy

Environmental

- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Middlecountry to Frontcountry
 - Within 0.5 mile of four-wheel-drive, ATV, and motorcycle routes
 - Within 0.5 mile of low-clearance or passenger vehicle routes (e.g., unpaved county roads)
- Naturalness: Middlecountry to Frontcountry
 - Character of the natural landscape retained. A few modifications contrast with character of the landscape (fences, ditches).
 - Character of the natural landscape partially modified but none overpower natural landscape (e.g., structures, utilities).
- Facilities and Structures: Middlecountry to Frontcountry
 - Maintained and marked trails, simple trailhead developments, and basic toilets
 - Rustic facilities such as campsites, restrooms, trailheads, and interpretive displays

Desired Social RSCs

- Contacts and Group Size: Backcountry to Middlecountry
 - 7–15 encounters per day on travel routes
 - 15-29 encounters per day on travel routes
- Group Size: Backcountry
 - 4-6 people per group
- Evidence of Use: Backcountry to Middlecountry
 - Areas of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use
- Visitor Services: Backcountry to Middlecountry
 - Basic maps; staff infrequently present to provide onsite assistance.
 - Area brochures and maps; staff occasionally present to provide onsite assistance.
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekends and holidays).
- Management Controls: Backcountry to Middlecountry
 - Basic user regulations at key access points. Minimum use restrictions.
 - Some regulatory and ethics signs. Moderate use restrictions (e.g., camping, human waste).

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Manage for paleontological values and to provide recreational opportunities where geologic and recreational uses are compatible.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, and other recreation facilities as necessary.
 - Develop mechanized trails where appropriate; prohibit the development of other new roads and trails.
 - Consider development of Management Plans and Corridor Management Plans within high recreational use areas of the RMZs.
- Competitive use
 - Allow non-motorized/non-mechanized competitive events.
- Organized group event/activity use
 - Limit group size to 25 people. Prohibit motorized group events. Groups over 25 would require approval of the authorized officer.
- Motorized and mechanized event/activity
 - Limited to designated routes.
- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Allow in developed campgrounds or in designated camping areas. Allow dispersed camping until designated campsites are developed.

- Campfires
 - Prohibit campfires.
- Overnight use
 - Encourage a self-registered permit.
- Leasable minerals
 - Already closed in GSENM.
- Mineral materials
 - Already closed in GSENM.
- Locatable minerals
 - Already withdrawn in GSENM.
- ROWs and renewable energy
 - Manage as ROW avoidance area.

Hole-In-The-Rock Road SRMA, Egypt Slot Canyons RMZ—KEPA

Alternative E

Size: 6,253 acres

Egypt slot canyons offer numerous steep descents and ascents within technical slot canyons. Hikers/canyoneers must be capable of using various technical and free-climbing maneuvers, such as stemming, and climbing skills to traverse pour-offs in the slots. Canyoneering equipment and an 80-foot piece of rope are required in most of the canyons. Egypt 3 is the only slot that can be navigated with minimal equipment but still requires canyoneering skills, is extremely narrow, and requires traversing sideways in many sections.

All routes are unmarked. Hikers must be able to read and use a topographic map or take compass bearings, and pay attention to landmarks so they can find their way back out. Flash floods are extremely dangerous in narrow canyons, and hikers must be very cautious during flash flood season. Heat exposure and lack of water along the route are safety concerns. Heat-related injuries and dehydration could be potential problems. Hikers must carry adequate water. An extensive amount of wading or swimming is possible after storms and during winter months. This hike should not be attempted during cold weather. Hypothermia can be a year-round risk. Warm clothing, even during summer months, is recommended.

SRMA/RMZ Objective(s)

The objective of the RMZ is to provide access to multiple technical slot canyons while retaining the rugged flavor through an undeveloped landscape, reduce user-created impacts, retain the visual qualities in the canyons, and provide recreational experiences in the area.

All trailheads and parking areas for the RMZ are not within the boundaries of the Egypt Canyons RMZ.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities</u>: Canyoneering, day hiking, photography, wildlife viewing, and education and interpretation of the area's geologic values.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people
- Enjoying a risk-taking adventure

Benefits

Personal

- Improved skills for outdoor enjoyment with others
- Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
- Stronger ties with family and friends
- Enlarged sense of personal accountability for acting responsibly on public lands

Community

- Enlarged sense of personal accountability for acting responsibly on public lands
- Feeling good about how visitors are managed
- Feeling good about how our cultural heritage is being protected

Economic

- Positive contributions to local-regional economic stability
- Maintenance of community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economy

Environmental

- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Middlecountry to Frontcountry
 - Within 0.5 mile of four-wheel-drive, ATV, and motorcycle routes
 - Within 0.5 mile of low-clearance or passenger vehicle routes (e.g., unpaved county roads)
- Naturalness: Middlecountry to Frontcountry
 - Character of the natural landscape retained. A few modifications contrast with character of the landscape (fences, ditches).
 - Character of the natural landscape partially modified but none overpower natural landscape (e.g., structures, utilities).

- Facilities and Structures: Middlecountry to Frontcountry
 - Maintained and marked trails, simple trailhead developments, and basic toilets
 - Rustic facilities such as campsites, restrooms, trailheads, and interpretive displays

Desired Social RSCs

- Contacts and Group Size: Middlecountry to Rural
 - 30 or more encounters per day on travel routes
 - People seem to be generally everywhere along the roadway and at specific locations, e.g., Devils Garden and Dry Fork.
- Group Size: Middlecountry
 - 7-12 people per group
- Evidence of Use: Middlecountry to Rural
 - Areas of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.

Desired Administrative/Operational RSCs

- Public Access: Frontcountry
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use
- Visitor Services: Primitive
 - Undisturbed natural setting
- Management Controls: Primitive
 - No structures; foot trails only

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Manage for recreational opportunities.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, and other recreation facilities as necessary outside of RM7
 - Consider development of Management Plans within high recreational use areas of the RMZs.
- Competitive use
 - Allow non-motorized competitive events.

- Organized group event/activity use
 - Allow up to 50 people. Permits for over 50 people may be approved by the authorized officer. Within WSAs, group size will be limited to 25 people. Groups over 25 people would require approval of the authorized officer. On a case-by-case basis, group size limits, where applicable, could be adjusted in the RMZ for consistency with group size limits on adjacent lands (e.g., NPS lands).
- Motorized and mechanized event/activity
 - Limited to designated routes.
- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Allow in developed campgrounds or in designated camping areas. Allow dispersed camping until designated camp sites are developed.
- Campfires
 - Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed.
- Overnight use
 - Encourage self-registered permits.
- Leasable minerals
 - Apply No Surface Occupancy stipulation for mineral leasing.
- Mineral materials
 - Close to exclusive pits. Open to community pits 5 acres or fewer of unreclaimed area.
 Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts. Closed inside GSENM.
- Locatable minerals
 - Open to mineral entry.
- ROWs and renewable energy
 - Manage as ROW avoidance.

Circle Cliffs SRMA—KEPA

Alternatives B and C

Size: Alternatives B and C - 100,611 acres

Circle Cliffs is a breached anticline with spectacular painted-desert scenery, the result of exposed sedimentary rocks of the Triassic Chinle and Moenkopi Formations. A nearly complete articulated skeleton of Poposauras—a rare bipedal crocodilian fossil—was also found here (Presidential Proclamation 9682). The Circle Cliffs are part of the Waterpocket Fold, the inclusion of which completes the protection of this geologic feature begun with the

establishment of Capitol Reef National Monument in 1938 (Presidential Proclamation No. 2246, 50 Stat. 1856) (Presidential Proclamation 6920).

The Circle Cliffs were largely unknown outside of the local region at the designation of GSENM in 1996. With the paving of the Burr Trail in 1994, two-wheel-drive access became a destination for auto touring and scientific and geologic research. The Circle Cliffs reveal remarkable specimens of petrified wood, such as large unbroken logs exceeding 30 feet in length, and provide access to the Wolverine Petrified Wood Natural Area established in 1970. The Circle Cliffs have a road network providing access to many hiking, backpacking, and equestrian trails into the eastern side of the Escalante River within GSENM and Glen Canyon NRA.

The Circle Cliffs are largely undeveloped and support a road network and trailheads leading into GSENM and Glen Canyon NRA. The SRMA provides for a unconfined recreational experience allowing visitors to enjoy viewing the unique geologic features; explore the region via the road network and hiking and equestrian use to old mining camps, geologic features, and the Wolverine Petrified Wood Natural Area; and explore the many hidden canyons. The Burr Trail leading to and within the Circle Cliffs is a key focal point for auto touring in the region and provides access to multiple trailheads leading into GSENM, Capitol Reef National Park, and the lower Escalante Canyons within Glen Canyon NRA.

SRMA/RMZ Objective(s)

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Travel and tourism, auto touring, OHV, photography, day hiking, equestrian use, access to trailheads, camping, and hunting.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people

Benefits

- Personal
 - Improved skills for outdoor enjoyment with others
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Stronger ties with family and friends
- Community
 - Enlarged sense of personal accountability for acting responsibly on public lands
- Economic
 - Positive contributions to local-regional economic stability
 - Maintenance of community's distinctive recreation/tourism market niche or character
 - Increased local tourism revenue
 - More positive contributions to local-regional economy
 - Feeling good about how visitors are managed

Environmental

- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Primitive to Middlecountry
 - More than 0.5 mile from both mechanized or motorized trails and routes
 - Within 0.5 mile of mechanized trails/routes
 - Within 0.5 mile of four-wheel-drive, ATV, and motorcycle routes
- Naturalness: Primitive to Backcountry
 - Natural landscape in harmony with surroundings and not visually obvious
 - Character of the natural landscape retained. A few modifications contrast with the character of the landscape.
- Facilities and Structures: Primitive to Middlecountry
 - No structures; foot and horse trails only
 - Developed trail made mostly of native materials. Structures are rare and isolated.
 - Maintained and marked trails, simple trailhead developments, and basic toilets if needed

Desired Social RSCs

- Contacts: Primitive to Middlecountry
 - Fewer than 3 encounters per day at campsites and fewer than 6 encounters per day on travel routes
 - 7-15 encounters per day on travel routes
 - 15-29 encounters per day on travel routes
- Group Size: Backcountry to Middlecountry
 - 4-6 people per group
 - 7–12 people per group
- Evidence of Use: Backcountry to Middlecountry
 - Areas of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.
 - Small areas of alteration. Surface vegetation showing wear with some base soils.
 Occasional sounds of people.

Desired Administrative/Operational RSCs

- Public Access: Primitive to Frontcountry
 - Foot, horse, and non-motorized travel
 - Mountain bike and perhaps other mechanized use

- Four-wheel-drive vehicles, ATVs, dirt bikes, in addition to non-motorized, mechanized use
- Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use
- Visitor Services: Primitive
 - No maps or brochures available on site. Staff rarely present to provide onsite assistance. Information will be available at Visitor Centers and online resources.
- Management Controls: Backcountry to Frontcountry
 - Basic user regulations at key access Points, minimum use restrictions
 - Some regulatory and ethics signs. Moderate use restrictions (e.g., camping, human waste).
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.
 - Develop mechanized trails where appropriate.
 - Consider development of Corridor Management Plans within high recreational use areas of the SRMA/RMZs.

Competitive use

- Allow motorized or non-motorized competitive events on paved and primary dirt roads (Alternative B).
- Allow motorized events except high-speed events. Allow non-motorized competitive events (Alternative C).
- Organized group event/activity use
 - Allow 25 people or fewer. Groups over 25 would require approval of the authorized officer.
- Motorized and mechanized event/activity
 - Limited to designated routes.
- Stock use event/activity
 - Allow cross-country travel for equestrian use only (Alternative B).
 - Allow cross-country travel for equestrian use (Alternative C).
- Camping
 - Allow dispersed camping.

Campfires

 Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed.

Overnight use

• Require (Alternative B) or encourage (Alternative C) self-registered permits.

Leasable minerals

- Apply No Surface Occupancy stipulation for mineral leasing (Alternative B).
- Apply Controlled Surface Use and Timing Limitation Stipulation for mineral leasing

Mineral materials

- Closed to mineral materials disposals (Alternative B).
- Open to mineral materials disposals (Alternative C).

ROWs

- Manage as ROW avoidance area (Alternative B).
- Open to ROWs (Alternative C).

Highway 12 SRMA—GSENM and KEPA

Alternatives B and C

Size: Alternatives B and C - 24,645 acres

Utah's Scenic Byway 12 is considered one of the most unforgettable roads in the country, stretching 124 miles in a remote and rugged region of the Colorado Plateau. Its outstanding scenery draws visitors from all over the world to journey through an extraordinary geologic landscape. Scenic Byway 12 was designated a Scenic Byway in April of 1990 and is the principal highway running from Panquitch (Highway 89) to Torrey, Utah (Highway 24). In 2001, local stakeholders started planning the future of the highway and secured an All American Highway designation. The goal is to make improvements where necessary and in a way that will be in harmony with the intrinsic qualities of the region.

Highway 12 is the key focal point for travel and tourism marketing for the region. The highway provides access to many popular recreational destinations in both Frontcountry and Primitive areas of GSENM and KEPA.

SRMA/RMZ Objective(s)

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Highway transportation, travel and tourism, auto touring, photography, filming, and day hiking.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people

Benefits

- Personal
 - Improved skills for outdoor enjoyment with others
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Stronger ties with family and friends
- Community
 - Enlarged sense of personal accountability for acting responsibly on public lands
- Economic
 - Positive contributions to local-regional economic stability
 - Maintenance of community's distinctive recreation/tourism market niche or character
 - Increased local tourism revenue
 - More positive contributions to local-regional economy
 - Feeling good about how visitors are managed
- Environmental
 - Increased ecologically friendly tourism operations
 - Greater community ownership and stewardship of park, recreation, and natural resources
 - Increased awareness and protection of natural resources
 - Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Frontcountry to Rural
 - Within 0.5 mile of low-clearance or passenger vehicle routes
 - Within 0.5 mile of paved/primary roads and highways
- Naturalness: Frontcountry
 - Character of the natural landscape partially modified but none overpower natural landscape (e.g., structures, utilities)
- Facilities and Structures: Frontcountry to Rural
 - Rustic facilities, such as campsites, restrooms, trailheads, and interpretive displays
 - Modern facilities such as campgrounds, group shelters, and occasional exhibits

Desired Social RSCs

- Contacts: Frontcountry
 - 30 or more encounters per day on travel routes
- Group Size: Frontcountry
 - 13–25 people per group

- Evidence of Use: Frontcountry
 - Small areas of alteration prevalent. Surface vegetation gone with compacted soils observed. Sound of people regularly heard.

Desired Administrative/Operational RSCs

- Public Access: Rural
 - Ordinary highway auto and truck traffic is characteristic.
- Visitor Services: Frontcountry
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekdays and weekends).
- Management Controls: Middlecountry to Frontcountry
 - Some regulatory and ethics signs. Moderate use restrictions (e.g., camping, human waste); limit motorized travel to designated roads and trails.
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Along Highway 12, develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.
 - Consider development of Corridor Management Plans within high recreational use areas of the SRMA/RMZs.
- Competitive use
 - Allow non-motorized/non-mechanized competitive events.
- Organized group event/activity use
 - Do not enact group size requirements.
- Motorized and mechanized event/activity
 - Limited to designated routes (Alternative B) outside the Little Desert RMZ (22,084 acres) (Alternative C).
- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Allow in developed campgrounds or in designated camping areas.
 - Prohibit dispersed camping (Alternative B).

- Prohibit dispersed primitive camping once campgrounds are developed and primitive camping areas are designated (Alternative C).
- Overnight use
 - Require (Alternative B) or encourage (Alternative C) self-registered permits.
- Leasable minerals
 - KEPA: Apply No Surface Occupancy stipulation for mineral leasing.
- Mineral materials
 - KEPA: Close to mineral materials disposals (Alternative B).
 - KEPA: Close to exclusive pits. Open to community pits 5 acres or fewer of unreclaimed area. Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts (Alternative C).
- ROWs and renewable energy
 - Manage as ROW avoidance area (Alternative B).
 - Open to ROWs (Alternative C).

Highway 12 SRMA / Little Desert RMZ—KEPA

Alternatives B and C

Size: Alternative B - 2,528 acres, Alternative C - 2,528 acres

Kanab-Escalante ERMA / Little Desert RMZ—KEPA

Alternative D

Size: Alternative D - 2,528 acres

KEPA ERMA / Little Desert RMZ—KEPA

Alternative E

Size: Alternative E - 2,528 acres

The Highway 12 SRMA is intended to be a focal point for visitation by providing day-use opportunities in close proximity to adjacent communities (GSENM Management Plan, 2000, Ch. 2, p. 8). Highway 12 is the key focal point for travel and tourism marketing for the region. The highway provides Frontcountry access to many popular recreational destinations in both Frontcountry and Primitive areas of the national monument and adjacent KFO-managed lands.

The Little Desert RMZ offers day-use recreational opportunities in close proximity to the community of Escalante. The Little Desert RMZ is within the Highway 12 SRMA and offers opportunities for scenic driving, hiking, scenic and interpretive viewing, camping, road and mountain bicycling, four-wheel-drive touring, and OHV play. This RMZ is necessary to protect and enhance Backcountry to Frontcountry recreational experiences within the Highway 12 SRMA corridor.

SRMA/RMZ Objective(s)

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Nature viewing, wildlife viewing, viewing geologic features, hiking, bicycling, camping, scenic and interpretive viewing, scenic driving, and vehicle and OHV/four-wheel-drive touring.

Experiences

- Enjoying easy access to natural landscapes and close-to-home outdoor amenities
- Enjoying the sensory experience—sight, sound, and smell—of a natural landscape
- Enjoying OHV and four-wheel-drive touring in a highly scenic landscape
- Enjoying an escape from crowds of people
- Having others nearby who could help if needed
- Savoring group/family affiliation and bonding
- Learning more about natural history and geology
- Encouraging visitors to help safeguard our lifestyle and quality of life

Benefits

Personal

- Restored mind from unwanted stress
- Improved outdoor recreation skills
- Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
- Improved mental well-being and physical fitness and health maintenance
- Enlarged sense of personal accountability for acting responsibly on public lands
- An improved stewardship ethic toward adjoining/host communities
- Heightened sense of satisfaction with our area as a place to live

Community

- Heightened sense of satisfaction with our community
- Enhanced lifestyle
- Enlarged sense of community dependency on public lands
- More informed citizenry about where to go for different kinds of recreation experiences and benefits

Economic

- Maintenance of community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economy
- Positive contributions to local-regional economic stability
- Greater value-added local services/industry
- Increased local tourism revenue
- Increased property values

Environmental

- Reduced negative human impacts such as litter, vegetative trampling, and unplanned trails
- Greater community ownership and stewardship of park, recreation, and natural resources
- Maintenance of distinctive small-town atmosphere

RSC Descriptions

Desired Physical RSCs

- Remoteness: Frontcountry
 - Retain current remoteness within 0.5 mile of low-clearance or passenger vehicle routes.
- Naturalness: Middlecountry to Frontcountry
 - Character of the natural landscape retained. A few modifications contrast with the character of a landscape (fences, ditched).
 - Character of natural landscape partially modified but none overpower natural landscapes (e.g., structures, utilities).
- Visitor Facilities: Middlecountry to Frontcountry
 - Maintained and marked trails, simple trailhead developments, and basic toilets. Rustic facilities such as visitor centers campsites, restrooms, trailheads, and directional and interpretive displays.

Desired Social RSCs

- Contacts (average): Backcountry to Frontcountry
 - Visitors experience 7–30 or more encounters per day on travel routes (motorized and/or non-motorized trails). Visitors hiking cross-country or off established trail systems may experience a dramatically lower number of contacts. OHV users traveling in more remote portions of the unit may also experience a lower number of contacts.
- Group Size (average): Backcountry to Frontcountry
 - Group sizes encountered range between 4–6 people per group in Backcountry settings and 13–25 people per group in Frontcountry settings, especially at trailheads or staging areas.
- Evidence of Use (average): Middlecountry to Rural
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds
 of people frequently heard.

Desired Administrative/Operational RSCs

- Access: Frontcountry
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use
 - Main access roads are natural surface or graded/gravel surface accessible by low-clearance and four-wheel-drive vehicles and OHVs, in addition to non-motorized methods of travel such as hiking, equestrian, and bicycling. Trails/roads within the unit are accessed via intersection with Highway 12. Motorized use within the unit is open, closed, and limited to designated roads and trails according to sensitivity of terrain and other environmental factors. Opportunities for designated single-track motorcycle and bicycle trails exist as well as the potential for development of open riding areas or constructed challenge/obstacle courses where riders could improve their skills.

- Visitor Services/Information: Frontcountry
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekdays and weekends).
 - BLM Visitor Information Services center is located in the nearby community of Escalante and is staffed 7 days per week during high-use season. Visitors have access to BLM public services staff and other amenities such as maps, supplies, and current condition/safety information relevant to the local area.
 - Directional/informational signs and interpretive/informative kiosks/displays present at key access points such as trailheads and staging areas.
 - Patrolled periodically by law enforcement officers and other BLM employees. Spike in BLM presence during high-use season.
- Management Controls: Frontcountry
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.
 - Close proximity to urban center enhances agency ability to monitor, manage, and
 maintain infrastructure and amenities in the Little Desert RMZ.
 Informational/regulatory signage posted at access points, trailheads, and staging
 areas. Directional and designation of use signage (open, limited, closed) exists along
 routes and within potential open riding areas within the unit. Informational material
 specific to site/resource protection, regulation, and safety featured at local visitor
 centers, access points, staging areas, and trailheads. Frequent patrolling of the area by
 BLM law enforcement, BLM employees, and volunteers/stewards is possible due to the
 close proximity of this area to Escalante and BLM headquarters.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop restrooms and other recreation facilities as necessary.
 - Consider development of OHV skills park/course for special events, formal and informal training opportunities, and skills development with an emphasis on responsible motorized recreation.
 - Develop appropriate physical barriers to limit recreationist damage to vegetation at high-use areas.
- Competitive use
 - Prohibit competitive events (Alternative B).
 - Allow competitive events (alternatives C and E).
- Organized group event/activity use
 - Allow up to 100 people; additional with permit and no resource damage (Alternative B).
 - Do not enact group size requirements; address during implementation planning based on frequency and intensity of use (alternatives C and E).

Motorized and mechanized event/activity

- Limited to designated routes (Alternative B).
- Limited to designated routes and open to cross-country travel where identified (alternatives C and E).

Stock use event/activity

Allow cross-country travel.

Camping

- Allow in developed campgrounds or in designated primitive camping areas. Allow dispersed camping once campgrounds are developed and camping areas are designated (Alternative B).
- Allow dispersed primitive camping in designated staging and camping areas within the OHV open areas, and in other locations outside of OHV open areas (alternatives C and E).
 - Allow designation of staging and camping areas for public safety.

Campfires

- Allow campfires only in designated fire grates, designated fire pits, or mandatory fire pans and prohibit wood collection for campfires (Alternative B).
- Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed (alternatives C and E).

Overnight use

 Require (Alternative B) or encourage (alternatives C and E) self-registered permits for overnight camping.

Grazing

- Make available for livestock grazing and trailing (alternatives B, D, and E).
- Make unavailable for livestock grazing, but open trailing (Alternative C).

Leasable minerals

Apply No Surface Occupancy stipulation for mineral leasing.

Mineral materials

- Close to mineral materials disposal (alternatives B, C, and D).
- Open to mineral materials disposal (Alternative E).

Locatable minerals

- Recommend withdrawal from mineral entry (alternatives B and C).
- Open to mineral entry (alternatives D and E).

ROWs and renewable energy

- Manage as ROW exclusion area (alternatives B, C, and D).
- Manage as ROW avoidance area (Alternative E).

Highway 89 SRMA—GSENM and KEPA

Alternatives B and C

Size: Alternatives B and C - 41,302 acres

This SRMA is necessary to protect and enhance Frontcountry to Middlecountry recreational experiences within the Highway 89 corridor. The corridor offers world-class scenic viewing opportunities of unique geological features forming the Grand Staircase formation such as the Vermilion Cliffs and White Cliffs. This area encompasses the Highway 89 corridor within GSENM, including the Paria movie set, the old Pahreah Townsite, and the Paria Contact Station. Activities in this SRMA include scenic driving, day-use hiking, camping, road and mountain bicycling, and scenic and interpretive viewing. Recreation management of this area will sustain and enhance education and interpretation of local geology, history, biology, and paleontology, and protect the viewshed of highly scenic landscapes. Short interpretive trails and scenic overlooks will be developed to encourage visitors to learn more about these monument resources. Management in this area will support commercial filming endeavors and provide a range of recreational opportunities for visitors. This corridor will be managed in conjunction with the Vermilion Cliffs Highway Project.

World-class opportunities for scenic viewing along a major highway corridor with roadside access to diverse recreation opportunities such as hiking, OHV/four-wheel-drive/auto touring, bicycling, and interpretation of natural, historic, and geological resources

SRMA/RMZ Objective(s)

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Wildlife viewing, nature viewing, viewing geologic features, day-use hiking, bicycling, camping, scenic and interpretive viewing, scenic driving, and vehicle and OHV/four-wheel-drive touring.

Experiences

- Enjoying the sensory experience—sight, sound, and smell—of a natural landscape
- Enjoying OHV and four-wheel-drive touring in a highly scenic landscape
- Enjoying access to close-to-home outdoor amenities
- Feeling good about solitude; being isolated and independent
- Savoring group/family affiliation and bonding
- Learning more about natural history and geology

Benefits

- Personal
 - Closer relationship with the natural world
 - Restored mind from unwanted stress
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Improved mental well-being and physical fitness and health maintenance
 - Heightened sense of satisfaction with our area as a place to live

Community

- Greater interaction with visitors from other cultures
- Enhanced lifestyle
- More informed citizenry about where to go for different kinds of recreation experiences and benefits

Economic

- Positive contributions to local-regional economic stability
- Greater value-added local services/industry
- Increased local tourism revenue
- Increased property values

Environmental

- Greater retention of the community's distinctive architecture and structures
- Greater retention of distinctive natural landscape features
- Improved care for community aesthetics

RSC Descriptions

Desired Physical RSCs

- Remoteness: Frontcountry to Rural
 - Retain current remoteness within 0.5 mile of low-clearance or passenger vehicle routes and within 0.5 mile of paved primary roads and highways.
- Naturalness: Frontcountry
 - Character of natural landscape partially modified but none overpower natural landscapes (e.g., structures, utilities)
- Visitor Facilities: Frontcountry
 - Rustic facilities such as visitor centers, campsites, restrooms, trailheads, and directional and interpretive displays

Desired Social RSCs

- Contacts (average): Frontcountry
 - Visitors experience 30 or more encounters per day on travel routes.
- Group Size (average): Middlecountry to Frontcountry
 - Group sizes of 7–10 people per group are encountered. Groups of 13–25 people per group may be encountered at developed facilities such as interpretive sites, during holiday periods, and during tours or special events.
- Evidence of Use (average): Frontcountry to Rural
 - Small areas of alteration prevalent. Surface vegetation gone with compacted soils observed. Sounds of people regularly heard.
 - A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds
 of people frequently heard.

Desired Administrative/Operational RSCs

- Access: Frontcountry to Rural
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use
 - Ordinary highway auto and truck traffic is characteristic.
- Visitor Services/Information: Frontcountry
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekdays and weekends).
 - Directional/informational signs and interpretive displays present at key access points and destinations.
 - Patrolled periodically by law enforcement officers, safety patrol volunteers, and other BLM employees. Spike in BLM presence during high-use season.
- Management Controls: Frontcountry to Rural
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and/or closures.
 - Informational/regulatory signage posted at access points, trailheads, and destination features/facilities. Signage and informational material are specific to site/resource protection, interpretation, and appreciation of natural and historic features.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop appropriate parking and facilities for equestrian use for the Paria River trail.
 - Develop new trails for hiking, biking, and equestrian use as necessary.
 - Develop appropriate facilities to enhance visitor safety, such as additional signage and turnout lanes at intersection locations where sight distance is limited.
 - Develop appropriate physical barriers to limit recreationist damage to vegetation at high-use areas, as well as to exclude livestock from campgrounds and other developed recreation sites.
 - Consider development of a Corridor Management Plan within high recreational use areas of the SRMA/RMZs.
- Competitive use
 - Allow non-motorized/non-mechanized competitive events (Alternative B).
 - Prohibit high-speed motorized competitive events (Alternative C).
- Organized group event/activity use
 - Do not apply group size requirements.
- Motorized and mechanized event/activity
 - Limited to designated routes.

- Stock use event/activity
 - Allow cross-country travel.
- Camping
 - Dispersed primitive camping is not allowed with 1,320 feet of the Highway 89 corridor (Alternative B).
 - Prohibit dispersed primitive camping within 660 feet of Highway 89 corridor (Alternative C).
- Campfires
 - Allow propane/non-wood fires only. Prohibit wood collection for campfires (Alternative B).
 - Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed (Alternative C).
- Leasable minerals
 - KEPA: Apply No Surface Occupancy stipulation for mineral leasing.
- Mineral materials
 - KEPA: Close to mineral materials disposals (Alternative B).
 - KEPA: Open to mineral materials disposals (Alternative C).
- ROWs and renewable energy
 - Manage as ROW exclusion area (Alternative B).
 - Open to ROWs (Alternative C).

Skutumpah SRMA—GSENM and KEPA

Alternatives B, C, and E

Size: Alternatives B and C - 3,026 acres; Alternative E - 1,477 acres

This SRMA is necessary to protect and enhance Backcountry to Middlecountry recreational experiences within the Skutumpah Road corridor. The corridor offers world-class scenic viewing opportunities of unique geological features forming the Grand Staircase formation such as the White Cliffs and upper terraces below Bryce Canyon National Park. This area encompasses the Skutumpah Road corridor from Johnson Canyon Road to the town of Cannonville. Skutumpah Road provides access to the northwestern edge of the monument, connecting the towns of Glendale and Cannonville, UT.

Activities in this SRMA include scenic driving, day-use hiking, dispersed camping, backpacking, equestrian use, bicycling, and scenic and interpretive viewing. Recreation management of this area will sustain and enhance education/interpretation of local geology, history, biology, and paleontology, and protect the viewshed of highly scenic landscapes. Scenic overlooks and/or interpretive displays will be developed to encourage visitors to learn more about natural resources and environmental stewardship. Designated dispersed camping sites and/or campgrounds will be developed to meet public need and limit potential impacts on private landowners within the area. Management in this area will support a range of recreational opportunities for visitors.

World-class opportunities for scenic viewing along a remote road with access to diverse recreation opportunities such as hiking, slot canyons, OHV/four-wheel-drive/auto touring, bicycling, and interpretation of natural, historic, and geological resources. The Skutumpah Road corridor serves as a major transportation route between Kanab and Cannonville and is maintained as a means of access for passenger cars and light trucks, depending upon season/conditions. The road provides two-wheel-drive access to several popular recreation destinations such as Lick Wash, Willis Creek, and Bull Valley Gorge. In inclement weather conditions, Skutumpah Road often becomes impassable to two-wheel-drive and even four-wheel-drive vehicles due to soil types that become extremely slippery when wet.

Considering the road's popularity for recreation access as well as its importance to local residents and business owners, Skutumpah Road would be managed to provide public access and include management actions directed toward developed and dispersed recreational uses. Efforts would be directed at minimizing user-created conflicts and increasing opportunities for access, interpretation, and protection of the natural environment, emphasizing public health and safety and stewardship of public lands.

SRMA Objective(s)

The objective of the Skutumpah Road SRMA is to provide access to multiple trailheads accessing the monument, retain the rural and rugged flavor through designed recreation developments, reduce user-created impacts, retain the visual qualities along the road, and provide recreational, educational, and interpretive opportunities on the historic values of the area. The road is heavily utilized for non-recreational purposes by area residents and business/ranch owners as well as commercial operations. Skutumpah Road SRMA would be managed to minimize conflicts between the multiple uses and user groups who frequent the area.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

Experiences

- Enjoying the sensory experience—sight, sound, and smell—of a natural landscape
- Risk reduction—having others nearby who could help if needed
- Enjoying OHV and four-wheel-drive touring in a highly scenic landscape
- Enjoying access to close-to-home outdoor amenities
- Feeling good about solitude and being isolated and independent
- Savoring group/family affiliation and bonding
- Learning more about natural history and geology

Benefits

- Personal
 - Restored mind from unwanted stress
 - Closer relationship with the natural world
 - Stronger ties with family and friends
 - Enlarged sense of personal accountability for acting responsibly on public lands
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Improved mental well-being and physical fitness and health maintenance

Heightened sense of satisfaction with our area as a place to live

Community

- Greater family bonding
- Enlarged sense of community dependency on public lands
- Lifestyle improvement or maintenance
- More informed citizenry about where to go for different kinds of recreation experiences and benefits

Economic

- Maintenance of a community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economic stability
- Greater value-added local services/industry
- Increased local tourism revenue
- Increased property values

Environmental

- Improved respect for privately owned lands
- Increased awareness and protection of natural landscapes
- Greater retention of the community's distinctive architecture and structures
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Backcountry to Frontcountry
 - Retain current remoteness within 0.5 mile of mechanized trails/routes and within 0.5 mile of low-clearance or passenger vehicle routes (e.g., unpaved county roads, private land routes).
- Naturalness: Middlecountry to Frontcountry
 - Character of natural landscape retained. A few modifications contrast with the character of the landscape (e.g., fences, ditches).
 - Character partially modified but none overpower natural landscapes (e.g., structures, utilities).
- Visitor Facilities: Middlecountry to Rural
 - Maintained and marked trails, simple trailhead developments, and basic toilets. Rustic
 facilities such as campsites, restrooms, trailheads, and interpretive displays. Modern
 facilities such as campgrounds, group shelters, boat launches, and occasional exhibits.

Desired Social RSCs

- Contacts (average): Backcountry to Frontcountry
 - Visitors experience 7-15 encounters per day on travel routes. Visitors experience 15-29 encounters per day on travel routes. Visitors experience 30 or more encounters per day on travel routes.

- Group Size (average): Primitive to Frontcountry
 - Group sizes encountered vary between fewer than or equal to 3 people per group, 4–6 people per group, 7–12 people per group, and 13–25 people per group. Group sizes encountered will vary widely along different sections of the corridor with a higher numbers of encounters at developed facilities such as campgrounds and visitor centers, and during holiday periods, tours, and special events especially near the northern end of the unit approaching Cannonville.
- Evidence of Use (average): Backcountry to Frontcountry
 - Areas of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.
 - Small areas of alteration prevalent. Surface vegetation gone with compacted soils observed. Sounds of people regularly heard.

Desired Administrative/Operational RSCs

- Access: Middlecountry to Frontcountry
 - Four-wheel-drive vehicles, ATVs, dirt bikes, or snowmobiles, in addition to nonmotorized, mechanized use.
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use.
- Visitor Services/Information: Frontcountry to Rural
 - Visitor Information Services/Contact Station near Paria River is staffed 7 days per week during high-use season and provides information, maps, supplies, and condition/safety info for area visitors.
 - Directional/informational signs and interpretive displays present at key access points and destinations.
 - Patrolled periodically by law enforcement officers, safety patrol volunteers, and other BLM employees. Spike in BLM presence during high-use season.
- Management Controls: Frontcountry to Rural
 - Informational/regulatory signage posted at access points, trailheads, and destination features/facilities. Signage and informational material are specific to site/resource protection, interpretation, and appreciation of natural and historic features. Motorized regulations posted at access points, staging areas, and trailheads. Periodic patrols performed by BLM law enforcement, BLM employees, and volunteers/stewards.

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs, maps, and other materials. Messages could include respect for private property in the area.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.

- Develop appropriate physical barriers to limit recreationist damage to vegetation at high-use areas, as well as to exclude livestock from campgrounds and other developed recreation sites.
- Develop parking lots and designated dispersed camping areas as necessary.

Competitive use

- Prohibit motorized and non-motorized competitive events (Alternative B).
- Allow motorized and non-motorized competitive events. Prohibit high-speed motorized competitive events (Alternative C).
- Allow non-motorized competitive events. Prohibit motorized competitive events unless it would not affect the monument objectives (Alternative E).

Organized group event/activity use

- Allow 25 people or fewer. Groups over 25 could be approved by the authorized officer (Alternative B).
- Allow 50 people or fewer. Groups over 50 could be approved by the authorized officer (Alternative C).
- Allow up to 50 people. Permits for over 50 people may be approved by the authorized officer. Within WSAs group size will be limited to 25 people. Groups over 25 people would require approval of the authorized officer (Alternative E).

Motorized and mechanized event/activity

Limited to designated routes.

Stock use event/activity

- Allow cross-country travel for equestrian use only (alternatives B and C).
- Allow cross-country travel (Alternative E).

Camping

- Allow dispersed primitive camping where resource damage does not occur. Prohibit camping with 0.25 mile of trailheads (alternatives B and C).
- Allow in developed campgrounds or in designated camping areas. Allow dispersed camping until designated camp sites are developed. Allow designation of staging and camping areas for public safety (Alternative E).

Campfires

- Allow propane/non-wood fires only. Prohibit wood collection for campfires (Alternative B).
- Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed (alternatives C and E).

Overnight use

 Require (Alternative B) or encourage (alternatives C and E) self-registered permits for overnight camping.

Grazing

Make available for livestock grazing and trailing (Alternative E).

Leasable minerals

- KEPA: Apply No Surface Occupancy stipulation for mineral leasing (alternatives B and E).
- KEPA: Apply Controlled Surface Use and Timing Limitation Stipulation for mineral leasing (Alternative C).

Mineral Materials

- KEPA: Close to mineral materials disposals (Alternative B).
- KEPA: Close to exclusive pits. Open to community pits 5 acres or fewer of unreclaimed area. Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts (alternatives C and E).

Locatable minerals

KEPA: Open to mineral entry unless already withdrawn (Alternative E).

ROWs and renewable energy

- Manage as ROW avoidance area (Alternative B).
- Open to ROWs (Alternative C), unless otherwise noted in other RMP prescriptions (Alternative E).

• Other Program Area Management

- Limit OHV and mechanized travel (including over-snow travel) to designated routes.
- Allow cross-country travel for equestrian use only (alternatives B and C). Allow cross-country travel (Alternative E).
- Minerals:
 - Close to mineral materials disposals (Alternative B).
 - Close to exclusive pits; open to community pits 5 acres or fewer. Allow expansion of existing pits; apply visual mitigation to reduce visual impacts except allow small community pits; apply controlled surface use and timing limitation stipulation for mineral leasing (Alternative C).
 - Outside GSENM, apply No Surface Occupancy stipulation for mineral leasing; close within GSENM (Alternative E). Outside GSENM, close to exclusive pits. Open to community pits 5 acres or fewer. Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts. Open to mineral entry unless already withdrawn.
- Require human waste disposal systems in proximity to water sources or in slot canyons.
- Allow propane/non-wood fires only. Prohibit wood collection for campfires (Alternative B).
- Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed (alternatives C and E).
- Consider development of Management Plans and Corridor Management Plans within high recreational use areas of the SRMA/RMZs.

Paria Canyons Vermilion Cliffs SRMA-KEPA

Alternatives B, C, and E

Size: Alternatives B, C, and E - 30,011 acres

This area encompasses Buckskin Mountain, West Clark Bench, and Cedar Mountain to connect to the BLM Arizona Strip Field Office's "Canyons and Plateaus of the Paria Resource

Conservation Area." These areas are located south of Highway 89, with the monument boundary marking the east boundary. Activities in this SRMA include canyoneering, equestrian use, backpacking, hiking, hunting, and scenic touring along the House Rock Valley Road. The overall recreation experience will continue to be Primitive, uncrowded, and remote. Overall social encounters will remain low compared to other southwest canyon hiking opportunities. However, a range of social encounters occur.

The trailheads in the SRMA provide access to world-famous canyons (e.g., the Wave and Paria River Canyon), offering a remote and unconfined recreation experience for day hiking, backpacking, canyoneering, and equestrian users.

Management of this SRMA will be in coordination with the KFO and the Arizona Strip Field Office.

SRMA/RMZ Objective(s)

The objective of Paria Canyon Vermilion Cliffs SRMA is to provide an undeveloped, Primitive, and self-directed visitor experience while accommodating motorized and mechanized access on designated routes. Facilities will be rare and provided only when essential for resource protection.

Participants in surveys/assessments report an average 4.0 realization (4.0 on a probability scale where: 1 = not at all realized to 5 = totally realized) of the targeted experiences and benefits, 5 years after the beginning of implementation.

<u>Activities:</u> Day hiking, backpacking, equestrian use and horse packing, auto and OHV touring, photography, wildlife viewing, canyoneering, hunting, and education and interpretation of natural geologic settings of the area's historic sites.

Experiences

- Escaping physical pressures
- Enjoying the closeness of family and friends
- Enjoying an escape from crowds of people
- Enjoying a risk-taking adventure

Benefits

- Personal
 - Improved skills for outdoor enjoyment with others
 - Greater sensitivity to/awareness of outdoor aesthetics and nature's art and its elegance
 - Stronger ties with family and friends
 - Enlarged sense of personal accountability for acting responsibly on public lands
- Community
 - Enlarged sense of personal accountability for acting responsibly on public lands
 - Feeling good about how visitors are managed
 - Feeling good about how our cultural heritage is being protected
 - Greater interaction with visitors from different cultures
- Economic
 - Positive contributions to local-regional economic stability

- Maintenance of community's distinctive recreation/tourism market niche or character
- More positive contributions to local-regional economy
- Increased local tourism revenue
- Greater physical capacity to maintain essential infrastructure and services

Environmental

- Increased ecologically friendly tourism operations
- Greater community ownership and stewardship of park, recreation, and natural resources
- Increased awareness and protection of natural resources
- Greater retention of distinctive natural landscape features

RSC Descriptions

Desired Physical RSCs

- Remoteness: Backcountry, Middlecountry to Frontcountry
 - Maintain remoteness within 0.5 mile of mechanized trails/routes.
 - Within 0.5 mile of four-wheel-drive, ATV, and motorcycle routes
 - Within 0.5 mile of low-clearance or passenger vehicle routes (e.g., unpaved county roads)
- Naturalness: Backcountry, Middlecountry to Frontcountry
 - Natural landscape with modification in harmony with surroundings and not visually obvious (e.g., stock ponds, habitat treatments, historic structures)
 - Character of the natural landscape retained. A few modifications contrast with character of the landscape (fences, ditches).
 - Character of the natural landscape partially modified but none overpower natural landscape (e.g., structures, utilities)
- Facilities and Structures: Backcountry, Middlecountry to Frontcountry
 - Developed trails made mostly of native materials; structures are rare and isolated.
 - Maintained and marked trails, simple trailhead developments, and basic toilets
 - Rustic facilities such as campsites, restrooms, trailheads, and interpretive displays

Desired Social RSCs

- Contacts and Group Size: Backcountry to Middlecountry
 - 7-15 encounters per day on travel routes
 - 15-29 encounters per day on travel routes
- Group size: Backcountry to Middlecountry
 - 4–6 per group
 - 7-12 people per group
- Evidence of Use: Backcountry to Middlecountry
 - Areas of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.
 - Small areas of alteration. Surface vegetation showing wear with some bare soils.
 Occasional sounds of people.

Desired Administrative/Operational RSCs

- Public Access: Middlecountry to Frontcountry
 - Four-wheel-drive vehicles, ATVs, dirt bikes, in addition to non-motorized, mechanized use
 - Two-wheel-drive vehicles predominant, but also four-wheel-drive and non-motorized, mechanized use
- Visitor Services: Frontcountry to Urban
 - Information materials describe recreation areas and activities; staff periodically present (e.g., weekends and holidays).
 - Information materials, plus experience and benefits descriptions. Staff regularly present.
 - Information materials plus regularly scheduled outdoor demonstrations and clinics
- Management Controls: Frontcountry to Urban
 - Rules, regulations, and ethics clearly posted. Use restrictions, limitations, and or closures.
 - Regulations strict and ethics prominent. Use may be limited by permit, reservation, etc.
 - Enforcement in addition to rules to reduce conflicts, hazards, and resource damage

Management and Allowable Use Decisions

To achieve the desired RSC:

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop parking lots, restrooms, culinary water, equestrian facilities, and other recreation facilities as necessary.
 - Develop mechanized trails where appropriate.
 - Consider development of Management Plans within high recreational use areas of the SRMA/RMZs.

Competitive use

- Prohibit competitive events (Alternative B).
- Prohibit motorized competitive events; allow non-motorized competitive events (alternatives C and E).
- Organized group event/activity use
 - Allow up to 12 people. Permits for over 12 people may be approved by the authorized officer (Alternative B).
 - Allow up to 25 people. Permits for over 25 people may be approved by the authorized officer (alternatives C and E).
- Motorized event/activity
 - Limited to designated routes.

Mechanized event/activity

• Limited to designated routes (Alternative B); authorize cross-country mechanized use in specific areas as identified in the Travel Management Plan (alternatives C and E).

Stock use event/activity

- Prohibit in the Paria River corridor south of White House Campground and side canyons north of White House Campground; allow in the House Rock area to the wilderness boundary (Alternative B).
- Prohibit in the Paria River corridor south of White House Campground; allow in the House Rock area to the wilderness boundary (alternatives C and E).

Camping

- Allow in developed campgrounds or in designated camping areas. Prohibit camping along House Rock Valley Road (Alternative B).
- Allow dispersed camping in designated areas (alternatives C and E).

Campfires

- In campgrounds: allow campfires only in designated fire grates, designated fire pits, or mandatory fire pans and prohibit wood collection for campfires. In House Rock area: Allow propane/non-wood fires only; prohibit wood collection for campfires (Alternative B).
- Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed (alternatives C and E).

Overnight use

 Require (Alternative B) or encourage (alternatives C and E) self-registered permits for overnight camping.

Leasable minerals

- Apply No Surface Occupancy stipulation for mineral leasing (Alternative B).
- Apply Controlled Surface Use and Timing Limitation stipulation for mineral leasing (alternatives C and E).

Mineral materials

- Close to mineral materials disposals (Alternative B).
- Close to exclusive pits. Open to community pits 5 acres or fewer of unreclaimed area.
 Allow expansion of existing pits. Apply visual mitigation to reduce visual impacts (alternatives C and E).

Locatable minerals

- Recommend withdrawal from mineral entry (alternatives B and C).
- Open to mineral entry (Alternative E).

ROWs and renewable energy

- Manage as ROW avoidance area (Alternative B).
- Open to ROWs (alternatives C and E).

Kanab-Escalante ERMA—GSENM and KEPA

Alternatives B, C, and D

Size: Alternatives B and C - 678,694 acres; Alternative D - 1,835,630 acres

GSENM ERMA and KEPA ERMA—GSENM and KEPA

Alternative E

Size: GSENM ERMA - 987,198 acres; KEPA ERMA - 805,908 acres

The Kanab-Escalante ERMA encompasses a wide array of often overlapping land designations/ classifications such as WSAs, Natural Areas, Research Natural Areas, Relict Plant Communities, lands with wilderness characteristics, ROWs, riparian areas, cultural and paleontological sites, hunting units, developed recreation areas, and motorized and non-motorized/mechanized travel zones.

The Kanab-Escalante ERMA offers a wide variety of recreation opportunities in diverse physical recreation settings that facilitate a visitor's freedom to participate in a variety of developed, undeveloped/primitive, dispersed, motorized, mechanized, and non-mechanized recreational activities.

ERMA Objective(s)

The Kanab-Escalante ERMA will offer recreation opportunities in a relatively unchanged physical recreation setting that facilitate the visitor's freedom to participate in a variety of dispersed, developed, motorized, non-motorized, mechanized, and non-mechanized recreation activities. The ERMA designation encompasses the four planning units (Grand Staircase, Kaiparowits, and Escalante Canyons Units and KEPA) identified in Presidential Proclamation 9682. While recreation would not be the specific management focus throughout the ERMA, recreational resources and values would be managed commensurately with other resource areas to accommodate a variety of multiple uses that support the health and productivity of the land. It is important to note that in some cases recreation opportunities may be constrained by decisions to benefit other resources.

<u>Activities:</u> day hiking, backpacking, sightseeing, equestrian use, auto and OHV touring, photography and filming, wildlife viewing, canyoneering, climbing, hunting/fishing, education and interpretation of cultural and historic areas, special recreation permit activities, and rock hounding/collecting.

Desired Social RSCs

- Manage Primitive areas for fewer than 6 encounters per day on and off travel routes in WSAs.
- Manage Middlecountry for 7–12 people per group along secondary and tertiary travel routes.
- Manage Frontcountry for 13–25 people per group along collector roads.
- Manage Rural areas for 26–50 people per group along paved roads OR do not limit group size on paved and dirt roads.

Management and Allowable Use Decisions

- Recreation and Visitor Services
 - Develop appropriate stewardship, educational/interpretative, and directional signs and maps.
 - Monitor visitor experiences and benefits through surveys/assessments, and visitor utilization and recreation setting condition through routine counts and observations.
 - Develop primitive trailheads at key access points where appropriate.

Competitive use

- Allow non-motorized competitive events. Prohibit motorized competitive events (Alternative B).
- Allow motorized events. Allow high-speed motorized competitive events in designated areas. Allow non-motorized competitive events (Alternative C).
- Allow competitive events (Alternative D).
- GSENM-Allow non-motorized competitive events. Prohibit motorized competitive events unless it would not affect the monument objects (Alternative E).
- KEPA-Allow competitive events (Alternative E).

Campfires

- Allow campfires only in designated fire grates, designated fire pits, or mandatory fire pans and prohibit wood collection for campfires (Alternative B).
- Encourage fire pans and allow collection of dead and down wood in areas where campfires are allowed (alternatives C, D, and E).

Group size

- Paved roads: Do not apply group size limit (alternatives B and C).
- Primary collector roads (e.g., Burr Trail, Hole-in-the-Rock, Cottonwood, Skutumpah Roads):
 - Allow up to 25 people. Permits for over 25 people could be approved by the authorized officer (Alternative B).
 - Allow up to 50 people. Permits for over 50 people could approved by the authorized officer (Alternative C).
- Group size is limited to 50 within ERMAs. More restrictive group size limits could be
 established within WSAs or areas adjacent to NPS units throughout implementationlevel planning. Permits for over these group sizes could be approved by the authorized
 officer (alternatives D and E).

Leasable minerals

 KEPA: Apply Controlled Surface Use and Timing Limitation Stipulation for mineral leasing.

Mineral materials

- KEPA: Close to mineral materials disposals (Alternative B).
- KEPA: Open to mineral materials disposals (alternatives C, D, and E).
- ROWs and renewable energy
 - Manage as ROW avoidance area (Alternative B).
 - Open to ROWs (alternatives C, D, and E).

Abbreviations-Acronyms

Term	Definition
ATV	All-terrain vehicle
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
ERMA	Extensive Recreation Management Area
GSENM	Grand Staircase-Escalante National Monument
HITRR	Hole-in-the-Rock Road
KEPA	Kanab-Escalante Planning Area
KFO	Kanab Field Office
NPS	National Park Service
NRA	National Recreation Area
OHV	Off-highway vehicle
RSC	Recreation Setting Characteristic
RMZ	Recreation Management Zone
ROW	Right-of-way
SRMA	Special Recreation Management Area
WSA	Wilderness Study Area

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans Final Environmental Impact Statement

Appendix S

Areas of Critical Environmental Concern Evaluation Report

August 2019

Table of Contents

The Law: FLPMA	S-1
The Regulation: 43 CFR 1610.7-2	S-1
The Policy: BLM Manual 1613	S-1
Evaluation Process	S-3
Existing Special Management Areas	S-3
Prior ACEC Nominations	S-4
Nominated ACECs	S-5
Potential ACECs	S-6
Consideration of Potential ACECs in the Draft RMPs/EIS	S-6
Evaluating Relevance and Importance Criteria	S-7
Mapping Potential ACECs	S-10
Evaluations of ACEC Nominations	S-11
References	S-57
Abbreviations-Acronyms	S-57
List of Tables	
Table 1. Potential ACECs	S-6

Appendix S: Areas of Critical Environmental Concern Evaluation Report

This report documents the process used to evaluate nominations for areas of critical environmental concern (ACECs) considered by the Bureau of Land Management (BLM) in developing the Grand Staircase-Escalante National Monument (GSENM) and Kanab-Escalante Planning Area (KEPA) Resource Management Plans (RMPs). In brief, the BLM interdisciplinary team (IDT) evaluated 1,705,069 acres that were nominated as ACECs (including several areas of overlapping acreage). Of these, 14 areas totaling 309,044 acres met the criteria for relevance and importance values, resources, natural systems or processes, or hazards/safety/public welfare (referred to collectively as values) and were identified as potential ACECs.

The Law: FLPMA

In the development and revision of land use plans, the Secretary shall ... give priority to the designation and protection of areas of critical environmental concern. (Federal Land Policy and Management Act [FLPMA], Title II, Section 202(c)3)

The term "areas of critical environmental concern" (often referred to as "ACECs") means areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards. (FLPMA, Title I, Section 103(a))

The Regulation: 43 CFR 1610.7-2

To be a potential ACEC, both of the following criteria shall be met:

- Relevant: There shall be present a significant historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or natural hazard.
- Important: The above described value, resource, system, process, or hazard shall have substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to human life or property.

The Policy: BLM Manual 1613

BLM Manual 1613, Areas of Critical Environmental Concern, provides direction for identifying, analyzing, designating, monitoring, and managing ACECs. Key points are as follows:

- The ACEC designation indicates to the public that the BLM recognizes that an area has significant values and has established special management measures to protect those values.
- Designation of ACECs is accomplished only through the RMP process, either in an RMP itself or in a plan amendment.

- Potential ACECs are identified as early as possible in the planning process.
- Existing ACECs are subject to reconsideration when plans are revised.
- Members of the public or other agencies may nominate an area for consideration as a potential ACEC. BLM personnel are encouraged to recommend areas for consideration as ACECs.
- No formal or special procedures are associated with nomination.

An area must meet relevance and importance criteria, and require special management attention, to qualify for consideration for designation as an ACEC. An area meets the relevance criterion if it contains one or more of the following:

- A significant historic, cultural or scenic value (including but not limited to rare or sensitive archaeological resources and religious or cultural resources important to Native Americans)
- A fish and wildlife resource (including but not limited to habitat for endangered, sensitive or threatened species, or habitat essential for maintaining species diversity)
- A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities that are terrestrial, aquatic, or riparian; or rare geological features)
- Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the resource management planning process that it has become part of a natural process.

The value, resource, system, process, or hazard described above must have substantial significance and values in order to satisfy the "importance" criteria. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:

- Has more than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource
- Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change
- Has been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of FLPMA
- Has qualities that warrant highlighting in order to satisfy public or management concerns about safety and public welfare
- Poses a significant threat to human life and safety or to property

Although it is only necessary for an area to meet the relevance and importance criteria for one value to qualify as an ACEC, many potential ACECs meet the criteria for several values.

To be designated as an ACEC, an area must require special management attention to protect and prevent irreparable damage to the relevance and importance values. "Special management attention" refers to management prescriptions developed during preparation of an RMP or amendment expressly to protect and prevent irreparable damage to the relevance and importance values of an area from the potential effects of actions allowed by the RMP, including proposed actions deemed to be in conformance with the terms, conditions, and decisions of the RMP. These are management measures that would not be necessary and prescribed if the relevant and important features were not present.

Evaluation Process

Existing Special Management Areas

The BLM did not designate any new ACECs in the 2000 GSENM Monument Management Plan, because it determined that resource protection would be substantially equivalent under either Monument authority or ACEC designation (BLM 1999:2.52). However, the BLM did retain pre-FLPMA special designations, including Outstanding Natural Areas (ONAs), Recreation Areas, and Historic Sites established under the Classification and Multiple Use Act of 1964, which predated monument designation. Under FLPMA, the BLM reviews the classifications and withdrawals made under the Classification and Multiple Use Act, along with other existing designations, as part of the land use planning process, and makes a recommendation regarding continuation of these designations. The Secretary reserves the authority to modify or terminate the classification consistent with the land use plan. The 1981 Escalante Management Framework Plan and 2000 GSENM Monument Management Plan continued all existing designations.

Provisions of 43 Code of Federal Regulations (CFR) 6225.0-5 of that era define ONAs as follows:

"Outstanding Natural Areas. These are established to preserve scenic values and areas of natural wonder. The preservation of these resources in their natural condition is the primary management objective. Access roads, parking areas, and public use facilities are normally located on the periphery of the area. The public is encouraged to walk into the area for recreation purposes wherever feasible."

A notice in the *Federal Register* in 1970 designated multiple areas as ONAs, recreation areas or sites, or historic sites. The notice temporarily segregated Devils Garden ONA and Dance Hall Rock Historic Site from all forms of entry, location, or selection under the public land laws, including the general mining laws, but not the mineral leasing laws. These areas were also segregated from oil and gas exploration to the extent that notices of intent to explore require the approval of the manager before operations commence. Termination of the mineral segregation for these areas occurred on May 15, 1982, with a notice in the *Federal Register*.

In 1972, Glen Canyon National Recreation Area (NRA) was established and the public lands it encompassed were transferred to the National Park Service for management. This eliminated the majority of the Escalante Canyons ONA (originally 129,000 acres) but left five scattered tracts totaling 1,160 acres. Tract 5 is being analyzed in this ACEC evaluation process.

The Tract 5 ONA became an Instant Study Area as part of the Wilderness Inventory process beginning in 1979. This area has been managed as part of the Escalante Canyons Wilderness Study Area (WSA), and will continue to be managed according to the non-impairment mandate until Congress decides to designate this area as Wilderness or release this area from study.

Later in 1979, off-road vehicle closures were made on the ONAs under the authority of Executive Order 11644.

No Mans Mesa

On September 18, 1986, a *Federal Register* notice announced the designation of No Mans Mesa as a Research Natural Area (RNA) under the authority of 43 CFR 8200 and using a plan amendment. The management prescription included designating 1,335 acres of public land as

an RNA. Management was to give primary emphasis to educational, scientific, and research values. Management prescriptions included restricting off-highway vehicles to existing roads and trails, placement of a "no surface occupancy" stipulation on oil and gas leases, a requirement that the area be retained in public ownership, withdrawal of the RNA from mineral entry, completion of a management plan, and provision for determination of fire suppression on a case-by-case basis. Since the Presidential Proclamation, mineral recommendations and the retention objective have been superseded.

Wolverine Petrified Wood Area

Wolverine Petrified Wood Natural Environmental Area (2,560 acres) was withdrawn in 1960 from all forms of appropriation under the public land laws, including the mining, but not the mineral leasing laws. In 1981, 2,560 acres were closed to off-road vehicle use.

The 2000 GSENM Monument Management Plan approved the continuing designations of Devils Garden ONA, Dance Hall Rock Historic Site, Escalante Canyons Tract 5 ISA Complex, and Wolverine Petrified Wood Natural Environmental Area. The portions of these areas that are no longer in the monument were evaluated for relevance and importance during this ACEC evaluation process. The portion of Devils Garden ONA that is now outside the monument boundaries was found not to meet relevance and importance because it does not contain any of the outstanding geologic features associated with Devils Garden ONA; therefore, it was not carried forward as a potential ACEC. The portion of Dance Hall Rock Historic Site that is now outside the monument boundaries is analyzed as part of the Hole-in-the-Rock Trail ACEC. The portions of Escalante Canyons Tract 5 ISA Complex that were found to contain relevance and importance values are analyzed as part of the Scorpion Flat/Dry Fork ACEC. The small portions of Wolverine Petrified Wood Natural Environmental Area that are now outside the boundaries of the monument were found not to meet relevance and importance because they do not contain the petrified wood resources associated with this area; therefore, they were not carried forward as a potential ACEC.

Prior ACEC Nominations

During the development of the 2000 GSENM Monument Management Plan, numerous ACEC nominations were submitted during the scoping process; however, these ACECs were not evaluated as ACECs because the BLM determined that resource protection would be substantially equivalent under either monument authority or ACEC designation (BLM 1999:2.52). Because some areas are no longer in the monument, the BLM evaluated these areas for relevance and importance. The previously nominated areas include:

- US Highway 89
- Utah Highway 12
- Cottonwood Wash Road from Utah Highway 12 to US Highway 89
- Road to Pahreah Townsite from US Highway 89
- Burr Trail from Boulder to Capitol Reef
- Hole-in-the-Rock Road from Utah Highway 12 to Glen Canyon NRA
- Fourmile Bench Old Tree Area
- No Mans Mesa RNA
- Utah Highway 9
- Utah Highway 143

Of these, Fourmile Bench Old Tree Area and No Mans Mesa RNA remain in the Kaiparowits and Grand Staircase Units, respectively, and therefore were not carried forward for analysis. Utah Highways 9 and 143 are out of the Planning Area and therefore were not carried forward for analysis.

Outcomes for other previously nominated areas are as follows:

- US Highway 89: nominated for scenic values. The BLM IDT evaluated the area for scenic values and included relevance and importance scenic values in the Cockscomb East and West ACECs.
- Utah Highway 12: nominated for scenic values. The BLM IDT evaluated the area for scenic values and included relevance and importance scenic values in the Henderson/Pardner and Straight Cliffs/Fiftymile Bench ACECs.
- Cottonwood Wash Road from Utah Highway 12 to US Highway 89: nominated for scenic values. The BLM IDT evaluated the area for scenic values and included relevance and importance scenic values in the Butler Valley, Cockscomb East, and Cockscomb West ACECs.
- Road to Pahreah Townsite from US Highway 89: nominated for scenic values. The BLM IDT evaluated the area for scenic values and included relevance and importance scenic values in the Cockscomb East and Cockscomb West ACECs.
- Burr Trail from Boulder to Capitol Reef: nominated for scenic values. The BLM IDT evaluated the area for scenic values and included relevance and importance scenic values in the Circle Cliffs ACEC.
- Hole-in-the-Rock Road from Utah Highway 12 to Glen Canyon NRA: nominated for scenic values. The BLM IDT evaluated the area for scenic values and included relevance and importance scenic values in the Straight Cliffs/Fiftymile Bench and the Scorpion Flat/Dry Fork ACECs.

Nominated ACECs

Numerous ACEC nominations were received during the public scoping process. Multiple areas received nominations, often with differing geographic extents. Many nominations lacked specific geographic areas (maps), but recommended the BLM create an ACEC to protect some type of resource on public lands (e.g., areas with a high potential for paleontological resources, or with important cultural sites). In instances where no map or description of an area was included, the BLM IDT reviewed available information and applied their knowledge, training, and experience in identifying areas that have a significant value, resource, other natural system or process, or natural hazard.

The BLM received most of the nominations considered early in the process as part of public scoping. However, the day before the Draft RMPs/EIS was published, the BLM received five new ACEC nominations. Due to the late receipt of these nominations, they were not included in the Draft RMPs/EIS, but have subsequently been evaluated; the results of that evaluation have been added to this appendix. All the newly received nominations overlapped, to some degree, portions of public lands that had already been found to contain relevance and importance values in potential ACECs that were analyzed in the Draft EIS.

All ACEC nominations were evaluated in accordance with BLM Manual 1613. Values meeting relevance and importance criteria were identified and are the basis for establishing potential ACECs for further consideration in the RMPs. Criteria that guided the IDT's consideration of

relevance and importance criteria outlined in 43 CFR 1610.7-2 are included in the Evaluating Relevance and Importance Criteria section.

Potential ACECs

Following the evaluation of identified values using the relevance and importance criteria, 309,044 acres were identified as potential ACECs (Maps 84 and 85). Descriptions of the potential ACECs and management are included in the *Evaluations* of *ACEC Nominations* section. Potential ACEC acreages vary from nominated ACEC acreage because the potential ACECs only include areas with relevance and importance values.

Table 1. Potential ACECs

	Area Name	Acreage with Relevance and Importance Values
1	Alvey Wash	29,935 acres
2	Bulldog Bench	361 acres
3	Butler Valley	15,780 acres
4	Circle Cliffs	26,706 acres
5	Cockscomb East	42,100 acres
6	Cockscomb West	40,475 acres
7	Collet Top	9,218 acres
8	Henderson/Pardner	12,259 acres
9	Hole in the Rock Trail	60,772 acres
10	Paria River	180 acres
11	Scorpion Flat/Dry Fork	30,691 acres
12	Straight Cliffs/Fifty Mile Bench	21,357 acres
13	Tibbet Head	19,079 acres
14	Wahweap Hoodoos	130 acres

Consideration of Potential ACECs in the Draft RMPs/EIS

Potential ACECs are considered in the Draft RMPs/EIS, as follows:

- Alternative A: Continue current management.
- Alternative B: Manage all nominated and evaluated areas as ACECs (309,044 acres).

- Alternative C: Manage Circle Cliffs, Cockscomb East, Cockscomb West, Straight
 Cliffs/Fiftymile Bench (portions bordering the Glen Canyon NRA), and Tibbet Head as ACECs
 (130.995 acres).
- Alternative D: Do not manage any areas as ACECs.

The environmental consequences of the proposals under each alternative, including threats of irreparable damage, are evaluated in Chapter 3 of the Draft RMPs/EIS.

Evaluating Relevance and Importance Criteria

The task of evaluating the ACEC nominations was done by the land use planning IDT. The team's tasks were to:

- Evaluate the ACEC nomination for relevance values, resources, processes, systems, and hazards/safety/public welfare (referred to collectively as *values*).
- Evaluate relevance values to determine which, if any, meet the importance criteria.
- Map the areas of relevance and importance. These maps define the potential ACECs that will be considered in the Draft RMPs/EIS.

Determining Relevance

The IDT evaluated available scientific reports, monitoring and inventory data, and judgment from specialists qualified by knowledge, training, or experience to comment on the area or resource in question when determining if a nominated value met the specific criteria identified in Federal regulations (43 CFR 1610.7-2, Designation of Areas of Critical Environmental Concern) and BLM policy (BLM Manual 1613, Areas of Critical Environmental Concern). In making such evaluations, the following characteristics and attributes were among the items considered as the IDT determined if a nominated value met the relevance and importance criteria identified in regulation and policy. Only one of the relevance criteria had to be met for the area to be considered further for importance.

Historic, Cultural, and Scenic Values

The IDT evaluated relevant information to determine if there was a significant historic or cultural value. In making this determination, the IDT considered the following:

- Was determined significant by the staff archaeologist or paleontologist, with consideration of information provided by local stakeholders and interested public;
- Has been determined to be eligible for, or is listed on, the National Register of Historic Places (NRHP);
- Retains integrity and has research potential; or
- Is considered important by local Native American tribes, including for traditional uses or as a Traditional Cultural Property or sacred site.

A scenic value was determined relevant if it was inventoried as Class A scenery in the BLM's Visual Resource Inventory and included one or more of the following:

- High Sensitivity Rating in the Visual Resource Inventory;
- State or national scenic designations (e.g. national scenic byway, state scenic byway or backway);
- Wild and Scenic River suitable segments where outstandingly remarkable values include scenic resources; or

 Adjacency to specially designated lands (e.g., National Park Service lands, designated wilderness areas) within the foreground view area of 0 to 3 miles.

Fish and Wildlife Resources

A fish and wildlife resource (including habitat for endangered, sensitive, or threatened species or habitat essential for maintaining species diversity) was determined to be present and relevant if it or its habitat was documented as present within the nominated area.

Sources of information:

- Utah Natural Heritage Program Database, operated and maintained by the Utah Division of Wildlife Resources (UDWR)
- UDWR habitat maps for game species
- Lewis, Leah R., Habitat Characteristics of Mexican Spotted Owls (Strix occidentalis lucida) in the Canyonlands of Southern Utah (2014). All Graduate Theses and Dissertations. 3335. https://digitalcommons.usu.edu/etd/3335
- Lewis 2014 Mexican Spotted Owl Potential Habitat Model
- U.S. Fish and Wildlife Service (USFWS) habitat data maps, recovery plans, and other information
- BLM biologist records and/or observations

Natural Processes or Systems

Nominated natural processes or systems (e.g., plants, riparian areas, and geologic processes) were considered relevant if they were present within the nominated area and included the following:

- Endangered, sensitive, or threatened plant species (documented occurrences and/or habitat within the nominated area);
- Rare, endemic, or relict terrestrial, aquatic, or riparian plants or plant communities (documented occurrences and/or habitat within the nominated area);
- Rare geologic features; or
- Fragile soils, including areas with potential concentrations of late successional biological soil crusts.

Sources of information included the following:

- Utah Natural Heritage Program Database operated and maintained by UDWR
- UDWR habitat maps for game species
- USFWS habitat data maps
- Riparian area inventories
- Existing management plans
- Colorado Plateau Rapid Ecoregional Assessment
- National Natural Landmark Areas Survey (1980)
- U.S. Geological Survey data

Natural Hazards

A natural hazard was determined relevant if it was so determined by the IDT after reviewing the information about the hazard on a case-by-case basis.

Determining Importance

Only relevance values were evaluated for importance. In general, the value, resource, system, process, or hazard described as relevant had to have substantial significance and values to meet the importance criteria. Only one of the importance criteria had to be met for an area to become a potential ACEC. Criteria for importance are described in the following sections.

More Than Local Significance

Historic and Cultural Values

A relevant historic or cultural value was determined more than locally significant if it was:

- Listed on or eligible for listing on the NRHP
- Otherwise judged more than locally significant as a result of federal laws, regulations, and national BLM policies that mandate consideration and protection of cultural resources
- Serves as an important reference for new published fossil species or faunas (e.g., type localities or historic/significant fossil sites)

Scenic Values

A relevance scenic value was determined more than locally significant if it:

- Contained a national or state scenic designation such as an All-American Road, National Scenic Byway, or State Scenic Byway or Backway
- Was adjacent to National Park Service lands, designated wilderness areas, etc. within the foreground view area of 0 to 3 miles
- Was otherwise judged more than locally significant by the IDT

Fish and Wildlife Resources

A relevant fish or wildlife resource or botanical process or system was determined more than locally significant if the species is protected under Federal law, regulation, or BLM national policy that mandates the consideration and protection of species:

- Special status species, including:
 - Federally listed threatened or endangered species
 - BLM sensitive species
 - State of Utah species of concern
- Endemic to nominated area

Natural Processes or Systems

For all natural processes or systems found to have relevance values, the IDT determined whether a specific value had qualities or circumstances that made it more than locally significant.

Natural Hazards

No natural hazards were determined relevant; therefore, benchmarks for importance were not developed for natural hazards.

<u>Fragile, Sensitive, Rare, Irreplaceable, Exemplary, Unique, Endangered, Threatened, or Vulnerable to Adverse Change</u>

For all relevance values, the IDT determined whether a specific value had qualities or circumstances that made it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.

National Priority

Historic and Cultural Values

Protection of cultural and paleontological resources is a national priority; therefore, any cultural or paleontological resource identified as relevant was also determined to be important.

Scenic Values

A relevant scenic resource that also carried a national designation such as National Scenic Byway, All-American Road, or State Scenic Byway or Backway or was in the foreground (0 to 3 miles) of National Park Service lands or designated Wilderness was determined important.

Fish and Wildlife Resources

A relevant, federally listed threatened or endangered species was determined important because of the Endangered Species Act.

Natural Processes or Systems

The BLM developed the *National Riparian-Wetland Initiative for the* 1990s. This initiative established riparian areas as a national priority, developed goals and objectives for managing riparian-wetland resources on public lands, and included a strategy to focus management on entire watersheds. The Utah BLM Riparian Management Policy is tiered to this overall national strategy.

Natural Hazards

No natural hazards were determined relevant; therefore, benchmarks for importance were not developed for natural hazards.

Safety and Public Welfare

For all relevance values, the IDT determined that the value met the importance criteria if it had qualities that warranted highlighting or protection in order to satisfy public or management concerns about safety and public welfare.

Threat to Human Life or Property

For all relevance values, the IDT determined that the value met the importance criteria if it poses a significant threat to human life and safety or property.

Mapping Potential ACECs

Values identified as having relevance and importance provided a basis for the potential ACECs. Initial nominations were revised and reconfigured based on the identified locations of specific relevance and importance values, resulting in the set of 14 potential ACECs. All potential ACECs will be evaluated in the Draft RMPs/EIS.

Evaluations of ACEC Nominations

Alvey Wash

- **General Location:** South and west of the town of Escalante, extending south along Alvey Wash to the north-central boundary of the Kaiparowits Unit
- General Description: A north-south trending canyon with many side canyons, containing numerous sites from the Archaic to Late Prehistoric periods but dominated by sites associated with the archaeological Fremont culture. Sites include habitations, camps, cliff structures (granaries), rock art, and rock shelters. Area also includes extensive outcrops of the lower and middle members of the Wahweap Formation that have yielded important dinosaur and other vertebrate fossils, including the type specimen of Machairoceratops cronusi.
- Acreage: 29,935 acres

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Historic/cultural value	More than local significance: Northern portion of canyon contains numerous prehistoric sites. This area contains sites very important in the understanding of the local archaeological Fremont culture, believed to be the southern extension of the San Rafael Fremont. Sites include pit houses, rock shelters, storage granaries, and rock art.
Yes	Historic/cultural value: Paleontological values	More than local significance: Vertebrate fossil resources from area are rare on a global scale. There is widespread interest in the fossils from paleontologists who study the origins of mammals and other vertebrates. Many specimens from the area have been published in scientific journals and serve as the types for new species. Rare: Rare concentrations of terrestrial vertebrate fossils of middle
		Campanian age along the Camp Flats portion of the Smoky Mountain Road and along the ridges to the west. This includes Star Seep area where the type specimen of <i>Machairocertops</i> was collected.
Yes	Natural process or system	Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: Atwood penstemon - endemic to GSENM.

R - relevance criteria, I - importance criteria, GSENM - Grand Staircase-Escalante National Monument

Alternative B Special Management

Relevance and Importance Values	Alternative B Special Management
Historic/cultural: Paleontological values	 Apply the following management: Work with SRP holders and site stewards to increase monitoring of known and documented archaeological sites. Plan and complete NHPA Section 110 inventories and site documentation in commonly used and likely recreational use areas and cattle congregation locations Prohibit exclusive commercial mineral materials sites. Prohibit community mineral materials pits larger than 5 acres in size. Require surface facilities incident to underground mining would be required to avoid known and documented archaeological sites. Apply stipulations to mitigate adverse effects of subsidence. Apply NSO stipulation for fluid mineral leasing. Prohibit rock climbing within 100 meters of archaeological structures. Apply the following management in identified paleontological resource areas within the ACEC. Prohibit casual collection of fossils or other paleontological materials. Conduct annual monitoring for impacts on paleontological resources and use this information to inform appropriate adaptive management. Prioritize paleontological areas within ACEC (Wahweap Formation) for inventory to adequately assess distribution, condition, and significance of fossil resources. Require inventories of all paleontological resources prior to surface-disturbing activities to document significant invertebrate and paleobotanical fossil sites, not just vertebrates.
Natural Process or System: Atwood penstemon	 Prohibit collection of BLM or State sensitive plants without a research permit. Prohibit vegetation treatments that are likely to harm, or will not benefit, special status species plants in known suitable habitat. Conduct inventories and research to identify and document habitat and populations of sensitive species plants, including Atwood penstemon. Monitor known populations of Atwood penstemon to document changes in species distribution, trends, and habitat conditions. Use this information to inform appropriate adaptive management strategies.

SRP – Special Recreation Permit, NHPA – National Historic Preservation Act, NSO – No Surface Occupancy, ACEC – Area of Critical Environmental Concern, BLM – Bureau of Land Management

Relationship to Wilderness Study Areas

Portions of the Alvey Wash ACEC overlap with portions of Carcass Canyon and Death Ridge WSAs.

Buckskin-Rock Cove

• General Location: Comprising most of the area between the southeastern boundary of the Grand Staircase Unit of GSENM and the Utah-Arizona State line of the Paria Wilderness Area. Situated east of the town of Kanab and west of the town of Bigwater, north of the

- Utah/Arizona border, and extending both north and south along Highway 89 around the Cockscomb into the Rock Cove area to encompass Brigham Plains.
- General Description: The area was nominated for a number of cultural values, wildlife
 habitat associated with many species, its scenic values and vistas, and ecological values
 identified in the table below.
- Acreage: 151,190 acres. The nominated area includes all the Cockscomb West and most of the Cockscomb East potential ACECs.

Meets Both R & I?	Relevance Criteria	Importance Criteria
Relevant in portions incorporated into the Cockscomb East and West potential ACECs. Not relevant in the remainder of the nominated area.	Historic/cultural value: Relevant cultural values have been identified associated with the Cockscomb East and West potential ACECs. Cultural sites north of Highway 89 are dominated by Formative sites with more significant structural features, whereas sites south of the highway are mostly hunter-gatherer sites and are not as susceptible to adverse impacts. The Old Spanish National Historic Trail is also included in the nominated area, but is also incorporated into both the Cockscomb East and West potential ACECs. As directed in the BLM's ACEC manual, relevant cultural values were identified as significant sites that included sites that were rare or sensitive compared to others in the region. The portions of the nominated area south of Highway 89 are not relevant. The nomination notes that the discovery of more significant cultural resources is very likely. However, relevance is based on if an area "containsa significant historic or cultural value" (BLM-M-1613 .1.11.A.1), not the potential for such a value.	See importance criteria evaluation for Cockscomb East and West areas. The portions of the nominated area that were not found relevant do not have more than locally significant qualities related to distinctiveness or cause for concern compared to other similar resources. Similarly, they are not exemplary or unique, and the nature of the sites do not lend them to be vulnerable to adverse change given the uses in the area and nature of the sites.
No	Fish and wildlife resource: Mexican spotted owl Based on Map 4, there are only a few acres of designated critical habitat for Mexican spotted owl in the farthest northern portions of the nominated area. Critical habitat maps allow agencies to determine which portions within the mapped areas actually have the elements necessary for habitat. There are no protected activity centers in the mapped areas, and none of the nominated ACEC contains habitat that contains the elements of critical habitat for this species.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Fish and wildlife resource: Ferruginous hawk. The species is occasionally seen along the Highway 89 corridor during the winter months. There are no known nesting ferruginous hawks in the area.	Not locally significant, let alone more than locally significant. Rarely observed in the nominated area. The area is a small component of habitat available elsewhere in the State, making habitat in the nominated area not unique, exemplary, irreplaceable, or rare.
No	Fish and wildlife resource: Northern goshawk. A rare winter migrant in the area.	Not locally significant, let alone more than locally significant. A small component of habitat available elsewhere in the State, making habitat in this nominated area not unique, exemplary, irreplaceable, or rare.
No	Fish and wildlife resource: Burrowing owl According to the Utah Natural Heritage Program's dataset, there are observations from the mid-1990s. Nothing confirmed since.	Not more than locally significant. A small component of habitat available elsewhere in the State, making habitat in this nominated area not unique, exemplary, irreplaceable, or rare. Recent presence is not confirmed in the nominated area. Compared to other similar resources in the region, the nominated area does not have special worth or distinctiveness.
No	Fish and wildlife resource: Allen's big-eared bat. According to the Utah Natural Heritage Program's dataset, there are observations from the mid-1990s. Nothing confirmed since.	Not more than locally significant. A small component of habitat available elsewhere in the State, making habitat in this nominated area not unique, exemplary, irreplaceable, or rare. Recent presence is not confirmed in the nominated area. Compared to other similar resources in the region, the nominated area does not have special worth or distinctiveness.
No	Fish and wildlife resource: Townsend's bigeared bat. According to the Utah Natural Heritage Program's dataset, there are observations from the mid-1990s. Nothing confirmed since.	Not more than locally significant. A small component of habitat available elsewhere in the State, making habitat in this nominated area not unique, exemplary, irreplaceable, or rare. Recent presence is not confirmed in the nominated area. Compared to other similar resources in the region, the nominated area does not have special worth or distinctiveness.
No	Fish and wildlife resource: Mule deer. Based on Map 3, nearly the entire area provides habitat for mule deer.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource."

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Fish and wildlife resource: Desert bighorn sheep. Based on Map 3, parts of the eastern portion of the nominated area include habitat for desert bighorn sheep.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource."
No	Fish and wildlife resource: Pronghorn Based on Map 3, much of the eastern portion of the nominated area includes habitat for pronghorn.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource."
No	Fish and wildlife resource: Wild turkey Wild turkeys are not known to occur within the proposal area and have never been observed.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
Relevant in portions incorporated into the Cockscomb East and West potential ACECs. Not relevant in the remainder of the nominated area.	Natural process or system: riparian areas Water resources and their associated ecologic systems are present in the nominated area. The riparian systems associated with the Paria River are included as values associated with the Paria River potential ACEC, as well as the Cockscomb East and West potential ACECs.	See importance criteria evaluation for the Paria River and Cockscomb East and West areas. Other isolated springs do not meet the importance criteria; while providing important ecological roles, they are not more than locally significant and do not have more cause for concern compared to other similar resources in the region.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No Natural process or system: ecologically and biologically unique ACECs are partially defined in FLPMA as "areas within public lands." Considering the entire ecosystem of large areas with diverse vegetation and soil types as relevant could result in interpreting ACECs as inclusive of the entirety of public lands, not "areas" within them. As such, while individual systems may meet relevance criteria (e.g., distinct ecotones, habitat associated with specific species or communities), the entire ecosystem associated with multiple vegetation communities, soil types, habitats, etc. is not a relevant natural process or system in relation to considering ACECs.	The nominee provided the results of a model that evaluated 11 selected "indicators of relevance and importance." Those indicators do not align with the criteria identified in BLM ACEC regulations or policy. While modeling the comparative value of these characteristics for a given area can be informative when developing regional managerial priorities, assigning a specific numerical value for one or more of those characteristics as a threshold for having "more than locally significant qualities" is arbitrary. Is local significance established at a rating of greater than the 50th percentile, or 70th, or 90th? Furthermore, is importance established if only one of the 11 indicators exceeds a certain percentile, or does the ecological system obtain importance only if several, the majority, or all of its indicators exceed a certain percentile?	
		Finally, using the basis of comparison of similarly sized areas from throughout the western United States introduces the potential for variance based on dissimilar ecological factors rather than relative significance of qualities in similar systems. For example, is species richness higher in these areas because it is higher in the Colorado Plateau compared to other physiographic regions, or because these specific areas within the Colorado Plateau have special ecological significance? Absent a comparison to similarly sized sites in the local and/or regional area, such distinctions cannot be determined. For these reasons, the landscape assessment provided by the nominee, while potentially informative for project planning, cannot be used as a standard for establishing importance.

Meets Both R & I?	Relevance Criteria	Importance Criteria
Relevant in portions incorporated into the Cockscomb East and West potential ACECs. Not relevant in the remainder of the nominated area.	Scenic: Based on the relevance criteria for scenic values and Maps 28 and 29 in the Proposed RMPs/Final EIS, there is Class A scenery in the nominated area. However, the relevant portions of the nomination were already considered in the Cockscomb East and West ACECs. The remainder of the nominated area does not meet relevance criteria, and therefore has not been carried forward as a potential ACEC. As for viewing areas within the nominated area overlooking broad vistas outside the nominated area, the scenic value and ACEC designation require the area to contain the resource (see BLM-M-1613 .1.11.A – "an area meets the 'relevance' criterion if it contains" the value). Vistas include looking at unobstructed landscapes outside the nominated area, and therefore do not qualify as having relevance or importance values for the given area.	High scenic quality and high sensitivity associated with the Cockscomb geologic feature provide unique scenic opportunities and are important. These areas are already included in potential ACECs for the Cockscomb East and West areas. The nominee identified "exceptional night sky darkness" as an importance criterion. The BLM's visual resources inventory and management processes consider seven factors to evaluate scenic quality. None of those factors include measures associated with dark night skies. As such, dark night skies are not considered a "scenic value" for the purposes of ACEC nominations or evaluations.
No	Other criteria identified by the nominee: within the 1996 national monument boundaries. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	The nominee suggested that because the nominated area was within the 1996 national monument boundaries, it met the importance criterion for being "recognized as warranting protection in order to satisfy national priority concerns." Importance criteria are evaluated based on whether a specific relevant value, resource, process/system, or hazard also has substantial significance. Each nominated component that met relevance criteria was evaluated for importance based on the criteria in the BLM's regulations and policy and not on a former designation.
No	Other criteria identified by the nominee: includes areas that have wilderness characteristics. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Other criteria identified by the nominee: area was managed to focus on primitive, uncrowded, and remote recreation. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Other criteria identified by the nominee: has a wild setting that is immense Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Other criteria identified by the nominee: extremely remote and seldom visited Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

R – relevance criteria, I – importance criteria, ACEC – Area of Critical Environmental Concern, BLM – Bureau of Land Management, RMP – Resource Management Plan, EIS – environmental impact statement, FLPMA – Federal Land Policy and Management Act, CFR – Code of Federal Regulations

Special Management

The portions of the Buckskin-Rock Cove nominated area that include ACEC components that meet relevance and importance criteria are included in the Cockscomb West and Cockscomb East potential ACECs. Special management for those components is identified in the sections of this appendix for those potential ACECs. No special management is required for values, resources, systems, processes, or hazards that do not meet relevance and importance criteria.

Bulldog Bench

- General Location: Approximately half a mile west of Cannonville, immediately south of Tropic, and east of Bryce Canyon National Park
- General Description: Area includes vertebrate fossils of Cenomanian age that are rare on a
 global scale and help paleontologists better understand the origins of mammals and other
 vertebrates. It is located on the upper slopes and southern end of the top of Bulldog Bench.
- Acreage: 361 acres

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Historic/cultural: Paleontological values	More than locally significant: Vertebrate fossil resources from area are rare on a global scale. There is widespread interest in the fossils from paleontologists who study the origins of mammals and other vertebrates. Many specimens from the area have been published in scientific journals and serve as the types for new species. Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: Extremely rare concentrations of terrestrial vertebrate fossils of Cenomanian age (about 96 million years old) found in lower and middle members of Naturita on Bulldog Bench and surrounding areas. Type localities for published fossil species are present.

R - relevance criteria, I - importance criteria

Alternative B Special Management

Relevance and Importance Values	Alternative B Special Management
Historic/cultural: Paleontological values	 Apply the following management: Prohibit casual collection of paleontological materials. Conduct annual monitoring for impacts on paleontological resources and use this information to inform appropriate adaptive management. Prioritize paleontological areas within ACEC (Wahweap Formation) for inventory to adequately assess distribution, condition, and significance of fossil resources. Require inventories of all paleontological resources prior to surface-disturbing activities to document significant invertebrate and paleobotanical fossil sites, not just vertebrates.

ACEC - Area of Critical Environmental Concern

Relationship to Wilderness Study Areas

The Bulldog Bench ACEC does not overlap any WSAs.

Butler Valley

- General Location: Approximately 7 miles southeast of Henrieville, connecting with the northwest side of the Kaiparowits Unit
- General Description: Area contains portions of two scenic quality ratings units that rated as A quality scenery (Willis Creek SQRU-017: score of 19; and Butler Valley/Big Dry Valley SQRU-018: score of 20). It is characterized by strongly contrasting landforms of gentle valley bottoms, elevated benches, rugged hills, and dramatic sandstone cliffs. The area sits above the northernmost reaches of the White Cliffs layer of the Grand Staircase. It includes portions of the Paria River, State Scenic Backway Cottonwood Canyon Road, Rock Springs Bench, and Butler Valley. The area also includes known habitat for populations of the special status plant species Kodachrome bladderpod.
- Acreage: 15,780 acres

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Scenic	Scenic Quality A & High Sensitivity
Yes	Natural process or system	Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: Kodachrome bladderpod, an endangered plant.

R - relevance criteria, I - importance criteria

Alternative B Special Management

Relevance and Importance Values	Alternative B Special Management
Scenic	Apply the following management: • Manage as VRM Class II.
Natural Process or System	 Prohibit collection of BLM or State sensitive plants without a research permit. Prohibit vegetation treatments in known suitable habitat for special status plant species. Conduct inventories and research to identify and document habitat and populations of sensitive species plants, including Kodachrome bladderpod. Monitor known populations of Kodachrome bladderpod to document changes in species distribution, trends, and habitat conditions. Use this information to inform appropriate adaptive management strategies. Prohibit development of new OHV routes within the ACEC to protect Kodachrome bladderpod from the impacts of increased recreation. Recommend as withdrawn from mineral entry.

VRM – Visual Resource Management, BLM – Bureau of Land Management, OHV – off-highway vehicle, ACEC – area of critical environmental concern

Relation to Wilderness Study Areas

The Butler Valley ACEC does not overlap with any WSAs.

Circle Cliffs

- General Location: Approximately 10 miles northeast of Boulder, including all KEPA lands northeast of the Escalante Canyons Unit and abutting Capitol Reef National Park.
- General Description: This areas sits between the north reaches of the Circle Cliffs and State Scenic Backway Burr Trail Road and borders Capitol Reef National Park and Dixie National Forest. Portions of the area include Ancestral Puebloan sites and represent a late Ancestral Puebloan intrusion into what was formerly Fremont territory and thus are very important for archaeological research. The northern and western edges of the area contain or are adjacent to the Circle Cliffs, dramatic red sandstone cliffs, and are part of a scenic quality rating unit that rated as A quality scenery (Upper Gulch/Wolverine Bench SQRU-044: score of 22). The area also includes habitat for several wildlife species, including some threatened and endangered animal species (Mexican spotted owl).
- Acreage: 100,817 acres were nominated and evaluated; 26,706 acres were determined to contain relevance and importance values and were considered as a potential ACEC for alternatives B and C.

Meets Both R & I?	Relevance Criteria	Importance Criteria
Relevant in the northernmost portion of the nominated area. Not relevant in the remainder of the area.	Historic/cultural values: The most significant cultural areas are in the northern portions of the nominated area. This includes an area that reflects the mixing of Kayenta and Virgin Anasazi cultures and the Fremont. The southern portion is largely unknown archaeologically but does contain sites. However, because relevance is based on if an area "containsa significant historic or culturalvalue" (BLM 1613 .1.11.A.1), not the potential for such, only the northern portions have known significant cultural values. The remainder of the area does not currently meet relevance criteria.	The portion that meets relevance is more than locally significant: This area is very important for archaeological research. The area is dominated by Ancestral Puebloan sites, which represent a late Ancestral Puebloan intrusion into what was formerly Fremont territory, probably in the early 1100s A.D., but seemingly without conflict. There is, instead, an apparent amalgamation of the two cultures into something new. By the mid-1200s, the area was abandoned by the Ancestral Puebloan/Fremont and returned to occupation by hunter-gatherers, today's Paiute.
Relevant in the northernmost portion of the nominated area. Not relevant in the remainder of the area.	Historic/cultural: Paleontological values The BLM has evaluated paleontological resources in the nominated area and has identified those portions that encompass where there are documented significant fossil localities within PFYC areas with ratings of 4 and 5. The same significant paleontological resources do not extend throughout the nominated area.	The portion that meets relevance criteria is more than locally significant: the concentrations of fossil wood on excluded lands in the north Circle Cliffs are equally abundant, well preserved, and significant as those in the Wolverine Trailhead area. Starting just northeast of the Lampstand and trending in a broad arc all the way to the western boundary with Dixie National Forest, there are spectacular concentrations of in situ and proximal ex situ wood. Some in situ logs are more than a meter in diameter and exposed for many tens of meters.
Relevant in the northernmost portion of the nominated area. Not relevant in the remainder of the area.	Scenic: Based on Maps 28 and 29 in the Proposed RMPs/Final EIS, the northern portions of the area meet the relevance criteria defined above. However, most of the area has Class B scenery and therefore does not meet relevance criteria and consequently has not been carried forward as a potential ACEC. As for viewing areas within the nominated area overlooking broad vistas outside the nominated area, the scenic value and ACEC designation require the area to contain the resource (see BLM-M-1613 .1.11.A – "an area meets the 'relevance' criterion if it contains" the value). Vistas include looking at unobstructed landscapes outside the nominated area, and therefore do not qualify as having relevance or importance values for the given area.	The portion that meets relevance is more than locally significant: scenic quality A, high sensitivity, associated with a scenic backway, and adjacent to National Park Service.

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Fish and wildlife resources: Mexican spotted owl. Includes designated critical habitat that contains habitat elements.	Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: Mexican spotted owl designated critical habitat. National priority concern: Threatened and Endangered Species Act.
No	Fish and wildlife resource: Allen's big-eared bat. According to the Utah Natural Heritage Program's dataset, there are observations from the mid-1990s. Nothing confirmed since.	Not more than locally significant. A small component of habitat available elsewhere in the State, making habitat in this nominated area not unique, exemplary, irreplaceable, or rare.
No	Fish and wildlife resource: Townsend's bigeared bat. According to the Utah Natural Heritage Program's dataset, there are observations from the mid 1990s. Nothing confirmed since.	Not more than locally significant. A small component of habitat available elsewhere in the State, making habitat in this nominated area not unique, exemplary, irreplaceable, or rare.
No	Fish and wildlife resource: Mule deer Based on Map 3, most of the northern portion of the nominated area includes mule deer habitat.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource." Habitat for mule deer exists throughout the State.
No	Fish and wildlife resource: Black bear Based on Map 3, there is year-long black bear habitat in much of the area.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource." Habitat for black bear exists throughout the State.
No	Fish and wildlife resource: Elk. Based on Map 3, there is elk habitat in the northern portion of the nominated area.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource." There is elk habitat throughout the State.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Fish and wildlife resource: Peregrine and eagle migration habitat. According to the Utah Natural Heritage Program's dataset, there are no observations of peregrine falcons or golden eagles in the nominated area.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Natural process or system: ecologically and biologically unique. ACEC are partially defined in FLPMA as "areas within public lands." Considering the entire ecosystem of large areas with diverse vegetation and soil types as relevant could result in interpreting ACECs as inclusive of the entirety of public lands, not "areas" within them. As such, while individual systems may meet relevance criteria (e.g., distinct ecotones, habitat associated with specific species or communities), the entire ecosystem associated with multiple vegetation communities, soil types, habitats, etc. is not a relevant natural process or system in relation to considering ACECs.	The nominee provided the results of a model that evaluated 11 selected "indicators of relevance and importance." Those indicators do not align with the criteria identified in BLM ACEC regulations or policy. While modeling the comparative value of these characteristics for a given area can be informative when developing regional managerial priorities, assigning a specific numerical value for one or more of those characteristics as a threshold for having "more than locally significant qualities" is arbitrary. Is local significance established at a rating of greater than the 50th percentile, or 70th, or 90th? Furthermore, is importance established if only one of the 11 indicators exceeds a certain percentile, or does the ecological system obtain importance only if several, the majority, or all of its indicators exceed a certain percentile? Finally, using the basis of comparison of similarly sized areas from throughout the western United States introduces the potential for variance based on dissimilar ecological factors rather than relative significance of qualities in similar systems. For example, is species richness higher in these areas because it is higher in the Colorado Plateau compared to other physiographic regions, or because these specific areas within the Colorado Plateau have special ecological significance? Absent a comparison to similarly sized sites in the local and/or regional area, such distinctions cannot be determined. For these reasons, the landscape assessment provided by the nominee, while potentially informative for project planning, cannot be used as a standard for establishing importance.

Meets Both R & I?	Relevance Criteria	Importance Criteria
Consistent with the USFWS listing determination, highlighting the specific locations for this species may increase risk to this species. As such, this aspect of the ACEC nomination will not be carried forward in defining the potential ACEC.	Natural process or system: Jones cycladenia. While there is a habitat model for Jones cycladenia and it covers most of the nominated area, a model of habitat does not mean that the area within the model has habitat or plants, merely that it meets the criteria of the model. A blanket evaluation of possible habitat does not meet the regulatory requirement for ACEC designation for where a value, resource, or system/process actually exists. Jones cycladenia is known from 26 sites, including one in the Greater Circle Cliffs area. There are seven complexes of known plants in the Greater Circle Cliffs area, five of which are wholly or partially on lands administered by the National Park Service. When the Jones cycladenia was listed (see Federal Register Vol. 51 No. 86, May 5 1986, pages 16528–16530), it was specifically noted that "publication of critical habitat descriptions and maps could be detrimental to the species by singling out the locations of each occurrence, thus increasing risk to the species." Therefore, consistent with BLM Manual 1613.2.22.A.4, it is determined that, consistent with the USFWS listing determination, highlighting the specific locations for this species may accelerate its degradation.	The entire modeled habitat is not a relevant value. Specific site locations are more than locally significant and are fragile and vulnerable to adverse change.
No	Other criteria identified by the nominee: within the 1996 national monument boundaries. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	The nominee suggested that because the nominated area was within the 1996 national monument boundaries it met the importance criterion for being "recognized as warranting protection in order to satisfy national priority concerns." Importance criteria are evaluated based on whether a specific relevant value, resource, process/system, or hazard also has substantial significance. Each nominated component that met relevance criteria was evaluated for importance based on the criteria in the BLM's regulations and policy and not on a former designation.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Other criteria identified by the nominee: includes areas that have wilderness characteristics. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Other criteria identified by the nominee: recreational uses. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

R – relevance criteria, I – importance criteria, BLM – Bureau of Land Management, PFYC – Potential Fossil Yield Classification, RMP – Resource Management Plan, EIS – environmental impact statement, FLPMA – Federal Land Policy and Management Act, USFWS – U.S. Fish and Wildlife Service

Alternatives B and C Special Management

Special management is limited to those values, resources, and systems/processes that have been identified as relevant and important. No special management is required for aspects of the nomination that do not meet relevance and importance criteria.

Relevance and Importance Values	Alternatives B and C Special Management
Historic/cultural values	Work with SRP holders and site stewards to increase monitoring of known and documented archaeological sites.
	 Plan and complete NHPA Section 110 inventories and site documentation in commonly used and likely recreational use areas and cattle congregation locations. Prohibit exclusive commercial mineral materials sites.
	Prohibit community mineral materials pits larger than 5 acres in size.
	Require surface facilities incident to underground mining to avoid known and document archaeological sites. Apply stipulations to mitigate adverse effects of subsidence.
	Apply NSO stipulation for fluid mineral leasing (Alternative B only).
	 Apply CSU stipulation for fluid mineral leasing. Avoid placement of oil and gas- related facilities and structures in areas where there are known or documented archaeological sites. Where setting is a component of a site's eligibility, require a viewshed analysis and require facilities to be placed outside the viewshed, or require mitigation to avoid adversely affecting the setting (Alternative C only).
	Promote archaeological research, site preservation, and stabilization.
	Apply the following management in the Petrified Wood Resource Area:
	Prohibit casual or commercial collection of petrified wood.
	Conduct annual monitoring for impacts on paleontological resources and use this information to inform appropriate adaptive management.(4)
	Prioritize wood deposits for inventory to adequately assess distribution, condition, and significance of resources.
	 Require inventories of paleontological resources prior to surface disturbing activities to document significant paleobotanical fossil sites (including petrified wood).
	 Avoid surface disturbance and placement of facilities near concentrations of wood or in situ logs.
Scenic	Manage as VRM Class II
Fish and Wildlife Resource	Require site-specific analysis of threatened and endangered resources to determine the potential for impacts, potential for habitats containing primary constituent elements of habitat, and the need for Section 7 consultation with USFWS.
1 Implementation decid	ions that are annealable to the Interior Roard of Land Anneals

¹ Implementation decisions that are appealable to the Interior Board of Land Appeals SRP – Special Recreation Permit, NHPA – National Historic Preservation Act, NSO – No Surface Occupancy, CSU – Controlled Surface Use, VRM – Visual Resource Management, USFWS – U.S. Fish and Wildlife Service

Relation to Wilderness Study Areas

The Circle Cliffs ACEC does not overlap with any WSAs.

Cockscomb East

- General Location: Approximately 3 miles northwest of Big Water, connecting with the southern boundary of the Kaiparowits Unit
- **General Description:** Shale badlands and tables and benches of the southwestern Kaiparowits Plateau and Paria Rimrocks. The area also includes the lower reaches of the

Cockscomb geomorphic feature and contains a portion of a high potential segment of the Old Spanish National Historic Trail. Approximately 50 percent of the area contains portions of two scenic quality ratings units that rated as A quality scenery (Cockscomb SQRU-008: score of 23; Wahweap/Rimrocks SQRU-011: score of 19). The area includes habitat for sensitive animal and plant species and also contains some of the only Cenomanian terrestrial vertebrate fossil sites in North America.

• Acreage: 42,100 acres for Alternative B; 32,683 acres for Alternative C

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Fish and wildlife resource	Southwestern willow flycatcher: endangered. National Priority Concern: Threatened and Endangered Species Act.
Yes	Natural process or system: sensitive plants	Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: sensitive plants. Sensitive plants: Gumbo milkvetch; Escarpement milkvetch; Silverleaf lupine, Lupinus caudatus argophyllus; Utah spurge, Euphorbia nephradenia; and Cataract gilia, Gilia imperialis.
Yes	Natural process or system: native endemics	Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: native endemics. Native endemics: Tompkins phacelia; Tropic goldeneye; Kane breadroot; Higgin's spring parsley.
Yes	Scenic	More than local significance: Scenic Quality A, Scenic Backway, & Wild and Scenic River suitable segment with scenic outstandingly remarkable values.
Yes	Historic/cultural value: Paleontological values	High density occurrences of Cenomanian age vertebrate fossils in the Paria Rimrocks. Important source for fossil species types including an early marsupial, <i>Pariadens kirklandi</i> . Some of the only Cenomanian terrestrial vertebrate fossil sites in North America. Also, marine reptile and other marine vertebrate fossils occur in the Tropic Shale, and highly significant vertebrate dinosaur and other vertebrate fossils occur in the Straight Cliffs Formation and overlying Wahweap Formation in the area.
Yes	Historic/cultural value	Includes portion of high potential segment of Old Spanish National Historic Trail.
Yes	Natural process or system: riparian	National priority concern: Riparian habitat around the Paria River.

R - relevance criteria, I - importance criteria

Alternatives B and C Special Management

Relevance and Importance Values	Alternatives B and C Special Management		
Fish and Wildlife Resource	Require site-specific analysis of sensitive, threatened, and endangered resources to determine the potential for impacts, potential for habitats containing primary constituent elements of habitat, and the need for Section 7 consultation with USFWS.		
Natural Process or System	 Prohibit collection of BLM or State sensitive plants without a research permit. Conduct inventories and research to identify and document habitat and populations of endemic and sensitive plants. Prohibit vegetation treatments that are likely to harm, or will not benefit, special status species plants in known suitable habitat (Alternative B only). Allow vegetation treatments in known suitable habitat for special status species plants (Alternative C only). Monitor known populations of endemic and sensitive plant species including distribution, trends, and habitat conditions. Use this information to inform appropriate adaptive management strategies. 		
Scenic	Manage all areas outside of WSA as VRM Class II.		
Historic/cultural: Paleontological value	 Apply the following management in identified paleontological resource areas within the ACEC: Prohibit casual collection of fossils or other paleontological materials. Conduct annual monitoring for impacts on paleontological resources and use this information to inform appropriate adaptive management. Prioritize paleontological areas within ACEC (Naturita, Tropic Shale, Straight Cliffs, and Wahweap Formations) for inventory to adequately assess distribution, condition, and significance of fossil resources. Require inventories of all paleontological resources prior to surface-disturbing activities to document significant invertebrate (including methane reefs) and paleobotanical fossil sites, not just vertebrates. 		
Natural Process or System: Riparian	 Prioritize functioning-at-risk riparian zones for restoration and implement restoration projects to achieve properly functioning condition. Do not designate spur routes in the ACEC. Area must be limited to designated routes. 		

USFWS – U.S. Fish and Wildlife Service, BLM – Bureau of Land Management, WSA – Wilderness Study Area, VRM – Visual Resource Management, ACEC – Area of Critical Environmental Concern

Relation to Wilderness Study Areas

The Cockscomb East ACEC overlaps with the Cockscomb WSA, and a very small portion of the Wahweap WSA.

Cockscomb West

 General Location: Approximately 11 miles west of Big Water, connecting with the southeastern boundary of the Grand Staircase Unit

- General Description: Area includes very important archaeological sites along the lower flanks and foothills of the Vermilion Cliffs that date to the earliest attempts at prehistoric North American agriculture and contains some portion of a high potential segment of the Old Spanish National Historic Trail. The northwestern edges of the area contain portions of a scenic quality rating unit that rated as A quality scenery (Vermilion Cliffs/Paria-Hackberry SQRU-003: score of 22), which is typified by dramatic red sandstone cliffs associated with the Vermilion Cliffs layer of the Grand Staircase. The area includes habitat for several sensitive plant species and contains concentrated areas with potential for high coverage of late successional biological soil crust. It also contains riparian areas that are functioning at risk.
- Acreage: 40,475 acres for Alternative B; 40,462 acres for Alternative C

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Significant historic/cultural value	More than local significance: This area encompasses a very important set of sites along the lower flanks and foothills of the Vermilion Cliffs. Sites in this area date to the earliest attempts at prehistoric North American agriculture and represent the entire sequence of the rise of, dominance of, and final collapse of the Formative period and large-scale prehistoric agriculture on the northern Colorado Plateau. Includes portions of high potential segment of Old Spanish National Historic Trail.
Yes	Natural process or system: biological soil crusts	Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: biological soil crusts. Biological soil crusts: Concentrated areas with potential for high coverage of late successional biological soil crusts.
Yes	Natural process or system: riparian areas	Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: riparian areas. Riparian areas determined to be functioning at risk. Protection warranted to satisfy national priority concerns or carry out mandates of FLPMA: Special Status Species 6840 Policy; Riparian-Wetlands Initiative for the 1990's.
Yes	Natural process or system: sensitive plants	Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: sensitive plants. Sensitive plants: Kane breadroot; Gumbo milkvetch; Kanab thelypody; Escarpement milkvetch; Silverleaf lupine, Lupinus caudatus argophyllus; Atwood's phacelia, Phacelia phacelia var. Atwoodii; Murdock's evening primrose, Oenothera murdockii; chia, salvia columbariae var. argillacea.
Yes	Natural process or system: native endemics	Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: native endemics. Native endemics: Kane breadroot; Meager camissonia.
Yes	Scenic	High Scenic Quality and High Sensitivity; Cockscomb geologic feature provides unique scenic opportunities.

R - relevance criteria, I - importance criteria, FLPMA - Federal Land Policy and Management Act

Alternatives B and C Special Management

Relevance and Importance Values	Alternatives B and C Special Management		
Historic/cultural value	 Work with SRP holders and site stewards to increase monitoring of known and documented archaeological sites. Prohibit exclusive commercial mineral materials sites. Prohibit community mineral materials pits larger than 5 acres in size. Require surface facilities incident to underground mining to avoid known and documented archaeological sites. Apply stipulations to mitigate adverse effects of subsidence (Alternative B only). Apply NSO stipulation for fluid mineral leasing (Alternative B only). Allow oil and gas leasing subject to moderate constraints (CSU). Avoid placement of oil and gas-related facilities and structures in areas where there are known or documented archaeological sites. Where setting is a component of a site's eligibility, require a viewshed analysis and require facilities to be placed outside of the viewshed, or require mitigation to avoid adversely affecting the setting (Alternative C only). 		
Natural Process or System - Sensitive and Endemic Plants; Biological Soil Crusts; and Riparian Systems	 Verify the ecological site and: Avoid vegetation treatments that disturb soils in previously untreated areas that are either Semidesert Shallow Loam (Pinyon-Juniper) or Semidesert Shallow Gypsum (Mormontea) Ecological Sites; limit method to hand-thinning (lop and scatter). Avoid designating these areas for cross-country OHV use. Limit other surface-disturbing activities in these areas. Prohibit collection of BLM or State sensitive plants without a research permit. Conduct inventories and research to identify and document habitat and populations of endemic and sensitive plants. Monitor known populations of endemic and sensitive plant species including distribution, trends, and habitat conditions. Use this information to inform appropriate adaptive management strategies. 		
Scenic	Manage as VRM Class II.		

SRP – Special Recreation Permit, NHPA – National Historic Preservation Act, CSU – Controlled Surface Use, NSO – No Surface Occupancy, OHV – off-highway vehicle, BLM – Bureau of Land Management, VRM – Visual Resource Management

Relation to Wilderness Study Areas

The Cockscomb West ACEC does not overlap with any WSAs.

Collet Top

- General Location: Approximately 24 miles south of Escalante, stretching southward below the Left Hand Collet/Croton Road junction, roughly surrounded by the Kaiparowits Unit
- General Description: At the northern end of what is considered Fiftymile Mountain along the
 eastern edge of the larger Kaiparowits Plateau, this ACEC includes the Collet Top area
 containing many significant Ancestral Puebloan sites and the rugged dissected ridges and
 canyons between Reese and Rogers Canyons. It falls within the Upper Kaiparowits Plateau

SQRU-026, which has an A scenic quality rating score of 19. The area also includes habitat for special status plant species (Atwood's penstemon).

• Acreage: 9,218 acres

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Significant historic/cultural value	More than local significance: Numerous sites display the transition from Fremont Habitation to a Late Pueblo II, Ancestral Puebloan influx, and a unique interface between the two cultural areas.
Yes	Scenic	More than local significance: Scenic Quality Rating A and High Sensitivity.
Yes	Natural process or system	Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: Atwood's penstemon.

R - relevance criteria, I - importance criteria

Alternative B Special Management

Relevance and Importance Values	Alternative B Special Management
Historic/cultural value	 Work with SRP holders and site stewards to increase monitoring of known and documented archaeological sites. Plan and complete NHPA Section 110 inventories and site documentation in commonly used and likely recreational use areas, research locations, and cattle congregation locations. Develop a Collet Top Cultural Resources Resource Management Plan. Prohibit exclusive commercial mineral materials sites. Prohibit community mineral materials pits larger than 5 acres in size. Prohibit exclusive commercial mineral materials sites. Prohibit community pits larger than 5 acres in size. Require surface facilities incident to underground mining to avoid known and documented archaeological sites. Stipulations would be necessary to mitigate adverse effects of subsidence. Allow oil and gas leasing subject to major constraints (NSO). Promote research into area archaeological sites. Prohibit rock climbing within 100 meters of archaeological structures.
Scenic Natural Process or System	 Manage all areas outside WSAs as VRM Class II. Prohibit collection of BLM or State sensitive plants without a research permit. Conduct inventories and research to identify and document habitat and populations
	 of endemic and sensitive plants. Monitor known populations of endemic and sensitive plant species including distribution, trends, and habitat conditions. Use this information to inform appropriate adaptive management strategies.

SRP – Special Recreation Permit, NHPA – National Historic Preservation Act, NSO – No Surface Occupancy, WSA – Wilderness Study Area, VRM – Visual Resource Management, BLM – Bureau of Land Management

Relation to Wilderness Study Areas

The outer edges of Collet Top ACEC overlap with small portions of the Burning Hills and Fiftymile Mountain WSAs.

Henderson/Pardner

- General Location: Approximately 4 miles northeast of Henrieville, connecting with a northeastern boundary of the Kaiparowits Unit
- General Description: Consists of golden-hued, rugged canyons, ridges, and benches in Straight Cliffs, Wahweap, and Kaiparowits Formations north of Highway 12, south of Dixie National Forest boundary directly below Powell Point, and approximately 6 to 10 miles northeast of Henrieville. Area includes the upper third of the Henderson/Pardner/Mud Spring Canyons SQRU-020 that inventoried as A quality scenery, scoring 21.5. It also contains Kaiparowits Formation fossils that are the best preserved examples of Late Campanian dinosaur ecosystems preserved in the southern United States.
- Acreage: 12,259 acres

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Scenic	Scenic Quality A and High Sensitivity
Yes	Significant historic/cultural value: Paleontological values	Rare paleontological resource—PFYC 5. Fossils from Kaiparowits Formation have elevated global significance to the scientific community and the public. Resources would qualify as world heritage status. Kaiparowits fossils are the best preserved examples of Late Campanian dinosaur ecosystems preserved in the southern United States. Included many unique and exceptionally well preserved specimens. One of the most important Late Campanian terrestrial fossil resources in North America. Also includes many important Turonian, Coniacian, and Santonian age fossil vertebrate sites in the Straight Cliffs Formation yielding type specimens for new species.

R - relevance criteria, I - importance criteria, PFYC - Potential Fossil Yield Classification

Alternative B Special Management

Relevance and Importance Values	Alternative B Special Management
Scenic	Manage all areas outside of WSA as VRM Class II.

Relevance and Importance Values	Alternative B Special Management
Historic/cultural: Paleontological values	 Apply the following management in identified paleontological resource areas within the ACEC. Prohibit casual collection of fossils or other paleontological materials. Conduct annual monitoring for impacts on paleontological resources and use this information to inform appropriate adaptive management.⁽¹⁾ Prioritize paleontological areas within ACEC (Straight Cliffs, Wahweap, and Kaiparowits Formations) for inventory to adequately assess distribution, condition, and significance of fossil resources. Require inventories of all paleontological resources prior to surface-disturbing activities to document significant invertebrate and paleobotanical fossil sites, not just vertebrates.

¹ Implementation decisions that are appealable to the Interior Board of Land Appeals
WSA – Wilderness Study Area, VRM – Visual Resource Management, ACEC – Area of Critical Environmental Concern

Relation to Wilderness Study Areas

The Henderson/Pardner ACEC overlaps with the Blues WSA.

Hole-in-the-Rock Trail

- General Location: Approximately 4 miles southeast of Escalante, extending along Hole-inthe-Rock Road to the boundary with Glen Canyon NRA
- General Description: The nominated Hole-in-the-Rock Trail ACEC is located along Hole-in-the-Rock Historic Trail, a graveled road of approximately 60 miles between the town of Escalante, Utah, and the Glen Canyon NRA. The nominated area spans the length of the Hole-in-the-Rock Road from north to south, and is bounded to the east and west by the Kaiparowits and Escalante Canyons Units of GSENM. The area follows the Mormon Pioneer Hole-in-the-Rock Historic Trail, which is listed on the NRHP. Trail follows closely along the Hole-in-the-Rock Road, which is also a State Scenic Backway. Area contains habitat for a special status plant species (Barneby milkvetch).
- Acreage: 111,000 acres were nominated and evaluated; 60,772 acres were determined to contain relevance and importance values and were considered as a potential ACEC for Alternative B.

Meets Both R & I?	Relevance Criteria	Importance Criteria
Relevant in portions incorporated into the Hole-in-the-Rock Trail potential ACEC boundary identified in the Draft RMPs/EIS (60,578 acres). Not relevant in the remainder of the nominated area.	Historic/cultural value: Hole-in-the-Rock Trail. The Hole-in-the-Rock Trail follows the road that is present in this area. However, the extent of this value is limited to the road and its immediate vicinity.	Has more than locally significant qualities: Hole-in-the-Rock Trail is listed on the NRHP.
Relevant in portions incorporated into the Straight Cliffs/Fiftymile Bench potential ACEC. Not relevant in the remainder of the nominated area.	Historic/cultural value: a wealth of other cultural sites. Fiftymile Mountain is a unique area for archaeology related to the relationship between the bench versus both upper and lower elevations. Applicable portions of this nomination are included in the Straight Cliffs/Fiftymile Bench potential ACEC. The remaining areas of the Hole-in-the-Rock nominated ACEC outside the Hole-in-the-Rock and Straight Cliffs/Fiftymile Bench potential ACECs that were evaluated in the Draft RMPs/EIS do not include significant cultural sites that are rare or sensitive compared to other sites in the region.	See the importance criteria evaluated for the Straight Cliffs/Fiftymile Bench potential ACEC for those portions that overlap this nominated ACEC. Those sites include midlevel habitat wintering locations in relation to Ancestral Puebloan sites and Fremont sites. The remainder of the areas that are not already included in a potential ACEC do not include known sites that are more than locally significant or exemplary when compared to similar resources in the region.
No (see evaluation for the Straight Cliffs/Fiftymile Bench potential ACEC for those portions that overlap the nominated ACEC)	Scenic: Based on the relevance criteria for scenic values and Maps 28 and 29 in the Proposed RMPs/Final EIS, the portions of the nominated ACEC that are Class A scenery and highly sensitive are included in the Straight Cliffs/Fiftymile Bench potential ACEC. The remainder of the nominated ACEC, including the 60,772-acre Hole-inthe-Rock Trail potential ACEC, does not meet the scenic criteria for a scenic value.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the non-overlapping areas failed to meet the relevance criterion, the importance criterion has not been evaluated. The nominee identified "night sky darkness" as an importance criterion. The BLM's visual resources inventory and management processes consider seven factors to evaluate scenic quality. None of those factors include measures associated with dark night skies. As such, dark night skies are not considered a "scenic value" for the purposes of ACEC nominations or evaluations.

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Natural process or system	Barneby milkvetch
No	Fish and wildlife resource: Mexican spotted owl. Based on Map 4, there are approximately 43 acres of the nominated area that touch Mexican spotted owl mapped critical habitat. However, the nominated area is confirmed semi-desert grassland and does not meet primary constituent elements of critical habitat. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Desert night lizard. Based on a report from Oliver (2003), desert night lizards are highly localized within the monument and are found within a small geographic extent, not within this nominated ACEC.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Bald eagle. According to the Utah Natural Heritage Program's dataset, there are no observations of bald eagle in the nominated ACEC. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Arizona toad. Based on a report from Oliver (2003), Arizona toad are known to occur at one locale on the monument. They are highly localized within the monument and are found within a small geographic extent, not within this nominated ACEC. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Burrowing owl. According to the Utah Natural Heritage Program's dataset, there are observations from the 1960s and nothing confirmed since. Because it has been over 40 years since a confirmed sighting, this is not a relevant resource.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Fish and wildlife resource: Allen's big-eared bat. According to the Utah Natural Heritage Program's dataset, there are observations from the mid-1990s. Nothing confirmed since.	Not more than locally significant. A small component of habitat available elsewhere in the State, making habitat in this nominated area not unique, exemplary, irreplaceable, or rare. Recent presence is not confirmed in the nominated area. Compared to other similar resources in the region, the nominated area does not have special worth or distinctiveness.
No	Fish and wildlife resource: Common chuckwalla. According to the Utah Natural Heritage Program's dataset, there is one observation (unknown year). Nothing confirmed since. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Fringed myotis bat. According to the Utah Natural Heritage Program's dataset, there are observations from the 1930s and nothing confirmed since. Because it has been over 70 years since a confirmed sighting, this is not a relevant resource.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Mule deer. Based on Map 3, there is a small amount of habitat on northeastern corner and also along the southeastern edge of the nominated area.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource."

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Natural process or system: ecologically unique. ACECs are partially defined in FLPMA as "areas within public lands." Considering the entire ecosystem of large areas with diverse vegetation and soil types as relevant could result in interpreting ACECs as inclusive of the entirety of public lands, not "areas" within them. As such, while individual systems may meet relevance criteria (e.g., distinct ecotones, habitat associated with specific species or communities), the entire ecosystem associated with multiple vegetation communities, soil types, habitats, etc. is not a relevant natural process or system in relation to considering ACECs.	The nominee provided the results of a model that evaluated 11 selected "indicators of relevance and importance." Those indicators do not align with the criteria identified in BLM ACEC regulations or policy. While modeling the comparative value of these characteristics for a given area can be informative when developing regional managerial priorities, assigning a specific numerical value for one or more of those characteristics as a threshold for having "more than locally significant qualities" is arbitrary. Is local significance established at a rating of greater than the 50th percentile, or 70th, or 90th? Furthermore, is importance established if only one of the 11 indicators exceeds a certain percentile, or does the ecological system obtain importance only if several, the majority, or all of its indicators exceed a certain percentile? Finally, using the basis of comparison of similarly sized areas from throughout the western United States introduces the potential for variance based on dissimilar ecological factors rather than relative significance of qualities in similar systems. For example, is species richness higher in these areas because it is higher in the Colorado Plateau compared to other physiographic regions, or because these specific areas within the Colorado Plateau have special ecological significance? Absent a comparison to similarly sized sites in the local and/or regional area, such distinctions cannot be determined. For these reasons, the landscape assessment provided by the nominee, while potentially informative for project planning, cannot be used as a standard for establishing importance.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Other criteria identified by the nominee: within the 1996 national monument boundaries. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	The nominee suggested that because the nominated area was within the 1996 national monument boundaries it met the importance criterion for being "recognized as warranting protection in order to satisfy national priority concerns." Importance criteria are evaluated based on whether a specific relevant value, resource, process/system, or hazard also has substantial significance. Each nominated component that met relevance criteria was evaluated for importance based on the criteria in the BLM's regulations and policy and not on a former designation.
No	Other criteria identified by the nominee: includes areas that have wilderness characteristics. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Other criteria identified by the nominee: recreational uses. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

R – relevance criteria, I – importance criteria, ACEC – Area of Critical Environmental Concern, EIS – environmental impact statement, NRHP – National Register of Historic Places, RMP – Resource Management Plan, FLPMA – Federal Land Policy and Management Act

Alternative B Special Management

Special management is limited to those values, resources, and systems/processes that have been identified as relevant and important. No special management is required for aspects of the nomination that do not meet relevance and importance criteria.

Relevance and Importance Values	Alternative B Special Management
Historic/cultural values	 Work with SRP holders and site stewards to increase monitoring of known and documented archaeological sites. Conduct surveys to identify Hole-in-the-Rock Trail. Develop a Hole-in-the-Rock Trail management and recreational plan. Prohibit exclusive commercial mineral materials sites. Prohibit community mineral materials pits larger than 5 acres in size. Require surface facilities incident to underground mining to avoid known and documented archaeological sites. Apply stipulations to mitigate adverse effects of subsidence. Allow oil and gas leasing subject to major constraints (NSO).
Natural Process or System	 Prohibit collection of BLM or State sensitive plants without a research permit. Conduct inventories and research to identify and document habitat and populations of endemic and sensitive plants. Monitor known populations of endemic and sensitive plant species including distribution, trends, and habitat conditions. Use this information to inform appropriate adaptive management strategies.

SRP - Special Recreation Permit, NSO - No Surface Occupancy, BLM - Bureau of Land Management

Relation to Wilderness Study Areas

The Hole-in-the-Rock Trail ACEC overlaps with a corner of the Devils Garden ISA and the Scorpion WSA.

Paria River

- **General Location:** The Paria River/Sheep Creek corridor between the Grand Staircase and Kaiparowits Units
- General Description: Area follows along Sheep Creek from Skutumpah Road to its
 confluence with the Paria River and then down the Paria River to where it meets
 Cottonwood Canyon Road within the Grand Staircase, beginning above the White Cliffs and
 passing down through the Vermilion Cliffs. It contains a proliferation of historic inscriptions
 and very significant prehistoric sites and rock art panels. The riparian areas are either not
 functioning or functioning at risk. It crosses through three scenic quality rating units, all of
 which are inventoried as A quality scenery (Vermilion Cliffs/Paria-Hackberry SQRU-003:
 scored 22; White Cliffs SQRU-002: scored 21.5; Willis Creek SQRU-017; scored 19).
- Acreage: 180 acres

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Scenic	Scenic Quality A and High Sensitivity

Meets Both R & I?	Relevance Criteria	Importance Criteria	
Yes	Historic/cultural value	More than local significance and vulnerability to adverse change: This corridor contains numerous historic inscriptions and some very significant prehistoric sites and rock art panels, and was a major travel route between the Paria and Cannonville areas during the pioneer settlement period. It was undoubtedly a major travel corridor in prehistoric times as well and also includes the northernmost Virgin Ancestral Puebloan site yet documented.	
Yes	Fish and wildlife	Mexican spotted owl: designated critical habitat. More than local significance and vulnerability to change. This river corridor contains five canyon systems that are known to have Mexican Spotted Owl. Three of these canyon systems contain Protected Activity Centers for Mexican spotted owl, while two have confirmed owl use and suspected breeding. National Priority Concern: Threatened and Endangered Species Act.	
Yes	Natural process or system	Riparian areas determined to be functioning at risk or not functioning. Protection warranted to satisfy national priority concerns or carry out mandates of FLPMA: Riparian-Wetlands Initiative for the 1990's.	

R - relevance criteria, I - importance criteria, FLPMA - Federal Land Policy and Management Act

Alternative B Special Management

Relevance and Importance Values	Alternative B Special Management	
Scenic	Manage all areas outside WSAs as VRM Class II.	
Historic/cultural value	Work with SRP holders and site stewards to increase monitoring of known and documented archaeological sites.	
	If the Paria River corridor is opened to vehicular traffic, require vehicles to stay on designated routes (no cross-country travel) and work with State and local officials to develop a plan to record and manage vehicle traffic.	
	Prohibit vehicular access to side canyons.	
Natural Process or System	Do not designate spur routes in the ACEC. Area must be closed or limited to designated routes.	
	Prioritize functioning-at-risk and not-functioning riparian zones for restoration and implement restoration projects to achieve properly functioning condition.	
Fish and Wildlife	Require site-specific analysis of resources to determine the potential for impacts and the need for timing and distance buffers.	
	Do not designate spur routes in the ACEC. Area must be closed or limited to designated routes.	

WSA – Wilderness Study Area, VRM – Visual Resource Management, SRP – Special Recreation Permit, ACEC – Area of Critical Environmental Concern

Relation to Wilderness Study Areas

The Paria River ACEC overlaps with the Paria-Hackberry WSA.

Scorpion Flat/Dry Fork

- **General Location:** Approximately 22 miles southeast of Escalante, on the east side of Holein-the-Rock Road abutting Glen Canyon NRA to the east above the Escalante River
- General Description: Area includes most of Scorpion Flat/Dry Fork SQRU-032 that
 inventoried as A quality scenery with a score of 19.5. It contains rolling, jumbled sandstone
 expanses with shallow drainages feeding into dramatic hidden canyons and narrow slots.
 Area includes Dry Fork Slot Canyons (including Peekaboo and Spooky), Twentyfivemile
 Wash and the Egypt Slots, which are popular recreational destinations.
- Acreage: 30,691 acres

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Scenic	High scenic quality, high sensitivity, and foreground adjacency to Glen Canyon National Recreation Area.

R - relevance criteria, I - importance criteria

Alternative B Special Management

Relevance and Importance Values	Alternative B Special Management
Scenic	Manage all areas outside of WSA as VRM Class II.

WSA - Wilderness Study Area, VRM - Visual Resource Management

Relation to Wilderness Study Areas

The Scorpion Flat/Dry Fork ACEC overlaps with the Scorpion WSA and a small portion of the Escalante Canyons Tract 5 ISA.

Straight Cliffs/Fiftymile Bench

- General Location: Two discontinuous areas, located approximately 3 and 35 miles southeast of Escalante, respectively, along the west side of Hole-in-the-Rock Road
- General Description: Area is composed of two discontinuous areas of the Straight Cliffs
 faces and benches. They are contained within the Straight Cliffs/Fiftymile Bench SQRU-030
 and were inventoried as A quality scenery with a score of 19. The Straight Cliffs are a long,
 narrow band extending from near the Colorado River northward to Escalante, creating the
 eastern edge of the Kaiparowits Plateau. Landforms include a bold, vertical, banded cliff
 face above rugged, drainage-braided benches with both pyramidal erosional features and
 sandstone outcrops at the base.
- Acreage: 21,357 acres for Alternative B: 12,270 acres for Alternative C

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Scenic	Scenic Quality A and High Sensitivity. Lower segment is adjacent to National Park Service.
Yes	Historic/cultural values	Fiftymile Bench is considered important as a mid-level habitat wintering location in relation to the Ancestral Puebloan sites and Fremont sites above, on Fiftymile Mountain, and below, in the Escalante River canyons and benches.

R - relevance criteria, I - importance criteria

Alternatives B and C Special Management

Relevance and Importance Values	Alternatives B and C Special Management
Scenic	Manage as VRM Class II.
Historic/cultural values	 Work with SRP holders and site stewards to increase monitoring of known and documented archaeological sites. Plan and complete NHPA Section 110 inventories and site documentation in commonly used and likely recreational use areas, research locations, and cattle congregation locations Develop a Fiftymile Mountain Cultural Resources Resource Management Plan. Prohibit exclusive commercial mineral materials sites. Prohibit community mineral materials pits larger than 5 acres in size. Allow oil and gas leasing subject to major constraints (NSO) (Alternative B only). Require surface facilities incident to underground mining to avoid known and documented archaeological sites. Apply stipulations to mitigate adverse effects of subsidence (Alternative B only). Allow oil and gas leasing subject to moderate constraints (CSU). Avoid placement of oil and gas-related facilities and structures in areas where there are known or documented archaeological sites. Where setting is a component of a site's eligibility, require a viewshed analysis and require facilities to be placed outside of the viewshed, or require mitigation to avoid adversely affecting the setting (Alternative C only). Promote research into area archaeological sites Prohibit rock climbing within 100 meters of archaeological structures.

VRM – Visual Resource Management, SRP – Special Recreation Permit, NHPA – National Historic Preservation Act, CSU – Controlled Surface Use, NSO – No Surface Occupancy

Relation to Wilderness Study Areas

The northern portion of the Straight Cliffs/Fiftymile Bench ACEC overlaps with a portion of the Carcass Canyon WSA. The southern portion of the Straight Cliffs/Fiftymile Bench ACEC does not overlap with any WSAs.

Tibbet Head

General Location: Approximately 7 miles northeast of Big Water

- **General Description:** Table lands, benches, and canyons underlain by Wahweap Formation, located between Smoky Mountain Road and just west of Nipple Spring. Area contains globally rare vertebrate fossils.
- Acreage: 19,079 acres for Alternative B; 18,874 acres for Alternative C

Meets Both R & I?	Relevance Criteria	Importance Criteria
Yes	Historic/cultural: Paleontological values	Rare paleontological resource-PFYC 5 units plus. More than local significance: Vertebrate fossil resources from area are rare on a global scale. There is widespread interest in the fossils from paleontologists who study the origins of mammals and other vertebrates. Many specimens from the area have been published in scientific journals and serve as the types for new species. Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: Rare concentrations of terrestrial vertebrate fossils and petrified wood of middle Campanian age throughout the Nipple Spring, Tibbett Spring, Tibbett Bench and Head of the Creeks areas. Includes a potential future type locality for new hadrosauromorph dinosaur at Nipple Spring, the Tibbett Bench Bonebed, and unusually large concentrations of petrified wood in the Head of the Creeks area. Other bonebeds known to exist in area that have not been tested.
Yes	Natural process or system	Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: Cataract gilia, <i>Gilia imperialis</i> (regional endemic and BLM Sensitive); and Smokey Mountain mallow, <i>Sphaeralcea fumariensis</i> (local endemic and BLM Sensitive).

R – relevance criteria, I – importance criteria, PFYC – Potential Fossil Yield Classification

Alternatives B and C Special Management

Relevance and Importance Values	Alternatives B and C Special Management	
Historic/cultural: Paleontological	Within identified paleontological resource areas in the ACEC, prohibit casual collection of fossils or other paleontological materials.	
values	Conduct annual monitoring for impacts on paleontological resources and use this information to inform appropriate adaptive management.	
	 Prioritize paleontological areas within the ACEC (i.e., Wahweap Formation) for inventory to adequately assess distribution, condition, and significance of fossil resources. 	
	 Require inventories of all paleontological resources prior to surface-disturbing activities to document significant invertebrate and paleobotanical fossil sites, not just vertebrates. 	

Relevance and Importance Values	Alternatives B and C Special Management
Natural Process or System	 Prohibit collection of BLM or State sensitive plants without a research permit. Conduct inventories and research to identify and document habitat and populations of endemic and sensitive plants. Monitor known populations of endemic and sensitive plant species including distribution, trends, and habitat conditions. Use this information to inform appropriate adaptive management strategies.

¹ Implementation decisions that are appealable to the Interior Board of Land Appeals ACEC – Area of Critical Environmental Concern, BLM – Bureau of Land Management

Relation to Wilderness Study Areas

The southwestern end of the Tibbet Head ACEC overlaps with the Wahweap WSA.

Wahweap Hoodoos ACEC

- General Location: Approximately 5 miles northwest of Big Water
- General Description: Area includes the formations known as the Wahweap Hoodoos, a
 grove of capped white columns of Entrada Sandstone topped with caps of Dakota
 Sandstone. The location is a popular destination for hikers and photographers.
- Acreage: 130 acres

Meets Both R & I?	Relevance Criteria	Importance Criteria	
Yes	Natural process or system: Hoodoos	Rare and unique geologic formations. Fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change: hoodoos. Depositional setting of formations has resulted in fragile columns of soft sediment supporting more durable capstones.	

R - relevance criteria, I - importance criteria

Alternative B Special Management

Relevance and Importance Values	Alternative B Special Management
Natural Process or System: Hoodoos	Develop an education and interpretation plan to prevent visitors from damaging unique geological features. Design trail systems to prevent human-caused erosion.

Relation to Wilderness Study Areas

The Wahweap Hoodoos ACEC overlap with the Wahweap WSA.

Warm Creek

- General Location: Northeast of the town of Bigwater, the Warm Creek area is connected to the south-central boundary of the Kaiparowits Unit of GSENM, filling the space between the national moment and the Glen Canyon NRA.
- **General Description:** The nominated area is located on the southern edges of the Kaiparowits Plateau.
- Acreage: 81,325 acres. The nominated area overlaps the entire 19,079-acre Tibbet Head potential ACEC.

	I.	t.
Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Historic/cultural value: Ancestral Puebloan cultural sites across the proposed ACEC are prevalent. There have been some archaeological surveys and recorded sites, but not enough to identify significant cultural sites that are rare or sensitive. The nomination also cites that the identification of "yet undiscovered sites are expected to be quite high (more than 11 sites per square mile)." However, relevance is based on if an area "containsa significant historic or cultural value" (BLM-M-1613 .1.11.A.1), not the potential for such a value. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
Yes, but only in relation to the areas already determined relevant in the Tibbet Head potential ACEC.	Historic/cultural value: Paleontological values. There are documented significant terrestrial vertebrate and fossil wood sites in the middle and lower Campanian age Wahweap Formation in this area. Fossil sites yielding dinosaurs, giant alligators, and other large animals are of more than local significance. These are relevant, but with highly disjunct distributions. The PFYC 5 portions of this nominated area are included in the Tibbet Head potential ACEC. The nomination also cites that "there is an "excellent chance that fossil mammals will eventually be discovered" within the boundaries of the Warm Creek nominated ACEC. However, relevance is based on if an area "containsa significant historic or cultural value" (BLM-M-1613 .1.11.A.1), not the potential for such a value. The portions of the nominated area outside Tibbet Head potential ACEC are not relevant.	The areas of the nominated area that are relevant are also greater than locally significant (see Tibbet Head ACEC section for more detail).

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Scenic: Unique geologic and scenic values. Many deep, remote, and incised canyons dominate the area. Based on Maps 28 and 29 in the Proposed RMPs/Final EIS, the area does not meet relevance criteria. While there are a few acres of Class A inventoried areas on the southwestern corner of the area, they do not meet the other necessary established criteria to be considered a "significant scenic value." As for viewing areas within the nominated area overlooking broad vistas outside the nominated area (looking into the rest of the Kaiparowits Plateau and Lake Powell), the scenic value and ACEC designation require the area itself to contain the resource (see BLM-M-1613 .1.11.A – "an area meets the 'relevance' criterion if it contains" the value). Vistas include looking at unobstructed landscapes outside the nominated area, and therefore do not qualify as having relevance or importance values for the given area.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Allen's big-eared bat. According to the Utah Natural Heritage Program's dataset, there are observations from the mid-1990s. Nothing confirmed since.	Not more than locally significant. A small component of habitat available elsewhere in the State, making habitat in this nominated area not unique, exemplary, irreplaceable, or rare. Recent presence is not confirmed in the nominated area. Compared to other similar resources in the region, the nominated area does not have special worth or distinctiveness.
No	Fish and wildlife resource: Townsend's bigeared bat. According to the Utah Natural Heritage Program's dataset, there are no observations in the nominated area. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Common chuckwalla. According to the Utah Natural Heritage Program's dataset, there are no observations in the nominated area. According to Oliver (2003), they were found highly localized but not within this nominated area. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Fish and wildlife resource: Desert night lizard. According to the Utah Natural Heritage Program's dataset and Oliver (2003), there are confirmed desert night lizard within the nominated area. Relevant.	According to Oliver (2003), presence of desert night lizards in this area was surprising. There are subspecies of night lizard on either side of this population but this population exhibits characteristics of both subspecies and is disjunct from other populations. Within the area, this potentially suggests a zone of integration between two subspecies. However, these findings are associated with one study that had just 12 data points. Additional studies are required to conclude that the lizards associated with these 12 data points actually reflect a subspecies that is more than locally significant and/or exemplary, or if they are common in the region. Not important.
No	Fish and wildlife resource: Northern goshawk. According to the Utah Natural Heritage Program's dataset, there are several observations between 1978 and 1980. Nothing confirmed since. However, the notes for these observations indicate that they were made on Fiftymile Mountain, which is not part of this proposal. It is likely that these locations within this proposed ACEC unit are mapping errors. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Great Plains toad. According to the Utah Natural Heritage Program's dataset and Oliver (2003), there are no observations of Great Plains toad in the nominated area. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Desert bighorn sheep. Based on Map 3, the entire nominated area includes habitat for desert bighorn sheep. Relevant.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource."
No	Fish and wildlife resource: Pronghorn. Based on Map 3, much of the western portion of the nominated area includes habitat for pronghorn. Relevant.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource."

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Natural process or system: Water and riparian areas. Isolated springs and perennial streams including Warm and Nipple Creeks are present and important to wildlife.	Isolated springs and other riparian areas do not meet the importance criteria; while providing important ecological roles, they are not more than locally significant and do not have more cause for concern compared to other similar resources in the region. Additionally, the BLM has already developed the National Riparian-Wetland Initiative, establishing goals and objectives for managing riparian-wetland resources. Because such resources already have special management at the agency level, this system does not meet the definition of an ACEC in FLPMA Section 103 as "areas within the public lands where special management attention is required."
No	Natural process or system: Welsh's milkweed. The nominated area is outside the species' range (USFWS 2012). Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Natural process or system: ecologically and biologically unique. ACECs are partially defined in FLPMA as "areas within public lands." Considering the entire ecosystem of large areas with diverse vegetation and soil types as relevant could result in interpreting ACECs as inclusive of the entirety of public lands, not "areas" within them. As such, while individual systems may meet relevance criteria (e.g., distinct ecotones, habitat associated with specific species or communities), the entire ecosystem associated with multiple vegetation communities, soil types, habitats, etc. is not a relevant natural process or system in relation to considering ACECs.	The nominee provided the results of a model that evaluated 11 selected "indicators of relevance and importance." Those indicators do not align with the criteria identified in BLM ACEC regulations or policy. While modeling the comparative value of these characteristics for a given area can be informative when developing regional managerial priorities, assigning a specific numerical value for one or more of those characteristics as a threshold for having "more than locally significant qualities" is arbitrary. Is local significance established at a rating of greater than the 50th percentile, or 70th, or 90th? Furthermore, is importance established if only one of the 11 indicators exceeds a certain percentile, or does the ecological system obtain importance only if several, the majority, or all of its indicators exceed a certain percentile? Finally, using the basis of comparison of similarly sized areas from throughout the western United States introduces the potential for variance based on dissimilar ecological factors rather than relative significance of qualities in similar systems. For example, is species richness higher in the Colorado Plateau compared to other physiographic regions, or because these specific areas within the Colorado Plateau have special ecological significance? Absent a comparison to similarly sized sites in the local and/or regional area, such distinctions cannot be determined. For these reasons, the landscape assessment provided by the nominee, while potentially informative for project planning, cannot be used as a standard for establishing importance.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Other criteria identified by the nominee: within the 1996 national monument boundaries. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	The nominee suggested that because the nominated area was within the 1996 national monument boundaries it met the importance criterion for being "recognized as warranting protection in order to satisfy national priority concerns." Importance criteria are evaluated based on whether a specific relevant value, resource, process/system, or hazard also has substantial significance. Each nominated component that met relevance criteria was evaluated for importance based on the criteria in the BLM's regulations and policy and not on a former designation.
No	Other criteria identified by the nominee: includes areas that have wilderness characteristics. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Other criteria identified by the nominee: access to many remote and pristine backcountry locations. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

R – relevance criteria, I – importance criteria, ACEC – Area of Critical Environmental Concern, PFYC – Potential Fossil Yield Classification, RMP – Resource Management Plan, EIS – environmental impact statement, FLPMA – Federal Land Policy and Management Act, USFWS – U.S. Fish and Wildlife Service

Special Management

The portions of the Warm Creek nominated area that include ACEC components that meet relevance and importance criteria are included in the Tibbet Head potential ACEC. Special management for those components is identified in the section of this appendix for that potential ACEC. No special management is required for values, resources, systems, processes, or hazards that do not meet relevance and importance criteria.

Willis Creek

- General Location: The nominated Willis Creek ACEC is a block of lands filling the gap between the northernmost corner of the Grand Staircase Unit of GSENM and the southeastern side of Bryce Canyon National Park and Dixie National Forest boundary. It stretches from south of the towns of Tropic and Cannonville, Utah, down to and north and west of Skutumpah Road.
- General Description: The nominated area is characterized by several series of canyons generally trending from the northwest to the southeast, interspersed by valleys, foothills, and benches with cliffs more distant. Prominent canyons include Bull Valley Gorge and Lick

Wash. Corresponding to the terrain, vegetation varies from pinyon-juniper forests and more sparse woodlands on the south transitioning to mixed vegetation and bare ground to the north. On the northern end, vegetation thins out and more bare hills are exposed. The northern end of the nominated area completely encapsulates the Bulldog Bench potential ACEC (361 acres). Several private land parcels are scattered through the lower elevation portions of the area.

Acreage: 67,659 acres

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Historic/cultural value: Known sites throughout the area, with many remnants of Ancestral Puebloan culture. In surveyed areas cultural sites are common, but they are generally repetitive temporary camps, scattered artifacts, and occasional thermal features associated with processing of plant and animal foods. Site densities in the nominated area are about the same as elsewhere across GSENM. No significant site(s) or characteristics setting this area apart. Not relevant. The nomination notes that the discovery of more significant cultural resources is very likely. However, relevance is based on if an area "containsa significant historic or cultural value" (BLM-M-1613 .1.11.A.1), not the potential for such a value.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Scenic: Unique geologic features (sandstone outcrops, narrow and deep slot canyons, plateaus) contribute to outstanding scenic values. The area does not meet relevance criteria. While there are some Class A inventoried areas (see Map 27 in the Proposed RMPs/Final EIS), none of them meet the other necessary criteria to be considered a "significant scenic value." Sandstone outcrops and slot canyons are prevalent in the region. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Utah prairie dog According to the Utah Natural Heritage Program's dataset, there are no individuals or colonies in the nominated area. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Fish and wildlife resource: Northern goshawk. According to the Utah Natural Heritage Program's dataset, there are no observations of Northern goshawk in the nominated area. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Arizona toad. According to the Utah Natural Heritage Program's dataset and a report from Oliver (2003), there are no observations of Arizona toad in the nominated area. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Fringed myotis bat. According to the Utah Natural Heritage Program's dataset, there are no observations of the fringed myotis in the nominated area. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Greater sage-grouse. According to Utah State University's seasonal habitat modeling based on radio-collared sage-grouse through Utah, as adopted by the UDWR (UDWR 2019) and shown in the BLM's 2018 Utah Greater Sage-Grouse Proposed RMP Amendment and Final EIS maps 3-2, 3-3, and 3-4, there is no habitat for greater sage-grouse in the area and there are no current, potential, or historic leks anywhere in the nominated area. The species is not present. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Black bear. Based on Map 3, nearly the entire area is substantial year-long habitat, with a very little bit of overlap of crucial year-long habitat on the eastern edge of the nominated area. Relevant.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource." Habitat for black bear exists throughout the State.
No	Fish and wildlife resource: Mule deer. Based on Map 3, there is very little bit of overall crucial winter habitat on the southeastern edge of the nominated area. Relevant.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource."

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Fish and wildlife resource: Elk. Based on Map 3, there is elk habitat in the southwestern portion of the nominated area. Relevant.	Not federally listed. Not important, as this habitat is not of greater than local significance. The portion of habitat in the nominated area is not of "substantial significance and valuesespecially compared to any similar resource." There is elk habitat throughout the State.
No	Fish and wildlife resource: Wild turkey. According to the Utah Natural Heritage Program's dataset, there are no observations of wild turkey in the nominated area. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Fish and wildlife resource: Pinyon jay. According to the Utah Natural Heritage Program's dataset, there are no observations of pinyon jay in the nominated area. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.
No	Natural process or system: intact pinyon pine and juniper forest ecosystem. The majority of the area is composed of pinyon and juniper forests and woodlands, especially on the benches on the southern portion of the nominated area. Relevant.	While there are pinyon pine and juniper forests and woodlands in portions of the nominated area, there are no data or evidence to support the claim of these being "some of the most lush and intact." Pinyon and juniper systems are present throughout northern, central, and southern Utah, as well as the greater Colorado Plateau and Great Basin regions. Such a system is not sensitive, endangered, endemic, or rare. Does not meet the importance criteria.
No	Natural process or system: Kodachrome bladderpod. Federally listed as endangered plant endemic, and only one small population in the world. Thrives on unvegetated shale soils and slopes. A review of the current data on this species shows there is no Kodachrome bladderpod in the Willis Creek nominated area. Not relevant.	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Natural process or system: untrammeled and rich biological soil crust. Given the size of the nominated area and diversity of soil and vegetation types, there is a high likelihood that the nominated area includes biological soil crusts. Portions of the area may meet relevance criteria for having areas with potential concentrations of late successional biological soil crusts. Relevant.	Areas with cryptobiotic crusts are found throughout southern Utah and the Colorado Plateau, including throughout the area still designated as a national monument. The areas within the nominated area have not been identified as having more than locally significant qualities regarding soil crusts giving it special worth, distinctiveness, or cause for concern compared to any similar resources. Does not meet the importance criteria.
No	Natural process or system: A particularly dense pinyon-juniper forest covers the higher benchlands, and the wider valleys and washes contain scrub-oak thickets, serviceberry bushes, and groves of ponderosa pine. There are varying vegetation types present throughout this area, including pinyon pine and juniper forests and woodlands in portions of the nominated area, with other scattered types of vegetation. Relevant.	While there is the noted vegetation in the nominated area, these vegetation communities are present throughout southern and central Utah, and are also present in other areas of the Colorado Plateau and Great Basin. Such a system is not sensitive, endangered, endemic, or rare, and the vegetation communities present in the nominated area are not more than locally significant. Not important.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Natural process or system: Exceptionally significant ecologically. ACECs are partially defined in FLPMA as "areas within public lands." Considering the entire ecosystem of large areas with diverse vegetation and soil types as relevant could result in interpreting ACECs as inclusive of the entirety of public lands, not "areas" within them. As such, while individual systems may meet relevance criteria (e.g., distinct ecotones, habitat associated with specific species or communities), the entire ecosystem associated with multiple vegetation communities, soil types, habitats, etc. is not a relevant natural process or system in relation to considering ACECs.	The nominee provided the results of a model that evaluated 11 selected "indicators of relevance and importance." Those indicators do not align with the criteria identified in BLM ACEC regulations or policy. While modeling the comparative value of these characteristics for a given area can be informative when developing regional managerial priorities, assigning a specific numerical value for one or more of those characteristics as a threshold for having "more than locally significant qualities" is arbitrary. Is local significance established at a rating of greater than the 50th percentile, or 70th, or 90th? Furthermore, is importance established if only one of the 11 indicators exceeds a certain percentile, or does the ecological system obtain importance only if several, the majority, or all of its indicators exceed a certain percentile? Finally, using the basis of comparison of similarly sized areas from throughout the western United States introduces the potential for variance based on dissimilar ecological factors rather than relative significance of qualities in similar systems. For example, is species richness higher in the Colorado Plateau compared to other physiographic regions, or because these specific areas within the Colorado Plateau have special ecological significance? Absent a comparison to similarly sized sites in the local and/or regional area, such distinctions cannot be determined. For these reasons, the landscape assessment provided by the nominee, while potentially informative for project planning, cannot be used as a standard for establishing importance.

Meets Both R & I?	Relevance Criteria	Importance Criteria
No	Other criteria identified by the nominee: within the 1996 national monument boundaries. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	The nominee suggested that because the nominated area was within the 1996 national monument boundaries it met the importance criterion for being "recognized as warranting protection in order to satisfy national priority concerns." Importance criteria are evaluated based on whether a specific relevant value, resource, process/system, or hazard also has substantial significance. Each nominated component that met relevance criteria was evaluated for importance based on the criteria in the BLM's regulations and policy and not on a former designation.
No	Other criteria identified by the nominee: includes areas that have wilderness characteristics. Not a criterion to be considered when evaluating ACECs (see 43 CFR 1610.7-2 and BLM Manual 1613).	A nominated area must meet both relevance and importance criteria to be considered a potential ACEC. Because the area failed to meet the relevance criterion, the importance criterion has not been evaluated.

R – relevance criteria, I – importance criteria, GSENM – Grand Staircase-Escalante National Monument, ACEC – Area of Critical Environmental Concern, BLM – Bureau of Land Management, UDWR – Utah Division of Wildlife Resources, RMP – Resource Management Plan, EIS – environmental impact statement, FLPMA – Federal Land Policy and Management Act

Special Management

No special management is required for values, resources, systems, processes, or hazards that do not meet both relevance and importance criteria.

References

- Bureau of Land Management (BLM). 1999. Grand Staircase-Escalante Monument Management Proposed Management Plan and Final Environmental Impact Statement. July. Retrieved from https://eplanning.blm.gov/epl-front-office/projects/lup/65870/79806/92584/GSENM_MP_FEIS.pdf. Accessed June 18, 2018.
- Oliver, George V. 2003. Amphibians and Reptiles of the Grand Staircase-Escalante National Monument: Distribution, Abundance, and Taxonomy. February. Utah Division of Wildlife Resources, Utah Natural Heritage Program. Prepared for U.S. Department of the Interior, Bureau of Land Management.
- U.S. Fish and Wildlife Service (USFWS). 2012. Welsh's Milkweed. July. Available: https://www.fws.gov/mountain-prairie/factsheets/WelshsMilkweedFactSheet.pdf.
- Utah Division of Wildlife Resources (UDWR). 2019. Greater sage-grouse. Updated January 31. Available: https://wildlife.utah.gov/learn-more/greater-sage-grouse.html.
- ——. 2019. Utah Natural Heritage Program Locality Data, Utah Threatened, Endangered, and Sensitive Species Occurrences. Available: https://dwrcdc.nr.utah.gov/ucdc/ DownloadGIS/disclaim.htm.

Abbreviations-Acronyms

Term	Definition
ACEC	Area of critical environmental concern
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
FLPMA	Federal Land Policy and Management Act
GSENM	Grand Staircase-Escalante National Monument
IDT	Interdisciplinary team
KEPA	Kanab-Escalante Planning Area
NRA	National Recreation Area
NRHP	National Register of Historic Places
ONA	Outstanding Natural Area
RMP	Resource Management Plan
RNA	Research Natural Area
UDWR	Utah Division of Wildlife Resources
USFWS	U.S. Fish and Wildlife Service
WSA	Wilderness Study Area

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix 1	
------------	--

Socioeconomic Baseline Report

August 2019

Table of Contents

Introduction	T-1
Study Area Overview	T-2
Potentially Affected Communities	T-2
Potentially Affected Groups and Individuals	T-5
Cultural Context	
Study Area Overview	T-7
Garfield County Culture	
Kane County Culture	
Coconino County Culture	
Social Conditions	
Study Area Overview	
Economic Conditions	
Study Area Economic Overview	
Local Connections with Public Lands	
Ecosystem Services	
Socioeconomic Workshop and Comment Period	
References	
Abbreviations-Acronyms	1-26
I to La Citta billion	
List of Tables	
Table 1. Basic Population Statistics	
Table 2. Household Income	
Table 3. Components of Household Income	
Table 5. Percentage of People in Poverty	
Table 5. Poverty Rates since 1960	
Table 6. Educational Attainment	
Table 8. Selected Socioeconomic Statistics	
Table 9. Federal Land Payments Table 10. Millennium Ecosystem Assessment	
Table 10. Willennium Ecosystem Assessment	
Table 11. Ecosystem Goods and Services Derived from Rangelands	1-23

List of Figures

Figure 1. Garfield and Kane Counties Population Growth, 2000 to 2016	T-11
Figure 2. Population Trends, 1970 to 2016	T-12
Figure 3. Personal Income Trends, 1970 to 2016	T-14
Figure 4. Employment by Major Industry Category, Utah and Arizona, 1970 to 2000	T-19

Appendix T: Socioeconomic Baseline Report

Introduction

This document provides a "slice in time" overview of the baseline socioeconomic (SE) conditions in Garfield and Kane Counties in Utah and, to a lesser degree, Coconino County in Arizona, which exist as a backdrop for the Grand Staircase-Escalante National Monument (GSENM) regional planning effort, and lays out the general concepts of social and economic impacts analysis that will be applied as part of the planning, documentation, and decisionmaking processes. The purpose of this document is to describe the SE backdrop within which the National Environmental Policy Act process associated with Agency and Cooperating Agency decisions will take place.

For each of the following general subjects, this baseline report includes an overview for the study area as a whole plus some additional detailed discussion for each of the two counties within the study area boundaries: potentially affected communities and groups of people, cultural context, social conditions, and economic conditions.

As noted in this report, there are a few issues that are of particular concern to regional leaders: The predominance of Federal lands in the region means that many land use decisions are made by Federal officials; cooperation between Federal, State, county, and local leaders is important to successful economic development in the region. Over time, tourism has become an increasingly important part of the economy, and Federal and State lands play a central role in attracting visitors to the area. There are only limited routes through several parts of the region, and many tourists pass through without stopping for very long. The counties in the study area have expressed interest in engaging in ongoing efforts to develop destination tourism opportunities as a means of economic development. Also of high importance to leaders in the region is recognition of the important roles that grazing and the ranching sector play in the economy. In addition, ranchers and their livestock serve as an attraction for visitors who want to see real cowboys at work, providing a support service to the tourism industry. Potential mineral development could play an increasing role in the regional economy in future years, depending on specific energy market conditions over time.

Rangeland conditions play a role in the regional economy. Ranchers are dependent on healthy range conditions to provide forage for their livestock, and forage availability influences the populations of both game and non-game wildlife, which in turn create economic activity through wildlife-oriented tourism and hunting outfitting. To the degree that rangeland health deteriorates, fewer livestock and wildlife can be supported on the range without endangering the long-term viability of associated economic activities.¹ When rangelands are healthy, the probability of financial success in a given year increases for those economic sectors that depend on healthy landscapes.

Data included in this baseline report come from multiple sources. First, the bulk of data in the report was provided by individual- and multiple-county reports generated by the Economic

_

¹ Specific range conditions are outside the scope of this document.

Profile System (EPS), an SE data compilation and analysis software program maintained by Headwaters Economics, a non-profit research organization.² The development of this program was funded by the Bureau of Land Management (BLM), United States Department of Agriculture (USDA) Forest Service (FS), and other public entities. EPS reports are based on data from multiple Federal and non-Federal sources, including the U.S. Census Bureau, the Bureau of Economic Analysis, the USDA Economic Research Service, the Bureau of Labor Statistics, the Office of Management and Budget, industry data sources, and more. Products associated with EPS and Headwaters Economics are available at no cost to the public and include individual county reports for all counties in the United States in addition to subject matter reports related to public lands, regional economics, and other topics of interest to government officials, public land managers, and public citizens. Additional sources of data used in this baseline report include BLM archives, local officials and agricultural producers within the region, and BLM employees who work in the area.

This report also describes the socioeconomic workshop and socioeconomic comment period that the BLM held to solicit input on socioeconomic issues from the public and stakeholders and a summary of the comments received during the socioeconomic comment period.

Study Area Overview

The study area is situated in south-central Utah just north of the Utah-Arizona border. The SE study area includes the two counties that are most closely tied to the proposed action. Coconino County in northern Arizona is also affected by land use management decisions made within the region, but because the population of Coconino County that is potentially affected is very small, it will not be included in detailed statistics or in discussion beyond general overviews.

Potentially Affected Communities

SE analysis presents unique challenges within a natural resource planning setting due to the nature of the available data. SE data are gathered by multiple government and private agencies and organizations and are usually available in geographic areas that are demarcated by the U.S. Bureau of the Census, the U.S. Bureau of Labor Statistics, State offices of planning and budget and economics, counties, and others. Because of the methods and limitations on the collection of SE data, the study area is not the same as the Planning Area. In this instance, the study area expands beyond the boundaries under consideration and includes the entirety of Garfield and Kane Counties in Utah. In addition to data availability, there is another reason for expanding the boundaries of the SE study area: although there are some private inholdings within its boundaries, the special designation BLM-administered surface land within the region is uninhabited. It is only the impacts on surrounding communities, regional economies, Statelevel entities, and other outside interested parties that are relevant in evaluating the SE

² Data sources used in this report include the following: 2000 Decennial U.S. Census (U.S. Department of Commerce), American Community Survey (U.S. Department of Commerce), Census of Agriculture (USDA), County Business Patterns (Department of Commerce), Local Area Unemployment Statistics (U.S. Department of Labor), National Bureau of Economic Research, Population Division (U.S. Department of Commerce), Protected Areas Database v 1.3 (U.S. Geological Survey), Quarterly Census of Employment and Wages (U.S. Department of Labor), Regional Economic Information System (U.S. Department of Commerce), TIGER/Line County Boundaries 2012 (U.S. Department of Commerce), Bureau of Land Management, U.S. Census of Governments (U.S. Department of Commerce), U.S. Fish and Wildlife Service, U.S. Forest Service, and U.S. Office of Natural Resources Revenue.

impacts of decisions made regarding the management of resources in the special designation land units.

The bulk of this report focuses on Garfield and Kane Counties, although Coconino County, Arizona, is also discussed. The towns between which GSENM is situated, and which are the most directly connected with and affected by GSENM management decisions, include Kanab, Big Water, Mount Carmel Junction, Orderville, Glendale, Alton, Tropic, Cannonville, Henrieville, Escalante, and Boulder in Utah, and Page and Fredonia in Arizona. People who do not live within the immediate area around the study area but who are interested in or who are affected by impacts on the communities within the region are also stakeholders in the proposed management actions.

Non-special designation BLM-administered surface land in the surrounding area are managed by the Kanab Field Office, the Arizona Strip Field Office, and the Richfield Field Office. The special designation lands in question are managed by the BLM, and in addition to managing livestock grazing on BLM-administered surface land within the Planning Area, the BLM administers livestock grazing on approximately 318,000 acres of National Park Service (NPS) Glen Canyon National Recreation Area lands. In addition to BLM-administered surface land, there are other Federal lands outside of the area that could potentially be affected by decisions regarding GSENM management. Lands managed by Dixie National Forest, NPS at Bryce Canyon and Capitol Reef National Parks, State Institutional Trust Lands, and Utah State Parks all fall within the study area. In addition to the three local counties, Arizona, Utah, and the United States as a whole are included in the economic and social statistics reported.

Under the provisions of the Federal Land Policy and Management Act of 1976, as amended, the BLM is directed to the extent consistent with Federal law and purposes of the act to manage the lands within its jurisdiction in alignment with State and local laws and ordinances. Recently adopted Utah State legislation and county ordinances in the area highlight grazing as a key component of the region's economy and culture.

Garfield County Plans and Policies

The Garfield County Resource Management Plan (Garfield County 2017) includes a variety of guidelines, principles, desired future conditions, findings, and policies related to socioeconomics. The Garfield County Resource Management Plan identifies the following socioeconomic standards:

- 1. "Conservation and management shall prevent overuse and depletion of resources while achieving, on a continual basis, optimum use of the resources and optimum socioeconomic benefit to local communities.
- 2. Socio-economic considerations shall be based on the best scientific information and processes available.
- 3. Management actions shall not discriminate against local communities. If it becomes necessary to allocate resources, such allocation shall be: a) fair and equitable to local individuals and communities; b) reasonably calculated to promote the health, safety an economic welfare of local communities; and c) carried out in a manner that provides the greatest benefit to local individuals and communities.
- 4. Management actions, where practicable, shall consider efficiency of resource use and shall have positive impacts on the stability of local communities.
- 5. Management actions shall avoid negative impacts on local communities and where avoidance is impossible shall minimize and mitigate negative impacts.

- 6. Management actions shall be consistent with the plans, policies and programs of Garfield County.
- 7. Management actions, to the extent possible, shall promote and enhance the health, safety, welfare, economies, prosperity, and stability of local communities.
- 8. Unintended consequences shall be minimized and socio-economic analysis shall consider adaptive mitigation techniques should management actions result in negative impacts to local economies.
- 9. Managers shall disclose uncertainties in socio-economic analysis.
- 10. Socio-economic impact assessments shall be proportionate to likely impacts from the proposed action.
- 11. Socio-economic assessments shall identify methods to reduce burdens placed by the various alternatives of proposed actions.
- 12. Socio-economic assessments shall support and integrate social and economic goals and objectives of impacted communities as identified by duly elected officials.
- 13. Whenever possible, socio-economic assessments shall prioritize incorporation of quantifiable data and expected impacts over demographics (Garfield County 2017).

In 2013, Garfield County passed a county ordinance establishing the Escalante Historic/Cultural Grazing Region (EHCGR) and recognizing grazing as a historically and culturally significant activity that has contributed to local values for more than a century. In part, the ordinance states that the highest management priority for lands within the EHCGR is responsible management, enhancement, and development of existing and future grazing resources in order to provide protection for resources, objects, customs, culture, and values associated with grazing in the American West.

The Garfield County ordinance also specifically recognizes "multiple use" management as being compatible with grazing activities within the EHCGR and encourages responsible development of mineral and recreation resources within the EHCGR.

Kane County Plans and Policies

In 2014, the Utah State Legislature passed House Bill 158, which established Utah Grazing Agricultural Commodity Zones and Utah Timber Agricultural Commodity Zones. This bill was amended during the 2015 legislative session to add Washington County, Utah, and to clarify some language included in the 2014 bill. Among other purposes, this law was written for the purpose of preserving and protecting the "agricultural livestock industry" and to "maximize efficient and responsible restoration, reclamation, preservation, enhancement, and development of grazing and water resources." In response to the newly passed State law, the Kane County General Plan, as adopted on August 12, 2013 and under amendment as of 2017, added Chapter 27 of the Escalante Region Multiple Use/Multiple Functions Grazing Zone, as outlined in House Bill 158, to the Kane County land use ordinance (Kane County 2017a). Kane County's Resources Management Plan as amended by Kane County Resolution No. 2015-5 (Kane County 2017b), along with the general plan, has been in place since 1998 and has been undergoing revisions during the past few years. These two documents describe in extensive detail the county's policies with respect to grazing and other resource-related subjects, and they provide information central to the process of coordination and cooperation between the county and land management agencies.

Kane County Ordinance No. 2014-6 outlines in detail the value of grazing to the local community within Kane County, specifying the many aspects of county life that are connected with and affected by livestock grazing, both from an economic standpoint and as related to

general local culture. The ordinance states, in part, "The highest management priorities for lands within the Escalante Region Grazing Zone are responsible management, enhancement, and restoration of historic sagebrush steppe landscapes and development of existing and future livestock grazing resources, in order to provide protection for resources, customs, culture, and values of Kane County." In addition, Kane County Ordinance No. 2014-11 recognizes the value of the ranching history of the region for reasons beyond production of cattle, stating, "The cowboy lifestyle has helped develop the character of Kane County, and this has been represented in multiple western movies filmed in the area. It is surprising how many people visit the county just to see where the movies were filmed, and take pictures of livestock and cowboys. The local festival and tradition called *Western Legends* depends on the cowboy icon and is centered on that historical figure. In essence, ranching and livestock grazing has a direct link to the local tourism industry."

Potentially Affected Groups and Individuals

The BLM-managed region in the center of Garfield and Kane Counties is used and/or visited by people from the local community, the surrounding region, other areas of the United States, and other nations. To better understand the social and cultural context within which this planning effort is taking place, some key groups are described below. Although these are shown as separate categories, many interactive and iterative effects ripple back and forth between them as economic and social activities spread and compound both positive and negative effects from changes in BLM management.

Traditional Land Users

Prior to the arrival of settlers of European descent, ancient peoples including the Ancestral Puebloan people (also known as the Anasazi and Fremont archaeological cultures) lived within the south-central area of Utah. In more recent years, the Paiute and Shoshone peoples inhabited areas of south-central Utah, while the Navajo settled in the Four Corners area, including southeastern Utah and northern Arizona. With the arrival of Spanish explorers and then Latter-day Saint (Mormon) immigrants, native communities were forcefully displaced from the area. Although few Native Americans live within Garfield and Kane Counties, there are many Native Americans living in Coconino County. Members of various tribes in Utah and Arizona continue to have a stake in how GSENM and its archaeological resources are managed. The BLM conducts formal consultation annually with the Hopi, Zuni, Navajo, Ute Tribes, as well as with the Kaibab Band of Paiute Indians and Paiute Indian Tribes of Utah (Annenberg Learner 2016).

Ranchers

In the late 1880s, as Mormons colonized areas of the Intermountain and Southwest regions of the United States, ranching quickly became an important part of the economic and cultural landscape in the desert regions of the West. In the early days of ranching in the region, herds of both sheep and cattle were grazed on what is now Garfield and Kane Counties. Many families that currently ranch in the region and that run cattle on GSENM are descendants of those early settlers. Multi-generational ranching and the traditional cowboy culture that has become largely invisible in many areas of the West, due to urbanization, are still prominent aspects of the region.

Local Private Landowners

Within the communities, landowners and citizens are also affected by the BLM and NPS land management decisions. Because only a small percentage of the study area is private land, any public land management decision that affects private property values and other economic activities on private land would generate disproportionate impacts on both landowners and the counties in comparison with places where publicly owned land makes up a small fraction of all land. Because of this disproportionate importance of public land management, local residents are sensitive to how decisions are made by the BLM, FS, and other land management agency decisionmakers. In contrast, in places where public land makes up only a small percentage of land, public land management decisions have little or no impact on the majority of individual private landowners.

Recreational Users

Recreation has long been a primary use of public lands in Kane and Garfield Counties. In recent decades, traditional local recreation has continued as increasing numbers of visitors from outside the region have made the area a popular stopping point on tours of the western United States. Hikers, backpackers, photographers, car campers, drivers out to enjoy the scenery, canyoneers, climbers, people interested in wildlife viewing, off-highway vehicle riders, picnickers, horseback riders, hunters, mountain and road bicyclists, ecotourists, artists, writers, participants in spiritual retreats, bus tour groups, and other tourists and recreationists are affected by BLM and NPS decisions. In turn, these users' spending and visitation patterns affect the local communities that host them and serve their needs for lodging, meals, supplies, and public safety services.

Scientific Researchers

For many years, researchers have visited the region, studying aspects of the area within multiple specific scientific disciplines such as geology, geomorphology, paleontology, social sciences, archaeology, watershed science, soil science, wildlife biology, and botany. Unique aspects of the regional geography draw scientists from around the world. Beyond its singular geologic structure, the remoteness and relatively unaffected nature of the area provide opportunities for learning that are unavailable in places that are more heavily affected by human visitation. The scientific community has a strong interest in how BLM special designation lands are managed, especially as that relates to areas where changes in management could either enhance or detract from prospective and/or ongoing research programs or could alter the investigated environment.

Others

In addition to the specific groups described above, other individuals and groups have the potential to be affected by area management decisions. Multiple non-governmental, environmental, conservation, and other organizations, both within and outside of Utah, as well as individuals aligned with them, have expressed interest in BLM management decisions. It is possible that many people who have spent time in the past visiting the region from other places in the United States or from overseas, who deeply enjoyed the scenery and solitude that they experienced, have a strong sense of attachment to the area. Some of these people will likely be keenly interested in the management planning process as it becomes more visible to the public, and some of them could feel deeply affected on a personal level by potential changes in the BLM's management of special designation land units. Another category of people who

could potentially be affected by BLM management decisions is travelers who pass through the area but who do not fall into any of the tourist or recreational user categories outlined above. Should a change in management result in a change in local economic activity, that increase or decrease could translate into a corresponding increase or decrease in the services available in one or more of the remote communities that serve travelers. Additional local and regional parties who could be directly or indirectly affected by changes in regional BLM land management include business owners not mentioned above, workers, educators, government workers, developers, and others.

Federal land managers are required by executive order to consider potential disproportionate impacts of their decisions on low-income, minority, and/or tribal populations. This area of analysis, called environmental justice, is to be addressed in other documents connected with the special designation lands being analyzed and is not discussed in detail within this baseline report.

Cultural Context

Study Area Overview

Life in the Garfield and Kane Counties region has never been easy. The arid climate, rough topography, and isolated location have all contributed to the difficulty with which both ancient and modern communities in the area have been able to establish basic economic security. The rivers that flow through the region provide much-needed water but also have created great challenges due to flooding, both causing repeated damage to structures and making transportation corridors difficult to develop and maintain. Although the development of modern transportation routes and vehicles has vastly improved the flow of people, goods, and services into, out of, and within the region, most of the communities within the area remain vulnerable to impacts from severe weather, loss of industries, and changes in how the vast public land holdings in the region are managed. The individual and community characteristics and values that developed over time within those difficult circumstances have been a source of pride for long-term residents for many years: independence, adaptability, maintenance of local traditions, devotion to religious faith, and appreciation for the natural resources and scenic beauty of their surroundings are all aspects of the local culture that are deeply valued by many residents of the region. The cowboy culture that once was widespread within the American West, but that is no longer as prevalent as it once was in some of the West's more urbanized places, is still a central part of life within the area. It is important to many long-time residents of the region to preserve and celebrate the traditional cowboy lifestyle and the skills, knowledge, and cultural arts that are connected with it.

Since the late 1990s, an ongoing project collecting the thoughts and memories of residents of the area surrounding the BLM-administered surface land in the region has documented experiences related to many aspects of life in south-central Utah:

"The Southern Oral History Project began in July 1998 when Grand Staircase-Escalante National Monument (GSENM) was established and BLM wanted to gather historical life ways and land use information from the surrounding communities. Local citizens in the small communities in Kane and Garfield counties of southern Utah that border the Monument manifest great interest in documenting and preserving the cultural history of the area. Funding for the project came from Bureau of Land Management. Grand Staircase-Escalante National Monument and Utah State Historical Society staffs

entered into a partnership to carry out the project with Kent Powell of the Utah State Historical Society manager for the project. The aim of the oral history project is to preserve some of the memories and culture of long-time residents of the area. Preserving cultural history through oral history collection allows communities to survive by continuing to retell their stories, building bridges between the past and present, and enabling local residents and visitors to the Monument and surrounding communities to engage in the area's unique culture" (Holland and Eaton 2007).

When interviewed, some of the Oral History Project participants discussed various aspects of grazing in the region. While some mentioned specific issues related to BLM management of grazing, most raised issues such as the physical and logistical difficulty of running sheep or cattle in the landscape in the region. For some, working through family conflicts, drought cycles, and market ups and downs have been long-term challenges. Those who run cattle in the region today are faced with many of the same problems and challenges that faced those who were grazing in the area back in the early 1900s, as being in the livestock industry has always been a risk-laden endeavor.

Since 1909, when the predecessor of Zion National Park was set aside for special protection by President Taft, an increasing number of national monuments, State and National Parks, and recreation areas of various types have been designated in southern Utah. Zion, Arches, Canyonlands, Bryce Canyon, and Capitol Reef National Parks, plus several national monuments, the Old Spanish National Historic Trail, and Glen Canyon National Recreation Area, Goblin Valley, and other State parks all draw tourists and recreationists to the region surrounding the study area. From the turn of the twentieth century, tourism has played a central role in the economies of the communities that grew in the region. Prior to the designation of GSENM, lands within it were also used for recreation. However, since the 1980s, more recreation attention has begun to focus in the area. Visitors from other areas of Utah, the rest of the United States, and other nations have provided a source of revenue flows and a catalyst for economic development in the region for many decades. In recent times, newcomers to communities within the region have brought with them ideas and ways of life that have added to the cultural complexities of the area. New businesses, new industries, facilities of various types that cater to the needs and interests of tourists, and non-traditional groups that have moved into the region have all altered and added to the social networks of Garfield, Kane, and Coconino Counties.

Garfield County Culture

Garfield County is characterized by widely varied, beautiful topography and the internationally popular attractions created by it, including parts of Bryce Canyon and Capitol Reef National Parks, Glen Canyon National Recreation Area, and Dixie National Forest, and portions of GSENM, as well as Anasazi and Escalante State Parks.

As mentioned in the overview above, many long-time local residents place a high value on the traditional cowboy and ranching way of life. The remote locations of Escalante and Boulder and other smaller communities within the county have led their residents to develop a spirit of independence as well as a combination of self-reliance and a degree of community solidarity that lend themselves to supporting and protecting tradition and history within the region. In addition to long-standing pioneer and ranching traditions, however, an appreciation for unique newcomers and their contributions to local business communities and societies has enabled the cultural aspects of Garfield County to develop and grow in complexity and variety over time.

Local residents cherish the history of the Mormon pioneers who either settled in the region or passed through on their way to locations farther south. The Hole-in-the-Rock pioneer route in particular, which runs south from Escalante down to and across the Colorado River, is a monument to perseverance in the face of adversity. Taking that type of approach to life in general, when faced with difficult challenges, is described by locals as being central to community and personal endeavors in the region.

Kane County Culture

Like Garfield County, Kane County contains a variety of beautiful geologic features that attract visitors from around the world. Within the county boundaries are parts of Zion and Bryce Canyon National Parks, Glen Canyon National Recreation Area, Dixie National Forest, and portions of GSENM, in addition to Coral Pink Sand Dunes and Kodachrome Basin State Parks. The county has a subculture associated with outfitters who run the Grand Canyon. It is also known as a central location for base camps for visiting several of the highly popular regional destinations, including the North Rim of the Grand Canyon, Zion and Bryce Canyon National Parks, and Lake Powell/Glen Canyon National Recreation Area, among others.

And as in Garfield County, Kane County geology has played a dominant role in shaping the economic opportunities and cultural fabric of local communities. Independence and resilience were necessary conditions for physical and economic survival in the region prior to the establishment of reliable trucking of goods into the area. Locals take pride in perpetuating the traditional values of self-reliance and maintenance of the skills necessary to living in harsh and often dangerous conditions. In the Kanab area, red rock mesas and extensive Navajo sandstone canyon walls complicate ranching operations. They have also provided the backdrop for many Hollywood movies. Kanab is famous for hosting a long string of film production crews and Hollywood stars that came to the area to make movies. That history is important to many residents of the area, who are proud of the role their local landscape has played in the film industry for many decades.

Another aspect of local culture in Kanab that has arisen in recent decades is the establishment and continued development of the Best Friends Animal Sanctuary a few miles north of Kanab. This no-kill animal sanctuary is nationally known for its humane approach to animal rescue and rehabilitation. It is the nation's largest animal sanctuary of its kind and is Kane County's top employer. Visitors to the sanctuary, who come from across the United States and from other countries, and the businesses that cater to them add a different element to local culture than had existed in the region prior to when Best Friends gained its current status.

Coconino County Culture

Coconino County, Arizona, is the second largest county in the United States in terms of land mass. Its cities, towns, and small communities are spread across a large area and are distinct from each other in terms of geography, economic structure, and demographics. Accordingly, there are wide differences in culture from one part of the county to another. Coconino County is home to Grand Canyon National Park. The county's largest city is Flagstaff, which is more than 100 miles from the Utah border. The communities of Fredonia and Page are both close to Utah. Multiple ranchers who hold grazing permits on the BLM-administered surface land in Utah are based in the Page area.

Arizona culture is strongly influenced by Native American (primarily Navajo), Mexican, and Latter-day Saint peoples and their traditions. The Fredonia-Page slice of northern Arizona is

closely tied to southern Utah due to both its location north of the Grand Canyon and the Colorado River and the long travel distances between this region and the larger communities within the County. The drive from Page to Flagstaff is more than 2 hours. From Fredonia to Flagstaff is nearly a 3.5-hour drive. In contrast, to drive from Page to Kanab, Utah, takes just over 1 hour in good road conditions, and the drive from Fredonia to Kanab is only a few minutes long. Fredonia and Kanab are closely connected from an economic standpoint, and some workers commute to work across the Utah-Arizona State line. Retail shopping in Fredonia is very limited, and local residents rely on businesses in Kanab to meet many of their everyday needs.

Page provides accommodations and services for visitors to Lake Powell and travelers headed between Utah and the South Rim of the Grand Canyon and other Arizona destinations, and serves the basic needs of workers at Glen Canyon Dam and the Navajo Generating Station power plant, which is east of Page on the Navajo Reservation.

Coconino County is home to members of at least 27 different Alaska Native and American Indian tribes, including the Kaibab Band of Paiute. Although there is quite a bit of diversity of tribes represented within the population, in 2013 the Navajo Nation made up more than 87 percent of native peoples within the county. The Pueblo, Apache, and Yuman tribes were the only other tribes that made up more than 1 percent each of the total Alaska Native/American Indian population in Coconino County in that same year. Within northern Coconino County, the Navajo tribe is the predominant American Indian tribe.

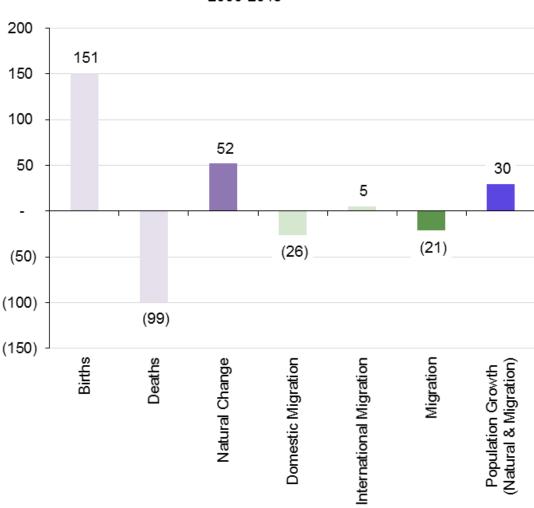
Social Conditions

Study Area Overview

The basic demographic makeup within the SE study area varies between Garfield and Kane Counties in comparison with the State of Utah. In the period from 2000 to 2016, at 5 percent and 4.7 percent, respectively, population growth in Garfield and Kane Counties was lower than that in Utah, which experienced 11 percent growth during the same period of time (see Table 1). At 36.1 years and 43.4 years, respectively, in 2016, both Garfield and Kane Counties had older median ages than did Utah as a whole, at 30.3 years, although Garfield County saw their median age slightly decrease between 2010 and 2016. In contrast, Utah's median age increased by 5.2 percent during the same period, from 28.8 years to 30.3 years (see Table 1).

The counties in the study area have collectively experienced steady population growth since 1970. From 1970 to 2016, overall population in Garfield and Kane Counties grew by 120 percent, increasing from 5,599 to 12,320 people (see Figure 2). Most of the region's population growth has been internal, through births exceeding deaths, rather than being due to inmigration from outside. Rather, net migration has been negative, indicating that more people are moving out of the study area than are moving in (see Figure 1).

In comparison to the two-county study area in Utah, Coconino County, Arizona, has experienced both positive migration and a high number of births. From 2000 to 2016, the population of Coconino County grew by 21 percent.



Average Annual Components of Population Change, County Region, 2000-2016

The Census Bureau makes a minor statistical correction, called a "residual," which is omitted from the figure above. Because of this correction, natural change plus net migration may not add to total population change in the figure.

Figure 1. Garfield and Kane Counties Population Growth, 2000 to 2016

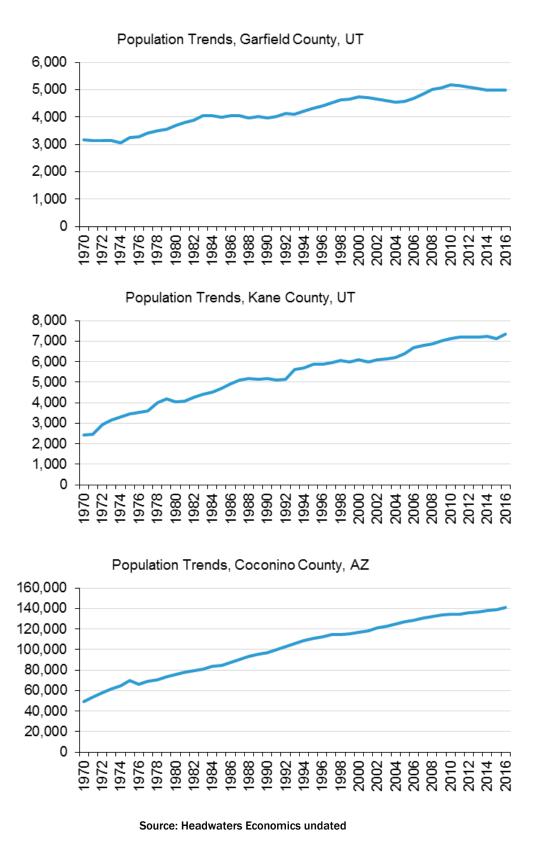


Figure 2. Population Trends, 1970 to 2016

Table 1. Basic Population Statistics

Basic Population Statistics	Garfield County, UT	Kane County, UT	Coconino County, AZ	Kane-Garfield Two-County Region	Utah
Population (2016)	4,986	7,334	134,011	12,320	3,051,217
Population (2000)	4,747	6,094	116,320	10,841	2,244,502
Population Percent Change (2010–2016)	5%	21%	15%	14%	36%
Median Age (2016)	36.1	43.4	30.7	N/A	30.3
Median Age (2010)	34.4	45.3	30.8	N/A	28.8

N/A - not available

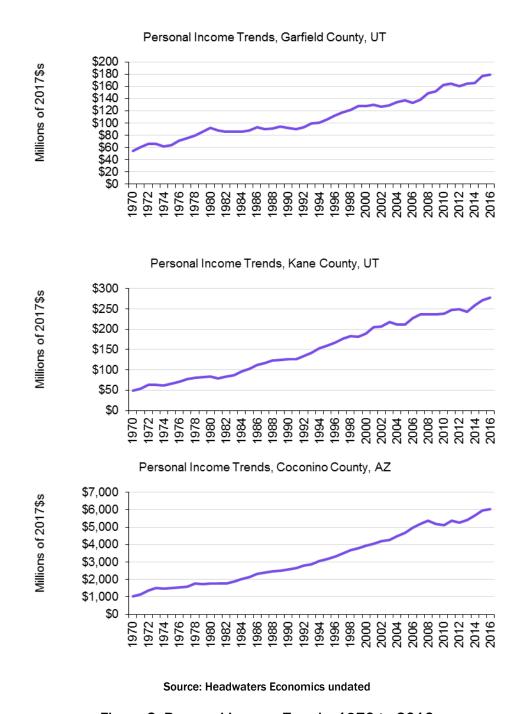


Figure 3. Personal Income Trends, 1970 to 2016

Within counties in the study area, per capita, median, and mean income are reported as being lower than they are in the State of Utah (see Table 2). Nominal retirement income is lower in Garfield County than in the other two counties in the study area (see Table 3).

Since 1960, total personal income in the study area has increased in real terms (adjusted for inflation), with a few decreases that largely correspond to national recessions (see Figure 3). Garfield County's income growth was the slowest of the three, and Kane County's growth has

been robust. All three counties experienced economic disruption during the 2007–2009 recession, but personal income in all three counties has returned to an upward trend since that time.

Table 2. Household Income

Household Income (2016)	Garfield County, UT	Kane County, UT	Coconino County, AZ	Kane-Garfield Two-County Region	Utah
Per Capita Income	\$21,006	\$24,488	\$24,711	N/A	\$25,600
Median Household Income	\$45,221	\$50,517	\$51,106	N/A	\$62,518
Mean Annual Household Income	\$53,927	\$60,030	\$66,392	\$57,444	\$78,007
Mean Household Social Security Income	\$15,848	\$17,993	\$17,781	\$17,202	\$18,920
Mean Household Retirement Income	\$21,111	\$26,688	\$25,660	\$24,604	\$25,790
Mean Household Supplemental Security Income	\$11,045	\$11,237	\$9,330	\$11,185	\$10,035
Mean Household Cash Public Assistance Income	\$132	\$5,137	\$3,203	\$3,317	\$3,196

Source: U.S. Department of Commerce 2017

N/A - not available

Table 3. Components of Household Income

Components of Household Income (2016)	Garfield County, UT	Kane County, UT	Coconino County, AZ	Kane-Garfield Two- County Region	Utah
Labor Earnings	77.4%	67.2%	83.0%	71.2%	84.3%
Social SECURITY	41.2%	45.1%	22.3%	43.6%	24.1%
Retirement Income	25.3%	27.1%	16.7%	26.4%	15.9%
Supplemental Security Income	2.4%	4.2%	4.3%	3.5%	3.7%
Cash Public Assistance Income	1.7%	1.9%	2.1%	1.8%	1.9%
Food Stamp/SNAP	5.4%	7.3%	12.4%	6.5%	8.3%

Source: U.S. Department of Commerce 2017

Poverty rates for different categories of the population vary widely both within the study area and in comparison to the United States. In general, poverty rates are lower in Garfield and Kane Counties than in the United States, while in Coconino County they are higher than in the United States as a whole (see Table 4). When evaluated by race and ethnicity, poverty rates within the study area are similarly complex and varied. No clear patterns emerge when compared to the United States, an indication that economic conditions in the study area do not uniformly mirror national trends or statistics (see Table 5). What can be stated is that poverty rates for certain categories within the study area are markedly higher than for the State of Utah.

Table 4. Percentage of People in Poverty

Percentage of People Who are Below the Poverty Line (2016)	Garfield County, UT	Kane County, UT	Coconino County, AZ	Kane-Garfield Two-County Region	Utah
People	13.5%	9.0%	22.2%	10.8%	11.7%
Families	8.5%	4.8%	14.5%	6.4%	8.4%
People under 18 years	16.8%	10.4%	25.8%	13.1%	13.4%
People 65 years and older	7.1%	7.4%	11.0%	7.3%	6.9%
Families with related children under 18 years	16.3%	6.7%	22.9%	10.7%	11.7%
Married couple families	6.1%	3.8%	8.3%	4.8%	5.3%
Married couple families with children under 18 years	11.5%	5.2%	13.4%	7.7%	6.9%
Female householder, no husband present	27.1%	20.0%	31.8%	24.1%	26.5%
Female householder, no husband present with children under 18 years	36.7%	25.9%	38.8%	32.6%	35.0%

Table 5. Poverty Rates since 1960

Poverty Rates (percentage of total population living in poverty)							
Location	1960	1970	1980	1990	2000	2010	2016
United States	22.1%	13.7%	12.4%	13.1%	12.4%	14.9%	15.1%
Utah	24.9%	15.3%	13.2%	15.7%	13.9%	17.2%	11.7%
Coconino County	34.8%	22.8%	20.4%	23.1%	18.2%	21.8%	22.2%
Garfield County	31.3%	16.1%	12.0%	14.8%	8.1%	12.3%	13.5%
Kane County	19.8%	12.4%	17.3%	16.3%	7.9%	7.6%	9.0%

Source: U.S. Department of Commerce undated; U.S. Census Bureau 2008–2012

Educational attainment statistics in the study area indicate that the people living within the study area tend to be high school graduates at a slightly higher rate on average than in Utah as a whole. For higher education, however, rates of completion tend to be lower within the study area (see Table 6). This could be evidence of either fewer opportunities for pursuing graduate degrees or a lower educational requirement for employment within the region, or both. It could also be that some people in the study area simply do not wish to pursue higher education or that some people, who are supported by others, do not work and therefore do not seek higher education, or both.

Table 6. Educational Attainment

Educational Attainment, Population Age 25 and Older (2008–2012), as Reported by Survey Respondents	Garfield County, UT	Kane County, UT	Coconino County, AZ	Kane-Garfield Two-County Region	Utah
No high school degree	9.3%	5.0%	11.1%	6.7%	8.5%
High school graduate	90.7%	95.0%	88.9%	93.3%	91.5%
Associate's degree	8.9%	9.9%	9.4%	9.5%	9.8%
Bachelor's degree or higher	20.1%	25.3%	34.2%	23.2%	31.7%
Bachelor's degree	14.8%	15.5%	19.9%	15.2%	21.0%
Graduate or professional	5.3%	9.8%	14.3%	8.0%	10.7%

From 1989 to 2016, rural school enrollment across Utah declined in some locations and increased in others. In a comparison of high schools in communities with similar populations to that of Escalante and having in-community high schools serving the same age cohorts (grades 7 through 12), student enrollments declined by an average of 10.9 percent (BLM 2019). In the past 5 years, enrollments have increased, stayed about the same, or decreased, depending on the specific school. In a separate analysis of six rural schools situated in communities in various regions of Utah that are similarly located in comparison to Escalante (remote, with long drives to access other communities or major highways), enrollment at five elementary schools has declined by as much as 60 percent, with one school's enrollment increasing (by 68 percent), from 1989 to 2016. These schools' average change in enrollment from 1989 to 2016 was a decline of 24.3 percent (BLM 2019). These figures are not surprising given changes in the overall rural population in Utah. The non-metro population in Utah is estimated as having dropped from 466,488 in 2010 to 291,295 in 2017, a reduction in rural population of 36.7 percent. During the same period, the number of children under the age of 18 living in nonmetro Utah dropped from 166,762 in 2010 to 88,871 in 2017, which is a decline of 46.7 percent (Headwaters Economics 2019). Given these numbers, it would be expected that school enrollments in rural communities across Utah would also decline.

Paying for housing in Garfield and Kane Counties requires a smaller percentage of household income than it does in Utah in general, while in Coconino County costs are similar to national housing costs (see Table 7).

Table 7. Housing Costs

Housing Costs as a Percentage of Household Income (2012)	Garfield County, UT	Kane County, UT	Coconino County, AZ	Kane-Garfield Two-County Region	Utah
Monthly cost <15% of household income	29.0%	30.4%	24.9%	29.8%	22.0%
Monthly cost >30% of household income	28.8%	28.8%	32.2%	30.2%	27.0%
Gross rent <15% of household income	20.7%	20.7%	13.2%	22.6%	12.6%

Housing Costs as a Percentage of Household Income (2012)	Garfield County, UT	Kane County, UT	Coconino County, AZ	Kane-Garfield Two-County Region	Utah
Gross rent >30% of household income	32.7%	32.7%	49.2%	33.1%	43.4%

Economic Conditions

Study Area Economic Overview

Within the study area, most SE conditions vary from one county to another. For example, population growth from 1970 to 2016 ranged from 130 percent in Garfield County to 201 percent in Kane County. Population growth in Utah during the same period was 186 percent.

For some economic sectors, trends in economic conditions within the study area have followed the national trend. An example is in the growth of the service sector as a leading source of employment. Service sector industries include, among others: utilities; wholesale trade; retail trade; transportation and warehousing; information technology and information services; finance and insurance; real estate, rental, and leasing services; professional and technical services; management of companies and enterprises; administrative and waste services; educational services; health care and social assistance; arts, entertainment, and recreation; accommodation and food services; and all other services except for public administration. Throughout the United States, service sector jobs have become an increasingly important source of household income as manufacturing and extractive industries have declined over time at the national level, with the exception of oil and gas extraction. Arizona, Utah, and the overall study area are no exceptions, with service sector employment steadily increasing from 1970 up to the present (see Figure 4). In contrast to those sectors in which the study area parallels trends for the United States as a whole, in some sectors there are marked differences. For example, in 2012, employment within the travel and tourism industry as a percentage of all employment in the study area was more than double that of the United States. Travel and tourism play a larger role in the economies of the counties around GSENM than they do in the United States in general.

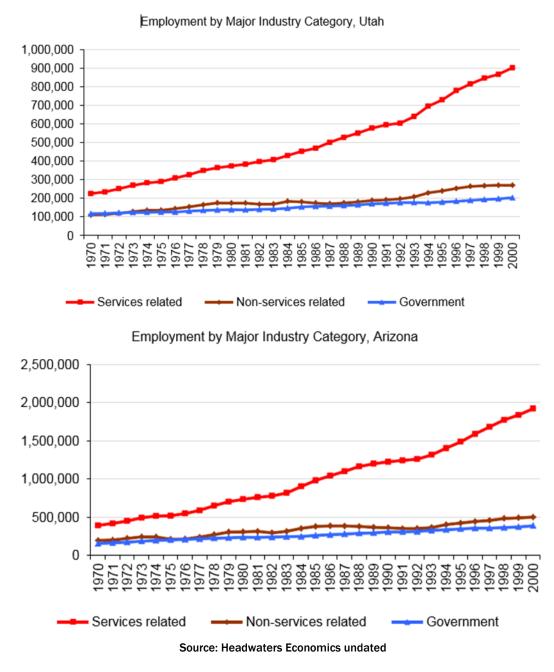


Figure 4. Employment by Major Industry Category, Utah and Arizona, 1970 to 2000

A major reason for the importance of travel and tourism within the economy of the study area is the scenic nature of the region and the many opportunities for participating in recreation and leisure activities in the region. The geology and geography of the GSENM region have played prominent roles in determining the types of economic activity that occur in the area, in part due to the limited nature of what was economically feasible in the region: for many years, long transportation distances, limited infrastructure, and a rugged landscape contributed to the limited nature of economic enterprises within the study area. In part because the region did not lend itself to successful traditional homesteading in the way that the Great Plains did, a

significant percentage of land within the study area remained in Federal ownership after Utah and Arizona achieved statehood. As such, the very nature of the landscape itself contributed to a circumstance of both limited economic opportunity and a high percentage of Federal lands. In each of the three counties, total Federal ownership of land is greater than the percentage for the United States in general. In Garfield County, more than 90 percent of all land is federally owned. In comparison, the total percentage of Federal land ownership for the entire United States is just under 29 percent. The high percentage of federally owned land in Garfield County indicates that Federal management of land and resources plays an important role in social and economic conditions and presents a complex issue for economic development in Garfield County.

Out of the three counties within the study area, during the period from 1970 to 2016 Kane County experienced the highest rates of growth in population, employment, and personal income. In addition, Kane County had the lowest unemployment rate of the three counties, with unemployment sitting at 3.4 percent as of 2017. In contrast, unemployment in Garfield County was 7.6 percent for the same year.

In 2016, in all three counties in the study area, government employment was somewhat greater as a percentage of all employment than it was in Utah as a whole. In Utah, it was 13 percent. In Garfield and Kane Counties, government employment was around 15 percent of all employment, while in Coconino County it was 23 percent (see Table 8).

With higher non-labor income as a percentage of all income, the study area is less likely to be vulnerable to changes in the productive economy, but it is more likely to be vulnerable to changes in financial asset and other investment asset markets. As mentioned in the prior discussion of social conditions, the area appears to have a higher percentage of retired residents than does Utah as a whole. This means that investment and retirement income will flow into these three counties at a higher rate than they do for Utah in general.

Table 8. Selected Socioeconomic Statistics

Selected Socioeconomic Statistics	Garfield County, UT	Kane County, UT	Coconino County, AZ	Utah
Population % change, 1970-2016	58%	201%	187%	186%
Employment % change, 1970–2016	130%	360%	320%	324%
Personal income % change, 1970–2016	229%	471%	496%	436%
Unemployment rate, 2017	7.6%	3.4%	5.2%	3.2%
Average earnings per job (total earnings/total jobs), 2016 (2017 \$s)	\$30,915	\$34,836	\$46,933	\$50,516
Per capita income, 2016 (2017 \$s)	\$35,922	\$37,913	\$42,941	\$41,784
Non-labor % of total personal income, 2016	43.9%	43.5%	41.0%	32.4%
Services % of total private employment, 2016	72%	84%	84%	83%
Government % of total employment, 2016	19.6%	19.1%	22.5%	14.7%
Farms % of total employment, 2016	8.2%	3.7%	2.7%	1.1%
Mining (including fossil fuels) % of total employment, 2016	N/A	0.1%	0.2%	0.7%

N/A - not available

In the study area, the most important industries in the past decade, in terms of total employment, were: arts, entertainment, recreation, accommodation, and food; education, health care, and social assistance; and retail trade. While farming provided more than 8 percent of all employment in Garfield County in recent years, this category of employment played a lesser role in Kane County's and Coconino County's economy as a percentage of all employment.

Another economic sector within the region is coal mining in Kane County. Managers of Alton Coal's Coal Hollow Project, located just southeast of Alton, Utah, estimate that the mine will employ between 150 and 200 workers over the next 40 years.

Local Connections with Public Lands

Payments in Lieu of Taxes (PILT) are Federal payments to local governments that help offset losses in property taxes due to non-taxable Federal lands within their boundaries. The key law is Public Law 94-565, dated October 20, 1976. This law was rewritten and amended by Public Law 97-258 on September 13, 1982, and codified as Chapter 69, Title 31 of the United States Code. The law recognizes that the inability of local governments to collect property taxes on federally owned land can create a financial impact.

"PILT payments help local governments carry out such vital services as firefighting and police protection, construction of public schools and roads, and search-and-rescue operations. The payments are made annually for tax-exempt Federal lands administered by the Bureau of Land Management, the National Park Service, the U.S. Fish and Wildlife Service (all agencies of the Interior Department), the U.S. Forest Service (part of the U.S. Department of Agriculture), and for Federal water projects and some military installations. PILT payments are one of the ways the Federal Government can fulfill its role of being a good neighbor to local communities" (U.S. Department of the Interior undated).

FS payments are revenue-sharing payments that were originally based on timber operations within each county as authorized by the Twenty-Five Percent Fund Act of 1908. "In the late 1980s, due largely to declines in timber sale receipts, 1908 Act payments began to drop significantly and fluctuate. In 1994, Congress responded by providing 'safety net payments' to counties in northern California, western Oregon and western Washington. In 2000, Congress passed the Secure Rural Schools and Community Self-Determination Act that provided enhanced, stabilized payments to more States. It also created a forum for community interests to participate collaboratively in the selection of natural resource projects on the National Forests, and has assisted in community wildfire protection planning" (USDA 2015). Table 9 provides the FS payments in Garfield, Kane, and Coconino Counties as well as Utah.

Table 9. Federal Land Payments

Federal Land Payments (2015 in 2017 \$s)	Garfield County, UT	Kane County, UT	Coconino County, AZ	Kane-Garfield Two-County Region	Utah
PILT	\$884,781	\$1,092,227	\$1,756,785	\$1,977,008	\$38,748,136
Forest Service payments	\$1,214,932	\$125,852	\$3,449,722	\$1,340,784	\$9,670,307
BLM payments(1)	\$76,848	\$55,471	\$26,189	\$132,319	\$1,424,525

Federal Land Payments (2015 in 2017 \$s)	Garfield County, UT	Kane County, UT	Coconino County, AZ	Kane-Garfield Two-County Region	Utah
Total Federal land Payments by geography of origin (\$)	\$2,176,562	\$1,273,555	\$5,232,696	\$3,450,117	\$169,581,702

Source: Headwaters Economics undated

PILT - Payments in Lieu of Taxes

Residents within the study area, as well as organizations of various types that exist and/or operate in the area, are connected with public lands in and around GSENM on multiple levels and in many different ways. Ranchers in the region are closely connected with the land through grazing their cattle on allotments on BLM-administered surface land and FS and State lands in the area. The ranchers who run livestock on GSENM and other public lands surrounding it are very familiar with the landscape. Local law enforcement and public safety workers spend time patrolling and providing rescue services on publicly owned land units in the region and become well acquainted with its physical characteristics. Local residents who recreate on the public lands that surround their communities often have deep emotional connections with the places they frequent. Even those residents who either rarely or never venture out onto public lands enjoy benefits from the scenic beauty that surrounds their communities. Ecologists have recognized that there is a special connection, often called a "sense of place," that develops when someone lives close to or in a particular landscape.

In addition to benefitting from the land in terms of the flow of Federal payments to the community and the commodity values generated by the natural resource base it provides, local residents often enjoy emotional, physical, and spiritual benefits that come from that sense of place. Attachment to specific places can also develop in visitors who do not live in the local area but who have a deep appreciation for the characteristics of the landscape and the non-market benefits it can provide.

Ecosystem Services

Economists sometimes divide all goods and services into two broad categories: market and non-market. "Market" goods and services are those for which a market exists or can exist, meaning that it is possible to buy and sell those goods and services. On the other hand, "non-market" goods and services are those that, for one reason or another, whether it is physical or legal, are not available for purchase and that cannot be sold. Public lands provide both market and non-market goods and services that are beneficial to communities, economies, groups, and individuals (see Table 10). An example of a non-market good provided by public lands is the water filtering service provided by an intact wetland on public land.

Although in theory many non-market ecosystem services could be privatized and sold in a market-based exchange, few of them are actually sold in any market either due to the basic public nature of the good or service (meaning that it is impossible to exclude anyone from using or enjoying it, and one person's use or enjoyment of it does not affect another's use or enjoyment, making it difficult or impossible to sell it for profit) or due to public ownership of the good or service. Most economists recognize both the market and non-market goods and services provided by public lands. One way of categorizing ecosystem services, adapted from

¹ Bureau of Land Management (BLM) Revenue Sharing: BLM shares a portion of receipts generated on public lands with State and local governments, including grazing fees through the Taylor Grazing Act and timber receipts generated on Oregon and California grant lands.

Millennium Ecosystem Assessment's Ecosystems and Human Well-being, divides them into provisioning, regulating, cultural, and supporting ecosystem services, as identified in Table 10 below.

Table 10. Millennium Ecosystem Assessment

Provisioning	Regulating	Cultural
Goods produced or provided by ecosystems	Benefits obtained from regulation of ecosystem processes	Non-material benefits from ecosystems
FoodFresh waterFuel woodGenetic resources	Climate regulationDisease regulationFlood regulation	 Spiritual Recreational Aesthetic Inspirational Educational
	Supporting	Educational

Services necessary for production of other ecosystem services

- Soil formation
- · Waste treatment and nutrient cycling
- Primary production

Source: Millennium Ecosystem Assessment 2005

In 2008, the Sustainable Rangelands Roundtable published a report on sustainable management of grazing lands, titled "Sustainable Rangelands Ecosystem Goods and Services" (Maczko and Hidlinger 2008). In this report, the authors provided a list of examples of ecosystem goods and services. They divide these into three categories: biological, hydrological/atmospheric, and miscellaneous (see Table 11).

Table 11. Ecosystem Goods and Services Derived from Rangelands

Biological	Hydrological/Atmospheric	Miscellaneous
 Domestic Livestock Other Food for Human Consumption Forage for Livestock Fiber Biofuels Fishing, Hunting, and Viewing Wildlife Biochemicals Genetic Material 	 Drinking Water Water for Economic Benefit Floods for Channel and Riparian Area Rejuvenation Flood Mitigation Water Bodies for Recreation/Tourism Minimizes Contributions of Chemicals and Particulates Contributes to Clean, Fresh Air Hydrologic Energy Potential Solar Energy Potential Wind Energy Potential 	 Views and Scenes Cultural or Spiritual Resources Historical/Archaeological Sites Scientifically Significant Sites Recreation and Tourism Sites Ornamental Resources Ceremonial Resources

Source: Maczko and Hidinger 2008

Regardless of how they are defined or categorized, the region included in the study area provides a wide range of ecosystem goods and services, many of which are highly valued both by local residents and by visitors from outside the area.

Market Values

Some of the direct and indirect market goods and services provided by the Planning Area include: forage and water for livestock; game species of wildlife; locations for video recording and filming for television and cinematic productions; and locations for both commercial and non-commercial recreation activities. Although the activity of viewing the scenery in the Planning Area does not itself constitute a market good or service, in its many forms (such as car tours, hiking excursions, backpacking trips, and so on) it does draw in customers for multiple business categories within the communities around the edges of GSENM. These businesses include motels, bed and breakfasts, grocery and other retail stores, restaurants, gas stations and convenience stores, clothing and souvenir shops, tour operators, auto repair and maintenance shops, medical service providers, and other retail and service establishments that cater to the needs of tourists and other visitors.

Non-market Values

GSENM provides a broad range of non-market goods and services to the communities close to the Planning Area and to visitors from outside, as well. Some examples include: the experience of solitude, as well as the opportunity to view uniquely sublime landscapes and scenery, and the spiritual and psychological benefits that can come from those experiences; opportunities for completing basic research, including research in both physical and social sciences; educational opportunities for students, both who visit the Planning Area and who participate in regional in-class programs and in a web-based, global curriculum used by teachers and students around the world; habitat for non-game wildlife species; and so on.

Socioeconomic Workshop and Comment Period

In accordance with the BLM Land Use Planning Handbook (H-1601-1), the BLM hosted a socioeconomic workshop on May 31, 2018. The workshop provided an opportunity for local government officials, community leaders, and other citizens to discuss regional economic conditions, trends, and strategies with BLM managers and staff. During the workshop, the BLM solicited comments from attendees; the BLM also accepted socioeconomic comments through June 8, 2018. During the workshop, five attendees provided oral comments and an additional 11 people submitted written comments during the comment period. The BLM considered input received at the socioeconomic workshop and during the comment period in the development of alternatives and in the analysis of environmental consequences.

References

- Annenberg Learner. 2016. *Plateau, Great Basin, and Southwest Tribes*. Retrieved from http://www.learner.org/interactives/historymap/indians3.html.
- Bureau of Land Management (BLM). 2019. Comparison of Schools in Utah. Spreadsheet provided by the BLM comparing school enrollment.
- Garfield County. 2017. *Garfield County Resource Management Plan.* Retrieved from http://garfield.utah.gov/departments/planning/.
- Headwaters Economics. Undated. Economic Profile System-Human Dimensions (EPS-HDT)

 Toolkit. Retrieved from https://headwaterseconomics.org/tools/economic-profile-system/about/.
- Headwaters Economics. 2019. Economic Profile System-Human Dimensions (EPS-HDT) Toolkit. Retrieved from https://headwaterseconomics.org/tools/economic-profile-system/about/.
- Holland, Marsha, and Marietta Eaton. 2007. *The Southern Utah Oral History Project: A Record of Living with the Land*. Unpublished manuscript. Selected interview transcripts available via multiple online sources.
- Kane County. 2017a. Kane County, Utah General Plan For the Physical Development of the Unincorporated Area Pursuant to Section 17-24a-403 of the Utah State Code. 2017 General Plan Amendment. Retrieved from https://kane.utah.gov/gov/dept/planning/2017-kane-county-general-plan-amendment/.
- Kane County. 2017b. *Kane County Resource Management Plan*. Final. July. Retrieved from https://kane.utah.gov/gov/dept/commission/resource-committee/kane-county-resource-management-plan/.
- Maczko, Kristie, and Lori Hidinger, editors. 2008. "Sustainable Rangelands Ecosystem Goods and Services." Sustainable Rangelands Roundtable. Retrieved from http://sustainable.rangelands.org/pdf/Ecosystem_Goods_Services.pdf. Accessed: May 2015.
- Millennium Ecosystem Assessment. 2005. Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC. Retrieved from https://www.millenniumassessment.org/documents/document.356.aspx.pdf.
- United States Census Bureau. 2008–2018. American Fact Finder. Poverty Status in the Past 12 Months, 2008–2012 American Community Survey 5-Year Estimates. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=A CS_12_5YR_S1701&prodType=Table.
- United States Department of Agriculture (USDA). 2015. "US Forest Service Announces Payments to States to Support Local Schools and Roads." Press Release No. 0011.15. Retrieved from https://www.usda.gov/media/press-releases/2015/01/15/us-forest-service-announces-payments-states-support-local-schools.
- United States Department of Commerce. Undated. *Poverty Data Tables*. Retrieved from https://www.census.gov/topics/income-poverty/poverty/data/tables.1960.html.

United States Department of Commerce. 2017. Census Bureau, American Community Survey Office, Washington, D.C.

United States Department of the Interior. Undated. *Payment in Lieu of Taxes*. Retrieved from https://www.doi.gov/pilt.

Abbreviations-Acronyms

Term	Definition
BLM	Bureau of Land Management
EHCGR	Escalante Historic/Cultural Grazing Region
EPS	Economic Profile System
FS	Forest Service
GSENM	Grand Staircase-Escalante National Monument
NPS	National Park Service
PILT	Payments in Lieu of Taxes
SE	socioeconomic
USDA	United States Department of Agriculture

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix U

Economic Assessment Report

August 2019

Table of Contents

Introduction	U-1
The IMPLAN Model and Economic Term Definitions	U-2
Alternatives	U-3
Methodology	
Recreation	U-4
Livestock Grazing	
Mineral Development	U-12
Forestry	U-18
IMPLAN Modeling Results	U-19
Recreation	
Livestock Grazing	U-23
Oil and Gas	U-24
Coal	U-25
Locatable and Salable Minerals	U-26
Forestry	U-26
Nonmarket Values	
Nonmarket Use Values	U-29
Non-use Values	U-30
Special Designations and Enhancement Values	U-30
Tribal Uses	
Ecosystem Service Values	U-31
Social Values	
References	U-37
Abbreviations-Acronyms	U-39
List of Tables	
Table 1. Total Annual Visitor Days in the Planning Area (2011–2017 annual average)	U-4
Table 2. Historical Recreation Visitor Days in GSENM and KEPA (2015–2017)	U-5
Table 3. Spending Estimates of Non-Local Visitors: 3-Year Historical Average (in 2017 dollars)	U-8
Table 4. IMPLAN Sectors Used for Recreation	
Table 5. Active AUMs and Suspended AUMs, by Alternative	U-11
Table 6. Direct Economic Impact of Livestock Grazing, by Alternative (in 2017 dollars)	U-11

Table 7. Federal Grazing Fee Revenue (in 2017 dollars)	U-12
Table 8. Annual Estimated Revenue and Federal Payments from Fluid Minerals Leases on Federal Land in the Planning Area (in 2017 dollars)	U-14
Table 9. Annual Estimated Sales Value and Federal Payments from Coal on Federal land in the Planning Area (in 2017 dollars)	U-15
Table 10. Annual Estimated Revenue and Federal Payments from Locatable Minerals Leases on Federal land in the Planning Area (in 2017 dollars)	U-17
Table 11. Annual Sales Value and Federal Revenues from Christmas Tree and Wood Products (in 2017 dollars)	U-18
Table 12. Stewardship Contract Payment Estimates, by Alternative (in 2017 dollars)	U-19
Table 13. Summary of Annual Economic Impact of GSENM Management in the Analysis Area, by Alternative (in 2017 dollars)	U-20
Table 14. Summary of Annual Economic Impact of KEPA Management in the Analysis Area, by Alternative (in 2017 dollars)	U-21
Table 15. Annual Economic Impact of GSENM Recreation Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)	U-21
Table 16. Annual Economic Impact of KEPA Recreation Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)	U-22
Table 17. Annual Economic Impact of GSENM Livestock Grazing Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)	U-23
Table 18. Annual Economic Impact of KEPA Livestock Grazing Activities and Management, by Alternative (in 2017 dollars)	
Table 19. Annual Economic Impact of KEPA Oil and Gas Activities and Management, by Alternative (in 2017 dollars)	U-24
Table 20. Annual Economic Impact of KEPA Coal Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)	U-25
Table 21. Annual Economic Impact of KEPA Locatable and Salable Mineral Development Activities and Development in the Analysis Area, by Alternative (in	
2017 dollars)	U-26
Table 22. Annual Economic Impact of GSENM Forestry Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)	U-27
Table 23. Annual Economic Impact of KEPA Forestry Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)	U-27
Table 24. Average Recreational Use Values, per Person per Day (in 2017 dollars)	U-29
Table 25. Ecosystem Services with Nonmarket Values in Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area	U-32
Table 26. Annual Consumer Surplus Value of Recreation in Grand Staircase-Escalante National Monument (2017\$)	

Appendix U: Economic Assessment Report

Introduction

This appendix describes the methods and results of the economic assessment conducted for the Grand Staircase-Escalante National Monument (GSENM) and Kanab-Escalante Planning Area (KEPA) Resource Management Plans (RMPs) and Environmental Impact Statement (EIS). This appendix primarily focus on the economic analysis methods and results. Refer to Section 3.21, Social and Economic Considerations: Environmental Justice; Native American Religious Concerns, Hazardous Materials and Public Safety, of the RMPs/EIS for additional information on social analysis, including environmental justice.

The analysis area for social and economic considerations (often referred to as socioeconomics) includes the extent of Garfield and Kane Counties in Utah and portions of Coconino County in Arizona. However, the economic assessment focuses primarily on Garfield and Kane Counties, as these areas are likely to experience the greatest economic impacts associated with decisions in the RMPs/EIS. The economic assessment used both quantitative and qualitative methods and analyses based on the best available existing information. Quantitative analysis was primarily conducting using the IMPLAN (IMpact analysis for PLANning model) economic model. Input-output models such as the IMPLAN model provide a quantitative representation of the production relationships between individual economic sectors and how these sectors and the economies in the analysis area could be affected under the various management alternatives in the RMPs/EIS. The quantitative impact analysis focuses on resource uses most likely to contribute to economic conditions in the analysis area including: recreation, livestock grazing, mineral development and production, and forestry. The economic assessment also included qualitative consideration of nonmarket values.

The following basic assumptions underlie the economic analyses:

- The analysis area will continue to experience increases in visitors and visitor uses consistent with recent trends.
- Market-based economic relationships, such as purchases between industries and relationships between value added, economic output, labor income, and employment, will remain similar to current relationships throughout the planning period.
- The pace and timing of mineral development activities is dependent on a variety of factors outside the management decisions of the Bureau of Land Management (BLM). These include national and international energy demand and prices, production factors within the Planning Area, and business strategies of operators. The Mineral Potential Report for the Lands now Excluded from Grand Staircase-Escalante National Monument (BLM 2018a) projects expected rates of oil and gas well drilling, and future production volumes. Economic impacts could vary depending on the actual level of development during the planning period.
- Tax and royalty revenues derived from activities on BLM-administered surface land would continue to be distributed among communities within the Planning Area, the State, and the Federal Government similar to the current distribution.
- BLM-administered surface land will continue to provide ecosystem services, and people will
 continue to experience nonmarket values from those services, at similar rates to those now

provided and experienced unless the conditions producing the ecosystem services or nonmarket values are altered by management actions.

The discussions below of the specific methodologies for each resource use provide additional assumptions used in the analyses.

The IMPLAN Model and Economic Term Definitions

IMPLAN is a regional economic model that provides a mathematical accounting of the flow of money, goods, and services through a region's economy—for this analysis, the region is Kane County and Garfield County. By combining the two counties, IMPLAN aggregates the two counties' economies into one region for modeling purposes. It should be noted that Kane and Garfield Counties have different economic situations, as described in Section 3.21 (Social and Economic Considerations) of the RMPs/EIS. While this analysis recognizes that the economic impacts may be overstated or understated for either county individually, the combined regional model provides an overview of how changes associated with each management alternative are expected to affect the region as a whole.

The IMPLAN model provides estimates of how a specific economic activity translates into jobs and income in the analysis area. The model includes the ripple effect (also called the "multiplier effect") of changes in economic sectors that may not be directly affected by management actions, but are linked to industries that are directly affected. In IMPLAN, these ripple effects are termed indirect impacts (for changes in industries that sell inputs to the industries that are directly affected) and induced impacts (for changes in household spending as household income increases or decreases due to the changes in production). This analysis used IMPLAN 2016 data, the latest available for the counties in the analysis area. Prior to running the model, costs and price data were converted to a consistent dollar year (2017) and the values in this appendix are expressed in year 2017 dollars.

IMPLAN is created and maintained by the Minnesota IMPLAN Group, and was developed in the 1970s through a collaboration with the U.S. Department of Agriculture, Forest Service (USFS) and the University of Minnesota. The IMPLAN model is constructed with data from the U.S. National Income and Product Accounts and the Bureau of Economic Analysis, among a variety of other data sources. The model includes 536 industry sectors based on the North American Industry Classification System. The model uses region-specific multipliers to trace and calculate the flow of dollars from the industries that originate the impact to supplier industries. Three types of impacts are calculated in IMPLAN:

- Direct Economic Impacts are impacts in the primary industries associated with activity on BLM-administered surface lands (e.g., restaurants frequented by visitors to BLMadministered surface lands in the analysis area).
- Indirect Economic Impacts are impacts in the industries that supply or interact with the primary industries. For example, when a restaurant expands and purchases new materials, the industry sectors supplying the materials experience indirect impacts.
- Induced Economic Impacts represent increased spending by workers who earn money due
 to increased economic activity, such as when restaurant employees use their wages to
 purchase goods from local shops.

Whenever new industry activity or income is injected into an economy, it starts a ripple effect that creates a total economic impact that is larger than the initial input. This is because the recipients of the new income spend some percentage of it and the recipients of that share, in

turn, spend some of it, and so on. The *total impact* of the new activity is the sum of these progressively smaller rounds of spending within the economy. This total economic impact creates a certain level of value added (i.e., Gross State Product), jobs, and industry activity. The total impact is the sum of the multiple rounds of secondary indirect and induced impacts that remain in the study area (as opposed to "leaking out" to other regions).¹

The results of this analysis are reported using commonly used metrics, consistent with best practices. A summary of each metric is provided below:

- **Employment**²: Represents the jobs created by industry, based on the output per worker and output impacts for each industry.
- Labor Income: Includes all forms of employment income, including employee compensation (wages and benefits) and proprietor income.
- Value added or Gross State Product: The difference between an industry's total output and the cost of its intermediate inputs; is the State-level counterpart to Gross Domestic Product.
- Industry Activity: Represents the total economic output generated by the direct spending.

Alternatives

The economic analysis assess the five management alternatives considered in the GSENM and KEPA RMPs/EIS, as summarized below and described in detail in Chapter 2, *Alternatives*, of the RMPs/EIS.

- Alternative A (No Action) is the continuation of existing management under the GSENM RMP. Alternative A represents continuing to manage the entire Planning Area as a national monument, and thus limits the potential for resource development uses of public lands.
- Alternative B emphasizes conservation of resources and applies the most restrictions and constraints on resource use on public lands in the Planning Area. As a result, Alternative B generally has less mineral development, livestock grazing, and resource use compared to other alternatives.
- Alternative C generally balances the need to maintain areas as open and available for multiple uses with the need to protect resources on public lands.
- Alternative D emphasizes resource use while protecting physical, biological, heritage, and visual resources to the extent required by existing laws, regulations, and agency guidance.
 As a result, Alternative D generally has more mineral development, livestock grazing, and resource use compared to the other alternatives.
- Alternative E (Proposed Plans): Alternative E represents the BLM's Proposed Plans.
 Alternative E is based on the management in the BLM's Preferred Alternative (Alternative D) with refinements based on public comments received on the Draft RMPs/EIS; input from cooperating agencies, tribes, and the BLM interdisciplinary team; input from the Utah State

¹ There is some amount of activity that leaks out to other counties or States, and thus is not included in the results presented here. For example, visitors to BLM-administered surface land may spend money at hotel chains that are owned by corporations based in other States. Some of these visitors' spending stays in the region, but most of it does not. The IMPLAN model accounts for this leakage and reflects only the economic activity remaining in the analysis area.

² Due to the static nature of the IMPLAN model, the employment impacts are presented in terms of annual job-years as the model calculates the annual impact of annual activity. It is likely that once the job is created, it will be sustained; however, to ensure that the impact is not overstated, it is conservatively assumed that the job impact is annual.

Resource Advisory Council, and other updates to management and allocations for clarity and consistency.

Methodology

This section describes the economic impact analysis methodology for the resource uses modeled in IMPLAN. The methodology includes a brief overview of the approach, the rationale for selecting the data inputs for the resource use, and a description of the IMPLAN inputs used for the management alternatives described in the GSENM and KEPA RMPs/EIS.

Recreation

Introduction

Recreation information considered and modeled includes information on the total number of visitors to GSENM; the proportion of local visitors (i.e., those who live in Kane County or Garfield County) versus non-local visitors; the average number of visitor days and/or nights spent in the area; spending patterns of visitors (what is spent on lodging versus food, for example); types of recreation and associated numbers of users; and permits obtained by visitors.

Recreation Data

The recreation economic analysis is informed by recent historical recreation visitation estimates for GSENM and KEPA taken from the BLM's Recreation Management Information System (RMIS) (BLM 2018b). Recreation usage data in RMIS are expressed in "visits" and "visitor days." A visit is defined as one individual who enters and recreates on BLM-administered surface land for an indeterminate period of time. A visit ends when that individual leaves BLM-administered surface land. The fact that some visits are of a single day or less, and some are for multiple days, is accounted for in the approach to estimating the direct impacts (expenditures) of visitors, as discussed below. One visitor day represents an aggregate of 12 visitor hours to a site or area. Table 1 shows the total visitor days in GSENM and KEPA for the past 7 years (generally 2011–2017).

Table 1. Total Annual Visitor Days in the Planning Area (2011–2017 annual average)

	Alternative A	Alternative B	Alternative C	Alternatives D and E
KEPA	287,454	296,078	293,204	287,454
GSENM	407,953	420,191	416,112	407,953
Total	695,407	716,269	709,315	695,407

Source: BLM 2018b

KEPA – Kanab-Escalante Planning Area, GSENM – Grand Staircase-Escalante National Monument

The IMPLAN portion of the analysis considers how direct, non-local visitor spending that can be tied directly to the Planning Area has an effect on the local economy. Only non-local visitor spending is considered because locals generally spend in the surrounding area regardless and the estimated results provide a lower bound to estimated economic impacts resulting from GSENM and KEPA management. The IMPLAN analysis relies on a combination of data sources, including RMIS (BLM 2018b), BLM specialists (Beal 2018), the 2016 Economic Snapshot produced by the Department of the Interior/National Conservation Lands (BLM 2016), and outside sources.

Market Valuation

The recreation economic analysis involved:

- Estimating recreation usage (annual recreation visits) to the GSENM and KEPA areas;
- Calculating total recreation-related expenditures (direct impacts) in these areas; and
- Estimating the total economic impacts based on recreation expenditures.

The recreation economic analysis presents two perspectives on economic effects used by economists: economic contribution and economic impact. Economic contribution measures gross changes in economic activity and in the case of recreation includes: (1) expenditures made by visitors from outside the economic analysis area, and (2) expenditures made by local residents (roughly, individuals who live within Kane County and Garfield County). Local residents make considerable recreation-related expenditures (gas, food, and so on) on local recreation, so the economic contribution perspective includes those expenditures in an analysis of the economic role of recreation. In other words, the combined expenditures by local and non-local recreationists help support local businesses. Economic impact measures only the net new changes in economic activity within the economic analysis area; in the case of recreation, net new economic activity is only generated by the spending within the economic analysis area of recreational visitors from outside the economic analysis area. Net new economic activity is not generated by local resident spending on local recreation, as these residents would generally make other expenditures locally if they did not make expenditures on local recreation. Therefore, by only accounting for non-local visitors, this analysis presents a conservative estimate of the economic activity generated by recreation in the GSENM and KEPA areas.

Estimation of Recreation Usage

Recreation usage data in RMIS are expressed in "visitor days" with one visitor day representing an aggregate of 12 visitor hours to a site or area. This analysis uses visitor days to estimate total spending related to recreation. Table 2 shows the estimated total visits in GSENM and KEPA in recent years. The estimation of Alternative A is derived from the 3-year average and then multiplied by an estimated 5 percent increase in visitation, which reflects the general trending increase in recreation in GSENM and KEPA.

Table 2. Historical Recreation Visitor Days in GSENM and KEPA (2015–2017)

Fiscal Year	GSENM	KEPA	Total
2015	359,487	231,469	590,956
2016	447,604	292,174	739,778
2017	366,614	303,381	669,995
3-Year Average	391,235	275,675	666,910
Alternative A (No Action) Adjusted 3-Year Average	407,953	287,454	695,407

Sources: BLM 2018b; Beal 2018

KEPA - Kanab-Escalante Planning Area, GSENM - Grand Staircase-Escalante National Monument

As indicated in Table 2, the annual average of visits to GSENM and KEPA is estimated at 695,407 visitor days for Alternative A (No Action Alternative). Historical recreation visitor days are reported in RMIS as the total visitor days in the extent of the former GSENM boundaries. The breakdown of total visitor days in GSENM and KEPA is estimated through local, expert BLM knowledge and the areal breakdown of the former boundary of GSENM into the new

boundaries. For example, visitation is given by recreation area and most of the recreation areas are exclusively in either the new boundaries of GSENM or KEPA. For the recreation areas not exclusively in either GSENM or KEPA, visitor days are either divided equally for recreation sites such as roads that make up the new boundaries or are divided proportionally by the percentage of GSENM and KEPA of the former monument boundary, 53.8 and 46.2 percent, respectively. Based on local, BLM expert knowledge, 82 percent of visitation to GSENM and KEPA is non-local and 18 percent is local (Beal 2018).

The BLM anticipates that recreation visitation will increase within the Planning Area as popularity and interest in outdoor recreation continues. This is likely the case for the majority of sites and activities, depending on social trends and the degree of external promotion (Beal 2018). For example, in 2018, total visitor days are estimated at 754,482 visitor days, which represent an approximate 13 percent increase in visitor days compared to 2017 (BLM 2019).

Recreation management varies across the alternatives in the GSENM and KEPA RMPs/EIS. In general, alternatives B and C provide for more intensive and targeted management of recreation, which may slightly increase visitor days compared to alternatives A, D, and E. For purposes of analysis, Alternative B is assumed to support an estimated increase of 3 percent in visitor days during the planning period and Alternative C is assumed to support an estimated increase of 2 percent in visitor days during the planning period. Under alternatives D and E, recreation visitation is estimated to be similar to Alternative A.

Estimation of the Direct Economic Impacts of Recreation (Expenditures)

Due to the lack of recreation expenditure data for recreation on BLM-administered surface land in Utah, data from the National Visitor Use Monitoring (NVUM) program of the USFS were used to estimate recreation-related expenditures for the recreation economic analysis area. The NVUM program provides a robust data source that is widely used for recreation economic impact analysis for areas besides USFS-managed lands. This is done by applying the recreational expenditure data from NVUM to specific recreation use data or estimates for GSENM and KEPA extracted from RMIS.

The BLM used NVUM Recreation Visitor Spending Profiles (average dollars per party 2016\$) of non-local visitors for day trips and overnight visitation for the non-snow-related recreation activities in USFS Region 4 – Intermountain (Stynes and White 2006; White 2017). The NVUM recreation segment and expenditure data, by non-local visitors, were applied to the recreation economic analysis area as described below. All NVUM expenditures were assumed to be local expenditures (within Kane and Garfield Counties).

- The allocation of spending by non-local day and overnight recreation visitors—82 percent of all visitors as determined by local BLM recreation experts (Beal 2018)—is estimated as 33.3 percent day recreation and 66.7 percent overnight recreation (White 2017).
- Spending by non-local day and overnight recreation visitors are estimated for the entire recreation group. An average non-local recreation group not participating in winter recreation activities is estimated at 2.43 people per group.
- Non-local day recreation visitors are estimated to spend \$56.60 (2017\$) per party and non-local overnight recreation visitors are estimated to spend \$273.20 (2017\$) per party on items such as lodging, restaurants, groceries, gas, activities, and other items.

As shown in Table 3, spending per party per activity is multiplied by the number of visitor days and then divided by the average party size. The total direct spending is estimated as \$44,306,642 for the baseline.

Table 3. Spending Estimates of Non-Local Visitors: 3-Year Historical Average (in 2017 dollars)

Spending Activity	Spending Per Non- Local Party Per Day	Non-local Visitor Days, GSENM	Non-local Visitor Days, KEPA	Average Party Size	Spending, GSENM	Spending, KEPA	Spending, Total
Lodging	\$40.33	320,813	226,053	2.43	\$5,323,994	\$3,751,430	\$9,075,424
Restaurant/Bar	\$43.50	320,813	226,053	2.43	\$5,742,503	\$4,046,322	\$9,788,825
Groceries	\$31.77	320,813	226,053	2.43	\$4,194,329	\$2,955,437	\$7,149,766
Gas and oil	\$36.62	320,813	226,053	2.43	\$4,835,074	\$3,406,923	\$8,241,997
Other transportation	\$4.97	320,813	226,053	2.43	\$655,708	\$462,029	\$1,117,737
Activities	\$11.84	320,813	226,053	2.43	\$1,563,577	\$1,101,738	\$2,665,315
Admissions/Fees	\$9.91	320,813	226,053	2.43	\$1,308,775	\$922,198	\$2,230,973
Souvenirs/Other	\$17.94	320,813	226,053	2.43	\$2,368,029	\$1,668,577	\$4,036,606
Total	\$196.88	320,813	226,053	2.43	\$25,991,988	\$18,314,655	\$44,306,642

Sources: Beal 2018; Stynes and White 2006; White 2017

GSENM - Grand Staircase-Escalante National Monument, KEPA - Kanab-Escalante Planning Area

The BLM acknowledges that certain recreation activities on BLM-administered surface land may generate visitor expenditure patterns that differ from the NVUM expenditure values. However, the per-visit expenditure values averaged across the many different recreation activities that take place in GSENM and KEPA are a reasonable approximation of the per-visit expenditures that occur in the analysis area due to recreation on BLM-administered surface land in GSENM and KEPA.

The spending values shown in Table 4 were used as inputs into IMPLAN and were distributed by the sectors depicted in Table 4.

Table 4. IMPLAN Sectors Used for Recreation

Number	Sector Name
400	Retail - Food and Beverages
402	Retail - Gasoline Stations
404	Retail - Sporting Goods, Hobby, Book, Music
406	Retail - Miscellaneous
442	Automotive Equipment Rental and Leasing
493	Museums, Historical Sites, Zoos, and Parks
496	Other Amusement and Recreation Industries
499	Hotels and Motels
500	Other Accommodations
501	Full-Service Restaurants
62	Maintenance and repair construction of nonresidential structures

Livestock Grazing

Introduction

Livestock grazing information considered and modeled includes the active and suspended animal unit months (AUMs) within GSENM and KEPA, the cost per AUM,³ and the total AUMs, as well as the payments collected from grazing permittees and sales of permits to obtain a dollar-per-AUM estimate. The economic parameters for cattle were applied to these livestock types. The IMPLAN portion of this analysis considered the economic impact of grazing on BLM-administered surface land by modeling the activity associated with cattle production as well as revenue earned by the BLM from permits and leases.

Estimation Value of Production

The economic activity generated by grazing is directly related to the number of AUMs actually used by livestock operators. Each AUM of forage consumed contributes to the weight of marketable cattle and therefore affects the value of livestock production. Billed AUMs are the closest available approximation of actual use of AUMs. Billed use may exceed actual grazing use, so the economic analysis may overstate the actual economic impacts of grazing to some degree. Billed AUMs will vary from year to year, based on weather and market conditions.

³ An AUM is equal to the approximate amount of forage consumed by a cow and calf during a 1-month grazing period.

Because these variations cannot be predicted, the impact estimates assume a constant level of use throughout the planning period.

An economic impact analysis was also conducted based on hypothetical use of all permitted AUMs in the Planning Area. This represents the maximum possible economic impact of livestock grazing on BLM-administered surface lands in GSENM and KEPA. For analysis purposes, this hypothetical scenario would not vary from year to year and it is unlikely that this maximum economic impact scenario would occur.

Estimates of active and suspended AUMs are included in the description of alternatives in Chapter 2, *Alternatives*, of the RMPs/EIS and other available information and are presented below in Table 5.

Based on readily available information, the dollar value per AUM is estimated at \$61.17. Table 6 presents the direct economic impact of livestock grazing using the number of AUMs presented in Table 5 multiplied by the estimated dollar value per AUM.

Table 5. Active AUMs and Suspended AUMs, by Alternative

	Alternative A		Alterna	ternative B Alter		ative C	Alternatives D and E	
	Active AUMs	Suspended AUMs	Active AUMs	Suspended AUMs	Active AUMs	Suspended AUMs	Active AUMs	Suspended AUMs
KEPA	48,852	13,452	29,046	13,453	35,150	13,453	49,678	0
GSENM	57,349	15,792	34,098	15,792	41,263	15,792	58,317	0
Total	106,202	29,245	63,144	29,245	76,413	29,245	107,995	0

Source: Active and suspended AUM values in Alternative A were provided by the BLM in a file titled "7June2018_GSENM-KFO-Allot-AUMs-County-Acres." AUM values for alternatives B-E are from the GSENM and KEPA Resource Management Plans/Environmental Impact Statement, Chapter 2.

Note: At the time of analysis, distribution of active and suspended AUMs in GSENM and KEPA were not readily accessible. For purposes of analysis, the distribution in Table 5 is based on the total surface area of GSENM and KEPA compared to the whole. GSENM encompasses 54% of the total Planning Area and therefore 54% of active and suspended AUMs were assumed to occur in GSENM, and KEPA encompasses 46% of the total Planning Area and therefore 46% of the active and suspended AUMs were assumed to occur in KEPA.

AUM - animal unit month, GSENM - Grand Staircase-Escalante National Monument, KEPA - Kanab-Escalante Planning Area

Table 6. Direct Economic Impact of Livestock Grazing, by Alternative (in 2017 dollars)

	Alternative A		Alternative B		Alternative C		Alternatives D and E	
	Active AUMs	Suspended AUMs	Active AUMs	Suspended AUMs	Active AUMs	Suspended AUMs	Active AUMs	Suspended AUMs
KEPA	\$2,988,167	\$0	\$1,776,678	\$0	\$2,153,043	\$0	\$3,038,691	\$0
GSENM	\$3,507,909	\$0	\$2,085,698	\$0	\$2,527,451	\$0	\$3,567,119	\$0
Total	\$6,496,075	\$1,788,789	\$3,862,376	\$1,788,851	\$4,680,494	\$1,788,851	\$6,605,810	\$0

AUM - animal unit month, GSENM - Grand Staircase-Escalante National Monument, KEPA - Kanab-Escalante Planning Area

Federal Grazing Fee Revenue

In addition to the value of production created from AUMs in GSENM and KEPA, the Federal Government raises revenues from grazing fees. Table 7 presents revenue raised based on 2017 grazing fees. The 2017 grazing fee is \$1.87 per AUM. In general, 50 percent of grazing fees collected are returned to the field office within the State as 8100 funds for range improvement. The remaining 50 percent of grazing fees collected by the BLM are distributed to a mix of the county, State, or U.S. Treasury general fund depending on the act governing the grazing land (e.g., Taylor Grazing Act and Bankhead-Jones Act). This analysis models only the 50 percent of the collected fee allocated toward range improvement, as this is generally the amount recognized within the two-county analysis area. Suspended AUMs do not generate grazing fee revenue and therefore are not modeled in IMPLAN.

Table 7. Federal Grazing Fee Revenue (in 2017 dollars)

	Alternative A		Alterna	Alternative B Alte		ative C	Alternatives D and E	
	Active AUMs	Suspended AUMs	Active AUMs	Suspended AUMs	Active AUMs	Suspended AUMs	Active AUMs	Suspended AUMs
KEPA	\$45,677	\$0	\$27,158	\$0	\$32,911	\$0	\$46,449	\$0
GSENM	\$53,621	\$0	\$31,882	\$0	\$38,634	\$0	\$54,526	\$0
Total	\$99,298	\$0	\$59,040	\$0	\$71,545	\$0	\$100,975	\$0

Sources: BLM 2017; Stewart 2018

AUM – animal unit month, GSENM – Grand Staircase-Escalante National Monument, KEPA – Kanab-Escalante Planning Area

The values shown in Table 6 and Table 7 were used as inputs into IMPLAN and were distributed among the following sectors:

- 11-Beef and cattle ranching and farming, including feedlots and dual-purpose ranching and farming
- 9-Support activities for agriculture and forestry

Mineral Development

This analysis considers locatable mineral development, salable mineral development, fluid leasable minerals (oil and gas), and solid leasable mineral development (coal). In general, mineral development in GSENM would continue to be limited to valid existing rights that existed prior to the original monument designation. Mineral development in the lands that are now excluded from GSENM (i.e., KEPA) would be guided based on the management and allocations in the KEPA RMP as described in Chapter 2, *Alternatives*, of the RMPs/EIS.

Minerals data primarily came from local BLM subject matter experts as well as the Office of Natural Resources Revenue, obtained from BLM National Operations Center economic staff. Data were also sourced from the BLM *Mineral Potential Report* (BLM 2018a).

Oil and Gas

Historical sales value and revenues associated with fluid mineral leases on BLM-administered surface land cover the 3-year period from 2015–2017, and were converted to 2017 dollars. Table 8 presents the estimated annual revenue and Federal royalties/rent for Federal leases in the Planning Area, by alternative.

The revenue and Federal royalties from oil and gas development in Table 8 were estimated based on the following methods and assumptions:

- 1. Total revenue and royalties under Alternative A were calculated using the total values for all 17 producing wells in Garfield County, dividing by 17 to estimate the production from a single well, then multiplying the resulting value by 4 to account for the four producing wells in KEPA (Upper Valley Field). As a result, a 3-year average of total existing revenue from the four producing wells in KEPA is estimated at \$1,190,604 annually ((\$5,060,065/17)*4) and royalties are estimated at \$152,630 annually ((\$648,677/17)*4) for the 4 producing wells in KEPA. Production from these four wells is assumed to continue under all alternatives. The values for a single well within the Planning Area can be estimated by dividing the Alternative A values by 4, to represent the production from one well. As a result, one producing well in the Planning Area is estimated to generate \$297,651 of revenue annually (\$1,190,604/4), and \$38,157 in royalties annually (\$152,630/4).
- 2. The reasonably foreseeable development for the excluded lands (BLM 2018a) indicates up to 10 producing wells during the planning cycle. This analysis assumed all of these wells (10 producing) would be developed under Alternative D (maximum resource use alternative), half (5 producing) would be developed under Alternative C, and 2 wells would be developed under Alternative B (resource conservation alternative).
- 3. The analysis then applied the estimated annual averages for a single producing well in the excluded lands from #1 above to the estimated number of producing oil and gas wells for the alternatives identified in #2. These values were then added to the continued production of the four existing oil wells.

The values shown in Table 8 were used as inputs into IMPLAN and were distributed among the following sectors:

- 37-Drilling oil and gas wells
- 38-Support activities for oil and gas operations

Table 8. Annual Estimated Revenue and Federal Payments from Fluid Minerals Leases on Federal Land in the Planning Area (in 2017 dollars)

	Alterna	Alternative A		Alternative B Altern		ative C	Alternatives D and E	
	Annual Revenue	Federal Royalties/ Rent	Annual Revenue	Federal Royalties/ Rent	Annual Revenue	Federal Royalties/ Rent	Annual Revenue	Federal Royalties/ Rent
Total Planning Area	\$1,190,604 ⁽¹⁾	\$152,630 ⁽²⁾	\$1,785,906	\$228,945	\$2,678,858	\$343,417	\$4,167,113	\$534,205
GSENM	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
KEPA	\$1,190,604	\$152,630	\$1,785,906	\$228,945	\$2,678,858	\$343,417	\$4,167,113	\$534,205

Sources: BLM subject matter experts (Bankert & Perkes); ONRR 2018; BLM 2018a

GSENM - Grand Staircase-Escalante National Monument, KEPA - Kanab-Escalante Planning Area

¹ Annual average revenue from the four existing producing oil wells (based on 3-year average 2015–2017). Adjusted to 2017 dollar value.

² Annual average Federal royalties from the four producing oil wells (based on 3-year average 2015–2017). Adjusted to 2017 dollar value.

Coal

Although there is currently no coal mining within the Planning Area, the *Mineral Potential Report* indicates the potential for up to one underground coal mine in the Planning Area within KEPA (BLM 2018a). Table 9 presents the estimated revenue and Federal royalties for coal development during the planning period, by alternative.

Table 9. Annual Estimated Sales Value and Federal Payments from Coal on Federal land in the Planning Area (in 2017 dollars)

	Alternative A		Alternative B		Alternative C		Alternatives D and E	
	Annual Revenue	Federal Royalties	Annual Revenue	Federal Royalties	Annual Revenue	Federal Royalties	Annual Revenue	Federal Royalties
Total	\$0	\$0	\$0	\$0	\$0	\$0	\$208,000,000	\$16,640,000
GSENM	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
KEPA	\$0	\$0	\$0	\$0	\$0	\$0	\$208,000,000	\$16,640,000

Source: BLM 2018a

Note: No coal mines exist in the Planning Area.

GSENM - Grand Staircase-Escalante National Monument, KEPA - Kanab-Escalante Planning Area

The sales value and Federal payments from coal development presented in Table 9 were estimated based on the following methods and assumptions:

- 1. The *Mineral Potential Report* (BLM 2018a) indicates the potential for up to one underground coal mine in the Planning Area within the excluded lands in the same general area and of a similar size as the previously proposed Smoky Hollow Mine. The Smoky Hollow Mine had an estimated ultimate recovery of 182 million tons of coal over a 35-year period (5.2 million tons per year).
- 2. There are no existing coal mines under Alternative A and coal mines would not occur, as the existing GSENM management would continue. Alternatives B and C assume no coal mines, and alternatives D and E assume that the one coal mine would be developed.
- 3. To estimate revenue, the analysis multiplied the estimated 182 million tons of recoverable coal (from Smoky Hollow Mine) by the current estimated regional market value of coal (\$40 per ton; see explanation in 3.a below), which equals a total estimated revenue of \$7,280,000,000 or an annual estimate of \$208,000,000 (7,280,000,000 / 35-year life of Smoky Hollow estimate). Federal mineral royalties on this volume/value of coal were estimated based on a general 8.0 percent Federal royalty on coal production from an underground mine, equaling an estimated annual royalty of \$16,640,000.
 - a) Market price of \$40.00 per ton of coal was estimated based on U.S. Energy Information Administration reporting of Uinta Basin coal region average weekly spot-market price of \$41.40 for 11,700 British thermal unit, 0.8 sulfur dioxide coal as of June, 8, 2018. Rounded down to \$40.00 per ton.
 - b) This assessment assumed a royalty rate of 8.0 percent. However, it is recognized that the royalty value of production from Federal leases is based on gross proceeds accruing to the lessee from its arm's-length sale of coal. Regulations do allow for deductions in

royalty rates and payments for certain costs associated with washing coal and transportation. For purposes of analysis, a standard 8.0 percent royalty rate was used.

The values shown in Table 9 were used as inputs into IMPLAN and were distributed among the following sectors:

- 22-Coal mining
- 38-Support services

Locatable Minerals

The *Mineral Potential Report* (BLM 2018a) indicates relatively low potential for locatable mineral development in the Planning Area. While a variety of locatable minerals are known to occur in KEPA, only those deposits of sculpting-grade alabaster could be expected to see development in the foreseeable future. There is currently one mining claim for alabaster in KEPA. All action alternatives assume that this mine would continue. Table 10 presents the annual estimated revenue and Federal payments from locatable mineral development on Federal land in the Planning Area.

The annual revenue and Federal payments from locatable mineral development presented in Table 9 were estimated based on the following methods and assumptions:

- 1. The Mineral Potential Report (BLM 2018a) indicates relatively low potential for locatable mineral development. While a variety of locatable minerals are known to occur in KEPA, only those deposits of sculpting-grade alabaster could be expected to see development in the foreseeable future. There is currently one mining claim for alabaster in the excluded lands. All action alternatives assume that this mining claim would continue.
- 2. Alternative B (resource conservation alternative) assumes that only the single existing alabaster mine would be producing/developed. Alternative C assumes that one additional alabaster mine could be constructed (two total mines) with the same revenue and maintenance fees as the existing mine. Alternative D (maximum resource use alternative) assumes that two additional alabaster mines could be constructed (three total mines) with the same revenue and maintenance fees as the existing mine.
- 3. There are no Federal royalties collected on locatable mineral claims/production. There is an annual maintenance fee collected by the Federal Government for mining claims in the amount of \$155 per 20 acres. This maintenance fee was applied based on the estimate of mining activity in #2 above.

The values shown in Table 10 were used as inputs into IMPLAN and were distributed among the following sectors:

- 30-Stone mining and quarrying
- 38-Support activities for mining operations

Table 10. Annual Estimated Revenue and Federal Payments from Locatable Minerals Leases on Federal land in the Planning Area (in 2017 dollars)

	Alternative A		Altern	ernative B Alternative C		native C	Alternatives D and E	
	Annual Revenue	Maintenance Fee to BLM	Annual Revenue	Maintenance Fee to BLM	Annual Revenue	Maintenance Fee to BLM	Annual Revenue	Maintenance Fee to BLM
Total Planning Area	\$131,767 ⁽¹⁾	\$155 ⁽²⁾	\$131,767 ⁽¹⁾	\$155 ⁽²⁾	\$263,534	\$310	\$395,301	\$465
GSENM	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
KEPA	\$131,767 ⁽¹⁾	\$155 ⁽²⁾	\$131,767 ⁽¹⁾	\$155 ⁽²⁾	\$263,534	\$310	\$395,301	\$465

Source: Alternative A revenue and royalties provided by the BLM (R. Bankert)

BLM - Bureau of Land Management, GSENM - Grand Staircase-Escalante National Monument, KEPA - Kanab-Escalante Planning Area

¹Annual average revenue value (3-year average 2015-2017), adjust to 2017 dollars. Values provided by the BLM (Roger Bankert).

²There are no Federal royalties collected for the production of locatable minerals. There is an annual maintenance fee collected by the Federal Government for mining claims in the amount of \$155 per 20 acres.

Salable Minerals

As indicated in the *Mineral Potential Report* (BLM 2018a), the salable mineral commodities of sand and gravel, crushed stone, building stone, clay, and humates occur within the KEPA portion of the Planning Area; however, only sand and gravel are likely to be developed. This development would likely take the form of free-use permits issued to county road departments to serve as maintenance materials for unpaved roads in the Planning Area. As a result, there are no anticipated in-place values or payments on production expected based on salable mineral development.

Forestry

This section includes information about forestry activity within GSENM and KEPA for Christmas tree and wood product permits as well as stewardship contracts. The calculations for IMPLAN rely on the amount collected by the BLM from Christmas tree and wood product permits (Table 11).

To calculate the amount collected from permits, this assessment assumed all forest product sales occur in the two designated wood cutting areas within KEPA. As a result, all values are assumed to accrue in KEPA. The assessment also assumed that, based on the management alternatives, Alternative B would have limitations on wood permits and Christmas tree harvesting similar to current management (Alternative A). Alternatives C, D, and E would generally allow wood permits and Christmas tree harvesting area-wide. As a result, the calculations assume that Alternative B would have a similar annual collection value as current management (\$2,538) and alternatives C, D, and E would have approximately double the amount of collections as alternatives A and B (\$5,077).

Table 11. Annual Sales Value and Federal Revenues from Christmas Tree and Wood Products (in 2017 dollars)

	Altern	ative A	Altern	ative B	Altern	ative C	Alternatives D and E	
	Annual Revenue (i.e., sales value)	Amount collected by BLM	Annual Revenue (i.e., sales value)	Amount collected by BLM from permits	Annual Revenue (i.e., sales value)	Amount collected by BLM	Annual Revenue (i.e., sales value)	Amount collected by BLM
Total Planning Area	N/A	\$2,538 ⁽¹⁾	N/A	\$2,538 ⁽¹⁾	N/A	\$5,077	N/A	\$5,077
GSENM	N/A	\$0	N/A	\$0	N/A	\$0	N/A	\$0
KEPA	N/A	\$2,538 ⁽¹⁾	N/A	\$2,538(1)	N/A	\$5,077	N/A	\$5,077

Source: Alternative A based on BLM-provided information in two files:

- 6 5 18 UT_GS_Christmas_Tree_Permits_2015_2018
- 6 5 2018_UT_GS_Wood_Permits_by_Entry_Measure_2015_2018

This analysis also considered economic activity generated from stewardship contracts. The BLM provided stewardship contract data for Kane County and Garfield County for 2005 through 2013. Table 12 presents the estimated stewardship contract values paid to the BLM under the alternatives.

¹ 3-year average (2015–2017) with values adjusted to 2017 dollars of Christmas Tree Permits and Wood Permits. BLM – Bureau of Land Management, N/A – not applicable, GSENM – Grand Staircase-Escalante National Monument, KEPA – Kanab-Escalante Planning Area

The stewardship contract values paid to the BLM in Table 12 were estimated based on the following methods and assumptions:

- 1. The BLM confirmed that no new stewardship contracts have been issued since 2013. To determine the amount spent per year in the Planning Area, county data were combined by adding total values across all years. It was assumed that all data provided by the BLM were in nominal dollars, and therefore all values were converted to 2017 dollars for comparison.
- 2. The average annual amount spent on stewardship contracts was calculated based on the 2005 through 2013 average for an average annual contract amount of \$95,849 in 2017 dollars. It was assumed that there will be some stewardship activity in the future, but that this activity will not change as a result of the alternatives. Therefore, the same amount was modeled for each alternative.
- 3. Data on stewardship contracts separated out between GSENM and KEPA were not readily available. For purposes of analysis, the distribution of stewardship contracts in Table 12 is based on the total surface area of GSENM and KEPA compared to the whole. GSENM encompasses 54 percent of the total Planning Area and therefore 54 percent of stewardship contracts are assumed to occur in GSENM, and KEPA encompasses 46 percent of the total Planning Area and therefore 46 percent of stewardship contracts are assumed to occur in KEPA.

Table 12. Stewardship Contract Payment Estimates, by Alternative (in 2017 dollars)

	Alternatives A, B, C, D, and E			
Stewardship Contracts	Amount Paid by BLM			
Total Planning Area	\$95,849			
GSENM	\$51,759			
Excluded Lands	\$44,091			

Source: Stewardship information provided by the BLM in a document titled "6 20 2018 GSENM Stewardship Contracts."

Note that numbers may not sum due to rounding.

BLM - Bureau of Land Management, GSENM - Grand Staircase-Escalante National Monument

The values shown in Table 11 and Table 12 were used as inputs into IMPLAN and were distributed among the following sectors:

- 15-Forestry, forest products, and timber tract production
- 19-Support activities for agriculture and industry

IMPLAN Modeling Results

The results of the IMPLAN modeling are presented in Table 13 through Table 23 below. Each table identifies the direct effect, indirect effect, induced effect, and total effect on employment, labor income, Gross State Product, and industry activity in the two-county analysis area. Refer to *The IMPLAN Model and Economic Term Definitions* for definitions of the types of effects and terminology referred to in this section. The results presented in Table 13 through Table 23 represent annual values.

Table 13 through Table 23 also show the economic impacts for alternatives A, B, C, D, and E to facilitate comparisons between the alternatives. Where applicable, results are separated by

GSENM and KEPA to represent the differences in economic activity associated with the two areas and their management under the alternatives. Recreation, grazing, and forestry each had different inputs for GSENM versus KEPA, as described in *Methodology* of this report. However, all of the mining impacts are associated with KEPA, as new mineral development would generally be excluded from GSENM, subject to valid existing rights.

Table 13 shows the combined economic impact of all modeled activities related to mineral development, recreation, forestry, and grazing from GSENM management under the alternatives. Economic effects would generally be greatest under alternatives D and E, followed by Alternative A, then Alternative C, with Alternative B having the least economic effect. Alternatives D and E would generally have the greatest economic effect due to the increased potential for resource use (e.g., livestock grazing) compared to the other alternatives. Alternative A would have a slightly higher economic effect than alternatives B and C due to a higher number of active AUMs under this alternative, compared to alternatives B and C. Total modeled employment ranges from 537 jobs supported in Alternative B to 549 jobs supported in alternatives D and E. Similarly, industry activity ranges from \$30.79 million in Alternative B to \$31.25 million in alternatives D and E.

Table 13. Summary of Annual Economic Impact of GSENM Management in the Analysis Area, by Alternative (in 2017 dollars)

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
Α	Direct Effect	461	\$7.86	\$10.01	\$21.84
	Indirect Effect	54	\$1.03	\$2.24	\$5.62
	Induced Effect	33	\$0.77	\$1.97	\$3.73
	Total Effect	548	\$9.66	\$14.21	\$31.20
В	Direct Effect	453	\$7.97	\$10.15	\$21.61
	Indirect Effect	51	\$0.99	\$2.19	\$5.42
	Induced Effect	33	\$0.78	\$1.98	\$3.76
	Total Effect	537	\$9.74	\$14.32	\$30.79
С	Direct Effect	455	\$7.93	\$10.10	\$21.67
	Indirect Effect	52	\$1.00	\$2.21	\$5.48
	Induced Effect	33	\$0.77	\$1.97	\$3.75
	Total Effect	540	\$9.71	\$14.28	\$30.90
D and E	Direct Effect	461	\$7.86	\$10.02	\$21.88
	Indirect Effect	55	\$1.04	\$2.24	\$5.64
	Induced Effect	33	\$0.77	\$1.97	\$3.74
	Total Effect	549	\$9.67	\$14.23	\$31.25

Note: Numbers may not sum due to rounding.

Table 14 shows the combined economic impact of KEPA-related management and activities including mineral development, recreation, grazing, and forestry. Economic effects would generally be greatest under alternatives D and E, followed by Alternative C, then Alternative A, with Alternative B having the least economic effect. Alternatives D and E generally have the greatest economic effect due to the increased potential for mineral development and resource

use compared to the other alternatives. Total employment ranges from 396 jobs supported in Alternative B to 503 jobs supported in alternatives D and E. Similarly, industry activity ranges from \$23.41 million in Alternative B to \$38.42 million in alternatives D and E.

Table 14. Summary of Annual Economic Impact of KEPA Management in the Analysis Area, by Alternative (in 2017 dollars)

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
Α	Direct Effect	338	\$5.66	\$7.39	\$16.52
	Indirect Effect	41	\$0.78	\$1.66	\$4.22
	Induced Effect	24	\$0.56	\$1.42	\$2.70
	Total Effect	404	\$7.00	\$10.46	\$23.45
В	Direct Effect	333	\$5.77	\$7.59	\$16.60
	Indirect Effect	39	\$0.74	\$1.63	\$4.07
	Induced Effect	24	\$0.56	\$1.44	\$2.73
	Total Effect	396	\$7.07	\$10.66	\$23.41
С	Direct Effect	340	\$5.81	\$7.77	\$17.32
	Indirect Effect	41	\$0.77	\$1.67	\$4.24
	Induced Effect	24	\$0.57	\$1.45	\$2.76
	Total Effect	405	\$7.15	\$10.89	\$24.32
D and E	Direct Effect	418	\$6.86	\$12.72	\$29.32
	Indirect Effect	56	\$1.04	\$2.18	\$5.78
	Induced Effect	29	\$0.68	\$1.75	\$3.32
	Total Effect	503	\$8.58	\$16.65	\$38.42

Note: Numbers may not sum due to rounding.

Recreation

As described in this report, the quantitative analysis of recreation impacts considered visitor spending across a number of sectors (e.g., groceries, souvenirs). Visitor spending was estimated for both GSENM and KEPA based on location-specific data. Table 15 shows the economic activity associated with recreation in GSENM and Table 16 shows the impacts associated with recreation in KEPA. As indicated in Table 15 and Table 16, recreation-related employment, income, and economic activity would be greatest under alternatives B and C and least under alternatives E, D, and A. It is important to note that continued trending increases in recreation use and visitation in the Planning Area are more likely to affect economic conditions than variations in recreation management in the alternatives.

Table 15. Annual Economic Impact of GSENM Recreation Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
Α	Direct Effect	410	\$7.58	\$9.63	\$19.80
	Indirect Effect	43	\$0.86	\$1.98	\$4.77

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
	Induced Effect	31	\$0.73	\$1.86	\$3.54
	Total Effect	484	\$9.16	\$13.48	\$28.11
В	Direct Effect	422	\$7.80	\$9.92	\$20.39
	Indirect Effect	44	\$0.88	\$2.04	\$4.92
	Induced Effect	32	\$0.75	\$1.92	\$3.64
	Total Effect	499	\$9.44	\$13.88	\$28.95
С	Direct Effect	418	\$7.73	\$9.82	\$20.20
	Indirect Effect	44	\$0.88	\$2.02	\$4.87
	Induced Effect	32	\$0.74	\$1.90	\$3.61
	Total Effect	494	\$9.35	\$13.75	\$28.67
D and E	Direct Effect	410	\$7.58	\$9.63	\$19.80
	Indirect Effect	43	\$0.86	\$1.98	\$4.77
	Induced Effect	31	\$0.73	\$1.86	\$3.54
	Total Effect	484	\$9.16	\$13.48	\$28.11

Note: Numbers may not sum due to rounding.

Table 16. Annual Economic Impact of KEPA Recreation Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
Α	Direct Effect	289	\$5.34	\$6.79	\$1 3.96
	Indirect Effect	30	\$0.61	\$1.40	\$3.36
	Induced Effect	22	\$0.51	\$1.31	\$2.49
	Total Effect	341	\$6.46	\$9.50	\$19.82
В	Direct Effect	298	\$5.50	\$6.99	\$14.38
	Indirect Effect	31	\$0.62	\$1.44	\$3.47
	Induced Effect	23	\$0.53	\$1.35	\$2.57
	Total Effect	351	\$6.65	\$9.79	\$20.42
С	Direct Effect	295	\$5.45	\$6.93	\$14.24
	Indirect Effect	31	\$0.62	\$1.43	\$3.43
	Induced Effect	23	\$0.52	\$1.34	\$2.54
	Total Effect	348	\$6.59	\$9.69	\$20.22
D and E	Direct Effect	289	\$5.34	\$6.79	\$13.96
	Indirect Effect	30	\$0.61	\$1.40	\$3.36
	Induced Effect	22	\$0.51	\$1.31	\$2.49
	Total Effect	341	\$6.46	\$9.50	\$19.82

Note: Numbers may not sum due to rounding.

Livestock Grazing

The quantitative analysis of livestock grazing impacts considered the economic activity generated per AUM, as well as the economic impact associated with the fees collected by the BLM, as described in *Methodology* of this report. Table 17 shows the estimated economic impact of livestock grazing activity and management within GSENM for each alternative and Table 18 presents estimated economic impacts for livestock grazing and activity in KEPA. As indicated in Table 17 and Table 18, livestock grazing-related employment, income, and economic activity would be greatest under alternatives D and E, followed by Alternative A, then Alternative C, with Alternative B having the least economic impact, primarily resulting from the reduced level of AUMs in Alternative B compared to the other alternatives. It is important to note that livestock grazing permittees may experience other market- and nonmarket-based impacts associated with livestock grazing management as described in Section 3.12, *Livestock Grazing*, of the GSENM and KEPA RMPs/EIS.

Table 17. Annual Economic Impact of GSENM Livestock Grazing Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
Α	Direct Effect	50	\$0.28	\$0.38	\$2.03
	Indirect Effect	12	\$0.17	\$0.25	\$0.85
	Induced Effect	2	\$0.04	\$0.10	\$0.20
	Total Effect	63	\$0.50	\$0.74	\$3.07
В	Direct Effect	30	\$0.17	\$0.23	\$1.21
	Indirect Effect	7	\$0.10	\$0.15	\$0.50
	Induced Effect	1	\$0.02	\$0.06	\$0.12
	Total Effect	38	\$0.30	\$0.44	\$1.83
С	Direct Effect	36	\$0.20	\$0.28	\$1.46
	Indirect Effect	8	\$0.13	\$0.18	\$0.61
	Induced Effect	1	\$0.03	\$0.07	\$0.14
	Total Effect	46	\$0.36	\$0.53	\$2.22
D and E	Direct Effect	51	\$0.29	\$0.39	\$2.07
	Indirect Effect	12	\$0.18	\$0.26	\$0.86
	Induced Effect	2	\$0.04	\$0.10	\$0.20
	Total Effect	64	\$0.51	\$0.75	\$3.13

Note: Numbers may not sum due to rounding.

Table 18. Annual Economic Impact of KEPA Livestock Grazing Activities and Management, by Alternative (in 2017 dollars)

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
Α	Direct Effect	43	\$0.24	\$0.33	\$1.73
	Indirect Effect	10	\$0.15	\$0.21	\$0.72

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
	Induced Effect	2	\$0.03	\$0.09	\$0.17
	Total Effect	54	\$0.42	\$0.63	\$2.62
В	Direct Effect	25	\$0.14	\$0.19	\$1.03
	Indirect Effect	6	\$0.09	\$0.13	\$0.43
	Induced Effect	1	\$0.02	\$0.05	\$0.10
	Total Effect	32	\$0.25	\$0.37	\$1.56
С	Direct Effect	31	\$0.17	\$0.23	\$1.25
	Indirect Effect	7	\$0.11	\$0.15	\$0.52
	Induced Effect	1	\$0.02	\$0.06	\$0.12
	Total Effect	39	\$0.31	\$0.45	\$1.89
D and E	Direct Effect	43	\$0.25	\$0.33	\$1.76
	Indirect Effect	10	\$0.15	\$0.22	\$0.73
	Induced Effect	2	\$0.03	\$0.09	\$0.17
	Total Effect	55	\$0.43	\$0.64	\$2.66

Note: Numbers may not sum due to rounding.

Oil and Gas

The quantitative analysis of oil and gas activity considered the sales value, royalties, bonus, rents, or other revenue from oil and gas leases within KEPA, as described in *Methodology* of this report. As noted above, any new oil and gas development would be limited to the KEPA portion of the Planning Area (i.e., no new oil and gas development in GSENM). Table 19 shows the economic activity associated with oil and gas production in KEPA. As indicated in Table 19, economic activity associated with oil and gas activities would be greatest under alternatives D and E, followed by Alternative C, then Alternative B, with Alternative A having the least effect.

Table 19. Annual Economic Impact of KEPA Oil and Gas Activities and Management, by Alternative (in 2017 dollars)

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
Α	Direct Effect	5	\$0.09	\$0.27	\$0.72
	Indirect Effect	1	\$0.02	\$0.03	\$0.09
	Induced Effect	<0.5	\$0.01	\$0.02	\$0.04
	Total Effect	7	\$0.11	\$0.32	\$0.86
В	Direct Effect	8	\$0.13	\$0.40	\$1.08
	Indirect Effect	2	\$0.02	\$0.05	\$0.14
	Induced Effect	1	\$0.01	\$0.03	\$0.06
	Total Effect	10	\$0.17	\$0.48	\$1.28
С	Direct Effect	12	\$0.19	\$0.60	\$1.62
	Indirect Effect	3	\$0.03	\$0.07	\$0.21

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
	Induced Effect	1	\$0.02	\$0.05	\$0.10
	Total Effect	16	\$0.25	\$0.72	\$1.93
D and E	Direct Effect	19	\$0.30	\$0.94	\$2.51
	Indirect Effect	4	\$0.05	\$0.11	\$0.33
	Induced Effect	1	\$0.03	\$0.08	\$0.15
	Total Effect	24	\$0.39	\$1.13	\$3.00

Note: Numbers may not sum due to rounding.

Coal

The quantitative analysis of coal mining activity considered the revenue and royalties associated with a potential coal mine constructed within the Planning Area, as described in *Methodology* of this report. New coal development would be limited to the KEPA portion of the Planning Area (i.e., no new coal development in GSENM). As indicated in Table 20, economic activity associated with coal development activities in KEPA would be greatest under alternatives D and E, as there is no coal development assumed under alternatives A, B, and C.

Table 20. Annual Economic Impact of KEPA Coal Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
Α	Direct Effect	0	\$0	\$0	\$0
	Indirect Effect	0	\$0	\$0	\$0
	Induced Effect	0	\$0	\$0	\$0
	Total Effect	0	\$0	\$0	\$0
В	Direct Effect	0	\$0	\$0	\$0
	Indirect Effect	0	\$0	\$0	\$0
	Induced Effect	0	\$0	\$0	\$0
	Total Effect	0	\$0	\$0	\$0
С	Direct Effect	0	\$0	\$0	\$0
	Indirect Effect	0	\$0	\$0	\$0
	Induced Effect	0	\$0	\$0	\$0
	Total Effect	0	\$0	\$0	\$0
D and E	Direct Effect	64	\$0.99	\$4.65	\$10.77
	Indirect Effect	11	\$0.21	\$0.42	\$1.24
	Induced Effect	5	\$0.10	\$0.26	\$0.50
	Total Effect	79	\$1.30	\$5.34	\$12.51

Note: Numbers may not sum due to rounding.

Locatable and Salable Minerals

The quantitative analysis of other mineral extraction activity considered the revenue generated by sales of minerals extracted as well as the maintenance fee paid to the BLM for locatable mineral leases, as described in *Methodology* of this report. Similar to other minerals, locatable and salable mineral development would be limited to the KEPA portion of the Planning Area (i.e., no new development in GSENM). Table 21 shows the economic activity associated with locatable and salable mineral development in KEPA. As indicated in Table 21, economic activity associated with locatable and salable mineral development activities in KEPA would be greatest under alternatives D and E, followed by Alternative C, with alternatives B and A having the least effect.

Table 21. Annual Economic Impact of KEPA Locatable and Salable Mineral Development Activities and Development in the Analysis Area, by Alternative (in 2017 dollars)

Alternative	Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
Α	Direct Effect	1	<\$0.01	<\$0.01	\$0.10
	Indirect Effect	<0.5	\$0.01	\$0.01	\$0.03
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	1	<\$0.01	\$0.01	\$0.14
В	Direct Effect	1	<\$0.01	<\$0.01	\$0.10
	Indirect Effect	<0.5	\$0.01	\$0.01	\$0.03
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	1	<\$0.01	\$0.01	\$0.14
С	Direct Effect	2	<\$0.01	<\$0.01	\$0.21
	Indirect Effect	1	\$0.01	\$0.02	\$0.07
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	2	<\$0.01	\$0.03	\$0.27
D and E	Direct Effect	3	<\$0.01	\$0.01	\$0.31
	Indirect Effect	1	\$0.02	\$0.03	\$0.10
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	4	<\$0.01	\$0.04	\$0.41

Notes: Numbers may not sum due to rounding.

Forestry

The economic analysis of forestry-related activity considered the permit fees received by the BLM for both Christmas tree and wood permits, as well as the amount spent on stewardship contracts, as described in *Methodology* of this report. The economic impact of forestry-related activities in GSENM is presented in Table 22 and the economic impact of forestry-related activities in KEPA is presented in Table 23. As indicated in Table 22 and Table 23, the overall economic activity associated with forestry activities and management would be minimal in the context of the analysis area economy and would generally be similar across the alternatives.

Table 22. Annual Economic Impact of GSENM Forestry Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
Α	Direct Effect	1	<\$0.01	<\$0.01	\$0.01
	Indirect Effect	0	<\$0.01	<\$0.01	<\$0.01
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	1	<\$0.01	<\$0.01	\$0.01
В	Direct Effect	1	<\$0.01	<\$0.01	\$0.01
	Indirect Effect	0	<\$0.01	<\$0.01	<\$0.01
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	1	<\$0.01	<\$0.01	\$0.01
С	Direct Effect	1	<\$0.01	<\$0.01	\$0.01
	Indirect Effect	0	<\$0.01	<\$0.01	<\$0.01
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	1	<\$0.01	<\$0.01	\$0.01
D and E	Direct Effect	1	<\$0.01	<\$0.01	\$0.01
	Indirect Effect	0	<\$0.01	<\$0.01	<\$0.01
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	1	<\$0.01	<\$0.01	\$0.01

Note: Numbers may not sum due to rounding.

Table 23. Annual Economic Impact of KEPA Forestry Activities and Management in the Analysis Area, by Alternative (in 2017 dollars)

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
Α	Direct Effect	1	<\$0.01	<\$0.01	\$0.01
	Indirect Effect	0	<\$0.01	<\$0.01	<\$0.01
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	1	<\$0.01	<\$0.01	\$0.01
В	Direct Effect	1	<\$0.01	<\$0.01	\$0.01
	Indirect Effect	0	<\$0.01	<\$0.01	<\$0.01
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	1	<\$0.01	<\$0.01	\$0.01
С	Direct Effect	1	<\$0.01	<\$0.01	\$0.01
	Indirect Effect	0	<\$0.01	<\$0.01	<\$0.01
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	1	<\$0.01	<\$0.01	\$0.01
D and E	Direct Effect	1	<\$0.01	<\$0.01	\$0.01
	Indirect Effect	0	<\$0.01	<\$0.01	<\$0.01

Alternative	Type of Effect	Employment	Labor Income (\$ millions)	Gross State Product (\$ millions)	Industry Activity (\$ millions)
	Induced Effect	0	<\$0.01	<\$0.01	<\$0.01
	Total Effect	1	<\$0.01	<\$0.01	\$0.01

Note: Numbers may not sum due to rounding.

Nonmarket Values

Market values of BLM-administered surface lands and mineral estate are relatively straightforward to understand and assess. Commodities produced through use of BLM-administered surface lands (such hard rock minerals, livestock, timber, and electricity from renewable energy projects) have a price in the marketplace that can be easily determined. Economic methods are readily available for measuring the flow of income and employment resulting from the production of commodities. Using economic impact models, economists can then estimate the business-related purchases that renewable energy developers and operators will make from other firms, and to estimate how employees will spend their wages on household-related purchases from businesses throughout the local economy. These economic market values and the associated impacts resulting from the GSENM and KEPA management alternatives are discussed above.

The term *nonmarket values* refers to the benefits individuals attribute to experiences of the environment or uses of natural and cultural resources that do not involve market transactions and therefore lack prices. Examples include the benefits received from wildlife viewing, hiking in a wilderness, or hunting for recreation. An understanding of nonmarket values in the analysis area helps to put economic values and impacts into a broader socioeconomic context. Estimates of nonmarket values supplement estimates of income generated from commodity uses to provide a more complete picture of the economic implications of proposed resource management decisions.

Although there are difficulties associated with measuring nonmarket values, it is well accepted that open space and natural and cultural resources can have monetary values. For example, it is common for real estate investors to pay more for view lots or property adjacent to open space, or for people to make financial donations to help protect old-growth forests, endangered species, or other resources. Even when it is not possible to estimate nonmarket values, it is still helpful to discuss these values qualitatively or to provide examples of these values in analogous situations.

In examining nonmarket values, economists distinguish between "use values" and "non-use values." *Use value* refers to the benefits an individual derives from some direct experience or activity, such as climbing a spectacular peak, hunting, or wildlife viewing. In contrast, *non-use value* refers to the utility or psychological benefit some people derive from the existence of some environmental condition that may never be directly experienced: an unspoiled Grand Canyon or the continued presence of an endangered species. The following subsections further describe use and non-use values and other values that are generally addressed within a nonmarket value framework.

While nonmarket values are discussed here, this section is not inclusive of all nonmarket values associated with BLM-administered surface land. For instance, the sections of the EIS

that are focused on resources (e.g., water, wildlife, vegetation, wetlands, cultural resources, visual resources) will reveal important nonmarket values of those resources, even though those sections do not use the language of nonmarket values used by economists generally, and used specifically in the material below. The BLM considers nonmarket values in their many forms, as well as market values, throughout the National Environmental Policy Act process.

Nonmarket Use Values

Economists measure nonmarket use values by estimating the "consumer surplus" associated with these activities, which is defined as the maximum dollar amount, above any actual payments made, that a consumer would be willing to pay to enjoy a good or service. For instance, hikers pay a market price for gasoline used to reach a trail, but typically pay nothing to use the trail. Any amount that a recreationist would be willing to pay to use this otherwise free resource represents the nonmarket consumer surplus value of that resource to that consumer. There are many techniques for measuring this nonmarket use value. One common way is to collect data on variations in what recreationists do pay (e.g., gasoline, hotels, restaurants, entry fees, guides or outfitters); economists then use quantitative techniques to impute the additional willingness to pay that constitutes consumer surplus.

Nonmarket use values have been studied for valuing a wide variety of recreation "goods." To help the reader understand the potential nonmarket value of some of the study area's natural and cultural resources, Table 24 summarizes average nonmarket use values for recreation activities for USFS Region 4, which includes the GSENM and KEPA areas and encompasses all of Utah and Nevada, and parts of Idaho and Wyoming, according to the Recreation Use Values Database maintained by the Oregon State University College of Forestry (Rosenberger et al. 2017).

Table 24. Average Recreational Use Values, per Person per Day (in 2017 dollars)

Activity	Use Value
Backpacking	\$43.71
Biking	\$98.43
Cross-County Skiing	\$67.57
Developed Camping	\$46.22
Downhill Skiing	\$93.82
Driving for Pleasure	\$76.23
Fishing	\$82.89
Gathering Forest Products	\$76.23
Hiking/Walking	\$96.10
Horseback Riding	\$76.23
Hunting	\$88.91
Motorized Trail Activities	\$61.38
Motorized Boating Activities	\$69.47
Nature Center Activities	\$76.23
Nature Study	\$76.23
No Activity Reported	\$76.23
Non-motorized Boating Activities	\$121.09

Activity	Use Value
Off Highway Vehicle Use	\$61.38
Other Motorized Activities	\$61.38
Other Non-motorized Activities	\$76.23
Picnicking	\$60.08
Primitive Camping	\$43.71
Relaxing	\$76.23
Resort Use	\$76.23
Snowmobiling	\$61.38
Other Activities	\$76.23
Viewing Natural Features	\$71.26
Viewing Wildlife	\$71.26
Visiting Historic Sites	\$71.26

Source: Rosenberger et al. 2017

By applying values in Table 24 to recreational usage figures, or by applying values from specific individual studies that are most comparable to the study area, an estimate of the recreation-related nonmarket use value (the consumer surplus) can be derived for the analysis area. The resulting figure would represent the total nonmarket use value that recreationists derive from these activities, or alternatively, it could be seen as the total additional amount recreationists would likely be willing to pay for the related recreation activities if a fee for participation were required. Those who are accustomed to free access and use of public land tend to forget that it represents a recreation opportunity and experience for which many would be willing to pay.⁴ This type of calculation must be done very carefully, with great attention to the reliability of the recreational usage numbers and the validity of the consumer surplus values derived from the literature. The results must also be carefully interpreted, because consumer surplus estimates are not directly comparable to estimates of income derived from commodity uses (BLM 2013).

Non-use Values

Economists differentiate multiple types of non-use values, including option values and existence values. Option value represents the benefits from having natural or cultural resources available for future use, while existence value reflects the benefits derived from knowing these resources simply exist. Local, State, and national taxpayers support a large variety of conservation and protection programs (e.g., National Parks, State parks, local parks and parkways, open space initiatives) through their tax dollars—programs that are very popular but support many resources that taxpayers may never visit. A number of nonprofit organizations are devoted to a wide variety of conservation and wildlife-related causes; many of the donors to these groups derive little direct benefit from their contributions. The BLM acknowledges that non-use values are real, and can be substantial (BLM 2013).

Special Designations and Enhancement Values

Special designations, whether legislative designations, such as National Parks, wilderness areas, and national conservation areas, or administrative designations, such as Areas of Critical

⁴ This observation is not meant to suggest that such fees should be charged. There are many philosophical and practical issues associated with charging fees for recreational use of public land.

Environmental Concern, usually result in additional protections to the ecological and open space values of the areas that are designated. A common concern with special designations is that protections that may be put in place may affect traditional, commodity-based uses of public lands; for example, mining, fluid mineral development, and grazing. Restrictions on these activities may reduce economic activity for individual resource users and for local or regional communities. They may also have social impacts—for instance on local customs and lifestyles surrounding mining and ranching. It is important to recognize the potential economic and social impacts from special designations. It is also important to recognize that special designations may have economic and social effects.

Another economic benefit of natural amenities is the enhancement effect of open space, including protected lands, on property values. The studies noted above, among others, have demonstrated that homes and properties close to open space are more valuable relative to properties farther away, holding all else constant. This relationship varies based on the various characteristics (e.g., type, size, location) of open space resources, including the quality of views provided by the open space near a property. Open space can indirectly affect property tax revenues realized by local jurisdictions through the effect open spaces have on property value assessments.

Tribal Uses

Tribal coordination and consultation through the years demonstrates that a wide range of tribal interests are often associated with public land. These include concerns about potential impacts on resources associated with practices such as gathering medicinal plants or native foods, and other natural products; access to traditional hunting and ceremonial areas; the availability of water and healthy plant and animal populations; and potential impacts on and threats to Native American archaeological sites, sacred sites, and traditional cultural properties. Tribal uses of BLM-administered surface land are not amenable to market valuation but can be considered a type of nonmarket value.

Ecosystem Service Values

Nonmarket values⁵ of open space and well-managed natural resources also include a broad range of human benefits resulting from healthy ecosystem conditions and functions. The benefits that humans derive from ecosystems are known as ecosystem services (Ruhl et al. 2007; De Groot et al. 2010), and these ecosystem services are commonly grouped into four broad categories based on how human beings interact with and derive value from them:

- Provisioning services provide products that are used directly by people (e.g., food, water, and raw materials).
- Regulating services are outputs from the normal functioning of ecosystems that benefit
 people in direct ways (e.g., regulation of climate, air and drinking water quality, soil
 formation and retention, moderation of extreme events, and biological control).

⁵ Note that confusion can arise regarding the difference between ecosystem service values and nonmarket values. A BLM instruction memorandum explains that "Ecosystem goods and services include a range of human benefits resulting from appropriate ecosystem structure and function, such as flood control from intact wetlands and carbon sequestration from healthy forests. Some involve commodities sold in markets, for example, timber production. Others, such as wetlands protection and carbon sequestration, do not commonly involve markets, and thus reflect nonmarket values" (BLM 2013:2).

- Supporting services are processes that are necessary for the production of other ecosystem services (e.g., habitat for plants and animals, conservation of genetic diversity, and cycling of nutrients).
- Cultural services provide benefits to people through meaningful interactions with nature (e.g., aesthetic enjoyment, recreation, spiritual enrichment, and cognitive development).

The benefits that humans receive from ecosystem services can be categorized as use values and non-use values, as described above. Economists have developed a variety of methods and approaches for estimating the monetary values associated with ecosystem services. The ecosystem services framework encompasses the amenity, recreational, and other values discussed above. For purposes of this discussion, the emphasis is on the additional functional benefits ecosystems provide.

Table 25 presents an initial listing of ecosystem services present in GSENM and KEPA. These services, with examples in parentheses, are further defined by the value (use versus non-use), and a qualitative description of their importance (magnitudes of ecosystem service value and estimated vulnerability resulting from changing management of the resource).

Table 25. Ecosystem Services with Nonmarket Values in Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

	Va	lue	Importance in Projects	
		Non-	Magnitude	
Resources and Uses	Use	Use	of Value	Vulnerability
Provisioning Services				
Mining (Prospecting)	+		Low	Low
Fishing	+		Low	Low
Logging	+		Low	Low
Food (Grazing)	+		Moderate	Low
Regulating Services				
Air Regulation (Clean Air)	+		Low	Low
Climate Regulation (Carbon Storage and Sequestration)	+		High	Low
Waste Treatment (Nitrogen and Phosphorous Absorption)		+	Low	Low
Biological Control (Pest Control)		+	Low	Low
Water Quality (Clean Water)	+		Low	Low
Erosion Prevention (Sediment Runoff)	+		Low	Low
Supporting Services				
Soil Formation		+	Low	Low
Photosynthesis		+	Low	Low
Biodiversity (Flora and Fauna)		+	High	Low
Habitat (Wilderness Characteristics)		+	Moderate	Low
Cultural Services				
Stewardship (Preserving History)		+	Low	Low
Aesthetic (Viewscapes)		+	Moderate	Low
Recreation	+		High	Low

		lue	Importance in Projects	
Resources and Uses	Use	Non- Use	Magnitude of Value	Vulnerability
Education	+		Low	Low

Following an accounting of ecosystem services present in a study site, the next step is to value these services employing one of three approaches:

- 1. Conduct primary studies. This option involves conducting original studies to estimate the value of nonmarket ecosystem services. Some nonmarket ecosystem service values can be estimated through revealed preference studies, which use observed or secondary data to infer the value of nonmarket ecosystem services. Economists also use stated preference methods to estimate nonmarket ecosystem service values, which involves asking people, in a survey setting, to ascribe a value to changes in the level of provision ecosystem services. Primary studies are viewed as the preferred method for ascribing value to ecosystem services, but they are costly in terms of both time and resources to conduct. It is thus not always possible to conduct primary studies for the purpose of estimating nonmarket values of ecosystem services.
- 2. Benefit transfer approaches. Benefit transfer methods involve taking the values of ecosystem services estimated in one context and customizing and adapting them to apply to ecosystem services in another context. The simplest approach to benefit transfer involves simply taking the original value and applying it in a new context. A preferred and more detailed approach involves utilizing the function that was used to estimate benefits and adapting that function to fit the new study conditions. This approach, called benefit function transfer, is preferred over the simpler benefit value transfer approach because it allows for more customization of the benefit values to match the new study context.
- 3. Qualitative approaches. In some cases it is not possible to estimate the value of nonmarket ecosystem services due to a lack of data or other analytical challenges. In these cases, it is often necessary to adopt a qualitative approach to evaluating the nonmarket values associated with ecosystem services.

Due to the time and resource constraints associated with conducting primary studies, ecosystem services are commonly valued by using benefit transfer methods to determine a peracre monetary value. For the purposes of this brief survey of ecosystem services in the Planning Area, an accounting of the monetary value of ecosystem services was not feasible. Rather, this assessment focuses on providing context for some of the ecosystem services that are most relevant, and presents a range of potential values. Benefit transfer methods will be used to determine monetary values of ecosystem services in the analysis of the alternatives in the GSENM and KEPA RMPs/EIS.

Provisioning Services

Provisioning services represent the products provided by ecosystem services that are most directly used by people. In the case of GSENM and KEPA, this includes traditional uses of the area, such as grazing, mining (prospecting), and fishing. Livestock grazing is a permitted use in GSENM and KEPA, and it will remain a permitted use in the future. Livestock grazing in GSENM

and KEPA can be viewed as a small-scale commercial operation, and can be valued based on the market price and number of livestock. Other uses of GSENM are predominantly recreational rather than commercial operations.

Regulating Services

Regulating services represent the output from the normal function of ecosystems that people benefit from either directly or through indirect means. These functions include: air, water, and climate regulation; waste treatment; biological control; and water quality. The most important regulating services to GSENM and KEPA are climate regulation, air quality, and water quality. Climate regulating services include both the sequestration and storage of carbon dioxide from the atmosphere by vegetation. Similarly, air quality regulation represents the value of clean air resulting from the filtering of particulate matter, sulfur dioxide, nitrogen oxide, and other air pollution by trees and other vegetation. Regulating services include the value of clean water that results from waste treatment and water filtration. Such ecosystem services have important direct and indirect impacts on the recreation industry in the analysis area.

Supporting Services

Supporting ecosystem services represent those processes that are necessary for the production of other ecosystem services. Supporting services provide inputs to other categories of ecosystem services, including providing refuge and reproductive habitat to wild plants and animals, formation of soil, nutrient cycling, and primary productivity. Due to the importance of the Planning Area as a recreational resource, ecosystem services that support plant and animal habitats are of particular relevance. Healthy habitats and biodiversity help maintain rangeland health and grazing opportunities in the Planning Area.

The value ascribed to biodiversity and habitat can vary widely based on study location and topic. Valuation models, such as InVEST,⁶ value habitat quality based on forecasted threats such as development and land cover conversion and decay rates. Additionally, supporting ecosystem services are often not valued directly by economists because these services are viewed as intermediate services that support ecosystem services in other categories to which economists do ascribe a value. Valuing both the intermediate service and the end service that this intermediate service supports would result in double counting. For example, the value of supporting services associated with habitat are generally valued through the end uses of habitat, such as the provision of timber, food, and fuel, or the provision of recreational amenities through wildlife viewing or consumptive uses such as hunting.

Cultural Services

Cultural services provide meaningful interactions between human beings and nature, including aesthetic enjoyment, cultural and artistic inspiration, science and education, and spiritual and historical purposes. Recreation is one of the largest draws of GSENM and KEPA, and travel and tourism made up 44 percent of total private wage and salary employment in 2015 (Headwaters Economics 2017a).

⁶ Additional information about the InVEST model is available online at: http://data.naturalcapitalproject.org/nightly-build/invest-users-guide/html/.

Cultural service values for recreation activities occurring in GSENM and KEPA were estimated using nonmarket recreation use values (Table 24) and visitation data from the BLM's RMIS⁷ in Table 26. Estimates of consumer surplus associated with each activity within GSENM over 1 year are presented in Table 26. The amount of participation is presented in visitor days, the standard unit of measurement for BLM activities, defined as aggregated 12-hour periods of time. The number of visitor days by activity represent a 3-year average. Using this methodology, the value of cultural ecosystem services provided by GSENM and KEPA is estimated at \$45 million annually. This estimate can be viewed as a lower bound of the value of ecosystem services provided by GSENM and KEPA, as it considers only a subset of services (recreation) within one single category of ecosystem services.

Table 26. Annual Consumer Surplus Value of Recreation in Grand Staircase-Escalante National Monument (2017\$)

Activity	Visitor Days ^(1,2)	Average Consumer Surplus ⁽³⁾	Total Value of Recreation
Camping	11,342	\$82.81	\$939,231
Backpacking	151,216	\$43.71	\$6,609,964
Biking	6,077	\$98.43	\$598,167
Developed Camping	107,156	\$46.22	\$4,953,184
Driving for Pleasure	127,798	\$76.23	\$9,742,450
Fishing	695	\$82.89	\$57,637
Gathering Forest Products	164	\$76.23	\$12,528
Hiking/Walking	114,342	\$96.10	\$10,988,669
Horseback Riding	14,170	\$76.23	\$1,080,224
Hunting	10,853	\$88.91	\$964,993
Nature Activities	11,680	\$76.23	\$890,378
Nature Activities - Environmental Edu.	7,619	\$76.23	\$580,821
Off-Highway Vehicle Use	23,842	\$61.38	\$1,463,341
Picnicking	7,893	\$60.08	\$474,230
Other Activities - Climbing	617	\$76.23	\$47,036
Other Activities - Photography	26,582	\$76.23	\$2,026,405
Other Activities - Target Practice	277	\$76.23	\$21,117
Other Activities - Trapping	434	\$76.23	\$33,085
Other Activities - Misc.	7,335	\$76.23	\$559,170
Viewing Natural Features/Wildlife	54,234	\$71.26	\$3,864,770
Sum			\$44,968,169

¹ Visitor days are the standard unit of BLM recreation and represent aggregated 12-hour periods of time.

² Visitor days are an annual average of 2015–2017 RMIS data in GSENM.

³ Consumer surplus values from the Recreation Use Values Database maintained by the Oregon State University College of Forestry (Rosenberger et al. 2017).

⁷ RMIS enables BLM employees to estimate recreation participation on BLM-administered surface lands in 65 types of recreational activities.

BLM – Bureau of Land Management, RMIS – Recreation Management Information System, GSENM – Grand Staircase-Escalante National Monument

Social Values

Social values, such as the role of BLM-administered surface land in local customs and lifestyles, are a type of nonmarket value. Members of various tribes in Utah and Arizona continue to have a stake in how GSENM and KEPA and their archaeological resources are managed. GSENM conducts formal consultation annually with the Hopi, Zuni, Navajo, and Ute Tribes, as well as with the Kaibab Band of Paiute Indians and Paiute Indian Tribes of Utah.

Cowboy culture is still a central part of life within the GSENM area. It is important to many long-time residents of the region to preserve and celebrate the traditional cowboy lifestyle and the skills, knowledge, and cultural arts that are connected with it.

Traditional local recreation has continued as increasing numbers of visitors from outside the region have made the GSENM area a popular stopping point on tours of the western U.S. Hikers, backpackers, photographers, car campers, drivers out to enjoy the scenery, canyoneers, climbers, people interested in wildlife viewing, off-highway vehicle riders, picnickers, horseback riders, hunters, mountain and road bicyclists, ecotourists, artists, writers, participants in spiritual retreats, bus tour groups, and other tourists and recreationists are affected by BLM decisions. In turn, these users' spending and visitation patterns affect the local communities that host them and serve their needs for lodging, meals, supplies, and public safety services.

The scientific community has a strong interest in how the monument is managed, especially as that relates to areas where changes in management could either enhance or detract from prospective and/or ongoing research programs or could alter the investigated environment.

References

- Beal, J. 2018. BLM Recreation Specialist Input on Recreation-related items. Personal contact conducted between Katie Segal (ICF) and Jabe Beal (BLM).
- Bureau of Land Management (BLM). 2013. *Instruction Memorandum No. 2013-131, Guidance on Estimating Nonmarket Environmental Values*. September 12, 2013. Retrieved from https://www.blm.gov/policy/im-2013-131-ch1.
- Bureau of Land Management (BLM). 2016. Regional Economic Contributions of National Monuments and National Conservation Areas. Grand Staircase-Escalante 2016 Economic Snapshot. U.S. DOI. National Conservation Lands.
- Bureau of Land Management (BLM). 2017. 2017 Grazing Fee, Surcharge Rates, and Penalty for Unauthorized Grazing Use. U.S. Department of the Interior. March 23, 2017. Retrieved from https://www.blm.gov/policy/im-2017-056. Accessed: June 13, 2018.
- Bureau of Land Management (BLM). 2018a. Mineral Potential Report for the Lands now Excluded from Grand Staircase-Escalante National Monument. U.S. Department of the Interior. Bureau of Land Management.
- Bureau of Land Management (BLM). 2018b. BLM Recreation Management Information System. 2015-2017 datasets for the Grand Staircase-Escalante National Monument. Accessed: June 25, 2018.
- Bureau of Land Management (BLM). 2019. Visitor and Visitor Days by Recreation Management Area from Oct 01, 2017 to Sep 30, 2018. BLM Recreation Management Information System. November 13, 2018.
- De Groot, R. S., B. Fisher, M. Christie, J. Aronson, L. Braat, J. Gowdy, R. Haines-Young, E. Maltby, A. Neuville, S. Polasky, R. Portela, and I. Ring. 2010. Integrating the ecological and economic dimensions in biodiversity and ecosystem service valuation. The Economics of Ecosystems and Biodiversity: Ecological and Economic Foundations, Earthscan, London. Retrieved from http://www.teebweb.org/wp-content/uploads/2013/04/D0-Chapter-1-Integrating-the-ecological-and-economic-dimensions-in-biodiversity-and-ecosystem-service-valuation.pdf. Accessed: July 23, 2018.
- Headwaters Economics. 2017a. *Grand Staircase-Escalante National Monument*. Retrieved from https://headwaterseconomics.org/wp-content/uploads/Escalante.pdf.
- Headwaters Economics. 2017b. *Updated Summary: The Economic Importance of National Monuments to Local Communities*. Retrieved from https://headwaterseconomics.org/wp-content/uploads/monuments-summary.pdf.
- National Agricultural Statistics Service (NASS). 2017. Utah Agricultural Statistics, 2017. USDA. Retrieved from https://www.nass.usda.gov/Statistics_by_State/Utah/Publications/ Annual Statistical Bulletin/2017%20Agricultural%20Statistics.pdf. Accessed: June 13, 2018.
- Office of Natural Resources Revenue (ONRR). 2018. Nationwide datasets of Federal onshore revenues (also including production volumes and sale values) by county for fiscal years 2015-2017. Obtained from ONRR by the BLM National Operations Center economics staff.

- Rosenberger, R., E. White, J. Kline, and C. Cvitanovich. 2017. Recreation Economic Values for Estimating Outdoor Recreation Economic Benefits from the National Forest System. Gen Tech. Rep. PNW-GTR-957. Portland OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. Retrieved from https://www.fs.fed.us/pnw/pubs/pnw_gtr957.pdf.
- Ruhl, J. B., S. E. Kraft, and C. L. Lant. 2007. *The Law and Policy of Ecosystem Services*. Washington (DC), Island Press.
- Stewart, S. 2018. BLM Rangeland Specialist Input on Federal Grazing Fee Revenues. Personal contact conducted between Katie Segal (ICF) and Sean Stewart (BLM).
- Stynes, D. J., and E. M. White. 2006. Spending Profiles of National Forest Visitors, NVUM. February 2006. Retrieved from https://www.fs.fed.us/recreation/programs/nvum/spending_profiles_2006.pdf.
- White, E. M. 2017. Spending Patterns of Outdoor Recreation Visitors to National Forests.

 U.S. Forest Service, Pacific Northwest Research Station. General Technical Report PNW-GTR-961. October 2017. Retrieved from https://www.fs.fed.us/pnw/pubs/pnw_gtr961.pdf.
- White, E. M., D. B. Goodding, and D. J. Stynes. 2013. Estimation of National Forest Visitor Spending Averages From National Forest Visitor Use Monitoring: Round 2 Update. May 2013. Retrieved from https://www.fs.fed.us/pnw/pubs/pnw_gtr883.pdf.

Abbreviations-Acronyms

Term	Definition	
AUM	Animal unit month	
BLM	Bureau of Land Management	
EIS	Environmental Impact Statement	
GSENM	Grand Staircase-Escalante National Monument	
IMPLAN	Impact analysis for planning	
KEPA	Kanab-Escalante Planning Area	
NVUM	National Visitor Use Monitoring	
RMIS	Recreation Management Information System	
RMP	Resource Management Plan	
USFS	U.S. Department of Agriculture, Forest Service	

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix V
Wild and Scenic Rivers
August 2019

Appendix V: Wild and Scenic Rivers

Introduction

This appendix provides an overview of the Wild and Scenic River (WSR) suitability recommendations determined in the 2000 Grand Staircase-Escalante National Monument (GSENM) Management Plan, under section 5(d)(1) of the WSR Act. WSR designations can be made only by Congress, or the Secretary of the Interior upon application of a State Governor. Representatives from GSENM, Bryce Canyon National Park, Glen Canyon National Recreation Area, and Dixie National Forest worked together, along with Cooperating Agencies, to determine river corridor suitability. With the exception of the Upper Paria-1 and Lower Sheep Creek determinations, which vary by alternative in these Resource Management Plans/Environmental Impact Statement, the original suitability determinations are carried forward.

Table 1 and Table 2 identify the length, tentative classification, and outstandingly remarkable values for suitable river corridors in the Escalante River system and Paria River system, respectively. Additional information on suitability determinations is contained in Appendix 4 of the 2000 Monument Management Plan.

Table 1. Suitable segments of the Escalante River System

Segment	Segment Description	Length (nearest 0.1 mile)	Tentative Classification	Outstandingly Remarkable Values
Calf Creek-1	Headwaters (T34S, R4E, S10) to Lower Calf Creek Falls (T34S, R4E, S24)	3.5	Wild	high scenic quality, Calf Creek Recreation Area, bird habitat, prehistoric site, and riparian area
Calf Creek-2	Lower Falls to Calf Creek Recreation Site (T35S, R4E, S1)	3.0	Scenic	_
Calf Creek-3	Recreation Site to Escalante River (T35S, R4E, S12)	1.5	Recreational	_
Coyote Gulch #2	Confluence of Big Hollow Wash with Coyote Gulch (T39S, R7E, Sec 10), downstream to confluence with Escalante River	0.7	Wild	scenic, recreational, geological, wildlife
Death Hollow Creek	BLM/private boundary (T34S, R3E, S3) to Mamie Creek (T34S, R3E, S36)	9.9	Wild	high scenic quality, part of an ONA, southwestern willow flycatcher habitat, prehistoric sites, dinosaur tracks, and riparian area
Escalante River-1	Confluence with Pine Creek (T35S, R3E, S9) to Highway 12 (T35S, R4E, S12)	13.8	Wild	high scenic quality, high recreational use, numerous geologic features, important fish and wildlife habitat, prehistoric sites,
Escalante River-2	Highway 12 to east side of private land (T35S, R4E, S13)	1.1	Recreational	historic homestead and routes, riparian area, fossil tracks, petrified wood
Escalante River-3	Private land to boundary (T36S, R6E, S4)	19.2	Wild	
Harris Wash	T36S, R5E, S36 to GCNRA	1.1	Wild	high-quality scenery, recreational attraction, southwestern willow flycatcher habitat, historic route, prehistoric sites, scientific study opportunities
Lower Boulder Creek	Downstream side of T34S, R4E, S11 to Escalante River (T35S, R5E, S22)	13.5	Wild	high-quality scenery, high recreational use, part of the Escalante Canyons ONA and prehistoric sites

Segment	Segment Description	Length (nearest 0.1 mile)	Tentative Classification	Outstandingly Remarkable Values
Lower Deer Creek-1	Slickrock Canyon (T33S, R5E, S 33) to Burr Trail Road (T34S, R5E, S16)	3.7	Recreational	high-quality scenery, Deer Creek Recreation Area, Escalante Canyons ONA,
Lower Deer Creek-2	Burr Trail Road to Lower Boulder Creek (T35S, R5E, S9)	7.0	Wild	southwestern willow flycatchers, prehistoric sites, threatened plant, and riparian area
Lower Sand Creek and tributary Willow Patch Creek	Sweetwater Creek (T34S, R4E, S8) to Escalante River (T35S, R4E, S10)	13.2	Wild	high scenic quality, part of an ONA, fish habitat, southwestern willow flycatcher habitat, historic trail, and riparian area
Mamie Creek and west tributary	BLM/private boundary (T34S, R3E, S16) to Escalante River (T35S, R4E, S7)	9.2	Wild	high scenic quality, part of an ONA, high recreational use, natural bridge, fish and wildlife habitat, prehistoric and historic sites including an historic mail trail, and riparian area
Scorpion Gulch	Headwaters in T38S, R7E, Sec 14 to GCNRA boundary	0.8	Scorpion Gulch	scenic
Slickrock Canyon	USFS/BLM boundary (T33S, R5E, S22) to Deer Creek (T33S, R5E, S33)	2.8	Wild	high-quality scenery, recreational values, prehistoric sites, and riparian areas
Steep Creek	USFS/BLM boundary (T33S, R5E, S24) to The Gulch (T34S, R5E, S12)	6.4	Wild	high-quality scenery, recreational values, and riparian areas
The Gulch-1	USFS/BLM boundary (T32S, R6E, S32) to Burr Trail Road (T34S, R5E, S13)	11.0	Wild	high-quality scenery, outstanding recreation, natural arch, peregrine falcon habitat, riparian area and petrified wood
The Gulch-2	Along Burr Trail Road to T34S, R5E, S13	0.6	Recreational	
The Gulch-3	Below Burr Trail Road to Escalante River (T35S, R5E, S36)	13.0	Wild	
Twentyfive Mile Wash #2	T37S, R6E, S2 to GCNRA boundary (T37S, R6E, S25), does not include unnamed tributary on north side	6.8	Wild	high scenic quality, high recreation use, bird habitat, rock art, prehistoric structures, and riparian

BLM - Bureau of Land Management, ONA - Outstanding Natural Area, GCNRA - Glen Canyon National Recreation Area, USFS - U.S. Forest Service

Table 2. Suitable segments of the Paria River System

Segment	Segment Description	Length (nearest 0.1 mile)	Tentative Classification	Characteristics that Make the Area a Worthy Addition to NWSRS	
Deer Creek Canyon	Headwaters (T40S, R3W, S1) to Paria River (T40S, R2W, S4)	5.2	Wild	high-quality scenery and recreation values	
Hackberry Creek	Top (T38S, R1W, S29) to Cottonwood Creek	20.1	Wild	recreational and scenic values, spotted owls, and riparian area	
Hogeye Creek	Entire (T40S, R2W, S 1 to T40S, R2W, S26)	6.3	Wild	high-quality scenery and recreation values	
Kitchen Canyon	T40S, R2W, S28 to Starlight Canyon (T40S, R2W, S34)	1.3	Wild	high-quality scenery	
Lower Cottonwood Creek ⁽²⁾	Confluence with Hackberry Creek to Paria River	2.9	Recreational	recreational values and ecological continuity	
Lower Paria River - 1	Downstream side of private property (T43S, R1W, S10) to Wilderness boundary (T43S, R1W, S23)	3.3	Recreational	high-quality scenery, high recreation use, narrow canyon, peregrine falcon, and historic travelway	
Lower Sheep Creek	Bull Valley Gorge (T39S, R2W, S7) to Paria River (T39S, R2W, S17)	1.5	Wild ⁽¹⁾	high-quality scenery, recreational values, spotted owl sighting	
Upper Paria River - 1	Little Dry Valley (T38S, R2W, S21 to T41S, R1W, S7)	21.7	Wild ⁽¹⁾	high-quality scenery, recreational attraction, exposed geologic strata and	
Upper Paria River - 2	T41S, R1W, S7 to downstream side of private property south of Highway 89 (T42S, R1W, S28)	16.9	Recreational	arches, and historic sites	
Snake Creek	Entire (T39S, R2W, S26 to T40S, R2W, S10)	4.7	Wild	high-quality scenery and recreation values	
Starlight Canyon	Entire (T41S, R2W, S7 to T40S, R2W, S35)	4.9	Wild	high-quality scenery	

¹ Varies by alternative in Resource Management Plans/Environmental Impact Statement

² Note that this segment is identified as Hackberry Creek in the Analysis of the Management Situation NWSRS – National Wild and Scenic River System

Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area

Proposed Resource Management Plans and Final Environmental Impact Statement

Appendix W

Draft RMPs/EIS Comment Analysis Report

August 2019

Table of Contents

Introduction	W-1
Public Involvement	W-2
Public Notification	W-2
Public Meetings	W-2
Comment Analysis Process	W-3
Comments Received	W-5
Form Letters	W-5
Comments by Submittal Method	W-5
Comments by Category	
Comments by Location/Geography	W-9
Comments by Affiliation	
Substantive Comment Summary and Response	
Attachment A – Comment Letter by Commenter	
Attachment B - Common Responses	
List of Tables	
Table 1. Number of Comment Documents by Method of Delivery	W-5
Table 2. Number of Substantive Comments by Category	W-6
Table 3. Number of Comment Documents by Geographic Location	W-9
Table 4. Number of Comment Documents by Affiliation	W-12
Table 5. Public Comment Summaries and Summary Responses, by Category	W-13
List of Figures	
Figure 1. Number of Substantive Comments by Issue Category	W-8
Figure 2. Number of Comment Documents by Geography	W-11
Figure 3. Number of Comment Documents by Affiliation	W-12

Appendix W: Draft RMPs/EIS Comment Analysis Report

Introduction

The Grand Staircase-Escalante National Monument and Kanab-Escalante Planning Area (GSENM/KEPA) Draft Resource Management Plans (RMPs)/Environmental Impact Statement (EIS) was released on August 17, 2018, with a revised document released on August 31, 2018. Release of the Draft RMPs/EIS initiated a public comment period that ran through November 30, 2018. During the comment period, the Bureau of Land Management (BLM) hosted two public meetings in October 2018 in Escalante and Kanab, Utah. Each meeting was held in an open-house format to encourage one-on-one discussion between the public and BLM staff. The BLM answered questions, provided information, and encouraged meeting attendees to submit comments. A total of 197 people attended the meetings. Chapter 4, Consultation and Coordination, of the Proposed RMPs/Final EIS contains additional information regarding the public comment meetings and other public outreach and participation opportunities that occurred throughout the development of the EIS.

The BLM received written comments on the Draft RMPs/EIS by mail, email, electronic submission through the BLM's Comment Analysis and Response Application (CARA), and submissions at the public meetings. The BLM also received oral comments transcribed at the public meetings.

A total of 2,389 unique comment documents, 20,680 duplicate comment documents, and 132,730 form letters were received during the course of the public comment period. See Attachment A (Comment Letter by Commenter) for a list of comment letters by submitting individual and organization. Comments covered a wide spectrum of thoughts, opinions, ideas, and concerns. The BLM recognizes that commenters invested considerable time and effort to submit comments on the Draft RMPs/EIS and developed a comment analysis methodology to ensure that all comments were reviewed and considered, as directed by National Environmental Policy Act of 1969 (NEPA) regulations.

This report summarizes substantive comments received during the comment period and the BLM's responses to the summary of comments.

The remainder of this report is organized as follows:

Public Involvement – Describes the public meetings and how the BLM notified the public of the release of the Draft RMPs/EIS and the comment period.

Comment Analysis Process – Describes how the BLM received, recorded, and categorized comment documents and individual comments.

Comments Received – Describes the public comments received including number of comments or comment letters by submittal method, category, location/geography, and affiliation.

Substantive Comment Summary and Response – Provides summaries of substantive comments and the BLM's summary comment responses.

Public Involvement

Public Notification

The Notice of Availability of the GSENM/KEPA Draft RMPs/EIS was published in the Federal Register on August 17, 2018, and a Notice of Error was published in the Federal Register on August 31, 2018, announcing the availability of the revised documents and extension of the public comment period by 15 days. The BLM published a press release on August 15, 2018, inviting the public to review the Draft RMPs/EIS and submit comments. The press release included information on the planning process and how to submit comments electronically or by mail. The BLM published another press release on September 18, 2018, that contained information on the time, location, and format of the public meetings and included information on the public comment period and ways to submit comments. The public comment period and instructions for commenting were also published on the project ePlanning website (https://goo.gl/EHvhbc).

Public Meetings

During the public comment period on the GSENM/KEPA Draft RMPs/EIS, the BLM hosted two public meetings to provide information to the public and to solicit comments on the Draft RMPs/EIS. The GSENM/KEPA Draft RMPs/EIS public meetings were held on October 15, 2018, and October 16, 2018. Each meeting provided an opportunity for attendees to review provided information, speak with resource specialists, ask questions, and submit comments on the Draft RMPs/EIS. The meeting on October 15, 2018, was held at Escalante High School in Escalante, UT (800 E. Hwy 12, Escalante, UT 84726). The meeting on October 16, 2018, was held at Kanab Elementary School in Kanab, UT (41 W 100 N, Kanab UT 84741). The public meetings were held from 4:00 p.m. to 7:00 p.m.

Each meeting was held in an open-house format to encourage one-on-one discussion between the public and BLM staff. Upon arrival, attendees were greeted, handed an informational brochure, and encouraged to sign in. Attendees were then directed to the open-house meetings where eight large informational boards and accompanying maps were displayed. The boards provided an overview of the RMP process and information on how various resources may be managed under each alternative considered in the RMPs. Resource-specific maps were placed next to the appropriate informational board to provide for visual comparison between alternatives.

Resource specialists from the BLM and the contractor team were stationed at the boards to answer questions and provide further information to the public. Printed copies of the Draft RMPs/EIS were available for attendees to reference, as needed. Written comment forms were provided and attendees were given the option to submit completed comment forms in person. Information was also provided on how to submit comment forms via mail if attendees wanted to take comment forms home and submit them at a later date. A court reporter was also available for members of the public to provide oral comments.

There were 123 meeting attendees that signed in during the October 15 meeting in Escalante. There were 74 meeting attendees that signed in during the October 16 meeting in Kanab. The attendees were composed of members of the public and representatives from the following agencies, local governments, and organizations:

Washington County Water Conservation District

- Garfield County
- Piute County
- Kane County
- Utah Public Lands Policy Coordinating Office
- National Park Service
- U.S. Environmental Protection Agency
- Grand Staircase-Escalante Partners
- Sierra Club
- Southern Utah Wilderness Alliance
- Western Watersheds Project
- Utah/Arizona ATV Club
- Great Old Broads for Wilderness
- An independent documentary film crew

Comment Analysis Process

According to NEPA, the BLM is required to identify and formally respond to all substantive public comments received during the GSENM/KEPA Draft RMPs/EIS comment period. The BLM developed a systematic process for responding to comments to ensure all substantive comments were identified, tracked, and responded to. When a submission was received via hardcopy or U.S. Mail, the comment letter was assigned an identification number and reviewed. Substantive comments from each letter were coded to appropriate categories based on the content of the comment. When a submission was received via CARA in ePlanning, the CARA system automatically assigned an identification number and allowed the BLM to organize, categorize, and respond to comments.

Categories used for comment coding included the following.

- Air Resources
- Alternatives
- Analysis Methods and Data
- Cultural Resources
- Fish, Wildlife, Special Status Species
- Forestry and Woodland Products
- Lands and Realty and Renewable Energy
- Lands with Wilderness Characteristics
- Laws, Regulations, Process, Guidance
- Livestock Grazing
- Minerals
- Mitigation and Monitoring
- National Monuments

- Paleontological Resources
- Public Involvement
- Purpose and Need
- Recreation and Visitor Services
- Social and Economic Considerations
- Soil and Water Resources
- Special Designations (e.g., Areas of Critical Environmental Concern, National Historic Trails)
- Travel and Transportation Management
- Vegetation and Fire and Fuels
- Visual Resources, Dark Night Skies, and Natural Soundscape
- Wild Horses

Each comment letter was reviewed, and the reviewers determined whether a comment was substantive or nonsubstantive in nature. The BLM's NEPA Handbook (H-1790-1) states that a substantive comment does one or more of the following:

questions, with reasonable basis, the accuracy of information in the EIS

- questions, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analysis
- presents new information relevant to the analysis
- presents reasonable alternatives other than those analyzed in the EIS
- causes changes or revisions in one or more of the alternatives

Additionally, the BLM's NEPA Handbook (H-1790-1) provides the following guidance on considering substantive comments:

- Comments on the Adequacy of the Analysis: Comments that express a professional disagreement with the conclusions of the analysis or assert that the analysis is inadequate are substantive in nature but may or may not lead to changes in the Proposed RMPs/Final EIS. Interpretations of analyses should be based on professional expertise. Where there is disagreement within a professional discipline, a careful review of the various interpretations is warranted. In some cases, public comments may necessitate a reevaluation of analytical conclusions. If, after reevaluation, the manager responsible for preparing the EIS (authorized officer) does not think that a change is warranted, the response should provide the rationale for that conclusion.
- Comments that Identify New Impacts, Alternatives, or Mitigation Measures: Public comments on the Draft RMPs/EIS that identify impacts, alternatives, or mitigation measures that were not addressed in the draft are substantive. This type of comment requires the authorized officer to determine whether it warrants further consideration. If it does, the authorized officer must determine whether the new impacts, new alternatives, or new mitigation measures should be analyzed in the Proposed RMPs/Final EIS, a supplement to the Draft RMPs/EIS, or a completely revised and recirculated Draft RMPs/EIS.
- Disagreements with Significance Determinations: Comments that directly or indirectly
 question, with a reasonable basis, determinations regarding the significance or severity of
 impacts are substantive. A reevaluation of these determinations may be warranted and
 may lead to changes in the Proposed RMPs/Final EIS. If, after reevaluation, the authorized
 officer does not think that a change is warranted, the response should provide the rationale
 for that conclusion.

Comments that failed to meet the above descriptions were considered nonsubstantive. Many comments received throughout the process expressed personal opinions or preferences, provided broad input with no specific actionable information, had little relevance to the adequacy or accuracy of the Draft RMPs/EIS, represented commentary regarding resource management and/or impacts without any real connection to the document being reviewed, or were considered out of scope because they dealt with existing law, rule, regulation, or policy or other projects. These comments did not provide specific information to assist the planning team in making changes to the alternatives or impact analysis in the Draft RMPs/EIS and are not addressed further in this document. Examples of nonsubstantive comments included the following:

- The best of the alternatives is Alternative D (or A, or B, or C).
- The Preferred Alternative does not reflect balanced land management.
- More land should be protected as wilderness.
- The BLM needs to change the Taylor Grazing Act and charge higher grazing fees.

- I want the EIS to reflect the following for this area: no grazing, no drilling, no mining, and no off-highway vehicles (OHVs).
- More areas should be made available for multiple uses (e.g., drilling, OHVs, or mining leases) without severe restrictions.

Opinions, feelings, and preferences for certain aspects of management or for one alternative over another, and comments of a personal and/or philosophical nature, were all read, analyzed, and considered. However, because such comments are not substantive in nature and do not include actionable information, the BLM did not respond to them individually. While all comments were reviewed and considered, comments were not counted as "votes." The NEPA public comment period is not considered an election, nor does it result in a representative sampling of the population.

Comments Received

This section summarizes comments received and commenter demographics based on information provided in the comment documents. Demographic analysis allows the BLM to form an overall picture of comments received and a better understanding of who is submitting comments, the geographic distribution of commenters, their affiliations, and the format of the public comment documents.

Form Letters

The BLM received 21 sets of form letters on the Draft RMPs/EIS. Form letters are standardized letters that are typically submitted on behalf of an organization. The organization arranging a form letter campaign usually provides individual commenters the opportunity to submit a standard letter prepared by the organization or to modify the letter to add new information or emphasize their main concern. One copy of each form letter was uploaded to CARA for review. Modified letters with unique comments were given their own letter number and coded. In total, the BLM received 132,730 form letters throughout the Draft RMPs/EIS public comment period. Form letters covered a variety of topics including mineral development, wilderness values, OHV use, and general support for or opposition to the RMPs/EIS.

Comments by Submittal Method

The BLM received comment documents, including form letters and duplicates, through a variety of delivery methods, as listed in Table 1. The BLM received the most comment documents through ePlanning (131,088 comment documents) and email (24,073 comment documents).

Table 1. Number of Comment Documents by Method of Delivery

Method of Delivery	Number of Comment Documents	
Email	24,073	
U.S. Mail/hand-delivered	588	
CARA (ePlanning)	131,088	
Public meetings	56	
Total	155,805	

CARA - Comment Analysis and Response Application

Comments by Category

The 1,288 individual substantive comments identified by the BLM cover a broad range of topics. Table 2 and Figure 1 present the number of substantive comments submitted by category. The greatest number of substantive comments was associated with Alternatives (143 comments), Travel and Transportation Management (102 comments), Fish and Wildlife (95 comments), and Livestock Grazing (92 comments).

Table 2. Number of Substantive Comments by Category

Category	Number of Comments by Category
Air Resources	71
Alternatives	143
Analysis Approach and Assumptions	85
Appendix C. Glossary Terms	5
Appendix E. Grand Staircase-Escalante National Monument Objects and Resource Values	4
Appendix G. Best Management Practices	10
Appendix H. Stipulations and Exceptions, Modifications, and Waivers	1
Consistency with County Plans	80
Cooperating Agencies	4
Cultural Resources	63
Editorial	2
Fire and Fuels General	3
Fish and Wildlife – General	95
General Use of Science	3
Lands and Realty General	31
Lands with Wilderness Characteristics	26
Laws and Policies	32
Livestock Grazing	92
Minerals	38
Mitigation and Monitoring	14
Monument Advisory Committee	22
Out of Scope	18
Paleontological Resources	51
Public Involvement	10
Purpose and Need	1
Recreation	73
Scenic Routes	11
Social and Economic Considerations	24
Soil and Water Resources	36
Special Designations	62
Suggest Additional Data Source	2

Category	Number of Comments by Category
Travel and Transportation Management	102
Vegetation	39
Visual Resources	31
Wild Horses	4

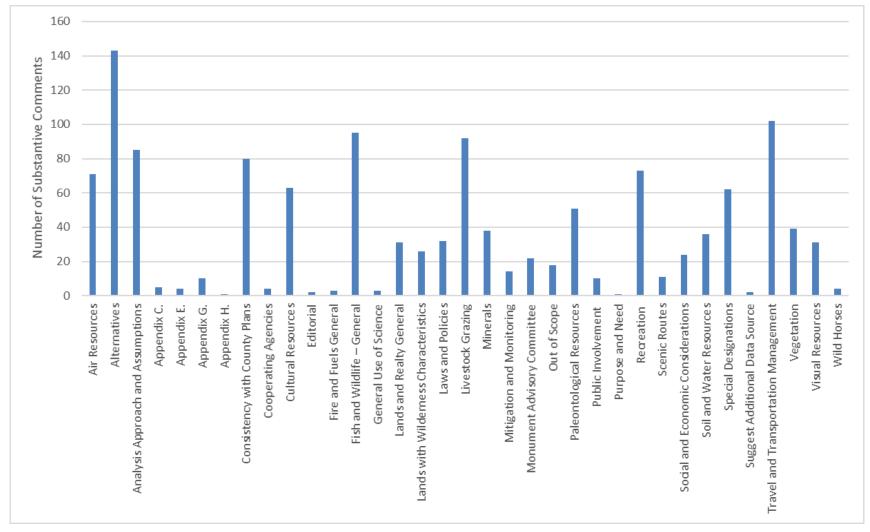


Figure 1. Number of Substantive Comments by Issue Category

Comments by Location/Geography

The BLM tracked the geographic location from which comment documents were submitted, if the comment submittal included geographic information. Table 3 identifies the number of comment documents received from individual geographic locations (excluding form letters and duplicate submissions). Figure 2 depicts the geographic distribution of comment documents received. The BLM received the most comment documents from Utah, followed by California and Colorado, respectively.

Table 3. Number of Comment Documents by Geographic Location

Alabama Alaska Arizona Arkansas California	28 18 144 10 284 255
Arizona Arkansas	144 10 284
Arkansas	10 284
	284
California	
	255
Colorado	
Connecticut	13
Delaware	6
Florida	26
Georgia	8
Hawaii	3
Idaho	16
Illinois	34
Indiana	12
lowa	1
Kansas	5
Kentucky	5
Louisiana	3
Maine	12
Maryland	23
Massachusetts	38
Michigan	28
Minnesota	20
Mississippi	1
Missouri	12
Montana	63
Nebraska	4
Nevada	28
New Hampshire	3
New Jersey	16
New Mexico	64

Geographic Location	Number of Comment Documents	
New York	67	
North Carolina	21	
North Dakota	1	
Ohio	29	
Oklahoma	7	
Oregon	64	
Pennsylvania	27	
Rhode Island	1	
South Carolina	6	
South Dakota	4	
Tennessee	9	
Texas	35	
Utah	514	
Vermont	8	
Virginia	33	
Washington	112	
Washington, D.C.	15	
West Virginia	3	
Wisconsin	13	
Wyoming	70	
International	1	

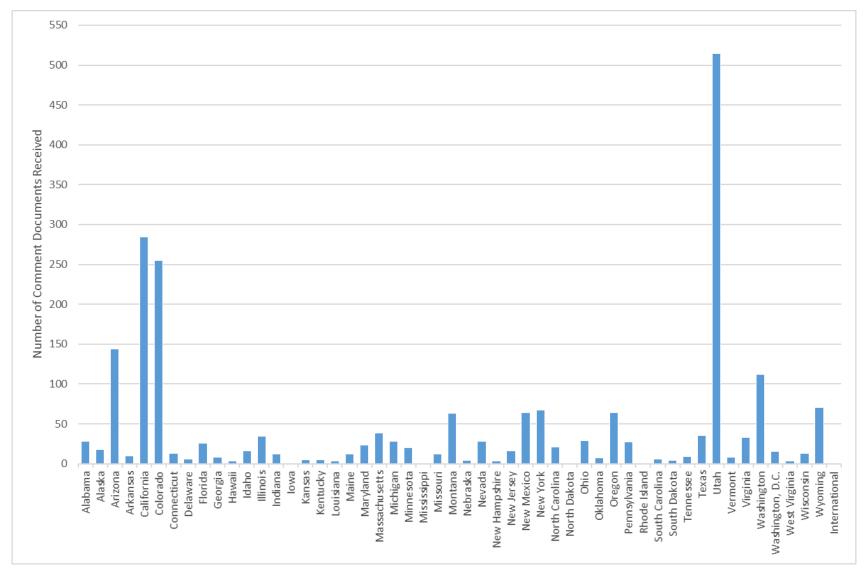


Figure 2. Number of Comment Documents by Geography

Comments by Affiliation

In addition to form letters, the BLM received comments from a range of entities, as listed in Table 4 and shown on Figure 3. The BLM affiliated comment documents with a government or non-governmental organization if the comment document was received on official letterhead or was received through an official agency or organization email address.

Affiliation	Number of Comment Documents	
Federal Agency	2	
State Agency	3	
Local Government	15	
Tribal Government	2	
Non-Governmental Organization	137	

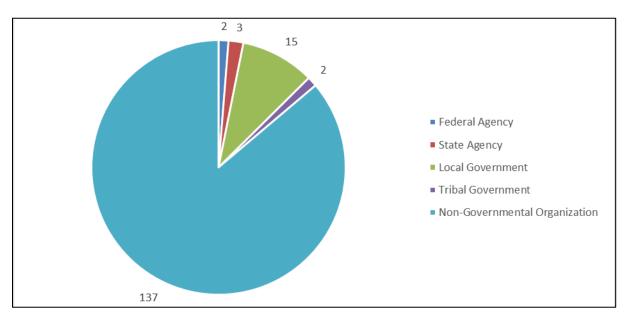


Figure 3. Number of Comment Documents by Affiliation

Substantive Comment Summary and Response

To provide a user-friendly method of understanding the broad themes and topics of concern expressed in the substantive comments, the BLM grouped individual comments with similar topics and concerns and developed summary comments and responses. Table 5 provides the comment summaries and responses organized by category, and includes a comment Letter Number indicating the comment document(s) from which the comments originated. See **Attachment A** (*Comment Letter by Commenter*) for a list of comment letters by submitting individual and organization. A number of issues were raised by multiple commenters; to avoid repetition, the BLM has included each response once in **Attachment B** (*Common Responses*) and placed a reference to the applicable response in **Green Text** in Table 5.

Table 5. Public Comment Summaries and Summary Responses, by Category

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
001	4572 108985 109036 109044	Air Resources	Commenters asserted that more detail should be provided on the beneficial impacts on air quality and climate from vegetation management and carbon sequestration. Commenters requested that the analysis compare carbon sequestration impacts across the alternatives and that a carbon sequestration goal be added to the RMPs/EIS. Commenters noted that the analysis of air quality impacts also portrays Alternative D in a negative light and the analysis should be more balanced to identify the beneficial effects of Alternative D.	The BLM has reviewed the Air Resources analysis and concluded it was sufficient to adequately inform the decision. The BLM performed an analysis of the potential impacts on each resource or resource use from management actions. Response A: Impact Analysis of Passive Management vs. Active Management
002	4572 108985 109036 109044	Air Resources	Commenters suggested a variety of revisions to the air quality management and analysis, including revisions to goals and objectives, individual management actions, and additional detail and data to support the analysis. Commenters requested revisions to better reflect the authority of local governments in managing air quality, to include more case-bycase management approaches. Commenters also asserted that the BLM failed to provide data to local governments while developing the RMPs as required by county-level plans and requested further government-to-government consultation to resolve their concerns.	The BLM reviewed the goals, objectives, and management actions for Air Resources and made revisions per commenter requests. For example, Objective AR:1.4 was revised to read: "Mange public land activities consistently with at least the Federal Class II area standards and visibility (regional haze) criteria, and no less than any local governments' air quality criteria." The BLM also revised the text of record #1002 to the following: "Manage activities at least within the air quality standards established by the Environmental Protection Agency and Utah Department of Air Quality, and no less than any local governments' air quality standards."
003	485 4572 100976 108414 108985 109036 109039	Air Resources	Commenters expressed concern about inaccurate or insufficient information/data used in the air quality impact analysis. Commenters identified concerns related to the size of the analysis area, the protection of visibility and scenic values especially in nearby National Parks, and the analysis of impacts from	The BLM reviewed Section 3.1 (Air Resources) and determined that the Draft RMPs/EIS provide a discussion of the environmental consequences of the alternatives, including direct and indirect effects, as required by 40 CFR § 1502.16. The BLM set the boundaries of the analysis area using technical and scientific judgments within

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
	109044 109539		activities such as livestock grazing and mining. Commenters requested additional information be added to the RMPs/EIS regarding nitrogen and sulfur deposition, quantifiable air quality objectives, impacts from road improvements, and impacts from other activities occurring outside of the analysis area such as landfills.	the agency's area of expertise. The Draft RMPs/EIS presented detailed information to aid in determining whether to proceed with the Preferred Alternative or make a reasoned choice among the other alternatives in a manner such that the public could have an understanding of the environmental consequences associated with the alternatives. The BLM has revised Section 3.1.2.3 to reference the landfills in the area. Note that landfills in the analysis area are in compliance with the California Air Resources Board's regulation to reduce methane emissions from landfills; therefore, the GHG emissions are not anticipated to represent a significant contribution to cumulative impacts on air quality. As the decisions under consideration by the BLM are programmatic in nature and would not result in on-the-ground planning decision or actions, the scope of the analysis was conducted at a regional, programmatic level. The analysis focuses on the direct, indirect, and cumulative impacts that could potentially result from land use planning decisions. Site-specific environmental analysis, potentially including additional air quality modeling, will provide opportunities to identify potential impacts associated with future projects. Response B: Range of Alternatives
004	92988 94307 94869 100976 102044	Air Resources	Commenters expressed concern that the BLM did not fully analyze impacts from climate change, including accounting for downstream emissions of GHGs generated from the transportation, processing, and use of fossil fuels due to the increased potential for mineral	The BLM reviewed the analysis and found that the GHG emissions for mineral development are quantified. See Appendix M and Section 3.1 (Air Resources). However, in response to comments, the BLM has also quantified indirect emissions associated with the downstream combustion of

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
	108989 109039		development in KEPA. Commenters requested a more detailed discussion of baseline conditions and direct, indirect, and cumulative climate change impacts including quantified GHG emission estimates, revised economic calculations, and the use of social cost comparison metrics to better inform the analysis.	the oil and gas for the existing activities in the Upper Valley oil field and for the foreseeable development of one additional well (refer to Proposed RMPs/Final EIS Appendix M, Air Quality Technical Support Document, Table 1). Prior to project-specific approval, additional air quality analyses may be required to comply with NEPA, FLPMA, and/or other applicable laws and regulations.
005	109039 109040 109539	Air Resources	Commenters requested additional air quality modeling be performed or requested technical revisions to the air quality modeling scenarios and results. Specifically, commenters requested modeling for the other alternatives in the RMPs/EIS, revisions to the receptor grid, revisions to the ozone modeling approach, revisions to nitrogen oxide chemistry settings, modeling of hazardous air pollutants associated with coal mining, revisions to the modeling of fugitive dust, analysis of the PSD of air quality selection of non-default model options, reporting format of model results, and the inclusion of an adaptive management modeling stipulation in the EIS. Commenters requested that the BLM conduct far-field and long-range transport modeling and that the BLM revise the emissions inventory to make it specific to potential oil and gas development in the Planning Area. Commenters noted that updating the air quality modeling will better support the air quality analysis and impact conclusions.	There were no changes in the Planning Area between the Draft RMPs/EIS and Proposed RMPs/Final EIS that would warrant updated or additional modeling. The decisions under consideration by the BLM are programmatic in nature. The BLM conducted its analysis using the best available data to reflect potential emissions (Response K: Best Available Information). Site-specific environmental analysis, potentially including additional air quality modeling and project-specific emissions inventories, will provide opportunities to identify potential impacts associated with future projects. In addition, in accordance with the BLM NEPA Handbook (H-1790-1), the BLM may require additional measures for air resources during site-specific environmental analysis and as developed through coordination with other Federal, State, and local regulatory and resource agencies. The BLM has noted in Appendix I (Monitoring Strategy), under the Monitoring Protocols for Air Resources section, that the BLM would "Evaluate current air monitoring data and trends from air monitoring sites located within or representative of the Planning Area airshed or

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				the potentially affected area to determine the status of current air quality conditions within the Planning Area, including measured adverse impacts on air quality-related values in Class I areas or sensitive Class II areas (as identified on a case-by-case basis by the appropriate Federal land management agency). Response to monitored exceedances may include additional modeling and mitigation requirements." As noted in Appendix M, volatile organic compounds and hazardous air pollutants from coal mines are poorly understood and the BLM chose to disclose their potential for release but not speculate on the quantity that would be released.
006	109039	Air Resources	Commenters expressed concern that the RMPs/EIS do not safeguard monument objects and resource values sensitive to air pollution or visibility degradation, including water resources, soils, vegetation, and scenic resources. Commenters also expressed concern with impacts on air resources at nearby NPS units including Glen Canyon NRA.	The BLM manages lands under the principles of multiple use and sustained yield in accordance with Section 302 of FLPMA. The BLM has concluded that all of the alternatives ensure the proper care and management of monument objects, and has the administrative and regulatory tools necessary to address situations that may jeopardize monument objects. The range of alternatives analyzed in the Draft RMPs/EIS provide for the proper care and management of the monument objects and values identified in Presidential Proclamation 6920, as modified by Presidential Proclamation 9682.
007	17577 60790 109040 109044	Alternatives	Commenters requested several edits related to the goals, objectives, and management actions associated with livestock grazing. Commenters noted that the BLM needs to clarify whether the Escalante River will be available or unavailable for livestock grazing under each alternative and	The BLM revised Section 2.3.12 (Alternatives – Livestock Grazing) based on comments received, including revisions to clarify that a portion of the Escalante River Allotment within Glen Canyon NRA is unavailable for grazing, and portions within the Escalante Canyons Unit and

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			suggested that the Final RMPs keep the river allotments unavailable for grazing, as per current management practices. Commenters also noted that the range of alternatives should include one or more alternatives with a reduction in the area of land available for livestock grazing, given the potential impacts that livestock grazing can have on other resources and resource uses.	KEPA are available under Alternative D. The BLM considered comments received on the alternatives during the development of the Proposed RMPs. The BLM also added Map 59 to the Proposed RMPs/FEIS that provides a closer view of the Escalante River Area grazing management for Alternative E. Response B: Range of Alternatives
008	62633 108992 109036 109044	Alternatives	Commenters provided a variety of specific edits, recommendations, and input on the alternatives, including adjustments to the goals and objectives, application of the management from one alternative to another alternative, editorial revisions, and revisions to management text/actions in the alternatives.	The BLM revised Section 2.3 (Detailed Alternatives) based on comments received, as appropriate. The BLM considered comments received on the alternatives during development of the Proposed RMPs.
009	109006	Alternatives	Commenters expressed concern regarding the selection of Alternative D as the BLM's Preferred Alternative, as the RMPs/EIS seem to indicate that Alternative D would have the most impact on resources in the Planning Area.	The BLM considered comments received on the alternatives during development of the Proposed RMPs. The rationale for selecting each land use plan will be provided in the ROD.
010	93508 100976 109015	Alternatives	Commenters indicated that the alternatives do not include enough specific detail on a variety of topics including quantifiable criteria for determining the effectiveness of planning goals, application of BMPs, possible constraints for implementing the alternatives (e.g., lack of staffing/funding), corrective actions that would be taken if the alternatives are not effective, how the BLM determined which decisions were planning-level versus implementation-level, and how the alternatives will ensure the proper care and management of monument objects.	Response H: Programmatic vs. Site-Specific Environmental Analysis Response B: Range of Alternatives Response C: Proper Care and Management of Monument Objects Refer to Section 1.4 (Planning Criteria), which notes that the planning criteria are the constraints or ground rules that guide and direct the development of the RMPs, and they determine how the planning team approaches development of alternatives and ultimately selects the Preferred Alternative.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				Made revisions to the alternatives tables in Chapter 2 and analyses in Chapter 3 to correct the identification of implementation-level decisions. The BLM incorrectly identified several management actions in the Draft RMPs/EIS as implementation-level actions. "Management actions" are types of land use planning decisions (BLM Handbook H-1601-1). BLM Handbook H-8320-1 further identifies recreation land use plan actions to include land use plan-supporting management actions and allowable uses. The BLM has determined these management actions are necessary to prevent resource damage to provide for the proper care and management of the monument objects and values. These Proposed RMPs/Final EIS correct the error and clarify that there are fewer implementation-level decisions. The BLM's Land Use Planning Handbook, H-1601-1, in Section V. Monitoring, Evaluation, and Adaptive Management (p. 32), notes that the BLM's planning regulations require that land use plans establish intervals and standards for monitoring and evaluations, based on the sensitivity of the resource decisions. Through monitoring and evaluation, the BLM can assess whether specific management goals or objectives are being met, and, if not, facilitate management changes that will best ensure that the agency can achieve outcomes identified in the land use plans. Currently, it is BLM policy to evaluate land use plans on a 5-year cycle after implementing the Approved RMPs. This process is further defined specifically for each resource program in Appendix I, Monitoring Strategy, of

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				the Draft RMPs/EIS and Proposed RMPs/Final EIS.
011	108992	Alternatives	A commenter suggested that loss of carbon storage and climate change and associated impacts be considered in the Range Science program and in the livestock grazing alternatives.	The BLM revised the cumulative impacts analysis for grazing in Section 3.12.2.3 to reference climate change and potential impacts on livestock grazing.
012	109044	Alternatives	Commenters requested that the BLM manage to maintain night sky and natural soundscapes only when there is no conflict with other resource management, as the BLM has no existing policy or mandate to manage night skies and natural soundscapes.	Although dark night skies and natural soundscapes are not identified as resources in the BLM's land use planning handbook (H-1601-1), the BLM has the purview to plan and manage for resources that are not explicitly noted in the handbook but raised during public and internal scoping, which it has done in this planning effort. The BLM has included BMPs (see Appendix G) that would apply to the Proposed RMPs that could minimize the effects of light pollution, and is in the process of developing additional BMPs that could also apply. Additionally, the BLM modified the goal to say, "Manage uses to protect the quality of night sky and natural soundscape resources."
013	109044	Alternatives	Commenters expressed concern that there was no public involvement in determining visual sensitivity levels and asked the BLM to clarify the term "visual contrast" and how much of the Planning Area is deemed a sensitive visual area under Alternative D. Commenters requested that county management priorities be fully considered before designating VRM classes and requested that an alternative exist that changes VRM classes in the buffer areas around roads to be less restrictive (Class III or IV).	The term and concept of "visual contrast rating" is defined in BLM Manual 8431, Visual Resource Contrast Rating. While one factor of consideration for determining the visual sensitivity level is the measure of public concern for scenic quality, there is no requirement to conduct formal public review and/or scoping. As Manual H-8410 notes in Section III. (Sensitivity Level Analysis), "The visual quality of an area may be of concern to local, State, or National groups." As noted in the Grand Staircase-Escalante National Monument Visual Resource Inventory (BLM 2019), the inventory process

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				begun in 2012 did however attempt to capture stakeholder input on scenic quality and sensitivity, specifically: "Invitations to participate in the inventory process were mailed in March 2012 to surrounding Federal land management agencies; local counties, towns, and cities; Monument Advisory Committee members; local partner organizations; and area State park managers. Additionally, scenic quality and sensitivity workshops and fieldwork in 2012 included not only BLM staff and interns, but also volunteers and representatives from the National Park Service, U.S. Forest Service, and Garfield County" (page 11)
014	62633 109011	Alternatives	Commenters requested that the BLM consider including management that would allow for surface disturbance in big game crucial habitat and disposal of these. Commenters requested that the BLM clarify the use restrictions and allowable surface-disturbing activities in big game crucial seasonal ranges, especially where management seems to conflict with BMPs in Appendix G. Commenters requested that migration corridors be shown on big game maps, especially corridors that connect crucial habitat.	The RMPs/EIS include a reasonable range of management for big game habitat, including crucial habitat. The BLM will apply the BMPs found in Appendix G (Best Management Practices) as needed to meet the goals and objectives of the RMPs. In the Proposed RMPs/FEIS, the BLM has identified a migration corridor along Highway 89 that is used by Mule Deer Herd Unit #27. The BLM included management and a BMP for a seasonal timing limitation for this mule deer migration corridor. The mule deer migration corridor was added to Map 3 (Big Game). The Chapter 3 Fish and Wildlife section was revised to further describe this migration corridor and additional text was included in the analysis associated with the seasonal timing limitation for the migration corridor.
015	4572 82807	Alternatives	Some commenters felt that the BLM did not provide an adequate range of alternatives and	The BLM is conducting planning for GSENM and KEPA lands according to the boundaries

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
	100974 108151 108988 109036 109039		requested the addition of other alternatives, including (1) a management alternative based on the original monument boundaries prior to Presidential Proclamation 9682, (2) an alternative that would improve air quality, (3) full consideration of the Sustainable Grand Staircase-Escalante Alternative suggested by The Wilderness Society in the EIS, and (4) an alternative that focuses more on protection and restoration of the monument. Commenters also requested that additional management consideration be given to the location and types of recreational facilities and identifying lands available for disposal under FLPMA Section 203.	described in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682, because there has been no judicial determination that Presidential Proclamation 9682 is unlawful. The range of alternatives analyzed in the Draft RMPs/EIS provides for the proper care and management of the monument objects and values identified in Presidential Proclamation 6920, as modified by Presidential Proclamation 9682. Actions relating to the improvement of air quality do not require a range of alternatives, as the actions are reflective of current laws, EPA requirements, and State requirements. While the BLM did not consider the Sustainable Grand Staircase-Escalante Alternative in its entirety, the BLM did include many of the management recommendations from this alternative in the range of alternatives (specifically in Alternative B).
016	109044	Alternatives	Commenters suggested additional government- to-government coordination occur regarding cultural resources and requested that non- commercial traditional and personal use be allowed without a permit.	Tribes provided additional input on preferences for collection for tribal purposes. Alternative E (Proposed Plans) management provides for traditional use without a permit. Response B: Range of Alternatives Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders) Response F: Traditional Uses
017	94869 108151	Alternatives	Commenters expressed concern regarding the lands with wilderness characteristics management actions and provided specific text edits be made to the language. Commenters requested the original monument management actions for the lands removed from the monument be considered as an alternative for	As noted in the Draft RMPs/EIS in Section 1.3 (Purpose and Need for the Plan), the BLM is charged with implementing the President's vision for lands excluded from GSENM by Presidential Proclamation 9682, that the lands are managed for multiple use as appropriate under FLPMA consistent with other applicable

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			the Proposed RMPs/Final EIS. Additionally, during the planning effort, commenters requested a thorough lands with wilderness characteristics inventory be conducted.	legal requirements. Other than where it conflicts with the management direction in Presidential Proclamation 9682, Alternative A is composed of the management actions in the current MMP. The BLM inventoried citizen and interdisciplinary team recommendations for lands with wilderness characteristics in accordance with BLM Manuals 6310 and 6320 and documented the units that met the requirements for size, naturalness, and outstanding opportunities for solitude or primitive and unconfined recreation. Following publication of the Draft RMPs/EIS and based on input received from the public, the BLM updated inventories for lands with wilderness characteristics in the Planning Area, the results of which have been incorporated into these Proposed RMPs/Final EIS (refer to Section 3.4, Lands with Wilderness Characteristics). Response B: Range of Alternatives
018	24324	Alternatives	Commenters requested revision of the management alternatives to address motorized use by youth, the handicapped, the disabled, veterans, the elderly, and other public land users with special needs and to meet the future needs of OHV users.	Response B: Range of Alternatives Response G: Travel Management Planning Except for the section that applies to Federal wilderness areas, the programs and facilities of Federal agencies are not governed by the ADA of 1990, the legislation that prohibits discrimination and guarantees that people with disabilities have equal access and opportunities. The ADA essentially extends to the private sector the rights and protections already prohibiting discrimination on the basis of disability in Federal government and federally assisted programs as mandated by the ADA and Section 504. Therefore, the ADA does not directly apply to the Federal government.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
019	109040 109044	Alternatives	Commenters expressed various concerns regarding the management of water resources in the alternatives and provided specific recommendations including (1) prioritizing management activities to focus on the most significant water resources that are in a recoverable condition, (2) greater setback distances for critical water resources such as drinking water sources and smaller setbacks for less critical resources such as ephemeral waters, and (3) that certain management actions for water from Alternative B be carried forward in the Proposed RMPs, including more protection for drinking water.	The BLM has reviewed the range of alternatives and found that the requested setback distances are captured in the current range of alternatives. The BLM has removed the prohibition on water developments that will increase livestock numbers from the management. Response B: Range of Alternatives
020	21162 94173 107723 109044	Alternatives	Commenters expressed concern regarding the paleontological resource alternatives and provided specific text edits to management actions. Commenters suggested developing a program for the BLM to track, license, or otherwise authorize amateur fossil collectors, and encourage children, students, and adults to participate. Commenters also requested that rockhounding and mineral collection be recognized and analyzed as a recreational activity in the EIS for recreation and educational programs in the monument and surrounding KEPA lands.	The request for the BLM to develop and administer this type of program is beyond the scope of the RMPs; however, this issue could be considered during implementation-level planning, specifically during development of the Paleontological Resources Plan. Recreational rockhounding (i.e., casual collection) is allowed within the spectrum of the current Goal REC 1 as well as the current range of available road networks for motorized access. The development of campgrounds, routes, and other site-specific decisions will be considered in the TMP or other future implementation actions and subject to appropriate site-specific environmental analysis.
021	24324 94173 108985 109044	Alternatives	Commenters requested a more diverse range of alternatives regarding allocation and management of SRMAs be considered and recommended that the BLM include at least one SRMA in the Preferred Alternative. Commenters also asked that the recreation and visitor use	The range of alternatives includes considerations of SRMAs and no SRMAs. The BLM can select any of the SRMAs for the Proposed RMPs. Appendix R (Recreation Management Areas) provides a description of the targeted recreation-tourism market for

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			management actions be changed to more specifically identify structured recreation opportunities. Commenters requested a new alternative be created that promotes recreation, including addressing the need for motorized access and recreation.	which each SRMA was created. Appendix R was updated to include a statement explaining how the BLM determined each SRMA's size. Response B: Range of Alternatives Response G: Travel Management Planning
022	109036 109040	Alternatives	Commenters indicated that the management of biological soil crusts is similar in GSENM and KEPA and that additional management and protection of biological soil crusts be included, especially management that would minimize disturbance to biological soil crusts and be consistent with local county plans.	All alternatives include measures to avoid impacts on the function, health, and distribution of biological soil crusts prior to any ground-disturbing activity within GSENM (see Appendix G). Although Alternative E does not include similar management for biological soil crusts in KEPA, site-specific environmental analysis will provide opportunities to identify and mitigate potential impacts associated with future projects. Refer to Appendix G (Best Management Practices) for soil BMPs that would be applied to reduce potential impacts on biological soil crusts and other soils.
023	4572 81854 81855 108985 109011 109035 109036 109044	Analysis	Commenters expressed concern that the environmental impacts analysis was biased against the Preferred Alternative or that the analyses were not consistent between resources and resource uses. Commenters asserted that the BLM used assumptions that skewed the analyses and indicate that Alternative D is the most damaging to the environment. Commenters also asserted that the EIS inappropriately equates hands-off "passive" management (i.e., Alternative B) with fewer impacts and more protection when in reality active management (i.e., Alternative D) has longer-term benefits that exceed the beneficial impacts of "passive" management. Commenters requested that the analysis be revised to reflect	The BLM reviewed the environmental impact analysis and concluded it was sufficient to adequately inform the decision because it analyzed both beneficial and adverse impacts from proposed management actions. The BLM has further reviewed the RMPs/EIS and made changes to ensure that the analysis is sufficiently objective and reflects long-term beneficial impacts on resource uses where applicable. Response A: Impact Analysis of Passive Management vs. Active Management

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			the long-term beneficial impacts associated with the more "active" management in Alternative D.	
024	109035	Analysis	Commenters requested that the BLM apply the same analysis standards and measurements when analyzing impacts on resources in both GSENM and KEPA.	The BLM analyzed all alternatives to ensure the proper care and management of monument objects in the three monument units and with respect to all existing laws and regulations in the monument units and in KEPA. The BLM added text to the analysis of impacts on monument objects in Chapter 3 to further demonstrate how all of the alternatives would ensure the proper care and management of monument objects. Assumptions for all analyses were standardized wherever possible and disclosed to provide a basis for the conclusions reached. Response C: Proper Care and Management of Monument Objects
025	94316 100976 108988 108992 109019 109020	Analysis	Commenters expressed concern that the environmental impacts analyses were incomplete, inaccurate, or insufficient under NEPA. Commenters requested the analyses be revised to address perceived deficiencies including a more detailed description of management conflicts between resource uses, further assessment of mitigation measures and their effectiveness, additional analysis of how management will provide for the proper care and management of the monument objects, and estimates of total implementation costs by alternative.	The BLM developed management for monument objects for areas within the current boundary under all alternatives that provide for the proper care and management of the objects. The BLM has concluded that all of the alternatives ensure the proper care and management of monument objects, and has the administrative and regulatory tools necessary to address situations that may jeopardize monument objects. If future development or permitted activities occur, those activities would generally be subject to site-specific environmental analysis. The BLM added text to the analysis of impacts on monument objects in Chapter 3 to further demonstrate how all of the alternatives would ensure the proper care and management of monument objects. Response H: Programmatic vs. Site-Specific Environmental Analysis

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
026	1900 24324 62633 81853 81854 82432 82831 82950 82950 86365 91141 93508 93704 94307 97375 101792 104202 108985 108997 109006 109011 109013 109019 109044	Analysis	Commenters requested a variety of revisions to baseline information and to the analysis of direct and indirect impacts on various resources including air quality, cultural resources, natural soundscape, vegetation, visual resources, travel management planning, paleontological resources, socioeconomics, recreation, and other resources.	The BLM revised various resource sections in Chapter 3 (Affected Environment and Environmental Consequences) based on comments received, as appropriate. Revisions included clarification of terminology, inclusion of additional baseline data, further analysis of certain impacts, and other changes. Refer to the AMS (BLM 2018b) for additional information on baseline conditions for resources and resource uses. Response H: Programmatic vs. Site-Specific Environmental Analysis
027	109040 109044	Analysis	Commenters requested additional analysis of impacts on water resources including climate change impacts and surface disturbance impacts. A commenter requested an assessment of impacts on PFC and that the Proposed RMPs/Final EIS identify specific impairments and prioritize measures in the selected alternative to restore water quality to the extent possible.	The RMPs are programmatic and will not authorize site-specific development. Future site-specific environmental analysis will provide opportunities to identify and mitigate potential impacts associated with future projects. Additional discussion for the analysis of impacts on water resources, climate change, and surface-disturbing impacts have been incorporated in the Proposed RMPs/Final EIS where applicable. Impacts from climate change

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				would be mitigated through continued observation and science-based adaptive management actions. The BLM can consider additional management during implementation plans.
028	93508 109015 109019	Analysis	Commenters suggested that the planning process be put on hold until missing resource inventories could be completed, including additional lands with wilderness characteristics inventories.	The BLM has completed inventories for numerous resources and employed a NEPA and land use planning process consistent with agency regulations. The BLM has disclosed where data is lacking and has presented a range of alternatives that considers the available data. Following publication of the Draft RMPs/EIS and based on input received from the public, the BLM conducted additional inventories, including for lands with wilderness characteristics (refer to Section 3.4, Lands with Wilderness Characteristics), the results of which have been incorporated into these Proposed RMPs/Final EIS.
029	24324 108988 109044	Analysis	Commenters indicated that the cumulative effects analyses is insufficient and provided a variety of recommended revisions. Specifically, commenters requested more detail on lands with wilderness characteristics and motorized route closures be added into all cumulative effects analyses to better inform BLM decisions.	The BLM has updated the analysis of WSA and lands with wilderness characteristics to include additional detail. The BLM has fully complied with the requirements of 40 CFR 1508.7 and prepared a cumulative impact analysis to the extent possible based on the known and anticipated reasonably foreseeable actions and the broad nature and scope of the proposed management options under consideration at the land use planning level. The BLM will develop TMPs in the future that will further address these and other issues related to OHV use.
030	93704 104220	Appendix C Glossary	Commenters provided suggested definitions for "fossil," "paleontology," and "paleontological	The BLM revised Appendix C (Glossary) based on the comments received.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			resource" in the Glossary and suggested adding the term "public interest" to the Glossary.	
031	93704 104220	Appendix E Monument Objects and Resource Values	Commenters expressed concern that Appendix E identifies paleontological resources that were previously in GSENM, but are now excluded from the monument and are located in KEPA. Commenters noted that even though paleontological resources are excluded from the monument, they are still rare and unique resources.	Paleontological resources not within the monument boundary are still subject to the protections of the PRPA. The BLM has reviewed the noted summary and list contained in Appendix E and found that the resources listed in both the Kaiparowits Unit of GSENM as well as areas in KEPA are accurate. Response C: Proper Care and Management of Monument Objects
032	4572 109036	Appendix E Monument Objects and Resource Values	Commenters asserted that monument objects and values listed in Appendix E receive proper care and management through the application of existing laws and regulations and do not require additional management.	Response B: Range of Alternatives

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
033	109012 485	Appendix E Monument Objects and Resource Values	Commenters expressed concerns that the BLM does not fully provide for the proper care and management of the monument objects and values. Commenters recommended that the BLM include additional management for monument objects and values including adaptive management for climate change, designating more ACECs, and adopting a sustainable approach to grazing.	Response B: Range of Alternatives Response C: Proper Care and Management of Monument Objects The BLM manages lands under the principles of multiple use and sustained yield in accordance with Section 302 of FLPMA. See the Alternatives Considered but Not Analyzed in Detail section of Chapter 2 of the Proposed RMPs/Final EIS. The range of alternatives considered in these RMPs/EIS covers the full spectrum of management actions, including a sustainable multiple-use grazing approach. The BLM did not carry forward these alternatives in their entirety because they would have effects that are substantially similar to other alternatives that are being analyzed. The BLM analyzed potential ACECs and uses adaptive management and mitigation measures to combat climate change.
034	4572 109036 109539	Appendix G Best Management Practices	Commenters recommended the addition of new BMPs to Appendix G, Best Management Practices; suggested revisions to existing BMPs; or requested BMPs be made mandatory to ensure compliance (e.g., required project mitigation or lease stipulations). Specifically, commenters suggested additional BMPs for air resources, cultural resources, wildlife, livestock grazing, and WSRs.	The BLM revised Appendix G (Best Management Practices) based on comments received, where appropriate. The application of BMPs is often the first tool used to mitigate site-specific impacts to meet the BLM's statutory requirements for environmental protection and meet the resource-specific goals and objectives of the RMPs. The BMPs identified in Appendix G were used to avoid, minimize, rectify, and reduce impacts identified during the impact analysis found in Chapter 3. It is later during implementation of the goals, objectives, and management actions, (e.g., when the BLM receives applications for permits or developments) that the BLM would actively use and apply the BMPs to modify the operations or

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				design of authorized uses or activities to meet these goals and objectives to reduce or avoid impacts on resources. Because of site-specific circumstances and localized resource conditions, BMPs are site- and project-specific and may not apply to some or all activities (e.g., a resource or conflict is not present on a given site) and/or may require slight variations. In addition, in accordance with the BLM NEPA Handbook (H-1790-1), the BLM may require additional measures, if necessary, during site-specific environmental analysis and as developed through coordination with other Federal, State, and local regulatory and resource agencies. Response H: Programmatic vs. Site-Specific Environmental Analysis
035	4572 109036	Appendix G Best Management Practices	Commenters asserted that all water in the State of Utah belongs to the State of Utah and questioned the authority of the BLM to include BMPs on water developments.	The BLM will follow all applicable State and Federal water quality laws and regulations, including State law regarding water appropriations and allocations. The BLM has reviewed Appendix G (Best Management Practices) and notes that BMPs are tools that will be further considered, analyzed, and potentially applied during site-specific permitting to reduce impacts, where appropriate. Because of site-specific circumstances and localized resource conditions, BMPs are site-and project-specific and may not apply to some or all activities (e.g., a resource or conflict is not present on a given site) and/or may require slight variations. In accordance with the BLM NEPA Handbook (H-1790-1), the BLM may require additional measures, if necessary, during

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				site-specific environmental analysis and as developed through coordination with other Federal, State, and local regulatory and resource agencies.
036	104989 100976	Appendix H Stipulations and Exceptions, Modifications, and Waivers	Commenters expressed concern that the exceptions, modifications, and waivers related to mineral development in Appendix H weaken necessary limitations on development and increase the risk to resource damage, especially to wildlife and its habitat. A commenter also stated that the BLM failed to describe and analyze how specific stipulations and exceptions, modifications, and waivers would be applied.	The BLM reviewed the exceptions, modifications, and waivers related to mineral development in Appendix H and determined that all of the alternatives considered provide proper care and management of monument objects. Appendix H identifies the circumstances under which general exceptions, modifications, and waivers could apply. Decisions on exceptions, modifications, and waivers would be made during site-specific analysis and the authorized officer may require additional surveys, mitigation, environmental analysis, or consultation at the time of decision if necessary to ensure proper care and management of the objects. Response B: Range of Alternatives
037	109011 109013 109036	Consistency with County Plans	Commenters indicated that the BLM failed to disclose inconsistencies with State and local plans and policies, particularly Garfield County's RMP, or even recognize that such plans exist. Commenters requested that the BLM engage in government-to-government coordination with counties to resolve inconsistencies with BLM management across a broad range of issues, some of which include transportation and access, lands and realty actions, special designations, special status species, wilderness characteristics, visual resources, and socioeconomics.	The BLM added Section 4.5 (Coordination and Consistency with Federal, State, and County Plans) to Chapter 4 of the RMPs/EIS describing consistency with county plans. Response B: Range of Alternatives Response D: Consistency with County Plans Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders)

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
038	109011 109036	Consistency with County Plans	Commenters called for an expansion in the range of alternatives so that at least one management alternative would be consistent with local plans and policies. Counties requested additional ongoing coordination with counties to address a range of issues during the planning life cycle. Commenters provided management recommendations to address potential conflicts between the RMPs and local plans including management of fluid mineral leasing, land tenure, livestock grazing, renewable energy, ROWs, VRM, and other resources and resource uses.	Response B: Range of Alternatives Response D: Consistency with County Plans Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders) Response I: Data Quality Act
039	10936	Consistency with County Plans	Commenters indicated that some of the travel management actions appear to conflict with local county plans and omit R.S. 2477 rights-of-way. Commenters requested government-to-government coordination to resolve issues associated with transportation planning and to initiate travel management planning.	Response B: Range of Alternatives Response D: Consistency with County Plans Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders) Response J: R.S. 2477
040	108985 109011 109036	Consistency with County Plans	Commenters indicated that because proposed management and BMPs to manage night skies, natural soundscapes, and visual resources are purely discretionary, the BLM should manage these resources consistent with local county plans. In order to achieve consistency, commenters called for removal of noise and visual restrictions and revision of VRM designations to conform with Garfield County's Visual Resource Management Plan.	While the BLM Land Use Planning Handbook, H-1601-1, does not specifically list "Dark Night Skies or Natural Soundscapes" as resources, both resources were brought up during scoping as issues that needed to be addressed in the new RMPs/EIS. See the Scoping Report, Section 4.4.8, Aesthetic Resources (visual resources, night skies, and noise). Therefore, the BLM has complied with NEPA guidance to address relevant issues ripe for discussion. See BLM NEPA Handbook, H-1790-1, Section 6.4, Issues. Response B: Range of Alternatives

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders)
041	109011	Cooperating Agencies and Other Consultation	One commenter indicated that the RMPs/EIS gave deferential treatment to the UDWR when the Utah PLPCO is the State Government serving as a cooperating agency. The commenter stated that PLPCO should be the appropriate agency to resolve conflict between UDWR and Garfield County. The commenter also expressed concern with basing management on UDWR-defined "crucial" wildlife habitat.	Response D: Consistency with County Plans Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders) Response K: Best Available Information
042	24324 100976	Cooperating Agencies and Other Consultation	Commenters expressed concern that the planning process did not include adequate coordination with organizations, local, State, and tribal governments, stating specifically that the process had failed to document contributions from surrounding counties and Native Americans.	Coordination with other agencies and consistency review with other plans, including the Kaibab Band of Paiute Indians, was accomplished through frequent communications, meetings, and cooperative efforts between the BLM interdisciplinary teams and involved Federal, State, and local agencies and organizations. Refer to Section 4.3 (Consultation and Coordination) for a description of consultation and coordination. Refer to Section 4.3.2 for a description of tribal coordination and consultation. Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders)
043	108414	Cooperating Agencies and Other Consultation	Commenters expressed concern that activities in the Planning Area could affect adjacent NPS lands, resources, and values and stated the importance of coordinating with the NPS to analyze and minimize impacts on the region as a whole. Commenters recommended that the BLM maintain ongoing communication and coordination with NPS managers of adjacent parks as well as tribal representatives in the area to minimize impacts and strengthen	Coordination with other agencies and consistency review with other plans, including the NPS and associated management plans, was accomplished through frequent communications, meetings, and cooperative efforts between the BLM interdisciplinary teams and involved Federal, State, and local agencies and organizations. Coordination and consistency is described in the Draft RMPs/EIS in Section 4.3, Consultation and Coordination, which was

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			management of the GSENM units and KEPA lands.	updated to reflect the BLM's work in revising and preparing the Proposed RMPs/Final EIS.
044	109017	Cooperating Agencies and Other Consultation	One commenter expressed concern that the planning process failed to coordinate with local first responder organizations. The commenter added that GSENM/the BLM must provide financial support and have a documented Risk Management Plan for individual first responder organizations providing for public safety in the Planning Area.	Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders)
045	2527 4572 104220 109036	Cultural Resources	Commenters expressed concern regarding the potential ways to protect and mitigate impacts on cultural sites presented in Appendix J. They were concerned that, generally, the mitigation strategies presented were too severe and that the discussion of impacts from vegetation treatments and livestock grazing was exaggerated. They questioned the need for special designations in addition to other cultural resource management actions to protect cultural resources. Commenters also asked for further clarification regarding site use categories and how they are chosen and applied. Another commenter suggested removing project-specific language in Appendix J.	The BLM revised Appendix J (<i>Cultural Resources</i>) based on comments received, as appropriate. BLM policy states that avoidance shall be the preferred strategy for treating potential adverse effects on listed or eligible properties (MS-8410.06.C and MS-8410.24). If avoidance is imprudent or infeasible, a range of alternative physical and administrative conservation measures should be considered. Chapter 3, Section 3.2.2.2, and Appendix J include several tools available to meet requirements under the BLM's cultural resources laws, regulations, and policies. The examples presented in Section 3.2.2.2 and in Appendix J are but a few of the allocations and/or management decisions that the BLM could apply to limit the potential for adverse impacts on cultural resources; additional options include the application of mitigation measures and BMPs (see Appendices G, H, and I for additional examples). The BLM considered a reasonable range of alternatives that applies different layers of management in full compliance with NEPA, FLPMA, the BLM Land-Use Planning Handbook (H-1601-1), and other guidance. As outlined in

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				Appendix G, the BLM has also specified BMPs that can be used to mitigate potential impacts on resources. The CEQ regulations (40 CFR 1502.1) require that the BLM consider reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment. In some cases, this results in special designations and resource management actions that overlap in certain areas. The BLM reviewed the environmental impact analysis describing the effects from vegetation treatments and livestock grazing and concluded it was sufficient to adequately inform the decision. Response A: Impact Analysis of Passive Management vs. Active Management Response C: Proper Care and Management of
046	4572 81856 102044 104146 108151 108985 108988 109036	Cultural Resources	Commenters requested additional consultation and coordination with various stakeholders including the local counties and Native American tribes. Kane and Garfield Counties requested language changes to specific goals, objectives, and management actions in Chapter 2 to include consultation with local governments. Commenters also requested additional information be provided regarding the BLM's consultation and coordination with local tribes during the planning process and asked that specific commitments from the BLM be included in the RMPs, such as adaptive management and monitoring for cultural resources. Commenters also questioned the BLM's decision to defer assigning cultural sites	The BLM has independent statutory obligations under both NEPA (P.L. 91-190; 83 Stat. 852; 42 U.S.C. 4321 and 40 CFR 1500-1508) and Section 106 of the NHPA (P.L. 89-665; 80 stat. 915; 16 U.S.C. 470f and 36 CFR Part 800), as well as an obligation to conduct tribal consultation (Presidential Memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments," Executive Order 13175 "Consultation and Coordination with Indian Tribal Governments, and related authorities listed in BLM Manual Section 8120). The close coordination of these three distinct processes creates efficiencies and improves public

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			to use categories until the development of a Cultural Resource Management Plan occurs.	disclosure of possible impacts of agency decisionmaking. The BLM consulted with SHPO, Native American tribes, and other consulting parties in compliance with Section 106 of the NHPA and its implementing regulations (36 CFR Part 800). Future project-specific undertakings will be subject to additional NHPA Section 106 review, which will include the identification and evaluation of historic properties and assessment of effects on NRHP eligible properties and consultation with SHPO, tribes, and other parties. The BLM elected to defer assigning most cultural sites to use categories to future Cultural Resource Management Plans. In preparation for development of these future plans, the RMPs establish the criteria and process the BLM will use to assign cultural sites to appropriate classifications (refer to Appendix J, Cultural Resources). Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders)
				Response F: Traditional Uses
047	104220 108985 109036	Cultural Resources	Commenters recommended revisions to certain cultural resource goals, objectives, and management actions in Chapter 2 to clarify terminology and to support further coordination with local counties and tribes. Commenters also provided specific revisions to cultural resource management related to development of Hole-inthe-Rock Road as a TCP and management of traditional uses. Commenters also expressed concern that cultural resource management	The Proposed RMPs/Final EIS do not preclude the identification and NRHP eligibility evaluation for other TCPs. Such identification and evaluation would occur through the BLM's ongoing efforts to comply with Section 106 and 110 of the NHPA. Additionally, Record #2008 indicates that the BLM will support local efforts to nominate Hole-in-the-Rock Road as a TCP. Response B: Range of Alternatives

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			could limit recreation opportunities in certain areas.	Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders) Response F: Traditional Uses
048	4572 102044 102799 104220 108985 108989 108992 108996 109036 109044	Cultural Resources	Commenters expressed multiple concerns regarding the cultural resource impacts analysis including requesting that cultural resources in KEPA be afforded the same protections as those in GSENM (especially where KEPA is adjacent to NPS lands), requesting adaptive management and monitoring strategies for cultural resources, and requesting that traditional Native American tribes and tribal uses be included in the analysis.	The BLM revised Section 3.2 (Cultural Resources) based on comments received, as appropriate. In addition, Appendix J (Cultural Resources) of the Draft RMPs/EIS and Proposed RMPs/Final EIS includes information on how the BLM would apply cultural resource management, site protection, monitoring, future consultation with Native America tribes, and BMPs related to cultural resources for the Planning Area. Response B: Range of Alternatives As part of the range of alternatives, the BLM also considered the application of adaptive management strategies for effects resulting from climate change (Chapter 2, Alternatives, Record #4011).
049	4572 104146 108985 109044 109036	Cultural Resources	Commenters expressed confusion as to why the BLM selected Alternative D as the Preferred Alternative when it has the most potential for impacts on cultural resources. Other commenters felt that the analysis was biased against Alternative D and requested specific language changes and additions, such as including that an action is only a direct adverse impact if the resource is disturbed prior to scientific documentation; requesting the removal of buffer zones; and noting that the potential for discovering, collecting, and cataloging cultural resources is the highest under Alternative D because of the surveys required when surface disturbance is proposed. Commenters also suggested the BLM misled the	The BLM revised Section 3.2 (<i>Cultural Resources</i>) based on comments received, as appropriate. The BLM has noted in Section 3.2.2.2 of the Proposed RMPs/Final EIS that discovering, collecting, and cataloguing cultural resources would likely be higher under Alternative D and lowest under Alternative A; however, such activities do not constitute protection or preservation of cultural resources. The BLM reviewed the environmental impact analysis and concluded it was sufficient to adequately inform the decision because it analyzed both beneficial and adverse impacts from proposed management actions. The BLM performed an analysis of the potential impacts

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			public by stating management that allowed natural degradation of undiscovered cultural resources constituted protection, requesting evidence under the Data Quality Act that natural degradation of cultural monument objects under alternatives A and B provided greater protection than discovery, examination, excavation, gathering, removal, and curation of cultural monument objects under alternatives C and D.	on each resource or resource use from management actions. The BLM reviewed the <i>Impacts on Monument Objects</i> section in Section 3.2.2.2 of Chapter 3 of the Proposed RMPs/Final EIS and concluded that the language is not erroneous or prejudicially biased. The BLM has further reviewed the RMPs/EIS and made changes to ensure that the analysis is sufficiently objective and reflects long-term beneficial impacts on resource uses where applicable. The BLM added text to the analysis of impacts on monument objects in Chapter 3 to further demonstrate how all of the alternatives would ensure the proper care and management of monument objects. In the document, the BLM does not equate the natural degradation of undiscovered cultural resources to protection. Collection of artifacts or data-recovery excavations do not constitute protections of archaeological sites under the Antiquities Act. Collection of artifacts and/or data-recovery excavations are measures enacted to mitigate adverse effects on resources under Section 106 of the NHPA. Response B: Range of Alternatives Response I: Data Quality Act
050	100976 104146 108151	Cultural Resources	Commenters expressed concern regarding the percentage of the Planning Area that has not undergone cultural resource inventories and thus questioned the accuracy of the affected environment and description of potential environmental consequences. Commenters asserted that the lack of cultural resource inventories at this programmatic level violates FLPMA and Section 106 of the NHPA.	Cultural resources inventory is continuous and ongoing through related NHPA Section 106 and Section 110 compliance processes. The BLM conducted an NHPA Section 106 review for the RMPs that included the identification of historic properties through reviews of the Class I Cultural Resources Inventory Report and reviews of a cultural resources probability model developed based upon the Class I information. The BLM

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				consulted with SHPO, Native American tribes, and other consulting parties in compliance with Section 106 of the NHPA and its implementing regulations (36 CFR Part 800). A Class I cultural resources inventory meets the "reasonable and good faith effort" standard, as future project-specific undertakings will be subject to additional NHPA Section 106 review, which will include the identification and evaluation of historic properties and assessment of effects on NRHP eligible properties and consultation with SHPO, tribes, and other parties.
051	4572	Editorial	Commenters provided a variety of editorial changes to the document including spelling, grammar, and punctuation changes.	The BLM made revisions throughout the RMPs/EIS based on comments received, as appropriate.
052	109013 109017	Fire and Fuels	Commenters requested that additional information be included in the fire and fuels sections in the Draft RMPs/EIS including additional detail on fire history/frequency and climate impacts, other ignition sources and types of fires (e.g., vehicular fires, airplane crashes), and public safety incidences.	Response H: Programmatic vs. Site-Specific Environmental Analysis Refer to Section 3.1.1.1 and Section 3.7 for impacts analysis associated with climate change. During development of Fire Management Plans, additional analysis will be done to account for the site-specific information. Response B: Range of Alternatives
053	108988	Fire and Fuels	Commenters provided additional sources of information regarding the connection between invasive and nonnative species and fire risk, fire behavior, fire management, and fire severity.	The BLM reviewed Section 3.7 (Fire and Fuels) and concluded it was sufficient to weigh the alternatives and adequately inform the decision. Additional analysis would be conducted during site-specific permitting.
054	4572 102044 106687 107622 108414	Fish and Wildlife	Commenters asked the BLM to incorporate additional information into the RMPs/EIS that represents the best available science with respect to management of bighorn and domestic sheep, big game migration corridors, habitat fragmentation, impacts on aquatic	In the Proposed RMPs/FEIS, the BLM has identified a migration corridor along Highway 89 that is used by Mule Deer Herd Unit #27. The BLM included management and a BMP for a seasonal timing limitation for this mule deer

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
	108988 108989		species, and the presence of bird and bee species. Some commenters requested that the BLM conduct additional inventories to determine the presence, preferred habitat characteristics, and behaviors of wildlife species and movement patterns in order to include effective management and sufficiently disclose impacts in the RMPs/EIS.	migration corridor. The mule deer migration corridor was added to Map 3 (Big Game). The Chapter 3 Fish and Wildlife section was revised to further describe this migration corridor and additional text was included in the analysis associated with the seasonal timing limitation for the migration corridor. The BLM will work with UDWR to identify corridors and provide protection for corridors as they are developed using approved management actions, mitigation measures, and BMPs. The analysis in the RMPs/EIS is programmatic. Following the signing of the ROD for the RMPs/EIS, the BLM will consider specific implementation-level plans and projects. The BLM's decisionmaking process for these activities will include appropriate site-specific environmental analysis. At that time, more information on resource conditions (e.g., new science, resource inventories) could be included and considered on project-by-project basis. Refer to Section 3.0.1 (Analytical Assumptions) for more information. Appendix G (Best Management Practices) contains the following BMP for bees and other pollinators: "Apply BMPs for bees and other pollinators described in the Pollinator-Friendly Best Management Practices on Federal Lands (USFWS 2015a) and the National Strategy to Promote the Health of Honey Bees and other Pollinators (Pollinator Health Task Force 2015)." Response I: Data Quality Act Response K: Best Available Information

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
055	4572 109036	Fish and Wildlife	Commenters asserted that existing laws, regulations, and management are largely adequate to protect wildlife and special status species. Commenters stated that proposing additional prescriptive management and special designations to protect wildlife are not necessary and are not grounded in science.	The BLM will continue to consult and coordinate with the relevant agencies to protect wildlife and special status species. Response B: Range of Alternatives Response I: Data Quality Act
056	108988	Fish and Wildlife	Commenters stated that "ecological intactness" is a monument object for which the BLM must provide proper care and management. The commenters indicated that the BLM could only fulfill its legal duties to provide proper care and management for ecological intactness by carrying forward a combination of management from alternatives A and B or by developing a new alternative that maintains wildlife and ecosystem values in the Planning Area and on adjacent Federal lands (e.g., adjacent National Parks).	Response B: Range of Alternatives Following the signing of the ROD for the RMPs/EIS, the BLM will consider specific implementation-level plans and projects. The BLM's decisionmaking process for these activities will include appropriate site-specific environmental analysis. At that time, more details on resources (e.g., studies) could be provided on a project-by-project basis. Presidential Proclamations 6920 and 9682 do not recognize "Ecologically intact landscapes" as a monument object; rather, ecologically intact values are the object (see Appendix E, Page E-16). Management under all the alternatives would protect identified areas that contain ecologically intact values. For example, management under all the alternatives would restrict development and use in Mexican spotted owl protected activity centers and would manage 16 WSAs totaling 880,857 acres (47 percent) that overlap Proclamation-identified intact values in areas such as Wahweap. Similar to the existing MMP, the Proposed RMPs would allow human use and development (e.g., recreation facilities or range improvement) in appropriate locations in the national monument. Refer to Appendix G (Best Management Practices) for BMPs that could be applied to

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				ensure the proper care and management of ecologically intact values and other monument objects.
				The BLM added text to the analysis of impacts on monument objects in Chapter 3 to further demonstrate how all of the alternatives would ensure the proper care and management of monument objects.
057	4571 4572 108985 109036 109044	Fish and Wildlife	Commenters requested that language used for the alternatives and environmental consequences for fish and wildlife and special status species be reworded to eliminate bias against Alternative D, which commenters asserted wrongly depicts Alternative D as the most impactful alternative. Commenters contended that the environmental consequences repeatedly fail to acknowledge that existing laws and regulations applied under all alternatives are typically adequate to protect fish and wildlife and special status species and ignores the beneficial impacts, especially long-term benefits, of active management under Alternative D. Commenters also noted specific statements in the environmental consequences that did not accurately represent the alternatives and requested specific changes.	The BLM revised management actions for Fish, Wildlife, and Special Status Species based on comments received, as appropriate. Refer to Appendix U (<i>Economic Assessment Report</i>) for information on beneficial effects associated with key resource uses and their management under the alternatives (e.g., minerals, livestock grazing, forestry management).
058	4572 100976 102799 107622 108988 109036 109039	Fish and Wildlife	Commenters requested that the environmental consequences be augmented to analyze a variety of issues, including conflicts between native and introduced species, cumulative impacts of energy development on habitat corridors, effects of natural variability in stream flow, impacts of grazing on fish and wildlife populations, and impacts of mineral materials disposal and commercial logging on habitats for	ESA Section 7 consultation between the BLM and USFWS is ongoing. Under ESA Section 7(a)(2), the BLM must ensure that its proposed actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species or adversely modify designated critical habitat. The BLM is currently developing a BA to address the proposed action's potential effects on federally listed

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			special status species. Commenters requested additional analysis of impacts on special status species and inquired about the status of Section 7 ESA consultation.	species. If the BA determines that formal consultation is warranted (i.e., a Likely to Adversely Affect determination of a listed species), the BLM will initiate formal consultation with the USFWS as required under ESA Section 7(a)(2). Subsequent NEPA documents (e.g., Proposed RMPs/Final EIS, ROD) will incorporate the BA and conclusion of Section 7 consultation with the USFWS. Regarding potential cumulative effects on federally listed species: for any actions that could contribute cumulatively to the BLM's proposed action impacts on federally listed species, the proponents of those cumulative actions would also be required to comply with the ESA, either through Section 7 (for activities with a Federal nexus) or Section 10 (for activities with no Federal nexus), to ensure that their actions would not jeopardize the continued existence of the species. Response H: Programmatic vs. Site-Specific Environmental Analysis
059	100976 104989 108414 109021 109024	Fish and Wildlife	Commenters indicated that Alternative D fails to provide proper care and management of monument objects related to fish and wildlife and that no scientific basis has been provided in cases where Alternative D eases restrictions relative to other alternatives. Commenters asserted that wording used for Alternative D, such as "avoid" important wildlife habitats or "on a basis consistent with other resource use restrictions," was vague and need clarification. Several comments noted that allowances for naturalized and introduced species under Alternative D are inconsistent with existing laws	The term "consistent with other resource use restrictions" refers to other management under Alternative D that could constrain surface-disturbing activities, such as restrictions in WSAs. Future site-specific environmental analysis will provide opportunities to identify and mitigate potential impacts associated with future projects. As noted in Chapter 2 of the Draft RMPs/EIS, the BLM would work with UDWR before the augmentation of native and naturalized fish and wildlife or the augmentation or specific management to support their habitat. The BLM

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			and policies, as well as RMP goals and objectives.	would continue to defer to the State of Utah on issues of augmentation or introduction. The BLM would consult with the USFWS on future actions that could affect federally listed threatened and endangered species. The BLM added text to the analysis of impacts on monument objects in Section 3.3.2, Fish and Wildlife Environmental Consequences, to further demonstrate how all of the alternatives would ensure the proper care and management of monument objects. As noted in Chapter 2 of the Draft RMPs/EIS, Alternative D prioritizes the use of native species but would allow the use of nonnative species where necessary to optimize land health, forage, and productivity in nonstructural range improvements. Decisions on the mix of species to use in land restoration and improvement would be consistent with Federal policy, and there is currently no law or BLM policy or guidance that prohibits all use of naturalized and introduced species. See BLM Handbook H1740-2, Integrated Vegetation Management, for information on vegetation treatment requirements. Response B: Range of Alternatives Response C: Proper Care and Management of Monument Objects
060	107658 108985 108988 109021 109024 109036 109039	Fish and Wildlife	Commenters stated that the alternatives omit decisions on key issues, such as special status plant species, predator control, and pollinators. Some commenters asked the BLM to resolve apparent inconsistencies within the alternatives related to authorization of domestic sheep grazing.	Response B: Range of Alternatives The BLM has not identified inconsistencies related to authorization of domestic sheep. Following the signing of the ROD for the RMPs/EIS, the BLM will consider specific implementation-level plans and projects, including livestock grazing permit renewals where type of livestock and other grazing

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				management issues will be considered. The BLM's decisionmaking process for these activities will include appropriate site-specific environmental analysis. At that time, more details on resources (e.g., studies) could be provided on a project-by-project basis. The BLM is not responsible for predator control and consideration of such actions are out of scope; the U.S. Department of Agriculture, Animal and Plant Health Inspection Service, would continue to have authority over predator control actions. Presidential Proclamation 6920 as modified by Presidential Proclamation 9682 does not identify "pollinators" as a monument object. The BLM has, however, included in Appendix G appropriate BMPs to protect pollinators, including a BMP to "Apply BMPs for bees and other pollinators described in the Pollinator-Friendly Best Management Practices on Federal Lands (USFWS 2015a) and the National Strategy to Promote the Health of Honey Bees and other Pollinators (Pollinator Health Task Force 2015)." The alternatives provide appropriate management for special status species plants and wildlife. In addition to the management in the RMPs, under all alternatives the BLM will coordinate with the USFWS and other Federal, State, and local agencies in managing special status species. The BLM's decisionmaking process will consider the results of this coordination and any appropriate site-specific environmental analysis before the authorization of activities that could affect special status species. As part of its decisionmaking process,

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				the BLM would consider appropriate mitigation measures and BMPs.
061	102044 104989 108151 108988 109036	Fish and Wildlife	Commenters requested that the alternatives be revised to acknowledge and emphasize the BLM's obligation to cooperate and coordinate with State and local governments in the management of roads, nonnative species removal, identification of big game crucial habitat, and other activities. Some commenters noted specific instances where the alternatives conflict with county plans. Other commenters asserted that the BLM cannot issue the Proposed RMPs/Final EIS without conducting formal consultation with the USFWS under requirements of the ESA.	Response B: Range of Alternatives Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders) ESA Section 7 consultation between the BLM and the USFWS is ongoing. Under ESA Section 7(a)(2), the BLM must ensure that its proposed actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species or adversely modify designated critical habitat. The BLM is currently developing a BA to address the proposed action's potential effects on federally listed species. If the BA determines that formal consultation is warranted (i.e., a Likely to Adversely Affect determination of a listed species), the BLM will initiate formal consultation with the USFWS as required under ESA Section 7(a)(2). Subsequent NEPA documents will incorporate the BA and conclusion of Section 7 consultation with the USFWS.
062	86365 108990 86365	General Use of Science	Commenters expressed concern that the RMPs/EIS minimized or ignored data that could further support the analysis of impacts on monument objects and that the BLM is moving forward with the least protective alternatives. Commenters also indicated that in some cases the RMPs/EIS do not use the best available science, especially related to climate change and mitigation.	Response B: Range of Alternatives Response C: Proper Care and Management of Monument Objects Response K: Best Available Information
063	81868 86343	Lands and Realty	Commenters expressed concern about the possibility of lands being identified for disposal	The BLM issued the revised Draft RMPs/EIS on August 30, 2018, wherein none of the

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
	94307 100976 109012		and the accuracy of the analysis regarding land tenure adjustments. Commenters suggested that more information should be provided in the Draft RMPs/EIS regarding land tenure adjustment criteria and disclosures.	alternatives identified any lands appropriate for disposal by sale per FLPMA Section 203 in accordance with Departmental policy. Furthermore, the RMPs do not identify specific public land parcels for disposal. However, over the life of the RMPs, situations may arise, especially in areas where public land tracts are isolated and difficult to manage, where the BLM may find it useful to have criteria identified to consider when deciding whether to make certain land use adjustments. This step is not a decision to dispose of land. Any decision regarding whether or not to dispose of a particular parcel under any particular authority, whether by exchange under Section 206 of FLPMA or patent under the Recreation and Public Purposes Act of 1926, as amended, for instance, would require site-specific consideration and analysis, including, but not limited to considerations of access, popular recreational uses, the existence of cultural resources or habitat for species, and whether or not such a parcel, isolated from the rest of the public lands, might be better suited for private ownership.
064	93704 4572 109013 109036	Lands and Realty	Commenters requested clarification of and changes to some of the lands and realty alternatives. Specific suggestions included adding definitions of lands and realty activities, clarifying the requirements for implementation-level NEPA analyses related to film permits and other uses, and adding exemptions for ROW and communication site development.	The BLM revised Section 2.3.11 (Lands and Realty) based on comments received, as appropriate. Response B: Range of Alternatives
065	109034 109036	Lands and Realty	Commenters expressed concern that the BLM did not fully consider public easements and valid existing rights when developing the lands and	Text was added to the Chapter 3 Lands and Realty section confirming that under all alternatives, existing designated utility corridors

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			realty alternatives. Commenters expressed concern that management actions in the Draft RMPs/EIS would conflict with the activities allowed in existing utility corridors and ROWs. Commenters specifically noted that the analysis of impacts on valid existing rights is missing or inadequate, requested clarification on why private land parcel access is considered an implementation-level decision, and requested additional government-to-government coordination regarding local government's role in managing utility corridors and ROWs.	could continue to be utilized for utility infrastructure, transmission, and other appropriate development. The BLM will follow Federal laws and regulations, including Title 5 of FLPMA. If warranted by public safety or specific local ordinances, additional access may be authorized by the BLM. The BLM reviewed the draft land use authorizations and designated utility corridors with an interdisciplinary team of BLM staff and cooperating agencies and concluded it was sufficient to weigh the alternatives and adequately inform the decision. The Preferred Alternative provides for the least amount of conflict between management actions and utility corridors. Regarding valid existing rights associated with roads, see Response J: R.S. 2477. As noted in Section 2.3, Detailed Alternatives, page 2-2, the implementation-level decisions in the text are noted with an asterisk (*). The RMPs/EIS evaluated differences among the alternatives between planning-level and implementation-level decisions.
066	2 4572 86434 109021 109024 109039	Lands and Realty	Commenters expressed concern with the location and extent of land open to ROWs, renewable energy development, and mineral development. Some commenters stated that the amount of land withdrawn from mineral location, entry, disposal, or leasing under the Preferred Alternative was too small and that monument objects and resource values could be threatened by development activity in areas surrounding cultural sites and WSAs. These commenters specifically requested a more	Response B: Range of Alternatives Response H: Programmatic vs. Site-Specific Environmental Analysis

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			detailed analysis of the demand for new ROWs in KEPA. Other commenters suggested that the alternatives were too restrictive and the BLM should identify more lands as suitable for ROW and renewable energy development to reflect a true range of alternatives.	
067	4572 107658 109021 109024	Lands and Realty	Some commenters expressed concern that monument objects and resource values could be impaired by the location of areas suitable for renewable energy development under the Preferred Alternative. Specifically, these commenters expressed concerns about development near National Historic Trails, National and State scenic byways and backways, and bordering NPS units. Commenters also requested more detailed analysis, including separate analyses for solar and wind development. Other commenters suggested that the range of management and allocations for renewable energy were too narrow and the BLM should identify more lands as suitable for renewable energy development.	Response B: Range of Alternatives Under all alternatives, utility-scale renewable energy development is not available (i.e., excluded) in the three units of GSENM. In KEPA, the BLM reviewed the renewable energy exclusion and avoidance areas with an interdisciplinary team made up of BLM resource specialists and cooperating agencies and concluded that the management provides an adequate range of management alternatives for renewable energy. To clarify how wind versus solar renewable energy will be managed, the BLM has split the decisions into separate management actions in Section 2.3.11.2 of the Proposed RMPs/Final EIS. As indicated in Section 3.11.2 (Renewable Energy), Affected Environment, renewable energy development projects in KEPA are permitted in accordance with the Final Programmatic EIS on Wind Energy Development on BLM-Administered Lands in the Western United States and the Final Programmatic EIS for Solar Energy Development in Six Southwestern States. Future site-specific environmental analysis will provide opportunities to identify and mitigate potential impacts associated with future projects.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
068	4571	Lands with Wilderness Characteristics	Commenters asserted that they disagree with the use of the term "wilderness characteristics" and disagree with the proposed designation of areas with wilderness characteristics, stating that it was not the intent of FLPMA or the Wilderness Act.	Inclusion of wilderness characteristics is consistent with BLM guidance.
069	4572	Lands with Wilderness Characteristics	Commenters stated that the stipulations and management actions for lands with wilderness characteristics in the Draft RMPs/EIS are not consistent with local government resource management plans.	Response D: Consistency with County Plans
070	2 94869 100976 109012 109021 109024	Lands with Wilderness Characteristics	Commenters expressed concern that the Draft RMPs/EIS, and particularly the Preferred Alternative, does not adequately manage lands with wilderness characteristics in a way that most effectively protects their wilderness values. Commenters asserted that protection of lands with wilderness characteristics provides protection for a number of other monument objects and resource values and that the analysis of Alternative D in the Draft RMPs/EIS fails to disclose the adverse impacts on lands that have wilderness characteristics.	Response B: Range of Alternatives Response H: Programmatic vs. Site-Specific Environmental Analysis Although alternatives E and D do not manage any lands with wilderness characteristics specifically to maintain their wilderness characteristics, the BLM anticipates other, overlapping management will help preserve wilderness characteristics in these areas. This includes management in the three units of GSENM, where the BLM is required to ensure the proper care and management of monument objects. The BLM's analysis of effects on lands with wilderness characteristics in Section 3.4, Lands with Wilderness Characteristics, was sufficient. For information on the use of programmatic analyses in the land use planning process, see Response H: Programmatic vs. Site-Specific Environmental Analysis.
071	107723 108985 109044	Lands with Wilderness Characteristics	Commenters requested specific management actions to be added to the lands with wilderness characteristics sections of the RMPs/EIS or	The BLM revised Section 2.3.4 (Lands with Wilderness Characteristics) and Section 3.4

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			requested revisions to the management actions contained in the draft plans. Specifically, commenters requested different or more detailed management regarding rockhounding, excavation, and mineral development activities, and vegetation treatments within lands with wilderness characteristics. Commenters also requested that the BLM provide more details on the reasoning for designation of areas managed for wilderness characteristics.	(Lands with Wilderness Characteristics) based on comments received, as appropriate.
072	104213 108985 108988 108989 109044	Lands with Wilderness Characteristics	Commenters requested that the BLM update wilderness character inventories in specific locations prior to making land use decisions and requested that the BLM include guidance on considering impacts on wilderness characteristics in implementation-level decisions in the Proposed RMPs/Final EIS. Locations noted by commenters included a number of small parcels contiguous with and adjacent to WSAs and previously identified lands with wilderness characteristics, including former SITLA lands. Commenters also asserted that the BLM improperly inventoried many lands during its 2018 lands with wilderness characteristics inventory and requested that the inventory rationale be reviewed.	The BLM affirms its responsibility under FLPMA Section 201 to maintain an inventory of resources on public lands, including wilderness characteristics. Specific to this resource, Manual 6310 states, "This wilderness characteristics inventory process directive does not mean that the BLM must conduct a completely new inventory and disregard the inventory information that it already has for a particular area. Rather, the BLM must ensure that its inventory is maintained." The BLM carefully reviewed existing wilderness inventory information at the outset of this planning process to determine which units or areas required an update. In addition to identifying areas that have not been updated since the late 1970s that meet the size criteria, the BLM performed a desktop GIS review of units documented in the 1999 Utah Wilderness Inventory, including querying specialists about known projects or areas where conditions were known to or likely to have changed since the most recent inventory. This review resulted in field visits and updates to the inventory for more than 280,000 acres of BLM-

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				administered surface lands within the Planning Area during 2018. The BLM also reviewed any pending external nominations. Between the 1999 Utah Wilderness Inventory and the scoping period for this MMP, the BLM received specific citizen-submitted information for Timber Mountain, Upper Kanab Creek Additions, and Pine Hollow units. The findings for these externally nominated units have been updated and made available to the public. Following publication of the Draft RMPs/EIS and based on input received from the public, the BLM updated inventories for lands with wilderness characteristics in the Planning Area, the results of which have been incorporated into these Proposed RMPs/Final EIS (refer to Section 3.4, Lands with Wilderness Characteristics).
073	107622 108988	Laws and Policies	Commenters asserted that the BLM's Draft RMPs/EIS are in violation of the Antiquities Act of 1906, which requires the BLM to manage public lands within GSENM in accordance with Proclamation 6920. Commenters stated that the revocation of Proclamation 6920 was illegal under the Antiquities Act and that the BLM is still required to manage the entire Planning Area as a national monument.	Presidential Proclamation 9682 excluded 861,974 acres from GSENM, and there has been no judicial determination that Presidential Proclamation 9682 was unlawful. The BLM is conducting planning for GSENM and KEPA lands according to the boundaries described in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682. The range of alternatives analyzed in the Draft RMPs/EIS provides for the proper care and management of the monument objects and values identified in Presidential Proclamation 6920, as modified by Presidential Proclamation 9682.
074	108992	Laws and Policies	Commenters requested that more detail be added to the Draft RMPs/EIS regarding the comments received during the public scoping period and how these comments were addressed. Specifically, commenters requested	Information on public comments received during the scoping period are available in the Grand Staircase-Escalante National Monument and Kanab Field Office-Escalante Area Resource Management Plans and Environmental Impact

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			more information on the BLM's decision to move forward with the RMP process despite receiving comments requesting the process be halted until litigation on Presidential Proclamation 9682 was resolved.	Statement Scoping Report (August 2018), which is available on the project ePlanning site. Presidential Proclamation 9682 excluded 861,974 acres from GSENM, and there has been no judicial determination that Presidential Proclamation 9682 was unlawful. The BLM is conducting planning for GSENM and KEPA lands according to the boundaries described in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682. The range of alternatives analyzed in the Draft RMPs/EIS provides for the proper care and management of the monument objects and values identified in Presidential Proclamation 6920, as modified by Presidential Proclamation 9682.
075a	60560 93508 108988 108992	Laws and Policies	Commenters expressed concern that the BLM failed to mention and was in violation of the National Landscape Conservation System Act (established in the Omnibus Public Land Management Act of 2009) and BLM Manual 6220, National Monuments, National Conservation Areas and Similar Designations. Commenters specifically stated concerns that the management in the Draft RMPs/EIS is not congruent with required management for lands in the National Landscape Conservation System. Commenters also stated that the incorporation of science and informational resources in the decisionmaking process is required for lands in the National Landscape Conservation System and is lacking from the Draft RMPs/EIS. Commenters suggested that the planning process should be delayed until critical resource inventories are completed.	The BLM reviewed and revised Appendix F (Laws, Regulations, Policies, and Guidance) to ensure it included appropriate laws, regulations, policies, and guidance that were not included in the Draft RMPs/EIS. BLM Manual 6220 is mentioned in Appendix E, Grand Staircase-Escalante National Monument Objects and Resource Values, and Appendix I, Monitoring Strategy, in reference to the BLM's compliance with Manual 6220. GSENM is designated as part of the National Conservation Lands system. Presidential Proclamation 9682 excluded 861,974 acres from GSENM, and there has been no judicial determination that Presidential Proclamation 9682 was unlawful. The BLM is conducting planning for GSENM and KEPA lands according to the boundaries described in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682. The range of alternatives

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				analyzed in the Draft RMPs/EIS provides for the proper care and management of the monument objects and values identified in Presidential Proclamation 6920, as modified by Presidential Proclamation 9682. Response K: Best Available Information
075b	108992		Commenters expressed concern that the BLM did not mention Public Law 105-335, Utah School and Land Exchange Act of 1998.	The BLM reviewed and revised Appendix F (Laws, Regulations, Policies, and Guidance) to ensure it included appropriate laws, regulations, policies, and guidance that were not included in the Draft RMPs/EIS.
075c	92723 92724		Commenters expressed concern that the BLM was in violation of the Federal Data Quality Act.	Response I: Data Quality Act
075d	109011		Commenters expressed concern that the BLM was in violation of NEPA requirements outlined in 40 CFR Part 1506, Other Requirements of NEPA.	The RMPs/EIS include a description of consultation and coordination efforts during this planning effort, and have been updated to include efforts that occurred after the Draft RMPs/EIS was published. Response D: Consistency with County Plans Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders)
075e	108992 4571 108988 109008 93508 100976		Commenters expressed concern that the BLM was in violation of FLPMA. Commenters specifically stated concerns that the management in the Draft RMPs/EIS is not congruent with lands managed for multiple use under FLPMA and that the planning process should have been delayed until resource inventories for the planning area were complete.	The BLM considered a reasonable range of alternatives to provide direction for managing public lands in accordance with the BLM's multiple use mandate. Recognizing the Nation's need for domestic sources of minerals is one of the multiple uses the BLM must accommodate. As part of its reasonable range of alternatives, the BLM also considered designation of nominated ACECs that met R&I criteria. The consideration of ACECs is required by FLPMA and does not constitute a violation of the BLM's multiple use mandate.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				The Preferred Alternative maintains compliance will all laws and regulations designed to protect physical, biological, cultural, and visual resources. Response K: Best Available Information
076	108988	Laws and Policies	Commenters asserted that the Draft RMPs/EIS are in violation of the Consolidated Appropriations Act 2018, which prohibits the BLM from proceeding with preleasing or leasing activities within the boundaries of any national monument as they existed on January 20, 2001.	Added text to Section 3.13.1 (Minerals) regarding the Consolidated Appropriates Act. The Consolidated Appropriations Act prohibits the BLM from expending appropriated funds on preleasing and leasing activities under the Mineral Leasing Act on lands excluded from GSENM by Presidential Proclamation 9682. Preleasing and leasing activities under the Mineral Leasing Act are separate and distinct from, and do not include, land use planning under FLPMA. The Consolidated Appropriations Act therefore does not prohibit the BLM from initiating and engaging in land use planning on the lands excluded from GSENM by Presidential Proclamation 9682 (i.e., KEPA lands).
077	24324 108992 109034	Laws and Policies	Commenters expressed concern that the Draft RMPs/EIS do not recognize valid existing rights as required under FLPMA. Specifically, commenters stated that Kane and Garfield Counties' transportation system highways established under R.S. 2477 are valid existing rights that cannot be legally superseded by the Draft RMPs/EIS. Commenters asserted that the BLM has failed to adequately consult with the counties and does not have the authority to manage these routes as currently laid out in the document. Commenters also requested that the BLM review Congressional actions that resulted in boundary adjustments to GSENM (Garfield County School District, East Clark Bench area,	Response J: R.S. 2477 The BLM revised text in Appendix F, Laws, Regulations, Policies, and Guidance, to include appropriate information on boundary modifications. The BLM added text to the Chapter 3 travel and transportation management section (Section 3.15.2.1) regarding R.S. 2477 routes.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			Kodachrome State Park, and the designation of a utility corridor along Highway 89) and recognize them in the RMPs/EIS.	
078	109025 109032	Laws and Policies	Commenters asserted that the Draft RMPs/EIS did not comply with the ADA because the management alternatives do not specifically manage for people with disabilities and do not appear to provide sufficient opportunities for public use by those with disabilities, especially related to OHV use.	The BLM must comply with the Rehabilitation Act of 1973. Where applicable, future site-specific projects and implementation-level plans would consider accessibility needs for all members of the public in accordance with the Rehabilitation Act of 1973. The BLM revised Appendix F (Laws, Regulations, Policies, and Guidance) to include the Rehabilitation Act of 1973.
079a	4572 100973	Livestock Grazing	Some commenters questioned the assumptions, methods, and conclusions of the livestock grazing analysis and indicated that the analysis over-emphasizes adverse impacts from livestock grazing, especially under Alternative D. Other commenters questioned the lack of sufficient attribution of beneficial effects on resources from livestock grazing and the lack of consideration of the adverse effects from making or maintaining areas as unavailable to livestock grazing.	The BLM revised Section 3.12 (<i>Livestock Grazing</i>) based on comments received, as appropriate. Language was removed from Section 3.12 that suggested continued demand for forage and livestock grazing permits could violate the Utah Standards for Rangeland Health; language was clarified regarding potential impacts from non-structural versus structural range improvements; language was clarified regarding the required adherence to Utah Standards for Rangeland Health and the application or appropriate mitigation measures under all alternatives; language was added to clarify that alternatives D and E provide the permittees the greatest flexibility in management livestock grazing activities; and to generally clarify the nature and direction of impacts on livestock grazing.
079b	108988 108414 109021	Livestock Grazing	Commenters suggested that the Draft RMPs/EIS did not adequately analyze impacts on soils, vegetation, fire and fuels management, water,	The BLM has taken a hard look at livestock grazing impacts and determined that the level of analysis is commensurate with the level of planning decisions being made. The Draft

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
	100976		and biological monument objects from livestock grazing. Commenters questioned the success of past non-structural range improvements and how the BLM could allow future treatments as a method to improve rangeland health. Comments stated that BLM had not provided sufficient analysis on the effects from opening riparian river parcels to livestock grazing on other resources and uses. Commenters also asserted that the direct, indirect, and cumulative impacts discussion related to livestock grazing effects on wildland was unclear and unreferenced.	RMPs/EIS described at a programmatic level the potential for adverse effects from livestock grazing in Section 3.6, Soil and Water Resources, and Section 3.7, Vegetation and Fire and Fuels Management. Additional information on the use of programmatic analysis is provided in Response H: Programmatic vs. Site-Specific Environmental Analysis. As evidenced by Presidential Proclamation 9682, livestock grazing is a recognized historic and ongoing use of GSENM. By meeting the rangeland health standards and guidelines, the BLM will manage grazing within the monument consistent with the Approved RMPs, laws, regulations and BLM Standards for Rangeland Health, and BLM policies that govern livestock grazing. The anticipated impacts from the alternatives on monument objects are presented in the Impacts on Monument Objects sections of Chapter 3. Future treatment analyses would include appropriate, site-specific conditions related to livestock grazing, and would address potential impacts or conflicts through site-specific BMPs or mitigation measures, as appropriate. The BLM considered making certain previously unavailable parcels available for future livestock grazing as part of the range of alternatives (see Response B: Range of Alternatives). Before livestock could move on to graze, parcels made available through the RMPs would require additional permitting and environmental analysis, during which conflicts and issues could be addressed through site-specific BMPs or mitigation

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
079c	109019	Livestock Grazing	Commenters asserted that expansion of livestock grazing would result in adverse effects on recreation and health and safety issues.	The BLM manages for multiple uses, which include both recreation and livestock grazing. The RMPs/EIS includes management for both of these program areas that is intended to reduce impacts from and improve management of both recreation and livestock grazing. Response #1 Range of Alternatives.
080	81868 91141 92376 93508 100971 102788 102799 107557 108414 109002 109021 109024	Livestock Grazing	Commenters asserted that the Preferred Alternative would unreasonably increase the acreage available for livestock grazing. Several commenters objected to reopening areas of the Escalante River Canyon to livestock grazing. Other commenters stated that grazing allotments that are available under current management should not be retired and should not have active AUMs reduced.	The BLM's planning process allows for analysis and consideration of a range of alternatives in the RMPs/EIS. The RMPs/EIS included alternatives that provide a greater and lesser degree of management in various use programs to address the issues raised. The portion of the Escalante River Allotment within Glen Canyon NRA is unavailable for grazing. Portions within the Escalante Canyons Unit and KEPA are available under alternatives D and E. Making the Escalante River Allotment available for grazing does not mean more grazing will occur, or that more animals will be grazing a specific area. The BLM also included a new map (Map 59) which provides additional detail on livestock grazing management in the Escalante River Canyon Area. Additional site-specific analysis would be required and potential impacts or conflicts would be identified at that time and addressed with site-specific BMPs or mitigation. For example, if grazing resumes, ecological restoration progress would not be reversed because the BLM could use seasonal changes in grazing (shifting from spring to winter use) to help reduce recreation conflicts and meet BLM Utah Standards for Rangeland Health and guidance. Although the BLM Utah Standards for

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				Rangeland Health mentioned in the comment are accurate as of 2006 (when the assessments were completed), the BLM has additional monitoring and restoration project documentation that indicates these allotments are improving. See additional information in Appendix Q (Livestock Grazing). Response B: Range of Alternatives
081	104894 108985 108988 109013 109019 109040 109044	Livestock Grazing	Commenters requested the incorporation of additional baseline information and analysis into the RMPs/EIS, including historic effects of grazing, trends in AUM use over time, the condition of rangelands and riparian areas, and effects of climate change on forage availability and vegetation production.	The BLM revised Section 3.12 (Livestock Grazing) based on comments received, as appropriate. The BLM also revised Section 3.6.2.3 (Soil and Water Resources – Cumulative Effects) to describe how drought and severe weather resulting from climate change could affect vegetation and livestock distribution.
082	10 4572 86343 94200 101179 104217 108414 108985 109021 109036 109044	Livestock Grazing	Commenters suggested revisions to livestock grazing goals and objectives to clarify their intent. Other commenters requested clarification on which grazing allotments would be available for livestock grazing, the parameters of administrative OHV use, and consistency with the Glen Canyon NRA and Capitol Reef National Park.	The BLM revised Section 2.3.12 (Livestock Grazing) and Section 3.12 (Livestock Grazing) based on comments, as appropriate. Alternative D was incorrect in the Draft RMPs/EIS in identifying the Phipps River Pasture as unavailable in Record #2023, but in record #2025 it was intended to be a forage reserve allotment. The revision has been made in the Proposed RMPs/Final EIS to show the Phipps River Pasture as available. However, making the Phipps River Pasture available does not equate to larger areas being actively grazed, or more animals actually grazing. Additional site-specific analysis will be completed and potential conflicts with recreational actions would be mitigated at that time. Editorial clarifications were made for how the BLM included the NPS in determinations related to grazing allotments that fall within Glen

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				Canyon NRA. Clarification was made for "unresolved conflicts" for Alternative B. A Memorandum of Understanding between the NPS and the BLM that addresses livestock grazing management in Glen Canyon NRA will be signed in early 2019. Allotments adjacent to Capitol Reef National Park are unchanged by the RMPs. None of the alternatives make alterations to AUMs that would have an impact on Capitol Reef National Park.
083	4572 92723 92724 107658 109036	Livestock Grazing	Commenters requested modifications to Alternative D that would give the BLM's range conservation specialists and grazing permittees flexibility to coordinate on decisions affecting grazing allotments. Commenters also requested that the BLM remove management restricting new water developments that would increase livestock numbers.	The BLM revised Section 2.3.12 (<i>Livestock Grazing</i>) based on comments, as appropriate. Response B: Range of Alternatives
084	4571 4572 104220	Mineral Resources	Commenters provided a variety of revisions associated with mineral resource terms, including correcting the use of "withdrawals," "mineral leasing," and other terminology. Commenters also requested that the BLM identify locatable mineral BMPs, privately owned community pits, and the cancellation of a specific coal terminal lease.	The BLM revised minerals terminology throughout the RMPs/EIS based on comments received. As indicated in Appendix G (Best Management Practices), the identified BMPs would be applied to avoid, minimize, rectify, and reduce impacts during activity and implementation-level decisions, including locatable minerals.
085	1454 62633 94869 100976 104146 106305 108990 109007 109012	Mineral Resources	Commenters expressed concern that the mineral development alternatives do not allow for the BLM to manage for multiple uses and do not adequately provide proper care and management of monument objects and resource values. Commenters indicated that the BLM appears to be opening up the majority of land to minerals development and that lands in the original monument boundaries should be	Presidential Proclamation 9682 provides that the public lands excluded from the monument reservation shall be open to (1) entry, location, selection, sale or other disposition under the public land laws; (2) disposition under all laws relating to mineral and geothermal leasing; and (3) location, entry, and patent under the mining laws.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
	109013 109021 109024 109040		closed to mineral leasing. Commenters asserted that the BLM's Preferred Alternative designates too many acres of former GSENM land as available for mineral development and that the direct, indirect, and cumulative impacts analysis associated with mineral development is inadequate. Specifically, commenters expressed concern about mineral development in former SITLA lands that are surrounded by WSAs, special status plant species habitats, fragile or sensitive soils, and commonly used recreation areas. Some commenters requested the completion of more detailed scientific studies prior to making any mineral leasing decisions.	As indicated in Section 2.3.13 (Minerals), Approximately 75,076 acres are unsuitable for surface coal mining and surface operations incident to an underground coal mine within the KEPA; coal leasing would not be allowed in these areas in such unsuitable lands. Approximately 46,071 acres, all within the Burning Hills WSA, are included in the unsuitable lands referred to above. If a coal lease application is submitted for lands in KEPA that are outside of the unsuitability analysis area, the BLM would make an assessment of suitability prior to finalizing the environmental analysis for the area being considered for coal leasing (see Appendix L: Coal Unsuitability Report). The range of alternatives analyzed in the Draft RMPs/EIS provide for the proper care and management of the monument objects and values identified in Presidential Proclamation 6920, as modified by Presidential Proclamation 9682. The BLM added text to the analysis of impacts on monument objects in Chapter 3 to further demonstrate how all of the alternatives would ensure the proper care and management of monument objects. Response B: Range of Alternatives Response H: Programmatic vs. Site-Specific Environmental Analysis
086	4571 4572 108992 109036	Mineral Resources	Commenters requested some changes to the mineral resources alternatives including changing the acreage open to mineral leasing and mineral materials disposals under Alternative D.	The RMPs/EIS include a reasonable range of minerals management, including acreage allocations for minerals and constraints on minerals development.
087	97067 100976 102044	Mineral Resources	Commenters questioned the validity of the BLM's analysis of mineral development potential. Commenters asserted that the EIS is	The BLM used the conclusions of the Mineral Potential Report as a basis for assessing RFD. The report represents the best information

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
	104146 106305 109019 109539		lacking a discussion on mineral resource demand and that the Mineral Potential Report does not support the BLM's decision to manage the majority of KEPA as available for mineral development under the Preferred Alternative. Commenters also indicated that the Mineral Potential Report makes contradictory claims about the likelihood of development on KEPA lands, and that the RFD assumptions are not congruent with historical interest in development in the region or were otherwise flawed.	available that the BLM and Utah Geological Survey have on mineral resources at the time of report preparation. The report indicates that future drilling within KEPA lands would be unlikely. The report acknowledges that if a new discovery of oil or gas were to occur either in the region, on KEPA lands or nearby, then drilling would likely increase. The report indicates that Utah coal operators have seen an increase in demand for coal from Asian markets. This increased foreign demand could generate interest in coal production opportunities outside the traditional coal-producing areas of the State. In order to clarify use of the phrase RFD, the BLM added a definition of this term to Appendix C (Glossary). Response H: Programmatic vs. Site-Specific Environmental Analysis
088	62633 81852 102044 104146 104989 108151 108988 108996 109040	Monitoring and Mitigation	Commenters questioned why the Preferred Alternative did not contain any of the mitigation measures that the BLM identified as the most effective. Commenters also asked how the BLM will manage and monitor impacts as a result of specific management actions including mineral development and livestock grazing. Commenters questioned the effectiveness of BMPs and requested that the BLM formally commit to mitigation and monitoring measures to protect against impacts on natural resources by uses such as OHV use and livestock grazing. Commenters requested adaptive management be included in the RMPs for specific resources with robust mitigation and monitoring provisions.	The BLM is committed to mitigation and monitoring protocols as identified in Appendix G (Best Management Practices) and Appendix I, (Monitoring Strategy). As noted in Section 3.0.1 (Analytical Assumptions), the BLM will implement all applicable standard operating procedures, BMPs, and mitigation. Site-specific environmental analysis will provide opportunities to identify and mitigate potential impacts associated with future projects.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			Commenters noted the importance of monitoring following vegetation treatments and reclamation and recommended additional detail for monitoring requirements.	
089	4572 109011 109025 109036	Monument Advisory Committee	Commenters expressed concern with the establishment of a MAC, especially the composition of the MAC and the number of scientists. Commenters recommended (1) doing away with the MAC and having duties performed by the BLM's Resource Advisory Council, (2) a smaller MAC with fewer scientists and more State and local representatives, and (3) continued coordination with local governments to resolve issues associated with the MAC.	Establishing a MAC is one way in which the BLM could implement the directive in Presidential Proclamation 6920, as modified by Presidential Proclamation 9682, that the Secretary of the Interior shall maintain one or more advisory committees under the Federal Advisory Committee Act (5 U.S.C. App.) to provide information and advice regarding the development of the above-described management plans, and, as appropriate, management of the monument. Any advisory committee maintained shall consist of a fair and balanced representation of interested stakeholders, including State and local governments, tribes, recreational users, local business owners, and private landowners. The BLM added Section 4.4, Monument Advisory Committee and Resource Advisory, to the Proposed RMPs/Final EIS, which describes recent interactions with the Resource Advisory Council and progress to date on establishing the MAC. Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders)
090	2 94307 108151 109006 109009	Monument Proclamation	Commenters felt that the Preferred Alternative did not provide proper care and management of monument objects required by monument designation, the National Landscape Conservation System, and FLPMA. Commenters also noted that shrinking and dividing the monument into three separate units would	Response B: Range of Alternatives The BLM is conducting planning for GSENM and KEPA lands according to the boundaries described in Presidential Proclamation 6920 as modified by Presidential Proclamation 9682. As KEPA is no longer designated as a national monument, it no longer fits the criteria for

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			diminish the integrity of the landscape across multiple resources and make the monument more difficult to manage.	National Landscape Conservation System inclusion. However, the management proposed for the three monument units was developed pursuant to the multiple-use and sustained yield mandates of FLPMA, the management requirements of the National Landscape Conservation System stated in the Omnibus Public Land Management Act (P.L. 111-11), and from specific direction in Presidential Proclamation 6920, as modified by Presidential Proclamation 9682. The range of alternatives analyzed in the Draft RMPs/EIS provide for the proper care and management of the monument objects and values identified in Presidential Proclamation 6920, as modified by Presidential Proclamation 9682. The BLM added text to the analysis of impacts on monument objects in Chapter 3 to further demonstrate how all of the alternatives would ensure the proper care and management of monument objects.
091	94307 109039	Monument Proclamation	Commenters felt that it was unlawful to open KEPA to minerals leasing, as this violates Presidential Proclamation 9682 as well as provisions of the Mineral Leasing Act within the boundaries of any national monument.	Presidential Proclamation 9682 provides that the public lands excluded from the monument reservation shall be open to (1) entry, location, selection, sale, or other disposition under the public land laws; (2) disposition under all laws relating to mineral and geothermal leasing; and (3) location, entry, and patent under the mining laws.
092	67732	Monument Proclamation	Commenters urged the BLM to halt the planning process until ongoing lawsuits regarding the legality of Presidential Proclamation 9682 is decided.	Presidential Proclamation 6920, as modified by Presidential Proclamation 9682, requires the Secretary of the Interior to prepare and maintain a land use plan for the three monument units.
093	2 485 2497	Out of Scope	Comments were provided on a number of topics and issues that are not within the scope of this planning process including comments on the	These comments are out of scope for this planning and NEPA process.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
	4181 8916 15349 16008 82512 82950 87638 90645 90941 91141 94307 96360 100976 109017		Bears Ears National Monument planning effort, the legality of Presidential Proclamation 9682, facilities in surrounding communities with no associated planning decision, and other topics.	
094	108992 109024 109025 100976 105008 102044 109019 109020	Public Involvement	Commenters expressed frustration that the BLM did not hold enough scoping meetings or additional Draft RMPs/EIS public meetings in a larger geographic range, extend the public comment period, or provide more time and opportunities for public input. Commenters also inquired which groups were involved in preparation of the RMPs/EIS and requested the RMPs/EIS be re-released before the issuance of the Proposed RMPs/Final EIS.	The BLM has fulfilled the public involvement required under FLPMA, NEPA, CEQ regulations, and other guidance. Refer to Chapter 4 (Consultation and Coordination) for information on public involvement in the planning process and stakeholders involved in the process.
095	108151 108985 109044	Paleontological Resources	Commenters pointed out inconsistencies in the effects analysis, including the effect of natural erosion being described as both beneficial and adverse as well as the impacts of proactive versus compliance-based paleontological inventories. Commenters also expressed concern regarding the selection of Alternative D as the Preferred Alternative, as it has the largest potential for adverse impacts, and requested a comprehensive paleontological survey be undertaken for the Planning Area. Other	The BLM revised the analysis of impacts on paleontological resources in Section 3.5 (Paleontological Resources) based on comments received, as appropriate. Appendix G (Best Management Practices) and Section 3.0.1 (Analytical Assumptions) already indicate that BMPs would be applied to surface-disturbing activities during site-specific permitting. As stated in Management Action #1046, the BLM will continue to conduct proactive (non-

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			commenters requested that language be added after the impacts discussion to note that all alternatives, including Alternative D, are subject to the BMPs as well as surface-disturbance restrictions and management prescriptions associated with WSA and ACEC designations that would provide protections for paleontological resources.	compliance-driven) inventories in GSENM for paleontological resources under all alternatives. Response A: Impact Analysis of Passive Management vs. Active Management
096	2 485 2125 4571 91141 93508 102387 102521 104146 108151 108999 109010 109012 109021	Paleontological Resources	Several commenters provided input on the benefits and drawbacks of casual collection of paleontological resources and requested clarifications on casual collection management. Some commenters noted that casual collection is in violation of the original intent of Presidential Proclamation 6920 as well as of various laws, policies, and court decisions, and will open the potential for undue degradation of paleontological resources. Commenters asked for definitions of various terms in the management actions including fossils that are considered of "critical recreational value." Commenters asked how areas closed to casual collection would be made known to the public and monitored. Multiple geological membership organizations advocated for casual collecting of rocks, minerals, and fossils (rockhounding) be recognized as a recreational activity and included in the goals and objectives for recreation in Chapter 2 of the RMPs/EIS.	The BLM revised management of paleontological resources in Section 2.3.5 (Paleontological Resources) based on comments received, including identifying the Spencer Flats area as closed to casual collection in record #1048. Response B: Range of Alternatives In passing the PRPA, Congress recognized that certain common invertebrates or plant fossils can be collected, and delegated authority to the agency to determine where casual collection is appropriate. The areas were selected within boundaries of the monument by paleontological experts and determined to be free of conflict with significant vertebrate and invertebrate resources. Management in the RMPs does not directly encourage or discourage illegal commercial markets for fossils. The commercial sale of any fossils from public lands, other than petrified wood in certain cases, is strictly illegal per the PRPA. The analysis of casual collection presented in the RMPs/EIS is specific to the paleontological resources within GSENM and KEPA and is not intended to be applied to other BLM-administered surface lands or replace the findings of the BLM's <i>Draft Programmatic</i>

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				Environmental Assessment for Casual Collecting of Paleontological Resources on BLM Administered Lands (2016).
097	4572 109036	Paleontological Resources	Commenters requested that counties and municipalities be included in the process to determine PFYC ratings as well as in any plans to develop a cultural resources center or museum.	The PFYC ratings were previously established in collaboration with Utah Geological Survey (State of Utah), and the BLM did not modify them for this planning effort. Use of PFYC ratings is done via policy and guidance found in IM-2008-009 and the updates in IM-2016-124. The PFYC rating system is one tool available to the BLM for planning and NEPA purposes. Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders)
098	93704 100976 108151 108414 108985 108988 108989 108992 109019 109021 109024 109036 100976	Paleontological Resources	Commenters identified a variety of management concerns and questions and provided numerous suggestions for edits to the alternatives for paleontological resources and suggestions for changes in terminology. Commenters expressed concern with the BLM using the PFYC system as a basis for management decisions as well as selecting Alternative D as the Preferred Alternative. Commenters noted that the management actions in alternatives C and D do not meet the goals and objectives stated for paleontological resources and asked the BLM to consider additional protections in KEPA and in specific localities including ACECs under Alternative D. Commenters also requested a detailed resource management plan for paleontological resources.	The BLM revised management of paleontological resources in Section 2.3.5 (<i>Paleontological Resources</i>) based on comments received, including terminology clarifications. Response B: Range of Alternatives Under all alternatives, the BLM would retain the ability to manage for the protection of paleontological resources under the authority of FLPMA and the PRPA. Response L: ACEC Criteria Discretion The PFYC ratings were previously established in collaboration with Utah Geological Survey (State of Utah), and the BLM did not modify them for this planning effort. Use of PFYC ratings is done via policy and guidance found in IM-2008-009 and the updates in IM-2016-124. The PFYC rating system is one tool available to the BLM for planning and NEPA purposes. The PFYC used for this planning purpose is supplemented by 20 years of intensive, on-the-ground inventory and

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				is the best available model for planning purposes. As stated in Management Action #1044, the BLM will develop a Paleontological RMP for GSENM and certain excluded lands with scientifically significant fossils.
099	100976	Purpose and Need	A commenter asked that the Purpose and Need section of the document include an explanation of why the planning process has been expedited.	Refer to Appendix F (Laws, Regulations, Policies, and Guidance) for an explanation of the expedited RMP preparation process (Secretarial Order 3355). It is not included in Purpose and Need, as it does not relate to the purpose and need of the project.
100	4572 102799 108985 108988 108990 109017 109021	Recreation	Some commenters recommended removing RMZs under Alternative D and just managing the field office as the Kanab-Escalante ERMA. Other commenters requested additional SRMAs and RMZs in Alternative D to manage the range of recreation across the Planning Area. One commenter mentioned potential conflicts with the Little Desert RMZ overlapping the Alvey Wash ACEC. Commenters also requested additional information on the specific recreation opportunities within each SRMA.	Response B: Range of Alternatives The BLM considered a reasonable range of alternatives for recreation and visitor services, which include RMZs that provide for desired outcomes and experiences in specific areas within the Kanab-Escalante ERMA. The BLM may select all of the management actions in a single alternative or elements of management actions from the analyzed alternatives when preparing the approved RMPs, including management of an ERMA without RMZs. In coordination with cooperating agencies, under Alternative E (Proposed Plans) the BLM has identified targeted SRMAs and RMZs to manage areas with high recreation use and known resource conflicts. For example, the Alternative E Little Desert RMZ OHV open area (located in KEPA) is smaller than that proposed under Alternative D and only overlaps portions of the Alvey Wash ACEC that the BLM has determined do not contain R&I values (refer to Section 3.16, Areas of Critical Environmental Concern).

Summary/ Response	Letter	Comment		
Number	Number	Category	Comment Summary	Comment Summary Response Refer to Appendix R (Recreation Management Areas) for more information on the desired activities, experiences, benefits, and desired recreation setting characteristics by SRMA and RMZ. Response L: ACEC Criteria Discretion
101	4572 93508 102799 107658 107723 108985 108988 109019 109021 109024 109044 108988 109006	Recreation	Some commenters requested clarification regarding camping restrictions near isolated water sources and range facilities. Commenters expressed concern with parking areas during large group events along major travel corridors as well as the location of campgrounds, dispersed camping areas, and travel routes resulting in impacts on the undeveloped character of the landscape. Commenters asked for clarification regarding the potential for directional drilling under campgrounds and trailheads as well as backcountry airstrips, drone use, and rockhounding. Commenters also expressed concern about the increase in group size limits, group size conflicts with adjacent land management, approval of group size exceptions by authorized officers instead of through an SRP process, and impacts on water resources and from human waste and trash. Commenters requested further explanation as to why SRP holders are prohibited from camping within 200 feet of riparian areas.	The BLM revised recreation management alternatives in Section 2.3.14 (Recreation and Visitor Services) to clarify management of camping near isolated water sources, to address conflicts between grazing and recreation, and to address other items identified in comments, as appropriate. The BLM revised the recreation analysis in Section 3.14 (Recreation and Visitor Services) to include additional analysis of the potential impacts on livestock grazing in areas near the Upper Paria 1 and Lower Sheep recreational WSR segments. The BLM included a range of management alternatives for recreation in compliance with FLPMA, NEPA, and other guidance and regulations (including H-29930-1, Recreation Permit and Fee Administration Handbook), which allow a Letter of Agreement for Organized Groups where a Special Permit is not required. In coordination with cooperating agencies, under Alternative E (Proposed Plans) the BLM has identified targeted SRMAs and RMZs to manage areas with high recreation use and known resource conflicts.
102	108988 109006 100976 107658 108988	Recreation	Commenters expressed concern regarding the goals, objectives, and management actions related to recreation and provided specific revisions. Commenters also requested further detail be provided regarding how specific	The BLM revised recreation management alternatives in Section 2.3.14 (Recreation and Visitor Services) to clarify management in

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
	109007 109012 109017 109021		recreation management would affect livestock grazing and why horses or other pack animals are allowed in relict plant communities under Alternative D. Commenters also requested more information on how the BLM would ensure no impacts would occur on monument objects from non-motorized, non-mechanized, and mechanized events in the Planning Area.	SRMAs and to address other items identified in comments, as appropriate. The BLM included a range of management alternatives for recreation in compliance with FLPMA, NEPA, and other guidance and regulations. Horses or other pack animals are allowed in relict plant communities and areas with standing structural sites, rock shelters, or alcoves in KEPA, but the BLM has discretion to close these areas if excessive damage is occurring. The BLM added text to the analysis of impacts on monument objects in Chapter 3 to further demonstrate how all of the alternatives would ensure the proper care and management of monument objects. Response C: Proper Care and Management of Monument Objects
103	109036	Recreation	Commenters expressed concern that recreation visitation data and transportation system data used in the RMPs/EIS were inaccurate and therefore not in compliance with Data Quality Act requirements.	Response I: Data Quality Act
104	4572 109013	Recreation	Commenters expressed concern regarding the analysis of recreation management and provided specific language revisions and additional analysis requests including expanding upon the economic benefits of recreation use in the monument and gateway communities and discussing the qualitative rise in recreation use within the area. Commenters suggested revisions to analysis of impacts on recreation from special designations, specifically related to visual resources and rangeland health. Commenters requested additional language	The BLM reviewed the impacts analysis for recreation and made revisions to Section 3.14 (Recreation and Visitor Services) based on comments, where appropriate. Added text to Section 3.8.2 (Dark Night Sky Resource Affected Environment) describing economic benefits of dark night skies. Response H: Programmatic vs. Site-Specific Environmental Analysis

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			about the flexibility of management areas as ERMAs as well as about the impacts of minerals development on tourism and recreation. Commenters expressed concerns about the analysis of cumulative effects identifying actions on non-BLM lands.	
105	109021	Scenic Routes	Commenters recommended revisions to the goals and objectives for scenic routes to ensure Alternative D was compatible and inquired why certain routes were not considered for BLM Back Country Byways designation.	The BLM revised Section 2.3.18 (Scenic Routes) based on comments received, as appropriate. The BLM considered a range of management for scenic routes, including pursuing designation as BLM Back Country Byways of scenic routes in alternatives B and C.
106	108414 109024	Scenic Routes	Commenters expressed the need for the BLM to preserve and safeguard the intrinsic scenic qualities of byways and backways within the Planning Area and criticized the lack of protective management afforded to these resources under Alternative D.	The BLM will conduct additional site-specific environmental analysis to assess development proposals that could affect scenic routes. Additional mitigation could be applied during site-specific permitting to reduce potential impacts. Response B: Range of Alternatives
107	4572 109036	Scenic Routes	Commenters identified a lack of cooperation and coordination with local governments in the management of scenic routes and VRM designations. They requested specific revisions to the alternatives to achieve consistency and remove impedances to the use of ROWs for utilities and communications.	The BLM revised Section 2.3.18 (Scenic Routes) based on comments received, as appropriate. Response B: Range of Alternatives Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders)
108	4572 97067 100976 102044 108414 109024 109039 109021	Social and Economic Considerations	Commenters questioned the adequacy of the analysis of social and economic impacts. Some commenters inquired about the basis of the BLM's goal to provide "maximum sustainable economic development" and the decision to use the IMPLAN economic modeling. Some commenters expressed concern that the BLM did not fully consider the economic impacts of	The BLM revised Section 2.3.21 (Social and Economic Considerations), Appendix T (Socioeconomic Baseline Report), and Section 3.21 (Social and Economic Considerations) based on comments received, as appropriate. The BLM removed "Maximum sustainable economic development" from the goals and objectives in Section 2.3.2.1.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			the Preferred Alternative on the region's tourism economy or climate change. Other commenters requested more detail/clarification be presented in the analysis regarding the economic benefits of the Preferred Alternative, including benefits to public health and safety.	Response H: Programmatic vs. Site-Specific Environmental Analysis
109	83916 106305	Social and Economic Considerations	Commenters emphasized the importance of GSENM on social and economic conditions including tourism, recreation, and employment in surrounding counties.	Refer to Appendix U (<i>Economic Assessment</i>) for the economic assessment of the management alternatives. Added text to Section 3.8.2 (<i>Dark Night Sky Resource Affected Environment</i>) describing economic benefits of dark night skies.
110	4572 109011 109036	Social and Economic Considerations	Commenters expressed concern about the validity of some of the data sources used in the socioeconomic impact analysis and other appendices, particularly surrounding the use of the Headwaters Economics data. Commenters asserted that additional studies that dispute the Headwaters Economics findings should be referenced or that more detail should be provided in the analysis regarding local conditions in Kane and Garfield Counties.	The BLM revised Section 2.3.21 (Social and Economic Considerations), Appendix T (Socioeconomic Baseline Report), and Section 3.21 (Social and Economic Considerations) to address some of the data issues identified in the comments, as appropriate. Response H: Programmatic vs. Site-Specific Environmental Analysis
111	4572 108151 108985 108988 109036	Soil and Water Resources	Commenters provided additional information on biological soils crusts for the BLM to consider in its analysis. Some commenters contended that alternatives C and D would not adequately protect biological soil crusts, while other commenters asserted that livestock grazing and vegetation treatments would have beneficial effects on the condition of biological soil crusts and should be allowed.	Response B: Range of Alternatives The BLM reviewed the environmental consequences section for Soil and Water Resources (Section 3.6.2 of the Proposed RMPs/Final EIS) and concluded it was sufficient to weigh the alternatives and adequately inform the decision. Alternative E includes measures to avoid impacts on the function, health, and distribution of biological soil crusts prior to any ground-disturbing activity within GSENM. Although Alternative E does not include similar management for biological soil crusts in KEPA,

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				site-specific environmental analysis will provide opportunities to identify and mitigate potential impacts associated with future projects. Refer to Appendix G (Best Management Practices) for soil BMPs that would be applied to reduce potential impacts on biological soil crusts and other soils.
				Note that the goals and objectives for soil health would apply across alternatives, and all alternatives include specific management to protect soil.
112	100976 104894	Soil and Water Resources	Commenters indicated that EIS failed to adequately analyze impacts on soil and water from mining, chaining, reclamation practices, and development that occurs on slopes, within Drinking Water Protection Zones.	Response B: Range of Alternatives Response H: Programmatic vs. Site-Specific Environmental Analysis
113	4572 108985 109036	Soil and Water Resources	Commenters called for the BLM to remove or ease restrictions on ROW development, surface-disturbing activities, and new water developments because intended protections to soil and water resources are not supported by scientific evidence or conflict with county plans.	Response B: Range of Alternatives Response D: Consistency with County Plans Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders)
114	109036	Soil and Water Resources	Several comments requested changes to the wording of RMP objectives and allowable uses related to watershed function, major visitor centers and facilities, and water development for beneficial uses.	The BLM revised Section 2.3.6.2 (Water Resources) based on comments received, as appropriate.
115	107658 109021 109024 109039 109040	Soil and Water Resources	Commenters indicated that the alternatives, particularly Alternative D, would not provide sufficient protection for water resources or move conditions toward PFC and restore water quality in specific areas. Specific concerns expressed in comments were impacts on water resources from the development of visitor and recreational	The BLM revised Section 3.6.2 (Water Resources) based on comments received to clarify that ephemeral streams are considered in the analysis. The BLM added text to the analysis of impacts on monument objects in Chapter 3 to further demonstrate how all of the alternatives would

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			facilities within the monument boundaries, new water developments for livestock or wildlife, and surface-disturbing activities. Commenters also asked the BLM to provide an analysis of the impacts from the management in each alternative on ephemeral streams. Some comments asserted that selection of the Preferred Alternative would prevent the BLM from fulfilling its legal obligation to protect water resources as monument objects.	ensure the proper care and management of monument objects. Response B: Range of Alternatives Response H: Programmatic vs. Site-Specific Environmental Analysis The BLM will follow all applicable State and Federal water quality laws and regulations, including State law regarding water appropriations and allocations.
116	109039	Soil and Water Resources	Commenters felt that the BLM did not adequately analyze potential impacts of the alternatives on water resources, specifically with respect to impaired waters, livestock grazing, mineral development, and climate change. Commenters noted the BLM lacked sufficient data on baseline water quality to make a determination on the effects of the alternatives on water resources.	Response K: Best Available Information The BLM revised Section 3.6.1.2 (Water Resources) based on comments received to expand description of existing water quality and sources of impairment based on the available data. Effects on water resources are addressed in the appropriate sections of Chapter 3 (Affected Environment and Environmental Consequences). When considering approval of potential future projects that could affect water quality or quantity, the BLM would review the proposal during site-specific environmental analysis to ensure the proposed project does not affect the BLM's ability to provide for the care and management of the water-associated monument objects.
117	81856 93347 108151 108414 109040	Soil and Water Resources	Commenters requested that the BLM consider additional information on effects of climate change and sedimentation on water resources and riparian areas, effects of new development on sand supplied to Grand Canyon National Park, and the effects of OHV use on soils. Commenters asked that the Proposed RMPs/Final EIS include additional information	The BLM revised Section 3.6.2 (Water Resources) based on comments received to clarify downstream effects on Grand Canyon Nation Park and to include a new map identifying aquifers in the Planning Area. The BLM reviewed the analysis of impacts on riparian and wetland areas in Section 3.7.2 (Vegetation Environmental Consequences) and

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			on springs and additional maps and data for Drinking Water Source Protection Zones and shallow aquifers.	concluded it was sufficient to weigh the alternatives and adequately inform the decision. The analysis of riparian and wetland areas includes impacts from BLM surface-disturbing activities and vegetation removal. In Section 3.1.1.1 (Climate Change), the BLM acknowledges the effects of climate change on precipitation and periods of drought. Under all alternatives the BLM would continue to manage riparian areas for PFC and would apply the BLM Utah Riparian Policy to protect and manage these areas. All action alternatives also include restrictions on new surface-disturbing activities around riparian/wetland areas, and would not conduct chaining in riparian areas. Impacts from vegetation treatment in upland areas generally have short-term effects on sedimentation in riparian areas, but long-term beneficial effects on sediment retention in a watershed.
118	2 93508 94869 100976 108988 109021	Special Designations	Commenters expressed concern that Alternative D does not designate any ACECs and inquired how Alternative D would protect the R&I values identified in the 14 nominated ACECs in Alternative B.	In reviewing the range of alternatives, the BLM determined that the R&I values for potential ACECs are protected by management actions presented in the alternatives, or by other means such as laws, regulations, and policies. ACECs are but one tool to protect R&I values; there are other options the BLM can employ to protect an area's R&I values. The BLM has used these additional tools in alternatives D and E, and therefore is still protecting R&I values, such as the provisions within the PRPA for paleontological resources found on KEPA lands. In addition, R&I values in ACECs are also protected under a range of Federal regulations including the PRPA, the Archaeological

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				Resources Protection Act, and other regulations. Additional site-specific analysis would be conducted for all projects to identify site-specific impacts and appropriate mitigation. The BLM revised analysis in Section 3.16 (Areas of Critical Environmental Concern) to clarify the management actions and protection measures that will be taken to provide protection to R&I values for areas not designated as ACECs under the Preferred Alternative.
119	108988	Special Designations	Commenters recommended additional areas for consideration as ACECs.	The BLM revised Appendix S (Areas of Critical Environmental Concern) to further describe the BLM's process in evaluating nominated ACECs and to provide more information on the assessment of relevance and importance criteria.
120	4571 108985 109044	Special Designations	Commenters contested the BLM's determinations that certain scenic or cultural values met R&I criteria for designation as ACECs. Comments argued that the designation of ACECs was unnecessary in light of protective management already in place and would actually have an adverse effect by restricting opportunities for proactive management. Some commenters asserted that ACEC designations would violate the spirit of Proclamation 6920 by using ACECs to essentially recreate existing restrictions in areas now excluded from the monument.	The RMPs/EIS present a reasonable range of alternatives, including some or no ACEC designations across the alternatives. The BLM revised Appendix S (Areas of Critical Environmental Concern) to further describe the BLM's process in evaluating nominated ACECs and to provide more information on the assessment of relevant and important criteria. Response L: ACEC Criteria Discretion
121	108991 109013	Special Designations	Commenters pointed out specific errors and deficiencies in how special designations are addressed in the RMPs/EIS, including a proposed ACEC that overlaps an OHV play area	The BLM revised the analysis in Section 3.16 (Areas of Critical Environmental Concern) to clarify the management actions and protection measures that will be taken to provide

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			and the failure to analyze impacts on WSAs from activities on adjacent lands.	protection to R&I values for areas not designated as ACECs. The BLM revised the RMPs/EIS to include impacts on the WSA from actions/land uses allowed adjacent to WSAs. Analysis in the Proposed RMPs/Final EIS discloses impacts WSAs from land uses allowed adjacent to the WSA (e.g., leasable mineral moderate constraints), consistent with MS-6330 (p. 1-43, section E.1.a). Disclosure of impacts is not to be interpreted as managing setbacks for WSAs, but instead as the BLM's attempt to disclose and describe the wilderness characteristics (e.g., naturalness, opportunities for solitude) that could be affected by the land uses adjacent to the WSA.
122	4572 100976 109021	Special Designations	Some commenters stated that noise and visual restrictions placed on the OSNHT National Trail Management Corridor were overly restrictive and contrary to its designation as a place of public interest. Some commenters requested signage along the trail and questioned the reasonableness of the National Trail Management Corridor applied to the OSNHT under the alternatives, suggesting a smaller corridor be applied. Other commenters held that selection of Alternative D was incompatible with the goals and objectives of the National Historic Trail. Some commenters questioned if the RMPs/EIS used the best available inventories of the OSNHT.	The BLM has complied with the NEPA process for the development of the RMPs/EIS and management of the OSNHT. As noted in Section 2.3.17 (National Historic Trails), Management Action #3003, an activity plan for the OSNHT can be completed to implement the decisions made in the Approved RMPs. As required by the BLM Land Use Planning Handbook, H-1601-1 (page 2), the BLM developed its alternatives and conducted its analysis using the best information available. The RMPs/EIS consider a reasonable range of management actions for the OSNHT National Trail Management Corridor, including a range of widths for the National Trail Management Corridor and land use allocations. The BLM has determined that the OSNHT Corridor proposed under Alternative D of "up to 300 feet on either side of the OSNHT centerline or within the

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				viewshed, whichever is less" is sufficient to provide for a range of alternatives. The BLM has reviewed the best available scientific inventories of the OSNHT and found them adequate to inform the alternatives. The BLM reviewed the analysis of impacts associated with the OSNHT and determined that the analysis is sufficient to assess the alternatives and inform the decision. Construction of trail signs along the OSNHT does not require a planning decision and may be considered in future activity- and implementation-level planning processes.
123	4572 109025	Special Designations	Commenters asked for evidence supporting the alignment of the OSNHT through the Paria Box, as depicted on BLM maps. Commenters argued that realignment of the trail would resolve a variety of land use conflicts.	The BLM has reviewed the best available scientific inventories of the OSNHT and found them adequate to inform the alternatives. The BLM has determined that under Alternative D "up to 300 feet on either side of the OSNHT centerline or within the viewshed, whichever is less" is sufficient for the range of alternatives. Management would continue to allow recreational access to the trail for all alternatives. Based on the information in the recently released BLM-NPS Comprehensive Administrative Strategy Report, the location of the Armijo Route through the Paria Box is the best available scientific information and was used to establish the centerline of the trail. Should future evidence become available that verifies alternative routes, the OSNHT administrator (NPS) and OSNHT manager (BLM) can agree on a change to the historic route.
124	4572	Special Designations	Commenters requested that all VRM Class I designations be removed from the Planning Area, including those applied to National Historic Trails, WSAs, and WSRs. They cited a lack of	The BLM reviewed the VRM Class I designations within KEPA and monument units and concluded they were in compliance with Manual H-8410-1 - Visual Resource Inventory, and

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			justification for this change from current management, in which no VRM Class II areas are present.	sufficient to weigh the alternatives and adequately inform the decision.
125	102799 108988 109021 109024	Special Designations	Commenters expressed concern that Alternative D would not effectively manage and protect WSAs to preserve wilderness characteristics so as not to impair the suitability of such areas for designation by Congress as a Wilderness. Commenters were specifically concerned that allowing nonnative species for reseeding and limiting OHV use to designated roads and trails (and not OHV closed areas) in WSAs would violate WSA policy and the BLM's obligation to provide proper care and management of monument objects.	Section 2.3.20 (Wilderness Study Areas), Record #3019, was changed to read "allow use of nonnative species consistent with applicable BLM WSA policy." Record #3018 notes that the designation of routes will be done during the TMP and done consistent with the requirements of MS-6330. The BLM revised references to the WSA Manual in Appendix G (Best Management Practices) to correct the reference.
126	4572 102799 108988 109021 109024	Special Designations	Some commenters called for removal of protective management for any segment of the Paria River under the Wild and Scenic Rivers Act because of its intermittent or ephemeral nature. Other commenters said the BLM cannot arbitrarily reclassify segments of the Paria River System as "recreational" under alternatives C or D without providing supporting evidence.	BLM Manual 6400 allows for a variety of classifications across RMP alternatives. This range typically is put forward to allow for different future uses across alternatives. "An alternative may also include a recommendation of eligible segment(s) at a less restrictive classification (e.g., scenic to recreational) to allow a specific resource activity" (Manual 6400, p. 7-8). The analyses in the Proposed RMPs/Final EIS have been revised to describe the justification for changing each river segment's tentative classification. The BLM reviewed the classifications and the eligibility status of the Upper Paria and Lower Sheep Creek and concluded it was sufficient to weigh the alternatives and adequately inform the decision. Furthermore, the BLM is in compliance with the WSR guidance as described in Manual 6400 as well as the Wild and Scenic Rivers Act.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
127	1569 4570 4571 109025 109027 109034 109036 109032	Travel and Transportation	Commenters expressed concern about valid existing rights and public easements under R.S. 2477 not being addressed, or being inadequately addressed in the RMPs/EIS. Commenters questioned the authority of the BLM to manage roads or highways throughout the Planning Area and requested that more consideration be given to the role of local governments in managing transportation routes. Commenters also asserted that routes are not being managed consistently with the current transportation route map because the 2000 GSENM Management Plan adopted a flawed Map 2.	Response J: R.S. 2477 The BLM added text to the Chapter 3 travel and transportation management section (Section 3.15.2.1) regarding R.S. 2477 routes.
128	2 485 104146 108151 108988 109021 109024	Travel and Transportation	Commenters expressed concern over opening additional lands to OHV access and the associated impacts of motorized use potentially causing unnecessary and undue degradation. Commenters asserted that the analysis of potential impacts was inadequate and does not discuss all the potential impacts to be expected in an arid/semiarid environment, specifically expressing concerns about opening new routes in the Little Desert area. Commenters also expressed concerns about WSAs and noted that FLPMA prohibits OHVs in WSAs.	Response B: Range of Alternatives Presidential Proclamation 9682 provides that the Secretary may allow motorized and non- mechanized vehicle use within GSENM on routes in existence immediately before the issuance of Proclamation 6920. The BLM has determined that all of the alternatives would not result in unnecessary and undue degradation. The BLM is not aware that legal use of routes is resulting in unnecessary and undue degradation. If a route is causing unnecessary and undue degradation, the BLM can close it without a plan decision. In addition, aside from the limited number of potential route designations in alternatives D and E, the consideration of route designations and route- or trail-specific proposals will be deferred until a future implementation-level travel management planning process.
129	4571 4572 24329	Travel and Transportation	Commenters expressed concern that the analysis of direct, indirect, and cumulative impacts on travel and transportation	The BLM revised the analysis of impacts on travel and transportation management in

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
	100976 108151 109017 109021 109025 109036 109043		management was incomplete, inaccurate, or biased. Commenters noted additional resources that could affect travel and transportation, additional areas to be analyzed or opened, and additional beneficial and adverse impacts that they would like to see included in the analysis. Commenters requested changes to the RMPs/EIS including more detail on routes designated prior to Proclamation 6920 and on the impacts of travel route designations on public safety.	Section 3.15 based on comments received, as appropriate.
130a	4572 109030 109036 100976 108992 108151	Travel and Transportation	Commenters asserted that the TMP process should not be delayed and stated that deferring the TMP constituted failure to take a hard look at travel and effects from travel. Commenters also provided input on how to ensure the TMP process was comprehensive and legal and suggested areas for the BLM to prioritize in TMP development. Commenters asserted that the BLM should undertake a complete and robust TMP process prior to making OHV designations for specific routes.	The travel management planning process is outlined in BLM Manual H-8342, which details the inventory, evaluation, and planning steps to develop the transportation system. Manual H-8342 encourages deferred travel management planning due to the size and complexity of the area. Completing the TMP in the future is consistent with BLM policy as indicated in Appendix K. The BLM analyzed the proposed route designation according to the criteria set forth by policy. As with all other routes in the Planning Area, the three route designations in Appendix K would be reviewed through the travel management planning process. Response G: Travel Management Planning
130b	100976	Travel and Transportation	Commenters disagreed with the BLM's decision to open the V-Road, Inchworm Arch Road, and Flagpoint Road in Alternative D. Commenters asserted the BLM failed to describe and analyze the reasonably foreseeable impacts on protected resources of allowing OHV travel on the three routes.	Refer to Appendix K (Interdisciplinary Route Evaluation Forms and Analysis) for the evaluation of the three routes. Note that these routes existed prior to designation of GSENM and are highly utilized today. As with all other routes in the Planning Area, these three routes would be reviewed through the travel management planning process.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
130c	108992	Travel and Transportation	Commenters requested the BLM consider the following design features if it elects to move forward with the opening the Inch Worm Arch Road Route: 50-inch maximum width, motorized vehicles at a parking area farther removed from archaeological sites, a barrier around the parking area, and a defined access trail to the arch and into the canyon.	As described in Appendix K (Interdisciplinary Route Evaluation Forms and Analysis), Table 7, Inch Worm Arch Road Route Evaluation Form, the BLM is considering mitigation and design measures for this route that include vehicle size restrictions, realignment to avoid archaeological sites, and official trails to local points of interest. As with all other routes in the Planning Area, the Inch Worm Arch Road Route would be reviewed through the travel management planning process.
1 30d	108992	Travel and Transportation	Commenters asserted that the age of the V-Road Route and its original intended purpose made it ineligible for an R.S. 2477 ROW claim, and requested the BLM mark the route as "Administrative Route, Closed to the Public."	The BLM considered a reasonable range of alternatives that included deferring route designation determinations to the future TMP (i.e., route remains officially closed) and adding the route to the existing route network (i.e., route is available for legal public access). See Response B: Range of Alternatives for more information. As with all other routes in the Planning Area, the V-Road Route would be reviewed through the travel management planning process.
1 30e	108988 100976	Travel and Transportation	Commenters asserted that the BLM's decision to allow OHV use routes consistent with Garfield and Kane Counties' motorized route systems went beyond the obligation of the BLM under FLPMA to make land use plans consistent with State and local plans to the "maximum extent [] consistent with federal law and the purposes of [FLPMA]" 43 U.S.C. § 1712(c)(9), and potentially violated the BLM's policy on land use planning and R.S. 2477 and its obligations under NEPA.	The RMPs do not indicate that the BLM will defer to the county plans when designating routes. As noted in Chapter 2, <i>Alternatives</i> , Record #2102, until travel planning is complete, consistent with OHV area designations made through the planning process, the BLM will allow OHV vehicle use on routes identified in the existing GSENM TMP. During future travel management planning, Garfield and Kane Counties' motorized route systems would be one of several considerations in the routes designation process.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
130f	108988	Travel and Transportation	Commenters stated the BLM must conduct a Class III inventory on all routes opened through the RMPs or future TMPs, and that the NHPA requires the BLM initiate and complete the Section 106 process prior to the designation of roads and routes.	The BLM has updated Appendix K to disclose the current state of Class III surveys and Section 106 consultation. For all three routes, Class III surveys are either complete (Inch Worm Arch and V-Road) or are in progress (Flag Point Trail). For all routes, the NHPA Section 106 process has been initiated (Inch Worm Arch and Flag Point Trail) or is complete (V-Road).
				Inventories and consultation for the travel management planning process for other routes is outside the scope of this land use planning effort but would be addressed as appropriate during TMP development.
131	109032 109026 109028 109029	Travel and Transportation	Commenters disagreed with management decisions they felt would limit access to private property or grazing allotments and requested clarification on the intent of implementation-level decisions for travel management.	The BLM is not making any management decisions that would deny authorized users access to their private property or grazing allotments.
132	109021 109024 109036	Vegetation	Commenters requested clarification on vegetation-related requirements in the alternatives, including the criteria for determining necessary use of nonnative species, whether biological soils crusts would be prioritized over vascular plants, how climatic conditions would affect seed collection, whether surface-disturbing activities would be allowed within relict plant communities, and how site objectives for vegetation monitoring were defined.	The BLM reviewed the requested clarifications and revised certain text in Section 2.3.6 (Soil and Water Resources), Section 2.3.7 (Vegetation and Fire and Fuels Management), Section 3.6 (Soil and Water Resources), Section 3.7 (Vegetation and Fire and Fuels Management), and elsewhere in the document for clarity where appropriate.
133	109021 109036 109039	Vegetation	Some commenters criticized a lack of protections for special status species, relict plant communities, and hanging gardens, noting their susceptibility to impacts from pack animals, camping, and surface-disturbing	Response B: Range of Alternatives Refer to Chapter 2, Management Action #1062, which prohibits vegetation restoration methods in hanging gardens on KEPA lands. The alternatives also provide for a range of

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
			activities. One commenter suggested allowing exceptions for certain ROWs in these areas, while another commenter noted an apparent inconsistency in whether the alternatives allow the BLM to authorize research in these plant communities.	protective buffers for riparian and wetland areas, which are where hanging gardens are expected to occur (see Management Action #1074).
134	35471 100976 108988 109013	Vegetation	Commenters contended that the BLM did not consider the best available science when developing alternatives and that the RMPs/EIS failed to fully analyze environmental consequences of BLM-authorized actions that could affect vegetation. There were comments requesting that the BLM consider impacts of livestock grazing in riparian areas, identify relict pinyon and juniper communities, and consider impacts on vegetation communities in the context of a changing climate.	Response H: Programmatic vs. Site-Specific Environmental Analysis
135	4571 100976 107658 108988 109013 109021 109024 109036	Vegetation	Commenters asked for clarification on where commercial timber harvest would be allowed and which criteria would be applied for permitting and monitoring such activities. Some commenters questioned how the BLM could ensure proper care and management of monument objects such as riparian areas, relict plant communities without prohibiting commercial timber harvest in those areas. Other commenters requested that the BLM remove any planning-level restriction on commercial timber harvest or remove consideration in the effects analysis on how the forest and woodland product management would affect lands with wilderness characteristics.	Response B: Range of Alternatives The BLM would only allow commercial timber harvest, "for the purposes of promoting or sustaining forest health" under alternatives C and D. The reduction of pinyon/juniper to promote native shrubs (e.g., sage-brush) to promote healthy landscapes and reach ecological site potential is the intent of this action. Areas where commercial timber harvest would be allowed would require future site-specific environmental analysis, consultation with USFWS for ESA clearance, consultation with SHPO on the NHPA, and compliance with other relevant laws and regulations. Site-specific analysis will provide opportunities to identify and mitigate potential impacts associated with future projects.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				The effects analysis includes impacts on resources and resource uses from the range of management alternatives presented in Chapter 2, including impacts on woodlands and forestry products from the management of lands with wilderness characteristics.
136	485 4571 24329 108988 109021	Vegetation	Some commenters requested additional restrictions on mechanical vegetation treatments and the use of nonnative species for seeding. Other commenters stressed the importance of actively managing vegetation communities to achieve optimal health and requested the selected alternative allow the broadest possible range of treatment options.	Response B: Range of Alternatives As noted in Chapter 2 (Alternatives D and E), Record #1070, Allow the use of nonnative species where necessary to optimize land health, forage, and productivity in nonstructural range improvements. The existing MMP allows the use of nonnative species in limited situations (see pages 28 and 30 of the MMP). Consistent with this current management direction, the BLM has used nonnative seeds in mixes since the designation of GSENM in 1996.
137	108985 109036	Visual Resources	A commenter requested clarification on the distinction between planning- and implementation-level decisions for visual resources. Another commenter asked to what extent the BLM involved the public in developing visual sensitivity levels.	Made revisions to the alternatives tables in Chapter 2 and analyses in Chapter 3 to correct the identification of implementation-level decisions. The BLM incorrectly identified several management actions in the Draft RMPs/EIS as implementation-level actions. "Management actions" are types of land use planning decisions (BLM Handbook H-1601-1). BLM Handbook H-8320-1 further identifies recreation land use plan actions to include land use plan-supporting management actions and allowable uses. The BLM has determined these management actions are necessary to prevent resource damage to provide for the proper care and management of the monument objects and values. These Proposed RMPs/Final EIS correct the error and clarify that there are fewer implementation-level decisions.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
				The Visual Resources Inventory process does not include a provision for public comment, although the information provided in the RMPs/EIS is open for comments from the public.
138	107658 108414 108985 109021 109024 109039	Visual Resources	Commenters expressed concern about the preservation of the pristine soundscapes within the Planning Area and adjacent National Park units, particularly with fewer restrictions on noise-emitting development activities under Alternative D. One commenter recommended managing soundscapes similar to visual resources and using noise propagation modeling as a basis for management decisions. Another commenter contended that the BLM should not put forth any special management for soundscapes considering that BLM planning guidance does not compel it to do so.	Refer to Section 3.8.4.1 (<i>Methods and Assumptions</i>) for information on the methods used for the soundscape analysis. Future development of a soundscape management plan will identify noise-monitoring metrics and procedures as well as management objectives to evaluate the level of impact associated with proposed future actions. Although dark night skies and natural soundscapes are not identified as resources in the BLM's land use planning handbook (H-1601-1), the BLM has the purview to plan and manage for resources that are not explicitly noted in the handbook but raised during public and internal scoping, which it has done in this planning effort.
139	105976 108414 108987 109021 109024 109039	Visual Resources	Commenters indicated that only Alternative B would allow the monument to remain eligible for accreditation as an International Dark Sky Sanctuary, in recognition of its pristine night skies. Some commenters suggested specific requirements to limit light pollution from outdoor lighting and highlighted the economic benefits of night sky tourism to surrounding communities. Another commenter contended that the BLM should not put forth any special management for night skies considering that BLM planning guidance does not require it to do so.	The BLM revised Section 3.8 (Visual Resources, Dark Night Skies, and Natural Soundscapes) and Appendix G (Best Management Practices) based on comments received, as appropriate. Response B: Range of Alternatives Although dark night skies and natural soundscapes are not identified as resources in the BLM's land use planning handbook (H-1601-1), the BLM has the purview to plan and manage for resources that are not explicitly noted in the handbook but raised during public and internal scoping, which it has done in this planning effort.

Summary/ Response Number	Letter Number	Comment Category	Comment Summary	Comment Summary Response
140	4572 82831 100976 108414 108985 108988 108992 109021 109024 109036	Visual Resources	Commenters requested that the BLM revise VRM designations to be consistent with the plans and policies of Garfield and Kane Counties. Commenters stated that restrictions imposed by VRM standards on energy and ROW development would unreasonably and arbitrarily restrict economic growth. Other commenters criticized the lack of protection of scenic values under Alternative D and lack of a comprehensive impact analysis, including consideration for visual impacts on adjacent National Park units. Commenters also raised issues with VRM designations given to SITLA lands and other specific areas.	The BLM has followed BLM Manual 8410, Handbook 8431-1, Handbook 1601-1, and other applicate guidance regarding visual resource inventories and designation of VRM Classes during the RMP process. The BLM reviewed the visual resource analysis in Section 3.8.1 (Visual Resources) and concluded it was sufficient to assess the range of alternatives and adequately inform the decision. To meet the many objectives of a multi-resource agency, the BLM must consider and evaluate where those objectives can be met. The NPS participated as a cooperating agency during the RMPs/EIS process and the BLM will continue to involve adjacent land management agencies and other stakeholders when evaluating individual projects. The BLM added Section 4.5 (Coordination and Consistency with Federal, State, and County Plans) to Chapter 4 of the RMPs/EIS describing consistency with county plans. Response B: Range of Alternatives Response D: Consistency with County Plans Response H: Programmatic vs. Site-Specific Environmental Analysis
141	4572 108985 109044	Wild Horses	Commenters requested that the BLM add a reference to the policy that would apply if survey of a herd determines there are no animals in a herd area. Commenters also requested a new objective be added regarding managing herds to achieve low AML if herd populations reach above AML. Commenters also requested that the approximate number of horses last counted be added to the document.	The BLM will follow all applicable law & policy, including policy found in MS-4700 through MS-4720, and H-4700-1. There are no AMLs for Herd Areas; AMLs are only designated for Herd Management Areas. There are no recent count numbers for horses in the Herd Areas.

ACEC = Area of Critical Environmental Concern; ADA = Americans with Disabilities Act; AML = Appropriate Management Level; AMS = Analysis of the Management Situation; AUM = animal unit month; BA = Biological Assessment; BLM = Bureau of Land Management; BMP = best management practice; CEQ = Council on Environmental Quality; CFR = Code of Federal Regulations; EIS = Environmental Impact Statement; EPA = U.S. Environmental Protection Agency; ERMA = Extensive Recreation Management Area; ESA = Endangered Species Act; FLPMA = Federal Land Policy and Management Act; GHG = greenhouse gas; GIS = geographic information system; GSENM = Grand Staircase-Escalante National Monument; KEPA = Kanab-Escalante Planning Area; MAC = Monument Advisory Committee; MMP = Monument Management Plan; NEPA = National Environmental Policy Act; NHPA = National Historic Preservation Act; NPS = National Park Service; NRA = National Recreation Area; NRHP = National Register of Historic Places; OHV = off-highway vehicle; OSNHT = Old Spanish National Historic Trail; P.L. = Public Law; PFC = proper functioning condition; PFYC = Potential Fossil Yield Classification; PLPCO = Utah Public Lands Policy Coordinating Office; PRPA = Paleontological Resources Protection Act; PSD = prevention of significant deterioration; R&I = relevance and importance; R.S. = Revised Statute; RFD = reasonably foreseeable development; RMP = Resource Management Plan; RMZ = Recreation Management Zone; ROD = Record of Decision; ROW = right-of-way; SHPO = State Historic Preservation Officer; SITLA = School and Institutional Trust Lands Administration; SRMA = Special Recreation Management Act; SRP = Special Recreation Permit; TCP = traditional cultural property; TMP = Travel Management Plan; U.S.C. = U.S. Code; UDWR = Utah Division of Wildlife Resources; USFWS = U.S. Fish and Wildlife Service; VRM = Visual Resource Management; WSA = Wilderness Study Area; WSR = Wild and Scenic River

Attachment A - Comment Letter by Commenter

The table below provides a list of comment letter submissions on the GSENM/KEPA Draft RMPs/EIS that included substantive comments. The letter numbers in the first column correspond to the letter numbers in the first column in Table 5. By locating a comment letter number in Table 5, you can view the BLM's response to comments.

Number Last Name Organization Name 1454 Ackley, S. 102799 Anderson, L. 105976 Barentine, J. International Dark-Sky Association 101179 Beck, K. 100976 Berry, R. 83916 Blackburn, K. The Conservation Alliance 109010 Bogosian, S. Peninsula Gem and Geology Society Inc. 15349 Bradus, R. 109011 Bremner, B. Garfield County 109034 Bremner, B. Garfield County 109036 Bremner, B. Garfield County 109027 Brodie, M. 109028 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 100071 Cox, S. 100071 Cremer-Vogel, K.			
102799 Anderson, L. 105976 Barentine, J. International Dark-Sky Association 101179 Beck, K. 100976 Berry, R. 83916 Blackburn, K. The Conservation Alliance 109010 Bogosian, S. Peninsula Gem and Geology Society Inc. 15349 Bradus, R. Bradus, R. 109011 Bremner, B. Garfield County 109034 Bremner, B. Garfield County 109036 Bremner, B. Garfield County 109027 Brock, T. and K. 109008 Brodie, M. 109029 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Buntling, B. Kane County Conservation District 109912 Carson, K. Summit County Council 108985 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. </th <th>Letter Number</th> <th>Commenter Last Name</th> <th>Organization Name</th>	Letter Number	Commenter Last Name	Organization Name
105976 Barentine, J. International Dark-Sky Association 101179 Beck, K. 100976 Berry, R. 83916 Blackburn, K. The Conservation Alliance 109010 Bogosian, S. Peninsula Gem and Geology Society Inc. 15349 Bradus, R. 109011 Bremner, B. Garfield County 109034 Bremner, B. Garfield County 109036 Bremner, B. Garfield County 109027 Brock, T. and K. 109008 Brodle, M. 109026 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 24324 CTVA Committee Capital Trail Vehicle Association 100971 Cox, S.	1454	Ackley, S.	
101179 Beck, K. 100976 Berry, R. 83916 Blackburn, K. The Conservation Alliance 109010 Bogosian, S. Peninsula Gem and Geology Society Inc. 15349 Bradus, R. Image: Record of Society Inc. 109011 Bremner, B. Garfield County 109036 Bremner, B. Garfield County 109027 Brock, T. and K. 109008 Brodie, M. 109026 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee	102799	Anderson, L.	
100976 Berry, R. 83916 Blackburn, K. The Conservation Alliance 109010 Bogosian, S. Peninsula Gem and Geology Society Inc. 15349 Bradus, R. 109011 Bremner, B. Garfield County 109034 Bremner, B. Garfield County 109036 Bremner, B. Garfield County 109027 Brock, T. and K. 109008 Brodie, M. 109028 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 100912 Cooper, S. 100971 Cox, S.	105976	Barentine, J.	International Dark-Sky Association
83916 Blackburn, K. The Conservation Alliance 109010 Bogosian, S. Peninsula Gem and Geology Society Inc. 15349 Bradus, R. 109011 Bremner, B. Garfield County 109034 Bremner, B. Garfield County 109027 Brock, T. and K. 109008 Brodie, M. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	101179	Beck, K.	
109010 Bogosian, S. Peninsula Gem and Geology Society Inc. 15349 Bradus, R. 109011 Bremner, B. Garfield County 109034 Bremner, B. Garfield County 109036 Bremner, B. Garfield County 109027 Brock, T. and K. 109008 Brodie, M. 109029 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	100976	Berry, R.	
15349 Bradus, R. 109011 Bremner, B. Garfield County 109034 Bremner, B. Garfield County 109036 Bremner, B. Garfield County 109027 Brock, T. and K. 109008 Brodie, M. 109026 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	83916	Blackburn, K.	The Conservation Alliance
109011 Bremner, B. Garfield County 109034 Bremner, B. Garfield County 109036 Bremner, B. Garfield County 109027 Brock, T. and K. 109008 Brodie, M. 109026 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	109010	Bogosian, S.	Peninsula Gem and Geology Society Inc.
109034 Bremner, B. Garfield County 109036 Bremner, B. Garfield County 109027 Brock, T. and K. 109008 Brodie, M. 109026 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	15349	Bradus, R.	
109036 Bremner, B. Garfield County 109027 Brock, T. and K. 109008 Brodie, M. 109026 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	109011	Bremner, B.	Garfield County
109027 Brock, T. and K. 109008 Brodie, M. 109026 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	109034	Bremner, B.	Garfield County
109008 Brodie, M. 109026 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	109036	Bremner, B.	Garfield County
109026 Brown, J. 109029 Brown, W. and J. 2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	109027	Brock, T. and K.	
109029 Brown, W. and J. Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	109008	Brodie, M.	
2 Bubb, A. 107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	109026	Brown, J.	
107723 Buchanan, D. Southern California Friends of Mineralogy 108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	109029	Brown, W. and J.	
108999 Buchanan, D. Southern California Friends of Mineralogy Chapter 92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	2	Bubb, A.	
92724 Bunting, B. Kane County Conservation District 109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	107723	Buchanan, D.	Southern California Friends of Mineralogy
109012 Carson, K. Summit County Council 108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	108999	Buchanan, D.	Southern California Friends of Mineralogy Chapter
108985 Clarke, K. State of Utah - PLPCO 109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	92724	Bunting, B.	Kane County Conservation District
109044 Clarke, K. Public Lands Policy Coordinating Office 4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	109012	Carson, K.	Summit County Council
4569 Clayson, D. Kane County 82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	108985	Clarke, K.	State of Utah - PLPCO
82432 Coelho, S. 24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	109044	Clarke, K.	Public Lands Policy Coordinating Office
24324 CTVA Committee Capital Trail Vehicle Association 16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	4569	Clayson, D.	Kane County
16008 Congdon, S. 1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	82432	Coelho, S.	
1900 Cooper, S. 104217 Coury, Z. 100971 Cox, S.	24324	CTVA Committee	Capital Trail Vehicle Association
104217 Coury, Z. 100971 Cox, S.	16008	Congdon, S.	
100971 Cox, S.	1900	Cooper, S.	
	104217	Coury, Z.	
35471 Cremer-Vogel, K.	100971	Cox, S.	
	35471	Cremer-Vogel, K.	
109009 Croft, J.	109009	Croft, J.	
109021 Croft, N.	109021	Croft, N.	

Letter	Commenter	
Number	Last Name	Organization Name
17577	David, A.	
81852	Deschu, N.	
24329	Dodds, W.	
109032	Dvorak, G.	
4181	Erkiletian, K.	
109002	Esplin, T.	
83927	Fugere, L.	
108151	Fugere, L.	
104220	George, S.	Natural History Museum of Utah
108991	Gilberg, A.	
86343	Gorzalski, C.	Great Old Broads for Wilderness Southwest Utah Broadband
107622	Greene, M.	National Wildlife Federation
60560	Gregg, K.	
4570	Habbashaw, M.	Kane County
94173	Haley, J.	California Federation of Mineralogical Societies
94200	Hallanger, C.	
108990	Hand, S.	Willow Canyon Outdoor Company
82807	Hanson, N.	
102044	Hartman, N.	
102387	Hoekstra, A.	
93508	Holland, J.	
109015	Holland, J.	
109019	Holland, M.	
2527	Hora, E.	Utah State Historic Preservation Office
109013	Hoyt, T.	
2125	Hult, M.	
104894	Hunner, N.	
107658	J.A.	
81853	Jackson, J.P.	
108987	Muir, J.	International Dark-Sky Association
102788	Jauhola, C.	
108997	Jauhola, C.	
100974	Jorgensen, H.	
104146	Karath, L.	
86365	Kenney, A.	National Ocean Protection Coalition
4571	Kershaw, B.	Kane County
109028	Knudsen, J. and E.	
109043	Korenblat, A.	Western Spirit Cycling
8916	Lake, R.	

Letter	Commenter	
Number	Last Name	Organization Name
107557	Livermore, D.	The Nature Conservancy
108414	MacNulty, C.	National Parks Conservation Association
109039	Marienfeld, K.	Southern Utah Wilderness Association
108988	Marienfield, K.	Southern Utah Wilderness Alliance
21162	Martin, W.	
102521	McQueary, K.	Southern California Paleontological Society
92723	Meisenbach, D.	Canyonlands Conservation District
82512	Metcalf, M.	
94316	Miller, D.	
97067	Miller, G.	ECONOMIC ASSOCIATES OF UTAH, INC
82438	Murray, D.	Conservation Lands Foundation
104213	Oprandy, C.	
108989	Oprandy, C.	
81854	Owens, S.	
82950	Padgett, W.	
81855	Parkin, D.	
90941	Plazonja, A.	
108992	Poe, N.	Grand Staircase Escalante Partners
93704	Polly, P.	Society of Vertebrate Paleontology
106305	Potts, A.	
106687	Poulson, M.	
108996	Reetz, P.	
62633	Resident, E.	
4572	Reynolds, M.	Kane County
109035	Reynolds, M.	Kane County
97375	Rogers, G.	
67732	Roper, B.	
82831	Rubin, D.	Informal group of 25 property owners bordering ECU-KEPA lands
93347	Rubin, D.	
81856	Sabata, D.	
109003	Schaus, P.	
485	Schoenbrun, D.	
94307	Schoenhut, K.	Sierra Club
109024	Shelton, C.	
87638	Sjogren, M.	
109007	Smith, B.	
109025	Smith, S.	Utah/Arizona ATV Club
109020	Sorenson, C.	
109031	Spanne, L.	

Letter	Commenter	
Number	Last Name	Organization Name
81868	Spitzer, M.	MAC Movement and Tenant Union
107746	Stevenson, B.	
109006	Stevenson, B.	
90645	Stewart, G.	
109040	Strobel, P.	EPA, Region 8
92376	Swanson, F.	
60790	Terry, K.	
91141	Todd, R.	Maryland Ornithological Society
105008	Trimble, S.	
94281	Tupper, M.	
96360	Ursin, C.	
104989	W. A.	
2497	Wald, J.	
109030	Wallen, B.	
92988	Wentz, J.	Sabin Center for Climate Change Law, Columbia Law School
100982	Wenzel, J.	
109017	Weppner, W.	
100973	Westhoff, S.	
10	White, L.	
94869	Williams, L.	The Pew Charitable Trusts
104202	Wilson, J.	
101792	Wood, S.	

ATV = all-terrain vehicle; CTVA = Capital Trail Vehicle Association; EPA = U.S. Environmental Protection Agency; KEPA = Kanab-Escalante Planning Area; MAC = Monument Advisory Committee; PLPCO = Public Lands Policy Coordinating Office

Attachment B – Common Responses

Response Number	Response Text
Response A: Impact Analysis of Passive Management vs. Active Management	In certain cases, the analysis identifies natural processes that could affect resources (e.g., natural erosion impacts on paleontological resources). However in accordance with the BLM NEPA Handbook (H-1790-1), the analysis in the RMPs/EIS focuses on describing and comparing the direct and indirect effects of the management alternatives. As a result, the analysis generally does not compare impacts from natural processes and generally does not compare impacts from management not included in the alternatives. In response to this and other comments, the BLM has reviewed the analysis and addressed any perceived bias that "passive" management (e.g., natural degradation) is better than "active" or "proactive" management of resources and resource uses.
Response B: Range of Alternatives	The BLM considered a reasonable range of alternatives in compliance with NEPA, the BLM NEPA Handbook, the BLM Land Use Planning Handbook, and other applicable law, policy, and regulation. The BLM also considered the management opportunities presented in the Analysis of the Management Situation as well as the planning issues and criteria identified during the scoping process to develop a reasonable range of alternatives that respond to the purpose of and need for the RMPs. As a result, four management alternatives were analyzed in detail in the Draft RMPs/EIS. All of the alternatives analyzed in the RMPs/EIS would provide for the proper care and management of the monument objects and values identified in Presidential Proclamation 6920, as modified by Presidential Proclamation 9682. The BLM may select all of the management actions in a single alternative or elements of management actions presented in the range of alternatives when preparing the approved RMPs.
Response C: Proper Care and Management of Monument Objects	The RMPs/EIS include a reasonable range of alternatives that provide for the proper care and management of monument objects and values identified in Presidential Proclamation 6920, as modified by Presidential Proclamation 9682. Refer to Chapter 3 for the analysis of impacts on monument objects. The BLM added text to the analysis of impacts on monument objects in Chapter 3 to further demonstrate how all of the alternatives would ensure the proper care and management of monument objects. In addition, potential impacts on monument objects would be further analyzed during review of activity-and implementation-level proposals (e.g., site-specific projects).

Response Number	Response Text
Response D: Consistency with County Plans	Section 202(c)(9) of FLPMA requires that "land use plans of the Secretary under this section shall be consistent with state and local plans to the maximum extent he finds consistent with federal law and the purposes of this act." However, as indicated in the BLM's planning regulations, land use plans may be inconsistent with State, local, and tribal plans where necessary to meet the purposes, policies, and programs associated with implementing FLPMA and other Federal laws and regulations applicable to public lands. BLM regulations at 40 CFR 1506.2(d) require that EISs "discuss any inconsistency of a proposed action with any approved state or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law." In accordance with these requirements, the BLM has given consideration to State and local plans, such as Kane and Garfield Counties' plans, that are germane to the development of the Proposed RMPs/Final EIS. In addition, the BLM has worked closely with Kane and Garfield Counties, both of which are cooperating agencies, during preparation of the Proposed RMPs/Final EIS. Chapter 4 describes coordination that has occurred throughout the development of the Proposed RMPs/Final EIS. Pursuant to 40 CFR 1506.2(d), the BLM will discuss why any remaining inconsistencies between the Proposed RMPs/Final EIS and relevant State and local plans cannot be resolved in the Record of Decision for the Proposed RMPs/Final EIS. The BLM added Section 4.5 (Coordination and Consistency with Federal, State, and County Plans) to Chapter 4 of the RMPs/EIS describing consistency with county plans.
Response E: Ongoing Coordination (Cooperating Agencies, Tribes, Stakeholders)	As described in Section 4.3 (Consultation and Coordination) of the RMPs/EIS, the BLM has and will continue to coordinate with tribes, cooperating agencies (including State and local governments), and other stakeholders during land use planning, travel management planning, and future activity- and implementation-level actions and decisions.
Response F: Traditional Uses	The BLM considered traditional uses in the Planning Area in accordance with FLPMA, the BLM Land Use Planning Handbook (H-1601-1), and other guidance. The alternatives include a reasonable range of management actions providing for traditional uses, and the analysis assesses potential impacts on traditional uses.
Response G: Travel Management Planning	The range of alternatives analyzed in the RMPs/EIS include OHV area designations. In addition, the RMPs/EIS identify and analyze three implementation-level route designations based on specific issues identified by cooperating agencies during the land-use planning process. Refer to Appendix K for a description of these routes and refer to Appendix K and Chapter 3 for analysis of these proposed route designations. All other route designations and route- or trail-specific proposals would be considered during a future implementation-level travel management planning process.

Response Number	Response Text
Response H: Programmatic vs. Site-Specific Environmental Analysis	Land use plan-level analyses for programmatic (i.e., non-implementation) decisions are typically broad and qualitative rather than quantitative or focused on site-specific actions (BLM Land Use Planning Handbook H-1601-1, Chapter II, A-B at 11-13 and Chapter IV, B at 29). As indicated in the BLM's Land Use Planning Handbook, H-1601-1, "A land use planning-level decision is broad in scope and, therefore, does not require an exhaustive gathering and monitoring of baseline data or site-specific analysis of potential impacts." Programmatic or RMP-level analysis addresses impacts from RMP-level decisions, which are decisions set forth to achieve the goals and objectives of a specific program area within the RMPs. The Draft RMPs/EIS provided information to aid in determining whether to proceed with the Preferred Alternative or make a reasoned choice among the other alternatives in a manner such that the public could have an understanding of the environmental consequences associated with the alternatives, in accordance with 40 CFR 1502.1. The BLM will conduct appropriate site-specific environmental analysis for other activity- and implementation-level activities and decisions that were not identified in the RMPs/EIS. The site-specific environmental analysis will provide opportunities to identify and mitigate potential impacts associated with future projects, and will provide appropriate opportunities for the public to participate.
Response I: Data Quality Act	Departmental policy related to the Data Quality Act provides that requests for corrections of information in the Draft RMPs/EIS will be treated as a comment on the draft document, rather than as a challenge to the quality of disseminated information under the Data Quality Act, and the agency response will be incorporated into the response to comments in the Proposed RMPs/Final EIS. In this case, the BLM developed alternatives and conducted analysis using the using the best information available related to this resource in full compliance with NEPA, FLPMA, the BLM Land-Use Planning Handbook (H-1601-1), and other applicable guidance. If possible, the BLM should respond to the allegation regarding science on the merits (e.g., why it is the best available science, or is not flawed for the reason the commenter alleges). In order to trigger the agency's review procedures under the BLM's Information Quality Guidelines, the commenter must submit the following information outside of the NEPA process: (1) a specific reference to the information being challenged; (2) a statement specifying why the complainant believes the information fails to satisfy the standards in the BLM, Department of the Interior, or Office of Management and Budget guidance; (3) how a complainant is affected by the challenged information; and (4) the name and address of the person filing the complaint.
Response J: R.S. 2477	The State of Utah and counties may hold valid existing ROWs in the Planning Area pursuant to R.S. 2477, Act of July 28, 1866, Chapter 262, 8,14; Stat. 252, 253, codified at 43 United States Code 932. Congress repealed R.S. 2477 through passage of the FLPMA of 1976. R.S. 2477 rights are determined through a process that is entirely independent of the BLM's travel management planning process. These RMPs are founded on an independently determined purpose and need that is based on resource uses and associated access to public lands and waters. These RMPs are not intended to provide any evidence bearing on or addressing the validity of any R.S. 2477 assertions and do not adjudicate, analyze, or otherwise determine the validity of claimed ROWs. Nothing in these RMPs extinguishes any valid ROW, or alters in any way the legal rights the State and counties have to assert and protect R.S. 2477 rights or to challenge in Federal court or other appropriate venue any use restrictions imposed by the plans that they believe are inconsistent with their rights. At such time as an administrative determination acknowledges a ROW or a binding judicial decision confirms a ROW, the BLM will adjust its travel management plan accordingly if necessary.

Response Number	Response Text
Response K: Best Available Information	As required by the BLM Land Use Planning Handbook, H-1601-1 (p. 2), the BLM developed alternatives and conducted analyses using the best information available. Based on comments submitted by the public and new information available since publication of the Draft RMPs/EIS, information in the Proposed RMPs/Final EIS has been updated, as necessary.
Response L: ACEC Criteria Discretion	Manual 1613 provides the BLM with significant discretion to determine whether a value or resource satisfies the criterion for relevance and importance. This includes significant discretion to determine whether an area has more than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource. The BLM developed an appropriate range of alternatives, which were considered in informing the decision on whether an ACEC designation was required to protect the identified relevance and importance values in each area. The BLM revised Appendix S (<i>Areas of Critical Environmental Concern</i>) to further describe the BLM's process for evaluating nominated ACECs and to provide more information on assessing relevance and importance criteria.

ACEC = Area of Critical Environmental Concern; BLM = Bureau of Land Management; CFR = Code of Federal Regulations; EIS = Environmental Impact Statement; FLPMA = Federal Land Policy and Management Act; NEPA = National Environmental Policy Act; OHV = off-highway vehicle; R.S. = Revised Statute; RMP = Resource Management Plan; ROW = right-of-way;