

I-15 ENVIRONMENTAL IMPACT STATEMENT

Farmington to Salt Lake City



DRAFT

Environmental Impact Statement

AND SECTIONS 4(F)/6(F) EVALUATION FOR

I-15: Farmington to Salt Lake City

in Davis and Salt Lake Counties, Utah

Utah Department of Transportation

UDOT Project No. S-I15-7(369)309

Submitted pursuant to

42 USC 4332(2)(c) and 49 USC 303

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being or have been carried out by UDOT pursuant to 23 USC 327 and a Memorandum of Understanding dated May 26, 2022, and executed by FHWA and UDOT.

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in
Davis and Salt Lake Counties, Utah

Draft

Environmental Impact Statement
and Sections 4(f)/6(f) Evaluation

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by the Utah Department of Transportation (UDOT)

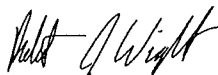
Cooperating agencies: U.S. Army Corps of Engineers; U.S. Bureau of Reclamation, and
U.S. Environmental Protection Agency

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September 2023

09/21/2023

Date of Approval



Rob Wight, P.E.
Region One Director
Utah Department of Transportation

09/21/2023

Date of Approval



Ben Huot, P.E.
Deputy Director
Utah Department of Transportation

The following persons may be contacted for additional information about this document:

Tiffany Pocock, PE, Project Director
Utah Department of Transportation
4501 South 2700 West, PO Box 141265
Salt Lake City, UT 84114-1265
Telephone: (801) 965-4612

Brandon Weston, Director of Environmental Services
Utah Department of Transportation
4501 South 2700 West, PO Box 141265
Salt Lake City, UT 84114-1265
Telephone: (801) 965-4603

Abstract

The purpose of the Interstate 15 (I-15): Farmington to Salt Lake City Project is to improve safety, replace aging infrastructure, provide better mobility for all travel modes, strengthen the state and local economy, and better connect communities along I-15 from Farmington to Salt Lake City. The project purpose consists of the following objectives, which are organized by UDOT's Quality of Life Framework categories of Good Health, Connected Communities, Strong Economy, and Better Mobility.

- Improve Safety
 - Improve the safety and operations of the I-15 mainline, I-15 interchanges, bicyclist and pedestrian crossings, and connected roadway network.
- Better Connect Communities
 - Be consistent with planned land use, growth objectives, and transportation plans.
 - Support the planned FrontRunner Double Track projects and enhance access and connectivity to FrontRunner, to regional transit and trails, and across I-15.
- Strengthen the Economy
 - Replace aging infrastructure on I-15.
 - Enhance the economy by reducing travel delay on I-15.
- Improve Mobility for All Modes
 - Improve mobility and operations on the I-15 mainline, I-15 interchanges, connected roadway network, transit connections, and bicyclist and pedestrian facilities to help accommodate projected travel demand in 2050.

The primary alternatives carried forward for detailed study in this Environmental Impact Statement (EIS) are the No-action Alternative and the Action Alternative. The Action Alternative includes the following subarea options:

- Farmington – 400 West Option and State Street Option
- Bountiful 400 North – Northern Option and Southern Option
- Bountiful 500 South – Northern Option and Southern Option
- Salt Lake City 1000 North – Northern Option and Southern Option

Environmental impacts in 18 resource categories are evaluated, and mitigation measures to reduce the impacts are described. Impacts to the natural environment as well as social and economic impacts have been minimized through coordination with the public, resource agencies, local governments, and the business community. UDOT identified the Action Alternative as its preferred alternative in this Draft EIS. The preferred alternative includes the Farmington 400 West Option, the Bountiful 400 North – Northern Option, the Bountiful 500 South – Northern Option, and the Salt Lake City 1000 North – Northern Option.

UDOT will issue a single Final EIS and Record of Decision document pursuant to 23 USC 139(n)(2), unless UDOT determines that statutory criteria or practicability considerations preclude issuing a combined document pursuant to that section.

Comments on this Draft EIS are due November 13, 2023, to Brandon Weston (UDOT) at the above address or at <https://i15eis.udot.utah.gov>.

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Chapter 6: Coordination

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Abbreviations

µg/L	micrograms per liter
AADT	annual average daily traffic
AASHTO	American Association of State Highway and Transportation Officials
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
AM	morning
APE	area of potential effects
AU	assessment unit
Ave.	avenue
BCC	the USFWS Birds of Conservation Concern
BFE	base flood elevation
BLM	Bureau of Land Management
Blvd.	boulevard
BMP	best management practice
BRT	bus rapid transit
CCA	Candidate Conservation Agreement
CD	collector-distributor
CEJST	Climate and Environmental Justice Screening Tool
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
Cgstrn	congestion
CH ₄	methane
Cities	Farmington City, Centerville City, West Bountiful City, Bountiful City, Woods Cross City, City of North Salt Lake, and Salt Lake City
CLG	certified local government
CLOMR	Conditional Letter of Map Revision
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
COC	contaminant of concern
Counties	Davis County and Salt Lake County
dB	decibels
dBA	A-weighted decibels
DERR	Utah Division of Environmental Response and Remediation
DOE	determination of eligibility
Dr.	drive
<i>E. coli</i>	<i>Escherichia coli</i>
EC	eligible/contributing
ECOS	Environmental Conservation Online System
EIS	Environmental Impact Statement
EJ	environmental justice
EJScreen	EPA's Environmental Justice Screen Tool

EO	Executive Order
EPA	U.S. Environmental Protection Agency
ES	eligible/significant
EWA	Enforceable Written Assurances
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FOE	finding of effect
ft	feet
FTA	Federal Transit Administration
FUD	Formerly Used Defense
GAP	Gap Analysis Program
GHG	greenhouse gas
GIS	geographic information systems
GP	general-purpose (lane)
GPS	global positioning system
HAPs	hazardous air pollutants
HEI	Health Effects Institute
HOT	high-occupancy/toll (lane)
Hvy	heavy congestion
I-15	Interstate 15
I-215	Interstate 215
I-80	Interstate 80
ICE	indirect and cumulative effects
ID	identification
IPaC	USFWS Information, Planning, and Conservation System
IRIS	integrated risk information system
IWG	interagency working group
Justice40	Climate and Economic Justice Screening Tool
KOP	key observation point
LAWG	local area working group
L _{eq}	equivalent sound level
LOMA	Letters of Map Amendment
LOMR	Letter of Map Revision
LOS	level of service
LU	landscape unit
LUST	leaking underground storage tanks
LWCF	Land and Water Conservation Fund
MAG	Mountainland Association of Governments
mg/L	milligrams per liter
Min	minimal congestion
ML	monitoring location
MOA	Memorandum of Agreement
Mod	moderate congestion
MOU	Memorandum of Understanding
MP	milepost
mpg	miles per gallon

mph	miles per hour
MS4	municipal separate storm sewer system
MSAT	mobile-source air toxic compounds
N ₂ O	nitrous oxide
NA	not applicable
NAAQS	National Ambient Air Quality Standards
NAC	noise-abatement criteria
NB	northbound
NC	ineligible/non-contributing
NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
NFHL	National Flood Hazard Layer
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
No.	number
NO ₂	nitrogen dioxide
NOI	Notice of Intent
NO _x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NRHP	National Register of Historic Places
O ₃	ozone
OHV	off-highway vehicles
OHWM	ordinary high water mark
OP	ineligible/out-of-period
Pb	lead
PM	afternoon
PM	particulate matter
PM ₁₀	particulate matter 10 microns in diameter or less
PM _{2.5}	particulate matter 2.5 microns in diameter or less
POAQC	project of air quality concern
POM	polycyclic organic matter
RCRA	Resource Conservation and Recovery Act
Rd.	road
RDCC	Resource Development Coordinating Committee
RMP	risk management plan
ROD	Record of Decision
RTP	regional transportation plan
S.R.	state route
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SB	southbound
SC-GHG	social cost of greenhouse gas emissions
SD	standard deviation
Section 106	Section 106 of the National Historic Preservation Act
Section 4(f)	Section 4(f) of the Department of Transportation Act

Section 404	Section 404 of the Clean Water Act
Section 6(f)	Section 6(f) of the Land and Water Conservation Fund Act
Section 7	Section 7 of the Endangered Species Act
SELDLM	Stochastic Empirical Loading and Dilution Model
SEMS	EPA's Superfund Enterprise Management System
SFHA	special flood hazard areas
SHPO	State Historic Preservation Office(r)
SIP	state implementation plan
SO ₂	sulfur dioxide
sp.	one species
spp.	more than one species
SPUI	single-point urban interchange
ssp.	subspecies
SUP	shared-use path
SWPPP	stormwater pollution prevention plan
TCE	temporary construction easement
TDM	travel demand management
TDS	total dissolved solids
TIP	transportation improvement program
TMDL	total maximum daily load
TNM	Traffic Noise Model
TNW	traditional navigable water
TRI	toxic release inventory
TSM	travel system management
TSS	total suspended solids
U.S. 89	U.S. Highway 89
U.S.	United States
UAC	Utah Administrative Code
UDDW	Utah Division of Drinking Water
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
UDWQ	Utah Division of Water Quality
UDWR	Utah Division of Wildlife Resources
UDWRi	Utah Division of Water Rights
UNHP	Utah Natural Heritage Program
UP	Union Pacific Railroad
UPDES	Utah Pollutant Discharge Elimination System
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USC	United States Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UTA	Utah Transit Authority

UVision	Utah's Transportation Vision
VIA	visual impact assessment
VMT	vehicle-miles traveled
VOC	volatile organic compounds
WFRC	Wasatch Front Regional Council

Chapter S: Summary

S.1 Which agency is leading the EIS? Why was the I-15 Farmington to Salt Lake City EIS initiated?

In March 2022, the Utah Department of Transportation (UDOT) initiated an Environmental Impact Statement (EIS) for the Interstate 15 (I-15): Farmington to Salt Lake City Project according to the provisions of the National Environmental Policy Act (NEPA) and its implementing regulations, as well as other pertinent environmental laws and regulations and relevant Federal Highway Administration (FHWA) guidelines. UDOT, as the project sponsor and lead agency for the project, is responsible for preparing the I-15 EIS. The environmental review, consultation, and other actions required by applicable federal environmental laws for this action have been carried out by UDOT pursuant to 23 United States Code (USC) Section 327 and a May 26, 2022, Memorandum of Understanding between FHWA and UDOT.

The U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers, and the U.S. Bureau of Reclamation are involved as cooperating agencies in the development of this EIS. For more information, see Section 1.1, *Introduction*, in Chapter 1, *Purpose and Need*.

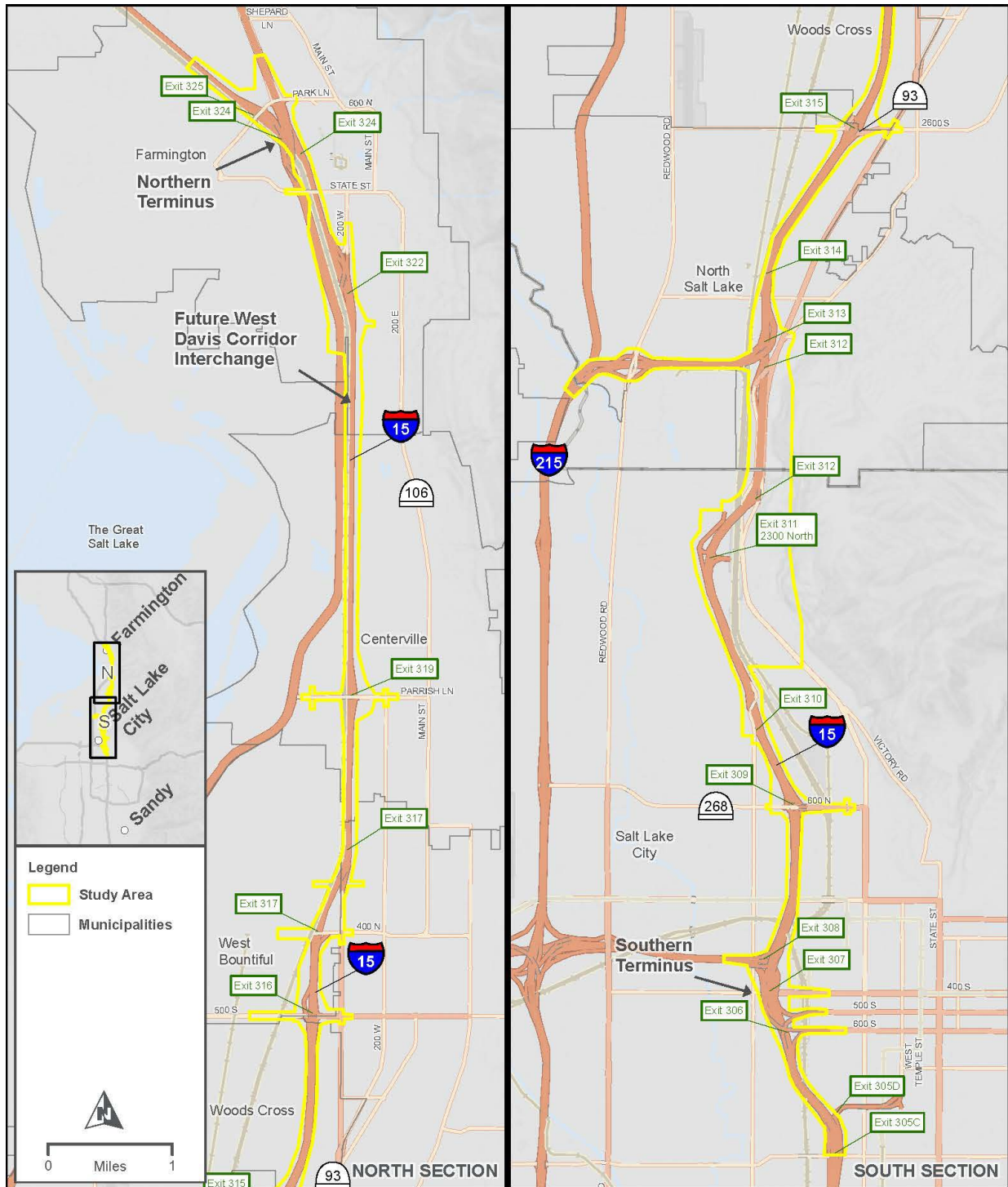
The needs assessment study area for the I-15 EIS extends from the U.S. Highway 89 (U.S. 89)/Legacy Parkway/Park Lane interchange (I-15 milepost 325) in Farmington to the Interstate 80 (I-80) West/400 South interchange (I-15 milepost 308) in Salt Lake City (Figure S.1-1). The study area also includes the ramps that begin or end at these termini.

As described in Section 1.3, *Need for the Project*, in Chapter 1, *Purpose and Need*, between Farmington and Salt Lake City, I-15 has aging infrastructure and worsening operational performance for 2019 conditions and projected (2050) travel demand. These issues contribute to decreased safety, increased congestion, lost productivity, and longer travel times. East-west streets that access or cross I-15 are important to connect communities and support other travel modes such as biking, walking, and transit. When I-15 and its interchanges fail to meet existing (and future) travel demand, traffic is added to the local streets, which affects both the regional and local transportation system as well as safe, comfortable, and efficient travel by other travel modes.

What is travel demand?

Travel demand is the expected number of transportation trips in an area. Travel demand can be met by various modes of travel, such as automobile, bus, light rail, carpooling, and bicycling.

Figure S.1-1. Needs Assessment Study Area for the I-15 EIS



NEEDS ASSESMENT STUDY AREA
I-15 EIS: FARMINGTON TO SALT LAKE CITY

S.2 What is the purpose of the project?

The purpose of the I-15 project is to improve safety, replace aging infrastructure, provide better mobility for all travel modes, strengthen the state and local economy, and better connect communities along I-15 from Farmington to Salt Lake City. The project purpose consists of the following objectives, which are organized by UDOT's Quality of Life Framework categories of Good Health, Connected Communities, Strong Economy, and Better Mobility.

- **Improve Safety**
 - Improve the safety and operations of the I-15 mainline, I-15 interchanges, bicyclist and pedestrian crossings, and connected roadway network.
- **Better Connect Communities**
 - Be consistent with planned land use, growth objectives, and transportation plans.
 - Support the planned FrontRunner Double Track projects and enhance access and connectivity to FrontRunner, to regional transit and trails, and across I-15.
- **Strengthen the Economy**
 - Replace aging infrastructure on I-15.
 - Enhance the economy by reducing travel delay on I-15.
- **Improve Mobility for All Modes**
 - Improve mobility and operations on the I-15 mainline, I-15 interchanges, connected roadway network, transit connections, and bicyclist and pedestrian facilities to help accommodate projected travel demand in 2050.

S.3 What is the history of the project?

Before the I-15 EIS process was initiated, many transportation planning studies had been conducted for I-15 or adjacent transportation facilities. The 15 studies that are most relevant to this EIS are summarized in Section 1A.2 of Appendix 1A, *Purpose and Need Chapter Supplemental Information*, of Chapter 1, *Purpose and Need*.

UDOT considered these studies as it developed the purpose of and need for the I-15 project. The relevant prior studies identified needs and potential solutions for the I-15 mainline, the I-15 interchanges, the arterial streets that access or cross I-15, the bicycle and pedestrian network, FrontRunner, and system-to-system connections for the West Davis Corridor and for Interstate 215 (I-215). These studies document existing and future travel demand between Davis and Salt Lake Counties and the need for a multifaceted solution to support future travel demand. The supporting document *Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* on the project website (<https://i15eis.udot.utah.gov>) includes detailed information about the bicycle and pedestrian mobility and facility characteristics at each location (Horrocks 2022).

The Wasatch Front Regional Council (WFRC) is the metropolitan planning organization for the project region and develops the *Wasatch Front Regional Transportation Plan* (RTP; WFRC 2019). WFRC's area of responsibility includes Davis, Salt Lake, and Weber Counties and the southern portion of Box Elder County.

WFRC's most recent RTP, the 2019–2050 RTP, was adopted in 2019 and has had a total of four amendments in 2020 and 2021. The amended 2019–2050 RTP includes two projects that identify improvements to I-15 in Davis and Salt Lake Counties:

- I-15 widening (from five lanes to six lanes in each direction) from Farmington to Salt Lake County line (2019 RTP project: R-D-53)
- I-15 widening (from four and five lanes to six lanes in each direction) in Davis County to 600 North (2019 RTP project: R-S-137)

The Federal Register notice for this EIS was posted on March 28, 2022. A draft version of the purpose and need was provided to the cooperating and participating agencies and the public for a 30-day review period ending on May 13, 2022. This review period occurred at the same time as the formal scoping process.

S.4 What alternatives were considered for the project?

Figure S.5-1 presents an overview of the alternatives development and screening process. The alternatives development and screening process is documented in Appendix 2A, *Alternatives Screening Report*, of Chapter 2, *Alternatives*.

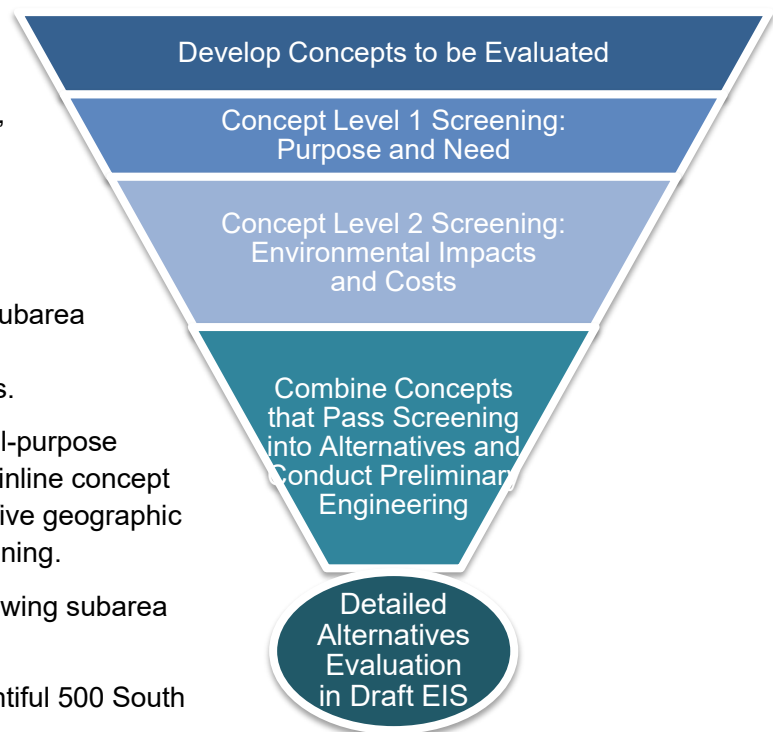
Based on the results of the alternatives development and screening process, UDOT advanced a range of action alternatives that combined a mainline concept with multiple subarea options. UDOT also considered a No-action Alternative as required by federal regulations.

The Action Alternative includes the 5 general-purpose (GP) + 1 high-occupancy/toll (HOT) lane mainline concept combined with the concepts for each of the five geographic areas that passed Level 1 and Level 2 screening.

The Action Alternative also includes the following subarea options:

- | | |
|-----------------------|-----------------------------|
| • Farmington | • Bountiful 500 South |
| ○ 400 West Option | ○ Northern Option |
| ○ State Street Option | ○ Southern Option |
| • Bountiful 400 North | • Salt Lake City 1000 North |
| ○ Northern Option | ○ Northern Option |
| ○ Southern Option | ○ Southern Option |

Figure S.5-1. Screening Process Overview



The main components of the Action Alternative and options are shown in Figure S.5-2 through Figure S.5-10.

Northern Terminus. The northern terminus is the U.S. 89 interchange in Farmington (milepost 324.4). The Action Alternative would make improvements to the northbound I-15 to northbound U.S. 89 ramp and the southbound U.S. 89 to southbound I-15 ramp but would not affect any of the ramp movements between Legacy Parkway and I-15, between Legacy Parkway and U.S. 89, or any ramp movements to or from Park Lane.

Southern Terminus. The southern terminus is the 400 South interchange in Salt Lake City (milepost 308.2). The Action Alternative would make improvements to the northbound on-ramp and southbound off-ramp at 400 South. The Action Alternative would maintain the existing ramps to and from I-80 west, which is located near 200 South.

Mainline Facility Type. The Action Alternative includes the 5 GP + 1 HOT lane mainline concept which means it would have 1 HOT lane and 5 GP lanes in each direction. Most segments of the Action Alternative would also include auxiliary lanes that would begin with an on-ramp that would continue on to the next off-ramp without merging into the GP lanes. For example, at 2600 South, the northbound on-ramp would continue north without merging onto I-15 and would become the northbound off-ramp at 500 South.

Interchanges and Cross Streets. The Action Alternative would have cross numerous streets and would require various cross street configurations: interchanges, overpasses, underpasses, and cul-de-sacs. Table 2.4-1, *Action Alternative Interchanges and Crossings*, in Chapter 2, *Alternatives*, provides an overview of the interchange and cross-street configurations for the Action Alternative.

Pedestrian and Bicyclist Facilities. The Action Alternative includes new or improved pedestrian and bicyclist facilities throughout the study area. The Action Alternative pedestrian and bicyclist improvements are listed in Table 2.4-2, *Action Alternative Pedestrian and Bicyclist Improvements by Location*, in Chapter 2 and shown in Figure S.5-11, *Action Alternative Proposed Pedestrian and Bicyclist Facilities*.

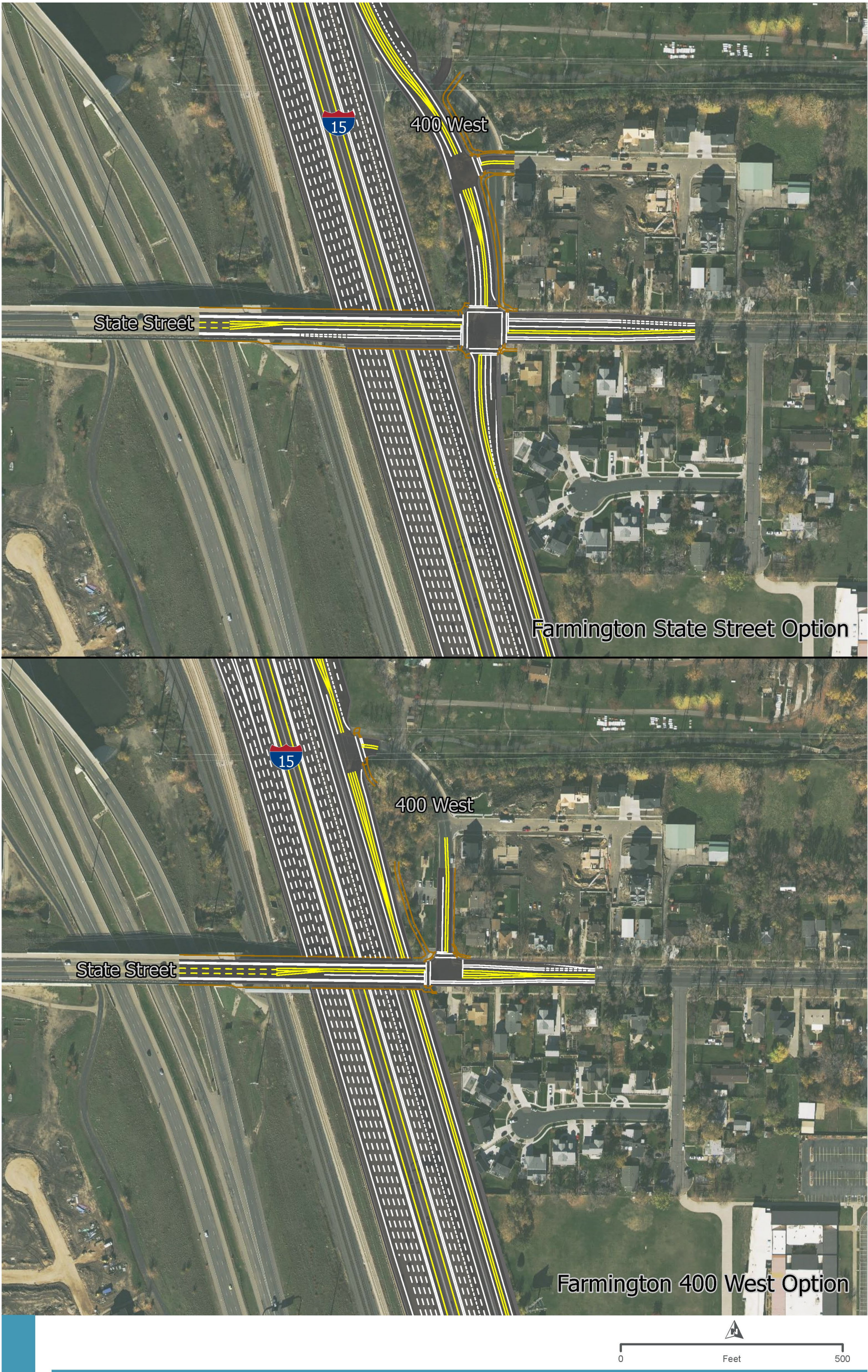
Additional graphics, and more detailed information about the features of the Action Alternative, is included in Section 2.4.2, *Action Alternative*, in Chapter 2.

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Figure S.5-2. Action Alternative: Farmington Segment



Figure S.5-3. Farmington State Street/Frontage Road and 400 West/Frontage Road Options



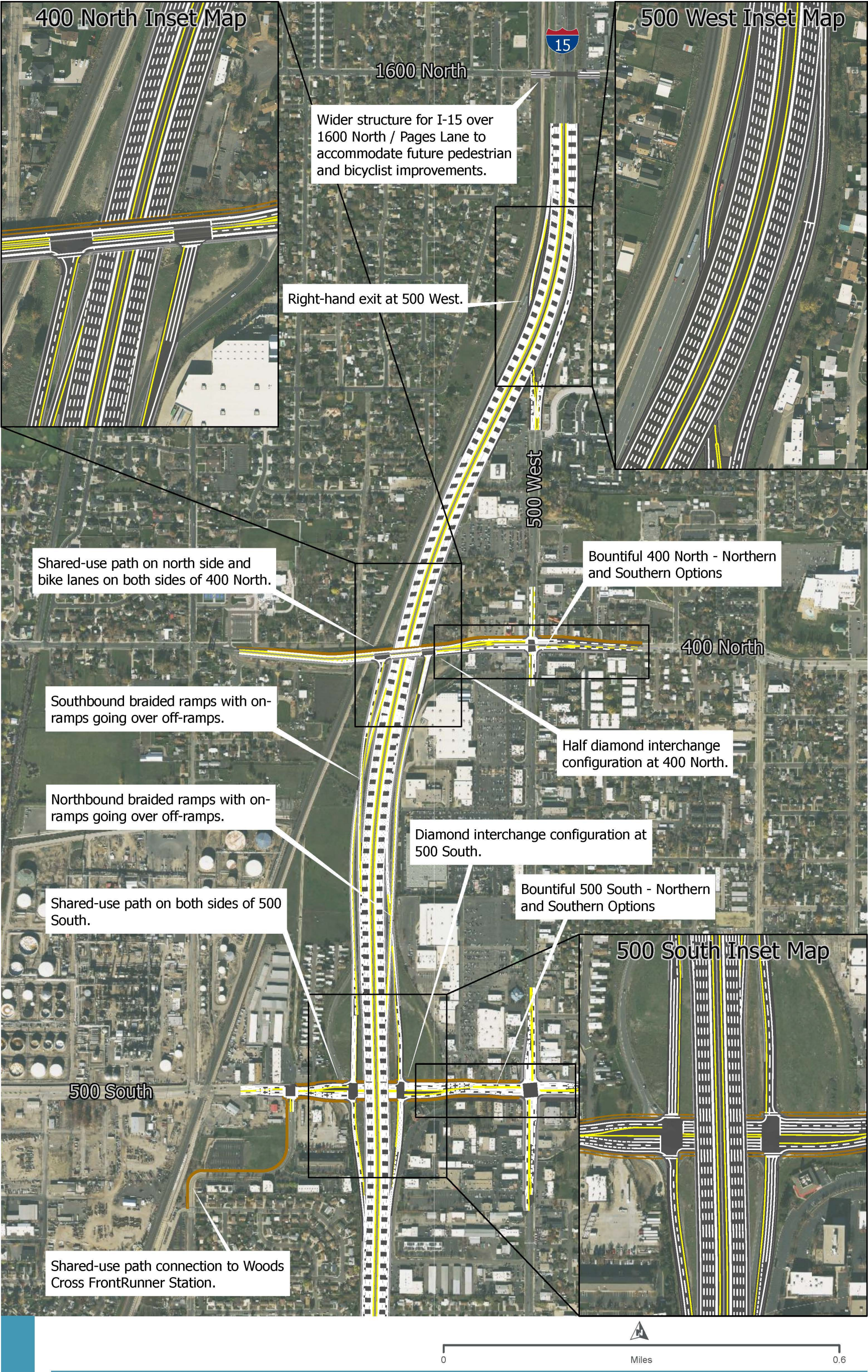
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Figure S.5-4. Action Alternative: Centerville Segment



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Figure S.5-5. Action Alternative: Bountiful/West Bountiful Segment



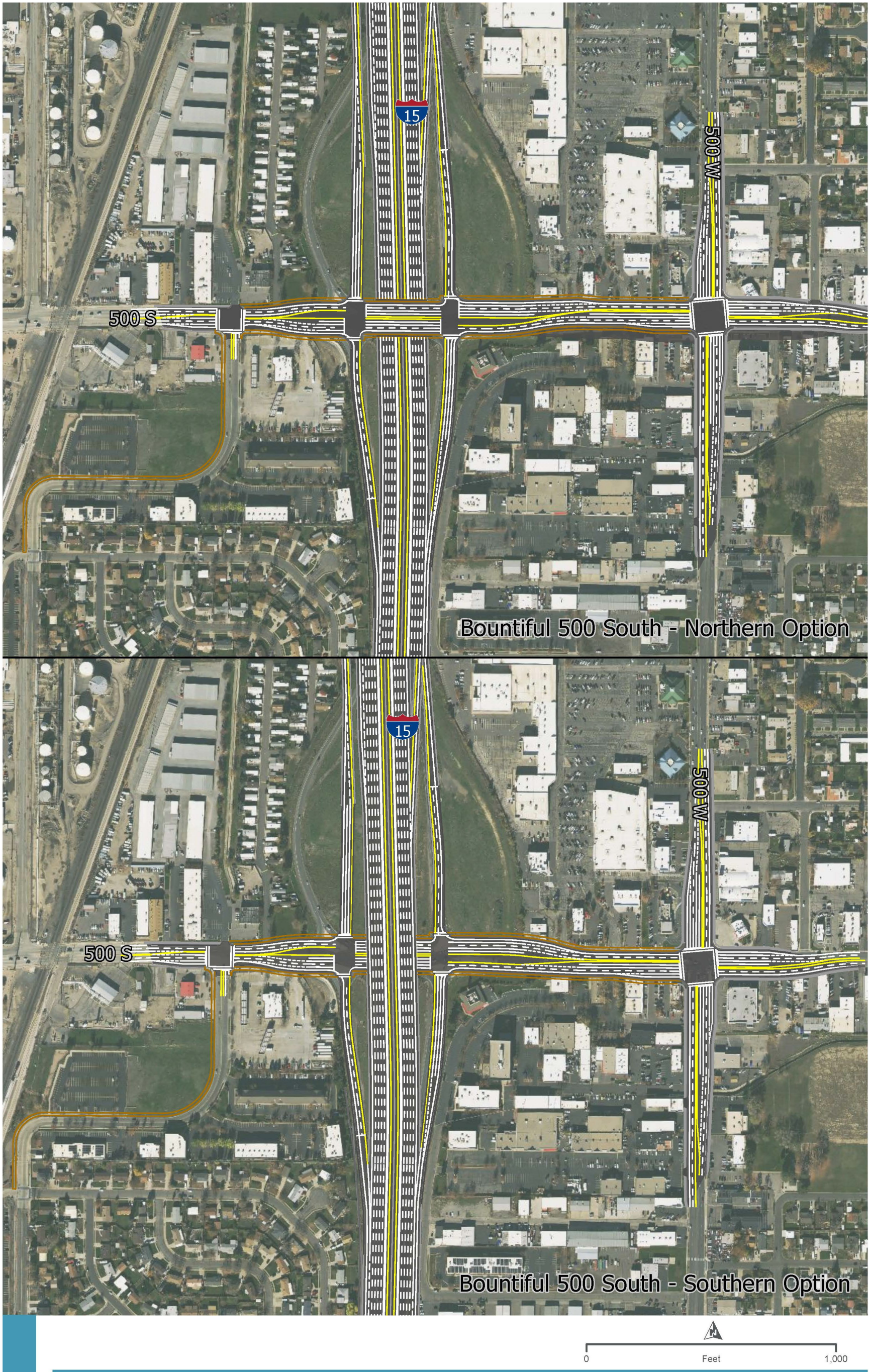
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Figure S.5-6. Bountiful/West Bountiful Option A – 400 North – Northern and Southern Options



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Figure S.5-7. Bountiful/West Bountiful Option A – 500 South – Northern and Southern Options



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Figure S.5-8. Action Alternative: North Salt Lake/Woods Cross Segment

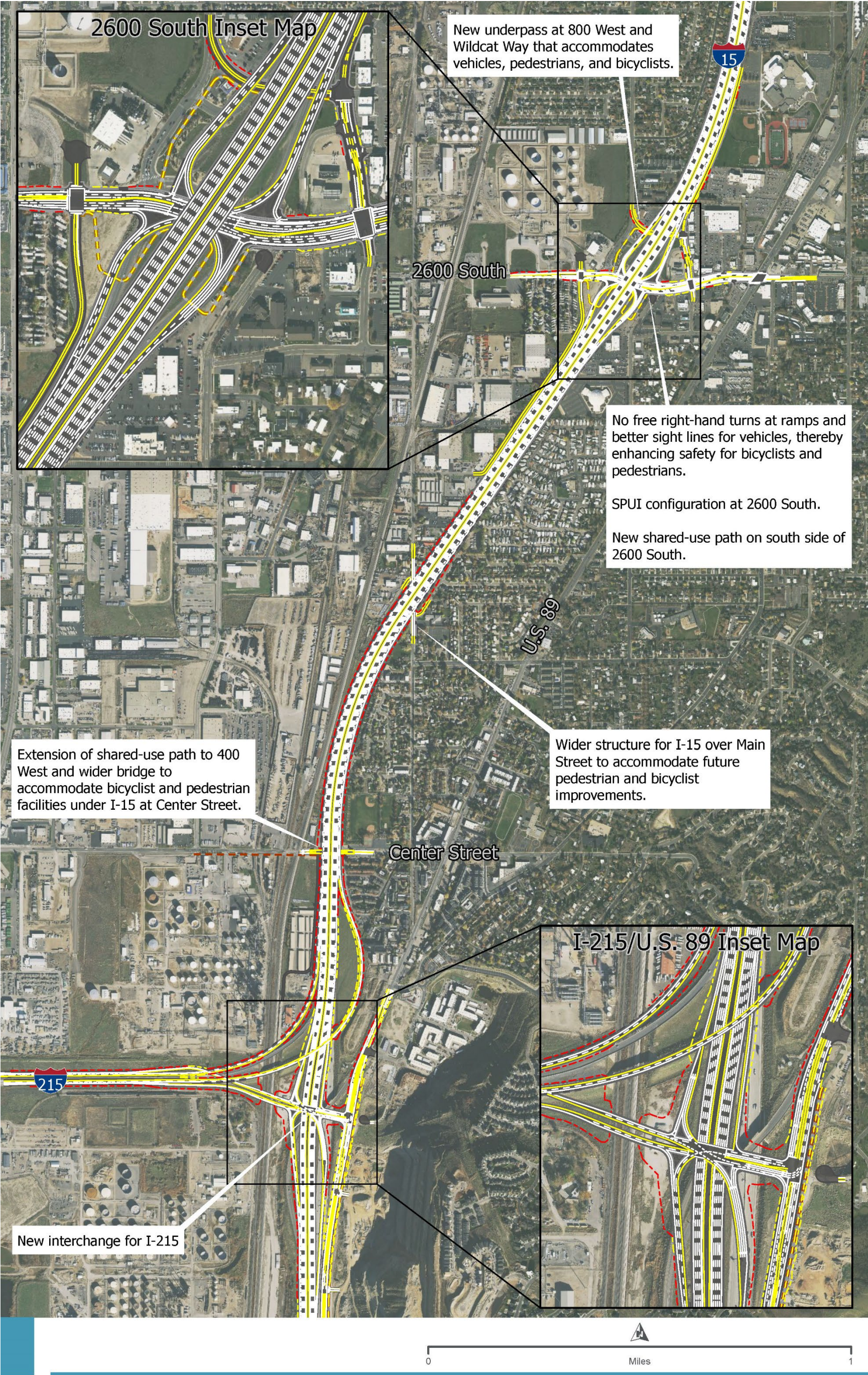
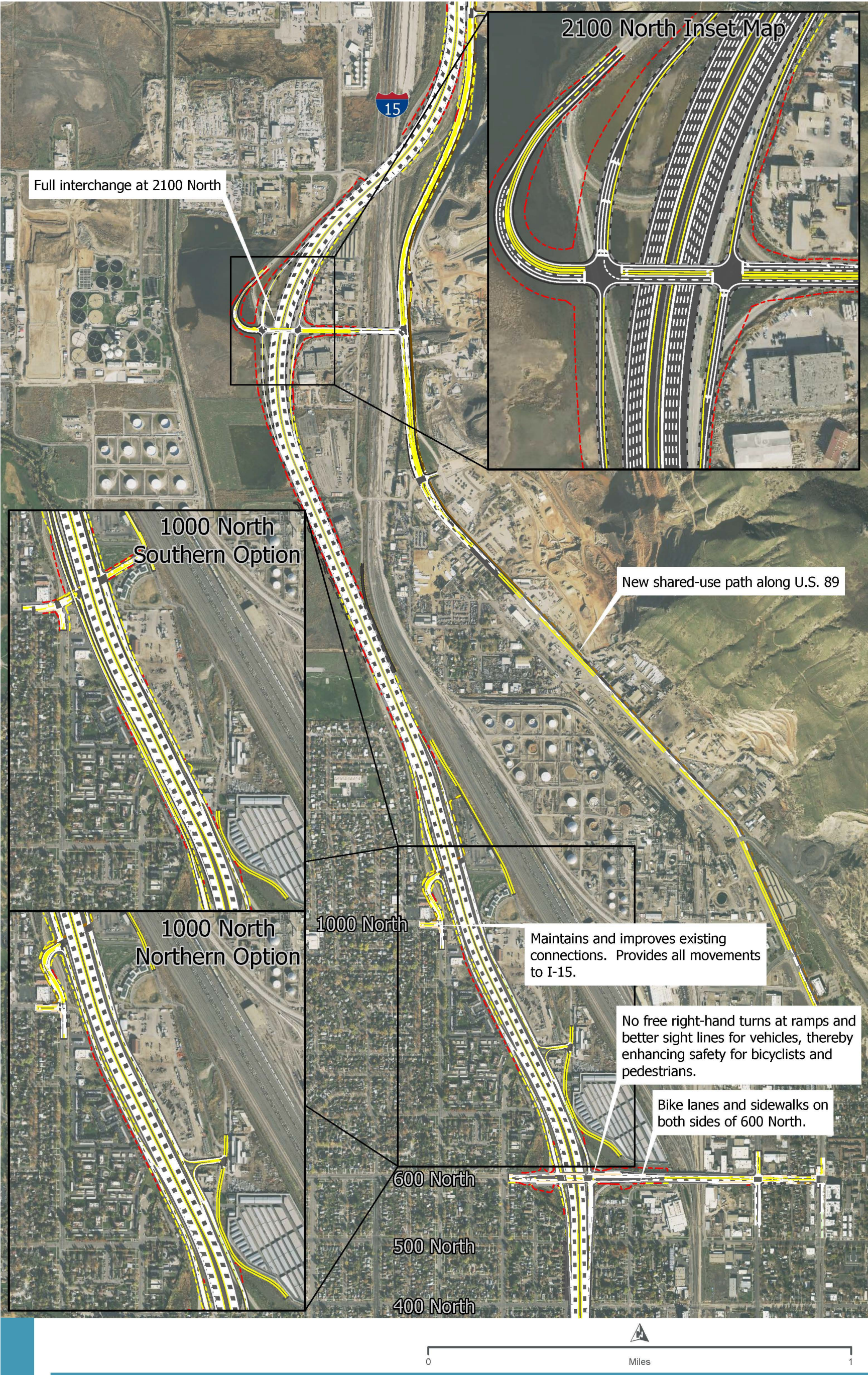


Figure S.5-9. Action Alternative: Salt Lake Segment



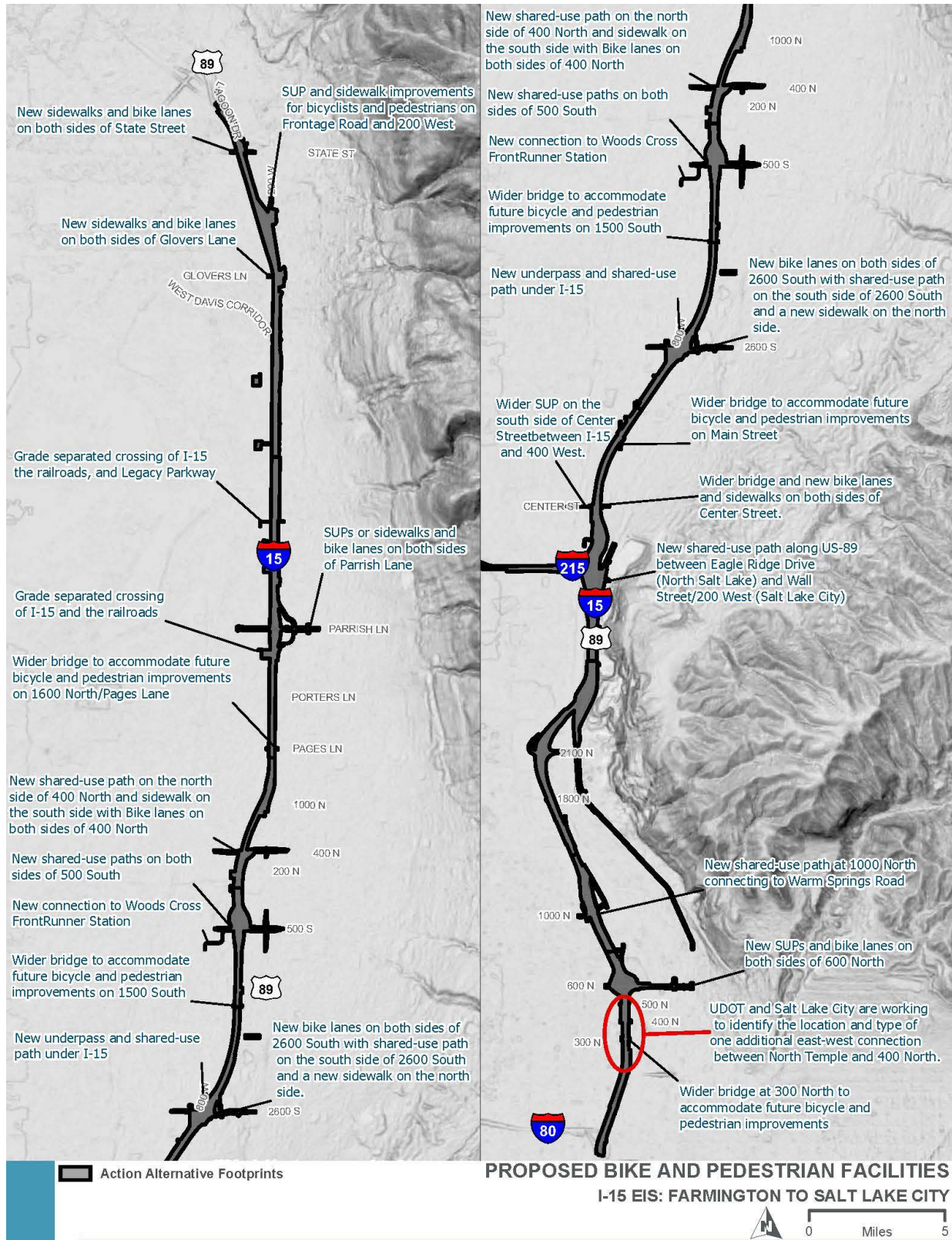
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Figure S.5-10. Salt Lake City 1000 North – Northern and Southern Options



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Figure S.5-11. Action Alternative Proposed Pedestrian and Bicyclist Facilities



S.5 How much would the Action Alternative cost?

UDOT developed a preliminary cost estimate of **\$3.7 billion** for the Action Alternative. There were no major differences in costs among the different options. This estimate is based on the preliminary engineering conducted for the Action Alternative and includes the total project cost for program management, construction, right-of-way acquisition, utility relocation, and design and construction engineering. The cost estimate is based on 2024 dollar values with 2 additional years of escalation. The actual cost of construction would change depending on the year of construction, any phasing, and inflation.

The selected alternative would be constructed based on available funding. UDOT would construct portions of the selected alternative based on the amount of the funding while considering safety and operational benefits. As of September 2023, \$1.7 billion has been allocated for potential construction if the Action Alternative is selected in the environmental process.

S.6 What impacts would the project have?

Table S.6-1 summarizes the environmental impacts of the No-action and Action Alternatives. Because the impacts to some resources depend on which options of the Action Alternative are selected, a range of impacts from low to high is provided. For detailed information about the environmental impacts of the project alternatives, see Chapter 3, *Affected Environment, Environmental Consequences, and Mitigation Measures*.

Table S.6-1. Environmental Impacts of the No-action and Action Alternatives

Impact Category	Unit	No-action Alternative	Action Alternative	Notes
Land converted to roadway use	Acres	0 acres	111 to 116 acres	
Consistent with local land use and transportation plans	Yes/no	No	Yes	Action Alternative is consistent with planned land uses and zoning for all cities. Action Alternative is consistent with the WFRC 2019–2050 RTP.
Residential relocations	Number	0	3 to 5	
Potential residential relocations	Number	0	35 to 36	
Commercial relocations (business relocations)	Number	0	13 to 16 commercial buildings (16 to 26 businesses)	Some commercial buildings include multiple businesses.
Potential commercial relocations (business relocations)	Number	0	10 to 13 commercial buildings (11 to 22 businesses)	Some commercial buildings include multiple businesses.
Section 4(f) parks and recreation areas affected	Number	0	10	Action Alternative's impacts to parks would be minor except for the Farmington State Street Option's impacts to Ezra T. Clark Park in Farmington.
Community facilities affected	Number	0	0	

(continued on next page)

Table S.6-1. Environmental Impacts of the No-action and Action Alternatives

Impact Category	Unit	No-action Alternative	Action Alternative	Notes
Environmental justice (EJ) benefits or impacts	Yes/no	No impacts and no benefits to EJ communities.	Yes; impacts and benefits to EJ communities. Impacts would not be disproportionately adverse to EJ communities.	
Economic impacts	Yes/No	Yes; adverse due to increased travel times and delay and reduction in average speeds on I-15.	Yes; adverse due to business impacts; positive due to improved travel times and average speeds on I-15.	
Pedestrian and bicyclist improvements	Number	0	<ul style="list-style-type: none"> • 1 new shared-use path • 4 new grade-separated crossings • 8 crossings with improved connections 	<p>No-action Alternative would not improve pedestrian and bicyclist facilities across I-15.</p> <p>Action Alternative would add four new grade-separated crossings of I-15 and a 3.8-mile new shared-use path between North Salt Lake and Salt Lake City. Action Alternative would improve existing crossings in eight locations.</p>
Air quality impacts exceeding standards (NAAQS)	Yes/No	No	No	Action Alternative is part of the WFRC conforming implementation plan.
Receivers with modeled noise levels above criteria	Number	1,789	3,272 to 3,288	3 new noise barriers and 13 replace-in-kind noise barriers are recommended to mitigate for noise impacts and would provide a benefit (at least a 5-dBA reduction) to 1,568 to 1,647 receivers.
Surface water beneficial use impacts	Yes/No	No substantial changes to water quality or beneficial uses.	No substantial changes to water quality or beneficial uses.	
Groundwater quality	Yes/No	No	No	
Impacts to aquatic resources (includes wetlands, streams, mudflats, open-water ponds, canals, and ditches)	Acres	0	30.2	Action Alternative would affect 30.2 acres of aquatic resources. It is likely that not all of these aquatic resources would be considered jurisdictional waters of the United States.
Adverse Impacts to cultural resources	Number	0	6 to 7	

(continued on next page)

Table S.6-1. Environmental Impacts of the No-action and Action Alternatives

Impact Category	Unit	No-action Alternative	Action Alternative	Notes
Hazardous material sites affected	Number	0	4 CERCLA 0 to 1 Dry Cleaner 5 LUST/UST	
Floodplain impacts	Acres	0	42.4 acres	Most of the Action Alternative floodplain impacts are in areas already impacted by I-15 (for example, existing floodplain crossings of I-15) and would not be considered new impacts to floodplains.
Visual changes	Category	Similar to existing conditions	Neutral to beneficial	
Section 4(f) uses with greater-than- <i>de minimis</i> impacts	Number	0	6 to 8	
Section 4(f) <i>de minimis</i> impacts	Number	0	52 to 54	
Section 4(f) temporary occupancy impacts	Number	0	66	
Section 6(f) conversions	Number	0	1 – Centerville Community Park (0.61 acre/2.5% of park)	Action Alternative would also have temporary nonconforming use of 0.19 acre of Hatch Park in North Salt Lake.

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; EJ = environmental justice; LUST = leaking underground storage tank; NAAQS = National Ambient Air Quality Standards; RTP = regional transportation plan; Section 4(f) = Section 4(f) of the Department of Transportation Act; Section 6(f) = Section 6(f) of the Land and Water Conservation Fund Act; UST = underground storage tank; WFRC = Wasatch Front Regional Council

S.7 How has UDOT coordinated with environmental justice (EJ) communities during the EIS process?

UDOT has used a variety of methods to notify the public of the I-15 Farmington to Salt Lake City EIS, including community canvassing and engagement events, attendance at neighborhood or community meetings on request, mailers, virtual flyers, lawn signs, pop-up banners, posters, social media outreach, UDOT project email updates, UDOT project website updates, and press releases. The intent of this broader outreach effort was to inform everyone, including underserved communities, about the I-15 Farmington to Salt Lake City EIS and provide opportunities for ongoing involvement for all interested individuals or groups.

UDOT engaged a number of city councils, advisory boards, planning commissions, homeowners' associations, and other entities to gain insight into the concerns of the communities but also to better understand where additional disadvantaged communities might be located to inform the EJ analysis. As part of these activities, UDOT developed an Equity Working Group through which UDOT sought equitable engagement with groups and individuals with affordable-housing interests and in areas of the project study area that historically might have been underserved due to language or other outreach barriers. Later, the Equity Working Group combined with three Local Area Working Groups to develop and engage with community members to capture the diverse viewpoints along I-15 and for the members to share study

information with their communities and neighbors. The Local Area Working Groups included representatives across chambers of commerce, school districts, social service organizations, youth organizations, business owners, developers, and residents, among others.

For the I-15 Farmington to Salt Lake City EIS, three Local Area Working Groups were established. The three groups were a north, central, and south local area working group. The intent of the groups was to develop and engage with community members to capture the diverse viewpoints along the I-15 corridor and for the members to share study information with their communities and neighbors. UDOT solicited Local Area Working Group members that represented the environmental justice communities including minorities or people of color, low-income households, households with one or more persons with a disability, youth, and linguistically isolated. Additional Local Area Working Group members included those that were residents in the area, city representatives, and partnering agencies. These groups are intended to provide input on the EIS and relay project information to the community groups they represent. These groups included representatives from the following businesses and community organizations:

- Chambers of commerce
- Community councils
- Local government agencies
- School districts
- Social service organizations
- WFRC
- Residents and landowners
- Business owners
- Developers
- Youth organizations
- City and county elected officials
- City and county staff

The public engagement during the draft alternatives development and screening process included a focus on meaningful engagement and implemented new strategies to provide opportunities for participation in parts of the study area that historically might have been underserved due to language, socioeconomic, racial, or other outreach barriers. To help to reduce barriers to participation at the two in-person open house events, UDOT provided, at no cost to the attendees, food, a kids' corner with supervised activities, and transportation (rideshare services and UTA On Demand, a point-to-point transit service from the Utah Transit Authority [UTA], were both provided as options). All study information was made available in both English and Spanish, and interpretation services were provided at the in-person events. The online comment tools were also provided in both languages, and the open house events were held at locations that meet Americans with Disabilities Act accessibility requirements.

Chapter 6, *Coordination*, provides more information about these engagement activities.

S.8 How are past and current impacts to neighborhoods in the west part of Salt Lake City being considered in the EIS?

During the development of the I-15: Farmington to Salt Lake City EIS, many stakeholders have expressed concern about the past impacts to the west-side communities of Salt Lake City (Rose Park, Poplar Grove and Fairpark, in particular) from redlining (in this case, the practice of denying equal access to mortgage lending in communities of color), transportation infrastructure (railroads, roads, and the Salt Lake City International Airport), and industrial developments. The long-standing impacts to the west-side neighborhoods of Salt Lake City are the result of many contributing factors. Examples include historical placement of transportation infrastructure and other facilities that placed barriers and emission sources

within and near these communities, and the meteorological and topographical makeup of the region that affect air quality.

Although decision-making relevant to the proposed Action Alternative cannot remedy many of these past transportation and industrial decisions, UDOT intends to continue to work collaboratively with the community to address past impacts to the extent they are related to I-15 and can be addressed with the current I-15 project. By actively involving the community in the process and considering their feedback, UDOT is committed to working with the community to identify and incorporate those ideas into the project that will have lasting benefits for all members of the community. Section S.7 summarizes how UDOT has been coordinating with EJ communities during the EIS process.

S.9 What alternative and options does UDOT prefer?

After evaluating the information in this EIS, the project file, and public input to date, UDOT has identified the **Action Alternative** as the preferred alternative.

The Action Alternative is the preferred alternative because it would meet the purpose of the project by:

- Improving the safety of the I-15 mainline, interchanges, pedestrian and bicyclist crossings, and connected roadway network;
- Strengthening the economy by replacing the aging infrastructure on I-15 and reducing travel delay on I-15 by 47% compared to the No-action Alternative;
- Incorporating a design that provides space for the planned UTA FrontRunner Double Track project and provides a new shared-use path connection to the Woods Cross FrontRunner Station;
- Being consistent with the WFRC 2019–2050 RTP assumptions for I-15;
- Improving the pedestrian and bicyclist facility network across I-15; and
- Improving mobility by reducing travel time by 49% to 55% and increasing average speeds by 95% to 125% during both the morning and evening peak periods compared to the No-action Alternative.

The preferred alternative includes the following options:

- Farmington 400 West Option
- Bountiful 400 North – Northern Option
- Bountiful 500 South – Northern Option
- Salt Lake City 1000 North – Northern Option

For more information about why UDOT selected the options for the preferred alternative, see Section 2.4.5, *Basis for Identifying the Preferred Alternative*, in Chapter 2, *Alternatives*.

S.10 Who will decide which alternative is selected for construction?

UDOT will decide which alternative is selected for construction. However, UDOT's decision will rely heavily on both technical information and agency and community input. The final decision will be documented in the Record of Decision supported by information in the Final EIS. The combined Record of Decision and Final EIS are anticipated to be published in the spring of 2024.

S.11 When and how would the selected alternative be constructed?

Currently, funding has been identified for construction on the approved 2023–2028 Statewide Transportation Improvement Program. The current funding amount is less than the Draft EIS cost estimate summarized in Section S.5, *How much would the Action Alternative cost?*.

The actual cost of construction would change depending on the year of construction, any phasing, and inflation. Typically, to take into account the specifics of the alternatives that are selected, UDOT does not identify funding for construction until the EIS process has been completed.

The selected alternative would be constructed based on available funding. If only partial funding is allocated for construction, UDOT would construct portions of the selected alternative based on the amount of the funding while considering safety and operational benefits.

S.12 What major themes were identified in comments submitted during the EIS process?

In all, 900 comments were received during the scoping and draft purpose and need comment period. The majority of the comments were related to access to Glovers Lane from I-15 or the West Davis Corridor, bicycle and pedestrian accommodations across I-15, new interchanges or interchange modifications, pavement quality, noise impacts, grade-separating railroad tracks and local streets, and other alternative ideas relating to transit, transportation system management, travel demand management, tolling, and lane restrictions. Copies of the comments received during the scoping and draft purpose and need comment period are included in the *Scoping Summary Report* on the project website.

UDOT considered these scoping comments during the alternatives development and screening process and Draft EIS impact analyses where applicable.

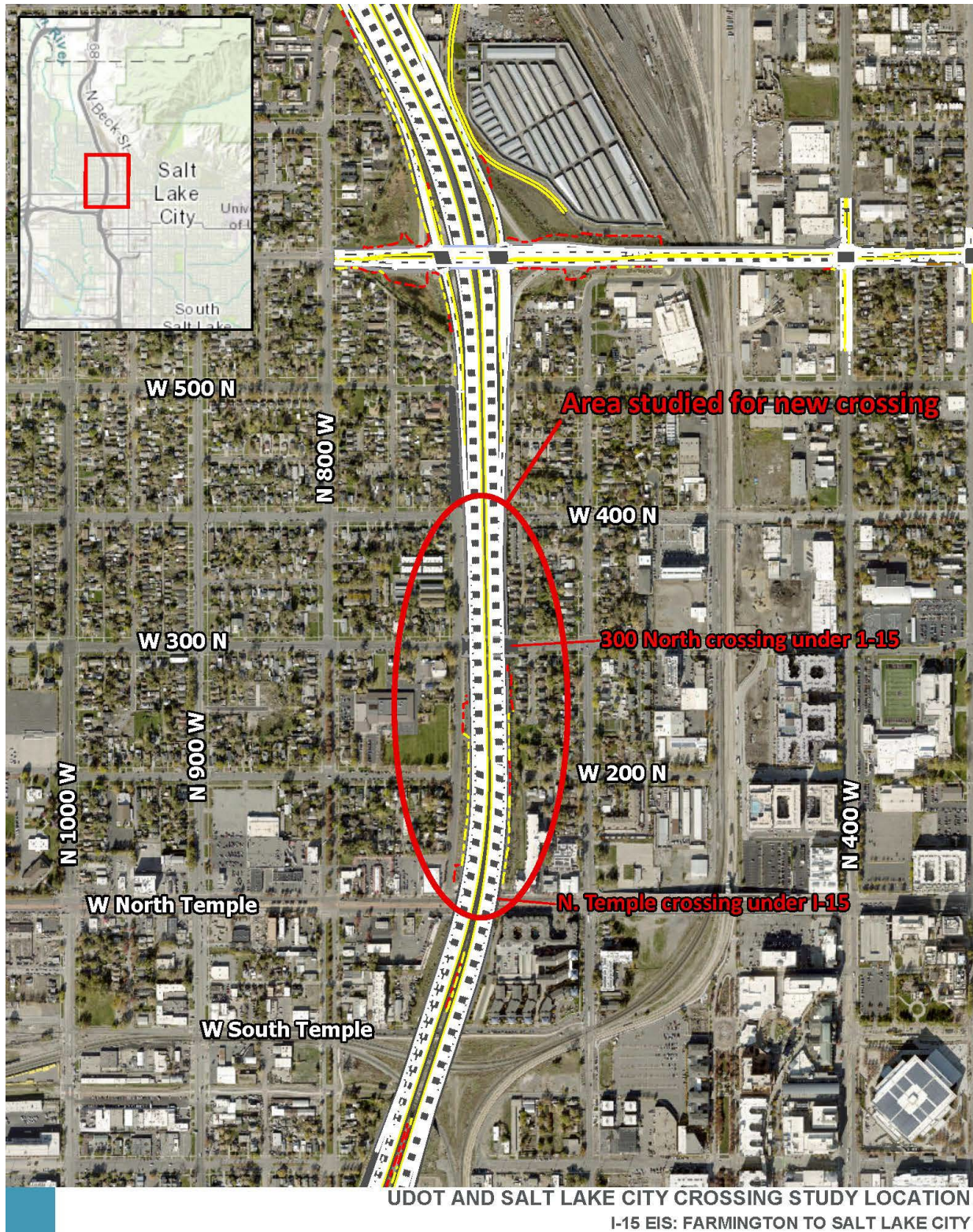
During the draft alternatives public comment period, 2,890 comments were received from the public and agencies. A summary of the public and agency comments is included in Attachment D of the *Alternatives Development and Screening Report*. Full copies of all public and agency comments are provided in *I-15 EIS: Draft Alternatives Comments January 2023* on the project website. The majority of the comments received were about community impacts, property impacts, impacts to environmental justice communities, air quality impacts, noise impacts, the need for the project, future travel demand, requests for transit, and comments for actions that are outside the jurisdiction of UDOT, such as requests for changes to zoning and land use. To a lesser degree, included among those comments were some new concepts, variations on existing concepts, and comments about the screening process and screening criteria.

UDOT considered and incorporated these comments into the final *Alternatives Development and Screening Report* (provided as Appendix 2A). As summarized in *Alternatives Development and Screening Report*, during the Level 2 screening process, UDOT screened out mainline and interchange concepts with additional resource impacts that were substantially more than the mainline and interchange concepts advanced past screening as part of the Action Alternative. The Action Alternative and options included in the Draft EIS meet the purpose of and need for the project while minimizing impacts compared to other concepts considered during the screening process.

S.13 Are UDOT and Salt Lake City still considering a new crossing in Salt Lake City?

A new crossing under I-15 was considered at 400 North in Salt Lake City during the draft alternatives development and screening process for this EIS. In response to mixed feedback from the community for the new 400 North crossing in Salt Lake City, UDOT removed this crossing from the Action Alternative in the Draft EIS. To meet the project purpose of “better connecting communities,” UDOT is working with Salt Lake City and the local community to evaluate a potential new crossing under I-15 between 400 North and North Temple (Figure S.13-1). If a location for a new crossing is identified through this additional study, UDOT will include this location in the Action Alternative. The crossing study was ongoing when this Draft EIS was released.

Figure S.13-1. Extent of the UDOT and Salt Lake City Crossing Study



S.14 What additional federal actions would be required if the project is built?

- Clean Water Act Section 404 Permit (U.S. Army Corps of Engineers)
- Approval of Addition of Modification of Interstate Access Points (FHWA)
- Section 6(f) of the Land and Water Conservation Funds Act Conversion and Temporary Nonconforming Use Approval (National Park Service)
- Bureau of Reclamation NEPA decision document (using this EIS) for the protection or replacement of Bureau of Reclamation lands, easements, or facilities impacted by the Action Alternative (Bureau of Reclamation)
- Federal Emergency Management Floodplain Review (Federal Emergency Management Agency)
- Air Quality Conformity Determination (FHWA)

S.15 What happens next?

The public has an opportunity to provide comments on this Draft EIS during a 45-day public comment period. During the public comment period, public hearings will be held in the vicinity of I-15 to allow the public to review the details of the project and talk with staff from UDOT.

After the Draft EIS comment period, the comments that are received will be reviewed, evaluated, responded to, and included in the Final EIS.

UDOT intends to issue a combined Final EIS and Record of Decision in the spring of 2024 pursuant to 49 USC Section 304a and 23 USC Section 139(n). These regulations direct the lead agency, to the maximum extent practicable, to combine the Final EIS and Record of Decision unless:

1. The Final EIS makes substantial changes to the proposed action that are relevant to environmental or safety concerns; or
2. There is a significant new circumstance or information relevant to environmental concerns that bears on the proposed action or the impacts of the proposed action.

S.16 References

[Horrocks] Horrocks Engineers

2022 Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City. July 7.

[WFRC] Wasatch Front Regional Council

2019 Wasatch Front 2019–2050 Regional Transportation Plan. <https://wfrc.org/vision-plans/regional-transportation-plan/2019-2050-regional-transportation-plan/>.

Chapter 1: Purpose and Need

1.1 Introduction

In March 2022, the Utah Department of Transportation (UDOT) initiated an Environmental Impact Statement (EIS) for the Interstate 15 (I-15): Farmington to Salt Lake City Project according to the provisions of the National Environmental Policy Act (NEPA) and other laws, regulations, and guidelines of the Federal Highway Administration (FHWA). UDOT, as the project sponsor and lead agency for the project, is responsible for preparing the I-15 EIS. The environmental review, consultation, and other actions required by applicable federal environmental laws for this action have been carried out by UDOT pursuant to 23 United States Code Section 327 and a May 26, 2022, Memorandum of Understanding between FHWA and UDOT.

1.1.1 Cooperating and Participating Agencies

As part of the environmental review process, the lead agency is required to identify and involve cooperating and participating agencies, develop coordination plans, provide opportunities for the public and participating agencies to be involved in defining the purpose and need statement and determining the range of alternatives, and collaborate with cooperating and participating agencies to determine methodologies and the level of detail for analyzing alternatives.¹ The lead agency must also provide oversight with regard to managing the NEPA process and resolving issues.

Table 1.1-1 lists the cooperating and participating agencies for the I-15 Farmington to Salt Lake City EIS.

What are cooperating and participating agencies?

A cooperating agency is an agency, other than a lead agency, that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposed project or project alternative.

A participating agency is a federal, state, tribal, regional, or local government agency that might have an interest in the project.

1.1.2 UDOT Quality of Life Framework

Utah's Transportation Vision (UVision) is a process for collaborating with partnering agencies and the public to establish a shared vision for transportation statewide. The statewide transportation vision as defined by UDOT is "A Pathway to Quality of Life." To further define the vision, UDOT developed a Quality of Life Framework to serve as the initiatives to implement the vision (UDOT 2020). The Quality of Life Framework includes four outcome areas: Good Health, Connected Communities, Strong Economy, and Better Mobility (Table 1.1-2). The purpose and need statement for the I-15 project is consistent with the Quality of Life Framework and prioritizes the same outcome areas. UDOT used the UVision process as it collaborated and partnered with the cooperating and participating agencies, local governments, and the public on the I-15 project.

More information regarding the project needs and how they align with the Quality of Life Framework is provided in Section 1.3, *Need for the Project*.

¹ These steps are required by 23 United States Code Section 139, which establishes an environmental review process that must be used when preparing an EIS for a highway or transit project.

Table 1.1-1. Cooperating and Participating Agencies for the I-15 Farmington to Salt Lake City EIS

Agency or Government	Type of Agency Involvement
Federal Agencies	
U.S. Army Corps of Engineers	Cooperating and participating
U.S. Bureau of Reclamation	Cooperating and participating
U.S. Environmental Protection Agency	Cooperating and participating
U.S. Fish and Wildlife Service	Participating
National Park Service (Omaha – Land and Water Conservation Fund)	Participating
Quasigovernmental Agencies	
Utah Transit Authority	Participating
Wasatch Front Regional Council	Participating
Weber Basin Water Conservancy District	Participating
State Agencies	
Utah Division of Outdoor Recreation	Participating
Local Governments	
Davis County	Participating
Salt Lake County	Participating
Bountiful City	Participating
Centerville City	Participating
City of North Salt Lake	Participating
Farmington City	Participating
Salt Lake City	Participating
West Bountiful City	Participating
Woods Cross City	Participating

Table 1.1-2. Outcome Areas in UDOT's Quality of Life Framework

UDOT Quality of Life Framework Initiatives			
Good Health	Connected Communities	Strong Economy	Better Mobility
<ul style="list-style-type: none"> • Safety • Public health and wellness • Natural environment 	<ul style="list-style-type: none"> • Connectivity • Land use and community • Integrated system 	<ul style="list-style-type: none"> • Accessibility • Transport costs • Economic development 	<ul style="list-style-type: none"> • Reliable travel time • Throughput • Risk and resiliency

Source: UDOT 2020

1.1.3 Description of the Needs Assessment Study Area and Logical Termini

The needs assessment study area was used to define the transportation issues that help develop the project purpose described in this chapter.

The needs assessment study area for the I-15 EIS extends from the U.S. Highway 89 (U.S. 89)/Legacy Parkway/Park Lane interchange (I-15 milepost 325) in Farmington to the Interstate 80 (I-80) West/400 South interchange (I-15 milepost 308) in Salt Lake City (see Figure 1.1-1). The study area also includes the ramps that begin or end at these termini.

What are logical termini?

Logical termini are the rational end points for evaluating proposed transportation improvements. Generally, they are the points of major traffic generation such as intersecting roads.

UDOT developed the logical termini for the I-15 EIS at an adequate distance apart to assess the environmental impacts of the project, and the termini are located at rational end points for evaluating proposed transportation improvements. The identified termini for the needs assessment study area were sufficiently broad and allowed UDOT to consider a reasonable range of alternatives that could meet the identified needs for the project.

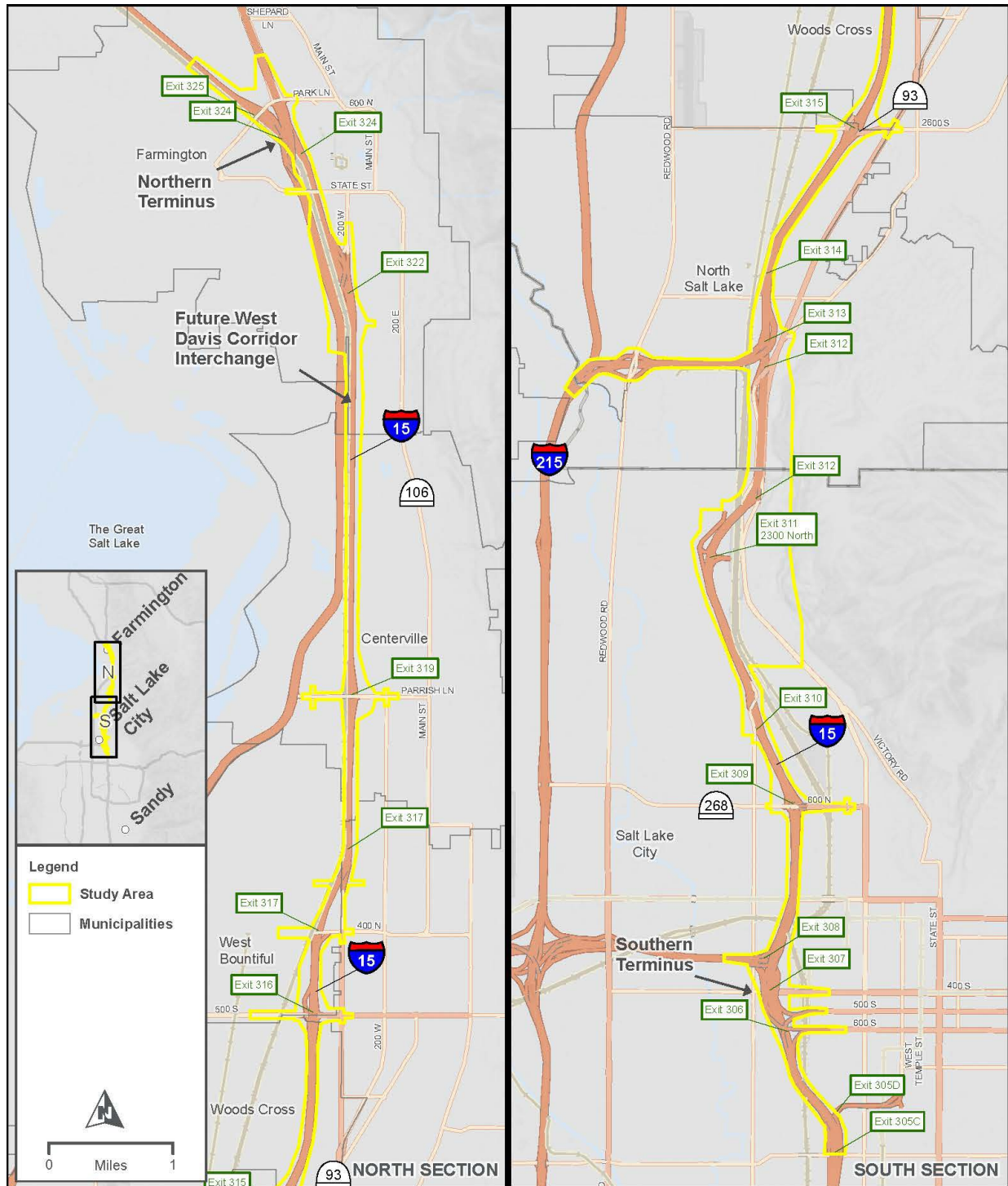
The following discussion explains how UDOT determined the termini of the needs assessment study area with regard to each major road in the area.

Northern Terminus. Farmington is the location of two prominent I-15 interchanges: the U.S. 89/Legacy Parkway/Park Lane interchange and the future West Davis Corridor interchange (planned to be completed in 2024). North of the U.S. 89/Legacy Parkway/Park Lane interchange, traffic volumes measurably decrease on I-15, though congestion issues are present. There is also another, separate planned I-15 project in the Wasatch Front Regional Council's (WFRC) 2019–2050 *Wasatch Front Regional Transportation Plan* (RTP) for the segment of I-15 north of U.S. 89. The U.S. 89/Legacy Parkway/Park Lane interchange in Farmington has high-traffic-volume connections to all of these freeways or major arterials and is the logical northern terminus for this project.

Southern Terminus. Salt Lake City is a primary commuting destination for morning peak-period trips and a primary source of trips during the evening peak period. 400 South, 600 North, and Beck Street/U.S. 89 are the primary interchanges into Salt Lake City when coming from the north on I-15. The exit from northbound I-15 to westbound I-80, a major system-to-system interchange, is also located just south of 400 South. I-80 westbound provides access to the Salt Lake City International Airport, the industrial areas surrounding the airport, and an additional system-to-system connection with Interstate 215 (I-215) and Bangerter Highway. South of 400 South is the end of both northbound and southbound collector-distributor systems and the I-15/I-80 eastbound/State Route (S.R.) 201 “spaghetti bowl” system interchange.

400 South is the logical southern terminus for this project because traffic measurably decreases going to or coming from downtown Salt Lake City at 400 South and because there is a major I-15/I-80/S.R. 201 system-to-system interchange as well as collector-distributor systems south of 400 South. The I-15 interchanges farther south at 1300 South and 2100 South do not tie in as directly to the dense business and residential areas of Salt Lake City. Additionally, south of 400 South there is another Phase 1 project in the 2019–2050 RTP (project R-S-133) to widen I-15 in the northbound direction between 600 South and I-215.

Figure 1.1-1. Needs Assessment Study Area for the I-15 EIS



NEEDS ASSESMENT STUDY AREA
I-15 EIS: FARMINGTON TO SALT LAKE CITY

1.2 Background of the I-15 Project

1.2.1 Project Area Context

I-15 is a major transportation corridor in the western United States that begins near the border of the United States and Mexico in San Diego County, California, and continues north to Alberta, Canada, passing through California, Nevada, Arizona, Utah, Idaho, and Montana. I-15 is a vital link in the economies of the western United States and the entire nation, connecting the ports in California to inland population centers. I-15 is the primary north-south transportation corridor in Utah; most of the population in Utah lives near this corridor.

Within the needs assessment study area, I-15 traverses seven cities (Farmington, Centerville, West Bountiful, Bountiful, Woods Cross, North Salt Lake, and Salt Lake City) and parts of two counties (Davis County and Salt Lake County). The I-15 corridor is an important local and regional transportation artery, facilitating access to commercial centers, industrial developments, residential areas, and community services and amenities.

What is travel demand?

Travel demand is the expected number of transportation trips in an area. Travel demand can be met by various modes of travel, such as automobile, bus, commuter rail, carpooling, and bicycling.

1.2.2 Projected Growth in Population, Employment, and Households

As shown in Table 1.2-1, Davis and Salt Lake Counties are both projected to have large increases in population, employment, and households by 2050. These projected increases are included in the 2019–2050 RTP and are expected to result in continued increased travel demand on I-15 and its interchanges.

Table 1.2-1. Projected Regional Population and Employment Growth

County	Population		Employment		Households	
	2019	2050 Projection (Percent Change from 2019)	2019	2050 Projection (Percent Change from 2019)	2019	2050 Projection (Percent Change from 2019)
Davis	356,000	488,000 (37%)	170,000	252,000 (48%)	112,482	182,148 (49%)
Salt Lake	1,144,000	1,502,000 (31%)	846,000	1,198,000 (42%)	411,472	606,036 (47%)

Sources: Kem C. Gardner Policy Institute 2017; U.S. Census Bureau 2021; WFRC 2019

1.2.3 Importance of I-15 in the Local and Regional Transportation Systems

1.2.3.1 Roadway

I-15, the primary north-south interstate highway in Utah, links most trips going to or from all destinations along the Wasatch Front and within Davis and Salt Lake Counties. I-15 also provides regional connections to Las Vegas, southern California, eastern Idaho, and Montana. On an average weekday in 2019, an estimated 170,000 vehicles crossed the Salt Lake County–Davis County border on I-15. By 2050, this number is projected to be 220,000, an increase of 29% (Horrocks 2022b).

The number of person-trips is the number of vehicle trips multiplied by the number of people per vehicle. The assumed occupancy per vehicle on I-15 in the needs assessment study area is 1.11 to 1.32 people per vehicle for the general-purpose lanes and 1.55 to 2.11 people per vehicle for the express lanes (Horrocks 2022b). The ranges for the assumed occupancy account for differences in occupancy during the morning and evening peak periods for both the northbound and southbound directions on I-15.

The projected increase in person-trips on I-15 between now and 2050 is primarily due to forecasted large population and employment growth in both Salt Lake and Davis Counties and the fact that 40% of workers from Davis County are predicted to commute south to Salt Lake County for work in 2050.

What are peak periods?

A peak period is a 4-hour period during a day in which travel demand is highest. For the I-15 project, the morning peak period is the period between 6 AM and 10 AM, and the evening peak period is the period between 3 PM and 7 PM. The I-15 peak periods were determined by reviewing data from 2019 and 2021. For information regarding why 2019 data are being used for this EIS, see Section 1.3.4.1.2, *Impact of COVID-19 on Traffic Data*.

1.2.3.2 Freight Routes

All segments of I-15 in Davis and Salt Lake Counties carry some of the highest volumes and percentages of freight trips in Utah. In Utah, the highest percentage of freight trips, by both value and weight, is carried by trucks. UDOT anticipates that the amount of freight moved by trucks will increase by 73% by value and 37% by weight by 2045 compared to 2015 (UDOT 2017).

I-15 is also a national freight corridor. I-15 and I-80 are National Highway Freight Network routes and provide direct connections to West Coast ports. The *I-15 Corridor System Master Plan Update 2017* (CH2M 2017) describes the Interstate 15 Mobility Alliance and joint planning efforts for I-15 among the states of California, Nevada, Arizona, and Utah.

The 2017 *Utah Freight Plan* (UDOT 2017) emphasizes the importance of I-15 to national and regional freight trips. It lists the same future improvements on I-15 in the needs assessment study area that are included in the 2019–2050 RTP in Table 1A-3 in Appendix 1A, *Purpose and Need Chapter Supplemental Information*. These projects include the widening and operational projects in both counties on I-15 and an upgrade to the I-215/I-15/U.S. 89 system interchange in Farmington.

1.2.3.3 Transit Routes

One Utah Transit Authority (UTA) bus route, route 473 Ogden–Salt Lake Express, currently uses I-15 as part of its service route. This route connects Ogden with downtown Salt Lake City. Numerous bus routes operate on cross streets in the needs assessment study area. Information regarding these bus routes is available on the UTA website (UTA 2022). The track for FrontRunner, UTA's commuter rail system, is west of I-15 in Davis County and east of I-15 in the Salt Lake County part of the study area. FrontRunner connects Ogden to Provo, Utah.

As shown in Table 1A-3 in Appendix 1A, *Purpose and Need Chapter Supplemental Information*, several funded and unfunded transit projects are planned in the needs assessment study area. The funded planned transit projects are double-tracking FrontRunner in strategic locations through Davis and Salt Lake Counties, implementing a bus rapid transit project from Farmington to the University of Utah Research Park, and making some bus service upgrades. The 2019–2050 RTP and UTA's long-range transit plan list additional unfunded transit projects that will be completed after 2050 (see Table 1A-3 in Appendix 1A). As described in Section 1.3.1, *Planning Horizon and No-action Conditions*, only funded projects are considered part of the no-action conditions in 2050 for the I-15 project. Figure 1.2-1 shows the locations of the existing UTA bus routes in the needs assessment study area.

What are the no-action conditions?

The no-action conditions are the expected conditions in the needs assessment study area in 2050 if no I-15 improvements are made. For more information, see Section 1.3.1, *Planning Horizon and No-action Conditions*.

1.2.3.4 Bicycle and Pedestrian Facilities

Numerous bicycle and pedestrian facilities cross over, cross under, or are parallel to I-15 between Salt Lake City and Farmington (Figure 1.2-2). There are 25 existing locations where bicyclists and pedestrians can cross I-15, with or without dedicated bicycle or pedestrian facilities. See Table 1A-1 in Appendix 1A, *Purpose and Need Chapter Supplemental Information*, for the locations of existing bicycle and pedestrian facilities and routes in the needs assessment study area. Many of these locations are within school district boundaries and connect residents who live on the other side of I-15 and must cross I-15 to get to a school in their district. Additionally, the supporting document *Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* on the project website (<https://i15eis.udot.utah.gov>) includes more detailed information regarding bicycle and pedestrian mobility and facility characteristics at each location (Horrocks 2022b).

Figure 1.2-1. Existing Transit Routes

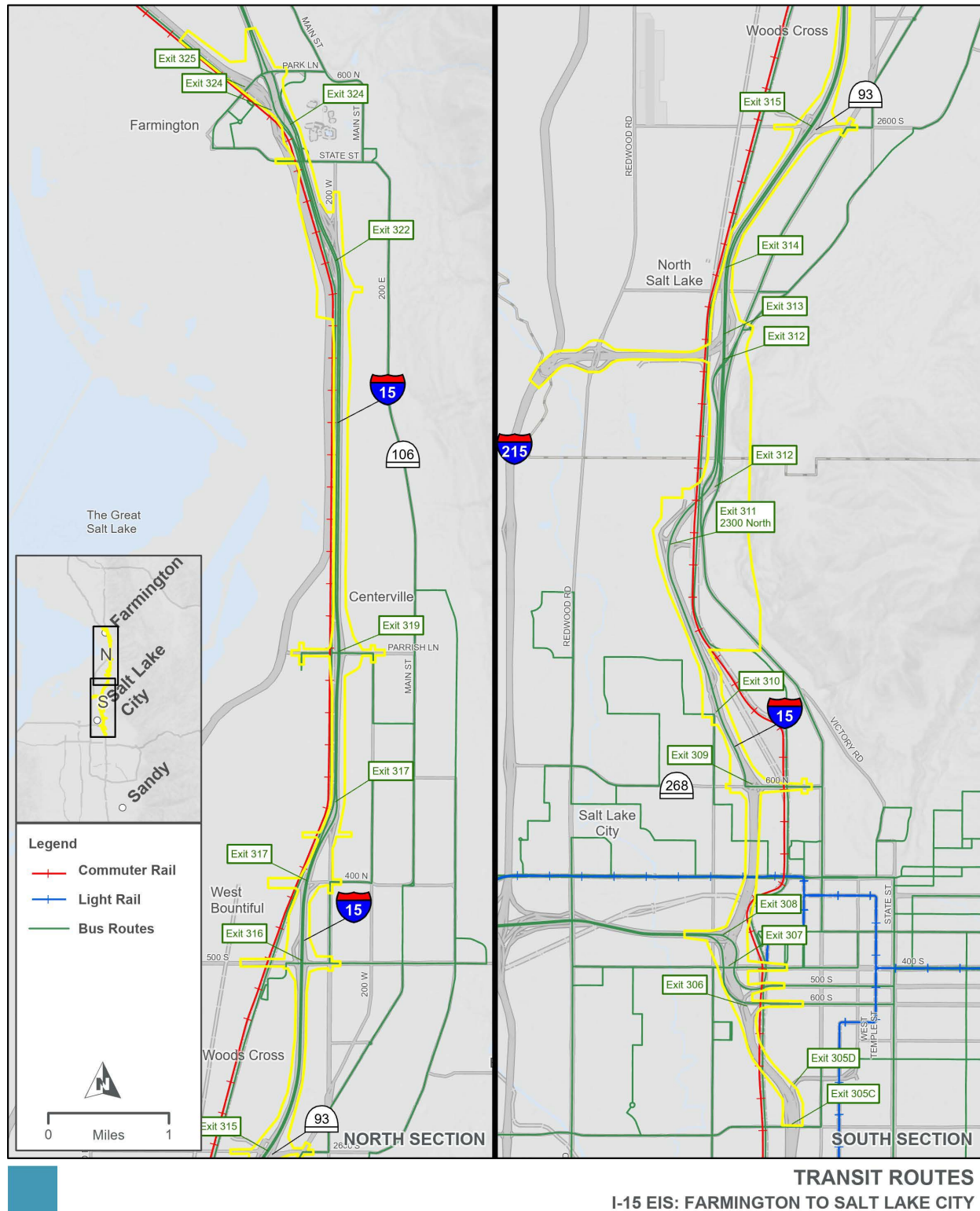
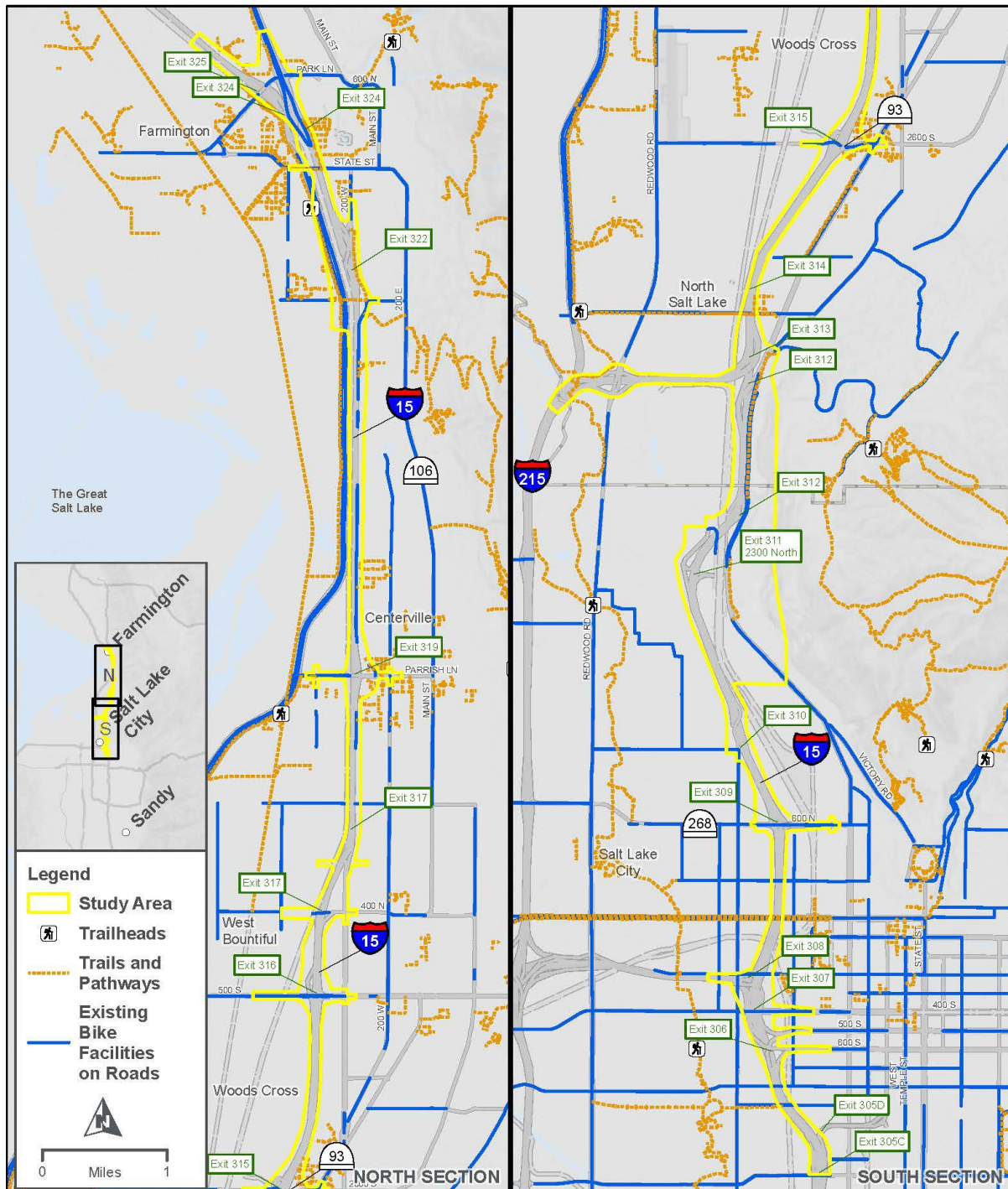


Figure 1.2-2. Existing Bicycle and Pedestrian Facilities



BICYCLE AND PEDESTRIAN FACILITIES
I-15 EIS: FARMINGTON TO SALT LAKE CITY

1.2.4 Prior Studies and Recommendations

Before the I-15 EIS process was initiated, many transportation planning studies had been conducted for I-15 or adjacent transportation facilities. The 15 studies that are most relevant to this EIS are summarized in Section 1A.2 of Appendix 1A, *Purpose and Need Chapter Supplemental Information*.

UDOT considered these studies as it developed the purpose of and need for the I-15 project. The relevant prior studies identified needs and potential solutions for the I-15 mainline, the I-15 interchanges, the arterial streets that access or cross I-15, the bicycle and pedestrian network, FrontRunner, and system-to-system connections for the West Davis Corridor and for I-215. These studies document existing and future travel demand between Davis and Salt Lake Counties and the need for a multifaceted solution to support future travel demand. The supporting document *Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* on the project website (<https://i15eis.udot.utah.gov>) includes detailed information about the bicycle and pedestrian mobility and facility characteristics at each location (Horrocks 2022b).

What is a system-to-system interchange?

A system-to-system interchange is an interchange that connects freeway facilities with direct-connect ramps.

What is a mainline?

A mainline is the primary travel-way of an interstate or freeway.

1.2.5 Regional Transportation Planning

The Wasatch Front Regional Council is the metropolitan planning organization for the project region and develops the *Wasatch Front Regional Transportation Plan* (WFRC 2019). WFRC's area of responsibility includes Davis, Salt Lake, and Weber Counties and the southern portion of Box Elder County. WFRC's most recent RTP, the 2019–2050 RTP, was adopted in 2019 and has had a total of four amendments in 2020 and 2021. The amended 2019–2050 RTP includes two projects that identify improvements to I-15 in Davis and Salt Lake Counties:

- I-15 widening (from five lanes to six lanes in each direction) from Farmington to Salt Lake County line (2019 RTP project: R-D-53)
- I-15 widening (from four and five lanes to six lanes in each direction) in Davis County to 600 North (2019 RTP project: R-S-137)

What is a fiscally constrained RTP?

Fiscally constrained means that an RTP demonstrates that the listed projects can be implemented using committed, available, or reasonably forecasted or expected revenue sources, with reasonable assurance that the federally supported transportation system is being adequately operated and maintained.

These two projects for I-15 were identified during the EIS process. The purpose of this EIS process is to conduct a thorough analysis of I-15 and identify a preferred solution. The 2019–2050 RTP is a fiscally constrained, 20-to-30-year plan of the anticipated highway, transit, and active transportation projects that would be needed to meet travel demand for all modes in WFRC's planning area. Transportation needs are based on projected and planned socioeconomic factors and land use in a region. Under federal law, WFRC must update its RTP every 4 years. An updated RTP is expected in 2023. WFRC and UDOT will coordinate on revisions and updates to project phasing. See Section 1A.3 of Appendix 1A, *Purpose and Need Chapter Supplemental Information*, for a list of upcoming 2019–2050 RTP projects in the needs assessment study area.

1.3 Need for the Project

Previous studies and the regional plans described in Sections 1A.2 and 1A.3 of Appendix 1A, *Purpose and Need Chapter Supplemental Information*, established a need for improvements to I-15 in the needs assessment study area. This section discusses the basis for those conclusions based on growth projections, travel demand data, and identified safety and operational issues. Section 1.3.1 describes the planning horizon and no-action conditions used for the needs assessment. Sections 1.3.3 through 1.3.5 describe the specific needs for the project using UDOT's Quality of Life Framework.

1.3.1 Planning Horizon and No-action Conditions

Planning Horizon. The planning horizon in WFRC's current RTP is 2019 to 2050. This EIS's planning horizon is designed to match the 2019–2050 RTP's planning horizon of 2050. To ensure the accuracy of travel demand modeling for the 2050 planning horizon, UDOT coordinated with WFRC and obtained WFRC's 2050 travel demand model for use in developing this EIS.

2050 No-action Conditions. This needs assessment is based on the no-action conditions in the needs assessment study area in 2050 if no I-15 improvements are made. The no-action travel demand conditions used in this EIS are based on version 8.3.2 of WFRC's regional travel demand model and include the socioeconomic forecast for 2050. WFRC's travel demand model is a state-of-the-practice tool that allows transportation analysts to input various land use and growth scenarios to test road and transit networks with the expected traffic for each scenario.

For the 2050 no-action conditions, UDOT assumed the socioeconomic forecast for 2050 and that all funded transit and roadway projects in the 2019–2050 RTP would be in place (see Section 1A.3 of Appendix 1A, *Purpose and Need Chapter Supplemental Information*, for a list of projects), with the only exception being the two widening projects on I-15 (identified in the 2019–2050 RTP as I-15 widening from Farmington to Salt Lake County line [R-D-53] and I-15 widening in Davis County to 600 North [R-S-137]). These two projects are not included in the 2050 no-action conditions because they are the potential components of this project.

The traffic analysis in this chapter is based on future land use, planned projects, and modeling assumptions. If some of these assumptions change as the study progresses, the results in this EIS might be updated based on more-current information.

What is a travel demand model?

A travel demand model is a computer model that predicts the number of transportation trips (travel demand) in an area at a given time. This prediction is based on the expected population, employment, household, and land-use conditions in the area. The travel demand model used for the I-15 project is maintained by WFRC.

1.3.2 Health and Safety Needs

The Good Health outcome area of UDOT's Quality of Life Framework encompasses the health of people and communities. UDOT recognizes the role of active transportation in mental and physical health as well as environmental conditions contributing to health such as air quality and water quality. This section describes the safety and public health needs that will be addressed during the development of the I-15 EIS. Natural environment considerations were addressed through alternatives screening and are discussed in Chapter 3, *Affected Environment, Environmental Consequences, and Mitigation Measures*.

1.3.2.1 Safety Issues

The crash analysis conducted for the needs assessment study area shows that the crash rate and characteristics in the study area are comparable with those in the I-15 corridor throughout the urban Wasatch Front (that is Salt Lake, Davis, and Weber Counties). Within the study area, the crash analysis identified 15 “hot spot” locations where there were crashes with a severity level of 4 or greater (serious injury or fatality) between 2018 and 2020.

In general, more crashes occur in Salt Lake County, where there is greater traffic and congestion. The crashes also have a directional and temporal pattern: southbound travel has more crashes during the morning hours (6 AM to 9 AM), and northbound travel has more crashes during the afternoon hours (3 PM to 6 PM). This pattern follows rush-hour and commuter-traffic characteristics between Davis and Salt Lake Counties. The majority of crashes in either travel direction are front-to-rear and sideswipe crashes. A high number of front-to-rear and sideswipe crashes is often associated with congestion. See Section 1A.5.1 of Appendix 1A, *Purpose and Need Chapter Supplemental Information*, for more crash data.

1.3.2.2 Operational Safety Issues

Several locations in the needs assessment study area have worsening operational issues. These issues include locations where traffic congestion exceeds capacity of the interchange and traffic can back onto I-15 mainline, which is a safety concern because of the high travel speeds on the I-15 mainline. In 2050, under the no-action conditions, 95th-percentile vehicle queue lengths are expected to extend back into the I-15 mainline at the 600 North, 2600 South, 500 South, 400 North, and Parrish Lane interchanges during peak travel periods (Horrocks 2022b). The supporting document *Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* on the project website (<https://i15eis.udot.utah.gov>) includes detailed figures showing the projected 95th-percentile vehicle queue lengths in 2050 at each location (Horrocks 2022b).

What are 95th-percentile vehicle queue lengths?

The 95th-percentile vehicle queue lengths is the vehicle queue length in feet (how many cars are backed up at a signal) that should not be exceeded in 95% of the operational periods based on predicted traffic volumes. In 5% of the operational periods, the vehicle queues will extend longer than this distance. The queue length distance varies at each location based on the amount of projected traffic demand.

1.3.2.3 Outdated Roadway Features

The definition of standard roadway geometry is based on the highway design standards established by the American Association of State Highway and Transportation Officials (AASHTO 2018). Design standards have been updated over time. Although I-15 met design standards when it was originally constructed, many elements of I-15 are now outdated and do not meet current design standards. UDOT analyzed the horizontal and vertical alignments of I-15 and identified several roadway geometric features that do not meet current design standards and contribute to congestion and safety issues. These roadway features include barriers, shoulder widths, interchange ramps, horizontal curves, lane buffers, vertical clearance, and vertical sight distances. See Section 1A.5.2 in Appendix 1A, *Purpose and Need Chapter Supplemental Information*, for the locations of these outdated roadway features and more details about the design standards and criteria for these roadway features.

1.3.2.4 Bicyclist and Pedestrian Issues

The Good Health outcome area of UDOT's Quality of Life Framework includes safety considerations and accommodations for bicyclists and pedestrians. At some locations, such as 500 South in Bountiful or Parrish Lane in Centerville, the existing pedestrian and bicycle accommodations cross uncontrolled roads (that is, roads without traffic signals) and are uncomfortable for many bicyclists and pedestrians. There is a need throughout the needs assessment area to better transition vehicle traffic from the interstate to neighborhood streets through visual and design cues to reduce speeds and increase line of sight for vehicles to see pedestrians and bicyclists.

What are comfortable bicycle and pedestrian facilities?

Comfortable bicycle and pedestrian facilities are facilities that provide a sense of perceived safety and protection for bicyclists and pedestrians and have an absence of "uncomfortable" interactions with motor vehicles.

During the Smart Growth America (SGA 2021) workshops, the I-15 corridor was identified by many participants as being a barrier to east-west connectivity for residents. In addition to these workshops, the *Salt Lake City Pedestrian and Bicycle Master Plan* (Salt Lake City 2015), the *South Davis County Active Transportation Plan* (APD and TR 2020), and the 2019–2050 RTP have also identified a need for safe and comfortable pedestrian and bicycle facilities that run parallel to I-15 and those that cross I-15.

Additionally, UDOT analyzed StreetLight Data to better understand the travel behavior of people walking, riding bicycles, and accessing transit in the needs assessment study area. The data were used to determine trip mode, origins and destinations of nonmotorized travel, demographics such as the race or income level of users, trip directness, short vehicle trips to FrontRunner stations, and frequency of use at each I-15 crossing. Each crossing of I-15 has unique bicycle and pedestrian travel patterns and traffic characteristics. See Section 1A.5.3 of Appendix 1A, *Purpose and Need Chapter Supplemental Information*, for the characteristics and needs of each crossing in the study area.

1.3.3 Connected Community Needs

The Connected Community outcome area of UDOT's Quality of Life Framework reviews the intersection of transportation and land use as well as the need for intermodal connections between walking, biking, transit, and vehicle travel. The Quality of Life Framework emphasizes that transportation ties communities together. This section describes the connected community needs that are addressed in this EIS.

1.3.3.1 Local Land Use and Transportation Plans

As described in Section 1.2.5, *Regional Transportation Planning*, and in Sections 1A.3 and 1A.4 of Appendix 1A, *Purpose and Need Chapter Supplemental Information*, many multimodal transportation projects are planned adjacent to and intersecting with the I-15 needs assessment study area in the 2019–2050 RTP. The I-15 project considers these other planned multimodal projects.

Local land use plans informed the travel demand model used to describe the conditions in 2050 in the study area. UDOT has considered land use plans and future updates to plans to the extent that these plans change travel demand or travel patterns. See Section 1A.4 of Appendix 1A for a list of land use plans that apply to the study area.

1.3.3.2 Network Gaps and Lack of Multimodal Connectivity

Bicyclist and Pedestrian Network Needs. Bicyclist and pedestrian network needs for both recreation users and those using bicycles or walking as their means of transportation have been previously identified in the *South Davis County Active Transportation Plan*, the *Salt Lake City Pedestrian and Bicycle Master Plan*, and the 2019–2050 RTP. All of these plans have projects to improve multimodal networks in or near the needs assessment study area. UDOT worked with project sponsors and considered these other planned projects that would cross or be close to I-15. The I-15 project is intended to maintain and improve multimodal access across I-15 and support these planned future multimodal projects.

Transit Network Needs. As described in the 2019–2050 RTP, several regional UTA projects are planned adjacent to and intersecting with the I-15 needs assessment study area, including the Davis–SLC Community Connector bus rapid transit (BRT) project and the FrontRunner double-track and unfunded electrification projects. In many locations in the I-15 study area, FrontRunner is directly adjacent or parallel to I-15, and the Davis–SLC Community Connector BRT project is parallel to and on the east side of I-15. UDOT has considered these planned FrontRunner and BRT projects where they are adjacent to I-15 or would cross I-15 to make sure that the I-15 project supports these planned projects.

Multimodal Connections to FrontRunner Station Needs. The existing road, bicyclist, and pedestrian connections to the FrontRunner stations in Farmington and Woods Cross would benefit from more direct, comfortable multimodal access. Farmington residents on the east side of I-15 cannot directly access the FrontRunner Farmington Station. A project is planned to build a new pedestrian crossing near Park Lane that will improve access for residents near Park Lane. Residents located near Park Lane must travel to State Street and then north to the station, resulting in out-of-direction travel. State Street has the highest use by bicyclists in the needs assessment study area for accessing a FrontRunner station.

The FrontRunner Woods Cross Station is closest to 500 South for residents on the east side of I-15. The 500 South diverging diamond interchange at I-15 has high bicycle and pedestrian use compared to the rest of the study area, but it is difficult to navigate. Additionally, no formal or maintained pedestrian or bicyclist facilities access the FrontRunner Woods Cross Station from 500 South. The Union Pacific Railroad and UTA FrontRunner rail lines in Woods Cross are barriers for residents arriving by foot or bicycle from the west because the cross streets have at-grade crossings that can have long delays when trains travel through. Increasing multimodal network connectivity (east-west and north-south) across I-15 near the FrontRunner stations and the future Davis–SLC Community Connector BRT stations will help support these planned transit projects.

1.3.3.3 Coordination with UTA FrontRunner

Coordination with UTA and the UTA FrontRunner Double Track project has been considered in this EIS. In 2021, in anticipation of the preparation of this EIS, UTA prepared a technical memorandum describing the current strategic UTA investments that are underway for the FrontRunner Double Track project. The full memorandum is included in Section 1A.6 in Appendix 1A, *Purpose and Need Chapter Supplement Information*. UTA notified UDOT that it has begun planning and engineering for the following FrontRunner Double Track improvements:

- Beck Yard double track
- Centerville to Woods Cross double track
- Potential double track embankment as part of the ongoing West Davis Corridor project

UTA's technical memorandum summarized many of the agreements from the 2009 *I-15 North and Commuter Rail Collaborative Design Planning Study* (see Section 1A.2.2 in Appendix 1A) as well as the locations where coordination will be required between UDOT and UTA as they work on these two projects that are parallel in location to ensure that there will be adequate space for the planned FrontRunner Double Track projects with the I-15 alternatives.

1.3.4 Economic Needs

The Strong Economy outcome area of UDOT's Quality of Life Framework recognizes the vital role of transportation in business and commerce. This outcome area is not solely focused on the intra-state and inter-state traffic levels but also considers how transportation can help inter-city and intra-city economies. The transportation system provides access to jobs, education, services, and many other essential needs and supports economic development to improve quality of life. The following economic needs are addressed in this EIS.

1.3.4.1 Delay and Congestion

1.3.4.1.1 Network Delay

Delay and congestion on I-15 adds time to regional and local trips on I-15 and local side streets near interchanges. UDOT analyzed network delay in the needs assessment study area. The I-15 EIS *Existing and No-action Traffic Operations Analysis Technical Memorandum* (Horrocks 2022a) shows that daily hours of network delay during both the morning and afternoon peak periods is projected to increase more than 1,300% under the no-action conditions in 2050 compared to 2019 (Table 1.3-1).

What is network delay?

Network delay is the delay on I-15, interchanges, cross streets, and other nearby roads.

Table 1.3-1. Existing (2019) and 2050 No-action Network Daily Delay

AM			PM		
2019 Delay (hours)	2050 Delay (hours)	Percent Increase	2019 Delay (hours)	2050 Delay (hours)	Percent Increase
2,409	36,782	1,427%	2,910	42,500	1,360%

Source: Horrocks 2022a

As discussed in Section 1.3, *Need for the Project*, for the 2050 no-action conditions, UDOT assumed that all funded transit and roadway projects in the 2019–2050 RTP would be in place except for the two widening projects on I-15 (R-D-53 and R-S-137). The list of projects included in the 2050 no-action conditions is in Table 1A-3 in Appendix 1A, *Purpose and Need Chapter Supplemental Information*. This projected increased delay will result in lost productivity and wages and increased transport costs, all of which negatively affect the local and regional economy through inefficient movement of goods and people. The large increase in delay on I-15 is primarily the result of large forecasted population and employment growth in both Salt Lake and Davis Counties and the fact that 40% of workers from Davis County are predicted to commute south to Salt Lake County for work in 2050.

1.3.4.1.2 Impact of COVID-19 on Traffic Data

In 2020, traffic volumes were disrupted by the COVID-19 pandemic. For many sectors of the state economy, normal business services were interrupted, and many employees began working from home. This led to unpredictable traffic volumes in 2020. Using traffic volumes from 2020 and 2021 for this study would have led to an inaccurate assessment of current and future traffic conditions due to the change in travel patterns with the COVID-19 pandemic. In this EIS, the analysis of the existing conditions uses traffic volumes from 2019 to characterize traffic during the AM and PM peak periods. UDOT selected 2019 over 2021 as the base year for this study for the following reasons:

- Although 2021 traffic volumes approached or surpassed pre-COVID levels, congestion on I-15 was less volatile and more predictable in 2019. Simulation models can be calibrated better when there is existing congestion to match the causes of congestion.
- Transit ridership in 2021 did not recover to pre-COVID levels.
- The regional travel demand model 8.3.2 is calibrated to 2019 and uses transit ridership from 2019.

For more information, see the I-15 EIS *Existing and No-action Traffic Operations Analysis Technical Memorandum* (Horrocks 2022a).

1.3.4.2 Aging Infrastructure

Quality infrastructure is important to Utah's freight network and the traveling public. Quality infrastructure reduces transport costs and reduces delay by providing reliable, safe, and efficient transportation and reducing repair costs for vehicles traveling on I-15 and maintenance costs of the roadway itself. This section provides an overview of existing infrastructure on I-15 that needs to be replaced.

1.3.4.2.1 Pavement

The existing pavement in the needs assessment study area has sections of asphalt and sections of concrete. UDOT's maintenance strategy for asphalt is to mill and overlay it every 7 to 10 years and completely replace it every 20 years. UDOT has used this strategy in the study area, and the asphalt pavement remains in good condition. Concrete pavement requires minimal routine maintenance during its lifecycle but needs major rehabilitation or replacement after 40 to 50 years. The concrete pavement on I-15 between Farmington and West Bountiful has been in service about 50 years, and UDOT has identified the need for a pavement reconstruction project on I-15 between Park Lane in Farmington to Pages Lane in West Bountiful.

1.3.4.2.2 Structures

Of the 35 existing structures in the I-15 needs assessment study area, the UDOT Structures Group recommends 9 for replacement, 1 for a deck replacement, and 19 for preservation work. Preservation work includes replacing and/or placing overlay, painting superstructures, sealing columns and parapets, replacing joints, making minor substructure repairs, and repairing and/or replacing fences. The other 6 are not identified as needing any condition-based work. Most existing structures (26 of the 35) do not have enough vertical clearance or width to accommodate any additional widening of I-15 in areas if needed. See Section 1A.5.4 of Appendix 1A, *Purpose and Need Chapter Supplemental Information*, for a list of structures and the identified needs for each structure.

What are structures?

Structures are bridges and culverts that cross under or over I-15 and carry vehicles, bicycles, pedestrians, creeks, or drainages.

1.3.5 Mobility Needs

The Better Mobility outcome area of UDOT's Quality of Life Framework focuses on moving people, not just vehicles, and includes public transit, walking, and biking needs as part of better mobility. The following mobility needs are addressed in this EIS.

1.3.5.1 Failing Operations

This section provides an overview of existing and projected traffic volumes in 2050 on I-15 and its interchanges, and the existing and future traffic volumes in the needs assessment study area. In this section, traffic volumes on roads are compared with existing and future no-action capacities to determine future operations and mobility on each road segment in the study area.

1.3.5.1.1 Increasing Regional Travel Demand

UDOT analyzed regional travel patterns among Weber, Davis, and Salt Lake Counties. Although Weber County is not in the needs assessment study area, traffic from Weber County is a component of the regional commuter traffic coming from the northern Wasatch Front on I-15 and is a component of traffic volumes on I-15 in Davis and Salt Lake Counties.

The I-15 EIS *Existing and No-action Traffic Operations Analysis Technical Memorandum* (Horrocks 2022a) shows that, in 2019, more than half of the jobs along the Wasatch Front were located in Salt Lake County, and more than 40% of Davis and Weber County workers commuted south. In 2050, even with strong job growth in Davis and Weber Counties, a majority of jobs are still projected to be in Salt Lake County, and a similar percentage of Davis and Weber County workers is projected to commute south. These factors lead to heavy north-south traffic between Davis and Salt Lake Counties and much higher traffic during peak commuting times.

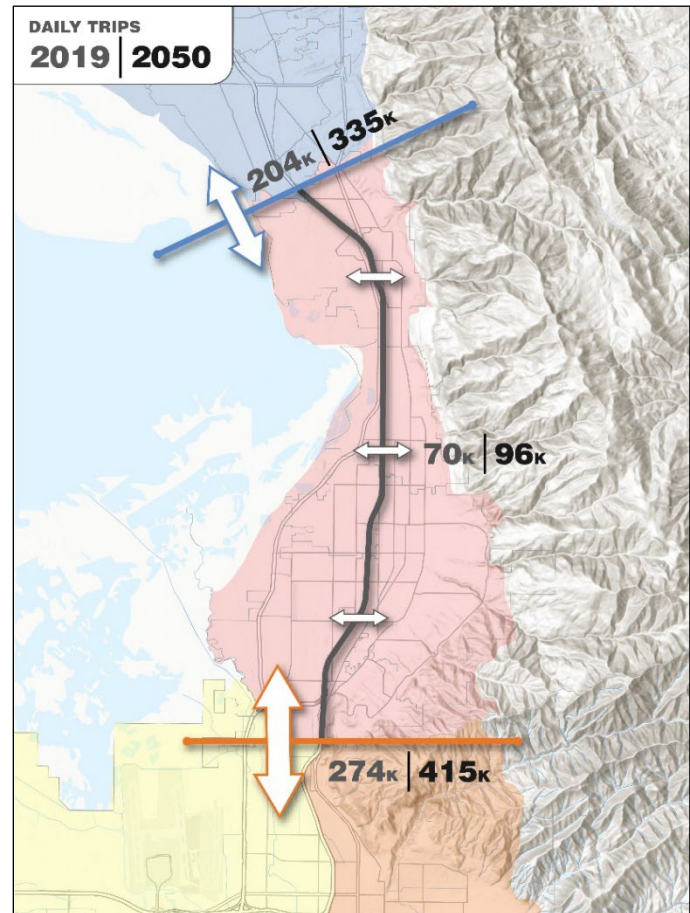
UDOT performed a screen-line analysis to quantify the travel demand across northern Davis County on the north end near Park Lane and across southern Davis County at the Davis and Salt Lake County boundary on the south end. A similar screen line was established on I-15 in southern Davis County to estimate east-west travel across I-15. Figure 1.3-1 shows the results of the screen-line analysis.

A screen line is an imaginary line on a map that crosses several links in a travel demand model. Screen lines are an accepted tool for evaluating a transportation network that serves a large geographic area. In a screen-line analysis, the sum of observed link trip counts (person-trips for all travel modes) that are crossed by the screen line are compared with model-estimated volumes for the same links and travel directions.

The screen-line analysis shows travel (in terms of person-trips) across northern-southern Davis County increasing from 204,000 in 2019 to 335,000 in 2050, an increase of over 64%. The screen-line analysis shows travel across Davis and Salt Lake Counties increasing from 274,000 in 2019 to 415,000 in 2050, an increase of over 51%. East-west travel across I-15 in the needs assessment study area is expected to increase from 70,000 in 2019 to 96,000 in 2050, an increase of 37%. See the I-15 EIS *Existing and No-action Traffic Operations Analysis Technical Memorandum* for more information (Horrocks 2022a).

This increase in north-south and east-west travel will put increased pressure on I-15, its interchanges, and crossing arterial streets.

Figure 1.3-1. Existing (2019) and 2050 No-action Screen-line Analysis



1.3.5.1.2 Increasing Travel Times

UDOT modeled the existing (2019) and 2050 no-action conditions for peak AM and PM travel times on I-15. Travel times in 2050 are expected to increase between 30% and 432% during the AM peak period for I-15 southbound travel, resulting in failing operations on I-15 for morning commuters. Travel times in 2050 are projected to increase between 129% and 407% during the PM peak period for I-15 northbound travel (Table 1.3-2). Additionally, travel times on the arterial streets that serve I-15 interchanges and local traffic in the needs assessment study area are projected to more than double. See the I-15 EIS *Existing and No-action Traffic Operations Analysis Technical Memorandum* (Horrocks 2022a) for more information.

What are failing operations?

Failing operations refers to traffic volumes that exceed roadway capacity, resulting in increased travel times, congestion and delay.

Table 1.3-2. Comparison of I-15 Mainline Travel Time between Farmington and Salt Lake City (2019 and 2050)

I-15 Travel Direction	Existing (2019) Travel Time (minutes)	2050 No-action Travel Time (minutes)	Percent Change
Southbound			
6:00 AM	15.9	20.6	30%
7:00 AM	19.2	41.6	117%
8:00 AM	19.1	69.1	262%
9:00 AM	16.7	88.9	432%
Northbound			
3:00 PM	16.5	37.8	129%
4:00 PM	20.6	64.5	213%
5:00 PM	23.6	78.1	231%
6:00 PM	16.6	84.2	407%

Source: Horrocks 2022a

1.3.5.1.3 Decreasing Average Speed

UDOT calculated average travel speeds on I-15 using the VISSIM model during the morning (6:00–10:00 AM) and evening (3:00–7:00 PM) peak periods for the existing (2019) and 2050 no-action conditions. Under the existing conditions (in 2019), I-15 southbound operates with limited congestion during the AM peak period, and average travel speeds are 59 to 71 miles per hour (mph). I-15 northbound experiences congestion during the PM peak period, and average travel speeds are 45 to 64 mph.

Under the no-action conditions in 2050, heavy congestion is projected to occur on I-15 in the northbound and southbound directions during both the AM and PM peak periods. Congested conditions are projected to spread to encompass the full 4-hour peak period during both the morning and evening. Southbound AM peak-period travel speeds are projected to be 13 to 55 mph, and northbound PM peak-period travel speeds are projected to be 13 to 28 mph. These projected average speeds are much slower than the existing conditions and will negatively impact throughput, operations, and safety on I-15. Table 1.3-3 shows the deteriorating average speeds on I-15 northbound and southbound under the projected no-action conditions in 2050.

Table 1.3-3. Comparison of I-15 Mainline Average Speed between Farmington and Salt Lake City (2019 and 2050)

I-15 Travel Direction	Existing (2019) Average Speed (mph)	2050 No-action Average Speed (mph)	Percent Change
Southbound			
6:00 AM	71.0	54.8	-23%
7:00 AM	58.8	27.1	-54%
8:00 AM	59.1	16.3	-72%
9:00 AM	67.6	12.7	-81%
Northbound			
3:00 PM	64.3	28.0	-56%
4:00 PM	51.5	16.4	-68%
5:00 PM	44.9	13.6	-70%
6:00 PM	63.9	12.6	-80%

Source: Horrocks 2022a

1.3.5.1.4 Interchange Operation Needs

By 2050, all I-15 interchanges between Park Lane and 600 North are projected to experience much higher levels of congestion than current levels because the interchanges will not have enough capacity to support the projected traffic volumes exiting and entering I-15.

As stated in Section 1.3.2.2, *Operational Safety Issues*, in 2050 under the no-action conditions, the 95th-percentile vehicle queue lengths are expected to extend back into the I-15 mainline at the 600 North, 2600 South, 500 South, 400 North, and Parrish Lane interchanges. See Table 1.3-4 for the I-15 interchanges that are expected to experience heavy congestion during the PM peak period in 2050.

Table 1.3-4. Interchanges Modeled in the Davis County I-15 Study and Future Congestion

I-15 Interchange	City	Existing Conditions ^a	Future Conditions ^a
Park Lane	Farmington	Minimal congestion	Moderate to heavy congestion
Parrish Lane	Centerville	Minimal to moderate congestion	Heavy congestion
400 North	West Bountiful	Minimal to moderate congestion	Heavy congestion
500 South	West Bountiful	Minimal to moderate congestion	Heavy congestion
1100 North/2600 South	North Salt Lake	Minimal to moderate congestion	Heavy congestion
600 North	Salt Lake City	Minimal congestion	Heavy congestion

Source: Horrocks 2022a

^a Minimal congestion is delays less than 35 seconds, moderate congestion is delays of 35 or 55 seconds, and heavy congestion is delays of more than 55 seconds at an intersection related to the interchange. This table presents a range of congestion levels when several intersections and congestion levels are associated with the interchange. Thresholds obtained from the sixth edition of the *Highway Capacity Manual* (TRB 2016) were used to assign a congestion level similar to what a driver would experience.

1.4 Summary of Purpose and Need

1.4.1 Need for the Project

As described in Section 1.3, *Need for the Project*, between Farmington and Salt Lake City, I-15 has aging infrastructure and worsening operational characteristics for 2019 and projected (2050) travel demand, both of which contribute to decreased safety, increased congestion, lost productivity, and longer travel times. East-west streets that access or cross I-15 are important to connect communities and support other travel modes such as biking, walking, and transit. When I-15 and its interchanges do not support travel demand, traffic is added to the local streets, which affects both the regional and local transportation system as well as safe, comfortable, and efficient travel by other travel modes.

1.4.2 Purpose of the Project

The purpose of the I-15 project is to improve safety, replace aging infrastructure, provide better mobility for all travel modes, strengthen the state and local economy, and better connect communities along I-15 from Farmington to Salt Lake City. The project purpose consists of the following objectives, which are organized by UDOT's Quality of Life Framework categories of Good Health, Connected Communities, Strong Economy, and Better Mobility.

1.4.2.1 Improve Safety

- Improve the safety and operations of the I-15 mainline, I-15 interchanges, bicyclist and pedestrian crossings, and connected roadway network.

1.4.2.2 Better Connect Communities

- Be consistent with planned land use, growth objectives, and transportation plans.
- Support the planned FrontRunner Double Track projects and enhance access and connectivity to FrontRunner, to regional transit and trails, and across I-15.

1.4.2.3 Strengthen the Economy

- Replace aging infrastructure on I-15.
- Enhance the economy by reducing travel delay on I-15.

1.4.2.4 Improve Mobility for All Modes

- Improve mobility and operations on the I-15 mainline, I-15 interchanges, connected roadway network, transit connections, and bicyclist and pedestrian facilities to help accommodate projected travel demand in 2050.

1.5 Public and Agency Involvement in Developing the Purpose and Need

The Council on Environmental Quality (CEQ) oversees federal agencies' implementation of NEPA. In 2020, CEQ announced a final rule amending the NEPA regulations in 40 Code of Federal Regulations Parts 1500–1508. The new regulations require agencies to provide more information and solicit input from the public earlier in the process to ensure and facilitate informed decision-making. The new regulations allow agencies to develop a draft purpose and need statement before publishing the Notice of Intent to prepare an EIS in the Federal Register.

What is scoping?

Scoping is an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action.

The Federal Register notice for this EIS was posted on March 28, 2022.

A draft version of this purpose and need chapter was provided to the cooperating and participating agencies and the public for a 30-day review period ending on May 13, 2022. This review period occurred at the same time as the formal scoping process. During the public comment period for the scoping process and the draft purpose and need, the study team gave presentations at 24 city council, community council, advisory group, and planning commission meetings. UDOT held two equity working group meetings, on February 28 and March 28, 2022. UDOT held a virtual agency scoping meeting on April 7, 2022, via Webex.

In all, 900 comments were received during the scoping and draft purpose and need comment period. Comments were submitted by the agencies and the public through the study email address, the study website, an online mapping tool (a geographic information systems [GIS] tool), and the regulations.gov website. The majority of the comments were related to access to Glovers Lane from I-15 or the West Davis Corridor, bicycle and pedestrian accommodations across I-15, new interchanges or interchange modifications, pavement quality, noise impacts, grade-separating railroad tracks and local streets, and other alternative ideas relating to transit, transportation system management, travel demand management, tolling, and lane restrictions. Copies of the comments received during the scoping and draft purpose and need comment period are included in the *Scoping Summary Report* (UDOT 2022).

During the scoping and draft purpose and need comment period, UDOT received very few unique comments related to the project purpose and need. UDOT reviewed comments related to the project purpose and need and revised this purpose and need chapter as appropriate based on the public and agency input. The following list summarizes the main comments UDOT received on the draft purpose and need chapter specifically and UDOT's responses to those comments.

- **The I-15 project is not needed.** Traffic operations on I-15 are expected to fail by 2050 if no action is taken, and the infrastructure on I-15 is nearing its useful life. See Section 1.3, *Need for the Project*.
- **The I-15 project should accommodate UTA's plans for FrontRunner.** The I-15 project will accommodate UTA's plans for FrontRunner. See Section 1.4.2, *Purpose of the Project*.

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Chapter 2: Alternatives

2.1 Introduction

This chapter describes the alternatives that were considered for meeting the purpose of the Interstate 15 (I-15): Farmington to Salt Lake City Project as described in Chapter 1, *Purpose and Need*. This chapter describes the alternatives that were developed during the scoping process, reviews the alternatives that were eliminated from further study through the alternatives screening process, describes the No-action Alternative and the Action Alternative (with options) that were carried forward for further study in this Environmental Impact Statement (EIS), and summarizes the advantages and disadvantages of the No-action and Action Alternatives.

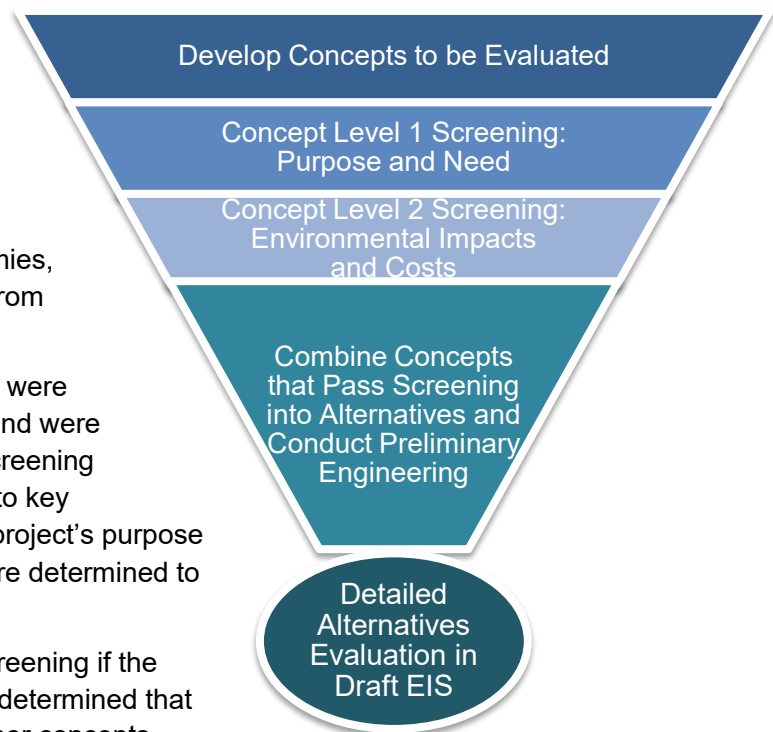
2.2 Alternatives Development and Screening Process

Figure 2.2-1 presents an overview of the alternatives development and screening process. The project's purpose and need are the foundation of the alternatives screening process. Level 1 screening was based on the project's purpose. The project purpose is to improve safety, replace aging infrastructure, provide better mobility for all users, strengthen the state and local economies, and better connect communities along I-15 from Farmington to Salt Lake City.

The concepts that passed Level 1 screening were determined to satisfy the project's purpose and were further refined and evaluated with Level 2 screening criteria to determine their expected impacts to key resources. Concepts that do not satisfy the project's purpose or that have identifiable adverse impacts were determined to be not reasonable.

Concepts were also eliminated in Level 2 screening if the Utah Department of Transportation (UDOT) determined that the concept would substantially duplicate other concepts advanced through Level 2 screening, would have impacts substantially similar to those of other concepts that are advanced through Level 2 screening, or would substantially duplicate other less harmful or less expensive concepts that were advanced through Level 2 screening. More details about the alternatives development and screening process are provided in Appendix 2A, *Alternatives Screening Report*.

Figure 2.2-1. Screening Process Overview



The alternatives development and screening process is designed to be dynamic throughout the EIS process. If a new alternative or refinement of an alternative is developed or arises later in the EIS process, it will be considered using the same screening considerations and criteria as the other alternatives, as described in this chapter.

2.2.1 Range of Alternatives to be Evaluated in This EIS

The first phase in the alternatives development and screening process was identifying a list of initial concepts. To be considered an initial concept, a concept needed to be applicable to the study area defined in Section 1.1.3, *Description of the Needs Assessment Study Area and Logical Termini*, in Chapter 1, *Purpose and Need*, and needed to present a type of solution that could meet the project's purpose and identified transportation needs. The initial concepts were developed with input from existing transportation plans, the public, local municipal governments, stakeholders, and resource agencies.

UDOT developed the initial concepts based on previous planning studies and through input collected during the EIS public scoping period (April 11 to May 13, 2022) and from the input and responses provided during the draft alternatives public comment period (November 10, 2022, to January 13, 2023). These initial concepts were further developed based on input during the EIS public scoping period and draft alternatives public comment period.

Initial concepts related to bicyclist and pedestrian improvements were identified from existing plans and from the input gathered during the Smart Growth America workshops held in the spring of 2022. The Smart Growth America workshop attendees included local government officials and other community stakeholders and were focused on identifying bicyclist and pedestrian needs and concepts that could address these needs along the I-15 corridor.

UDOT identified potential concepts from the following previous transportation plans and studies (listed in chronological order):

- *I-15 North Corridor Downtown Salt Lake City to Kaysville – Draft Environmental Impact Statement* (UDOT 1998)
- *I-15 North and Commuter Rail Collaborative Design Planning Study* (UDOT and UTA 2009)
- *Salt Lake City Pedestrian and Bicycle Master Plan* (Salt Lake City 2015)
- *Wasatch Front Central Corridor Study* (UDOT and others 2015)
- *I-15 and Parrish Lane Single-point Urban Interchange (SPUI) Concept Report* (UDOT 2016)
- *I-15; 400 South, SLC and 2600 South, Woods Cross Traffic Study* (UDOT 2018)
- *Future of FrontRunner Final Report* (UTA 2018)
- *I-15 Northbound; I-215 South Interchange, Murray and 600 North, Salt Lake City; Traffic Study* (UDOT 2019)
- Wasatch Front Regional Council's *2019–2050 Regional Transportation Plan* (WFRC 2019)
- *Davis County I-15 Study* (UDOT 2020)
- *South Davis County Active Transportation Plan* (APD and TR 2020)
- *600/700 North Mobility, Safety, and Transit Improvements Study* (Salt Lake City 2021)

A summary of prior studies and recommendations is included in Section A.2, *Summary of Prior Studies and Recommendations*, of Appendix 1A, *Purpose and Need Chapter Supplemental Information*.

2.2.1.1 Consideration of Transit, Travel Demand Management, and Transportation System Management Alternatives

No standalone transit, travel demand management (TDM), or transportation system management (TSM) concepts were identified for the I-15 project because these concepts would not meet the purpose of the project. As standalone options, transit, TDM, or TSM concepts would not address aging infrastructure on I-15, improve safety on I-15, or meet the projected travel demand in 2050.

UDOT received many comments during the scoping period and alternatives development process requesting consideration of standalone (meaning no roadway improvement) transit concepts such as the double-tracking of FrontRunner commuter rail.

As described in Chapter 1, *Purpose and Need*, the 2050 no-action conditions for the project assume that all funded transit and roadway projects in the Wasatch Front Regional Council's (WFRC) 2019–2050 regional transportation plan (RTP) (including the planned Utah Transit Authority [UTA] FrontRunner Double Track projects and a new Davis–Salt Lake City Community Connector bus service project) would be constructed and operational.

Including these transit and roadway projects, including the FrontRunner Double Track projects, in the no-action conditions means that UDOT's analysis takes into account the benefits and impacts of these projects. In other words, the projected increased congestion and travel times under the 2050 no-action conditions will occur even assuming that all funded transit and roadway projects are completed.

Because the planned UTA FrontRunner Double Track projects are already part of the 2050 no-action conditions, a double-tracking project was not considered as a separate transit concept for the I-15 project. The projected ridership assumptions of future funded transit projects are included in WFRC's travel demand model and were reviewed to develop alternatives for the I-15 project that can support the 2050 travel demand in addition to the projected transit ridership. Additional evaluation of the transit concepts identified during the alternatives development process is included in Section 2.3.3, *Consideration of Transit, Travel Demand Management, and Transportation System Management Alternatives*, of Appendix 2A, *Alternatives Screening Report*.

The alternatives for the I-15 project considered by UDOT will accommodate all current and proposed transit projects identified in WFRC's 2019–2050 RTP (including the planned UTA FrontRunner

What is travel demand management (TDM)?

Travel demand management includes the application of strategies and policies to reduce travel demand, or to redistribute travel demand at different times or on other transportation facilities. Examples of TDM strategies could include but are not limited to tolling, congestion pricing, and encouragement of alternative work arrangements.

What is transportation system management (TSM)?

Transportation system management includes strategies or systems to optimize the operation and performance of a transportation system. Examples of TSM strategies could include but are not limited to ramp metering, signal optimizations, or improvements to transit system connections.

What is a travel demand model?

A travel demand model is a computer model that predicts the number of transportation trips (travel demand) in an area at a given time. The travel demand model used for the I-15 project is maintained by WFRC.

Double Track projects and a new Davis–Salt Lake City Community Connector bus service project). To ensure that the I-15 project’s alternatives support all planned transit projects, UDOT’s Level 1 screening criteria for this project include the criterion to “support the planned FrontRunner Double Track projects and enhance access and connectivity to FrontRunner and regional transit.” UDOT is supporting the existing and planned transit network by working closely with UTA to provide adequate space for the planned double-tracking of FrontRunner, improving multimodal connections to the Woods Cross FrontRunner Station, and supporting all existing and planned bus routes that use I-15 or other roads in the I-15 study area. TDM is also included in the 2050 no-action conditions as part of the planned I-15 managed motorways project.

2.2.2 Alternatives Screening Phase

The initial concepts identified during the process described in Section 2.2.1, *Range of Alternatives to be Evaluated in This EIS*, were evaluated using a two-step screening process to determine which alternatives were reasonable and practicable and should be considered for further study in this EIS.

Level 1 screening quantitatively evaluated the range of preliminary concepts to determine which concepts would meet the project’s purpose. Concepts that passed Level 1 screening were then evaluated using the Level 2 screening process.

Level 2 screening involved a primarily quantitative analysis to identify the reasonable conflicts to be studied further in the EIS. In part, Level 2 screening considered a concept’s impacts to the natural and human environment.

Review of the Alternatives Screening Methodology Report. On April 11, 2022, the *Alternatives Development and Screening Methodology Report* describing the screening process that would be used in this EIS was placed on the project website and sent to cooperating and participating agencies for a 30-day public comment period that ended on May 13, 2022 (UDOT 2022a).

UDOT received 900 comments from agencies and the public on the draft version of the report. The majority of the comments were related to access to Glovers Lane from I-15 or West Davis Corridor, bicycle and pedestrian accommodations across I-15, new interchanges or interchange modifications, pavement quality, noise impacts, grade-separating railroads and local streets, and other alternative ideas relating to transit, TSM, TDM, tolling, and lane restrictions. UDOT reviewed all comments received and revised the *Alternatives Development and Screening Methodology Report* based on the public and agency input.

2.2.2.1 Level 1 Screening

Level 1 screening was based on the project purpose. Each of the initial concepts was evaluated using criteria that identified whether the concept would meet the purpose of the project. Concepts were screened out from further consideration by UDOT if they were determined to not meet the purpose of the project and/or would also not satisfy the standards under the National Environmental Policy Act (NEPA), the Clean Water Act, Section 4(f) of the Department of Transportation Act, and Section 6(f) of the Land and Water Conservation Fund Act. As a result, these concepts were not carried forward for further analysis.

What is the purpose of Level 1 screening?

Level 1 screening eliminates concepts that do not meet the purpose of the project.

The initial concepts were screened against criteria pertaining to travel demand, safety, and bicyclist and pedestrian access and connectivity (Table 2.2-1). To accommodate Level 1 screening, UDOT developed the initial concepts in sufficient detail to allow them to use the WFRC travel demand model to forecast the future traffic volumes and associated congestion for I-15. Not all measures apply to all project elements considered in the EIS. For example, delay and congestion measures do not apply to bicyclist and pedestrian crossing improvements.

Table 2.2-1. Level 1 Screening Criteria and Measures

Quality of Life Category	Criterion	Measure(s)
Improve Safety	Improve the safety and operations of the I-15 mainline, I-15 interchanges, bicyclist and pedestrian crossings, and connected roadway network.	<ul style="list-style-type: none"> Does the concept meet UDOT's safety standards (such as curvature, lane and shoulder widths, access, and sight distance)? (Yes/No) Does the concept meet UDOT's operational standards (such as traffic weaving, ramp operations, and queuing)? (Yes/No) Can the concept be designed to reduce conflicts between motorized and bicyclist and pedestrian modes? (Yes/No) Does the concept improve bicyclist and pedestrian accommodations at cross streets or interchanges? (Yes/No)
Better Connect Communities	Be consistent with planned land use, growth objectives, and transportation plans.	<ul style="list-style-type: none"> Is the concept consistent with land use and transportation plans? (Yes/No)
	Support the planned FrontRunner Double Track projects and enhance access and connectivity to FrontRunner, to regional transit and trails, and across I-15.	<ul style="list-style-type: none"> Does the concept provide sufficient space for the UTA to construct the planned FrontRunner Double Track projects? (Yes/No) Can the concept be designed to improve connectivity to FrontRunner stations? (Yes/No) Can the concept be designed to enhance bicyclist and pedestrian access across I-15 and connectivity to regional trails? (Yes/No)
Strengthen the Economy	Replace aging infrastructure on I-15.	<ul style="list-style-type: none"> Does the concept address I-15 aging infrastructure needs? (Yes/No)
	Enhance the economy by reducing travel delay on I-15.	<ul style="list-style-type: none"> Does the concept reduce daily hours of delay on I-15, interchanges, and cross streets in 2050? ^a
Improve Mobility for All Users ^b	Improve mobility and operations on the I-15 mainline, I-15 interchanges, connected roadway network, transit connections, and bicyclist and pedestrian facilities to help accommodate projected travel demand in 2050.	<ul style="list-style-type: none"> Does the concept decrease through-traffic travel time on I-15 during the morning and evening peak periods? ^{a,c} Does the concept improve average speed on I-15 during the morning and evening peak periods? ^{a,c}

^a UDOT determined whether concepts met these measures when comparing the concepts' modeled metrics versus the no-action conditions in 2050.

^b Measures for improving the mobility of transit and bicyclist and pedestrian modes are included in the "Improve Safety" and "Better Connect Communities" categories. These measures would improve mobility for transit and bicyclist and pedestrian modes. To avoid duplication, they are not repeated in the "Improve Mobility for All Users" category.

^c Both of these metrics compare traffic conditions with the concepts versus the no-action conditions during the morning and evening peak 4-hour periods in 2050. Peak periods are the periods of the day with the greatest amounts of traffic. For the I-15 project, the morning peak period is from 6 AM to 10 AM, and the evening peak period is from 3 PM to 7 PM.

2.2.2.1.1 Public and Agency Review of the Preliminary Alternatives that Passed Initial Level 1 Screening

The results of the draft alternatives Level 1 screening process were published for agency and public review on November 10, 2022. The review and comment period was from November 10, 2022, through January 13, 2023. The process included an online public meeting on November 14, 2022; two in-person public meetings on November 15 and 16, 2022; meetings with three local area working group meetings; and 34 presentations or meetings with agencies or stakeholders. The concepts that passed Level 1 screening and were included in the November 2022 draft version of the *Alternatives Development and Screening Report: November 2022 Preliminary Results* are described in Table 2.2-2.

Table 2.2-2. I-15 Mainline and Interchange Concepts That Passed Level 1 Screening in the November Draft Alternatives Screening Report

Concept	Description
I-15 Mainline Concepts	
Widen I-15 to 3 Express Lanes and 3 to 4 General-purpose (GP) Lanes	Widen I-15 to 3 express lanes and 3 to 4 GP lanes in each direction. I-15 in Salt Lake County would have 3 GP lanes, and I-15 in Davis County would have 4 GP lanes.
I-15 5 GP Lanes Each Direction and 2 Reversible Lanes	Widen I-15 to 5 GP lanes in each direction. Widening includes 2 reversible lanes from 400 South in Salt Lake City to just north of Parrish Lane in Centerville (no intermediate access to the reversible lanes in between). The reversible lanes would allow southbound (SB) travel in the morning and northbound (NB) travel in the afternoon.
Widen I-15 to 5 GP Lanes and 1 High-occupancy/Toll (HOT) Lane	Widen I-15 to a roadway cross section of 5 GP lanes and 1 HOT lane (5+1) in each direction. This is consistent with the project proposed in UTA's long-range plan.
Widen I-15 to 5 GP Lanes and 2 HOT Lanes	Widen I-15 to a roadway cross section of 5 GP lanes and 2 HOT lanes (5+2) in each direction.
Widen I-15 to 6 GP Lanes and 1 HOT Lane	Widen I-15 to a roadway cross section of 6 GP lanes and 1 HOT lane (6+1) in each direction.
200 West/Glovers Lane/500 South Interchange Concepts (Farmington)	
Rebuild Existing Half Diamond Interchange at 200 West	Existing interchange configuration rebuilt to support a wider I-15 mainline. Includes safety improvements to bring the interchange up to current UDOT design standards.
New Full-access Interchange at 200 West	Full-access interchange at 200 West. Interchange would add a NB on-ramp and a SB off-ramp to 200 West near the current alignment.
SPUI at Glovers Lane	New SPUI with full access to I-15 at Glovers Lane. Includes 200 West NB off-ramp and SB on-ramp.
Centerville and Parrish Lane Interchange Concepts	
Tight Diamond Interchange at Parrish Lane and Frontage Road Connection	Tight diamond interchange at Parrish Lane with NB off-ramp that connects directly to frontage road on north side of Parrish Lane. East-side Frontage Road connection for north-south travel.
SPUI at Parrish Lane and Frontage Road Connection	SPUI with NB off-ramp that connects directly to frontage road on north side of Parrish Lane. Includes grade-separated bicyclist and pedestrian crossing at 200 North. East-side Frontage Road connection for north-south travel.

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Table 2.2-2. I-15 Mainline and Interchange Concepts That Passed Level 1 Screening in the November Draft Alternatives Screening Report

Concept	Description
400 North/500 West Interchange Concepts (Bountiful/West Bountiful)	
3/4 Partial Diamond Interchange at 400 North	Partial diamond interchange at 400 North. The interchange at 400 North would accommodate SB on- and off-ramps and the NB off-ramp. The NB on-ramp would be at 500 West.
Split Diamond Interchange at 400 North and 500 West	A split diamond interchange divides access to I-15 between 400 North and 500 West. The NB off-ramp and SB on-ramp would be at 400 North, and the SB off-ramp and NB on-ramp at 500 West. SB off-ramp would exit on right side instead of left side.
Collector-distributor (CD) between 500 South and 400 North	CD concept combined with a full diamond interchange at 500 South, full diamond interchange at 400 North, and NB on-ramp at 500 West.
Bountiful/West Bountiful 500 South Interchange Concepts	
Tight Diamond Interchange at 500 South	Tight diamond interchange at 500 South.
2600 South/1100 North Interchange Concepts (Woods Cross/North Salt Lake/Bountiful)	
Tight Diamond Interchange at 2600 South	Tight diamond interchange at 2600 South.
Two-lane SPUI at 2600 South and 800 West Connection	SPUI at 2600 South with a new SPUI at I-215 and a grade-separated bicyclist and pedestrian crossing parallel to the interchange. Adding a new SPUI at I-215 allows for a two-lane SPUI (instead of a three-lane SPUI) at 2600 South.
Center Street Interchange Concepts	
I-15 Overpass (no access)	I-15 would go over Center Street with no access. SB I-15 access to North Salt Lake would be provided with the new I-215 interchange or 2600 South interchange.
North Salt Lake/Woods Cross Interchange Concepts	
Full SPUI at Interstate 215 (I-215)	New, full SPUI with access to I-15 and I-215 from U.S. 89. This option has a T intersection on U.S. 89 and no Center Street SB off-ramp.
Salt Lake Area Interchange Concepts	
CD Interchange at 600 North and 1000 North	A CD interchange divides access to I-15 between 600 North and 1000 North and connects the access points with a CD road system. This interchange design is paired with a new full-access interchange at Warm Springs Road (2100 North) to provide the best traffic operations.
Two-lane SPUI at 600 North and West Side Frontage Road Connection to 1800 North	SPUI at 600 North with west side frontage road connecting the new Warm Springs Road full interchange at 1800 North. Adding a full interchange at Warm Springs Road allows a two-lane SPUI (instead of a three-lane SPUI) at 600 North.
Tight Diamond Interchange at 600 North	Tight diamond interchange with full access at 600 North. This concept does not include additional connections to 1000 North.
Tight Diamond Interchange at 1800 North	New tight diamond interchange at 1800 North. This interchange is paired with the two-lane SPUI at 600 North. This interchange does not pair with the 600 North and 1000 North CD interchange. This concept reduces truck traffic at 600 North.
Tight Diamond Interchange at 2100 North	New tight diamond interchange at 2100 North. This concept reduces truck traffic at 600 North.

In addition to the bicyclist and pedestrian crossings evaluated at interchange locations in Table 2.2-2 above, there were also 11 bicyclist and pedestrian crossing concepts in the study area that would reduce conflicts between travel modes and improve bicyclist and pedestrian accommodation. These 11 bicyclist and pedestrian concepts would work with any of the interchange concepts in each geographic area, would better connect communities, and would improve mobility and safety. The combined interchange and bicyclist and pedestrian crossing concepts in Table 2.2-2 above that passed Level 1 screening, and the 11 bicyclist and pedestrian improvements, were further analyzed in 2023 after the *Alternatives Development and Screening Report: November 2022 Preliminary Results* was published.

During the draft alternatives public comment period, 2,890 comments were received from the public and agencies. A summary of the public and agency comments is included in Attachment D, *Draft Alternatives Comment Summary*, of Appendix 2A. Full copies of all public and agency comments are provided in *I-15 EIS: Draft Alternatives Comments January 2023* (UDOT 2023b). The majority of the comments received were about community impacts, property impacts, impacts to environmental justice communities, air quality impacts, noise impacts, the need for the project, future travel demand, requests for transit, and comments on actions that are outside the jurisdiction of UDOT, such as requests for changes to zoning and land use. To a lesser degree, included among those comments were some new concepts, variations on existing concepts, and comments about the screening process and screening criteria.

Some commentors requested that UDOT work with other agencies such as UTA. UTA and several other State agencies are participating agencies on this EIS as documented in the *Coordination Plan for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* (UDOT 2022b). Many agencies provided comments during the draft alternatives screening process. Those comments are also included in *I-15 EIS: Draft Alternatives Comments January 2023* (UDOT 2023b).

2.2.2.1.2 Evaluation of New Concepts Identified during the Public Comment Period

Table 2-4, *Preliminary Evaluation of Concepts Suggested during the Draft Alternatives Public Comment Period*, in Appendix 2A, *Alternatives Screening Report*, describes the new concepts or variations on existing concepts that were identified during the draft alternatives public comment period from November 10, 2022, to January 13, 2023. These public concepts were developed and evaluated to determine whether they would be considered mainline, interchange, or bicyclist and pedestrian concepts and then were evaluated to determine whether they would pass Level 1 and Level 2 screenings. This evaluation determined that one of the public concepts to tunnel or bury I-15 in Salt Lake City would meet the purpose of the project and was therefore reviewed in Level 2 screening.

Several other public and agency concepts requested grade-separated railroad crossing improvements at Center Street in North Salt Lake, 2600 South/1100 North in North Salt Lake, and 500 South in Woods Cross. These railroad crossings are separate projects in WFRC's 2019–2050 RTP. The I-15 Farmington to Salt Lake City EIS will be forward-compatible with the planned future projects to grade-separate the Center Street, 2600 South/1100 North, and 500 South railroad crossings.

Several other public and agency comments focused on final design–related items such as turn lanes (number, locations, start/end points, etc.), intersection types (signalized, stop, roundabouts, etc.), bicycle and pedestrian lanes (separation, location, priority, etc.), and landscaping and aesthetics. UDOT will consider these comments as part of higher-level design for the concepts that are advanced through Level 2 screening to the Draft EIS. UDOT will evaluate these comments along with roadway needs, bicyclist and pedestrian needs, and safety needs for all users while trying to minimize impacts to adjacent properties and other resources.

2.2.2.1.3 Final Level 1 Screening Results

After the comment period, review of new alternative suggestions, and additional review of traffic model performance, the following mainline and interchange concepts were determined to pass Level 1 screening and advanced to Level 2 screening (Table 2.2-3).

All bicycle and pedestrian options were advanced to Level 2 screening except for the underpass at 500 North in Salt Lake City. After a design review, UDOT determined that it was technically infeasible.

Table 2.2-3. Final I-15 Mainline and Interchange Concepts That Passed Level 1 Screening

Concept	Description	New Based on Public Comment
I-15 Mainline Concepts		
Widen I-15 to 3 Express Lanes and 3 to 4 GP Lanes	Widen I-15 to 3 express lanes and 3 to 4 GP lanes in each direction. I-15 in Salt Lake County would have 3 GP lanes, and I-15 in Davis County would have 4 GP lanes.	No
I-15 5 GP Lanes Each Direction and 2 Reversible Lanes	Widen I-15 to 5 GP lanes in each direction. Widening includes 2 reversible lanes from 400 South in Salt Lake City to just north of Parrish Lane in Centerville (no intermediate access to the reversible lanes in between). The reversible lanes would allow SB travel in the morning and NB travel in the afternoon.	No
Widen I-15 to 5 GP Lanes and 1 HOT Lane	Widen I-15 to a roadway cross section of 5 GP lanes and 1 HOT lane (5+1) in each direction. This is consistent with the project proposed in Utah's long-range plan.	No
Widen I-15 to 5 GP Lanes and 2 HOT Lanes	Widen I-15 to a roadway cross section of 5 GP lanes and 2 HOT lanes (5+2) in each direction.	No
Widen I-15 to 6 GP Lanes and 1 HOT Lane	Widen I-15 to a roadway cross section of 6 GP lanes and 1 HOT lane (6+1) in each direction.	No
Salt Lake Area Interchange Concepts		
CD Interchange at 600 North and 1000 North	A CD interchange divides access to I-15 between 600 North and 1000 North and connects the access points with a CD road system. This interchange design is paired with a new full-access interchange at Warm Springs Road (2100 North) to provide the best traffic operations.	No
Tight Diamond Interchange at 2100 North	New tight diamond interchange at 2100 North. This concept reduces truck traffic at 600 North.	No
Bury, cap and cover, or tunnel I-15 in Salt Lake City	Four tunnel options were evaluated for the segment of I 15 in Salt Lake City between North Temple and 600 North.	Yes
North Salt Lake/Woods Cross Interchange Concepts		
Full SPUI at I-215	New, full SPUI with access to I-15 and I-215 from U.S. 89. This option has a T intersection on U.S. 89 and no Center Street SB off-ramp.	No
Center Street Interchange Concepts		
I-15 Overpass (no access)	I-15 would go over Center Street with no access. SB I-15 access to North Salt Lake would be provided with the new I-215 interchange or 2600 South interchange.	No

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Table 2.2-3. Final I-15 Mainline and Interchange Concepts That Passed Level 1 Screening

Concept	Description	New Based on Public Comment
2600 South/1100 North Interchange Concepts (Woods Cross/North Salt Lake/Bountiful)		
Tight Diamond Interchange at 2600 South	Tight diamond interchange at 2600 South.	No
Two-lane SPUI at 2600 South and 800 West Connection	SPUI at 2600 South with a new SPUI at I-215 and a grade-separated bicyclist and pedestrian crossing parallel to the interchange. Adding a new SPUI at I-215 allows for a two-lane SPUI (instead of a three-lane SPUI) at 2600 South.	No
Bountiful/West Bountiful 500 South Interchange Concepts		
Tight Diamond Interchange at 500 South	Tight diamond interchange at 500 South.	No
400 North/500 West Interchange Concepts (Bountiful/West Bountiful)		
3/4 Partial Diamond Interchange at 400 North	Partial diamond interchange at 400 North. The interchange at 400 North would accommodate SB on- and off-ramps and the NB off-ramp. The NB on-ramp would be at 500 West.	No
Split Diamond Interchange at 400 North and 500 West	A split diamond interchange divides access to I-15 between 400 North and 500 West. The NB off-ramp and SB on-ramp would be at 400 North, and the SB off-ramp and NB on-ramp at 500 West. SB off-ramp would exit on right side instead of left side.	No
CD between 500 South and 400 North	CD concept combined with a full diamond interchange at 500 South, full diamond interchange at 400 North, and NB on-ramp at 500 West.	No
Centerville and Parrish Lane Interchange Concepts		
Tight Diamond Interchange at Parrish Lane and Frontage Road Connection	Tight diamond interchange at Parrish Lane with NB off-ramp that connects directly to frontage road on north side of Parrish Lane. East-side Frontage Road connection for north-south travel.	No
SPUI at Parrish Lane and Frontage Road Connection	SPUI with NB off-ramp that connects directly to frontage road on north side of Parrish Lane. Includes grade-separated bicyclist and pedestrian crossing at 200 North. East-side Frontage Road connection for north-south travel.	No
200 West/Glovers Lane/500 South Interchange Concepts (Farmington)		
Rebuild Existing Half Diamond Interchange at 200 West	Existing interchange configuration rebuilt to support a wider I-15 mainline. Includes safety improvements to bring the interchange up to current UDOT design standards.	No
New Full-access Interchange at 200 West	Full-access interchange at 200 West. Interchange would add a NB on-ramp and a SB off-ramp to 200 West near the current alignment.	No
SPUI at Glovers Lane	New SPUI with full access to I-15 at Glovers Lane. Includes 200 West NB off-ramp and SB on-ramp.	No

2.2.2.2 Level 2 Screening

Level 2 screening identifies and then eliminates concepts that are not practicable, feasible, and reasonable. During Level 2 screening, UDOT collectively evaluated the concepts that passed Level 1 screening against criteria that focus on the concepts' impacts to the natural and built environment, estimated project costs, logistical considerations, and technological feasibility. These Level 2 screening criteria also support UDOT's Quality of Life Framework categories of Good Health, Connected Communities, Strong Economy, and Better Mobility.

2.2.2.2.1 Level 2 Screening Methodology and Process

Public and agency comments received during the formal scoping comment period and the draft alternatives public comment period were particularly relevant during Level 2 screening because several of the Level 2 screening criteria focus on local and community elements and regulated resources such as housing and equity concerns. Table 2.2-4 lists the Level 2 screening criteria.

Table 2.2-4. Level 2 Screening Criteria and Measures

Criterion	Measure
Impacts to the natural environment	<ul style="list-style-type: none"> • Acres and types of aquatic resources (wetlands, streams, and springs)^a • Linear feet of ditches and creeks affected • Acres of floodplains affected
Access to transit, bicyclist, and pedestrian facilities	<ul style="list-style-type: none"> • Number and relative quality of connections to regional transit facilities and regional trails
Impacts to Section 4(f) and Section 6(f) resources	<ul style="list-style-type: none"> • Number and types of Section 4(f) uses^b • Number and types of Section 6(f) conversions^b
Impacts to the built environment	<ul style="list-style-type: none"> • Number and area of parks, trails, and other recreation resources affected • Number of community facilities affected • Number of potential property acquisitions, including residential and business relocations • Number of cultural resources (for example, historic and archaeological resources) affected • Potential impacts and benefits to low-income or minority populations (environmental justice populations)^c
Cost, technology, and logistics	<ul style="list-style-type: none"> • Estimated project cost (general) • Constructability given available technology • Logistical considerations

^a Consistent with the avoidance and minimization concepts of the Clean Water Act, a concept with the potential to impact a substantially greater number of delineated aquatic features could be eliminated from detailed study in the EIS. However, UDOT will not eliminate a concept from detailed study in the EIS unless it is clear that the concept would not comply with the Clean Water Act Section 404(b)(1) Guidelines. For more information, see Section 1.3.2, *Clean Water Act Requirements*, in Appendix 2A, *Alternatives Screening Report*.

^b Based on the requirements of Section 4(f) of the Department of Transportation Act of 1966 and Section 6(f) of the Land and Water Conservation Fund Act of 1965, a concept with substantially greater Section 4(f) or Section 6(f) impacts could be eliminated from detailed study in the EIS. For more information, see Section 1.3.3, *Section 4(f) and Section 6(f) Requirements*, in Appendix 2A, *Alternatives Screening Report*.

^c Areas with higher percentages of low-income or minority populations are identified using U.S. Census data.

The criteria listed above in Table 2.2-4 were selected based on applicable federal laws—such as Section 4(f) of the U.S. Department of Transportation Act of 1966 and Section 404 of the Clean Water Act—and comments received during agency and public outreach. Waters of the United States and Section 4(f) properties were given special consideration during screening because federal laws require UDOT to consider and analyze alternatives that avoid or minimize impacts to these resources. See Section 1.3, *Reasons Why a Concept Might Be Eliminated during the Screening Process*, in Appendix 2A, *Alternatives Screening Report*, for more information regarding Section 4(f) of the U.S. Department of Transportation Act and Section 404 of the Clean Water Act.

The overall process for Level 2 screening includes the following steps:

1. Develop basic alignments and footprints, including rights-of-way, for the concepts carried forward from Level 1 screening. The concept design will try to minimize impacts to natural resources and the built environment while meeting design standards. Concepts that pass Level 2 screening will be further refined during the engineering process.
2. Review the concepts to make sure they continue to meet basic requirements for roadway design and safety.
3. Evaluate the concepts for costs, logistical considerations, and technological feasibility and determine whether any of the concepts would have substantially greater impacts or costs without having substantially greater benefits. Additionally, a concept may also be eliminated in Level 2 screening if it is determined that the concept would substantially duplicate or overlap other concepts advanced through Level 2 screening, would have impacts substantially similar to those of other concepts that are advanced through Level 2 screening, or would substantially duplicate other less harmful or less expensive concepts that are advanced through Level 2 screening.
4. Convert the concepts' footprints to geographic information systems (GIS) format and perform GIS analysis to determine the extent of resource impacts for each concept.
5. Compare the concepts' effects on the resources listed above in Table 2.2-4 to determine the practicable, feasible, and reasonable concepts that will be advanced for detailed analysis in the Draft EIS.

Using the information gathered from Level 2 screening, UDOT determined which concepts should be combined into corridor-wide alternatives to study in detail in the EIS. More information about each of these steps are provided in Appendix 2A, *Alternatives Screening Report*.

2.2.2.2.2 Alternatives Evaluated in Level 2 Screening

The mainline and interchange concepts evaluated in Level 2 screening are summarized above in Table 2.2-3.

The mainline Level 2 screening evaluation is described in Section 3.1.2, *Level 2 Screening for Mainline Concepts*, in Appendix 2A, *Alternatives Screening Report*. The Level 2 screening evaluation for the interchange and bicycle and pedestrian facilities are detailed in Section 3.2.3, *Level 2 Screening for Interchange and Bicyclist and Pedestrian Crossing Concepts*, in Appendix 2A.

2.2.2.2.3 Level 2 Evaluation and Results

Several mainline and interchange concepts were eliminated in Level 2 screening for additional impacts to resources or because the concept would substantially duplicate and have impacts similar to those of other concepts advanced through Level 2 screening.

Four I-15 mainline concepts were eliminated during Level 2 screening. The eliminated mainline concepts are summarized in Table 2.2-5. For more detail on these eliminated concepts, see Section 3.1.2, *Level 2 Screening for Mainline Concepts*, in Appendix 2A, *Alternatives Screening Report*.

Table 2.2-5. Initial Mainline Concepts Eliminated in Screening

Concept Name and Description	Reason for Elimination
<i>I-15 Mainline General Widening Concepts</i>	
Widen I-15 to 5 GP Lanes and 2 HOT Lanes	This concept was screened out in Level 2 screening because it would have additional resource impacts that were substantially more than those of the 5 GP and 1 HOT lane concept. The additional lanes proposed in these concepts were also not consistent with the WFRC 2019–2050 RTP’s assumptions for I-15.
Widen I-15 to 6 GP Lanes and 1 HOT Lane	This concept was screened out in Level 2 screening because it would have additional resource impacts that were substantially more than those of the 5 GP and 1 HOT lane concept. The additional lanes proposed in these concepts were also not consistent with the WFRC 2019–2050 RTP’s assumptions for I-15.
<i>I-15 Mainline Express Lane and Reversible Express Lane Concepts</i>	
Widen I-15 to 3 Express Lanes and 3 to 4 GP Lanes	This concept was screened out in Level 2 screening because it would have additional resource impacts that were substantially more than those of the 5 GP and 1 HOT lane concept. The additional lanes proposed in these concepts were also not consistent with the WFRC 2019–2050 RTP’s assumptions for I-15.
I-15 5 GP Lanes Each Direction and 2 Reversible Lanes	This concept was screened out in Level 2 screening for the additional resource impacts; for the additional operational, maintenance, and emergency response considerations for the reversible lanes; and for the inconsistency with the HOT lanes on I-15 north and south of the project area.

Eleven interchange concepts were eliminated during Level 2 screening. The options and reasons for elimination are summarized in Table 2.2-6. More details about this process are available in Section 3.2.3, *Level 2 Screening for Interchange and Bicyclist and Pedestrian Crossing Concepts*, in Appendix 2A, *Alternatives Screening Report*.

Table 2.2-6. Initial Interchange Concepts Eliminated in Level 2 Screening

Concept Name and Description	Reason for Elimination
Farmington Interchange Concepts	
Option B	UDOT eliminated Farmington Option B in Level 2 screening due to the substantially higher impacts to residential properties and the change in traffic patterns that would result in higher traffic volumes on residential roads that have not been planned to accommodate traffic accessing an I-15 interchange.
Option C	UDOT eliminated Farmington Option C because it would substantially duplicate Farmington Option A and would result in impacts substantially similar to but slightly higher than those of Farmington Option A.
Centerville Interchange Concepts	
Option A	UDOT eliminated Centerville Option A because it would substantially duplicate Option B and would result in impacts similar to but slightly higher than those of Option B.
Bountiful/West Bountiful Interchange Concepts	
Option B	UDOT eliminated Bountiful/West Bountiful Option B because it would substantially duplicate Bountiful/West Bountiful Option A and would result in impacts substantially similar to but slightly greater than those of Bountiful/West Bountiful Option A.
Option C	UDOT eliminated Bountiful/West Bountiful Option C because it would substantially duplicate Bountiful/West Bountiful Option A and would result in impacts substantially similar to but slightly greater than those of Bountiful/West Bountiful Option A.
North Salt Lake/Woods Cross Interchange Concepts	
Option A	UDOT eliminated North Salt Lake/Woods Cross Option A because it would substantially duplicate Option B and would result in impacts substantially similar to those of Option B.
Salt Lake Area Interchange Concepts	
600 North 800 West Roundabout	The roundabout at 600 North and 800 West was eliminated because it would result in four relocations of residential properties and one historic property/Section 4(f) resource that would be avoided with Salt Lake Option A.
Tunnel Option A	All tunnel options were eliminated for the same reasons. All four of the tunnel options were screened out due to the substantially higher impacts to the community and higher costs compared to the original Salt Lake Option A.
Tunnel Option B	
Tunnel Option C	
Tunnel Option D	

2.2.2.2.4 Summary of the Results of the Alternatives Development and Screening Process

Based on the results of the alternatives development and screening process, UDOT advanced the following alternatives for further study in the EIS:

- No-action Alternative
- Action Alternative

The Action Alternative includes the 5 general-purpose (GP) + 1 high-occupancy/toll (HOT) lane mainline concept combined with the concepts for each of the five geographic areas that passed Level 1 and Level 2 screening.

The Action Alternative also includes the following subarea options:

- Farmington
 - 400 West Option
 - State Street Option
- Bountiful 400 North
 - Northern Option
 - Southern Option
- Bountiful 500 South
 - Northern Option
 - Southern Option
- Salt Lake City 1000 North
 - Northern Option
 - Southern Option

A summary of the interchange and bicyclist and pedestrian concepts that were advanced past Level 2 screening as part of the Action Alternative are listed in Table 2.2-7. Figures, graphics, and more detailed information about the features of the Action Alternative are included in Section 2.4.2, *Action Alternative*.

Table 2.2-7. I-15 Interchange and Bicyclist and Pedestrian Concepts That Passed Level 2 Screening by Location

Geographic Area Selected Concept	Limits	Interchange and Bicyclist and Pedestrian Crossing Features	Subarea Options for Location
Farmington Option A	Centerville boundary to U.S. 89	<p>Existing 200 West SB on-ramp and NB off-ramp (Figure 2.4-1, Figure 2.4-2, Figure 2.4-3, Figure 2.4-4, and Figure 2.4-5)</p> <ul style="list-style-type: none"> No free right-hand turns for vehicles and better sight lines, thereby enhancing safety for bicyclists and pedestrians. Glovers Lane bridge over I-15 and the railroad tracks is widened to include a 10-foot-wide sidewalk on the north side, a 6-foot-wide sidewalk on the south side, and buffered or barrier-separated bike lanes on both sides to match the facilities going over Legacy Parkway (Figure 2.4-3). State Street/Clark Lane bridge over I-15 and the railroad tracks is widened to include buffered or barrier-separated bike lanes and sidewalks on both sides that match the facilities going over Legacy Parkway (Figure 2.4-5). 	<p>Existing 200 West SB on-ramp and NB off-ramp (Figure 2.4-2)</p> <ul style="list-style-type: none"> Farmington 400 West Option Farmington State Street Option
Centerville Option B	Pages Lane/ 1600 North to Farmington boundary	<p>Parrish Lane SPUI with NB connection to east frontage road (Figure 2.4-6 , Figure 2.4-7, Figure 2.4-8, and Figure 2.4-9)</p> <ul style="list-style-type: none"> No free right-hand turns for vehicles and better sight lines, thereby enhancing safety for bicyclists and pedestrians. 12-foot-wide SUPs on the north and south sides of Parrish Lane (Figure 2.4-8). Grade-separated 14-foot-wide SUP crossing of I-15 and railroad tracks at 200 North (Figure 2.4-7). New grade-separated 14-foot-wide SUP crossing at Centerville Park over I-15/railroad tracks/Legacy Parkway (Figure 2.4-9). 	<ul style="list-style-type: none"> Not applicable
Bountiful/ West Bountiful Option A	1500 South to Pages Lane/ 1600 North	<p>500 South diamond interchange and 400 North/500 West half-diamond interchange (Figure 2.4-10, Figure 2.4-11, Figure 2.4-12, Figure 2.4-13, and Figure 2.4-14)</p> <ul style="list-style-type: none"> No free right-hand turns for vehicles and better sight lines, thereby enhancing safety for bicyclists and pedestrians. 12-foot-wide SUP on both sides of 500 South (Figure 2.4-13). Buffered or barrier-separated bike lanes on both sides of 400 North (Figure 2.4-14). 12-foot-wide SUP on the north side of 400 North (Figure 2.4-14). 6-foot-wide sidewalk on the south side of 400 North (Figure 2.4-14). New SUP connection from 500 South to Woods Cross FrontRunner Station west of I-15. Wider bridge over 1600 North/Pages Lane to accommodate future bicyclist and pedestrian improvements (Figure 2.4-15). 	<p>500 South diamond interchange (Figure 2.4-12)</p> <ul style="list-style-type: none"> Bountiful 500 South – Northern Option Bountiful 500 South – Southern Option <p>400 North/500 West half diamond interchange (Figure 2.4-11)</p> <ul style="list-style-type: none"> Bountiful 400 North – Northern Option Bountiful 400 North - Southern Option

(continued on next page)

Table 2.2-7. I-15 Interchange and Bicyclist and Pedestrian Concepts That Passed Level 2 Screening by Location

Geographic Area Selected Concept	Limits	Interchange and Bicyclist and Pedestrian Crossing Features	Subarea Options for Location
North Salt Lake/Woods Cross Option B	County boundary to 1500 South	<p>New I-215/U.S. 89 local interchange and 2600 South SPUI (Figure 2.4-16, Figure 2.4-17, Figure 2.4-18, Figure 2.4-19, Figure 2.4-20, Figure 2.4-21, and Figure 2.4-22)</p> <ul style="list-style-type: none"> • New U.S. 89 12-foot-wide SUP between Eagle Ridge Drive in North Salt Lake and Wall Street/200 West in Salt Lake City (Figure 2.4-27). • Center Street buffered or barrier-separated bike lanes on both sides, 6-foot-wide sidewalk on north side, and 12-foot-wide SUP improvements on south side of Center Street between I-15 and 400 West (Figure 2.4-17). • Wider bridge over Main Street to accommodate future bicyclist and pedestrian improvements (Figure 2.4-18). • At 2600 South, no free right-hand turns for vehicles and better sight lines, thereby enhancing safety for bicyclists and pedestrians. • Buffered or barrier-separated bike lanes on both sides of 2600 South (Figure 2.4-19). • 8-foot-wide sidewalk on north side of 2600 South (Figure 2.4-19). • 14-foot-wide grade-separated SUP on south side of 2600 South (Figure 2.4-20). • 800 West: new underpass of I-15 with new 12-foot-wide SUP. 12-foot-wide SUP connection between 800 West and 2600 South on west side of I-15 (Figure 2.4-21). • Wider bridge over 1500 South to accommodate future bicyclist and pedestrian improvements (Figure 2.4-22). 	<ul style="list-style-type: none"> • Not applicable
Salt Lake County Option A	400 South to county boundary	<p>600 North CD and 2100 North full diamond interchange (Figure 2.4-23, Figure 2.4-24, Figure 2.4-25, Figure 2.4-26, and Figure 2.4-27)</p> <ul style="list-style-type: none"> • No free right-hand turns and better sight lines for vehicles, thereby enhancing safety for bicyclists and pedestrians. • Buffered or barrier-separated bike lanes and 8-foot-wide sidewalks on both sides of 600 North (Figure 2.4-25). • 12-foot-wide shared-use path (SUP) on 1000 North that crosses under I-15 and connects to Warm Springs Road east of I-15 (Figure 2.4-26). • 400 North: new sidewalks and roadway crossing under I-15. • New U.S. 89 12-foot-wide SUP between Eagle Ridge Drive in North Salt Lake and Wall Street/200 West in Salt Lake City (Figure 2.4-27). 	<p>1000 North (Figure 2.4-24)</p> <ul style="list-style-type: none"> • Salt Lake City 1000 North – Northern Option • Salt Lake City 1000 North – Southern Option

2.3 Alternatives Refinement Process

The purposes of the alternatives refinement process were to further refine and develop the Action Alternative and to develop a construction footprint for evaluating the impacts of the Action Alternative in the Draft EIS. The alternatives refinement process was conducted to address:

- Nonmotorized transportation components (bicycle and pedestrian accommodations)
- Drainage design and stormwater management
- Access and connectivity to local road networks
- Access to businesses
- Conflicts with major infrastructure and utilities
- Avoidance or minimization of impacts to key resources
- Avoidance or minimization of private property impacts
- Avoidance or minimization of recreation areas and trails
- Areas potentially impacted temporarily during construction

When refining the alternative alignments, UDOT used input from stakeholders during the scoping process, public and agency comments on the initial alternatives, and stakeholder interviews. These activities and input included the following:

- Meetings with Cities and Counties to review alternatives and identify:
 - Bicycle and pedestrian facility types and locations
 - Business accesses
 - Planned local road projects
 - Planned development in the study area
 - Stormwater treatment approach
- Meetings with major utility providers
- City council meetings
- Meetings with local and regional stakeholders such as neighborhood representatives, owners of large properties, industry groups, and local elected officials

2.3.1 Roadway Design Standards

When developing projects through the NEPA process, UDOT follows established design standards. UDOT's standards are in place to ensure the safety of the traveling public by providing curvature, grade, and dimensional standards; separation from roadside obstructions; space for vehicles to pull out of traffic in an emergency; adequate distance to see intersections; and a safe place for cyclists and pedestrians. Standards are also important for roadway operations such as providing an area for storing plowed snow and conducting routine maintenance safely.

Following screening, engineers revised the alternatives in accordance with the UDOT adopted standards described in Table 2.3-1 through Table 2.3-3. The right-of-way dimensions used for the design of the Action Alternative are based on the roadway geometric standards in *A Policy on Geometric Design of Highways and Streets*, 7th Edition (AASHTO 2018); in *Roadside Design Guide*, 4th Edition (AASHTO 2011); and on UDOT's standards, including UDOT's *Roadway Design Manual* (UDOT 2021) and UDOT's *2024 Standard Specifications and Standard Drawing Books* (UDOT 2023a). UDOT uses these standards in planning roadway projects to ensure that safety standards are met.

Table 2.3-1. Cross-section Components and Dimensions for I-15

Component	Dimension	Standard or Reference	Notes
Clear zone	30 feet	AASHTO 2011 ^a	<ul style="list-style-type: none"> Clear zone is measured from the edge of travel lane Based on design speed and average daily traffic
Inside shoulder	12 feet	UDOT 2021 ^b	<ul style="list-style-type: none"> Includes a 2-foot shy distance to the concrete barrier
Outside shoulder	12 feet	UDOT 2021 ^b	<ul style="list-style-type: none"> Includes a 2-foot shy distance to the concrete barrier
Travel lane	12 feet	UDOT 2021 ^b	<ul style="list-style-type: none"> Lane width for general purpose lanes. 11 feet for HOT lanes

^a AASHTO 2011: *Roadside Design Guide*

^b UDOT 2021: *UDOT Roadway Design Manual*

Table 2.3-2. Cross-section Components and Dimensions for Ramps

Component	Dimension	Standard or Reference	Notes
Clear zone	16 to 22 feet	AASHTO 2011 ^a	<ul style="list-style-type: none"> Clear zone is measured from the edge of travel lane Based on design speed and average daily traffic
Inside shoulder	4 feet	UDOT 2021 ^b	<ul style="list-style-type: none"> Where barrier is present, a 2-foot shy distance would be added
Outside shoulder	8 feet	UDOT 2021 ^b	<ul style="list-style-type: none"> Where barrier is present, a 2-foot shy distance would be added
Travel lane	12 feet	UDOT 2021 ^b	<ul style="list-style-type: none"> Lane width for through and turn lanes on-ramps.

^a AASHTO 2011: *Roadside Design Guide*

^b UDOT 2021: *UDOT Roadway Design Manual*

Table 2.3-3. Cross-section Components and Dimensions for Cross-Streets

Component	Dimension	Standard or Reference	Notes
Clear zone	10 to 22 feet	AASHTO 2011 ^a	<ul style="list-style-type: none"> • Clear zone is measured from the edge of travel lane • Based on design speed and average daily traffic • Clear zone can include park strip and sidewalk
Shoulder	4 to 10 feet	UDOT 2021 ^b	<ul style="list-style-type: none"> • 4-foot-wide bicycle lane can be included within shoulder • Width is based on road classification, amount of truck traffic, and number of lanes
Travel lane	11 to 12 feet	UDOT 2021 ^b	<ul style="list-style-type: none"> • Lane width for general purpose lanes. • Width is based on road classification, amount of truck traffic, and number of lanes
Median/center turn lane	11 to 14 feet	UDOT 2021 ^b	<ul style="list-style-type: none"> • Width is based on road classification and design speed
Curb and gutter	2.5 feet	UDOT 2024 ^c	<ul style="list-style-type: none"> • Standard UDOT curb and gutter type B1 would be used for design speeds equal to or less than 50 mph • Standard UDOT curb and gutter type M1 would be used for design speeds greater than 50 mph
Park strip	4 feet	UDOT 2024 ^c	<ul style="list-style-type: none"> • None
Sidewalk	5 feet	UDOT 2024 ^c	<ul style="list-style-type: none"> • 5 feet minimum when a park strip is present • 6 feet minimum when a park strip is eliminated and sidewalk is adjacent to the curb and gutter.

^a AASHTO 2011: *Roadside Design Guide*

^b UDOT 2021: *UDOT Roadway Design Manual*

^c UDOT 2024: *2024 Standard Specifications and Standard Drawing Books*

Figure 2.3-1 and Figure 2.3-2 show the typical sections for the Action Alternative mainline and ramps.

Figure 2.3-1. Action Alternative Mainline Typical Section

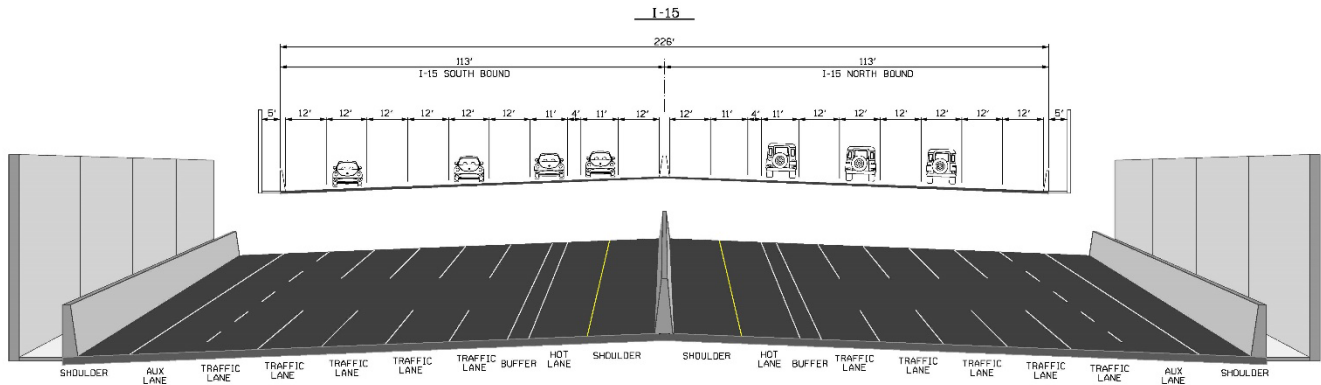
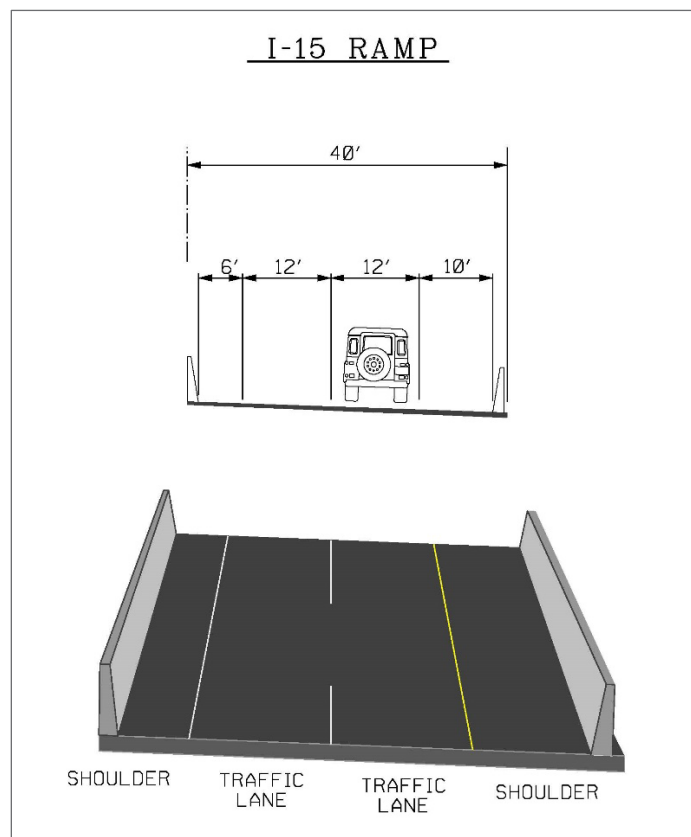


Figure 2.3-2. Action Alternative Ramp Typical Section



2.3.2 Roadway Design Changes

Two notable changes were made to roadway components of the Action Alternative after the alternatives screening process. These two changes included the following items:

- The design between 500 South and 400 North in Bountiful/West Bountiful was revised to propose braided ramps instead of auxiliary lanes for both the northbound and southbound directions. This change was made because the ramp spacing between 500 South and 400 North with the auxiliary lanes would not meet interchange spacing standards. The braided ramps would improve safety by reducing the amount of merging and weaving between 500 South and 400 North. The braided ramps are shown in Figure 2.4-10, *Action Alternative: Bountiful/West Bountiful Segment*, Figure 2.4-11, *Bountiful/West Bountiful Option A – 400 North – Northern and Southern Options*, and Figure 2.4-12, *Bountiful/West Bountiful Option A – 500 South – Northern and Southern Options*, in Section 2.4.2, *Action Alternative*.
- The design of the east side access for the Salt Lake City 1000 North – Northern Option north of 600 North was changed to provide a new northbound on-ramp and off-ramp access to Warm Springs Road on the east side of I-15 near 800 North and eliminate access to and from Warm Springs Road near 1100 North. This change was made to improve access and reduce impacts to businesses on Warm Springs Road. With this change, the Salt Lake City 1000 North – Northern Option would still provide full I-15 access to the west side of I-15 from the 1000 North interchange. The new east-side access for the Salt Lake City 1000 North – Northern Option is shown in Figure 2.4-23, *Action Alternative: Salt Lake Segment*, and Figure 2.4-24, *Salt Lake City 1000 North – Northern and Southern Options*, in Section 2.4.2, *Action Alternative*.

The roadway facilities included in the Action Alternative are described in Section 2.4.2, *Action Alternative*.

2.3.3 Pedestrian and Bicyclist Facilities

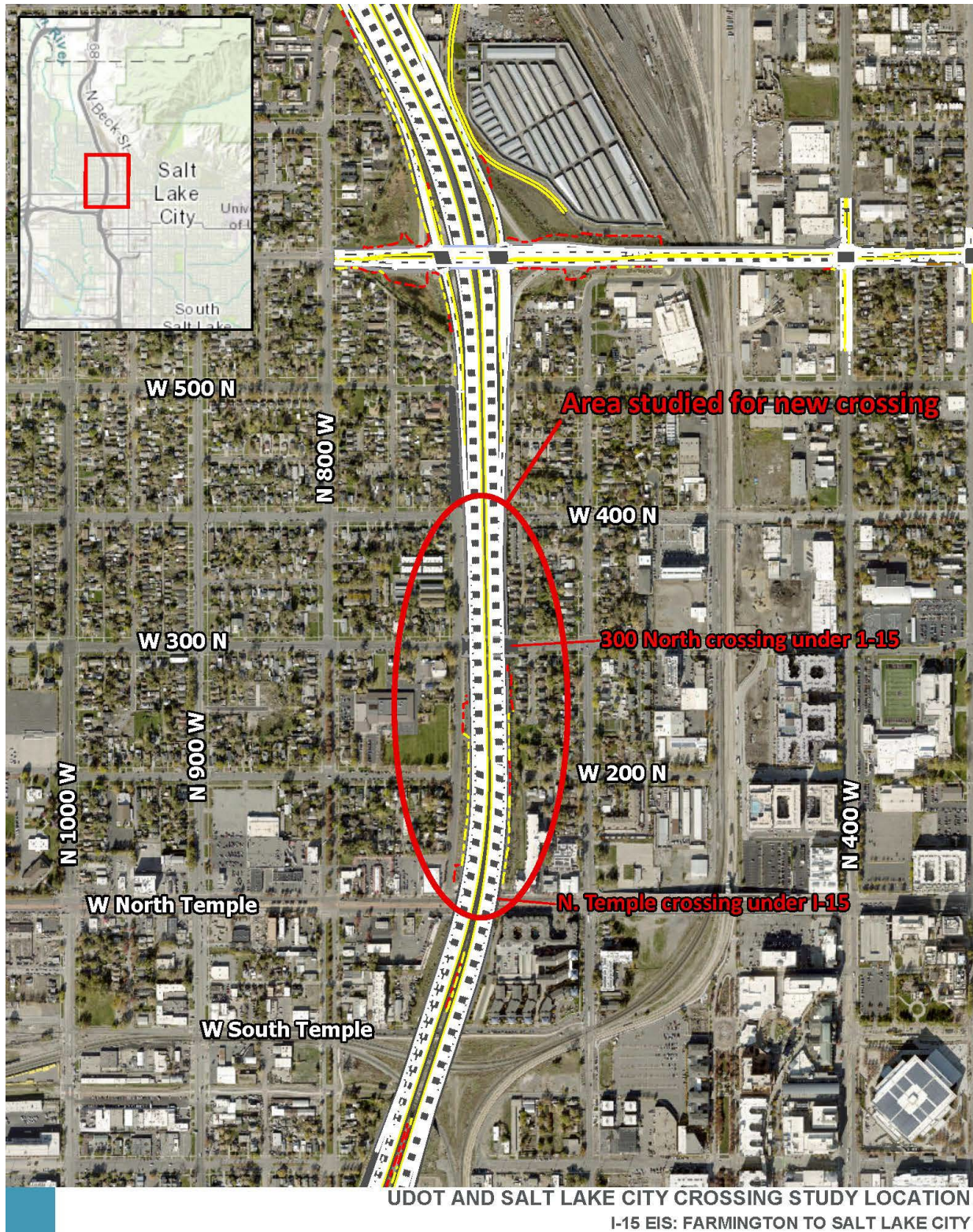
For the Action Alternative and its segment options, UDOT continued to refine the conceptual pedestrian and bicyclist facility designs in coordination with the local Cities and Counties. Some of these refinements included facility widths, decisions regarding which side of the cross streets there would be shared-use paths and/or sidewalks, and connections of the pedestrian and bicyclist facilities with the existing local pedestrian and bicyclist facilities.

2.3.3.1 UDOT and Salt Lake City Crossing Study

A new crossing under I-15 was considered at 400 North in Salt Lake City during the draft alternatives development and screening process for this EIS. In response to mixed feedback from the community for the new 400 North crossing in Salt Lake City, UDOT removed this crossing from the Action Alternative in the Draft EIS. To meet the project purpose of “better connecting communities,” UDOT is working with Salt Lake City and the local community to evaluate a potential new crossing under I-15 between 400 North and North Temple (Figure 2.3-3). If a location for a new crossing is identified through this additional study, UDOT will include this location in the Action Alternative. The crossing study was ongoing when this Draft EIS was released.

The pedestrian and bicyclist facilities included in the Action Alternative are described in Table 2.4-2, *Action Alternative Pedestrian and Bicyclist Improvements by Location*, in Section 2.4.2, *Action Alternative*.

Figure 2.3-3. Extent of the UDOT and Salt Lake City Crossing Study



2.3.4 Avoidance and Minimization Process

2.3.4.1 Wetlands and the Waters of the United States

During the design process, UDOT evaluated opportunities to further avoid and minimize water resource impacts. These steps included the following:

- Refined the alignment near the 2100 North interchange in Salt Lake City to minimize impacts to aquatic resources. This area has the highest amount of aquatic resources the study area. UDOT tried to use the existing right-of-way as much as possible to minimize impacts to aquatic resources in this area.
- Stormwater treatment design incorporated several best management practices designed to manage and minimize the effects of roadway stormwater discharges to surface and groundwater quality by reducing the total volume of water that runs off a roadway and reducing the concentrations of pollutants in the stormwater.

2.3.4.2 Property Impacts

During the alternatives design process, UDOT evaluated opportunities to avoid and minimize right-of-way impacts to private properties and recreation resources. These steps included the following:

- Optimize the design of I-15 mainline to include retaining walls to reduce the number of relocations.
- Optimize the design of I-15 mainline east and west to reduce property impacts.
- Explored north and south shifts at all interchange cross streets to minimize property and business impacts where feasible.
- Develop the horizontal and vertical alignments to inform potential right-of-way and easement extents.

2.4 Alternatives Considered for Detailed Study

Based on the results of the alternatives development and screening process, UDOT advanced the following alternatives for further study in this EIS:

- No-action Alternative
- Action Alternative

The Action Alternative includes the 5 GP + 1 HOT lane mainline concept combined with the concepts for each of the five geographic areas that passed Level 1 and Level 2 screening.

The Action Alternative also includes the following subarea options:

- Farmington
 - 400 West Option
 - State Street Option
- Bountiful 400 North
 - Northern Option
 - Southern Option
- Bountiful 500 South
 - Northern Option
 - Southern Option
- Salt Lake City 1000 North
 - Northern Option
 - Southern Option

This section provides a detailed description of each option. In order to conduct a detailed evaluation of the Action Alternative and the options listed above, UDOT developed preliminary engineering and cost estimates for the Action Alternative and its options.

Appendix 2B, *Action Alternative Design Figure Series*, includes figures that show the designs and roadway plans of the Action Alternative and options. The roadway plans are at a closer scale and show how the improvements for each alternative would be located relative to the existing roadway. Interactive maps are also available on the project website: <https://i15eis.udot.utah.gov>.

2.4.1 No-action Alternative

NEPA requires an analysis of the No-action Alternative. This alternative serves as a baseline so that decision-makers can compare the environmental effects of the Action Alternative.

If no action is taken on the I-15 Farmington to Salt Lake City EIS, UDOT would continue to make minor maintenance improvements such as rehabilitating pavement and rehabilitating or replacing structures along the corridor. Overall, with the No-action Alternative, the basic design of I-15 and the interchanges in the I-15 EIS study area would not change.

2.4.2 Action Alternative

Figure 2.4-1 through Figure 2.4-28 beginning on page 2-31 show the termini, facility type, interchanges, cross streets, pedestrian and bicyclist facilities, and alignment of the Action Alternative.

Northern Terminus. The northern terminus is the U.S. 89 interchange in Farmington (milepost 324.4). The Action Alternative would make improvements to the northbound I-15 to northbound U.S. 89 ramp and the southbound U.S. 89 to southbound I-15 ramp but would not affect any of the ramp movements between Legacy Parkway and I-15, between Legacy Parkway and U.S. 89, or any ramp movements to or from Park Lane.

Southern Terminus. The southern terminus is the 400 South interchange in Salt Lake City (milepost 308.2). The Action Alternative would make improvements to the northbound on-ramp and southbound off-ramp at 400 South. The Action Alternative would maintain the existing ramps to and from I-80 west, which is located near 200 South.

Mainline Facility Type. The Action Alternative includes the 5 GP + 1 HOT lane mainline concept which means it would have one HOT lane and five GP lanes in each direction. Most segments of the Action Alternative would also include auxiliary lanes that would begin with an on-ramp that would continue on to the next off-ramp without merging into the GP lanes. For example, at 2600 South, the northbound on-ramp would continue north without merging onto I-15 and become the northbound off-ramp at 500 South.

Interchanges and Cross Streets. The Action Alternative would have cross numerous streets and would require various cross street configurations: interchanges, overpasses, underpasses, and cul-de-sacs. Table 2.4-1 provides an overview of the interchange and cross-street configurations for the Action Alternative. The edge of the UDOT right-of-way would include a chain link or similar type of fence.

Table 2.4-1. Action Alternative Interchanges and Crossings

Cross Street	Road Jurisdiction	Interchange	Cross Street Over	Cross Street Under	Shared-use Path
State Street	Farmington		X		
200 West	Farmington	Half interchange; southbound on-ramp and northbound off- ramp	X (southbound on-ramp only)		
Glovers Lane	Farmington		X		
West Davis Corridor	Farmington	System-to-system			
Centerville Park SUP	Centerville				X (over I-15)
Parrish Lane	Centerville	SPUI	X		
200 North SUP	Centerville				X (over I-15)
1600 North/ Pages Lane	Centerville/West Bountiful			X	
500 West	West Bountiful/Bountiful	Half interchange; southbound off-ramp and northbound on- ramp		X (southbound off-ramp only)	
400 North	West Bountiful/Bountiful	Half interchange; southbound on-ramp and northbound off- ramp	X		
500 South	West Bountiful/Bountiful/ Woods Cross	Diamond		X	
1500 South	Woods Cross			X	
800 West	Woods Cross			X	
2600 South/ 1100 North	Woods Cross/North Salt Lake	SPUI		X	
SUP at 2600 South/ 1100 North	Woods Cross/North Salt Lake				X (over I-15 ramps, but under mainline I-15)
Main Street	North Salt Lake			X	
Center Street	North Salt Lake			X	
I-215	North Salt Lake	System-to-system for SB I-15 to WB I-215 and EB I-215 to NB I-15	X		
I-215/U.S. 89	North Salt Lake	SPUI	X		

(continued on next page)

Table 2.4-1. Action Alternative Interchanges and Crossings

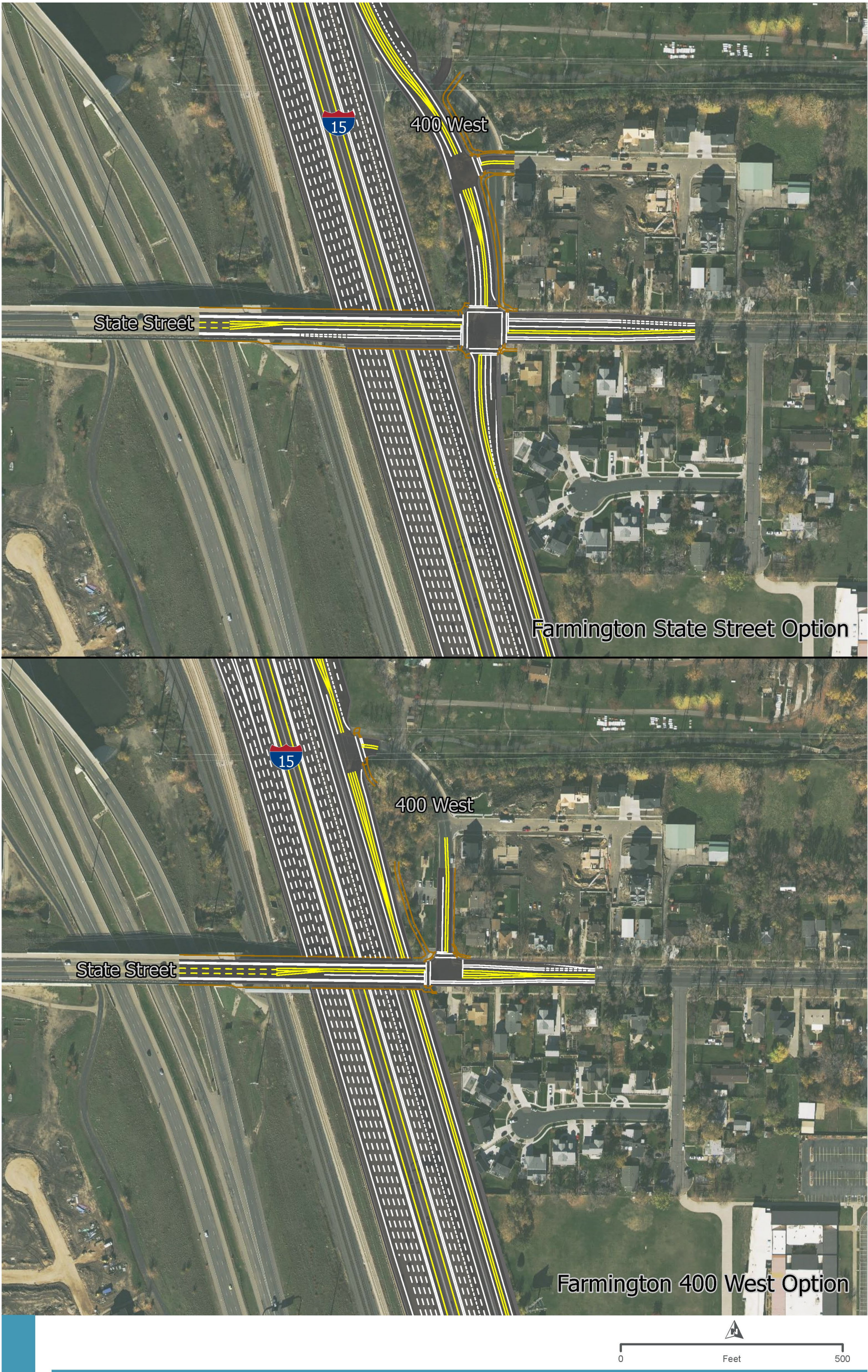
Cross Street	Road Jurisdiction	Interchange	Cross Street Over	Cross Street Under	Shared-use Path
Warm Springs Road/Union Pacific Railroad/UTA railroads	Salt Lake City			X	
2100 North	Salt Lake City	Diamond	X		
1000 North	Salt Lake City	Diamond with collector-distributor to 600 North		X	
600 North	Salt Lake City	Diamond with collector-distributor to 1000 North	X		
300 North	Salt Lake City			X	
North Temple	Salt Lake City			X	
South Temple/Railroad	Salt Lake City			X	
200 South	Salt Lake City			X	
I-80	Salt Lake City	System to System	X (I-80 EB to I-15 NB)	X (I-15 NB to I-80 WB)	
400 South	Salt Lake City	Diamond		X	

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Figure 2.4-1. Action Alternative: Farmington Segment



Figure 2.4-2. Farmington State Street/Frontage Road and 400 West/Frontage Road Options



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Figure 2.4-3. Action Alternative: Glovers Lane Farmington



Figure 2.4-4. Action Alternative: 200 West Farmington

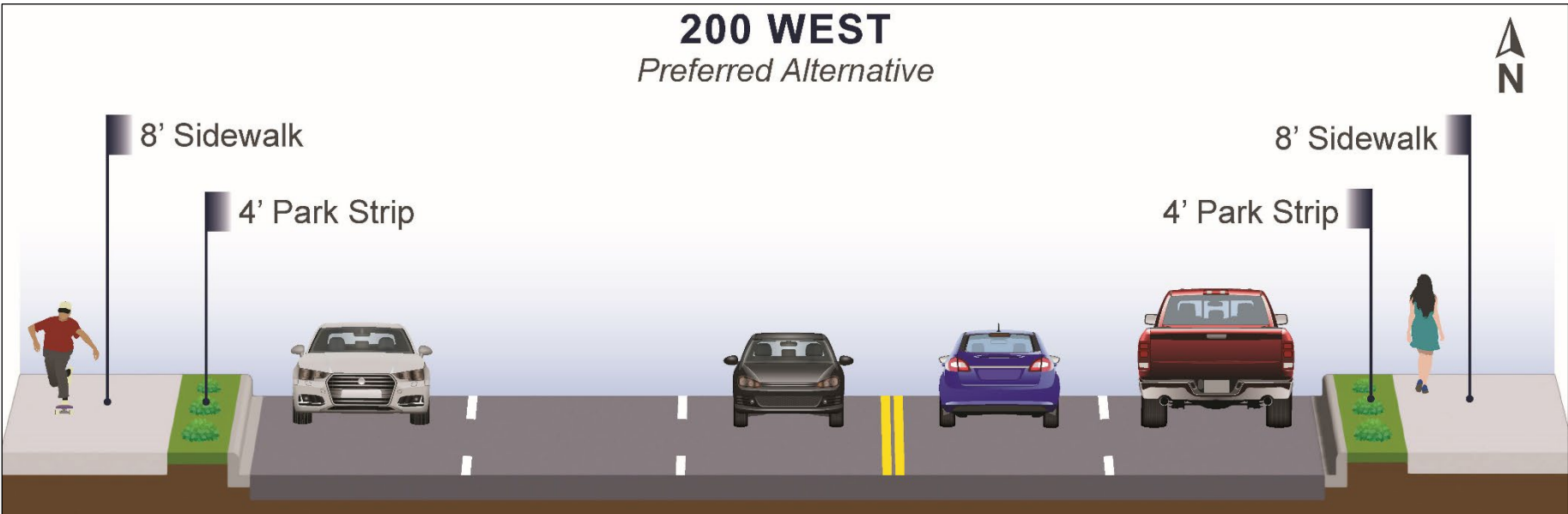


Figure 2.4-5. Action Alternative: State Street Farmington

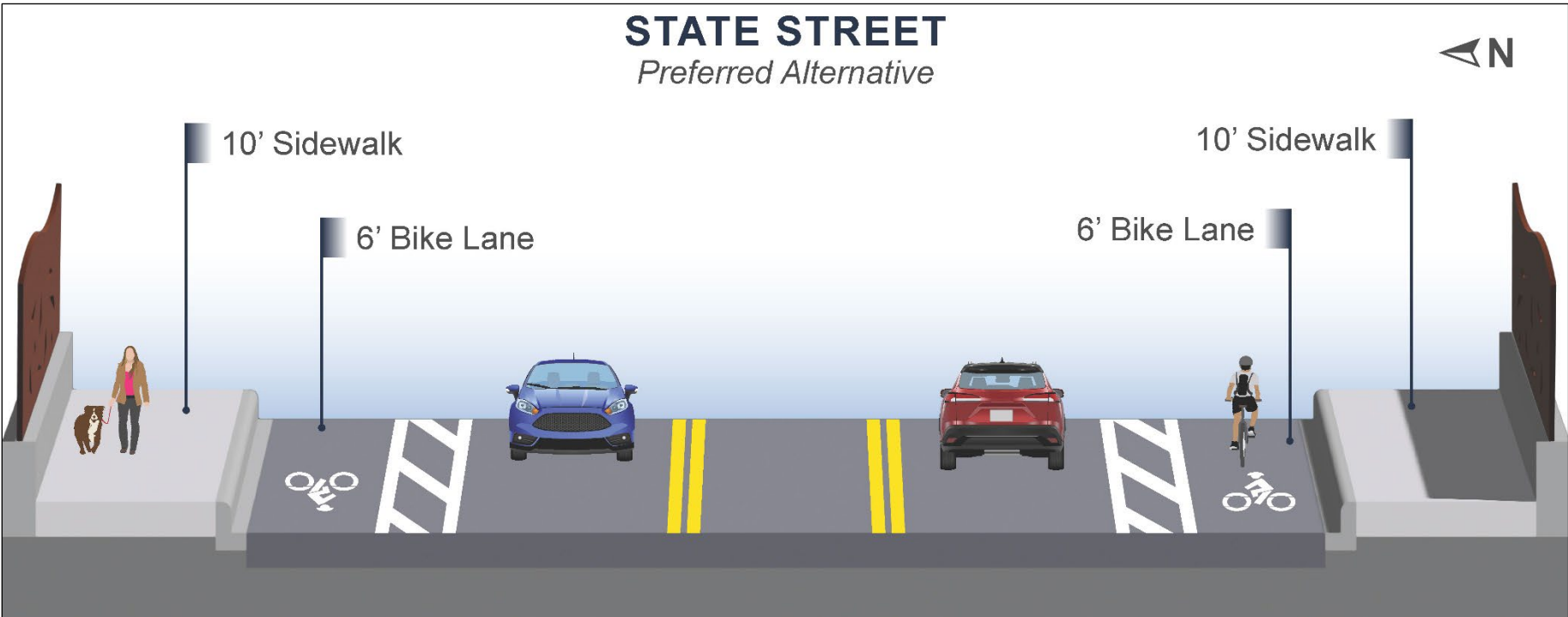


Figure 2.4-6. Action Alternative: Centerville Segment



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Figure 2.4-7. Action Alternative: Parrish SUP

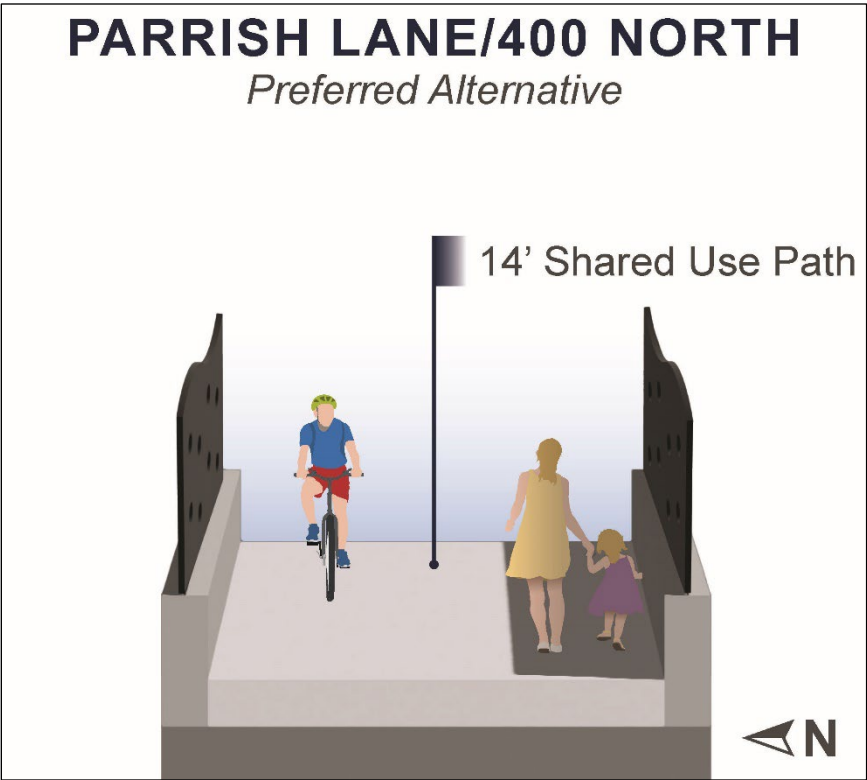


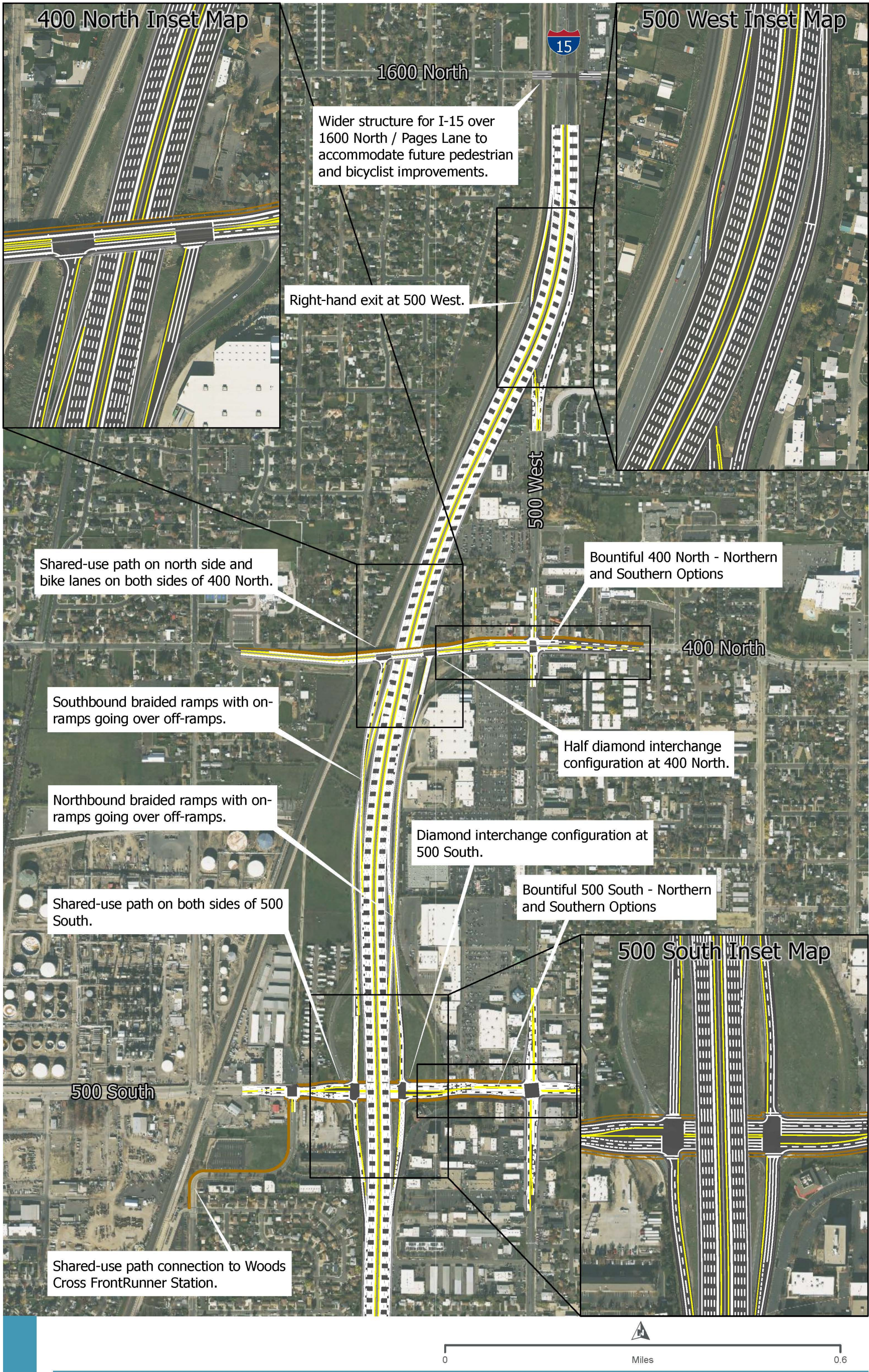
Figure 2.4-8. Action Alternative: Parrish Lane



Figure 2.4-9. Action Alternative: Crossing over I-15 at Centerville Community Park



Figure 2.4-10. Action Alternative: Bountiful/West Bountiful Segment

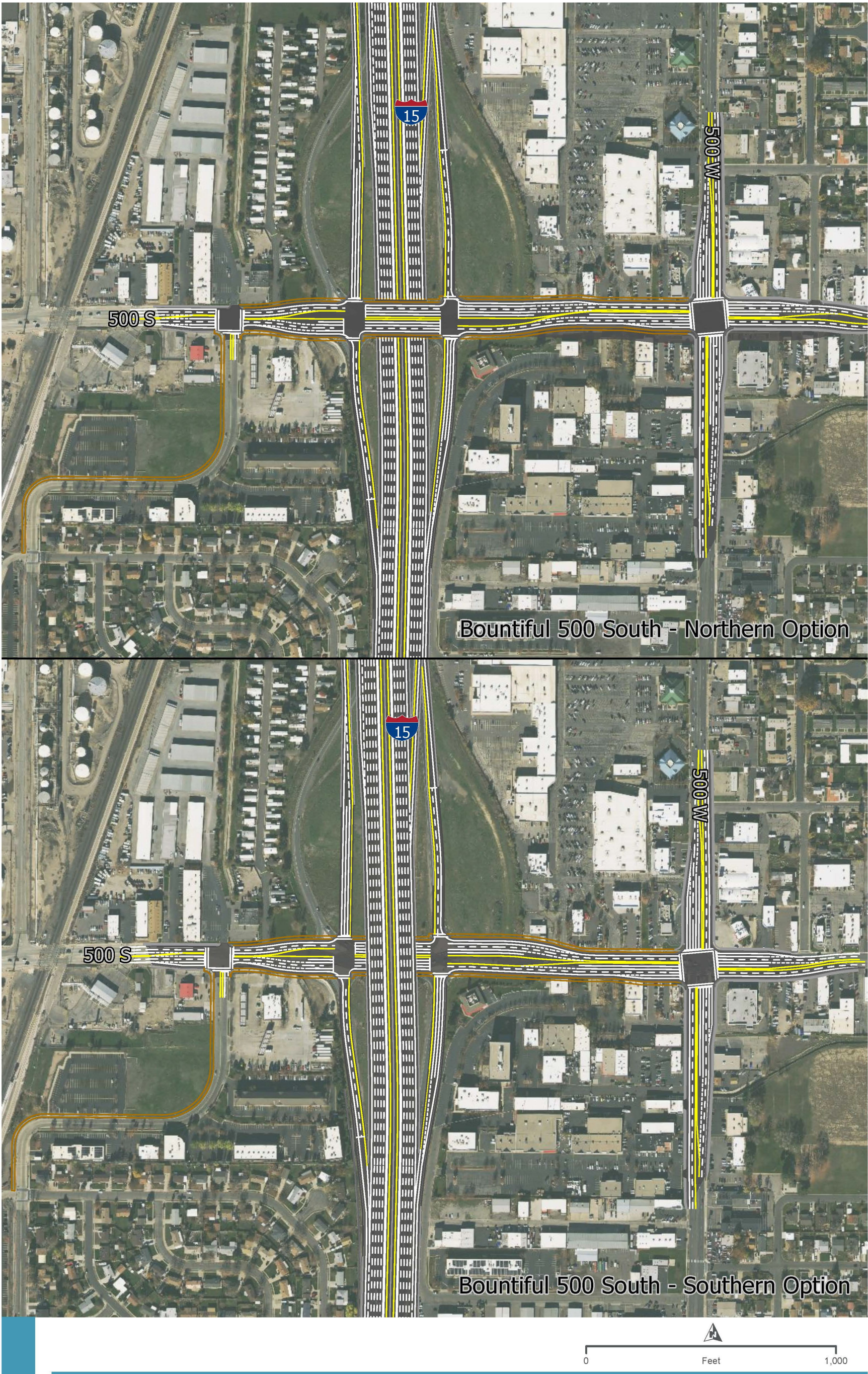


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Figure 2.4-11. Bountiful/West Bountiful Option A – 400 North – Northern and Southern Options



Figure 2.4-12. Bountiful/West Bountiful Option A – 500 South – Northern and Southern Options



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Figure 2.4-13. Action Alternative: 500 South Bountiful/West Bountiful

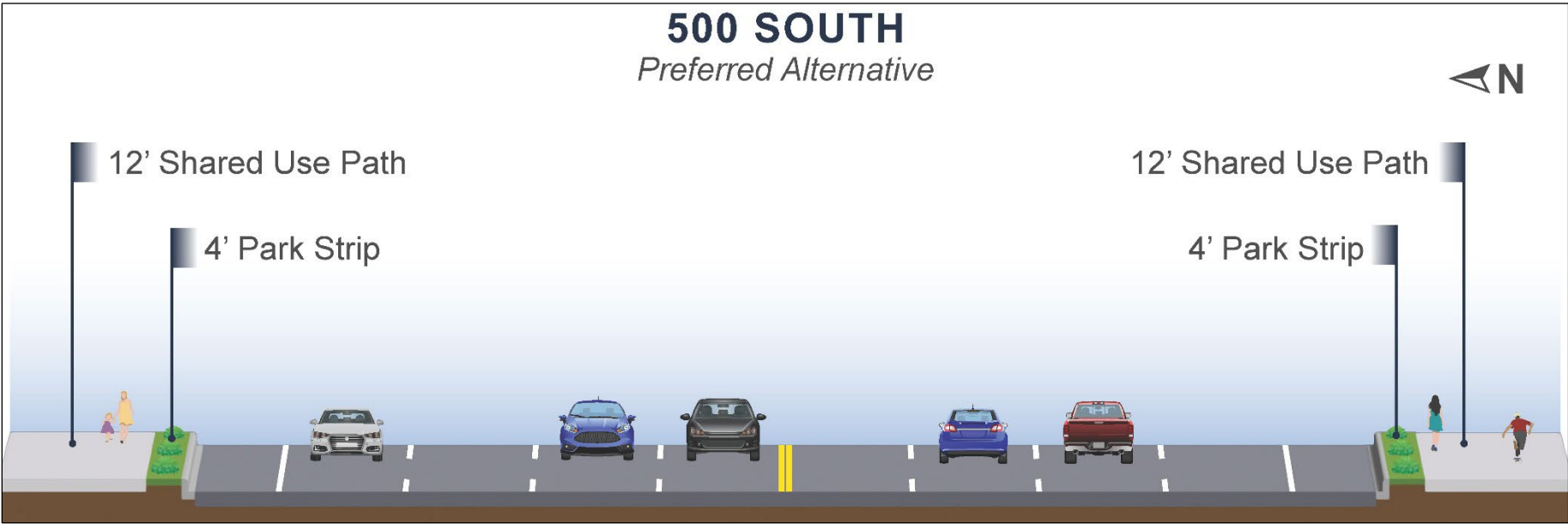


Figure 2.4-14. Action Alternative: 400 North Bountiful/West Bountiful

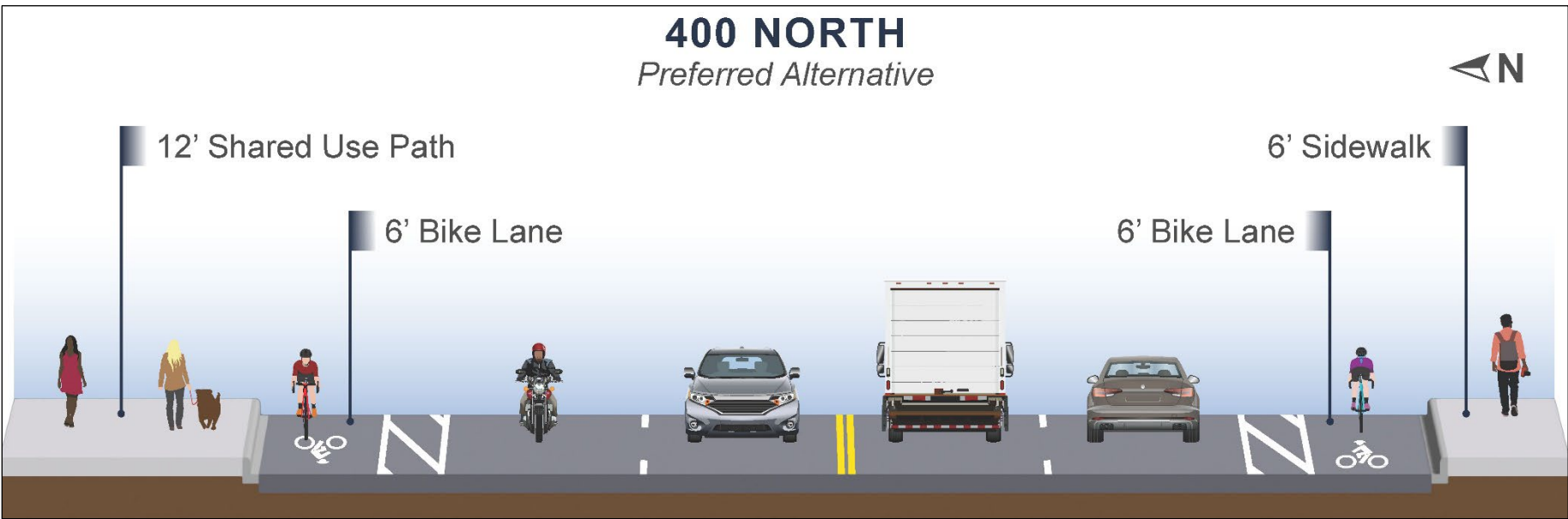


Figure 2.4-15. Action Alternative: Pages Lane/1600 North West Bountiful/Centerville

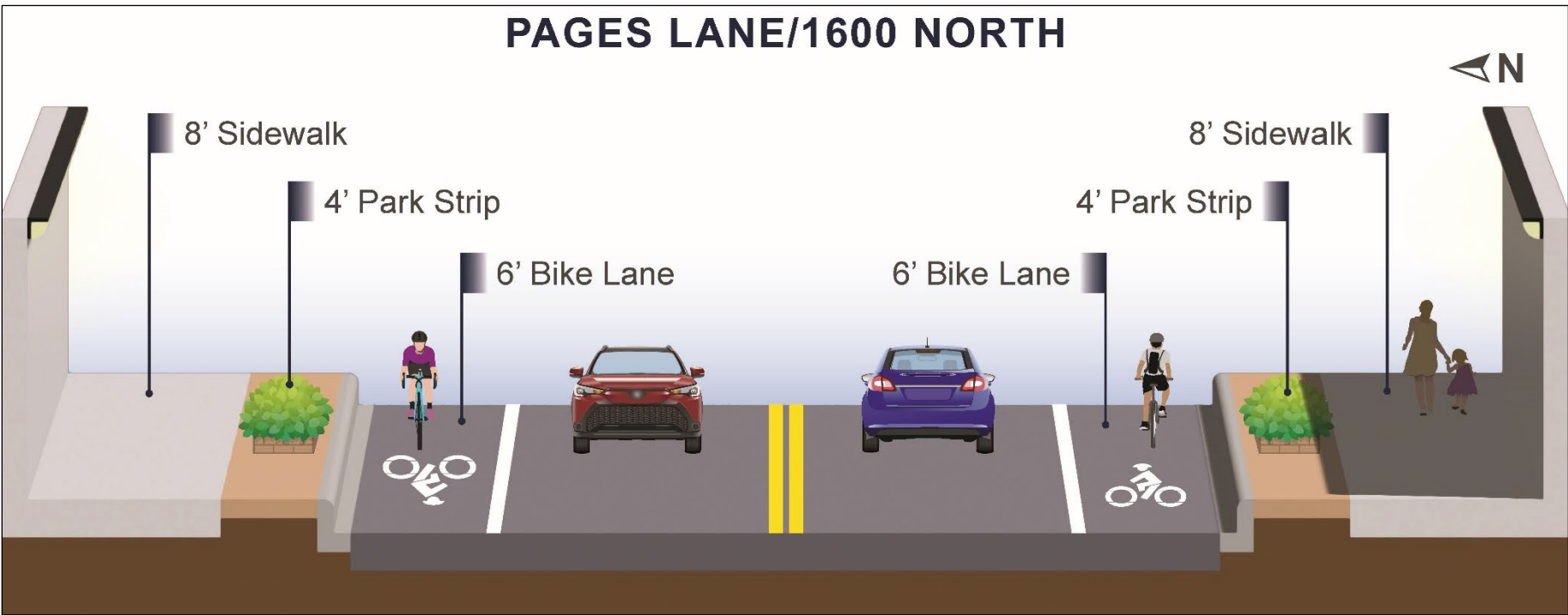


Figure 2.4-16. Action Alternative: North Salt Lake/Woods Cross Segment



Figure 2.4-17. Action Alternative: Center Street North Salt Lake

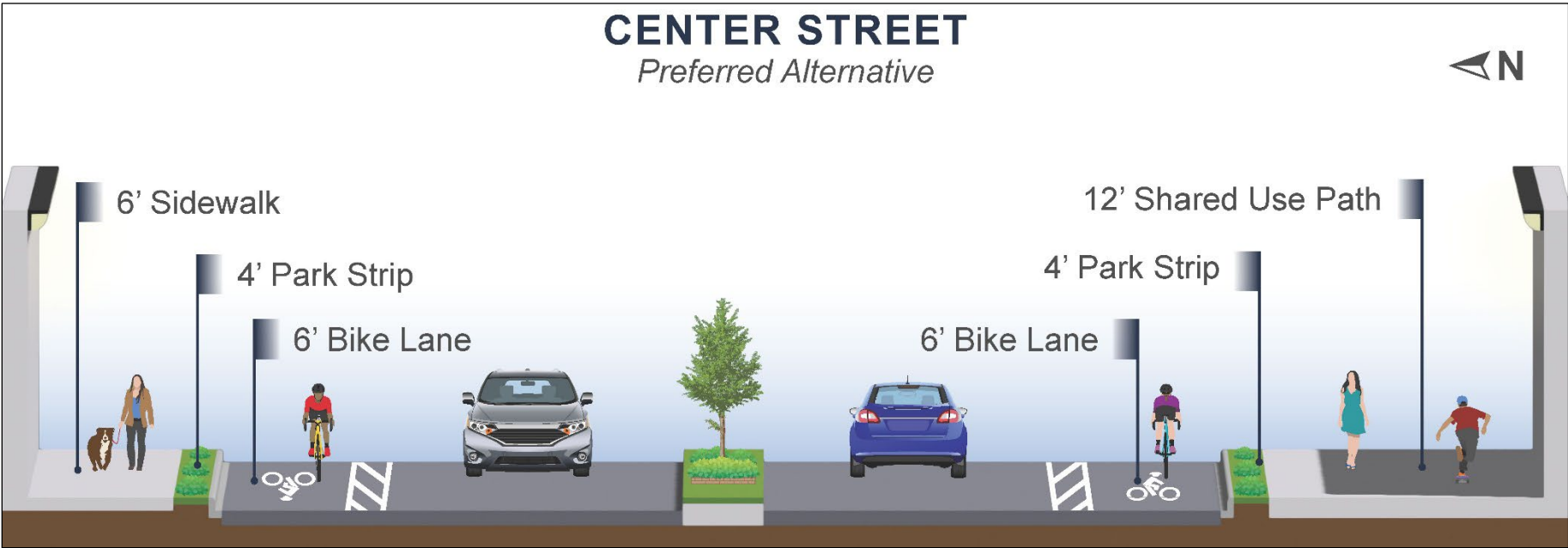


Figure 2.4-18. Action Alternative: Main Street North Salt Lake



Figure 2.4-19. Action Alternative: 2600 South Woods Cross

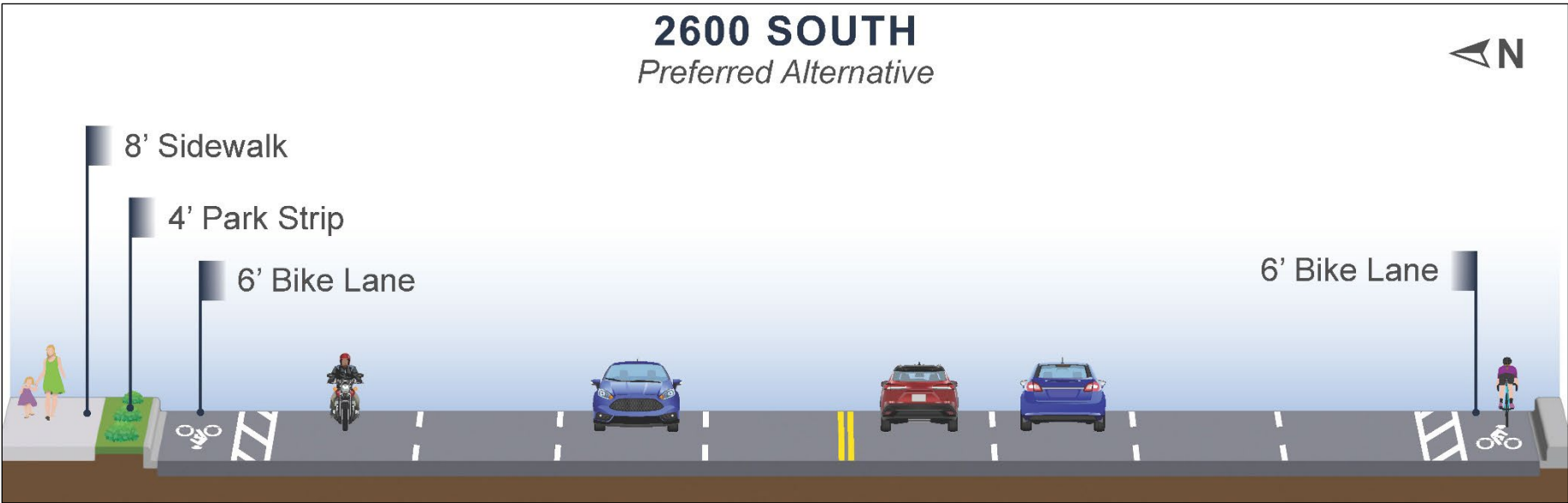


Figure 2.4-20. Action Alternative: 2600 South SUP

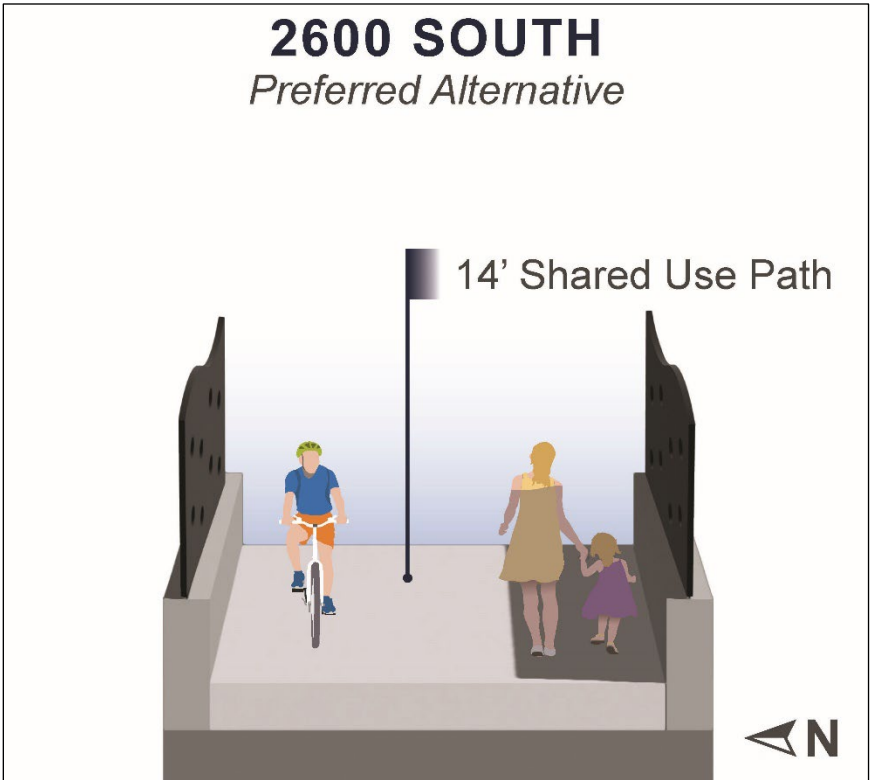


Figure 2.4-21. Action Alternative: 800 West Woods Cross



Figure 2.4-22. Action Alternative: 1500 South Woods Cross

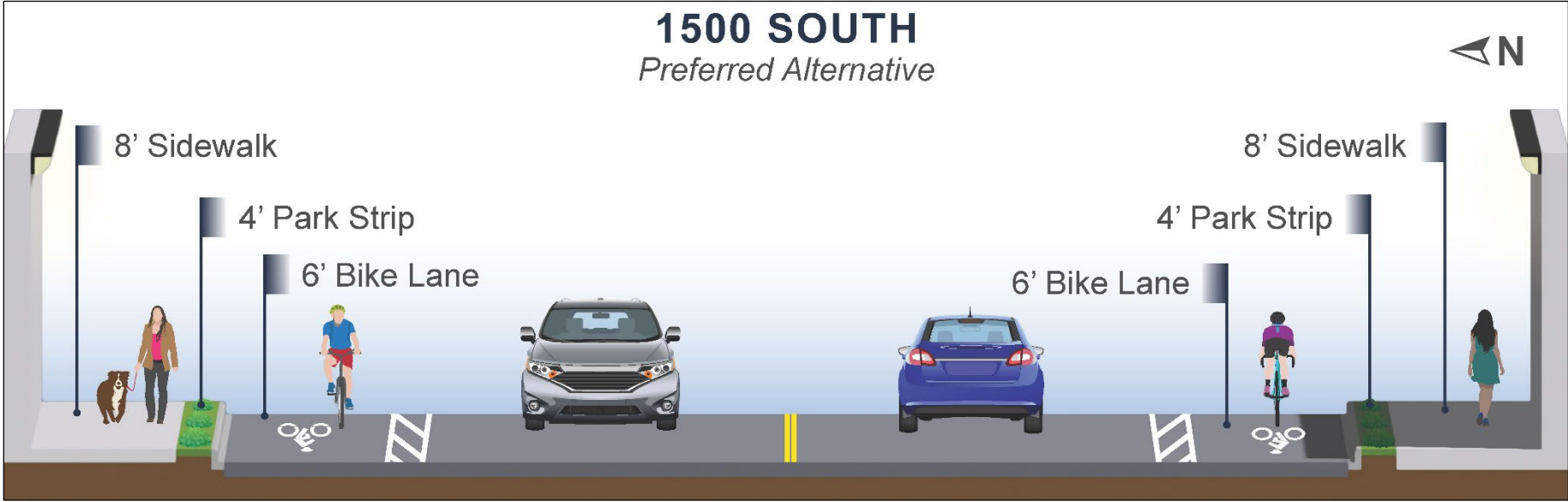
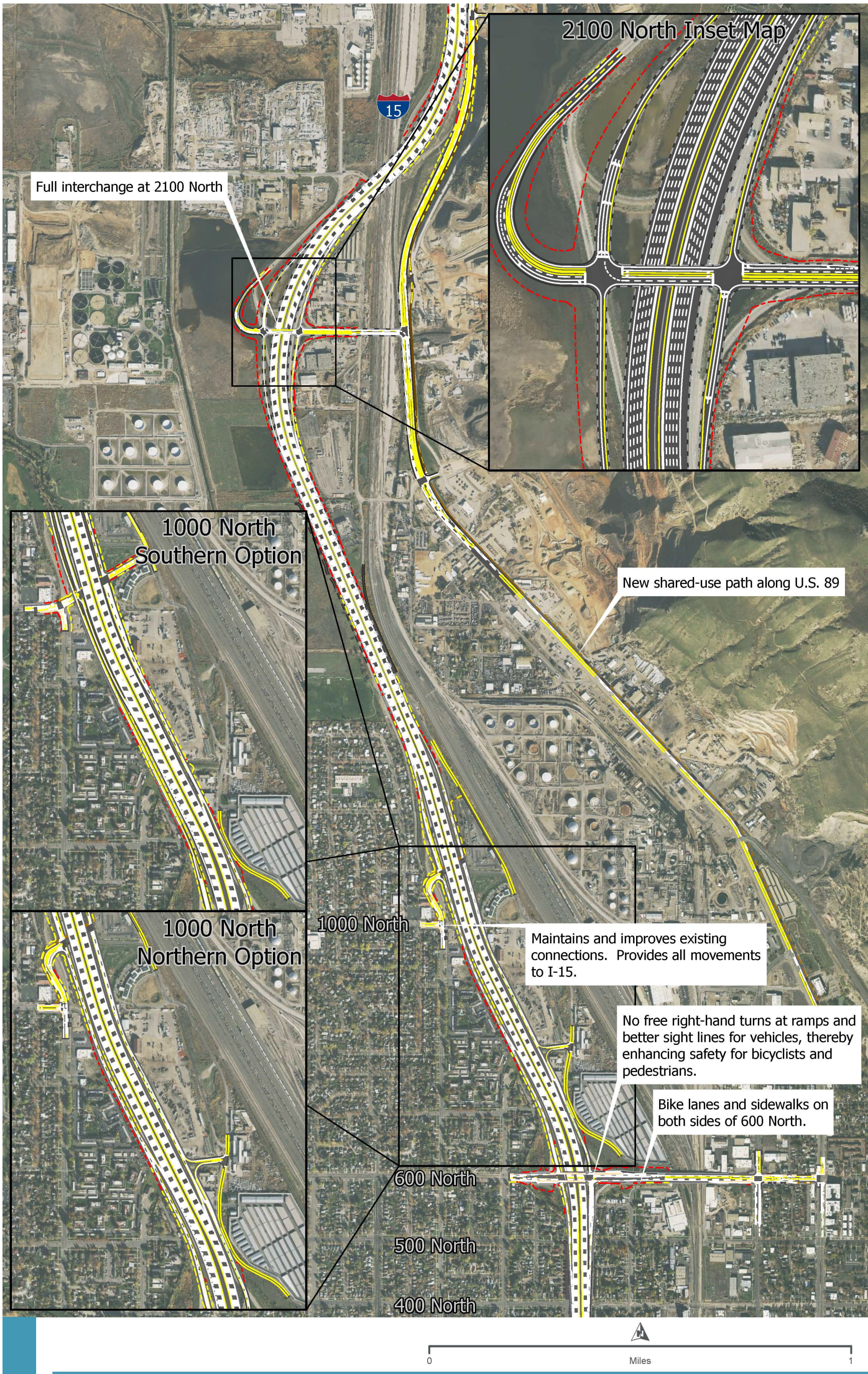


Figure 2.4-23. Action Alternative: Salt Lake Segment



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Figure 2.4-24. Salt Lake City 1000 North – Northern and Southern Options



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Figure 2.4-25. Action Alternative: 600 North Salt Lake

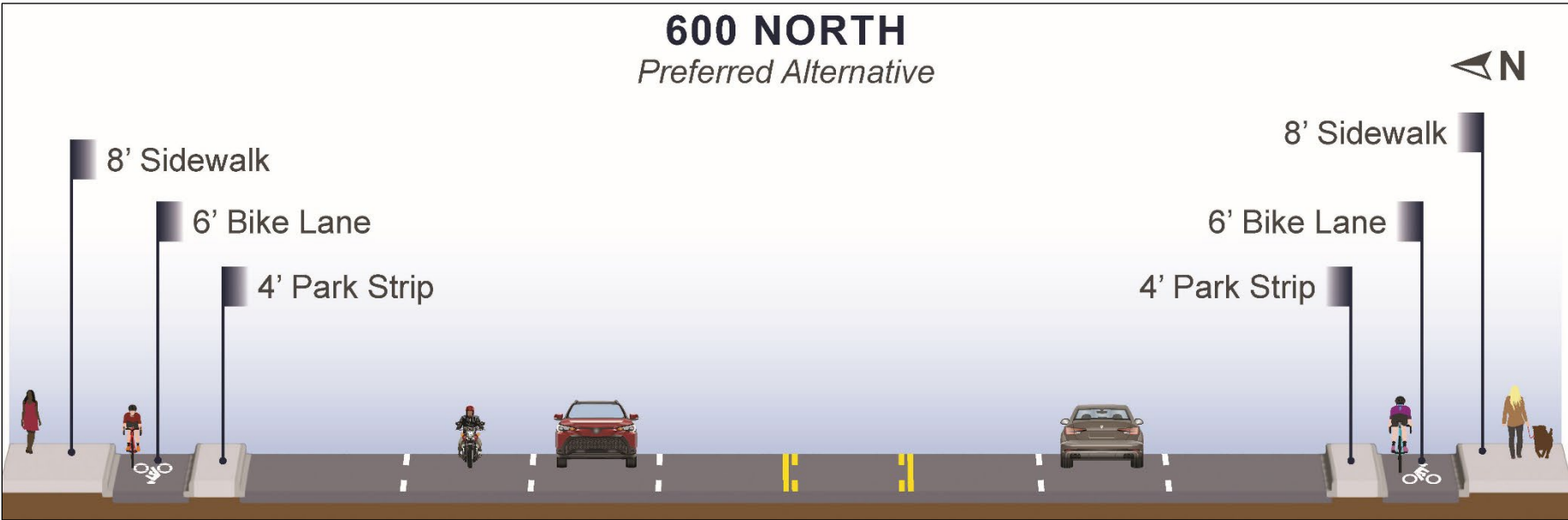


Figure 2.4-26. Action Alternative: Salt Lake 1000 North – Northern and Southern Options

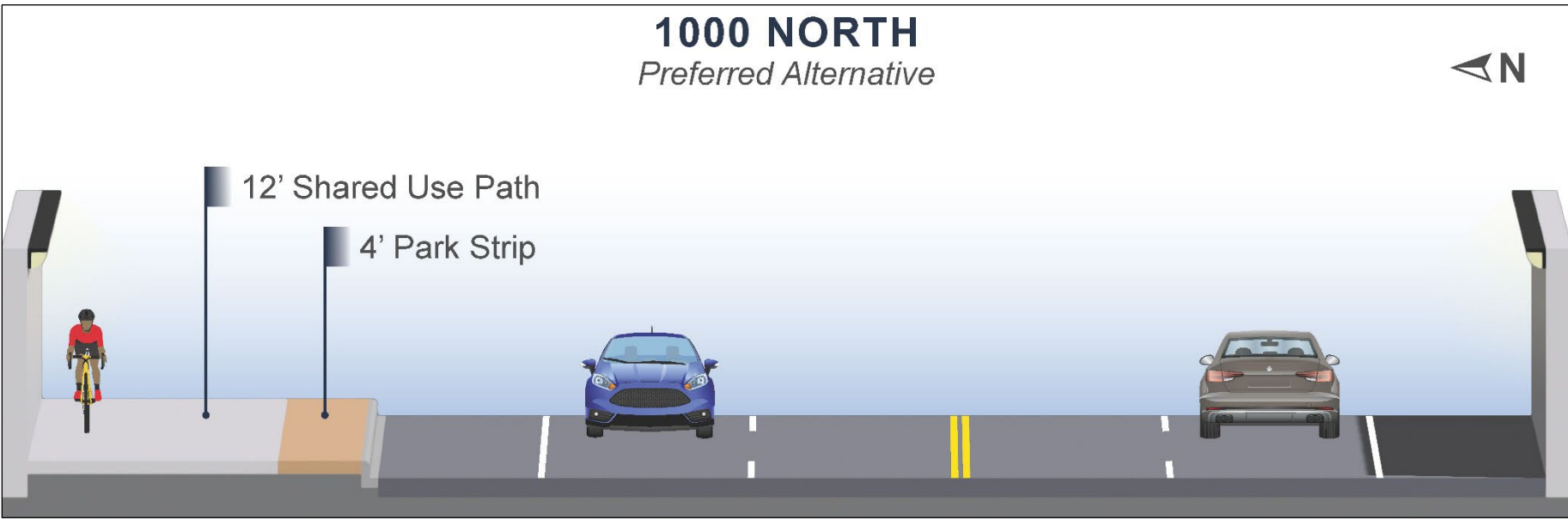


Figure 2.4-27. Action Alternative: Beck Street



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Pedestrian and Bicyclist Facilities. The Action Alternative includes new or improved pedestrian and bicyclist facilities throughout the study area. The Action Alternative pedestrian and bicyclist improvements are listed in Table 2.4-2 and shown in Figure 2.4-28.

Table 2.4-2. Action Alternative Pedestrian and Bicyclist Improvements by Location

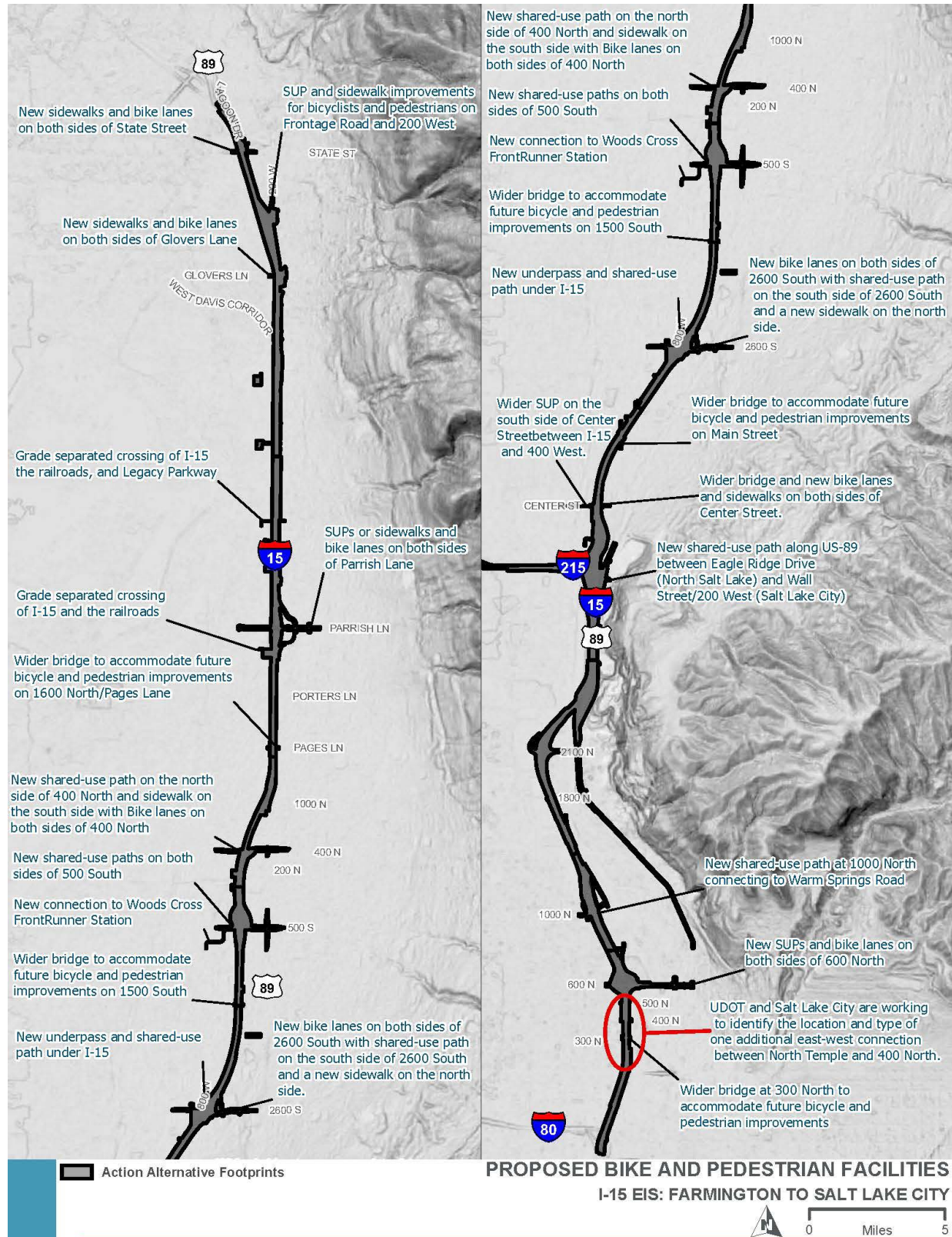
Geographic Area	Action Alternative Bicyclist and Pedestrian Crossing Features
North segment (Farmington and Centerville)	<ul style="list-style-type: none"> • State Street/Clark Lane bridge over I-15 and the Union Pacific and FrontRunner railroad tracks would be widened to include buffered or barrier-separated bike lanes and sidewalks on both sides that match the facilities going over Legacy Parkway. • No free right-hand turns for vehicles and better sight lines, thereby enhancing safety for pedestrians and bicyclists at the 200 West interchange. • Glovers Lane bridge over I-15 and the Union Pacific and FrontRunner railroad tracks would be widened to include a 10-foot-wide sidewalk on the north side, a 6-foot-wide sidewalk on the south side, and buffered or barrier-separated bike lanes on both sides to match the facilities going over Legacy Parkway. • New grade-separated 14-foot-wide SUP crossing at Centerville Park over I-15/Union Pacific and FrontRunner railroad tracks/Legacy Parkway. • No free right-hand turns for vehicles and better sight lines, thereby enhancing safety for pedestrians and bicyclists at the Parrish Lane interchange. • 12-foot-wide SUP on north side of Parrish Lane. East of I-15, the SUP would narrow to a 5- to 6-foot-wide sidewalk with a park strip. 12-foot-wide SUP on the south side of Parrish Lane. • Wide shoulders on Parrish Lane to accommodate future bike lanes. • Grade-separated 14-foot-wide SUP crossing of I-15 and the Union Pacific and FrontRunner railroad tracks at 200 North.
North central and south central segments (West Bountiful, Bountiful, and Woods Cross)	<ul style="list-style-type: none"> • Wider bridge over 1600 North/Pages Lane to accommodate future pedestrian and bicyclist improvements. • No free right-hand turns for vehicles and better sight lines, thereby enhancing safety for pedestrians and bicyclists at the 500 South and 400 North interchanges. • Buffered or barrier-separated bike lanes on both sides of 400 North. • 12-foot-wide SUP on the north side of 400 North. • 6-foot-wide sidewalk on the south side of 400 North. • 12-foot-wide SUP on both sides of 500 South. • New SUP connection from 500 South to the Woods Cross FrontRunner Station west of I-15.

(continued on next page)

Table 2.4-2. Action Alternative Pedestrian and Bicyclist Improvements by Location

Geographic Area	Action Alternative Bicyclist and Pedestrian Crossing Features
South segment (North Salt Lake, Woods Cross, and Salt Lake City)	<ul style="list-style-type: none"> • Wider bridge over 1500 South to accommodate future pedestrian and bicyclist improvements. • At 800 West, new underpass of I-15 with new 12-foot-wide SUP. 12-foot-wide SUP connection between 800 West and 2600 South on west side of I-15. • At 2600 South, no free right-hand turns for vehicles and better sight lines, thereby enhancing safety for pedestrians and bicyclists. • Buffered or barrier-separated bike lanes on both sides of 2600 South. • 8-foot-wide sidewalk on north side of 2600 South. • 14-foot-wide grade-separated SUP on south side of 2600 South. • Wider bridge over Main Street to accommodate future pedestrian and bicyclist improvements. • Center Street buffered or barrier-separated bike lanes on both sides, 6-foot-wide sidewalk on north side, and 12-foot-wide SUP improvements on south side of Center Street between I-15 and 400 West. • New U.S. 89 12-foot-wide SUP between Eagle Ridge Drive in North Salt Lake and Wall Street/200 West in Salt Lake City. • 12-foot-wide SUP on 1000 North that crosses under I-15 and connects to Warm Springs Road east of I-15. • No free right-hand turns and better sight lines for vehicles, thereby enhancing safety for pedestrians and bicyclists at 600 North interchanges. • Buffered or barrier-separated bike lanes and 8-foot-wide sidewalks on both sides of 600 North. • Wider bridge over 300 North to accommodate future pedestrian and bicyclist improvements.

Figure 2.4-28. Action Alternative Proposed Pedestrian and Bicyclist Facilities



2.4.3 Preliminary Cost Estimates and Construction Implementation

UDOT developed a preliminary cost estimate of **\$3.7 billion** for the Action Alternative. There were no major differences in costs among the different options. This estimate is based on the preliminary engineering conducted for the Action Alternative and includes the total project cost for program management, construction, right-of-way acquisition, utility relocation, and design and construction engineering. The cost estimate is based on 2024 dollar values with 2 additional years of escalation. The actual cost of construction would change depending on the year of construction, any phasing, and inflation.

The selected alternative would be constructed based on available funding. UDOT would construct portions of the selected alternative based on the amount of the funding while considering safety and operational benefits. As of September 2023, \$1.7 billion has been allocated for potential construction if the Action Alternative is selected in the environmental process.

2.4.4 Comparison of Alternatives

Table 2.4-3 lists the major advantages and disadvantages of each alternative that was evaluated in detail in this EIS. Table 2.4-4 summarizes the environmental impacts of each alternative evaluated in detail in this EIS. For detailed information about the environmental impacts of the alternatives, see Chapter 3, *Affected Environment, Environmental Consequences, and Mitigation Measures*.

Table 2.4-3. Primary Advantages and Disadvantages of the No-action and Action Alternatives

Alternative	Primary Advantages	Primary Disadvantages
No-action Alternative	<ul style="list-style-type: none"> Few impacts because no major improvements would be made to I-15. 	<ul style="list-style-type: none"> Would not be consistent with regional transportation plans. Aging infrastructure would not be replaced. Safety and operations would not be improved on I-15 and I-15 interchanges. New pedestrian and bicyclist improvements that improve safety and mobility would not be made. Network delay would increase to 36,782 hours (1,427% increase) during the AM peak period and 42,500 hours (1,360% increase) during the PM peak period. Travel times would increase 30% to 432% during the AM peak period and 129% to 407% during the PM peak period. Average speeds would be 13 to 55 mph (a decrease of 23% to 81%) during AM peak period and 13 to 28 mph (a decrease of 56% to 80%) during PM peak period.
Action Alternative	<ul style="list-style-type: none"> Would be consistent with regional transportation plans. Aging infrastructure would be replaced. Safety and operations would be improved on I-15 and I-15 interchanges. New pedestrian and bicyclist improvements that improve safety and mobility would be made, including a new 3.8-mile shared-use path, four new grade-separated crossings, and improvements to eight existing crossings. Network delay would decrease by about 47% compared to the No-action Alternative. Travel times would decrease by 49% to 55% during the AM and PM peak periods compared to the No-action Alternative. Average speeds would increase 95% to 125% during the AM and PM peak periods compared to the No-action Alternative. 	<ul style="list-style-type: none"> The Action Alternative would have impacts to some adjacent properties and resources (see Table 2.4-5 below for a summary of impacts). The Action Alternative would cost about \$3.4 billion to construct.

Table 2.4-4. Environmental Impacts of the No-action and Action Alternatives

Impact Category	Unit	No-action Alternative	Action Alternative	Notes
Land converted to roadway use	Acres	0 acres	111 to 116 acres	
Consistent with local land use and transportation plans	Yes/no	No	Yes	Action Alternative is consistent with planned land uses and zoning for all cities. Action Alternative is consistent with the WFRC 2019–2050 RTP.
Residential relocations	Number	0	3 to 5	
Potential residential relocations	Number	0	35 to 36	
Commercial relocations (business relocations)	Number	0	13 to 16 commercial buildings (16 to 26 businesses)	Some commercial buildings include multiple businesses.
Potential commercial relocations (business relocations)	Number	0	10 to 13 commercial buildings (11 to 22 businesses)	Some commercial buildings include multiple businesses.
Section 4(f) parks and recreation areas affected	Number	0	10	Action Alternative's impacts to parks would be minor except for the Farmington State Street Option's impacts to Ezra T. Clark Park in Farmington.
Community facilities affected	Number	0	0	
Environmental justice (EJ) benefits or impacts	Yes/no	No impacts and no benefits to EJ communities.	Yes; impacts and benefits to EJ communities. Impacts would not be disproportionately high and adverse to EJ communities.	
Economic impacts	Yes/No	Yes; adverse due to increased travel times and delay and reduction in average speeds on I-15.	Yes; adverse due to business impacts; positive due to improved travel times and average speeds on I-15.	
Pedestrian and bicyclist improvements	Number	0	<ul style="list-style-type: none"> • 1 new shared-use path • 4 new grade-separated crossings • 8 crossings with improved connections 	<p>No-action Alternative would not improve pedestrian and bicyclist facilities across I-15.</p> <p>Action Alternative would add four new grade-separated crossings of I-15 and a 3.8-mile new shared-use path between North Salt Lake and Salt Lake City. Action Alternative would improve existing crossings in eight locations.</p>

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Table 2.4-4. Environmental Impacts of the No-action and Action Alternatives

Impact Category	Unit	No-action Alternative	Action Alternative	Notes
Air quality impacts exceeding standards (NAAQS)	Yes/No	No	No	Action Alternative is part of the WFRC conforming implementation plan.
Receivers with modeled noise levels above criteria	Number	1,789	3,272 to 3,288	3 new noise barriers and 13 replace-in-kind noise barriers are recommended to mitigate for noise impacts and would provide a benefit (at least a 5dBA reduction) to 1,568 to 1,647 receivers.
Surface water beneficial use impacts	Yes/No	No substantial changes to water quality or beneficial uses.	No substantial changes to water quality or beneficial uses.	
Groundwater quality	Yes/No	No	No	
Impacts to aquatic resources (includes wetlands, streams, mudflats, open-water ponds, canals, and ditches)	Acres	0	30.2	Action Alternative would affect 30.2 acres of aquatic resources. It is likely that not all of these aquatic resources would be considered jurisdictional waters of the United States.
Adverse Impacts to cultural resources	Number	0	6 to 7	
Hazardous material sites affected	Number	0	4 CERCLA 0 to 1 Dry Cleaner 5 LUST/UST	
Floodplain impacts	Acres	0	42.4 acres	Most of the Action Alternative floodplain impacts are in areas already impacted by I-15 (for example, existing floodplain crossings of I-15) and would not be considered new impacts to floodplains.
Visual changes	Category	Similar to existing conditions	Neutral to beneficial	
Section 4(f) uses with greater-than- <i>de minimis</i> impacts	Number	0	6 to 8	
Section 4(f) <i>de minimis</i> impacts	Number	0	52 to 54	
Section 4(f) temporary occupancy impacts	Number	0	66	

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Table 2.4-4. Environmental Impacts of the No-action and Action Alternatives

Impact Category	Unit	No-action Alternative	Action Alternative	Notes
Section 6(f) conversions	Number	0	1 – Centerville Community Park (0.61 acre/2.5% of park)	Action Alternative would also have temporary nonconforming use of 0.19 acre of Hatch Park in North Salt Lake.

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; EJ = environmental justice; LUST = leaking underground storage tank; NAAQS = National Ambient Air Quality Standards; RTP = regional transportation plan; Section 4(f) = Section 4(f) of the Department of Transportation Act; Section 6(f) = Section 6(f) of the Land and Water Conservation Fund Act; UST = underground storage tank; WFRC = Wasatch Front Regional Council

2.4.5 Basis for Identifying the Preferred Alternative

This section identifies and provides UDOT's basis for identifying the preferred alternative. The final selection of an alternative will be made by UDOT in the Record of Decision for the I-15 project.

After evaluating the information in this EIS, the project file, and public input to date, UDOT has identified the **Action Alternative** as the preferred alternative.

The Action Alternative is the preferred alternative because it would meet the purpose of the project by:

- Improving the safety of the I-15 mainline, interchanges, pedestrian and bicyclist crossings, and connected roadway network;
- Strengthening the economy by replacing the aging infrastructure on I-15 and reducing travel delay on I-15 by 47% compared to the No-action Alternative;
- Incorporating a design that provides space for the planned UTA FrontRunner Double Track project and provides a new SUP connection to the Woods Cross FrontRunner Station;
- Being consistent with the WFRC 2019–2050 RTP assumptions for I-15;
- Improving the pedestrian and bicyclist facility network across I-15 (see Table 2.4-2 and Figure 2.4-28); and
- Improving mobility by reducing travel time by 49% to 55% and increasing average speeds by 95% to 125% during both the morning and evening peak periods compared to the No-action Alternative.

The preferred alternative includes the following options:

- Farmington 400 West Option
- Bountiful 400 North – Northern Option
- Bountiful 500 South – Northern Option
- Salt Lake City 1000 North – Northern Option

The following sections provide the basis for identifying the preferred option in each segment.

North Segment Preferred Option

Degree to Which the Options Meet the Project Purpose. The Farmington 400 West Option and the Farmington State Street Option would both meet the project purpose.

Resource Impacts. As shown in Table 2.4-5, the Farmington 400 West Option and the Farmington State Street Option would have similar levels of impacts to all resources except parks and Section 4(f) resources.

Section 404 of the Clean Water Act Regulatory Considerations. As shown in Table 2.4-5, the Farmington 400 West Option and the Farmington State Street Option would have the same impacts to wetlands and aquatic resources. Therefore, UDOT anticipates that the selection of either option would be consistent with the requirements of Section 404 of the Clean Water Act.

Section 4(f) Regulatory Considerations. As shown in Table 2.4-5, compared to the Farmington 400 West Option, the Farmington State Street Option would use more Section 4(f) resources because it would have a use with greater-than-*de minimis* impact to Ezra T. Clark Park. The Farmington 400 West Option would impact 0.17 acre of Ezra T. Clark Park, and this would be considered a use with *de minimis* impact to the park under Section 4(f). Therefore, the identification of the Farmington 400 West Option as the preferred alternative is consistent with the requirements of Section 4(f).

Summary. In the north segment, the Farmington 400 West Option is part of the preferred alternative because it would result in a Section 4(f) use with *de minimis* impact to Ezra T. Clark Park; it would minimize impacts to the Clark Lane Historic District; it would maintain the existing local road connections between the Frontage Road, 400 West, and State Street in Farmington; and it would provide direct access to Lagoon that does not require users to go through any signalized intersections.

Table 2.4-5. Summary of Environmental Impacts for the North Segment

Impact Category	Unit	Farmington 400 West Option	Farmington State Street Option
Impacts to local roadway network	None	The local road network would be the same as the existing local road network. The frontage road would continue to have free-flow access crossing under State Street with a nonsignalized intersection at 400 West. Access to State Street would continue to use 400 West.	The State Street Option would include a new signalized intersection at State Street for the frontage road. Motorists going to Station Park and areas of Farmington west of I-15 would have more direct access.
Pedestrian and bicyclist improvements	Number	<ul style="list-style-type: none"> • 2 new grade-separated crossings • 2 improved crossings at cross-streets • 1 improved interchange crossing 	<ul style="list-style-type: none"> • 2 new grade-separated crossings • 2 improved crossings at cross-streets • 1 improved interchange crossing
Residential relocations	Number	1	1
Potential residential relocations	Number	5	5
Commercial relocations (number of businesses)	Number	0 (0)	0 (0)
Potential commercial relocations (number of businesses)	Number	1 (1)	1 (1)
Utility relocations	Number	1	1
Section 4(f) parks and recreation areas that would need to be relocated	Number	0	1 – Ezra T. Clark Park
Section 4(f) parks and recreation areas with minor impacts	Number	5	4
Receivers with modeled noise levels above criteria	Number	422	417
Impacts to wetlands	Acres	1.6	1.6
Impacts to aquatic resources	Acres	4.7	4.7
Impacts to floodplains (all categories)	Acres	39.5	39.5
Adverse effects on cultural resources	Number	2	2
Impacts to sites with hazardous materials	Number	0	0
Section 4(f) greater-than- <i>de minimis</i> impacts	Number	2	3
Section 4(f) <i>de minimis</i> impacts	Number	6	5
Section 4(f) temporary occupancy impacts	Number	7	7

North Central Segment Preferred Option

Degree to Which the Options Meet the Project Purpose. The Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option would both meet the project purpose.

Resource Impacts. As shown in Table 2.4-6, the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option would have similar levels of impacts to all resources except residential and commercial properties. Compared to the Bountiful 400 North – Northern Option, the Bountiful 400 North – Southern Option would have more residential relocations or potential relocations and would also have more relocations and potential relocations to commercial properties and businesses.

Section 404 of the Clean Water Act Regulatory Considerations. As shown in Table 2.4-6, the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option would have no impacts to wetlands and the same impacts to aquatic resources. Therefore, UDOT anticipates that the selection of either option would be consistent with the requirements of Section 404 of the Clean Water Act.

Section 4(f) Regulatory Considerations. As shown in Table 2.4-6, the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option would have the same number and category of impacts to Section 4(f) resources. Therefore, UDOT anticipates that the selection of either option would be consistent with the requirements of Section 4(f).

Summary. In the north central segment, the Bountiful 400 North – Northern Option is part of the preferred alternative because it would result in fewer impacts to residential and commercial properties.

Table 2.4-6. Summary of Environmental Impacts for the North Central Segment

Impact Category	Unit	Bountiful 400 North – Northern Option	Bountiful 400 North – Southern Option
Impacts to local roadway network	None	None. Local roadway network would be maintained similar to existing conditions.	None. Local roadway network would be maintained similar to existing conditions.
Pedestrian and bicyclist improvements	Number	<ul style="list-style-type: none"> • 1 improved crossing at cross street • 1 improved interchange crossing 	<ul style="list-style-type: none"> • 1 improved crossing at cross street • 1 improved interchange crossing
Residential relocations	Number	0	2
Potential residential relocations	Number	2	1
Commercial relocations (number of businesses)	Number	5 (5)	4 (7)
Potential commercial relocations (number of businesses)	Number	0 (0)	2 (10)
Impacts to Section 4(f) parks and recreation areas	Number	0	0
Receivers with modeled noise levels above criteria	Number	158	157
Impacts to wetlands	Acres	0	0
Impacts to aquatic resources	Acres	<0.1	<0.1
Impacts to floodplains (all categories)	Acres	0.97	0.97
Adverse effects on cultural resources	Number	1	1
Impacts to sites with hazardous materials	Number	2	2
Section 4(f) greater-than- <i>de minimis</i> impacts	Number	1	1
Section 4(f) <i>de minimis</i> impacts	Number	10	10
Section 4(f) temporary occupancy impacts	Number	4	4

South Central Segment Preferred Option

Degree to Which the Options Meet the Project Purpose. The Bountiful 500 South – Northern Option and Bountiful 500 South – Southern Option would both meet the project purpose.

Resource Impacts. As shown in Table 2.4-7, the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option would have similar levels of impacts to all resources except commercial properties and businesses, sites with hazardous materials, historic properties, and Section 4(f) resources. Compared to the Bountiful 500 South – Northern Option, the Bountiful 500 South – Southern Option would have more relocations and potential relocations to commercial properties and businesses, one more impact to a site with hazardous materials, and one more impact to a historic property [which is also a Section 4(f) resource].

Section 404 of the Clean Water Act Regulatory Considerations. As shown in Table 2.4-7, the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option would have no impacts to wetlands and the same impacts to aquatic resources. Therefore, UDOT anticipates that the selection of either option would be consistent with the requirements of Section 404 of the Clean Water Act.

Section 4(f) Regulatory Considerations. As shown in Table 2.4-7, compared to the Bountiful 500 South – Northern Option, the Bountiful 500 South – Southern Option would use more Section 4(f) resources because it would have uses with greater-than-*de minimis* impacts to two historic properties. The Bountiful 500 South – Northern Option would have a use with greater-than-*de minimis* impact to one historic property. Therefore, the identification of the Bountiful 500 South – Northern Option as the preferred alternative is consistent with the requirements of Section 4(f).

Summary. In the south central segment, the Bountiful 500 South – Northern Option is part of the preferred alternative because it would result in fewer uses with greater-than-*de minimis* impacts to Section 4(f) historic properties, and because it would have fewer impacts to commercial properties and businesses.

Table 2.4-7. Summary of Environmental Impacts for the South Central Segment

Impact Category	Unit	Bountiful 500 South – Northern Option	Bountiful 500 South – Southern Option
Impacts to local roadway network	None	None. Local roadway network would be maintained similar to existing conditions.	None. Local roadway network would be maintained similar to existing conditions.
Pedestrian and bicyclist improvements	Number	<ul style="list-style-type: none"> • 1 improved interchange crossing • 1 new shared-use path connection to the Woods Cross FrontRunner Station 	<ul style="list-style-type: none"> • 1 improved interchange crossing • 1 new shared-use path connection to the Woods Cross FrontRunner Station
Residential relocations	Number	0	0
Potential residential relocations	Number	0	0
Commercial relocations (number of businesses)	Number	7 (9)	8 (16)
Potential commercial relocations (number of businesses)	Number	6 (7)	5 (6)
Utility relocations	Number	0	1
Section 4(f) parks and recreation areas with minor impacts	Number	1	1
Receivers with modeled noise levels above criteria	Number	136	134
Impacts to wetlands	Acres	0	0
Impacts to aquatic resources	Acres	<0.1	<0.1
Impacts to floodplains (all categories)	Acres	<0.1	<0.1
Adverse effects on cultural resources	Number	1	2
Impacts to sites with hazardous materials	Number	3	4
Section 4(f) greater-than- <i>de minimis</i> impacts	Number	1	2
Section 4(f) <i>de minimis</i> impacts	Number	6	5
Section 4(f) temporary occupancy impacts	Number	10	10

South Segment Preferred Option

Degree to Which the Options Meet the Project Purpose. The Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option would both meet the project purpose.

Local Traffic Considerations. Traffic projections show that the Salt Lake City 1000 North – Northern Option would reduce traffic volumes on 1000 North and slow down traffic coming to 1000 North or 900 West from I-15 due to the slower-speed connection to the I-15 ramps.

Resource Impacts. As shown in Table 2.4-8, the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option would have similar levels of impacts to all resources except commercial relocations. The Salt Lake City 1000 North – Northern Option would require the relocation of one more commercial property than the Salt Lake City 1000 North – Southern Option. However, the Salt Lake City 1000 North – Northern Option would have fewer impacts to the access and operations for the businesses on Warm Springs Road on the east side of I-15 compared to the Salt Lake City 1000 North – Southern Option. The Salt Lake City 1000 North – Southern Option would have more impacts to the existing and planned access and operations of Granite Construction. The Salt Lake City 1000 North – Northern Option would minimize impacts to the existing and planned access and operations of Granite Construction.

Section 404 of the Clean Water Act Regulatory Considerations. As shown in Table 2.4-8, the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option would have similar impacts to wetlands and aquatic resources. Therefore, UDOT anticipates that the selection of either option would be consistent with the requirements of Section 404 of the Clean Water Act.

Section 4(f) Regulatory Considerations. As shown in Table 2.4-8, the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option would have the same number and category of impacts to Section 4(f) resources. Therefore, UDOT anticipates that the selection of either option would be consistent with the requirements of Section 4(f).

Summary. In the south segment, the Salt Lake City 1000 North – Northern Option is part of the preferred alternative because it would reduce traffic volumes on 1000 North and slow down traffic coming to 1000 North or 900 West from I-15 due to the slower-speed connection to the I-15 ramps. The Salt Lake City 1000 North – Northern Option is also part of the preferred alternative because it would also have fewer impacts to the access and operations for the businesses on Warm Springs Road on the east side of I-15 compared to the Salt Lake City 1000 North – Southern Option.

Table 2.4-8. Summary of Environmental Impacts for the South Segment

Impact Category	Unit	Salt Lake City 1000 North – Northern Option	Salt Lake City 1000 North – Southern Option
Impacts to local roadway network	None	Beneficial impacts with new collector-distributor ramps that provide full access to 1000 North, new full access interchange at 2100 North, and new grade-separated railroad crossing at 2100 North. Provides new access to Warm Springs Road near 800 North.	Beneficial impacts with new collector-distributor ramps that provide full access to 1000 North, new full access interchange at 2100 North, and new grade-separated railroad crossing at 2100 North. Provides new access to Warm Springs Road near 1100 North.
Pedestrian and bicyclist improvements	Number	2 new grade-separated crossings 7 improved crossings at cross-streets 3 improved interchange crossings 3.8 mile new shared use path between North Salt Lake and Salt Lake City on U.S. 89/Beck Street	2 new grade-separated crossings 7 improved crossings at cross-streets 3 improved interchange crossings 3.8 mile new shared use path between North Salt Lake and Salt Lake City on U.S. 89/Beck Street
Residential relocations	Number	2	2
Potential residential relocations	Number	29	29
Commercial relocations (number of businesses)	Number	3 (3)	2 (2)
Potential commercial relocations (number of businesses)	Number	4 (4)	4 (4)
Section 4(f) parks and recreation areas with minor impacts	Number	4	4
Receivers with modeled noise levels above criteria	Number	2,572	2,564
Impacts to wetlands	Acres	17.9	17.9
Impacts to aquatic resources	Acres	25.5	25.4
Impacts to floodplains (all categories)	Acres	1.85	1.85
Adverse effects on cultural resources	Number	2	2
Impacts to sites with hazardous materials	Number	4	4
Section 4(f) greater-than- <i>de minimis</i> impacts	Number	2	2
Section 4(f) <i>de minimis</i> impacts	Number	32	32
Section 4(f) temporary occupancy impacts	Number	45	45

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Chapter 3: Affected Environment, Environmental Consequences, and Mitigation Measures

This chapter describes the existing social, economic, and environmental conditions in the Interstate 15 (I-15): Farmington to Salt Lake City Project study area, which serve as a baseline for evaluating the impacts of the Action Alternative. This chapter also addresses the expected beneficial and adverse social, economic, and environmental impacts of the Action Alternative. If no mitigation measures are listed for a resource in this chapter, then none are proposed. Potential indirect and cumulative effects are described in Section 3.18, *Indirect and Cumulative Effects*.

The I-15: Farmington to Salt Lake City Project includes two project alternatives:

- No-action Alternative
- Action Alternative

Resource-specific Evaluation Areas. For each resource discussed in this chapter, a resource-specific evaluation area has been defined that establishes the geographic area of impacts for that resource. The introduction to each resource section defines the specific evaluation area for that resource.

Resources Not Analyzed in Detail in This EIS. Farmland, wild and scenic rivers, and paleontological resources are not analyzed in detail in this Environmental Impact Statement (EIS).

- The Utah Department of Transportation's (UDOT) review of land use data and aerial photographs showed that the I-15: Farmington to Salt Lake City Project study area has no farmland. The study area is in an urban environment and is already developed, is used for parks and recreation, or is within municipal boundaries, which qualifies the land as being committed to urban development.
- There are no wild and scenic rivers in the study area.
- No paleontological resources are known to be present in the project study area. According to the Utah Geological Survey, the potential for encountering fossil resources is low due to the nature of the geology in the area (UGS 2022).

3.1 Land Use

3.1.1 Introduction

Section 3.1 describes existing land uses and adopted general plans and zoning ordinances for communities in the land use evaluation area as well as the expected impacts to land use from the project alternatives.

Land Use Evaluation Area. The land use evaluation area is the area within 1,000 feet on each side of the Action Alternative approximate right-of-way. This area was selected because traffic patterns and access from the Action Alternative could affect influence land use patterns in this area. Land use is influenced by many variables, including access to regional transportation. There are no formal guidelines for buffer distances to use for land use evaluations. A distance of 1,000 feet was used for the land use evaluation area because I-15 already exists, and the land uses around I-15 are already developed and are part of a large urban area with a mature transportation network. Any effects on land use beyond 1,000 feet from the right-of-way would be unlikely or very limited. The land use and planning in the evaluation area are regulated by seven cities: Farmington City, Centerville City, West Bountiful City, Bountiful City, Woods Cross City, City of North Salt Lake, and Salt Lake City (Figure 3.1-1).

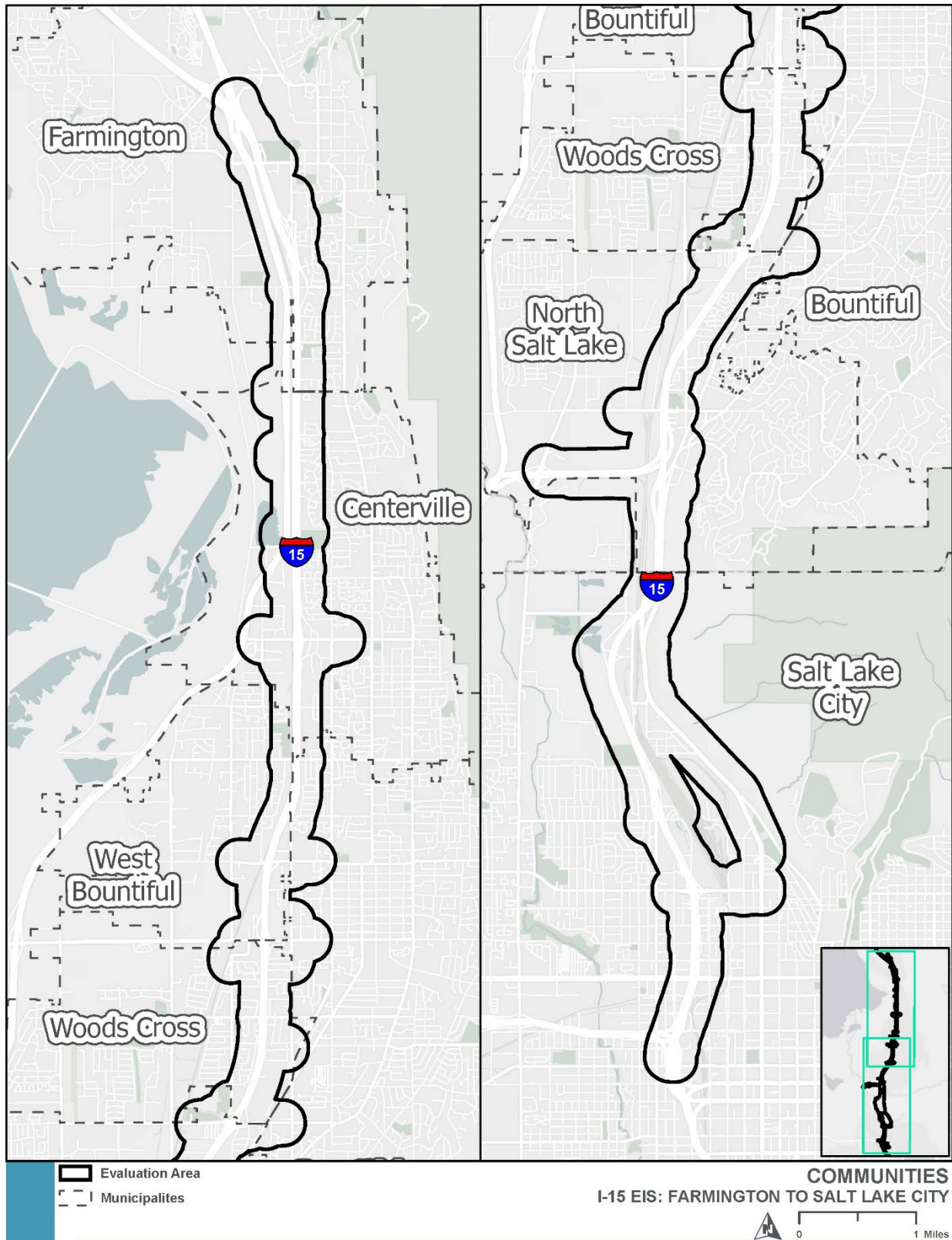
3.1.2 Regulatory Setting

The Federal Highway Administration's (FHWA) Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, states that environmental documents for National Environmental Policy Act (NEPA) projects should identify and review development trends, area growth, and land use plans and policies in the area that will be affected by the proposed project (FHWA 1987). The land use discussion should assess the consistency of alternatives with the area's plans and any secondary impacts associated with substantial, foreseeable, induced development for each alternative.

The Utah legislature has delegated responsibility for land use planning and regulation to the state's Counties and Cities. These local governments develop general or comprehensive plans for land development within their jurisdictional boundaries. These plans provide the parameters for future land use as well as infrastructure needs. The public has the opportunity to participate in the land-planning process by reviewing and commenting on draft land use and zoning plans before they are approved by local officials.

All plans discussed in Section 3.1 have been developed in accordance with this general approach and, therefore, represent the type of land use and built environment that each community desires.

Figure 3.1-1. Cities and Counties in the Land Use Evaluation Area



3.1.3 Affected Environment

This section describes the existing land use in each jurisdiction in the land use evaluation area as well as the applicable local and regional land use plans and policies. The land use patterns described below are the product of interdependent decisions by numerous parties including local elected officials, local planning staff, developers, citizens, regional planning authorities, and many other public and private entities.

3.1.3.1 Current Land Use

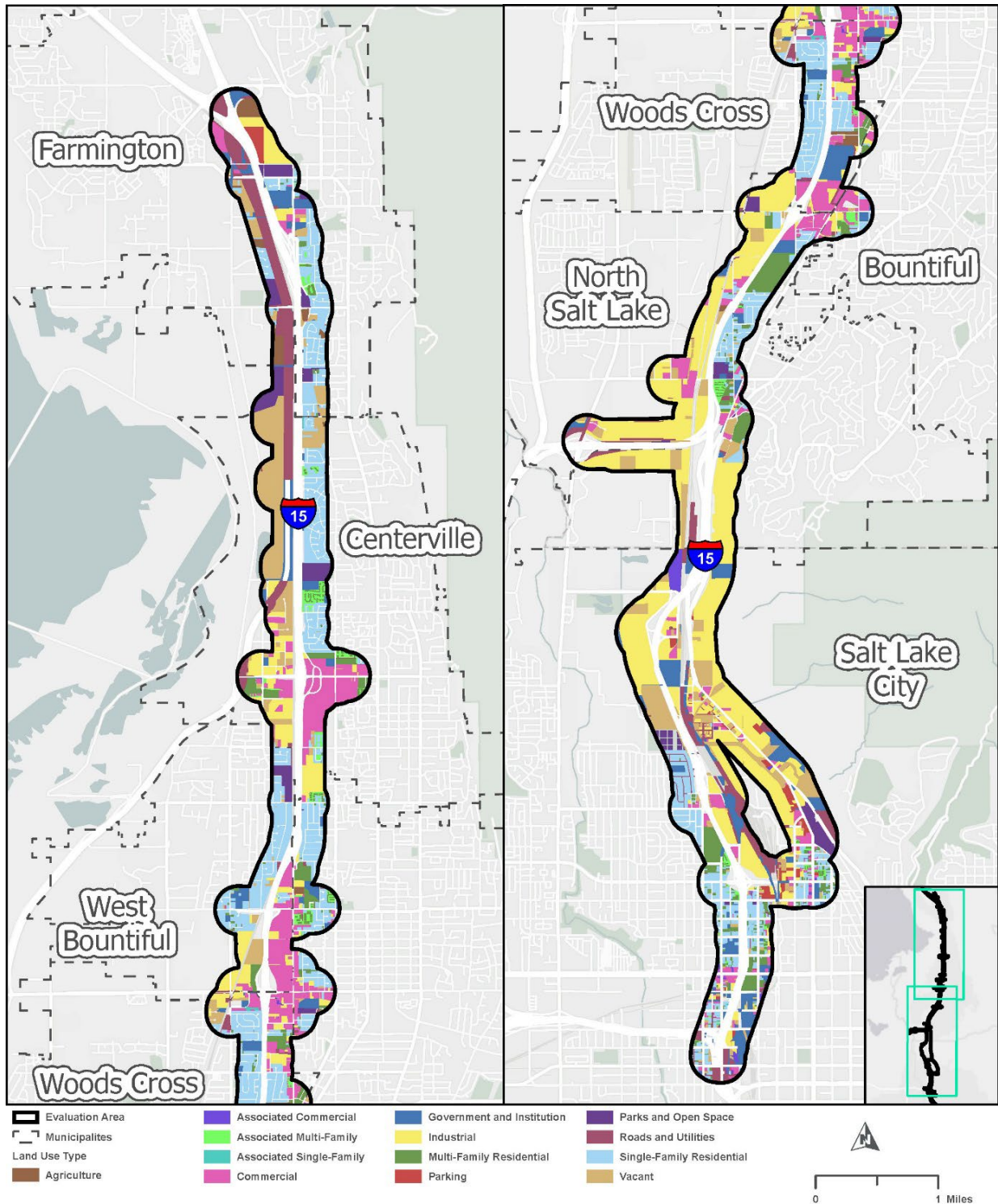
UDOT inventoried the current land uses in the land use evaluation area by using the Wasatch Front Regional Council's (WFRC) 2018 land use data layer. The WFRC data layer was edited to remove areas in the existing road corridors and update land use categories for areas that had been recently developed based on a review of more recent aerial images. The land use categories are grouped by general type of land use. For example, the residential land use type includes all densities of housing, and the commercial land use type includes both retail and office space. See Table 3.1-1 and Figure 3.1-2.

Table 3.1-1. Current Land Use in the Land Use Evaluation Area

Land Use Type	Acreage in Evaluation Area	Percent in Evaluation Area	Description
Parks and Open Space	174	4	Several parks and developed recreation areas are located in the evaluation area.
Residential	1,317	27	Residential is a third of the land use in the evaluation area. Residential areas consist primarily of single-family dwelling units. Some higher-density, multifamily units are located near the commercial centers.
Commercial	613	13	The evaluation area encompasses four commercial areas. These areas are discussed in more detail in Section 3.5, <i>Economic Conditions</i> .
Industrial	1,311	27	There is a large industrial corridor along both sides of I-15 in the evaluation area throughout Salt Lake City and North Salt Lake. Other industrial areas in the evaluation area are present at the intersection of I-15 and 500 South (Woods Cross) and I-15 and Parrish Lane.
Agriculture	58	1	There is little agricultural land use in the evaluation area. It is mostly present in small quantities throughout the evaluation area.
Government and Institution	409	8	Educational facilities intersected by the evaluation area include a number of schools, police departments, places of worship, and libraries (see Section 3.2, <i>Social Environment</i>).
Roads and Utilities	361	7	This land use consists of the local collector and arterial roads as well as areas owned, administered, and/or used by the various utility companies that have property and facilities in the evaluation area.
Parking	48	1	This land use consists of areas used for parking.
Vacant	555	11	There is relatively little vacant land in the evaluation area. The largest quantity of vacant land is present in Farmington and Centerville west of I-15 and Legacy Parkway.
Total	4,846	100	

Source: Calculated from geographic information systems (GIS)-based inventory

Figure 3.1-2. Current Land Uses in the Land Use Evaluation Area



LAND USE
I-15 EIS: FARMINGTON TO SALT LAKE CITY

3.1.3.2 Planning and Zoning

The land use evaluation area intersects the incorporated cities of Farmington, Centerville, West Bountiful, Bountiful, Woods Cross, North Salt Lake, and Salt Lake City. UDOT reviewed current general plans and zoning for these areas.

3.1.3.2.1 Planning

This section reviews the land use chapters from the general plans and neighborhood master plans from Farmington, Centerville, West Bountiful, Bountiful, Woods Cross, North Salt Lake, and Salt Lake City. General plans typically include guidelines for regulating growth and future development. They are developed with public input and adopted by each area's respective planning commission. Figure 3.1-2 above shows the cities in the land use evaluation area.

Farmington General Plan

The *Farmington General Plan* (Farmington City 2016) identifies I-15 as a major arterial that runs north-south throughout the city. The plan states that circulation in the city is limited by the location of I-15 and U.S. Highway 89 (U.S. 89). Glovers Lane, State Street, and Shepard Lane provide the only east-west connections, and the plan states a preference for more east-west collector streets over I-15, Legacy Parkway, and U.S. 89. The importance of these connections will increase with population growth and the need to provide efficient emergency services to more people. The I-15 land use evaluation area extends from the southernmost extent of I-15 to approximately where U.S. 89 and I-15 split. Existing residential land is present on the east side of I-15 to about 200 West, clustered around State Street and intermixed along the west side of Legacy Parkway. Other land uses are present predominantly in the northern part of the land use evaluation area and consist of commercial, industrial, governmental/institutional, and agricultural land use.

Centerville City General Plan

The *Centerville City General Plan* (Centerville City, no date) provides a collection of policies and guidance for the city as a whole as well as planning initiatives for subparts within the city. I-15 runs south to north through the entirety of the city and is within the land use evaluation area (Figure 3.1-2 above). Current land use east of I-15 is primary residential with some commercial land use on Parrish Lane. The *Centerville City General Plan* states that residents of this community value and wish to retain the suburban, low-density residential land use.

The residential land use on the east side of I-15 is largely broken up only by the Central Business District, which extends from about Pages Lane to Parrish Lane along Main Street. Existing and future land use reflect mostly commercial uses in the Central Business District. The *South Main Street Corridor Plan*, Part 12-480-7 of the general plan, states that the City's goal is to provide a distinctive entryway into Centerville from the I-15 interchange that guides travelers toward Main Street.

The plan states that Centerville is limited in its east-west dimension by the Great Salt Lake on the west and the Wasatch Mountains on the east. Therefore, it is the stated intention of Centerville City to concentrate on the development of major east-west streets to allow traffic to move quickly from the city proper to one of the major north-south routes. The major streets proposed are Pages Lane, Porter Lane, Parrish Lane (400 North), Chase Lane (1000 North), Jennings Lane (1700–1800 North), 2025 North, and Lund Lane. The City also

wishes to improve pedestrian and biking access to current and future trails west of I-15 to residents living both west and east of I-15, including a trailhead to the Legacy Parkway Trail on 1275 North.

West Centerville Neighborhood Plan

Although the majority of Centerville is developed, the West Centerville Neighborhood, located entirely west of I-15, has current land uses comprising industrial, commercial, residential, open space and vacant land. The *West Centerville Neighborhood Plan* (Centerville City 2009) examines land use surrounding Legacy Parkway, which parallels the west side of I-15 throughout Centerville.

Current land use shows predominantly commercial and industrial uses in south Centerville between Legacy Parkway and I-15. Moving north, the current land use west of Legacy Parkway and I-15 is vacant land. The plan's future land use states that this area will be the Shoreline Commerce Park District and the Shoreline Commerce Park/Mixed Node.

The *West Centerville Neighborhood Plan* specifies that the land west of I-15 is suited best for well-planned highway commercial, office, business and research parks, light manufacturing, and permanent open space and that commercial uses should be developed as an extension of the Parrish Lane Corridor. The plan includes objectives that support the enhancement of I-15 and Legacy Parkway. The goal is to ensure construction and reconstruction of these roads, particularly with interchange areas such that they can provide needed capacity to serve the city.

The plan also includes Centerville City's desire to connect the east side of the city to the Legacy Parkway trail system. The plan mentions connecting to Glovers Lane and Parrish Lane through an enhanced trail system.

West Bountiful City General Plan 2019–2039

I-15 is one of two major north-south transportation corridors in West Bountiful. It runs through the southeast part of the city and continues northward just outside the eastern city limit. The southeast corner and eastern edge of West Bountiful is within the land use evaluation area (Figure 3.1-2, *Current Land Uses in the Land Use Evaluation Area*, above). The *West Bountiful City General Plan 2019–2039* (West Bountiful City 2019) describes the city as a low-density residential area that prides itself on its agricultural past and present rural atmosphere. Current land use patterns indicate commercial and industrial use in the southeast corner of the land use evaluation area, while the remaining land use evaluation area is primarily residential. The commercial district along the southeast corner around I-15 allows it to buffer the residential areas from I-15. The *West Bountiful Land Use Plan* states that the City intends to carry forward these same attributes into the future. Generally, the land use plan maintains the same land use patterns already present in the city. The *West Bountiful City General Plan* acknowledges the likelihood of I-15 reconstruction in the area.

Bountiful City General Plan

I-15 runs along the northwest limits of Bountiful, and the western limits of the city are within the land use evaluation area. Land use in this area is primarily residential with commercial corridors around 500 South and 2600 South. The City is currently working on a 2023 update to its general plan.

The *2009 Bountiful City General Plan – Downtown Master Plan* (Bountiful City 2009a) describes goals and objectives to revitalize the city's historic downtown.

Woods Cross City General Plan Update 2019

Wood Cross is immediately north of North Salt Lake and immediately south of West Bountiful (Figure 3.1-2, *Current Land Uses in the Land Use Evaluation Area*, above). I-15 runs north-south along the city's eastern edge. The east side of the city is within the land use evaluation area. The *Woods Cross City General Plan Update 2019* (Woods Cross City 2019) documents existing conditions and analyzes important community issues and ideas. Current land use in the land use evaluation area shows that industrial and commercial uses are present at the southern and northern limits of the city, with some commercial and industrial use around 1500 South. Residential land use in the land use evaluation area is located primarily on the west side of I-15. The east side has more of a mixed land use with an emphasis on commercial activity. Two schools, Woods Cross Elementary School and Woods Cross High School, are adjacent to the I-15 corridor.

Quality of life is mentioned in the plan, with Woods Cross residents considering easy access to I-15 and the Salt Lake area as one amenity that increases their quality of life. The plan also mentions the impact of traffic issues on I-15 on local streets—that when I-15 is congested, the local network becomes congested.

Future land use in the land use evaluation area will be consistent with current land use patterns, with the exception of plans to revitalize the 500 West Commercial District North End, a shared commercial corridor with Bountiful.

North Salt Lake General Plan 2013

North Salt Lake is adjacent to and directly north of Salt Lake City. I-15 runs north-south through the middle of the city. Interstate 215 (I-215) merges with I-15 within the city, and the land use evaluation area comprises areas along both roads. The predominant land use along I-215 and the west side of I-15 in the land use evaluation area is industrial. Along the east side of I-15, land use is industrial in the southern part of the city and then largely residential. A commercial corridor surrounds the intersection of Main Street and 1100 North/2600 South in the northeast corner of the city where the city limits of North Salt Lake, Woods Cross, and Bountiful meet.

According to the *North Salt Lake General Plan* (City of North Salt Lake 2013), much of the city in the land use evaluation area has been developed. Current land use is largely consistent with future land use with the exception of one major area where an anticipated and desired change is planned over the next decade: the Town Center, oriented generally between I-15 and Orchard Drive around the Center Street neighborhoods on the east side of I-15. The Orchard District is intended to become the town center complete with improved commercial areas, mixed-use buildings, and residential areas. The City desires a way to connect communities on both sides of I-15 as well as beautified gateways from I-15 to destination areas such as the Town Center.

Plan Salt Lake

Adopted in 2015, *Plan Salt Lake* (Salt Lake City 2015) is the unified vision for Salt Lake City and its neighborhoods for the next 25 years. The purposes of *Plan Salt Lake* are to:

- Establish and articulate a citywide vision for Salt Lake City;
- Identify the commonly held values of the community;
- Establish a framework for future community master plans and element plans (also known as thematic plans) to carry out the City's 2040 Vision; and
- Set targets and identify metrics to help measure success over time.

Thirteen guiding principles (see the box at right) were established in *Plan Salt Lake* to serve as a framework for developing neighborhood and community plans. *Plan Salt Lake* includes metrics for each principle and baseline numbers to help measure the City's progress toward its vision for the city in 2040.

The communities listed below are in the land use evaluation area and have individual master plans that were developed under the guiding principles.

What are the guiding principles in *Plan Salt Lake*?

The guiding principles in *Plan Salt Lake* are:

- Neighborhoods
- Growth
- Housing
- Transportation and Mobility
- Air Quality
- Natural Environment
- Parks and Recreation
- Beautiful City
- Preservation
- Arts and Culture
- Equity
- Economy
- Government

Capitol Hill Community Master Plan

The Capitol Hill community of Salt Lake City is generally bounded by the Central Business District on the south, I-15 on the west, the north city limits on the north, and City Creek Canyon on the east. The *Capitol Hill Community Master Plan* (Salt Lake City 2001b) states that the Capitol Hill community has the greatest land use diversity of all communities in Salt Lake City and is home to two regional activity centers: the state capitol and the headquarters for the Church of Jesus Christ of Latter-day Saints. The southern end of the I-15 corridor is within the land use evaluation area (see Figure 3.1-2, *Current Land Uses in the Land Use Evaluation Area*, above).

Existing residential and recreational uses (Children's Museum) are shown on the plan's future land use map as unchanged from their current use. In the future land use plan, the Capitol Hill Business Park is shown as a redevelopment area. Current land use designates this area as industrial. In general, land use in this community has remained relatively unchanged over the last 30 years.

Northwest Community Master Plan Update

The Northwest community of Salt Lake City is immediately west of the Capitol Hill community in northwest Salt Lake City (Figure 3.1-2, *Current Land Uses in the Land Use Evaluation Area*, above). The I-15 corridor is the east boundary of the Northwest community, and the area to the west of I-15 is in the land use evaluation area. The *Northwest Community Master Plan Update* (Salt Lake City 1992) is the planning document for the Northwest community.

The current land use in this community within the land use evaluation area is industrial. The future land use plan states that this area is planned to be a mix of industrial, recreational, open space, and limited residential; however, a detailed plan has not been created.

West Salt Lake Community Master Plan

The West Salt Lake community is directly north of the Northwest community and I-15 on the east. The area west of I-15 is in the land use evaluation area. Land use in the corridor is primarily residential. The *West Salt Lake Community Master Plan* (Salt Lake City 1995) describes the residential part of the community as consisting of dense single-family housing. Future land use in the land use evaluation area reflects the current land use.

Gateway Specific Master Plan

The Gateway District is about 650 acres and is bounded by I-15 on the west and 300 West on the east. The *Gateway Specific Master Plan* (Salt Lake City 1998) describes this area as the gateway to downtown Salt Lake City and the Wasatch Front. Once a very diverse neighborhood, the area became increasingly industrial after over time, reducing the community connectedness in the area. The construction of I-15 created small pockets of land within the area that were difficult to develop. Current land use in the land use evaluation area is largely industrial and government and institutional. Future land use is intended to be mixed-use office, residential, and commercial areas oriented toward mass transit.

Rose Park Small Area Plan

Rose Park is defined as west of I-15, north of 600 North, and east of Redwood Road. The neighborhood's boundaries extend north to the city limits. The area west of I-15 is in the land use evaluation area. The *Rose Park Small Area Plan* (Salt Lake City 2001c) describes small commercial nodes in the Rose Park neighborhood that historically acted as community gathering areas but have since become less used since residents are able to easily travel to nearby larger commercial areas. The future land use for this area includes revitalizing these commercial nodes into a gathering point for residents. The majority of the commercial land use in the neighborhood is along I-15.

Beck Street Reclamation Framework and Foothill Area Plan

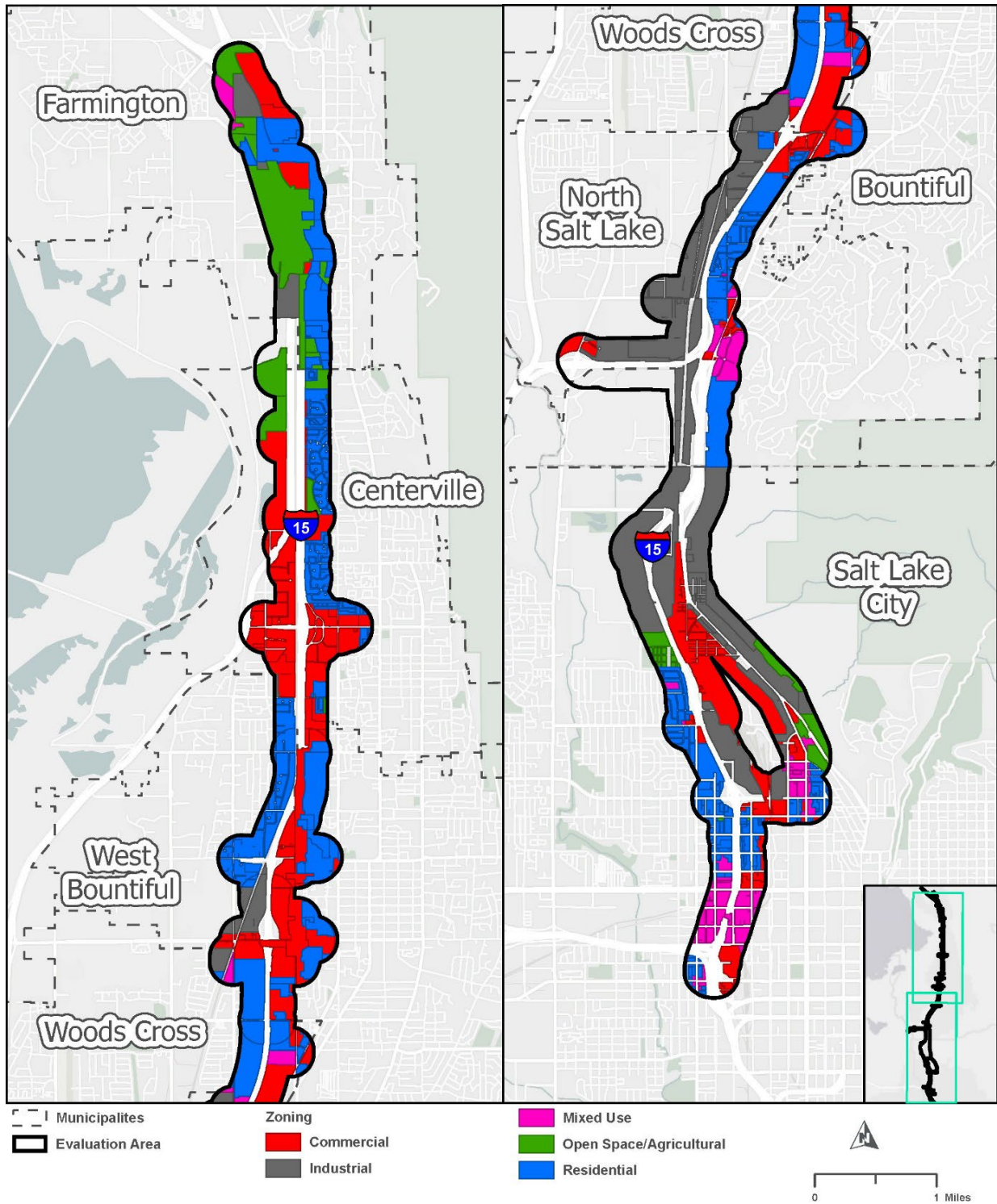
The *Beck Street Reclamation Framework and Foothill Area Plan* study area is situated on the northern edge of Salt Lake City and the southernmost portion of North Salt Lake along Beck Street along the east side of I-15 (Dames & Moore 1999). Currently, the area supports industrial and extractive land uses. Mining and excavation work might continue for several decades. Estimates from the current operators are that the Lakeview Rock quarry in North Salt Lake might be ended in the 2030s or 2040s depending on demand. Current assumptions from Staker Parsons about its current quarry in Salt Lake City are to continue mining and operations at least through 2050, if not longer. Once excavation has ceased and mitigation has been implemented, future land use designations indicate that open space and residential uses would be the primary land use types in the northern part, while open space and business parks would be the primary land use in the southern part.

3.1.3.2.2 Zoning

Zoning designations are used by municipalities to understand land use and implement land use goals determined in the planning documents discussed in Section 3.1.3.2.1, *Planning*. UDOT reviewed zoning ordinances from each jurisdiction with land in the land use evaluation area. Figure 3.1-3 shows the zoning designations for the municipalities with land in the land use evaluation area. The predominant zoning is residential, followed by commercial and industrial. The zoning designations are generally consistent with the planned future land uses for the cities in the land use evaluation area.

The zoning land use data used the current zoning data from Farmington City, Centerville City, Bountiful City, West Bountiful City, Woods Cross City, the City of North Salt Lake, and Salt Lake City. The zoning categories are grouped by general type of land use. For example, the residential land use type includes all densities of housing, and the commercial land use type includes both retail and office space. Some of the cities' zoning data are contiguous for all land within the city boundaries, meaning that the roadway areas are included in the data set. Additionally, some of the cities' zoning identifies roadway areas as commercial, residential, or industrial zoning, so some of these data are counting roadway areas as some other form of land use.

Figure 3.1-3. Zoning in the Land Use Evaluation Area



3.1.4 Environmental Consequences and Mitigation Measures

This section analyzes the expected effects on land use and conflicts with local and regional land use plans from the project alternatives. The Action Alternative options were evaluated equally in this section. To reduce repetitive discussions, if impacts from one option would be the same as impacts from a previously discussed option, the text is not repeated but instead references the previous analysis.

This section focuses on the direct impacts to land use and land use plans from the project alternatives. For a detailed discussion of indirect effects on land use and growth as a result of the project alternatives, see Section 3.18, *Indirect and Cumulative Effects*.

3.1.4.1 Methodology

To assess the expected impacts to land use from the Action Alternative, UDOT reviewed the improvements included with the Action Alternative to determine whether the Action Alternative would be consistent with the planned land use and zoning for the cities in the land use evaluation area.

3.1.4.2 No-action Alternative

With the No-action Alternative, I-15 between Farmington and Salt Lake City would not be reconstructed, so no changes to current land uses or zoning would occur as a result of the project. However, the No-action Alternative would not be consistent with WFRC's 2019–2050 *Wasatch Front Regional Transportation Plan* (RTP; WFRC 2019a), which identifies improvements to I-15 in this segment. And, the community connections proposed as part of the Action Alternative would not be made, thereby ultimately impacting community cohesion and land use.

3.1.4.3 Action Alternative

3.1.4.3.1 Land Converted to Transportation Use

The Action Alternative would convert certain existing land uses to transportation use through the purchase of property adjacent to the Action Alternative. For more details about impacts to specific parcels and properties and mitigation for these impacts, see Section 3.3, *Right-of-way and Relocations*.

Because I-15 is an existing freeway, and the land uses around I-15 are already developed and are part of a large urban area with a mature transportation network, UDOT does not expect the Action Alternative to cause any changes to local zoning or land uses in the areas adjacent to the Action Alternative that are not purchased for roadway use. See Section 3.18, *Indirect and Cumulative Effects*, for more information about potential indirect impacts to land use from the Action Alternative.

Any remaining land purchased by UDOT that is not used for transportation use would be surplus (sold to the highest bidders at auction) and subject to the city zoning rules before it is redeveloped.

3.1.4.3.2 Consistency with Planned Land Use and Zoning

The Action Alternative would be consistent with the planned land uses and zoning for all the cities in the land use evaluation area. All of the city general plans and zoning assume the continued use of I-15 in its existing location. Around the Action Alternative interchange locations, all of the cities have existing and planned land

uses that are consistent and compatible with the interchange improvements proposed by the Action Alternative.

The Action Alternative includes one new interchange location at I-215/U.S. 89 in North Salt Lake. This new interchange would provide better access to North Salt Lake and reduce out-of-direction travel to 2600 South. However, it would not provide new access to any areas that do not currently have access to the regional transportation network.

The Action Alternative would also be consistent with WFRC's 2019–2050 *Wasatch Front Regional Transportation Plan* (WFRC 2019a), which identifies improvements to I-15 between Farmington and Salt Lake City.

3.1.4.4 Mitigation Measures

Because the Action Alternative would have no impacts to land use or zoning, no mitigation is proposed.

3.2 Social Environment

3.2.1 Introduction

Section 3.2 describes the social characteristics in the social environmental evaluation area and the impacts to the social environment from the Action Alternative in terms of community cohesion, quality of life, recreation resources, community facilities, public safety and security, and utilities.

FHWA's guidelines for "social impacts" also include the impacts to travel patterns and accessibility for all users (roadway users, transit users, pedestrians, and bicyclists), highway and traffic safety, and social groups (such as environmental justice communities or other social groups that could be harmed by the project) (FHWA 1987). Information about impacts to travel patterns, accessibility for all users, and highway and traffic safety is provided in Section 3.6, *Transportation and Mobility*. Information about environmental justice communities and other social groups is provided in Section 3.4, *Environmental Justice Populations*. Sometimes noise impacts or visual impacts are included as "social impacts." Impacts to these resources are described in more detail in Section 3.9, *Noise*, and Section 3.15, *Visual Resources*.

Social Environment Evaluation Area. The general social environment evaluation area includes parts of Farmington, Centerville, West Bountiful, Bountiful, Woods Cross, North Salt Lake, and Salt Lake City, since these are the communities that immediately surround the footprint for the Action Alternative.

3.2.2 Regulatory Setting

FHWA's guidelines for preparing environmental documents for evaluating community impacts consider several types of impacts, including impacts to community cohesion; changes in travel patterns and accessibility; impacts to school districts, recreation areas, houses of worship, and businesses; effects on public facilities and services; benefits or harm to different social groups; and displacements of people, businesses, and farms (FHWA 1987).

3.2.3 Affected Environment

Community cohesion, quality of life, recreation resources, community facilities, and public safety and security are important factors in determining how residents develop a sense of belonging to their neighborhoods. UDOT obtained information about the existing social environment by reviewing aerial images; reviewing general plans and other publications from Farmington City, Centerville City, West Bountiful City, Bountiful City, Woods Cross City, the City of North Salt Lake, and Salt Lake City; communicating with local officials; attending public meetings; and conducting field surveys.

3.2.3.1 Community Cohesion

Community cohesion is the degree to which residents have a sense of belonging to their neighborhood or community, including commitment to the community or a strong attachment to neighbors, institutions, or particular groups. Community cohesion can also be described as the patterns of social networking within a community (NCHRP 2001). Community cohesion is subjective and cannot be solidly defined, though specific indicators include interaction among neighbors, use of community facilities and services, community leadership, participation in local organizations, desire to stay in the community and length of residency, satisfaction with the community, and the presence of families in communities (FDOT 2003).

The social environment evaluation area includes 11 planning communities and neighborhoods: Farmington, Centerville, West Centerville, Bountiful, West Bountiful, Woods Cross, North Salt Lake, and the Salt Lake City communities of Northwest, Capitol Hill, Rose Park, and Beck Street. The majority of the evaluation area is fully developed. Residential land use is characterized by urban and suburban single-family homes. The planning communities and neighborhoods have all published a general plan or neighborhood plan, which describe community boundaries, discuss history, and provide long-range guidance and goals for future development and community life (see Section 3.1, *Land Use*). The planning communities have long and rich histories, and many have experienced significant change over time. All of the planning communities expressed a desire to enhance commerce, in part, to create attractive opportunities for people to shop and gather.

Commercial land uses in the evaluation area, include four larger commercial centers which consist of office complexes, “big-box” stores, small retail shops, restaurants, and providers of professional and hospitality services. Some higher-density, multifamily units are located near these commercial centers, and the commercial centers are within walking distance or a short drive of many of the neighborhoods in the planning communities.

Other land uses in the evaluation area include industrial (such as gravel quarries, oil refineries, and warehouses) and municipal (schools and parks).

3.2.3.2 Quality of Life

Quality of life encompasses the general sense of well-being and satisfaction experienced by individuals or communities. Although the factors that contribute to quality of life can be somewhat subjective and vary from person to person, quality of life considerations often include safety, general living environment, accessibility to work, public services and shopping, affordable housing, and cultural and recreation activities.

The area needs and project purposes were defined using UDOT’s Quality of Life Framework’s outcome areas of good health, connected communities, strong economy, and better mobility. Quality of life informed the project purpose statement “to improve safety, replace aging infrastructure, provide better mobility for all

travel modes, strengthen the state and local economy, and better connect communities along I-15 from Farmington to Salt Lake City.” For more information, see Chapter 1, *Purpose and Need*.

Information regarding quality of life considerations for the planning communities in the social environment evaluation area is provided in Section 3.2.3.3, *Recreation Resources*; Section 3.2.3.4, *Community Facilities*; Section 3.2.3.5, *Public Safety and Security*; and Section 3.2.3.6, *Utilities*. Other factors, such as air quality, noise, and changes in the surrounding viewshed could also contribute to a person’s quality of life. For more information about air quality and noise impacts, see Section 3.8, *Air Quality*; Section 3.9, *Noise*; and Section 3.15, *Visual Resources*.

3.2.3.3 Recreation Resources

Recreation resources are scattered throughout the social environment evaluation area. As shown in Table 3.2-1 and Figure 3.2-1, numerous parks and recreation areas are entirely or partially located within the evaluation area. There are no golf courses or trailheads in the evaluation area.

Information regarding trails and pedestrian and bicyclist facilities is included in Section 3.6, *Transportation and Mobility*.

There are 19 parks or recreation resources in the social environment evaluation area. All parks and recreation resources in the evaluation area are listed in Table 3.2-1 and shown in Figure 3.2-1.

Table 3.2-1. Recreation Resources in the Social Environment Evaluation Area

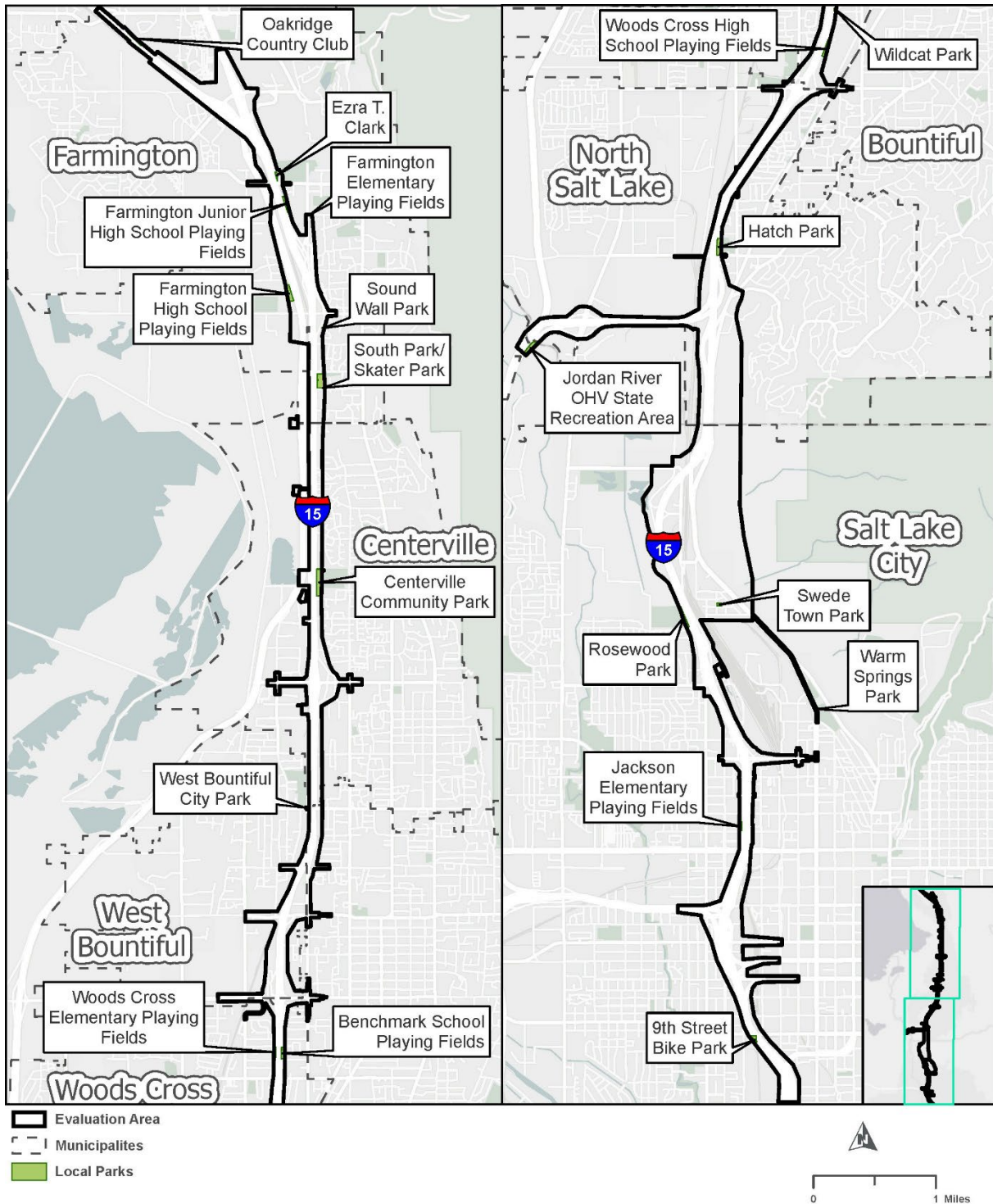
Recreation Resource	Description	Address
Parks		
Ezra T. Clark Park	2-acre park east of I-15 north of State Street. Amenities include a pavilion and access to Farmington Creek Trail.	400 W. State Street, Farmington
Farmington Junior High School playing fields	8.25-acre sports fields on the east side of I-15 on the west side of Farmington Junior High School. Amenities include grass playing fields.	150 South 200 West, Farmington
Farmington High School playing fields	15.4-acre sports fields on the west side of Legacy Parkway north of Glovers Lane and on the east side of Farmington High School. Amenities include baseball field, softball field, football field, tennis courts, grass playing fields, and parking lots.	548 W. Glovers Lane, Farmington
Sound Wall Park	0.3-acre neighborhood park at about 100 West 1050 South. Amenities include grass playing fields and Davis Creek Trail.	1050 S. I-15 Frontage Road, Farmington
South Park	6.6-acre park east of I-15 north of 1470 South. Amenities include basketball courts, volleyball court, playground, softball field, skate park, pavilion, and parking.	1384 S. Frontage Road, Farmington
Centerville Community Park	30-acre park east of I-15 at about 1200 N. Frontage Road in Centerville. Amenities include 6 multisport fields, drinking fountains, 1 mile jogging path, playground, sand volleyball court, pavilions, bathrooms, and parking.	1350 North 400 West, Centerville

(continued on next page)

Table 3.2-1. Recreation Resources in the Social Environment Evaluation Area

Recreation Resource	Description	Address
West Bountiful City Park	14.5-acre park west of I-15 at about 1600 North in West Bountiful. Amenities include Softball fields, soccer fields, sand volleyball courts, tennis court, pavilions, bathrooms, parking, and playground.	550 West 1600 North, West Bountiful
Wildcat Park	0.9-acre park with two playgrounds, benches, and a pavilion.	1950 Wildcat Way, Woods Cross
Benchmark Behavioral Health playing field	1.2-acre sports fields associated with Benchmark Behavioral Health.	592 West 1350 South, Woods Cross
Woods Cross Elementary School playing fields and walking path	4.2-acre sports fields on the west side of I-15 at about 1300 South in Woods Cross and on the east side of Woods Cross Elementary School. Amenities include grass playing fields and walking path.	745 West 1100 South, Woods Cross
Woods Cross High School playing fields	16.3-acre sports fields on the east side of I-15 at about 2200 South in Woods Cross and on the south side of Woods Cross High School. Amenities include baseball field, softball field, football field, tennis courts, grass playing fields, and parking lots.	600 West 2200 South, Woods Cross
Hatch Park	12.3-acre park on the east side of I-15 and the north side of Center Street in North Salt Lake. Amenities include Softball fields, tennis courts, basketball court, soccer fields, sand volleyball court, walking path, playground, parking, bathrooms, and pavilions	50 W. Center Street, North Salt Lake
Swede Town Park	0.6-acre park at 840 West 1500 North. Amenities include playground, sandbox, basketball court, and grass playing fields.	840 West 1500 North, Salt Lake City
Rosewood Park	29-acre park on the west side of I-15 and east of 1200 West around 1400 North. Amenities include a skate park, tennis courts, walking path, softball fields, playground, basketball court, grass playing fields, restrooms, and parking.	1400 North 1200 West, Salt Lake City
Warm Spring Park	13.5-acre park east of U.S. 89 in Salt Lake City. Amenities include a playground, restrooms, multi-use fields, tennis courts, drinking fountains, picnic tables, and parking.	840 N. Beck Street, Salt Lake City
North Gateway Park	6-acre park east of U.S. 89 in Salt Lake City. Amenities include restrooms, walking path, drinking fountains, and parking.	840 N. Beck Street, Salt Lake City
Jordan River OHV State Recreation Area	133.7-acre recreation area for off-highway vehicles (OHV). Includes trails, jumps, and training areas. Amenities include trails, jumps, training areas, restrooms, picnic tables, pavilions, and fee station/main office.	2800 N. Rose Park Lane, Salt Lake City
Jackson Elementary School playing fields	2.5-acre sports fields on the west side of I-15 at about 200 North in Salt Lake City and on the southeast side of Jackson Elementary School. Amenities include grass playing fields.	750 West 200 North, Salt lake City
9-Line Bike Park	0.5-acre parcel on the south side of 900 South under I-15. Amenities include bike jumps, pump track, and walking path.	700 West 900 South, Salt Lake City

Figure 3.2-1. Recreation Resources in the Social Environment Evaluation Area



RECREATION
I-15 EIS: FARMINGTON TO SALT LAKE CITY

3.2.3.4 Community Facilities

Community facilities provide opportunities for the public to interact; help to define a city, community, or neighborhood; and contribute to community cohesion and quality of life. Community facilities generally include (but are not limited to) schools, houses of worship, law-enforcement facilities, fire stations, libraries, and government offices. These facilities provide opportunities for residents to gather and interact as well as provide a basis for community education, networking, and communication.

There are 26 community facilities in the social environment evaluation area: 12 schools, 9 places of worship, 3 emergency service providers, and 2 libraries. All community facilities in the evaluation area are listed in Table 3.2-2 and shown below in Figure 3.6-1.

Table 3.2-2. Community Facilities in the Social Environment Evaluation Area

Name	Address
Schools	
Ascent Academies of Utah, Farmington	22 South 650 West, Farmington
Farmington Junior High School	150 South 200 West, Farmington
Farmington School	50 West 200 South, Farmington
West Bountiful School	750 West 400 North, West Bountiful
Meadowbrook School	700 North 325 West, Bountiful
Washington School	340 West 650 South, Bountiful
Utah Connections Academy	687 West 700 South, Woods Cross
Woods Cross High	600 West 2200 South, Woods Cross
Woods Cross School	745 West 1100 South, Woods Cross
Mary W. Jackson School	750 West 200 North, Salt Lake City
Salt Lake Head Start	1240 American Beauty Drive, Salt Lake City
Franklin School	1115 West 300 South, Salt Lake City
Places of Worship	
Our Lady of Guadalupe Church	715 West 300 North, Salt Lake City
Islamic Society of Bosniaks in Utah	425 North 700 West, Salt Lake City
Tam Bảo Buddhist Temple	459 North 700 West, Salt Lake City
The Church of Jesus Christ of Latter-day Saints – Mount Ensign 3rd (Spanish) Branch	225 West 500 North, Salt Lake City
The Church of Jesus Christ of Latter-day Saints – Nineteenth Ward	225 West 500 North, Salt Lake City
The Church of Jesus Christ of Latter-day Saints – Orchard 4th Ward	55 East 350 North, Salt Lake City
The Church of Jesus Christ of Latter-day Saints – Orchard 8th Ward	55 East 350 North, Salt Lake City
The Church of Jesus Christ of Latter-day Saints – Seventeenth Ward	225 West 500 North, Salt Lake City
The Church of Jesus Christ of Latter-day Saints – Vaiola (Samoan) Ward	55 East 350 North, Salt Lake City
Emergency Services	
Utah Highway Patrol, Section 3, Farmington Office	631 Lagoon Drive, Farmington
West Bountiful Police Department	550 North 800 West, West Bountiful
North Salt Lake Police Department	17 S. Main Street, North Salt Lake
Libraries	
Salt Lake City Public Library, Marmalade Branch	280 West 500 North, Salt Lake City
Salt Lake City Public Library, Chapman Branch	577 South 900 West, Salt Lake City

3.2.3.5 Public Safety and Security

Public safety in the social environment evaluation area is provided by community police departments, fire stations, emergency response units, and hospitals. Public safety plays an important role in fostering community cohesion and social interaction by ensuring the safety and security of the community. In addition, an effective public safety presence, safe streets, and safe homes contribute to residents' quality of life.

As shown in Figure 3.2-2 on the following page, two police stations in the evaluation area serve the local communities. There are no fire stations in the evaluation area. Salt Lake City provides its own police, fire, and emergency medical and ambulance services in the Salt Lake City neighborhoods in the evaluation area. Farmington, Centerville, Bountiful, West Bountiful, Woods Cross, and North Salt Lake each have their own municipal police department.

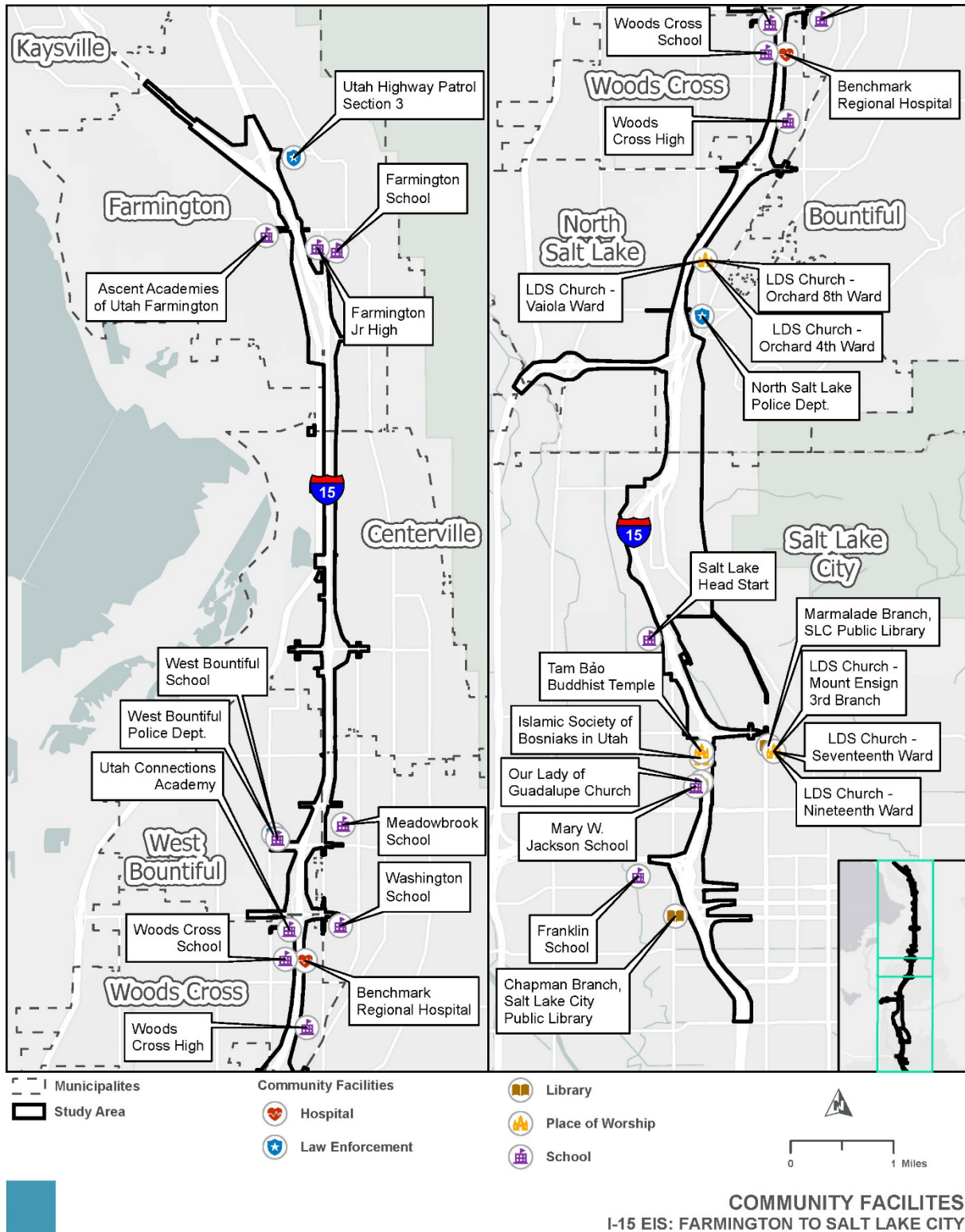
3.2.3.6 Utilities

UDOT contacted local municipalities and public and private utility providers that operate utility infrastructure in and adjacent to the project study area. Table 3.2-3 lists the utilities in or adjacent to I-15 between U.S. 89 in Farmington and 400 South in Salt Lake City.

Table 3.2-3. Utilities in or adjacent to the Project Study Area

Utility Provider			
AT&T	Comcast	North Salt Lake City	UNEV Pipeline
Beehive Broadband	Deuel Creek Irrigation	Phillips 66 Pipeline	Unknown Utility Owner
Bountiful City Fiber Optic	Dominion Energy	Pioneer Pipeline	UTOPIA
Bountiful City Power	Davis County	Rocky Mountain Power	Unknown Utility Owner
Bountiful City Water	First Digital	South Davis Sewer District	West Bountiful City
Bountiful Irrigation District	Farmington City	South Davis Water District	MCI Verizon
Benchland Water District	Google Fiber	Salt Lake City Public Utilities	Weber Basin Water Conservancy District
Centerville City	Holly Energy	Syringa Networks	Woods Cross City
Central Davis Sewer District	Kern River Gas	Sprint T-Mobile	Zayo
Chevron Pipeline Company	Linde Gas	UDOT Region One	
CenturyLink Lumen	Marathon Petroleum	UDOT Region Two	

Figure 3.2-2. Community Facilities in the Social Environment Evaluation Area



3.2.4 Environmental Consequences and Mitigation Measures

This section discusses the direct effects of the Action Alternative on the social environment in the social environment evaluation area.

3.2.4.1 Methodology

To assess the expected impacts to the social environment from the Action Alternative, UDOT used geographic information systems (GIS) software to identify recreation resources and community facilities that would be affected.

3.2.4.2 No-action Alternative

With the No-action Alternative, the improvements associated with the I-15: Farmington to Salt Lake City Project would not be implemented. Therefore, there would be no change to neighborhood and community cohesion, recreation resources, community facilities, or public safety as a result of the project. The increased congestion on I-15 and the lack of safety improvements could reduce the quality of life for residents who use I-15 and the I-15 interchanges in the social environment evaluation area. In addition, the increased congestion could increase response times for emergency service providers that travel on I-15 or on the I-15 interchanges. Local economies would not benefit from the roadway improvements, and communities would not benefit from the community-focused aspects of this project related to improved community connections, improved bicyclist and pedestrian connections, and reduced speeds for traffic coming into residential areas. Therefore, the No-action Alternative would not meet the quality of life project purposes of improving safety, providing better mobility for all travel modes, and better connecting communities.

3.2.4.3 Action Alternative

This section describes the impacts of the Action Alternative on the social environment evaluation area.

With all segment options of the Action Alternative, the alternative could change noise levels and the visual elements within each segment option. These resources are described in more detail in see Section 3.9, *Noise*, and Section 3.15, *Visual Resources*.

3.2.4.3.1 Community Cohesion and Quality of Life

The improvements associated with all segment options of the Action Alternative would be similar and would benefit community cohesion and quality of life by reducing congestion, improving safety on I-15 and the I-15 interchanges, providing for better mobility for all travel modes, and better connecting communities. The proposed improvements would be consistent with the current community setting since most impacts would occur within or immediately adjacent to the existing freeway right-of-way. The surrounding communities and neighborhoods would have improved access to commercial areas, and increased access between the east and west side of I-15, which would benefit community cohesion and quality of life.

The bicyclist and pedestrian improvements listed in Table 3.6-16, *Action Alternative Pedestrian and Bicyclist Improvements by Location*, in Section 3.6.4.3, *Action Alternative*, would meaningfully improve safety and the user experience for pedestrians and bicyclists at all of the existing interchanges in the social environment evaluation area (200 West in Farmington; Parrish Lane in Centerville; 400 North in Bountiful and West

Bountiful; 500 South in Bountiful, West Bountiful, and Woods Cross; 1100 North/2600 South in North Salt Lake and Woods Cross; 1000 North in Salt Lake City; and 600 North in Salt Lake City). All of these interchanges would include wider, safer facilities that are intended specifically for pedestrians and bicyclists. Additional roadway design features, such as signal-controlled turn movements at the interchange terminals and perpendicular intersection designs, would also improve the safety and user experience for pedestrians and bicyclists crossing I-15 at an interchange.

Additionally, the Action Alternative improvements to the 2100 North interchange in Salt Lake City would improve community cohesion and quality of life in Salt Lake City by taking some truck traffic off 600 North and reducing the overall traffic volumes on 600 North. UDOT has received comments from Salt Lake City and residents east of I-15 that truck traffic on 600 North and 300 West has adversely impacted the quality of life of residents near 600 North through noise, road debris, and congestion.

The addition of the new interchange at I-215/U.S. 89 in North Salt Lake with the Action Alternative would improve community cohesion and quality of life by reducing out-of-direction travel for roadway users in North Salt Lake and Bountiful who are going west on I-215 and would also reduce traffic and congestion on 2600 South and at the I-15/2600 South interchange.

In addition to the improvements at the I-15 interchanges, the Action Alternative would also provide:

- A new 3.8-mile shared-use path (SUP) connection between Eagle Ridge Drive in North Salt Lake and Wall Street/200 West in Salt Lake City
- Three new grade-separated SUP crossings of I-15 (Centerville Community Park SUP, Centerville 200 North SUP, and North Salt Lake 2600 South SUP)
- One new crossing of I-15 as part of the new road crossings under I-15 at 800 West in Woods Cross
- Improvements to the existing pedestrian and bicyclist facilities crossing I-15 at three locations (State Street in Farmington, Glovers Lane in Farmington, and Center Street in North Salt Lake)
- New, wider bridges at five locations (1600 North/Pages Lane in West Bountiful and Centerville, 1500 South in Woods Cross, Main Street in North Salt Lake, Center Street in North Salt Lake, 300 North in Salt Lake City, North Temple in Salt Lake City, South Temple/Folsom Trail in Salt Lake City, and 200 South in Salt Lake City)

These new SUPs and crossing improvements would increase connectivity, community cohesion, and quality of life and enhance pedestrian and bicyclist experiences.

3.2.4.3.2 Recreation Resources

North Segment Impacts

The Action Alternative would impact parks in the north segment. Table 3.2-4 lists the impacts to these resources.

Table 3.2-4. Recreation Resource Impacts in the North Segment

Community Resource	Acres of Impacts	
	Farmington 400 West Option	Farmington State Street Option
Centerville Community Park	1.06 ^a	1.06 ^a
Ezra T. Clark	0.17 ^b	0.47 ^b
South Park	0.40	0.40
Total	1.63	1.93

^a 1.06 acres includes 0.92 acre of permanent impact and 0.14 acre of temporary impact for constructing a new pedestrian bridge.

^b The impacted acreage shown includes only the acreage of the park owned by Farmington City. There would be additional impacts to Ezra T. Clark Park on the parcels of the park that are located on property owned by UDOT.

The impacts to parks in the north segment would be similar for both the Farmington 400 West Option and the Farmington State Street Option. The only differences are the impacts to Ezra T. Clark Park. The Farmington 400 West Option would impact 0.17 acre of Ezra T. Clark Park while avoiding impacts to the parking lot, pavilion, and historic monument at the park. The Farmington State Street Option would impact 0.47 acre of Ezra T. Clark Park, which is all of the park owned by Farmington City. A new roadway would be placed in the areas where the parking lot, pavilion, and historic monument are currently located at the park.

What is Section 4(f)?

Section 4(f) of the Department of Transportation Act and FHWA's implementing regulations require a review of significant publicly owned parks, recreation areas, and wildlife and waterfowl refuges and to significant publicly or privately owned historic properties. For more information, see Chapter 4, *Section 4(f) Analysis*.

North Central Segment Impacts

There would be no impacts to recreation resources in the north central segment from either the Bountiful 400 North – Northern Option or the Bountiful 400 North – Southern Option.

South Central Segment Impacts

The Action Alternative would impact one recreation resource in the south central segment. The impacts to the Benchmark Behavioral Health playing field in the south central segment would be the same for both the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option. There would be a total of 0.36 acre of impacts to this recreation resource.

South Segment Impacts

There would be impact to parks and recreational resources in the south segment as a result of the project. The impacts to parks in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. There would be a total of 0.58 acre of impacts to parks. Both options would acquire 0.37 acre of the Woods Cross High School playing fields along the western boundary of the playing fields. In addition, both options would impact 0.21 acre of Hatch Park. The 0.21-acre impact to Hatch Park would be temporary construction impacts on the south edge of the park to construct a new sidewalk and bike lane on City-owned park property. Additionally, the existing noise wall might be replaced and another noise wall might be added on the west edge of the park. There would be no permanent conversion of right-of-way.

3.2.4.3.3 *Community Facilities*

There would be no impacts to community facilities from the Action Alternative.

3.2.4.3.4 *Public Safety and Security*

With the Action Alternative, all impacts to public safety and security would be the same for all segment options. The Action Alternative would reduce congestion and improve safety in the social environment evaluation area, which would benefit emergency services including fire protection, ambulance services, and law enforcement.

3.2.4.3.5 *Utilities*

With the Action Alternative, all impacts to utilities would be temporary and would occur during construction. The construction contractor would contact local businesses and residences if any loss of service is required during construction. Effects on these utilities would be determined by UDOT by working with local jurisdictions and utility providers during the final design of the selected alternative. Impacts to these utilities can often be avoided during final design. UDOT would continue to communicate with local jurisdictions and utility providers throughout the development of the selected alternative to minimize service disruptions.

3.2.4.3.6 Summary of Action Alternative Impacts

Table 3.2-5 summarizes the impacts from the Action Alternative broken down by each segment and option. The Action Alternative would not affect community facilities. There is about 0.3 acre of difference between the minimum and maximum acres of impacts to parks.

Table 3.2-5. Summary of Impacts to the Social Environment from the Action Alternative

Segment	Option	Impacts	
		Parks (acres)	Community Facilities (number)
North	Farmington 400 West Option	1.63	0
	Farmington State Street Option	1.93	0
North Central	Bountiful 400 North – Northern Option	0	0
	Bountiful 400 North – Southern Option	0	0
South Central	Bountiful 500 South – Northern Option	0.36	0
	Bountiful 500 South – Southern Option	0.36	0
South	Salt Lake City 1000 North – Northern Option	0.58	0
	Salt Lake City 1000 North – Southern Option	0.58	0
	Minimum impacts (sum of lowest impacts for each segment)	2.57	0
	Maximum impacts (sum of highest impacts for each segment)	2.87	0
	Range of impacts	2.57 to 2.87	0

3.2.4.4 Mitigation Measures

As discussed above, the social impacts are generally beneficial or would be temporary during construction. No mitigation is necessary because there would be no disproportionate impact to any particular social group. More information is provided below about UDOT's best practices for project development.

3.2.4.4.1 Community Cohesion

The Action Alternative would benefit the communities and neighborhoods in the social environment evaluation area. No mitigation is proposed.

3.2.4.4.2 Quality of Life

The Action Alternative would benefit the communities and neighborhoods in the social environment evaluation area. No mitigation is proposed.

3.2.4.4.3 Recreation Resources

Mitigation for impacts to recreation resources typically includes replacing or relocating impacted amenities (for example, trails, pavilions, or playgrounds) or providing other items that can enhance the recreation use of the recreation resource. During the final design of the selected segment options of the Action Alternative, UDOT would work with the local municipalities with jurisdiction over the public parks and recreation areas to evaluate opportunities to further mitigate impacts. For all temporary construction impacts, the disturbed land would be restored and revegetated.

3.2.4.4.4 Community Facilities

There would be no impacts to community facilities from the Action Alternative. No mitigation is proposed.

3.2.4.4.5 Public Safety and Security

The Action Alternative would benefit public safety providers by improving the operations on I-15 and the I-15 interchanges in the social environment evaluation area. No mitigation is proposed.

3.2.4.4.6 Utilities

All impact to utilities would be temporary. The UDOT document *Accommodation of Utilities and the Control and Protection of State Highway Rights-of-Way* (Utah Administrative Code Rule R930-6) would be followed. The construction contractor would contact local businesses and residences if any loss of utility service is required during construction. UDOT would work with the utility companies during the final design or the design-build process if utilities need to be relocated.

UDOT would also identify and obtain all appropriate permits from state and local government agencies, as necessary, related to relocating and modifying utilities. UDOT would comply with all permit conditions.

3.3 Right-of-way and Relocations

3.3.1 Introduction

Section 3.3 discusses the potential displacements, relocations, and right-of-way acquisitions associated with the project alternatives.

Right-of-way and Relocations Evaluation Area. The right-of-way and relocations evaluation area is residential and commercial buildings within the geographical area required for the Action Alternative. Appendix 3B, *Property Impact Figures*, includes figures showing all parcel impacts.

3.3.2 Regulatory Setting

The acquisition of property for the selected alternative would be subject to the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 United States Code [USC] Section 4601 and subsequent sections); Title VI of the Civil Rights Act of 1964, as amended; and the State of Utah Relocation Program (under the Utah Relocation Assistance Act, Utah Code Title 57, Chapter 12). These laws provide for the uniform and equitable treatment of all persons displaced from their homes, businesses, and farms, without discrimination on any basis.

The guidelines used by UDOT for carrying out the provisions of these acts are contained in its 2023 *Relocation Assistance Brochure*. Relocation resources are available to all residents (including qualified renters) and businesses whose properties need to be acquired, and the process for acquiring replacement housing and other sites must be fair and open. The 2023 *Relocation Assistance Brochure* can be viewed on UDOT's website (UDOT 2023a).

3.3.3 Affected Environment

The right-of-way and relocations evaluation area consists mostly of commercial, residential, and industrial land uses. For more information, see Section 3.1, *Land Use*.

3.3.4 Environmental Consequences and Mitigation Measures

3.3.4.1 Methodology

The property impacts described below are based on preliminary engineering for the Action Alternative. The actual property impacts could change and would be determined during the final design phase of the project and during the property-acquisition process. Property impacts are defined as follows:

- **Relocation.** A relocation is when an existing building is within the proposed right-of-way and the current residents or business would need to be relocated to a new property. A relocation includes the full acquisition of the parcel and relocation of the residents or business. In the situation where the property owner is not the resident or business owner, the property owner would receive fair compensation for the land and structure impacts, and the residents or business owners would receive relocation benefits.
- **Potential Relocation.** For this analysis, a potential relocation is assumed when any of the following three situations would occur. UDOT would make a final determination about the property impact for each of these three situations during the right-of-way acquisition phase of the project, which would occur shortly before construction.
 - **Encroachment** – an existing building is outside of but within 15 feet of the proposed right-of-way. This type of impact is referred to as a *potential relocation* because it is not clear whether the structure would be impacted or whether the entire property would be acquired.
 - **Impacts to continued usage of the property** – if the Action Alternative would impact portions of the property (for example, drive-thru lanes, circulation patterns, or parking lots for businesses) that could make the property difficult to maintain its current uses. If the property could not continue to be used with its current uses with mitigation with the Action Alternative, UDOT would need to acquire the property and relocate the occupants.
 - **Adverse construction impacts** – if impacts during construction would occur close enough to a residential or commercial property that the property might not be habitable or usable during construction. These circumstances could include the operation of construction equipment in back yards or the extended closure of property accesses. In these circumstances, the Action Alternative would not have a permanent physical impact to the property, but UDOT might end up relocating the occupants of the property to avoid their having adverse impacts during construction.
- **Full Acquisition.** A full acquisition is when UDOT would need to purchase an entire parcel to construct an alternative. This category is used for properties without buildings, and it is used for the circumstance when the remaining land outside the proposed right-of-way is unusable for its intended purpose because it is too small or because access is cut off.
- **Partial Acquisition.** A partial acquisition is when UDOT would need to purchase only a portion of a parcel, and the property owner would retain ownership outside the proposed right-of-way. For this analysis, a partial acquisition is assumed when an existing building is at least 15 feet from the proposed right-of-way. For properties without buildings, a partial acquisition is assumed when the remaining land would be large enough to function for its intended purpose and would still have access. A partial acquisition includes situations in which the impacts from the Action Alternative

would not impact the primary structures on the parcel (for example, a house or main business buildings) and there would be enough remaining acreage to maintain continued use of the property. The final determination of the impacted acreage UDOT would need to acquire would be made during final design.

- **Temporary Construction Easement (TCE).** A TCE would allow UDOT to temporarily use property during construction. Land ownership would not change. Examples of work done under a TCE could include replacing noise walls on the edge of the property or reconstructing driveway access or sidewalks on the edge of the property.
- **Perpetual Easement.** A perpetual easement would allow UDOT to have ongoing access to a property for maintenance activities during and after construction. Land ownership would not change. Examples of work done with a perpetual easement could include the maintenance of noise walls, retaining walls, drainage system, bridges, and/or utilities on the edge of the property.

For this analysis, the numbers of relocations, potential relocations, full acquisitions, and partial acquisitions were calculated using the Salt Lake County and Davis County parcel data as of May 2023 and the anticipated right-of-way footprint for the Action Alternative. There are known issues with the Salt Lake County and Davis County parcel data in some areas. Some of the data issues include gaps or overlaps between parcels, parcel boundaries extending into UDOT's right-of-way, and parcel boundaries set back from UDOT's right-of-way leaving no record of ownership for land adjacent to existing roads. UDOT did not attempt to fix the parcel data for this impact analysis; impacts are likely to change when property boundaries are surveyed during the final design and right-of-way phases of the project.

3.3.4.2 No-action Alternative

The No-action Alternative would not require any displacements, relocations, or right-of-way acquisitions.

3.3.4.3 Action Alternative

For this analysis, the numbers of relocations, potential relocations, and partial acquisitions were calculated using Salt Lake County's and Davis County's parcel data as of September 2021 and the anticipated right-of-way footprint for the Action Alternative. For all relocations listed below, UDOT would acquire the entire property, and the residents or businesses would need to relocate. However, during the final design process, UDOT will look at measures that could avoid needing to acquire these properties.

This section also includes a summary of potential impacts due to changes in access in each segment.

3.3.4.3.1 North Segment Impacts

Table 3.3-1, *South Segment Access Changes with the Action Alternative*, below shows right-of-way impacts with the Farmington 400 West Option and the Farmington State Street Option for the north segment. The majority of the property impacts would be partial acquisitions that would not affect the activities that occur on each affected parcel. The number of relocations and potential relocations for both options in the north segment would be the same.

Potential Impacts due to Changes in Access. No effects due to changes in access are anticipated with the Action Alternative in the north segment. The Action Alternative would provide similar access as existing

conditions for Glovers Lane, Frontage Road, and Parrish Lane. The Action Alternative would improve access at 200 West in Farmington by providing a signalized intersection at 200 West and the Frontage Road which would allow southbound traffic on Frontage Road to go north on 200 West or continue south on Frontage Road. These movements are not accommodated with the existing conditions. The Action Alternative would maintain the free traffic movement from northbound I-15 to northbound Frontage Road. The Action Alternative would also improve access for northbound I-15 traffic accessing 800 West north of Parrish Lane by providing a dedicated underpass to 800 West from the northbound off-ramp, thereby removing the need for drivers to go east on Parrish Lane first and then turn left at the 800 West traffic signal.

The Farmington State Street Option would have a new, signalized four-way intersection with Frontage Road/Lagoon Drive and State Street. This option would improve access to State Street from Frontage Road/Lagoon Drive but would require travelers on Frontage Road/Lagoon Drive to go through the new signalized intersection.

3.3.4.3.2 North Central Segment Impacts

Table 3.3-1, *South Segment Access Changes with the Action Alternative*, below shows the right-of-way impacts associated with the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option for the north central segment. The majority of the property impacts would be partial acquisitions that would not affect the activities that occur on each affected parcel.

Although the total number of parcels and acres of impact would be similar for both options in the north central segment, the properties that would need to be acquired for each option differ slightly. The Bountiful 400 North – Southern Option would have 1 more relocation and 1 more potential relocation compared to the Bountiful 400 North – Northern Option. The Bountiful 400 North – Southern Option would result in greater direct impacts to businesses compared to the Bountiful 400 North – Northern Option. This option would require acquiring 4 commercial buildings and relocating the 7 businesses in these 4 commercial buildings. The option would also require the potential acquisition of 2 commercial buildings and potential relocation of the 10 businesses in these 2 commercial buildings on the south side of 400 North. These impacts would be greater than the impacts of the Bountiful 400 North – Northern Option, which would require the acquisition of 5 commercial buildings and relocation of 5 businesses.

Potential Impacts due to Changes in Access. No effects due to changes in access are anticipated to properties on Pages Lane, 500 West, or 400 North with the Action Alternative in the north central segment. The Action Alternative would maintain a similar level of access as existing conditions for Pages Lane, 500 West, and 400 North.

3.3.4.3.3 South Central Segment Impacts

Table 3.3-1, *South Segment Access Changes with the Action Alternative*, below shows potential displacements, relocations, right-of-way acquisitions, and easements associated with the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option for the south central segment. For both options, the majority of the property impacts would be partial acquisitions that would not affect the activities that occur on each affected parcel.

Although the total number of parcels and acres of impact would be similar for both options in the south central segment, the properties that would need to be acquired for each option differ slightly. The Bountiful

500 South – Northern Option would require acquiring 7 commercial buildings and relocating the 9 businesses in these 7 commercial buildings, and potentially acquiring 6 commercial buildings and relocating the 7 businesses in these 6 commercial buildings. The Bountiful 500 South – Southern Option would result in greater direct impacts to businesses compared to the Bountiful 500 South – Northern Option. This option would require acquiring 8 commercial buildings and relocating 16 businesses and potentially acquiring 5 commercial buildings and relocating 6 businesses.

Potential Impacts due to Changes in Access. There is potential for changes in access to affect properties that access 500 South between I-15 and 500 West with the Action Alternative in the south central segment. The Action Alternative would include a raised median on 500 South between I-15 and 500 West. All business accesses on the north and south sides of 500 South in this segment would be right-in and right-out. Travelers who currently make left turns onto or off of 500 South would be required to make U-turns on 500 South and/or use alternate accesses to or from 500 West with the Action Alternative.

3.3.4.3.4 South Segment Impacts

Table 3.3-1 shows potential displacements, relocations, right-of-way acquisitions, and easements associated with the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option for the south segment. For both options, the majority of the property impacts would be partial acquisitions that would not affect the activities that occur on each affected parcel.

The Salt Lake City 1000 North – Northern Option would have 1 more commercial acquisition and business relocation (the Salt City Inn at 1026 North 900 West) compared to the Salt Lake City 1000 North – Southern Option.

Potential Impacts due to Changes in Access. There is potential for changes in access to affect properties with the Action Alternative in the south segment. Table 3.3-1 Table 3.5-4 describes the access changes in the south segment with the Action Alternative.

3.3.4.3.5 Summary of Action Alternative Impacts

Table 3.3-2 lists the impacts to parcels from the Action Alternative. Additional areas adjacent to right-of-way for the Action Alternative have been identified as TCEs.

Appendix 3A, *Property Impact Tables*, includes tables showing all parcel impacts including address, type of impact, and impact amount as well as these TCEs, and Appendix 3B, *Property Impact Figures*, includes figures showing all parcel impacts.

3.3.4.4 Mitigation Measures

No mitigation is proposed beyond the requirements of federal and state relocation assistance acts.

During the final design process, UDOT will look at measures that could avoid needing to acquire properties. Where necessary, UDOT would acquire all property according to the federal Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970 (as amended July 2008) and the Utah Relocation Assistance Act. These regulations require fair compensation for property owners and qualified renters to offset or eliminate any financial hardship that private individuals or entities could experience as a result of acquiring property for public purposes. No individual or family would be required to relocate until adequate, decent, safe, and sanitary housing is available.

Relocation resources will be available to all residents and businesses that are relocated, and the process for acquiring replacement housing and other sites will be fair and open.

Table 3.3-1. South Segment Access Changes with the Action Alternative

Location	Description of Change in Access
2600 South interchange (North Salt Lake/Woods Cross)	At the 2600 South interchange, a new road connection would be made on the north end between Wildcat Way and 800 West through a new underpass of I-15. Businesses on 800 West (Lorena's Restaurant, Hampton Inn, and Motel 6) would continue to have access on 800 West, but customers traveling to or from I-15 would have additional distance with the Action Alternative's new 800 West design compared to existing conditions. A segment of existing 800 West might be closed or converted to a private driveway between 1100 North and the new 800 West underpass. Business access for Thomas Petroleum on 800 West would be moved to a new cul-de-sac off of 1100 North/2600 South.
Center Street southbound off-ramp (North Salt Lake)	The southbound off-ramp of I-15 at Center Street would be removed. Access to Center Street from I-15 would require travel through the I-15 2600 South interchange to the north, the new I-15/I-215 interchange to the south, or the I-215/Redwood Road interchange to the west.
I-215 interchange (North Salt Lake)	Access would be increased at the I-215/I-15 interchange to accommodate all directions of travel between I-215 and I-15, and a new access would be added to I-215 and I-15 to and from U.S. 89/Beck Street.
2100 North interchange (Salt Lake City)	Access would be increased between 2100 North, I-15, and Beck Street/U.S. 89. A new diamond interchange at 2100 North would replace the partial-access interchange to allow vehicles to access every direction of I-15 from 2100 North. A new overpass of the Union Pacific and FrontRunner railroad tracks would allow traffic on Beck Street/U.S. 89 to connect to the new interchange at 2100 North and vice versa. This change in access would allow truck traffic to bypass the 600 North interchange and the 300 West Marmalade neighborhood of Salt Lake City when accessing or departing the industrial areas surrounding 2100 North.
Warm Springs Road north of 1100 North (Salt Lake City)	The businesses located on Warm Springs Road north of 1100 North would have changes to their access to get on or off northbound I-15 at the 2100 North interchange. To access northbound I-15 at the from Warm Springs Road north of 1000 North, travelers would need to either (1) go under I-15 near 2300 North and travel to the new 2100 North interchange on the west side or (2) use the existing 1800 North railroad crossing to get over to U.S. 89 to get on I-15 at either the new 2100 North interchange or the new I-215 interchange. This is similar to what they have to do to get on or off southbound with the existing design.
Warm Springs Road south of 1100 North (Salt Lake City)	Reconfigured access to northbound and southbound I-15 would be provided around 1100 North with the Salt Lake City 1000 North – Southern Option. With the Salt Lake City 1000 North – Northern Option, new northbound off-ramp and on-ramp access would be provided near 800 North. Both of these options would improve access to Granite Construction because there would be new access from northbound I-15 that does not currently exist.
900 West and 1000 North (Salt Lake City)	900 West and 1000 North would be reconfigured to support a new collector-distributor (CD) interchange between 1000 North and 600 North. The connections between 1000 North and Warm Springs Road would be slightly different with the 1000 North – Northern Option and the 1000 North – Southern Option. With both options, access to and from I-15 would be improved because there would be new access from northbound I-15 that does not currently exist.
600 North (Salt Lake City)	Business access from the westbound one-way frontage road on the north side of 600 North between 500 West and 400 West would be removed with the Action Alternative because 600 North would have a wider footprint that would encroach on the one-way frontage road. UDOT anticipates that access to the commercial building at 615 North 400 West and Industrial Heat Treat at 430 West 600 North can be moved to 400 West. UDOT anticipates that access to Mixtec North America at 454 West 600 North and Land Cruiser Heritage Museum at 476 West 600 North can be moved to 500 West. UDOT will work with these businesses to try to find acceptable alternate methods of access from 400 West or 500 West.

Table 3.3-2. Summary of Right-of-way Impacts from the Action Alternative

Impact Type	North Segment		North Central Segment		South Central Segment		South Segment		Summary
	Farmington 400 West Option	Farmington State Street Option	Bountiful 400 North – Northern Option	Bountiful 400 North – Southern Option	Bountiful 500 South – Northern Option	Bountiful 500 South – Southern Option	Salt Lake City 1000 North – Northern Option	Salt Lake City 1000 North – Southern Option	
Relocation ^a	2 / 0.52	2 / 0.52	5 / 4.52	6 / 4.40	7 / 4.48	9 / 3.982	5 / 2.28	4 / 1.9	18 to 22/10.8 to 11.8
Potential relocation ^a	6 / 0.26	6 / 0.26	2 / 0.09	3 / 0.43	6 / 0.56	5 / 0.77	33 / 3.43	33 / 3.43	46 to 48/4.34 to 4.89
Full acquisition ^a	1 / 0.02	2 / 0.48	—	—	2 / 0.08	2 / 0.08	8 / 4.12	7 / 3.37	10 to 12/3.47 to 4.68
Partial acquisition ^a	95 / 33.1	94 / 33.0	23 / 4.33	23 / 3.45	53 / 4.70	60 / 5.33	105 / 52.16	106 / 51.14	275 to 283/92.29 to 94.41
TCE	21	21	5	5	27	20	85	85	131 to 138
Perpetual easement	0	0	0	0	0	0	17	17	17

Sources: Salt Lake County and Davis County parcel GIS data, September 2021

^a Number of parcels / acres of impact

3.4 Environmental Justice Populations

3.4.1 Introduction

Section 3.4 describes the impacts of the project alternatives on low-income populations, minority populations, and other populations identified as environmental justice (EJ) communities in accordance with federal regulations and guidance. UDOT follows three fundamental EJ principles identified by FHWA:

- Avoid, minimize, or mitigate disproportionate adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

What does environmental justice seek to do?

Environmental justice seeks to:

- Identify and address disproportionate adverse effects of an agency's programs, policies, and activities on minority and low-income populations to achieve an equitable distribution of benefits and burdens
- Include the full and fair participation by all potentially affected communities in the decision-making process

Section 3.4 includes a review of the regulatory context and methodology, identification of EJ populations, an overview of the public outreach efforts and activities conducted to engage these communities in the project planning process, an assessment of project impacts and burdens on EJ populations, and the preliminary results of UDOT's EJ analysis.

Environmental Justice Evaluation Area. The environmental justice evaluation area (EJ evaluation area) considers all communities within 0.5 mile of the Action Alternative's limits of construction to include both direct construction and operational impacts as well as potential indirect impacts. Therefore, all U.S. Census Bureau census tract block groups that are totally or partially within the 0.5-mile buffer are included in the evaluation area. These block groups are located in Davis and Salt Lake Counties. UDOT's analysis included an expanded area in these counties surrounding the block groups to capture local users of I-15 and to help UDOT determine whether each block group has a percentage of minority populations (referred to in Section 3.4 as, broadly, people of color) or low-income households that is meaningfully greater than a comparative community.

Consideration of Cumulative Effects on Environmental Justice Populations. Section 3.18, *Indirect and Cumulative Effects*, includes an indirect and cumulative effects (ICE) analysis for the I-15 project. The ICE analysis considers the effects of the Action Alternative in the context of general population, employment, and development trends in the cities in the ICE analysis area. It also considers the effects of other previous, ongoing, and anticipated future actions to determine whether the overall effect of the combined actions would be substantial. The ICE analysis is focused on the potential indirect and cumulative effects to specific resources (for example, social and community impacts, air quality, greenhouse gases, noise, floodplains, and others). The potential for cumulative effects specific to EJ populations is addressed in Section 3.4 as part of Section 3.4.5, *Affected Environment: Identification of Historic and Ongoing Issues for EJ Communities*, and Section 3.4.6, *Environmental Consequences and Mitigation Measures*. Certain resources evaluated in the ICE analysis are also issues of concern for EJ populations. Therefore, some of this discussion is replicated here to address potential effects on EJ populations.

3.4.2 Regulatory Setting

The principles of environmental justice have their origins in the Civil Rights Act of 1964 and have evolved through presidential Executive Orders and other federal policies, as summarized below.

3.4.2.1 Civil Rights Act of 1964

Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, national origin, age, sex, or disability in programs receiving federal funding. Federal agencies are required to ensure that no person is excluded from participation in, denied the benefits of, or subjected to discrimination under any program or activity receiving federal financial assistance.

3.4.2.2 Executive Order 12898

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*, issued February 11, 1994, directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. EO 12898 seeks the “fair treatment and meaningful involvement of all people regardless of race, color, sex, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations, and policies.”

FHWA implemented the U.S. Department of Transportation’s (USDOT) Order 6640.23A on June 14, 2012, to establish policies and procedures for complying with EO 12898, which aims to address environmental justice in minority and low-income populations.

3.4.2.3 Executive Order 13985

Executive Order 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, issued January 20, 2021, aimed to address systemic racism and advance equity in the United States by directing federal agencies to review their policies and practices for potential disparities affecting underserved communities, engage with these communities to understand their needs, enhance data collection and analysis to measure equity, foster diversity and inclusion in the federal workforce, and establish an interagency working group for equitable data coordination, all with the overarching goal of advancing racial equity and support for marginalized groups across the nation.

3.4.2.4 Executive Order 14008

Established as a requirement of Section 223 of EO 14008, the Justice40 Initiative is a federal government effort to deliver at least 40% of the overall benefits from certain federal investments to disadvantaged communities that are marginalized, underserved, and overburdened by pollution. The Justice40 Initiative’s investment areas, including clean energy, energy efficiency, and clean transit, are especially relevant in the context of transportation, where Justice40 provides an opportunity to address current gaps in transportation infrastructure and access and public services. USDOT grants, programs, policies, and initiatives work toward the goal that at least 40% of the benefits of projects flow to disadvantaged communities that have been overburdened by legacy pollution and environmental hazards and are ultimately intended to address underinvestment in disadvantaged communities and advance environmental justice.

3.4.2.5 Executive Order 14091

Executive Order 14091, *Further Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, issued February 22, 2023, directs federal agencies to undertake additional efforts to advance equity initiatives. Specifically, the order requires agencies to:

- Identify and address specific barriers to equity that underserved communities face.
- Develop and implement equity plans that outline how they will achieve racial equity in their programs and operations.
- Collect and analyze data on the impact of their programs and policies on underserved communities.
- Report to the President on their progress in advancing racial equity.

The EO also establishes a new Interagency Equity Council to coordinate federal efforts to advance racial equity. The council will be chaired by the White House Domestic Policy Council and will include representatives from all federal agencies. The EO provides federal agencies with clear guidance on how to identify and address the specific barriers that underserved communities face. It also requires agencies to collect and analyze data on the impact of their programs and policies on underserved communities.

3.4.2.6 Executive Order 14096

Executive Order 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*, issued April 21, 2023, defines environmental justice as “[t]he just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other federal activities, that affect human health and the environment so that people:

- Are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structure or systemic barriers; and
- Have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices.”

The EO also emphasizes the importance of engaging and collaborating with underserved communities to address adverse conditions and ensure that they do not face any additional disproportionate burdens or underinvestment.

3.4.2.7 Department of Transportation Order 5610.2c

Issued on May 16, 2021, USDOT Order 5610.2c updates EJ procedures for USDOT in response to the *Memorandum of Understanding on Environmental Justice* signed by heads of federal agencies on August 4, 2011; USDOT's revised Environmental Justice Strategy, updated on November 15, 2016; and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*, issued February 11, 1994. Order 5610.2c promotes the principles of environmental justice through incorporating those principles in all USDOT programs, policies, and activities and throughout all planning and decision-making processes in the development of programs, policies, and activities under NEPA, Title VI of the Civil Rights Act of 1964 (Title VI), and other statutes, regulations, and guidance that

address or affect infrastructure planning and decision-making. The Order states that USDOT shall avoid imposing adverse effects on minority and low-income communities through overly burdensome requirements that hinder projects and deprive communities of economic opportunity. It also affirms the importance of providing meaningful opportunities for public engagement of minority populations and low-income populations, as well as providing public access to information concerning the human health or environmental impacts of programs, policies, and activities, including information that will address the concerns of minority and low-income populations regarding the health and environmental impacts of the proposed action.

3.4.2.8 U.S. Department of Transportation Equity Action Plan

The USDOT Equity Action Plan is a roadmap for the Department to advance equity in the transportation system. The plan was released in January 2022 and outlines four focus areas:

- **Wealth Creation:** USDOT will work to increase access to transportation and transportation-related opportunities for underserved communities, with a focus on increasing homeownership, business ownership, and access to capital.
- **Power of Community:** USDOT will support community-led transportation planning and decision-making, and will work to increase the participation of underserved communities in transportation planning and decision-making processes.
- **Interventions:** USDOT will take proactive steps to address transportation-related disparities, such as developing a national transportation cost burden measure and increasing funding for transportation safety programs in underserved communities.
- **Expanding Access:** USDOT will expand access to transportation for all Americans, regardless of their income, race, ethnicity, or zip code. This includes expanding access to public transportation, improving pedestrian and bicycle infrastructure, and making it easier for people to get around without a car.

3.4.3 Outreach, Coordination, and Public Engagement

Consistent with EO 13985 and EO 14096, throughout the EIS process, UDOT has been engaging with EJ populations to understand their needs, address the needs through the alternatives development process, and collaborating with underserved communities to better understand and address their adverse conditions and ensure that they do not face additional disproportionate burdens or underinvestment due to the project.

Purpose and Need Development. During the development of the purpose and need for the project, UDOT conducted Smart Growth Workshops and other targeted coordination that was aimed at identifying the transportation needs in the communities for all users (roadway, transit, pedestrians, and bicyclists). UDOT also obtained and reviewed various data sources focused on nonmotorized transportation (such as Streetlight data) to help identify transportation needs related to transit riders, pedestrians, and bicyclists. UDOT reviewed these data sources with the demographic data related to EJ populations to try to identify specific transportation needs in areas with EJ populations that could be improved as part of the I-15 project.

The importance of and focus on transportation needs for all users was intended to help identify transportation and mobility needs for people who do not own a vehicle and have a higher reliance on transit, walking, or bicycling for transportation and access to jobs. A specific focus of this effort was the areas where

demographic data show a lot of overlap among these groups and minorities (people of color), low-income populations, and/or persons with disabilities. UDOT included the broad transportation needs in the purpose and need for the project and considers the incorporation of transportation benefits to all users a key benefit to EJ populations in the EJ evaluation area.

The results of this effort were incorporated into the purpose and need for the I-15 project. See the *Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* (Horrocks 2022b) on the project website for more information and details about this effort.

Alternatives Development Process. Based on the input received during scoping and the purpose and need phases of the project, UDOT considered and placed emphasis on incorporating the data related to needs in the areas with EJ populations as part of the alternatives development process. This emphasis on providing safe, convenient facilities for all users was carried into the alternatives development process. The interchange designs that propose slower vehicle speeds and more comfortable, convenient pedestrian and bicyclist facilities were a direct result of the engagement with EJ populations, and these designs focus on trying to improve the diverse transportation needs in areas with EJ populations.

Outreach and Coordination. Throughout the EIS process, UDOT has engaged with a number of city councils, advisory boards, planning commissions, homeowners' associations, and other entities to gain insight into the concerns of the communities and to better understand where additional disadvantaged communities might be located to inform the EJ analysis. As part of these activities, UDOT developed an Equity Working Group through which UDOT sought equitable engagement with groups and individuals with affordable-housing interests and in areas of the project study area that historically might have been underserved due to language or other outreach barriers. Later, the Equity Working Group combined with three Local Area Working Groups to develop and engage with community members to capture the diverse viewpoints along I-15 and for the members to share study information with their communities and neighbors. The Local Area Working Groups included representatives across chambers of commerce, school districts, social service organizations, youth organizations, business owners, developers, and residents, among others. Chapter 6, *Coordination*, provides more information about these engagement activities.

3.4.4 Affected Environment: EJ Populations

This section provides the methodology and analysis approach used to identify the locations of EJ communities in the EJ evaluation area as well as the key environmental issues relevant to those EJ populations. For this analysis, EJ communities are defined as those census block groups with percentages of people of color and/or low-income households that exceed the county percentage. In addition, consistent with EO 14096, this analysis also considers persons with a disability. Additional information is included in Section 3.4.5, *Affected Environment: Identification of Historic and Ongoing Issues for EJ Communities*, on the communities in the EJ evaluation area who might have experienced historical environmental disparities such as diminished air quality (the prevalence of air toxics, particulate matter [PM_{2.5}], or ozone) and/or the presence of, or proximity to, hazardous materials from past industrial developments, effluent or wastewater discharges, and other distressed environmental conditions.

3.4.4.1 Methodology

UDOT collected data from the U.S. Census Bureau’s American Community Survey (2017–2021 5-year estimates) for each of the socioeconomic characteristics below:

- EJ populations:
 - Minority populations / people of color
 - Low-income households
- Additional characteristics based on EO 14096:
 - Households with 1 or more persons with a disability

Across each socioeconomic characteristic listed above, UDOT collected data for each block group and compared the data to the county in which the block group lies. A block group is considered an EJ community if it has either a percentage of people of color or a percentage of low-income households that exceed the county percentage, which is used as a benchmark community of comparison. In addition, UDOT calculated one standard deviation (SD)¹ from the county percentage (county mean) as a benchmark to identify those block groups with much higher percentages of people of color and/or low-income households, which indicates a potential for a more disadvantaged community.

UDOT then collected and analyzed percentages of households with one or more persons with a disability using the same methodology to capture additional populations in the EJ evaluation area that would be considered potentially disadvantaged. Depending on the individuals, persons with a disability might have mobility limitations that affect how they move within their communities and access jobs and essential services. Sections 3.4.4.2 through 3.4.4.5 discuss the socioeconomic characteristics of the EJ evaluation area. Appendix 3C, *Environmental Justice Data Tables*, includes tabular data.

Although this analysis uses higher percentages of minority populations, low-income populations, and persons with disabilities to identify EJ populations, this data does not assume that all people in these categories are disadvantaged. To the extent that these socioeconomic categories have a higher percentage of people that are disadvantaged compared to the general population, they are used as proxies to identify areas where there is a higher potential for disadvantaged people that could have one or more of these socioeconomic characteristics.

In addition, comments and input received during the EIS process and public data from the Climate and Economic Justice Screening Tool (Justice40) and the U.S. Environmental Protection Agency’s (EPA) Environmental Justice Screen Tool (EJScreen) were also reviewed for the project area to identify areas with historical environmental disparities (see Section 3.4.5, *Affected Environment: Identification of Historic and Ongoing Issues for EJ Communities*). The socioeconomic data for the Climate and Economic Justice

What is the difference between an EJ population and an EJ community?

In Section 3.4, the term *EJ communities* is generally used when referring to locations with higher percentages of EJ populations.

The term *EJ populations* is generally used when referring to the people in the communities.

However, in Section 3.4, the terms *EJ populations*, *areas with EJ populations*, and *EJ communities* are used interchangeably.

¹ Based on an assumed normally distributed set of data, in which one standard deviation from the mean represents approximately 68% of all data points on either side of the mean (34% on each side). Therefore, for this analysis, one standard deviation as a benchmark means that 50% plus 34% of the data points fall below the benchmark, and 16% of the data points fall above the benchmark. Percentages that are among the top 16% would be among the highest and considered to have the highest potential to be disadvantaged as EJ communities.

Screening Tool and the EPA Environmental Justice Screen Tool were consistent with the information that was collected from the U.S. Census Bureau.

3.4.4.2 Minority Populations/People of Color

3.4.4.2.1 North Segment

The north segment is located completely in Davis County, which is the benchmark community of comparison. People of color make up 17.5% of the population of Davis County. In the north segment, 5 out of 17 block groups have percentages of people of color greater than Davis County, as shown in Figure 3.4-1. None of the block groups have percentages that exceed 1 SD from the county percentage, which is 29.5%.

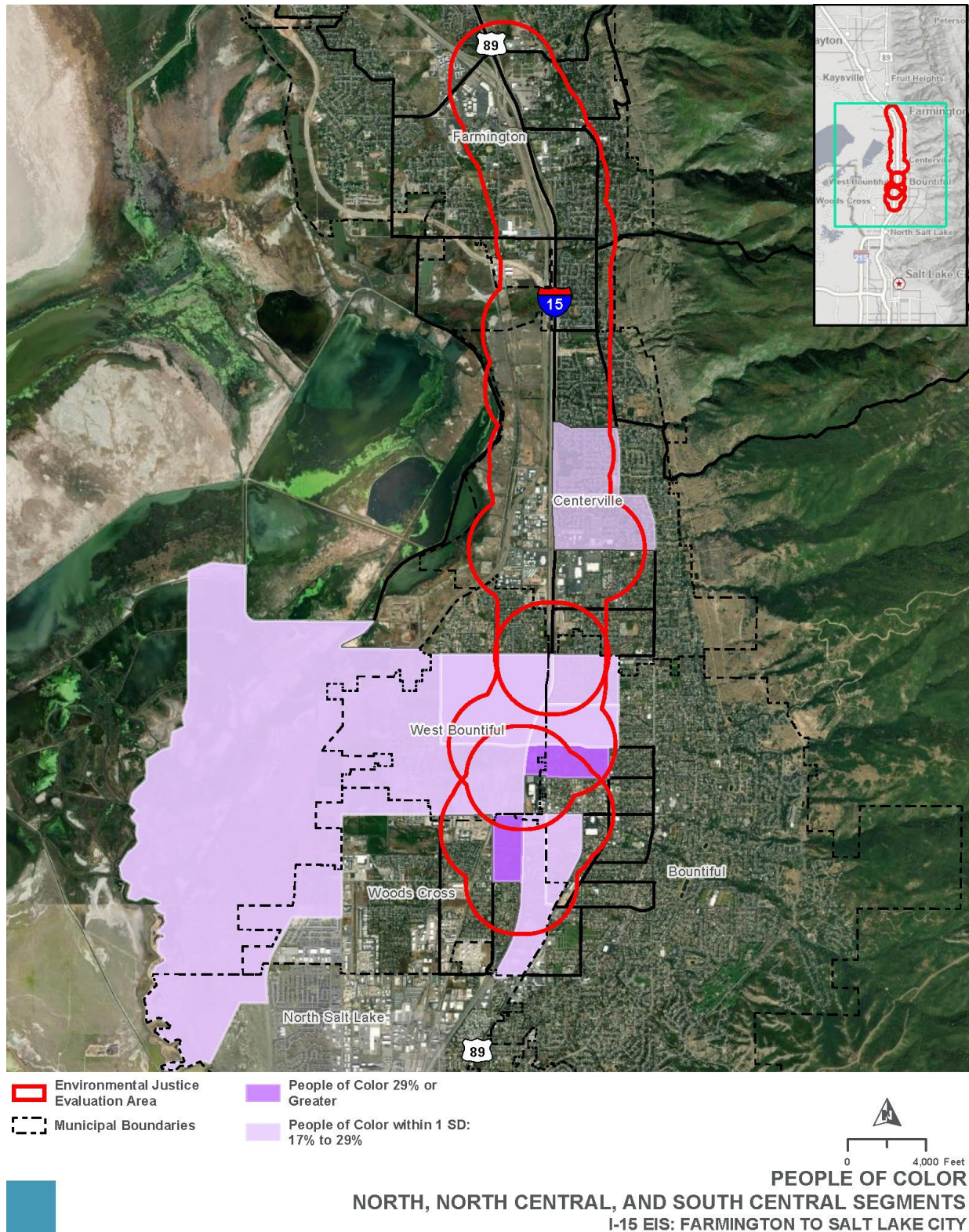
North Central Segment

The north central segment is located completely in Davis County, which is the benchmark community of comparison. As stated above, people of color make up 17.5% of the population of Davis County. In the north central segment, 8 of the 14 block groups have percentages of people of color greater than Davis County, as shown above in Figure 3.4-1. Among these, 2 block groups have percentages that exceed 1 SD from the county percentage (29.5%), indicating areas with relatively high numbers of people of color that might be more disadvantaged than other communities. These communities with high percentages of people of color are located on both sides of I-15 in West Bountiful and Bountiful.

South Central Segment

The south central segment is located completely in Davis County, which is the benchmark community of comparison. As stated above, people of color make up 17.5% of the population of Davis County. In the south central segment, 7 of the 15 block groups have percentages of people of color greater than Davis County, as shown above in Figure 3.4-1. Among these, 2 block groups have percentages that exceed 1 SD from the county percentage (29.5%), indicating areas with relatively high numbers of people of color that might be more disadvantaged than other communities. These communities with high percentages of people of color are located on both sides of I-15 in Bountiful and Woods Cross.

Figure 3.4-1. People of Color in the North, North Central, and South Central Segments



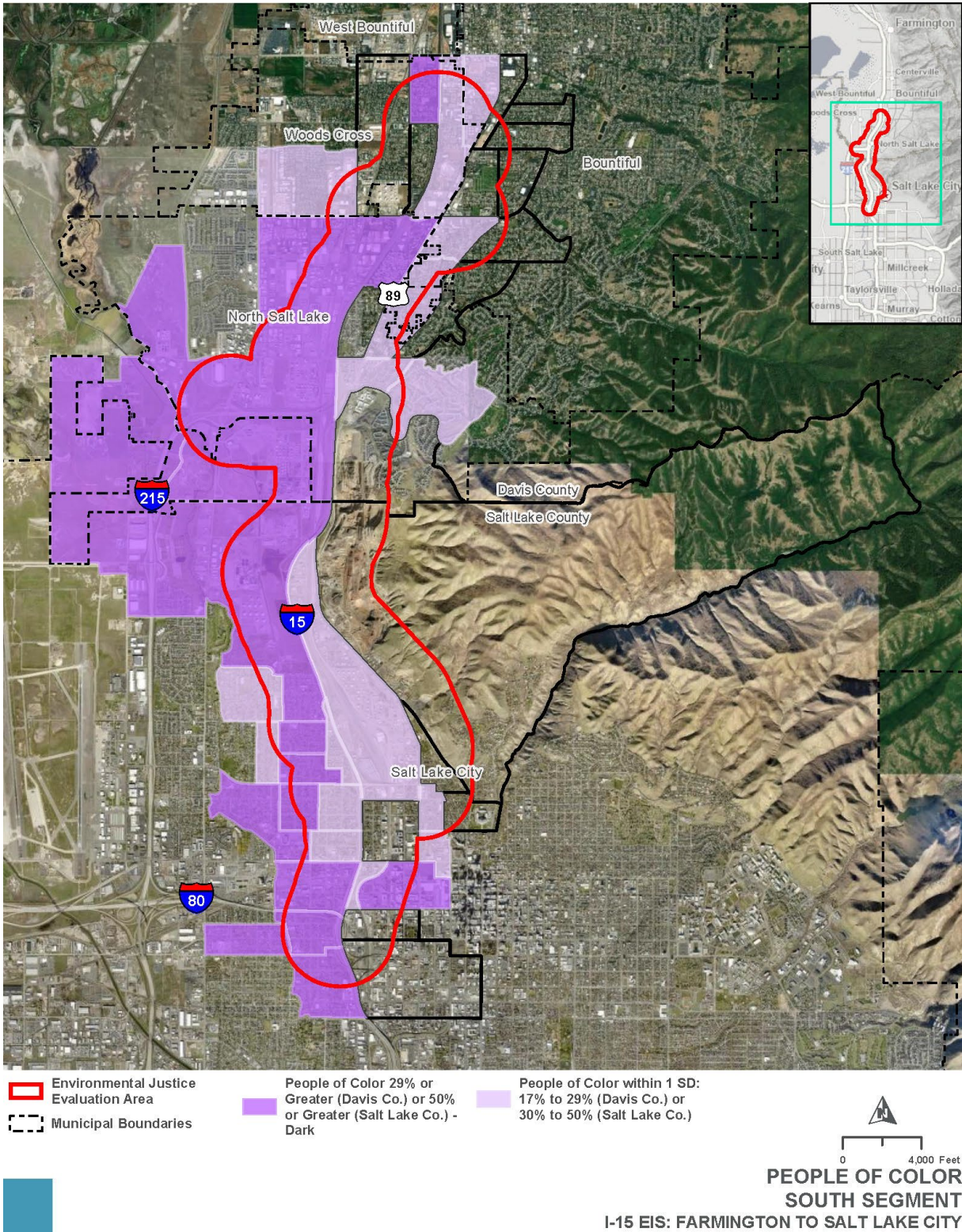
3.4.4.2.2 South Segment

The south segment is located partially in Davis County and partially in Salt Lake County; therefore, both counties are used as benchmark communities of comparison. As stated above, people of color make up 17.5% of the population of Davis County. In Salt Lake County, people of color make up 30.2% of the population. In the Davis County portion of the south segment, 9 of the 20 block groups have percentages of people of color greater than Davis County, as shown in Figure 3.4-2. Among these, 2 block groups have percentages that exceed 1 SD from the county percentage (29.5%), indicating areas with relatively high numbers of people of color that might be more disadvantaged than other communities.

In the Salt Lake County portion of the south segment, 19 of the 25 block groups have percentages of people of color greater than Salt Lake County, as shown in Figure 3.4-2. Among these, 10 block groups have percentages that exceed 1 SD from the county percentage (29.5%), indicating areas with relatively high numbers of people of color that might be more disadvantaged than other communities.

The communities with high percentages of people of color in the south segment are located predominantly on the west side of I-15 in both Davis and Salt Lake Counties. As Figure 3.4-2 illustrates, the majority of block groups in North Salt Lake and Salt Lake City that are considered EJ populations have high percentages of minority populations and/or people of color that might be more disadvantaged.

Figure 3.4-2. People of Color in the South Segment



3.4.4.3 Low-income Households

3.4.4.3.1 North Segment

In Davis County, the benchmark community of comparison for the north segment, 5.5% of the households are considered low-income. In the north segment, 3 out of 17 block groups have percentages of low-income households greater than Davis County, as shown in Figure 3.4-3. None of the block groups have percentages that exceed 1 SD from the county percentage, which is 13.3%.

3.4.4.3.2 North Central Segment

In the north central segment, 11 out of 14 block groups have percentages of low-income households greater than Davis County (5.5%), as shown in Figure 3.4-3. Among these, 5 block groups have percentages that exceed 1 SD from the county percentage (13.3%). These communities with high percentages of low-income households are located on both sides of I-15 in West Bountiful and Bountiful.

3.4.4.3.3 South Central Segment

In the south central segment, 12 out of 15 block groups have percentages of low-income households greater than Davis County (5.5%), as shown in Figure 3.4-3. Among these, 4 block groups have percentages that exceed 1 SD from the county percentage (13.3%). These communities with high percentages of low-income households are located on both sides of I-15 in West Bountiful, Woods Cross, and Bountiful.

3.4.4.3.4 South Segment

The south segment is located partially in Davis County and partially in Salt Lake County; therefore, both counties are used as benchmark communities of comparison. In the Davis County portion of the south segment, 12 out of 20 block groups have percentages of low-income households greater than Davis County (5.5%), as shown in Figure 3.4-4. Among these, 4 block groups have percentages that exceed 1 SD from the Davis County percentage (13.3%).

In the Salt Lake County portion of the south segment, 21 out of 25 block groups have percentages of low-income households greater than Salt Lake County, which is 8.3%, as shown in Figure 3.4-4. Among these, 13 block groups have percentages that exceed 1 SD from the Salt Lake County percentage, which is 18.4%. These communities with high percentages of low-income households are located predominantly in Salt Lake City on both sides of I-15.

Figure 3.4-3. Low-income Households in the North, North Central, and South Central Segments

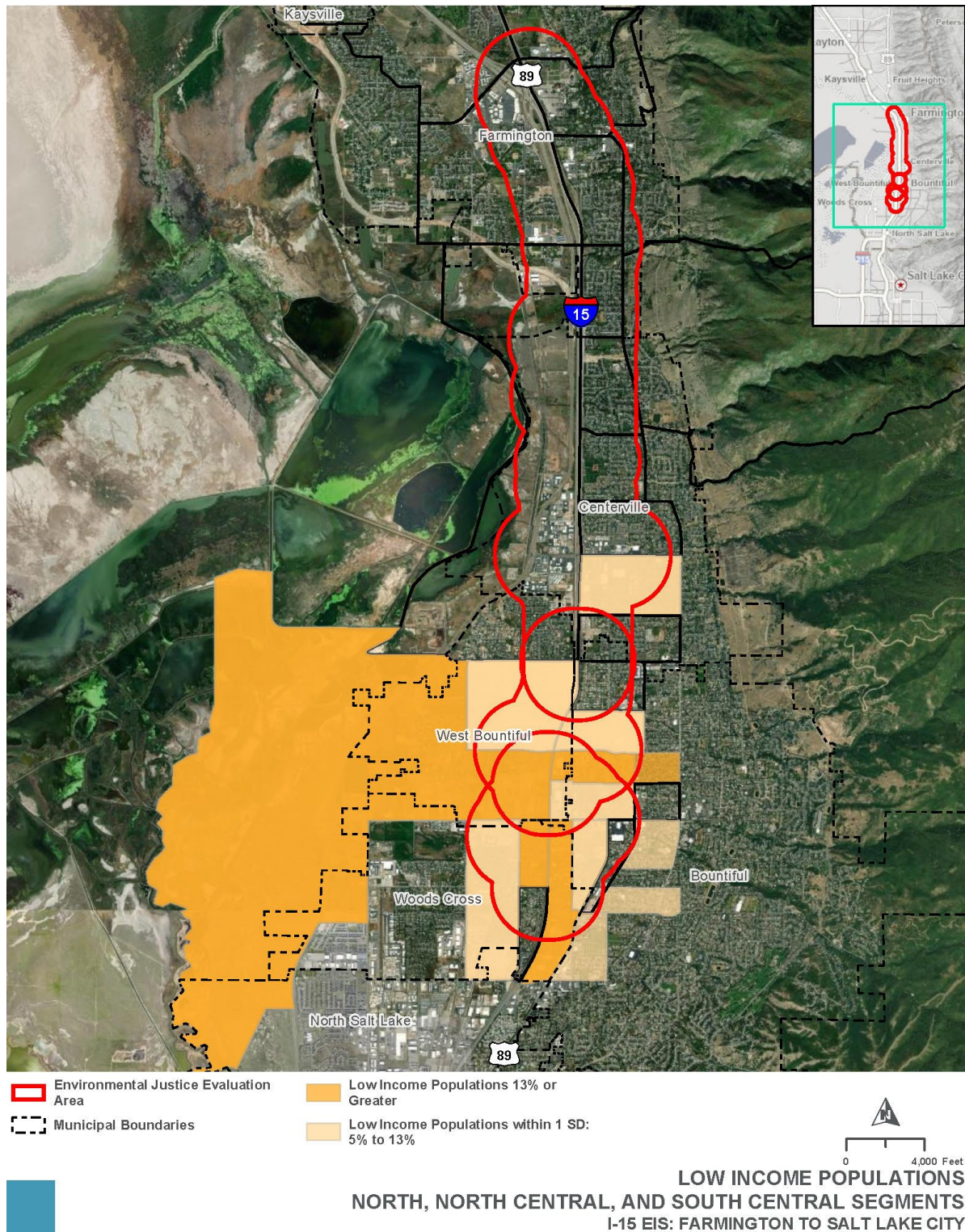
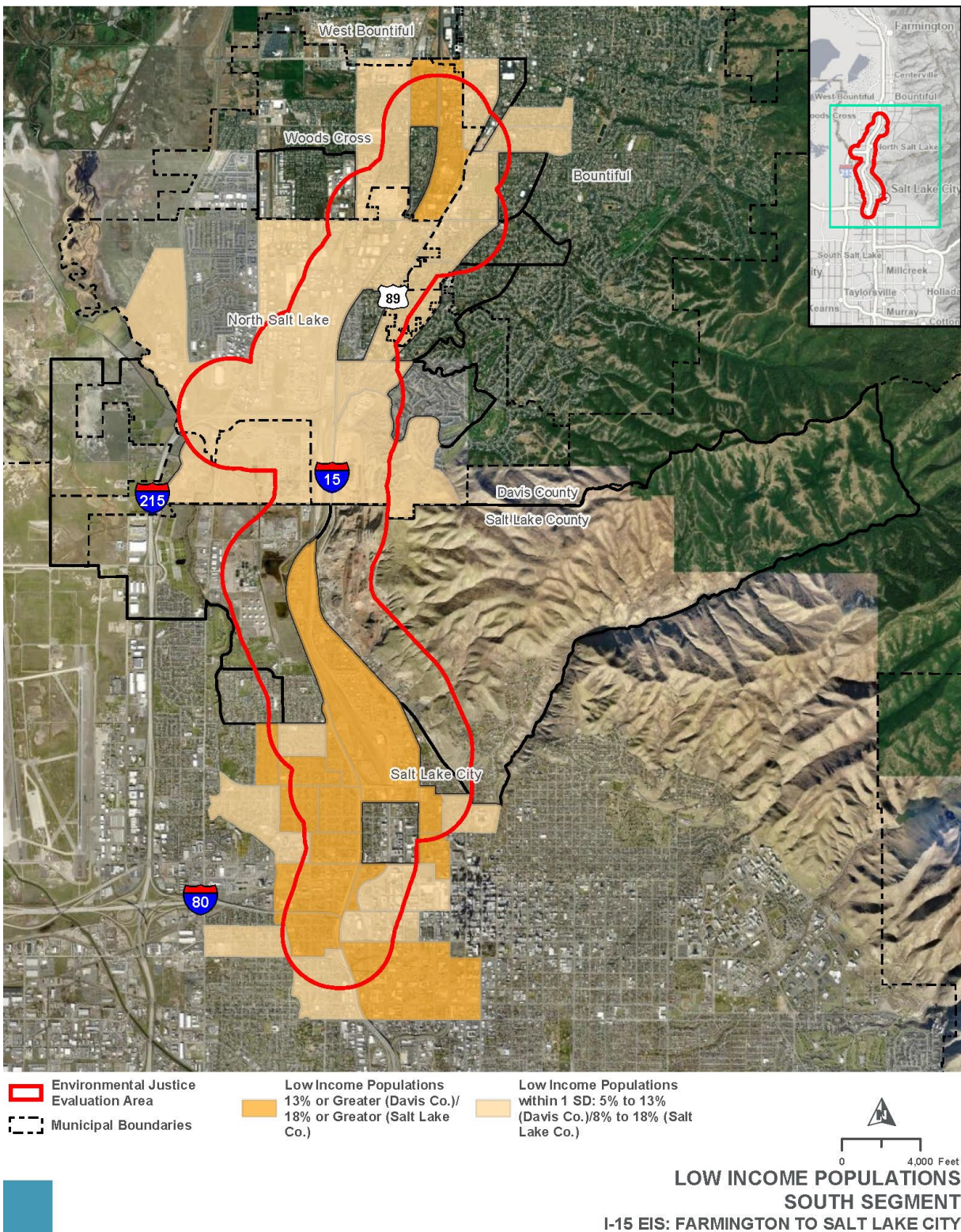


Figure 3.4-4. Low-income Households in the South Segment



3.4.4.4 Households with One or More Persons with a Disability

3.4.4.4.1 North Segment

In the north segment, 2 out of 17 block groups have percentages of households with one or more persons with a disability greater than Davis County (22.3%), as shown in Figure 3.4-5. None has a percentage that exceeds 1 SD from the county percentage (32.3%).

3.4.4.4.2 North Central Segment

In the north central segment, 7 out of 14 block groups have percentages of households with one or more persons with a disability greater than Davis County (22.3%), as shown in Figure 3.4-5. Among these, 4 block groups have percentages that exceed 1 SD from the county percentage (32.3%). These communities with high percentages of households with one or more persons with a disability are located predominantly east of I-15 in Bountiful.

3.4.4.4.3 South Central Segment

In the south central segment, 9 out of 15 block groups have percentages of households with one or more persons with a disability greater than Davis County (22.3%), as shown in Figure 3.4-5. Among these, 3 block groups have percentages that exceed 1 SD from the county percentage (32.3%). These communities with high percentages of households with one or more persons with a disability are located on both sides of I-15 in Bountiful and Woods Cross.

3.4.4.4.4 South Segment

In the Davis County portion of the south segment, 10 out of 20 block groups have percentages of households with one or more persons with a disability greater than Davis County (22.3%), as shown in Figure 3.4-6. Among these, 2 block groups have percentages that exceed 1 SD from the county percentage (32.3%).

In the Salt Lake County portion of the south segment, 13 out of 25 block groups have percentages of households with one or more persons with a disability greater than Salt Lake County (21.6%), as shown in Figure 3.4-6. Among these, 4 block groups have percentages that exceed 1 SD from the county percentage (32.6%). These communities with high percentages of households with one or more persons with a disability are located predominantly west of I-15 in Salt Lake City.

Figure 3.4-5. Households with One or More Persons with a Disability in the North, North Central, and South Central Segments

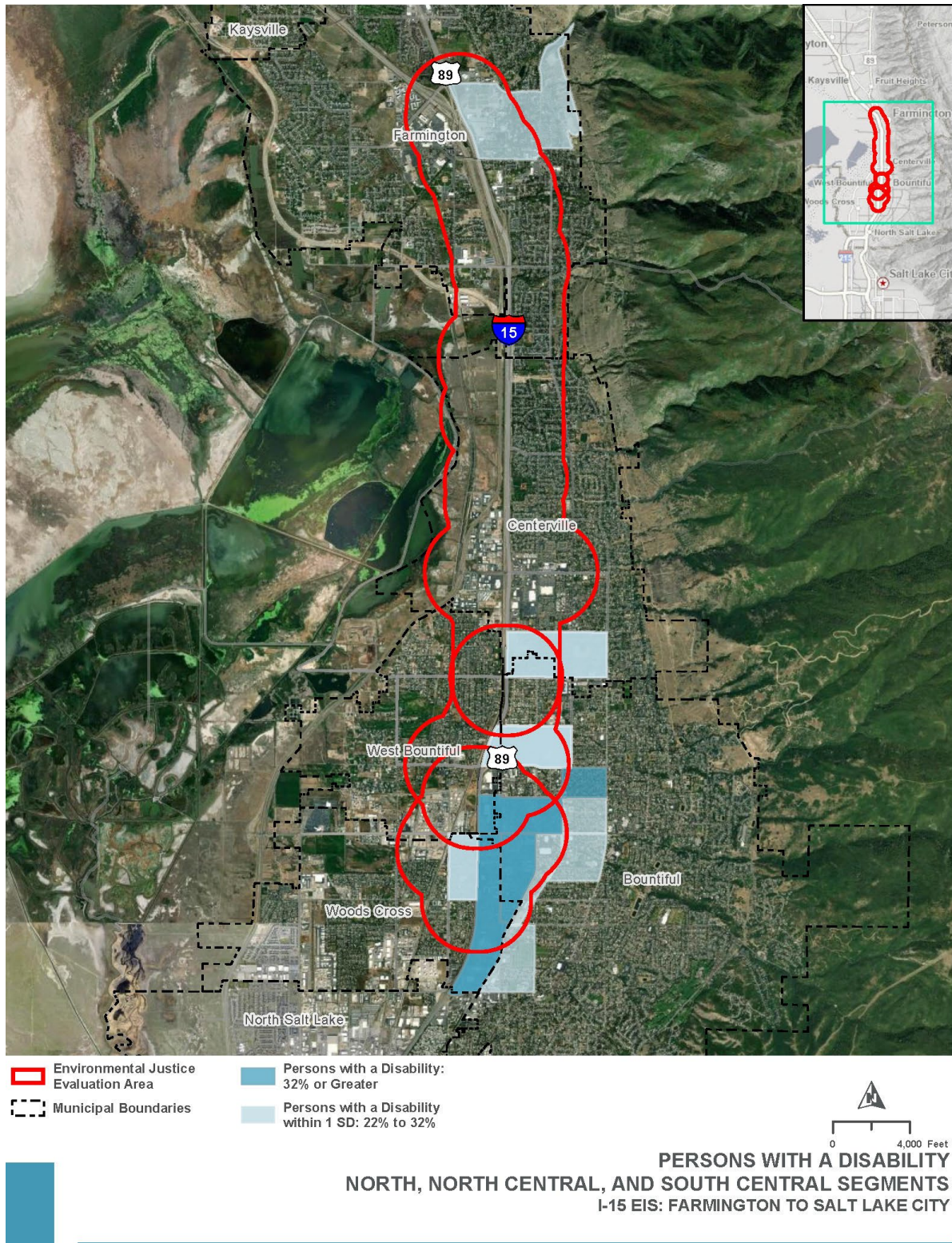
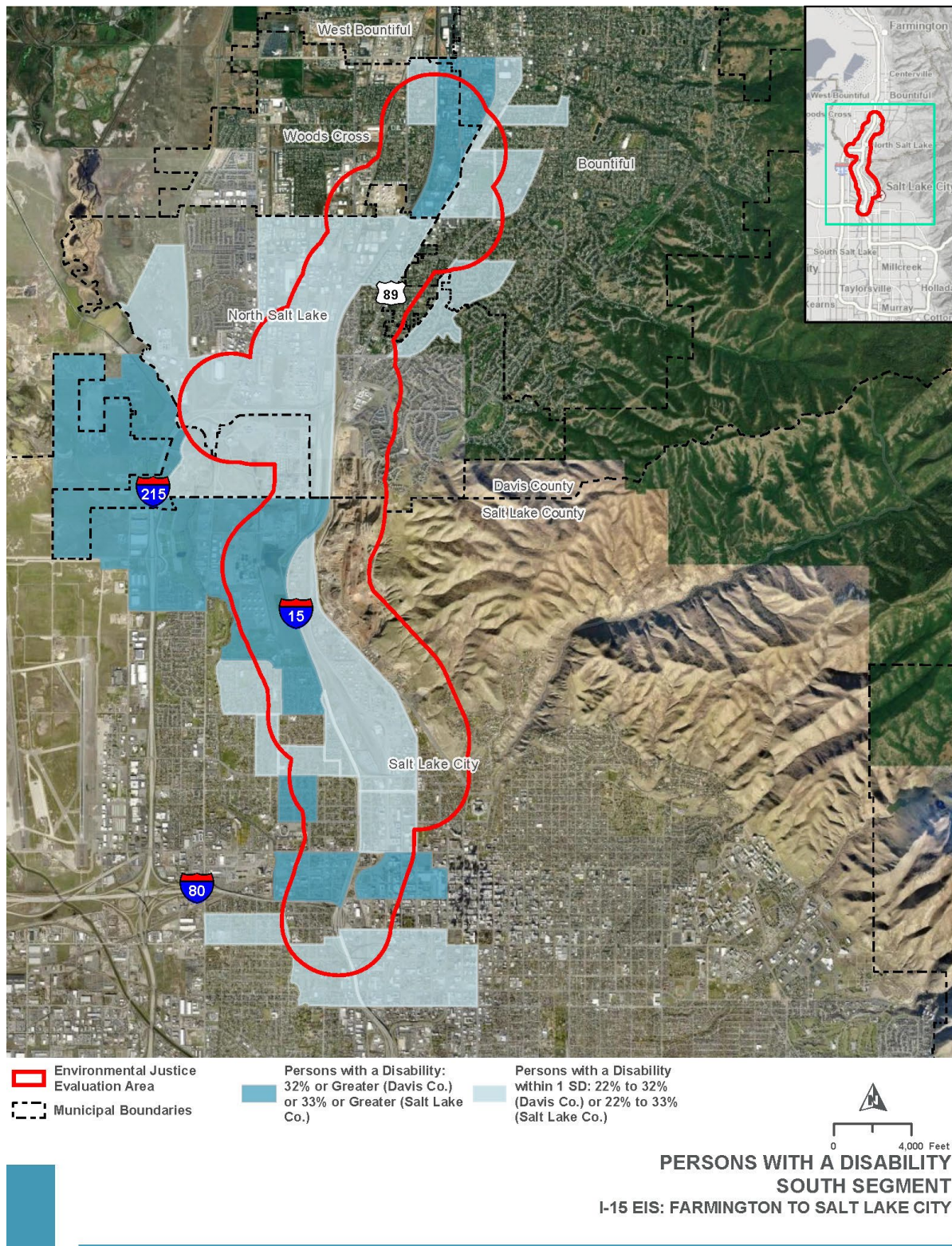


Figure 3.4-6. Households with One or More Persons with a Disability in the South Segment



3.4.4.5 Environmental Justice and Additional Potentially Burdened Communities

According to EO 12989 and subsequent USDOT guidance, EJ populations include minority (people of color) and/or low-income populations. Additional potentially burdened communities and persons with disabilities were also identified consistent with EO 14096. Figure 3.4-7 through Figure 3.4-10 show the EJ populations in the EJ evaluation area, by individual segment, illustrating the areas that are identified as EJ populations according to the original definition (lighter shading) and those that have an additional burden of households with one or more persons with a disability.

As the figures illustrate, in the north segment, the EJ populations are located toward the southern portion of the segment, predominantly east of I-15 (Figure 3.4-7). In the north central and south central segments, the majority of the block groups on both sides of I-15 are considered EJ populations (Figure 3.4-8 and Figure 3.4-9). In the south segment, nearly the entirety of the block groups west of I-15 are considered EJ populations (Figure 3.4-10). East of I-15, most block groups are EJ populations.

Figure 3.4-7. EJ Populations in the North Segment

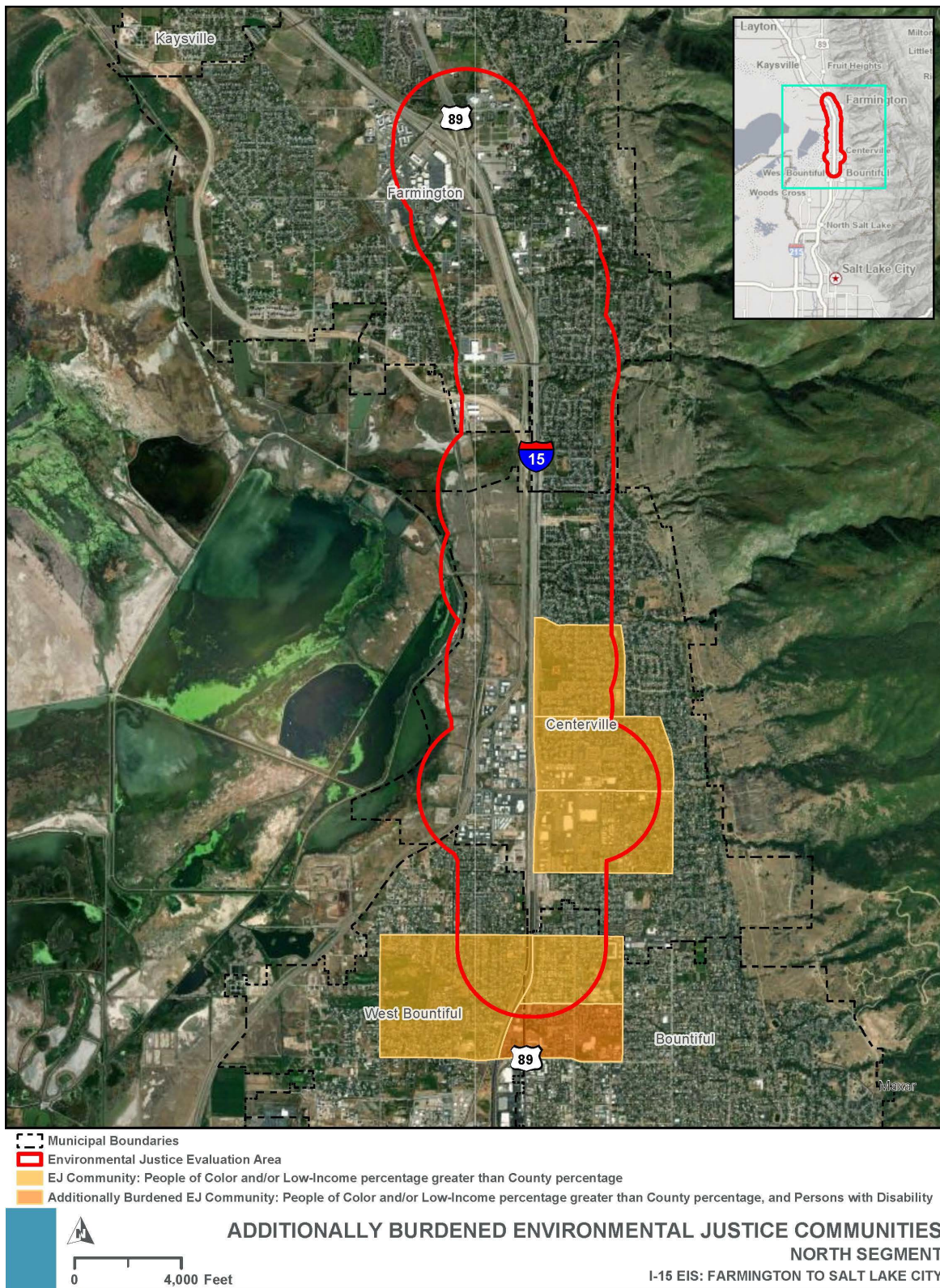


Figure 3.4-8. EJ Populations in the North Central Segment

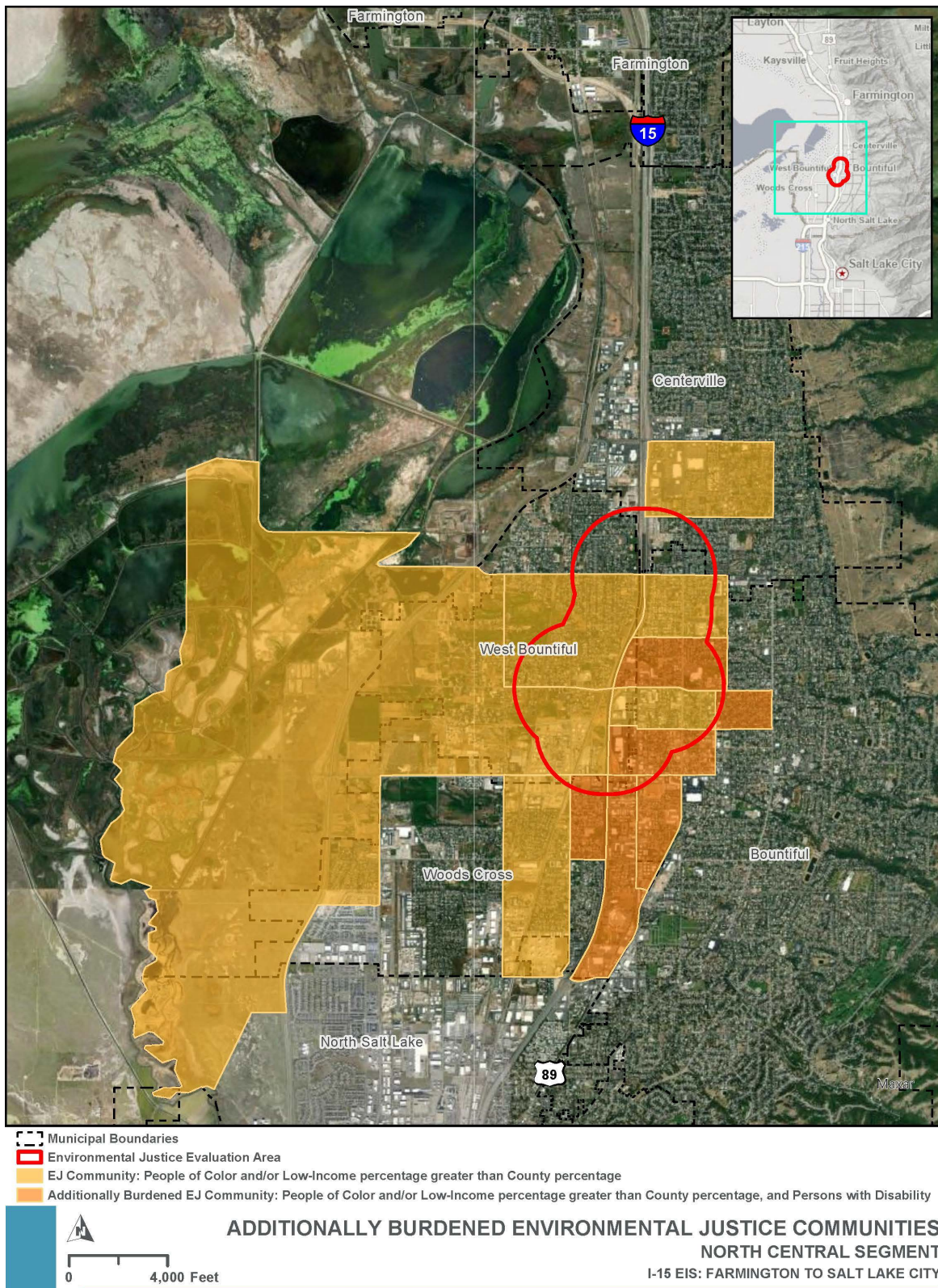


Figure 3.4-9. EJ Populations in the South Central Segment

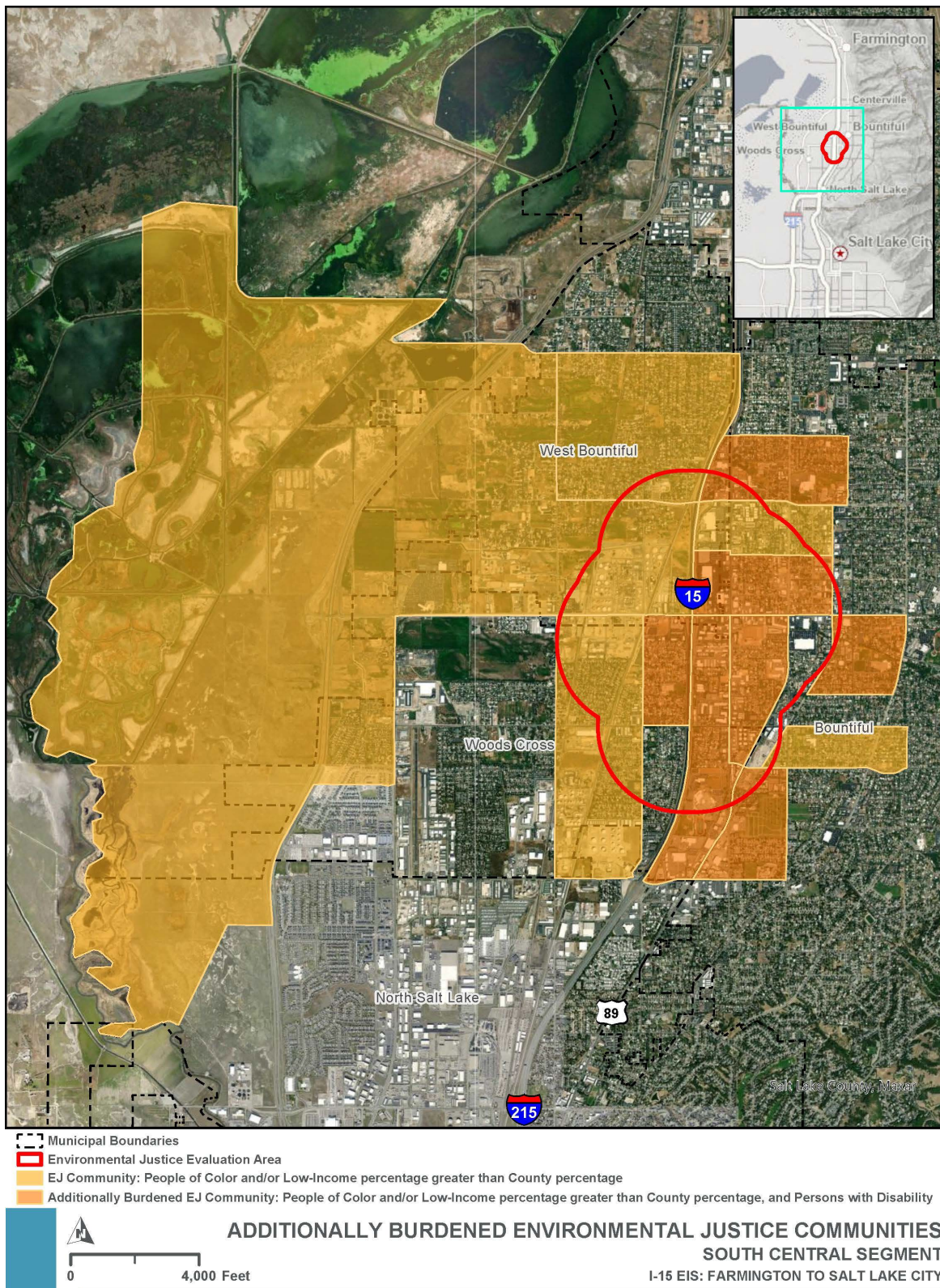
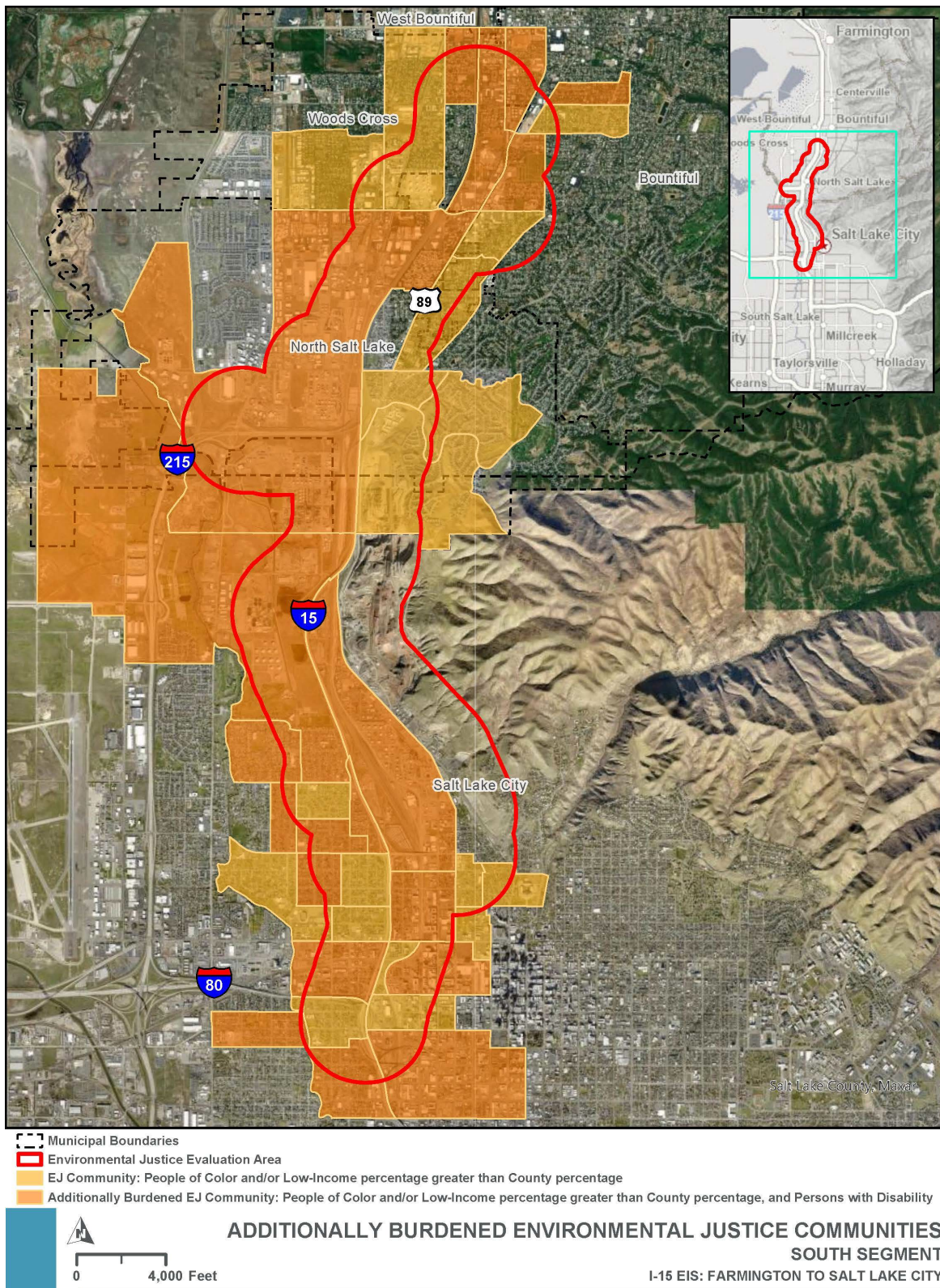


Figure 3.4-10. EJ Populations in the South Segment



3.4.5 Affected Environment: Identification of Historic and Ongoing Issues for EJ Communities

UDOT confirmed EJ populations through census data and by evaluating the historic issues these communities have faced. To help identify specific issues of concern facing EJ populations in the EJ evaluation area, UDOT reviewed background information about historic issues, considered comments received during the EIS scoping and alternatives development processes, and reviewed the EPA Climate and Environmental Justice Screening Tool (Justice40) and the EJScreen Tool.

3.4.5.1 Background and Issues Identified during the EIS Process

During the development of the I-15: Farmington to Salt Lake City EIS, many stakeholders and community groups have made UDOT aware of the past impacts on the west side communities of Salt Lake City (Rose Park, Fairpark, and Poplar Grove in particular) from redlining, past transportation infrastructure (railroads, roads, and the Salt Lake City International Airport), and industrial developments. UDOT is also aware of concerns from Salt Lake City and local groups about potential impacts from the Utah Inland Port and associated development west of the Salt Lake City International Airport.

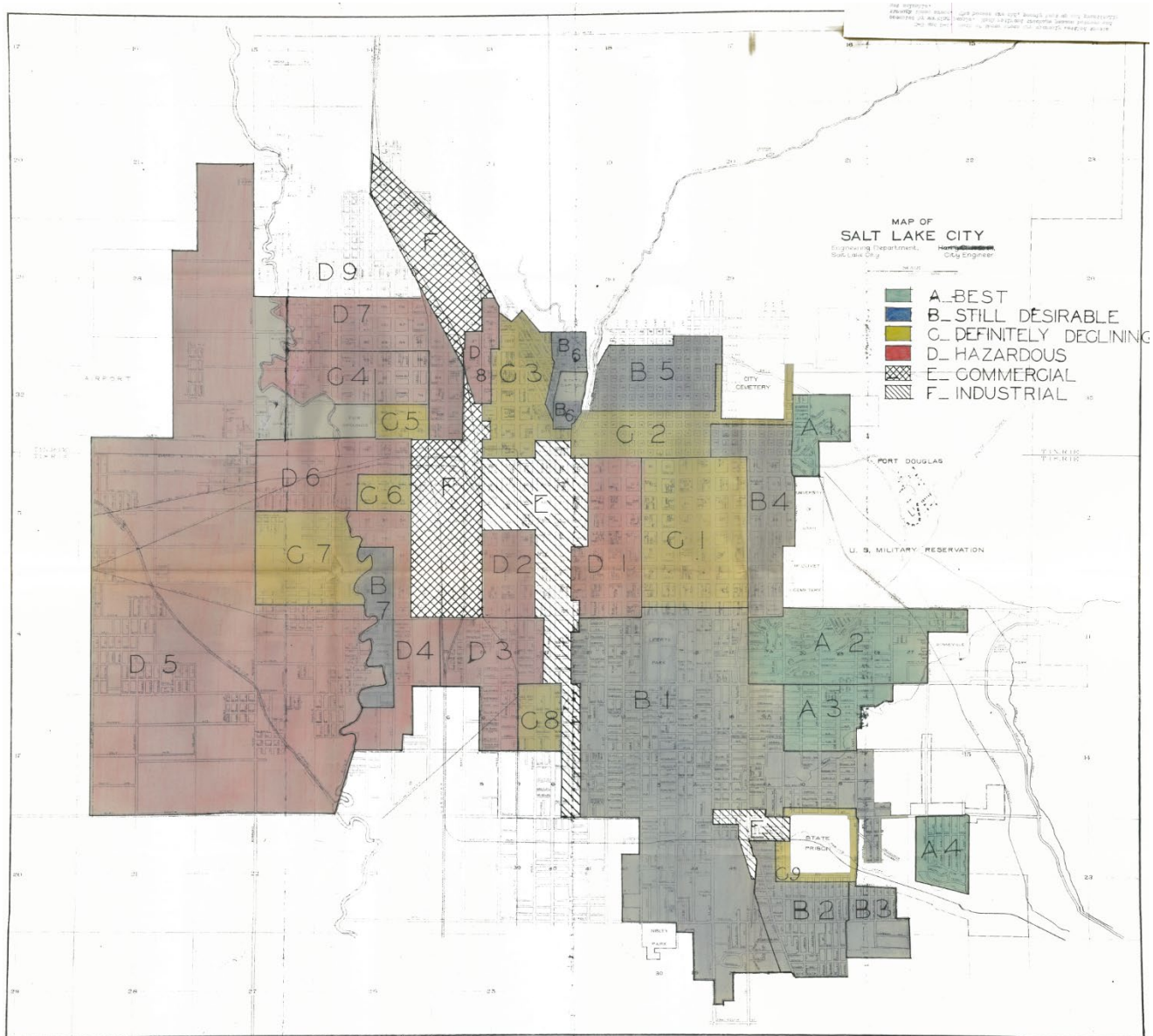
As a January 2023 letter to UDOT from the mayor and others at Salt Lake City stated, Salt Lake City is one of the few cities in Utah where a redlining map was created (in 1939) to predict “safe” or “risky” home mortgage lending conditions, based in part on the racial composition of an area (Figure 3.4-11; Salt Lake City 2023a). The letter states that “most neighborhoods west of the Salt Lake City freight rail tracks were designated as ‘hazardous’ for lending, and most of those neighborhoods are west of I-15 today.” Redlining has historically made wealth creation through home ownership more difficult for communities of color.

The January 2023 letter from Salt Lake City to UDOT also noted the physical barriers, such as I-15 (which was constructed in the 1950s and 1960s) and the railroad tracks (which were constructed in the 1860s) located two blocks east of I-15, that have “perpetuated racial segregation and disparate economic, educational, and health outcomes for the city’s west-side communities” (Salt Lake City 2023a). A Westside Coalition was developed in 2018 to address many of the issues shared by the west-side communities, including ongoing environmental concerns with clean air and clean water, affordable housing, unhoused populations, transportation and accessibility, and future west-side development. These issues, which perpetuate environmental and social burdens, confirm the presence of EJ populations west of I-15, as illustrated in Figure 3.4-11.

The areas of concern to these communities include air quality (including how air quality could affect health and the economy), physical barriers or separation caused by the railroads and I-15, noise, and potential for relocations or displacements of residents, businesses, or community facilities from the proposed I-15 improvements. Commenters have noted that the west-side communities of Salt Lake City have historically had disparate economic, educational, and health outcomes and are concerned about the potential for the I-15 improvements to exacerbate these concerns.

Concerns about impacts to the west-side neighborhoods of Salt Lake City have been long-standing and are a result of many contributing factors.

Figure 3.4-11. Historic Redlining Map of Salt Lake City



Many of the existing issues and the contributions of transportation infrastructure and land uses preceded the original construction of I-15 in the 1960s. Examples include historical placement of transportation infrastructure and other industrial facilities that placed barriers and emission sources within and near these communities before the original construction of I-15. The meteorological and topographical makeup of the region also affects air quality. For example, the transcontinental railroad was constructed in the 1860s north of the project study area, and many subsequent north-south railroad lines from Salt Lake City to the transcontinental railroad have created the main railroad corridor that exists in the narrow corridor between the Wasatch Mountains and the Great Salt Lake. Since the initial railroad lines were constructed in the late 1800s, many additional railroad lines have been added in this railroad corridor, most recently the UTA

FrontRunner in 2008. Many of the industrial land uses and facilities in western and northern Salt Lake City, which were established prior to the construction of I-15, were developed around these rail lines.

As one example, the Salt Lake City refinery (currently the Marathon Oil Refinery) was opened in 1908. The Salt Lake City International Airport was constructed the 1930s. The historic Salt Lake City redlining mapping was most recently documented in 1939. Additionally, prior to the construction of I-15 in the 1960s, there was also U.S. Highway 91 that was located on a similar alignment to the current U.S. Highway 89/Beck Street alignment (about 4 blocks east from the current I-15 alignment in most areas of northern Salt Lake City). Local zoning and the types of industries allowed in various zones were then established around these early developments. Concerns about air quality (in the late 1800s) resulted in many industrial land uses being located in the northern and western areas of the city to keep these land uses farther away from the downtown areas and residential east of the railroads.

Similarly, air quality issues and concerns are multivariate and have been an ongoing issue in Salt Lake City since Mormon pioneers settled in Utah in 1847 (Mitchell and Zajchowski 2022; University of Utah, J. Willard Marriott Library, no date). In addition to the multivariate sources of emissions (industry, transportation, and residential and commercial emissions from heating and appliances), the Wasatch Front also has valleys that trap air during winter inversions. In the late 1800s and early 1900s, most winter heat was produced by burning wood or charcoal, which produce high rates of particulate matter, carbon monoxide, and other air quality pollutants. Salt Lake City passed its first air quality ordinance in 1893 and has made ongoing efforts, along with the State of Utah, to continue to look at ways to improve air quality, especially during winter inversions.

From a historical perspective, the current air quality in Utah is much improved from historical levels, even with a much higher population, and continues to get better due to stricter air quality standards, better industrial and vehicle emission technologies, cleaner-burning fuels, and energy-efficiency measures. Consistent with this recent trend, transportation-related air quality pollutants are projected to continue to decrease in the future due to even-better emissions technologies and fuel efficiency (WFRC 2019b).

Although the regional air quality in the project study area is improving, many commenters stated, and the EPA EJScreen Tool (see Section 3.4.5.3, *EPA EJScreen Tool*) found, that air quality in many EJ communities in the project study area is often worse than air quality in non-EJ communities. Monitoring data from the Utah Division of Air Quality confirm that monitored levels of some pollutants are higher at the Rose Park monitoring station (in west Salt Lake City) compared to the Hawthorne (in east Salt Lake City) and Bountiful monitoring stations (see Table 3.8-3, *Air Quality Monitoring Data from the Bountiful, Rose Park, and Hawthorne Monitoring Stations in Davis and Salt Lake Counties*, in Section 3.8, *Air Quality*). The reasons for this disparity in air quality between the monitoring stations is not known, and EPA and Salt Lake City are currently studying this issue. EPA anticipates that a report documenting the results of its literature review, data review, and recommendations for areas of further research will be available in the fall of 2023. UDOT has been coordinating with EPA and its contractors as part of the EPA study and will review the EPA report when it is available.

UDOT received comments stating issues of concern for EJ populations that included air quality (including how air quality could affect health and the economy), physical barriers or separation caused by the railroads and I-15, noise, and potential for relocations or displacements of residents, businesses, or community facilities from the I-15 improvements. Many of these comments also noted that the west-side communities of Salt Lake City have historically had disparate economic, educational, and health outcomes, and the commenters were concerned about the potential for the I-15 improvements to exacerbate these concerns.

Although decision-making relevant to the proposed Action Alternative cannot remedy many of these past transportation and industrial decisions, UDOT will continue to collaborate with the community through this NEPA process. For more information, see Section 3.4.6.4, *Mitigation Measures*.

3.4.5.2 Climate and Environmental Justice Screening Tool (CEJST)

Disadvantaged communities were identified in the EJ evaluation area using the CEJST. The tool was developed to help federal agencies and project sponsors identify disadvantaged communities to fulfill the promise of the Justice40 Initiative so that federal investments reach communities that need them most. Communities are considered disadvantaged if they are in census tracts that meet the thresholds for at least one of the tool's categories of burden (climate change, clean energy and energy efficiency, health, affordable housing, legacy pollution, clean and affordable transportation, water and wastewater, and barriers to workforce development), or if they are on land within the boundaries of federally recognized tribes.

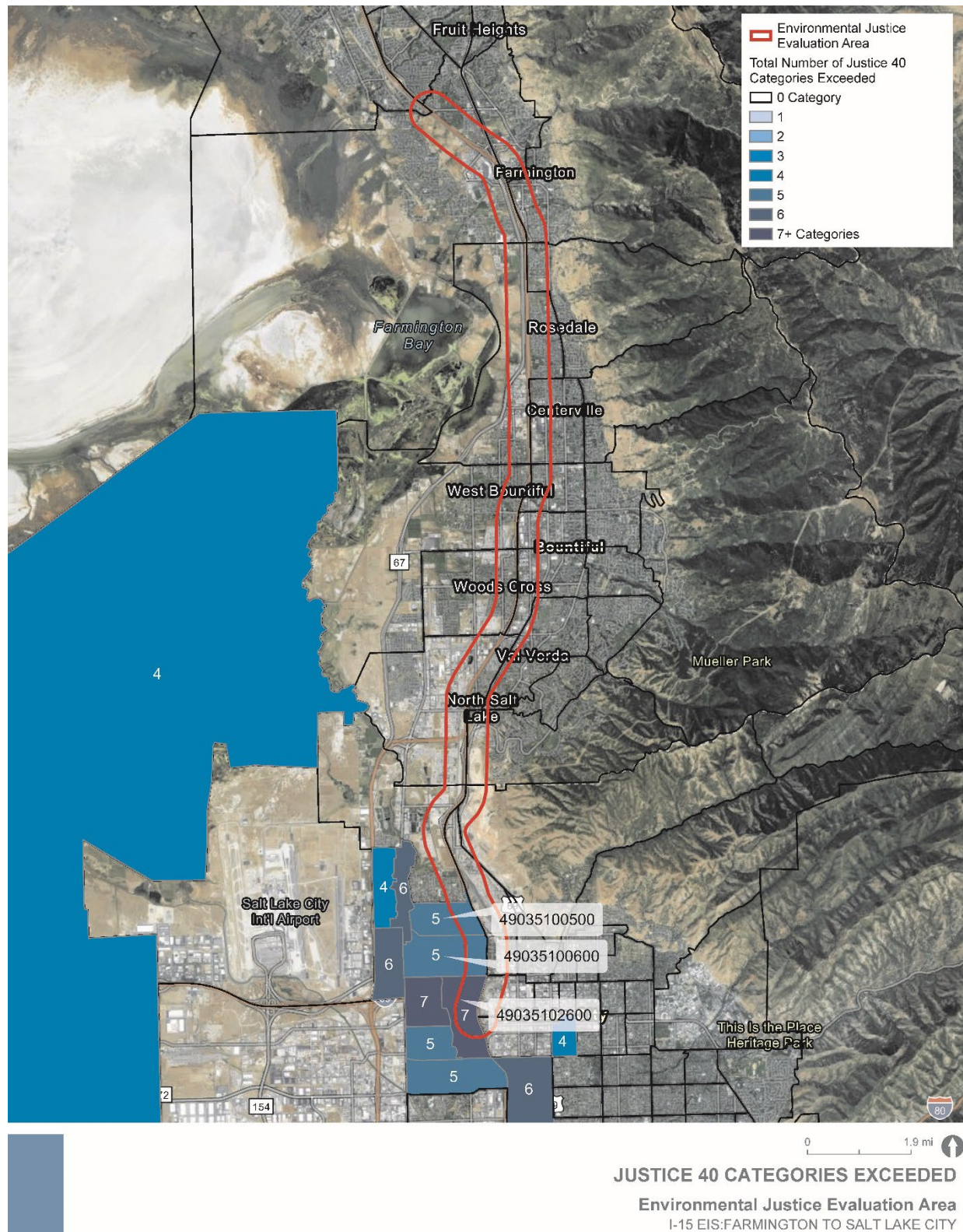
Three census tracts along I-15 have been identified as disadvantaged in this tool due to meeting multiple burden thresholds as well as the associated socioeconomic criteria (see Table 3.4-1 and Figure 3.4-12). These tracts are located in the south segment on the western side of I-15 in Salt Lake City. Given their proximity, the indicators exceeding Justice40 thresholds are nearly identical among these adjacent tracts. This area faces several existing environmental disparities including heightened projected flood risk, asthma prevalence, a history of underinvestment in housing, close proximity to Superfund sites, or wastewater discharge.

Table 3.4-1. Justice40 Categories of Disadvantaged Census Tracts in the EJ Evaluation Area

Justice40 Category	Census Tract 49035100500 (5 categories exceeded)	Census Tract 49035100600 (5 categories exceeded)	Census Tract 49035102600 (7 categories exceeded)
Climate Change	Projected flood risk (94th percentile)	Projected flood risk (94th percentile)	Expected population loss rate (99th percentile)
Energy	NA	NA	NA
Health	Asthma (93rd percentile)	Asthma (93rd percentile)	Asthma (93rd percentile) Low life expectancy (96th percentile)
Housing	Historic underinvestment – census tracts with historically high barriers to accessing home loans	NA	Historic underinvestment – census tracts with historically high barriers to accessing home loans
Legacy Pollution	Proximity to Superfund sites (98th percentile)	Proximity to Superfund sites (98th percentile)	Proximity to Superfund Sites (99th percentile)
Transportation	NA	NA	Traffic proximity and volume (98th percentile)
Water and Wastewater	Wastewater discharge (95th percentile)	Wastewater discharge (95th percentile)	Wastewater discharge (95th percentile)
Workforce Development	NA	Poverty (91st percentile)	Unemployment (92nd percentile) High school education only (28th percentile)

Data accessed from CJEST on August 16, 2023 (<https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>)

Figure 3.4-12. Justice40 Disadvantaged Communities and Number of Categories Exceeded



3.4.5.3 EPA EJScreen Tool

The EPA EJScreen tool is a mapping and screening tool that helps identify communities that might be disproportionately exposed to environmental hazards. The tool evaluates environmental and demographic data to create EJ indices that represent a potential for disparate existing impacts.

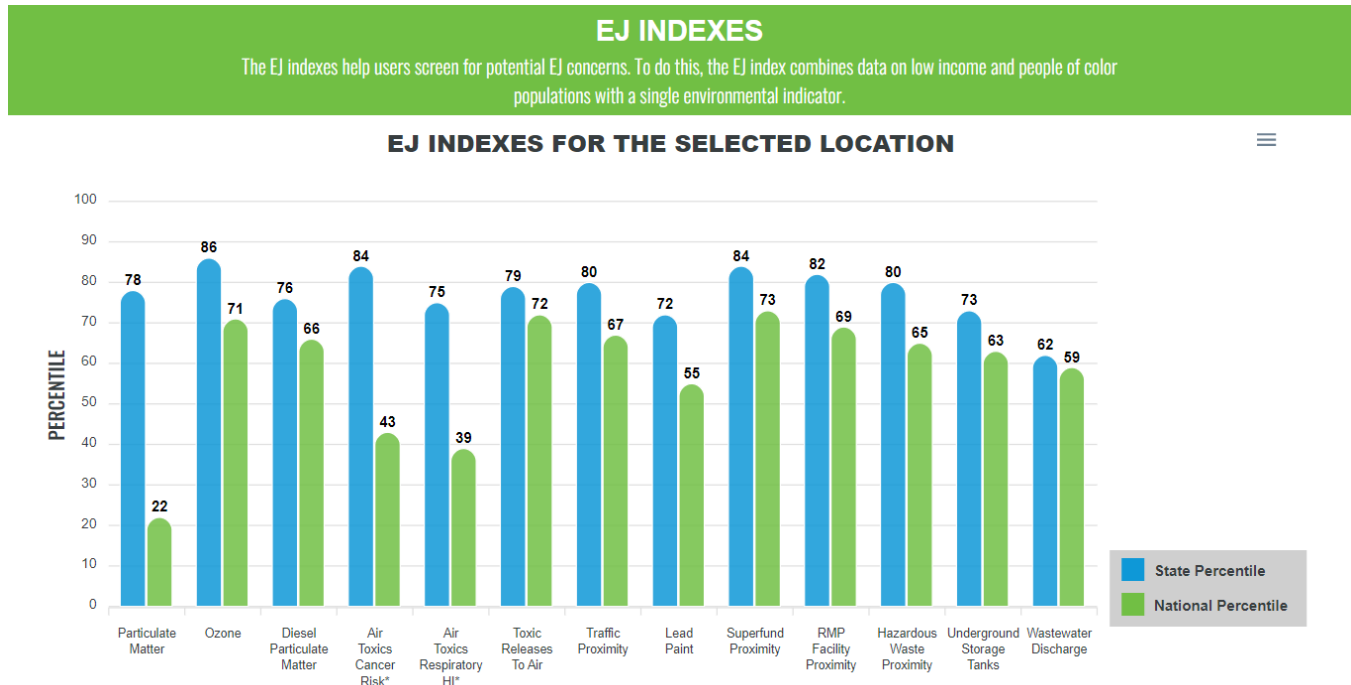
The EJ indices are a measure of the potential for environmental injustice in a community. They are calculated by combining a single environmental indicator, such as proximity to a hazardous waste site, with the demographic index of an EJ population, which then becomes a measure of the population's vulnerability to environmental hazards. The demographic index is calculated by averaging the percentage of people in a community who are low-income and people of color in the state. A high EJ index score indicates that a community might be disproportionately exposed to environmental hazards. An index is presented as a percentile, which compares residents in the community to state and national populations. The reported percentile represents what percentage of the state and U.S. population has an equal or lower value, meaning less potential for exposure, risk, or proximity to certain facilities. EPA has found that the tool is helpful to establish a suggested starting point for the purpose of identifying geographic areas that might warrant further consideration, analysis, and public and agency outreach.

The EJScreen Tool generates EJ indices for 12 environmental indicators:

- Particulate matter 2.5
- Ozone
- Diesel particulate matter
- Air toxics cancer risk
- Air toxics respiratory hazard index
- Toxics releases to air
- Traffic proximity
- Lead paint
- Superfund proximity
- Risk Management Plan (RMP) facility proximity
- Hazardous waste proximity
- Underground storage tanks and leaking underground storage tanks
- Wastewater discharge

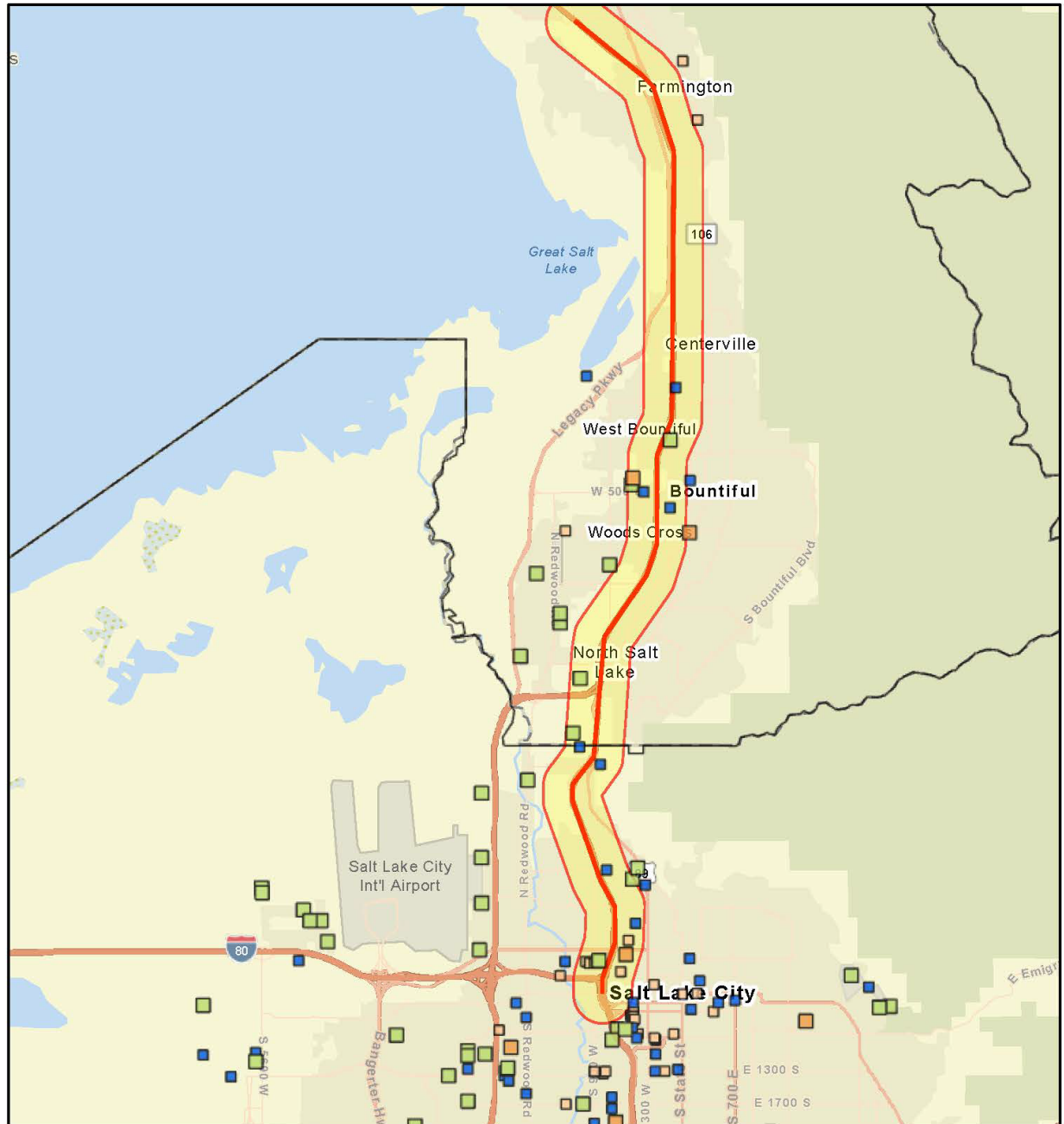
The EJScreen Tool found the EJ indices for the selected location to have a greater existing burden when it comes to particulate matter (78th percentile), ozone level (86th percentile), diesel particulate matter (76th percentile), air toxics cancer risk (84th percentile), toxic releases to air (79th percentile), traffic proximity (80th percentile), Superfund proximity (84th percentile), RMP facility proximity (82th percentile), and hazardous waste proximity (80th percentile) (Figure 3.4-13). These percentiles are the results for these indicators compared to the state population.

Figure 3.4-13. EJ Indexes for the EJ Evaluation Area from the EPA EJScreen Tool



The area report generated by the tool also provided documentation on location-specific sites in the EJ evaluation area. The report showed that these EPA sites are located both within and outside EJ communities, as shown previously in Figure 3.4-7 to Figure 3.4-10. For example, there are pockets of potentially hazardous waste sites in EJ communities in Bountiful and non-EJ communities in North Salt Lake. However, hazardous waste sites are disproportionately concentrated in the south segment and in the EJ communities of that segment (Figure 3.4-14).

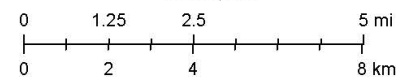
Figure 3.4-14. Locations of EJ Regulated Sites in the EJ Evaluation Area from the EPA EJScreen Tool



8/11/2023

1:200,000

- Superfund (NPL)
- Hazardous waste (TSDF & LQG)
- Air pollution
- Brownfields
- Counties
- Project 1



County of Salt Lake, Utah Geospatial Resource Center, Esri, HERE, Garmin, SafeGraph, METI/WASA, USGS, Bureau of Land Management, EPA, NPS, USDA, EPA OEI

3.4.5.4 Summary of EJ Issues of Concern

Based on review of the CEJST and EPA EJScreen Tool and input provided by comments during the I-15 EIS process, UDOT identified the following topics as the topics of concern for EJ populations relevant for consideration with the I-15 project. These issues are discussed in more detail in Section 3.4.6.3, *Action Alternative*.

- Community connectivity, transportation, and accessibility
- Air quality
- Property impacts to residents and businesses in areas with EJ populations
- Noise

Non-transportation-related EJ Issues. Other identified issues, such as proximity to hazardous materials (including Superfund sites, RMP sites, and underground storage tanks), wastewater discharges, flood risk, lead paint, and educational concerns would not be affected positively or negatively by the I-15 project, are outside of UDOT's area of jurisdiction, and are not discussed further in this analysis. Although the Action Alternative would have potential impacts to sites with hazardous materials (see Section 3.14, *Hazardous Materials and Hazardous Waste Sites*), it would not add any new hazardous material sites or increase exposure to hazardous materials to any areas with EJ populations. Similarly, the Action Alternative would have stormwater discharges, which would be treated and have similar effects on the existing stormwater discharges from I-15 (see Section 3.11, *Water Quality and Water Resources*). There would not be any new wastewater discharges or increased exposure to wastewater discharges with the I-15 project. As described in Section 3.13, *Floodplains*, the Action Alternative would not increase risk of upstream flooding or otherwise change the flood risk to any areas, including areas with EJ populations. Issues related to lead paint and workforce development are not related to transportation and would not be affected by the I-15 project.

3.4.6 Environmental Consequences and Mitigation Measures

This section discusses the direct impacts of the project alternatives on the environmental justice populations in the EJ evaluation area.

3.4.6.1 Methodology

To determine the potential for the Action Alternative to result in disproportionate adverse human health or environmental effects on EJ populations, UDOT reviewed the expected project impacts discussed in the resource sections and assessed the likelihood of any of these impacts to affect minority populations and/or low-income populations. The environmental justice impact analysis considers the USDOT Order 5610.2c definition of adverse effects, which are:

“the totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness or death; air, noise, and water pollution and soil contamination; destruction or disruption of man-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities.”

According to USDOT Order 5610.2c, a disproportionate adverse effect is one that:

1. is predominately borne by a minority population and/or a low-income population; or
2. will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the nonminority population and/or non-low-income population.

UDOT reviewed the temporary construction and permanent operational effects of the Action Alternative and identified the magnitude of the effects, whether effects are adverse or beneficial, the duration of effects (temporary or permanent), and the geographic location of the effects on the identified minority and low-income populations in the EJ evaluation area. Where the Action Alternative would have no adverse effects on populations in general, no further analysis was conducted.

In addition to reviewing operational and construction-phase adverse effects, UDOT considered the benefits of the Action Alternative. Of note are any benefits to the communities that have experienced a legacy of impacts on environmental injustice populations and for which the I-15 project might improve the quality of life for these populations.

3.4.6.2 No-action Alternative

With the No-action Alternative, the improvements associated with the I-15: Farmington to Salt Lake City Project would not be implemented. There would be no project-related construction activities on I-15, and all nearby roads in the project area would continue to operate as they currently do. With the No-action Alternative, there would be no benefit to communities and residents' and workers' quality of life from the roadway and pedestrian and bicyclist facility improvements. Moreover, the increased congestion on I-15 and the lack of safety improvements could reduce the quality of life for all users of I-15 and the I-15 interchanges, including the EJ communities who use I-15, the I-15 interchanges, and cross-streets. Although there would be no short-term construction impacts to the minority and low-income populations in the EJ evaluation area, there would also be no benefits to these communities. The project purposes to improve safety, replace aging infrastructure, provide better mobility for all travel modes, strengthen the state and local economy, and better connect communities along I-15 from Farmington to Salt Lake City would not be met.

3.4.6.3 Action Alternative

This section provides a summary of the Action Alternative's expected impacts on historical issues of community connectivity, air quality, right-of-way impacts, and noise, and an evaluation of any disproportionate adverse effects on EJ populations from the Action Alternative. This section also summarizes the potential for cumulative effects for these resources in EJ communities.

3.4.6.3.1 Action Alternative Impacts Related to Community Connectivity, Transportation, and Accessibility for EJ Populations

As previously discussed, the community separation issues began with the construction of the railroads in the 1860s and are longstanding and multivariate. Items that have and continue to contribute to the separation between the east- and west-side neighborhoods in Davis County and Salt Lake City include the railroads, I-15, and industrial land uses (such as oil refineries) in some locations.

In order to improve connectivity to and from I-15, UDOT is proposing to maintain all existing crossings of I-15 and improve the safety for all users (roadway, transit, pedestrians, and bicyclists, some of which might be from disadvantaged EJ populations) on I-15, the I-15 interchanges and the I-15 cross streets by making geometric improvements and congestion relief elements. UDOT will improve connectivity to both sides of I-15 by adding new pedestrian and bicyclist crossings of I-15.

The Action Alternative includes new or improved pedestrian and bicyclist facilities at each interchange in the transportation and mobility evaluation area. The improvements (listed in Table 3.6-16, *Action Alternative Pedestrian and Bicyclist Improvements by Location*, in Section 3.6, *Transportation and Mobility*) would meaningfully improve safety and the user experience for pedestrians and bicyclists at all of the existing interchanges in the transportation and mobility evaluation area (200 West in Farmington; Parrish Lane in Centerville; 400 North in Bountiful, and West Bountiful; 500 South in Bountiful, West Bountiful, and Woods Cross; 1100 North/2600 South in North Salt Lake and Woods Cross; 1000 North in Salt Lake City; and 600 North in Salt Lake City). All of these interchanges would include wider, safer facilities that are intended specifically for pedestrians and bicyclist needs. Additional roadway design features, such as signal-controlled turn movements at the interchange terminals and perpendicular intersection designs, would also improve the safety and user experience for pedestrians and bicyclists crossing I-15 at an interchange.

In addition to the improvements at the I-15 interchanges, the Action Alternative would also provide:

- A new 3.8-mile SUP connection between Eagle Ridge Drive in North Salt Lake and Wall Street/200 West in Salt Lake City
- Three new grade-separated SUP crossings of I-15 (Centerville Community Park SUP, Centerville 200 North SUP, and North Salt Lake 2600 South SUP)
- One new crossing of I-15 as part of the new road crossings under I-15 at 800 West in Woods Cross
- Improvements to the existing pedestrian and bicyclist facilities crossing I-15 at three locations (State Street in Farmington, Glovers Lane in Farmington, and Center Street in North Salt Lake)
- New, wider bridges at eight locations (1600 North/Pages Lane in West Bountiful and Centerville, 1500 South in Woods Cross, Main Street in North Salt Lake, Center Street in North Salt Lake, 300 North in Salt Lake City, North Temple in Salt Lake City, South Temple/Folsom Trail in Salt Lake City, and 200 South in Salt Lake City)

In Salt Lake City, the Action Alternative would also provide a benefit to the west-side EJ populations in the Rose Park and Fairpark communities by providing a new collector-distributor design between 600 North and 1000 North. This interchange design would benefit these neighborhoods by allowing full access to and from I-15 at 1000 North, which would reduce traffic on 600 North and other local roads (such as 900 West and 1000 West) for traffic going to or from 600 North.

In Salt Lake City, the Action Alternative would also provide a new, full-access interchange at 2100 North that would have a grade-separated railroad crossing to U.S. 89. This new interchange and grade-separated railroad crossing would be a benefit to the Salt Lake City neighborhoods east of I-15 by reducing overall traffic and industrial truck traffic on both 600 North and U.S. 89/Beck Street.

Overall, the Action Alternative would be a net benefit to community connectivity and would reduce barriers. The Action Alternative would maintain all existing crossings of I-15 and be a beneficial improvement to all users. This net benefit would also be considered beneficial from the perspective of cumulative effects

on EJ populations since it would help to reduce historic issues in EJ populations related to community connectivity.

Additionally, a new crossing under I-15 was considered at 400 North in Salt Lake City during the draft alternatives development and screening process for this EIS. In response to mixed feedback from the community for the new 400 North crossing in Salt Lake City, UDOT removed this crossing from the Action Alternative in the Draft EIS. To meet the project purpose of “better connecting communities,” UDOT is working with Salt Lake City and the local community to evaluate a potential new crossing under I-15 between 400 North and North Temple. If a location for a new crossing is identified through this additional study, UDOT will include this location in the Action Alternative in the Final EIS or in an EIS re-evaluation. The crossing study was ongoing when this Draft EIS was released.

3.4.6.3.2 Action Alternative Impacts Related to Air Quality Issues for EJ Populations

Air quality issues and concerns are multivariate and have been an ongoing issue in Salt Lake City since Mormon pioneers settled in Utah in 1847 (Mitchell and Zajchowski 2022; University of Utah, J. Willard Marriott Library, no date). In addition to the multiple sources of emissions (industry, transportation, and residential and commercial emissions from heating and appliances), the Wasatch Front also has valleys that trap air during winter inversions. In the late 1800s and early 1900s most winter heat was provided by burning wood or charcoal, which produces high rates of particulate matter emissions, carbon monoxide, and other air quality pollutants. Salt Lake City passed its first air quality ordinance in 1893 and has made ongoing efforts, along with the State of Utah, to continue to look at ways to improve air quality, especially during winter inversions.

As summarized in the Utah Division of Air Quality’s *2022 Annual Report* (UDAQ 2022), air quality along the Wasatch Front during the winter shows a clear trend of continued improvement over the past two decades, even with the large population and economic growth in the region during this period. The Division also notes that summertime ozone is now the primary air quality concern along the Wasatch Front.

From a historical perspective, the current air quality in Utah is much improved from historical levels, even with a much higher population, and continues to get better due to stricter air quality standards, better industrial and vehicle emission technologies, cleaner-burning fuels, and energy-efficiency measures. Consistent with this recent trend, transportation-related air quality pollutants are projected to continue to decrease in the future due to even-better emissions technologies and fuel efficiency standards (WFRC 2019b).

Air quality in a given area depends on several factors such as the area itself (size, nature of existing development, and topography), the prevailing weather patterns (meteorology and climate), and the pollutants released into the air. All state governments are required to develop a state implementation plan (SIP) for each pollutant for which an area is in nonattainment or maintenance status. The SIP explains how the State will comply with the requirements of the Clean Air Act. The 2019–2050 conforming RTP and transportation improvement program (TIP) include the I-15 project (widening I-15 from five lanes to six lanes in each direction) from Farmington to the Salt Lake County border (2019–2050 RTP project: R-D-45) and other transportation projects.

Regional air quality modeling conducted by WFRC for the 2050 transportation conformity determination (WFRC 2019b) used existing ambient air quality conditions which capture to current air quality conditions in the entire WFRC coverage area (Salt Lake, Davis, Tooele, Weber, and Morgan Counties). The modeling

demonstrated that all regionally significant transportation projects, including the I-15 project, would be in compliance with the National Ambient Air Quality Standards (NAAQS).

As described in Section 3.8, *Air Quality*, the Action Alternative would help reduce regional traffic congestion, which would reduce idling emissions. UDOT modeling shows annual on-road emissions of criteria pollutants (with the exception of particulate matter [PM₁₀]) and mobile-source air toxics (MSAT) emissions for the Action Alternative will decrease compared to existing conditions. The expected decrease in emissions is projected to occur even with expected increases in vehicle-miles traveled (VMT) in the project study area due to improved fuel and emissions standards in the future. PM₁₀ emissions are expected to increase because of increased road dust emissions, which are projected to increase proportionately with VMT. However, Utah is in a maintenance area for PM₁₀ and this minor increase in PM₁₀ emissions related to road dust emissions is not anticipated to cause any issues related to the region continuing to meet the NAAQS for PM₁₀.

UDOT expects that, during construction, air quality would be degraded in the short term from the release of diesel exhaust particulate matter and other emissions from equipment and on-road vehicles powered by gasoline and diesel engines and fugitive dust generated from ground disturbances. Construction activities in the area could temporarily increase traffic congestion and slow the speed of traffic, resulting in a temporary increase in on-road emissions. These emissions would be limited to the immediate area affected by construction-related traffic. There would also be short-term increases in fugitive dust, particulates, and local air pollutant emissions from construction equipment.

Since there would be no temporary or permanent adverse air quality impacts, the Action Alternative would not result in disproportionate adverse air quality effects on EJ populations and would not contribute to additional degradation of air quality in the project study area, including any areas with EJ populations.

As summarized in Section 3.18, *Indirect and Cumulative Effects*, any future air quality sources in the EJ evaluation area would need to apply to the Utah Division of Air Quality for an approval order, which would address compliance with the SIP. Therefore, the I-15 project would not have adverse impacts to air quality and would not contribute to cumulative effects when combined with other reasonably foreseeable projects or future land use changes. Overall, the forecasted trend of improving air quality should benefit both EJ populations and non-EJ populations.

3.4.6.3.3 Action Alternative Impacts Related to Right-of-Way Impacts in Areas with EJ Populations

Constructing the Action Alternative options would require property acquisitions, which could affect the adjacent EJ populations. UDOT is dedicated to working closely with property owners and officials to minimize any potential negative effects. Each option within the Action Alternative segments would involve full acquisitions and relocations of commercial or residential properties. Although some of the commercial properties and/or businesses might be minority-owned, employ minority or low-income individuals, or serve minority and low-income customers, they are not unique and can be relocated to comparable locations. These impacts would be dispersed throughout the project area and would avoid disproportionate effects on EJ populations. An overview of acquisitions and relocations is provided in Table 3.3-2, *Summary of Right-of-way Impacts from the Action Alternative*, in Section 3.3, *Right-of-way and Relocations*.

The Action Alternative would also result in partial acquisition of residential, commercial, utility, and municipal properties, many of which are located in EJ communities. During the final design process for the Action

Alternative, UDOT would explore measures to minimize the need for property acquisition. Properties required for the project would be acquired at fair market values, and relocation assistance would be provided in accordance with federal requirements.

Specific to the Salt Lake City area, there are 1 or 2 commercial relocations and 2 commercial potential relocations. In Salt Lake City, no residential properties are currently anticipated to need to be demolished and considered as relocations from the project. Twenty-four residential properties, located on the east side of I-15 between Hodges Lane and 300 North, are identified as potential relocations. These 24 properties are considered potential relocations because they are located close to the existing I-15 retaining wall and potentially could experience adverse construction impacts (due to road closures or construction equipment operating in back yards). All but one of these 24 properties was constructed on surplus property after the last I-15 project in the late 1990s or early 2000s, and none are considered historic properties. UDOT will work with the property owners and renters, if applicable, of these properties through the right-of-way process to minimize impacts during construction and provide fair compensation and/or relocation assistance, if needed, in accordance with federal requirements.

Because there are few anticipated relocations from the Action Alternative (in areas with EJ populations and in areas with non-EJ populations), and because federal laws require fair compensation for any impacted property owners or renters, no cumulative effects on EJ populations are anticipated from impacts related to right-of-way.

3.4.6.3.4 Action Alternative Impacts Related to Noise Impacts in Areas with EJ Populations

The main determinant of noise levels is proximity to the noise source. Therefore, noise impacts from the I-15 project would be similar throughout the noise evaluation area and would be experienced similarly in both EJ and non-EJ areas.

According to Section 3.9, *Noise*, the construction activities for all options would take place in specific locations for short periods as the work progresses. Although some of these improvement areas are located within or close to EJ populations, the majority of typical construction activities fall within the 75-to-85 dBA range at 50 feet. The noise impacts would be temporary and would be experienced in both EJ and non-EJ areas.

To minimize the temporary noise impacts associated with construction, the contractor would comply with all state and local regulations relating to construction noise. This includes adhering to UDOT's 2022 Standard Specification 00555 for nighttime construction work and UDOT's 2017 Special Provision Section 00555M, *Prosecution and Progress*, to reduce the impacts of construction noise on the surrounding community.

Based on the noise analysis in the EIS (see Section 3.9), UDOT determined that the expected noise impacts of the Action Alternative would reasonably predict the cumulative effects analysis for noise, and there would likely not be any significant cumulative noise impacts from other foreseeable future actions. With the proposed mitigation measures, no cumulative effects on EJ populations from noise are anticipated.

3.4.6.3.5 Evaluation of Potential Disproportionate Adverse Effects from the Action Alternative to EJ Populations

As summarized in Section 3.4.4.5, *Environmental Justice and Additional Potentially Burdened Communities*, using various data sources, EJ populations are present in almost all areas of the project study area.

As summarized in Appendix 2A, *Alternatives Screening Report*, the Action Alternative was advanced through the alternatives screening process because it was the concept that met the purpose of and need for the project and would have the fewest impacts to all resources, including areas with EJ populations. Other I-15 mainline options evaluated during the screening process would have wider widths and more impacts to all resources, including areas with EJ populations. When refining the design of the Action Alternative, UDOT also went to substantial effort to avoid and minimize impacts to areas with EJ populations. The best example of this consideration in the design process is in the Salt Lake City segment between 600 North and about 1400 North where the wider I-15 and collector-distributor ramps proposed with the Action Alternative were shifted to the east to avoid impacts to residential areas and Rosewood Park that are located in areas with EJ communities on the west side of I-15.

Because I-15 is an existing facility and the Action Alternative proposes making the same roadway, pedestrian, and bicyclist improvements to the existing I-15 corridor, the benefits and impacts from the Action Alternative would be similar and proportionate for all populations throughout the corridor. The Action Alternative's width and impacts would be similar and proportionate throughout the project study area because the Action Alternative is proposing the same 5 GP lanes, 1 HOT lane, and auxiliary lanes cross section consistently through the project study area. Therefore, the Action Alternative's benefits (roadway, pedestrian, and bicyclist facility improvements), impacted resources (for example, right-of-way, noise, air quality, public parks, etc.), magnitude or severity of impacts, and proposed mitigation for impacts (for example, noise barriers, right-of-way compensation, etc.) would be the same for all segments regardless of whether there are EJ populations or non-EJ populations.

The differences among the Action Alternative options would be minor and would not have any notable differences in benefits or impacts to areas with EJ populations. No option would be better or have more adverse impacts to areas with EJ populations.

All impacts from the Action Alternative would be strictly a result of the geographic proximity of resources to the existing I-15 roadway. Most impacts from the Action Alternative would be minor and/or could be mitigated. In the context of the broader community, the conditions with the Action Alternative after construction would be similar to the existing conditions given that I-15 already exists.

In locations where the Action Alternative would have impacts to areas with EJ populations, these areas would also receive the benefits of the Action Alternative. In locations where there are impacts to areas with EJ populations, it would not be possible to avoid impacts to areas with EJ populations because the areas with EJ populations are located on both sides of the existing I-15. In other words, there are not situations or locations in the project study area where there would be options to shift the alignment to avoid impacts to EJ populations by impacting non-EJ populations.

As a hypothetical example, it would not be possible to avoid impacts from the Action Alternative to areas with EJ populations in the south segment by proposing more impacts in areas without EJ populations in the north segment. Although this hypothetical example would avoid impacts to the south segment, it would also not meet the purpose of and need for the project, and a wider roadway in the north segment would not

provide the benefits of the Action Alternative to the south segment. A reduced number of lanes in the south segment would create a bottleneck with no transportation benefits and more congestion for the EJ populations in this area.

Therefore, there are not any impacts from the Action Alternative, or options in various segments, that are being predominantly borne by EJ populations, or adverse impacts that would be suffered by the EJ populations appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the non-EJ populations. With consideration of avoidance, minimization, and mitigation measures, as well as offsetting benefits, the identified impacts would not have disproportionate adverse effects on minority, low-income, and additionally burdened communities as defined in Section 3.4.

3.4.6.3.6 Summary of Action Alternative Impacts

As discussed in this analysis, the Action Alternative would not result in disproportionate adverse effects on EJ populations or contribute to substantial cumulative effects from the Action Alternative on EJ populations. With consideration of avoidance, minimization, and mitigation measures, as well as offsetting benefits, the identified impacts would not have disproportionate adverse effects on minority, low-income and additionally burdened communities as defined in Section 3.4.4, *Affected Environment: EJ Populations*. The Action Alternative's benefits and impacts to the EJ issues of concern (community cohesion, transportation, and accessibility; air quality; right-of-way; and noise) would be similar throughout the EJ evaluation area, and any adverse impacts would be proportionate to all of the areas, regardless of whether there are EJ populations in the area or not.

3.4.6.4 Mitigation Measures

Although decision-making relevant to the proposed Action Alternative cannot remedy many of these past transportation and industrial decisions, UDOT intends to continue to work collaboratively with the community to address past impacts to the extent that they are related to I-15 and can be addressed with the current I-15 project. By actively involving the community in the process and considering their feedback, UDOT is committed to working with the community to identify and incorporate those ideas into the project that will have lasting benefits for all members of the community.

To meet the project purpose of "better connecting communities," UDOT is working with Salt Lake City and the local community to evaluate a potential new crossing under I-15 between 400 North and North Temple. If a location for a new crossing is identified through this additional study, UDOT will include this location in the Action Alternative in the Final EIS or in an EIS re-evaluation. The crossing study was ongoing when this Draft EIS was released.

3.5 Economic Conditions

3.5.1 Introduction

Section 3.5 describes the economic characteristics in the economic conditions evaluation area and evaluates how those characteristics would be affected by the project alternatives. The economic analysis considers the economic conditions in the areas surrounding the Action Alternative.

Economic Conditions Evaluation Area. The economic conditions evaluation area is located in Davis and Salt Lake Counties. It measures about 18 miles north-south and extends from the U.S. 89/Legacy Parkway/Park Lane interchange (I-15 milepost 325) in Farmington to the Interstate 80 (I-80) West/400 South interchange (I-15 milepost 308) in Salt Lake City. The economic conditions evaluation area includes the businesses within 0.5 mile of the project footprint. The distance of 0.5 mile was chosen for the economic conditions evaluation area because businesses in this area would be most likely affected by property impacts or indirectly affected by changes in vehicle access and by traffic congestion on I-15 and the interchange cross streets. The economic conditions for Salt Lake City and major cities in Davis County located along the I-15 project are also provided as context for regional economic activity.

3.5.2 Regulatory Setting

Currently, no regulations specify how to evaluate economic impacts in an EIS. FHWA's Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (FHWA 1987), recommends that the economic analysis, if applicable, should discuss the following impacts:

- The economic impacts on the regional and/or local economy such as development, taxes and public expenditures, employment opportunities, accessibility, and retail sales;
- Impacts on the economic vitality of existing highway-related businesses (for example, gas stations and motels) and the overall local economy; and
- Impacts of the project alternatives on established business districts, and any opportunities to minimize or reduce such impacts by the public and/or private sectors.

3.5.3 Affected Environment

3.5.3.1 Regional Economic Conditions

3.5.3.1.1 Road Network

Employment Link

I-15 is the primary transportation corridor connecting the cities of Farmington, Centerville, West Bountiful, Bountiful, Woods Cross, North Salt Lake, and Salt Lake City. The I-15 project serves as a regional transportation artery, providing these population centers access to major economic employers and centers in the region. The I-15 project provides residents of Davis County access to 2 of Utah's top 10 employers: the University of Utah and Intermountain Health Care (Utah Department of Workforce Services 2021). The primary destinations for commuters travelling south from Davis County on I-15 include areas in downtown Salt Lake City, primarily the LDS Church Office Building, the University of Utah, and Research Park (Fehr & Peers 2022).

The Strong Economy outcome area of UDOT's Quality of Life Framework recognizes the vital role of transportation in business and commerce. I-15 provides Davis County and Salt Lake County access to jobs, education, services, and many other essential needs and supports economic development to improve quality of life (UDOT 2020a).

Freight Link

I-15 is a national freight corridor, and all segments of I-15 located in Davis and Salt Lake Counties carry some of the highest volumes and percentages of freight trips in Utah. In Utah, trucks carry the highest percentage of freight trips by both value and weight when compared to air, water, and rail freight. UDOT anticipates that the amount of freight moved by trucks will increase 73% by value and 37% by weight by 2045 compared to 2015 (UDOT 2017a).

I-15 is a National Highway Freight Network route that provides direct connections to West Coast ports. The 2017 *Utah Freight Plan* (UDOT 2017a) emphasizes the importance of I-15 to national and regional freight trips; summarizes the "Interstate 15 Mobility Alliance" and joint planning among California, Nevada, Arizona, and Utah; and summarizes the development of the *I-15 Corridor System Master Plan Update 2017* (CH2M 2017).

Salt Lake City is a major freight hub due to the presence of Salt Lake City International Airport and major rail lines into and out of the region, I-80, and I-15. As a result, manufacturing and distribution companies have established their western distribution centers in the Salt Lake City-to-Ogden portion of I-15. Additionally, many large trucking firms are either headquartered in this area or maintain large truck terminals here (UDOT 2017a).

The 2017 *Utah Freight Plan* emphasizes the importance of I-15 to national and regional freight trips and lists the I-15 project as a Phase 1 freight project (to be constructed between 2017 and 2024; UDOT 2017a). In 2019, UDOT estimated that truck traffic on I-15 from Park Lane to the I-80 interchange was between 4% and 6% of the total traffic in this segment (UDOT and FHWA 2019).

City Economics

The economic conditions evaluation area includes the cities of Farmington, Centerville, West Bountiful, Bountiful, Woods Cross, and North Salt Lake in Davis County and Salt Lake City in Salt Lake County.

The cities in Davis County have a combined total employment of 61,025 and a combined total population of 124,851. For the majority of cities in this portion of the evaluation area, the major employment sectors are health care/social assistance, educational services, and retail trade. However, in both West Bountiful and North Salt Lake, manufacturing is the largest employment sector. While these cities do offer employment opportunities, the predominant land use on both the east and west sides of I-15 consists of single-family homes and other lower-density housing. The average commute times in these cities range from 20.5 minutes in Woods Cross to 24.9 minutes in West Bountiful. Traffic data patterns show that residents in these cities travel south to Salt Lake County and north to northern Davis County (Layton and Hill Air Force Base) or Weber County for work.

Salt Lake City is Utah's main economic center; in 2023, the total employment in the city was 114,921 and the total population was 199,153 (U.S. Census Bureau 2021). In 2022, the unemployment rate for the city was 2.1%, which was below the national average of 3.9% (U.S. Bureau of Labor Statistics 2023). The largest employment sectors are educational services (14.3%); healthcare and social assistance (12.9%); professional, scientific, and technical services (10.5%); and retail trade (10.5%). Of the cities included in the economic conditions evaluation area, Salt Lake City had the shortest commute time (19.4 minutes), which might suggest that many of the city's residents work in Salt Lake City (ESRI 2022; U.S. Bureau of Labor Statistics 2020; U.S. Census Bureau 2021).

3.5.3.2 Local Economic Conditions

To determine the current economic conditions in the economic conditions evaluation area (defined in Section 3.5.1, *Introduction*, as the businesses within 0.5 mile of the project footprint), UDOT discussed pending and future developments with local economic development officials, reviewed general plans and zoning documents, and conducted a field review of the businesses in the evaluation area. The evaluation area has a variety of businesses that support both local and regional customers. As shown in Figure 3.5-1 through Figure 3.5-4, businesses are generally clustered along major streets transecting and adjacent to I-15, including the I-15/U.S. 89 Interchange in Farmington, Parrish Lane in Centerville, 400 North and 500 South in Bountiful, 1100 North/2600 South and along U.S. 89 in North Salt Lake/Woods Cross, and North Temple in Salt Lake City.

Figure 3.5-1. Commercial Developments in the Economic Conditions Evaluation Area – North Segment

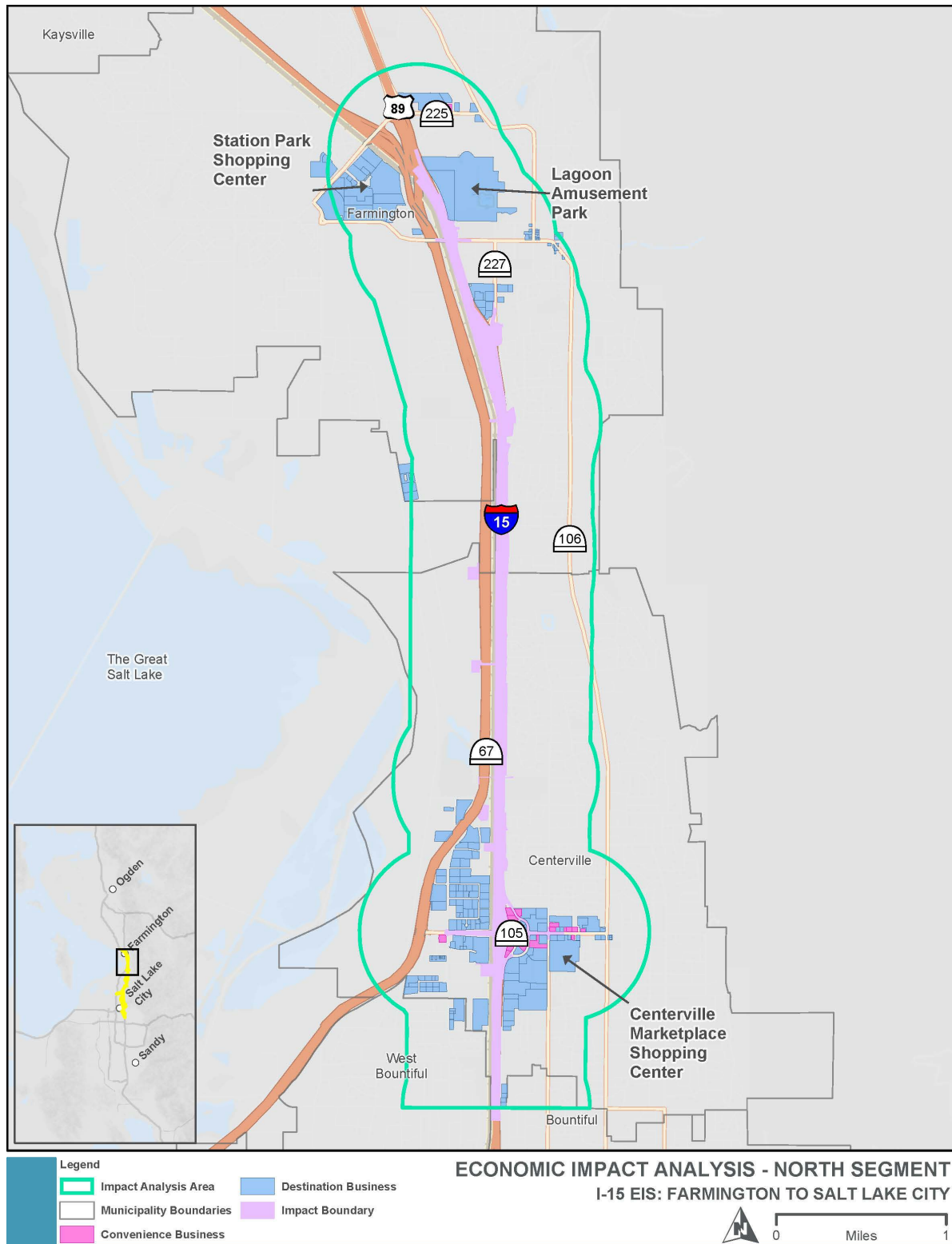


Figure 3.5-2. Commercial Developments in the Economic Conditions Evaluation Area – North Central Segment

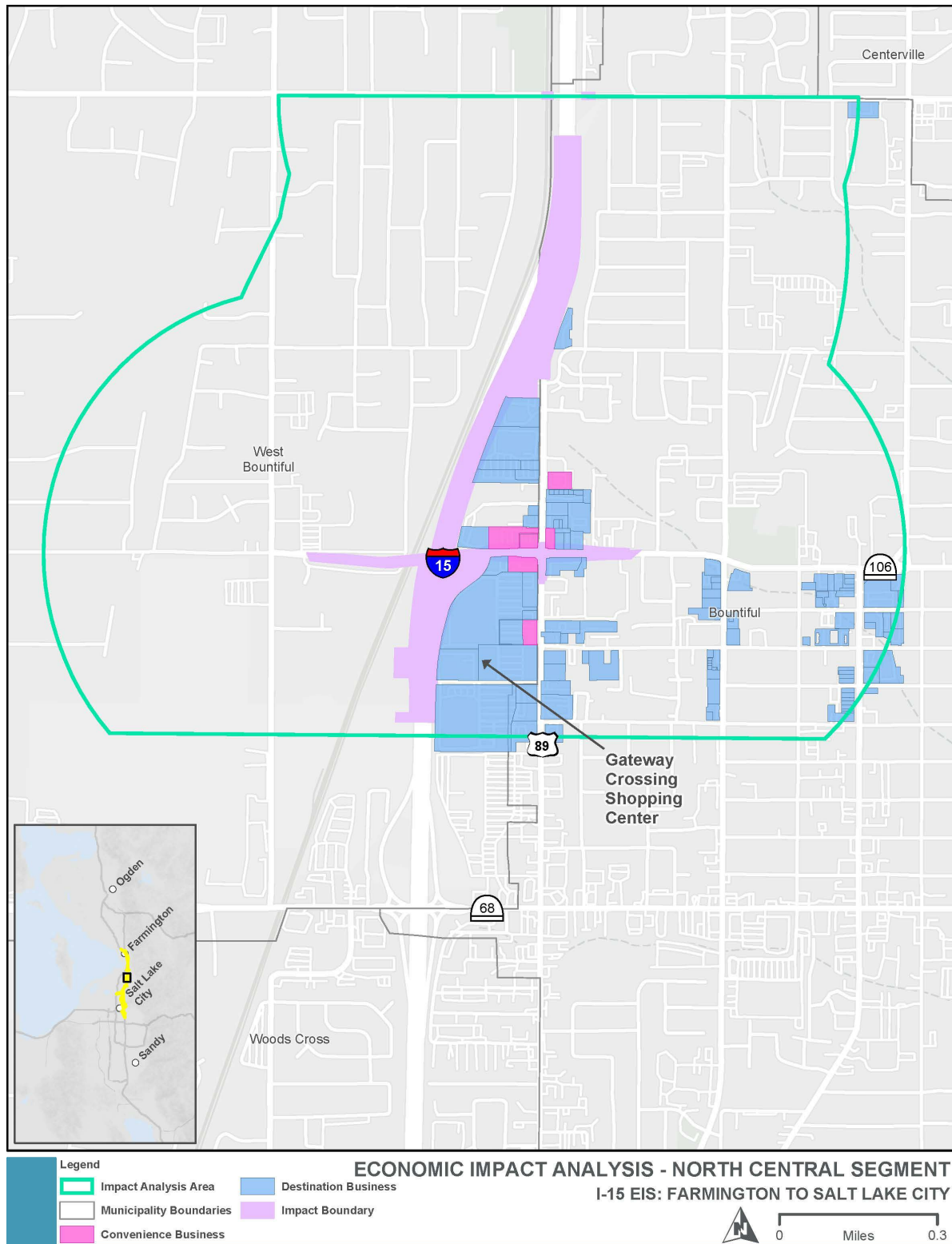


Figure 3.5-3. Commercial Developments in the Economic Conditions Evaluation Area – South Central Segment

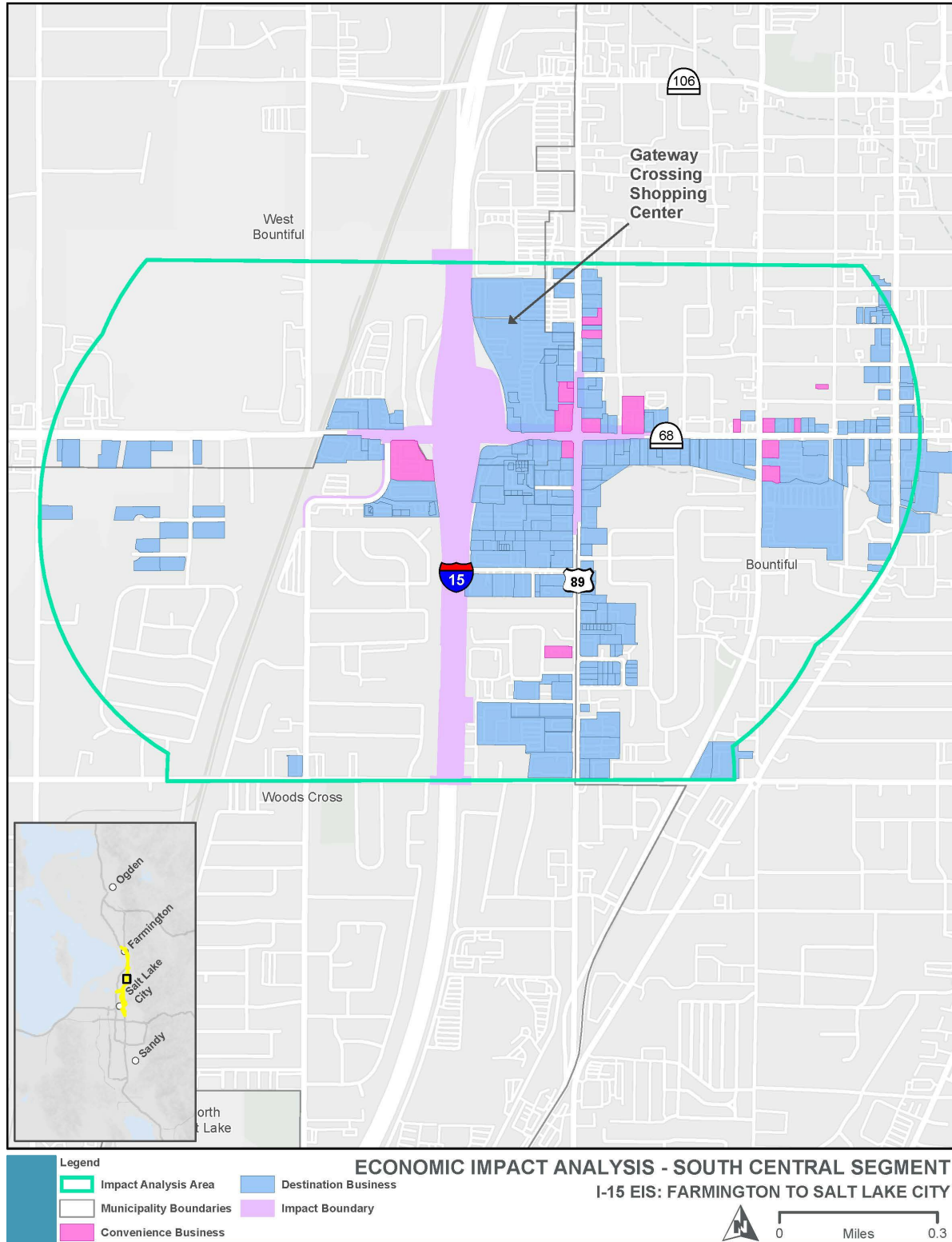
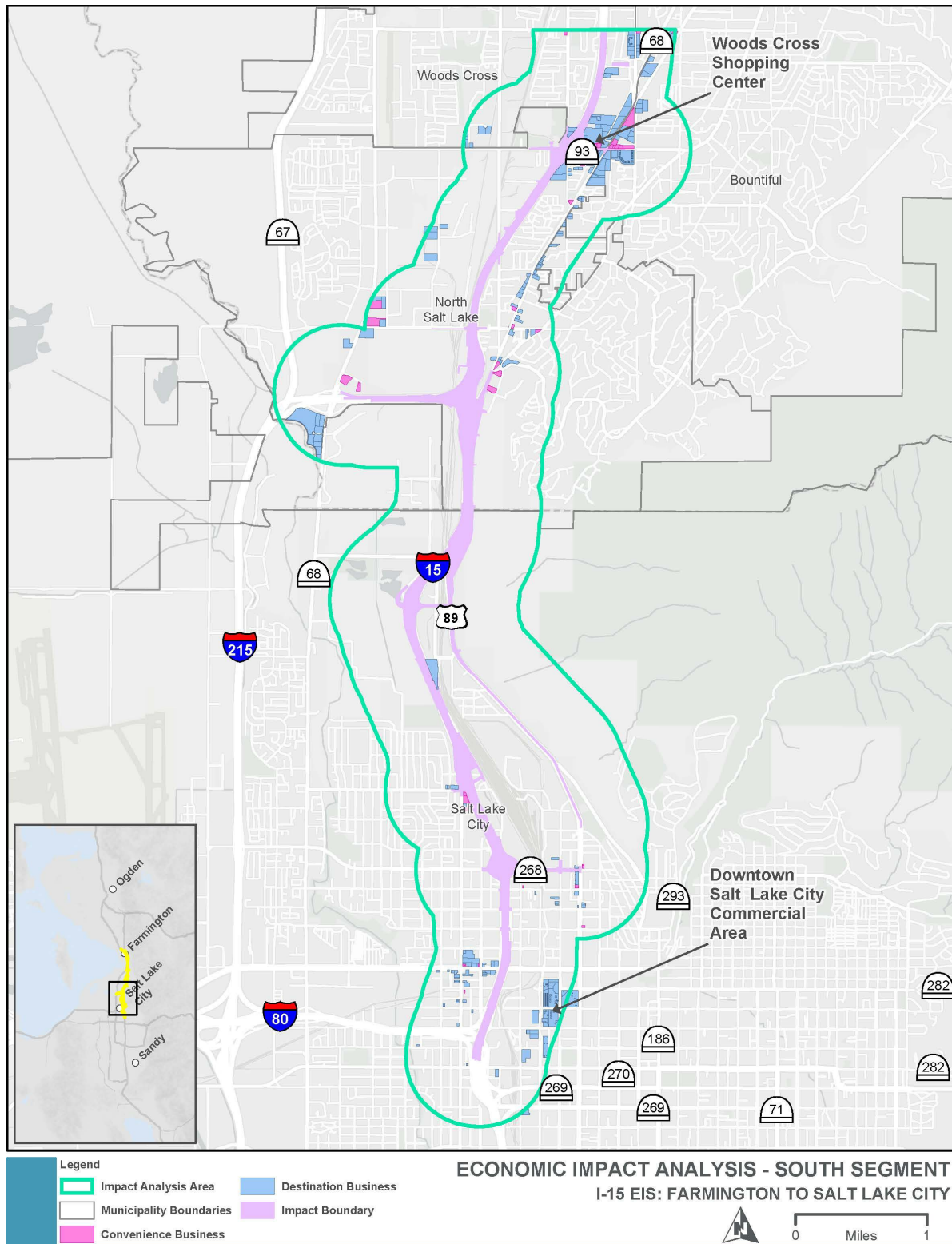


Figure 3.5-4. Commercial Developments in the Economic Conditions Evaluation Area – South Segment



The two main types of private businesses in the economic conditions evaluation area are destination businesses and convenience businesses. This EIS makes this distinction because customers use these types of businesses differently and because most available studies regarding the economic effects of changes in access distinguish between these business types. For purposes of this analysis, industrial businesses were not considered because they would not consistently attract a significant number of daily customers.

- **Destination businesses.** These include businesses that customers plan to visit in advance of their trip. Examples include trucking companies, vehicle repair shops, specialty stores, doctors' or dentists' offices (and most offices), major retailers, insurance agencies, and sit-down restaurants.
- **Convenience businesses.** These include businesses that customers visit more on impulse or when passing by. Examples include convenience stores, gas stations, and fast-food restaurants. Convenience businesses are also referred to as "drive-by" businesses.

The primary destination businesses for traffic travelling on I-15 to Davis County from outside the evaluation area include Lagoon Amusement Park at 375 N. Lagoon Drive and the Station Park Shopping Center and mixed-use development on 140 N. Union Avenue in Farmington. Other major destination businesses in Davis County include shopping centers adjacent to I-15 such as the Centerville Marketplace Shopping Center on 400 West and Parrish Lane in Centerville; the Gateway Crossing Shopping Center on 500 West and 500 South in Bountiful; and the Woods Cross Shopping Center on 618 West 2600 South in Woods Cross. The business destinations for traffic traveling south on I-15 to Salt Lake City include primarily businesses located downtown, such as the City Creek Shopping Center, Temple Square, and the University of Utah located east of downtown.

In both Davis and Salt Lake Counties, convenience businesses are located along major roads directly adjacent to the I-15 interchanges in Farmington, Centerville, Bountiful, Woods Cross, and Salt Lake City.

3.5.3.3 Government Revenues and Tax Services

3.5.3.3.1 Government Revenues

Revenues for all local governments in Utah are a combination of tax revenues, intergovernmental transfers, and fees. Table 3.5-1 shows the total dollar amounts of property and sales taxes, and the percentage of total government revenue this represents for each city and county included in the economic conditions evaluation area.

Table 3.5-1. Tax Revenues for Cities and Counties in the Economic Conditions Evaluation Area

Jurisdiction (Year)	Tax Revenue and Percent of Total Revenue	
	Property Tax	Sales Tax
Davis County (fiscal year 2021)	\$64.9 million, 28%	\$31.9 million, 14%
Farmington (fiscal year 2022)	\$4.6 million, 12%	\$8.2 million, 21%
Centerville (fiscal year 2022)	\$2.1 million, 15%	\$6.2 million, 44%
West Bountiful (fiscal year 2022)	\$1.7 million, 29%	\$3 million, 51%
Bountiful (fiscal year 2022)	\$4.1 million, 6%	\$11.5 million, 16%
Woods Cross (fiscal year 2021)	\$2.1 million, 29%	\$3.9 million, 54%
North Salt Lake (fiscal year 2022)	\$3.1 million, 20%	\$6.3 million, 41%
Salt Lake County (fiscal year 2021)	\$332.4 million, 25%	\$169.3 million, 13%
Salt Lake City (fiscal year 2022)	\$136.6 million, 27%	\$175.1 million, 35%

Sources: Bountiful City Finance Department 2022; Centerville City Corporation 2022; City of North Salt Lake Finance Department 2022; Davis County Clerk and Auditor's Office 2021; Farmington City Corporation 2022; Keddington & Christensen, LLC 2021; Office of the Utah State Auditor 2022a, 2022b; West Bountiful City 2022

3.5.3.3.2 Tax Rates

Table 3.5-2 shows the property and sales tax rates for each city and county in the economic conditions evaluation area. In 2023, combined² sales tax rates were 7.25% for Farmington, Centerville, West Bountiful, Bountiful, Woods Cross, and North Salt Lake; and 7.75% for Salt Lake City. Davis and Salt Lake Counties had sales tax rates of 7.15% and 7.25%, respectively (Utah State Tax Commission 2022, 2023).

The average property tax rate in Davis County was 0.12% in 2022, with property tax for cities ranging from 0.09% in North Salt Lake and Bountiful to 0.13% in Centerville. Salt Lake County had an average property tax rate of 0.13% in 2023, with the average for Salt Lake City being 0.15% (Utah State Tax Commission 2022).

² Combined sales tax rate, which can include state, county, city, and district tax rates. For 2023, the Utah state sales tax rate is 4.85%.

Table 3.5-2. Tax Rates in the Economic Conditions Evaluation Area

Jurisdiction	2022 Property Tax Rate ^a	2023 Sales Tax Rate ^b
Davis County	0.12%	7.15%
Farmington	0.12%	7.25%
Centerville	0.13%	7.25%
West Bountiful	0.12%	7.25%
Bountiful	0.09%	7.25%
Woods Cross	0.12%	7.25%
North Salt Lake	0.09%	7.25%
Salt Lake County	0.13%	7.25%
Salt Lake City	0.15%	7.75%

Source: Utah State Tax Commission 2022

^a Average percent of property's assessed market value.

^b Combined sales tax rate, which could include state, county, city, and district tax rates. For 2023, the Utah state sales tax rate is 4.85%.

3.5.4 Environmental Consequences and Mitigation Measures

This section discusses the direct impacts and indirect effects of the project alternatives on the economic conditions in the economic conditions evaluation area.

3.5.4.1 Methodology

The evaluation was based on data and information presented in Section 3.5.3, *Affected Environment*. Site visits to the project area, desktop evaluation of the county assessor parcel data, review of aerial photography, and analysis of GIS data were also conducted.

3.5.4.2 No-action Alternative

With the No-action Alternative, the I-15 project would not be implemented, and impacts to traffic congestion and safety conflicts in the project area of I-15 would increase. The No-action Alternative would not require relocating any existing businesses. As a result, there would be no loss to the property tax base and revenues.

Worsening congestion and safety concerns would make it increasingly difficult to access businesses in the regional study area. Travel demand modeling projects that the heavy congestion would occur on I-15 in the northbound and southbound directions during both the morning and evening peak periods. Travel times in 2050 are expected to increase between 30% and 432% during the morning peak period for I-15 southbound travel, resulting in failing operations on I-15 for morning commuters. Travel times in 2050 are projected to increase between 129% and 407% during the evening peak period for I-15 northbound travel.

The congestion that would occur with the No-action Alternative would most likely affect convenience businesses, which customers visit more on impulse or when passing by. During the peak travel periods of the morning and evening commutes, some travelers might avoid convenience businesses in the economic

conditions evaluation area and take other routes with less congestion. Because of the difficulty of entering or exiting a business, this congestion could result in fewer people visiting businesses. As a result, the No-action Alternative could reduce business revenue, sales tax, or employment levels at some convenience businesses in the evaluation area.

The predicted congestion levels with the No-action Alternative could delay local, regional, and national truck travel through this important freight link during the morning and evening commutes. Freight traffic would avoid these congested times or would incur additional travel-related costs such as fuel and longer travel times, which would increase hourly cost.

Davis and Salt Lake Counties are both projected to have large increases in population, employment, and households by 2050. These projected increases are included in WFRC's 2019–2050 RTP and are expected to result in continued increased travel demand on I-15 and its interchanges. Regional economic growth in Davis and Salt Lake Counties would continue, and the rate and patterns of growth would not substantially change with the implementation of the No-action Alternative. However, local economic impacts such as reduction in trips to businesses adjacent to I-15 could result from increased congestion.

3.5.4.3 Action Alternative

3.5.4.3.1 Regional Economic Impacts

As described in Section 3.5.3.1, *Regional Economic Conditions*, I-15 serves as the primary transportation artery connecting population centers in Davis and Salt Lake Counties to major employers in the region. With all options for the Action Alternative, the less-congested conditions on I-15 and through the interchanges would result in shorter travel times when compared to the No-action Alternative. Shorter travel times and easier commutes could result in higher employee retention for businesses and make the area more attractive for new employees due to the easier commute.

Local, regional, and nationwide freight traffic would also benefit from the reduction in travel time with all options during the morning and evening commutes. The reduction in travel time during peak travel periods would provide freight businesses more flexibility with regard to scheduling deliveries and would decrease freight traffic travel times during these periods. These shorter travel times could also translate into reduced fuel and labor costs, making businesses more competitive with companies outside this area.

Overall, the improved mobility resulting from all options would benefit the regional economy.

3.5.4.3.2 Local Economic Impacts

Effects of Construction

With the Action Alternative, construction activities could result in congestion and an increase in travel delays. Due to reduced accessibility, commercial businesses adjacent to construction activities could experience temporary adverse economic impacts.

Several studies conducted in Texas show that the actual impacts experienced by businesses can vary based on the nature of the businesses. Some generalities can be drawn from these studies, including that convenience businesses such as fast-food restaurants and gas stations might experience slightly reduced revenues and that sales rebounded after the construction project was completed. Additionally, the studies found that opinions of the economic impacts were more pessimistic than the actual, measured impacts (Buffington and Wildenthal 1997a, 1997b).

A follow-up study on the business types that the previous studies had considered the most vulnerable destination businesses (retail other, retail food, retail auto, and services) was conducted by the Center for Transportation Research at the University of Texas at Austin. Similarly, this study found that construction did not substantially affect these types of businesses in the construction area (Buffington and Wildenthal 1998).

Another study conducted by Wisconsin Department of Transportation (1989) found that detours caused by construction led to a decline in total sales ranging from 2% to 17%. The level of impact once again depended on the type of business.

With the Action Alternative, impacts from construction would be experienced primarily by convenience businesses directly accessed from I-15 (such as gas stations and fast-food restaurants). Customers might avoid these businesses because the area would be congested and not easily accessible, which might result in a temporary loss in sales. The severity of the impact would depend on the length of construction.

In contrast, a customer who wants to go to a specific business (a destination business such as Station Park State Street) in a construction area would be less likely to avoid the area and select another business because of temporary construction-related congestion. Patrons of these destination businesses would be more likely to travel during off-peak periods to avoid construction delays, and any impacts would be temporary and moderate depending on the length of construction.

Because the construction of the Action Alternative could take several years, construction impacts from poor access or longer travel times would have the greatest effects on convenience businesses and fewer effects on destination businesses.

Effects of Operation

With the Action Alternative, travel times and average speeds would improve compared to the No-action Alternative. Both convenience and destination businesses that use I-15 for access would have an increase in business as a result of the reduction in roadway congestion, which could result in slightly more tax revenue for cities. Overall, the Action Alternative would likely provide economic benefits to businesses as a result of reduced congestion.

3.5.4.3.3 Business Impacts

Table 3.5-3 shows the direct impacts to businesses for each option of the four segments of the Action Alternative. Direct impacts to businesses occur when an existing structure is within the right-of-way of a proposed alternative. UDOT would acquire the entire property, and the business would need to relocate. Direct impacts also include potential relocations, where an existing structure for a business is within 15 feet of the proposed right-of-way or where there could be impacts that would affect the continued use of the property (such as impacts to drive-throughs or parking capacity) and the property might need to be relocated. UDOT would make a final determination about the property during the right-of-way acquisition phase of the project, which would occur shortly before construction.

In addition to properties that would need to be relocated or potentially relocated as described below, UDOT would acquire minor strips of property from businesses. The acquisition of minor strips of property would not affect the viability of any of these businesses and therefore would not reduce local government property tax or sales tax revenue.

Table 3.5-3. Direct Impacts to Businesses from Relocation or Potential Relocation

Business Name	Business Address	Impact Type	Option	
North Segment			Farmington 400 West	Farmington State Street
Taco Bell	311 N. Frontage Road, Centerville	Potential relocation	X	X
North Central Segment			Bountiful 400 North – Northern	Bountiful 400 North – Southern
Holiday Inn	999 North 500 West, Bountiful	Relocation	X	X
Unsigned business	573 West 550 North, West Bountiful	Relocation	X	X
4 businesses in building	535 West 400 North, Bountiful	Relocation		X
Sunmart	391 North 500 West, Bountiful	Relocation		X
9 businesses in building	390 North 500 West (southeast corner) Bountiful	Potential relocation		X
Valvoline Oil Change	460 West 400 North, Bountiful	Potential relocation		X
Shell Station	405 North 500 West, Bountiful	Relocation	X	
Exxon	490 West 400 North, Bountiful	Relocation	X	
Valvoline Oil Change	460 West 400 North, Bountiful	Relocation	X	
South Central Segment			Bountiful 500 South – Northern	Bountiful 500 South – Southern
Shell Station	560 West 500 South, Bountiful	Relocation	X	X
Hoskins Trucks	453 West 500 South, Bountiful	Relocation		X
The Dive Shop	429 West 500 South, Bountiful	Relocation		X
Crystal Pools and Spas	425 West 500 South, Bountiful	Relocation		X
Taco Bell	509 West 500 South, Bountiful	Relocation		X
Walgreens	515 South 500 West, Bountiful	Potential relocation		X
FedEx building (5 businesses in building)	521 West 500 South, Bountiful	Relocation		X
MiaBel building (5 businesses in building)	535 West 500 South, Bountiful	Relocation		X
Burbank & Wilde CPA	541 West 500 South, Bountiful	Relocation		X
Café Rio	550 West 500 South, West Bountiful	Relocation	X	
McDonald's	490 West 500 South, West Bountiful	Relocation	X	
KFC	495 South 500 West, Bountiful	Relocation	X	
New Concepts Dentistry	462 West 500 South, Bountiful	Potential relocation	X	
TitleMax	426 West 500 South, Bountiful	Relocation	X	
Starbucks	422 West 500 South, Bountiful	Relocation	X	
Plaza Building (3 businesses in building)	416 West 500 South, Bountiful	Relocation	X	

(continued on next page)

Table 3.5-3. Direct Impacts to Businesses from Relocation or Potential Relocation

Business Name	Business Address	Impact Type	Option	
South Central Segment (continued)			Bountiful 500 South – Northern	Bountiful 500 South – Southern
Taco Bell	509 West 500 South, Bountiful	Potential relocation	X	
K-9 Cuts (dog groomer)	1484 South 600 West, Woods Cross	Potential relocation	X	X
Entellus	1470 South 600 West, Woods Cross	Potential relocation	X	X
2 businesses in building	1414 South 600 West, Bountiful	Potential relocation	X	X
Affordable Tax and Accounting	1398 South 600 West, Bountiful	Potential relocation	X	X
South Segment			Salt Lake City 1000 North – Northern	Salt Lake City 1000 North – Southern
IHOP	2487 South 800 West, North Salt Lake	Relocation	X	X
U.S. Bank	1090 North 500 East, North Salt Lake	Potential relocation	X	X
Storage City	211 W. Center Street, North Salt Lake	Potential relocation	X	X
Salt City Inn	1026 North 900 West, Salt Lake City	Relocation	X	
Lifetime Store	745 N. Warm Springs, Salt Lake City	Relocation	X	X
Industrial Heat Treat	430 West 600 North, Salt Lake City	Potential relocation	X	X
Western Telcom	775 N. Warm Springs Road, Salt Lake City	Potential relocation	X	X

North Segment

The impacts on businesses in the north segment would be the same for both the Farmington 400 West Option and the Farmington State Street Option. Based on the level of design currently developed for the north segment, the right-of-way for both options would encroach on one business, the Taco Bell located at 311 N. Frontage Road in Centerville. While these options would not go through the building structure, UDOT would potentially need to acquire the property due to encroachment near the structure and the business might need to relocate. During the final design process, UDOT would look at measures that could avoid UDOT needing to acquire this business.

Potential Impacts due to Changes in Access. No effects due to changes in access are anticipated with the Action Alternative in the north segment. The Action Alternative would provide similar access as existing conditions for Glovers Lane, Frontage Road, and Parrish Lane. The Action Alternative would improve access at 200 West in Farmington by providing a signalized intersection at 200 West and the Frontage Road, which would allow southbound traffic on the Frontage Road to go north on 200 West or continue south on the Frontage Road. These movements are not accommodated with the existing conditions. The Action Alternative would maintain the free movement from northbound I-15 to the northbound Frontage Road. The Action Alternative would also improve access for northbound I-15 traffic accessing 800 West north of Parrish Lane by providing a dedicated underpass to 800 West from the northbound off-ramp, thereby removing the need to go east on Parrish Lane first and then turn left at the 800 West traffic signal.

The Farmington State Street Option would have a new, signalized four-way intersection with the Frontage Road/Lagoon Drive and State Street. This option would improve access to State Street from the Frontage Road/Lagoon Drive but would require travelers on the Frontage Road/Lagoon Drive to go through the new signalized intersection.

North Central Segment

Bountiful 400 North – Northern Option Impacts. The Bountiful 400 North – Northern Option would require relocating 5 businesses (two on the east side of I-15 between 400 North and 500 West and 3 on the north side of 400 North).

Bountiful 400 North – Southern Option Impacts. The Bountiful 400 North – Southern Option would result in greater direct impacts to businesses compared to the Bountiful 400 North – Northern Option. This option would require relocating 4 commercial buildings (2 on the east side of I-15 between 400 North and 500 West and 2 on the south side of 400 North). These commercial buildings include 7 businesses. The option would also require the potential relocation of 2 commercial buildings (with 10 businesses) on 400 North.

Potential Impacts due to Changes in Access. No effects due to changes in access are anticipated to properties on Pages Lane, 500 West, or 400 North with the Action Alternative in the north central segment. The Action Alternative would maintain a similar level of access as existing conditions for Pages Lane, 500 West, and 400 North.

South Central Segment

Bountiful 500 South – Northern Option Impacts. The Bountiful 500 South – Northern Option would require relocating 7 commercial buildings (with 9 businesses) and potentially relocating 6 commercial buildings (with 7 businesses). All 7 of the commercial building relocations (with 9 businesses) and 2 of the potential relocations would be on 500 South east of I-15. The potential relocations include 4 buildings (with 5 businesses) located east of I-15 on 600 West and north of 1500 South.

Bountiful 500 South – Southern Option Impacts. The Bountiful 500 South – Southern Option would result in greater direct impacts to businesses compared to the Bountiful 500 South – Northern Option. This option would require relocating 8 commercial buildings (with 16 businesses) and potentially relocating 5 commercial buildings (with 6 businesses). All 8 of the commercial building (with 16 businesses) relocations and 1 of the potential relocations would be on 500 South east of I-15. The potential relocations include 4 buildings (with 5 businesses) located east of I-15 on 600 West and north of 1500 South.

Potential Impacts due to Changes in Access. There is potential for changes in access to affect properties that access 500 South between I-15 and 500 West with the Action Alternative in the south central segment. The Action Alternative would include a raised median on 500 South between I-15 and 500 West. All business accesses on the north and south sides of 500 South in this segment would be right-in and right-out. Travelers who currently make left turns onto or off of 500 South would be required to make U-turns on 500 South and/or use alternate accesses to or from 500 West with the Action Alternative.

South Segment

Salt Lake City 1000 North – Northern Option Impacts. The Salt Lake City 1000 North – Northern Option would require relocating 3 businesses and potentially relocating 4 businesses. The Salt Lake City 1000 North – Northern Option would have 1 more relocation (the Salt City Inn at 1026 North 900 West) compared to the Salt Lake City 1000 North – Southern Option.

Salt Lake City 1000 North – Southern Option Impacts. The Salt Lake City 1000 North – Southern Option would result in slightly less direct impacts to businesses compared to the Salt Lake City 1000 North – Northern Option because it would not require relocating the Salt City Inn at 1026 North 900 West. This option would require relocating 2 businesses and potentially relocating 4 businesses.

Potential Impacts due to Changes in Access. There could be changes in access to businesses at 2600 South/800 West in North Salt Lake/Woods Cross, Center Street in North Salt Lake, I-215, 2100 North in Salt Lake City, Warm Springs Road in Salt Lake City, 900 West/1000 North in Salt Lake City, and 600 North in Salt Lake City. Table 3.3-1, *South Segment Access Changes with the Action Alternative*, in Section 3.3, *Right-of-way and Relocations*, describes these potential changes in access in more detail. UDOT does not anticipate that any of these access changes would result in the relocation or potential relocation of any businesses in the south segment.

3.5.4.3.4 Government Revenues and Tax Rates

Local government revenues overall would not be substantially affected by any of the Action Alternative options. UDOT anticipates that the potential loss of business would be a small portion of the total tax revenue for the Cities and would therefore not substantially reduce the Cities' revenue. Although less congestion during the morning and evening commutes could make the area more accessible to business patrons, the increase in revenues would be small compared to the total government revenues in the cities in the economic conditions evaluation area.

Overall, local government revenues would continue to increase at a pace about equal to the community's population and job growth. Property tax revenues and sales tax revenues would continue to be important sources of funds for the communities, and other forms of revenue generation would likely be developed.

3.5.4.3.5 Summary of Action Alternative Impacts

Table 3.5-4 shows a summary of impacts to economic resources from the Action Alternative.

Table 3.5-4. Summary of Impacts to Economic Conditions by Segment and Option

Segment	Option	Impacts to Businesses	
		Relocations	Potential Relocations
North	Farmington 400 West Option	0	1
	Farmington State Street Option	0	1
North Central	Bountiful 400 North – Northern Option	5	0
	Bountiful 400 North – Southern Option	7	10
South Central	Bountiful 500 South – Northern Option	9	7
	Bountiful 500 South – Southern Option	16	6
South	Salt Lake City 1000 North – Northern Option	3	4
	Salt Lake City 1000 North – Southern Option	2	4
	Minimum impacts (sum of lowest impacts for each segment)	16	11
	Maximum impacts (sum of highest impacts for each segment)	26	22
	Range of impacts	16 to 26	11 to 22

3.5.4.4 Mitigation Measures

UDOT proposes to implement mitigation to include the following.

3.5.4.4.1 Construction

To mitigate short-term access and visibility impacts to businesses during construction, a traffic access management plan would be developed and implemented by the construction contractor that maintains public access to impacted businesses during normal business hours. Following completion of the construction phase, UDOT would install appropriate roadway directional signs consistent with UDOT policy.

3.5.4.4.2 Operation

When acquisition of a right-of-way is necessary, it is done in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. This mitigation measure is discussed in more detail in Section 3.3, *Right-of-way and Relocations*. Compliance with the Act ensures that all persons regardless of race, color, religion, sex, national origin, disability, or age will be fairly and equitably treated.

Mitigation is not provided to local governments that are adversely affected when land is removed from their tax base. Over the long term, property values are expected to increase as a result of improved regional transportation access to businesses. The revenues generated from this would offset any short-term impacts from the I-15 project on local government revenues.

3.6 Transportation and Mobility

3.6.1 Introduction

Section 3.6 discusses the existing travel patterns on and adjacent to I-15 and considers the expected effects of the Action Alternative on these travel patterns. Section 3.6 also describes the existing and planned pedestrian and bicyclist facilities in the transportation and mobility evaluation area and the effects of the project alternatives on pedestrian and bicyclist facilities and movement in the evaluation area. The purpose of the I-15: Farmington to Salt Lake City Project is to provide better mobility for all travel modes and better connect communities along I-15 from Farmington to Salt Lake City. Improving pedestrian and bicyclist connectivity is a project purpose.

Transportation and Mobility Evaluation Area. The transportation and mobility evaluation area includes the roads that connect to or are adjacent to I-15 and could be beneficially or adversely affected by the Action Alternative. The transportation and mobility evaluation area also includes the existing and planned pedestrian and bicyclist facilities that cross over, cross under, or run parallel I-15 from Farmington to Salt Lake City.

3.6.2 Regulatory Setting

Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, from FHWA (1987) recommends an analysis of travel patterns and accessibility in an EIS.

In addition, when UDOT develops a project, it considers the social and environmental effects of the project, including disruption or destruction of human-made facilities and services. Under 23 USC Section 109(m), if a proposed project would sever an existing major route for nonmotorized traffic, the project must provide a reasonable alternate route for the nonmotorized traffic, or UDOT must show that a reasonable route exists. In addition, UDOT encourages bicycle use on and connecting with its facilities that are suitable for bicycle use. Bicycle facilities or improvements for bicycle transportation are included in UDOT's project development and highway programming processes.

For a detailed discussion of trails that are regulated under Section 4(f) of the Department of Transportation Act of 1966, see Chapter 4, *Section 4(f) Analysis*. For information about other recreation resources, see Section 3.2, *Social Environment*.

3.6.3 Affected Environment

This section describes the existing transportation facilities in the transportation and mobility evaluation area.

3.6.3.1 Roadway System

I-15, the primary north-south interstate highway in Utah, links a large volume of trips going to or from all destinations along the Wasatch Front and within Davis and Salt Lake Counties. I-15 also provides regional connections to Las Vegas, southern California, eastern Idaho, and Montana. I-15 is a critical freight route and supports numerous transit routes. The length of I-15 in the transportation and mobility evaluation area is 16 miles and includes 14 interchanges and several cross streets without connections to I-15. Table 2.4-1, *Action Alternative Interchanges and Crossings*, in Chapter 2, *Alternatives*, lists the interchanges and cross streets.

The need for the project and background on the importance of I-15 are listed in Section 1.2, *Background of the I-15 Project*, and Section 1.3, *Need for the Project*, in Chapter 1, *Purpose and Need*. Mobility and traffic operations on I-15 are in decline and are projected to fail by 2050 without action. For more information, see Section 3.6.4.2, *No-action Alternative*.

3.6.3.2 Existing Pedestrian and Bicyclist Facilities

In Utah, bicycles are considered vehicles and are allowed on roads and road shoulders except where prohibited by state or local ordinances, such as I-15 along the urban Wasatch Front. Bicyclists are prohibited for the entire length of I-15 in the transportation and mobility evaluation area. Existing pedestrian and bicyclist facilities on cross streets of I-15 are shown in Table 1A-1 and shown in Figure 1A-1 of Appendix 1A, *Purpose and Need Chapter Supplemental Information*. The appendix includes only dedicated facilities on or parallel to roads, but not every location in the evaluation area where pedestrians and bicyclists are legally allowed to travel.

In addition to the facilities listed in Appendix 1A, UDOT analyzed the nonmotorized demand and operations in the evaluation area. UDOT reviewed the location, distance, origin, and destinations of nonmotorized trips as well as demographics of the locations of origins and destinations. A brief summary of this analysis is included in Table 3.6-1. For more information about this analysis and the outreach UDOT conducted, see the *Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* (Horrocks 2022b).

3.6.3.3 Future Pedestrian and Bicyclist Facilities

Several proposed pedestrian and bicyclist facility projects are in adopted city and county plans that would improve active transportation connectivity across the transportation and mobility evaluation area. These proposed improvements have been compiled into the adopted WFRC RTP. Maps and descriptions of these improvements can be referenced through WFRC's website at <https://wfrc.org/vision-plans>. The evaluation area crosses 28 proposed pedestrian and bicyclist projects listed in WFRC's 2023–2050 RTP.

Table 3.6-1. Summary of Existing Conditions from the Non-Motorized Demand and Operations Analysis

Cross Street	Level of Traffic Stress ^a	Speed Limit (miles per hour)	Top Crossings Used for Pedestrian Trips	Top Crossings Used for Bicycle Trips	Crossings with Safety Concerns
North Segment (Farmington and Centerville)					
State Street	4	35	Yes	Yes	—
Glovers Lane	3	35	—	—	—
Parrish Lane	4	35	Yes	Yes	Yes
Pages Lane	1	25	—	—	—
North Central Segment (West Bountiful and Bountiful)					
400 North	4	35	—	—	Yes
South Central Segment (West Bountiful, Bountiful, and Woods Cross)					
500 South	3	35	Yes	Yes	Yes
1500 South	1	25	Yes	Yes	—
South Segment (North Salt Lake, Woods Cross, and Salt Lake City)					
2600 South	3	35–40	Yes	Yes	—
Main Street	4	25	—	—	—
Center Street	3	25	—	—	Yes
Beck Street	4	50	—	—	—
900 West	NA	40	—	—	—
600 North	4	35	Yes	Yes	Yes
300 North	2	30	Yes	Yes	—
North Temple	3	30	—	—	—

Source: Horrocks 2022b

^a Level of traffic stress is defined as: 1 – Comfortable for Nearly All Riders, 2 – Comfortable for Most Adults, 3 – Comfortable for Confident Bicyclists, and 4 – Comfortable for Only the Most Confident Bicyclists.

3.6.4 Environmental Consequences and Mitigation Measures

This section analyzes how the No-action and Action Alternatives would affect the travel patterns on freeways and arterials (included in WFRM's travel demand model) in the transportation and mobility evaluation area (the effects would be experienced by both motorists and transit users). This section also analyzes the benefits and impacts to pedestrian and bicyclist facilities with the No-action and Action Alternatives.

This section does not specifically address construction-related transportation impacts (see Section 3.17, *Construction Impacts*). However, during construction, there would be increased congestion on roads and on pedestrian and bicyclist facilities depending on the timing and methods of construction. The delays associated with construction would be temporary, and alternate routes to minimize effects on motorists, pedestrians, and bicyclists would be identified with signs.

3.6.4.1 Methodology

To evaluate the No-action and Action Alternatives, UDOT used the following traffic analysis software packages and travel demand model to generate data about delay, congestion, travel time, and vehicle queuing on the road network in the transportation and mobility evaluation area for the future (2050) no-action and action conditions. These models and tools follow the standard of practice set forth by FHWA to analyze traffic. For a detailed methodology see *IACR Methods and Assumptions Document I-15 EIS; Farmington to Salt Lake City* (Horrocks 2023a).

Synchro/Sim Traffic (Trafficware/Cubic). Synchro/SimTraffic software, version 11, was used to organize and balance the peak-period traffic counts in the transportation and mobility evaluation area. The software was also used to optimize signal timing for future-year scenarios.

VISSIM (PTV). VISSIM is a microscopic simulation software program used to perform a detailed traffic operations analysis for this study. UDOT used VISSIM version 2021, with service pack 13, for operational analysis. The software has the ability to model complicated intersection geometries and operations in addition to freeway operations. VISSIM was used in this EIS analysis to determine delay, vehicle density, speed, percent of traffic demand served, number of lane changes, vehicle queue lengths, congestion, travel time, and vehicle-miles traveled.

Cube (Bentley). Cube software was used to forecast future traffic based on projections of land use, socioeconomic patterns, and transportation system characteristics. Cube software runs the travel demand model described below and is used to calculate daily and peak-period volumes and future demand.

Regional Travel Demand Model. WFRC and the Mountainland Association of Governments (MAG) jointly maintain a regional travel demand forecasting model (the model) for the five-county metropolitan region that includes Box Elder, Weber, Davis, Salt Lake, and Utah Counties. The regional model predicts future travel demand based on projections of land use, socioeconomic patterns, and transportation system characteristics. The model is based on the Cube software (currently using version 6.5.0). The EIS analysis used version 8.3.2 of the regional model (made available on February 4, 2022), which was the most recent official release of the model at the start of the analysis. For more information about the regional travel demand model calibration for the analysis, see the *Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* (Horrocks 2022b).

Using the software and travel demand model described above, UDOT analyzed the 2050 No-action and Action Alternative traffic operations for the following traffic metrics:

Delay and Congestion. Delay and congestion on I-15 adds time to regional and local trips on I-15 and local side streets near interchanges. Average vehicle delay was calculated using VISSIM for the I-15 mainline, interchanges, and arterials. UDOT analyzed network delay in the transportation and mobility evaluation area using the travel demand model. Congestion is represented by a three-tier system ranging from minimal congestion for excellent conditions (free-flowing traffic and little delay) to heavy congestion for failure conditions (extremely congested, stop-and-go traffic and excessive delay). Moderate congestion is intermediate traffic conditions between minimal and heavy congestion.

What is a travel demand model?

A travel demand model is a computer model that predicts the number of transportation trips (travel demand) in an area at a given time. This prediction is based on the expected population, employment, household, and land-use conditions in the area. The travel demand model used for the I-15: Farmington to Salt Lake City Project is jointly maintained by WFRC and MAG.

Vehicle Queuing. The vehicle queue length is the length of a line of vehicles backed up waiting to get through an intersection, similar to those intersections at the ends of off-ramps of I-15. Vehicle queues at intersections form as the result of heavy traffic volumes and can affect traffic operations and safety because vehicles back up onto the I-15 mainline from interchange ramps. Vehicle queue lengths were computed for the I-15 off-ramps using VISSIM.

Travel Time. Vehicle travel times were measured throughout the VISSIM network and collected for each of the arterial corridors for existing (2019) and 2050 conditions. These measures were calculated for the morning and evening peak periods.

Impacts to Pedestrian and Bicyclist Facilities. To assess the expected impacts to pedestrian and bicyclist facilities from the Action Alternative, UDOT used data in GIS format to identify the pedestrian and bicyclist facilities intersected or affected by the Action Alternative's improvements. The GIS data include city, county, and WFRC data for existing and planned pedestrian and bicyclist facilities. Aerial images were also reviewed to confirm existing pedestrian and bicyclist facilities.

What are peak periods?

The peak periods for the I-15 project represent the 4-hour periods during the morning and evening during which travel demand is highest. The morning peak period occurred between 6 AM and 10 AM, and the evening peak period occurred between 3 PM and 7 PM. The I-15 peak periods were determined by reviewing traffic data from 2019 and 2021. For information regarding why 2019 data are used for this EIS, see Section 1.3.4.1.2, *Impact of COVID-19 on Traffic Data*, in Chapter 1, *Purpose and Need*.

3.6.4.2 No-action Alternative

With the No-action Alternative, the changes associated with the I-15: Farmington to Salt Lake City Project would not be made. I-15 lane geometry would remain in its existing configuration. Future traffic operations would reach failing conditions for all metrics analyzed under no-action conditions. In addition, the operational and safety deficiencies and aging infrastructure described in Chapter 1, *Purpose and Need*, would not be corrected. The traffic measures for the No-action Alternative are included in the tables below for comparison with the Action Alternative.

3.6.4.2.1 Delay and Congestion

Delay and congestion on I-15 add time to regional and local trips on I-15 and local side streets near interchanges. UDOT analyzed network delay in the needs assessment study area (defined in Section 1.1.3, *Description of the Needs Assessment Study Area and Logical Termini*), in Chapter 1, *Purpose and Need*. The I-15 EIS *Existing and No-action Traffic Operations Analysis Technical Memorandum* (Horrocks 2022a) shows that daily hours of network delay during both the morning and evening peak periods is projected to increase more than 1,300% under the no-action conditions in 2050 compared to 2019 (Table 3.6-2).

Table 3.6-2. Existing (2019) and 2050 No-action Network Daily Delay

AM			PM		
2019 Delay (hours)	2050 Delay (hours)	Percent Increase	2019 Delay (hours)	2050 Delay (hours)	Percent Increase
2,409	36,782	1,427%	2,910	42,500	1,360%

Source: Horrocks 2022a

3.6.4.2.2 Travel Times

UDOT modeled the existing (2019) and 2050 no-action conditions for peak morning and evening travel times on I-15. Travel times in 2050 are expected to increase between 30% and 432% during the morning peak period for I-15 southbound travel, resulting in failing operations on I-15 for morning commuters. Travel times in 2050 are projected to increase between 129% and 407% during the evening peak period for I-15 northbound travel (Table 3.6-3).

Table 3.6-3. Comparison of I-15 Mainline Travel Time between Farmington and Salt Lake City (2019 and 2050)

Times during the AM and PM Peak Periods	Existing (2019) Travel Time (minutes)	2050 No-action Travel Time (minutes)	Percent Change
Southbound			
6:00 AM	15.9	20.6	30%
7:00 AM	19.2	41.6	117%
8:00 AM	19.1	69.1	262%
9:00 AM	16.7	88.9	432%
Northbound			
3:00 PM	16.5	37.8	129%
4:00 PM	20.6	64.5	213%
5:00 PM	23.6	78.1	231%
6:00 PM	16.6	84.2	407%

Source: Horrocks 2022a

3.6.4.2.3 Vehicle Queuing and Deceleration Lengths

Vehicle queue length and deceleration length are interrelated and affect traffic operations and safety. Deceleration length is the length needed for vehicles exiting a road to safely decelerate or stop before an intersection at the end of an off-ramp. During periods of traffic congestion, if a vehicle queue length exceeds the ramp length, there is not enough room (or length) for vehicles to safely decelerate when exiting an interstate or other high-speed road.

Several locations in the transportation and mobility evaluation area have worsening operational issues for the I-15 mainline for vehicle queue lengths and ramp deceleration lengths. These issues include locations where traffic volumes exceed capacity of the interchange and traffic can back onto the I-15 mainline, which is a safety concern because of the high travel speeds on the I-15 mainline. See the *Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* (Horrocks 2022b) for more information regarding existing vehicle queue characteristics.

What is the 95th-percentile vehicle queue length?

The vehicle queue length is the length of a line of vehicles backed up waiting to get through an intersection, like those found at the end of off-ramps for I-15. The 95th-percentile vehicle queue length is the vehicle queue length in feet that should not be exceeded in 95% of the operational periods based on predicted traffic volumes. In 5% of the operational periods, the vehicle queues will extend longer than this distance.

In 2050, under the no-action conditions, the 95th-percentile vehicle queue lengths are expected to extend back into the I-15 mainline at the 600 North, 2600 South, 500 South, 400 North, and Parrish Lane interchanges and the Center Street southbound off-ramp during peak travel periods (see Horrocks 2022a and Appendix 3D, *Alternatives Operations Analysis Memo*, of this EIS). See Table 3.6-14, *Vehicle Queuing and Deceleration Lengths for the Action Alternative*, on page 3-105.

3.6.4.2.4 Impacts to Pedestrian and Bicyclist Facilities

The No-action Alternative would not meet the purpose of the project because it would not provide better mobility for all travel modes and better connect communities along I-15 from Farmington to Salt Lake City. With the No-action Alternative, mainline I-15 and its interchanges would be maintained in the current configurations, and UDOT would conduct only necessary maintenance. The pedestrian and bicyclist improvements described in Section 3.6.4.3.6, *Impacts to Pedestrian and Bicyclist Facilities*, would not be made, and the benefits of these improvements would not be available to the pedestrians and bicyclists in the transportation and mobility evaluation area.

Existing Facilities

The existing pedestrian and bicyclist facilities in the transportation and mobility evaluation area would continue to operate similarly to the existing conditions. These existing conditions include narrow and disconnected pedestrian and bicyclist facilities that would not be improved through the elements of the Action Alternative that are listed in Table 3.6-16, *Action Alternative Pedestrian and Bicyclist Improvements by Location*, on page 3-110.

Future Facilities

The future facilities identified in WFRC's 2023–2050 RTP would be completed when funding becomes available.

3.6.4.3 Action Alternative

With the Action Alternative, an additional travel lane would be added in each direction of I-15 between Farmington and Salt Lake City, and numerous improvements would be made at each interchange and at most cross streets. A full description of the Action Alternative by location is provided in Section 2.4.2, *Action Alternative*, in Chapter 2, *Alternatives*. The Action Alternative is projected to improve delay, congestion, travel times, and traffic operation characteristics such as vehicle queuing in all locations of the transportation and mobility evaluation area.

3.6.4.3.1 Delay and Congestion

The Action Alternative would reduce delay and congestion during the morning and evening peak periods compared to the No-action Alternative. Based on results from the travel demand model, daily network delay on roads in the vicinity of the Action Alternative and including the Action Alternative (I-15, I-215, U.S. 89, Legacy Parkway, and connecting arterial roads) would be greatly reduced compared to the 2050 no-action conditions. With the Action Alternative, daily network-wide delay, as reported in the travel demand model, would be reduced from 95,000 hours to 50,000 hours, a 47% reduction in delay (Horrocks 2022a).

At the local level, the main arterials and interchanges reconstructed as part of the Action Alternative would also experience a reduction in delay and congestion. These measures are summarized below by segment.

North Segment Impacts

The north segment options, the Farmington 400 West Option and the Farmington State Street Option, were analyzed for delay and congestion in two portions. Table 3.6-4 includes the delay for the northern half of the north segment options from State Street to 200 West. Both the Farmington 400 West Option and the Farmington State Street Option would operate similarly, improving the poor, congested conditions observed during the evening peak period at the Frontage Road at 200 West and at Glovers Lane.

Table 3.6-4. North Segment Options Delay and Congestion for State Street to 200 West^a

Intersection	No-action (2050)				Farmington 400 West Option ^b				Farmington State Street Option ^b			
	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn
Frontage Rd at 200 W	10.7	Min	120.7	Hvy	5.8	Min	5.8	Min	5.4	Min	6.0	Min
W Glovers Ln at Farmington High School	9.9	Min	8.9	Min	9.5	Min	9.0	Min	10.0	Min	9.3	Min
W Glovers Ln at Frontage Rd	11.1	Min	37.1	Mod	10.3	Min	18.2	Min	10.5	Min	18.7	Min
W Glovers Ln at 650 W	27.5	Min	29.5	Min	18.4	Min	23.0	Min	19.2	Min	23.0	Min
400 W at W State	—	—	—	—	5.4	Min	8.5	Min	13.7	Min	18.0	Min
400 W & Lagoon Dr	—	—	—	—	5.5	Min	9.9	Min	—	—	—	—

Source: Appendix 3D, *Alternatives Operations Analysis Memo*

^a Delay is measured as per vehicle in seconds. The color coding shows results by measure: green is minimal congestion (Min), yellow is moderate congestion (Mod), and red is heavy congestion (Hvy).

^b These options include State Street and 200 West. Parrish Lane is reviewed separately in Table 3.6-5 below.

Table 3.6-5 shows the delay for the Parrish Lane interchange. The Action Alternative would substantially reduce delay and congestion on Parrish Lane compared to the No-action Alternative during both the morning and evening peak periods.

Table 3.6-5. North Segment Options Delay and Congestion for the Parrish Lane Interchange^a

Intersection	No-action (2050) ^a				Parrish Lane ^b			
	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn
Bypass at 800 W	—	—	—	—	5.1	Min	12.7	Min
Marketplace Dr at 700 W	—	—	—	—	0.0	Min	0.0	Min
Parrish Ln at S.R. 67 SB ramps	23.4	Min	15.9	Min	16.5	Min	14.5	Min
Parrish Ln at S.R. 67 NB ramps	225.8	Hvy	21.5	Mod ^c	24.3	Min	15.5	Min
Parrish Ln at (NB) 700 W	67.1	Hvy	272.1	Hvy	18.5	Min	16.9	Min
Parrish Ln at I-15 SB ramps	76.3	Hvy	165.0	Hvy	28.6	Min	30.6	Min
Parrish Ln at I-15 NB ramps	12.0	Min	59.1	Hvy	28.6	Min	30.6	Min
Parrish Ln at Marketplace Dr	15.1	Min	52.0	Mod	16.4	Min	27.4	Min
Parrish Ln at 400 W	14.4	Min	50.4	Mod	18.6	Min	29.8	Min
Parrish Ln at 1250 W	24.7	Min	42.0	Mod	24.6	Min	39.7	Mod

Source: Appendix 3D, *Alternatives Operations Analysis Memo*

^a Delay is measured as per vehicle in seconds. The color coding shows results by measure: green is minimal congestion (Min), yellow is moderate congestion (Mod), and red is heavy congestion (Hvy).

^b Parrish Lane is the same for both north segment options. Both options for State Street to 200 West are reviewed separately in Table 3.6-4 above.

^c This unsignalized intersection has different thresholds for congestion. In this case, moderate congestion is acceptable.

North Central Segment Impacts

The north central segment options, Bountiful 400 North – Northern Option and Bountiful 400 North – Southern Option, would have the same delay and congestion whether 400 North is shifted north or south. The delay and congestion for the Action Alternative in the north central segment is comparable to that with the No-action Alternative during the morning peak period; however, during the evening peak period, the Action Alternative would be a beneficial improvement over the No-action Alternative at 400 North (Table 3.6-6).

Table 3.6-6. North Central Segment Options Delay and Congestion^a

Intersection	No-action (2050) ^a				Bountiful 400 North – Northern and Southern Options			
	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn
400 N at 800 W	9.5	Min	20.2	Min	12.0	Min	15.1	Min
400 N at 660 W Access	7.6	Min	7.8	Min	7.8	Min	8.0	Min
400 N at 660 W	0.0	Min	6.0	Min	6.2	Min	6.2	Min
400 N at I-15 ramp	12.3	Min	89.7	Hvy	14.0	Min	20.5	Min
400 N at U.S. 89	82.4	Hvy	223.2	Hvy	34.1	Min	41.1	Mod

Source: Appendix 3D, *Alternatives Operations Analysis Memo*

^a Delay is measured as per vehicle in seconds. The color coding shows results by measure: green is minimal congestion (Min), yellow is moderate congestion (Mod), and red is heavy congestion (Hvy).

South Central Segment Impacts

The south central segment options, Bountiful 500 South – Northern Option and Bountiful 500 South – Southern Option, would have the same delay and congestion whether 500 South is shifted north or south. The delay and congestion for the Action Alternative in the south central segment would be an improvement compared to the No-action Alternative during the morning peak period and would be greatly improved compared to the No-action Alternative during the evening peak period (Table 3.6-7).

Table 3.6-7. South Central Segment Options Delay and Congestion^a

Intersection	No-action (2050) ^a				Bountiful 500 South – Northern and Southern Options			
	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn
500 S at 800 W	7.4	Min	219.4	Hvy	7.9	Min	7.9	Min
500 S at 700 W	11.2	Min	466.1	Hvy	9.7	Min	14.4	Min
U.S. 89 at 1000 N	53.0	Mod	103.1	Hvy	10.4	Min	14.6	Min
500 S at I-15 DDI	24.9	Min	95.7	Hvy	36.8	Mod	36.6	Mod
500 S at U.S. 89	28.9	Min	176.8	Hvy	36.4	Mod	54.6	Mod

Source: Appendix 3D, *Alternatives Operations Analysis Memo*

^a Delay is measured as per vehicle in seconds. The color coding shows results by measure: green is minimal congestion (Min), yellow is moderate congestion (Mod), and red is heavy congestion (Hvy).

South Segment Impacts

The south segment options, Salt Lake City 1000 North – Northern Option and Salt Lake City 1000 North – Southern Option, were analyzed for delay and congestion in three portions. Table 3.6-8 shows the delay and congestion for the northern extent of the south segment options at the 2600 South interchange. The delay and congestion for the Action Alternative in the south segment is comparable with the No-action Alternative during the morning peak period; however, during the evening peak period, the Action Alternative would be greatly improved compared to the No-action Alternative at 2600 South. With the Action Alternative, the 2600 South and U.S. 89 intersection would experience less delay compared to the No-action Alternative, but UDOT expects it to experience congested conditions during the morning and afternoon peak travel times as a result of heavy traffic volumes on all four approaches coupled with a single northbound left-turn lane serving a heavy traffic movement.

Table 3.6-8. South Segment Options Delay and Congestion for 2600 South Interchange^a

Intersection	No-action (2050) ^a				2600 South ^b			
	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn
2600 S at 1100 W	16.4	Min	82.9	Hvy	14.3	Min	14.4	Min
2600 S at Overland Rd	9.1	Min	11.7	Min	9.5	Min	9.8	Min
2600 S at Wildcat Way	23.3	Min	64.3	Hvy	22.1	Min	33.9	Min
2600 S at U.S. 89	100.1	Hvy	140.0	Hvy	60.5	Hvy	75.6	Hvy
2600 S at 800 W	18.5	Min	26.9	Min	27.9	Min	28.9	Min
2600 S at I-15 NB Ramps	21.9	Min	125.2	Hvy	27.9	Min	28.9	Min
Wildcat Way/625 W & 800 W/2500 S	—	—	—	—	7.2	Min	11.1	Min

Source: Appendix 3D, *Alternatives Operations Analysis Memo*

^a Delay is measured as per vehicle in seconds. The color coding shows results by measure: green is minimal congestion (Min), yellow is moderate congestion (Mod), and red is heavy congestion (Hvy).

^b 2600 South is the same for both south segment options.

Table 3.6-9 shows the delay and congestion for the I-215 interchange area. The delay and congestion for the Action Alternative in the south segment is comparable with the No-action Alternative at the I-215 interchange.

Table 3.6-9. South Segment Options Delay and Congestion for I-215 Interchange^a

Intersection	No-action (2050) ^a				I-215 ^b			
	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn
Center St at Main St	20.2	Min	23.7	Min	23.6	Min	21.7	Min
U.S. 89 at Main St	8.7	Min	11.2	Min	9.4	Min	9.4	Min
U.S. 89 at Eagle Gate Dr	8.9	Min	10.9	Min	10.4	Min	13.3	Min
U.S. 89 at Eagle Ridge Dr	26.7	Min	16.5	Min	16.2	Min	16.8	Min
U.S. 89 at Center St	18.9	Min	22.0	Min	19.0	Min	17.6	Min
U.S. 89 at I-215	—	—	—	—	17.4	Min	22.1	Min
I-15 at I-215	—	—	—	—	17.3	Min	25.9	Min

Source: Appendix 3D, *Alternatives Operations Analysis Memo*

^a Delay is measured as per vehicle in seconds. The color coding shows results by measure: green is minimal congestion (Min), yellow is moderate congestion (Mod), and red is heavy congestion (Hvy).

^b I-215 is the same for both south segment options.

Table 3.6-10 shows the delay and congestion for the southern extent of the south segment from 2100 North to 600 North. Although some intersections would operate better with the Northern Option, the 600 North interchange would operate better with the Southern Option. The ramps at this location could affect I-15 mainline operations if vehicle queuing is too heavy and vehicles are backing onto I-15; therefore, UDOT prefers the Southern Option. The new interchanges at 1000 North and 2100 North would operate well with both options.

Table 3.6-10. South Segment Options Delay and Congestion for 2100 North to 600 North^a

Intersection	No-action (2050) ^a				Salt Lake City 1000 North – Northern Option ^b				Salt Lake City 1000 North – Southern Option ^b			
	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn	AM Delay (sec)	AM Cgstn	PM Delay (sec)	PM Cgstn
600 N at 8th W	10.1	Min	6.4	Min	12.5	Min	9.8	Min	10.9	Min	8.8	Min
600 N at 900 W	15.6	Min	24.0	Min	20.0	Min	24.9	Min	19.0	Min	31.2	Min
600 N at 300 W	111.3	Hvy	100.2	Hvy	37.8	Mod	51.9	Mod	39.3	Mod	57.4	Hvy
600 N at 400 W	108.1	Hvy	44.0	Mod	25.2	Min	60.7	Hvy	24.2	Min	53.5	Mod
Beck St at N Chicago St	15.0	Min	13.1	Min	22.0	Min	25.2	Min	22.5	Min	27.6	Min
600 N at I-15	46.9	Mod	41.6	Mod	60.0	Hvy	48.5	Mod	46.8	Mod	49.0	Mod
900 W at 1000 N	22.6	Min	99.5	Hvy	10.3	Min	14.7	Min	14.3	Min	20.8	Min
1000 N at I-15	—	—	—	—	20.2	Min	25.9	Mod	17.3	Min	36.0	Mod
2100 N at Beck St	—	—	—	—	15.9	Min	15.7	Min	15.8	Min	15.7	Min
2100 N at I-15	—	—	—	—	36.7	Mod	33.8	Min	33.3	Min	27.4	Min

Source: Appendix 3D, *Alternatives Operations Analysis Memo*

^a Delay is measured as per vehicle in seconds. The color coding shows results by measure: green is minimal congestion (Min), yellow is moderate congestion (Mod), and red is heavy congestion (Hvy).

^b These options include 2100 North, 1000 North, and 600 North.

3.6.4.3.2 Travel Time

The Action Alternative would lower travel times compared to the No-action Alternative; however, the Action Alternative would still have some congestion and would not result in free-flow traffic at all locations and at all times of day.

Travel times were measured on I-15 for 2050 No-action Alternative and design 2050 Action Alternative conditions during morning and evening peak travel times. The results of the morning travel time comparison for I-15 southbound is shown in Table 3.6-11.

Table 3.6-11. I-15 Southbound Mainline Travel Time Comparison

I-15 Southbound Period	2050 No-action Travel Time (minutes)	2050 Action Travel Time (minutes)	Percent Change
6:00 AM	20.6	16.6	-19%
7:00 AM	41.6	18.5	-55%
8:00 AM	69.1	20.8	-70%
9:00 AM	88.9	16.9	-81%

Source: Appendix 3D, *Alternatives Operations Analysis Memo*

As shown above in Table 3.6-11, travel times on I-15 are expected to decrease by more than half during most of the 4-hour morning commute period with the Action Alternative. The results of the evening travel time comparison for I-15 northbound are shown in Table 3.6-12.

Table 3.6-12. I-15 Northbound Mainline Travel Time Comparison

I-15 Southbound Period	2050 No-action Travel Time (minutes)	2050 Action Travel Time (minutes)	Percent Change
3:00 PM	37.8	18.2	-52%
4:00 PM	64.5	27.4	-57%
5:00 PM	78.1	41.8	-46%
6:00 PM	84.2	40.5	-52%

Source: Appendix 3D, *Alternatives Operations Analysis Memo*

As shown above in Table 3.6-12, travel times on I-15 are expected to decrease by more than half during most of the 4-hour evening commute period with the Action Alternative.

The main arterials and interchanges that would be reconstructed as part of the Action Alternative would also experience an improvement (decrease) in travel times compared to the No-action Alternative. These measures are summarized by arterial in Table 3.6-13. Both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option would increase travel times on 600 North due to increased capacity at the 300 West and 600 North intersection, which would result in more westbound traffic on 600 North.

Table 3.6-13. Travel Times for the Action Alternative

Street	Direction	No-action (2050) ^a		Action Alternative		Percent Change	
		Travel Time (minutes)		Travel Time (minutes)			
		AM	PM	AM	PM	AM	PM
Parrish Lane – Eastbound travel measured from S.R. 67 to 400 West, westbound travel from Main Street to S.R. 67 on-ramp							
Parrish Lane	Eastbound	9.1	9.9	2.8	3.3	–69%	–67%
	Westbound	4.0	11.1	3.5	4.5	–12%	–60%
400 North – Eastbound travel measured from 900 West to U.S. 89, westbound from 200 West to 800 West							
400 North	Eastbound	2.4	3.6	2.3	2.9	–2%	–19%
	Westbound	3.0	9.3	2.4	2.5	–20%	–73%
500 South – Eastbound travel measured from 1100 West to U.S. 89, westbound from 200 West to 800 West							
500 South	Eastbound	3.0	3.7	2.6	3.0	–13%	–17%
	Westbound	6.8	6.6	2.7	3.2	–60%	–51%
2600 South – Eastbound travel measured from 1250 West to U.S. 89, westbound from 500 West to 1100 West							
2600 South	Eastbound	4.5	7.4	3.3	4.2	–26%	–43%
	Westbound	5.0	9.7	4.5	5.3	–9%	–45%
600 North – Eastbound travel measured from 1300 West to 300 West, westbound from Wall Avenue to 1000 West							
600 North ^b	Eastbound	9.0	6.2	5.7	5.8	–36%	–8%
	Westbound	4.7	4.4	5.1	5.8	+7%	+32%
600 North ^c	Eastbound	9.0	6.2	5.3	5.9	–41%	–5%
	Westbound	4.7	4.4	5.2	6.8	+10%	+57%

Source: Appendix 3D, *Alternatives Operations Analysis Memo*

^a Travel time is measured as average per vehicle in minutes.

^b This is the travel time for the Salt Lake City 1000 North – Northern Option at 600 North.

^c This is the travel time for the Salt Lake City 1000 North – Southern Option at 600 North.

3.6.4.3.3 Vehicle Queuing and Deceleration Lengths

When vehicle queue lengths exceed ramp deceleration lengths due to traffic congestion, traffic operations and safety issues arise because vehicles stop on the mainline of I-15. The Action Alternative would improve vehicle queuing and deceleration lengths for all off-ramps compared to the No-action Alternative. The No-action Alternative vehicle queue lengths are described in the *Mobility Memorandum* (Horrocks 2022b). Table 3.6-14 shows the vehicle queue lengths and deceleration lengths at I-15 off-ramps at arterials in the transportation and mobility evaluation area. Acceptable vehicle queue lengths and deceleration lengths on off-ramps increase safety for travelers and improve the traffic operations of the I-15 mainline.

For example, at Parrish Lane with the No-action Alternative, the 95th-percentile vehicle queue length during the afternoon peak period would be 3,883 feet, which is much longer than the existing 1,218-foot ramp length available for vehicles. This vehicle queue length would cause traffic to back onto mainline I-15. By comparison, at Parrish Lane with the Action Alternative, the 95th-percentile vehicle queue length during the afternoon peak period would be 583 feet, which is much shorter than the proposed 1,370-foot ramp length. With the Action Alternative, no vehicles would back onto mainline I-15 in the 95th-percentile conditions.

Table 3.6-14. Vehicle Queuing and Deceleration Lengths for the Action Alternative

Location	I-15 Off-ramp	Option ^a	Vehicle Queue Length (ft)			Ramp Length (ft)	Deceleration Length (ft) ^b
			AM	PM	95%		
200 West	Northbound	Farmington 400 West Option	165	175	175	1,500	1,325
	Northbound	Farmington State Street Option	131	180	180	1,500	1,320
Parrish Lane	Northbound	No-action Alternative	196	3,883	3,883	1,218	-2,665
		NA	246	583	583	1,370	787
	Southbound	No-action Alternative	3,438	3,436	3,438	1,076	-2,362
		NA	294	312	312	1,520	1,208
400 North	Northbound	No-action Alternative	113	2,449	2,449	1,121	-1,328
		NA	152	258	258	920	662
500 South	Northbound	No-action Alternative	211	3,985	3,985	1,124	-2,861
		NA	181	350	350	1,290	940
	Southbound	No-action Alternative	352	3,523	3,523	1,463	-2,060
		NA	511	614	614	1,440	826
2600 South	Northbound	No-action Alternative	228	4,051	4,051	1,147	-2,904
		NA	331	681	681	1,200	519
	Southbound	NA	273	391	391	1,400	1,009
Center Street	Southbound	No-action Alternative	3,133	239	3,133	1,328	-1,805
I-215	Northbound	NA	283	619	619	2,580	1,961
	Southbound	NA	121	103	121	1,270	1,149
Warm Springs	Northbound	No-action Alternative	452	195	452	1,365	913

(continued on next page)

Table 3.6-14. Vehicle Queuing and Deceleration Lengths for the Action Alternative

Location	I-15 Off-ramp	Option ^a	Vehicle Queue Length (ft)			Ramp Length (ft)	Deceleration Length (ft) ^b
			AM	PM	95%		
2100 North	Northbound	Salt Lake City 1000 North – Northern Option	166	201	201	1,760	1,559
		Salt Lake City 1000 North – Southern Option	173	198	198	1,760	1,562
	Southbound	Salt Lake City 1000 North – Northern Option	389	249	389	1,440	1,051
		Salt Lake City 1000 North – Southern Option	400	239	400	1,440	1,040
1000 North	Northbound	Salt Lake City 1000 North – Northern Option	422	347	422	3,170	2,748
		Salt Lake City 1000 North – Southern Option	209	930	930	2,850	1,920
	Southbound	Salt Lake City 1000 North – Northern Option	363	302	363	1,340	977
		Salt Lake City 1000 North – Southern Option	259	367	367	2,050	1,683
600 North	Northbound	No-action Alternative	3,575	552	3,575	2,395	-1,180
		Salt Lake City 1000 North – Northern Option	322	457	457	1,200	743
		Salt Lake City 1000 North – Southern Option	264	358	358	1,640	1,282
	Southbound	No-action Alternative	361	298	361	1,352	991

Source: Appendix 3D, *Alternatives Operations Analysis Memo*

^a NA (not applicable) indicates that the measures apply to all options of the Action Alternative at this location.

^b If deceleration length is greater than 430 feet or more for 50-miles-per-hour travel, the cell is shaded green, indicating that adequate deceleration length is available. Distances of at least 430 feet are needed to provide adequate stopping distance for vehicles traveling at 50 miles per hour.

3.6.4.3.4 Access Impacts

The Action Alternative would introduce some change in network connectivity. These access impacts are described by segment and option below. For descriptions of bicyclist and pedestrian access and connectivity, see Section 3.6.4.3.6, *Impacts to Pedestrian and Bicyclist Facilities*.

North Segment Impacts

In the north segment, the Action Alternative would provide similar access as the existing conditions for Glovers Lane, Frontage Road, and Parrish Lane.

The Action Alternative would improve access at 200 West in Farmington by providing a signalized intersection at 200 West and Frontage Road which would allow southbound traffic on Frontage Road to go north on 200 West or continue south on Frontage Road. These movements are not accommodated with the

existing conditions. The Action Alternative would maintain the free movement of traffic from northbound I-15 to northbound Frontage Road.

The Action Alternative would also improve access for northbound I-15 traffic accessing 800 West north of Parrish Lane by providing a dedicated underpass to 800 West from the northbound off-ramp, thereby removing the need for drivers to go east on Parrish Lane first and then turn left at the 800 West traffic signal.

Farmington 400 West Option Impacts. This option would provide similar access as existing conditions for State Street and 400 West in Farmington.

Farmington State Street Option Impacts. The difference in access with this option is the Frontage Road/Lagoon Drive would have a new signalized four-way intersection with State Street. This option would improve access to State Street from the Frontage Road/Lagoon Drive but would require travelers on the Frontage Road/Lagoon Drive to go through the new signalized intersection.

North Central Segment Impacts

Access in the north central segment would be the same for both the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option. The Action Alternative would maintain a similar level of access as the existing conditions for Pages Lane, 500 West, and 400 North.

South Central Segment Impacts

Access in the south central segment would be the same for both the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option. A raised median would be added to 500 South between I-15 and 500 West. All business accesses on 500 South in this segment would be right-in and right-out only.

South Segment Impacts

The Action Alternative would introduce some change in network connectivity (Table 3.6-15). The Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option would be similar with minor differences for the area around 1000 North. With the Salt Lake City 1000 North – Southern Option, 1000 North would be realigned farther south, connecting to Warm Springs Road closer to 1100 North (instead of near 1150 North as with the Salt Lake City 1000 North – Northern Option). For both options, southbound I-15 traffic traveling to 600 North would be required to exit I-15 near the current exit for 900 West and travel through the collector-distributor (CD) system to 600 North. The Salt Lake City 1000 North – Southern Option has an advantage by having a grade-separated bypass for 600 North travelers at 1000 North, and drivers would not need to stop at a traffic signal.

Table 3.6-15. Access Impacts from the Action Alternative in the South Segment

Location	Description of Change in Access
2600 South interchange (North Salt Lake/Woods Cross)	At the 2600 South interchange, a new road connection would be made on the north end between Wildcat Way and 800 West through a new underpass of I-15. A segment of existing 800 West might be closed or converted to a private driveway between 1100 North and the new 800 West underpass. Business access for Thomas Petroleum on 800 West would be moved to a new cul-de-sac off 1100 North/2600 South.
Center Street southbound off-ramp (North Salt Lake)	The southbound off-ramp of I-15 at Center Street would be removed. Access to Center Street from I-15 would require travel through the I-15 2600 South interchange to the north, the new I-15/I-215 interchange to the south, or the I-215/Redwood Road interchange to the west.
I-215 interchange (North Salt Lake)	Access would be increased at the I-215 and I-15 interchange to accommodate all directions of travel between I-215 and I-15, and a new access would be added to I-215 and I-15 to and from Beck Street/U.S. 89.
2100 North interchange (Salt Lake City)	Access would be increased between 2100 North, I-15, and Beck Street/U.S. 89. A new diamond interchange at 2100 North would replace the partial-access interchange to allow vehicles to access every direction of I-15 from 2100 North. A new overpass of the Union Pacific and FrontRunner railroad tracks would allow traffic on Beck Street/U.S. 89 to connect to the new interchange at 2100 North and vice versa. This change in access would allow truck traffic to bypass the 600 North interchange and the 300 West Marmalade neighborhood of Salt Lake City when accessing or departing the industrial areas surrounding 2100 North.
Warm Springs Road north of 1100 North (Salt Lake City)	The businesses located on Warm Springs Road would have changes to their access to get on or off northbound I-15. To access northbound I-15 from Warm Springs Road north of 1000 North, travelers would need to either (1) go under I-15 near 2300 North and travel to the new 2100 North interchange on the west side or (2) use the existing 1800 North railroad crossing to get over to U.S. 89 to get on I-15 at either the new 2100 North interchange or the new I-215 interchange. This is similar to what they have to do to get on or off southbound with the existing design.
Warm Springs Road south of 1100 North (Salt Lake City)	Reconfigured access to northbound and southbound I-15 would be provided around 1100 North with the Salt Lake City 1000 North – Southern Option. With the Salt Lake City 1000 North – Northern Option, new northbound off-ramp and on-ramp access would be provided near 800 North. Both of these options would improve access to Granite Construction because there would be new access from northbound I-15 that does not currently exist.
900 West and 1000 North (Salt Lake City)	900 West would be reconfigured to support a new CD interchange between 1000 North and 600 North. The current access between 900 West and Warm Springs Road would be relocated to the south, closer to 1100 North. 1000 North would be reconfigured to provide direct access to Warm Springs Road and all directions of I-15 via a new CD interchange paired with 600 North. At 1000 North, drivers would be able to access northbound I-15 and Warm Springs Road, and those exiting southbound I-15 would be able to access 1000 North directly. Drivers accessing southbound I-15 or 600 North from 1000 North would travel along the CD system, no longer using 900 West for access. Business access along Warm Springs Road near 1000 North would be reconfigured.
600 North (Salt Lake City)	600 North would be reconfigured as a CD interchange paired with 1000 North. Southbound I-15 traffic traveling to 600 North would be required to exit I-15 near the current exit for 900 West and travel through the CD system to 600 North, stopping at one traffic signal at 1000 North. Access to southbound I-15 from 600 North would be the same as existing conditions. Access to northbound I-15 from 600 North would require drivers to travel north to 1000 North via the CD system before accessing the northbound I-15 on-ramp. Accessing northbound I-15 from 600 North requires travel through two additional traffic signals compared to existing conditions. Business access on the north side of 600 North between 500 West and 400 West would be reconfigured due to 600 North's wider footprint.

3.6.4.3.5 *Transit Travel Impacts*

The Action Alternative would not impact existing or planned transit projects or access to transit. The Action Alternative would provide room to construct and operate the FrontRunner Double Track project. The Action Alternative would provide better multimodal connections to the Woods Cross FrontRunner Station and would improve access east-west across I-15 for pedestrians and bicyclists accessing other bus and FrontRunner stations. The Action Alternative would benefit bus routes using I-15, the interchanges, and cross streets through improved traffic operations (reduced delay, faster travel times, reduced congestion, and improved vehicle queuing) as described above.

3.6.4.3.6 *Impacts to Pedestrian and Bicyclist Facilities*

The Action Alternative includes new or improved pedestrian and bicyclist facilities at each interchange in the transportation and mobility evaluation area. Several of these improvements are not included in WFRC's 2019–2023 RTP and would therefore not be constructed without the Action Alternative unless they were added to a future, adopted active transportation plan and constructed as part of a future project.

When developing these proposed facilities, UDOT assessed nonmotorized demand and operations in the evaluation area. UDOT reviewed the location, distance, origin, and destinations of nonmotorized trips as well as demographics of the locations of origins and destinations. For more information about this analysis and the outreach UDOT conducted, see the *Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* (Horrocks 2022b). This analysis informed the Action Alternative pedestrian and bicyclist improvements listed in Table 3.6-16 and shown in Figure 3.6-1.

The improvements listed in Table 3.6-16 would meaningfully improve safety and the user experience for pedestrians and bicyclists at all of the existing interchanges in the transportation and mobility evaluation area (200 West in Farmington; Parrish Lane in Centerville; 400 North in Bountiful, and West Bountiful; 500 South in Bountiful, West Bountiful, and Woods Cross; 1100 North/2600 South in North Salt Lake and Woods Cross; 1000 North in Salt Lake City; and 600 North in Salt Lake City). All of these interchanges would include wider, safer facilities that are intended specifically for pedestrians and bicyclists. Additional roadway design features, such as signal-controlled turn movements at the interchange terminals and perpendicular intersection designs, would also improve the safety and user experience for pedestrians and bicyclists crossing I-15 at an interchange.

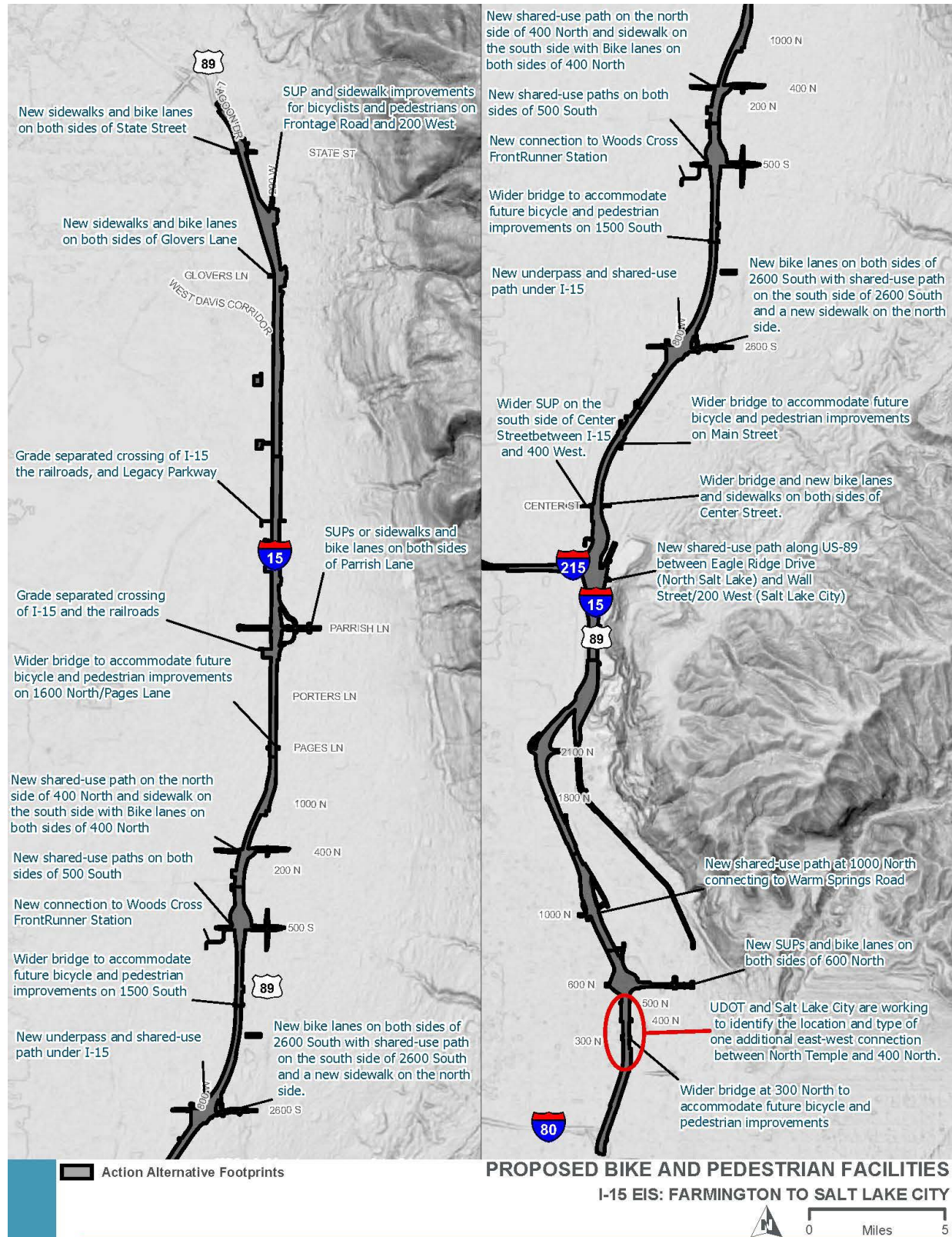
What is a shared-use path?

Shared-use paths (SUPs) are an improved facility with exclusive right-of-way for bicycles and pedestrians and have minimal intersections with motor vehicles.

Table 3.6-16. Action Alternative Pedestrian and Bicyclist Improvements by Location

Geographic Area	Action Alternative Bicyclist and Pedestrian Crossing Features
North Segment (Farmington and Centerville)	<ul style="list-style-type: none"> • State Street/Clark Lane bridge over I-15 and the Union Pacific and FrontRunner railroad tracks would be widened to include buffered or barrier-separated bike lanes and sidewalks on both sides that match the facilities going over Legacy Parkway. • No free right-hand turns for vehicles and better sight lines, thereby enhancing safety for pedestrians and bicyclists at the 200 West interchange. • Glovers Lane bridge over I-15 and the Union Pacific and FrontRunner railroad tracks would be widened to include a 10-foot-wide sidewalk on the north side, a 6-foot-wide sidewalk on the south side, and buffered or barrier-separated bike lanes on both sides to match the facilities going over Legacy Parkway. • New grade-separated 14-foot-wide SUP crossing at Centerville Park over I-15/Union Pacific and FrontRunner railroad tracks/Legacy Parkway. • No free right-hand turns for vehicles and better sight lines, thereby enhancing safety for pedestrians and bicyclists at the Parrish Lane interchange. • 12-foot-wide SUP on north side of Parrish Lane. East of I-15, the SUP would narrow to a 5- to 6-foot-wide sidewalk with a park strip. 12-foot-wide SUP on the south side of Parrish Lane. • Wide shoulders on Parrish Lane to accommodate future bike lanes. • Grade-separated 14-foot-wide SUP crossing of I-15 and the Union Pacific and FrontRunner railroad tracks at 200 North.
North Central and South Central Segments (West Bountiful, Bountiful, and Woods Cross)	<ul style="list-style-type: none"> • Wider bridge over 1600 North/Pages Lane to accommodate future pedestrian and bicyclist improvements. • No free right-hand turns for vehicles and better sight lines, thereby enhancing safety for pedestrians and bicyclists at the 500 South and 400 North interchanges. • Buffered or barrier-separated bike lanes on both sides of 400 North. • 12-foot-wide SUP on the north side of 400 North. • 6-foot-wide sidewalk on the south side of 400 North. • 12-foot-wide SUP on both sides of 500 South. • New SUP connection from 500 South to the Woods Cross FrontRunner Station west of I-15.
South Segment (North Salt Lake, Woods Cross, and Salt Lake City)	<ul style="list-style-type: none"> • Wider bridge over 1500 South to accommodate future pedestrian and bicyclist improvements. • At 800 West, new underpass of I-15 with new 12-foot-wide SUP. 12-foot-wide SUP connection between 800 West and 2600 South on west side of I-15. • At 2600 South, no free right-hand turns for vehicles and better sight lines, thereby enhancing safety for pedestrians and bicyclists. • Buffered or barrier-separated bike lanes on both sides of 2600 South. • 8-foot-wide sidewalk on north side of 2600 South. • 14-foot-wide grade-separated SUP on south side of 2600 South. • Wider bridge over Main Street to accommodate future pedestrian and bicyclist improvements. • Center Street buffered or barrier-separated bike lanes on both sides, 6-foot-wide sidewalk on north side, and 12-foot-wide SUP improvements on south side of Center Street between I-15 and 400 West. • New U.S. 89 12-foot-wide SUP between Eagle Ridge Drive in North Salt Lake and Wall Street/200 West in Salt Lake City. • 12-foot-wide SUP on 1000 North that crosses under I-15 and connects to Warm Springs Road east of I-15. • No free right-hand turns and better sight lines for vehicles, thereby enhancing safety for pedestrians and bicyclists at 600 North interchanges. • Buffered or barrier-separated bike lanes and 8-foot-wide sidewalks on both sides of 600 North. • Wider bridge over 300 North to accommodate future pedestrian and bicyclist improvements.

Figure 3.6-1. Action Alternative Proposed Pedestrian and Bicyclist Facilities Improvements



In addition to the improvements at the I-15 interchanges, the Action Alternative would also provide:

- A new 3.8-mile SUP connection between Eagle Ridge Drive in North Salt Lake and Wall Street/200 West in Salt Lake City
- Three new grade-separated SUP crossings of I-15 (Centerville Community Park SUP, Centerville 200 North SUP, and North Salt Lake 2600 South SUP)
- One new crossing of I-15 as part of the new road crossings under I-15 at 800 West in Woods Cross
- Improvements to the existing pedestrian and bicyclist facilities crossing I-15 at three locations (State Street in Farmington, Glovers Lane in Farmington, and Center Street in North Salt Lake)
- New, wider bridges at eight locations (1600 North/Pages Lane in West Bountiful and Centerville, 1500 South in Woods Cross, Main Street in North Salt Lake, Center Street in North Salt Lake, 300 North in Salt Lake City, North Temple in Salt Lake City, South Temple/Folsom Trail in Salt Lake City, and 200 South in Salt Lake City)

Existing Facilities

UDOT anticipates that the impacts to pedestrian and bicyclist facilities, including trails, from the Action Alternative would be new crossings of existing trails or the realignment and/or reconnection of existing trails. The impacts to the pedestrian and bicyclist facilities would be limited to potential temporary closures and/or detours during construction. None of the pedestrian and bicyclist facilities would be permanently removed or disconnected.

The Action Alternative would require relocating the following existing pedestrian and bicyclist facilities (Table 3.6-17). The Action Alternative would replace each affected facility with a similar facility near its current location as described in the table.

Table 3.6-17. Impacts from Action Alternative to Existing On-street Pedestrian and Bicyclist Facilities

Route or Trail	Description of Impact	Proposed Mitigation
North Segment (Farmington and Centerville)		
Farmington Creek Trail	North Lagoon Drive would be realigned to the east to accommodate the I-15 mainline. This realignment would temporarily close a segment of Farmington Creek Trail in Ezra T. Clark Park.	The trail will be realigned within the park and maintain the same width and characteristics.
State Street	State Street would be widened to add a turn lane onto 400 West. The existing sidewalks and bike lanes would be temporarily closed.	The sidewalks and bike lanes would be replaced and upgraded to match the sidewalks and bike lanes on the State Street bridge that goes over Legacy Parkway.
200 West and Frontage Road	200 West would be realigned to the west where it meets the off-ramp for I-15 and Lagoon Drive. The sidewalks and bike lanes would be temporarily closed.	The sidewalk network would be extended and improved on the west side of 200 West where it currently does not exist. The bike lanes and sidewalk on the east side of 200 West would be replaced in kind. The sidewalks and SUP by the Frontage Road would be replaced in kind and connected to the new 200 West sidewalks.
Glovers Lane	The bike lanes and sidewalks on Glovers Lane and the pedestrian and bicyclist overpass on the north side of Glovers Lane would be temporarily closed during construction.	The sidewalks and bike lanes would be upgraded to match the sidewalks and bike lanes on the Glovers Lane bridge that goes over Legacy Parkway.
South Frontage Road and 800 West	South Frontage Road/800 West would be realigned to the east to accommodate the I-15 mainline. This realignment would temporarily close the bike lanes and the sidewalk on the east side of the road.	The sidewalks and bike lanes would be replaced in kind.
Parrish Lane	Along Parrish Lane is a multi-use pathway on the north side of the street. This multi-use pathway would be temporarily closed during construction.	This pathway would be rebuilt and improved. Additionally, new pedestrian and bicyclist facilities would be constructed on the south side of Parrish Lane.
Market Place Drive	Market Place Drive would have minor realignment to add or improve turn lanes. These improvements would relocate the existing sidewalks.	The sidewalks would be replaced in kind.
North Central and South Central Segments (West Bountiful, Bountiful, and Woods Cross)		
400 North	The 400 North barrier-separated sidewalk on the north side of the street would be temporarily closed during construction.	The sidewalk would be replaced with buffered or barrier-separated bike lanes on both sides of 400 North, a 12-foot-wide SUP on the north side of 400 North, and a 6-foot-wide sidewalk on the south side of 400 North.
500 South	The bike lanes and sidewalks that traverse the diverging diamond interchange would be temporarily closed during construction.	The bike lanes and sidewalks would be part of the new SUPs on the north and south sides of 500 South through the new diamond interchange configuration.

(continued on next page)

Table 3.6-17. Impacts from Action Alternative to Existing On-street Pedestrian and Bicyclist Facilities

Route or Trail	Description of Impact	Proposed Mitigation
South Segment (North Salt Lake, Woods Cross, and Salt Lake City)		
2600 South and 1100 North	The bike lanes and sidewalks that traverse the existing interchange would be temporarily closed during construction.	The bike lanes would be realigned to the north and south of the street of the new single-point urban interchange. A separate multi-use path would be constructed to the south side of 2600 South, and a new pathway would be constructed on the north side in a new alignment under I-15 connecting 800 West and Wildcat Way.
800 West	The sidewalk on the east side of 800 West would be temporarily closed during construction.	A multi-use pathway would be constructed on the west and south side of 800 West.
Center Street	The sidewalks and bike lanes along Center Street would be temporarily closed during construction while a new overpass for I-15 is installed. There are gaps in the sidewalk network on the west side of I-15.	Bike lanes and sidewalks would be constructed along both sides of Center Street providing a complete network. The project would widen and improve the SUP on the south side of Center Street between I-15 and 400 West.
U.S. 89/Beck Street	The bike lane on the east side of Beck Street would be temporarily closed construction.	The bike lane would be replaced with an SUP on the east side of the street. The new SUP would be extended to connect Eagle Ridge Drive in North Salt Lake to Wall Avenue/200 West in Salt Lake City.
900 West	900 West would be realigned as part of the new interchange at 1000 North. The bike lanes and sidewalks would be temporarily closed during construction.	The sidewalks and bike lanes would be replaced in kind.
1000 North	1000 North would be realigned near 900 West as part of the new interchange at 1000 North. The bike lanes and sidewalks would be temporarily closed during construction.	The sidewalks and bike lanes would be replaced in kind.
600 North	The bike lanes and sidewalk on the south side of the street that traverse the single-point urban interchange would be temporarily closed during construction.	The bike lanes and sidewalks would be realigned to the north and south of the street of the new diamond interchange configuration. Protected or buffered bike lanes and new SUPs would be constructed.

The Action Alternative would cross but not have any direct impact to the following existing pedestrian and bicyclist facilities. These facilities would be accommodated or connected to the improvements to the pedestrian and bicyclist facilities proposed with the Action Alternative:

- 1600 North/Pages Lane in West Bountiful and Centerville
- 1500 South in Woods Cross
- Main Street in North Salt Lake
- 300 North in Salt Lake City
- North Temple in Salt Lake City
- South Temple/Folsom Trail in Salt Lake City
- 200 South in Salt Lake City

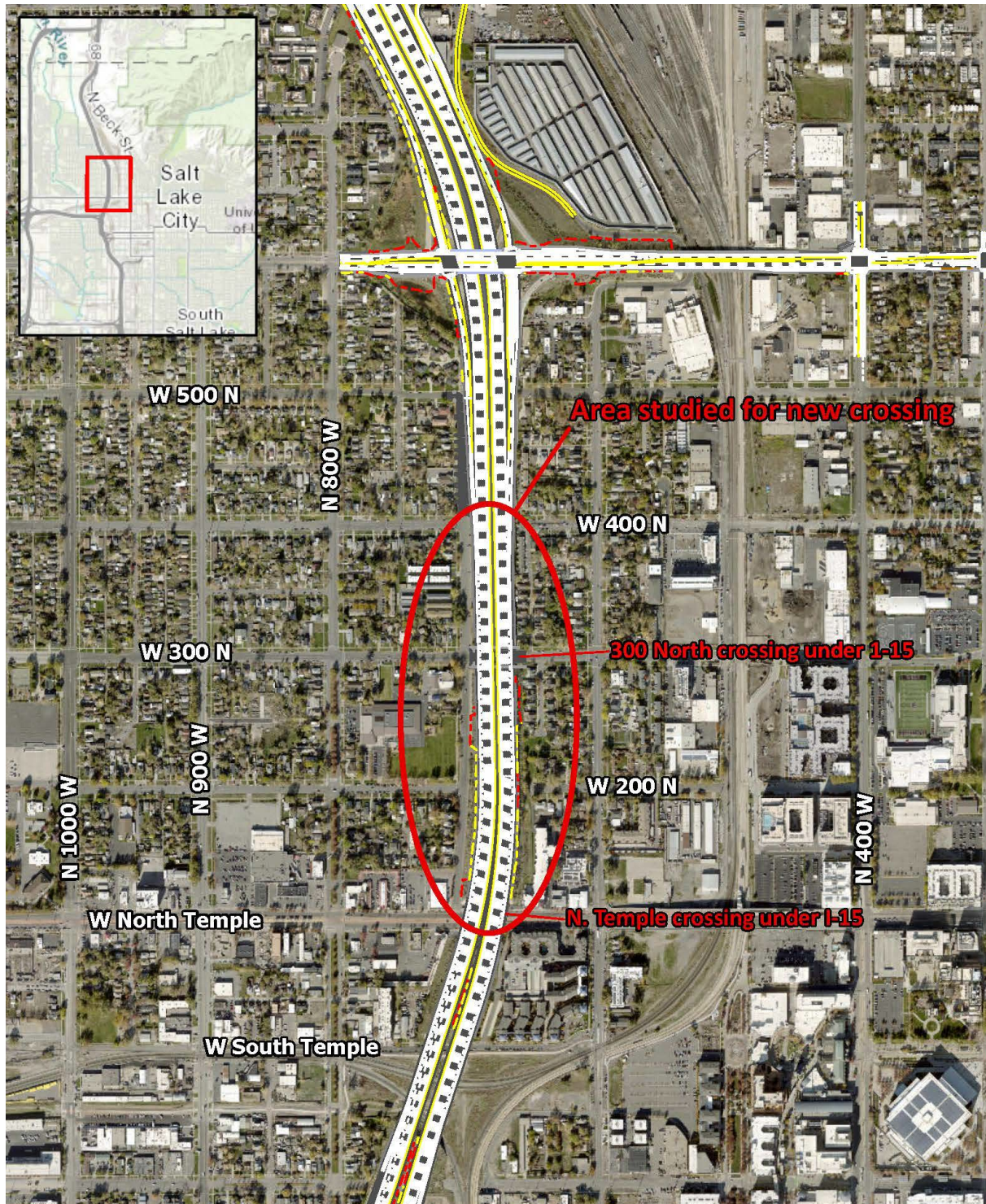
Future Facilities

The Action Alternative would support the proposed pedestrian and bicyclist facilities in WFRC's 2023–2050 RTP through the construction of features listed in Table 3.6-16, *Action Alternative Pedestrian and Bicyclist Improvements by Location*, above and through the construction of wider bridges at Center Street and Main Street in North Salt Lake, 1600 North/Pages Lane in West Bountiful and Centerville, and 1500 South in Woods Cross. Additional proposed projects in the RTP are subject to available funding and coordination with local jurisdictions.

UDOT and Salt Lake City Crossing Study

A new crossing under I-15 was considered at 400 North in Salt Lake City during the draft alternatives development and screening process for this EIS. In response to mixed feedback from the community for the new 400 North crossing in Salt Lake City, UDOT removed this crossing from the Action Alternative in the Draft EIS. To meet the project purpose of “better connecting communities,” UDOT is working with Salt Lake City and the local community to evaluate a potential new crossing under I-15 between 400 North and North Temple (Figure 3.6-2). If a location for a new crossing is identified through this additional study, UDOT will include this location in the Action Alternative. The crossing study was ongoing when this Draft EIS was released.

Figure 3.6-2. Extent of the UDOT and Salt Lake City Crossing Study



UDOT AND SALT LAKE CITY CROSSING STUDY LOCATION

I-15 EIS: FARMINGTON TO SALT LAKE CITY

3.6.4.3.7 Summary of Action Alternative Impacts

The Action Alternative would improve traffic operations in the transportation and mobility evaluation area compared to the No-action Alternative by reducing delay, reducing congestion, reducing travel times, enhancing safety, and increasing access.

The Action Alternative would meaningfully improve safety and the user experience for pedestrians and bicyclists at all of the existing interchanges in the evaluation area. The Action Alternative would also provide a new 3.8-mile SUP between North Salt Lake and Salt Lake City, three new grade-separated SUP crossings of I-15 (Centerville Community Park SUP, Centerville 200 North SUP, and North Salt Lake 2600 South SUP), one new crossing for pedestrians and bicyclists under I-15 at 800 West in Woods Cross, improvements to existing pedestrian and bicyclist facilities crossing I-15 in three locations (State Street in Farmington, Glovers Lane in Farmington, and Center Street in North Salt Lake), and new, wider bridges in eight locations (1600 North/Pages Lane in West Bountiful and Centerville, 1500 South in Woods Cross, Main Street in North Salt Lake, Center Street in North Salt Lake, 300 North in Salt Lake City, North Temple in Salt Lake City, South Temple/Folsom Trail in Salt Lake City, and 200 South in Salt Lake City).

3.6.4.4 Mitigation Measures

The Action Alternative would be an improvement over the no-action conditions. No mitigation for impacts to the roadway network is proposed.

Each existing pedestrian and bicyclist facility that would be closed and removed during construction would be replaced with a similar or improved facility near its current location. Project construction for pedestrian and bicyclist facilities would be phased to minimize disruptions to the public to the extent feasible. UDOT would also coordinate with the Counties and Cities during the final design of the Action Alternative to mitigate disruptions to pedestrian and bicyclist facility users. Potential mitigation for disruption would include providing signed on-road detours where feasible, closing facilities during low-use seasons (winter), and providing information to the public about closures.

3.7 Joint Development

3.7.1 Introduction

Joint development refers to opportunities to develop other public works projects jointly with the I-15 project. Section 3.7 discusses proposed road, rail, park, and pedestrian and bicyclist facilities that might be developed jointly with the I-15 project.

Joint Development Evaluation Area. The joint development evaluation area is the same as the needs assessment study area described in Section 1.1.3, *Description of the Needs Assessment Study Area and Logical Termini*, in Chapter 1, *Purpose and Need*.

3.7.2 Regulatory Setting

Under FHWA guidelines [Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*], an agency developing a project that uses federal money should identify and discuss those joint development measures that will preserve or enhance an affected

community's social, economic, environmental, and visual values. As required by that guideline, Section 3.7 discusses facilities that might be developed jointly with the I-15 project.

3.7.3 Affected Environment

The joint development evaluation area has many road, rail, park, pedestrian, and bicyclist facilities that cross over, cross under, or are located near I-15. Representatives with Davis County, Salt Lake County, Farmington City, Centerville City, West Bountiful City, Bountiful City, Woods Cross City, the City of North Salt Lake, and Salt Lake City have asked to work with UDOT to develop improvements to enhance road, park, and pedestrian and bicyclist facility connections at I-15 interchange areas or at separate crossings of I-15.

3.7.4 Environmental Consequences and Mitigation Measures

3.7.4.1 No-action Alternative

With the No-action Alternative, the changes associated with the I-15 project would not be made, including the pedestrian and bicyclist improvements described in more detail in Section 3.6, *Transportation and Mobility*. If the I-15 project is not implemented, it would be more difficult for affected Cities and Counties to improve road, park, and pedestrian and bicyclist facilities across I-15.

3.7.4.2 Action Alternative

The Action Alternative would require reconstructing portions of the existing roads and pedestrian and bicyclist facilities that cross I-15. However, with the Action Alternative, UDOT would work with the Cities and Counties in the joint development evaluation area during the final design process to determine whether additional roadway elements or pedestrian and bicyclist facilities could be constructed while the Action Alternative is under construction.

The Action Alternative would impact the park strips between the Frontage Road and the parking lot and would relocate the Central Davis Sewer District pump station close to the skate park of South Park in Farmington. Farmington City is planning to upgrade South Park and has stated that they may look at changing the design and/or location of the skate park area as part of the South Park upgrades.

The Action Alternative would have temporary construction impacts due to sidewalk and bike lane improvements on the south side of Hatch Park in North Salt Lake. During the final design of the Action Alternative, UDOT would coordinate with these Cities regarding impacts or connections to any existing or planned park facilities and would determine feasible options to redesign planned park facilities if necessary.

In addition, three existing at-grade railroad crossings are being considered for grade separation by Woods Cross at 500 South or North Salt Lake at 1100 North and Center Street. The Action Alternative would not require reconstructing the crossings, and the Action Alternative is compatible with the planned rail crossing upgrades. UDOT will coordinate with the Cities and railroads to determine whether these railroad grade-separation projects are candidates for joint development with the I-15 project.

During the final design process for the Action Alternative, UDOT would work with the applicable Counties and/or Cities to determine the scope and design for the additional road, rail, park, and pedestrian and bicyclist facilities beyond those replaced or constructed as part of the Action Alternative. The cost of constructing additional facilities beyond those replaced or constructed as part of the Action Alternative

improvements and long-term maintenance of the additional facilities would be the responsibility of the applicable Counties or Cities. By considering these improvements during the final design process for the Action Alternative, the final designers or design-builder could look at opportunities to limit construction impacts and closures, save costs, and provide cohesive road and pedestrian and bicyclist facilities across I-15.

Table 3.7-1 lists the planned projects that could have a similar construction timeline and could be considered for potential joint development with the I-15 project. This list of projects is based on WFRC's 2019–2050 RTP and discussions with the Counties and Cities. Other planned projects listed in the 2019–2050 RTP could also be considered joint development opportunities if the timing of these projects were to coincide with that of the I-15 project (see Table 1A-3, *Planned Transportation Improvements in the 2019–2050 RTP in the Needs Assessment Area*, in Appendix 1A, *Purpose and Need Chapter Supplemental Information*).

Table 3.7-1. Potential Joint Development Projects

Project Name	Municipality	Location/Limits	Description
Farmington South Park Updates	Farmington	1384 S. Frontage Road, Farmington	Farmington City has mentioned that planned upgrades and reconstruction of South Park might occur at around the same time as the Action Alternative would be constructed. UDOT would coordinate any park impacts and mitigation for impacts to South Park with Farmington City to be compatible with the City's planned South Park upgrades.
500 South Railroad Crossing	Woods Cross	800 West 500 South, Woods Cross	This project is a grade-separated railroad crossing west of the Action Alternative improvements on 500 South in Woods Cross. The Action Alternative is forward-compatible with this future grade-separated railroad crossing project.
2600 South/1100 North Railroad Crossing	North Salt Lake	1050 West 1100 North, North Salt Lake	This project is a grade-separated railroad crossing west of the Action Alternative improvements on 2600 South/1100 North in North Salt Lake. The Action Alternative is forward-compatible with this future grade-separated railroad crossing project.
Center Street Railroad Crossing	North Salt Lake	300 W. Center Street, North Salt Lake	This project is a grade-separated railroad crossing west of the Action Alternative improvements on Center Street in North Salt Lake. The Action Alternative is forward-compatible with this future grade-separated railroad crossing project.
Hatch Park Expansion and Upgrades	North Salt Lake	50 W. Center Street, North Salt Lake	The City of North Salt Lake is purchasing land and beginning work on expansions and upgrades to Hatch Park. The City of North Salt Lake has provided UDOT with a copy of the plan for Hatch Park. UDOT will coordinate the Action Alternative improvements to the Center Street roadway, sidewalks, bike lanes, and shared-use path with the City of North Salt Lake to be compatible with the City's planned Hatch Park improvements.
600 North/700 North Protected Bike Lane Project	Salt Lake City	600 North from 800 West to 2200 West, Salt Lake City	Salt Lake City is currently studying this segment of 600 North to add new protected bike lanes, safer pedestrian facilities, and other operational improvements. UDOT is coordinating with Salt Lake City on this project so that the Action Alternative improvements to the 600 North roadway, shared-use paths, and bike lanes are compatible with Salt Lake City's planned improvements to 600 North.

Sources: City of North Salt Lake 2022; WFRC 2019a

3.7.4.3 Mitigation Measures

No mitigation measures for joint development impacts are proposed because no adverse impacts are expected. UDOT will continue to work with the Counties and Cities to make the Action Alternative compatible with the planned projects listed above in Table 3.7-1, *Potential Joint Development Projects*.

3.8 Air Quality

3.8.1 Introduction

Section 3.8 describes the existing air quality conditions in the applicable evaluation area and potential effects of the project alternatives on air quality. Air quality in a given area depends on several factors such as the area itself (size and topography), the prevailing weather patterns (meteorology and climate), and the pollutants released into the air. Air quality is described in terms of the concentrations of various pollutants in a given area of atmosphere (for example, parts per million or micrograms per cubic meter).

Air Quality Evaluation Area. The air quality evaluation area is broader than the needs assessment area and includes the regionally significant roads in the RTP that are in the geographic area of the I-15 project. The evaluation area includes all freeways, arterials, and collectors between roughly Shepard Lane in Farmington and roughly 1300 South in Salt Lake City (including I-15, Legacy Parkway, I-215, and U.S. 89 in addition to the smaller arterial and collector roads in this area). The evaluation area includes these other regionally significant roads because the traffic volumes and associated emissions or other air quality effects could be beneficially or adversely affected by the Action Alternative.

3.8.2 Regulatory Setting

3.8.2.1 National Ambient Air Quality Standards

The U.S. Environmental Protection Agency (EPA), under the authority of the Clean Air Act (42 USC Section 7401 and subsequent sections), established National Ambient Air Quality Standards (NAAQS) for ubiquitous pollutants considered harmful to public health and the environment (40 Code of Federal Regulations [CFR] Part 50). These standards are broken down into primary standards, which protect public health, and secondary standards, which protect public welfare (such as protecting property and vegetation from the effects of air pollution). These standards have been adopted by the Utah Division of Air Quality as the official ambient air quality standards for Utah.

EPA has set NAAQS for six principal pollutants known as *criteria pollutants*. The current NAAQS are listed in Table 3.8-1. According to EPA, transportation sources currently contribute to four of the six criteria pollutants: carbon monoxide (CO), particulate matter (PM₁₀ and PM_{2.5}), ozone (O₃), and nitrogen dioxide (NO₂).

If an area meets the NAAQS for a given air pollutant, the area is called an *attainment area* for that pollutant (because the NAAQS have been attained). If an area does not meet the NAAQS for a given air pollutant, the area is called a *nonattainment area*. A *maintenance area* is an area previously designated as a nonattainment area that has been redesignated as an attainment area and is required by Section 175A of the Clean Air Act, as amended, to have a maintenance plan for the 20 years following its redesignation to attainment or maintenance status.

Table 3.8-1. National and Utah Ambient Air Quality Standards for Criteria Pollutants and Attainment Status for Salt Lake and Davis Counties

Pollutant	Primary/ Secondary	Averaging Time	Level	Form	Attainment Status for Salt Lake and Davis Counties
Carbon monoxide (CO)	Primary	8 hours	9 ppm	Not to be exceeded more than once per year	Salt Lake and Davis Counties are attainment areas
		1 hour	35 ppm	Not to be exceeded more than once per year	
Ozone (O ₃)	Primary and secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years	Salt Lake and Davis Counties are marginal nonattainment areas ^a
Particulate matter (PM _{2.5})	Primary	1 year	12.0 µg/m ³	Annual mean, averaged over 3 years	Salt Lake and Davis Counties are attainment areas
	Secondary	1 year	15.0 µg/m ³	Annual mean, averaged over 3 years	Salt Lake and Davis Counties are attainment areas
	Primary and secondary	24 hours	35 µg/m ³	98th percentile, averaged over 3 years	Salt Lake and Davis Counties are serious nonattainment areas ^b
Particulate matter (PM ₁₀)	Primary and secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years	Salt Lake County is a maintenance area and Davis County is an attainment area
Nitrogen dioxide (NO ₂)	Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	Salt Lake and Davis Counties are attainment areas
	Primary and secondary	1 year	53 ppb	Annual mean	Salt Lake and Davis Counties are attainment areas
Sulfur dioxide (SO ₂)	Primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years	Salt Lake and Davis Counties are attainment areas
	Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year	Salt Lake County is a nonattainment area and Davis County is an attainment area
Lead (Pb)	Primary and secondary	Rolling 3-month average	0.15 µg/m ³	Not to be exceeded	Salt Lake and Davis Counties are attainment areas

Sources: 49 CFR Part 50 (NAAQS) and EPA 2022 (attainment status)

Note: µg/m³ = micrograms per cubic meter; ppm = parts per million; ppb = parts per billion; PM_{2.5} = particulate matter 2.5 microns in diameter or less; PM₁₀ = particulate matter 10 microns in diameter or less

^a A “marginal” nonattainment area is one where the O₃ level has a value of 0.071 ppm up to but not including 0.081 ppm.

^b A “serious” nonattainment area is one that failed to meet the 2006 24-hour PM_{2.5} NAAQS within a timeframe required by EPA.

The air quality evaluation area is located in Davis and Salt Lake Counties. Davis and Salt Lake Counties are attainment areas for CO, NO₂, and lead (Pb), and Davis County is an attainment area for PM₁₀ and sulfur dioxide (SO₂). Salt Lake County is a nonattainment area for PM_{2.5}, O₃, and secondary SO₂ and a

maintenance area for PM₁₀, having transitioned from a nonattainment area effective March 27, 2020. Davis County is a nonattainment area for PM_{2.5} and O₃. Table 3.8-1 above shows the attainment status for Davis and Salt Lake Counties for each criteria pollutant.

SO₂ and Pb are not considered transportation-related criteria pollutants and are not discussed further.

3.8.2.2 Transportation Conformity Requirements

Transportation conformity is a process required by Clean Air Act Section 176(c), which establishes the framework for improving air quality to protect public health and the environment. All state governments are required to develop a state implementation plan (SIP) for each pollutant for which an area is in nonattainment or maintenance status. The SIP explains how the State will comply with the requirements of the Clean Air Act.

Section 176(c) of the Clean Air Act, and its related amendments, require that transportation plans, programs, and projects developed, funded, or approved by FHWA and/or the Federal Transit Administration and metropolitan planning organizations must demonstrate that such activities conform to the SIP. Transportation conformity requirements apply to any transportation-related criteria pollutants for which the project area is designated a nonattainment or maintenance area.

Unless the project is exempt from conformity requirements, federal agencies are required to make a conformity determination before adopting, accepting, approving, or funding an activity or project located in a nonattainment or maintenance area. A conformity determination is a finding that the activity or project conforms to the SIP's purpose of "eliminating or reducing the severity and number of violations" of the NAAQS and "achieving expeditious attainment of the NAAQS" [42 USC Section 7506(c)] and that the project or activity will not:

- Cause or contribute to new air quality violations of the NAAQS,
- Worsen existing violations of the NAAQS, or
- Delay timely attainment of the NAAQS or required interim milestones.

To demonstrate project-level conformity, a project must come from a conforming RTP and TIP. The project design concept and scope must not have changed significantly from those in the RTP and TIP and the analysis must have used the latest planning assumptions and latest estimates of emissions. Additional analysis might be necessary in CO, PM₁₀, and PM_{2.5} nonattainment or maintenance areas to determine whether a project would have local air quality impacts. This analysis is referred to as a "hot-spot" analysis. A hot-spot analysis is defined in 40 CFR Section 93.101 as an estimation of likely future local pollutant concentrations and a comparison of those concentrations to the relevant NAAQS. A hot-spot analysis assesses air quality impacts on a smaller scale than an entire nonattainment or maintenance area.

What is a hot-spot analysis?

A hot-spot analysis is an estimation of likely future local pollutant concentrations and a comparison of those concentrations to the relevant NAAQS.

A PM hot-spot analysis is required only for specific types of projects, which are listed in the transportation conformity regulations at 40 CFR Section 93.123(b)(1). EPA uses the term *project of air quality concern* (POAQC) to refer to any of the project types for which a PM hot-spot analysis is required.

Because the improvements associated with the I-15 project would be in a CO attainment area, a CO hot-spot analysis is not required.

3.8.2.2.1 Transportation Conformity Compliance

WFRC, the metropolitan planning organization for the project region, develops the Wasatch Front RTP (WFRC 2023a). The 2023–2050 RTP includes the I-15 project (widening from five lanes to six lanes in each direction) from Farmington to the Salt Lake County border (2023–2050 RTP project: R-D-45).

EPA approved the maintenance plan for the Salt Lake County 8-hour O₃ standard on September 26, 2013 (78 Federal Register 59242). Project-level conformity for O₃ is met by demonstrating that the area has a conforming RTP and TIP, and that the project is consistent with the description provided in the RTP.

EPA approved the maintenance plan for the Salt Lake County SIP for PM₁₀ on July 8, 1994 (59 Federal Register 35036). Davis and Salt Lake Counties do not yet have an approved SIP. Until the SIP for PM_{2.5} is approved, interim emissions tests are required for RTP conformity determinations.

The I-15 EIS is also listed in the 2023–2028 TIP (WFRC 2022).

3.8.2.2.2 Exempt Projects

EPA regulations set forth certain projects that are exempt from transportation conformity requirements. See 40 CFR Sections 93.126 and 93.128. Projects consistent with 40 CFR Section 93.126 or 40 CFR Section 93.128 are exempt from transportation conformity requirements. Exempt projects include safety projects such as railroad crossings, guard rails, and bridge reconstruction (with no additional travel lanes); mass transit projects such as rehabilitation of transit vehicles; air quality projects such as pedestrian and bicycle facilities; and other projects such as noise attenuation. The I-15 project does not qualify for any of these exemptions.

3.8.2.2.3 Projects of Air Quality Concern

Because the project would be located in a PM_{2.5} nonattainment and PM₁₀ maintenance area, it is subject to procedures to determine whether it should be classified as a POAQC such that quantitative hot-spot analysis is warranted [see 40 CFR Section 93.123(b)(1)]. Projects that require quantitative hot-spot analyses for PM_{2.5} and PM₁₀ include:

- i. New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles
- ii. Projects affecting intersections that are at a level of service (LOS) of LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project
- iii. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location
- iv. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location
- v. Projects in or affecting locations, areas, or categories of sites that are identified in the PM₁₀ or PM_{2.5} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation

EPA's *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas* (EPA 2021) provides guidance for reviewing transportation projects in the context of CFR Title 40 and clarification regarding the criteria for determining whether a project is a project of air quality concern. Appendix B of EPA's hot-spot guidance provides the following examples of projects of local air quality concern that would be covered by 40 CFR Section 93.123(b)(1)(i) and (ii):

- A project on a new highway or expressway that serves a significant volume of diesel vehicle traffic, such as facilities with greater than 125,000 annual average daily traffic (AADT), and 8% or more of such AADT is diesel truck traffic (or the equivalent of 10,000 diesel new AADT)
- New exit ramps and other highway facility improvements to connect a highway or expressway to a major freight, bus, or intermodal terminal
- Expansion of an existing highway or other facility that affects a congested intersection (operated at LOS D, E, or F) that has a significant increase in the number of diesel trucks
- Similar highway projects that involve a significant increase in the number of diesel transit buses and/or diesel trucks

EPA's hot-spot guidance also provides the following examples of projects that are *not* projects of local air quality concern under 40 CFR Section 93.123(b)(1)(i) and (ii):

- Any new or expanded highway project that services primarily gasoline vehicle traffic (that is, does not involve a significant number or increase in the number of diesel vehicles), including such projects involving congested intersections operating at LOS D, E, or F.
- An intersection channelization project or interchange-configuration project that involves either turn lanes or slots, or lanes or movements that are physically separated. These kinds of projects improve freeway operations by smoothing traffic flow and vehicle speeds by improving weave and merge operations, which would not be expected to create or worsen PM NAAQS violations.
- Intersection channelization projects, traffic circles or roundabouts, intersection signalization projects at individual intersections, and interchange-reconfiguration projects that are designed to improve traffic flow and vehicle speeds, and do not involve any increases in idling. Thus, they would be expected to have a neutral or positive influence on PM emissions.

Project of Air Quality Concern Determination. The I-15 project does not qualify as a project of air quality concern since it would not increase the percentage of diesel vehicles and would not significantly increase the number of diesel vehicles in the project study area compared to the no-action conditions. The project is not expected to either influence the vehicle mix in the project study area or attract new diesel vehicles to the area. For more information, see Appendix 3E, *Project of Air Quality Concern Evaluation*.

3.8.2.3 Hazardous Air Pollutants

The Clean Air Act Amendments of 1990 listed 188 hazardous air pollutants (also referred to as air toxics or HAPs) that are known to cause or are suspected of causing cancer or other serious health effects or adverse environmental effects. Most air toxics originate from human-made sources including road mobile sources, nonroad mobile sources (such as locomotives, construction equipment, and airplanes), and stationary sources (such as factories or refineries). Section 112 of the Clean Air Act Amendments of 1990 requires EPA to establish emission standards that require the maximum degree of reduction in emissions of hazardous air pollutants. Unlike the criteria pollutants, HAPs do not have NAAQS, making evaluation of their impacts more subjective.

In 2001, EPA issued its first Mobile-source Air Toxics Rule, which identified 21 mobile-source air toxic compounds (MSATs) as being HAPs that required regulation. EPA issued a second MSAT Rule in 2007 that generally supported the findings in the first rule and specified several emissions standards that must be implemented.

Using the 2011 National Air Toxics Assessment, EPA further identified nine MSATs that are among the national and regional-scale cancer risk drivers or contributors and noncancer hazard contributors. These are the MSATs that should be evaluated during NEPA analysis. FHWA's *Updated Interim Guidance on Mobile-source Air Toxic Analysis in NEPA Documents* (FHWA 2023a) specifies how MSATs should be considered in NEPA documents. FHWA developed a tiered approach for analyzing MSATs in NEPA documents, depending on the following specific project circumstances:

- **Tier 1:** No analysis for projects with no potential for meaningful MSAT effects;
- **Tier 2:** Qualitative analysis for projects with low potential MSAT effects; or
- **Tier 3:** Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Tier 3 projects that require quantitative analysis include (1) projects that create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location, involving a significant number of diesel vehicles for new projects or expansion projects accommodating a significant increase in the number of diesel vehicles; or (2) projects that create new capacity or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000 or greater by the design year; and also proposed to be located in proximity to populated areas. The I-15 project is considered a Tier 3 project because it would add capacity to an interstate where the AADT is projected to be in the range of 140,000 to 150,000 or greater by the design year. Table 3.8-2 shows the AADT on segments of I-15 in 2019 and the design year, 2050, all of which are over 150,000 in 2050.

Table 3.8-2. Estimated AADT on Segments of I-15 in the Air Quality Evaluation Area in 2019 and 2050

From	To	AADT		
		2019 ^a	2050 No-action Alternative	2050 Action Alternative ^b
Park Lane	Shepard Lane	145,000	175,000	179,000
200 West	U.S. 89	141,000	156,000	170,000
Parrish Lane	200 West	155,000	201,000	221,000
500 West	Parrish Lane	160,000	207,000	228,000
500 South	400 North	157,000	197,000	221,000
2600 South	500 South	159,000	197,000	224,000
Center Street	2600 South	166,000	208,000	236,000
U.S. 89/Beck Street	I-215	129,000	172,000	208,000
1100 West/Warm Springs Road	U.S. 89/Beck Street	135,000	176,000	225,000
1000 North	1100 West/Warm Springs Road	139,000	180,000	232,000
600 North	1000 North	135,000	175,000	226,000
I-80	600 North	153,000	204,000	240,000
400 South	I-80	139,000	185,000	211,000

^a Source: 2019 AADT taken from UDOT automated PeMes traffic counters in 2019

^b Source: 2050 AADT from WFRC regional travel demand model, version 8.3.2

The following MSATs should be considered in a NEPA analysis. Note that polycyclic organic matter (POM) is broadly defined in the Clean Air Act as organic substances that have at least two benzene rings and a boiling point of at least 100 degrees Celsius. Thus, POM includes naphthalene, which is also listed for regulation by itself as an MSAT.

- 1,3-butadiene
- Benzene
- Formaldehyde
- Acetaldehyde
- Diesel particulate matter
- Naphthalene
- Acrolein
- Ethyl benzene
- POM

3.8.2.4 Greenhouse Gases

Gases that trap heat in the atmosphere are called *greenhouse gases* (GHG). The primary greenhouse gases are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Concentrations of the key GHGs have all increased since the Industrial Revolution. CO₂ is the primary GHG emitted through human activities. In 2020, CO₂ accounted for about 79% of all U.S. GHG emissions from human activities (EPA 2022). The combustion of fossil fuels (coal, natural gas, and oil) for energy and transportation is the main source of these emissions.

CO₂, CH₄, and N₂O concentrations are now more abundant in the earth's atmosphere than during any time in the last 800,000 years (National Academy of Sciences 2020). The average temperature of the Earth's surface between 2011 and 2020 was 2 degrees Fahrenheit warmer than the average temperature during the late 19th century and warmer than at any time during the last 100,000 years (IPCC 2021). Rising GHG

levels are causing corresponding increases in average global temperatures and in the frequency and severity of natural disasters including storms, flooding, and wildfires.

The effects of climate change observed to date and projected to occur in the future include more frequent and intense heat waves, longer fire seasons and more severe wildfires, degraded air quality, increased drought, greater sea-level rise, an increase in the intensity and frequency of extreme weather events, harm to water resources, harm to agriculture, ocean acidification, and harm to wildlife and ecosystems. Weather and climate extremes are also causing economic and societal impacts across national boundaries through supply chains, markets, and natural resource flows. Climate change is a particularly complex challenge given its global nature and the inherent interrelationships among its sources and effects. In addition, the effects of climate change are likely to fall disproportionately on vulnerable communities, including communities of color, low-income communities, and tribal nations and indigenous communities with environmental justice concerns (CEQ 2023).

From a quantitative perspective, GHG emissions can contribute to global climate change through the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations.

In contrast to broad-scale actions such as those involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the impacts of GHG emissions for a particular transportation project. Furthermore, there is currently no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions.

On January 9, 2023, the Council on Environmental Quality issued interim guidance to assist agencies in analyzing GHGs and climate change effects of their proposed actions under NEPA (88 Federal Register 1196; CEQ 2023). In addition to quantifying GHG emissions, this guidance directs agencies to calculate the social cost of greenhouse gas emissions (SC-GHG) for each project alternative. SC-GHG is a monetary estimate of the net harm to society associated with adding a small amount of GHG to the atmosphere in a given year. This estimate allows agencies to understand the social benefits of reducing emissions of each GHG or the social costs of increasing such emissions. SC-GHG values are calculated using models that translate changes in emissions into economic impacts through a multistep process and include the value of all climate change impacts, including changes in net agricultural productivity, human health effects, property damage from increased natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services.

3.8.3 Affected Environment

3.8.3.1 Attainment Status

Davis and Salt Lake Counties are attainment areas for CO and NO₂ and Davis County is an attainment area for PM₁₀. Salt Lake County is a nonattainment area for PM_{2.5}, O₃, and a maintenance area for PM₁₀, having transitioned from a nonattainment area effective March 27, 2020. Davis County is a nonattainment area for PM_{2.5} and O₃.

3.8.3.2 Existing Air Quality Data

The Utah Division of Air Quality maintains a network of air quality monitoring stations throughout the state. In general, these monitoring stations are located where there are known air quality problems, so they are usually in or near urban areas or close to specific emission sources. Other stations are located in suburban locations or remote areas to provide an indication of regional air pollution levels.

The Bountiful #2 Monitoring Station (#490110004) located at 171 West 1370 North in Bountiful, the Rose Park Monitoring Station (#490353010) located at 1400 W. Goodwin Avenue in Salt Lake City, and the Hawthorne Monitoring Station (#490353006) located at 1675 South 600 East in Salt Lake City are the closest air quality monitors to the air quality evaluation area that provide data for all transportation-related criteria pollutants (PM₁₀, PM_{2.5}, O₃, CO, and NO₂). Figure 3.8-1 provides a map showing the locations of these monitoring stations. Air quality data for transportation-related criteria pollutants from these monitoring stations are compiled in Table 3.8-3.

Davis and Salt Lake Counties are attainment areas for CO and NO₂ and Davis County is an attainment area for PM₁₀ and sulfur dioxide (SO₂). Salt Lake County is a nonattainment area for PM_{2.5} and O₃ and a maintenance area for PM₁₀. Davis County is a nonattainment area for PM_{2.5} and O₃.

Figure 3.8-1. Air Quality Monitoring Stations

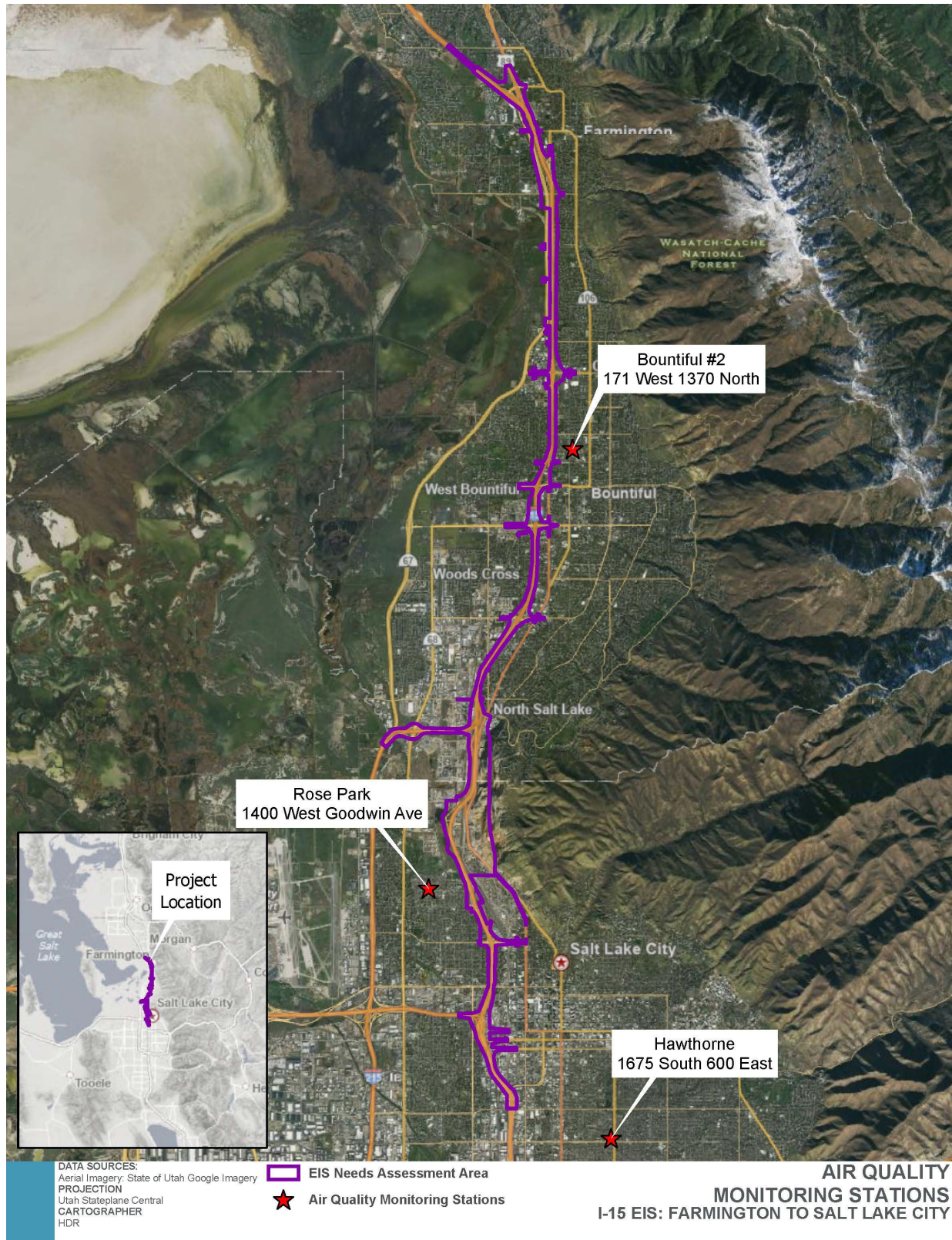


Table 3.8-3. Air Quality Monitoring Data from the Bountiful, Rose Park, and Hawthorne Monitoring Stations in Davis and Salt Lake Counties

Pollutant	Standard	Value	Monitoring Station	Monitoring Year and Data					
				2019	2020	2021	2022	2019–2021 Average	2020–2022 Average
PM ₁₀	24-hour standard ^a	150 µg/m ³	Bountiful	30	52	79	57	NA	NA
			Rose Park	No data	No data	No data	No data	NA	NA
			Hawthorne	69	114	94	113	NA	NA
PM _{2.5}	24-hour standard ^b	35 µg/m ³	Bountiful	22.5	25.6	33.5	27.4	27.2	28.8
			Rose Park	28.5	32.0	39.5	31.4	33.3	34.3
			Hawthorne	26.4	26.4	36.5	26.5	29.8	29.8
	Annual standard ^c	12 µg/m ³	Bountiful	5.68	7.09	7.63	7.18	6.80	7.30
			Rose Park	6.66	8.05	8.99	8.35	7.90	8.46
			Hawthorne	6.22	7.60	8.17	7.36	7.33	7.71
O ₃	8-hour standard ^d	0.070 ppm	Bountiful	0.073	0.080	0.082	0.075	0.078	0.079
			Rose Park	0.071	0.080	0.079	0.075	0.076	0.078
			Hawthorne	0.073	0.075	0.081	0.072	0.076	0.076
CO	8-hour standard ^e	9 ppm	Bountiful	No data	No data	No data	No data	NA	NA
			Rose Park	1.3	1.4	1.3	1.4	NA	NA
			Hawthorne	1.2	1.2	1.1	1.1	NA	NA
	1-hour standard ^f	35 ppm	Bountiful	No data	No data	No data	No data	NA	NA
			Rose Park	1.6	2.0	2.0	2.0	NA	NA
			Hawthorne	1.9	1.5	1.6	2.0	NA	NA
NO ₂	Annual standard ^g	53 ppb	Bountiful	24.40	23.56	24.05	25.55	NA	NA
			Rose Park	27.73	28.97	27.33	28.82	NA	NA
			Hawthorne	28.08	29.24	25.01	27.00	NA	NA
	1-hour standard ^h	100 ppb	Bountiful	46.0	44.1	46.7	41.1	45.6	44.0
			Rose Park	46.8	50.4	48.6	49.8	48.6	49.6
			Hawthorne	55.4	52.6	46.6	51.0	51.5	50.1

Source: UDEQ 2023

Note: µg/m³ = micrograms per cubic meter, ppb = parts per billion, ppm = parts per million, NA = not applicable

^a The PM₁₀ 24-hour standard is exceeded when the peak 24-hour value exceeds 150 µg/m³. One exceedance of the NAAQS is allowed per year. Annual maximum values are presented.

^b The PM_{2.5} 24-hour standard is exceeded when the 3-year average of the 98th-percentile value (rounded to the nearest whole number) exceeds 35 µg/m³. 98th-percentile values are presented.

^c The PM_{2.5} annual standard is exceeded when the 3-year average of the weighted arithmetic mean exceeds 12.0 µg/m³. Weighted arithmetic means are presented.

^d The O₃ 8-hour standard is exceeded when the annual fourth-highest daily maximum 8-hour concentration averaged over 3 years exceeds 0.070 ppm. Annual fourth-highest daily maximum values are presented.

^e The CO 8-hour standard is exceeded when the 8-hour concentration exceeds 9 ppm more than once per year. Annual 8-hour maximum values are presented.

^f The CO 1-hour standard is exceeded when the 1-hour concentration exceeds 35 ppm more than once per year. Annual 1-hour maximum values are presented.

^g The NO₂ annual standard is exceeded when the annual average exceeds 53 ppb. Annual average values are presented.

^h The NO₂ 1-hour standard is exceeded when the 3-year average of the 98th percentile of 1-hour daily maximum concentrations exceeds 100 ppb. 98th-percentile values are presented.

3.8.4 Environmental Consequences and Mitigation Measures

This section describes the effects of the project alternatives on air quality. The impacts of construction activities would be temporary and are discussed in Section 3.17.2.2.6, *Air Quality Impacts from Construction*. The operational impacts of the Action Alternative would be long-term and would be largely attributed to highway traffic and vehicle speeds on the highway.

3.8.4.1 Methodology

UDOT used EPA and FHWA guidelines (EPA 2016, 2020; FHWA 2023a, 2023b), as well as materials used in FHWA-sponsored training classes (for example, “Workshop on NEPA Air Quality Analysis for Highway Projects”), to complete emissions inventories for criteria pollutants, MSATs, and GHGs in the air quality evaluation area. Note that O₃, one of the criteria pollutants, is formed by photochemical reactions between the precursor pollutants, oxides of nitrogen (NO_x) and volatile organic compounds (VOCs). Emissions inventories were prepared for these two precursor pollutants.

EPA’s MOVES3.0 model was used to calculate daily on-road emissions. MOVES3.0 data inputs were provided by WFRC or were developed from traffic data provided by the traffic consultant using WFRC’s travel demand model. MOVES defaults were used for fuel and meteorology inputs.

3.8.4.2 Emissions Inventory for Criteria Pollutants

3.8.4.2.1 No-action Alternative

With the No-action Alternative, the improvements associated with the I-15 project would not be made. However, the air quality analysis presumed that other regionally significant transportation projects identified in WFRC’s 2023–2050 RTP would still be built and would contribute to local air quality impacts throughout the air quality evaluation area.

As shown in Table 3.8-4, the amount of daily vehicle-miles traveled (VMT) in the evaluation area between 2019 and 2050 is expected to increase by about 28% due to population and development growth. This growth is expected to occur with or without the I-15 project. However, over the same period, annual on-road emissions of criteria pollutants are expected to decrease, with the exception of PM₁₀, as shown in the table. These emissions reductions are projected to occur even with the expected 28% increase in VMT during the same period. The expected decrease in emissions is due to improved fuel and emissions standards in the future resulting in lower emissions. PM₁₀ emissions are expected to increase by about 16% as a result of increased road dust emissions (road dust emissions increase with increasing VMT).

Table 3.8-4. Annual VMT and On-road Criteria Pollutant Emissions with Each Project Alternative

VMT (million miles/year)	2019	2050				
	VMT under Existing Conditions	No-action Alternative		Action Alternative		
		VMT with No-action Alternative	Percent Change from Existing Conditions	VMT with Action Alternative	Percent Change from Existing Conditions	Percent Change from No- action
VMT	1,389,642,965	1,784,512,740	+28%	1,994,497,240	+44%	+12%
Criteria Pollutant (tons/year)	2019	2050				
	Existing Conditions	No-action Alternative		Action Alternative		
		Emissions with No-action Alternative	Percent Change from Existing Conditions	Emissions with Action Alternative	Percent Change from Existing Conditions	Percent Change from No- action
CO	5,028.903	2,787.876	-45%	3,136.537	-38%	+13%
VOCs	117.053	76.622	-35%	82.614	-29%	+8%
NO _x	542.802	171.698	-68%	186.960	-66%	+9%
PM ₁₀ ^a	351.432	406.866	+16%	447.371	+27%	+10%
PM _{2.5} ^b	14.941	10.248	-31%	10.533	-30%	+3%

^a PM₁₀ emissions include vehicle exhaust emissions, tire wear, brake wear, and road dust. Road dust values for 2019 were obtained from WFRC's Air Quality Memorandum Report No. 39, Table 11b (WFRC 2019b), and road dust values for 2050 were obtained from WFRC's Air Quality Memorandum Report No. 41, Table 10b (WFRC 2023b).

^b PM_{2.5} emissions include vehicle exhaust emissions, tire wear, and brake wear.

3.8.4.2.2 Action Alternative

Similar to the No-action Alternative, annual on-road emissions of criteria pollutants for the Action Alternative are expected to decrease, with the exception of PM₁₀, compared to existing conditions. As shown above in Table 3.8-4, annual VMT with the Action Alternative is projected increase by about 12% over the annual VMT with the No-action Alternative in 2050. Annual on-road emissions of criteria pollutants with the Action Alternative are expected to increase compared to the No-action Alternative due to increased VMT.

3.8.4.3 Emissions Inventory for MSATs

3.8.4.3.1 No-action Alternative

With the No-action Alternative, the improvements associated with the I-15 project would not be made. However, the air quality analysis presumed that other regionally significant transportation projects identified in WFRC's 2023–2050 RTP would still be built and would contribute to local air quality impacts throughout the air quality evaluation area.

As shown in Table 3.8-5, annual on-road MSAT emissions in the evaluation area are expected to decline by about 28% to 100% from 2019 to 2050, regardless of whether the I-15 project is implemented. These emissions reductions are projected to occur even with an expected 28% increase in VMT during the same period. The expected decrease in emissions is due to improved fuel and emissions standards in the future.

Table 3.8-5. Annual VMT and On-road MSAT Emissions with Each Project Alternative

VMT (million miles/year)	2019	2050				
	VMT under Existing Conditions	No-action Alternative		Action Alternative		
		VMT with No-action Alternative	Percent Change from Existing Conditions	VMT with Action Alternative	Percent Change from Existing Conditions	Percent Change from No-action
VMT	1,389,642,965	1,784,512,740	+28%	1,994,497,240	+44%	+12%
MSAT (tons/year)	2019	2050				
	Existing Conditions	No-action Alternative		Action Alternative		
		Emissions with No-action Alternative	Percent Change from Existing Conditions	Emissions with Action Alternative	Percent Change from Existing Conditions	Percent Change from No-action
1,3-butadiene	0.205	0.000	-100%	0.000	-100%	0%
Acetaldehyde	1.327	0.610	-54%	0.658	-50%	+8%
Acrolein	0.146	0.053	-64%	0.058	-61%	+8%
Benzene	4.295	3.090	-28%	3.361	-22%	+9%
Diesel particulate matter	6.716	0.630	-91%	0.687	-90%	+9%
Ethyl benzene	1.873	1.258	-33%	1.357	-28%	+8%
Formaldehyde	2.507	1.186	-53%	1.285	-49%	+8%
Naphthalene	0.292	0.127	-57%	0.138	-53%	+9%
Polycyclic organic matter	0.120	0.052	-57%	0.058	-52%	+12%

3.8.4.3.2 Action Alternative

Similar to the No-action Alternative, annual on-road MSAT emissions for the Action Alternative are expected to decrease compared to existing conditions. As shown above in Table 3.8-5, annual on-road MSAT emissions are expected to increase compared to those with the No-action Alternative due to increased VMT.

3.8.4.3.3 Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action (FHWA 2023a).

EPA is responsible for protecting the public health and welfare from the known or anticipated effects of air pollutants. It is the lead authority for administering the Clean Air Act and its amendments and has specific statutory obligations with respect to hazardous air pollutants and MSATs. EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. It maintains the Integrated

Risk Information System (IRIS), which is “a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects” (<https://www.epa.gov/iris>). Each report contains assessments of noncancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude (FHWA 2023a).

Other organizations are also active in the research and analyses of the human health effects of MSATs, including the Health Effects Institute (HEI). Several HEI studies are summarized in Appendix D of FHWA’s *Updated Interim Guidance on Mobile-source Air Toxic Analysis in NEPA Documents* (FHWA 2023a). Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings, cancer in animals, and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI 2007) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling, dispersion modeling, exposure modeling, and then a final determination of health impacts, with each step in the process building on the model predictions obtained in the previous step. All methodologies are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among the project alternatives. These difficulties are magnified for lifetime (that is, 70-year) assessments, particularly because unsupportable assumptions would need to be made regarding changes in travel patterns and vehicle technology (both of which affect emissions rates) over that timeframe, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposures near roads, to determine the portion of time that people are actually exposed at a specific location, and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSATs because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (2007). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. EPA states that, with respect to diesel engine exhaust, “[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk” (EPA 2003, Section II.C).

There is also the lack of a national consensus regarding an acceptable level of risk. The current context is the process used by EPA as provided by the Clean Air Act to determine whether more-stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source.

The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA’s approach to addressing risk in its two-step decision

framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than those deemed acceptable (U.S. Court of Appeals for the District of Columbia Circuit, *Natural Resources Defense Council and Louisiana Environmental Action Network v. Environmental Protection Agency*, decided June 6, 2008).

Because of the limitations in the methodologies for forecasting health impacts described above, any predicted difference in health impacts among alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision-makers, who would need to weigh this information against project benefits—such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response—that are better suited for quantitative analysis (FHWA 2023a).

3.8.4.4 Emissions Inventory for Greenhouse Gases

3.8.4.4.1 No-action Alternative

With the No-action Alternative, the improvements associated with the I-15 project would not be made. However, the air quality analysis presumed that other regionally significant transportation projects identified in WFRC's 2023–2050 RTP would still be built and would contribute to local air quality impacts throughout the air quality evaluation area.

As shown in Table 3.8-6, between 2019 and 2050, annual on-road CH₄ emissions are expected to increase by about 1%, N₂O emissions are expected to decrease by about 10%, and CO₂ emissions are expected to decrease by about 5%, regardless of whether the I-15 project is implemented. The overall projected decreases in GHG emissions are due to improved fuel and emissions standards in the future.

Table 3.8-6. Annual VMT and On-road GHG Emissions with Each Project Alternative

VMT (million miles/year)	2019	2050				
	VMT under Existing Conditions	No-action Alternative		Action Alternative		
		VMT with No-action Alternative	Percent Change from Existing Conditions	VMT with Action Alternative	Percent Change from Existing Conditions	Percent Change from No-action
VMT	1,389,642,965	1,784,512,740	+28%	1,994,497,240	-44%	+12%
GHG (tons/year)	2019	2050				
	Existing Conditions	No-action Alternative		Action Alternative		
		Emissions with No-action Alternative	Percent Change from Existing Conditions	Emissions with Action Alternative	Percent Change from Existing Conditions	Percent Change from No-action
Methane (CH ₄)	27.396	27.623	+1%	29.367	+7%	+6%
Nitrous oxide (N ₂ O)	2.142	1.921	-10%	1.991	-7%	+4%
Atmospheric carbon dioxide (CO ₂)	586,367.800	556,287.500	-5%	617,599.600	+5%	+11%

3.8.4.4.2 Action Alternative

As shown above in Table 3.8-6, annual on-road CH₄ emissions from the Action Alternative are expected to increase by about 6%, N₂O emissions are expected to increase by about 4%, and CO₂ emissions are expected to increase by about 11% compared to the No-action Alternative. Although fuel economy and engine technology are improving, they are not improving enough to offset the increase in VMT.

3.8.4.4.3 Comparison of the Social Costs of Greenhouse Gases by Alternative

One of the most important factors influencing SC-GHG estimates is the discount rate. A large portion of climate change damages are expected to occur many decades into the future, and the present value of those damages (the value at present of damages that occur in the future) is highly dependent on the discount rate. Given the long time horizon over which the damages are expected to occur and uncertainty about how rates could change over time, the Interagency Working Group on the Social Cost of Greenhouse Gases (IWG) recommends that agencies use three discount rates to evaluate SC-GHG that span a plausible range of certainty-equivalent constant consumption discount rates: 2.5%, 3%, and 5% per year plus a fourth value, selected as the 95th-percentile of estimates based on a 3% discount rate (IWG 2021).

What is a discount rate?

As used in Section 3.8, a discount rate is the rate of return used to discount future cash flows back to their present value.

Table 3.8-7, Table 3.8-8, and Table 3.8-9 provide the discount rates for CH₄, N₂O, and CO₂, respectively, for 2020 and 2050 as well as the calculated social costs of each GHG for existing conditions, the No-action Alternative, and the Action Alternative. Due to the projected increase in VMT in the air quality evaluation area, which in turn would increase GHG emissions, SC-GHG is higher for the No-action Alternative compared to existing conditions, and the SC-GHG is higher for the Action Alternative compared to the No-action Alternative. Table 3.8-10 summarizes the combined social cost of CH₄, N₂O, and CO₂ for each project alternative.

Table 3.8-7. Social Cost of Methane (CH₄) for the Project Alternatives

Emissions Year ^a		Discount Rate for Social Cost of CH ₄ (2020 dollars per metric ton of CH ₄)			
		5% Average	3% Average	2.5% Average	3% 95th Percentile
2020		\$670	\$1,500	\$2,000	\$3,900
2050		\$1,700	\$3,100	\$3,800	\$8,200
Conditions or Alternative	CH ₄ (tons/year)	Social Cost of CH ₄ (dollars per metric ton of CH ₄)			
		5% Average	3% Average	2.5% Average	3% 95th Percentile
Existing conditions (2019) ^a	27.396	\$18,355	\$41,094	\$54,792	\$106,844
No-action Alternative	27.623	\$46,959	\$85,631	\$104,967	\$226,509
Action Alternative	29.36729.516	\$49,924	\$91,038	\$111,595	\$240,809

^a Emissions years are those provided in *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990* (IWG 2021). Emissions year 2020 was used to calculate the SC-GHG estimate for the 2019 existing conditions because 2019 was not provided as an option in IWG (2021), and 2050 was used to calculate the SC-GHG estimates for the No-action and Action Alternative.

Table 3.8-8. Social Cost of Nitrous Oxide (N₂O) for the Project Alternatives

Emissions Year ^a		Discount Rate for Social Cost of N ₂ O (2020 dollars per metric ton of N ₂ O)			
		5% Average	3% Average	2.5% Average	3% 95th Percentile
2020		\$5,800	\$18,000	\$27,000	\$48,000
2050		\$13,000	\$33,000	\$45,000	\$88,000
Conditions or Alternative	N ₂ O (tons/year)	Social Cost of N ₂ O (dollars per metric ton of N ₂ O)			
		5% Average	3% Average	2.5% Average	3% 95th Percentile
Existing conditions (2019) ^a	2.142	\$12,424	\$38,556	\$57,834	\$102,816
No-action Alternative	1.921	\$24,973	\$63,393	\$86,445	\$169,048
Action Alternative	1.991	\$25,883	\$65,703	\$89,595	\$175,208

^a Emissions years are those provided in *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990* (IWG 2021). Emissions year 2020 was used to calculate the SC-GHG estimate for the 2019 existing conditions because 2019 was not provided as an option in IWG (2021), and 2050 was used to calculate the SC-GHG estimates for the No-action and Action Alternative.

Table 3.8-9. Social Cost of Atmospheric Carbon Dioxide (CO₂) for the Project Alternatives

Emissions Year ^a		Discount Rate for Social Cost of CO ₂ (2020 dollars per metric ton of CO ₂)			
		5% Average	3% Average	2.5% Average	3% 95th Percentile
2020		\$14	\$51	\$76	\$152
2050		\$32	\$85	\$116	\$260
Conditions or Alternative	Atmospheric CO ₂ (tons/year)	Social Cost of CO ₂ (dollars per metric ton of CO ₂)			
		5% Average	3% Average	2.5% Average	3% 95th Percentile
Existing conditions (2019) ^a	586,367.80	\$8,209,149	\$29,904,758	\$44,563,953	\$89,127,906
No-action Alternative	556,287.50	\$17,801,200	\$47,284,438	\$64,529,350	\$144,634,750
Action Alternative	617,599.60	\$19,763,187	\$52,495,966	\$71,641,554	\$160,575,896

^a Emissions years are those provided in *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990* (IWG 2021). Emissions year 2020 was used to calculate the SC-GHG estimate for the 2019 existing conditions because 2019 was not provided as an option in IWG (2021), and 2050 was used to calculate the SC-GHG estimates for the No-action and Action Alternative.

Table 3.8-10. Combined Social Cost of CH₄, N₂O, and CO₂ for the Project Alternatives

Conditions or Alternative	Combined Social Cost of CH ₄ , N ₂ O, and CO ₂ (2020 dollars per metric ton)			
	5% Average	3% Average	2.5% Average	3% 95th Percentile
Existing conditions (2019) ^a	\$8,239,928	\$29,984,408	\$44,676,579	\$89,337,566
No-action Alternative	\$17,873,132	\$47,433,462	\$64,720,762	\$145,030,307
Action Alternative	\$19,838,994	\$52,652,707	\$71,842,743	\$160,991,913

^a Emissions years are those provided in *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990* (IWG 2021). Emissions year 2020 was used to calculate the SC-GHG estimate for the 2019 existing conditions because 2019 was not provided as an option in IWG (2021), and 2050 was used to calculate the SC-GHG estimates for the No-action and Action Alternative.

As shown above in Table 3.8-10, the combined SC-GHG is about 11% higher for the Action Alternative compared to the No-action Alternative using any of the discount rates.

3.8.4.5 Mitigation Measures

Regional modeling conducted by WFRC for the 2050 transportation conformity analyses demonstrated that all regionally significant transportation projects (including the I-15 project) would not adversely affect local compliance with the NAAQS. Atmospheric CO₂ and PM₁₀ emissions are projected to increase in 2050 with the Action Alternative due to the projected increase in VMT in the air quality evaluation area. The amounts of all other pollutants are projected to decrease in future years due to improved fuel and emissions standards. Therefore, no mitigation is proposed related to the project operations. See Section 3.17.3.6, *Mitigation Measures for Air Quality Impacts from Construction*, for the proposed air quality mitigation related to construction.

3.9 Noise

3.9.1 Introduction

Section 3.9 describes the existing noise conditions in the noise evaluation area and the expected noise impacts of the project alternatives. Traffic noise impacts are evaluated using the noise model and methodologies approved by FHWA and UDOT (FHWA 2011; UDOT 2020b).

Where appropriate, noise barriers or other abatement measures are evaluated to mitigate noise impacts, and recommendations are made for noise-abatement measures consistent with UDOT Policy 08A2-01, *Noise Abatement*, revised May 28, 2020. For detailed information about the UDOT noise analysis described in Section 3.9, see Appendix 3F, *Noise Technical Report*.

Noise Evaluation Area. The noise evaluation area is the land adjacent to the Action Alternative that could be affected by an increase in noise levels to a distance of about 500 feet.

Noise Policy Applicability. Under UDOT's noise-abatement policy, the I-15 EIS is classified as a Type I project since the project's Action Alternative is proposing changes to the horizontal and vertical alignments of existing roads.

3.9.2 Regulatory Setting

The federal regulation that FHWA uses to assess noise impacts is 23 CFR Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. This regulation was updated on July 13, 2010. The highway traffic noise prediction requirements, noise analysis, and noise-abatement criteria described in Section 3.9 are consistent with 23 CFR Part 772 and with Utah Administrative Code Rule R930-3, *Highway Noise Abatement*.

Utah Administrative Code Rule R930-3 and UDOT's noise-abatement policy establish UDOT's noise impact and abatement policies and procedures. Since UDOT's noise-abatement policy is consistent with 23 CFR Part 772 and has been approved by FHWA, it was used by UDOT for the noise impact analysis in this EIS.

Noise-abatement Criteria. FHWA has established noise-abatement criteria (NAC) for several categories of land use activities (Table 3.9-1). FHWA's NAC are based on sound levels that are considered to be an impact to nearby noise-sensitive areas, also known as receivers. According to FHWA guidance, UDOT must give primary consideration for noise abatement to exterior areas that are frequently used by people.

UDOT has developed a noise-abatement policy for transportation projects, which conforms to FHWA's noise abatement requirements in 23 CFR Part 772.

For each land use category, UDOT's noise-abatement criterion is the A-weighted noise decibel (dBA) value reflecting the approach criterion of 1 dBA below the noise-abatement criterion value listed in 23 CFR Part 772 for that land use category (Table 3.9-1).

UDOT's noise-abatement policy states that a traffic noise impact occurs when either (1) the future worst-case noise level is equal to or greater than the UDOT noise-abatement criterion for a specified land-use category or (2) the future worst-case noise level is greater than or equal to an increase of 10 dBA over the existing noise level.

Noise impact and abatement analyses are required within land use activity categories A, B, C, D, and E (Table 3.9-1) only when development exists or has been permitted (formal building permit issued prior to the date when the final environmental decision document is approved). Activity categories F and G include lands that are not sensitive to traffic noise. There are no impact criteria for these land use types, and an analysis of noise impacts is not required.

For this noise analysis, aerial photographs and on-site visits were used to identify existing land uses and structure locations. UDOT also requested information from the Cities and Counties to identify planned and approved developments in the noise evaluation area.

Section 3.9.4.1, *Methodology*, describes how impacts are assessed for noise.

Table 3.9-1. UDOT's Noise-abatement Criteria

Activity Category	FHWA Criterion L_{eq} (dBA)	L_{eq} Noise Level (dBA)	Evaluation Location	Description of Activity Category
A	57	56	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	66	Exterior	Residential.
C	67	66	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails and trail crossings.
D	52	51	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting room, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	71	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in categories A–D or F.
F	—	—	—	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	—	—	—	Undeveloped lands that are not permitted for other types of development.

Source: UDOT 2020b

dBA = A-weighted decibels; L_{eq} = equivalent sound level

3.9.3 Affected Environment

The noise evaluation area contains a mix of residential developments, parks, recreation areas, schools, churches, commercial properties, industrial areas, and undeveloped land. The properties in the evaluation area fall within activity categories B, C, D, E, F, and G under UDOT's NAC. The predominant source of noise in the evaluation area is automobile, bus, and truck traffic on I-15, I-215, U.S. 89, the interchange cross-streets, and other roads in the area.

3.9.3.1 Noise Monitoring

Existing noise levels in the noise evaluation area for existing conditions were determined by taking short-term (20-minute) sound-level measurements at 40 locations throughout the evaluation area with an Extech Instruments 407780A Type II integrating sound-level meter. On-site measurements were taken between November 12 and November 19, 2021.

Noise-measurement locations were selected to represent existing residential developments or other areas of frequent human outdoor use where people could be exposed to traffic noise for extended periods. Traffic was counted during the short-term monitoring events so that vehicle counts and vehicle classifications could be determined. Weather conditions and other parameters that could affect measured noise levels were noted. Noise measurements were conducted under the following conditions:

- Wind speeds less than 12 miles per hour
- Dry weather conditions
- Dry road conditions

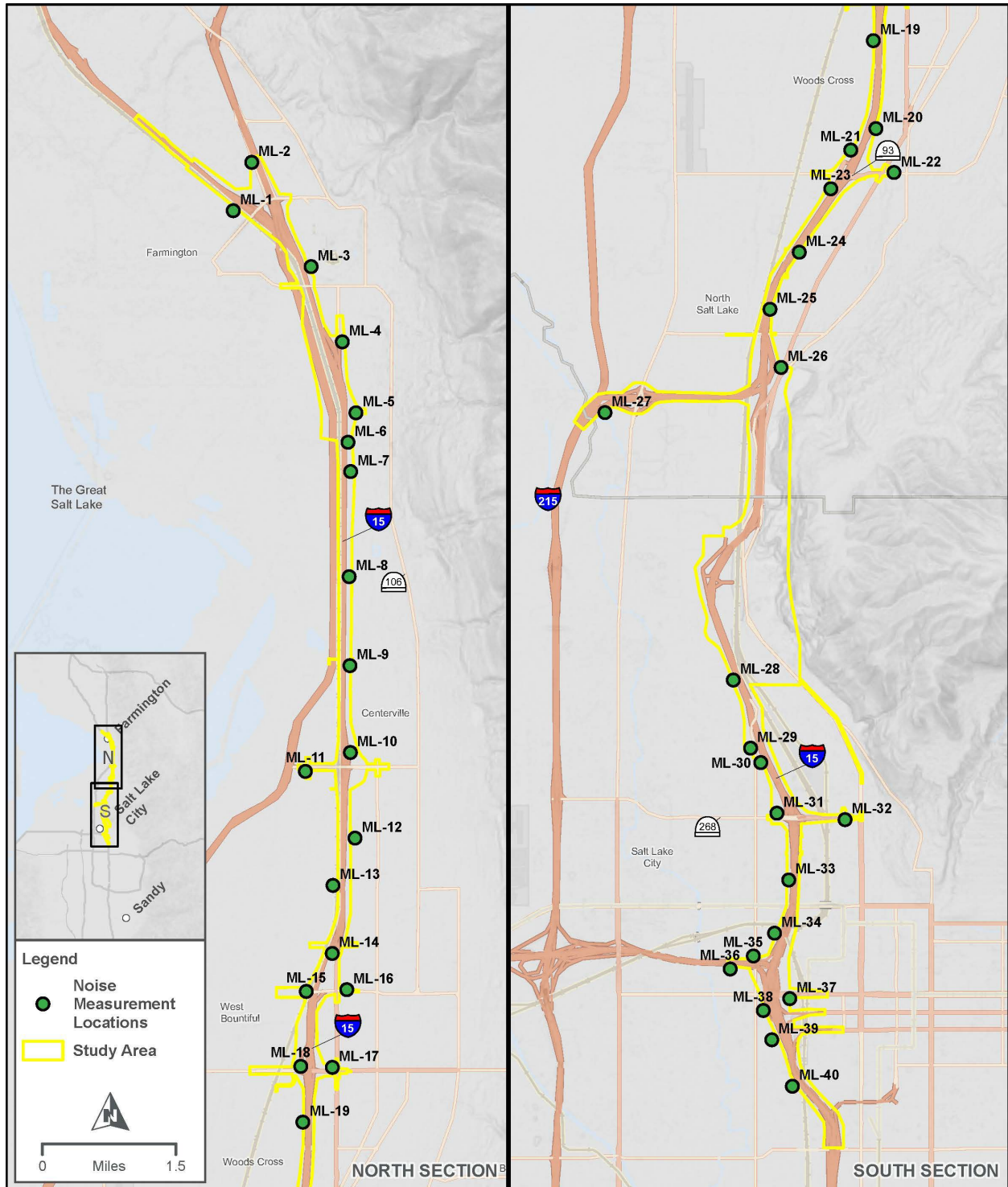
The 40 noise-monitoring locations (ML) are shown in Figure 3.9-1 and listed in Table 3.9-2. The noise descriptor used in the noise monitoring is the hourly equivalent sound level (L_{eq}).

The measured noise levels and traffic information collected in the field were used to validate FHWA's Traffic Noise Model (TNM) version 2.5. These measured noise levels were also used to establish baseline conditions. The traffic volumes were also counted at each of the monitoring locations shown above in Table 3.9-2 and were used to determine vehicle mix (that is, the percentage of cars, medium trucks, and heavy trucks) during each measurement period as well as the directional flow of traffic on the roads.

By following this process of measuring noise and counting traffic volumes and vehicle mixes at each monitoring location, UDOT does not need to monitor noise at every receiver and can develop a noise model that can predict the noise levels at all receivers in the evaluation area for existing and future conditions. This process of validating the noise model ensures that the measured noise levels recorded in the field agree with the traffic volumes recorded during the measurement period.

Measured noise levels that are within 3 dBA of the modeled noise are considered accurate for the purpose of validating the noise model. As shown in Table 3.9-2, the modeled noise levels were within 3 dBA of the measured noise levels, so the TNM is considered valid for use on this project.

Figure 3.9-1. Noise-monitoring Locations



**NOISE MEASUREMENT LOCATIONS
I-15 EIS: FARMINGTON TO SALT LAKE CITY**

Table 3.9-2. Measured Short-term Noise Levels in the Noise Evaluation Area

Monitoring Location	Address	Activity Category and Noise Level (dBA L _{eq})	Measured Noise Level (dBA L _{eq} rounded)	Modeled Noise Level (dBA)	Difference (dBA)
ML-1 ^a	Park Lane Village; 500 Broadway, Farmington	B (66)	—	—	—
ML-2 ^a	Residence; 932 Spring Pond Drive, Farmington	B (66)	—	—	—
ML-3	Lagoon RV Park and Campground; 375 Lagoon Drive, Farmington	C (66)	66	63	-3
ML-4	Covington Senior Living; 430 South Brookside Drive, Farmington	B (66)	60	60	0
ML-5	Residence; 53 West Glovers Lane, Farmington	B (66)	67	64	-3
ML-6	Residence; 1138 South 110 West, Farmington	B (66)	67	67	0
ML-7	South Park; 1384 South Farmington Road, Farmington	C (66)	63	68	5 ^b
ML-8	Residence; 773 West 1875 North, Centerville	B (66)	70	69	-1
ML-9	Community Park; 1350 North 400 West, Centerville	C (66)	73	71	-2
ML-10	McDonald's; 529 North 700 West, Centerville	E (71)	66	69	3
ML-11	Maverick; 1265 West Parrish Lane, Centerville	E (71)	61	59	-2
ML-12	Residence; 402 South 675 West, Centerville	B (66)	62	65	3
ML-13	West Bountiful City Park; 550 West 1600 North, West Bountiful	C (66)	—	—	—
ML-14	Country Inn and Suites; 999 North 500 West, Bountiful	E (71)	71	72	1
ML-15	Residence; 417 North 660 West, West Bountiful	B (66)	62	65	3
ML-16	Residence; 444 West, 400 North, Bountiful	B (66)	—	—	—
ML-17	McDonald's; 500 South, West Bountiful	E (71)	—	—	—
ML-18	Residence; 680 West 500 South, West Bountiful	B (66)	67	70	3
ML-19	Woods Cross Elementary School; 745 West 1100 South, Woods Cross	C (66)	68	69	1
ML-20	Woods Cross High School; 600 West 2200 South, Woods Cross	C (66)	71	74	3
ML-21	Motel 6; 2433 South 800 West, Woods Cross	E (71)	—	—	—
ML-22	Nielsen's Frozen Custard; 570 West 2600 South, Bountiful	E (71)	—	—	—
ML-23	Residence; 240 East 1100 North, North Salt Lake	B (66)	—	—	—
ML-24	Residence; 106 Wilson Drive, North Salt Lake	B (66)	70	69	-1

(continued on next page)

Table 3.9-2. Measured Short-term Noise Levels in the Noise Evaluation Area

Monitoring Location	Address	Activity Category and Noise Level (dBA L _{eq})	Measured Noise Level (dBA L _{eq} rounded)	Modeled Noise Level (dBA)	Difference (dBA)
ML-25	Residence; 158 North 125 West, North Salt Lake	B (66)	73	71	2
ML-26	Chile Amor; 220 U.S. 89, North Salt Lake	E (71)	—	—	—
ML-27	Pony Express RV Resort; 1012 Recreation Way, North Salt Lake	C (66)	—	—	—
ML-28	Rosewood Park; 1400 North 1200 West, Salt Lake City	C (66)	69	70	1
ML-29	Residence; 948 Poinsettia Drive, Salt Lake City	B (66)	68	70	2
ML-30	Santo Taco; 910 North 900 West, Salt Lake City	E (71)	63	66	3
ML-31	Residence; 608 North 800 West, Salt Lake City	B (66)	—	—	—
ML-32	Residence; 578 North 400 West, Salt Lake City	B (66)	71	72	1
ML-33	Mary W. Jackson Elementary School; 750 West 200 North, Salt Lake City	C (66)	67	66	1
ML-34	Residence; 49 South 800 West, Salt Lake City	B (66)	—	—	—
ML-35	Chunga's; 180 South 900 West, Salt Lake City	E (71)	—	—	—
ML-36	Residence; 1033 Pierpont Avenue, Salt Lake City	B (66)	—	—	—
ML-37 ^a	King's Peak Coffee Roasters; 412 South 700 West Suite 140, Salt Lake City	E (71)	59	62	3
ML-38 ^a	Residence; 844 West 500 South, Salt Lake City	B (66)	—	—	—
ML-39 ^a	Residence; 650 South 800 West, Salt Lake City	B (66)	—	—	—
ML-40 ^a	9-Line Community Garden Playground; 725 West 900 South, Salt Lake City	C (66)	—	—	—

^a These monitoring locations are outside the limits of improvements for the Action Alternative and were not used to validate the noise model.

^b A 17-foot-tall noise wall is currently under construction in this area as part of the West Davis Corridor project, which is not included in the validation model.

3.9.3.2 Existing Noise Levels in the Noise Evaluation Area

The predominant source of noise in the evaluation area is automobile, bus, and truck traffic on I-15, I-215, U.S. 89, the interchange cross streets, and other roads in the area.

3.9.3.2.1 Methodology for Existing Traffic Model

UDOT evaluated existing noise levels using noise models and methodologies approved by FHWA and UDOT (UDOT Policy 08A2-01, *Noise Abatement*, revised May 28, 2020). Areas within 500 feet from the

edge of the proposed right-of-way of the Action Alternative were reviewed to identify UDOT land use activity categories (primarily residential, schools, and recreation sites) and to select representative receivers for the existing conditions and proposed project noise analyses. The 500-foot buffer is a large enough area to encompass all locations potentially affected by the Action Alternative. More details about the methodology and data used for the noise model for the existing conditions analysis are provided in Appendix 3F, *Noise Technical Report*.

3.9.3.2.2 Summary of Existing Noise Model Results

The noise model developed for the existing conditions scenario included 5,219 receivers, including 5,000 residential receivers (land use activity category B), 152 receivers in land use activity category C, 21 receivers in land use activity category D, and 46 receivers in land use activity category E. Under the existing conditions, 1,789 receivers experience a noise level above the NAC threshold. The noise levels for the existing conditions and locations of the receivers are shown in Appendix 3F, *Noise Technical Report*.

Overall, noise levels with the existing conditions range from 45 to 81 dBA.

3.9.4 Environmental Consequences and Mitigation Measures

3.9.4.1 Methodology

According to UDOT's noise-abatement policy, a traffic noise impact occurs when either of the following conditions occurs at a sensitive land use (that is, at land uses defined in activity categories A, B, C, D, or E):

- The future-year worst-case noise level is equal to or greater than the UDOT NAC listed above in Table 3.9-1, *UDOT's Noise-abatement Criteria*, for each corresponding land-use category, or
- The future-year worst-case noise level is equal to or greater than an increase of 10 dBA over the existing noise level (a substantial increase). This second impact criterion applies regardless of existing noise levels.

Traffic-related noise impacts with the Action Alternative were estimated with TNM version 2.5 based on the roadway design for the Action Alternative.

The TNM estimates acoustic intensity at receiver locations based on the level of sound energy generated from a series of straight-line road segments. Where appropriate, the effects of local shielding from existing structures (for example, existing barriers and rows of homes), terrain, and other adjustment factors were included in the model to provide higher levels of detail and accuracy. The noise impact analysis for the Action Alternative used the same receivers that were used for the existing conditions analysis; these receivers are located within 500 feet from the edge of the proposed right-of-way of the Action Alternative.

The noise models for the Action Alternative used traffic volumes at a level of service of LOS C to represent the worst-case noise conditions while traffic is operating at uncongested, free-flow speeds for the proposed project noise analyses. The TNM inputs also include traffic volume and speed for the following vehicle classifications: automobiles, medium trucks, heavy trucks, and buses. More details are provided in Appendix 3F, *Noise Technical Report*.

What is level of service?

Level of service (LOS) is a measure of the operating conditions on a road or at an intersection. Level of service is represented by a letter "grade" ranging from A (free-flowing traffic and little delay) to F (extremely congested traffic and excessive delay).

3.9.4.2 No-action Alternative

Noise levels with the No-action Alternative would be the same as those modeled for the existing conditions.

The noise model developed for the existing conditions scenario included 5,219 receivers, including 5,000 residential receivers (land use activity category B), 152 receivers in land use activity category C, 21 receivers in land use activity category D, and 46 receivers in land use activity category E. Under the existing conditions, 1,789 receivers experience a noise level above the NAC threshold. The noise levels for the existing conditions and locations of the receivers are shown in Appendix 3F, *Noise Technical Report*.

Overall, noise levels with the existing conditions range from 45 to 81 dBA.

3.9.4.3 Action Alternative

Overall, noise levels with the Action Alternative would range from 47 to 86 dBA compared to the existing conditions of 45 to 81 dBA.

With the Action Alternative, 3,272 to 3,288 of the 5,219 receivers would have traffic noise impacts; that is, they would exceed the NAC as defined in Section 3.9.2, *Regulatory Setting*. A total of 545 to 549 of the impacted receivers would have future worst-case noise levels greater than or equal to an increase of 10 dBA over the existing noise level. The locations of those receivers exceeding the NAC are shown in Appendix 3F, *Noise Technical Report*.

Noise during construction is discussed in Section 3.17.2.2.7, *Noise Impacts from Construction*.

3.9.4.3.1 Summary of Action Alternative Impacts

Table 3.9-3 summarizes the Action Alternative noise impacts for each segment and option.

Table 3.9-3. Summary of Noise Impacts from the Action Alternative

Segment	Option(s)	Impacts
North	Farmington State Street Option	417
	Farmington 400 West Option	422
North Central	Bountiful 400 North – Northern Option	158
	Bountiful 400 North – Southern Option	157
South Central	Bountiful 500 South – Northern Option	136
	Bountiful 500 South – Southern Option	134
South	Salt Lake City 1000 North – Northern Option	2,572
	Salt Lake City 1000 North – Southern Option	2,564
	Minimum impacts (sum of lowest impacts for each segment)	3,272
	Maximum impacts (sum of highest impacts for each segment)	3,288
	Range of impacts	3,272 to 3,288

As listed in Table 3.9-3 above, the Action Alternative would cause noise impacts to 3,272 to 3,288 total receivers, depending on the option selected for each segment. The noise impacts among the Action Alternative options would not be substantially different. The Farmington 400 West Option would have 5 more noise impacts than the Farmington State Street Option. The Bountiful 400 North – Northern Option would have 1 more noise impact than the Bountiful 400 North – Southern Option. The Bountiful 500 South – Northern Option would have 2 more noise impacts than the Bountiful 500 South – Southern Option. The Salt Lake City 1000 North – Northern Option would have 8 more noise impacts than the Salt Lake City 1000 North – Southern Option. The Action Alternative would cause a net increase of 1,483 to 1,499 noise impacts compared to the existing conditions and the No-action Alternative, and 1,789 receivers would exceed UDOT's NAC levels.

For each Action Alternative option, detailed summary tables with the existing and build noise levels and maps showing the receiver locations are included in Attachment B, *Summary of Existing and Action Alternative Noise Levels*, of Appendix 3F, *Noise Technical Report*.

3.9.4.4 Mitigation Measures

According to UDOT's noise-abatement policy, specific conditions must be met before traffic noise abatement is implemented. Noise abatement must be considered both feasible and reasonable.

The factors considered when determining whether abatement is feasible are:

- **Engineering Considerations.** Engineering considerations such as safety, presence of cross streets, sight distance, access to adjacent properties, wall height, topography, drainage, utilities, maintenance access, and maintenance of the abatement measure must be taken into account as part of establishing feasibility. Noise-abatement measures are not intended to serve as privacy fences or safety barriers. Abatement measures installed on structures would not exceed 10 feet in height measured from the top of deck or roadway to the top of the noise wall. Noise walls would not be installed on structures that require retrofitting to accommodate the noise-abatement measure. Noise-abatement measures would be considered if the project meets the criteria established in this policy if structure replacement is included as part of the project. Abatement measures shall be consistent with general American Association of State Highway and Transportation Officials (AASHTO) design principles.
- **Safety on Urban Non-access-controlled Roads.** To avoid a damaged barrier from becoming a safety hazard, in the event of a failure, barrier height must be no greater than the distance from the back-of-curb to the face of the proposed barrier. Because the distance from the back-of-curb to the face of a proposed barrier varies, barrier heights that meet this safety requirement might also vary.
- **Acoustic Feasibility.** Noise abatement must be considered "acoustically feasible." This is defined as achieving at least a 5-dBA highway traffic noise reduction for at least 50% of front-row receivers.

The following factors are considered when determining whether abatement is reasonable:

- **Noise-abatement Design Goal.** Every reasonable effort should be made to obtain substantial noise reductions. UDOT defines the minimum noise reduction (design goal) from proposed abatement measures to be 7 dBA or greater for at least 35% of front-row receivers.
- **Cost-effectiveness.** The cost of a noise-abatement measure must be deemed reasonable in order for it to be included in a project. Noise-abatement costs are based on a fixed unit cost of \$20 per square foot, multiplied by the height and length of the wall, in addition to the cost of any other item associated with the abatement measure that is critical to safety. The fixed unit cost is based on the historical average cost of noise walls installed on UDOT projects and is reviewed at regular intervals, not to exceed 5 years. The cost-effectiveness of abatement is determined by analyzing the cost of a wall that would provide a noise reduction of 5 dBA or more for a benefited receiver. A reasonable cost is considered to be a maximum of \$30,000 per benefited receiver for activity category B and \$360 per linear foot for activity categories A, C, D, or E. If the anticipated cost of the noise-abatement measure is less than the allowable cost, then the abatement is deemed reasonable.

The cost-effectiveness calculation also takes into account the cost of any items associated with the abatement measure that is critical to safety, such as snow storage and safety barriers where applicable.

- **Viewpoints of Property Owners and Residents.** As part of the final design phase, balloting would take place if noise-abatement measures meet the feasible criteria and reasonable noise-abatement design goal and cost-effectiveness criteria (listed above) in UDOT's noise-abatement policy.

Section C.2(c) of UDOT's noise-abatement policy requires balloting for all benefited receivers (property owners or tenants that would receive a 5-dBA or greater reduction in noise from the noise-abatement measure) or receivers whose property would abut the proposed noise-abatement measures. Balloting approval is contingent on at least 75% of the total ballots being returned and 75% of the returned ballots being in favor of the proposed noise-abatement measure.

The Draft EIS noise analysis includes the preliminary results based on an evaluation of all three feasibility factors and the reasonable noise-abatement design goal and cost-effectiveness factors. The evaluation of the reasonableness factor for the "viewpoints of property owners and residents" would take place as part of the final design phase for the Action Alternative.

3.9.4.4.1 Noise Barriers

For a noise barrier to be effective, it must be high enough and long enough to block the view of the noise source from the receiver's perspective. FHWA's *Highway Traffic Noise: Analysis and Abatement Guidance* states that a good "rule of thumb" is that the noise barrier should extend 4 times as far in each direction as the distance from the receiver to the barrier. For instance, if the receiver is 50 feet from the proposed noise barrier, the barrier needs to extend at least 200 feet on either side of the receiver in order to shield the receiver from noise traveling past the ends of the barrier.

Openings in noise barriers for driveway and cross street access greatly reduce the effectiveness of noise barriers. Therefore, impacted receivers with direct access onto local streets do not qualify for noise barriers.

The anticipated cost of each wall was calculated by multiplying the wall area and the wall cost per square foot (\$20). The allowable cost was calculated using two variables: (1) activity category B allowable cost and (2) activity category C allowable cost. The activity category B allowable cost was calculated by multiplying the allowable cost per benefited receiver (\$30,000) by the number of receivers benefited by the wall. The activity category C allowable cost was calculated by multiplying the length of the wall associated with activity category C land use by the allowable cost for activity category C land (\$360 per linear foot). These two variables, activity category B allowable cost and activity category C allowable cost, were combined to produce the allowable cost for each wall (for detailed wall analyses, see Appendix 3F, *Noise Technical Report*).

For areas with noise impacts that do not have an existing noise wall, in an effort to provide an objective analysis of traffic noise reduction at impacted receivers, a variety of noise wall heights were considered. If multiple wall heights would meet noise-abatement requirements, the shortest wall height found to be both feasible and reasonable would be recommended for balloting.

UDOT's noise-abatement policy requires the replacement "in kind" of any existing noise wall. For areas with noise impacts that have an existing noise wall, UDOT evaluated only noise wall heights as tall as or taller than the existing noise wall height. For some replacement walls, UDOT also evaluated extensions to the replacement walls if the Action Alternative would have noise impacts to receivers beyond the ends of the existing walls. More details are included in Appendix 3F.

A total of 26 noise barriers were considered for the Action Alternative. See the noise wall maps in Appendix 3F.

3.9.4.4.2 Noise-abatement Evaluation for the Action Alternative

UDOT evaluated 21 noise barriers at locations where noise impacts would occur with the Action Alternative. Eight of the 21 noise barriers were new noise barriers, and 13 of the 21 noise barriers were replacement noise barriers consistent with UDOT's noise-abatement policy. Three of the 8 new noise barriers met UDOT's feasibility and reasonableness acoustic and cost criteria with the Action Alternative. Maps showing the locations of the noise walls evaluated for the Action Alternative and more detailed information is available for each barrier in Appendix 3F, *Noise Technical Report*.

Table 3.9-4 summarizes the analyzed noise barriers. The locations of the noise barriers are shown in Figure 3.9-2 through Figure 3.9-4 and in Attachment D, *Noise Wall Maps*, of Appendix 3F. Table 3.9-4 summarizes the results of the noise barrier analysis for the Action Alternative.

The 3 new noise barriers and 13 replacement noise barriers recommended in this analysis would provide a benefit (at least a 5-dBA reduction) to 1,568 to 1,647 receivers.

Noise-abatement Consideration during Final Design. Recommended noise walls in the noise evaluation area that met the requirements of UDOT's noise-abatement policy are summarized in Table 3.9-4. A barrier identified as recommended for balloting is a barrier that has been shown to meet the feasible criteria and reasonable design goal and cost-effectiveness criteria as defined in UDOT's noise-abatement policy. However, that finding is not a commitment to build a barrier.

Noise barriers shown in this analysis include replacement noise barriers for areas with existing noise walls and new or extended noise walls for locations modeled to have noise impacts from the Action Alternative. The final height for replacement noise barriers would be at least equal to the existing height. The new noise barriers are preliminary and must meet the feasibility and reasonableness requirements of the UDOT noise-abatement policy.

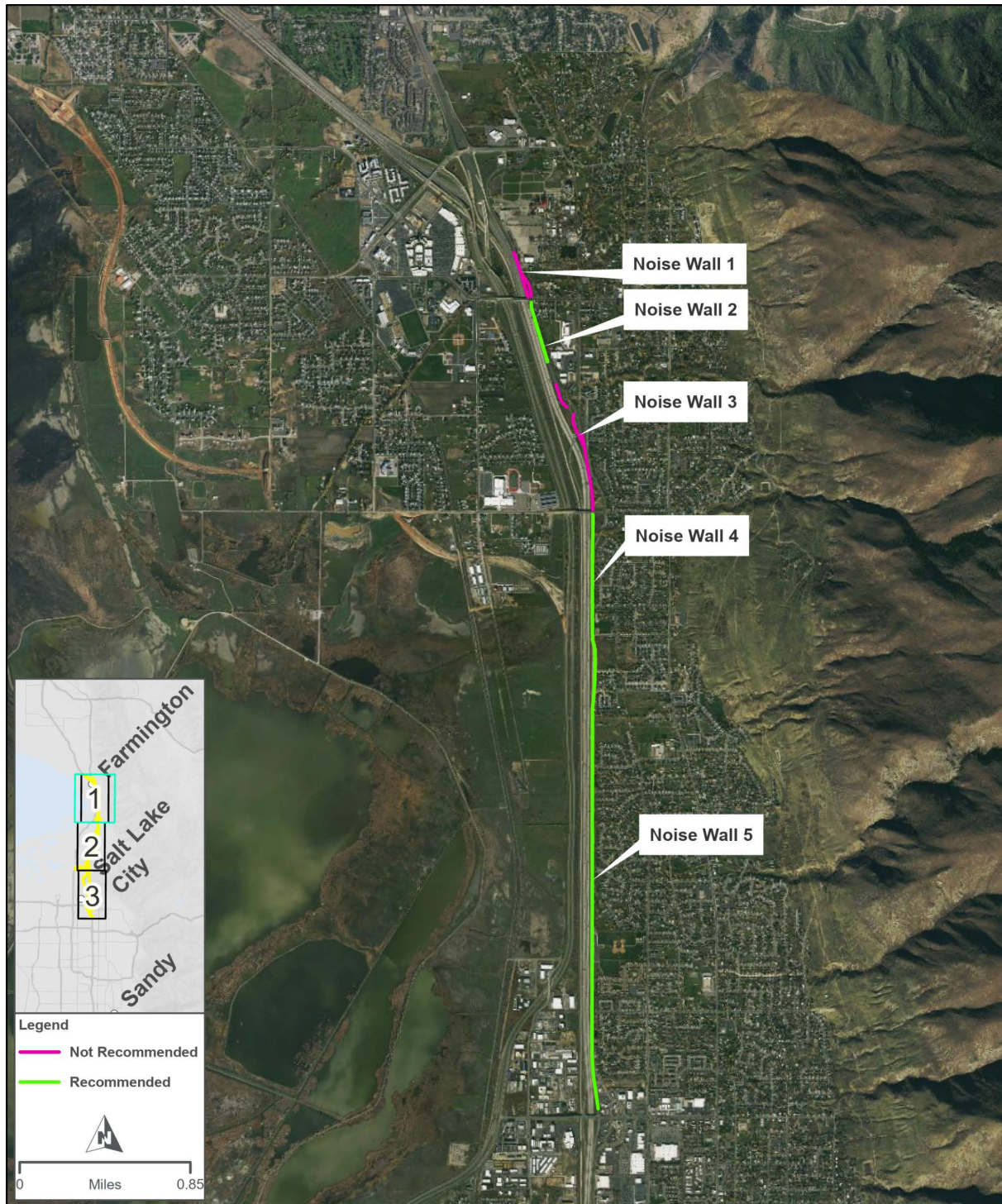
The final lengths and heights for any of the noise barriers identified in the environmental study phase are still subject to final design and the feasibility and reasonable criteria as defined in the UDOT noise-abatement policy (and summarized in Section 3.9.4.4, *Mitigation Measures*). UDOT would not make a decision whether to construct the proposed noise barrier until the project design is completed and refined utility relocation and right-of-way costs are available. Reasonableness would be evaluated using refined costs based on the final design.

UDOT will conduct balloting for the proposed noise-abatement measures with the final design engineering considerations and costs that meet the feasibility criteria and reasonable design goal and cost-effectiveness criteria as defined in UDOT's noise-abatement policy. As described above, Section C.2(c) of UDOT's noise-abatement policy requires balloting for all benefited receivers (property owners or tenants that would receive a 5-dBA or greater reduction in noise from the noise-abatement measure) or receivers whose property would abut the proposed noise-abatement measures. Balloting approval is contingent on at least 75% of the total ballots being returned and 75% of the returned ballots being in favor of the proposed noise-abatement measure.

Table 3.9-4. Barrier Analysis Summary

Proposed Barrier	Segment/Options	New Barrier or Replacement of Existing Barrier?	Is Barrier Feasible, Reasonable, and Recommended for Balloting? (applicable to new walls only)	Recommended Barrier Height, Length
1	North – Farmington State Street Option	New	No	NA
1	North – Farmington 400 West Option	New	No	NA
2	North – Farmington State Street Option	New	Yes	16 feet, 1,651 feet
2	North – Farmington 400 West Option	New	Yes	16 feet, 1,400 feet
3	North/both options	New	No	NA
4	North/both options	Replacement	NA	16 feet, 4,199 feet
5	North/both options	Replacement	NA	17 feet, 12,345 feet
6	North central/both options	Replacement	NA	16 feet, 4,481 feet
7	North central/both options	Replacement	NA	13 feet, 986 feet
8	North central/both options	New	No	NA
9	South central/both options	New	No	NA
10	South central/both options	Replacement	NA	13 feet, 3,381 feet
11	South central/both options	Replacement	NA	14 feet, 1,880 feet
12	South/both options	Replacement	NA	12 feet, 4,343 feet
13	South/both options	Replacement	NA	14 feet, 1,370 feet
14	South/both options	New	Yes	15 feet, 1,557 feet
15	South/both options	New	No	NA
16	South/both options	New	Yes	11 feet, 650 feet
17	South/both options	Replacement	NA	16 feet, 9,243 feet
18	South/1000 North Northern Option	Replacement	NA	12 feet, 1,726 feet
18	South/1000 North Southern Option	Replacement	NA	12 feet, 1,372 feet
19	South/1000 North Northern Option	Replacement	NA	16 feet, 3,282 feet
19	South/1000 North Southern Option	Replacement	NA	16 feet, 4,442 feet
20	South/both options	Replacement	NA	14 feet, 4,250 feet
21	South/both options	Replacement	NA	14 feet, 4,524 feet

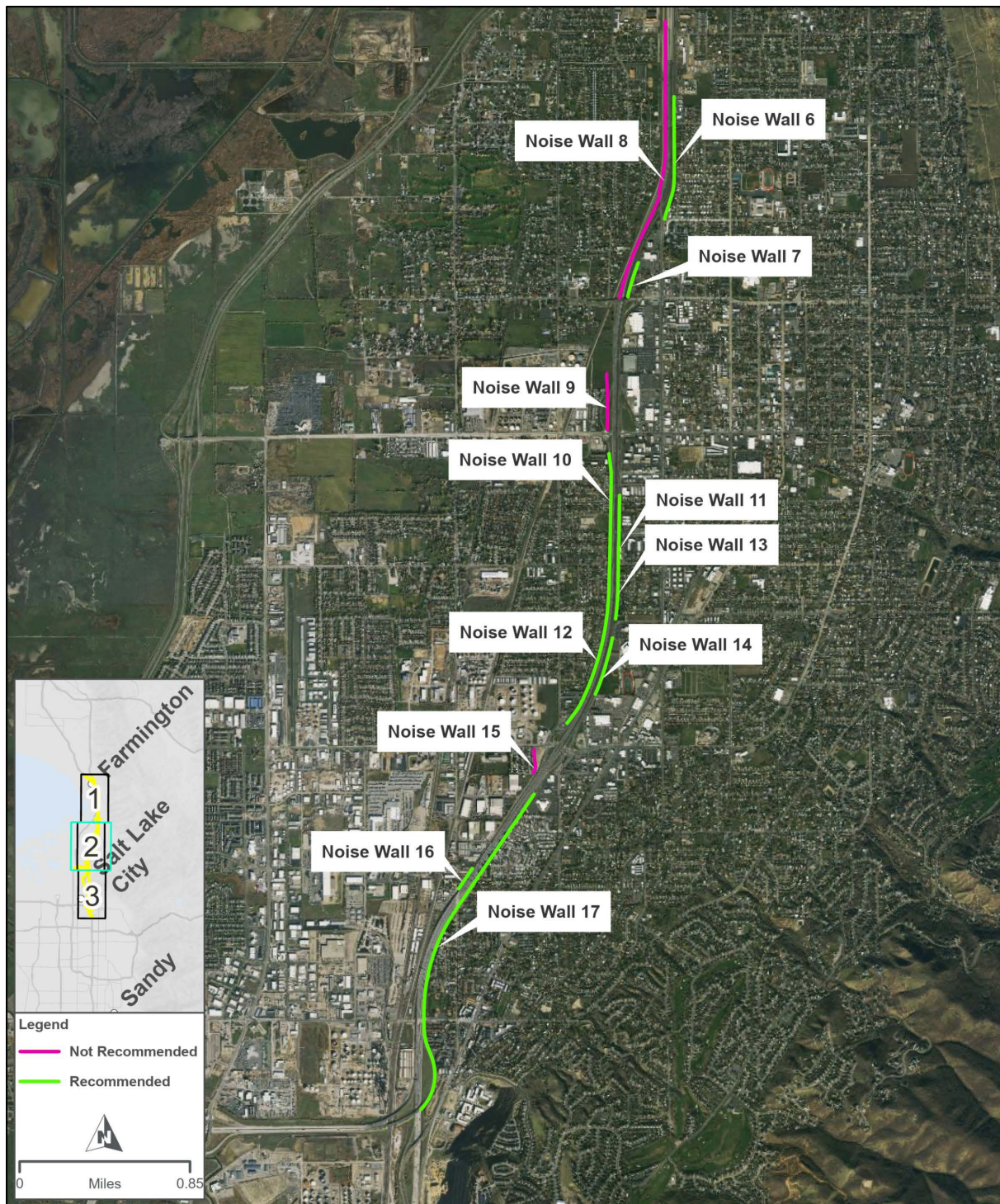
Figure 3.9-2. Noise Wall Evaluation (1 of 3)



NOISE WALL EVALUATION
I-15 EIS: FARMINGTON TO SALT LAKE CITY

FIGURE 1 OF 3

Figure 3.9-3. Noise Wall Evaluation (2 of 3)



NOISE WALL EVALUATION
I-15 EIS: FARMINGTON TO SALT LAKE CITY

FIGURE 2 OF 3

Figure 3.9-4. Noise Wall Evaluation (3 of 3)



NOISE WALL EVALUATION
I-15 EIS: FARMINGTON TO SALT LAKE CITY

FIGURE 3 OF 3

3.10 Historic and Archaeological Resources

3.10.1 Introduction

Section 3.10 describes the cultural resources in the area of potential effects and the effects of the project alternatives on these resources.

The National Historic Preservation Act (NHPA) regulations establish the criteria for eligibility as a historic property. To be considered “historic,” a resource must be deemed significant according to the National Register of Historic Places (NRHP) criteria (Table 3.10-1), possess integrity, and generally be at least 50 years old. To account for the amount of time that could elapse between identifying resources and implementing any project decision, UDOT identified and evaluated cultural resources that were at least 41 years old at the time of the 2021 field surveys (that is, constructed in or before 1980).

For this analysis, *cultural resources* include historic architectural and archaeological resources. *Architectural resources* can include structures, objects, historic buildings, or districts composed of these resources. In Section 3.10, they are also referred to as simply *architectural resources* or *historic buildings*. *Archaeological resources* are sites, features, structures, or districts that are composed primarily of nonarchitectural elements.

Area of Potential Effects. The area of potential effects (APE), or the survey area for cultural resources, is the corridor around I-15 and its cross streets. The APE was defined to encompass the combined areas of anticipated physical disturbance, right-of-way acquisition, and easements for the Action Alternative and the segment options being evaluated in this EIS. The approximate acreage of the APE is 4,848 acres. The Utah State Historic Preservation Office (SHPO) concurred with this APE in a letter dated September 24, 2021. The letter from the Utah SHPO is provided in Appendix 3I, *Cultural Resources Correspondence*.

What is the area of potential effects (APE)?

The APE, or the survey area for cultural resources, is the corridor around I-15 and its cross streets.

What are the responsibilities of the Utah SHPO?

The Utah SHPO is responsible for carrying out the responsibilities of the National Historic Preservation Act of 1966 in Utah. These responsibilities include surveying, evaluating, and nominating significant historic buildings, sites, structures, districts, and objects to the National Register of Historic Places.

3.10.2 Regulatory Setting

Section 106 of the NHPA (16 USC Section 470), as amended, requires that federally funded projects, projects requiring a federal license or approval, or projects subject to state or local regulation administered pursuant to a delegation or approval by a federal agency be evaluated for their effects on historic properties listed in, or eligible for listing in, the NRHP. Also, the Utah Historic Preservation Act (Utah Code Annotated Section 9-8-401 and subsequent sections) was passed to provide protection of “all antiquities, historic and prehistoric ruins, and historic sites, buildings, and objects which, when neglected, desecrated, destroyed, or diminished in aesthetic value, result in an irreplaceable loss to the people of this state.”

UDOT has assumed FHWA’s responsibilities for complying with the NHPA for certain federal-aid highway projects under a May 26, 2022, Memorandum of Understanding pursuant to 23 USC Section 327, which applies to the I-15 project. UDOT’s Section 106 responsibilities are further defined in the *Third Amended Programmatic Agreement among the Federal Highway Administration, the Utah State Historic Preservation*

Officer, the Advisory Council on Historic Preservation, the United States Army Corps of Engineers, Sacramento District, and the Utah Department of Transportation Regarding Section 106 Implementation for Federal-Aid Transportation Projects in the State of Utah (UDOT 2017b).

The term *eligible for listing in the NRHP* includes properties that meet the NRHP criteria as determined by the lead agency, with concurrence from the SHPO. The NRHP criteria (36 CFR Part 63) are listed in Table 3.10-1.

Table 3.10-1. Criteria for Evaluating Eligibility for the NRHP

NRHP Criterion	Characteristic
A	Associated with events that have made a significant contribution to the broad patterns of our history.
B	Associated with the lives of persons significant in our past.
C	Embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction.
D	Yielded, or may likely to yield, information important in prehistory or history.

Sources: NPS 1997; 36 CFR Part 63

The Utah SHPO has developed a rating system (Table 3.10-2) to qualify buildings in a reconnaissance-level survey to be used in conjunction with the NRHP criteria for evaluation.

Table 3.10-2. Utah SHPO Rating Definitions for Historic Structures

SHPO Rating	Characteristic
Eligible/Significant (ES)	Built within the historic period and retains integrity; excellent example of a style or type; unaltered or only minor alterations or additions; individually eligible for the NRHP under criterion "C"; also buildings of known historical significance.
Eligible/Contributing (EC)	Built within the historic period and retains integrity; good example of a style or type, but not as well-preserved or well-executed as "ES" buildings; more substantial alterations or additions than "ES" buildings, though overall integrity is retained; eligible for the NRHP as part of a potential historic district or primarily for historical, rather than architectural, reasons.
Ineligible/Non-contributing (NC)	Built during the historic period but has had major alterations or additions; no longer retains integrity.
Ineligible/Out-of-period (OP)	Constructed outside the historic period.

3.10.3 Affected Environment

3.10.3.1 Consultation

Section 106 of the NHPA requires the lead federal agency to consult with the state historic preservation officer, tribal historic preservation officer, and other consulting parties (such as certified local governments and members of the general public with an interest in the project), as applicable. The Section 106 consultation process is intended to provide interested consulting parties with an opportunity to review determinations or eligibility, findings of effect, and avoidance, minimization, or mitigation options to resolve adverse effects.

UDOT consulted with the Utah SHPO, Native American tribes, and other potential consulting party entities as part of the effort to define the APE, identify historic architectural and archaeological properties, and determine the expected effects of the Action Alternative.

The SHPO concurred with eligibility determinations for historic architectural and archaeological properties in a letter dated March 22, 2023, which is included in Appendix 3I, *Cultural Resources Correspondence*.

UDOT sent letters to the following Native American tribes, and other entities with preservation interests, inviting them to become consulting parties under Section 106 of the NHPA:

- Cedar Band of Paiutes
- Confederated Tribes of Goshute Reservation
- Eastern Shoshone Tribe of the Wind River Reservation
- Northwestern Band of Shoshone Nation
- Shivwits Band of Paiute Indian Tribe of Utah
- Shoshone-Bannock Tribes of the Fort Hall Reservation
- Skull Valley Band of Goshute Indians
- Ute Indian Tribe of the Uintah and Ouray Reservation
- Salt Lake County certified local government (CLG)
- Bountiful CLG
- Centerville CLG
- Farmington CLG
- Salt Lake City
- Clark Lane Historical Preservation Association
- Utah Professional Archaeological Council
- Preservation Utah

To date, no responses have been received from the tribes. Responses accepting the invitations to become consulting parties have been received from the Salt Lake County CLG, the Centerville CLG, and the Clark Lane Historical Preservation Association. See Chapter 6, *Coordination*, for additional details regarding agency consultation.

UDOT has received comments from the Clark Lane Historical Preservation Association as part of the alternatives development process public comment period that ended in January 2023.

UDOT submitted its Determinations of Eligibility (DOE) report for historic architectural and archaeological properties to the Utah SHPO on March 17, 2023. The Utah SHPO concurred with all determinations in a letter dated March 23, 2023. UDOT submitted its Findings of Effect (FOE) report for historic architectural and archaeological properties to the Utah SHPO on July 25, 2023. The Utah SHPO concurred with all findings in a letter dated July 31, 2023. Copies of the correspondence between UDOT and the Utah SHPO are provided in Appendix 3I, *Cultural Resources Correspondence*.

3.10.3.2 Historic Architectural Resources

A historic structures survey conducted for the I-15 project identified previously documented buildings and structures as well as other buildings and structures that could be eligible for listing in the NRHP using the Utah SHPO ratings criteria (see Table 3.10-2, *Utah SHPO Rating Definitions for Historic Structures*, above). Fifty-six of the 328 previously documented buildings and structures had been demolished. Ultimately, 429 structures in the APE were determined to be eligible for listing in the NRHP. Of these, 377 structures are recommended as eligible-contributing (EC) and 52 structures are recommended as eligible/significant (ES) under the Utah Division of State History's rating system. The report *Selective Reconnaissance-level Survey for the I-15: Salt Lake City 600 North to Farmington EIS, Salt Lake and Davis Counties, Utah* (Horrocks 2023c) contains additional details including descriptions, locations, and pictures of the properties. Descriptions and photos of the potentially affected properties are included in Appendix 3I, *Cultural Resources Correspondence*, and the locations are shown in Appendix 3H, *Cultural Resources Maps*.

3.10.3.3 Archaeological Sites

An archaeological inventory conducted for the I-15 project identified 11 NRHP-eligible archaeological sites in the APE (Table 3.10-3). The reports *A Cultural Resource Inventory for the I-15: 600 North to Farmington Environmental Impact Study* (Horrocks 2022c), *A Cultural Inventory of Additional Areas for the I-15: 600 North to Farmington Environmental Impact Study* (Horrocks 2023b), and *Supplementary Areas for the I-15: 600 North to Farmington Environmental Impact Study* (Horrocks 2023d) contain additional details. Locations are shown in Appendix 3H, *Cultural Resources Maps*.

Table 3.10-3. NHRP-eligible Archaeological Sites in the APE

Site Number(s)	Site Name	NRHP Evaluation
42DV2	Prehistoric Artifact Scatter	Eligible (Criterion D)
42DV86/42SL293	Denver & Rio Grande Western Railroad	Eligible (Criterion A)
42DV89	Historic Earthen Berms/ Lake Shore Resort	Eligible (Criterion A)
42DV87/42SL300	Union Pacific Railroad	Eligible (Criteria A, B, and C)
42DV93	Historic Trash Deposit	Eligible (Criterion D)
42DV126/42SL489	Historic Oil Drain	Eligible but not contributing (Criterion A)
42DV187	Historic Oakridge Golf Course	Eligible (Criterion A)
42DV197/42SL513	Historic Sewage Canal	Eligible but not contributing (Criterion A)
42SL718	Denver & Rio Grande Western Historic Railroad Repair Yard	Eligible but not contributing (Criteria A, C, and D)
42SL729	Historic Trolley Line	Eligible but not contributing (Criterion A)

Sources: Horrocks 2022c, 2023b

3.10.4 Environmental Consequences and Mitigation Measures

3.10.4.1 Methodology

The cultural resources identified in the APE and that are eligible for listing in the NRHP were then evaluated to determine whether the Action Alternative would impact those resources. Impacts (also called effects) could be direct or indirect.

- A **direct impact** is a physical alteration of any portion of the primary historic building, contributing historic outbuilding(s), or historically associated land as a result of one or more of the segment options. Includes activities that would diminish those qualities of the site that contribute to its historic significance.
- An **indirect impact** is an effect that is removed in space or time, such as a visual, audible, or atmospheric impact.

Once UDOT determined that an eligible historic property would be impacted, the next step was to assess whether there could be an “adverse effect” on those resources pursuant to Section 106 regulations. UDOT assessed the nature and extent of those effects on the characteristics of the resource that make it eligible for listing in the NRHP under a particular criterion. If an option would alter the important characteristics such that some portion of the resource’s eligibility would be affected, an adverse effect was considered likely. If

the option would not significantly alter those important characteristics, the option was considered to have no adverse effect on the resource.

UDOT's FOE, which was submitted to the Utah SHPO on July 25, 2023, provides greater detail regarding the effects findings. The Utah SHPO concurred with all findings in a letter dated July 31, 2023, which is provided in Appendix 3I, *Cultural Resources Correspondence*.

3.10.4.2 No-action Alternative

With the No-action Alternative, the I-15 project would not be implemented. The No-action Alternative would have no effect on archaeological sites or eligible historic architectural resources and would result in a finding of **no historic properties affected**.

3.10.4.3 Action Alternative

The Action Alternative would affect both historic architectural resources and archaeological sites. The summary of these effects is provided in the following sections. The Action Alternative would result in an overall finding of **adverse effect**. This effect would apply for any combination of options. The following subsections describe the effects on historic architectural resources and archaeological sites for each option for each of the four segments.

3.10.4.3.1 Historic Architectural Resources

The sections below summarize the impacts to architectural resources for each of the four segments of the Action Alternative. The address for the architectural resources with adverse effects is included in the summary sections below. The list of the architectural resources with no adverse effect is included in Appendix 3G, *Architectural Impacts*. "No adverse effects on architectural resources" include situations in which UDOT would need to acquire a small piece of property from a parcel that contains an eligible historic building, but the acquisition of this small piece of property would not have any direct effects on the eligible historic building. The "no adverse effects" also include situations in which the UDOT would obtain temporary construction easements on parcels that contain eligible historic buildings. The temporary construction easements include work associated with replacing or reconstructing noise walls, sidewalks, or driveway accesses on the edge of a parcel, but they would not have any direct effects on the eligible historic buildings.

North Segment Impacts

The impacts to architectural resources in the north segment would be the same for both the Farmington 400 West Option and the Farmington State Street Option. Both of these options would have an **adverse effect** on two architectural resources (399 W. State Street and the Clark Lane Historic District in Farmington) and would have **no adverse effect** on 7 architectural resources (see Appendix 3G, *Architectural Impacts*). The impact to 399 W. State Street would be considered an adverse effect because the Action Alternative would require the acquisition and demolition of the eligible historic building. The **adverse effect** on 399 W. State Street in Farmington and the potential loss of trees on State Street east of 400 West would also be considered an **adverse effect** on the Clark Lane Historical District.

North Central Segment Impacts

Bountiful 400 North – Northern Option Impacts. This option would have an **adverse effect** on 444 West 400 North in Bountiful and would have **no adverse effect** on 13 architectural resources (see Appendix 3G, *Architectural Impacts*). The impact to 444 West 400 North would be considered an adverse effect because the Bountiful 400 North – Northern Option would require the acquisition and demolition of the eligible historic building.

Bountiful 400 North – Southern Option Impacts. This option would have an **adverse effect** on 433 West 400 North in Bountiful and would have **no adverse effect** on 13 architectural resources (see Appendix 3G, *Architectural Impacts*). The impact to 433 West 400 North would be considered an adverse effect because the Bountiful 400 North – Southern Option would require the acquisition and demolition of the eligible historic building.

South Central Segment Impacts

Bountiful 500 South – Northern Option Impacts. This option would have an **adverse effect** on 409 South 500 West in Bountiful and would have **no adverse effect** on 15 architectural resources (see Appendix 3G, *Architectural Impacts*). The impact to 409 South 500 West would be considered an adverse effect because the Bountiful 500 South – Northern Option would remove the historic sign and encroach on the parking area on the west side main entrance to the property.

Bountiful 500 South – Southern Option Impacts. This option would have an **adverse effect** on 409 South 500 West and 453 West 500 South in Bountiful and would have **no adverse effect** on 14 architectural resources (see Appendix 3G, *Architectural Impacts*). The impact to 409 South 500 West would be considered an adverse effect because the Bountiful 500 South – Southern Option would remove the historic sign and encroach on the parking area on the west side main entrance to the property. The impact to 453 West 500 South would be considered an adverse effect because the Bountiful 500 South – Southern Option would require the acquisition and demolition of the eligible historic building.

South Segment Impacts

The impacts to architectural resources in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. Both of these options would have an **adverse effect** on two architectural resources (U.S. Bank at 1090 North 500 East in North Salt Lake and a Quonset hut at 825 N. Warm Springs Road in Salt Lake City) and would have **no adverse effect** on 70 architectural resources (see Appendix 3G, *Architectural Impacts*). The U.S. Bank building at 1090 North 500 East in North Salt Lake would not be demolished with the Action Alternative. However, the Action Alternative would require UDOT to acquire and remove parking stalls and part of the drive-through lane for the bank, which is considered a potential business relocation. If UDOT purchases and resells the historic structure, the impact would be considered an adverse effect because the new owner might remove or modify the eligible historic building. The impact to Quonset hut at 825 N. Warm Springs Road in Salt Lake City would be considered an adverse effect because the Action Alternative would require the acquisition and demolition of the eligible historic building.

3.10.4.3.2 Archaeological Sites

The sections below summarize the impacts to archaeological sites for each of the four segments of the Action Alternative.

North Segment Impacts

The impacts to archaeological sites in the north segment would be the same for both the Farmington 400 West Option and the Farmington State Street Option. Both of these options would require the following 10 crossings of the Union Pacific Railroad tracks and would have **no adverse effect** on site 42DV87/42SL300, Union Pacific Railroad:

- Reconstruction of three existing grade-separated road crossings (road over the railroad tracks at State Street in Farmington, Glovers Lane in Farmington, and Parrish Lane in Centerville). The existing bridges at these crossings are not historic.
- Reconstruction of one existing at-grade road and sidewalk crossing at Pages Lane in Centerville and West Bountiful.
- Construction of two new grade-separated shared-use path crossings (shared-use path over the railroad tracks), at the Centerville Community Park pedestrian bridge crossing and at 200 North in Centerville.
- Construction of four underground drainage crossings (drainage pipes would cross under the railroad tracks) near Lund Lane, 1825 North, 1175 North, and Chase Lane in Centerville.

All 10 of these crossings would be considered **no adverse effect** because the railroad alignment and the historic integrity of the railroad tracks would not be changed as a result of the road or drainage crossings.

North Central Segment Impacts

The impacts to archaeological sites in the north central segment would be the same for both the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option. Both of these options would require reconstructing one existing grade-separated crossing of the Union Pacific Railroad tracks (road over the railroad tracks) at 400 North in Bountiful and West Bountiful and would have **no adverse effect** on site 42DV87/42SL300, Union Pacific Railroad. The existing bridge at this crossing is not historic.

This crossing would be considered **no adverse effect** because the railroad alignment and the historic integrity of the railroad tracks would not be changed as a result of the reconstructed road crossing.

South Central Segment Impacts

The impacts to archaeological sites in the south central segment would be the same for both the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option. These options would not impact any archaeological sites.

South Segment Impacts

The impacts to archaeological sites in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. Both of these options would have **no adverse effect** on the following three archaeological sites:

- **Site 42DV86/42SL293 (Denver & Rio Grande Western Railroad)** at I-215 would have four grade-separated crossings (road over the railroad tracks). These four grade-separated crossings include reconstruction of two existing crossings (southbound to eastbound ramp and westbound to northbound ramp) and construction of two new crossings (a new westbound connection to I-215 from U.S. 89 and a new eastbound connection from I-215 to U.S. 89). The existing bridges at these crossings are not historic.
- **Site 42SL729 (Historic Trolley Line)** at 200 South in Salt Lake City would have a road over the historic trolley line. This would be a reconstruction of the existing I-15 crossing over the historic trolley line.
- **Site 42DV87/42SL300 (Union Pacific Railroad)** would have eight crossings of the railroad tracks:
 - Reconstruction of five existing grade-separated road crossings (road over the railroad tracks) at I-215 (southbound-to-westbound ramp and eastbound-to-northbound ramp), at I-15 near 2300 North in Salt Lake City, at 600 North in Salt Lake City, and at South Temple in Salt Lake City. The existing bridges at these crossings are not historic.
 - Reconstruction of one existing at-grade road and shared-use path crossing at Center Street in North Salt Lake.
 - Construction of three new grade-separated road crossings (road over the railroad tracks) at I-215 (a new westbound connection to I-215 from U.S. 89 and a new eastbound connection from I-215 to U.S. 89) and at 2100 North in Salt Lake City.

The crossings of the two railroads and the historic trolley line would be considered **no adverse effect** because the railroad and historic trolley line alignments and the historic integrity of the railroad tracks and historic trolley line would not be changed as a result of the road crossings.

3.10.4.3.3 Summary of Action Alternative Impacts

Table 3.10-4 shows the impacts associated with each segment and option of the Action Alternative. As shown in Table 3.10-4, depending on the option selected in each of the segments, the Action Alternative would have an **adverse effect** on 6 or 7 architectural resources, **no adverse effect** on 104 or 105 architectural resources, and **no adverse effect** on 3 archaeological resources.

Table 3.10-4. Summary of Impacts to Cultural Resources from the Action Alternative

Segment	Option	Architecture Impacts	Archaeological Site Impacts
North	Farmington 400 West Option	2 adverse effects 7 no adverse effects	1 – no adverse effect on 42DV87/42SL300 (Union Pacific Railroad)
	Farmington State Street Option	2 adverse effects 7 no adverse effects	1 – no adverse effect on 42DV87/42SL300 (Union Pacific Railroad)
North Central	Bountiful 400 North – Northern Option	1 adverse effect 13 no adverse effects	1 – no adverse effect on 42DV87/42SL300 (Union Pacific Railroad)
	Bountiful 400 North – Southern Option	1 adverse effect 13 no adverse effects	1 – no adverse effect on 42DV87/42SL300 (Union Pacific Railroad)
South Central	Bountiful 500 South – Northern Option	1 adverse effects 15 no adverse effects	None
	Bountiful 500 South – Southern Option	2 adverse effect 14 no adverse effects	None
South	Salt Lake City 1000 North – Northern Option	2 adverse effects 70 no adverse effects	3 – No adverse effect on 42DV87/42SL300 (Union Pacific Railroad), 42DV86/42SL293 (Denver & Rio Grande Western Railroad), and 42SL729 (Historic Trolley Line)
	Salt Lake City 1000 North – Southern Option	2 adverse effects 70 no adverse effects	3 – No adverse effect on 42DV87/42SL300 (Union Pacific Railroad), 42DV86/42SL293 (Denver & Rio Grande Western Railroad), and 42SL729 (Historic Trolley Line)
	Minimum impacts (sum of lowest impacts for each segment)	6 adverse effects 105 no adverse effects	3 no adverse effects
	Maximum impacts (sum of highest impacts for each segment)	7 adverse effects 104 no adverse effects	3 no adverse effects
	Range of impacts	6 to 7 adverse effects 105 to 104 no adverse effects	3 no adverse effects

3.10.4.4 Mitigation Measures

3.10.4.4.1 Mitigation Measures for Impacts to Eligible Historic Architecture Resources

The Action Alternative would have an **adverse effect** on architectural resources. Mitigation measures for architectural resources are not yet developed. UDOT will coordinate with the Utah SHPO, tribes, or other consulting parties, as appropriate, to develop specific mitigation measures for the architectural resources that would have adverse effects from the project.

These measures will be described in a Memorandum of Agreement that will be included in the Final EIS and Record of Decision for the I-15 project.

Typical mitigation measures for adversely affected historic buildings consist of detailed documentation of the physical structure of the building and the history of its occupants and uses since it was constructed.

Although these types of mitigation measures are common, mitigation can consist of any measures that UDOT, the SHPO, and the consulting parties agree are appropriate to compensate for the effects on the resource or resources in question. In many cases, mitigation measures involve off-site activities, such as developing interpretive signs or museum displays to share the history of or information about the affected resources rather than focusing on documentation of the resource itself.

3.10.4.4.2 Mitigation Measures for Impacts to Archaeological Sites

The Union Pacific Railroad tracks, the Denver & Rio Grande Western Railroad tracks, and a historic trolley line are the eligible archaeological sites that would be impacted by the project. The project proposes to bridge most of the railroad crossings and the historic trolley crossing. The project's two at-grade railroad crossings already exist. Because the Action Alternative has been designed to have **no adverse effect** on archaeological sites, no specific mitigation measures are necessary.

3.11 Water Quality and Water Resources

3.11.1 Introduction

Section 3.11 describes the existing conditions of surface water and groundwater in the water quality and water resources evaluation area. This section also discusses the expected effects of the project alternatives on surface water and groundwater.

The focus of this section is on the expected impacts to water quality and water resources after the proposed improvements and project elements associated with the Action Alternative have been constructed. Water quality impacts during construction are addressed in Section 3.17, *Construction Impacts*. The existing conditions of riparian areas and wetlands, and the expected impacts to these areas from the project alternatives, are discussed in Section 3.12, *Ecosystem Resources*. Impacts to regulatory floodplains from the project alternatives are discussed in Section 3.13, *Floodplains*.

The main recurring impact to water quality is from highway stormwater runoff that flows off impervious areas of the highway surface during a precipitation event. This runoff could pick up pollutants and, in the absence of retention facilities, carry them to receiving water bodies.

Water Quality and Water Resources Evaluation Area. The water quality and water resources evaluation area is the combined project right-of-way or footprint for all options that are part of the Action Alternative. The evaluation area also includes the upstream watersheds of Farmington Creek, Ricks Creek, and Mill Creek, as well as downstream watershed areas for Ricks Creek and Mill Creek, which are outside the project right-of-way or footprint. These areas are included in the water quality modeling to establish a baseline water quality and to help assess the expected impacts of the project alternatives to surface water quality.

3.11.2 Regulatory Setting

The Utah Divisions of Water Quality (UDWQ) and Drinking Water (UDDW) within the Utah Department of Environmental Quality (UDEQ) regulate the quality of Utah's water bodies. These agencies act pursuant to delegated authority to enforce the federal Clean Water Act and the federal Safe Drinking Water Act and pursuant to Utah's water quality laws and regulations. The water quality laws and regulations that apply to the I-15: Farmington to Salt Lake City Project are summarized in Table 3.11-1 and discussed in the following sections.

Table 3.11-1. Laws and Regulations Related to Water Quality

Regulation	Regulating Agency and Requirement	Applicability
Clean Water Act Section 401 Utah Water Quality Certification (Utah Administrative Code [UAC] Rule [R] 317-15)	If a Clean Water Act Section 404 permit is needed for the I-15: Farmington to Salt Lake City Project, the Section 404 permit would require UDEQ to certify that the project would not cause Utah water quality standards (numeric and narrative) to be exceeded. This certification is a Section 401 Water Quality Certification.	Water Quality Certification UDEQ provides this certification to the U.S. Army Corps of Engineers if a Section 404 permit is required.
Clean Water Act Section 402 (UAC R317-8) NPDES Permit (UPDES in Utah, regulates discharges)	EPA has delegated authority for the National Pollutant Discharge Elimination System (NPDES) program in Utah to UDEQ. Construction projects that discharge stormwater to surface water and construction projects that disturb 1 or more acres of land must obtain a Utah Pollutant Discharge Elimination System (UPDES) permit to minimize impacts to water quality associated with construction activities. Operators of municipal separate storm sewer systems (MS4), such as UDOT, must comply with their UPDES permit to minimize water quality impacts associated with discharges from the project site. If dewatering activities discharge project water to surface waters during construction, a UPDES Construction Dewatering or Hydrostatic Testing General Permit must be obtained.	UPDES Permits Required for roadway construction stormwater discharges to surface water such as dewatering activities that discharge project water to surface waters. Compliance with UDOT's MS4 UPDES permit for ongoing operations is also required for all facilities.
UAC R317-2-7-2, <i>Narrative Water Quality Standards</i> (limits discharges)	This regulation states that it is unlawful to discharge into surface waters substances that could cause undesirable effects on human health or aquatic life.	Narrative Standards Surface water discharges must comply with narrative standards.
UAC R317-2-14 <i>Numeric Criteria (in-stream standards)</i>	Numeric standards for water quality are based on the water's designated beneficial uses, such as providing drinking water, supporting game fish, or supporting swimming. For surface waters exceeding water quality standards for pollutants identified on the state 303(d) list (of impaired waters), this regulation requires UDEQ to develop a total maximum daily load (TMDL) study to restore water quality standards and beneficial uses.	Numeric Standards Surface water discharges are permitted as long as beneficial uses are protected. Discharges to water with approved TMDL studies need to comply with pollutant load allocations defined in the TMDL studies.
UAC R317-2-3, <i>Antidegradation Policy</i>	UDEQ assigns protection categories to manage the allowable level of degradation of water bodies in the state. Antidegradation procedures are applied to each protection category on a parameter-by-parameter basis. Antidegradation reviews are required for any action that requires a Section 401 Water Quality Certification or UPDES permit or has the potential to significantly degrade water quality.	Antidegradation Review Might be required to support the Section 401 Water Quality Certification required by the U.S. Army Corps of Engineers Section 404 permit.
UAC R309-605, <i>Drinking Water Source Protection for Surface Waters</i> (regulates activities near drinking water sources)	Owners of public water systems are responsible for protecting sources of drinking water and for submitting a drinking water source protection plan to the Utah Division of Drinking Water. Such plans must identify drinking water source protection zones around each drinking water source (such as a lake or river), existing sources of contamination, and the types of new construction projects that are restricted within each zone.	Source Protection Land uses and potential sources of contamination should be managed in compliance with the drinking water source protection plans.

(continued on next page)

Table 3.11-1. Laws and Regulations Related to Water Quality

Regulation	Regulating Agency and Requirement	Applicability
Clean Water Act Section 404 UAC R655-13, <i>Stream Alteration</i>	Any changes to a natural streambed and stream banks require a Clean Water Act Section 404 permit for stream alteration. This permit, which has been jointly authorized by the U.S. Army Corps of Engineers and the State of Utah, can be obtained from the Utah Division of Water Rights pursuant to certain rules.	Stream Alteration Permit Any project that proposes to alter a natural stream must receive a state stream alteration permit for those activities.
UAC R317-6, <i>Groundwater Quality Protection</i>	UDEQ classifies aquifers and permits discharges to groundwater to protect and maintain groundwater quality. Permits are required for discharges to groundwater.	Groundwater Discharge Permits Stormwater management facilities are “permitted by rule” by the Utah Division of Water Quality.

EPA = U.S. Environmental Protection Agency; MS4 = municipal separate storm sewer system; NPDES = National Pollutant Discharge Elimination System; R = rule; TMDL = total maximum daily load; UAC = Utah Administrative Code; UDEQ = Utah Department of Environmental Quality; UPDES = Utah Pollutant Discharge Elimination System

3.11.2.1 Surface Waters and Beneficial-use Classifications

Under the Clean Water Act, every state must establish and maintain water quality standards designed to protect, restore, and preserve the quality of the waters of the state. UDEQ oversees these water quality standards in Utah. Utah’s water quality regulations broadly consist of three types of standards: an antidegradation policy, beneficial-use designations and their associated numeric water quality criteria, and narrative standards that apply to all waters within the state boundaries.

What are beneficial uses?

Lakes, rivers, and other water bodies have uses to people and other forms of life called *beneficial uses*. Beneficial-use designations that apply to the water bodies in the water quality and water resources evaluation area are shown in Table 3.11-2 below.

3.11.2.1.1 Antidegradation Policy and Reviews

Utah’s antidegradation policy states that waters whose existing quality is better than the established standards for their designated beneficial uses should be maintained at high quality (Utah Administrative Code [UAC] Rule [R] 317-2-3.1). Discharges that could lower or degrade water quality are allowable if UDEQ determines that these discharges are necessary for important economic or social development. However, discharges must not impair the existing in-stream beneficial uses of these high-quality waters.

Highway stormwater runoff is generally considered a nonpoint source discharge whether it flows overland and is discharged directly to an adjacent water body or whether it is collected in a storm drain system that then discharges to a water body at one or more points.

An antidegradation review determines whether a proposed activity complies with the applicable antidegradation requirements for receiving waters that may be affected. To facilitate the policy, all waters in the state of Utah are designated as Category 1, 2, or 3 waters.

- For **Category 1 waters**, new point discharges are not allowed; however, new discharges from nonpoint sources are allowed, provided that best management practices are used to the extent feasible to address the effects of pollution. Point source discharges might be allowed in these waters if the discharges are determined to be temporary and limited or limited to sediment.
- **Category 2 waters** have the same requirements as Category 1 waters, except that point source discharges may be allowed provided that the discharge does not degrade existing water quality.
- For **Category 3 waters**, point source discharges are allowed and degradation of water quality may occur as long as an antidegradation review is completed and approved to ensure that existing beneficial uses will be maintained and protected.

What is a best management practice (BMP)?

A BMP is a stormwater facility that is designed to manage runoff through conveying runoff to receiving waters by passing the runoff through features that remove pollutants from the water or by reducing the volume of potentially polluted runoff that reaches the water body.

Antidegradation reviews are also required for any activity that requires a federal permit and/or water quality certification or projects which, as determined by the Director of the Utah Division of Water Quality, could have a major impact.

Section 3.11.3.1, *Surface Waters and Beneficial-use Classifications*, discusses the designated beneficial uses and antidegradation categories of these waters.

3.11.2.1.2 *Beneficial-use Designations, Numeric Standards, and Narrative Standards*

UDEQ designates all surface water bodies in the state according to how the water is used, and each use designation has associated standards. Table 3.11-2 lists the applicable beneficial uses of the surface waters in the water quality and water resources evaluation area.

Table 3.11-2. Designated Beneficial Uses for Surface Waters in the Water Quality and Water Resources Evaluation Area

Class	Description
1C	Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.
2B	Protected for infrequent primary-contact recreation. Also protected for secondary-contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.
3A	Protected for cold-water species of game fish and other cold-water aquatic life, including the necessary aquatic organisms in their food chain.
3B	Protected for warm-water species of game fish and other warm-water aquatic life, including the necessary aquatic organisms in their food chain.
4	Protected for agricultural uses including irrigation of crops and stock watering.

Source: UAC R317-2-6, *Use Designations*, updated January 25, 2023

Numeric standards for water quality are intended to protect the designated beneficial uses of the water, such as providing drinking water, supporting game fish and other wildlife, or protecting waders or swimmers (UAC R317-2-14). Numeric standards refer to pollutant concentration limits that are applied to each class of water to protect its beneficial uses.

Narrative standards, which are general policy statements that prohibit the discharge of waste or other substances that result in unacceptable water quality conditions, such as visible pollution, or that are harmful to healthy aquatic life, also apply to waters in the evaluation area.

When a lake, river, or stream fails to meet the water quality standards for its beneficial uses, the State places the water body on a list of “impaired” waters—also known as a 303(d) list, from Section 303(d) of the Clean Water Act—and prepares a study called a total maximum daily load (TMDL). The objective of a TMDL study is to determine the allowable load of a given pollutant for that water body and to allocate that load among different pollutant sources so that the appropriate actions can be taken, and controls implemented, to maintain water quality standards. The TMDL process is important for improving water quality because it serves as a link in the chain between water quality standards and implementing control actions designed to attain those standards.

What is a 303(d) list?

When a lake, river, or stream fails to meet the water quality standards for its designated beneficial use, the State places the water body on a list of “impaired” waters—also known as a 303(d) list, from Section 303(d) of the Clean Water Act—and prepares a study called a TMDL.

3.11.2.1.3 Stormwater Discharges

The State of Utah administers the Utah Pollutant Discharge Elimination System (UPDES) rules (UAC R317-8) under delegated authority from EPA under the Clean Water Act and the Utah Water Quality Act. Under this program, industries and municipalities that could discharge wastewater, stormwater, or other pollutants into water bodies must obtain a UPDES permit to minimize impacts to water quality.

UDOT has been issued a statewide municipal separate storm sewer system (MS4) permit (UTS000003) that allows the discharge of stormwater from transportation facilities to waters of the state. In addition to managing stormwater runoff during construction through the implementation of a stormwater pollution prevention plan (SWPPP), UDOT must address postconstruction stormwater runoff from new and redeveloped roads in accordance with its permit requirements. With regard to the I-15: Farmington to Salt Lake City Project, UDOT must, to the extent practical, evaluate permanent stormwater management BMPs (such as detention basins, vegetated swales, or infiltration trenches) that minimize impacts to surface water quality from the discharge of additional stormwater runoff associated with the proposed improvements and project elements. BMPs are designed to remove pollutants from the runoff and/or reduce the total volume of stormwater runoff that is discharged.

3.11.2.1.4 Groundwater Discharges

The Utah Water Quality Board classifies aquifers according to their quality and use (such as pristine, ecologically important, sole source, irreplaceable, drinking water quality, limited use, and saline). The Utah Division of Water Quality publishes numeric standards for each class of aquifer (UAC R317-6-3). Any person can petition the Board to classify an aquifer. Aquifers in Utah are classified as follows:

- **Class IA – Pristine** is a source of groundwater that has a concentration of total dissolved solids (TDS) less than 500 milligrams per liter (mg/L) and no contaminant concentrations that exceed the groundwater quality standards listed in UAC R317-6-2. Class IA groundwater is protected to the maximum extent feasible from degradation from facilities that discharge or would probably discharge pollutants to groundwater (UAC R317-6-4).
- **Class IB – Irreplaceable Groundwater** is a source of groundwater for a community public drinking water system for which no reliable supply of comparable quality and quantity is available because of economic or institutional constraints.
- **Class IC – Ecologically Important Groundwater** is a source of groundwater discharge important to the continued existence of wildlife habitat.
- **Class II – Drinking Water Quality** is a source of groundwater that has a concentration of TDS between 500 mg/L and 3,000 mg/L and no contaminant concentrations that exceed the groundwater quality standards listed in UAC R317-6-2. Class II groundwater is protected for use as drinking water or other similar beneficial use with conventional treatment prior to use (UAC R317-6-4).
- **Class III – Limited Use** is a source of groundwater that has a concentration of TDS between 3,000 mg/L and 10,000 mg/L or that has one or more contaminants that exceed the groundwater quality standards listed in UAC R317-6-2. Class III groundwater is protected as a potential source of drinking water after substantial treatment or as a source for industry and agriculture.
- **Class IV – Saline Groundwater** is a source of groundwater that has a concentration of TDS greater than 10,000 mg/L.

In addition, the Division of Water Quality requires groundwater permits for activities that discharge pollutants into groundwater. However, some flood-control facilities do not require a groundwater discharge permit and are instead considered “permitted by rule” [UAC R317-6-6.2(A)(5) and R317-6-6.2(A)(7)]. Under this generalized permit by rule, UDOT is not required to obtain a groundwater discharge permit provided that the groundwater discharge does not cause groundwater to exceed groundwater quality standards or the TDS limits for the applicable class of aquifer. Flood-control systems that are considered “permitted by rule” include detention basins, catch basins, and wetland treatment facilities used for collecting or conveying stormwater runoff, such as BMPs that infiltrate stormwater.

3.11.2.1.5 Drinking Water Source Protection Plans and Protection Zones

Owners of public water systems are responsible for protecting sources of drinking water and for submitting a drinking water source protection plan to the Utah Division of Drinking Water. Such plans must identify drinking water source protection zones around each drinking water source (such as a lake, river, spring, or groundwater well), identify existing and potential sources of contamination, and propose methods to control sources of pollution within each zone.

For groundwater sources, the Utah Division of Drinking Water requires the drinking water source protection plan to identify four distinct drinking water source protection zones for each well.

- **Zone 1** is the area within a 100-foot radius of the wellhead.
- **Zone 2** is the area within a 250-day groundwater time of travel to the wellhead.
- **Zone 3** is the area within a 3-year groundwater time of travel to the wellhead.
- **Zone 4** is the area within a 15-year groundwater time of travel to the wellhead.

For surface water sources, the Utah Division of Drinking Water requires the drinking water source protection plan to identify distinct drinking water source protection zones for each surface water source. The zone descriptions for streams and rivers are generally as follows:

- **Zone 1** is the area from 100 feet downstream of the system intake to 15 miles above the intake and a half-mile on each side of the drainage.
- **Zone 2** is the area between 15 and 65 miles upstream from the intake and 1,000 feet on each side of the drainage.
- **Zone 3** is the area between 65 miles upstream from the intake and the edge of the watershed and 500 feet on each side of the drainage.
- **Zone 4** is the rest of the contributing watershed area outside Zones 1 through 3.

In addition to the surface water source protection zones, watershed management plans, antidegradation reviews, and standards for surface water, beneficial-use designations provide many drinking water source protection mechanisms. Land managers are responsible for protecting drinking water sources from contamination in coordination with the public water system owners. Cities, through zoning and land use, control which forms of development are allowable within each of the various drinking water source protection zones. In general, if transportation development within source protection Zone 1 is determined by the owner to harm the function of a well or surface water intake, methods to reduce and/or eliminate the harm may be proposed. See Section 3.11.2.1.6 below for a description of surface water and groundwater right points of diversion in the water quality and water resources evaluation area.

3.11.2.1.6 *Water Right Points of Diversion*

All waters in Utah are public property. The Utah Division of Water Rights (UDWRi) regulates the appropriation and distribution of water in Utah. A water right is a right to divert (remove from its natural source) and beneficially use water (UDWRi 2011). The defining elements of a typical water right include:

- A defined nature and extent of beneficial use
- A priority date
- A defined quantity of water allowed for diversion by flow rate (cubic feet per second) and/or volume (acre-feet)
- A specified point of diversion and source of water
- A specified place of beneficial use

Water right points of diversion are overseen by UDWRi and are locations from which a water right owner can legally divert water from a source and beneficially use it. Knowing the location of and protecting existing points of diversion is important from the perspective of ensuring that a project does not affect the physical point of diversion, the water quality, or the beneficial use of the existing points of diversion. For administrative purposes, water rights are classified into the following four categories based on their status (UDWRi 2023a):

- **Approved** water rights have been granted through an application to the State Engineer and belong to specific places of use.
- **Perfected** water rights are fully developed and have been certificated by the State Engineer, decreed by a court of law, or certificated legislatively. These rights are considered real property.
- **Terminated** water rights have been ended by a court order.
- **Unapproved** water rights have been applied for but have not been granted by the State Engineer.

3.11.3 **Affected Environment**

There are several surface water bodies (streams) in the water quality and water resources evaluation area. These streams are conveyed both in open-water streams and in stream structures, such as constructed channels, culverts, and underground pipe systems. These waters have assigned beneficial uses and antidegradation categories.

The groundwater resources in the evaluation area are protected to supply agricultural, industrial, and drinking water. For drinking water, these groundwater resources have designated groundwater source protection zones. There are also multiple water right points of diversion in the evaluation area.

Figure 3.13-1 through Figure 3.11-12 show the footprints for the Action Alternative by segment as well as the surface water bodies and the water right points of diversion by current status in the water quality and water resources evaluation area.

Figure 3.11-1. Water Resources in the North Segment (1 of 4)



Figure 3.11-2. Water Resources in the North Segment (2 of 4)



Figure 3.11-3. Water Resources in the North Segment (3 of 4)



Figure 3.11-4. Water Resources in the North Segment (4 of 4)



Figure 3.11-5. Water Resources in the North Central Segment



Figure 3.11-6. Water Resources in the South Central Segment



Figure 3.11-7. Water Resources in the South Segment (1 of 6)

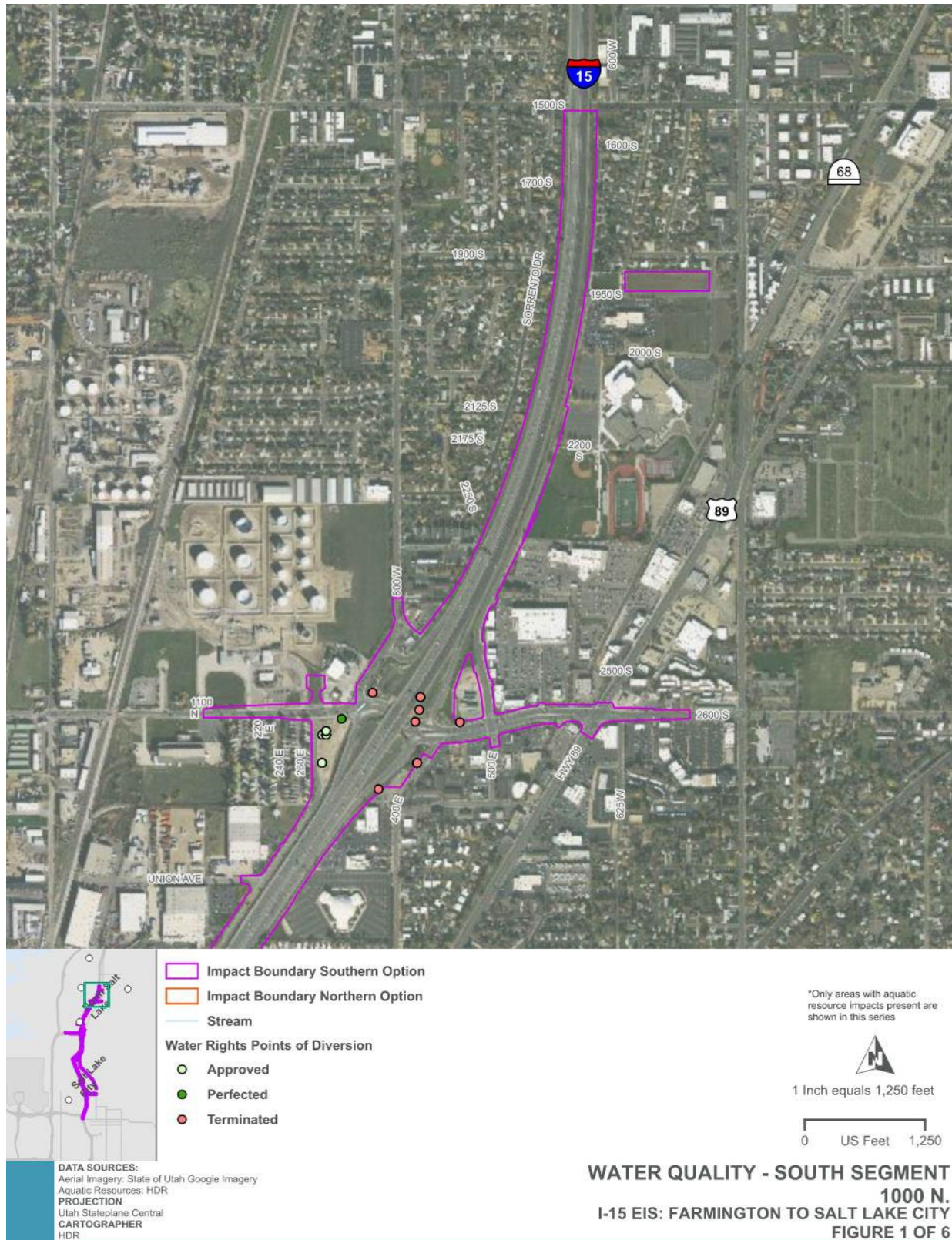


Figure 3.11-8. Water Resources in the South Segment (2 of 6)



Figure 3.11-9. Water Resources in the South Segment (3 of 6)

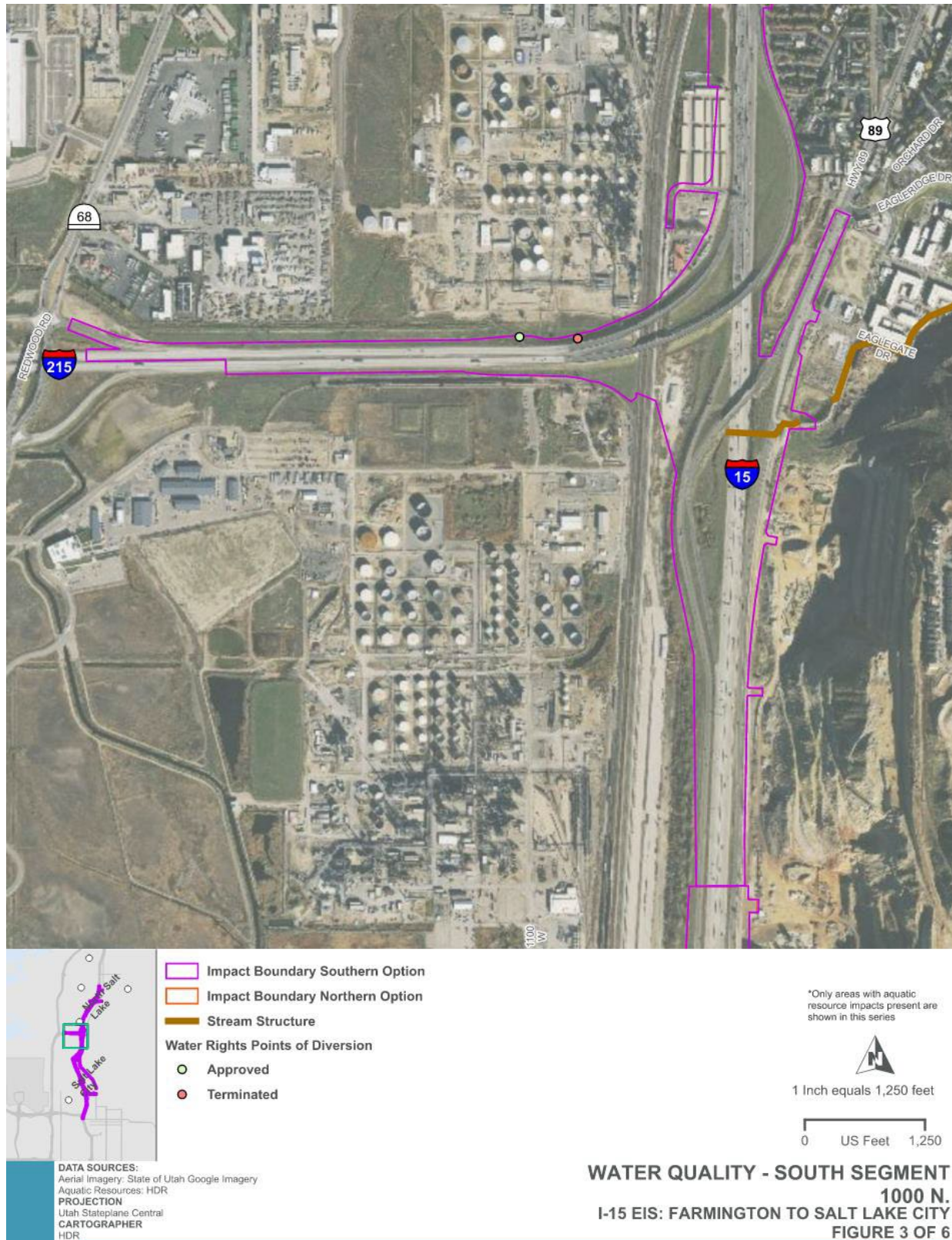


Figure 3.11-10. Water Resources in the South Segment (4 of 6)



Figure 3.11-11. Water Resources in the South Segment (5 of 6)



Figure 3.11-12. Water Resources in the South Segment (6 of 6)



3.11.3.1 Surface Waters and Beneficial-use Classifications

All surface water bodies in the water quality and water resources evaluation area originate in the Wasatch Mountains to the east of the evaluation area, flow generally from east to west through the evaluation area, and have similar beneficial uses and antidegradation requirements. Three of these surface water bodies (Farmington Creek, Ricks Creek, and Mill Creek) have assigned assessment units (AUs) that overlap with the evaluation area. An AU is an area that the state has defined to determine whether the beneficial uses of the surface waters are supported. Enough historical water quality data is available near the evaluation area footprint for Farmington Creek, Ricks Creek, and Mill Creek.

Several other waters cross the evaluation area (Steed Creek, Davis Creek, Lone Pine Creek, Barnard Creek, Parrish Creek, Deuel Creek, Stone Creek, Barton Creek, and City Creek). These streams have AUs that terminate upstream of the evaluation area. These streams have similar beneficial uses as Farmington Creek, Ricks Creek, and Mill Creek; however, in most cases, these streams enter a culvert or underground pipe system upstream of I-15, and flows are conveyed west past the evaluation area. Historical water quality data are not available near the project footprint, so the existing water quality for these streams is undefined.

Due to the presence of an established AU and the availability of information regarding water quality data and beneficial-use impairments, only Farmington Creek, Ricks Creek, and Mill Creek are evaluated further in Section 3.11. UDOT anticipates that the expected impacts to these surface water bodies are representative of the potential impacts to all of the surface water bodies because of their similar headwater conditions, flow patterns, upstream basin land uses (forested and then urban), and watershed size.

Table 3.11-3 summarizes the beneficial-use classifications of Farmington Creek, Ricks Creek, and Mill Creek.

Table 3.11-3. Beneficial Uses and Antidegradation Categories of Representative Surface Waters in the Water Quality and Water Resources Evaluation Area

Water Body	Assessment Unit / Reach	Reach Description	Beneficial Uses	Antidegradation Category
Farmington Creek	Farmington Creek-1	Farmington Creek from Farmington Bay Waterfowl Management Area to U.S. Forest Service boundary	2B – Infrequent primary-contact recreation 3B – Warm-water fishery/aquatic life 4 – Agricultural uses including irrigation of crops and stock watering	Category 3
Ricks Creek	Ricks Creek	Entire reach (Ricks Creek from I-15 to headwaters)	1C – Domestic/drinking water with prior treatment 2B – Infrequent primary-contact recreation 3A – Cold-water fishery/aquatic life 4 – Agricultural uses including irrigation of crops and stock watering	Category 3
Mill Creek	Mill Creek1-Davis	Mill Creek from State Canal to U.S. Forest Service boundary	2B – Infrequent primary-contact recreation 3B – Warm-water fishery/aquatic life 4 – Agricultural uses including irrigation of crops and stock watering	Category 3

Sources: UAC R317-2-12, *Category 1 and Category 2 Waters*, and UAC R317-2-13, *Classification of Waters of the State*, as in effect January 25, 2023

3.11.3.2 Impaired Surface Waters

If the water quality of a surface water or segment does not meet the quality standards for its beneficial uses, the water or segment is listed in the State of Utah's 2022 *Integrated Report* [commonly referred to as the 303(d) list] as impaired, and the Utah Division of Water Quality must develop a TMDL study to address pollutant sources and take measures to restore its beneficial uses.

Table 3.11-4 lists the impairments of Farmington Creek, Ricks Creek, and Mill Creek in the water quality and water resources evaluation area and the TMDL development status for each of these surface waters.

Table 3.11-4. Impaired Surface Waters in the Water Quality and Water Resources Evaluation Area

Impaired Water Body	Assessment Unit / Reach	Constituents or Measurements	Description of Impairment	TMDL Development Status
Farmington Creek	Farmington Creek-1	Dissolved oxygen Aluminum pH Copper <i>Escherichia coli</i> (<i>E. coli</i>)	Does not meet water quality standards for beneficial use 2B (infrequent primary-contact recreation) because of high levels of <i>E. coli</i> and beneficial use 3B (warm-water fishery and aquatic life) because of elevated concentrations of copper and aluminum and low levels of dissolved oxygen. pH measurements have also been recorded outside the allowable range for beneficial uses 2B (infrequent primary-contact recreation), 3B (warm-water fishery and aquatic life), and 4 (agricultural uses).	Not developed; low priority
Ricks Creek	Ricks Creek	Copper	Does not meet water quality standards for beneficial use 3A (cold-water fishery and aquatic life) because of elevated concentrations of copper.	Not developed; low priority
Mill Creek	Mill Creek1-Davis	Copper <i>E. coli</i> TDS	Does not meet water quality standards for beneficial use 2B (infrequent primary-contact recreation) because of high levels of <i>E. coli</i> , and beneficial uses 3A (cold-water fishery and aquatic life) and 4 because of elevated concentrations of copper and TDS, respectively.	Not developed; low priority

Source: UDWQ 2022

3.11.3.3 Groundwater Resources and Quality

The water quality and water resources evaluation area overlays protected groundwater basins or aquifers that are classified as Class IA – Pristine, Class II – Drinking Water Quality, and Class III – Limited Use. These aquifers are not classified as sole-source aquifers (aquifers that are the only source of drinking water for a community) (EPA 2023b).

The areas of Class IA – Pristine classification are mainly in the northern part of the evaluation area and generally include areas of Farmington, Centerville, Bountiful, and West Bountiful. Areas of Class II – Drinking Water Quality classification are mainly in the southern part of the evaluation area and generally include areas of Woods Cross, North Salt Lake, and Salt Lake City. Just south of the boundary between Davis County and Salt Lake County is an area that has groundwater classified as Class III – Limited Use.

According to the U.S. Geological Survey (USGS), the existing groundwater gradient in the evaluation area is generally from east to west, meaning that groundwater flows from the mountain bedrock and foothills through the evaluation area and toward the Great Salt Lake and the Jordan River (USGS 2008, 2011). Government facilities such as salt storage facilities and transportation and equipment storage facilities that could contribute chlorine, metals, salt, solvents, and petroleum are listed as potential contaminant sources if the materials are not appropriately managed. These facilities are not located in the project footprint area; however, UDOT owns and operates these facilities in other locations.

3.11.3.4 Drinking Water Source Protection Zones

This section discusses the drinking water source protection zones in the water quality and water resources evaluation area that could be impacted by the Action Alternative and those that are located within the project right-of-way. These areas have protection plans in place which include allowable activities, types of development, and measures to protect water quality from potential pollution sources in different zones.

In the evaluation area, six public water systems draw water from groundwater sources and have drinking water source protection plans in place. These systems are Bountiful City Water System, Lagoon Investment Company, North Salt Lake City Water System, Weber Basin Water Conservancy District – South, West Bountiful City Water System, and Woods Cross City Water System. Two of these systems have Zone 1 designations in the evaluation area – North Salt Lake City Water System has two and West Bountiful City Water System has four. Three systems within the project boundaries have Zone 2 designations – North Salt Lake City Water System has six, Weber Basin Water Conservancy District – South has two, and West Bountiful City Water System has four. With the exception of Lagoon Investment Company, each system has one or more Zone 3 source protection zones. All six systems have at least two Zone 4 source protection zones.

In the evaluation area, there are no public water systems that draw water from surface water sources and have drinking water source protection plans in place.

3.11.3.5 Water Rights

This section identifies water right points of diversion in the water quality and water resources evaluation area that would be impacted as a part of the Action Alternative and those that are located within the project right-of-way. For groundwater points (underground or abandoned wells), the point of diversion is typically the area around the wellhead. For surface waters (surface, drain, or point-to-point sources), the point of diversion could be a diversion structure in a stream or a collection system around a spring.

The Utah Division of Water Rights tracks water rights according to an inventoried water right number. Each water right number can represent one or more actual groundwater wells, springs, or surface water sources or a combination of these sources. Table 3.11-5 below summarizes the number of water rights by type in the project right-of-way. The approximate locations of points of diversion or clusters of water rights (shown as one point in the figures) are shown above in Figure 3.11-1 through Figure 3.11-12.

Table 3.11-5. Water Right Points of Diversion by Type and Status in the Project Right-of-way

Type of Diversion	Number of Sources	Status	Owners
Surface	8	P – Perfected (2), T – Terminated (6)	Clark Water Company (T), Bountiful Water Sub-Conservancy District (T), Beck Hot Spring Company (T), Dal-Tec Incorporated (T), Salt Lake Union Stock Yards (T), private owners (T, P)
Drain	1	P – Perfected (1)	Centerville City (P)
Underground	43	A – Approved (14), P – Perfected (24), T – Terminated (14), U – Unapproved (1)	Centerville City (A), West Bountiful City (A), City of North Salt Lake (A), Conoco Phillips (A), Monroc, Inc. (A), Underwood Environmental Consulting (A), U.S. Environmental Protection Agency (A), Utah Division of Environmental Response and Remediation (A), CDM Federal Programs Corporation (A), private owners (A, P, T, U), Clark Water Company (P, T), Corporation of the Presiding Bishop of the Church of Jesus Christ of Latter-day Saints (P), Professional United Builders Supply, Inc. (P), American Oil Company (P), West Bountiful City (P), City of North Salt Lake (P), Phillips/Tosco C/O ATC Associates, Inc. (T), U.S. Bureau of Reclamation (T), UDOT (T), Utah State Road Commission (T), West Bountiful City (T), American Oil Company (T), California Oil Company (T), South Davis County Water Improvement District (T), Wasatch Potato Flake Manufacturing Company (T), Zions Security Corporation (T), City of North Salt Lake (T), HollyFrontier Woods Cross Refining, LLC (T)
Point to point	1	P – Perfected (1)	Private owner (P)
Abandoned well	2	A – Approved (2)	Ecova Corporation (A), Underground Environmental Consulting (A)

Note that a single point of diversion in Figure 3.11-1 through Figure 3.11-12 above can represent more than one water right.

3.11.4 Environmental Consequences and Mitigation Measures

This section discusses the expected water quality impacts to surface water quality, groundwater quality, and water rights from the project alternatives.

3.11.4.1 Methodology

UDOT used the Stochastic Empirical Loading and Dilution Model (SELDLM), which was developed by FHWA and USGS, to estimate the effects of the I-15 project on water quality. UDOT assessed the impacts of solids, nutrients, and metals, which are common pollutants in highway stormwater runoff, and other pollutants of concern if a particular water body is listed as impaired for that pollutant (such as pH and aluminum for Farmington Creek). UDOT has prepared a supplemental technical report (UDOT 2023b) to accompany this EIS to document in greater detail the methodology that was used to determine the environmental consequences of the Action Alternative, specifically water quality modeling to determine the expected impacts to surface water resources.

These environmental consequences were determined by comparing the results of the modeling for the Action Alternative to the results of the No-action Alternative (which represents the existing conditions) to understand the changes that could occur as a result of implementing the Action Alternative. If the I-15: Farmington to Salt Lake City Project is implemented, UDOT intends to continue to use any existing water quality control facilities or BMPs and to design and construct any new facilities that are needed to address the additional impervious areas added with the Action Alternative.

In addition to the surface water modeling that is described in the supplemental technical report, UDOT assessed impacts to points of diversion using GIS files of water rights points of diversion (UDWRI 2023b) and drinking water source protection zones (UDDW 2023). These shapefiles were overlaid on the preliminary design for the Action Alternative to determine the expected impacts of the Action Alternative to drinking water source protection zones and water right points of diversion.

There are many existing I-15 stream crossings in the water quality and water resources evaluation area. The physical condition of these crossings would be evaluated during the final design stage of the project, and the appropriate action for each location would be taken. These actions might include replacing, lining, extending, or repairing conveyance structures, as well as a number of other methods or techniques that might be pursued to limit the impacts of the work. Mitigation measures for these actions are discussed in Section 3.11.4.4, *Mitigation Measures*.

3.11.4.2 No-action Alternative

This section describes the impacts to water quality and water resources from stormwater runoff from the No-action Alternative. With this alternative, I-15 and its on- and off-ramps would remain mostly the same as they are now, so there would be no additional impervious areas added and no change to the current effects of highway stormwater runoff on water quality and water resources. Stormwater would be treated as it is currently, since vehicles would continue to use the existing roads in the water quality and water resources evaluation area. Other projects might be completed without the I-15: Farmington to Salt Lake City Project; however, the impacts to water quality and water resources from these projects would be addressed through individual UPDES permits (construction and/or community MS4 permits) and other regulatory processes that are in place to protect water quality.

3.11.4.2.1 Surface Waters and Beneficial-use Classifications

With the No-action Alternative, there would be no change to the impacts from existing highway stormwater runoff to surface waters or existing beneficial-use classifications since the I-15: Farmington to Salt Lake City Project would not be implemented. UDOT prepared a version of the water quality model for the No-action Alternative to establish a baseline to compare the modeled water quality of the Action Alternative to the baseline (existing conditions); see Sections 2.3.1, 2.3.2, and 2.3.3 in the supplemental water quality technical report (UDOT 2023b) for a description of the baseline model and results for Farmington Creek, Ricks Creek, and Mill Creek, respectively. A summary of these results for both the No-action Alternative and the Action Alternative is provided in Table 3.11-6 below.

3.11.4.2.2 Groundwater Quality and Resources

The No-action Alternative would not additionally affect any groundwater resources or quality.

3.11.4.2.3 Drinking Water Source Protection Plans and Protection Zones

The No-action Alternative would not additionally affect drinking water source protection plans or protection zones.

3.11.4.2.4 Water Right Points of Diversion

The No-action Alternative would not additionally affect any water right points of diversion.

3.11.4.2.5 Stream Crossings

The No-action Alternative would not include actions that would additionally impact any existing stream crossings of I-15.

3.11.4.3 Action Alternative

This section describes the impacts to water quality and water resources from the Action Alternative. With this alternative, UDOT would construct an additional travel lane in each direction from Farmington to Salt Lake City. UDOT would also reconstruct several interchanges, which would result in a net increase of impervious area that contributes runoff. Any precipitation that would fall on the additional impervious area would be treated through the use of detention basins and other potential BMPs in accordance with UDOT's *Stormwater Quality Design Manual* (UDOT 2021).

For this EIS, the Action Alternative was divided into four segments: north, north central, south central, and south. Section 3.11.4.3.1 through Section 3.11.4.3.5 discuss the water quality and water resources impacts for each option and segment by type of impact. Section 3.11.4.3.6 summarizes the water quality and water resources impacts for each option and segment as well as the range of possible impacts for the Action Alternative.

3.11.4.3.1 Surface Waters and Beneficial-use Classifications

Highway stormwater runoff and its impacts to surface waters have been analyzed in a supplemental technical report accompanying this EIS (UDOT 2023b). This report presents the results of a modeling analysis for Farmington Creek (north segment), Ricks Creek (north segment), and Mill Creek (south central segment), including comparisons between existing conditions that represent the No-action Alternative and proposed conditions that represent the Action Alternative. Refer to Sections 2.3.1, 2.3.2, and 2.3.3 of the supplemental water quality technical report for model results for Farmington Creek, Ricks Creek, and Mill Creek, respectively. A summary of these results for both the No-action Alternative and the Action Alternative for the main contaminants of concern, which are those with existing impairments, is shown in Table 3.11-6. The technical report can also be consulted for additional information regarding the model setup, assumptions, and results for all contaminants of concern. The paragraphs following the table provide a written summary of the model results.

Table 3.11-6. No-action Alternative and Action Alternative Impacts to Impaired Waters and Numeric Water Quality Exceedances

Pollutant	Units	Most Stringent Surface Water Quality Standard (Beneficial Use)	% of Simulated Storms Equaling or Exceeding the Most Stringent Water Quality Standard Downstream of I-15		“Central Concentration Range” – Downstream Concentration Equaled or Exceeded during _____ of Simulated Storms			
			No-action Alternative	Action Alternative	No-action Alternative		Action Alternative	
					80%	20%	80%	20%
Farmington Creek								
Dissolved aluminum	µg/L	750 µg/L (3B ^a)	0.64	0.48	4.83	36.2	4.97	39.7
Dissolved copper	µg/L	65 µg/L (3B ^a)	8.27	9.36	4.95	37.4	4.56	38.1
pH	—	6.5-9.0 (2B, 3B ^a , 4)	5.53 ^c	7.18 ^c	7.03	7.96	7.00	7.94
Total phosphorus	mg/L	0.05 mg/L (3B ^{a,b})	50.9	48.5	0.0235	0.122	0.0238	0.130
Ricks Creek								
Dissolved copper	µg/L	65 µg/L (3A ^a)	14.6	15.0	20.4	56.1	20.4	53.2
Total phosphorus	—	0.05 mg/L (1C, 3A ^{a,b})	33.3	32.3	0.0240	0.0711	0.0235	0.0687
Mill Creek								
Dissolved copper	µg/L	65 µg/L (3B ^a)	7.07	7.49	4.16	31.5	4.34	33.6
Total phosphorus	mg/L	0.05 mg/L (3B ^{a,b})	31.0	31.0	0.0169	0.0649	0.0175	0.0681
Total dissolved solids (TDS)	mg/L	1,200 mg/L (4)	14.1	14.3	184	857	183	921

µg/L = micrograms per liter; mg/L = milligrams per liter

Note: This table only includes the constituents for which a stream is impaired and/or where the modeled central range of expected concentrations (between 20% and 80% of storms) exceeds the water quality standard. For full model results, see Sections 2.3.1 through 2.3.3 of the supplemental water quality technical report (UDOT 2023b).

^a One-hour criterion – chosen since impacts from stormwater runoff typically move downstream and dissipate quickly.

^b Pollution indicator.

^c Percent of pH values outside (more acidic or more basic than) the standard range of pH values.

North Segment Impacts

The impacts to surface waters and beneficial-use classifications in the north segment would be the same for both the Farmington 400 West Option and the Farmington State Street Option. These options would both include similar quantities of highway and roadway pavement in the same general areas that are associated with the I-15 mainline and the interchanges in Farmington and Centerville. Since the quantity of highway and roadway pavement is a main factor that can cause impacts to surface water quality, UDOT anticipates that any impacts to surface waters would be same for both options.

Both the Farmington Creek and Ricks Creek crossings of I-15 are also located in the north segment. The modeling shows that the concentration ranges for most of the pollutants analyzed in Farmington Creek and Ricks Creek downstream of the project area would not materially change and the concentrations would not exceed the surface water quality standards associated with beneficial uses of Farmington Creek (2B, 3B, and 4) and Ricks Creek (1C, 2B, 3A, and 4).

Farmington Creek is currently impaired for aluminum, copper, pH, dissolved oxygen, and *E. coli*. The analysis shows that additional pollutant loads would not contribute to the impairments for aluminum, copper, or pH. The modeled expected concentration ranges (observed between 80% and 20% of storms or the “central range”) for these pollutants show minor changes (less than 10%) between the No-action and Action Alternatives. Modeled expected central ranges are also below the standards for the creek’s beneficial uses. Dissolved oxygen and *E. coli* were not modeled directly since these characteristics are not typically contaminants of concern for highway projects (NCHRP 2019). Nutrients (phosphorus) can contribute to low dissolved oxygen levels; therefore, an analysis of phosphorus was conducted, and modeling showed that 50.9% of storms would exceed the pollution indicator level for the No-action Alternative and 48.5% for the Action Alternative, representing a decrease from existing conditions.

Ricks Creek is impaired for copper, and the analysis shows a *de minimis* (less than 1%) decrease to the modeled central range of downstream copper concentrations between the No-action Alternative (20.4 to 56.1 micrograms per liter [µg/L]) and the Action Alternative (20.4 to 53.2 µg/L). With the Action Alternative, the modeled concentration of total phosphorus would exceed the 0.05-µg/L concentration standard (pollution indicator level) for about 32% of storm events compared to the No-action Alternative, for which the model results show that concentrations of total phosphorus would exceed this pollution indicator for about 33% of simulated storm events. The Action Alternative represents a slight decrease from the No-action Alternative with respect to the percent of storm events that could exceed this pollution indicator for total phosphorus.

North Central Segment Impacts

The impacts to surface waters and beneficial-use classifications in the north central segment would be the same for both the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option. These options would both include similar quantities of highway and roadway pavement associated with the I-15 mainline and the proposed 400 North interchange improvements in Bountiful. Since the quantity of highway and roadway pavement is a main driver of impacts to surface water quality, UDOT anticipates that any impacts to surface waters would be the same for both options. The highway stormwater runoff concentration would be the same in this segment for both the No-action Alternative and the Action Alternative. Although the quantity of highway stormwater runoff could be greater with the Action Alternative, this runoff would be treated by BMPs (such as detention basins) before being discharged into a surface water body, and some of this runoff volume would be removed. Pollutant concentrations for the additional

volume of highway stormwater runoff would also be reduced by the BMPs; therefore, in-stream pollutant concentrations would be similar to the No-action Alternative.

There are no surface water bodies in the north central segment that were modeled as a part of the water quality analysis; however, since all of the surface water bodies that cross the evaluation area have similar headwaters and settings, UDOT anticipates that the water quality impacts to surface waters would be similar to the impacts to the creeks that were modeled.

South Central Segment Impacts

The impacts to surface waters and beneficial-use classifications in the south central segment would be the same for both the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option. These options would both include similar quantities of highway and roadway pavement that are associated with the I-15 mainline and the proposed 500 South interchange improvements in Bountiful. Since the quantity of highway and roadway pavement is a main factor that causes impacts to surface water quality, UDOT anticipates that any impacts to surface waters would be same for both options.

The Mill Creek crossing of I-15 is located in the south central segment. The modeling shows that the expected surface water concentration ranges for the pollutants analyzed in Mill Creek downstream of the project area would not exceed the surface water quality standards associated with Mill Creek's beneficial uses (2B, 3B, and 4) except for total phosphorus. The No-action and Action Alternatives would have the same effects. For both the No-action and Action Alternatives, the total phosphorus concentrations were modeled to exceed the 0.05-µg/L concentration standard (pollution indicator level) for 31% of storms.

Mill Creek is impaired for copper, TDS, and *E. coli*. The analysis shows that additional pollutant loads with the Action Alternative would not contribute to the impairments. The modeled central concentration ranges (observed between 80% and 20% of storms) for copper show minor increases (less than 10%) with the Action Alternative. For TDS, modeling shows a minor decrease for more frequent storms (80% of storms) and a minor increase for less frequent storms (20% of storms) between the No-action and Action Alternatives. Modeled central ranges are also below the standards for the creek's beneficial uses. *E. coli* was not modeled or analyzed since it is not typically a contaminant of concern for highway projects (NCHRP 2019).

South Segment Impacts

The impacts to surface waters and beneficial-use classifications in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. These options would both include similar quantities of increased highway and roadway pavement associated with the I-15 mainline and the proposed interchange improvements in Davis County and Salt Lake City that are part of this segment. Since the quantity of highway and roadway pavement is a main factor that causes impacts to surface water quality, UDOT anticipates that any impacts to surface waters would be the same for both options. The highway stormwater runoff concentration would be the same in this segment for both the No-action and Action Alternatives. Although the quantity of highway stormwater runoff would be greater with the Action Alternative, this runoff would be treated by BMPs (such as detention basins) to reduce pollutant concentrations before being discharged into a surface water body, and some of the runoff volume would be reduced per UDOT's stormwater manual. Therefore, in-stream pollutant concentrations would be similar to the No-action Alternative.

There are no surface water bodies in the south segment that were modeled as a part of the water quality model; however, since all of the surface water bodies that cross the evaluation area have similar headwaters and settings, UDOT anticipates that the water quality impacts to surface waters in this segment would be similar to the impacts to those creeks that were modeled.

3.11.4.3.2 Groundwater Quality and Resources

This section discusses the impacts to groundwater quality and resources for each segment of the Action Alternative. The groundwater of the principal aquifer underlying the water quality and water resources evaluation area is generally of high quality and is protected for drinking water and other uses of high-quality water.

North Segment Impacts

The impacts to groundwater quality and resources in the north segment would be the same for both the Farmington 400 West Option and the Farmington State Street Option. These options would both provide widening of I-15 along the existing corridor and interchange improvements in areas that are already used as a transportation land use. Transportation corridors are not specifically mentioned as potential pollution sources for these groundwater resources (USGS 2008, 2011); however, government facilities that provide salt storage and storage for transportation equipment (maintenance sheds) are listed as potential sources of groundwater pollution if materials are not properly managed. The north segment does not include building new roads to a level that would require additional maintenance sheds; therefore, UDOT does not anticipate that the north segment options would cause any additional impacts to groundwater quality and resources beyond the impacts that would be caused by the No-action Alternative.

Any infiltration that might occur from highway stormwater runoff BMPs to achieve the volume reduction goal in UDOT's *Stormwater Quality Design Manual* is "permitted by rule" because these facilities are not typically a major source of groundwater pollution. Therefore, UDOT did not conduct impact analysis of the No-action or Action Alternatives with regard to impacts to groundwater quality. UDOT anticipates that these facilities would not cause any additional impacts to groundwater quality beyond the impacts that would be caused by the No-action Alternative.

North Central Segment Impacts

The impacts to groundwater quality and resources in the north central segment would be the same as those in the north segment.

South Central Segment Impacts

The impacts to groundwater quality and resources in the south central segment would be the same as those in the north segment.

South Segment Impacts

The impacts to groundwater quality and resources in the south segment would be the same as those in the north segment.

3.11.4.3.3 Drinking Water Source Protection Plans and Protection Zones

The Action Alternative would impact groundwater drinking water source protection zones ranging in classification from Zone 1 to Zone 4. No drinking water source protection zones associated with surface water sources would be impacted by the Action Alternative. If the Action Alternative is selected, UDOT will collaborate with the public water system owners who have drinking water source protection zones in place (Bountiful City Water System, Lagoon Investment Company, North Salt Lake City Water System, Weber Basin Water Conservancy District – South, West Bountiful City Water System, and Woods Cross City Water System) to mitigate any impacts to water distribution infrastructure caused by the Action Alternative. These drinking water source protection zones currently have existing transportation infrastructure located inside their boundaries; therefore, UDOT anticipates that no additional mitigation measures would be necessary. A possible exception is in the event of encroachments into drinking water source protection Zone 1 (100-foot radius from the wellhead), since Zone 1 generally does not include transportation infrastructure, and construction in Zone 1 would require additional investigation and the design of specific mitigation measures (additional stormwater BMPs, routing stormwater out of the zone, or relocating the well) during the final design stage of the project.

North Segment Impacts

The impacts to groundwater drinking water source protection zones in the north segment would be the same for both the Farmington 400 West Option and the Farmington State Street Option. These options would impact one Zone 3 groundwater source protection zone associated with the Lagoon Investment Company and two Zone 4 groundwater source protection zones associated with the Weber Basin Water Conservancy District – South and the Lagoon Investment Company. The additional impervious area would not materially change the character of the existing transportation land uses in these zones.

North Central Segment Impacts

The impacts to groundwater drinking water source protection zones in the north central segment would be the same for both the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option. These options would both impact eight groundwater source protection zones associated with the West Bountiful City Water System (two each of Zone 1, Zone 2, Zone 3, and Zone 4). Four additional Zone 4 groundwater source protection zones would be impacted, two of which are associated with the Weber Basin Water Conservancy District – South, and one each associated with the Bountiful City Water System and the Woods Cross City Water System. The effects of the Action Alternative on the two Zone 1 protection zones, as well as the need for any special mitigation measures, would be investigated during final design. The additional impervious area would not materially change the character of the existing transportation land uses in the other zones.

South Central Segment Impacts

The impacts to groundwater drinking water source protection zones in the south central segment would be the same for both the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option. These options would not impact any Zone 1 groundwater source protection zones. One Zone 2 source protection zone associated with the Weber Basin Water Conservancy District – South would be impacted. Four Zone 3 source protection zones associated with the Woods Cross City Water System, the Bountiful

City Water System, and the Weber Basin Water Conservancy District – South would be impacted. Finally, eight additional Zone 4 groundwater source protection zones would be impacted; the impacted systems are the North Salt Lake City Water System (3), the Woods Cross City Water System (2), the Bountiful City Water System (1), the West Bountiful City Water System (1), and the Weber Basin Water Conservancy District – South (1). The additional impervious area would not materially change the character of the existing transportation land uses in these drinking water source protection zones.

South Segment Impacts

The impacts to groundwater drinking water source protection zones in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. These options would both impact 12 groundwater source protection zones associated with the North Salt Lake City Water System (one Zone 1, three Zone 2, four Zone 3, and four Zone 4 groundwater source protection zones). In addition, there would be impacts to two Zone 3 (one each) and three Zone 4 source protection zones that are associated with the Weber Basin Water Conservancy District (one Zone 4) and the Woods Cross City Water System (two Zone 4). The effects of the Action Alternative on the one Zone 1 protection zone, as well as the need for any special mitigation measures, would be investigated during final design. The additional impervious area would not materially change the character of the existing transportation land uses in the other zones.

3.11.4.3.4 Water Right Points of Diversion

This section discusses the water right points of diversion that would be impacted by the Action Alternative in each of the four project segments. If the Action Alternative is selected, UDOT will coordinate with the owners of these points of diversion during final design and construction to protect or replace the impacted points of diversion as necessary. The impacted points of diversion mentioned below could include points that are already impacted by the existing I-15 infrastructure.

North Segment Impacts

Farmington 400 West Option Impacts. This option would impact 20 underground water right points of diversion, 2 of which are approved, 12 of which are perfected, 5 of which are terminated, and 1 of which is unapproved. Additional impacts include 2 point-to-point, 1 surface, and 1 drain water right points of diversion that have perfected status.

Farmington State Street Option Impacts. This option would impact 20 underground water right points of diversion, 2 of which are approved, 12 of which are perfected, 5 of which are terminated, and 1 of which is unapproved. Additional impacts include 2 point-to-point, 2 surface, and 1 drain water right points of diversion that have perfected status and 1 more surface water right point of diversion that has a terminated status.

For both options, the water right owners that would be impacted are Centerville City, Clark Water Company, Phillips/Tosco C/O ATC Associates, Inc., U.S. Bureau of Reclamation, and private owners.

North Central Segment Impacts

The impacts to water right points of diversion in the north central segment would be the same for both the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option. These options would

impact 30 underground points of diversion, of which 6 are approved, 9 are perfected, and 15 are terminated. Three terminated surface water points of diversion would also be impacted. The water right owners that would be impacted in the north central segment are the Bountiful Water Sub-Conservancy District, West Bountiful City, Professional United Builders Supply, Inc., Corporation of the Presiding Bishop of the Church of Jesus Christ of Latter-day Saints, American Oil Company, UDOT, and private owners.

South Central Segment Impacts

The impacts to water right points of diversion in the south central segment would be the same for both the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option. These options would impact 29 abandoned wells (all with approved status) and 22 underground sources, of which 18 are approved and 4 are terminated. The water right owners that would be impacted in the south central segment are Underground Environmental Consulting, U.S. Environmental Protection Agency, Utah Division of Environmental Response and Remediation, HollyFrontier Woods Cross Refining, LLC, UDOT, and private owners.

South Segment Impacts

The impacts to water right points of diversion in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. These options would impact 37 underground water rights, of which 22 are terminated, 13 are approved, and 2 are perfected, as well as 5 surface water right points of diversion, of which 1 is perfected and 4 are terminated. There is also 1 abandoned well with approved status. Water right owners that would be impacted by the south segment are Ecova Corporation, Salt Lake Union Stock Yards, Beck Hot Spring Company, Al-Tec Incorporated, Conoco Phillips, Monroc, Inc., City of North Salt Lake, American Oil Company, UDOT, California Oil Company, Zions Security Corporation, South Davis County Water Improvement District, Wasatch Potato Flake Manufacturing Company, and private owners.

3.11.4.3.5 Stream Crossings

This section describes the stream crossings that would be impacted by the Action Alternative for each of the four project segments. If the Action Alternative is selected, UDOT will inspect the existing condition of all stream crossings and decide the proper course of action (replace, extend, or maintain the crossing) during the final design stage of the project. If UDOT determines that an action needs to be taken for a stream crossing, UDOT will follow the procedures and requirements in UDOT's *Drainage Design Manual of Instruction* (UDOT 2022a). For more information, see Section 3.12, *Ecosystem Resources*, and Section 3.13, *Floodplains*.

North Segment Impacts

The impacts to stream crossings in the north segment would be the same for both the Farmington 400 West Option and the Farmington State Street Option. These options would include modified or improved stream crossings in the same general areas as the existing stream crossings, and UDOT anticipates that the selected option would not impact the stream crossing design approach if one option is selected over the other.

North Central Segment Impacts

The impacts to stream crossings in the north central segment would be the same for both the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option. These options would include modified or improved stream crossings in the same general areas as the existing stream crossings, and UDOT anticipates that the selected option would not impact the stream crossing design approach if one option is selected over the other.

South Central Segment Impacts

The impacts to stream crossings in the south central segment would be the same for both the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option. These options would include modified or improved stream crossings that would occur in the same general areas as the existing stream crossings, and UDOT anticipates that the selected option would not impact the stream crossing design approach if one option is selected over the other.

South Segment Impacts

The impacts to stream crossings in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. These options would include modified or improved stream crossings that would occur in the same general areas as the existing stream crossings, and UDOT anticipates that the selected option would not impact the stream crossing design approach if one option is selected over the other.

3.11.4.3.6 Summary of Action Alternative Impacts

Table 3.11-7 summarizes the expected impacts to water quality and water resources from the Action Alternative. The table provides quantitative summaries of the number of groundwater drinking water source protection zones and the number of water right points of diversion that would be impacted by each option of the Action Alternative. No summary is given for impacts to surface waters and their beneficial uses (no substantial changes to water quality was modeled), groundwater quality (no impacts expected), or stream crossings since these impacts would be similar for all of the Action Alternative options.

Table 3.11-7. Summary of Impacts to Water Quality and Water Resources from the Action Alternative

Segment	Option	Impacts	
		Groundwater Drinking Water Source Protection Zones	Water Right Points of Diversion
North	Farmington 400 West Option	<u>Number of Impacts by Zone</u> Zone 1: 0; Zone 2: 0; Zone 3: 1; Zone 4: 2	<u>Number of Impacts by Status</u> Approved: 2; Perfected: 16; Terminated: 5; Unapproved: 1
	Farmington State Street Option	<u>Number of Impacts by Zone</u> Zone 1: 0; Zone 2: 0; Zone 3: 1; Zone 4: 2	<u>Number of Impacts by Status</u> Approved: 2; Perfected: 17; Terminated: 6; Unapproved: 1
North Central	Bountiful 400 North – Northern Option	<u>Number of Impacts by Zone</u> Zone 1: 2; Zone 2: 2; Zone 3: 2; Zone 4: 6	<u>Number of Impacts by Status</u> Approved: 6; Perfected: 9; Terminated: 18; Unapproved: 0
	Bountiful 400 North – Southern Option	<u>Number of Impacts by Zone</u> Zone 1: 2; Zone 2: 2; Zone 3: 2; Zone 4: 6	<u>Number of Impacts by Status</u> Approved: 6; Perfected: 9; Terminated: 18; Unapproved: 0
South Central	Bountiful 500 South – Northern Option	<u>Number of Impacts by Zone</u> Zone 1: 0; Zone 2: 1; Zone 3: 4; Zone 4: 8	<u>Number of Impacts by Status</u> Approved: 47; Perfected: 0; Terminated: 4; Unapproved: 0
	Bountiful 500 South – Southern Option	<u>Number of Impacts by Zone</u> Zone 1: 0; Zone 2: 1; Zone 3: 4; Zone 4: 8	<u>Number of Impacts by Status</u> Approved: 47; Perfected: 0; Terminated: 4; Unapproved: 0
South	Salt Lake City 1000 North – Northern Option	<u>Number of Impacts by Zone</u> Zone 1: 1; Zone 2: 3; Zone 3: 6; Zone 4: 7	<u>Number of Impacts by Status</u> Approved: 14; Perfected: 3; Terminated: 26; Unapproved: 0
	Salt Lake City 1000 North – Southern Option	<u>Number of Impacts by Zone</u> Zone 1: 1; Zone 2: 3; Zone 3: 6; Zone 4: 7	<u>Number of Impacts by Status</u> Approved: 14; Perfected: 3; Terminated: 26; Unapproved: 0
	Minimum impacts (sum of lowest impacts for each segment)	<u>Number of Impacts by Zone</u> Zone 1: 3; Zone 2: 6; Zone 3: 13; Zone 4: 23	<u>Number of Impacts by Status</u> Approved: 69; Perfected: 28; Terminated: 53; Unapproved: 1
	Maximum impacts (sum of highest impacts for each segment)	<u>Number of Impacts by Zone</u> Zone 1: 3; Zone 2: 6; Zone 3: 13; Zone 4: 23	<u>Number of Impacts by Status</u> Approved: 69; Perfected: 29; Terminated: 54; Unapproved: 1
	Range of impacts	<u>Number of Impacts by Zone</u> Zone 1: 3; Zone 2: 6; Zone 3: 13; Zone 4: 23	<u>Number of Impacts by Status</u> Approved: 69; Perfected: 28–29; Terminated: 53–54; Unapproved: 1

As shown above in Table 3.11-7, the same number of each groundwater source protection zone types would be impacted with any combination of Action Alternative options. Likewise, the same number of water right points of diversion of each status would be impacted with any combination of Action Alternative options with the exception of the options in the north segment. The Farmington State Street Option would impact one additional water right point of diversion with a perfected status and one additional water right point of diversion with terminated status compared to the Farmington 400 West Option.

3.11.4.4 Mitigation Measures

UDOT proposes the following mitigation measures to help ensure that surface water and groundwater quality is maintained.

- UDOT or its design consultants would follow all applicable requirements of UDOT's *Stormwater Quality Design Manual* (UDOT 2021) for the design of BMPs to meet MS4 permit and groundwater permit-by-rule requirements.
- UDOT or its design consultants would follow UDOT's *Drainage Manual of Instruction* for the design of stream crossings and culverts.
- UDOT or its construction contractors would prepare SWPPPs and obtain a UPDES permit for stormwater discharges associated with construction activities. Restoration efforts would also be monitored to ensure successful revegetation as typically required by an SWPPP.
- If construction activities require dewatering that would discharge project water to surface waters, UDOT or its construction contractors would obtain a UPDES Construction Dewatering or Hydrostatic Testing General Permit.
- UDOT would visually inspect and maintain stormwater quality BMPs so that they are functioning properly. These BMPs would likely include detention basins; however, other BMPs from UDOT's *Stormwater Quality Design Manual* might be chosen during the final design stage of the project.
 - During construction, inspectors for the project would certify that the BMPs were installed according to contract documents and UDOT standards.
 - After construction, UDOT would document and maintain records of inspections, any deficiencies identified during inspections, and the repairs performed on the BMPs.
- UDOT would comply with the Clean Water Act Section 404 permit, including any required Section 401 Water Quality Certifications and applicable Stream Alteration Permits for activities placing fill into waters of the United States and altering natural stream bed and banks.
- UDOT would maintain wetland hydrology and existing surface water conveyance patterns through the installation of culverts or other engineering alternatives through the roadway embankment.
- UDOT would collaborate with the public water system owners that have drinking water source protection zones in place that might be impacted by the Project during final design and construction to mitigate any impacts to water distribution infrastructure.
- UDOT would coordinate with the owners of any impacted water right points of diversion during final design and construction to protect or replace the impacted points of diversion as necessary.
- UDOT would design and implement countermeasures to mitigate potential impacts to a stream's natural flow pattern, velocity, profile, channel stability, aquatic habitats, streambank vegetation, and riparian habitats that could result from replacing, lining, extending, or repairing conveyance structures for the project.

3.12 Ecosystem Resources

3.12.1 Introduction

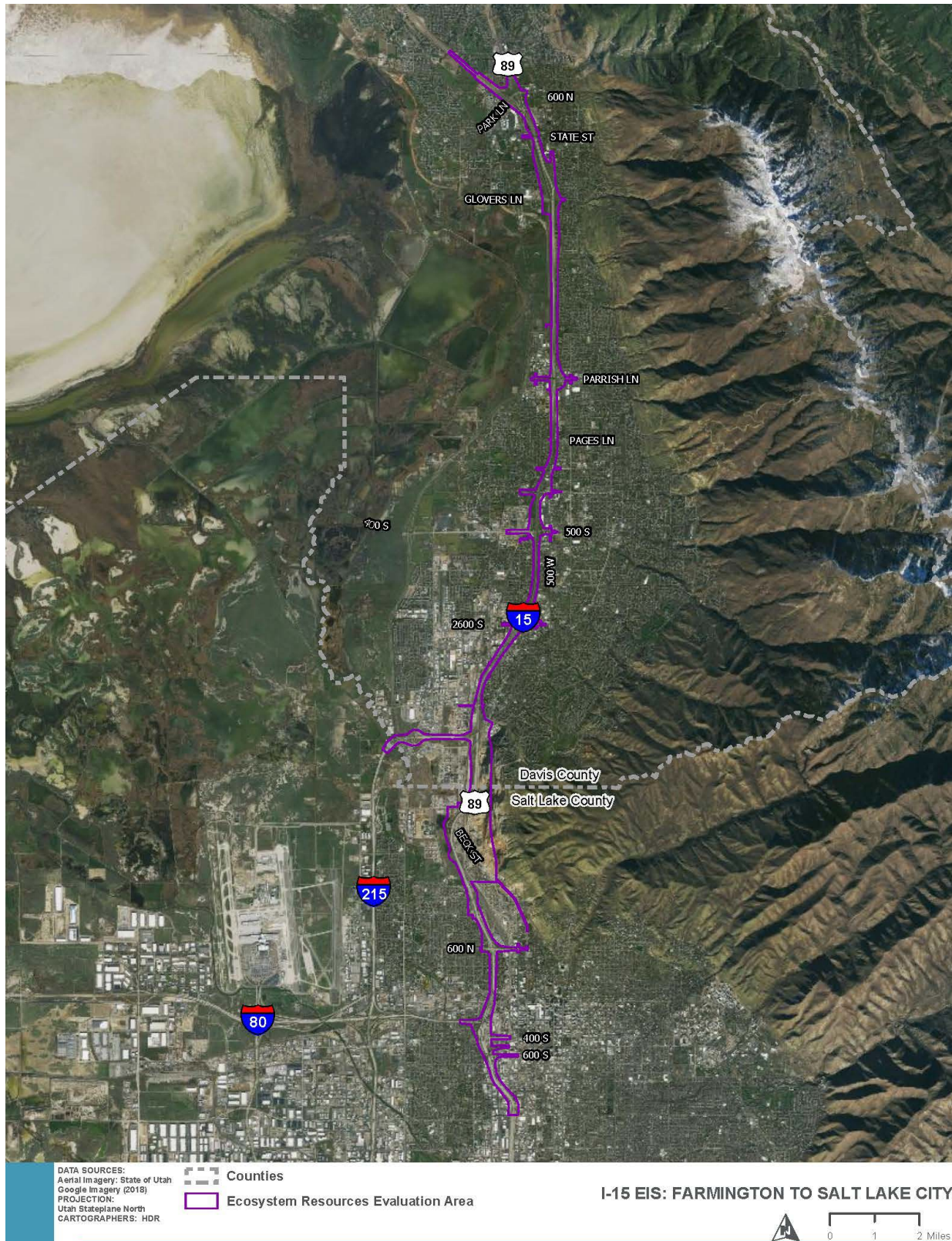
Section 3.12 describes the ecosystem resources, including the plant species, wildlife species, habitat types, and aquatic resources, in the ecosystem resources evaluation area and how these resources would be directly and indirectly affected by the project alternatives.

Ecosystem Resources Evaluation Area. The ecosystem resources evaluation area is located in Davis and Salt Lake Counties. It measures about 18 miles north-south and extends from the U.S. 89/Legacy Parkway/Park Lane interchange (I-15 milepost 325) in Farmington to the I-80 West/400 South interchange (I-15 milepost 308) in Salt Lake City (Figure 3.12-1). The width of the evaluation area varies. The boundaries for the evaluation area extend beyond the north and south termini of the project to include ramps that begin or end at these interchanges. In addition, the evaluation area includes each of the I-15 interchanges between the northern and southern termini and extends to the east and west to include the next major intersection. The evaluation area covers about 2,855 acres and ranges in elevation from about 4,210 to 4,710 feet.

What is the ecosystem resources evaluation area?

The ecosystem resources evaluation area is located in Davis and Salt Lake Counties. It measures about 18 miles north-south and extends from the U.S. 89/Legacy Parkway/Park Lane interchange in Farmington to the I-80 West/400 South interchange in Salt Lake City (Figure 3.12-1).

Figure 3.12-1. Ecosystem Resources Evaluation Area



3.12.2 Regulatory Setting

3.12.2.1 Threatened and Endangered Species

The Endangered Species Act (ESA; 16 USC Sections 1531–1544) establishes a framework to protect and conserve species listed as threatened or endangered and their habitats. The ESA prohibits the “take” of endangered species except when the take is incidental to, and not the purpose of, carrying out an otherwise lawful activity, or when take is for scientific purposes, or to enhance the propagation or survival of the species.

What is a take of a listed species?

The term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect an individual of a species listed as threatened or endangered (16 USC Section 1532).

Under Section 7 of the ESA, federal agencies must consult with the U.S. Fish and Wildlife Service (USFWS) before taking any action that will likely affect a federally listed threatened or endangered species or designated critical habitat for an endangered species. In addition, federal agencies must ensure that their actions are not likely to jeopardize the continued existence of any listed species or to destroy or adversely modify any designated critical habitat.

Under the Memorandum of Understanding described in Section 1.1, *Introduction*, in Chapter 1, *Purpose and Need*, UDOT has been assigned FHWA’s responsibilities for compliance with Section 7 requirements as part of the environmental review process for highway projects in Utah. A federal action agency (in this case, UDOT acting in the role of FHWA) makes an effect determination for a proposed action on each listed species in the evaluation area.

- **“No Effect” Determination.** A “no effect” determination means that the proposed action would not impact listed species or their designated critical habitats and does not require consultation or concurrence from USFWS.
- **“May Affect, but Not Likely to Adversely Affect” Determination.** A “may affect, but not likely to adversely affect” determination means that any effects on listed resources would be beneficial, insignificant, or discountable. If a federal agency makes this determination, it can satisfy its Section 7 consultation responsibilities by obtaining concurrence with its determination from USFWS.
- **“May Affect, Likely to Adversely Affect” Determination.** When listed resources are likely to be exposed to a proposed project’s actions and are likely to respond negatively to the exposure, a “may affect, and is likely to adversely affect” determination is made by the federal action agency. This determination requires the federal agency to formally consult with USFWS on the impacts of the proposed action. After formal consultation is completed, USFWS prepares its Biological Opinion on whether the proposed action will jeopardize the continued existence of the species or adversely modify its designated critical habitat.

3.12.2.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 USC Sections 703–712) makes it unlawful to pursue, hunt, take, capture, kill, possess, sell, barter, purchase, transport, export, or import any migratory bird, or any part, nest, or egg of any such bird, with the exception of taking game birds during established hunting seasons. Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* (January 10, 2001), directs

federal agencies taking actions likely to affect migratory birds to support the implementation of the Migratory Bird Treaty Act.

3.12.2.3 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC Sections 668–668d) makes it unlawful to take, import, export, sell, purchase, transport, or barter any bald or golden eagle or their parts, products, nests, or eggs. “Take” includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing eagles.

3.12.2.4 Candidate Conservation Agreements

USFWS considers candidate species to be those plants and animals that are candidates for listing under the ESA. These are species for which there is enough information regarding their biological status and threats to propose them as threatened or endangered, but listing is currently precluded by higher-priority listing activities. Candidate species are not subject to the legal protections of the ESA.

A Candidate Conservation Agreement (CCA) is a formal, voluntary agreement among USFWS and one or more parties to address the conservation needs of candidate species or species that could become candidates in the near future. Participants voluntarily commit to implement specific actions designed to remove or reduce threats to the covered species. The development of a CCA is one of the primary ways of identifying appropriate conservation efforts. Proactive conservation efforts for candidate species can, in some cases, eliminate the need to list them under the ESA.

3.12.2.5 Clean Water Act

The 1972 Clean Water Act (33 USC Sections 1251–1387) provides authority for the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers (USACE) to define waters of the United States. *Waters of the United States* are jurisdictional waters, currently defined in 40 CFR Section 120.2.

Section 404 of the Clean Water Act requires authorization from USACE to discharge dredged or fill material into any waters of the United States. Any person, firm, or agency planning to alter or work in waters of the United States, including the discharge of dredged or fill material, must first obtain authorization from USACE under Clean Water Act Section 404 and, if applicable, Section 10 of the Rivers and Harbors Act of 1899 (33 USC Section 403) for work within navigable waters of the United States. Additionally, Executive Order 11990, *Protection of Wetlands*, directs federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out agency responsibilities.

USACE issues permits to allow discharges into waters of the United States pursuant to the Section 404(b)(1) Guidelines. One of the key requirements in the guidelines is that a Section 404 permit cannot be issued for an alternative if there is another practicable alternative that would cause less adverse impact to aquatic resources. This requirement is commonly known as the requirement to select the “least environmentally damaging practicable alternative.” In addition, Executive

What are aquatic resources?

Aquatic resources include rivers, lakes, streams, creeks, natural ponds, and wetlands.

Order 11990 also states that agencies are directed to avoid new construction in wetlands unless an agency determines that there are no practicable alternatives to such construction.

3.12.3 Affected Environment

3.12.3.1 Methodology

3.12.3.1.1 Data Collection

UDOT used several methods to collect data regarding the ecosystem resources in the ecosystem resources evaluation area that could be affected by the action alternatives. These methods included conducting literature reviews, consulting with resource agency personnel, and interpreting aerial photographs. UDOT also conducted field surveys for wildlife; vegetation; rare, threatened, and endangered species; and aquatic resources during the fall seasons of 2021 and 2022.

UDOT obtained a species list from the USFWS Information, Planning, and Conservation System (IPaC) website for federally threatened, endangered, or candidate species that might occur in the evaluation area and/or might be affected by the action alternatives (USFWS 2022a). UDOT also consulted the USFWS Environmental Conservation Online System (ECOS) for a list of species under conservation agreement that are known to occur in Davis and Salt Lake Counties (USFWS 2022b). Additionally, UDOT obtained a species list from the Utah Natural Heritage Program online data request website to determine whether there are records of occurrence for any of the federally listed threatened, endangered, and candidate species or species listed under conservation agreement in the vicinity of the evaluation area (UDWR 2022). Reports from IPaC and the Utah Natural Heritage Program are provided in Attachment A, *Species Lists*, of the *Biological Resources Evaluation Report* (UDOT 2023c). This report is provided as Appendix 3L of this EIS.

The Utah Species Field Guide (UDWR, no date), NatureServe (no date), Audubon (no date), and Cornell Lab's All About Birds website (Cornell Lab of Ornithology 2019) were referenced for species habitat descriptions.

UDOT identified, mapped, and delineated wetlands and other aquatic resources in the evaluation area using the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (Lichvar and McColley 2008), and the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Curtis and Lichvar 2010). Aquatic resource boundaries were mapped through a combination of global positioning system (GPS)-based field mapping (using ArcGIS Field Maps software and a tablet) and desktop digitization referencing aerial images. These data were also used to calculate the area, lengths, and widths of aquatic resources in the evaluation area (see the *Aquatic Resources Delineation Report* [UDOT 2023d]). This report is provided as Appendix 3M of this EIS.

3.12.3.2 General Overview of the Ecosystem Resources Evaluation Area

The ecosystem resources evaluation area is part of the Moist Wasatch Front Footslopes subregion in the Central Basin and Range Ecoregion (Woods and others 2001). The Moist Wasatch Front Footslopes region supports the majority of Utah's population and commercial activity. This region is fed by perennial streams and aqueducts that originate in the adjacent Wasatch Range.

The evaluation area is located within two watersheds: the Jordan to the south (hydrologic unit code 16020204) and the Lower Weber to the north (hydrologic unit code 16020102) (USGS 2023). The Jordan River originates at Utah Lake; flows north through the Salt Lake Valley, west of the evaluation area; and discharges to the Great Salt Lake. A small portion of the Jordan River is within the evaluation area. The Weber River originates east of the evaluation area in the northwest corner of the Uinta Mountains where it continues west through Echo and Rockport Reservoirs, eventually terminating into the Great Salt Lake. Water in the evaluation area generally flows west toward the Jordan River or the Great Salt Lake. The surface waters in the evaluation area include nine named streams (Shepard Creek, Farmington Creek, Steed Creek, Davis Creek, Ricks Creek, DSB Drain, Barton Creek, Mill Creek, and the Jordan River), two named canals (Oil Drain and 600 North Drain), one unnamed canal, and many ditches. The DSB Drain is the convergence of Deuel Creek, Stone Creek, and Barton Creek converging in the evaluation area. In addition, multiple stream features cross the evaluation area in a culvert or a pipe including Barnard Creek, City Creek, Lone Pine Creek, and Parrish Creek.

In general, the evaluation area consists primarily of roads and road shoulders; commercial, industrial, and residential development; and disturbed uplands. There are several palustrine emergent wetlands in the evaluation area, some of which consist primarily of saltgrass (*Distichlis spicata*), Utah swampfire (*Sarcocornia utahensis*), and burningbush (*Bassia scoparia*) with some standing water. Others consist primarily of common reed (*Phragmites australis*) and saltgrass. Several open-water ponds, canals, and perennial streams were present at the time of the field surveys.

3.12.3.3 Special-status Plant Species

3.12.3.3.1 Threatened, Endangered, and Candidate Species

The IPaC report identified one federally listed threatened plant species, Ute ladies'-tresses (*Spiranthes diluvialis*), that might occur in the ecosystem resources evaluation area and/or might be affected by the project. The evaluation area does not include designated or proposed critical habitat for this species, nor does the evaluation area include potentially suitable habitat for this species. In addition, no known occurrences of Ute ladies'-tresses have been previously mapped in the evaluation area.

3.12.3.4 Special-status Wildlife Species

3.12.3.4.1 Threatened, Endangered, and Candidate Species

The IPaC report identified one federally listed threatened bird species, yellow-billed cuckoo (*Coccyzus americanus*), and one candidate insect species, monarch butterfly (*Danaus plexippus*), that might occur in the ecosystem resources evaluation area and/or might be affected by the project. The evaluation area does not include designated or proposed critical habitat for either species, and potentially suitable habitat does not exist in the evaluation area for yellow-billed cuckoo. Potentially suitable habitat could exist in the

evaluation area for monarch butterfly; however, no milkweed plants (*Asclepias* spp.), an essential feature of quality monarch habitat, were observed during the field survey. Monarch butterfly habitat is described below.

Monarch Butterfly. In the spring, summer, and early fall, monarch butterflies can be found wherever there are milkweeds in fields, meadows, and parks. They overwinter in the cool, high mountains of central Mexico and woodlands in central and southern California. Milkweed is an essential feature of quality monarch habitat. Female monarch butterflies lay their eggs on the underside of young leaves or flower buds of milkweed. Common places where milkweed grows include short- and tall-grass prairies, livestock pastures, agricultural margins, roadsides, wetland and riparian areas, sandy areas, and gardens. In addition to milkweed, other nectar sources, trees for roosting, and close proximity to water are key components of monarch habitat (Western Association of Fish and Wildlife Agencies 2019).

3.12.3.4.2 Species Listed under Conservation Agreement

UDOT consulted the USFWS ECOS for a list of species listed under conservation agreement that are known to occur in Davis and Salt Lake Counties. One amphibian species, Columbia spotted frog (*Rana luteiventris*) and two fish species, Bonneville cutthroat trout (*Oncorhynchus clarkii utah*) and least chub (*Lotichthys phlegethontis*), were identified. There is no suitable habitat in the evaluation area for Bonneville cutthroat trout or least chub. However, potentially suitable habitat exists for Columbia spotted frog in the ecosystem resources evaluation area. Columbia spotted frog habitat is described below.

Columbia Spotted Frog. Columbia spotted frogs are highly aquatic and require permanent quiet water. They usually live at the grassy/sedgy margins of streams, lakes, ponds, springs, and marshes and use stream-side small mammal burrows as shelter. Breeding typically occurs in small pools or ponds with little or no current surrounded by dense aquatic vegetation. The canals, open-water ponds, perennial streams, and ditches with relatively permanent sources of water in the evaluation area provide potentially suitable habitat for Columbia spotted frogs. No Columbia spotted frogs were observed during field surveys.

3.12.3.4.3 Migratory Birds

The IPAC report identified 20 birds of particular concern because they either are listed on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in the ecosystem resources evaluation area. Potentially suitable breeding or nesting habitat exists in the evaluation area for 4 of the 20 identified species (Black tern [*Chlidonias niger*], long-eared owl [*Asio otus*], marbled godwit [*Limosa fedoa*], and willet [*Tringa semipalmata*]). The habitat for these 4 species is described below.

Black Tern. Breeding habitat for black terns includes freshwater marshes, rivers, lakes, and wet meadows. Nests are typically placed near fresh open water with extensive marsh vegetation and sometimes in wet meadows. Tropical coasts provide winter habitat. There is potentially suitable breeding and nesting habitat in the evaluation area in a marsh north of Park Lane between I-15 and U.S. 89 in Farmington (see Figures 2 and 3 in the *Biological Resources Evaluation Report* in Appendix 3L of this EIS). Freshwater marshes consisting of common reed, reed canarygrass (*Phalaris arundinacea*), and broadleaf cattail (*Typha latifolia*) occur near open water in this area.

Long-eared Owl. Long-eared owls are found throughout Utah, especially where woodlands are bordered by open habitats. They roost and nest in deciduous and coniferous woodlands, orchards, parks, and other dense vegetation, and forage in open grasslands or shrublands. Nest sites are usually in a tree, sometimes

in a giant cactus or on a cliff ledge, typically in nests abandoned by other birds. There is potentially suitable breeding and nesting habitat in the evaluation area in a woodland north of Park Lane between I-15 and U.S. 89 in Farmington (see Figures 2 and 3 in the *Biological Resources Evaluation Report* in Appendix 3L of this EIS). The woodland is bordered by wet meadow, marsh, and upland habitats as well as Park Lane.

Marbled Godwit. Marbled godwits breed in meadows, short-grass prairies, pastures, and marshes. Nests are placed on the ground, usually in a dry spot in short grass fairly close to water. Winter habitat includes coastal mudflats, estuaries, and beaches. They are common migrants in northern Utah, especially in areas around the Great Salt Lake and Utah Lake. There is potentially suitable breeding and nesting habitat in the evaluation area in a wet meadow complex west of I-15 between about 1800 North and 2300 North in Salt Lake City and in marshes north of Park Lane in Farmington (see Figures 2 and 4 in the *Biological Resources Evaluation Report* in Appendix 3L of this EIS). The wet meadows in Salt Lake City are adjacent to open water and consist of Pursh seepweed (*Suaeda calceoliformis*), Utah swampfire, burningbush, and saltgrass. The marshes in Farmington consist of common reed, reed canarygrass, and broadleaf cattail and occur near open water in this area.

Willet. Willets prefer to inhabit shorelines of marshes, wet meadows, mudflats, coastal beaches, and lakes. Birds nest in salt marshes, barrier islands, and beaches in eastern North America and near marshes, wet meadows, and wet fields in western North America. Nests are built on the ground in marshy areas or in grassland habitat near water. Large expanses of grasslands are required for nesting and foraging. There is potentially suitable breeding and nesting habitat in the evaluation area in a wet meadow complex west of I-15 between about 1800 North and 2300 North in Salt Lake City and in marshes north of Park Lane in Farmington (see Figures 2 and 3 in the *Biological Resources Evaluation Report* in Appendix 3L of this EIS). The wet meadows are adjacent to open water and consist of Pursh seepweed, Utah swampfire, burningbush, and saltgrass. The marshes in Farmington consist of common reed, reed canarygrass, and broadleaf cattail and occur near open water in this area.

Bald Eagles and Golden Eagles. The evaluation area does not provide suitable nesting habitat for bald eagles or golden eagles.

3.12.3.5 Aquatic Resources

A total of 99.86 acres of aquatic resources were delineated in the ecosystem resources evaluation area. These resources consist of 70.95 acres of palustrine emergent wetlands, 5.39 acres of mudflats, 2.28 acres (7,104 linear feet) of perennial stream channels, 0.21 acre (1,733 linear feet) of intermittent stream channels, 3.80 acres (18,223 linear feet) of ditches, 0.96 acre (2,338 linear feet) of canals, and 16.27 acres of open-water ponds. The characteristics of delineated aquatic resources are summarized in the aquatic resources delineation report for the I-15 project (UDOT 2023d).

The jurisdictional status of delineated aquatic resources is subject to determination by USACE. Aquatic resources in the evaluation area do not have an identifiable connection to interstate or foreign commerce, and they do not include any interstate waters or a traditional navigable waterbody (TNW). Relatively permanent waters in the evaluation area eventually drain to the Great Salt Lake, a TNW.

3.12.3.5.1 Wetlands

Wetlands were delineated in the ecosystem resources evaluation area as 99 separate polygons totaling 70.95 acres (UDOT 2023d). Based on the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin and others 1979), all of these polygons were identified as palustrine emergent wetlands.

Wetland communities in the evaluation area range in hydrologic regime from being inundated temporarily or only seasonally or intermittently saturated to inundated semipermanently or permanently. Common species in these communities include common reed, common spike-rush (*Eleocharis palustris*), hardstem bulrush (*Schoenoplectus acutus*), broadleaf cattail, foxtail barley (*Hordeum jubatum*), mountain rush (*Juncus arcticus* ssp. *littoralis*), sedges (*Carex* spp.), reed canarygrass, saltgrass, three-square (*Schoenoplectus pungens*), Utah swampfire, and western seepweed (*Suaeda occidentalis*).

Wetlands in the evaluation area perform physical, chemical, and biological functions.

- **Physical Functions.** Most wetlands in the evaluation area store surface and subsurface water, and wetlands along surface waters also retain particulates and dissipate energy.
- **Chemical Functions.** All wetlands in the evaluation area cycle nutrients and export organic carbon.
- **Biological Functions.** All wetlands in the evaluation area support wetland vegetation communities and animal communities that use wetland environments to complete life cycle requirements.

The extent to which each wetland provides these functions varies depending on characteristics such as condition, plant community composition, hydrogeomorphology, size, and land use.

3.12.3.5.2 Streams

A total of 2.28 acres (7,104 linear feet) of perennial stream channels and 0.21 acre (1,733 linear feet) of intermittent stream channels were delineated in the ecosystem resources evaluation area (UDOT 2023d). These resources consist of nine named streams: Shepard Creek, Farmington Creek, Steed Creek, Davis Creek, Ricks Creek, DSB Drain, Barton Creek, Mill Creek, and the Jordan River. Davis and Steed Creeks were identified as intermittent streams, and all others were identified as perennial streams.

As described in Section 3.12.3.2, *General Overview of the Ecosystem Resources Evaluation Area*, perennial streams in or near the evaluation area discharge into the Great Salt Lake and are used primarily as stormwater drainage. Most streams in the evaluation area have been straightened and channelized for urban development, although some segments support woody riparian vegetation and some segments maintain natural meanders. Common woody riparian species include boxelder (*Acer negundo*), Fremont cottonwood (*Populus fremontii*), narrowleaf cottonwood (*Populus angustifolia*), and Russian olive (*Elaeagnus angustifolia*).

The Jordan River is the largest stream in the evaluation area. Most of the aquatic resources in the southern portion of the evaluation area drain into the Jordan River. The width of the Jordan River in the evaluation area varies from about 40 to 70 feet, and its condition is moderately degraded with steep banks, high invasive species cover, and adjacent roadway disturbances. The one segment of the Jordan River in the evaluation area maintains natural meanders and supports some woody riparian vegetation.

The other named streams in the evaluation area are smaller perennial or intermittent streams with widths varying from 4 to 18 feet. All of these streams originate east of the evaluation area in the Wasatch Range

and were delineated as either perennial or intermittent based on UDOT's review of available resources and observed flow characteristics. These streams have been mostly straightened and channelized for urban development.

The primary functions of stream segments in the evaluation area that maintain natural meanders with low floodplain terraces include supporting riparian and wetland habitats, providing aquatic habitat, slowing runoff, and storing flood water. Channelized areas have limited floodplain functionality and are generally unable to support adjacent wetlands.

3.12.3.5.3 Mudflats

Four mudflats totaling 5.39 acres were delineated in the ecosystem resources evaluation area (UDOT 2023d). These features delineated as mudflats have overall absolute vegetation cover less than 5% and might or might not exhibit an OHWM. The OHWM of mudflats was indicated by physical characteristics including salt crust, lack of vegetation cover, and water marks. Mudflats in the evaluation area generally include a narrow fringe of higher-cover vegetation along the mudflat edges and little to no vegetation farther inside the mudflat. Common species along mudflat fringes include saltgrass, Pursh seepweed, red swampfire (*Salicornia rubra*), and little barley (*Hordeum pusillum*).

3.12.3.5.4 Open-water Ponds

Twenty open-water ponds totaling 16.27 acres were delineated in the ecosystem resources evaluation area (UDOT 2023d). Delineated open-water features generally consist of constructed impoundments such as stock ponds and stormwater basins, and some naturally occurring open-water ponds.

3.12.3.5.5 Canals and Ditches

A total of 0.96 acre (2,338 linear feet) of canals and 3.80 acres (18,223 linear feet) of ditches were delineated in the ecosystem resources evaluation area (UDOT 2023d). These resources consist of two named canals (Oil Drain and 600 North Drain) and 55 unnamed features. Of the 55 unnamed features, 1 was delineated as a canal and 54 were delineated as ditches.

All of these features appear to be entirely human-made to provide water delivery or drainage functions. Some segments of these features contain little vegetation, while others are dominated by upland vegetation. Some features contain hydrophytic vegetation along their banks and sometimes within channel features where these features are not regularly maintained. Conversely, drainage features that met all three wetland criteria parameters were delineated as a wetland rather than as a drainage or ditch feature.

3.12.4 Environmental Consequences and Mitigation Measures

This section discusses the direct impacts and indirect effects of the project alternatives on the ecosystem resources in the ecosystem resources evaluation area. Vegetation, wildlife, special-status species, and waters of the United States would continue to be affected by current and future use.

3.12.4.1 Methodology

Impacts to aquatic resources and migratory bird habitat were calculated using GIS software.

3.12.4.2 No-action Alternative

Because the I-15 project would not be implemented with this alternative, there would be no new impacts to resources in the ecosystem resources evaluation area resulting from project development. Vegetation, terrestrial and aquatic wildlife, special-status wildlife species, and waters of the United States would continue to be affected by current and future development.

3.12.4.3 Action Alternative

3.12.4.3.1 *Special-status Plant Species*

There would be no impacts to special-status plant species from the Action Alternative and segment options. The ecosystem resources evaluation area does not include designated or proposed critical habitat for Ute ladies'-tresses, nor does the evaluation area include potentially suitable habitat for this species.

3.12.4.3.2 *Special-status Wildlife Species*

UDOT identified potentially suitable habitat for one federally listed insect species (monarch butterfly), one species listed under conservation agreement (Columbia spotted frog), and four migratory birds of particular concern (black tern, long-eared owl, marbled godwit, and willet).

Monarch Butterfly. Milkweed is an essential feature of quality monarch habitat. No milkweed plants were observed during the field survey; therefore, impacts to monarch butterflies are unlikely. If possible, milkweed plants should be avoided if they are identified prior to the proposed work.

Columbia Spotted Frog. The canals, open-water ponds, perennial streams, and ditches with relatively permanent sources of water in the evaluation area provide potentially suitable habitat for Columbia spotted frogs. No Columbia spotted frogs were observed during field surveys.

As shown below in Table 3.12-1, *Summary of Impacts to Aquatic Resources in the Ecosystem Resources Evaluation Area by Segment and Option*, all segment options would fill and disturb perennial streams, canals, ditches, and open-water ponds, thereby eliminating these areas as potentially suitable habitat for Columbia spotted frogs. However, these resources are highly degraded and are surrounded by invasive vegetation species (common reed) and by commercial, highway, and road development. Given the degradation of these resources, the habitat is low quality and is unlikely to support Columbia spotted frog populations. Therefore, impacts to Columbia spotted frogs are unlikely.

Migratory Birds. Potentially suitable habitat was identified for four migratory bird species of particular concern: black tern, long-eared owl, marbled godwit, and willet. There is potentially suitable breeding and nesting habitat for all four species in the evaluation area in the marshes and woodlands north of Park Lane between I-15 and U.S. 89 in Farmington, and there is potentially suitable breeding and nesting habitat for marbled godwits and willets in the evaluation area in a wet meadow complex west of I-15 between about 1800 North and 2300 North in Salt Lake City. The habitat north of Park Lane in Farmington would not be impacted by any of the segment options, while both options in the south segment would convert 5.82 acres of the habitat west of I-15 between about 1800 North and 2300 North in Salt Lake City to transportation use.

Construction activities could take migratory birds and displace them from habitat near construction areas. If construction takes place during the nesting season for migratory birds and raptors (April 1 through August 15), birds could lose or abandon their nests. Disturbance by construction workers and equipment

might be substantial enough to cause stress to nesting birds and cause birds to abandon their nests and their young to be killed by predators. To mitigate these potential impacts to birds, including those protected by the Migratory Bird Treaty Act and in accordance with Executive Order 13186, UDOT will implement the mitigation measures in Section 3.12.4.4.2, *Mitigation Measures for Terrestrial and Aquatic Wildlife Impacts*.

3.12.4.3.3 Aquatic Resources

All segment options would convert aquatic resources to transportation use. Table 3.12-1 shows the impacts to aquatic resources by segment and option. The aquatic resource impacts with the Action Alternative would be about 30.24 acres. The impacts to palustrine emergent wetlands (the category of aquatic resources with the highest amount of impacts) would be about 17.93 acres. The south segment options would convert the greatest acreages of aquatic resources to transportation use, followed by the north segment options, the south central options, and then the north central options. The south segment options would have the greatest impacts to palustrine emergent wetlands. The differences in impacts between the options in each segment would be minor. Appendix 3K, *Aquatic Resources Impacts*, of this EIS provides a figure series showing the locations and acreages of the impacted aquatic resources.

As discussed in Section 3.12.3.5, *Aquatic Resources*, the jurisdictional status of delineated aquatic resources is subject to determination by USACE and could change during the jurisdictional determination process. Many of the features might be determined to be constructed features (such as ditches, canals, ponds, or detention basins) or might not be considered jurisdictional by USACE during the jurisdictional determination process.

Indirect Effects. Indirect effects on aquatic resources could occur from sediment discharges associated with stormwater, erosion, hydrologic modifications, and the establishment of noxious weeds. Most of these indirect effects could be reduced or eliminated through the mitigation measures listed in Section 3.12.4.4.3, *Mitigation Measures for Aquatic Resources Impacts*.

Table 3.12-1. Summary of Impacts to Aquatic Resources in the Ecosystem Resources Evaluation Area by Segment and Option

Aquatic Resource Type	Impacts by Segment and Option (acres)							
	North		North Central		South Central		South	
	Farmington 400 West Option	Farmington State Street Option	Bountiful 400 North – Northern Option	Bountiful 400 North – Southern Option	Bountiful 500 South – Northern Option	Bountiful 500 South – Southern Option	Salt Lake City 1000 North – Northern Option	Salt Lake City 1000 North – Southern Option
Palustrine emergent wetland	1.57	1.56	0.00	0.00	0.00	0.00	17.93	17.90
Perennial stream	0.36	0.36	0.01	0.01	0.04	0.04	0.00	0.00
Intermittent stream	<0.01	<0.01	0.00	0.00	0.00	0.00	0.00	0.00
Mudflats	0.00	0.00	0.00	0.00	0.00	0.00	1.29	1.29
Open-water ponds	0.93	0.93	0.00	0.00	0.00	0.00	5.94	5.94
Canals	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
Ditches	1.84	1.84	0.02	0.02	0.00	0.00	0.27	0.26
Total	4.70	4.69	0.03	0.03	0.04	0.04	25.48	25.44

3.12.4.4 Mitigation Measures

UDOT's best practices for project development include the following mitigation measures for ecosystem resources.

3.12.4.4.1 Mitigation Measures for Vegetation Impacts

All of the segment options would remove vegetation and could also introduce noxious species into the surrounding areas. To prevent further, permanent effects, UDOT would mitigate temporary impacts to vegetation once construction is complete and no further disturbance is anticipated. Mitigation would include the following measures:

- All fill materials brought onto the construction site would be required to be clean of any chemical contamination per UDOT's General Standard Specifications, Section 02056, *Embankment, Borrow, and Backfill*. Topsoil used for roadside stabilization or landscaping must meet UDOT's General Standard Specifications, Section 02912, *Topsoil*.
- The contractor would rip and stabilize any compacted soil and reseed it with native seed mixes.
- The contractor would be required to follow noxious weed mitigation and control measures identified in the most recent version of UDOT Special Provision Section 02924S, *Invasive Weed Control*.
- The contractor would stabilize all disturbed areas by following UDOT Standards, including topsoil, seeding, and installation of appropriate erosion-control measures.

3.12.4.4.2 Mitigation Measures for Terrestrial and Aquatic Wildlife Impacts

UDOT would implement the following mitigation measure to conserve and minimize impacts to migratory birds and in furtherance of Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*:

- Trees and shrubs would be removed during the non-nesting season (about August 15 to April 1). If this is not possible, UDOT or its contractor would arrange for preconstruction nesting surveys, to be conducted no more than 10 days before ground-disturbing activities, by a qualified wildlife biologist of the area that would be disturbed to determine whether active bird nests are present. If active nests are found, the construction contractor would coordinate with the UDOT Natural Resources Manager/Biologist to avoid impacts to migratory birds.

3.12.4.4.3 Mitigation Measures for Aquatic Resources Impacts

In order to fill jurisdictional wetlands and other aquatic resources as part of the project, UDOT must prepare a Clean Water Act Section 404 permit application and submit it to USACE for approval before construction. The permit application must contain a compensatory mitigation plan that describes the proposed mitigation efforts and how they would offset the functions and values eliminated by the selected alternatives. Compensatory mitigation could include any one or a combination of the following five methods: restoring a previously existing wetland or other aquatic site, enhancing an existing aquatic site's functions, establishing (that is, creating) a new aquatic site, preserving an existing aquatic site, and/or purchasing credits from an authorized wetland mitigation bank.

Potential temporary construction impacts to aquatic resources would be minimized through consideration of construction methods and use of BMPs such as silt fences and other erosion-control features in areas

adjacent to wetlands and streams. Any necessary temporary construction impacts to aquatic resources that are authorized by a Clean Water Act Section 404 permit would be restored through regrading the ground surface to natural contours and revegetating disturbed areas.

3.12.4.4 Threatened and Endangered Species Commitments

Since no federally threatened or endangered species and no critical habitat were identified in the ecosystem resources evaluation area, no mitigation is proposed.

3.13 Floodplains

3.13.1 Introduction

Section 3.13 discusses the floodplains in the floodplains evaluation area and the effects of the project alternatives on these floodplains. For a discussion of aquatic resources associated with floodplains, see Section 3.12, *Ecosystem Resources*.

Floodplains Evaluation Area. The floodplains evaluation area is the combined project right-of-way or footprint for all options that are part of the Action Alternative as shown below in Figure 3.13-2 through Figure 3.13-8, *Floodplains in the Floodplains Evaluation Area* (labeled as the impact boundary).

3.13.2 Regulatory Setting

Two terms that are used in floodplain regulatory guidance (summarized in Section 3.13.2.1, *Federal Emergency Management*, and Section 3.13.2.2, *Executive Order 11988, Floodplain Management*) are *100-year floodplain* and *100-year flood*.

Floods are usually described in terms of their statistical frequency. A 100-year floodplain is the area that would be affected by a 100-year flood. A 100-year flood (also referred to as a *base flood*) is a level of flood water that has a 1% chance of occurring in a given location in any given year.

This concept does not mean that such a flood will occur only once in 100 years. If a 100-year flood occurs during a given year, there would still be a 1% chance of a similar flood occurring in the same location the following year or even later in the same year.

The boundary of the 100-year flood is commonly used in floodplain mitigation programs to identify areas where the risk of flooding is significant. Any other statistical flooding frequency could be chosen for regulation depending on the degree of risk that is considered acceptable.

3.13.2.1 Federal Emergency Management

In response to escalating taxpayer costs for flood disaster relief, Congress established the National Flood Insurance Program (NFIP). This program is a voluntary mitigation program administered by the Federal Emergency Management Agency (FEMA), through which the federal government makes flood insurance available in those communities that practice sound floodplain management. This incentive encourages state and local governments to develop and implement floodplain-management programs. FEMA requirements for land management and use, and for identifying and mapping special flood hazard areas, are described in 44 CFR Parts 60 and 65, respectively.

In the 1970s and 1980s, FEMA performed location hydrologic and hydraulic studies to identify and map the areas with the highest risk of flooding within developed or developing areas of the communities participating in the NFIP. These FEMA studies resulted in Flood Insurance Rate Maps (FIRMs) that show the floodplain for each river, lake, or other surface water resource that was studied.

A *special flood hazard area* (SFHA) is the area that would be inundated by a 100-year flood, also referred to by FEMA as the base flood. NFIP regulations are based on these SFHAs; therefore, this analysis is focused on areas affected by a 100-year flood. Other types of zones representing greater or lesser flood risk may be defined. Special flood hazard areas are given a zone designation based on the level of detail of the FEMA study and the anticipated type of flooding. The following SFHA zones are located within the floodplains evaluation area (FEMA 2023c):

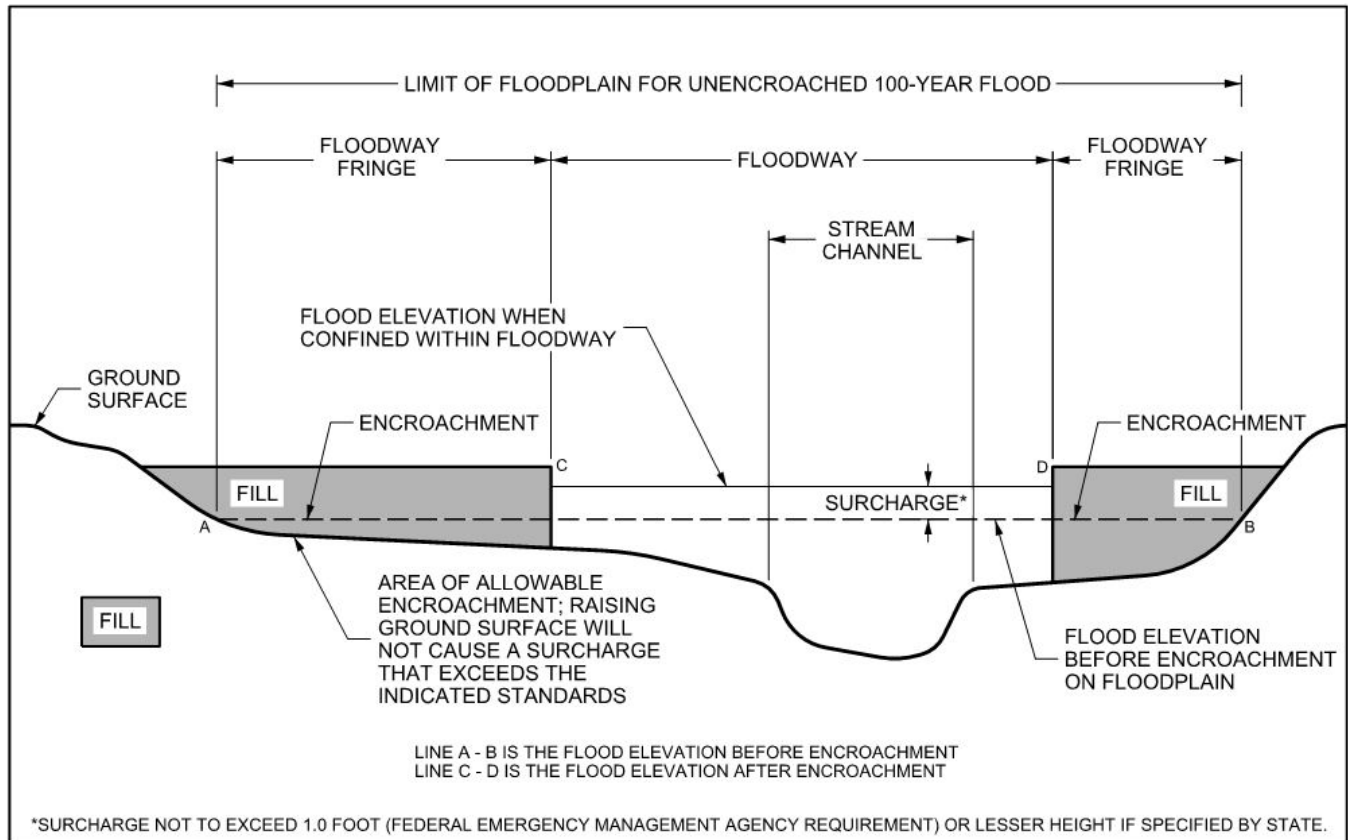
- **Zone A:** Areas that would be flooded by a 100-year flood. Detailed analyses have not been performed; therefore, no depths or base flood elevations (BFEs) have been established.
- **Zone AE:** Areas that would be flooded by a 100-year flood and where BFEs have been established through detailed analyses. Zone AE floodplains might also include a floodway.
- **Zone AH:** Areas that would be flooded by a 100-year flood (usually due to ponding) with average depths between one and three feet. BFEs derived from detailed hydraulic analyses are shown.
- **Zone AO:** Areas that would be flooded by a 100-year flood (usually due to shallow flooding [sheet flow] from river or stream hazards) with average depths between one and three feet. Flood depths derived from detailed hydraulic analyses are shown.
- **Zone X:** Areas of minimal or moderate flood hazard. Areas of minimal flood hazard are not shaded on the FIRM (indicating the area as being outside of the risk area for the 500-year flood), while areas of moderate flood hazard are shaded to indicate that the risk of flooding is between the 100-year and 500-year floods. This zone is present in the floodplains evaluation area but is not pertinent to impact analysis; therefore, impacts have not been quantified.

The 100-year floodplain for streams is the area in and around the stream that would be inundated by a 100-year flood. In AE Zones, this floodplain might consist of both a floodway and floodway fringe, as shown in Figure 3.13-1. The floodway is the defined stream channel and the adjacent areas that must be kept free of encroachment to pass the 100-year flood without increasing the water surface elevation by more than a designated height. This floodway fringe is the area between the floodway and the boundary of the floodplain.

What is a stream?

In Section 3.13, *stream* is used as a general term to describe waterways such as rivers, creeks, canals, and washes.

Figure 3.13-1. FEMA Floodplain Schematic



Source: FEMA 2022, volume I, page 45

3.13.2.2 Executive Order 11988, Floodplain Management

Executive Order 11988, *Floodplain Management* (May 24, 1977), established federal policy “to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.” This floodplain evaluation relies on the regulations that FHWA adopted based on Executive Order 11988 which govern the development of projects that could affect floodplains (23 CFR Part 650, Subpart A).

These regulations clearly state that the project must conform to 44 CFR Parts 60 and 65 as well as the floodplain management ordinance of the affected community and require the project proponent (in this case, UDOT) to not approve a project that involves a “significant encroachment” on a floodplain unless the significant encroachment is the “only practicable alternative” (23 CFR Section 650.113). What constitutes a “significant encroachment” is determined on a case-by-case basis by considering adjacent development. FEMA has set a 1-foot increase in the 100-year flood elevation as the upper limit of the allowable encroachment caused by the cumulative (past and future) encroachments from development. If the project impacts exceed the standards defined in the regulations, the project could be subject to conditional approval from FEMA in accordance with 44 CFR Section 65.12.

Under FHWA's regulations, a significant encroachment can arise from any of the following situations:

- A significant potential for interfering with a transportation facility that is needed for emergency vehicles or provides a community's only evacuation route
- A significant risk of upstream flooding
- A significant adverse impact to natural and beneficial floodplain values including flood conveyance, storage, and control; groundwater recharge; water quality function; and wildlife habitat and diversity

In addition, the FHWA regulations require that a hydraulic report be prepared during final design of the selected alternative to demonstrate that the requirements of 44 CFR Parts 60 and 65 have been met by the project. This hydraulic report would include the results of a detailed hydraulic analysis for each impacted drainage facility to confirm that the proposed bridges and culverts, with the roadway embankments and other features in place, would adequately convey flood waters. Additionally, UDOT would compare the elevations of the designed roadways to the elevations of the surrounding floodplains to determine the potential for floodplains to interfere with the transportation facility. These detailed analyses, together with roadway and drainage plans and profiles, would demonstrate compliance with various regulations, permitting requirements, and design criteria. Overall impacts to the floodplains and beneficial floodplain values would be measured against the impacts and requirements documented in the EIS.

3.13.3 Affected Environment

The streams that are located in the floodplains evaluation area originate in the Wasatch Mountains generally to the east of the evaluation area. All streams discharge to the Great Salt Lake or one of its other tributaries downstream of the evaluation area.

Information about the floodplains evaluation area was gathered from a variety of sources including FEMA's Community Status Book (FEMA 2023d), the Davis County flood insurance study (FEMA 2022), the Salt Lake County flood insurance study (FEMA 2021), National Flood Hazard Layer (NFHL) data (FEMA 2023a, 2023b), USGS topographic maps (USGS 2020a, 2020b), and the Utah Geographic Information Systems Portal.

3.13.3.1 Communities Participating in FEMA's National Flood Insurance Program

The floodplains evaluation area includes both incorporated and unincorporated areas of Davis County and Salt Lake County. All of the communities in the evaluation area participate in FEMA's NFIP, which requires communities to enact ordinances to protect natural floodplains, prevent damage to property, and protect the safety of the public. The identification numbers for each community are listed in Table 3.13-1.

Table 3.13-1. Identification Numbers for Communities Participating in the National Flood Insurance Program

Community	FEMA Community Identification Number
Davis County	490038
Farmington City	490044
Centerville City	490040
West Bountiful City	490062
Bountiful City	490039
Woods Cross City	490054
City of North Salt Lake	490048
Salt Lake County	490102
Salt Lake City	490106

Source: FEMA 2023d

3.13.3.2 Floodplains in the Floodplains Evaluation Area

Streams and floodplains in the floodplains evaluation area are described below and include named waterways and isolated areas for which regulatory floodplains are defined. All streams (unless otherwise noted) originate in the Wasatch Mountains and foothills to the east of the evaluation area and generally flow from east to west toward the Great Salt Lake. Effective floodplain maps for the evaluation area are based on the latest flood insurance studies performed for Davis County (FEMA 2022) and Salt Lake County (FEMA 2021); the latest Letters of Map Revision in 2011, 2016, and 2023; and Letters of Map Amendment from 2003 through 2023. (A Letter of Map Revision and a Letter of Map Amendment are FEMA's modifications to an effective floodplain map.) Stream names are based on the FEMA data and are consistent with the names found on the USGS Farmington (USGS 2020a) and Salt Lake City North (USGS 2020b) 7.5-minute topographic quadrangles unless otherwise noted.

In the following descriptions (from north to south in the evaluation area), references to Davis County and Salt Lake County refer to unincorporated parts of the county, while incorporated areas are referred to by the community name. Streams and floodplains in the evaluation area are shown in Figure 3.13-2 through Figure 3.13-8. In the figures, NHD refers to the National Hydrography Dataset.

Farmington Creek. Farmington Creek flows through Davis County in Farmington Canyon and through Farmington City mostly in an open channel. Within the floodplains evaluation area, Farmington Creek has Zone AE floodplains, including both a floodway and floodway fringe in Farmington. According to the FIRM, the 0.2%-annual-chance flood discharge (500-year flood) is contained in the existing culvert under I-15.

Steed Creek. Steed Creek flows through Davis County and Farmington mostly in an open channel. Near the floodplains evaluation area, Steed Creek enters a south running culvert east of the floodplains evaluation area that, according to the FIRM, contains the 1%-annual-chance event (100-year flood). At the south end of the culvert, Steed Creek has Zone AH floodplains in the floodplains evaluation area.

What is a regulatory floodplain?

A water body has a regulatory floodplain if the floodplain has been identified and mapped by FEMA.

Davis Creek. Davis Creek flows through Davis County and Farmington, mostly in an open channel. In the floodplains evaluation area, Davis Creek has Zone AE floodplains, including both a floodway and floodway fringe. The floodway fringe also includes overflow areas along I-15 that flow to the south of the floodway and connect to the Zone A floodplains from Lone Pine Creek. According to the FIRM, there is no specific information for the existing culvert under I-15; however, it can be assumed that the 0.2%-annual-chance flood discharge is contained in this culvert because this flood discharge is contained in several upstream culverts. On the west side of I-15, flows from Davis Creek contribute to Zone AE floodplains.

Great Salt Lake. The Great Salt Lake, one of the largest terminal lakes in the world, receives water from the Bear River, the Weber River, the Jordan River, and numerous streams (including many of the streams in the floodplains evaluation area). Additionally, water is received through direct precipitation and groundwater.

The lake levels of the Great Salt Lake fluctuate due to seasonal differences in precipitation and runoff. Flooding along the shoreline is also influenced by wind and wave action on the lake. Wind and waves on the lake will increase flooding levels in areas along the lake shore; however, the part of the Great Salt Lake floodplain that is in the floodplains evaluation area is beyond the anticipated wave surge zone and is designated as Zone AE (the area associated with a stillwater elevation). The designated base-flood elevation in the evaluation area is 4,217 feet.

Flooding associated with the Great Salt Lake also differs from riverine flooding (flooding associated with a linear water body) in duration. Riverine flooding will typically last for hours at peak stage, but flooding associated with the Great Salt Lake will take months to recede since lake levels will decline only in response to evaporation from the lake surface.

Lone Pine Creek. Lone Pine Creek flows through Davis County and Centerville in both open channels and culverts. In the floodplains evaluation area, Lone Pine Creek has Zone A floodplains in Farmington and Centerville that represent shallow flooding.

Ricks Creek. Ricks Creek flows through Davis County and Centerville in both open channels and culverts. In the floodplains evaluation area, Ricks Creek has Zone AH floodplains. According to the FIRM, the Ricks Creek culvert under I-15 contains the 1%-annual-chance event (100-year flood). On the west side of I-15, flows from Ricks Creek contribute to Zone AE floodplains.

Barnard Creek. Barnard Creek flows through Davis County and Centerville in both open channels and culverts. A short distance downstream of where Barnard Creek enters Centerville, a diversion structure creates a northern segment and a southern segment. In the floodplains evaluation area, Barnard Creek has Zone AH floodplains.

Parrish Creek. Parrish Creek flows through Davis County and Centerville in both open channels and culverts. According to the FIRM, the Parrish Creek culvert under I-15 contains the 1%-annual-chance flood discharge (100-year flood). In the floodplains evaluation area, there are Zone AO floodplains, most likely resulting from potential backup of a debris basin just east of I-15.

Deuel Creek. Deuel Creek flows through Davis County, Centerville, and West Bountiful in both open channels and culverts. According to the FIRM, the Deuel Creek culvert under I-15 contains the 1%-annual-chance flood discharge (100-year flood). There are no floodplains in the floodplains evaluation area on the east side of I-15; however, there are Zone AO floodplains associated with Deuel Creek on the west side of I-15.

Stone Creek. Stone Creek consists of North Fork Stone Creek and Stone Creek, both of which flow through Davis County and Bountiful in open channels and culverts. According to the FIRM, the culvert that conveys Stone Creek across I-15 contains the 1%-annual-chance flood discharge (100-year flood). In the floodplains evaluation area, Stone Creek has Zone AE floodplains with a floodway as Stone Creek flows north along the west side of I-15 before entering a culvert that conveys Stone Creek to the west.

Barton Creek. Barton Creek (shown as Holbrook Creek on the USGS Farmington 15-minute quadrangle [USGS 2020a]) flows through Davis County, Bountiful, and West Bountiful in open channels and culverts. According to the FIRM, the culvert that conveys Barton Creek across I-15 contains the 1%-annual-chance flood discharge (100-year flood). In the floodplains evaluation area, there are Zone AE floodplains on the east side of I-15 and Zone AE floodplains with a floodway on the west side of I-15 as Barton Creek flows northeast before it enters a west-flowing culvert. North of this culvert along the west side of I-15, there are Zone AO floodplains between Barton Creek and Stone Creek.

Mill Creek. Mill Creek flows through Davis County, Bountiful, Woods Cross, and West Bountiful in open channels and culverts. According to the FIRM, the culvert that conveys Mill Creek across I-15 contains the 1%-annual-chance flood discharge (100-year flood). In the floodplains evaluation area, there are Zone AE floodplains on both the east and west sides of I-15.

Floodplain Area near Center Street and I-15. Regulatory floodplains designated as Zone A are located on the south side of Center Street west of I-15 in the floodplains evaluation area. These Zone A floodplains are from an unnamed drainage that generally flows in a culvert along Center Street in North Salt Lake.

Floodplain Area near U.S. 89 and I-215. Regulatory floodplains designated as Zone A that are part of a detention basin are located on the east side of U.S. 89 near the I-215 interchange with I-15 in the floodplains evaluation area. These Zone A floodplains are part of an unnamed tributary in North Salt Lake.

Floodplain Areas near I-215 and Redwood Road. Regulatory floodplains designated as Zone AE with a base flood elevation of 4,217 feet are located on the north and south sides of I-215 east of Redwood Road in North Salt Lake in the floodplains evaluation area. There is an unnamed tributary that begins to the east of this area north of I-215; however, this area also appears to be connected to Zone AE floodplains that are associated with the Jordan River. The Jordan River originates south of the floodplains evaluation area at the outflow from Utah Lake in Utah County and flows generally north through Utah, Salt Lake, and Davis Counties.

Figure 3.13-2. Floodplains in the Floodplains Evaluation Area – North Segment (1 of 4)

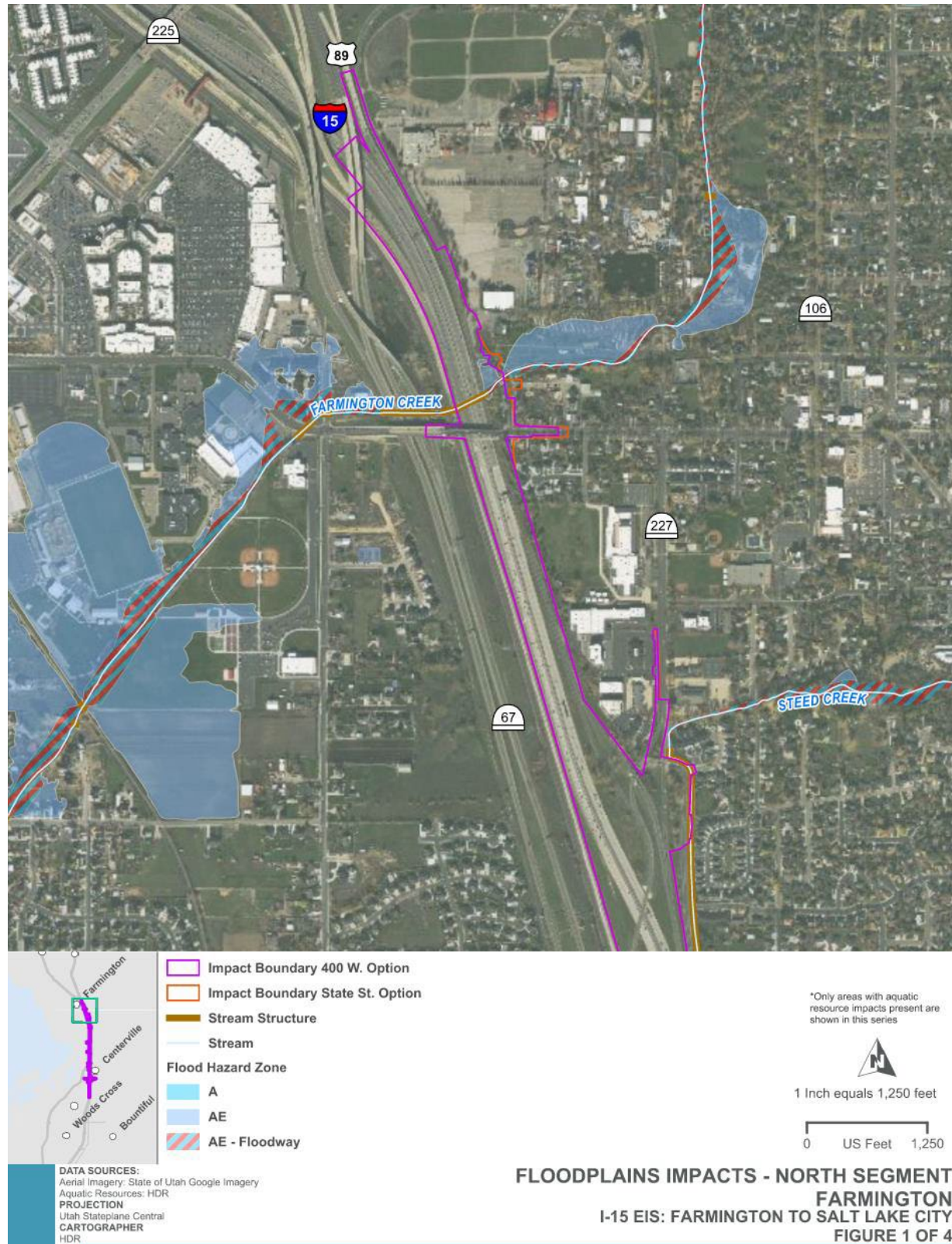


Figure 3.13-3. Floodplains in the Floodplains Evaluation Area – North Segment (2 of 4)

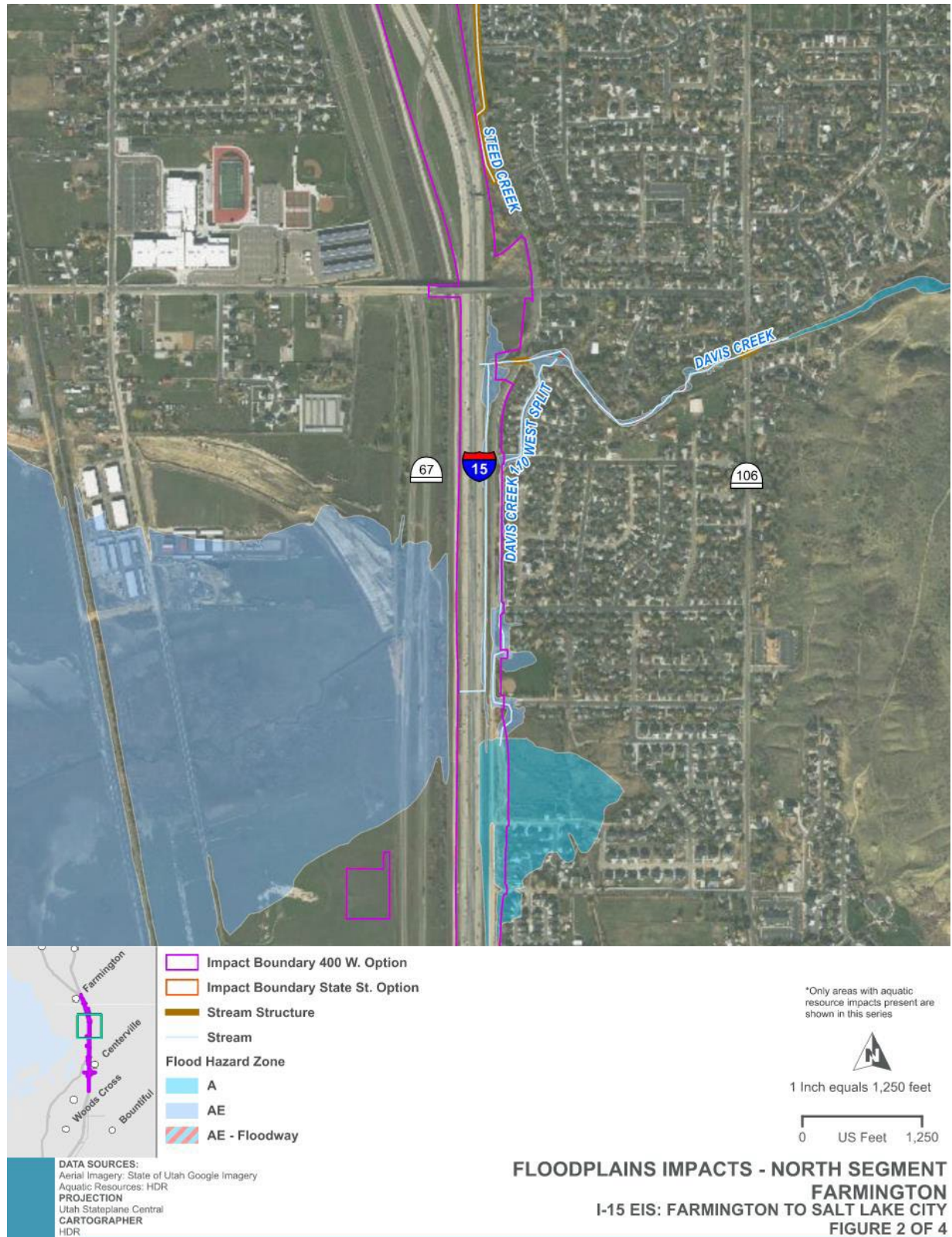


Figure 3.13-4. Floodplains in the Floodplains Evaluation Area – North Segment (3 of 4)



Figure 3.13-5. Floodplains in the Floodplains Evaluation Area – North Segment (4 of 4)



Figure 3.13-6. Floodplains in the Floodplains Evaluation Area – North Central Segment

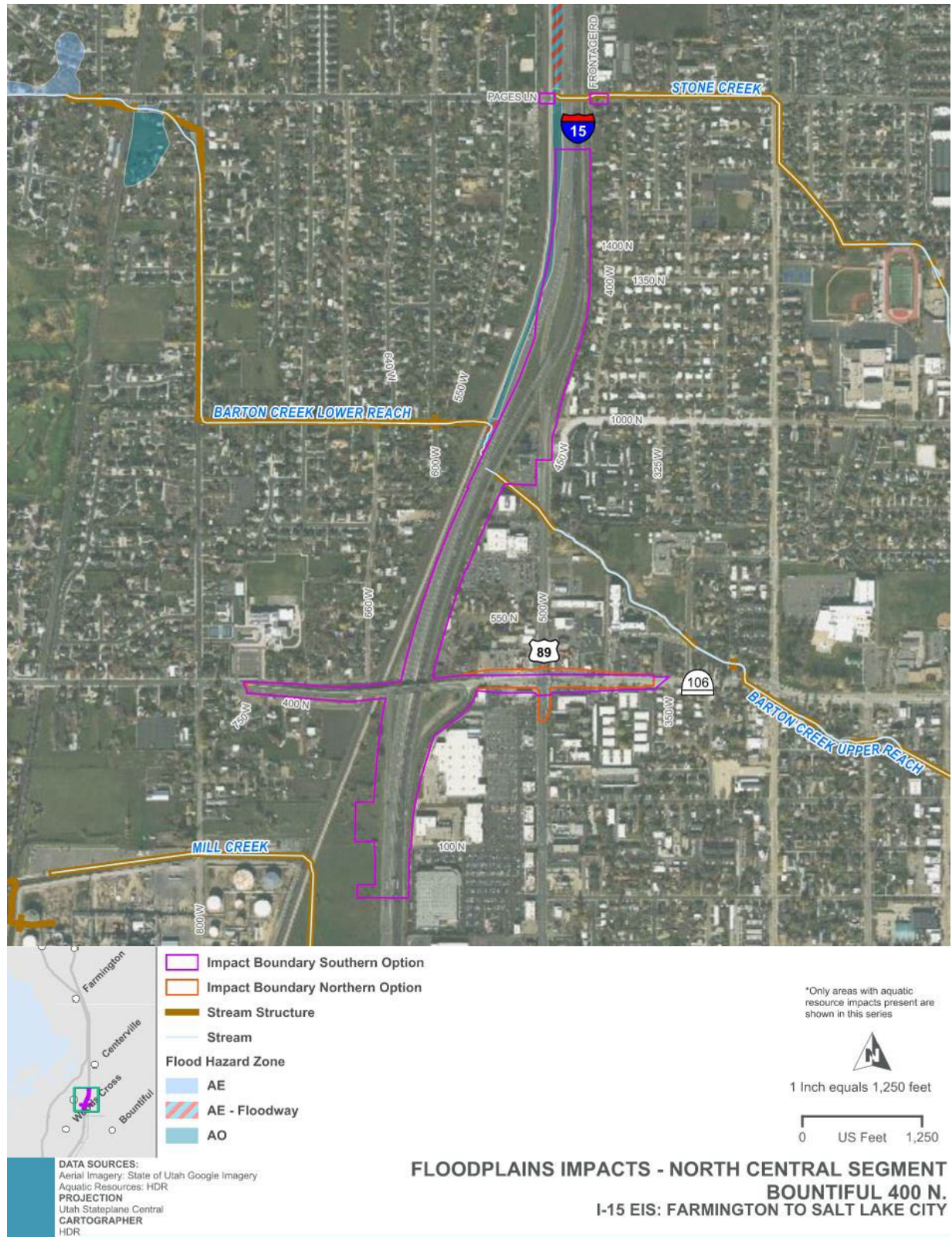


Figure 3.13-7. Floodplains in the Floodplains Evaluation Area – South Central Segment

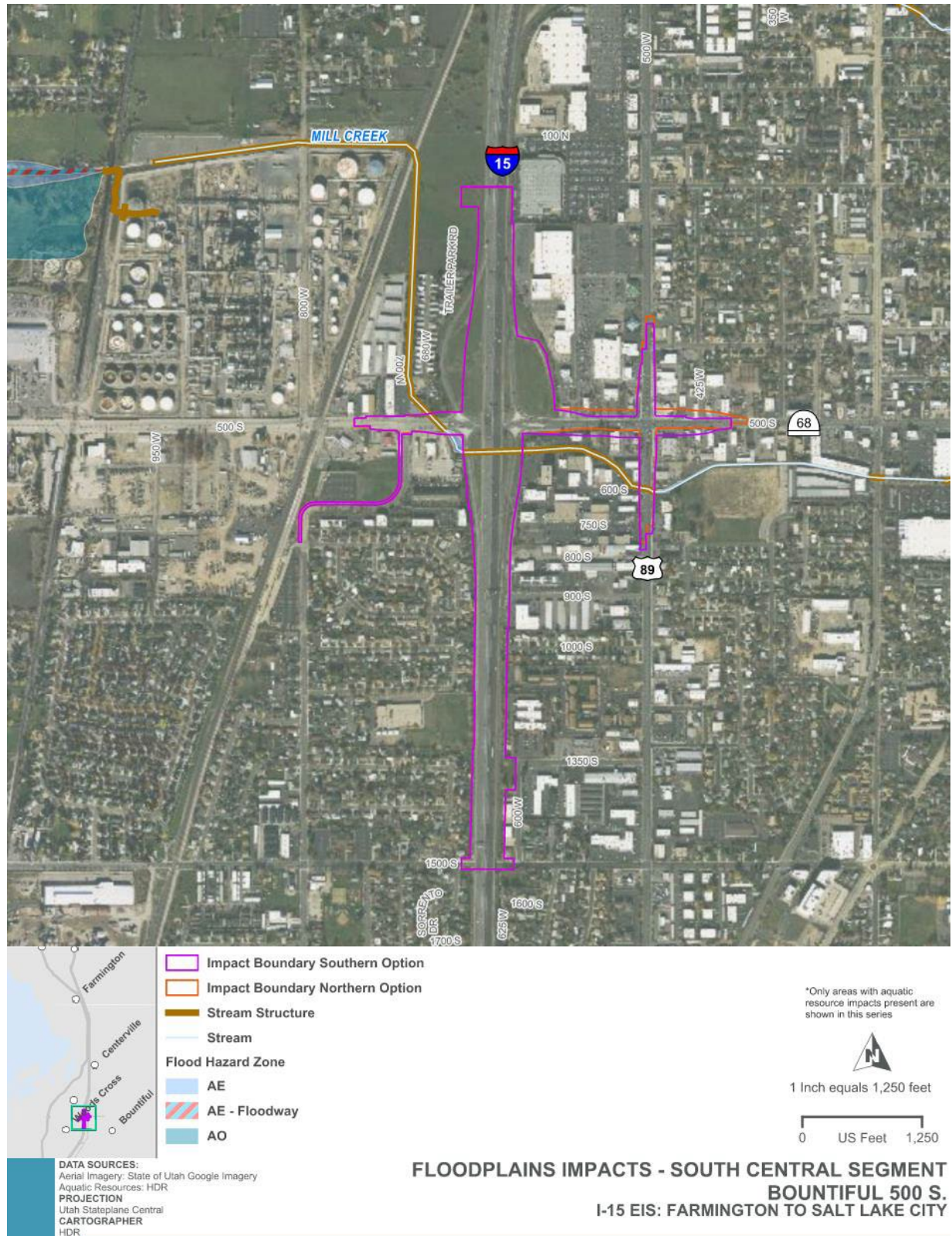
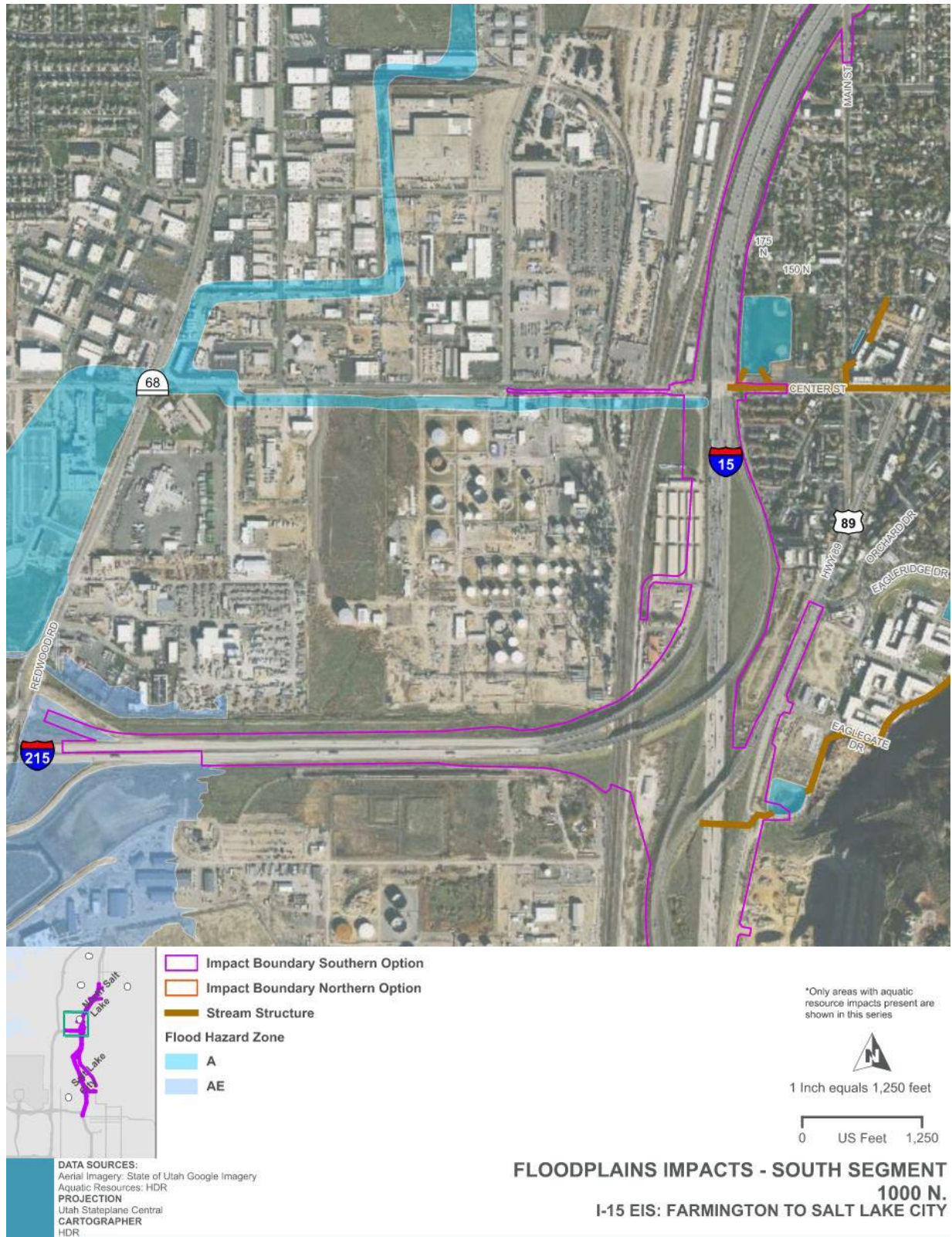


Figure 3.13-8. Floodplains in the Floodplains Evaluation Area – South Segment



3.13.4 Environmental Consequences and Mitigation Measures

This section discusses the floodplain impacts from the Action Alternative based on the footprint for the Action Alternative, which includes the roadway surface, embankment limits, and temporary impacts from construction. In most cases, this area has been approximated as the proposed right-of-way line for the Action Alternative.

3.13.4.1 Methodology

UDOT determined the floodplain impacts from the Action Alternative using a GIS approach by comparing the FEMA NFHL data obtained for Davis County (FEMA 2023a) and Salt Lake County (FEMA 2023b) to the right-of-way footprint of the Action Alternative to identify the locations of regulatory floodplain crossings and to quantify the impacted area. The regulatory analysis is based on current FEMA floodplain maps. Floodplain crossings in the floodplains evaluation area can be transverse or longitudinal based on the impact of the proposed infrastructure to the floodplain.

What are transverse and longitudinal crossings?

Transverse crossings are perpendicular or nearly perpendicular to the direction of flow. Longitudinal crossings are parallel or nearly parallel to a stream or the edge of a lake.

The following factors should be considered when reviewing the floodplain impacts described in Sections 3.13.4.2 and 3.13.4.3.

- The analysis presented covers only the impacts to regulatory floodplains. Stream impacts are covered in Section 3.11, *Water Quality and Water Resources*, and Section 3.12, *Ecosystem Resources*.
- The hydraulic design described in this EIS is based on a preliminary roadway design with a sufficient level of detail to conduct the floodplain analysis. During the final design process for the selected alternative, more-detailed hydraulic studies would be conducted to ensure that the roadway and hydraulic design would meet FEMA's and FHWA's regulatory requirements.
- Impacts are reported as being the same if the number of acres impacted when rounded to two decimal places are equal for both options and the impacts occur in the same general location.

3.13.4.2 No-action Alternative

With the No-action alternative, the I-15: Farmington to Salt Lake City Project would not be implemented, and no floodplains would be affected by the Action Alternative. Local floodplain administrators would continue to manage regulatory floodplains according to local ordinance and NFIP requirements.

3.13.4.3 Action Alternative

The Action Alternative has been divided into four segments: north, north central, south central, and south. Each segment of the project contains one I-15 interchange option in order to limit the total number of combinations possible. For reference, a description of each option is included in Section 2.4.2, *Action Alternative*, in Chapter 2, *Alternatives*. Sections 3.13.4.3.1 through 3.13.4.3.4 discuss the floodplain impacts for each of the four segments. Section 3.13.4.3.5 provides a summary of the floodplain impacts for each option and segment. The range of possible impacts for the Action Alternative is also provided.

3.13.4.3.1 North Segment Impacts

The impacts to floodplains in the north segment would be the same for both the Farmington 400 West Option and the Farmington State Street Option. These options would result in a total of about 39.5 acres of floodplain impacts as shown in Table 3.13-2.

Table 3.13-2. North Segment Floodplain Impacts

Stream or Flooding Source	FEMA Zone(s)	Type of Impact	Acres of Impact
Farmington Creek	AE	Transverse	0.51
	AE Floodway	Transverse	0.19
Steed Creek	AH	Longitudinal	2.19
Davis Creek	A	Longitudinal	6.29
	AE	Longitudinal	4.81
	AE Floodway	Transverse	0.02
Great Salt Lake	AE	Longitudinal	3.50
Ricks Creek	AH	Longitudinal	16.51
Parrish Creek	AO	Longitudinal	1.53
Stone Creek	AE Floodway	Longitudinal	1.38
	AO	Longitudinal	2.60

Source: FEMA 2023a

As shown above in Table 3.13-2, in the north segment, the Action Alternative would have both transverse and longitudinal crossings of regulatory floodplains. These crossings include about 6.3 acres of impacts to Zone A floodplains, about 10.4 acres of impacts to Zone AE floodplains (including about 1.6 acres of floodway), about 18.7 acres of Zone AH floodplains, and about 4.1 acres of Zone AO floodplains.

3.13.4.3.2 North Central Segment Impacts

The impacts to floodplains in the north central segment would be the same for both the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option. These options would result in a total of about 1.0 acre of floodplain impacts as shown in Table 3.13-3.

Table 3.13-3. North Central Segment Floodplain Impacts

Stream or Flooding Source	FEMA Zone(s)	Type of Impact	Acres of Impact
Barton Creek	AE	Transverse	0.01
	AE Floodway	Longitudinal	0.01
	AO	Longitudinal	0.95

Source: FEMA 2023a

As shown above in Table 3.13-3, in the north central segment, the Action Alternative would have both transverse and longitudinal crossings of regulatory floodplains. These crossings include about 0.02 acre of Zone AE floodplains (including about 0.01 acre of floodway) and about 1.0 acre of Zone AO floodplains.

3.13.4.3.3 South Central Segment Impacts

Bountiful 500 South – Northern Option Impacts. This option would result in transverse crossings of about 0.06 acre of Zone AE floodplains associated with Mill Creek.

Bountiful 500 South – Southern Option Impacts. This option would result in transverse crossings of about 0.07 acre of Zone AE floodplains associated with Mill Creek.

3.13.4.3.4 South Segment Impacts

The impacts to floodplains in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. These options would result in a total of about 1.9 acres of floodplain impacts as shown in Table 3.13-4.

Table 3.13-4. South Segment Floodplain Impacts

Stream or Flooding Source	FEMA Zone(s)	Type of Impact	Acres of Impact
Floodplain area near Center Street and I-15	A	Transverse	0.38
Floodplain area near U.S. 89 and I-215	A	Transverse	0.29
Floodplain areas near I-215 and Redwood Road	AE	Longitudinal	1.18

Source: FEMA 2023a

As shown above in Table 3.13-4, in the south segment, the Action Alternative would have both transverse and longitudinal crossings of regulatory floodplains. These crossings include about 0.7 acre of Zone A floodplains and about 1.2 acres of Zone AE floodplains.

3.13.4.3.5 Summary of Action Alternative Impacts

Table 3.13-5 shows a summary of the floodplain impacts by flood zone that would result from each option within each segment of the Action Alternative. The impacts are totaled up to provide a minimum, maximum, and range of possible impacts depending on which option is selected for each segment of the Action Alternative.

Table 3.13-5. Summary of Impacts to Floodplains from the Action Alternative

Segment	Option	Impacts by FEMA Zone (acres)				
		A	AE	AE Floodway	AH	AO
North	Farmington 400 West Option	6.29	8.82	1.59	18.70	4.13
	Farmington State Street Option	6.29	8.82	1.59	18.70	4.13
North Central	Bountiful 400 North – Northern Option	—	0.01	0.01	—	0.95
	Bountiful 400 North – Southern Option	—	0.01	0.01	—	0.95
South Central	Bountiful 500 South – Northern Option	—	0.06	—	—	—
	Bountiful 500 South – Southern Option	—	0.07	—	—	—
South	Salt Lake City 1000 North – Northern Option	0.67	1.18	—	—	—
	Salt Lake City 1000 North – Southern Option	0.67	1.18	—	—	—
	Minimum impacts (sum of lowest impacts for each segment)	6.96	10.07	1.60	18.70	5.08
	Maximum impacts (sum of highest impacts for each segment)	6.96	10.08	1.60	18.70	5.08
	Range of impacts	6.96	10.07–10.08	1.60	18.70	5.08

Note: Each option includes floodplain impacts from the whole segment, including those elements that are the same for both options.
Source: FEMA 2023a

As shown above in Table 3.13-5, the Action Alternative would result in the same impacts to each flood zone in each section for whichever option is chosen except for the south central section. In the south central segment, the Bountiful 500 South – Southern Option would impact an additional about 0.01 acre of Zone A floodplains than the Bountiful 500 South – Northern Option. For each segment, even where the footprints for each option vary, the floodplain impacts would occur in generally the same locations. UDOT also anticipates that the impacts would cause similar changes to water surface elevations and floodplain boundaries.

UDOT anticipates that the Action Alternative would not cause an interruption to a transportation facility, a significant risk of upstream flooding, or an adverse impact to natural and beneficial floodplain values since the impacts of the Action Alternative would occur in locations where existing culverts cross the evaluation area. According to FEMA data, these existing culverts contain at least the 100-year (1%-annual-chance) flood. The mitigation measures discussed in Section 3.13.4.4, *Mitigation Measures*, would also be implemented to mitigate impacts in other locations and would apply to all Action Alternative options. The finding of a practicable alternative as required by 23 CFR Part 650, Subpart A, is therefore not required.

3.13.4.4 Mitigation Measures

UDOT and/or its construction contractor would take measures to reduce floodplain impacts and to ensure that, if the Action Alternative is selected, the alternative complies with all applicable regulations (see Section 3.13.2.2, *Executive Order 11988, Floodplain Management*). These mitigation measures would include the following:

- The Action Alternative would require a number of stream and floodplain crossings in the same locations where they presently exist as well as several new stream and floodplain crossings. UDOT would determine whether existing bridges and culverts need to be replaced as a part of the Action Alternative. Where new or rehabilitated bridges and culverts are included in the Action Alternative, the design would follow FEMA requirements and the requirements of UDOT's *Drainage Manual of Instruction*, where applicable. Where no Special Flood Hazard Area is defined, culverts and bridges would be designed to accommodate a 50-year (2%-annual-chance) or greater-magnitude flood. Where regulatory floodplains are defined, hydraulic structures would be designed to accommodate at least a 100-year (1%-annual-chance) flood. Since I-15 is important to regional mobility, UDOT would evaluate potential benefits that might be gained by designing stream crossings to convey larger flood events in locations where UDOT determines a culvert is required or needs to be replaced.
- Stream alteration permits would be obtained for stream crossings as required by the Utah Division of Water Rights to satisfy state regulations, and in some circumstances might also be used to meet Clean Water Act Section 404 permitting requirements (through use of Army Corps of Engineers Programmatic General Permit 10).
- Floodplain development permits would be obtained for all locations where the proposed roadway embankment or structural elements would encroach on a regulatory floodplain. FEMA requires that construction within a floodway must not increase the base (100-year) flood elevation. FEMA Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) processes would be executed in compliance with 44 CFR Sections 60.3 and 65.12 as necessary based on hydrologic and hydraulic analyses and the nature of anticipated changes in base flood elevation and/or floodplain limits. The LOMR process takes place after construction impacts have occurred to modify and update an effective floodplain map. The CLOMR process (if required) must be completed before construction impacts take place to receive FEMA's concurrence that, if the selected alternative is constructed as designed, a LOMR could be issued to modify and update the effective floodplain map. The following cases apply:
 - For areas of Zone A floodplain impacts, the approach would be to analyze existing and proposed conditions and design project features such that compliance is achieved, or that a CLOMR is not required, as much as possible. In these areas, FEMA performed floodplain mapping without publishing base flood elevations or delineating a floodway. The absence of this information places the burden on UDOT to perform hydrologic and hydraulic analyses consistent with FEMA standards. These analyses would confirm or refine the FEMA floodplain mapping and could increase or decrease the estimate of affected areas.
 - For areas of Zone AE, AH, and AO floodplain impacts, the approach would be to analyze proposed conditions relative to effective floodplain mapping (with base flood elevations and ponding depths defined) and design project features such that compliance is achieved, or that a

CLOMR is not required, as much as possible. Any action that would increase the water surface elevation within a floodway (for the 1%-annual-chance event) would require that a CLOMR is prepared and accepted by FEMA prior to the start of construction and issuance of a floodplain development permit.

- UDOT would obtain flood-control permits from Davis County Public Works for all work that would take place within a county flood-control facility to certify that plans and specifications meet the requirements of the Davis County Flood Control Master Plan. UDOT would also obtain flood-control permits from Salt Lake County for any actions occurring within 20 feet of a Salt Lake County-controlled waterway.
- Roadway elevations would be a minimum of 2 feet above adjacent floodplain elevations, where those elevations are defined, so that flooding would not interfere with a transportation facility needed for emergency vehicles or evacuation.
- Walls would be designed and constructed to minimize longitudinal floodplain impacts.

3.14 Hazardous Materials and Hazardous Waste Sites

3.14.1 Introduction

Section 3.14 describes a screening-level investigation into potentially hazardous sites within or near the Action Alternative that could contain hazardous materials and/or hazardous waste and analyzes the expected effects of the Action Alternative on these sites. Hazardous materials include any solid, liquid, or gaseous materials that, if improperly managed or disposed of, could pose hazards to human health and the environment. A material is considered hazardous if it exhibits one or more of the following characteristics: ignitability, corrosivity, reactivity, and toxicity. Section 3.14 also analyzes possible effects of the Action Alternative on potentially hazardous sites.

Hazardous Materials and Waste Sites Evaluation Area. The hazardous materials and waste sites evaluation area encompasses the area within the footprint of the Action Alternative and adjacent properties (see Figure 3.14-1, *Hazardous Materials Facilities in the Hazardous Materials and Waste Sites Evaluation Area*, on page 3-239). The evaluation area includes parts of Davis and Salt Lake Counties.

3.14.2 Regulatory Setting

Hazardous materials are regulated by the Resource Conservation and Recovery Act (RCRA); by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and by Utah Administrative Code Title 19, *Environmental Quality Code*. The following concerns are raised when a transportation project affects sites with hazardous materials:

- The spread of existing soil or groundwater contamination through construction activities
- The potential for increased construction costs
- The potential for construction delays
- The health and safety of construction workers and people who live near the sites with hazardous materials
- The short-term and long-term liability associated with acquiring environmentally distressed properties

Section 3.14 provides a preliminary identification of known parcels that contain hazardous waste sites. If the Action Alternative is selected, during the final design phase and before any property is acquired, UDOT would conduct more detailed assessments on sites of concern to determine the presence of contamination, if any, and establish the nature and limits of the chemical hazard.

3.14.3 Affected Environment

3.14.3.1 Resource Identification Methods

To determine the presence of potentially hazardous waste sites in the hazardous materials and waste sites evaluation area, UDOT reviewed the following pertinent databases: the Utah Division of Environmental Response and Remediation's (DERR) Interactive Map (DERR 2023b), DERR's leaking underground storage tanks (LUST) and underground storage tanks (UST) databases (DERR 2023c), the Utah Division of Solid and Hazardous Waste's active and closed landfills database (UDSHW 2023), and EPA's EnviroMapper database (EPA 2023).

What are Superfund sites?

Superfund sites are locations polluted with hazardous materials that are being assessed or cleaned up with funds managed by EPA.

Table 3.14-1 describes the hazardous material and hazardous waste sites databases. UDOT used the DERR Interactive Map and the EPA EnviroMapper database to query the databases.

Table 3.14-1. Descriptions of Potentially Hazardous Materials Sites

Site Type	Description
Brownfields	Brownfields are former industrial areas. These site types are contained in EPA's Assessment, Cleanup, and Redevelopment Exchange System database. Voluntary Cleanup Program, which is a database of Utah Brownfield sites that are being redeveloped outside of the federal Brownfield process, was another source of information.
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)	CERCLIS contains sites that have chemicals listed under CERCLA but the sites have not been categorized as National Priorities List (NPL) sites. These site types are also listed in EPA's Superfund Enterprise Management System (SEMS) database.
Dry Cleaners	Dry cleaners are locations of past or current dry cleaner companies. Dry cleaners produce waste that potentially could become a hazard.
Environmental Incident	Environmental incidents are locations where a spill or other incident regarding hazardous materials has been reported.
Enforceable Written Assurances (EWA)	EWA sites are properties where the owner has come to an agreement with UDEQ regarding obligations associated with hazardous materials or waste on the site.
Formerly Used Defense (FUD)	FUD sites were once under the jurisdiction of the U.S. Department of Defense and could contain hazardous, toxic, or radioactive wastes in the soil, water, or containers on site. These site types are contained in a database of former military sites that have been identified for environmental restoration by the Department of Defense.
Leaking Underground Storage Tanks (LUST)	LUST sites are UST sites where a leak has been detected. These site types are located in a database of sites in Utah with leaking underground storage tanks whose status is either open (under investigation) or closed (no additional remedial actions are required or ever took place).
National Priorities List (NPL)	NPL sites are those containing listed chemicals under CERCLA and that have been identified as priorities for cleanup.
Solid Waste	Solid waste sites include landfills and transfer stations. These site types are located in a database of active or closed landfill sites in Utah.
Tier II	Tier II sites are sites with documented hazardous chemicals stored on site. No chemical spills or release is implied by the database listing. These site types are contained in a database of sites that either store or release toxic materials specified by the Emergency Planning and Community Right to Know Act.
Toxic Release Inventory (TRI)	TRI sites are sites such as manufacturing or mining facilities that manufacture or process listed chemicals. These site types are located in a database of sites that use, manufacture, treat, transport, or release toxic chemicals into the environment.
Used Oil Facility	Used oil facilities are sites that store, transport, or recycle used oil. These site types are located in a database of permitted sites in Utah that transport, transfer, burn, market, refine, or process used oil.
Underground Storage Tanks (UST)	USTs are sites where underground storage tanks are currently being used or have been used to store petroleum products such as gasoline or diesel fuel. These site types are located in a database of locations in Utah that have underground storage tanks. In Utah, USTs are managed according to Title R311, <i>Environmental Response and Remediation</i> , of the Utah Administrative Code and the state Underground Storage Tank Act (Title 19, Chapter 6, Part 4 of the Utah Code).

3.14.3.2 Facilities with Hazardous Materials in the Hazardous Materials and Waste Sites Evaluation Area

The potentially hazardous sites in the hazardous materials and waste sites evaluation area are listed by facility type in Table 3.14-2 and shown in Figure 3.14-1. There are a total of 48 sites in the evaluation area that are known or suspected to contain, or have previously contained, hazardous materials or where a spill or release of a hazardous material occurred. Some sites are listed in multiple databases.

Table 3.14-2. Hazardous Waste Sites in the Hazardous Materials and Waste Sites Evaluation Area

Facility Type	Number of Facilities in the Evaluation Area
Targeted Brownfield sites	0
CERCLA sites	4
Environmental Incidents	36
Toxic Release Inventory sites	0
Tier II sites	0
Formerly Used Defense sites	0
Underground storage tanks	7
Permitted used-oil facilities	0
Solid-waste landfills	0
Leaking underground storage tanks	6
Dry cleaner	1

Sources: DERR 2023b, 2023c; UDSHW 2023

The majority (36) of the sites found in the searched environmental databases were Environmental Incidents. Environmental Incidents are typically locations of accidents (many occurred on I-15) involving a minor spill or chemical release, over a reportable quantity, that were cleaned up without the need for major remedial efforts. These site types do not typically contain residual contamination nor present high risks to construction. Therefore, these site types are not included in Section 3.14.4, *Environmental Consequences and Mitigation Measures*. A summary of information on the other identified sites is included in Section 3.14.4.

Figure 3.14-1. Hazardous Materials Facilities in the Hazardous Materials and Waste Sites Evaluation Area



3.14.4 Environmental Consequences and Mitigation Measures

3.14.4.1 Methodology

UDOT assessed the expected environmental risks to the project by considering the site type and status, reported contamination, reported remedial actions, and the locations of facilities potentially containing hazardous materials in relation to the Action Alternative. For this analysis, the footprint for the Action Alternative is considered to be the right-of-way and temporary construction easement requirements for the alternative as described in Section 3.3, *Right-of-way and Relocations*. The criteria for classifying the risk (high, moderate, or low) of encountering contaminated soil and/or groundwater at each site were defined according to UDOT's *Environmental Process Manual of Instruction* (UDOT 2020c), which are summarized below.

- **High-risk site.** A high-risk site is one with a high potential that contamination exists on site. These site types include CERCLA, NPL, and open LUST sites.
- **Moderate-risk site.** A moderate-risk site is a site with a higher potential to contain contamination. These site types include closed LUST sites, active or closed landfills, and UST sites.
- **Low-risk site.** A low-risk site is a site with a lower potential to contain contamination. These site types include closed UST, Tier II, and TRI sites.

Table 3.14-3 shows the results of the risks analysis based on site type.

Table 3.14-3. Hazardous Waste Sites in the Hazardous Materials and Waste Sites Evaluation Area

Facility Type	Number of Facilities in the Evaluation Area	Risk Analysis
CERCLA sites	4	High-risk site
Closed UST	7	Low-risk site
Closed LUST	6	Moderate-risk site
Dry cleaner	1	Moderate-risk site

Sources: DERR 2023b, 2023c; UDSHW 2023

Note that a site could be listed in multiple databases.

To identify “sites of primary concern,” UDOT considered the site’s expected risk level and each site’s location relative to the anticipated footprint for the Action Alternative. Sites of primary concern are high- and moderate-risk sites directly impacted by the Action Alternative footprint or located on adjacent property close to the Action Alternative footprint where contaminated soil or groundwater could have migrated into the footprint and affect construction.

3.14.4.2 No-action Alternative

With the No-action Alternative, the improvements associated with the I-15 project would not be made, so no impacts to or disturbances of hazardous materials sites would occur as a result of the project. Existing sites would continue to be managed in accordance with state and federal regulations, and other projects in the

hazardous materials and waste sites evaluation area might disturb hazardous materials sites during construction, or other projects could result in site clean-up activities.

3.14.4.3 Action Alternatives

There are 48 known hazardous materials facilities in the hazardous materials impact analysis area (see Table 3.14-2, *Hazardous Waste Sites in the Hazardous Materials and Waste Sites Evaluation Area*, above). Twelve sites that present a high or moderate risk of containing contamination were investigated further by researching information in environmental databases and inspecting the site location relative to the Action Alternative. Eleven sites were retained as sites of primary concern and are listed below along with one site (UDOT Intersection 400 North 500 West) that, based on information in the DERR database, poses a low risk to construction and is not a site of primary concern.

3.14.4.3.1 North Segment Impacts

No impacts to hazardous materials or sites would occur in the north segment.

3.14.4.3.2 North Central Segment Impacts

Bountiful 400 North – Northern Option Impacts. This option would include 1 UST and 1 LUST/UST sites.

- **UDOT Intersection 400 North 500 West Bountiful** (ID# 3000533) is listed as a UST site. Both north central segment options would impact this site. The USTs were removed and considered closed in 2016 and in 2017. According to DERR records, the site was cleaned up by removal of contaminated soil and it was determined to not contain residual hazardous chemicals (DERR 2023b), making this site a **low** risk site to construction and is not a site of primary concern.
- **Chevron 828** (ID# 3000012) is listed in the UST and LUST site database. The Bountiful 400 North – Northern Option would impact this site. The site has had multiple LUST occurrences which were closed in 2017, 2006, and 1993. UDEQ recommended that no further corrective action was needed because any detectable petroleum from these releases was not a threat to human health or the environment (DERR 2023b). The site is currently an active UST site and is an open Shell gas station. This site poses a **moderate** risk to construction and is a site of primary concern.

Bountiful 400 North – Southern Option Impacts. This option would include 1 UST and 1 LUST/UST sites.

- **UDOT Intersection 400 North 500 West Bountiful** (ID# 3000533) is an UST site. Both north central segment options would impact this site. The USTs were removed, and DERR considered the site closed in 2017. The LUST occurrence at the site was cleaned up by removing contaminated soil, and investigations determined that no hazardous chemicals remain (DERR 2023b). This site presents a **low** risk to construction and is not a site of primary concern.
- **Sunmart #875** (ID# 3000046) is a UST and LUST site located at 391 North 500 West in West Bountiful. The Bountiful 400 North – Southern Option would impact this site. The LUST occurrence was closed in 2001 after corrective actions cleaned up the site to regulatory standards (Utah Administrative Code R311-211) (DERR 2023b); however, the site is an active gas station, making this site pose a **moderate** risk to construction and making the site a site of primary concern.

3.14.4.3.3 South Central Segment Impacts

Bountiful 500 South – Northern Option Impacts. This option would include 1 CERCLA site and 1 UST/LUST site.

- **Woods Cross 800 West Plume** (ID# UTD003807930) is a CERCLA site containing a chlorinated solvent contamination. This site consists of a former truck terminal operation including a wash rack and fueling station. It was determined that the chlorinated solvent contamination is isolated to the area where the wash rack and fueling station were located (DERR 2023b). However, contamination could have migrated away from this main source. This site extends into both the south central segment options. This site is considered **high** risk to construction and is a site of primary concern.
- **Super Stop Texaco** (ID#3000200) is a LUST/UST site located at 560 West 500 South in West Bountiful. Both south central segment options would impact this site. The LUST was closed in 2003 after corrective actions in 1999 cleaned up the site to regulatory standards (Utah Administrative Code R311-211) by the removal of contaminated soil, and the site was determined not to contain residual hazardous chemicals (DERR 2023b). The site is an active Shell gas station. This site poses a **moderate** risk to construction and is a site of primary concern.

Bountiful 500 South – Southern Option Impacts. This option would include 1 CERCLA site, 1 dry cleaner, and 3 UST/LUST sites.

- **Woods Cross 800 West Plume** (ID# UTD003807930) is a CERCLA site containing chlorinated solvent contamination, as described for the south central segment northern option, above. This site extends into both the south central segment options. This site is considered **high** risk to construction and is a site of primary concern.
- **Family Cleaners** (ID# 221) is a dry cleaner located at 461 West 500 South in Bountiful. This site is an inactive dry cleaner that was closed in the 1980s (DERR 2023b). These site types can contain residual contamination, and the site is considered a **moderate** risk to construction and is a site of primary concern.
- **Super Stop Texaco** (ID#3000200) is a LUST/UST site located at 560 West 500 South in West Bountiful. Both south central segment options would impact this site. The LUST was closed in 2003 after corrective actions in 1999 cleaned up the site to regulatory standards (Utah Administrative Code R311-211) by the removal of contaminated soil. The site was determined by DERR to not contain hazardous chemicals (DERR 2023b). The site is an active Shell gas station. The site poses a **moderate** risk to construction and is a site of primary concern.
- **Circle K Store #7951** (ID# 3000117) is a UST/LUST located at 495 South 500 West in Bountiful. The LUST was closed in 1992. DERR determined that any detectable petroleum contamination that remained at the site complies with UST rules (DERR 2023d), and there appeared to not be a threat to human health or the environment (DERR 2023b). Due to the potential for residual contamination, this site presents a **high** risk to construction and is a site of primary concern.
- **Rainbo #41** (ID# 3000295) is a UST/LUST site located at 515 South 500 West in Bountiful. The LUST was closed in 2000. Based on information in DERR records, it was determined that any detectable petroleum contamination at the site complies with UST rules (DERR 2023d), and there

appeared to not be a threat to human health or the environment (DERR 2023b) and the UST was closed in 1999, making this site a **moderate** risk to construction and a site of primary concern.

3.14.4.3.4 *South Segment Impacts*

The impacts to hazardous materials in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. These options would include 3 CERCLA sites and 1 UST/LUST site.

- **1700 North Beck Street Plume** (ID# UT0001909407) is a CERCLA site located at 1700 N. Beck Street in Salt Lake City. The plume consisted of groundwater contaminated with a variety of chlorinated hydrocarbons (DERR 2023b). This site is considered **high** risk to construction and is a site of primary concern.
- **Chevron USA, Inc. – Site I, IIIA, IIIB** (ID# UTD092029768) is a CERCLA site located at 2351 North 1100 West in North Salt Lake. According to DERR, this plume contains heavy metals, spent caustics, phenols, hydrochloric acid, spent catalyst leads, sulfuric acid sludges, heavy oil sludges, and other petroleum byproducts (DERR 2023b). This site is considered **high** risk to construction and is a site of primary concern.
- **Beck Street Salvage** (ID# UTD988066049) is a CERCLA site located at 1225 N. Beck Street in Salt Lake City. This site is a Superfund site (DERR 2023b). Cleanup for PCB-, lead-, and chromium-contaminated soils began in 1987. An analytical results report in DERR's database states that soil contamination is present at nearby residences, and contaminated groundwater might have migrated off site. This site is considered **high** risk to construction and is a site of primary concern.
- **Gas-N-Go #7** (ID# 3000016) is a LUST/UST site located at 1085 Overland Road in Woods Cross. The LUST occurrences were closed in 2022 and 1998 (DERR 2023b). Based on information in DERR's database, it was determined that any detectable petroleum contamination at the site complies with UST rules (DERR 2023d), and there appeared to not be a threat to human health or the environment (DERR 2023b). This site is considered **moderate** risk to construction and is a site of primary concern.

3.14.4.3.5 *Summary of Action Alternative Impacts*

Table 3.14-4 shows there are 12 sites of primary concern in the hazardous materials and waste sites evaluation area. These sites consist of 4 CERCLA sites, 1 dry cleaner site, 6 UST/LUST sites, and 1 UST site.

Table 3.14-4. Hazardous Material Sites of Concern within the I-15 Evaluation Area

Site Type	Site Name	Address or UTM	Identification (ID) Number(s)	Option(s)	Site Status	Risk to Construction
CERCLA	1700 North Beck Street Plume	1700 N. Beck Street, Salt Lake City	UT0001909407	Both south segment options	Active	High
CERCLA	Woods Cross 800 West Plume	643 South 800 West, Woods Cross	UTD003807930	Both south central segment options	Active	High
CERCLA	Chevron USA, Inc. – Site I, IIIA, IIIB	2351 North 1100 West, North Salt Lake	UTD092029768	Both south segment options	Active	High
CERCLA	Beck Street Salvage	1225 N. Beck Street, Salt Lake City	UTD988066049	Both south segment options	Active	High
Dry cleaner	Family Cleaners	461 West 500 South, Bountiful	221	South central segment, Bountiful 500 South – Southern Option	Inactive	Moderate
UST/LUST	Chevron 828	504 West 400 North, Bountiful	3000012	North central segment, Bountiful 400 North – Northern Option	LUST closed 3/21/2017; LUST closed 7/31/2006; LUST closed 5/14/1993	Moderate
UST/LUST	Gas-N-Go #7	1085 Overland Road, Woods Cross	3000016	Both south segment options	LUST closed 11/08/2022; LUST closed 1998	Moderate
UST/LUST	Sunmart #875	391 North 500 West, West Bountiful	3000046	North central segment, Bountiful 400 North – Southern Option	LUST closed 2/08/2001; UST still open	Moderate
UST/LUST	Circle K Store #7951	495 South 500 West, Bountiful	3000117	South central segment, Bountiful 500 South – Northern Option	LUST closed 1/31/1992; UST closed 1/09/1992	High
UST/LUST	Super Stop Texaco	560 West 500 South, West Bountiful	3000200	Both south central segment options	LUST closed 5/06/2003 and 2/3/1999; UST still open	Moderate
UST/LUST	Rainbo #41	515 South 500 West, Bountiful	3000295	South central segment, Bountiful 500 South – Southern Option	LUST closed 2/23/2000; UST closed 12/1999	Moderate
UST	UDOT Intersection 400 North 500 West Bountiful	400 North 500 West, Bountiful	3000533	Both north central segment options	UST closed 12/12/2016	Low

Sources: DERR 2023b, 2023c; UDSHW 2023

Table 3.14-5 summarizes the impacts of the segment options to hazardous material sites in the evaluation area.

Table 3.14-5. Summary of Impacts to Hazardous Material Sites in the Hazardous Materials and Waste Sites Evaluation Area

Facility Type	North Segment		North Central Segment		South Central Segment		South Segment	
	Farmington 400 West Option	Farmington State Street Option	Bountiful 400 North – Northern Option	Bountiful 400 North – Southern Option	Bountiful 500 South – Northern Option	Bountiful 500 South – Southern Option	Salt Lake City 1000 North – Northern Option	Salt Lake City 1000 North – Southern Option
CERCLA	0	0	0	0	1	1	3	3
Dry Cleaners	0	0	0	0	0	1	0	0
LUST/UST	0	0	2	2	2	2	1	1

As shown above in Table 3.14-5, all options are similar with respect to impacts to potentially hazardous waste sites. Neither of the north segment options would impact any hazardous material sites. Both north central options would impact two LUST/UST sites. The south central options would both impact 1 CERCLA site and 2 LUST/UST sites; in addition, the south central southern option would also impact a historic dry cleaner site. The south segment options would impact the most hazardous material sites; these impacts include 3 high-risk CERCLA sites and 1 LUST/UST site. In conclusion, all options, except the south central options, would include the same impacts as the associated alternate option (northern or southern). For the south central section, the southern option would impact 1 more site than the northern option.

Therefore, the impacts to potentially hazardous waste sites is not a major distinguishing factor for evaluating the Action Alternative options.

3.14.4.4 Mitigation Measures

UDOT's best practices for project development include the following mitigation measures for hazardous materials and hazardous waste sites.

If the Action Alternative is selected, site investigations would be conducted by UDOT during final design to confirm the presence of contamination and determine potential risks to construction, if any, and the appropriate remedial measures. In the case of an identified chemical hazard, UDOT would negotiate the site remedy with the property owner before property is acquired and disturbed by construction and through possible coordination with EPA and DERR.

Previously unidentified sites or contamination could be encountered during construction. The construction contractor would implement measures to prevent the spread of contamination and to limit worker exposure. In such a case, all work would stop in the area of the contamination according to UDOT Standard Specifications, and the contractor would consult with UDOT and DERR to determine the appropriate remedial measures. Hazardous materials would be handled according to UDOT Standard Specifications and the requirements and regulations of DERR.

During construction, coordination would take place with UDOT, EPA, and/or DERR, the construction contractor, and the appropriate property owners. This coordination would involve determining the status of

the sites of concern, identifying newly created sites, identifying the nature and extent of remaining contamination (if any), and minimizing the risk to all parties involved. Environmental site assessments might be conducted at the sites of concern to further evaluate the nature and extent of contamination and to better identify the potential risks of encountering hazardous materials when constructing the selected alternative.

Engineering controls (such as dust mitigation, temporary soil covers, and groundwater extraction) and personal protective equipment for construction workers would be used to reduce the potential for public or worker exposure to hazardous materials as determined necessary by UDOT.

3.15 Visual Resources

3.15.1 Introduction

Visual resources are the components of the natural, cultural, or project environments that are capable of being seen. The visual and aesthetic resources of a community or area include the physical features that make up the visible landscape and vistas, features including land, water, vegetation, topography and human-made features such as buildings, roads, utilities, and structures, combined with the viewer sensitivity to the area. Viewer sensitivity is a combination of viewer exposure and viewer awareness. Viewer exposure is a function of the number of viewers, the number of views seen, the distance of the viewers, and the viewing duration. Viewer awareness relates to the extent of the public's attention, focus, and concern for a particular viewshed.

Section 3.15 considers the visual resources in the visual resources evaluation area for the I-15: Farmington to Salt Lake City EIS, the typical viewer groups that would view those resources, and the effects, or viewer response, of the Action Alternative on those resources.

Visual Resources Evaluation Area. The visual resources evaluation area is defined as all areas where physical changes associated with the Action Alternative could be seen. The views include both looking outward from the alternative and looking toward the alternative from key viewpoints. The visual resources evaluation area is shown in Figure 3.15-7, *Key Views in the Visual Resources Evaluation Area*, on page 3-258.

3.15.2 Regulatory Setting

UDOT considers aesthetic values during project development. The Council on Environmental Quality's regulations for implementing NEPA (40 CFR Section 1508.8) also state that aesthetic effects should be considered.

To consider the aesthetic effects of the Action Alternative, UDOT performed a visual analysis for the EIS. An analysis of visual impacts is required in an EIS by FHWA's Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (FHWA 1987).

This section was also prepared with reference to guidance from FHWA's *Guidelines for the Visual Impact Assessment for Highway Projects* (FHWA 2015) to assess visual impacts. In accordance with these guidelines, the existing visual character and quality of the affected environment (or the area of visual effect), as well as the viewer response to those resources, provide the framework for assessing the change in visual character that would occur as a result of the I-15: Farmington to Salt Lake City Project.

3.15.2.1 Visually Sensitive Resources

In addition to following the standard regulatory guidance above, UDOT reviewed local plans for evidence of the community's visual preferences and scenic resources. There are four historic districts in the visual resources evaluation area: the Salt Lake City Northwest Historic District, the Salt Lake City Warehouse Historic District, the Capitol Hill Historic District in Salt Lake County, and the Clark Lane Historic District in Davis County. The general plans and land use plans for cities in the evaluation area and the Salt Lake City historic districts have several aesthetic and preservation guidelines that might apply to the I-15 cross streets during final design. The Clark Lane Historic District in Davis County specifically mentions the streetscape along State Street in its National Register of Historic Places Registration Form. The form describes the trees on State Street as a unifying element of the historic district and states that the trees have been maintained and replanted over time (Utah Department of Cultural and Community Engagement 2017). For more information regarding State Street in Farmington, see Section 3.10, *Historic and Archaeological Resources*, and Chapter 4, *Section 4(f) Analysis*.

3.15.3 Methodology

Based on FHWA's *Guidelines for the Visual Impact Assessment for Highway Projects* (FHWA 2015), UDOT conducted a Visual Impact Assessment (VIA) to analyze the visual resources and visual character in the visual resources evaluation area (the area of visual effect) and of the Action Alternative. The VIA was conducted in four phases, which are described below.

- **Establishment Phase**
 - This phase provides the regulatory context, identifies sensitive visual resources from local plans, defines the area of visual effect, identifies static and dynamic viewsheds, identifies key views, and describes the existing visual landscape.
 - This phase is both a desktop and field review of visual resources.
- **Inventory Phase**
 - This phase is an assessment of the visual quality of the existing visual resources in the affected environment summarized by key view.
 - A component of visual quality is visual character. Visual character is a description of the visible attributes of a scene or object, typically using artistic terms such as form, line, color, and texture.
 - Visual quality is an assessment (what viewers like and dislike) of the composition of the character-defining features of the landscape and its aesthetics. Under the FHWA VIA guidelines, visual quality is determined by evaluating the viewed landscape's characteristic in terms of natural harmony, cultural order, and project coherence (FHWA 2015).
 - This information provides the baseline for analysis of the action alternatives in the analysis phase and is summarized by key view identified in the establishment phase.

What is a key view?

A key view is a topographic position that encompasses views both of and from the highway and represents the range of views that are affected by the project. Key views are meant to represent the visual character of either the environment or the project.

- This phase also identifies the locations of the two main user groups associated with a transportation network within the visual resource evaluation area: *those using the network* (who have views from the road, also known as “travelers”) and *those looking at the transportation network* (who have views of the road, also known as “neighbors”).
- **Analysis Phase**
 - This phase is an assessment of the impact of the visual change of the action alternatives within the area of visual effect.
 - The visual impacts of the action alternatives are the combined assessment of the visual compatibility of the action alternative and viewer sensitivity at each key view to determine the degree of visual impact. Impacts to visual quality can be adverse, beneficial, or neutral.
 - Photo simulations are prepared in this phase to illustrate what an action may look like from a key view. Not every key view or option will be represented as a simulation.
- **Mitigation Phase**
 - This phase describes the visual resource mitigation measures that could be implemented to lessen any adverse effects of the action alternatives.

3.15.4 Affected Environment

This section describes the existing visual character of the visual resources evaluation area for assessing visual resources. The information in this section comes from the tasks in the establishment and inventory phases of the analysis methodology described in Section 3.15.3, *Methodology*. This section provides information about the character of the regional landscape and the land use patterns that have modified the natural landscape.

3.15.4.1 Geographic Setting and Topography

The visual resources evaluation area and the I-15 corridor are on the “front side” of the Wasatch Mountains, an area known locally as the “Wasatch Front.” In Utah, the Wasatch Front metropolitan area is home to the majority of the state’s population. The Wasatch Front is defined by several unique geographic features including the internationally famous, snow-covered Wasatch Mountains range to the east and the expansive Great Salt Lake to the west. These beautiful yet imposing features pose unique transportation and land use challenges for the five counties that comprise the Wasatch Front (Box Elder, Weber, Davis, Salt Lake, and Utah Counties) by constraining the overall transportation network and suburban and urban development to a narrow swath of land between the lake and mountains. Because of these constraints, the valley floor is heavily developed and is visually different than the undeveloped and natural-appearing landscapes of the lake and mountains.

3.15.4.2 Affected Viewers and Sensitivity

For a visual analysis, two basic user groups are associated with a transportation network: neighbors and travelers. People using the road see some of the same views as people looking at the road. The visual sensitivity of these user groups depends on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also affected by viewer activity, awareness, and visual expectations in regard to the views.

What are travelers and neighbors?

For this visual analysis, travelers are those using the transportation network (who have views from the road), and neighbors are those looking at the transportation network (who have views of the road).

3.15.4.2.1 Neighbors

Neighbors are a viewer group that consists of owners and renters of single-family homes, multifamily homes, apartments, condominiums, and other dwelling units used primarily by permanent residents. Residential neighbors are the most sensitive viewers to visual change. Along I-15, residential areas are directly adjacent to the interstate and the Action Alternative. On the eastern bench of the Wasatch Mountains in Davis County, residents have elevated views across I-15.

3.15.4.2.2 Travelers

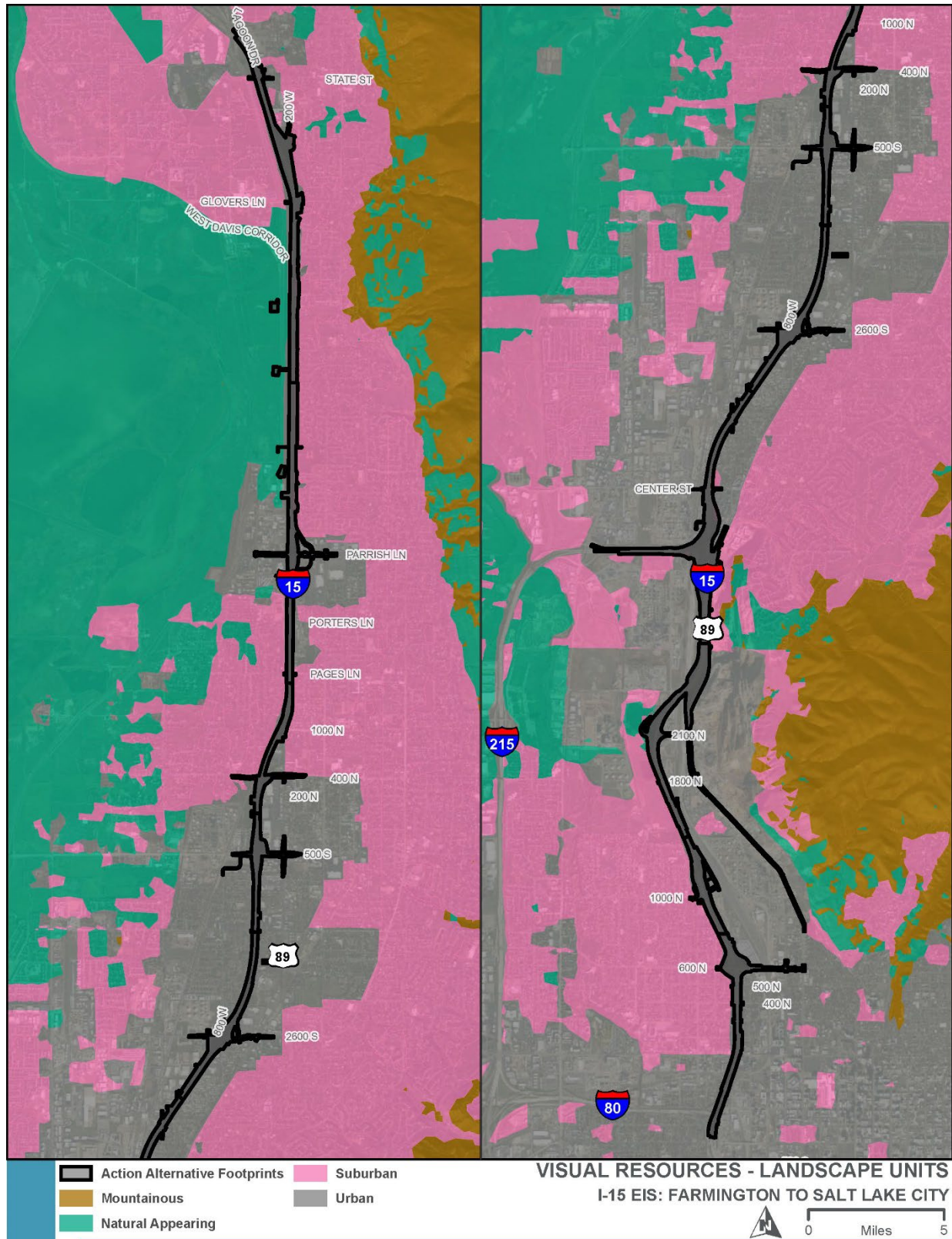
Travelers are a viewer group that consists of those who are traveling on and across I-15 and have views of the road in the visual resources evaluation area. Because of the nature of dynamic viewsheds, travelers are typically not as sensitive to visual change as are neighbors.

3.15.4.3 Visual Character and Landscape Units

Visual character is the description of the visible attributes of a view or object typically using artistic terms such as form, line, color, and texture. The visual character of an area can be divided among the natural, developed, and roadway settings in the landscape. I-15 is a major corridor that provides the first glimpse of the Salt Lake Valley from the north and the first glimpse of the Great Salt Lake from the south. For these reasons, this highway provides an opportunity to showcase Utah.

To develop and delineate landscape units (LUs), this analysis implemented an approach consistent with FHWA's *Guidelines for the Visual Impact Assessment for Highway Projects* (FHWA 2015); LUs are defined by viewsheds and landscape type. These LUs were refined in the visual resources evaluation area to better represent the current landscape character that could be affected by the Action Alternative (Figure 3.15-1). The remainder of Section 3.15.4.3 describes the existing LUs.

Figure 3.15-1. Landscape Units in the Visual Resources Evaluation Area



3.15.4.3.1 Industrial LU

The industrial LU consists of the refineries, quarry, railyards, and associated retail and business operations that are generally adjacent to I-15 and the Union Pacific and FrontRunner railroad tracks. The existing landscape character in this LU is influenced by direct human activities, is heavily altered, and appears disorderly and inharmonious to most viewers. The industrial pattern elements include a combination of angular and structural linear forms with gray, brown, and black undertones (Figure 3.15-2).

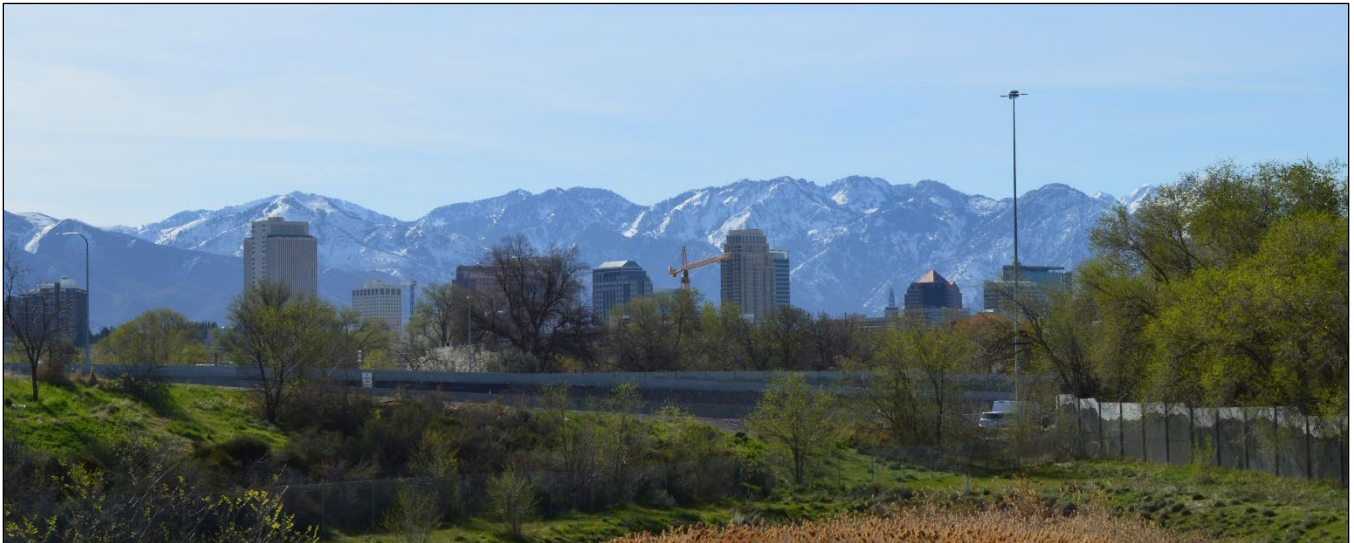
Figure 3.15-2. Industrial Area West of I-15 in North Salt Lake



3.15.4.3.2 Mountainous LU

The mountainous LU includes the surrounding mountains and foothills in Davis and Salt Lake Counties. For a representative picture, see the background views in Figure 3.15-3. Views of the mountains are prized by residents, recreationists, and tourists. The existing landscape character in this LU is influenced by direct and indirect human activities but appears natural to most viewers. Natural elements include forests, shrublands, grass lands, and the peaks and rock faces above the tree line. Mountain pattern elements (angular forms, clean lines, dark green and natural undertones, and rocky textures) currently dominate the LU. Human influence in this LU includes dirt roads, off-highway-vehicle trails, foot trails, road cuts, road pullouts, and power lines. These human influences are typically obscured from view by topography or vegetation depending on the vantage point and distance. The mountainous LU is the most intact—meaning the least altered by development—of all the LUs in the visual resources evaluation area.

Figure 3.15-3. Mountainous LU in the Background and Urban LU in the Middle Ground Looking East across Salt Lake City from 600 North



3.15.4.3.3 *Natural Appearing LU*

The natural appearing LU consists of the Great Salt Lake, its wetlands, and Antelope Island, which is located generally north-south along the west side of I-15. For a representative picture, see the middle and background views in Figure 3.15-4. This area has not been as heavily altered for residential and industrial purposes as the neighboring LUs, industrial and suburban. Natural elements include the lake, its surrounding wetlands, and native shrubs and grasses. Natural pattern elements (rolling and flat forms, soft lines, sage green and natural undertones, and natural textures) currently dominate the LU. Human elements include trails, dirt roads, causeways, canals, and recreation access for boating. These human influences are typically obscured from view by topography or vegetation depending on the vantage point and distance.

Figure 3.15-4. Natural Appearing LU Surrounding the Great Salt Lake West of the Evaluation Area



3.15.4.3.4 Suburban LU

The suburban LU is the predominantly single-family residential developments on either side of I-15 and on the foothills and on the outer edges of some of the urban and industrial LUs. This existing landscape character is heavily influenced by human activities; however, it has more green spaces and separation of buildings than does the urban LU. Suburban pattern elements include roads, fences, single-family homes, power lines, and ornamental landscaping (Figure 3.15-5). The suburban pattern elements include a combination of linear urban forms and colors (structural lines and warm gray, tan, and red brick undertones) as well as softer, rolling forms of the landscaping and greenspaces (soft lines and green and natural undertones). These human influences can range in appearance from disorderly and inharmonious to orderly and harmonious depending on the vantage point, the age of the structure, and the level of upkeep of the properties.

Figure 3.15-5. Suburban LU



3.15.4.3.5 Urban LU

The urban LU includes both high-density residential and urban developments adjacent to I-15 in Farmington, Centerville, West Bountiful, Bountiful, Woods Cross, North Salt Lake, and Salt Lake City. The existing landscape character is heavily influenced by human activities and includes commercial and retail areas, multistory buildings, large parking lots, and high-density residential areas of the incorporated cities. For representative pictures, see Figure 3.15-6 and the middle ground of Figure 3.15-3.

What are high-density residential developments?

The term *high-density residential developments* refers to apartment complexes, townhouses, condos, and other multifamily homes. It does not refer to single-family homes.

Urban pattern elements include roads, fences, parking lots, buildings, power lines, and ornamental landscaping. Urban pattern elements (linear and concrete forms, more-dominant highway and structural lines, gray and black undertones, and concrete and pavement textures) create a strong change in visual character compared to the mountainous and natural appearing LUs. The vegetated elements of the urban LU consist of ornamental landscaping and park strips that are more clearly altered by human activities.

Figure 3.15-6. Urban LU with High-density Residential Housing and Commercial Areas



3.15.4.4 Overview of the Viewsheds

A viewshed is all of the surface area visible from a particular location such as an overlook or a sequence of locations such as a road or trail. The geography and topography of the visual resources evaluation area can be represented in both static and dynamic viewsheds. Static viewsheds are what *neighbors* of a road see from a stationary location. Dynamic viewsheds are what *travelers* on the road see as they move through the landscape. Static and dynamic viewsheds were identified with the selection of key views and are listed below in Table 3.15-1.

The most dominant natural features in the viewsheds in the visual resources evaluation area are the Wasatch Mountain Range to the east and southeast, the Great Salt Lake and Antelope Island to the west, and the Oquirrh Mountains to the southwest. The dominant human-made or human-altered features in the viewshed include the transportation system; I-15, I-215, U.S. 89, and the numerous associated state and local roads; railroad tracks for Union Pacific freight rail and FrontRunner commuter rail; industrial areas that include refineries, railyards, manufacturing, rock quarry, and retail operations; and the single-family homes, apartment complexes, townhomes, and the surrounding neighborhoods in the cities of Farmington, Centerville, West Bountiful, Bountiful, Woods Cross, North Salt Lake, and Salt Lake City. Human alteration and dense urban development are dominant on the lower elevations on the valley floors along I-15.

3.15.4.4.1 Identify Key Views

A key view is a location from which a viewer (traveler or neighbor) can see either iconic or representative landscapes, with or without the project. The existing visual character and the visual impact analysis are documented to or from key viewpoints. The key views discussed in Section 3.15 were chosen by UDOT to help provide context from the visual quality of the area near the alignment for the Action Alternative and the views of those using the road network and those looking at the road network in the viewsheds. The key views were selected based on the field review and are summarized in Table 3.15-1.

Table 3.15-1. Key Views and Rationales for Their Locations

Key View	Address	Viewer / Viewshed Type	Rationale for Location
1	State Street, Farmington	Traveler / dynamic	The Action Alternative would reconfigure the overpass and consolidate the two structures into one.
2	Centerville Community Park, Centerville	Neighbor / static	The Action Alternative would construct a new, elevated pedestrian and bicyclist crossing of I-15 that connects the park with the Legacy Parkway Trail west of I-15.
3	Parrish Lane interchange, Centerville	Aerial	The Action Alternative would reconfigure the interchange and add a new northbound underpass.
4	800 West and 2600 South, Woods Cross	Neighbor / static Traveler / dynamic	The Action Alternative would reconfigure the interchange and add a new underpass for Wildcat Way.
5	Sunset Ridge, North Salt Lake	Neighbor / static	The Action Alternative would reconfigure the interchange and add new access to I-215 and U.S. 89.
6	Warm Springs and Beck Street Connection, Salt Lake City	Traveler / dynamic	The Action Alternative would construct a new, full-access interchange.
7	600 North, Salt Lake City	Aerial	The Action Alternative would reconfigure the interchange.

Figure 3.15-7 below shows the location and direction of each of the seven key views listed in Table 3.15-1 above.

3.15.4.4.2 Assess Visual Quality of the Landscape by Key View

Visual quality is an assessment (what viewers like and dislike) of the composition of the character-defining features of the landscape and its aesthetics. Under the FHWA VIA guidelines, visual quality is determined by evaluating the viewed landscape's characteristic in terms of natural harmony, cultural order, and project coherence (FHWA 2015).

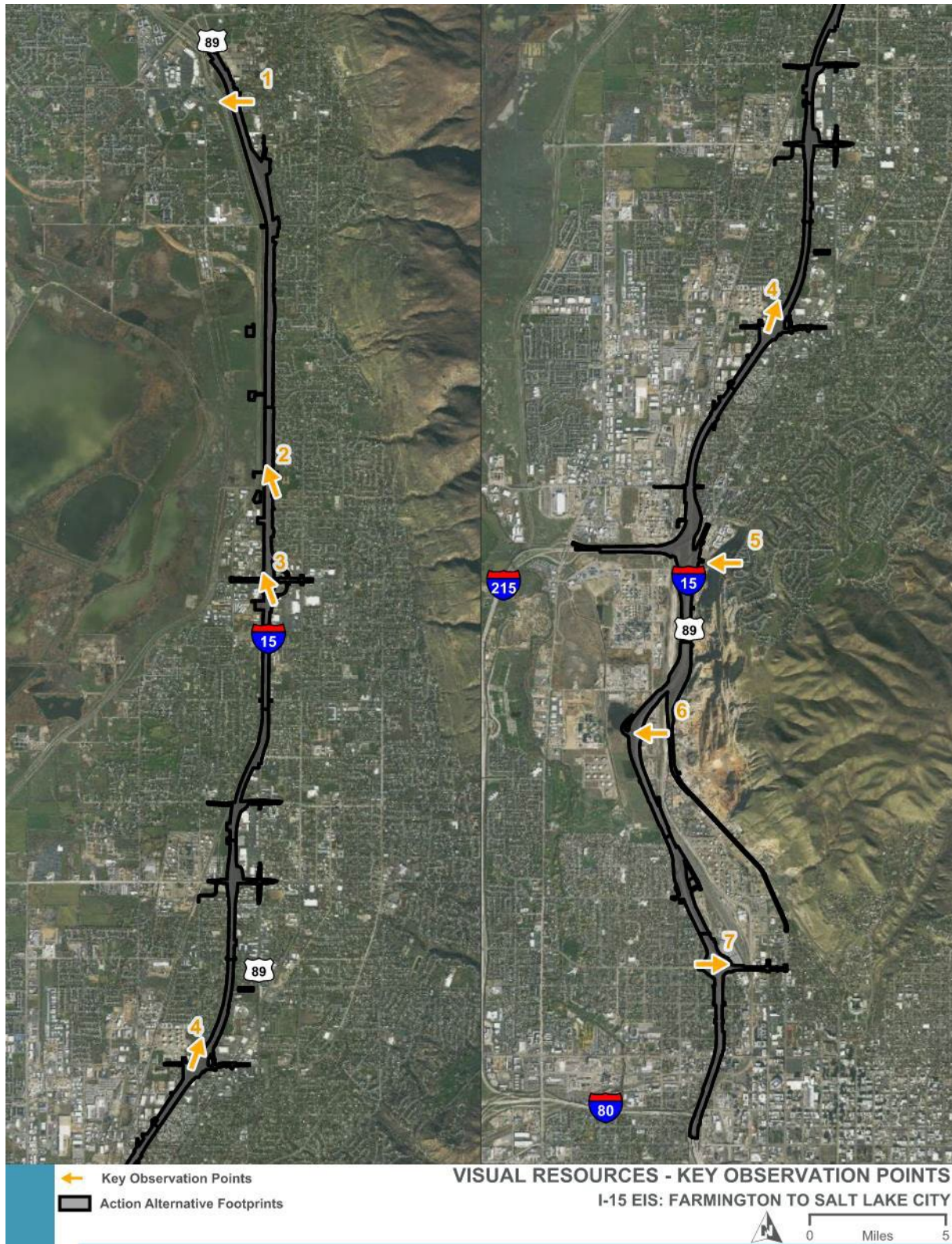
Natural Harmony. Viewing the visual resources of the natural environment creates a sense of natural harmony in people. People interpret the visual resources of the natural environment as being harmonious or inharmonious. Harmony is considered desirable; disharmony (or inharmoniousness) is undesirable. Natural environments with high visual quality are typically those with interesting or varying topography, colors, forms, and vegetation that come together in a vivid or memorable scene for a viewer. These scenes are typically devoid of human-made elements or obvious modifications to the landscape. The greater the degree to which the natural visual resources of the area meet the viewer's preferred concept of natural harmony, the higher value the viewer places on those visual resources.

Cultural Order. Viewing the visual resources of the cultural environment creates in people a sense of cultural order. People interpret the visual resources of the cultural environment as being orderly or disorderly. Orderly is considered desirable; disorderly is undesirable. High visual quality consists of areas that are well-planned and -designed; landscaping is manicured; buildings and infrastructure are in good repair; and parcels are devoid of clutter. High visual quality means that the overall composition of the area leaves a vivid impression and gives the viewer a sense of place. Crumbling infrastructure, dilapidated or vacant buildings, incompatible building styles, and unkempt landscaping can diminish the visual quality of the cultural environment and appear disorderly. The greater the degree to which the visual resources meet the viewer's preferred concept of cultural order, the higher value the viewer places on those visual resources.

Project Coherence. Viewing the visual resources of the project environment creates in people a sense of project coherence. People interpret the visual resources of the project environment as being either coherent or incoherent. Coherent is considered desirable; incoherent is undesirable. Project environments with high visual quality generally present highway elements, such as geometry, striping, and signs, in an understandable, clean, and predictable manner. The greater the degree to which the visual resources of the project environment meet the viewer's preferred concept of project coherence, the higher value the viewer places on those visual resources.

Natural harmony, cultural order, and project coherence combine to form the landscape composition and describe the vividness of the view. Vividness is how memorable or scenic the view is. In this chapter, the baseline visual quality is described in terms of natural harmony and cultural order. The visual impacts of the Action Alternative is described in terms of project coherence with the natural harmony and cultural order.

Figure 3.15-7. Key Views in the Visual Resources Evaluation Area



3.15.4.5 Existing Visual Quality at Key Views

This section summarizes the visual quality of the key views in the visual resources evaluation area. Visual quality is an assessment (what viewers like and dislike) of the composition of the character-defining features of the landscape and its aesthetics. Under FHWA's VIA guidelines, visual quality is determined by evaluating the viewed landscape's characteristic in terms of natural harmony, cultural order, and project coherence (FHWA 2015). The visual quality at these key views serves as the baseline for analyzing the Action Alternative.

3.15.4.5.1 Key View 1

Key View 1 is the view that travelers see looking west along State Street in Farmington (Figure 3.15-8).

Visual Character. The foreground views are of the pavement and linear markings of State Street and streetscape that includes the sidewalk, arching trees, and soft vegetative shoulders. The middleground views are of the hardscaped pedestrian and State Street overpass that arch over I-15. The foreground and middleground views are of the suburban LU. The background views are of the residential and commercial development west of I-15, and in the distance the natural appearing LU is visible. The visual character is a suburban street bordered by new and older residential and commercial development (on the west side of I-15). Building architecture and age of construction vary greatly and are typical of an area that is growing in population. Some landscaping on the edge of the road is not maintained.

Visual Quality. The foreground and middleground views of State Street and residential development are compatible and expected for the views within a fully developed city. The views of the overpass are inharmonious and disorderly—that is, the views of the overpass do not leave the viewer with a vivid, memorable view. However, the streetscape of State Street itself is harmonious, orderly, and well kept. The background views are mostly obscured by the overpass and traffic signal.

Figure 3.15-8. Key View 1 Looking West along State Street and Its Overpass of I-15



3.15.4.5.2 Key View 2

Key View 2 is the view that recreationists see as they walk along the sidewalk of Centerville Community Park and North Frontage Road (Figure 3.15-9). This view is looking north-northwest towards I-15. In this picture, the noise wall is being replaced due to the construction of the West Davis Corridor overpass to the north of this location.

Visual Character. The foreground and middleground views are of the Centerville Community Park, North Frontage Road, I-15, construction, and the power line corridor. The background views are of the Wasatch Mountains and residential development on the east benches of the mountains. The foreground and middleground views are representative of the suburban LU, and the background views are representative of the mountainous LU. In this location, the soft green forms of the park and rolling brown forms of the mountains abut the gray concrete and asphalt and the vertical and horizontal forms of the road and noise walls. The visual character is a suburban park along a transportation corridor.

Visual Quality. The foreground and middleground views of I-15 and North Frontage Road contrast in form, texture, and color with the manicured vegetation and visual qualities of the park. The views are generally inharmonious and disorderly; however, views will be more orderly when the noise wall is complete. The background views are also inharmonious and disorderly due to the interrupting features of the power line, the noise wall, and other features in the middle ground.

Figure 3.15-9. Key View 2 Looking North-northwest at I-15, North Frontage Road, and Centerville Community Park



3.15.4.5.3 Key View 3

Key View 3 is an aerial view of Parrish Lane and I-15 interchange looking north in Centerville (Figure 3.15-10). This image was captured by drone and does not represent what travelers or neighbors see; however, it provides a better vantage point of the interchange.

Visual Character. The foreground and middleground views are of the I-15, Parrish Lane, the Union Pacific and FrontRunner railroad tracks, and commercial development surrounding the interchange. The background views are of the Wasatch Mountains and residential development on the east benches of the mountains. All LUs are visible from this aerial view. The interstate corridor comprises long, linear, gray forms. Surrounding the interstate are a mix of buildings that vary in size, shape, and colors and include ornamental vegetation indicative of urban and suburban development in Utah. The background views are of the mountainous and natural appearing LUs and have softer forms and muted green and tan colors. The visual character is an urban interstate and rail corridor bordered by commercial and residential development.

Visual Quality. The foreground and middleground views are compatible and expected for the views in a fully developed city. The urban interstate and rail corridor is orderly and coherent. The background views of the mountainous LU are scenic.

Figure 3.15-10. Key View 3 Looking North over the Parrish Lane and I-15 Interchange



3.15.4.5.4 Key View 4

Key View 4 is the view that recreationists and travelers see as they walk or drive along 800 West in Woods Cross (Figure 3.15-11).

Visual Character. The foreground and middleground views are of the pavement, sidewalk, and landscaping along 800 West. Commercial and industrial development are obscured by the traffic signal and landscaping in the middle ground. The foreground and middleground views are dominated by soft, vibrant ornamental landscaping typical of the suburban and urban LUs. The background views are of the Wasatch Mountains and the mountainous LU. The visual character is a landscaped city street.

Visual Quality. The form, texture, and colors of the foreground and middleground views of the manicured landscaping are harmonious, orderly, and compatible for the location. The background views, where visible, are scenic.

Figure 3.15-11. Key View 4 Looking North-northwest at 800 West in Woods Cross



3.15.4.5.5 Key View 5

Key View 5 is the view that residents of Sunset Ridge in North Salt Lake see looking west over U.S. 89, I-15, the Union Pacific and FrontRunner railroad tracks, I-215, the industrial LU, the Great Salt Lake, and Antelope Island (Figure 3.15-12).

Visual Character. The foreground views are of the soft-sage-green vegetation and rolling landscape of the natural appearing LU. This key view includes the east bench of the Wasatch Mountains, in which the residential development is located, and new residential construction east of U.S. 89. The middleground views are of the urban LU and its development, highway and railroad infrastructure, and the industrial LU that includes a refinery. The middleground views have a variety of building shapes, heights, and colors. The background views are of the Great Salt Lake, its wetlands, and Antelope Island and the natural appearing LU. The natural appearing LU surrounding the lake has a lot of horizontal flat forms and neutral colors. The visual character is a combination of urban and industrial development and a natural appearing landscape.

Visual Quality. The foreground and middleground views of the highway and railroad infrastructure and urban and industrial development contrast in form, texture, and color with the natural vegetation and background visual qualities. The foreground and middleground views are inharmonious and disorderly. The background views are scenic, harmonious, and orderly, which creates a vivid and memorable view. Background views are intact.

Figure 3.15-12. Key View 5 Looking West across U.S. 89, I-15 and I-215 in North Salt Lake



3.15.4.5.6 Key View 6

Key View 6 is the view that travelers see as they turn west on 2100 North to merge onto I-15 northbound (Figure 3.15-13).

Visual Character. The foreground views are of the pavement for Warm Springs Road and the I-15 northbound on-ramp at 2100 North. The middleground views are of phragmites (a wetland plant species) and industrial development. The landscape, including the phragmites, has a coarse texture and is predominantly brown. The background views are of industrial development obscured by distance and the flat topography. The background views include several vertical and angular forms of the streetlights, I-15, and the buildings. This key view is of the industrial LU. The landscape character is of an industrial area and a freeway entrance.

Visual Quality. The foreground, middleground, and background views are inharmonious and disorderly. The form, texture, and color of the buildings contrast with the unkempt landscaping. However, the views are compatible and expected with the land use of this location.

Figure 3.15-13. Key View 6 Looking West at the 2100 North On/off-ramp in Salt Lake City



3.15.4.5.7 Key View 7

Key View 7 is an aerial view of 600 North and I-15 interchange looking east in Salt Lake City (Figure 3.15-14). This image was captured by drone and does not represent what travelers or neighbors see; however, it provides a better vantage point of the interchange.

Visual Character. The foreground and middleground views are of the I-15 on- and off-ramps and 600 North. The background views are of an industrial area, downtown Salt Lake City, the Wasatch Mountains, and residential development on the east benches of the mountains. The foreground and middleground views are dominated by smooth, gray concrete, linear pavement striping, and cylindrical sign and light posts. In the background are softer green forms of the landscaping and street trees of downtown Salt Lake City, interspersed by the rectangular buildings of the downtown skyline. The Wasatch Mountains in the background behind the downtown skyline have soft, angular forms and muted green and blue colors. This area is a transitional zone between the urban, industrial, and suburban LUs. The Union Pacific and FrontRunner railroad corridor is parallel to I-15 and just out of view. The visual character is an urban interchange.

Visual Quality. The foreground and middleground views are compatible and expected for the views in a fully developed city. The urban interstate corridor is orderly and coherent; however, the landscaping and sidewalk are unkempt at the street level. The background views are of the mountainous LU and the downtown skyline and are scenic.

Figure 3.15-14. Key View 7 Looking East over the 600 North and I-15 Interchange in Salt Lake City



3.15.5 Environmental Consequences and Mitigation Measures

This section describes the visual changes from the No-action and Action Alternatives and potential measures to mitigate these changes. The information in this section comes from the tasks in the analysis and mitigation phases of the analysis methodology described in Section 3.15.3, *Methodology*.

The visible features of the Action Alternative and the visual change in the landscape are summarized for each key view. The visual impacts of the Action Alternative are the combined assessment of the visual compatibility of the Action Alternative and viewer sensitivity at each key view to determine the degree of visual impact. Impacts to visual quality are a function of the visual compatibility of the Action Alternative and viewer sensitivity to visual changes at each key view.

Visual Compatibility. Visual compatibility is a comparison of the visual character of the Action Alternative and the visual character of the existing view from the key view location. Compatibility is described in terms of project scale, form, materials, and overall visual character compared to the existing natural and cultural environment. The Action Alternative can be considered compatible (not contrasting) or incompatible (contrasting).

Viewer Sensitivity. Viewer sensitivity to visual change is a function of exposure and awareness. Viewer exposure to the Action Alternative is described in terms of proximity (distance to a view), extent (the number of viewers), and duration (how long viewers can see the view in the context of dynamic viewsheds). Viewer awareness of the Action Alternative is described in terms of attention (uniqueness of the view), focus (focal points within the viewshed), and protection (legal protections or local values). Viewers are either sensitive or insensitive to visual impacts.

Impacts to Visual Quality. Impacts to visual quality are a function of the visual compatibility of the Action Alternative and viewer sensitivity to visual changes at each key view. Impacts to visual quality can be **adverse**, **beneficial**, or **neutral**. An adverse impact refers to the degradation in visual quality due to the incompatibility of action in the landscape or by obstructing or altering desired views. A beneficial impact is visually compatible or results in an improvement or enhancement to the visual quality of a view. A neutral impact is either not perceptible to a viewer or the change will not detract or enhance the visual quality of view.

3.15.5.1 No-action Alternative

3.15.5.1.1 Construction Impacts

With the No-action Alternative, the changes associated with the I-15: Farmington to Salt Lake City Project would not be made, and I-15, its interchanges, and cross streets would remain in their current condition. The visual nature of the visual resources evaluation area would be similar to that described in Section 3.15.4.5, *Existing Visual Quality at Key Views*. Because no major roadway improvements would be made, there would be no topographic changes or soil disturbances or associated construction equipment from roadway construction-related cuts and fills.

3.15.5.1.2 Long-term Impacts

With the No-action Alternative, I-15 would remain in its current configuration, and no widening, new interchange configurations, or pedestrian over- or underpasses would be constructed in the I-15 corridor. The current types of land use and development would continue in the area with or without the I-15: Farmington to Salt Lake City Project. The long-term impacts of the No-action Alternative are summarized by LU below.

Industrial LU. The industrial LU would look mostly the same with the No-action Alternative because the majority of the LU is developed and there is limited free land within the LU.

Mountainous LU. The mountainous LU is mostly protected land under jurisdiction of the U.S. Forest Service. These areas will not be developed and will visually stay the same. The bench east of I-15 is private land and will continue to fill in with residential development where there are undeveloped parcels. Much of the development is already approved and constructed. See Section 3.1, *Land Use*, for more information regarding future development.

Natural Appearing LU. The natural appearing LU would look mostly the same with the No-action Alternative because the majority of the LU is part of the Great Salt Lake and its wetland fringes and will not be developed. Some of the natural appearing LU that is on private land could transition to suburban LU as allowed by zoning and as population growth continues to add to the need for housing in Davis and Salt Lake Counties.

Suburban LU. The suburban LU will continue to expand in the visual resources evaluation area consistent with zoning and approved development plans. Some land currently in the natural appearing LU or on the foothills in the mountainous LU might transition to a suburban LU as private property changes ownership.

Urban LU. The urban LU will continue to expand around the core of the cities consistent with zoning and approved development plans. A portion of the suburban LU might transition to an urban LU in the future as the cities add density to accommodate more housing and retail space.

Given these assumptions, with the No-action Alternative the views in the visual resources evaluation area would be similar to the existing conditions, and visual change will be the result of the development and growth that is currently occurring and that is consistent with adopted land use plans.

3.15.5.2 Action Alternative

3.15.5.2.1 Construction Impacts

With the Action Alternative, short-term, construction-related impacts would include construction vehicle activity and accompanying staging areas, stockpiling of excavated material, and construction-related dust which would be visible during construction. The excavation and grading work to widen I-15 would minimally contrast with the existing conditions. Once the road construction is complete, the areas outside the road alignment would be revegetated, and visual quality would be similar to the existing conditions.

3.15.5.2.2 Long-term Impacts

With the Action Alternative, the overall long-term visual changes to visual quality would be **neutral** to **beneficial** compared to the existing conditions, depending on the vantage point and existing LU. In locations of neutral visual impacts, the alternative would maintain a similar level of natural harmony, cultural order, and landscape composition compared to the existing conditions. That is, in urban areas, areas of existing interchanges, or where I-15 is viewed from a great distance and blends in with the existing development, the visual impact of the Action Alternative would be **neutral**. Where the alternative would enhance the transportation and improve the streetscape, the visual impact would be **beneficial**. The main visual changes with the Action Alternative are described below from north to south. An assessment of the visual changes by key view is provided in *Visual Impacts of the Action Alternative by Key View* starting on page 3-272.

Main Elements of the Action Alternative That Would Have Visual Impacts

I-15 Mainline. Adding an additional lane in each travel direction of I-15 mainline will widen the overall footprint of I-15. This extra width would make the interstate more prominent in the viewshed; however, the views would be consistent with the existing conditions and landscape character.

State Street in Farmington (Farmington 400 West Option). This option is similar to the existing conditions. This option would retain the underpass at State Street for Lagoon Drive. Lagoon Drive would parallel I-15, and both I-15 and Lagoon Drive would remain below State Street. The intersection of State Street and 400 West would be a similar three-way intersection as it is today; however, both roads would have improved pedestrian and bicyclist infrastructure. With the wider footprint of I-15, Lagoon Drive would be moved farther to the east, and one home would be removed. 400 West would remain in its current location. State Street would be 6 feet wider to accommodate vehicle turning movements at the intersection with 400 West and new bike lanes. The separate pedestrian overpass structure would be removed, and improved pedestrian and bicyclist infrastructure would be added to the north and south sides of State Street. The overall visual character of the street would look similar to how it does today.

State Street in Farmington (Farmington State Street Option). This option is similar to the Farmington 400 West Option; however, Lagoon Drive would not pass underneath State Street. This option would construct a new four-way intersection at State Street and 400 West for Lagoon Drive. Lagoon Drive would be elevated to meet 400 West and State Street at the same grade to create a standard four-leg intersection. State Street would be 10 to 16 feet wider near the intersection with 400 West and would then taper to the original width east of the intersection. This option would impact more street trees than would the Farmington 400 West Option. The remainder of the Farmington State Street Option is the same as the Farmington 400 West Option.

200 West in Farmington. The 200 West interchange would be reconstructed with a modified design that includes a new signalized intersection and maintains the free-flow movement to Lagoon Drive. The signalized intersection would be a visual change that would introduce a new traffic signal where one does not currently exist. The location of the new 200 West/Frontage Road/Lagoon Drive intersection would be aligned farther to the southwest away from the residential areas and closer to I-15, and the intersection would be most visible to travelers. The reconstructed interchange would add sidewalks on the west side of 200 West, thereby improving the streetscape over the existing conditions.

Centerville Community Park Pedestrian Overpass in Centerville. A new pedestrian overpass would be constructed over I-15 connecting the Centerville Community Park with the regional trail network west of I-15. The pedestrian overpass would add a new vertical structure that does not currently exist.

Parrish Lane in Centerville. The I-15 and Parrish Lane interchange would be converted from a diamond interchange to a single-point urban interchange (SPUI). This new configuration would alter the on- and off-ramp configuration, and the number of traffic signals would be reduced. The new interchange would also feature a new underpass for northbound traffic exiting I-15 that is traveling to the commercial area on the northeast corner of the interchange. The streetscape would be enhanced for pedestrians and bicyclists. A new pedestrian overpass would be constructed over I-15 south of Parrish Lane near 200 North in Centerville. The pedestrian overpass would add a new vertical structure that does not currently exist.

500 West in Bountiful. The 500 West southbound exit of I-15 would be reconstructed as a right-hand exit (instead of the current left-hand exit) that would cross underneath I-15 in a new underpass under the both the northbound and southbound lanes. An underpass currently exists underneath the northbound lanes. The new underpass would have similar visual character as the existing conditions.

400 North in Bountiful (Bountiful 400 North – Northern Option). The new partial diamond interchange at 400 North would be similar to the existing conditions, but it would include one additional travel lane on the north side of the street as well as bike lanes, a sidewalk on the south side of the street, and a shared-use path on the north side of the street. With this option, the wider footprint of 400 North would be shifted to the north side of 400 North. Several buildings on the north side of 400 North would need to be removed and the businesses relocated to accommodate the wider footprint. The relocation of businesses would be a visual change.

400 North in Bountiful (Bountiful 400 North – Southern Option). This option would have similar visual impacts as Bountiful 400 North – Northern Option. The option design is the same; however, it is shifted to the south along 400 North. The commercial development would be removed on the south side of the street versus the north side of the street with the Bountiful 400 North – Northern Option. The relocation of businesses would be a visual change.

500 South in Bountiful (Bountiful 500 South – Northern Option). This option would reconstruct the existing diverging diamond interchange at 500 South and I-15 as a tight diamond interchange and add one lane width to 500 South to the north side of the street. The proposed tight diamond interchange at 500 South would be visually different than the existing diverging diamond interchange, but the views would be consistent with the existing conditions and landscape character. 500 South would be wider than the existing conditions in part due to the shared-use path on each side of 500 South. With this option, the wider footprint of 500 South is shifted to the north side of the street. Several buildings on the north side of 500 South would need to be removed and the businesses relocated to accommodate the wider footprint. The relocation of businesses would be a visual change.

500 South in Bountiful (Bountiful 500 South – Southern Option). This option would have similar visual impacts as the Bountiful 500 South – Northern Option. The option design is the same but shifted to the south. The commercial development would be removed on the south side of the street versus the north side of the street with the Bountiful 500 South – Northern Option. The relocation of businesses would be a visual change.

Braided Ramps between 400 North and 500 South in Bountiful. The Action Alternative would have braided ramps between 400 North and 500 South. Braided ramps are highway ramps that cross over each other and are vertically separated. Braided ramps would be a visual change since new bridges would be added to separate traffic merging onto and exiting I-15. The structures would be most visible to residents of Wood Haven, from vantage points not obscured by trees, and from the back sides of the commercial buildings east of I-15. An example of braided ramps near the project area is in Farmington on U.S. 89 between Main Street and Shepard Lane (Figure 3.15-15).

2600 South in Woods Cross. The proposed SPUI at 2600 South would be visually different than the existing interchange with changes to the ramp locations and lane locations under I-15, but the views would be consistent with the existing conditions and landscape character. The streetscape would be enhanced for pedestrians and bicyclists.

800 West in Woods Cross. North of 2600 South, a new underpass of I-15 would be constructed connecting 800 West with Wildcat Way on the east side of I-15. This underpass would include a new shared-use path.

I-215 and I-15 in North Salt Lake. The existing interchange would be reconfigured to connect eastbound I-215 with southbound I-15 and connect northbound I-15 with westbound I-215. These two movements between I-215 and I-15 currently do not exist, and the reconfigured interchange would result in additional pavement, structures, and signals. The reconfigured interchange would also increase access to both I-15 and I-215 from U.S. 89 in North Salt Lake. The full-access interchange at I-215, I-15, and U.S. 89 in North Salt Lake would be visually different than the existing conditions, but the views would be consistent with the existing conditions and landscape character.

2100 North in Salt Lake City. The existing partial-access interchange at 2100 North would be reconfigured to include an overpass of I-15, Warm Springs Road, and the Union Pacific and FrontRunner railroad tracks that would allow traffic from U.S. 89/Beck Street, 2300 North, and Warm Springs Road access to all directions of travel on I-15. This overpass would add a new vertical structure and urban form in an industrial area.

1000 North in Salt Lake City (Salt Lake City 1000 North – Northern Option). This option would align a connection to I-15 and the 600 North collector and distributor system near 1100 North. The existing southbound on-ramp to I-15 would be reconstructed as part of a collector and distributor system parallel to I-15. These changes would alter the existing intersection at 1000 North and 900 West and would require acquiring the Salt City Motel property on the northwest side of the intersection and relocating the business. The relocation of the business would be a visual change.

Figure 3.15-15. Braided Ramp Example on U.S. 89



1000 North in Salt Lake City (Salt Lake City 1000 North – Southern Option). This option is similar to the Salt Lake City 1000 North – Northern Option except that 1000 North would extend underneath I-15 close to the existing 1000 North alignment. Visually, this option would extend views underneath I-15 to the east side of the interstate that are not currently visible. These changes would alter the existing intersection at 1000 North and 900 West, but this option would be less impactful to the businesses on the northwest corner of the intersection and result in less visual change at this corner.

600 North in Salt Lake City. The proposed tight diamond interchange at 600 North would be visually different than the existing SPUI, but the views would be consistent with the existing conditions and landscape character. The streetscape would be enhanced for pedestrians and bicyclists.

Long-term Impacts by LU

Land use patterns are well established in the visual resources evaluation area, and I-15 and its interchanges would remain with or without the Action Alternative. The Action Alternative is visually compatible with the existing conditions, and most viewers are not likely to be sensitive to the change. The long-term impacts by LU at a landscape-level from the Action Alternative would be similar to those impacts from the No-action Alternative (see Section 3.15.5.1.2, *Long-term Impacts*). Specific impacts to LUs as represented by the key views are discussed below.

Visual Impacts of the Action Alternative by Key View

Key View 1

The foreground and middleground views would change slightly with the Action Alternative. Background views would not change. The north segment Farmington 400 West and Farmington State Street Options would look similar at this location; however, have minor differences described below.

Compatibility. With the north segment Farmington 400 West Option, the home at 399 W. State Street would be removed, and State Street would be widened to accommodate the turning movements at 400 West. About five street trees on State Street closest to I-15 and near 400 West may need to be removed. With the north segment Farmington State Street Option, the same home would be removed, and State Street would be widened to accommodate the turning movements at 400 West and Lagoon Drive. As many as 21 street trees on State Street might be removed with this option.

For both options, the pedestrian overpass for I-15 would be removed and pedestrian and bicyclist facilities would be constructed on the north and south sides of a new State Street overpass of I-15. Within the foreground and middleground views, the Action Alternative would have low contrast with existing conditions. The form, materials, and visual character would be compatible with the existing conditions. The Action Alternative would not affect background views.

Viewer Sensitivity. The viewers would be predominantly the travelers and residents along State Street. Travelers on State Street would be less sensitive to the visual change because the route and travel patterns are similar. Consolidating the two I-15 overpasses into one would improve coherence for travelers (that is, pedestrians and bicyclists expect sidewalks and bike lanes to continue). Residents along State Street would be more sensitive to visual changes in the landscape such as the removal of street trees.

Visual Quality. Overall, the visual impact would be **neutral** because the streetscape would be compatible to the existing conditions, and the street trees, if removed, could be replanted.

Key View 2

Key View 2. The foreground and middleground views would change with the Action Alternative and the addition of a new pedestrian overpass at Centerville Community Park. Background views would be obscured by the pedestrian overpass from this vantage point. The Action Alternative is the same for all options at this location.

Compatibility. With the Action Alternative, a new pedestrian overpass would be highly visible from this key view and would introduce a new urban form, obscuring some background views when looking north. The form, materials, and visual character would be compatible with the existing conditions, but the structure would change views at this vantage point.

Viewer Sensitivity. The viewers would be predominantly the travelers along North Frontage Road and recreationists at the park. Travelers on North Frontage Road would be less sensitive to the visual change because a pedestrian overpass is an expected structure in a developed, urban environment. Recreationists might be more sensitive to the visual change due to time spent in the viewshed and to the change in background views when looking north.

Visual Quality. Overall, the visual impact would be **neutral** because the pedestrian overpass is a visually expected structure along a developed interstate corridor.

Key View 3

Key View 3. The foreground and middleground views would change with the Action Alternative. Background views would not change. The interchange and photo simulation shown in Figure 3.15-16 is the same for all options at this location. The original image is included in Figure 3.15-17 for comparison.

Compatibility. With the Action Alternative, the I-15 and Parrish Lane interchange would be converted from a diamond configuration to a SPUI. The area is an interchange under the existing conditions and would remain an interchange with the Action Alternative. The form, materials, and visual character would be compatible with the existing conditions. The Action Alternative would maintain a similar level of cultural order and would not contrast with the existing conditions.

Viewer Sensitivity. Viewer sensitivity of travelers along the reconfigured interchange and neighbors near the interchange would be low. The new features of the interchange and the underpass would complement the existing urban development and roadway configuration; therefore, the natural harmony and cultural order would be compatible with the existing conditions, and viewers would not be sensitive to these changes.

Visual Quality. Overall, the visual impact would be **neutral** because the interchange is consistent with the existing conditions.

Figure 3.15-16. Key View 3 with Simulation of the Action Alternative at the Parrish Lane and I-15 Interchange



Figure 3.15-17. Original Key View 3 Image for Comparison with Simulation Above



Key View 4

Key View 4. The foreground and middleground views would change with the Action Alternative. Background views would not change. The Action Alternative is the same for all options at this location.

Compatibility. With the Action Alternative, the sidewalk visible in Key View 4 would be replaced with a 12-foot-wide shared-use path. All other features of 800 West visible from this vantage point would be similar to the existing conditions. 800 West would remain a road or would become a private driveway to maintain access for the business to the west. The form, materials, and visual character would be compatible with the existing conditions. The Action Alternative would maintain a similar level of cultural order and would not contrast with the existing conditions.

Viewer Sensitivity. Viewer sensitivity of travelers along 800 West and recreationists along the shared-use path would be low. The new shared-use path would complement the existing development and roadway configuration; therefore, the harmony and cultural order would be similar to the existing conditions, and viewers would not be sensitive to these changes.

Visual Quality. Overall, the visual impact would be **neutral** because the Action Alternative is similar to the existing conditions.

Key View 5

Key View 5. The foreground and middleground views would change with the Action Alternative. Background views would not change. The interchange and simulation shown in Figure 3.15-18 is the same for all options at this location. The original image is included in Figure 3.15-19 for comparison.

Compatibility. With the Action Alternative, the additional on- and off-ramps between I-215 and I-15 would result in additional pavement, structures, and signals in the middleground views. All other features visible from this vantage point would be similar to the existing conditions. The form, materials, and visual character would be compatible with the existing conditions.

Viewer Sensitivity. Viewer sensitivity of residents to changes in the middleground viewshed would be low. The new on- and off-ramps would be placed between existing I-15, I-215, and railroad infrastructure in an industrial area. These new on- and off-ramps are compatible with the existing development and roadway configuration; therefore, the harmony and cultural order would be similar to the existing conditions, and viewers would not be sensitive to these changes. Viewers would be sensitive to changes in background views of the natural appearing landscapes surrounding the Great Salt Lake, but background views would not change.

Visual Quality. Overall, the visual impact would be **neutral** because the Action Alternative is similar to the existing conditions.

Figure 3.15-18. Key View 5 with Simulation of the Action Alternative at the New U.S. 89, I-215, and I-15 Interchange



Figure 3.15-19. Original Key View 5 Image for Comparison with the Simulation Above



Key View 6

Key View 6. The foreground and middleground views would change with the Action Alternative. Background views would not change. The Action Alternative is the same for all options at this location.

Compatibility. With the Action Alternative, the new overpass at 2100 North would result in additional pavement, structures, and signals in the foreground and middleground views. The form, materials, and visual character would be compatible with the existing conditions.

Viewer Sensitivity. Viewer sensitivity of travelers to changes in the foreground and middleground viewshed would be low. The new overpass would complement the existing industrial development and roadway configuration; therefore, the harmony and cultural order would be similar to the existing conditions, and viewers would not be sensitive to these changes. Background views are not highly visible under existing conditions and would be even more obscured with the overpass.

Visual Quality. Overall, the visual impact would be **neutral** because the Action Alternative is compatible with the existing conditions and viewer sensitivity would be low.

Key View 7

Key View 7. The foreground and middleground views would change with the Action Alternative. Background views would not change. The interchange and simulation shown in Figure 3.15-20 is the same for all options at this location. The original image is included in Figure 3.15-21 for comparison.

Compatibility. With the Action Alternative, the existing SPUI would be converted to a tight diamond configuration and an additional traffic signal would be added. There would be curb separation between bike lanes and vehicle lanes. The area is an interchange under the existing conditions and would remain an interchange with the Action Alternative. The form, materials, and visual character would be compatible with the existing conditions.

Viewer Sensitivity. Viewer sensitivity of travelers along the reconfigured interchange and neighbors near the interchange would be low. The new features of the interchange and improved pedestrian and bicyclist facilities would complement the existing urban development and roadway configuration; therefore, the natural harmony and cultural order would be similar to the existing conditions, and viewers would not be sensitive to these changes. The improved pedestrian and bicyclist infrastructure might be seen by residents as a visual improvement that enhances the harmony and order of the streetscape. The existing pedestrian and bicyclist infrastructure has less separation from traffic and requires users to cross four more intersections at the 600 North interchange compared to the Action Alternative.

Visual Quality. Overall, the visual impact would be **beneficial** due to a more coherent streetscape for pedestrians and bicyclists.

Figure 3.15-20. Key View 7 with Simulation of the Action Alternative at the 600 North and I-15 Interchange

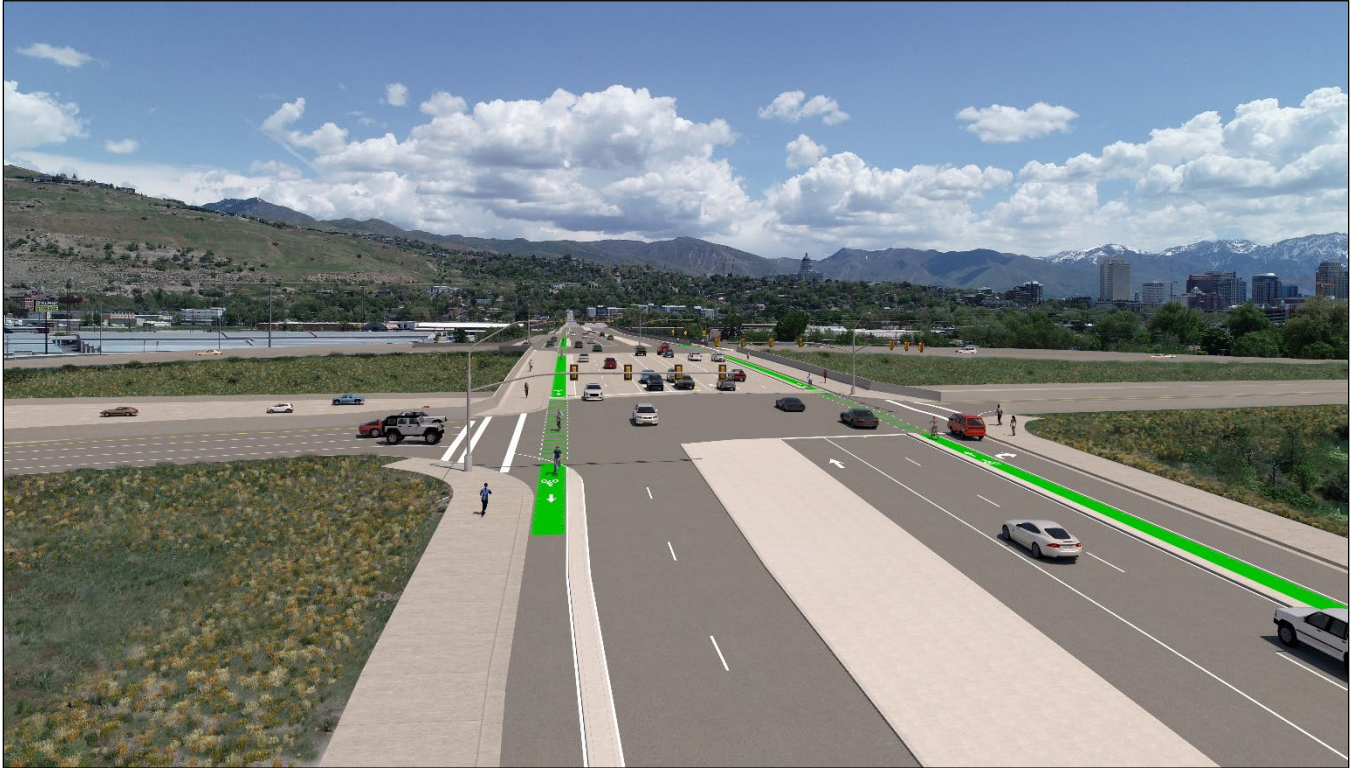
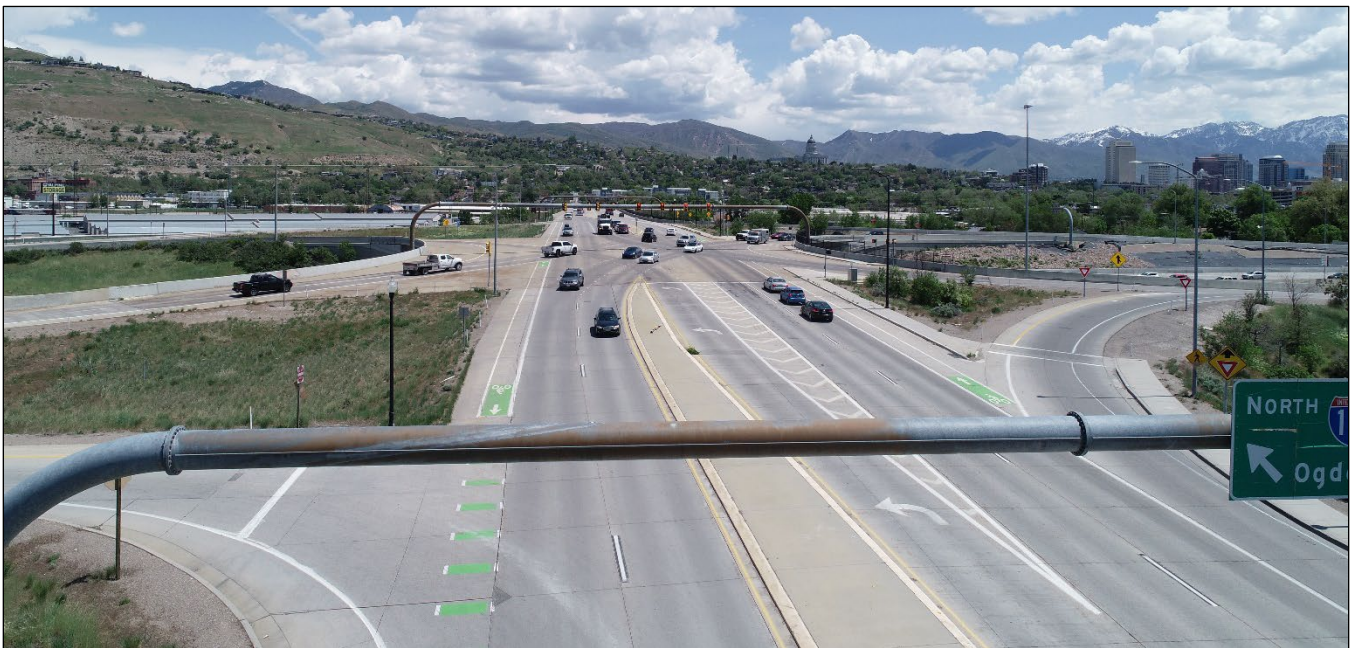


Figure 3.15-21. Original Key View 7 for Comparison with the Simulation Above



3.15.5.2.3 Summary of Action Alternative Impacts

Table 3.15-2 summarizes the impacts by key view for the Action Alternative.

Table 3.15-2. Summary of Visual Impacts by Key View for the Action Alternative

Alternative	Location and Key View						
	State Street	Centerville Community Park	Parrish Lane	800 West / 2600 South	Sunset Ridge	2100 North / Warm Springs Road	600 North
	1	2	3	4	5	6	7
No-action	N	N	N	N	N	N	N
Action Alternative	N	N	N	N	N	N	B

B = beneficial visual impacts, N = neutral visual impacts

3.15.5.3 Mitigation Measures

UDOT proposes to implement mitigation to include the following. All aesthetic treatments would be completed in accordance with UDOT Policy 08A-03, *Project Aesthetics and Landscaping Plan Development and Review* (UDOT 2014a), and UDOT's *Aesthetics Guidelines* (UDOT 2014b). UDOT's policy is to set a budget for aesthetics and landscape enhancements based on the aesthetics guidelines. The aesthetic features considered during the final design phase of the selected alternative could include lighting; vegetation and plantings (such as street trees); the color of bridges, structures, and retaining walls; and other architectural features such as railings.

Aesthetic treatments are typically evaluated during the final design phase of the project after an alternative is selected in the project's Record of Decision and funding has been allocated for the project. UDOT would coordinate with the local municipalities to determine whether the desired aesthetics can be implemented.

3.16 Energy

3.16.1 Introduction

Section 3.16 describes how energy demands would be affected in the short and long terms with the No-action and Action Alternatives. Energy is evaluated primarily in the form of vehicle fuel consumption.

Fuel consumption varies with traffic characteristics. The primary traffic characteristics are traffic flow (average vehicle speed), driver behavior, the geometric configuration of the roadway, the vehicle mix (cars versus trucks), and climate and weather. Of all the traffic-related factors, average vehicle speed accounts for most of the variability in fuel consumption and is a good predictor of fuel economy for most travel. Fuel efficiency under steady-flow, “cruising” driving conditions peaks at 45 to 60 miles per hour (mph) and then rapidly declines as speeds increase. At lower speeds, fuel efficiency is reduced by engine friction, underinflated tires, use of powered accessories (such as power steering and air conditioning), and repeated braking and acceleration (Davis and Diegel 2003).

Energy Evaluation Area. The energy evaluation area includes I-15 and the cross streets within the right-of-way of the Action Alternative. This same area is evaluated for the No-action Alternative.

3.16.2 Regulatory Setting

Under 40 CFR Section 1502.16 and FHWA Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, UDOT is required to consider the energy requirements and conservation potential for each project alternative.

3.16.3 Methodology

To determine existing energy use, UDOT used the WFRC travel demand model, version 8.3.2, to determine the average daily VMT in the energy evaluation area with and without the Action Alternative. This methodology does not account for 2019 or projected 2050 vehicle speeds and how vehicle speeds affect energy use.

For existing (2019) conditions, an average vehicle fuel efficiency of 23.8 miles per gallon (mpg) was used based on information from the U.S. Energy Information Administration (EIA 2020); this number includes on-the-road estimates for both cars and light trucks. The average on-the-road fuel efficiency of 23.8 mpg was divided into the average daily VMT to determine the total daily fuel consumption for the No-action and Action Alternatives.

For future (2050) conditions, an average vehicle fuel efficiency of 36.1 mpg was used (EIA 2023); this number includes on-the-road estimated for both cars and light trucks. The average on-the-road fuel efficiency of 36.1 mpg was divided into the predicted daily average VMT to determine the total daily fuel consumption for the No-action and Action Alternatives for comparison.

3.16.4 Environmental Consequences and Mitigation Measures

Table 3.16-1 summarizes the existing (2019) and projected (2050) conditions with the No-action and Action Alternatives in the energy evaluation area. Overall, energy requirements (that is, fuel consumption) are expected to decrease in 2050 because vehicles are expected to become more fuel-efficient over time.

Table 3.16-1. Average Daily VMT and Fuel Consumption for Existing Conditions and Forecasts for 2050

Conditions or Alternative	Average Daily VMT ^a	Fuel Consumption			
		Average (gallons/day)	% Change from Existing Conditions	Change from No-action Alternative (gallons)	% Change from No-action Alternative
Existing conditions (2019)	1,389,642,965	58,388,360	NA	NA	NA
2050 Estimates					
No-action Alternative	1,784,512,740	49,432,486	-15.3%	NA	NA
Action Alternative	1,994,497,240	55,249,231	-5.4%	+5,816,745	+11.8%

^a Average daily VMT information was obtained from a review of the WFRC travel demand model, version 8.3.2, for I-15 and its cross streets with and without the Action Alternative.

3.16.4.1 No-action Alternative

3.16.4.1.1 Construction-related Energy Impacts

With the No-action Alternative, the changes associated with the I-15: Farmington to Salt Lake City Project would not be made. The only construction-related energy impacts would be caused by roadway maintenance and resurfacing and any roadway work that occurs as part of ongoing commercial and residential development near I-15.

3.16.4.1.2 Direct Energy Impacts

With the No-action Alternative, VMT would increase due to higher travel demand and population growth; however, overall energy requirements would decrease compared to the existing conditions because vehicles are expected to become more fuel-efficient (Table 3.16-1 above).

3.16.4.2 Action Alternative

3.16.4.2.1 Construction-related Energy Impacts

Constructing the Action Alternative, regardless of its geographic subarea options, would involve the operation of heavy machinery with a resulting increase in energy use, since fuel would be consumed as part of the construction activities. In addition, traffic congestion could increase during construction, so more fuel would be used. The construction-related energy consumption would be temporary.

3.16.4.2.2 Direct Energy Impacts

With the Action Alternative, regardless of its geographic subarea options, congestion would be reduced, which would increase average vehicle speeds and fuel efficiency in the energy evaluation area. Based on the results of travel demand modeling, the Action Alternative would reduce travel time by 49% to 55% and increase average speeds by 95% to 125% during both the morning and evening peak periods compared to the 2050 no-action conditions. The Action Alternative would increase VMT by more than 200 million miles over the No-action Alternative because more traffic would be served by the added capacity on I-15. Even with this added capacity, the energy used would be slightly less than with the existing conditions due to improved fuel economy (Table 3.16-1 above). The improved vehicle speeds with the Action Alternative would also benefit overall vehicle fuel efficiencies (see Section 3.16.1, *Introduction*).

3.16.4.3 Mitigation Measures

Due to improved fuel economy in the future, the energy used with the Action Alternative would be less than the energy used with the existing conditions. No mitigation measures for energy impacts are proposed.

3.17 Construction Impacts

3.17.1 Introduction

Reconstructing I-15 and its interchanges in a wider footprint would cause a number of temporary impacts from disturbing the ground and operating construction equipment. Construction could affect property, land use, public services and utilities, public safety, travel patterns, economics (businesses), pedestrian and bicyclist facilities, air quality, noise levels, water quality, noxious weeds, aquatic resources (wetlands), wildlife, cultural resources, Section 4(f) resources, Section 6(f) resources, hazardous materials sites, and visual resources. In addition, construction could cause impacts from the use of sand and gravel pits and from hauling these materials by truck to and from the construction staging and material borrow areas and the construction site.

The nature and timing of these impacts would be related to the project's construction methods. Most construction-related impacts to the public would be associated with travel delays during construction.

Section 3.17 describes the construction impacts associated with the Action Alternative for each of the environmental resources analyzed in the EIS.

3.17.2 Environmental Consequences

3.17.2.1 No-action Alternative

With the No-action Alternative, the improvements associated with the I-15 project would not be made; therefore, there would be no construction-related impacts.

3.17.2.2 Action Alternative

Construction of the Action Alternative could affect property, land use, public services and utilities, public safety, travel patterns, economics (businesses), pedestrian and bicyclist facilities, air quality, noise levels, water quality, noxious weeds, wetlands, wildlife, cultural resources, Section 4(f) resources, Section 6(f) resources, hazardous materials sites, and visual resources. Construction could cause impacts from trucks hauling materials to and from the construction staging and material borrow areas and the construction site. Overall, construction-related impacts from the Action Alternative would be temporary.

3.17.2.2.1 Construction Phasing

In general, the alternatives analysis in a NEPA study for a federal-aid transportation project focuses on the impacts and benefits of the alternatives in a single future year—often called the *design year*—which is usually 25 to 30 years in the future, or, in the case of the I-15 EIS, the year 2050. The analysis of project impacts assumes construction of the entire Action Alternative (including segment options) and assumes that construction is completed before the 2050 design year. The analysis of project benefits also assumes full construction by 2050. A delay in completing the project could reduce the estimated safety and travel time benefits to a shorter period. Similarly, the benefits of the project are defined as the benefits that would result from full construction of the project in the design year.

At the end of the NEPA process for a project, UDOT issues a Record of Decision (ROD) for the project. Once the ROD has been issued, and if UDOT selects an action alternative in the ROD, UDOT often implements the project through a series of separate contracts for individual sections of the project. Unless otherwise specified in the ROD, UDOT has the flexibility to determine the appropriate construction phasing.

The I-15 EIS is included in WFRC's 2019–2050 RTP for construction in Phase 1 (2019–2030). If only partial funding were allocated for construction, UDOT would construct portions of the project based on the amount of the funding while considering safety and operational benefits.

The main impact to the traveling public from constructing the project in phases would be traffic congestion. Constructing the project in phases would likely prolong construction-related congestion over a longer period and could potentially result in the loss of sales by businesses over a longer period during construction. The economic impacts would likely be the greatest to the business areas directly accessed from I-15 (Parrish Lane, 400 North Bountiful, 500 South Bountiful, and 1100 North/2600 South North Salt Lake/Woods Cross).

Phased construction could result in more air quality impacts because of multiple construction mobilization and demobilization periods and because the full congestion relief of the project, which would reduce traffic-related emissions, would not be realized earlier in the project.

3.17.2.2.2 Property and Land Use Impacts from Construction

UDOT would need to obtain construction easements for some properties in order to construct the Action Alternative. Current estimates on the properties requiring easements are included in the right-of-way analysis in Section 3.3, *Right-of-way and Relocations*. Construction easements would be required for properties that are outside the right-of-way but would be affected by the cuts or fills during construction, would be used by equipment during construction, would be necessary for utility relocations, or would accommodate property access modifications. UDOT would temporarily use these properties during construction and would provide compensation to the landowner for this temporary use.

3.17.2.2.3 Social Impacts from Construction

Public Services and Utilities

Utilities and services could be temporarily disrupted or relocated during construction. UDOT would coordinate with utility providers to minimize disruption of these services.

Public Safety

Lane closures, detours, increased congestion, and reduced travel speeds in construction zones could increase emergency response times.

Travel Patterns

Area residents and commuters could experience temporary impacts with the Action Alternative on I-15 and at the interchanges. Traffic impacts would likely include temporary changes or detours to business and residential access, traffic delays, rerouting, and temporary lane closures. Although all access on affected travel routes would likely be maintained during construction, some accesses to businesses and residences could be altered during construction—for example, a business access could be rerouted to another side of a parking lot or accessed through a side street.

3.17.2.2.4 Economic Impacts from Construction

The congestion associated with construction could cause increased travel delays and lost worker productivity where the construction would affect existing roads. The areas of potential construction delay or congestion impacts are I-15 and the primary cross streets at each interchange. These impacts would affect both commuters and businesses that rely on these roads.

Temporary adverse impacts could also occur if business accessibility is reduced during construction. The businesses most likely to be affected are convenience businesses—those that cater to impulse shopping or “in-route” shopping such as gas stations and convenience stores. Construction impacts would be temporary but could substantially affect individual businesses depending on the length of construction—that is, travelers might decide to bypass the businesses in favor of businesses located in less-congested areas not affected by construction. Destination businesses—those that customers plan to visit in advance of their trip such as grocery stores and sit-down restaurants—would experience moderate impacts.

3.17.2.2.5 Pedestrian and Bicyclist Impacts from Construction

Several pedestrian and bicycle facilities would be reconstructed by the Action Alternative at every interchange and at the locations of dedicated pedestrian and bicycle crossings of I-15. All trails and the road shoulders and sidewalks of active construction zones could be temporarily closed during construction.

3.17.2.2.6 Air Quality Impacts from Construction

Air quality impacts during construction would be limited to short-term increases in fugitive dust, particulates, and local air pollutant emissions from construction equipment. Construction would generate air pollutant emissions from the following activities:

- Excavation related to cut and fill
- Mobile emissions from construction workers' vehicles as they travel to and from the project site
- Mobile emissions from delivering and hauling construction supplies and debris to and from the project site
- Stationary emissions from on-site construction equipment
- Mobile emissions from vehicles whose speeds are slowed because of increased congestion caused by construction

Because construction would be local and short-term, impacts to individual air quality receptors would also be short-term. The most common air pollutant caused by construction would be particulate matter 10 microns in diameter or less (PM₁₀).

3.17.2.2.7 Noise Impacts from Construction

Land uses that are sensitive to traffic noise are also sensitive to construction noise and could be affected by construction. Constructing roads causes a substantial amount of temporary noise. Noise during construction could be a nuisance to nearby residents and businesses. The Action Alternative would generate some noise that would occur sporadically in different locations throughout the construction period.

The most common noise source in construction areas would be from engine-powered machinery such as earth-moving equipment (bulldozers), material-handling equipment (cranes), and stationary equipment (generators). Mobile equipment (such as trucks and excavators) operates in a sporadic manner, while stationary equipment (generators and compressors) generates noise at fairly constant levels. The loudest and most disruptive construction activity would be pile driving (including driving sheet pile).

For the Action Alternative, pile driving would likely be necessary at all new bridge locations associated with each interchange and crossing of I-15. An additional source of construction noise would be the demolition and removal of old concrete pavement along the I-15 mainline. The equipment to break up the pavement would be a source of noise and vibration, as would the loading of concrete into trucks to haul away.

Typical noise levels from construction equipment range from 74 to 101 dBA at 50 feet from the source; however, the majority of typical construction activities fall within the 75-to-85-dBA range at 50 feet. Peak noise levels from pile driving associated with structures such as interchanges and overpasses are about 101 dBA at 50 feet (FHWA 2006). Generally, noise at 70 dBA is intrusive and noise at 80 dBA is annoying. At 100 dBA, people must shout to be heard (CEQ 1970). As an example, typical vacuum cleaners have a noise level of about 80 dBA.

Construction noise at locations farther away than 50 feet would decrease by 6 to 8 dBA for each doubling of the distance from the source. For example, if the noise level from a jackhammer is 89 dBA at 50 feet, it would decrease to about 83 dBA at 100 feet and about 76 dBA at 200 feet. Noise impacts to adjacent residential areas during construction would vary based on the proximity to the construction zone throughout

the construction area. Some residential properties directly abut the existing noise walls along I-15, and some residences have some separation due to the locations of frontage roads and vacant parcels.

3.17.2.2.8 Water Quality Impacts from Construction

Construction could temporarily reduce surface water quality during the construction phase for the selected alternative. Construction activities—such as clearing and grubbing, grading, stockpiling, and material staging—disturb vegetation and increase the potential for erosion. Runoff from disturbed areas could temporarily increase the amount of sediment and pollutants (oil, gasoline, lubricants, cement, and so on) discharged into receiving waters. Discharges of pollutants—which would be mostly sediment—could be minimized with the use of BMPs, which would keep soil from leaving the construction site.

3.17.2.2.9 Noxious Weeds Impacts from Construction

Construction operations would remove the existing hard surfaces and established vegetation, which would expose the underlying soils to the risk of being invaded by noxious and invasive weeds. Materials and equipment delivered to the job site could introduce noxious and invasive weeds into the area if seeds are present in imported soil or on equipment that is not properly cleaned.

3.17.2.2.10 Aquatic Resources Impacts from Construction

Construction-related impacts and mitigation to aquatic resources, such as wetlands and streams, are identified in Section 3.12, *Ecosystem Resources*. During construction, some erosion might occur outside the specific roadway construction zone, and this erosion might increase sediment levels in adjacent aquatic resources, thereby placing fill in those resources. BMPs such as silt fences and other erosion-control features would be used in areas adjacent to aquatic resources. In addition, aquatic resources outside of but adjacent to the construction footprint would be fenced to prevent pedestrian and vehicle access. If any construction activities would affect aquatic resources through increased sediments or fill, the construction contractor would be required to identify the additional amount of aquatic resources that would be affected. The contractor would also be responsible for obtaining the necessary authorization from USACE and all other environmental clearances before affecting these areas.

3.17.2.2.11 Impacts to Migratory Birds from Construction

Construction activities could disrupt the feeding, nesting, and reproductive activities of migratory birds in or near the right-of-way because of higher noise levels, construction equipment activity, and lights. These temporary construction activities are of particular concern during nesting periods for migratory birds near the right-of-way because the activities could disrupt nesting or cause birds to flee the nest. During construction, some habitat could be temporarily disturbed by movement of equipment, storage of materials, and disturbance of staging areas. For more information, see Section 3.12, *Ecosystem Resources*.

3.17.2.2.12 Cultural Resources Impacts from Construction

During construction, ground-disturbing activities could result in the discovery of additional archaeological or historical resources other than those identified during the cultural resources surveys (see Section 3.10, *Historic and Archaeological Resources*).

3.17.2.2.13 Section 4(f) Resource Impacts from Construction

Temporary construction easements would be required for Section 4(f) properties. See Chapter 4, *Section 4(f) Analysis*, for more information.

3.17.2.2.14 Section 6(f) Resource Impacts from Construction

Temporary construction easements would be required for Section 6(f) properties. See Chapter 5, *Section 6(f) Analysis*, for more information.

3.17.2.2.15 Hazardous Materials Impacts from Construction

Contaminated soil and/or groundwater could be encountered during excavation on or near properties that are known to have stored hazardous materials or that have documented releases of hazardous materials. Coordination with UDEQ might be needed if a discovery is made.

3.17.2.2.16 Visual Impacts from Construction

During construction, the work zone would be cleared of vegetation, and the exposed bare ground would contrast visually with the surrounding agricultural, recreational, and residential areas that viewers of the area are accustomed to seeing. Construction equipment operating in the roadway, lane closures and lane shifts, construction signs, modifications to business access, and potential detours during construction could temporarily and adversely affect the visual quality of the project environment. Construction equipment (such as cranes) and dust would be visible from a distance and would modify views of the surrounding landscape. In addition, the movement of equipment and materials would be noticeable and would detract from neighboring views of the surrounding landscape. Any construction-specific impacts to visual resources would be short-term.

3.17.2.2.17 Traffic Impacts from Construction

The primary traffic impacts related to construction of the Action Alternative include the following:

- Traffic detours and some temporary road closures could occur throughout construction. Changes in roadway conditions could include rerouting of traffic onto other roads, temporary closure of lanes or sections, and temporary lane shifts. Detours and road closures could temporarily increase travel times, fuel use, and air pollutant emissions.
- The properties and communities located near the roads used as detours could experience temporary increases in traffic. The temporary increases in traffic could cause longer travel time for the residents and patrons of businesses on these roads and have temporary impacts related to more noise and vehicle emissions due to the higher traffic volumes during construction.
- Access to commercial properties could be temporarily disrupted or have detours, which could cause longer travel times for employees and customers of these businesses, and a potential loss of revenue for some commercial businesses.

3.17.2.2.18 Construction Staging and Material Borrow Areas

During construction, the contractor would establish staging areas for equipment and would obtain fill material for improvements. Because a contractor has not yet been selected, the exact locations of staging areas and sources of fill material are not known.

3.17.3 Mitigation Measures

The following mitigation measures are currently proposed to be implemented during construction.

3.17.3.1 Mitigation Measures for Construction Phasing

No specific mitigation has been identified for construction phasing. If a phased approach is taken, the project mitigation identified in this EIS is proposed to be implemented for the specific design for each phase. Future mitigation for subsequent phases would take into account the final design for that phase and any changes in regulations or potential improvements to BMPs at the time of implementation.

3.17.3.2 Mitigation Measures for Property and Land Use Impacts from Construction

To the extent possible, the contractor would be required to ensure that irrigation systems remain intact and fully functional. Fencing could be altered during project construction. The contractor would be required to maintain fences and gate operations to protect construction crews and the traveling public during the construction phase. In locations of temporary easements where UDOT would temporarily use private property during construction, UDOT would provide compensation to the landowner for the temporary use.

3.17.3.3 Mitigation Measures for Social Impacts from Construction

Public Safety

A thorough public information program would be implemented to inform the public about construction activities and to reduce impacts. Information would include work hours and alternate routes. Construction signs would be used to notify drivers about work activities and changes in traffic patterns. Construction sequencing and activities would be coordinated with emergency service providers to minimize delays and response times during construction.

Public Services and Utilities

Utility agreements would be completed to coordinate utility relocations. The project specifications would require the contractor to coordinate with the utility companies to plan work so that utility disruptions to a business occur when the business is closed or during off-peak times. Before beginning work, the contractor would be required to contact Blue Stakes to identify the locations of all utilities. The contractor would be required to use care when excavating to avoid unplanned utility disruptions. If utilities are unintentionally disrupted, UDOT would work with the contractor and the utility companies to restore service as quickly as possible.

Travel Patterns

The contractor would be required to develop a maintenance of traffic plan that defines measures to reduce construction impacts to traffic. A general requirement of this plan is that, to the extent reasonably practical, safe access to businesses and residences must be maintained and existing roads must be kept open to traffic unless alternate routes are provided.

Even with the implementation of the maintenance of traffic plan, short-term increases in traffic congestion would occur in the construction area. Road closures would be limited to what is specified in the maintenance of traffic plan as approved by UDOT before the start of construction.

3.17.3.4 Mitigation Measures for Economic Impacts from Construction

Access to businesses would be maintained during the construction and post-construction phases of this project. For each phase of the project, UDOT would coordinate with property owners and businesses to evaluate ways to maintain access while still allowing efficient construction operations. This coordination could entail sharing a temporary access or identifying acceptable timeframes when access is not needed. Adequate signs would be placed in construction areas to direct drivers to businesses. Other potential mitigation measures for construction impacts include:

- A traffic access management plan developed and implemented by the construction contractor that maintains the public's access to the business during normal business hours
- A frequent newsletter provided to all businesses in the construction area describing the progress of construction and upcoming construction events
- Business access signs that identify business access points within the construction limits
- Meetings with business representatives to inform them of upcoming construction activities and to provide a forum for the representatives to express their concerns with the project

3.17.3.5 Mitigation Measures for Pedestrian and Bicyclist Impacts from Construction

All existing pedestrian and bicyclist facilities including shoulder ways that would be temporarily impacted during construction would be reconstructed as part of the project. The trails and sidewalks and the road shoulders of active construction zones could be closed temporarily during construction. Closures would be limited in duration and construction detours would accommodate pedestrians and bicyclists as well as vehicles. Detours for pedestrians and bicyclists would be as direct as possible to minimize lengthy route deviations.

3.17.3.6 Mitigation Measures for Air Quality Impacts from Construction

Measures would be taken to reduce fugitive dust generated by construction when the control of dust is necessary for the protection and comfort of motorists or area residents. Dust-suppression techniques would be applied during construction in accordance with UDOT's Standard Specifications for Road and Bridge Construction, Section 01355, *Environmental Protection*, Part 1.11, *Fugitive Dust* (UDOT 2022b).

3.17.3.7 Mitigation Measures for Noise Impacts from Construction

To reduce temporary noise impacts associated with construction, the contractor would comply with all state and local regulations relating to construction noise, including UDOT's 2023 Standard Specification 00555 for nighttime construction work to reduce the impacts of construction noise on the surrounding community.

3.17.3.8 Mitigation Measures for Water Quality Impacts from Construction

Because more than 1 acre of ground would be disturbed, a UPDES permit and an SWPPP, consistent with UDOT's Standard Specifications for Road and Bridge Construction, Section 01355, *Environmental Protection*, Part 1.9, *Water Resource Permits*, and Part 1.14, *Stormwater Management Compliance*, would be required. The SWPPP would identify measures to reduce impacts to receiving waters from construction activities including site grading, materials handling and storage, fueling, and equipment maintenance. In addition, BMPs could include such measures as silt fences, erosion-control fabric, fiber mats, straw bales, silt drains, detention basins, mulching, and revegetation.

3.17.3.9 Mitigation Measures for Noxious Weeds Impacts from Construction

The contractor would be required to follow UDOT Special Provision 02924S, *Invasive Weed Control*, to minimize construction impacts. To mitigate the possible introduction of noxious and invasive weeds due to construction activities, the contractor will:

- Be required to follow the noxious weed mitigation and control measures identified in UDOT's Standard Specifications for Invasive Weed Control.
- Strictly follow the BMPs to reduce the potential for weed infestations.
- Reseed disturbed areas.

3.17.3.10 Mitigation Measures for Aquatic Resource Impacts from Construction

The Action Alternative would convert aquatic resources to transportation use. In order to fill jurisdictional wetlands and other aquatic resources as part of the project, UDOT must prepare a Clean Water Act Section 404 permit application and submit it to USACE for approval before construction. The permit application must contain a compensatory mitigation plan that describes the proposed mitigation efforts and how they would offset the functions and values eliminated by the selected alternative.

In addition, BMPs such as silt fences and other erosion-control features would be used in areas adjacent to wetlands to mitigate potential temporary construction impacts to wetlands and other waters of the United States. For more information, see Section 3.12, *Ecosystem Resources*.

3.17.3.11 Mitigation Measures for Impacts to Migratory Birds from Construction

Trees and shrubs would be removed during the non-nesting season (about August 15 to April 1). If this is not possible, UDOT or its contractor would arrange for preconstruction nesting surveys, to be conducted no more than 10 days before ground-disturbing activities by a qualified wildlife biologist, of the area that would be disturbed to determine whether active bird nests are present. If active nests are found, the construction contractor would coordinate with the UDOT Natural Resources Manager or biologist to avoid impacts to migratory birds.

For more proposed mitigation measures, see Section 3.12.4.4, *Mitigation Measures*.

3.17.3.12 Mitigation Measures for Cultural Resources Impacts from Construction

In accordance with UDOT's Standard Specifications for Road and Bridge Construction, Section 01355, *Environmental Protection*, Part 1.13, *Discovery of Historical, Archaeological, or Paleontological Objects, Features, Sites or Human Remains*, if cultural resources are discovered during construction, activities in the area of the discovery would immediately stop. The construction contractor would notify UDOT of the nature and exact location of the finding and would not damage or remove the resource. Work in the area of the discovery would be delayed until UDOT evaluates the extent and cultural significance of the site in consultation with the Utah SHPO. The course of action and the construction delay would vary depending on the nature and location of the discovery. Construction would not resume until the contractor receives written authorization from UDOT to continue.

3.17.3.13 Mitigation Measures for Section 4(f) Resource Impacts from Construction

Any Section 4(f) property approved for temporary use during construction would be regraded and revegetated when construction is complete or when the use of the property is no longer required.

3.17.3.14 Mitigation Measures for Section 6(f) Resource Impacts from Construction

Any Section 6(f) property approved for temporary use during construction would be regraded and revegetated when construction is complete or when the use of the property is no longer required.

3.17.3.15 Mitigation Measures for Hazardous Materials Impacts from Construction

If contamination is discovered during construction, mitigation measures would be coordinated according to UDOT Standard Specification 01355, *Environmental Compliance*, Part 1.7, *Hazardous Waste*, which directs the construction contractor to stop work and notify the engineer of the possible contamination. Coordination with UDEQ might be necessary if a discovery is made. Any hazardous materials would be disposed of according to applicable state and federal guidelines.

3.17.3.16 Mitigation Measures for Visual Impacts from Construction

The contractor would prepare and implement an appropriate seeding vegetation and/or landscaping plan to restore or enhance aesthetics after the project is completed.

3.17.3.17 Mitigation Measures for Traffic Impacts from Construction

The contractor would be required to develop a maintenance of traffic plan that defines measures to reduce construction impacts on traffic. A general requirement of this plan is that, to the extent reasonably practical, safe access to businesses and residences must be maintained and existing roads must be kept open to traffic unless alternate routes are provided.

Even with the implementation of the maintenance of traffic plan, short-term increases in traffic congestion would occur in the construction area. Road closures would be limited to what is specified in the maintenance

of traffic plan as approved by UDOT before the start of construction. Additional considerations are listed in Section 3.17.3.4, *Mitigation Measures for Economic Impacts from Construction*.

3.17.3.18 Mitigation Measures for Construction Staging and Material Borrow Areas

Because the exact locations of staging areas and sources of fill material are not known, no mitigation is proposed for construction staging and material borrow areas.

3.18 Indirect and Cumulative Effects

UDOT conducted this indirect and cumulative effects (ICE) assessment in accordance with the regulations of the Council on Environmental Quality (CEQ). The ICE analysis considers the effects of the Action Alternative in the context of general population, employment, and development trends in the cities in the ICE analysis area. It also considers the effects of other previous, ongoing, and anticipated future actions to determine the significance of the overall effect of the combined actions on natural and human resources.

- **Indirect effects** are defined by the CEQ regulations as “effects which are caused by the [proposed] action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate...” Typically, for highway improvement projects, the primary indirect effect would be changes to land use and their consequent environmental impacts. This type of indirect effect involves changes in the rate, intensity, location, and/or density of land development. For the I-15 project, an example of an indirect effect could be urban development converting farmland or filling wetlands as a result of any new access provided by the project.
- **Cumulative effects** are defined by the CEQ regulations in 40 CFR Section 1508.7 as “... the impact on the environment which results from the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.” The effects of a proposed action include direct impacts (impacts that are caused by the action and occur at the same time and place) and indirect effects. For the I-15 project, examples of past actions in the project study area include past transportation projects and commercial and residential development in the cities crossed by the Action Alternative. For the I-15 project, reasonably foreseeable future projects include other planned transportation projects and large commercial or residential developments.

3.18.1 Analysis Approach and Methodology

This section describes the general methodology used to conduct the ICE analysis. UDOT's methodology for determining the indirect and cumulative effects of the I-15 project is based on the FHWA, National Cooperative Highway Research Program (NCHRP), and CEQ guidance that is referenced in the *UDOT Environmental Process Manual of Instruction* (UDOT 2020c). The ICE assessment approach uses elements of these guidance documents. UDOT conducted the following general steps for the ICE assessment:

- Conduct background research and collect data
- Define the geographic scope for the analysis (ICE analysis area)
- Determine the timeframe of the analysis
- Identify potentially affected resources
- Prepare the ICE analysis for the project

3.18.1.1 Research and Data Collection

The first step in the ICE analysis reflected research into past and reasonably foreseeable trends concerning human and natural resources in the ICE analysis area. References included those about the history of development in Davis and Salt Lake Counties, historic information on population growth and the resulting land uses, and, where data exists, information about the past conditions and trends related to the extents or quality of the natural environment. UDOT also considered scoping comments and the direct impacts of the Action Alternative in the context of potential indirect and meaningful cumulative effects on the ICE analysis area's human and natural resources.

3.18.1.2 Geographic Scope for the Analysis

The geographic scope (ICE analysis area) for the ICE analysis for the I-15 project was determined by establishing the area of project impacts and determining the geographic areas occupied by each affected resource that are surrounded by the Wasatch Mountains on the east and the Great Salt Lake on the west. For this analysis, the geographic scope for the analysis is the same for all affected resources.

The six cities in Davis County (Farmington, Centerville, West Bountiful, Bountiful, Woods Cross, and North Salt Lake) are primarily mature, suburban cities that are surrounded by the Wasatch Mountains on the east sides of the cities and the Great Salt Lake. These cities in Davis County were originally settled in the late 1800s but experienced more rapid suburban development in the late 1900s. The primary transportation infrastructure in the six Davis County cities includes I-15, Legacy Parkway, the Utah Transit Authority (UTA) FrontRunner commuter rail tracks, and U.S. 89. The geographic scope for the ICE analysis includes the entire extent of the six cities in Davis County along I-15. The full city extents are included in the ICE analysis area because I-15 is the largest-volume roadway transportation facility in these cities and would have the most transportation-related influence on any land use development in these cities. As shown in the *Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* (Horrocks 2022b), in 2019 in Farmington, I-15 accommodated an average of 170,000 person-trips per day (83%) of the 204,000 total regional trips. In 2050 with the Action Alternative, I-15 is projected to accommodate 227,000 (68%) of the 335,000 total regional trips in Farmington. The decrease in percentage in 2050 is due to planned increased capacity on Legacy Parkway, the West Davis Corridor, and FrontRunner.

From a natural resources perspective, these cities are located in the watersheds of the streams that originate in the Wasatch Mountains east of the cities and flow west through these cities before terminating in the Great Salt Lake. These cities have a similar setting with respect to potential natural resource impacts. Therefore, including the entire extent of the six cities in Davis County would capture areas where the indirect and cumulative effects are reasonably foreseeable.

Salt Lake City is primarily a mature, urban city that is surrounded by the Wasatch Mountains on the north and east sides of the city and the Great Salt Lake on the northwest side of the city. Salt Lake City was also the first city in Utah to develop and has the highest density of urban development and transportation infrastructure. The entire extent of Salt Lake City was considered when evaluating the appropriate ICE analysis area based on data availability regarding past growth and future growth projections. However, the geographic scope for the reasonably foreseeable indirect and cumulative effects would be centered on the Salt Lake City neighborhoods (Capitol Hill, Northwest, West Salt Lake, Gateway, Rose Park, and Beck Street) in or near the I-15 project's land use evaluation area presented in Section 3.1, *Land Use*.

The majority of Salt Lake City is in the City Creek watershed (culverted along North Temple from State Street to the Jordan River) and the much larger and hydrologically distinct Jordan River watersheds. All areas in Salt Lake City would have a similar setting with respect to potential human and natural resource impacts. UDOT's research focused on the reasonably foreseeable future actions in these Salt Lake City neighborhoods, not the entirety of Salt Lake City's large municipal boundary. The neighborhoods of Salt Lake City were mostly built out by about 2010 (WFRC 2023c) and lack the same remaining natural areas (National Forest and Great Salt Lake) that exist in the Davis County part of the ICE analysis area.

In Salt Lake City, I-15 is one of several major transportation facilities. Other major transportation facilities include I-80, State Route (S.R.) 201, I-215, Redwood Road, U.S. 89/State Street, 700 East, 1300 East, and Foothill Boulevard. I-15 is the primary transportation facility that has the most transportation-related influence on any land use development in the neighborhoods immediately east or west of I-15 and north of 1300 South. As one goes farther west and south, I-215, I-80, and/or S.R. 201 become the primary transportation facilities for which changes could potentially affect land use development. As one goes farther east and south, U.S. 89/State Street, I-80, 700 East, 1300 East, and/or Foothill Boulevard become the primary transportation facilities. As shown in the *Mobility Memorandum*, in 2019 at the Davis County–Salt Lake County border, I-15 accommodated an average of 170,000 person-trips per day (55%) of the 304,000 total regional trips in this location. In 2050 with the Action Alternative, I-15 is projected to accommodate 220,000 (52%) of the 335,000 total regional trips at the county border. The small decrease in percentage in 2050 is due to planned increased capacity on I-215, Redwood Road, and FrontRunner.

3.18.1.3 Timeframe for the Analysis

The timeframe for the ICE analysis includes past and future periods. The period for the past impacts analysis can vary by resource depending on the timeframe in which past actions contributed to effects and the availability of historical data. However, for this analysis, the timeframe focuses on historical information beginning in the early 20th century (early 1900s) when the region started the more rapid urban development. The period for the future potential impacts extends from the present day to the project design year of 2050. The 2050 design year is also consistent with WFRC's 2019–2050 RTP (WFRC 2019a) and supporting land use and economic data forecasts.

3.18.1.4 Resources for the ICE Analysis

The I-15 project could affect resources either directly or indirectly. Resources can be elements of the physical environment, species, habitats, ecosystem parameters and functions, cultural resources, recreation opportunities, the structure of human communities, traffic patterns, or other economic and social conditions. The analyses of direct impacts, which are provided in the appropriate resource sections of this chapter, help inform the resources for the ICE analysis.

Highway improvement projects often result in potential indirect effects involving changes to land use and their consequent environmental impacts. This type of indirect effect involves changes in the rate, intensity, location, and/or density of land development due to changes in access to the highway or changes to travel patterns in the surrounding areas.

According to CEQ's cumulative effects guidance, the cumulative effects analysis should be narrowed to focus on important issues at a national, regional, or local level. The degree to which cumulative effects need to be addressed depends on the potential for the effects to be adverse. The analysis should look at other actions that could have similar effects and whether a particular resource has been historically affected by cumulative actions.

As mentioned, UDOT also relied on scoping input and an analysis of the direct impacts of the project to identify resources needing detailed ICE analysis. Public and agency scoping meetings were held to help identify issues to be analyzed. UDOT reviewed the comments received during the public and agency scoping periods to determine whether issues were identified related to indirect and cumulative effects.

The following are the main resources that UDOT assessed for indirect and cumulative effects:

- Social and community resources
- Residential and commercial properties
- Environmental justice (impacts to low-income and minority groups) (see Section 3.4, *Environmental Justice Populations*)
- Regional air quality and greenhouse gases
- Future noise levels
- Stormwater drainage and associated degradation of water quality
- Floodplains
- Wetlands and aquatic resources

3.18.2 Affected Environment

3.18.2.1 Past and Current Actions

3.18.2.1.1 Past Growth and Land Use

Past population growth in Davis and Salt Lake Counties has led to the current land uses in the two counties. A brief history of development is provided below.

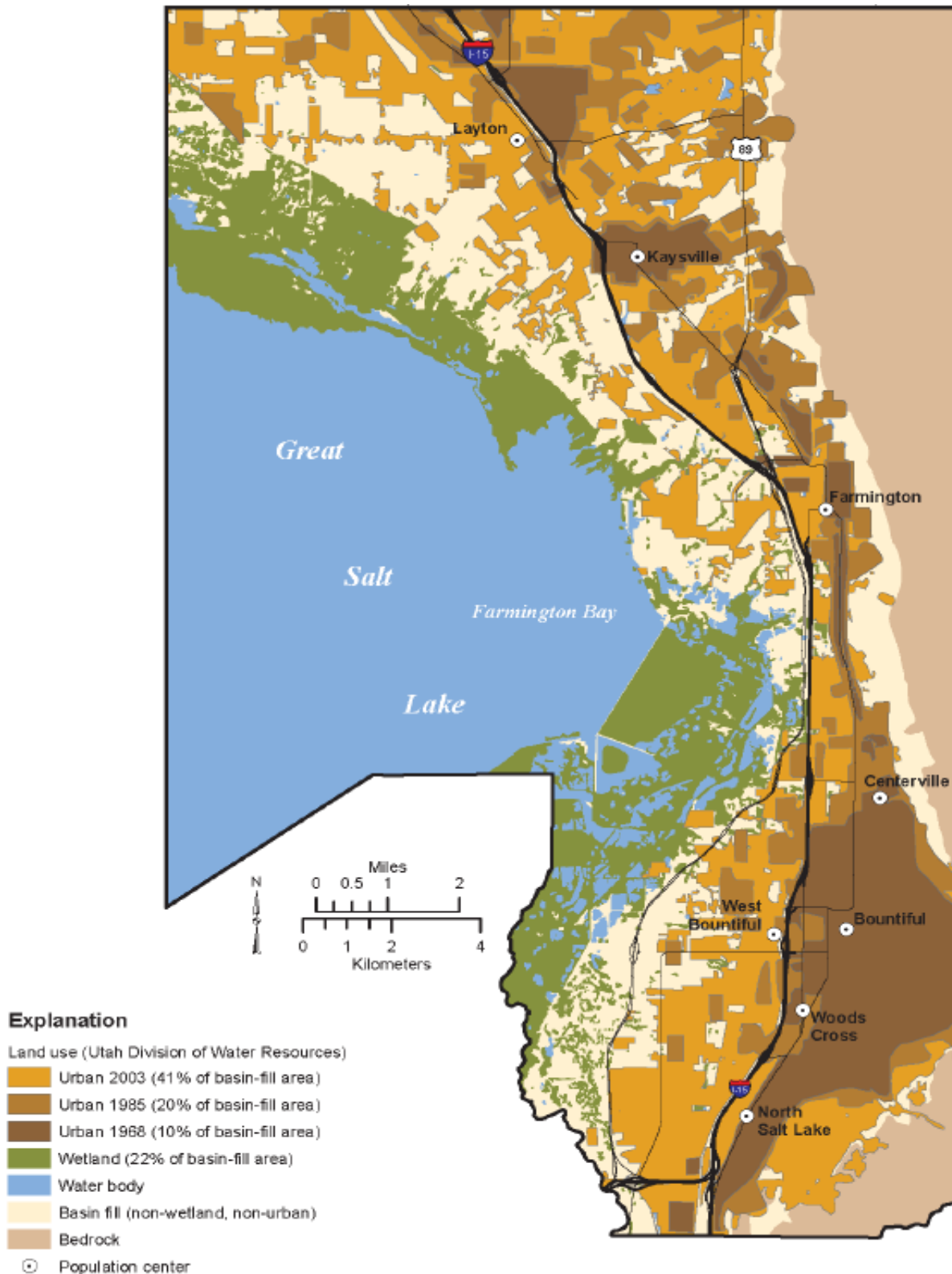
In the early 1900s, the majority of land use in the land use evaluation area was dedicated to farming and raising livestock to serve Salt Lake City and other towns established early in the state's history. The expansion of farming and grazing required early settlers to divert water from the rivers and streams going to the Great Salt Lake and to drain wetland areas around the Great Salt Lake floodplain fringe and those formed by, or supplemented by, shallow groundwater (for example, around Farmington Bay and around Warm Springs in northern Salt Lake City).

The completion of the transcontinental railroad (in 1869) spurred the development of north-south-running railways (Bamberger [later called Salt Lake & Ogden], Utah Central, and Union Pacific) between Salt Lake City and Ogden. These railway connections led to more industrial development and suburban growth throughout the early to mid-20th century. Between 1890 and 1920, Utah's population more than doubled, from 210,779 to 449,396 (OnlineUtah.com, no date). However, most of that growth was still in the urban areas. By 1940, the population of Davis County was only about 16,000. The small family farms and local businesses could not support greater population increases (Davis County, no date).

By the mid-20th century, local roads were constructed, and the expanded use of interurban railways continued suburban development, mainly on the Wasatch foothills, supported by the faster-growing Salt Lake City and Ogden urbanized areas but also into the western portions of south Davis County. After World War II, the establishment of Hill Air Force Base in northern Davis County and other defense-supporting businesses nearby created a surge of civilian employment. Davis County doubled in population between 1940 and 1950 and doubled again in the next decade. Between 1960 and 1980, the population more than doubled again, from 65,000 to 147,000 people. The initial construction of I-15, I-80, and I-215 in the 1960s greatly improved accessibility in Salt Lake County and northern Davis County and helped facilitate the spread of suburban and industrial development along both interstates, particularly in Davis County.

By 1990, the population of Davis County had reached 188,000 and the 2000 U.S. Census recorded 238,994 people, making the county the fastest-growing of the four major urban communities along the Wasatch Front. Figure 3.18-1 shows the urban expansions for 20-year periods from the late 1960s to the early 2000s in Davis County.

Figure 3.18-1. Urban Expansion in Davis County between 1968 and 2003



3.18.2.1.2 Recent Growth and Current Land Use

Since the Great Recession ended in 2009, Utah's state economy was among the 10 fastest growing in the country. The availability of jobs led to in-migration which compounded the natural population growth rate. Between 2010 and 2020, Salt Lake County's and Davis County's populations grew 15% and 18%, respectively. Most cities in the ICE analysis area experienced near-double-digit growth rates over this 10-year period. As shown in Table 3.18-1, the near-term growth rates (2019–2025) for the cities in the ICE analysis are projected to range from 2.8% in Salt Lake City to 10.7% in North Salt Lake.

Table 3.18-1. Recent Population Growth Rates and Near-term Growth Rate Forecasts

County or City	2010–2020	2019–2025 ^a
Davis County ^b	17.6%	7.4%
Farmington	22.5%	9.7%
Centerville	16.1%	6.5%
West Bountiful	8.5%	7.8%
Bountiful	4.5%	4.7%
Woods Cross	18.0%	8.3%
North Salt Lake	24.3%	10.7%
Salt Lake County ^c	15.1%	6.4%
Salt Lake City ^d	9.3%	2.8%

^a To determine an approximate 10-growth rate that is equivalent to the 2010 to 2020 10-year period, add about 5% to Davis County and its cities and about 3% to Salt Lake County and Salt Lake City.

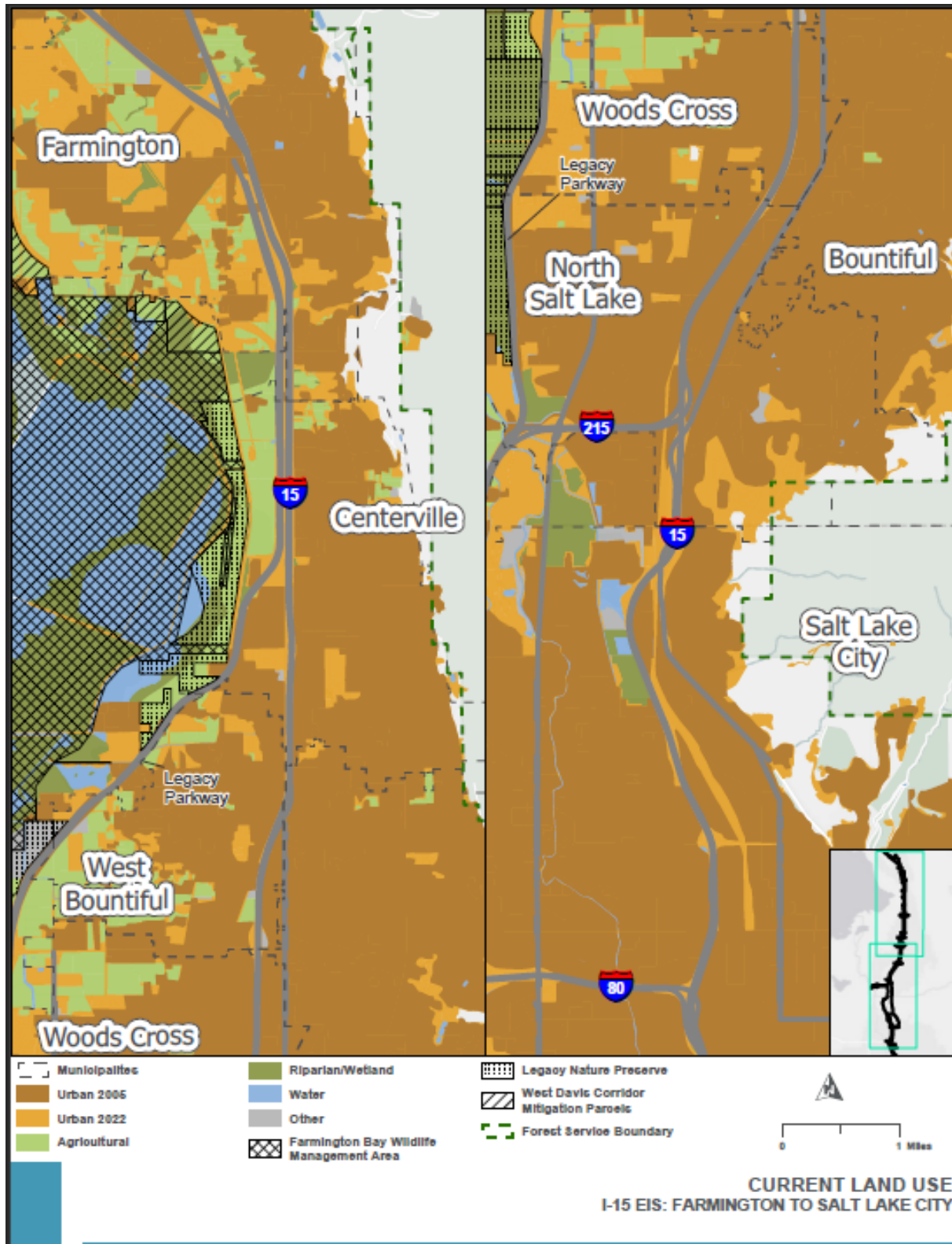
^b Source: Information for Davis County and its communities is from the Davis County Community and Economic Development's 2020 Demographic Overview (Davis County 2020).

^c Source: Kem C. Gardner Policy Institute, Utah Population Committee 2020

^d Source: Salt Lake City 2023b

Although the cities in the ICE analysis are projected to continue to grow, the near-term growth rates (2019–2025) for all of the cities except West Bountiful and Bountiful are projected to be 50% less than the growth rates from 2010 to -2020. There was and is limited remaining developable land in Salt Lake City and the south Davis County cities. The south Davis County cities are situated in a relatively narrow land corridor constrained by the Wasatch Mountains and U.S. Department of Agriculture Forest Service land on the east and Great Salt Lake and its floodplain and fringe wetlands on the west, especially through Centerville, West Bountiful, Woods Cross, and North Salt Lake. Smaller areas in western Farmington, West Bountiful, Woods Cross, and North Salt Lake had land converted from agriculture and/or open space to urban land uses (mainly residential developments) between 2005 and 2022. Legacy Parkway, the Legacy Nature Preserve, the Farmington Bay Waterfowl Management Area, and West Davis mitigation properties (north of the ICE analysis area along western parts of Farmington and Kaysville) have limited and will continue to limit further western expansion for south Davis County communities. Figure 3.18-2 shows the urban development in the ICE analysis area during the last 17 years.

Figure 3.18-2. Current Land Use and 2006–2022 Urban Expansion in the ICE Analysis Area



3.18.2.1.3 Growth Forecasts

As described in Chapter 1, *Purpose and Need*, Davis and Salt Lake Counties are both projected to have large increases in population, employment, and households by 2050. Davis County's population was about 356,000 in 2019 and is expected to grow by 37% to 488,000 by 2050. Salt Lake County's population was about 1,144,000 in 2019 and is expected to grow by 31% to 1,502,000 by 2050. These projected increases are expected to result in continued increased travel demand for all modes of transportation in 2050, including on I-15 and its interchanges. There is limited remaining developable land in Salt Lake City and the south Davis County cities. The county population forecasts anticipate larger percentages of population increases in the areas where there are still large areas of developable land.

In Davis County, the northern Davis County communities (primarily Layton, Syracuse, Clearfield, Clinton, and West Point, which are outside the ICE analysis area) are projected to experience about 71% of the total county growth by 2050. The southern Davis County communities in the ICE analysis area are projected to experience about 29% of the total county growth to 2050. In Salt Lake County, population growth is expected along the west edge (Oquirrh Mountains foothills) and southern parts of Salt Lake County (West Jordan, South Jordan, Draper, and Herriman). These areas are projected to experience about 46% of the total county population growth by 2050. Salt Lake City is projected to experience about 15% of the total county growth. The remaining 12 Salt Lake County communities (located generally in the central and eastern parts of the county) are projected to experience about 39% of the expected total county growth by 2050.

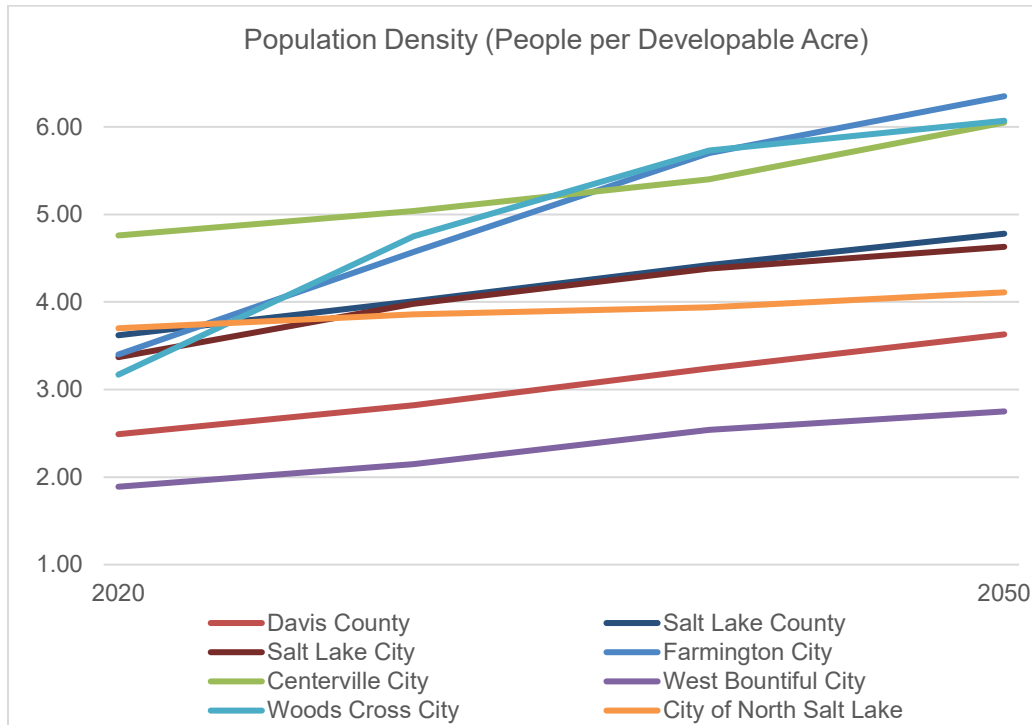
3.18.2.1.4 Future Land Use

Existing urban-related land uses are consistent with a mature metropolitan area, including a mix of residential, commercial, and industrial centers along I-15 and major cross streets. As described in Section 3.1, *Land Use*, cities in the ICE analysis area along I-15 are mostly fully developed, with new developments typically replacing existing development. In Davis County, some open space and agricultural lands remain, predominantly in Farmington, Centerville, and West Bountiful. Legacy Parkway, the Legacy Nature Preserve, the Farmington Bay Waterfowl Management Area, and West Davis mitigation properties limit further western expansion for south Davis County communities.

The northwestern areas of Salt Lake City (north of I-80 and west of the Salt Lake City International Airport) are the only large areas of incorporated Salt Lake City that are not currently developed. Most of these northwestern areas are undevelopable due to sensitive ecology including wetlands and/or proximity to the Salt Lake City International Airport. Because most of the city's developable land in the communities in the ICE analysis area is already built out and has existing transportation access, the I-15 project would not change planned land uses (City of North Salt Lake 2013; Salt Lake City 2023b; Woods Cross City 2019). Expected population growth in all of the cities will likely be accommodated by infill redevelopment, which will create higher densities in existing urbanized areas. None of the cities in the ICE analysis area have land use plans that identify large, new developments in currently undeveloped geographic areas (WFRC 2023a, 2023d).

Figure 3.18-3 shows the projected development density trends for communities in the ICE analysis area.

Figure 3.18-3. Population Density (People per Developable Acre)



3.18.3 Environmental Consequences

3.18.3.1 Indirect Effects

3.18.3.1.1 Indirect Effects Methodology

This section evaluates the potential indirect effects of the Action Alternative. Typically, for highway improvement projects, indirect effects are defined as effects that could result from the project's action alternatives beyond direct impacts to property and resources within the project's proposed right-of-way and the construction footprint. In this analysis, indirect effects are primarily the effects of land development that could occur from improved accessibility and mobility in the ICE analysis area that is influenced by the Action Alternative. Indirect effects on natural resources would typically be caused when undeveloped and partially developed land with such natural resources is converted to residential, industrial, commercial, or government land uses.

Land use patterns are the product of interdependent decisions by numerous parties including local elected officials, local planning staff, developers, citizens, regional planning authorities, transportation agencies, and many other public and private entities. Moreover, land use patterns are strongly affected by economic and demographic forces that are beyond the control of government authorities and by an area's access to utilities such as power, water, and sewer.

UDOT based the indirect effects analysis on a review of existing and proposed future development patterns, existing and future improvements to the existing transportation network, travel time improvements from the Action Alternative, and future city and county land use plans to determine the potential indirect effects of the I-15 project.

3.18.3.1.2 Potential Indirect Effects

Because land use and transportation are connected, improvements in the transportation system can result in changes in land use near transportation improvements. The initial construction of I-15, I-80, and I-215 in the 1960s greatly improved accessibility in Davis and Salt Lake Counties and most likely helped facilitate the spread of development along both interstates, particularly in Davis County.

The Action Alternative would convert certain existing land uses to transportation use through the purchase of property adjacent to the Action Alternative. However, because I-15 is an existing freeway, and because the land uses around I-15 are already developed and are part of a large urban area with a mature transportation network, UDOT does not expect the Action Alternative to cause any meaningful changes to local zoning or induce land use changes in the areas adjacent to the Action Alternative. The following paragraphs describe the main reasons why UDOT does not expect the improvements to I-15 as proposed in this EIS to induce development in Davis or Salt Lake Counties.

Access. The existing I-15 corridor in Davis and Salt Lake Counties is part of a mature regional transportation system that already has a high degree of accessibility. Research has shown that the extent of indirect effects is influenced by the maturity of the regional transportation system. Greater effects are associated with the development of new roads on new alignments compared with the expansion of existing roads (Haughwout and Boarnet 2000; NCHRP 2002).

One new interchange location is proposed as part of the I-15 project: the I-215/U.S. 89 interchange in North Salt Lake. Although this new interchange would improve access to North Salt Lake and reduce out-of-direction travel to 2600 South, it would not provide new access to any areas that do not currently have access to the regional transportation network. The rest of the project would improve the existing accesses to I-15, improve safety, and reduce congestion. Therefore, no new access to undeveloped areas would be provided by the Action Alternative.

Travel Demand. The I-15 project is intended primarily to improve safety, better connect communities, strengthen the economy, and improve mobility along the I-15 corridor. Because the cities in and adjacent to the project study area are mostly developed, the projected beneficial travel-time savings during peak hours associated with the Action Alternative would likely not be of such magnitude as to trigger meaningful changes to either regional land use patterns or to shift future development from one part of the region to another. In addition, adding new travel lanes would not shorten the distances between destinations, nor would it serve land that does not already have access to the freeway.

Land Use Patterns. Land use patterns and development have already established themselves in Davis and Salt Lake Counties around the existing transportation network, including I-15. The region currently has a high level of transportation accessibility, the cities in the ICE analysis area are mostly built out, and employment centers are already well established. In addition, as described in Section 3.18.2.1.2, *Recent Growth and Current Land Use*, the amount of undeveloped land in the cities in the ICE analysis area is limited. The small areas that have undeveloped, vacant land are generally in environmentally sensitive areas (for example, unincorporated areas near the Great Salt Lake) and would not be suitable for new, higher-density developments.

As summarized in Section 3.1, *Land Use*, because I-15 is an existing freeway and the land uses around I-15 are already developed and part of a large urban area with a mature transportation network, UDOT does not expect the Action Alternative to change any local zoning or land use in the areas adjacent to the Action

Alternative that are not purchased for roadway use. Additionally, the Action Alternative would be consistent with the planned land uses and zoning for all of the cities in the ICE analysis area. The existing travel patterns likely would not be altered or expanded with the Action Alternative.

The human environment has been built out for years. Because it would not induce growth or have any other causal relationship to changes in land use patterns or traffic demand, the Action Alternative would not cause indirect effects to social and community facilities, residential or commercial properties, environmental justice, air quality, or noise in the ICE analysis area.

Because it would not induce growth or have any other causal relationship to changes in land use patterns or traffic demand, the Action Alternative would also not cause indirect effects to open lands or natural areas from increased stormwater runoff and its potential effects on water quality, it would not induce significant encroachments on floodplain areas, and it would not indirectly cause filling of wetlands or diverting of or culverting of other aquatic resources in the ICE analysis area.

The Action Alternative could result in indirect effects on aquatic resources outside the project footprint due to sediment and other pollutant discharges associated with stormwater from additional impervious areas, from stream erosion caused by hydrologic modifications at existing stream crossings, and from the potential establishment of noxious weeds. Most of these indirect effects could be reduced or avoided by implementing the mitigation measures listed in Section 3.12.4.4.3, *Mitigation Measures for Aquatic Resources Impacts*, which would apply to the project.

3.18.3.1.3 Indirect Effects Summary

Based on the above factors, the Action Alternative would not induce development or growth in Davis and Salt Lake Counties and thereby cause substantial indirect effects. Because induced land use is not expected, indirect effects on the human environment (social and community facilities, residential or commercial properties, air quality, and noise levels) and natural resources (wetlands and aquatic resources, floodplains, water quality) are also not expected.

3.18.3.2 Cumulative Effects

3.18.3.2.1 Cumulative Effects Methodology

This section describes the methodology used to conduct the cumulative effects analysis. The specific analyses of direct resource impacts are discussed in the appropriate resource sections in this EIS (see the cross-references in Section 3.18.3.2.3, *Potential Cumulative Effects*). UDOT's methodology for determining the cumulative effects of the I-15 project is based on the CEQ guidance *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ 1997) and the *UDOT Environmental Process Manual of Instruction* (UDOT 2020). Elements of this guidance are described in more detail below.

Examples of reasonably foreseeable future actions include transportation projects on the long-range transportation plan and planned commercial and residential developments in the ICE analysis area. These reasonably foreseeable future actions are independent of the proposed I-15 project but are considered as part of the cumulative effects analysis.

3.18.3.2.2 Present and Reasonably Foreseeable Future Actions

Davis and Salt Lake Counties are both projected to have large increases in population, employment, and households by 2050. These projected increases are included in the WFRC 2019–2050 RTP and are expected to result in continued increases in travel demand for all modes of transportation in 2050, including I-15 and its interchanges.

To determine the potential reasonably foreseeable actions to consider in the cumulative effects analysis, UDOT reviewed WFRC’s 2019–2050 RTP to identify transportation projects (roadway, transit, and nonmotorized) and coordinated with Cities and Counties with jurisdiction in the ICE analysis area to identify development that could result in cumulative effects when combined with the I-15 project. UDOT also reviewed other environmental documents for developments, transit, and transportation projects that were recently completed or are in progress. Lastly, UDOT reviewed city, county, and regional general plans and transportation plans in the analysis area to identify planned future actions.

Table 3.18-2 lists the present and reasonably foreseeable future actions to be considered in the context of the potential incremental cumulative effect of the I-15 project on area resources.

3.18.3.2.3 Potential Cumulative Effects

The CEQ guidance document *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ 1997) states that not all potential cumulative effects issues need to be analyzed in a project’s EIS. Some cumulative effects might be irrelevant or inconsequential to decisions about the project alternatives. The cumulative effects analysis should “count what counts,” not produce superficial analyses of a long “laundry list” of issues that have little relevance to the effects of the project alternatives or to the eventual decision.

Section 3.18.3.2.3 discusses resources that have a potential to experience incremental cumulative effects from the I-15 project in the context of the impacts from past and reasonably foreseeable future actions.

The analysis of a project’s potential EJ impacts, by definition, takes into consideration cumulative effects on certain disadvantaged communities based on historical pollution and/or socioeconomic trends. Therefore, for a detailed discussion of impacts to low-income or minority groups, see Section 3.4, *Environmental Justice Populations*.

Table 3.18-2. Present and Reasonably Foreseeable Future Actions

Project or Activity (and RTP ID No., if applicable ^{a)})	Description	Project Status
Development Projects		
Salt Lake City new development or redevelopment areas	Kozo House six-story apartment building (242 units) with ground-floor retail space in Salt Lake City on 169 North 600 West east of I-15. Redevelopment of existing residential properties.	Planning
	The Flats at Folsom seven-story apartment building (188 units) located in Salt Lake City at 16 South 800 West west of I-15. Redevelopment of existing commercial properties.	Construction
	The Vue Apartments (218 units) located in Salt Lake City at 816 West 200 South west of I-15. Redevelopment of existing residential properties.	Construction
	Studios Squared four-story apartment building (64 units) with ground-floor retail space in Salt Lake City at 767 W. North Temple east of I-15. Redevelopment of existing commercial properties.	Construction
	Entry Note eight-story apartment building (171 units) in Salt Lake City at 735 W. North Temple east of I-15. Redevelopment of existing commercial properties.	Construction
North Salt Lake new development or redevelopment areas	Williamsburg apartment complex (246 units) in North Salt Lake around 200 South and east of I-15. Redevelopment of existing commercial properties.	Planning
	Eaglewood Plaza office building and commercial property in North Salt Lake on Eagle Ridge Road and U.S. 89. Redevelopment of existing industrial properties.	Construction
	Village Station apartment complex (226 units) on Eagle Ridge Road and U.S. 89. Redevelopment of existing industrial properties.	Construction
Lakeview Rock Gravel Quarry	Plan is to phase out mining activities on 147 acres, reclaim the property, and convert it to mixed-use commercial and residential development. This development is anticipated occur in 10 to 20 years.	Planning
Woods Cross Station mixed-use development	Retail, residential, commercial, and office space located at 750 South 800 West in Woods Cross.	Planning
Transportation Projects		
I-15 widening (R-D-41)	I-15 Widening: Weber County Line to 300 North	Planning, funded for 2019 to 2030
West Davis Corridor (R-D-30)	New 16-mile, four-lane highway on the west side of Davis County	Planning, funded for 2019 to 2030
U.S. 89 widening (R-D-56)	Widen to six lanes between I-15 and U.S. 89 in Davis County	Planning, funded for 2019 to 2030
Shepard Lane widening (R-D-21)	Construct Shepard Lane as a five-lane local minor arterial from the new West Davis Corridor to I-15 in Farmington	Planning, funded for 2019 to 2030
Farmington Frontage Road (R-D-54)	Farmington Frontage Road Connection: Lagoon Drive to 200 West (S.R. 227)	Planning, funded for 2041 to 2050
Park Lane overpass improvement (A-D-153 and A-D-154)	Improvements to the Park Lane overpass of I-15, U.S. 89, Legacy Parkway, and the UP/UTA rail corridor in Farmington	Planning, funded for 2019 to 2030
I-15/Parrish Lane Improvement (R-D-73)	Interchange improvement crossing at I-15 Parrish Lane interchange in Centerville	Planning, funded for 2031 to 2040

(continued on next page)

Table 3.18-2. Present and Reasonably Foreseeable Future Actions

Project or Activity (and RTP ID No., if applicable ^{a)})	Description	Project Status
500 South grade-separated crossing of railroad tracks (R-D-75)	New grade-separated crossing at 500 South crossing of rail line at 800 West	Planning, funded for 2019 to 2030
1500 South grade-separated crossing of railroad tracks (R-D-76)	New grade-separated crossing at 1500 South crossing of rail line at 900 West	Planning, funded for 2031 to 2040
2600 South/1100 North grade-separated crossing (R-D-77)	New grade-separated crossing at 2600 South/1100 North rail crossing at 1050 West	Planning, funded for 2031 to 2040
Center Street grade-separated crossing of railroad tracks (R-D-78)	New grade-separated crossing at Center Street overpass rail crossing at 300 West	Planning, funded for 2031 to 2040
I-215/Legacy Parkway interchange improvement (R-D-79)	I-215/Legacy Parkway interchange improvement to make interchange accommodate all movements	Planning, funded for 2041 to 2050
I-15 expansion – Salt Lake County to Utah County (R-S-136)	Widening I-15 HOT ramps and reversible lanes	Planning, funded for 2019 to 2030
Legacy Parkway widening (R-D-42)	Legacy Parkway from I-15/U.S. 89 to I-215 widening in Bountiful	Planning, funded for 2031 to 2040
500 South operations (R-D-23)	500 South operations improvements from I-15 to Main Street in Bountiful	Planning, funded for 2031 to 2040
500 West (U.S. 89) operations (R-D-57)	500 West (U.S. 89) operations improvements from I-15 to 2600 South in Bountiful	Planning, funded for 2031 to 2040
Transit, bicycle, and automobile corridor	U.S. 89 from 1800 South to Salt Lake City in Bountiful	Planning
New residential street	Proposed 220 North/650 West alignment in West Bountiful	Planning
New road construction	Proposed 1450 West alignment in West Bountiful	Planning
Road realignment	700 West/800 West alignment in West Bountiful	Planning
New residential street	Proposed 220 North/650 West alignment in West Bountiful	Planning
1250 West/650 West (R-D-52)	New road at 1250 West/650 West – Glovers Lane to 1275 North in Woods Cross	Planning, funded for 2019 to 2030
200 East operations (R-D-54)	200 East operations improvements from Glovers Lane to Tuscany Cove Drive in Centerville	Planning
Center Street operations (R-D-24)	Center Street operations improvements from Jordan River Parkway to U.S. 89 in North Salt Lake	Planning, funded for 2019 to 2030
400 West operations (R-D-59)	400 West operations improvements from Center Street to 2600 South in North Salt Lake	Planning
600 North operations (R-S-13)	600 North/700 North operations improvements from 2200 West to 300 West in Salt Lake City	Planning

(continued on next page)

Table 3.18-2. Present and Reasonably Foreseeable Future Actions

Project or Activity (and RTP ID No., if applicable ^{a)})	Description	Project Status
Redwood Road widening (R-D-46)	Redwood Road widening from 500 South to 2600 South in Woods Cross	Planning, funded for 2041 to 2050
I-215/I-15/U.S. 89 interchange improvement (R-D-79)	I-215/I-15/U.S. 89 interchange improvement in Salt Lake City	Planning, unfunded
S.R. 201 widening (R-S-14)	Widen to six lanes plus HOT lanes from S.R. 85 to I-15	Planning
S.R. 108 operations (R-D-11)	Interchange upgrade at S.R. 108 in Davis County	Planning, funded for 2031 to 2040
I-80 widening (R-S-6)	Widen to six lanes from 1300 East to I-215 (east)	Planning, funded for 2041 to 2050
Transit Projects		
FrontRunner (T-D-1/T-S-1)	Upgrade Double Track FrontRunner: Davis and Salt Lake Counties	Planning, funded for 2031 to 2040
Light rail (T-D-3)	Davis–Salt Lake City Community Connector Core Route from Davis County border to Research Park	Planning, funded for 2019 to 2030
Light rail (T-D-9)	Clearfield Station to Woods Cross Station	Planning, funded for 2031 to 2040
Light rail (T-S-28)	200 South Core Route Salt Lake Central Station to 1300 East	Planning, funded for 2019 to 2030
Light rail (T-S-15)	500 East Corridor Core Route from Power Station TRAX Station to Murray North TRAX Station in Salt Lake City	Planning, funded for 2019 to 2030
Light rail (T-S-18)	Salt Lake Loop (S-Line extension) Center Point Station to U Street	Planning, funded for 2041 to 2050
Bus (T-D-3/T-S-3)	Davis–Salt Lake City Community Connector Bus Rapid Transit	Planning, funded for 2019 to 2030
Bus (T-D-9)	Clearfield to Woods Cross Core Service	Planning, funded for 2031 to 2040
Bus (T-D-4)	North Redwood Corridor Core Service	Planning, funded for 2031 to 2040
Bus (T-D-5/T-S-5)	East Davis Express Bus: Weber County to Salt Lake County	Planning, unfunded
Bus (T-T-1)	Tooele Corridor express bus service from Vine Street in Tooele to 200 East in Salt Lake City	Planning, funded for 2041 to 2050

(continued on next page)

Table 3.18-2. Present and Reasonably Foreseeable Future Actions

Project or Activity (and RTP ID No., if applicable ^a)	Description	Project Status
<i>Pedestrian and Bicyclist Projects</i>		
Main Street widening, bike lanes, and sidewalks	Widening, bike lanes, and sidewalks on Main Street and U.S. 106 in Farmington	Planning
200 East widening, bike lanes, and sidewalks	200 East/U.S. 206 in Farmington	Planning
Legacy Parkway Trail North Extension (A-D-42)	Extend existing Legacy Parkway Trail 1 mile farther north to connect with Shepard Lane in Farmington	Planning, funded for 2019 to 2030
Legacy Parkway Trail	Add shared-use path in West Bountiful at Millcreek Canal and 400 North, add shared-use path in Centerville and 1250 West, and add bike lane in West Bountiful and Centerville at Porter Lane	Planning
Shepard Lane I-15 crossing improvements	Bike path/pedestrian path improvements on the Shepard Lane/I-15 crossing in Farmington	Planning
I-15 crossing improvements	Overpass Porter Lane and I-15 in Centerville	Planning
Creekside Trail	Urban and single-track hike connecting Creekside Park crossing both Davis and Bountiful Boulevards	Planning

Sources: Bountiful City 2009a, 2009b; Centerville City, no date; City of North Salt Lake 2013; Farmington City 2016; Salt Lake City 2015; UDOT 2017a; UTA 2022; WFRC 2019a

^a Projects included in the WFRC 2019–2050 RTP Phased Project List include their corresponding RTP identification number.

Social and Community Impacts

Past and present growth has led to the construction of community facilities (parks and community services) and transportation infrastructure (roadways and trails) that were implemented to serve the growing communities in the ICE. As described in Section 3.2, *Social Environment*, the Action Alternative would have beneficial impacts to several attributes or amenities that define the surrounding communities, including improved community cohesion and benefits to the quality of life. The planned redevelopments would increase housing densities from lower densities to higher-density residential and mixed-use developments. The Action Alternative would improve public safety by improving operations on I-15. Other planned projects in the ICE analysis area, such as minor residential roads, grade-separated rail crossings, grade-separated bike and pedestrian paths, operations improvements on I-15, and pedestrian and bicyclist projects, would have beneficial impacts to communities.

Overall, the impacts from the Action Alternative would be negligible to parks and beneficial to trails when combined with other reasonably foreseeable projects. The Action Alternative's proposed pedestrian and bicyclist facility improvements would help improve regional mobility and network connectivity for pedestrians and bicyclists and would support other planned pedestrian and bicyclist improvements in adjacent communities. Therefore, the I-15 project would not result in adverse cumulative effects on social or community resources.

Residential and Commercial Property Impacts

As described in Section 3.3, *Right-of-way and Relocations*, the Action Alternative would have impacts to certain residential and commercial properties. When combined with the other reasonably foreseeable

projects listed above in Table 3.18-2, *Present and Reasonably Foreseeable Future Actions*, impacts to residential properties and businesses due to relocations could be compounded. As described in Section 1.2.2, *Projected Growth in Population, Employment, and Households*, in Chapter 1, *Purpose and Need*, Davis and Salt Lake Counties are projected to have an increase in the number of households and employment opportunities.

UDOT's acquisition of project right-of-way is governed by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Compliance with the Act also requires that UDOT would fully compensate property owners and provide relocation assistance in accordance with the law. See Section 3.3, *Right-of-way and Relocations*, for a full discussion of relocation impact mitigation consistent with the requirements of the Uniform Act.

Because acquisition and relocation policies provide full and just compensation, property impacts would be mitigated. Therefore, the I-15 project would not result in adverse cumulative effects on residential and commercial properties.

Air Quality Impacts

Air quality issues and concerns are multivariate and have been an ongoing issue in Salt Lake City since Mormon pioneers settled in Utah in 1847 (Mitchell and Zajchowski 2022; University of Utah, J. Willard Marriott Library, no date). In addition to the multiple sources of emissions (industry, transportation, and residential and commercial emissions from heating and appliances), the Wasatch Front also has valleys that trap air during winter inversions. In the late 1800s and early 1900s, most winter heat was produced by burning wood or charcoal, which produce high rates of particulate matter emissions, carbon monoxide, and other air quality pollutants. Salt Lake City passed its first air quality ordinance in 1893 and has made ongoing efforts, along with the State of Utah, to continue to look at ways to improve air quality, especially during winter inversions.

As summarized in the Utah Division of Air Quality's *2022 Annual Report* (UDAQ 2022), air quality along the Wasatch Front during the winter shows a clear trend of continued improvement over the past two decades, even with the large population and economic growth in the region during this period. The Division also notes that summertime ozone is now the primary air quality concern along the Wasatch Front.

From a historical perspective, the current air quality in Utah is much improved from historical levels, even with a much higher population, and continues to get better due to stricter air quality standards, better industrial and vehicle emission technologies, cleaner-burning fuels, and energy-efficiency measures. Consistent with this recent trend, transportation-related air quality pollutants are projected to continue to decrease in the future due to even-better emissions technologies and fuel efficiency (WFRC 2019b).

Air quality in a given area depends on several factors such as the area itself (size, nature of existing development, and topography), the prevailing weather patterns (meteorology and climate), and the pollutants released into the air. All state governments are required to develop an SIP for each pollutant for which an area is in nonattainment or maintenance status. The SIP explains how the State will comply with the requirements of the Clean Air Act. The 2019–2050 conforming RTP and TIP include the I-15 project (widening I-15 from five lanes to six lanes in each direction) from Farmington to the Salt Lake County border (2019–2050 RTP project: R-D-45) and other transportation projects.

As described in Section 3.8, *Air Quality*, the Action Alternative would help reduce regional traffic congestion, which would reduce idling emissions of CO and volatile organic compounds. Although the I-15 project would increase the annual VMT by 12% compared to the No-action Alternative in 2050, resulting in an associated increase in atmospheric CO₂ emissions through 2050 in the air quality evaluation area, the amounts of all other pollutants are projected to decrease in future years due to improved fuel and emissions standards.

Regional air quality modeling conducted by WFRC for the 2050 transportation conformity determination (WFRC 2019b) used existing ambient air quality conditions which capture to current air quality conditions in the ICE analysis area. The modeling demonstrated that all regionally significant transportation projects, including the Action Alternative and all other planned projects listed above in Table 3.18-2, *Present and Reasonably Foreseeable Future Actions*, would be in compliance with the National Ambient Air Quality Standards.

Major new fixed sources of air pollutants are not anticipated in the highly urbanized ICE analysis area. Future air quality sources would need to apply to the Utah Division of Air Quality for an approval order, which would address compliance with the SIP. Therefore, the I-15 project would not result in adverse cumulative effects on air quality.

Greenhouse Gas Impacts

Background information and emissions modeling for greenhouse gases for the Action Alternative are discussed in Section 3.8, *Air Quality*. As discussed in Section 3.8, the annual on-road CH₄ emissions from the Action Alternative are expected to increase by about 6%, N₂O emissions are expected to increase by about 4%, and CO₂ emissions are expected to increase by about 11% compared to the No-action Alternative. Although fuel economy and engine technology are improving, they are not improving enough to offset the increase in emissions from the increase in total VMT.

From a cumulative effects perspective, there are multiple sources of greenhouse gases, including transportation (cars, trucks, planes, boats, and trains); electric power generation; industrial, residential, and commercial (heating, cooling, and appliances); and agriculture (EPA 2023c).

From a quantitative perspective, GHG emissions can contribute to global climate change through the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations.

In contrast to broad-scale actions such as those involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the impacts of GHG emissions for a particular transportation project. Furthermore, there is currently no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions.

Because GHGs and climate change are global issues, the small changes to GHG emissions estimated with the Action Alternative would not be considered a substantial increase or decrease to the total worldwide GHG emissions. The most meaningful reductions in GHG reductions will come from large-scale (national and international) programmatic changes to the primary GHG sources listed above. Meaningful reductions to transportation-related GHG emissions would occur from improved vehicle-emission-reduction technologies (including the expanded use of electric vehicles), cleaner fuels, and/or improved fuel efficiency. The United States and other countries are actively pursuing these types of strategies with the goals of decreasing future

transportation-related GHG emissions. Therefore, the I-15 project would not result in adverse cumulative effects on GHG emissions.

Future Noise Levels

As discussed in Section 3.9, *Noise*, an increase in traffic, changes in traffic patterns, or changes in travel speeds can affect noise levels at adjacent properties. Noise is logarithmic, and different sources of noise do not have a linear additive relationship. If there are two noise sources, one cannot simply add the noise levels from the two noise sources to arrive at the total noise level. In most cases, the noise level of the louder noise source dominates the quieter noise source, and the total noise level is close to the noise level of the louder noise source (NoiseMeters Inc., no date). For example, if a 40-decibel (dB) background noise level were added to a 60-dB noise level from a road, the total noise level would be 60 dB.

The noise modeling conducted for the Action Alternative is based on the worst-case LOS C traffic volumes, which provide a conservative (that is, high) estimate of the amount of traffic associated with the anticipated growth and development and the planned future road network. Therefore, the noise modeling for the I-15 project is inherently cumulative, adding the worst-case project-related noise to existing background noise levels. The LOS C traffic volumes assume free-flow conditions with high traffic volumes in both directions at the same time. In reality, during most hours of the day, the traffic volumes would be lower than the LOS C volumes, and the noise levels would be lower. Overall, the noise modeling for the project is conservative and represents worst-case noise levels.

The Action Alternative would generally increase noise levels throughout the noise evaluation area and near sensitive noise receivers. Noise mitigation is also being recommended as part of the Action Alternative to mitigate for noise impacts. Based on the analysis in this EIS, UDOT determined that the expected noise impacts of the Action Alternative would reasonably predict the cumulative effects analysis for noise, and would not result in adverse cumulative effects on noise.

Stormwater and Water Quality Impacts

Past actions have led to the existing surface water and groundwater quality conditions in the ICE analysis area as described in Section 3.11, *Water Quality and Water Resources*. The Action Alternative would involve constructing an additional travel lane in each direction from Farmington to Salt Lake City and reconstructing several interchanges. This would result in a net increase of impervious area and an increased amount of highway stormwater runoff that could impact water resources. However, with the stormwater controls that would be integrated into the project design to address water quality, there would not be impacts to surface and groundwater resources.

When combined with other reasonably foreseeable transportation, residential, and commercial development projects, the risk of impacts to surface and groundwater resources could be compounded. However, precipitation that would fall on the additional impervious areas would be treated through the use of BMPs to control runoff quantities and quality in compliance with each community's existing stormwater management plans and other regulatory controls. With implementation of BMPs and coordination with owners of drinking water source systems, the I-15 project would not have adverse impacts to water quality or water resources. Therefore, the I-15 project would not result in adverse cumulative effects on water quality or water resources.

Floodplains

As described in Section 3.13, *Floodplains*, the Action Alternative would have a maximum of 42.42 acres of impacts on 100-year floodplains from transverse and longitudinal crossings. Most of the floodplains that would be impacted by the Action Alternative are already crossed by I-15, so the Action Alternative would primarily modify, widen, or extend the existing I-15 floodplain crossings and would not cause new impacts to floodplains that are not already crossed by I-15. With the Action Alternative, culverts and bridges in regulatory floodplains would be designed to accommodate a 100-year flood in accordance with FEMA and local floodplain ordinance criteria. These design standards, together with the proper placement of structures and walls, would avoid or reduce the risk that the I-15 project would exacerbate flooding. The Action Alternative's impact would be insignificant to the overall function of the floodplain and stormwater systems. Other reasonably foreseeable projects listed above in Table 3.18-2, *Present and Reasonably Foreseeable Future Actions*, could compound impacts from floodplains in the floodplains evaluation area. However, if these other reasonably foreseeable projects would impact floodplains, they would also be required to meet the FEMA and local floodplain ordinance criteria. Therefore, the I-15 project would not result in adverse cumulative effects on floodplains.

Wetlands and Aquatic Resources Impacts

The past total amount of wetlands in the project study area is unknown due to large past natural fluctuations of the Great Salt Lake, which fluctuates on longer time scales (typically 10-year or longer timeframes). Similarly, it is not well understood what impact past actions have had on wetlands and aquatic resources. Past actions include conservation and mitigation lands developed to minimize future impacts to these sensitive resources.

As described in Section 3.12, *Ecosystem Resources*, the Action Alternative would convert aquatic resources to transportation use, and this conversion would have a maximum of about 29 acres of impacts to aquatic resources. In order to fill jurisdictional wetlands and other resources as part of the I-15 project, UDOT must prepare and submit a Clean Water Act Section 404 permit to USACE. The permit application must contain a compensatory mitigation plan that describes the proposed mitigation efforts and how they would offset the functions and values eliminated by the selected alternative. Other reasonably foreseeable projects listed above in Table 3.18-2, *Present and Reasonably Foreseeable Future Actions*, could compound impacts from aquatic resources in the ICE analysis area. If the other reasonably foreseeable projects would impact jurisdictional aquatic resources, they would also be required to obtain a Clean Water Act Section 404 permit and provide mitigation for these impacts with the goal of no net loss of this resource.

With implementation of this mitigation, the I-15 project would not have adverse impacts to aquatic resources and would not result in adverse cumulative effects on aquatic resources.

3.18.3.2.4 Cumulative Effects Summary

In making these cumulative effects determinations, UDOT considered the planned projects and development listed above in Table 3.18-2, *Present and Reasonably Foreseeable Future Actions*, as well as the past and present conditions of the resources near I-15. UDOT determined that, because none of the resources evaluated in this EIS would experience substantial adverse direct or indirect impacts and because none of the reasonably foreseeable future actions are anticipated to have substantial impacts on resources in the ICE analysis area, there would not be substantial cumulative effects from the Action Alternative.

3.19 Short-term Uses versus Long-term Productivity

3.19.1 Regulatory Setting

The Council on Environmental Quality's regulations for implementing NEPA require an EIS to address the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity (40 CFR Section 1502.16). FHWA's guidelines for environmental documents state that an EIS should discuss in general terms the proposed action's relationship of local short-term impacts and use of resources, and the maintenance and enhancement of long-term productivity, including recognition that transportation improvements are based on state and/or local planning that considers the need for present and future traffic requirements within the context of present and future land use development (FHWA 1987).

3.19.2 Short-term Uses versus Long-term Productivity

The Action Alternative would be consistent with local land use and transportation plans, which demonstrate a need for more capacity on I-15 to accommodate planned growth and regional population projections. The short-term use of environmental resources versus preserving their long-term productivity relates to converting the productivity of the land, viewed as a long-term and renewable use, to a developed transportation use that has a relatively short economic life. Almost all of the I-15: Farmington to Salt Lake City EIS study area is developed and has been previously affected by development. Overall, the I-15: Farmington to Salt Lake City Project would improve the long-term economic productivity of the area by providing a more efficient transportation network.

3.20 Irreversible and Irretrievable Commitment of Resources

3.20.1 No-action Alternative

There would not be any irreversible or irretrievable commitment of resources with the No-action Alternative.

3.20.2 Action Alternative

Implementing the Action Alternative would involve a commitment of a range of natural, physical, human, and fiscal resources. Land used for constructing the Action Alternative would be considered an irreversible commitment of these resources during the time that the land is used for the interstate and its interchanges. However, if a greater need for use of the land arises, or if the interstate or its interchanges are no longer needed, the land could be converted to another use. At present, such a conversion is not reasonably foreseeable.

A considerable amount of fossil fuels, labor, and roadway construction materials such as cement, aggregate, and bituminous material would be expended. Additionally, large amounts of labor and natural resources would be necessary for fabricating and preparing the construction materials. These materials are generally not retrievable, but they are not in short supply, and their use would not have an adverse effect on the continued availability of these resources.

Constructing the Action Alternative would also require a substantial expenditure of irretrievable funds. The commitment of these resources is based on the premise that residents in the area, the state, and the region would benefit from the improved quality of the transportation system. These economic benefits would consist of improved accessibility and mobility, increased safety, and savings in travel time, all of which are economic benefits that are anticipated to outweigh the commitment of these financial resources.

Wetlands in the study area would be lost as discussed in Section 3.12, *Ecosystem Resources*, though the loss of these wetlands would be mitigated.

Historic buildings would be affected by the Action Alternative as described in Section 3.10, *Historic and Archaeological Resources*. The demolition of historic buildings as part of construction is an irreversible commitment of resources.

3.21 Permits, Reviews, Clearances, and Approvals

3.21.1 Introduction

Section 3.21 discusses the permits, reviews, clearances, and approvals that would be required to construct the Action Alternative. Section 3.21 applies to any of the area options unless specified otherwise.

3.21.2 Federal Permits, Reviews, Clearances, and Approvals

3.21.2.1 Individual Permit under Section 404 of the Clean Water Act (USACE)

Project applicants are required to obtain a Clean Water Act Section 404 permit if a proposed action would discharge dredged or fill materials in waters of the United States, including wetlands. The Action Alternative would place fill material in waters of the United States and would require an individual permit. The agency responsible for issuing a Section 404 permit is USACE. As a condition of the required Section 404 permit, a Section 401 water quality certification must be obtained from the state water quality agency [see Section 3.21.3.1, *Water Quality Certification under Section 401 of the Clean Water Act (Utah Division of Water Quality)*].

UDOT has been coordinating throughout the EIS process with USACE. UDOT will continue to work with the USACE on information needed for the 404 permit process.

UDOT anticipates that USACE would issue a Section 404 permit or permits for the selected alternative at some point after the ROD is issued for the I-15 project. UDOT could implement the project in phases based on available funds. Section 404 permitting also could be phased. UDOT would be responsible for any required changes or additions to the Section 404 permit due to design changes or construction activities.

3.21.2.2 Approval of Addition or Modification of Access Points (FHWA)

Changing access points to the interstate highway system requires approval from FHWA. The Action Alternative would require modifications to I-15 accesses. An interchange design/justification report would need to be prepared and approved by FHWA for each modified access. UDOT anticipates that the required interstate access point approval would be issued after the ROD for the I-15 EIS.

UDOT has had meetings with FHWA throughout the EIS process to discuss the proposed interchange designs included with the Action Alternative. UDOT will continue to coordinate with FHWA regarding the information needed for the interstate access point approvals after the ROD for the I-15 EIS is completed.

3.21.2.3 Migratory Bird Treaty Act (USFWS and Utah Division of Wildlife Resources)

The Action Alternative could affect nests of migratory birds during construction through vegetation removal. If protected species are found nesting in the construction zone or buffer zone before or during construction, UDOT will coordinate with USFWS and the Utah Division of Wildlife Resources to ensure compliance with the Migratory Bird Treaty Act. See Section 3.12, *Ecosystem Resources*, for potential mitigation measures for impacts to migratory birds.

3.21.2.4 Air Conformity Requirements under the Clean Air Act (FHWA)

Section 3.8, *Air Quality*, provides a detailed analysis of air conformity requirements related to the I-15 project. In summary, the Clean Air Act requires that all regionally significant highway and transit projects in air quality non-attainment areas be included in a “conforming” transportation plan and transportation improvement program.

Counties in the air quality evaluation area (Davis and Salt Lake Counties) are in air quality nonattainment status for certain criteria pollutants. A “conforming” plan is one that has been analyzed regionally for emissions of controlled air pollutants and is found to be within the emission limits established in the state implementation plan. Transportation projects are said to conform if, both alone and in combination with other planned projects included in that transportation improvement program, the project would not result in any of the following:

- New violations of the NAAQS
- Increases in the frequency or severity of existing violations of the NAAQS
- Delays in attainment of the NAAQS

For the I-15 project, WFRC, which is the metropolitan planning organization for the project study area, conducted the regional conformity analyses and submitted them to FHWA for a conformity determination. Based on the most recent regional conformity analyses, the project conforms to the state implementation plan for all pollutants in applicable nonattainment or maintenance areas.

3.21.2.5 Section 106, National Historic Preservation Act (Utah SHPO and ACHP)

For this EIS, UDOT is the lead agency under the Section 106 process. Section 106 of the NHPA requires agencies to take into account the effects of their actions on historic properties and to give the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. Any property that is included or eligible for listing in the NRHP is considered a historic property. For projects that could affect a historic property, the federal agency must consult with the relevant SHPO.

UDOT submitted its Determinations of Eligibility report for historic architectural and archaeological properties to the Utah SHPO on March 17, 2023. The Utah SHPO concurred with all determinations in a letter dated March 22, 2023. UDOT submitted its Findings of Effect report for historic architectural and archaeological properties to the Utah SHPO on July 25, 2023. The Utah SHPO concurred with all findings in a letter dated

July 31, 2023. Copies of the correspondence between UDOT and the Utah SHPO are provided in Appendix 3I, *Cultural Resources Correspondence*.

3.21.2.6 Section 4(f) of the Department of Transportation Act

The Section 4(f) regulation (23 CFR Section 774.3) states that UDOT may not approve the use of a Section 4(f) property unless:

- (a) FHWA determines that (1) there is no feasible and prudent avoidance alternative to the use of the property and (2) the action includes all possible planning to minimize harm to the property resulting from such use; or
- (b) FHWA determines that the use of the property, including any measure(s) to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures) committed to by the applicant, would have a *de minimis* impact on the property.

What is a Section 4(f) property?

Section 4(f) properties are publicly owned parks, recreation areas, wildlife and waterfowl refuges, or historic sites.

For historic sites, a *de minimis* impact means UDOT has determined that no historic property would be affected by the project or that the project would have no adverse effect on the historic property in question. For parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact means that FHWA has determined that the project would not adversely affect the activities, features, or attributes of the park, recreation area, or wildlife or waterfowl refuge eligible for protection.

Chapter 4, *Section 4(f) Analysis*, provides a detailed analysis of the Section 4(f) requirements related to the project. This evaluation found that the Action Alternative would require use of Section 4(f) properties.

3.21.2.7 Section 6(f) of the Land and Water Conservation Funds Act (National Park Service and Utah Division of Outdoor Recreation)

Two Section 6(f) properties, Centerville Community Park and Hatch Park, would be affected by the Action Alternative. Chapter 5, *Section 6(f) Analysis*, provides a detailed analysis of the Section 6(f) requirements related to the project. This evaluation found that the Action Alternative would require use of Section 6(f) properties. UDOT is coordinating mitigation for these impacted Section 6(f) properties with the local owners (Centerville City and the City of North Salt Lake), the U.S. National Park Service, and the Utah Division of Outdoor Recreation.

What is a Section 6(f) property?

A Section 6(f) property is any area or facility for which Land and Water Conservation Fund assistance has been obtained, regardless of the extent of participation of the program in the assisted area or facility and consistent with the contractual agreement between the National Park Service and the State (36 CFR Section 59.1).

3.21.2.8 Impacts to Bureau of Reclamation Lands, Easements, or Facilities

The Action Alternative would cross federal land, easements, or facilities owned by the U.S. Bureau of Reclamation (USBR). Prior to highway construction, UDOT would need to finalize agreements with the USBR to protect or replace lands, easements, or facilities impacted by the Action Alternative. These actions affecting USBR lands, easements, or facilities are actions requiring compliance with NEPA. The I-15 EIS would be adopted by USBR to fulfill its NEPA compliance requirements pertaining to the protection or replacement of federal lands, easements, or facilities impacted by the Action Alternative. USBR would need to approve its

own NEPA decision document based on the findings of this EIS. To ensure that this EIS meets USBR's NEPA requirements, USBR is a cooperating agency in the I-15 EIS NEPA process.

3.21.3 State Permits, Reviews, Clearances, and Approvals

3.21.3.1 Water Quality Certification under Section 401 of the Clean Water Act (Utah Division of Water Quality)

Section 401 of the Clean Water Act requires that before a federal agency issues a permit authorizing a discharge into waters of the United States, it must obtain certification from the state that the discharge will not violate water quality standards. For the I-15 project, UDOT must obtain a certification from the Utah Division of Water Quality before USACE issues a Clean Water Act Section 404 permit for the project. The Action Alternative would require a Section 404 permit [as discussed in Section 3.21.2.1, *Individual Permit under Section 404 of the Clean Water Act (USACE)*], due to placement of fill material in waters of the United States and therefore would require a water quality certification in accordance with Section 401 of the Clean Water Act from the Division of Water Quality.

3.21.3.2 Utah Pollutant Discharge Elimination System Permit under Section 402 of the Clean Water Act (Utah Division of Water Quality)

Section 402 of the Clean Water Act regulates discharges of pollutants to surface waters. Construction projects that disturb 1 or more acres of land must be covered under the statewide UPDES stormwater permit. The Action Alternative would disturb 1 or more acres of land and would require coverage under the UPDES stormwater permit.

Additionally, UDOT might be required to obtain a UPDES Construction Dewatering or Hydrostatic Testing General Permit during construction if construction dewatering activities discharge project water to surface waters. UDOT would coordinate with the Utah Division of Water Quality to obtain this permit if it is required.

As described in Section 3.11, *Water Quality and Water Resources*, UDOT would address postconstruction stormwater runoff from the selected alternative in accordance with its statewide MS4 permit. UDOT would also coordinate with the Utah Division of Water Quality to ensure that MS4 permit conditions are met. Additionally, UDOT would coordinate with local municipalities, as appropriate, to ensure that stormwater runoff or stormwater facilities from the selected alternative would not affect any municipal MS4 permits.

3.21.3.3 Utah State Stream Alteration Permit (Utah Division of Water Rights)

As part of its Stream Alteration Program, the Utah Division of Water Rights requires that any state agency, County, City, corporation, or person may not relocate any natural stream channel or alter the beds and banks of any natural stream without first obtaining the written approval of the state engineer (Utah Code 73-3-28). Construction of any new highway or drainage feature or associated alteration to a natural stream will require a stream alteration permit. UDOT anticipates that stream alteration permits would be required for the Action Alternative.

3.21.3.4 Air Quality Approval Order (Utah Division of Air Quality)

An air quality approval order is required to build, own, or operate a facility that pollutes the air, including the Action Alternative. To obtain an air quality approval order, a notice of intent must be submitted to the Utah

Division of Air Quality describing the construction activities and emissions that would be associated with operating construction equipment. The permit applicant must include provisions for controlling dust and emission sources, and the permit might require other construction approvals depending on the sources and locations of aggregate, asphalt, combustion, and/or fuel storage facilities. This permit would be obtained by the contractor before construction.

3.21.3.5 Approval of Remediation Work Plan (UDEQ or EPA)

Several hazardous waste sites are within the vicinity of the Action Alternative as described in Section 3.14, *Hazardous Materials and Hazardous Waste Sites*. Sites of primary concern (sites that represent a high or moderate risk to construction) are located in the north central, south central, and south segments of the Action Alternative. UDOT would conduct site investigations or screening-level soil and groundwater testing within the Action Alternative's right-of-way near the sites of concern. UDOT would conduct additional research and site investigations, if warranted, for the lower-risk sites.

If a hazardous site is found during construction, a remediation work plan would be submitted and approved by the regulatory agency (either UDEQ or EPA) if construction activities would occur on existing hazardous waste sites. The remediation work plan would define clean-up levels and protective measures for construction workers.

3.21.4 Local Permits and Clearances

3.21.4.1 Floodplain Development Permit (Local Jurisdictions)

Floodplain development permits would be required from local jurisdictions if construction, including placement of highway fill and drainage structures at stream crossings, is required within the FEMA 100-year floodplain boundary.

The Cities and Counties in the I-15 project study area have adopted FEMA's National Flood Insurance Program. This program includes the preparation of flood insurance rate maps that show the 100-year floodplain boundaries within a community.

The Action Alternative would cross several floodplains, washes, rivers, and creeks as described in Section 3.13, *Floodplains*. The Action Alternative would overlap several 100-year floodplains. In accordance with Executive Order 11988, coordination with FEMA would be required during the construction phase to ensure that local jurisdictions' flood design standards are met and to obtain floodplain development permits from the local jurisdictions.

3.21.4.2 Construction-related Permits and Clearances (Various Agencies)

The construction contractor would be responsible for obtaining all construction-related permits and other environmental clearances for activities occurring outside the right-of-way, such as activities in construction staging areas, and batch plant sites.

3.21.5 Summary of Permits, Reviews, Clearances, and Approvals

Table 3.21-1 lists the permits and clearances that would be required for the Action Alternative. To make sure the contractor follows environmental commitments, UDOT would include commitments in contract documents.

Table 3.21-1. Permits, Reviews, Clearances, and Approvals Likely To Be Required for the I-15 Project

Permit	Granting Agency(ies)	Applicant	Application Time	Granting Time	Applicable Portion of Project
Federal Permits, Reviews, and Approvals					
Individual Permit under Section 404 of the Clean Water Act	USACE	UDOT	After the Final EIS	Before construction	Impacts to aquatic resources such as wetlands and streams
Approval of additional or modification of access points	FHWA	UDOT	During the EIS	After the ROD	Interstate access changes
Compliance with Section 106 of the NHPA	Utah SHPO and ACHP	FHWA	Concurrent with the EIS	Final EIS	Considerations of impacts to historic properties; includes consultation between agencies and interested parties
USBR approval for impacts to federal facilities	USBR	UDOT	After the Final EIS	Before construction	Portions of the project that cross USBR lands, easements, or facilities.
Section 6(f) conversion and replacement property for impacts Centerville Community Park; temporary non-conforming use for Hatch Park	U.S. National Park Service	UDOT	After the Final EIS	Before construction	Section 6(f) parks, specifically Centerville Community Park and Hatch Park in North Salt Lake
State Permits, Reviews, and Clearances					
Water quality certification under Section 401 of the Clean Water Act	Utah Division of Water Quality	UDOT	Concurrent with Section 404 Individual Permit	Concurrent with Section 404 Individual Permit	Required if the project could discharge fill into navigable waters
UPDES permit under Section 402 of the Clean Water Act	Utah Division of Water Quality	Contractor	Construction phase	Before construction	Stormwater quality during construction phase
Stream alteration permit	Utah Division of Water Rights	UDOT	Final design phase	Before construction	Required for new or modified stream crossings proposed as part of the preferred alternative
Local Permits and Clearances					
Floodplain development permit	Local jurisdictions	UDOT	Final design phase	Final design phase	Portions of roadway or structure in FEMA floodplain
Construction-related permits	Various agencies	Contractor	Construction phase	Before construction	Impacts associated with off-site activities such as activities in construction staging areas, borrow areas, batch plant sites, and so on

3.22 Mitigation Summary

Section 3.22 summarizes the mitigation measures developed to avoid, minimize, rectify, reduce, or compensate impacts from the Action Alternative for the I-15: Farmington to Salt Lake City Project.

The mitigation items listed in Section 3.22 are the same items that are listed in Sections 3.1 through 3.21 of this EIS. For consistency, the mitigation measures are listed in the same order as they are organized in Chapter 3.

The mitigation measures include standard UDOT best practices, expected permit conditions, legal requirements, and other measures specifically targeted to mitigate for unique impacts. UDOT does not typically propose mitigation for resources that are anticipated to have negligible or beneficial impacts from the Action Alternative.

For this Draft EIS, the mitigation measures listed below are draft measures that reflect UDOT's current anticipation regarding what mitigation is being considered or likely required based on the impacts included in this Draft EIS. The Final EIS will include additional detail and commitment regarding mitigation measures based on permitting processes, public comments on the Draft EIS, and continued coordination with agencies, Cities, and other stakeholders.

Funding for mitigation will be included in the cost of construction; UDOT will have the final responsibility for implementation.

UDOT or its designated contractor will implement a mitigation and monitoring tracking system to ensure that all mitigation identified in this EIS is performed and that appropriate monitoring for effectiveness takes place. If a mitigation measure is determined to not be effective, the contractor will consult with UDOT to develop other appropriate mitigation.

3.22.1 Mitigation Measures for Impacts to Land Use

Because the Action Alternative would have no impacts to land use or zoning, no mitigation is proposed.

3.22.2 Mitigation Measures for Impacts to the Social Environment

As discussed above, the social impacts are generally beneficial or would be temporary during construction. No mitigation is necessary because there would be no disproportionate impact to any particular social group. More information is provided below about UDOT's best practices for project development.

3.22.2.1 Community Cohesion

The Action Alternative would benefit the communities and neighborhoods in the social environment evaluation area. No mitigation is proposed.

3.22.2.2 Quality of Life

The Action Alternative would benefit the communities and neighborhoods in the social environment evaluation area. No mitigation is proposed.

3.22.2.3 Recreation Resources

Mitigation for impacts to recreation resources typically includes replacing or relocating impacted amenities (for example, trails, pavilions, or playgrounds) or providing other items that can enhance the recreation use of the recreation resource. During the final design of the selected segment options of the Action Alternative, UDOT would work with the local municipalities with jurisdiction over the public parks and recreation areas to evaluate opportunities to further mitigate impacts. For all temporary construction impacts, the disturbed land would be restored and revegetated.

3.22.2.4 Community Facilities

There would be no impacts to community facilities from the Action Alternative. No mitigation is proposed.

3.22.2.5 Public Safety and Security

The Action Alternative would benefit public safety providers by improving the operations on I-15 and the I-15 interchanges in the social environment evaluation area. No mitigation is proposed.

3.22.2.6 Utilities

All impact to utilities would be temporary. The UDOT document *Accommodation of Utilities and the Control and Protection of State Highway Rights-of-Way* (Utah Administrative Code Rule R930-6) would be followed. The construction contractor would contact local businesses and residences if any loss of utility service is required during construction. UDOT would work with the utility companies during the final design or the design-build process if utilities need to be relocated.

UDOT would also identify and obtain all appropriate permits from state and local government agencies, as necessary, related to relocating and modifying utilities. UDOT would comply with all permit conditions.

3.22.3 Mitigation Measures for Right-of-way and Relocation Impacts

No mitigation is proposed beyond the requirements of federal and state relocation assistance acts.

During the final design process, UDOT will look at measures that could avoid needing to acquire properties. Where necessary, UDOT would acquire all property according to the federal Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970 (as amended July 2008) and the Utah Relocation Assistance Act. These regulations require fair compensation for property owners and qualified renters to offset or eliminate any financial hardship that private individuals or entities could experience as a result of acquiring property for public purposes. No individual or family would be required to relocate until adequate, decent, safe, and sanitary housing is available.

Relocation resources will be available to all residents and businesses that are relocated, and the process for acquiring replacement housing and other sites will be fair and open.

3.22.4 Mitigation Measures for Impacts to Environmental Justice Populations

Although decision-making relevant to the proposed Action Alternative cannot remedy many of these past transportation and industrial decisions, UDOT intends to continue to work collaboratively with the community to address past impacts to the extent that they are related to I-15 and can be addressed with the current I-15 project. By actively involving the community in the process and considering their feedback, UDOT is committed to working with the community to identify and incorporate those ideas into the project that will have lasting benefits for all members of the community.

To meet the project purpose of “better connecting communities,” UDOT is working with Salt Lake City and the local community to evaluate a potential new crossing under I-15 between 400 North and North Temple. If a location for a new crossing is identified through this additional study, UDOT will include this location in the Action Alternative in the Final EIS or in an EIS re-evaluation. The crossing study was ongoing when this Draft EIS was released.

3.22.5 Mitigation Measures for Impacts to Economic Conditions

UDOT proposes to implement mitigation to include the following.

3.22.5.1 Construction

To mitigate short-term access and visibility impacts to businesses during construction, a traffic access management plan would be developed and implemented by the construction contractor that maintains public access to impacted businesses during normal business hours. Following completion of the construction phase, UDOT would install appropriate roadway directional signs consistent with UDOT policy.

3.22.5.2 Operation

When acquisition of a right-of-way is necessary, it is done in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. This mitigation measure is discussed in more detail in Section 3.3, *Right-of-way and Relocations*. Compliance with the Act ensures that all persons regardless of race, color, religion, sex, national origin, disability, or age will be fairly and equitably treated.

Mitigation is not provided to local governments that are adversely affected when land is removed from their tax base. Over the long term, property values are expected to increase as a result of improved regional transportation access to businesses. The revenues generated from this would offset any short-term impacts from the I-15 project on local government revenues.

3.22.6 Mitigation Measures for Impacts to Transportation

The Action Alternative would be an improvement over the no-action conditions. No mitigation for impacts to the roadway network is proposed.

Each existing pedestrian and bicyclist facility that would be closed and removed during construction would be replaced with a similar or improved facility near its current location. Project construction for pedestrian and bicyclist facilities would be phased to minimize disruptions to the public to the extent feasible. UDOT

would also coordinate with the Counties and Cities during the final design of the Action Alternative to mitigate disruptions to pedestrian and bicyclist facility users. Potential mitigation for disruption would include providing signed on-road detours where feasible, closing facilities during low-use seasons (winter), and providing information to the public about closures.

3.22.7 Mitigation Measures for Joint Development Impacts

No mitigation measures for joint development impacts are proposed because no adverse impacts are expected. UDOT will continue to work with the Counties and Cities to make the Action Alternative compatible with the planned projects listed above in Table 3.7-1, *Potential Joint Development Projects*.

3.22.8 Mitigation Measures for Impacts to Air Quality

Regional modeling conducted by WFRC for the 2050 transportation conformity analyses demonstrated that all regionally significant transportation projects (including the I-15 project) would not adversely affect local compliance with the NAAQS. Atmospheric CO₂ and PM₁₀ emissions are projected to increase in 2050 with the Action Alternative due to the projected increase in VMT in the air quality evaluation area. The amounts of all other pollutants are projected to decrease in future years due to improved fuel and emissions standards. Therefore, no mitigation is proposed related to the project operations. See Section 3.17.3.6, *Mitigation Measures for Air Quality Impacts from Construction*, for the proposed air quality mitigation related to construction.

3.22.9 Mitigation Measures for Impacts to Noise

According to UDOT's noise-abatement policy, specific conditions must be met before traffic noise abatement is implemented. Noise abatement must be considered both feasible and reasonable.

The factors considered when determining whether abatement is feasible are:

- **Engineering Considerations.** Engineering considerations such as safety, presence of cross streets, sight distance, access to adjacent properties, wall height, topography, drainage, utilities, maintenance access, and maintenance of the abatement measure must be taken into account as part of establishing feasibility. Noise-abatement measures are not intended to serve as privacy fences or safety barriers. Abatement measures installed on structures would not exceed 10 feet in height measured from the top of deck or roadway to the top of the noise wall. Noise walls would not be installed on structures that require retrofitting to accommodate the noise-abatement measure. Noise-abatement measures would be considered if the project meets the criteria established in this policy if structure replacement is included as part of the project. Abatement measures shall be consistent with general American Association of State Highway and Transportation Officials (AASHTO) design principles.
- **Safety on Urban Non-access-controlled Roads.** To avoid a damaged barrier from becoming a safety hazard, in the event of a failure, barrier height must be no greater than the distance from the back-of-curb to the face of the proposed barrier. Because the distance from the back-of-curb to the face of a proposed barrier varies, barrier heights that meet this safety requirement might also vary.
- **Acoustic Feasibility.** Noise abatement must be considered "acoustically feasible." This is defined as achieving at least a 5-dBA highway traffic noise reduction for at least 50% of front-row receivers.

The following factors are considered when determining whether abatement is reasonable:

- **Noise-abatement Design Goal.** Every reasonable effort should be made to obtain substantial noise reductions. UDOT defines the minimum noise reduction (design goal) from proposed abatement measures to be 7 dBA or greater for at least 35% of front-row receivers.
- **Cost-effectiveness.** The cost of a noise-abatement measure must be deemed reasonable in order for it to be included in a project. Noise-abatement costs are based on a fixed unit cost of \$20 per square foot, multiplied by the height and length of the wall, in addition to the cost of any other item associated with the abatement measure that is critical to safety. The fixed unit cost is based on the historical average cost of noise walls installed on UDOT projects and is reviewed at regular intervals, not to exceed 5 years. The cost-effectiveness of abatement is determined by analyzing the cost of a wall that would provide a noise reduction of 5 dBA or more for a benefited receiver. A reasonable cost is considered to be a maximum of \$30,000 per benefited receiver for activity category B and \$360 per linear foot for activity categories A, C, D, or E. If the anticipated cost of the noise-abatement measure is less than the allowable cost, then the abatement is deemed reasonable.

The cost-effectiveness calculation also takes into account the cost of any items associated with the abatement measure that is critical to safety, such as snow storage and safety barriers where applicable.

- **Viewpoints of Property Owners and Residents.** As part of the final design phase, balloting would take place if noise-abatement measures meet the feasible criteria and reasonable noise-abatement design goal and cost-effectiveness criteria (listed above) in UDOT's noise-abatement policy.

Section C.2(c) of UDOT's noise-abatement policy requires balloting for all benefited receivers (property owners or tenants that would receive a 5-dBA or greater reduction in noise from the noise-abatement measure) or receivers whose property would abut the proposed noise-abatement measures. Balloting approval is contingent on at least 75% of the total ballots being returned and 75% of the returned ballots being in favor of the proposed noise-abatement measure.

The Draft EIS noise analysis includes the preliminary results based on an evaluation of all three feasibility factors and the reasonable noise-abatement design goal and cost-effectiveness factors. The evaluation of the reasonableness factor for the "viewpoints of property owners and residents" would take place as part of the final design phase for the Action Alternative.

3.22.9.1 Noise Barriers

For a noise barrier to be effective, it must be high enough and long enough to block the view of the noise source from the receiver's perspective. FHWA's *Highway Traffic Noise: Analysis and Abatement Guidance* states that a good "rule of thumb" is that the noise barrier should extend 4 times as far in each direction as the distance from the receiver to the barrier. For instance, if the receiver is 50 feet from the proposed noise barrier, the barrier needs to extend at least 200 feet on either side of the receiver in order to shield the receiver from noise traveling past the ends of the barrier.

Openings in noise barriers for driveway and cross street access greatly reduce the effectiveness of noise barriers. Therefore, impacted receivers with direct access onto local streets do not qualify for noise barriers.

The anticipated cost of each wall was calculated by multiplying the wall area and the wall cost per square foot (\$20). The allowable cost was calculated using two variables: (1) activity category B allowable cost and (2) activity category C allowable cost. The activity category B allowable cost was calculated by multiplying the allowable cost per benefited receiver (\$30,000) by the number of receivers benefited by the wall. The activity category C allowable cost was calculated by multiplying the length of the wall associated with activity category C land use by the allowable cost for activity category C land (\$360 per linear foot). These two variables, activity category B allowable cost and activity category C allowable cost, were combined to produce the allowable cost for each wall (for detailed wall analyses, see Appendix 3F, *Noise Technical Report*).

For areas with noise impacts that do not have an existing noise wall, in an effort to provide an objective analysis of traffic noise reduction at impacted receivers, a variety of noise wall heights were considered. If multiple wall heights would meet noise-abatement requirements, the shortest wall height found to be both feasible and reasonable would be recommended for balloting.

UDOT's noise-abatement policy requires the replacement "in kind" of any existing noise wall. For areas with noise impacts that have an existing noise wall, UDOT evaluated only noise wall heights as tall as or taller than the existing noise wall height. For some replacement walls, UDOT also evaluated extensions to the replacement walls if the Action Alternative would have noise impacts to receivers beyond the ends of the existing walls. More details are included in Appendix 3F.

A total of 26 noise barriers were considered for the Action Alternative. See the noise wall maps in Appendix 3F.

3.22.9.2 Noise-abatement Evaluation for the Action Alternative

UDOT evaluated 21 noise barriers at locations where noise impacts would occur with the Action Alternative. Eight of the 21 noise barriers were new noise barriers, and 13 of the 21 noise barriers were replacement noise barriers consistent with UDOT's noise-abatement policy. Three of the 8 new noise barriers met UDOT's feasibility and reasonableness acoustic and cost criteria with the Action Alternative. Maps showing the locations of the noise walls evaluated for the Action Alternative and more detailed information is available for each barrier in Appendix 3F, *Noise Technical Report*.

Table 3.9-4 summarizes the analyzed noise barriers. The locations of the noise barriers are shown in Figure 3.22-1 through Figure 3.22-3 and in Attachment D, *Noise Wall Maps*, of Appendix 3F. Table 3.22-1 summarizes the results of the noise barrier analysis for the Action Alternative.

The 3 new noise barriers and 13 replacement noise barriers recommended in this analysis would provide a benefit (at least a 5-dBA reduction) to 1,568 to 1,647 receivers.

Noise-abatement Consideration during Final Design. Recommended noise walls in the noise evaluation area that met the requirements of UDOT's noise-abatement policy are summarized in Table 3.22-1. A barrier identified as recommended for balloting is a barrier that has been shown to meet the feasible criteria and reasonable design goal and cost-effectiveness criteria as defined in UDOT's noise-abatement policy. However, that finding is not a commitment to build a barrier.

Noise barriers shown in this analysis include replacement noise barriers for areas with existing noise walls and new or extended noise walls for locations modeled to have noise impacts from the Action Alternative. The final height for replacement noise barriers would be at least equal to the existing height. The new noise barriers are preliminary and must meet the feasibility and reasonableness requirements of the UDOT noise-abatement policy.

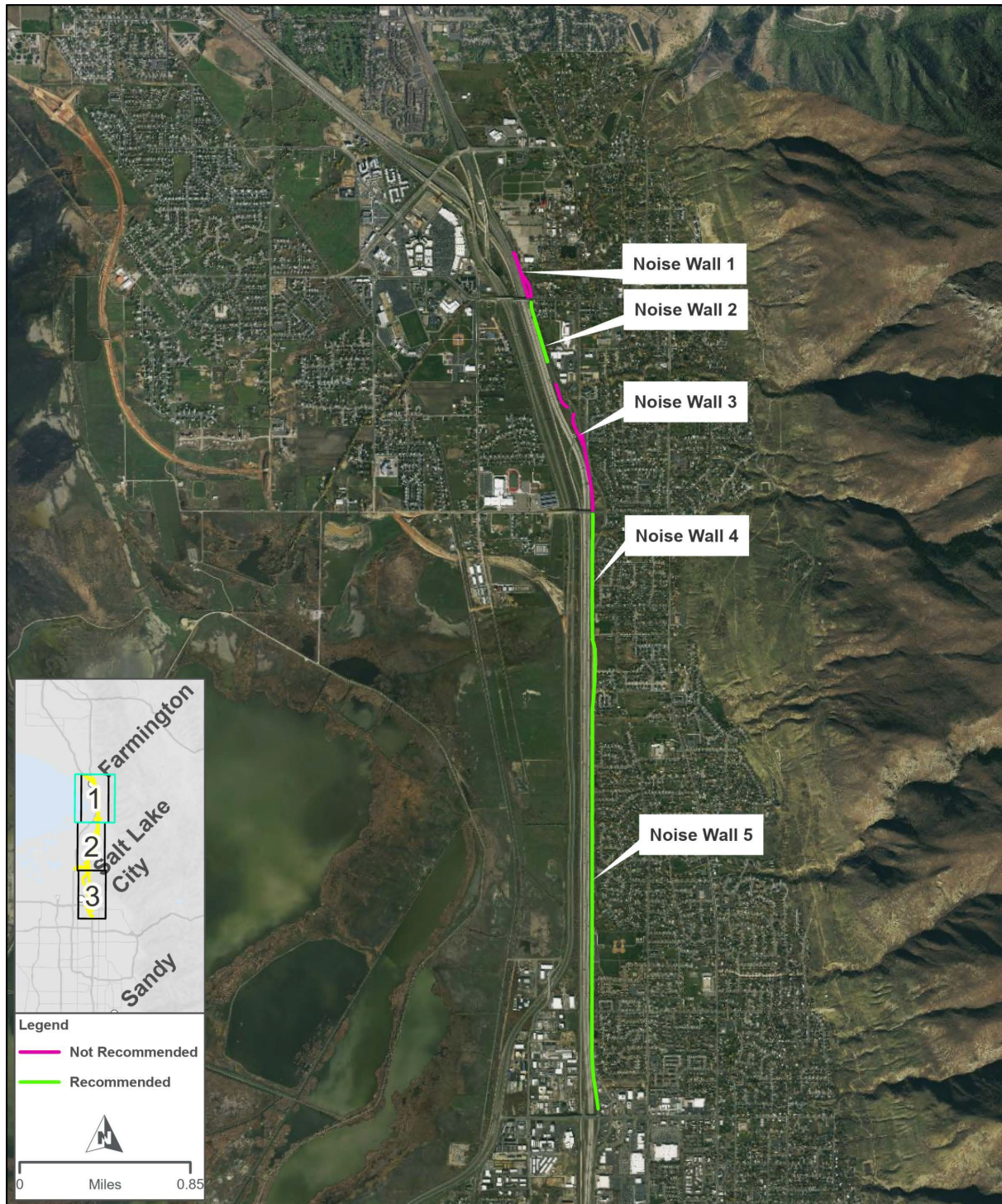
The final lengths and heights for any of the noise barriers identified in the environmental study phase are still subject to final design and the feasibility and reasonable criteria as defined in the UDOT noise-abatement policy (and summarized in Section 3.9.4.4, *Mitigation Measures*). UDOT would not make a decision whether to construct the proposed noise barrier until the project design is completed and refined utility relocation and right-of-way costs are available. Reasonableness would be evaluated using refined costs based on the final design.

UDOT will conduct balloting for the proposed noise-abatement measures with the final design engineering considerations and costs that meet the feasibility criteria and reasonable design goal and cost-effectiveness criteria as defined in UDOT's noise-abatement policy. As described above, Section C.2(c) of UDOT's noise-abatement policy requires balloting for all benefited receivers (property owners or tenants that would receive a 5-dBA or greater reduction in noise from the noise-abatement measure) or receivers whose property would abut the proposed noise-abatement measures. Balloting approval is contingent on at least 75% of the total ballots being returned and 75% of the returned ballots being in favor of the proposed noise-abatement measure.

Table 3.22-1. Barrier Analysis Summary

Proposed Barrier	Segment/Options	New Barrier or Replacement of Existing Barrier?	Is Barrier Feasible, Reasonable, and Recommended for Balloting? (applicable to new walls only)	Recommended Barrier Height, Length
1	North – Farmington State Street Option	New	No	NA
1	North – Farmington 400 West Option	New	No	NA
2	North – Farmington State Street Option	New	Yes	16 feet, 1,651 feet
2	North – Farmington 400 West Option	New	Yes	16 feet, 1,400 feet
3	North/both options	New	No	NA
4	North/both options	Replacement	NA	16 feet, 4,199 feet
5	North/both options	Replacement	NA	17 feet, 12,345 feet
6	North central/both options	Replacement	NA	16 feet, 4,481 feet
7	North central/both options	Replacement	NA	13 feet, 986 feet
8	North central/both options	New	No	NA
9	South central/both options	New	No	NA
10	South central/both options	Replacement	NA	13 feet, 3,381 feet
11	South central/both options	Replacement	NA	14 feet, 1,880 feet
12	South/both options	Replacement	NA	12 feet, 4,343 feet
13	South/both options	Replacement	NA	14 feet, 1,370 feet
14	South/both options	New	Yes	15 feet, 1,557 feet
15	South/both options	New	No	NA
16	South/both options	New	Yes	11 feet, 650 feet
17	South/both options	Replacement	NA	16 feet, 9,243 feet
18	South/1000 North Northern Option	Replacement	NA	12 feet, 1,726 feet
18	South/1000 North Southern Option	Replacement	NA	12 feet, 1,372 feet
19	South/1000 North Northern Option	Replacement	NA	16 feet, 3,282 feet
19	South/1000 North Southern Option	Replacement	NA	16 feet, 4,442 feet
20	South/both options	Replacement	NA	14 feet, 4,250 feet
21	South/both options	Replacement	NA	14 feet, 4,524 feet

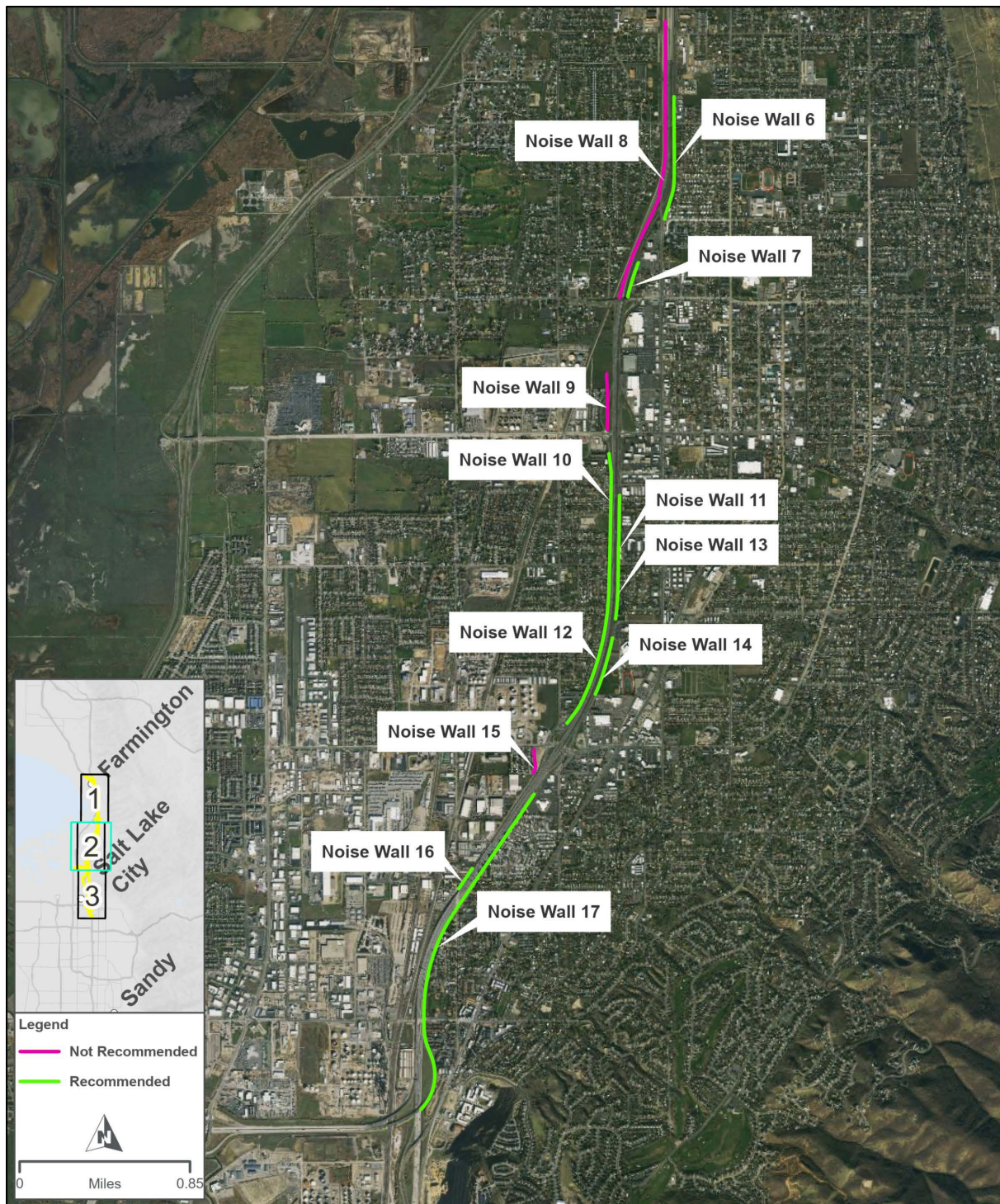
Figure 3.22-1. Noise Wall Evaluation (1 of 3)



NOISE WALL EVALUATION
I-15 EIS: FARMINGTON TO SALT LAKE CITY

FIGURE 1 OF 3

Figure 3.22-2. Noise Wall Evaluation (2 of 3)



NOISE WALL EVALUATION
I-15 EIS: FARMINGTON TO SALT LAKE CITY

FIGURE 2 OF 3

Figure 3.22-3. Noise Wall Evaluation (3 of 3)



NOISE WALL EVALUATION
I-15 EIS: FARMINGTON TO SALT LAKE CITY

FIGURE 3 OF 3

3.22.10 Mitigation Measures for Impacts to Historic and Archaeological Resources

3.22.10.1 Mitigation Measures for Impacts to Eligible Historic Architecture Resources

The Action Alternative would have an **adverse effect** on architectural resources. Mitigation measures for architectural resources are not yet developed. UDOT will coordinate with the Utah SHPO, tribes, or other consulting parties, as appropriate, to develop specific mitigation measures for the architectural resources that would have adverse effects from the project.

These measures will be described in a Memorandum of Agreement that will be included in the Final EIS and Record of Decision for the I-15 project.

Typical mitigation measures for adversely affected historic buildings consist of detailed documentation of the physical structure of the building and the history of its occupants and uses since it was constructed.

Although these types of mitigation measures are common, mitigation can consist of any measures that UDOT, the SHPO, and the consulting parties agree are appropriate to compensate for the effects on the resource or resources in question. In many cases, mitigation measures involve off-site activities, such as developing interpretive signs or museum displays to share the history of or information about the affected resources rather than focusing on documentation of the resource itself.

3.22.10.2 Mitigation Measures for Impacts to Archaeological Sites

The Union Pacific Railroad tracks, the Denver & Rio Grande Western Railroad tracks, and a historic trolley line are the eligible archaeological sites that would be impacted by the project. The project proposes to bridge most of the railroad crossings and the historic trolley crossing. The project's two at-grade railroad crossings already exist. Because the Action Alternative has been designed to have **no adverse effect** on archaeological sites, no specific mitigation measures are necessary.

3.22.11 Mitigation Measures for Impacts to Water Quality and Water Resources

UDOT proposes the following mitigation measures to help ensure that surface water and groundwater quality is maintained.

- UDOT or its design consultants would follow all applicable requirements of UDOT's *Stormwater Quality Design Manual* (UDOT 2021) for the design of BMPs to meet MS4 permit and groundwater permit-by-rule requirements.
- UDOT or its design consultants would follow UDOT's *Drainage Manual of Instruction* for the design of stream crossings and culverts.
- UDOT or its construction contractors would prepare SWPPPs and obtain a UPDES permit for stormwater discharges associated with construction activities. Restoration efforts would also be monitored to ensure successful revegetation as typically required by an SWPPP.

- If construction activities require dewatering that would discharge project water to surface waters, UDOT or its construction contractors would obtain a UPDES Construction Dewatering or Hydrostatic Testing General Permit.
- UDOT would visually inspect and maintain stormwater quality BMPs so that they are functioning properly. These BMPs would likely include detention basins; however, other BMPs from UDOT's *Stormwater Quality Design Manual* might be chosen during the final design stage of the project.
 - During construction, inspectors for the project would certify that the BMPs were installed according to contract documents and UDOT standards.
 - After construction, UDOT would document and maintain records of inspections, any deficiencies identified during inspections, and the repairs performed on the BMPs.
- UDOT would comply with the Clean Water Act Section 404 permit, including any required Section 401 Water Quality Certifications and applicable Stream Alteration Permits for activities placing fill into waters of the United States and altering natural stream bed and banks.
- UDOT would maintain wetland hydrology and existing surface water conveyance patterns through the installation of culverts or other engineering alternatives through the roadway embankment.
- UDOT would collaborate with the public water system owners that have drinking water source protection zones in place that might be impacted by the Project during final design and construction to mitigate any impacts to water distribution infrastructure.
- UDOT would coordinate with the owners of any impacted water right points of diversion during final design and construction to protect or replace the impacted points of diversion as necessary.
- UDOT would design and implement countermeasures to mitigate potential impacts to a stream's natural flow pattern, velocity, profile, channel stability, aquatic habitats, streambank vegetation, and riparian habitats that could result from replacing, lining, extending, or repairing conveyance structures for the project.

3.22.12 Mitigation Measures for Impacts to Ecosystem Resources

UDOT's best practices for project development include the following mitigation measures for ecosystem resources.

3.22.12.1 Mitigation Measures for Vegetation Impacts

All of the segment options would remove vegetation and could also introduce noxious species into the surrounding areas. To prevent further, permanent effects, UDOT would mitigate temporary impacts to vegetation once construction is complete and no further disturbance is anticipated. Mitigation would include the following measures:

- All fill materials brought onto the construction site would be required to be clean of any chemical contamination per UDOT's General Standard Specifications, Section 02056, *Embankment, Borrow, and Backfill*. Topsoil used for roadside stabilization or landscaping must meet UDOT's General Standard Specifications, Section 02912, *Topsoil*.
- The contractor would rip and stabilize any compacted soil and reseed it with native seed mixes.
- The contractor would be required to follow noxious weed mitigation and control measures identified in the most recent version of UDOT Special Provision Section 02924S, *Invasive Weed Control*.
- The contractor would stabilize all disturbed areas by following UDOT Standards, including topsoil, seeding, and installation of appropriate erosion-control measures.

3.22.12.2 Mitigation Measures for Terrestrial and Aquatic Wildlife Impacts

UDOT would implement the following mitigation measure to conserve and minimize impacts to migratory birds and in furtherance of Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*:

- Trees and shrubs would be removed during the non-nesting season (about August 15 to April 1). If this is not possible, UDOT or its contractor would arrange for preconstruction nesting surveys, to be conducted no more than 10 days before ground-disturbing activities, by a qualified wildlife biologist of the area that would be disturbed to determine whether active bird nests are present. If active nests are found, the construction contractor would coordinate with the UDOT Natural Resources Manager/Biologist to avoid impacts to migratory birds.

3.22.12.3 Mitigation Measures for Aquatic Resources Impacts

In order to fill jurisdictional wetlands and other aquatic resources as part of the project, UDOT must prepare a Clean Water Act Section 404 permit application and submit it to USACE for approval before construction. The permit application must contain a compensatory mitigation plan that describes the proposed mitigation efforts and how they would offset the functions and values eliminated by the selected alternatives.

Compensatory mitigation could include any one or a combination of the following five methods: restoring a previously existing wetland or other aquatic site, enhancing an existing aquatic site's functions, establishing (that is, creating) a new aquatic site, preserving an existing aquatic site, and/or purchasing credits from an authorized wetland mitigation bank.

Potential temporary construction impacts to aquatic resources would be minimized through consideration of construction methods and use of BMPs such as silt fences and other erosion-control features in areas adjacent to wetlands and streams. Any necessary temporary construction impacts to aquatic resources that are authorized by a Clean Water Act Section 404 permit would be restored through regrading the ground surface to natural contours and revegetating disturbed areas.

3.22.12.4 Threatened and Endangered Species Commitments

Since no federally threatened or endangered species and no critical habitat were identified in the ecosystem resources evaluation area, no mitigation is proposed.

3.22.13 Mitigation Measures for Impacts to Floodplains

UDOT and/or its construction contractor would take measures to reduce floodplain impacts and to ensure that, if the Action Alternative is selected, the alternative complies with all applicable regulations (see Section 3.13.2.2, *Executive Order 11988, Floodplain Management*). These mitigation measures would include the following:

- The Action Alternative would require a number of stream and floodplain crossings in the same locations where they presently exist as well as several new stream and floodplain crossings. UDOT would determine whether existing bridges and culverts need to be replaced as a part of the Action Alternative. Where new or rehabilitated bridges and culverts are included in the Action Alternative, the design would follow FEMA requirements and the requirements of UDOT's *Drainage Manual of Instruction*, where applicable. Where no Special Flood Hazard Area is defined, culverts and bridges would be designed to accommodate a 50-year (2%-annual-chance) or greater-magnitude flood. Where regulatory floodplains are defined, hydraulic structures would be designed to accommodate at least a 100-year (1%-annual-chance) flood. Since I-15 is important to regional mobility, UDOT would evaluate potential benefits that might be gained by designing stream crossings to convey larger flood events in locations where UDOT determines a culvert is required or needs to be replaced.
- Stream alteration permits would be obtained for stream crossings as required by the Utah Division of Water Rights to satisfy state regulations, and in some circumstances might also be used to meet Clean Water Act Section 404 permitting requirements (through use of Army Corps of Engineers Programmatic General Permit 10).
- Floodplain development permits would be obtained for all locations where the proposed roadway embankment or structural elements would encroach on a regulatory floodplain. FEMA requires that construction within a floodway must not increase the base (100-year) flood elevation. FEMA Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) processes would be executed in compliance with 44 CFR Sections 60.3 and 65.12 as necessary based on hydrologic and hydraulic analyses and the nature of anticipated changes in base flood elevation and/or floodplain limits. The LOMR process takes place after construction impacts have occurred to modify and update an effective floodplain map. The CLOMR process (if required) must be completed before construction impacts take place to receive FEMA's concurrence that, if the selected alternative is

constructed as designed, a LOMR could be issued to modify and update the effective floodplain map. The following cases apply:

- For areas of Zone A floodplain impacts, the approach would be to analyze existing and proposed conditions and design project features such that compliance is achieved, or that a CLOMR is not required, as much as possible. In these areas, FEMA performed floodplain mapping without publishing base flood elevations or delineating a floodway. The absence of this information places the burden on UDOT to perform hydrologic and hydraulic analyses consistent with FEMA standards. These analyses would confirm or refine the FEMA floodplain mapping and could increase or decrease the estimate of affected areas.
- For areas of Zone AE, AH, and AO floodplain impacts, the approach would be to analyze proposed conditions relative to effective floodplain mapping (with base flood elevations and ponding depths defined) and design project features such that compliance is achieved, or that a CLOMR is not required, as much as possible. Any action that would increase the water surface elevation within a floodway (for the 1%-annual-chance event) would require that a CLOMR is prepared and accepted by FEMA prior to the start of construction and issuance of a floodplain development permit.
- UDOT would obtain flood-control permits from Davis County Public Works for all work that would take place within a county flood-control facility to certify that plans and specifications meet the requirements of the Davis County Flood Control Master Plan. UDOT would also obtain flood-control permits from Salt Lake County for any actions occurring within 20 feet of a Salt Lake County–controlled waterway.
- Roadway elevations would be a minimum of 2 feet above adjacent floodplain elevations, where those elevations are defined, so that flooding would not interfere with a transportation facility needed for emergency vehicles or evacuation.
- Walls would be designed and constructed to minimize longitudinal floodplain impacts.

3.22.14 Mitigation Measures for Impacts to Hazardous Materials and Hazardous Waste Sites

UDOT's best practices for project development include the following mitigation measures for hazardous materials and hazardous waste sites.

If the Action Alternative is selected, site investigations would be conducted by UDOT during final design to confirm the presence of contamination and determine potential risks to construction, if any, and the appropriate remedial measures. In the case of an identified chemical hazard, UDOT would negotiate the site remedy with the property owner before property is acquired and disturbed by construction and through possible coordination with EPA and DERR.

Previously unidentified sites or contamination could be encountered during construction. The construction contractor would implement measures to prevent the spread of contamination and to limit worker exposure. In such a case, all work would stop in the area of the contamination according to UDOT Standard Specifications, and the contractor would consult with UDOT and DERR to determine the appropriate

remedial measures. Hazardous materials would be handled according to UDOT Standard Specifications and the requirements and regulations of DERR.

During construction, coordination would take place with UDOT, EPA, and/or DERR, the construction contractor, and the appropriate property owners. This coordination would involve determining the status of the sites of concern, identifying newly created sites, identifying the nature and extent of remaining contamination (if any), and minimizing the risk to all parties involved. Environmental site assessments might be conducted at the sites of concern to further evaluate the nature and extent of contamination and to better identify the potential risks of encountering hazardous materials when constructing the selected alternative.

Engineering controls (such as dust mitigation, temporary soil covers, and groundwater extraction) and personal protective equipment for construction workers would be used to reduce the potential for public or worker exposure to hazardous materials as determined necessary by UDOT.

3.22.15 Mitigation Measures for Impacts to Visual Resources

UDOT proposes to implement mitigation to include the following. All aesthetic treatments would be completed in accordance with UDOT Policy 08A-03, *Project Aesthetics and Landscaping Plan Development and Review* (UDOT 2014a), and UDOT's *Aesthetics Guidelines* (UDOT 2014b). UDOT's policy is to set a budget for aesthetics and landscape enhancements based on the aesthetics guidelines. The aesthetic features considered during the final design phase of the selected alternative could include lighting; vegetation and plantings (such as street trees); the color of bridges, structures, and retaining walls; and other architectural features such as railings.

Aesthetic treatments are typically evaluated during the final design phase of the project after an alternative is selected in the project's Record of Decision and funding has been allocated for the project. UDOT would coordinate with the local municipalities to determine whether the desired aesthetics can be implemented.

3.22.16 Mitigation Measures for Energy Impacts

Due to improved fuel economy in the future, the energy used with the Action Alternative would be less than the energy used with the existing conditions. No mitigation measures for energy impacts are proposed.

3.22.17 Mitigation Measures for Construction Impacts

The following mitigation measures are currently proposed to be implemented during construction.

3.22.17.1 Mitigation Measures for Construction Phasing

No specific mitigation has been identified for construction phasing. If a phased approach is taken, the project mitigation identified in this EIS is proposed to be implemented for the specific design for each phase. Future mitigation for subsequent phases would take into account the final design for that phase and any changes in regulations or potential improvements to BMPs at the time of implementation.

3.22.17.2 Mitigation Measures for Property and Land Use Impacts from Construction

To the extent possible, the contractor would be required to ensure that irrigation systems remain intact and fully functional. Fencing could be altered during project construction. The contractor would be required to maintain fences and gate operations to protect construction crews and the traveling public during the construction phase. In locations of temporary easements where UDOT would temporarily use private property during construction, UDOT would provide compensation to the landowner for the temporary use.

3.22.17.3 Mitigation Measures for Social Impacts from Construction

Public Safety

A thorough public information program would be implemented to inform the public about construction activities and to reduce impacts. Information would include work hours and alternate routes. Construction signs would be used to notify drivers about work activities and changes in traffic patterns. Construction sequencing and activities would be coordinated with emergency service providers to minimize delays and response times during construction.

Public Services and Utilities

Utility agreements would be completed to coordinate utility relocations. The project specifications would require the contractor to coordinate with the utility companies to plan work so that utility disruptions to a business occur when the business is closed or during off-peak times. Before beginning work, the contractor would be required to contact Blue Stakes to identify the locations of all utilities. The contractor would be required to use care when excavating to avoid unplanned utility disruptions. If utilities are unintentionally disrupted, UDOT would work with the contractor and the utility companies to restore service as quickly as possible.

Travel Patterns

The contractor would be required to develop a maintenance of traffic plan that defines measures to reduce construction impacts to traffic. A general requirement of this plan is that, to the extent reasonably practical, safe access to businesses and residences must be maintained and existing roads must be kept open to traffic unless alternate routes are provided.

Even with the implementation of the maintenance of traffic plan, short-term increases in traffic congestion would occur in the construction area. Road closures would be limited to what is specified in the maintenance of traffic plan as approved by UDOT before the start of construction.

3.22.17.4 Mitigation Measures for Economic Impacts from Construction

Access to businesses would be maintained during the construction and post-construction phases of this project. For each phase of the project, UDOT would coordinate with property owners and businesses to evaluate ways to maintain access while still allowing efficient construction operations. This coordination could entail sharing a temporary access or identifying acceptable timeframes when access is not needed.

Adequate signs would be placed in construction areas to direct drivers to businesses. Other potential mitigation measures for construction impacts include:

- A traffic access management plan developed and implemented by the construction contractor that maintains the public's access to the business during normal business hours
- A frequent newsletter provided to all businesses in the construction area describing the progress of construction and upcoming construction events
- Business access signs that identify business access points within the construction limits
- Meetings with business representatives to inform them of upcoming construction activities and to provide a forum for the representatives to express their concerns with the project

3.22.17.5 Mitigation Measures for Pedestrian and Bicyclist Impacts from Construction

All existing pedestrian and bicyclist facilities including shoulder ways that would be temporarily impacted during construction would be reconstructed as part of the project. The trails and sidewalks and the road shoulders of active construction zones could be closed temporarily during construction. Closures would be limited in duration and construction detours would accommodate pedestrians and bicyclists as well as vehicles. Detours for pedestrians and bicyclists would be as direct as possible to minimize lengthy route deviations.

3.22.17.6 Mitigation Measures for Air Quality Impacts from Construction

Measures would be taken to reduce fugitive dust generated by construction when the control of dust is necessary for the protection and comfort of motorists or area residents. Dust-suppression techniques would be applied during construction in accordance with UDOT's Standard Specifications for Road and Bridge Construction, Section 01355, *Environmental Protection*, Part 1.11, *Fugitive Dust* (UDOT 2022b).

3.22.17.7 Mitigation Measures for Noise Impacts from Construction

To reduce temporary noise impacts associated with construction, the contractor would comply with all state and local regulations relating to construction noise, including UDOT's 2023 Standard Specification 00555 for nighttime construction work to reduce the impacts of construction noise on the surrounding community.

3.22.17.8 Mitigation Measures for Water Quality Impacts from Construction

Because more than 1 acre of ground would be disturbed, a UPDES permit and an SWPPP, consistent with UDOT's Standard Specifications for Road and Bridge Construction, Section 01355, *Environmental Protection*, Part 1.9, *Water Resource Permits*, and Part 1.14, *Stormwater Management Compliance*, would be required. The SWPPP would identify measures to reduce impacts to receiving waters from construction activities including site grading, materials handling and storage, fueling, and equipment maintenance. In addition, BMPs could include such measures as silt fences, erosion-control fabric, fiber mats, straw bales, silt drains, detention basins, mulching, and revegetation.

3.22.17.9 Mitigation Measures for Noxious Weeds Impacts from Construction

The contractor would be required to follow UDOT Special Provision 02924S, *Invasive Weed Control*, to minimize construction impacts. To mitigate the possible introduction of noxious and invasive weeds due to construction activities, the contractor will:

- Be required to follow the noxious weed mitigation and control measures identified in UDOT's Standard Specifications for Invasive Weed Control.
- Strictly follow the BMPs to reduce the potential for weed infestations.
- Reseed disturbed areas.

3.22.17.10 Mitigation Measures for Aquatic Resource Impacts from Construction

The Action Alternative would convert aquatic resources to transportation use. In order to fill jurisdictional wetlands and other aquatic resources as part of the project, UDOT must prepare a Clean Water Act Section 404 permit application and submit it to USACE for approval before construction. The permit application must contain a compensatory mitigation plan that describes the proposed mitigation efforts and how they would offset the functions and values eliminated by the selected alternative.

In addition, BMPs such as silt fences and other erosion-control features would be used in areas adjacent to wetlands to mitigate potential temporary construction impacts to wetlands and other waters of the United States. For more information, see Section 3.12, *Ecosystem Resources*.

3.22.17.11 Mitigation Measures for Impacts to Migratory Birds from Construction

Trees and shrubs would be removed during the non-nesting season (about August 15 to April 1). If this is not possible, UDOT or its contractor would arrange for preconstruction nesting surveys, to be conducted no more than 10 days before ground-disturbing activities by a qualified wildlife biologist, of the area that would be disturbed to determine whether active bird nests are present. If active nests are found, the construction contractor would coordinate with the UDOT Natural Resources Manager or biologist to avoid impacts to migratory birds.

For more proposed mitigation measures, see Section 3.12.4.4, *Mitigation Measures*.

3.22.17.12 Mitigation Measures for Cultural Resources Impacts from Construction

In accordance with UDOT's Standard Specifications for Road and Bridge Construction, Section 01355, *Environmental Protection*, Part 1.13, *Discovery of Historical, Archaeological, or Paleontological Objects, Features, Sites or Human Remains*, if cultural resources are discovered during construction, activities in the area of the discovery would immediately stop. The construction contractor would notify UDOT of the nature and exact location of the finding and would not damage or remove the resource. Work in the area of the discovery would be delayed until UDOT evaluates the extent and cultural significance of the site in consultation with the Utah SHPO. The course of action and the construction delay would vary depending on the nature and location of the discovery. Construction would not resume until the contractor receives written authorization from UDOT to continue.

3.22.17.13 Mitigation Measures for Section 4(f) Resource Impacts from Construction

Any Section 4(f) property approved for temporary use during construction would be regraded and revegetated when construction is complete or when the use of the property is no longer required.

3.22.17.14 Mitigation Measures for Section 6(f) Resource Impacts from Construction

Any Section 6(f) property approved for temporary use during construction would be regraded and revegetated when construction is complete or when the use of the property is no longer required.

3.22.17.15 Mitigation Measures for Hazardous Materials Impacts from Construction

If contamination is discovered during construction, mitigation measures would be coordinated according to UDOT Standard Specification 01355, *Environmental Compliance*, Part 1.7, *Hazardous Waste*, which directs the construction contractor to stop work and notify the engineer of the possible contamination. Coordination with UDEQ might be necessary if a discovery is made. Any hazardous materials would be disposed of according to applicable state and federal guidelines.

3.22.17.16 Mitigation Measures for Visual Impacts from Construction

The contractor would prepare and implement an appropriate seeding vegetation and/or landscaping plan to restore or enhance aesthetics after the project is completed.

3.22.17.17 Mitigation Measures for Traffic Impacts from Construction

The contractor would be required to develop a maintenance of traffic plan that defines measures to reduce construction impacts on traffic. A general requirement of this plan is that, to the extent reasonably practical, safe access to businesses and residences must be maintained and existing roads must be kept open to traffic unless alternate routes are provided.

Even with the implementation of the maintenance of traffic plan, short-term increases in traffic congestion would occur in the construction area. Road closures would be limited to what is specified in the maintenance of traffic plan as approved by UDOT before the start of construction. Additional considerations are listed in Section 3.17.3.4, *Mitigation Measures for Economic Impacts from Construction*.

3.22.17.18 Mitigation Measures for Construction Staging and Material Borrow Areas

Because the exact locations of staging areas and sources of fill material are not known, no mitigation is proposed for construction staging and material borrow areas.

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Chapter 4: Section 4(f) Analysis

4.1 Introduction

This chapter addresses the requirements of Section 4(f) of the Department of Transportation Act of 1966 for the Interstate 15 (I-15): Farmington to Salt Lake City Environmental Impact Statement (EIS) in Davis County and Salt Lake County, Utah. Section 4(f) applies to significant publicly owned parks, recreation areas, and wildlife and waterfowl refuges and to significant publicly or privately owned historic properties.

This chapter identifies Section 4(f) resources in the Section 4(f) evaluation area, determines potential use of those resources, evaluates potential avoidance alternatives and measures to minimize harm where necessary, and describes the coordination efforts made to address Section 4(f) issues and concerns.

Section 4(f) Evaluation Area. The Section 4(f) evaluation area is the area within and adjacent to the right-of-way for the Action Alternative where Section 4(f) resources could be affected, as generally illustrated in Figure 4.2-1. For this evaluation area, *adjacent* refers to parcels that directly border the Action Alternative’s proposed right-of-way. The Section 4(f) evaluation area is limited in size to areas within and adjacent to the right-of-way because Section 4(f) applies only to directly impacted parks or recreation areas, wildlife and waterfowl refuges, and historic properties.

What is Section 4(f)?

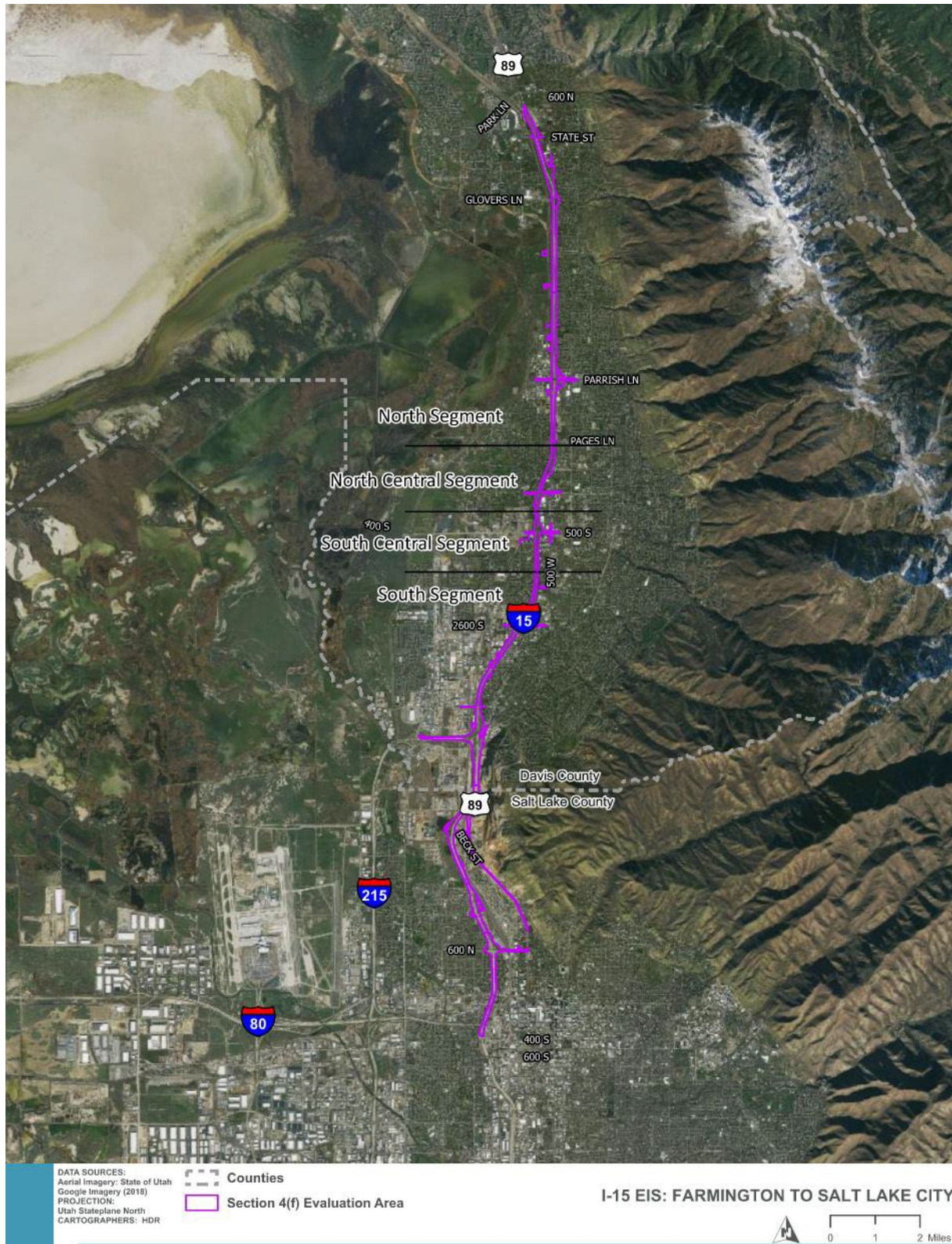
Section 4(f) of the Department of Transportation Act and the Federal Highway Administration’s implementing regulations require a project to avoid the use of protected historic properties and park and recreation areas unless there is no feasible and prudent alternative to such use or unless the lead agency determines that the impacts would be *de minimis*. If the project would use protected properties, all possible planning must be undertaken to minimize harm to these properties.

4.2 Regulatory Setting

Section 4(f) of the Department of Transportation Act of 1966 is codified at 49 United States Code (USC) Section 303, *Policy on Lands, Wildlife and Waterfowl Refuges, and Historic Sites*. It governs the use of land from publicly owned parks, recreation areas, wildlife and waterfowl refuges, and public or private historic sites.

The requirements of Section 4(f) apply only to modal administrations within the U.S. Department of Transportation: the Federal Highway Administration (FHWA), the Federal Transit Administration, the Federal Railroad Administration, and the Federal Aviation Administration. FHWA’s Section 4(f) regulations, entitled *Parks, Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites*, are codified at 23 Code of Federal Regulations (CFR) Part 774. FHWA has also developed guidance in the form of the *Section 4(f) Policy Paper* (FHWA 2012).

Figure 4.2-1. Section 4(f) Evaluation Area



NEPA Assignment. Pursuant to 23 USC Section 327, the Utah Department of Transportation (UDOT) has assumed FHWA's responsibilities under the National Environmental Policy Act of 1969 (NEPA) and all or part of the responsibilities of the Secretary of the U.S. Department of Transportation for environmental review, consultation, or other actions required or arising under federal environmental laws, including Section 4(f) with respect to the review or approval of highway projects in the state. Therefore, where the law and regulations refer to FHWA or the Secretary of Transportation, UDOT has assumed those responsibilities.

4.2.1 Definition of Section 4(f) Properties

A Section 4(f) property is defined as any of the following:

- Parks and recreation areas of national, state, or local significance that are both publicly owned and open to the public
- Publicly owned wildlife and waterfowl refuges of national, state, or local significance that are open to the public to the extent that public access does not interfere with the primary purpose of the refuge
- Historic sites of national, state, or local significance in public or private ownership regardless of whether they are open to the public

Parks and Recreation Areas. Section 4(f) applies to significant publicly owned parks and recreation areas that are open to the public. The land must be officially designated as a park or recreation area, and the officials with jurisdiction of the land must determine that its primary purpose is as a park or recreation area. The term *significant* means that, in comparing the availability and function of the property with the recreation objectives of the agency or community authority, the property in question plays an important role in meeting those objectives. Park and recreation areas that are on privately owned land are not Section 4(f) properties, even if they are open to the public. However, if a governmental body has a permanent easement, or in some cases a long-term lease, UDOT will determine on a case-by-case basis whether Section 4(f) applies. Public school playing fields that are open to the public and serve either organized or substantial walk-on recreational purposes that are determined to be significant are also subject to the requirements of Section 4(f).

Section 4(f) can also apply to *planned* parks and recreation areas. Section 4(f) applies when the land is publicly owned and the public agency that owns the property has formally designated and determined it to be significant for park or recreation purposes. The key is whether the planned facility is presently publicly owned, presently formally designated for Section 4(f) purposes, and presently significant.

Historic Sites. Historic sites include any prehistoric or historic district, site, building, structure, or object. Section 4(f) applies to historic sites that are listed on or eligible for listing on the National Register of Historic Places (NRHP), unless UDOT determines that an exception under 23 CFR Section 774.13 applies. An exception would apply if UDOT concludes that a site eligible for listing in the NRHP "is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place" and the Utah State Historic Preservation Officer (SHPO) concurs with or does not object to such conclusion [23 CFR Sections 774.13(b)(1) and (b)(2)].

4.2.2 Determination of Use

After UDOT has determined which properties are eligible for Section 4(f), the next step is to determine the effects or “use” of the project on the eligible Section 4(f) properties.

“Use” in the context of Section 4(f) is defined in 23 CFR Section 774.17 and includes the following categories.

Permanent Incorporation. The most common form of use is when land is permanently incorporated into a transportation facility. This occurs either when land from a Section 4(f) property is purchased outright as transportation right-of-way or when permanent access onto the property such as a permanent easement for maintenance or other transportation-related purpose is granted.

Temporary Occupancy (Use or Exception). A second type of use of Section 4(f) property or resources is a temporary occupancy. This results when a Section 4(f) property, in whole or in part, is required for activities related to project construction. With temporary occupancy, the Section 4(f) property is not permanently incorporated into a transportation facility, but the activity is considered to be adverse in terms of the preservation purpose of Section 4(f) law and is therefore considered a Section 4(f) use.

The regulation at 23 CFR Section 774.13(d) excepts from the requirements of Section 4(f) temporary occupancies of land that are so minimal as to not constitute a use within the meaning of Section 4(f). The following conditions must be satisfied:

1. Duration must be temporary, and there should be no change in ownership of the land;
2. The scope of the work must be minor;
3. There are no anticipated permanent adverse physical impacts, nor would there be interference with the protected activities, features, or attributes of the property;
4. The land being used must be fully restored; and
5. There must be documented agreement of the officials with jurisdiction over the Section 4(f) resource regarding the above conditions.

Temporary occupancies of this kind can occur during the construction process and, if they truly cause no interference, are excepted from the requirement for Section 4(f) approval. As stated in the regulations, temporary occupancy also requires written concurrence from the officials with jurisdiction if the exception criteria listed above are applied. If all of the conditions in Section 774.13(d) are met, the temporary occupancy does not constitute a use. However, if one or more of the conditions for the exception cannot be met, then the temporary occupancy of the Section 4(f) property is considered a “use” by the project even though the duration of on-site activities would be temporary and the ownership of the property would not change.

Constructive Use. In addition to actual, physical use of Section 4(f) property or resources (whether through direct use or temporary occupancy), the FHWA regulations at 23 CFR Section 774.15 recognize that an impact to Section 4(f) resources can occur based on a project's proximity, if the project substantially impairs the value of the Section 4(f) resource. This can also be a "use" and is called constructive use. It is defined in the FHWA regulations as occurring

... when the transportation project does not incorporate land from a Section 4(f) resource, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes are substantially diminished. [23 CFR Section 774.15(a)]

A constructive use determination is rare. It is unusual for proximity impacts to be so great that the purpose of the property that qualifies the resource for protection would be substantially diminished. Although UDOT has assumed most of FHWA's responsibilities for environmental review, consultation, and other actions under Section 4(f), UDOT cannot make a determination that an action constitutes a constructive use without first consulting with FHWA and obtaining FHWA's views on such a determination. Per the First Renewed Memorandum of Understanding between FHWA and UDOT regarding NEPA assignment (FHWA 2022), if FHWA raises an objection, then UDOT agrees not to proceed with a constructive-use determination.

4.2.3 Approval Options

Once UDOT determines that a project might use a Section 4(f) property, there are three methods available for UDOT to approve the use:

1. Make a *de minimis* impact determination;
2. Conclude that specific conditions in an approved programmatic Section 4(f) evaluation are met; or
3. Prepare an individual Section 4(f) evaluation and conclude that there is no feasible and prudent alternative that completely avoids the use of the Section 4(f) property, that the project includes all possible planning to minimize harm, and that, if there are multiple alternatives with use(s) that have greater-than-*de minimis* impacts, the alternative with least overall harm is selected.

The project's potential uses of Section 4(f) properties would trigger both *de minimis* and individual evaluations. Requirements for making a *de minimis* impact determination and the requirements for making an individual Section 4(f) evaluation are described below. A programmatic Section 4(f) evaluation is not applicable for this project and is not discussed further.

Requirements for Making a Finding of De Minimis Impact. A *de minimis* impact determination is made for the net impact to the Section 4(f) property after considering any measures (such as avoidance, minimization, mitigation, or enhancement measures) to minimize harm to the property.

For historic properties, a *de minimis* impact finding may be made only if there is a finding under the National Historic Preservation Act that a transportation project will have "no adverse effect" or there will be "no

What is a *de minimis* impact?

For historic sites, a *de minimis* impact means that the historic property would not be affected by the project or that the project would have "no adverse effect" on the historic property.

For parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact is one that would not adversely affect the activities, features, or attributes of a property that is eligible for protection under Section 4(f).

historic properties affected” and the SHPO has concurred with the finding in writing [49 USC Section 303(d)(2) and 23 CFR Section 774.5(b)].

For parks, recreation areas, and wildlife refuges, UDOT may make a finding of *de minimis* impact only if:

- (A) the Secretary has determined, after public notice and opportunity for public review and comment, that the transportation program or project will not adversely affect the activities, features, and attributes of the park, recreation area, or wildlife or waterfowl refuge eligible for protection under this section; and
- (B) the finding of the Secretary has received concurrence from the officials with jurisdiction over the park, recreation area, or wildlife or waterfowl refuge. [49 USC Section 303(d)(3)]

Requirements for Individual Section 4(f) Evaluations. An individual Section 4(f) evaluation must be completed when approving a project that requires the use of a Section 4(f) property if the use would result in a greater-than-*de minimis* impact and a programmatic Section 4(f) evaluation cannot be applied to the situation. The individual Section 4(f) evaluation requires two findings to approve the use with greater-than-*de minimis* impact:

- 1. That there is no feasible and prudent alternative that completely avoids the use of the Section 4(f) property; and
- 2. That the project includes all possible planning to minimize harm to the Section 4(f) property resulting from the transportation use. [23 CFR Section 774.3(a)]

This chapter summarizes the individual Section 4(f) evaluations required as a result of the proposed action. More information regarding feasible and prudent avoidance alternatives is provided in Section 4.6, *Avoidance Alternatives*. More information regarding all possible planning to minimize harm is provided in Section 4.7, *Least Overall Harm Analysis*, and Section 4.8, *Measures to Minimize Harm*.

4.3 Proposed Action

Chapter 1, *Purpose and Need*, of this EIS describes in detail why the I-15: Farmington to Salt Lake City Project is needed and presents the purpose of the project. Chapter 2, *Alternatives*, describes the alternatives that are evaluated in this EIS, including the Action Alternative evaluated in detail. This section summarizes the project purpose and need and the alternatives.

4.3.1 Need for the Project

As described in Section 1.4.1, *Need for the Project*, I-15 between Farmington and Salt Lake City has aging infrastructure and worsening operational characteristics for current and projected (2050) travel demand, both of which contribute to decreased safety, increased congestion, lost productivity, and longer travel times. East-west streets that access or cross I-15 are important to connect communities and support other travel modes such as biking, walking, and transit. When I-15 and its interchanges do not support travel demand, traffic is added to the

What is travel demand?

Travel demand is the expected number of transportation trips in an area. Travel demand can be met by various modes of travel, such as automobile, bus, commuter rail, carpooling, and bicycling.

local streets, which affects both the regional and local transportation system as well as safe, comfortable, and efficient travel by other travel modes.

4.3.2 Purpose of the Project

The purpose of the I-15 project is to improve safety, replace aging infrastructure, provide better mobility for all travel modes, strengthen the state and local economy, and better connect communities along I-15 from Farmington to Salt Lake City. The project purpose consists of the following objectives, which are organized by UDOT's Quality of Life Framework categories of Good Health, Connected Communities, Strong Economy, and Better Mobility.

4.3.2.1 Improve Safety

- Improve the safety and operations of the I-15 mainline, I-15 interchanges, bicyclist and pedestrian crossings, and connected roadway network.

4.3.2.2 Better Connect Communities

- Be consistent with planned land use, growth objectives, and transportation plans.
- Support the planned FrontRunner Double Track projects and enhance access and connectivity to FrontRunner, to regional transit and trails, and across I-15.

4.3.2.3 Strengthen the Economy

- Replace aging infrastructure on I-15.
- Enhance the economy by reducing travel delay on I-15.

4.3.2.4 Improve Mobility for All Modes

- Improve mobility and operations on the I-15 mainline, I-15 interchanges, connected roadway network, transit connections, and bicyclist and pedestrian facilities to help accommodate projected travel demand in 2050.

4.3.3 Alternatives Evaluated in the EIS

Based on the results of the alternatives development and screening process, UDOT advanced the following alternatives for further study in this EIS:

- No-action Alternative
- Action Alternative

The Action Alternative includes the five general-purpose lane and one high-occupancy/toll lane mainline concept combined with the concepts for each of the five geographic areas that passed Level 1 and Level 2 screening. For more information about the alternatives screening process, see Chapter 2, *Alternatives*.

The Action Alternative also includes the following subarea options:

- Farmington
 - 400 West Option
 - State Street Option
- Bountiful 400 North
 - Northern Option
 - Southern Option
- Bountiful 500 South
 - Northern Option
 - Southern Option
- Salt Lake City 1000 North
 - Northern Option
 - Southern Option

4.4 Identification of Section 4(f) Resources

This section discusses the Section 4(f) resources in the Section 4(f) evaluation area that could be affected by the Action Alternative. These resources include historic resources as well as public parks and recreation areas. There are no wildlife or waterfowl refuges near the Action Alternative. As used in this chapter, the term *historic resource* includes archaeological sites and architectural properties.

Section 4(f) applies only to parks, recreation areas, wildlife and waterfowl refuges, and historic resources of “national, state, or local significance,” according to the definition of Section 4(f) property in 23 CFR Section 774.17. All of the Section 4(f) properties discussed in this chapter have been determined to be significant pursuant to 23 CFR Section 774.11(c).

4.4.1 Historic Resources

Historic resources for this project include archaeological sites, houses and farmstead buildings, and historic linear features such as canals, utilities, and rail lines. Section 4(f) protections apply to historic resources that are listed on or eligible for listing on the National Register of Historic Places. A detailed description of the process used under Section 106 of the National Historic Preservation Act to determine eligibility is provided in Section 3.10, *Historic and Archaeological Resources*. To identify historic resources, cultural resource surveys were conducted in the Section 4(f) evaluation area. These studies documented the archaeological sites and architectural buildings in the evaluation area.

4.4.1.1 Surveys for Archaeological Resources

Eleven NRHP-eligible archaeological sites located in the Section 4(f) evaluation area could be impacted by the Action Alternative, as listed in Table 4.4-1. For more information about the process that was used to identify archaeological sites, see Section 3.10, *Historic and Archaeological Resources*. The reports *A Cultural Resource Inventory for the I-15: 600 North to Farmington Environmental Impact Study* (Horrocks 2022), *A Cultural Inventory of Additional Areas for the I-15: 600 North to Farmington Environmental Impact Study* (Horrocks 2023a), and *Supplementary Areas for the I-15: 600 North to Farmington Environmental Impact Study* (Horrocks 2023c) contain additional details. Locations are shown in Appendix 3H, *Cultural Resources Maps*.

Table 4.4-1. NHRP-eligible Archaeological Sites in the Section 4(f) Evaluation Area

Site Number(s)	Site Name	NRHP Evaluation ^a	Figure Number
42DV2	Prehistoric Artifact Scatter	Eligible (under Criterion D)	Not shown. No impacts from Action Alternative
42DV86/42SL293	Denver & Rio Grande Western Railroad Grade	Eligible (under Criterion A)	Appendix 3H: Figure 22
42DV89	Historic Earthen Berms/Lake Shore Resort	Eligible (under Criterion A)	Not shown. No impacts from Action Alternative
42DV87/42SL300	Union Pacific Railroad	Eligible (under Criteria A, B, and C)	Appendix 3H: Figures 1A, 1B, 3, 4, 5, 6, 7A, 7B, 20, 22, 23, 25, 30, and 33
42DV93	Historic Trash Deposit	Eligible (under Criterion D)	Not shown. No impacts from Action Alternative
42DV126/42SL489	Historic Oil Drain	Eligible (under Criterion A)	Not shown. No impacts from Action Alternative
42DV187	Historic Oakridge Golf Course	Eligible (under Criterion A)	Not shown. No impacts from Action Alternative
42DV197/42SL513	Historic Sewage Canal	Eligible (under Criterion A)	Not shown. No impacts from Action Alternative
42SL718	Denver & Rio Grande Western Historic Railroad Repair Yard	Eligible (under Criteria A, C, and D)	Not shown. No impacts from Action Alternative
42SL729	Historic Trolley Line	Eligible (under Criterion A)	Appendix 3H: Figure 33

^a Criterion A is for sites associated with events that have made a significant contribution to the broad patterns of our history. Criterion B are for sites associated with the lives of persons significant in the past. Criterion C is for sites that embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction. Criterion D is for sites that have yielded, or might likely yield, information important in prehistory or history (36 CFR Part 63).

4.4.1.2 Surveys for Architectural Resources

The Utah Division of State History's criteria for architectural buildings state that properties are potentially eligible if they are 50 years old or older and retain most of their original appearance without major changes to the structures (FHWA and others 2017).

For this project, UDOT identified architectural sites that were a minimum of 41 years old at the time of the 2021 field surveys (that is, constructed in or before 1980) and identified which sites and buildings are eligible for listing in the NRHP. Ultimately, 429 structures in the evaluation area were determined to be eligible for listing in the NRHP. Of these, 377 structures are recommended as eligible/contributing (EC) and 52 structures are recommended as eligible/significant (ES) under the Utah Division of State History's rating system. Most of the eligible structures are residential or commercial buildings. The report *Selective Reconnaissance-level Survey for the I-15: Salt Lake City 600 North to Farmington EIS, Salt Lake and Davis Counties, Utah* (Horrocks 2023b) contains additional details including descriptions, locations, and pictures of the properties.

For a detailed description of these historic buildings and the process used under Section 106 of the National Historic Preservation Act to determine a resource's eligibility for the NRHP, see Section 3.10, *Historic and Archaeological Resources*. Descriptions and photos of the potentially affected properties are included in Appendix 3I, *Cultural Resources Correspondence*, and the locations are shown in Appendix 3H, *Cultural Resources Maps*.

What is the Utah Division of State History's rating system for historic structures?

See Section 3.10, *Historic and Archaeological Resources*, for definitions of eligible/contributing (EC) and eligible/significant (ES).

4.4.1.3 Determination of Eligibility

UDOT submitted its Determinations of Eligibility report for historic architectural and archaeological properties to the Utah SHPO on March 17, 2023. The Utah SHPO concurred with all determinations in a letter dated March 22, 2023.

This Section 4(f) evaluation examines those historic properties that would be affected by the Action Alternative. Section 106 resources for which the Section 106 process found no effect are not discussed in the Section 4(f) evaluation. (For more information about the Section 106 process, see Section 3.10, *Historic and Archaeological Resources*.)

4.4.2 Public Parks and Recreation Areas

Section 4(f) applicability for parks and recreation areas is described in Section 4.2.1, *Definition of Section 4(f) Properties*. The Section 4(f) evaluation area includes several park or recreation resources that UDOT determined to be Section 4(f) resources. The Section 4(f) resources were identified through discussion with local municipalities and a review of their official planning documents. Section 4(f) parks and recreation areas in the Section 4(f) evaluation area are described in Table 4.4-2.

Table 4.4-2. Section 4(f) Parks and Recreation Areas in the Section 4(f) Evaluation Area

Park or Recreation Resource	Ownership and/or Management	Description and/or Location	Attributes, Features, and Attributes	Address
Oakridge Preserve Trails	Farmington City	Paved recreation trails on east side of I-15, north of Park Lane, and west side of U.S. Highway 89 (U.S. 89) around Farmington Preserve neighborhood. Identified on <i>Farmington Trails Plan</i> .	Paved trails used for walking, jogging, and cycling.	855 North 1100 West, Farmington
Shepard Lane Park	Farmington City	5.6-acre park east of U.S. 89 and north of Park Lane.	Playground, pavilions, tennis courts, softball field, and sand volleyball court.	760 Shepard Lane, Farmington
Farmington Preserve Park	Farmington City	1.4-acre park east of I-15 and north of Park Lane.	Playing fields and playground.	855 North 1100 West, Farmington
Farmington Creek Trail	Farmington City	2.5-mile-long paved trail between the Davis County Fairgrounds and Farmington Canyon. The segment in the project area includes a 0.1-mile segment in Ezra T. Clark Park. The Farmington Creek Trail uses the pedestrian crossing on the south side of State Street to cross I-15, the railroad tracks, and Legacy Parkway.	Paved trail used for walking, jogging, and cycling.	400 W. State Street, Farmington
Ezra T. Clark Park	UDOT owns western part of park; Farmington City owns the 0.5-acre central parcel of park with trail and pavilion	2-acre park east of I-15 north of State Street. The middle 0.47 acre of the park that includes the Farmington Creek Trail is owned by Farmington City. The rest of the park (including the areas with the parking lot, pavilion, and historic monument) is located on parcels owned by UDOT.	Pavilion and access to Farmington Creek Trail.	400 W. State Street, Farmington

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Table 4.4-2. Section 4(f) Parks and Recreation Areas in the Section 4(f) Evaluation Area

Park or Recreation Resource	Ownership and/or Management	Description and/or Location	Attributes, Features, and Attributes	Address
Farmington Junior High School playing fields	Farmington City	8.25-acre sports fields on the east side of I-15 on the west side of Farmington Junior High School.	Grass playing fields.	150 South 200 West, Farmington
Farmington High School playing fields	Farmington City	15.4-acre sports fields on the west side of Legacy Parkway north of Glovers Lane and on the east side of Farmington High School.	Baseball field, softball field, football field, tennis courts, grass playing fields, and parking lots.	548 W. Glovers Lane, Farmington
Sound Wall Park	Farmington City	0.3-acre neighborhood park at about 100 West 1050 South.	Grass playing fields and Davis Creek Trail.	1050 S. I-15 Frontage Road, Farmington
Davis Creek Trail	Farmington City	0.4-mile-long trail between Frontage Road and 200 East.	Unpaved multi-use trail for use by hikers and joggers.	200 East 1035 South, Farmington
South Park	Farmington City	6.6-acre park east of I-15 north of 1470 South.	Basketball courts, volleyball court, playground, softball field, skate park, pavilion, and parking.	1384 S. Frontage Road, Farmington
Centerville Community Park	Centerville City	30-acre park east of I-15 at about 1200 N. Frontage Road in Centerville.	6 multisport fields, drinking fountains, 1-mile jogging path, playground, sand volleyball court, pavilions, bathrooms, and parking.	1350 North 400 West, Centerville
West Bountiful City Park	West Bountiful City	14.5-acre park west of I-15 at about 1600 North in West Bountiful.	Softball fields, soccer fields, sand volleyball courts, tennis court, pavilions, bathrooms, parking, and playground.	550 West 1600 North, West Bountiful
Woods Cross Elementary School playing fields and walking path	Woods Cross City	4.2-acre sports fields on the west side of I-15 at about 1300 South in Woods Cross and on the east side of Woods Cross Elementary School.	Grass playing fields and walking path.	745 West 1100 South, Woods Cross
Woods Cross High School playing fields	Woods Cross City	16.3-acre sports fields on the east side of I-15 at about 2200 South in Woods Cross and on the south side of Woods Cross High School.	Baseball field, softball field, football field, tennis courts, grass playing fields, and parking lots.	600 West 2200 South, Woods Cross

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Table 4.4-2. Section 4(f) Parks and Recreation Areas in the Section 4(f) Evaluation Area

Park or Recreation Resource	Ownership and/or Management	Description and/or Location	Attributes, Features, and Attributes	Address
Hatch Park	City of North Salt Lake	12.3-acre park on the east side of I-15 and the north side of Center Street in North Salt Lake.	Softball fields, tennis courts, basketball court, soccer fields, sand volleyball court, walking path, playground, parking, bathrooms, and pavilions.	50 W. Center Street, North Salt Lake
Swede Town Park	Salt Lake City	0.6-acre park at 840 West 1500 North.	Playground, sandbox, basketball court, and grass playing fields.	840 West 1500 North, Salt Lake City
Rosewood Park	Salt Lake City	29-acre park on the west side of I-15 and east of 1200 West around 1400 North.	Skate park, tennis courts, walking path, softball fields, playground, basketball court, grass playing fields, restrooms, and parking.	1400 North 1200 West, Salt Lake City
North Gateway Park	Salt Lake City	6-acre park east of U.S. 89 in Salt Lake City.	Restrooms, walking path, drinking fountains, and parking.	840 N. Beck Street, Salt Lake City
Warm Spring Park	Salt Lake City	13.5-acre park east of U.S. 89 in Salt Lake City.	Playground, restrooms, multi-use fields, tennis courts, drinking fountains, picnic tables, and parking.	840 N. Beck Street, Salt Lake City
Guadalupe Park	Salt Lake City	0.6-acre park at 500 North 600 West (east of I-15).	Playground, basketball court, and picnic tables.	619 West 500 North, Salt Lake City
Jackson Park	Salt Lake City	1-acre park at 481 N. Grant Street (west of I-15).	Playground and picnic tables.	481 N. Grant Street, Salt Lake City
Jordan River OHV State Recreation Area	Utah Department of Natural Resources	133.7-acre recreation area for off-highway vehicles (OHV). Includes trails, jumps, and training areas.	Trails, jumps, training areas, restrooms, picnic tables, pavilions, and fee station/main office.	2800 N. Rose Park Lane, Salt Lake City
Jordan River Trail Extension/Porter's Takeout Trail	Salt Lake City	Paved trail that crosses under Interstate 215 (I-215) and Legacy Parkway and connects to the Jordan River Trail and the Legacy Parkway Trail.	Paved trail used for walking, jogging, and cycling.	50 Jordan River Drive, North Salt Lake

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Table 4.4-2. Section 4(f) Parks and Recreation Areas in the Section 4(f) Evaluation Area

Park or Recreation Resource	Ownership and/or Management	Description and/or Location	Attributes, Features, and Attributes	Address
Jackson Elementary School playing fields	Salt Lake City	2.5-acre sports fields on the west side of I-15 at about 200 North in Salt Lake City and on the southeast side of Jackson Elementary School.	Grass playing fields.	750 West 200 North, Salt lake City
9-Line Bike Park	Salt Lake City	0.5-acre parcel on the south side of 900 South under I-15.	Bike jumps, pump track, and walking path.	700 West 900 South, Salt Lake City
Jordan River Trail	Salt Lake City	Paved regional trail that follows the Jordan River and connects to the Legacy Parkway Trail near I-215.	Paved trail used for walking, jogging, and cycling.	Jordan River Parkway Trail, North Salt Lake

4.5 Use of Section 4(f) Resources

The following sections describe the impacts of the No-action and Action Alternatives to Section 4(f) properties. For each Section 4(f) property, there can be one of the following findings related to use by a project alternative:

- Use with greater-than-*de minimis* impact
- Use with *de minimis* impact
- Use as a result of temporary occupancy
- Temporary occupancy with impacts so minimal as to not constitute a use
- Constructive use (proximity impact if the alternative is adjacent)
- No use (if there is no use to a Section 4(f) resource, it is not listed in the tables in this section)
- Exception to the requirement for Section 4(f) approval

Use, *de minimis* impact, temporary occupancy, constructive use, and relevant exceptions for this project are defined in the Section 4(f) regulations and guidance cited in Section 4.2, *Regulatory Setting*. The Action Alternative would have uses with greater-than-*de minimis* impacts, uses with *de minimis* impacts, and temporary occupancy impacts. These impacts would occur to historic architecture resources, archaeological resources, and to public parks or recreation areas. The ranges of the uses of Section 4(f) resources with the Action Alternative would vary based on the different options. Section 4.5.2, *Action Alternative*, provides more detail about the differences in use among the different options.

4.5.1 No-action Alternative

The No-action Alternative would not require acquisition of right-of-way and would result in no uses of Section 4(f) properties.

4.5.2 Action Alternative

The Action Alternative would use property from Section 4(f) resources. The following sections summarize these effects. Table 4.5-1, *Summary of Impacts to Section 4(f) Resources from the Action Alternative*, in Section 4.5.2.3, *Summary of Action Alternative Impacts*, summarizes all Section 4(f) uses for each segment and option for the Action Alternative.

4.5.2.1 Historical Sites

4.5.2.1.1 Architectural Resources

UDOT evaluated the historic architectural properties that were determined eligible for listing in the NRHP to determine whether the segment options would impact any portion of the resource or site and whether that impact would constitute an effect under Section 106.

For properties for which the Utah SHPO concurred that there would be an adverse effect, the Utah SHPO also concurred with the determination of a Section 4(f) use with greater-than-*de minimis* impact. Similarly, for properties for which the Utah SHPO concurred that there would be no adverse effect, the Utah SHPO also concurred with the determination of a Section 4(f) use with *de minimis* impact or a Section 4(f) temporary occupancy impact.

The sections below summarize the use of historical sites for each of the four segments of the Action Alternative.

North Segment Impacts

The impacts to architectural resources in the north segment would be the same for both the Farmington 400 West Option and the Farmington State Street Option. Both of these options would result in a use with greater-than-*de minimis* impact to two architectural resources (399 W. State Street and the Clark Lane Historic District in Farmington), would have a use with *de minimis* impact to 1 architectural resource, and would have temporary occupancy impacts for 6 architectural resources (see Appendix 3H, *Cultural Resources Maps*, Figures 1A, 1B, 2A, and 2B, and Appendix 3G, *Architectural Impacts*).

Roadway improvements with both options would impact the historic structure at 399 W. State Street and require UDOT to acquire the parcel, demolish the structure, and relocate the occupants.

The use with greater-than-*de minimis* impact to the Clark Lane Historical District would be due to the demolition of 399 W. State Street in Farmington (which is part of the Clark Lane Historical District) and the potential loss of trees on State Street east of 400 West.

North Central Segment Impacts

Bountiful 400 North – Northern Option Impacts. This option would have a use with greater-than-*de minimis* impact to 444 West 400 North in Bountiful, would have uses with *de minimis* impacts to 9 architectural resources, and would have temporary occupancy impacts for 4 architectural resources (see Appendix 3H, *Cultural Resources Maps*, Figures 6, 7A, and 8A, and Appendix 3G, *Architectural Impacts*).

Roadway improvements with the Bountiful 400 North – Northern Option would impact the historic structure at 444 West 400 North and would require UDOT to acquire the parcel, demolish the structure, and relocate the occupants (see Appendix 3H, *Cultural Resources Maps*, Figure 8A).

Bountiful 400 North – Southern Option Impacts. This option would have a use with greater-than-*de minimis* impact to 433 West 400 North in Bountiful, would have uses with *de minimis* impacts to 9 architectural resources, and would have temporary occupancy impacts for 4 architectural resources (see Appendix 3H, *Cultural Resources Maps*, Figures 6, 7B, and 8B, and Appendix 3G, *Architectural Impacts*).

Roadway improvements with the Bountiful 400 North – Southern Option would impact the historic structure at 433 West 400 North and require UDOT to acquire the parcel, demolish the structure, and relocate the occupants (see Appendix 3H, Figure 8B).

South Central Segment Impacts

Bountiful 500 South – Northern Option Impacts. This option would have an **adverse effect** on 409 South 500 West in Bountiful, would have uses with *de minimis* impacts to 6 architectural resources, and would have temporary occupancy impacts for 9 architectural resources (see Appendix 3H, *Cultural Resources Maps*, Figures 9, 10A, and 11A, and Appendix 3G, *Architectural Impacts*).

Roadway improvements with the Bountiful 500 South – Northern Option would require partial acquisition of about 0.13 acre of the 0.88-acre parcel on the west edge of the parcel for 409 South 500 West, which is a commercial property that includes the Bountiful Bowl business. The roadway improvements would remove the overhead sign and parking on west side of the building. UDOT does not anticipate needing to demolish the historic building or relocate the business. However, the impacts to the overhead sign and parking are considered a greater-than-*de minimis* impact (see Appendix 3H, *Cultural Resources Maps*, Figure 10A).

Bountiful 500 South – Southern Option Impacts. This option would have uses with greater-than-*de minimis* impacts to 409 South 500 West and 453 West 500 South in Bountiful, would have uses with *de minimis* impacts to 5 architectural resources, and would have temporary occupancy impacts for 9 architectural resources (see Appendix 3H, *Cultural Resources Maps*, Figures 9, 10B, and 11B, and Appendix 3G, *Architectural Impacts*).

The impacts to 409 South 500 West would be the same as those from the Bountiful 500 South – Northern Option. Roadway improvements with the Bountiful 500 South – Southern Option would impact the historic commercial structure at 453 West 500 South and would require UDOT to acquire the parcel, demolish the structure, and relocate the business (see Appendix 3H, *Cultural Resources Maps*, Figure 10B).

South Segment Impacts

The impacts to architectural resources in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. Both of these options would have uses with greater-than-*de minimis* impacts to two architectural resources (U.S. Bank at 1090 North 500 East in North Salt Lake and a Quonset hut at 825 N. Warm Springs Road in Salt Lake City), would have uses with *de minimis* impacts to 28 architectural resources, and would have temporary occupancy impacts for 42 architectural resources (see Appendix 3H, *Cultural Resources Maps*, Figures 12 to 33, and Appendix 3G, *Architectural Impacts*).

Roadway improvements with both options would require partial acquisition of about 0.18 acre of the 1.07-acre parcel on the north edge of the 1090 North 500 East parcel. The roadway improvements would impact the parking area on the north side of the structure and impact the drive-thru lane. UDOT might need to purchase the property and relocate the business due to impacts to drive-thru and parking area. UDOT does not anticipate needing to demolish the historic building. However, if UDOT purchases and resells the historic structure, the impact would be considered adverse and a greater-than-*de minimis* impact (see Appendix 3H, *Cultural Resources Maps*, Figure 15).

Roadway improvements with both options would demolish the historic structure at 825 N. Warm Springs Road. This historic structure is part of a 19.3-acre parcel. UDOT would need to purchase a strip of property on the west side of this parcel and work with the property owners to provide compensation to replace the impacted structure (see Appendix 3H, *Cultural Resources Maps*, Figure 28A for the Salt Lake City 1000 North – Northern Option and Figure 28B for the Salt Lake City 1000 North – Southern Option).

4.5.2.1.2 Archaeological Sites

UDOT evaluated the archaeological sites that were determined eligible for listing in the NRHP to determine whether the segment options would use any portion of the resource or site and whether that impact would constitute an effect under Section 106. The Utah SHPO concurred that no sites would have an adverse effect as a result of the Action Alternative. For sites for which the SHPO concurred that there would be no adverse effect, the Utah SHPO also concurred with the determination of a Section 4(f) use with *de minimis* impact.

The sections below summarize the use of archaeological sites for each of the four segments of the Action Alternative.

North Segment Impacts

The uses of archaeological sites in the north segment would be the same for both the Farmington 400 West Option and the Farmington State Street Option. Both of these options would require the following 10 crossings of the Union Pacific Railroad tracks and would have uses with *de minimis* impacts to site 42DV87, Union Pacific Railroad:

- Reconstruction of three existing grade-separated road crossings (road over the railroad tracks at State Street in Farmington, Glovers Lane in Farmington, and Parrish Lane in Centerville) (see Appendix 3H, *Cultural Resources Maps*, Figures 1A, 1B, 3, and 5)
- Reconstruction of one existing at-grade road and sidewalk crossing at Pages Lane in Centerville and West Bountiful (see Appendix 3H, Figure 6)
- Construction of two new grade-separated shared-use path crossings (shared-use path over the railroad tracks), at the Centerville Community Park pedestrian bridge crossing and at 200 North in Centerville (see Appendix 3H, Figures 4 and 5)
- Construction of four underground drainage crossings (drainage pipes would cross under the railroad tracks) near Lund Lane, 1825 North, 1175 North, and Chase Lane in Centerville

North Central Segment Impacts

The uses of archaeological sites in the north central segment would be the same for both the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option. Both of these options would require reconstructing one existing grade-separated crossing of the Union Pacific Railroad tracks (road over the railroad tracks) at 400 North in Bountiful and West Bountiful and would have a use with *de minimis* impact to site 42DV87, Union Pacific Railroad (see Appendix 3H, *Cultural Resources Maps*, Figures 7A and 7B).

South Central Segment Impacts

The uses of archaeological sites in the south central segment would be the same for both the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option. These options would not require use of any Section 4(f) archaeological sites.

South Segment Impacts

The uses of archaeological sites in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. Both of these options would have uses with *de minimis* impacts to the following three archaeological sites:

- **Site 42DV86/42SL293 (Denver & Rio Grande Western Railroad Grade)** at I-215 would have four grade-separated crossings (road over the railroad tracks). These four grade-separated crossings include reconstruction of two existing crossings (southbound-to-eastbound ramp and westbound-to-northbound ramp) and construction of two new crossings (a new westbound connection to I-215 from U.S. 89 and a new eastbound connection from I-215 to U.S. 89) (see Appendix 3H, *Cultural Resources Maps*, Figure 22).
- **Site 42SL729 (Historic Trolley Line)** at 200 South in Salt Lake City would have a road over the historic trolley line. This would be a reconstruction of the existing I-15 crossing over the historic trolley line (see Appendix 3H, Figure 33).
- **Site 42DV87/42SL300 (Union Pacific Railroad)** would have nine crossings of the railroad tracks:
 - Reconstruction of five existing grade-separated road crossings (road over the railroad tracks) at I-215 (southbound-to-eastbound ramp and westbound-to-northbound ramp), at I-15 near 2300 North in Salt Lake City, at 600 North in Salt Lake City, and at South Temple in Salt Lake City (see Appendix 3H, Figures 22, 23, 30, and 33)
 - Reconstruction of one existing at-grade road and shared-use path crossing at Center Street in North Salt Lake (see Appendix 3H, Figure 20)
 - Construction of three new grade-separated road crossings (road over the railroad tracks) at I-215 (a new westbound connection to I-215 from U.S. 89 and a new eastbound connection from I-215 to U.S. 89) and at 2100 North in Salt Lake City (see Appendix 3H, Figures 22 and 25)

4.5.2.2 Public Parks and Recreation Areas

Once UDOT determined that a public park or recreation area would be used by the Action Alternative, UDOT assessed the nature and extent of those effects on the characteristics of the resource. If an option would not adversely affect the activities, features, or attributes of the public park or recreation area, then the use was determined to have a *de minimis* impact. For public parks or recreation areas where there would be no permanent conversion to transportation right-of-way, UDOT determined that the impacts would be considered temporary occupancy with impacts so minimal as to not constitute a Section 4(f) use. The sections below summarize the impacts to public parks and recreation areas for each of the four segments of the Action Alternative. Uses of Section 4(f) public parks and recreation areas are shown in Appendix 4A, *Figures for Section 4(f) Public Parks and Recreation Areas*.

For properties for which UDOT is proposing there would be a Section 4(f) use with *de minimis* impact, UDOT has coordinated with the officials with jurisdiction to discuss the potential Section 4(f) uses and proposed measures to minimize harm that are included in this Draft EIS and Section 4(f) Evaluation. UDOT will request formal concurrence from the officials with jurisdiction on the determination of a Section 4(f) use with *de minimis* impact for the Final EIS and Section 4(f) Evaluation.

North Segment Impacts

Farmington 400 West Option. This option would have uses with *de minimis* impacts to the Farmington Creek Trail, Ezra T. Clark Park, South Park, and Centerville Community Park, and a temporary occupancy impact to the Farmington Junior High School playing fields.

- **Farmington Creek Trail** within Ezra T. Clark Park would be realigned as a result of this option. About 874 linear feet of the Farmington Creek Trail would be realigned. This segment uses a pedestrian crossing on the south side of State Street to cross I-15, the railroad tracks, and Legacy Parkway (see Appendix 4A, *Figures for Section 4(f) Public Parks and Recreation Areas*, Figure 1A).
- **Ezra T. Clark Park** would be impacted on its western edge (partial acquisition of about 0.17 acre of the 0.47-acre parcel owned by Farmington City and about 0.75 acre of the 2-acre total park acreage (including the parcels owned by UDOT) with this option. There would be no impacts to the parking lot, pavilion, or historical monument (see Appendix 4A, Figure 1A).
- **Farmington Junior High School playing fields** would have temporary construction impacts to the west edge of the playing fields from construction of the new frontage road and potential installation of a noise wall. There would be no permanent conversion of right-of-way (see Appendix 4A, Figure 2).
- **South Park** would have 0.40 acre of land acquired on the west edge of the 6.6-acre park. There would be impacts to the park strip and landscaping between the parking lot and frontage road, and the softball field and frontage road. The skate park would be impacted with the relocation of the Central Davis Sewer District pump station. There would be no impacts to parking lot capacity (see Appendix 4A, Figure 3).
- **Centerville Community Park** would have 0.92 acre of land acquired on the west edge of the 30-acre park. There would be impacts to landscaping between the parking lot and frontage road. There would be no impacts to parking capacity. There would also be temporary impacts to 0.14 acre of the park from installing a new trail overpass of I-15, the railroad lines, and Legacy Parkway that connects to the Legacy Parkway Trail and the Denver and Rio Grande Western Trail. This new trail overpass would be considered a beneficial impact to Centerville Community Park (see Appendix 4A, Figure 4).

Farmington State Street Option. This option would have a use with a greater-than-*de minimis* impact to one public park (Ezra T. Clark Park); would have uses with *de minimis* impacts to the Farmington Creek Trail, South Park, and Centerville Community Park, and would have temporary occupancy impacts to the Farmington Junior High School playing fields. Impacts to South Park, Centerville Community Park, and the

Farmington Junior High School playing fields would be the same as with the Farmington 400 West Option described above.

- **Ezra T. Clark Park** would have impacts to the parking lot, pavilion, and historical monument from the realignment of the frontage road. These impacts would require full parcel acquisition of the 0.47-acre central section of the park from Farmington City. These impacts would place new roadway on all 2 acres of the 2-acre park, including the parcels owned by UDOT (see Appendix 4A, Figure 1B).
- **Farmington Creek Trail** within Ezra T. Clark Park would be realigned as a result of this option. About 1,126 linear feet of the Farmington Creek Trail would be realigned. This segment uses a pedestrian crossing on the south side of State Street to cross I-15, the railroad tracks, and Legacy Parkway (see Appendix 4A, Figure 1B).

North Central Segment Impacts

The impacts to public parks and recreation areas in the north central segment would be the same for both the Bountiful 400 North – Northern Option and the Bountiful 400 North – Southern Option. These options would not require use of any Section 4(f) public parks or recreation areas.

South Central Segment Impacts

The impacts to public parks and recreation areas in the south central segment would be the same for both the Bountiful 500 South – Northern Option and the Bountiful 500 South – Southern Option. These options would have temporary occupancy impacts to the Woods Cross Elementary School playing fields and walking path. This impact would be temporary construction impacts to the eastern edge of the playing fields to replace the noise wall (see Appendix 4A, *Figures for Section 4(f) Public Parks and Recreation Areas*, Figure 5).

South Segment Impacts

The impacts to public parks and recreation areas in the south segment would be the same for both the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option. Both of these options would have a use with *de minimis* impact to the Woods Cross High School playing fields and temporary occupancy impacts to Hatch Park, North Gateway Park, and Warm Springs Park.

- **Woods Cross High School playing fields** would have 0.37 acre of land acquired on the west edge of the 4.2-acre playing fields. Impacts would remove about 5 to 7 feet of property consisting of landscaping and sidewalk on the western edge of the playing fields and would require replacing the chain link fence south of the baseball field (see Appendix 4A, *Figures for Section 4(f) Public Parks and Recreation Areas*, Figure 6).
- **Hatch Park** would have temporary construction impacts on the south edge of the park to construct a new sidewalk and bike lane on City-owned park property. Additionally, the existing noise wall might be replaced and another noise wall might be added on the west edge of the park. These temporary impacts would affect about 0.21 acre of land. There would be no permanent conversion of right-of-way (see Appendix 4A, Figure 7).
- **North Gateway Park** would have temporary construction impacts to reconstruct driveway access. There would be no permanent conversion of right-of-way (see Appendix 4A, Figure 8).
- **Warm Springs Park** would have temporary construction impacts to reconstruct driveway access. There would be no permanent conversion of right-of-way (see Appendix 4A, Figure 8).

4.5.2.3 Summary of Action Alternative Impacts

Table 4.5-1 shows the uses in each segment of the Action Alternative and the total range of uses for the Action Alternative. As shown in Table 4.5-1, the Action Alternative would have uses with greater-than-*de minimis* impacts to architectural resources and public parks; uses with *de minimis* impacts to architectural resources, archaeological resources, and public parks or recreation areas; and temporary occupancy impacts to architectural resources and public parks or recreation areas.

Table 4.5-1. Summary of Impacts to Section 4(f) Resources from the Action Alternative

Segment	Option	Architectural Resource Uses	Archaeological Site Uses	Public Park and Recreation Area Uses
North	Farmington 400 West Option	<ul style="list-style-type: none"> • 2 uses with greater-than-<i>de minimis</i> impact • 1 use with <i>de minimis</i> impact • 6 temporary occupancy impacts 	<ul style="list-style-type: none"> • 1 – use with <i>de minimis</i> impact to 42DV87 (Union Pacific Railroad) 	<ul style="list-style-type: none"> • 4 – uses with <i>de minimis</i> impacts to Ezra T. Clark Park, Farmington Creek Trail, South Park, and Centerville Community Park • 1 – temporary occupancy impact to Farmington Junior High School playing fields
	Farmington State Street Option	<ul style="list-style-type: none"> • 2 uses with greater-than-<i>de minimis</i> impact • 1 use with <i>de minimis</i> impact • 6 temporary occupancy impacts 	<ul style="list-style-type: none"> • 1 – use with <i>de minimis</i> impact to 42DV87 (Union Pacific Railroad) 	<ul style="list-style-type: none"> • 1 – use with greater-than-<i>de minimis</i> impact to Ezra T. Clark Park • 3 – uses with <i>de minimis</i> impacts to Farmington Creek Trail, South Park, and Centerville Community Park • 1 – temporary occupancy impact to Farmington Junior High School playing fields
North Central	Bountiful 400 North – Northern Option	<ul style="list-style-type: none"> • 1 use with greater-than-<i>de minimis</i> impact • 9 uses with <i>de minimis</i> impacts • 4 temporary occupancy impacts 	<ul style="list-style-type: none"> • 1 – use with <i>de minimis</i> impact to 42DV87 (Union Pacific Railroad) 	<ul style="list-style-type: none"> • None
	Bountiful 400 North – Southern Option	<ul style="list-style-type: none"> • 1 use with greater-than-<i>de minimis</i> impact • 9 uses with <i>de minimis</i> impacts • 4 temporary occupancy impacts 	<ul style="list-style-type: none"> • 1 – use with <i>de minimis</i> impact to 42DV87 (Union Pacific Railroad) 	<ul style="list-style-type: none"> • None
South Central	Bountiful 500 South – Northern Option	<ul style="list-style-type: none"> • 1 use with greater-than-<i>de minimis</i> impact • 6 uses with <i>de minimis</i> impacts • 9 temporary occupancy impacts 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 1 – temporary occupancy impact to Woods Cross Elementary School playing fields and walking path
	Bountiful 500 South – Southern Option	<ul style="list-style-type: none"> • 2 uses with greater-than-<i>de minimis</i> impact • 5 uses with <i>de minimis</i> impacts • 9 temporary occupancy impacts 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 1 – temporary occupancy impact to Woods Cross Elementary School playing fields and walking path
South	Salt Lake City 1000 North – Northern Option	<ul style="list-style-type: none"> • 2 uses with greater-than-<i>de minimis</i> impacts • 28 uses with <i>de minimis</i> impacts • 42 temporary occupancy impacts 	<ul style="list-style-type: none"> • 3 – uses with <i>de minimis</i> impacts to 42DV87/42SL300 (Union Pacific Railroad), 42DV86 (Denver & Rio Grande Western Railroad Grade), and 42SL729 (Historic Trolley Line) 	<ul style="list-style-type: none"> • 1 – use with <i>de minimis</i> impact to Woods Cross High School playing fields • 3 – temporary occupancy impacts to Hatch Park, North Gateway Park, and Warm Springs Park
	Salt Lake City 1000 North – Southern Option	<ul style="list-style-type: none"> • 2 uses with greater-than-<i>de minimis</i> impact • 28 uses with <i>de minimis</i> impacts • 42 temporary occupancy impacts 	<ul style="list-style-type: none"> • 3 – uses with <i>de minimis</i> impacts to 42DV87/42SL300 (Union Pacific Railroad), 42DV86 (Denver & Rio Grande Western Railroad Grade), and 42SL729 (Historic Trolley Line) 	<ul style="list-style-type: none"> • 1 – use with <i>de minimis</i> impact to Woods Cross High School playing fields • 3 – temporary occupancy impacts to Hatch Park, North Gateway Park, and Warm Springs Park

4.6 Avoidance Alternatives

Unless the use of land from a Section 4(f) property is determined to be a use with *de minimis* impact, UDOT must determine that no feasible and prudent avoidance alternative exists before approving the use of such land (23 CFR Section 774.3). A minimum of 6 and maximum of 8 Section 4(f) properties would have uses with greater-than-*de minimis* impacts with the Action Alternative. Section 4(f) properties that would have uses with greater-than-*de minimis* impacts are described in Section 4.5, *Use of Section 4(f) Resources*, for historical sites and public parks or recreation areas, or Appendix 3G, *Architectural Impacts*, for architectural impacts. This section evaluates whether a feasible and prudent avoidance alternative exists for using any of these 6 to 8 Section 4(f) properties.

According to 23 CFR Section 774.17, the definition of a “feasible and prudent avoidance alternative” is one that avoids using a Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) property. An alternative is not feasible if it cannot be built as a matter of sound engineering judgment. Multiple factors are listed in 23 CFR Section 774.17 that must be considered in determining whether an avoidance alternative is not prudent. An alternative is not prudent if:

1. It compromises the project to a degree that is unreasonable to proceed with the project in light of its stated purpose and need;
2. It results in unacceptable safety or operational problems;
3. After reasonable mitigation, it still causes:
 - a. Severe social, economic, or environmental impacts;
 - b. Severe disruption to established communities;
 - c. Severe disproportionate impacts to minority or low-income populations; or
 - d. Severe impacts to environmental resources protected under other federal statutes;
4. It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
5. It causes other unique problems or unusual factors; or
6. It involves multiple factors in paragraphs 1 through 5 of this definition that, while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

Also, the *Section 4(f) Policy Paper* states that “a project alternative that avoids one Section 4(f) property by using another Section 4(f) property is not an avoidance alternative” (FHWA 2012).

The avoidance alternatives for the I-15 project are discussed for each geographic segment of the Action Alternative in the following subsections.

4.6.1 North Segment

The Farmington 400 West Option and the Farmington State Street Option would both result in the use of a Section 4(f) property. Both options would have a use with greater-than-*de minimis* impact to a historic property (399 W. State Street). The use with greater-than-*de minimis* impact to 399 W. State Street in Farmington and the potential loss of trees on State Street east of 400 West would also be considered a use with greater-than-*de minimis* impact to the Clark Lane Historic District. There are no prudent avoidance

alternatives to the use of this historic property and the Clark Lane Historic District since the widening of I-15 with the Action Alternative would need to be shifted to the west to avoid any use of 399 W. State Street. Shifting I-15 west would require I-15 to be located on the land currently used by the Union Pacific (UP) and Utah Transit Authority (UTA) railroad tracks and would require UDOT to relocate the UP and UTA railroad tracks west. The UP railroad tracks are also a Section 4(f) resource (site 42DV87/42SL300), and relocating the tracks would be considered a Section 4(f) use with greater-than-*de minimis* impacts. As stated in the *Section 4(f) Policy Paper*, “a project alternative that avoids one Section 4(f) property by using another Section 4(f) property is not an avoidance alternative.”

The Farmington State Street Option would have a use with a greater-than-*de minimis* impact to Ezra T. Clark Park. The avoidance alternative to the use of this Section 4(f) resource is the Farmington 400 West Option. The Farmington 400 West Option avoids any impacts to the parking lot, pavilion, and historical monument and would result in a use with *de minimis* impact to Ezra T. Clark Park.

4.6.2 North Central Segment

The Bountiful 400 North – Northern Option and Bountiful 400 North – Southern Option would both result in the use of a Section 4(f) property. The Bountiful 400 North – Northern Option would have a use with greater-than-*de minimis* impact to 444 West 400 North, and the Bountiful 400 North – Southern Option would have a use with greater-than-*de minimis* impact to 433 West 400 North. There are no prudent avoidance alternatives. To meet the project needs related to improving operations on 400 North, additional turn lanes are needed at the 400 North/500 West intersection. These additional turn lanes would result in additional width on 400 North. The Bountiful 400 North – Northern Option would minimize impacts on the south side of 400 North, and the Bountiful 400 North – Southern Option would minimize impacts on the north side of 400 North. There are not any prudent or feasible options that would avoid greater-than-*de minimis* impacts to both 444 West 400 North and 433 West 400 North.

4.6.3 South Central Segment

The Bountiful 500 South – Northern Option and Bountiful 500 South – Southern Option would both have the same use with greater-than-*de minimis* impact to 409 South 500 West. To meet the project needs related to improving operations on 500 South, additional turn lanes are needed at the 500 South/500 West intersection. The greater-than-*de minimis* impact to 409 South 500 West would result from the additional turn lanes at the 500 West 500 South intersection. To avoid this impact, either option would need to be shifted west. Shifting either option west would result in greater-than-*de minimis* impact to a different Section 4(f) property, the Daniel Wood Cemetery at 350 South 500 West, so shifting either option west would not be a prudent avoidance alternative.

The Bountiful 500 South – Southern Option would also have a use with greater-than-*de minimis* impact to a Section 4(f) property, the historic property at 453 West 500 South. The avoidance alternative to the use of 453 West 500 South is the Bountiful 500 South – Northern Option. The Bountiful 500 South – Northern Option avoids any impacts to contributing features of 453 West 500 South and would require only partial acquisition, resulting in a use with *de minimis* impact.

4.6.4 South Segment

The Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option would both result in the use of two Section 4(f) properties. Both options would have a use with greater-than-*de minimis* impact to two historic properties (1090 North 500 East in North Salt Lake and 825 N. Warm Springs Road in Salt Lake City).

There is no prudent avoidance alternative for the property at 1090 North 500 East. To meet the project needs related to improving operations on 2600 South, additional turn lanes are needed at the 2600 South/500 East/Wildcat Way intersection. These additional turn lanes would result in additional width on 2600 South. To avoid impacts to 1090 North 500 East, the Salt Lake City 1000 North – Northern Option and the Salt Lake City 1000 North – Southern Option would need to be shifted north. Widening 2600 South to the north would require relocating 10 businesses in three commercial buildings in the Woods Crossing shopping center on the north side of 2600 South. One of the three commercial buildings has 8 businesses. UDOT determined that the avoidance alternative is not prudent because the impact to 10 businesses would be a severe social and economic impact.

Additionally, there are no prudent avoidance alternatives to the historic property located at 825 N. Warm Springs Road. To meet the project needs related to improving operations on I-15, additional through travel lanes are needed on I-15. Avoiding impacts to the historic property at 825 N. Warm Springs Road would require shifting the Action Alternative to the west, which would result in multiple property impacts including The Village at Raintree Apartments complex (304 units) at 870 North 900 West, three commercial properties (on 900 West at 938 North, 916 North, and 910 North), two commercial properties at the 900 West and 1000 North intersection, and two residential properties on 1100 North. 916 North 900 West and 921 West 1100 North are both eligible historic properties that would have uses with greater-than-*de minimis* impacts from this avoidance alternative.

UDOT determined that the avoidance alternative for 825 N. Warm Springs Road is not prudent because the impacts to the businesses and residential properties on the west side of I-15 would result in severe disruption to established communities, severe disproportionate impacts to minority or low-income populations, and severe social and economic impacts. Additionally, as stated in the *Section 4(f) Policy Paper*, “a project alternative that avoids one Section 4(f) property by using another Section 4(f) property is not an avoidance alternative.”

4.7 Least Overall Harm Analysis

If there is no prudent and feasible overall avoidance alternative, UDOT must select the alternative that “causes the least overall harm in light of the [Section 4(f)] statute’s preservation purpose” [23 CFR Section 774.3(c)]. Under these regulations, the “least overall harm” is determined by “balancing the following factors”:

1. The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);
2. The relative severity of the remaining harm, after mitigation to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
3. The relative significance of each Section 4(f) property;
4. The views of the official(s) with jurisdiction over each Section 4(f) property;
5. The degree to which each alternative meets the purpose of and need for the project;
6. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
7. Substantial differences in costs among alternatives.

The following sections address each of these factors.

4.7.1 Ability to Mitigate Adverse Impacts

The first factor is the ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property).

For the 6 to 7 uses with greater-than-*de minimis* impacts to historic architecture properties, mitigation would include relocating and providing just compensation to the owner of the historic property. Additional mitigation for historic properties would include photographic recording and archiving of the historic properties as part of the Section 106 Memorandum of Agreement. The generally accepted mitigation measures for adverse effects on historic properties would be applicable to all segment options. Therefore, these options perform equally with respect to this factor.

In the north segment, the Farmington State Street Option would have a use with greater-than-*de minimis* impact to Ezra T. Clark Park. This use would affect contributing features of the park including the parking lot, pavilion, and historical monument and would require the full property acquisition of the park parcel from Farmington City. Appropriate mitigation measures would be determined between UDOT and Farmington City if this option was included in the preferred Action Alternative.

4.7.2 Relative Severity of the Remaining Harm to Each Section 4(f) Property

The second factor is the relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection. All uses with greater-than-*de minimis* impacts from segment options, except the use of 409 South 500 West in Bountiful and

1090 North 500 East in North Salt Lake, would result in demolishing and removing the historic structure or park (for Ezra T. Clark Park in Farmington with the Farmington State Street Option).

Roadway improvements with the Bountiful 500 South – Northern Option and Bountiful 500 South – Southern Option would require partial acquisition of about 0.13 acre of the 0.88-acre parcel on the west edge of the parcel for 409 South 500 West, which is a commercial property that includes the Bountiful Bowl business. The roadway improvements would remove the overhead sign and parking on the west side of the building. UDOT does not anticipate needing to demolish the historic building or relocate the business. However, the impacts to the overhead sign and parking are considered a greater-than-*de minimis* impact.

The use of 1090 North 500 West in North Salt Lake would impact the drive-through and parking area, which would negatively affect current business operations by limiting access and amenities to customers and likely require UDOT to purchase and relocate the business. If UDOT ends up reselling the property, it is likely that the building would be torn down or remodeled. Therefore, a use with greater-than-*de minimis* impact is assumed for 1090 North 500 West in North Salt Lake from either of the south segment options.

Therefore, the relative severity of remaining harm would be less for 409 South 500 West in Bountiful and 1090 North 500 West in North Salt Lake.

4.7.3 Relative Significance of Each Section 4(f) Property

The third factor is the relative significance of each Section 4(f) property.

The Utah SHPO ratings for historic properties include eligible/significant (ES) and eligible/contributing (EC). The eligible/significant category includes historic buildings that meet the age and integrity criteria and have known historical significance and/or are individually eligible under NRHP criterion C (which are sites that embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction). Eligible/contributing sites meet the age and integrity criteria but do not have the known historical significance or eligibility under NRHP criterion C.

All of the eligible historic properties with greater-than-*de minimis* impacts from the Action Alternative are considered eligible/contributing and would have the same relative significance. As described in the previous paragraph, the Utah SHPO eligible/contributing criteria are strictly based on age and integrity, and there are not any attributes or known historical significance with these historic properties that would make them more or less relatively significant for the purposes of Section 4(f). Therefore, the greater-than-*de minimis* impacts from the Action Alternative to historic properties would be considered the same, and all options would perform equally with respect to this factor.

Ezra T. Clark Park in Farmington is considered a significant park for the Farmington neighborhoods on the east side of I-15 near State Street and 400 West. As discussed in Section 4.5.2.2, *Public Parks and Recreation Areas*, the Farmington State Street Option would have impacts to the parking lot, pavilion, and historical monument from realigning the frontage road, and these impacts would require acquiring the entire park from Farmington City and relocating it. The Farmington 400 West Option would have minor impacts to the west edge of Ezra T. Clark Park.

4.7.4 Views of the Officials with Jurisdiction over Each Section 4(f) Property

The fourth factor is the views of the officials with jurisdiction over each Section 4(f) property. The Utah SHPO is the official with jurisdiction over historic Section 4(f) properties, and local municipalities are the officials with jurisdiction over Section 4(f) public parks and recreation areas. Two of the segments (north and south central) have options that differ in the number of uses with greater-than-*de minimis* impacts. The Farmington 400 West Option in the north segment would not have any uses with greater-than-*de minimis* impacts to public parks, while the Farmington State Street Option would have a use with greater-than-*de minimis* impact to Ezra T. Clark Park. UDOT has discussed the impacts to Ezra T. Clark Park for both the Farmington 400 West Option and the Farmington State Street Option with Farmington City (the official with jurisdiction over Ezra T. Clark Park). Farmington City has provided input to UDOT that they would view the Farmington 400 West Option more favorably due to fewer impacts to Ezra T. Clark Park.

The Bountiful 500 South – Northern Option in the south central segment would have one use with greater-than-*de minimis* impacts to 409 South 500 West, while the Bountiful 500 South – Southern Option would have two uses with greater-than-*de minimis* impact to 409 South 500 West and 453 West 500 South and would be considered more favorable by the Utah SHPO.

4.7.5 Degree to Which Each Alternative Meets the Purpose and Need

The fifth factor is the degree to which each alternative meets the purpose of and need for the project. UDOT analyzed the transportation performance of each segment option to determine how well the options would meet the purpose of and need for the project. UDOT concluded that all options included in the Action Alternative would meet the purpose of and need for the project, so all options perform equally with respect to this factor.

4.7.6 After Reasonable Mitigation, Magnitude of Any Adverse Impacts to Resources Not Protected by Section 4(f)

The sixth factor is the magnitude of any adverse impacts (after reasonable mitigation) to resources not protected by Section 4(f). Table 4.7-1 compares the No-action Alternative and the different segment options of the Action Alternative for the resources evaluated in this Draft EIS.

As shown in Table 4.7-1, the adverse impacts to resources not protected by Section 4(f) are very similar when comparing the two options for each segment of the Action Alternative. The most notable differences in impacts are the commercial and business impacts for the north central and south central segments.

In the north central segment, the Bountiful 400 North – Northern Option would relocate 5 businesses, which is less than Bountiful 400 North – Southern Option, which would relocate 4 commercial properties (with 7 businesses) and potentially relocate 2 more commercial properties (with 10 businesses).

In the south central segment, the Bountiful 500 South – Northern Option would relocate 7 commercial properties (with 9 businesses) and potentially relocate 6 commercial properties (with 7 businesses), which is less than Bountiful 500 South – Southern Option, which would relocate 8 commercial properties (with 16 businesses) and potentially relocate 5 more commercial properties (with 6 businesses).

Table 4.7-1. Impacts to Resources Not Protected by Section 4(f)

Impact Category	Unit	No-action Alternative	Action Alternative Options							
			Farmington 400 West	Farmington State Street	Bountiful 400 North – Northern	Bountiful 400 North – Southern	Bountiful 500 South – Northern	Bountiful 500 South – Southern	Salt Lake City 1000 North – Northern	Salt Lake City 100 North – Southern
Residential relocations	Number	0	1	1	0	2	0	0	2	2
Potential residential relocations	Number	0	5	5	2	1	0	0	29	29
Commercial relocations	Number	0	0 (0)	0 (0)	5 (5)	4 (7)	7 (9)	8 (16)	3 (3)	2 (2)
Potential commercial relocations (business relocations)	Number	0	1 (1)	1 (1)	0 (0)	2 (10)	6 (7)	5 (6)	4 (4)	4 (4)
Utility relocations	Number	0	1	1	0	0	0	1	0	0
Impacts to aquatic resources	Acres	0	4.70	4.70	0.03	0.03	0.04	0.04	25.96	25.94
Hazardous waste sites affected (all categories)	Number	0	0	0	2	2	3	4	4	4
Floodplain impacts (all categories)	Acres	0	39.50	39.50	0.97	0.97	0.06	0.07	1.85	1.85
Environmental justice benefits or impacts	Yes/no	No impacts or benefits.	Yes; Action Alternative would have both benefits and impacts to environmental justice communities. None of the impacts would be disproportionate to environmental justice communities.							
Air quality impacts exceeding standards	Yes/no	No.	No; Action Alternative is part of the Wasatch Front Regional Council conforming implementation plan.							

4.7.7 Substantial Differences in Costs among Alternatives

The seventh and last factor is substantial differences in costs among alternatives. Current construction cost estimates for each of the segment options do not vary enough to be considered substantial differences, so all segment options perform equally with respect to this factor.

4.7.8 Conclusions for the Least Overall Harm

By balancing these seven factors, UDOT has made the following least overall harm determinations:

1. For the north segment, the Farmington 400 West Option would cause the least overall harm in light of the preservation purpose of 49 USC Section 303 because it would have only a use with *de minimis* impact to Ezra T. Clark Park.
2. For the south central segment, the Bountiful 500 South – Northern Option would cause the least overall harm in light of the preservation purpose of 49 USC Section 303 because it would have one use with greater-than-*de minimis* impact to Section 4(f) resources. The Bountiful 500 South – Southern Option would have two uses with greater-than-*de minimis* impact to Section 4(f) resources.
3. For the north central and south segments, both options perform equally with respect to all seven factors, so either option in these segments would be considered to cause the least overall harm in light of the preservation purpose of 49 USC Section 303.

4.8 Measures to Minimize Harm

UDOT has considered avoidance, minimization, and mitigation measures for Section 4(f) resources during the development of the Action Alternative, including those Section 4(f) resources determined to have uses with only *de minimis* impacts. *De minimis* impact determinations are based on the degree of impact after the inclusion of any measure(s) to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures) to address the Section 4(f) use (that is, the net impact). UDOT proposes to implement mitigation to include the following measures.

4.8.1 Section 4(f) Historic Properties

During the design process, UDOT took measures to minimize harm to Section 4(f) historic properties by minimizing the amount of property acquisition needed to accommodate the Action Alternative without affecting any of the contributing attributes of the property. For all temporary construction easements, the disturbed land would be restored and revegetated. See Section 4.7.1, *Ability to Mitigate Adverse Impacts*, for proposed mitigation for Section 4(f) properties uses with greater-than-*de minimis* impacts.

4.8.2 Section 4(f) Archaeological Sites

Table 4.8-1 describes the proposed measures to minimize harm to Section 4(f) archaeological sites.

Table 4.8-1. Measures to Minimize Harm to Section 4(f) Archaeological Sites

Site Number(s)	Site Name	Options with Effect	Avoidance, Minimization, and Mitigation Measures
42DV86/42SL293	Denver & Rio Grande Western Railroad Grade	<ul style="list-style-type: none"> Both south segment options 	<ul style="list-style-type: none"> Avoidance by installing and/or upgrading overpasses above resource.
42DV87/42SL300	Union Pacific Railroad	<ul style="list-style-type: none"> Both north segment options Both north central segment options Both south segment options 	<ul style="list-style-type: none"> Widening mainly to the east of the existing roadway to avoid any impacts that would require relocating the Union Pacific Railroad tracks. Avoidance by installing and/or upgrading overpasses above resource.
42SL729	Historic Trolley Line	<ul style="list-style-type: none"> Both south segment options 	<ul style="list-style-type: none"> Avoidance by installing and/or upgrading overpasses above resource.

4.8.3 Section 4(f) Public Parks and Recreation Areas

Table 4.8-2 describes the proposed measures to minimize harm to Section 4(f) public parks and recreation areas. During the final design of the selected segment options of the Action Alternative, UDOT will work with the local municipalities with jurisdiction over the Section 4(f) public parks and recreation areas to evaluate opportunities to further mitigate impacts. For all temporary construction impacts, the disturbed land would be restored and revegetated.

Table 4.8-2. Measures to Minimize Harm to Section 4(f) Public Parks and Recreation Areas

Park or Recreation Resource	Option(s) with Effect	Avoidance, Minimization, and Mitigation Measures
Ezra T. Clark Park	<ul style="list-style-type: none"> Farmington 400 West Option 	<ul style="list-style-type: none"> Minimizes harm by requiring only partial acquisition of the park on its western edge and avoiding impacts to park features (pavilion, parking lot, and historic monument). All disturbed areas would be revegetated.
Ezra T. Clark Park	<ul style="list-style-type: none"> Farmington State Street Option 	<ul style="list-style-type: none"> Would require full acquisition; mitigation would be determined through coordination with Farmington City.
Farmington Creek Trail	<ul style="list-style-type: none"> Both north segment options 	<ul style="list-style-type: none"> Trail would be replaced to provide the same connectivity to the segments of the Farmington Creek Trail on the north and south sides of Ezra T. Clark Park. All disturbed areas adjacent to the trail would be revegetated.
Farmington Junior High School playing fields	<ul style="list-style-type: none"> Both north segment options 	<ul style="list-style-type: none"> All disturbed areas would be revegetated. Temporary construction easement would be acquired, and UDOT would coordinate with the Davis School District during construction to minimize any impacts to or closures of the playing fields.

(continued on next page)

Table 4.8-2. Measures to Minimize Harm to Section 4(f) Public Parks and Recreation Areas

Park or Recreation Resource	Option(s) with Effect	Avoidance, Minimization, and Mitigation Measures
South Park	<ul style="list-style-type: none"> Both north segment options 	<ul style="list-style-type: none"> Impacts to park recreational features besides the skate park would be avoided. All disturbed areas would be revegetated. UDOT would work with Farmington City to replace the skate park within the existing South Park boundaries.
Centerville Community Park	<ul style="list-style-type: none"> Both north segment options 	<ul style="list-style-type: none"> Beneficial impact due to new trail overpass of I-15, railroad tracks, and Legacy Parkway that connects to the Legacy Parkway Trail and Denver and Rio Grande Western Trail. Impacts to park features would be avoided. All disturbed areas would be revegetated. UDOT would coordinate with Centerville City to provide replacement property pursuant to Section 6(f) requirements [see Chapter 5, <i>Section 6(f) Analysis</i>].
Woods Cross Elementary School playing fields and walking path	<ul style="list-style-type: none"> Both south central segment options 	<ul style="list-style-type: none"> All disturbed areas would be revegetated. Temporary construction easement would be acquired, and UDOT would coordinate with the Davis School District during construction to minimize any impacts or closures to the playing fields and walking path.
Woods Cross High School playing fields	<ul style="list-style-type: none"> Both south segment options 	<ul style="list-style-type: none"> Chain link fence south of the baseball field would be replaced. UDOT would work with Davis School District to minimize any closures or detours on Wildcat Way when school is in session. Impacts would be minimized to affect only landscaping and sidewalk on the west edge of the playing fields. UDOT would work with Davis School District to reconfigure baseball fields if the fencing replacement causes spacing issues for the baseball fields. All disturbed areas would be revegetated.
Hatch Park	<ul style="list-style-type: none"> Both south segment options 	<ul style="list-style-type: none"> UDOT would construct a new sidewalk and bike lane on City-owned property on the north side of Center Street. No permanent conversion of right-of-way would be needed. All disturbed areas would be revegetated.
North Gateway Park	<ul style="list-style-type: none"> Both south segment options 	<ul style="list-style-type: none"> Driveway to parking lot would be reconstructed. Temporary construction easement would be acquired, and UDOT would coordinate Salt Lake City during construction to minimize any closures of the park during construction.
Warm Spring Park	<ul style="list-style-type: none"> Both south segment options 	<ul style="list-style-type: none"> Driveway to parking lot would be reconstructed. Temporary construction easement would be acquired, and UDOT would coordinate Salt Lake City during construction to minimize any closures of the park during construction.

4.9 Coordination

Chapter 6, *Coordination*, summarizes the meetings held with the public and agencies, including Salt Lake City, the City of North Salt Lake, Centerville City, and Farmington City, during the development of the Action Alternative and the preparation of this Draft EIS. Section 3.10, *Historic and Archaeological Resources*, summarizes the coordination efforts specific to historic resources and the National Historic Preservation Act.

4.9.1 Section 4(f) Historic and Archaeological Sites

UDOT coordinated with the Utah SHPO, the official with jurisdiction over Section 4(f) historic properties, regarding UDOT's Determinations of Eligibility and Findings of Effect (DOE/FOE). Under a 2017 programmatic agreement (FHWA and others 2017) among the Advisory Council on Historic Preservation, FHWA, the Utah SHPO, and UDOT regarding Section 4(f) *de minimis* impact determinations, the SHPO is notified of UDOT's intent to make a Section 4(f) *de minimis* impact determination when there is a Section 106 finding of no adverse effect. Because of this agreement, *de minimis* impact determinations became effective after the SHPO concurred with the FOE on July 31, 2023. The FOE is available in Appendix 3I, *Cultural Resources Correspondence*.

UDOT also coordinated with the SHPO regarding UDOT's Section 4(f) temporary occupancy findings. The SHPO concurred with UDOT's temporary occupancy findings on July 31, 2023. This concurrence is available in Appendix 3I.

4.9.2 Section 4(f) Public Parks and Recreation Areas

UDOT coordinated with Farmington City, Centerville City, the City of North Salt Lake, Salt Lake City, and the Davis County School District, the agencies with jurisdiction over Section 4(f) public parks and recreation areas in the evaluation area. Coordination occurred through discussions at meetings and by email.

Before making a *de minimis* impact determination or temporary occupancy determination for a Section 4(f) public park or recreation area, UDOT must inform the official with jurisdiction over that resource of its intent to make a *de minimis* impact determination or temporary occupancy determination. UDOT has informed the officials with jurisdiction of the intent to make *de minimis* impact and temporary occupancy determinations for the parks and recreation areas summarized in Table 4.5-1, *Summary of Impacts to Section 4(f) Resources from the Action Alternative*, above.

UDOT must also provide public notice and an opportunity for public review and comment concerning the effects on the protected activities, features, or attributes of the property. The public notice and opportunity for public review are being provided as part of the public comment period on this Draft EIS.

Following an opportunity for public review and comment, the official with jurisdiction over the Section 4(f) resource must concur in writing that the use will not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection. UDOT can then finalize any *de minimis* impact findings and temporary occupancy findings concurred with by the official with jurisdiction and approve the use of the Section 4(f) property. UDOT anticipates that *de minimis* impact and temporary occupancy concurrence letters will be obtained prior to the release of the Final EIS.

4.10 Section 4(f) Summary

4.10.1 Section 4(f) Uses

The Action Alternative would have uses with *de minimis* and greater-than-*de minimis* impacts and temporary occupancy impacts. Section 4.5, *Use of Section 4(f) Resources*, describes the uses with *de minimis* and greater-than-*de minimis* impacts from each of the segment options included in the Action Alternative. UDOT has determined that the Action Alternative would not result in constructive use of Section 4(f) resources.

Table 4.10-1 summarizes the Section 4(f) impacts for each segment of the Action Alternative.

Table 4.10-1. Section 4(f) Summary

Segment	Option	Greater-than- <i>De minimis</i>	<i>De minimis</i>	Temporary Occupancy
North	Farmington 400 West	2	6	7
	Farmington State Street	3	5	7
North Central	Bountiful 400 North – Northern	1	10	4
	Bountiful 400 North – Southern	1	10	4
South Central	Bountiful 500 South – Northern	1	6	10
	Bountiful 500 South – Southern	2	5	10
South	Salt Lake City 1000 North – Northern	2	32	45
	Salt Lake City 1000 North – Southern	2	32	45

Selecting the Farmington 400 West Option in the north segment and the Bountiful 500 South – Northern Option in the south central segment would result in the fewest number of uses with greater-than-*de minimis* impacts, which is 6. The Action Alternative with the Farmington 400 West Option in the north segment and the Bountiful 500 South – Northern Option in the south central segment would be considered the least overall harm in light of the preservation purpose of Section 4(f). The options in the north central segment and the south segment of the Action Alternative do not differ in the number of uses with greater-than-*de minimis* impacts, and either option could be considered the least overall harm in light of the preservation purpose of Section 4(f).

Selecting the Farmington State Street Option in the north segment and the Bountiful 500 South – Southern Option in the south central segment would result in the greatest number of uses with greater-than-*de minimis* impacts, which is 8. UDOT could not select the Farmington State Street Option and the Bountiful 500 South – Southern Option unless the Final Section 4(f) Evaluation showed that it would cause the least overall harm in light of the preservation purpose of Section 4(f) (see Section 4.7, *Least Overall Harm Analysis*).

4.11 References

[FHWA] Federal Highway Administration

- 2012 Section 4(f) Policy Paper. <https://www.environment.fhwa.dot.gov/legislation/section4f/4fpolicy.aspx>. June 2.
- 2022 First Renewed Memorandum of Understanding between the Federal Highway Administration and the Utah Department of Transportation Regarding the State of Utah's Participation in the Surface Transportation Project Delivery Program Pursuant to 23 USC 317. May 26.

[FHWA and others] Federal Highway Administration, Utah State Historic Preservation Officer, Advisory Council on Historic Preservation, United States Army Corps of Engineers, Sacramento District, and Utah Department of Transportation

- 2017 Third Amended Programmatic Agreement among the Federal Highway Administration, the Utah State Historic Preservation Officer, the Advisory Council on Historic Preservation, the United States Army Corps of Engineers, Sacramento District, and the Utah Department of Transportation Regarding Section 106 Implementation for Federal-Aid Transportation Projects in the State of Utah. July 6.

[Horrocks] Horrocks Engineers

- 2022 A Cultural Resource Inventory for the I-15; 600 North to Farmington Environmental Impact Study. January.
- 2023a A Cultural Inventory of Additional Areas for the I-15; 600 North to Farmington Environmental Impact Study. February.
- 2023b Selective Reconnaissance-level Survey for the I-15: Salt Lake City 600 North to Farmington EIS, Salt Lake and Davis Counties, Utah. March.
- 2023c Supplementary Areas for the I-15 EIS; 600 North to Farmington Environmental Impact Study. June.

Chapter 5: Section 6(f) Analysis

5.1 Introduction

This chapter addresses the requirements of Section 6(f) of the Land and Water Conservation Fund Act (LWCF Act) of 1965 as amended for the Interstate 15 (I-15): Farmington to Salt Lake City Environmental Impact Statement (EIS) in Davis County and Salt Lake County, Utah. Section 6(f) applies to parks or recreation areas acquired, developed, or improved with assistance from the LWCF.

This chapter identifies Section 6(f) resources in the Section 6(f) evaluation area, determines impacts to those resources, and describes the coordination efforts made to address Section 6(f) issues and concerns.

Section 6(f) Evaluation Area. The Section 6(f) evaluation area is the area adjacent to the Action Alternative right-of-way where Section 6(f) resources could be affected, as generally illustrated in Figure 5.4-1, *Section 6(f) Parks Overview*, on page 5-5. This evaluation area is limited in size because Section 6(f) applies only to directly impacted parks or recreation areas acquired, developed, or improved with assistance from the LWCF.

What is Section 6(f)?

Section 6(f) of the Land and Water Conservation Fund Act applies to parks or recreation areas acquired, developed, or improved with assistance from the Land and Water Conservation Fund.

5.2 Regulatory Setting

The LWCF Act of 1965, as amended, is codified at 54 United States Code (USC) Chapter 2003. The purpose of the Act is to assist in preserving, developing, and ensuring accessibility to outdoor recreation resources for present and future generations. Section 6(f) of this Act applies to properties that receive funding from the LWCF State Assistance Program. Section 6(f) includes provisions to protect the federal investment and quality of the resources developed with LWCF assistance. Converting a Section 6(f) property to uses other than outdoor recreation (such as transportation uses) requires a replacement property of reasonably equivalent usefulness and location and of at least equal fair market value and approval from the National Park Service (NPS).

5.2.1 Section 6(f) Impacts and Conversion Options

Once the Utah Department of Transportation (UDOT) determines that a project could impact a Section 6(f) property, the following options are available:

1. **Conversion.** A conversion of use occurs when a site identified by the 6(f) boundary map is wholly or partially converted to a use other than public outdoor recreation. No property acquired or developed with LWCF assistance may be converted to other than public outdoor recreation uses without the approval of the Secretary of the Interior. The Secretary's approval depends on the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location (NPS 2021; Utah Division of State Parks, no date). The Secretary also considers whether the proposed conversion and substitution is in accordance with the then-existing statewide comprehensive outdoor plan. To qualify, the replacement property must be contiguous with the current site, or another existing park or recreation area, and otherwise meet the eligibility requirements for an acquisition grant (NPS 2021). Small conversions are partial conversions in which no more than 10% of the whole LWCF-assisted area will be converted to a use other than public outdoor recreation.
2. **Temporary nonconforming uses.** Temporary nonconforming uses of the 6(f) property lasting less than 6 months are not considered conversion and do not require replacement property. A temporary use shall not result in permanent damage to the LWCF-assisted area. Appropriate measures will be taken to ensure that the outdoor recreation area is restored for public recreation use and there are no residual impacts on the site once the temporary use is concluded (NPS 2021).

5.3 Proposed Action

Chapter 1, *Purpose and Need*, of this EIS describes in detail why the I-15: Farmington to Salt Lake City Project is needed and presents the purpose of the project. Chapter 2, *Alternatives*, describes the alternatives that are evaluated in this EIS, including the Action Alternative that is being evaluated in detail. This section summarizes the project purpose and need and the alternatives.

5.3.1 Need for the Project

As described in Section 1.4.1, *Need for the Project*, in Chapter 1, *Purpose and Need*, I-15 between Farmington and Salt Lake City has aging infrastructure and worsening operational characteristics for current and projected (2050) travel demand, both of which contribute to decreased safety, increased congestion, lost productivity, and longer travel times. East-west streets that access or cross I-15 are important to connect communities and support other travel modes such as biking, walking, and transit. When I-15 and its interchanges do not support travel demand, traffic is added to the local streets, which affects both the regional and local transportation system as well as safe, comfortable, and efficient travel by other travel modes.

What is travel demand?

Travel demand is the expected number of transportation trips in an area. Travel demand can be met by various modes of travel, such as automobile, bus, commuter rail, carpooling, and bicycling.

5.3.2 Purpose of the Project

The purpose of the I-15 project is to improve safety, replace aging infrastructure, provide better mobility for all travel modes, strengthen the state and local economy, and better connect communities along I-15 from Farmington to Salt Lake City. The project purpose consists of the following objectives, which are organized by UDOT's Quality of Life Framework categories of Good Health, Connected Communities, Strong Economy, and Better Mobility.

5.3.2.1 Improve Safety

- Improve the safety and operations of the I-15 mainline, I-15 interchanges, bicyclist and pedestrian crossings, and connected roadway network.

5.3.2.2 Better Connect Communities

- Be consistent with planned land use, growth objectives, and transportation plans.
- Support the planned FrontRunner Double Track projects and enhance access and connectivity to FrontRunner, to regional transit and trails, and across I-15.

5.3.2.3 Strengthen the Economy

- Replace aging infrastructure on I-15.
- Enhance the economy by reducing travel delay on I-15.

5.3.2.4 Improve Mobility for All Modes

- Improve mobility and operations on the I-15 mainline, I-15 interchanges, connected roadway network, transit connections, and bicyclist and pedestrian facilities to help accommodate projected travel demand in 2050.

5.3.3 Alternatives Evaluated in the EIS

Based on the results of the alternatives development and screening process, UDOT advanced the following alternatives for further study in this EIS:

- No-action Alternative
- Action Alternative

The Action Alternative includes the five general-purpose lane and one high-occupancy/toll lane mainline concept combined with the concepts for each of the five geographic areas that passed Level 1 and Level 2 screening. For more information about the alternatives screening process, see Chapter 2, *Alternatives*.

The Action Alternative also includes the following subarea options:

- Farmington
 - 400 West Option
 - State Street Option
- Bountiful 400 North
 - Northern Option
 - Southern Option
- Bountiful 500 South
 - Northern Option
 - Southern Option
- Salt Lake City 1000 North
 - Northern Option
 - Southern Option

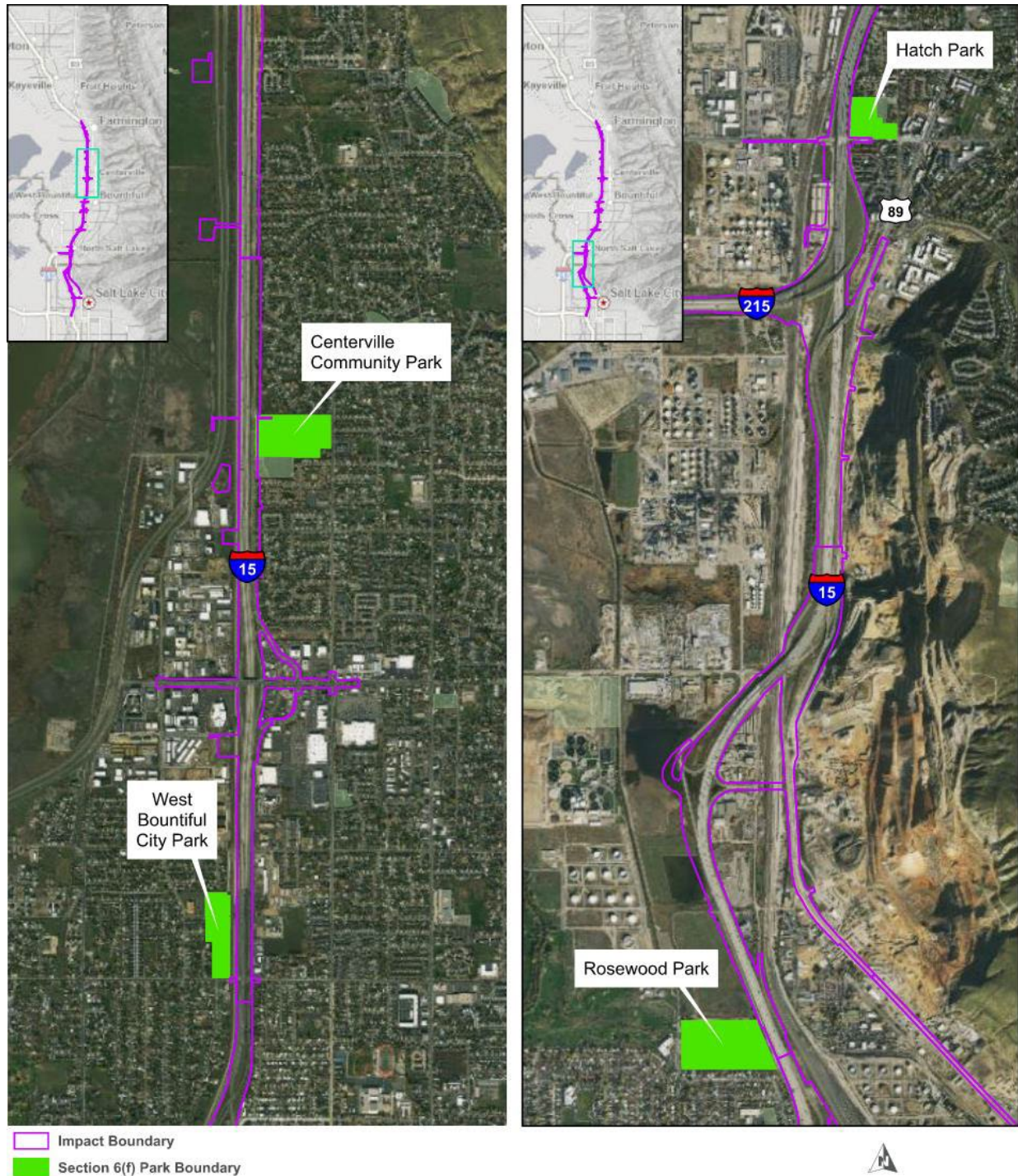
5.4 Identification of Section 6(f) Resources

Table 5.4-1 lists the four existing parks that have been determined by UDOT to be Section 6(f) properties and that are in the Section 6(f) evaluation area. Figure 5.4-1 below shows the Section 6(f) parks and the LWCF boundary areas.

Table 5.4-1. Section 6(f) Parks in the Section 6(f) Evaluation Area

Name and Section 6(f) Project Number	Ownership and Management	Size of Property within LWCF Boundary	Recreation Features	Location
Centerville Community Park 49-00325-H	Centerville City	23.95 acres	Multisport fields, jogging path, playground, sand volleyball courts, and pavilions	1350 North 400 West, Centerville
West Bountiful City Park 49-00171, 49-00313	West Bountiful City	14.50 acres	Boweries, playgrounds, basketball court, volleyball courts, and baseball fields	550 West 1600 North, West Bountiful
Hatch Park 49-00034	City of North Salt Lake	10.9 acres	Baseball diamond, grills, boweries, picnic tables, playground, soccer field, tennis court, volleyball court, and walking trail	50 W. Center Street, North Salt Lake
Rosewood Park 49-00211	Salt Lake City	26.0 acres	Playground, multipurpose fields, jogging/walking path, volleyball court, picnic tables, and skate park	1400 North 1200 West, Salt Lake City

Figure 5.4-1. Section 6(f) Parks Overview



SECTION 6(F) PARKS OVERVIEW

I-15 EIS: FARMINGTON TO SALT LAKE CITY

5.5 Impacts to Section 6(f) Resources

Table 5.5-1 lists the Section 6(f) properties for which there would be impacts from the Action Alternative.

Table 5.5-1. Section 6(f) Impacts from the Action Alternative

Name	Ownership and Management	Size	Figure	Impact and Use by the Action Alternative
Centerville Community Park	Centerville City	23.95 acres	Figure 5.5-1	Conversion <ul style="list-style-type: none"> 0.61 acre (2.5% of park)
Hatch Park	City of North Salt Lake	10.9 acres	Figure 5.5-2	Temporary non-conforming use <ul style="list-style-type: none"> 0.19 acre

There would be no permanent or temporary impacts to West Bountiful City Park or Rosewood Park from the Action Alternative because the Action Alternative would shift improvements to I-15 east away from these two parks. These two parks are not discussed further in this chapter.

The sections below provide more detail about the impacts to Centerville Community Park and Hatch Park.

5.5.1 Centerville Community Park

The Action Alternative would permanently convert to transportation use 0.61 acre (2.5%) of the 23.95-acre area of Centerville Community Park protected under Section 6(f). The additional lanes that would be constructed on I-15 with the Action Alternative would require relocating Frontage Road and the sidewalk to the east, which would impact the western edge of the park by converting this acreage to transportation use. The conversion of park property to transportation use would occur on the existing park strip area between the existing sidewalk and parking lot (Figure 5.5-1). The impacts would not result in any loss of parking or access and would not impact any of the existing recreation amenities of the park. Temporary impacts to park access (such as access closures or detours) might be needed due to the reconstruction of the driveway accesses to the parking lot.

As part of the Action Alternative, UDOT would also construct a new grade-separated crossing for pedestrians and bicyclists that would start at the Centerville Community Park and go over Frontage Road, I-15, the Union Pacific and Utah Transit Authority (UTA) FrontRunner rail lines, and Legacy Parkway and would connect with the Legacy Parkway Trail and the Denver and Rio Grande Western Trail on the west side of Legacy Parkway (Figure 5.5-1). This grade-separated crossing would enhance the recreation use of Centerville Community Park by providing a critical regional trail network link for pedestrians and bicyclists on the east side of I-15 to access the regional Legacy Parkway and Denver and Rio Grande Western Trails on the west side of Legacy Parkway. This new grade-separated crossing would use about 0.14 acre of Centerville Community Park. However, since this use would qualify as a permanent recreation facility that enhances the recreation attributes of Centerville Community Park, it would not be considered a conversion.

As this Draft EIS is being released, UDOT is coordinating with Centerville City regarding potential replacement properties and mitigation for impacts to the park.

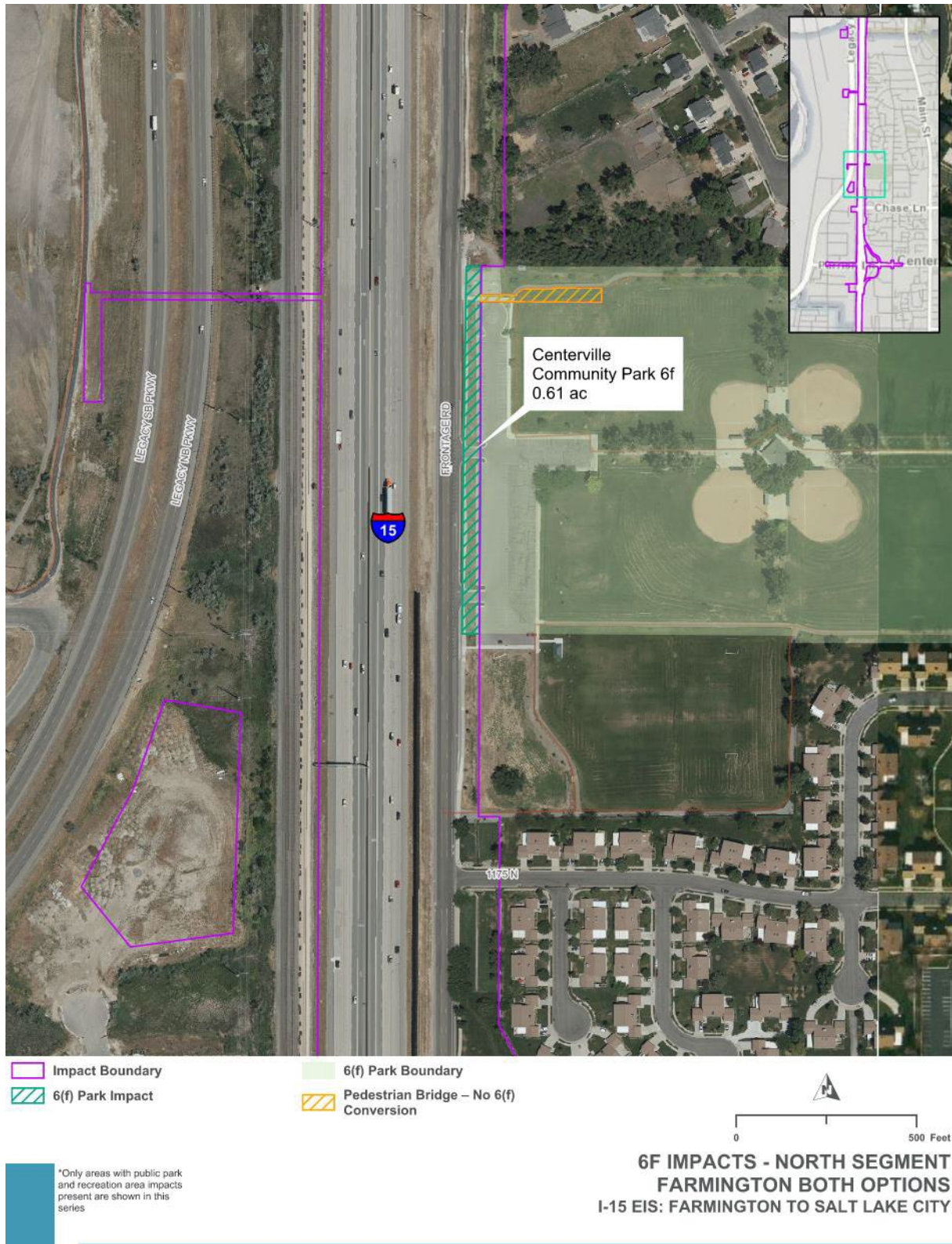
Converting 0.61 acre of Centerville Community Park would likely qualify as a small conversion if the following conditions can be met (see Chapter 8.F.9 of NPS 2021 for more details about the small conversion conditions):

- No more than 10% of the whole Section 6(f) area would be converted to transportation use. With the Action Alternative, 0.61 acre, or 2.5%, of the 23.95-acre area of Centerville Community Park protected under Section 6(f), would be converted to transportation use.
- This replacement property would need to be contiguous with an existing park or recreation area.
- Minor or no environmental impacts would occur to resources being removed from Section 6(f) properties, to the remaining Section 6(f) property, or to the contiguous new replacement recreation area.
- The proposed conversion would not be controversial.

If suitable contiguous replacement property is not available or if UDOT cannot meet the other small-conversion criteria listed above, UDOT would need to follow the conversion procedures of the LWCF Act and look at replacement properties in different locations.

UDOT will consult with the State LWCF Coordinator to comply with the conversion procedures of the LWCF Act, including evaluating all practical alternatives to the proposed conversion, obtaining substitution recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location, and preparing a Proposal Description and Environmental Screening Form with the appropriate National Environmental Policy Act (NEPA) documentation for both the converted property and the replacement property.

Figure 5.5-1. Section 6(f) Impacts to Centerville Community Park



5.5.2 Hatch Park

The Action Alternative would temporarily impact 0.19 acre of the 10.9-acre Hatch Park. These temporary impacts would include relocating the sidewalk on the south side of Hatch Park farther north between the west parking lot entrance and I-15, replacing the existing noise wall on the west side of Hatch Park, and extending the existing noise wall farther south (Figure 5.5-2). These activities would likely require temporary nonrecreation activities within the park to construct the new sidewalk and the noise wall. There would be no conversion of ownership of the park with these improvements. The total park acreage would remain the same, and the park parcels would continue to be owned by the City of North Salt Lake. The improvements would not impact parking or access.

These activities would likely qualify for a temporary nonconforming use because:

- Constructing the sidewalk and the noise wall would take less than 6 months.
- The size of the area affected by the temporary nonrecreation use would not significantly impact public outdoor recreation use. The temporary uses would occur in areas that are not actively used for recreation, including a storage area and a landscaped berm west of the walking trail and ball fields.
- The temporary use would not permanently damage Hatch Park. The area would be restored for public recreation use, and there would be no residual impacts once construction is complete.
- No practical alternatives to the proposed temporary use exist.

UDOT will submit a request for temporary use to the State LWCF Coordinator. Documentation will include start and completion dates, identification of the affected area and map, an analysis of alternatives to the proposed temporary use, a description of immediate impacts and any residual or long-term impacts, and a description of the actions that will be taken to restore the site for public outdoor recreation use. The LWCF Coordinator will then submit the proposal to NPS for its review.

Figure 5.5-2. Section 6(f) Impacts to Hatch Park



5.6 Coordination

UDOT has consulted with the State LWCF Coordinator to determine the LWCF boundary areas of Section 6(f) properties in the Section 6(f) evaluation area and to discuss the potential conversion of Centerville Community Park and the temporary nonconforming use of Hatch Park.

5.7 Mitigation Measures

UDOT proposes to implement mitigation to include the following. Converting Section 6(f) land from recreation use to transportation use requires complying with the conversion procedures of the LWCF Act as described in 36 CFR Part 59, *Land and Water Conservation Fund Program of Assistance to States; Post-completion Compliance Responsibilities*, including obtaining substitution recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location. UDOT would comply with all required LWCF Act procedures pertaining to the conversion of Section 6(f) land from outdoor recreation use to transportation use. No construction activities would occur on Section 6(f) land without prior approval from NPS.

5.8 References

[NPS] U.S. Department of the Interior, National Park Service

- 2021 Land and Water Conservation Fund State Assistance Program Federal Financial Assistance Manual. Volume 71. <https://www.nps.gov/subjects/lwcf/upload/LWCF-FA-Manual-Vol-71-3-11-2021-final.pdf>. Effective March 11, 2021.

Utah Division of State Parks

- No date 6(f) Conversion of Use Procedures. https://stateparks.utah.gov/stateparks/wp-content/uploads/sites/26/2015/04/6F_Conversion_Procedure.pdf.

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Chapter 6: Coordination

6.1 Introduction

This chapter describes the public and agency coordination for the Interstate 15 (I-15): Farmington to Salt Lake City Environmental Impact Statement (EIS). As the lead agency, the Utah Department of Transportation (UDOT) is responsible for preparing the I-15: Farmington to Salt Lake City EIS, including the requirements for conducting and documenting public and agency coordination and consultation.

6.2 Regulatory Setting

The Federal Highway Administration's (FHWA) guidance for preparing EISs states that an EIS should contain copies of pertinent correspondence with each cooperating agency, other agencies, and the public. It should summarize (1) the early coordination process, including scoping; (2) the meetings with community groups (including minority and nonminority interests) and individuals; and (3) the key issues and pertinent information received from the public and government agencies through these efforts (FHWA 1987).

6.3 Public and Agency Involvement

Public and agency involvement is important to the success of any project that could affect the community. The planning for the I-15: Farmington to Salt Lake City EIS involved extensive coordination and consultation with the affected communities, agencies, and other stakeholders. The affected communities include not only the residents and businesses but also landowners, individuals, groups, tribes, and others interested in the project study area.

The planning process was structured and implemented to ensure that substantive issues were considered, including the affected community's concerns related to the project's purpose and need, engineering solutions, social impacts, environmental impacts, economic effects, and other issues of concern to the community.

Where can I find the documents referenced in this chapter?

All documents and appendices referenced in this chapter are available on the project website at <https://i15eis.udot.utah.gov>.

6.3.1 Public Outreach Activities and Information Exchange

The goal of the public outreach process under the National Environmental Policy Act (NEPA) is to gather input from the local community, tribes, and government leadership to help inform the decisions regarding the impacts and mitigation associated with potential alternatives. The public and agency involvement process is open to ensure that interested parties have an opportunity to be involved in project planning. Stakeholders have had, and will continue to have, opportunities to review and comment on the EIS analysis and results at major milestones during the course of the study.

The public involvement process under NEPA is not a voting process. The information provided through comments during the NEPA process benefits the decision-makers by providing them with relevant information about how the proposed alternative actions are expected to affect the human environment, what kind of alternatives or mitigation measures might be appropriate, what resources are important to the stakeholders, and other information. The intent of NEPA, including public comments, is to increase the quantity and quality of information available to decision-makers about the consequences of the proposed action.

The public involvement plan for the I-15: Farmington to Salt Lake City Project is available as Appendix A of the *I-15 Farmington to Salt Lake City EIS Coordination Plan*.

6.3.2 Outreach Compliance with Federal Laws

The public and agency involvement program was conducted consistent with NEPA and the requirements of other environmental laws (such as Section 106 of the National Historic Preservation Act). The roles and responsibilities for lead, cooperating, and participating agencies during the environmental review process are defined in Section 6002 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and the regulations of the Council on Environmental Quality (40 Code of Federal Regulations [CFR] Part 1501) for implementing NEPA.

In preparing this EIS, UDOT followed these laws by reaching out to the agencies, the public, and other stakeholders and providing an opportunity for input into and collaboration on the processes of defining the project's purpose and need, identifying potential alternatives, and developing an understanding of the consequences of the alternatives.

What is SAFETEA-LU?

SAFETEA-LU—the Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users—is a 2005 federal law that established provisions and requirements for transportation projects.

6.3.3 Scoping

NEPA scoping is a formal EIS outreach and coordination process to determine the scope of issues to be addressed and to identify significant issues related to the proposed action. UDOT used the scoping process to identify and review the purpose of and need for the project and alternatives to consider in this EIS.

6.3.3.1 Early Scoping

Prior to the release of the notice of intent (NOI) to prepare this EIS during formal scoping in 2022, UDOT began meeting with Cities, Counties, and other stakeholders in the fall of 2021. Early scoping is an optional process that UDOT used to better understand the potential needs and issues before formally initiating the EIS process.

UDOT engaged with Smart Growth America and conducted walk audits of five cross streets in the project study area. Community members, city staff, elected officials, and other representatives of the communities were invited to participate. Five walk audits were held between October and November 2021. The five locations were State Street in Farmington, Parrish Lane in Centerville, 500 South in Bountiful, 2600 South in North Salt Lake, and 600 North in Salt Lake City. The walk audits are summarized in Appendix I of the *Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City* (Horrocks 2022).

During early scoping, the Utah Transit Authority (UTA) provided UDOT with additional input on their strategic investments in UTA's FrontRunner commuter rail system as documented in a technical memorandum on December 13, 2021.

What is a walk audit?

A walk audit is an assessment of the pedestrian safety, accessibility, and comfort of a particular area undertaken in the street environment.

6.3.3.2 Formal Scoping and Notice of Intent

UDOT initiated the formal NEPA scoping process on March 28, 2022, with the publication of the NOI to prepare an EIS advertised in the U.S. Federal Register. This notice, which is a requirement of NEPA, alerted federal agencies and others of UDOT's intent to study potential options for I-15. This notice provided a short description of the I-15 corridor, the proposed actions, and preliminary alternatives including capacity improvements and additional modified access. A copy of the Federal Register NOI is included in Appendix A of the *Scoping Summary Report*.

The *Scoping Summary Report* summarizes public and agency input gathered during the formal scoping period, which lasted 45 days from March 28 to May 13, 2022.

6.4 Agency Coordination

Although people who live and access the study area understand the issues associated with day-to-day life in the area, it's important to also coordinate with local, state, and federal agencies that oversee the management of resources in the study area. Since these agencies oversee important resources and issue permits for areas under their authority, it's important to include them in the initial scoping activities. In this way, issues are identified early so that they can be properly considered and, if necessary, avoided, minimized, or mitigated as the study progresses. More discussion regarding the agencies that have been consulted is included in Section 6.4.2.3, *Agencies Consulted*.

6.4.1 Coordination Plan

Section 6002 of SAFETEA-LU (Public Law 109-059), codified at 23 United States Code (USC) Section 139, requires the federal lead agency to develop a coordination plan for all projects for which an EIS is prepared under NEPA. The purpose of the plan is to coordinate public and agency participation and comment on the NEPA environmental review process. The plan explains how the public, agencies, and local governments are given opportunities to provide input.

The *I-15 Farmington to Salt Lake City EIS Coordination Plan* ensures that UDOT works with the public to address their concerns and suggestions and that these concerns and suggestions are reflected in the alternatives and analysis that were developed. The plan also ensures that UDOT provides feedback regarding how the public's input influenced the decisions made during the EIS process. The plan is updated throughout the EIS process. The *I-15 Farmington to Salt Lake City EIS Coordination Plan* is available on the project website.

6.4.2 Identification of Participating and Cooperating Agencies

For the I-15 project, agencies that would have permitting or other authority for affected resources were invited to participate in the project planning process as NEPA cooperating agencies. In addition, federal and nonfederal agencies that might have an interest in the project but do not necessarily have permitting authority were invited to participate in the project planning process as NEPA participating agencies. The roles and responsibilities of cooperating and participating agencies include but are not limited to:

- Participating in the NEPA process starting at the earliest possible time, especially with regard to the development of the project's purpose and need, range of alternatives, methodologies, and review or provision of content used in developing the EIS.
- Identifying, as early as practicable, any issues of concern regarding the project's potential environmental or socioeconomic impacts. Participating agencies are also allowed to participate in an issue-resolution process.
- Providing meaningful and timely input on unresolved issues.
- Participating in the scoping process.

Other federal, state, and local agencies and organizations (referred to as nonparticipating agencies and organizations) were also contacted to obtain information about the project study area and any issues or concerns they had.

6.4.2.1 Cooperating Agencies

The regulations that implement NEPA define a *cooperating agency* as “any federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major federal action significantly affecting the quality of the human environment” (40 CFR Section 1508.1). Typically, agencies with resources in a study area that could be affected by certain actions of the project are contacted early in the scoping process and asked to be involved with the study as cooperating agencies.

A cooperating agency has a high level of involvement and responsibility for the study and works with the study team to develop solutions. Being involved as a cooperating agency allows resource agencies to better protect their resource areas but requires a commitment to remain involved and accept some responsibility for activities during the environmental review process.

6.4.2.2 Participating Agencies

SAFETEA-LU includes a category under which agencies can participate in the development of alternatives but that does not require them to take on the same level of responsibility for the study as a cooperating agency. An agency that has this level of involvement in a study is known as a *participating agency*. Participating agencies are federal, state, tribal, regional, or local government agencies that have an interest in a project. Participating agencies perform the following activities in coordination with the study team:

- Attending agency coordination meetings
- Developing an agency coordination plan
- Commenting as early as practicable on the study’s purpose and need and the range of alternatives
- Evaluating the environmental and socioeconomic resources in the study area and the general locations of alternatives
- Identifying as early as practicable any issues regarding the study’s environmental and socioeconomic impacts that could substantially delay or prevent the granting of a permit or other approval

6.4.2.3 Agencies Consulted

The following agencies and federally recognized tribes were sent letters on March 18, 2022, requesting their involvement as cooperating and/or participating agencies:

- Bountiful City
- Cedar Band of the Paiutes
- Centerville City
- City of North Salt Lake
- Confederated Band of the Goshutes
- Davis County
- Eastern Shoshone Tribe of the Wind River Reservation
- Farmington City
- National Park Service, Land and Water Conservation Fund
- Northwestern Band of Shoshone Nation
- Salt Lake City
- Salt Lake County
- Shiwits Band of the Paiute Indian Tribe of Utah
- Shoshone–Bannock Tribes of the Fort Hall Reservation
- Skull Valley Band of Goshute Indians
- State of Utah Resource Development Coordinating Committee
- U.S. Army Corps of Engineers
- U.S. Bureau of Indian Affairs
- U.S. Bureau of Reclamation
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- Utah Division of Air Quality
- Utah Division of Drinking Water
- Utah Division of Environmental Response and Remediation
- Utah Division of Forestry, Fire and State Lands
- Utah Division of Indian Affairs
- Utah Division of Parks and Recreation – Land and Water Conservation Fund Coordinator
- Utah Division of Outdoor Recreation
- Utah Division of Water Quality
- Utah Division of Water Resources
- Utah Division of Water Rights
- Utah Division of Wildlife Resources
- Utah State Historic Preservation Office
- Utah Transit Authority
- Ute Indian Tribe of the Uintah and Ouray Reservation
- Weber Basin Water Conservancy District
- West Bountiful City
- Woods Cross City
- Wasatch Front Regional Council

Of the agencies and federally recognized tribes that were contacted, 3 agreed to be cooperating agencies and 15 agreed or were assumed to be participating agencies (Table 6.4-1).

Table 6.4-1. Cooperating and Participating Agencies for the I-15 EIS

Cooperating Agencies	Participating Agencies
U.S. Army Corps of Engineers	U.S. Fish and Wildlife Service
U.S. Bureau of Reclamation	National Park Service (Land and Water Conservation Fund)
U.S. Environmental Protection Agency	Utah Division of Outdoor Recreation
	Wasatch Front Regional Council
	Utah Transit Authority
	Weber Basin Water Conservancy District
	Salt Lake City
	North Salt Lake City
	Woods Cross City
	Bountiful City
	West Bountiful City
	Centerville City
	Farmington City
	Salt Lake County
	Davis County

6.5 Agency Scoping

6.5.1 April 7, 2022, Agency Coordination Meeting

A virtual agency scoping meeting was held on April 7, 2022, at 1:00 PM via Webex. UDOT gave a brief presentation that included a project overview as well as the requirements of being a participating or cooperating agency. The materials that were discussed at the meeting included the purpose of and need for the project, potential alternatives, alternatives development and screening, potential impacts, and other issues pertaining to the study area. In addition, to help identify potential issues, UDOT completed an environmental checklist with input from the following agencies that attended the agency scoping meeting (see Appendix B of the *Scoping Summary Report*):

- Salt Lake City
- Salt Lake County
- U.S. Fish and Wildlife Service
- Utah Division of Outdoor Recreation
- Utah Division of Water Quality
- Utah Transit Authority
- Wasatch Front Regional Council

6.5.2 Opportunities for the Cooperating and Participating Agencies to Help Develop the Project Purpose and Need and Define the Range of Alternatives

The Fixing America's Surface Transportation Act (23 USC Section 139) requires an opportunity for cooperating and participating agencies to help develop the project's purpose and need statement and define the range of alternatives. In addition, the lead agency must determine, in collaboration with the cooperating and participating agencies, the appropriate methodologies to be used and the level of detail required in the analysis of alternatives.

The NOI provided a short description of the I-15 corridor, the proposed actions, and preliminary range of alternatives. Additionally, on April 8, 2022, UDOT published a draft of the project purpose and need document and the *Alternatives Development and Screening Methodology Report* for review by the agencies and the public through May 13, 2022. Members of the public and agencies were encouraged to provide comments by email, on the project website, and by postal mail.

UDOT received 900 comments in total from the public and agencies during scoping. UDOT received agency comments from the City of North Salt Lake, Davis County, Farmington City, the Farmington Historic Preservation Commission, Salt Lake City, Salt Lake County, Woods Cross City, UTA, and the Wasatch Front Regional Council during this comment period. UDOT provided comment-response matrices to the agencies who provided comments on September 14, 2022. UDOT submitted a revised Draft Purpose and Need and a revised Draft Alternatives Screening Methodology Memorandum in the same response email in September.

The draft purpose and need document, draft alternatives screening criteria, and conceptual alternatives were also discussed at the agency scoping meeting on April 7, 2022, and during the public outreach described in Table 6.6-1 on page 6-14.

6.5.3 Alternatives Development and Screening Report: November 2022 Preliminary Results

The preliminary results of the alternatives development and screening process were published for agency and public review on November 10, 2022. The preliminary analysis focused on Level 1 screening criteria. The review and comment period was from November 10, 2022, through January 13, 2023. The process included an online public meeting on November 14, 2022; two in-person public meetings on November 15 and 16, 2022; meetings with three local area working group meetings; and 34 presentations or meetings with agencies or stakeholders. UDOT received 2,890 comments during the alternatives screening comment period. UDOT received agency comments from the U.S. Bureau of Reclamation, City of North Salt Lake, Farmington City, Farmington City Historic Preservation Committee, Salt Lake City, Salt Lake City Department of Public Utilities, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, West Bountiful City, Wasatch Front Regional Council, and Woods Cross City during this comment period. UDOT provided comment-response matrices to the agencies who provided comments on May 9, 2023.

The alternatives development and screening process was also discussed during the public outreach described in Table 6.6-2 on page 6-19.

6.5.4 Coordination and Consultation Required by Section 106 of the National Historic Preservation Act

Section 106 of the National Historic Preservation Act (codified at 54 USC Section 306108) requires federal agencies that fund, permit, or are otherwise involved in a project (for example, as a landowner) to consider the impacts that the federal undertaking would have on historic and archaeological resources. Pursuant to the Memorandum of Understanding by which FHWA assigned certain powers to UDOT, UDOT is responsible for compliance with Section 106 as part of this EIS.

The regulations at 36 CFR Part 800, commonly referred to as the Section 106 regulations, implement the National Historic Preservation Act and describe the process through which the above actions are carried out. This process includes steps for consulting with state and/or tribal historic preservation officers, the Advisory Council on Historic Preservation, Native American tribes, and other interested parties.

For the I-15: Farmington to Salt Lake City Project, in addition to federal and state agencies, UDOT consulted with several other entities with direct interest in historic architectural resources or archaeological sites that could be affected by the action alternatives. Agencies with direct jurisdiction over land within or adjacent to the alignments for the action alternatives were also consulted. These entities included certified local governments (CLGs), historical societies and organizations, and mayors or town councils where no CLG or historical society exists. CLGs are entities that meet historic preservation standards established by the National Park Service and the State Historic Preservation Office (SHPO), that act under the guidance of the SHPO, and that can be federally funded through the SHPO.

UDOT contacted the following groups by letter on March 18, 2022, invited them to become consulting parties for the project, and invited them to provide information about architectural and archaeological properties of importance to their communities or organizations:

- Bountiful CLG
- Centerville CLG
- Clark Lane Historical Preservation Association
- Confederated Tribes of the Goshute Reservation
- Eastern Shoshone Tribe of the Wind River Reservation
- Farmington CLG
- Northwestern Band of the Shoshone Nation
- Preservation Utah
- Salt Lake City CLG
- Salt Lake County CLG
- Shoshone-Bannock Tribes of the Fort Hall Reservation
- Skull Valley Band of Goshute Indians
- Utah Professional Archaeological Council
- Ute Indian Tribe of the Uintah and Ouray Reservation

What is an undertaking?

An undertaking is a 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.

What are interested parties?

Interested parties include property owners, local historic preservation societies, and neighborhood associations with a demonstrated interest in the project.

UDOT's consultation with the agencies, municipalities, and CLGs focused on soliciting information about the known or potential presence of historic architectural resources and archaeological sites in the areas that could be directly or indirectly affected by the Action Alternative. Three groups accepted UDOT's invitation to be a consulting party: the Clark Lane Historical Preservation Society, Centerville CLG, and Salt Lake County CLG. The Clark Lane Historical Preservation Society identified specific concerns in the project's area of potential effects during the alternatives development and screening comment period on January 13, 2023. The concerns included impacts to historic properties on State Street and Clark Circle in Farmington, concerns for impacts to Ezra T. Clark Park on the north side of State Street, questions on the traffic modeling for the project, and an alternative suggestion to widen Legacy Parkway instead of I-15.

UDOT's May 9, 2023, response to the preservation society advised that historic property impacts will be minimized to the extent feasible and detailed in the Draft EIS. Where impacts are unavoidable, UDOT will work with Farmington City and the Clark Lane Historical Preservation Society to mitigate for impacts. Traffic modeling and long-range transportation planning illustrate a need to widen both I-15 and Legacy Parkway.

6.5.5 Tribal Consultation

The National Historic Preservation Act and Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, require that federal agencies involved in a project that could affect resources of importance to Native American tribes must consult with those tribes when the location of the federal undertaking is within an area of traditional use for the tribe and/or could affect resources of cultural, religious, or traditional importance to the tribe. This consultation is to occur at a government-to-government level in recognition of the sovereign status of the tribes.

UDOT sent participating invitation letters to six tribes on March 18, 2022. UDOT provided notification of the I-15: Farmington to Salt Lake City EIS to the tribal chairperson or president, and to the tribal historic preservation officer, of the Confederated Tribes of the Goshute Reservation, Eastern Shoshone Tribe of the Wind River Reservation, Northwest Band of the Shoshone Nation, Shoshone-Bannock Tribes of the Fort Hall Reservation, Skull Valley Band of Goshute, and Ute Indian Tribe of the Uintah and Ouray Reservation. To date, none of the tribes have responded to the participating agency invitations. UDOT will continue to consult with tribes and other parties that express an interest in becoming a consulting party under Section 106 of the National Historic Preservation Act as part of the development of the I-15 EIS.

6.5.6 Meetings with City and County Councils

UDOT presented at city and county council meetings throughout the development of this EIS, starting in April 2022, to provide study updates to government stakeholders and the public. These meetings are listed in Table 6.6-1 and Table 6.6-2 on pages 6-14 and 6-19, respectively.

6.5.7 Meetings with Wasatch Front Regional Council

UDOT met with the Wasatch Front Regional Council (WFRC) on September 22, 2021, and May 3, June 28, and October 24, 2022, to review and validate the growth assumptions in the travel demand model. WFRC is a participating agency and participated in agency scoping meetings.

6.6 Public Involvement

In addition to agency coordination, public participation is important to developing informed analysis and understanding the issues and concerns of the community. UDOT's commitment at the beginning of this environmental review process was to proactively involve the public so that analysis would reflect the goals and issues of those who live, work, and travel in the project study area. Throughout this process, UDOT has kept the public informed and has incorporated their feedback.

As NEPA requires, UDOT reached out to the public and gave the public an opportunity to provide input into and collaborate on the processes of defining the project's purpose and need, identifying potential alternatives, and documenting how the alternatives could affect people and the resources they value.

6.6.1 Coordination and Public Involvement Plan

The *I-15 Farmington to Salt Lake City EIS Coordination Plan* includes a public involvement element that introduces several strategies to inform the public about the project, communicate how a preferred alternative or alternatives would be selected, and address agency and public issues during the course of the EIS process. The goal of this plan is to engage stakeholders and the public in an open and inclusive process that builds on previous efforts to identify issues and potential solutions that consider a range of perspectives.

In addition, the plan ensures that UDOT works with the public to address their concerns and suggestions and that these concerns and suggestions are directly reflected in the alternatives and analysis that were developed. The plan also ensures that UDOT provides feedback regarding how the public's input influenced the decisions made during the EIS process. The plan is updated throughout the EIS process.

The *I-15 Farmington to Salt Lake City EIS Coordination Plan* is available on the project website.

6.6.2 Public Scoping

Public scoping is a key component of the environmental review process. Scoping helps UDOT prepare a comprehensive and focused EIS that will help inform the decision-making and permitting processes. UDOT relies on public comments to help identify issues, gather input on a reasonable range of alternatives, and gauge public sentiment about the proposed improvements. Because some of the alternatives under consideration for the study could affect adjacent property owners, a combination of measures was taken to ensure that the public was notified about the study and invited to participate in the process, as described below.

6.6.2.1 Formal Scoping Period (March 28 to May 13, 2022)

The scoping period was initiated with the Federal Register notice on March 28, 2022, and ended on May 13, 2022. During the formal scoping period, the NOI, purpose and need, alternatives screening methodology, and initial range of alternatives were presented to the public for review and comment.

6.6.2.1.1 Purpose and Need

On April 8, 2022, as part of the scoping period, UDOT published a draft of the project purpose and need document for review by the agencies and the public through May 13, 2022. A summary of the comment themes as well as all comments received are included *Scoping Summary Report*.

6.6.2.1.2 Screening Criteria and Conceptual Alternatives

The draft *Alternatives Development and Screening Methodology Report* was first published during the formal scoping period on April 11, 2022, for public review and comment. The report described the alternatives screening process. UDOT received 900 comments from agencies and the public on the draft version of the report. A few public comments were received specific to the alternatives screening process and criteria. The majority of the comments were related to access to Glovers Lane from I-15 or West Davis Corridor, bicycle and pedestrian accommodations across I-15, new interchanges or interchange modifications, pavement quality, noise impacts, grade-separating railroads and local streets, and other alternative ideas relating to transit, transportation systems management (TSM), travel demand management (TDM), tolling, and lane restrictions. UDOT reviewed all comments received and revised the *Alternatives Development and Screening Methodology Report* based on the public and agency input.

6.6.2.1.3 Notification

The scoping period was initiated with the Federal Register notice on March 28, 2022, and ended on May 13, 2022. The following methods were used to notify the general public of the public scoping activities:

- Grassroots efforts (community canvassing and engagement) occurred at local events, including:
 - Farmington Station Park Bunny Hop event on April 7, 2022
 - North Salt Lake Senior Lunch Brunch on April 13, 2022
 - Food Truck League in North Salt Lake on May 2, 2022
 - South Davis Recreation Center in Bountiful on May 10, 2022
 - Bountiful Food Pantry on May 11, 2022
 - Community canvassing in Salt Lake City on May 11, 2022
- A virtual flyer was emailed to all parents of students in the Davis School District.
- Lawn signs, pop-up banners, flyers, and posters were posted in 101 public locations throughout the study area (see Figure 6.6-1 for locations).

- Social media outreach occurred on TikTok, YouTube, Facebook, Instagram, and Twitter.
 - Targeted Facebook advertising was used at key points during the comment period (between April 11 and May 13, 2022) to raise awareness of the study and the opportunity to provide comments.
 - Videos describing the study overview and scoping were posted on social media.
 - Social media outreach had a total of 44,066 organic impressions and views.
- Information regarding the study scoping period was posted on the project website: i15eis.udot.utah.gov.
- A UDOT press release was sent to local media outlets.

Copies of the posters, pop-up banners, lawn signs, fact sheet, flyers, and press release are included in Appendix C of the *Scoping Summary Report*.

6.6.2.1.4 Public Scoping Materials

UDOT released virtual public scoping content on April 11, 2022, on the project website (i15eis.udot.utah.gov) that included presentation videos and several options for providing comments. Copies of the presentation slides are included in Appendix D of the *Scoping Summary Report*.

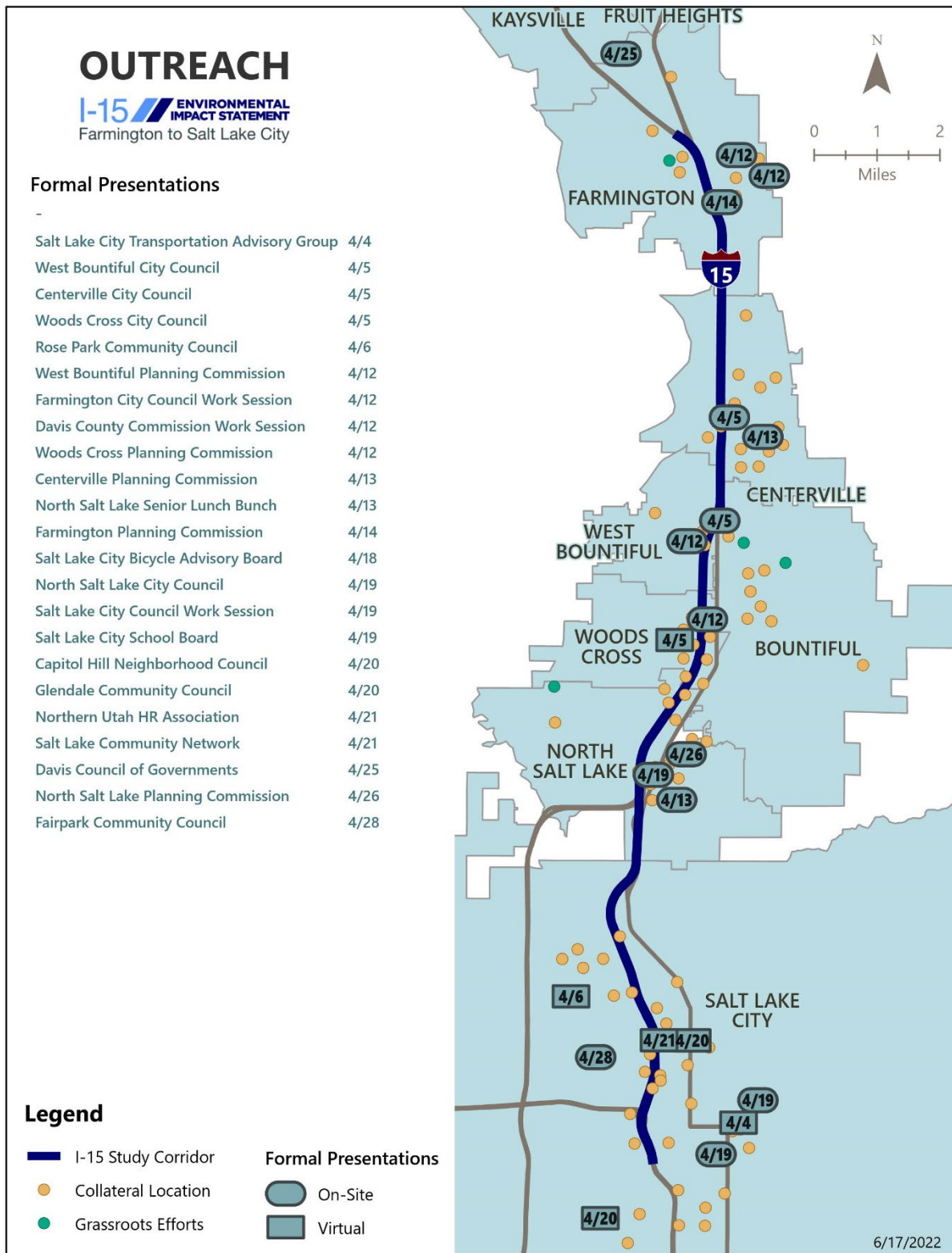
City Council, Community Council, and Planning Commission Scoping Presentations

During the scoping process, the study team gave presentations at 24 city council, community council, advisory group, and planning commission meetings. The presentation from the meetings is included in Appendix D of the *Scoping Summary Report*. Table 6.6-1 summarizes the presentations by date and location. Figure 6.6-1 following the table shows the locations of presentations and signs (collateral) throughout the study area.

Table 6.6-1. City Council, Community Council, Advisory Groups, and Planning Commission Presentations

Date	Entity	Location
April 4, 2022	Salt Lake City Transportation Advisory Group	Virtual
April 5, 2022	Woods Cross City Council	Woods Cross Municipal Building, 1555 South 800 West, Woods Cross
	Centerville City Council	Centerville City Hall, 250 N. Main Street, Centerville
	West Bountiful City Council	West Bountiful City Hall, 550 North 800 West, West Bountiful
April 6, 2022	Rose Park Community Council	Virtual
April 7, 2022	Station Park Bunny Hop Event	140 N. Union Blvd., Farmington
April 12, 2022	Davis County Commission Work Session	Davis County Administrative Building, 61 S. Main Street, Farmington
	Farmington City Council Work Session	Farmington City Hall, 160 S. Main Street, Farmington
	Woods Cross Planning Commission	Woods Cross Municipal Building, 1555 South 800 West, Woods Cross
	West Bountiful Planning Commission	West Bountiful City Hall, 550 North 800 West, West Bountiful
April 13, 2022	Centerville Planning Commission	Centerville City Hall, 250 N. Main Street, Centerville
April 14, 2022	Farmington Planning Commission	Farmington City Hall, 160 S. Main Street, Farmington
April 18, 2022	Salt Lake City Bicycle Advisory Board	Virtual
April 19, 2022	Salt Lake City Council Work Session	City and County Building, 451 S. State Street, Salt Lake City
	Salt Lake City School Board	440 East 100 South, Salt Lake City
	North Salt Lake City Council	North Salt Lake City Hall, 10 E. Center Street, North Salt Lake
April 20, 2022	Capitol Hill Community Council	Virtual
	Glendale Community Council	Virtual
April 21, 2022	Northern Utah Human Resource Association	1068 West 350 South, Suite A, Syracuse
	Salt Lake Community Network	Virtual
April 25, 2022	Davis County Council of Governments	61 S. Main Street, Farmington
April 26, 2022	Bountiful City Council Work Session	Bountiful City Hall, 795 S. Main Street, Bountiful
	North Salt Lake Planning Commission	North Salt Lake City Hall, 10 E. Center Street, North Salt Lake
	Fairpark Community Council	Virtual

Figure 6.6-1. Locations and Dates of Scoping Outreach



Equity Outreach

In keeping with NEPA requirements, UDOT's public engagement included equitable outreach, including engagement with affordable-housing interests, and outreach in areas of the study area that historically might have been underserved due to language or other barriers. UDOT collaboratively worked with local elected officials and community leaders to build a list of key stakeholders representing local residents, business owners, and other interested participants. UDOT held two Equity Working Group meetings, on February 28 and March 28, 2022, to inform these efforts.

6.6.2.1.5 *Scoping Summary Report*

The *Scoping Summary Report* summarizes public and agency input gathered during the formal scoping period. In addition to comments received during the city council presentations and Equity Working Group meetings, 900 individual comment submissions were received that identified issues. The majority of the comments were related to access to Glovers Lane from I-15 or West Davis Corridor, bicycle and pedestrian accommodations across I-15, new interchanges or interchange modifications, pavement quality, noise impacts, grade-separating railroads and local streets, and other alternative ideas relating to transit, transportation system management, travel demand management, tolling, and lane restrictions. A summary of the comment themes is included *Scoping Summary Report*.

6.6.3 Alternatives Development Process

6.6.3.1 Alternatives Development and Screening Report: November 2022 Preliminary Results

The preliminary results of the alternatives screening process were published for public review on November 10, 2022. The preliminary analysis focused on Level 1 screening criteria. The review and comment period was from November 10, 2022, through January 13, 2023. The process included an online public meeting on November 14, 2022; two in-person public meetings on November 15 and 16, 2022; meetings with three local area working groups; and 34 presentations or meetings with agencies or stakeholders.

What are Level 1 screening criteria?

Level 1 screening criteria are the elements of a project's purpose. Level 1 screening eliminates concepts that do not meet the purpose of the project.

The public engagement during the draft alternatives development and screening process included a focus on meaningful engagement and implemented new strategies to provide opportunities for participation in parts of the study area that historically might have been underserved due to language, socioeconomic, racial, or other outreach barriers. To help to reduce barriers to participation at the two in-person open house events, UDOT provided, at no cost to the attendees, food, a kids' corner with supervised activities, and transportation (rideshare services and UTA On Demand, a point-to-point transit service, were both provided as options). All study information was made available in both English and Spanish, and interpretation services were provided at the in-person events. The online comment tools were also provided in both languages, and the open house events were held at locations that meet Americans with Disabilities Act accessibility requirements.

6.6.3.1.1 Notification

The alternatives development and screening comment period was initiated with the release of the preliminary results of the alternatives screening process published on November 10, 2022. The following methods were used to notify the general public of the public scoping activities:

- Grassroots efforts (including neighborhood- and stakeholder-requested meetings) occurred throughout the corridor and included the following:
 - Community Perspectives on Housing and Gentrification Open House, Salt Lake City (December 5, 2022)
 - Mestizo Community Mingle, Salt Lake City (December 6, 2022)
 - Glovers Lane Resident Meeting, Farmington (December 8, 2022)
 - Legislative Listening Session, Salt Lake City (December 8, 2022)
 - Farmington Resident Q&A Session, Farmington (January 5, 2023)
 - State Street Resident Meeting, Farmington (January 12, 2023)
- Yard signs, flyers, and posters were posted in 63 public locations throughout the study area (see Figure 6.6-2 for locations).
- Mailers were sent to properties with a physical mailing address within 0.25 mile of I-15. These mailers began arriving the first week of November 2022. Mailer information was in both English and Spanish.
- Social media outreach occurred on TikTok, YouTube, Facebook, Instagram, and Twitter.
 - Targeted Facebook advertising was used at key points during the comment period (between November 10, 2022 and January 13, 2022) to raise awareness of the study and the opportunity to provide comments.
 - Videos describing the study overview and scoping were posted on social media.
 - Social media outreach had a total of 94,780 organic impressions and views, and 190 comments were made through social media.
- Information regarding the alternatives development and screening comment period was posted on the project website: i15eis.udot.utah.gov.
- A UDOT press release was sent to local media outlets.

Copies of the posters, pop-up banners, lawn signs, fact sheet, flyers, and press release are included in Attachment C, *Public Involvement Materials for Draft Alternatives November 2022*, of Appendix 2A, *Alternatives Screening Report*, of this EIS.

6.6.3.1.2 Alternatives Development and Screening Materials

UDOT released virtual public alternatives development and screening content on November 10, 2022 on the project website (i15eis.udot.utah.gov) that included presentation videos and several options for providing comments. Copies of the presentation slides are included in Attachment C, *Public Involvement Materials for Draft Alternatives November 2022*, of Appendix 2A, *Alternatives Screening Report*, of this EIS.

City Council, Community Council, and Planning Commission Scoping Presentations

During the alternatives development and screening process, UDOT gave presentations at 34 city council, community council, and advisory group meetings. The presentation from the meetings is included in Attachment C, *Public Involvement Materials for Draft Alternatives November 2022*, of Appendix 2A, *Alternatives Screening Report*, of this EIS. Table 6.6-2 below summarizes the presentations by date and location. Figure 6.6-2 following the table shows the locations of presentations and signs (collateral) throughout the study area.

Equity Outreach

During the alternatives development and screening phase, the Equity Working Group was combined with the Local Area Working Group because there was overlap between the groups. The Local Area Working Group is described in Section 6.6.4, *Local Area Working Group Meetings*.

6.6.3.1.3 Public Review

During the draft alternatives public comment period, 2,890 comments were received from the public and agencies. A summary of the public and agency comments is included in Attachment D, *Draft Alternatives Comment Summary*, of Appendix 2A, *Alternatives Screening Report*, of this EIS. Full copies of all public and agency comments are provided in *I-15 EIS: Draft Alternatives Comments January 2023* on the project website. The majority of the comments received were about community impacts, property impacts, impacts to environmental justice communities, air quality impacts, noise impacts, the need for the project, future travel demand, requests for transit, and comments supporting (or regarding) actions that are outside the jurisdiction of UDOT, such as requests for changes to zoning and land use. To a lesser degree, included among those comments were some new concepts, variations on existing concepts, and comments about the screening process and screening criteria.

Some commentors requested that UDOT work with other agencies such as UTA. UTA and many other state agencies are participating agencies on this EIS as documented in the *Coordination Plan*. Many agencies provided comments during the draft alternatives development and screening process. Those comments are also included in *I-15 EIS: Draft Alternatives Comments January 2023*.

What is travel demand?

Travel demand is the expected number of transportation trips in an area. Travel demand can be met by various modes of travel, such as automobile, bus, commuter rail, carpooling, and bicycling.

Table 6.6-2. City Council, Community Council, Advisory Group, and Planning Commission Presentations

Date	Entity	Location
10/31/2022	Utah Transit Authority	250 South 600 West, Salt Lake City
11/1/2022	Davis County Commission	28 E. State St., Farmington
11/1/2022	Farmington City	160 S. Main St., Farmington
11/1/2022	Farmington City Council	160 S. Main St., Farmington
11/1/2022	Woods Cross City Council	1555 South 800 West, Woods Cross
11/1/2022	Centerville City Council	250 N. Main St., Centerville
11/1/2022	West Bountiful City Council	550 North 800 West, West Bountiful
11/2/2022	Salt Lake County	2001 S. State St., Suite N2-100, Salt Lake City
11/2/2022	Guadalupe School	Virtual
11/2/2022	Wasatch Front Regional Council	3600 Constitution Blvd., West Valley City
11/3/2022	Farmington High School	Virtual
11/4/2022	Salt Lake City Planning Department	349 South 200 East, Suite 150, Salt Lake City
11/7/2022	Central Local Area Working Group (LAWG)	550 North 200 West, Bountiful
11/8/2022	Centerville City Recreation Department	Virtual
11/8/2022	Southern LAWG	622 West 500 North, Salt Lake City
11/8/2022	Bountiful City Council	795 S. Main St., Bountiful
11/9/2022	City of North Salt Lake	10 E. Center St., North Salt Lake
11/9/2022	Northern LAWG	120 S. Main St., Farmington
11/10/2022	UDOT (Legislative Briefing)	754 North 800 West, Salt Lake City
11/14/2022	Alternatives Presentation	Virtual
11/15/2022	Alternatives Open House	1105 West 1000 North, Salt Lake City
11/15/2022	City of North Salt Lake	10 E. Center St., North Salt Lake
11/16/2022	Alternatives Open House	550 North 200 West, Bountiful
11/16/2022	Capitol Hill Neighborhood Council	280 West 500 North, Salt Lake City
11/21/2022	Salt Lake City Bicycle Advisory Board	349 South 200 East, Salt Lake City
11/30/2022	Reagan Outdoor Advertising, Inc.	1775 N. Warm Springs Rd., Salt Lake City
12/1/2022	University of Utah City and Metropolitan Planning Dept.	1255 W. Clark Ave., Salt Lake City
12/5/2022	Perspectives on Housing and Gentrification	855 California Ave., Salt Lake City
12/6/2022	NeighborWorks	631 North Temple, Salt Lake City
12/7/2022	Rose Park Community Council	1575 West 1000 North, Salt Lake City
12/8/2022	Glovers Lane Neighborhood Resident Group	43 W. Glovers Lane, Farmington
12/8/2022	Community Listening Session	155 North 1000 West, Salt Lake City
1/3/2023	Salt Lake City Council	451 S. State St., Salt Lake City
1/5/2023	Glovers Lane Neighborhood	160 S. Main St., Farmington
1/11/2023	Salt Lake City Communications and Transportation Representatives	451 S. State St., Salt Lake City
1/12/2023	Farmington State Street Residential Group	364 Clark Circle, Farmington
1/9/2023	Wasatch Front Regional Council	Virtual

Figure 6.6-2. Dates and Locations of Outreach during the Draft Alternatives Screening Process



6.6.3.2 Alternatives Development and Screening Report

The results of the Level 1 and Level 2 alternatives screening process were published for public review on May 4, 2023. On May 26, 2023, UDOT published an interactive online map showing the alternatives that were recommended for analysis in this Draft EIS.

Local Area Working Group meetings were held on May 9, 10, and 11, 2023, to review the results of the screening process with stakeholders throughout the I-15 corridor. UDOT also held several meetings with community groups, legislators, property owners, and other interested stakeholders in May to June 2023.

6.6.4 Local Area Working Group Meetings

For the I-15: Farmington to Salt Lake City EIS, UDOT established three Local Area Working Groups: a north, central, and south local area working group. The intent of the groups was to develop and engage with community members to capture the diverse viewpoints along the I-15 corridor and for the members to share study information with their communities and neighbors. UDOT solicited Local Area Working Group members that represented the environmental justice communities of minorities or people of color, low-income households, households with one or more persons with a disability, youth, and linguistically isolated residents. Additional Local Area Working Group members included those that were residents in the area, city representatives, and partnering agencies. These groups are intended to provide input on the EIS and relay project information to the community groups they represent. These groups included representatives from the following businesses and community organizations:

- Chambers of commerce
- Community councils
- Local government agencies
- School districts
- Social service organizations
- WFRC
- Residents and landowners
- Business owners
- Developers
- Youth organizations
- City and county elected officials
- City and county staff

The following Local Area Working Group meetings were held:

- **November 7, 2022 (Central); November 8, 2022 (South); and November 9, 2022 (North).** The purpose of the meeting was to provide an update on the revised purpose and need; provide an overview of conceptual alternatives, Level 1 screening process, and public comments received to date; and discuss feedback heard from constituents.
- **May 9, 2023 (North); May 10, 2023 (Central); and May 11, 2023 (South).** The purpose of the meeting was to provide an update on the results of the screening process, listen to comments, answer questions, and facilitate a transfer of information between the EIS team and community groups.

6.6.5 Other Public Outreach

Additional outreach activities have been occurring throughout the EIS process; some examples are listed below.

- **Social media.** UDOT provided project updates and posted notifications of public meetings and comment periods on Facebook, Twitter, and Instagram to reach members of the public who do not receive email notifications.
- **Frequently asked questions and public comments.** At the end of the two public comment periods for formal scoping and alternatives development and screening, UDOT posted all public comments received as appendices in the documentation. UDOT also produced responses to frequently asked questions during each comment period directly on the project website. Emails were sent notifying the public when the materials were posted on the project website.
- **Scoping summary reports posted on the project website.** In June 2022, UDOT posted the *Scoping Summary Report* and sent an email to the project email list to notify stakeholders that the report was available for review.
- **Notice of Intent.** The NOI was published in the Federal Register and posted on the project website.
- **Open-house materials.** Materials used in the scoping open houses and in the release of the *Alternatives Development and Screening Report* were posted on the project website.
- **Stakeholder meetings.** At key project milestones, UDOT held meetings with various stakeholder groups to obtain information, provide a project update, and share information about the information released at that milestone.

6.7 Project Website

The I-15: Farmington to Salt Lake City Project website, <https://i15eis.udot.utah.gov>, is accessible through the navigation menu on the home page of UDOT's website. The project website allows the public to view current project information. The website publishes all project-related materials and is updated periodically as new information becomes available. Comments can be submitted to the project's public involvement coordinator through the website at any time.

6.8 References

[FHWA] Federal Highway Administration

- 1987 Guidance for Preparing and Processing Environmental and Section 4(f) Documents. Technical Advisory T 6640.8A. https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx. October 30.

[Horrocks] Horrocks Engineers

- 2022 Mobility Memorandum for the I-15 Environmental Impact Statement from Farmington to Salt Lake City. July 7.

Chapter 7: List of Preparers

The following preparers played a significant role in the composition of this EIS. Because of the nature of this project, the list includes lead agencies, sponsoring agencies, outside consultants, and firms that were involved in and consulted regarding the I-15: Farmington to Salt Lake City Project.

Name and Title	Project Role	Education	Years of Experience
Utah Department of Transportation (UDOT)			
Tiffany Pocock, PE, Project Director	Project Manager	BS, Civil Engineering	14
Brandon Weston, Environmental Services Director	Environmental Oversight	BS, Landscape Architect	19
Rod Hess, Senior Landscape Architect	Wetlands Oversight	BA, Landscape Architecture and Environmental Planning AA, General Studies	22
Naomi Kisen, NEPA Program Oversight	Air Quality Oversight	BS, Ecology	14
Liz Robinson, Cultural Resources Program Manager	Cultural Resources Oversight	MA, Anthropology BA, Anthropology	22
David Amott, Architectural Historian	Cultural Resources Oversight	PhD, Architectural History	20
Matt Howard, Natural Resources Manager	Biological Resources Oversight	BS, Conservation and Restoration Ecology	16
Horrocks Engineers			
Shane Marshall, Chief Revenue Officer	Consultant Project Manager	BS, Civil Engineering	31
Alexis Verson, AICP Senior Transportation Planner	Active Transportation	BS, Urban Planning MS, Strategic Communications	12
Doug Graham, PE Design Engineer	Project Engineer	BS, Civil Engineering	28
David Clawson, PE Design Engineer	Project Engineer	BS, Civil Engineering	17
Michael Heaps, PE Traffic Engineer	Traffic Engineer	BS, Civil Engineering	19
Kevin Stankiewicz, PE Traffic Engineer	Traffic Engineer	BS, Civil Engineering	25
Jayson Cluff, PE Traffic Engineer	Traffic Engineer	BS, Civil Engineering	30
Katie Williams, Public Involvement Specialist	Public Involvement	BS, Sociology, Journalism, and Communications	12
Nicole Tolley, NEPA Specialist	Noise Analyst	BS, Civil and Environmental Engineering	20
Haylie Ferguson, Environmental Planner	Noise Analyst	BA, Anthropology MA, Anthropology	6
Aaron Woods	Archaeologist	MA, Anthropology BA, Anthropology	20
Ben Pearson	Architectural Historian	MDS, Historical Preservation BA, Art History	8

(continued on next page)

Name and Title	Project Role	Education	Years of Experience
HDR, Inc.			
Larry Reasch, Senior Program Manager	Engineering Design Lead	MS, Civil Engineering BS, Architectural Engineering	37
Mark Bedke, PE, Transportation Engineer	Project Engineer	BS, Civil Engineering	15
Manuel Zamora, Highway Design Engineer	Project Engineer	BS, Civil and Environmental Engineering BS, Biology	15
Nathan Beutler, Water Resources Engineer	Water Resources Engineer	BS, Civil Engineering	19
Kevin Kilpatrick, Environmental Planner	NEPA Lead	MS, Bioregional Planning BS, Applied Mathematics	17
John McPherson, AICP Transportation Environmental Services Director	NEPA Advisor QA/QC Reviewer	MA, Community and Regional Planning BA, Mathematics and Economics	32
Terry Warner, PE, Civil and Environmental Engineer	Environmental Analysis, Quality Control	MS, Civil Engineering BS, Civil and Environmental Engineering	24
Sarah Rigard, Environmental Planner	Environmental Analyst	MLA, Landscape Architecture and Environmental Planning BS, Landscape Contracting	14
Mike Perkins, Field Ecologist	Biological Analyst Wetlands Analyst	MS, Environmental Science/Studies BS, Biological, Life Science	18
Amy Croft, PhD, Ecologist	Air Quality Analyst Environmental Analyst Biological Analyst	PhD, Biology/Ecology MS, Plant Science BS, Biology	13
Jacob Flansberg, PE, Hydraulics	Water Quality Analyst	BS, Civil Engineering	6
Adrian Sellars, GIS Manager	GIS Manager and Analyst	MS, GIS BS, Environmental Planning and Management	4
Josh McMillin, Environmental Scientist	Wetlands and Section 4(f) Analyst	BS, Biology	4
Mike Parsons, PE, Traffic Noise Analysis Manager	Noise Analyst	BS, Civil Engineering	26
Mike Marchyshyn, AICP, INCE Transportation Planner	Noise Analyst	MS, Transportation Planning BS, Geography	21
Carrie Ulrich, Senior Technical Editor	Technical Editor	MS, English BS, Environmental Studies	30
Megan Trujillo, Technical Editor	Document Production	BA, Editing and Publishing	3
Cathy LaFata, Transportation Equity Director	Environmental Justice Analyst	MS, Transportation Planning BS, Psychology	38
June Lai, Transportation Planner	Environmental Justice Analyst	MS, Civil Engineering BS, Urban Studies	4

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Name and Title	Project Role	Education	Years of Experience
Lacey Wilder, Environmental Scientist	Environmental Scientist	MS, Ecology BS, Environmental Studies	8
The Langdon Group			
Dan Adams	Communications and Public Involvement Project Manager	MA, Organizational Behavior BS, Business Management	26
Siobhan Locke	Communications and Public Involvement	MA, Conflict Resolution BA, Communication Studies	17
Christina McCulloch	GIS Support and Analysis for Communications Team	BS, Cartography and GIS	27
Penna Powers			
Justin Smart, Partner/Chief Strategy Officer	Mass Communications Lead	BS, Journalism and Communications	21
Shelley Brydon	Creative Project Manager	BS, Business Management, Marketing	9
Smart Growth America			
Beth Osborne, Director, Transportation for America	Active Transportation and Community Scoping	JD, Law BA, Political Science	25
Benito Perez, AICP CTP CPM CAPP, Policy Director, Transportation for America	Active Transportation and Community Scoping	MA, Urban Planning MS, Civil Engineering	14
Stephen Coleman Kenny, Policy Associate, Transportation for America	Active Transportation and Community Scoping	MS, Public Policy	2

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Chapter 8: Distribution

The following agencies and organizations were notified that the Draft EIS was available on the project website and that an electronic copy could be provided on request.

Federal Agencies

National Park Service (Land and Water Conservation Fund)
U.S. Army Corps of Engineers
U.S. Bureau of Reclamation
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

Native American Tribes

Confederated Tribes of the Goshute Reservation
Eastern Shoshone Tribe of the Wind River Reservation
Northwestern Band of the Shoshone Nation
Shoshone-Bannock Tribes of the Fort Hall Reservation
Skull Valley Band of Goshutes
Ute Indian Tribe of the Uintah and Ouray Reservation

State Agencies

Governor's Office:
• Resource Development Coordinating Committee
Department of Natural Resources:
• Division of Outdoor Recreation

Local and Regional Agencies

Davis County
Salt Lake County
Bountiful City
Centerville City
Farmington City
City of North Salt Lake
Salt Lake City
West Bountiful City
Woods Cross City
Utah Transit Authority
Wasatch Front Regional Council
Weber Basin Water Conservancy District

Elected Officials

Senator J. Stuart Adams – Utah Senate, District 7
Senator Todd D. Weiler – Utah Senate, District 8
Senator Jen Plumb – Utah Senate, District 9
Senator Luz Escamilla – Utah Senate, District 10
Representative Paul A. Cutler – Utah House of Representatives, District 18
Representative Raymond P. Ward – Utah House of Representatives, District 19
Representative Melissa G. Ballard – Utah House of Representatives, District 20
Representative Sandra Hollins – Utah House of Representatives, District 21
Representative Jennifer Dailey-Provost – Utah House of Representatives, District 22
Lorene Miner Kamalu, Davis County Commission Chair
Jenny Wilson, Salt Lake County Mayor
Kendalyn Harris, Bountiful City Mayor
Clark Wilkinson, Centerville City Mayor
Brett Anderson, Farmington City Mayor
Brian Horrocks, City of North Salt Lake Mayor
Erin Mendenhall, Salt Lake City Mayor
Kenneth Romney, West Bountiful City Mayor
Ryan Westergard, Woods Cross City Mayor

Locations with Hard Copies

Davis County Public Library, 133 S. Main Street, Farmington
Davis County Public Library, 725 S. Main Street, Bountiful
Davis County Public Library, 45 South 400 West, Centerville
Salt Lake City Public Library, Day-Riverside Branch, 1575 West 1000 North, Salt Lake City
Salt Lake City Public Library, Marmalade Branch, 280 West 500 North, Salt Lake City
UDOT Headquarters, 4501 South 2700 West, Salt Lake City
UDOT Region One, 166 W. Southwell Street, Ogden
UDOT Region Two, 2010 South 2760 West, Salt Lake City

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Chapter 9: Responses to Comments on the Draft EIS

This chapter is a placeholder for the Final EIS. All comments received on this Draft EIS will be responded to in Chapter 9 of the Final EIS.

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