



**U.S. Department of the Interior
Bureau of Land Management
Fish & Wildlife Service**

**Draft Supplemental Environmental Impact Statement
to Reconsider a Highway Right-of-Way Application
and Associated Amendment of an Incidental Take
Permit, Washington County, Utah**

May 2024



Cover photograph: Red Cliffs National Conservation Area
Photograph courtesy of BLM staff

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Draft Supplemental Environmental Impact Statement to Reconsider a Highway Right-of-Way Application and Associated Amendment of an Incidental Take Permit, Washington County, Utah

Prepared by:

U.S. Department of the Interior
Bureau of Land Management
Fish & Wildlife Service

In Cooperation with:

City of Hurricane
City of Ivins
City of St. George
Dixie Metropolitan Planning Organization
Paiute Indian Tribe of Utah
Santa Clara City
Shivwits Band of Paiutes
State of Utah – Public Lands Policy Coordinating Office
Utah Department of Environmental Quality
Utah Trust Lands Administration
Washington City

May 2024

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Draft Supplemental Environmental Impact Statement to Reconsider a Highway Right-of-Way Application and Associated Amendment of an Incidental Take Permit, Washington County, Utah

- Lead Agencies:** U.S. Department of the Interior, Bureau of Land Management (BLM), and Fish & Wildlife Service (FWS).
- Cooperating Agencies:** City of Hurricane, City of Ivins, City of St. George, Dixie Metropolitan Planning Organization, Paiute Indian Tribe of Utah, Santa Clara City, Shivwits Band of Paiutes, State of Utah – Public Lands Policy Coordinating Office, Utah Department of Environmental Quality, Utah Trust Lands Administration, and Washington City.
- Proposed Action:** In 2018, the Utah Department of Transportation (UDOT) submitted an application for a FLPMA Title V right-of-way grant (ROW) to construct a multi-lane, divided highway (referred to as the Northern Corridor) north of the City of St. George, Utah, on BLM-managed and non-Federal lands within the Red Cliffs National Conservation Area (NCA) and the overlapping Red Cliffs Desert Reserve with the stated objective of reducing congestion, increasing capacity, and improving east-west mobility on arterial and interstate roadways in Washington County, Utah.
- Abstract:** The BLM and FWS have prepared this Draft Supplemental Environmental Impact Statement (SEIS) to reconsider the environmental effects of issuing a ROW grant to UDOT for the Northern Corridor and associated amendment of an Incidental Take Permit (ITP) for Mojave desert tortoise to Washington County.
- In response to a November 2023 court remand, the Northern Corridor ROW and ITP, which were analyzed in the November 2020 *Final Environmental Impact Statement to Consider a Highway Right-of-Way, Amended Habitat Conservation Plan and Issuance of an Incidental Take Permit for the Mojave Desert Tortoise, and Proposed Resource Management Plan Amendments, Washington County, UT* (Final EIS) and authorized in separate Records of Decision (ROD) in January 2021 by the BLM and FWS, are being further evaluated. This Draft SEIS analyzes five alternative routes for the Northern Corridor that were previously considered in the Final EIS (UDOT ROW Alignment, T-Bone Mesa Alignment, Southern Alignment, Red Hills Parkway Expressway, and St. George Boulevard/100 South One-way Couplet) and an alternative that would terminate UDOT’s ROW grant for the Northern Corridor within the NCA.
- This Draft SEIS supplements the information in the Final EIS regarding (1) the trend of increasing frequency and extent of wildfires in the Mojave Desert; (2) the rise of noxious weeds and invasive species in post-burn areas; and (3) the impacts increased fire and noxious weeds and invasive species have on the Mojave desert tortoise. The analysis also includes those resources that warrant reconsideration based on new information or changed conditions beyond what was presented in the Final EIS.
- Review Period:** The review period for the Northern Corridor Draft SEIS is 45 calendar days. The review period began when the Environmental Protection Agency published a notice of availability in the Federal Register on May 10, 2024. The review period ends on June 24, 2024.
- Further Information:** Contact Dawna Ferris, BLM Project Manager at 435-688-3200.

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United States Department of the Interior



BUREAU OF LAND MANAGEMENT
Utah State Office
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Salt Lake City, UT 84101-1434

In Reply Refer To:
2800 (UTC0300)
UTU-93620

Dear Reader:

Enclosed for your review and comment is the Draft Supplemental Environment Impact Statement (SEIS) that further considers the effects of granting a right-of-way (ROW) to the Utah Department of Transportation (UDOT) for the Northern Corridor (a proposed highway) as well as a potential amendment to the Incidental Take Permit (ITP) issued to Washington County, Utah, under Section 10(a)(1)(B) of the Endangered Species Act of 1973.

This Draft SEIS was prepared by the U.S. Department of the Interior, Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (FWS), as co-lead agencies. It follows a Settlement Agreement that was the result of a lawsuit in response to the 2021 Records of Decision related to the Final Environmental Impact Statement to Consider a Highway Right-of-Way, Amended Habitat Conservation Plan and Issuance of an Incidental Take Permit for the Mojave Desert Tortoise, and Proposed Resource Management Plan Amendments, Washington County, UT (Final EIS).

The analysis contained in this SEIS supplements the information in the Final EIS. The general structure of the Draft SEIS is described below to aid in the review:

- Chapter 1 presents the project background and purpose and need for the project.
- Chapter 2 provides a detailed description of the alternatives considered.
- Chapter 3 describes the affected environment or existing conditions of resources in the project area that may be affected by the alternatives. This chapter also discloses the impacts or effects of the alternatives.
- Chapter 4 provides an overview of consultation and coordination efforts undertaken by the BLM and FWS throughout the process of developing the Draft SEIS.

The BLM and the FWS encourage the public to review and provide comments on the Draft SEIS. The Draft SEIS is available on the BLM's ePlanning website at <https://eplanning.blm.gov/eplanning-ui/project/2026562/510>.

Public comments will be accepted for 45 calendar days following the U.S. Environmental Protection Agency's publication of its Notice of Availability in the *Federal Register*. The BLM and FWS can best use your comments and resource information submissions if they are as specific as possible and received within the review period. Responses to substantive comments (40 CFR 1503.3) will be included in the Final SEIS. Comments may be submitted either via the website or regular mail:

Website: <https://eplanning.blm.gov/eplanning-ui/project/2026562/510>

Mail: Bureau of Land Management
Attn.: Northern Corridor SEIS
345 East Riverside Drive
St. George, UT 84790

To facilitate analysis of comments and information submitted, we encourage you to submit comments in an electronic format to the website above. Before including your address, telephone number, email address, or other personal identifying information in your comment, please be advised your entire comment, including your personal identifying information, may be made publicly available at any time. Although you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

The BLM and FWS will be holding one in-person public meeting in St. George, Utah. The specific date and location of the meeting will be announced at least 15 days in advance through media releases and the BLM ePlanning website.

Thank you for your interest and review of the Draft SEIS. We appreciate the information and suggestions you contribute to the process.

Sincerely,

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Greg Sheehan
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George Weekley
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ACRONYMS AND ABBREVIATIONS

ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CI	Confidence Interval
DMPO	Dixie Metropolitan Planning Organization
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973
FLPMA	Federal Land Policy and Management Act
FWS	United States Fish and Wildlife Service
GIS	Geographic Information System
HCP	Habitat Conservation Plan
I-15	Interstate-15
ITP	Incidental Take Permit
LWCF	Land and Water Conservation Fund
MOA	Memorandum of Agreement
NCA	National Conservation Area
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act
NOI	Notice of Intent
OPLMA	Omnibus Public Lands Management Act of 2009
Reserve	Red Cliffs Desert Reserve
RMP	Resource Management Plan
ROD	Record of Decision
ROV	Resources, Objects and Values
ROW	Right-of-way
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
U.S.C.	United States Code
UDOT	Utah Department of Transportation
UDWR	Utah Division of Wildlife Resources
UVRRU	Upper Virgin River Recovery Unit
VRM	Visual Resource Management

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EXECUTIVE SUMMARY

Introduction

This Draft Supplemental Environmental Impact Statement (Draft SEIS) was prepared by the U.S. Department of the Interior, Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (FWS), as co-lead agencies, in compliance with the National Environmental Policy Act of 1969, as amended (NEPA). The Draft SEIS further considers the effects of granting a right-of-way (ROW) to the Utah Department of Transportation (UDOT) for the Northern Corridor (a proposed highway) as well as a potential amendment to the Incidental Take Permit (ITP) issued to Washington County, Utah, under Section 10(a)(1)(B) of the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1533(c)(1)). The Draft SEIS follows a Settlement Agreement that was the result of a lawsuit filed by seven environmental and wildlife conservation organizations in response to the 2021 Records of Decision (BLM 2021, FWS 2021a) related to the Final Environmental Impact Statement to Consider a Highway Right-of-Way, Amended Habitat Conservation Plan and Issuance of an Incidental Take Permit for the Mojave Desert Tortoise, and Proposed Resource Management Plan Amendments, Washington County, UT (Final EIS; BLM 2020a). On November 16, 2023, the United States District Court for the District of Columbia granted the United States' request for voluntary remand of the 2021 decisions to the FWS and BLM for reconsideration.

In accordance with the Settlement Agreement and the remand order, the analysis contained in this SEIS supplements the information in the Final EIS regarding (1) the trend of increasing frequency and extent of wildfires in the Mojave Desert; (2) the rise of noxious weeds and invasive species in post-burn areas; and (3) the impacts increased fire and noxious weeds and invasive species have on the Mojave desert tortoise. The analysis also includes those resources that warrant reconsideration based on new information or changed conditions beyond what was presented in the Final EIS, in order to better inform the agencies' review of granting UDOT's ROW. Title 40 of the Code of Federal Regulations (CFR) Section 1502.9(d)(1) states that a SEIS shall be prepared if: (i) the agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) there are significant new circumstances or information relevant to concerns and bearing on the proposed action or its effects. The BLM also intends to complete the consultation requirements under the National Historic Preservation Act (NHPA). The supplemental analysis tiers to and incorporates by reference all other information and analyses that were addressed in the Final EIS.

Purpose and Need

The BLM's purpose and need for this action is to reconsider the 2018 UDOT ROW application to determine whether the BLM will affirm, affirm with modifications, or terminate the ROW grant. The FWS's purpose and need for action is to consider whether to amend Washington County's ITP so that it reflects the BLM's reconsideration of UDOT's ROW.

This supplemental document further analyzes the potential impacts of the construction and use of the Northern Corridor Highway in the context of the following: (1) the trend in the increasing frequency and extent of wildfires in the Mojave Desert; (2) the rise of non-native/exotic and invasive vegetation in post-burn areas; and (3) the impacts increased fire and new non-native/exotic and invasive vegetation have on Mojave desert tortoise.

Decisions to be Made

After evaluation of public comments and completion of the supplemental analysis, there are two Federal decisions to be made:

- 1) With respect to UDOT's ROW grant, the BLM Authorized Officer will decide whether to affirm, affirm with modifications, or terminate.

-
- 2) If changes are made to the ROW, the FWS Authorized Officer will determine whether any change is consistent with the Northern Corridor Changed Circumstances commitments identified in the Washington County Amended HCP and whether an amendment to the 2021 ITP is warranted.

The BLM will not consider amendments to the Red Cliffs National Conservation Area (NCA) Resource Management Plan (RMP) or the St. George Field Office RMP in this SEIS. The FWS will not consider changes to the Washington County Amended HCP in this SEIS. If the BLM's 2024 decision on the ROW application differs from the 2020 ROW decision, the BLM may undertake additional land use planning to reflect the 2024 decision. Until that additional planning is complete, BLM will not consider or reconsider a similar ROW application within the NCA.

Alternatives

Five alternative routes for the Northern Corridor Highway that were previously considered in detail are carried forward in this SEIS as is an alternative that would terminate UDOT's ROW grant in the NCA, which is the equivalent of the "no action" alternative in the 2020 Final EIS.

UDOT ROW Alignment (Affirm Current ROW Grant): The UDOT ROW Alignment was the Proposed Action in the Final EIS and the BLM approved the ROW for this alternative in the 2021 ROD. The BLM would affirm UDOT's ROW grant across public lands in the NCA for the Northern Corridor. This alternative functions as the "no action" or "no change" alternative because the ROW grant for the Northern Corridor was issued to UDOT in January 2021. This alternative would connect Green Spring Drive on the east to Red Hills Parkway on the west just north of the Pioneer Hills trailhead parking area. The Northern Corridor would be approximately 4.5 miles long, approximately 1.9 miles of which would be across BLM-managed lands. Under this alternative, FWS would affirm Washington County's ITP for the take of Mojave desert tortoise.

T-Bone Mesa Alignment: The BLM would affirm the ROW grant to UDOT across public lands in the NCA but show the T-Bone Mesa Alignment as the approved highway corridor. This alignment would connect Green Spring Drive on the east to Red Hills Parkway on the west just north of the Pioneer Hills trailhead parking area. Under this alternative, the Northern Corridor would skirt the southern edge of T-Bone Mesa. The Northern Corridor would be approximately 4.2 miles long, 2.2 miles of which would be across public lands in the NCA. Under this alternative, FWS would affirm Washington County's ITP for the take of Mojave desert tortoise.

Southern Alignment: The BLM would affirm the ROW grant to UDOT across public lands in the NCA but show the Southern Alignment as the approved highway corridor. Under this alternative, the Northern Corridor would be near the southern border of the NCA, connecting Green Spring Drive on the east to Red Hills Parkway on the west just south of, and slightly encroaching onto, the Pioneer Hills trailhead parking area. The Northern Corridor would be approximately 5.5 miles long, approximately 1.5 miles of which would be across public lands in the NCA. Under this alternative, FWS would affirm Washington County's ITP for the take of Mojave desert tortoise.

Red Hills Parkway Expressway: This alternative would convert Red Hills Parkway into a grade-separated expressway between Interstate 15 and Bluff Street. Under this alternative UDOT would no longer hold the ROW grant for the Northern Corridor across the NCA. The BLM may need to grant necessary ROW amendments to the City of St. George's existing ROW for the Red Hills Parkway if the planned improvements exceed the boundaries of the existing ROW. The FWS would need to amend the ITP under this alternative because the Northern Corridor changed circumstance would not occur. This would eliminate protections on tortoises and their habitat on 3,338 acres of non-Federal lands in Zone 6 of the Red Cliffs Desert Reserve (Reserve), which was established as mitigation in response to the Northern Corridor changed circumstance to offset the construction of a highway within the NCA.

St. George Boulevard/100 South One-way Couplet: The One-way Couplet Alternative proposes changes to existing St. George Boulevard and 100 South instead of a new road across BLM-managed lands within the NCA. Under this alternative, UDOT would no longer hold the ROW grant for the Northern Corridor across the NCA. This alternative would have to be implemented by the City of St. George because it does not cross any BLM-managed lands. The FWS would need to amend the ITP under this alternative because the Northern Corridor changed circumstance would not occur, thus eliminating Zone 6 from the Reserve.

Terminate UDOT's ROW: Under this alternative, UDOT would no longer hold the ROW grant for the Northern Corridor across the NCA. This alternative would have similar effects as the "no action" alternative in the 2020 Final EIS. The FWS would amend Washington County's ITP because the Northern Corridor changed circumstance is not triggered, thus eliminating Zone 6 from the Reserve.

Scoping and Issues

The BLM and FWS undertook a scoping process for the draft SEIS from November 16, 2023, to December 28, 2023, to obtain information from potentially affected communities, Tribal entities, and the public at large regarding the scope of the analysis, potential alternatives, and identification of relevant information and studies to help determine which additional impacts and resources should be more thoroughly assessed. The scoping process and its full results appear in the Scoping Report posted on the BLM's ePlanning website (<https://eplanning.blm.gov/eplanning-ui/project/2026562/570>).

The key issues that are addressed in this SEIS, including those identified in the Notice of Intent (Federal Register Vol. 88, No. 220, Thursday, November 16, 2023) or during internal agency and public scoping, and for which there is new information or guidance since publication of the Final EIS are:

- **Vegetative Communities:** The impacts of the alternatives on the potential spread of noxious weeds and invasive species within the Reserve and NCA are of particular concern as these species can most readily regrow and invade native ecosystems following fire and other disturbances.
- **Special Status Plants:** Three Federally-listed endangered plant species and three BLM sensitive plant species are known to occur in the Reserve and could be impacted directly by the alternatives or indirectly through increased spread of noxious weeds and invasive species or increased frequency of wildfires.
- **Fire and Fuels Management:** Wildfire regimes are changing dramatically across North American deserts with the spread of invasive grasses and the increase in fine fuels in the spaces between native shrubs due to the presence of invasive annual grasses, resulting in larger and more frequent fires. A total of 12,437 acres were burned in the Reserve in 2020 from five fires, of which 2,583 acres were previously unburned.
- **Special Status Wildlife:** The impacts of the alternatives on Mojave desert tortoise or their habitat is of concern because of habitat destruction and fragmentation from development, increased wildfire frequency, and the proliferation of noxious weeds and invasive species.
- **ESA Section 6 Land Acquisition Grants:** Using ESA Section 6 grants, three parcels totaling 120 acres have been purchased by the Utah Department of Wildlife Resources within the NCA since publication of the Final EIS.
- **Land and Water Conservation Fund (LWCF) Lands:** Using LWCF funding, three parcels totaling 87.3 acres have been purchased within the NCA since publication of the Final EIS.
- **National Conservation Areas:** A formal compatibility framework analysis will be completed for this project once the analysis for the SEIS is complete and a preferred alternative is identified. The formal compatibility framework analysis will assess the impacts of the project on the resources, objects, and values of the NCA.
- **Cultural Resources and Native American Concerns:** Issuance or termination of the ROW by the BLM to UDOT and the issuance or amendment of an ITP by the FWS to Washington County

are Federal undertakings and are therefore subject to Section 106 of the NHPA. To resolve adverse effects through the Section 106 process, the BLM is continuing to consult with the Utah State Historic Preservation Office and consulting parties including affected Indian Tribes, other involved State and Federal agencies, the applicant, representatives of local governments, and other individuals and organizations with a demonstrated interest in the undertaking as appropriate and will develop a Memorandum of Agreement (MOA) to avoid, minimize, or mitigate adverse effects on historic properties.

- **Environmental Justice and Socioeconomics:** The issuance or termination of the ROW could result in disproportionate or adverse impacts to minority, low-income, and Tribal populations. Because of the growth in and around the greater St. George metropolitan area since 2020, updates to Environmental Justice communities and demographics, as well as traffic volumes and patterns, is examined.

Primary Impacts in the SEIS

Construction of the Northern Corridor on the UDOT ROW Alignment, T-Bone Mesa Alignment, or Southern Alignment would result in some level of ground disturbance and seed dispersal which are known vectors for spread of noxious and invasive plants. Vehicular travel on roads is also a known vector for introduction and spread of invasive plant species. Furthermore, increased prevalence of invasive grasses increases the threat of wildfires. Construction of the Northern Corridor Highway on any one of these three alignments has the potential to further introduce ignition sources during construction and through daily vehicle usage. This would increase fire probability and likely increase fire frequency near the highway, which would again lead to an increase in noxious weeds and invasive species. Modifications to the Red Hills Parkway to make it function as an expressway would result in substantially fewer impacts on native vegetation or the spread of noxious weeds and invasive species, when compared to the construction of a new highway within the UDOT ROW alignment. There would be no new impacts on noxious weeds resulting from selecting the St. George Boulevard/100 South One-Way Couplet alternative or from terminating UDOT's ROW.

Construction of the Northern Corridor on the UDOT ROW Alignment, T-Bone Mesa Alignment, or Southern Alignment would not impact any Federally-listed plant species. Construction of the UDOT ROW Alignment, Southern Alignment, or Red Hills Parkway Expressway could adversely impact the BLM sensitive Virgin thistle. Endangered plants and occupied habitat on non-Federal lands in Zone 6 may be subject to development with no assurance of protections under the ESA if the Red Hills Parkway Expressway, One-way Couplet, or Terminate UDOT's ROW alternative is selected.

Construction of the Northern Corridor on the UDOT ROW Alignment, T-Bone Mesa Alignment, or Southern Alignment has the potential to further introduce ignition sources during construction and through daily vehicle usage and increased human activity. Road construction would create a permanent fuel break and potential weed treatments and road maintenance activities could reduce fuel loads in the short term. However, these actions may not offset the increase in fire probability and likely increase in fire frequency that would occur from constructing a road in the NCA. Selecting the Red Hills Parkway Expressway, One-way Couplet, or Terminate UDOT's ROW alternative would remove current protections on non-Federal lands within the Zone 6 boundaries and continued degradation of soils and habitat loss from unmanaged motorized and non-motorized recreational activities on and off trails may occur, which could increase the risk of wildfire.

Construction and operation of a Northern Corridor within the NCA under the UDOT ROW Alignment, T-Bone Mesa Alignment, or Southern Alignment would cause direct loss of occupied tortoise habitat, displacement and short-distance translocation of tortoises, and destruction of burrows. Indirect effects include increased threat of wildfire by providing additional ignition sources from construction and vehicles as well as facilitating additional spread of noxious weeds and invasive vegetation contributing to increased fuel load. This could result in further direct tortoise mortality as well as increased habitat loss

and degradation if wildfires occurred on previously unburned areas. Additionally, tortoises would be affected by disturbance from noise and vibrations associated with construction and use of the highway, facilitating human intrusion into Mojave desert tortoise habitat, spreading trash and toxins in the environment, influencing predator abundance and distribution, disrupting home range and landscape movement patterns, and fragmenting habitat within lands specifically identified for the protection and long-term management of Mojave desert tortoise. No additional Mojave desert tortoise habitat would be lost as a result of selecting the Red Hills Parkway Expressway, One-way Couplet, or Terminate UDOT's ROW alternatives, although selecting any of these alternatives would not trigger the Northern Corridor changed circumstance, thus eliminating Zone 6 from the Reserve and exposing non-Federal lands in Zone 6 to land development and other covered activities that could potentially increase impacts to Mojave desert tortoise.

Only the T-Bone Mesa Alignment would directly encroach upon the newly-acquired ESA Section 6 parcels although all three alternatives within the NCA are within 1 kilometer of the parcels and thus there could be indirect impacts to Mojave desert tortoise and other wildlife habitat. All three alternatives within the NCA would impact newly-acquired LWCF lands with the greatest impact being from the Southern Alignment and the smallest impact from the T-Bone Mesa Alignment.

The UDOT ROW Alignment may affect up to eight historic properties, the T-Bone Mesa Alignment up to six historic properties, the Southern Alignment up to five historic properties, and the Red Hills Parkway Expressway up to two historic properties. There are 63 historic properties located along the One-way Couplet, but it is unlikely that there would be adverse effects from converting the streets into a one-way couplet. The number of historic properties that may have adverse effects may be reduced with further developments in design changes. Regardless, BLM will complete a Memorandum of Agreement to resolve adverse effects to Historic Properties under any of the alternatives within the NCA to comply with the National Historic Preservation Act.

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1 PURPOSE AND NEED FOR ACTION

1.1 Introduction

This Draft Supplemental Environmental Impact Statement (Draft SEIS) was prepared by the U.S. Department of the Interior, Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (FWS), as co-lead agencies, in compliance with the National Environmental Policy Act of 1969, as amended (NEPA). The Draft SEIS further considers the effects of granting a right-of-way (ROW) to the Utah Department of Transportation (UDOT) for the Northern Corridor (a proposed highway) as well as a potential amendment to the Incidental Take Permit (ITP)¹ issued to Washington County, Utah, under Section 10(a)(1)(B) of the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1533(c)(1)). The Draft SEIS follows a Settlement Agreement that was the result of a lawsuit filed by seven environmental and wildlife conservation organizations in response to the 2021 Records of Decision (BLM 2021, FWS 2021a) related to the Final Environmental Impact Statement to Consider a Highway Right-of-Way, Amended Habitat Conservation Plan and Issuance of an Incidental Take Permit for the Mojave Desert Tortoise, and Proposed Resource Management Plan Amendments, Washington County, UT (Final EIS; BLM 2020a). On November 16, 2023, the United States District Court for the District of Columbia granted the United States' request for voluntary remand of the 2021 decisions to the FWS and BLM for reconsideration.

In accordance with the Settlement Agreement and the remand order, the analysis contained in this SEIS supplements the information in the Final EIS regarding (1) the trend of increasing frequency and extent of wildfires in the Mojave Desert; (2) the rise of noxious weeds and invasive species in post-burn areas; and (3) the impacts increased fire and noxious weeds and invasive species have on the Mojave desert tortoise. The analysis also includes those resources that warrant reconsideration based on new information or changed conditions beyond what was presented in the Final EIS, in order to better inform the agencies' review of granting UDOT's ROW. Title 40 of the Code of Federal Regulations (CFR) Section 1502.9(d)(1) states that a SEIS shall be prepared if: (i) the agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) there are significant new circumstances or information relevant to concerns and bearing on the proposed action or its effects. The BLM also intends to complete the consultation requirements under the National Historic Preservation Act (NHPA). The supplemental analysis tiers to and incorporates by reference all other information and analyses that were addressed in the Final EIS.²

1.2 Background

On April 2, 1990, the FWS determined the Mojave population of the desert tortoise (*Gopherus agassizii*) to be threatened, pursuant to the ESA (55 Federal Register 12178). The Mojave population covered by this rule included all tortoises north and west of the Colorado River in California, southern Nevada, southwestern Utah, and northwestern Arizona. Reasons for the listing included loss of habitat from construction projects such as roads, housing, energy developments, and conversion of native habitat to agriculture. Livestock grazing and vehicle use off existing roads were also noted to have degraded additional habitat. Also cited as threatening the Mojave desert tortoise's continued existence were illegal

¹ The Endangered Species Act (ESA) requires that an ITP be obtained for any "take" of an endangered or threatened species incidental to an otherwise lawful activity, such as development. Take is defined under the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

² Final Environmental Impact Statement to Consider a Highway Right-of-Way, Amended Habitat Conservation Plan and Issuance of an Incidental Take Permit for the Mojave Desert Tortoise, and Proposed Resource Management Plan Amendments, Washington County, UT. November 2020. Available at <https://eplanning.blm.gov/eplanning-ui/project/2026562/570>.

collection, upper respiratory tract disease, and predation on juvenile tortoises by common ravens. Critical habitat for the entire Mojave population of desert tortoise was designated on February 8, 1994 (59 Federal Register 5820). A Mojave desert tortoise recovery plan was published in June 1994 (FWS 1994a). This plan included identification of six recovery units (Upper Virgin River, Northeastern Mojave, Eastern Mojave, Eastern Colorado, Northern Colorado, and Western Mojave), recommendations for a system of Desert Wildlife Management Areas within the recovery units, and development and implementation of specific recovery actions.

In response to extensive growth and development in Washington County in the late 1980s and early 1990s, the Washington County Commission submitted an application to the FWS for an ITP for Mojave desert tortoise in the Upper Virgin River Recovery Unit (UVRRU), which encompasses all Mojave desert tortoise habitat in Washington County, Utah, east of the Beaver Dam Mountains. As part of the permit application, Washington County, with the assistance of a steering committee (which included Federal, state, and local government entities, as well as environmental groups and land use groups), prepared a Habitat Conservation Plan (HCP) in 1995 that provided for the conservation of the Upper Virgin River population of the Mojave desert tortoise. Washington County prepared the 1995 HCP with the goal of reducing the potential for conflicts between otherwise lawful land use activities and species protected by the ESA, most notably the Mojave desert tortoise.

The central conservation measure of the 1995 HCP was the proposed creation of the 61,022-acre Red Cliffs Desert Reserve (Reserve).³ The Reserve design was consistent with the criteria for the Upper Virgin River Desert Wildlife Management Area envisioned by the 1994 Mojave desert tortoise recovery plan and set aside critical and buffer habitat to assist with the recovery of the tortoise in the UVRRU. In 1996, the FWS issued an ITP to Washington County, pursuant to Section 10(a)(1)(B) of the ESA, for the take of Mojave desert tortoise incidental to covered activities in the County's permit area and the Reserve was established. Issuance of the ITP allowed Washington County to proceed with covered activities while complying with the ESA. It also provided regulatory assurances to Washington County that FWS would not impose additional Mojave desert tortoise conservation measures during the duration of the permit as long as the County was properly implementing the 1995 HCP and the existence of any listed species was not jeopardized.

Creating the Reserve involved actions by Washington County and its HCP Partners to define the Reserve boundary, consolidate approximately 18,609 acres of private or State lands within the Reserve boundary into Federal or State ownership, and establish certain land use restrictions protecting the Mojave desert tortoise within the Reserve. Other conservation measures of the 1995 HCP included actions to manage the Reserve for the benefit of Mojave desert tortoise (e.g., removing grazing, installing fencing, eliminating several motorized routes), perform monitoring and research activities, provide education to the public, implement protocols for performing certain types of land use activities inside and outside of the Reserve (i.e., subdivision development, utility development, road development, recreation), and experimentally collect and translocate Mojave desert tortoise from areas subject to land development and other human activities to underoccupied portions of the Reserve. The Reserve was divided into five zones to facilitate management (Zones 1–5). As a result of the ITP and compliance with the HCP, development has been able to occur in tortoise habitat on non-Federal lands in Washington County outside the Reserve.

³ Landownership within the Reserve in 1995 consisted of 38,034 acres of BLM-managed lands, 4,379 acres of State park lands, 10,938 acres of State lands owned by the Trust Lands Administration, and 7,671 acres of private or local government lands. Subsequent boundary changes resulted in an increase in size of the Reserve to 62,009 acres.

The Red Cliffs National Conservation Area (NCA) was designated by Congress on March 30, 2009, by inclusion of the Washington County Growth and Conservation Act of 2008 in the Omnibus Public Land Management Act (OPLMA) of 2009 (Public Law 111-11 at Title I, Subtitle O, Section 1974(a), codified at 16 U.S.C. 460www). OPLMA designated the public lands in the Reserve, consisting of approximately 44,725 acres, as the NCA. In designating the NCA, Congress defined its purpose as follows:

SEC. 1974. RED CLIFFS NATIONAL CONSERVATION AREA.

(a) PURPOSES.—The purposes of this section are—

- (1) to conserve, protect, and enhance for the benefit and enjoyment of present and future generations the ecological, scenic, wildlife, recreational, cultural, historical, natural, educational, and scientific resources of the National Conservation Area; and
- (2) to protect each species that is—
 - (A) located in the National Conservation Area; and
 - (B) listed as a threatened or endangered species on the list of threatened species or the list of endangered species published under section 4(c)(1) of the Endangered Species Act of 1973 (16 U.S. 1533(c)(1)).

OPLMA (16 U.S.C. 460www), Title I, Subtitle O, Section 1974(e) states:

(e) MANAGEMENT.—

- (1) IN GENERAL.—The Secretary [of the Interior] shall manage the National Conservation Area—
 - (A) in a manner that conserves, protects, and enhances the resources of the National Conservation Area; and
 - (B) in accordance with—
 - (i) the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S. 1701 et seq.);
 - (ii) this section [of the OPLMA]; and
 - (iii) any other applicable law (including regulations).
- (2) USES.—The Secretary shall only allow uses of the National Conservation Area that the Secretary determines would further a purpose described in subsection (a).
- (3) MOTORIZED VEHICLES.—Except in cases in which motorized vehicles are needed for administrative purposes, or to respond to an emergency, the use of motorized vehicles in the National Conservation Area shall be permitted only on roads designated by the management plan for the use of motorized vehicles.

OPLMA (16 U.S.C. 460www), Title I, Subtitle O, Section 1977(b), also directs the Secretary to develop a comprehensive travel management plan for the land managed by the BLM in Washington County, with the following specific direction:

SEC. 1977. WASHINGTON COUNTY COMPREHENSIVE TRAVEL AND TRANSPORTATION MANAGEMENT PLAN.

(b) COMPREHENSIVE TRAVEL AND TRANSPORTATION MANAGEMENT PLAN.—

- (1) IN GENERAL.—Not later than 3 years after the date of enactment of this Act, in accordance with the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) and other applicable laws (including regulations), the Secretary, in consultation with appropriate Federal agencies and State, Tribal, and local governmental entities, and after an opportunity for public comment, shall develop a comprehensive travel management plan for the land managed by the Bureau of Land Management in the County—

-
- (A) to provide to the public a clearly marked network of roads and trails with signs and maps to promote—
 - (i) public safety and awareness; and
 - (ii) enhanced recreation and general access opportunities;
 - (B) to help reduce in the County growing conflicts arising from interactions between—
 - (i) motorized recreation; and
 - (ii) the important resource values of public land;
 - (C) to promote citizen-based opportunities for—
 - (i) the monitoring and stewardship of the trail; and
 - (ii) trail system management; and
 - (D) to support law enforcement officials in promoting—
 - (i) compliance with off-highway vehicle laws (including regulations); and
 - (ii) effective deterrents of abuses of public land.
- (2) SCOPE; CONTENTS.—In developing the travel management plan, the Secretary shall—
- (A) in consultation with appropriate Federal agencies, State, Tribal, and local governmental entities (including the County and St. George City, Utah), and the public, identify 1 or more alternatives for a northern transportation route in the County;
 - (B) ensure that the travel management plan contains a map that depicts the trail; and
 - (C) designate a system of areas, roads, and trails for mechanical and motorized use.

Under OPLMA Subtitle O, Section 1977, the BLM is required to develop a comprehensive travel management plan for the land managed by the BLM in Washington County and, in doing so, to “identify one or more alternatives for a northern transportation route” in the county. In 2016, as part of developing the Red Cliffs NCA Resource Management Plan (RMP; BLM 2016b), BLM considered an alternative that included a Northern Corridor in the NCA. However, at that time, BLM did not have a specific ROW application to consider as part of that planning process. Instead, the BLM relied on several conceptual alignments from the Dixie Metropolitan Planning Organization (DMPO) that were based on Washington County’s recommendations.

In December 2016, the BLM issued a Record of Decision (ROD) and Approved RMP for the Red Cliffs NCA (BLM 2016). While the BLM eventually selected a different alternative that did not include a corridor, the selected alternative did create an avoidance area that could accommodate a Northern Corridor alignment in the NCA. Under the 2016 RMP, an avoidance area is an area identified through resource management planning to be avoided but that may be available for ROW location with special stipulations. The RMP stated the management goals, objectives, and actions that would apply to BLM-managed lands within the NCA, consistent with the Congressionally-defined purposes of conservation, protection, enhancement, and restoration of public land values in the NCA. One of the stated goals under Section 6.33 Lands and Realty of the RMP was that “Land use authorizations further the purposes of conservation, protection, and enhancement of resource values in the NCA.” This section specifically addressed linear ROWs in the NCA as follows:

LAR-13: Designate ROW Avoidance and Exclusion areas and retain an existing ROW corridor as follows:

Exclusion areas: (areas that are not available for location of ROWs under any conditions, including all designated wilderness within the NCA): 38,472 acres.

Avoidance areas: 6,367 acres.

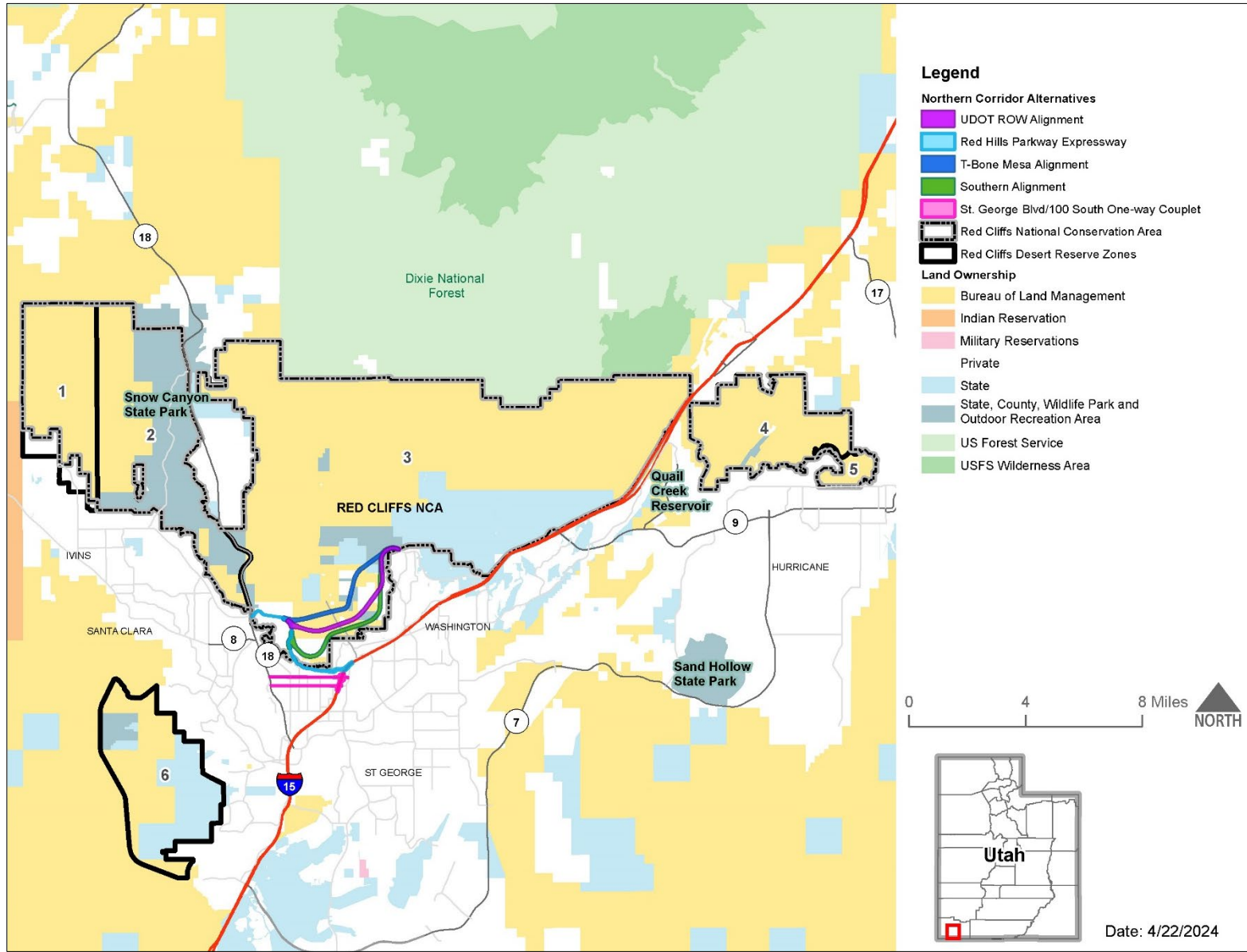
While considering a new proposed ROW application the BLM will:

- a) consider options for routing or siting the ROW outside of the NCA;
- b) ensure consistency of the ROW with the established purpose of the NCA, as identified in OPLMA;
- c) ensure that new ROWs share, parallel, or adjoin existing ROWs;
- d) apply special stipulations and mitigation measures within avoidance areas consistent with VRM objectives and the purpose of the NCA;
- e) authorize new ROWs only when the project specific NEPA analysis indicates that the construction and operation of the facility would not result in the take of Federally-listed species; the adverse modification of designated critical habitats; or adverse effects to National Register of Historic Places listed or eligible properties, and the following criteria are met:
 - 1) construction could be accomplished through methods that minimize new surface disturbances and resource impacts;
 - 2) new ROW access roads would not be required for construction, operation, and maintenance;
 - 3) existing ROW access roads would not be permanently widened or upgraded for construction, operation, and maintenance; temporary enlargements or modifications to existing access routes needed during construction would be rehabilitated immediately after construction is completed; and
 - 4) construction, operations, and maintenance would not require off-road travel by motorized vehicles.

Designated ROW Corridor: 20 acres.

On September 18, 2018, UDOT submitted an application for a ROW grant to construct a multi-lane, divided highway (referred to as the Northern Corridor) north of the City of St. George, Utah, on BLM-managed and non-Federal lands within the NCA and the overlapping Reserve (Figure 1), with the stated objective of reducing congestion, increasing capacity, and improving east-west mobility on arterial and interstate roadways between State Route 18 and Interstate 15 (I-15) at milepost 13. Washington County's current transportation infrastructure may not accommodate the County's projected growth, and the Northern Corridor was part of its efforts to balance the anticipated future growth with the statutory and regulatory provisions governing the Red Cliffs NCA and larger Red Cliffs Desert Reserve, and the protected wildlife that resides on those lands. UDOT's stated objective at the time was driven by the current and forecasted population growth within Washington County, which was anticipated to continue to increase demand on the transportation network. Based on traffic projections from the DMPO's regional travel demand model (DMPO 2019), UDOT stated the existing transportation network between State Route 18 and I-15 was not considered adequate to meet future (2050) travel demand in the northeastern and northwestern areas of St. George. The ROW application from UDOT sought a ROW through the NCA that was larger than the then existing ROW avoidance area could accommodate and, thus, could not be granted without also considering amending the Red Cliffs NCA RMP. Amendments to the St. George Field Office RMP were also considered to enhance Mojave desert tortoise conservation on BLM-managed lands outside the NCA in order to comply with Washington County's amended HCP.

Figure 1. Project Area



Prior to the ITP's expiration in 2016, Washington County applied to the FWS to renew their ITP as described in their proposed HCP for Washington County, Utah, Restated and Amended October 2020 (hereafter Amended HCP; Washington County 2020). To address some of the Reserve effects if a ROW crossing the Red Cliffs NCA were granted for the Northern Corridor, the Amended HCP included a Northern Corridor changed circumstance that addressed effects of the highway to the HCP conservation program. FWS defines changed circumstances as "changes in circumstances affecting a species or geographic area covered by a conservation plan or agreement that can reasonably be anticipated by plan or agreement developers and the [FWS] and that can be planned for" (50 CFR 17.3). Selecting a ROW alignment that crosses the existing Reserve would be considered a changed circumstance, in accordance with Section 9.1 of the Amended HCP, that may affect the Mojave desert tortoise. If triggered, a significant part of the changed circumstance was to expand the Reserve by approximately 6,813 acres with the addition of a new sixth zone (Zone 6; see Figure 1). Creation of Zone 6 was contingent on the BLM issuing a ROW grant crossing Zone 3 of the Reserve and was the primary conservation strategy to offset granting the Northern Corridor ROW in the Reserve.

To consider UDOT's ROW application and Washington County's ITP application, the BLM and FWS prepared a Final EIS that analyzed the environmental impacts associated with several alternative northern transportation routes and proposed amendments to the Red Cliffs NCA RMP and the St. George Field Office RMP. The BLM consulted with the FWS to meet the requirements in Section 7 of the ESA for both the ROW application and the amendments to the management plans. On January 12, 2021, the FWS issued a Biological Opinion to the BLM that determined the ROW and approved amendments to the RMPs are not likely to jeopardize the continued existence of the Mojave desert tortoise and that they are not likely to destroy or adversely modify designated critical habitat for the species. The FWS also issued an intra-agency Biological Opinion on January 12, 2021, that determined the ITP is not likely to jeopardize the continued existence of the Mojave desert tortoise, Holmgren milkvetch (*Astragalus holmgreniorum*), Shivwits milkvetch (*Astragalus ampullarioides*), dwarf bear-poppy (*Arctomecon humilis*), or Siler pincushion cactus (*Pediocactus sileri*), or result in the adverse modification of critical habitat for any of the above listed species. The FWS Regional Director for Interior Regions 5 and 7 signed a ROD and issued an ITP to Washington County for the Mojave desert tortoise under Section 10(a)(1)(B) of the ESA, which included take associated with the changed circumstance of the Northern Corridor ROW and associated mitigation (i.e., creation of Zone 6 of the Reserve and associated actions; see Section 2.2).

On January 13, 2021, after the Final EIS was completed, the Secretary of the Interior signed a ROD which approved the Northern Corridor ROW application and the amendments to the RMPs. The decision approving the ROW was effective immediately, and the BLM signed and issued a FLPMA Title V ROW grant to UDOT that approved the issuance of a 1.9-mile ROW for the approximately 4.5-mile long Northern Corridor that crosses the Reserve and the NCA. The Red Cliffs NCA RMP Amendment allowed a one-time exception for a transportation ROW within the NCA and the St. George Field Office RMP amendment modified management on a portion of the 6,813-acre mitigation area (Zone 6) that was added to the Reserve to offset the ROW impacts. Tables 2.3-1 and 2.5-1 of the Final EIS (BLM 2020a) describe in more detail the approved amendments that were made to the Red Cliffs NCA RMP and the St. George Field Office RMP, respectively, in granting the ROW to UDOT.

In response to these decisions, seven organizations (i.e., Conserve Southwest Utah, Conservation Lands Foundation, Center for Biological Diversity, Defenders of Wildlife, Southern Utah Wilderness Alliance, Wilderness Society, and WildEarth Guardians; collectively, Plaintiffs) filed an initial complaint in the United States District Court for the District of Columbia against the Department of the Interior on June 3, 2021. Among other claims, the Plaintiffs alleged the BLM's ROW decision violated NEPA, the NHPA, OPLMA, and the Land and Water Conservation Fund (LWCF) Act. The Plaintiffs stated the Final EIS did not fully address the changed conditions of wildfire in the region and the impacts it may have on the Mojave desert tortoise, tortoise habitat, and the spread of invasive annual grasses. On July 27, 2021,

Plaintiffs amended their complaint to include the FWS and additional claims related to NEPA and the ESA. In August 2023, the United States and Plaintiffs entered into a Settlement Agreement that requires the BLM and FWS to complete a supplemental EIS and NHPA consultation (as necessary) and issue a new ROW decision, and updated Biological Opinion, incidental take statement, and ITP by November 2024. On November 16, 2023, the United States District Court Order, supported by a Memorandum Opinion, granted the request for voluntary remand of the 2021 decisions to the BLM and FWS for reconsideration. On March 8, 2024, the FWS rescinded its Biological Opinion for the ROW and issued an amended Biological Opinion for the St. George Field Office and Red Cliffs NCA RMP amendments. As a result of the amended Biological Opinion, Section 7 consultation will still need to be completed.

1.3 Purpose and Need

The BLM's purpose and need for this action is to reconsider the 2018 UDOT ROW application to determine whether the BLM will affirm, affirm with modifications, or terminate the ROW grant. The FWS's purpose and need for action is to consider whether to amend Washington County's ITP so that it reflects the BLM's reconsideration of UDOT's ROW.

This supplemental document further analyzes the potential impacts of the construction and use of the Northern Corridor Highway in the context of the following: (1) the trend in the increasing frequency and extent of wildfires in the Mojave Desert; (2) the rise of non-native/exotic and invasive vegetation in post-burn areas; and (3) the impacts increased fire and new non-native/exotic and invasive vegetation have on Mojave desert tortoise.

1.4 Decisions to be Made

After evaluation of public comments and completion of the supplemental analysis, there are two Federal decisions to be made:

- 3) With respect to UDOT's ROW grant, the BLM Authorized Officer will decide whether to affirm, affirm with modifications, or terminate.
- 4) If changes are made to the ROW, the FWS Authorized Officer will determine whether any change is consistent with the Northern Corridor Changed Circumstances commitments identified in the Washington County Amended HCP and whether an amendment to the 2021 ITP is warranted.

The BLM will not consider amendments to the Red Cliffs NCA RMP or the St. George Field Office RMP in this SEIS. The FWS will not consider changes to the Washington County Amended HCP in this SEIS. If the BLM's 2024 decision on the ROW application differs from the 2020 ROW decision, the BLM may undertake additional land use planning to reflect the 2024 decision. Until that additional planning is complete, BLM will not consider or reconsider a similar ROW application within the NCA.

1.5 Land Use Plan Conformance

The following RMPs provide management direction for the public lands administered by the BLM that may be crossed by the alternatives considered in this SEIS: the Red Cliffs NCA RMP, as Amended, and the St. George Field Office RMP, as Amended (BLM 2021). The 2020 Final EIS evaluated if the ROW application was consistent with these plans and determined that amendments to the plans were necessary to accommodate a ROW.

The Red Cliffs NCA RMP Amendment allowed for a one-time exception to LAR-13, Criteria E, for the issuance of a Title V ROW within the existing ROW Avoidance Area for the Northern Corridor, amended VRM-07 to manage the Northern Corridor ROW as BLM Visual Resource Management (VRM) Class IV, and amended REC-05 to manage the 600-foot-wide area around the selected route for the Northern Corridor as part of the Rural Recreation Management Zone. The Amendment stated that all future development will continue to comply with the strict limitations currently in place for the NCA.

The St. George Field Office RMP Amendment aligned the management of BLM-managed lands within Zone 6 of the Reserve with the management described in the Amended Washington County HCP. The creation of Zone 6 resulted in permanent protection of 6,813 acres including the BLM's commitment in the RMP Amendment to acquire and manage the state and private lands in Zone 6. The Amendment changed management prescriptions for approximately 3,471 acres of public lands in Zone 6 to offset impacts of the Northern Corridor ROW within the NCA and Zone 3 the Reserve.

1.6 Relationship to Statutes, Regulations, and Other Plans

All alternatives analyzed in detail must be consistent with Federal laws and applicable agency policies including FLPMA, OPLMA, the NHPA, and the ESA, as described below. The BLM and FWS also recognize the importance of State, Tribal, and local plans. The agencies conducted a detailed review of relevant State and County plans to evaluate the consistency of these plans with the alternatives in the Final EIS. A number of inconsistencies with the Washington County RMP and the St. George General Plan were identified. The results of this review and coordination with local governments related to this subject can be found in Appendix H of the Final EIS and updates are incorporated into applicable sections of the SEIS, as appropriate. Additional information is provided below.

Federal Land Policy and Management Act of 1976, as amended (43 U.S.C. 1701 *et seq.*). The BLM responded to UDOT's application for a ROW grant under Title V of FLPMA. On January 13, 2021, the Secretary of the Interior signed a ROD that allowed for the immediate issuance of a FLPMA Title V ROW grant to UDOT for the Northern Corridor Highway. The decision in the SEIS is whether to affirm, affirm with modifications, or terminate the FLPMA Title V ROW grant. FLPMA at Section 302(a) states that "public lands are to be managed under the principles of multiple use and sustained yield except where that tract of such public land has been dedicated to specific uses according to any other provision of law that it will be managed in accordance with such law."

The Omnibus Public Land Management Act of 2009 (P.L. 111-11). As stated in Section 1.2, the designating statutory authority for the Red Cliffs NCA is OPLMA of 2009 (Public Law 111-11 at Title I, Subtitle O, Section 1974(a), codified at 16 U.S.C. 460www. Section 1974 directs the Secretary of the Interior to manage the NCA in a manner that conserves, protects, and enhances its resources and to only allow uses that would further its designation purposes. OPLMA at Title 1, Subtitle O, Section 1977(b)(2) also directs the Secretary to develop a comprehensive travel management plan for the land managed by the BLM in Washington County and, in accordance with FLPMA, "in developing the travel management plan, the Secretary shall—(A) in consultation with appropriate Federal agencies, State, Tribal, and local governmental entities (including Washington County and St. George City, Utah), and the public, identify one or more alternatives for a northern transportation route in the County."

Land and Water Conservation Fund Act of 1965 (54 U.S.C. 200301 *et seq.*). The LWCF Act established a funding source to assist the Federal agencies and States in acquiring certain lands for certain recreation and other conservation purposes. The LWCF Act has a Federal agency component (54 U.S.C. 200306) and a State and local government component (54 U.S.C. 200305), which have different uses and requirements. For Federal land management agencies such as the BLM and FWS, the LWCF may be used to purchase private in-holdings to meet certain resource management objectives. Lands acquired for Federal purposes are administered by the respective Federal land management agency and subject to other laws. Since the establishment of the Reserve, and in accordance with the 1995 HCP Implementation Agreement, the BLM has acquired private property parcels within the Reserve. Most of these acquisitions have been made with funds originating from the LWCF Act.

National Historic Preservation Act Section 106 Consultation. The issuance of a ROW by the BLM is a Federal undertaking, which triggers Section 106 of the NHPA. Section 106, through its implementing regulations (36 CFR 800), defines Federal undertakings as any project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency, those carried out with Federal financial assistance, and those

requiring a Federal permit, license, or approval. The regulations require Federal agencies to consider the effects of their undertakings that have the potential to impact historic properties including any district, site, building, structure, or object that is listed on or eligible for listing on the National Register of Historic Places and provide the State Historic Preservation Office (SHPO), affected Tribes, and other consulting parties an opportunity to comment. The BLM and FWS notified the public that they would coordinate their public consultation obligations under the NHPA (54 U.S.C. 306108) through this NEPA process, as provided for in 36 CFR 800.2(d)(3) as a component of the Notice of Intent (NOI) to prepare a SEIS (88 Federal Register 78781-78783). As stated in 36 CFR 800.8(c)(4), when there will be adverse effects to historic properties, the agency must enter into either a Memorandum of Agreement (MOA) or make binding commitments to avoid, minimize, or mitigate those effects in the ROD (see Section 4.2.2 for additional detail).

Endangered Species Act of 1973 (16 U.S.C. 1533(c)(1)). Section 7(a)(2) of the ESA requires that each Federal agency ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. If an action agency determines a proposed action may affect listed species or designated critical habitat, consultation between that agency and the FWS is required under Section 7 of the ESA. The ROW alternatives within the NCA occur within desert tortoise habitat. The BLM developed a Biological Assessment to document the expected impacts to the species and habitat, including designated critical habitat, and completed formal consultation with the FWS as part of the Final EIS process. The FWS also completed a formal intra-agency Section 7 consultation regarding the potential effects of issuing an ESA Section 10(a)(1)(B) ITP to Washington County. The FWS, as co-lead for the SEIS, has again been working with BLM on the information and the potential impacts of the actions on threatened and endangered species and designated critical habitats in the SEIS. As part of the SEIS process the BLM will submit a supplemental Biological Assessment and complete Section 7 consultation with FWS for the ROW. If an amendment to the ITP is warranted, the FWS will review the intra-agency Section 7 consultation for the action to determine if revision is necessary.

City of St. George General Plan. Since the Final EIS was completed, the St. George City Council has adopted a new Downtown Area Plan. Many updates have been made to the St. George area, and specifically the downtown area, to improve livability of the downtown neighborhood since the General Plan was adopted in 2002, including a new library, children’s museum, elementary school, and City Hall. A new General Plan is also being developed and is nearing completion but has not yet been adopted. If this latter plan is finalized before the Final SEIS is released to the public, the SEIS will be updated with this information. Both the Downtown Area Plan and the Draft General Plan have inconsistencies with the St. George Boulevard/100 South One-way Couplet Alternative.

1.7 Public Involvement

Public participation opportunities that occurred prior to this SEIS are detailed in the Final EIS in Section 4.1 (page 4–1). Additional opportunities for the public to provide input are planned throughout the SEIS process. The formal scoping process for the SEIS began on November 16, 2023, with the publication of the NOI in the Federal Register informing the public of the BLM’s and FWS’ intent to prepare an SEIS to further consider the effects of granting a ROW to UDOT for the Northern Corridor as well as a potential amendment to the ITP issued to Washington County, Utah, under Section 10(a)(1)(B) of the ESA (Federal Register Vol. 88, No. 220, Thursday, November 16, 2023).⁴ The initial notice had an incorrect end date of the scoping period of December 18, 2023. A subsequent notice was published which stated the correct end date of the scoping period as December 21, 2023 (Federal Register Vol. 88,

⁴ The NOI is available on BLM’s ePlanning website at <https://eplanning.blm.gov/eplanning-ui/project/2026562/570>.

No. 240, Friday, December 15, 2023). Comments were accepted until December 28, 2023, due to requests for additional time to submit scoping comments.

During the public scoping period, an open house-style meeting was held in St. George on December 6, 2023. A total of 8,993 submissions were received from the public during the scoping period. Comments were reviewed and organized into categories to inform the analysis in the Draft SEIS. Scoping and public involvement activities are described in detail in the Scoping Report posted on the BLM's ePlanning website and are summarized in Section 4.1. Comments received during the scoping period were used to refine the issues addressed in the Draft SEIS. Because the SEIS focuses on topics identified in the NOI and any new conditions or information, some comments contained information beyond the scope of the decisions to be made. The Draft SEIS is now being made available for public review and comment. Substantive comments received on the Draft SEIS will be addressed in preparation of the Final SEIS.

The BLM is using the NEPA public participation process to satisfy the public involvement requirements under Section 106 of the NHPA (54 U.S.C. 306108) and pursuant to 36 CFR 800.2(d)(3). The information about cultural resources within the Area of Potential Effects for this undertaking will assist the BLM in identifying and evaluating effects and/or impacts to such resources in the context of both NEPA and Section 106 of the NHPA. Further discussion of NHPA Section 106 consultation actions taken by both BLM and FWS is provided in Section 3.9 and Section 4.2.

1.8 Issues Considered for Detailed Analysis

This SEIS supplements the Final EIS and addresses the specific issues associated with supplemental information as identified in the NOI. Key issues that are the focus of this SEIS analysis, including those identified in the NOI or during internal agency and public scoping, and for which there is new information or guidance since publication of the Final EIS are:

- Vegetative Communities, including Noxious Weeds and Invasive Species;
- Special Status Plants;
- Fire and Fuels Management;
- Special Status Wildlife, specifically incorporating updated Mojave desert tortoise information;
- ESA Section 6 Land Acquisition Grants;
- LWCF Lands;
- National Conservation Areas, specifically addressing the compatibility of the project with the resources, objects, and values of the Red Cliffs NCA;
- Cultural Resources and Native American Concerns, specifically addressing NHPA Section 106 compliance;
- Environmental Justice; and
- Socioeconomics.

A detailed transportation and traffic analysis was prepared for the Final EIS to help inform the development of alternatives and to distinguish among the alternatives, especially in the NCA, related to average intersection delay and travel time at key points and routes in the City of St. George and around the Northern Corridor. The traffic and transportation effects were based on future 2050 travel demand forecasts for Washington County that were developed using the DMPO's regional travel demand model which included an analysis of the transportation system within the northern City of St. George, Washington City, City of Santa Clara, and the City of Ivins metropolitan areas. The traffic and transportation analysis methodology, study, intersections and roadways, and results are detailed in the Northern Corridor Highway Alternatives Development Report (Jacobs 2020a and included as Appendix J in the Final EIS) and the Preliminary Northern Corridor Traffic Analysis Memorandum (Horrocks Engineers 2020 and included as Appendix L in the Final EIS). The growth in and around the greater St. George metropolitan area since the Final EIS was published warrants an update to the traffic analysis. This analysis is underway and will be provided by the DMPO for inclusion in the Final SEIS, although it is not complete at the time of publication of the Draft SEIS.

1.9 Issues Not Analyzed in Detail

Issues satisfactorily addressed in the Final EIS, or that have not substantially changed, or for which there is no new information that has bearing on the proposed action or its effects, are not analyzed in detail in this SEIS; rather, the supplemental analysis tiers to and incorporates by reference the information and analyses contained in the Final EIS. The issues that were considered in this analysis, but not analyzed in detail, are listed below; more detail on the rationale for dismissal from detailed analysis, and where additional information for each resource can be located in the Final EIS, is provided in Appendix A.

These issues include:

- General Wildlife;
- Geology, Mineral Resources, and Soils;
- Paleontology;
- Prime and Unique Farmland;
- Wetlands, Floodplains, and Waters of the U.S.;
- Water Resources;
- Air Quality, including Greenhouse Gases;
- Visual Resources;
- Recreation and Visitor Services;
- BLM Transportation and Travel Management;
- Areas of Critical Environmental Concern;
- BLM Lands and Realty;
- Livestock Grazing;
- Noise;
- Hazardous Materials and Solid Waste; and
- Human Health and Safety.

2 ALTERNATIVES

2.1 Introduction

The 2020 Final EIS describes five alternative routes that were considered in detail for the Northern Corridor and a No Action Alternative. These alternatives, as well as others that were not considered in detail, are described in the Northern Corridor Highway Alternatives Development Technical Report (Jacobs 2020b). The five alternative routes for the Northern Corridor Highway that were previously considered in detail are carried forward in this SEIS as is an alternative that would terminate UDOT's ROW grant in the NCA, which is the equivalent of the "no action" alternative in the 2020 Final EIS. When developing the alternatives for the SEIS, the BLM and FWS considered issues and alternatives raised during public scoping, input from consultation and coordination with cooperating agencies, and any new data and issues raised by agency resource specialists since publication of the Final EIS.

The five alternatives were developed through collaborative discussions with traffic engineers, environmental resource leads, agency stakeholders, and the public. Three alternative alignments (UDOT ROW Alignment, T-Bone Mesa Alignment, and Southern Alignment) would result in a new highway being constructed within the NCA. The three alternatives within the NCA would create a multi-lane, divided highway with the following common features, as described in the UDOT Plan of Development (UDOT 2020):

- Up to 500-foot-wide ROW. The total width of the ROW would vary between 300 and 500 feet because of differences in the cut and fill slopes and construction requirements along the length of the proposed highway. These variations would be based on geotechnical analysis, terrain type (for example, rock or dirt), and further design to minimize impacts. The 500-foot study corridor width was selected to accommodate those areas requiring cut and fill slopes that would extend beyond the standard 300-foot typical section, which was based on the conceptual engineering design using readily available topographical and design-related information.
- 4-lane highway with two 12-foot-wide travel lanes in each direction, 8-foot shoulders, and a 20-foot center median.
- A combination of curb and gutter, drainage swales, and ditches.
- 10 to 14-foot-wide multi-use, paved trail accommodating bicyclists and pedestrians on both sides of the proposed highway.
- Associated signage and fencing.
- Posted speed limit of 50 miles per hour.
- A new intersection for connection to Red Hills Parkway, consisting initially of an at-grade intersection with traffic signals and lighting. The intersection would later be converted to a grade-separated interchange with bridges, ramps, and lighting similar to a freeway interchange. The conversion to the interchange would occur by 2050, based on traffic levels and available funding.
- A new at-grade intersection with traffic signals at Cottonwood Springs Road (also known as Old Dump Road or Turkey Farm Road); this connection would fit within the 500-foot ROW.
- A connection to the Washington Parkway at Green Spring Drive.
- Under-road passages (e.g., culverts) to provide connectivity underneath the roadway for Mojave desert tortoise and for recreational trails.
- Communications infrastructure (e.g., roadway cameras and associated fiber) and power supply for roadway cameras, lighting, and traffic signals may be required within the ROW. The requirements for these appurtenances would be determined during roadway design. If required, power supply and fiber would be buried within the ROW.

The highway may be constructed in two phases. Though specific details of the phased construction would be determined by UDOT during the final design of the highway, the first construction phase would result in one lane in each direction, likely with a center median. The second phase would provide an extra lane in each direction and conversion of the intersection with Red Hills Parkway to an interchange later.

The Red Hills Parkway Expressway alternative is an existing highway that crosses public lands in the NCA, and the BLM would need to grant necessary ROW amendments to the City of St. George's existing FLPMA Title V ROW for the Red Hills Parkway to accommodate the planned improvements. The St. George Boulevard/100 South One-way Couplet alternative lies entirely outside the NCA and consists of existing roadways that are under the purview of the City of St. George. Under the Terminate UDOT's ROW alternative, the BLM would terminate the ROW grant issued to UDOT for the Northern Corridor across public lands in the NCA.

2.2 Zone 6 and Other Conservation Actions Associated with the Northern Corridor Changed Circumstance in the Amended Washington County HCP

FWS regulations define changed circumstances as “changes in circumstances affecting a species or geographic area covered by a conservation plan or agreement that can reasonably be anticipated by plan or agreement developers and the Service [FWS] and that can be planned for (for example, the listing of new species, or a fire or other natural catastrophic event in areas prone to such events).” To the extent that an ITP permittee provides for a changed circumstance in the HCP, the permittee must implement the prescribed response to the changed circumstance, if it occurs, to remain eligible for the assurances of the No Surprises rule (63 FR 8859). The approval of the Northern Corridor across the Reserve was included as a changed circumstance in Washington County's Amended HCP (Washington County 2020). Zone 6 of the Reserve was established as mitigation in response to the Northern Corridor changed circumstance to offset the construction of a highway within Zone 3 of the Reserve.

Zone 6 (see Figures 1 and 2) represents a contiguous block of Mojave desert tortoise habitat in Washington County separate from the other five zones of the Reserve. Management of this Zone currently protects tortoises and suitable habitat on 3,338 acres of non-Federal lands that would have otherwise been subject to take under Washington County's ITP (for more information, see Section 2.4.2.6 of the Final EIS and Section 5.2.4 of the 2020 Biological Opinion issued by the FWS for the ROW and amendments to the RMPs). As part of the establishment of Zone 6, the BLM has a responsibility for acquiring non-Federal lands in Zone 6 that would be facilitated by Washington County and supported by FWS, Utah Division of Wildlife Resources (UDWR), and the State Trust Lands Administration. Approximately 6,760 acres of the total 6,813 acres of Zone 6 are considered occupied Mojave desert tortoise habitat. Adding Zone 6 to the Reserve represented a nearly 11% increase in the area covered by the Reserve to offset the less than 1% of critical Mojave desert tortoise habitat that would be lost (direct effects), and the approximately 3.3% of habitat that would be fragmented (indirect effects), by the Northern Corridor ROW.

Approximately one-third (2,345 acres) of Zone 6 are public lands within the Red Bluff Area of Critical Environmental Concern (ACEC; Figure 2). The BLM manages this ACEC to provide specific protections for the dwarf bear-poppy, an endangered native plant that only grows in Washington County, in highly erodible saline soils. These special protections include limiting motorized and non-motorized recreation uses to designated roads and trails, physical barriers to prevent off-trail use, and managing the public lands as an avoidance area to new ROWs.

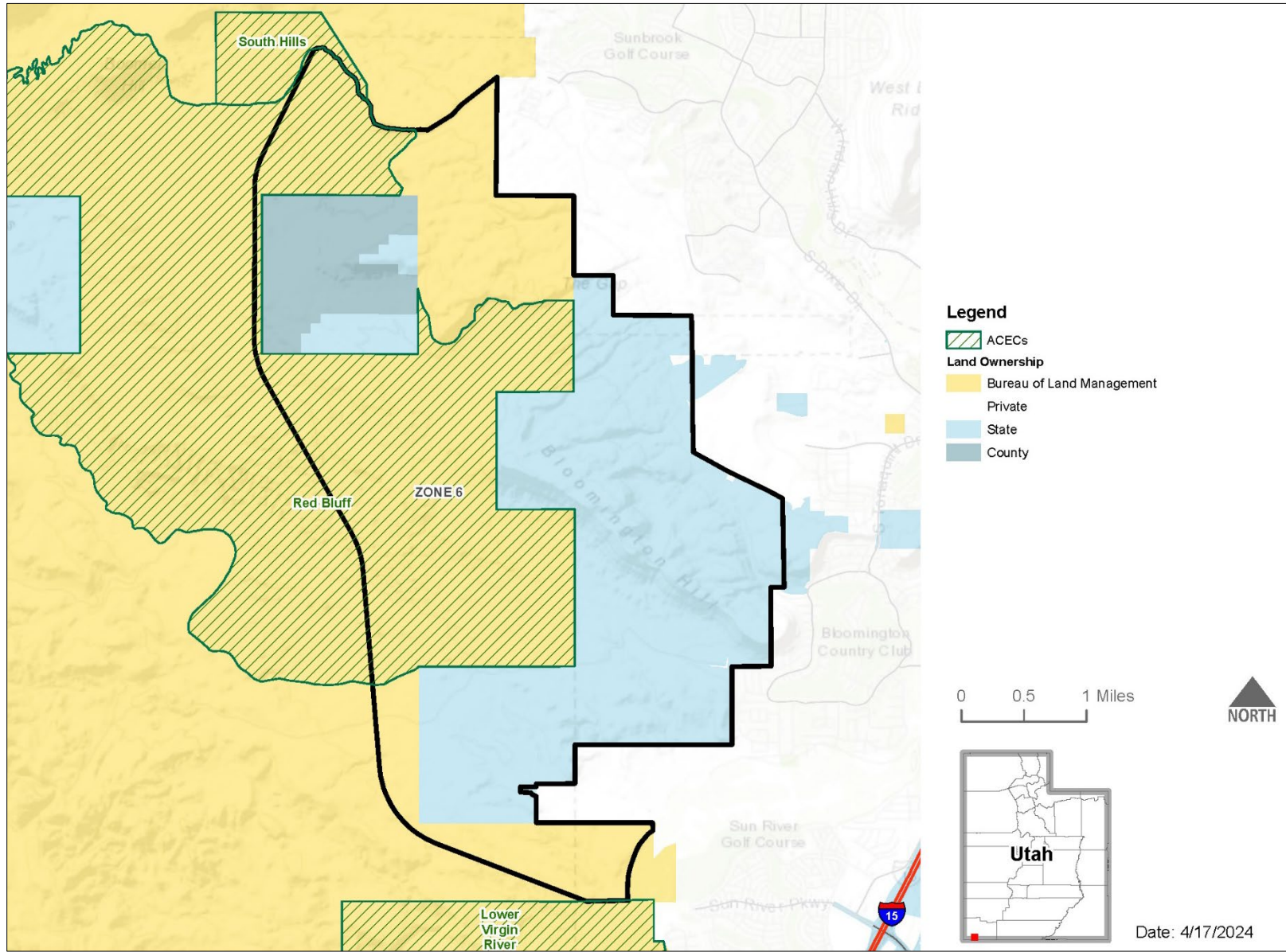
Additional HCP partner conservation obligations related to the establishment and management of Zone 6 are described in detail in the Amended HCP (Washington County 2020). Washington County increased its commitment to minimize and mitigate the impact of Mojave desert tortoise take to include many other actions, many of which are already underway or complete (i.e., land purchase, fencing, grazing retirement), including:

- Protecting additional high-density tortoise habitat in Zone 6;
- Providing \$150,000 for Mojave desert tortoise passage structures (e.g., culverts) across the fenced Cottonwood Springs Road in Zone 3;
- Purchasing 450 acres of non-Federal land in Zone 6;

-
- Providing funding to support post-fire restoration in the Reserve as described in the Amended HCP;
 - Funding for Reserve administration;
 - Fencing installations to prevent motorized access and enhance protections for listed plant species within Zone 6;
 - Additional funding for law enforcement within the Reserve;
 - Community education and outreach;
 - Grazing permit acquisition and retirement;
 - Additional funding to support the application of Development Protocols;
 - Reduction of existing designated recreation access routes;
 - Funding for recreation management activities;
 - Habitat and fire management; and
 - Monitoring and adaptive management planning.

If, following completion of the SEIS, the BLM affirms UDOT's ROW Alignment for the Northern Corridor, Zone 6 would be retained, the Northern Corridor changed circumstance would continue to be triggered as described in the 2021 ITP, and Washington County would continue to implement the Amended HCP under the changed circumstance including the commitments listed above. If BLM selects the T-Bone Mesa or Southern alternative, the FWS would not amend the ITP as the Northern Corridor changed circumstance still applies. If the BLM terminates UDOT's ROW grant or selects an alternative outside of the NCA, then the FWS would amend the ITP because the Northern Corridor changed circumstance would no longer be triggered, thus eliminating Zone 6 as mitigation for the Northern Corridor ROW and the conservation obligations stated above. If the ITP is amended, the management prescriptions for Federal lands managed by the BLM within Zone 6 would remain in place and the protections on the 2,345 acres of ACEC lands within the area covered by Zone 6 would also remain in place (see Figure 2). The obligations under the Amended HCP would still apply except for those under the Northern Corridor changed circumstance, which would cease.

Figure 2. Zone 6 of the Reserve



2.3 Alternatives for Analysis

The five alternative routes for the Northern Corridor Highway that were previously considered in the Final EIS are carried forward in this SEIS, as is an alternative that would terminate UDOT's ROW for the Northern Corridor Highway within the NCA.

2.3.1 UDOT ROW Alignment (Affirm Current ROW Grant)

The UDOT ROW Alignment was the Proposed Action in the Final EIS and the BLM granted the ROW for this alternative in the 2021 ROD. The BLM would affirm UDOT's ROW grant across public lands in the NCA for the Northern Corridor (Figure 3). This alternative functions as the "no action" or "no change" alternative because the ROW grant for the Northern Corridor was issued to UDOT in January 2021. This alternative would have a similar analysis of effects as the "UDOT Application Alignment for the Northern Corridor" described in the Final EIS. The current term "UDOT ROW Alignment" will be used in this SEIS when referring to the analysis for this alternative in either the Final EIS or this SEIS.

The UDOT ROW Alignment would connect Green Spring Drive on the east to Red Hills Parkway on the west just north of the Pioneer Hills trailhead parking area. The Northern Corridor would be approximately 4.5 miles long, approximately 1.9 miles of which would be across BLM-managed lands. Under this alternative, FWS would affirm Washington County's ITP for the take of Mojave desert tortoise. The changed circumstance related to construction of the Northern Corridor across the Reserve described in the Amended HCP remains triggered, and Zone 6 would remain as part of the Reserve.

2.3.2 T-Bone Mesa Alignment

The BLM would affirm the ROW grant to UDOT across public lands in the NCA but show the T-Bone Mesa Alignment as the approved highway corridor. This alignment would connect Green Spring Drive on the east to Red Hills Parkway on the west just north of the Pioneer Hills trailhead parking area. Under this alternative, the Northern Corridor would skirt the southern edge of T-Bone Mesa. The Northern Corridor would be approximately 4.2 miles long, 2.2 miles of which would be across public lands in the NCA (Figure 3). Under this alternative, FWS would affirm Washington County's ITP for the take of Mojave desert tortoise. The changed circumstance related to construction of the Northern Corridor across the Reserve described in the Amended HCP remains triggered, and Zone 6 would remain part of the Reserve.

2.3.3 Southern Alignment

The BLM would affirm the ROW grant to UDOT across public lands in the NCA but show the Southern Alignment as the approved highway corridor (Figure 3). Under this alternative, the Northern Corridor would be near the southern border of the NCA, connecting Green Spring Drive on the east to Red Hills Parkway on the west just south of, and slightly encroaching onto, the Pioneer Hills trailhead parking area. The Northern Corridor would be approximately 5.5 miles long, approximately 1.5 miles of which would be across public lands in the NCA. Under this alternative, FWS would affirm Washington County's ITP for the take of Mojave desert tortoise. The changed circumstance related to construction of the Northern Corridor across the Reserve described in the Amended HCP remains triggered, and Zone 6 would remain as part of the Reserve.

2.3.4 Red Hills Parkway Expressway

The Red Hills Parkway Expressway Alternative proposes changes to the existing Red Hills Parkway so that it would function as an expressway (Figure 3). Under this alternative UDOT would no longer hold the ROW grant for the Northern Corridor across the NCA. The BLM may need to grant necessary ROW amendments to the City of St. George's existing FLPMA Title V ROW for the Red Hills Parkway if the planned improvements exceed the boundaries of the existing ROW. The FWS would need to amend the ITP under this alternative because the Northern Corridor changed circumstance would not occur, thus eliminating Zone 6 as mitigation for the Northern Corridor Highway. Instead, the FWS would authorize incidental take of the Mojave desert tortoise associated with the implementation of covered activities

occurring on non-Federal lands in Zone 6. The additional HCP partner conservation obligations related to the establishment and management of Zone 6 described in Section 2.2 and in detail in the Amended HCP (Washington County 2020), would end. This would include authorizing take of Mojave desert tortoise on non-Federal lands in Zone 6, reducing the HCP funding obligations, and allowing development to occur on non-Federal lands in Zone 6, which could affect the endangered dwarf bear-poppy and its habitat, as well as the Parry's sandpaper plant, managed by the BLM as a Sensitive Species. Wildlife and native plant habitats could be subject to degradation and loss from the use of unmanaged motorized and non-motorized recreational activities on and off trails, in addition to a potentially greater risk of wildfires due to dispersed camping and/or the complete loss of habitat from development. Management of BLM-managed lands within Zone 6 would remain unchanged.

This alternative would convert Red Hills Parkway into a grade-separated expressway between I-15 and Bluff Street. Improvements would include new east-to-north and south-to-west connections to I-15 to connect Red Hills Parkway directly to I-15, including an additional lane in each direction extending most of the length between 200 East and 900 East. The alternative would also convert the existing at-grade signalized intersections at 200 East (Skyline Drive) and 1000 East to grade-separated interchanges with necessary modifications to the mainline roadway to accommodate the new interchanges. New flyover ramps would be constructed to connect Red Hills Parkway to I-15. The intersections at 900 East and Industrial Road would be closed or converted to right-in-right-out movements only because of their proximity to the 1000 East interchange and I-15 flyover ramps. The intersection at Highland Drive would be closed. Existing driveways to public and private properties along the existing roadway would either be closed or converted to right-in-right-out movements only; all left turns in and out would be prohibited.

Additional widening of Red Hills Parkway at various locations between 200 East and 900 East would be required to add exclusive turning lanes for access to individual properties or public use areas where feasible. Fencing with tortoise mesh exists along the entire length of Red Hills Parkway and widening the road to accommodate turning lanes may require moving the existing tortoise fencing. The existing pedestrian trail along Red Hills Parkway would be relocated in various locations between 200 East and 900 East to accommodate improvements, including lengthening of the existing pedestrian tunnel under Red Hills Parkway in the Pioneer Park area. The design of the Red Hills Parkway Expressway would need to avoid impacts to Pioneer Park including the Dixie Rock (Sugarloaf) historic landmark.

2.3.5 St. George Boulevard/100 South One-way Couplet

The One-way Couplet Alternative proposes changes to existing St. George Boulevard and 100 South instead of a new road across BLM-managed lands within the NCA (Figure 3). Under this alternative UDOT would no longer hold the ROW grant for the Northern Corridor across the NCA. While this alternative meets the purpose and need of the project, it would have to be implemented by the City of St. George because it does not cross any BLM-managed lands. The FWS would need to amend the ITP under this alternative because the Northern Corridor changed circumstance would not occur, thus eliminating Zone 6 from the Reserve. Instead, the FWS would authorize incidental take of the Mojave desert tortoise associated with the implementation of covered activities occurring on non-Federal lands in Zone 6. The additional HCP partner conservation obligations related to the establishment and management of Zone 6 described in Section 2.2 and in detail in the Amended HCP (Washington County 2020), would end. Management of BLM-managed lands within Zone 6 would remain unchanged.

This alternative would include modifications to St. George Boulevard and 100 South to respond to future transportation demands in Washington County. The two roadways would be converted into a one-way couplet system between I-15 and Bluff Street, wherein St. George Boulevard would only accommodate westbound traffic and 100 South would only accommodate eastbound traffic. St. George Boulevard would be converted from its existing two lanes in each direction (with a raised center median and turn pockets) to three westbound lanes. Modifications to the cross streets between I-15 and Bluff Street would disallow eastbound left and right turns from the cross streets. Similarly, 100 South would be converted

from its existing one lane in each direction (with a center-turn lane), to three eastbound lanes. Modifications to the intersections at cross streets between I-15 and Bluff Street would disallow westbound left and right turns from the cross streets. Other minor reconstructions to storm drain and utility systems may be required to safely convert these streets to one-way operations.

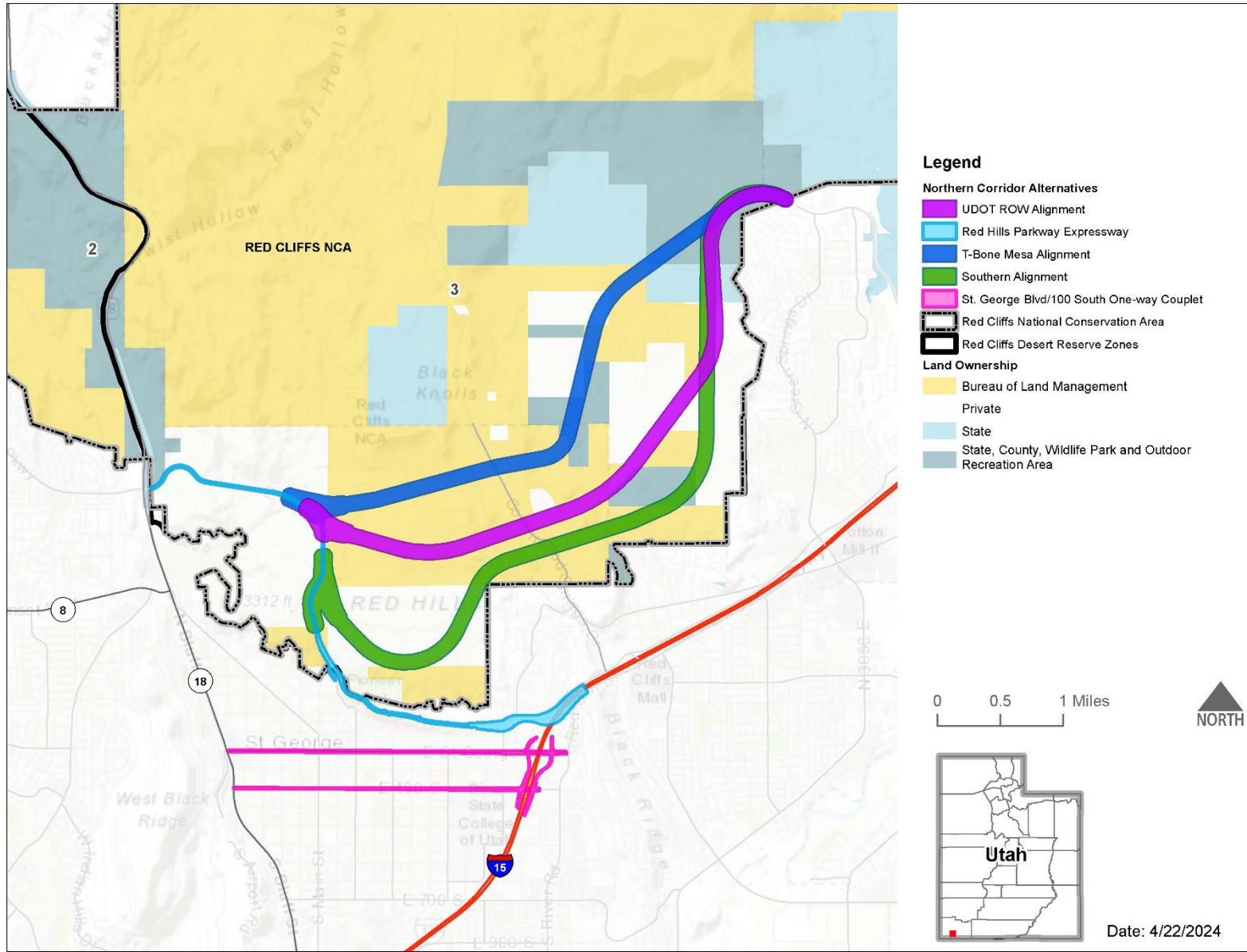
On St. George Boulevard, the raised and landscaped medians and irrigation systems would be removed, and the median lighting would be replaced or relocated to the sides of the road. In addition, the Diverging Diamond Interchange at I-15/St. George Boulevard would be reconfigured to a more conventional diamond intersection configuration. On 100 South, the center two-way-left turn median and shoulders would be reconfigured. In addition, the existing interchange with I-15 at St. George Boulevard would be reconfigured and combined with a new interchange at 100 South to provide a split interchange system between these two roadways connected by one-way ramps. Southbound interstate traffic would exit at St. George Boulevard and enter from 100 South. Similarly, northbound interstate traffic would exit at 100 South and enter from St. George Boulevard.

2.3.6 Terminate UDOT's ROW

Under this alternative, UDOT would no longer hold the ROW grant for the Northern Corridor across the NCA. This alternative would have a similar analysis if effects as the “no action” alternative in the 2020 Final EIS. The FWS would amend Washington County’s ITP because the Northern Corridor changed circumstance is not triggered, thus eliminating Zone 6 from the Reserve. Instead, the FWS would authorize incidental take of the Mojave desert tortoise associated with the implementation of covered activities occurring on non-Federal lands in Zone 6. Management prescriptions and objectives for BLM-managed lands within Zone 6 would remain unchanged.

Under this alternative, the additional HCP partner conservation obligations related to the establishment and management of Zone 6 described in Section 2.2 and in detail in the Amended HCP (Washington County 2020), would end. This would include authorizing take of Mojave desert tortoise on non-Federal lands in Zone 6, reducing the HCP funding obligations, and allowing development to occur on non-Federal lands in Zone 6, which could affect the endangered dwarf bear-poppy plants and their habitat as well as the BLM-sensitive Parry’s sandpaper plant. In addition, habitat would continue to be subject to degradation and loss from the use of unmanaged motorized and non-motorized recreational activities on and off trails and there could be a greater risk of wildfires due to dispersed camping and/or loss of habitat from development.

Figure 3. Proposed Northern Corridor Alternatives



3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This chapter describes the affected environment and environmental consequences associated with the resource issues identified in Section 1.8. The affected environment sections describe and update the existing conditions, focusing on those that have changed since the Final EIS was published. For all resources, the impacts of the past and present actions contribute to the current condition and are captured through the affected environment description for that resource. For most resources, the affected environment is the same as described in the Final EIS. Where there are differences between the Final EIS and this supplemental analysis, they are noted in Sections 3.2 to 3.11.

The environmental consequences analyze the effects of the alternatives and address specific, relevant concerns identified by the NOI or issues raised during scoping. The BLM and FWS reviewed available information to identify significant new circumstances or information relevant to environmental concerns and the alternatives analyzed (40 CFR Section 1502.9(d)(1)(II)). The analysis is organized by first presenting a summary of the effects identified in the Final EIS, then presenting any new data, direction, guidance, and analysis, and finally stating whether any of that changes the environmental consequences described in the Final EIS.

3.2 Vegetative Communities, Including Noxious Weeds and Invasive Species

The analysis area for the evaluation of impacts on vegetative communities in the Final EIS was defined as all Mojave desert tortoise suitable habitat and potential habitat within Washington County (including the UVRRU but excluding the Northeastern Mojave Recovery Unit along the western border of Washington County). This analysis area includes the Reserve (including Zone 6). The impacts of the alternatives to the dominant vegetative communities within the analysis area remain largely as described in Section 3.2.2 of the Final EIS. However, impacts of the alternatives on the potential spread of noxious weeds and invasive species within the Reserve and NCA are of particular concern as these species can most readily regrow and invade native ecosystems following fire and other disturbances. Therefore, the supplemental analysis in this section focuses primarily on noxious weeds and invasive species.⁵

3.2.1 2020 Final EIS Summary

Section 3.2 of the Final EIS (pages 3-6 to 3-19) discusses vegetative communities within the Reserve. According to the Final EIS, desert scrub predominates the vegetation types in the Reserve, accounting for 68% of the vegetation in Zones 1–5 of the analysis area in the Reserve and 88% in Zone 6. This group ranges from a sparse, mostly barren ground surface to a moderately dense layer (1 to 50% cover) of evergreen or drought-deciduous, broad-leaved shrubs and/or succulent species adapted to an environment with little water availability. Dominant shrubs may include creosote (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), saltbush (*Altriplex canescens*), big sagebrush (*Artemisia tridentata*), yuccas (*Yucca* sp.), blackbrush (*Coleogyne ramosissima*), or rabbitbrush (*Ericameria* sp. or *Chrysothamnus* sp.). Invasive grasses such as cheatgrass (*Bromus tectorum*) and red brome (*B. rubens*), and noxious weeds such as African mustard (*Strigosella africana*) have been identified as a dominant understory throughout this community group in the analysis areas (Miller 2018).

⁵ A noxious weed is defined as a plant species designated by Federal or State law or by County government as injurious to public health, agriculture, recreation, wildlife or property. An invasive species is defined as a plant species that is not native to a specific location and that has a tendency to spread to a degree believed to cause damage to the environment, human economy, or human health.

Noxious weeds and invasive species account for the second most prevalent vegetation type in the analysis area, accounting for 22% of the vegetation in Zones 1–5 of the analysis area in the Reserve and 10% in Zone 6. Exotic and invasive grasses include annual bromes (cheatgrass, red brome), and split grasses (*Schismus arabicus*, *S. barbatus*). Characteristic forbs may include tall tumble mustard (*Sisymbrium altissimum*), black mustard (*Brassica nigra*), and African mustard.

Most vegetation communities in the analysis area, as well as all areas that have been burned in the last two decades, have become infested with invasive grasses that are continuing to spread. Surveys conducted in March and April of 2020 on the proposed ROW alignments showed 73% of the community comprised of cheatgrass, redstem storksbill (*Erodium cicutarium*), split/Mediterranean grass, tall tumble mustard, and red brome (Jacobs 2020b). A modeling and mapping effort by The Nature Conservancy (TNC 2011) discovered that vegetation communities within the NCA are 90 to 100% departed ecologically from their original reference community. This is largely because of the rapid proliferation of invasive annual grasses and forbs following fire and the elimination of native shrubs that are slow to recover from fire.

Mapping efforts by LANDFIRE in 2014, prior to a 2016 base layer mapping revision (Remap), show a large, almost-solid, exotic herbaceous layer (classified as introduced annual and perennial grasslands and forblands) in the middle of the Reserve covering most of the upper western half of Zone 3. An extensive cover of an exotic herbaceous layer also blankets the eastern bajadas of the Beaver Dam Mountains, just west of Zone 6.

Localized vegetation surveys were conducted across the three proposed highway alignments on Federal, State, and private lands within the boundaries of the NCA in March and April of 2020. Survey methods followed the BLM's assessment, inventory, and monitoring (AIM) protocol (Toevs et al. 2011) and returned results that indicate invasive species represent a substantial amount of the plant cover within the ROW areas specifically. Averaged across all plots, about one-fourth of these proposed alternative alignments are dominated by native vegetation, predominantly creosote, Mormon tea (*Ephedra viridis*), blackbrush, broom snakeweed (*Gutierrezia sarothrae*), Sandberg bluegrass (*Poa secunda*), and big galleta (*Pleuraphis rigida*). Across the 46 plots surveyed, more than 73% of the foliage cover identified in the AIM plots was made up of five invasive plant species: cheatgrass (46%), redstem storksbill (12%), split/Mediterranean grass (6%), tall tumble mustard (5%), and red brome (4%).

The UDOT ROW Alignment supports a minimum foliar cover of 67% exotic or invasive species, of which 41% is cheatgrass (Jacobs 2020b). The T-Bone Mesa Alignment supports a minimum of 75% foliar cover of exotic or invasive species, of which 52% is cheatgrass (Jacobs 2020b). The Southern Alignment supports a minimum foliar cover of 78% exotic or invasive species, of which 46% cover is cheatgrass, and 14% is split/Mediterranean grass (Jacobs 2020b).

The Final EIS stated that granting a ROW in the NCA could result in the unintentional spread of noxious weeds and invasive species because of ground disturbance and seed dispersal. Exotic invasive species have the potential to spread up to 1 kilometer outside of the ROW from wind dispersal, human activity, and other disturbances. Increases in invasive species would be less for the Red Hills Parkway Expressway Alignment compared to the alternatives within the NCA since this highway already exists and would be minimal for the St. George Boulevard/100 South One-Way Couplet since much of this area has already been disturbed and developed into residential and commercial properties.

3.2.2 Supplemental Analysis

Affected Environment

Invasive annual grasses are regarded as the most important causative factor in increased fire (Brooks 1999, Underwood et al. 2019). As invasive grasses fill interspaces between shrubs, fine fuel continuity is increased, enabling larger and more frequent fires (Smith et al. 2023, Stanton et al. 2023). In addition, fire hot spots are found closer to roads on average throughout the entire Mojave Desert than areas with lower densities of invasives, (Smith et al. 2023, Stanton et al. 2023). Increased human

activities and infrastructure have also contributed to the spread of invasive vegetation. The proliferation of invasive grasses increases the chance of wildfire ignition, facilitates spread, increases burn extent, decreases the time between fires, and decreases habitat quality (see Section 3.4; Underwood et al. 2019, FWS 2021b). The impacts of co-occurring invasive plant species on fire regimes and postfire native communities has been assessed in the Mojave Desert (Underwood et al. 2019). These studies have shown that invasive cover increased for the first 20 years postfire and that burned plots exhibited 2 to 5 times more invasive cover than unburned plots. Furthermore, invasive cover increased with each additional invasive species in the plot, and native herbaceous species declined when invasive cover ranged from 60-70%, resulting in negative impacts to native species abundance and diversity (Underwood et al. 2019). The presence of multiple invasive species led to synergistic effects, exacerbating impacts on native species diversity and ecosystem structure (Underwood et al. 2019).

Between April and May of 2020, the UDWR assessed plant cover composition near plantings within 100 acres of burned tortoise habitat in the NCA that was revegetated in 2016 and 2017. Exotic plant species were found in all monitoring plots across the entire restoration area, with cheatgrass and red brome increasing from 10% (at the time of revegetation) to up to 95% cover (UDWR 2020). This area was re-burned in the summer of 2020 by the Turkey Farm Road fire. Underwood et al. (2019) observed no amplifying effect from repeat fires on fine fuel load in Mojave Desert experimental plots. Likewise, the 2020 fires in the NCA (see Section 3.4) may not have any additional impact on invasive plant density within these reburned areas beyond effects already observed from previous burns. The further elimination of native shrub species (e.g., creosote and blackbrush) and reduction of native forb species by the 2020 fires in previously burned and unburned habitats, represents a decline in Mojave desert tortoise habitat quality that may take decades to centuries to recover (Callison et al. 1985, Brown and Minnich 1986, Hood and Miller 2007, FWS 2011). Abundant winter precipitation in 2022/2023 produced abundant growth of annual and perennial native plants that was subsequently choked by aggressive growth of exotic mustards (e.g., Sahara mustard, tall tumble mustard, London rocket [*Sisymbrium irio*]), cheatgrass, red brome, Mediterranean grass, and Russian thistle (*Salsola paulsenii*) in the NCA and Snow Canyon State Park within Zones 2, 3, 4, and 5 of the Reserve (McLuckie et al. 2023). To assess species composition in these previously burned areas, additional vegetation studies are currently underway for the 2024 growing season. These surveys are taking place in the burned areas and in the AIM survey plots in the NCA. This data, as well as any new UDWR monitoring data, will be included in the Final SEIS.

Silverleaf nightshade (*Solanum elaeagnifolium*), whorled milkweed (*Asclepias subverticillata*), halogeton (*Halogeton glomeratus*), and Malta star-thistle (*Centaurea melitensis*), which are designated as Washington County Declared Noxious Weeds Early Detection/Rapid Response species, are being aggressively targeted upon discovery as these invasive species are relatively new to the area. In 2024, a population of Malta star-thistle was identified within the analysis area in the northeast corner of Zone 3 near I-15 (BLM unpublished data). This population is approximately three acres in size. Malta star-thistle is a “high priority, Class 1A Early Detection Rapid Response” species in Washington County. This population is of concern because it occurs in critical habitat for Shivwits milkvetch (*Astragalus ampullarioides*), an endangered species (see Section 3.3) and a traditional plant of the Southern Paiute people. Although the NCA has not been systematically inventoried for the presence of noxious weeds, African mustard, giant reed (*Arundo donax*), Scotch thistle (*Onopordum acanthium*), tamarisk (*Tamarix ramosissima*), and puncturevine (*Tribulus terrestris*) are known to occur in the NCA, and BLM is treating these species as described in the Integrated Weed Management Plan (BLM 2022a).

Environmental Consequences

UDOT ROW Alignment (Affirm Current ROW Grant)

Construction of the Northern Corridor on the UDOT ROW Alignment would result in some level of ground disturbance and seed dispersal which are known vectors for spread of noxious and invasive plants. Vehicular travel on roads is also a known vector for introduction and spread of invasive plant species (FWS 2021b). Furthermore, increased prevalence of invasive grasses increases the threat of wildfires.

Construction of the Northern Corridor Highway on the UDOT ROW Alignment has the potential to further introduce ignition sources during construction and through daily vehicle usage. This would increase fire probability and likely increase fire frequency near the highway, which would again lead to an increase in noxious weeds and invasive species.

High occurrence of noxious and invasive weeds already observed within the Reserve contribute to high fuel loads and the potential for new fires to spread beyond previously burned areas (see Section 3.4), thereby increasing loss of native vegetation and habitat. Because of the high prevalence of invasives already found within the alternative alignments, it is possible the site is already saturated and further disturbances would have negligible effects (Moloney et al. 2019). It is likely that the effect of the 2020 wildfires on noxious and invasive plant density within previously burned areas was inconsequential as noxious weeds and invasive species were already abundant from past wildfires (Underwood et al. 2019). However, newly burned areas would have an increase in noxious weeds and invasive species, thus spreading the increased threat of future wildfires to new areas within the Reserve.

Under this alternative, construction of the Northern Corridor across the Reserve on the UDOT ROW Alignment would occur, the changed circumstance described in the Amended HCP remains triggered, and Zone 6 would remain as part of the Reserve. Noxious weeds and invasive species are over 50% less abundant in Zone 6 compared to the rest of the Reserve. Current management protects habitat on non-Federal lands in Zone 6 from development and provides for additional plant and habitat protections that would otherwise not be available. In addition, current management reduces unmanaged motorized and non-motorized recreational activities on and off trails on non-Federal lands in Zone 6, which would reduce habitat loss and degradation, reduce the risk of wildfires, and reduce the spread of noxious weeds and invasive plants.

T-Bone Mesa Alignment

Construction of the Northern Corridor Highway on the T-Bone Mesa Alignment would result in similar potential impacts as the UDOT ROW Alignment, although these impacts would be in a slightly different area. Impacts in Zone 6 would also be the same as described for the UDOT ROW Alignment and the additional protections afforded to plant and soil resources would remain in place.

Southern Alignment

Construction of the Northern Corridor Highway on the Southern Alignment would result in similar potential impacts as the UDOT ROW Alignment, although these impacts would be in a slightly different area. Impacts in Zone 6 would also be the same as described for the UDOT ROW Alignment.

Red Hills Parkway Expressway

Modifications to the Red Hills Parkway to make it function as an expressway would result in substantially fewer impacts on native vegetation or the spread of noxious weeds and invasive species, when compared to the construction of a new highway within the UDOT ROW alignment. The Red Hills Parkway is a fenced multi-lane highway and the modifications required would be limited to the roadway between Skyline Drive and I-15, with the most extensive being made in fully developed private and municipal areas. Under this alternative, the Northern Corridor changed circumstance is not triggered, thus eliminating Zone 6 from the Reserve as mitigation for the Northern Corridor, and non-Federal lands in Zone 6 would be subject to covered activities through the HCP (e.g., land development) and increased activity that could potentially increase noxious weeds and invasive species. As a result of selecting this alternative, development of the non-Federal lands within the Zone 6 boundaries may occur as well as the continued degradation of soils and habitat loss from the use of unmanaged motorized and non-motorized recreational activities on and off trails.

BLM would continue to manage 3,475 acres of Federal lands within Zone 6 consistent with the Saint George Field Office RMP. However, additional resources provided by Washington County under the Northern Corridor changed circumstance would not be available, including funding of law enforcement,

public outreach and education, or personnel that would otherwise support management beneficial to native plant communities.

St. George Boulevard/100 South One-Way Couplet

There would be no new impacts resulting from selecting the St. George Boulevard/100 South One-Way Couplet alternative beyond those described in Section 3.2.2.5 of the Final EIS. The potential impacts in Zone 6 would be the same as those described for the Red Hills Parkway Expressway.

Terminate UDOT’s ROW

Under this alternative, the Northern Corridor Highway would not be developed and there would be no new impacts beyond those described in Section 3.2.2.2 of the Final EIS. The potential impacts in Zone 6 would be the same as those described for the Red Hills Parkway Expressway. Management prescriptions and objectives for BLM-managed lands within Zone 6 would remain unchanged.

3.3 Special Status Plants

Special status plants are those that are proposed or listed as endangered or threatened under the ESA or listed as sensitive by the BLM. BLM Manual 6840 further defines special status plants as species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. For the SEIS, the analysis area for special status plants is all Mojave desert tortoise suitable habitat and potential habitat within Washington County, as described in Section 3.2, and includes the Reserve.

3.3.1 2020 Final EIS Summary

Section 3.3 of the Final EIS (pages 3-19 to 3-37) discusses vegetative communities within the Reserve. Special status plants within the analysis area face threats because of their limited distributions and specialized habitat requirements. For example, many of the special status plants grow on soils that do not support most other plants and that are easily erodible or have other properties that can be easily destroyed (NRCS 2011). Recreation on public lands in the analysis area can be destructive to the sensitive soils that many of these plants require. Soil-disturbing activities include off-road vehicle use, mountain biking, and hiking. Plant populations located on private, state, or other non-Federal lands are vulnerable to urban development because of the population growth within the greater St. George metropolitan area. Other threats include utility and transportation corridors, grazing, fire, mining, invasive species, pest infestations, habitat fragmentation, and climate change (NRCS 2011).

Three Federally-listed endangered plant species and three BLM sensitive plant species are known to occur in the Reserve (Tables 1 and 2, respectively). Further information on the ecology of these species and their distribution is found in Section 3.3 of the Final EIS.

Table 1. Federally-listed Endangered Plant Species in the Reserve

Federally-listed Species	Presence in the Reserve
Dwarf bear-poppy (<i>Arctomecon humilis</i>)	Occupied habitat (Zone 6) Suitable habitat (Zones 1–4 and Zone 6)
Holmgren (Paradox) milkvetch (<i>Astragalus holmgreniorum</i>)	Occupied habitat (Zone 6) Suitable habitat (Zone 6) Critical habitat (Zone 6)
Shivwits milkvetch (<i>Astragalus ampullarioides</i>)	Occupied habitat (Zone 3) Suitable habitat (Zone 3) Critical habitat (Zone 3)

Table 2. BLM Sensitive Plant Species in the Reserve

BLM Listed Sensitive Species	Presence in the Reserve
Jones indigobush (<i>Psorothamnus nummularius</i>)	Occupied habitat (Zone 4)
Parry's sandpaper plant (<i>Petalonyx parryi</i>)	Occupied habitat (Zone 4 and Zone 6)
Virgin thistle (<i>Cirsium virginense</i>)	Occupied habitat (Zone 3)

The Final EIS concluded that none of the endangered plant species would be impacted by construction or operation of the Northern Corridor within the NCA. The only endangered plant species present in the NCA is Shivwits milkvetch and it is only known to occur in one location in the far northeast corner of Zone 3 near I-15. None of the proposed alternatives cross near this location. Dwarf bear-poppy and Holmgren milkvetch are present in Zone 6, and the protections afforded these endangered plant species by the current management of Zone 6 in the Reserve are beneficial to the conservation and recovery of these populations.

The Final EIS concluded that construction and operation of the Northern Corridor along the UDOT ROW Alignment, the Southern Alignment, or the Red Hills Parkway Expressway could negatively impact the BLM sensitive Virgin thistle as there are known populations of this species that overlap the southern portions of Zone 3 where Red Hills Parkway currently passes through and where the terminus of the UDOT ROW Alignment or Southern Alignment would pass through or near to in order to connect to the Red Hills Parkway. The other two BLM sensitive species do not occur near the Northern Corridor ROW alignments in Zone 3.

3.3.2 Supplemental Analysis

Affected Environment

There are three minor updates regarding special status plants in the Reserve that are considered in the SEIS. First, Holmgren milkvetch was identified as present on Federal lands in Zone 6 and critical habitat was also identified as present on Federal lands in Zone 6. Holmgren milkvetch is likely only found on Federal lands in Zone 6, and, although suitable habitat may exist in a broader area of Zone 6, an extensive vegetation survey on State lands in Zone 6 did not identify the presence of any Holmgren milkvetch (Billings and Wheeler 2020). Updated surveys are needed to ascertain the extent of this species in Zone 6.

Second, dwarf bear-poppy, which is endemic to Washington County and restricted to certain soil types, is only found in nine recognized populations around St. George. While none of these locations are within the NCA, State lands in Zone 6 contain approximately 10% of the total known dwarf bear-poppy plants and 2,589 acres of occupied habitat (Billings and Wheeler 2020, FWS 2021b). Because of the importance of Zone 6 in protecting the limited habitat for this species, the BLM has undertaken field efforts to obtain accurate counts of this species within Zone 6. While the data is not available at the time of publication of the draft SEIS, it will be included in the final analysis.

Finally, as mentioned in Section 3.2, noxious weed proliferation is a problem throughout the Reserve. The newly identified population of Malta star-thistle that was identified within Zone 3 is in designated critical habitat for Shivwits milkvetch. This population is about three acres in size. The BLM has initiated the hand removal of this infestation where the Malta star-thistle is growing in close proximity to Shivwits milkvetch plants. Although not near any of the alternative ROW locations, it is within the analysis area, and it is likely that this species would pose a threat to Shivwits milkvetch as it is known to outcompete native plants for resources (Utah Weed Supervisors Association 2021).

Environment Consequences

UDOT ROW Alignment (Affirm Current ROW Grant)

Construction of the Northern Corridor on the UDOT ROW Alignment would not impact any Federally-listed plant species. Shivwits milkvetch is the only Federally-listed plant in the Reserve, and it is not known to occur near any of the alternative alignments. Construction of the UDOT ROW Alignment could adversely impact the BLM sensitive Virgin thistle as there are known populations of this species where the UDOT ROW Alignment would-connect to the Red Hills Parkway.

Under this alternative, construction of the Northern Corridor across the Reserve on the UDOT ROW Alignment would occur and Zone 6 would remain as part of the Reserve. Maintaining Zone 6 as part of the Reserve would protect occupied and suitable habitat for dwarf bear-poppy and Holmgren milkvetch, Holmgren milkvetch critical habitat, and the populations of Parry's sandpaper plant that occur in this area. Current management of the area protects habitat on non-Federal lands in Zone 6 from development and provides for additional plant and habitat protections that would otherwise not be available under the ESA. In addition, current management reduces unmanaged motorized and non-motorized recreational activities on and off trails on non-Federal lands in Zone 6, which would reduce habitat loss and degradation, reduce the risk of wildfires, and reduce the spread of noxious weeds and invasive plants into Federally-listed and BLM sensitive plant occupied or suitable habitat.

T-Bone Mesa Alignment

Construction of the Northern Corridor Highway on the T-Bone Mesa Alignment would not impact any Federally-listed plant species. BLM sensitive Virgin thistle populations would not be expected to be adversely impacted by the T-Bone Mesa Alignment as this alignment connects to Red Hills Parkway in a different location than the UDOT ROW Alignment. Maintaining Zone 6 as part of the Reserve would protect occupied and suitable habitat for dwarf bear-poppy and Holmgren milkvetch, Holmgren milkvetch critical habitat, and populations of Parry's sandpaper plant that occur in this area.

Southern Alignment

Construction of the Northern Corridor Highway on the Southern Alignment would not impact any Federally-listed plant species but could adversely impact the BLM sensitive plant Virgin thistle, in a similar manner, but in a slightly different area, as described for the UDOT ROW Alignment alternative. Maintaining Zone 6 as part of the Reserve would protect occupied and suitable habitat for dwarf bear-poppy and Holmgren milkvetch, Holmgren milkvetch critical habitat, and populations of Parry's sandpaper plant that occur in this area.

Red Hills Parkway Expressway

Selecting the Red Hills Parkway Expressway alternative would not result in any impacts to Federally-listed species within the NCA. Selecting this alternative could adversely impact BLM sensitive Virgin thistle populations as there are known populations of this species where Red Hills Parkway currently passes through. The non-Federal lands in Zone 6 are protected under the changed circumstance, but if the changed circumstance is not triggered, endangered plants and occupied habitat on non-Federal lands may be subject to development with no assurance of protections under the ESA. Development of the non-Federal lands within the Zone 6 boundaries may result in the loss of dwarf bear-poppy plants, dwarf bear-poppy occupied habitat, and dwarf bear-poppy suitable habitat as well as Parry's sandpaper plant and other vegetation. Without the designation of Zone 6, Federally-listed and BLM sensitive plant habitat would continue to be subject to degradation and loss from the use of unmanaged motorized and non-motorized recreational activities on and off trails. In addition, there could be a greater risk of wildfires due to dispersed camping and/or the complete loss of habitat from development.

BLM would continue to manage 3,475 acres of Federal lands within Zone 6 consistent with the St. George Field Office RMP. However, additional resources provided by Washington County under the Northern Corridor changed circumstance would not be available, including funding of law enforcement, protective fencing, public outreach and education, and personnel that would otherwise support

management beneficial to special status plants. The more than 3,300 acres of non-Federal lands within Zone 6 would continue to remain available for future development, resulting in potential direct impacts to dwarf bear-poppy and its occupied habitat, including plant and habitat loss, fragmentation, and potentially increasing the wildland-urban interface between special status plant populations located on BLM-managed lands to the west.

St. George Boulevard/100 South One-Way Couplet

There would be no new impacts resulting from selecting the St. George Boulevard/100 South One-Way Couplet alternative as it lies outside the NCA along existing roadways and would not affect any Federally-listed or BLM listed sensitive plants. However, if the changed circumstance is not triggered as a result of selecting this alternative, dwarf bear-poppy occupied and suitable habitat on non-Federal lands may be subject to development with no assurance of plant or habitat protections under the ESA, as described for the Red Hills Parkway Expressway.

Terminate UDOT's ROW

Under this alternative, the Northern Corridor Highway would not be developed. The potential impacts in Zone 6 would be the same as those described for the Red Hills Parkway Expressway. Management prescriptions and objectives for 3,475 acres of BLM-managed lands within Zone 6 would remain unchanged, but the non-Federal lands would be available for future development, resulting in potential impacts to occupied and suitable habitat for dwarf bear-poppy, and direct impacts to populations of Parry's sandpaper plant that occur in this area.

3.4 Fire and Fuels Management

Large-scale or frequent wildland fires are not part of the natural fire regime of the Mojave Desert, because desert shrublands are not fire-adapted species (Paysen et al. 2000). Wildfire regimes are changing dramatically across North American deserts with the spread of invasive grasses (Stanton et al. 2023). The increase in fine fuels in the spaces between native shrubs due to the presence of invasive annual grasses has resulted in larger and more frequent fires in deserts of North America (Bishop et al. 2019, Fusco et al. 2019). The management of fire and invasive plants must be closely integrated for each to be managed effectively (Brooks and Pyke 2001). The analysis area for fire focuses primarily on the NCA and Reserve, although the influence of increasing wildfires throughout Washington County and in the northern Mojave Desert is also considered.

3.4.1 2020 Final EIS Summary

Section 3.22 of the Final EIS (pages 3-189 to 3-194) discusses fire and fuels management within the Reserve. Large-scale or frequent wildland fires are not part of the natural fire regime of the Mojave Desert, because desert shrublands are not fire-adapted species (Paysen et al. 2000). Historically, wildfire has been a rare occurrence because the Mojave Desert does not produce enough vegetation to carry a fire.

Large-scale wildfires have become more frequent due primarily to the proliferation of invasive grasses, specifically red brome and cheatgrass (Brown and Minnich 1986, Brooks 1999, Brooks and Esque 2002, McKenzie et al. 2004, UDWR 2021). Additional factors include elevated temperatures and prolonged droughts. Native Mojave Desert species, unaccustomed to frequent large-scale fires, struggle to recover from larger and more-frequent fires and recovery of associated native plant communities is slow (Brooks and Esque 2002, UDWR 2021). The NCA and the Reserve, including Zone 6, are managed for full fire suppression since the plant communities in these areas are not fire-resistant or resilient. Emergency stabilization and rehabilitation efforts follow each fire incident.

Since 1976, a total of 19,428 acres have burned within Zones 1–5 of the Reserve, which includes the NCA, with 42% of all burned areas burning multiple times. Washington County has estimated that less than 80 acres have burned within proposed Zone 6 in this same time period, although no known mapping of the burned areas is readily available. Following publication of the Draft EIS, three human-caused wildfires (Turkey Farm Road, Cottonwood Trail and Lava Ridge) burned approximately 11,750 acres

within the NCA and Reserve, of which over 8,800 acres had been burned in prior wildfires. Much of the previously burned area had already converted to invasive annual grasses and noxious weeds following the initial burns and thus there was less native vegetation left to burn in these recent fires. In the Final EIS, the BLM and FWS considered the impact these three fires had on the amount and quality of affected Mojave desert tortoise habitat and estimated potential direct impacts to the Mojave desert tortoise population including mortality and injury.

The Final EIS stated that granting a ROW in the NCA could result in improved wildfire suppression response as the roadway would provide quicker access to an area that is not currently easily accessible and a linear barrier such as a roadway may function as a fuel break that may slow or stop the spread of fire depending on the size and intensity of the fire. Construction activities may introduce noxious weeds and invasive species to the area, as described in Section 3.3, and traveling vehicles along the highway may introduce new ignition sources and increase the likelihood of fire in the area, not only from the vehicles themselves but also as a result of increased human activity.

3.4.2 Supplemental Analysis

Affected Environment

This section discusses climate change and fire, invasive species and fire, and recent wildfires in the Reserve.

Climate Change and Fire

Wildfire activity is undergoing shifts in frequency, intensity, and seasonality in response to climate change. Across the contiguous United States between 1984 and 2020 the number of wildfires increased by 94% and the total burned area increased by 337% (Boisramé et al. 2022, Iglesias et al. 2022, Yu et al. 2023). High fire danger days are expected to increase as much as 41 days more than the historic average, driven by increased fuel production cycles during wet years followed by more frequent droughts (FWS 2021, Yu et al. 2023).

Fuel moisture levels are important predictors of wildfire risk. Increased dryness of fuels, driven by drought, increases the ease and risk of ignition and prolongs the fire season (Matthews et al. 2011, Jolly 2015). There is evidence pointing to a global shift towards extreme fuel dryness propelled by climate change. A recent study found a near-universal trend in drying wildland fuels across the majority of Earth's flammable ecoregions between 1979 and 2019 (Ellis et al. 2022). Notably, strong, widespread drying trends in western North America add to the global evidence (Ellis et al. 2022). These patterns suggest continuous increases in fire-prone fuels if current climatic trends continue.

Invasive Species and Fire

Historically, large fires were rare in the Mojave Desert pre-1970 (Humphrey 1974, Brooks 1999) and were generally characterized by small (generally less than 110 acres) local fires that burned out quickly due to the patchy distribution of Mojave Desert scrub vegetation and lack of fuel in interstitial spaces (Lovich and Bainbridge 1999, Paysen et al. 2000, Brooks and Matchett 2006, UDWR 2021).

In conjunction with climatic changes, wildfire frequency, extent, and intensity within the UVRU, and the Reserve specifically, have increased as a result of the increase and establishment of non-native invasive plants (e.g., red brome and cheatgrass) that provide ample dry "bridge" fuels, which allow fires to spread quickly between native plants (Fusco et al. 2019, Stanton et al. 2023). Historically, Mojave Desert ecozones did not produce enough vegetation to sustain fire spread across the landscape. Fires were rare due to lack of fine fuels to facilitate ignition or to "carry" the fire as it spreads. However, with increasing invasive annual grasses and noxious weeds (see Section 3.2), an emerging pattern suggests previously burned areas will burn again hotter and larger roughly 12-15 years later (UDWR 2020) and the landscape may be capable of supporting fire return intervals as short as 5-10 years (Hood and Miller 2007, TNC 2011, FWS 2021b).

After a fire, non-native vegetation is likely to increase in density due to faster post-fire recovery compared to native species, causing further habitat degradation (Boarman 2002). Recurrent fires can alter habitat structure and plant species composition, density, and cover of native plants, including preferred Mojave desert tortoise forage plants (Brooks and Esque 2002, FWS 2021b). Studies have shown that the presence and dominance of invasive annual grasses makes areas more susceptible to recurring fire cycles (Brooks 1999). An increased fire cycle is an ecological threat because most native plant species are poorly adapted to survive fire in the deserts of southwestern North America (Brooks 1999). Fires result in increased inorganic nitrogen in the soils which can favor invasive annuals over natives fueling further invasive plant presence and dominance in the ecosystem (Brooks 2003, Esque et al. 2010, Jones et al. 2015). Human activities can increase ecological disturbance, acting as a vector for the introduction and increased spread of non-native and invasive species (Seabloom et al. 2006, Bishop et al. 2019), as well as introduce potential ignition sources (Brooks 1999, Brooks and Esque 2002, BLM 2015, FWS 2021b).

Recent Wildfires

After the Final EIS was published, two additional fires burned in the Reserve in 2020 and there have been four additional small fires (<110 acres) since 2020 (Table 3). In addition to the approximately 11,750 acres burned in the three 2020 wildfires discussed in the Final EIS, two additional human-caused fires burned in the Reserve in 2020: (1) the Snow Canyon fire which burned 630 acres in the NCA as well as on State Park land; and (2) the 56-acre Volcano fire which was entirely within Snow Canyon State Park. A total of 12,437 acres were burned in the Reserve because of these five fires, of which 2,583 acres were previously unburned. All five fires that burned within the Reserve were human caused and burned 9,019 acres of critical tortoise habitat (see Section 3.6). Native shrub vegetation was severely burned throughout surveyed areas within the Cottonwood Trail and Turkey Farm Road fire footprints. In areas that have experienced multiple burns in the last 20 years, little to no ground cover was present (UDWR 2021).

The Turkey Farm Road fire completely burned 100 acres of previously burned revegetated Mojave desert tortoise habitat within the NCA, decreasing survival of plantings by 50%. Creosote had the greatest wildfire mortality with a 6% survival rate post fire (UDWR 2020). Restoration within burned areas is difficult and often unsuccessful (Abella and Newton 2009, as cited in TNC 2011). Although some native shrubs are able to resprout and recover within 20 years, they have little chance of recovery within areas burned multiple times in a 20-year period (TNC 2011). Some shrub communities are severely impacted by fire and may take centuries to recover. Though surviving creosote have limited sprouting ability after low-intensity fires, they can regrow to their former size within 5 years (NatureServe 2018). However, big sagebrush lacks morphological or physiological adaptations to survive fire or facilitate rapid recolonization and blackbrush shrublands, one of the most flammable vegetation communities in the region, can take centuries to recover (Hood and Miller 2007). As previously stated, the landscape is now capable of supporting fire-return intervals as short as 5-10 years (Hood and Miller 2007, TNC 2011, FWS 2021b). Fire occurrence at this frequency would prevent most, if not all, recovery of the native shrub communities without active management strategies to reduce fire, reduce invasive grasses, and promote native shrub communities.

Since 1993, 32 fires have burned a total of 34,227 acres in the Reserve (Table 3). These fires have burned areas as small as a half-acre or less to over 10,000 acres in the Reserve, and many of the fires were bigger than this as they burned lands outside of the Reserve as well (Figure 4). Of these fires, 23 of them have burned in Zone 3, consuming approximately 32,809 acres. The areas burned during the 2020 wildfires did not intersect with the action area for any of the ROW alternatives within the NCA. However, all three action areas intersected with areas burned in fires during previous years (Figure 5). The UDOT ROW Alignment would cross 43.8 acres of previously burned area which amounts to 15% of the total acreage of that alignment; 20% of the T-bone Mesa Alignment (52.2 acres) and 13% of the Southern Alignment (45.1 acres) would cross previously burned areas.

Table 3. Reserve Acres Burned by Wildfires Since 1993

Fire Name	Year	Reserve Acres Burned	Zone 3 Acres Burned
Millcreek	1993	2,248.0	2,248.0
Sandstone	1993	85.1	0.0
Sandstone	1993	28.8	0.0
TBone Hill	1993	92.3	92.3
Twist Hillw	1994	62.3	62.3
Turkeyfrm1	1998	102.8	102.8
Turkeyfrm2	1998	404.7	404.7
Yant Flat	2005	0.3	0.3
Cottonwood	2005	8.2	8.2
Red Cliffs	2005	731.6	731.6
Pit	2005	28.9	0.0
SR 18	2005	65.5	65.5
Diamond Valley Complex	2005	5,835.6	5,835.6
Millcreek	2005	7,696.5	7,696.5
Tortoise	2005	29.7	29.7
Line	2006	9.8	9.8
Bluff	2006	15.2	15.2
Red Hill	2006	38.2	0.0
Red Hills	2011	63.8	63.8
Quail	2012	1,166.5	0.0
Reserve	2012	3,033.3	3,033.3
Turkey Farm Road	2016	12.8	12.8
Turkey Farm Road	2020	10,005.1	10,005.1
Volcano	2020	56.5	0.0
Cottonwood Trail	2020	1,396.9	1,396.9
Lava Ridge	2020	348.3	348.3
Snow Canyon	2020	630.3	630.3
1450	2020	0.3	0.0
Babylon	2021	13.2	0.0
Cottonwood	2022	15.7	15.7
Moe's Valley	2022	0.5	0
Dixie Rock	2023	0.5	0.5

Note: Acres burned were estimated by digitizing the fire boundary extents and clipping them to the boundary of the Reserve or of Zone 3.

Zone 6 has been relatively free of any fires during this period except for a small (0.5-acre) fire that burned in Moe's Valley in 2022. However, there have been 33 fires that have burned adjacent to or within five miles of the western border of Zone 6 that have consumed over 107,650 acres since 1993. The increased threat of larger, catastrophic wildfires is a continued concern for Mojave desert tortoise recovery and management across the species range (FWS 2022a). Direct and indirect impacts to Mojave desert tortoises from wildfires can be numerous and variable. A detailed analysis of these impacts, including impacts resulting from the 2020 wildfires specifically, is provided in Section 3.5.

Figure 4. Fire Perimeters in and near the Reserve

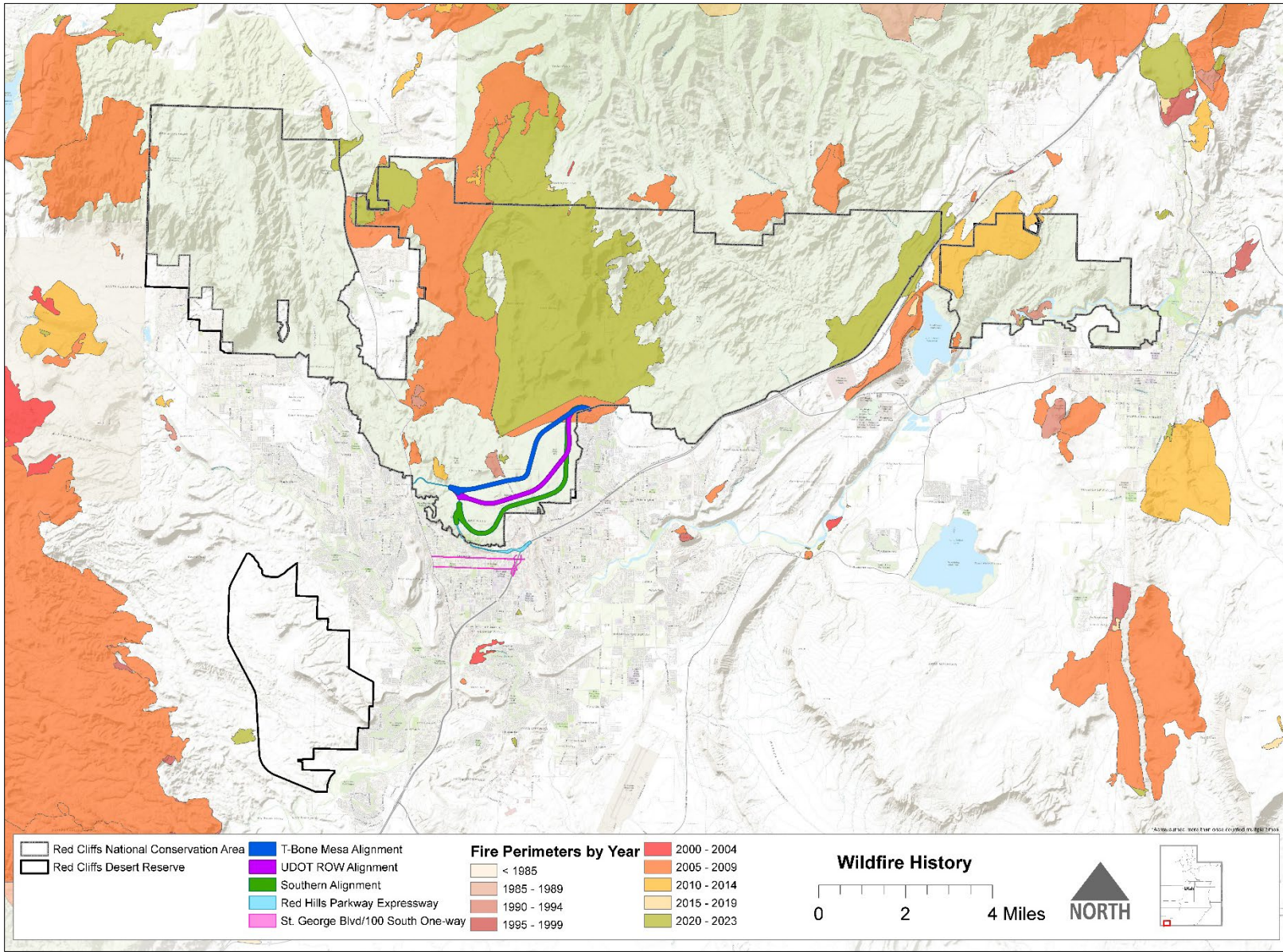
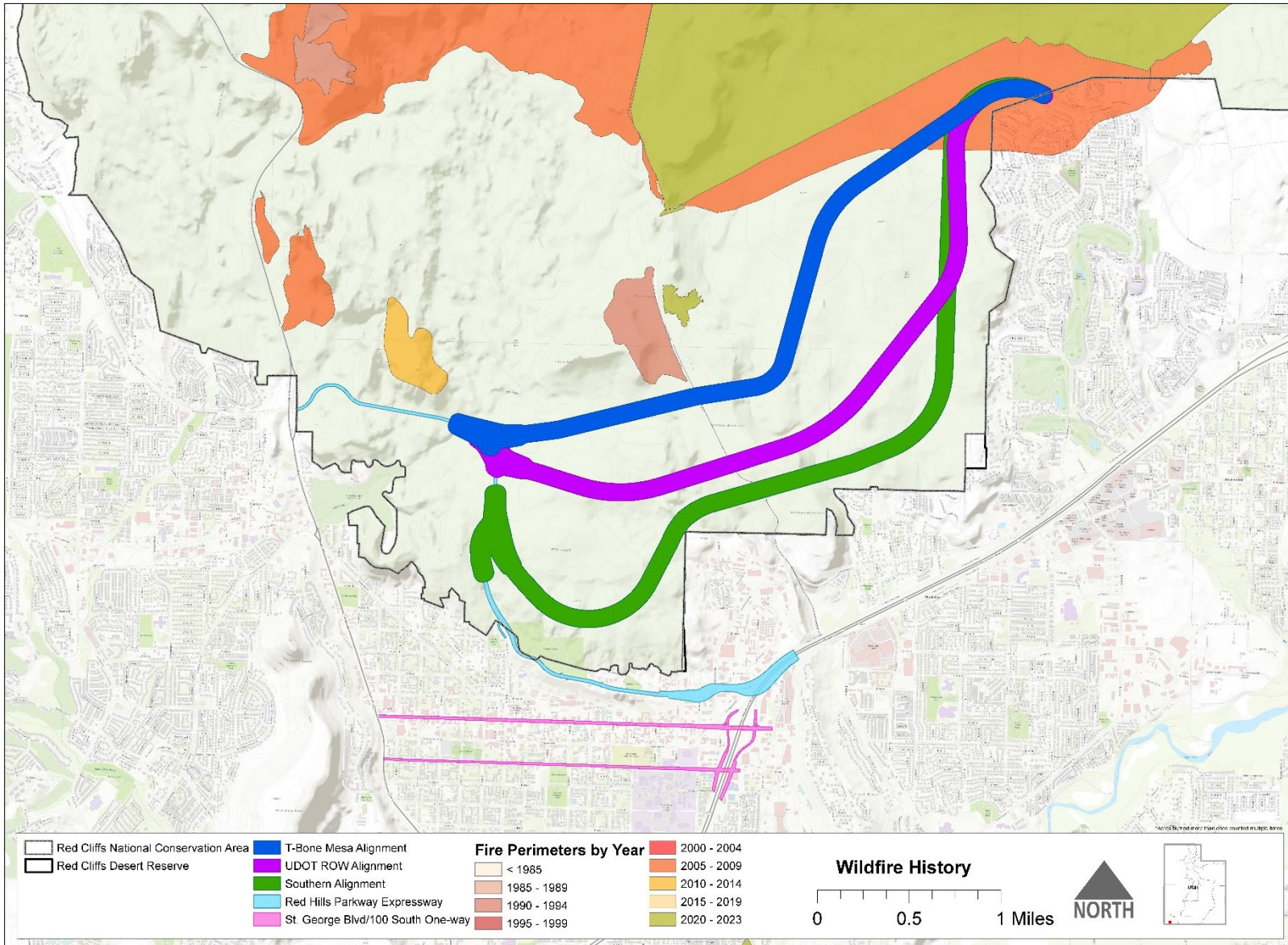


Figure 5. Fire Perimeters near the Northern Corridor Alternatives



Environmental Consequences

UDOT ROW Alignment (Affirm Current ROW Grant)

Construction of the Northern Corridor on the UDOT ROW Alignment has the potential to further introduce ignition sources during construction and through daily vehicle usage and increased human activity. Road construction would create a permanent fuel break and potential weed treatments and road maintenance activities could reduce fuel loads in the short term. However, these actions may not offset the increase in fire probability and likely increase in fire frequency that would occur from constructing a road in the NCA. All five fires that occurred in 2020 were human caused and the increase in human activity that would result from selecting an alternative within the NCA may increase fire probability and frequency. Native vegetation and wildlife already affected by previous wildfires would have increased difficulties recovering from further population and habitat loss. The proliferation of noxious and invasive plants already observed within the Reserve contributes to high fuel loads and the potential for new fires to spread beyond previously burned areas, thereby increasing loss of native vegetation and habitat.

Zone 6 has been relatively untouched by wildfires, and the additional plant and habitat protections that are in place because of the changed circumstance would reduce unmanaged motorized and non-motorized recreational activities on and off trails on non-Federal lands in Zone 6. These protections could reduce habitat loss and degradation, reduce the spread of noxious weeds and invasive plants, and reduce the risk of wildfires in this area.

T-Bone Mesa Alignment

Construction of the Northern Corridor Highway on the T-Bone Mesa Alignment would result in the same potential impacts as the UDOT ROW Alignment alternative, although these impacts would be in a different area. Management of Zone 6 would not change if this alignment were selected, and the additional protections afforded to at-risk native plants and erodible soils would remain in place.

Southern Alignment

Construction of the Northern Corridor Highway on the Southern Alignment would result in the same potential impacts as the UDOT ROW Alignment alternative, although these impacts would be in a different area. Management of Zone 6 would not change if this alignment were selected, and the additional protections afforded to at-risk native plants and erodible soils would remain in place.

Red Hills Parkway Expressway

Construction of the Red Hill Parkway Expressway would result in substantially fewer impacts as this alternative would make changes to an existing multi-lane highway to make it function as an expressway. Under this alternative, the Northern Corridor changed circumstance is not triggered, thus eliminating Zone 6 from the Reserve as mitigation for the Northern Corridor. Consequently, non-Federal lands in Zone 6 would be subject to covered activities through the HCP (e.g., land development). Zone 6 is less susceptible to fire as invasion by non-native grasses has occurred at a lower level than other areas of the Reserve. However, as a result of selecting this alternative, development of the non-Federal lands within the Zone 6 boundaries may occur and continued degradation of soils and habitat loss from unmanaged motorized and non-motorized recreational activities on and off trails may occur, which could increase the risk of wildfire.

BLM would continue to manage 3,475 acres of Federal lands within Zone 6 for full suppression of wildfires and other land uses would be consistent with the St. George Field Office RMP. However, additional resources provided by Washington County under the Northern Corridor changed circumstance would not be available, including funding of law enforcement, maintenance of protective fencing, eliminating grazing activities on non-Federal land, public outreach and education, or personnel that would otherwise support management that could be beneficial to reducing the risk of wildfire.

St. George Boulevard/100 South One-Way Couplet

There would be no new impacts resulting from selecting the St. George Boulevard/100 South One-Way Couplet alternative as it lies outside the NCA along existing roads. Current fire and fuels management and wildfire suppression practices within the NCA would be maintained. Impacts to Zone 6 would be the same as described for the Red Hills Parkway Expressway.

Terminate UDOT's ROW

Under this alternative, the Northern Corridor Highway would not be developed and current fire and fuels management and wildfire suppression practices within the NCA would be maintained. Impacts to Zone 6 would be the same as described for the Red Hills Parkway Expressway.

3.5 Special Status Wildlife – Mojave Desert Tortoise

This section focuses specifically on Mojave desert tortoise where new data has been collected or additional analysis completed since publication of the Final EIS. Actions to benefit Mojave desert tortoise habitat would generally be beneficial to other special status species, and activities that result in adverse effects to tortoises would generally result in adverse effects to other special status species as well. The analysis area used for the SEIS is the same analysis area defined in the original Final EIS. This is defined as all potential and suitable Mojave desert tortoise habitat within the Reserve boundary (which includes Zone 6), regardless of landownership (i.e., the BLM, State, or Private).

3.5.1 2020 Final EIS Summary

Section 3.5 of the Final EIS (pages 3-42 to 3-94) discusses special status wildlife within the Reserve with an emphasis on Mojave desert tortoise. Analysis of project-related direct effects to Mojave desert tortoise from the proposed Northern Corridor was based on the number of acres of lost suitable habitat in the proposed ROW within Zones 1–5 of the Reserve and the number of Mojave desert tortoises to be relocated from the proposed ROW. Indirect effects for the Northern Corridor were evaluated based on the number of acres and number of Mojave desert tortoises where their home ranges may be impacted because of the presence of project activities. Indirect effects, because of habitat fragmentation, were quantified using the number of acres of Mojave desert tortoise habitat located between each ROW alternative and the southern Reserve boundary, for which connectivity to the larger tortoise population in Zone 3 may be impaired. The evaluation also considered beneficial management actions that could result from proposed mitigation, such as acres of Mojave desert tortoise habitat with improved conservation status in Zone 6 and installation of culverts under roads to increase habitat connectivity.

The Mojave population of Mojave desert tortoise includes all tortoises north and west of the Colorado River in Arizona, Utah, Nevada, and California. Ongoing threats to the species include loss, degradation, and fragmentation of habitat due to development, as well as increased wildfires due to non-native invasive vegetation, disease, road mortality, and predation of their eggs and hatchlings (FWS 1994a, 2011). The Mojave desert tortoise was listed as threatened in 1990 (FWS 1990). The Final EIS detailed the life history of the Mojave desert tortoise in Section 3.5.1.1. A summary is provided in this section.

The Mojave desert tortoise, adapted to the arid Mojave landscape, is most active during spring and early summer (FWS 2008), foraging on herbaceous perennials, grasses, shrubs, and cacti (FWS 2011). These slow-growing tortoises take 13 to 20 years to reach sexual maturity. Female tortoises lay one to ten eggs, and incubation temperature determines the hatchlings' sex (Rostal et al. 2002). Growth and reproduction increase during years with higher precipitation (FWS 2011). They may use multiple burrows within their range and occasionally venture beyond (O'Connor et al. 1994). Seeking shelter during unfavorable conditions, they use burrows, rodent holes, and caves (FWS 2011), remaining mostly inactive during droughts (Duda et al. 1999). The typical habitat for Mojave desert tortoises is characterized by creosote scrub, with a peak observation frequency between 2,000 and 3,300 feet in elevation (Nussear et al. 2009, FWS 2011).

Threats that result in mortality, permanent habitat loss, habitat fragmentation, and habitat degradation are among the most significant to the Mojave desert tortoise (FWS 1994a, 2011a). This includes urbanization and large-scale renewable energy projects, the proliferation of roads and highways, off-highway vehicle activity, destruction of habitat as a result of wildfire, and invasion by non-native plant species (FWS 2019a). Predation, disease, drought, and climate change also pose risks to their populations (FWS 1994b, FWS 2011).

The Final EIS stated that implementation of the alternatives would result in varying levels of impacts to the Mojave desert tortoise. Issuing a ROW within the NCA under either the T-Bone Mesa, UDOT ROW Alignment, or Southern Alignment would result in direct and indirect impacts to Mojave desert tortoise and their habitat, although the location of the highway ROW, number of affected acres, and number of Mojave desert tortoises would differ amongst alternatives. There would be a direct loss of occupied Mojave desert tortoise habitat and designated critical habitat through displacement, short-distance translocation, destruction of burrows, and indirect effects such as noise, vibration, and habitat fragmentation. The proposed highway would also lead to habitat fragmentation and impact a Mojave desert tortoise population cluster in the Reserve. Tables 4 and 5 provide more specific information on impacts to Mojave desert tortoise habitat from the Northern Corridor alternatives (adapted from Section 3.5.2 of the Final EIS).

The Final EIS stated that granting a 25-year ITP to Washington County would result in the direct loss of up to 14,466 acres of occupied Mojave desert tortoise habitat and 51,835 acres of potential habitat within the ITP area. Zones 1–5 of the Reserve are mitigation for these impacts. Because of additional impacts that would occur under construction and operation of a highway within Zone 3 of the Reserve, Zone 6 was proposed as additional mitigation for the Northern Corridor ROW. For the two alternatives located partially or completely outside the NCA, the Final EIS stated that the Red Hills Parkway Expressway Alignment would result in the same types of indirect adverse impacts as the T-Bone Mesa Alignment. However, additional impacts would be minimized as the highway ROW primarily follows the existing Red Hills Parkway. Red Hills Parkway presently has a wide ROW with tortoise exclusion fencing on both sides that precludes tortoises from unpaved habitat within the ROW; no additional Mojave desert tortoise habitat would be lost from the ROW within the Reserve, and no short-distance translocation of Mojave desert tortoise was anticipated. Temporary indirect effects from noise, vibrations, and construction-related activities would impact a smaller area and additional habitat fragmentation would be avoided. The St. George Boulevard/100 South One-way Couplet would involve reconfiguring existing roadways within the City of St. George, causing no disturbance to the Mojave desert tortoise or its habitat.

Table 4. Impacted Acres of Desert Tortoise Habitat from Northern Corridor Alternatives (adapted from Final EIS Table 3.5-11)

Alternative	Total ROW (acres)	ROW within Reserve (acres)	508-meter Buffer of ROW within Reserve (acres)	Fragmented Habitat inside Reserve (acres)	Total Indirect Impacts (acres)
UDOT ROW Alignment	300	275	1,733	1,335	2,333
T-Bone Mesa Alignment	279	255	1,811	2,313	3,278
Southern Alignment	373	340	1,996	650	1,883
Red Hills Parkway Expressway	68	11	11	0	11
St. George Boulevard/100 South One-way Couplet	45	0	0	0	0

Note: Fragmented habitat, as used here, refers to the number of acres of tortoise habitat that would remain between the alternative alignment and the southern boundary of Zone 3 once the highway was constructed. This fragmented habitat would potentially impair connectivity to the larger tortoise population.

Table 5. Desert Tortoise Critical Habitat and Potential Number of Adult Tortoises Impacted in the Reserve (adapted from Final EIS Table 3.5-12)

Alternative	Lost Critical Habitat within Reserve (acres)	Percent of Total Critical Habitat Lost from Reserve (%)	Disturbed and Fragmented Critical Habitat (Total Indirect Impacts) (acres)	Potential Number of Tortoises Translocated	Number of Tortoises with Indirect Impacts	Total Number of Tortoises Affected by Alternative
UDOT ROW Alignment	275	0.59	2,333	40	328	368
T-Bone Mesa Alignment	255	0.54	3,278	30	463	493
Southern Alignment	340	0.73	1,883*	44	249	293
Red Hills Parkway Expressway	0	0	11**	0	1	1
St. George Boulevard/100 South One-way Couplet	0	0	0	0	0	0

*An error in the Final EIS stated disturbed and fragmented critical habitat acres for the Southern Alignment to be 833 acres. This has been corrected in the SEIS to accurately reflect the 1,883 acres of disturbed and fragmented critical habitat.

**The 11 acres of “Disturbed and Fragmented Critical Habitat” is within the existing 300-foot-wide Red Hills Parkway ROW which has tortoise exclusion fencing on both sides that precludes tortoises from using habitat within the ROW that was originally designated as critical habitat. Therefore, the disturbance/fragmentation of 11 acres of “critical habitat” within the existing ROW is a legacy fragmentation/loss that would have no new direct/indirect impact on tortoises. No additional Mojave desert tortoise habitat would be lost from the ROW within the Reserve under this alternative and it is not anticipated that Mojave desert tortoise short-distance translocation would be necessary.

3.5.2 Supplemental Analysis

Affected Environment

Much of the analysis regarding threats to the Mojave desert tortoise within the Final EIS remains valid. For example, it was well understood that roads disrupt movement patterns, fragment habitat, and cause direct mortality (FWS 2018) as well as introduce a suite of potential indirect effects such as increased thermal stress, noise, increased predator attractants, etc. (FWS 1994b, Latch et al. 2011, Peaden et al. 2017, Berry and Murphy 2019). Roads can act as a vector for the introduction of non-native and invasive plant species, and roads provide human access and disturbance into tortoise habitat (Mortensen et al. 2009, FWS 2021b, Deeley and Petrovskaya 2022). As road density increases so does the severity of habitat fragmentation and the probability of detrimental human caused effects in a given area (Averill-Murray and Allison 2023). Although this section focuses specifically on Mojave desert tortoises and their habitat, the conclusions would be similar for all wildlife species that rely on native habitat for food, cover, reproduction, or other life history stages.

The section discusses and updates a number of factors that impact Mojave desert tortoise – including fire, invasive plants, habitat fragmentation and connectivity, predation, and climate – and concludes with an updated analysis of Mojave desert tortoise density and abundance and the number of tortoises that would be affected by each alternative.

Desert Tortoise and Fire

As discussed in Section 3.4, the increased threat of large, catastrophic wildfires continues to be a concern for Mojave desert tortoise (FWS 2018, 2022a). In 2005, wildfires heavily impacted the Reserve, including burning 10,244 acres of Mojave desert tortoise critical habitat and 1,267 acres of additional tortoise habitat (FWS 1994a, UDWR 2007, FWS 2008, FWS 2018, UDWR 2018, UDWR 2021). It is estimated that 15% of adult Mojave desert tortoise within Zone 3 died because of wildfires that year (UDWR 2007). In the Reserve, 65% of Zone 3 burned between 1993 and 2012 (BLM 2020b, FWS 2021b). In the summer and fall of 2020, five human-caused wildfires burned a combined 12,437 acres within the Reserve, of which 9,019 acres were designated Mojave desert tortoise critical habitat (FWS 1994b) and at least 2,583 acres were previously unburned. The 2020 fires included: Turkey Farm Road (10,005 acres), Cottonwood Trail (1,397 acres), Lava Ridge (348 acres), Snow Canyon (630 acres), and Volcano (57 acres; Table 3).

Some of the Reserve's most densely occupied tortoise habitat is adjacent to Cottonwood Springs Road where several of these fires burned (see Figure 8). The Turkey Farm Road, Cottonwood Trail, Lava Ridge, and Snow Canyon fires predominantly occurred in areas previously burned in 2005. Proximity to roads can result in non-native invasive plant species introduction and wildfire ignition from the roads themselves or human access (Darst et al. 2013, FWS 2021b). For example, in June 2020, the 234-acre Volcano fire (caused by illegal fireworks use along State Route 18) burned 57 acres of tortoise habitat in the Reserve (UDNR 2020). In July 2020, the Turkey Farm Road and Cottonwood Trail fires burned approximately 11,402 acres in Zone 3. The Cottonwood Trail fire was caused by a blown tire, and the Turkey Farm Road fire was caused by illegal fireworks (FWS 2021b). In October 2020, the Lava Ridge fire burned another 348 acres and in November the Snow Canyon fire burned 630 acres of tortoise habitat—both of these were also caused by human-use activities (FWS 2021b). In total, the 2020 wildfires burned 12,381 acres in Zone 3 which is 31.5% of the core tortoise area in the Reserve (UDWR 2018, FWS 2021b). Of these burned acres, 9,019 of these acres were designated Mojave desert tortoise critical habitat (FWS 1994b). Based on this information, and that described in Section 3.4.2, it is highly probable that the Reserve will experience large and small wildfires in the future (FWS 2021b).

Direct impacts to Mojave desert tortoises from wildfires can be variable and include burning fatalities or injuries, dehydration, exposure to high temperatures, or smoke inhalation (Lyon et al. 1978 and 2000, Huff and Smith 2000, Esque et al. 2003). Indirect effects of fire can be significant, including loss of plant cover, exposure to predators and extreme heat, reduced food availability, diversity, and quality, change in ecotypes and hydrology, and damage to soil and burrows (Brooks and Esque 2002, Esque et al. 2003,

UDWR 2007). High tortoise mortality and indirect effects of fire can severely affect reproduction, juvenile recruitment, and the size and survivorship of tortoise populations (Stubbs et al. 1985, Lambert et al. 1998, Hailey 2000), especially within the UVRU, which was identified as the smallest and most at-risk recovery unit within the species range (FWS 1994b, 2011a).

Regular monitoring of the tortoise population between 2006 and 2019 indicates the population had not recovered from the 2005 wildfires, which resulted in similar percentage losses to the adult Mojave desert tortoise population as the 2020 fires (UDWR 2007, Kellam et al. 2022). The inability to repopulate is a substantial concern for long-lived species with a low reproductive output like the Mojave desert tortoise (Doak et al. 1994, FWS 2019b). Burned areas within the Reserve now support fire return intervals as short as 5 to 10 years (TNS 2011, Moloney et al. 2019), which is less than a third of a tortoise's generation time. Tortoise population stability is predicated on high adult survival (>90%) and sufficient recruitment into adult size classes (Doak et al. 1994), therefore a short fire return interval may contribute to extirpation of the tortoise population. Reserve Zone 6 is separated from the other zones and would serve as a refuge population that may be less prone to the threats of fire and weeds and may help provide for the long-term protection of tortoises. In addition, the habitat restoration efforts identified in Appendix B would help restore tortoise habitat impacted by fire and weeds.

Desert Tortoise Mortality Surveys From 2020 Fires

In the Final EIS, the BLM and FWS considered the impact that the three earlier 2020 fires had on the amount and quality of affected Mojave desert tortoise habitat and the potential direct impacts to the Mojave desert tortoise population were estimated, including mortality and injury. Section 7 consultation also included consideration of the three earlier 2020 fires. After publication of the Final EIS, two additional fires burned in the Reserve (see Table 3) and additional detailed tortoise mortality studies were completed. After the 2020 wildfires, the following surveys were conducted to ascertain the direct impacts to the local Mojave desert tortoise populations within Zone 3.

BLM 2020 Cottonwood Trail Fire Tortoise Mortality Surveys

From July 22 to September 8, 2020, systematic searches for fire-killed and injured tortoises were carried out within a 618-acre area of burned tortoise habitat to determine direct tortoise mortality and injury as a result of the 2020 Cottonwood Trail fire in Zone 3 (Kellam et al. 2022). Individual observers walked on 10-meter-wide belt transects at the same rate to provide 100% coverage (Esque et al. 2003, FWS 2017). Surveys were conducted (by experienced tortoise surveyors) starting 1 day after the fire was contained and continuing up to 49 days after the fire.

As a result of these surveys, 25 tortoise remains were encountered in the Cottonwood Trail fire area of which 14 remains were directly attributed to fire, including 5 adults and 9 juveniles (Kellam et al. 2022). The majority of direct tortoise mortality occurred in small washes and open areas containing a high density of non-native red brome and cheatgrass (Kellam et al. 2022). Three live uninjured tortoises (one adult and two juveniles) and one fire-injured adult tortoise were also encountered (Kellam et al. 2022). A trail camera captured images of a desert woodrat (*Neotoma lepida*) feeding on the fire-affected tissues of the fire-injured tortoise at a burrow site; due to the severity of the desert woodrat-caused injuries, the decision was made to remove the tortoise from the wild on August 22, 2020, for medical treatment (Kellam et al. 2022). The novel observation of a desert woodrat feeding on a live, fire-injured Mojave desert tortoise highlights the potential impacts of desert woodrat carnivory on postfire tortoise survivorship (Kellam et al. 2022). Continued desert woodrat feeding on the tortoise might have led to injuries that confined and eventually killed the tortoise deep in its burrow (Kellam et al. 2022). Therefore, desert woodrat carnivory might contribute to indirect (and undetected) fire-related tortoise mortality (Kellam et al. 2022).

It was estimated that 15% of the adult tortoise population died due to the 2005 fires within the Zone 3 region where the 2020 Cottonwood Trail fire occurred (UDWR 2007). Biannual tortoise population monitoring between 2006 and 2019 indicated the tortoise population had not recovered to pre-2005

population levels (Allison and McLuckie 2018, UDWR 2020). In 2019, the adult tortoise population density for the Zone 3 region where the 2020 Cottonwood Trail fire occurred was estimated at 12.3 tortoises/km² (UDWR 2020). Extrapolating from the biannual population surveys (UDWR 2020), it was estimated that approximately 16.3% of the local adult tortoise population within the 250-ha (2.5-km²) Cottonwood Trail fire survey area died directly from fire (Kellam et al. 2022).

Tortoise mortality from the Cottonwood Trail fire (Kellam et al. 2022) is likely underestimated. Juvenile shells are more likely to suffer greater damage in the fire, deteriorate more rapidly than adult shells, or be scavenged by animals and therefore be undetected by surveyors (Turner and Berry 1984, Esque et al. 2003, UDWR 2007). Additionally, some tortoises, both adult and juvenile, with injuries might have retreated and died in deep soil burrows or caves and were undetected during surveys (Esque et al. 2003, UDWR 2007). Therefore, it is likely that overall direct mortality as a result of the 2020 Cottonwood Trail fire was underestimated (Kellam et al. 2022).

UDWR 2020 Turkey Farm Road Fire and Cottonwood Trail Fire Tortoise Mortality Surveys

Surveys were conducted for the Turkey Farm Road and Cottonwood Trail fires to quantify the effects to Mojave desert tortoise and surrounding habitat (Kellam et al. 2022). The sampling methodology used was consistent with the Mojave desert tortoise monitoring program (Anderson and Burnham 1996, UDWR 2020, UDWR 2021). The encounter rate and the two correction factors (see Figure 7 footnote) provide an estimate of the overall population density within each monitoring area (FWS 2022b). This method differs from the 10-meter-wide belt transects survey method used to provide 100% coverage (Esque et al. 2003, FWS 2017). Population monitoring efforts were concentrated in burned habitat within Zone 3 and long-term monitoring plots, established in 1998, were surveyed (UDWR 2020, UDWR 2021). Three field biologists completed Mojave desert tortoise surveys within Zone 3 of the Reserve from April 9, 2021, to June 4, 2021, which was 262 to 318 days after the 2020 Cottonwood Trail and Turkey Farm Road fires were contained (UDWR 2021). The tortoise mortality surveys were conducted 1 to 49 days after the Cottonwood Trail fire was contained, as described above (Kellam et al. 2022).

Surveyors found the Cottonwood Trail and Turkey Farm Road fires severely burned native shrub vegetation throughout the survey area (UDWR 2021). Large extensive areas were exposed with no to very limited vegetation present (UDWR 2021). In the core of the fires, where some areas have experienced multiple burns in the last 20 years, shrub vegetation was generally not present and there was little to no ground cover (UDWR 2021). A few perennials survived the fire including desert globemallow (*Sphaeralcea ambigua*), desert marigold (*Baileya multiradiata*), and brittlebush (*Encelia farinosa*); some annuals were present throughout and included Mariposa lily (*Calochortus flexuosus*) and woolly daisy (*Eriophyllum wallacei*) (UDWR 2021). In contrast, vegetation diversity was highest on the edge of fires and included pockets of unburned creosote, blackbrush, brittlebush, eastern Mojave buckwheat (*Eriogonum fasciculatum*), and ephedra (*Ephedra spp.*) (UDWR 2021). Non-native plants were observed on most transects and included Russian thistle, cheatgrass, and red brome (UDWR 2021).

Overall, relatively similar encounter rates of shells were found per kilometer searched on transects for both fires (UDWR 2021); however, in the Cottonwood Trail fire, many more shells were observed off the transect than in the Turkey Farm Road fire. The overall higher density of shells found in the Cottonwood Trail fire was speculated to be due to fire intensity and intensive surveys completed immediately post fire (Kellam et al. 2022). The Turkey Farm Road fire was ignited in the evening and burned throughout the night while the Cottonwood Trail fire occurred in the late afternoon when tortoises were likely active (UDWR 2021). Further, several shells in the Cottonwood Trail fire were heavily charred which may suggest that fire intensity was high (UDWR 2021). Juvenile tortoise mortality was likely underestimated as their shells are more likely to suffer greater damage in the fire, deteriorate more rapidly, and be more likely to be carried off by scavengers (Turner and Berry 1984, UDWR 2021). A higher number of juvenile tortoises were found in the Cottonwood Trail fire; surveys conducted immediately post-fire were critical in finding the smaller shells and determining cause of death (UDWR 2021, Kellam et al. 2022). In 2021, almost one-year post-fire, cause of death for four juvenile remains in the Turkey Farm Road fire

could not be determined due to the deteriorated state of the shells (UDWR 2021). Post-fire surveys are recommended to be completed immediately after wildfires as the longer shells are exposed to the elements and scavengers, the more difficult it is to ascertain cause of death (UDWR 2021).

Tortoise encounter rates for the 2021 spring monitoring season were 0.34 adult tortoises per kilometer surveyed, less than the average encounter rate from previous monitoring years (UDWR 2020) but higher than four previous monitoring years (2013-2019; UDWR 2021). In addition, the effective strip width was higher than any other previous monitoring year suggesting that the lack of perennial vegetation in the burned habitat greatly improved the ability to observe tortoises from the transect line and accounted for the relatively high encounter rate in burned habitat (UDWR 2021). In fact, on one transect that overlooked a sandy valley, observers were able to spot a tortoise over 120 meters from the transect line (UDWR 2021).

Monitoring data in 2021 was compared to similar surveys that were carried out in previous years and is shown in Table 6 (UDWR 2021). Density estimates of adult tortoises in burned habitat declined from previous monitoring years, although the difference was not significant (UDWR 2021). The annualized adult mortality within burned habitat was much higher than all previous monitoring years except for the post wildfire surveys in 2006, indicating that mortality was very high relative to the number of live tortoises observed in the 2020 spring season (UDWR 2007 and 2021).

Lava Ridge Fire, Snow Canyon Fire, and Volcano Fire

Tortoise mortality surveys were not completed for the Lava Ridge, Snow Canyon, and Volcano fires due to logistical/staffing constraints and focus of conducting surveys in the higher tortoise density Cottonwood Trail fire and Turkey Farm Road fire burn areas.

Table 6. Monitoring Data for Adult Desert Tortoise in Burned Areas of Reserve Zones 1–5

Year	Density (95%CI)	Abundance (95% CI)	Annualized Mortality
1998 – 2001	22.0 (16.6-29.2)	615 (463-816)	0.19-0.37
2003	15.1 (9.6-23.9)	423 (268-667)	2.96
2005	23.3 (14.8-36.9)	652 (412-1032)	1.00
2007 – 2019	12.7 (10.0-16.2)	355 (280-452)	0.18-1.43
2021	11.5 (7.0-18.6)	320 (197-520)	5

Note: Data adapted from UDWR 2021. Summary data including density (tortoises per km²) and abundance (total animals per area sampled) estimates with associated 95% confidence interval, and annualized mortality rate [(ns/Ny)100%] where ns is the total number of shells observed in burned habitat and Ny is the estimated abundance of live adults for each monitoring year, 1998 to 2021. Monitoring years and detection probability were pooled across years: pre-fire (1998-2001, 2005), drought (2003), and post-fire (2007-2019, 2021).

Desert Tortoise and Invasive Plants

As discussed in Sections 3.2 and 3.4, invasive plants and wildfires are closely interrelated, and a number of projects have been undertaken to reduce invasive grasses in the Reserve (see Appendix B). Burned native shrubs may take years or even decades to centuries to regrow and recover depending on the severity of the fires and the type of community burned. Changes in vegetative cover from native shrublands to invasive and non-native plants have an effect on food availability, food nutrition, shelter and thermal landscape environments for Mojave desert tortoise. The prevalence of invasive *Bromus* grasses in the diets of juvenile Mojave desert tortoise leads to a host of body and health conditions including loss of fat, increased muscular atrophy, mucosal inflammation from embedded grass seeds, and

increased susceptibility to disease and other health related problems (Drake et al. 2016, FWS 2021b, Jennings and Berry 2023). This in turn leads to reduced recruitment and survivorship in the species as a whole. Desert tortoises exhibit high site-fidelity and will remain in native home ranges despite poor quality habitats and vegetation changes from burn-reburn patterns (Drake et al. 2015, Lovich et al. 2018).

Desert Tortoise and Habitat Fragmentation and Connectivity

Road construction, development, recreation, and other activities can disturb Mojave desert tortoise habitat and result in fragmentation and a decrease in habitat connectivity. Within Zones 1–5 of the Reserve, roads have been consolidated and some unpaved non-designated roads have been closed to off-road use or have limited off-road use as a management strategy to reduce fragmentation and restore habitat. Permanent paved roads in the Reserve, such as the Red Hills Parkway and Tuacahn Drive, have culverts intended to serve as under-roadway passage structures for Mojave desert tortoise to minimize effects of habitat fragmentation.

Recent culvert studies conducted by Washington County in 2022 and 2023 indicate that tortoises utilize culverts within the Reserve to seek shelter, feeding, or nesting opportunities more than previously recognized (Washington County 2023a, Washington County 2023b). In 2022 and 2023, the County monitored six and five culverts, respectively, of varying design within the Reserve using game cameras. Their analysis identified 45 individual tortoises crossing or sheltering within the structures in 2022 and 66 individual tortoises either utilizing the structures for crossing or sheltering in 2023 (Washington County 2023a, Washington County 2023b). These data indicate tortoises may regularly utilize under-roadway passage structures, such as culverts, for various behaviors when habitat is fragmented by roadways. More information is needed to understand if usage is limited by passage design or other ecological, biological, or environmental condition and how culverts should be spaced to provide adequate connectivity. Overall, there is evidence that tortoises utilize culverts but the effectiveness of tortoise passage structures in aiding long-term population health and habitat connectivity for Mojave desert tortoise is unknown.

Desert Tortoise and Predation

Common ravens (*Corvus corax*; hereafter raven) are highly opportunistic, human-subsidized scavengers and predators in the Mojave Desert with populations that have dramatically increased over the last 50 years (Kristan et al. 2004, Harju et al. 2021, FWS 2022, WCHCP-FWS 2024). Recent evidence further indicates that expansions of the raven's range and population density are key ecological drivers in the decrease of juvenile tortoises and observed adult Mojave desert tortoise density declines (Kristan and Boarman 2003, Allison and McLuckie 2018, Holcomb et al. 2021, FWS 2023, WCHCP-FWS 2024). Therefore, raven predation has been identified as a primary threat to the Mojave desert tortoise (FWS 1994a, FWS 2011, FWS 2022).

From 2015 through 2021, Washington County HCP staff conducted raven nest surveys within and adjacent to the Reserve and documented 53 total nests (including 20 nesting territories) and 40 juvenile tortoise carcasses that were attributed to raven predation (Schijf 2021, Schijf 2023, WCHCP-FWS 2024). The observed carcasses likely represent only a small portion of the actual number of tortoise carcasses because carcass persistence rates can be very low in desert habitats (WCHCP-FWS 2024).

In spring 2022, Washington County HCP (with assistance from BLM, Snow Canyon State Park, and volunteers) conducted raven point-count surveys throughout 176,606 acres (714.7 km²) of Mojave desert tortoise habitat in the UVRRU (WCHCP-FWS 2024). Using a distance analysis, raven density was estimated to be 2.7 raven/km² across the UVRRU. Raven detection rates were higher outside of the Reserve as compared to inside of the Reserve, with hotspots being identified in the Sand Mountain/Warner Valley area (Schijf 2023, WCHCP-FWS 2024). The FWS estimates that the average annual survival probability for juvenile tortoises decreases below 0.77 when raven density exceeds 0.89 raven/km² or within approximately 1.7 kilometers of an active raven nest (Holcomb et al. 2021). A tortoise population experiencing an average annual juvenile survival probability of less than 0.77 is

expected to exhibit a negative population expansion rate and in some instances may be functionally extinct because of low or no recruitment into adult age-class (Holcomb et al. 2021).

During spring 2022, Washington County HCP staff deployed Techno Tortoises (artificial juvenile tortoise shells that can be equipped with cameras, non-lethal sprays, and other technology) at randomized stations within the raven point-count survey area to document and assess the frequency of raven “predated” Techno Tortoises, and to assess how decoy “survival” may translate to juvenile tortoise survival (WCHCP-FWS 2024). Based on the 2022 Washington County Techno Tortoise survey results, tortoises are being depredated at an unsustainable rate (i.e., there is an 18.4% chance of tortoise mortality by raven predation annually compared to an estimated maximum rate of 7.8% to sustain tortoise populations; Holcomb et al. 2021, WCHCP-FWS 2024). The 2022 Washington County raven point-count population and Techno Tortoise predation surveys showed a substantial raven population that is likely contributing to tortoise population declines in the UVRRU and Reserve that may lead to localized to widespread functional extinction due to low 0 to 10-year-old annual survival rates (WCHCP-FWS 2024).

Ravens are often found at higher densities along roadsides than other less disturbed habitats (Knight and Kawashima 1993). Adult ravens use roads to forage for human-produced foods, trash and garbage, and road-killed animals (Boarman 1993, Boarman and Heinrich 2020), and raven nest productivity increases by nest proximity to roads (Kristan and Boarman 2007). Being that raven densities are higher outside of the Reserve (WCHCP-FWS 2024), the creation and use of a highway within currently undeveloped tortoise habitat may increase adult raven populations and nesting productivity in the Reserve, as the highway would likely produce human-subsidized food resources, and associated highway structures (such as fence posts, lighting and traffic signal poles, and signs) would create artificial raven perching opportunities that increase the potential of tortoise predation (Boarman 1993, Boarman et al. 2006, Kristan and Boarman 2007, Fleischer et al. 2008).

Animals would have direct access to each of the proposed highway alignments in the Reserve at their respective east and west entrances (at Green Spring Drive and Red Hills Parkway) and at the at-grade intersection at Cottonwood Springs Road. Though each of the highway alignments within the Reserve would provide fencing with tortoise-exclusion mesh (at the bottom) along the ROW corridor, some wildlife species are able to climb through or over the fences and birds can also be struck and killed by vehicles on the roadway, thereby creating food subsidies for ravens.

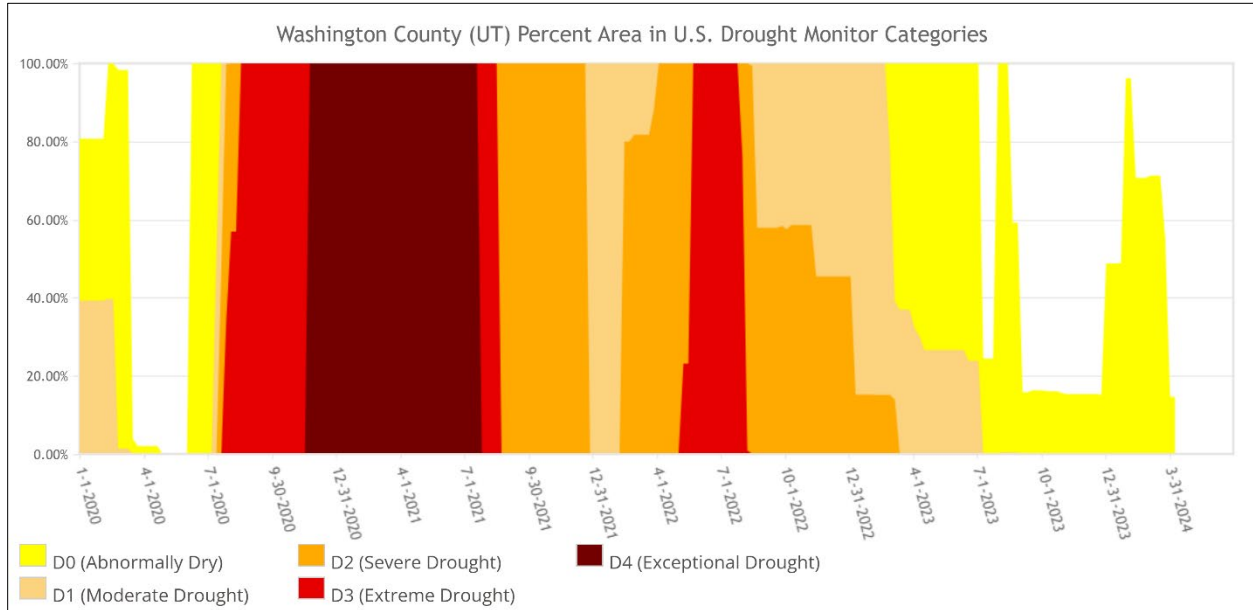
Desert Tortoise and Climate

Climate change not only presents itself as a departure from historical averages, but also an increase in extreme events such as record heat and long periods of dry or wet weather. The climate in the southwestern U.S. from 2000 through 2021 was the driest 22-year period in over 1,200 years (Williams et al. 2022, FWS 2022a). Washington County experienced record drought and extreme climate events from 2019 to 2023, including the hottest and driest and wettest periods on record going back to 1893. For example:

- On July 10, 2021, a high temperature reading of 117°F in St. George tied the all-time Utah maximum temperature record (NWS 2022).
- In July 2023, daytime highs across St. George averaged 107.4°F, which is more than 5°F warmer than St. George’s historical average for the month and made it the city’s hottest July on record (NWS 2023).
- From June 18 to November 19, 2019, no measurable rainfall (at least 0.01 inches) was recorded in St. George, Utah, for 155 consecutive days, which was the longest dry streak since records began in 1893 (NOAA 2019, WU 2019).
- From October 1, 2022, to September 30, 2023, St. George recorded the largest amount of rainfall and precipitation (15.8 inches) in a water year since local weather records started being kept in 1893 (NWS 2023).

The “Exceptional, Extreme, and Severe” drought conditions during 2020-2022 in Washington County (USDM 2024; see Figure 6) had a serious impact on wildlife populations in the Reserve, including Mojave desert tortoise who were observed to have fewer nests and eggs during the spring and summer of 2021 and 2022 (Kellam 2022a, Kellam 2022b).

Figure 6. U.S. Drought Monitor Data for Washington County, Utah



Note: From U.S. Drought Monitor website, <https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>, 4-17-2024 (USDM 2024).

Although droughts are a frequent and natural part of Utah’s climate (Frankson et al. 2017), drought conditions are likely to intensify as temperature increases are predicted to continue throughout the American Southwest and locally (Gonzalez et al. 2018, Rangwala 2020, Williams et al. 2022), which may impact Mojave desert tortoises and their habitat depending on the severity and duration of the drought (FWS 2021b). Drought conditions limit spring, summer, and fall forage for tortoises and contribute to the establishment of non-native invasive annual grasses (Melgoza et al. 1990, USDA 2013). Extended periods of drought can lead to physiological effects to tortoises including stress, dehydration, malnutrition, starvation, and death, as well as reducing overall activity, limiting opportunities to interact or breed (FWS 2011). Recurring or long-term droughts may thus impact tortoise population resiliency by reducing survivorship, recruitment, and population sizes (FWS 2019c, FWS 2021b).

For example, within the Reserve, a severe drought in 2002 resulted in no perennial or annual plant growth that year (UDWR 2018, Washington County 2020, UDWR 2024). Abnormal tortoise behavior was observed, including failure to hibernate, and there was an increase in clinical signs of upper respiratory tract disease (e.g., damp or wet nares, discharge, one or both nares completely impacted; Berry and Christopher 2001) and the presence of emaciated tortoises (UDWR 2018, Washington County 2020). In 2003, one year following the severe drought, surveys identified 2.7 times the normal amount of shell remains and a corresponding decrease in the percent of tortoises with clinical signs of upper respiratory tract disease, likely due to sick tortoises unable to survive the extreme drought (UDWR 2018, UDWR 2024). Reflective of these losses, in 2003 the estimated tortoise population had dropped to 16.5 individuals per square kilometer from the 28.3 individuals per square kilometer recorded in 2001 and the annualized mortality rate was estimated at 34% indicating a severe reduction in tortoise survival (UDWR 2018, UDWR 2024).

Upper respiratory tract disease can be aggravated by drought (Jacobson et al. 1991, FWS 2021). The disease has higher prevalence in dense desert tortoise populations (e.g., as found within the UVRU and the Reserve), because mycoplasmal infections are dependent upon higher densities of the host (Tracy et al. 2004, FWS 2021). In 2023, 9% of tortoises (in Reserve Zones 2, 3, 4, and 5) had clinical signs of upper respiratory tract disease (UDWR 2024). Tortoises have evolved in arid environments for millions of years and have numerous adaptations for living in areas where drought is a relatively common periodic event (Nagy and Medica 1986, Peterson 1996a, Peterson 1996b, Berry et al. 2002). However, if droughts are severe and prolonged, as in 2002, tortoises will eventually succumb from lack of food and water (Jacobson et al. 1991, Berry et al. 2002). Tortoises infected with upper respiratory tract disease may see increases in mortality from the drought-aggravated effects of late-stage upper respiratory tract disease (Jacobson et al. 1991, Berry et al. 2002, Longshore et al. 2003, FWS 2021).

Changes in temperature affect rate of tortoise egg development and incubation timing (Rostal et al. 1994, Lewis-Winokur and Winokur 1995). For Mojave desert tortoise, higher temperatures influence sex during embryo development; sustained high temperatures could result in all female clutches (FWS 2021b). Although reptile species with temperature-dependent sex determination have adapted to shifting temperature during natural climatic change (Booth 2006), a more rapid rate of change in climate may be limited by adaptive capacity of the Mojave desert tortoise (FWS 2011, FWS 2021b, Lovich et al. 2012, Lovich et al. 2017).

Precipitation events can affect Mojave desert tortoise clutch health; drought results in reduced clutch frequency while increased rainfall may increase clutch frequency (Lovich et al. 1999, Lovich et al. 2015, FWS 2021b). Increased precipitation and changes in vegetative cover can result in increased flooding in desert environments (FWS 2021b). In future conditions with increased flood events, tortoise individuals could become entrapped in burrows more frequently, especially during times of the year they are typically hibernating (Lovich et al. 2011, FWS 2011, Berry and Murphy 2019, FWS 2021b). Increased frequency and severity of flooding may also increase the probability of individuals being washed into culvert debris piles adjacent to roads, because tortoise frequent washes (Lovich et al. 2011). In addition, tortoise-proof fences are often breached during flood events, resulting in more potential for vehicular collisions (FWS 2011, FWS 2021b). Overall, increased flood events have the potential to directly impact Mojave desert tortoise mortality and injury rates (FWS 2021b).

Several local-level climate models projected substantial reductions in and movement upslope of suitable Mojave desert tortoise habitat under the anticipated effects of climate change (FWS 2022a). For example, at moderate predictions of climate change (+2°C maximum July temperature, -50 millimeters annual precipitation), modeled Mojave desert tortoise habitat at Joshua Tree National Park shrank by nearly 66% in the Mojave Desert portion and nearly 88% in the Sonoran Desert portion of the park (Barrows 2011, FWS 2022a). Similarly, models of the region surrounding Lake Mead National Recreation Area using a similar range of climate projections as those above predicted habitat reductions of up to 77% (Barrows and Murphy 2011, FWS 2022a).

In conclusion, climate change has been identified as a primary threat to Mojave desert tortoise (FWS 2022a). The combined effects of global climate change (i.e., increased ambient temperatures and altered precipitation patterns) and drought may increasingly influence the long-term persistence of the Mojave desert tortoise, including within the UVRU and Reserve (FWS 2011, FWS 2021b, FWS 2022a).

Desert Tortoise Abundance and Density

In 1998 the UDWR adopted line distance sampling to monitor Mojave desert tortoise populations across Zones 2 through 5 of the Reserve. The UDWR has reported density and abundance for Management Zones 2, 3, and 5 for all years of the study (i.e., typically biannually, 1998 to 2023; UDWR 2024). In the 2023 line sampling surveys, the UDWR estimated there are 2,425 adult tortoises within Zones 2, 3, and 5 of the Reserve, with the majority found in Zone 3 (1,681 adult tortoises; Table 7; UDWR 2024). This abundance is the highest recorded since 2005 and is likely influenced by high densities within Zone 2

(34.2 tortoises/km²), the translocation of displaced tortoises into Zone 4 (UDWR 2024), and the favorable environmental conditions observed in 2023. The FWS estimated the minimum density and abundance of adult Mojave desert tortoise by year for Zone 3 using UDWR’s available data. The FWS estimates are not corrected for the percent of tortoises above ground or visible in burrow, while UDWR’s data are corrected. FWS estimated that the minimum number of tortoises in 2023 was 1,614 adult tortoises in Zone 3 (Table 7).

Table 7. Estimated Adult Desert Tortoise Abundance and Density Estimates in Zone 3, 2017 to 2023

Survey Year	FWS Estimated Minimum Desert Tortoise Abundance	FWS Estimated Minimum Density*	UDWR Estimated Desert Tortoise Abundance	UDWR Estimated Adjusted Density
2017	1,538	9.7 (7.3 to 12.8, 95% CI)	1,824	19.0 (14.4-25.2, 95% CI)
2019	1,064	6.7 (4.7 to 9.5, 95% CI)	1,209	12.6 (9.0 to 17.7, 95% CI)
2023	1,614	10.1 (7.4 to 13.8, 95% CI)	1,681	17.5 (13.3 to 23.1, 95% CI)

Note: See note on Figure 8 for definitions of FWS Estimated Density and UDWR Estimated Adjusted Density. CI=95% Confidence Interval. UDWR estimates taken from UDWR 2024, which re-analyzed previous year’s estimates and pooled the detection function across all years of the study.

Detection of tortoises aboveground depends on temperature, the timing and amount of rainfall, and food plant availability, and can vary greatly from year to year independent of survey effort (Duda et al. 1999, Freilich et al. 2000, Lovich et al. 2014). Desert tortoises seek shelter during unfavorable conditions and remain mostly inactive during droughts (Duda et al. 1999, Freilich et al. 2000). Wet years with good germination of annual food plants are the best years to locate desert tortoises due to increased surface activity (Duda et al. 1999, Freilich et al. 2000, Lovich et al. 2014).

Record winter/spring precipitation and low spring temperatures in the Reserve during 2023 (NWS 2022, NWS 2023) increased plant growth which likely increased surface activity of tortoises and the number of tortoises detected during surveys that year (UDWR 2024). The severe drought conditions in the Reserve during 2018-2019 likely influenced a decrease in the number of tortoises observed during the spring 2019 tortoise surveys (UDWR 2020, USDM 2024). Therefore, the increase in tortoise observations/estimated abundance in Reserve Zone 3 from 2019 (1,181 tortoises) to 2023 (1,681 tortoises) was likely strongly influenced by the change from severe drought to the wettest water year on record in St. George (UDWR 2020, NWS 2022, NWS 2023, UDWR 2024, USDM 2024). Given the fluctuating environmental conditions that can affect surface activity and detectability of tortoises in a given year, the FWS recommends long-term line distance sampling surveys to estimate tortoise population abundance and density trends (FWS 2011, FWS 2022b).

In May of 2023 Washington County HCP staff conducted drone surveys over Zones 2 through 5 of the Reserve. Previously established pedestrian survey transects were photographed by aerial drones to generate density and abundance estimates for adult Mojave desert tortoise in each zone. This experimental drone survey methodology was previously successfully implemented in Zone 6 in 2022 (Washington County 2022). Using this methodology, it was estimated that Zones 2 through 5 of the Reserve support a relatively high number (2,779) and density (20.1/km²) of tortoises, consistent with previous estimates from pedestrian line-transect surveys. Drone surveys in Zone 3 estimated a density of 12.8 tortoises/km² (95% confidence interval [CI]: 8.2 to 19.8) and an abundance of 1,223 adult tortoises (95% CI: 790 to 1898; Washington County 2023a). While the 2023 Zone 3 drone surveys estimated a lower density and abundance than the 2023 pedestrian line-transects (see Table 7), there is large overlap in the 95% CIs, suggesting the difference is not statistically significant.

Drone surveys are a novel methodology, and the confidence intervals (95%) are accordingly large due to potential bias and other sampling errors. In particular, this novel technique may not account for the mobility of tortoises and potential for double-counting individuals as well as differences between juvenile and adult detection due to the use of aerial photography in classification, among other errors. The 2022 Zone 6 drone surveys, where this methodology was first implemented in the Reserve, were adjusted with a correction factor to account for differences in detection between pedestrian line-transect surveys and drone surveys (Washington County 2022). The drone estimates for the 2023 surveys in Zone 3 were not adjusted, likely because the 2023 pedestrian line-transect data was not available at the time. Therefore, the differences between drone surveys and pedestrian surveys may become even less once the correction factors are applied.

Relative density of Mojave desert tortoise is high in the Reserve, especially in the unburned, southern portions of Zone 3 where the Northern Corridor alignments are located (SEIS Figure 7; UDWR 2024 Figure 8). Relative observation density of Mojave desert tortoise throughout Zone 3 of the Reserve was mapped based on Mojave desert tortoise line transect survey data collected by UDWR in the Reserve between 2007 and 2023. Those survey data were used to generate a kernel density surface⁶ that models the relative density of adult Mojave desert tortoise observations on the landscape (Figure 7). This model reflects observation density but does not reflect imperfect detection nor areas that were not sampled due to the systematic spacing of transects. However, this analysis reveals that observed tortoises are not distributed evenly, and there are clusters located near the southern reaches of Zone 3. In addition, a high number of desert tortoises were found in unburned habitats west of Cottonwood Springs Road in Reserve Zone 3 (an area the UDOT ROW Application, T-Bone Mesa Alignment, and Southern Alignments would bisect; Figure 7) and other similar unburned areas in the Reserve containing high native shrub and annual plant diversity (UDWR 2024).

Although the population in Reserve Zones 1–5 is considered relatively stable, over 25 years of monitoring by the UDWR has observed a localized decline of adult tortoise densities in Zone 3 (Figure 8). During the first several years of monitoring (1998 to 2001), tortoise densities were consistently high; however, following stochastic events, including drought (e.g., 2002) and wildfire (e.g., 2005, 2020), tortoise densities decreased over 50%, from an estimated 3,409 adult tortoises in 2001 to 1,681 adults by 2023 (UDWR 2024). While monitoring indicates populations may have stabilized since 2009 in Zones 1–5 (UDWR 2024), overall, density and abundance estimates show a decreasing trend over time (see Figure 8 and Table 7).

Juvenile and immature tortoises are more difficult to observe than adults, due in part to their small size, and their numbers are often underrepresented in monitoring efforts (Wilbur 1975, Bourn and Coe 1978, Berry and Turner 1986, Wilson et al. 1994, UDWR 2024). The majority of tortoises encountered during 2023 monitoring in the Reserve were reproductive adults (85%); 15% of the tortoises observed had a carapace (hard upper shell) length of less than 180 millimeters (i.e., were juvenile and immature tortoises; UDWR 2024). The percentage of juvenile and immature tortoises observed in 2023 in the Reserve was below average from previous years (19%; 1998–2019), which varied from 13% in monitoring year 2000 to 26% in 1998 (UDWR 2024). Allison and McLuckie (2018) determined that the odds of encountering a juvenile from 1999 to 2014, not only in the Reserve but in all recovery units across the tortoises' range, have declined since 2007. This may be a reflection of reduced reproduction and increased mortality across the range of the desert tortoise, a result primarily of drought, predation (e.g., ravens), and habitat degradation (e.g., from fire; Darst et al. 2013, UDWR 2024, FWS 2019a, FWS 2021, FWS 2022a).

⁶ Kernel density is a geoprocessing tool used to estimate density from point-based or line-based data. Kernel density estimation has been widely used for various purposes, such as point or line data smoothing, risk mapping, and hot spot detection.

Figure 7. Relative Observation Density of Desert Tortoise in the Reserve

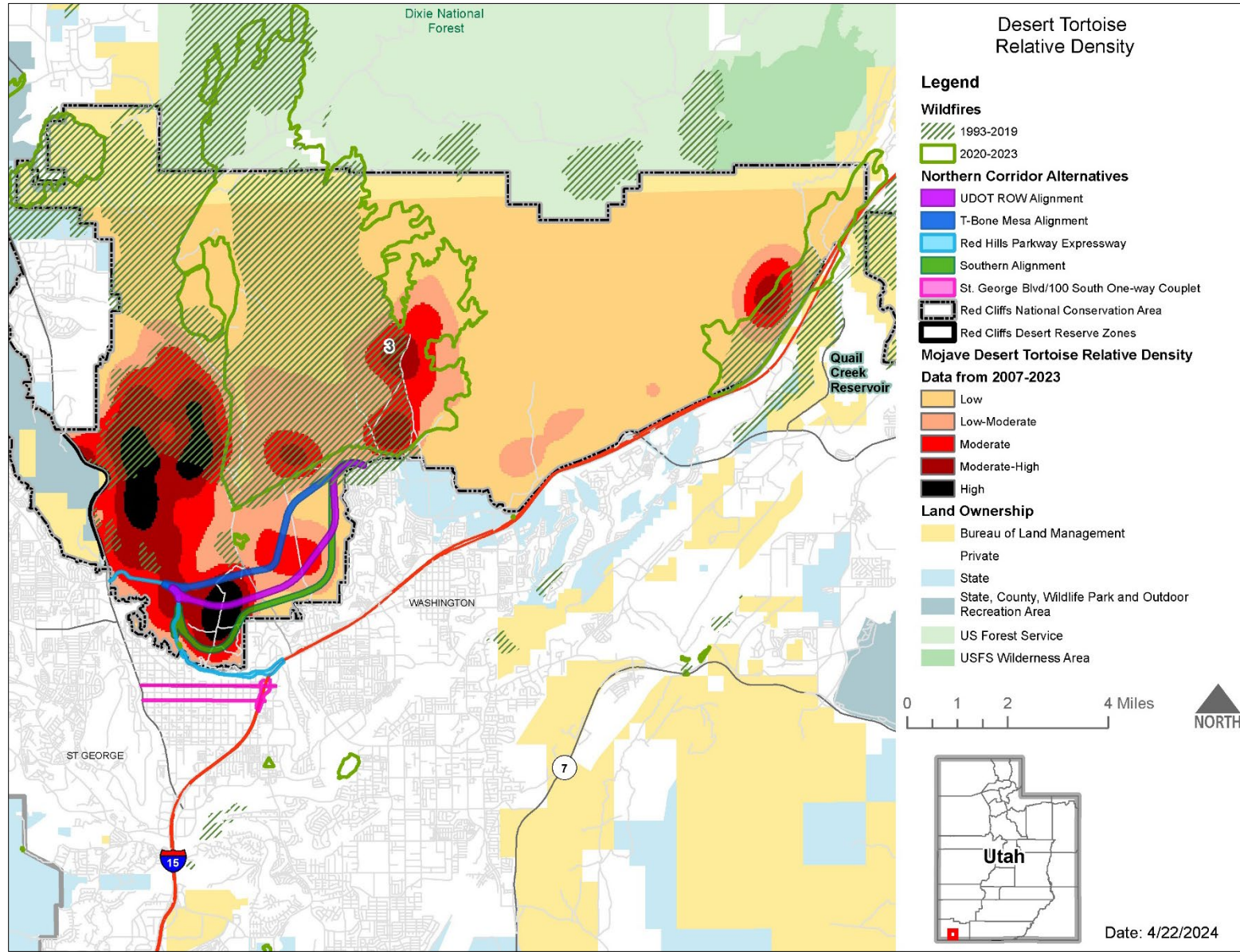
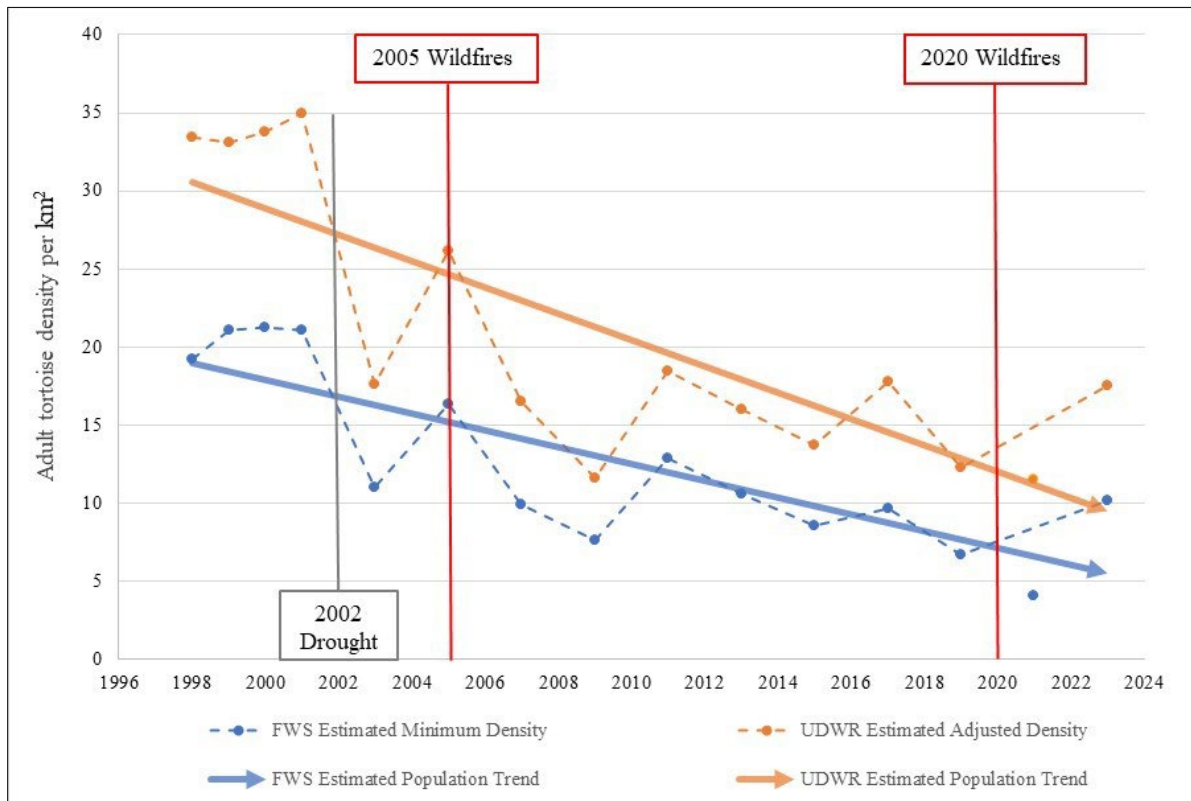


Figure 8. Estimated Adult Desert Tortoise Density in Zone 3, 1998 to 2023



Note: FWS Estimated Density – This analysis shows the estimated minimum density of tortoise by year for Zone 3 of the Reserve and overall population trend data using UDWR’s available line-distance monitoring data. These data are not corrected for tortoises not visible, or that may be in burrows, or for level of survey effort (that is, amount of area that is not surveyed). This means actual densities are likely higher and these data represent the minimum density and abundance in Zone 3. UDWR Adjusted Density – These data are adjusted for tortoises not visible and survey effort (unsurveyed areas). See UDWR 2024 for more detailed methodology.

Desert Tortoise in Zone 6

Analysis in the Final EIS on Zone 6 remains largely relevant to this discussion (see Final EIS, pages 3-62 and 3-83), especially since the future management of non-Federal lands in Zone 6 depends in large part on which alternative is selected. Since publication of the Final EIS however, there is new data that provides refined density and abundance estimates for Zone 6. Zone 6 represents a large and contiguous block of habitat in Washington County and protects the largest known sub-population of tortoises that would otherwise be subject to take on non-Federal lands under the Amended HCP ITP. Across Zone 6, approximately 6,760 acres are considered occupied Mojave desert tortoise habitat (53 acres were not included as suitable Mojave desert tortoise habitat based on USGS modeled criteria).

Pedestrian line-transect surveys conducted in 2017 on 5,150 acres within Zone 6 and adjacent habitat revealed a much larger population of Mojave desert tortoise in the area than previously identified. In 2022, Washington County HCP staff used a combination of pedestrian line-transects and experimental drone surveys, as described in the previous section, in Zone 6 to establish improved baseline abundance and density estimates, including in previously unsurveyed acreage in the Red Bluffs ACEC. Spatial overlap of the two survey methods was used to calibrate the methods and ensure tortoise estimates generated by the novel drone-based approach were within the range of line-transect generated estimates. Pedestrian line-transects were not walked in the ACEC due to the presence of sensitive soils for the endangered dwarf bear-poppy. Due to a higher detection rate by pedestrian line-transects, a correction factor was applied to calibrate the drone methodology used in the ACEC (Washington County 2022).

The 2022 surveys in Zone 6 areas found similar densities to the areas surveyed in 2017, indicating that Zone 6 supports a relatively high density of adult Mojave desert tortoises. Drone surveys conducted in the ACEC found significantly higher densities (31.4 tortoises/km² [95% CI: 20.5 to 47.4]) than those used in the Final EIS (1.3 tortoises/km²) (Washington County 2022). Due to the previous likely underestimate of abundance, particularly on unsurveyed ACEC lands, the Zone 6 estimates have been updated based on this new information (FWS 2023). Non-Federal lands in Zone 6 are estimated to support an abundance of 328 tortoises (95% CI: 242 to 445) and Federal lands support an abundance of 408 tortoises (95% CI: 275 to 598) Mojave desert tortoises (see Table 8). The total area of Zone 6 is estimated to support an abundance of 736 desert tortoises (95% CI: 517 to 1043), indicating Zone 6 supports a relatively large and dense population of tortoises within the UVRU. Current calculations vary slightly from those presented in the final survey report (Washington County 2022) to account for approximately 500 acres of unsurveyed habitat. The 95% confidence intervals for both estimates substantially overlap, suggesting the differences are not statistically significant.

Zone 6 offers additional protection to tortoises within the UVRU, however, the long-term abundance and density trends within Zone 6 are unknown. Due to the lack of long-term monitoring in Zone 6, limited to systematic surveys from 2017 and 2022, trends previous to those years cannot be inferred in this part of the Reserve. Between 2017 and 2022 efforts, survey estimates indicate tortoise populations in Zone 6 have likely remained stable or slightly increased over the past 5 years (Washington County 2022).

The establishment of Zone 6 provided conservation benefits to the desert tortoise and increased the existing acreage of the Reserve by approximately 11%. The addition of Zone 6 to the Reserve provides additional protection to approximately 736 adult desert tortoises and 6,813 acres of habitat (both Federal and non-Federal; Table 8). Habitat in Zone 6 has not been impacted by fires in the recent past and is separated from the other zones geographically. As such, Zone 6 may serve as a refuge population less prone to the threats of weeds, fire, and disease and may therefore preserve genetic and behavioral representation through habitat corridors connecting analytical units and recovery units. The protection of this additional habitat may increase the viability of desert tortoises by increasing the number of tortoises living within protected habitat and providing increased resiliency and redundancy against the cumulative threats they face in the UVRU (FWS 2021c).

Table 8. Abundance of Adult Mojave Desert Tortoise in Zone 6 of the Reserve.

Habitat Unit	Survey Area and Observations	Estimated Density	Number of Adult Mojave Desert Tortoise
Non-Federal lands in Zone 6 (Systematic line-distance survey data available in 2017 and 2022)	13.52 km ² (3,340 acres) total survey area	24.3 tortoises/km ²	328 (95% CI: 242 – 445)
Federal lands in Zone 6 (Systematic line-distance survey data available in 2017 and 2022 and drone survey data in 2022)	14.04 km ² (3,469 acres) total survey area ACEC lands: 9.44 km ² surveyed Non-ACEC lands: 4.60 km ² surveyed	ACEC lands: 31.4 tortoises/km ² Non-ACEC lands: 24.3 tortoises/km ²	408 (95% CI: 275 – 598)

Desert Tortoise in the Upper Virgin River Recovery Unit

A range-wide Mojave desert tortoise population estimate in 2014 documented a decline of almost 125,000 adult tortoises over a 10-year period, representing a nearly 37% overall population decline (Allison and McLuckie 2018). According to overall extrapolated density estimates within the UVRU, densities of Mojave desert tortoise in the UVRU are declining at a rate of approximately 3.2% per year, lower than

other tortoise populations across the range, including Colorado Desert (4.5%), Eastern Mojave (11.2%), and Western Mojave (7.1%) (Allison and McLuckie 2018). If tortoises in the UVRRU continue this downward trajectory at the same rate of decline (3.2%), they could become more vulnerable to future stochastic events and habitat impacts, particularly considering the small size of the UVRRU and its proximity to growing urbanized areas.

Densities within the Reserve are currently higher than many other Mojave desert tortoise populations range wide. Densities across the range outside of the UVRRU are thought to range from 1.7 to 14.2 tortoises per km² (FWS 2020). While the UVRRU hosts a higher density of adult Mojave desert tortoises than any other Mojave desert tortoise conservation area^s (Berry and Murphy 2019), the small geographic size of the Reserve and UVRRU increases the vulnerability of the population. Therefore, the long-term survival and population viability of Mojave desert tortoises in the UVRRU and Reserve will depend upon the reduction, avoidance, and mitigation of primary threats to the species.

Large expanses of high-quality tortoise habitat are necessary to provide resilience to populations as they fluctuate due to threats (Averill-Murray et al. 2021, FWS 2022a). Primary threats to Mojave desert tortoise in the UVRRU and Reserve include wildfire, invasive plants, drought, habitat degradation, fragmentation and loss, human access, recreation, paved and unpaved roads, disease, and predation (FWS 2011, FWS 2021b, FWS 2022a). Tortoise habitat bordering the Reserve is rapidly changing and areas that were once accessible to tortoises are now inaccessible due to development, preventing immigration from adjacent tortoise populations. As habitat is fragmented and lost, habitat patches become smaller, patch populations (e.g., clusters of tortoises) have fewer tortoises and become more disjunct, extinction probabilities within patches increase, and the number of occupied patches decreases (Fahrig 2002, Ovaskainen et al. 2002, FWS 2022a). Human activities can also have negative impacts on tortoise populations and illegal collection and intentional killing may be a factor contributing to tortoise declines (Grandmaison 2012).

Although many human related threats have been removed or minimized within the Reserve (e.g., grazing, off-road vehicles, dumping/littering), recreational impacts, habitat fragmentation, habitat degradation, and utility and maintenance are continued cumulative threats to tortoise populations.

Environmental Consequences

The estimated number of Mojave desert tortoise to be relocated from the ROW and within the area that may experience indirect effects from the ROW (refer to Tables 4 and 5) is based upon estimates of abundance of Mojave desert tortoise in Zone 3 for 2007-2023 (UDWR 2024), using a kernel density analysis (refer to Figure 7). Total adult tortoises impacted by indirect effects include all Reserve lands within the 508-meter buffer (or 300-foot buffer if a previously established roadway) to the north of each alternative ROW, and any additional fragmented habitat south of each ROW (the 508-meter buffer is the generally accepted annual home range area of adult desert tortoises, although home range sizes vary between males and females, and is influenced by resources, location, and weather; Franks et al. 2011, FWS 2011). This analysis follows the methodology and assumptions used in the Final EIS (data from 2007-2017) with updated tortoise data through 2023 (see Final EIS pages 3-73 and 3-78 and Table 5 above). Because Mojave desert tortoises move around, the exact number of Mojave desert tortoises that need to be moved out of the ROW or that may experience indirect effects may be more or less under each of the three proposed alignments through the Reserve. Permanently modified habitat, loss of areas with concentrated tortoise use, and habitat fragmentation may result in long-term consequences to the conservation of the Mojave desert tortoise.

As the UDWR survey data indicates (Figure 7), tortoise observations are not distributed evenly. BLM and FWS used this information to better estimate the number of tortoises that could be impacted by the alternatives instead of using the previously estimated overall density for Zone 3 (17.5 adult tortoises/km²). These estimates, updated to include tortoise data through 2023, are shown in Table 9. The number of Mojave desert tortoises affected differs from those previously analyzed in the Final EIS (see Table 5).

This is likely due to the change in tortoise abundance within Zone 3 from 2017, the last year of survey data available prior to the Final EIS (1,824 in 2017 and 1,681 in 2023; Table 7), and changes in locations of tortoise observations since 2017 (Figure 8). The acres of designated critical habitat affected have not changed from the Final EIS and those numbers are not repeated here but are shown in Table 5.

Table 9. Potential Number of Adult Tortoises Impacted in the Reserve

Alternative	Potential Number of Adult Tortoises Translocated (within ROW)	Number of Adult Tortoises with Indirect Impacts (from ROW)	Number of Tortoises Subject to Take in Zone 6	Total Number of Tortoises Affected by the Alternative
UDOT ROW Alignment	31	275	0	306
T-Bone Mesa Alignment	27	357	0	384
Southern Alignment	31	189	0	220
Red Hills Parkway Expressway	0	3	328	331
St. George Boulevard/100 South One-way Couplet	0	0	328	328
Terminate UDOT's ROW	0	0	328	328

Note: Under the Red Hills Parkway Expressway, St. George Boulevard/100 South One-way Couplet, or Terminate UDOT's ROW alternatives, the non-Federal lands in Zone 6 could be developed, as described in Section 2.2. As per HCP protocols, surveys would be conducted, and tortoises would be relocated prior to development.

UDOT ROW Alignment (Affirm Current ROW Grant)

Construction and operation of a Northern Corridor within the NCA under the UDOT ROW Alignment would cause direct loss of occupied tortoise habitat, displacement and short-distance translocation of tortoises, and destruction of burrows. Indirect effects include increased threat of wildfire by providing additional ignition sources from construction and vehicles as well as facilitating additional spread of noxious weeds and invasive vegetation contributing to increased fuel load. This could result in further direct tortoise mortality as well as increased habitat loss and degradation if wildfires occurred on previously unburned areas. Shortened fire return intervals due to increased ignition sources and fuels may contribute to the extirpation of Mojave desert tortoise populations within the UVRRU and Reserve.

Additionally, tortoises would be affected by disturbance from noise and vibrations associated with construction and use of the highway, facilitating human intrusion into Mojave desert tortoise habitat, spreading trash and toxins in the environment, influencing predator abundance and distribution, disrupting home range and landscape movement patterns, and fragmenting habitat within lands specifically identified for the protection and long-term management of Mojave desert tortoise. Direct and indirect impacts of this alternative remain similar to those analyzed in the Final EIS for the ITP (Final EIS page 3-77). Due to the change in estimated abundance and observations from the FEIS (using 2017 abundance information) to the 2023 information, as noted earlier, the total number of Mojave desert tortoise that would be affected changed from 368 in the Final EIS to 306 in the SEIS analysis.

Under this alternative, the FWS would affirm the ITP under the Northern Corridor changed circumstance and incidental take of Mojave desert tortoise associated with 3,338 acres of tortoise habitat on non-Federal lands within Zone 6 would not be part of the County's ITP. In addition, the County would continue their obligations under the Northern Corridor changed circumstance, including funding of law enforcement, public outreach and education, and personnel that would support tortoise-related management as well as financial resources to support fire management and habitat restoration and tortoise passage structures.

T-Bone Mesa Alignment

Construction and operation of a Northern Corridor within the NCA under the T-Bone Mesa Alignment would result in similar impacts to tortoises as the UDOT ROW Alignment. Differences in habitat lost, habitat fragmented, and potential translocations under each alternative can be found in Table 4 and Table 9. Table 9 shows that the number of tortoises that would be directly and indirectly impacted under the T-Bone Mesa Alignment (384 tortoises) would be more than the UDOT ROW Alignment (306 tortoises). Due to the change in estimated abundance and observations from the FEIS (using 2017 abundance information) to the 2023 information, as noted earlier, the total number of Mojave desert tortoise that would be affected by this alternative decreased from 493 in the Final EIS to 384 in the SEIS analysis. The impacts in Zone 6 would be the same as the UDOT ROW Alignment.

Southern Alignment

Construction and operation of a Northern Corridor within the NCA under the Southern Alignment would result in similar impacts to tortoises as the UDOT ROW Alignment. Table 9 shows that the number of tortoises that would be directly and indirectly impacted under the Southern Alignment (220 tortoises) would be less than both the UDOT ROW Alignment and the T-Bone Mesa Alignment. Due to the change in estimated abundance and observations from the FEIS (using 2017 abundance information) to the 2023 information, as noted earlier, the total number of Mojave desert tortoise that would be affected by this alternative decreased from 293 in the Final EIS to 220 in the SEIS analysis. The impacts in Zone 6 would be the same as the UDOT ROW Alignment.

Red Hills Parkway Expressway

No additional Mojave desert tortoise habitat would be lost as a result of selecting the Red Hills Parkway Expressway (see footnote to Table 5). Consequently, the acres of habitat that could be impacted by this alternative is lower than the three alternatives located wholly within the NCA. The potential number of adult tortoises translocated from within the ROW for this alternative is zero (which is a change from one in the Final EIS), and the number of adult tortoises with indirect impacts from the ROW is three (which is a change from one in the Final EIS). This difference from the Final EIS is due to the change in estimated abundance and observations from the Final EIS (using 2017 abundance information) to the 2023 information, as noted earlier. These tortoises may be indirectly impacted, for instance by road noise and vehicle vibrations, but this is not new disturbance as the roadway already exists.

Under this alternative, the Northern Corridor changed circumstance is not triggered, thus eliminating Zone 6 from the Reserve as mitigation for the Northern Corridor Highway, and non-Federal lands in Zone 6 would be subject to covered activities through the HCP (e.g., land development) and increased activity that could potentially increase impacts to Mojave desert tortoise. As a result of selecting this alternative, development of the non-Federal lands within the Zone 6 boundaries (3,338 acres) may occur and Mojave desert tortoises on non-Federal land in Zone 6 (328 tortoises, see Tables 8 and 9) would be subject to take under covered activities in the ITP. Mojave desert tortoises displaced by development would be translocated (i.e., moved outside their home range) to appropriate locations facilitated by the County's Mojave desert tortoise conservation program in coordination with UDWR. Translocations would occur through the term of the ITP (25 years) or until such time that all covered activities are finished, or all clearances have been completed and there would be no more need for salvage collection.

Under this alternative, the FWS would amend the ITP to allow for incidental take of Mojave desert tortoise on 3,338 acres of tortoise habitat on non-Federal lands within Zone 6 as a result of covered activities. The 3,338 acres of non-Federal lands within Zone 6 would become available for future development, resulting in potential direct impacts to tortoise habitat, fragmentation, and potentially increasing the wildland-urban interface between the population of tortoises located on BLM-managed lands to the west. Development of the non-Federal lands within the Zone 6 boundaries would result in indirect effects up to 508 meters out from the development as well (approximately 2,270 acres). With the elimination of Zone 6, the habitat on non-Federal lands would also be subject to degradation and loss

from the use of unmanaged motorized and non-motorized recreational activities on and off trails. In addition, tortoise habitat could be at a greater risk of wildfires due to dispersed camping.

The BLM would continue to manage 3,475 acres of Federal lands within Zone 6 consistent with the St. George Field Office RMP. No direct effects to tortoises located on Federal lands would be anticipated.

As previously described (Section 2.2), additional resources provided by the County under the Northern Corridor changed circumstance would also not be available to benefit Mojave desert tortoise. This includes funding of law enforcement, public outreach and education, or personnel that would support the tortoise-related management. In addition, financial resources to support fire management, habitat restoration, and tortoise passage structures would also not be available.

Direct and indirect impacts of the ITP without the Northern Corridor changed circumstance remain similar to those analyzed in the Final EIS (page 3-74).

St. George Boulevard/100 South One-way Couplet

The St. George Boulevard/100 South One-way Couplet would involve reconfiguring existing roadways within the City of St. George, causing no additional disturbance to the Mojave desert tortoise or its habitat in the NCA. If this alternative is selected, Zone 6 would no longer be part of the Reserve and impacts would be the same as described for the Red Hills Parkway Expressway for Zone 6.

Terminate UDOT's ROW

Termination of UDOT's ROW would result in no additional disturbances to the Mojave desert tortoise or its habitat within the NCA. The Northern Corridor changed circumstance would not be triggered, Zone 6 would no longer be part of the Reserve, resulting in impacts that would be the same as what is described for the Red Hills Parkway Expressway for Zone 6.

3.6 ESA Section 6 Land Acquisition Grants

Section 6 of the ESA authorizes grants to states for conservation efforts on non-Federal lands through what is commonly referred to as the Cooperative Endangered Species Conservation Fund. This analysis identifies properties—hereafter referred to as Section 6 lands—that have been acquired using Section 6 grants awarded to the State of Utah, Utah Division of Wildlife Resources. The analysis area for the evaluation of impacts is the Reserve boundary, and potential impacts are analyzed for the proposed Northern Corridor alternatives; no Section 6 lands occur in Zone 6.

3.6.1 2020 Final EIS Summary

Section 3.6 of the Final EIS (pages 3-94 to 3-102) discusses ESA Section 6 land acquisition grants within the Reserve. Within the Reserve, all Section 6 lands were acquired using Habitat Conservation Plan Land Acquisition Grants. States awarded Section 6 grants must manage these land grants in accordance with the executed grant agreements. If compliance with the terms and conditions of the executed grant agreements for long-term conservation cannot be achieved, then the property or properties acquired through the grant or property used to match the grant funds is subject to transfer, replacement, or repayment to the United States government.

The Final EIS stated that the Cooperative Endangered Species Conservation Fund had been used to acquire approximately 3,059 acres of private in-holdings within Zones 1 through 5 of the Reserve. The parcels that may be affected by the Northern Corridor were purchased between 2003 and 2015 by the State through Habitat Conservation Planning Land Acquisition Grants. The purpose of these grants is to complement an existing Habitat Conservation Program, in this case, Washington County's Amended HCP. All of the lands acquired have a similar grant objective, or long-term conservation goal, which is "to be operated by the UDWR and/or Utah Division of Parks and Recreation, Snow Canyon State Park as a wildlife preserve for the Mojave desert tortoise and other wildlife biodiversity species, in accordance with the Washington County Habitat Conservation Plan and the Desert Tortoise Recovery Plan, and for limited, controlled public access for wildlife viewing." These lands are managed in keeping with this objective.

The Turkey Farm Road and Lava Ridge fires affected approximately 764 acres of Section 6 lands east of Cottonwood Springs Road within the Reserve. The extent of the damage on Section 6 lands was unknown at the time of the Final EIS but was anticipated to include wildlife and habitat loss. While degradation of these parcels may have compromised the existing conservation value of these parcels through permanent and temporary habitat loss, the lands are still managed in accordance with the executed grant agreements.

The Final EIS found that the St. George Boulevard/100 South One-way Couplet alternative would have no direct or indirect impacts to Section 6 lands. One Section 6 parcel is located directly adjacent to Red Hills Parkway at its western terminus with Bluff Street; the Red Hills Parkway Expressway would not require further expansion of the road or ROW acquisition within 1 kilometer of this location. Therefore, no physical encroachment or fragmentation of Section 6 lands would occur. The parcel would retain its conservation value and continue to serve its intended purpose, and the Red Hills Parkway Expressway would comply with the terms and conditions for long-term conservation set forth in the grant.

The Final EIS found that five Section 6 parcels are either wholly or partially within 1 kilometer of the T-Bone Mesa Alignment proposed ROW. All these parcels are within areas of primarily medium to low relative tortoise density in Zone 3 of the Reserve and, in total, amount to approximately 765 acres. Three parcels provide valuable, relatively continuous habitat east of Cottonwood Springs Road—which acts as a barrier to Mojave desert tortoise—by linking State-owned lands with BLM-managed lands in this core zone of the Reserve. Two of these parcels comprise approximately 671 contiguous acres. Bounded by development to the south, east, and west, Parcel 5 currently serves as a buffer between existing development in the City of St. George and the open space of the Reserve. While this parcel has been incorporated into the Reserve since its purchase in 2015, fencing still exists on the northern boundary of the parcel. If the T-Bone Mesa Alignment were selected, a total of approximately 418 acres of Section 6 lands would be lost, accounting for approximately 14% of Section 6 lands within the Reserve.

The Final EIS found that four Section 6 parcels are either wholly or partially within 1 kilometer of the UDOT ROW Alignment, totaling approximately 705 acres. The UDOT ROW Alignment would generally have the same direct and indirect impacts to three of the parcels as described for the T-Bone Mesa Alignment, including the assessment of remaining conservation value. However, the UDOT ROW Alignment would result in less direct habitat loss and potential fragmentation. A total of approximately 341 acres of Section 6 lands would be lost, accounting for approximately 11% of existing Section 6 lands within the Reserve.

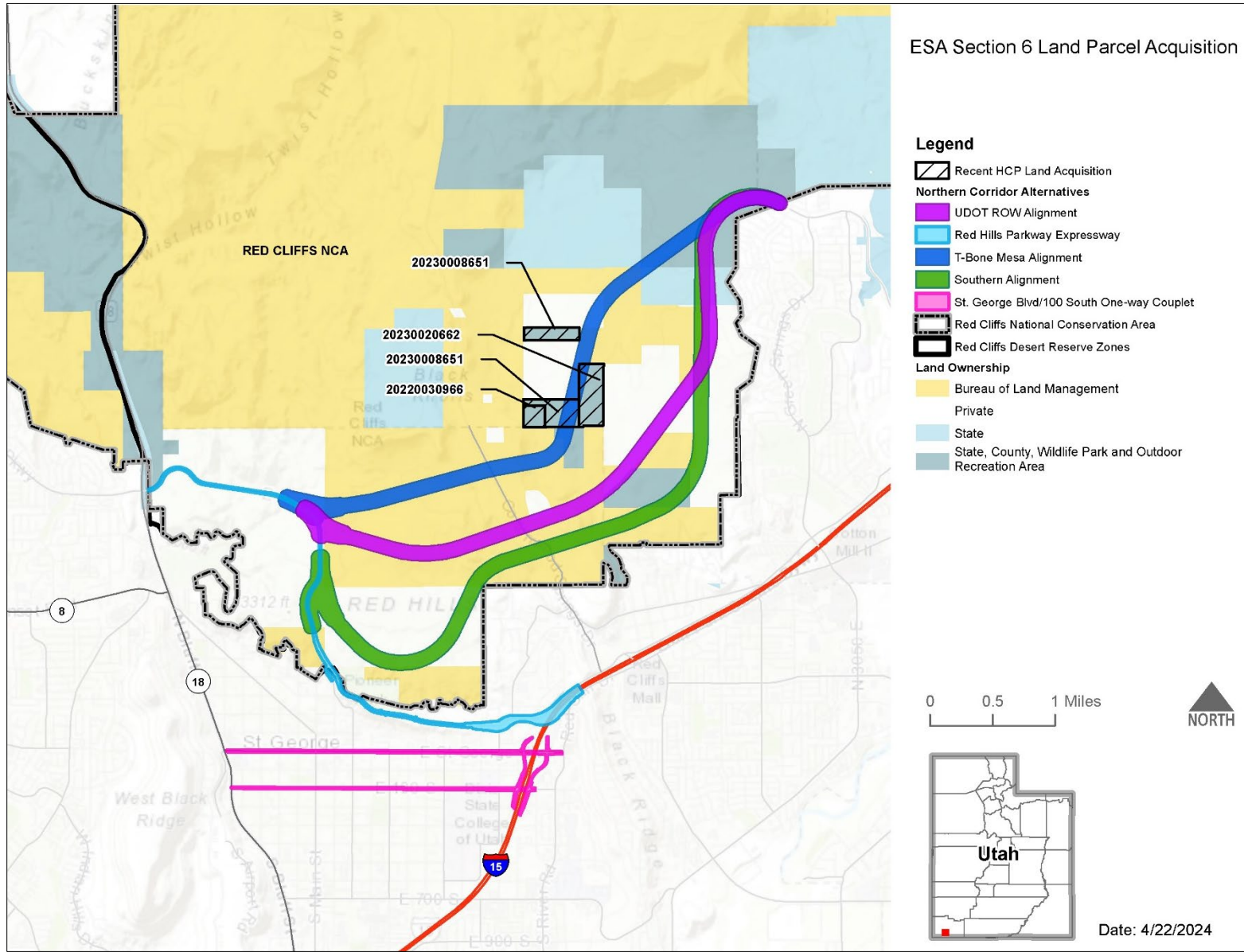
The Final EIS found that the Southern Alignment would have slightly more physical encroachment on Section 6 lands and more total acres of indirect impacts because of proximity to the road and overall fragmentation. If the Southern Alignment were selected, a total of approximately 355 acres of Section 6 lands would be lost, accounting for approximately 12% of existing Section 6 lands within the Reserve.

3.6.2 Supplemental Analysis

Affected Environment

Since the Final EIS, the FWS awarded one Section 6 Habitat Conservation Plan land acquisition grant to the UDWR for acquisition of land within the Reserve and three new Section 6 land parcels have been added (Figure 9). These are Parcel 20230008651 (46 acres; comprised of County parcel 6602-A and 6602-B), Parcel 20220030966 (12 acres; County parcel 6600-NP-9), and Parcel 20230020662 (62 acres; County parcel 6810-D-12). These parcels have been acquired in part with grant funds provided by the FWS, pursuant to the ESA Section 6 Grant Program, and are to be managed for the purpose of this grant, in accordance with applicable Federal and State law.

Figure 9. Recent Section 6 Land Acquisitions



The new parcels consist of approximately 120 acres and are located in an area that has moderate tortoise density and high tortoise connectivity. To adequately assess potential changes to these lands, consideration must be given to the purpose of the grant and the associated land's conservation value with respect to the agreed upon conservation purposes. The analysis considers direct impacts to the parcels themselves and indirect impacts (up to 1 kilometer) that may result from proximity to the proposed Northern Corridor. It also considers how Section 6 lands work in concert to achieve the long-term conservation goal of the grants and the indirect effects that may occur.

Indicators for changes to Section 6 lands include encroachment or proximity impacts to these lands that result in the parcel or parcels no longer complementing Washington County's Amended HCP and, therefore, not meeting the long-term conservation goal or purpose, resulting in a violation of executed grant agreement terms and conditions. Consideration of degradation in conservation value takes into account potential impacts to Mojave desert tortoise and other special status wildlife, general wildlife, and wildlife viewing opportunities for the public as follows:

- Portions of Section 6 lands within ROWs of the Northern Corridor alternatives would result in a direct loss of habitat to Mojave desert tortoise and other wildlife species.
- Portions of Section 6 lands within 508 meters of the proposed ROWs would result in indirect impacts to Mojave desert tortoise from disturbance.
- Portions of Section 6 lands within 1 kilometer of the proposed ROWs would result in indirect impacts to special status and general wildlife species because of habitat degradation.

Environmental Consequences

UDOT ROW Alignment (Affirm Current ROW Grant)

None of the new parcels would be directly encroached upon by the UDOT ROW Alignment (Table 10); there would not be a direct loss of habitat for Mojave desert tortoise and other wildlife species within these lands. Approximately 6 acres of Parcel 20230020662 is located within 508 meters of the UDOT ROW Alignment, resulting in indirect disturbance to Mojave desert tortoise on 10% of the parcel. The entirety of this parcel is within 1 kilometer of this ROW, resulting in indirect degradation of 62 acres of habitat for special status and general wildlife species. Portions of Parcels 20220030966 and 20230008651 are also located within 1 kilometer of this ROW. Approximately 9 acres of habitat for special status and general wildlife species within Parcel 20220030966 and 24 acres within Parcel 20230008651 would be indirectly impacted due to degradation (representing 75% and 52% of the parcel acreage, respectively).

The ROW would fragment the habitat to the south and east between the parcels and the Reserve boundary. For all wildlife that may inhabit these Section 6 lands, construction of the roadway would result in habitat loss within the ROW and further habitat degradation because of fragmentation and road proximity impacts, such as noise and visual intrusion (Table 11). While Section 6 land would remain following fragmentation, the conservation value of the remaining lands may be degraded so it no longer meets the intended purpose of long-term conservation. Overall, this alternative would result in indirect impacts to Mojave desert tortoise from disturbance of 5% of the new parcels within 508 meters of the ROW and indirect habitat degradation on 79% of the new parcels within 1 kilometer of the ROW.

These new Section 6 lands, when added to those that were disclosed in the Final EIS, indicates a total of 825 acres of Section 6 lands that could be directly or indirectly impacted by the UDOT ROW Alignment. This would include 47 acres that would be directly impacted within the ROW, 292 acres that are within 508 meters of ROW, and 665 acres that are within 1 kilometer of the ROW.

Table 10. UDOT ROW Alignment Habitat Loss and Proximity-Related Degradation on New Section 6 Lands

Parcel No.	Parcel Size (acres)	Acres within ROW	Acres within 508 Meters	Acres within 1 Kilometer
20230008651	46	0	0	24
20220030966	12	0	0	9
20230020662	62	0	6	62
Total	120	0	6	95

Note: Acres were calculated in GIS and are rounded to the nearest acre. These totals may differ from deeded acreage. 1 kilometer and 508 meters are measured from the 500-foot proposed ROWs.

Table 11. UDOT ROW Alignment Section 6 Lands Fragmentation

Parcel No.	Parcel Size (acres)	Acres Remaining after ROW Encumbrance	Acres That May Remain for Desert Tortoise	Acres That May Remain for Other Wildlife Species
20230008651	46	46 (no change)	46 (no change)	22
20220030966	12	12 (no change)	12 (no change)	3
20230020662	62	62 (no change)	56	0
Total	120	120	114	25

Note: Acres remaining for Mojave desert tortoise were calculated after deducting the ROW and 508 meters from the ROW. For other species, habitat remaining was calculated after deducting the ROW and 1 kilometer from the ROW.

T-Bone Mesa Alignment

Under this alternative, the BLM would affirm the ROW grant to UDOT across public lands in the NCA but show the T-Bone Mesa Alignment as the approved highway corridor. Portions of two of the new Section 6 parcels would be directly encroached upon by the T-Bone Mesa Alignment; approximately 11 acres of Parcel 20230008651 and 5 acres of Parcel 20230020662 would be crossed by this alignment (Table 12). There would be a direct loss of habitat for Mojave desert tortoise and other wildlife species within these lands, representing 24% of Parcel 20230008651 and 8% of Parcel 20230020662.

Approximately 44 acres of Parcel 20230008651 is located within 508 meters of the T-Bone Mesa Alignment ROW, resulting in indirect disturbance to Mojave desert tortoise on 96% of the parcel. The entirety of Parcels 20220030966 and 20230020662 are located within 508 meters of the alignment, resulting in indirect disturbance to Mojave desert tortoise on 100% of those lands. The entirety of the three new parcels is located within 1 kilometer of this ROW, resulting in indirect degradation of 120 acres of habitat for special status and general wildlife species on these lands.

The T-Bone Mesa Alignment would fragment the habitat to the south and east between the parcels and the Reserve boundary. For all wildlife that may inhabit these Section 6 lands, construction of the roadway would result in habitat loss within the ROW and further habitat degradation because of fragmentation and road proximity impacts, such as noise and visual intrusion (Table 13). While Section 6 lands would remain following fragmentation, the conservation value of the remaining lands may be degraded so it no longer meets the intended purpose of long-term conservation. Overall, this alternative would result in direct impacts to 13% of the lands within the new parcels, indirect impacts to Mojave desert tortoise from disturbance of 98% of the new parcels within 508 meters of the ROW, and indirect habitat degradation on 100% of the new parcels within 1 kilometer of the ROW.

These new Section 6 lands, when added to those that were disclosed in the Final EIS, indicates a total of 885 acres of Section 6 lands that could be directly or indirectly impacted by the T-Bone Mesa Alignment. This would include 82 acres that would be directly impacted within the ROW, 470 acres that are within 508 meters of ROW, and 679 acres that are within 1 kilometer of the ROW.

Table 12. T-Bone Mesa Alignment Habitat Loss and Proximity-Related Degradation on Section 6 Lands

Parcel No.	Parcel Size (acres)	Acres within ROW	Acres within 508 Meters	Acres within 1 Kilometer
20230008651	46	11	44	46
20220030966	12	0	12	12
20230020662	62	5	62	62
Total	120	16	118	120

Note: Acres were calculated in GIS and are rounded to the nearest acre. These totals may differ from deeded acreage. 1 kilometer and 508 meters are measured from the 500-foot proposed ROWs.

Table 13. T-Bone Mesa Alignment Section 6 Lands Fragmentation

Parcel No.	Parcel Size (acres)	Acres Remaining after ROW Encumbrance	Acres That May Remain for Desert Tortoise	Acres That May Remain for Other Wildlife Species
20230008651	46	35	2	0
20220030966	12	12 (no change)	0	0
20230020662	62	57	0	0
Total	120	104	2	0

Note: Acres remaining for Mojave desert tortoise were calculated after deducting the ROW and 508 meters from the ROW. For other species, habitat remaining was calculated after deducting the ROW and 1 kilometer from the ROW.

Southern Alignment

Under this alternative, the BLM would affirm the ROW grant to UDOT across public lands in the NCA but show the Southern Alignment as the approved highway corridor. None of the new Section 6 parcels would be directly encroached upon by the Southern Alignment (Table 14); there would not be a direct loss of habitat for Mojave desert tortoise and other wildlife species within these lands. Furthermore, none of the new parcels are located within 508 meters of the Southern Alignment ROW so there would be no indirect disturbance to Mojave desert tortoise. Neither Parcel 20230008651 nor Parcel 20220030966 are located within 1 kilometer of the ROW. Parcel 20230020662 is the only new parcel that is located within 1 kilometer of this ROW, resulting in indirect degradation to approximately 19 acres of habitat for special status and general wildlife species (representing 30% of the parcel acreage). For all wildlife that may inhabit these Section 6 lands, construction of the roadway would result in habitat degradation because of fragmentation and road proximity impacts, such as noise and visual intrusion.

The Southern Alignment nearly skirts the southern border of the NCA, thus reducing the amount of habitat fragmentation between the parcel and the boundary (Table 15). While Section 6 lands would remain following fragmentation, the conservation value of the remaining lands may be degraded so it no longer meets the intended purpose of long-term conservation. Overall, this alternative would result in indirect habitat degradation on approximately 16% of the new parcels within 1 kilometer of the ROW.

These new Section 6 lands, when added to those that were disclosed in the Final EIS, indicates a total of 705 acres of Section 6 lands that could be directly or indirectly impacted by the Southern Alignment. This would include 49 acres that would be directly impacted within the ROW, 294 acres that are within 508 meters of ROW, and 596 acres that are within 1 kilometer of the ROW.

Table 14. Southern Alignment Habitat Loss and Proximity-Related Degradation on Section 6 Lands

Parcel No.	Parcel Size (acres)	Acres within ROW	Acres within 508 Meters	Acres within 1 Kilometer
20230008651	46	0	0	0
20220030966	12	0	0	0
20230020662	62	0	0	19
Total	120	0	0	19

Note: Acres were calculated in GIS and are rounded to the nearest acre. These totals may differ from deeded acreage. 1 kilometer and 508 meters are measured from the 500-foot proposed ROWs.

Table 15. Southern Alignment Section 6 Lands Fragmentation

Parcel No.	Parcel Size (acres)	Acres Remaining after ROW Encumbrance	Acres That May Remain for Desert Tortoise	Acres That May Remain for Other Wildlife Species
20230008651	46	46 (no change)	46 (no change)	46 (no change)
20220030966	12	12 (no change)	12 (no change)	12 (no change)
20230020662	62	62 (no change)	62 (no change)	43
Total	120	120	120	101

Note: Acres remaining for Mojave desert tortoise were calculated after deducting the ROW and 508 meters from the ROW. For other species, habitat remaining was calculated after deducting the ROW and 1 kilometer from the ROW.

Red Hills Parkway Expressway

The Red Hills Parkway Expressway Alternative proposes changes to Red Hills Parkway. Under this alternative, UDOT would no longer hold the ROW grant for the Northern Corridor and no new road would be built in the NCA. There would be no direct or indirect impacts on any of the new Section 6 parcels under this alternative because they all are more than 1 kilometer in distance from this alternative. Under this alternative, the new parcels would retain their conservation value and continue to serve their intended purpose and there would not be any additional impacts to Section 6 lands beyond those described in the Final EIS.

St. George Boulevard/100 South One-way Couplet

The One-way Couplet Alternative proposes changes to existing St. George Boulevard and 100 South instead of a new road across public lands within the NCA. There would be no direct or indirect impacts on any of the new Section 6 parcels under this alternative because they all are more than 1 kilometer in distance from this alternative. Under this alternative, the new parcels would retain their conservation value and continue to serve their intended purpose and there would not be any additional impacts to Section 6 lands beyond those described in the Final EIS.

Terminate UDOT's ROW

Under this alternative, UDOT would no longer hold the ROW grant for the Northern Corridor across public lands in the NCA. There would be no direct or indirect changes to any of the Section 6 lands, and they would retain their conservation value and continue to serve their intended purpose.

3.7 Land and Water Conservation Fund Lands

This analysis identifies properties acquired or developed through grants and Congressional appropriations from the LWCF Act of 1965 (54 U.S.C. 200301 *et seq.*) that may be affected by the Northern Corridor alternatives analyzed in this SEIS. These lands are sometimes referred to as Section 6(f) properties. This analysis focuses on properties crossed by the Northern Corridor alternatives; no LWCF lands are located within Zone 6.

3.7.1 2020 Final EIS Summary

Section 3.16 of the Final EIS (pages 3-168 to 3-171) discusses LWCF lands within the Reserve. The LWCF Act established a funding source to assist states and Federal agencies in acquiring certain lands for recreation and other conservation purposes. The LWCF has a Federal agency component (54 U.S.C. 200306) and a State and local government component (54 U.S.C. 200305), which have different uses and requirements. Federal agencies, such as the BLM, may use LWCF to purchase private in-holdings to meet resource management objectives. For State and local governments, funds from the LWCF are allocated to a State for the planning, acquisition, and development of needed land and water public outdoor recreation projects. Section 6(f)(3), as described in 36 CFR 59.3(a), is the cornerstone of Federal efforts that ensure Federal investments in State LWCF assistance are being maintained for public outdoor recreation use. Once land has been purchased or developed (partially or entirely) with LWCF assistance from the State side of the LWCF program, it cannot be wholly or partially converted to a use other than public outdoor recreation use(s) without the approval of the National Park Service. The LWCF Act, as amended, does not include these provisions for funds allocated for Federal purposes. Lands acquired for Federal purposes are administered by the respective Federal land management agency and subject to other laws.

Since the establishment of the Reserve, the BLM has acquired private property parcels for the purposes of land tenure consolidation and wildlife habitat acquisition. The majority of these acquisitions were made with LWCF funds and consistent with the agency's acquisition authority under 43 U.S.C. 1715, which post-dates LWCF and is part of the larger comprehensive statutory scheme for public lands management established by the FLPMA (43 U.S.C. 1701 et seq.). The Final EIS concluded that private land parcels previously acquired by BLM with LWCF funds would be encumbered as a result of constructing the Northern Corridor under either the UDOT ROW Alignment, T-Bone Mesa Alignment, or Southern Alignment alternatives, but these alignments would not wholly or partially convert any State LWCF properties to non-recreational use. The Federal LWCF parcels that may be encumbered are generally in open areas of the NCA that do not contain designated trails or other formal recreation resources.

Pioneer Park is the only State LWCF/Section 6(f) property located within the Northern Corridor analysis area and it is located on Red Hills Parkway just north of downtown St. George. The Final EIS stated that the Red Hills Parkway Expressway would require acquiring a ROW over approximately 0.9 acre of additional land in Pioneer Park. This would likely constitute a conversion of use under State LWCF requirements. The acquisition would occur directly adjacent to the existing Red Hills Parkway and would encumber areas not actively used for recreation. The existing ROW for Red Hills Parkway already encumbers approximately 2 acres of Federal LWCF land. Because of the small amount of additional potentially encumbered acreage (0.2 acre) and their location directly adjacent to the existing Red Hills Parkway, the Final EIS found that there would be no impact to Federal LWCF lands under the Red Hills Parkway Expressway alternative. No LWCF lands would be affected by the St. George Boulevard/100 South One-way Couplet.

The BLM is unaware of any express statutory or regulatory provision prohibiting the issuance of a ROW over portions of NCA lands. The BLM's review of the warranty deeds did not reveal any reference to LWCF, limitations on additional encumbrances, or other restrictions on the LWCF parcels identified in the Final EIS. Lands that are acquired pursuant to 43 U.S.C. 1715 are subsequently managed in accordance with the governing land use plan. The wildlife habitat acquired was for the endangered Mojave desert tortoise, consistent with the Amended HCP Implementation Agreement. The Final EIS determined that due to the small amount of acreage potentially encumbered within the ROW corridor under the T-Bone Mesa Alignment, UDOT ROW Alignment, and Southern Alignment alternatives, NCA lands would continue to fulfill wildlife habitat purposes.

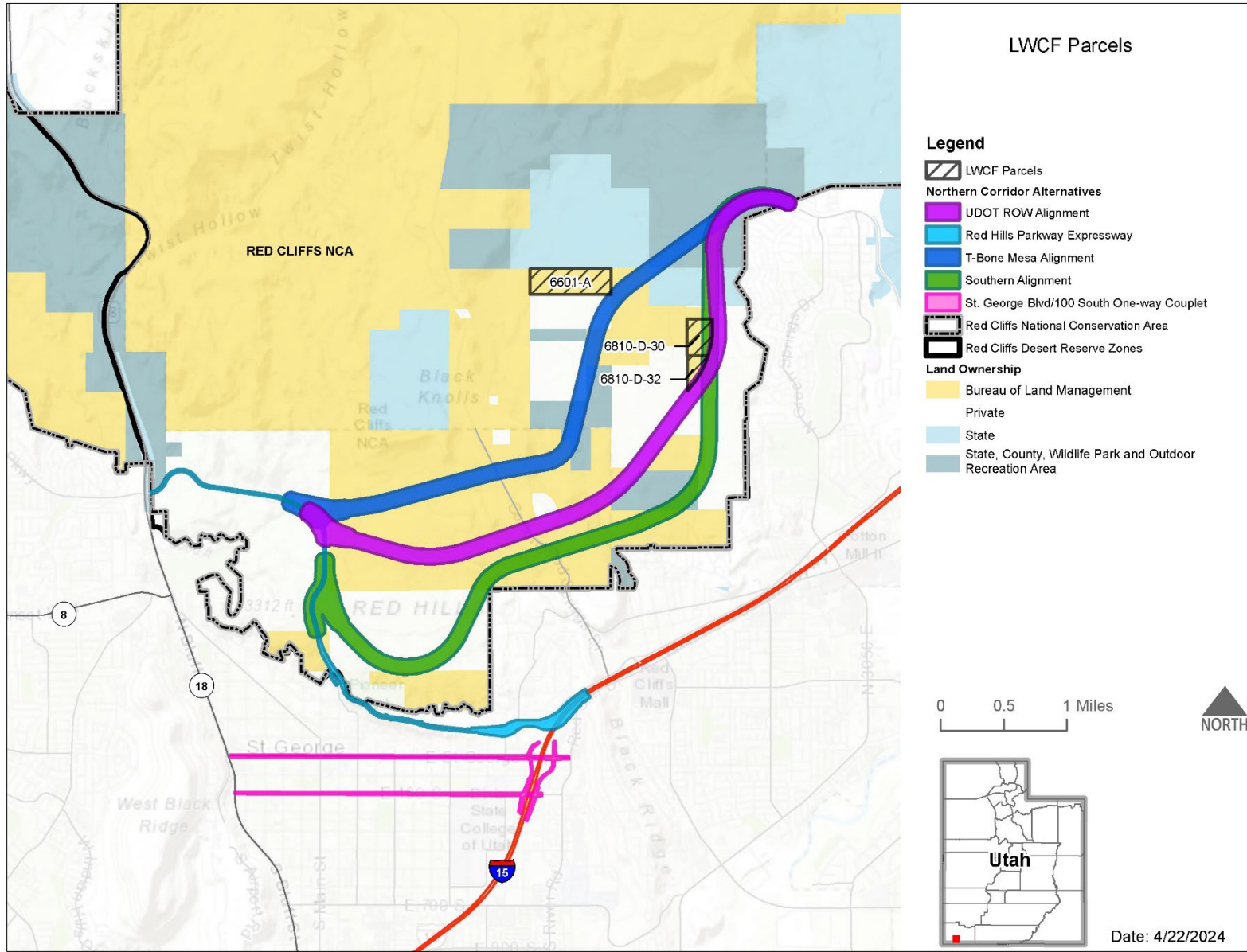
3.7.2 Supplemental Analysis

Affected Environment

Three new parcels of LWCF lands have been acquired in the NCA since the Final EIS was completed (Figure 10). These are Parcel 6601-A (53.3 acres), Parcel 6810-D-30 (11 acres), and Parcel 6810-D-32 (23 acres). Parcels 6601-A and 6810-D-32 were purchased with LWCF funding and Parcel 6810-D-30 was purchased with Washington County Lands Acquisition Funding. Acquisition of non-Federal land in Washington County conforms to management direction and decisions in the Red Cliffs NCA RMP, as amended, which prioritizes acquisitions of NCA inholdings containing Mojave desert tortoise habitat. The RMP states “Any land or interest in land that is located in the National Conservation Area that is acquired by the United States shall (1) become part of the National Conservation Area; and (2) be managed in accordance with (A) the Federal Land Policy and Management Act of 1976 as amended, (B) this section and (c) any other applicable law (including regulations) (OPLMA section 1974 (f)).”

Both State and Federal types of acquisitions are analyzed for direct impacts associated with encumbrance, and additional impacts are analyzed associated with State acquisitions that include whether the State LWCF parcel—the boundaries of which are detailed in the grant application and may differ from the parcel or current recreation boundary—would be wholly or partially converted to a non-conforming use. Whole or partial conversion of a State LWCF parcel is based on whether construction would (1) terminate the public outdoor recreation use, (2) convey a property interest for a private or non-public outdoor recreational use, or (3) result in the loss of recreational viability of the remaining property if a partial conversion occurs. If a State LWCF property is wholly or partially converted to a non-public outdoor recreational use, land of equal value, location, and usefulness would be identified for mitigation in accordance with 36 CFR 59.3. Conversion and replacement would require approval from the National Park Service and may be subject to subsequent NEPA documentation as determined by the National Park Service. Details of the process and prerequisites for conversions can be found in the Land and Water Conservation Fund State Assistance Federal Financial Assistance Manual (NPS 2023).

Figure 10. Recent Land and Water Conservation Fund Act Land Acquisitions



Environmental Consequences

UDOT ROW Alignment (Affirm Current ROW Grant)

Under this alternative, the UDOT ROW Alignment would directly encumber a portion of two of the new LWCF parcels. As shown in Table 16, approximately 1.93 acres of Parcel 6810-D-30 and 2.30 acres of Parcel 6810-D-32 are located within the 500-foot corridor alignment for this alternative. Approximately 18% of Parcel 6810-D-30 and 10% of Parcel 6810-D-32 would potentially be encumbered within the ROW corridor under this alternative.

Table 16. Direct Impacts to Federal LWCF Lands within the UDOT ROW Alignment.

BLM Case Number	Total Acres	UDOT ROW Alignment (acres within 500-foot corridor)
6601-A	53.28	0
6810-D-30	11.01	1.93
6810-D-32	23.08	2.30
Total	87.37	4.23

T-Bone Mesa Alignment

Under this alternative, the BLM would affirm the ROW grant to UDOT across public lands in the NCA but show the T-Bone Mesa Alignment as the approved highway corridor. The T-Bone Mesa Alignment Alternative would directly encumber a portion of one of the new LWCF parcels. As shown in Table 17, approximately 0.13 acre of Parcel 6601-A, or 0.24% of the 53-acre parcel, is located within the 500-foot corridor alignment for this alternative.

Table 17. Direct Impacts to Federal LWCF Lands within the T-Bone Mesa Alignment.

BLM Case Number	Total Acres	T-Bone Mesa Alignment (acres within 500-foot corridor)
6601-A	53.28	0.13
6810-D-30	11.01	0
6810-D-32	23.08	0
Total	87.37	0.13

Southern Alignment

Under this alternative, the BLM would affirm the ROW grant to UDOT across public lands in the NCA but show the Southern Alignment T-Bone Mesa Alignment as the approved highway corridor. The Southern Alignment Alternative would directly encumber a portion of two of the new LWCF parcels. As shown in Table 18, approximately 8.89 acres of Parcel 6810-D-30 and 1.34 acres of Parcel 6810-D-32 are located within the 500-foot corridor alignment for this alternative. Approximately 81% of Parcel 6810-D-30 and 6% of Parcel 6810-D-32 would potentially be encumbered under this alternative.

Table 18. Direct Impacts to Federal LWCF Lands within the Southern Alignment.

BLM Case Number	Total Acres	Southern Alignment (acres within 500-foot corridor)
6601-A	53.28	0
6810-D-30	11.01	8.89
6810-D-32	23.08	1.34
Total	87.37	10.23

Red Hills Parkway Expressway

The Red Hills Parkway Expressway Alternative proposes changes to Red Hills Parkway instead of a new road corridor across public lands within the NCA. Eleven acres of the NCA is within the existing 300-foot-wide Red Hills Parkway ROW, as discussed in Table 5. As discussed in the Final EIS, this Alternative would further encumber approximately 0.9 acres of an LWCF parcel previously acquired by the State. However, the alternative would not encumber any of the newly acquired LWCF parcels. There would be no additional impacts to these lands from this alternative beyond those disclosed in the Final EIS.

St. George Boulevard/100 South One-way Couplet

The St. George Boulevard/One-way Couplet Alternative proposes changes to existing St. George Boulevard and 100 South instead of a new road corridor across public lands within the NCA. This alternative would not encumber any of the new LWCF parcels. There would be no additional impacts to these lands from this alternative beyond those disclosed in the Final EIS.

Terminate UDOT's ROW

Under this alternative, UDOT would no longer hold the ROW grant for the Northern Corridor across public lands in the NCA. Because there would be no highway constructed under this alternative, there would be no impacts to LWCF lands.

3.8 National Conservation Area

Congress designates NCAs on public lands to conserve, protect, enhance, and manage public lands for the benefit and enjoyment of present and future generations. NCAs offer exceptional scientific, cultural, ecological, historical, and recreational value. The management emphasis of a given NCA is provided by Congress in the individual statute that establishes the NCA. The designating statutory authority for the Red Cliffs NCA is 16 U.S.C. 460www, as described in Section 1.2. The analysis area is the Red Cliffs NCA.

3.8.1 2020 Final EIS Summary

Section 3.18 of the Final EIS (pages 3-176 to 3-179) discusses the NCA and focuses on those lands in the NCA that would be impacted by the proposed Northern Corridor ROW. BLM Manual 6220 – National Monuments, National Conservation Areas, and Similar Designations, directs the BLM to analyze the impacts on the NCA's objects and values to determine consistency of a proposed ROW with the NCA's objects and values and directs the BLM to consider protection of the objects and values in the NEPA analysis. In the case of the NCA, the objects and values are the purposes Congress identified in OPLMA as further clarified in the Approved Red Cliffs NCA RMP (BLM 2016).

Specific aspects pertaining to the Resources, Objects, and Values of the Red Cliffs NCA, identified by the BLM based on OPLMA, include:

1. Unique ecological values as a transition zone between three major ecoregions: the Mojave Desert, Colorado Plateau and Great Basin;
2. Critical habitat for the endangered Shivwits milkvetch, a small native plant that grows only in Washington County on specific soil types, and other rare and endemic plant species including dwarf bear-poppy;
3. The dramatic visual landscape and scenery including exposures of the Jurassic age Kayenta Formation and Navajo Sandstone that preserve scientifically important dinosaur tracks and trackways, bone beds, plant fossils, and silicified wood;
4. Archaeological sites that preserve evidence of Archaic, Ancestral Puebloan, and Southern Paiute occupations and land uses;
5. Mid-19th century and later historic period sites and features relating to the Euro-American settlement of southern Utah, including wagon roads, irrigation systems, farmsteads, mining sites, and the early 20th century Arrowhead Trails Highway;

-
6. Habitat for diverse wildlife species such as the kit fox, Gambel's quail, and the Mojave desert tortoise;
 7. Designated wilderness areas and associated scenic vistas, solitude, natural quiet, and unconfined recreation just a few miles from local communities; and
 8. Miles of designated hiking, mountain biking and equestrian trails.

The Final EIS assessed the impacts of the project on the NCA's objects and values, in accordance with BLM Manual 6220, Section 1.6, which describes specific direction for Compatibility of Uses (Section C) and Rights-of-way and Transportation and Utility Corridors (Section E) as follows (the lists that follow are excerpts of relevant information from Manual 6220; additional direction is contained in Manual 6220):

(C) Compatibility of Uses

(1) Site-specific activities in Monuments and NCAs will be managed in a manner that is compatible with the protection of the objects and values for which these areas were designated. Multiple uses may be allowed to the extent they are consistent with the applicable designating authority, other applicable laws, and with the applicable land use plan.

(2) Through the NEPA process, the manager with decision-making authority for a Monument or NCA will evaluate discretionary uses and will analyze whether the impacts of the proposed use in the Monument or NCA or similarly designated area are consistent with the protection of the area's objects and values. As part of this analysis, the manager will consider the severity, duration, timing, and direct and indirect and cumulative effects of the proposed use. If necessary and appropriate, the BLM may use the land use planning process to consider whether to change discretionary use authorizations.

(E) Rights-of-way and Transportation and Utility Corridors

(2) When processing a new ROW application, to the greatest extent possible, through the NEPA process, the BLM will:

- a. determine consistency of the ROW with the Monument or NCA's objects and values;
- b. consider routing or siting the ROW outside of the Monument or NCA;

(7) To the greatest extent possible, subject to applicable law, the BLM should through land use planning and project-level processes and decisions, avoid granting new ROWs in Monuments and NCAs and similar designations. In deciding whether to approve ROWs in these components of the National Landscape Conservation System, the BLM shall consider whether ROW proposals are consistent with the authority that designated the component. Subject to applicable law, the BLM shall exercise its discretion to deny ROW applications in Monuments and NCAs and similar designations if they are inconsistent with the component's designating authority.

(8) To the greatest extent possible, subject to applicable law, the BLM should through land use planning and project-level processes and decisions, avoid designating or authorizing use of transportation or utility corridors within Monuments and NCAs. To that end, and consistent with applicable law, when developing or revising land use plans for Monuments and NCAs, the BLM will consider:

- b. not designating any new transportation or utility corridors within the Monument or NCA if the BLM determines that the corridor would be incompatible with the designating authority or the purposes for which the Monument or NCA was designated;

The BLM worked with UDOT, FWS, and other partners to identify additional measures that would conserve, protect, and enhance the objects and values of the NCA and reduce the potential impacts of BLM issuing a ROW to UDOT for the construction of the Northern Corridor. As a result of those conversations, UDOT submitted a revised POD containing additional design features of the proposed action for environmental protection. In addition, BLM, in collaboration with FWS and other partners identified additional mitigation measures that were applicable to the issuance of the ROW across the Red Cliffs NCA for the Northern Corridor (refer to Section 2.2.9 of the Final EIS).

3.8.2 Supplemental Analysis

In the August 2023 Settlement Agreement, the BLM committed to the following:

Prior to any new decision on the ROW application, BLM agrees to make a compatibility determination to ensure that the decision is compatible with law, regulation, and policy for a National Conservation Area, consistent with the Omnibus Public Lands Management Act, the Federal Land Policy and Management Act, and those version of BLM Manual 6220 and BLM's National Monument, National Conservation Areas, and Similar Designations Compatibility Analysis Framework in effect at the time of the decision.

Therefore, a formal compatibility framework analysis will be completed for this project once the analysis for the SEIS is complete and a preferred alternative is identified. The formal compatibility framework analysis will assess the impacts of the project on the NCA's objects and values, as described above, and in accordance with BLM Manual 6220, Section 1.6, which describes specific direction for Compatibility of Uses and Rights-of-way and Transportation and Utility Corridors. As described in Section 2.3, five alternative alignments for the Northern Corridor that were previously considered in the Final EIS are being carried forward in this SEIS, as is an alternative that would terminate UDOT's ROW grant for the Northern Corridor within the NCA. Because the SEIS is an extension of the Final EIS where the alternatives being considered are already established, the BLM is conducting its compatibility analysis at the end of the process rather than the beginning to remain consistent with its prior analysis. A compatibility determination is made by the authorized official, and any early determinations may be pre-decisional and jeopardize the integrity of this SEIS process. Therefore, the compatibility determination will be documented in the ROD for the SEIS.

3.9 Cultural Resources and Native American Concerns

Conservation, protection, and enhancement of cultural and historical resources was identified as one of the purposes for the Congressional designation of the NCA. Cultural resources are defined as any prehistoric or historic district, site, building, structure, or object, or isolated find; these include both those that are and are not eligible for the National Register of Historic Places. The assessment of impacts to cultural resources occurs within an Area of Potential Effect, which is a geographic area within which an undertaking (project) may directly or indirectly cause alterations in the character or use of historic properties (36 CFR 800.16 (d)). A Historic Property is defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior (36 CFR 800.16 (1)(1)). For the three alternatives completely within the NCA, the Area of Potential Effect for cultural resources is a 700-foot-wide corridor along each of the proposed Northern Corridor alignments. For the Red Hills Parkway Expressway Alignment, the Area of Potential Effect for cultural resources is the existing roadway and a 50-foot buffer on each side. For the Red Hills Parkway Expressway and One-way Couplet, the Area of Potential Effect for historical structures is the existing roadway and the legal parcels immediately adjacent to the existing roadways.

Issuance or termination of the ROW by the BLM to UDOT and the issuance or amendment of an ITP by the FWS to Washington County are Federal undertakings and are therefore subject to Section 106 of the NHPA. Section 106 through its implementing regulations (36 CFR Part 800) defines Federal undertakings

as any project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency, those carried out with Federal financial assistance, and those requiring a Federal permit, license or approval. The regulations require Federal agencies to consider the effects of their undertakings that have the potential to impact historic properties including any district, site, building, structure, or object that is listed on or eligible for listing on the National Register of Historic Places and provide the SHPO, affected Tribes, and other consulting parties an opportunity to comment.

3.9.1 2020 Final EIS Summary

Section 3.14 of the Final EIS (pages 3-143 to 3-154) discusses Cultural Resources and Native American Concerns for the Northern Corridor and provides a cultural history of the area as well as the results of the investigations carried out as part of the previous NEPA process for the Final EIS. Between 2020 and 2021, the BLM consulted with SHPO and received concurrence with the adequacy of its definition of the Areas of Potential Effects described above for each of the five alternative highway alignments. The identification efforts within the Areas of Potential Effects were accomplished through a literature review and Class III level field investigations (Intensive Pedestrian Survey for archeological sites [Tuttle Collins et al. 2020] and Reconnaissance Level Survey for historic structures [Pearson and Calkins 2020]), with its evaluations of eligibility and preliminary determination of effects for Historic Properties within the Areas of Potential Effects.

The number of National Register eligible Historic Properties in each alignment’s Area of Potential Effects is shown in Table 19. The Historic Properties listed within each alignment may have adverse effects from the construction of the highway, but due to the nature of the alignment and the types and locations of historic properties, the alignments will have dissimilar levels of direct and indirect effects to these Historic Properties, as discussed in the Final EIS. It should be noted that the Historical Structures in the Red Hills Parkway Expressway and the One-way Couplet, while present in the Area of Potential Effects for those alternatives, will not likely be affected by the project since they are located along existing roadways.

The Final EIS also presented the number of National Register ineligible cultural resources that were found in each of the alignments (Table 20). A records search was also completed for Zone 6 for the Final EIS. It showed that approximately 23.8 percent (1,621 acres) of Zone 6 has been previously surveyed as a result of 20 cultural resources investigations and that there are 14 previously recorded historic properties within Zone 6 (see Table 3.14-3 in the Final EIS).

Table 19. National Register Eligible Historic Properties in Each Northern Corridor Alignment

Alignment	Prehistoric	Multi-Component	Historic	Historic Structure	Total
UDOT ROW Alignment	2	2	4	0	8
T-Bone Mesa Alignment	2	1	3	0	6
Southern Alignment	2	1	2	0	5
Red Hills Parkway Expressway	0	0	1	1*	2
St. George Boulevard/100 South One-way Couplet	0	0	0	63	63

*This historic structure is also site 42WS4989, which includes a water tank and associated features.

Table 20. National Register Ineligible Cultural Resources in Each Northern Corridor Alignment

Alignment	Prehistoric	Multi-Component	Historic	Historic Structure	Total
UDOT ROW Alignment	3	0	5	0	8
T-Bone Mesa Alignment	2	0	3	0	5
Southern Alignment	0	0	2	0	2
Red Hills Parkway Expressway	0	2	2	5	9
St. George Boulevard/100 South One-way Couplet	0	0	0	70	70

The BLM and FWS notified the public that they would coordinate their public consultation obligations under the NHPA (54 U.S.C. 306108) through the previous NEPA process for the Final EIS, as provided for in 36 CFR 800.2(d)(3) as a component of the NOI to prepare an EIS (Federal Register 84: 66692-66694). The BLM and the FWS each independently initiated the Section 106 process, as it related to their respective decisions, by establishing the undertaking (pursuant to 36 CFR 800.3.a), identifying and consulting with interested parties, identifying points in the process to seek input from the public, and notifying the public of proposed actions. The BLM and the FWS each consulted independently with the Utah SHPO and American Indian Tribes regarding efforts to identify cultural resources and evaluate them for National Register of Historic Places eligibility (36 CFR 800.4) and assess effects of the project on historic properties by applying the criteria of adverse effect (36 CFR 800:5). This process is described in more detail in Section 4.2.

Concurrent with the previous NEPA process for the Final EIS, the BLM assessed the effects of issuing the ROW for the Northern Corridor highway on Historic Properties, as required by Section 106 of the NHPA, following the 2020 BLM Statewide Protocol Agreement (Protocol) with SHPO. As part of its obligations under the NHPA, the BLM has not yet completed the resolution of adverse effects to Historic Properties in the Northern Corridor. However, a stipulation was included in the ROW grant stating that a Notice to Proceed with construction and operation of the highway would not be issued until an MOA had been developed through consultations with American Indian Tribes and other parties and adverse effects to Historic Properties resolved through the implementation of approved treatments. As part of the Settlement Agreement, the BLM has agreed to complete its NHPA consultation to resolve adverse effects to historic properties. More detail about the steps that are currently being carried out regarding this agreement, in addition to steps that have already been completed, is provided in Section 4.2.

For the ITP, the FWS determined that they could not fully anticipate the effects to historic properties prior to issuance of the ITP, and so worked with the SHPO, Washington County, and other consulting parties to develop a Programmatic Agreement, as authorized by 36 CFR 800.14(b). The Programmatic Agreement was limited to the authorized activities in the ITP and conservation measures in the HCP that would result in take of desert tortoises and may have the potential to cause effects on historic properties. The Programmatic Agreement was signed by the FWS, Washington County, and consulting parties to resolve future, but presently unknown, effects to historic properties on non-Federal lands associated with the FWS's issuance of the ITP to Washington County. Signing of the Programmatic Agreement concluded FWS obligations under the NHPA.

3.9.2 Supplemental Analysis

Affected Environment

On February 2, 2024, UDOT provided the BLM with the GIS shapefiles of its 30% design plan for the complete build out of the UDOT ROW Alignment. These plans were not available when the Final EIS was published and may be subject to further changes as the design plans are finalized. The design plans are specific to the UDOT ROW Alignment, as that is the alternative for which the ROW grant was authorized.

Environmental Consequences

UDOT ROW Alignment (Affirm Current ROW Grant)

The UDOT ROW Alignment may affect up to eight historic properties: two prehistoric sites, four historic sites, and two multi-component sites. The 30% design plans that were provided on February 2, 2024, indicate UDOT may be able to avoid up to four of the eight historic properties previously identified within the ROW (see Table 19), including two prehistoric sites, one historic site, and one multi-component site. All four of these historic properties are located within the 700-foot-wide Area of Potential Effects for the UDOT Alignment and within the 500-foot-wide authorized UDOT ROW. These historic properties range in distance from approximately 26 to 125 feet away from the edge of the 30% design plan.

The Cultural Resource Fieldwork Guidelines and Standards, BLM Supplement H-8100-Utah, recommends that changes to project design to avoid sites, which include site avoidance and/or reroutes, should be at least 100 feet from site boundaries or otherwise require an archeological monitor or other special considerations. Even if these sites are far enough away from the current design that they would not experience direct effects from highway construction, they may experience indirect effects such as increased erosional runoff from the road and issues related to greater access from the public. As of this writing, UDOT's design plans for the Northern Corridor Highway are not complete and the highway may be constructed in phases, so it is uncertain when the construction of all four lanes would be completed. If the UDOT ROW Alignment is affirmed, it is still foreseeable that all eight historic properties may have adverse effects; these effects may consist of either direct effects or indirect effects, from the construction, maintenance, and use of the highway within the UDOT ROW Alignment. The number of historic properties that may have adverse effects is likely to change with further developments in design changes, or changes to the alignment alternative. Regardless, BLM will complete the MOA to resolve adverse effects to Historic Properties under this alternative and the other alternatives within the NCA.

The UDOT ROW Alignment would not require FWS to amend the ITP, and protections for cultural resources in Zone 6 would continue to occur as a result. Therefore, direct and indirect impacts to cultural resources in this area would remain unchanged from current conditions.

T-Bone Mesa Alignment

There are no new survey data or design plans for the T-Bone Mesa Alignment. The Final EIS conclusion that the T-Bone Mesa Alignment may affect up to six historic properties—two prehistoric sites, three historic sites, and one multi-component site—is still valid. The T-Bone Mesa Alignment would not require FWS to amend the ITP, and protections for cultural resources in Zone 6 would continue to occur as a result. Therefore, direct and indirect impacts to cultural resources in this area would remain unchanged from current conditions.

Southern Alignment

There are no new survey data or design plans for the Southern Alignment. The Final EIS conclusion that the Southern Alignment may affect up to five historic properties—two prehistoric sites, two historic sites, and one multi-component site—is still valid. The Southern Alignment would not require FWS to amend the ITP, and protections for cultural resources in Zone 6 would continue to occur as a result. Therefore, direct and indirect impacts to cultural resources in this area would remain unchanged from current conditions.

Red Hills Parkway Expressway

There are no new survey data or design plans for the Red Hills Parkway Expressway. The Final EIS conclusion that the Red Hills Parkway Expressway may affect two historic properties—one historic site and one historic structure within a site—is still valid.

Under the Red Hills Parkway Expressway Alignment, FWS would amend the ITP to allow covered activities to occur on non-Federal lands in Zone 6. To ensure NHPA compliance for cultural resources that may be impacted by non-Federal land management and land development activities that may require

take of Mojave desert tortoise authorized under the ITP, the FWS, Utah SHPO, Trust Lands Administration, the Utah Public Lands Policy Coordinating Office, and Washington County developed a Programmatic Agreement to ensure compliance with Section 106 of the NHPA for covered activities under the ITP. In addition, State lands managed by the Trust Lands Administration in Zone 6 would be subject to Utah Code Annotated 9-8-404 prior to any potential development.⁷ Sites on lands managed by the BLM would continue to be subject to Section 106 of the NHPA.

There have been 24 cultural resource surveys in Zone 6, including four additional ones that have been completed since publication of the Final EIS, and an increase in the number of sites as well. In the approximately 24% of Zone 6 that has been surveyed, there are 34 known archaeological sites representing a mix of National Register eligible Historic Properties, ineligible cultural properties, and unevaluated sites (Table 21). There are 11 known sites occurring on non-Federal lands in Zone 6, which could be impacted under this alternative. Not all of the non-Federal lands in Zone 6 have been surveyed, and thus additional sites may be present that may also be subject to development. The 23 known sites occurring on BLM-managed public lands, and any additional sites located on public lands in Zone 6 that have not been surveyed, would continue to be managed under the prescriptions established through the 2021 amendments to the St. George Field Office RMP. The amendments increased restrictions on uses that could impact cultural resources, such as dispersed camping or physical geocaches.

Table 21. Known Archaeological Sites in Zone 6

Land Status	Total No. of Sites	Prehistoric	Historic	Eligible	Unevaluated	Not Eligible	ACEC
BLM	23	23	0	11	7	5	2
TLA	11	7	4	4	1	6	N/A
Total	34	30	4	15	8	11	2

St. George Boulevard/100 South One-way Couplet

There are no new survey data or design plans for the St. George Boulevard/100 South One-way Couplet. The Final EIS concluded that the 63 historic properties located within this alignment would be unlikely to have adverse effects from converting the streets into a one-way couplet. Under this alternative the impacts to cultural resources in Zone 6 would be the same as described under the Red Hills Parkway Expressway.

Terminate UDOT’s ROW

Under this alternative, UDOT would no longer hold the ROW grant for the Northern Corridor across public lands in the NCA. This would result in no impacts to any cultural resources or historic properties. Under this alternative the impacts to cultural resources in Zone 6 would be the same as described under the Red Hills Parkway Expressway.

3.10 Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” directs Federal agencies to identify minority, low-income, and Tribal populations that could be disproportionately and adversely impacted by a Federal action. Low income is defined as individuals whose income is less than or equal to

⁷ Undertakings (projects) on state lands including Trust Lands Administration lands are required to comply with Utah Code Annotated 9-8-404, which includes surveys and consultation with the Utah SHPO.

twice the Federal poverty level. Minority populations consist of individuals who identify as one or more race or ethnicity other than white alone. The analysis area for Environmental Justice was identified as selected census block groups in Washington County. The selected block groups were adjacent to or comprised of the project area, or otherwise affected by one or more alternatives.

3.10.1 Final EIS Summary

Section 3.27 of the Final EIS (pages 3-219 to 3-221) discusses Environmental Justice communities. In the Final EIS, 11 block groups were identified within the analysis area and compared to State of Utah data to identify Environmental Justice populations. Low-income, minority, and American Indian Environmental Justice populations were present within the study area and each Environmental Justice population type was present in multiple block groups.

The Final EIS concluded that implementation of any of the action alternatives would cause temporary construction-related impacts, however, this would affect the communities as a whole and was not expected to disproportionately affect any Environmental Justice populations. Likewise temporary and permanent modifications to existing transit routes along 100 South, under the One-way Couplet Alternative, would impact transit riders as a whole and not Environmental Justice communities disproportionately. Land-use restrictions established by the addition of Zone 6 would also affect all populations that recreate in the area equally.

3.10.2 Supplemental Analysis

Affected Environment

Executive Order 14096, Revitalizing Our Nation’s Commitment to Environmental Justice for All, which was signed April 21, 2023, places new emphasis on advancing Environmental Justice. For this analysis, an updated baseline analysis for Environmental Justice was completed for Washington County using updated census data. It focuses primarily on selected census block groups that intersect with the action area for each of the alternatives. Block groups are a geographical unit used by the U.S. Census Bureau to tabulate data and are typically comprised of around 600 to 3,000 people. There are 87 census block groups in the analysis area.

Council on Environmental Quality guidance directs that adverse health and environmental effects be evaluated against an appropriate reference area to determine whether the impact disproportionately affects minority or low-income populations or Tribal communities (CEQ 1997). In this analysis, the reference area is the State of Utah.

The BLM has adopted the following five criteria in determining whether a population is an Environmental Justice population (BLM 2022c):

- The low-income rate (percent of population whose income is less than or equal to 200% of the Federal poverty level) is equal to or greater than 50%.
- The low-income rate in a study population is equal to, or greater than 100% of the low-income rate in the reference area.
- The percentage of the population identified as belonging to a minority group in a study area is equal to or greater than 50% of the population.
- The percentage of the population identified as belonging to a minority group in a study area is “meaningfully greater” than the reference area. Meaningfully greater is calculated by comparing the minority group population percentage with 110% of reference area minority population.
- The percentage of the population identified as belonging to an Indigenous community is equal to or greater than 100% of the reference area.

Low-income, minority and Tribal/Native American populations are present and intersect with the project area under each of the alternatives (Figures 11 through 13).

Figure 11. Low-Income Environmental Justice Population Census Tracts Near the Project Area

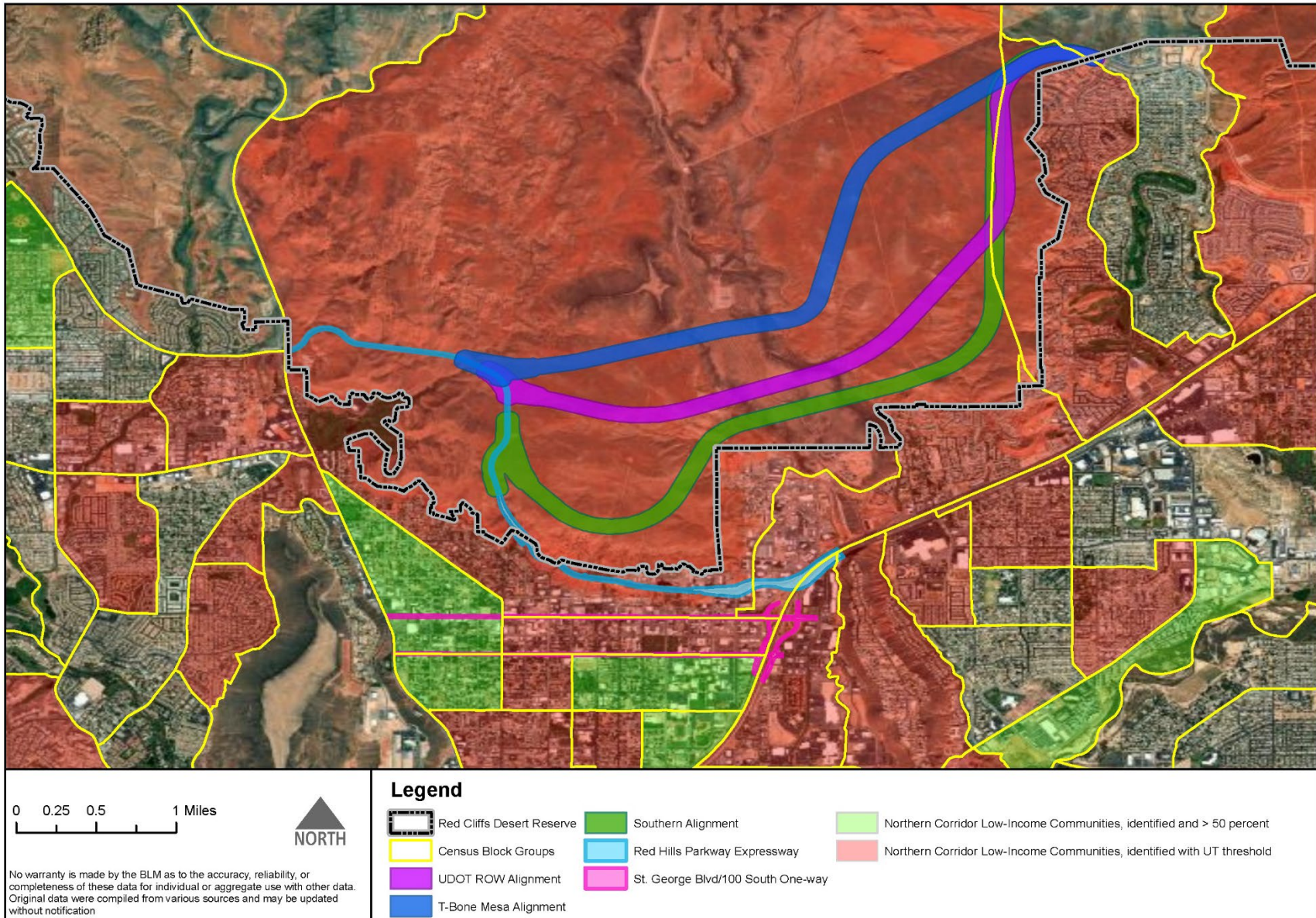


Figure 12. Minority Environmental Justice Population Census Tracts Near the Project Area

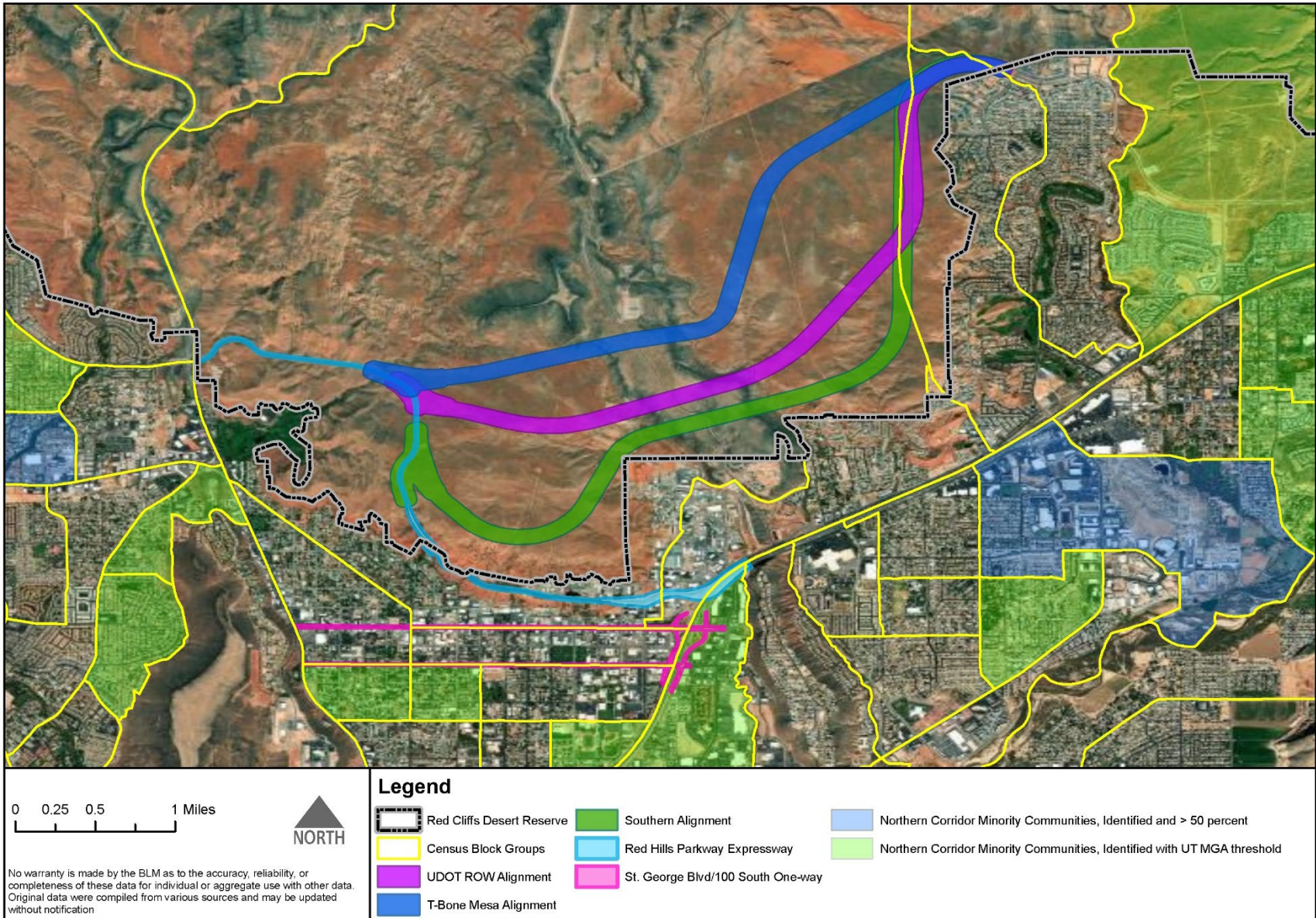
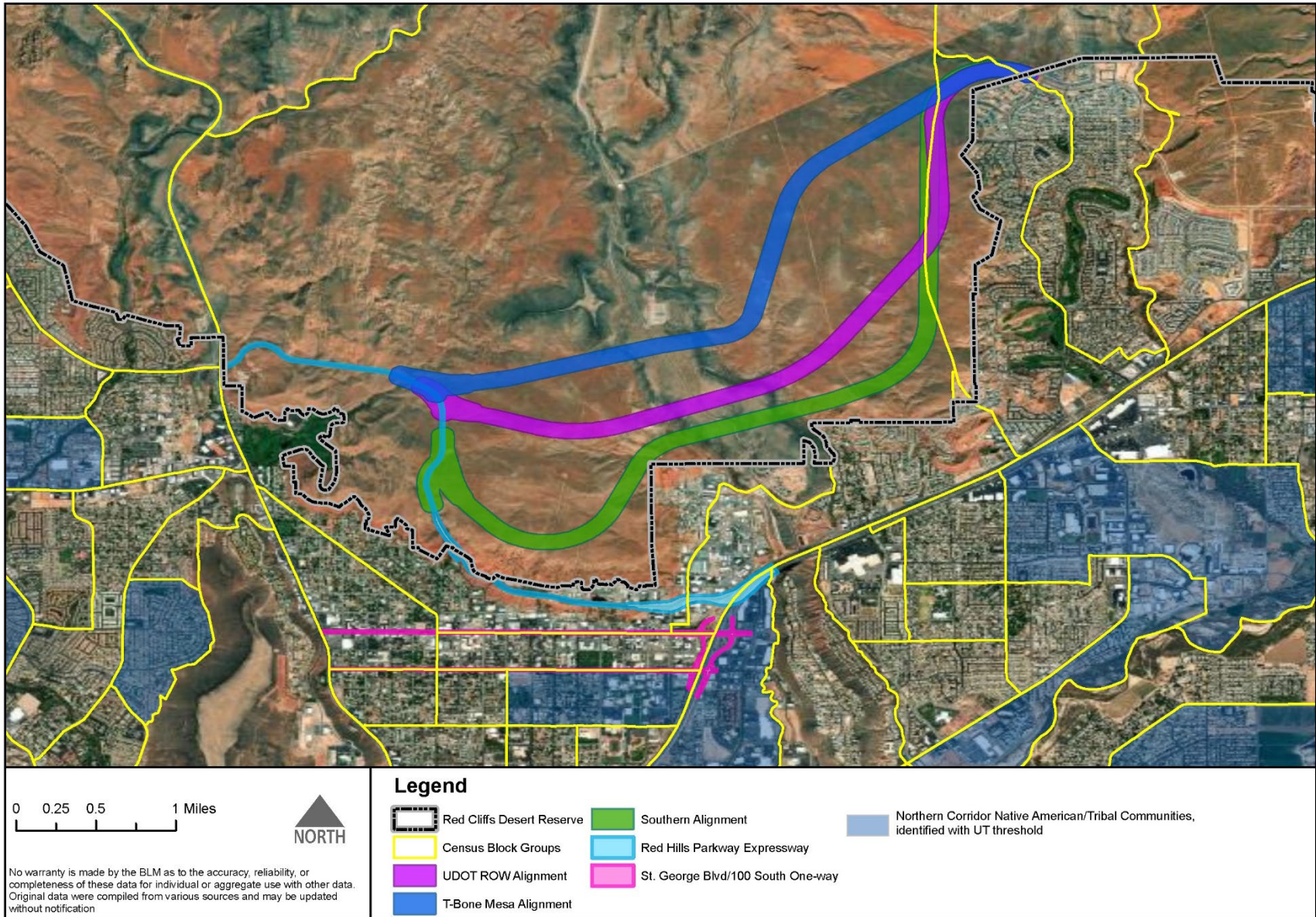


Figure 13. Native American/Tribal Environmental Justice Census Tracts Near the Project Area



Overall, 27.6 percent of the analysis area populations were identified as low-income populations. A total of 43 block groups (49.4%) in the analysis area met or exceeded the State of Utah’s low-income threshold (24.7%). 17.2% of the analysis area are identified as minority populations. A total of 18 block groups (20.7%) in the analysis area met or exceeded the State of Utah’s Meaningfully Greater minority threshold (25.0%). Approximately 1.8% of the analysis area identified as American Indian or Alaska Native and 19 block groups (21.8%) in the analysis area met or exceeded the State of Utah’s American Indian or Alaska Native threshold (2.0%).

Environmental Consequences

Potential impacts under all action alternatives include temporary construction related impacts such as noise and dust, and temporary interruptions and changes to transit routes and traffic patterns. Land use changes in Zone 6 could also impact these populations depending on the selected alternative. The majority of block groups that directly contain or are intersected by the potential highway alignments and Zone 6 are identified as low-income populations. As such, these low-income communities may be impacted at a higher level than some other populations because of proximity to the project area.

An outreach plan to Environmental Justice communities is being developed by BLM, consistent with Instruction Memorandum 2022-059 (BLM 2022b) and will be implemented as part of public outreach activities during the SEIS process (see Section 4.1).

UDOT ROW Alignment (Affirm Current ROW Grant)

Three census block groups intersect with the UDOT ROW Alignment. Two of these block groups were identified as low-income populations. No minority or Tribal populations intersect with this alignment. Four census block groups intersect with Zone 6. One of these block groups was identified as a low-income population, and two of these block groups were identified as Tribal/Native American populations. None of the block groups intersecting Zone 6 were identified as minority populations.

In addition to the potential impacts listed previously, the increased probability of wildfire under this alternative would disproportionately and adversely affect environmental justice communities located proximal to the route due to factors such as the inability to relocate, smoke inhalation due to lack of access to air filtration, and the prevalence of outdoor work done by sectors of these communities. Language issues during emergency wildfire situations and the breakup of cultural and ethnic communities could also impact these populations.

The Climate and Economic Justice Screening Tool (CEQ 2022) is used to identify community vulnerabilities. The tool identified communities in the northern part of St. George and in tracts that contain the UDOT ROW Alignment, T-Bone Mesa Alignment, Southern Alignment, and Red Hills Parkway Expressway alternatives to be in the 94th percentile for projected wildfire risk and 97th percentile for economic loss to building value resulting from natural hazards each year. Increased ignition sources from construction of and day-to-day use of a highway would increase these risks and affect the identified Environmental Justice populations. Many individuals in the identified low-income populations could be renters lacking renters’ insurance or without means to rebuild should a fire take their property.

In addition, as most block groups in the analysis area represent small geographic areas, adjacent block groups that do not directly intersect or contain portions of the action alternative would likely experience similar impacts as well.

T-Bone Mesa Alignment

Three census block groups intersect with the T-Bone Mesa Alignment. Two of these block groups were identified as low-income populations. No minority or Tribal populations intersect with this alignment. The census block groups in Zone 6 would be the same as described under the UDOT ROW Alignment. The same impacts as those described under the UDOT ROW Alignment would also occur under the T-Bone Mesa Alignment, impacting the Environmental Justice populations near the proposed ROW.

Southern Alignment

Three census block groups intersect with the Southern Alignment. Two of these block groups were identified as low-income populations. No minority or Tribal populations intersect with this alignment. The census block groups in Zone 6 would be the same as described under the UDOT ROW Alignment. The same impacts as those described under the UDOT ROW Alignment would also occur under the Southern Alignment, impacting the Environmental Justice populations near the proposed ROW.

Red Hills Parkway Expressway

Three census block groups intersect with the Red Hills Parkway Expressway. All three intersecting block groups were identified as low-income populations, one was identified as a minority population and two were identified as Tribal/Native American populations. The census block groups in Zone 6 would be the same as described under the UDOT ROW Alignment.

In addition to the 94th percentile for projected wildfire risk, and 97th percentile for economic loss to building value resulting from natural hazards each year, block groups near the Red Hills Parkway Expressway are in the 96th percentile for fatalities and injuries resulting from natural hazards each year. Impacts under this alternative would be similar to those described for the UDOT ROW Alignment although to a lesser extent as fire risk is decreased under this alternative. Fire risks and impacts are described in more detail in Section 3.4.

St. George Boulevard/100 South One-way Couplet

Six census block groups intersect with the St. George Boulevard/100 South One-way Couplet alternative. All six intersecting block groups were identified as low-income populations, three were identified as minority populations, and three were identified as Tribal/Native American populations. The census block groups in Zone 6 would be the same as described under the UDOT ROW Alignment.

Populations that border the action area for this alternative are already at a high risk of wildfire (99th percentile for projected wildfire risk and 98th percentile for economic loss to building value) resulting from natural hazards each year, however construction and road use activities are not likely to lead to additional wildfire risk because no new road is being constructed in a previously roadless area.

Environmental Justice populations near this alternative would still experience the temporary construction related impacts previously described. These populations experience a high low-income factor and are in the 90th percentile for diesel particulate matter exposure. Changing traffic patterns in this area could also change the diesel particulate matter exposure which could increase public health issues for these populations. Routing increased traffic through this area would increase exhaust and may impact walkability and community connectivity in the area.

Terminate UDOT's ROW

Under this alternative, UDOT would no longer hold the ROW grant for the Northern Corridor across public lands in the NCA. This would result in no impacts to any census block groups within the NCA. The census block groups in Zone 6 would be the same as described under the UDOT ROW Alignment.

3.11 Socioeconomics

The geographic area of analysis to evaluate potential socioeconomic effects of the proposed actions and alternatives is Washington County, Utah. In addition, the primary geographic area of analysis to evaluate the traffic and transportation effects is the transportation system within the northern City of St. George, Washington City, City of Santa Clara, and the City of Ivins metropolitan areas.

3.11.1 2020 Final EIS Summary

Section 3.26 of the Final EIS (pages 3-204 to 3-219) discusses Socioeconomics. The Final EIS detailed the socioeconomic conditions in Washington County, Utah, and the potential effects from each of the alternatives based on data from 2015 to 2019. Sections 3.26.1.1 through 3.26.1.3 as well as Tables 3.26-1 and 3.26-2 in the Final EIS provide detailed demographics, employment and income statistics, and land

use and value information for that time frame. A traffic and transportation analysis to forecast future travel demands for the St. George urbanized area was also included in Appendix L of the Final EIS and used to inform the potential traffic and transportation effects as a result of the Northern Corridor alternatives.

The following conclusions were made in the Final EIS. Under the No Action Alternative, congestion on existing roadways in the St. George area would continue to increase. This may cause longer travel times, increased vehicle emissions, and increased noise. This could discourage residents from traveling to shopping centers and result in losses of sales and tax revenue.

Under each of the three ROW alignments within the NCA (T-Bone Mesa, UDOT Application, and Southern Alignments) properties would be encumbered. Acreages that would be encumbered under each alternative are shown in Tables 3.26-3 through 3.26-5 within the 2020 Final EIS and summarized in Table 22 in the supplemental analysis section.

Existing neighborhoods adjacent to where the highway would connect to existing infrastructure would experience increases in traffic and noise, while increased traffic resulting from expected population growth would be mitigated elsewhere due to the presence of an alternative route. Residential properties would likely also be negatively affected by changes in property values or aesthetic features of the Reserve. Other potential effects include restricted livestock grazing in Zone 6 and induced growth to undeveloped areas.

The Red Hills Parkway Expressway would impact property access between 200 East and 900 East and may necessitate either relocating or closing access to certain properties (refer to Table 3.26-6 within the Final EIS for specific property impacts). Road widening would entail partial and full property acquisitions which could alter current land use, potentially leading to relocations of 13 commercial or city utility properties.

The One-way Couplet alternative would impact downtown St. George, potentially affecting social, economic, and walkability aspects within 0.25 mile of St. George Boulevard and 100 South. While St. George Boulevard may see minimal changes, the one-way configuration could lead to higher traffic volumes, depending on the results of the updated traffic analysis, and faster speeds, potentially affecting property values and businesses along those routes. Increased traffic on 100 South may boost commercial property values but decrease residential values, impacting neighborhood cohesion. Some property would need to be acquired under this alternative (specific property impacts can be found in Table 3.26-7 in the 2020 Final EIS).

3.11.2 Supplemental Analysis

A number of land transfers have occurred since publication of the Final EIS, including the ESA Section 6 and LWCF lands described in Sections 3.6 and 3.7. The analysis updated the acreages encumbered under each of the alternatives. This supplemental analysis also focuses on updated demographics in Washington County in regard to the rapid population growth the area has experienced in the last several years. As stated in Section 1.8, the DMPO is completing a detailed transportation and traffic analysis for the SEIS. Although this analysis is not complete at the time of publication of the Draft SEIS, any new information resulting from the updated traffic analysis will be included in the Final SEIS.

Affected Environment

Since publication of the Final EIS, a number of land transfers has occurred. The acreages that would be encumbered under each of the three ROW alignments within the NCA (T-Bone Mesa, UDOT Application, and Southern Alignments) are shown in Table 22. This data updates Tables 3.26-3 through 3.26-5 within the 2020 Final EIS. Acreages that would be encumbered under the Red Hills Parkway Expressway and the One-way Couplet alternative have not changed since the Final EIS although landownership has changed for a few parcels. The data for these two alternatives are shown in Table 23.

Table 22. Acreage Encumbered under the UDOT ROW, T-Bone Mesa, or Southern Alignments

Landowner	UDOT ROW Alignment Final EIS	UDOT ROW Alignment Draft SEIS	T-Bone Mesa Alignment Final EIS	T-Bone Mesa Alignment Draft SEIS	Southern Alignment Final EIS	Southern Alignment Draft SEIS
Federal	122	65.9	131.1	90.7	99.5	80.0
State	61.6	126.0	68.8	130.5	63.3	93.0
County	4.1	41.4	5.2	0	0	45.9
Municipal	15.2	15.2	23.0	23.0	113.9	113.9
Private	75.7	34.3	32.2	32.2	75.2	29.3
Total Acres	278.6	282.8	260.3	276.4	351.9	362.1

Table 23. Acreage Encumbered under the Red Hills Parkway Expressway or St George Boulevard/100 South One-way Couplet Alternatives

Landowner	Red Hills Parkway Expressway	St George Blvd/100 S One-way Couplet
Federal	0.21	0
State	8.70	0
County	0	0
Municipal	7.19	0
Commercial or Private	10.40	2.19
Total Acres	26.5	2.19

Washington County’s population was 197,680 in 2022 (the most recent year with available data), a 19.3% increase over the 2017 population data published in the Final EIS. Over that same time frame, the population of the State of Utah grew by 9.0%. Demographics have also shifted with a substantial increase in minority and Hispanic populations (Table 24). Employment, income, and educational attainment have also increased in Washington County and the State of Utah (Table 25). Median home values have increased in both Washington County and the State of Utah to \$528,400 and \$499,500, respectively.

Table 24. Minority and Hispanic Populations in Washington County and Utah for the years 2020 and 2022

Year	Geography	Percent White	Percent Minority	Percent Hispanic
2020	Washington County	90	10	10
	Utah	87	13	14
2022	Washington County	88	12	11.1
	Utah	82.4	17.6	14.6
Percent Change	Washington County	-2.2	20.0	11.0
	Utah	-5.3	35.4	4.3

Note: The Hispanic demographic is also included in the percent minority. The total population can be obtained by summing White and Minority populations.

Table 25. Employment and Income in Washington County and Utah for the years 2020 and 2022

Year	Geography	Unemployment Rate	Per Capita Income	Bachelor's Degree or higher
2020	Washington County	3.4	\$29,886	29.2
	Utah	3.6	\$30,986	34.7
2022	Washington County	3.1	\$36,047	36.6
	Utah	3.4	\$37,023	37.9
Percent Change	Washington County	-8.8	20.6	25.3
	Utah	-5.6	19.5	9.2

Environmental Consequences

In 2023, DMPO, a cooperating agency, commissioned a new traffic analysis that will examine, among other things, traffic congestion and travel times at major intersections adjacent to the project area under each alternative. DMPO expects to receive and share the results from this analysis before the Final SEIS is published. While BLM expects the results will be similar to the 2020 analysis, the agency anticipates the projected results for the expected level of service at individual intersections, traffic volumes, and travel times under each alternative may potentially increase because of the growth in and around the greater St. George metropolitan area since 2020 (19.3% growth between 2017 and 2022), and other factors that have occurred since the Final EIS was published. BLM understands from DMPO that these changes are incorporated into the 2023 Travel Demand Model.

UDOT ROW Alignment (Affirm Current ROW Grant)

There is no change to property impacts beyond what was disclosed in the Final EIS and updated in Table 22. Construction of the Northern Corridor on the UDOT ROW Alignment may help to relieve congestion on existing roadways in the St. George area. Zone 6 would be retained as part of the Reserve and current land uses within the Zone would be maintained.

T-Bone Mesa Alignment

There is no change to property impacts for this alternative beyond what was disclosed in the Final EIS and updated in Table 22. The T-Bone Mesa Alignment would be expected to have fewer impacts on the property values (and quality of life values related to highway noise, vehicle lights, emissions) for the residents of the Green Spring developments that are along the boundary of the NCA, when compared to the UDOT ROW and Southern Alignments, although this is not quantified. The reason for this expectation is that that the T-Bone Alignment diverts north and west away from these subdivisions almost immediately, while the UDOT ROW and Southern Alignments follow a joint, single, southerly path much closer to the subdivisions along the boundary of the NCA, before separating as they turn west at varying distances from the southern boundary of the NCA. Zone 6 would be retained as part of the Reserve and current land uses within the Zone would be maintained.

Southern Alignment

There is no change to property impacts for this alternative beyond what was disclosed in the Final EIS and updated in Table 22. Construction of the Northern Corridor Highway on the Southern Alignment would result in similar potential impacts to traffic as the UDOT ROW Alignment, although these impacts would be in a different area. Zone 6 would be retained as part of the Reserve and current land uses within the Zone would be maintained.

Red Hills Parkway Expressway

Under this alternative, a new highway would not be constructed within the NCA and instead the Red Hills Parkway would be modified (see Section 2.3.4) to a grade-separated expressway between I-15 and Bluff Street. Construction of the Northern Corridor on this alignment may help to relieve congestion in the St. George area. As indicated in Table 23, it is anticipated that 26.5 acres of property along Red Hills Parkway would need to be acquired to accommodate necessary road widening and improvements. There

may be additional expenses associated with these acquisitions due to the increase in property values in Washington County. Zone 6 would not be retained under this alternative and the 3,338 acres of non-Federal lands would be available for development under the amended ITP. Localized impacts related to construction and additional growth in that area would occur, although they cannot be quantified at this time.

St. George Boulevard/100 South One-way Couplet

Under this alternative, modifications to the St. George Boulevard and 100 South would be undertaken to create a one-way couplet (see Section 2.3.5). Modifications to traffic patterns in this heavily built-up area may decrease pedestrian walkability in the area and have negative economic impacts on local businesses. Zone 6 would not be retained under this alternative and the 3,338 acres of non-Federal lands would be available for development under the amended ITP. Localized impacts related to construction and additional growth in that area would occur, although they cannot be quantified at this time.

Terminate UDOT's ROW

Under this alternative, UDOT would no longer hold the ROW grant for the Northern Corridor across public lands in the NCA. As detailed in Section 3.11.1, congestion on existing roadways in the St. George area would continue to increase, which would cause longer travel times, increased vehicle emissions, and increased noise. Zone 6 would not be retained under this alternative and the 3,338 acres of non-Federal lands would be available for development under the amended ITP. Localized impacts related to construction and additional growth in that area would occur, although they cannot be quantified at this time.

3.12 Cumulative Impacts

Cumulative impacts are effects on the environment that result from the incremental effects of implementing any of the alternatives analyzed in this SEIS in combination with the effects of other past, present, and reasonably foreseeable actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time, regardless of what agency or person undertakes such other actions (40 CFR Part 1508.1(g)(3)). Cumulative effects are analyzed only for those resources where there is a direct or indirect impact resulting from any of the proposed actions. The area analyzed for cumulative impacts varies by environmental resource and is described below for each resource.

A summary of the cumulative impacts described in the Final EIS is provided. The cumulative effects analysis in the Final EIS identified reasonably foreseeable future actions and provided that list in Table 3.28-2 of the Final EIS. Several of the projects on that list have been started or completed since the Final EIS and are now part of the affected environment described in this SEIS for each resource. For all resources, the impacts of the past and present actions contribute to the current condition and are captured in the baseline description of the affected environment for that resource in Sections 3.2 through 3.11. For the cumulative effects analysis for the SEIS, the reasonably foreseeable future projects listed in Table 3.28-2 of the Final EIS that have not been started, and any new or future projects that were not known or planned at the time of the Final EIS, are listed in Table 26 and considered in this analysis. Resources evaluated for cumulative effect are presented in the same order as discussed earlier in this chapter.

Table 26. Reasonably Foreseeable Future Projects or Actions

Action or Project	Description	Disturbance or Description of Impacts
Transportation		
Washington City, Long Valley Road Extension	Long Valley Road is the principal access for the future Trails Development in Long Valley, southeast of Washington City	The road is proposed to be 4,877 feet in length and 110 feet wide
UDOT, Region 4 SR 9, Various projects	New interchanges at Telegraph, Purgatory, Sand Hollow Road, 3400 West, 2800 West; widening, I-15 to 2700 West	Proposed improvements on SR 9 in Washington City and Hurricane City
UDOT, Region 4, Purgatory Road	Extend 5300 West from SR 9 to Washington Dam Road	New 5-mile-long roadway beginning in Hurricane City and ending in Washington City
Hurricane, Various widening and new construction	DMPO 2019 – 2031: Seven new roadway construction projects; Two roadway widening/reconstruction projects	Projects vary in length from 0.5 to 2.2 miles
Hurricane, Various widening and new construction	DMPO 2031 - 2040: Thirteen new roadway construction projects; One roadway reconstruction	Projects vary in length from 0.5 to 6.8 miles
Ivins, Various projects	DMPO 2019– 2030: Western North, Old Highway 91 to 400 East; City Boundary to 400 East DMPO 2031 – 2040: Red Mountain Boulevard, Old Highway 91 to Center Street	New roadway construction from 0.5 to 1.2 miles long. New roadway construction from 1.5 miles long
Santa Clara and Ivins, Various projects	DMPO 2019 – 2030: Red Mountain Drive, Pioneer Parkway to Western; Western Corridor North, 400 East to City Boundary; Plantations Drive, Dixie Drive to Sunbrook to Western Corridor DMPO 2031 – 2040: Pioneer Parkway, Lava Flow to Red Mountain Drive; Santa Clara Drive to Western Corridor Connector	New roadway construction from 0.7 to 0.9 mile long. New roadway construction of 3.0 and 1.52 miles. New roadway construction 1.5 miles long each
City of St. George, Various projects	DMPO 2031 – 2040: Seven new roadway construction projects and three widening and reconstruction projects. Includes 3.0-mile Cottonwood Springs Drive from Red Hills Parkway to Northern Corridor	New roadway construction from 0.3 to 4.3 miles in length, roadway widening and reconstruction from 0.5 to 1.9 miles long
City of St. George, Western Corridor and I-15 corridor projects	DMPO 2041-2050: Western Corridor, Sun River Parkway to Plantations Drive	10.0 miles of new roadway construction. Two new roadways (0.5 and 1.8 miles long) and one 3.0-mile-long widening project in or near the I-15 corridor

Action or Project	Description	Disturbance or Description of Impacts
City of St. George, Warner Valley Area	DMPO 2041-2050: Warner Valley Road to Southern Parkway to the road through Warner Valley and Pecan Road to Honeymoon Trail Road	30.8 miles of new construction plus 4.9 miles of widening between River Road and Warner Valley
Comprehensive Travel and Transportation Management Plan for the BLM St. George Field Office in Washington County	Completion of a Comprehensive Travel and Transportation Management Plan for BLM-administered lands in Washington County, including the BLM St. George Field Office and Red Cliffs NCA. The BLM would designate motorized, mechanized, and non-mechanized routes	Designation of routes would occur throughout the county. After routes are designated, off-highway vehicle use would be managed as limited to designated routes, which would reduce off-highway vehicle use on existing, undesignated routes
Public Works		
Utah Board of Water Resources	Lake Powell Pipeline project would deliver water from Lake Powell near Glenn Canyon Dam in Page, Arizona to Sand Hollow Reservoir near St. George, Utah	Approximately 140 miles of underground pipeline, five pumping stations, and 6 hydroelectric facilities are proposed
Development		
DiVario Development	Master-planned community	730 acres proposed adjacent to the northeastern border of proposed Zone 6.
The Trails Development	Master-planned community	605.61 acres proposed within the recently completed Brennan/BLM land exchange, six miles east of St. George, 1.5 miles from St. George Airport
Apple Valley	Master-planned community	200 acres proposed off Cinder Road consisting of hotel and 22-single-family detached housing units
Solara	Master-planned community	200 acres south of Anderson Junction, east of Silver Reef
Recreation Tours, Events, Special Recreation Permits		
BLM permit applications, Various tours and events	115 permitted uses for activities including adventure tours, hunting, all-terrain- vehicle tours, races, film shoots, and similar, including Red Rock Rampage, Huntsman World Senior Games, Interscholastic Cycling Association High School Championship, and tri-state all-terrain-vehicle events	St. George Field Office – Washington County (various locations). Kanab Field Office, Arizona Strip Field Office

Action or Project	Description	Disturbance or Description of Impacts
BLM permit applications, Shooting Range	Proposal for a long-distance rifle range to address potential conflicts with other recreational users; The BLM working with the County to relocate current proposed location	County proposal located in Cove Wash; may infringe on the Red Bluff ACEC
Ivins Public Works, Regional Park and Cemetery	The outdoor recreation area would contain a regional park, a disc golf course, a junior mountain biking trail, and a trail system that connects to existing trails. The public works facility and yard would consist of an office, a fleet maintenance facility, various storage areas, covered employee parking, and a public garbage area	72-acre parcel. Southwest side of Old Hwy 91, at the intersection of Old Hwy 91 and Main St
Land and Facilities Management		
City of St. George, Reserve Boundary Adjustment	St. George has proposed a minor boundary adjustment to allow for construction of an access road from their Water, Power, and Streets yard	Removal of 0.65 acre from Zone 3 of the Red Cliffs Desert Reserve in exchange for 0.65 acre (also in Zone 3), construction of access road in area of adjusted boundary
Land Tenure Adjustments and Land Use Authorizations		
Various Proposed Parcel acquisitions	Proposed acquisitions within Zone 3 of the Reserve	Washington County HCP Funds, 22.2-acre parcel, T42S, R15W, Section 16 Nature Conservancy, 2.2-acre parcel, T42S, R15W, Section 16 UDNR, 2.2-acre parcel, T42S, R15W, Section 16 LWCF, approximately 15.2 acres remaining of 44.4- acre parcel, T42S, R15W, Section 16 ESA Section 6 funds, UDWR and unnamed private landowner, totaling approximately 200 acres in undisclosed location within Zone 3
BLM acquisition through Land Exchange	Proposed land exchange with WCWCD	Land Exchange with the WCWCD involving 2 parcels. The non-Federal parcel is approximately 89.43 acres, T42S R15W sec 9 and the Federal parcel is 929.14 acres, T42S R 14W sec 28, 29, 30, 31 and T42S R14W sec 6

3.12.1 Vegetative Communities, including Noxious Weeds and Invasive Species

The cumulative impact analysis area for the evaluation of impacts on vegetative communities, and, in particular, noxious weeds and invasive species, is the same as used in the Final EIS (Section 3.28.2, BLM 2020a), which was defined as potential and suitable modeled desert tortoise habitat (up to 4,500-foot elevation) in Washington County (excluding the Northeastern Mojave Recovery Unit).

2020 Final EIS Summary

The Final EIS stated in Section 3.28.2 that the HCP, which addresses development on Mojave desert tortoise habitat on non-Federal, non-Tribal land in most of Washington County, involves a substantial amount of acreage, which would lead to vegetation loss from all alternatives. The cumulative effects of project-related activities, combined with additional ground-disturbing actions identified in Section 3.28.2, were identified as a threat to native vegetation communities.

Supplemental Analysis

Since publication of the Final EIS, a number of projects or actions listed in Table 3.28-2 of the Final EIS have been completed. The effects of those projects are now considered as part of the affected environment baseline for vegetative communities. Completed transportation projects include the construction and expansion of roads near the NCA. Although these projects did not directly occur on NCA lands, all projects identified that have the potential for ground-disturbing activities within previously undeveloped land have the potential to exacerbate the proliferation of non-native and invasive plant species which could spread into the NCA leading to further habitat degradation and increased wildfire risk.

Additional reasonably foreseeable actions not included in Table 3.28-2 of the Final EIS that have been identified since the Final EIS are included in Table 26. All actions in Table 26 that have the potential for ground disturbance and to contribute to cumulative effects on vegetation resources. Effects would be similar to those disclosed in Section 3.28.2 of the Final EIS. The identified development and transportation projects, such as the Western Corridor, listed in Table 26, would remove, destroy, or degrade soil and native vegetation communities. The removal or degradation of native vegetation would potentially exacerbate the spread of invasive species, particularly given the compounding impacts of climate change and wildfire threats. All projects identified that have the potential for ground-disturbing activities within previously undeveloped land would adversely impact native vegetation communities as well as potentially increase the spread of noxious and invasive species.

Utah's Watershed Restoration Initiative, a partnership-based program to improve high priority watersheds throughout the state, has undertaken a number of projects in the Reserve. The Watershed Restoration Initiative has focused on improving three ecosystem values: 1) watershed health and biological diversity, 2) water quality and yield, and 3) opportunities for sustainable uses of natural resources. A list of projects that has occurred in the Reserve is provided in Appendix B. More information about each of these projects can be found at <https://watershed.utah.gov>. These projects are designed to improve the native plant communities in the Reserve and reduce the impact of invasive species.

3.12.2 Special Status Plants

The cumulative impact analysis area for special status plants is the same as the analysis area identified for Vegetative Communities in Section 3.12.1.

2020 Final EIS Summary

Any ground-disturbing activities that occur within suitable and occupied habitat would have cumulative effects on the special status plants present in the analysis area. Projects outlined in Table 3.28-2, such as road widening and new road construction, may overlap with occupied habitat for various special status plant species, adversely affecting them or their habitat. Furthermore, the impact of climate change, soil erosion, and recreational activities compound the threats to suitable habitat for special status plants within the analysis area.

Supplemental Analysis

Since publication of the Final EIS, a number of projects or actions listed in Table 3.28-2 of the Final EIS have been completed. The effects of those projects are now considered as part of the affected environment baseline for special status plants. Completed transportation projects include the construction and expansion of roads near the NCA. Although these projects did not directly occur on NCA lands, any projects that occurred in potentially suitable habitat for special status plants described in Section 3.4 of this SEIS, have the potential to contribute to cumulative effects.

Additional reasonably foreseeable actions that have been identified since the Final EIS are included in Table 26. All actions in Table 26 that have the potential for ground disturbance in suitable habitat for special status plants, would have the potential to contribute to cumulative effects to this resource. Effects would be similar to those disclosed in Section 3.28.3 of the Final EIS. The degradation of suitable habitat for special status species would be exacerbated by the spread of invasive species associated with ground disturbing activities, particularly given the compounding impacts of climate change and wildfire threats. Any of the planned projects that are Federally-funded would require avoidance and minimization measures that would help to reduce or mitigate impacts to special status species.

3.12.3 Fire and Fuels Management

The cumulative impact analysis area for fire and fuels management is the same as used in the Final EIS (Section 3.28.22), which was defined as the NCA and Reserve, although the influence of increasing wildfires throughout Washington County and in the northern Mojave Desert was also considered.

2020 Final EIS Summary

The Final EIS stated in Section 3.28.22 that foreseeable actions impacting fire management are related to projects with potential human-caused wildfire risks or those affecting fuel loading or vegetation cover types. While the T-Bone Mesa, UDOT Application, and Southern Alignments would impact fire and fuels management in the NCA, aside from the completion of the Comprehensive Travel and Transportation Management Plan for the BLM St. George Field Office, there were no other foreseeable actions identified in the area that would have contributed to cumulative effects to fire and fuels management. The potential for climate change to exacerbate fire risks by altering plant growth, increasing drought frequency, and facilitating the expansion of invasive grasses, was identified in the Final EIS as contributing to cumulative effects.

Supplemental Analysis

Since publication of the Final EIS, a number of projects or actions listed in Table 3.28-2 of the Final EIS have been completed. The effects of those projects are now considered as part of the affected environment baseline for fire and fuels management. Additional reasonably foreseeable actions that have been identified since the Final EIS are included in Table 26. Effects would be similar to those disclosed in Section 3.28.5 of the Final EIS. Reasonably foreseeable road or other development projects identified in Table 26 that are near the NCA may provide additional vectors for ignition sources for wildfires which could spread into the NCA. In addition to impacts from climate change and an increase in annual grasses, these actions could cumulatively contribute to impacts to fire and fuels management.

3.12.4 Special Status Wildlife

The cumulative impact analysis area for special status wildlife is the same as the analysis area identified above for vegetation in Section 3.12.1.

2020 Final EIS Summary

The Final EIS stated in Section 3.28.5 that all alternatives, along with foreseeable land development and transportation projects, would contribute to habitat loss for special status wildlife in the analysis area, impacting in particular the desert tortoise. While roadway improvements in the Red Hills Parkway Expressway and St George Blvd/100 South One-way Couplet alternatives were identified as having negligible cumulative impacts, the analysis showed the T-Bone Mesa, UDOT Application, and Southern

Alignments could moderately affect wildlife habitats due to habitat loss. Projects listed in Table 3.28-2 of the Final EIS, including the Western Corridor, would further fragment tortoise habitat. The Final EIS identified measures like ESA Section 7 consultation and fencing to mitigate some of the potential impacts. The combination of the proposed actions (HCP, Zone 6, and ROW) would contribute to beneficial and adverse cumulative effects to Mojave desert tortoise.

Supplemental Analysis

Since publication of the Final EIS, a number of projects or actions listed in Table 3.28-2 of the Final EIS have been completed. The effects of those projects are now considered as part of the affected environment baseline for special status wildlife. Additional reasonably foreseeable actions identified in Table 26 that have the potential for ground disturbance in suitable habitat would have the potential to contribute to cumulative effects to special status wildlife. Effects would be similar to those disclosed in Section 3.28.5 of the Final EIS. Road construction and widening projects completed since publication of the Final EIS have contributed to the incremental habitat loss for special status wildlife species. Additional foreseeable and planned projects such as road construction and associated developments for recreation as well as the widening of SR-318 would add to habitat loss and fragmentation. The implementation of the project combined with the ground-disturbing projects listed in Table 26 would result in incremental cumulative impacts to special status wildlife within the analysis area. Of particular note are the planned 3.0-mile Cottonwood Springs Drive from Red Hills Parkway to the Northern Corridor highway that would be undertaken by the City of St. George and UDOT's 4.0-mile Babylon Road project that would connect Old Highway 91 to Hurricane along the existing Babylon Road. Both of these projects would be located in occupied Mojave desert tortoise critical habitat within the NCA. In addition, the planned Western Corridor would directly abut the western boundary of Zone 6. The Western Corridor would result in direct impacts to tortoise, including loss/degradation of occupied tortoise habitat, loss of habitat connectivity (including between the UVRU and Northeastern Mojave Recovery Unit), and increase threats of fire, the spread of exotic/invasive plants, and of raven subsidies (e.g., roadkill).

3.12.5 ESA Section 6 Land Acquisition Grants

The cumulative impact analysis area for the evaluation of impacts to ESA Section 6 Land Acquisition Grants is the same as was used in Section 3.28.2 of the Final EIS, which was the Reserve boundary, although no Section 6 lands occur in Zone 6 of the Reserve.

2020 Final EIS Summary

The Final EIS stated in Section 3.28.6 that no reasonably foreseeable actions identified in Table 3.28-2 of the Final EIS would affect ESA Section 6 lands within the analysis area with the exception of a potential increase in Section 6 lands within the Reserve. The Final EIS stated that the increase of stressors affecting desert tortoise could also result in the incremental degradation of Section 6 lands that could adversely affect their long-term conservation goals.

Supplemental Analysis

Since publication of the Final EIS, a number of projects or actions listed in Table 3.28-2 of the Final EIS have been completed and there has been an increase in Section 6 lands within the Reserve as identified in the affected environment. Similar to the effects disclosed in Section 3.28.6 of the Final EIS, additional reasonably foreseeable actions included in Table 26 would not affect ESA Section 6 lands within the Reserve.

3.12.6 Land and Water Conservation Fund Lands

The cumulative impact analysis area for LWCF lands is the same as was used in Section 3.28.2 of the Final EIS, which was the boundaries of LWCF properties within the Reserve and NCA.

2020 Final EIS Summary

The Final EIS stated in Section 3.28.16 that land tenure acquisitions and land use authorizations would offset some of the loss from Federal LWCF impacts by incorporating private in-holdings into the NCA.

No reasonably foreseeable actions identified in Final EIS Table 3.28-2 would affect State LWCF lands within the analysis area.

Supplemental Analysis

Since publication of the Final EIS, a number of projects or actions listed in Table 3.28-2 of the Final EIS have been completed and there has been an increase in LWCF lands in the Reserve as identified in the affected environment. Additional reasonably foreseeable actions that have been identified since the Final EIS are included in Table 26. Similar to the effects disclosed in Section 3.28.16 of the Final EIS, additional reasonably foreseeable actions included in Table 26 would not affect LWCF lands within the Reserve.

3.12.7 National Conservation Area

The cumulative impact analysis area for the evaluation of impacts to the NCA is the same as used in Section 3.28.18 of the Final EIS, which was the NCA boundary.

2020 Final EIS Summary

Section 3.28.18 of the Final EIS stated that the cumulative impacts on the NCA's objects and values were described in other cumulative resource sections. That is, wildlife values were discussed in General Wildlife (Section 3.28.4) and Special Status Wildlife (Section 3.28.5); ecological values were addressed in Vegetative Communities Including Noxious Weeds and Invasive Species (Section 3.28.2); Special Status Plants (Section 3.28.3); General Wildlife (Section 3.28.4); Special Status Wildlife (Section 3.28.5); Fire and Fuels Management (Section 3.28.22); and so on. Table 3.28-3 in the Final EIS includes details about which sections of the cumulative effects analysis discuss which resources.

Supplemental Analysis

For this supplemental analysis, cumulative effects to the NCA's objects and values are described in other resource sections, similar to the Final EIS. As part of the Settlement Agreement, the BLM agreed to complete a compatibility analysis determination which will be included in the ROD for the SEIS.

3.12.8 Cultural Resources and Native American Concerns

The cumulative impact analysis area for evaluation of impacts to Cultural Resources and Native American Concerns consists of areas within the proposed alternative alignments for the Northern Corridor, the non-Federal lands within the HCP Permit Area, and Zone 6. This includes all areas where the Federal actions may directly or indirectly impact cultural resources.

2020 Final EIS Summary

The Final EIS stated in Section 3.28.14 that the T-Bone Mesa, UDOT Application Alignment, Southern Alignment, and the Red Hills Parkway Expressway alternatives, along with foreseeable land development and transportation projects, would contribute to the gradual loss of cultural resources in the area, with the T-Bone Mesa, UDOT Application, and Southern Alignments having the most impact due to highway improvements. Construction projects like the Washington Parkway, the proposed Western Corridor, and DiVario Development pose risks to cultural resources because of ground-disturbing activities, particularly on lands that are undeveloped. The construction of residences for the DiVario Development would result in ground-disturbing activities and have the potential for adverse effects to archaeological resources. The completion of BLM land acquisitions of non-Federal lands within the Red Cliffs NCA would have beneficial impacts on cultural resources if those resources were present on acquired parcels. A number of measures like the Amended HCP and Comprehensive Travel and Transportation Management Plan, were identified that would result in a reduction in impacts to cultural resources. Overall, the impacts of the actions analyzed in the Final EIS in addition to reasonably foreseeable future actions would result in loss and adverse impacts on cultural resources in the analysis area. Compliance with cultural resource laws would help to minimize cumulative effects on cultural heritage.

Supplemental Analysis

Since publication of the Final EIS, a number of projects or actions listed in Table 3.28-2 of the Final EIS have been completed. The effects of those projects are now considered as part of the affected environment baseline for cultural resources and Native American concerns. Additional reasonably foreseeable actions that have been identified since the Final EIS are included in Table 26. All actions in Table 26 that have the potential for ground disturbance, would have the potential to contribute to cumulative effects to cultural resources. Effects would be similar to those disclosed in Section 3.28.14 of the Final EIS. If the ongoing Red Cliffs/Warner Valley Land Exchange is approved, one historic property within the UDOT ROW alignment would be acquired by the BLM through this exchange. Overall, the impacts of the actions analyzed in the Final EIS in addition to reasonably foreseeable future actions would result in the incremental loss and adverse impacts on cultural resources in the analysis area.

3.12.9 Environmental Justice

The cumulative impact analysis area for impacts to Environmental Justice was the same as used in the Final EIS (Section 3.28.27), which was Washington County. The effects to Environmental Justice populations from all Federal actions analyzed in the Final EIS would occur in Washington County.

2020 Final EIS Summary

The Final EIS stated in Section 3.28.27 that no reasonably foreseeable actions identified in Table 3.28-2 of the Final EIS would disproportionately affect Environmental Justice populations within the analysis area.

Supplemental Analysis

A more robust Environmental Justice analysis was conducted in this SEIS in accordance with further additional guidance on Environmental Justice described in Section 3.10.2. Additional reasonably foreseeable actions not included in Table 3.28-2 of the Final EIS that have been identified and are included in Table 26. Reasonably foreseeable actions related to construction and development of some of the projects in Table 26 will have temporary impacts such as noise and fugitive dust that could affect both Environmental Justice and non- Environmental Justice communities. These impacts would disproportionately impact Environmental Justice communities if projects were concentrated closer to these communities than non- Environmental Justice communities; impacts from these other projects should include an analysis to determine and mitigate their impacts to Environmental Justice communities.

3.12.10 Socioeconomics

The cumulative impact analysis area for impacts to socioeconomics was the same as used in the Final EIS (Section 3.28.26), which was Washington County. The socioeconomic impacts of all Federal actions analyzed in the Final EIS would occur in Washington County.

2020 Final EIS Summary

The Final EIS stated in Section 3.28.26 that the actions outlined in Table 3.28-2 of the Final EIS could affect social and economic activity in the county, particularly with projects like the Northern Corridor and other construction projects boosting construction jobs and local spending. These infrastructure developments aim to accommodate a growing population and enhance socioeconomic activity, though they may also entail displacing existing residences and utilities and altering access to land use. Despite projected population growth and potential impacts on recreational demand and landscape aesthetics, the cumulative effects of these actions are not expected to affect the availability of homes, schools, or community services.

Supplemental Analysis

Since publication of the Final EIS, a number of projects or actions listed in Table 3.28-2 of the Final EIS have been completed. Additional reasonably foreseeable actions not included in Table 3.28-2 of the Final EIS that have been identified since the Final EIS are included in Table 26. Effects to socioeconomics would be similar to those disclosed in Section 3.28.14 of the Final EIS.

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4 CONSULTATION AND COORDINATION

This chapter describes efforts by the BLM and the FWS to comply with legal requirements to involve the public in the development of the SEIS and consult and coordinate with various government agencies. These efforts include the following:

- Public involvement and scoping.
- Consulting with applicable Federal agencies.
- Consulting with American Indian Tribal governments.
- Identifying, designating, and working with State and local governments and cooperating agencies to identify “any known inconsistencies with State or local plans, policies or programs” (43 CFR 1610.3-2(e)).

A list of preparers of the Draft SEIS is also presented.

4.1 Public Involvement and Scoping

The scoping period for the SEIS began with the publication of the NOI in the Federal Register on November 16, 2023, and extended through December 28, 2023. The BLM and the FWS initiated the scoping process to solicit public comments and identify issues to be addressed in the SEIS. A public scoping meeting was held on December 6, 2023, at the Dixie Convention Center in St. George. In total, 8,993 submissions were received from the public during the scoping period. Information about the scoping meeting, comments received, and comment analysis can be found in the Final Northern Corridor SEIS Scoping Report available on the BLM’s ePlanning website.⁸

The NEPA process provides additional opportunities for public involvement. This Draft SEIS will be available for public review. A Notice of Availability will be published in the Federal Register informing the public of the availability of this Draft SEIS for a 45-day public comment period. The availability of the Draft SEIS will also be announced on the ePlanning website. Public comments will be accepted for 45 days, during which time a public open house will be held to provide information on the Draft SEIS and to solicit public and agency comments. The BLM and FWS will review and consider all comments received on the Draft SEIS. The BLM and FWS will respond to substantive comments and the draft document will be modified as appropriate based on public comments; all substantive comments and responses will be incorporated into the Final SEIS. The availability of the Final SEIS will be announced in a Federal Register Notice of Availability and a document will be posted on the ePlanning website. After a 30-day period of availability for the Final SEIS, a BLM ROD, and potentially a FWS ROD, will be published.

An outreach plan to Environmental Justice communities is being developed by BLM, consistent with Instruction Memorandum 2022-059 (BLM 2022b) and will be implemented as part of public outreach activities during the SEIS process. During the SEIS process, and in conjunction with the release of the Draft SEIS and Final SEIS, BLM will proactively provide opportunities for meaningful involvement of minority populations, low-income populations, and Tribes in BLM decision-making processes that affect their lives, livelihoods, and health. This is in addition to the BLM’s responsibilities to consult with Federally-recognized Tribes, as outlined in Department and BLM policies.

4.2 Agency Consultation and Coordination

4.2.1 Endangered Species Act Section 7 Consultation

Section 7(a)(2) of the ESA requires that each Federal agency ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the

⁸ <https://ow.ly/pgkG50Q7AyR>

destruction or adverse modification of designated critical habitat. If an action agency determines a proposed action may affect listed species or designated critical habitat, consultation between that agency and the FWS is required under Section 7 of the ESA.

The FWS considered Washington County's request for an ITP through Section 10 of the ESA as they conduct otherwise legal activities located in Washington County, Utah. As a part of this process, the FWS completed an intra-agency Section 7 consultation regarding the potential effects of issuing an ITP to Washington County and found that the action, as proposed, was not likely to jeopardize the continued existence of the desert tortoise, Holmgren milkvetch, Shivwits milkvetch, dwarf bear-poppy, Siler pincushion cactus, Gierisch mallow, and Fickeisen plains cactus or result in the adverse modification of critical habitat for desert tortoise, Holmgren milkvetch, Shivwits milkvetch, Gierisch mallow, or Fickeisen plains cactus (FWS 2021c). A Biological Opinion for the Amended Washington County Habitat Conservation Plan was issued on January 12, 2021.

The FWS completed an inter-agency Section 7 consultation with the BLM regarding the potential effects of BLM's issuance of the Northern Corridor ROW to UDOT. The BLM submitted a Biological Assessment to the FWS to initiate the formal Section 7 consultation process on September 23, 2020. A Biological Opinion for the Northern Corridor Highway Project was issued on January 12, 2021. The Biological Opinion included three Federal actions on the part of the BLM from its responsibility under FLPMA: 1) Issuance of a ROW to UDOT to construct a road through the Red Cliffs NCA; 2) Amendment of the Red Cliffs NCA RMP to allow for a ROW in the Red Cliffs NCA; and 3) Amendment of the St. George Field Office RMP to facilitate the expansion of the Red Cliffs Desert Reserve to change management prescriptions on 3,475 acres of BLM-administered land within the 6,813 acre Zone 6 conservation area comprised of predominantly BLM and Trust Lands Administration land to offset the effects of the Northern Corridor ROW within the Reserve.

As part of the Settlement Agreement, BLM requested that the FWS rescind its Biological Opinion pending reconsideration of the ROW. The Plaintiffs further requested that the FWS withdraw the Biological Opinion within 60 days of receiving the request from BLM. The BLM requested withdrawal of the Biological Opinion for the ROW on January 5, 2024, and it was received by the FWS on January 8, 2024. On March 8, 2024, the FWS issued an Amended Biological Opinion. Because the original Biological Opinion covered three Federal actions, including the Northern Corridor Highway ROW, Red Cliffs NCA RMP Amendment, and St. George Field Office RMP Amendment, the amended Biological Opinion only considered the amendments to the Red Cliffs NCA RMP and St. George Field Office RMP for effects to the Mojave desert tortoise and desert tortoise designated critical habitat. As a result, the amended Biological Opinion withdrew the portions of the original Biological Opinion related to the Northern Corridor ROW. The FWS stated that subsequent affirmation, or affirmation with modifications, of a ROW would require additional Section 7 consultation.

4.2.2 National Historic Preservation Act Section 106 Consultation

As first mentioned in Section 3.9.1, the BLM and the FWS have each independently and together consulted with the Utah SHPO and American Indian Tribes regarding efforts to identify cultural resources, evaluate them for National Register of Historic Places eligibility (36 CFR 800.4), and assess effects of the project on Historic Properties by applying the criteria of adverse effect (36 CFR 800.5). The BLM also consulted and took the lead on Section 106 compliance efforts for portions of the project area located on Trust Lands Administration and UDWR managed lands. The FWS consultation process culminated in the development and signing of a Programmatic Agreement to resolve future, but presently unknown, effects of the FWS's issuance of an ITP to Washington County. The decisions available in this SEIS do not change the implementation of the FWS ITP Programmatic Agreement; thus, the Agreement is in place and valid for all available alternatives in this SEIS and will not be reevaluated as part of the SEIS process.

The BLM consultation process is ongoing, and BLM has committed to completing the process prior to issuance of the ROD. This will include development of a MOA that would address the resolution of adverse effects to historic properties, based on the implementation of approved treatments.

To resolve adverse effects through the Section 106 process, the BLM is required to consult with the Utah SHPO and consulting parties including affected Indian Tribes, other involved State and Federal agencies, the applicant, representatives of local governments, and other individuals and organizations with a demonstrated interest in the undertaking (36 CFR 800.2 c) as appropriate to develop and evaluate alternatives or modifications to an undertaking that could avoid, minimize, or mitigate adverse effects on historic properties. For this project, two separate documents will be written through consultation with BLM, SHPO, and the consulting parties. First, an MOA will be consulted on and executed before a ROD is issued. The rationale for the MOA is that there will likely be adverse effects to historic properties from the design, construction, maintenance, and use of the Northern Corridor Highway in the NCA, and the BLM is legally required to resolve those adverse effects. An MOA is the best vehicle to resolve those effects for this project, to have legal accountability for UDOT, and for BLM to mitigate these adverse effects. The MOA will lay out the framework the BLM, UDOT, the tribes, agencies, organizations, and other consulting parties will use to fund and develop the second document, a Historic Properties Treatment Plan with an associated Native American Graves Protection and Repatriation Act Plan of Action. These documents will be developed and consulted on to resolve adverse effects to Historic Properties, provide legal accountability, and address a plan of action for inadvertent discovery of any Native American Graves, per requirements of 43 CFR 10, Subpart B, Sections 10.4 and 10.6, updated December 13, 2023. BLM will conduct consultation for these two documents separately. Executing the MOA will close out the Section 106 process for the BLM; however, further work (that is, the mitigation process itself) will occur after the signing of the MOA and ROD.

The BLM uses the 2020 BLM Statewide Protocol Agreement with SHPO to comply with the NHPA. This process is briefly summarized in Table 27 along with the dates when specific steps in the Section 106 process were completed. Federal law requires the BLM and FWS to consult with American Indian Tribes during the planning and NEPA process. This is discussed in more detail in Section 4.2.3.

Table 27. Steps in NHPA Section 106 Process

Section 106 Steps	BLM Northern Corridor Section 106 Efforts
Initiation of Section 106 Process Completed: April 17, 2020	<ul style="list-style-type: none"> • Define the Area of Potential Effects: 700-foot-wide corridor centered along NCA Alignments, 200-foot-wide Areas of Potential Effects for Red Hills Parkway (50-foot-wide on either side of the existing road, and one-lot wide on either side of the roads for the One-Way Couplet • Literature Review within 0.25 miles of Area of Potential Effects, all alignments • Initial Tribal Consultation Letters • Initial SHPO Consultation Letter
Identification of Historic Properties Completed: August 7, 2020	<ul style="list-style-type: none"> • Class III Archeological Survey of UDOT ROW Alignment, T-Bone Mesa Alignment, Southern Alignment, and Red Hills Parkway Expressway • Reconnaissance Level Survey of Historic Structures on Red Hills Parkway Expressway and One-Way Couplet • Initial Tribal Consultation Letters

Section 106 Steps	BLM Northern Corridor Section 106 Efforts
Evaluate the Eligibilities of Historic Properties within the Area of Potential Effects for the National Register of Historic Places Completed: August 7, 2020	<ul style="list-style-type: none"> • UDOT ROW Alignment: 8 Eligible Historic Properties, 8 Sites Not Eligible for the National Register of Historic Places • T-Bone Mesa Alignment: 6 Eligible Historic Properties, 5 Sites Not Eligible for the National Register of Historic Places • Southern Alignment: 5 Eligible Historic Properties, 2 Sites Not Eligible for the National Register of Historic Places • Red Hills Parkway Expressway: 2 Eligible or Listed Historic Properties, 9 Sites Not Eligible for the National Register of Historic Places • Structures for the One-Way Couplet: 139 Historic Structures and 63 Structures Eligible for the National Register of Historic Places, 70 Structures Not Eligible for the National Register of Historic Places
Evaluate the Effects to Historic Properties Completed: October 5, 2020	<ul style="list-style-type: none"> • The UDOT ROW Alignment would likely have adverse effects to 8 Historic Properties. (Note: Evaluation was only completed on the Preferred Alternative identified in the Final EIS)
Resolve Adverse Effects to Historic Properties To be completed in 2024	<ul style="list-style-type: none"> • Completion of an MOA through Consultation with the BLM, the Utah SHPO, Affiliated Tribes, and Consulting and Interested Parties.

Consultation with SHPO on the Northern Corridor began in 2020 (Table 28). While no additional formal actions have occurred since then, the BLM and SHPO continue to hold informal discussions on the Northern Corridor and will consult on and execute the MOA with other parties including affected Indian Tribes, per 36 CFR 800.6(c) and 36 CFR 800.8(c)(4), before issuing a new ROW decision.

Table 28. BLM Northern Corridor SHPO Consultation in 2020

Date	Letter	SHPO Case No.	Content
February 5, 2020	Initial Consultation Letter to SHPO	20-0386	Description of project, and a list of tribes the BLM initiated consultation with. Concurrence received: February 10, 2020
April 17, 2020	Area of Potential Effects Consultation Letter to SHPO	20-1117	Description of project, consultation on Area of Potential Effects for all alternatives, description of identification efforts for historic properties (archeological sites and historic structures), and consultation on consulting party list. Concurrence received: April 20, 2020
August 7, 2020	Eligibilities Consultation Letter to SHPO	20-2753	Submission of Historic Structures Report and Class III Cultural Resources Inventory Report (U20ST0150). Asked for Concurrence on Determination of Eligibilities for Archeological Sites (29 total sites, 17 eligible) and Structures (139 Historic Structures, 64 eligible). Concurrence received: August 26, 2020
October 5, 2020	Effects Consultation Letter to SHPO	20-3358	Asked for concurrence on our determination that the construction, use, and maintenance of the UDOT Alignment Alternative may cause Adverse Effects to 8 eligible archeological sites in UDOT Alternative Alignment. Concurrence received: October 5, 2020
December 10, 2020	Red Cliffs NCA RMP Amendments	20-4173	Described proposed Amendment and Alternatives to the Red Cliffs NCA RMP, to allow the granting of a ROW for the Northern Corridor and asked for concurrence on the BLM's

Date	Letter	SHPO Case No.	Content
	Consultation Letter to SHPO		No Adverse Effects Determination for this proposed action. Concurrence received: December 10, 2020
December 10, 2020	St. George Field Office RMP Amendments Consultation Letter to SHPO	20-4173	Described proposed Amendment and Alternatives to the St. George Field Office RMP to create and manage a sixth zone of the Red Cliffs Desert Reserve as a mitigation reserve for Mojave desert tortoise, and close this area to future ROWs, mineral development, livestock grazing, dispersed camping, and target shooting. The BLM asked for concurrence on its No Adverse Effects Determination. Concurrence received: December 12, 2020

For the Northern Corridor Highway, the Advisory Council on Historic Preservation (ACHP) has been notified and invited to consult three times on the undertaking; however, the ACHP has declined to participate following all notifications and invitations to consult. The ACHP was contacted on December 1, 2020, by the FWS to consult on the *Programmatic Agreement Among the US Fish and Wildlife Service: Interior Regions 5 and 7, the Utah State Historic Preservation Officer, and Washington County, Utah Regarding the Issuance of an Incidental Take Permit, Washington County Utah*, and declined to participate. In December of 2020, the Hopi Tribe and Conserve Southwest Utah asked the ACHP to be involved on BLM’s aspects of the project. The ACHP contacted the BLM and FWS on February 12, 2021, and declined to participate at that point also. On January 31, 2024, the BLM invited the ACHP to participate in the Section 106 process for the Northern Corridor Highway and on February 12, 2024, the BLM received a letter from the ACHP saying that they declined to participate in the consultation process.

4.2.3 American Indian Tribal Consultation and Coordination

Federal law requires the BLM and the FWS to consult with American Indian Tribes during the planning and NEPA process. In December 2019, the BLM and FWS initiated government-to-government consultations with 14 American Indian Tribes and Bands that claim affiliation to southwestern Utah, requesting information about sacred sites or places of traditional cultural importance. These Tribes and Bands include: the Hopi Tribe, Kaibab Band of Paiute Indians, the Las Vegas Paiute Tribe, the Moapa Band of Paiute Indians, the Navajo Nation, the Paiute Indian Tribe of Utah (including the Indian Peaks Band of Paiutes, the Cedar Band of Paiutes, the Shivwits Band of Paiutes, the Koosharem Band of Paiutes, and the Kanosh Band of Paiutes), the San Juan Southern Paiute Tribe, the Pueblo of Zuni, and the Chemehuevi Indian Tribe. Responses have been received from the Navajo Nation, the Hopi Tribe, and the Paiute Indian Tribe of Utah. The FWS sent another letter in April 2020 to these same 14 American Indian Tribes and Bands and associated Tribal Historic Preservation Offices that claim affiliation to southwestern Utah, requesting information about sacred sites or places of traditional cultural importance.

On December 30, 2019, the Hopi Tribe responded to this initial consultation and the FWS letter, stating concerns that the proposed Northern Corridor would adversely impact cultural and natural resources that are important to the Tribe. The Hopi Tribe responded several times between 2019 and 2020, stating that the project would have adverse effects to cultural resources significant to the Hopi, that they would like a Hopi Traditional Cultural Properties Study of the Area of Potential Effects, and that the project is an “outrageous double cross for the Mojave desert tortoise.” The Hopi Tribe also asked the ACHP to reconsider declining their involvement with the project (see Section 4.2.2). The Navajo Nation was the only other tribe to respond to this initial consultation in 2019 and they stated that they were not concerned about the project.

The BLM presented information on the proposed Northern Corridor Highway and the two RMP amendments at the February 10, 2020, Tribal Council meeting of the Paiute Indian Tribe of Utah. The BLM and FWS reinitiated government-to-government consultation with these same 14 Tribes and Bands in October 2023. The Paiute Indian Tribe of Utah’s Cultural Resource Manager requested a meeting with the BLM in November of 2023. The BLM met with the Paiute Indian Tribe of Utah’s Chairwoman and Cultural Resource Manager on December 6, 2023; they expressed interest in becoming a Cooperating Agency for the project, informed the BLM that the project area is important to the Southern Paiute, that the tortoise is a sacred animal that they do not want removed from their homes, and that there is an important spring and waterfall that may be within the project area. No other tribes or bands have responded with concerns about the project. The Navajo Nation once again indicated that they are not concerned about the project. As of this publication, no other tribe has responded to the agencies’ joint October 2023 letter. Tribal consultations will be ongoing throughout this planning and NEPA process. A brief description of the Tribal consultation letters sent regarding the Northern Corridor and the responses received is summarized in Table 29.

Table 29. BLM and FWS Northern Corridor Tribal Consultation

Date	Letter	Content	Responses
December 17, 2019	Initial Government-to-Government Letter to 14 Culturally Affiliated Tribes, Bands, and associated Cultural and Historic Preservation Personnel (17 letters). Joint BLM & FWS letter.	The letter initiated Government-to-Government consultation on the Northern Corridor Highway, described the project, and provided notification of a NOI published in the <i>Federal Register</i> that the BLM and FWS would produce one EIS on the planning efforts and consideration of a ROW initiating a 30-day public comment period.	<i>December 30, 2019:</i> The Hopi expressed that they were concerned that the Northern Corridor Highway would have adverse effects to cultural resources significant to the Hopi, the project is “an outrageous double cross for the desert tortoise,” they support the BLM denial of the ROW, and they would like a Hopi Traditional Cultural Properties study of the Area of Potential Effects. The Navajo Nation responded in 2020 and said they do not have concerns with this project.
April 22, 2020	Second Tribal Consultation Letter to 14 culturally affiliated Tribes. Consulting for FWS only.	Description of the project, definition of the Area of Potential Effects, and efforts to identify Historic Properties in the Area of Potential Effects.	<i>May 2020:</i> The Hopi responded and stated they had interest in any tortoise shells for ceremonial activities.
June 1, 2020	Third Tribal Consultation Letter to 14 culturally affiliated Tribes. Consulting for BLM only.	Description of the project, definition of the Area of Potential Effects, and efforts to identify Historic Properties in the Area of Potential Effects.	<i>June 8, 2020:</i> The Hopi acknowledged receipt of information about the results of the Class III survey and reiterated their previous concerns. <i>October 5, 2020:</i> The Hopi acknowledged receipt of the Class III survey information and reviewed it, asked for a copy of the EIS, and reiterated their previous concerns about the project. <i>December 15, 2020:</i> Hopi letter to the ACHP asking the ACHP to reconsider declining their involvement in the project.

Date	Letter	Content	Responses
October 12, 2023	Fourth Tribal Consultation Letter to 14 culturally affiliated tribes (18 letters). Joint BLM and FWS letter.	The letter reinitiated Government-to-Government Consultation, provided notification that a NOI would be published in the <i>Federal Register</i> because of the BLM and FWS’s intent to prepare a SEIS to reanalyze granting a ROW to UDOT for the Northern Corridor Highway. Also provided a summary of the project from 2019 to 2023, and updates on the project and Section 106 process.	The Navajo Nation responded in 2023 and said they do not have concerns with this project. <i>November 14, 2023:</i> Paiute Indian Tribe of Utah asked for meeting. The BLM met with the Cultural Resource Manager and Chairwoman on December 6, 2023. They informed BLM that the project area is important to the Southern Paiute, that the tortoise is a sacred animal that they do not want removed from their homes, and that there is an important spring and waterfall that may be within the project area.

4.2.4 Cooperating Agencies

Federal regulations direct the BLM and FWS to invite eligible Federal agencies, State and local governments, and Federally recognized American Indian Tribes to participate as cooperating agencies when drafting the SEIS. The groups listed in Table 30 accepted invitations to participate as cooperating agencies in the preparation of the SEIS. The BLM and FWS communicated with the cooperating agencies to review development of alternatives and the analysis contained in the SEIS. This process included cooperating agency meetings and conference calls completed on February 15, 2024, and March 22, 2024. Additional meetings will be held between the Draft and Final SEIS. During these workshops, the BLM and the FWS have discussed or will discuss with cooperating agencies, at the appropriate review time, the following:

- Issues raised during scoping.
- Alternatives developed for consideration in the Draft SEIS.
- Preliminary portions of the Draft SEIS.
- Public comments on the Draft SEIS.
- Preliminary portions of the Final SEIS.

Table 30. Cooperating Agencies

Cooperating Agencies
City of Hurricane
City of Ivins
City of St. George
Dixie Metropolitan Planning Organization
Paiute Indian Tribe of Utah
Santa Clara City
Shivwits Band of Paiutes
State of Utah – Public Lands Policy Coordinating Office
Utah Department of Environmental Quality
Utah Trust Lands Administration
Washington City

4.2.5 List of Preparers

This SEIS was prepared by an interdisciplinary team of staff from the BLM and the FWS, with assistance from North Wind Resource Consulting, LLC (North Wind) and Galileo Project, LLC (Galileo). A list of the names and roles and responsibilities of the preparers is provided in Table 31.

Table 31. List of Preparers

Name	Agency	Role or Responsibility
Chiasson, Katherine	BLM	NEPA document review
Cleek, Katherine	BLM	Cultural resources and Native American concerns
Ferris-Rowley, Dawna	BLM	Project Manager, cultural resources, NEPA document review
Fockler, Matt	BLM	Environmental Justice, socioeconomics, NEPA document review
Gaddis, Ben	BLM	NEPA document review
Kellam, John	BLM	Biological resources, vegetation, noxious weeds and invasive species, NEPA document review
Moffit, Melinda	BLM	NEPA document review
Peterson, Shawn	BLM	Fire and fuels management
Taylor, Stephanie	BLM	Biological and Botanical Resources, NEPA document review
Tibbetts, Gloria	BLM	District Manager, NEPA document review
Trujillo, Stephanie	BLM	Lands and realty, NEPA document review
Vernon, Erik	BLM	Air quality
White, Ali	BLM	Geographic Information Systems
FWS Utah Field Office	FWS	ESA Section 6 lands, NEPA document review, threatened and endangered species, biological resources, cultural resources
North Wind Resource Consulting, LLC	North Wind	NEPA document development
Galileo Project, LLC	Galileo	Project Management Assistance

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Appendix A.

Issues Not Analyzed in Detail

Issues satisfactorily addressed in the Final EIS, or that have not substantially changed, or for which there is no new information that has bearing on the proposed action or its effects, are not analyzed in this SEIS; rather the supplemental analysis tiers to and incorporates by reference the information and analyses contained in the Final EIS. The following issues are not considered for detailed analysis:

General Wildlife – Section 3.4 of the Final EIS (pages 3-37 to 3-42) discusses general wildlife within the NCA and in the area covered by the Washington County Amended HCP. The analysis area provides habitat for a variety of mammals, including migratory birds, and other wildlife species. Urban expansion and development will continue in the greater St. George metropolitan area and result in direct and indirect adverse impacts to wildlife through habitat fragmentation and loss and from direct mortality.

Implementation of any of the action alternatives would result in additional habitat loss and fragmentation, especially for the alternatives that lie entirely within the NCA and have the greatest amount of permanent habitat loss. The impacts to general wildlife and their habitat that is described in the Final EIS have not changed and no additional habitat loss or fragmentation beyond that already described would occur. In general, the impacts described in Section 3.6 of this SEIS for Special Status Wildlife would be applicable to general wildlife.

Geology, Mineral Resources, and Soils – Section 3.7 of the Final EIS (pages 3-102 to 3-106) discusses geology, mineral resources, and soils within the Red Cliffs NCA and Zone 6 of the Reserve. Any construction activities as a result of implementing any of the action alternatives would disturb sensitive soils, soil crusts, and topsoil as a result of grading and fill activities. This effect would be greatest for the alternatives that lie entirely within the NCA since they would have the most acres disturbed. The impacts to geology, mineral resources, and soils described in the Final EIS have not changed and no additional disturbance beyond that already described would occur.

Paleontology – Section 3.8 of the Final EIS (pages 3-107 to 3-109) discusses paleontological resources within the Red Cliffs NCA and Zone 6 of the Reserve. The Potential Fossil Yield Classification of the analysis area has not changed since the Final EIS and there would be no impacts to paleontological resources beyond that already described in the Final EIS as no additional disturbance would occur.

Prime and Unique Farmland – Section 3.9 of the Final EIS (pages 3-109 to 3-110) discusses prime and unique farmland in the alternatives that lie outside the NCA and in Zone 6 of the Reserve; no farmlands occur within the NCA. Some prime farmland occurs in the alternatives that lie outside the NCA that could be impacted by selecting one of these alternatives. Some prime farmland also occurs in Zone 6 of the Reserve. There would be no impacts to prime and unique farmland beyond that already described in the Final EIS as no additional disturbance would occur.

Wetlands, Floodplains, and Waters of the U.S. – Section 3.10 of the Final EIS (pages 3-110 to 3-113) discusses wetlands, floodplains, and Waters of the U.S. within the NCA and in the area covered by the Washington County Amended HCP. There are no wetlands that would be impacted by any of the action alternatives. There are potential waters of the U.S. that could be impacted by selecting one of the alternatives within the NCA, and there are floodplains that could be impacted by selecting any of the action alternatives. There would be no impacts to wetlands, floodplains, and Waters of the U.S. beyond that already described in the Final EIS as no additional disturbance would occur.

Water Resources – Section 3.11 of the Final EIS (pages 3-114 to 3-117) discusses water resources within the NCA and in the area covered by the Washington County Amended HCP. Water resources include consideration of surface runoff, springs and seeps, groundwater, and associated floodplains. Additional considerations include potential for sediment from soil erosion to influence water quality. Land topography and surface storage influence surface runoff conveyance to downstream receiving waters as does vegetative cover type and quality. Surface water quality is typically affected by human

activities, but is also influenced by wildlife, vegetation, and soil erosion. Areas with recent wildfire burns have reduced water quality and increased sediment loading in runoff. Any of the action alternatives that would increase impervious surfaces would result in increased runoff. There would be no impacts to water resources beyond those already described in the Final EIS as no additional disturbance would occur.

Air Quality, including Greenhouse Gases – Section 3.12 of the Final EIS (pages 3-118 to 3-124) and Appendix I: Air Quality Technical Report in the Final EIS discusses air quality, including greenhouse gases. Under the Clean Air Act, the U.S. Environmental Protection Agency is responsible for establishing National Ambient Air Quality Standards (40 CFR part 50) for criteria air pollutants considered harmful to the public health and the environment: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (less than 2.5 micrometers [PM_{2.5}] and less than 10 micrometers [PM₁₀]), sulfur dioxide (SO₂), and lead (Pb). On February 7, 2024, the U.S. Environmental Protection Agency announced its final air quality standard to govern fine particulate matter (PM_{2.5}), also known as soot. More specifically, the Environmental Protection Agency set an annual health-based national ambient air quality standard for PM_{2.5} of 9 micrograms per cubic meter, which is a significant reduction from the previous standard of 12 micrograms per cubic meter. The air quality index within Washington County is generally moderate to good and the new air quality standards are not expected to change the conclusions that described in the Final EIS.

The Clean Air Act also requires the Environmental Protection Agency to regulate mobile source air toxics, which include nine compounds emitted from highway vehicles, trucks, buses, and non-road equipment. Diesel particulate matter remains the dominant mobile source air toxic of concern for highway and other transportation projects. In addition to strengthening the annual standard, the Environmental Protection Agency also modified the PM_{2.5} monitoring network design criteria in order to improve data collection to account for environmental justice considerations. This modification is intended to account for proximity of populations at increased risk of health effects from PM_{2.5} to sources of air pollution.

Class I Federal lands include areas such as national parks, designated wilderness, and national monuments that are granted special air quality protections under the Clean Air Act. Zion National Park is the nearest designated Class I area and is located within Washington County, approximately 20 miles east of the Northern Corridor project area. Any generated local air emissions from the alternatives are not anticipated to affect the air quality within Zion National Park. These air emissions are anticipated to dissipate over several land uses and be indistinguishable from emissions from other regional sources before reaching the park. In addition, the topography between the project area and the park generally increases towards the east. Therefore, the conclusions described in the Final EIS are not expected to change.

On January 9, 2023, the Council on Environmental Quality issued new interim NEPA guidance on consideration of greenhouse gases and climate change. The guidance does not establish any particular quantity of greenhouse gas emissions as “significant” but does provide guidance to quantify, contextualize, and address the potential climate change effects of proposed Federal actions. There are no Federal or State ambient concentrations or emissions standards for greenhouse gas. Carbon dioxide (CO₂) from transportation sources is the largest component of human-produced emissions in the United States. These emissions are different from criteria air pollutants because their effects in the atmosphere are global rather than local and because they remain in the atmosphere for decades to centuries, depending on the substance. An increasing population in the greater St. George metropolitan area has resulted in increased construction and increased traffic, which has increased criteria air pollutants in the region. Overall greenhouse gas emissions have also increased in the State over the last 30 years. Traffic volumes are anticipated to increase as the population increases, resulting in increased air emissions. The previous traffic analysis modeled expected increases in traffic volumes for the year 2050 based on population growth in and around the greater St. George metropolitan area and on predicted traffic future patterns. There would be no construction-related impacts to air quality beyond those already described in the Final EIS as no additional disturbance from construction activities analyzed in the SEIS would occur. Traffic volumes could slightly change as a result of an updated traffic analysis that is currently being prepared,

but these changes would be expected to impact air emissions and greenhouse gases for all action alternatives similarly and thus the impacts described in the Final EIS remain accurate. Any new conclusions resulting from the updated traffic analysis will be included in the Final SEIS.

Visual Resources – Section 3.13 of the Final EIS (pages 3-124 to 3-143) discusses visual resources within the NCA and Zone 6 of the Reserve including BLM’s Visual Resource Management (VRM) classes and management objectives for those areas. Issuance of the Title V ROW to UDOT required amending VRM-07 of the Red Cliffs NCA RMP to a BLM VRM Class IV, which allows for major modifications of the existing character of the landscape, such as would result from construction of the Northern Corridor Highway in the NCA. No additional changes in visual resources beyond those already described in the Final EIS would occur.

Recreation and Visitor Services – Section 3.15 of the Final EIS (pages 3-155 to 3-168) discusses recreation and visitor services within the NCA and Reserve including the Red Cliffs Special Recreation Management Area recreation management zone objectives. Issuance of the Title V ROW to UDOT required amending REC-05 of the Red Cliffs NCA RMP to manage the 600-foot-wide area around the selected route of the Northern Corridor as part of the Rural Recreation Management Zone. No additional changes in Recreation and Visitor Services beyond those already described in the Final EIS would occur.

BLM Transportation and Travel Management – Section 3.17 of the Final EIS (pages 3-171 to 3-176) discusses BLM transportation and travel management within the NCA and Reserve Zone 6 including an inventory of unmaintained social trails, motorized (off-highway vehicle) trails, and non-motorized trails. Issuance of the Title V ROW to UDOT and establishment of Reserve Zone 6 triggered a generally reductive effect on visitor access and future trail designation due to management with an emphasis on having a neutral or positive effect on desert tortoise habitat. No additional changes in BLM Transportation and Travel Management beyond those already described in the Final EIS would occur.

Areas of Critical Environmental Concern – Section 3.19 of the Final EIS (pages 3-179 to 3-181) discusses Areas of Critical Environmental Concern (ACEC) within Reserve Zone 6. The Red Bluff ACEC is the only ACEC to overlap the proposed Zone 6 boundary (see Figure 2). Issuance of the Title V ROW to UDOT and establishment of Zone 6 does not change the boundary of the Red Bluff ACEC nor any of the existing Land Use Plan decisions. On areas where Zone 6 geographically overlaps with the ACEC, the more restrictive management applies. No additional changes to ACECs beyond those already described in the Final EIS would occur.

BLM Lands and Realty – Section 3.20 of the Final EIS (pages 3-182 to 3-186) discusses BLM Lands and Realty including existing authorized uses and potential modifications, and land tenure. Issuance of the Title V ROW to UDOT required amendments of the Red Cliffs NCA RMP and St. George Field Office RMP to modify the ROW avoidance area and designated ROW corridors within the NCA. In addition, the establishment of Zone 6 identifies all non-Federal lands within Zone 6 for acquisition and all Federal lands within Zone 6 for retention. Since publication of the Final EIS specific land tenure changes have occurred with the acquisition of three new parcels of LWCF lands in the NCA (refer to Section 3.8.2 of this SEIS for details); however, these types of acquisitions are encompassed by the environmental consequences described in the Final EIS and no additional changes in BLM lands and realty beyond those already described would occur.

Livestock Grazing – Section 3.21 of the Final EIS (pages 3-186 to 3-189) discusses livestock grazing. Issuance of the Title V ROW to UDOT and establishment of Zone 6 required all BLM-administered lands within Zone 6 to become unavailable to grazing. The livestock grazing permittees of the lands within Zone 6 that were previously available for grazing have been bought out. Should the ROW be terminated, current management would remain because no new land use planning decisions are being made as part of the SEIS. Therefore, no additional changes to livestock grazing beyond what was already described in the Final EIS would occur.

Noise – Section 3.23 of the Final EIS (pages 3-194 to 3-200) discusses the fundamentals of noise, noise sensitive land uses, and ambient conditions within the project area. A qualitative noise analysis was undertaken for the Final EIS and it used the UDOT Noise Abatement Policy (08A2-01), revised May 28, 2020 (UDOT 2020a), as described in Section 3.23.2.1 of the Final EIS and in the Noise Technical Report (Appendix K of the Final EIS). A qualitative analysis was determined to be the appropriate level of analysis for assessing potential noise impacts as a result of the planning level decisions made under the Final EIS. Differences in the increase in noise levels along existing roadways between the three alternatives within the NCA is not anticipated to be perceptible. In accordance with 23 CFR 772, detailed noise analyses for the selected alignment, including evaluations of noise barriers, would be completed prior to any highway construction. Temporary and intermittent elevations in noise levels are anticipated during construction activities. No additional noise disturbances beyond what was already described in the Final EIS would occur. Indirect impacts of noise and other disturbances to Mojave desert tortoise and other animals are covered in the sections describing those resources.

Hazardous Materials and Solid Waste – Section 3.24 of the Final EIS (pages 3-200 to 3-202) discusses hazardous materials and solid waste including potential existing contamination sources in the NCA and Reserve. Construction of a highway within the NCA would introduce new potential contamination sources associated with equipment used during construction. No additional disturbances beyond what was already described in the Final EIS would occur.

Human Health and Safety – Section 3.25 of the Final EIS (pages 3-202 to 3-204) discusses potential human health and safety risks that may be affected by the proposed actions including roadway and recreationist safety, dangerous topography, proximity to construction equipment, changes in emergency response times, etc. No additional changes in human health and safety risks beyond those discussed in the Final EIS would occur.

Appendix B.
Watershed Restoration Initiative Projects in the Reserve

Project	Description	Status
771 - Turkey Farm Test Plots	The objective of this study is to establish test plots to determine the effectiveness of management actions in controlling brome grasses and establishing native plant communities within the Reserve and to help inform future actions. Six treatments were identified: 1) control plot, 2) low density native seeding, 3) high density native seeding, 4) low density native seeding with pre-emergent herbicide Plateau, 5) low density native seeding with forage kochia, and 6) low density native seeding with pre-emergent herbicide Plateau and forage kochia.	Completed in 2008
3284 - Desert Tortoise Habitat Restoration in Burned Areas within two National Conservation Areas in Southwestern Utah	The objective of this project was to revegetate burned areas in Mojave desert tortoise habitat with native species which could act as seed banks. Planted 10,000+ containerized native plants in Red Cliffs NCA from 2016–2018. Plantings were quite successful (60% creosote survival), but then the site burned in the 2020 Turkey Farm Rd fire; however, some plants survived post fire (roughly 10-15%).	Completed in 2018
4996 - Red Cliffs NCA (Cottonwood Road)	The objective of this project was to re-establish 280 acres of critical desert tortoise habitat by chain harrowing and seeding along both sides of Cottonwood Road. This will serve as a food resource as well as a future fire break in an area of high traffic with a likelihood of being a potential ignition source in the future.	Completed in 2021 and currently being monitored
5499 - Turkey Farm Road Fire Emergency Stabilization and Rehabilitation	The objective of this project was to help provide stabilization of lands affected by the June 25, 2020, Turkey Farm Road Fire. Emergency Stabilization efforts were chaining, seeding, outplanting of shrubs, combined in the efforts to rehabilitate this fire.	Work is ongoing. Plantings occurred throughout the fall of 2021 and early spring of 2022. Monitoring is ongoing.
5503 - Cottonwood Trail Fire Emergency Stabilization and Rehabilitation	The objective of this project was to help provide stabilization of lands affected by the July 19, 2020, Cottonwood Trail Fire. Efforts included aerial seeding a portion of the burned area, as well as hiring ACE crews to hand rake in the seed in several areas that were critical to desert tortoise. Also following the reseeding efforts was an outplanting of mature grasses, forbs, and shrubs.	Work is ongoing. Some plantings have occurred in the fall of each of the last four years, and more efforts to plant shrubs and forbs in this area are planned for the future along with monitoring of the work that has been completed.

Project	Description	Status
6090 - State Land Rejuvra Treatment	The objective of this project is to control cheatgrass in areas that have burned and have had significant cheatgrass invasion. 522.5 acres of Rejuvra and Plateau applied to State Lands in the Red Cliffs Reserve. Part of these acres were a fuel break along I-15 and part of the acres treated were to protect unburned intact Mojave Desert Plant Community adjacent to homes in an area of high concern for potential future fire starts.	Work is ongoing. Rejuvra applied in late December 2022 and monitoring is occurring to assess effectiveness.
6690 - Washington County T&E Habitat Restoration	The objective of this project is to restore critical habitat within the northernmost breeding range for southwestern willow flycatcher (Federally endangered) and desert tortoise (Federally threatened) in Washington County, Utah. 759 acres of Rejuvra and Plateau applied to State lands in the Red Cliffs Reserve.	Completed in early December 2023 and is now being monitored.
6995 - Red Cliffs NCA Invasive Grass	The objective of this project is to build wildfire resilience in the project area by treating invasive annual grasses and increasing desirable habitat for wildlife. Multi-part project in Red Cliffs NCA, first applying pre-emergent herbicide Plateau (Imazapic) to invasive annual grasses such as downy brome (<i>Bromus tectorum</i>) and seeding areas after herbicide treatment across 1,100 acres to improve habitat by reducing fine fuels and increasing desirable native vegetation. Additionally, handplanting of forbs and shrubs would also complement this project.	Planned for 2025
7007 - Raven Control	The objective of this project is to reduce the raven population to a range that is sustainable for tortoise recruitment and long-term sustainability (0.89 raven/km ²). This project aims to control raven population growth through egg-oiling, subsidy reduction, and public outreach.	Planned for 2025
7043 - Tortoise Fencing within the Red Cliffs National Conservation Area and Snow Canyon State Park	The objective of this project is to replace fencing in many areas of the NCA to provide better protection to desert tortoise. Construct up to 13 miles of fencing, in Zone 2, Zone 3, and Zone 5 in partnership with BLM, SCSP, and Washington County.	Planned for 2025
7101 - Red Cliffs Reserve Fire Prevention Herbicide	The objective of this project is to treat areas within the Red Cliffs Reserve with herbicide to prevent fire events from causing loss of habitat for Desert Tortoise due to fire. This project is a continuation of WRI project 6690 to treat 550 acres within the Red Cliffs Reserve with herbicide to prevent fire events from causing loss of habitat for desert tortoise due to fire.	Planned for 2025