U.S. Department of the Interior Bureau of Land Management, Price Field Office and U.S. Department of Agriculture Fishlake and Manti La-Sal National Forests

(Co-Leads)

and

U.S. Department of the Interior Office of Surface Mining Reclamation and Enforcement (Cooperating Agency)

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South Fork Federal Coal Lease Modifications UTU-84102 and U-63214 Environmental Assessment

Location: Sevier County, Utah

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APPENDICES

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	Acronym Definition
ARMP	Approved Resource Management Plan
BLM	Bureau of Land Management
Btu	British thermal unit
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH ₄	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO ₂ e	CO ₂ equivalent
COA	Conditions of approval
DEQ	Department of Environmental Quality
DAQ	Division of Air Quality
DOGM	Division of Oil, Gas, and Mining
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FONSI	Finding of No Significant Impact
HAPs	Hazardous Air Pollutants
IWG	Interagency Working Group
LRMP	Land and Resource Management Plan
M&RP	Mining and Reclamation Plan
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System

Acronyms and Abbreviations

O ₃	ozone
OSMRE	Office of Surface Mining Reclamation and Enforcement
PM	particulate matter
PM ₁₀	particulate matter with a nominal diameter of 10 microns or less
PM _{2.5}	particulate matter with a nominal diameter of 2.5 microns or less
ROD	Record of Decision
SCC	social cost of carbon
SF ₆	sulfur hexafluoride
SO_2	sulfur dioxide
TBtu	trillion British thermal unit
UDAQ	Utah Division of Air Quality
UPDES	Utah Pollutant Discharge Elimination System
U.S.C.	U.S. Code
VOCs	volatile organic compounds

1.1 Introduction

This Environmental Assessment (EA) has been prepared to analyze and disclose the potential environmental impacts of the USDA Forest Service consent to, and the BLM Utah State Office modifying federal coal leases UTU-84102 (Greens Hollow Lease) and U-63214 (Quitchupah Lease), hereafter referred to as South Fork Federal Coal Lease Modifications (lease modifications), held by Canyon Fuel Company, LLC. These lease modifications are located in the Wasatch Plateau Coal Field of Sevier County, Utah and are composed of National Forest System (NFS) lands managed by the U.S. Department of Agriculture, Forest Service, Fishlake and Manti-La Sal National Forests; and federal coal resources managed by the U.S. Department of the Interior, Bureau of Land Management (BLM), Price Field Office.

This EA is a site-specific analysis of potential impacts from the implementation of the Proposed Action (lease modifications) and the No Action Alternative. The EA is written to comply with the National Environmental Policy Act (NEPA), and assist in making a determination as to whether any significant impacts could result. Significance is defined by the Council on Environmental Quality (CEQ) regulations for implementing NEPA found in 40 Code of Federal Regulations (CFR) 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) and potential BLM Decision Record and FS Decision Notice. The BLM and Forest Service will evaluate the impacts and public comment and make their respective decisions.

If the lease modifications are approved, and before any underground mining may occur in the modification areas, Canyon Fuel Company must submit a modification to their existing Mining and Reclamation Plan (M&RP) to the Utah Division of Oil, Gas, and Mining (DOGM) for approval. The Office of Surface Mining Reclamation and Enforcement (OSMRE) will also evaluate the Permit Application Package to assess if a federal mining plan is also required. If OSMRE determines that a mining plan decision document is necessary, OSMRE is the agency responsible for making a recommendation to the United States Department of the Interior Assistant Secretary for Land and Minerals Management (ASLM) to approve, disapprove, or approve with conditions the proposed mining plan modification.

1.2 Background

On May 3, 2017, Canyon Fuel Company submitted a request (Canyon Fuel Company, 2017) to the BLM to modify the lease boundaries for the Greens Hollow and Quitchupah Federal Coal Leases (UTU-84102 and U-63214, respectively). The lease modifications (i.e., the South Fork Federal Coal Lease Modifications) are adjacent to existing leased areas currently being mined from the Sufco Mine, and include an estimated 6.25 million tons of recoverable federal coal resources. On April 4, 2018 Canyon Fuel Company (Canyon Fuel Company, 2018) submitted a request to revise the acreage and legal descriptions between the two leases. The request doesn't alter the perimeter of the tract identified in the May 3, 2017 application.

No surface disturbing activity or subsidence are foreseen in the modification areas.

On August 16, 2017, the BLM determined that the proposed lease modifications qualify under BLM regulations (43 CFR § 3432.2(a)) because 1) they serve the interest of the U.S. in the conservation of the resource by avoiding wasting coal and the loss of royalties, 2) there is no competitive interest in the lands or deposits, and 3) the lands or deposits cannot be developed as part of another potential or existing independent operation (BLM, 2017). The BLM formally requested Forest Service consent to the modifications on May 23, 2017.

The Sufco Mine is an underground coal mine that has operated since 1941. Underground coal mining is conducted via longwall mining methods, supported by continuous miners. If the lease modifications are approved, coal obtained from them would be mined as part of the existing Sufco Mine. Mining would likely be initiated as soon as the lease modifications are obtained and the required mining and reclamation permits are approved.

The lease modifications are being processed according to the BLM regulations at 43 CFR 3432, and are considered noncompetitive leasing actions. The Energy Policy Act of 2005, established that the holder of a federal coal lease may apply to modify a lease by adding up to 960 acres, as long as the "parent" lease is at least 960 acres. Canyon Fuel Company's application, for two contiguous modifications is for a total of 790 acres. The BLM, charged with administration of the mineral estate of these federal lands, is required by law to consider leasing federally-owned minerals for economic recovery. The Federal Land Policy and Management Act of 1976 states that public lands shall be managed in a manner that recognizes the nation's need for domestic sources of minerals (43 U.S. Code (U.S.C.) 1701(a)(12)).

1.3 Purpose and Need for the Proposed Action

The BLM and the Forest Service have identified a need to carry out their statutory and regulatory responsibilities in the federal coal program and are responding to a request to modify two existing federal coal leases. The agencies have a need to consider issuing the two coal lease modifications for federal coal lands immediately adjacent to existing federal coal leases UTU-84102 and U-63214, under the Mineral Leasing Act of 1920, as amended by the Federal Coal Leasing Amendments Act of 1976, and the Energy Policy Act of 2005, according to the regulatory process in 43 CFR 3432.

The purpose of the agencies actions is to implement direction in the applicable land management plans with respect to coal resource management. This direction is described below in Section 1.4.1 for the BLM, and Section 1.4.2 for the Fishlake and Manti-La Sal National Forests.

Additional purposes of the federal agencies' actions are to facilitate recovery of federal coal resources in an environmentally sound manner (30 U.S.C. 1265(b)(1)), to carry out the federal government's policy in the Mining and Minerals Policy Act of 1970, and to foster and encourage private enterprise in the development of economically sound and stable industries to help assure satisfaction of industrial, security and environmental needs. The lease modifications are to ensure that compliant and super-compliant coal reserves are recovered and not bypassed.

1.4 Conformance with Land Use Plans

To be approved, the lease modifications must comply with agency policies, plans, and programs. The applicable BLM and Forest Service planning guidance is provided below.

1.4.1 BLM

The BLM Price Field Office ARMP was approved in October 2008. The ARMP guides land use on federal lands. The goals, objectives, actions, standards, and guidelines for the development of mineral resources consistent with other resources and uses are part of an ecologically healthy ecosystem. The ARMP includes goals and actions that recognize Tribal treaty rights and Tribal involvement in resource and resource use decisions including lands and realty, soil and water, vegetation, and fish and wildlife.

Operational standards and guidelines for minerals and energy apply during implementation of approved actions. Government-to-government consultation occurred and Canyon Fuel Company's M&RP has been reviewed relative to the ARMP (BLM, 2008) and is consistent with the management direction. No amendments to the ARMP are needed to make the M&RP consistent with the ARMP. The ARMP discusses conformance with coal leasing on page 123 under MINERALS AND ENERGY RESOURCES 9MIN); LEASABLE MINERALS (MLE), MATERIALS (MSA). In addition, the ARMP states on page 125 that "coal will be available for further leasing consideration" under MLE-2, MLW-3, and MLE-4, assuming there is no conflict or unsuitability restriction.

The ARMP conforms to the planning regulations and guidance of the Federal Land Policy and Management Act of 1976 and the BLM's Land Use Planning Handbook, H-1601-1.

1.4.2 Forest Service

The Fishlake and Manti-La Sal National Forests' Land and Resource Management Plans (LRMPs) were both approved in 1986. The proposed lease modifications lie within management areas, and areas determined to be acceptable for further consideration for coal leasing. As required by 43 CFR 3461 and the LRMPs, an Unsuitability Analysis was conducted as part of this review for the lease modifications. This analysis determined that the area is not unsuitable for leasing; this analysis is available in the project record.

Goals in the Fishlake National Forest LRMP for minerals are:

- Protect surface resources and environmental quality;
- Encourage mineral exploration, development, and extraction consistent with management of surface resources;
- Coordinate minerals management with state and other federal agencies; and
- Inventory geologic hazards and ground water resources.

The lease modifications are in Management Prescription Area 6-B (emphasis on livestock grazing). There are no specific management standards for minerals management in this prescription (Forest Service, 1986a).

Goals in the Manti-La Sal National Forest LRMP for minerals and geology are:

- Provide for the interpretation of surface and subsurface geologic conditions and processes such as landsliding;
- Manage geologic resources, common variety minerals, ground water, and underground spaces (superficial deposits, bedrocks, structures, and process) to meet resource needs and minimize adverse effects.
- Provide appropriate opportunities for and manage activities related to locating, leasing, exploration, development, and production of mineral and energy resources; and
- Ensure that adequate reclamation of disturbed areas is accomplished.

General LRMP direction is that leasing may be limited where certain conditions occur (potential degradation of water quantity or quality, impairment of the quality of recreation, presence of National Recreation Trails, unacceptable impacts on wildlife and fish, operations that could aggravate land instability, the need for coal cannot be demonstrated, unacceptable impacts on communities or unacceptable or unstable traffic flows) (Forest Service, 1986b). As demonstrated in this analysis and in the project record, none of these conditions apply.

For additional information about compliance with the LRMPs, see Section 1.8 Conformance with Land Use Plans in the Final Supplemental Environmental Impact Statement for the Greens Hollow Federal Coal Lease Tract (BLM and Forest Service, 2015). This information is applicable to the Quitchupah lease modification.

1.5 Decisions to be Made

To approve the Proposed Action under the Mineral Leasing Act of 1920, as amended by the Federal Coal Leasing Amendments Act of 1976, and the Federal Land Policy and Management Act of 1976, the BLM State Director will decide:

- Whether or not to approve, approve with modifications, or deny a modification of existing Federal Coal Leases UTU- 84102 and U-63214.
- Whether or not the lease modifications would facilitate managing the public lands "in a manner which recognizes the nation's need for domestic sources of minerals (43 USC 1701(A) (12)).
- Based on Forest Service consent, what conditions (special lease stipulations) must be applied to the lease to protect non-mineral surface resources.

Under authorities established in the Mineral Leasing Act of 1920, as amended by the Federal Coal Leasing Amendments Act of 1976 and Energy Policy Act of 2005, the Fishlake and Manti-La Sal National Forest Supervisors will jointly decide:

- Whether or not to consent to the modification of two Federal Coal Leases to include a total of 790 additional acres to the existing leases (620 acres to UTU-84102 and 170 acres to U-63214); and
- If consent to modify the leases is given, prescribe stipulations needed for the protection of nonmineral surface resources by determining if the existing stipulations on the parent lease are sufficient. If the parent lease stipulations are not sufficient, the Forest Service will prescribe

additional stipulations that will provide for the protection of non-mineral resources in the National Forest lands.

The Forest Supervisors will determine if the activity, with the addition of stipulations, provides for protection of non-mineral resources related to their authorities consistent with the Fishlake and Manti-La Sal National Forest LRMPs, and other applicable laws, regulations, and policies, and will advise the BLM if there are any significant, recreation, timber, economic, or other values which may be incompatible with leasing the subject lands.

1.6 Relationship to Statutes, Regulations, or Other Plans

The lease modifications would be processed and evaluated under the BLM and Forest Service statutory mandates and authority governing federal coal leasing and other federal authorities listed below:

- Mineral Leasing Act of 1920, as amended
- Federal Coal Leasing Amendments Act of 1976
- Multiple-use Sustained Yield Act of 1960
- Federal Land Policy and Management Act of 1976
- Energy Policy Act of 2005
- National Environmental Policy Act
- Implementing regulations at 43 CFR 3400

The BLM regulates coal mining operations to ensure that maximum economic recovery of the coal resource is achieved (43 CFR 3480), while maintaining compliance with other applicable laws and regulations.

The proposed lease modifications recover federal coal resources underlying the Fishlake and Manti-La Sal National Forests. In addition to the federal authorities listed above, management of these lands is guided by the National Forest Management Act of 1976 through the Fishlake and Manti-La Sal National Forest LRMPs (see Section 1.4).

Based on Forest Service consent and recommendations on the findings below, the Secretary of the Interior (represented by the BLM Deputy State Director for Energy, Lands, and Minerals) makes the determination on whether there are significant, recreation, timber, economic, or other values which may be incompatible with leasing the lands in question, and whether or not to modify the leases. The BLM could then modify the existing leases by adding acreage to them.

If the lease modifications are approved, Canyon Fuel Company must obtain mine plan approval and a permit to conduct coal mining operations before mining can begin on the lease modifications. If the lease modifications are approved, Canyon Fuel Company will initiate permit modification review with the Utah DOGM and the OSMRE under the Surface Mining Control and Reclamation Act of 1977, the Utah Coal Rules, and requirements at 30 CFR Part 700.

1.7 Scoping

Scoping is the process by which the federal agency with NEPA oversight solicits internal and external input on the issues, impacts, and potential alternatives that are to be addressed in the EA. Projects implementing the LRMP are also subject to the regulation at 36 CFR 218, which requires public notice. The Fishlake and Manti-La Sal National Forests notified the public and solicited comments on the Proposed Action as described below from other public agencies, tribal governments, adjacent property owners, interest groups, and Forest Service specialists.

1.7.1 Public Scoping

Public comments were solicited on the Proposed Action. The public scoping served as the notice and comment period for the South Fork Federal Coal Lease Modifications beginning on September 7, 2017, and finishing on October 10, 2017. A public notice was published in the *Richfield Reaper* and *Sun Advocate* newspapers, on the BLM eplanning website (https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId= 89382&dctmId=0b0003e880fa638c), and in the Forest Service Schedule of Proposed Actions (https://www.fs.fed.us/sopa/components/reports/sopa-110408-2017-10.html). The notices included information on accessing the Scoping Notice. The Scoping Notice was also mailed to interested organizations and individuals. The notices requested the public to review the proposal and submit comments within the 30-day public notice and comment period. Public scoping letters were sent to about 60 recipients, which included government entities, private companies, non-government organizations, and landowners. Three parties provided written feedback. The interdisciplinary team assigned to this project reviewed the comments to identify site specific natural resource issues, which are discussed in Section 1.8.

All letters and comments received on the proposal are part of the project record and are in the project file. A review of the comment letters and associated responses are included in Appendix B.

1.7.2 Internal Scoping

A Forest Service interdisciplinary team with specialists from the Fishlake and Manti-La Sal National Forests, representatives from cooperating agencies and the two Forest Supervisors identified the issues that would be carried forward for detailed analysis in Chapter 3 of this EA.

1.8 Issues

An issue is a point of debate, dispute, or disagreement regarding anticipated effects of implementing the proposed action. CEQ regulations at 40 CFR §1500.4 and 1501.7 require that the EA focus on issues that are key to the proposed action. Key issues are directly or indirectly caused by the proposed action and may lead to the development of alternative actions or other mitigation.

Non-key issues are defined as being: 1) outside the scope of the project; 2) already decided by law, regulation, or policy; 3) irrelevant to the decision; or 4) conjectural and not supported by scientific or factual evidence. Issues were identified based on the scoping process described above. These issues were categorized as key issues based on the CEQ regulations.

Based on the agencies' responses as documented in the Resource Specialist Checklist (in the project record) and Response to Comments document (Appendix B), the issues being carried forward in this EA for analysis are associated with resources that may be affected by the proposed action. Additionally, the rationale for not carrying concerns forward for detailed analysis in this EA are also

documented in the Resource Specialist Checklist and Response to Comments document.

The following issues are being carried forward for analysis in this EA:

- Approval of these lease modifications may result in adverse impacts to air quality (Section 3.3)
- Approval of these lease modifications may result in adverse impacts from increased greenhouse gases (Section 3.4)
- Approval of these lease modifications may result in adverse impacts to water resources (Section 3.5)

CHAPTER 2 ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Introduction

This EA analyzes the potential impacts of implementing the Proposed Action and the No Action Alternative. The No Action Alternative is considered and analyzed to provide a baseline against which to compare the impacts of the Proposed Action. No other alternatives were brought forward for detailed analysis (see Section 2.4).

2.2 Proposed Action

Proposed Action Type and Location: The Forest Service proposed action is to consent to the BLM modifying federal coal leases UTU-84102 (Greens Hollow Lease) and U-63214 (Quitchupah Lease), held by Canyon Fuel Company. The Forest Service also proposes to require the parent lease stipulations from the Greens Hollow and Quitchupah Leases (Appendix A) with modifications to Stipulation #18 of the Greens Hollow Lease and Stipulation #17 of the Quitchupah Lease. These modifications include protection for spring sources within the project area.

Based on Forest Service consent the BLM proposed action is to approve the coal lease modifications submitted as described in the application letter (Canyon Fuel Company, 2017).

The modifications of these leases could result in the underground mining of approximately 6.25 million tons of coal in approximately 790 acres of federal coal lands (Figure 1). No new surface facilities are proposed nor are any surface disturbances foreseen.

Lease UTU-84102 in Township 21 South, Range 4 East, Salt Lake Base and Meridian:

All or parts of Sections 11, 14, 15, 22, and 23 - containing 620 acres, more or less

Lease U-63214 in Township 21 South, Range 4 East, Salt Lake Base and Meridian:

All or parts of Sections 22 and 23 - containing 170 acres, more or less.

Applicant: Canyon Fuel Company, LLC, 225 North 5th Street, Suite 900, Grand Junction, CO 81501.

In addition to the federal coal in the leases modifications, approval of the leases modifications would facilitate the recovery of 2.3 million additional tons of federal coal from the existing leases that would otherwise be bypassed (hereafter referred to as bypass coal) (Canyon Fuel Company, 2017). Recovering these coal resources was previously analyzed and approved in the Greens Hollow Federal Coal Lease Tract UTU-84102 Final Supplemental EIS (FSEIS) (BLM and Forest Service, 2015) and the Quitchupah Federal Coal Lease Tract U-63214 Environmental Assessment (BLM and Forest Service, 1988). The Greens Hollow FSEIS is incorporated by reference.

If mining begins upon approval of the lease modifications and associated DOGM permit, the modification areas and the bypass coal that would be accessed (a combined total of 8.55 million tons of coal) represents about 1.5 years of additional mine life.



Figure 1. Project Location

2.3 No Action Alternative

Under the No Action Alternative, the BLM would not approve the lease modifications and the Forest Service would not consent to the lease modifications. Both decisions would have the same result, the lease modifications would not be approved, and therefore subsequent recovery of the coal resources would not occur. An estimated 6.25 million tons of federal coal in the modification area would not be recovered, and an additional 2.3 million tons of federal coal in existing leases would be bypassed. Mine life of the Sufco mine would not realize a potential of 1.5 additional years.

Mining operations currently approved at the Sufco Mine, including mining the Greens Hollow Lease, would follow Utah DOGM approved M&RP and Mining Plan, including environmental protection measures and reclamation as described in Section 2.2.

2.4 Alternatives Considered, but Eliminated From Further Analysis

Federal agencies are required by NEPA to "rigorously explore and objectively evaluate all reasonable alternatives" to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). For an EA where there are not unresolved conflicts with respect to alternative uses of available resources, only the Proposed Action requires consideration (Forest Service 2010). Other alternatives do not need to be analyzed. The following alternatives were considered, but not studied in detail for the reasons summarized below:

- An alternative was suggested in public comments to transition the Sufco mine away from coal. This alternative was not considered in detail because it does not meet the purpose and need identified in Section 1.3.
- An alternative was suggested by public comment to consider mitigation measures to offset the climate and environmental impacts of additional coal. This would include offsetting carbon dioxide emissions with renewable energy. Development of renewable resources would not meet the purpose and need identified in Section 1.3. Mitigation from coal combustion at a power plant is not within the scope of the analysis for a lease modification decision.
- An alternative was suggested to limit the amount of coal or acreage to be mined to lower levels than are currently proposed, such as leasing only enough to meet domestic needs. This alternative was not considered in detail because it would not meet the purpose and need and would be inconsistent with the Mineral Leasing Act and the LRMPs (see Sections 1.3, 1.4, and 1.6).

CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This chapter presents the existing environment and the environmental consequences on resources that could be affected by the Proposed Action and No Action Alternative. Environmental data collected on the lease modifications was used to describe the affected environment and to evaluate environmental effects. The analysis is intended to allow comparison of alternatives and to provide a method to determine whether activities proposed would be expected to comply with applicable federal, state, and local regulations.

The analysis of the impacts is based on the scope of the project, which will include about 1.5 years of underground mining of 8.55 million tons of coal (in the lease modifications and bypass coal), and above ground processing, and shipping operations at a currently operating facility. No additional surface disturbance would be required to conduct activities and recover the coal.

The impacts from current mining operations and cumulative impacts are largely described in the Greens Hollow FSEIS (BLM and Forest Service, 2015), which is incorporated by reference.

The Sufco Mine's ongoing mining operations are conducted according to its current Mine and Reclamation Plan (M&RP) approved by the Utah DOGM. The M&RP identifies environmental protective measures taken to minimize or eliminate the impacts. This information can be found in the form of performance standards, operating plans, reclamation plans, revegetation, protection of values, monitoring, and design criteria in Volumes 2 and 3, on Utah DOGM's website at: https://fs.ogm.utah.gov/FILES/COAL/MRPS/SUFCO%20041002/.

Table 1 and Table 2 show the recent production and where coal destined for power plants was shipped in the recent past. Coal that was not shipped to power plants was shipped to other U.S. industrial sites (Drysdale, 2018). In 2015 and 2016, all of the coal from the Sufco Mine was consumed in the U.S.

	2015ª	2016 ^a	2017 ^b
Production (short tons)	6,024,483	5,375,171	5,303,004
Average Number of Employees	369	370	

Table 1. Annual Coal Production and Average Number of Employees at the Sufco Mine

Sources:

a (EIA, 2016a)

b (Hansen, 2018)

Table 2. Shipments from	Sufco Mine to U.S.	Power Plants	(short tons)

Plant	2015 ^a	2016 ^a	2017
Hunter (including sales reported as Hunter Prep Plant)	2,351,159	2,064,744	2,379,466
Huntington	1,042,569	984,094	112,942
Intermountain Power Project	1,957,865	1,902,571	1,797,596
Total Shipped to Power Plants	5,351,596	4,951,409	4,290,004

Plant	2015 ^a	2016 ^a	2017
Not shipped to Power Plants ¹	672,887	423,762	1,593,971
Percent (%) of Sufco Coal Shipped to U.S. Power Plants	89%	92%	73%

Sources:

a (EIA, 2016b; Drysdale, 2018)

b (Hansen, 2018)

1 Mine production and shipments may not zero out for 2017 due to coal mined one year and shipped another year).

3.1.1 Effects Determinations

In finding whether potential environmental impacts are significant or not, the responsible officials will consider the context and intensity (40 CFR 1508.27). The terms used below in the conclusions for the impacts analysis are defined as:

Context

- Localized: Changes are perceived at the location of the activity, but dissipate beyond the local setting.
- **Regional:** Changes are perceived at a county level.
- Short-term: Changes occur at a site from a specific activity, for the duration of that activity.
- Long-term: Changes remain beyond the end of a specific activity.

Intensity

- No Impact: No change in current activities or ongoing effects.
- **Negligible:** Effects of activities would be so small as to not be detectable, resulting in no perceptible change in ambient conditions.
- **Minor:** Effects from activities would show a change from current conditions, but would be clearly below regulatory or permitted standards.
- **Moderate:** Effects from proposed activities would show a larger change from current conditions, which are very close to regulatory or permitted standards.
- **Major:** Effects from proposed activities would be detectable at a regional scale, a large enough increase in effects would require controls or mitigation to be implemented to meet regulatory or permitted requirements.

3.2 Past, Present, and Reasonably Foreseeable Actions

The BLM, Price Field Office and Forest Service, Fishlake and Manti-La Sal National Forests recently completed the analysis for the Greens Hollow FSEIS, immediately adjacent to the South Fork Federal Coal Lease Modifications area. The analysis documented in the Greens Hollow FSEIS is incorporated by reference, and the analysis for the South Fork Federal Coal Lease Modifications is tiered to the Greens Hollow FSEIS cumulative impacts analysis.

The primary past and present actions that would affect the resources analyzed in this EA are mining operations, exploration drilling operations, and livestock management. If the lease modifications are approved, coal would be mined using existing facilities and processes. No subsidence is foreseen as

documented in the project record. The reasonably foreseeable actions are decisions, funded projects, or formal proposals that are either existing or are highly probable, based on known opportunities or trends. The BLM Price Field Office and Forest Service Fishlake and Manti-La Sal National Forests have identified reasonably foreseeable actions within the cumulative impacts analysis areas identified below. Table 3 lists the past, present, and reasonably foreseeable actions in the cumulative impacts analysis areas.

Actions	Dates	Residual, Current, and Future Effects
Oil and gas leases that have been developed and are producing	Ongoing	Closest is more than 20 air miles from SUFCO portal. Fewer than 10 pads exist and methane gas flaring doesn't occur.
Vent fan operating in the North Fork of Quitchupah	1996 to	Fan site includes 0.70 acres of disturbance.
Canyon.	present	Continual noise is produced by the fan.
Greens Hollow Lease UTU-84102	2018	Emissions consistent with current air permit approval. The total greenhouse gas emissions from coal combustion is estimated at 191.8 million metric tons. Mercury emissions from power plants are within regulated standards. Mining of coal lease with 56.6 million tons of recoverable coal. Mine life extension of 9 to 10 years
Link Canyon power line and substation.	2000 to present	Current facility includes 0.25 acres of disturbance.
Link Canyon intake ventilation breakout and	2003 to	Current structure encompasses 0.38 acres of
access.	present	disturbance.
Vehicle (passenger, off-highway vehicle, snowmobile) access for Christmas tree cutting, firewood gathering, grazing management, mining, recreation, hunting, timber and private land access.	Ongoing	Emissions from vehicles.
Seven exploratory drill holes to determine geologic factors. Drill holes would be considered a cumulative action since their authorization occurs independently.	Future	Each drill pad is approximately 0.006 acres for a total permitted disturbance of 0.042 acres. In sensitive areas or areas of extreme terrain, helicopter assisted drilling may be used. Drill holes will be plugged, reclaimed, and revegetated. Exposed soil that could contribute particulate matter would be short-term until the pads are revegetated, generally 1-2 years for complete cover.
Vehicle access and road use for construction and maintenance of an electrical power line to supply the Sufco Mine and the vent fan. Access would be via existing National Forest System roads (no new road construction).	Future	Emissions from vehicle access to the vent shaft site(s) would be required on a daily basis.
3 Right 4 East Panel Amendment (Quitchupah Lease) (received by Utah DOGM January 24, 2017). Includes mining part of the Quitchupah Lease which was previously approved but not	2017- 2021	Emissions from 2.01 million tons of coal mined, transported, and combusted.

|--|

Actions	Dates	Residual, Current, and Future Effects
mined. The panel orientation has been modified. No		
additional surface disturbance would occur.		
4 Right 4 East Panel Amendment (received by Utah	2017-	Emissions from 1.67 million tons of coal mined,
DOGM October 26, 2017). Includes mining part of	2021	transported, and combusted.
the Quitchupah Lease which was previously		
approved but not mined. No additional surface		
disturbance would occur.		

3.3 Issue 1 – Approval of the lease modifications may result in adverse impacts to air quality

The state of Utah has delegated authority to regulate sources of air pollution to protect public health and welfare through enforcing compliance with the national ambient air quality standards. There are no additional county or local air quality requirements. Sufco Mine operates under Utah DEQ-DAQ Approval Order DAQE-AN106650014-13. The calculated or measured concentrations of pollutants are compared to established standards to evaluate the impact of a source and to evaluate the regional air quality.

Additionally, the Clean Air Act gives federal land managers of Class I areas, the closest of which is Capitol Reef National Park, an affirmative responsibility to protect the Class I areas from effects of anthropogenic air pollution.

Air quality is determined by the topography, meteorology, location of air pollutant sources; and type, quantity, and combination of air pollutants. The scope of the analysis and the analysis area for air quality includes the stationary and mobile sources, and potential receptors.

3.3.1 Existing Conditions

3.3.1.1 Criteria Pollutants

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare for six pollutants known as criteria pollutants. When an area exceeds the NAAQS, that area may be designated as a "nonattainment" area and the state develops an enforceable state implementation plan with measures to bring the area back into compliance. The Sufco mine area is not within the boundaries of any nonattainment areas. Since the state does not maintain ambient air quality monitors close to the mine, the triennial emissions inventory provides the best information about emissions that may affect air quality in the area. Table 4 presents the results from the 2014 statewide emissions inventory (most recently available) for Sevier, Sanpete, and Emery counties, Utah.

Table 4. 2014 Triennial Emissions Inventory (Tons per Year) for Sevier, Sanpete, and EmeryCounties, Utah

County	CO	NOx	PM ₁₀	PM _{2.5}	SO ₂	VOCs
Sevier County	9,058	2,012	7,512	1,092	36	16,843
Sanpete County	6,847	1,175	5,430	813	14	14,835

County	CO	NOx	PM ₁₀	PM _{2.5}	SO ₂	VOCs
Emery County	17,837	20,403	5,146	1,250	6,427	36,041

Source: (DEQ, 2014a)

 $PM_{10} = particulate matter with a nominal diameter of 10 microns or less$

 $PM_{2.5}$ = particulate matter with a nominal diameter of 2.5 microns or less

This emissions inventory includes the permitted emissions from the Sufco Mine as detailed in Table 5. Sufco Mine's air quality permit - Utah DEQ-DAQ Approval Order DAQE-AN106650014-13 (DEQ-DAQ, 2013) - is based on production of up to 10 million tons of coal per year, although annual coal production at the Sufco Mine recently averaged 5.6 million tons per year (based on Table 1).

Table 5. Sufco Mine Permitted Emissions per Year from Mining Operations

Pollutant	CO	NOx	PM ₁₀	PM _{2.5}	SO ₂	VOCs
Emissions (tons per year)	15.59	65.70	20.29	10.15	5.25	4.83

Source: (DEQ-DAQ, 2013)

3.3.2 Direct and Indirect Impacts of the Proposed Action Alternative

Issue #1 will be analyzed using the following measures:

- Emissions of criteria pollutants from mining operations;
- Emissions of criteria pollutants from the transportation of coal;
- Emissions of criteria pollutants from the combustion of 8.55 million tons of coal;
- Emissions of mercury and selenium;
- Fugitive Dust Impacts; and
- Impacts to Class I Areas.

3.3.2.1 Criteria Pollutants

The Utah DEQ-DAQ Approval Order DAQE-AN106650014-13 (DEQ-DAQ, 2013) identifies the potential to emit the following criteria pollutants: PM₁₀, PM_{2.5}, SO₂, NO_X, CO, and VOCs. The following discussion addresses direct air quality emissions resulting from the criteria pollutants associated with the Proposed Action.

The Proposed Action would use the existing surface facilities and coal movement operations at the Sufco Mine. The Utah DEQ-DAQ approved annual emission rates for the current Sufco Mine operations are presented in Table 5.

Emissions from Mining Operations

The operational limits of emission sources include:

- Sufco Mine coal mining and preparation facility;
- H.B. Smith coal-fired hot water heater rated at 1,584,000 Btu, fueled by coal;

- Two Landa heated hot water pressure washers, model #'s VHG-30024A, both rated 400,000 Btu per hour, fueled by propane;
- Two emergency electrical generators driven by diesel engines, Caterpillar, model #'s 3516 and 3516C, rated 1879 kilowatts (2520 horsepower) and 2500 kilowatts (3634 horsepower), respectively;
- Two enclosed screens in Stoker coal circuit (one FMC, model #SS1616-B, rated 120 tons per hour and one Allis-Chalmers, model #DD SH RIPL-FLO, rated 120 tons per hour);
- Three enclosed crushers (one Jeffery, Model #45 FT, rated 185 tons per hour in Stoker coal circuit and two Gundlach, model #5060S, rated 1800 tons per hour each in run of mine (ROM) coal circuit);
- Conveyors (enclosed and exposed; one conveyor is to facilitate coal transfer from the west lease mine portal to the receiving bin);
- Bins for truck load-out and storage;
- Paved and unpaved haul roads;
- Front-end loaders for loading materials on to the trucks; and
- Haul trucks.

Emissions from mining operations are not expected to exceed the permitted emissions described in Table 5. No change is expected from current mining operations, only an extension of 1.5 additional years.

Emissions from Transport of Coal to the Hunter Power Plant

As an example of emissions from hauling coal by diesel truck from the Sufco Mine, the haul to Hunter Power Plant was used and emissions calculated using the EPA's Diesel Emissions Quantifier (EPA, 2017). The Hunter Power Plant has been the recipient of the largest portion of Sufco's coal recently (Table 2). The diesel calculator does not calculate PM10, SO2 or VOCs, so the EPAs MOVES program was used to calculate these emissions. The calculator and MOVES uses the number of vehicles, annual miles, annual idle time, and age of vehicle to make the calculation. The results are shown in Table 6. The calculations were generated using the following assumptions:

- The fleet is on-road, Class 8 combination long haul truck.
- The Sufco Mine reports there were 14,388 average trips per month for the most recent 3- month period reported.
- Default annual fuel usage generated by the calculator is 17,349 gallons per truck.
- Round trip distance is 72 miles for 12,431,232 miles traveled per year (14,388 trips per month for 12 months at 72 miles each).
- Annual truck idle time is 520 hours (an average of 2 hours per day for 260 working days).
- Average truck was made in 2010 and will be replaced in 2020.

Because it is uncertain where the coal will be shipped, due to the changing nature of the coal market, Table 6 also indicates the emissions per mile for Sufco coal shipped by diesel truck, based on the analysis described above.

Annual Results (tons)	CO	NOx	PM ₁₀	PM _{2.5}	SO ₂	VOCs
Baseline of Entire Fleet	4.910	23.471	0.971	0.487	0.236	2.164
Annual Emissions per mile	0.038	0.326	0.013	0.007	0.003	0.030

 Table 6. Annual Sufco Mine Emissions from Truck Transportation of Coal

The estimated emission rates presented in Table 6 are not expected to increase annually from the transport of coal via diesel trucks from the Sufco Mine to the Hunter Power Plant, but would continue for an additional 1.5 years. Emissions from transportation of coal are not regulated as a point source.

Emissions from the Combustion of Coal

The Hunter Power Plant burns approximately 4.5 million tons per year of coal (PacifiCorp, 2011). For purposes of this analysis, it has been assumed that emissions from the Hunter Power Plant will be at their maximum permitted level when burning 4.5 million tons of coal per year. The Hunter Power Plant has historically been the largest consumer of coal from the Sufco Mine. In 2017, 58 percent of Sufco's coal that was shipped to power plants went to Hunter. Although it is not possible to predict where the coal may be burned in the future, the Hunter Power Plant permitted emissions provide an estimate of the annual emissions that burning the coal would create. The Hunter Power Plant annually uses approximately 4.5 MM tons of coal. Annual permitted emissions from the Hunter Power Plant are provided in Table 7. If Hunter Power Plant burned all the coal from the Proposed Action (approximately 8.55 MM tons), this would provide just under two years of fuel, assuming the consumption rate did not increase; these total emissions are also shown in Table 7. The maximum permitted emissions are not expected to change as a result of this project. The coal would continue to be combusted per Title V permit requirements.

Coal Burned	СО	NOx	PM ₁₀	PM _{2.5}	SO ₂	VOCs
4.5 Million Tons (current permitted-annual)	4,343	11,491	747	426	3,939	126
8.55 Million Tons (lease modification and						
bypass coal-total)	8,252	21,833	1,419	809	7,484	239

Table 7. Estimated Indirect Range of Emissions from Coal Combustion (Tons)

Source: (PacifiCorp, 2011; DEQ, 2017).

The estimates provided are for information purposes only. Other companies could also purchase coal from Sufco Mine. These companies are subject to their own permits and regulations. Permitting of these emissions is not within the authority of the BLM or FS.

Emissions of Mercury and Selenium

Mercury and selenium emissions would not be released into the atmosphere during mining of the lease modifications and transport of the coal. The final destination of the coal from the Proposed

Action varies, so again, the Hunter Power Plant is used for the disclosure of impacts. Ultimately, the actual mercury emissions from the Proposed Action will depend on the destination, and emissions control technology and permit requirements at those facilities. The Hunter Power Plant is used as the example consumer of coal from the Proposed Action; however, the actual buyers and combustion locations would vary depending on coal market conditions. These combustion locations are subject to permitting and regulation pertaining to mercury and selenium.

The Hunter Power Plant's Title V Air Permit 1500101002 (DEQ-DAQ, 2016) limits emissions of mercury to no greater than 1.2 pounds per trillion British thermal unit (Btu) and requires monitoring, record keeping, and reporting to demonstrate continuous compliance. Emission limits in the air permit are set to be protective of the environment and human health.

The DEQ compiled the Hazardous Air Pollutants (HAPs) emissions reported for stationary industrial (point) sources in 2014. Emissions of mercury and selenium are shown in Table 8.

 Table 8. 2014 Reported Emissions of Mercury and Selenium from Point Sources (Tons per year)

Point Source	Mercury (TSP)	Mercury Compounds	Selenium and Compounds	Selenium (TSP)
Hunter Power Plant	0.014	0	0.001	0.477

Source: (DEQ, 2014b)

TSP = total suspended particulate

Implementation of the Proposed Action would release mercury and selenium into the atmosphere during the combustion of the coal. Air quality would be indirectly affected by the Proposed Action for an additional 1.5 years. The coal would be combusted per Title V permit requirements.

Fugitive Dust Impacts

Current fugitive dust emissions sources at the Sufco Mine include conveyor transfer points, stockpile storage, and truck loading operations. The emissions from these sources are not expected to increase annually because of the Proposed Action; however, they would be extended for the life of the project, which is about 1.5 years. The Sufco Mine's Utah DEQ-DAQ Approval Order DAQE-AN106650014-13 (DEQ-DAQ, 2013) requires compliance with the requirements for Fugitive Emissions and Fugitive Dust sources in Utah Administrative Code R307-205. Compliance with these requirements would continue and no fugitive dust emissions over approved annual levels are expected. The Utah DEQ-DAQ Approval Order DAQE-AN106650014-13 (DEQ-DAQ, 2013) would not need to be modified. Fugitive emissions will not be discussed further in this EA.

Impacts to Class I Areas

Mandatory federal Class I areas are those national parks and wilderness areas that are greater than 6,000 or 5,000 acres, respectively, and were in existence when the Clean Air Act was modified in 1977. Visibility and other Air Quality Related Values in Class I areas receive the highest level of protection from anthropogenic air pollution impacts. In Utah, Class I areas are Zion National Park, Bryce Canyon National Park, Capitol Reef National Park, Arches National Park, and Canyonlands National Park (UAC, 2016). The closest Class I area to the Proposed Action is Capitol Reef National Park, approximately 30 miles south of the lease modifications. The Class II designation is currently

applied to all other lands in the nation including the lease modifications area. In compliance with guidelines outlined in the "Federal Land Manager's Air Quality Related Values Work Group Phase I Report – Revised (2010)", a Level I screening analysis for near-field visibility impacts to Capitol Reef National Park from direct emissions was conducted by the Forest Service air quality modeling staff using VISCREEN. Neither the conservative estimates for color difference (Delta E) nor plume contract (C) showed potential levels of change nearing the thresholds that would indicate the need for Level II modeling (Anderson, 2018). As visibility at the closest Class I area is considered the air quality related value that would be sensitive to impacts from the project, screening using these conservative techniques indicates that no further Air Quality Related Values analysis or discussion of impacts to Class 1 areas is needed. The National Park Service Air Quality Division was contacted and they expressed no concerns with the Proposed Action.

3.3.3 Cumulative Impacts of the Proposed Action Alternative

Cumulative air quality impacts from past and present actions (Table 3) are reflected in the air quality monitoring data collected in Utah, and the cumulative air quality impacts are represented by the baseline air quality conditions described above. No other future major point sources within the analysis area have been identified, so the future impacts are also reflected in the current conditions.

Continued mining, operation of mine surface facilities, and associated vehicle traffic would contribute to the release of air pollution into the atmosphere at current levels. Emissions would remain local in impact and is not expected to measurably contribute to larger scale particulate levels. Cumulative effects to air quality as a result of the Proposed Action are expected to be negligible.

In conclusion, after considering the direct, indirect, and cumulative impacts, annual emission rates associated with the Proposed Action are not expected to exceed the approved emission rates in Utah DEQ-DAQ Approval Order DAQE-AN106650014-13 (DEQ-DAQ, 2013). Emissions under the Proposed Action would occur for about 1.5 additional years based on the coal to be mined resulting from the lease modifications. Air quality would be directly impacted by the Proposed Action for this 1.5 years. The Utah DEQ-DAQ Approval Order DAQE-AN106650014-13 would not need to be modified; therefore, the impacts from mining operations are expected to have localized, short-term minimal effects on air quality.

3.3.4 Direct and Indirect Impacts of the No Action Alternative

Currently permitted emissions from operations at the Sufco Mine surface facilities complex would continue until the Sufco Mine closes. Air quality would be required to continue to meet existing approval order requirements through the current mine plan for the life of the mine. Compared to the Proposed Action, the No Action Alternative current air quality impacts would cease about 1.5 years earlier.

3.4 Issue 2 – Approval of the lease modifications may result in adverse impacts from Greenhouse Gases

Greenhouse gases (GHG) contribute to a greenhouse effect or warming trend on the earth by absorbing infrared radiation. Primary greenhouse gases include CO2, CH4, NOx, and ozone. Changes in amounts of these gases can contribute to changes in the climate.

As advised by the Council on Environmental Quality (CEQ), the level of effort expended in analyzing GHG emissions or climate change effects associated with these lease modifications is reasonably proportionate to the importance of climate change-related considerations. For this analysis, greenhouse gases are analyzed to represent the impacts on climate. Impacts from greenhouse gases are also discussed in detail in Section 4.13.3.6 of the referenced Greens Hollow FSEIS (BLM and Forest Service, 2015).

Greenhouse gas emissions from the transportation, employee transport, and combustion of coal specifically related to the Proposed Action are analyzed below.

3.4.1 Existing Conditions

The most abundant atmospheric greenhouse gases include water vapor, CO_2 , methane, nitrous oxide (N₂O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF₆). There are many regional sources that emit greenhouse gases. According to the Greens Hollow FSEIS (BLM and Forest Service, 2015), the methane produced at the Sufco Mine is 1,950 tons per year. Methane concentrations in the exhaust gas at several vent locations was recorded as 0.01 to 0.03 percent.

3.4.2 Direct and Indirect Impacts of the Proposed Action Alternative

Issue 2 will be analyzed using the following measures:

- Greenhouse gas emissions from transporting coal;
- Greenhouse gas emissions from employee transportation; and
- Greenhouse gas emissions from the combustion of the coal to be mined from the South Fork Federal Coal Lease Modifications and bypass coal (i.e., 8.55 million tons).

Greenhouse Gas Emissions from Transporting Coal

Using the Environmental Protection Agency (EPA) Diesel Emissions Quantifier (EPA, 2017), based on the number of vehicles, annual miles, annual idle time, and age of vehicle to make the calculation described in Section 3.3.2, 195.2 tons of CO₂ would be emitted from the Sufco Mine haul trucks during the hauling of the coal for an additional 1.5 years. This is a continuation of current emissions.

Greenhouse Gas Emissions from Employee Transportation

Emissions from employee have been estimated in Table 9. Emissions are generally limited to gasoline or diesel vehicles.

Vehicle Type	Daily Tri ps ²	Daily Avera ge Miles ³	Work- day s per Ye ar ⁴	CO₂ Emiss ion Facto r (poun ds per mile)	Methane Emiss ion Facto r (poun ds per mile)	N₂O Emiss ion Facto r (poun ds per mile)	Pounds of CO ₂	Pounds of CH₄	Pou nds of N₂O
Commuting	to Mine (1	Monday – Fr	iday)						
Car	65	30	260	0.802	0.068	0.071	406,614	34,476	35,997
Passenger Vans ¹	6	30	260	1.14	0.079	0.104	53,352	3,697	4,867
Bus	6	30	260	0.236	0.001	0.001	11,045	47	47
Commuting	to Salina	Bus Stop (M	onday – F	riday)					
Car	193	15	260	0.802	0.068	0.071	603,665	51,184	53,442
Commuting	to Mine (Saturday – S	unday)						
Car	13	30	104	0.802	0.068	0.071	32,529	2,758	2,880
Passenger Vans ¹	2	30	104	1.14	0.079	0.104	7,114	493	649
Bus	2	30	104	0.236	0.001	0.001	1,473	6	6
Commuting	to Salina	Bus Stop (Sa	turday – S	Sunday)					
Car	65	15	104	0.802	0.068	0.071	81,323	6,895	7,199
Total	Annual	Emissions	(lbs.)				1,197,115	99,556	105,087
Total	Annual	Emissions	(Tons)				598.56	49.78	52.54
Source: (EPA.	2008)								

Table	9. Estimate	d Annua	Employee	Traffic	Greenhous	Gas Emissi	ons
	0. =0a.e						••

 $CH_4 = Methane$

1 Considered equivalent to light-duty truck emission factor.

2 Provided by Sufco Mine.

3 Estimated from proximity to nearby communities, actual mileage unknown.

4 Based on 52-week calendar year.

Employee transportation to the mine would emit greenhouse gas for about 1.5 additional years. This would be a continuation of current emissions.

Greenhouse Gas Emissions from the Combustion of Coal

Historically, the Hunter Power Plant has been the largest consumer of coal from the Sufco Mine (Table 2). The EPA keeps a database of reported emissions for large facilities (EPA, 2016). Based on direct emissions monitoring, the total CO₂ equivalent (CO₂e) emitted from the Hunter Power Plant reported are shown in Table 10. The Hunter Power Plant burns approximately 4.5 million tons

per year of coal (PacifiCorp, 2011). CO_2e emissions from burning the 8.55 million tons of coal were calculated using the emissions per ton shown in Table 10.

Greenhouse Gas	Reported 2016 Metric Tons of CO ₂ e ¹	Calculated CO ₂ e per ton of coal ²	Calculated ³ Metric Tons from South Fork Federal Coal Lease Modifications and Bypass Coal
CO ₂	7,705,762	1.712	14,637,600
CH ₄	22,762	0.005	42,750
N ₂ O	39,866	0.009	76,950
SF ₆	0	0.000	-
Total CO ₂ e	7,768,390	1.726	14,757,300

Table 10. Total Reported and Calculated Greenhouse Gas Emissions

1 (EPA, 2016)

2 (PacifiCorp, 2011), calculated based on 4.5 million tons of coal consumed

3 Calculated based on 8.55 million tons multiplied by the CO2e per ton

Greenhouse gases would be emitted at current levels for an additional 1.5 years.

3.4.3 Cumulative Impacts of the Proposed Action Alternative

The annual coal production from the Sufco Mine is limited to a maximum of 10 million tons per year by the air quality approval with a heat content of 11,400 Btu per pound of coal (Union Pacific, 2010). The annual worldwide coal production is approximately 8.69 billion tons (Marquez Environmental Services, Inc. and Cirrus, 2014). The coal produced by the Sufco Mine would therefore be expected to constitute approximately 0.1 percent of the total worldwide production. Because heat content varies by the coal's Btu and chemical properties, there is not a constant relationship between the amount of coal burned and the emissions produced.

In 2015, approximately 3.36 billion tons (3.05 billion metric tons) of CO_2e were emitted annually from direct emitters (EPA, 2015a). Approximately 47.4 million tons (43 million metric tons) of CO_2e were emitted from underground coal mines (EPA, 2015b). Based on an estimate of 0.63 cubic centimeters per gram of CH_4 in the Hiawatha Coal Field (Duel & Kim, 1988), the estimated annual CO_2e emissions from the lease modifications would be 115,974 tons or 105,210 metric tons (assuming 100 percent of the CH4 in the coal is released). This value represents approximately 0.0024 percent of all CO_2e emissions, and 0.16 percent of all underground coal mine CO_2e emissions.

In conclusion, after considering the direct, indirect, and cumulative effects, the impacts from greenhouse gases resulting from the Proposed Action are expected to be negligible.

3.4.4 Direct and Indirect Impacts of the No Action Alternative

The current mining, hauling, and combustion of coal would continue to emit greenhouse gases. No additional greenhouse gas emissions would occur from the No Action Alternative, but the emissions would occur for 1.5 fewer years.

3.5 Issue 3 - Approval of the lease modifications may result in adverse impacts to Water Resources

The analysis area for water resources consists of the lease modifications area and an additional 0.25mile area around the lease modifications. This analysis considers the water resources downstream of the lease modifications that may experience potential effects from the proposed mining.

There are no registered water supply wells in the analysis area and groundwater is only used at the point of surface discharge at springs and seeps (UDWR, 2016).

3.5.1 Existing Conditions

Surface Water

The lease modifications are on the boundary of two drainage basins: the Sevier River/Sevier Lake basin and the western Colorado River basin (NRCS, 2014). The Sevier River basin is a closed basin, where surface water flow eventually terminates at Sevier Lake. More specifically, surface waters in the western portion of the lease modifications are within the Middle Sevier River watershed. Streams in this area include Skutumpah Creek and its headwaters, which drain to the southwest (Figure 2). Skutumpah Creek flows into Salina Creek, a tributary to the Sevier River. The segments of the South Fork Quitchupah Creek and Skutumpah Creek within the analysis area are intermittent streams.

Surface waters in the eastern half of the lease modifications are within the Muddy Creek watershed. Streams in this area primarily drain eastward, and include the North Fork Quitchupah Creek, South Fork Quitchupah Creek, and their headwater tributaries (Figure 2). These forks join, then flow into the main branch of Quitchupah Creek downstream, which flows into Ivie Creek, the Muddy River and then into the Dirty Devil River, a tributary of the Colorado River. The streams located in the lease modifications derive flow from snowmelt runoff, groundwater seepage, and thunderstorms. Spring/seep monitoring locations are shown on Figure 2.

The average yield in the North Fork Quitchupah Creek was estimated at 3.4 cubic feet per second (cfs) (1,526 gallons per minute) (Thiros & Cordy, 1991), using regional regression relationships. This same report included a gain-loss study of the North Fork Quitchupah Creek, which showed an apparent gain in flow where the North Fork Quitchupah Creek crossed the Castlegate Sandstone, a loss of flow as it crossed the upper part of the Blackhawk Formation, a slight gain in flow crossing the lower Blackhawk Formation, a considerable gain in flow crossing the Star Point Sandstone, and a loss in flow crossing the Mancos Shale (outside of the lease modifications, see Figure 2).

Flow in the North Fork Quitchupah Creek is increased by the Sufco Mine breakout discharge UPDES 003A (located east and downstream of the area shown on Figure 2). The Sufco Mine's Station 006 monitors the South Fork of Quitchupah Creek and Station 007 monitors the upper segments of the North Fork Quitchupah Creek (east and downstream of the area shown on Figure 2). Water quality measurements from Station 006 and Station 007 have shown occasional violations of the temperature standard and exceedances in the pollution indicator value for total phosphorous (0.05 micrograms per liter) (Cirrus and Norwest Applied Hydrology, 2014). These exceedances are not attributed to mining. Additional monitoring stations in these drainages are shown on Figure 2.





Groundwater

Water is present in all of the geologic units exposed at the land surface as either continuous or discontinuous saturated zones (Thiros & Cordy, 1991) including the Blackhawk Formation from which the coal would be mined. Pre-mine conditions for each water-bearing stratum in the analysis area is described in more detail below. A chart of the general stratigraphy referenced in this analysis chart can be found in Figure 3.2 of the Greens Hollow Lease FSEIS.

Springs and seeps located in the lease modifications are most likely supported by shallow water migration through the Flagstaff Limestone and discharged from the North Horn Formation. The springs and seeps are separated from the coal seams proposed for mining by a sequence of interbedded, low-permeability claystones, mudstones, and shales, indicating that the potential for vertical groundwater flow through this low-permeability, heterogeneous rock sequence is low.

Groundwater in the coal and in the geologic units above and below the Sufco Mine would enter the underground workings during mine development and longwall mining. Sufco Mine discharge rates would be lower than mine water inflow rates because some of the mine inflow would be removed with the mined coal or by evaporation through the mine ventilation system. Also, as underground mining advances, active Sufco Mine inflow water could migrate down into mined out areas of the underground workings. Excess water that interferes with mining operations is collected from the Sufco Mine, treated to meet UPDES standards and discharged at the surface (DOGM, 2018) into the same basin. The water encountered in the mining sequence becomes a part of a closed-circuit system whereby the water is directed, stored and then used for dust suppression during mining.

Water volumes from the coal are typically relatively small and generally on the same order of magnitude as the volumes removed by the ventilation system. Excess water can occur because of roof drips and floor seeps where either sandstone rocks or fractures permit enough inflow to be visible in the mine. Existing inflow into the Sufco Mine is from isolated groundwater that is stored in sandstone paleochannels or localized perched aquifers and not from water conveying faults and fractures that interact with surface or shallow subsurface hydrology (Cirrus and Norwest Applied Hydrology, 2014). This occurs in every underground mine in Utah and likely, the nation.

<u>Flagstaff Limestone</u> – Much recharge of the groundwater systems occurs on outcrops of Flagstaff Limestone in the upper reaches of the Wasatch Plateau (Thiros & Cordy, 1991). Downward recharge is probably slow due to less permeable shale layers within the North Horn Formation, although where faulting has broken the continuity of these shale layers, vertical movement through fractures may recharge underlying formations (Thiros & Cordy, 1991).

<u>North Horn Formation</u> – Groundwater in the North Horn Formation appears to move laterally and ultimately discharges in the form of springs and seeps based on geologic characteristics and the large number of springs and seeps associated with the unit. Vertical flow into the Price River Formation is restricted by shales and clays. Approximately 90 percent of springs and seeps that were inventoried in coal-resource areas in the southern Wasatch Plateau discharged from the North Horn Formation (Danielson & Sylla, 1983).

<u>Price River Formation</u> – The Price River Formation consists of medium- to coarse-grained sandstone, interbedded shale, and some thin beds of conglomerate. Mudstone drapes deposited during low-flow periods separate fluvial sandstones from each other both horizontally and vertically (Forest Service, 1999). Siltstones and shales in the formation were found to include 15 percent smectite (Cirrus and Norwest Applied Hydrology, 2014). Much of the groundwater recharge for the formation flows laterally where it discharges as springs and seeps. Some of the groundwater flows vertically into the Castlegate Sandstone, where it is perched above the Blackhawk Formation (Cirrus and Norwest Applied Hydrology, 2014).

<u>Castlegate Sandstone</u> – Groundwater flow in the Castlegate Sandstone generally occurs as perched water flowing laterally along bedding planes in the direction of dip (Thiros & Cordy, 1991). The groundwater flow in the Castlegate Sandstone is limited as evidenced by the occurrence of only one spring discharging from the formation near the analysis area (Cirrus and Norwest Applied Hydrology, 2014).

<u>Star Point Sandstone/Blackhawk Formation</u> – The Star Point Sandstone consists of three massive sandstone layers (Panther, Storres, and Spring Canyon Members), the uppermost of which intertongues with the Blackhawk Formation (Thiros & Cordy, 1991). The Blackhawk Formation is comprised of interbedded coals, sandstones, shale, and mudstone. Sandstone decreases towards the base of the Blackhawk Formation where coal is present. The finer-grained rocks in the Blackhawk Formation can contain abundant swelling clays (Cirrus and Norwest Applied Hydrology, 2014). Vertical flow is restricted, but may occur as unsaturated flow along fractures through perching beds (Lines, 1985). The target coal and the Star Point Sandstone are likely to be saturated everywhere in the lease modifications, but may be unsaturated beyond the lease modifications near outcrops at the edge of the plateau (Cirrus and Norwest Applied Hydrology, 2014). Most of the groundwater found in the Blackhawk Formation is found in sandstone paleochannels or as localized perched zones above the saturated portion of the Blackhawk Formation. Vertical or horizontal hydraulic communication between sandstone channels is prevented by the shale and mudstone layers that surround sandstone paleochannels.

Water Rights

Points of diversion in the analysis area are shown on Figure 2. Water rights that are approved or perfected were identified. Canyon Fuel Company holds one water right (94-1183) that is approved or perfected within the analysis area. The rest belong to the Forest Service for stock watering along streams and from springs (UDWR, 2016). Water used by Canyon Fuel Company is for temporary water mitigation and exploratory drilling incident to coal mining. There are no registered water rights for wells in the lease modifications area.

3.5.2 Direct and Indirect Impacts of the Proposed Action Alternative

Issue 3 will be analyzed using the following measures:

- Effects to surface water quality and quantity;
- Effects to groundwater quality and quantity; and
- Effects to water rights.

Effects to Surface Water Quality and Quantity

Removing infiltrating groundwater (dewatering) from the mine which is then discharged is not anticipated to affect Skutumpah Creek, and is not anticipated to change flows to Quitchupah Creek (or tributaries) or affect surface water quality. Quitchupah Creek has been receiving mine discharge from the Sufco Mine since 1982 (Cirrus and Norwest Applied Hydrology, 2014). Thirty-eight stream sites are being monitored within and adjacent to the Sufco Mine permit area. With the exception of a temporary increase of flow and increase of total dissolved solids (TDS) concentrations for the East Fork of Box Canyon Creek, monitoring of steams for the Sufco Mine has not identified any mining-related impacts and future diversion of stream flow is considered to be an overall low risk (DOGM, 2018). No increase in mine-related discharge to surface water is expected; therefore, changes to the stream flow, impacts from erosion, and impacts from degradation of surface water quality from dewatering are not anticipated. No loss or relocation of perennial water sources are expected to occur from mining the lease modifications.

The interbedded claystones, siltstones, and sandstones of the Wasatch Plateau are known to be rich in swelling clays. These clays absorb water and expand appreciably relative to their dry volume, which reduces the hydraulic conductivity of the rock or soil that contains them and contributes to the rapid closing or healing of tension fractures that could result from subsidence (DOGM, 2007); however, as mentioned above, no subsidence is foreseen. Due to the lack of connectivity between the groundwater and the seeps and springs, impacts on the flow to surface water systems are not expected. Stipulation #18 of the Greens Hollow Lease as modified and Stipulation #17 of the Quitchupah Lease as modified (Appendix A) require the Lessee to replace surface water and/or developed groundwater sources lost or adversely affected by mining operations, with water from an alternate source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, livestock and wildlife use, or other land uses (DOGM, 2018).

Mining the coal lease modifications would not release mercury and selenium into the atmosphere. Combustion of coal in power plants emits mercury and selenium into the atmosphere. Mercury and selenium can affect the quality of surface water if it settles into streams and lakes through deposition or precipitation. Mercury can go through a series of chemical transformations that convert it to a highly toxic form, which may concentrate in fish and birds (Bowen & Irwin, 2007). Selenium can also bioaccumulate in fish. It would be extremely difficult to quantify how much mercury or selenium may be deposited into surface waters or where deposition may occur from combustion of coal from the Sufco Mine. The mercury content of the Blackhawk Formation coal in the ground (which is what Sufco mines) averages about 4 pounds per trillion British thermal unit (Tabet, et al., 2009). The Btu content of bituminous coal is about 24 million Btu per ton of coal. As a result of the Proposed Action, up to 8.55 million tons of coal could be combusted; therefore, the amount of mercury emissions resulting from this combustion would be extremely low. Mercury and selenium emissions are subject to permitting and regulations.

Based on this analysis of impacts to surface water quality and quantity, the overall direct and indirect impacts resulting from the Proposed Action are expected to be negligible.

Effects to Groundwater Quality and Quantity

The primary impact resulting from mine dewatering and drawdown of groundwater would be related to the direct discharge to surface waters (BLM and Forest Service, 2015). Effects from mining the South Fork Federal Coal Lease Modifications are expected to remain the same. Drawdown or water pressure reductions in the coal due to mine dewatering could create a groundwater flow gradient toward the mine; however, the flow rates are expected to be very low due to the low vertical permeability of the interbedded silts, shale, sandstones, and coals of the Blackhawk Formation. Pressure redistribution within the coal supports rapid recovery of levels to about 80 to 90 percent of the pre-mine levels within about a decade following mining. The final 10 to 20 percent of recovery to pre-mining levels occurs very slowly. Pressure response due to drawdown within the coal is damped and reduced vertically above and below the mined coal due to interbedded silts, clays, and sandstone units of the Blackhawk Formation. Thus, most of the water that enters the coal during final recovery is water stored by these units within the Blackhawk Formation. Effects on groundwater from the underlying Star Point Sandstone or from the hydrogeologic units located stratigraphically above the coal are expected to be localized, short-term, negligible and unmeasurable (Cirrus, 2014).

Due to the thickness of the overburden in the lease modifications area, it is unlikely that water quality in shallower perched aquifers would be affected by caving and fracturing of the overburden allowing groundwater to flow into the mine. The DOGM has discovered that water quality downstream from coal mines in the Wasatch Plateau is often better than natural spring flow or base flow (DOGM, 2018).

Based on the above analysis and due to the thick overburden compared to the thin coal seam to be removed, impacts to groundwater quality and quantity are expected to be minimal. Monitoring for subsidence impacts are required (Appendix A).

Effects to Water Rights

As discussed above, impacts to surface and groundwater quality and quantity are expected to be minimal; therefore, effects on water rights are also expected to be minimal. In accordance with Utah DOGM rules and stipulations (Appendix A), an alternate supply of water would need to be provided to mitigate any water right that is adversely affected by mining.

3.5.3 Cumulative Impacts of the Proposed Action Alternative

The cumulative impacts analysis area for water resources includes the North Fork Quitchupah Creek sub-watershed, the Skutumpah Creek-Salina Creek sub-watershed, and the Convulsion Canyon-Quitchupah Creek sub-watershed.

The Cumulative Hydrologic Impact Analysis completed by Utah DOGM found no evidence of material damage (no impacts to economic loss to water users, reduction of the capability of an area to support fish and wildlife, or other adverse change to the hydrologic balance outside the permit area) from past mining operations, and very low probability of material damage from actual or anticipated mining operations. The actual and proposed coal mining and reclamation operations have been designed to prevent material damage (DOGM, 2018). Stipulations (Appendix A) on the leases

require baseline data to be established for future comparison and the stipulations require water that is lost or adversely effected be replaced by the lessee. Subsidence-related impacts have occurred within the sub-watershed, but negligible impacts to surface or groundwater resources have been identified. Based on this analysis, cumulative impacts to water in the North Fork Quitchupah Creek subwatershed, Skutumpah Creek-Salina Creek sub-watershed, or the Convulsion Canyon-Quitchupah Creek sub-watershed are expected to be minimal.

In conclusion, after considering the direct, indirect, and cumulative effects, the impacts to water resources resulting from the Proposed Action are expected to be minimal.

3.5.4 Direct and Indirect Impacts of the No Action Alternative

The current mining, hauling, and combustion of coal would continue to affect surface and groundwater as they have in the past; however, the effects would occur for 1.5 fewer years.

CHAPTER 4 CONSULTATION AND COORDINATION

4.1 People, Groups, and Agencies Consulted

Table 11 provides a summary of those persons, groups, or agencies consulted during preparation of this EA.

Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusion
BLM	The BLM is the agency responsible for leasing federal coal lands under the Mineral Leasing Act of 1920, as amended by the Federal Coal Leasing Amendments Act of 1976.	Initiate leasing and NEPA analysis for the South Fork Federal Coal Lease Modifications. Posted public notifications. BLM's knowledge and experience lies in the underground mining of coal beneath National Forest System (NFS) lands. BLM will recommend the R2P2 approval for the lease mods and once leased, will continue to administer the leases, conduct I&E and PV for public satisfaction of bonus payments and royalties.
Forest Service	The Forest Service is the agency responsible for administering National Forest System lands and resources overlying the coal lease. As the federal surface land administrator, the Forest Service has the responsibility to consent or not to consent to the coal lease.	Forest Service resource specialists from the Fishlake and Manti-La Sal National Forests were responsible for the majority of the issue identification and associated environmental analysis. The USFS specialists have the knowledge and experience for identifying impacts on NFS lands.
OSMRE	Consulted for concerns regarding leasing of the coal and performed review of the internal draft EA.	Participated in the NEPA process as a cooperating agency. OSMRE has the unique knowledge and experience for reclamation related activity as well as underground mining expertise.

Table 11. List of People, Groups, or Agencies Consulted for the Purposes of this EA
Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusion
Tribes	Consultation as required by the American Indian Religious Act of 1978 and the National Historic Preservation Act.	Leasing of the Greens Hollow tract involved extensive tribal contact and communication to satisfy tribal concerns pertaining to sacred lands. The tribes were also consulted for the proposed lease modifications.

Consultation was initiated in September 2017 with the following tribes:

- Hopi Tribal Council
- The Navajo Nation
- Paiute Indian Tribe of Utah
- Ute Indian Tribe

Tribes are offered an opportunity to identify cultural or religious concerns, or traditional cultural properties through direct government-to-government consultation. No cultural or religious concerns or traditional cultural properties relative to the South Fork Federal Coal Lease Modifications have been identified through consultation with the tribes. The Hopi Tribe did provide comments. Their recommendations are included in the stipulations.

List of Preparers and Reviewers

Table 12 and Table 13 identify the BLM, Forest Service, OSMRE staff, and the third-party contractor who prepared this EA.

Name	Title	Role
BLM		
Michael Glasson	Geologist, Solid Minerals Lead, PFO	Project Manager
Jefferson McKenzie	Mining Engineer/Economist, UTSO	D&E report, FMV
Steve Falk	Mining Engineer, PFO	Mine Plan, R2P2 review
Steve Rigby	AFM – Coal, PFO	Project Management, Advisor
Forest Service – Intermountain		
Region		
Ann Mebane	Intermountain Region Air Program	Air Quality Resource Review
	Manager	
Forest Service – Fishlake		
National Forest		
Rob Hamilton	Minerals Program Manager	Forest Service Project Coordinator
Jenneka Knight	Environmental Coordinator	NEPA Review

Table 12. BLM, Forest Service, and OSMRE Staff

Name	Title	Role	
Dave Christensen	Recreation Specialist	Recreation & Roadless Resource	
		Review	
Kreig Rasmussen	Wildlife Biologist	Wildlife Resource Review	
Adam Solt	Hydrologist	Hydrology Review	
Jim Whelan	Fishery Biologist	Fishery Resource Review	
Jens Swensen	Fishery Biologist	Fishery Resource Review	
Dave Tait	Botanist	Botany Review	
Maggie Toone	Acting Environmental Coordinator	NEPA Review	
Jason Kling	Richfield District Ranger	NEPA Review	
Forest Service – Manti-La Sal			
National Forest			
Greg Montgomery	Environmental Coordinator	NEPA	
Jeff Salow	Minerals Program Manager	FS Project and Geology Review	
Kim Anderson	Botanist	Botany Review	
Bill Broadbear	Recreation Specialist	Recreation & Roadless Resource Review	
Jeff Jewkes	Wildlife Biologist	Wildlife Resource Review	
Denise Laes	Hydrologist	Hydrology Review	
Charmaine Thompson	Heritage Program Leader	Archaeology and Cultural Review	
OSMRE – Western Region			
Gretchen Pinkham	NEPA Coordinator	NEPA Review	

Table 13. Tetra Tech, Inc.

Name	Title	Role	
Cameo Flood	Senior NEPA Specialist	Project Manager	
Chris Hayes	Geologist	Air Quality, Greenhouse Gases, and Water Resources	
Wendy Reith	Biologist	Biological Resources, GIS	
Jill Reid	General Resource Specialist	Technical Editing, and Administrative Record Compilation	

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Appendix A Special Coal Lease Stipulations

GREENS HOLLOW SPECIAL STIPULATIONS, COAL LEASE UTU-84102

- 1. In accordance with Sec. 523(b) of the "Surface Mining Control and Reclamation Act of 1977," surface mining and reclamation operations conducted on this lease are to conform with the requirements of this act and are subject to compliance with Office of Surface Mining Reclamation and Enforcement regulations, or as applicable the Utah program approved under the cooperative agreement in accordance with sec. 523(c). The United States Government does not warrant that the entire tract will be susceptible to mining.
- 2. Before undertaking activities that may disturb the surface of previously undisturbed leased lands, the lessee may be required to conduct a cultural resource inventory and a paleontological appraisal of the areas to be disturbed. These studies shall be conducted by qualified professional cultural resource specialists or qualified paleontologists, as appropriate, and a report prepared itemizing the findings. A plan will then be submitted making recommendations for the protection of, or measures to be taken to mitigate impacts for identified cultural or paleontological resources.

If cultural resources or paleontological remains (fossils) of significant scientific interest are discovered during operations under this lease, the lessee, prior to disturbance, shall immediately bring them to the attention of the appropriate authorities. Paleontological remains of significant scientific interest do not include leaves, ferns, or dinosaur tracks commonly encountered during underground mining operations.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the lessee.

3. If there is reason to believe that Threatened or Endangered species of plants or animals, or migratory bird species of high Federal interest occur in the area, the Lessee shall be required to conduct an intensive field inventory of the area to be disturbed and/or impacted. The inventory shall be conducted by a qualified specialist and a report of findings will be prepared. A plan will be prepared making recommendations for the protection of these species or action necessary to mitigate the disturbance.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the lessee.

- 4. The Lessee shall be required to perform a study to secure adequate baseline data to quantify the existing surface resources on and adjacent to the lease area. Existing data may be used if such data are adequate for the intended purposes. The study shall be adequate to locate, quantify, and demonstrate the interrelationship of the geology, topography, surface and ground water hydrology, vegetation and wildlife. Baseline data will be established so that future programs of observation can be incorporated at regular intervals for comparison.
- 5. Power lines used in conjunction with the mining of coal from this lease shall be constructed so as to provide adequate protection for raptors and other large birds. When feasible, power lines will be located at least 100 yards from public roads.

- 6. The limited area available for mine facilities at the coal outcrop, steep topography, adverse winter weather, and physical limitations on the size and design of the access road, are factors which will determine the ultimate size of the surface area utilized for the mine. A site specific environmental analysis will be prepared for each new mine site development and for major modifications to existing developments to examine alternatives and mitigate conflicts.
- 7. Consideration will be given to site selection to reduce adverse visual impacts. Where alternative sited are available, and each alternative is technically feasible, the alternative involving the least damage to the scenery and other resources shall be selected. Permanent structures and facilities will be designed, and screening techniques employed, to reduce visual impacts, and where possible achieve a final landscape compatible with the natural surroundings. The creation of unusual, objectionable, or unnatural land forms and vegetative landscape features will be avoided.
- 8. The lessee shall be required to establish a monitoring system to locate, measure, and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for location and measurement of a number of points over the lease area. The monitoring shall incorporate and be an extension of the baseline data.
- 9. The lessee shall provide for the suppression and control of fugitive dust on haul roads, permitted roads, and at coal handling and storage facilities. On National Forest System Roads (NFSR), lessees may perform their share of road maintenance by a commensurate share agreement if a significant degree of traffic is generated that is not related to their activities.
- 10. Except at locations specifically approved by the Authorized Officer, with the concurrence of the Forest Service, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, and (3) damage or alter the flow of perennial streams. Where the Forest Service specifically approves exceptions to the above restrictions on subsidence, the lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created.
- 11. In order to avoid surface disturbance on steep canyon slopes and to preclude the need for surface access, all surface breakouts for ventilation tunnels shall be constructed from inside the mine, except at specifically approved locations.
- 12. If removal of timber is required for clearing of construction sites, etc., such timber shall be removed in accordance with the regulations of the surface management agency.
- 13. The coal contained within, and authorized for mining under this lease, shall be extracted only by underground mining methods.

- 14. Existing Forest Service owned or permitted surface improvements will need to be protected, restored, or replaced to provide for the continuance of current land uses.
- 15. In order to protect big game wintering areas, elk calving and deer fawning areas, sage grouse strutting areas, and other critical wildlife habitat and/or activities, specific surface uses outside the mine development area may be curtailed during specific periods of the year.

No new surface facilities shall be authorized in sage grouse priority habitat management areas.

- 16. Support facilities, structures, equipment, and similar developments will be removed from the lease area within 2 years after the final termination of use of such facilities. This provision shall apply unless the requirement of Section 10 of the lease form is applicable. Disturbed areas and those areas previously occupied by such facilities will be stabilized and rehabilitated, drainages reestablished, and the areas returned to a premining land use.
- 17. The Lessee at the conclusion of the mining operation, or at other times as surface disturbance related to mining may occur, will replace all damaged, disturbed, or displaced corner monuments (section corners, quarter corners, etc.) their accessories and appendages (witness trees, bearing trees, etc.), or restore them to their original condition and location, or at other locations that meet the requirements of the rectangular surveying system. This work shall be conducted at the expense of the Lessee, by Bureau of Land Management (BLM) land surveyors, to the standards and guidelines found in the Manual of Surveying Instructions, U.S. Department of Interior.
- 18. The Lessee, at their expense, will be responsible to replace any surface water and/or developed ground water sources identified for protection (see Table 1 and Table A-1) that may be lost or adversely affected by mining operations, with water from an alternate source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, livestock and wildlife use, or other land uses (authorized by 36 CFR 251).

Spring Site ID ^a	Elevation	Easting	Northing
M SPO1	8420	465615	4319979
M SPO2	8335	466086	4319977
M SPO4	8812	464246	4319267
M SPO5	8937	464212	4319133
M SPO6	8952	464215	4319121
M SPO8	8820	464754	4317178
M SPO9	8849	464791	4317141
M SP012	8739	464583	4319397
M SP015	8811	463884	4316685
M SP018	8295	465794	4320892
M SP019	8968	462644	4316124
M SP020	9395	462191	4316826
M SP040	9163	463677	4318041

Table 1.	Spring	sources ide	ntified for	protection	during	mining c	perations
	opinig	3001003100	nunca ioi	protocilon	aunig	mining c	perations

Spring Site ID ^a	Elevation	Easting	Northing
M SP041	9223	463475	4318025
M SP045	8505	465156	4319780
M SP060	8801	462887	4316092
M SP087	7922	465309	4322427
M SP100	8975	463616	4316719
M SP103	8999	463271	4316302
M SP104	9052	463250	4316335
M SP105	8971	463233	4316280
M SP106	8997	462626	4316155

a Derived from Table 3.2 in the Greens Hollow Federal Coal Lease Tract SEIS.

Spring Site ID	Elevation (feet)	Easting ¹	Northing ¹
Divide Spring	8,845	461297	4314348
94-110	9,224	461800	4315754
99	9,352	461609	4315684
A Spring	8,520	460639	4313578
B Spring	8,520	460661	4313547
Skutumpah Spring	8,400	460903	4313360

Table A-1. Spring Sources Identified for Protection

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19. The Licensee/Permittee/Lessee must comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use and management of the National Forest System (NFS) when not inconsistent with the rights granted by the Secretary of the Interior in the license/permit/lease. The Secretary of Agriculture's rules and regulations must be complied with for (1) all use and occupancy of the NFS prior to approval of a permit/operation plan by the Secretary of Interior, (2) uses of all existing improvements, such as Forest Development Roads, within and outside the area licensed, permitted or leased by the Secretary of Interior, and (3) use and occupancy of the NFS not authorized by a permit/operation plan approved by the Secretary of the Interior.

All matters related to this stipulation are to be addressed to:

Forest Supervisor Manti-La Sal National Forest 599 West Price River Drive Price, Utah 84501 Telephone No.: 435-637-2817

who is the authorized representative of the Secretary of Agriculture.

 The Licensee/Lessee must comply with the Roadless Area Conservation Rule, 36 CFR Part 294- Special Areas, Subpart B- Protection of Inventoried Roadless Areas, January 12, 2001. In addition, on lands within inventoried roadless areas any surface disturbance from authorized temporary cross-country motorized access will be restricted to the minimum necessary to safely and efficiently complete surface activities.

21. Notwithstanding the approval of a resource recovery and protection plan (R2P2) by the BLM, lessor reserves the right to seek damages against the operator/lessee in the event (i) the operator/lessee fails to achieve maximum economic recovery [as defined at 43 CFR §3480.0-5(21)] of the recoverable coal reserves, or (ii) the operator/lessee is determined to have caused a wasting of recoverable coal reserves. Damages shall be measured on the basis of the royalty that would have been payable on the wasted or unrecovered coal.

The parties recognize that under an approved R2P2, conditions may require a modification by the operator/lessee of that plan. In the event a coal bed or portion thereof is not to be mined or is rendered unmineable by the operation, the operator shall submit appropriate justification to obtain approval by the Authorized Officer to leave such reserves unmined. Upon approval by the AO, such coal beds or portions thereof shall not be subject to damages as described above. Further, nothing in this section shall prevent the operator/lessee from exercising its right to relinquish all or a portion of the lease as authorized by statute and regulation.

In the event the Authorized Officer determines that the R2P2 as approved will not attain maximum economic recovery (MER) as the result of changed conditions, the Authorized Officer will give proper notice to the operator/lessee as required under applicable regulations. The Authorized Officer will order a modification if necessary, identifying additional reserves to be mined in order to attain MER. Upon a final administrative or judicial ruling upholding such an ordered modification, any reserves left unmined (wasted) under that plan will be subject to damages as described in the first paragraph under this section.

Subject to the right to appeal hereinafter set forth, payment of the value of the royalty on such unmined recoverable coal reserves shall become due and payable upon determination by the Authorized Officer that the coal reserves have been rendered unminable or at such time that the lessee has demonstrated an unwillingness to extract the coal.

The BLM may enforce this provision either by issuing a written decision requiring payment of the Office of Natural Resource Revenue (ONRR) demand for such royalties, or by issuing a notice of non-compliance. A decision or notice of non-compliance issued by the lessor that payment is due under this stipulation is appealable as allowed by law.

22. WASTE CERTIFICATION: The lessee shall provide upon abandonment and/or sealing off a mined area and prior to lease termination/relinquishment, certification to the lessor that, based upon a complete search of all the operator's records for the mine and upon their knowledge of past operations, there has been no hazardous substances per (40 CFR 302.4) or used oil as per Utah State Management Rule R-315-15, deposited within the lease, either on the surface or underground, or that all remedial action necessary has been

taken to protect human health and the environment with respect to any such substances remaining on the property. The back-up documentation to be provided shall be described by the lessor prior to the first certification and shall include all documentation applicable to the Emergency Planning and Community Right-to-know Act (EPCRA, Public Law 99-499), Title III of the Superfund Amendments and Reauthorization Act of 1986 or equivalent.

23. ABANDONMENT OF EQUIPMENT: The lessee/operator is responsible for compliance with reporting regarding toxic and hazardous material and substances under Federal Law and all associated amendments and regulations for the handling such materials on the land surface and in underground mine workings.

The lessee/operator must remove mine equipment and materials not needed for continued operations, roof support and mine safety from underground workings prior to abandonment of mine sections. Exceptions can be approved by the BLM Authorized Officer in consultation with the Forest Service. Creation of a situation that would prevent removal of such material and by retreat or abandonment of mine sections without prior authorization would be considered noncompliance with lease terms and conditions and subject to appropriate penalties under the lease.

24. UNDERGROUND INSPECTION: All safe and accessible areas shall be inspected prior to being sealed. The lessee shall notify the Authorized Officer in writing 30 days prior to the sealing of any areas in the mine and state the reason for closure. Prior to seals being put into place, the lessee shall inspect the area and document any equipment/machinery, hazardous substances, and used oil that is to be left underground.

The purpose of this inspection will be: (1) to provide documentation for compliance with 42 U.S.C. 9620 section 120(h) and State Management Rule R-315-15, and to assure that certification will be meaningful at the time of lease relinquishment, (2) to document the inspection with a mine map showing location of equipment/machinery (model, type of fluid, amount remaining, batteries etc.) that is proposed to be left underground. In addition, these items will be photographed at the lessee's expense and shall be submitted to the Authorized Officer as part of the certification. The abandonment of any equipment/machinery shall be on a case by case basis and shall not be accomplished unless the Authorized Officer has granted a written approval.

Lease Notice

Portions of federal coal lease UTU-84102 are in an Inventoried Roadless Area and may be subject to restrictions on road construction and timber harvest pursuant to rules and regulations of the Secretary of Agriculture pertaining to Inventoried Roadless Area management applicable at the time such activities may be proposed on the lease. Locations of any proposed surface use will be verified for relationship to Inventoried Roadless Area boundaries using site-specific maps if/when surface operations are proposed.

QUITCHUPAH SPECIAL STIPULATIONS, COAL LEASE U-63214

1. Before undertaking activities that may disturb the surface of previously undisturbed leased lands, the lessee may be required to conduct a cultural resource inventory and a paleontological appraisal of the areas to be disturbed. These studies shall be conducted by qualified professional cultural resource specialists or qualified paleontologists, as appropriate, and a report prepared itemizing the findings. A plan will then be submitted making recommendations for the protection of, or measures to be taken to mitigate impacts for identified cultural or paleontological resources.

If cultural resources or paleontological remains (fossils) of significant scientific interest are discovered during operations under this lease, the lessee prior to disturbance shall, immediately bring them to the attention of the appropriate authorities. Paleontological remains of significant scientific interest do not include leaves, ferns, or dinosaur tracks commonly encountered during underground mining operations.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the lessee.

2. If there is reason to believe that Threatened or Endangered (T&E) species of plants or animals, or migratory bird species of high Federal interest occur in the area, the Lessee shall be required to conduct an intensive field inventory of the area to be disturbed and/or impacted. The inventory shall be conducted by a qualified specialist and a report of findings will be prepared. A plan will be prepared making recommendations for the protection of these species or action necessary to mitigate the disturbance.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the lessee.

- 3. The Lessee shall be required to perform a study to secure adequate baseline data to quantify the existing surface resources on and adjacent to the lease area. Existing data may be used if such data are adequate for the intended purposes. The study shall be adequate to locate, quantify, and demonstrate the interrelationship of the geology, topography, surface and ground water hydrology, vegetation and wildlife. Baseline data will be established so that future programs of observation can be incorporated at regular intervals for comparison.
- 4. Powerlines used in conjunction with the mining of coal from this lease shall be constructed so as to provide adequate protection for raptors and other large birds. When feasible, powerlines will be located at least 100 yards from public roads.
- 5. The limited area available for mine facilities at the coal outcrop, steep topography, adverse winter weather, and physical limitations on the size and design of the access road, are factors which will determine the ultimate size of the surface area utilized for the mine. A site specific environmental analysis will be prepared for each new mine site development and for major modifications to existing developments to examine alternatives and mitigate conflicts.
- 6. Consideration will be given to site selection to reduce adverse visual impacts. Where alternative sites are available, and each alternative is technically feasible, the alternative involving the least damage to the scenery and other resources shall be selected. Permanent structures and facilities

will be designed, and screening techniques employed, to reduce visual impacts, and where possible achieve a final landscape compatible with the natural surroundings. The creation of unusual, objectionable, or unnatural land forms and vegetative landscape features will be avoided.

- 7. The lessee shall be required to establish a monitoring system to locate, measure, and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for location and measurement of a number of points over the lease area. The monitoring shall incorporate and be an extension of the baseline data.
- 8. The lessee shall provide for the suppression and control of fugitive dust on haul roads and at coal handling and storage facilities. On Forest Development Roads (FDR), lessees may perform their share of road maintenance by a commensurate share agreement if a significant degree of traffic is generated that is not related to their activities.
- 9. Except at locations specifically approved by the Authorized Officer, with concurrence of the Forest Service, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, and (3) damage or alter the flow of perennial streams. The lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created.
- 10. In order to avoid surface disturbance on steep canyon slopes and to preclude the need for surface access, all surface breakouts for ventilation tunnels shall be constructed from inside the mine, except at specifically approved locations.
- 11. If removal of timber is required for clearing of construction sites, etc., such timber shall be removed in accordance with the regulations of the surface management agency.
- 12. The coal contained within, and authorized for mining under this lease, shall be extracted only by underground mining methods.
- 13. Existing Forest Service owned or permitted surface improvements will need to be protected, restored, or replaced to provide for the continuance of current land uses.
- 14. In order to protect big game wintering areas, elk calving and deer fawning areas, sage-grouse strutting areas, and other critical wildlife habitat and/or activities, specific surface uses outside the mine development area may be curtailed during specific periods of the year.
- 15. Support facilities, structures, equipment, and similar developments will be removed from the lease area within 2 years after the final termination of use of such facilities. This provision shall apply unless the requirement of Section 10 of the lease form is applicable. Disturbed areas and those areas previously occupied by such facilities will be stabilized and rehabilitated, drainages reestablished, and the areas returned to an acceptable post mining land use.
- 16. The Lessee at the conclusion of the mining operation, or at other times as surface disturbance related to mining may occur, will replace all damaged, disturbed, or displaced corner monuments

(section corners, quarter corners, etc.) their accessories and appendages (witness trees, bearing trees, etc.), or restore them to their original condition and location, or at other locations that meet the requirements of the rectangular surveying system. This work shall be conducted at the expense of the Lessee, by BLM, to the standards and guidelines found in the Manual of Surveying Instructions, U.S. Department of Interior.

17. The Lessee, at his expense, will be responsible to replace any surface and/or developed ground water sources identified for protection, that may be lost or adversely affected by mining operations, with water from an alternate source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, livestock and wildlife use, or other land uses (authorized by 36 CFR 251).

Specifically for the Quitchupah Lease Modification, Hansen Seep has been identified for protection.

Spring Site ID	Elevation (feet)	Easting ¹	Northing ¹	
Hansen Seep	8,399	462514	4313461	

1 UTM NAD27

18. The Licensee/Permittee/Lessee must comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use and management of the National Forest System (NFS) when not inconsistent with the rights granted by the Secretary of the Interior in the license/permit/lease. The Secretary of Agriculture's rules and regulations must be complied with for (1) all use and occupancy of the NFS prior to approval of a permit/operation plan by the Secretary of Interior, (2) uses of all existing improvements, such as Forest Development Roads, within and outside the area licensed, permitted or leased by the Secretary of Interior, and (3) use and occupancy of the NFS not authorized by a permit/operation plan approved by the Secretary of the Interior.

All matters related to this stipulation are to be addressed to:

Forest Supervisor Manti-La Sal National Forest 599 West Price River Drive Price, UT 84501 Telephone No: 801-637-2817

19. Notwithstanding the approval of a resource recovery and protection plan by the BLM, lessor reserves the right to seek damages against the operator/lessee in the event (I) the operator/lessee fails to achieve maximum economic recovery [as defined at 43 CFR §3480.0-5(21)] of the recoverable coal reserves or (ii) the operator/lessee is determined to have caused a wasting of recoverable coal reserves. Damages shall be measured on the basis of the royalty that would have been payable on the wasted or unrecovered coal.

The parties recognize that under an approved R2P2, conditions may require a modification by the operator/lessee of that plan. In the event a coal bed or portion thereof is not to be mined or is rendered unminable by the operation, the operator shall submit appropriate justification to obtain approval by the AO to leave such reserves unmined. Upon approval by the AO, such coal beds or portions thereof shall not be subject to damages as described above. Further, nothing in this

section shall prevent the operator/lessee from exercising its right to relinquish all or a portion of the lease as authorized by statute and regulation.

In the event the AO determines that the R2P2 modification will not attain MER resulting from changed conditions, the AO will give proper notice to the operator/lessee as required under applicable regulations. The AO will order a new R2P2 modification if necessary, identifying additional reserves to be mined in order to attain MER. Upon a final administrative or judicial ruling upholding such an ordered modification, any reserves left unmined (wasted) under that plan will be subject to damages as described in the first paragraph under this section.

Subject to the right to appeal hereinafter set forth, payment of the value of the royalty on such unmined recoverable coal reserves shall become due and payable upon determination by the AO that the coal reserves have been rendered unmineable or at such time that the lessee has demonstrated an unwillingness to extract the coal.

The BLM may enforce this provision either by issuing a written decision requiring payment of the MMS demand for such royalties, or by issuing a notice of non-compliance. A decision or notice of non-compliance issued by the lessor that payment is due under this stipulation is appealable as allowed by law.

- 20. WASTE CERTIFICATION: The lessee shall provide upon abandonment and/or sealing off a mined area and prior to lease termination/relinquishment, certification to the lessor that, based upon a complete search of all the operator's records for the mine and upon their knowledge of past operations, there has been no hazardous substances per (40 CFR 302.4) or used oil as per Utah State Management Rule R-315-15, deposited within the lease, either on the surface or underground, or that all remedial action necessary has been taken to protect human health and the environment with respect to any such substances remaining on the property. The back-up documentation to be provided shall be described by the lessor prior to the first certification and shall include all documentation applicable to the Emergency Planning and Community Right-to-know Act (EPCRA, Public Law 99-499), Title III of the Superfund Amendments and Reauthorization Act of 1986 or equivalent.
- 21. ABANDONMENT OF EQUIPMENT: The lessee/operator is responsible for compliance with reporting regarding toxic and hazardous material and substances under Federal Law and all associated amendments and regulations for the handling such materials on the land surface and in underground mine workings.

The lessee/operator must remove mine equipment and materials not needed for continued operations, roof support and mine safety from underground workings prior to abandonment of mine sections. Exceptions can be approved by the Authorized Officer (BLM) in consultation with the surface management agency. Creation of a situation that would prevent removal of such material and by retreat or abandonment of mine sections without prior authorization would be considered noncompliance with lease terms and conditions and subject to appropriate penalties under the lease.

22. UNDERGROUND INSPECTION: All safe and accessible areas shall be inspected prior to being sealed. The lessee shall notify the Authorized Officer in writing 30 days prior to the sealing of any areas in the mine and state the reason for closure. Prior to seals being put into place, the

lessee shall inspect the area and document any equipment/machinery, hazardous substances, and used oil that is to be left underground.

The purpose of this inspection will be: (1) to provide documentation for compliance with 42 U.S.C. 9620 section 120(h) and State Management Rule R-315-15, and to assure that certification will be meaningful at the time of lease relinquishment, (2) to document the inspection with a mine map showing location of equipment/machinery (model, type of fluid, amount remaining, batteries etc.) that is proposed to be left underground. In addition, these items will be photographed at the lessee's expense and shall be submitted to the Authorized Officer as part of the certification. The abandonment of any equipment/machinery shall be on a case by case basis and shall not be accomplished unless the Authorized Officer has granted a written approval.

Appendix B Responses to Public Comments

	Commenter	Comment	Response
1	Emery County Board of Commissioners	Monitoring of all water resources should take place as soon as possible in order to establish adequate baseline data.	Baseline data collection is required by Stipulation #4 in the Greens Hollow Lease and Stipulation #3 of the Quitchupah Lease. See Appendix A. Also, a permit to mine will not be issued by UDOGM (under SMCRA) without appropriate base line water monitoring (min 2 years). Water quality monitoring is and will continue to occur.
2	Emery County Board of Commissioners	Any impacts to water resources should be mitigated by Canyon Fuel Company, LLC.	Mitigation is required by Stipulation #18 of the Greens Hollow Lease and Stipulations #17 of the Quitchupah Lease. See Appendix A. Also, SMCRA permit addresses water quality and quantity impacts.
3	Emery County Board of Commissioners	Any surface facilities which may be proposed in conjunction with the lease modifications should only be permitted that are consistent with Emery County's "no net loss of watershed efficiency" from the Emery County General Plan" 8.4 Water Resources Adequate water quality and availability is the lifeblood of Emery County and is necessary for current and future residential, industrial, commercial, agricultural, and recreational development. Emery County will protect this valuable resource by promoting watershed protection measures and supporting the efficient management and use of water resources. Protection measures will include a "no net loss of watershed" efficiency policy specific to areas upstream from communities, typically on Forest Service managed land.	No surface facilities are proposed in conjunction with the lease modification. Water Resources Issue 3 - Effects on surface water, groundwater and water rights are assessed in Section 3.5.2. Due to the thick overburden compared to the thin coal seam to be removed, the proposed action and potential subsidence associated with the proposed action is not expected to affect surface or shallow hydrology.
4	Hopi Tribe	Hopi Cultural Preservation Office requests consultation on any proposal with the potential to adversely affect prehistoric cultural resources. We understand this proposal could affect cultural resources through subsidence of the ground surface.	Consultation is required and was initiated in September 2017. The BLM and the USFS will work closely with all affected tribes, as needed. Impacts from subsidence are expected to be minimal. As needed consultation with the Hopi Tribe will occur.

Table B-1. Response to Public Comments

	Commenter	Comment	Response
5	Hopi Tribe	If any cultural features or deposits are encountered during project activities, these activities must be discontinued in the immediate area of the remains, and the State Historic Preservation Office must be consulted to evaluate their nature and significance, and if any Native American human remains or funerary objects are discovered during construction they shall be immediately reported as required by law.	Field surveys were completed and did not identify any cultural resources within the proposed project area (Tetra Tech, Inc, 2016). This request is included in the Forest Service Decision Notice. The Utah State Historic Preservation Office concurred with this recommendation on October 13, 2017. The Paiute Indian Tribe of Utah also concurred on October 20, 2017.
6	WildEarth Guardians and Sierra Club	The SUFCO mine, which shipped over 6 million tons of coal in 2015, currently ships primarily to electric utilities in Utah by railway and truck. This extraction, shipment, and eventual combustion of coal poses hazards to our air, water and climate.	Effects on air, greenhouse gases, and water are discussed in Chapter 3 of the EA.
7	WildEarth Guardians and Sierra Club	Because the Greens Hollow lease was not legally approved, BLM therefore cannot approve a modification to the lease. In fact, WildEarth Guardians, Sierra Club, and other organizations currently have an appeal before the Interior Board of Land Appeals ("IBLA") challenging the BLM's legal basis for approving the lease.	While a challenge to the BLM compliance with NEPA and the Administrative Procedures Act in approving the Greens Hollow Lease is pending, BLM's sale of the lease has not been stayed or enjoined. Accordingly, the lease is in effect, and as such may be modified by regulation.
8	WildEarth Guardians and Sierra Club	Approval of the Greens Hollow coal lease was clearly in violation of sage grouse protection requirements. As explained in our Statement of Reasons, under the applicable Resource Management Plan ("RMP") and the BLM's coal management regulations, the agency was prohibited from authorizing the Greens Hollow coal lease because the BLM was required to deem the lease area "unsuitable" for coal mining in order to protect priority sage grouse habitat. 43 C.F.R. § 3461.3-1(a) the lease modification area must be declared as unsuitable for leasing.	Consistency with the two Forest LRMPs and Amendments is discussed in Chapter 1 of the EA and is included in the project record. The project lease modification area is not located within a Greater Sage-Grouse Priority Habitat Management Area or a General Habitat Management Area. Stipulation #15 of the Greens Hollow Lease requires sage-grouse

	Commenter	Comment	Response
			protection. For these reasons, impacts to sage- grouse were not carried forward for detailed analysis in Chapter 3 of the EA. A biological assessment/ biological evaluation (Tetra Tech, Inc., 2017) was completed for threatened, endangered, sensitive, and management indicator species and determined there would be no impact on sage grouse.
9	WildEarth Guardians and Sierra Club	A previous modification to the Quitchupah coal lease was illegally approved by a BLM Field Manager who lacked delegated authority. This raises serious concerns that the latest proposal to modify the Quitchupah coal lease cannot be authorized. The previous modification, which was supposedly approved on November 5, 2009 as part of the "West Coal Lease Modifications," authorized a 640-acre expansion of the Quitchupah coal lease. If the latest lease modification proposal would further expand this previous expansion, then it cannot be authorized according to Interior Department policy.	In any case, the S.F. LMA is not contiguous to the West Lease Mods.
10	WildEarth Guardians and Sierra Club	The Forest Service cannot consent to modifications that violate Federal Legal obligations.	As documented in the EA and Decision Notice, the Forest Service is compliant with applicable laws, rules, regulations, Forest LRMPs, etc.
11	WildEarth Guardians and Sierra Club	The Forest Service and BLM (collectively, "the Agencies") must first determine whether this proposal for additional coal is in the public interest. We further believe that this lease is not in the public interest.	These concerns are already decided by law, rule, and regulation. See Section 1.2 and 1.3 of the EA.
12	WildEarth Guardians and Sierra Club	Thus, the Forest Service must ensure that any consent to coal leasing is consistent with NEPA, its RMPs, and other applicable environmental protection requirements.	As documented in the EA and Decision Notice, the Forest Service is compliant with applicable laws, rules, regulations, Forest LRMPs, NEPA, and other applicable environmental protection requirements.

	Commenter	Comment	Response
13	WildEarth Guardians and Sierra Club	Further, the Agencies must consider the use and protection of the non-mineral interest in those lands under 30 U.S.C. § 201(a)(3)(A)(iii). The Manti-La Sal and Fishlake National Forests are currently managed to allow for a variety of uses, including recreation, grazing, wildlife, timber, and mineral extraction. Camping, sightseeing, hiking, and hunting are some of the recreational activities available in the area. These recreational activities must be assessed when determining whether the modification is in the best interest of the American people. Here if the Forest Service consents to the issuance of the two leases the agency will fall exceptionally short of meeting these basic legal obligations.	No surface facilities are proposed. No surface disturbance is expected. These non-mineral uses are not expected to change from current use. Existing non- mineral uses would continue. For these reasons, impacts to these non- mineral uses were not carried forward for detailed analysis in Chapter 3 of the EA.
14	WildEarth Guardians and Sierra Club	The Forest Service may be offering its consent to the lease modifications at a time when our nation and our federal government should be doing everything possible to prevent additional carbon emissions in order to combat climate change.	Chapter 1 of the EA identifies BLM and FS policy and legal requirements to consider leasing of minerals. Impacts to air quality and from greenhouse gases is analyzed in Chapter 3 of the EA.
15	WildEarth Guardians and Sierra Club	Pursuant to the Mineral Leasing Act of 1920, a prerequisite to approving any coal lease modification is that the modification be in the "public interest" and the national interest.	Section 1.2 of the EA provides rationale as to why these modifications are in the U.S interest.
16	WildEarth Guardians and Sierra Club	The bypass of federal coal is not the only consideration the agencies must weigh in assessing whether to consent to the lease modifications. Under 30 U.S.C. § 203, a lease modification must satisfy three requirements: (1) it must "be in the interest of the United States"; (2) it must "not displace a competitive interest in the lands"; and (3) it must "not include lands or deposits that can be developed as part of another potential or existing operation."	Compliance with these three requirements is described in Chapter 1 of the EA.
17	WildEarth Guardians and Sierra Club	modification and leasing of additional coal will aid only in the profit creation for Bowie Resources.	Bowie Resources is a profit based Coal company, operating as a Delaware Corporation, authorized and permitted to do business in Utah.
18	WildEarth Guardians and Sierra Club	Many of the power plants currently receiving SUFCO coal, are slated to shutter, or at least severely reduce their capacity the addition of 6.25 million tons of coal is seemingly unnecessarycoal from the SUFCO Mine has been exported in the past and, given Bowie Resources' expressly stated plans to increase the amount of coal the company exports	The purpose and need for the lease modifications is described in Chapter 1 of the EA.

	Commenter	Comment	Response
	WildEarth Guardians and Sierra Club	We are further concerned that the federal coal program, as a whole, is moving forward in leasing without a wider assessment. BLM manages federal coal pursuant to regulations and a programmatic EIS that were originally adoptedat a time whenclimate change was not fully appreciated and market conditions, infrastructure development, scientific understanding, and national priorities were dramatically different The 1979 PEIS	The need for a programmatic EIS is beyond the scope of this proposal. Chapter 3 discloses impacts to air quality and impacts from greenhouse gas emissions.
19		does not consider the climate impacts of the federal coal program or adequately evaluate other potential environmental effects, let alone reflect the conditions of the coal industry as it exists today While Order 3348 removed the moratorium, the facts surrounding the need for a PEIS still exist. The direct, indirect, and cumulative impacts of the federal coal program have not been fully analyzed under NEPA in nearly 40 years. It is critical to complete this review before any new leasing actions are considered, including the South Fork Federal Coal Lease Modifications.	
20	WildEarth Guardians and Sierra Club	Approval of the lease modification will lead to more air and water pollution, more degradation to the quality of life for residents in the area, increased truck traffic and damage to local roads, among other impacts that will certainly impose costs upon the community and society as a whole. Because the lease modifications proposal will worsen climate change, and result in unnecessary and unmitigated pollution, with the only benefits flowing to a single coal company, both BLM and the Forest Service have ample basis to reject this proposal.	Effects on air, greenhouse gases, and water resources are discussed in Chapter 3 of the EA.
21	WildEarth Guardians and Sierra Club	The agencies must prepare an EIS in order to meet its duties under NEPA.	The Responsible Officials will make a finding as to whether an EIS is needed, once the EA is complete.
22	WildEarth Guardians and Sierra Club	The Agencies must analyze and disclose the reasonably foreseeable direct, indirect, and cumulative climate impacts of the proposed mining, and emission of connected actions.	Cumulative effects are disclosed in Chapter 3 of the EA for each of the issues analyzed in detail.
23	WildEarth Guardians and Sierra Club	The combined effect of these past operations and the proposed expansion must be disclosed on a multitude of bases, among other considerations, climate, air quality, and water quality, before the Agencies can authorize or consent to, the proposed lease modification.	Impacts to air, from greenhouse gases, and to water are disclosed in Chapter 3 of the EA.
24	WildEarth Guardians and Sierra Club	By allowing for coal mining on the lease modification and ongoing mining on the existing lease, the Agencies' decisions will, in effect, authorize myriad other indirect impacts, including connected road construction and maintenance, truck traffic, the operation and maintenance of coal processing facilities on site, the disposal of mine waste,	No additional surface disturbance is proposed or expected to occur. Impacts to air, from greenhouse gases, and to water are

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		the development of mine ventilation systems, and other impacts. If the Agencies do not believe that the proposed activities are significant in terms of the context of the area that may be impacted, the Agency must explain why.	disclosed in Chapter 3 of the EA.
25	WildEarth Guardians and Sierra Club	Include an explanation as to the thresholds upon which the Agencies based their assessment. If the Agencies cannot identify any rational thresholds for which to assess the significance of its actions with regards to context, then any future decisions will be arbitrary and capricious.	The EA characterizes the context and intensity of impacts. Impacts to air, from greenhouse gases, and to water are disclosed in Chapter 3 of the EA. As part of this analysis, permitted thresholds are described.
26	WildEarth Guardians and Sierra Club	Here, the proposed activities area also significant in the context of the potential impacts to native species and their habitats, to the climate and to other natural resources, including ground and surface water, and air quality, and to residents and the quality of life in the area.	Effects on air, greenhouse gases, and water resources are discussed in Chapter 3 of the EA. Impacts to Threatened, Endangered, Proposed, Candidate, Sensitive, and MIS species were considered and described in the BA and BE. The two Forest LRMPs also provide management direction, standards, and guidelines for management of these species. Related stipulations, also providing guidance, are included in the proposed action and in the draft Decision. For these reasons, impacts to these species were not carried forward for additional detailed analysis in Chapter 3 of the EA.
27	WildEarth Guardians and Sierra Club	The direct, indirect, and cumulative impacts of coal mining and combustion associated with the proposed SUFCO coal mine expansion will undoubtedly have a significant effect on the environment.	Impacts to air, from greenhouse gases, and to water are disclosed in Chapter 3 of the EA. The Responsible Officials will make a finding as to whether an EIS is needed, once the EA is complete.
28	WildEarth Guardians and Sierra Club	The agencies must analyze the reasonable foreseeable direct, indirect and cumulative impacts of the proposed mining, and emissions of connected actions.	Impacts to air, from greenhouse gases, and to water are disclosed in Chapter 3 of the EA.

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29	WildEarth Guardians and Sierra Club	The Agencies' NEPA review must disclose any anticipated or reasonably foreseeable future expansions, including expansions into areas currently under lease, and must analyze the impacts of the mining and burning of coal from other federal, state, and private lands or mineral reserves that are made economically or physically accessible by the proposed expansion.	See Table 3. Areas currently under lease have already been analyzed. Any additional reserves which become accessible or feasible in the future will be analyzed at the time an application for those reserves is received. Impacts to air, from greenhouse gases, and to water are disclosed in Chapter 3 of the EA.
30	WildEarth Guardians and Sierra Club	Agencies must analyze coal combustion impacts from mine expansion decisions when "(1) 'but for' the proposed expansion, the coal-combustion impacts would not occur and (2) the coal-combustion impacts are reasonably foreseeable."In this case, the purpose of mining the coal is its eventual combustion, therefore, the Agencies must analyze the coal combustion impacts from additional mining of the	Impacts to air, from greenhouse gases, and to water are disclosed in Chapter 3 of the EA.
31	WildEarth Guardians and Sierra Club	The Agencies must provide, at a minimum, the following quantifiable information, much of which includes quantification of emissions from coal combustion; Direct emissions of carbon dioxide ("CO2") during mining and transportation, identified by both annual and total figures; Indirect emissions of CO2 from combustion of coal in the lease modification area; Cumulative emissions from of CO2 from combustion of all past, current, and reasonably	Impacts to air, from greenhouse gases, and to water are disclosed in Chapter 3 of the EA. Impacts to fish are described in the BE and BA.
32	WildEarth Guardians and Sierra Club	Emissions of greenhouse gases contributing to global climate change, but also emission of hazardous air pollutants including mercury and selenium that are deposited proximate to the power plant and pose risks to both human health and the survival of endangered and other native fish in the Green River.	A BA and BE were completed for the Proposed Action. The U.S. Fish and Wildlife Service did not identify any fish as occurring in the project area (USFWS, 2017a) or being affected by the Proposed Action (USFWS, 2017b). These USFWS documents (2017a and 2017b) are located for reference in the Administrative Record for this project.
33	WildEarth Guardians and Sierra Club	an analysis of impacts to the listed Colorado pikeminnow, razorback sucker, humpback chub, and	A BA and BE were completed for the Proposed Action. The U.S. Fish and Wildlife Service did not identify any fish as occurring in the project area (USFWS, 2017a) or being affected by the Proposed Action (USFWS, 2017b).

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		bonytail.	
		bonytail.	The two Forest LRMPs also provide management direction, standards, and guidelines for management of these species. Related stipulations, also providing guidance, are included in the Proposed Action and in the draft Decision. For these reasons, impacts to these species were not carried forward for additional detailed analysis in Chapter 3 of the EA. Impacts to air, from greenhouse gases, and to water are also disclosed in Chapter 3 of the EA. These USFWS documents (2017a and 2017b) are located for
			and 2017b) are located for reference in the Administrative Record for this
	WildForth	Some of the highest levels of margury concentration in	project.
34	WildEarth	some of the highest levels of hiercury concentration in fish tissue within the entire region of the Upper Colorado River Basins occur in Colorado pikeminnow in the Middle Green River, located in close proximity to the Hunter power plant that burns the largest share of SUFCO coal. The Colorado pikeminnow is a critically-endangered fish and top natural predator in the Colorado River that has been federally protected since 1967. The pikeminnow is imperiled due to widespread destruction and modification of the Colorado River basin, including its tributaries, where it once occurred. The Agencies must analyze and assess whether SUFCO's contribution to mercury releases from Hunter and other plants will cause jeopardy to	greenhouse gases, and to water are disclosed in Chapter 3 of the EA.
35	WildEarth Guardians and Sierra Club	analyze and disclose the indirect impacts from coal transportation	Impacts to air, from greenhouse gases, and to water are also disclosed in Chapter 3 of the EA.
36	WildEarth Guardians and Sierra Club	quantify the number of trips and miles travelled for both trains and coal trucks, and these must be disclosed to the public the Agencies must assess impacts that result from these trips, including carbon dioxide emissions emitted during transportation, diesel particulate matter emissions and air quality impacts from coal trains and coal trucks, and the amount and impact of coal dust emissions as coal blows off the	Impacts to air, from greenhouse gases, and to water are also disclosed in Chapter 3 of the EA.

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37	WildEarth Guardians and Sierra Club	SUFCO coal has a limited number of purchasers, and with these likely end-users identified based on current SUFCO purchasers, the Agencies can determine the likely number of trips to each destination as a result of a 6.25 million ton SUFCO expansion, the total miles travelled, whether by coal train or coal truck, the towns and waterways likely to be adversely impacted by this transportation, and the extent of these impacts.	Impacts to air, from greenhouse gases, and to water are also disclosed in Chapter 3 of the EA.
38	WildEarth Guardians and Sierra Club	The Agencies must analyze and disclose greenhouse gas and non-greenhouse gas pollution impacts caused by the transportation of the proposed 6.25-million-ton expansion at SUFCO mine.	Impacts to air, from greenhouse gases, and to water are also disclosed in Chapter 3 of the EA.
39	WildEarth Guardians and Sierra Club	Analyze and assess water quality impacts to ensure compliance with state water quality standardsidentify all existing water quality problems in the area that will be directly, indirectly, and cumulatively affected by the proposed action and disclose any contribution the proposed action will make to those water quality problems. The Agencies must ensure that the reasonably foreseeable consequences of its actions ensure compliance with relevant water quality standards in accordance with the Clean Water Act.	Impacts to air, from greenhouse gases, and to water are also disclosed in Chapter 3 of the EA. In addition, permits for mining issued by the UDOGM include regulation compliance requirements with all other State agencies which would include the Utah DEQ, Division of Water Quality and if required, the associated UPDES permit.
40	WildEarth Guardians and Sierra Club	Agencies are responsible for taking a "hard look" at surface and groundwater water quality and quantity impacts.	Impacts to water are also disclosed in Chapter 3 of the EA.
41	WildEarth Guardians and Sierra Club	Agencies must identify all existing water quality problems in the area that will be directly, indirectly, and cumulatively affected by the proposed action and disclose any contribution the proposed action will make to those water quality problems.	Chapter 3 of the EA discloses direct, indirect, and cumulative effects to water resources.
42	WildEarth Guardians and Sierra Club	The agencies must ensure that the reasonable foreseeable consequences of its actions ensure compliance with relevant water quality standards in accordance with the Clean Water Act.	Chapter 3 of the EA discloses direct, indirect, and cumulative effects to water resources. Compliance with the Clean Water Act is described in the draft Decision Notice.
43	WildEarth Guardians and Sierra Club	South and North forks of the Quitchupah are tributaries of the Colorado River, and run right next to the mine. The Agencies must assess impacts on this particular watershed, as a whole.	Chapter 3 of the EA discloses direct, indirect, and cumulative effects to water resources.

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44	WildEarth Guardians and Sierra Club	the Agencies must disclose approximately how much water will be used at the expanded facility areas, for such things like dust suppression on roads and other uses. Agencies must disclose the threshold for the significance of the water use data.	No surface facilities would be expanded or constructed. Chapter 3 of the EA discloses direct, indirect, and cumulative effects to water resources.
45	WildEarth Guardians and Sierra Club	The current spring and seep survey is dated and does not provide an accurate, up-to-date representation of pre-mining conditions as they currently exist, according to a 2015 report regarding deficiencies at the Greens Hollow Lease Tract.	Baseline data collection is required by Stipulation #4 in the Greens Hollow Lease and Stipulation #3 of the Quitchupah Lease. Also, a permit to mine will not be issued by UDOGM (under SMCRA) without appropriate base line water monitoring (min 2 years). Chapter 3 of the EA discloses direct, indirect, and cumulative effects to water resources.
46	WildEarth Guardians and Sierra Club	While the farm asserts the water from the power plant is safe, a study found that the cattle eating it have "soft teeth and bone weaknesses." (Exhibit 8). Thus, the Agencies should incorporate an analysis of the combustion wastewater in its assessment, and determine its impacts on the human environment.	Water quality from the power plant is monitored by the state. Disclosing impacts to water resulting from the power plant is also outside the scope of this proposed action and analysis.
47	WildEarth Guardians and Sierra Club	The significant oil and gas development in the region that can also cause and contribute to water quality degradation. The potential impacts that may result from hydraulic fracturing ("fracking") are significant, and include impacts to water quality and supply, impacts to habitat and wildlife, as well as impacts on greenhouse gas emissions and air quality.	See Table 3. None exists within 15 miles of proposed project area, and as such is not considered to be a cumulative impact to this proposal. Direct, indirect, and cumulative impacts to air, from greenhouse gases, and to water are also disclosed in Chapter 3 of the EA.
48	WildEarth Guardians and Sierra Club	The agencies must analyze its impacts on the watershed, and the downstream impacts on wildlife, human health, and the surrounding environment.	Impacts to air, from greenhouse gases, and to water are disclosed in Chapter 3 of the EA. Impacts to wildlife are disclosed in the BE and BA.
49	WildEarth Guardians and Sierra Club	The Agencies must analyze and assess, at a minimum: (1) the chemical composition of ground water that flows into the mined area; (2) the quantity and quality of flow in nearby	Baseline data collection is required by Stipulation #4 in the Greens Hollow Lease

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		streams to which mine water is discharged; (3) the direction and quantity of surface-water runoff above underground mining areas because of diversion of runoff into tension cracks; (4) the quantity of water recharging aquifers that overlie a mined area; and (5) the quantity of ground water moving vertically between aquifer layers.	and Stipulation #3 of the Quitchupah Lease. Also, a permit to mine will not be issued by UDOGM (under SMCRA) without appropriate base line water monitoring (min 2 years). The mine then prepares a "Probable Hydrologic Consequences" (PHC) document which is a part of their application to mine. The UDOGM in turn, writes a "Cumulative Hydrologic Impact Analysis" (CHIA) prior to issuing a permit to mine, which covers each of these 5 concerns and much more. Chapter 3 of the EA discloses direct, indirect, and cumulative effects to water resources.
50	WildEarth Guardians and Sierra Club	Dewatering of this aquifer could affect springs and seeps which may be located near the mine.	Mitigation is required by Stipulation #18 of the Greens Hollow Lease and Stipulation #17 of the Quitchupah Lease. Chapter 3 of the EA also discloses direct, indirect, and cumulative effects to water resources.
51	WildEarth Guardians and Sierra Club	Construction and upkeep of access ways and facilities, if not properly controlled, can increase erosion and sediment yields.	No new surface facilities are proposed. Maintenance of facilities are covered by BMPs.
52	WildEarth Guardians and Sierra Club	Agencies must fully analyze and assess direct, indirect, and cumulative impacts to air quality, including impacts to air quality in the context of all National Ambient Air Quality Standards, prevention of significant deterioration increments for Class I and II areas, and visibility impacts to Class I areas.	Chapter 3 of the EA discloses direct, indirect, and cumulative effects to air quality.
53	WildEarth Guardians and Sierra Club	FLPMA requires the agency to, "provide for compliance with applicable pollution control laws, including State and Federal air, water, noise, or other pollution standards."	Impacts to air, from greenhouse gases, and to water are disclosed in Chapter 3 of the EA. Permits for air, water, noise, etc. do not get issued without compliance with all

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			State and Federal regulatory requirements.
54	WildEarth Guardians and Sierra Club	We are particularly concerned over the impacts of coal mining and combustion to pollutants for which the EPA has established NAAQS. Emission of sulfur dioxide and nitrogen oxides, which are pollutants in themselves and precursors to formation of ambient fine particulate matter methane; nitrous oxide; and hydrofluorocarbons range up to and beyond 6,300 as well as directly emitted fine particles such as PM2.5 (particulate matter of a diameter equal to or less than 2.5 micrometers).	Impacts to air, from greenhouse gases, and to water are disclosed in Chapter 3 of the EA. Air quality standards are established to protect human health. All required parameters are analyzed and disclosed.
55	WildEarth Guardians and Sierra Club	Coal burning also emits mercury and other substances classified as toxic under the Clean Air Act.	Impacts to air quality are disclosed in Chapter 3 of the EA.
56	WildEarth Guardians and Sierra Club	Air quality in the area is affected by emissions from this existing mine, trucks used in hauling the coal, and two power plants in the area: The Hunter Power Plant located near Castle Dale and the Huntington Power Plant located in Huntington.	Impacts to air quality are disclosed in Chapter 3 of the EA.
57	WildEarth Guardians and Sierra Club	Analyze and assess the impacts of emissions and pollutants as it relates to class areas [Federal Air Quality Control Regions].	Impacts to air quality are disclosed in Chapter 3 of the EA.
58	WildEarth Guardians and Sierra Club	The Agencies must analyze and disclose the reasonably foreseeable direct, indirect, and cumulative climate impacts of the proposed mining, and emissions of connected actions.	Direct, indirect, and cumulative impacts to air quality are disclosed in Chapter 3 of the EA.
59	WildEarth Guardians and Sierra Club	To ensure an effective analysis and assessment of impacts, we request that the Agencies at least use modeling to address ozone, nitrogen dioxide, and particulate matter impacts.	Direct, indirect, and cumulative impacts to air quality are disclosed in Chapter 3 of the EA.
60	WildEarth Guardians and Sierra Club	It is critical that modeling be utilized to ensure that an accurate analysis is completed and that the Agencies ensure future impacts are appropriately disclosed and mitigated. the Agencies must undertake their own analysis and assessment to comply with NEPA.	Direct, indirect, and cumulative impacts to air quality are disclosed in Chapter 3 of the EA. Emissions and discharges are regulated through state authorizations.
61	WildEarth Guardians and Sierra Club	The agencies must address human health impacts related to air quality [SO2, NOx, PM2.5, Coal Dust].	Direct, indirect, and cumulative impacts to air quality are disclosed in Chapter 3 of the EA.
62	WildEarth Guardians and Sierra Club	A recent study found a new toxin existing in coal combustion emissions The Agencies must account for this new information in its modeling analysis.	The study referenced was related to coal ash storage from coal power plants, rather than combustion, which is outside the scope of the analysis for the
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			decisions to be made for the lease modifications.
63	WildEarth Guardians and Sierra Club	use modeling to address ozone, nitrogen dioxide, and particulate matter impacts. It is critical that modeling be utilized to ensure that an accurate analysis is completed and that Agencies ensure future impacts are appropriately disclosed and mitigated.	Direct, indirect, and cumulative impacts to air quality are disclosed in Chapter 3 of the EA.
64	WildEarth Guardians and Sierra Club	analyze and assess the full extent of climate change impacts of consenting to the proposed lease modification.	Direct, indirect, and cumulative impacts from greenhouse gas emissions are disclosed in Chapter 3 of the EA.
65	WildEarth Guardians and Sierra Club	quantify the greenhouse gas emissions resulting from the proposal, including methane and carbon dioxide released during the mining process, methane emitted during the storage and shipment of the coal, carbon dioxide emissions associated with the truck and rail transportation of the coal, and the carbon dioxide emitted during the end-use combustion of the coal. In particular, the coal extraction process releases large amounts of greenhouse gases, particularly methane, through leakage from surface mines and from ventilation and degasification systems in underground mines. These methane emissions must be quantified, and alternatives that avoid or reduce these emissions must be addressed.	Direct, indirect, and cumulative impacts from greenhouse gas emissions are disclosed in Chapter 3 of the EA.
66	WildEarth Guardians and Sierra Club	analyze and disclose the impact of these greenhouse gas emissions.	Direct, indirect, and cumulative impacts from greenhouse gas emissions are disclosed in Chapter 3 of the EA.
67	WildEarth Guardians and Sierra Club	One tool available to the Agencies, though not the only available means to analyze the impact of the proposal's greenhouse gas emissions, is the social cost of carbon	Direct, indirect, and cumulative impacts from greenhouse gas emissions are disclosed in Chapter 3 of the EA.
68	WildEarth Guardians and Sierra Club	Climate change is an urgent problem, and the Agencies must acknowledge this fact in the upcoming environmental review.	Direct, indirect, and cumulative impacts from greenhouse gas emissions are disclosed in Chapter 3 of the EA.
69	WildEarth Guardians and Sierra Club	The Agencies must analyze and assess the impacts of similar and cumulative mining and coal leasing approvals that are under consideration by the U.S. Department of the Interior in the same area.	Direct, indirect, and cumulative impacts to air, from greenhouse gas emissions, and to water are disclosed in Chapter 3 of the EA. This is the only leasing activity for coal in Utah at this time.

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70	WildEarth Guardians and Sierra Club	In addition to the obligation to disclose cumulative impacts discussed above, if the proposed expansion will facilitate mining on adjacent private, state and federal lands, then NEPA requires the Agencies to disclose the impacts of mining and burning that coal as part of its analysis of the indirect effects of the proposed project.	Direct, indirect, and cumulative impacts to air, from greenhouse gas emissions, and to water are disclosed in Chapter 3 of the EA.	
71	WildEarth Guardians and Sierra Club	review must disclose any anticipated or reasonably foreseeable future expansions, including expansions into areas currently under lease, and must analyze the impacts of the mining and burning of coal from other federal, state, and private lands or mineral reserves that are made economically or physically accessible by the proposed expansion.	Direct, indirect, and cumulative impacts to air, from greenhouse gas emissions, and to water are disclosed in Chapter 3 of the EA.	
72	WildEarth Guardians and Sierra Club	in Sevier county alone, there are 65 active oil and gas wells. This oil and gas development is arguably a similar action, the direct, indirect, and cumulative impacts of which must also be analyzed and assessed in the South Fork Federal Coal Lease Modification EIS the Agencies must ensure a comprehensive analysis of any and all reasonably foreseeable oil and gas development.	Direct, indirect, and cumulative impacts to air, from greenhouse gas emissions, and to water are disclosed in Chapter 3 of the EA.	
73	WildEarth Guardians and Sierra Club	analyze and assess not only the coal extraction for the immediate SUFCO, but also assess the extraction and combustion in the wider region. Here the direct, indirect, and cumulative impacts of coal mining and combustion associated with the proposed South Fork Federal Coal Lease Modifications will undoubtedly have a significant effect on the environment, in conjunction with similar actions.	Direct, indirect, and cumulative impacts to air, from greenhouse gas emissions, and to water are disclosed in Chapter 3 of the EA. Areas currently under lease have already been analyzed. Any additional reserves which become accessible or feasible in the future will be analyzed at the time an application for those reserves is received.	
74	WildEarth Guardians and Sierra Club	analyze and disclose carbon costs.	Analysis using the social cost of carbon is covered in Section A.1.	
75	WildEarth Guardians and Sierra Club	analyze and assess the extent to which these emissions are likely to contribute to global climate changeit appears that any level of extended carbon dioxide emissions would pose significant impacts.	Direct, indirect, and cumulative impacts to air and from greenhouse gas emissions are disclosed in Chapter 3 of the EA.	
76	WildEarth Guardians and Sierra Club	Must analyze and assess the cost of carbon emission of mining the Greens Hollow lease and Quitchupah lease using the social cost of carbon protocol.	The social cost of carbon is addressed in Section A.1 of the EA. Analysis of the effects of authorizing these leases has been completed.	
77	WildEarth Guardians and Sierra Club	analyze and assess the climate impacts of mining the additional coal at SUFCO using the social cost of carbon protocol.	Analysis using the social cost of carbon is addressed in Section A.1 of the EA.	

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78	WildEarth Guardians and Sierra Club	must at least attempt to quantify the costs of its impacts, even with a disclaimer that there could be many more impacts that are not quantified.	Analysis using the social cost of carbon is addressed in Section A.1of the EA.
79	WildEarth Guardians and Sierra Club	NEPA requires the Agencies to use the social cost of carbon because it is the best tool available to analyze the economic and environmental impact of increased carbon dioxide emissions.	Analysis using the social cost of carbon is addressed in Section A.1of the EA.
80	WildEarth Guardians and Sierra Club	NEPA specifically requires federal agencies to analyze and disclose the environmental effects of their actions, including "ecological aesthetic, historic, cultural, economic, and health impacts.	Impacts from this federal action are analyzed thoroughly as documented in this EA and project record.
81	WildEarth Guardians and Sierra Club	NEPA regulations direct agencies to evaluate a project's impacts "based on theoretical approaches or research methods generally accepted in the scientific community."	Impacts from this federal action are analyzed thoroughly as documented in this EA and project record.
82	WildEarth Guardians and Sierra Club	Agencies cannot ignore the effects of GHG emissions from mining operations or coal combustion. NEPA requires agencies to engage in "a reasonable good faith, objective presentation of topics," such that it "fosters both informed decision making and informed public participation."	Impacts from this federal action are analyzed thoroughly as document in this EA and project record. Specialists at the USFS, BLM, and OSM are familiar with and adhere to scientific principles and acceptable methods.
83	WildEarth Guardians and Sierra Club	The agency must use the social cost of carbon to disclose the "ecologicaleconomic, and social" impacts of the proposed action.	Impacts to air, from greenhouse gases are disclosed in Chapter 3 of the EA
84	WildEarth Guardians and Sierra Club	Using any of the Interagency Working Group's social cost of carbon values demonstrates that the combustion of coal from the proposed expansion will likely result in massive economic damages associated with climate change. The total climate impacts from the proposal will reach into the hundreds of millions of dollars, and this must be disclosed to the public and decision makers. To this end, the Agencies must fully analyze and disclose the carbon costs of authorizing the proposed lease modification.	Analysis using the social cost of carbon is addressed in Section A.1 of the EA.
85	WildEarth Guardians and Sierra Club	The Agencies must account for wildlife impacts, especially Greater Sage-Grouse. Of particular concern is the analysis and assessment of impacts to the greater sage grouse. Much of the Greens Hollow tract underlies mapped priority sage grouse habitat. The Agencies must analyze whether the sage grouse will be adequately protected and the leasing will not contribute to the need for listing under the ESA.	Analysis using the social cost of carbon is addressed in Section A.1 of the EA.

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86	WildEarth Guardians and Sierra Club	analyze and assess the impacts as related to its obligation to comply with its Land and Resource Management Plans	Consistency with the two Forest LRMPs and Amendments is discussed in Chapter 1 of the EA and is included in the project record.
87	WildEarth Guardians and Sierra Club	The Agencies must analyze and assess potential for impacts from project-related construction activity and vehicle traffic with sage grouse protection in mind. The development of the mine in question will involve access road development, use, and/or maintenance. Roads pose and important threat to sage grouse by fragmenting their habitat and displacing them from adjacent areas.	No road development would occur on the surface or at any location as a result of this leasing action, within or not within any habitat. See Chapter 2 of the EA. For these reasons, impacts from project related construction activity were not carried forward for additional detailed analysis in Chapter 3 of the EA.
88	WildEarth Guardians and Sierra Club	Existing impacts include vegetation treatment projects, roads, off-road vehicle traffic, and existing coal mine exhaust fans. Reasonably foreseeable impacts include all of this project's modification of infrastructure. Cumulative effects for sage grouse consider only partially the direct consequences of coal leasing on this tract, but not how these interact with other cumulative impacts.	Table 3 of the EA lists the past, present, and reasonably foreseeable actions in the cumulative impacts analysis areas. No surface facilities are proposed in conjunction with the lease modification In addition, impacts to wildlife were considered and described in the BA and BE for direct, indirect and cumulative impacts.
89	WildEarth Guardians and Sierra Club	The Forest Service Sensitive Species Manual, requires that the Forest Service "develop and implement management practices to ensure that species do not become threatened or endangered because of Forest Service actions," to maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System lands," and to avoid or minimize impacts to species whose viability has been identified as a concern."	Impacts to Threatened, Endangered, Proposed, Candidate, Sensitive, and MIS species were considered and described in the BA and BE. The two Forest LRMPs also provide management direction, standards, and guidelines for management of these species. Related stipulations, also providing guidance, are included in the proposed action and in the draft Decision. For these reasons, impacts to these

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			species were not carried forward for additional detailed analysis in Chapter 3 of the EA.
90	WildEarth Guardians and Sierra Club	Consider in detail mitigation measures to offset the climate and environmental impacts of additional coal.	This alternative is discussed in Chapter 2 of the EA.
91	WildEarth Guardians and Sierra Club	Consider in detail any alternative that are based in the satisfaction of needs other than avoiding the bypass of coal.	The no action alternative is analyzed. Other alternatives considered, but eliminated from detailed study are addressed in Chapter 2 of the EA.
92	WildEarth Guardians and Sierra Club	Analyze whether a new lease would be more appropriate than a lease modification. A lease modification does not have to be approved through a competitive process.	The BLM determined that the request qualified for lease modifications per 43CFR 3432.2(a) on August 16, 2017 (BLM, 2017). The fact that the lease is not sold competitively has no impact on the established pre-lease sale Fair Market Value established by BLM through exhaustive review by the Department of Mineral Evaluation and Office of Valuation Services (DME/OVS).
93	WildEarth Guardians and Sierra Club	The Agencies must explain how granting a lease modification will ensure that the American public will receive a fair market value for its coal, and why a lease modification, rather than a lease issuance, is appropriate here.	Fair Market Value (FMV) is determined using the BLM Handbook H-3630-1, updated September 2016. The results are then reviewed by the U.S. Department of Interior, Department of Mineral Evaluation/Office of Valuation Services who must sign-off on the result. A lease modification (non- competitive sale) is not considered differently than a lease-by-application

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			(competitive sale). Also, see Chapter 1 of the EA.
94	WildEarth Guardians and Sierra Club	Consider in detail an alternative that limits the amount of coal tonnage and/or acreage to be mined to lower levels than are currently proposed. To that end, a specific appropriate limit could be a leasing proposal that met only the demands of domestic coal needs, and not export needs. Such an alternative will limit the extent to which the direct and indirect impacts of mining, hauling, and coal combustion will occur, as well as incentivize power plant owners to develop alternative non-coal-fired electricity generation.	This alternative is discussed in Chapter 2 of the EA.
95	WildEarth Guardians and Sierra Club	Consider in detail an alternative that plans for the just transition of the SUFCO mine away from coal.	This alternative is discussed in Chapter 2 of the EA.
96	WildEarth Guardians and Sierra Club	Consider in detail offsite mitigation, as well as mitigation that requires compensation consider an alternative or alternatives that would require Bowie Resources to offset its carbon dioxide emissions from the mine and the power plants it fuels with offsite mitigation by developing a comparable amount of renewable energy. Such a mitigation measure would provide additional generation and also help to create cleaner energy sources that will eventually offset the greenhouse gas emissions produced by coal mining and burning.	This alternative is discussed in Chapter 2 of the EA.
97	WildEarth Guardians and Sierra Club	Reject the proposed lease modification in favor of the No Action alternative.	The Responsible Officials will decide whether to proceed with this action, to proceed with an alternative action, or to do nothing at this time, once the EA is complete.
98	WildEarth Guardians and Sierra Club	Prepare a full EIS for the proposed lease modification.	The Responsible Officials will make a finding as to whether an EIS is needed, once the EA is complete.

A.1 Social Cost of Carbon

A protocol to estimate what is referenced as the "social cost of carbon" (SCC) associated with greenhouse gas emissions was developed by a federal Interagency Working Group (IWG), to assist agencies in addressing Executive Order (EO) 12866 which requires federal agencies to assess the cost and the benefits of proposed regulations as part of their regulatory impact analyses. The SCC is an estimate of the economic damages associated with an increase in carbon dioxide emissions and is intended to be used as part of a cost-benefit analyses for proposed rules. As explained in the Executive Summary of the 2010 SCC Technical Support Document "the purpose of the [SCC]

estimates...is to allow agencies to incorporate the social benefits of reducing carbon dioxide (CO₂) emissions into cost-benefit analysis of emissions." Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 February 2010 (withdrawn by EO13783). While the SCC protocol was created to meet the requirements for regulatory impact analyses during rulemakings, there have been requests by public commenters or project applicants to expand the use of SCC estimates to project-level NEPA analyses.

The use of the SCC protocol was not expanded for the South Fork Federal Coal Lease modifications for a number of reasons. Most notably, this action is not a rulemaking for which the SCC protocol was originally developed. Second, on March 28, 2017, the President issued Executive Order 13783 which, among other actions, withdrew the Technical Support Documents upon which the protocol was based and disbanded the earlier Interagency Working Group on Social Cost of Greenhouse Gases. The Order further directed agencies to ensure that estimates of the social cost of greenhouse gases used in regulatory analyses "are based on the best available science and economics" and are consistent with the guidance contained in OMB Circular A-4, "including with respect to the consideration of domestic versus international impacts and the consideration of appropriate discount rates" (EO 13783, Section 5(c)). In compliance with OMB Circular A-4, interim protocols have been developed for use in the rulemaking context. However, the Circular does not apply to project decisions, so there is no Executive Order requirement to apply the SCC protocol to project decisions. Further, NEPA does not require a cost-benefit analysis (40 CFR § 1502.23), although NEPA does require consideration of "effects" that include "economic" and "social" effects (40 CFR § 1508.8(b). Without a complete monetary cost-benefit analysis, which would include the social benefits of the proposed action to society as a whole and other potential positive benefits, inclusion solely of a SCC cost analysis would be unbalanced, potentially inaccurate, and not useful in facilitating an authorized official's decision. Any increased economic activity, in terms of revenue, employment, labor income, total value added, and output, that is expected to occur with the proposed action is simply an economic impact, rather than an economic benefit, inasmuch as such impacts may be viewed by another person as negative or undesirable impacts due to potential increase in local population, competition for jobs, and concerns that changes in population will change the quality of the local community.

Economic impact is distinct from "economic benefit" as defined in economic theory and methodology, and the socioeconomic impact analysis required under NEPA is distinct from costbenefit analysis, which is not required.

Finally, the SCC protocol does not measure the actual incremental impacts of a project on the environment and does not include all damages or benefits from carbon emissions. The SCC protocol estimates economic damages associated with an increase in CO₂ emissions - typically expressed as a one metric ton increase in a single year - and includes, but is not limited to, potential changes in net agricultural productivity, human health, and property damages from increased flood risk over hundreds of years. The estimate is developed by aggregating results "across models, over time, across regions and impact categories, and across 150,000 scenarios" (Rose, S. and EEARG, EPRI, 2014). The dollar cost figure arrived at based on the SCC calculation represents the value of damages avoided, if ultimately, there is no increase in carbon emissions. But the dollar cost figure is generated in a range and provides little benefit in assisting the authorized officer's decision for

project level analyses. For example, in a recent EIS, OSMRE estimated that the selected alternative had a cumulative SCC ranging from approximately \$4.2 billion to \$22.1 billion depending on a dollar value and the discount rate used, and the cumulative SCC for the no action alternative ranged from \$2.0 billion to \$10.7 billion. Given the uncertainties associated with assigning a specific and accurate SCC resulting from approximately one additional year of operation, and that the SCC protocol and similar models were developed to estimate impacts of regulations over long time frames, this EA quantifies direct and indirect greenhouse gas emissions and evaluates these emissions in the state/county emission inventories as discussed in Section 3.4 of this EA.

To summarize, this EA does not undertake an analysis of SCC because 1) it is not engaged in a rulemaking for which the protocol was originally developed; 2) the IWG, technical supporting documents, and associated guidance have been withdrawn; 3) NEPA does not require cost-benefit analysis ; and 4) the full social benefits of coal-fired energy production have not been monetized, and quantifying only the costs of GHG emissions but not the benefits would yield information that is both potentially inaccurate and not useful.

Appendix C Biological Assessment and Biological Evaluation

Biological Assessment and Biological Evaluation for the South Fork Federal Coal Lease Modifications Revision 1

#114-520378 May 2018

PRESENTED TO

U.S. Department of Agriculture, Forest Service Fishlake National Forest

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and

Manti-La Sal National Forest 599 West Price River Dr. Price, UT 84501

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1.0 INTRODUCTION

Canyon Fuel Company, LLC. is requesting modifications to the lease boundaries for federal coal deposits near the Sufco Mine in Sevier County, Utah. The requested lease modifications are for federal coal leases UTU-84102 (Greens Hollow Lease) and U-63214 (Quitchupah Lease), together referred to as the South Fork Lease Modifications (**Figure 1**). The South Fork Lease Modifications are composed of National Forest Lands, Fishlake National Forest and Manti-La Sal National Forest, and federal minerals are administered by the U.S. Department of the Interior, Bureau of Land Management (BLM) Price Field Office. Canyon Fuel Company's request to modify the lease boundaries was submitted to the BLM Utah State Office in May 2017.

Environmental impacts from the proposed action are being reviewed in an Environmental Assessment (EA). In support of the EA, this Biological Assessment and Biological Evaluation (BA/BE) has been prepared to analyze the potential effects of the lease modifications on threatened, endangered, and proposed (TEP) species listed under the Endangered Species Act (ESA); on the Regional Forester's list of sensitive species; and management indicator species identified in the Forest Plans for the Fishlake and Manti-La Sal National Forests. This BA/BE follows standards established in Forest Service Manual (FSM) 2670. Section 7 of the ESA requires federal agencies to determine if any activities they authorize, fund, or carry out would jeopardize the continued existence of TEP species or result in the destruction or adverse modification of critical habitats. This BA/BE analyzes potential project impacts on TEP species, and provides determinations on whether the proposed action is likely to affect TEP species or their critical habitat. The U.S. Fish and Wildlife Service (USFWS) must be consulted if TEP species or their critical habitats may be affected by authorized activities.

The Forest Service has developed policy for sensitive species (FSM 2670.32). Sensitive species are those plants and animals identified by the Regional Forester for which population viability is a concern as evidenced by: 1) significant current or predicted downward trends in population numbers of density, or (2) significant current or predicted downward trends in population numbers of density, or (2) significant current or predicted downward trends in population numbers of density, or (2) significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. This BA/BE identifies sensitive species that may occur in the project area and analyzes the effects in sufficient detail to determine whether impacts on these species or their habitat would adversely affect their viability. Management indicator species are "plant and animal species, communities, or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent" (FSM 2620.5).

1.1 PROPOSED ACTION

The Forest Service proposed action is to consent to the BLM modifying federal coal leases UTU-84102 (Greens Hollow Lease) and U-63214 (Quitchupah Lease), held by Canyon Fuel Company. The Forest Service also proposes to require the parent lease stipulations from the Greens Hollow and Quitchupah Leases (Appendix A of the EA) with modifications to Stipulation #18 of the Greens Hollow Lease and Stipulation #17 of the Quitchupah Lease. These modifications include protection for spring sources within the project area.

Based on Forest Service consent the BLM proposed action is to approve the coal lease modifications submitted as described in the application letter (Canyon Fuel Company, 2017).

The modifications of these leases could result in the underground mining of approximately 6.25 million tons of coal in approximately 790 acres of federal coal lands. No new surface facilities are proposed nor are any surface disturbances foreseen.

Lease UTU-84102 in Township 21 South, Range 4 East, Salt Lake Base and Meridian:

All or parts of Sections 11, 14, 15, 22, and 23 - containing 620 acres, more or less

Lease U-63214 in Township 21 South, Range 4 East, Salt Lake Base and Meridian:

All or parts of Sections 22 and 23 - containing 170 acres, more or less.

Applicant: Canyon Fuel Company, LLC, 225 North 5th Street, Suite 900, Grand Junction, CO 81501.

In addition to the federal coal in the leases modifications, approval of the leases modifications would facilitate the recovery of 2.3 million additional tons of federal coal from the existing leases that would otherwise be bypassed (hereafter referred to as bypass coal) (Canyon Fuel Company, 2017). Recovering these coal resources was previously analyzed and approved in the Greens Hollow Federal Coal Lease Tract UTU-84102 Final Supplemental EIS (FSEIS) (BLM and Forest Service, 2015) and the Quitchupah Federal Coal Lease Tract U-63214 Environmental Assessment (BLM and Forest Service, 1988). The Greens Hollow FSEIS is incorporated by reference.

If mining begins upon approval of the lease modifications and associated DOGM permit, the modification areas and the bypass coal that would be accessed (a combined total of 8.55 million tons of coal) represents about 1.5 years of additional mine life.

Special coal lease stipulations for UTU-84102 (Greens Hollow Lease) and U-63214 (Quitchupah Lease) are included in the proposed action because they would also apply to the lease modifications. The special coal lease stipulations are included in Appendix A of the EA.

1.2 PURPOSE AND NEED

The BLM and the Forest Service have identified a need to carry out their statutory and regulatory responsibilities in the federal coal program and are responding to a request to modify two existing federal coal leases. The agencies have a need to consider issuing the two coal lease modifications for federal coal lands immediately adjacent to existing federal coal leases UTU-84102 and U-63214, under the Mineral Leasing Act of 1920, as amended by the Federal Coal Leasing Amendments Act of 1976, and the Energy Policy Act of 2005, according to the regulatory process in 43 CFR 3432.

The purpose of the agencies actions is to implement direction in the applicable land management plans with respect to coal resource management. This direction is described below in Section 1.4.1 for the BLM, and Section 1.4.2 for the Fishlake and Manti-La Sal National Forests.

Additional purposes of the federal agencies' actions are to facilitate recovery of federal coal resources in an environmentally sound manner (30 U.S.C. 1265(b)(1)), to carry out the federal government's policy in the Mining and Minerals Policy Act of 1970, and to foster and encourage private enterprise in the development of economically sound and stable industries to help assure satisfaction of industrial, security and environmental needs. The lease modifications are to ensure that compliant and super-compliant coal reserves are recovered and not bypassed.

2.0 ACTION AREA DESCRIPTION

The action area for this BA/BE analysis is the approximately 790-acre lease modifications and an additional halfmile buffer. It is located in the Wasatch Mountains, approximately ten miles west-northwest of the town of Emery, Utah (**Figure 1**). The action area lies within the Wasatch Plateau physiographic province, where topography is characterized by plateaus broken up by deeply incised canyons. The action area is approximately 3.5 miles north of Convulsion Canyon and is adjacent to the limestone outcrop known as White Mountain (**Figure 2**). Elevations range from 8,200 to 9,775 feet. Climatically, the area is classified as subalpine with average winter season and summer season temperatures in the aspen-fir zone of 27 to 58 degrees Fahrenheit. Average annual precipitation is 29 inches in the aspen-fir zone, most of which falls as snow from November to May (Price and Evans 1937). Drainages in the action area are shown on **Figure 2**. North Fork Quitchupah Creek and its South Fork tributary drain the eastern portion of the action area, flowing into the main stem of Quitchupah Creek and eventually into the Muddy River. This portion of the action area is within the larger Colorado River Basin. Skutumpah Creek (aka Skumpah) drains the southwestern portion of the action area, flowing into Salina Creek and eventually the Sevier River. The Sevier River Basin is a closed basin terminating at Sevier Lake. The action area encompasses only the upper reaches of these drainages where minimal erosion into the plateau has taken place. The streams are classified as perennial in the National Hydrography Dataset (NHD) (USGS 2017), but the headwater flows within the action area are often intermittent in duration (UDOGM 2018). Streams in the action area derive flow from snowmelt runoff, groundwater seepage, and thunderstorms. There are also small ponded areas present.

The headwaters in the action area have not been surveyed for fisheries. Drainages of North Fork Quitchupah Creek and South Fork are not expected to support fish due to the steep terrain and presence of road culverts that likely block fish passage up stream (Jewkes 2017a). Portions of Skutumpah Creek were surveyed in 2000 just below the action area and above Skutumpah Reservoir, and a marginal non-native fishery was present (Whelan 2017). The stream is not optimal trout habitat due to the lack of pools and minimal habitat diversity (Shell Valley Consulting 2003). Just below the reservoir, the stream is often dry in summer months (Whelan 2017; Shell Valley Consulting 2003). Skutumpah Reservoir contains rainbow trout, which are maintained through stocking (Hadley 2011).

The topography in the action area consists of steep hillsides and drainages. No cliff formations are present. White Mountain, a prominent limestone outcrop, is located 0.75 mile northwest of the lease modifications.

Vegetation within the action area is predominately aspen (*Populus tremuloides*) and mixed aspen-conifer (*Pinophyta* spp.) forest. Patches of mixed conifer forest are also present. The forest types are interspersed within open areas of montane sagebrush (*Artemisia tridentata* spp. *vaseyana*) steppe and grassland/meadow. In addition, mountain shrub communities are also present. Vegetation along streams is similar to adjacent upland areas. In some areas, a narrow band of willow (*Salix* spp.) and other shrubs line the banks.

Human access is limited due to the rugged terrain and limited road access. There are minor jeep trails but no highways or infrastructure are present.

Mining activities within the lease modifications would be underground. There would be no direct surface disturbance in the action area as a result of the proposed action. Surface land subsidence is expected to be minimal, resulting in negligible surface impacts.



Figure 1. Project Location



Figure 2. Action Area

3.0 GENERAL EFFECTS

If the lease modifications are approved, the coal would be mined as part of the existing Sufco Mine, which is an underground coal mine. No surface disturbance is proposed. Ongoing mining operations at the Sufco Mine are conducted according to their current mine and reclamation plan (MRP) approved by the Utah Division of Oil, Gas, and Mining. Mining would be initiated as soon as the lease modifications are obtained and the appropriate mining and reclamation permits are approved. Canyon Fuel Company anticipates that mining of the South Fork Lease Modifications would be completed in approximately 1.5 years. Mining would continue into the UTU-84102 (Greens Hollow Lease) as described in the Greens Hollow Coal Leasing Environmental Impact Statement (Forest Service and BLM, 2015).

Coal mining at the Sufco Mine is conducted underground via longwall mining methods. No direct surface disturbance would occur and minimal surface disturbance from subsidence is foreseen in the modification areas due to the thick overburden compared to the thin coal seam to be removed. No cliffs or escarpments are present in the action area, and therefore; cliffs would not be affected by the proposed project.

Streams in the action area are headwaters that are perennial to intermittent in flow. The springs and seeps located within the lease modifications are most likely supported by shallow water migration through the Flagstaff Limestone and discharged from the North Horn Formation. The springs and seeps located in the action area are separated from the coal seams proposed for mining by a low permeability, heterogeneous rock sequence, resulting in low potential for vertical groundwater flow. Due to this lack of connectivity, impacts to surface water systems due to the proposed action are not expected. Additionally, the interbedded claystones, siltstones, and sandstones of the Wasatch Plateau are known to be rich in swelling clays. These clays absorb water and expand appreciably relative to their dry volume, which reduces the hydraulic conductivity of the rock or soil that contains them and contributes to the relatively rapid closing or healing of tension fractures that may result from subsidence (UDOGM 2007).

Using methods from Darling (2011), it is estimated that based on the proposed 11-foot mining extraction height, effects to groundwater aquifers, springs, seeps, and streams may occur as a result of upwardly propagating fracturing only in areas where the overburden is less than 660 feet (Darling 2011). Actual overburden in the lease modifications area ranges from 1,250 feet to 2,650 feet. Therefore, measurable impacts to surface water or shallow groundwater systems from upwardly propagating fractures are not anticipated.

The lease modifications would include a stipulation that requires mining be done in a manner that prevents surface subsidence that may cause hazardous conditions, result in damage to existing surface structures, or damage the flow of perennial streams (see Appendix A and Appendix B of the EA). In addition, there is also a stipulation requiring inventory and monitoring of threatened or endangered species and migratory birds of high federal interest in the potentially affected area. The Sufco Mine conducts annual inventories and monitoring of raptors and other migratory birds, sensitive species, management indicator species, and TEP in potential subsidence areas.

4.0 THREATENED AND ENDANGERED SPECIES

The USFWS provided an official list of TEP species listed under the ESA to be considered for this proposed action. The list was obtained from the USFWS Information for Planning and Conservation (IPAC) website and is available in **Appendix A**. **Table 1** lists these species along with their habitat and range information and an evaluation of their potential occurrence within the action area. No proposed or designated final critical habitat exists within the action area for any of these species.

Projects resulting in water depletions from any watershed in the Colorado River Basin have typically required an analysis of potential effects to Colorado River endangered fish species. The action area is within the Colorado

River Basin but these fish were not listed on the official TEP species list obtained from IPAC for this project. Mr. George Weekley of the USFWS Utah Ecological Services Office stated that for this area of Utah, projects outside the San Raphael River drainage are not in the depletion consultation area (USFWS 2017). Quitchupah Creek and Muddy Creek, which drain the Sufco Mine, flow into the Dirty Devil River; therefore, watersheds for these streams and their tributaries are excluded from the water depletion consultation area for Colorado River endangered fish (USFWS 2017) and the species do not need to be analyzed for this project.

Species Name	Status	Habitat and Range	Potential for Occurrence within the Action Area		
BIRDS					
California Condor (<i>Gymnogyps</i> californianus)	E	Wide-ranging species that requires rock or cliff escarpments for nesting and wide expanses of open grasslands or savannas to scavenge for carrion. Individuals from the reintroduced population in northern Arizona often roosts in southern Utah, and have been documented flying as far north as Flaming Gorge (USFWS 2013).	Unlikely to Occur . May fly over the action area but foraging, nesting, or roosting would not occur due to the lack of suitable habitat. The action area is forested; no suitable cliff cavities or expansive open foraging areas are present.		
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>)	т	Occurs in scattered lowland riparian areas across Utah. Inhabits mature riparian forest, including an overstory of large trees and at least one layer of dense shrub in the understory. In Utah this is typically cottonwood (<i>Populus</i> spp.)-willow communities. Found at elevations below 8,500 feet (USFWS 2015).	Unlikely to Occur. There is no cottonwood-willow habitat in the action area.		
MAMMALS					
Utah Prairie Dog (<i>Cynomys parvidens</i>)	т	Occurs only in southwestern and south-central Utah. Inhabits semi-arid shrub-steppe and grassland habitats from 5,100 to over 10,000 feet. Within these habitats, prefer swale- type formations where moist herbaceous vegetation is available and soils are well-drained (USFWS 2012).	Unlikely to Occur . Based on the Utah Division of Wildlife Resources range map (UDWR 2015a), the species does not currently occupy this portion of Sevier County. In addition, the forest habitat in the action area is not suitable habitat for prairie dogs, which require open vegetation.		
PLANTS					
Heliotrope Milk-vetch (<i>Astragalus montii</i>)	Т	Occurs in very limited limestone barren habitat at timberline, including openings in spruce (<i>Picea</i> spp.)-fir	Unlikely to Occur . There is a known population nearby on White Mountain but it is not within the action area.		

Table 1. Federally Threatened, Endangered, and Proposed Species

Species Name	Status	Habitat and Range	Potential for Occurrence within the Action Area
		(<i>Abies</i> spp.) forest or at plateau margins on Flagstaff Limestone. Elevation range is between 10,500 and 11,300 feet. Endemic to central Utah in Sanpete and Sevier counties, where it is found only on the MLNF. There are a total of three populations, all of which are within eight miles of each other: two in southern Sanpete County and one on White Mountain in Sevier County. The limestone cliffs of White Mountain are located approximately 0.75-mile from the lease modifications. Critical habitat for this species is designated only in Sanpete County, and is not present in the action area. The White Mountain population consists of approximately 60,000 individuals distributed in scattered small stands within a 300-acre area (UNPS 2016; USFWS 1995).	Based on geology maps (Hintz et al. 2000; UGS 2016), there is no exposed Flagstaff Limestone in the action area. The White Mountain population is confined to a 300-acre area and all other suitable habitat has been surveyed (USFWS 1995). For these reasons, this species is not expected to occur in the action area.
Jones Cycladenia (<i>Cycladenia humilis</i> var. <i>jonesii</i>)	Т	Gypsiferous saline soils on the Chinle, Cutler, and Summerville Formations in <i>Eriogonum</i> – <i>Ephedera</i> , cool desert shrub, and juniper (<i>Juniperus</i> spp.) communities. Elevation range between 4,400 and 6,000 feet. Endemic to Utah in Emery, Garfield, Grand, and Kane counties (UNPS 2016; USFWS 2008).	Unlikely to Occur . The action area is well above the elevational range for this species, and lacks suitable shrub or juniper habitat. In addition, the species' known geographic range does not include Sevier County.

E= Endangered; T = Threatened; Manti-La Sal National Forest

The Utah Natural Heritage Program's (UNHP) database was queried for the action area. The UNHP database contained no occurrences of USFWS threatened or endangered species in the lease modifications or within the action area (**Appendix B**). Based on the desktop review and UNHP response, no threatened or endangered species or critical habitats occur in the action area. Therefore, the proposed action would have no effect on TEP species or their critical habitat. Because there would be no direct or indirect effects, there would also be no cumulative effects to TEP species. **Table 2** provides a summary of these determinations by species.

Species Name	Analysis of Impacts	Species Determination	Critical Habitat Determination
California Condor (<i>Gymnogyps</i> californianus)	Species not present in action area. No critical habitat present in the action area.	No Effect	No Effect
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>)	Species not present in action area. No proposed critical habitat present in the action area.	No Effect	No Effect
Utah Prairie Dog (<i>Cynomys parvidens</i>)	Species not present in action area. No critical habitat has been designated for this species.	No Effect	N/A
Heliotrope Milk-vetch (<i>Astragalus montii</i>)	Species not present in action area. No critical habitat present in the action area.	No Effect	No Effect
Jones Cycladenia (<i>Cycladenia humilis</i> var. <i>jonesii</i>)	Species not present in action area. No critical habitat has been designated for this species.	No Effect	N/A

 Table 2. Determination of Effects on USFWS Federally Listed Species

E= Endangered; T = Threatened; N/A = Not applicable because no critical habitat has been designated.

5.0 SENSITIVE SPECIES

Chapter 2670 of the FSM sets objectives for management of threatened, endangered, candidate, and sensitive species. The objectives include managing habitats and activities for threatened and endangered species to achieve recovery objectives so that special protection measures provided under the ESA of 1973, as amended (16 U.S.C. § 1531 et seq.) are no longer necessary, and to implement management practices to ensure that sensitive species do not become threatened or endangered due to Forest Service actions.

The Regional Forester in Region 4 publishes a list of Forest Service sensitive species by forest (**Appendix C**). **Table 3** and **Table 5** list the Fishlake and Manti-La Sal National Forest sensitive wildlife and plant species, respectively, along with their known range, habitat requirements, and potential to occur within the action area. The action area analyzed for sensitive species is a half-mile buffer around the lease modifications.

5.1 SENSITIVE WILDLIFE

Table 3 lists sensitive wildlife species of the Fishlake and Manti-La Sal National Forest along with their known range, habitat requirements, and potential to occur within the action area. Based on this review, no sensitive wildlife species have known occurrences or primary habitat within the action area. Some species may occur in the action area incidentally (i.e., flyover of birds) or in portions of the action area that provide secondary habitat for that species. Potential impacts to these species are analyzed below. No sensitive fish species occur in the action area, but these species are analyzed further to consider potential effects on occupied downstream water bodies.

Species Name	Status	Habitat and Range	Potential for Occurrence within the Action Area
AMPHIBIANS			
Boreal (Western) Toad (Anaxyrus (<i>=Bufo)</i> <i>boreas</i>)	FLNF and MLNF Sensitive Species	Found in permanent water bodies in certain mountain ranges in Utah. Associated with a variety of habitats above 5,150 feet, including riparian, sagebrush (<i>Artemisia</i> spp.), pinyon (<i>Pinus</i> spp.)-juniper, mountain shrub, mixed conifer, and aspen-conifer forests (Hogrefe et al. 2005).	May Occur . Perennial water sources occur within the action area. Larvae were documented in two ponds west of the existing Greens Hollow tract in 2001 but were not present when resurveyed in 2003 (Cirrus 2014a). Regular breeding occurs on both the MLNF and FLNF to the north and south of the action area, but these sites are more than 40 miles away (Hogrefe et al. 2005). The MLNF has surveyed several times over the past ten years and has found only one breeding site (East Mountain, approximately 45 miles northeast of the project) (Jewkes 2017b).
Columbia Spotted Frog (<i>Rana luteiventris</i>)	MLNF Sensitive Species	Found in Utah in isolated populations along the Wasatch Front, West Desert, and San Pitch River (as far south as northern Sanpete County). In Utah, this species is usually found in semi-permanent ponds with cool, clear spring-fed water and organic substrates (Bailey et al. 2006).	Does Not Occur . Action area is outside species' known geographic range.
BIRDS			
Bald Eagle (<i>Haliaeetus</i> <i>leucocephalus</i>)	FLNF and MLNF Sensitive Species	Bald eagles may be found on the FLNF and MLNF occasionally in winter months but no active breeding sites are known. In the winter, they roost communally at night in deciduous and coniferous trees, typically near water that is not frozen (UDWR 2005). There is no winter roosting habitat within the action area.	May Occur . May use the action area incidentally for winter foraging. In November 2003, five eagles were observed along Cowboy Creek approximately 1.5 miles to the northeast of the lease modifications (Cirrus 2014a).
Flammulated Owl (<i>Otus flammeolus</i>)	FLNF and MLNF Sensitive Species	Found in mature pine and mixed- conifer forests, especially ponderosa pine (<i>Pinus ponderosa</i>)-Douglas fir (<i>Pseudotsuga menziesii</i>) forests (Rodriguez 2006). Require cavities excavated by woodpeckers for nesting. Migrates to Mexico and	May Occur . Occurs in the adjacent Greens Hollow Tract (Cirrus 2014a).

Table 3. Fishlake and Manti-La Sal National Forest Sensitive Wildlife Specie

Species Name	Status	Habitat and Range	Potential for Occurrence within the Action Area
		Central America in winter. Recent breeding surveys have found this owl in ponderosa pine, limber pine (<i>Pinus</i> <i>flexilis</i>)/aspen, and mixed conifer- aspen forest types adjacent to the action area (Cirrus 2014a).	
Greater Sage-grouse (<i>Centrocercus</i> <i>urophasianus</i>)	FLNF and MLNF Sensitive Species	Resident in sagebrush habitats across Utah. Based on current GIS data from UDWR, the lease modifications are not within mapped lekking, nesting, brood-rearing, or winter habitat. Based on current BLM GIS data, the lease modifications are not within a PHMA or a GHMA. There is a PHMA located 1.2 miles to the east, which is used by the Emery population (aka Biologically Significant Unit). The lease modifications are mostly forested and do not contain suitable habitat for sage-grouse. The nearest lek is approximately 4.1 miles east of the lease modifications.	May Occur . May occur in the action area incidentally (i.e., flyovers) due to the proximity to occupied sagebrush habitat to the east, but regular use is not expected due to the presence of trees.
Northern Goshawk (<i>Accipiter gentilis</i>)	FLNF and MLNF Sensitive Species	Nest in a variety of habitat conditions but show a preference for mature and older forests with large trees, dense canopy cover, and open understories (Graham et al. 1999). The majority of nesting in Utah occurs in mixed lodgepole pine (<i>Pinus cont</i> orta), aspen, Engelmann spruce (<i>Picea engelmannii</i>), and mixed spruce-pine forests. In winter may descend into the lower elevation woodlands and riparian areas (Graham et al. 1999).	May Occur . UNHP has records of this species within the action area (i.e., within half-mile of the lease modifications) (see Appendix B). May occur in the action area incidentally but no breeding is expected due to the lack of suitable mature forest habitat. Was not found in the action area during the 2017 annual goshawk surveys conducted for the Sufco Mine.
Peregrine Falcon (<i>Falco peregrinus</i> <i>anatum</i>)	FLNF and MLNF Sensitive Species	Nests on high ledges on mountain cliff faces as well as high-rise buildings near abundant avian prey populations (Rodriguez 2006). Nests are typically located within ten miles of water bodies or marshes. This species is uncommon in montane	May Occur . A pair was observed in Muddy Creek canyon in 2002 (Cirrus 2014a). There are two known eyries within ten miles of the action area; one is 6.5 miles to the southeast of the lease modifications and the other is 9.5 miles to the east (Jewkes 2017a). Annual raptor nest monitoring for the Sufco Mine has not documented the

Species Name	Status	Habitat and Range	Potential for Occurrence within the Action Area
		areas and generally occurs at lower elevations in Utah (Bosworth 2003).	species in the action area and there is no suitable cliff nesting habitat in the action area. May occur incidentally (i.e., fly over), but action area does not contain primary habitat.
(American) Three-toed Woodpecker (<i>Picoides tridactylus</i>)	FLNF and MLNF Sensitive Species	Restricted to high elevation conifer forests above 8,000 feet, especially spruce-fir (Parrish et al. 2002). Excavates a nest cavity in trees and snags on forest edges, often in aspen trees. Forages for beetles and other insects on scaly-barked trees and is attracted to areas with numerous dead trees, such as from beetle infestations or fire. Movements are often irregular and populations irrupt locally in response to tree die-offs (Parrish et al. 2002).	May Occur . May occur in the action area since the area contains some patchy spruce-fir habitat. Occurs in adjacent coal tracts (Cirrus 2014a).
FISH			
Bonneville Cutthroat Trout (<i>Oncorhynchus clarki</i> <i>utah</i>)	FLNF and MLNF Sensitive Species	In Utah, occurs in streams and lakes of the Bonneville Basin and a limited portion of the Virgin River Drainage. Found in headwater streams and high-elevation river reaches (Bosworth 2003). Skutumpah Creek, located in the action area, drains into Salina Creek, which contains a conservation population (i.e., at least 90 percent genetically pure) of Bonneville cutthroat trout. The Salina Creek fish have tested as 100% genetically pure (Hadley et al. 2011).	Does Not Occur . This species does not occur within the action area. There would be no effects on occupied downstream waters.
Colorado River Cutthroat Trout (<i>Oncorhynchus clarki</i> <i>pleuriticus</i>)	FLNF and MLNF Sensitive Species	Restricted to tributaries of the upper Colorado River and Green River drainages, where it occurs in headwater streams and mountain lakes (Bosworth 2003; Young 2008). Not found in streams in the action area, but is found in the Muddy Creek drainage (Birdsey et al. 2008; Cirrus 2014a).	Does Not Occur . This species does not occur within the action area. There would be no effects on occupied downstream waters.

Species Name	Status	Habitat and Range	Potential for Occurrence within the Action Area
Southern Leatherside Chub (<i>Lepidomeda aliciae</i>)	FLNF and MLNF Sensitive Species	Occur in desert streams throughout the southern and eastern Bonneville Basin. In Utah, it is found in Utah Lake and Sevier River drainages. Does not occur in the action area, but Skutumpah Creek flows into Salina Creek, where the species occurs (UDWR 2010).	Does Not Occur . This species does not occur within the action area. There would be no effects on occupied downstream waters.
MAMMALS	^		
Bighorn Sheep (<i>Ovis canadensis</i>)	FLNF and MLNF Sensitive Species	Occur in remote, rugged areas of Utah. To escape predators, they require terrain that is steep and rocky including snowy alpine zones as well as hot, dry canyonlands. Based on current GIS range data from UDWR, this species does not occur in the action area.	Does Not Occur . Action area is outside species' known geographic range.
Pygmy Rabbit (<i>Brachylagus</i> <i>idahoensis</i>)	FLNF Sensitive Species	Found in western Utah in the Great Basin region and edge of adjacent Intermountain region. Habitat is tall dense, sagebrush communities, especially where deep, loamy soils are present to facilitate burrowing (IPRWG 2008). Typical occupied areas include alluvial fans, swales in rolling hills, large flat valleys, along creeks and drainages, and other terrain where soils have accumulated. At a landscape scale, found in areas with flat to moderate slopes where soils are stable (IPRWG 2008).	Unlikely To Occur. There are sagebrush communities within the action area but these are not expected to support pygmy rabbits due to their isolated nature amongst forest stands, as well as the steep, eroded terrain and soils.
Spotted Bat (<i>Euderma maculatum</i>)	FLNF and MLNF Sensitive Species	There are scattered records of this rare species throughout eastern and southern Utah. Forages in a variety of open habitats from lowland riparian, desert shrub, to edges of montane coniferous forest. Limited by roosting habitat, which is cliff walls that have cracks and crevices and are near water (Oliver 2000). It is a solitary rooster, and does not form	May Occur . Cliffs and water bodies are present within this species' foraging range. Known to occur on the MLNF (Jewkes 2017a).

Species Name	Status	Habitat and Range	Potential for Occurrence within the Action Area
		colonies. Forages up to six miles from day roosts (NatureServe 2017).	
Townsend's Western Big-eared Bat (<i>Corynorhinus</i> <i>towsendii townsendii</i>)	FLNF and MLNF Sensitive Species	Occurs throughout Utah in desert shrub, pinyon-juniper, mountain brush, ponderosa pine, and mixed forests. Requires caves or mines for roosting; sometimes will roost in buildings (Oliver 2000). Limited by availability of roost sites. Generally forages within 6.5 miles of roost sites (Fellers and Pierson 2002).	May Occur . Suitable foraging habitat is present. Few roost sites are known from the MLNF but there may be roosting habitat that has not yet been identified (Jewkes 2017b).

FLNF = Fishlake National Forest; MLNF = Manti-La Sal National Forest; GIS = Geographic Information System; UDWR = Utah Division of Wildlife Resources; Primary Habitat Management Area (PHMA); General Habitat Management Area (GHMA); Utah Natural Heritage Program (UNHP)

Impacts to Fishlake and Manti-La Sal National Forest sensitive wildlife species are expected to be negligible. The proposed action would not result in downward population trends. **Table 4** provides an analysis of potential impacts to Fishlake and Manti-La Sal National Forest sensitive wildlife species and determinations of effects.

Species Name	Status	Analysis of Impacts	Determination	
AMPHIBIANS				
Boreal (Western) Toad (Anaxyrus (= <i>Bufo) boreas</i>)	FLNF and MLNF Sensitive Species	Due to the thick overburden compared to the thin coal seam to be removed, minimal surface disturbance from subsidence is expected. In addition, Stipulation #18 (Greens Hollow) and Stipulation #17 (Quitchupah) require mitigation measures for springs and seeps; therefore, no impacts would occur.	No Impact	
Columbia Spotted Frog (<i>Rana luteiventris</i>)	MLNF Sensitive Species	No impacts. Species does not occur in the action area.	No Impact	
BIRDS				
Bald Eagle (<i>Haliaeetus</i> <i>leucocephalus</i>)	FLNF and MLNF Sensitive Species	No impacts. May fly through the area but would not be affected.	No Impact	

Table 4. Determination of Effects on Fishlake and Manti-La Sal National Forest Sensitive Wildlife Species

Species Name	Status	Analysis of Impacts	Determination
Flammulated Owl (<i>Otus flammeolus</i>)	FLNF and MLNF Sensitive Species	No disturbance of forest habitat in the action area is expected due to the minimal subsidence that may occur. Given higher quality habitat exists elsewhere on the FLNF and MLNF.	No Impact
Greater Sage-grouse (<i>Centrocercus</i> urophasianus)	FLNF and MLNF Sensitive Species	No impacts. May fly over the area but would not be affected.	No Impact
Northern Goshawk (<i>Accipiter gentilis</i>)	FLNF and MLNF Sensitive Species	No surface disturbance impacts on foraging habitat in the action area. Subsidence-induced alterations on individual trees/shrubs would not have a measurable effect. Higher quality breeding habitat is available elsewhere on the FLNF and MLNF.	No Impact
Peregrine Falcon (<i>Falco peregrinus</i> <i>anatum</i>)	FLNF and MLNF Sensitive Species	No impacts. May fly over the area but would not be affected.	No Impact
(American) Three-toed Woodpecker (<i>Picoides tridactylus</i>)	FLNF and MLNF Sensitive Species	No surface disturbance impacts on foraging habitat in the action area. Subsidence-induced alterations on individual trees/shrubs would not have a measurable effect. Higher quality breeding habitat is available elsewhere on the FLNF and MLNF.	No Impact
FISH			
Bonneville Cutthroat Trout (<i>Oncorhynchus clarki</i> <i>utah</i>)	FLNF and MLNF Sensitive Species	No impacts to surface waters in the action area. Due to the thick overburden compared to the thin coal seam to be removed and Stipulation #18 (Greens Hollow) and Stipulation #17 (Quitchupah) that require mitigation measures for springs and seeps, no impact from subsidence on the quantity and quality of occupied downstream waters is expected.	No Impact
Colorado River Cutthroat Trout (<i>Oncorhynchus clarki</i> <i>pleuriticus</i>)	FLNF and MLNF	No impacts to surface waters in the action area. Due to the thick overburden compared to the thin coal seam to be removed, and Stipulation	No Impact

Species Name	Status	Analysis of Impacts	Determination
	Sensitive Species	#18 (Greens Hollow) and Stipulation #17 (Quitchupah) that require mitigation measures for springs and seeps, no impact from subsidence on the quantity and quality of occupied downstream waters is expected.	
Southern Leatherside Chub (<i>Lepidomeda aliciae</i>)	FLNF and MLNF Sensitive Species	No impacts to surface waters in the action area. Due to the thick overburden compared to the thin coal seam to be removed and Stipulation #18 (Greens Hollow) and Stipulation #17 (Quitchupah) that require mitigation measures for springs and seeps, no subsidence impact on the quantity and quality of occupied downstream waters is expected.	No Impact
MAMMALS		·	·
Bighorn Sheep (<i>Ovis canadensis</i>)	FLNF and MLNF Sensitive Species	No impacts. Species does not occur in the action area.	No Impact
Pygmy Rabbit (<i>Brachylagus</i> <i>idahoensis</i>)	FLNF Sensitive Species	No impacts because species is not expected to occur in the action area.	No Impact
Spotted Bat (<i>Euderma maculatum</i>)	FLNF and MLNF Sensitive Species	No roosting habitat would be affected since there are no cliffs in the action area. No surface disturbance impacts to foraging habitat in the action area from subsidence.	No Impact
Townsend's Western Big-eared Bat (<i>Corynorhinus towsendii</i> <i>townsendii</i>)	FLNF and MLNF Sensitive Species	No roosting sites are present in the action area. No surface disturbance impacts to foraging habitat in the action area.	No Impact

FLNF = Fishlake National Forest; MLNF = Manti-La Sal National Forest; MIIH = May impact individuals or habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

5.2 SENSITIVE PLANTS

Many of the sensitive plant species have restricted geographic range, occurring in small localized areas and on specific soils/formations. These species were eliminated from further analysis because they do not have geographic range in Sevier County, Utah where the action area is located. There would be no impact to the following species because they do not occur in the action area:

- Abajo Daisy (Erigeron abajoensis)
- Abajo Peak Draba (*Draba abajoensis*)
- Barneby Woody Aster (Tonestus (=Aster) kingii var. barnebyana)
- Beaver Mountain Groundsel (*Packera* (=*Senecio*) *castoreus*)
- Bicknell Thelesperma (Thelesperma subnudum var. alpinum)
- Canyonlands Lomatium (Lomatium latilobum)
- Canyon Sweetvetch (Hedysarum occidentale var. canone)
- Chatterley Onion (Allium geyeri var. chatterleyi)
- Creeping Draba (Draba sobolifera)
- Fish Lake Naiad (Najas caespitosa)
- Isely's Milkvetch (Astragalus iselyi)
- Kachina Daisy (Erigeron kachinensis)
- La Sal Daisy (Erigeron mancus)
- Maguire Daisy (Erigeron maguirei)
- Mt. Belknap Draba (Draba ramulosa)
- Musinea Groundsel (Senecio musiniensis)
- Nevada Willowherb (Epilobium nevadense)
- Pinnate Spring-parsley (Cymopterus beckii)
- Sweet-flowered Rock Jasmine (Androsace chamaejasme ssp. carinata)
- Tushar Paintbrush (Castilleja parvula var. parvula)
- Wonderland Alice Flower (Aliciella (=Gilia) caespitosa)

Table 5 lists the sensitive plant species analyzed for potential occurrence within the action area and supporting information on their habitat and geographic range. These species are carried forward for impacts analysis.

Species	Status	Habitat and Range	Potential for Occurrence within the Action Area
Arizona Willow (<i>Salix arizonica</i>)	FLNF and MLNF Sensitive Species	Riparian areas and wet meadows above 8,300 feet, on calcareous or volcanic soils (UNPS 2016). Range in Utah includes Iron, Kane, Sanpete, and Sevier counties. One population known on the MLNF in the Muddy Creek drainage (Franklin 2005; Rodriguez 2006).	Does Not Occur . Muddy Creek is not located in the action area. However, because a portion of the action area is within the larger Muddy Creek watershed, this species is considered for potential impacts.
Bicknell Milkvetch (<i>Astragalus</i> consobrinus)	FLNF and MLNF ¹ Sensitive Species	Pinyon-juniper and sagebrush communities on volcanic gravel, gravelly or sandy knolls, and barren stony hillsides between 6,000 and 8,500 feet (UNPS 2016). Range is central Utah, including Emery, Garfield, Piute, Sevier, and Wayne counties. Not known from the MLNF (UNPS 2016). All occurrences from	Does Not Occur . Records from the Intermountain Region Herbarium Network (2017) and Franklin (2005) indicate this species occurs in Sevier County at lower elevations approximately 13 miles to the east of the action area.

Table 5. Fishlake and Manti-La Sal National Forest Sensitive Plant Species

Species	Status	Habitat and Range	Potential for Occurrence within the Action Area
		the FLNF are from the Fremont District (Rodriguez 2006).	
Carrington Daisy (<i>Erigeron</i> <i>carringtonae</i>)	MLNF Sensitive Species	Subalpine zones in upland herb associations, which are present on ridgetops within scattered small stands of spruce and fir. Meadows and escarpment margins on Flagstaff Limestone between 10,000 and 11,000 feet (Franklin 2005; UNPS 2016).	May Occur . Habitat exists within the action area. The Intermountain Region Herbarium Network (2017) has records of this species occurring at higher elevations approximately 2.5 miles to the north of the lease modifications area.
Creutzfeldt-flower Cryptantha (<i>Cryptantha</i> <i>creutzfeldtii</i>)	MLNF Sensitive Species	Shadescale and mat <i>Atriplex</i> communities on the Mancos Shale Formation between 5,200 and 6,500 feet (UNPS 2016).	Does Not Occur . There is no suitable habitat within the action area.
Elsinore Buckwheat (<i>Eriogonum batemanii</i> var. <i>ostlundii</i>)	FLNF Sensitive Species	Prefer igneous outcrops and gravels in shadscale, ponderosa pine, mixed desert shrub, and juniper communities between 5,500 and 6,500 feet. Range includes Garfield, Piute, Sanpete, and Sevier counties (UNPS 2016).	Does Not Occur . There is no suitable habitat within the action area.
Link Trail Columbine (<i>Aquilegia</i> <i>flavenscens</i> var. <i>rubicunda</i>)	MLNF Sensitive Species	Ponderosa pine, aspen, and spruce-fir communities, generally associated with seeps in Mesa Verde Group sandstones near coal measures (6,000 to 8,500 feet). Endemic to Emery, Garfield, and Sevier counties (UNPS 2016). Known to occur in nearby drainages, including Link Canyon, Green Hollow, and Cowboy Canyon (Cirrus 2014b).	May Occur. Suitable habitat is present in the action area.
Little Penstemon (<i>Penstemon parvus</i>)	FLNF Sensitive Species	Black sagebrush (<i>Artemisia nova</i>), silver sagebrush (<i>Artemisia cana</i>), and grass (<i>Poaceae</i> spp.)-forb communities on sandy, gravelly loam and Tertiary volcanic gravels at 8,500 to 10,500 feet. Endemic to the Aquarius Plateau in Garfield,	Does Not Occur. Action area is not located on the Aquarius Plateau.

Species	Status	Habitat and Range	Potential for Occurrence within the Action Area
		Piute, and Sevier counties (Rodriguez 2006; UNPS 2016).	
Maguire Campion (<i>Silene petersonii</i>)	FLNF ¹ and MLNF Sensitive Species	Ponderosa, aspen, and spruce-fir forests on Flagstaff Limestone and the Claron Formation between 7,000 and 11,300 feet (UNPS 2016).	May Occur . Suitable habitat is present in the action area. The Intermountain Region Herbarium Network (2017) has records of this species occurring on White Mountain, located 1.5 miles to the northwest of the lease modifications area.
Sevier Townsendia (<i>Townsendia jonesii</i> var. lutea)	FLNF Sensitive Species	Salt desert and mixed desert shrub and juniper-sagebrush communities on Arapien shale and clays in volcanic rubble, at 5,500 to 6,300 feet (UNPS 2016). Records from Sevier County are from the north- western portion of the county, and are not near the action area (Franklin 2005).	Does Not Occur . There is no suitable habitat within the action area.
Ward's Beardtongue (<i>Penstemon wardii</i>)	FLNF Sensitive Species	Desert scrub, pinyon-juniper, sagebrush, shadscale and greasewood (<i>Sarcobatus</i> spp.) communities on the Bald Knoll and Arapien Shale formations between 5,200 and 6,810 feet (UNPS 2016). Records from Sevier County are from the western portion of the county, and are not near the action area (Franklin 2005).	Does Not Occur . There is no suitable habitat within the action area

1 FLNF = Fishlake National Forest; MLNF = Manti-La Sal National Forest

Impacts to Fishlake and Manti-La Sal National Forest sensitive plant species would be negligible. In general, upland plants and plant communities would not be altered, as surface disturbance from subsidence is expected to be minimal due to the thick overburden compared to the thin coal seam to be removed. Therefore, there would be no measurable effect on riparian or aquatic plant species and cumulative effects are not anticipated. **Table 6** provides an analysis of potential impacts to Fishlake and Manti-La Sal National Forest sensitive plant species and determinations of effects.

Table 6. Determination of Effects on Fishlake and Manti-La Sal National ForestSensitive Plant Species

Species Name	Status	Analysis of Impacts	Determination
Arizona Willow (<i>Salix arizonica</i>)	FLNF and MLNF Sensitive Species	No impacts to springs/seeps and streams in the action area. No impacts to surface waters in the action area. Due to the thick overburden compared to the thin coal seam to be removed and Stipulation #18 (Greens Hollow) and Stipulation #17 (Quitchupah) that require mitigation measures for springs and seeps, no impact from subsidence on the quantity and quality of occupied downstream waters is expected.	No Impact
Bicknell Milkvetch (<i>Astragalus</i> consobrinus)	FLNF and MLNF ¹ Sensitive Species	No impacts because this species does not occur in action area.	No Impact
Carrington Daisy (<i>Erigeron carringtonae</i>)	MLNF Sensitive Species	No impacts to individuals of this species or on the overall plant community.	No Impact
Creutzfeldt-flower Cryptantha (<i>Cryptantha</i> <i>creutzfeldtii</i>)	MLNF Sensitive Species	No impacts because this species does not occur in action area.	No Impact
Elsinore Buckwheat (<i>Eriogonum batemanii</i> var. <i>ostlundii</i>)	FLNF Sensitive Species	No impacts because this species does not occur in action area.	No Impact
Link Trail Columbine (<i>Aquilegia flavenscens</i> var. <i>rubicunda</i>)	MLNF Sensitive Species	No impacts to springs/seeps and streams in the action area. No impacts to individuals of this species or on the overall plant community.	No Impact
Little Penstemon (<i>Penstemon parvus</i>)	FLNF Sensitive Species	No impacts because this species does not occur in action area.	No Impact
Maguire Campion (<i>Silene petersonii</i>)	FLNF ¹ and MLNF Sensitive Species	No impacts to individuals of this species or on the overall plant community.	No Impact

Species Name	Status	Analysis of Impacts	Determination
Sevier Townsendia (<i>Townsendia jonesii</i> <i>var. lutea</i>)	FLNF Sensitive Species	No impacts because this species does not occur in action area.	No Impact
Ward's Beardtongue (<i>Penstemon wardii</i>)	FLNF Sensitive Species	No impacts because this species does not occur in action area.	No Impact

FLNF = Fishlake National Forest; MLNF = Manti-La Sal National Forest; MIIH = May impact individuals or habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

6.0 FOREST SERVICE MANAGEMENT INDICATOR SPECIES

The National Forest Management Act of 1976 regulations directs the National Forests to identify management indicator species. FSM 2621.1 states: "...Wildlife, Fish, and Plant Species (or groups of species) shall be selected to assure the maintenance of viable populations of existing native and desired non-native plants and animals; to facilitate the attainment of Forest Rangeland Resources Planning Act of 1974 habitat capability goals; and to represent area specific issues, concerns, and opportunities." Management indicator species are species that are selected by the Forest Service because their population changes indicate effects of management activities on the plant and animal community (Forest Service 1986a; Forest Service 1986b; Forest Service 2003). Management indicator species are specific to the individual forests and their forest plans.

Table 7 lists the Fishlake and Manti-La Sal National Forest management indicator species along with their habitat and range information. The following management indicator species are also sensitive species and were previously discussed above; therefore, they are not included in **Table 7**:

- Northern goshawk (Fishlake and Manti-La Sal National Forests),
- Bonneville cutthroat trout (Fishlake National Forest), and
- Colorado River cutthroat trout (Fishlake National Forest).

The action area is unlikely to support large numbers of species in the riparian guild or sagebrush guild due to the limited amount of these habitat types.

Species Name	Status	Habitat and Range	Potential for Occurrence within the Action area	
BIRDS				
Cavity Nesters ¹ (i.e., Hairy Woodpecker (<i>Picoides villosus</i>), Western Bluebird (<i>Sialia Mexicana</i>), and Mountain Bluebird (<i>Sialia</i> <i>currucoides</i>))	FLNF MIS	Generally favor open woodlands with a well-developed understory of shrubs and/or herbaceous vegetation (Forest Service and BLM 2015).	May Occur . Suitable habitat exists within the action area.	
Golden Eagle (<i>Aquila chrysaetos</i>)	MLNF MIS	In winter, found in open country where there is sufficient mammalian, avian, and reptilian prey or carrion. Primarily nest on	May Occur . There are approximately 40 nests within ten miles of the lease	

Table 7. Fishlake and Manti-La Sal National Forest Management Indicator Species

Species Name	Status	Habitat and Range	Potential for Occurrence within the Action area
		cliffs, but also nest on trees or human structures. Utah is home to year-round residents and also hosts migrants and over-wintering eagles further north (UWAP Joint Team 2015).	modifications (Jewkes 2017a). There are no nests within the action area. The closest known nest is located in the North Fork Quitchupah Creek drainage, two miles from the action area. The nest was active in 2017. Suitable foraging habitat is present in the action area.
Riparian Dependent Guild ² (i.e., Lincoln's Sparrow (<i>Melospiza lincolnii</i>), Song Sparrow (<i>Melospiza melodia</i>), Yellow Warbler (<i>Dendroica petechial</i>), and MacGillivray's Warbler (<i>Oporornis tolmiei</i>))	FLNF MIS	Riparian habitat (Forest Service and BLM 2015).	May Occur . A developed riparian zone is uncommon along streams in the action area. Typically the stream- side vegetation is similar to adjacent upland vegetation. However, in limited areas with gentler slopes, a narrow band of small willows and other riparian vegetation is present.
Sage Nesters (i.e., Brewer's Sparrow (<i>Spizella brewer</i>), Vesper Sparrow (<i>Pooectes</i> <i>gramineus</i>), and Sage Thrasher (<i>Oreoscoptes</i> <i>montanus</i>))	FLNF MIS	Require sagebrush during at least part of the year (Forest Service and BLM 2015).	May Occur. The action area is primarily forested. Sagebrush is present in small patches between forest stands, and is unlikely to support high numbers of sage nesters.
FISH			
Brook Trout (<i>Salvelinus fontinalis</i>)	FLNF MIS	Spawn in gravel riffles in spring-fed tributaries or spring seepage areas in lakes. Inhabit cool, clear, headwater ponds and spring-fed streams. Also, lakes with cool, well-oxygenated lower layers of water (Rodriguez 2006).	May Occur . Present in Muddy Creek Drainage (Birdsey et al. 2008).
Brown Trout (<i>Salmo trutta</i>)	FLNF MIS	Prefer cold water with temperatures ranging up to 26 degrees Celsius with boulders, cobble, logs, rootwads, and overhead cover. Prefer cool lakes and streams, but are present in many lower	May Occur. Suitable habitat exists within the action area. Occur downstream in Salina Creek.

Species Name	Status	Habitat and Range	Potential for Occurrence within the Action area
		elevation waters which are quite warm at times and sometimes polluted (Rodriguez 2006).	
Lake Trout (<i>Salvelinus namaycush</i>)	FLNF MIS	Native to the Great Lakes. Prefer deep, coldwater lakes throughout North America. Usually found offshore in deep, well oxygenated water. On FLNF, they spawn on reefs in the fall (Rodriguez 2006).	Does Not Occur . There are no lakes in the action area, and species is not present in Skutumpah Reservoir (Hadley 2011).
Rainbow Trout (<i>Oncorhynchus mykiss</i>)	FLNF MIS	Typically small, cool-water streams for spawning. Water of low velocity with adequate protective cover for rearing habitat. Adult habitat consists of water depths of 0.3 meters or greater where rapid-flow water meets calm water with cover that consists of boulders, logs, vegetation, and undercut stream banks. Overwintering habitat consists of deep waters with an adequate amount of food (Rodriguez 2006).	May Occur. Suitable habitat exists within the action area. Present in Skutumpah Reservoir downstream (Hadley 2011). Present in Muddy Creek Drainage (Birdsey et al. 2008).
Aquatic Macroinvertebrates	FLNF and MLNF MIS	Aquatic habitat (Rodriguez 2006).	May Occur. However, macroinvertebrates are considered MIS only for trout-bearing streams, which are not present in the action area.
MAMMALS	1		I
Abert's Squirrel (<i>Sciurus aberti</i>)	MLNF MIS	Optimum habitat is characterized by ponderosa pine stands with even-aged clumps of 12 to 19 inches in diameter at breast height and 45-75 foot height, with interlocking crowns and a ground cover of forbs, grasses, and shrubs. Occurs only on the Monticello District (Forest Service 1986b).	Does Not Occur . Action area is not within this species' geographic range.
Rocky Mountain Elk (<i>Cervus elaphus nelsoni</i>)	FLNF and MLNF MIS	Inhabit a variety of habitat types including all of Utah's mountains as well as some of the low deserts. Prefer to spend their summers at high elevations in aspen conifer forests and winter months at mid to low elevation in habitats that contain mountain shrub and sagebrush	May Occur . Action area is mapped as summer range and a small portion as winter range.

Species Name	Status	Habitat and Range	Potential for Occurrence within the Action area
		communities. In Utah, they are more closely tied to aspen than any other habitat type (UDWR 2015b).	
Mule Deer (<i>Odocoileus hemionus</i>)	FLNF and MLNF MIS	Inhabit a wide variety of habitats. Habitat is nearly always characterized by areas of thick brush or trees interspersed with small openings. In Utah, mule deer are found across the state, but are less abundant in the desert areas (UDWR 2015c).	Known to Occur . Action area is mapped as summer range.
PLANTS			
Rydberg's Milkvetch (<i>Astragalus perianus</i> Barneby)	FLNF MIS	Occupies tertiary igneous gravels, often on barrens in alpine or montane sites in tundra and spruce-fir communities. Also found in sagebrush stands. Elevation range of 7,000 and 11,400 feet (Rodriguez 2006).	Does Not Occur . This species occurs only in areas south of Interstate 75 (Franklin 2005). Therefore, the action area is not within this species' geographic range.

Sources: Forest Service 1986a; Forest Service 1986b; Rodriguez 2006

FLNF = Fishlake National Forest; MLNF = Manti-La Sal National Forest; MIS = Management Indicator Species

¹Cavity Nesters include the primary and secondary species (to be monitored on a case by case basis).

²Riparian Dependent Guild include the species dependent upon the various niches of vegetation communities found in riparian zones, i.e., tall deciduous trees, willows, riparian shrubs, riparian grasses.

Table 8 provides an analysis of potential impacts to Fishlake and Manti-La Sal National Forest management indicator species. Impacts to management indicator species are expected to be negligible. No direct surface disturbance would occur and minimal surface disturbance from subsidence is foreseen in the modification areas due to the thick overburden compared to the thin coal seam to be removed; therefore, cumulative effects to Management Indicator Species are not anticipated.

Table 8. Determination of Effects on Fishlake and Manti-La Sal National Forest Management Indicator Species

Species Name	Status	Analysis of Impacts	Determination
Cavity Nesters ¹ (i.e., Hairy Woodpecker (<i>Picoides villosus</i>), Western Bluebird (<i>Sialia Mexicana</i>), and Mountain Bluebird (<i>Sialia currucoides</i>))	FLNF MIS	No surface disturbance Impacts on foraging habitat in the action area Subsidence-induced alterations on individual trees/shrubs would not have a measurable effect. No impacts to habitat in the action area or the population in the area.	No Impact

Species Name	Status	Analysis of Impacts	Determination
Golden Eagle (<i>Aquila chrysaetos</i>)	MLNF MIS	No nests would be affected because there are no known nests or escarpments within the action area. No surface disturbance impacts on foraging habitat in the action area or on the population in the area. Subsidence-induced alterations on individual trees/shrubs would not have a measurable effect.	No Impact
Riparian Dependent Guild ² (i.e., Lincoln's Sparrow (<i>Melospiza lincolnii</i>), Song Sparrow (<i>Melospiza melodia</i>), Yellow Warbler (<i>Dendroica petechial</i>), and MacGillivray's Warbler (<i>Oporornis tolmiei</i>))	FLNF MIS	No surface disturbance impacts on the limited habitat in the action area due to subsidence or on the population in the area. Subsidence-induced alterations on individual trees/shrubs would not have a measurable effect. Higher quality breeding habitat is available elsewhere on the FLNF and MLNF.	No Impact
Sage Nesters (i.e., Brewer's Sparrow (<i>Spizella brewer</i>), Vesper Sparrow (<i>Pooectes</i> gramineus), and Sage Thrasher (<i>Oreoscoptes</i> montanus))	FLNF MIS	No surface disturbance impacts on the limited habitat in the action area from subsidence or on the population in the area. Higher quality breeding habitat is available elsewhere on the FLNF and MLNF.	No Impact
Brook Trout (<i>Salvelinus fontinalis</i>)	FLNF MIS	No impacts to surface waters in the action area. Due to the thick overburden compared to the thin coal seam to be removed and Stipulation #18 (Greens Hollow) and Stipulation #17 (Quitchupah) that require mitigation measures for springs and seeps, no impact from subsidence on the quantity and quality of occupied downstream waters is expected.	No Impact
Brown Trout (<i>Salmo trutta</i>)	FLNF MIS	No impacts to surface waters in the action area. Due to the thick overburden compared to the thin coal seam to be removed and Stipulation #18 (Greens Hollow) and Stipulation #17 (Quitchupah) that require mitigation measures for springs and seeps, no impact	No Impact
Species Name	Status	Analysis of Impacts	Determination
-----------------------------------------------------------------	----------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------
		from subsidence on the quantity and quality of occupied downstream waters is expected.	
Lake Trout (Salvelinus namaycush)	FLNF MIS	No impacts. Lake trout require deep cold water lakes. No suitable habitat occurs in the action area or downstream waters.	No Impact
Rainbow Trout (<i>Oncorhynchus mykiss</i>)	FLNF MIS	No impacts to surface waters in the action area. Due to the thick overburden compared to the thin coal seam to be removed and Stipulation #18 (Greens Hollow) and Stipulation #17 (Quitchupah) that require mitigation measures for springs and seeps, no impact from subsidence on the quantity and quality of occupied downstream waters is expected.	No Impact
Aquatic Macroinvertebrates	FLNF and MLNF MIS	No impacts to surface waters in the action area. Due to the thick overburden compared to the thin coal seam to be removed and Stipulation #18 (Greens Hollow) and Stipulation #17 (Quitchupah) require mitigation measures for springs and seeps, no impact from subsidence on the quantity and quality of occupied downstream waters is expected.	No Impact
Abert's Squirrel (<i>Sciurus aberti</i>)	MLNF MIS	No impacts. Species does not occur in the action area.	No Impact
Rocky Mountain Elk (<i>Cervus elaphus nelsoni</i>)	FLNF and MLNF MIS	No impacts to summer range and the small portion of winter range in the action area or on the population in the area.	No Impact
Mule Deer (Odocoileus hemionus)	FLNF and MLNF MIS	No impacts to summer range in the action area or on the population in the area.	No Impact
Rydberg's Milkvetch (<i>Astragalus perianus</i> Barneby)	FLNF MIS	No impacts. Species does not occur in the action area.	No Impact

FLNF = Fishlake National Forest; MLNF = Manti-La Sal National Forest; MIS = Management Indicator Species; MIIH = May impact individuals or habitat but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

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APPENDIX A: Official IPAC List



United States Department of the Interior

FISH AND WILDLIFE SERVICE Utah Ecological Services Field Office 2369 West Orton Circle, Suite 50 West Valley City, UT 84119-7603 Phone: (801) 975-3330 Fax: (801) 975-3331 <u>http://www.fws.gov</u> <u>http://www.fws.gov/utahfieldoffice/</u>



October 26, 2017

In Reply Refer To: Consultation Code: 06E23000-2018-SLI-0040 Event Code: 06E23000-2018-E-00110 Project Name: South Fork Lease Modifications EA

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having

2

similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan

(http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Utah Ecological Services Field Office

2369 West Orton Circle, Suite 50 West Valley City, UT 84119-7603 (801) 975-3330

Project Summary

Consultation Code:	06E23000-2018-SLI-0040
Event Code:	06E23000-2018-E-00110
Project Name:	South Fork Lease Modifications EA
Project Type:	MINING
Project Description:	Canyon Fuel Company LLC is requesting modifications to the lease boundaries for federal coal deposits near the Sufco Mine. The requested lease modifications are for federal coal leases UTU-84102 (Greens Hollow Lease) and U-63214 (Quitchupah Lease), together referred to as the South Fork Lease Modifications, and which total approximately 790 acres. The project area is located on public surface lands (Manti-La Sal National Forest and Fishlake National Forest) and federal mineral estate administered by the Bureau of Land Management. Potential environmental impacts of the project are being reviewed in an Environmental Assessment and Biological Assessment/Biological Evaluation. The coal would be mined as part of the Sufco Mine, an existing underground coal mine operation that uses longwall mining methods. No surface disturbance is proposed. Mining within the leases would occur over the course of approximately one year. The lease modifications are needed to prevent the bypass of valuable federal coal reserves at the Sufco Mine.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.98171824097409N111.44182514594908W



Counties: Sevier, UT

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Utah Prairie Dog Cynomys parvidens No critical habitat has been designated for this species.	Threatened
Species profile: <u>https://ecos.fws.gov/ecp/species/5517</u>	
Birds	
NAME	STATUS
California Condor <i>Gymnogyps californianus</i> Population: U.S.A. only, except where listed as an experimental population There is final critical habitat for this species. Your location is outside the critical habitat.	Endangered
Species profile: https://ecos.fws.gov/ecp/species/8193	
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is proposed critical habitat for this species. Your location is outside the critical habitat.	Threatened
Species profile: https://ecos.fws.gov/ecp/species/3911	
Flowering Plants	
NAME	STATUS
Heliotrope Milk-vetch Astragalus montii There is final critical habitat for this species. Your location is outside the critical habitat.	Threatened
Species profile: <u>https://ecos.fws.gov/ecp/species/7704</u>	
Jones Cycladenia <i>Cycladenia humilis var. jonesii</i> No critical habitat has been designated for this species.	Threatened
Species profile: <u>https://ecos.fws.gov/ecp/species/3336</u>	

Critical habitats

There are no critical habitats within your project area under this office's jurisdiction.

APPENDIX B: Utah Species of Concern



State of Utah DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER Executive Director

SPENCER J. COX Lieutenant Governor **Division of Wildlife Resources** GREGORY SHEEHAN Division Director

December 16, 2016

Wendy Rieth Tetra Tech 4750 West 2100 South, Suite 400 Salt Lake City, UT 84120

Subject: Species of Concern Near the South Fork Coal Lease-by-Application Area, Sevier County, Utah

Dear Wendy Rieth:

I am writing in response to your email dated December 12, 2016 regarding information on species of special concern proximal to the proposed South Fork Coal Lease-by-Application Area located in Sections 10, 11, 14, 15, 22 and 23 of Township 21 South, Range 4 East, SLB&M in Sevier County, Utah.

Within a ¹/₂-mile radius of the project area noted above, the Utah Division of Wildlife Resources (UDWR) has recent records of occurrence for northern goshawk, a species included on the Utah Sensitive Species List.

The information provided in this letter is based on data existing in the Utah Division of Wildlife Resources' central database at the time of the request. It should not be regarded as a final statement on the occurrence of any species on or near the designated site, nor should it be considered a substitute for on-the-ground biological surveys. Moreover, because the Utah Division of Wildlife Resources' central database is continually updated, and because data requests are evaluated for the specific type of proposed action, any given response is only appropriate for its respective request.

In addition to the information you requested, other significant wildlife values might also be present on the designated site. Please contact UDWR's habitat manager for the southeastern region, Daniel Eddington, at (435) 613-3709 if you have any questions.

Please contact our office at (801) 538-4759 if you require further assistance.

Sincerely,

Sarah Lindsey Information Manager Utah Natural Heritage Program

cc: Daniel Eddington



APPENDIX C: US Forest Service TEPS Distribution

INTERMOUNTAIN REGION (R4) THREATENED, ENDANGERED, PROPOSED, AND, SENSITIVE SPECIES

June 2016

KNOWN / SUSPECTED DISTRIBUTION BY FOREST

STATUS

FOREST

ENDANGERED	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	TOI	UIN	W-C
MAMMALS																
Black-footed ferret 3/11/67			_													•
Mustela nigripes			0													0
Sierra Nevada bighorn sheep Ovis canadensis														v		
sierra January 3, 2000														^		
BIRDS																
Southwestern willow flycatcher 2/27/95									x					2		
Empidonax traillii extimus ED 3/29/95									~					:		
Whooping crane 3/11/67			x										2			
Grus americana			^										•			
REPTILES AND AMPHIBIANS																
Sierra Nevada Yellow-legged Frog 06/30/2014														x		
Rana sierrae														^		
INSECTS																
Mt. Charleston Blue Butterfly 10/21/2013														x		
Icaricia shasta charlestonensis														^		
FISH																
June sucker 3/31/86															0	0
Chasmistes liorus															0	0
Bonytail chub 4/23/80	0		0			0	0		0						0	0
Gila elegans	U		U			0	0		0						0	0
Humpback chub 3/11/67	0		0			0	0		0						0	0
Gila cypha	U		U			0	0		0						0	0
Colorado pike minnow 3/11/67	0		0			0	0		0						0	0
Ptychocheilus lucius	0		0			0	0		0						0	0
Kendall Warm Springs dace 10/13/70			x													
Rhinichthys osculus			^													

ENDANGERED	ASH	BOI	B-T	CAR	CHA	DIX	FIS	ним	M-L	PAY	SAL	SAW	TAR	TOI	UIN	W-C
Sockeye salmon, (Snake River0 11/20/91												v				
Oncorhynchus nerka (CH 12/28/98)					+					+	+	^				
Razorback sucker 10/23/91			•			_	_									•
Xyrauchen texanus (ED 11/22/91)	0		0			0	0		0						0	0
Sturgeon, pallid																
Scaphirhynchus albus			0													
PLANTS																
San Rafael cactus							v									
Pediocactus despainii							^									
Clay phacelia 09/28/78									c C						v	
Phacelia argillacea									?						^	
THREATENED	ASH	BOI	B-T	CAR	CHA	DIX	FIS	ним	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
MAMMALS																
Canada lynx 4/15/00	v	v	v							v		v	v		2	2
Lynx canadensis	^	^	^							^		^	^		?	ſ
Grizzly bear 9/21/2009			v										v			
Ursus arctos horribilis			^										^			
Gray wolf (Wyoming Rocky Mountain DPS 10J																
Experimental Population)			Х	Х									Х			Х
Canis lupus																
Utah prairie dog 6/04/73						v	v									
Cynomys parvidens						^	^									
Northern Idaho ground squirrel 3/24/00		Y								x						
Spermophilus brunneus		^								^						
BIRDS																
Mexican spotted owl 3/16/93						Y	x		v							
Strix occidentalis lucida (ED 4/15/93)						^	^		^							
Yellow-billed cuckoo 11/03/2014	x	x	x		2	2	2	x	х	x	2	x	x	х	х	x
Coccyzus americanus	~	~			•	•	•	~	~	Λ	•	~	Λ	~		Λ
REPTILES AND AMPHIBIANS																
Desert tortoise 8/04/89														Y		
Gopherus agassizii														^		
Yosemite toad 6/30/2014														x		
Anaxyrus canorus														^		
FISH																
Steelhead trout (Snake River summer)		x			Y					x	x	x				
Oncorhynchus mykiss		^			^					^	^	^				

THREATENED	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
Chinook salmon, Snake River sprg/smr		v			v					v	v	v				
Oncorhynchus tshawytscha 4/22/92 (ED 5/22/92)		^			^					^	^	^				
Chinook salmon, Snake River fall										V						
Oncorhynchus tshawytscha 4/22/92 (ED 5/22/92)										^						
Greenback cutthroat trout									v							
Oncorhynchus clarki stomiua									^							
Railroad Valley springfish 3/31/86														x		
Crenichthys nevadae														^		
Lahontan cutthroat trout 10/13/70								Y						v		
Oncorhynchus clarki henshawi								^						^		
Columbia River bull trout 6/10/98		v			v			v		v	v	v				
Salvelinus confluentus		^			^			^		^	^	^				
Paiute cutthroat trout 3/11/67														v		
Oncorhynchus clarki seleniris														^		
PLANTS																
Deseret milkvetch 10/20/99									2						2	
Astragalus desereticus									1						!	
Heliotrope milkvetch 11/6/87									v							
Astragalus limnocharis var.montii (A. montii)									^							
Slick-spot peppergrass 10/08/09		2														
Lepidium papilliferum																
Winkler cactus									2							
Pediocactus winkleri									-							
Maguire's primrose 8/21/85																x
Primula cusickiana var. maguirei (P. maguirei)																^
Last chance townsendia 8/21/85						x	x									
Townsendia aprica						^	^									
Ute ladies' tresses orchid 1/17/92		2		2	2		2				2	2	x		x	2
Spiranthes diluvialis (2/18/92)				•	•		•					•	~		^	•
Webber ivesia 7/3/2014														x		
Ivesia webberi														^		
PROPOSED	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	ΤΟΙ	UIN	W-C
North American wolverine		~	~		V					V						
Gulo gulo (luscus)	X	X	X	X	Х					Х	X	X	X	Х		Х
						1				1						

CANDIDATE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	ним	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
Sierra Nevada red fox														v		
Vulpes vulpes necator														^		
Whitebark Pine		v	v		v			v		v	v	v	v	V		
Pinus albicaulis		^	^		^			^		^	^	^	^	^		

SENSITIVE	ASH	BOI	B-T	CAR	СНА	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	TOI	UIN	W-C
MAMMALS																
Bighorn Sheep Ovis canadensis - Includes																
Rocky Mountain bighorn sheep (O. c. canadensis),	X	Х	Х		Х		Х	Х	Х	X	Х	х	Х	Х	Х	х
California bighorn sheep (<i>O. c. californiana</i>), and																
Crowwolf (Rooky Mountain DRS)																
Gray Woll (Rocky Mountain DPS)		Х		Х	Х					Х	Х	Х	Х			Х
Duamy rabbit																
Prachylagus idahaansis				Х	Х	Х	Х	Х			Х	Х	Х	Х		
Spotted bot	_															
Spolled bal	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	?	Х	Х	Х
Fichor	-									<u> </u>						
Martes poppanti		Х	Х		Х					Х	Х	Х	?		Х	
Southern Idaho Ground Squirrel																
Spermonhilus brunneus endemicus		Х								Х						
Townsend's Western Big-Eared Bat																
Corvnorhinus townsendii townsendii	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
BIRDS																
Bald eagle				l	l											
Haliaeetus leucocephalus	X	Х	Х	X	X	Х	Х	Х	Х	X	Х	Х	Х	Х	Х	Х
Boreal owl	V	v	v	V	V					V	V	V	V			V
Aegolius funereus	X	X	X	X	X					X	X	X	X			Х
Greater sage-grouse	V	v	v	V	V	v	v	v	v	2	v	v	v	v	v	V
Centrocercus urophasianus	^	^	^	^	^	^	^	^	^	ſ	^	^	^	^	^	^
Greater sage-grouse Bi-State DPS														v		
Centrocercus urophasianus														^		
Trumpeter swan			v	v									v			
Cygnus buccinator			^	^									^			
Peregrine falcon 3/20/84	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Falco peregrinus anatum	^	^	^	^	^	^	^	^	~	^	~	^	~	^	^	^
Common loon		x	x		+					2	+	x	x			
Gavia immer		^	^		т					•	т	~	~			
Harlequin duck			x	х	2+					х	2+		х			
Histrionicus histrionicus			~	~						~	••		~			
Mountain quail		x						x		х		х		х		
Oreortyx pictus																
Flammulated owl	x	x	x	х	x	x	x	x	х	х	х	х	х	х	х	х
Otus flammeolus																\sim

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SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
White-headed woodpecker		v								v		v		v		
Picoides albolarvatus		^								^		^		^		
Three-toed woodpecker	x	v	x	Y	×	v	v	x	Y	Y	Y	Y	Y	Y	Y	Y
Picoides tridactylus	^	^	^	^	^	^	^	^	^	^	~	^	~	~	~	^
Great gray owl	x	v	x	Y	×					Y	Y	Y	Y	Y		Y
Strix nebulosa	^	^	^	^	^					^	~	^	~	~		^
California spotted owl														x		
Strix occidentalis occidentalis														~		
Columbian sharp-tailed grouse		x		x				x		x		x	x			x
Tympanuchus phasianellus columbianus		~		~				^		~		^	~			~
Northern goshawk	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Accipiter gentilis	^	^	^	^	^	^	^	^	^	~	~	^	~	~	~	^
REPTILES AND AMPHIBIANS																
Columbia spotted frog	2	x	x	x	x			x	x	x	x	x	x	x	x	x
Rana luteiventris	•	~	^	~	^			^	^	~	~	^	~	~	~	~
Boreal Toad	x		x	x		x	x		x				x		x	x
Bufo boreas	^		^	^		^	^		^				^		^	^
FISH																
Wood River sculpin												x				
Cottus leiopomus												^				
Westslope cutthroat trout		x	x		x					x	x	x				
Oncorhynchus clarki lewisi		~	^		~					~	~	~				
Colorado River cutthroat trout	x		x			x	x		x						x	x
Oncorhynchus clarki pleuriticus	~		~			~	~		~						~	~
Bonneville cutthroat trout			x	x		x	x	x	x						х	х
Oncorhynchus clarki utah			~	~		~	~	~	~						~	~
Yellowstone cutthroat trout			х	x								x	х			
Oncorhynchus clarki bouvieri			~	~								~	~			
Northern Leatherside Chub			х	х								х	х			х
Lepidomeda copei			~	~								~	~			~
Southern Leatherside Chub						х	х		х						х	
Lepidomeda aliciae						~	~		~						~	
Big Lost River Whitefish					х											
Prosopium williamsoni																
INSECTS																
Spring Mountain Checkerspot														х		
Chlosyne acastus robusta														~		
Dark Blue														Х		

SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	ним	M-L	PAY	SAL	SAW	TAR	TOI	UIN	W-C
Euphilotes ancilla purpura																
Morand's Checkerspot														v		
Euphydryas anicia morandi														^		
PLANTS																
Pink agoseris			v								v		v			
Agoseris lackschewitzii			^								^		^			
Wonderland Alice flower						v	v									
Aliciella (=Gilia) caespitosa						^	^									
Chatterley Onion									v							
Allium geyeri var. chatterleyi									^							
Swamp onion										V						
Allium madidum										^						
Tolmie's onion		v								~						
Allium tolmiei var. persimile		^								^						
Candystick										×						
Allotropa virgata										^						
Sweet-flowered rock jasmine			x						Y				Y			
Androsace chamaejasme ssp. carinata			^						^				^			
Charleston angelica														v		
Angelica scabrida														^		
Wheeler's angelica															x	x
Angelica wheeleri															~	~
Meadow pussytoes								x								
Antennaria arcuata								~								
Charleston pussytoes														x		
Antennaria soliceps														~		
Link Trail columbine									x							
Aquilegia flavescens var. rubicunda									~							
Graham columbine	x															
Aquilegia grahamii	~															
Rosy King's sandwort														х		
Arenaria kingii ssp. rosea														~		
Petiolate wormwood	x															
Artemisia campestris ssp. borealis var. petiolata	~															
Eastwood milkweed					1			x						х		
Asclepias eastwoodiana											L					
Clokey milkvetch														x		
Astragalus aequalis			1	1		1										

SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	ним	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
Lost River milkvetch					v											
Astragalus amnis-amissi					^											
Goose Creek milkvetch												0				
Astragalus anserinus												<u>؛</u>				
Lemhi milkvetch					v							0				
Astragalus aquilonius					^							<u>؛</u>				
Bicknell milkvetch							v		2							
Astragalus consobrinus							^		:							
Meadow milkvetch			Y		Y								Y			
Astragalus diversifolius var. diversifolius			^		^								^			
Dana milkvetch						Y										
Astragalus henrimontanensis						^										
Isely's milkvetch									Y							
Astragalus iselyi									^							
Starvling milkvetch			x	x												
Astragalus jejunus var. jejunus			^	^												
Long Valley milkvetch														Y		
Astragalus johannis-howellii														~		
Broad-pod freckled milkvetch								x								
Astragalus lentiginosus var. latus								~								
Navajo Lake milkvetch						x										
Astragalus limnocharis var. limnocharis						^										
Table Cliff milkvetch						x										
Astragalus limnocharis var. tabulaeus						^										
Lee Canyon milkvetch														x		
Astragalus oophorus var. clokeyanus														~		
Lavin's egg milkvetch														x		
Astragalus oophorus var. lavinii														~		
Payson's milkvetch			x							х			2			
Astragalus paysonii			^							~			•			
Spring Mountain milkvetch														x		
Astragalus remotus														~		
Lamoille Canyon milkvetch								x								
Astragalus robbinsii var. occidentalis								~								
Toquima milkvetch														x		
Astragalus toquimanus														~		
Currant milkvetch								x								
Astragalus uncialis								^								

SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	ним	M-L	PAY	SAL	SAW	TAR	ΤΟΙ	UIN	W-C
White Cloud milkvetch					v					v		v				
Astragalus vexilliflexus var. nubilus					^					^		^				
Guard milkvetch						v										
Astragalus zionis var. vigulus						^										
Bodie Hills rockcress														v		
Boechera (=Arabis) bodiensis														^		
Grouse Creek rockcress								v								
Boechera (=Arabis) falcatoria								^								
Spring Mountains rockcress														v		
Boechera (=Arabis) nevadensis														^		
Washoe tall rockcress														v		
Boechera (=Arabis) rectissima var. simulans														^		
Galena Creek rockcress														v		
Boechera (=Arabis) rigidissima var. demota														^		
Ophir rockcress														v		
Boechera (=Arabis) ophira														^		
Tiehm rockcress														v		
Boechera (=Arabis) tiehmii														^		
Upswept moonwort														x		
Botrychium ascendens														^		
Dainty moonwort	x												x	x	x	
Botrychium crenulatum	^												^	^	~	
Slender moonwort	x							2		2		x		x	2	x
Botrychium lineare	^							:		•		~		^	:	~
Paradox moonwort						x										
Botrychium paradoxum						^										
Little grape fern												x				
Botrychium simplex												~				
Moosewort														x		
Botrychium tunux														~		
Beautiful Bryum		x										х				
Bryum calobryoides		~										~				
Cascade reedgrass										x						
Calamagrostis tweedyi										~						
Cusick camas										x						
Camassia cusickii										Λ						
Seaside sedge			x		x											
Carex incurviformis			^		^											

SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
Black and purple sedge			v													
Carex luzulina var. atropurpurea			^													
Tioga Pass sedge														×		
Carex tiogana														^		
Aquarius paintbrush						v										
Castilleja aquariensis						^										
Christ's Indian paintbrush												×				
Castilleja christii												^				
Tushar paintbrush						v	v									
Castilleja parvula var. parvula						^	^									
Reveal paintbrush						v										
Castilleja parvula var. revealii						^										
Centennial rabbitbrush													x			
Chrysothamnus parryi ssp. montanus													~			
Flexible alpine collomia											x					
Collomia debilis var. camporum											~					
Wasatch fitweed															x	x
Corydalis caseana spp. brachycarpa															~	~
Creutzfeldt-flower cryptanth									x							
Cryptantha creutzfeldtii									~							
Yellow-white catseye						x										
Cryptantha ochroleuca						~										
Bodie Hills draba														x		
Cusickiella quadricostata														~		
Pinnate spring-parsley						х			х							
Cymopterus beckii						~			~							
Davis' wavewing												х				
Cymopterus davisii												~				
Douglas' biscuitroot					x						х	х				
Cymopterus douglassii					~						~	~				
Goodrich biscuitroot														х		
Cymopterus goodrichii																
Cedar Breaks biscuitroot						х										
Cymopterus minimus																
Brownie ladyslipper	х															х
Cypripedium fasciculatum																~
Lesser yellow Lady's slipper																х
Cypripedium parviflorum (Cypripedium calceolus		1														~

SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	ΤΟΙ	UIN	W-C
var. parviflorum)																
Wyoming tansymustard			v													
Descurainia torulosa			^													
Wasatch shooting star																v
Dodecatheon utahense																^
Idaho douglasia		v								2		2				
Douglasia idahoensis		^								ŕ		:				
Abajo peak draba									Y							
Draba abajoensis									^							
Arid draba														v		
Draba arida														^		
Star draba														v		
Draba asterophora var. asterophora														^		
Wasatch Draba														Y	2	Y
Draba brachystylis														^	:	^
Burke's draba																x
Draba burkei																^
Rockcress draba	x		v		Y							Y			Y	x
Draba globosa (=D. densifolia var. apiculata)	^		^		^							^			^	^
Jaeger draba														x		
Draba jaegeri														^		
Maguire draba																x
Draba maguirei																^
Serpentine draba								2						x		
Draba oreibata var. serpentina								:						^		
Charleston draba														x		
Draba paucifructa														~		
Pennell draba								x								
Draba pennellii								~								
Mt. Belknap draba							x									
Draba ramulosa							~									
Santaquin draba															х	
Draba santaquinensis															~	
Creeping draba						x	x									
Draba sobolifera																
Stanley's whitlow-grass					x							х				
Draba trichocarpa					~							~				
Nevada willowherb							Х							Х		

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SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	ним	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
Epilobium nevadense																
Spring Mountain goldenweed																
Ericameria compacta (=Haplopappus														Х		
compactus)																
Pine Valley goldenweed						v										
Ericameria crispa (=Haplopappus crispus)						^										
Narrow-leaf goldenweed																
Ericameria discoidea var. linearis			Х													
(=Haplopappus macronema var.linearis)																
Abajo daisy									v							
Erigeron abajoensis									^							
Carrington daisy									v							
Erigeron carringtonae									^							
Snake Mountain erigeron								~								
Erigeron cavernensis								^								
Cronquist daisy																v
Erigeron cronquistii																^
Garrett's fleabane															v	×
Erigeron garrettii															^	^
Kachina daisy									v							
Erigeron kachinensis									^							
Woolly daisy			v													
Erigeron lanatus			^													
Maguire daisy							v									
Erigeron maguirei							^									
LaSal daisy									v							
Erigeron mancus									^							
Untermann daisy	v															
Erigeron untermannii	^															
Widtsoe buckwheat						Y										
Eriogonum aretioides						^										
Elsinore buckwheat							v									
Eriogonum batemanii var. ostlundii							^									
Desert buckwheat												v				
Eriogonum brevicaule var. desertorum												^				
Welsh buckwheat					v	1										
Eriogonum capistratum var. welshii					^											
Sunflower Flat buckwheat								Х								

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SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
Eriogonum douglasii var. elkoense																
Toiyabe buckwheat														×		
Eriogonum esmeraldense var. toiyabense														^		
Clokey buckwheat														×		
Eriogonum heermannii var. clokeyi														^		
Lewis's buckwheat								v								
Eriogonum lewisii								^								
Logan buckwheat																
Eriogonum loganum (=E. brevicaule var.																Х
loganum)																
Guardian buckwheat					Y							Y				
Eriogonum meledonum					^							^				
Altered andesite buckwheat														Y		
Eriogonum robustum														^		
Clokey greasebush														x		
Glossopetalon clokeyi														^		
Smooth dwarf greasebrush																
Glossopetalon pungens var. glabra														Х		
(=G.pungens)																
Puzzling halimolobos										x						
Halimolobos perplexa var. perplexa										~						
Canyon sweetvetch									x							
Hedysarum occidentale var. canone									~							
Jones goldenaster						x										
Heterotheca jonesii						~										
Sierra Valley ivesia														x		
Ivesia aperta var. aperta														~		
Dog Valley ivesia														x		
Ivesia aperta var. canina														~		
Charleston ivesia														х		
Ivesia cryptocaulis														~		
Jaeger ivesia														x		
Ivesia jaegeri														~		
Plumas ivesia														2		
Ivesia sericoleuca														•		
Utah ivesia															x	x
Ivesia utahensis															^	~
Wasatch jamesia															Х	Х

SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
Jamesia americana var. macrocalyx																
Zion jamesia						v										
Jamesia americana var. zionis						^										
Basin jamesia								V								
Jamesia tetrapetala								^								
Grimes lathyrus								V								
Lathyrus grimesii								^								
Wasatch pepperwort															2	Y
Lepidium montanum var. alpinum															:	^
Neeses' peppergrass						v										
Lepedium montanum var. neeseae						^										
Hazel's prickly phlox										Y						
Leptodactylon pungens ssp. hazeliae										^						
Garrett bladderpod															x	x
Lesquerella garrettii															^	^
Hitchcock bladderpod														x		
Lesquerella hitchcockii var. hitchcockii														~		
Payson bladderpod			x	x									x			
Lesquerella paysonii			^	~									^			
Maguire lewisia								x								
Lewisia maguirei								~								
Sacajawea's bitterroot		x			x					x	x	2				
Lewisia sacajaweana		~			~					~	^	•				
Canyonlands Iomatium									x							
Lomatium latilobum									~							
Three-ranked hump-moss														х		
Meesia triquetra														~		
Goodrich stickleaf	x															
Mentzelia goodrichii	~															
Bank monkeyflower										x						
Mimulus clivicola										~						
Fish Lake naiad							х									
Najas caespitosa							~									
Idaho pennycress																
Noccaea idahoensis var. aileeniae (=Thlaspi					Х							Х				
alleeniae)																
Shevock rockmoss														х		
Orthotrichum shevockii														~		

x=known species/habitat; ?=suspected/potential habitatt; *=wild/naturally reproducing; +=migration; o=offsite; r= reintroduced populations; ED=Effective dates

SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
Spjut's brittle-moss														<		
Orthotrichum spjutii														^		
Challis crazyweed					×											
Oxytropis besseyi var. salmonensis					^											
Beaver Mountain groundsel							v									
Packera (=Senecio) castoreus							^									
Podunk groundsel						v										
Packera (=Senecio) malmstenii						^										
Arctic poppy	v															v
Papaver radicatum var. pygmaeum	^															^
Naked-stemmed parrya			×													
Parrya nudicaulis			^													
Paria breadroot						v										
Pediomelum pariense						^										
Stemless beardtongue	V															
Penstemon acaulis var. acaulis	^															
Dune penstemon														с С		
Penstemon arenarius														?		
Red Canyon beardtongue						v										
Penstemon bracteatus						^										
Cache beardtongue				×												×
Penstemon compactus				^												^
Elegant penstemon								2								
Penstemon concinnus								ŕ								
Idaho penstemon												Y				
Penstemon idahoensis												^				
Charleston beardtongue														×		
Penstemon leiophyllus var. keckii														^		
Lemhi penstemon											Y					
Penstemon lemhiensis											^					
Mt. Moriah penstemon								Y								
Penstemon moriahensis								^								
Little penstemon						v	v									
Penstemon parvus						^	^									
Pinyon penstemon						×										
Penstemon pinorum						^										
Bashful penstemon								V								
Penstemon pudicus								^								

SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	ним	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
Rhizome beardtongue								Y								
Penstemon rhizomatosus								^								
Wassuk beardtongue														Y		
Penstemon rubicundus														^		
Jaeger beardtongue														×		
Penstemon thompsoniae ssp. jaegeri														^		
Ward beardtongue							Y									
Penstemon wardii							^									
Inconspicuous phacelia								2								
Phacelia inconspicua								-								
Small-flower phacelia		v						x				2				
Phacelia minutissima		^						^				:				
Mono phacelia														x		
Phacelia monoensis														~		
Salmon twin bladderpod											x		x			
Physaria didymocarpa var. Iyrata											~		~			
Creeping twinpod			x													
Physaria integrifolia v. monticola			^													
Whitebark Pine		x	x		x			x		x	x	x	x	x		
Pinus albicaulis		~	^		~			~		~	~	~	Λ	~		
Altered andesite popcorn flower														x		
Plagiobothrys glomeratus														~		
Marsh's bluegrass					x			x			x	x		x		
Poa abbreviata ssp. marshii					~			~			~	~		~		
White Mountain skypilot														х		
Polemonium chartaceum														~		
Williams combleaf														х		
Polyctenium williamsii														~		
Angell cinquefoil						x										
Potentilla angelliae						~										
Cottam cinquefoil												х				х
Potentilla cottamii												~				~
Sagebrush cinquefoil								x								
Potentilla johnstonii								~								
Alkali primrose													Х			
Primula alcalina													~			
Ruby Mountain primrose								x								
Primula capillaris																

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SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	HUM	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
Nevada primrose																
Primula cusickiana var. nevadensis								Х								
(=P. nevadensis)																
Greenland primrose			v													
Primula egaliksensis			^													
Bugleg goldenweed		v										v				
Pyrrocoma (=Haplopappus) insecticruris		^										^				
Radiate goldenweed										v						
Pyrrocoma radiata (=Haplopappus radiatus)										^						
Bartons' blackberry										v						
Rubus bartonianus										^						
Arizona willow						v	v		v							
Salix arizonica						^	^		^							
Weber's saussurea			v													
Saussurea weberi			^													
Tobias' saxifrage										v						
Saxifraga bryophora var. tobiasiae										^						
Tolmie's saxifrage										v						
Saxifraga tolmiei var. ledifolia										^						
Musinea groundsel									v							
Senecio musiniensis									^							
Mono ragwort														v		
Senecio pattersonensis														^		
Clokey silene														Y		
Silene clokeyi														~		
Nachlinger silene								x								
Silene nachlingerae								^								
Maguire campion						v	2		Y							
Silene petersonii						^	:		^							
Railroad Valley globemallow								x								
Sphaeralcea caespitosa var. williamsiae								~								
Rock-tansy						v										
Sphaeromeria capitata						^										
Low sphaeromeria														Y		
Sphaeromeria compacta														~		
Masonic Mountain jewelflower														Y		
Streptanthus oliganthus														^		
Soft aster			Х													

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SENSITIVE	ASH	BOI	B-T	CAR	CHA	DIX	FIS	ним	M-L	PAY	SAL	SAW	TAR	τοι	UIN	W-C
Symphyotrichum molle (=Aster mollis)																
Charleston kittentails														Y		
Synthyris ranunculina														^		
Caespitose greenthread	x															
Thelesperma caespitosum	^															
Uinta green thread																Y
Thelesperma pubescens																^
Bicknell thelesperma						x	x									
Thelesperma subnudum var. alpinum						^	^									
Wavy-leaf thelypody					Y											
Thelypodium repandum					^											
Alpine goldenweed														Y		
Tonestus (=Haplopappus) alpinus														^		
Barneby woody aster							x								x	
Tonestus (=Aster) kingii var. barnebyana							^								^	
Sevier townsendia							Y									
Townsendia jonesii var. lutea							^									
Charleston ground daisy														Y		
Townsendia jonesii var. tumulosa														~		
Short-slyle tofieldia										x						
Triantha occidentalis ssp. brevistyla										~						
Currant Summit clover								x								
Trifolium andinum var. podocephalum								^								
Leiberg's clover								v								
Trifolium leibergii								^								
Rollins clover														x		
Trifolium macilentum var. rollinsii														~		
Charleston violet														x		
Viola charlestonensis														~		
Smith violet																x
Viola franksmithii																^
Lithion violet								x								
Viola lithion																
Idaho range lichen											x					
Xanthoparmelia idahoensis											~					
ASH - Ashley BOI - Boise B-T - Bridger-Teton	CHA - Challis DIX - Dixie FIS - Fishlake	M-L - Manti-LaSal PAY - Payette SAL - Salmon	TAR - Targhee TOI - Toiyabe UIN - Uinta													
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CAR - Calibou	HUM - Humbolat	SAW - Sawlooln	W-C - Wasalch-Cache													
<pre>KEY: X = known distribution species and/or habitat ? = suspected or potential habitat * = wild and naturally reproducing stocks + = migration corridors only o = offsite impacts (e.g. downstream) r = reintroduced Central Idaho & Yellowstone populations, covered under ESA Section 10(j), and declared experimental non- essential populations, and thus are treated like "proposed" species ## = no longer meet "sensitive"criteria (personal communication with Forest botanists and Dr. Duane Atwood), but no official list revision yet Dates are dates the Final Rule was published in the <i>Federal Register;</i> ED = Effective dates are about 30 days later if not listed.</pre>		 This list was compiled from the following sources: <i>R-4</i> Vertebrate Sensitive Species List (August 13, 1990) <i>R-4</i> Sensitive Plant List (April 29, 1994) Endangered and Threatened Wildlife and Plants, USDA-U.S. Fish & Wildlife Service (August 20, 1994) Northern Goshawk - Listed as a Sensitive Species in R4 (October 31, 1991) Miscellaneous Federal Registers 														