VOLUME 1

BANGERTER HIGHWAY

4100 SOUTH TO CALIFORNIA AVENUE

State Environmental Study

UDOT PIN: 18808

UDOT Project Number: S-0154(92)0

December 2023

BANGERTER

4100 S. TO CALIFORNIA AVE.

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LIST OF ACRONYMS

ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
ADA	Americans with Disabilities Act
APE	Area of Potential Effects
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practices
BOR	Bureau of Reclamation
BRT	Bus Rapid Transit
CA	Conservation Agreement
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CFI	Continuous Flow Intersection
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CPTED	Crime Prevention Through Environmental Design
CWA	Clean Water Act
DAQ	Division of Air Quality
DBA	A-Weighted Decibels
DOEFOE	Determination of Effect Finding of Effect
DWR	Utah Division of Wildlife Resources
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EWA	Enforceable Written Agreement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GPI	Gardner Policy Institute
GPS	Global Positioning System

JVA	Jordan Valley Aqueduct
JVWCD	Jordan Valley Water Conservancy District
LEQ	Equivalent Levels
LOS	Level of Service
LTS	Level of Traffic Stress
LUST	Leaking Underground Storage Tank
LWCF	Land Water Conservation Fund
NAAQS	National Ambient Air Quality Standards
NHPA	National Historic Preservation Act
NPL	National Priorities List
NRHP	National Register of Historic Places
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
MPH	Miles Per Hour
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxics
O_3	Ozone
PIO	Public Information Officer
PM	Particulate Matter
PM_{10}	Particulate Matter with a Diameter of 10 Micrometers or Less
$PM_{2.5}$	Particulate Matter with a Diameter of 2.5 Micrometers or Less
POD	Point of Diversion
RCRA	Resource Conservation and Recovery Act
RDCC	Resource Development Coordinating Committee
ROW	Right of Way
RTP	Regional Transportation Plan
SES	State Environmental Study
SGA	Smart Growth America
SHPO	State Historic Preservation Office
SIP	State Implementation Plan

SLC	Salt Lake City
SO_2	Sulfur Dioxide
SPUI	Single-Point Urban Interchange
STEAP	Screening Tool for Equity Analysis of Projects
TCP	Traditional Cultural Properties
TDS	Total Dissolved Solids
TMP	Transportation Master Plan
TNM	Traffic Noise Model
TRI	Toxic Release Inventory
TSS	Total Suspended Solids
UDDW	Utah Division of Drinking Water
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
UDSH	Utah Division of State History
UDWQ	Utah Division of Water Quality
UDWR	Utah Division of Water Rights
UGS	Utah Geological Survey
UIPA	Utah Inland Port Authority
UNHP	Utah Natural Heritage Program
UPDES	Utah Pollution Discharge Elimination System
USACE	United States Army Corps of Engineers
USC	Utah State Code
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
UTA	Utah Transit Authority
UVISION	Utah's Transportation Vision
WFRC	Wasatch Front Regional Council
WMI	Wildlife Migration Initiative
WOTUS	Waters of the United States
WVC	West Valley City

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The Utah Department of Transportation (UDOT) has prepared a State Environmental Study (SES) to analyze improvements on Bangerter Highway (SR-154) from 4100 South in West Valley City to California Avenue in Salt Lake City, Salt Lake County, Utah. An SES is an environmental document prepared for UDOT projects that are entirely state funded and documents the environmental reviews and public involvement activities undertaken while evaluating the proposed transportation improvements. UDOT uses the SES process to make informed decisions that balance project benefits and environmental impacts.

ES.2 PROPOSED ACTION

The Proposed Action includes converting Bangerter Highway to a freeway-style system with the following improvements:

- Constructing a grade-separated interchange at 4100 South with Bangerter Highway going under the cross-street, below the existing roadway surface;
- Constructing grade-separated interchanges at 3500 South, Parkway Boulevard (2700 South), SR-201, 1820 South, and California Avenue with Bangerter Highway going over the cross-streets;
- Constructing grade-separated crossings at 3100 South, 2400 South, and 2100 South with Bangerter Highway going over 3100 South and 2100 South, and 2400 South going over Bangerter Highway;
- Constructing and/or realigning frontage roads between 2400 South and 2100 South to provide additional north-south connectivity;
- Constructing northbound and southbound auxiliary lanes;
- Constructing a shared use path along Bangerter Highway between 4100 South and California Avenue; and
- Constructing north-south pedestrian and bicyclist bridges at 3500 South, 3100 South, Parkway Boulevard, 2100 South, and SR-201, with an east-west bridge at California Avenue and crossings near 4100 South, 3600 South, 2400 South, and 2200 South.

ES.2.1 STUDY AREA

The study area is comprised of approximately 1,040 acres of predominantly developed land between 4100 South and California Avenue (see FIGURE ES.1). The study area measures approximately five miles north-south and extends to adjacent intersections both east and west at all cross streets.

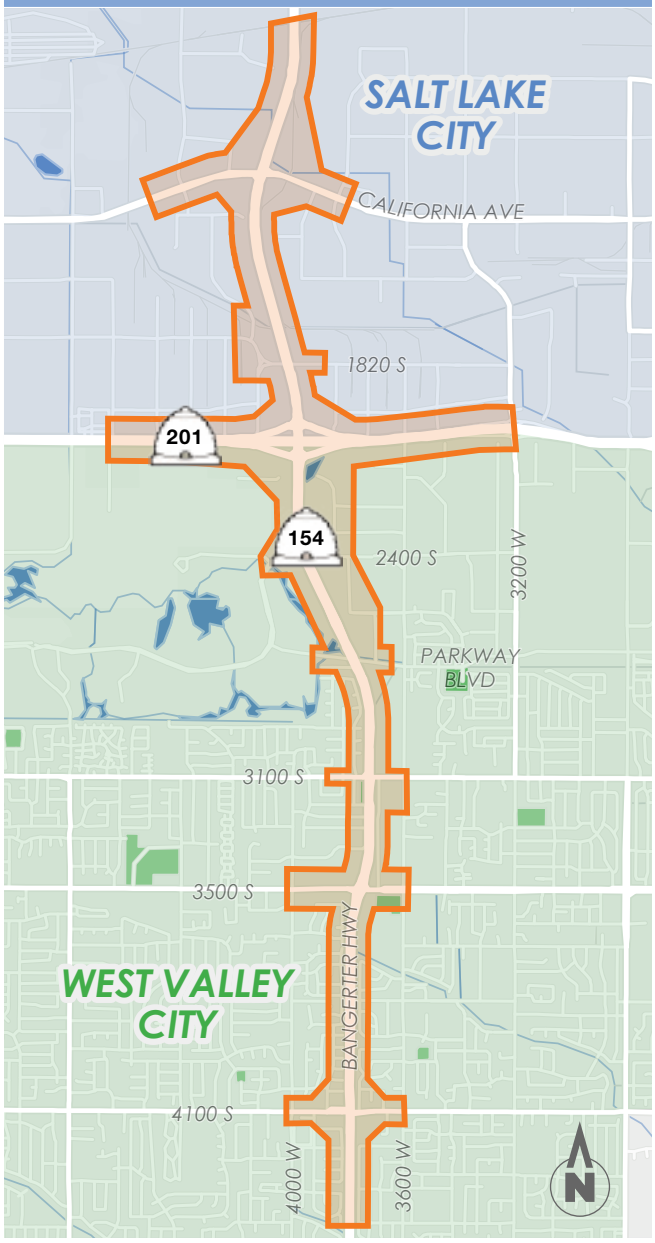
ES.3 PURPOSE AND NEED

ES.3.1 PURPOSE OF THE PROPOSED ACTION

The purpose of the Proposed Action is to:

- Provide better mobility by addressing current and future travel demand on Bangerter Highway between 4100 South and California Avenue
- Improve multi-modal community connectivity routes near Bangerter Highway
- Support the economy by maintaining accessibility to and from Bangerter Highway
- Improve safety and operations on Bangerter Highway between 4100 South and California Avenue

FIGURE ES.1 Study Area



ES.3.2 SUMMARY OF TRANSPORTATION NEED

The need for the Proposed Action is based on the following:

- Existing and future failing Level of Service (LOS) F conditions at Bangerter Highway intersections and interchanges during peak travel times
- Lack of desirable multi-modal routes near Bangerter Highway
- Increased difficulty accessing Bangerter Highway during peak travel times
- Sudden speed or lane changes associated with the current roadway configuration

For additional information, see CH 1.

ES.4 ALTERNATIVES

ES.4.1 ALTERNATIVES DEVELOPMENT

In accordance with UDOT SES guidelines as set forth in the UDOT Environmental Manual of Instruction, a discussion of the No Action Alternative and one or more Conceptual Alternatives is included in this study.

NO ACTION ALTERNATIVE

The No Action Alternative would maintain Bangerter Highway with no additional changes to its current configuration or to the intersections at 4100 South, 3500 South, 3100 South, Parkway Boulevard, 2400 South, 2100 South, SR-201, 1820 South, or California Avenue. The No Action Alternative also includes any short-term and minor restoration activities (safety and maintenance improvements, etc.) that would be required to maintain continuing operations on the existing roadways.

CONCEPTUAL ALTERNATIVES

The study team developed and evaluated a total of four Conceptual Alternatives, referred to as Alternatives A through D.

Each of the alternatives include a six-lane arterial (three travel lanes in each direction) along Bangerter Highway, grade-separated interchanges or over/underpasses at all cross streets, and a shared use path. For a detailed description of the four alternatives, see Ch 2.

ES.4.2 ALTERNATIVES SCREENING PROCESS

The screening process evaluated the four alternatives and included:

- Level 1 Screening – Purpose and Need: Evaluated the ability of each alternative to meet the purpose and need by satisfying the following four measures of effectiveness:

  1. Provide LOS D or better at interchanges on Bangerter Highway during peak travel times
  2. Provide acceptable accessibility (within 0.5 miles) to and from the Bangerter Highway Corridor
  3. Maintain an acceptable LOS (D or better) at intersections adjacent to Bangerter Highway
  4. Improve walking and biking facilities in the study area

- Level 2 Screening – Reasonability: The study team evaluated the remaining alternatives based on construction reasonability. The alternatives were evaluated based on the following measures of effectiveness:

  1. Minimizes the general estimated alternative cost
  2. Minimizes the number of residential, business, and community facility relocations
  3. Minimizes additional relocations as a result of utility conflicts
  4. Minimizes the number of affected parcels

- Level 3 Screening – Constraints: The study team evaluated three options for Alternative B based on environmental and built constraints within the study area. The options included a West Shift Option, an East Shift Option, and a Center Optimization Option. The options were evaluated based on the following measures of effectiveness:

  1. Minimizes the number of adverse effects to cultural resources
  2. Minimizes the number of residential relocations
  3. Minimizes the number of business and community facility relocations
  4. Minimizes the impacts to aquatic resources
  5. Minimizes the linear feet of the Jordan Valley Aqueduct (JVA) to be relocated and the number of ancillary facilities impacted
  6. Minimizes the linear feet of the Kearns-Chesterfield drain to be relocated
  7. Minimizes the length of railroad impacts

ES.4.3 ALTERNATIVES SCREENING SUMMARY

This section provides an overview of the alternatives screening process. The alternatives that were carried forward or eliminated at each level of screening are summarized in the paragraphs below and in Table ES.1.

LEVEL 1 - PURPOSE AND NEED

Alternatives B, C, and D met all Level 1 measures of effectiveness and were carried forward to the Level 2 screening.

Alternative A was eliminated from further study because it did not provide LOS D or better at several interchanges on Bangerter Highway during peak travel times or maintain an acceptable LOS at adjacent intersections.

LEVEL 2 - REASONABILITY

Alternative B met all Level 2 measures of effectiveness and was carried forward to the Level 3 screening.

Alternatives C and D were eliminated from further study because they failed to minimize impacts due to relocations and total number of parcels affected. Additionally, Alternatives C and D were not a reasonable expenditure of funds for the anticipated operational and safety benefits.

TABLE ES.1 Alternatives Screening Summary

A	B	C	D
Level 1 - Purpose and Need			
Eliminated ✖	Carried Forward ↓	Carried Forward ↓	Carried Forward ↓
Level 2 - Reasonability			
	Carried Forward ↓	Eliminated ✖	Eliminated ✖
Level 3 - Environmental Constraints			
	West Shift Option: Eliminated ✖	East Shift Option: Eliminated ✖	Center Optimization Option: Carried Forward ↓		

LEVEL 3 - ENVIRONMENTAL CONSTRAINTS

The Center Optimization Option of Alternative B met all Level 3 measures of effectiveness and was carried forward for detailed study.

The West Shift and East Shift Options were eliminated from further study because they adversely affected the greatest number of eligible historic properties, required the greatest number of residential, business, and community facilities relocations, and required the relocation of operational railroad facilities.

ES.5 ALTERNATIVES SELECTED FOR DETAILED STUDY

The screening process identified the following alternatives that will be carried forward for detailed study.

ES.5.1 NO ACTION ALTERNATIVE

The No Action Alternative would not meet the Purpose and Need of the project, but was carried forward for detailed analysis in order to provide a baseline evaluation with which to compare the Preferred Alternative.

ES.5.2 CONCEPTUAL ALTERNATIVE B: CENTER OPTIMIZATION OPTION

The Alternative B: Center Optimization Option begins at 4100 South and extends north to California Avenue and includes the following (see FIGURE ES.2):

- Constructing a grade-separated interchange at 4100 South with Bangerter Highway going under the cross-street, below the existing roadway surface;
- Constructing grade-separated interchanges at 3500 South, Parkway Boulevard, SR-201, 1820 South, and California Avenue with Bangerter Highway going over the cross-streets;

- Constructing grade-separated crossings at 3100 South, 2400 South, and 2100 South with Bangerter Highway going over 3100 South and 2100 South, and 2400 South going over Bangerter Highway;
- Constructing and/or realigning frontage roads between 2400 South and 2100 South to provide additional north-south connectivity;
- Constructing northbound and southbound auxiliary lanes;
- Constructing a shared use path along Bangerter Highway between 4100 South and California Avenue; and
- Constructing north-south pedestrian and bicyclist bridges at 3500 South, 3100 South, Parkway Boulevard, 2100 South, and SR-201, with an east-west bridge at California Avenue and crossings near 4100 South, 3600 South, 2400 South, and 2200 South.

Based on available information, the depth to ground water ranges from 21 feet near 4100 South to as shallow as eight feet in the northern portion of the study area. Any vertical alignment that would require excavation below the existing roadway surface to facilitate structures and/or roadway facilities has the potential to encounter ground water. Due to the high water table in the study area, no vertical alignment below the existing roadway surface was evaluated for Bangerter Highway or the cross-streets north of 4100 South. All grade-separation will occur above the existing roadway surface in these areas.

Through coordination with West Valley City, a hybrid vertical option was evaluated for the 4100 South interchange. As the depth of the water table allows for some excavation below existing grade, it has been determined that the vertical configuration of the 4100 South interchange will include 4100 South going over Bangerter Highway, with Bangerter Highway being constructed below the existing roadway surface.

ES.5.3 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

UDOT has identified the Alternative B: Center Optimization Option as the Preferred Alternative because it meets the Purpose and Need for the project, minimizes the number of relocations and affected parcels, is a reasonable expenditure of funds for the anticipated operational and safety benefits, and minimizes impacts to environmental resources and the built environment.

ES.6 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

A summary of the affected environment, environmental consequences, and mitigation commitments for the various environmental resources analyzed in the SES can be found in Table ES.2. The No Action Alternative is used as the baseline for discussing impacts.

The following resources are either not present in the study area or do not have a reasonable possibility for environmental impacts; therefore, the following resources were initially considered but not evaluated in detail:

- Farmland
- Transportation
- Paleontological
- Soils and Geology
- Section 6(f)
- Floodplains

For additional information, see Ch 3.

FIGURE ES.2 Preferred Alternative

Grade-separated interchange at 4100 South with Bangerter Highway going under the cross-street, below the existing roadway surface.

Grade-separated interchanges at 3500 South, Parkway Boulevard, SR-201, 1820 South, and California Avenue with Bangerter Highway going over the cross-streets.

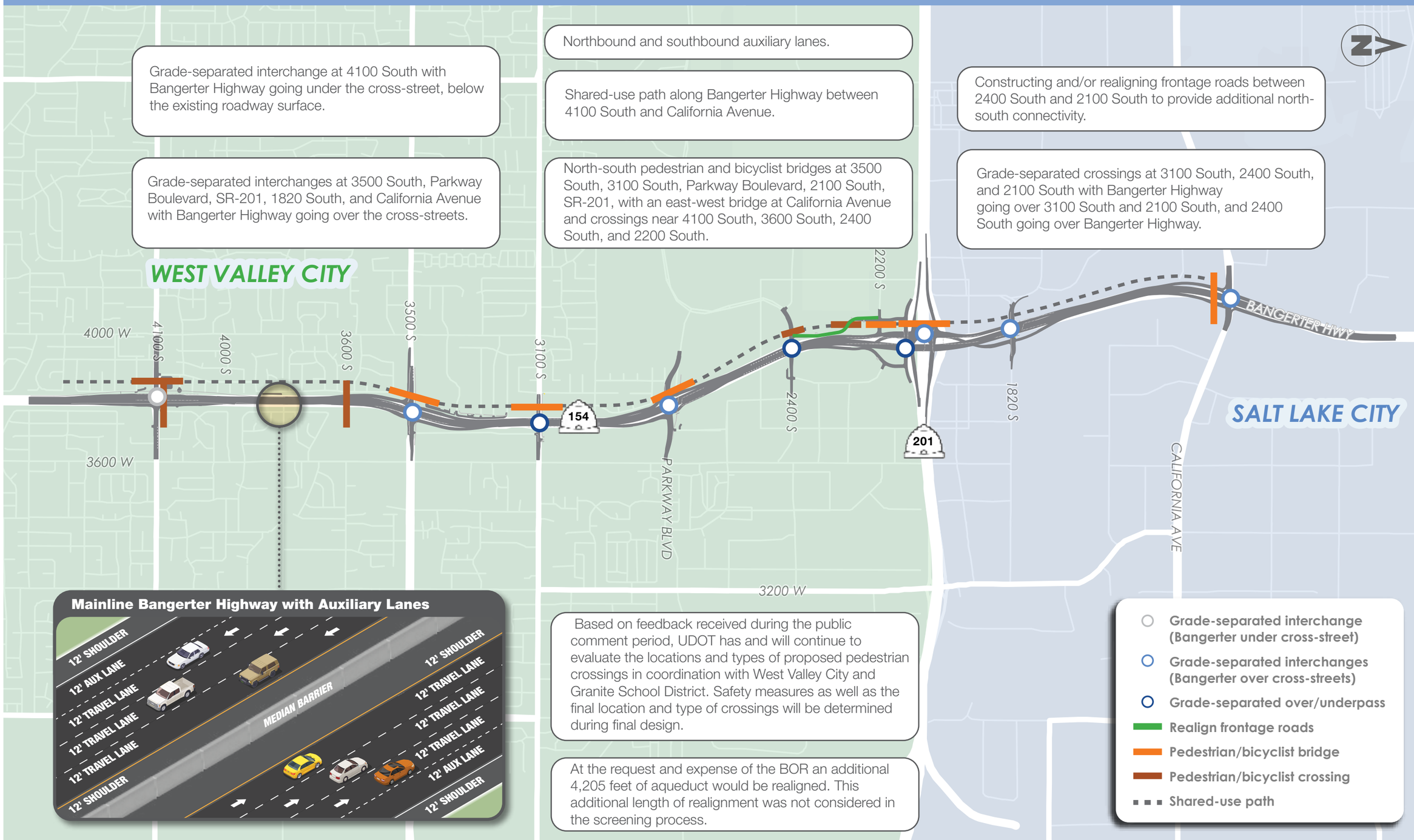
Northbound and southbound auxiliary lanes.

Shared-use path along Bangerter Highway between 4100 South and California Avenue.

North-south pedestrian and bicyclist bridges at 3500 South, 3100 South, Parkway Boulevard, 2100 South, SR-201, with an east-west bridge at California Avenue and crossings near 4100 South, 3600 South, 2400 South, and 2200 South.

Constructing and/or realigning frontage roads between 2400 South and 2100 South to provide additional north-south connectivity.

Grade-separated crossings at 3100 South, 2400 South, and 2100 South with Bangerter Highway going over 3100 South and 2100 South, and 2400 South going over Bangerter Highway.



Based on feedback received during the public comment period, UDOT has and will continue to evaluate the locations and types of proposed pedestrian crossings in coordination with West Valley City and Granite School District. Safety measures as well as the final location and type of crossings will be determined during final design.

At the request and expense of the BOR an additional 4,205 feet of aqueduct would be realigned. This additional length of realignment was not considered in the screening process.

TABLE ES.2 Comparison Summary of Alternatives

Resource	No Action Alternative	Preferred Alternative	Mitigation
Land Use	Continued development of undeveloped properties.	• The Preferred Alternative would convert approximately 92.6 acres of land currently zoned for other uses into transportation facilities. This would not affect the land use characteristics within the study area because adjacent areas would continue to be used according to established zoning and land use plan designations. Impacts to recreation facilities and public use facilities identified above would consist of partial right-of-way (ROW) acquisition. • The Preferred Alternative would be consistent with existing and future land use plans for West Valley City and Salt Lake City and would support the economy by improving access to land within the study area.	Because the Preferred Alternative would have no impacts to land use or zoning, no mitigation is proposed.

Resource	No Action Alternative	Preferred Alternative	Mitigation
Social Environment	No impact.	• The study area demographics show that a large group of the population identifies as a member of one or more minority groups. Low-income populations are present in Census Tracts 1135.36 and 1134.06. Impacts to underrepresented populations due to the Preferred Alternative were evaluated using the environmental justice principles. • The Preferred Alternative would not have disproportionately high or adverse effects to environmental justice populations. • The Preferred Alternative would improve regional connectivity by removing traditional intersections and replacing them with grade-separated options such as interchanges or overpass/underpass connections for local cross-streets. These improvements would reduce existing conflict points along Bangerter Highway which could result in improved safety for motorists, pedestrians, and bicyclists. Additionally, reducing congestion along this major north-south corridor could improve mobility during emergencies. It is not anticipated that the Preferred Alternative would increase a person's risk to bodily impairment, infirmity, illness, or death.	Residents are compensated under the Utah Relocation Assistance Act, which provides a uniform policy for the fair and equitable treatment of persons displaced by the acquisition of property by local jurisdictions and UDOT (Utah Administrative Code (UAC) 57-12-2).

Resource	No Action Alternative	Preferred Alternative	Mitigation
		• The Preferred Alternative would improve access to local communities by removing barriers across Bangerter Highway through grade-separated designs for motorists, pedestrians, and bicyclists. This could improve community connectivity and reduce the prevalence of isolation. • The Preferred Alternative requires property acquisition from a total of 381 parcels. This includes 239 residential relocations, eight business relocations, two community property acquisitions (one church and one park), four vacant parcel acquisitions, and partial acquisitions from 124 parcels.	
Economic Conditions	No impact.	• The Preferred Alternative would require the relocation of eight businesses. These relocations would have an insignificant impact on taxable sales and tax base within the community. • Converting Bangerter Highway to a grade-separated roadway would change local access to commercial properties located within and adjacent to the study area. This may increase/decrease traffic to these businesses. Long-term, this change in access may influence the types of businesses that would locate to the area. • The Preferred Alternative would support the economy by maintaining accessibility to and from Bangerter Highway.	UDOT Right-of-Way Division, under the guidance of the Utah Relocation Assistance Act, would negotiate with affected business owners directly, ensuring that fair market value is received for the required properties. UDOT would coordinate with local businesses to address construction-related congestion, potential detours, and maintenance of access.

Resource	No Action Alternative	Preferred Alternative	Mitigation
Right-of-Way and Relocations	No impact.	• Would require property acquisition from a total of 381 parcels. • Relocation of eight businesses. • Acquisition of two community facilities (one church and one park). • Relocation of 239 residences. • Potential relocation of four residences. • Would require partial acquisitions of 124 parcels, totaling approximately 95 acres.	All ROW impacts are based on preliminary design. It is anticipated that refinements and updates will be made during the final design of the project to minimize impacts. The ROW process will follow the requirements of the Utah Relocation Assistance Act. UDOT Right-of-Way Division will negotiate with property owners directly, ensuring that fair market value is received for the required properties.

Resource	No Action Alternative	Preferred Alternative	Mitigation
Pedestrians and Bicyclists	No impact.	• Would construct a new 12-foot, paved, shared-use path that would be separated from and run parallel to Bangerter Highway on the west side of the road between 4400 South and California Avenue. • Would construct underpasses or bridges across Bangerter Highway and major cross streets. • The length of the Bangerter Highway bridge over 3500 South, as well as the pedestrian bridge, would be lengthened to accommodate future UTA plans for fixed BRT stations on 3500 South. • East-west access at grade-separated intersections would be available via sidewalks on the north and south sides of most cross-streets. • Would construct a paved path along the canal south of Granger High School between Bangerter Highway and 3600 West. The paved path would terminate at Lancer Way and provide a connection to the planned pedestrian and bicyclist facilities on Lancer Way from 3600 West to 2700 West.	During final design, UDOT will finalize proposed pedestrian crossings between 4100 South and 3500 South in coordination with West Valley City and Granite School District. Specifically, UDOT will coordinate with West Valley City's Neighborhood Services Department to implement CPTED principles into the final design. UDOT would develop a plan to communicate with the public and property owners regarding the final pedestrian crossing configurations, construction schedule, street and sidewalk closures, and detours throughout construction. UDOT would work with the cities to identify pedestrian route detours that may be needed during construction. Access to residences and businesses would be maintained during construction. UDOT would maintain Americans with Disabilities Act-compliant pedestrian access, including temporary safe street crossings and sidewalks.

Resource	No Action Alternative	Preferred Alternative	Mitigation
		• The construction of the Preferred Alternative would improve multi-modal community connectivity routes near Bangerter Highway and would be designed to be compatible with pedestrian and bicyclist facilities planned in municipal and regional transportation plans.	
Air Quality	Congestion would worsen, resulting in higher levels of criteria pollutant emissions.	• Improvements to mobility and a reduction in congestion are anticipated, which are expected to decrease levels of criteria pollutants. • Under the Preferred Alternative, the quantity of MSATs that are expected to be emitted would be proportional to the vehicle miles traveled (VMT). Because improvements under the Preferred Alternative remove intersection signals and eliminate stop-and-go traffic, there would potentially be a reduction in congestion and the amount of MSAT emissions is projected to decrease.	The Preferred Alternative is identified as a Phase 1 project in the WFRC RTP. The air quality conformity report published on June 17, 2019 found that the 2050 RTP conforms to state air quality goals and objectives and therefore conforms to the State Implementation Plan (SIP). For this reason, UDOT does not expect the Preferred Alternative to adversely affect local compliance with the NAAQS. 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 2022).

Resource	No Action Alternative	Preferred Alternative	Mitigation
Noise	No impact.	• Noise levels would range from 60 dBA to 80 dBA. • Three hundred and fifty receivers would be impacted by traffic noise. • Eight of the nine evaluated noise walls are recommended and are subject to final design and balloting.	**Noise Wall 1:** This wall would be located on the east side of Bangerter Highway between 4100 South and 4400 South. The wall would be approximately 2,400 feet in length and 13 feet tall. **Noise Wall 2:** This wall would be built in two overlapping segments and would be located on the east side of Bangerter Highway between 4100 South and the North Jordan Canal. The wall would be approximately 3,753 feet in length and 13 feet tall. **Noise Wall 4:** This wall would be built in two overlapping segments and would be located on the east side of Bangerter Highway between 3500 South and 3100 South. The wall would be approximately 2,552 feet in length and 15 feet tall. **Noise Wall 5:** This wall would be located on the west side of Bangerter Highway between 2400 South and Parkway Boulevard. The wall would be approximately 2,465 feet in length and 10 feet tall. **Noise Wall 6:** This wall would be located on the west side of Bangerter Highway between Parkway Boulevard and 3100 South. The wall would be approximately 2,562 feet in length and 15 feet tall. **Noise Wall 7:** This wall would be located on the west side of Bangerter Highway between 3100 South and 3500 South. The wall would be approximately 2,325 feet in length and 14 feet tall. **Noise Wall 8:** This wall would be built in two overlapping segments and would be located on the west side of Bangerter Highway between 3500 South and 4100 South. The wall would be approximately 4,692 feet in length and 13 feet tall. **Noise Wall 9:** This wall would be located on the west side of Bangerter Highway between 4100 South and 4400 South. The wall would be approximately 2,660 feet in length and 13 feet tall.

Resource	No Action Alternative	Preferred Alternative	Mitigation
Cultural Resources	No impact.	• The Preferred Alternative would result in a finding of adverse effect to 42 architectural properties, a finding of no adverse effect to 20 architectural properties and 2 archaeological sites, and a finding of no historic properties affected for all remaining cultural resources.	UDOT will mitigate adverse effects to historic properties through a Memorandum of Agreement (MOA) with the State Historic Preservation Office (SHPO). Mitigation efforts include the completion of intensive level survey forms for affected homes and research on the history of the area.
Water Resources	No impact.	• Increase to impervious ground surface (approximately 61 acres). • The Preferred Alternative would cross over or near land associated with 16 PODs. Specific impacts would be determined during final design. • Quantity and quality of groundwater would not be impacted due to the use of storm drain systems with best management practices.	During the final design of the project, coordination with property owners would occur to determine the appropriate mitigation measures if a well head or other water right Point of Diversion (POD) is affected. Mitigaiton could include: (1) relocating a well head or surface water diversion to continue to provide irrigation water to any land that is not acquired or (2) abandoning the well and compensating the owner for the value of the associated water right.
Waters of the U.S.	No impact.	• Eleven wetlands would be impacted, resulting in approximately 2.26 acres of impacts. • Four canals and four open water features would be impacted, resulting in approximately 1.26 acres of impacts.	A CWA Section 404 permit authorization would be required for project activities within Waters of the U.S., including wetlands. Permits, licenses, variances, or similar authorization may also be required by other federal, state, and local statutes. All required permits will be fully evaluated during final design.
Wildlife	No impact.	• Removal of migratory bird habitat within undeveloped and landscaped areas.	To avoid impacts to migratory birds, removal of woody vegetation, including sagebursh, must occur before April 15 or after July 31. If removal of woody vegetation cannot occur before or after that time period, a nest survey would be required to identify active migratory bird nests within vegetation scheduled for removal. If active nests are found, the UDOT Natural Resources Manager would be coordinated with to identify what avoidance measures are appropriate for the species and context.

Resource	No Action Alternative	Preferred Alternative	Mitigation
Hazardous Materials	No impact.	• Potential to impact 11 hazardous materials sites. • Any hazardous materials encountered during construction would be dealt with in accordance with UDOT Standard Specifications and disposal would take place under the guidelines set by the UDEQ.	Before UDOT purchases right-of-way from any site containing potentially hazardous materials, a Phase 1 Environmental Site Assessment would be conducted at the site(s). If hazardous materials are identified during the Phase 1, a Phase 2 Environmental Site Assessment would be conducted.
Visual and Aesthetic	No impact.	• Some of the proposed structures and noise walls would alter the views of those living and working adjacent to Bangerter Highway. • Impacts would not constitute an overall reduction in visual quality for either viewer group and would not be considered adverse.	Aesthetic treatments required through UDOT's Landscape and Aesthetic program for color and texture will be applied to visually blend proposed facilities into the broader urban background. Aesthetic treatments consistent in color and texture with the existing Bangerter Highway aesthetic treatments to the south shall be placed on all bare ground slopes to the UDOT right-of-way line to provide slope protection and to blend new slopes into the visual background. The lighting system will use LED fixtures designed to help mitigate sky glow and light spillover.
Construction Impacts	No impact.	• Temporary congestion, delays, detours, dust and particulates, and soil erosion. • Temporary construction easements. • Temporary noise, air quality, and visual impacts.	Implementation of UDOT's Standard Specifications and BMPs would be required.

CH 1. PURPOSE AND NEED

1.1 INTRODUCTION

The Utah Department of Transportation (UDOT) has prepared a State Environmental Study (SES) to analyze improvements on Bangerter Highway (SR-154) from 4100 South in West Valley City to California Avenue in Salt Lake City, Salt Lake County, Utah. An SES is an environmental document prepared for UDOT projects that are entirely state funded and documents the environmental reviews and public involvement activities undertaken while evaluating the proposed transportation improvements. UDOT uses the SES process to make informed decisions that balance project benefits and environmental impacts.

This chapter of the SES describes the current (2021) and future (2050) conditions of the Bangerter Highway study area, summarizes transportation planning in the area, and explains the Purpose and Need of the project. The Purpose and Need provides the foundation for determining which alternatives are considered, and for selecting the Preferred Alternative, which will be discussed in Chapter 2.

1.1.1 UTAH'S TRANSPORTATION VISION

Utah's Transportation Vision (UVision) is a process for collaborating with partnering agencies 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 2020a). The Quality of Life Framework includes four outcome areas: Good Health, Strong Economy, Better Mobility, and Connected Communities (see TABLE 1.1). UDOT used the UVision process as it collaborated with agencies, local governments, and the public in the development of this SES.

1.2 PROPOSED ACTION

The Proposed Action includes converting Bangerter Highway to a freeway-style system with the following improvements (see FIGURE 2.7 in Chapter 2):

- Constructing a grade-separated interchange at 4100 South with Bangerter Highway going under the cross-street, below the existing roadway surface;
- Constructing grade-separated interchanges at 3500 South, Parkway Boulevard (2700 South), SR-201, 1820 South, and California Avenue with Bangerter Highway going over the cross-streets;
- Constructing grade-separated crossings at 3100 South, 2400 South, and 2100 South with Bangerter Highway going over 3100 South and 2100 South, and 2400 South going over Bangerter Highway;
- Constructing and/or realigning frontage roads between 2400 South and 2100 South to provide additional north-south connectivity;
- Constructing a shared use path along Bangerter Highway between 4100 South and California Avenue; and
- Constructing north-south pedestrian and bicyclist bridges at 3500 South, 3100

TABLE 1.1 UDOT Quality of Life Framework Initiatives

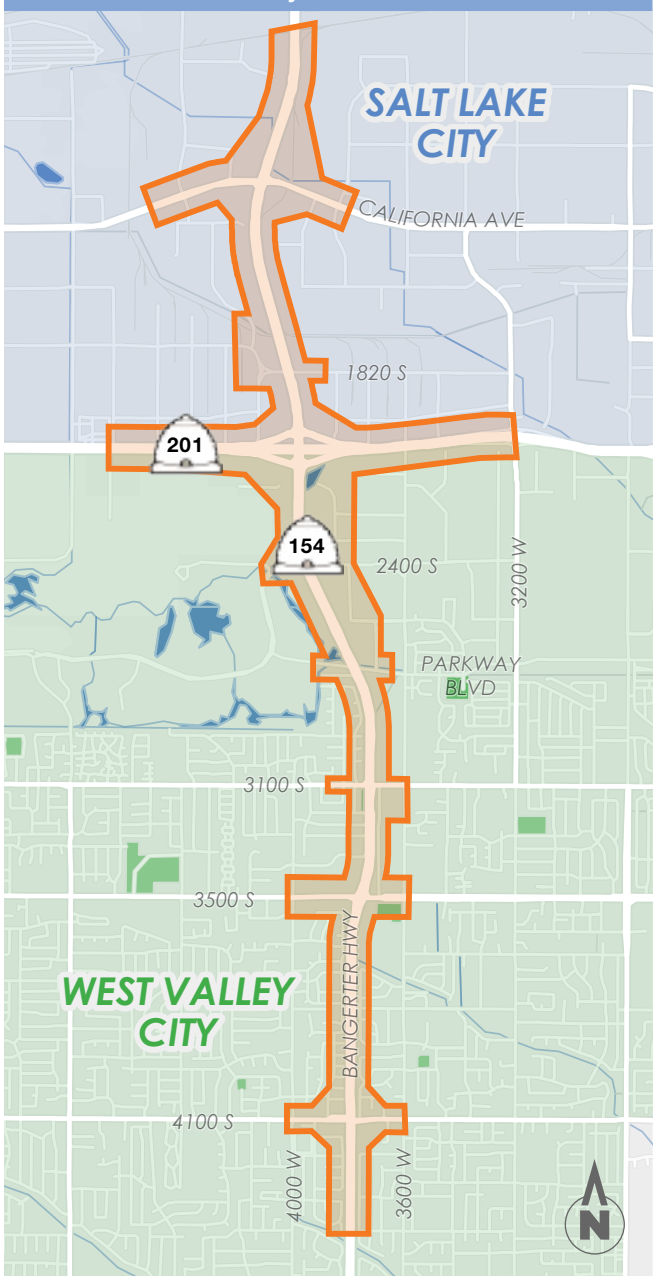
Good Health	Strong Economy	Better Mobility	Connected Communities
Safety	Accessibility	Reliable travel time	Connectivity
Public health and wellness	Transport costs	Throughput	Land use and community
Natural environment	Economic development	Risk and resiliency	Integrated systems

South, Parkway Boulevard, 2100 South, and SR-201, with an east-west bridge at California Avenue and underpasses at 4100 South, 3955 South (Edgewater Circle), 3600 South, 2400 South, and 2200 South.

1.2.1 STUDY AREA

The study area is comprised of approximately 1,040 acres of predominantly developed land between 4100 South and California Avenue (see FIGURE 1.1). The study area measures approximately 5 miles north-south and extends to adjacent intersections both east and west at all cross streets.

FIGURE 1.1 Study Area



Existing Conditions

Within the study area, Bangerter Highway is an arterial with three travel lanes in each direction and a posted speed limit of 50 miles per hour (mph). Bangerter Highway follows a generally north-south alignment and is the focus of the study area. Various land uses exist within the corridor including residences, parks, schools, golf courses, commercial properties, and industrial facilities. The southern portion of the study area is predominantly residential with some commercial hubs at the major intersections. The northern portion of the study area is comprised entirely of industrial and commercial uses.

Nine east-west roads intersect with Bangerter Highway within the study area. These roads include signalized continuous flow intersections (CFI) at 4100 South, 3500 South, 3100 South and signalized intersections at Parkway Boulevard, 2400 South, 2100 South, 1820 South, and California Avenue. A diverging diamond interchange is located at the intersection of Bangerter Highway and SR-201.

There are several existing at-grade crosswalks across Bangerter Highway within the study area, including east-west crossings at 3500 South, Parkway Boulevard, and 1820 South. Two pedestrian bridges also provide east-west access over Bangerter Highway within the study area near the intersections of 3100 South and 4100 South.

1.3 PROJECT BACKGROUND

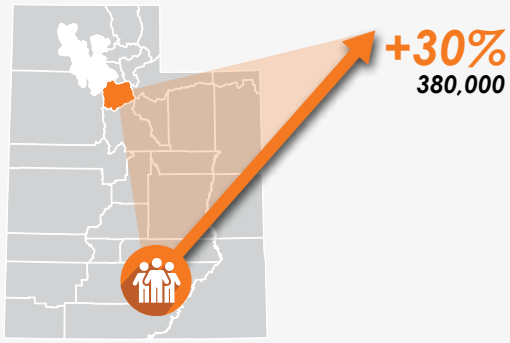
Projected future increases in population, employment, and development within and near the study area will lead to increased traffic volumes and greater traffic demand.

1.3.1 POPULATION GROWTH

Current estimates published by Kem C. Gardner Policy Institute (GPI) show a projected population increase of more than 30% (approximately 380,000 people) in

Salt Lake County by 2050 (see FIGURE 1.2). Much of this growth will occur in western Salt Lake County, near Bangerter Highway.

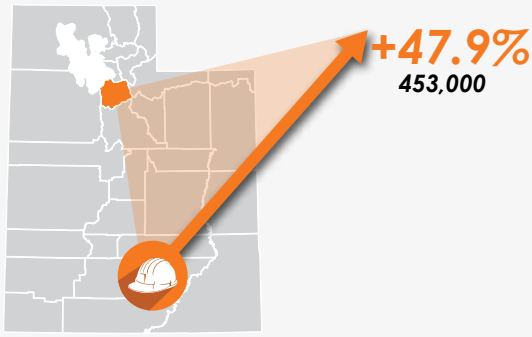
FIGURE 1.2 Population Growth



1.3.2 JOB GROWTH

Data from the January 2022 Utah Long-Term Planning Projections report published by GPI show a projected employment increase of 47.9% (approximately 453,000 jobs) in Salt Lake County by 2050 (see FIGURE 1.3).

FIGURE 1.3 Job Growth



The area northwest of SR-201 (beyond the study area) is zoned light and heavy manufacturing with the Utah Inland Port Authority (UIPA). The UIPA utilizes air, rail, and freight systems to move goods.

The UIPA area designation and associated system of logistical connections will continue to attract industrial type facilities. According to Utah Department of Workforce Services, employment growth in the Salt Lake region is expected to increase in manufacturing, wholesale and retail trade, transportation and warehousing, and construction. Combined, these industries are projected to increase annual employment in the Salt Lake region.

1.3.3 TRANSPORTATION PLANNING

Increased growth of an area requires continual transportation planning to identify projects that would maintain mobility of the transportation system. The Wasatch Front Regional Council (WFRC), UDOT, Salt Lake County, West Valley City, and Salt Lake City are responsible for transportation planning within the study area. UDOT and the cities are responsible for implementing recommended improvements within their respective jurisdictions.

1.4 WFRC REGIONAL TRANSPORTATION PLAN

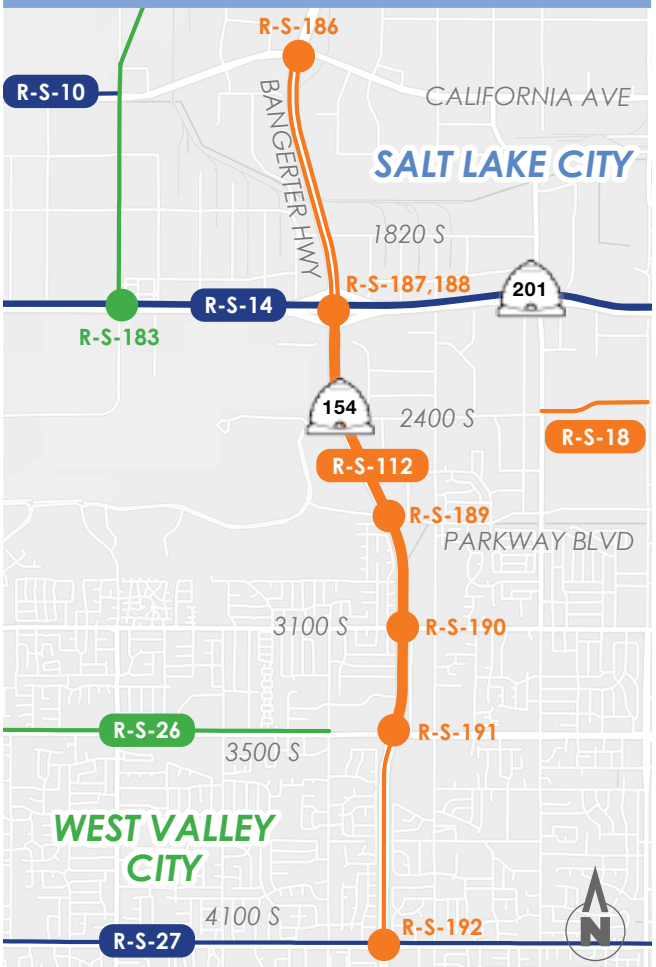
WFRC is responsible for developing a 30-year fiscally constrained regional transportation plan (RTP) for the Salt Lake City-West Valley City Urbanized Area based on a comprehensive, region-wide transportation system analysis. The RTP analysis includes roadway, transit, biking, and walking facilities.

Improvements listed in the WFRC RTP 2019-2050 (WFRC 2019) within the study area are identified as Phase 1 (2019-2030) funding, unless otherwise stated.

The WFRC RTP identifies roadway projects at the intersections of Bangerter Highway and 4100 South, 3500 South, Parkway Boulevard, and California Avenue as new construction (IDs: R-S-192, R-S-191, R-S-189, and R-S-186 respectively) along with system-to-system interchange improvements at Bangerter Highway and SR-201 (ID:R-S-187), frontage roads between 3500 South and California Avenue (ID: R-S-112), and a grade-separated overpass at the intersection of Bangerter Highway and 3100 South (ID: R-S-190). Other surrounding roadway transportation projects from the WFRC RTP can be seen in FIGURE 1.4.

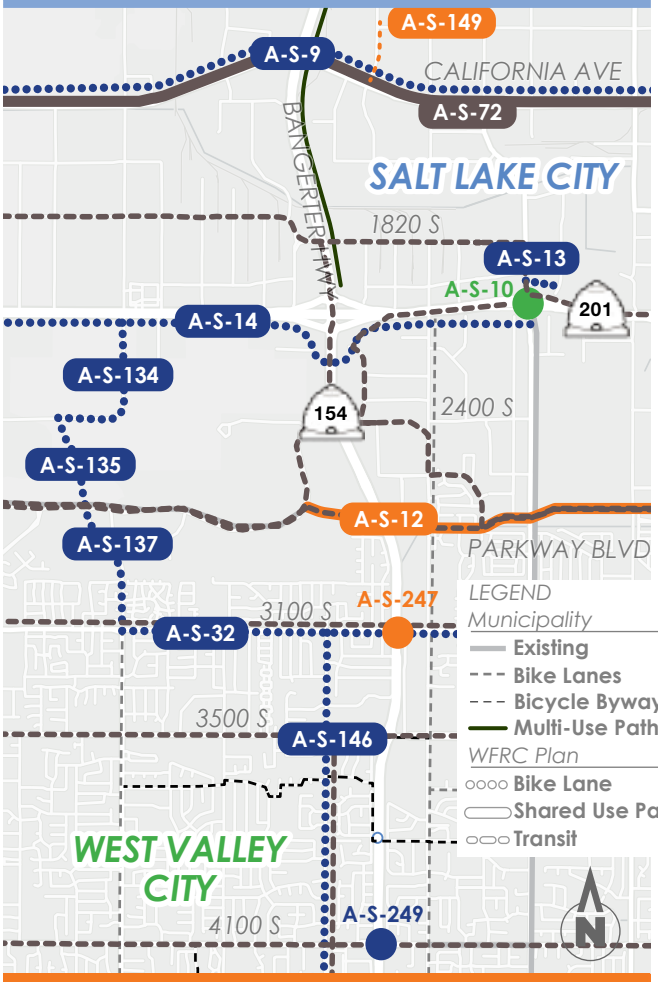
Multi-modal enhancements, including transit, biking, and walking facilities, are planned within the study area. Biking and walking enhancements are identified in

FIGURE 1.4 Regional Roadway Transportation Plan



Phase 1	
R-S-18	2400 South, New Construction
R-S-186	Bangerter Hwy Interchange, Construction
R-S-187	Bangerter Hwy Interchange (System-to-System), Interchange Improvements
R-S-188	Bangerter Hwy Interchange (Upgrade), Interchange Improvements)
R-S-189	Bangerter Hwy Interchange, Construction
R-S-190	Bangerger Hwy Interchange, Grade-Seperated Crossing
R-S-191	Bangerter Hwy Interchange, Construction
R-S-192	Bangerter Hwy Interchange, Construction
Phase 2	
R-S-14	SR-201, Widening
R-S-27	4100 South, Operational
Phase 3	
R-S-26	3500 South, Widening
R-S-183	4800 West Overpass, Grade-Seperated Crossing

FIGURE 1.5 Multi-Modal Plans near Bangerter Highway



Phase 1	
A-S-12	California Avenue, Shared Use Path
A-S-149	3800 West, Bike Lane
A-S-247	3100 South, At-Grade Crossing
Phase 2	
A-S-9	California Ave, At-Grade Crossing
A-S-13	SR-201 North Frontage Road, Bike Lane
A-S-14	SR-201 South Frontage Road, Bike Lane
A-S-32	3100 South/Rosa Parks Drive, Bike Lane
A-S-134	4800 West, Bike Lane
A-S-135	4800 West, Bike Lane
A-S-137	Coporate Park Drive, Bike Lane
A-S-146	4000 West, Bike Lane
A-S-249	4100 South, Overhead Crossing
Phase 3	
A-S-10	3200 West, 3200 West At-Grade Crossing
Unfunded	
A-S-72	California Ave, Shared Use Path

the WFRC RTP at the intersections of Bangerter Highway and 4100 South and 3100 South (IDs: A-S-249 and A-S-247). New biking corridors are identified at 4100 South, 3100 South, 2100 South, and California Avenue (IDs: A-S-41, A-S-32, A-S-14, and A-S-9). A shared use path has been identified along Parkway Boulevard (ID: A-S-27) within the study area.

The WFRC RTP 2019-2050 identifies new transit construction along 4100 South, 3500 South, and Parkway Boulevard for Phase 2 (2031-2040) funding (IDs: T-S-38, T-S-37, and T-S-35).

The revised WFRC RTP will be published in 2023. The study team has coordinated with WFRC to ensure this project aligns with the goals identified in the revised plan. Other surrounding transit, walking, and biking projects from the WFRC RTP can be seen in FIGURE 1.5.

1.4.1 MUNICIPAL TRANSPORTATION PLANNING

West Valley City and Salt Lake City are responsible for local multi-modal transportation planning within their municipalities. The Transportation Master Plans (TMPs) for both cities align with WFRC's RTP and show planned new construction within the study area (see FIGURE 1.5).

1.5 PURPOSE AND NEED

The Purpose of and Need for this SES are consistent with UDOT's Quality of Life Framework and prioritize Good Health, Strong Economy, Better Mobility, and Connected Communities.

1.5.1 PURPOSE

The Purpose of the Proposed Action is to:

- Provide better mobility by addressing current and future travel demand on Bangerter Highway between 4100 South and California Avenue
- Improve multi-modal community connectivity routes near Bangerter Highway
- Support the economy by maintaining accessibility to and from Bangerter Highway
- Improve safety and operations on Bangerter Highway between 4100 South and California Avenue

1.5.2 NEED

For the Bangerter Highway SES, UDOT has identified the following needs that will be addressed with the Proposed Action.

- Existing and future failing Level of Service (LOS) F conditions at Bangerter Highway intersections and interchanges during peak travel times
- Lack of desirable multi-modal routes near Bangerter Highway
- Increased difficulty accessing Bangerter Highway during peak travel times
- Sudden speed or lane changes associated with the current roadway configuration

1.6 DETAILED DESCRIPTION OF TRANSPORTATION NEEDS

This section provides a discussion of the transportation deficiencies, or "needs," for the Proposed Action. Needs are evaluated by analyzing existing roadway performance as well as roadway performance in the future (2050). Future roadway performance is analyzed as if the Proposed Action were not constructed (No Action condition).

The 2050 traffic conditions were estimated using the WFRC travel demand model. The travel demand model assumed a current analysis year of 2021 and compared current traffic conditions to a 2050 model year for future conditions using WFRC model inputs. The No Action condition assumed that all planned projects on the WFRC RTP would be completed by 2050 except for the proposed improvements that are the subject of this SES (see FIGURE 1.4). The No Action condition also included short-term and minor restoration activities (safety and maintenance improvements, etc.) that maintain continuing operations of the existing roadways. For more detailed

information on traffic modeling and operations, see the Bangerter Highway Existing and 2050 No Build Traffic Analysis in the Appendix.

1.6.1 TRAFFIC CONDITIONS

Transportation agencies use LOS, a qualitative measurement, to measure the operational performance of a road or intersection. LOS characterizes the traffic operations of a transportation facility by looking at factors such as speed, average travel delay, travel times, and freedom to maneuver. LOS ranges from A to F, with LOS A representing the best operating conditions (almost no congestion or delay) and LOS F representing the worst operating conditions (traffic demand exceeds capacity and the facility experiences long queues and delays) (see FIGURE 1.6). LOS E and F are considered failing conditions.

Intersection LOS is determined by the amount of extra time it takes, or the delay, to pass through an intersection as a result of starts and stops associated with the intersection control, such as stop signs or signals.

EXISTING (2021) FAILING CONDITIONS AT BANGERTER HIGHWAY INTERSECTIONS

The existing at-grade intersections of Bangerter Highway and 3500 South, Parkway Boulevard, 2400 South, 2100 South, SR-201, and California Avenue operate at failing conditions during either the AM or PM peak hour. These failing conditions limit access to Bangerter Highway (see FIGURE 1.7, FIGURE 1.8, TABLE 1.2, and the Existing and 2050 No Build Traffic Analysis in the Appendix).

FUTURE (2050) FAILING CONDITIONS AT BANGERTER HIGHWAY INTERSECTIONS

By 2050, the existing at-grade intersections of Bangerter Highway and 4100 South, 3100 South, Parkway Boulevard, 2400 South, 2100 South, SR-201, 1820 South, and California Avenue are projected to operate at failing conditions during either the AM or PM peak hour, with long delays. These failing conditions limit access to Bangerter Highway (see FIGURE 1.7, FIGURE 1.8, TABLE 1.2, and the Future Build Traffic Analysis in the Appendix).

FIGURE 1.6 Level of Service Description

LOS	Intersection Delay (sec/veh)	Traffic Conditions
A	0 ≤ 10	**Free Flow**: Low volumes, no delays
B	10 ≤ 20	**Stable Flow**: Speeds restricted by travel conditions, minor delays
C	20 ≤ 35	**Stable Flow**: Speeds and maneuverability closely controlled because of higher volumes
D	35 ≤ 55	**Stable Flow**: Speeds considerably affected by change in operating conditions, high-density traffic restricts maneuverability, volume near capacity
E	55 ≤ 80	**Unstable Flow**: Low speeds, considerable delay, volume at or slightly over capacity
F	> 80	**Forced Flow**: Very low speeds, volumes exceed capcity, long delays with stop-and-go traffic

1.6.2 LACK OF MULTI-MODAL FACILITIES

The Good Health outcome area of UDOT's Quality of Life Framework includes safety considerations and accommodations for bicyclists and pedestrians. During the Smart Growth America Study (SGA 2022) workshops, the Bangerter Highway corridor was identified by many participants as being a barrier to east-west connectivity for residents. Additionally, the Smart

FIGURE 1.7 Bangerter Highway Existing (2021) and Projected (2050) AM LOS

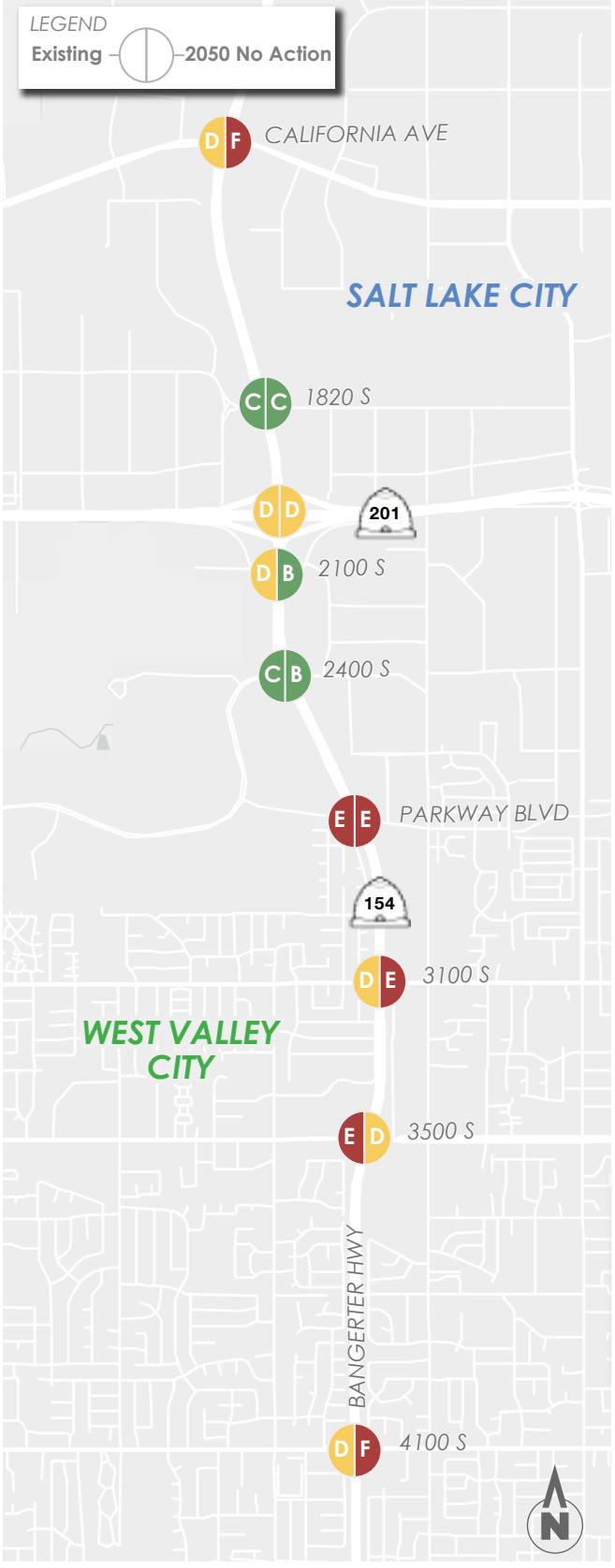


FIGURE 1.8 Bangerter Highway Existing (2021) and Projected (2050) PM LOS

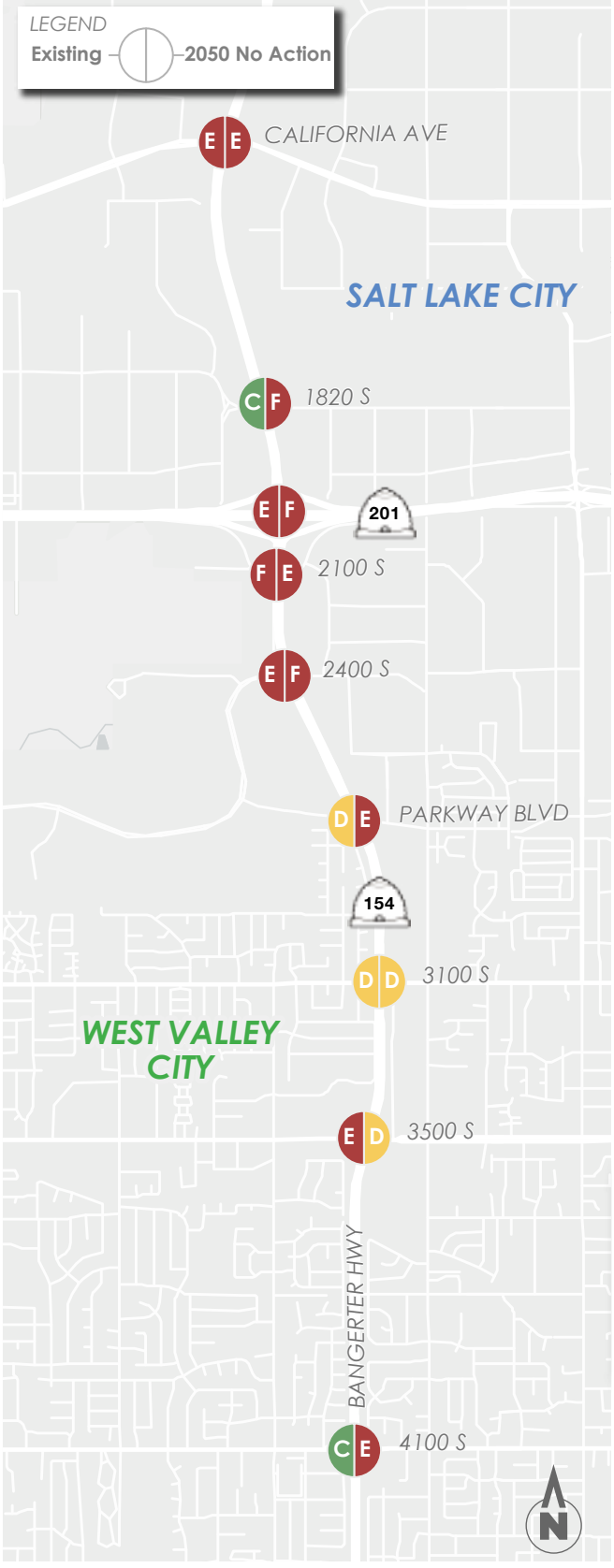


TABLE 1.2 Existing and 2050 Intersection LOS and Delay on Bangerter Highway

Intersection	Existing AM LOS/Delay (sec)	2050 AM LOS/Delay (sec)	Existing PM LOS/Delay (sec)	2050 PM LOS/Delay (sec)
California Avenue	D/43	F/183	E/77	E/84
1820 South	C/33	C/35	C/35	F/149
SR-201	D/43	D/45	E/72	F/101
2100 South	D/44	B/18	F/92	E/80
2400 South	C/27	B/18	E/64	F/85
Parkway Boulevard	E/64	E/78	D/38	E/75
3100 South	D/39	E/42	D/55	D/37
3500 South	E/62	D/40	E/78	D/54
4100 South	D/49	F/97	C/35	E/76

Growth America Study, the Salt Lake City Pedestrian and Bicycle Master Plan (Salt Lake City 2015), the West Valley City Active Transportation Plan (2020), and WFRC's RTP have identified a need for safe and comfortable pedestrian and bicycle facilities that cross Bangerter Highway (see FIGURE 1.5 for planned facilities).

At some locations, such as 3500 South in West Valley City, the existing pedestrian and bicycle accommodations cross 10 traffic lanes on Bangerter Highway, making the crossing undesirable for many bicyclists and pedestrians (see FIGURE 1.9 for existing facilities).

In order to improve awareness of pedestrians and bicyclists using local roads, there is a need to better transition vehicle traffic from Bangerter Highway to neighborhood streets. This can be done through visual and design cues that will reduce speeds and increase line of sight for vehicles to see pedestrians and bicyclists.

Transit facilities within the study area include bus routes along 4100 South, 3500 South, 3100 South, 2400 South, and 1820 South (see FIGURE 1.9). There is only one north-south bus route along Bangerter Highway between 2400 South and 1820 South. In general, the Bangerter corridor lacks north-south multimodal facilities.

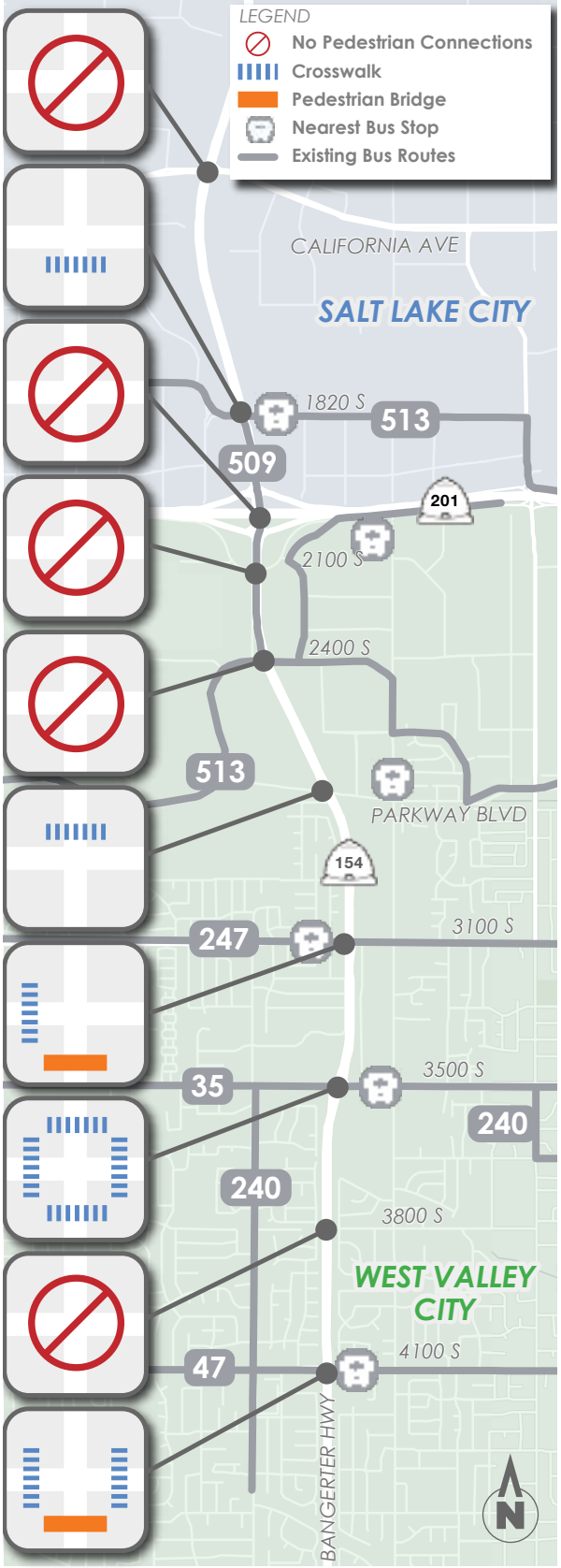
1.6.3 TRANSPORTATION DEFICIENCIES

By 2050, the population in Salt Lake County is expected to increase by 30% (approximately 380,000 people) to a total of 1,572,400 people (see FIGURE 1.2). Much of the current development in Salt Lake County is occuring on the west side of the county. This growth requires additional connectivity for communities to access employment and service locations. Additionally, job growth is expected to increase by 47.9% from approximately 945,900 jobs to 1,398,900 jobs by 2050 (see FIGURE 1.3).

By 2050, future population and job growth will result in increased traffic volumes in the study area. Daily traffic volumes on Bangerter Highway are projected to grow from 46,000 to 58,000 vehicles per day, an increase of 27%. However, this increase is limited by the available capacity on Bangerter Highway. The current configuration of Bangerter Highway as an arterial with at-grade intersections is insufficient to support regional growth and travel demands. Existing roadways and intersections are not compatible with a freeway-style system on Bangerter Highway.

The current configuration of Bangerter Highway is a three-lane roadway in either direction with a posted speed limit of 50 mph. Nine at-grade signalized intersections

FIGURE 1.9 Bangerter Highway Existing Multi-Modal Facilities



occur within the study area, with several intersections spaced less than one mile apart (see FIGURE 1.9). Sudden speed or lane changes associated with these stop-and-go conditions limit the safety and operations on Bangerter Highway within the study area. The current configuration of these intersections is incompatible with a freeway-style system on Bangerter Highway.

1.7 REVIEW OF PURPOSE AND NEED

The purpose and supporting needs of the Proposed Action are summarized in TABLE 1.3.

TABLE 1.3 Purpose and Need

Purpose	Need	Quality of Life Framework
Provide better mobility by addressing current and future travel demand on Bangerter Highway between 4100 South and California Avenue	Existing and future failing Level of Service (LOS) F conditions at Bangerter Highway intersections and interchanges during peak travel times	Better Mobility
Improve multi-modal community connectivity routes near Bangerter Highway	Lack of desirable multi-modal routes near Bangerter Highway	Better Mobility/Connected Communities
Support the economy by maintaining accessibility to and from Bangerter Highway	Increased difficulty accessing Bangerter Highway during peak travel times	Strong Economy
Improve safety and operations on Bangerter Highway between 4100 South and California Avenue	Sudden speed or lane changes associated with the current roadway configuration	Good Health

CH 2. ALTERNATIVES

2.1 INTRODUCTION

Chapter 2 discusses the No Action Alternative, the Conceptual Alternatives, and outlines the process used to select the Preferred Alternative, which will move forward for detailed study.

2.2 ALTERNATIVES DEVELOPMENT AND SCREENING

Except for the improvements that are the subject of this SES, each alternative assumes that the identified projects in the WFRC RTP (WFRC 2019), the West Valley City TMP (West Valley City 2015), and the Salt Lake City TMP (Salt Lake City 1996) would be constructed and operational by 2050.

2.2.1 NO ACTION ALTERNATIVE

The No Action Alternative would maintain Bangerter Highway with no additional changes to its current configuration or to the intersections at 4100 South, 3500 South, 3100 South, Parkway Boulevard, 2400 South, 2100 South, SR-201, 1820 South, or California Avenue. The No Action Alternative also includes any short-term and minor restoration activities (safety and maintenance improvements, etc.) that would be required to maintain continuing operations on the existing roadways.

2.2.2 CONCEPTUAL ALTERNATIVES

The study team developed and evaluated a total of four Conceptual Alternatives, referred to as Alternatives A through D.

Each of the alternatives include a six-lane arterial (three travel lanes in each direction) along Bangerter Highway, grade-separated interchanges or over/underpasses at all cross streets, and a shared use path. Specifics for each alternative are summarized below:

Alternative A – Grade-separated interchanges and a four-lane frontage road system (two lanes in each direction) between 4100 South and California Avenue.

Alternative B – Grade-separated interchanges between 4100 South and California Avenue.

Alternative C – Grade-separated interchanges between 4100 South and California Avenue and a four-lane frontage road system (two lanes in each direction) between 3500 South and 1820 South.

Alternative D – Grade-separated interchanges between 4100 South and California Avenue and a single-lane northbound frontage road between 3100 South and Parkway Boulevard and a a single-lane southbound frontage road between 3100 South and 3500 South.

Each of the Conceptual Alternatives are shown in FIGURE 2.1 - FIGURE 2.4.

FIGURE 2.1 Alternative A

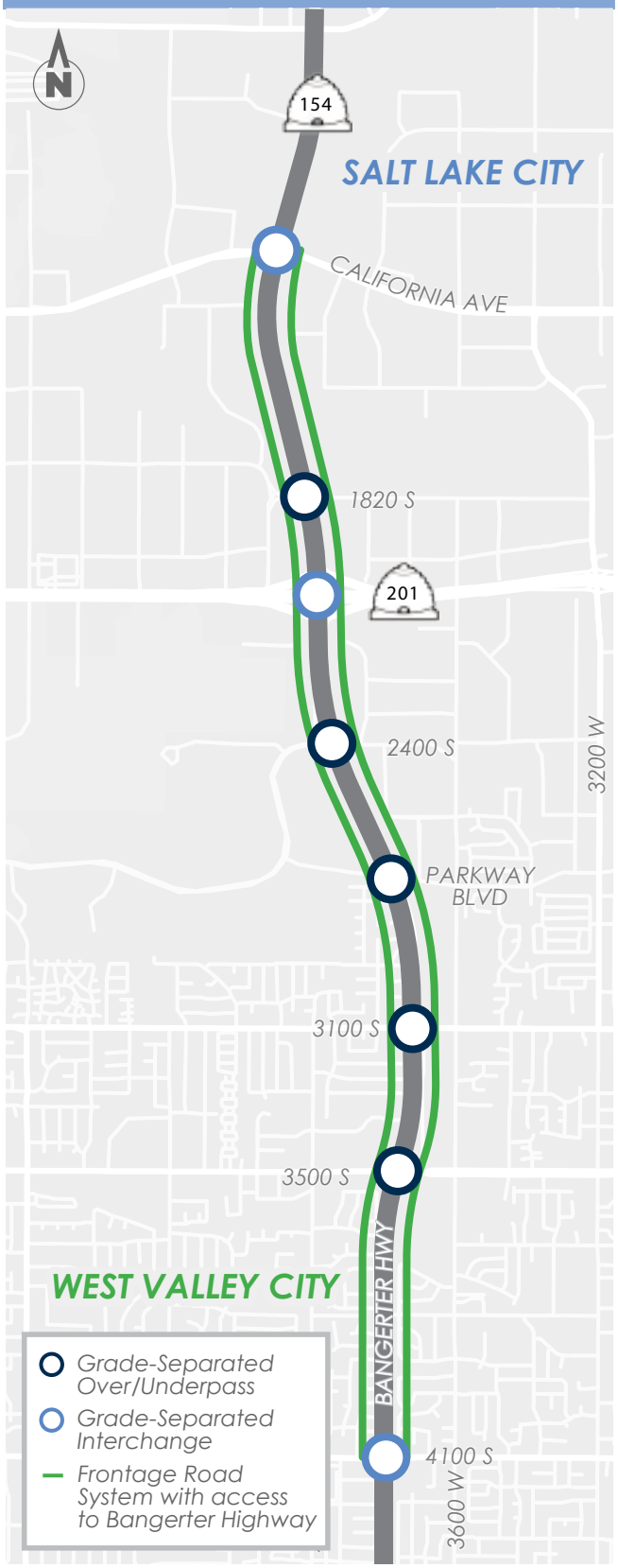


FIGURE 2.2 Alternative B

FIGURE 2.3 Alternative C

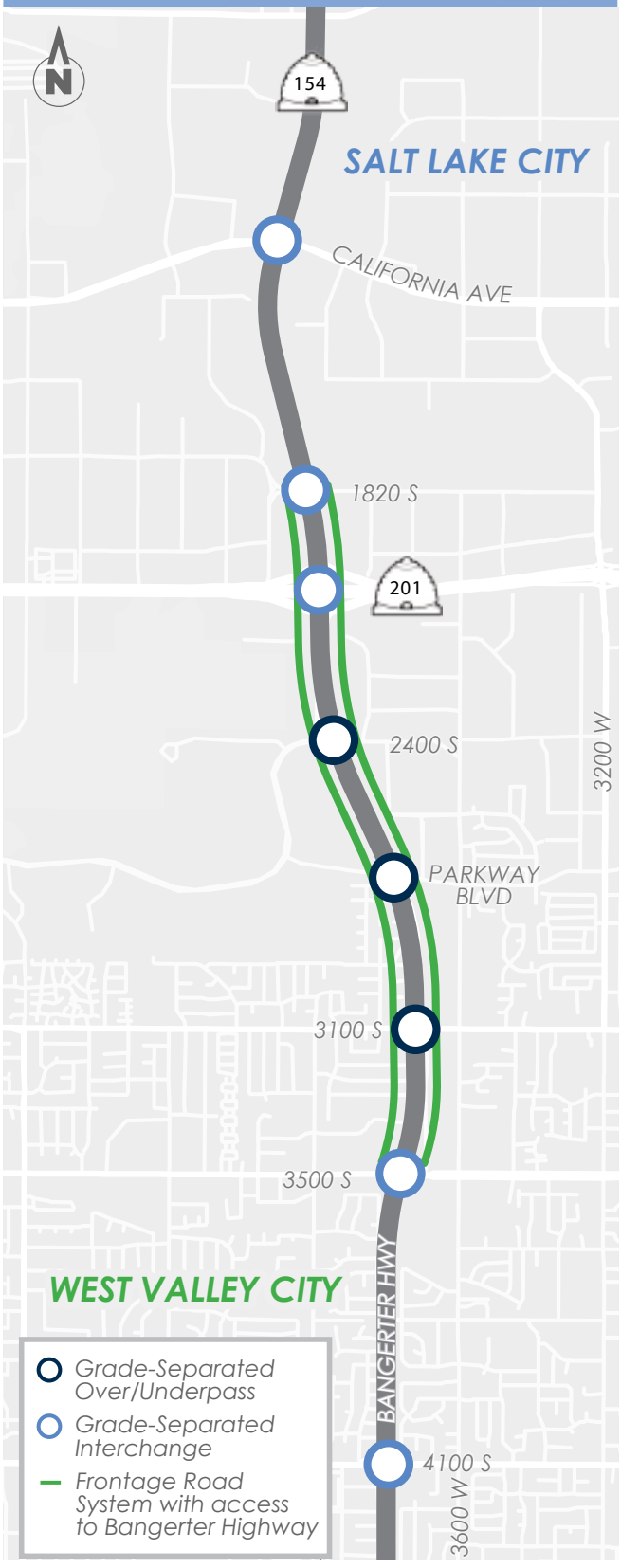


FIGURE 2.4 Alternative D

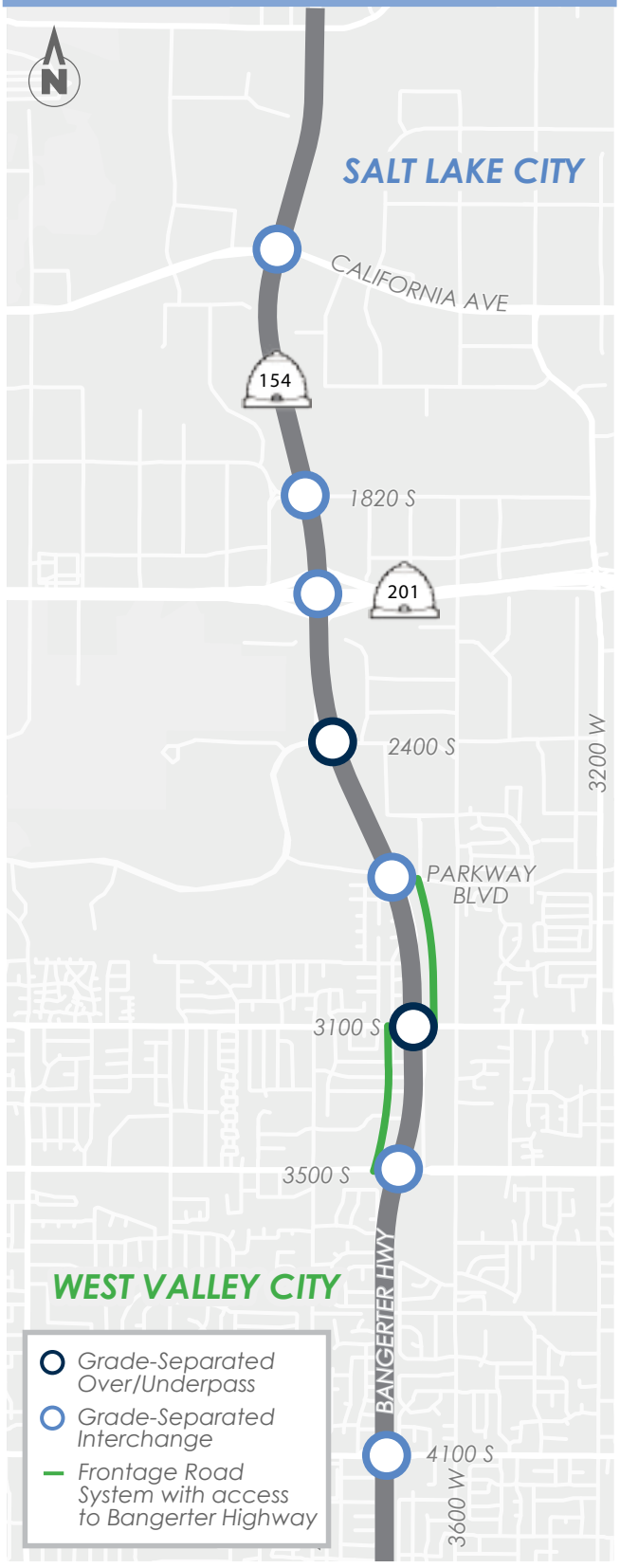
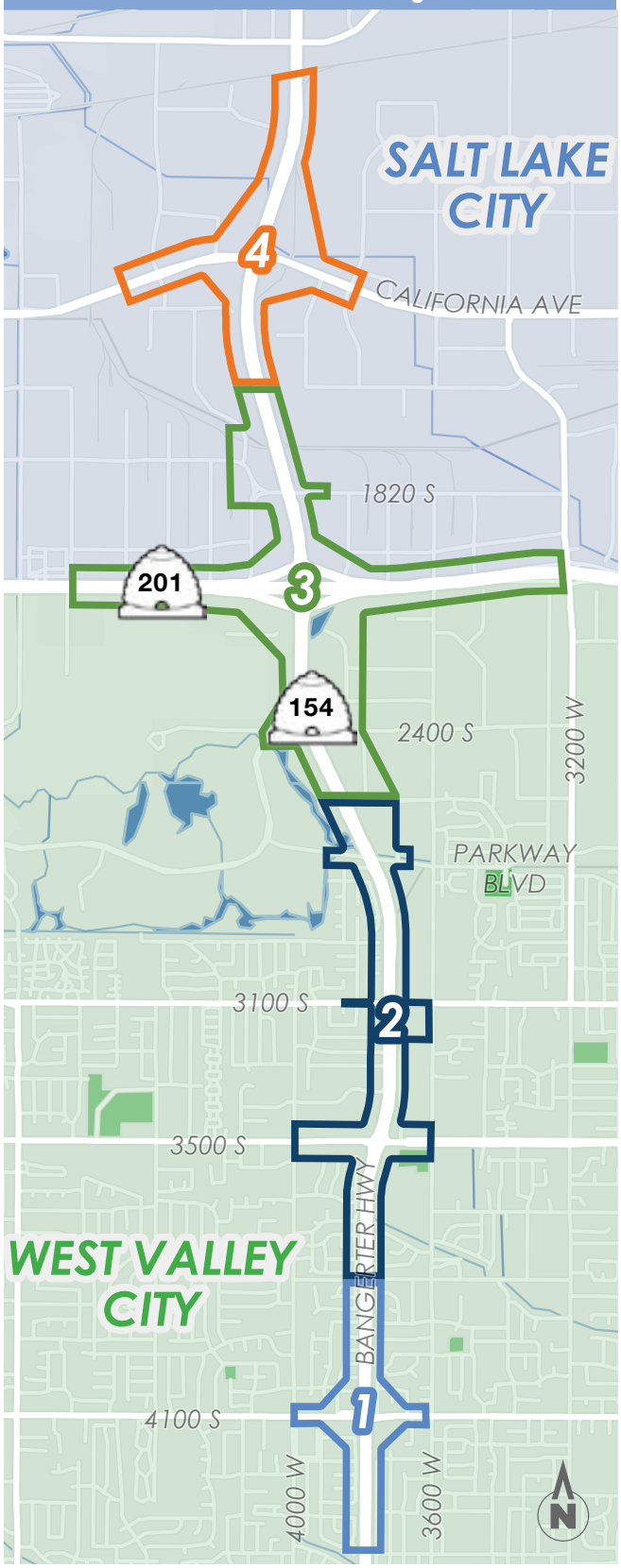


FIGURE 2.5 Alternative Segments



2.2.3 ALTERNATIVES SCREENING

LEVEL 1 — PURPOSE AND NEED

Each alternative was evaluated for three levels of screening. If it failed at any level, it was not carried forward to the next screening level. The levels included:

- Level 1: Purpose and Need
- Level 2: Reasonability
- Level 3: Environmental Constraints

Additionally, in order to assist in evaluating traffic operations within the local network, Bangerter Highway was divided into four segments within the study area (see FIGURE 2.5). The segments include:

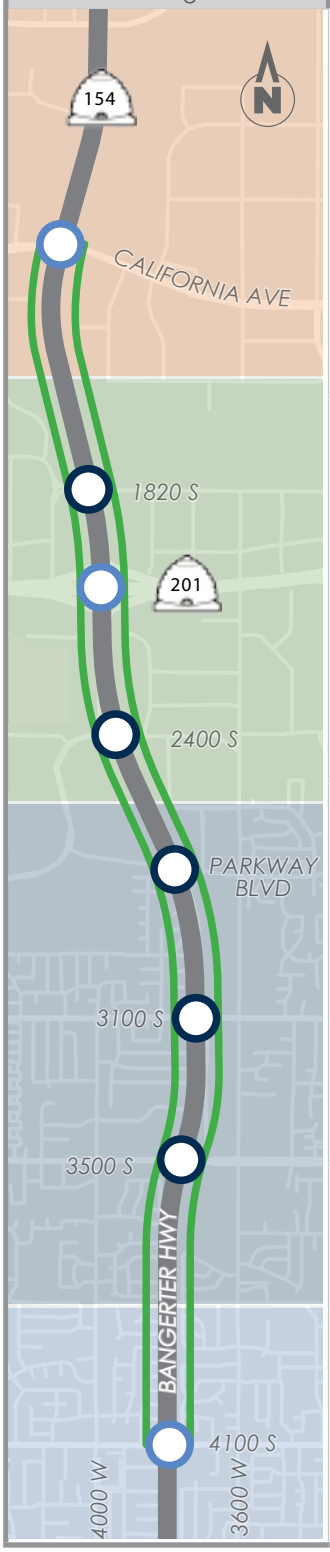
- Segment 1: 4100 South
- Segment 2: 3500 South to Parkway Boulevard
- Segment 3: 2400 South to 1820 South
- Segment 4: California Avenue

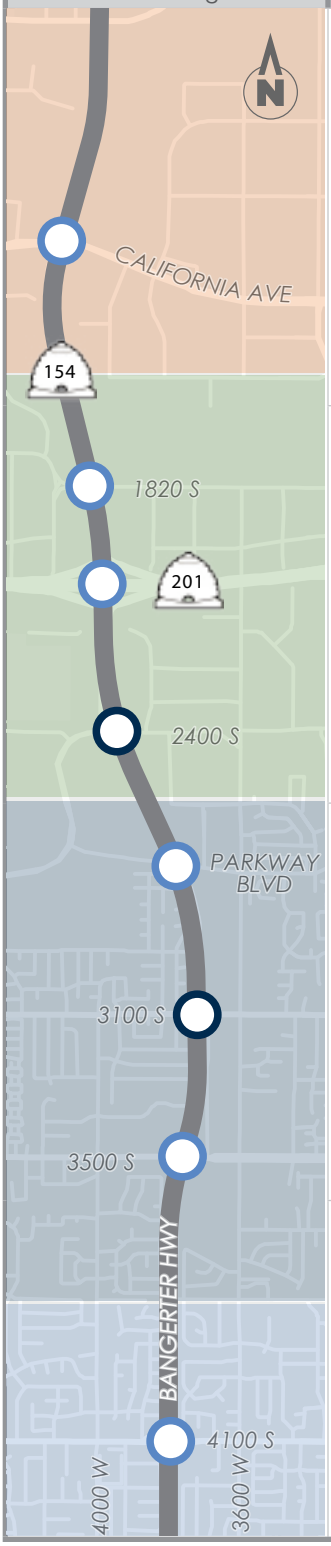
The study team evaluated how well each Conceptual Alternative met the Purpose and Need, as described in Chapter 1 (see TABLE 1.3). For an alternative to be considered effective, it needed to satisfy the following four measures of effectiveness:

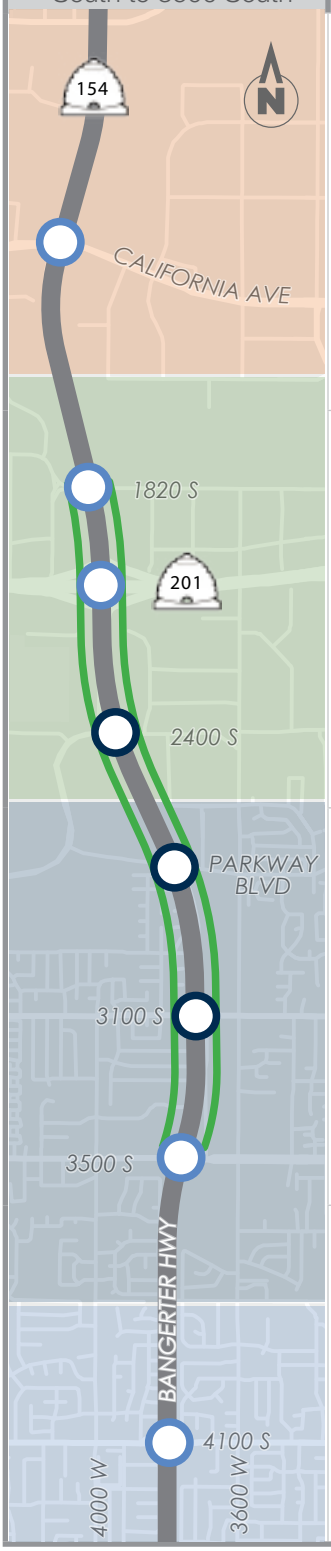
- Provide LOS D or better at interchanges on Bangerter Highway during peak travel times
- Provide acceptable accessibility (within 0.5 miles) to and from the Bangerter Highway Corridor
- Maintain an acceptable LOS (D or better) at intersections adjacent to Bangerter Highway
- Improve walking and biking facilities in the study area

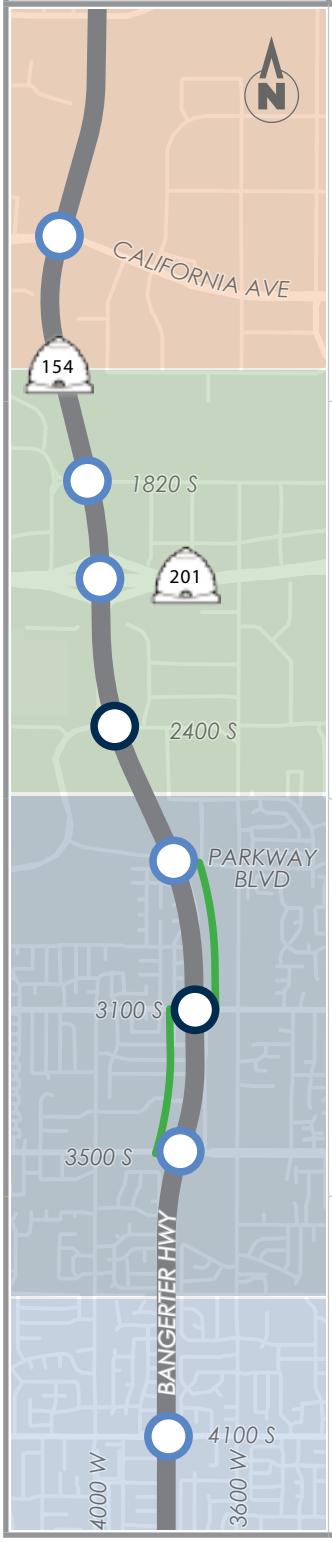
TABLE 2.1 summarizes Level 1 screening for each of the alternatives. For more information on peak traffic conditions and adjacent intersection LOS see the Future Build Traffic Analysis in the Appendix.

TABLE 2.1 Level 1 - Purpose and Need

Alternative						Carried Forward to Level 2 Screening?
Alternative A Full Frontage Road		**Segment 1**	**Segment 2**	**Segment 3**	**Segment 4**	
	Provides LOS D or better at interchanges on Bangerter Highway during peak travel times	**No** Failing conditions at 4100 South	**Yes**	**Yes**	**No** Failing conditions at California Avenue	**No** ✖
	Provides acceptable accessibility (0.5 miles) to and from the Bangerter Highway corridor	**Yes**	**Yes**	**Yes**	**Yes**	
	Maintains an acceptable LOS at adjacent intersections	**Yes**	**No** Failing conditions at 3500 South	**Yes**	**Yes**	
	Improves walking and biking facilities in the study area	**Yes**	**Yes**	**Yes**	**Yes**	

Alternative						Carried Forward to Level 2 Screening?
Alternative B Interchanges		Segment 1	Segment 2	Segment 3	Segment 4	
	Provides LOS D or better at interchanges on Bangerter Highway during peak travel times	Yes	Yes	Yes	Yes	Yes
	Provides acceptable accessibility (0.5 miles) to and from the Bangerter Highway corridor	Yes	Yes	Yes	Yes	
	Maintains an acceptable LOS at adjacent intersections	Yes	Yes	Yes	Yes	
	Improves walking and biking facilities in the study area	Yes	Yes	Yes	Yes	

Alternative						Carried Forward to Level 2 Screening?
Alternative C Frontage Roads: 1820 South to 3500 South		Segment 1	Segment 2	Segment 3	Segment 4	
	Provides LOS D or better at interchanges on Bangerter Highway during peak travel times	Yes	Yes	Yes	Yes	Yes
	Provides acceptable accessibility (0.5 miles) to and from the Bangerter Highway corridor	Yes	Yes	Yes	Yes	
	Maintains an acceptable LOS at adjacent intersections	Yes	Yes	Yes	Yes	
	Improves walking and biking facilities in the study area	Yes	Yes	Yes	Yes	

Alternative						Carried Forward to Level 2 Screening?
Alternative D 3100 South Access		Segment 1	Segment 2	Segment 3	Segment 4	
	Provides LOS D or better at interchanges on Bangerter Highway during peak travel times	Yes	Yes	Yes	Yes	Yes
	Provides acceptable accessibility (0.5 miles) to and from the Bangerter Highway corridor	Yes	Yes	Yes	Yes	
	Maintains an acceptable LOS at adjacent intersections	Yes	Yes	Yes	Yes	
	Improves walking and biking facilities in the study area	Yes	Yes	Yes	Yes	

Alternative A was eliminated from further study because it did not provide LOS D or better at several interchanges on Bangerter Highway during peak travel times or maintain an acceptable LOS at adjacent intersections. For more information see the Build Traffic Report in the Appendix.

Alternatives B, C, and D met all Level 1 measures of effectiveness and were carried forward for Level 2 screening.

LEVEL 2 — REASONABILITY

The study team evaluated Alternatives B, C, and D based on construction reasonability. The alternatives were evaluated based on the following four measures of effectiveness:

1. Minimizes the general estimated alternative cost
2. Minimizes the number of residential, business, and community facility relocations
3. Minimizes additional relocations as a result of utility conflicts
4. Minimizes the number of affected parcels

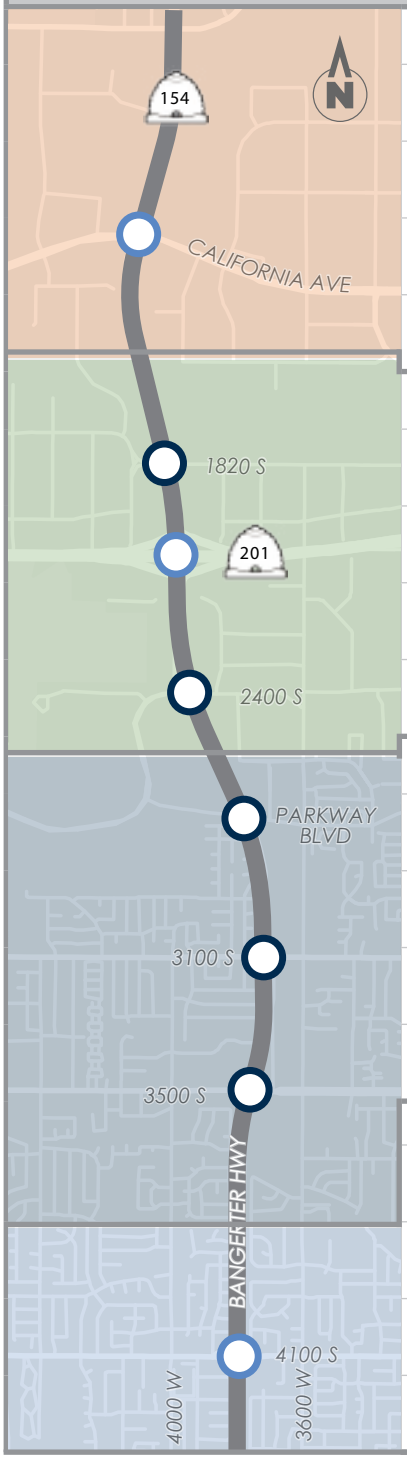
General cost estimates for Alternatives B-D were based on fixed unit rates for residential and commercial properties as well as roadway structure lengths.

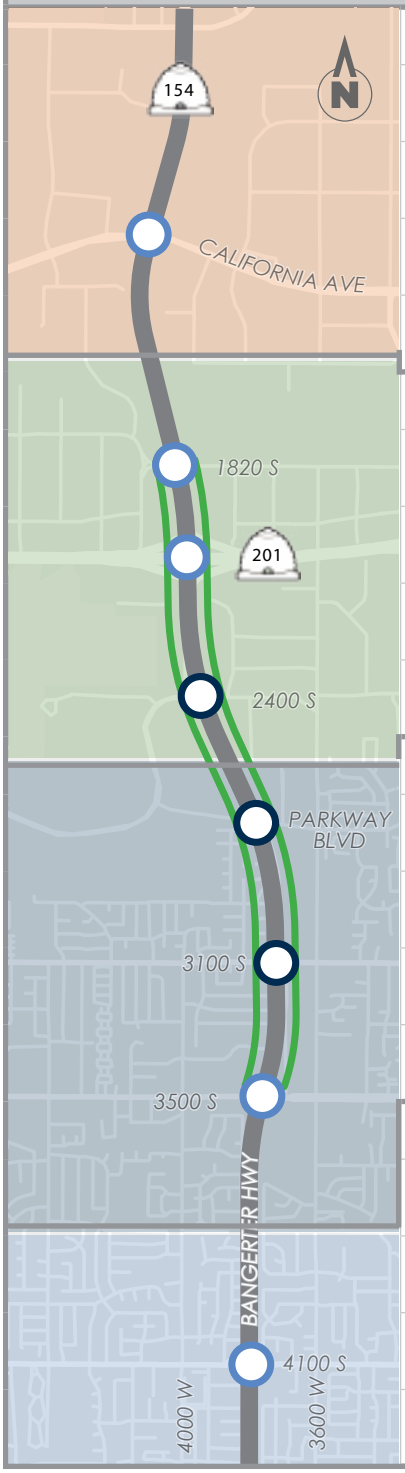
Relocations were determined based on a centerline alignment for Bangerter Highway and the frontage roads for Alternatives B-D.

Alternatives C and D had increased impacts to the public due to relocations and total number of affected parcels. Additionally, Alternatives C and D are not a reasonable expenditure of funds for the anticipated operational and safety benefits. Therefore, Alternatives C and D were eliminated from further study.

While Alternative B did not reduce the number of additional relocations as a result of utility conflicts, it had the lowest estimated cost, the fewest residential, business, and community facility relocations, and affected the fewest number of parcels. As such, Alternative B met all Level 2 measures of effectiveness for construction reasonability and was carried forward to Level 3 screening. TABLE 2.2 and TABLE 2.3 summarize Level 2 screening for Alternatives B, C, and D.

TABLE 2.2 Level 2 - Reasonability

Alternative		Meets Level 2 Measures of Effectiveness?	Carried Forward to Level 3?
ALTERNATIVE B - INTERCHANGES			
	**Segment 4**		
	1.	Yes	General estimated alternative cost: $138 million
	2.	Yes	No relocations
	3.	Yes	No additional relocations as a result of utility conflicts
	4.	Yes	Seven total parcels affected
	Segment 3		
	1.	Yes	General estimated alternative cost: $626 million
	2.	Yes	Results in 3 commercial relocations
	3.	Yes	No additional relocations as a result of utility conflicts
	4.	Yes	31 total parcels affected
	Segment 2		
	1.	Yes	General estimated alternative cost: $585 million
	2.	Yes	Results in 142 total relocations: 131 residential and 11 commercial
	3.	Yes	29 additional relocations as a result of utility conflicts
	4.	Yes	177 total parcels affected
	Segment 1		
	1.	Yes	General estimated alternative cost: $252 million
	2.	Yes	Results in 59 total relocations: 58 residential and one commercial
	3.	Yes	No additional relocations as a result of utility conflicts
	4.	Yes	85 total parcels affected
			Yes

Alternative	Meets Level 2 Measures of Effectiveness?			Carried Forward to Level 3?
ALTERNATIVE C - HYBRID				
	**Segment 4**			No
	1.	Yes	General estimated alternative cost: $139 million	
	2.	Yes	No relocations	
	3.	Yes	No additional relocations as a result of utility conflicts	
	4.	Yes	Seven total parcels affected	
	Segment 3			
	1.	No	General estimated alternative cost: $750 million	
	2.	Yes	Results in 5 commercial relocations	
	3.	Yes	No additional relocations as a result of utility conflicts	
	4.	Yes	36 total parcels affected	
	Segment 2			
	1.	No	General estimated alternative cost: $769 million	
	2.	No	Results in 230 total relocations: 219 residential and 11 commercial	
	3.	Yes	13 additional relocations as a result of utility conflicts	
	4.	No	274 total parcels affected	
	Segment 1			
	1.	Yes	General estimated alternative cost: $255 million	
	2.	Yes	Results in 60 total relocations: 59 residential and one commercial	
	3.	Yes	No additional relocations as a result of utility conflicts	
	4.	Yes	87 total parcels affected	

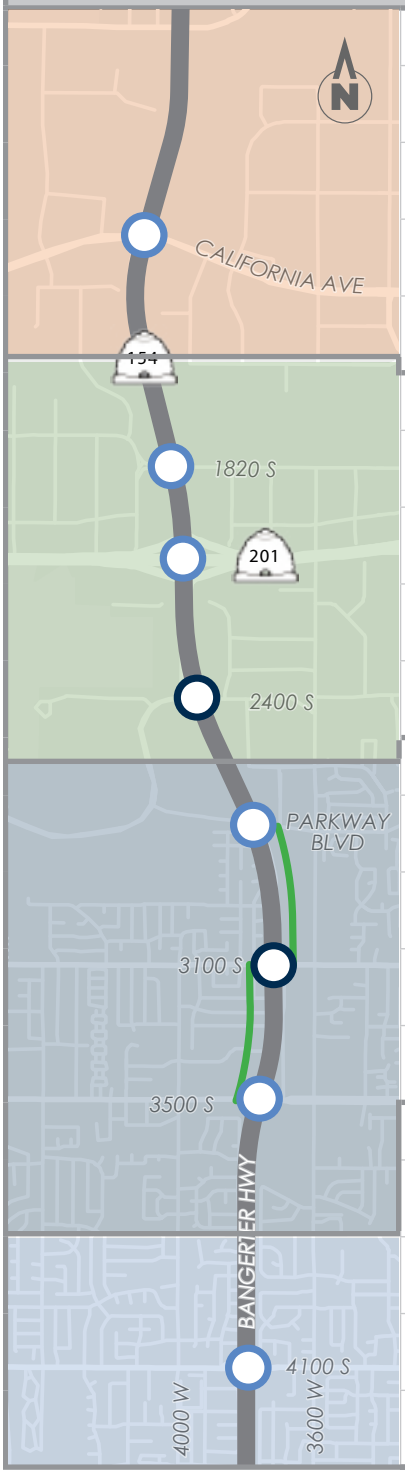
Alternative	Meets Level 2 Measures of Effectiveness?			Carried Forward to Level 3?
ALTERNATIVE D - 3100 SOUTH ACCESS				
	**Segment 4**			No
	1.	Yes	General estimated alternative cost: $139 million	
	2.	Yes	No relocations	
	3.	Yes	No additional relocations as a result of utility conflicts	
	4.	Yes	Seven total parcels affected	
	Segment 3			
	1.	Yes	General estimated alternative cost: $626 million	
	2.	Yes	Results in 3 commercial relocations	
	3.	Yes	No additional relocations as a result of utility conflicts	
	4.	Yes	31 total parcels affected	
	Segment 2			
	1.	No	General estimated alternative cost: $661 million	
	2.	No	Results in 217 total relocations: 206 residential and 11 commercial	
	3.	Yes	37 additional relocations as a result of utility conflicts	
	4.	No	261 total parcels affected	
	Segment 1			
	1.	Yes	General estimated alternative cost: $255 million	
	2.	Yes	Results in 60 total relocations: 59 residential and one commercial	
	3.	Yes	No additional relocations as a result of utility conflicts	
	4.	Yes	87 total parcels affected	

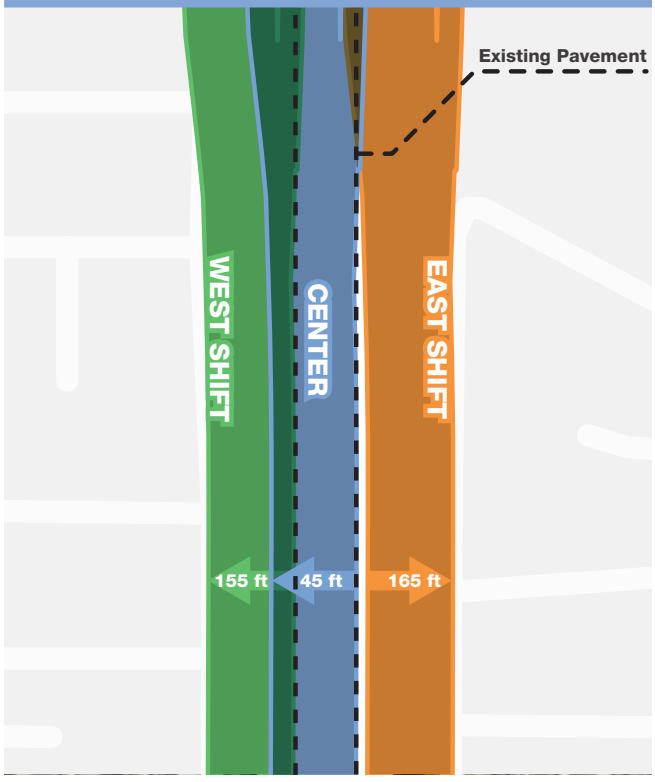
TABLE 2.3 Level 2 - Total Impacts

Level 2 Measures of Effectiveness		Alternative B	Alternative C	Alternative D
1.	General estimated alternative cost	$1,601,000,000	$1,913,000,000	$1,681,000,000
2.	Number of residential, business, and community facility relocations	204	295	280
3.	Additional relocations as a result of utility conflicts	29	13	37
4.	Number of affected parcels	300	404	386

LEVEL 3 — CONSTRAINTS

The study team evaluated three options for Alternative B based on environmental and built constraints within the study area. The options included a West Shift Option, an East Shift Option, and a Center Optimization Option (see FIGURE 2.6).

FIGURE 2.6 Alternative B Options



Explanation of Constraints

Environmental Resource Constraints

Cultural Resources

In compliance with the Utah Antiquities Act (Utah Code Annotated (UCA) 9-8-102 et seq (404)), each state agency must consider the effects of an expenditure or undertaking on historic properties before funds are allocated for the undertakings completion.

According to the Programmatic Agreement between UDOT and the Utah State Historic Preservation Officer (SHPO), renewed January 22, 2018, UDOT will be in compliance with UCA 9-8-404 for state projects by following the process outlined in Section 106 of the National Historic Preservation Act (NHPA). For more information, see SECTION 3.9.

Waters of the U.S.

Waters of the U.S. are protected under the Clean Water Act (CWA) of 1972. Under Section 404 of the CWA, no discharge of dredged or fill material is permitted in waters of the U.S. (including wetlands) if there is a less environmentally damaging practicable alternative. For more information, see SECTION 3.11.

Built Constraints

Residences and Businesses

The conversion of Bangerter Highway to a freeway-style facility has the potential to

impact existing or planned residential and commercial development. Businesses and community facilities adjacent to Bangerter Highway include, but are not limited to:

- Granger High School
- American Preparatory Academy
- Granger Medical Center
- USANA
- Stonebridge Golf Club

Jordan Valley Aqueduct

The Jordan Valley Aqueduct (JVA) is a 66-inch pressurized pipeline that supplies drinking water to large areas within the Salt Lake Valley and extends from the mouth of Provo Canyon to 2100 South in Salt Lake City. Improvements to Bangerter Highway have the potential to impact the pipeline, which runs for approximately three miles through the study area. Impacts resulting in extensive realignment of the pipeline would require coordination with the United States Bureau of Reclamation (BOR), the owners of the JVA. Additionally, extensive realignment of the JVA pipeline would incur substantial impacts and cost to the project.

Kearns-Chesterfield Drain

The Kearns-Chesterfield Drain is part of a storm water drainage system that runs through West Valley City. Improvements to Bangerter Highway have the potential to impact the 84- to 90-inch drain, which runs for approximately two miles through the study area. Impacts resulting in extensive realignment of the drain would incur substantial impacts and cost to the project.

Railroad Facilities

The conversion of Bangerter Highway to a freeway-style system has the potential to impact railroad facilities.

Level 3 Constraints

The three Alternative B Options were evaluated based on the following seven measures of effectiveness:

1. Minimizes the number of adverse effects to cultural resources
2. Minimizes the number of residential relocations
3. Minimizes the number of business and community facility relocations
4. Minimizes the impacts to aquatic resources
5. Minimizes the linear feet of the Jordan Valley Aqueduct to be relocated and the number of ancillary facilities impacted
6. Minimizes the linear feet of the Kearns-Chesterfield drain to be relocated
7. Minimizes the length of railroad impacts

Across all four segments, the West Shift Option adversely affected 38 eligible historic properties and required the greatest number of residential relocations.

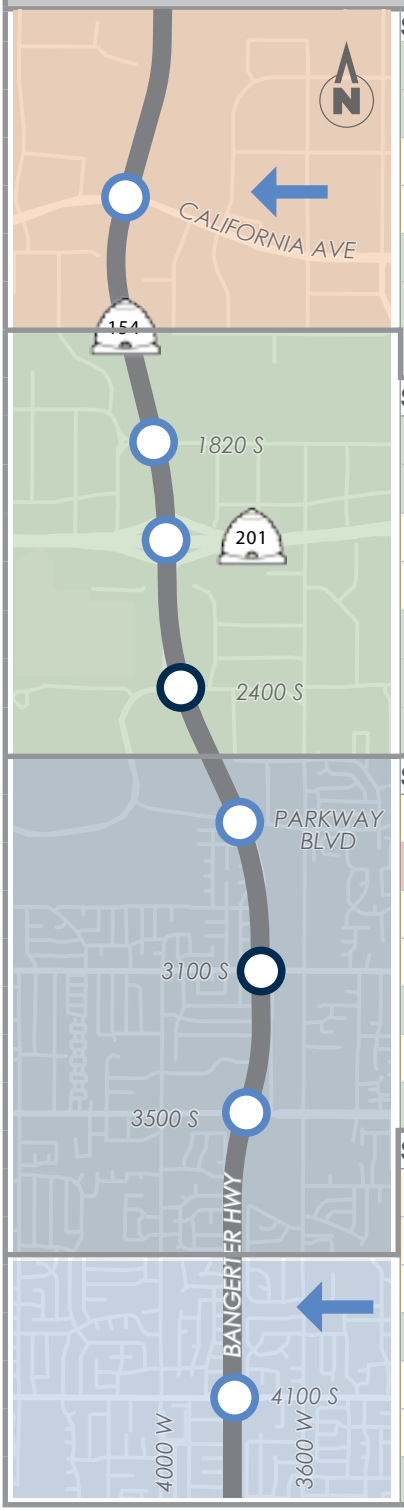
Across all four segments, the East Shift Option adversely affected 49 eligible historic properties; required the relocation of an operational railroad; and required the greatest number of business and community facilities relocations and impacts, including:

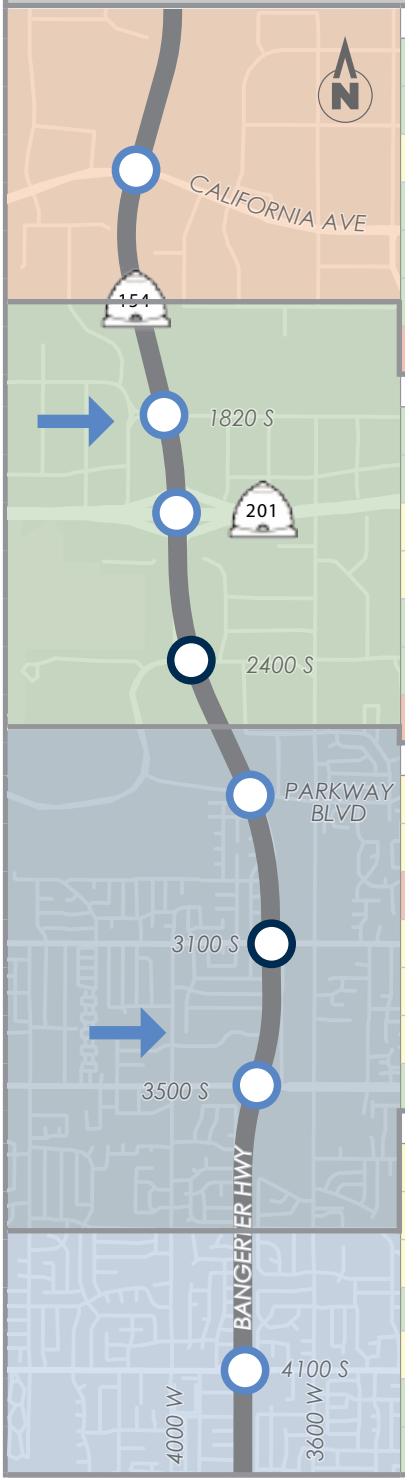
- Granger High School
- American Preparatory Academy
- Granger Medical Center
- USANA

Due to the increased impacts, the West and East Shift Options were eliminated from further study.

While the Center Optimization Option had greater impacts to the Kearns-Chesterfield Drain, Jordan Valley Aqueduct, aquatic resources, and residential relocations in some segments, it adversely affected the fewest number of eligible historic properties, had the fewest number of commercial relocations; avoided the relocation of Granger High School, American Preparatory Academy, Granger Medical Center, and USANA; and did not require the relocation of any operational railroad facilities. As such, the Center Optimization Option met all Level 3 measures of effectiveness and was carried forward for detailed study. TABLE 2.4 and TABLE 2.5 summarize Level 3 screening for Alternative B.

TABLE 2.4 Level 3 - Constraints

Alternative	Meets Level 3 Measures of Effectiveness?		Carried Forward for Detailed Study?
ALTERNATIVE B: WEST SHIFT OPTION			
	**Segment 4**		No
	1.	No historic properties present	
	2.	No residences present	
	3.	Eight business/community facility relocations	
	4.	0.8 acres of impacts to aquatic resources	
	5.	Aqueduct not present	
	6.	Drain not present	
	7.	No impact to the railroad	
	Segment 3		
	1.	No historic properties present	
	2.	No residences present	
	3.	Twelve business/community facility relocations	
	4.	4.5 acres of impacts to aquatic resources	
	5.	Aqueduct not present	
	6.	Drain not present	
	7.	No impact to the railroad	
	Segment 2		
	1.	16 adverse effects to cultural resources	
	2.	190 residential relocations	
	3.	Eight business/community facility relocations	
	4.	1.36 acres of impacts to aquatic resources	
	5.	No impacts to JVA	
	6.	2,000 linear feet of drain relocation	
	7.	Railroad not present	
	Segment 1		
	1.	22 adverse effects to cultural resources	
	2.	71 residential relocations	
	3.	One church relocation	
	4.	No impacts to aquatic resources	
	5.	2,559 linear feet of aqueduct relocation	
	6.	2,561 linear feet of drain relocation	
	7.	Railroad not present	

Alternative	Meets Level 3 Measures of Effectiveness?		Carried Forward for Detailed Study?
ALTERNATIVE B: EAST SHIFT OPTION			
	**Segment 4**		No
	1.	No historic properties present	
	2.	No residences present	
	3.	Nine business/community facility relocations	
	4.	No impacts to aquatic resources	
	5.	Aqueduct not present	
	6.	Drain not present	
	7.	Relocation of 3,000 feet of railroad	
	Segment 3		
	1.	No historic properties present	
	2.	No residences present	
	3.	Eight business/community facility relocations	
	4.	2.64 acres of impacts to aquatic resources	
	5.	Aqueduct not present	
	6.	Drain not present	
	7.	Relocation of 1,450 feet of railroad	
	Segment 2		
	1.	16 adverse effects to cultural resources	
	2.	88 residential relocations	
	3.	14 business/community facility relocations	
	4.	0.31 acres of impacts to aquatic resources	
	5.	3,500 linear feet of aqueduct relocation	
	6.	600 linear feet of drain relocation	
	7.	Railroad not present	
	Segment 1		
	1.	33 adverse effects to cultural resources	
	2.	72 residential relocations	
	3.	Granger Medical Center relocation	
	4.	No impacts to aquatic resources	
	5.	3,275 linear feet of aqueduct relocation	
	6.	No impacts to the drain	
	7.	Railroad not present	

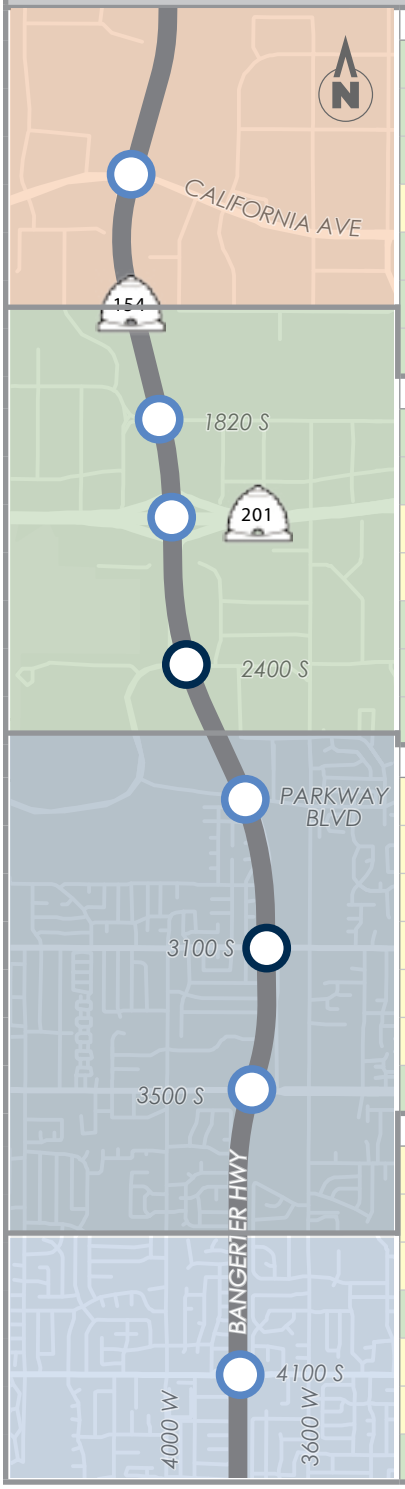
Alternative	Meets Level 3 Measures of Effectiveness?		Carried Forward for Detailed Study?
ALTERNATIVE B: CENTER OPTIMIZATION OPTION			
	**Segment 4**		Yes
	1.	No historic properties present	
	2.	No residences present	
	3.	No business/community facility relocations	
	4.	0.04 acres of impacts to aquatic resources	
	5.	Aqueduct not present	
	6.	Drain not present	
	7.	No impacts to the railroad	
	Segment 3		
	1.	No historic properties present	
	2.	No residences present	
	3.	Two business/community facility relocations	
	4.	2.86 acres of impacts to aquatic resources	
	5.	Aqueduct not present	
	6.	Drain not present	
	7.	No impacts to the railroad	
	Segment 2		
	1.	13 adverse effects to cultural resources	
	2.	134 residential relocations	
	3.	Seven business/community facility relocations	
	4.	0.61 acres of impacts to aquatic resources	
	5.	4,500 linear feet of aqueduct relocation	
	6.	2,400 linear feet of drain relocation	
	7.	Railroad not present	
	Segment 1		
	1.	25 adverse effects to cultural resources	
	2.	57 residential relocations	
	3.	Church relocation	
	4.	No impacts to aquatic resources	
	5.	3,190 linear feet of aqueduct relocation	
	6.	3,180 linear feet of drain relocation	
	7.	Railroad not present	

TABLE 2.5 Level 3 - Total Impacts

Level 3 Measures of Effectiveness		Alternative B West Shift	Alternative B East Shift	Alternative B Center Optimization
1.	Number of Adverse Effects to Cultural Resources	38	49	38
2.	Number or Residential Relocations	261	160	191
3.	Number of Business and Community Facility Relocations	29	32	10
4.	Impacts to Aquatic Resources	6.7 acres	3.0 acres	3.5 acres
5.	Impacts to Jordan Valley Aqueduct	2,559 feet	6,775 feet	7,690 feet
6.	Impacts to Kearns-Chesterfield Drain	4,561 feet	600 feet	5,580 feet
7.	Impacts to the Railroad	No impacts	4,450 feet	No impacts

2.3 ALTERNATIVES SCREENING SUMMARY

This section provides an overview of the alternatives screening process. The alternatives that were carried forward or eliminated at each level of screening are summarized in the paragraphs below and in TABLE 2.6.

LEVEL 1 - PURPOSE AND NEED

Alternatives B, C, and D met all Level 1 measures of effectiveness and were carried forward to the Level 2 screening.

Alternative A was eliminated from further study because it did not provide LOS D or better at several interchanges on Bangerter Highway during peak travel times or maintain an acceptable LOS at adjacent intersections.

LEVEL 2 - REASONABILITY

Alternative B met all Level 2 measures of effectiveness and was carried forward to the Level 3 screening.

Alternatives C and D were eliminated from further study because they failed to minimize impacts due to relocations and total number of parcels affected. Additionally, Alternatives C and D were not a reasonable expenditure of funds for the anticipated operational and safety benefits.

LEVEL 3 - ENVIRONMENTAL CONSTRAINTS

The Center Optimization Option of Alternative B met all Level 3 measures of effectiveness and was carried forward for detailed study.

The West Shift and East Shift Options were eliminated from further study because they adversely affected the greatest number of eligible historic properties, required the greatest number of residential, business, and community facilities relocations, and required the relocation of operational railroad facilities.

TABLE 2.6 Alternatives Screening Summary

A	B			C	D
Level 1 - Purpose and Need					
Eliminated ✖	Carried Forward ↓			Carried Forward ↓	Carried Forward ↓
Level 2 - Reasonability					
	Carried Forward ↓			Eliminated ✖	Eliminated ✖
Level 3 - Environmental Constraints					
	West Shift Option	**East Shift Option**	**Center Optimization Option**		
	Eliminated ✖	Eliminated ✖	Carried Forward ↓		

2.4 ALTERNATIVES SELECTED FOR DETAILED STUDY

The screening process identified the following alternatives that will be carried forward for detailed study.

2.4.1 NO ACTION ALTERNATIVE

The No Action Alternative would not meet the Purpose and Need of the project, but was carried forward for detailed analysis in order to provide a baseline evaluation with which to compare the Preferred Alternative. For additional information on the No Action Alternative, see SECTION 2.2.1

2.4.2 CONCEPTUAL ALTERNATIVE B: CENTER OPTIMIZATION OPTION

The Alternative B: Center Optimization Option begins at 4100 South and extends north to California Avenue and includes the following (see FIGURE 2.7):

- Constructing a grade-separated interchange at 4100 South with Bangerter Highway going under the cross-street, below the existing roadway surface;
- Constructing grade-separated interchanges at 3500 South, Parkway Boulevard, SR-201, 1820 South, and California Avenue with Bangerter Highway going over the cross-streets;
- Constructing grade-separated crossings at 3100 South, 2400 South, and 2100 South with Bangerter Highway going over 3100 South and 2100 South, and 2400 South going over Bangerter Highway;
- Constructing and/or realigning frontage roads between 2400 South and 2100 South to provide additional north-south connectivity;
- Constructing northbound and southbound auxiliary lanes;
- Constructing a shared use path along Bangerter Highway between 4100 South and California Avenue; and
- Constructing north-south pedestrian and bicyclist bridges at 3500 South, 3100 South, Parkway Boulevard, 2100 South, and SR-201, with an east-west bridge at California Avenue and crossings near 4100 South, 3600 South, 2400 South, and 2200 South.

Based on available information, the depth to ground water ranges from 21 feet near 4100 South to as shallow as eight feet in the northern portion of the study area. Any vertical alignment that would require excavation below the existing roadway surface to facilitate structures and/or roadway facilities has the potential to encounter ground water. Due to the high water table in the study area, no vertical alignment below the existing roadway surface was evaluated for Bangerter Highway or the cross-streets north of 4100 South. All grade-separation will occur above the existing roadway surface in these areas.

Through coordination with West Valley City, a hybrid vertical option was evaluated for the 4100 South interchange. As the depth of the water table allows for some excavation below existing grade, it has been determined that the vertical configuration of the 4100 South interchange will include 4100 South going over Bangerter Highway, with Bangerter Highway being constructed below the existing roadway surface.

Based on feedback received during the public comment period, UDOT has and will continue to evaluate the locations and types of proposed pedestrian crossings in coordination with West Valley City and Granite School District. Safety measures as well as the final location and type of crossings will be determined during final design.

2.4.3 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

UDOT has identified the Alternative B: Center Optimization Option as the Preferred Alternative because it meets the Purpose and Need for the project, minimizes the number of relocations and affected parcels, is a reasonable expenditure of funds for the

anticipated operational and safety benefits, and minimizes impacts to environmental resources and the built environment.

2.5 CONSTRUCTION PHASING

If the Preferred Alternative is selected, it is anticipated that it could be constructed in multiple phases as funding becomes available.

FIGURE 2.7 Preferred Alternative

Grade-separated interchange at 4100 South with Bangerter Highway going under the cross-street, below the existing roadway surface.

Grade-separated interchanges at 3500 South, Parkway Boulevard, SR-201, 1820 South, and California Avenue with Bangerter Highway going over the cross-streets.

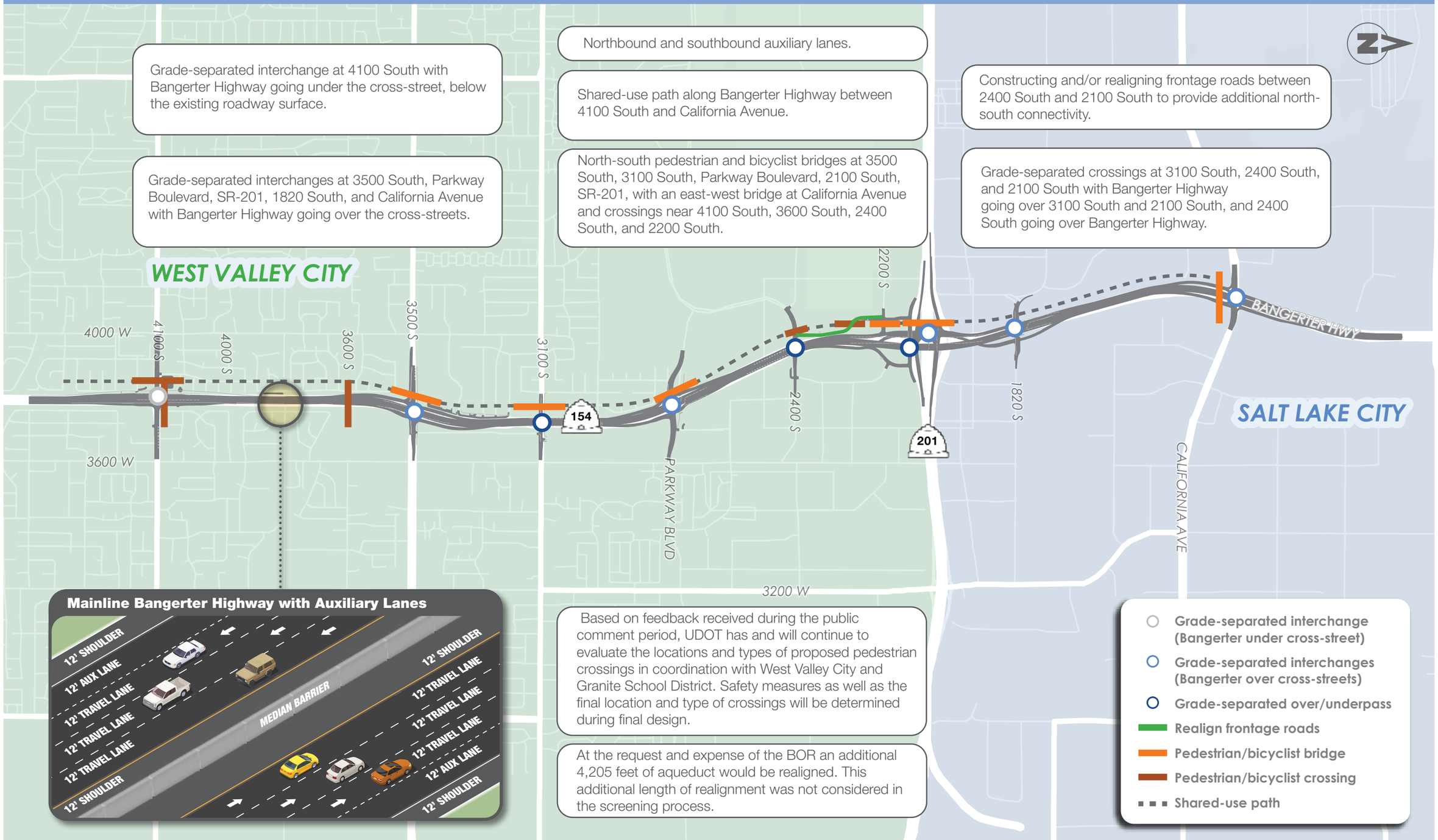
Northbound and southbound auxiliary lanes.

Shared-use path along Bangerter Highway between 4100 South and California Avenue.

North-south pedestrian and bicyclist bridges at 3500 South, 3100 South, Parkway Boulevard, 2100 South, SR-201, with an east-west bridge at California Avenue and crossings near 4100 South, 3600 South, 2400 South, and 2200 South.

Constructing and/or realigning frontage roads between 2400 South and 2100 South to provide additional north-south connectivity.

Grade-separated crossings at 3100 South, 2400 South, and 2100 South with Bangerter Highway going over 3100 South and 2100 South, and 2400 South going over Bangerter Highway.



Mainline Bangerter Highway with Auxiliary Lanes

Based on feedback received during the public comment period, UDOT has and will continue to evaluate the locations and types of proposed pedestrian crossings in coordination with West Valley City and Granite School District. Safety measures as well as the final location and type of crossings will be determined during final design.

At the request and expense of the BOR an additional 4,205 feet of aqueduct would be realigned. This additional length of realignment was not considered in the screening process.

- Grade-separated interchange (Bangerter under cross-street)
- Grade-separated interchanges (Bangerter over cross-streets)
- Grade-separated over/underpass
- Realign frontage roads
- Pedestrian/bicyclist bridge
- Pedestrian/bicyclist crossing
- Shared-use path

CH 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter describes the existing environmental, social, and economic conditions within the study area and how these conditions would be affected by the No Action Alternative and the Preferred Alternative. Once the Center Optimization Option for Alternative B was selected as the Preferred Alternative, additional design refinements were made to more accurately determine and evaluate potential impacts. Existing conditions were identified based on literature and data file searches; coordination with federal, state, and local agencies; and field investigations. Other technical research used to inform the SES, but not discussed in the document, are included in the project records.

The study area may vary for individual resources as noted in each resource subsection, when applicable. Unless noted, the study area for each resource analysis is the study area defined in Chapter 1 of this SES (see FIGURE 1.1).

3.1.1 RESOURCES EVALUATED BUT NOT ANALYZED IN DETAIL

The following resources are either not present in the study area or do not have a reasonable possibility for environmental impacts; therefore, the following resources were considered but not evaluated in detail:

Farmland — The Preferred Alternative would not impact land that is being used for farming or zoned as agricultural. Additionally, Agricultural Protection Areas are not present in the study area.

Transportation — Potential impacts to transportation facilities specifically related to transit services provided by the UTA were assessed using the WFRC's RTP (WFRC 2019), and through coordination with UTA. The Preferred Alternative improves the overall transportation system, accommodating both existing and planned transit services within the study area, including the fixed bus rapid transit (BRT) stations planned near the 3500 South and Bangerter Highway interchange. As discussed in Chapters 1 and 2, existing and future (2050) transportation deficiencies on Bangerter Highway include failing conditions at several at-grade intersections and a lack of desirable multi-modal facilities within the study area.

Paleontological — Through coordination with the Utah Geological Survey (UGS) Office of the State Paleontologist, it was determined that the study area has a low potential to yield significant fossil localities and that the Preferred Alternative should have no effect on paleontological resources (see CH 4).

Soils and Geology — Possible geological hazards in the study area include a high potential for liquefaction during an earthquake. If the Preferred Alternative is selected, a geotechnical report would be completed prior to completion of final design. This report would identify potential soil and geotechnical hazards and would provide design recommendations to address the hazards that would be incorporated into the final design.

Section 6(f) — Section 6(f) of the Land and Water Conservation Fund (LWCF) Act protects property acquired or developed with LWCF assistance. There are no Section 6(f) properties within the study area.

Floodplains — A floodplain is defined as a normally dry area surrounding a natural lake or river that is occasionally inundated by water and subject to periodic flooding. Floodplain impacts occur when a project encroaches on a Special Flood Hazard Area (100-year floodplain). According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, there

are no Special Flood Hazard Areas within the study area.

NO ACTION ALTERNATIVE

The No Action Alternative was carried forward for analysis to provide a baseline comparison for impacts caused by the Preferred Alternative. The No Action Alternative would not have impacts to the following resources:

- Economic Conditions
- Right-of-Way and Relocations
- Pedestrians and Bicyclists
- Noise
- Cultural Resources
- Water Resources
- Waters of the U.S.
- Wildlife
- Hazardous Materials
- Visual and Aesthetic
- Construction Impacts

Resources that would have impacts from the No Action Alternative are discussed in the specific resource section.

3.2 LAND USE

Zoning maps, general plans, and master plans are used to show current and planned land uses. Zoning maps are used to show how the land within each municipality is currently zoned, while general plans and master plans are used to show proposed future land uses. Local governments develop these maps and plans and use them to document community goals and priorities and to assist in decision-making. This section includes a review of existing and future land uses within the study area and describes potential land use impacts resulting from the No Action Alternative and the Preferred Alternative.

3.2.1 AFFECTED ENVIRONMENT

The study area is located within West Valley City and Salt Lake City. The study team reviewed the 2015 West Valley City General Plan Update and the Salt Lake City 2016 Northwest Quadrant Master Plan for current zoning and future land use goals and objectives within the study area. Land use designations used within this document are consistent with those found in these plans.

EXISTING LAND USE

Land within the study area is largely developed with the northern portion of the study area, north of Parkway Boulevard, being used for light manufacturing and the southern portion used for commercial and residential development. Some public and private utilities, parks and open space, and community use areas are also found within the southern portion of the study area (see FIGURE 3.1).

CURRENT ZONING

Land within the study area located in Salt Lake City is all zoned for light manufacturing. Land located within West Valley City has been zoned for a variety of uses including: Community Use, Parks and Open Space, Public or Private Utility, General Commercial, Business Park, Neighborhood Commercial, Non-Retail Commercial, Low Density Residential, Medium Density Residential, High Density Residential, Very High Density Residential, Small Lot Residential, Large Lot Residential, Mixed Use, and Light Manufacturing.

FUTURE LAND USE

Land within the study area is developed and established with very little undeveloped or open land available. Land use will likely remain consistent with current land use and zoning as outlined within the plans for West Valley City and Salt Lake City.

RECREATIONAL FACILITIES

There are two recreational facilities located adjacent to the Bangerter Highway corridor: Scottsdale Park (3755 West 3100 South) and Stonebridge Golf Club (4415 Links Drive), both located in West Valley City (see VOLUME 2).

PUBLIC USE FACILITIES

There are two public education facilities adjacent to the Bangerter Highway Corridor: Granger High School, located at 3580 South 3600 West and American Preparatory Academy, a K-12 public charter school, located at 3636 West 3100 South, both in West Valley City (see VOLUME 2).

3.2.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

Under the No Action Alternative, undeveloped properties not designated as public open space would continue to develop into commercial, industrial, or residential properties as envisioned by each governing body's future land use plans.

The absence of proposed transportation improvements could affect access to facilities and services within the study area.

PREFERRED ALTERNATIVE

The Preferred Alternative would convert approximately 92.6 acres of land currently zoned for other uses into transportation facilities. This would not affect the land use characteristics within the study area

because adjacent areas would continue to be used according to established zoning and land use plan designations. Impacts to recreation facilities and public use facilities identified above would consist of partial right-of-way (ROW) acquisition (see SECTION 3.5).

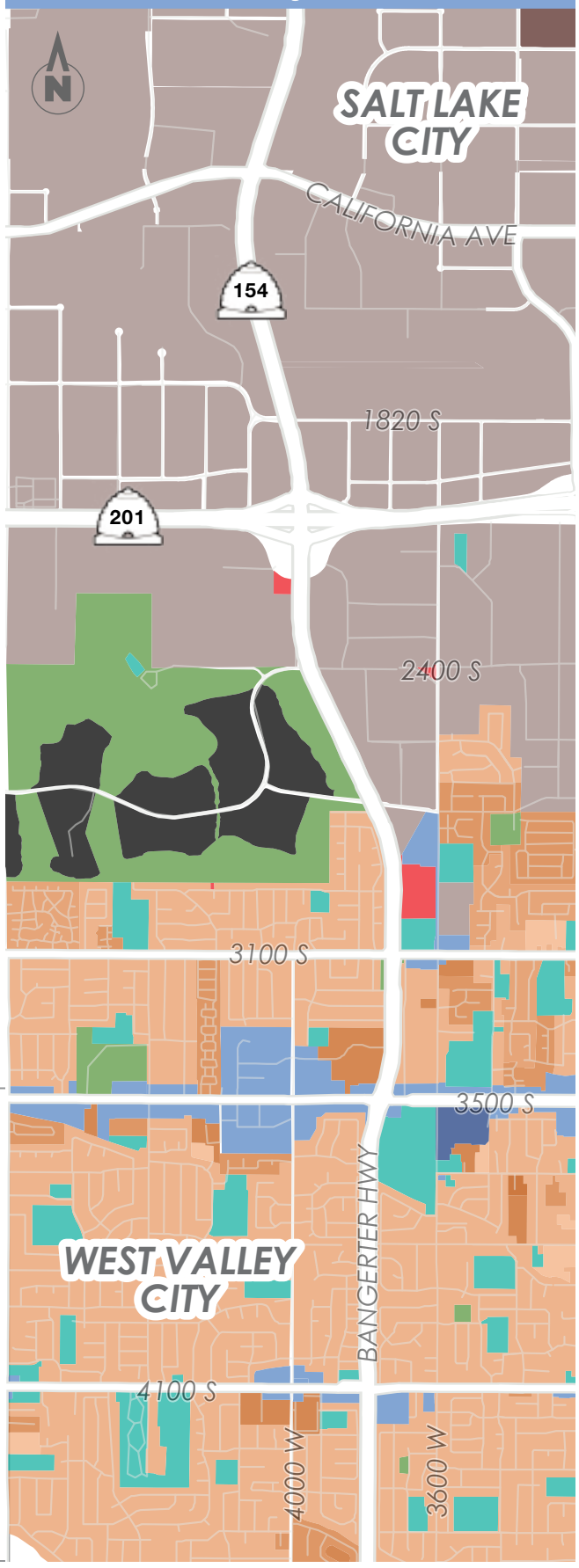
Project Benefits

The Preferred Alternative would be consistent with existing and future land use plans for West Valley City and Salt Lake City and would support the economy by improving access to land within the study area (see TABLE 1.3).

3.2.3 MITIGATION

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

FIGURE 3.1 Existing Land Use



3.3 SOCIAL ENVIRONMENT AND UNDERREPRESENTED POPULATIONS

3.3.1 METHODOLOGY

Existing social and demographic characteristics of the population in the study area were analyzed to determine potential impacts to the community as a result of the No Action Alternative and Preferred Alternative. These characteristics were also used to identify the presence of populations that could be most susceptible to impacts.

Community resources were analyzed using windshield surveys, aerial imagery, and information gathered from stakeholder meetings throughout the study process.

U.S. CENSUS BUREAU DATA

The U.S. Census Bureau collects data for the national census every 10 years and continuously collects data for the American Community Survey (ACS). This SES utilizes data from both the ACS and the 2020 national census.

American Community Survey

The ACS has replaced the traditional long form of the national census. It asks standard questions that are also found on the national census along with detailed questions about housing and population characteristics.

The ACS provides 1-year or 5-year estimates. For this analysis, the ACS 5-year estimates were used to understand the social and demographic characteristics of residents in the study area and surrounding areas. The ACS 5-year estimates compile data over 60 months and provide information for geographic areas of all population sizes. The data are less current because the 5-year estimates cover a longer range of time than 1-year estimates, but the data are more reliable, especially for geographic areas with smaller populations.

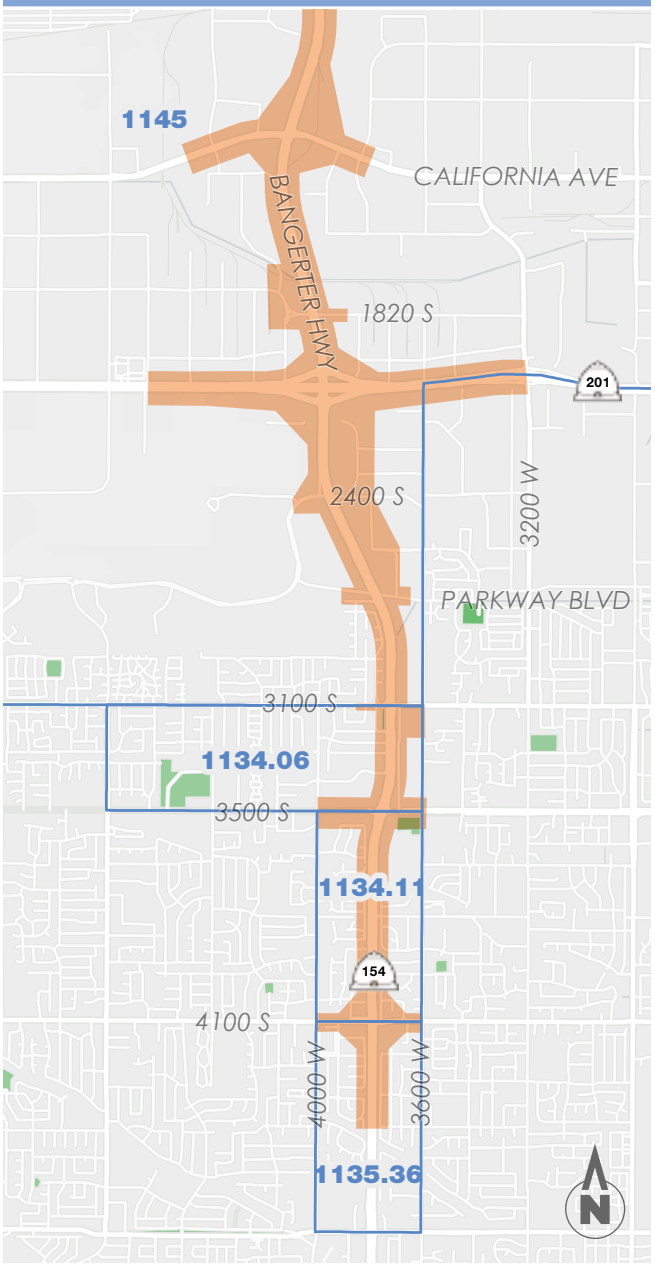
The most recent ACS 5-year estimates use data collected from January 1, 2018 to December 31, 2022.

Geography

The U.S. Census Bureau establishes geographies for the census and ACS data collection. At the local level, these geographies are defined by state, county, place, census tract, and block group.

For this analysis, the study team evaluated census tracts that capture the majority of the study area (see FIGURE 3.2). Census tracts that are barely within the study area or adjacent to the study area were reviewed but not included in this documentation.

FIGURE 3.2 Census Tracts



Census Tracts within the Study Area

- Census Tract 1135.36
- Census Tract 1134.11
- Census Tract 1134.06
- Census Tract 1145

Cities within the Study Area

- West Valley City
- Salt Lake City

County and State Comparisons

- Salt Lake County
- State of Utah

3.3.2 AFFECTED ENVIRONMENT

GROWTH

The population in Salt Lake County is estimated to increase more than 30% (approximately 380,000 people) by 2050.

Job growth in Salt Lake County is expected to increase by 47.9%, from 945,900 jobs to 1,572,400 jobs, by 2050.

COMMUNITY RESOURCES

The study area is located within West Valley City and Salt Lake City, both well established communities with many community resources. The northern portion of the study area is used for light manufacturing and the southern portion has commercial and residential development.

The north area contains many industrial operations meaning it is a large employment center. Some of these industries include Beehive Clothing Manufacturing, USANA Health Sciences, Arizona Tile, and Granger-Hunter Improvement District. It also includes Stonebridge Golf Club and American Preparatory Academy (West Valley Campus).

The central portion of the study area transitions to commercial and residential. Some community resources include; Scottsdale Park, Tuscany Cove Apartments, Granger High School, and a Church of Jesus Christ of Latter-day Saints meeting house. A variety of restaurants including Peruvian and Mexican restaurants are located in the area, along with a Mexican grocery store along 3500 South.

The southern portion of the study area includes medical offices, Village Green Apartments, New Life Center United Pentecostal Church, and a Church of Jesus Christ of Latter-day Saints meeting house.

COMMUNITY DEMOGRAPHICS

According to Federal Highway Administration (FHWA) Office of Planning Screening Tool for Equity Analysis of Projects (STEAP), approximately 50% of the population in the study area identify as non-Hispanic white. The other 50% identify as Asian, Pacific Islander, some other race, and two or more races. Ten percent of the population is 65 years old or older, 31% is under 18 years old, and 59% is between 18 and 64 years of age.

Seventy-two percent of the population 16 years and older are in the labor force. The population with less than a high school diploma is 21%. Fifty-six percent of the population has monthly housing costs between $800 and $1500. Five percent of the population do not have a vehicle and 24% of households have only one vehicle.

Within this community, 43% of persons 5 years or older speak non-English at home. Those who speak non-English at home primarily speak Spanish (67%). Other non-English languages spoken at home include Vietnamese (12%) and Other Asian or Pacific Islander (14%), as well as Chinese (2%) and Other Indo-European (2%) languages.

UNDERREPRESENTED POPULATIONS

The USDOT has provided guiding environmental justice principles to use for project-specific environmental reviews. These principles include the following:

- To ensure the full and fair participation by all potentially affected communities in the transportation and decision-making process.

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- To prevent the denial of, reduction in, or substantial delay in the receipt of benefits by minority and low income populations.

Environmental justice populations are defined as any of the following groups:

Low income- A person whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines. The guidelines are established using household size and income. For a family of eight, the poverty guideline is $50,560 and for a family of one the guideline is $14,580.

Minority- Any person belonging to any of the following five groups:

- Black - A person having origins in any of the black racial groups of Africa
- Hispanic or Latino - A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race
- Native Hawaiian and Other Pacific Islander - A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands
- Asian American - A person having origins in any of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands
- American Indian or Alaska Native - A person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition

Race and ethnicity data show higher percentages of underrepresented populations within and adjacent to the study area compared to the county and the state (see TABLE 3.1 and TABLE 3.2). As shown in these tables, thresholds were used (orange = 10% difference; gray = 5% difference) to highlight where the population characteristics were different in the project area compared to county and state data.

TABLE 3.1 Demographic Data for Census Tracts within the Northern Portion of Study Area

Characteristics	Census Tract 1145	Salt Lake City	Salt Lake County	State of Utah
Population	7,487	199,723	1,185,238	3,271,616
Race and Ethnicity				
White	44.6%	68.4%	71.5%	78.7%
Black or African American	3.2%	2.9%	2.0%	1.2%
American Indian and Alaskan Native	1.4%	1.4%	1.1%	1.3%
Asian	11.9%	5.5%	4.3%	2.5%
Native Hawaiian or Other Pacific Islander	4.9%	2.1%	1.8%	1.1%
Some Other Race	20.6%	9.7%	9.4%	6.7%
Two or More Races	13.3%	9.9%	9.9%	8.5%
Hispanic or Latino	37.5%	20.8%	19.6%	15.1%
Age Distribution				
Under 18 years	33.1%	18.0%	26.1%	28.5%
18 Years and over	66.9%	82.0%	73.9%	71.5%
65 Years and over	5.6%	11.6%	11.3%	11.4%
Median age (years)	28.6	32.5	33.4	31.4
Education Level (25 years and over)				
Less than a high school diploma	20.2%	8.8%	8.2%	6.8%
High school graduate	31.9%	16.8%	22.3%	22.6%
Some college or an associate degree	28.3%	24.2%	31.8%	35.5%
Bachelor's degree	10.9%	28.9%	24.3%	23.9%
Graduate or professional degree	8.8%	21.3%	13.4%	12.2%
Other				
Persons below poverty level	12.7%	14.1%	8.1%	8.5%
Persons with disability	8.4%	10.5%	9.4%	9.6%

TABLE 3.2 Demographic Data for Census Tracts within the Southern Portion of Study Area

Characteristics (2020 Census and ACS 2018-2022)	Census Tract 1135.36	Census Tract 1134.11	Census Tract 1134.06	West Valley City, UT	Salt Lake County	State of Utah
Population	4,201	2,808	6,787	140,230	1,185,238	3,271,616
Race and Ethnicity						
White	43.3%	52.1%	39.3%	49.5%	71.5%	78.7%
Black or African American	2.3%	2.2%	2.4%	2.8%	2.0%	1.2%
American Indian and Alaskan Native	2.1%	1.0%	2.4%	1.9%	1.1%	1.3%
Asian	3.6%	10.8%	3.2%	5.7%	4.3%	2.5%
Native Hawaiian or Other Pacific Islander	6.9%	6.2%	5.9%	4.6%	1.8%	1.1%
Some Other Race	27.8%	14.0%	33.0%	22.5%	9.4%	6.7%
Two or More Races	13.9%	13.8%	13.9%	13.1%	9.9%	8.5%
Hispanic or Latino	45.7%	28.6%	54.1%	39.4%	19.6%	15.1%
Age Distribution						
Under 18 years	26.5%	31.0%	35.8%	31.2%	26.1%	28.5%
18 Years and over	73.5%	69.0%	64.2%	68.8%	73.9%	71.5%
65 Years and over	14.0%	13.6%	10.1%	9.0%	11.3%	11.4%
Median age (years)	32.5	33.0	27.2	30.2	33.4	31.4
Education Level (25 years and over)						
Less than a high school diploma	17.6%	10.8%	20.8%	16.8%	8.2%	6.8%
High school graduate	37.7%	36.4%	40.7%	35.1%	22.3%	22.6%
Some college or an associate degree	24.0%	37.8%	25.4%	32.3%	31.8%	35.5%
Bachelor's degree	18.0%	9.0%	10.5%	12.1%	24.3%	23.9%
Graduate or professional degree	2.6%	5.9%	2.6%	3.8%	13.4%	12.2%
Other						
Persons below poverty level	14.6%	1.7%	16.9%	10.8%	8.1%	8.5%
Persons with a disability	7.2%	9.4%	9.4%	9.5%	9.4%	9.6%

Race and Ethnicity

Data for census tracts within the study area show that as low as 39% of the population identifies as white compared to 72% in Salt Lake County and 79% in Utah. As shown in TABLE 3.1 and TABLE 3.2, census tracts within the study area have over 5% higher populations compared to state and county populations of Asian, Native Hawaiian or other Pacific Islander, and two or more races. Generally compared to state and county demographics, the census tracts within the study area have over 10% higher representation of Hispanic/Latino populations and groups that identify as some other race.

Low Income

Between 17% and 2% of persons living within census tracts in the study area are below poverty level. This range encompasses the state and county percentages of 8 to 9%.

Age

Generally, census tracts within the study area have similar age demographics compared to the state and county. Some census tracts have 5% or higher percentages of persons under 18 years old and lower percentages of persons over 18 years old.

The median ages for the population are similar to or younger compared to state and county populations.

Education

Average educational attainment is lower in all census tracts compared to state and county percentages, with between two and three times the amount of persons with less than a high school education. Higher education (Bachelor's degree and higher) is drastically lower in all census tracts compared to the state and county.

3.3.3 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

Traffic conditions and minimal walking and biking options along Bangerter Highway creates a divide between neighborhoods that could worsen as congestion increases. Some drivers do not feel safe crossing major highways or driving in congested traffic. Pedestrians and bicyclists expressed safety concerns crossing at-grade on Bangerter Highway. Without improvements, these conditions could lead to social isolation for some members of the community.

PREFERRED ALTERNATIVE

Direct Impacts

The study area demographics show that a large group of the population identifies as a member of one or more minority groups. Low-income populations are present in Census Tracts 1135.36 and 1134.06. Impacts to underrepresented populations due to the Preferred Alternative were evaluated using the environmental justice principles.

Full and Fair Participation

One of the guiding environmental justice principles is the full and fair participation by all potentially affected communities in the transportation decision-making process. Throughout the study process, the study team hosted 20 public meetings and events. Translation services were provided during these events to ensure fair and equal participation for those with limited English proficiency. In addition, the study team has mindfully selected outreach options to reach low-income populations, Spanish-speaking populations, the Laotian community, Native Hawaiian or other Pacific Islander communities, and the Vietnamese community (see CH 4 for more details).

Avoid, Minimize, or Mitigate Disproportionately High and Adverse Human Health and Environmental Effects

Another guiding environmental justice principle is to avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects. The Preferred Alternative would not have

disproportionately high or adverse effects to environmental justice populations, as described below:

Bodily Impairment, Infirmity, Illness, or Death

The Preferred Alternative would improve regional connectivity by removing traditional intersections and replacing them with grade-separated options such as interchanges or overpass/underpass connections for local cross-streets. These improvements would reduce existing conflict points along Bangerter Highway which could result in improved safety for motorists, pedestrians, and bicyclists. Additionally, reducing congestion along this major north-south corridor could improve mobility during emergencies. It is not anticipated that the Preferred Alternative would increase a person's risk to bodily impairment, infirmity, illness, or death.

Air Quality

The Preferred Alternative is not likely to exceed the National Ambient Air Quality Standards or worsen the existing exceedances (see SECTION 3.7). In addition to the criteria air pollutants for which there are NAAQS, the EPA also regulates air toxics. Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act and are compounds emitted from highway vehicles and non-road equipment. When a roadway alignment is altered by a corridor widening or shift, the localized level of MSAT emissions that could result from the Preferred Alternative could be higher than the No Action Alternative. This could be offset by increased speeds and decreased travel times, which are both associated with lower MSAT emissions. The EPA's vehicle and fuel regulations, coupled with fleet turnover, would over time cause reductions that, in almost all cases, would result in region-wide MSAT levels that are lower than today.

Based on the air quality conformity analysis conducted by the WFRC (as the Metropolitan Planning Organization (MPO)) for the RTP and the Air Quality Memorandum dated June 2019 (see Air Quality Summary in the Appendix), all the transportation projects in the 2019-2050 RTP conform to the State Implementation Plan (SIP) or the Environmental Protection Agency (EPA) interim conformity guidelines. The Preferred Alternative is identified in the WFRC RTP (which is a financially constrained long-range plan) for Phase 1.

Noise/Vibration

Overall, noise levels for the Preferred Alternative would range from 60 dBA to 80 dBA (see SECTION 3.8). Two hundred and forty-one receptors would experience a substantial increase in noise, which is defined as a 10 dBA or greater increase over existing noise levels. This increase is due to the removal of existing noise walls as a result of the Preferred Alternative. Of the 930 receivers, representing 1,568 noise sensitive locations within the study area, 350 would be impacted by traffic noise.

Nine noise walls were evaluated to mitigate traffic noise to impacted receptors. See VOLUME 2 and SECTION 3.8 for wall locations. Noise abatement measures analyzed and deemed feasible and reasonable in the environmental study phase are still subject to final design and balloting. The final decision to construct the proposed noise barrier would not be made until completion of the project design and refined utility relocation and right-of-way costs are available. Noise impacts are localized throughout the entire corridor and would not disproportionately impact any one group.

Water Quality

The Preferred Alternative would increase the impervious surface area in the study area by approximately 61 acres. Storm water would be collected and enter existing, improved, or new storm drain systems. Any required storm drain modifications would be constructed in compliance with current UDEQ and UDWQ standards as well as local discharge rates and regulations. In addition, the quantity

and quality of the groundwater would not be impacted because the storm drain system would be designed and managed according to the requirements of UDWQ to minimize negative impacts to water quality, including flow management controls, oil skimmers, grease traps, etc., where needed.

Hazardous Materials

The Preferred Alternative has the potential to impact eleven hazardous materials sites that occur within or directly adjacent to the design footprint. Any hazardous materials encountered during construction would be dealt with in accordance with UDOT Standard Specifications and disposal would take place under the guidelines set by the UDEQ.

Aesthetic Values

The Preferred Alternative would include the construction of a grade-separated interchange with Bangerter Highway going under the cross street at 4100 South. The Preferred Alternative would include the construction of grade-separated interchanges with Bangerter Highway going over the cross streets at the following locations (see SECTION 3.14):

- 3500 South
- Parkway Boulevard
- SR-201
- 1820 South
- California Avenue

The Preferred Alternative would also include the construction of grade-separated crossings at 3100 South, 2400 South, and 2100 South.

Additionally, the Preferred Alternative would include modifications to other ancillary elements such as lighting, street signs (including signage for entrance and exit ramps), fencing, noise walls, and traffic signals as well as a wider roadway footprint along Bangerter Highway. Some of the proposed structures and noise walls would alter the views of those living and working adjacent to Bangerter Highway.

Because the majority of the area is already highly developed, impacts would not constitute an overall reduction in visual quality for viewer groups and would not be considered adverse.

Community Cohesion/Social Impacts/ Isolation

The Preferred Alternative requires relocation of residents and businesses which could lead to impacts for communities and individuals. These effects are personal and perceived differently by individuals. Overall the project will remain on the existing alignment which currently goes through established residential communities. The Preferred Alternative would improve access to local communities by removing barriers across Bangerter Highway through grade-separated designs for motorists, pedestrians, and bicyclists. This could improve community connectivity and reduce the prevalence of isolation.

Business/Community/Economic Vitality

The Preferred Alternative would require the relocation of eight businesses (see TABLE 3.3). These relocations would have an insignificant impact on taxable sales and tax base within the community. Businesses that are required to relocate would be compensated under the Utah Administrative Code (UAC) 57-12-2.

TABLE 3.3 Business Relocations

Business	Address
La Frontera Café	3784 West 3500 South
Les Schwab Tire Center	3815 Parkway Boulevard
KFC	3865 West 3500 South
American Title Loans	3867 West 3500 South
VARA Salon Suites	3881 West 3500 South
First Base	3815 Parkway Boulevard

Business	Address
Anagraphica Inc.	1906 South 3850 West
7-Eleven	1820 South Bangerter Highway

Converting Bangerter Highway to a grade-separated roadway would change local access to commercial properties located within and adjacent to the study area. This may increase/decrease traffic to these businesses. Long-term, this change in access may influence the types of businesses that would locate to the area.

Right-of-Way/Relocations/ Displacement of Persons, Businesses, Farms, or Nonprofit Organizations

The Preferred Alternative requires property acquisition from a total of 381 parcels. This includes 239 residential relocations, eight business relocations, two community property acquisitions (one church and one park), four vacant parcel acquisitions, and partial acquisitions from 124 parcels. A majority of these impacts are concentrated in the south and central portion of the study area, where residential homes are located close to Bangerter Highway. These are primarily located within Census Tracts 1135.36, 1134.11, and 1134.06. As shown in CHAPTER 2, the study team considered relocation impacts and total number of parcels affected in Level 2 Screening. The study team selected the Build Alternative that minimizes impacts to the community.

Removing persons from their community could be considered a negative impact due to social disruption. Others may view relocation as an opportunity to find another location that is removed from a busy highway that produces traffic noise and vehicles that emit air pollutants.

Removing select homes immediately adjacent to Bangerter Highway creates a new “front row” of homes adjacent to the highway. This could increase exposure to noise and introduce visual changes to select properties. A noise analysis conducted as part of the study indicates that noise walls are proposed as part of the Preferred Alternative (see SECTION 3.8).

ROW acquisitions would occur in accordance with state relocation policies. The acquisition and relocation program would be conducted in accordance with the UAC 57-12-2. ROW acquisition resources would be available to each impacted business or residence without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 USC 2000d, et seq.).

Availability of Public and Private Facilities and Services

As discussed above, the Preferred Alternative would require the relocation of businesses in addition to two community properties: a church and a park. The Preferred Alternative would also improve connectivity to services by connecting motorists, pedestrians, and bicyclists across Bangerter Highway through grade-separated improvements. These would remove barriers to services.

Pedestrian/Bicyclists/Transit

The Preferred Alternative would include a 12-ft wide, paved, shared-use path that would run parallel to Bangerter Highway on the west side of the road from approximately from 4100 South to California Avenue. It would also include the construction of either underpasses or bridges across Bangerter Highway and major cross streets to improve access and safety for pedestrians and bicyclists.

East-west access at grade-separated intersections would be available via sidewalks on the north and south sides of most cross-streets. It would also construct a paved path along the canal south of Granger High School between Bangerter Highway and 3600 West. These improvements provide options to populations with limited vehicle access and safer options for school-aged children to walk to school. These improvements would benefit the community, including minority and low-income populations.

Transportation/Accessibility/Mobility/ Congestion

The Preferred Alternative would improve transportation facilities and accessibility by improving Bangerter Highway. This will reduce congestion and improve mobility.

Prevent Denial of, Reduction in, or Substantial Delay in the Receipt of Benefits

The final guiding environmental justice principle is to prevent the denial of, reduction in, or substantial delay in the receipt of benefits by minority and low-income populations. The Preferred Alternative would provide benefits such as improving mobility by addressing current and future travel demand, improving multi-modal community connectivity routes, supporting the economy, and improving safety and operations on Bangerter Highway.

Receipt of benefits would be provided to the community as a whole and not just certain groups within the community.

MITIGATION

Residents are compensated under the Utah Relocation Assistance Act, which provides a uniform policy for the fair and equitable treatment of persons displaced by the acquisition of property by local jurisdictions and UDOT (UAC 57-12-2).

3.4 ECONOMIC CONDITIONS

3.4.1 AFFECTED ENVIRONMENT

REGIONAL SETTING

Salt Lake County's labor market conditions follow state and national trends with year-to-year increases, but with some substantial decreases during the COVID-19 pandemic.

According to the Bureau of Labor Statistics, employment numbers have risen beyond pre-pandemic levels. In February 2020 (the pre-pandemic high-point for employment), the total employment in the Salt Lake Metropolitan Area was 758,500 jobs. In May 2022, total employment had increased to 786,500 jobs.

Data from the Bureau of Labor Statistics indicates that growth between May 2021 and May 2022 was 3% in the Salt Lake Metropolitan Area. This is lower than the state average of 3.3% and the national average of 4.3% for that same time period.

Between April 2021 and April 2022, job growth occurred in the Salt Lake Metropolitan Area in all industries. Growth was highest in the areas of information (13%) and leisure and hospitality (8.4%). Seasonally adjusted unemployment rates for Salt Lake County in April 2022 was slightly higher than the state and lower than the national rates (see TABLE 3.4).

TABLE 3.4 April 2022 Seasonally Adjusted Unemployment Rate

Location	Unemployment Rate
Salt Lake County	2.1%
State of Utah	2.0%
United States	3.3%

The most recent data from the U.S. Census Bureau shows that there were 33,829 businesses in Salt Lake County in 2020. Given the economic recovery that has occurred since 2020, the number of businesses has likely increased.

EMPLOYMENT

According to the Department of Workforce Services, there are ten employers in Salt Lake County with 5,000 or more employees. Those employers are:

- University of Utah
- State of Utah
- Intermountain Health Care
- United States Government
- Church of Jesus Christ of Latter-Day Saints
- Zions Bank
- Walmart
- Granite School District
- Jordan School District
- Salt Lake County

According to the Kem C. Gardner Policy Institute, job growth in Salt Lake County is projected to increase by 40.7% (545,600 jobs) between 2020 and 2060. Projected job gains in construction, professional and technical services, and healthcare are the largest drivers for growth.

INCOME

Income demographics show that median household income for census tracts within and adjacent to the study area varies widely (see TABLE 3.5). Median household income in census tracts 1133.07, 1133.08, and 1134.06 are lower than for Salt Lake County, the State of Utah, and the United States. Households located in census tracts 1133.09, 1134.10, 1135.05, and 1135.36 have a median household income greater than the rest of the nation but lower than Salt Lake County and the State of Utah. Median household incomes in census tract 1145 are greater than the nation and state but lower than county incomes. Finally, median household incomes in tracts 1134.11 and 1135.37 are greater than county, state, and nation incomes.

TABLE 3.5 Median Household Income in the Past 12 Months (2018 Inflation-Adjusted Dollars)

Location	Median Household Income
Census Tract: 1133.07	50,395
Census Tract: 1133.08	52,547
Census Tract: 1133.09	63,750
Census Tract: 1134.06*	39,459
Census Tract: 1134.10	62,109
Census Tract 1134.11*	78,889
Census Tract: 1135.05	60,776
Census Tract: 1135.36*	63,607
Census Tract: 1135.37	72,262
Census Tract: 1145*	69,596
Salt Lake County	71,230
State of Utah	68,374
United States	60,293

* Census tract within the study area

BUSINESSES WITHIN THE STUDY AREA

The study team identified 303 businesses that are within or immediately adjacent to the study area. These business were separated into the following ten categories:

- Retailer (100)
- Business Services (69)
- Supplier (41)
- Food Service (23)
- Manufacturer (18)
- Health Practitioner (14)
- Corporate Offices (12)
- Contractors (12)
- Warehouses (8)
- Distributor (6)

3.4.2 ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE

The Preferred Alternative would require the relocation of eight businesses. See TABLE 3.6 for more details about relocated businesses. These relocations would have an insignificant impact on taxable sales and tax base within the community.

Converting Bangerter Highway to a grade-separated roadway would change local access to commercial properties located within and adjacent to the study area. This may increase/decrease traffic to these businesses. Long-term, this change in access may influence the types of businesses that would locate to the area.

TABLE 3.6 Business Relocations

Business	Address
La Frontera Café	3784 West 3500 South
Les Schwab Tire Center	3815 Parkway Boulevard
KFC	3865 West 3500 South
American Title Loans	3867 West 3500 South
VARA Salon Suites	3881 West 3500 South
First Base	3815 Parkway Boulevard
Anagraphica Inc.	1906 South 3850 West
7-Eleven	1820 South Bangerter Highway

Project Benefits

The Preferred Alternative would support the economy by maintaining accessibility to and from Bangerter Highway.

3.4.3 MITIGATION

UDOT Right-of-Way Division, under the guidance of the Utah Relocation Assistance Act, would negotiate with affected business owners directly, ensuring that fair market value is received for the required properties.

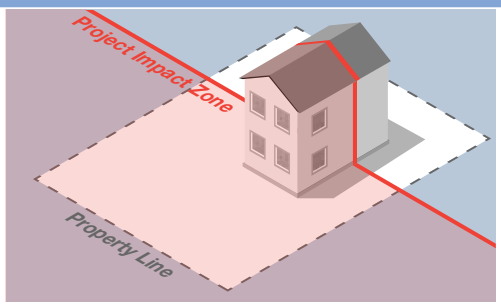
UDOT would coordinate with local businesses to address construction-related congestion, potential detours, and maintenance of access.

3.5 RIGHT-OF-WAY AND RELOCATIONS

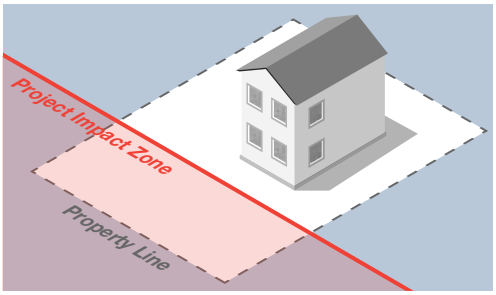
When property acquisition is necessary for state-funded projects, land owners are compensated under the Utah Relocation Assistance Act, which provides a uniform policy for the fair and equitable treatment of persons displaced by the acquisition of property by local jurisdictions and UDOT (UAC 57-12-2). To analyze project impacts, the following definitions will be used (see FIGURE 3.3):

- **Relocation –** When an existing structure is in the proposed right-of-way needed for the project and the entire property needs to be acquired. In these cases, the residents or businesses would need to relocate.
- **Potential Relocation –** This occurs when a property would be directly affected by the project and (1) an existing structure (excluding porches and garages) would be within 20 feet of the proposed right-of-way or (2) the project would impair driveway access, but it is unclear whether the entire property would need to be acquired. As the project design advances, it would be determined whether each potential relocation is a full relocation or a partial acquisition.
- **Partial Acquisition –** When a property is located within the proposed right-of-way but is at least 20 feet away from an existing structure. For this type of impact, only land needs to be acquired.

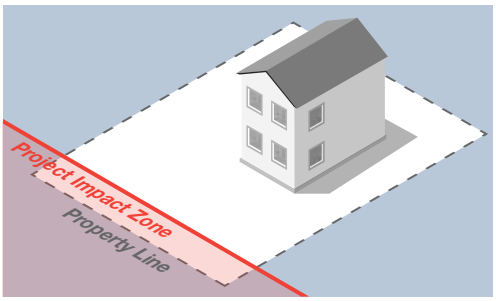
FIGURE 3.3 Right-of-Way Definitions



Relocation: Direct Impact
The right-of-way required for the project goes through the structure.



Potential Relocation: Proximity Impact
The right-of-way required for the project impacts the property and is close to the structure.



Partial Acquisition
The right-of-way required for the project impacts the property but is farther away from the structure.

3.5.1 AFFECTED ENVIRONMENT

Land within the study area is largely developed. The northern portion of the study area, north of Parkway Boulevard, is being used for light manufacturing. The central and southern portions of the study area, south of Parkway Boulevard, are being used for commercial and residential development. Some public and private utilities, parks and open space, and community use areas are also found within the southern portion of the study area.

This area is largely developed with minimal opportunities for further development. Currently many businesses, residences, parks, schools, churches, and other community resources are within the study area.

3.5.2 ENVIRONMENTAL CONSEQUENCES PREFERRED ALTERNATIVE

The Preferred Alternative requires property acquisition from a total of 381 parcels. The Preferred Alternative would require eight business relocations, two community property acquisitions (one church and

one park), 239 residential relocations, and four potential residential relocations (see VOLUME 2 and the ROW Acquisition Summary in the Appendix).

The Preferred Alternative would require partial acquisitions from 124 parcels and four vacant parcel acquisitions. The project would require approximately 95 acres (see VOLUME 2 and the ROW Acquisition Summary in the Appendix).

3.5.3 MITIGATION

All ROW impacts are based on preliminary design. It is anticipated that refinements and updates will be made during the final design of the project to minimize impacts.

The ROW process will follow the requirements of the Utah Relocation Assistance Act. UDOT Right-of-Way Division will negotiate with property owners directly, ensuring that fair market value is received for the required properties.

3.6 PEDESTRIANS AND BICYCLISTS

The UDOT Policy 07-117, Inclusion of Active Transportation, requires that the needs of bicyclists, pedestrians, and other active transportation users shall be routinely considered as an important aspect in the funding planning, design, construction, operation, and maintenance of UDOT transportation facilities (UDOT 2013).

3.6.1 AFFECTED ENVIRONMENT

Information used in this section was summarized from the Pedestrian and Bicycle Memo (see Pedestrian and Bicycle Memo in the Appendix).

EXISTING AND FUTURE LAND USE AND GROWTH

The West Valley City portion of the study area between 4100 South and Parkway Boulevard is highly residential and includes commercial land use. Over the next several decades, land uses are expected to remain similar but to increase in the intensity of use. For example, residential and commercial areas may become more dense, mixed-use and transit oriented development may become more common, and the industrial area around California Avenue in Salt Lake City will be part of Utah's Inland Port.

SOCIOECONOMICS

Poverty levels, zero-vehicle households, one-vehicle households, and other socioeconomic vulnerabilities were identified within one-half mile of the Bangerter Highway study area. Results of the analysis indicate that there is a large socioeconomically vulnerable population within and near the study area.

According to the League of American Bicyclists and U.S. Census data, people with lower income are more dependent upon walking and biking as transportation to work. As income level decreases, the percentage of people walking and biking increases.

EXISTING AND PLANNED TRANSIT

Transit is considered in pedestrian and bicyclist analyses because many people must first walk or bike to access transit before they can reach their final destinations. If walking and biking facilities are not available, it can greatly impede the publics' ability to travel to work, school, shopping, and other essential destinations.

EXISTING TRANSIT

Existing public transit services in and near the study area include Utah Transit Authority (UTA) local and flex bus routes, shuttles, and light rail. There are seven UTA local bus routes in and near the study area. In addition, the Green Line light rail station (approximately 1.3 miles east of the study area) and the 3500 South bus route have the highest weekday average boarding with ridership of 9,932 and 3,515, respectively.

PLANNED TRANSIT

According to WFRC's RTP, planned transit improvements include creating the new Lake Park Core Route on Parkway Boulevard for Phase 2 (2031-2040); extending the existing 3300 South/3500 South Core Route to Wasatch Boulevard for Phase 1 (2021-2030); and extending the existing 3900 South/4100 South Core Route to Wasatch Boulevard for Phase 2 (2031-2040). Additionally, fixed Bus Rapid Transit (BRT) stations are planned at the 3500 South Bangerter Interchange.

EXISTING PEDESTRIAN AND BICYCLIST FACILITIES

Grade Separated Crossings and Crosswalks

There are only five locations along the entire corridor from California Avenue to 4100 South (approximately 5 miles) that can safely accommodate pedestrian and bicyclist crossings of Bangerter Highway (see FIGURE 3.4). Two existing east-west bridges across Bangerter Highway are present at 4100 South and 3100 South.

The low number of crossings indicate that Bangerter Highway is a barrier to connectivity and direct travel for people walking, biking, and accessing public transit.

Existing Pedestrian and Bicyclist Facilities

Information on existing and planned trails and pedestrian facilities within the study area was obtained from the WFRC RTP and local adopted plans and policies for West Valley City and Salt Lake City.

Bicycle facilities are classified as Class I, Class II, and Class III facilities. Class I facilities consist of a paved trail separated from a roadway. Class II facilities consist of dedicated bike lanes. Class III facilities consist of a shared travel lane with vehicles.

Class I Facilities

There is one Class I facility in the study area, the Scottsdale Park paved path, which includes the 3100 South pedestrian overpass bridge (i.e., Scottsdale Park Pedestrian bridge).

Class II Facilities

Five Class II bicycle facilities exist within and near the study area. Class II bicycle facilities are predominantly north-south, and none of the east-west facilities cross Bangerter Highway. Class II facilities are summarized in the bulleted list below:

- Gramercy Road
- 4130 West
- 3600 West
- 2100 South
- 1820 South

Class III Facilities

Four Class III facilities exist within and near the study area. None of the east-west class III bicycle facilities cross Bangerter Highway. Class III facilities are summarized in the bulleted list below:

- 3600 West
- 4000 West
- South Frontage Road

Sidewalks

Sidewalks provide little east-west and north-south connectivity for pedestrians in the study area. There are no sidewalks at the intersections of Bangerter Highway and 4100 South, 2400 South, 2100 South, SR-201, or California Avenue. There are no north-south sidewalks at the intersections of Bangerter Highway and Parkway Boulevard or 1820 South. East-west sidewalks are available at the intersections of Bangerter Highway and 3500 South, Parkway Boulevard, and 1820 South.

Planned Pedestrian and Bicyclist Facilities

Several pedestrian and bicycle facilities are planned to be constructed in the study area under municipal and regional transportation plans. See FIGURE 1.5 for a summary of planned pedestrian and bicyclist facilities in the study area.

Many of the planned facilities will create additional east-west connections across Bangerter Highway in the study area. Others improve, extend, and connect the existing north-south connections. In Salt Lake City, there is a planned shared-use path adjacent to Bangerter Highway from the airport to SR-201. The WFRC also recommends a shared-use path south of SR-201.

Safe Routes to Schools

Six elementary schools (Robert Frost Elementary School, Philo T. Farnsworth Elementary School, Pioneer Elementary School, Hillsdale Elementary School, Monroe Elementary School, and Armstrong Academy), and two junior high schools (West Lake Junior High School and Valley Junior High School) serve portions of the study area. 4100 South and 3100 South have been designated as safe routes.

Pedestrian and Bicyclist Safety

According to UDOT crash data, 67 crashes involving bicyclists and pedestrians happened over the past five years within the study area. Of these, 54 involved

pedestrians and 13 involved bicyclists. Thirty-two of these crashes resulted in injuries.

The top three intersections with the greatest number of pedestrian and bicyclist crashes within the study area include Bangerter Highway and 1820 South, 3100 South, and 3500 South.

Crime Prevention Through Environmental Design

Crime Prevention Through Environmental Design (CPTED) is a multi-disciplinary approach of crime prevention that uses urban and architectural design and the management of built and natural environments. CPTED strategies aim to reduce victimization, deter offender decisions that precede criminal acts, and build a sense of community among inhabitants so they can gain territorial control of areas, reduce crime, and minimize fear of crime (CPTED 2023).

The goal of applied CPTED principles is to prevent crime by designing a physical environment that positively influences human behavior. The theory is based on the following five principles:

Natural Access Control – Controlling and reducing the number of access points to a property. Gated communities are an example of access control.

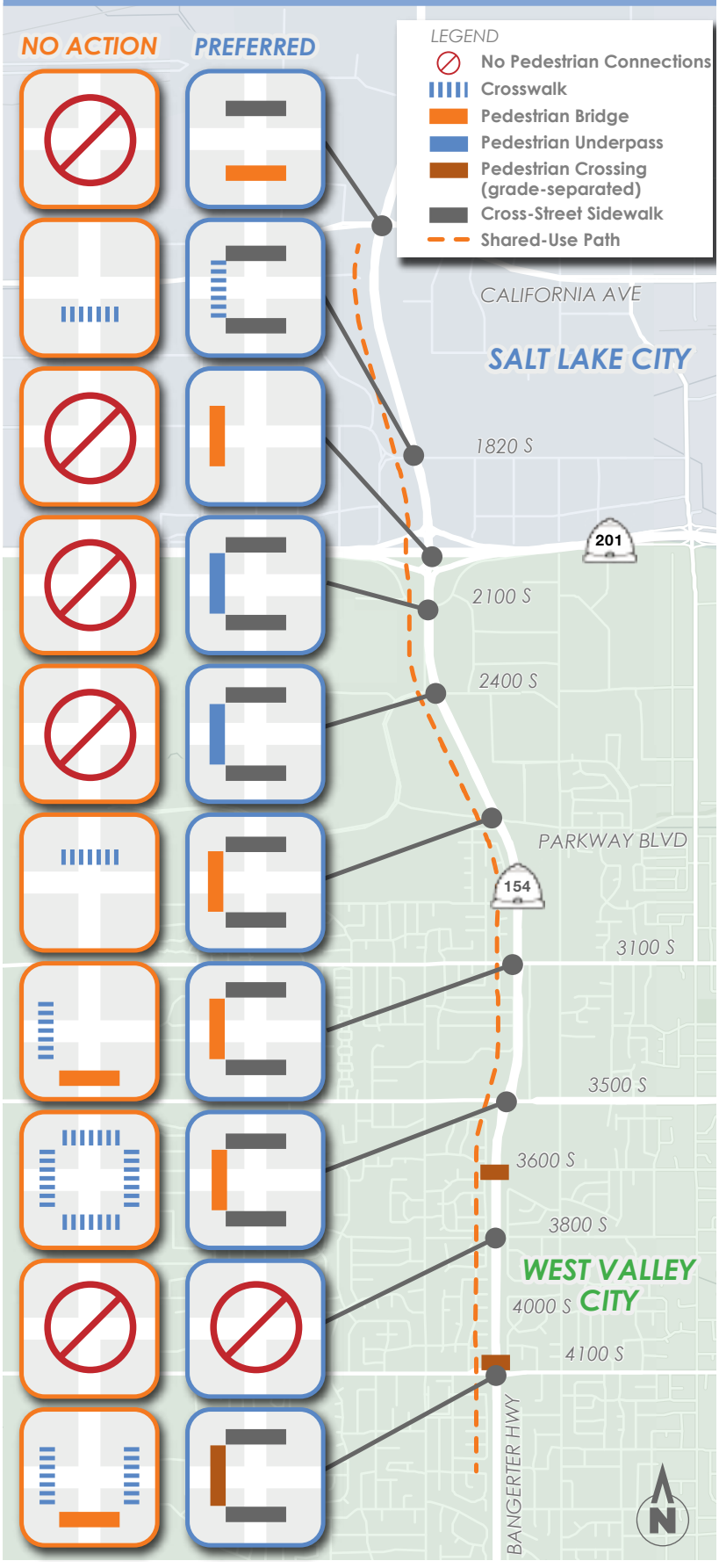
Natural Surveillance – The intended users can observe the property. Effective lighting of a property is an example of natural surveillance.

Territoriality – Creating a clear delineation of space and separates your space from non-legitimate users.

Activity Support – Placing activity where individuals become part of the natural surveillance.

Maintenance – Regularly scheduled maintenance routine will ensure the property demonstrates territoriality and natural surveillance.

FIGURE 3.4 Pedestrian Facility Improvements



Bicyclist Level of Traffic Stress

The WFRC has developed a Level of Traffic Stress (LTS) online map. LTS is a rating system that quantifies the amount of discomfort people feel when they bicycle close to traffic, where one is the most comfortable and four is the least comfortable.

Existing roadways in the study area, including California Avenue, Parkway Boulevard, 3500 South, and 4100 South have an LTS rating of four and are comfortable for only the most confident bicyclists.

Americans with Disabilites Act (ADA) Compliance

The existing pedestrian and bicyclist facilities comply with ADA standards and requirements.

3.6.2 ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE

The Preferred Alternative would include a 12-ft wide, paved, shared-use path that would be separated from and run parallel to Bangerter Highway on the west side of the road from approximately from 4100 South to California Avenue.

The Preferred Alternative would also include the construction of either underpasses or bridges across Bangerter Highway and major cross streets to improve access and safety for pedestrians and bicyclists (see FIGURE 3.4). Both the underpass and bridge options were evaluated for impacts as part of this study. The path would be designed for year-round use and would be vehicle accessible for snow removal and other maintenance.

The length of the Bangerter Highway bridge over 3500 South, as well as the pedestrian bridge, would be lengthened to accommodate future UTA plans for fixed BRT stations on 3500 South.

East-west access at grade-separated intersections will be available via sidewalks on the north and south sides of most cross-streets (see FIGURE 3.4).

The Preferred Alternative would also construct a paved path along the canal south of Granger High School between Bangerter Highway and 3600 West. The paved path would terminate at Lancer Way and provide a connection to the planned pedestrian and bicyclist facilities on Lancer Way from 3600 West to 2700 West.

Project Benefits

The construction of the Preferred Alternative would improve multi-modal community connectivity routes near Bangerter Highway and would be designed to be compatible with pedestrian and bicyclist facilities planned in municipal and regional transportation plans.

3.6.3 MITIGATION

During final design, UDOT would finalize proposed pedestrian crossings between 4100 South and 3500 South in coordination with West Valley City and Granite School District. Specifically, UDOT would coordinate with West Valley City's Neighborhood Services Department to implement CPTED principles into the final design.

UDOT would develop a plan to communicate with the public and property owners regarding the final pedestrian crossing configurations, construction schedule, street and sidewalk closures, and detours throughout construction. UDOT would work with the cities to identify pedestrian route detours that may be needed during construction. Access to residences and businesses would be maintained during construction. UDOT would maintain Americans with Disabilities Act-compliant pedestrian access, including temporary safe street crossings and sidewalks.

3.7 AIR QUALITY

An air quality assessment was prepared as part of this SES that focused on the following criteria pollutants:

- Carbon monoxide (CO)
- Particulate matter (PM) with a diameter of 10 micrometers or less (PM_{10})
- Particulate matter with a diameter of 2.5 micrometers or less ($PM_{2.5}$)
- Ozone (O_3)
- Sulfur dioxide (SO_2)

The assessment also included a qualitative analysis of Mobile Source Air Toxics (MSATs), greenhouse gases, and a review of existing state and federal data on air pollutant levels in the study area. Details on the methodology and results of this analysis can be found in the Air Quality Summary in the Appendix.

3.7.1 AFFECTED ENVIRONMENT

The Utah Department of Environmental Quality (UDEQ) Division of Air Quality (DAQ) operates a network of air quality monitoring stations in the state of Utah. Stations are strategically placed to measure both residential and industrial air quality. The air quality monitoring station closest to the study area is the Lake Park station, located at 2782 South Corporate Park Drive in West Valley City, approximately 1.4 miles from the study area.

ATTAINMENT STATUS

The study area is located within the Salt Lake City, Utah $PM_{2.5}$ Nonattainment Area, the Salt Lake County PM_{10} Maintenance Area, the SO_2 Nonattainment Area, and the Northern Wasatch Front O_3 Nonattainment Area. It is not within a nonattainment area for any other National Ambient Air Quality Standards (NAAQS).

3.7.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

Under the No Action Alternative, congestion would worsen, resulting in higher levels of criteria pollutant emissions.

PREFERRED ALTERNATIVE

Regional-Level Conformity

Based on the air quality conformity analysis conducted by the WFRC (as the Metropolitan Planning Organization (MPO)) for the RTP and the Air Quality Memorandum dated June 2019 (see Air Quality Summary in the Appendix), all the transportation projects in the 2019-2050 RTP conform to the State Implementation Plan (SIP) or the Environmental Protection Agency (EPA) interim conformity guidelines. The Preferred Alternative is identified in the WFRC RTP (which is a financially constrained long-range plan) for Phase 1 (see CH 1).

Sulfur Dioxide (SO_2)

SO_2 is primarily produced by sources other than roadway vehicles; therefore, it is unlikely that the Preferred Alternative would affect concentrations of this pollutant in the study area.

Ozone (O_3)

Vehicle exhaust, industrial emissions, and gasoline vapors are major contributors to the production of O_3. Although meteorological conditions combined with changes in the regional land use and transportation patterns could affect O_3 on a regional level, the effects that could result from any one project alone are minimal and uncertain.

Greenhouse Gases

The sources and effects of greenhouse gases are global, and to attempt a project-level analysis of negligible increases or decreases of carbon dioxide (CO_2), which is the primary transportation-related greenhouse gas emission, is technically unfeasible.

Mobile Source Air Toxics (MSATs)

In addition to the criteria air pollutants for which there are NAAQS, the EPA also regulates air toxics. Most air toxics originate from human-made sources, including

on-road mobile sources, non-road mobile sources (e.g., locomotives, construction equipment, and airplanes) and stationary sources (e.g., factories or refineries). Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. MSATs are compounds emitted from highway vehicles and non-road equipment.

When a roadway alignment is altered by a corridor widening or shift, the localized level of MSAT emissions that could result from the Preferred Alternative could be higher than the No Action Alternative. This could be offset by increased speeds and decreased travel times, which are both associated with lower MSAT emissions.

The EPA's vehicle and fuel regulations, coupled with fleet turnover, would over time cause reductions that, in almost all cases, would result in region-wide MSAT levels that are lower than today.

Project Benefits

Improvements to mobility and a reduction in congestion are anticipated to occur as part of the Preferred Alternative, which is expected to decrease levels of criteria pollutants in the study area and surrounding areas.

Under the Preferred Alternative, the quantity of MSATs that are expected to be emitted would be proportional to the vehicle miles traveled (VMT). Because improvements under the Preferred Alternative remove intersection signals and eliminate stop-and-go traffic, there would potentially be a reduction in congestion and the amount of MSAT emissions is projected to decrease.

3.7.3 MITIGATION

The Preferred Alternative is identified as a Phase 1 project in the WFRC RTP. The air quality conformity report published on June 17, 2019 found that the 2050 RTP conforms to state air quality goals and objectives and therefore conforms to the State Implementation Plan (SIP). For this reason, UDOT does not expect the Preferred Alternative to adversely affect local compliance with the NAAQS.

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 2022).

3.8 NOISE

A noise analysis was prepared in accordance with UDOT's Noise Abatement Policy (UDOT 2020b), and consistent with federal regulation 23 Code of Federal Regulations (CFR) 772 and UAC R930-3. For this analysis, the noise study area is along Bangerter Highway from California Avenue in Salt Lake City to approximately 4100 South in West Valley City. The study area also includes several east-west cross-segments along Parkway Boulevard, 3100 South, 3500 South, and 4100 South that could be affected by an increase in noise levels.

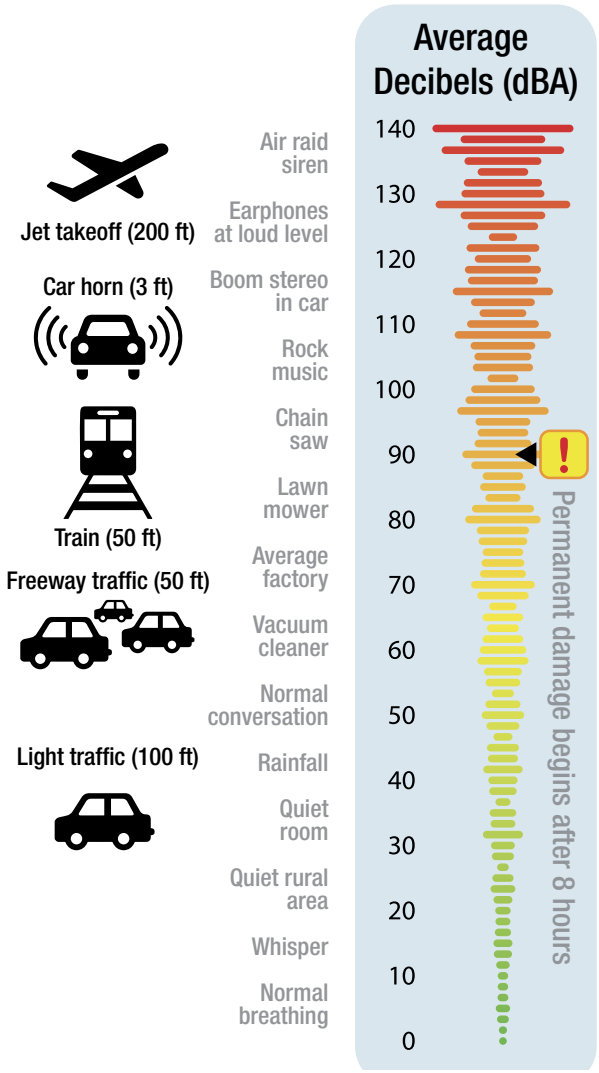
3.8.1 AFFECTED ENVIRONMENT

Traffic noise is measured in A-weighted sound levels in decibels (dBA), which most closely approximates the way the human ear hears sounds at different frequencies (see FIGURE 3.5). Since traffic noise varies over time, the sound levels for this noise analysis are expressed as "equivalent levels" or Leq, representing the average sound level over a one-hour period of time. Unless noted otherwise, all sound levels in this noise analysis are expressed in the hourly equivalent noise level.

UDOT has established Noise Abatement Criteria (UDOT 2020b) for several categories of land use activities (see the Noise Study in the Appendix). UDOT's noise criteria are based on sound levels that are considered to be an impact to nearby property owners, also known as receptors. Primary consideration is to be given for exterior areas where frequent human use occurs.

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 Criteria for specified land use categories, or 2) the future worst-case noise level is greater than or equal to an increase of 10 dBA over the existing noise level (see the Noise Study in the Appendix).

FIGURE 3.5 Sound Levels of Common Noise



Existing Noise Levels

The primary source of noise in the study area is automobile and truck traffic from Bangerter Highway, Parkway Boulevard, 3100 South, 3500 South, 4100 South, and other roadways in the area. Existing traffic sound levels for each receptor in the study area were calculated using the Traffic Noise Model (TNM) 2.5 software using existing conditions (travel lane configurations and the posted speed limit). Existing noise levels were determined using the greatest hourly traffic noise conditions likely to occur on a regular basis, or LOS C traffic volumes. On-site measurements were made to verify the accuracy of the model.

Noise levels under existing conditions would range from 58 dBA to 73 dBA (see the Noise Study in the Appendix).

3.8.2 ENVIRONMENTAL CONSEQUENCES PREFERRED ALTERNATIVE

Overall, noise levels for the Preferred Alternative would range from 60 dBA to 80 dBA (see the Noise Study in the Appendix). Two hundred and forty-one receptors would experience a substantial increase in noise, which is defined as a 10 dBA or greater increase over existing noise levels. This increase is due to the removal of existing noise walls as a result of the Preferred Alternative. Of the 930 receivers, representing 1,568 noise sensitive locations within the study area, 350 would be impacted by traffic noise (see Noise Study in the Appendix).

3.8.3 MITIGATION

According to the UDOT Noise Abatement Policy (2020b), specific conditions must be met before traffic noise abatement is implemented. Noise mitigation must be considered both feasible and reasonable.

The factors considered when determining if mitigation 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.
- Safety on Urban Non-Access Controlled Roadways – To prevent a damaged wall from becoming a safety hazard, in the event of a failure, wall height shall be no greater than the distance from the back-of-curb to the face of the proposed wall. Because the distance from the back-of-curb to the face of a proposed wall varies, wall heights that meet this safety requirement may 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 receptors.

The factors considered when determining if mitigation is "reasonable" include:

- 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 receptors.
- Cost Effectiveness – The cost of noise abatement measures must be deemed reasonable in order to be included in the project.
- Viewpoints of Property Owners and Residents – As part of the final design phase, public balloting would take place if noise abatement measures appear to meet the criteria outlined in UDOT's Noise Abatement Policy (2020).

Noise Barriers

Nine noise walls were evaluated to mitigate traffic noise to impacted receptors. See below for a summary of the recommended noise walls. A more detailed noise wall analysis can be found in the Noise Study in the Appendix. See VOLUME 2 and FIGURE 3.6 for wall locations.

Wall 1

This wall would be located on the east side of Bangerter Highway between 4100 South and 4400 South. The wall would be approximately 2,400 feet in length and 13 feet tall.

Wall 2

This wall would be built in two overlapping segments and would be located on the east side of Bangerter Highway between 4100 South and the North Jordan Canal. The wall would be approximately 3,753 feet in length and 13 feet tall.

Wall 3

This wall was evaluated for impacts at Granger High School and was modeled on the east side of Bangerter Highway south of 3500 South. The wall did not meet the requirements of the UDOT Noise Abatement Policy.

Wall 4

This wall would be built in two overlapping segments and would be located on the east side of Bangerter Highway between 3500 South and 3100 South. The wall would be approximately 2,552 feet in length and 15 feet tall.

Wall 5

This wall would be located on the west side of Bangerter Highway between 2400 South and Parkway Boulevard. The wall would be approximately 2,465 feet in length and 10 feet tall.

Wall 6

This wall would be located on the west side of Bangerter Highway between Parkway Boulevard and 3100 South. The wall would be approximately 2,562 feet in length and 15 feet tall.

Wall 7

This wall would be located on the west side of Bangerter Highway between 3100 South and 3500 South. The wall would be approximately 2,325 feet in length and 14 feet tall.

Wall 8

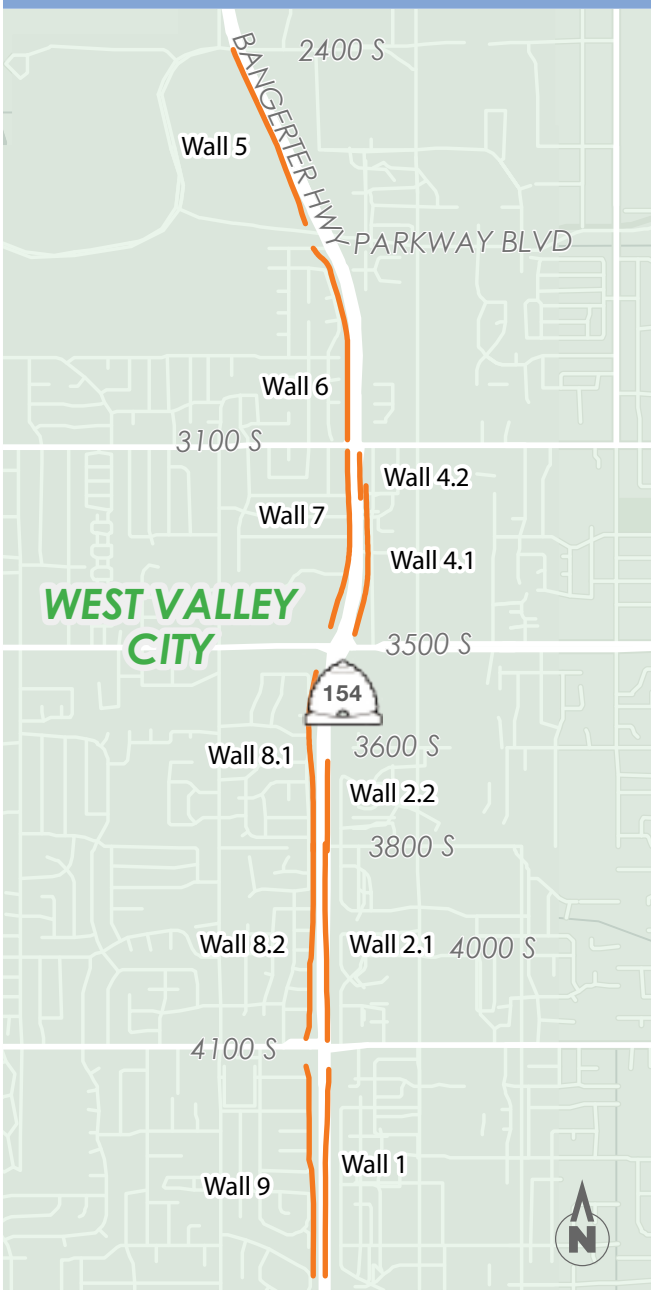
This wall would be built in two overlapping segments and would be located on the west side of Bangerter Highway between 3500 South and 4100 South. The wall would be approximately 4,692 feet in length and 13 feet tall.

Wall 9

This wall would be located on the west side of Bangerter Highway between 4100 South and 4400 South. The wall would be approximately 2,660 feet in length and 13 feet tall.

Noise abatement measures analyzed and deemed feasible and reasonable in the environmental study phase are still subject to final design and balloting. The final decision to construct the proposed noise barrier will not be made until completion of the project design and refined utility relocation and right-of-way costs are available. Reasonableness will be revisited using refined costs prior to balloting.

FIGURE 3.6 Recommended Noise Walls



3.9 CULTURAL

Cultural resources include archaeological resources (both prehistoric and historic), architectural or historic resources (buildings and structures), and traditional cultural properties (TCPs). The Advisory Council on Historic Preservation (ACHP) defines a historic resource as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) (i.e., historic properties built 50 years ago or later)." The term includes artifacts, records, and remains related to and located within such properties and includes properties of traditional religious and cultural importance to a Native American tribe that also meet the National Register criteria. The term "eligible for inclusion" in the NRHP includes all properties that meet the National Register criteria, whether or not formally determined as such.

In compliance with the Utah Antiquities Act (Utah Code Annotated (UCA) 9-8-102 et seq (404)), each state agency must consider the effects of an expenditure or undertaking on historic properties before funds are allocated for the undertakings completion.

According to the Programmatic Agreement between UDOT and the Utah State Historic Preservation Officer (SHPO), renewed January 22, 2018, UDOT will be in compliance with UCA 9-8-404 for state projects by following the process outlined in Section 106 of the National Historic Preservation Act (NHPA).

The Section 106 review process requires cultural resources to be evaluated for eligibility for listing on the NRHP based upon whether "the quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association" and whether or not they meet one or more of the criteria in TABLE 3.7.

TABLE 3.7 National Register of Historic Places (NRHP) Criteria

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 yield, information important in prehistory or history

The Utah SHPO has developed a rating system for buildings that allows for a distinction to be made between those buildings individually eligible under the National Register Criterion A or C and those that have been altered, but that may be eligible as part of a historic district or for historical reasons. The rating system also allows for a distinction to be made between those buildings that are ineligible due to loss of integrity and those that are ineligible because they are out-of-period (see TABLE 3.8).

TABLE 3.8 Utah State Historic Preservation Office (SHPO) Rating Definitions for Historic Structures

ES	Eligible/Significant: 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 NRHP under Criterion C; also, buildings of known historical significance
EC	Eligible/Contributing: 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 NRHP as part of a potential historic district or primarily for historical rather than architectural reasons
NC	Ineligible/Noncontributing: Built during the historic period but has had major alterations or additions; no longer retains integrity
OP	Ineligible/Out-of-Period: Built during the modern era

3.9.1 AFFECTED ENVIRONMENT

AREA OF POTENTIAL EFFECTS (APE)

UDOT determined the Area of Potential Effects (APE) in consultation with the SHPO. The APE is the same as the study area shown in FIGURE 1.1.

ARCHAEOLOGICAL RESOURCES

A Class III, intensive-level pedestrian inventory of undeveloped areas of the APE was conducted in October 2022. The survey resulted in the identification of six archaeological sites, two of which have been determined eligible for inclusion on the NRHP (see TABLE 3.9).

TABLE 3.9 Archaeological Resources

Site #	Description	NRHP Eligibility
42SL304	West Branch of Brighton Canal	Eligible
42SL199	Historic trash scatter	Not Eligible
42SL827	Unnamed Historic Canal	Not Eligible
42SL305	Ridgeland Canal	Not Eligible
42SL342	North Jordan Canal	Eligible
42SL289	Historic Residence	Not Eligible

ARCHITECTURAL RESOURCES

UDOT conducted a survey of the APE for architectural resources on October 27-28, 2022 following the Utah Division of State History (UDSH) Standard Operating Procedures. For a complete list of historic properties and eligibility determinations see Reconnaissance Level Survey in the Appendix. To extend the life of the survey, this date range (45 years) was used instead of the standard 50-year mark as part of the NRHP requirements. Three-hundred and eighty-four historic properties (45 years or older) were identified within the APE (see the Preferred Alternative Maps in VOLUME 2). One-hundred and eighty-three of those properties were determined eligible for the National Register (see Determination of Effect, Finding of Effect (DOEFOE) in the Appendix.

3.9.2 ENVIRONMENTAL CONSEQUENCES

Although compliance with Section 106 of the NHPA does not apply for this SES, UDOT follows the definitions found in Section 106 to determine effects under the Utah Antiquities Act.

Effects are defined as "alteration[s] to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register" (36 CFR §800.16(i)). Impacts to historic properties are categorized as No Historic Properties Affected, No Adverse Effect, and Adverse Effect.

A finding of No Historic Properties Affected is made when "[e]ither there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them as defined in §800.16(i)" (see 36 CFR §800.4(d)(1)).

A finding of No Adverse Effect is made "[w]hen the undertaking's effects do not meet the criteria of paragraph (a)(1) of this section [see Adverse Effect definition] or the undertaking is modified or conditions are imposed... to ensure consistency with the Secretary's standards for the treatment of historic properties (36 CFR §68) to avoid adverse effects" (see 36 CFR §800.5(b)).

A finding of Adverse Effect is made "[when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, and association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative" (see 36 CFR §800.5(a)(1)).

3.9.3 FINDING OF EFFECT

UDOT prepared a DOEFOE, which outlines the effect determinations for each architectural and archaeological resource. SHPO concurred with the DOEFOE. A copy of the DOEFOE is found in the Appendix.

3.9.4 PREFERRED ALTERNATIVE

The Preferred Alternative would result in a finding of adverse effect to 42 architectural properties, a finding of no adverse effect to 20 architectural properties and 2 archaeological sites, and a finding of no historic properties affected for all remaining cultural resources (see TABLE 3.10 and VOLUME 2).

3.9.5 MITIGATION

UDOT will mitigate adverse effects to historic properties through a Memorandum of Agreement (MOA) with the SHPO. Mitigation efforts include the completion of intensive level survey forms for affected homes and research on the history of the area. The MOA can be found in the Appendix.

TABLE 3.10 Effects of the Preferred Alternative

Address	Date	Style	NRHP Eligibility/ SHPO Rating	Finding of Effect	Description of Effect
3087 South Corbin Drive	1976	Split Entry	Eligible/EC	No Adverse Effect	Partial acquisition (2,172 sq. feet)
3112 South 3780 West	1964	Split Entry	Eligible/EC	No Adverse Effect	Partial acquisition (673 sq. feet)
3190 South 3690 West	1977	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
3326 South 3690 West	1951	Early Ranch	Eligible/EC	Adverse Effect	Demolition of the historic structure
3402 South 3690 West	1950	Early Ranch	Eligible/EC	Adverse Effect	Full acquisition (11,365 sq. feet)
3414 South 3690 West	1950	Early Ranch	Eligible/EC	Adverse Effect	Demolition of the historic structure
3426 South 3690 West	1950	Early Ranch	Eligible/EC	Adverse Effect	Demolition of the historic structure
3460 South 3690 West	1950	Early Ranch	Eligible/EC	Adverse Effect	Demolition of the historic structure
3559 South Hawkeye	1963	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
3577 South Hawkeye	1962	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
3585 South Hawkeye	1962	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
3597 South Hawkeye	1962	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
3639 South Hawkeye	1962	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
3661 South Hawkeye	1960	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
3762 West Bawden	1965	Ranch/ Rambler	Eligible/EC	No Adverse Effect	Partial acquisition (1,111 sq. feet)
3770-3784 West 3500 South	1977	Contemporary Restaurant	Eligible/EC	Adverse Effect	Demolition of the historic structure
3810 West Pinehurst	1977	Split Entry	Eligible/EC	Adverse Effect	Demolition of the historic structure
3812 West Warr Barton Circle	1977	Split Entry	Eligible/EC	Adverse Effect	Demolition of the historic structure
3813 West Pinehurst	1977	Split Level	Eligible/EC	Adverse Effect	Demolition of the historic structure
3813 West Warr Barton Circle	1977	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
3813 West Woodgate	1977	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
3816 West Cochise	1963	Split Level	Eligible/EC	Adverse Effect	Demolition of the historic structure

Address	Date	Style	NRHP Eligibility/ SHPO Rating	Finding of Effect	Description of Effect
3826 West Bobwhite	1976	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
3838 W Mooregate	1971	Ranch/ Rambler	Eligible/EC	No Adverse Effect	Partial acquisition (2,910 sq. feet)
3964 South Kewanee	1964	Ranch/ Rambler	Eligible/EC	No Adverse Effect	Partial acquisition (331 sq. feet)
3976 South Kewanee	1963	Ranch/ Rambler	Eligible/EC	No Adverse Effect	Partial acquisition (1,360 sq. feet)
3980 South Kewanee	1963	Ranch/ Rambler	Eligible/EC	No Adverse Effect	Partial acquisition (2,416 sq. feet)
4008 South Carrie	1964	Ranch/ Rambler	Eligible/EC	No Adverse Effect	Partial acquisition (799 sq. feet)
4016 South Carrie	1963	Ranch/ Rambler	Eligible/EC	No Adverse Effect	Partial acquisition (3,460 sq. feet)
4030 South Carrie	1973	Ranch/ Rambler	Eligible/EC	Adverse Effect	Full acquisition (8,556 sq. feet)
4052 South Carrie	1974	Ranch/ Rambler	Eligible/EC	Adverse Effect	Full acquisition (8,572 sq. feet)
4058 South Carrie	1972	Ranch/ Rambler	Eligible/EC	Adverse Effect	Full acquisition (8,570 sq. feet)
4066 South Carrie	1972	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4074 South Carrie	1972	Contemporary	Eligible/EC	Adverse Effect	Demolition of the historic structure
4090 South Carrie	1972	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4151 South Bluebird	1976	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4159 South Bluebird	1976	Split Entry	Eligible/EC	Adverse Effect	Demolition of the historic structure
4169 South Bluebird	1976	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4177 South Bluebird	1976	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4189 South Bluebird	1975	Split Entry	Eligible/EC	Adverse Effect	Demolition of the historic structure
4192 South 3760 West	1965	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4197 South Bluebird	1975	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4202 South 3760 West	1964	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4207 South Bluebird	1975	Split Entry	Eligible/EC	Adverse Effect	Demolition of the historic structure

Address	Date	Style	NRHP Eligibility/ SHPO Rating	Finding of Effect	Description of Effect
4235 South Bluebird	1975	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4240 South 3760 West	1971	Ranch/ Rambler	Eligible/EC	No Adverse Effect	Partial acquisition (1,020 sq. feet)
4243 South Bluebird	1975	Split Entry	Eligible/EC	Adverse Effect	Demolition of the historic structure
4257 South Bluebird	1977	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4258 South 3760 West	1971	Split Entry	Eligible/EC	No Adverse Effect	Partial acquisition (627 sq. feet)
4267 South Bluebird	1977	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4268 South 3760 West	1971	Split Level	Eligible/EC	No Adverse Effect	Partial acquisition (538 sq. feet)
4276 South 3760 West	1971	Ranch/ Rambler	Eligible/EC	No Adverse Effect	Partial acquisition (513 sq. feet)
4281 South Bluebird	1977	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4287 South Bluebird	1976	Ranch/ Rambler	Eligible/EC	Adverse Effect	Demolition of the historic structure
4316 South 3760 West	1971	Split Entry	Eligible/EC	No Adverse Effect	Partial acquisition (660 sq. feet)
4334 South 3760 West	1971	Ranch/ Rambler	Eligible/EC	No Adverse Effect	Partial acquisition (664 sq. feet)
4355 South Hawkeye	1971	Split Level	Eligible/EC	No Adverse Effect	Partial acquisition (1,985 sq. feet)
4358 South 3760 West	1973	Split Entry	Eligible/EC	No Adverse Effect	Partial acquisition (556 sq. feet)
4390 South 3760 West	1972	Split Entry	Eligible/EC	No Adverse Effect	Partial acquisition (532 sq. feet)
3845 West 4100 South	1965	Contemporary	Eligible/EC	Adverse Effect	Demolition of the historic structure

3.10 WATER RESOURCES

The Federal Water Pollution Control Act (33 Utah State Code (USC) §1251-1376), as amended by the CWA of 1977 and 1987, is the primary regulation for water quality. It controls discharge of dredge or fill material into Waters of the U.S. (WOTUS) and requires states and Native American tribes to set specific water quality criteria and pollution control programs. The EPA is charged with regulating its implementation and has delegated certain portions of its authority to the U.S. Army Corps of Engineers (USACE) and the UDEQ, which includes the Utah Division of Water Quality (UDWQ) and the Utah Division of Drinking Water (UDDW).

The CWA requires the development and maintenance of water quality standards, along with water body classifications, to identify beneficial uses to be sustained. UDWQ is responsible for this task and, through UAC §R317-2-13, classifies each water body. Waters that do not meet water quality standards for its classified use are placed on a list of impaired waters where further analysis is conducted to determine pollutants and remedial actions, if necessary.

3.10.1 AFFECTED ENVIRONMENT

STORM WATER

The goal of storm water systems is to treat storm water runoff on-site to reduce the amount of pollutants that flow into nearby waters or that permeate into the ground. In general, areas with storm drain systems capture storm water runoff from roads and convey it to a discharge point through catch basins, pipes, and/or detention ponds. These systems can be effective at reducing total suspended solids (TSS) if storm water is conveyed to a detention pond with discharge control devices prior to storm water entering surface waters. Discharge control devices regulate the flow exiting a detention pond, thus slowing storm water and allowing sufficient time for suspended solids to fall from the flow.

Paved areas without storm drain systems allow storm water to sheet flow into nearby surface waters or to nearby permeable surfaces without reducing the amount of TSS. These areas allow for storm water to flow into nearby waters or infiltrate into the ground untreated.

If not managed properly, roadway runoff can negatively impact water quality by increasing total dissolved solids (TDS) and TSS that enter nearby streams and lakes. Highway surfaces collect automobile-related pollutants (mainly lead, copper, zinc, oil, grease, and rust) and de-icing chemicals (salt and salt solutions), which are then washed off highway surfaces from rain or snow melt. Unmanaged runoff can become concentrated, gather sediment through erosion, and enter streams and lakes unless measures are taken to reduce pollutants.

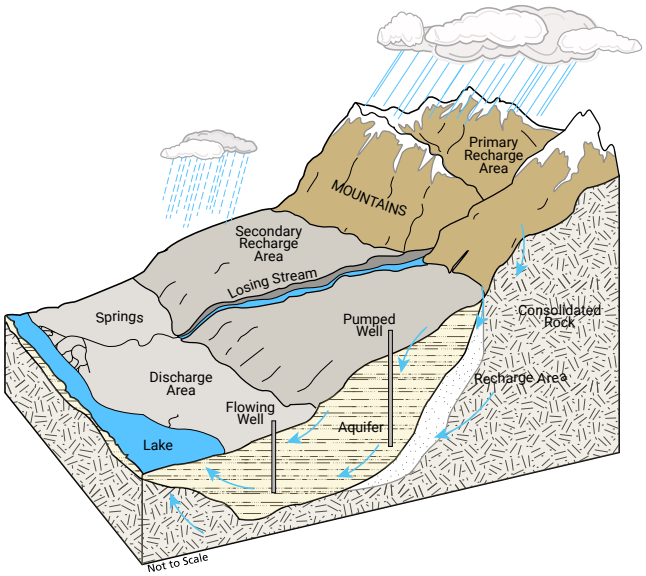
The study area has a mix of impervious surfaces (roadways, sidewalks, parking lots, etc.) and pervious surfaces (undeveloped areas). Storm water generally sheet flows to roadside ditches or gutters. The water then remains in the ditch, flows to detention basins, or discharges to one of the open water sources in the area. Many of these eventually flow into the Great Salt Lake.

GROUNDWATER/AQUIFERS

Springs or seeps may be found in areas where groundwater discharge from the underground water table surface intersects with the land surface. No springs or seeps are located within the study area.

The study area is located within a Secondary Recharge zone, as well as a Discharge zone of an aquifer (see FIGURE 3.7). The outflow of groundwater discharge from the aquifer may occur naturally or as the result of human activity, notably well pumping. Within the study area, human activity is the primary means of groundwater discharge.

FIGURE 3.7 Recharge and Discharge Areas



Utah classifies groundwater according to TDS concentration and contaminant concentration according to the rules established by the Utah Ground Water Quality Protection Program (R317-6-3). The groundwater within the study area is classified under Use Class II- Drinking Water Quality Ground Water and Class III- Limited Use Ground Water (DEQ 2023).

POINTS OF DIVERSION

A point of diversion (POD) is a place where water is extracted for use by both private and public parties. The Utah Division of Water Rights (UDWR) records permitted PODs from both surface water and groundwater sources and divides them into eight categories. Four types of PODs are recorded within the study area:

- **Underground:** Wells, tunnels, sumps, and underground drains.
- **Abandoned Well:** A well whose purpose and use has been permanently discontinued.
- **Surface:** Streams, rivers, creeks, and any water above ground.
- **Return:** Point where water that has been non-consumptively used is returned back to the natural stream.

According to the UDWR (2012), 353 PODs are located within 0.25 miles of the study area (see TABLE 3.11). FIGURE 3.8 shows the POD types and the number that occur within 0.25 miles of the study area.

TABLE 3.11 PODs within 0.25 Miles of Study Area

TYPE	NUMBER
Abandoned Well	7
Return	1
Surface	4
Underground	341

SURFACE WATER

Seventeen surface water features, including canals, ditches, and other open water features are present within the study area. More detailed information about these features can be found in SECTION 3.11.

3.10.2 ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE

Storm Water

The Preferred Alternative would increase the impervious surface area in the study area by approximately 61 acres. Storm water would be collected and enter existing, improved, or new storm drain systems. Any required storm drain modifications would be constructed in compliance with current UDEQ and UDWQ standards as well as local discharge rates and regulations. The use of existing, modified, or new storm drain systems would minimize negative impacts to water quality by including flow management controls, oil skimmers, grease traps, etc. See VOLUME 2 for detention basin locations.

Groundwater/Aquifers

The Preferred Alternative would increase the impervious surface area in the study area by approximately 61 acres and would likely concentrate infiltration to detention basin locations. However, the quantity

and quality of the groundwater would not be impacted because the storm drain system would be designed and managed according to the requirements of UDWQ to minimize negative impacts to water quality, including flow management controls, oil skimmers, grease traps, etc., where needed.

Points of Diversion

The Preferred Alternative would cross over or near land associated with 16 PODs. Specific impacts would be determined during final design.

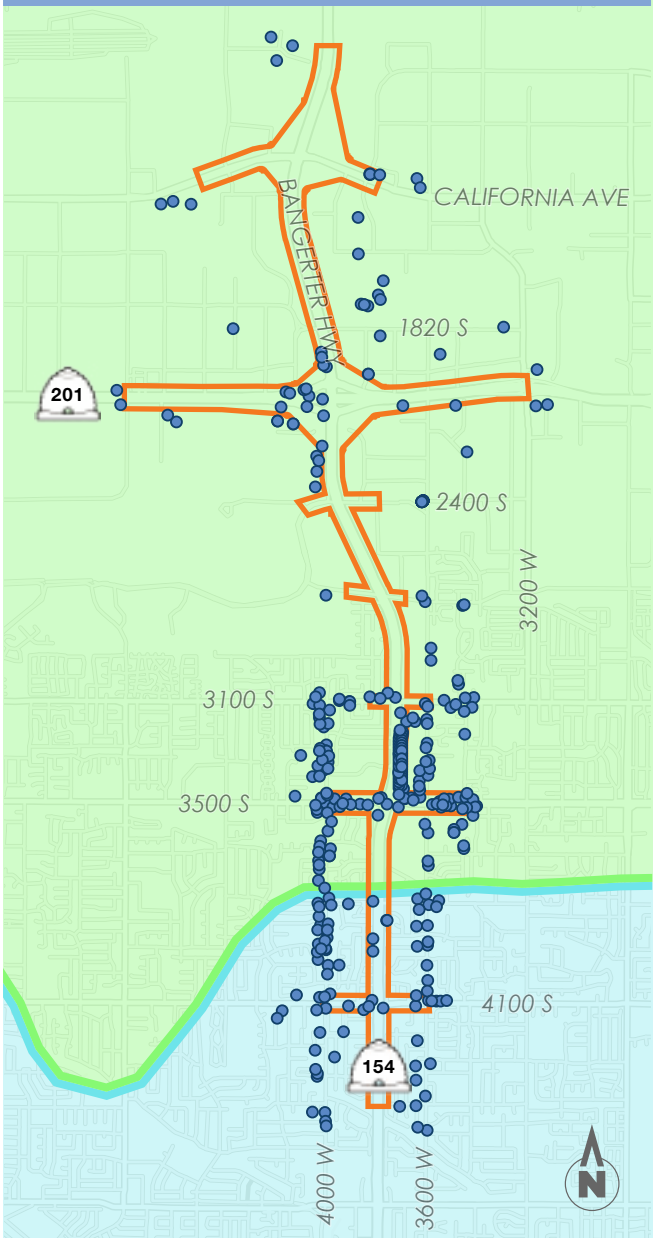
Surface Water

The Preferred Alternative would impact and reduce the amount of surface water in the area (see UDOT Water Resources Concurrence Memo in the Appendix). Further discussion on the impacts to surface water can be found in SECTION 3.11.

3.10.3 MITIGATION

During the final design of the project, coordination with property owners would occur to determine the appropriate mitigation measures if a well head or other water right POD is affected. Mitigation could include (1) relocating a well head or surface water diversion to continue to provide irrigation water to any land that is not acquired or (2) abandoning the well and compensating the owner for the value of the associated water right.

FIGURE 3.8 Aquifers and Points of Diversion



LEGEND
- Study Area
- PODs - Underground
- Aquifer - Discharge
- Aquifer - Secondary Recharge

3.11 WATERS OF THE U.S.

The USACE has primary authority to administer and enforce Section 404 of the CWA (33 USC 1251). Under the CWA, WOTUS are defined in 33 CFR 328.3 and 40 CFR 102.2 as jurisdictional waters that include the territorial seas and traditional navigable waters; perennial or intermittent tributaries that contribute surface water flow to such waters; certain lakes, ponds, and impoundments of jurisdictional waters; and wetlands adjacent to jurisdictional waters.

Under Section 404 of the CWA, no discharge of dredged or fill material is permitted in WOTUS if there is a less environmentally damaging practicable alternative.

3.11.1 AFFECTED ENVIRONMENT

In compliance with Section 404 of the CWA, an Aquatic Resources Delineation of the study area was conducted in October 2021 and September and October 2022 (see Aquatic Resources Delineation Report in the Appendix). The purpose of the delineation was to identify and map potential WOTUS including wetlands that could be considered jurisdictional by the USACE.

WATERS OF THE U.S., INCLUDING WETLANDS

Forty-five features, totaling 17.722-acres, were identified within the study area. The aquatic resources that were delineated in the survey area consist of 9.831 acres of palustrine emergent wetlands, 0.794 acre of playa, 1.155 acres (7,105 linear feet) of canals, 0.384 acre (3,488 linear feet) of ditches, and 5.559 acres of open-water ponds (see TABLE 3.12 and VOLUME 2).

For the purpose of this SES these features, including wetlands, are only considered potentially jurisdictional because the USACE will make the final determination on the jurisdictional nature of the delineated features. When the USACE reviews the Aquatic Resources Delineation report, it will be known which of these features are considered jurisdictional by the USACE and regulated under Section 404 of the CWA.

TABLE 3.12 Aquatic Resources Summary

Name	Type	Area	Linear Feet
PEM-1	Wetland	0.275	--
PEM-2	Wetland	0.454	--
PEM-3	Wetland	0.032	--
PEM-4a	Wetland	0.112	--
PEM-4b	Wetland	0.141	--
PEM-5a	Wetland	0.084	--
PEM-5b	Wetland	0.127	--
PEM-6a	Wetland	0.151	--
PEM-6b	Wetland	0.128	--
PEM-7a	Wetland	0.184	--
PEM-7b	Wetland	0.008	--
PEM-8	Wetland	0.038	--
PEM-9	Wetland	0.040	--
PEM-10	Wetland	0.071	--
PEM-11a	Wetland	0.268	--
PEM-11b	Wetland	0.172	--
PEM-12a	Wetland	0.006	--
PEM-12b	Wetland	0.007	--
PEM-13a	Wetland	0.021	--
PEM-13b	Wetland	0.028	--
PEM-14	Wetland	0.051	--
PEM-15	Wetland	0.185	--
PEM-16a	Wetland	0.098	--
PEM-16b	Wetland	0.098	--
PEM-17a	Wetland	0.135	--
PEM-17b	Wetland	0.071	--

Name	Type	Area	Linear Feet
PEM-18a	Wetland	0.126	--
PEM-18b	Wetland	0.049	--
PEM-19	Wetland	0.162	--
PEM-20	Wetland	1.207	--
PEM-21	Wetland	0.155	--
PEM-22	Wetland	3.568	--
PEM-23	Wetland	0.992	--
PEM-24	Wetland	0.047	--
PEM-25	Wetland	0.159	--
PEM-26	Wetland	0.343	--
PEM-27a	Wetland	0.026	--
PEM-27b	Wetland	0.026	--
C-1a	Canal	0.160	1,394
C-1b	Canal	0.194	1,365
C-1c	Canal	0.105	1,076
C-2c	Canal	0.010	67
C-2d	Canal	0.028	153
C-3	Canal	0.143	446
C-4	Canal	0.038	325
C-5a	Canal	0.124	850
C-5b	Canal	0.137	777
D-1a	Ditch	0.004	34
D-1b	Ditch	0.066	421
D-2	Ditch	0.032	236
D-3	Ditch	0.042	460
D-4	Ditch	0.046	983
D-5	Ditch	0.015	250
D-6a	Ditch	0.064	490
D-6b	Ditch	0.098	474
D-6c	Ditch	0.010	83
D-6d	Ditch	0.006	57
Playa-1	Playa	0.794	--
OW-1	Open Water	0.114	--
OW-2	Open Water	1.948	--
OW-3	Open Water	1.271	--
OW-4a	Open Water	0.222	--
OW-4b	Open Water	1.414	--
OW-4c	Open Water	0.048	--
OW-4d	Open Water	0.320	--
OW-5	Open Water	0.104	--
OW-6a	Open Water	0.098	--
OW-6b	Open Water	0.020	--

3.11.2 ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE

The Preferred Alternative would involve roadway improvements in and around the areas identified as WOTUS, including wetlands (see UDOT Water Resources Concurrence Memo in the Appendix).

Eleven wetlands within the study area would be impacted by the Preferred Alternative, resulting in approximately 2.26-acres of impacts. Four canals and four Open Water features would also be impacted by the Preferred Alternative, resulting in an additional 1.26-acres of impacts. Impacts from the Preferred Alternative are shown in TABLE 3.13.

TABLE 3.13 Aquatic Resources Impacts Summary

Name	Type	Acres Impacted	Linear Feet impacted
PEM-2	Wetland	0.008	--
PEM-3	Wetland	0.032	--
PEM-11a	Wetland	0.204	--
PEM-11b	Wetland	0.112	--
PEM-12a	Wetland	0.003	--
PEM-12b	Wetland	0.002	--
PEM-14	Wetland	0.051	--
PEM-15	Wetland	0.185	--
PEM-16a	Wetland	0.098	--
PEM-16b	Wetland	0.134	--
PEM-17a	Wetland	0.082	--
PEM-17b	Wetland	0.071	--
PEM-18a	Wetland	0.126	--
PEM-18b	Wetland	0.049	--
PEM-20	Wetland	0.796	--
PEM-26	Wetland	0.304	--
C-2b	Canal	0.141	895
C-2c	Canal	0.003	24
C-3	Canal	0.024	73
C-4	Canal	0.003	26
C-5b	Canal	0.137	774
OW-1	Open Water	0.114	--
OW-2	Open Water	0.237	--
OW- 3	Open Water	0.03	--
OW-4b	Open Water	0.576	--
TOTAL:		**3.522**	**1,792**

3.11.3 MITIGATION

A CWA Section 404 permit authorization would be required for project activities within WOTUS, including wetlands. This permit would require mitigation to compensate for impacts.

Permits, licenses, variances, or similar authorization may also be required by other federal, state, and local statutes. All required permits will be fully evaluated during final design.

3.12 WILDLIFE

Wildlife and plant life, as well as their associated habitats, are protected and regulated by law at both the federal and state levels. Applicable wildlife conservation laws for the Preferred Alternative include the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), and the Candidate Conservation Agreements (CAs) with Assurances policy under the Endangered Species Act (ESA).

CAs are formal, voluntary agreements between U.S. Fish and Wildlife Service (USFWS) and one or more parties to address the conservation needs of plant and animal species that are candidates, or are likely to become candidates, for listing under the ESA. CAs provide additional protections to vulnerable species to help with long-term conservation and recovery without listing.

Additionally, the Utah Division of Wildlife Resources (DWR) is responsible for the management of other wildlife and game animals.

3.12.1 AFFECTED ENVIRONMENT

STUDY AREA SETTING

The study area is located in an urbanized area that has been extensively developed for residential and commercial uses. Vegetation in the study area is sparse and is composed almost entirely of landscape trees, shrubs, and turf grasses. The study area also contains some canals, detention ponds, and wetlands.

MIGRATORY BIRDS AND RAPTORS

The highest likelihood of impact to migratory birds and raptors from a roadway project is associated with the removal (incidental or other) of an active nest.

Migratory bird nesting habitat occurs in landscape trees and shrubs, disturbed uplands, canals, ponds, and wetlands in the study area. It is likely that various species of migratory birds (e.g., robins, ducks, etc.) are present in the study area.

Bald and golden eagles require tall trees or cliff faces near water for nesting, and this type of habitat does not occur in the study area. Due to lack of suitable habitat, eagles are not present in the study area.

OTHER WILDLIFE

In 2017, DWR founded the Utah Wildlife Migration Initiative (WMI) which uses Global Positioning System (GPS) tracking collars to identify important wildlife habitat, including migration corridors that link essential seasonal ranges. WMI has created a webmap using the data it collects so agencies and the public can visualize where human uses are most likely to conflict with wildlife by intersecting migration corridors.

The WMI webmap does not identify any wildlife migration corridors in the study area.

SUITABLE HABITAT FOR PROTECTED SPECIES WITHIN THE STUDY AREA

Migratory bird habitat is present in the study area. There is no suitable habitat present for eagles, CA species, or other wildlife.

3.12.2 ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE

The Preferred Alternative would require the removal of trees, shrubs, or other vegetation that could be suitable migratory bird nesting habitat. The study team has coordinated anticipated impacts with the UDOT Natural Resources Manager (see Protected Species Review and Protected Species Concurrence in the Appendix). The UDOT Natural Resources Manager determined that through implementation of the conservation measures found in the mitigation section, the Preferred Alternative would not result in direct or incidental take of migratory birds.

The Preferred Alternative would not negatively impact eagles, CA species, or other wildlife.

3.12.3 MITIGATION

To avoid impacts to migratory birds, removal of woody vegetation (trees, shrubs, or other vegetation that could be suitable migratory bird nesting habitat), including sagebrush, must occur before April 15 or after July 31. If removal of woody vegetation cannot occur before or after that time period, a nest survey would be required to identify active migratory bird nests within vegetation scheduled for removal. If active nests are found, the UDOT Natural Resources Manager would be coordinated with to identify what avoidance measures are appropriate for the species and context.

3.13 HAZARDOUS MATERIALS

Hazardous materials include any solid, liquid, or gaseous materials that, if improperly managed or disposed of, may pose substantial 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.

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976 to regulate the management of solid waste (e.g., garbage), hazardous waste, and underground storage tanks (USTs) that hold petroleum products or certain chemicals, including leaking underground storage tanks (LUSTs). Under RCRA, hazardous wastes are tracked from the time they are generated until the time they are ultimately disposed of or recycled.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was enacted in 1980. CERCLA provides for the cleanup and remediation of closed and abandoned hazardous waste sites where hazardous waste has been abandoned, accidentally spilled, or illegally dumped and also creates a "Superfund" to help pay for cleanup costs.

3.13.1 AFFECTED ENVIRONMENT

Hazardous materials and waste sites were evaluated by reviewing records from the UDEQ and the EPA. These sites include National Priorities List (NPL) sites; Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) sites; Toxic Release Inventory (TRI); Used Oil Facilities; Enforceable Written Assurances (EWAs); Brownfields; USTs and LUSTS; and Environmental Incidents. These site types are defined in TABLE 3.14 along with the search radius beyond the study area.

TABLE 3.14 Description of Hazardous Materials Sites and Search Radius Distances

Site Type	Search Radius Beyond Study Area	Description
NPL	1 mile	NPL sites are those containing listed chemicals under CERCLA and have been identified as priorities for cleanup.
CERCLIS	0.5 miles	CERCLIS sites contain listed chemicals under CERCLA but have not been categorized as NPL sites.
TRI	0.5 miles	TRI are sites such as manufacturing or mining facilities that manufacture or process listed chemicals.
Used Oil Facility	Study Area or Adjacent Property	Used oil facilities are sites that store, transport, or recycle used oil.
EWA	0.5 miles	EWA sites are properties where the owner has come to an agreement with the UDEQ on obligations associated with hazardous materials or waste on the site.
Brownfield	0.5 miles	Brownfields are former industrial areas.
UST	Study Area or Adjacent Property	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.
LUST	0.5 miles*	LUSTs are UST sites where a leak has been detected.
Environmental Incident	Study Area or Adjacent Property	Environmental incidents are locations where a spill or other incident regarding hazardous materials has been reported.

Site Type	Search Radius Beyond Study Area	Description
Other Hazardous Materials Sites	Study Area or Adjacent Property	Other hazardous materials sites include Tier 2 facilities, dry cleaner facilities, voluntary cleanup program sites, formerly used defense sites, military munition response program sites, solid waste facilities, and others.

* Properties outside the study area that have been closed by the UDEQ with no evidence of contamination extending beyond the property boundary were not included.

Sites were reviewed for the potential to be affected by the Preferred Alternative based on standard radius distances as shown in TABLE 3.14. A total of 51 hazardous materials sites were identified within proximity to the study area (see FIGURE 3.9). For more information, see Hazardous Materials Site Assessment Memorandum in the Appendix.

NATIONAL PRIORITIES LIST (NPL)

No NPL sites are located within one mile of the study area.

CERCLIS SITES

There are six CERCLIS sites within 0.5 miles of the study area.

TOXIC RELEASE INVENTORY (TRI)

There are twelve TRI sites located within 0.5 miles of the study area.

USED OIL FACILITIES

There are five Used Oil Facilities located within or adjacent to the study area.

ENFORCEABLE WRITTEN ASSURANCES (EWA)

There are eight EWA properties within 0.5 miles of the study area.

BROWNFIELD

No brownfields are located within 0.5 miles of the study area.

UNDERGROUND STORAGE TANKS (USTS) AND LEAKING UNDERGROUND STORAGE TANKS (LUSTS)

There are two USTs and five LUSTs within the study area or on an adjacent property.

ENVIRONMENTAL INCIDENTS

There are five environmental incidents within the study area or on an adjacent property.

OTHER HAZARDOUS MATERIALS SITES

There are seven other hazardous materials sites within the study area or on an adjacent property. Six are Tier 2 sites and one is a dry cleaner.

3.13.2 ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE

The Preferred Alternative has the potential to impact eleven hazardous materials sites that occur within or directly adjacent to the design footprint. These sites, and the estimated risk of encountering hazardous materials at each site, are summarized in TABLE 3.15. For more information, see Hazardous Materials Site Assessment Memorandum in the Appendix.

Project Benefits

Any hazardous materials encountered during construction would be dealt with in accordance with UDOT Standard Specifications and disposal would take place under the guidelines set by the UDEQ.

3.13.3 MITIGATION

Before UDOT purchases right-of-way from any site containing potentially hazardous materials, a Phase 1 Environmental Site Assessment would be conducted at the site(s). If hazardous materials are identified during the Phase 1, a Phase 2 Environmental Site Assessment would be conducted.

FIGURE 3.9 Hazardous Materials

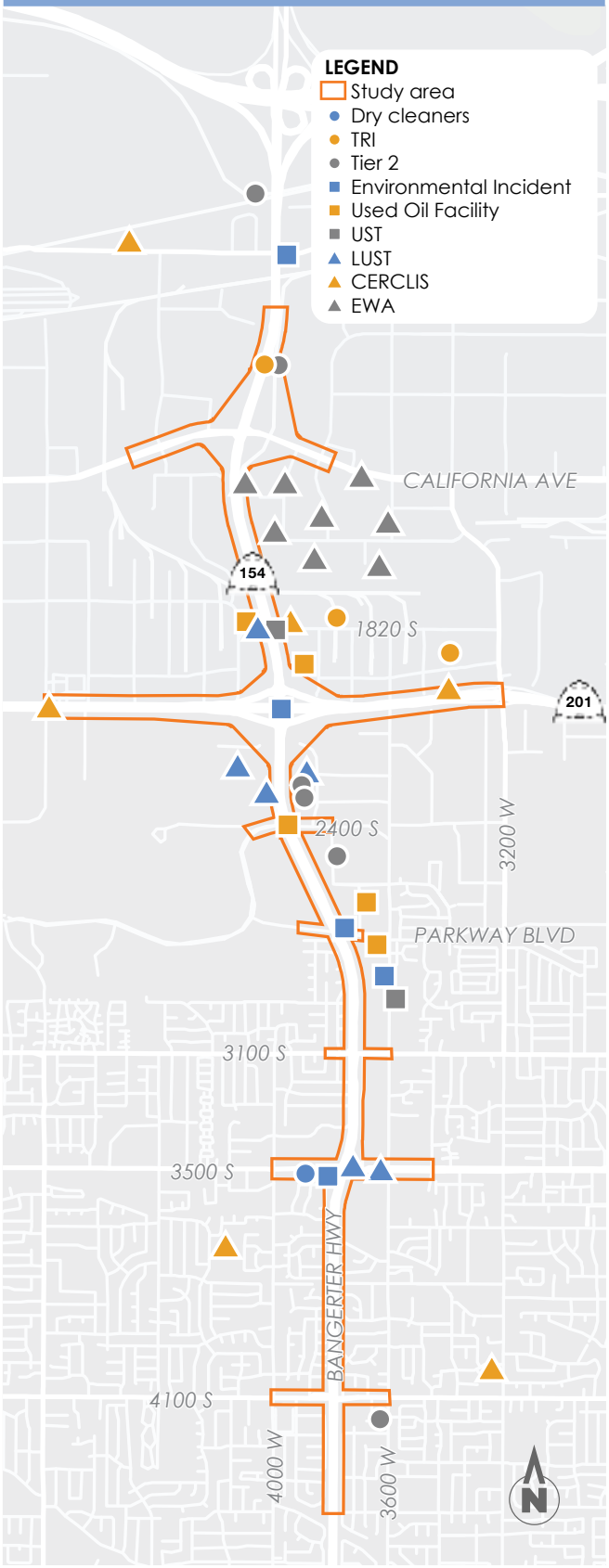


TABLE 3.15 Hazardous Materials Sites within or Adjacent to the Design Footprint

Site Type	Site Name	Site History Summary	Estimated Risk
CERCLIS	GTE Business Communications Systems Inc	On May 18, 1988, the EPA issued a Preliminary Assessment Decision indicating “no further remedial action planned”.	Low
Used Oil Facility	John Evans Company	On February 5, 2019, UDEQ issued a letter stating the company was in compliance with applicable solid waste rules.	Low
Used Oil Facility	Naranjo Brothers Trucking	On June 25, 2007, UDEQ received a form indicating the company had closed.	Low
LUST	Former Shag Rug La Building	On September 13, 2007, UDEQ issued a letter indicating that no further action is required.	Low
LUST	Q-Lube #1002	On September 18, 1996, UDEQ issued a letter indicating that no further action is required.	Low
UST/LUST	Top Stop C-18	On September 24, 2019, a LUST was closed and on October 28, 2019, UDEQ issued a letter indicating that no further action is required. Three USTs are currently in use at the site.	Moderate
UST	7-Eleven #38707	Four USTs are currently in use at the site.	Moderate
Environmental Incident	Salt Lake Co - Transformer Oil 40 Gallons	On March 9, 2014, UDEQ was notified of the environmental incident. Hazardous materials were cleaned up shortly after DEQ was notified.	Low
Environmental Incident	West Valley City - Diesel Fuel in Storm Drain	On September 9, 2019, UDEQ was notified of the environmental incident. Hazardous materials were cleaned up shortly after UDEQ was notified.	Low
Environmental Incident	SLC - Unknown Green Liquid in Pond	On March 31, 2022, UDEQ was notified of the environmental incident. Hazardous materials were cleaned up shortly after UDEQ was notified.	Low
Environmental Incident	West Valley City - Hydraulic/Motor Oil Spill	On August 11, 2016, UDEQ was notified of the environmental incident. Hazardous materials were cleaned up shortly after UDEQ was notified.	Low

3.14 VISUAL AND AESTHETIC

The aesthetic quality of an area is dependent on its visual resources. Visual resources are the physical features that make up the visible landscape and include both natural (e.g., landforms, waterways, etc.) and built, human-made elements (e.g., buildings, roads, structures, etc.).

Impacts to visual resources are generally defined as the potential of a project to change or alter the existing visual character of an area. The analysis in this section will discuss the visual character within and near the study area for the following two viewer groups:

- Those traveling within the study area (mobile)
- Those living and working adjacent to Bangerter Highway (stationary)

What is Visual Quality?

Visual quality is the experience of having pleasing visual perceptions. Although background and experience shape each individual's experience, human perception of a pleasing landscape is remarkably consistent.

3.14.1 AFFECTED ENVIRONMENT

BUILT ENVIRONMENT

The study area is mostly developed and contains some open land and human-made features.

The existing built environment includes transportation facilities such as local roads and highways (SR-201 and Bangerter Highway). Commercial, industrial, recreational, and residential developments are also present within the study area. FIGURE 3.10 shows Bangerter Highway at 4100 South.

There is one existing roadway bridge structure that supports travel along Bangerter Highway over SR-201. Two pedestrian bridge structures are also present in the study area over Bangerter Highway at 3100 South and 4100 South.

There are existing noise walls between 4100 South and Parkway Boulevard that range in height from 13 to 18 feet tall.

NATURAL ENVIRONMENT

The Wasatch Mountain Range to the east of the study area and Oquirrh Mountain Range to the west are dominant, yet distant, visual resources and influence the existing visual character of the area.

Aside from a few undeveloped parcels of land and open areas near SR-201, the only other vegetated open space in the study area is the Stonebridge Golf Course located between 2400 South and Parkway Boulevard.

Atmospheric conditions for the region are hot and dry in the summer and wet and cold in the winter. The winter months are often accompanied by an atmospheric inversion that restricts views of the background landscapes from the Bangerter

FIGURE 3.10 Looking south along Bangerter Highway at 4100 South.

Highway corridor, such as the Wasatch Mountains.

Hydrology in the region mostly occurs in the form of roadside ditches, man-made ponds and canals, and drainage ditches. The hydrological elements are visible from the roadways within the study area.

3.14.2 ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE

The Preferred Alternative would include the construction of a grade-separated interchange with Bangerter Highway going under the cross street at 4100 South.

The Preferred Alternative would include the construction of grade-separated interchanges with Bangerter Highway going over the cross streets at the following locations (see FIGURE 3.11):

- California Avenue
- 1820 South
- SR-201
- Parkway Boulevard
- 3500 South

The Preferred Alternative would also include the construction of grade-separated crossings, without interchanges, with Bangerter Highway going over the cross streets at 2100 South and 3100 South and 2400 South going over Bangerter Highway.

Additionally, the Preferred Alternative would include modifications to other ancillary elements such as lighting, street signs (including signage for entrance and exit ramps), fencing, noise walls, and traffic signals as well as a wider roadway footprint along Bangerter Highway.

Some of the proposed structures and noise walls would alter the views of those living and working adjacent to Bangerter Highway (see locations of proposed noise walls in SECTION 3.8 and VOLUME 2).

Because the majority of the area is already highly developed, impacts would not constitute an overall reduction in visual quality for either viewer group and would not be considered adverse.

3.14.3 MITIGATION

Aesthetic treatments required through UDOT's Landscape and Aesthetic program for color and texture will be applied to visually blend proposed facilities into the broader urban background.

Aesthetic treatments consistent in color and texture with the existing Bangerter Highway aesthetic treatments to the south shall be placed on all bare ground slopes to the UDOT right-of-way line to provide slope protection and to blend new slopes into the visual background.

The lighting system will use LED fixtures designed to help mitigate sky glow and light spillover.

FIGURE 3.11 Existing structure that carries Bangerter Highway over 5400 South. Figure illustrates example of what proposed structures would resemble.

3.15 CONSTRUCTION IMPACTS

Construction activities can cause temporary impacts to environmental resources within and adjacent to a study area. Only those resources that could potentially be impacted during construction of the Preferred Alternative are addressed in this section. The contractor would be required to follow UDOT Standard Specifications and incorporate best management practices (BMPs).

3.15.1 ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE

Social Conditions

Local residents as well as those traveling through the study area would experience traffic congestion, delays, and detours during the construction period, particularly at intersections. Access to all properties would be maintained; however, there could be some temporary lane closures or detours. During construction it is likely that temporary closures of the east-west cross streets may be required for up to 12 months.

Right-of-Way

Temporary construction easements for the purpose of construction access, repair, and reconstruction may be required from property owners within the study area. Temporary construction easements would be acquired in accordance with state and federal laws and UDOT right-of-way procedures. Property owners would still have the right to use the property subject to the easement conditions during construction, provided that there would not be any interference with construction activities.

Air Quality

Construction of the Preferred Alternative would result in temporary negative effects to air quality in the study area due to increased dust and particulates. PM_{10} emissions from construction activities are usually localized and last only during construction. Construction activities could also generate a temporary increase in MSAT emissions.

A permit for air quality impacts during construction would be obtained from the UDAQ by the contractor. Fugitive dust during construction would be minimized in accordance with UDOT Standard Specifications. This includes submitting a fugitive dust control plan to UDAQ; minimizing dust from construction activities; and minimizing dust from material storage, handling, or hauling operations.

Noise

Residents in and near the study area may experience temporary construction noise impacts. Extended disruption of normal activities is not anticipated, since exposure to construction noise is not expected for long durations. Construction noise impacts would be minimized in accordance with UDOT Standard Specifications and Policies.

Cultural Resources

It is not expected that any additional, previously unidentified cultural resources would be encountered during construction. However, in the event that any such resources were discovered, the contractor would be required to abide by UDOT Standard Specifications in relation to the discovery of any historical or archaeological objects, features, sites, or human remains.

Water Resources

Construction of the Preferred Alternative would result in the potential for temporary soil erosion and sediment/siltation impacts. Construction-related erosion and sedimentation would be managed through obtaining a Utah Pollution Discharge Elimination System (UPDES) permit from the UDEQ. This permit requires a Storm Water Pollution Prevention Plan (SWPPP) and implementation of BMPs during construction.

Hazardous Materials

Any unanticipated hazardous waste material encountered during construction would be dealt with in accordance with UDOT Standard Specifications, which directs the contractor to stop work and notify the project engineer of any discovery of a hazardous material. Disposal of any hazardous material would take place under the guidelines set by the UDEQ.

Visual Conditions

There would be some temporary visual impacts to the study area with the addition of construction signs, barricades, exposed earth, and construction equipment.

Emergency Services

Temporary construction detours could alter the routes taken by emergency response teams. Access to all areas would be maintained for emergency services.

Utilities

Construction activities have the potential to impact utilities. Impacted utilities could include:

- Water and sewer lines
- Fiber optic lines
- Electrical transmission lines
- Gas lines
- Irrigation facilities
- Other utilities

Invasive Species

Construction activities, including soil disruptions, would provide opportunities for the movement of invasive weed species. To minimize the spread and introduction of invasive weeds, the contractor would be required to follow UDOT's Special Provision for Invasive Weed Control. This requires cleaning earthmoving equipment before mobilizing; controlling existing noxious weeds 10 days before starting earthwork operations; and controlling noxious weeds using pre-emergent, selective, and non-selective herbicides.

3.15.2 MITIGATION

Implementation of UDOT's Standard Specifications and BMPs would be required.

3.16 PERMITS AND MITIGATION

Implementation of the Preferred Alternative would require adherence to all applicable UDOT Standards, Specifications, Special Provisions, and Manuals of Instruction to avoid and/or minimize impacts to the environment.

Resource mitigation measures required for the implementation of the Preferred Alternative are listed in TABLE 3.16.

Government approvals and regulatory permits are found in TABLE 3.17.

TABLE 3.16 Required Mitigation

Resource	Mitigation
Land Use	Because the Preferred Alternative would have no impacts to land use or zoning, no mitigation is proposed.
Social Environment and Underrepresented Populations	Residents are compensated under the Utah Relocation Assistance Act, which provides a uniform policy for the fair and equitable treatment of persons displaced by the acquisition of property by local jurisdictions and UDOT (Utah Administrative Code (UAC) 57-12-2).
Economic Conditions	UDOT Right-of-Way Division, under the guidance of the Utah Relocation Assistance Act, would negotiate with affected business owners directly, ensuring that fair market value is received for the required properties. UDOT would coordinate with local businesses to address construction-related congestion, potential detours, and maintenance of access.
Right-of-Way and Relocations	All ROW impacts are based on preliminary design. It is anticipated that refinements and updates will be made during the final design of the project to minimize impacts. The ROW process will follow the requirements of the Utah Relocation Assistance Act. UDOT Right-of-Way Division will negotiate with property owners directly, ensuring that fair market value is received for the required properties.
Pedestrians and Bicyclists	During final design, UDOT would finalize proposed pedestrian crossings between 4100 South and 3500 South in coordination with West Valley City and Granite School District. Specifically, UDOT would coordinate with West Valley City's Neighborhood Services Department to implement CPTED principles into the final design. UDOT would develop a plan to communicate with the public and property owners regarding the final pedestrian crossing configurations, construction schedule, street and sidewalk closures, and detours throughout construction. UDOT would work with the cities to identify pedestrian route detours that may be needed during construction. Access to residences and businesses would be maintained during construction. UDOT would maintain Americans with Disabilities Act-compliant pedestrian access, including temporary safe street crossings and sidewalks.

Resource	Mitigation
Air Quality	The Preferred Alternative is identified as a Phase 1 project in the WFRC RTP. The air quality conformity report published on June 17, 2019 found that the 2050 RTP conforms to state air quality goals and objectives and therefore conforms to the State Implementation Plan (SIP). For this reason, UDOT does not expect the Preferred Alternative to adversely affect local compliance with the NAAQS. 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 2022).
Noise	The following will be implemented if approved through property owner and residents balloting: Wall 1: This is a new wall that would be located on the east side of Bangerter Highway between 4100 South and 4400 South. The wall would be approximately 2,400 feet in length and 13 feet tall. Wall 2: This is a new wall that would be built in two overlapping segments and would be located on the east side of Bangerter Highway between 4100 South and the North Jordan Canal. The wall would be approximately 3,753 feet in length and 13 feet tall. Wall 4: This is a new wall that would be built in two overlapping segments and would be located on the east side of Bangerter Highway between 3500 South and 3100 South. The wall would be approximately 2,552 feet in length and 15 feet tall. Wall 5: This is a new wall that would be located on the west side of Bangerter Highway between 2400 South and Parkway Boulevard. The wall would be approximately 2,465 feet in length and 10 feet tall. Wall 6: This is a new wall that would be located on the west side of Bangerter Highway between Parkway Boulevard and 3100 South. The wall would be approximately 2,562 feet in length and 15 feet tall. Wall 7: This is a new wall that would be located on the west side of Bangerter Highway between 3100 South and 3500 South. The wall would be approximately 2,325 feet in length and 14 feet tall. Wall 8: This is a new wall that would be built in two overlapping segments and would be located on the west side of Bangerter Highway between 3500 South and 4100 South. The wall would be approximately 4,692 feet in length and 13 feet tall. Wall 9: This is a new wall that would be located on the west side of Bangerter Highway between 4100 South and 4400 South. The wall would be approximately 2,660 feet in length and 13 feet tall.

Resource	Mitigation
Cultural Resources	UDOT will mitigate adverse effects to historic properties through a Memorandum of Agreement (MOA) with the SHPO. Mitigation efforts include the completion of intensive level survey forms for affected homes and research on the history of the area. The MOA can be found in the Appendix.
Water Resources	During the final design of the project, coordination with property owners would occur to determine the appropriate mitigation measures if a well head or other water right POD is affected. Mitigation could include (1) relocating a well head or surface water diversion to continue to provide irrigation water to any land that is not acquired or (2) abandoning the well and compensating the owner for the value of the associated water right.
Waters of the U.S.	A CWA Section 404 permit authorization would be required for project activities within WOTUS, including wetlands. Permits, licenses, variances, or similar authorization may also be required by other federal, state, and local statutes. All required permits will be fully evaluated during final design.
Wildlife	To avoid Impacts to migratory birds, removal of woody vegetation, including sagebrush, must occur before April 15 or after July 31. If removal of woody vegetation cannot occur before or after that time period, a nest survey would be required to identify active migratory bird nests within vegetation scheduled for removal. If active nests are found, the UDOT Natural Resources Manager would be coordinated with to identify what avoidance measures are appropriate for the species and context.
Hazardous Materials	Before UDOT purchases right-of-way from any site containing potentially hazardous materials, a Phase 1 Environmental Site Assessment would be conducted at the site(s). If hazardous materials are identified during the Phase 1, a Phase 2 Environmental Site Assessment would be conducted.
Visual and Aesthetic	Aesthetic treatments required through UDOT's Landscape and Aesthetic program for color and texture will be applied to visually blend proposed facilities into the broader urban background. Aesthetic treatments consistent in color and texture with the existing Bangerter Highway aesthetic treatments to the south shall be placed on all bare ground slopes to the UDOT right-of-way line to provide slope protection and to blend new slopes into the visual background. The lighting system will use LED fixtures designed to help mitigate sky glow and light spillover.
Construction Impacts	Implementation of UDOT's Standard Specifications and BMPs would be required.

TABLE 3.17 Government Approvals and Regulatory Permits

Basis	Mitigation	Agency or Government Entity with Jurisdiction
Air Quality	Air Quality Approval Form	UDEQ/DAQ
Air Quality	Fugitive Dust Emission Control Plan	UDEQ/DAQ
Noise	Temporary Noise Permits	Salt Lake County
Water Resources	UPDES General Permit for Construction Activities	UDEQ/DWQ
Water Resources	UPDES Construction Dewatering and Hydrostatic Testing (if applicable)	UDEQ/DWQ
Waters of the U.S.	Section 404 Permit	USACE

CH 4. PUBLIC INVOLVEMENT

4.1 INTRODUCTION

This chapter describes the public involvement process, including key issues and information received during coordination with the public and various agencies (see TABLE 4.1 and TABLE 4.2). Chapter 4 will cover the following:

- Public and Agency Coordination - Summarizes key meetings, outreach, and feedback.
- Agency Correspondence - Details correspondence between study team and federal, state, and local agencies.

For each public meeting, translation services were available in Spanish and others languages were available upon request. The Neighborhood Meeting invitations included information in Spanish, Vietnamese, and Laotian and translation services were provided at each of the Neighborhood Meetings. The study team distributed information to multiple groups to inform their audiences about opportunities to provide feedback and learn more about the study. These groups included:

- Hispanic Chamber of Commerce
- Pacific Island Chamber of Commerce
- Vietnamese American Community of Utah
- Conexion Comunidad Hispana
- LDS Spanish Wards

4.2 PUBLIC AND AGENCY COORDINATION

TABLE 4.2 lists meetings with agencies, stakeholders, and the public that were held as part of the coordination process for the SES. Coordination has been ongoing with the following agencies:

- West Valley City (WVC)
- Salt Lake City (SLC)
- Granite School District
- American Prep Academy
- Bureau of Reclamation
- UTA

A summary of the discussion points for each meeting are included. Some agency coordination overlapped on separate Bangerter Highway intersection studies. These meetings were included if the 4100 South to California Avenue study area was discussed (i.e. meetings with WVC). In addition to the meetings listed, internal project team meetings were held throughout the development of this SES.

4.2.1 AGENCY SCOPING PROCESS

Comments were solicited from key agencies and public organizations via scoping letters. Letters were mailed to 12 agencies to request input:

- Salt Lake County
- West Valley City
- Salt Lake City
- Cities within other Bangerter project areas
- Jordan School District
- Jordan Valley Water Conservancy District (JVWCD)
- Resource Development Coordinating Committee (RDCC)
- WFRC
- SHPO
- UTA

One comment was received from UTA requesting a meeting about existing and future UTA routes within the study area (see the Appendix).

4.2.2 PUBLIC SCOPING MEETING

Three in-person open houses were held to inform the public about the SES process and gather input on the study.

When:

- June 27, 2022 from 6-7:30 p.m.
- June 28, 2022 from 11:30 a.m.-1 p.m.
- June 29, 2022 from 6-7:30 p.m.

Where: Granger High School, 3580 South 3600 West, West Valley City, UT 84119

Attendees: 182 members of the public attended one of the three open houses. Eighteen members of the study team participated in the open houses.

Comment Summary: Comments were gathered as part of a formal comment period between June 2022 through the end of July. Comments were submitted by postal mail, email, and in-person meeting comment forms.

A total of 73 comments were received.

Common Themes:

- Input to select the design that impacts homes and residential areas the least.
- Concerns about general housing and residential impacts.
- Positive feedback about converting the highway to a freeway.
- Desire for construction to start as soon as possible.
- Concerns about noise and air pollution.
- Requests for a freeway-style facility between 4100 South to 3500 South, then frontage road style from 3500 South and on.
- Request for Bangerter Highway to go under 4100 South and 3500 South intersections.
- In favor of implementing interchanges rather than a frontage road system.
- Request for pedestrian and bicyclist accessibility, including pedestrian bridges.

4.2.3 NEIGHBORHOOD MEETINGS

Twelve in-person meeting options were held to inform the potentially impacted property owners about the study goals, the Preferred Alternative design, schedule, and to discuss individual property owner impacts. The study team offered to accommodate impacted property owner's schedules whenever possible by holding meetings at various times and days (see SECTION 4.2.4). Phone calls were made during the meeting to try and reach impacted property owners who were not in attendance.

When:

- May 10, 2023 from 5-6 & 6:30 -7:30 p.m.
- May 11, 2023 from 5-6 & 6:30 -7:30 p.m.
- May 17, 2023 from 5-6 & 6:30 -7:30 p.m.
- May 18, 2023 from 5-6 & 6:30 -7:30 p.m.
- May 24, 2023 from 5-6 & 6:30 -7:30 p.m.
- May 25, 2023 from 5-6 & 6:30 -7:30 p.m.

Where:

Granger High School, 3580 South 3600 West, West Valley City, UT 84119

Attendees: 228 potentially impacted property owners attended meeting.

Comment Summary: Questions and comments were addressed individually through discussions with UDOT right-of-way representatives and study team members.

4.2.4 ONE-ON-ONE MEETINGS

Impacted property owners were provided multiple opportunities to meet one-on-one with project team members. The team met with 19 tenants and business/property owners between May 22, 2023 and July 31, 2023. Information provided at the neighborhood meetings were conveyed and attendees were provided opportunities to ask questions about potential impacts and the right-of-way process.

4.2.5 PUBLIC HEARING

One online public hearing option and two in-person options were held to inform the public about the study goals, the Preferred Alternative design, schedule, and to gather input from the public. Additional phone calls were made by the UDOT ROW and translators during the meeting to try and reach impacted property owners the team had not talked to yet.

When:

- June 12, 2023 from 6-7 p.m. (online)
- June 14, 2023 from 6-7:30 p.m.
- June 15, 2023 from 6-7:30 p.m.

Where:

Online Option: Zoom Webinar

In-Person Options: Granger High School, 3580 South 3600 West, West Valley City, UT 84119

Attendees: 72 members of the public attended the online option and 217 members of the public attended the in-person options.

Comment Summary: Comments were gathered as part of a formal comment period between May 28, 2023 through August 2, 2023. The study team extended the comment period from 30 days to 67 days to allow adequate time for community feedback. Comments were submitted by postal mail, email, and in-person meeting comment forms and verbal comments.

A total of 225 comments were received.

Common Themes:

- Safety along the shared-use path and pedestrian under-crossings
- Concerns about the design
- Concerns about construction timeline (the project to be built sooner)
- Right-of-way acquisition
- Noise walls
- Access at 4100 South

4.2.6 POP-UP EVENTS

When/Where:

- June 15, 16, & 17, 2023 at West Valley City's West Fest
- July 8, 2023 at West Valley City Family Fitness Center from 9 a.m. to 2 p.m.

Participants: The team was able to speak with many individuals at the events and 56 people signed up for project updates.

4.2.7 COMMON THEMES FROM PUBLIC COMMENTS

Throughout the study process, the team sought public input and identified several common themes based on public comments (see SECTION 4.2.5). Feedback received contributed to additional analysis, increased public outreach, and several modifications in design elements to meet the needs of the community. See TABLE 4.1 for a summary of the public comment themes, associated project benefits, and design modifications. Those who submitted a formal comment during the Public Hearing can find individualized responses to their comment in the APPENDIX of the PUBLIC HEARING REPORT.

SAFETY ALONG THE SHARED-USE PATH AND PEDESTRIAN UNDER-CROSSINGS

The community voiced concerns about pedestrian under crossings proposed in West Valley City. UDOT is committed to providing safe and accessible pedestrian and bicyclist facilities. In coordination with West Valley City and Granite School District, the study team will continue to evaluate the types and locations of the crossings. The pedestrian crossing near 3970 South has been moved closer to 4100 South and the type of crossings (underpasses versus overpasses) will be finalized during final design (see VOLUME 2). If the Preferred Alternative is selected, UDOT would develop a plan to communicate with the public and property owners regarding the final pedestrian crossing configurations, construction schedule, street and sidewalk closures, and detours throughout construction.

CONCERNS ABOUT THE DESIGN

Early in the process community and city officials communicated they would prefer Bangerter Highway to go under the cross-streets; however, due to high groundwater levels, the team was only able to accommodate this preference at the 4100 South interchange.

Many participants asked UDOT to improve bicyclist and pedestrian facilities in the area. The Preferred Alternative includes a 12-ft wide, paved, shared-use path that runs parallel to Bangerter Highway on the west side of the road from approximately 4100 South to California Avenue and the construction of crossings across Bangerter Highway and major cross streets to improve access and safety for pedestrians and bicyclists.

Members of the community requested adjusting the design to allow access into the former Granger Medical Center from

4100 South. The team added a new access point from 4100 South to the former Granger Medical Center, allowing drivers to access the property from 4100 South in both the eastbound and westbound directions.

CONCERNS ABOUT CONSTRUCTION TIMELINE

During the Public Hearing many participants asked UDOT to start work on the project immediately. If the Preferred Alternative is selected, it is anticipated that it could be constructed in multiple phases as funding becomes available. UDOT will contact property owners and tenants directly when a final decision has been made. The decision will also be posted on the study website and distributed through existing UDOT and city channels. Possible construction phasing (which sections would be built and when) is currently unknown.

RIGHT-OF-WAY ACQUISITION

Many participants asked UDOT to reduce impacts to residential areas. The team was able to achieve this by selecting the alternative that reduced relocation and ROW impacts. Outreach included twelve in-person meetings with property owners and renters to inform them about the study, Preferred Alternative design, the anticipated schedule, and individual property impacts (see SECTION 4.2.3). All ROW impacts are based on preliminary design. It is anticipated that refinements and updates will be made during the final design of the project to minimize impacts.

NOISE WALLS

The community voiced concerns about the location and heights of noise walls in the study area. The study team evaluated nine different noise walls in the study area at heights up to 16 feet along Bangerter Highway. Eight noise walls met the requirements of the UDOT Noise Abatement Policy. New noise walls are being recommended for balloting in each location where an existing wall conflicted with the Proposed Action and will be implemented if approved through balloting. The identified walls would be the same height or taller than the existing noise walls.

ACCESS AT 4100 SOUTH

During the Public Hearing, the team heard concerns from residents about building an interchange at 4100 South. The study team evaluated the option to remove access to Bangerter Highway from 4100 South and found that removing access would increase travel times and congestion for the adjacent Bangerter interchanges, intersections, and local side streets. This would increase morning and evening peak traffic volumes at 3500 South and 4700 South interchanges by 9-16% in 2050, which does not meet the project's traffic performance goals.

TABLE 4.1 Public Comments Summary, Project Benefits, and Design Modifications

Common Theme	Project Benefits	Design Modifications
Safety along the Shared-Use Path and Pedestrian Under-Crossings	• Construction of the Preferred Alternative would improve multi-modal community connectivity routes near Bangerter Highway and would be designed to be compatible with pedestrian and bicyclist facilities planned in municipal and regional transportation plans.	• The pedestrian crossing near 3970 South has been moved closer to 4100 South and the type of crossings (underpasses versus overpasses) will be finalized during final design.
Concerns about the Design	• The Preferred Alternative would provide better mobility by addressing current and future travel demand on Bangerter Highway between 4100 South and California Avenue. • The Preferred Alternative would improve multi-modal routes near Bangerter Highway. • The Preferred Alternative would support the economy by maintaining accessibility to and from Bangerter Highway. • The Preferred Alternative would improve safety and operations on Bangerter Highway between 4100 South and California Avenue.	• The design team was able to accommodate the community and city officials preference that Bangerter Highway go under the 4100 South cross-street because of low groundwater levels. • The team added a new access point from 4100 South to the former Granger Medical Center, allowing drivers to access the property from 4100 South in both the eastbound and westbound directions.
Concerns about Construction Timeline (the project to be built sooner)	• Not Applicable	• None
Right-of-Way Acquisition	• Not Applicable	• All ROW impacts are based on preliminary design. It is anticipated that refinements and updates will be made during the final design of the project to minimize impacts.
Noise Walls	• Existing noise walls within the study area have a post and split-panel design. This design is no longer the UDOT standard. The Preferred Alternative would replace all existing noise walls with post and a single-panel design. These replacement walls would be the same height or taller than the existing noise walls.	• None
Access at 4100 South	• The Preferred Alternative would reduce travel times and congestion for the adjacent Bangerter interchanges, intersections, and local side streets by providing access to Bangerter Highway at 4100 South.	• None

TABLE 4.2 Meetings

Date/Meeting Type	Attendees	Discussion Items
April 15, 2021 **West Valley City**	• WVC Public Information Officer (PIO) • WVC City Engineer • WVC Public Works Director • Study Team	• Introductions • City's desire for regular meetings • Ideas and concepts to consider
May 10, 2021 **West Valley City**	• WVC PIO • WVC City Engineer • WVC Public Works Director • Study Team	• Introductions • Study schedules and overview • Desired design elements • Potential risks • Needs at 3500 South, and 4100 South • Ongoing collaboration and next steps
June 8, 2021 **West Valley City - City Council Work Session**	• WVC City Council • WVC Public Works Director • Study Team	• Study process • Funding options • ROW preferences • Timeline
June 9, 2021 **Granite School District**	• Granite School District Assistant Superintendent • Granite School District Planning and Boundaries Director • Study Team	• Introductions • Study overview • Pedestrian overpasses • Safe walking routes • Granger High School • Ongoing collaboration • Next steps
June 14, 2021 **West Valley City**	• WVC PIO • WVC City Engineer • WVC Public Works Director • Study Team	• Study updates • Design updates • City standard cross-sections • Active transportation plans • Upcoming events to share with WVC residents
June 29, 2021 **American Prep Academy**	• School Director • Study Team	• Introductions • Study overview • School information and transportation • Students programs • Carpool system • Walking/biking program and routes • Ongoing collaboration and communication channels • Schedule
July 12, 2021 **West Valley City**	• WVC PIO • WVC City Engineer • WVC Public Works Director • Study Team	• Study updates • Overview of upcoming public meetings

August 9, 2021 **West Valley City**	• WVC City Engineer • WVC Public Works Director • Study Team	• Study updates - east shift vs. hybrid shift • Preferred design options • Development plans • Active transportation • Overview of recent public meetings
September 13, 2021 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Community and Economic Development Director • Study Team	• Study updates - east shift • Traffic analysis and concepts • Vertical alignment discussion • Decision timeline • Upcoming neighborhood meetings
October 11, 2021 **West Valley City**	• WVC PIO • WVC Public Works Director • WVC Community and Economic Development Director • Study Team	• Upcoming public meeting schedule • Vertical alignment options • Utilities • Brainstorming session for 4100 South to California Ave.
December 13, 2021 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Community and Economic Development Director • Study Team	• Vertical alignment options - cost difference • Utilities • Public meeting schedule • BOR document status • ROW discussion • Pedestrian bridge • Design for study areas
January 10, 2022 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Community and Economic Development Director • Study Team	• Upcoming public outreach • City involvement in design and construction process • 4100 South design concepts and constraints • 3500 South to SR-201 needs
February 14, 2022 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC PIO • WVC Community and Economic Development Director • Study Team	• Upcoming city council meeting presentation • Updates on 4100 South and 3500 South to SR-201 • SES process • Bangerter Corridor Study updates • Ground water levels
March 14, 2022 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Community and Economic Development Director • Study Team	• UDOT project manager transition • Bangerter Highway Corridor Study update • 4100 South to SR-201 options • Ground water levels presentation • New development • Executive partnering • Smart Growth Workshop

April 11, 2022 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC PIO • WVC Community and Economic Development Director • Study Team	• Timing of 4100 South SES • Bangerter Highway Corridor Study status and preliminary results • Executive partnering event planning
May 11, 2022 **West Valley City Executive Meeting**	• WVC City Manager • WVC Public Works Director • WVC Assistant City Engineer • UDOT Region 2 Director • UDOT Region 2 Deputy Director • UDOT Region 2 Program Manager • UDOT Project Manager • Horrocks Project Manager • Horrocks Public Involvement Manager	• 4100 South to SR-201 city priorities • Discussion on aesthetics and landscaping • Bangerter Highway Corridor Study recap • 4700 South vertical alignment discussion • Mountain View Corridor
June 13, 2022 **West Valley City**	• WVC City Engineer • Study Team	• 4100 South to California Ave. schedule update • Design concepts • City Council presentation • Upcoming scoping (public) meetings • Smart Growth Workshop
June 15, 2022 **Granite School District**	• Granite School District Assistant Superintendent • Granite School District Transportation Director • Study Team	• 4100 South to California Ave. study overview • Upcoming scoping (public) meetings • Smart Growth Workshop • Questions about impacts to school, air quality, bus routes • Intersection safety for students crossing • Pedestrian bridge replacement at 4100 South • Upcoming school facility changes
June 17, June 28, and June 29, 2022 **Public Scoping Meetings**	• 82 members of the public • 18 members of the study team	• Information presented during the public meetings included: • Environmental study process • Existing and future traffic conditions • Study area • Contact information
June 30, 2022 **Salt Lake City**	• SLC City Engineer • SLC Construction Program Manager • SLC Deputy Director - Transportation • SLC Strategic Planning & Programming Manager • SLC Bicycle/Pedestrian Coordinator • Study Team	• Introductions • Study schedule and overview • Scoping meetings • Smart Growth Workshop • Questions and input about development and coordination • Departments to coordinate with • Active transportation needs • Utilities

July 6, 2022 **UTA**	• UTA Transit Planner • Study Team	• Introductions • Study schedule and overview • Scoping meetings • Smart Growth Workshop • Input about existing UTA facilities (bus rapid transit) and airport access • Input about future UTA facilities
July 18, 2022 **West Valley City**	• WVC City Engineer • Study Team	• Screening process for 4100 South to California Ave. • Scoping meeting summary • Business outreach efforts • City council presentation prep • Upcoming West Valley events • Smart Growth Workshop • Frontage road concept • Utilities • Golf course impacts
July 21, 2022 **Salt Lake City/UDOT Executive Meeting**	• SLC City Engineer • SLC Strategic Planning & Programming Manager • SLC Deputy Director - Transportation • SLC Construction Program Manager • UDOT Region 2 Director • UDOT Region 2 Deputy Director • UDOT Region 2 Program Manager • UDOT Project Manager • Horrocks Project Manager • Horrocks Public Involvement Manager	• 4100 South to SR-201 study status • Frontage road concept • WVC Council resolution • Scoping process and planning • Vertical alignments and ground water levels • Coordination moving forward
August 8, 2022 **West Valley City**	• WVC City Engineer • WVC Public Works Director • Study Team	• Scoping meeting summary • West Valley City events • City council presentation • Smart Growth Workshop • Interchange concept • Frontage road concept
August 11, 2022 **American Prep Academy**	• School Director of Operations • Study Team	• Introductions • Study overview • Traffic patterns during school drop-off and pick-up • Parking challenges • Location of JVA
August 11, 2022 **Salt Lake City - Workforce Development Meeting**	• Workforce Development Manager • Study Team	• Introductions • Study overview • Traffic discussion • Information and feedback regarding outreach efforts and businesses in the area

August 18, 2022 **Salt Lake City**	• SLC City Engineer • SLC Construction Program Manager • SLC Deputy Director - Transportation • SLC Director - Transportation • SLC Strategic Planning & Programming Manager • SLC ROW Manager • Study Team	• Alternatives screening process • Scoping meeting summary • Study schedule • Smart Growth Workshop • Preliminary design geometry and impacts • SR-201 access
August 18, 2022 **Salt Lake City and West Valley City Joint Meeting**	• SLC Construction Program Manager • SLC Director - Transportation • SLC Deputy Director - Transportation • SLC Strategic Planning & Programming Manager • SLC Bicycle/Pedestrian Coordinator • WVC City Engineer • WVC Public Works Director • WVC PIO • WVC Community and Economic Development Director • Study Team	• Introductions • Design concept discussions • SR-201 access • Drainage • Aesthetics • Permitting • Shared-use pathway
Aug. 8 and Aug. 20, 2022 **West Valley City National Night Out (NNO) Community Events**	• Residents of West Valley City	• Information presented during the public meetings included: • Environmental study process • Existing and future traffic conditions • Study area • Contact information
August 22, 2022 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Assistant City Engineer • WVC Community and Economic Development Director • Study Team	• City council presentation • Upcoming WVC events • Preliminary concept review and impacts discussion • City council feedback • Traffic data • Shared use path options • Local traffic network and access • Alternatives screening • Study process
Aug. 31, 2022 **Smart Growth Walk Audit and Workshop**	• 18 people attended	• A workshop and walk audit was held to assess needs on Bangerter Highway between 4100 South and California Ave.

September 12, 2022 **Granite School District**	• Granite School District Assistant Superintendent • Granite School District Transportation Director • Granite School District Planning & Boundaries Director • Study Team	• 4100 South to California Ave. SES update • Interchange options • Frontage road options • Concerns about impacts such as noise and ROW • Study timeline • Shared use pathway • Scoping comments about pedestrian access/bridge • Smart Growth Workshop summary
September 12, 2022 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Assistant City Engineer • WVC Community and Economic Development Director • Study Team	• Scoping meeting summary • Smart Growth Workshop summary • Shared-use pathway • BRT discussion • Pedestrian crossing near high school • Preliminary concept review • Relocations discussion • 4100 South comparison table • Frontage road concept
September 21, 2022 **UTA**	• UTA Service Planning Supervisor • UTA Long Range Strategic Planning Manager • Study Team	• Smart Growth Workshop summary • 4100 South to California Ave. Corridor Study and SES schedule • Preliminary design • Interchange and frontage road concepts • BRT line
October 5, 2022 **Granite School District**	• Granite School District Assistant Superintendent • Study Team	• 4100 South to California Ave. design update • Project impacts and cost estimates • Access and parking • BRT line • Design speed • Shared-use pathway • Scoping comments about pedestrian access and crossings • Additional outreach
October 11, 2022 **American Prep Academy**	• Director of Operations • Study Team	• Study update • Interchange and frontage road concepts • Shared-use pathway • Scoping period update • Alternatives selection process
October 12, 2022 **West Valley City**	• WVC Assistant City Engineer • WVC Public Works Director • WVC Community and Economic Development Director • Study Team	• Alternatives level one screening results • City council presentation • ROW impacts • Estimated cost • Traffic comparison between alternatives • Shared-use pathway • Study timeline • Surplus property

October 19, 2022 **West Valley City**	• WVC Public Works Director • Study Team	• Feedback on alternatives • ROW discussion • City council presentation • Impact avoidance discussion
October 20, 2022 **Salt Lake City**	• SLC Construction Program Manager • SLC Deputy Director - Transportation • SLC Strategic Planning & Programming Manager • Study Team	• Alternatives screening results • Shared-use pathway • Planned active transportation facilities • Patriot Rail crossing
November 8, 2022 **American Prep Academy**	• Director of Operations • Study Team	• Study update • Advancing interchange concept • Shared-use pathway • Pedestrian crossings • Next steps
November 14, 2022 **UTA**	• UTA Service Planning Supervisor • UTA Long Range Strategic Planning Manager • Study Team	• Study update • Interchange concept • Concern about BRT line on 3500 South • Traffic simulations discussion • Schedule review • Next steps
November 16, 2022 **Granite School District**	• Granite School District Assistant Superintendent • Granite School District Transportation Director • Granite School District Planning & Boundaries Director • Study Team	• Design along the corridor • Shared-use pathway • Title One schools in the area • Discussion about impacts - inland port, air quality, and noise • Additional coordination
November 17, 2022 **Salt Lake City**	• SLC Construction Program Manager • SLC Bicycle/Pedestrian Coordinator • SLC Director - Transportation • SLC Public Lands Planning Manager • SLC Strategic Planning & Programming Manager • SLC Public Utilities • Study Team	• Design along the corridor • Shared-use pathway • Maintenance of pathway discussion • Schedule review • Landscaping plans once in final design • Additional coordination
November 22, 2022 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Assistant City Engineer • WVC Community and Economic Development Director • Study Team	• Design update • East/west shift • JVA impacts • Pedestrian bridges • Shared-use pathway • Corbin Drive to a through-street discussion • Golf course impacts • Discussion of local facilities • City council work session presentation • Public outreach • Additional coordination

December 1, 2022 **Bureau of Reclamation**	• Bureau of Reclamation • UDOT • Horrocks • HDR • Bowen Collins & Associates	• Introductions • Project status update • Design • JVA and easement relocations • Timeline • Next meeting
December 12, 2022 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Assistant City Engineer • WVC Community and Economic Development Director • Study Team	• Design progress • Shared-use pathway • Cul-de-sac/trail at Parkway and 3860 West • Over/under at 4100 South • Traffic analysis - 2050 Build traffic volumes • Truck traffic percentages on 2100 South and other local facilities • City Council Work Session presentation • Public outreach events • Additional coordination
December 12, 2022 **UTA**	• UTA Service Planning Supervisor • UTA Long Range Strategic Planning Manager • Study Team	• Design progress • BRT line • Dedicated ROW options • Schedule review • Next steps
December 13, 2022 **West Valley City Council Work Session**	• WVC City Council Members • WVC Public Works Director • WVC PIO • Study Team	• Study update • Schedule • Next steps
December 15, 2022 **UDOT Region 2 Leadership Meeting**	• UDOT Region 2 Leadership • Study Team	• Bangerter Highway program management • Budget • JVA • Bangerter Highway environmental • Summary of agency coordination and outstanding decisions • Draft SES schedule • Delta in over vs. under options for interchanges in WVC
December 15, 2022 **Salt Lake City**	• SLC Parks Director • SLC Public Lands Planning Manager • SLC Director - Transportation • SLC Maintenance • SLC City Engineer • SLC Deputy Director of Public Utilities • Study Team	• Introductions • Design progress • Shared-use pathway • Schedule review • Public outreach • Impact avoidance discussion • Maintenance of trails • Plan for Bangerter Highway north of California Ave. • Additional coordination

January 19, 2023 **Salt Lake City**	• SLC Construction Program Manager • SLC City Engineer • SLC Director - Transportation • SLC Public Lands Planning Manager • SLC Strategic Planning & Programming Manager • Study Team	• Design along the corridor • Shared-use pathway • Maintenance of pathway discussion • Schedule review • Upcoming public events
January 23, 2023 **UTA**	• UTA Service Planning Supervisor • UTA Long Range Strategic Planning Manager • Study Team	• Design progress • BRT line • Schedule review • Next steps
January 24, 2023 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Community and Economic Development Director • Study Team	• Parkway Boulevard • Design progress • Shared-use pathway • Over/under options at 4100 South • Traffic discussion • Cost • Public outreach events • UTA coordination
January 26, 2023 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Assistant City Engineer • Study Team	• Traffic discussion • UTA coordination
February 1, 2023 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Assistant City Engineer • Study Team	• Traffic discussion • Parkway Boulevard • Design updates • 4100 South vertical alignment • Schedule updates
February 2, 2023 **Bureau of Reclamation**	• Bureau of Reclamation • UDOT • Horrocks • HDR • Bowen Collins & Associates	• Project status update and discuss comments • JVA and easement relocations • Vertical alignment options • Timeline • Next meeting
February 8, 2023 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Assistant City Engineer • Study Team	• Traffic discussion and analysis • Parkway Boulevard • 4100 South vertical alignment
February 15, 2023 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Assistant City Engineer • WVC Community and Economic Development Director • Study Team	• 4100 South vertical alignment 3D Renderings • Design discussion • Traffic discussion • Schedule
February 16, 2023 **Salt Lake City**	• SLC Construction Program Manager • SLC City Engineer • SLC Director - Transportation • Study Team	• Design updates • Shared-use pathway • Schedule review • Property owner coordination • Upcoming events and city council coordination

February 23, 2023 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Assistant City Engineer • WVC Community and Economic Development Director • Study Team	• Jordan Valley Aqueduct • 4100 South vertical alignment • Traffic analysis discussion • Schedule
February 24, 2023 **Stakeholder Meeting with David Bernolfo**	• Property Owner • Property Owner's Attorney • Study Team	• Project overview • Corridor preservation process • Property owner coordination overview • Upcoming public events • Property acquisition questions • Next steps
February 27, 2023 **UTA**	• UTA Service Planning Supervisor • UTA Long Range Strategic Planning Manager • Study Team	• Design progress • BRT line • Schedule review • Next steps
March 1, 2023 **West Valley City**	• WVC City Engineer • WVC Public Works Director • WVC Assistant City Engineer • WVC Community and Economic Development Director • Study Team	• Jordan Valley Aqueduct • Traffic analysis discussion • Schedule
March 2, 2023 **Bureau of Reclamation**	• Bureau of Reclamation • UDOT • Horrocks • HDR • Bowen Collins & Associates	• Project status update • Design • JVA and easement relocations • Timeline
March 13, 2023 **West Valley City**	• WVC Public Works Director • WVC Assistant City Engineer • WVC Community and Economic Development Director • Study Team	• Refined 2050 Traffic Model • Traffic analysis discussion • City Council presentation • Updated schedule • Next steps
April 10, 2023 **West Valley City**	• WVC Public Works Director • WVC Assistant City Engineer • WVC Community and Economic Development Director • Study Team	• Project status update • Project phasing • Right-of-Way • City council presentation • Upcoming public outreach • I-215 Frontage Road • Next steps

May 8, 2023 **West Valley City**	• WVC Public Works Director • WVC City Engineer • WVC Assistant City Engineer • WVC Community and Economic Development Director • WVC Parks and Recreation Director • Stone Bridge Golf Course Representatives • Study Team	• Project status update • Project phasing • Funding updates • City council presentation debrief • Stonebridge Golf Course discussion • Scottsdale Park discussion • Upcoming public outreach • Questions about 4100 South and 4700 South trail connections
May 10 & 11, 2023 **May 17 & 18, 2023** **May 24 & 25, 2023** **Neighborhood Meetings (Translation Services Available)**	• 228 potentially impacted property owners attended these meetings • Study team	At each of the 12 neighborhood meetings (two each day), the following was discussed: • Study goals • Preferred Alternative design • Schedule • Potential property impacts for individual properties
June 12, 14, & 15, 2023 **Public Hearing (Online & In-Person Options)**	• 289 members of the public • Study team	• Study goals • Preferred Alternative design • Schedule
June 15-17, 2023 **Pop-Up Event at West Valley City's West Fest**	• West Valley City Community • Study Team	• The study team answered questions and distributed information about the project
July 6, 2023 **Granite School District**	• Granite School District Planning & Boundaries Director • Study Team	• Project status update • Shared-use pathway • Additional coordination
July 8, 2023 **Pop-Up Event at West Valley City Fitness Center**	• West Valley City Community • Study Team	• The study team answered questions and distributed information about the project
July 10, 2023 **West Valley City**	• WVC Public Works Director • WVC City Engineer • WVC Assistant City Engineer • Study Team	• Project status update • 4100 South traffic analysis • Upcoming public outreach events • Public comments • Granite School District • Next steps

July 10, 2023 **Senator Kwan Town Hall Meeting**	• Senator Kwan • Senate Minority Assistant • Study Team • Peter Asplund • Leif Elder • Robert Stewart • Stephen Nielson • Ross Workman • Robin Howard • JoAn Ishimatsu • Judy Weeks Rhoner • Brett Garner	• Pedestrian crossings • Remnant parcels • Noise • Safety • Funding • 4100 South interchange options • Jordan Valley Aqueduct • Right-of-way process
July 11, 2023 **West Valley City Council**	• WVC City Council Members • WVC Mayor • WVC City Manager • WVC City Clerk • WVC Public Works Director • Study Team	• 4100 South interchange vs. overpass • Shared-use path and pedestrian passageways
July 20, 2023 **Granite School District**	• Granite School District Communications Director • Granite School District Elementary Schools Director • Granite School District Planning & Boundaries Director • Granite School District Chief of Police • Study Team	• Project status update • Proposed interchange concepts • Shared-use pathway • Pedestrian crossing discussion • Safe walking routes • Additional coordination
July 31, 2023 **West Valley City**	• WVC Public Works Director • WVC City Engineer • Study Team	• Project status update • 4100 South traffic analysis • City council debrief • Trail crossing discussions • Granite School District • Public comments • Next steps
August 16, 2023 **Meeting with Representative Kotter**	• Representative Kotter • Study Team	• Pedestrian crossings • Safety • Local roadway maintenance requests

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