

# Red Hills Parkway

State Route 18 (Bluff Street) to Industrial Road  
Washington County, Utah

## Environmental Assessment and Draft Section 4(f) Evaluation

November 2007

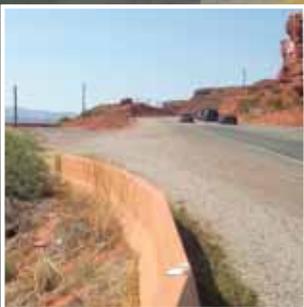
Submitted Pursuant to: 42 USC 4332(2)(C) and 49 USC 303



U.S. Department of Transportation  
Federal Highway Administration



Utah Department of Transportation



# General Information About This Document

## What's in this document?

The City of St. George (City), Utah Department of Transportation (UDOT), and Federal Highway Administration (FHWA) have prepared this environmental assessment (EA) to examine the potential environmental impacts of the Build and No-Build Alternatives for the proposed Red Hills Parkway project, State Route 18 (Bluff Street) to Industrial Road, located in Washington County, Utah. This EA describes the following:

- why the project is being proposed,
- alternatives that were considered for the project,
- the existing environment that could be affected by the project,
- potential impacts from the Build and No-Build Alternatives, and
- proposed avoidance, minimization, and/or mitigation measures.

## What should you do?

- Please read this environmental assessment. Additional copies of this document as well as the supporting technical studies are available for review at the St. George City Hall, Public Works Department, located at 175 East 200 North; the St. George Branch of the Washington County Library, located at 88 West 100 South; UDOT Region 4, 1345 South 350 West, Richfield; and FHWA, 2520 West 4700 South, Suite 9A, Salt Lake City.
- If possible, please attend the public hearing to be held December 19, 2007, in the St. George City Council Chambers, 175 East 200 North, St. George, Utah, from 5:00 p.m. to 7:00 p.m.
- We welcome your comments. If you have any questions or concerns regarding the proposed project, please send us your written comments by January 7, 2008. Comments may be submitted
  - via postal mail, addressed to: City of St. George, c/o Jones & Stokes, Attn: Jennifer Bassett-Hales, 1935 East Vine Street, Suite 250, Salt Lake City, UT 84121; or
  - via email, addressed to: [jhales@jsanet.com](mailto:jhales@jsanet.com).

Please note that the deadline for receiving comments on this document is January 7, 2008.

## What happens next?

After comments are received from the public and reviewing agencies, the comments will be reviewed and considered. After that, the City, UDOT, and FHWA may

1. conduct additional environmental studies,
2. give environmental approval to the proposed project, or
3. discontinue the project.

If the project is given environmental approval and funding is appropriated, the City could design and construct all or part of the project.



# **Red Hills Parkway Transportation Improvements from State Route 18 (Bluff Street) to Industrial Road**

## **Environmental Assessment and Draft Section 4(f) Evaluation**

Submitted Pursuant to: 42 USC 4332(2)(C) and 49 USC 303

U.S. Department of Transportation  
Federal Highway Administration, and  
Utah Department of Transportation

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# Summary

This section of the environmental assessment (EA) provides a summary of the proposed action, alternatives analyzed, potential environmental impacts, and proposed mitigation measures. It also includes a list of approvals required for project implementation.

## Proposed Action

The Federal Highway Administration (FHWA), Utah Department of Transportation (UDOT), and the City of St. George (City) propose to implement approximately 3.5 miles of transportation improvements along Red Hills Parkway between State Route (SR) 18 (Bluff Street) and Industrial Road in the City of St. George, Washington County, Utah. The proposed action would involve widening Red Hills Parkway, currently a two-lane facility (one eastbound lane and one westbound lane), to two lanes in each direction with a center turn lane between Skyline Drive and Industrial Road. A grade-separated diamond interchange configuration would be constructed at the intersection of Red Hills Parkway and Bluff Street. Additional improvements along portions of Red Hills Parkway would include sidewalk, curb, gutter, upgraded signals at existing intersections, and a separate paved pedestrian/bike trail.

## Purpose and Need

The purpose of the proposed action is to better accommodate east/west travel demand on Red Hills Parkway between Bluff Street and Industrial Road. The needs the proposed action is intended to address have been identified as follows:

- insufficient transportation system capacity to accommodate growing travel demand,
- insufficient east/west transportation capacity to serve areas in the City that attract large traffic volumes,
- excessive projected vehicle hours of delay along Red Hills Parkway,
- insufficient multi-modal trail connectivity,
- safe intersections and trail crossings,

- Mojave Desert tortoise habitat adjacent to Red Hills Parkway,
- lack of continuous east/west traffic lanes, and
- congestion on St. George Boulevard.

## Alternatives Considered

The initial traffic analysis considered a five-lane and a seven-lane cross section. During the scoping process for the Red Hills Parkway project, comments were received requesting consideration of a “Northern Corridor” Alternative and a Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative. The TSM/TDM Alternative was eliminated from further consideration because it did not meet the project purpose and need. Three build alternatives, the Build Alternative (5-Lane Alternative), the 7-Lane Alternative, and the Northern Corridor Alternative, underwent a more detailed screening process. The screening process was based on a series of criteria that evaluated traffic capacity, traffic circulation, pedestrian and bike use, safety, environmental impacts, and implementation. The five alternatives that were considered are described below.

### TSM/TDM Alternative

The TSM/TDM Alternative would use the existing transportation system better by improving the efficiency of vehicles, roads, and signals and managing demand for the system without changing the total number of travel lanes on the road.

### 7-Lane Alternative

The 7-Lane Alternative would follow the existing Red Hills Parkway alignment from Bluff Street to Industrial Road. This alternative would require a 175-foot-wide right-of-way and be designed for three traffic lanes in each direction, with an unpaved center median or paved turn lane. This alternative would also include a separate paved bike/pedestrian path and shoulders that would be striped to accommodate bike lanes.

### Northern Corridor

The Northern Corridor would begin at Red Hills Parkway approximately 1 mile east of Bluff Street and continue through the Red Cliffs Desert Reserve, eventually connecting to I-15 at milepost 13. This alternative would include three lanes of traffic in each direction, with an unpaved center median or paved turn lane. The Northern Corridor would include a separate paved bike/pedestrian path and shoulders that would be striped to accommodate bike lanes.

## **Build Alternative (5-Lane Alternative)**

The Build Alternative would include widening the existing Red Hills Parkway alignment from Bluff Street to Industrial Road. This alternative would be designed for two lanes in each direction, with an unpaved center median or paved turn lane. This alternative would also include a separate paved bike/pedestrian path and shoulders that would be striped to accommodate bike lanes.

On October 19, 2006, the City of St. George passed a resolution affirming its support for the Build Alternative as the locally preferred alternative and considered this alternative the best alternative to meet transportation goals while minimizing impacts on important visual, cultural, and biological resources.

## **No-Build Alternative**

Under the No-Build Alternative, Red Hills Parkway would continue to operate as a two-lane road. Planned improvements listed on the adopted Regional Transportation Plan or projects with funding currently available would be implemented. The intersection of Skyline Drive and Red Hills Parkway would be realigned approximately 100 feet north of its existing alignment and signalized. Additional minor improvements anticipated along Red Hills Parkway under the No-Build Alternative are presented in Chapter 2.

## **Major Unresolved Issues**

The major unresolved issue for this project is the completion of the Section 7 consultation with the U.S. Fish and Wildlife Service. The City of St. George is also actively pursuing acquisition of two parcels of private property (parcel numbers SG-6-2-13-3410 and SG-6-2-13-3415) to compensate for the loss of desert tortoise habitat as a result of the proposed project.

## **Required Approvals**

Table S-1 lists approvals that would be needed to complete the proposed action.

**Table S-1. Required Approvals**

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service (USFWS)	Endangered Species Act Section 7 consultation. Approval of the grant agreement amendment for land purchased by Utah State Parks with federal Endangered Species Act Section 6 grant monies.	Biological Opinion has not yet been issued. USFWS has actively participated in the National Environmental Policy Act (NEPA) process. Grant amendment request has not yet been submitted to USFWS for review and approval.
Bureau of Land Management (BLM)	Issuance of right-of-way grant under the Federal Land Policy and Management Act. Approval of a patent transfer to Utah State Parks under the Recreation and Public Purposes Act.	Application for right-of-way anticipated after final EA distribution. BLM has actively participated in NEPA process. Property transfer to state anticipated after final EA distribution.
Washington County Habitat Conservation Advisory Committee (HCAC)	Approval to allow the proposed project to occur within the Red Cliffs Desert Reserve.	In 2003, HCAC approved a four-lane road, following the proposed alignment through the reserve. Since that time there have been minor modifications to the proposed project. HCAC will review the proposed project again to ensure that it is consistent with the Habitat Conservation Plan, and the project will need to be approved again. HCAC has actively participated in the NEPA process.
State of Utah, Department of Natural Resources, Division of State Parks and Recreation	Preparation of Endangered Species Act Section 6 land exchange proposal for USFWS approval.	Land exchange proposal has not yet been prepared.
Utah Department of Environmental Quality (UDEQ)	Issuance of Utah Pollutant Discharge Elimination System (UPDES) permit.	Submission of Notice of Intent (NOI) to comply with the conditions of the City's UPDES permit anticipated prior to the start of construction. The UPDES permit fulfills the Clean Water Act Section 402 requirements.
UDEQ Utah School and Institutional Trust Lands Administration	Issuance of General Construction Storm Water permit. Issuance of right-of-way.	Submission of NOI to comply with conditions of the general permit prior to start of construction. Application for right-of-way anticipated after final EA distribution.
Utah State Historic Preservation Office (SHPO)	Concurrence with the Determination of Eligibility and Finding of Effect (DOE/FOE)	FHWA and UDOT have submitted a DOE/FOE, and SHPO has concurred with the eligibility and effects determinations included in the DOE/FOE. There would be an adverse effect on one cultural resource. To comply with Section 106 of the National Historic Preservation Act (NHPA), a Memorandum of Agreement (MOA) will be prepared to outline responsibilities and measures to mitigate or reduce the adverse effect. The MOA will be included as an appendix to the final EA.

## Summary of Environmental Impacts and Mitigation for the Build Alternative

Table S-2 provides a summary of environmental impacts that would result from implementation of the Build Alternative and lists mitigation measures that would be implemented to minimize environmental impacts. The title of the mitigation measure is listed in the table; for a full description of the measure see the appropriate resource section in Chapter 3 or the complete list of mitigation measures in Chapter 5 of this EA.

**Table S-2.** Summary of Environmental Impacts and Mitigation Measures for Red Hills Parkway, SR-18 (Bluff Street) to Industrial Road Project

Impact Category	Project Impacts	Mitigation Measures
Land Use	The Build Alternative would be compatible with existing land uses and land use plans and would not induce growth.	None required
Social Impacts	<p>During construction, temporary access disruptions along the alignment could occur due to partial road closures, delays, and movement of construction equipment. Access to businesses and City utility yards located along Red Hills Parkway would be maintained during construction.</p> <p>The Build Alternative would neither divide existing or planned communities nor change existing community character.</p> <p>Partial acquisition of nine parcels would be required. Existing buildings or facilities necessary for the function of business would not be affected. No residential, commercial, or farm relocations would be required.</p> <p>Several utility relocations would be required; relocations would be minor and would not result in major service disruptions.</p> <p>Traffic congestion on Red Hills Parkway, St. George Boulevard, and Bluff Street would be reduced, and emergency response times would improve.</p> <p>A total of 1.7 acres of land from Pioneer Park would be incorporated into the new road facility, and reconfiguration of the main park access would be required.</p> <p>A total of 0.62 acre of land from the proposed Temple Springs Park would be incorporated into the new road facility, and construction of a retaining wall would be required.</p> <p>The Build Alternative would not have disproportionately high and adverse effects on minority and/or low-income populations.</p>	<p>Mitigation Measure SI-1: Development of a Construction Access Management Plan</p> <p>Mitigation Measure SI-2: Minimize Impacts on Recreational Facilities and Parks</p>

Impact Category	Project Impacts	Mitigation Measures
Economics	The Build Alternative would not affect employment, business sales, the tax base, or development patterns. The Build Alternative is projected to provide a savings of \$13,340,912 in motorists' travel time per year in 2030 over the No-Build Alternative.	None required
Pedestrian and Bicyclist Considerations	During construction, the Build Alternative would require temporary realignment of several trails located in the study area. New pedestrian/bicycle trail and bicycle lanes would be provided by the project. Trail connectivity would increase as a result of the project.	Mitigation Measure PED-1: Minimize Impacts on Pedestrian and Bicyclist Facilities
Air Quality	The Build Alternative would generate temporary fugitive dust emissions, emit small amounts of odor-causing compounds, and emit air pollutants during construction. Emissions would be temporary and localized and would not cause ambient air pollutant concentrations in the project vicinity to approach the National Ambient Air Quality Standards (NAQSS) limits.  Operationally, the proposed project would not cause an exceedance of the NAAQS limits. Mobile-source air toxics emissions are projected to decrease between 2006 and 2030.	Mitigation Measure AQ-1: Minimize Fugitive Dust Emissions  Mitigation Measure AQ-2: Implement Best Available Control Technology to Reduce Construction Emissions from Stationary Equipment  Mitigation Measure AQ-3: Implement Construction Emissions Controls
Noise	Construction activities would create temporary, localized noise during the construction period.  Overall traffic noise increase (Build Alternative in 2030 compared to existing conditions) would be 2.5 to 5.0 dBA at the noise-sensitive receivers along Red Hills Parkway.  Model results indicate that one noise-sensitive receiver (Pool-1) would experience noise levels that would exceed the noise abatement criteria limit. Noise levels under the 2006 existing conditions at Pool-1 already exceed the noise abatement criteria limit. The difference between the noise levels associated with the 2030 Build and No-Build Alternatives at Pool-1 is only 0.6 dBA, which would not be perceptible to most people.	Mitigation Measure N-1: Construction Mitigation
Geology, Soils, and Topography	Construction of the Build Alternative would include grading and fill activities. The project would require cuts up to 60 feet in height along the sandstone outcrops. Fills could be as deep as 60 feet.  The Build Alternative is primarily located on bedrock and, therefore, would not be subject to most geological hazards, including liquefaction, lateral spreading, settlement, or expansive or corrosive soils. No active or potentially active faults are known to underlie Red Hills Parkway, so the potential for surface fault rupture is low. The potential for surface ground shaking from nearby and distant earthquakes exists.	Mitigation Measure G-1: Grading and Earthwork Procedures

Impact Category	Project Impacts	Mitigation Measures
Water Quality and Wetlands	<p>Runoff from excavation and construction activities could contain soil and other pollutants that could degrade water quality in the surrounding springs or washes that eventually drain to the Virgin and Santa Clara Rivers.</p> <p>The Build Alternative would be constructed above the Navajo Sandstone and Kayenta Formation aquifers. If construction occurs in aquifer recharge areas, contamination of the groundwater aquifer could occur.</p> <p>Construction could affect Hopkins Spring and the Kemp Springs collection pipeline.</p> <p>Implementation of the Build Alternative would increase the footprint of impervious surfaces in the project vicinity from 45 acres to approximately 65 acres. The increased amount of impervious cover would result in increased surface water runoff.</p> <p>Construction of the proposed project would permanently fill 0.0275 acre (1,200 square feet) of the delineated wetland located within the proposed Temple Springs Park.</p>	<p>Mitigation Measure WQ-1: Implement Best Management Practices to Control Discharge of Construction-Related Pollutants to Surface Waters</p> <p>Mitigation Measure WQ-2: Develop and Implement a Toxic Materials Spill Prevention and Control Program</p> <p>Mitigation Measure WQ-3: Build Retaining Wall and Avoid or Replace Buried Pipeline</p> <p>Mitigation Measure WQ-4: Implement Measures to Treat Storm Water Runoff</p> <p>Mitigation Measure WQ-5: Create, Enhance, or Restore Wetlands</p>
Wildlife	<p>The primary direct impact of construction activities on wildlife would be the removal or disturbance of approximately 6.75 acres of undisturbed wildlife habitat located within the Red Cliffs Desert Reserve.</p> <p>Operation of the Build Alternative would increase the number of vehicles using Red Hills Parkway, which could increase wildlife mortality due to resultant road kills.</p> <p>Operation of the Build Alternative would not substantially reduce or diminish habitat, cause a wildlife population to drop below self-sustaining levels, or threaten to eliminate any wildlife population.</p>	<p>See Mitigation Measures BIO-1, BIO-2, and BIO-3.</p>
Special-Status Species	<p>Construction activities would permanently remove 6.2 acres and temporarily disturb 0.55 acres of Mojave Desert tortoise habitat outside of the existing tortoise exclusionary fencing. Construction could also result in the incidental death of unseen tortoises within the construction area. Operation of road facilities could result in desert tortoise habitat degradation that could render an area less valuable to, but still useable by, tortoises.</p> <p>The study area may provide a small amount of habitat for nine state-sensitive species, including western threadsnake, desert night lizard, common chuckwalla, zebra-tailed lizard, western banded gecko, Gila monster, Townsend’s big-eared bat, kit fox, and Western Burrowing Owl. Overall, the project would affect a small amount of the available habitat for these species.</p>	<p>Mitigation Measure BIO-1: Treatment of All Lands within the Reserve</p> <p>Mitigation Measure BIO-2: Treatment of Areas within the Existing Tortoise Exclusionary Fence</p> <p>Mitigation Measure BIO-3: Treatment of Areas outside of the Existing Tortoise Exclusionary Fence</p> <p>Mitigation Measure BIO-4: Compensation for Property Purchased with ESA Section 6 Funds</p>

Impact Category	Project Impacts	Mitigation Measures
Invasive Species	<p>Construction activities could introduce or spread noxious weeds into currently noninfested areas. Impacts from the introduction of invasive species include the displacement or elimination of native plant species and therefore degradation of habitat for special-status wildlife, such as desert tortoise, which depend on native plants for food.</p>	<p>Mitigation Measure IS-1: Avoid the Dispersal of Noxious Weeds into Noninfested Areas</p> <p>Mitigation Measure IS-2: Revegetate Disturbed Portions of the Study Area with Native Plant Species</p>
<p>Historic, Archaeological, and Paleontological Resources</p>	<p>Six cultural resources located within the Area of Potential Effect are eligible for listing in, or meet the criteria to be listed in, the National Register of Historic Places. The project would have an adverse effect on one cultural resource. SHPO has concurred with the NHPA Section 106 eligibility and effects determinations of the Build Alternative related to cultural resources. An MOA will be developed to mitigate or reduce the adverse effect.</p> <p>There are no known paleontological resources within the Area of Potential Effect.</p>	<p>Mitigation Measure CR-1: Avoidance and Monitoring of Significant Cultural Resources</p> <p>Mitigation Measure CR-2: Discovery of Historic or Archaeological Resources</p> <p>Mitigation Measure CR-3: Comply with State Laws Pertaining to the Discovery of Human Remains</p> <p>Mitigation Measure CR-4: Physical Disturbance to Site 42WS2872</p> <p>Mitigation Measure CR-5: Potential to Damage a Unique Paleontological Resource</p>
<p>Hazardous Materials</p>	<p>The principal environmental impact involving hazardous waste is the mobilization of contaminants, resulting in exposure of workers and the general public (i.e., through excavation and handling of soil that might be contaminated by past and current uses). Nine potential hazardous material sites were identified in or near the study area. It was determined that four of the sites would not affect soils within the proposed construction limits. Monitoring in the vicinity of the remaining five properties was recommended during excavation.</p>	<p>Mitigation Measure H-1: Hazardous Material Monitoring during Construction</p> <p>Mitigation Measure H-2: Hazardous Material Spills during Construction</p>
<p>Visual Quality</p>	<p>The Build Alternative would leave the appearance of the road essentially the same as the existing road with regard to construction materials and overall configuration and would not substantially affect views or visual resources.</p>	<p>Mitigation Measure VQ 1: Limitations on Building Materials</p> <p>Mitigation Measure VQ 2: Limitations on Excavation</p>

Impact Category	Project Impacts	Mitigation Measures
Energy	The Build Alternative would increase traffic capacity and use and, therefore, would result in increased energy consumption along Red Hills Parkway. This increase in energy consumption would be minor.	None required
Section 4(f) Resources	The Build Alternative would result in a direct use of four properties protected under Section 4(f). The direct uses appear to meet the impact criteria and requirements for a <i>de minimis</i> impact finding.	None required



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# Acronyms

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
AASHTO	American Association of State Highway and Transportation Officials
ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
APE	area of potential effects
AST	aboveground storage tank
BACT	best available control technology
BLM	Bureau of Land Management
BMPs	best management practices
Btu	British thermal unit
CAA	Clean Air Act
CEQ	U.S. Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
City	City of St. George
CO	carbon monoxide
County	Washington County
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DIDM	detention/infiltration device management
Dixie MPO	Dixie Metropolitan Planning Organization
DOE/FOE	determination of effect/finding of effect
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
DUs	dwelling units
EA	environmental assessment
EDB	extended detention basins
EIA	Energy Information Administration
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRMs	Flood Insurance Rate Maps
FLPMA	Federal Land Policy and Management Act
FTA	Federal Transit Administration
HAPs	hazardous air pollutants
HCAC	Habitat Conservation Advisory Committee

HCP	Habitat Conservation Plan
HHS	U.S. Department of Health and Human Services
I-15	Interstate 15
IPL	infrastructure planning
$L_{eq}$	equivalent sound level
LOS	Level of Service
LUPM	land use planning/management
LWCF	Land and Water Conservation Fund
MBTA	Migratory Bird Treaty Act
mg/l	milligrams per liter
MOEs	Measures of Effectiveness
MOU	memorandum of understanding
mpg	miles per gallon
mph	miles per hour
MS4	municipal separate storm sewer systems
MSATs	mobile-source air toxics
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NB	northbound
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NISC	National Invasive Species Council
$NO_2$	nitrogen dioxide
NOI	Notice of Intent
NOT	Notice of Termination
$NO_x$	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OD	ordinance development
OPA	Office of Public Archaeology
OS	Open Space
Parks Master Plan	2006 Parks, Trails, Recreation, and Arts Master Plan
$PM_{10}$	particulate matter that is 10 microns in diameter or smaller
$PM_{2.5}$	particulate matter that is 2.5 microns in diameter or smaller
ppm	parts per million
QRS	Quick Response System
RTP	Regional Transportation Plan
RMP	Resource Management Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SB	southbound
SCADA	Supervisory Control and Data Acquisition
SGPD	St. George Police Department
SHPO	State Historic Preservation Office
SITLA	School and Institutional Trust Lands Administration
SLM	sound level measurement
$SO_2$	sulfur dioxide

SR	State Route
STIP	Statewide Transportation Improvement Program
SWPPP	Stormwater Pollution Prevention Plan
Tc	time of concentration
TDM	Transportation Demand Management
TDS	total dissolved solids
TMDL	total maximum daily load
TNM	Traffic Noise Model Version 2.5
TSM	Transportation System Management
UAMPS	Utah Association of Municipal Power Systems
UCA	Utah Code Annotated
UDAF	Utah Department of Agriculture and Food
UDAQ	Utah Division of Air Quality
UDEQ	Utah Department of Environmental Quality
UDNR	Utah Department of Natural Resources
UDOT	Utah Department of Transportation
UDWR	Utah Division of Wildlife Resources
UGS	Utah Geological Survey
Uniform Relocation Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
UPDES	Utah Pollutant Discharge Elimination System
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
v/c	volume-to-capacity
VHD	vehicle hours of delay
VMT	vehicle miles traveled
VOCs	volatile organic compounds
WCC	Washington County Commission
WSC	Wildlife Species of Concern
ZO	zoning

# Chapter 1

## Purpose and Need

### Proposed Action

The Federal Highway Administration (FHWA), the Utah Department of Transportation (UDOT), and the City of St. George (City) propose to implement approximately 3.5 miles of transportation improvements along Red Hills Parkway between State Route (SR) 18 (Bluff Street) and Industrial Road (see Figure 1-1).

Red Hills Parkway is currently a two-lane facility (one eastbound lane and one westbound lane) with left-turn lanes provided at intersections. Five existing intersections along Red Hills Parkway occur at Bluff Street, Skyline Drive (200 East), 900 East, 1000 East, and Industrial Road. West of the Red Hills Parkway intersection with Bluff Street, the road name changes from Red Hills Parkway to Snow Canyon Parkway.

The proposed action would involve widening Red Hills Parkway to two lanes in each direction, with a center turn lane between Skyline Drive and Industrial Road. Between Bluff Street and Skyline Drive, an unpaved median would separate the eastbound and westbound lanes. Sidewalk, curb, and gutter would be installed between Industrial Road and the eastern entrance to Pioneer Park. A grade-separated diamond interchange configuration would be constructed at the intersection of Red Hills Parkway and Bluff Street. Bluff Street would be elevated to span over Red Hills Parkway. Signals would be installed on Red Hills Parkway at the interchange ramps to accommodate turning movements between Bluff Street and Red Hills Parkway. Signals at the intersections of Skyline Drive and Red Hills Parkway and at 1000 East and Red Hills Parkway would be upgraded to accommodate the new lanes of traffic. A separate paved pedestrian/bike trail would be constructed along the Red Hills Parkway alignment between Bluff Street and the trailhead located at Pioneer Park.

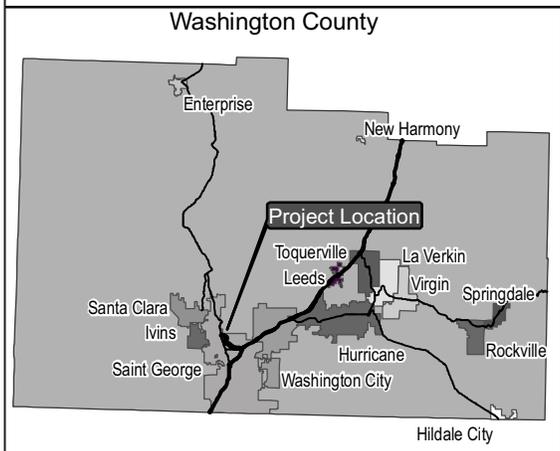
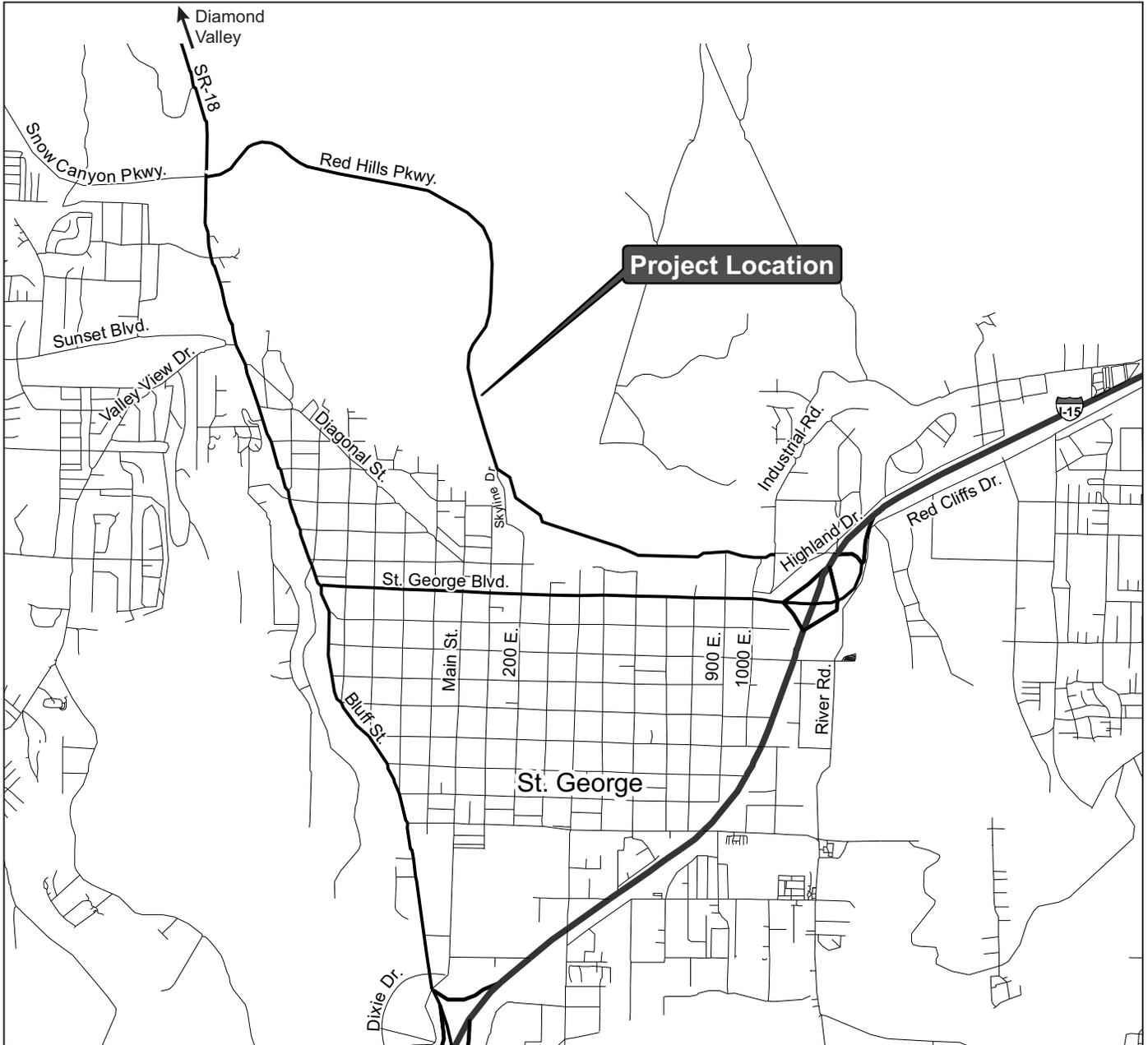
Construction of the interchange at Bluff Street and Red Hills Parkway would affect approximately 2 acres of land owned by the State of Utah Department of Natural Resources, Division of State Parks and Recreation (Utah State Parks). This land was purchased by the state using funds authorized under Section 6 of the Endangered Species Act and was intended to provide land for the conservation and recovery of desert

tortoise. Since the project would result in the conversion of 2 acres of land from conservation purposes to road, which is inconsistent with the intended purposes for the land, the City of St. George would be required to compensate the United States for the property by means of land transfer, replacement, or repayment with property of equal biological and economic value. The U.S. Fish and Wildlife Service (USFWS) is responsible for approving amendments to Section 6 grant agreements.

The City of St. George, USFWS, and the state are in the process of preparing an amendment to the state's Section 6 grant agreement that would allow the City to transfer ownership of a parcel of property located north of Red Hills Parkway (see Figure 1-2) to Utah State Parks in exchange for 2 acres of property located south of Red Hills Parkway. This property was previously public land managed by BLM and was transferred to the City under the Recreation and Public Purposes (R&PP) Act, which stipulates that the land must be treated as public land. Therefore, BLM will be required to approve a patent transfer to Utah State Parks under the R&PP Act.

The current Red Hills Parkway right-of-way is adjacent to three parcels (SG-1743-A, SG-1743-G, and SG-1744-B) of public land administered by the Bureau of Land Management (BLM). The BLM acquired parcels SG-1743-A and G in 1998 and SG-1744-B in 2002. Parcel SG-1743-A was acquired with funding authorized under the Land and Water Conservation Fund Act. Parcel SG-1743-G was acquired through a property exchange. The Red Hills Parkway right-of-way was excluded from the acquisition, and the property owners conveyed title to the 82-foot-wide parcel to the City. Widening Red Hills Parkway would require obtaining 2.05 acres of right-of-way from the BLM. The right-of-way would be approximately 1,200 feet in length and 60 feet in width on the west side of the road, just north of the intersection with Skyline Drive. Additional right-of-way would also be needed on the east side of the road, approximately 1,000 feet in length and 10 feet in width, just north of the intersection with Skyline Drive (see Figure 1-3). A temporary construction easement approximately 1,000 to 1,200 feet in length and extending up to 100 feet on either side of the right-of-way (approximately 5 acres) would also be needed.

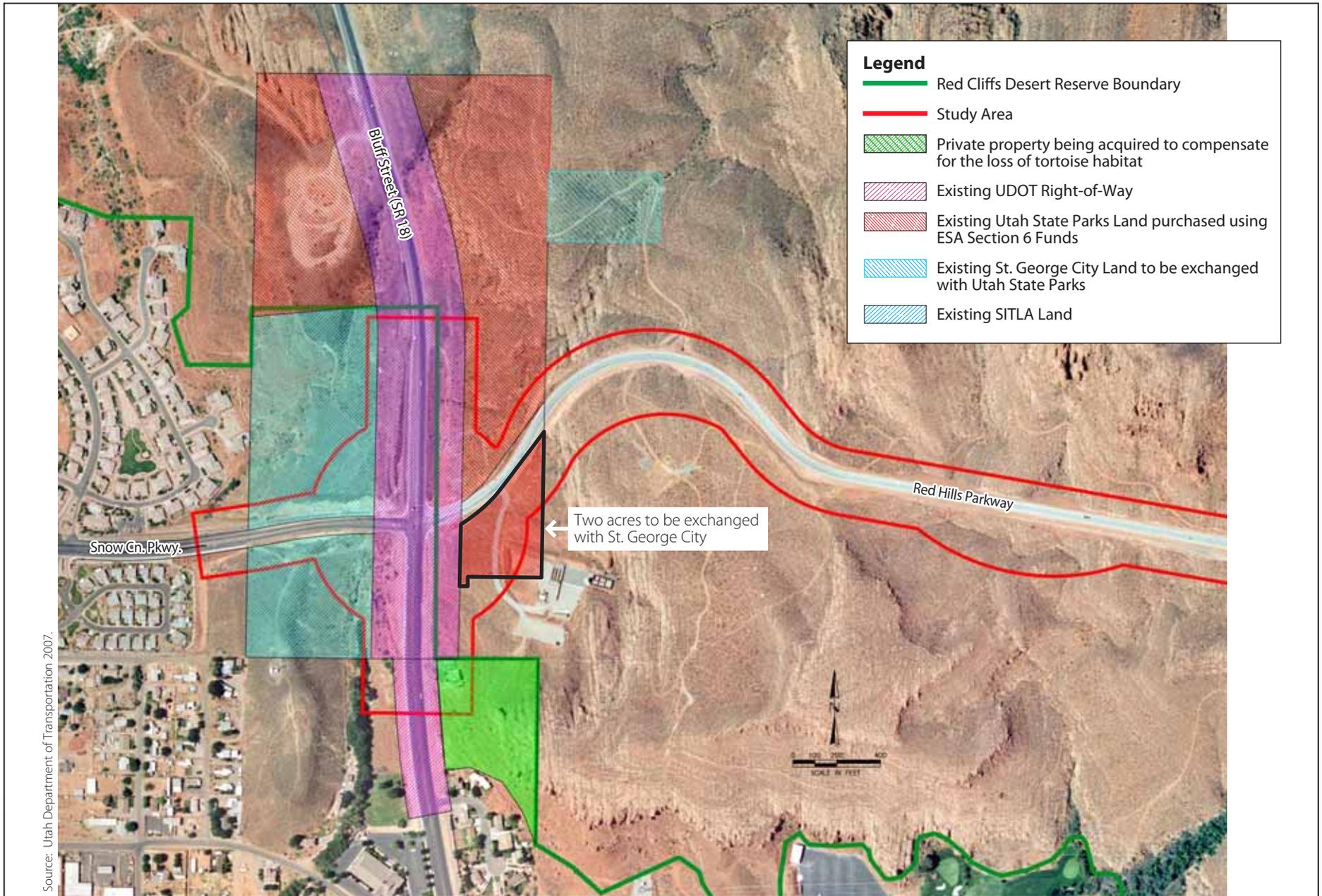
The proposed project would affect 6.75 acres of desert tortoise habitat. The City of St. George is currently pursuing acquisition of approximately 5 acres of private property located just south of Red Hills Parkway and just east of Bluff Street to compensate for the loss of approximately 5 acres of desert tortoise habitat as a result of the proposed project. The property is primarily undeveloped; however, a residential fourplex is located on the northwest corner of the property. Tenants living in the building would be relocated by the City of St. George in accordance with the Uniform Relocation Act and the Utah Relocation Assistance Act. The remaining 1.75 acres of desert tortoise habitat that would be affected by the project would be mitigated for in accordance with mitigation measure BIO-3.



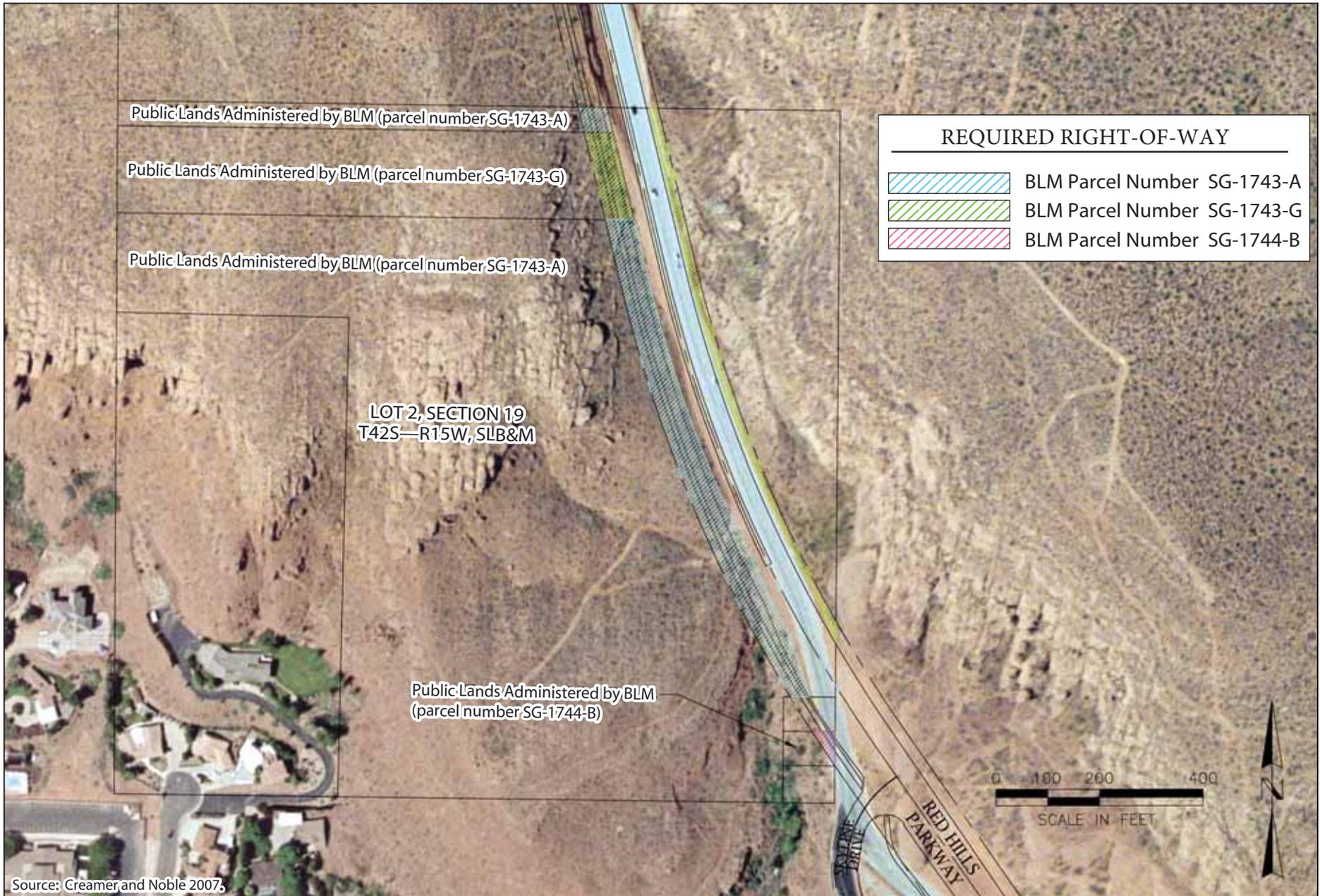
Sources: U.S Census Tiger Data, 2000; Jones & Stokes, 2006.

055801.05 EA (6-27-07)

**Figure 1-1  
Project Location Map**



**Figure 1-2**  
**Mitigation Property Acquisition/Transfer**



05801.05 EA (10-31-07)

Source: Creamer and Noble 2007.

**Figure 1-3**  
**BLM Right-of-Way**

## Background

Red Hills Parkway and St. George Boulevard are the primary east/west travel routes through the northern portion of the City. Several projects have been undertaken in the last few years to improve these routes.

In 2004, the City completed improvements to Red Hills Parkway,<sup>1</sup> including minor realignments to flatten curves, widen shoulders, and chip seal the road. These improvements were intended to enhance safety conditions on Red Hills Parkway and were completed in anticipation of increased traffic resulting from the reconstruction of St. George Boulevard.

Upon completion of the 2004 safety improvements on Red Hills Parkway, the overall road was posted with a 40-mile-per-hour (mph) speed limit. However, due to the need to avoid a historic resource, the design speed of the intersection of Skyline Drive and Red Hills Parkway was lowered to 30 mph. The Skyline Drive intersection is currently located on a horizontal curve. As a result of its location, vehicle operators waiting at the intersection have limited sight distance and therefore experience difficulty merging with Red Hills Parkway traffic. Ten vehicular accidents occurred within 500 feet of the intersection between April 2005 and March 2006. Of the 10 accidents, six were related to excessive speed and limited sight distance through the intersection (Baker 2006). The City and UDOT are currently implementing a separate improvement project at this intersection, scheduled for completion in fall 2007. The planned intersection improvement will provide a traffic signal and realign Red Hills Parkway approximately 100 feet north of its existing alignment to flatten out the horizontal curve and improve intersection safety.

The City and UDOT began the reconstruction of St. George Boulevard in June 2005 and completed the project in September 2006. This project was intended to improve the deteriorating condition of the road surface and improve safety by reducing vehicle turn conflicts. The project included a landscaped raised center median, dedicated left-turn lanes at major intersections, a traffic control system, new sidewalks, and pedestrian crossings. Additional capacity improvements to St. George Boulevard are unlikely due to the number of businesses that would be affected.

A study was recently completed that examined the long-range transportation needs of the Bluff Street corridor between Interstate 15 (I-15) and Diamond Valley, an area north of St. George. The findings of the study indicate that the following improvements are needed in this corridor:

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<sup>1</sup> Prior to 2004 Red Hills Parkway was named "Skyline Drive" east of 200 East and "Turtle Road" west of 200 East. After completion of the safety project, the City changed the road names to Red Hills Parkway. A short segment of road that connects Red Hills Parkway to 200 East is still named Skyline Drive (see Figure 1-1).

- widen Bluff Street to three lanes each direction between I-15 and Snow Canyon Parkway/Red Hills Parkway;
- widen Bluff Street to two lanes each direction with grade-separated access, where possible, between Snow Canyon Parkway/Red Hills Parkway and Diamond Valley;
- provide a grade-separated interchange at Snow Canyon Parkway/Red Hills Parkway;
- provide a partial grade separation at Sunset Boulevard;
- reconstruct the interchange at I-15 and Bluff Street; and
- add a new overpass and interchange on I-15 at Dixie Drive, with a connection to the Bluff Street interchange.

The combined effect of the planned projects is intended to improve mobility in the St. George area. No single project, including the project proposed in this environmental assessment, can address all of the long-term regional mobility needs.

## Transportation Planning

The concept for the Red Hills Parkway project arose from local, regional, and state transportation planning (in accordance with 23 Code of Federal Regulations [CFR] 450) to accommodate future predicted travel demand in the northern portion of the City of St. George in Washington County. These plans are discussed below.

### Utah Statewide Transportation Improvement Program

The proposed Red Hills Parkway project is included in the 2007 Statewide Transportation Improvement Program (STIP), project number STP-GSP-HPP-TI-3190(5). The STIP is a 5-year plan of highway and transit projects for the state of Utah that is published annually. The STIP provides the basis for obtaining FHWA approval of federal-aid highway and transit projects and is UDOT's official work plan for the development of projects through conception, environmental studies, right-of-way acquisition, planning, and advertising for construction.

### 2007–2030 Regional Transportation Plan

The Dixie Metropolitan Planning Organization (Dixie MPO) adopted the 2007–2030 Regional Transportation Plan for the St. George Urbanized Area in June 2007. This plan replaces the Dixie Urbanizing Area Interim Long-Range (2000–2020) Transportation Plan that was adopted in 2004. This plan sets baseline and 2030 demographic projections and includes projects that address short-term and long-term transportation needs. Red Hills Parkway is identified as a high-priority corridor where improvements are needed to meet future regional transportation needs.

- Provide a multiple-use corridor for bicyclists, pedestrians, and utilities in the northern portion of the City of St. George.
- Enhance safety at the Bluff Street intersection and at locations where the City Creek and Pioneer Rim trails cross Red Hills Parkway.
- Minimize adverse impacts on the Red Cliffs Desert Reserve (reserve).
- Maintain existing transportation connections to downtown St. George.

## Need for the Project

### Insufficient Transportation System Capacity

Washington County is rapidly growing and was identified as the nation's fifth fastest-growing county in 2005 by the U.S. Census Bureau (U.S. Census Bureau 2006). Current Utah state records estimate the county's population is approximately 127,000—a 40 percent increase from 2000 (Bulkeley 2006). According to the Governor's Office of Planning and Budget, the long-term growth in Washington County will result in a population of 353,922 by 2030 (Governor's Office of Planning and Budget 2005). Population growth projections for St. George and Washington County are shown in Table 1-1. Continued population growth in St. George and Washington County will require development of the transportation system to accommodate increased transportation demand.

**Table 1-1.** Growth Projections

Area	Population		
	2000	2010	2030
St. George City	49,663	85,644	185,809
Washington County	90,354	162,544	353,922

Source: Governor's Office of Planning and Budget. 2005 Baseline City Population Projections, Year 2000 to 2050.

A traffic analysis, prepared by Fehr & Peers (2007), provided existing and future (2030) No-Build Measures of Effectiveness (MOEs). These measures were used to indicate the future performance of Red Hills Parkway. The Average Daily Traffic (ADT) was recorded for existing conditions and projected for the corridor's future conditions. The MOEs evaluated included Levels of Service (LOS) for each intersection along Red Hills Parkway, the percent of traffic served at each intersection, and the corresponding traffic volume-to-road-capacity (v/c) ratio.

The Great Northern Corridor is listed in the unfunded, or illustrative, section of the Regional Transportation Plan. The Great Northern Corridor would provide a new regional east/west road north of Red Hills Parkway. Currently, there is no funding available for this project, and it is anticipated that construction would not occur until after 2030. Therefore, because of the conceptual and uncertain status of this project, it has not been included in the traffic modeling for the proposed Red Hills Parkway project.

### **St. George General Plan**

Red Hills Parkway is shown as an arterial road on the St. George Road Master Plan (City of St. George 2004a). The improvement of Red Hills Parkway is consistent with the road system identified in the road master plan. Additionally, the general plan bikeway policy states that the City will “implement a bikeway system that integrates and interconnects pedestrian paths and on-street bike lanes that will connect major destinations (shopping, schools) with parks and open space corridors” (City of St. George 2002). The proposed project includes a bikeway from Bluff Street to the Pioneer Park Trailhead that would aid in the implementation of the City’s bikeway policy.

## **Funding**

Approximately \$27.8 million is available to design and construct the Red Hills Parkway project. Most of the funding, approximately \$24 million, was allocated as part of the federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), adopted August 2005. The bill states that the funds are to be used to “expand Red Hills Parkway from two to five lanes and improve [the] alignment within rights-of-way in St. George.” Additional funding sources include local government matching funds and state funds.

## **Purpose of the Project**

The purpose of the proposed action is to better accommodate east/west travel demand on Red Hills Parkway between Bluff Street and Industrial Road. The objectives of the project are outlined below.

### **Objectives**

- Provide additional capacity to accommodate future travel demand.
- Provide a single, continuous alternate east/west route to maintain circulation and minimize the diversion of through traffic onto St. George Boulevard.
- Reduce future vehicle hours of delay on Red Hills Parkway.

The term LOS describes the operating performance of an intersection or road and is based on the Highway Capacity Manual 2000 (HCM 2000) methodology. The LOS is measured quantitatively and reported on a scale from A to F, with A representing the best performance and F the worst performance. The LOS corresponds to the average time delay each vehicle at the intersection will experience during the study period. The City considers LOS D conditions at intersections and along the corridor acceptable operations for road projects. Vehicles at intersections operating at LOS E or LOS F would experience excessive delays.

The percent of traffic served (percent served) is a MOE that evaluates the ability of the facility to accommodate traffic demand for a particular road or intersection during a specific period of time. A percent served of 100 percent means that all traffic wishing to pass through an intersection or use a road could be accommodated during the study period. Typically, the lower the percent served, the worse the LOS at the intersection. This is a useful MOE to evaluate the overall operations of an intersection. For example, if an intersection has an LOS F condition but accommodates 95 percent of the traffic, intersection improvements and modifications to signal timing would improve the operations. However, if an intersection has LOS F and only 50 percent of the traffic is served, then substantial queues would be experienced and more substantial improvements would be required along the corridor.

The v/c ratio represents the existing or projected traffic on a corridor divided by the theoretical capacity of the corridor. The capacity is based on the number of travel lanes, width of lanes and shoulders, and number of intersections per mile. A road that has the capacity to carry the exact amount of traffic desiring to use it will have a v/c ratio of 1.0. A road with a v/c ratio of less than 1.0 is capable of accommodating additional traffic, while a road with a v/c ratio greater than 1.0 will experience delays and heavy congestion.

The results of the existing conditions analysis are presented in Table 1-2.

**Table 1-2.** 2006 Red Hills Parkway PM Peak-Hour Level of Service and Percent Served

Intersection		Worst Approach			Overall Intersection		
Location	Control	Delay <sup>1</sup> (Sec/Veh)	Approach	LOS	Avg. Delay <sup>2</sup> (Sec/Veh)	LOS	% Served
Bluff St/Red Hills Pkwy	Signalized	N/A	N/A	N/A	31.6	C	100%
Skyline Dr/Red Hills Pkwy	NB Stop	14.9	Northbound	B	11.8	B	100%
900 East/Red Hills Pkwy	NB/SB Stop	25.8	Southbound	D	6.5	A	100%
1000 East/Red Hills Pkwy	Signalized	N/A	N/A	N/A	23.9	C	100%
Industrial Rd/Red Hills Pkwy	NB/SB Stop	35.4	Southbound	E	10.6	B	100%

Notes:

<sup>1</sup> Worst approach LOS and delay (seconds/vehicle) only, reported for unsignalized intersections.

<sup>2</sup> Overall intersection LOS and average delay (seconds/vehicle) for all approaches.

NB = northbound, SB = southbound.

Source: Fehr & Peers, 2007.

The analysis concluded that without any improvements to the road, overall all of the Red Hills Parkway intersections operate acceptably under 2006 PM peak-hour conditions (see Figure 1-4 and Table 1-2). However, the unsignalized southbound approach to the Industrial Road and Red Hills Parkway intersection would function at LOS E, and motorists would experience excessive delays. As the volumes on Red Hills Parkway increase over time, the available merge and lane-change space in the traffic flow will decrease, and subsequently, the side road delays will increase. In 2006, each intersection served 100 percent of the traffic, i.e., all traffic desiring to access the intersection was accommodated during the peak hour.

Fehr & Peers (2007) also calculated the intersection LOS and delay for the intersections under 2030 no-build PM peak-hour conditions. The 2030 no-build condition represents a scenario in which Red Hills Parkway remains a two-lane road between Bluff Street and Industrial Road. The 2030 no-build scenario incorporates reasonable, minor enhancements that improve operations on the corridor without expanding the number of travel lanes. The estimated traffic volumes projected for Red Hills Parkway in 2030 were developed using the DMPO Quick Response System (QRS) II travel demand model. This model incorporates future land uses to generate, distribute, and assign traffic to the transportation network. The results are provided in Table 1-3.

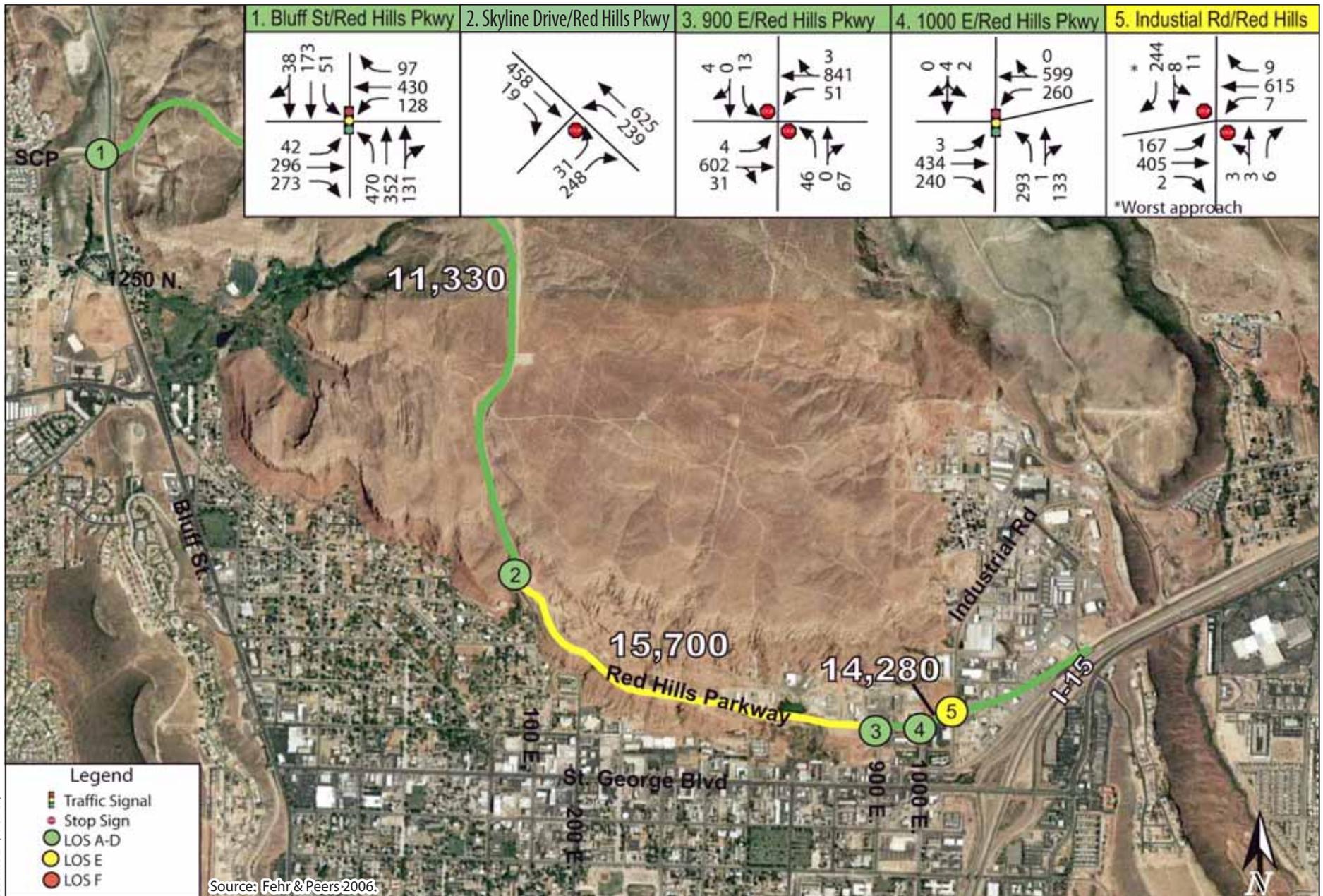


Figure 1-4  
2006 PM Peak Hour Conditions

**Table 1-3.** 2030 No-Build Red Hills Parkway PM Peak-Hour Level of Service and Percent Served

Intersection		Worst Approach			Overall Intersection		
Location	Control	Delay <sup>1</sup> (Sec/Veh)	Approach	LOS	Avg. Delay <sup>2</sup> (Sec/Veh)	LOS	% Served
Bluff St/Red Hills Pkwy	Signalized	N/A	N/A	N/A	> 80.0	F	52%
Skyline Dr/Red Hills Pkwy	Signalized	N/A	N/A	N/A	60.2	F	61%
900 East/Red Hills Pkwy	NB/SB Stop	> 50.0	Southbound	F	> 80.0	F	59%
1000 East/Red Hills Pkwy	Signalized	N/A	N/A	N/A	> 80.0	F	59%
Industrial Rd/Red Hills Pkwy	NB/SB Stop	> 50.0	Southbound	F	> 80.0	F	63%

Notes:

<sup>1</sup> Worst approach LOS and delay (seconds/vehicle) only, reported for unsignalized intersections.

<sup>2</sup> Overall intersection LOS and average delay (seconds/vehicle) for all approaches.

NB = northbound, SB = southbound.

Source: Fehr & Peers, 2007.

It is projected that every study intersection will experience high levels of delay (LOS F) under no-build conditions in 2030, as shown in Table 1-3. Also, only 52 percent to 63 percent of the traffic demand would be served on Red Hills Parkway. This means that 37 percent to 48 percent of the traffic that wants to use the corridor would be unable to enter Red Hills Parkway due to road congestion. The average peak hour traffic demand served for the entire network would be only 57 percent. Intersection conditions for Red Hills Parkway in 2030 are shown in Figure 1-5.

The 2006 and 2030 traffic volumes and corresponding v/c ratios are provided in Table 1-4 for the No-Build Red Hills Parkway scenario.

**Table 1-4.** No-Build Average Daily Traffic and V/C Ratios

Red Hills Parkway Road Segment	2006 Average Daily Traffic	2006 V/C Ratio	2030 Average Daily Traffic	2030 V/C Ratio
Bluff Street to Skyline Drive	11,330	0.67	33,000	1.94
Skyline Drive to 900 East	15,700	0.92	27,900	1.64
1000 East to Industrial Road	14,280	0.84	26,300	1.55

Source: Fehr & Peers, 2007.

The 2006 v/c ratios shown in Table 1-4 for all segments of Red Hills Parkway range between 0.67 and 0.92. This means that existing traffic volumes can be accommodated on Red Hills Parkway, but the road is approaching capacity.

The 2030 v/c ratios shown in Table 1-4 are 1.5 to 2 times the capacity of the corridor. This is an indication that there would be substantially more demand than capacity along Red Hills Parkway by 2030 if no improvements are provided.

## **Insufficient East/West Transportation Capacity**

The City was originally developed in a grid pattern, with residential development generally occurring south of Tabernacle Street and commercial development generally occurring north of Tabernacle Street. More recent outlying development to the south, east, and west of the City has not followed the original grid pattern due to topographical constraints. The City's major commercial and retail development is concentrated along Bluff Street, St. George Boulevard, and west of Industrial Road. This development pattern has resulted in a need for an east/west transportation corridor to connect these areas that attract large traffic volumes.

St. George Boulevard traditionally has been the major east/west arterial. However, this road cannot be further widened to accommodate future transportation needs without resulting in major business relocations. Traffic modeling indicates that if there are no improvements to St. George Boulevard or Red Hills Parkway by 2030, the average vehicle delay at all intersections along St. George Boulevard and Red Hills Parkway would be more than 60 seconds, meaning all of the intersections would fail to adequately handle the traffic demand (Fehr & Peers 2006). Additionally, v/c ratios on Red Hills Parkway and St. George Boulevard would be greater than 1.0. The average speed on Red Hills Parkway would be reduced by approximately 80 percent from 29 mph to 5 mph during peak hours.

A transportation corridor north of downtown St. George is needed to improve east/west mobility, provide alternative access to St. George Boulevard, and connect major commercial/retail areas on the east and west sides of the City.

## **Excessive Projected Vehicle Hours of Delay**

Population growth in the St. George area and the corresponding increase in traffic will substantially increase congestion on local roads over the next 25 years. As stated previously, no single project would sufficiently meet the increasing demand for travel capacity in the area, but each project would provide some additional capacity and serve to reduce congestion and delays. As shown in the previous tables, Red Hills Parkway would, without improvements, experience LOS F conditions in both capacity (v/c > 1.0) and intersection delays. A substantial portion of drivers (37 percent to 48 percent) would not be able to access Red Hills Parkway when desired, which would also add to overall travel delay.

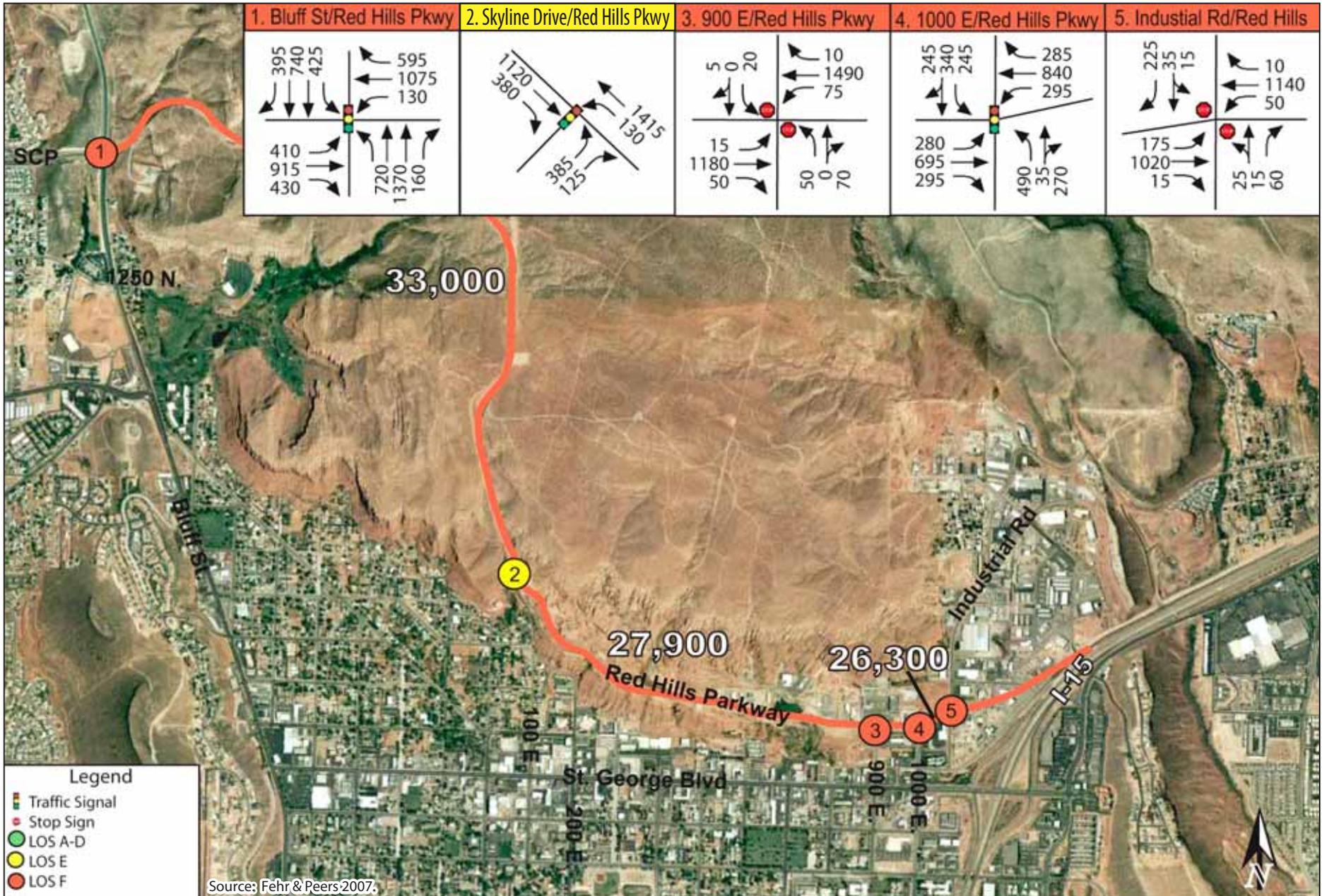


Figure 1-5  
2030 No Build PM Peak Hour Conditions

Fehr & Peers (2007) determined the travel time along Red Hills Parkway between Bluff Street and Industrial Road during the peak hour was approximately 8 minutes in 2006. The total vehicle hours of delay (VHD) along Red Hills Parkway was calculated based on the average intersection delay and number of cars entering each intersection during the peak hour. In 2006, the total VHD during the peak hour was 45.4 hours. This total network delay was experienced by 9,212 vehicles, for a network average delay of 17.8 seconds, or 0.3 minute per vehicle.

Under the 2030 no-build conditions, it is projected that the time required to access and travel the length of the Red Hills Parkway corridor would be 40 to 60 minutes. Total VHD during the peak hour would increase to 4,738 hours. The total network delay during the peak hour would be experienced by 20,710 vehicles, for a network average delay of 13.7 minutes per vehicle. During many hours of a typical day, the Red Hills Parkway corridor would essentially be in gridlock. This total network delay is more than 46 times the current network delay.

## **Insufficient Multi-Modal Trail Connectivity**

Currently, Red Hills Parkway does not include any pedestrian or bicycle facilities. Some bicyclists travel on Red Hills Parkway; however, narrow shoulders and the lack of a bicycle lane or path create unsafe conditions and discourage riders from using the road. The City's Trail Master Plan calls for a trail system that connects major population centers throughout the City (City of St. George 2006a) and includes plans for a trail between Bluff Street and Industrial Road.

The northern portion of St. George experiences substantial recreational bicycle use of off-road trails located throughout the Red Cliffs Desert Reserve and in Snow Canyon State Park. A bicycle trail along Red Hills Parkway would increase trail connectivity, and underpasses would provide safe crossings for trails that intersect with the parkway.

## **Safe Intersections and Trail Crossings**

Red Hills Parkway experienced an average of 29 collisions per year between 2003 and 2005. The number of collisions has increased in each successive year since 2003, indicating an increasingly congested corridor. Data indicate the collision rate on Red Hills Parkway is lower than expected, but the severity of collisions is slightly higher than expected (Leonard 2006).

Collision data for the intersection of Red Hills Parkway and Bluff Street between 2003 and 2005 are shown in Table 1-5. Data indicate both the collision rate and severity of collisions at this intersection are higher than expected (Leonard 2006). The number of collisions at this intersection is almost three times greater than expected. In addition, the severity of collisions has substantially increased from 1.0 (no injury) in 2003 to 2.16 (possible injury) in 2005 (Leonard 2006). In 2007 there was a fatality at this intersection.

**Table 1-5.** 2003 to 2005 Collision Data for the Intersection of Bluff Street and Red Hills Parkway

	Actual				Expected
	2003	2004	2005	Average	
Number of Collisions	4	14	19	12.33	
Collision Rate	0.98	3.43	4.66	3.02	1.07
Collision Severity	1.00	1.50	2.16	1.55	1.29

Source: John Leonard, UDOT, 2006.

A grade-separated interchange is needed at the intersection of Bluff Street and Red Hills Parkway to improve safety. An interchange would provide additional capacity and fewer opportunities for vehicle conflicts, which would reduce collisions and increase safety at this intersection.

A trail system has been developed throughout the Red Cliffs Desert Reserve. At-grade trail crossings have become increasingly dangerous as traffic volumes increase on Red Hills Parkway. In addition, relatively high speed limits (40 mph) and short sight distances, resulting from the undulating topography, further increase hazards to pedestrians and bicyclists. Two partial trail underpasses were installed in 2004 as part of the previous Red Hills Parkway improvements, but additional roadwork and excavation are needed before the underpasses are functional. A third fully functional trail underpass was installed near the Pioneer Hills Trailhead, but additional trail connections are needed to improve utilization of this underpass.

## Protection of Mojave Desert Tortoise Habitat

The Red Cliffs Desert Reserve is located north of St. George between the cities of Ivins, Washington, and Hurricane in Washington County. The 62,000-acre reserve was established to conserve the desert tortoise and its habitat in perpetuity. The Mojave Desert tortoise appears on the federal list as Threatened, with designated critical habitat since 1994. The reserve encompasses all of the critical habitat designated within the Upper Virgin River Recovery Unit.

In 1995, the Washington County Habitat Conservation Plan (HCP) was completed. The HCP was developed to provide a comprehensive approach to preserving and protecting desert tortoise habitat in Washington County, while allowing controlled growth and development in portions of desert tortoise habitat deemed less essential to species survival and recovery. As a result, USFWS issued an incidental take permit (10[a] 1[B]) based on the terms and conditions of an agreement with Washington County. The reserve was established to protect the majority of the densest desert tortoise habitat and thereby protect the habitat in perpetuity to offset Washington County development of tortoise habitat outside reserve boundaries. The HCP is designed to allow for the take of desert tortoise on

350,000 acres of private and municipal land in Washington County as long as the species as a whole is protected, habitat is conserved, and the permitted incidental take will not jeopardize the continued survival of the species. Prior to development on non-federal lands in Washington County, live, healthy tortoise are relocated to Zone 5 of the reserve whenever possible. The reserve also provides habitat for other sensitive species, including peregrine falcon, Merriam's kangaroo rat, pygmy rabbit, ferruginous hawk, loggerhead shrike, chuckwalla, Gila monster, Utah banded gecko, lyre snake, western blind snake, and sidewinder (Washington County 1995).

The Red Cliffs Desert Reserve is composed of multiple jurisdictions, including public lands managed by BLM, lands managed by the State of Utah (SITLA and State Parks), municipal lands, and a few private holdings. Approximately two-thirds of the reserve is public lands managed by BLM. Red Hills Parkway is located in Zone 3 of the reserve. BLM is the managing agency for Zone 3 of the reserve in all matters except for issues directly related to tortoise protection since a majority of the lands in Zone 3 are public lands managed by BLM.

Red Hills Parkway is currently located on approximately 25 acres of land within the southern portion of the reserve. The proposed road corridor would follow the same alignment but would occupy an additional 15 acres of land within the reserve. Of the additional 15 acres, approximately 6.75 acres are located outside of the reserve tortoise exclusionary fencing currently located along Red Hills Parkway. The HCP included provisions for the reconstruction of Skyline Drive (now designated as Red Hills Parkway) and stated that the road improvement project should follow the existing alignment as near as possible except where engineering and/or safety considerations require deviations (Washington County 1995).

## **Lack of Continuous East/West Traffic Lanes**

Red Hills Parkway connects to five-lane roads west of Bluff Street and east of Industrial Road. Widening Red Hills Parkway between Bluff Street and Industrial Road would provide two continuous traffic lanes in each direction, which is needed to improve the east/west traffic flow.

## **Congestion on St. George Boulevard**

Downtown St. George has traditionally been the economic center for the City. Development of new, larger commercial and retail space has occurred outside of the downtown core. For downtown St. George to remain economically viable, it is important for traffic congestion to be reduced while still maintaining connections to the downtown area. As previously described, projected traffic delays on St. George Boulevard would be excessive and future improvements to St. George Boulevard are not feasible due to excessive business impacts. Therefore, improvements to other east/west corridors are needed to relieve congestion on St. George Boulevard.

## Summary of Purpose and Need

The purpose of the proposed action is to accommodate east/west travel demand on Red Hills Parkway better between Bluff Street and Industrial Road. The needs the proposed action is intended to address have been identified as follows:

- insufficient transportation system capacity to accommodate growing travel demand,
- insufficient east/west transportation capacity to serve areas in the City that attract large traffic volumes,
- excessive projected vehicle hours of delay along Red Hills Parkway,
- insufficient multi-modal trail connectivity,
- safe intersections and trail crossings,
- Mojave Desert tortoise habitat adjacent to Red Hills Parkway,
- lack of continuous east/west traffic lanes, and
- congestion on St. George Boulevard.

## **Proposed Action**

This chapter of the environmental assessment (EA) describes the proposed action and the design alternatives that were developed to achieve the project purpose and need while avoiding or minimizing environmental impacts. The alternatives that were evaluated include the Transportation System Management (TSM)/Transportation Demand Management (TDM) Alternative, the 7-Lane Alternative, the Build Alternative (5-Lane Alternative), the Northern Corridor, and the No-Build Alternative. The results of the alternatives analysis is presented in this chapter of the EA.

The 5-Lane Alternative has been selected as the locally preferred alternative. Chapter 3 of this EA includes an in-depth analysis of the impacts of the Build Alternative (5-Lane Alternative) and the No-Build Alternative. The Build Alternative includes widening Red Hills Parkway to two lanes in each direction with a center turn lane between Skyline Drive and Industrial Road and constructing a separate paved pedestrian/bike trail between Bluff Street and the west side of Pioneer Park. The alternatives are described in more detail below.

## **Study Area**

The study area for the proposed action includes a 300-foot-wide corridor beginning 1,000 feet west of Bluff Street and terminating 1,000 feet east of Industrial Road (see Figure 2-1). The study area is based on the limits of disturbance (or the “red lines”) that were approved by the Washington County Habitat Conservation Advisory Committee (HCAC), the HCAC Technical Committee, and the Washington County Commissioners in April and May of 2003 (see Figure 2-1). The HCAC approved disturbance within the red lines for reconstruction of Red Hills Parkway and construction of a new trail, subject to impact minimization efforts and coordination with appropriate resource staff (HCAC Technical Committee 2003). The proposed limits of disturbance for the Build Alternative would be within the study area and would be 150 to 250 feet wide except at the interchange, which would disturb an area approximately 600 feet wide.

The study area has been revised slightly since the 2003 HCAC approval and now encompasses a slightly wider area in the vicinity of the intersection of Bluff Street and Red Hills Parkway and the intersection of Skyline Drive and Red Hills Parkway; these wider areas were included to allow reconfiguration of the intersections (see Figure 2-1). The additional study area around the Skyline Drive intersection is approximately 2 acres, and the additional study area around the proposed Bluff Street interchange is approximately 27.5 acres (most of the 27.5 acres is within the existing UDOT right-of-way).

The HCAC has reviewed the revised study area (see Sections 3.9 and 3.10 of this EA). During the alternatives evaluation process, alignments outside of this study area were considered but were eliminated from further review due to environmental considerations or because they did not meet the purpose and need.

The study area for specific resources may be slightly larger than the study area described above. Resource-specific study areas that vary from the project study area are defined in the resource sections in Chapter 3.

## Independent Utility and Logical Termini

The termini for the proposed action include Bluff Street to the west and Industrial Road to the east. Red Hills Parkway between Bluff Street and Industrial Road is currently a two-lane facility. Snow Canyon Parkway west of Bluff Street and Red Hills Parkway east of Industrial Road are currently five-lane facilities. The Build Alternative would match the existing five-lane facilities.

This project has independent utility because improving Red Hills Parkway between Bluff Street and Industrial Road would not require additional improvements to other segments of the road outside of this project. Implementation of the Build Alternative would not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

## Alternatives Screening Process

Traffic projections indicate the need for future widening of Red Hills Parkway between Bluff Street and Industrial Road. The initial traffic analysis considered a five-lane and a seven-lane road cross section. During the scoping process for the Red Hills Parkway project, comments were received requesting consideration of a “Northern Corridor Alternative” and a TSM/TDM Alternative. The TSM/TDM Alternative was eliminated from further consideration because it did not meet the project purpose and need. Three build alternatives, the Build Alternative (5-Lane Alternative), the 7-Lane Alternative, and the Northern Corridor Alternative, underwent a more detailed screening process. The alternatives screening criteria, listed in Table 2-1, were used to evaluate each alternative. The criteria were developed to provide a qualitative and/or quantitative comparison of each alternative based on the project objectives. The results of the detailed screening are included in Table 2-5 at the end of this chapter.



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**Figure 2-1  
Study Area**

**Table 2-1.** Project Objectives and Alternatives Screening Criteria

Objective	Criteria	Measurement Method	Rating System
Provide additional capacity to accommodate future east/west travel demand on Red Hills Parkway.	Improve East/West Mobility	Increase in vehicular capacity on Red Hills Parkway.	ADT and v/c ratios
Provide a multi-use corridor for bicyclists, pedestrians, and utilities in the northern portion of the City of St. George.	Nonvehicular Travel Linkages	Inclusion of pedestrian and bicycle facilities that connect to existing facilities.	Yes/No
Enhance safety at the Bluff Street intersection and at locations where the City Creek and Pioneer Rim trails cross Red Hills Parkway.	Safety	Inclusion of grade-separated trail crossings. Improvements to Bluff Street intersection.	Yes/No
Minimize impacts to the Red Cliffs Desert Reserve.	Reserve Impacts	Amount of reserve land that would be affected.	Acres of take
Maintain transportation connections to downtown St. George.	Transportation Connections to St. George	Number of intersections that connect to downtown St. George.	Number of intersections
Avoid, minimize, and/or mitigate adverse environmental impacts caused by project construction and operation.	Land Use Impacts	Consistency with current land use. Consistency with adopted plans.	Rating (Poor/Neutral/Fair/Good)
	Social Impacts	Number of relocations/acquisitions.	Acres of acquisitions, number of relocations
	Public Facilities, Services, and Utilities	Impact on emergency response time. Impact on demand for public facilities, utilities, or services.	Rating (Poor/Neutral/Fair/Good)
	Recreational Resources	Impact of acquisitions and indirect effects on recreational facilities.	Rating (Poor/Neutral/Fair/Good)
	Economics	Impact on local business owners.	Rating (Poor/Neutral/Fair/Good)
	Noise	Impact on sensitive receptors.	Number of receptors, volume of traffic, proximity to receptor
	Geology, Soils, and Topography	Amount of cut and fill.	Acres of disturbance
	Water Resources	Impact on springs and drainages.	Rating (Poor/Neutral/Fair/Good)

Objective	Criteria	Measurement Method	Rating System
	Biological Resources	Impact on threatened and endangered species and special-status species.	Acres of surface disturbance in the reserve. Location of disturbance in the reserve.
	Historic and Archaeological Resources	Impact on significant cultural resources.	Number of resources impacted
	Visual Quality	Impact to topography and natural features (e.g., Dixie Rock).	Rating (Poor/Neutral/Fair/Good)
	Section 4(f)	Impact on 4(f) resources.	Number of acres. Function of area affected.
Develop feasible, cost-effective solutions that can be implemented within a reasonable time horizon.	Implementation Issues	Judgment based collectively on legislative needs, jurisdictional issues, and public controversy.	Rating (Poor/Neutral/Fair/Good)
	Cost Effectiveness	Rating on anticipated benefits in relation to costs.	Rating (Poor/Neutral/Fair/Good)

Source: Jones & Stokes 2007.

## No-Build Alternative

The No-Build Alternative provides a baseline for comparing impacts with the other alternatives. Under the No-Build Alternative, Red Hills Parkway would continue to operate as a two-lane road. Planned improvements or projects with funding currently available would be implemented. The intersection of Skyline Drive and Red Hills Parkway would be realigned approximately 100 feet north of its existing alignment and signalized. This project would improve sight distance and safety but would not add capacity to the intersection. In addition, the segment of Bluff Street south of Sunset Boulevard would be widened to three lanes in each direction. No capacity improvements to St. George Boulevard would occur.

Additional minor improvements anticipated along Red Hills Parkway under the No-Build Alternative are listed below.

- Optimize signal timing at each signalized intersection.
- Make improvements at the intersection of Bluff Street and Red Hills Parkway:
  - increase left-turn storage bays to 450 feet for each approach,
  - add or extend right-turn lanes on each approach (200 feet), and
  - add permissive/protected left-turn phases for eastbound approach.

- Make improvements at the intersection of Skyline Drive and Red Hills Parkway:
  - signalize intersection and reconfigure as a Hi-T design (westbound traffic does not stop),
  - extend westbound left-turn lane bay to 250 feet, and
  - add center median to allow a two-stage gap acceptance for northbound left turns.
- Make improvements at the intersection of 900 East and Red Hills Parkway:
  - modify shared through/right-turn lanes to provide a dedicated right-turn lane for eastbound and westbound traffic on Red Hills Parkway.
- Make improvements at the intersection of 1000 East and Red Hills Parkway:
  - modify shared through/right-turn lanes to provide a dedicated right-turn lane for eastbound and westbound traffic on Red Hills Parkway,
  - add permissive/protected left-turn phases for each approach, and
  - expand southbound approach to provide a left-turn lane and a shared through/right-turn lane.

Under the No-Build Alternative, all of the intersections along Red Hills Parkway would operate at unacceptable levels of service by 2030. On average, only 57 percent of the traffic demand would be accommodated. Delays would be excessive for vehicles attempting to enter Red Hills Parkway; drivers could expect to spend 40 to 60 minutes accessing/traveling Red Hills Parkway during peak hours. The average travel speed for Red Hills Parkway would be approximately 5 mph. Future traffic demand would increase capacity to nearly twice what the road could accommodate. Chapter 1 provides details on the 2030 no-build traffic conditions.

## Proposed Build Alternative

The proposed Build Alternative would involve widening approximately 3.5 miles of Red Hills Parkway to two 12-foot-wide traffic lanes in each direction between Bluff Street and Industrial Road (see Figure 2-2). The total right-of-way would be 150 feet wide between Bluff Street and Skyline Drive and 100 feet wide between Skyline Drive and Industrial Road (see Figure 2-3). A paved 14-foot-wide center turn lane would be constructed between Skyline Drive and Industrial Road. Between Bluff Street and Skyline Drive, a 12-foot-wide unpaved median would separate the eastbound and westbound lanes. The width of the median was set to comply with ASHTO and UDOT safety standards.

Sidewalk, curb, and gutter would be installed on the north side of Red Hills Parkway between the eastern entrance to Pioneer Park and Industrial Road. On the south side of Red Hills Parkway, sidewalk, curb, and gutter would be installed between 900 East and Industrial Road.

A grade-separated diamond interchange configuration would be constructed at the intersection of Red Hills Parkway and Bluff Street. Bluff Street would be elevated to span over Red Hills Parkway. Signals would be installed on Red Hills Parkway at the interchange ramps to accommodate turning movements between Bluff Street and Red Hills Parkway. Signals at the intersections of Skyline Drive and Red Hills Parkway and at 1000 East and Red Hills Parkway would be upgraded to accommodate the new lanes of traffic.

Bike lanes within the shoulders of the road would be constructed from Bluff Street to Industrial Road. The bike lanes would be 6 to 8 feet wide and designated by pavement striping.

A separate paved pedestrian/bike trail would be constructed along the Red Hills Parkway alignment between Bluff Street and the trailhead located at Pioneer Park. The trail, which would accommodate travel in two directions, would be paved, 10 feet wide, and separated from the road. Between Bluff Street and Skyline Drive, the proposed trail would be located on the south and west sides of the Red Hills Parkway alignment (Figure 3.2-2 in Section 3.2 of this EA shows the proposed trail alignment). At Skyline Drive, the proposed trail would cross at a signalized crosswalk, continue eastward to the existing trail underpass, and connect to the Pioneer Park Trailhead at the Rotary parking area. A section of the trail would continue beyond the underpass on the south side of Red Hills Parkway for approximately 100 feet and, terminate at the overlook.

The Build Alternative includes signal optimization and pedestrian/bicycle amenities as TSM/TDM strategies to improve traffic flow and optimize capacity.

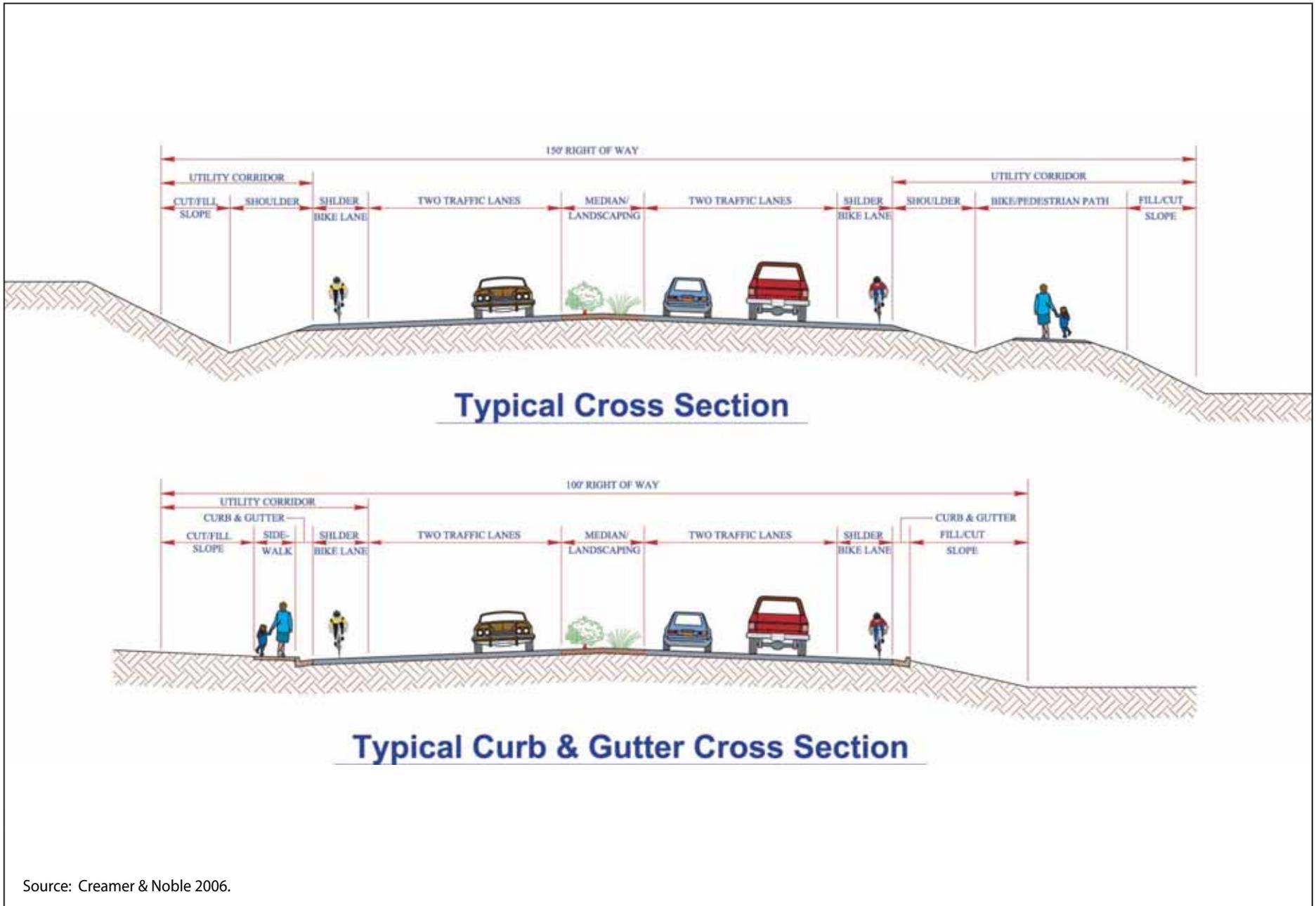
## Future Transportation Conditions

Future 2030 transportation conditions under the proposed Build Alternative are presented in this section. Intersection LOS and delay for the five study intersections under 2030 PM peak-hour conditions are presented in Table 2-2.

All of the intersections, except the interchange at Bluff Street and Red Hills Parkway, would continue to operate at LOS F conditions. However, the percentage of traffic served would be significantly improved over the 2030 no-build conditions. Additionally, more vehicles would be accommodated in the transportation network, and each intersection would have a higher percentage of demand served than under the No-Build Alternative. Total traffic demand during the peak hour (23,840 vehicles) would be 15 percent higher than under the no-build condition due to changes in driver behavior. The average percentage of vehicles being served at the intersections would increase by 33 percent; an increase from 57 percent under the No-Build Alternative to 90 percent under the Build Alternative. The Build Alternative would accommodate an average of 8,108 more vehicles on Red Hills Parkway during the peak hour, which would be 69 percent more vehicles than under the No-Build Alternative. Though conditions would improve, the minor approaches at unsignalized intersections would continue to experience excessive delays.



**Figure 2-2  
Build Alternative**



Source: Creamer & Noble 2006.

**Figure 2-3**  
**Build Alternative Cross Section**

**Table 2-2.** 2030 Build Alternative PM Peak-Hour Level of Service

Intersection		Worst Approach			Overall Intersection		
Location	Control	Delay <sup>1</sup> (sec/veh)	Approach	LOS	Avg. Delay <sup>2</sup> (sec/veh)	LOS	Percent Served
Bluff St/Red Hills Pkwy Interchange	SB Ramps Signal	N/A	N/A	N/A	23.3	C	99%
	NB Ramps Signal	N/A	N/A	N/A	36.7	D	99%
Skyline Dr/Red Hills Pkwy	Signalized	N/A	N/A	F	> 80	F	91%
900 East/Red Hills Pkwy	NB/SB Stop	> 50	Southbound	F	> 80	F	86%
1000 East/Red Hills Pkwy	Signalized	N/A	N/A	N/A	> 80	F	88%
Industrial Rd/Red Hills Pkwy	NB/SB Stop	> 50	Southbound	F	> 80	F	83%

Notes:

<sup>1</sup> Worst approach LOS and delay (seconds/vehicle) only, reported for unsignalized intersections.

<sup>2</sup> Overall intersection LOS and average delay (seconds/vehicle) for all approaches.

NB = northbound; SB = southbound.

Source: Fehr & Peers, 2007.

In addition, the interchange at Bluff Street and Red Hills Parkway would improve traffic conditions on Bluff Street. The interchange would remove any obstruction to northbound and southbound traffic on Bluff Street. The 1,880 vehicles projected to use Bluff Street during the peak hour would experience no delay while traveling through the Red Hills Parkway interchange. The ramp termini, under signal control, would also operate efficiently.

The projected 2030 v/c ratios for each major segment of Red Hills Parkway and the ADT volumes for the Build Alternative are shown in Table 2-3.

**Table 2-3.** 2030 Build Alternative ADT Volumes and V/C Ratios

Red Hills Parkway Segment	Average Daily Traffic	V/C Ratio
Bluff Street to Skyline Drive	45,700	1.34
Skyline Drive to 900 East	39,700	1.17
1000 East to Industrial Road	31,700	0.93

Source: Fehr & Peers, 2007.

Traffic demand would exceed capacity on the segment of Red Hills Parkway between Bluff Street and 900 East. However, the road would serve 40 percent more daily traffic than the No-Build Alternative. Traffic demand on the 1000 East to Industrial Road segment would not exceed capacity and would serve 21 percent more vehicles than the No-Build Alternative.

The travel times from the simulation model and the corresponding average travel speeds, shown in Table 2-4, indicate that the Build Alternative would result in an overall improvement in travel time and speed over the No-Build Alternative.

Peak-hour travel time in 2030 for vehicles on Red Hills Parkway under the Build Alternative (6.8 minutes) would be an 85 percent improvement over the No-Build Alternative (47.5 minutes). The average speed for the corridor would improve from 5 mph under the No-Build Alternative to nearly 33 mph under the Build Alternative.

**Table 2-4.** 2030 Build Alternative PM Peak-Hour Travel Time and Average Speed

Eastbound	Travel Time (minutes)	Average Speed (mph)
Bluff Street to Skyline Drive	3.9	35.9
Skyline Drive to Industrial Road	2.8	29.7
<i>Entire Corridor</i>	6.7	33.3
Westbound	Travel Time (minutes)	Average Speed (mph)
Industrial Road to Skyline Drive	3.2	26.4
Skyline Drive to Bluff Street	3.6	38.5
<i>Entire Corridor</i>	6.8	32.9

Source: Fehr & Peers, 2007.

The total VHD along Red Hills Parkway was calculated based on the average intersection delay and number of vehicles entering each intersection during the peak hour. Under the Build Alternative, VHD would be 595 hours. The total network delay during the peak hour would be experienced by 21,200 vehicles, for an average of 1.7 minutes per vehicle. This would be a substantial delay but would provide an 88 percent reduction in average delay over the No-Build Alternative. The Build Alternative would serve more vehicles than the No-Build Alternative, and each vehicle would experience less delay.

## Summary of Future Transportation Conditions

The Build Alternative would result in substantial traffic improvements over the No-Build Alternative in 2030. Under the Build Alternative, delays would remain high, but Red Hills Parkway would serve 40 percent more daily traffic at higher speeds, with less delay, and with better intersection operations compared to the No-Build Alternative.

## Alternatives Considered but Eliminated from Further Consideration

### Northern Corridor

In 1995, the City of St. George completed a Master Transportation Study that identified the need for a “Northern Corridor.” The City subcontracted Creamer and Noble Engineers to develop conceptual alignments to meet east/west

transportation needs in the northern portion of St. George. Creamer and Noble developed 12 initial road corridors. The options were narrowed to two routes, the Northern Corridor, or T-Bone Mesa Route, and the Red Hills Parkway route. The other alternatives were dismissed because they had circuitous and unsafe routes, a high cost, low traffic use, effects on existing facilities, or significant terrain and right-of-way issues. Both the Northern Corridor and Red Hills Parkway were identified as arterial roads on the St. George Road Master Plan. Therefore, it was considered as an alternative to widening Red Hills Parkway. However, the Northern Corridor is not included in the list of funded transportation projects in the adopted Dixie MPO 2007–2030 Regional Transportation Plan, and implementation of this project is anticipated to occur after 2030.

The Northern Corridor begins at Red Hills Parkway approximately 1 mile east of Bluff Street and continues eastward through the Red Cliffs Desert Reserve, eventually connecting to I-15 at milepost 13 (see Figure 2-4). This alternative would include three lanes of traffic in each direction, with an unpaved center median or paved turn lane. It would also include a separate paved bike/pedestrian path and shoulders that would be striped to accommodate bike lanes.

Of all the alternatives considered, this alternative would best accommodate east/west travel demand on Red Hills Parkway between Bluff Street and Industrial Road because it would divert traffic off Red Hills Parkway and onto the Northern Corridor. Under this alternative, ADT on Red Hills Parkway would decrease by 19,700 vehicles compared to the 2030 no-build scenario. The v/c ratio on Red Hills Parkway would decrease to 0.71 compared to 1.87 under 2030 no-build conditions. This would result in a substantial improvement in traffic conditions along Red Hills Parkway. Under this alternative, traffic conditions would also slightly improve on St. George Boulevard but would slightly deteriorate on Bluff Street. Implementation of the Northern Corridor would also reduce vehicle hours of delay on Red Hills Parkway.

This alternative would provide bicycle and pedestrian facilities and improve connectivity with Red Cliffs Desert Reserve trails. It would also include construction of the grade-separated interchange at Bluff Street and completion of the pedestrian underpass on Red Hills Parkway, east of Bluff Street. These features would improve safety conditions and trail connectivity.

The Northern Corridor Alternative would not eliminate transportation connections to downtown St. George, but would redirect most east/west traffic away from downtown St. George, thereby potentially indirectly affecting business patronage. However, traffic demand along St. George Boulevard would still exceed the road's capacity, so the effect may be minimal.

The Northern Corridor Alternative would not meet the objective of minimizing impacts to the reserve. This alternative would affect approximately 90 undisturbed acres within the reserve and bisect the reserve, resulting in desert tortoise habitat fragmentation. USFWS does not support any new road through Zone 3 of the Red Cliffs Desert Reserve. According to a letter from USFWS, "such a road would compromise the commitments on which the Washington

County HCP was based, is likely to compromise the biological integrity of the Upper Virgin Recovery Unity (already the smallest recovery unit), and may result in an adverse modification of designated critical habitat.”

Additional environmental effects and implementation considerations of the Northern Corridor include

- acquisition of 62 acres of School and Institutional Trust Lands Administration (SITLA) land and 2.2 acres of state land;
- effects to the Cottonwood Pipeline, a cultural resource that would be bisected;
- substantial terrain leveling in a portion of the reserve that is currently relatively undisturbed;
- required approval by the Washington County HCAC, BLM, and USFWS, agencies that do not support this alternative;
- potential to jeopardize the status of the countywide incidental take permit, which could have major economic impacts; and
- substantially higher acquisition and mitigation costs compared to the other build alternatives.

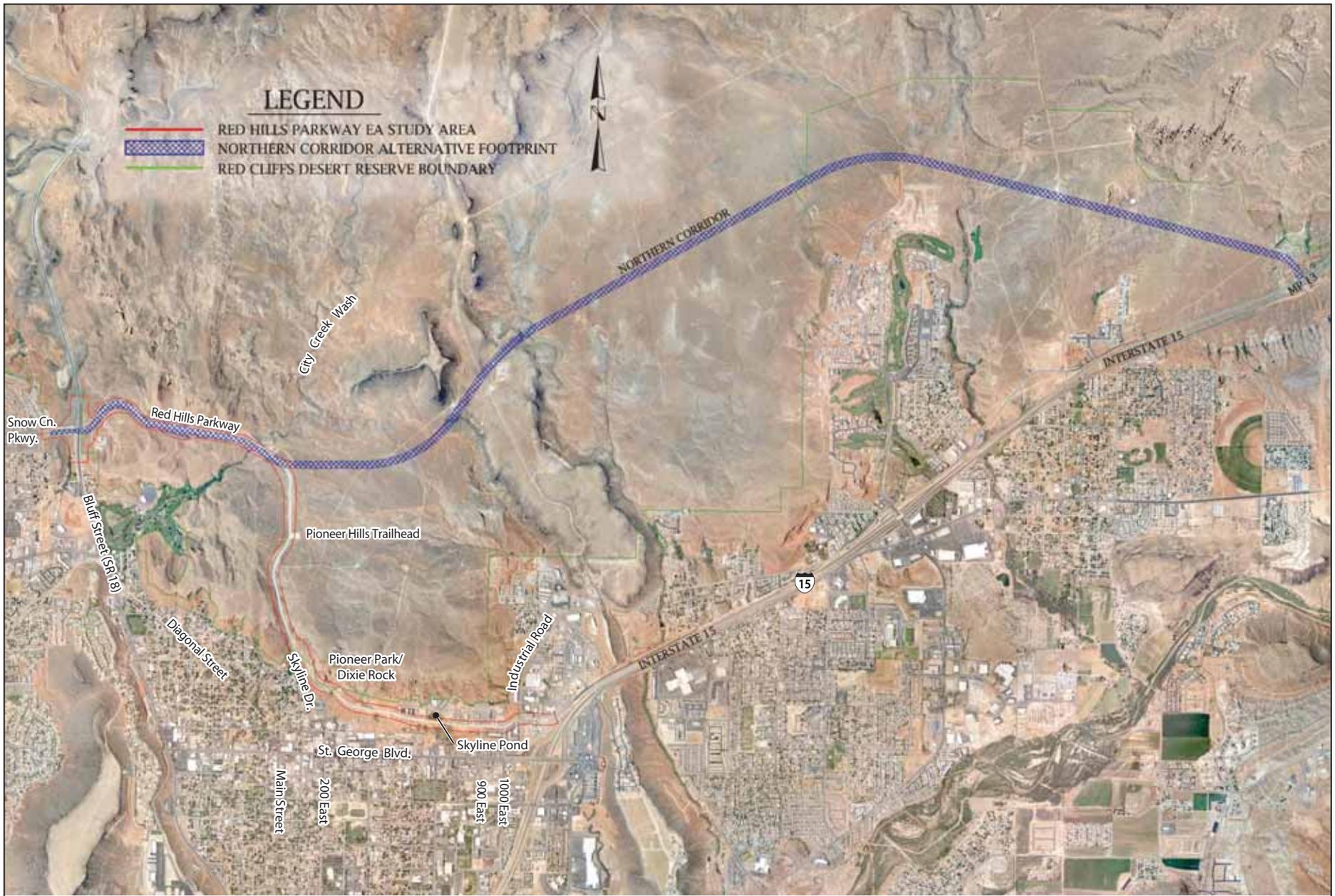
The City of St. George, UDOT, and FHWA determined that the anticipated implementation challenges and potential environmental effects, as previously described, would be substantial and thereby eliminated the Northern Corridor Alternative from further consideration.

## 7-Lane Alternative

The 7-Lane Alternative would follow the existing Red Hills Parkway alignment from Bluff Street to Industrial Road (see Figure 2-5). This alternative would require a 175-foot-wide right-of-way and be designed for three traffic lanes in each direction, with an unpaved center median or paved turn lane (see Figure 2-6). The 7-Lane Alternative would include a separate paved bike/pedestrian path and shoulders that would be striped to accommodate bike lanes.

This alternative would better accommodate east/west travel demand on Red Hills Parkway between Bluff Street and Industrial Road compared to the Build Alternative. The v/c ratio on Red Hills Parkway would decrease to 1.05, from 1.87 under the 2030 no-build conditions. This would result in substantial improvements to traffic conditions along Red Hills Parkway. Under this alternative, traffic conditions would also slightly improve along St. George Boulevard and Bluff Street. Vehicle hours of delay would also decrease from the 2030 no-build conditions.

This alternative would provide bicycle and pedestrian facilities and improve connectivity with Red Cliffs Desert Reserve trails. This alternative would include construction of the grade-separated interchange at Bluff Street and improvements to pedestrian underpasses on Red Hills Parkway. These features would improve safety conditions and trail connectivity.

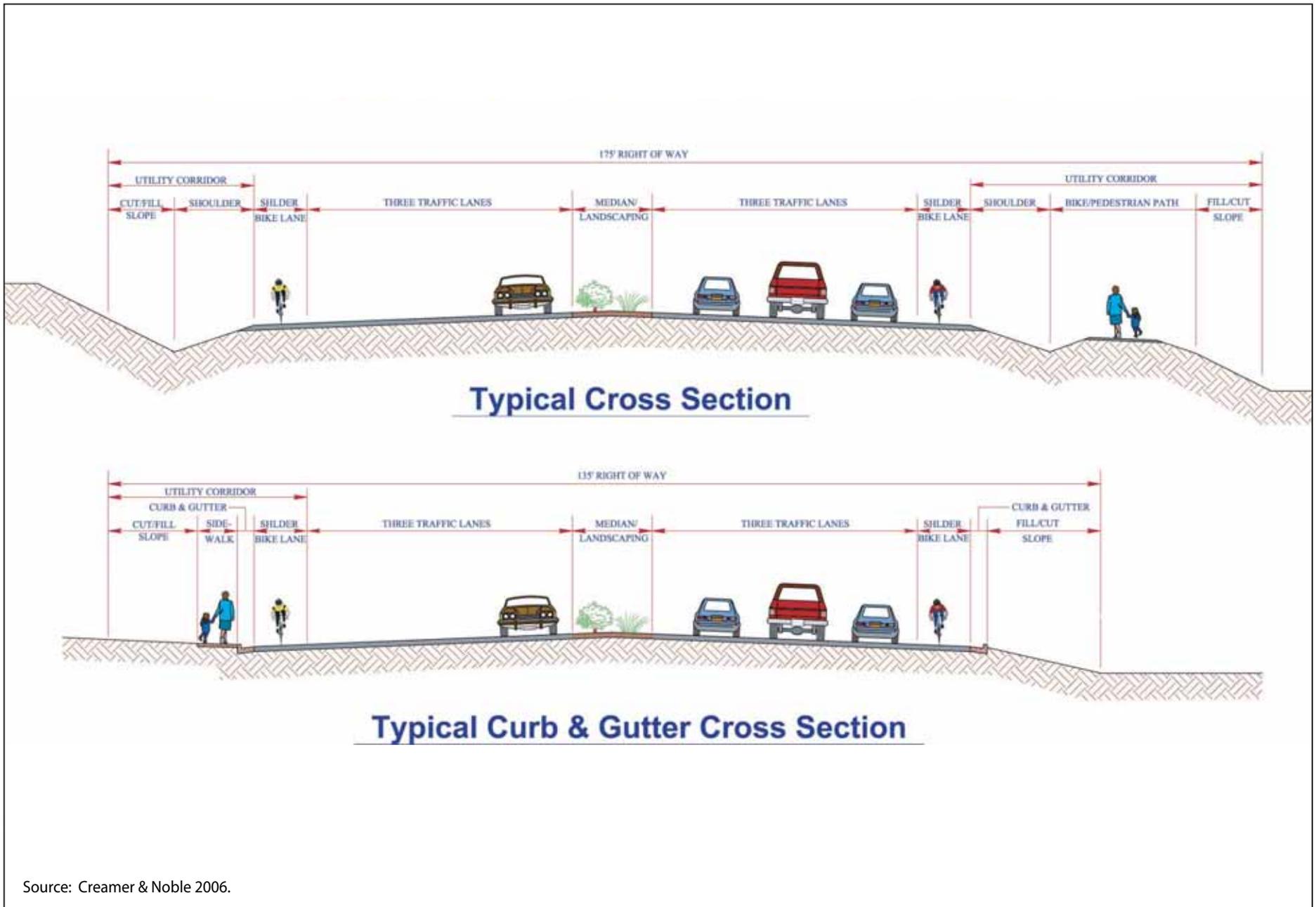


Source: Creamer & Noble 2007.

**Figure 2-4  
Northern Corridor**



**Figure 2-5**  
**7-Lane Alternative**



Source: Creamer & Noble 2006.

**Figure 2-6**  
**7-Lane Alternative Cross Section**

The 7-Lane Alternative would not meet the objective of minimizing impacts to the reserve as well as the Build Alternative. This alternative would disturb approximately 9 more acres within the reserve than the Build Alternative. Of those 9 acres, 5 acres would occur outside of the existing tortoise exclusionary fence.

Additional environmental effects and implementation considerations of the 7-Lane Alternative include

- adverse effects to Dixie Rock (the wider road would require removal of the rock, which is considered a traditional cultural property);
- adverse effects to archaeological sites located near Pioneer Park;
- adverse effects to Pioneer Park due to the road being closer to the park;
- adverse noise impacts at sensitive receptors due to increased traffic;
- acquisition of slightly more state and private property compared to the Build Alternative; and
- higher acquisition and mitigation costs compared to the Build Alternative.

The City of St. George, UDOT, and FHWA determined that the 7-Lane Alternative would have environmental impacts that would be substantially greater than those of the 5-Lane Alternative and affect Dixie Rock and Pioneer Park, which are Section 4(f) resources, making the 7-Lane Alternative one that would not be prudent or feasible, nor a “least harm” alternative; therefore, the 7-Lane Alternative was eliminated from further consideration.

## TSM/TDM Alternative

The TSM/TDM Alternative would use the existing transportation system better by improving the efficiency of vehicles, roads, and signals and managing demand for the system, without changing the total number of travel lanes on the road.

### Transportation System Management

Improving the efficiency of the road focuses on improving traffic flow characteristics without changing the total number of travel lanes on the road. Traffic flow can be made more efficient by improving

- traffic signalization,
- intersection traffic operations,
- pedestrian and bicycle mobility, and
- access management.

Some reasonable, minor TSM enhancements to improve operations along the corridor, without expanding the number of travel lanes, were assumed in the 2030 no-build traffic analysis (see No-Build Alternative discussion below). Even with these improvements, additional capacity along Red Hills Parkway would be needed.

Evaluation of Red Hills Parkway with additional TSM improvements, but no additional through lanes, indicated that despite minor improvements in intersection operations, capacity constraints remain in the corridor. All of the intersections would continue to operate at LOS F conditions and serve only 52 to 63 percent of the traffic demand. The capacity constraint between intersections on Red Hills Parkway can be mitigated only by adding through lanes (Fehr & Peers 2007).

Transit service improvements were also considered as part of the TSM Alternative. However, transit capture in this area of St. George is very small and would have a minimal impact on overall traffic operations (Fehr & Peers 2007). In 2005, SunTran had a system-wide ridership of 159,372 persons per year (Dixie MPO 2007), which accounts for a very small percentage of the total trips in the St. George area.

## Travel Demand Management

The objective of TDM strategies is to reduce vehicular traffic volume on roads, especially during peak periods. TDM strategies are usually implemented by large employers and government agencies and include incentives to encourage employees to walk, bicycle, use public transportation, carpool, or explore alternatives to driving alone.

There are several categories of TDM program elements, which include

- alternative travel modes (carpools and vanpools, public and private transit, bicycling, walking, and other nonmotorized travel);
- work schedule management (work schedule flexibility to make better use of the transportation network during off-peak periods);
- financial incentives (transportation allowances, employer-provided/subsidized transit passes, employer-subsidized bicycles, and carpools/vanpools); and
- support elements (on-site facilities and services provided by the employer that make it easier for employees to use alternative travel modes).

The effectiveness and success of TDM programs is highly subjective and related to the effort made to implement and sustain them. Generally, vehicle traffic is reduced 1 to 6 percent. Assuming that the TDM Alternative would be effective and a 6 percent vehicle traffic reduction would be achieved, excessive demand would continue to overwhelm the capacity of Red Hills Parkway (Fehr & Peers 2007).

The City of St. George, UDOT, and FHWA determined that the TSM/TDM Alternative would not meet the transportation need and eliminated it from further consideration.

## Detailed Screening Results

The City, UDOT, and FHWA used the information contained in Table 2-5 to compare the potential impacts of three build alternatives and the No-Build Alternative during the alternatives screening process. The TSM/TDM Alternative was not included because it does not meet the purpose and need of the project.

## Preferred Alternative

In February 2006, a public scoping meeting was held to obtain input from the community. The project team used that input to develop three alternatives, the Build Alternative (5-Lane Alternative), the 7-Lane Alternative, and the Northern Corridor Alternative. These alternatives were screened using a series of criteria that evaluated traffic capacity, traffic circulation, pedestrian and bike use, safety, environmental impacts, and implementation.

The public and various agencies had an opportunity to comment on the three alternatives at the Alternatives Workshop, which was held August 3, 2006, and during the comment period from August 1, 2006, to September 1, 2006. Comments received have been summarized in Chapter 6 of this EA.

On October 19, 2006, the City of St. George passed a resolution affirming its support for the Build Alternative (5-Lane Alternative) as the locally preferred alternative and considered this alternative the best alternative to meet transportation goals while minimizing impacts on important visual, cultural, and biological resources.

In evaluating and selecting the locally preferred alternative, FHWA, UDOT, and the City of St. George followed the applicable regulations and guidance set forth by NEPA and the Council on Environmental Quality (CEQ).

**Table 2-5. Alternatives Screening Results**

Screening Criteria	Alternatives			
	No-Build	Build Alternative	7-Lane	Northern Corridor
Improve East/West Mobility (ADT in 2030)	Red Hills Parkway, 31,800 Bluff Street, 64,900 St. George Blvd., 46,300 Northern Corridor, 0	Red Hills Parkway, 42,700 Bluff Street, 59,300 St. George Blvd., 43,800 Northern Corridor, 0	Red Hills Parkway, 49,470 Bluff Street, 56,700 St. George Blvd., 42,400 Northern Corridor, 0	Red Hills Parkway, 12,100 Bluff Street, 61,000 St. George Blvd., 40,500 Northern Corridor, 50,600
Improve East/West Mobility (v/c ratio in 2030)	Red Hills Parkway, 1.87 Bluff Street, 1.38 St. George Blvd., 1.36 Northern Corridor, 0	Red Hills Parkway, 1.26 Bluff Street, 1.26 St. George Blvd., 1.29 Northern Corridor, 0	Red Hills Parkway, 1.05 Bluff Street, 1.21 St. George Blvd., 1.25 Northern Corridor, 0	Red Hills Parkway, 0.71 Bluff Street, 1.30 St. George Blvd., 1.19 Northern Corridor, 1.49
Nonvehicular Travel Linkages	No	Yes, provides a bike lane and separate pedestrian/bike trail and increases connectivity to City Creek Trail, Rusty Cliffs Trail, Owens Loop Trail, and Pioneer Rim Trail.	Yes, would provide same amenities as the Build Alternative. However, it may be less desirable to ride/walk next to a seven-lane facility.	Yes, provides a bike lane and separate pedestrian/bike trail and increases connectivity to the City Creek Trail, Rusty Cliffs Trail, T-Bone Trail, Turkey Farm Trail, Middleton Power Line Trail, Middleton Water Line Trail, and Green Springs Trail. May be less desirable to ride/walk next to a seven-lane facility. Provides more access to the reserve, which may increase biological impacts.
Safety	No	Yes, would provide three usable grade-separated trail crossings. A grade-separated interchange would be installed at Bluff Street, which would reduce high-speed accidents at the intersection.	Yes, the 7-Lane Alternative would be the same as the Build Alternative.	Yes, would require up to seven grade-separated trail crossings. Would also include an interchange at Bluff Street.

Screening Criteria	Alternatives			
	No-Build	Build Alternative	7-Lane	Northern Corridor
Reserve Impacts	25 acres, existing footprint	40 acres total footprint in the reserve, 15 acres new disturbance, 7.5 acres new disturbance outside tortoise fence.	49 acres total footprint in the reserve, 24 acres new disturbance, 12 acres new disturbance outside tortoise fence.	127.9 acres total footprint in the reserve, 90 acres new disturbance; bisects the southern portion of the reserve.
Transportation Connections to St. George	Would provide five intersections with downtown St. George.	Would provide five intersections with downtown St. George.	Would provide five intersections with downtown St. George.	Would provide one intersection with St. George at Bluff Street. The alignment would bypass downtown St. George.
Land Use Impacts	Poor (not consistent with transportation plan, doesn't induce growth, consistent with current land uses)	Good (consistent with transportation plan, doesn't induce growth, consistent with current land uses).	Fair (consistent with transportation plan, doesn't induce growth, not consistent with current land uses, e.g., Pioneer Park).	Fair (consistent with transportation plan; provides transportation infrastructure to accommodate growth around milepost 13; not consistent with current reserve land use).
Social Impacts	0 acres acquisition	Acquisitions: Pioneer Park = 1.7 acres, State land = 2 acres, SITLA = 0.3 acre, BLM-administered land = 2.05 acres, Private property = 0.5 acre, HCP = 6.75 acres outside of fence, Displacements: None.	Acquisitions: Pioneer Park = 2.3 acres, State land = 2.2 acres, SITLA = 0.3 acre, BLM-administered land = 2.8 acres, Private property = 0.9 acre, HCP = 12 acres outside of fence. Displacements: Water tank at 500 East and/or southern portion of the City utility yards. May affect Panda Garden loading area and parking for Travelodge.	Acquisitions: State land = 2.2 acres, SITLA = 62 acres, HCP = 90 acres outside of fence (includes 36.7 acres of private land in the reserve). Displacements: None.
Public Facilities, Services, and Utilities	Poor Future congestion would increase emergency response times.	Fair Reduced future congestion would improve emergency response times.	Fair Reduced future congestion would improve emergency response times. Would affect water tank and/or City utility yards.	Good Reduced future congestion would improve emergency response times. Would cross the Middleton water line.

Screening Criteria	Alternatives			
	No-Build	Build Alternative	7-Lane	Northern Corridor
Recreational Resources	Neutral Would not affect recreational resources.	Fair Would require conversion of park frontage to road right-of-way. Would improve trail connectivity.	Poor Would require more conversion of park frontage to road right-of-way than the Build Alternative. Would improve trail connectivity.	Fair Bisects six trails in the reserve and crosses one trail twice. Underpasses would reduce impacts. Would improve connectivity with HCP trails.
Economics	Poor Traffic congestion on St. George Boulevard may deter patrons.	Fair Traffic congestion on St. George Boulevard would improve, which may attract patrons.	Fair Traffic congestion on St. George Boulevard would improve, which may attract patrons.	Neutral Traffic congestion on St. George Boulevard would be reduced, which may attract patrons. However, the alignment bypasses downtown, which may reduce patrons.
Noise	Noise levels at parks and at the hotels along Red Hills Parkway would increase until the road reached capacity.	Noise levels at sensitive receptors would be slightly higher than under the No-Build Alternative because the road would have more capacity.	Noise impacts at sensitive receptors would be slightly higher than under the Build Alternative because the road would have more capacity.	Noise impacts would be less than all the other alternatives because traffic would be diverted on the Northern Corridor. There are no noise-sensitive receptors located along the Northern Corridor.
Geology, Soils, and Topography	Existing footprint, 45 acres.	New footprint, 65 acres.	New footprint, 77 acres.	New footprint, 167 acres.
Water Resources	No change	Good Would not affect any existing springs along the alignment.	Fair May affect Hopkins Spring. Would require resloping the City Creek Debris Basin embankment but would not substantially affect the City Creek Wash.	Poor May affect springs in the Mill Creek area. Would affect the City Creek Debris Basin in the same way as the 7-Lane Alternative. Would cross Middleton Wash and Mill Creek in two places.
Biological Resources	No change	Would affect 6.75 acres of tortoise habitat outside of the tortoise fence.	Would affect 12 acres of tortoise habitat outside of the tortoise fence.	Would affect 90 acres of tortoise habitat outside of the tortoise fence.

Screening Criteria	Alternatives			
	No-Build	Build Alternative	7-Lane	Northern Corridor
Historic and Archaeological Resources	No adverse effect on cultural resources.	Adverse effect on site 42WS2872; no adverse effect on the Cottonwood Pipeline. No effect on the other four NRHP-eligible cultural resources in the APE. SHPO has concurred with the findings in the DOE/FOE.	Adverse effect to Dixie Rock and other archaeological resources in the vicinity of Pioneer Park.	Cultural resources surveys have not been performed along this corridor. The area near milepost 13 is considered sensitive for paleontological resources.
Visual Quality	No change	The Build Alternative would not substantially degrade the visual character of Red Hills Parkway and its visual setting.	Poor Substantial cuts and fills would have a greater visual impact than the Build Alternative. Dixie Rock, a major visual feature and cultural resource, would be removed.	Poor Would require major cuts and fills through the reserve in areas that are currently undisturbed.
Section 4(f)	There would be no use of Section 4(f) properties.	Would result in a direct use ( <i>de minimis</i> ) of one archaeological resource and three recreational properties.	Would result in direct use of several cultural resources.	May result in a direct use of cultural sites and recreational sites.
Implementation	No change	Good Public and agency support this alternative.	Fair Would face public opposition to the removal of the Dixie Rock.	Poor Would face public opposition. Would require approval by the HCP board, BLM, and USFWS (agencies that do not support this alternative). Project may jeopardize status of the countywide incidental take permit, which could have major economic impacts.
Cost Effectiveness	No change	Good Road would be less expensive than the 7-Lane and Northern Corridor Alternatives but would provide the least capacity.	Fair Road would be more expensive and have more environmental consequences than the Build Alternative but would provide more capacity.	Poor Road would provide capacity but would be substantially more expensive than the other two alternatives. The acquisition and mitigation costs would be dramatically higher than the Build Alternative or 7-Lane Alternative.

Source: Jones & Stokes, 2007.

# Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

## Introduction

The purpose of this chapter is to provide the reader with the information necessary to understand the potential environmental consequences or impacts due to construction and operation of the proposed Red Hills Parkway project. This chapter is divided into sections that discuss resources that could be affected by the proposed action. Each section includes a discussion of the Regulatory Setting, Studies, and Coordination; Affected Environment; Impacts; and Avoidance, Minimization, and/or Mitigation. The impact sections include a discussion of the effects of the No-Build Alternative and the Build Alternative (see Chapter 2 for a detailed description of these alternatives).

The scope of the evaluation for this EA was based on field investigations, a review of available data, and agency and public input received during the scoping period. The following environmental resources are discussed in the sections identified below:

- 3.1: Land Use;
- 3.2: Social Impacts;
- 3.3: Economics;
- 3.4: Pedestrian and Bicyclist Considerations;
- 3.5: Air Quality;
- 3.6: Noise;
- 3.7: Geology, Soils, and Topography;
- 3.8: Water Quality and Wetlands;
- 3.9: Wildlife;
- 3.10: Threatened and Endangered Species;
- 3.11: Invasive Species;

- 3.12: Historical, Archaeological, and Paleontological Resources;
- 3.13: Hazardous Materials;
- 3.14: Visual Quality; and
- 3.15: Energy.

As part of the scoping and environmental analysis conducted for the project, the following environmental resources were considered, but the project will have no impact on these resources. Consequently, there is no further discussion regarding these resources in this document.

- **Wild and Scenic Rivers:** The National Wild and Scenic Rivers System was created by the Wild and Scenic Rivers Act of 1968. There are no rivers in Utah that have been designated by Congress to the National Wild and Scenic Rivers System. However, Section 5(d)(1) of the act directs all federal agencies to consider the potential for national wild, scenic, and recreational river areas in all planning for the use and development of water and related land resources. The St. George Field Office (formerly the Dixie Resource Area) Record of Decision and Resource Management Plan prepared by the BLM evaluated rivers located within the BLM planning area in Washington County and determined that there were five river segments suitable for designation under the Wild and Scenic Rivers Act (BLM 1999). None of these river segments are located in the project study area, and runoff from the proposed project would not adversely affect any of the river segments.
- **Farmland:** According to the Natural Resources Conservation Service (NRCS) soil database, no prime, unique, statewide, or locally important farmlands are located in the project study area (NRCS 2006). No land within the study area is currently, or historically, has been in agricultural production. The soils and topography within the study area are not conducive to agricultural use. Additionally, lands located within the Red Cliffs Desert Reserve are restricted from agricultural uses.

## Permits and Approvals

The proposed project is subject to the permits and approvals listed in Table 3-1.

**Table 3-1.** Required Permits and Approvals

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service	Endangered Species Act Section 7 consultation. Approval of the grant agreement amendment for land purchased by Utah State Parks with federal Endangered Species Act Section 6 grant monies.	Biological Opinion has not yet been issued. USFWS has actively participated in the NEPA process. Grant amendment request has not yet been submitted to USFWS for review and approval.
Bureau of Land Management	Issuance of right-of-way grant under the Federal Land Policy and Management Act. Approval of a patent transfer to Utah State Parks under the R&PP Act.	Application for right-of-way anticipated after final EA distribution. BLM has actively participated in NEPA process. Property transfer to state anticipated after final EA distribution.
Washington County Habitat Conservation Advisory Committee	Approval to allow the proposed project to occur within the Red Cliffs Desert Reserve.	In 2003, the HCAC approved a four-lane road, following the proposed alignment though the reserve. Since that time there have been minor modifications to the proposed project. The HCAC will review the proposed project again to ensure that it is consistent with the HCP, and the project will need to be approved again. The HCAC has actively participated in the NEPA process.
State of Utah, Department of Natural Resources, Division of State Parks and Recreation	Preparation of Endangered Species Act Section 6 land exchange proposal for USFWS approval.	Land exchange proposal has not yet been prepared.
Utah Department of Environmental Quality (UDEQ)	Issuance of Utah Pollutant Discharge Elimination System (UPDES) permit.	Submission of Notice of Intent (NOI) to comply with the conditions of the City’s UPDES permit anticipated prior to the start of construction. The UPDES permit fulfills the Clean Water Act Section 402 requirements.
UDEQ	Issuance of General Construction Storm Water Permit.	Submission of NOI to comply with conditions of the general permit prior to start of construction.
Utah School and Institutional Trust Lands Administration	Issuance of right-of-way.	Application for right-of-way anticipated after final EA distribution.
Utah State Historic Preservation Office (SHPO)	Concurrence with the Determination of Eligibility and Finding of Effect (DOE/FOE)	FHWA and UDOT have submitted a DOE/FOE, and SHPO has concurred with the eligibility and effects determinations included in the DOE/FOE. There would be an adverse effect on one cultural resource. To comply with Section 106 of the National Historic Preservation Act, an MOA will be prepared to outline responsibilities and measures to mitigate or reduce the adverse effect. The MOA will be included as an appendix to the final EA.



## 3.1 Land Use

This section addresses current land use policies, describes existing and future land uses within the study area, and describes potential land use impacts resulting from the proposed action. The study area includes a 300-foot-wide corridor along Red Hills Parkway between Bluff Street and Industrial Road.

### Regulatory Setting, Studies, and Coordination

The City of St. George has developed a general plan that provides guidance for land use decisions; the proposed action would be subject to conformity with the adopted general plan (City of St. George 2002). A portion of the study area is located within the Red Cliffs Desert Reserve and is also subject to land use policies established by the Washington County HCP (Washington County 1995). Red Hills Parkway also crosses three parcels of public land administered by BLM. The St. George BLM field office manages the lands in accordance with the St. George Field Office Resource Management Plan (RMP) (BLM 1999). Dixie MPO is responsible for preparing the Regional Transportation Plan (Dixie MPO 2007). Relevant land use policies from each of these plans are discussed below.

#### City of St. George General Plan

The general plan for the City of St. George is not a regulatory document, although it is given authority under Utah law. Utah Code authorizes communities “to adopt a general plan and to require that all streets, parks, public buildings, and utilities (public or private) be constructed in conformance with the general plan” (City of St. George 2002). The general plan is used as a guide for broad land use decisions. The City has also developed a zoning plan that follows the land use pattern established in the general plan and assigns individual parcels specific densities and uses.

The following land use descriptions and policies from the general plan are applicable to lands within the study area.

- Open Space: permanent open space but also allowing limited development activity such as gravel extraction, golf course development, livestock grazing, recreational facilities, and public utilities. Land designated as Open Space is intended to be preserved permanently free from development and left in a natural state and/or used for recreational purposes. Areas within and around the community that are desirable to be preserved as permanent open space include
  - existing and future park sites,
  - scenic areas and views such as the Red Hill north of St. George,
  - areas with natural hazards (e.g., steep slopes, geologic hazards, floodplains),

- ❑ significant ecological habitats such as the desert tortoise wildlife management area north of St. George, and
- ❑ land that separates communities and keeps them from growing together.
- Public Facilities: schools, libraries, fire stations, or similar public facilities.
- Residential Low Density: single-family-type developments with 1 to 4 dwelling units per acre. Low density is the predominant residential land use in the City of St. George.
- General Commercial: various commercial uses, including the General Commercial, Highway Commercial, and Neighborhood Commercial areas (City of St. George 2002).

## Washington County Habitat Conservation Plan

The Red Cliffs Desert Reserve is located north of St. George between the cities of Ivins and Hurricane in Washington County. The 62,000-acre reserve protects and conserves habitat for the Mojave Desert tortoise. The Mojave Desert tortoise appears on the federal list as Threatened; critical habitat has been designated since 1994. The reserve encompasses all of the critical habitat designated within the Upper Virgin River Recovery Unit. The reserve was established in 1996, and a HCP was developed to provide a comprehensive solution to conflicts between urban growth and development and protection of the Mojave Desert tortoise.

The establishment of the reserve was, in part, the mitigation required to offset the incidental take provisions for lands outside reserve boundaries. In 1995, a four-part document was prepared that included the Incidental Take Permit Application, the HCP, the Final EIS, and the Final Implementation Agreement. Both the HCP and the Final EIS include provisions for the future reconstruction and maintenance of Skyline Drive (now designated Red Hills Parkway). Also contained within the EIS are protocols for activities permitted within the Bluff Street right-of-way that apply to Red Hills Parkway. Permitted activities within the right-of-way include road maintenance, reconstruction, and widening; utility maintenance and installation; and bicycle path construction and maintenance. The EIS states “agreed upon protocols will have to be followed to minimize potential impacts to the Mojave Desert tortoise. Existing tortoise fencing along Skyline Drive (Red Hills Parkway) will be upgraded within the reserve boundaries, with the same right-of-way restrictions that apply to Highway 18 (Bluff Street)” (Washington County 1995).

An HCAC was formed, and part of its duties include meeting on a monthly basis to discuss issues concerning the reserve, such as proposals for road development, utility corridors, and boundary changes. For analysis and management purposes, the county was divided into zones in the HCP and EIS. The reserve and Red Hills Parkway are located in Zone 3. The HCP EIS lists the following management regulations for land within Zone 3.

- The eventual reconstruction of Skyline Drive (now designated as Red Hills Parkway) should follow the existing alignment as near as possible except where engineering and/or safety considerations require deviations. Biological review under the HCP will be necessary when deviating from the current alignment. From Skyline Drive, no general public access will be permitted into the reserve except on designated trails. However, access to Skyline Drive will be available for private landowners until their property is acquired.
- Hiking, equestrian, and camping uses should be restricted to designated areas.
- BLM should be requested to apply for mineral withdrawal for federal minerals.
- No organized or competitive sporting or recreational events should be allowed.
- Grazing permits should be acquired and retired.
- New utility development should be encouraged to be conducted during the winter months when the desert tortoise is not active.
- Hunting should be restricted to big game or upland birds during official seasons.
- Existing governmental uses, such as the City of St. George's pistol range, the debris basin behind City Creek Dam, and Pioneer Park, should be allowed to continue. Expansion of use of Pioneer Park outside of the existing developed area will be subject to HCAC approval of a desert tortoise management plan.
- Vehicles should be restricted to designated roads.
- Continuation of present activities associated with the Moroni Feeds Turkey Farm should be permitted but new actions, which the reserve manager reasonably believes may harm the desert tortoise, should not be allowed.
- Water development should be allowed consistent with the HCP protocol.
- Firefighting should be allowed.
- Research that will not negatively influence the desert tortoise should be allowed.
- Non-consumptive recreation (e.g., hiking, bird watching) should be allowed.
- Desert tortoise translocation should not be permitted except as authorized under approved translocation projects (Washington County 1995, pg. 25).

## **St. George Field Office Resource Management Plan**

BLM manages several parcels of land along Red Hills Parkway. The St. George Field Office RMP is the approved land use plan. It directs management of public lands in Washington County and all uses of those lands, whether by the agency or by those who obtain federal authorizations for use of public lands. The management goals and decisions within the RMP were developed to meet the

agency's legal and regulatory requirements for land and resource management. The St. George Field Office (formerly the Dixie Resource Area) Record of Decision and Resource Management Plan was approved in 1999. Lands within the reserve managed by BLM are listed as "right-of-way avoidance areas" (e.g., Red Hills Parkway). Major decisions in the plan related to land uses within the study area are listed below.

- Preservation and protection of the desert tortoise and its habitat will be accomplished by implementing goals and objectives of the Washington County HCP and Red Cliffs Desert Reserve within the Upper Virgin Recovery Unit.
- The plan will continue to make public lands available for a variety of rights-of-way where consistent with planning goals and prescriptions for other resources. Where possible, BLM will encourage project sponsors to locate new rights-of-way in existing or designated utility corridors.
  - Applications for new rights-of-way on public lands will be considered and analyzed on a case-by-case basis. Proposals will be reviewed for consistency with planned decisions and evaluated under requirements of NEPA and other applicable laws for resource protection. Mitigation needed to avoid adverse impacts will be integrated into project proposals and, where appropriate, alternatives identified to further reduce environmental impacts to lands, resources, or adjacent land uses.
  - All new rights-of-way will be subject to applicable standards listed in Appendix 1 for surface-disturbing activities (Appendix 1 of the RMP includes standard procedures applied to surface-disturbing activities).
  - New utility construction within the Washington County HCP reserve will continue to be guided by protocols established in the HCP (BLM 1999).

## 2007–2030 Regional Transportation Plan

In 2000, the cities of St. George, Santa Clara, Ivins, and Washington, in cooperation with the Utah Governor's Office of Planning and UDOT, organized an MPO. The MPO is responsible for metropolitan transportation planning in the region in conformance with federal regulations for metropolitan planning (23 CFR Part 450). The MPO mission statement is "Providing Unified Transportation Planning for Utah's Dixie MPO" (Dixie Transportation Planning Office 2004). As such, the MPO gives guidance and direction to the participating entities as transportation issues are identified and resolved.

The Dixie MPO adopted the 2007–2030 Regional Transportation Plan for the St. George Urbanized Area in June 2007. This plan sets baseline and 2030 demographic projections and includes transportation projects to address short-term and long-term transportation needs. Red Hills Parkway is identified as a high-priority corridor where improvements are needed to meet future regional transportation needs.

## Affected Environment

### Existing Land Uses

A residential area is located approximately 1,000 feet west of the intersection of Red Hills Parkway and Bluff Street. Concrete block walls surround the perimeter of the housing tracts and are 6 to 10 feet in height.

Between Bluff Street and Pioneer Park, Red Hills Parkway is located within the Red Cliffs Desert Reserve. Lands in the study area and within the reserve are primarily undeveloped. The primary purpose of reserve lands is to protect desert tortoise habitat for conservation and recovery of desert tortoise populations. Secondly, the land provides recreational opportunities. The City of St. George Police Department operates a pistol range located approximately 400 feet east of Bluff Street and south of Red Hills Parkway on land located within the reserve.

Brooks Pond Park, an undeveloped natural park, is located just west of Skyline Drive, approximately 100 feet in elevation below Red Hills Parkway. Pioneer Park is located north of Red Hills Parkway, between approximately 100 East and 500 East. The City maintains 3 acres of developed land in the park. The remaining 197 acres will remain undeveloped natural open space.

City-owned utilities dominate the land uses on the north side of Red Hills Parkway between 500 East and 800 East. Skyline Pond Park includes a recreational fishing pond located between the City maintenance yard and the water department facility at 600 East. The hillside is very steep on the south side of Red Hills Parkway between Skyline Drive and 900 East, and the land within the study area is generally undeveloped (see Figure 3.1-1). The proposed Temple Springs Park is located between 700 East and 800 East, south of Red Hills Parkway, and is a 7-acre undeveloped natural recreation area. The area between approximately 900 East and Industrial Road is developed with commercial land uses, including offices, hotels, a restaurant, and industrial buildings.

### Designated Land Uses

According to the City of St. George General Plan, the following land use designations occur within the study area: Commercial, Public Facilities, Open Space, HCP Open Space, and Low-Density Residential (see Figure 3.1-1). The area west of Bluff Street is designated Low-Density Residential. A small area on the south side of Red Hills Parkway, approximately 400 feet from the intersection with Bluff Street, is designated as Public Facilities and is occupied by the St. George City Pistol Range. The rest of the study area between Bluff Street and Pioneer Park is designated as HCP Open Space or Open Space. Continuing east from Pioneer Park for approximately 4,000 feet, land within the study area is designated for Public Facilities. Facilities located in this area

include City maintenance yards, a water storage tank, a power plant, and the City animal shelter. Property along both sides of Red Hills Parkway, between 900 East and Industrial Road, is designated Commercial.

Land uses along Red Hills Parkway are not anticipated to substantially change in the future. Most of the undeveloped land located along Red Hills Parkway has been designated for hillside, recreational, or habitat preservation purposes and is protected from development.

## Impacts

### No-Build Alternative

The No-Build Alternative would result in minimal physical improvements to Red Hills Parkway and would not affect the current or planned land uses along the road. The realignment of the Skyline Drive intersection would be consistent with the Washington County HCP and has already been approved.

### Build Alternative

#### Construction Impacts

Construction of the Build Alternative is estimated to last 1 year. Typical road construction activities would result in temporary impacts to adjacent land uses, including increased traffic congestion and delays, increased dust generated by earth-moving activities, increased noise and vibration, and temporary and intermittent access disruptions. Mitigation measures identified in Sections 3.2, Social Impacts; 3.5, Air Quality; and 3.6, Noise, of this EA would minimize these impacts.

#### Operational Impacts

##### Compatibility with Existing Land Uses

Implementation of the Build Alternative would widen an existing road and land uses along the road would not be substantially affected by the widening. Land acquisitions and new rights-of-way would be minimal because the City owns most of the land along the corridor (see Section 3.2). Operation of businesses, City utilities, and City parks located within the study area would not be impeded by implementation of the Build Alternative (see Section 3.2).

##### Consistency with Land Use Plans

The Build Alternative would be consistent with policies of the St. George General Plan. Red Hills Parkway is designated as a limited access road on the City Road Master Plan, and its main purpose is to offer the traveling public



**Legend**

- COM Commercial
  - HCP Open Space - HCP
  - HWY
  - IND Industrial
  - LDR Low Density Residential (Up to 4 DU/AC)
  - MDR Medium Density Residential (Up to 9 DU/AC)
  - OS Open Space
  - PF Public Facilities
  - PK Parks
  - PO Professional Office
  - LOCAL ROAD, 50' Right-of-Way
  - COLLECTOR ROAD, 60' Right-of-Way
  - MAJOR COLLECTOR ROAD, Min 66' Right-of-Way\*
  - ARTERIAL ROAD, Min 90' Right-of-Way\*
  - MAJOR ARTERIAL ROAD, Min 100' Right-of-Way\*
- \* ADDITIONAL WIDTH MAY BE REQUIRED
- Nov 4, 2004 Revision

05801.05 EA (6-27-07)

Source: St. George Land Use and Master Plan, 2004.

**Figure 3.1-1**  
**City of St. George Land Use Plan**

convenient access between the east and west side of the City. Existing land uses within the study area are consistent with adopted land use plans, and it is anticipated that land uses adjacent to the road would not change as a result of implementation of the Build Alternative.

The HCP anticipates the future widening of the road. Protocols established in the HCP would be followed during construction and operation, and mitigation would be implemented to minimize impacts to tortoise (see Section 3.10). The St. George Field Office RMP allows for rights-of-way within the HCP on land managed by the BLM to be issued in accordance with protocols established in the HCP. Therefore, the Build Alternative is in conformance with the management direction provided in the approved RMP.

The Build Alternative is identified in the 2007–2030 Regional Transportation Plan for the St. George Urbanized Area and is consistent with the planned transportation network.

### **Induced Growth**

The Build Alternative would provide additional transportation capacity to accommodate planned increases in population and employment. The road would not provide excess capacity beyond what is needed to accommodate growth projected by the Dixie MPO and the Governor’s Office of Planning and Budget. The road is neither intended nor expected to induce substantial changes in the location, distribution, or rate of population and housing growth. The road widening would occur along an existing alignment and would not provide new access to lands that are currently undeveloped. Development in Washington County is limited to those lands that are not in federal ownership or within the HCP. The project would not make additional land available for development.

### **Cumulative Effects**

The Build Alternative would not contribute to cumulative adverse land use impacts. The project follows the established guidelines of the Dixie MPO, HCP, St. George Field Office RMP, and St. George General Plan. The Build Alternative is not expected to result in substantial unplanned changes in the long-term pattern of land use or substantial unplanned changes in the rate or amount of development.

## **Avoidance, Minimization, and/or Mitigation Measures**

No mitigation is necessary.

## 3.2 Social Impacts

This section discusses considerations related to potential social impacts, including community character and cohesion; relocations; public facilities, services, and utilities; recreation; and environmental justice populations. The community social characteristics were analyzed for the St. George region and the project study area.

### Community Character and Cohesion

This subsection addresses changes in community character and cohesion resulting from implementation of the proposed action. Community cohesion is an attribute of a geographic area where segmentation or division of the area would reduce its desirability to current and future residents. Community character is an attribute of a geographic area with identifiable characteristics that make it unique. Direct effects of the proposed action within the 300-foot-wide Red Hills Parkway study area as well as indirect effects that could occur in downtown St. George, which is the nearest cohesive community, are also discussed in this subsection.

### Regulatory Setting, Studies, and Coordination

NEPA mandates that the federal government use all practicable means to ensure safe, healthful, productive, and aesthetically and culturally pleasing surroundings for all Americans (42 USC 4331(b)(2)). FHWA, in its implementation of NEPA (23 USC 109(h)), directs that final decisions regarding projects be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of community character and cohesion.

### Affected Environment

Red Hills Parkway is located in the northern portion of the City of St. George. The City is situated in the northern extension of the Mojave Desert, at the confluence of the Virgin and Santa Clara Rivers in Washington County, in southwestern Utah. The City is surrounded by open space (public lands) primarily managed by SITLA and BLM.

According to the City's General Plan, the pioneer settlers of the 1860s carefully laid out the original form of St. George. They followed the pattern established by Brigham Young, which included a compact central community surrounded by farmland so that farmers could live in the City and commute to their farms daily (City of St. George 2002). Throughout most of St. George's history, the downtown area was the focal point of the community. Beginning in the 1950s, suburban development began to occur outside of downtown, and commerce and enterprise gradually began to shift away from downtown. Since 1976, the City of St. George has implemented several redevelopment projects to revitalize the downtown area and attract tourists. Today, downtown St. George is

characterized by low-profile buildings, generally not exceeding three stories; small shops, restaurants, and art galleries; mixed commercial and residential uses, with commercial uses primarily occurring along major roads; a large number of historic buildings and homes; and an accumulation of governmental and financial institutions (City of St. George 2002).

Red Hills Parkway is located immediately north of downtown St. George but generally is not visible from downtown because the road is located along the edge of a bluff at elevations approximately 100 to 200 feet above downtown. Red Hills Parkway begins at Bluff Street, the western extent of downtown, and ends at Industrial Road, the eastern extent of downtown. Traffic utilizing Red Hills Parkway can bypass downtown or use one of three roads (Skyline Drive, 900 East, or 1000 East) to access downtown St. George.

Land uses along Red Hills Parkway consist of suburban-style residences west of Bluff Street, undeveloped and recreational lands along most of the corridor, and municipal (utility) and commercial uses between 500 East and Industrial Road. Most of the undeveloped land located along Red Hills Parkway has been designated for hillside, recreational, or habitat preservation purposes and is protected from development.

## Impacts

### No-Build Alternative

Minor improvements to Red Hills Parkway, including realignment of the Skyline Drive intersection, would occur under the No-Build Alternative. The associated construction of these improvements would be minor and short term. The improvements would occur in undeveloped areas and would not directly affect a cohesive community. Improvements to the Skyline Drive intersection would reduce congestion and improve safety. In addition, these improvements would improve vehicular access to downtown St. George via Skyline Drive, which connects to 200 East (Fehr & Peers 2007). Improving vehicular access would be beneficial to downtown businesses. A residential area is located southwest of Skyline Drive. Existing concrete block walls along Skyline Drive separate the neighborhood from the road and would continue to prevent indirect noise and visual effects from the road.

### Build Alternative

#### Construction Impacts

During construction of the proposed Build Alternative, temporary access disruptions along the alignment could occur due to partial road closures, delays, and movement of construction equipment. Access to businesses and city utility yards located along Red Hills Parkway would be maintained during construction. A construction access management plan would be developed prior to construction that would identify detour routes and congestion management methods to be used in the construction zone (see mitigation measure SI-1). This plan would minimize access disruptions during construction.

### **Operational Impacts**

The Build Alternative would be implemented on an existing road and would neither divide existing or planned communities, nor change existing community character. Designated open space occurs along most of the Red Hills Parkway study area. The proposed road widening would be consistent with the current land use plans adopted for this area, including the St. George General Plan and the Red Cliffs Desert Reserve Habitat Conservation Plan. Road widening would not substantially change aesthetic character (see Section 3.14 of this EA) or land uses within the study area.

Existing concrete block walls would separate the neighborhoods west of Bluff Street and southwest of Skyline Drive from the road and would continue to prevent noise and visual impacts.

No business or municipal building relocations or acquisitions would be required to accommodate the Build Alternative. These land uses do not constitute a cohesive community and do not possess unique community character.

Widening the existing road would increase traffic capacity and relieve future traffic congestion on Bluff Street and St. George Boulevard (Fehr & Peers 2006). Traffic projections indicate that commuter traffic traveling between Ivins and St. George to the west and Washington and Hurricane to the east would use Red Hills Parkway. This diversion of commuter traffic congestion would allow patrons to more easily access downtown businesses.

Red Hills Parkway would not be visible from downtown St. George, and the proposed improvements would not change the character or continuity of downtown.

### **Cumulative Effects**

A cumulative impact to community character and cohesion would occur if the Build Alternative combined with past, present, or reasonably foreseeable projects would change unique community characteristics or divide an established community. According to the City of St. George, there are no plans that would result in the division of downtown St. George or developments that would change existing land uses in the study area. The project includes widening an existing road facility along a primarily undeveloped corridor. The road would not affect any cohesive communities and would not contribute to any cumulative community character or cohesion impacts.

## **Avoidance, Minimization, and/or Mitigation Measures**

### **No-Build Alternative**

No mitigation is necessary.

## **Build Alternative**

### **Mitigation Measure SI-1: Development of a Construction Access Management Plan**

Prior to the start of construction, the City of St. George and/or its contractors will develop a construction access management plan. The plan will identify vehicular detour routes and congestion management methods to be used in the construction zone. The plan will also identify detours for pedestrian trails that may be affected by construction. The City and/or its contractors will coordinate with emergency service providers to provide prior notice of any closures or detours. The City and/or its contractors will also coordinate with utility providers that may be affected by construction to minimize service disruptions.

## **Relocations**

This subsection discusses right-of-way acquisitions and relocations that would be required as a result of implementation of the proposed action.

## **Regulatory Setting, Studies, and Coordination**

### **The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970**

The purpose of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Relocation Act) is to provide uniform and equitable treatment of persons displaced from their homes, businesses, or farms by federal and federally assisted programs and establish uniform and equitable land acquisition policies for federal and federally assisted programs.

The Uniform Relocation Act is implemented under 49 CFR Part 24 in accordance with the following relocation assistance objective:

To ensure that persons displaced as a direct result of federal or federally assisted projects are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole.

### **Utah Relocation Assistance Act**

The purpose of the Utah Relocation Assistance Act is to establish a uniform policy for the fair and equitable treatment of persons displaced by the acquisition of real property by state or local land acquisition programs, building code enforcement activities, or a program of voluntary building rehabilitation or other improvements conducted pursuant to governmental supervision (Utah Code Section 57-12-2).

The City of St. George and UDOT are responsible for implementing the Uniform Relocation Act and the Utah Relocation Assistance Act. Right-of-way acquisition from private property owners would be accomplished in accordance with both laws.

When private land would be acquired for highway purposes, the purchase price would be negotiated based on an appraiser's valuation of the property. If the purchase would require relocation, assistance would be provided to the property owner. In the event of a partial property acquisition, the property owner would be paid the per unit value of the whole property. If improvements such as buildings, fences, and landscaping were located within the partial acquisition, the owner would be paid for the improvements' contribution toward the value of the whole property. If the remaining property suffers a loss in value, damages would be paid. The property damage amount and partial taking value cannot exceed the market value of the whole property.

## Affected Environment

Land ownership along Red Hills Parkway is shown in Figure 3.2-1. Red Hills Parkway, and most of the land adjacent to it, is owned by the City of St. George. The land owned by the City located north and west of Skyline Drive is within the Red Cliffs Desert Reserve, which is administered by Washington County.<sup>1</sup> The State of Utah (SITLA and Department of Parks and Recreation) owns property within the study area near the intersection of Red Hills Parkway and Bluff Street. BLM administers public land within the study area just north of the intersection of Skyline Drive and Red Hills Parkway.

Within the study area, there are 10 private parcels between Skyline Pond and Industrial Road. There are four undeveloped private parcels located south of Red Hills Parkway between Skyline Pond and 900 East. Two developed private parcels (the Panda Garden Restaurant and the St. George Travelodge) are located south of Red Hills Parkway between 900 East and 1000 East. There is one developed private parcel (a strip mall and movie theater) located south of Red Hills Parkway between 1000 East and Industrial Road. On the north side of Red Hills Parkway, east of Skyline Pond, there are two developed private property parcels. One of these parcels, located at approximately 845 East, includes several small businesses; the other, located at 999 East, is the Rodeway Inn. Also, there is an undeveloped private parcel located north of Red Hills Parkway between 1000 East and Industrial Road.

There is also a 5.36-acre parcel of private property located south of Red Hills Parkway and just east of Bluff Street. It is primarily undeveloped but does have a residential fourplex on the northwest corner of the property.

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<sup>1</sup> Since this land is already owned by the City of St. George and no acquisition would be required, no further discussion of the Red Cliffs Desert Reserve is included in this section. A discussion of impacts to the reserve is included in Section 3.13 of this EA.

## Impacts

### No-Build Alternative

The No-Build Alternative would result in intersection improvements at Skyline Drive and minor improvements along Red Hills Parkway. All construction would occur within the existing right-of-way or on land owned by the City. No property acquisitions would be required, and no relocations would be required.

### Build Alternative

#### Construction Impacts

The Build Alternative would not directly affect any existing buildings or facilities necessary for the function of business (e.g., a substantial reduction in parking or elimination of access to loading facilities).

The City of St. George is currently pursuing acquisition of 5.36 acres of private property located just south of Red Hills Parkway and just east of Bluff Street to compensate for the loss of approximately 5 acres of desert tortoise habitat resulting from the proposed project. The property is primarily undeveloped; however, a residential fourplex is located on the northwest corner of the property. Tenants living in the building would be relocated by the City of St. George in accordance with the Uniform Relocation Act and the Utah Relocation Assistance Act.

The City of St. George, USFWS, and Utah State Parks are in the process of preparing an amendment to the state's Section 6 grant agreement that would allow the City to transfer ownership of a parcel of property located north of Red Hills Parkway (see Figure 1-2) to Utah State Parks in exchange for 2 acres of property (SG-6-2-13-440) located south of Red Hills Parkway that would be needed to construct the proposed project. A right-of-way would also be needed from SITLA and BLM. Additionally, partial property acquisitions would be required to provide adequate right-of-way for the proposed road improvements. Land that would be acquired under the Build Alternative is listed in Table 3.2-1. The table includes the ownership and use of each parcel, the acreage of the permanent right-of-way needed, and whether or not a construction easement would be needed. These property acquisitions would be comparatively minor in size to the overall property area and would not substantially interfere with existing land uses or activities. Approximately seven to 10 parking spaces in the parking lot of the strip mall located east of 1000 East would be removed as a result of the Build Alternative. There are approximately 170 existing parking spaces. The parking lot is not fully occupied most days. The loss of seven to 10 parking spaces at the periphery of the parking lot would only affect a small proportion of the available parking and would not disrupt business operations.

#### Operational Impacts

Operation of the Build Alternative would not require any land acquisitions or relocations.

**Table 3.2-1.** Property Acquisitions Required under the Build Alternative

Ownership	Use	Parcel Number	Permanent Right-of-Way Requirement	Additional Temporary Construction Easement Required?
Kellie Y. and Kelly M. Thayer Trust	Undeveloped	SG-6-2-13-3410	5.11 acres	No
Kellie Y. and Kelly M. Thayer Trust	Fourplex	SG-6-2-13-3415	0.25 acre	No
Utah State Parks and Recreation	Reserve	SG-6-2-13-440	2 acres	Yes
SITLA	Undeveloped	SG-6-2-13-440	0.30 acre	Yes
United States of America – BLM	Reserve	SG-1743-A	1.40 acres	Yes
United States of America – BLM	Reserve	SG-1743-G	0.60 acre	Yes
United States of America – BLM	Reserve	SG-1744-B	0.05 acre	No
Robert W. Squire	Undeveloped	SG-1734-A-3-A	0.10 acre	No
Foremaster & Riggs	Undeveloped	SG-1337-A-2	0.30 acre	No
Vista Leasing	Strip Mall (7–10 parking spaces)	SG-1381-D	0.07 acre	No

Source: Creamer and Noble Engineers, 2007.

### Cumulative Effects

A cumulative relocation impact would occur when the proposed action combined with past, present, and reasonably foreseeable projects would result in relocations that could not be accommodated in the local community. There are no known projects that would result in major relocations in the St. George area. The proposed action would result in relocation of the residents of the fourplex; however, it is expected that comparable replacement housing is available and cumulative relocation impacts would not occur.

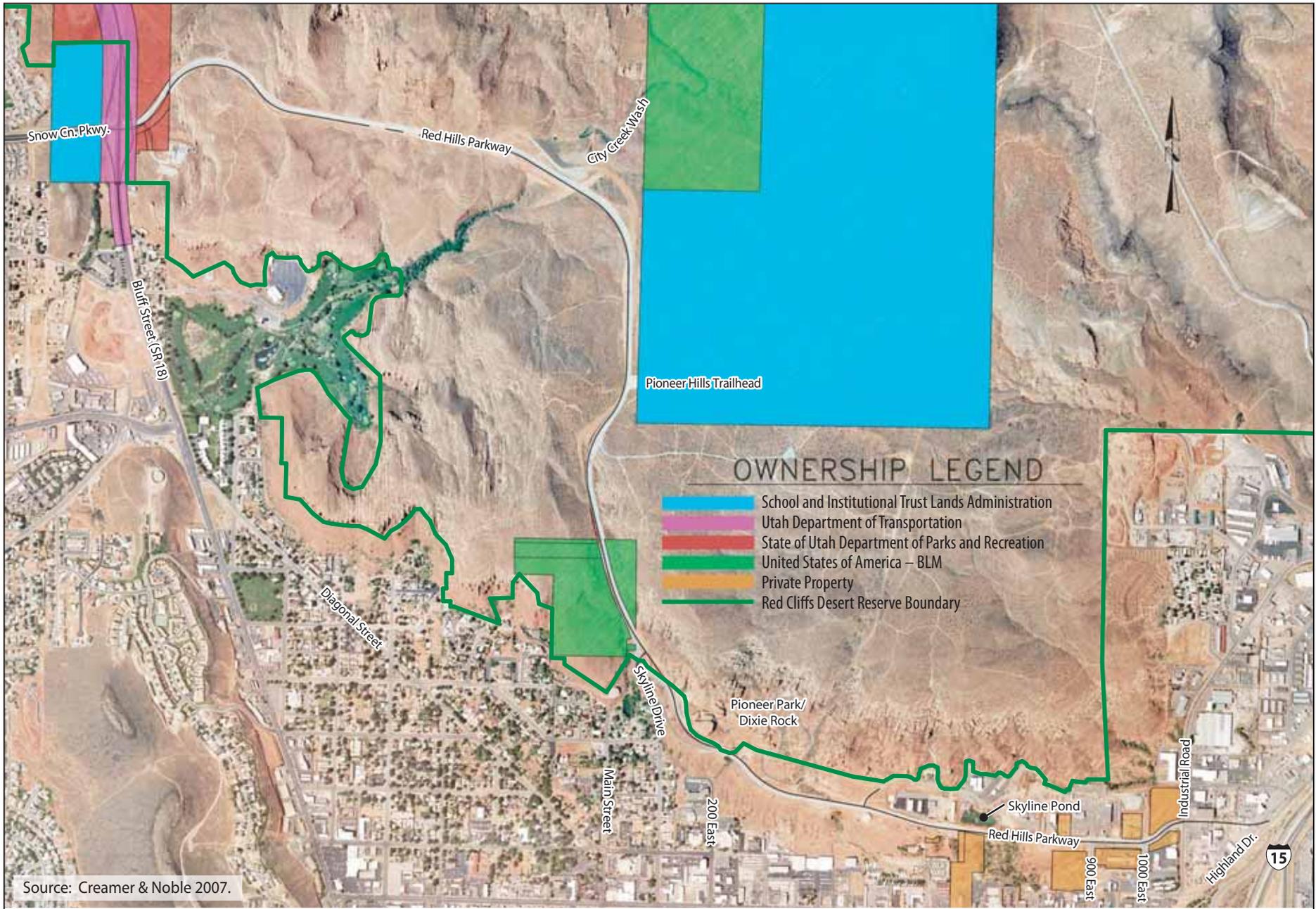
## Avoidance, Minimization, and/or Mitigation Measures

### No-Build Alternative

No mitigation is necessary.

### Build Alternative

No mitigation is necessary. All acquisitions would be conducted in accordance with the regulatory requirements of the Uniform Relocation Act and the Utah Relocation Assistance Act.



**Figure 3.2-1**  
**Non-City Owned Land Adjacent to Red Hills Parkway**

## Public Facilities, Services, and Utilities

This subsection discusses how the proposed action would affect public facilities, services, and utilities located in, or serving, the study area. Figure 3.2-2 identifies those facilities.

### Regulatory Setting, Studies, and Coordination

NEPA requires consideration of “urban quality...and the design of the built environment,” which would include consideration of impacts to public facilities, services, and utilities. Ongoing consultation with public service and utility providers during design and construction would occur to avoid facility conflicts and service outages.

### Affected Environment

#### Public Facilities and Services

Public facilities and services that utilize Red Hills Parkway include police services, fire services, schools, hospital and ambulance services, and public transportation services, as discussed below.

##### Police Services

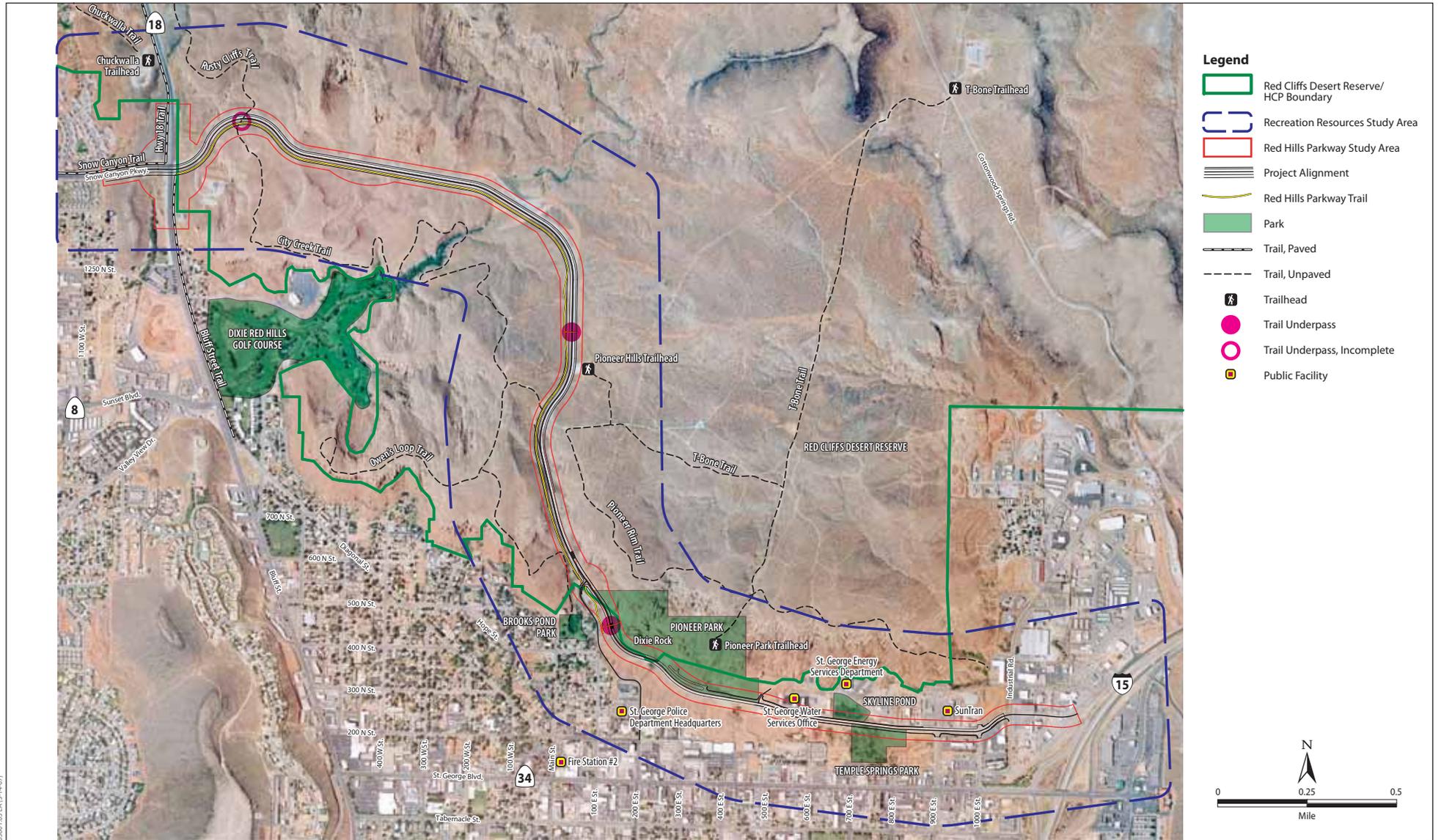
The St. George Police Department (SGPD) provides police and public safety services to the City. SGPD headquarters are located at 200 East 265 North. Currently, there are approximately 96 sworn officers on the police force (Harding pers. comm.). The study area is located within Police District #1. Red Hills Parkway is a regularly used response route for police and other emergency vehicles because it provides east/west connectivity, circumvents traffic on city streets, and is easily accessible from police headquarters.

##### Fire Services

The St. George Fire Department provides fire, hazardous material, and basic life support services within the City. Station #1, located at 51 South 1000 East, and Station #7, located at 1912 West 1800 North, are staffed stations and house a fire chief and all current full-time firefighters (Dastrup pers. comm.). There are also five other satellite stations throughout the City. The department currently has 22 full-time staff members and 60 volunteers. Stations #2 and #5 (volunteer stations) and #1 and #7 (full-time stations) use Red Hills Parkway as an emergency access/response route. Red Hills Parkway is consistently used by various emergency vehicles and is considered an essential response route (Dastrup pers. comm.).

##### Schools

Washington County School District provides public education services for approximately 18,277 students in Washington County. There are currently 29 schools (elementary, middle, and high schools) within the district. There are no schools within the immediate project vicinity (i.e., within 0.25 mile of Red



**Figure 3.2-2**  
**Public Facilities and Recreation Resources**

Hills Parkway). Presently, there are five school bus routes that use Red Hills Parkway (McArthur pers. comm.).

### **Hospital and Ambulance Services**

Dixie Regional Medical Center is the main hospital that serves the City of St. George. The 245-bed facility is located on two campuses in St. George, one at 1380 East Medical Center Drive and the other at 544 South and 400 East. Various other healthcare facilities, clinics, and surgery centers are located throughout the City.

The City of St. George contracts Dixie Ambulance for ambulance services. Dixie Ambulance commonly uses Red Hills Parkway as a response route (Randall pers. comm.).

### **Public Transportation Services**

SunTran is the City of St. George's public transit system, providing three transportation routes throughout the City of St. George. Buses operate weekdays (Monday through Friday) from 6 a.m. to 8 p.m. and Saturdays from 8 a.m. to 6 p.m. All three routes connect at the Transit Center located at Dixie State College (SunTran 2007).

SunTran does not operate a transit route along Red Hills Parkway. However, the SunTran administrative office and maintenance facilities are located at approximately 953 East Red Hills Parkway. All SunTran vehicles are serviced and fueled at this location.

## **Utilities**

Underground utilities in the project vicinity consist of water, sewer, and gas transmission lines. Overhead electrical transmission lines are located along the eastern portion of Red Hills Parkway. Utilities are discussed individually, below.

### **Water**

The City of St. George Water Services Department provides water service to the City. Primary water supply sources include Mountain Springs (eight mountain springs), Gunlock Wells (eight different wells located below the Gunlock Reservoir), and Quail Creek Water Treatment Plant (Quail Lake and/or the Virgin River). Water demand in St. George continues to increase as the City continues to grow. In 2003, yearly water demand was nearly 7 billion gallons. The City's peak water demand occurs in July, with lower water demand in the winter months (City of St. George 2004b).

Various water facilities are located in the project vicinity. The City Water Services Department's offices and equipment storage/maintenance facility are located west of Skyline Pond and north of Red Hills Parkway. A culinary water pumping station is located at 1036 East Red Hills Parkway. Two culinary water storage tanks are located just west of the City Water Services Department's offices (within the study area) and a third tank is located approximately 200 feet south of the intersection of Skyline Drive and Red Hills Parkway.

The Washington County Water Conservancy District manages a 30-inch pressurized culinary water pipeline that parallels Red Hills Parkway. The pipeline is buried approximately 3 feet below ground surface. The City Water Services Department manages an 8-inch pressurized water pipeline that extends from the southeast corner of the City Water Services Department property to Industrial Road where it joins another water pipeline. The City's pipeline is located approximately 3 feet below ground surface.

### **Wastewater**

Wastewater facilities in the study area include an 8-inch sewer pipeline located under Red Hills Parkway between Skyline Pond and Industrial Road. The sewer line connects to the main sewer trunk lines located under St. George Boulevard, which eventually connect to the regional wastewater treatment plant in Bloomington. Treatment facilities at the plant include oxidation ditches, clarifiers, centrifuges for sludge dewatering, and ultraviolet disinfection for the final effluent water (Alder Construction 2007).

### **Energy**

The St. George Energy Services Department provides power generation and distribution within the project vicinity. The Red Rock Power Plant, the City Energy Services Department offices, and the City equipment storage/maintenance facility are all located adjacent to Red Hills Parkway. The Red Rock Power Plant commenced operation in 1986. It is powered by two 10,000-horsepower engines, each of which drives a 7,000-kilowatt generator (City of St. George 2007a). The plant participates in the Utah Association of Municipal Power Systems (UAMPS) and provides emergency power when problems occur at other power plants throughout Utah. The plant generates an average of 300,000 kilowatt-hours annually.

The plant also houses the Water and Power Control Center, which includes the Supervisory Control and Data Acquisition (SCADA) system. This system maintains load and voltage on the St. George grid. It also monitors and controls 13 water tanks, five pumping stations, nine valve stations, and one irrigation system (City of St. George 2007b).

The City Energy Services Department manages overhead electrical transmission lines along the eastern portion of Red Hills Parkway. These transmission lines run along the north side of the road from the water department facility to Industrial Road. Some poles have been relocated to areas away from the road as part of past projects, and would not have to be relocated as part of the Build Alternative.

Questar Gas Company manages a 4-inch gas pipeline that extends from the southeast corner of the St. George water department property to Industrial Road where it joins another gas pipeline. The City requires gas pipelines to be buried under a minimum cover of 40 inches, with burial caution tape placed 12 inches above the pipe.

## Impacts

### No-Build Alternative

The No-Build Alternative would have no impact on existing public service facilities. Future traffic congestion on Red Hills Parkway resulting from the No-Build Alternative could adversely affect emergency response times, especially during peak traffic hours. Traffic congestion would also adversely affect school buses and public transportation buses that utilize Red Hills Parkway.

No utility disruptions or relocations would be required as a result of the No-Build Alternative. The No-Build Alternative would not result in an increase in utility usage.

### Build Alternative

#### Construction Impacts

Potential impacts to emergency protective services during construction of the proposed Build Alternative would be related to the effects of increased traffic and diminished access on emergency response time. Increased traffic congestion caused by construction activities could adversely affect emergency response times; however, these disruptions would be temporary and intermittent. Implementation of mitigation measure SI-1 would allow emergency service providers to develop alternative routes or amend service areas as necessary to maintain emergency services during project construction.

School buses using Red Hills Parkway and SunTran buses accessing the maintenance facility would experience delays, but the delays would not affect operation of any schools or the public transportation system substantially.

The Build Alternative would result in several utility relocations. The fire hydrant located near the intersection of Bluff Street and Red Hills Parkway that serves the police firing range would be relocated to accommodate the interchange. The sewer line located under Red Hills Parkway would be replaced between Skyline Pond and 900 East (a distance of approximately 1,200 feet). Relocation of portions of the 30-inch Washington County Water Conservancy District pipeline may be required during construction. Relocation would be coordinated with the water conservancy district, and service interruptions would be limited. Power poles located along Red Hills Parkway between Skyline Pond and 1000 East would be repositioned to accommodate the wider road. The traffic signal at 1000 East would also be repositioned. These relocations would be minor and would not result in major service disruptions. Any unanticipated utility relocations required during construction would be coordinated with the utility provider to minimize service disruptions (see Mitigation Measure SI-1).

#### Operational Impacts

The Build Alternative would reduce traffic congestion on Red Hills Parkway, St. George Boulevard, and Bluff Street and would generally improve emergency response times. The Build Alternative would also improve access and travel

times for public school buses and SunTran buses. No utilities would be affected by operation of the Build Alternative.

### **Cumulative Effects**

The Build Alternative would not contribute to any adverse cumulative public services or utility impacts. The Build Alternative would not induce population growth; therefore, the demand for public services or utilities would not increase as a result of the Build Alternative.

## **Avoidance, Minimization, and/or Mitigation Measures**

### **No-Build Alternative**

See mitigation measure SI-1, described previously in this section.

### **Build Alternative**

No mitigation is necessary.

## **Recreational Resources**

This subsection describes recreational facilities and parks located within the recreation study area, defined as the area located within a 0.25-mile wide corridor on either side of the existing Red Hills Parkway alignment. Recreational resources located outside the 0.25-mile limits would not be subject to effects of the proposed action and are not discussed in this document. Designated trails located within the recreation study area are discussed in Section 3.4, Pedestrian and Bicyclist Considerations. The discussion provided below describes the recreational resources and potential impacts that may occur from implementing the proposed action.

## **Regulatory Setting, Studies, and Coordination**

### **Section 4(f) of the Department of Transportation Act**

The regulatory setting for recreational resources is provided under Section 4(f) of the Department of Transportation Act of 1966, amended and codified in federal law at 49 USC 303. Section 4(f) declares, “it is the policy of the United States government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.”

The public parks described in this subsection are considered eligible for protection under Section 4(f). Detailed information regarding Section 4(f) regulations, definitions, and resources, as well as impacts to the recreational resources is provided in Chapter 4, Draft Section 4(f) Evaluation.

## Land and Water Conservation Fund Act

State and local governments often obtain financial grants through the Land and Water Conservation Fund (LWCF) Act for land acquisition or improvements to parks and recreational areas (16 United States Code [USC] Section 4601-4 et seq., September 3, 1964, as amended). Funds under the LWCF program are appropriated under two sections of the LWCF Act; Section 6 applies to financial assistance to states, and Section 7 applies to grants provided for federal purposes. There are no resources within the recreation study area purchased or improved with funds obtained under Section 6 of the LWCF Act. However, the reserve does include several parcels of land administered by BLM and purchased using LWCF Section 7 funds. Refer to Chapter 4 of this EA for a detailed discussion of lands purchased with LWCF funds.

## Local Recreation Plans

Various plans provide guidance and information pertaining to recreational resources. The 2006 City of St. George Parks, Trails, Recreation, and Arts Master Plan (Parks Master Plan) was reviewed for information pertaining to the existing and planned recreational facilities, parks, and trails within the recreation study area.

In addition, the 2000 Red Cliffs Desert Reserve Public Use Plan was reviewed. The public use plan provides specific instructions for management of public lands within the reserve, which were not provided under the more general parameters of the HCP. This includes instructions regarding specific trail designations, access points, and management prescriptions (Washington County HCP Administration 2000).

Coordination consisted of discussions with Leisure Services, the Washington County Habitat Conservation Advisory Committee, and the BLM. This coordination is discussed in the Section 4(f) analysis (see Chapter 4).

## Affected Environment

Recreational resources within the recreation study area include a golf course, an existing park, two planned parks, and an urban fishing pond. Figure 3.2-2 depicts the location of the recreational resources. The St. George Marathon, an annual event, also occurs within the study area.<sup>2</sup> The City of St. George Leisure Services manages parks and recreational events in the City, including the St. George Marathon.

No privately owned recreational resources have been identified within the recreation study area.

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<sup>2</sup> The St. George Marathon is not a typical recreational resource. However, the marathon is an important annual event to the City and community. This event is included in this discussion because it could be affected by the proposed action.

## Existing Recreational Resources

### Dixie Red Hills Golf Course

Dixie Red Hills Golf Course is a 9-hole golf course located on 50 acres at 1250 North 645 West in St. George. It was the first golf course developed by the City and opened in the mid-1960s. The golf course is open daily to the general public on a year-round basis. Amenities offered at the golf course include a driving range, cart and club rentals, and snack bar. The golf course is accessed from 1250 North. (Red Rock Golf Trail 2007)

### Pioneer Park

Pioneer Park is a 200-acre community park located north of Red Hills Parkway, between 100 East and 500 East. The park is located on land owned by the City; the majority of the park is located within the reserve boundaries. The City maintains 3 acres of developed land in the park. The remaining 197 acres will remain undeveloped as natural open space. There is a large picnic pavilion and five picnic sites located around a 0.5-mile, paved, one-way access road that forms a loop east of the main parking area (picnic loop). There are two small gravel parking areas, one main parking area, and a Rotary parking area. The park is open year-round during daylight hours. There are three existing entrances to the park from Red Hills Parkway, including entrances to the Rotary parking area, the main parking area, and the picnic loop. There is an existing trail underpass in the Rotary parking area that is complete but is not functional for trail users due to steep grades leading in and out of the underpass. (City of St. George 2007c)

### Skyline Pond

Skyline Pond is an urban fishing pond located on approximately 3.2-acres of land at 600 East Red Hills Parkway. The pond is approximately 1 acre in size, with a dock, fishing pier, parking lot, and restroom facility. It is one of four urban fishing ponds in Washington County. The pond is stocked with rainbow trout, bluegill, and largemouth bass, and is open year-round during daylight hours. Access to the Skyline Pond is from Red Hills Parkway at 600 East. (City of St. George 2007d)

### St. George Marathon

The St. George Marathon is the 15<sup>th</sup> largest marathon in the U.S. and is held annually on the first Saturday in October. The marathon course crosses the project study area at the Bluff Street/Red Hills Parkway intersection. The next event is scheduled for October 6, 2007. The course begins in the Pine Valley Mountains, then descends 2,600 feet in elevation to Worthen Park in the City on Highway 18. The City sponsors and organizes the St. George Marathon. (City of St. George 2007e)

## Planned Recreational Resources

### Brooks Pond Park

Brooks Pond Park is designated in the Parks Master Plan as a future planned neighborhood park. Currently, the park is primarily undeveloped and with limited recreational amenities. It is located on a 4-acre parcel in Brooks Canyon, southwest of Skyline Drive. The park is also referred to as Hidden Springs Park

in the Parks Master Plan. There is a small pond with a trail encircling the pond. Another trail extends northward up Brooks Canyon and ultimately connects to the Owens Loop Trail in the reserve. Access to Brooks Pond Park is from Main Street. The Parks Master Plan indicates that there are plans to develop the 4-acre area with amenities that include limited parking, restrooms, picnic shelters, playground structures, open grass and shaded areas, and at least one additional amenity, such as a basketball standard, tennis court, volleyball court, sports court, paved walking trail, climbing wall, or other neighborhood-desired facility (City of St. George 2006a).

### **Temple Springs Park**

Temple Springs Park is a 7-acre, primarily undeveloped natural park located between 700 East and 800 East, south of Red Hills Parkway. There is a system of underground concrete boxes and pipelines collecting water from several springs occurring below the nearby cliff face. Existing facilities on the property include a bench and a bridge near the springs, some informal trails, and picnic tables. A trail extends from the picnic area up the cliff face to an unpaved shoulder off of Red Hills Parkway used for parking. There is also a section of trail that accesses the spring area. Access to Temple Springs Park is from Red Hills Parkway at approximately 750 East and from 700 East south of the park. (City of St. George 2006a)

The Parks Master Plan describes small parks, ponds, recreational facilities, and areas with unique features that do not function as neighborhood or community parks but are available for limited recreational opportunities for the public. Temple Springs Park is included in this category, and the City intends to further develop this property in the future for recreational use. There are eight recreational facilities in this category within the City, including Skyline Pond.

## **Impacts**

### **No-Build Alternative**

There would be no construction impacts to recreational resources under the No-Build Alternative. Minor improvements to the road may occur, including improvements at the Skyline Drive intersection. Traffic volume on Red Hills Parkway would continue to increase. Access to Pioneer Park would become increasingly difficult as the space between cars decreases and turning movements are restricted. Congestion and traffic incidents in this area could potentially increase due to conflicts between the increased number of vehicles traveling on the road and park users attempting to access the park. Pedestrian access to the park would also become increasingly more difficult, and safety issues for pedestrians crossing Red Hills Parkway at grade would increase.

### **Build Alternative**

#### **Construction Impacts**

No project-related impacts on Dixie Red Hills Golf Course would occur.

In the event that the Red Hills Parkway/Bluff Street interchange is under construction during the St. George Marathon, a route through the interchange construction area would be provided for race participants (see mitigation measure SI-2).

There would be no direct impacts on the Brooks Pond Park property. However, the realignment of a short section of the trail that exits Brooks Canyon and connects to the Owens Loop Trail may be required due to the placement of fill at the mouth of the canyon. In that case, the trail would be realigned prior to the placement of the fill. Access to the trail would be maintained throughout construction.

Implementation of the Build Alternative would require incorporation of 1.7 acres of land from Pioneer Park into the new road facility and reconfiguration of the main park access. The land that would be incorporated into the road facility is located immediately adjacent to the existing Red Hills Parkway alignment and is shown in Figure 3.2-3. Reconfiguration of the park entrance would require elimination of the existing main parking entrance and construction of a new section of access road that would connect the main parking area to the existing picnic loop road, as shown in Figure 3.2-3. A 400-foot length of the existing picnic loop road would be utilized for the new access road, and an additional 200-foot length of new paved road would be required to connect the existing road and the main parking area. A right-turn lane into the park off Red Hills Parkway would also be provided. The land located between the new road alignment and the new access road is included in the 1.7-acres of parkland that would be required for the proposed project. However, this area would remain undisturbed. The existing access to the Rotary parking area would be paved, and logs would be placed to direct vehicles entering the area, similar to the existing entrance to the main parking area. Both parking areas would remain unpaved, and the space available for parking would not be affected. The change in access and incorporation of land from Pioneer Park into the new road facility would not affect the recreational facilities or uses that occur within the park.

At Skyline Pond, a short retaining wall would be built along the Red Hills Parkway frontage to maintain the property boundary and avoid physical disruptions on the property.

At the proposed Temple Springs Park, construction of the Build Alternative would require incorporation of 0.62 acre of land into the new road facility and construction of a retaining wall, as shown in Figure 3.2-3. The strip of land is immediately adjacent to the existing road and is currently used as unofficial parking; the parking area would still be accessible after construction. The retaining wall would be located along the hillside immediately above the springs and approximately 300 feet in length. The retaining wall would minimize the amount of fill material needed and avoid impacts to the springs, vegetation, bench, or bridge. Incorporation of the land into the right-of-way and construction of the retaining wall would not affect planned development or recreational use of this park.



**Figure 3.2-3**  
**Impacts—Pioneer Park and Temple Springs Park**

### **Operational Impacts**

There would be no operational impacts on the Dixie Red Hills Golf Course, St. George Marathon, Brooks Pond Park, or Skyline Pond as a result of the Build Alternative.

Reconfiguration of access to Pioneer Park would help to alleviate safety concerns related to reduced sight distances for motorists entering and exiting the park. Construction of a center turn lane on Red Hills Parkway to access the park would stop vehicles from impeding traffic to turn left. It would also reduce the number of park access points, which would reduce turning movement conflicts. Safety would be improved for users accessing the park and for vehicles traveling on Red Hills Parkway.

There would be no operational impacts on Temple Springs Park as a result of the Build Alternative. The acquisition of land from park property would have no effect on recreational use or future development of the park.

### **Cumulative Effects**

The recreational facilities and parks in the study area are expected to experience increased use as population and demand in St. George increase. Implementation of the improvements to Brooks Pond Park, Pioneer Park, and Temple Springs Park described in the Parks Master Plan would help accommodate future demand for parks. It is unlikely that new parks, which are not in the current Parks Master Plan, would be developed within the study area because the majority of the study area is within the boundaries of the reserve. Because the proposed action would not result in future population growth and use of the existing and planned parks would be maintained and/or improved, there would be no adverse cumulative impacts to recreational resources.

## **Avoidance, Minimization, and/or Mitigation Measures**

### **No-Build Alternative**

No mitigation is necessary.

### **Build Alternative**

The following measure would be implemented to minimize impacts on recreational facilities and parks.

#### **Mitigation Measure SI-2: Minimize Impacts on Recreational Facilities and Parks**

The following measures will be implemented to minimize impacts on Pioneer Park:

- Barriers will be placed to close off the existing entrance to the main parking area in Pioneer Park. The abandoned entrance area between the new road alignment and the barriers will be reclaimed and the existing paving material

removed. Materials used for the barriers will be similar to materials used elsewhere in the park, such as the logs used in the main parking area..

- The area separating the new road alignment from the new access road to the main parking area will remain undisturbed. Any areas that are disturbed during construction will be reclaimed.
- Park entrance signs will be relocated to direct access to the park and the main parking area. Any signage that is removed or disturbed during construction will be restored prior to construction completion.
- The entrance to the Rotary parking area will be paved, and barriers will be placed to direct and formalize the entrance. Materials used for the barriers will be similar to materials used elsewhere in the park, such as the logs used in the main parking area.

The following measures will be implemented to minimize impacts on other recreational resources:

- A retaining wall will be installed along the property frontage with Skyline Pond to avoid possible impacts on the pond property. Another retaining wall will be installed above the spring area at Temple Springs Park to avoid impacts to the springs, vegetation, bridge, and bench. The walls will be constructed of materials that match the texture and color of the sandstone bluff to minimize visual effects.
- The trail exiting Brooks Canyon and connecting to Owens Loop Trail will be realigned prior to placement of fill material that would disturb the existing trail.
- If construction of the Red Hills Parkway/Bluff Street interchange has not been completed prior to the annual St. George Marathon, a route through the construction area will be provided for race participants. Coordination related to the location of the route will occur prior to the race to ensure the route is acceptable and approved by Leisure Services.

## Environmental Justice Populations

The following discussion of environmental justice has been prepared in accordance with the applicable guidance for addressing environmental justice, including U.S. Department of Transportation (DOT) Order 5610.2 (April 15, 1997), FHWA Order 6640.23 (December 2, 1998), and FHWA Western Resource Center Interim Guidance (March 2, 1999). Consistent with this guidance, the environmental justice analysis for the proposed project describes (1) the existing population and the presence of minority and low-income population groups; (2) potential adverse effects on the overall project vicinity population, including minority and low-income population groups; (3) disproportionately high and adverse effects on minority and low-income population groups; and (4) community outreach and public involvement efforts.

The demographic study area includes the Red Hills Parkway alignment and the census tracts immediately adjacent to the road (see Figure 3.2-4).



**Legend**

Roads		Census Tract	
—	Highway		2703
—	Major Road		2707
			2712



Sources: U.S Census Tiger Data, 2000; State of Utah AGRC, 2001; Jones & Stokes, 2007.

**Figure 3.2-4  
Census Tracts in the Study Area**

## Regulatory Setting, Studies, and Coordination

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse human health or environmental effects of federal projects and programs on minority and low-income populations to the greatest extent practicable and permitted by law. The term “minority” includes persons who identify themselves as black, Asian/Pacific Islander, Native American, or of Hispanic origin. The term “low-income” includes persons whose household income is at or below the U.S. Department of Health and Human Services (HHS) poverty guidelines. An alternate threshold (e.g., U.S. Census Bureau poverty threshold) may be utilized as long as it is not selectively implemented and is inclusive of all persons at or below the HHS poverty guidelines.

## Affected Environment

The U.S. Census Bureau establishes geographies for conducting census studies. At the local level, these geographies are defined by state, county, city, census tract, block group, and block. The demographic study area for the proposed action includes census tracts 2703, 2707, and 2712.

### Race/Ethnicity

Race/ethnicity data for the demographic study area, as well as for Washington County and the City of St. George, are provided in Table 3.2-2. Washington County and the City of St. George are included in this table to provide demographic context.

Table 3.2-2 shows that a large majority of the population in the demographic study area is white, which is similar to the percentage of the population in Washington County and the City. The next highest population segment percentage is Hispanic/Latino, which is similar to Washington County and the City. In census tract 2712, the percentage of Hispanic/Latino population is slightly higher than the City and Washington County.

**Table 3.2-2.** Population Data by Race

	Total Population <sup>1</sup>	White	Hispanic/Latino	Black	Native American	Asian American	Native Hawaiian/Pacific Islander
Washington County	90,354	91.4%	5.0%	0.1%	0.9%	0.5%	0.5%
City of St. George	49,621	89.1%	6.5%	0.1%	1.1%	0.8%	0.8%
Census Tract 2703	6,439	90.7%	5.6%	0.0%	0.7%	0.2%	0.0%
Census Tract 2707	6,863	85.7%	8.7%	0.0%	3.5%	0.5%	0.3%
Census Tract 2712	2,427	84.5%	13.4%	0.0%	0.4%	1.1%	0.0%

<sup>1</sup> Population variations between Tables 3.2-2 and 3.2-3 are based on census sampling errors.  
Note: Due to electronic rounding conventions, not all geographic data sum to 100%.  
Source: U.S. Census Bureau, 2000a.

## Income

Income data for census tracts 2703, 2707, and 2712 were reviewed to determine poverty status. The percentage of the population below the poverty threshold, based on median household income data (1999 dollars), is shown in Table 3.2-3. Washington County and the City are included in this table to provide the demographic context. The average household size for Washington County, the City, and all three census tracts is three persons. The U.S. Department of Health and Human Services defines the poverty threshold for various household sizes based on median household income. In 1999 dollars, for a household size of three, the poverty threshold is \$13,290.

**Table 3.2-3.** Population Below Poverty Threshold

	Population <sup>1</sup>	Median Household Income (\$)	Population below Poverty Threshold	Percent Below Poverty Threshold
Washington County	89,228	37,212	9,988	11%
City of St. George	49,018	36,505	5,665	12%
Census Tract 2703	6,357	34,906	1,018	16%
Census Tract 2707	6,834	30,270	698	10%
Census Tract 2712	2,362	31,135	387	16%

<sup>1</sup> Population variations between Tables 3.2-2 and 3.2-3 are based on census sampling errors.  
Source: U.S. Census Bureau, 2000a.

The data in Table 3.2-3 show that the percentage of the population in all geographies that fall below the poverty threshold ranges between 10 and 16 percent. Census tracts 2703 and 2712 have slightly higher poverty rates than the City and Washington County as a whole.

## Impacts

### No-Build Alternative

Under the No-Build Alternative, no impacts to environmental justice populations would occur.

### Build Alternative

#### Existing Population

The demographic data that are summarized above indicate that the proportion of minority populations in the project vicinity is slightly larger than in either the City of St. George or Washington County. The poverty rate in the study area is also higher than in either the City of St. George or Washington County.

The poverty rate in census tract 2703 is approximately 4 to 5 percent higher than in the City or Washington County. The percentage of minority persons within

the census tract is slightly higher than in the County and slightly lower than in the City. Census tract 2703 includes the developed area south of Red Hills Parkway and a very large sparsely developed area north and west of Red Hills Parkway. Within this census tract, all homes are located more than 200 feet from the proposed Build Alternative, except for a fourplex south of Red Hills Parkway and east of Bluff Street. The City of St. George is currently pursuing acquisition of this property. Residents would be relocated in accordance with the Uniform Relocation Act and Utah Relocation Assistance Act. It is expected that comparable replacement housing is available in the St. George area.

The poverty rate in census tract 2707 is slightly lower than in the City or Washington County. The percentage of minority persons within the census tract is slightly higher than in the City or Washington County. In census tract 2707, all of the homes are located more than 200 feet from the proposed Red Hills Parkway and Bluff Street interchange. Homes located in this area have been constructed in the last 5 to 10 years and are located in higher end residential subdivisions. Most of these homes were constructed after the last census was conducted; therefore, income and race information is not reflected in the census data.

Census tract 2712 is located east of Industrial Road. The portion of the census tract that is adjacent to the Build Alternative is an industrial area. The nearest residential area is located approximately 0.5 mile east of the Build Alternative. The poverty rate in census tract 2712 is approximately 4 to 5 percent higher than in the City or Washington County. The percentage of minority persons within the census tract is slightly higher than in the City or Washington County.

### **Effects on Overall Population**

The technical analyses conducted as part of this environmental document have determined that construction of the Build Alternative may encounter hazardous materials (see Section 3.13), would slightly increase dust (see Section 3.5), and could slightly increase noise levels (see Section 3.6). Mitigation measures and regulatory compliance methods have been identified to address all of these impacts, and no residual or unavoidable adverse effects are expected. Beneficial effects for all population groups are expected as a result of improvements in traffic circulation.

### **Disproportionately High and Adverse Effects on Minority and/or Low-Income Populations**

Environmental justice considerations require an assessment of whether the adverse effects of the project on minority and low-income groups could be considered disproportionately high and adverse, after taking into consideration the mitigation measures that have been proposed in this environmental document, the impact avoidance and minimization efforts that have occurred during the project planning and development process, and the potential benefits that the community would accrue.

The determination of whether or not the effects of the proposed project are disproportionately high and adverse depends on whether (1) the effects of the project are predominately borne by a minority or low-income population or (2) the effects of the project are appreciably more severe or greater in magnitude to

minority or low-income populations compared to the effects on non-minority or non-low-income populations. The project would directly affect only one residential building. The project would comply with the Uniform Relocation Act, the Utah Relocation Assistance Act, and adequate replacement housing is available in the City of St. George; therefore, disproportionately high and adverse effects on minority and/or low-income populations are not anticipated.

### **Community Outreach and Public Involvement**

During development of the purpose and need and project alternatives, UDOT and the City of St. George held four public meetings between February 2006 and February 2007 to discuss the proposed project (see Chapter 6 for a discussion of consultation and coordination efforts). The Build Alternative was selected as the preferred alternative in October 2006 after consideration of public comment. Additional outreach and involvement efforts are expected to continue as part of the ongoing environmental compliance and project development processes.

The Build Alternative will be developed in accordance with Title VI of the Civil Rights Act of 1964, which provides that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.

### **Cumulative Effects**

The Build Alternative would not contribute to any cumulative effects on environmental justice populations.

## **Avoidance, Minimization, and/or Mitigation Measures**

### **No-Build Alternative**

No mitigation is necessary.

### **Build Alternative**

No mitigation is necessary.

## 3.3 Economics

This section discusses the current economic climate and temporary and permanent economic impacts that could occur in the study area as a result of implementation of the proposed action. Five regional economic variables—employment, commerce, tax base, development, and travel time—are assessed in this section.

### Regulatory Setting, Studies, and Coordination

Consideration of economic impacts to the human environment is mandated in Title 23 of 23 USC 109(h). U.S. Council on Environmental Quality (CEQ) regulation 40 CFR 1508.14 states that when an environmental document is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental document will discuss all of those effects on the human environment.

### Affected Environment

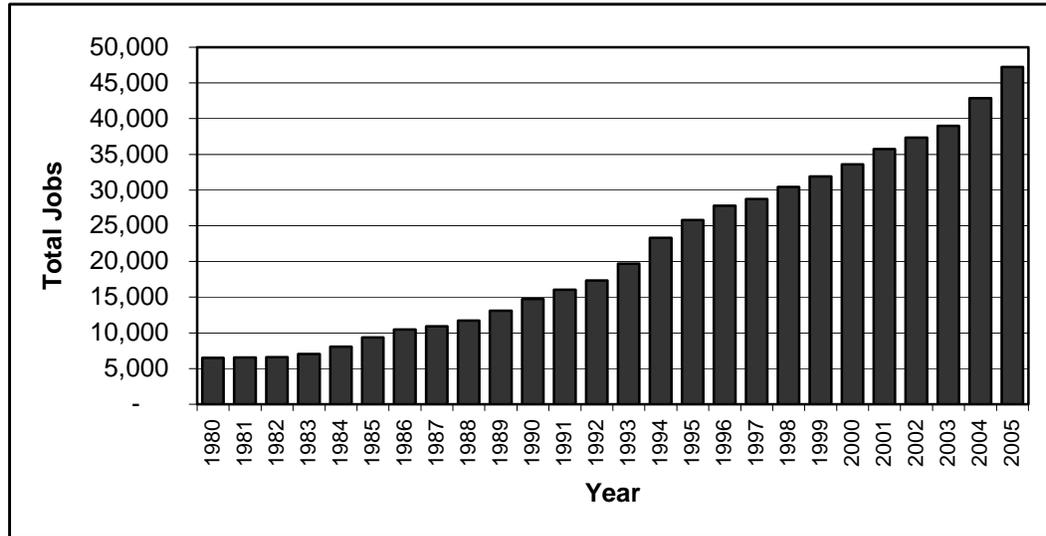
#### Employment

The employment history for Washington County for the past 25 years is shown in Figure 3.3-1. The graph shows that employment in the county has steadily increased over time. No major Washington County employers are located within the Red Hills Parkway study area. The City of St. George operates SunTran, the animal shelter, Dixie power plant, and water services within the study area. Several small private businesses (Sky Satellite, Travelodge, Roadway Inn, Westates Theatres), a small office building, and a small strip mall are located within the study area. These employers provide a small percentage of the more than 45,000 non-farm jobs in Washington County.

#### Commerce

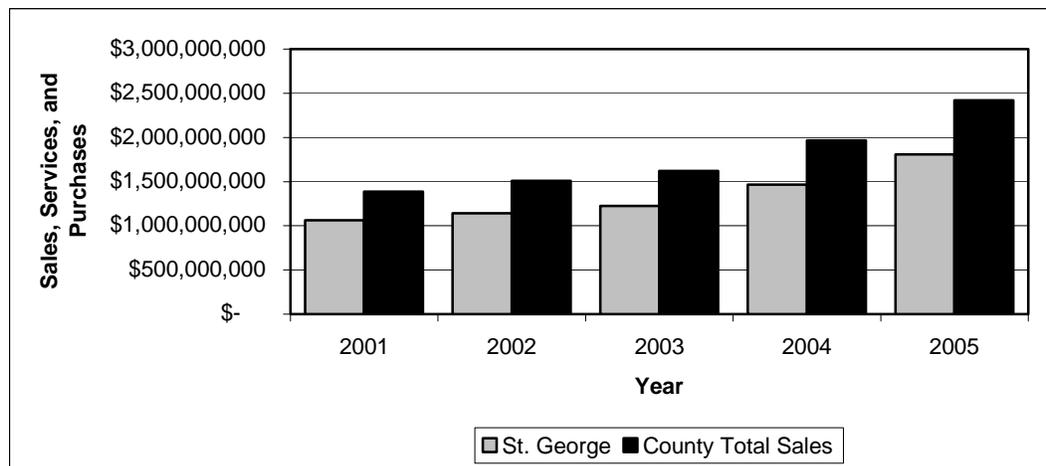
Gross annual sales in Washington County have grown from \$1.38 billion in 2001 to \$2.42 billion in 2005 (see Figure 3.3-2). The City of St. George accounted for 76.6 percent of the 2001 sales and 74.7 percent of the 2005 sales. For the 5-year period, the City experienced sales growth of 70 percent, and Washington County experienced sales growth of 75 percent. Businesses located within the study area provided only a small contribution to City and Washington County gross taxable sales because there are few commercial businesses within the study area.

**Figure 3.3-1.** Washington County Employment 1980–2005



Source: Utah Department of Workforce Services, 2005.

**Figure 3.3-2.** Taxable Sales in Washington County and St. George between 2001 and 2005



Source: Utah State Tax Commission, 2007.

## Tax Base

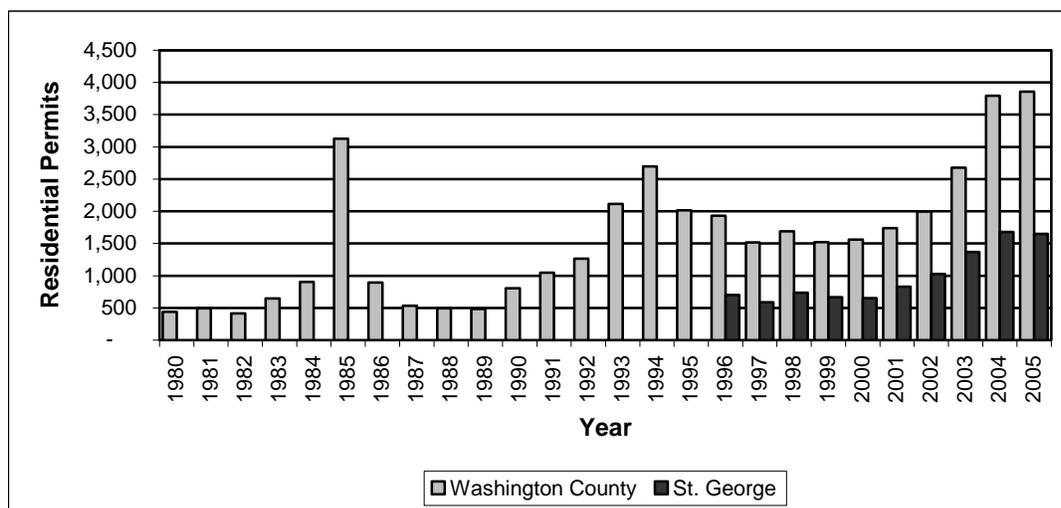
In 2005, Washington County assessed \$70,050,505 in real property taxes (Utah State Tax Commission 2006). Parcels located within the study area accounted for \$29,812 of the property taxes assessed (Washington County Assessor 2006). Property taxes for parcels within the study area account for less than .04 percent of the total property taxes for Washington County.

## Development

Development in Washington County has generally increased over the past 25 years, with peak building development occurring approximately every 10 years (see Figure 3.3-3). Between 1996 and 2005, building permits issued for the City of St. George accounted for almost half of the permits issued in the Washington County.<sup>1</sup> The data show that City-issued building permits generally follow the same trend as Washington County. A small portion of the land located within the study area is designated for developable uses, including the commercial area at the eastern project extent and the residential area at the western project extent. These two areas are already built out, and no additional development is anticipated. The City is currently pursuing acquisition of 5.36 acres of private property located just south of Red Hills Parkway and just east of Bluff Street. The owner intended to develop part of the property with residential apartments.

The City of St. George General Plan (2002) identified significant remaining building capacity in the City, including 13,700 acres of undeveloped land and 6,494 residential units that were approved but not built. None of the areas identified for future development are located within the study area or in the project vicinity.

**Figure 3.3-3.** Residential Building Permits in Washington County and St. George



Source: University of Utah, 2007; and the U.S. Census Bureau, 2000b.

## Value of Motorists' Travel Time

The value of motorists' time spent delayed in traffic is calculated by multiplying the number of hours of delay by the value of motorists' time. In this analysis the value of motorists' time was based on the Washington County

<sup>1</sup> Building permit data for the City of St. George was not readily accessible before 1996.

2005 mean hourly wage of \$12.40 per hour (Utah Department of Workforce Service 2007). For this study, vehicle hours of delay for the network was calculated using the projected average intersection delay and number of cars entering each intersection during peak travel hours. Fehr & Peers estimates that the Red Hills Parkway peak-hour delay is currently 45.4 hours per day (Fehr & Peers 2007). This equates to \$146,370 in lost time per year for motorists traveling Red Hills Parkway.

## Impacts

### No-Build Alternative

Under the No-Build Alternative physical improvements to Red Hills Parkway would be limited to realigning the Skyline Drive intersection and adding turn lanes. These improvements would not affect employment, commerce, the tax base, or development within the study area, the City of St. George, or Washington County.

Over time, traffic congestion on Red Hills Parkway would increase under the No-Build Alternative. Fehr & Peers projects that the Red Hills Parkway peak-hour delay would be 4,733 hours per day in 2030 under the No-Build Alternative (Fehr & Peers 2007). This equates to \$15,259,192<sup>2</sup> in lost time per year for motorists traveling Red Hills Parkway during the peak hour.

### Build Alternative

#### Construction Impacts

Construction of the Build Alternative would be short term and would not substantially affect economic conditions in the study area, the City, or Washington County. Construction activities would result in a slight temporary increase in employment. However, because the construction would be short in duration and the number of jobs would be small, this increase is not anticipated to change the overall employment conditions in the City or Washington County. During construction, the businesses located along Red Hills Parkway could experience a slight, short-term decrease in sales associated with construction noise, dust, and intermittent access disruptions. Overall, any decreases would be short term, and businesses in this area contribute a very small percentage of the gross taxable sales revenue. Therefore, no substantial changes to commerce are anticipated. Construction activities may temporarily increase travel delay on Red Hills Parkway. This increase in delay would be short term, and long-term operational reductions in travel time would more than compensate for the short-term delays. Construction is not anticipated to affect the tax base or significantly change the development rates or patterns in the study area, City or Washington County.

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<sup>2</sup> Calculated using 2005 hourly wage of \$12.40 per hour. Does not take account inflation or wage escalation.

## Operational Impacts

### Employment

Operation of Red Hills Parkway would not affect employment. The project would not require any business relocations or affect the operation of businesses or municipal facilities along the alignment, resulting in job loss.

### Commerce

Business sales within the study area are not anticipated to change as a result of the Build Alternative. The project would require the acquisition of seven of the 170 parking spaces available to the movie theater and strip mall (see Section 3.2). This loss of parking is not anticipated to affect sales since adequate parking would still be available. The two hotels located along the alignment would experience a slight increase in noise (less than 1dBA in 2030); however, this increase is not likely to be noticeable or affect hotel occupancy. The small office building located on the north side of Red Hills Parkway would not be affected by operation of the Build Alternative. Increased access and reduced delay resulting from implementation of the Build Alternative may have beneficial effects on commerce in the study area. Business sales within the study area make up a small percentage of the gross taxable sales revenue in the City or Washington County, and changes would not affect overall economic conditions.

### Tax Base

Implementation of the Build Alternative would require acquisition of 5.83 acres of private property. This property would no longer be taxable. Since the study area provides a very small contribution to Washington County's tax base, a minor reduction in taxable real estate in the study area would not affect the overall Washington County real property tax base.

### Development

Implementation of the Build Alternative would not significantly change the amount of developable real estate in the City or Washington County. The project would primarily be built on land owned by the City of St. George and require acquisition of only 5.83 acres of private land. Acquisition of this land would prevent construction on one parcel of land located south of Red Hills Parkway and east of Bluff Street. However, this would not significantly affect development rates or patterns in St. George. As discussed in Section 3.1, implementation of the Build Alternative is neither intended nor expected to induce substantial changes in the location, distribution, or rate of population growth or development.

### Travel Time

Fehr & Peers projects that the Red Hills Parkway peak-hour delay would be 595 hours per day in 2030 under the Build Alternative (Fehr & Peers 2007). This equates to \$1,918,280<sup>3</sup> in lost time per year for motorists traveling Red Hills

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<sup>3</sup> Calculated using 2005 hourly wage of \$12.40 per hour. Does not take account inflation or wage escalation.

Parkway. In 2030, the Build Alternative is projected to provide a savings of \$13,340,912<sup>4</sup> in motorists' travel time per year over the No-Build Alternative.

### **Cumulative Effects**

Overall, implementation of the Build Alternative would have substantial beneficial economic impacts related to reduced travel time. The project would not significantly contribute to adverse economic impacts.

## **Avoidance, Minimization, and/or Mitigation Measures**

No mitigation is necessary. Mitigation contained in Section 3.2 would minimize impacts to businesses during construction.

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<sup>4</sup> Ibid.

## 3.4 Pedestrian and Bicyclist Considerations

This section presents information on the existing and proposed pedestrian and bicyclist facilities in the study area. Trails discussed in this section are recreation trails within the recreation study area, defined in Section 3.2 as the area located within a 0.25-mile space on either side of the existing Red Hills Parkway alignment. The discussion provided below describes these facilities and the potential impacts that might be expected as a result of implementation of the proposed action.

### Regulatory Setting, Studies, and Coordination

#### Federal and State

United States Code Title 23, Section 217, calls for the integration of bicycling and walking into the transportation mainstream. FHWA encourages development and implementation of bicycle and pedestrian plans as part of the overall transportation planning process and helps coordinate the efforts of federal, state, metropolitan, and other agencies to improve conditions for bicycling and walking.

The Americans with Disabilities Act (ADA) of 1990 declares that “no otherwise qualified individual with a disability in the United States shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance” (49 CFR 27). Title II of the ADA requires UDOT to apply specific access design standards, developed by the U.S. Access Board, when constructing or altering pedestrian facilities.

The following federal and state plans pertaining to pedestrian and bicycle considerations and recreation trails were reviewed in preparation of this section:

- UDOT’s 2001 Statewide Pedestrian and Bicycle Plan, an element of the Statewide Long Range Transportation Plan (UDOT 2001); and
- UDOT’s 2004 Utah Transportation 2030, Chapter 6, Pedestrians and Bicycles (UDOT 2004).

#### Local

The City of St. George General Plan (2002) and the Parks, Trails, Recreation, and Arts Master Plan (2006) are the policy documents related to pedestrian and bicyclist facilities in the St. George area. The City of St. George General Plan includes the following policies specific to pedestrian and bicyclist facilities.

- The City will implement a bikeway system that integrates and interconnects pedestrian paths and on-street bike lanes that will connect major destinations (shopping, schools) with parks and open space corridors (p.6-18).
- The City will assure that all new development provides either off-street bike/pedestrian paths or detached sidewalks or both and shall encourage such paths to be designed and located to tie in to a citywide system (p.6-18).
- The City will connect on-street bike lanes to the bikeway system (p.6-18).
- Bike/recreation paths will be included in all greenway corridors wherever physically and environmentally possible (p.6-18) (City of St. George 2002).

The 2006 Parks, Trails, Recreation, and Arts Master Plan includes the following recommendations specific to pedestrian and bicyclist facilities.

- Include system-wide trails development in any future planning initiatives, focusing on closing any gaps in trails and connecting existing and future neighborhoods to downtown St. George, parks and recreational facilities, and community destinations. The intent is to encourage walking and bicycling to reduce automobile dependence and improve the overall health of the community and its residents (p. 5-9).
- Complete a sidewalk assessment to identify areas where sidewalks are incomplete in developed areas. Prioritize sidewalk development and repair in residential areas, recreation areas, city destinations, and complete safe routes to schools. Where sidewalks function as a trail connection, they should be 8 feet in width (p. 5-10). (City of St. George 2006a)

Goals included in the City of St. George Traffic and Transportation Master Plan related to pedestrian and bicycle considerations include the following.

- Enhance safety for vehicle drivers, bicyclists, pedestrians, transit riders, wheelchair users, and children (p. 1).
- Integrate pedestrian and bicycle facilities into the overall transportation system to meet recreational and community needs (p. 1). (City of St. George 2006b)

The following local plans were also reviewed for information on pedestrian and bicycle considerations.

- Washington County Regional Trails Cooperative Master Plan.
- 2007–2030 Regional Transportation Plan for the St. George Urbanized Area (Dixie MPO 2007).

Coordination consisted of meetings and discussions with the Department of Leisure Services, BLM, and the Washington County HCAC. Coordination pertaining to recreation trails also occurred during analysis for the draft Section 4(f) evaluation (see Chapter 4).

## Affected Environment

Pedestrian and bicyclist facilities in the study area include sidewalks, paved multiuse trails, and natural-surface trails (details are provided below). Review of the 2006 Parks Master Plan found that there are no existing designated bicycle routes within the recreation study area (City of St. George 2006a). Bicyclists ride on the shoulder of the existing road.

### Existing Facilities

#### City of St. George

Existing pedestrian facilities in the study area include sidewalks on Skyline Drive, 900 East, 1000 East, the north side of Red Hills Parkway between 900 East and 1000 East, and a 300-foot length of sidewalk between 1000 East and Industrial Road.

The City maintains an existing trail system with 35.31 miles of developed off-street trails, including:

- 27.34 miles of paved multiuse trails,
- 1.72 miles of paved paths associated with parks,
- 4.15 miles of natural-surface hiking/biking trails, and
- 2.1 miles of natural-surface hiking trails. (City of St. George 2006a)

The 2006 Parks Master Plan includes plans for development of an additional 79.15 miles of multiuse and natural-surface trails. The existing City trails within the recreation study area are described in Table 3.4-1 and shown in Figure 3.2-2.

#### Red Cliffs Desert Reserve

An extensive 130-mile trail system has been developed within the Red Cliffs Desert Reserve. The reserve trail system includes 61 designated trails for hiking, horseback riding, and mountain biking. More than 30 trailheads provide access to the trail system (Washington County HCP Administration, n.d.). The reserve trailheads and trails located within the recreation study area are described below in Table 3.4-1 and shown in Figure 3.2-2. Trails within the reserve are managed collaboratively by BLM, Washington County, and Utah State Parks and Recreation (Washington County HCP Administration 2000).

**Table 3.4-1.** Trailheads and Trails in Recreation Study Area

Trailheads and Trails	
City of St. George Trails	<p><b>Snow Canyon Trail</b> A 3.1-mile paved multiuse trail on the north side of Snow Canyon Parkway. The trail begins at the intersection with Bluff Street and extends west to the city limits of Ivins. The trail can also be accessed from the Tawa Pond Trailhead or the connecting Highway 18, Halfway Wash, and Bluff Street trails. In the future this trail will connect with the city of Ivins trail system.</p> <hr/> <p><b>Highway 18 Trail</b> A 5.3-mile paved multiuse trail on the west side of Bluff Street. Begins at the intersection with Snow Canyon Parkway/Red Hills Parkway and extends north to the Winchester Hills area. Snow Canyon Trail connects to this trail. This trail does not cross Red Hills Parkway.</p> <hr/> <p><b>Bluff Street Trail</b> A 0.8-mile paved multiuse trail on the east side of Bluff Street. This trail begins at the intersection with Diagonal Street and extends to Red Hills Parkway. Bluff Street Trail would connect with the proposed Red Hills Parkway Trail.</p>
Red Cliffs Desert Reserve Trails	<p><b>Chuckwalla Trailhead and Trail</b> The trailhead is located on SR-18, approximately 0.25 mile north and west of the intersection of Bluff Street and Red Hills Parkway. Facilities include a restroom, parking area, and a trailer parking area. The trail is an unpaved hiking/biking double track trail, approximately 0.6 mile in length. The trail begins on the north end of the trailhead and connects to trails in the Paradise Canyon area of the reserve. This trail is the primary access to the Paradise Canyon area located west of Bluff Street. The trail does not cross Red Hills Parkway.</p> <hr/> <p><b>Rusty Cliffs Trail</b> This trail is an unpaved hiking/biking trail with sections of single and double track trail, approximately 3 miles in length. The trail begins on the north side of Red Hills Parkway, approximately 0.25 mile east of the Bluff Street intersection, directly across from City Creek Trail. The trail does not cross Red Hills Parkway. Trail users cross Red Hills Parkway at grade to access City Creek Trail on the south.</p> <hr/> <p><b>City Creek Trail</b> This trail is an unpaved hiking/biking trail with sections of single and double track trail, approximately 2.25 miles in length. The trail begins on the south side of Red Hills Parkway (across from Rusty Cliffs Trail) and extends south to the Owens Loop Trail. Trail users cross Red Hills Parkway at grade to access the Rusty Cliffs Trail on the north and the Pioneer Hills Trailhead.</p> <hr/> <p><b>Pioneer Hills Trailhead and Pioneer Rim Trail</b> The trailhead is located on Red Hills Parkway, approximately 0.75 mile north of the Skyline Drive intersection. Facilities at the trailhead include vehicle and trailer parking. The 1.25-mile Pioneer Rim Trail originates at this trailhead and is designated as an unpaved hiking/biking single-track trail. The trail connects to the T-Bone Trail north of the Pioneer Park Trailhead and continues on to the developed area near 1000 East. The trail does not cross Red Hills Parkway. Trail users cross Red Hills Parkway at grade to access the City Creek Trail to the southwest.</p> <hr/> <p><b>T-Bone Trail</b> This 2.4-mile trail is designated as an unpaved hiking/biking single-track trail. The trail begins at the T-Bone Trailhead on Cottonwood Road and extends south to the Pioneer Park Trailhead. Within the first mile of the trail, an extension leaves the main trail, heads west, and intersects Pioneer Rim Trail east of the Pioneer Hills Trailhead. The trail does not cross Red Hills Parkway.</p> <hr/> <p><b>Owens Loop Trail</b> This trail is approximately 1 mile in length and designated as an unpaved hiking/biking trail. The trail begins on the west side of Red Hills Parkway, north of the intersection with Skyline Drive, and travels northwest on the bluff above the City. City Creek Trail and a trail exiting Brooks Canyon connect to this trail. This trail does not cross Red Hills Parkway.</p> <hr/> <p><b>Pioneer Park Trailhead</b> This trailhead is located on the north end of the picnic loop in Pioneer Park. Facilities include a parking area. The T-Bone and Pioneer Rim trails are accessed from this trailhead.</p>

Source: City of St. George, 2007f; Washington County HCP Administration, n.d.

As part of the 2004 Red Hills Parkway safety project, the Pioneer Hills Trailhead was relocated and trail underpasses were installed in three locations. Two of those underpasses were completed and one was partially completed. The underpass locations are shown in Figure 3.2-2. The incomplete underpass is located where the Rusty Cliffs Trail begins on Red Hills Parkway; only the northern half of the underpass was constructed. In this area, trail users currently cross Red Hills Parkway at grade to gain access to the trails. The completed underpasses are located just north of the Pioneer Hills Trailhead and in the Rotary parking area in Pioneer Park. The underpass north of Pioneer Hills Trailhead is functional; however, the trail connections from the trailhead and existing City Creek Trail were not made, and trail users cross the road at grade to access the trailhead. The underpass in the Rotary parking area is complete but is not functional at this time due to steep grades leading into and out of the crossing.

## Planned Facilities

There is one planned asphalt trail in the study area, the proposed Red Hills Parkway Trail. The 2006 Parks Master Plan describes the proposed Red Hills Parkway Trail as extending from Bluff Street to 1600 East for 4.5 miles. This trail would be constructed as part of the Build Alternative and is shown in Figure 3.2-2.

## Impacts

### No-Build Alternative

There would be no project-related impacts on pedestrian and bicyclist facilities under the No-Build Alternative. The pedestrian and bicyclist facilities in the project vicinity are expected to experience increased use as population and demand in the St. George area increases. The City would implement planned pedestrian and bicyclist facility improvements, including additional sidewalks, bike lanes, multiuse trails, and natural-surface trails, in accordance with the Parks Master Plan and general plan. It is unlikely that new pedestrian and bicyclist facilities would be developed because the majority of the study area is within the boundaries of the reserve. In addition, traffic volume on Red Hills Parkway would continue to increase. Access to the reserve trails, Pioneer Hills Trailhead, and Pioneer Park would become increasingly difficult, and safety issues could increase. At-grade crossings of Red Hills Parkway by trail users would become increasingly more dangerous as traffic volumes increase. Relatively high speed limits (40 mph) and short sight distances caused by undulating terrain would further increase hazards for trail users. Bicyclists on Red Hills Parkway would continue to share the existing road with vehicles. Narrow shoulders and increased traffic congestion would reduce bicyclist safety.

## Build Alternative

### Construction Impacts

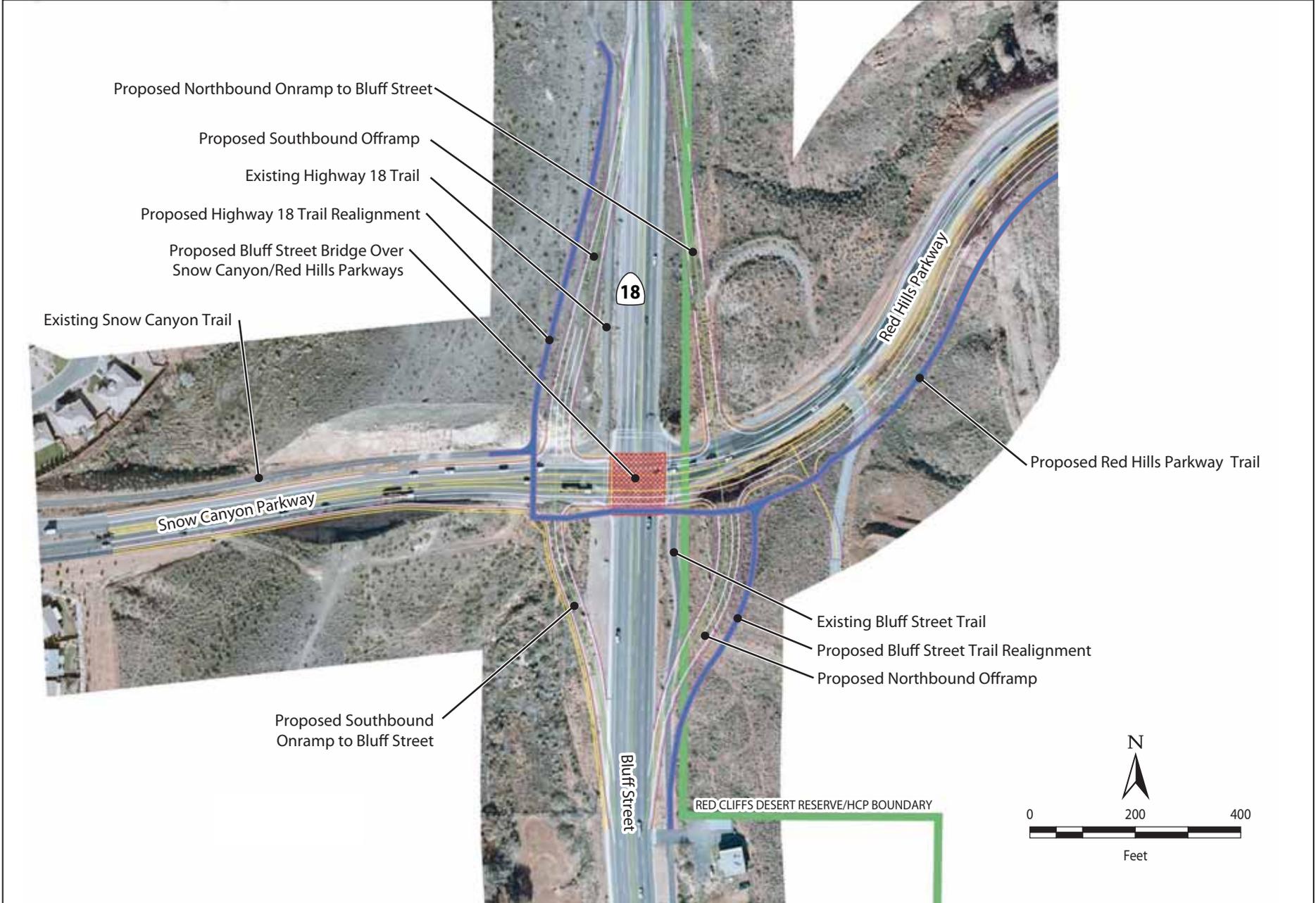
Sidewalk, curb, and gutter would be installed on the north side of Red Hills Parkway between Pioneer Park's eastern entrance and Industrial Road and on the south side of Red Hills Parkway between 900 East and Industrial Road. Most of the existing sidewalk would remain in place during construction; however, there may be temporary sidewalk closures between 900 East and Industrial Road. During construction, Red Hills Parkway would not be a desirable route for road cyclists because road surfaces may not be consistent and shoulders may be narrower than usual.

Construction of the Red Hills Parkway/Bluff Street interchange would require partial realignment and reconstruction of the Snow Canyon, Highway 18, and Bluff Street trails to accommodate the on- and off-ramps for the proposed interchange. The trails would be realigned and reconstructed in an alignment outside the interchange area, as shown in Figure 3.4-1. A detour route would be provided during construction so that trail use would not be interrupted.

Implementation of the Build Alternative would not directly affect the trails and trailheads in the reserve. During construction, access to the trails and Pioneer Hills Trailhead would be maintained to the greatest extent feasible. Short-term trail detours may be required near the road to ensure user safety. These realignments would be coordinated with, and approved by, the Washington County HCAC prior to construction. Construction of the proposed improvements would not require right-of-way from the Pioneer Hills Trailhead.

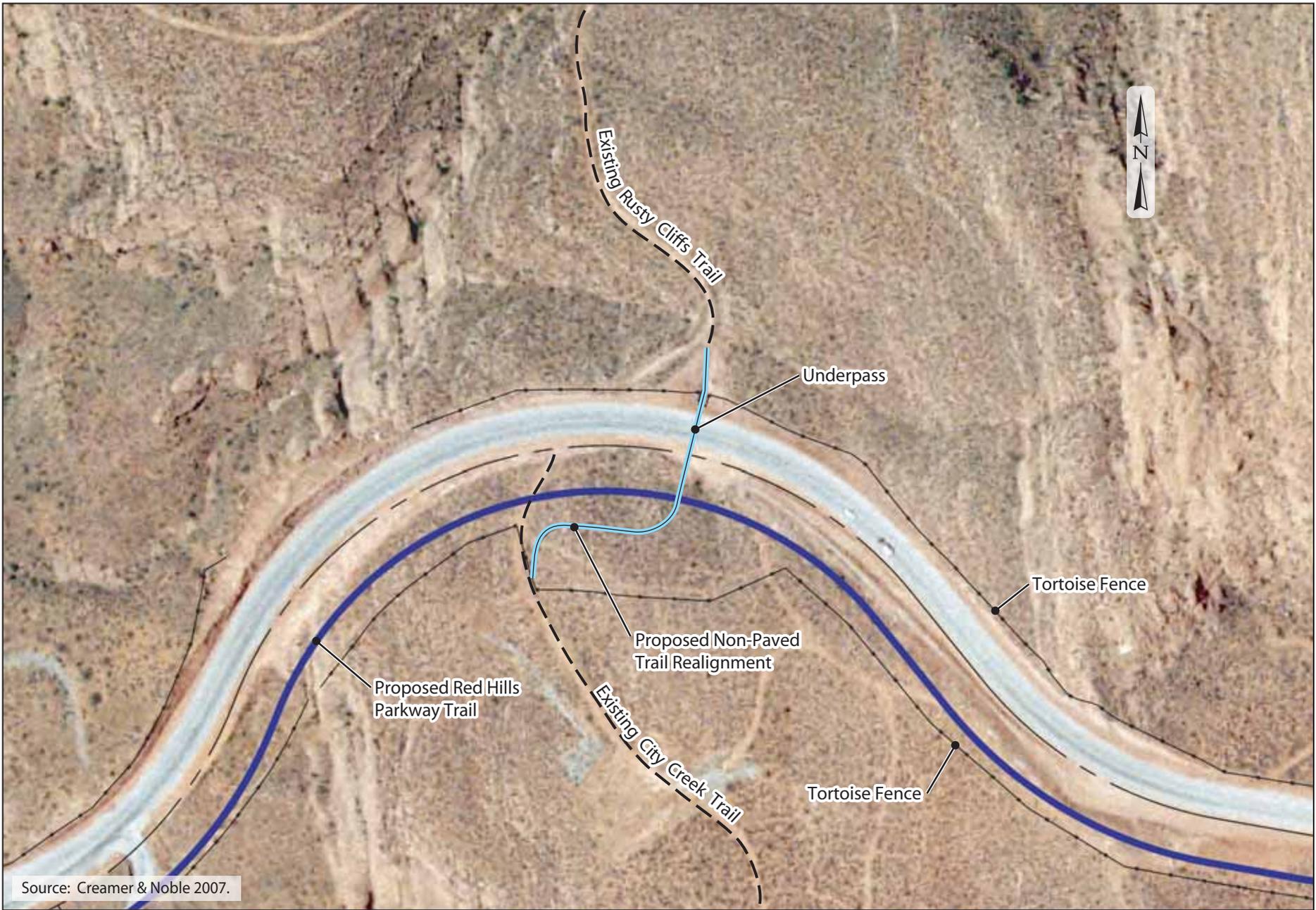
During construction, the underpass near the Rusty Cliffs Trail would be completed (see Figure 3.4-2). Approximately 100 feet of new trail would be constructed north of Red Hills Parkway to connect the existing Rusty Cliffs Trail to the underpass. Approximately 300 feet of new trail would be constructed south of Red Hills Parkway to connect the existing City Creek Trail to the underpass. Once the improvements to the underpass have been made and the new trail sections are in use, the abandoned sections of trail would be reclaimed. Reclamation of the abandoned sections of trail would occur in accordance with provisions contained in the reclamation plan (see Section 3.10, Sensitive Species).

During construction, the underpass north of the Pioneer Hills Trailhead would be lengthened and trail connections constructed. A 400-foot section of new trail would be constructed on the east side of Red Hills Parkway from the Pioneer Hills Trailhead to the underpass. This new section of trail would be located west of the existing tortoise exclusionary fence. Construction of a new trail section would also be required to connect the underpass to the existing City Creek Trail. This connection would be made utilizing the proposed Red Hills Parkway Trail located along the west side of Red Hills Parkway. Approximately 400 feet south of the underpass, an unpaved section of trail would leave the proposed Red Hills Parkway Trail to connect to the existing City Creek Trail. The new section of trail, approximately 700 feet in length, would be located on the west side of the



05801.05 EA (3-29-07)

**Figure 3.4-1**  
**Realignment of City of St. George Trails**



05801.05 EA (4-27-07)

Source: Creamer & Noble 2007.

**Figure 3.4-2**  
**City Creek Trail Crossing**

existing tortoise exclusionary fence. This trail detail is depicted in Figure 3.4-3. Once the improvements to the underpass have been made and the new trail sections are in use, the abandoned sections of trail would be reclaimed as described previously.

The underpass in the Rotary parking area in Pioneer Park is complete but is not functional due to steep grades leading in and out of the underpass. During construction, the underpass would be lengthened and regraded to make this underpass functional for trail users.

## Operational Impacts

Implementation of the Build Alternative would include construction of bike lanes within the shoulders of the road from Bluff Street to Industrial Road. The proposed bike lanes would be 6 to 8 feet wide and designated by pavement striping. The designated bike lanes would provide bicyclists an alternative route from Bluff Street to downtown St. George.

Implementation of the Build Alternative would also include construction of the Red Hills Parkway Trail. The trail, which would accommodate two-directional travel, would be paved, 10 feet wide, and separated from the road. Between Bluff Street and Skyline Drive, the proposed trail would be located on the south and west sides of the Red Hills Parkway alignment. At Skyline Drive, the proposed trail would cross at a signalized crosswalk, then continue to the existing trail underpass, connecting to the Rotary parking area in Pioneer Park. A section of the trail would continue beyond the underpass on the south side of Red Hills Parkway for approximately 100 feet, terminating at the overlook. The main access point and proposed Red Hills Parkway Trailhead would be located in the Rotary parking area. The trail would be ADA compliant. The proposed trail would connect to the Bluff Street Trail, Pioneer Hills Trailhead, City Creek Trail, and Owens Loop Trail.

The proposed multiuse trail and bike lane improvements included in the Build Alternative are consistent with the City of St. George's General Plan, the 2006 Parks Master Plan, and the Traffic and Transportation Master Plan, with some exceptions. The 2006 Parks Master Plan describes the proposed Red Hills Parkway Trail as extending from Bluff Street to 1600 East for 4.5 miles. As described above, the trail terminates at Pioneer Park Trailhead and is approximately 2.25 miles in length. The trail terminates at this location to minimize the right-of-way width required between Skyline Drive and 1000 East. Eliminating the separated multiuse trail minimizes impacts related to cut and fill along the bluff and reduces impacts to Pioneer Park, Skyline Pond, and Temple Springs Park. The proposed bike lanes would extend to Industrial Road, and sidewalk would be provided on the north side of the road between the eastern entrance to Pioneer Park and Industrial Road, which would allow bicyclists and pedestrians to continue their route east of Pioneer Park. This configuration was determined based on coordination with the director of the St. George Leisure Services Department. Construction of the multiuse trail extension between Industrial Road and 1600 East may occur as part of a future project, but it would not be located within the Red Hills Parkway project study area.

Improvements resulting from implementation of the Build Alternative, including construction of a multiuse trail, designated bike lanes, underpass improvements, and additional sidewalks, would improve connectivity and the safety of pedestrian and bicyclist facilities within the study area.

The Build Alternative would also provide connections among the Snow Canyon Trail, Highway 18 Trail, Bluff Street Trail, Pioneer Park Trail, and reserve trails, which would increase recreational facility connectivity and provide additional opportunities for recreation throughout the northern portion of the City.

## **Cumulative Effects**

The Build Alternative would have beneficial cumulative impacts because it would help fulfill provisions included in the City of St. George General Plan and 2006 Parks Master Plan. It would implement connections to major destinations, such as parks and open space corridors, through a system of integrated pedestrian and bicycle facilities that would encourage healthy lifestyles (City of St. George 2006a).

# **Avoidance, Minimization, and/or Mitigation Measures**

## **No-Build Alternative**

No mitigation is necessary.

## **Build Alternative**

### **Mitigation Measure PED-1: Minimize Impacts on Pedestrian and Bicyclist Facilities**

The following measures will be implemented to minimize impacts on pedestrian and bicyclist facilities.

- Temporary detours for sidewalks and trails will be provided during construction to maintain continuity and access to existing facilities. Signs will be used to direct pedestrians and bicyclists around the construction activities.
- Construction of connections to the reserve trails and improvements to the underpasses will be completed prior to abandonment of the existing trail sections. Reclamation of the abandoned trail sections will occur in accordance with provisions contained in the reclamation plan (see Section 3.10, Sensitive Species).



**Figure 3.4-3**  
**Proposed Route for Pioneer Hills Trailhead**

## 3.5 Air Quality

This section provides the regulatory context governing air quality and describes the existing air quality conditions in the St. George area. This section then analyzes the potential impacts of the No-Build and Build Alternatives on air quality and identifies mitigation measures to minimize impacts.

### Regulatory Setting, Studies, and Coordination

The two agencies that regulate ambient air quality in the project vicinity are the U.S. Environmental Protection Agency (EPA) and Utah Division of Air Quality (UDAQ). These agencies establish and enforce regulations that govern outdoor air pollutant concentrations and contaminant emissions from air pollution sources. The EPA and UDAQ regulations are similar in stringency; however, each agency has established its own standards. Unless the state or local jurisdiction has adopted more stringent standards, the EPA standards apply.

### Ambient Air Quality Standards

The Clean Air Act (CAA), amended in 1990, requires EPA to set National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) for pollutants considered harmful to public health and the environment. The NAAQS were established as the official ambient air quality standards for Utah. These standards include both primary standards to protect public health and secondary standards to protect public welfare (such as protecting property and vegetation from the effects of air pollution). Standards have been established for carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), particulate matter that is 10 microns in diameter or smaller (PM<sub>10</sub>), particulate matter that is 2.5 microns in diameter or smaller (PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>), and ozone. The NAAQS for these six criteria pollutants are listed in Table 3.5-1.

### Attainment Status for Washington County

Data from EPA and UDAQ monitoring stations collected over several years assist EPA and UDAQ in determining if regions have met attainment or nonattainment status for regulated air pollutants. Attainment status indicates that air quality in an area meets the NAAQS, and nonattainment status indicates that air quality in an area does not meet those standards. Regions previously designated as nonattainment areas that have demonstrated consistent improvements in air quality have been reclassified as maintenance areas, requiring approval of maintenance plans by UDAQ.

Washington County, the area in which the proposed project would be located, has been designated an attainment area for all regulated air pollutants.

**Table 3.5-1. National Ambient Air Quality Standards**

Pollutant	Primary Standards	Secondary Standards
<i>CO</i>		
8-hour average <sup>1</sup>	9 ppm	No standard
1-hour average <sup>1</sup>	35 ppm	No standard
<i>NO<sub>2</sub></i>		
Annual average	0.053 ppm	0.053 ppm
<i>PM<sub>10</sub></i>		
Annual average <sup>2</sup>	50 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
24-hour average <sup>1</sup>	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
<i>PM<sub>2.5</sub></i>		
Annual average <sup>3</sup>	15 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
24-hour average <sup>4</sup>	65 µg/m <sup>3</sup>	65 µg/m <sup>3</sup>
<i>SO<sub>2</sub></i>		
Annual average	0.03 ppm	No standard
24-hour average <sup>1</sup>	0.14 ppm	No standard
3-hour average <sup>1</sup>	No standard	0.50 ppm
<i>Ozone</i>		
8-hour average <sup>5</sup>	0.08 ppm	0.08 ppm

Notes:

ppm = parts per million; µg/m<sup>3</sup> = micrograms per cubic meter.

<sup>1</sup> Not to be exceeded more than once per year.

<sup>2</sup> To attain this standard, the 3-year average of the weighted annual mean PM<sub>10</sub> concentrations, at each monitor within an area, must not exceed 50 µg/m<sup>3</sup>.

<sup>3</sup> To attain this standard, the 3-year average of the weighted annual mean PM<sub>2.5</sub> concentrations, from single or multiple community-oriented monitors, must not exceed 15.0 µg/m<sup>3</sup>.

<sup>4</sup> To attain this standard, the 3-year average of the 98<sup>th</sup> percentile of 24-hour concentrations, at each population-oriented monitor within an area, must not exceed 65 µg/m<sup>3</sup>.

<sup>5</sup> To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations, measured at each monitor within an area over each year, must not exceed 0.08 ppm.

Source: U.S. Environmental Protection Agency 2006a.

## Transportation Conformity

Federally funded road improvement projects proposed for construction within nonattainment or maintenance areas are subject to the transportation conformity regulations specified under 40 CFR Part 93, Subpart A. The project is in a region that EPA has designated an attainment area for all air pollutants. Therefore, the transportation conformity regulations do not apply to the project; neither a regional transportation conformity analysis nor a project-level hot-spot analysis is required.

## Air Quality Regulations for Construction Emissions

Fugitive dust emissions from construction activities are subject to Utah Administrative Code R307-205 (Emission Standards: Fugitive Emissions and Fugitive Dust). R307-205 applies to any activity or man-made condition capable of generating fugitive dust within attainment areas.

Temporary portable stationary sources would emit small quantities of particulate and combustion emissions (CO, volatile organic compounds [VOCs], and oxides of nitrogen [NO<sub>x</sub>]). All stationary construction equipment requires an operating permit from UDAQ called an Approval Order and is required to use the best available control technology (BACT) to minimize emissions. The permit requirements are specified in Utah Administrative Code Rule 307-401 (Permit: New and Modified Sources).

## Guidance on Mobile-Source Air Toxic Analysis

Toxic air pollutants, also known as hazardous air pollutants (HAPs), are known to cause or are suspected of causing cancer or other serious health ailments. The CAA amendments of 1990 listed 188 HAPs and addressed the need to control toxic emissions from modes of transportation. In 2002, the EPA developed a list of 21 mobile-source air toxics (MSATs), of which, a subset of six toxics were identified as having the greatest influence on health. This subset includes benzene 1 and 3, butadiene, formaldehyde, acrolein, acetaldehyde, and diesel particulate matter (DPM).

Unlike the criteria pollutants, the NAAQS have not been identified for toxics. Therefore, there are no established criteria for determining when MSAT emissions should be considered significant, as defined by NEPA. In February 2006, FHWA provided interim guidance on how MSATs should be addressed in NEPA documents for highway projects.

The FHWA developed a three-tiered approach for analyzing MSATs in NEPA documents. The three categories of project-specific analysis are as follows:

- no analysis is required for projects with no potential for meaningful MSAT effects,
- qualitative analysis is required for projects with low potential MSAT effects, or
- quantitative analysis is required to differentiate alternatives for projects with higher potential MSAT effects (FHWA 2006).

The second category, qualitative analysis for projects with low potential MSAT effects, applies to the proposed action. The forecast MSAT effects are discussed in the Build Alternative Operational Impacts section.

## Affected Environment

### Project Vicinity Meteorology

The proposed project is located in the high desert at an elevation of 2,800 feet amsl, within the Virgin River Valley. The Pine Valley Mountains (10,000 feet amsl) are located to the northeast, and the Beaver Dam Mountains (7,000 feet amsl) are located to the southwest. The climate of Washington County is characterized as semi-arid desert with hot, dry summers and warm winters. High atmospheric pressure results in clear skies for much of the year.

The average annual temperature in the project vicinity is approximately 61 degrees Fahrenheit. The project vicinity experiences an average winter temperature of approximately 42 degrees Fahrenheit and an average summer temperature of 81 degrees Fahrenheit. Total precipitation in the analysis area averages approximately 8 inches annually. Precipitation occurs mostly during the winter. The average wind speed recorded at the St. George Airport Monitoring Station is 7.9 mph in summer and 3.5 mph in winter. The prevailing wind direction, as recorded at the St. George Airport Monitoring Station, is predominantly from the west in the summer and from the east in the winter. (Western Regional Climate Center 2006)

### Pollutants and Their Effects

This air quality study focuses on five pollutants that are most commonly monitored and regulated (i.e., criteria pollutants): CO, NO<sub>2</sub>, particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), SO<sub>2</sub>, and ozone. Since ozone, a photochemical oxidant, is not directly emitted into the air from sources, emissions of ozone precursors, NO<sub>x</sub> and VOCs, are regulated with the aim of reducing ozone formation in the lowermost region of the troposphere. The principal sources and effects of these pollutants are discussed in Table 3.5-2. The MSATs have also been included in this analysis because vehicles traveling along the corridor produce mobile-source emissions.

### Regional Air Pollutant Emissions

The EPA compiles annual air pollutant emission inventory reports for each county. The reports list aggregate annual emissions of criteria air pollutants from both point sources (e.g., facilities) and area sources (e.g., small businesses, residences, wildfires, vehicles, etc.) (U.S. Environmental Protection Agency 2006b). The 2001 regional air pollutant emissions in Washington County are listed in Table 3.5-3. As shown in the table, mobile-source emissions from on-road and off-road vehicles are the dominant air pollutant emissions source in Washington County.

**Table 3.5-2. Regulated Pollutants and Their Effects**

Name	Source	Health Effects	Environmental Effects
CO: a clear, colorless, odorless gas	Burning gasoline, wood, natural gas, coal, oil, etc.	Reduces ability of blood to bring oxygen to body cells and tissues; cells and tissues need oxygen to work. CO may be particularly hazardous to people who have heart or circulatory (blood vessel) problems and people who have damaged lungs or breathing passages.	
NO <sub>2</sub> (one component of NO <sub>x</sub> ): a smog-forming chemical	Burning gasoline, natural gas, coal, oil, etc. Cars and trucks are important sources of NO <sub>2</sub> .	Lung damage, illnesses related to breathing passages and lungs (respiratory system).	NO <sub>2</sub> is an ingredient of acid rain (acid aerosols), which can damage trees and lakes. Acid aerosols can form regional haze.
Particulate matter (PM <sub>10</sub> , PM <sub>2.5</sub> ): dust, smoke, soot	Burning wood, diesel, and other fuels; industrial plants; agriculture (plowing, burning fields); unpaved roads.	Nose and throat irritation, lung damage, bronchitis, early death.	Particulates are the main source of haze, which reduces visibility.
SO <sub>2</sub>	Burning coal and oil, especially high-sulfur coal from the eastern United States; industrial processes (paper, metals).	Breathing problems; may cause permanent damage to lungs.	SO <sub>2</sub> is an ingredient in acid rain (acid aerosols), which can damage vegetation and surface water resources. Acid aerosols can also form regional smog conditions.
Ozone: a chief component of smog	Chemical reaction of pollutants, VOCs and NO <sub>x</sub> .	Breathing problems, reduced lung function, asthma, eye irritation, nasal congestion, reduced resistance to colds and other infections; may accelerate aging of lung tissue.	Ozone can damage vegetation and surface water resources; can contribute to regional smog conditions.
VOCs: smog-formers	VOCs are released from burning fuel (gasoline, oil, wood, coal, natural gas, etc.), solvents, paints, glues, and other products used in the workplace or at home. Automobiles are primary sources of VOCs. VOCs include chemicals such as benzene, toluene, methylene chloride, and methyl chloroform.	Many VOCs can cause serious health problems such as cancer and other diseases.	In addition to ozone (smog) effects, some VOCs such as formaldehyde and ethylene may harm vegetation.

Name	Source	Health Effects	Environmental Effects
MSATs	Compounds that are present in gasoline and emitted to the air when it evaporates or passes through an engine unburned.  Six priority MSATs identified by EPA are: benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene.	Some air toxics have been proven to cause cancer in humans. However, most air toxics are identified through laboratory experiments in which animals receive very high doses of the compound being studied. Humans rarely breathe such high doses, but lower exposures may still pose risks.	Photochemical smog; DPM can contribute to regional haze.

Source: UDAQ 2006; U.S. Environmental Protection Agency 1994.

**Table 3.5-3.** Washington County Regional Emissions by Category (2001)

Category	Area-Source and Mobile-Source Emissions (tons per year)						Point-Source Emissions (tons per year)					
	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	S <sub>02</sub>	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	S <sub>02</sub>	VOC
Fuel Comb., Elec. Util.	0	0	0	0	0	0	30	171	16	16	2	7
Fuel Comb., Industrial	5	35	2	1	21	0	13	45	2	2	5	5
Fuel Comb., Other	1,520	80	209	152	80	340	6	13	1	1	1	2
Petroleum and Related Industries	0	0	0	0	0	0	2	5	0	0	4	5
Other Industrial Processes	12	0	30	28	0	14	0	0	1	0	0	0
Solvent Utilization	0	0	0	0	0	798	0	0	0	0	0	0
Storage and Transport	0	0	0	0	0	314	1	2	6	2	0	0
Waste Disposal and Recycling	184	13	79	73	3	62	0	0	0	0	0	11
Highway Vehicles	27,539	2,934	82	62	108	1,962	0	0	0	0	0	0
Off-Highway	13,587	603	70	64	74	1,350	0	0	0	0	0	0
Miscellaneous	8,144	184	14,098	3,109	45	433	0	0	4	1	0	0
<b>Grand Total</b>	<b>50,991</b>	<b>3,849</b>	<b>14,570</b>	<b>3,489</b>	<b>331</b>	<b>5,273</b>	<b>52</b>	<b>236</b>	<b>30</b>	<b>22</b>	<b>12</b>	<b>30</b>

Source: U.S. Environmental Protection Agency 2006b.

## Ambient Air Quality Data

The EPA and UDAQ maintain and operate a network of ambient air monitoring stations throughout the state. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the NAAQS.

Only one ambient monitoring station is located within the project vicinity in the City of St. George (126 East Tabernacle Street, approximately 0.5 mile from Red Hills Parkway). St. George and the Washington County area have been designated attainment areas for all regulated air pollutants. The most recent air quality data recorded from the station was from 1996 to 1998 for CO, PM<sub>10</sub>, and ozone, as presented in Table 3.5-4. Since 1996, no data have been recorded for NO<sub>2</sub>, SO<sub>2</sub>, and PM<sub>2.5</sub>. These data indicate that air pollutant concentrations in the analysis area have been below the NAAQS.

**Table 3.5-4.** Ambient Air Pollutant Concentrations in St. George (126 E. Tabernacle St. Station)

Pollutant Standards	1996	1997	1998
<i>CO</i>			
Maximum 1-hour concentration (ppm)	5.2	4.9	No Data
Maximum 8-hour concentration (ppm)	3.4	2.7	No Data
<i>Number of Days Standard Was Exceeded</i>			
NAAQS (1-hour) $\geq$ 35 ppm	0	0	No Data
NAAQS (8-hour) $\geq$ 9.0 ppm	0	0	No Data
<i>PM<sub>10</sub></i>			
Maximum 24-hour concentration ( $\mu\text{g}/\text{m}^3$ )	85	49	43
Annual average concentration ( $\mu\text{g}/\text{m}^3$ )	25	22	19
<i>Number of Days Standard Was Exceeded</i>			
NAAQS (24-hour) $>$ 150 $\mu\text{g}/\text{m}^3$	0	0	0
NAAQS (annual) $>$ 50 $\mu\text{g}/\text{m}^3$ exceeded	0	0	0
<i>Ozone</i>			
Maximum 1-hour concentration (ppm)	0.086	0.083	No Data
Maximum 8-hour concentration (ppm)	0.083	0.077	No Data
<i>Number of Days Standard Was Exceeded</i>			
NAAQS (8-hour) $>$ 0.08 ppm	0	0	No Data
Notes:			
ppm = parts per million; $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.			
Source: U.S. Environmental Protection Agency 2006c.			

## Impacts

### No-Build Alternative

Under the No-Build Alternative Red Hills Parkway would remain a two-lane road between Industrial Road and Bluff Street. The 2030 no-build scenario incorporates reasonable, minor enhancements that improve operations on Red Hills Parkway without expanding the number of travel lanes. The intersection of Red Hills Parkway and Skyline Drive would be realigned in 2007 to improve safety. Construction emissions associated with that project would be minor, short-term, and would comply with Utah Administrative Code R307-205 to minimize fugitive dust. These emissions would not substantially contribute to exceedance of any air quality standards. Under the No-Build Alternative average daily traffic on Red Hills Parkway would increase to between 26,300 and 33,000 vehicles per day. This would be a substantial increase over the existing conditions. Red Hills Parkway would experience severe traffic congestion, which would contribute to increased vehicle emissions.

### Build Alternative

#### Construction Impacts

Construction of the Build Alternative would be completed in accordance with UDAQ regulations to minimize air quality emissions during construction. Information on each construction element is provided below.

#### Fugitive Dust and Particulates

Construction of the Build Alternative would generate temporary fugitive dust emissions. Fugitive dust emissions would be generated mainly by wind blowing across exposed soil surfaces during grading operations and the movement of construction equipment over unpaved areas. Another potential source of fugitive dust would be trackout of soil, sediment, and mud onto public roads during construction. Fugitive dust emissions during construction would be temporary and localized. Mitigation Measure AQ-1 would minimize fugitive dust emissions.

#### Odors

Asphalt installation and paint striping operations would emit small amounts of odor-causing compounds. Odor impacts would be temporary and limited to the immediate vicinity of the construction site. None of the land uses that occur along the road would be impaired due to construction-period odors.

#### Tailpipe Emissions from Construction Equipment

Mobile construction equipment and portable stationary engines would emit air pollutants, including NO<sub>x</sub>, CO, and PM<sub>10</sub>. These emissions would be temporary and localized. It is unlikely that the temporary emissions would cause ambient air pollutant concentrations in the project vicinity to approach the NAAQS limits.

### **Emissions from Temporary Portable Stationary Sources**

Temporary portable stationary sources, such as an asphalt batch plant or a concrete batch plant, would emit small amounts of particulate, VOCs from asphalt processing, and combustion emissions (VOC, CO, and NO<sub>x</sub>). Mitigation Measure AQ-2 would minimize emissions from stationary construction equipment.

### **Operational Impacts**

Under the Build Alternative, future traffic volumes along Red Hills Parkway would increase compared to volumes associated with the No-Build Alternative. However, as described below, no air quality impacts are expected.

#### **CO Analysis**

Red Hills Parkway is located in St. George, which is an attainment area for CO. While there is no requirement for additional CO hot-spot analysis under transportation conformity rules, NEPA requires demonstration that the proposed action would not cause an exceedance of the NAAQS. Exhaustive sensitivity testing done for the UDOT Air Quality Hot-Spot Manual indicates that ADT volumes in the range of 30,000 (existing) to 50,000 (design year) do not cause CO levels to increase to the point of violating the NAAQS 1-hour or 8-hour standards. Existing ADT volumes along Red Hills Parkway and anticipated future design-year volumes are below those thresholds. Therefore, no existing or future violation of the CO standard is anticipated.

#### **PM<sub>10</sub> Analysis**

Red Hills Parkway is located in St. George, which is an attainment area for PM<sub>10</sub>. Therefore, there is no requirement for additional PM<sub>10</sub> hot-spot analysis. Operation of the Build Alternative would not substantially increase PM<sub>10</sub> emissions. Typical street maintenance performed by the City (e.g., periodic street sweeping) would minimize fugitive dust emissions, and no existing or future violation of the PM<sub>10</sub> standard is anticipated.

#### **MSAT Analysis**

The EPA has issued a number of regulations that will dramatically decrease MSATs through cleaner fuels and cleaner engines. EPA's MSAT rules were issued under the authority of Section 202 of the Clean Air Act. In its rules, EPA examined the impacts of existing and newly promulgated mobile-source control programs. These programs and regulations include the reformulated gasoline program, national low-emission vehicle standards, Tier 2 motor vehicle emissions standards and gasoline sulfur-control requirements, proposed heavy-duty engine and vehicle standards, and on-highway diesel fuel sulfur-control requirements.

According to FHWA analysis, EPA's ongoing programs will reduce the nationwide MSAT emission factor for individual vehicles (expressed as tons of MSAT per million VMT) from the current value of 150 tons MSAT/million VMT down to only 31.5 tons/million VMT by 2030 (FHWA 2006). For the Red Hills Parkway project the decrease in the emission factor for individual vehicles would more than offset the forecast increase in traffic volumes. Regional MSAT emissions along the corridor are forecast to decrease for all alternatives between today and 2030. The estimated current and future MSAT emissions are shown in Table 3.5-5.

**Table 3.5-5.** Forecast MSAT Emissions Along Red Hills Parkway

Scenario	VMT Per Day	MSAT Emission Factor (tons/million VMT)	MSAT Emissions (Tons/Day)
Existing 2006	49,275	150	7.4
2030 No-Build Alternative	116,334	31.5	3.7
2030 Build Alternative	175,076	31.5	5.5

Sources:  
VMT projections based on Fehr and Peers, 2007.  
MSAT emission factors based on FHWA, 2006.

### Cumulative Effects

The study area for the cumulative air quality analysis is Washington County, due to the regional nature of emissions. Washington County is currently designated as an attainment area for all criteria pollutants. The predominant air quality factors influencing air quality in Washington County have historically been and will likely continue to be the stationary- and mobile-source emissions associated with continued development, all of which would occur with or without implementation of the proposed project. As described above, the proposed project would result in a minor increase in emissions during construction and operation. The proposed project is in conformity with state air quality goals and would not have a considerable contribution to any criteria pollutant exceedances in Washington County.

## Avoidance, Minimization, and/or Mitigation Measures

### No-Build Alternative

No minimization or mitigation measures would be required.

### Build Alternative

The following measures would be implemented to reduce air quality impacts.

#### Mitigation Measure AQ-1: Minimize Fugitive Dust Emissions

The City of St. George and/or its contractors will implement UDAQ regulations (Utah Administrative Code R307-205) during construction, which require all construction operations to employ best management practices (BMPs) to minimize

fugitive dust emissions and prevent soil, sediment, and mud trackout onto public roads.

### **Mitigation Measure AQ-2: Implement Best Available Control Technology to Reduce Construction Emissions from Stationary Equipment**

The City of St. George and/or its contractors will obtain an operating permit for all stationary construction equipment from UDAQ (Utah Administrative Code Rule 307-401) and will use BACT to minimize emissions.

### **Mitigation Measure AQ-3: Implement Construction Emissions Controls**

The City of St. George will implement measures to minimize pollutant emissions, dust, and odors. Typical BACT used to minimize air quality impacts during construction include the following:

- maintaining the engines of construction equipment according to manufacturers' specifications,
- minimizing idling of equipment while the equipment is not in use, and
- installing emission controls on temporary portable stationary construction equipment.



## 3.6 Noise

This section includes a discussion of federal and state noise regulations that apply to the proposed action, measurements of existing sound levels at representative sensitive receiving locations, and noise impact and mitigation modeling based on expected future traffic conditions. The noise impact and mitigation modeling used to determine impacts is described in more detail in the Red Hills Parkway Project Noise Technical Report.

### Characteristics of Noise

Noise is defined as unwanted sound that adversely affects people at various locations, such as residential yards, parks, or schoolyards. Sound-level meters measure the air pressure fluctuations caused by sound waves. The decibel (dB) scale used to describe sound is logarithmic, which accounts for the wide range of audible sound intensities.

Most sounds consist of a broad range of sound frequencies. Several frequency-weighting schemes have been used to develop composite decibel scales that approximate the way the human ear responds to noise levels. The weighting of noise levels at different frequencies accounts for human perception of noise, with the A-weighted decibel (dBA) scale being the most widely used for this purpose. Typical A-weighted noise levels for various types of sound sources are summarized in Table 3.6-1.

Noise levels that vary with time are often described in terms of the equivalent sound level ( $L_{eq}$ ), or the average noise level. In a stated period of time, the  $L_{eq}$  contains the same acoustic energy as the time-varying sound level during the same time period.

Sound levels from different noise sources cannot be added directly to obtain a combined noise level. Instead, the combined noise level produced by multiple sources is calculated logarithmically. For example, if one bulldozer produces a noise level of 80 dBA, then two bulldozers would generate a combined noise level of 83 dBA, not 160 dBA.

The ability of people to discern new noise sources, when added to existing background noise, depends on both the magnitude and nature of the new noise and background noise. If the new noise source is similar in character to the background noise (e.g., an increase in traffic noise compared to existing traffic noise), then most people would be unable to discern a noise increase of less than 3 dBA. However, if the new noise is of a different type from the background noise (e.g., backup beepers in an otherwise quiet neighborhood), then most people can easily discern the new noise source even if it increases the overall noise level by less than 1 dBA.

**Table 3.6-1.** Typical A-Weighted Decibel Sound Levels

Sound Source	dBA	Typical Response
Carrier deck jet operation	140	
Limit of amplified speech	130	Painfully loud
Jet takeoff (200 feet)	120	Threshold of feeling and pain
Auto horn (3 feet)		
Riveting machine	110	
Jet takeoff (2,000 feet)		
Shout (0.5 foot)	100	Very annoying
New York subway station		
Heavy truck (50 feet)	90	Hearing damage (8-hour exposure)
Pneumatic drill (50 feet)		
Passenger train (100 feet)	80	Annoying
Helicopter (in flight, 500 feet)		
Freight train (50 feet)		
Freeway traffic (50 feet)	70	Intrusive
Air-conditioning unit (20 feet)	60	
Light auto traffic (50 feet)		
Normal speech (15 feet)	50	Quiet
Living room	40	
Bedroom		
Library		
Soft whisper (15 feet)	30	Very quiet
Broadcasting studio	20	
	10	Just audible
	0	Threshold of hearing

Source: Jones & Stokes, 2006.

## Regulatory Setting, Studies, and Coordination

### Federal and State Traffic Noise Regulations

The Federal Noise Control Act of 1972 (Public Law 92-574) requires all federal agencies to administer their programs in a manner that promotes an environment free from noises that may jeopardize public health or welfare.

FHWA has adopted criteria for evaluating noise impacts associated with federally-funded or state-funded highway projects and determining whether such impacts are sufficient to justify the funding of noise abatement. These criteria are specified in Procedures for Abatement of Highway Traffic Noise and Construction Noise (23 CFR 772). The FHWA Noise Abatement Criteria (NAC) are summarized in Table 3.6-2.

UDOT has adopted the FHWA NAC, which are specified in Utah Administrative Code R930-3 (Highway Noise Abatement) and UDOT Noise Abatement Policy (UDOT 2006). According to UDOT policy, noise abatement is considered when a noise level resulting from a project comes within 2 dBA of the FHWA NAC (see Table 3.6-2). Additionally, a 10 dBA increase over existing noise levels is considered a substantial increase under UDOT policy. Thus, project implementation would have a noise impact if either of the following occurred:

- an increase in worst-hour traffic noise of 10 dBA or greater (Build Alternative design year [2030] minus existing year [2006]), or
- design-year (2030) worst-hour traffic noise levels resulting from the Build Alternative come within 2 dBA of the FHWA NAC (see Table 3.6-2).

**Table 3.6-2.** FHWA and UDOT Noise Abatement Criteria

Activity Category	FHWA NAC L <sub>eq</sub> (dBA)	UDOT NAC L <sub>eq</sub> (dBA)	Description of Activity Category
A	57 (exterior)	55 (exterior)	Lands where serenity and quiet are of extraordinary significance, serving an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 (exterior)	65 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals
C	72 (exterior)	70 (exterior)	Developed lands, properties, or activities not included in categories A or B above
D	—	—	Undeveloped lands
E	52 (interior)	50 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Source: 23 CFR 772, UDOT 2006.

## UDOT Criteria for Noise Abatement

According to UDOT noise abatement policy, if a noise impact is identified, the following abatement measures may be considered:

- traffic management measures (e.g., signage that restricts the use of compression brakes or reduces speed limits);
- alteration of horizontal and vertical alignments;
- construction of noise barriers within UDOT rights-of-way;
- pavement surface considerations; and
- noise insulation for public-use or nonprofit institutional structures.

UDOT policy stipulates that noise mitigation shall be implemented only if it is both feasible and reasonable. A number of factors go into the determination of whether noise abatement measures are reasonable and feasible as a means of abating noise impacts, including

- noise abatement benefits;
- land use and zoning;
- engineering, safety, and maintenance; and
- cost of abatement.

For a noise barrier to be considered acoustically feasible, it must be able to be constructed without adversely affecting either the structural integrity of the roadway or sight distances along curves. Furthermore, the noise barrier must provide a 5 dBA reduction for a simple majority of front-row (adjacent) receivers; efforts must also be made to attain a 10 dBA or greater reduction in sound levels at the first row of receivers.

Once the construction of a noise barrier has been determined to be feasible, the proponent determines whether construction of the barrier is reasonable by considering the following criteria.

- The unit cost effectiveness of constructing a noise barrier (expressed as construction cost per benefited receiver) must be less than the range of values specified by UDOT. A benefited receiver is defined by UDOT as a receiver for which a noise wall provides at least 5 dBA of noise reduction.
- A total of 75 percent of the affected front-row receivers and 67 percent of the affected residents/landowners overall (including front-row receivers) who would receive a minimum reduction of 5 dBA must vote in favor of the noise abatement.

## Noise Regulations for Construction Noise

Quantitative restrictions on construction noise are not defined by Utah Administrative Code, Washington County Code, or St. George City Code. The only regulation related to construction noise is a qualitative “nuisance standard” provided by City Code 4-2-3 (Enumeration of Nuisances):

Noises: It shall be unlawful for any person to make, continue, or cause to be made or continued any loud, unnecessary, or unusual noise or any noise that annoys, disturbs, injures, or endangers the comfort, repose, health, peace, or safety of others within the limits of the city. The following acts, when prolonged, unusual, and unnatural in their time, place, and use, may be a detriment to the public health, comfort, convenience, safety, welfare, and prosperity: horns, radios, stereos, loudspeakers, yelling or shouting, exhausts, motor vehicles, drums or musical instruments, construction equipment, airplanes, or blasting (Ord., 3-19-1981).

## Affected Environment

### Land Use and Noise-Sensitive Receivers

As shown in the aerial photograph of the project vicinity (Figure 3.6-1), land uses within the Red Hills Parkway noise study area (500 feet either side of the proposed alignment, unless a receiver is shielded from the road by terrain or multiple rows of intervening structures) consist of residences at the western project limit, undeveloped and recreational lands along most of the corridor, and municipal (utility) and commercial uses along the eastern portion of Red Hills Parkway. Red Hills Parkway is elevated on a bluff that is approximately 100 to 200 feet higher than the developed land uses south of the road between Skyline Drive and 900 East. Developed land uses south of Red Hills Parkway include primarily offices and residences, but the bluff shields these land uses from road noise (see Figure 3.6-1). Most of the undeveloped land located along Red Hills Parkway has been designated for hillside, recreational, or habitat preservation purposes and is protected from development.

Noise-sensitive receivers identified within the noise study area and the represented dwelling units (DUs) for each receiver are listed in Table 3.6-3. UDOT noise abatement policy considers homes, parks, and businesses with outdoor usages within 500 feet of the road noise-sensitive receivers.

**Table 3.6-3.** Identified Noise-Sensitive Receivers

Receiver	Receiver Description	UDOT NAC (dBA)	Represented DUs
Home-1	Single-family residences (Paradise Canyon) on north side of Red Hills Parkway	65	4
Home-2	Single-family residences (Sedona Hills) on south side of Red Hills Parkway	65	3
Picnic-1	Picnic area at Pioneer Park	65	0.5*
Picnic-2	Picnic area at Skyline Pond	65	0.5*
Pool-1	Swimming pool at Roadway Inn	65	0.5*
Pool-2	Swimming pool at Travelodge	65	0.5*
Room-1	Rooms in Travelodge with windows facing Red Hills Parkway (interior)	50	14

\* Assumed six persons in the park/pond/pool during the evening peak-hour period. The usage factor is 0.25 for each person who uses the facilities 6 hours per day, 7 days per week, and 12 months per year. Assumed three average persons per dwelling unit (6 x 0.25/3 = 0.5 represented dwelling unit).

Source: Jones and Stokes, 2007.

For this assessment, noise-sensitive receivers include homes located at the western end of the study area (Home-1 and Home-2), picnic tables located at Pioneer Park and Skyline Pond (Picnic-1 and Picnic-2), and hotels located at the eastern end of the study area (Pool-1 and Pool-2). Concrete block walls have already been installed by private developers along the perimeter of the housing tracts represented by receivers Home-1 and Home-2 (Figure 3.6-1). Existing 8- to 10-foot block walls at Home-1 and 6- to 8-foot block walls at Home-2 shield traffic noise from Snow Canyon Parkway. Hotel rooms (Room-1) with windows facing Red Hills Parkway directly were considered for indoor noise impacts.

A fourplex apartment building is located on Bluff Street within the noise study area, but no window, balcony, or outdoor usage areas face Red Hills Parkway. Therefore, it is not considered a noise-sensitive receiver. Additionally, the City is in the process of acquiring this parcel to compensate for the loss of desert tortoise habitat resulting from the project; residents would be relocated prior to project construction.

Several other receivers (e.g., an RV/mobile home park, residences, two hotels, and two parks) are located south of Red Hills Parkway within the noise study area, but they are more than 200 feet south of the road and shielded from view by steep terrain (at an elevation of approximately 100 feet below the road). There is a very low potential for noise levels to increase at these locations as a result of implementation of the Build Alternative. Therefore, they are not considered noise-sensitive receivers for this study.

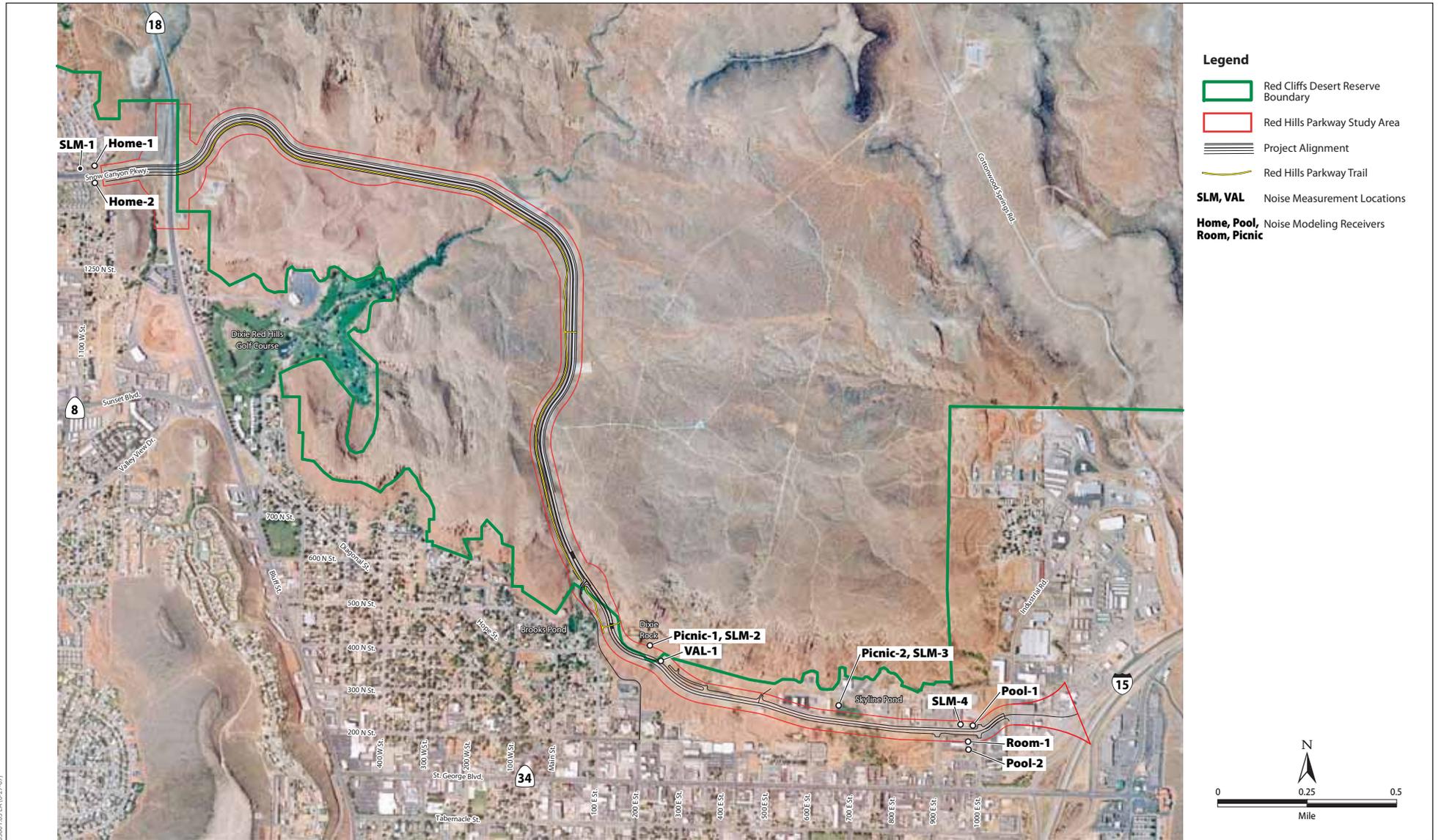
## Existing Noise Levels

Baseline noise measurements were recorded during the evening peak hours on October 24, 2006, at four noise-sensitive locations. The locations were selected to represent the noise-sensitive receptors that could be affected by the proposed action. Figure 3.6-1 shows these sound-level measurement (SLM) locations. The measured noise levels at these noise-sensitive locations are summarized in Table 3.6-4.

**Table 3.6-4.** Noise Measurements at Noise-Sensitive Locations

SLM	Location	Measured $L_{eq}$ (dBA)
SLM-1	Shared parking lot at Paradise Canyon	65.1
SLM-2	Picnic table at Pioneer Park	55.5
SLM-3	Picnic table at Skyline Pond	58.5
SLM-4	Western entrance to Roadway Inn (50 feet from the edge of pavement)	66.9

Source: Jones and Stokes, 2007.



## Traffic Noise Model

FHWA Traffic Noise Model (TNM) Version 2.5 was used to estimate the traffic noise levels at identified noise-sensitive receivers during the evening peak-hour period for the baseline year (2006) and the No-Build and Build Alternatives in the design year (2030).

The TNM accounts for the following factors to model traffic noise levels (hourly  $L_{eq}$ ) at noise-sensitive receivers for each alternative:

- traffic features, including traffic volumes, vehicle composition, travel speed, and number of traffic lanes;
- obstruction features, including buildings, noise walls, or landscaping (e.g., trees); and
- ground surfaces that could affect noise attenuation.

## Impacts

### No-Build Alternative

Table 3.6-5 shows the PM peak-hour modeled noise levels at identified receivers for the baseline year (2006) and the No-Build Alternative in 2030. Under the No-Build Alternative, traffic volumes and traffic noise along Red Hills Parkway would increase between 2006 and 2030. As listed in Table 3.6-5, model results indicate that one noise-sensitive receiver (Pool-1) would experience noise levels that exceed the NAC limit. Noise levels currently exceed the NAC limit for this receptor. However, UDOT is not required to consider noise abatement for existing roads in the absence of a road-widening project. Therefore, the Pool-1 receiver would be affected by traffic noise under the No-Build Alternative, but no noise mitigation would be warranted.

### Build Alternative

#### Construction Impacts

Construction activities would create temporary, localized noise during the construction period. The nature of the construction noise and the overall noise level would depend on the specific construction activity being conducted. Each phase of construction typically involves a different combination of construction equipment, which produces varying noise levels. Project construction would involve routine road construction activities, including removing old roadbed material, site grading, and paving. Construction of the interchange at the intersection of Bluff Street and Red Hills Parkway would involve a more intensive construction effort (e.g., driving piles and forming and pouring concrete). The types of equipment expected to be used for road construction include trucks, pavers, backhoes, bulldozers, scrapers, loaders, and pneumatic tools. Engines on mobile construction equipment generally produce the most

noticeable noise levels. Stationary construction equipment, such as generators, usually produces lower noise levels but operates continuously. Construction noise would generally occur during daytime hours. Some work could occur at night to minimize traffic disruptions and prevent damage to vehicles; however, this work would not occur within 200 feet of an occupied residence (see Mitigation Measure N-1).

## Operational Impacts

Future noise levels approaching or exceeding the NAC were predicted only at Pool-1 and Pool-2. The PM peak-hour modeled noise levels at identified receivers for the Build Alternative in 2030 are shown in Table 3.6-5. As listed in the table, the overall traffic noise increase (Build Alternative in 2030 compared to existing conditions) would be 2.5 to 5.0 dBA at the noise-sensitive receivers along Red Hills Parkway. Model results indicate that one noise-sensitive receiver (Pool-1) along Red Hills Parkway would experience noise levels that would exceed the NAC limit for the 2030 Build Alternative. That receiver is already affected under the 2006 existing conditions.

Model results indicate that the noise level at receiver Pool-2 would approach the NAC limit for the 2030 Build Alternative. However, as shown in Figure 3.6-1, the Pool-2 receiver is mostly shielded from Red Hills Parkway by the Travelodge building, and it faces another busy street (1000 East) directly. Table 3.6-5 also shows that traffic on 1000 East is the primary source of noise at Pool-2. The noise level contributed by Red Hills Parkway is only 59 dBA. Even if noise from Red Hills Parkway were completely eliminated, the noise level would still be 64 dBA due to traffic on 1000 East, which is close to the NAC of 65 dBA. Therefore, the Build Alternative would not result in a noise impact at receiver Pool-2.

Under the Build Alternative, a new interchange would be constructed at the intersection of Red Hills Parkway and Bluff Street. The proposed road alignment and interchange would increase noise levels at receivers Home-1 and Home-2 by 5.0 dBA (Build Alternative in 2030 compared to the existing condition). The modeled noise levels were below the NAC for the base year and design year. Therefore, the new interchange and Red Hills Parkway widening would not result in traffic noise impacts at Home-1 or Home-2.

The modeled noise levels at Picnic-1 and Picnic-2 and Room-1 were below the NAC for the base year and design year. Therefore, Red Hills Parkway widening would not result in traffic noise impacts at these receivers.

## Cumulative Effects

There would be no cumulative noise impact from traffic noise associated with this road project. Currently, there are no additional projects planned within 500 feet of Red Hills Parkway. Traffic noise is attenuated within 500 feet of the road; therefore, it is unlikely other regional projects would cumulatively affect noise levels.

**Table 3.6-5** Modeled PM Peak-Hour Noise Levels

Receiver	UDOT NAC (dBA)	Number of DUs	Noise Source	Peak-Hour L <sub>eq</sub> (dBA)			Noise Increases (dBA)		Number of Affected DUs
				2006 Existing	2030 No- Build	2030 Build	2030 Build Minus 2006 Existing	2030 Build Minus 2030 No-Build	
Home-1	65	4	Total noise from all roads	57.8	61.9	62.8	5.0	0.9	
Home-2	65	3	Total noise from all roads	52.1	56.3	57.0	4.9	0.7	
Picnic-1	65	0.5	Total noise from all roads	58.6	61.0	62.7	4.1	1.7	
Picnic-2	65	0.5	Total noise from all roads	58.8	61.3	62.8	4.0	1.4	
			Total noise from all roads	69.1	72.3	72.9	3.8	0.6	
			<i>Noise from Red Hills Parkway Only</i>	68.9	71.4	72.3	2.5	0.9	
Pool-1	65	0.5	<i>Noise from 1000 East Only</i>	57.8	64.9	64.5	7.1	-0.4	1
			Total noise from all roads	61.3	64.0	64.9	3.6	0.9	
			<i>Noise from Red Hills Parkway Only</i>	55.6	58.2	58.6	2.6	0.4	
Pool-2	65	0.5	<i>Noise from 1000 East Only</i>	59.7	62.7	63.8	3.0	1.1	
Room-1	50 (indoor)	14	Total noise from all roads	43.2*	46.1*	47.0 <sup>a</sup>	2.9	0.9	

\* Indoor noise level = 20 dBA attenuation by closed single-pane windows on wood-frame structure (Table 5 of FHWA 1995).

Source: Jones and Stokes, 2007.

## Avoidance, Minimization, and/or Mitigation Measures

### No-Build Alternative

No minimization or mitigation measures would be required.

### Build Alternative

The following measures would be implemented to reduce noise impacts.

#### Mitigation Measure N-1: Construction Mitigation

If construction occurs within 200 feet of a residence, the City and/or its contractor shall implement the following:

- locate stationary equipment as far as practical from sensitive receptors and
- comply with the City of St. George Nuisance Ordinance.

#### Operational Traffic Noise Abatement Analysis

The TNM modeling results indicate that the Pool-1 receiver would experience noise levels that exceed 65 dBA under the 2030 Build Alternative. According to UDOT policy, noise abatement must be considered for that affected receiver, despite the fact that noise levels currently exceed the NAC limit.

The following noise mitigation measures were qualitatively evaluated for their potential to reduce noise impacts.

- Traffic management measures include time restrictions, traffic control devices, signage for prohibition of certain vehicle types (e.g., motorcycles and heavy trucks), modified speed limits, and exclusive land designations. Red Hills Parkway already has signals near this receptor and a low speed limit (35 mph), so no further management measures are available to reduce noise levels.
- Realigning the road to reduce traffic noise is not a feasible option for the project; the horizontal and vertical alignment is defined by available right-of-way. Realigning the road to the south would affect the Travelodge and Panda Garden, requiring the businesses to relocate.
- Using a special low-noise pavement surface would not be practical or effective in a low-speed commercial area.
- Constructing noise barrier walls along the right-of-way to protect the Pool-1 receiver would not be technically feasible because the hotel requires driveway access to Red Hills Parkway. Creating breaks in the wall for access would reduce the effectiveness of the wall.

None of the noise mitigation measures above would be feasible in reducing noise impacts at Pool-1. Therefore, no noise mitigation measures are proposed. Noise levels at this receiver already exceed the NAC limits. The difference between the noise levels associated with the 2030 Build and No-Build Alternatives is only 0.6 dBA, which would not be perceptible to most people.



## 3.7 Geology, Soils, and Topography

This section identifies the geology and tectonics of the project vicinity, the types of soil and rock present, geological hazards, and topographic limitations associated with implementation of the proposed action.

### Regulatory Setting, Studies, and Coordination

Prior to implementation of the 2004 Red Hills Parkway safety project, a geotechnical report was prepared to identify variations in soil/bedrock, assess excavation requirements and pavement support characteristics, determine pavement design parameters, and evaluate the stability of slopes along the alignment. The geotechnical investigation included field exploration, laboratory testing, and engineering analysis. Information from *Geotechnical Investigation Report for Northern Corridor, St. George, Utah* (Geotechnical Investigation Report) (Landmark Testing and Engineering [Landmark] 2003) was used to prepare this section.

### Affected Environment

#### Geologic Setting

The St. George basin is situated in a transition zone where two major physiographic provinces meet (Basin and Range and the Colorado Plateau). The Basin and Range province is characterized by east/west extensional tectonics that formed long, straight, north/south-trending mountain ranges with intervening basins. Normal faulting and widespread igneous activity during the Miocene<sup>1</sup> were the dominant geologic processes. The Colorado Plateau province is a relatively coherent and tectonically stable region underlain by generally horizontal sedimentary strata. Folds, faults, igneous intrusions, and basalt flows locally disrupt the strata. The transitional zone between the two provinces includes two major faults (Hurricane and Gunlock-Grand Wash) that affect the transition from the Colorado Plateau to the Basin and Range. The St. George area lies on the intermediate block created and bounded by the Hurricane fault zone on the east and the Gunlock-Grand Wash fault on the west (Landmark 2003).

Most of the rock formations in the St. George area were created between 250 and 180 million years ago (Hansen 1997). The major topographic feature in the project vicinity is the Red Hills, upon which the proposed project is located. The Red Hills are located north of the City of St. George and consist generally of exposed Navajo Sandstone and Kayenta Formation bedrock that forms a variety of gently sloping rock formations and vertical cliffs. The elevation of the project vicinity ranges from approximately 2,760 to 3,200 feet above mean sea level.

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<sup>1</sup> The period in the geologic timescale that extends from the present to 15 million years before present.

There are no active faults that cross the study area (Landmark 2003). A projected tract of the St. George fault crosses the study area at approximately 900 East, but no surface evidence of the fault was noted by Landmark (2003). The latest movement of the fault was at least 1 million years ago.

## **Bedrock and Soils**

The majority of the study area is located within the Jurassic Age upper member of the Kayenta Formation or within the Navajo Sandstone Formation. Bedrock is exposed throughout the project vicinity except where the road traverses the industrial park. In this area, the soils are loose, consisting of sandstone and occasional siltstone bedrock. The Washington County Soil Survey identifies the soil associations located within the study area as Rock Land, Rock Outcrops, or Badlands, which are characterized by slopes that range from gently sloping to steep, very steep, or nearly vertical. The ground surface within the study area is composed mostly of multicolored beds of actively eroding shale and bare bedrock of sandstone, limestone, conglomerate, or basalt. Where soils do occur, they are usually shallow, not exceeding 3 feet in depth. These soils are not identified because of their wide variation. Vegetation growth along the badlands and rock outcrop areas is sparse due to the small amount of soil accumulation and steep slopes (U.S. Department of Agriculture, Soil Conservation Service 1977).

## **Impacts**

### **No-Build Alternative**

Under the No-Build Alternative, Red Hills Parkway would remain a two-lane road between Industrial Road and Bluff Street. The 2030 No-Build Alternative incorporates reasonable minor enhancements that improve operations on Red Hills Parkway without expanding the number of travel lanes. The intersection of Red Hills Parkway and Skyline Drive would be realigned in 2007 to improve safety. These minor modifications would not substantially affect the geology, soils, or topography within the study area.

### **Build Alternative**

#### **Construction Impacts**

Construction of the Build Alternative would include grading and fill activities. The project would require cuts up to 60 feet in height along the sandstone outcrops. Fills could be as deep as 60 feet. The existing road surface would be pulverized and used as fill material for the new road. Additional fill material may need to be imported to accommodate construction of the interchange. Impacts during construction would be associated with site grading and earthwork. Hazards to the road posed by local and regional geologic conditions are described under Operational Impacts below.

Landmark Testing performed stability analyses to determine the strength of the rock within the study area and the appropriate slope configurations along Red Hills Parkway. Appropriate slope ratios vary along the corridor between 0.25-foot horizontal distance to 1-foot vertical rise (0.25h:1v) and 1.5h:1v, depending on the geologic conditions. The project design has incorporated the specific slope ratio recommendations from the Geotechnical Investigation Report. Consequently, no unstable slopes or landslides would result from implementation of the proposed project. In addition, site grading and earthwork procedures are outlined in the Geotechnical Investigation Report (Landmark 2003) and summarized in mitigation measure G-1, which would ensure that fills would be stable.

During construction, erosion could occur when bare soil is exposed to moving water or wind. The proposed action would be built primarily on bedrock, and therefore, erosion would be limited along most of the alignment. In areas where grading and excavation would be required, increased soil erosion and subsequent sedimentation could occur. Implementation of mitigation measure WQ-1 (described in the Water Quality section) would avoid or minimize this impact.

### **Operational Impacts**

The Build Alternative is primarily located on bedrock and, therefore, would not be subject to most geological hazards, including liquefaction, lateral spreading, settlement, or expansive or corrosive soils. Implementation of mitigation measure G-1 would ensure that fill materials used for this project would be stable in the long term.

No active or potentially active faults are known to underlie Red Hills Parkway, so the potential for surface fault rupture is low. However, the potential for surface ground shaking from nearby and distant earthquakes exists. According to the Geotechnical Investigation Report (Landmark 2003), the peak horizontal ground acceleration is approximately 0.3g. Therefore, the new road could be exposed to ground shaking in the event of an earthquake. However, the road would be constructed in compliance with current construction and seismic codes and in accordance with recommendations in the Geotechnical Investigation Report, which would reduce seismic hazard risks.

### **Cumulative Effects**

The proposed alignment is located within the transitional zone between the Colorado Plateau and the Basin and Range physiographic provinces. Therefore, the appropriate study area for potential cumulative geologic impacts would be the transitional zone between the provinces. Potential cumulative geologic impacts are limited to disturbance of unique geological features and exposure of people or persons to seismic hazards.

There are no unique geological features that would be affected by related projects or the proposed project. Seismic hazards are mitigated on an individual project basis through sound engineering and adherence to geotechnical construction/operation standards. Consequently, the proposed project would not contribute to adverse cumulative impacts on unique geologic features, and it would not contribute to a cumulative increase in the risks posed by seismic hazards.

## Avoidance, Minimization, and/or Mitigation Measures

### No-Build Alternative

No minimization or mitigation measures would be required.

### Build Alternative

The following measures would be implemented to reduce geological impacts.

#### Mitigation Measure G-1: Grading and Earthwork Procedures

Compliance with the grading and earthwork recommendations described in the Geotechnical Investigation Report (Landmark 2003) will ensure fill stability. These measures are summarized below.

- All vegetation, organic material, non-engineered fill material, construction debris, soft/wet areas, and deleterious materials will be removed from any area that will be structurally loaded.
- Fill placement will be scarified to a minimum depth of 8 inches, moisture conditioned to near optimum moisture, then compacted to 95 percent of the maximum dry density.
- Excavated sandstone fragments of up to 3 to 4 feet will be used in deeper fills provided the fragments are incorporated into a matrix of finer material and placed in a manner so that they do not nest or create voids between adjacent fragments.
- Sandstone fragments will be used as structural fill beneath the road provided they are crushed or otherwise screened to remove larger fragments and the overall fill is uniformly graded.

## 3.8 Water Quality and Wetlands

This section describes existing conditions related to hydrology, water quality, and wetlands and summarizes the overall federal, state, and regional/local regulatory framework that would affect implementation of the proposed action. This section then analyzes the potential impacts of the No-Build and Build Alternatives on hydrology and water quality and identifies mitigation measures to minimize impacts.

### Regulatory Setting, Studies, and Coordination

#### Regulatory Setting

##### Federal

##### Clean Water Act

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 USC 1344) is the primary law regulating wetlands and waters of the United States.

Several sections of the Clean Water Act (CWA) pertain to regulating impacts on waters of the United States. Section 303 (Impaired Waters) specifies requirements for assessing the quality of waters against established water quality standards. Section 404 (Discharges of Dredge or Fill Material) requires a permit for projects that discharge dredge or fill material into waters of the United States. Section 401 (Certification) specifies additional requirements for permit review, particularly at the state level. Section 402 specifies requirements for management of point and nonpoint sources of pollutants, including issuance of discharge permits.

The U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (EPA) regulate the placement of fill into waters of the United States under CWA Section 404. The term “waters of the United States” includes lakes, rivers, streams and their tributaries, and adjacent wetlands. Wetlands are defined for regulatory purposes as areas “inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3; 40 CFR 230.3). Project proponents must obtain a permit from USACE for all discharges of fill material into waters of the United States, including wetlands, before proceeding with a proposed action. USACE may either issue individual permits on a case-by-case basis or general permits on a program level. General permits are prior authorized and issued to cover similar activities that are expected to cause only minimal adverse environmental effects.

CWA Section 401 gives EPA review authority over issuance of Section 404 permits. EPA reviews to determine whether an activity might result in a discharge that violates federal or state water quality standards and provides a

water quality certification if these standards would be met. Section 401 allows states to assume authority for water quality review; in Utah, EPA has delegated this authority to the Utah Department of Environmental Quality (UDEQ), Division of Water Quality.

Section 402 establishes the NPDES, a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. In Utah, the NPDES permit program is administered by the UDEQ. The UPDES permit fulfills the Section 402 requirements.

### **Executive Order 11990**

The Executive Order for the Protection of Wetlands (EO 11990) regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

### **National Wetlands Policy**

FHWA implemented the National Wetlands Policy as part of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). This policy includes a goal of no net loss of the nation's remaining wetlands and the long-term goal of increasing the quality and quantity of the nation's wetlands resource base through mitigation banking (FHWA 1994).

## **State**

### **General Construction Storm Water Permit (Permit UTR 100000)**

UDEQ requires a project applicant to obtain a UPDES storm water permit if project construction disturbs more than 1 acre of land. A permit is required before construction begins and must be maintained through final site stabilization (meaning that all disturbed areas have been built on, paved, or revegetated). When compliance with this permit is required, the applicant must submit a Notice of Intent (NOI) to comply with conditions of the permit to UDEQ. The permit requires the applicant to control and eliminate storm water pollution through the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is required to identify possible sources of storm water pollutants (e.g., erosion and sedimentation) and select BMPs to reduce or eliminate their impacts. In addition, postconstruction storm water treatment measures are required for projects that generate peak discharges of 5 cubic feet per second (cfs) or more for the 10-year storm event, with a duration corresponding to the time of concentration ( $T_c$ ). The flows are treated using designed detention basins, oil-water separators, or other approved methods. Smaller storm water flows with significant pollution potential may also be regulated (UDEQ 2004b). Once project construction has been completed, the applicant must submit a Notice of Termination (NOT) to UDEQ to confirm that conditions of the construction permit have been met and that the project is complete.

## Local

### **St. George City UPDES Permit (Permit UTR090051)**

Discharges from small municipal separate storm sewer systems (MS4), such as those of cities, counties, universities, hospitals, etc., are authorized by UDEQ through compliance with UPDES permit requirements. Because Red Hills Parkway would be operated by the City of St. George, runoff from Red Hills Parkway would be regulated under the City's UPDES permit (Permit No. UTR090051), which was issued by UDEQ on April 21, 2003, and became effective on March 10, 2003. The permit requires the discharger to submit a Notice of Intent (NOI) and adhere to the conditions of the permit. Requirements include development of a Storm Water Management Program; implementation of postconstruction BMPs; implementation of pollution prevention and good housekeeping practices; annual reporting, monitoring, and recordkeeping; and compliance with total maximum daily load (TMDL) implementation plans. In compliance with the permit, the City has developed a Storm Water Management Program and submits annual monitoring reports to UDEQ. The City's permit applies to runoff generated from municipal activities (postconstruction), not construction activities (see discussion of UPDES Permit UTR 100000 above).

## Affected Environment

### Watersheds and Receiving Waters

Red Hills Parkway is located in the City of St. George, which is within the Virgin River watershed (shown in Figure 3.8-1). There are two parts to the Virgin River watershed. The Upper Virgin River watershed is located primarily in Washington County and includes drainages flowing generally from north to south into the Virgin and the Santa Clara Rivers. The Lower Virgin River watershed begins at the confluence of the Virgin and Santa Clara Rivers and includes drainages flowing north to south into Beaver Dam Wash and the Virgin River. Average annual rainfall for St. George is 8 inches.

The Virgin River is one of the few western rivers not dam controlled; its water level depends solely on the annual snow pack of the surrounding mountains. Approximately 3,853 square miles of land drain into the Virgin River. According to USGS records, the maximum flow between 1977 and 2005 was 60,000 cfs in January 1989 as a result of the Quail Creek Dike failure. The minimum daily flow was 5.1 cfs, in July 2003. The Virgin River eventually empties into Lake Mead in southeastern Nevada. (USGS 2005a)

The Santa Clara River, located southwest of St. George, is the largest tributary to the Virgin River (shown in Figure 3.8-1). Approximately 541 square miles of land drain into the Santa Clara River. According to USGS records, the maximum flow between 1950 and 2005 was 6,200 cfs in January 2005. This peak flow resulted in major flooding. There was no river flow in 1951, 1953, 1955, 1956, 1989, 1991, and 2003. Red Hills Parkway is located approximately 3 miles north of the confluence of the Santa Clara and Virgin Rivers. (USGS 2005b)

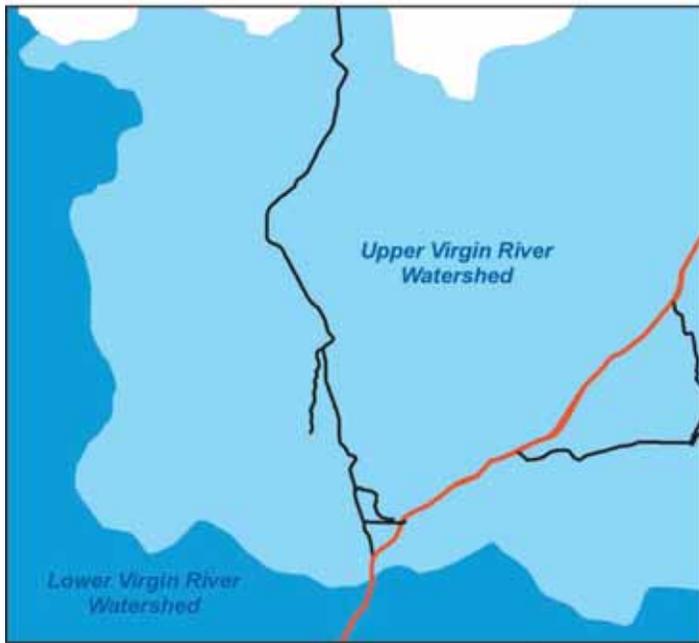
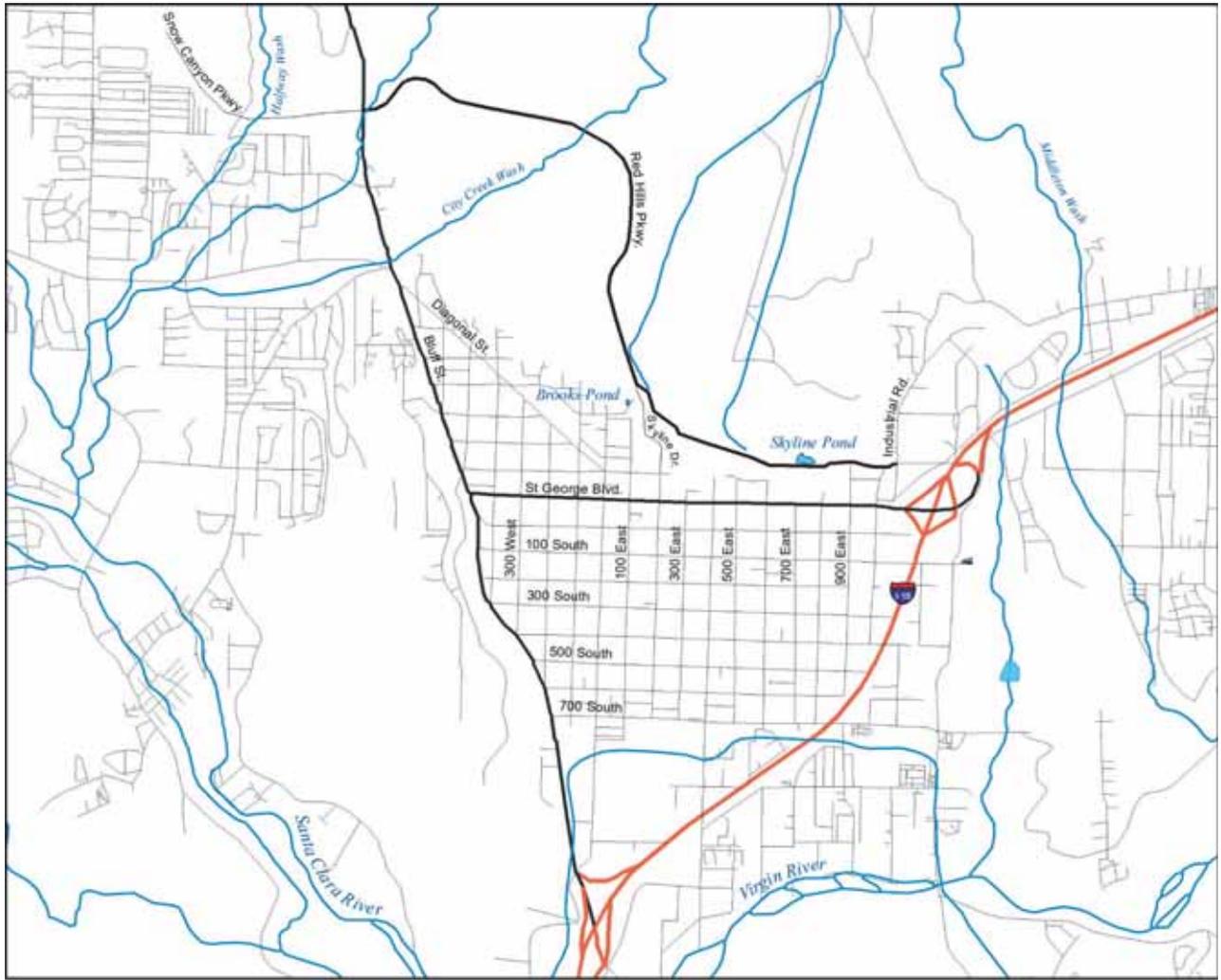
A variety of tributary washes are located within the proposed project vicinity. The City Creek Wash originates approximately 4 miles north of where it crosses Red Hills Parkway (see Figure 3.8-1). The wash flows from north of Red Hills Parkway to just south of the parkway where it begins to flow in a westerly direction after leaving the City Creek Debris Basin. Water flows to the Dixie Red Hills Golf Course where it is collected in an underground pipe that runs approximately 2 miles to Halfway Wash. It is another mile from the confluence with Halfway Wash to the Santa Clara River. There are seven smaller unnamed washes that cross Red Hills Parkway. Pipe culverts under the road provide connectivity and drainage. Runoff from the City of St. George is directed to various washes that ultimately discharge to the Santa Clara and Virgin Rivers.

There are two ponds within the proposed project vicinity. Brooks Pond is a small pond owned by the City of St. George located southwest of the intersection of Skyline Drive and Red Hills Parkway (shown in Figure 3.8-1). Water in the pond comes from springs located near Skyline Drive. The spring water is collected and diverted into the pond. The pond may also receive some runoff from storm water flowing down Brooks Canyon. Water from the pond is not currently used, and overflow from the pond drains down City gutters. The City plans to build a recreational/visual feature down Main Street that will utilize this water. Skyline Pond is located north of Red Hills Parkway and east of 900 East (shown in Figure 3.8-1). Skyline Pond was originally constructed to provide irrigation and cooling for the adjacent power plant. Recently, it has also been used as a recreational fishing pond. Water for the pond is pumped from the Virgin River to a detention pond near Dixie High School. The water is then pumped through an 18-inch pipe along 700 South to 700 East and then to Skyline Pond. Excess water from the pond is piped down 700 East and 700 South to provide irrigation water for Dixie High School. Other water sources for the pond include overflow from the water tank located at 500 East and the storm water runoff from Red Hills Parkway between Pioneer Park and 700 East.

## Water Quality of Surface Conveyances

In April 2006, UDEQ updated its CWA Section 303(d) List of Impaired Waters to include portions of the Virgin River within the Lower Colorado Watershed Management Unit (UDEQ 2006). The reach of the Virgin River from the confluence of the Santa Clara River to the state line (15.24 miles) is identified as currently impaired by temperature.

EPA approved the TMDL Water Quality Study of the Virgin River watershed on September 20, 2004 (UDEQ 2004a). Eight segments in the Lower Colorado River watershed previously identified as being impaired by total dissolved solids, dissolved oxygen, temperature, and total phosphorus were included in this TMDL. The Virgin River, located approximately 3 miles south of Red Hills Parkway, is listed for salinity, chlorides, and high total dissolved solids (TDS). The impaired reach of the Santa Clara River, located approximately 3 miles southwest of Red Hills Parkway, is listed for temperature, salinity, chlorides, and high TDS.



**Legend**

- Rivers/Streams/Washes

**Roads**

- Highway
- Major Road
- Residential Street



Sources: U.S Census Tiger Data, 2000; State of Utah AGRC, 2001; Jones & Stokes, 2006.

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**Figure 3.8-1  
Rivers and Watersheds**

The TMDL for the Virgin River, including the Santa Clara River, which is a tributary to the Virgin River, established maximum levels for TDS concentrations, including chloride and salinity levels (UDEQ 2004a). The TMDL for TDS concentrations in the Virgin River was determined to be 1,200 milligrams per liter (mg/l); the average TDS level in the Virgin River was 1,848 mg/l (UDEQ 2004a). The TMDL identifies BMPs to address TDS loading in specific reaches of the Santa Clara and Virgin Rivers. For the reaches within the project area, the Virgin River from Bloomington to the Washington Fields Diversion and the Santa Clara River from the Virgin River Confluence to Ivins, these BMPs include passive and active management measures for construction and agricultural activities as well as engineered upgrades to storm drainage systems.

The existing water quality standard for temperature is 27°C, and the standard for TDS, including salinity and chlorides, is 1,200 mg/l. Accordingly, UDEQ may limit discharges by UPDES permit holders to restrict increases in salinity and chlorides in the aforementioned segments of the Santa Clara and Virgin Rivers. Compliance with UPDES permits associated with construction projects may require additional measures to ensure that the Santa Clara and Virgin Rivers are protected.

## Groundwater and Groundwater Quality

The Navajo Sandstone and Kayenta Formation aquifers provide most of the potable water to the municipalities of Washington County. In Washington County, the aquifers encompass a large area, shown in part in Figure 3.8-2. A small percentage of the total surface runoff traveling over the Navajo Sandstone and Kayenta Formation infiltrates openings, such as joints and fractures, in the rock where it is stored. Because of large outcrop exposures, large stratigraphic thickness, and extensive fracture zones, these formations are able to receive, store, and move large amounts of water (USGS 2000). The main sources of recharge are infiltration of precipitation and seepage of streams crossing the outcrop. The quality of groundwater in the Navajo Sandstone aquifer is generally good, with concentrations of dissolved solids generally less than 500 mg/l (City of St. George 2006c).

Red Hills Parkway is located at the boundary between the Navajo Sandstone and Kayenta Formation outcrops. There are multiple springs along this boundary because the lower permeability of the Kayenta Formation forces water in the Navajo Sandstone to the surface. One group of springs is located near Skyline Drive. The City owns the water rights to most of these springs. During construction of the Red Hills Parkway safety project in 2004, the collection system for these springs was put in place, which diverts water from the springs to Brooks Pond. Springs located south of Red Hills Parkway between 600 East and 900 East are known as Temple Springs. The Church of Jesus Christ of Latter Day Saints owns the water rights to most of the springs between 600 East and 900 East. Water from the springs is collected and diverted to a concrete tank located at approximately 800 East. Water from the tank is piped to the St. George Temple where it is used for irrigation. These springs have been used for

the past 120 years (Sunrise Engineering 2002). Hopkins Spring, part of Temple Springs (shown in Figure 3.8-2), is located approximately 100 feet from Red Hills Parkway and is the only spring with water rights between 600 East and 900 East that is located within the 300-foot-wide project study area.

## Drainage and Flooding

According to the Federal Emergency Management Agency (FEMA)-generated Flood Insurance Rate Maps (FIRMs), the proposed project vicinity lies outside the 100- and 500-year flood zones.

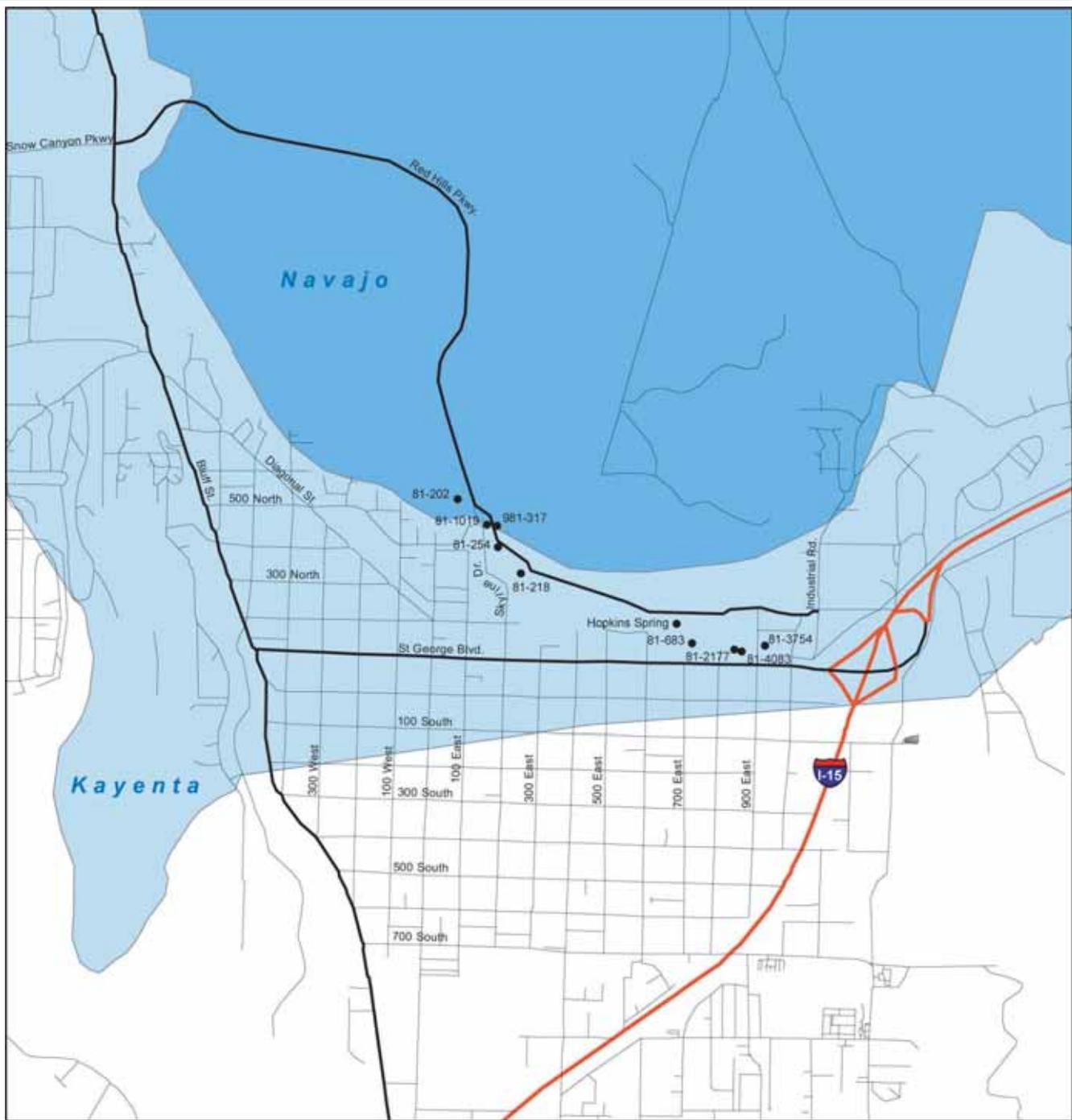
The study area is composed primarily of Navajo Sandstone and Kayenta Formation exposed bedrock, which have very low infiltration rates; therefore, about 70 percent of the rainfall on these formations becomes storm water runoff (Giles pers. comm.). Storm water runoff is diverted to the surrounding washes or the City's storm water drainage system and eventually discharges to the Santa Clara and Virgin Rivers.

Storm water runoff from Red Hills Parkway flows into several different drainages. The drainage that flows southwest of the intersection of Bluff Street and Red Hills Parkway collects the runoff that runs west and down the hill located approximately 1,500 feet east of the intersection. City Creek Wash collects runoff from the area between the top of the hill near Bluff Street and Pioneer Hills Trailhead. Drainage from the road between Pioneer Hills Trailhead and Pioneer Park flows into small washes that eventually dissipate or drain to Brooks Canyon (Brooks Pond) or City Creek Wash.

Storm water from Red Hills Parkway east of Pioneer Park enters a storm water drainage system. During the 2004 Red Hills Parkway safety project, catch basins and a 24- to 30-inch pipeline were installed on the north side of Red Hills Parkway to collect runoff. The pipeline collects runoff from Red Hills Parkway between Pioneer Park and Skyline Pond and drains into Skyline Pond. On the north side of Red Hills Parkway, from 850 East to Industrial Road, and on the south side of Red Hills Parkway, from 1000 East to Industrial Road, a curb and gutter system collects runoff. Currently, road runoff is diverted from entering naturally occurring springs on the south side of Red Hills Parkway.

## Wetlands

Wetlands in the study area were delineated based on field investigations conducted on May 25 and July 13, 2007. The wetland delineation was conducted in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the 2006 Arid West Supplement. One wetland was observed and delineated within the study area based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. This emergent wetland occurs within the proposed Temple Springs Park, located south of Skyline Pond (see Figure 3.8-3). The hydrologic source is overflow from an unnamed spring that occurs within the



**Legend**

**Springs**

- Name/Number

**Aquifers**

- Light Blue Box: Kayenta
- Dark Blue Box: Navajo

**Roads**

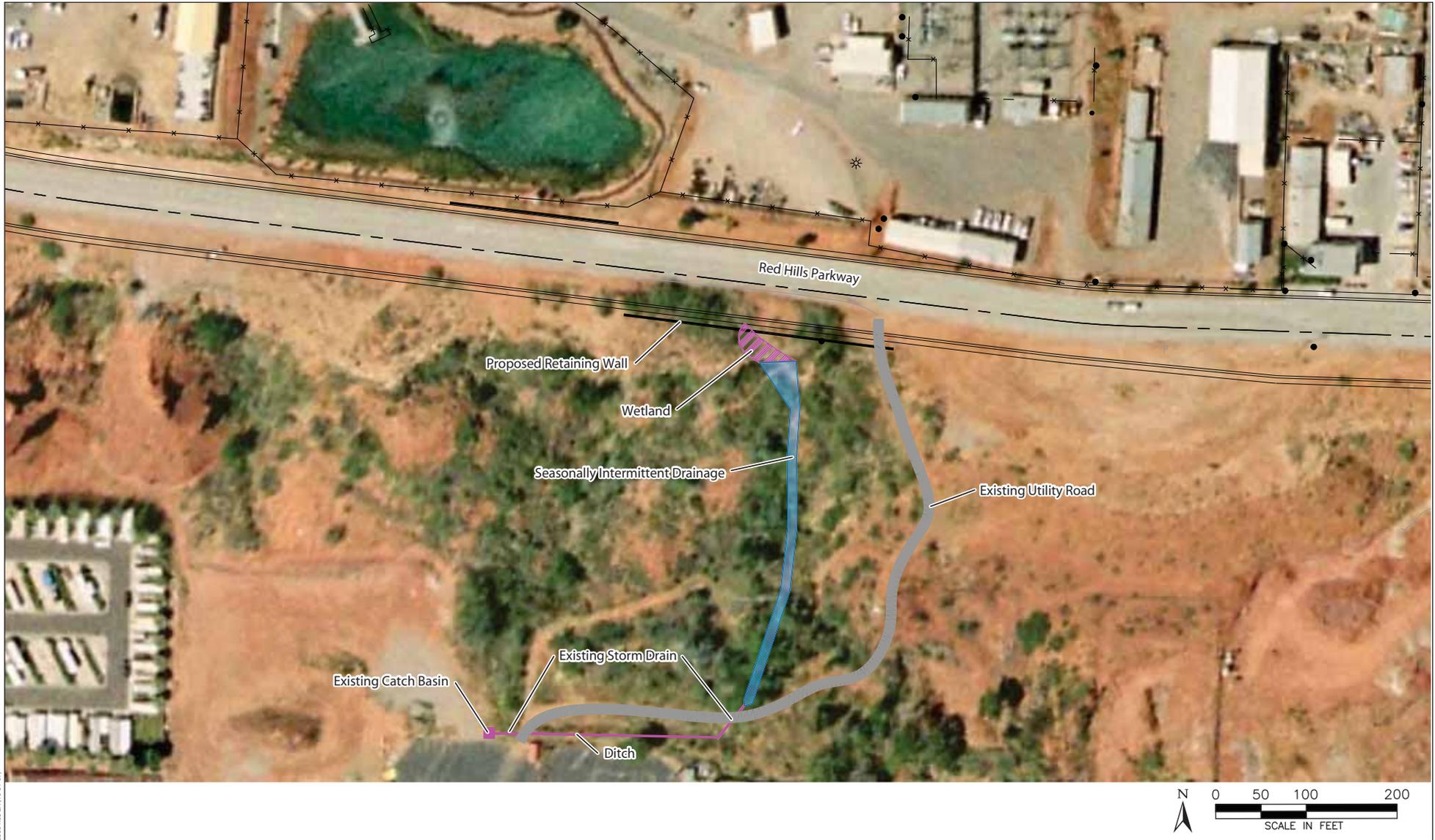
- Orange Line: Highway
- Thick Black Line: Major Road
- Thin Grey Line: Residential Street



Sources: U.S Census Tiger Data, 2000; Utah Division of Water Resources, 2006; Washington County, Utah 2006; Jones & Stokes, 2006.

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**Figure 3.8-2  
Aquifers and Springs**



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**Figure 3.8-3  
Wetlands**

wetland boundaries. This spring is not collected as part of the Temple Springs. Water from the spring naturally pools in a small 1,200-square-foot basin that overflows down the face of the bluff for a distance of approximately 400 feet until it connects with a man-made drainage canal that flows in a westerly direction for approximately 200 feet until it empties into an existing collection box and becomes part of the St. George City storm drainage system. Between the wetland and the canal, the surface flow is seasonally intermittent. This area contains a mixture of wetland, upland, and desert vegetation. USACE considers this wetland a jurisdictional water of the United States.

## Impacts

### No-Build Alternative

Red Hills Parkway currently has two lanes in each direction and a 45-acre footprint. Under the No-Build Alternative, the footprint of the road would not change, wetlands would not be affected, and drainage patterns would not be altered. Road runoff east of Pioneer Park would continue to be directed into the existing drainage system, and road runoff west of Pioneer Park would continue to drain into naturally occurring washes. As the volume of traffic on the road increases over time, the amount of pollutants (e.g., petrochemicals, asbestos from brake pads, antifreeze, and debris) in the runoff would also increase. Storm water runoff is currently managed by the City, in compliance with the UPDES permit, UTR 090051, issued by UDEQ (UDEQ 2003). UDEQ considers the current City storm water treatment measures adequate to protect water quality, including the water quality of the Santa Clara and Virgin Rivers.

### Build Alternative

#### Construction Impacts

##### Water Quality Degradation

The proposed action would be built primarily on bedrock, so it is anticipated that the project would not result in substantial grading and excavation of soil, and the potential for erosion and sedimentation would be relatively low. Several major cuts (up to 60 feet in height) would be required but would primarily affect bedrock and would not result in substantial erosion or sedimentation. Several large fills (up to 60 feet deep) would also be required that could result in increased soil erosion and subsequent sedimentation. Runoff from excavation and construction activities could contain soil and other pollutants that could degrade water quality in the surrounding springs or washes that drain to the Santa Clara River. Project grading, stockpiling of spoil materials, and other construction-related earth-disturbing activities could cause soil erosion and sedimentation and affect local waterways. If water from those waterways is discharged to adjacent surface waters, a violation of water quality standards could occur. Sedimentation in local drainage facilities could result in reduced storm flow capacity, causing localized ponding or flooding during storm events.

As such, this project has the potential to degrade water quality during construction. Implementation of mitigation measure WQ-1 would avoid or minimize this impact.

Hazardous materials, such as gasoline, oils, grease, lubricants, and other petroleum-based products required to operate construction equipment, could be accidentally released during construction. Impacts associated with hazardous material spills are difficult to quantify because their location, severity, and conditions are not known in advance. As such, this project has the potential for hazardous material spills during construction. Implementation of mitigation measure WQ-2 would avoid or minimize this impact.

### **Groundwater Quality Impacts**

During past construction projects, including installation of the Washington County Water Conservancy District pipeline at a depth of 6 feet below ground surface, groundwater was not encountered, and dewatering was not required (Giles pers. comm.). It is anticipated that since the proposed action would require excavation shallower than 6 feet below ground level,<sup>1</sup> no dewatering would be required. During construction and installation of the existing curb and gutter drainage system in 2004, some water-inundated areas were encountered between 600 East and 800 East (Giles pers. comm.). In this area, Skyline Pond is located north of the road, and several springs are located south of the road. It is unknown if the seepage that was encountered during construction was from the pond or the springs. The amount of water that was previously encountered was not excessive and did not require dewatering (Giles pers. comm.).

The proposed action would be constructed above the Navajo Sandstone and Kayenta Formation aquifers. If construction occurs in aquifer recharge areas, contamination of the groundwater aquifer could occur. Primary construction-related contaminants that could reach groundwater would include sediment, oil and grease, and construction-related hazardous materials from excavating equipment. As such, project construction has the potential to degrade groundwater quality. However, implementation of mitigation measures WQ-1 and 2 would avoid or minimize this impact.

### **Interference with Existing Infrastructure**

Several springs are located along the alignment in areas where Navajo Sandstone meets the Kayenta Formation, because the lower permeability of the Kayenta Formation forces water in the Navajo Sandstone aquifer to the surface. The springs located near the intersection of Skyline Drive and Red Hills Parkway would not be affected by project construction. During construction of the 2004 safety project, collection facilities for springs in the vicinity of the road were installed. The proposed Build Alternative would not affect these facilities (Carpenter pers. comm.).

The springs and associated facilities located between 600 East and 900 East are too far from Red Hills Parkway to be affected by the proposed action, except for Hopkins Spring and the Kemp Springs collection pipeline, which are part of

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<sup>1</sup> The project would require cuts up to 60 feet in height along the sandstone outcrop; however, these cuts would be above the ground surface and would not require substantial below ground excavation.

Temple Springs. Construction of the Build Alternative would necessitate placing fill material up to 100 feet south of the road at approximately 750 East. This fill would cover the Hopkins Spring collection box and would potentially affect the water quality and supply of this spring. Water from Hopkins Spring would be collected and piped to allow flow to continue. Kemp Springs is located north of the proposed action at approximately 850 East. This spring would not be directly affected by project construction. However, the collection pipe that is used to carry water from this spring to the main collection box, located south of Red Hills Parkway, crosses the road. The 4-inch cast iron pipe is buried under Red Hills Parkway at an unknown depth. It is anticipated that construction would not disturb or damage this pipeline. However, implementation of mitigation measure WQ-3 would minimize impacts to the pipeline and Hopkins Spring.

### **Wetland Impacts**

Construction of the proposed project would permanently fill 0.0275 acre (1,200 square feet) of the delineated wetland located within the proposed Temple Springs Park. Mitigation measure WQ-3 would reduce impacts on the wetland. Implementation of mitigation measure WQ-5 would create, enhance, or restore wetlands. The City would be required to obtain a Section 404 permit from USACE prior to construction activities that would affect the wetland.

## **Operational Impacts**

### **Erosion or Sedimentation Due to Increased Storm Runoff**

The Build Alternative would increase the footprint of impervious surfaces in the project vicinity from 45 acres to approximately 65 acres. The increased amount of impervious cover would result in increased surface water runoff, and increased storm water runoff from the project vicinity would potentially result in erosion and sedimentation impacts on nearby water bodies or developed areas. However, the existing storm drainage system along Red Hills Parkway was designed to receive the capacity of runoff from the proposed action and incorporates measures to filter sediments from storm runoff (e.g., fabric-lined underdrains). Additionally, 2,000 feet of upgraded curb and gutter would be installed on the south side of Red Hills Parkway from Industrial Road to the water tank located on the west side of Skyline Pond. All City of St. George projects incorporate standard storm water management and treatment practices in compliance with UDEQ Permit UTR 090051. Additionally, for projects that generate peak flows of 5 cfs or more, compliance with UDEQ storm water treatment measures are required. During final design, peak discharge of the completed project would be determined. If runoff peak flows exceed 5 cfs, mitigation measure WQ-4 would be implemented to ensure water quality is adequately protected.

### **Potential Exceedance of Water Quality Objectives and Established TMDLs**

Because the Virgin and Santa Clara Rivers are listed as impaired for TDS, as stated above, any increase in TDS concentrations would result in a negative impact on water quality. According to FHWA, average TDS concentrations in road runoff is 356 mg/l, while other studies have shown TDS concentrations from road runoff ranging from 14 to 470 mg/l (Kayhanian 2001). Although the project would not discharge TDS concentrations or sediments directly to the

Virgin or Santa Clara Rivers, there would be a potential increase in concentrations of these contaminants in waters (washes and groundwaters) that ultimately discharge to these rivers.

In consideration of the project location within recharge areas of the Navajo Sandstone and Kayenta Formation aquifers, discharges of road runoff contaminants have the potential to degrade the quality of water within these aquifers and, ultimately, the impaired Virgin and Santa Clara Rivers. However, sediments and other contaminants, such as TDS, from road runoff are generally removed through natural filtration processes as the water infiltrates the ground. Additionally, natural processes within sandstone aquifers remove contaminants, thereby improving water quality. There are no indications that the water within the Navajo Sandstone and Kayenta Formation aquifers presently exhibits high concentrations of TDS. Consequently, the estimated contributions of TDS from the proposed action would not significantly degrade the quality of receiving groundwater or the Virgin and Santa Clara Rivers.

The project would comply with requirements of the TMDL implementation plan, which include implementing control measures and developing and implementing a monitoring system for TDS levels. The project would install filtration underdrains to treat one-third of project runoff, while natural filtration processes would treat discharges to groundwaters. In addition, implementation of mitigation measure WQ-4 would ensure that the underdrains and other BMPs implemented by the project would be properly maintained, and appropriate monitoring would be conducted to protect the quality of contributing waters to the Virgin and Santa Clara Rivers.

### **Wetland Impacts**

Implementation of the proposed project would permanently fill 0.0275 acre (1,200 square feet) of the delineated wetland located within the proposed Temple Springs Park. Water from the spring, which is associated with the wetland, would be collected and piped to allow flow to continue. Additional operational impacts would not occur because curb and gutter would direct roadway runoff away from the springs and prevent co-mingling of these waters.

## **Cumulative Effects**

### **Water Quality Degradation**

Surface water in the project vicinity generally drains from north to south toward the Santa Clara and Virgin Rivers. The proposed action is located at the northern extent of the City of St. George. Development north of the City of St. George is limited by the 62,000-acre Red Cliffs Desert Reserve. Two large-scale residential development projects are anticipated north of the City of St. George, the Ledges (1,093 acres) and the Trails (335 acres). No other large-scale development projects are anticipated in the same drainage area as the proposed action (Baker pers. comm.).

When the proposed action is considered along with other development projects in the project vicinity, the proposed action would, potentially, contribute to altered storm flow quantities and velocities. Altered storm flows can increase the

potential for scour and deposition of sediments in water bodies, which can in turn result in loss of biological habitat and reduced water quality. However, because most of the area north of the proposed action is located on an outcrop of Navajo Sandstone with minimal surficial deposits, most precipitation runs off and does not infiltrate groundwater. Thus, potential impacts to water quality from increased amounts of impervious cover are less pronounced in this region, and implementation of BMPs listed in the City's Storm Water Management Program (City of St. George 2003), as required by UPDES storm water permit UTR 090051, would adequately protect against water quality degradation. In particular, the Storm Water Management Program includes the following BMPs, which the City would implement to address postconstruction runoff: detention/infiltration device management (DIDM), extended detention basins (EDB), land use planning/management (LUPM), infrastructure planning (IPL), zoning (ZO), and ordinance development (OD). Additionally, the City implements pollution prevention measures, including street sweeping, catch basin cleaning, storm drainage system maintenance, and public outreach and education, as required by permit UTR 090051. These measures are implemented to reduce and manage cumulative impacts from storm water generated in the City. Therefore, with the City's continued compliance with conditions of permit UTR 090051, impacts of the proposed project, when considered with other projects in the foreseeable future, would not generate a substantial cumulative impact on water quality.

## **Avoidance, Minimization, and/or Mitigation Measures**

### **No-Build Alternative**

No minimization or mitigation measures would be required.

### **Build Alternative**

The following measures would be implemented to reduce potential water quality and wetland impacts.

#### **Mitigation Measure WQ-1: Implement Best Management Practices to Control Discharge of Construction-Related Pollutants to Surface Waters**

As part of the process of obtaining coverage under the UPDES General Construction Permit, the contractor for the City of St. George will submit a NOI to UDEQ and develop and implement a SWPPP to minimize the potential for and effects from spills of hazardous, toxic, or petroleum-based substances during project construction. The SWPPP will meet the requirements of UDEQ as well as any City and county requirements.

The SWPPP will identify BMPs to maintain water quality and minimize the potential for pollutants and sediments to enter the aquatic system. The final selection and design of pollutant and sediment controls will be subject to UDEQ approval. The BMPs in the SWPPP may include, but are not limited to, the following elements:

- All construction work shall be conducted according to site-specific construction plans designed to retain sediment on-site to the maximum extent possible.
- All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or incorrectly, the permittee must replace or modify the control for site situations.
- If sediments escape the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impacts (e.g., fugitive sediment in the street could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets).
- Sediment must be removed from sediment traps or sedimentation ponds when design capacity has been reduced by 50 percent.
- Litter, construction debris, and construction chemicals exposed to storm water shall be picked up prior to anticipated storm events (e.g., forecast local weather reports) or otherwise prevented from becoming a pollutant source for storm water discharges (e.g., by screening outfalls, daily removal, etc.).
- Off-site material storage areas (including overburden and stockpiles of dirt, etc.) used solely by the permitted project are considered a part of the project and shall be addressed in the pollution prevention plan.
- Roads leaving the construction site shall be continually swept and cleaned during construction to remove accumulated earth and debris in the construction zone during project construction, particularly before predicted rainfall events.

The contractor for the City of St. George will implement a monitoring program to verify the effectiveness of BMPs. The monitoring program will begin at the outset of construction and terminate upon completion of the project. Upon completion of the project, the contractor for the City of St. George will submit a NOT to UDEQ to conclude compliance with the construction general permit.

### **Mitigation Measure WQ-2: Develop and Implement a Toxic Materials Spill Prevention and Control Program**

As part of obtaining coverage under the UPDES General Construction Permit, the contractor for the City of St. George will develop and implement a spill prevention and control program to minimize the potential for and effects from spills of hazardous, toxic, or petroleum-based substances during project construction. The contractor may utilize the City's SWPPP template, which

includes a spill control prevention component, or prepare a separate plan. A spill control and prevention plan will be completed before any construction activities begin and will include provisions for preventing, containing, and reporting spills of hazardous materials. The plan could contain the following measures.

- Prevent raw cement, concrete, or concrete washings; asphalt, paint, or other coating material; oil or other petroleum-based products; or any other substances that could be hazardous to aquatic life from contaminating the soil or entering watercourses.
- Establish a spill prevention and countermeasure plan before construction that includes strict on-site handling rules regarding construction and maintenance materials to keep them from entering drainages and waterways.
- Clean up all spills immediately according to the spill prevention and countermeasure plan, and notify the UDEQ Division of Environmental Response and Remediation immediately of any reportable spills and cleanup activities.
- Provide areas located outside the ordinary high-water mark for staging and storing equipment, materials, fuels, lubricants, solvents, and other possible contaminants.
- Avoid operation of equipment in flowing water.

Implementation of measures to avoid or minimize the effects of increased sediment input will also avoid and minimize increased input of pollutants associated with sediments. If a spill is reportable, the contractor's superintendent will notify 911 emergency services and the UDEQ Division of Environmental Response and Remediation.

### **Mitigation Measure WQ-3: Build Retaining Wall and Avoid or Replace Buried Pipeline**

To mitigate construction effects to the Hopkins Spring collection box, a retaining wall will be built approximately 25 feet north of the spring. The retaining wall will be approximately 200 feet long by 15 feet high. This will reduce the amount of surface disturbance by approximately 7,000 square feet. The wall will be constructed of materials that match the texture and color of the sandstone bluff to minimize visual effects. Water from the spring associated with the wetland will be collected and piped under the retaining wall to allow flow to continue.

It is anticipated that construction would not affect the buried pipeline connecting Kemp Springs to the main collection box. However, prior to construction, consultation with staff from the St. George Temple will occur to determine the best approach in avoiding or replacing the pipeline should it be damaged during construction.

### **Mitigation Measure WQ-4: Implement Measures to Treat Storm Water Runoff**

To ensure that runoff from the road does not degrade the quality of waters within the Santa Clara and Virgin Rivers and associated aquifers, the project proponent will comply with conditions of the General Construction Storm Water permit (UTR 100000) and the City's UPDES permit (UTR 090051), which require implementation of measures to treat storm runoff during construction and operation of the road.

Additionally, during final design, peak discharge of the completed project will be determined. If the project generates peak discharges of 5 cfs or greater for the 10-year storm event, with a duration corresponding to Tc, the project proponent will include the necessary storm water treatment systems in the construction scope of work and in bid documents (UDEQ 2004b).

### **Mitigation Measure WQ-5: Create, Enhance, or Restore Wetlands**

Coordination with USACE will be necessary to obtain a permit to discharge fill material into waters of the United States. In order to comply with FHWA's goal of no net loss of wetlands, the project proponent will mitigate for 0.0275 acre (1,200 square feet) of affected wetlands. Coordination with FHWA and USACE will determine whether creation, enhancement, or restoration of wetlands would be appropriate.

## 3.9 Wildlife

This section lists the general wildlife and wildlife habitats that occur in the vicinity of the project. Potential environmental consequences to wildlife and proposed mitigation measures are also identified.

### Regulatory Setting, Studies, and Coordination

See Regulatory Setting in the Sensitive Species section (Section 3.10) for a summary of the laws and regulations that apply to wildlife species in the study area. The following local land management plans protect biological resources within the study area.

#### Washington County Habitat Conservation Plan

In February 1996, USFWS issued an Endangered Species Act Section 10(a)(1)(B) Permit for incidental take of desert tortoise. Issuance of the permit resulted in the development of the Washington County HCP, which governs the acquisition and management of lands within the Red Cliffs Desert Reserve. The underlying purpose of the action was to support a program designed to ensure continued existence and recovery of the desert tortoise while resolving potential conflicts that may arise from otherwise lawful private and public improvement projects. (Washington County 1995)

The HCP includes provisions for the reconstruction of Skyline Drive (now designated as Red Hills Parkway) and states that the road improvement project should follow the existing alignment as near as possible except where engineering and/or safety considerations require deviations (Washington County 1995). Disturbances within the reserve associated with road improvements are subject to approval by the Washington County HCAC and require compliance with the Restoration/Reclamation Standards for the Red Cliffs Desert Reserve (Washington County Commission 2001).

#### St. George Field Office RMP

BLM manages several parcels of land along Red Hills Parkway. The St. George Field Office (formerly the Dixie Resource Area) Record of Decision and Resource Management Plan is the approved land use plan. It directs management of public lands in Washington County and all uses on those lands, whether by the agency or by those who obtain federal authorizations for use of public lands. The plan was approved in 1999. Major decisions in the plan related to biological resources are listed below.

- Preservation and protection of the desert tortoise and its habitat will be accomplished by implementing goals and objectives of the Washington County HCP and Red Cliffs Desert Reserve within the Upper Virgin Recovery Unit.

- Sensitive areas such as special-status plant and animal species habitat, developed recreation sites, recreational opportunity spectrum primitive areas, riparian areas, floodplains, watershed protection areas, Visual Resource Management Class II areas, crucial deer winter habitat and elk calving areas, severe erosion soils, designated wilderness, and cultural sites will be afforded a higher level of protection than that afforded under current management (BLM 1999).

## Affected Environment

Two Mojave scrub plant communities occur within the study area: Mojave creosote bush scrub and Mojave wash scrub. Mojave creosote bush scrub occurs over the majority of the upland areas, and Mojave wash scrub occurs in the major washes. Each community is described below.

Mojave creosote bush scrub is a widespread community type and the most common type found in the Mojave Desert below about 4,000 feet (Holland 1986). It is also the most common type found in the study area and characterized by widely spaced shrubs 2 to 8 feet tall. Creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) often are the co-dominants in this community type. Creosote bush scrub is usually found on well-drained soils, often on bajadas and low hills, but not on highly salty or alkaline soils.

City Creek Wash and other smaller unnamed washes occur in the project vicinity and support Mojave wash scrub. In general, Mojave wash scrub is a shrubby open community with scattered to locally dense overstory of microphyllous trees (Holland 1986). Honey mesquite (*Prosopis juliflora*), range ratany (*Krameria grayi*), and plants of the adjacent creosote bush scrub community occur with this plant community.

Wildlife species that occur in the project vicinity are adapted to desert scrub habitats with little cover and xeric conditions. Because surface water is scarce and transitory (primarily limited to small scattered pools that form immediately following rainstorms), no fish or amphibians are known to occur in the project vicinity.

Riparian/spring communities occur at several locations along the bluff below Red Hills Parkway where small springs come to the surface. These small areas provide wildlife habitat, offer nesting and foraging habitat for migratory birds, maintain the water table, and provide shade and cover. These communities would generally not be disturbed by the proposed action.

Rock outcrops located between Skyline Drive and Pioneer Hills Trailhead may provide habitat for sensitive reptiles and temporary roosting sites for bats.

## Species Known to Occur in the Area

The following is a list of animal and plant species known to occur in the vicinity of the project according to data collected from the Red Cliffs Desert Reserve web site ([www.redcliffsdesertreserve.com](http://www.redcliffsdesertreserve.com)) and field reconnaissance. A Jones & Stokes biologist visited the Red Hills Parkway study area on October 30, 2006, to

assess the area for potential sensitive-species habitat. Species that were observed within the study area during that visit are indicated in Table 3.9-1.

**Table 3.9-1. General Wildlife Species Known to Occur in the Area**

Species Common Name	Scientific Name	Observed in Study Area
<b>Mammals</b>		
Kit Fox	<i>Vulpes macrotis</i>	
Coyote	<i>Canis latrans</i>	
Ringtail Cat	<i>Bassariscus astutus</i>	
Bobcat	<i>Felis rufus</i>	
Mountain Lion	<i>Felis concolor</i>	
Mule Deer	<i>Odocoileus hemionus</i>	
White-tailed Antelope Squirrel	<i>Ammospermophilus leucurus</i>	
Black-tailed Jackrabbit	<i>Lepus californicus</i>	
Desert Cottontail	<i>Sylvilagus audubonii</i>	X
Ord's Kangaroo Rat	<i>Dipodomys ordii</i>	
<b>Reptiles</b>		
Mojave Desert Tortoise	<i>Gopherus agassizii</i>	X
Gila Monster	<i>Heloderma suspectum</i>	
Chuckwalla	<i>Sauromalus obesus</i>	
Desert Spiny Lizard	<i>Sceloporus magister</i>	
Collared Lizard	<i>Crotaphytus insularis</i>	
Long-nosed Leopard Lizard	<i>Gambelia wislizenii</i>	
Zebra-tailed Lizard	<i>Callisaurus draconoides</i>	
Desert Horned Lizard	<i>Phrynosoma platyrhinos</i>	
Side-blotched Lizard	<i>Uta stansburiana</i>	
Western Banded Gecko	<i>Coleonyx variegates</i>	
Western Whiptail	<i>Cnemidophorus tigris</i>	
Common Kingsnake	<i>Lampropeltis getulus</i>	
Glossy Snake	<i>Arizona elegans</i>	
Coachwhip Snake	<i>Masticophis flagellum</i>	
Gopher Snake	<i>Pituophis melanoleucus</i>	
Western Patch-nosed Snake	<i>Salvadora hexalepis</i>	
Sidewinder	<i>Crotalus cerastes</i>	
Western Great Basin Rattlesnake	<i>Crotalus viridis lutosus</i>	
<b>Birds (S = Summer; W = Winter; R = Resident)</b>		
Great Blue Heron (R)	<i>Ardea herodias</i>	
Golden Eagle (R)	<i>Aquila chrysaetos</i>	
Bald Eagle (W)	<i>Haliaeetus leucocephalus</i>	
Red-tailed Hawk (R)	<i>Buteo jamaicensis</i>	
Cooper's Hawk (R)	<i>Accipiter cooperii</i>	
Sharp-shinned Hawk (W)	<i>Accipiter striatus</i>	
American Kestrel (R)	<i>Falco sparverius</i>	
Peregrine Falcon (R)	<i>Falco peregrinus</i>	
Northern Harrier (R)	<i>Circus cyaneus</i>	
Turkey Vulture (S)	<i>Cathartes aura</i>	
Gambel's Quail (R)	<i>Callipepla gambelii</i>	
Wild Turkey (R)	<i>Meleagris gallopavo</i>	
Mourning Dove (R)	<i>Zenaida macroura</i>	
Greater Roadrunner (R)	<i>Geococcyx californianus</i>	
Great Horned Owl (R)	<i>Bubo virginianus</i>	
Barn Owl (R)	<i>Tyto alba</i>	
Lesser Nighthawk (S)	<i>Chordeiles acutipennis</i>	
White-throated Swift (S)	<i>Aeronautes saxatalis</i>	
Costa's Hummingbird (S)	<i>Calypte costae</i>	
Western Kingbird (S)	<i>Tyrannus verticalis</i>	
Loggerhead Shrike (R)	<i>Lanis ludovicianus</i>	
Common Raven (R)	<i>Corvus corax</i>	X
Juniper Titmouse (R)	<i>Baeolophus ridgwayi</i>	

Species Common Name	Scientific Name	Observed in Study Area
Cactus Wren (R)	<i>Campylorhynchus brunneicapillus</i>	
Canyon Wren (R)	<i>Catherpes mexicanus</i>	
Rock Wren (R)	<i>Salpinctes obsoletus</i>	
Black-throated Sparrow (S)	<i>Amphispiza bilineata</i>	
Sage Sparrow (W)	<i>Amphispiza belli</i>	
Northern Mockingbird (R)	<i>Mimus polyglottos</i>	X
House Sparrow (R)	<i>Passer domesticus</i>	X
Western Meadowlark (S)	<i>Sturnella neglecta</i>	
<b>Plants</b>		
Utah Juniper	<i>Juniperus osteosperma</i>	
Pinyon Pine	<i>Pinus edulis</i>	
Fremont Cottonwood	<i>Populus fremontii</i>	
Honey Mesquite	<i>Prosopis juliflora</i>	X
Utah Yucca	<i>Yucca utahensis</i>	
Datil Yucca	<i>Yucca baccata</i>	
Creosote Bush	<i>Larrea divaricata</i>	X
Blackbrush	<i>Coleogyne ramosissima</i>	
Mormon or Brigham Tea	<i>Ephedra viridis</i>	
Indigo Bush	<i>Psoralea fremontii</i>	
Bitterbrush	<i>Purshia tridentata</i>	
Broom Snakeweed	<i>Gutierrezia sarothrae</i>	
Rubber Rabbitbrush	<i>Chrysothamnus nauseosus</i>	
Old Man or Sand Sagebrush	<i>Artemisia filifolia</i>	
Shrub Live Oak	<i>Quercus turbinella</i>	
Sego Lily	<i>Calochortus nuttallii</i>	
Desert Globemallow	<i>Sphaeralcea ambigua</i>	
Desert Marigold	<i>Baileya multiradiata</i>	
Four O'Clock	<i>Mirabilis multiflora</i>	
Common Paintbrush	<i>Castilleja chromosa</i>	
Spectaclepod	<i>Dithyrea wislizenii</i>	
Bottlebrush or Desert Trumpet	<i>Eriogonum inflatum</i>	X
Purple Torch	<i>Echinocereus engelmannii</i>	
Silver Cholla	<i>Opuntia echinocarpa</i>	X
Engelmann Prickly Pear	<i>Opuntia phaeacantha</i>	
White Bursage	<i>Ambrosia dumosa</i>	X
Sting Weed	<i>Amsinckia</i> spp.	X
Big Saltbush	<i>Atriplex lentiformis</i>	X
Strawberry Hedgehog	<i>Echinocereus engelmannii</i>	X
Nevada Ephedra	<i>Ephedra nevadensis</i>	X
Corymb Buckwheat	<i>Eriogonum corymbosum</i>	X
Winter Fat	<i>Eurotia lanata</i>	X
Red Molly	<i>Kochia scoparia</i>	X
Range Ratany	<i>Krameria grayi</i>	X
Peppergrass	<i>Lepidium densiflorum</i>	X
Fish Hook Cactus	<i>Mammillaria tetrancistra</i>	X
Beavertail Cactus	<i>Opuntia basilaris</i>	X
Old Man Prickly Pear	<i>Opuntia erinacea</i>	X
Rabbitfoot Grass	<i>Polypogon monspeliensis</i>	X
Western Cottonwood	<i>Populus fremontii</i>	X
Skunk Bush	<i>Rhus aromatica</i> var. <i>triobata</i>	X
Willow Tree	<i>Salix</i> spp.	X
Russian Thistle	<i>Salsola tragus</i>	X
Desert Mallow	<i>Sphaeralcea ambigua</i>	X
Tamarisk	<i>Tamarix</i> spp.	X
Cattail	<i>Typha</i> spp.	X
Narrow-leaved Yucca	<i>Yucca angustissima</i>	X

Source: Red Cliffs Desert Reserve, 2006; Knight and Leavitt Associates, 2003; Utah Conservation Data Center, 2006; and Jones & Stokes, 2006.

## Impacts

### No-Build Alternative

Under the No-Build Alternative, minor improvements would occur along Red Hills Parkway. None of these improvements would occur outside of the existing right-of-way. No impacts to biological resources would occur.

### Build Alternative

#### Construction Impacts

The primary direct impact of construction activities on wildlife would be the removal or disturbance of wildlife habitat. Clearing and grading activities would result in the direct destruction of wildlife that is not mobile enough to avoid construction operations. These impacts would be limited primarily to reptilian species and burrowing mammals. Mitigation measure BIO-1 (see Section 3.10) would minimize these impacts because biological monitors would survey for sensitive wildlife within the construction disturbance area and relocate any sensitive species encountered. Other impacts to wildlife could occur as a result of disturbing rocky areas, which may provide habitat for reptiles. No impacts on migratory birds are anticipated because preconstruction surveys would be conducted (see mitigation measure BIO-1), and if active nests are encountered, they would be avoided until the chicks fledge.

Mitigation measure BIO-1 (see Section 3.10) would require installation of culverts under the road for tortoise crossings; the culverts would also be accessible to other small animals. This measure would allow animals to access the habitat located north and south of the road and minimize fragmentation.

Increased noise, dust, and human activity during construction could potentially disturb breeding or other activities of wildlife species in the adjacent areas. These effects would be limited to the perimeter of the construction disturbance area and construction staging areas and would be temporary and intermittent.

#### Operational Impacts

Operation of the Build Alternative would increase the number of vehicles using Red Hills Parkway, which could increase wildlife mortality due to resultant road kills. Speed limits along Red Hills Parkway would not change as a result of the proposed project. The tortoise exclusionary fence, which would extend the length of the road, would provide some protection for wildlife species unable to cross over or go through the fencing. Mule deer, coyote, cottontail, and other large wildlife species that occur within the reserve could access the road.

Operation of the Build Alternative would not substantially reduce or diminish habitat, cause a wildlife population to drop below self-sustaining levels, or threaten to eliminate any wildlife population.

Impacts to special-status species are discussed in Section 3.10.

## **Cumulative Impacts**

Cumulative impacts on biological resources are generally additive and proportional to the amount of ground disturbance within specific habitat types. The primary biological impacts of widening Red Hills Parkway would occur within the Red Cliffs Desert Reserve. The reserve has more than 62,000 acres and provides habitat for a number of wildlife species. Currently, there are few cumulative development threats to the reserve because most uses are prohibited within the reserve. Primary activities that occur within the reserve boundaries include non-motorized recreation, operation of a turkey farm, and maintenance of utility corridors. These activities result in small surface disturbances within the reserve but do not significantly impede the objective of the reserve, which is to protect and conserve desert tortoise habitat. Washington County has proposed building the Great Northern Corridor, a road that would connect SR-18 to I-15 and bisect the reserve. This project has not been funded, and implementation is not anticipated until after 2030. If implementation of this road were to be considered in the future, Washington County would have to demonstrate that construction of the road would not impair the function of the reserve.

Red Hills Parkway is currently located on approximately 25 acres of land within the southern portion of the Red Cliffs Desert Reserve. The road is located in a portion of the reserve with the densest desert tortoise population in California, Nevada, Arizona, and Utah, an area significant to the recovery of the Upper Virgin River Desert tortoise population. However, the proposed road corridor would follow the existing alignment but occupy an additional 15 acres of land within the Red Cliffs Desert Reserve. Of the additional 15 acres, approximately 6.75 acres are located outside of the tortoise exclusionary fencing currently located along Red Hills Parkway. Overall, the project would affect a small portion of the reserve, and mitigation (BIO-1 through BIO-4) would ensure that the impact would not be cumulatively significant.

## **Avoidance, Minimization, and/or Mitigation Measures**

### **No-Build Alternative**

No mitigation is necessary.

### **Build Alternative**

See Avoidance, Minimization, and/or Mitigation Measures in Section 3.10, Sensitive Species, for a detailed description of wildlife mitigation measures for the project.

## 3.10 Special-Status Species

This section discusses special-status wildlife and plant species that may occur in the project study area, including those that are listed or proposed for listing under the federal Endangered Species Act (ESA) and those that are listed on the Utah Sensitive Species List.

### Regulatory Setting, Studies, and Coordination

#### Federal Regulations

##### Endangered Species Act

The ESA (16 USC 1531 et seq.) provides certain protections for species that are listed or proposed for listing as threatened or endangered. USFWS is one of the federal agencies that administers the ESA and has primary responsibility for protection of listed terrestrial and freshwater species. Under Section 7 of the ESA, federal agencies are required to ensure that their actions do not jeopardize the continued existence of species listed as endangered or threatened or result in destruction or adverse modification of designated critical habitats used by those species. Section 9 of the ESA makes it unlawful for a person to take a listed species, with take defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct” (16 USC 1532).

The ESA also designates species that are candidates for listing as threatened or endangered. Federal and state agencies typically carry out conservation actions for candidate species to prevent their further decline and possibly eliminate the need to list them as threatened or endangered in the future.

In 1982, Congress amended Section 10 of the ESA to authorize incidental take of a listed species through the development and implementation of HCPs. The Washington County HCP was developed to authorize incidental take of Mojave Desert tortoise under Section 10(a)1(B) of the ESA.

Section 6 of the ESA authorizes the USFWS to enter into cooperative agreements with any state that establishes and maintains an adequate and active program for the conservation of endangered species and threatened species. Once a state enters into such an agreement, USFWS is authorized to assist in, and provide federal funding for, implementation of the state’s conservation program. Federal funding, provided in the form of grants, can be used to implement conservation projects, acquire habitat, support development of HCPs, or acquire land within HCPs. A portion of the Red Cliffs Desert Reserve was acquired with ESA Section 6 funds, including lands located at the intersection of Bluff Street and Red Hills Parkway. This land was purchased with the intent of managing the conservation and recovery of desert tortoise populations. Since the project would result in the conversion of 2 acres of land from conservation purposes to road, which is inconsistent with

intended purposes for the land, the City of St. George would be required to compensate the United States for the property by means of land transfer, replacement, or repayment with property of equal biological and economic value. USFWS is responsible for approving amendments to Section 6 grant agreements.

## **Migratory Bird Treaty Act**

The proposed project would be subject to the federal Migratory Bird Treaty Act (MBTA), which prohibits any person to “pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase...” any listed migratory bird. The list of migratory birds includes nearly all bird species native to the United States; nonnative species such as European starlings are not included. The statute was extended in 1974 to include parts of birds as well as eggs and nests. Thus, it is illegal under the MBTA to directly kill, or destroy an occupied nest of, nearly any bird species, not just sensitive species. Activities that result in removal or destruction of an active nest (a nest with eggs or young being attended by one or more adults) would violate the MBTA. Removal of unoccupied nests or bird mortality resulting indirectly from a project is not considered a violation of the MBTA.

## **Utah State Regulations**

### **Utah Wildlife Species of Concern**

Utah Wildlife Species of Concern (WSC) (Utah Administrative Rule R657-48), listed on Utah’s Sensitive Species List are those species for which there is credible scientific evidence to substantiate a threat to continued population viability in the State of Utah. WSC designations are intended to promote conservation actions that will ultimately prevent the species from being listed as threatened or endangered under the ESA. The UDNR Division of Wildlife Resources is the state agency responsible for monitoring WSC.

## **Agency Coordination**

Coordination letters were sent to USFWS, UDNR Division of Wildlife Resources, Red Cliffs Desert Reserve, and other stakeholders on February 1, 2006, informing them of a stakeholder meeting to be held on February 15, 2006. The purpose of this meeting was to allow agencies to comment on the project. The letter also requested information from the agencies regarding resources under their jurisdiction. No letters were received in response to the UDOT coordination letters. USFWS did send a letter on August 30, 2006, commenting on the alternatives presented at the alternatives open house (see Appendix A). A field visit occurred on August 22, 2006, to discuss improvements to the Skyline Drive intersection and other proposed improvements along Red Hills Parkway. Those in attendance included Lori Rose, Washington County HCP biologist; Paul West, UDOT biologist; Renee Chi, USFWS; Larry Crist, USFWS; William Tuttle, Jones & Stokes biologist; and Phil Giles, Creamer and Noble engineer. A mitigation strategy for desert tortoise was developed and submitted to USFWS on December 11, 2006. Additional coordination with USFWS, as required under

Section 7 of the ESA, is needed to finalize the consultation and determination of the appropriate mitigation for project-related impacts to Mojave Desert tortoise. In addition, USFWS is responsible for approving amendments to Section 6 grant agreements, and an ESA Section 7 consultation would be required prior to approval of the land exchange.

## Affected Environment

### Habitat

For a description of sensitive-species habitat types occurring within the study area, see Section 3.9, Wildlife.

### Special-Status Species

Special-status species with the potential to occur in the study area were determined based on a search of the Utah Conservation Data Center database on October 24, 2006, for the USGS St. George and Washington County 7.5-minute quadrangles. The list of special-status species known to occur within this geographic area is provided in Table 3.10-1.

A Jones & Stokes biologist visited the Red Hills Parkway study area on October 30, 2006, to assess potential sensitive-species habitat within the study area, determine which species could potentially occur in the study area, and ascertain the effects the proposed action could have on those species.

**Table 3.10-1.** Special-Status Species Known to Occur in the St. George and Washington County Quadrangles

Species Common Name ( <i>scientific name</i> )	Species Present in the Study Area?	Suitable Habitat in the Study Area?	Status of Species	Distribution/ Habitat Association
<b>Birds</b>				
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	No	No	Federal Threatened Species	Bald Eagles are opportunistic carnivores, generally occurring where food is most available. Most observations of Bald Eagles in Washington County are along the Virgin and Santa Clara Rivers and bodies of water associated with these rivers (Washington County 1995). Habitat in the study area is not suitable for this species.

Species Common Name ( <i>scientific name</i> )	Species Present in the Study Area?	Suitable Habitat in the Study Area?	Status of Species	Distribution/ Habitat Association
Southwestern Willow Flycatcher ( <i>Empidonax traillii extimus</i> )	No	No	Federal Endangered Species	The Southwestern Willow Flycatcher is rare in southern Utah during the summer. It is found most frequently in riparian habitats, especially in areas of dense willow. Breeding occurs during late spring or early summer. The Southwestern Willow Flycatcher is currently very rare throughout its range. The major factor in the decline of the Southwestern Willow Flycatcher is likely the alteration/loss of the riparian habitat necessary for the species (Utah Department of Natural Resources 2003). Habitat in the study area is not suitable for this species.
Mexican Spotted Owl ( <i>Strix occidentalis lucida</i> )	No	No	Federal Threatened Species	The Mexican Spotted Owl is a rare permanent resident of southern and eastern Utah on the Colorado Plateau. It occupies a variety of habitats, including various forest types and steep rocky canyons, with this last habitat being the primary habitat used in Utah. Spotted Owls nest in trees (especially those with broken tops), trunk cavities, or on cliffs. Their diet consists mainly of rodents but also includes rabbits, birds, reptiles and other vertebrates, and insects (Utah Department of Natural Resources 2003). Habitat in the study area is not suitable for this species.
Western Burrowing Owl ( <i>Athene cunicularia</i> )	May occur in the study area.	Yes	State Species of Special Concern	Western Burrowing Owls are distributed throughout western North America, primarily in open areas with short vegetation and bare ground in desert, grassland, and shrub-steppe environments. They have been known to use tortoise burrows for nesting. Habitat in the study area is suitable for this species.
California Condor ( <i>Gymnogyps californianus</i> )	No	No	Federal Endangered Experimental Species	The California Condor is among the rarest birds in North America. Over the last century, populations declined to the point where the few remaining birds were captured for captive breeding efforts in the 1980s. Since then, captive-reared birds have been released in California and northern Arizona. In Utah, sightings were historically rare, but sightings of birds that were released in northern Arizona have been made almost statewide in the late 1990s. California Condors prefer mountainous country at low and moderate elevations, especially rocky and brushy areas near cliffs, often near important foraging grounds. Condors eat carrion, usually feeding on large items such as dead sheep, cattle, and deer (Utah Department of Natural Resources 2003). Habitat in the study area is not suitable for this species.

Species Common Name ( <i>scientific name</i> )	Species Present in the Study Area?	Suitable Habitat in the Study Area?	Status of Species	Distribution/ Habitat Association
Yellow-billed Cuckoo ( <i>Coccyzus americanus</i> )	No	No	Federal Candidate	The Yellow-billed Cuckoo breeds primarily in large riparian areas, especially cottonwood and willow habitats along large rivers. In Utah, the species is historically uncommon to rare (Utah Department of Natural Resources 1998). Historical breeding records are known from areas around American Fork, Lehi, and Provo. Habitat in the study area is not suitable for this species.
<b>Mammals</b>				
Gray Wolf ( <i>Canis lupus</i> )	No	No	Federal Endangered	Gray wolves have been observed only in northern Utah (USFWS 2007).
Brown (Grizzly) Bear ( <i>Ursus arctos</i> )	No	No	Federal Threatened Extirpated Species	USFWS considers this species to be extirpated from Utah (Utah Department of Natural Resources 2006).
Kit Fox ( <i>Vulpes macrotis</i> )	May occur in the study area.	Yes	State Species of Special Concern	Kit foxes are found throughout Utah in desert and semiarid regions with flat shrub or shrub-grass communities and little ground cover. Habitat in the study area is suitable for this species.
Townsend's Big-eared Bat ( <i>Corynorhinus townsendii</i> )	No	Yes	State Species of Special Concern	Townsend's big-eared bats are common in the highlands of the West, often found in scrub plant communities, pinyon-juniper and pine forests, and deciduous woodlands (Zeloff and Collett 1988). However, they appear to be generally uncommon in dry regions. Local distribution is closely tied to the presence of roosting caves, rock shelters, mines, or buildings within reasonable commute distances (up to 20 miles) of foraging areas (Pearson et al. 1952). The rock outcrop located within the study area between Skyline Drive and Pioneer Hills Trailhead could provide temporary roosting for bats but is not considered high-quality habitat.
<b>Fish, Amphibians, and Invertebrates</b>				
Virgin River Chub ( <i>Gila robusta seminuda</i> )	No	No	Federal Endangered Species	There is no habitat in the study area for this species. Runoff from the project travels a considerable distance before eventually draining into the Santa Clara and Virgin Rivers. Water quality mitigation described in Section 3.8 would ensure that the project would not affect sensitive fish species.
Woundfin ( <i>Plagopterus argentissimus</i> )	No	No	Federal Endangered Species	There is no habitat in the study area for this species. Runoff from the project travels a considerable distance before eventually draining into the Santa Clara and Virgin Rivers. Water quality mitigation described in Section 3.8 would ensure that the project would not affect sensitive fish species.
Relict Leopard Frog ( <i>Rana onca</i> )	No	No	Federal Candidate Extirpated Species	This species is believed to be extirpated from the state of Utah (Utah Department of Natural Resources 2006).

Species Common Name ( <i>scientific name</i> )	Species Present in the Study Area?	Suitable Habitat in the Study Area?	Status of Species	Distribution/ Habitat Association
Mojave Desert Tortoise ( <i>Gopherus agassizii</i> )	Yes	Yes	Federal Threatened Species	In Utah, desert tortoise occurs in the extreme southwest corner of the state. Within its range, desert tortoise can be found in a variety of habitats, including creosote brush shrub, semi-arid grasslands, canyon bottoms, and rocky hillsides. Desert tortoises often construct burrows in compacted sandy or gravelly soil. Females nest under large shrubs or at the mouth of a burrow and lay one to three clutches of two to 14 eggs from May to July; eggs hatch in late summer or fall. Burrows, which may contain multiple tortoises, are used for hibernation/estivation during cold winter months. The typical diet of the desert tortoise consists of perennial grasses, cacti, shrubs, and other plant material (Utah Department of Natural Resources 2003). Suitable habitat occurs within the study area, and tortoises have been observed.
Gila Monster ( <i>Heloderma suspectum</i> )	May occur in the study area.	Yes	State Species of Special Concern	The Gila monster ranges from southwestern Utah in the United States to northern Sinaloa in Mexico and from southeastern California to western New Mexico (Knight and Leavitt Associates 2003). Background information suggests the Gila monster may be present in the study area. Gila monster habitat was encountered in the study area around rocky outcrops, canyons, and cliffs.
Arizona Toad ( <i>Bufo microscaphus</i> )	No	No	State Species of Special Concern	The Arizona toad occurs in isolated areas of the southwestern United States. In Utah, the Arizona toad is found only in the southwestern portion of the state. This species inhabits streams, washes, irrigated croplands, reservoirs, and uplands adjacent to water. It is inactive in cold weather, and adults are mainly nocturnal, whereas the newly metamorphosed young are active during daylight hours. The Arizona toad lays eggs on the bottoms of shallow, slow-moving streams. The diet of adults consists mainly of insects and snails, whereas larvae (tadpoles) consume plant matter and organic debris (Utah Department of Natural Resources 2003). Habitat in the study area is not suitable for this species.
Western Banded Gecko ( <i>Coleonyx variegatus</i> )	May occur in the study area.	Yes	State Species of Special Concern	The western banded gecko occurs throughout the southwestern United States. In Utah, the species can be found in the Mojave Desert of the extreme southwestern part of Utah. The western banded gecko eats small invertebrates, primarily insects and spiders. Females may lay several clutches of eggs each year during the spring and summer. Western banded geckos are excellent climbers and can be found in many types of habitat (Utah Department of Natural Resources 2003). Habitat in the study area is suitable for this species.

Species Common Name ( <i>scientific name</i> )	Species Present in the Study Area?	Suitable Habitat in the Study Area?	Status of Species	Distribution/ Habitat Association
Zebra-tailed Lizard ( <i>Callisaurus draconoides</i> )	May occur in the study area.	Yes	State Species of Special Concern	The zebra-tailed lizard, in Utah, is found only in the extreme southwestern corner of the state. The zebra-tailed lizard prefers sparsely vegetated desert areas with hard, packed soils. The diet of the species consists of insects, spiders, lizards, and occasionally plants (Utah Department of Natural Resources 2003). Habitat in the study area is suitable for this species.
Common Chuckwalla ( <i>Sauromalus ater</i> )	May occur in the study area.	Yes	State Species of Special Concern	The common chuckwalla, in Utah, occurs only in the southern portion of the state. Chuckwallas are found predominantly near cliffs, boulders, or rocky slopes where they use the rocks as basking sites and the crevices for shelter. Chuckwallas are primarily herbivorous (they eat plants), but they also eat insects (Utah Department of Natural Resources 2003). Habitat in the study area is suitable for this species.
Desert Night Lizard ( <i>Xantusia vigilis</i> )	Unlikely to occur in the study area.	Yes	State Species of Special Concern	The desert night lizard is found, in Utah, in a few small areas of the southern portion of the state. The desert night lizard is rarely seen. This lizard is extremely secretive, spending much of its time hiding under Joshua tree limbs and similar cover. This species breeds in May and June. Females do not lay eggs but give birth to live young (usually one to three young) in late summer or early fall. The desert night lizard eats a variety of insects and other small invertebrates (Utah Department of Natural Resources 2003). Habitat in the study area is suitable for this species.
Western Threadsnake ( <i>Leptotyphlops humilis</i> )	Unlikely to occur in the study area.	Yes	State Species of Special Concern	The western threadsnake is native to the southwestern United States and Mexico. In Utah, it occurs only in the extreme southwestern corner of the state, in Washington County. The western threadsnake is a secretive burrowing species, often living in moist, loose soil. Because the species spends so much time under the ground, the western threadsnake's eyes are vestigial, meaning that they no longer function. The western threadsnake eats small invertebrates, such as spiders, insects, and centipedes, and insect larvae. The species is nocturnal; individuals are active on the surface only at night (Utah Department of Natural Resources 2003). Habitat in the study area is suitable for this species.

Species Common Name ( <i>scientific name</i> )	Species Present in the Study Area?	Suitable Habitat in the Study Area?	Status of Species	Distribution/ Habitat Association
<b>Plants</b>				
Siler Pincushion Cactus ( <i>Pediocactus sileri</i> )	No	No	Federal Threatened Species	Siler pincushion cactus is a plant that occurs in Kane and Washington counties, Utah, and adjacent Coconino and Mohave counties, Arizona. A member of the cactus family, this species is a small, globose cactus with solitary, but occasionally clustered, stems that are typically 4 inches tall (some as great as 18 inches) and spines that become white with age. Its flowers are yellow with purple veins and bloom during March and April. Siler pincushion cactus is found on the white, occasionally red, gypsiferous and calcareous sandy or clay soils derived from the various members of the Moenkopi Formation. It is sometimes found, however, on the nearly identical Kaibab Formation. Siler pincushion cactus occurs on rolling hills, often with a badlands appearance, in warm desert shrub, sagebrush-grass, and, at its upper limits, pinyon-juniper communities, at elevations ranging from 2,640 to 5,410 feet above mean sea level (Utah Department of Natural Resources 2003). Habitat in the study area is not suitable for this species.
Shivwits or Shem Milkvetch ( <i>Astragalus ampullarioides</i> )	No	No	Federal Endangered Species	Shivwits or Shem milkvetch occurs in only Washington County, Utah. A member of the bean family, Shivwits milkvetch is a perennial herb. Specimens are 8 to 18 inches tall, each with an underground, branching woody base and an erect flower stalk bearing yellow-white flowers that bloom from late April to early June. Shivwits milkvetch grows on the unstable clay soil of Chinle Shale in warm desert shrub and pinyon-juniper communities, at elevations ranging from 2,860 to 3,660 feet above mean sea level (Utah Department of Natural Resources 2003). Habitat in the study area is not suitable for this species.
Holmgren Milkvetch ( <i>Astragalus holmgreniorum</i> )	No	No	Federal Endangered Species	Holmgren milkvetch occurs in Washington County, Utah, and in immediately adjacent Mohave County, Arizona. A member of the bean family, this species is a dwarf, tufted, stemless perennial herb. It has pinkish-purple flowers with unique white-tipped wings; it blooms in April and May. Holmgren milkvetch grows in topographic sites where water runoff occurs and the soil surface is covered by a stony or gravelly erosional pavement. The soils are derived from the Moenkopi Formation (Utah Department of Natural Resources 2003). Habitat in the study area is not suitable for this species.

Species Common Name ( <i>scientific name</i> )	Species Present in the Study Area?	Suitable Habitat in the Study Area?	Status of Species	Distribution/ Habitat Association
Dwarf Bearclaw-poppy ( <i>Arctomecon humilis</i> )	No	No	Federal Endangered Species	Dwarf bearclaw-poppy is a narrow endemic to Washington County, Utah (the only area where it occurs). A member of the poppy family, this species is a perennial herb that produces abundant white flowers. The flowers bloom from mid-April through May and are quite showy next to the red soils in which the plant grows. Dwarf bearclaw-poppy is found on gypsiferous clay soils derived from the Moenkopi Formation. It occurs on rolling low hills and ridge tops, often on barren, open sites in warm desert shrub communities (Utah Department of Natural Resources 2003). Habitat in the study area is not suitable for this species.

## Impacts

### No-Build Alternative

The No-Build Alternative would not disrupt sensitive-species habitat. USFWS has concurred that the realignment of the Skyline Drive intersection is “not likely to adversely affect desert tortoise” (Crist 2006). The intersection realignment would occur in an area that is heavily disturbed and does not provide habitat for any state sensitive species.

### Build Alternative

#### Construction Impacts

##### Federally Listed Species

The only federally listed species that occurs in the study area, or that the study area provides habitat for, is the desert tortoise.

Direct impacts to the Mojave Desert tortoise would result from construction of the Build Alternative. Construction activities would permanently remove 6.2 acres of tortoise habitat outside of the existing tortoise exclusionary fencing. Construction activities would temporarily affect an additional 0.55 acre of habitat outside of the existing tortoise exclusionary fencing. The proposed limits of disturbance are shown in Figure 3.10.1. Following construction, the 0.55 acre of habitat would be restored in accordance with mitigation measure BIO-1. The area within the existing Red Hills Parkway right-of-way enclosed by tortoise exclusionary fencing was previously cleared of tortoise, an action that was approved by the Washington County HCP and USFWS.

Construction activities would disturb existing soil and vegetation and could result in the spread of non-native plants. Exotic species may be of lower nutritional value than endemic forage and may assist in the spread of wildfires. Mitigation measures IS-1 and IS-2 (see Section 3.11) would reduce the potential for invasive species to infest the areas of disturbance after construction.

Construction could also result in the incidental death of unseen tortoises within the construction area beneath crushed vegetation or in undetected burrows. Mitigation measure BIO-1 would require biological monitors during construction to survey for tortoise and relocate any individuals that occur within the construction area. This measure would reduce the potential for tortoise mortality.

### **State Sensitive Species**

The study area may provide a small amount of habitat for nine state sensitive species, including western threadsnake, desert night lizard, common chuckwalla, zebra-tailed lizard, western banded gecko, Gila monster, Townsend's big-eared bat, kit fox, and Western Burrowing Owl. Most of the 62,000-acre Red Cliffs Desert Reserve provides habitat for these species.

Red Hills Parkway is currently located on approximately 25 acres of land within the southern portion of the reserve. The proposed road would follow the existing alignment but would occupy an additional 15 acres of land within the reserve. Of the additional 15 acres, approximately 6.75 acres are located outside of the tortoise exclusionary fencing located along Red Hills Parkway on land that is generally undisturbed. Much of the land located within the fence that would be affected by construction is already heavily disturbed and is not considered quality habitat. Overall, the project would affect a small amount of the available habitat. Mitigation measure BIO-1 would require a preconstruction biological survey of the area of disturbance and relocation of any sensitive species observed within the construction area. This measure would minimize the potential for mortality of sensitive species during construction.

## **Operational Impacts**

### **Mojave Desert Tortoise**

Desert tortoise densities within the project study area are very high outside of the existing tortoise fence. Because appropriate habitat is being preserved for the species through the adjacent Red Cliffs Desert Reserve, implementation of the Build Alternative would not jeopardize the continued existence of the species.

The proposed road would permanently remove 6.2 acres of tortoise habitat outside of the existing tortoise exclusionary fencing. Following construction, the existing tortoise exclusionary fencing would be relocated, and 1.6 acres of land currently located within the tortoise fencing would be restored to the reserve (see Figures 3.10-1a and 3.10-1d). Most of this land is undisturbed. A portion of the land has been disturbed, but restoration activities have been or will be performed prior to project completion.

The City of St. George is currently pursuing acquisition of approximately 5 acres of private property located just south of Red Hills Parkway and just east of Bluff Street to compensate for the loss of approximately 5 acres of desert tortoise

habitat resulting from the proposed project. The remaining 1.75 acres of desert tortoise habitat affected by the project would be mitigated for in accordance with mitigation measure BIO-3.

Operation of road facilities could result in habitat degradation, which would consist of human-mediated changes in habitat characteristics that could render an area less valuable to, but still useable by, tortoises. The degradation could include altered soil structure, increased exotic plants, lower abundance of preferred forage plants, reduced availability of effective cover sites, or a combination of these traits. The degradation may not directly cause mortality in tortoise populations but may reduce reproductive output or cause animals to leave the area (Borman 2002). The implementation of mitigation measures BIO-1, BIO-2, BIO-3, IS-1, and IS-2 would reduce potential project-related habitat loss and degradation. Additionally, the Build Alternative involves widening an existing road; tortoises occupying habitat near the road already experience many of these impacts and have not left the area.

Roads are commonly associated with population fragmentation due to the reduction or prevention of movement of individuals across the road. The proposed project would consist of widening an existing road and replacing existing tortoise exclusionary fencing and, therefore, would not increase tortoise habitat fragmentation or population fragmentation. The implementation of mitigation measure BIO-2 would result in the construction of new culverts that would allow tortoise to cross under the road. Since there are few existing opportunities for tortoise to cross under the existing road facility, this measure may increase the movement of individuals across the road and provide habitat connectivity on both sides of the road.

Garbage dumped illegally from vehicles may cause local habitat alteration and may affect individual tortoises. Garbage may also attract ravens, which prey on soft-shelled juvenile tortoises. Mitigation measure BIO-2 would require the City to maintain the right-of-way and remove trash and roadkill. This measure would reduce the potential for raven predation.

Potential impacts would be reduced to an acceptable level with the adoption of mitigation measures BIO-1, BIO-2, BIO-3, IS-1, and IS-2.

### **State Sensitive Species**

Operational impacts to state sensitive species would be similar to the existing conditions since Red Hills Parkway is an existing road. Mitigation measures that would reduce impacts to desert tortoise and restore habitat after construction would also mitigate habitat impacts for state sensitive species.

### **Cumulative Effects**

Section 3.9 discusses cumulative impacts to the Red Cliffs Desert Reserve, which accounts for the majority of the occupied desert tortoise habitat within the area. This section will concentrate on cumulative impacts to desert tortoise.

The Washington County HCP was developed to provide a comprehensive approach to preserving and protecting desert tortoise habitat in Washington

County while allowing controlled growth and development in portions of desert tortoise habitat deemed less essential to species survival and recovery. As a result, USFWS issued an incidental take permit (10[a] 1[B]) based on the terms and conditions of an agreement with Washington County. This permit allows the take of up to 1,169 tortoise in Washington County over a 20-year period (USFWS 1996). In its decision to issue the permit for incidental take, USFWS stated that the HCP would benefit tortoise recovery by implementing actions required for the long-term survival and recovery of the species, allowing incidental take of desert tortoise in areas not proposed for recovery, and consolidating desert tortoise habitat ownership in the recovery unit to allow comprehensive planning and management for recovery and survival of desert tortoise and minimize habitat fragmentation (USFWS 1996).

The reserve was established to compensate for the permitted incidental take of desert tortoise and the loss of habitat resulting from development in Washington County. Therefore, this section considers only cumulative threats to tortoise within the reserve. These threats include wildfire, drought, disease, and human disturbances (recreation and utility use). Tortoise populations within the reserve have declined in recent years due to drought and wildfire. The Build Alternative could contribute to declining tortoise populations due to construction and operational impacts. The road is located in a portion of the reserve with the densest desert tortoise population in California, Nevada, Arizona, and Utah, an area significant to the recovery of the Upper Virgin River Desert tortoise population. However, the road would affect only approximately 6.75 acres of land outside of the tortoise exclusionary fencing, and mitigation (BIO-1 through BIO-4) would ensure that the impact would not be cumulatively significant

## **Avoidance, Minimization, and/or Mitigation Measures**

### **No-Build Alternative**

No mitigation is necessary.

### **Build Alternative**

#### **Mitigation Measure BIO-1: Treatment of All Lands within the Reserve**

1. The City shall provide qualified desert tortoise biologists to survey the construction area prior to initiating construction activities and relocate any desert tortoise or other sensitive species occurring within the construction area. Biologists will also identify any nesting migratory birds prior to construction activities. Any active nests found will be avoided until the chicks fledge. The City shall also provide qualified desert tortoise monitors that will be available during construction activities to monitor the area for desert tortoise and other sensitive species and relocate live desert tortoises or other sensitive species that may occur within the construction area. Monitors would visit the construction site once a week to inspect construction activities and inspect fencing. Monitors would be available to relocate any sensitive

species encountered during construction but would not be present during all construction activities.

2. The City shall prepare a restoration/reclamation plan to be approved by the USFWS that includes stockpiling and replacing topsoil, observing construction practices that limit damage to the reserve, applying BLM-certified seed mixes to areas disturbed during construction, and placing boulders and rocks in reclaimed areas. Stockpiles would be located within the fenced construction area.
3. Prior to initiating construction, the City shall prepare a fencing plan to be approved by the USFWS and install USFWS-recommended temporary desert tortoise exclusionary fencing around the limits of disturbance (see Figure 3.10-1). This fencing shall be erected in areas that require disturbance outside of the existing tortoise exclusionary fence. The temporary construction fence will be inspected on a weekly basis to insure it is functioning properly.
4. After construction, the City shall install permanent tortoise exclusionary fencing along the permanent right-of-way in accordance with USFWS specifications and the fencing plan.

### **Mitigation Measure BIO-2: Treatment of Areas within the Existing Tortoise Exclusionary Fence**

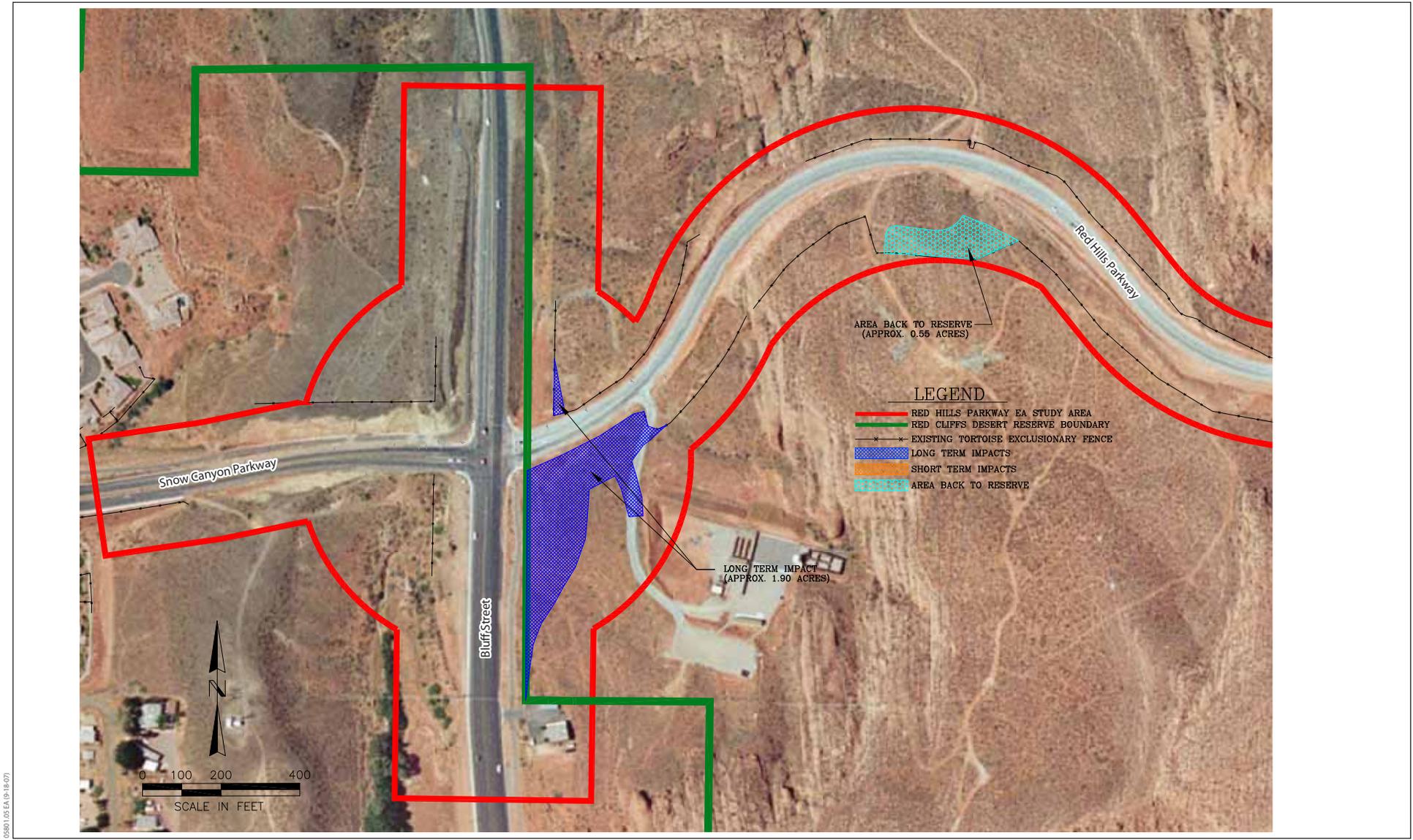
1. The City shall install 5 culverts spaced approximately 2,500 feet apart to allow desert tortoise movement under Red Hills Parkway. The final type, design, and location of the said crossings shall be coordinated with USFWS. The crossings will consist of open grating on top except for where the crossings cross under the roadway. The bottom of the crossings shall consist of native material.
2. Once operational, the City shall maintain the right-of-way, including removal of illegally dumped garbage and roadkill, which can attract ravens. During construction of the proposed facility, trash will be kept in an airtight garbage container. No trash or debris from construction of the project will be left within the project area outside of an approved disposal container for more than 24 hours.

### **Mitigation Measure BIO-3: Treatment of Areas outside of the Existing Tortoise Exclusionary Fence**

The City shall rehabilitate identified areas of desert tortoise habitat within the reserve to offset additional impacts from this project. Mitigation ratios for project-related impacts on tortoise habitat will be coordinated with USFWS.

### **Mitigation Measure BIO-4: Compensation for Property Purchased with ESA Section 6 Funds**

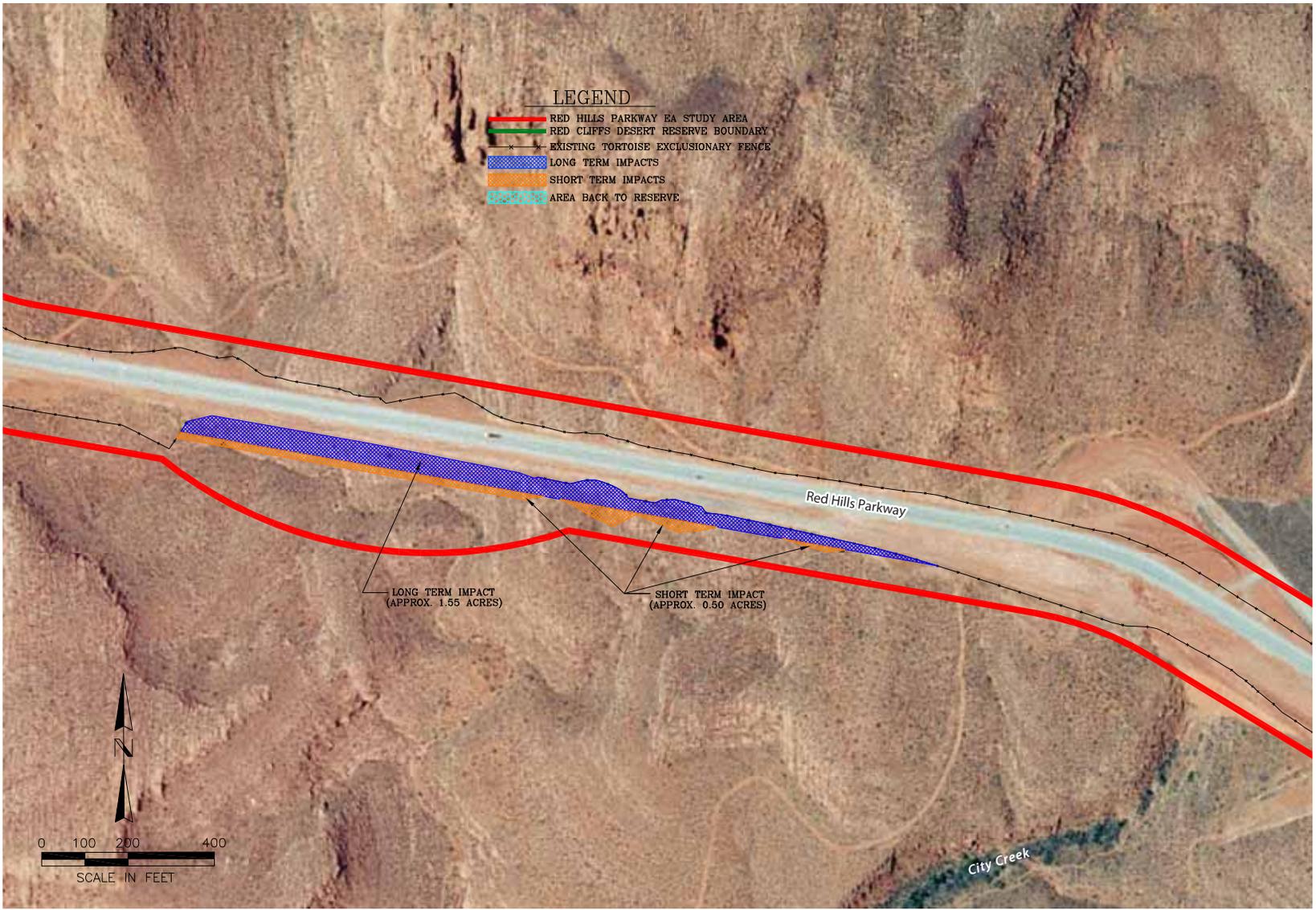
The City shall provide State Parks with compensatory mitigation for property originally purchased with ESA Section 6 funds at a 1:1 ratio. The replacement property will fulfill the following three criteria: 1) The property will be manageable and adjacent to existing park property, 2) the property will have recreational value, and 3) the property will have biological value for desert tortoise. The replacement property is identified in Figure 1-2.



**Figure 3.10-1a**  
Impacts to Mojave Desert Tortoise Habitat

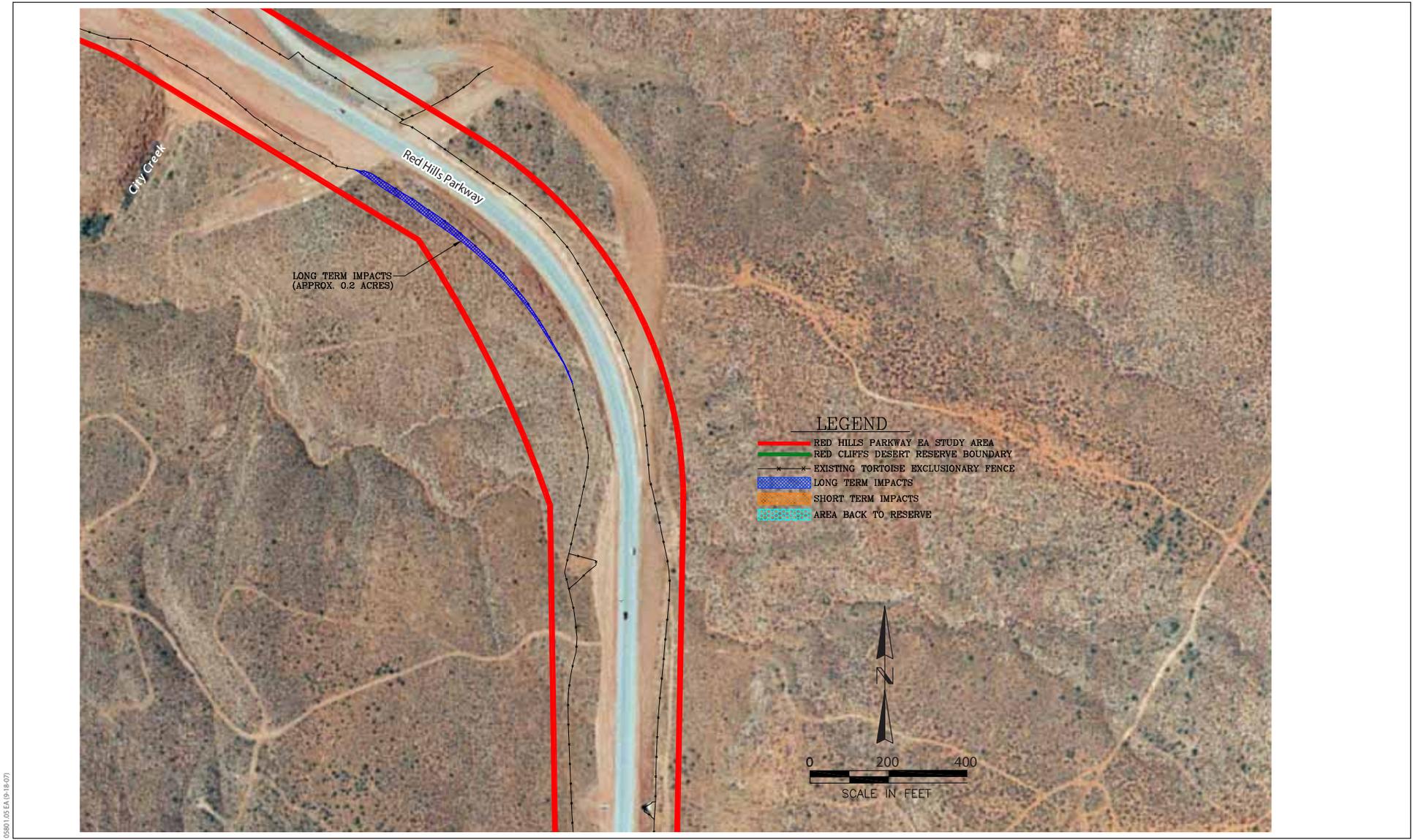
LEGEND

- RED HILLS PARKWAY EA STUDY AREA
- RED CLIFFS DESERT RESERVE BOUNDARY
- EXISTING TORTOISE EXCLUSIONARY FENCE
- LONG TERM IMPACTS
- SHORT TERM IMPACTS
- AREA BACK TO RESERVE



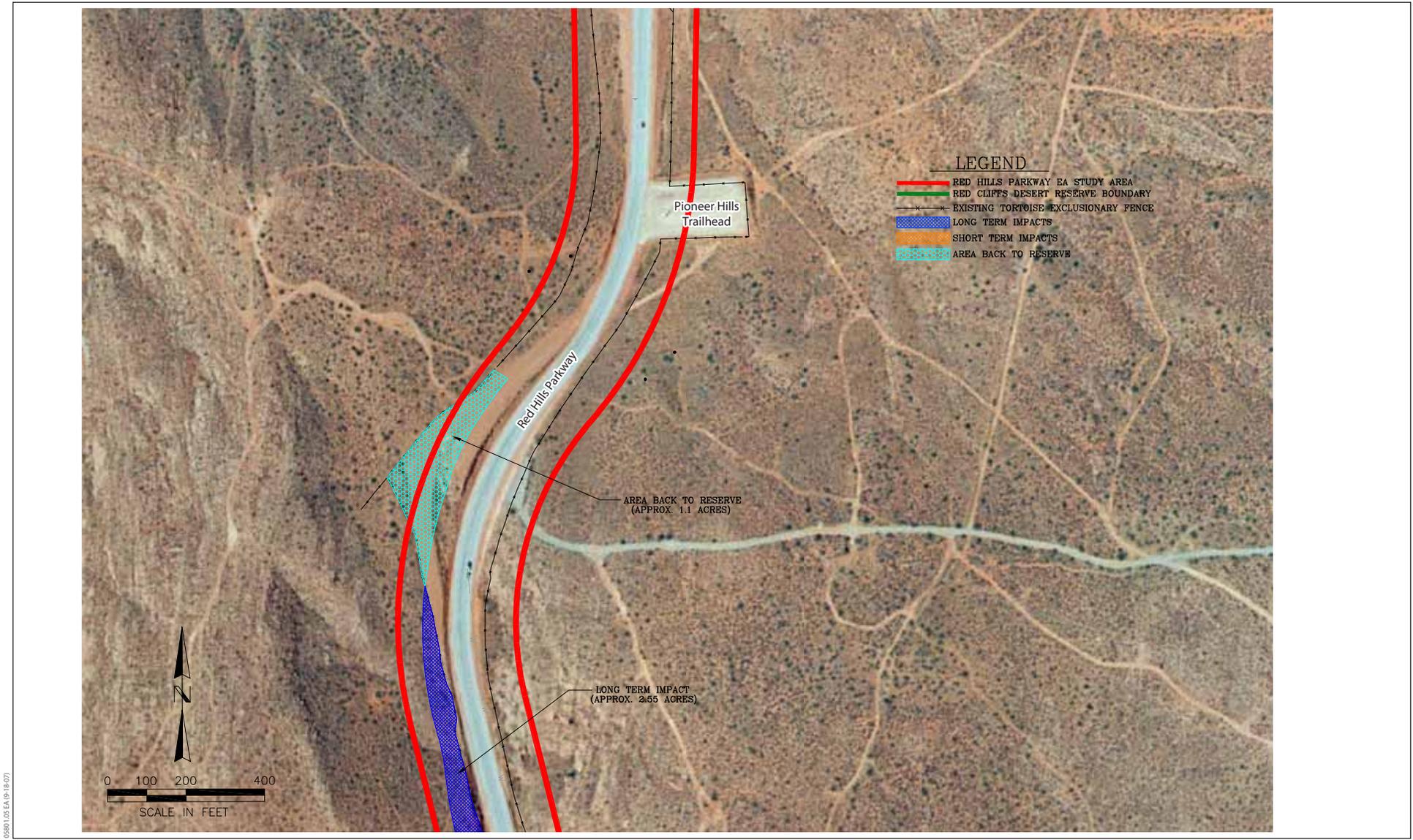
058601.05 EA (9-18-07)

Figure 3.10-1b  
Impacts to Mojave Desert Tortoise Habitat

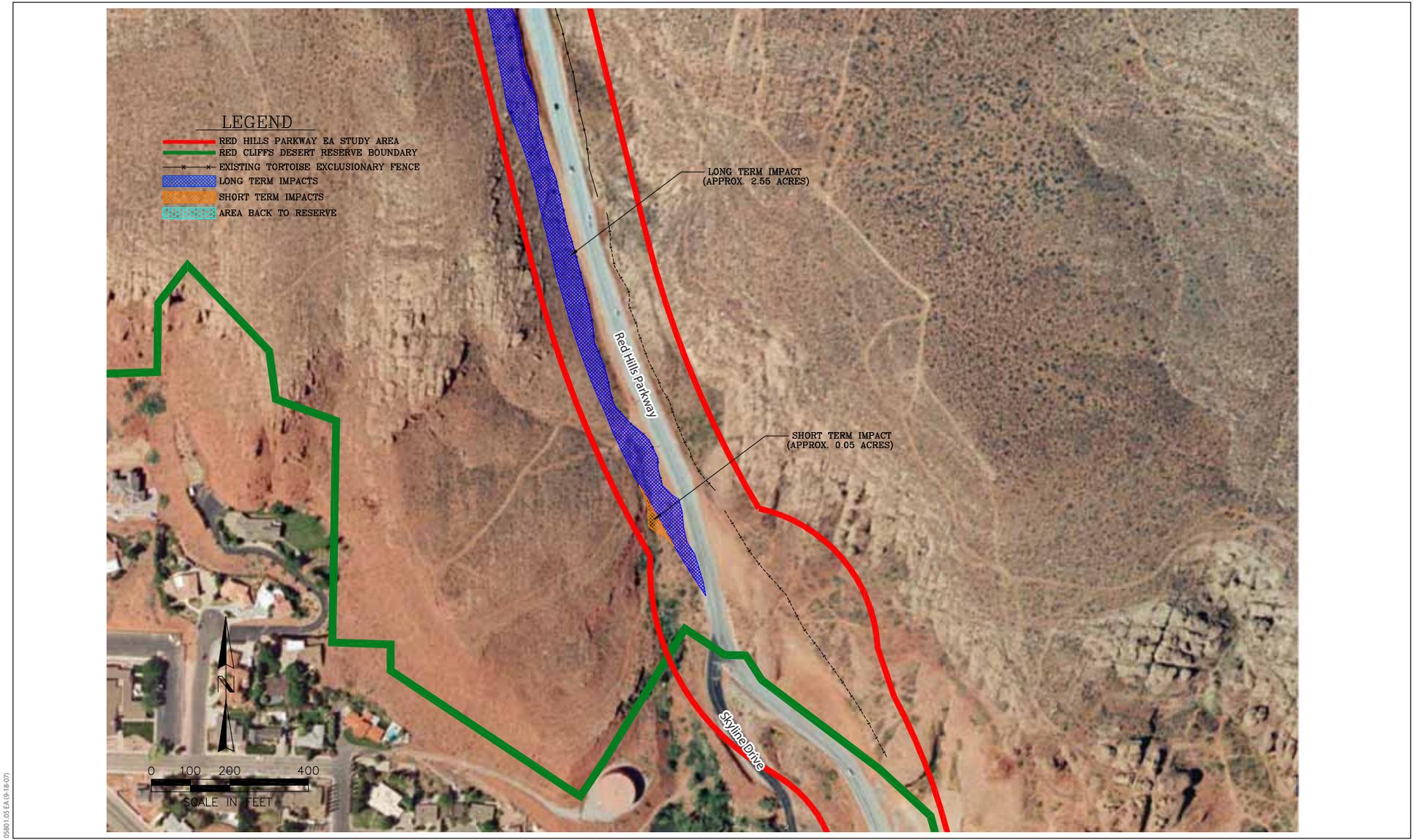


05860.1.05 EA (9-18-07)

**Figure 3.10-1c**  
**Impacts to Mojave Desert Tortoise Habitat**



**Figure 3.10-1d**  
**Impacts to Mojave Desert Tortoise Habitat**



**Figure 3.10-1e**  
Impacts to Mojave Desert Tortoise Habitat

## 3.11 Invasive Species

This section lists noxious weeds of concern in Washington County and noxious weeds that occur in the study area. Potential noxious weed impacts resulting from the proposed action and mitigation measures are also identified.

### Regulatory Setting, Studies, and Coordination

On February 3, 1999, President Clinton signed Executive Order 13112, the foundation of federal action to prevent the spread of invasive species. It established the National Invasive Species Council (NISC) and required NISC to issue biennial national management plans for invasive species and instructed federal agencies not to authorize, fund, or carry out actions likely to promote or introduce invasive species in the United States or elsewhere. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.”

Local governments in Utah are also responsible for invasive-species surveys and treatments for their projects, as set forth in the Utah Noxious Weed Act, Title 04, Chapter 17-1 of the Utah Code and Constitution. The Utah Noxious Weed Act requires each county to formulate and implement a countywide noxious weed control program designed to prevent and control noxious weeds. In administering the Utah Noxious Weed Act, the state weed specialist coordinates and monitors weed control programs throughout the state. County commissioners may declare a particular weed a county noxious weed. A list of noxious weeds of concern in Washington County is provided in Table 3.11-1.

To identify noxious weeds that may be of concern in the project vicinity, the following sources were used:

- State Noxious Weeds – the Utah Noxious Weed List (Utah Department of Agriculture and Food [UDAF] 2006). Provides a list of officially designated noxious weeds for the State of Utah, as per the authority vested in the commissioner of agriculture under the Utah Noxious Weed Act; and
- County Declared Invasive Weeds – County Noxious Weeds 2003 (UDAF 2003).

Aquatic nuisance species pose a major threat to Utah water resources. However, the three species of primary concern, purple loosestrife (*Lythrum salicaria*), Eurasian watermilfoil (*Myriophyllum spicatum*), and zebra mussel (*Dreissena polymorpha*), all require perennial open water, which does not occur in the study area.

**Table 3.11-1.** Noxious Weeds of Potential Concern in Washington County, Utah

Common Name	Scientific Name	Utah Noxious Weeds List	County Noxious Weeds List
Quackgrass	<i>Agropyron repens</i>	Yes	
Poison milkweed	<i>Asclepias subverticillata</i>		Yes
Hoary cress	<i>Cardaria drabe</i>	Yes	
Musk thistle	<i>Carduus mutans</i>	Yes	
Diffuse knapweed	<i>Centaurea diffusa</i>	Yes	
Spotted knapweed	<i>Centaurea maculosa</i>	Yes	
Russian knapweed	<i>Centaurea repens</i>	Yes	
Yellow starthistle	<i>Centaurea solstitialis</i>	Yes	
Squarrose knapweed	<i>Centaurea squarrosa</i>	Yes	
Squarrose knapweed	<i>Centaurea squarrosa</i>	Yes	
Canada thistle	<i>Cirsium arvense</i>	Yes	
Field bindweed (wild morning glory)	<i>Convolvulus arvensis</i>	Yes	
Bermuda grass	<i>Cynodon dactylon</i>	**	
Leafy spurge	<i>Euphorbia esula</i>	Yes	
Dyers woad	<i>Isatis tinctoria</i>	Yes	
Perennial pepperweed	<i>Lepidium latifolium</i>	Yes	
Purple looserstrife	<i>Lythrum salicaria</i>	Yes	
Scotch thistle	<i>Onopordum acanthium</i>	Yes	
Silverleaf nightshade	<i>Solanum eleagnifolium</i>		Yes
Johnsongrass	<i>Sorghum halepense</i>	Yes	
Perennial sorghum	<i>Sorghum halepense and sorghum almum</i>	Yes	
Medusahead	<i>Taeniatherum caput-medusae</i>	Yes	

\*\* Bermuda grass is not considered a noxious weed in Washington County and is not subject to provisions of the Utah Noxious Weed Act within the boundaries of the county.  
Source: UDAF, 2003 and 2006.

## Affected Environment

On September 8, 2006, a Jones & Stokes botanist conducted a field survey to evaluate the study area for the presence of listed noxious weeds. The botanist walked along most of the Red Hills Parkway alignment, noting all plants encountered and recording any noxious weeds observed.

One noxious weed species, silverleaf nightshade, was observed in the study area; occurrences are summarized in Table 3.11-2 below:

**Table 3.11-2.** Noxious Weeds Observed in the Study Area

Noxious Weed Species	Location
Silverleaf nightshade	Northwest corner of the intersection with Bluff Street
Silverleaf nightshade	East end of disturbed pull-out area opposite Skyline Pond
Silverleaf nightshade	Central portion of disturbed pull-out area opposite Skyline Pond

## Impacts

### No-Build Alternative

Under the No-Build Alternative, regular road maintenance would occur and invasive weed species occurring within the study area would likely be eradicated as part of the City's weed spraying program. The No-Build Alternative would not require surface soil disturbances except during realignment of the Skyline Drive intersection, which is not expected to result in the spread of noxious weeds.

### Build Alternative

#### Construction Impacts

Construction activities associated with the Build Alternative could introduce or spread noxious weeds into currently noninfested areas. Plants or seeds of noxious weeds may be dispersed via construction equipment and able to colonize disturbed soil if appropriate measures are not implemented. Impacts from the introduction of invasive species include the displacement or elimination of native plant species and therefore degradation of habitat for special-status wildlife, such as desert tortoise, which depend on native plants for food. Displacement of native plants could, in turn, indirectly affect community structure and ecosystem processes. Implementation of mitigation measures IS-1 and IS-2 would ensure that construction activities would not introduce or spread noxious weeds in the study area.

#### Operational Impacts

Operation of the widened Red Hills Parkway would not result in the introduction or spread of noxious weeds. Regular right-of-way maintenance would result in the elimination of noxious weeds.

#### Cumulative Effects

The largest undeveloped area near Red Hills Parkway susceptible to noxious weed impacts is the Red Cliffs Desert Reserve. In 2005, wildfires burned a large portion of the reserve, resulting in 30 to 40 percent mortality for the tortoise population (U.S. Institute for Environmental Conflict Resolution 2006). Invasive cheatgrass and red brome fueled the fires. Reducing noxious weeds within the reserve is a stated goal of both the St. George Field Office Resource Management Plan and the Washington County HCP. The proposed project would implement measures (IS-1 and IS-2) to minimize the introduction or spread of noxious weeds and, therefore, would not substantially contribute to cumulative noxious weeds impacts within the reserve.

## **Avoidance, Minimization, and/or Mitigation Measures**

### **No-Build Alternative**

No mitigation is necessary.

### **Build Alternative**

#### **Mitigation Measure IS-1: Avoid the Dispersal of Noxious Weeds into Noninfested Areas**

To avoid the introduction or spread of noxious weeds into noninfested areas, the project proponent shall incorporate the following measures into the project plans and specifications.

1. Clean construction equipment prior to entering noninfested areas.
2. Minimize native vegetation disturbances during construction.
3. Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of noxious weeds.
4. If fill material or erosion-control materials are brought in from off-site, use certified weed-free materials.
5. Manage invasive weeds found within the construction disturbance area prior to the start of construction and at the end of construction, if necessary.

#### **Mitigation Measure IS-2: Revegetate Disturbed Portions of the Study Area with Native Plant Species**

To avoid introduction of potentially invasive exotic landscape species and reestablish vegetation cover on disturbed sites that are vulnerable to invasive plants, the City of St. George will specify on construction contract documents and in the reclamation plan that seed mixes and/or live plants used for landscaping and/or erosion control must be free of noxious weeds and other invasive plant species.

## 3.12 Historic, Archaeological, and Paleontological Resources

This section documents cultural resources identified within the area of potential effects (APE). This section also discusses potential impacts to cultural resources resulting from implementation of the Build and No-Build Alternatives.

### Regulatory Setting, Studies, and Coordination

#### Regulatory Setting

##### Federal

The proposed project is subject to compliance with the NHPA of 1966, as amended. The following section within the NHPA applies to FHWA's responsibilities as the lead federal agency regarding the identification and treatment of cultural resources.

##### **National Historic Preservation Act, Section 106 (16 USC 470f)**

According to Section 106, the responsible federal agency is required to take into account the effect of a project on cultural resources included in, or eligible for, inclusion in the National Register of Historic Places (NRHP). The lead federal agency, in consultation with the State Historic Preservation Office (SHPO), is responsible for the determination of eligibility for listing in the NRHP and for the finding of effect. The federal Advisory Council on Historic Preservation (ACHP) is given the opportunity to comment on the project and its effect on cultural resources.

Cultural resources include prehistoric and historic districts, sites, buildings, structures, and objects that represent past human activities. This term includes artifacts, features, and remains that are related to and located within such properties. The term also includes properties of traditional religious and cultural importance that meet the significance criteria described below. Significant cultural resources include those resources that are listed, or are eligible for listing, in the NRHP. The criteria for evaluating the significance of cultural resources are set forth in 36 CFR 60.4. These criteria are designated in the four-tier letter code system (A, B, C, and D), presented below.

Significance as it relates to American history, architecture, archaeology, 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

- Criterion A – are associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion B – are associated with the lives of persons significant in our past;

- Criterion C – embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values; or represent a significant and distinguishable entity whose components may lack individual distinction; or
- Criterion D – has yielded, or may be likely to yield, information important in prehistory or history.

## State

The Antiquities Protection Act of 1992 requires state agencies to take into account, prior to spending state funds, the effect of any undertaking on districts, sites, buildings, structures, or specimens that are included in or eligible for the NRHP or the Utah State Register of Historic Sites. It also allows adequate time for the SHPO to comment on the undertaking (Utah Code Annotated [UCA] 9-8-404).

State of Utah Regulation UCA 63-73-19 protects significant paleontological resources and applies to all paleontological resources on or eligible for inclusion in the State Paleontological Register. This regulation requires state agencies to take into account the effect of the undertaking on paleontological resources and allow the director of UGS an opportunity to comment. A memorandum of understanding (MOU) between UDOT and UGS pursuant to UCA 63-73-19 sets forth policy regarding paleontological resources in the State of Utah. If it is determined that the proposed action would have no effect on paleontological resources, then no further action is required. If there may be an effect on paleontological resources, then documentation and surveys may be required.

## Paleontological Consultation

A UGS paleontology file search dated October 24, 2006, and a letter from UGS dated November 14, 2006, indicate that this project qualifies for treatment under the UDOT/UGS-executed memorandum of agreement. Some exposures of Lower Jurassic Moenave and Kayenta Formations are present in the project vicinity; these formations are sensitive for paleontological resources. While vertebrate fossils and track sites have been found in these formations in the project vicinity, there are no known paleontological locations in the project vicinity. Implementation of mitigation measure CR-4 would minimize or avoid impacts to paleontological resources.

## Native American Consultation

FHWA conducted Native American consultations for the proposed action. On June 29, 2006, a letter requesting consultation was prepared for the Hopi tribe, the Paiute Indian tribe of Utah, the Shivwits band of the Paiutes, and the Kanosh band of the Paiutes, along with a project description and vicinity map. The letter invited the tribes to be consulting parties, requested information they may have on cultural resources in the APE, and invited comments about the project. In addition, a draft of the Class III Cultural Resources Inventory report for this project was sent to the tribes on April 12, 2007, for comment. Responses have

been received from the Paiute Indian Tribe of Utah, and the Hopi Tribe (see Appendix A) requesting additional information as it becomes available and notification of project changes. A follow-up letter was sent to the tribes on November 8, 2007, to notify them that an additional cultural resources survey had been conducted. A copy of the Determination of Eligibility and Finding of Effect (DOE/FOE) was also provided.

## Cultural Resource Study Methodology

In consideration of both direct and indirect effects, the APE for the project was defined as the area 200 feet from the edge of the pavement on both sides of Red Hills Parkway, beginning at Industrial Road and continuing west to a location 1,000 feet west of Bluff Street. An additional area 200 feet from the edge of the pavement on both sides of Bluff Street, beginning 1,000 feet north of Red Hills Parkway and ending 1,000 feet south of Red Hills Parkway, was also included in the APE to allow construction of a grade-separated interchange. Two parcels located southeast of the intersection of Red Hills Parkway and Bluff Street and one parcel located northeast of the intersection of Red Hills Parkway and Bluff Street were also included in the APE as potential mitigation sites.

In December 2005, Jones & Stokes cultural resources personnel conducted a records search and historic research at the Antiquities Section of the Utah State Division of History. All cultural resources sites and studies within the project APE as well as within a 1-mile radius of the APE were noted. Nine previous archaeological studies were conducted within 1-mile of the APE, the results of which are listed in Table 3.12-1.

These previous studies resulted in the identification of eight cultural resources in the current APE. Of these resources, three are historic-era features that include a roadbed segment (42WS2428.1), a rock wall segment (42WS4438), and the Cottonwood Pipeline (42WS4388). Five are prehistoric sites that include three rock shelters (42WS2871, 42WS4386, 42WS4387) and two lithic scatters (42WS2872, 42WS2873). One of the rock shelters listed above (42WS2871) also includes historic-era refuse. Five of these previously recorded resources have been recommended or determined eligible for listing in the NRHP.

A Class III reconnaissance-level survey to identify and evaluate all archaeological and historic resources in the APE was conducted by Jones & Stokes (Jones & Stokes 2007). The inventory and evaluation efforts were conducted in accordance with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 Federal Register Part IV), the guidelines set forth by the Utah BLM (Utah BLM 2002), and the UDOT Guidelines for Archaeological Survey and Testing (UDOT 2000). A Class III inventory, preceded by an existing data review, is the standard method of identifying historic properties in Utah for the purpose of complying with Section 106 of the National Historic Preservation Act (NHPA).

**Table 3.12-1.** Previous Cultural Resources Studies Completed within the Project Vicinity

SHPO Report #	Author(s)	Report Title
U-94-AS-570bps	Montgomery & Montgomery (1995) Abajo Archaeology	Cultural Resource Inventory and Evaluative Testing along State Route 18, St. George to Snow Canyon project, Washington County, Utah
U-03-BC-079s(e)	Office of Public Archaeology, BYU (2004)	Historic Background and Archaeology of the Cottonwood Pipeline, Washington County, Utah
U-04-UM-0329s	Shaver (2004)	Two Surveys in Washington County, Utah
U-88-IG-0262p	InterSearch Learning and Research (1987)	Letter report to Lester Jester, Utah Department of Transportation, regarding archaeological survey along Bluff Street, St. George, Utah
U-88-IG-0262p	InterSearch Learning and Research (1988)	Letter report to Creamer & Noble regarding archaeological survey for Sunset Boulevard Improvement project, St. George, Utah
U-95-SJ-0363bps	Polk (1995)	Cultural Resource Inventory for the City of St. George's Proposed Skyline Drive, Washington County, Utah
U-05-UM-0130s	Shaver (2005)	An Archaeological Inventory of the Snow Canyon North Parcel in Washington County, Utah
U-02-BC-0775bps	Office of Public Archaeology, BYU (2002)	An Archaeological Inventory of the Proposed Regional Water Pipeline between Quail Creek Lake and Snow Canyon State Park, Washington County, Utah
U-03-BC-0585bs	Office of Public Archaeology, BYU (2003)	An Archaeological Inventory of the Snow Canyon Parkway and Red Hills Parkway Widening project, Washington County, Utah

Source: Jones & Stokes, 2007.

During the last week of August and the first week of September 2006, both a cultural resource inventory and historic resources reconnaissance survey of the APE were conducted. An archaeological resources inventory was conducted between September 2 and 5, 2006, in accordance with UDOT's Guidelines for Archaeological Survey and Testing (2000). Jones & Stokes archaeologists Karen Crawford and Shahira Ashkar conducted a cultural resources survey of all accessible land within the APE. Ms. Crawford, who supervised the survey, meets the Secretary of the Interior's Standards for Professional Qualifications for an archaeologist and holds an individual archaeological survey permit from the State of Utah Public Lands Policy Coordination Office. Carson Anderson also conducted a historic resources reconnaissance survey of the APE between August 31 and September 2, 2006. Mr. Anderson meets the Secretary of the Interior's Standards for Professional Qualifications for an architectural historian. The historic resources reconnaissance survey included a windshield survey of the project corridor, photographic documentation, and focused historic research utilizing special collection materials pertaining to local history at the Washington County Public Library as well as a review of prior cultural resources studies conducted in the APE. Each of the eight previously recorded sites within the APE was revisited and field checked. In addition to these, five additional sites were recorded in the APE

Subsequent project planning required an additional three parcels northeast and southeast of the Red Hills Parkway and Bluff Street intersection to be inventoried. The City of St. George and UDOT are considering using all or part of these parcels to mitigate for the loss of desert tortoise habitat. On October 30, 2007, Jones &

Stokes conducted a Class III Cultural Resource Inventory of these parcels. One additional site was recorded in the amended APE. Two previously recorded prehistoric sites (42WS2871, 42WS2872) were field checked to ensure that site conditions had not changed.

All of the cultural resources recorded within the APE are listed in Table 3.12-2.

## Affected Environment

### Archaeological and Historic Resources

The Class III reconnaissance-level survey identified 14 cultural resource sites. Eight of the sites were previously recorded, and six sites were newly identified as part of this survey. The newly identified sites include 42WS4987 (prehistoric lithic scatter), 42WS4988 (prehistoric rock shelter), 42WS4990 (Dixie Rock), 42WS4989 (Temple Springs), 42WS4991 (prehistoric milling rock with historic-era graffiti), and 42WS5059 (prehistoric archaeological site). Of these newly identified sites, only 42WS4988 and 42WS4990 were recommended eligible for listing in the NRHP (see Table 3.12-2).

**Table 3.12-2.** Cultural Resources Surveyed and Eligibility Recommendations/Determinations

Site	Description	Eligibility Recommendation/ Determination	APE In/Out
42WS2428.1	Historic-era roadbed segment	Segment of road; not a contributing element	In
42WS2873	Prehistoric lithic scatter	Not eligible	In
42WS4438	Historic-era rock wall segment	Not eligible	In
42WS2871	Prehistoric rock shelter/historic-era refuse	Eligible, Criterion D	In
42WS2872	Prehistoric lithic scatter	Eligible, Criterion D	In
42WS4987	Prehistoric lithic scatter	Not eligible	In
42WS4388	Cottonwood Pipeline	Eligible, Criteria A, C, D	In
42WS4387	Prehistoric rock shelter	Eligible, Criterion D	In
42WS4988	Prehistoric rock shelter	Eligible, Criterion D	Out
42WS4990	Dixie Rock	Eligible, Criterion A	In
42WS4386	Prehistoric rock shelter	Eligible, Criterion D	In
42WS4989	Temple Springs	Not eligible	In
42WS4991	Prehistoric feature, historic-era graffiti	Not eligible	In
42WS5059	Prehistoric archaeological site	Not eligible	In

Source: Jones & Stokes, 2007.

More detailed information on each of the resources listed in Table 3.12-2 is provided below.

**Site 42WS2428.1** is a segment of a historic-era roadbed dating to the 1920s, originally recorded by Abajo Archaeology in 1995 and again by SWCA in 1997. Segment 1, which lies within the APE, lacks integrity and data important to the understanding of local or regional history and therefore is not eligible for listing in the NRHP.

**Site 42WS2873** is a surface prehistoric lithic scatter originally recorded by Abajo Archaeology in 1994. The site lacks diagnostic artifacts and lacks the potential to possess a subsurface deposit and therefore cannot offer information important to the understanding of local or regional prehistory. Therefore the site is not eligible for listing in the NRHP.

**Site 42WS4438** is a historic-era rock wall originally recorded by State of Utah archaeologists in 2004. The site lies partially within the APE. The site lacks association with a specific period, person, event, or style or data important to the understanding of local or regional history and therefore is not eligible for listing in the NRHP.

**Site 42WS2871** is a rock shelter containing surface and subsurface prehistoric deposits and a historic refuse scatter, originally recorded by Abajo Archaeology in 1994. The site contains potentially important data regarding prehistory in the St. George area and therefore is eligible for listing in the NRHP under Criterion D.

**Site 42WS2872** is a prehistoric lithic scatter originally recorded and tested by Abajo Archaeology in 1994. Testing resulted in the discovery of a subsurface ash lens. The site contains potentially important data regarding prehistory in the St. George area and therefore is eligible for listing in the NRHP under Criterion D.

**Site 42WS4987** is a surface prehistoric lithic scatter identified by Jones & Stokes in 2006. The site lacks diagnostic artifacts and demonstrates no potential for producing data important to the understanding of local or regional prehistory and therefore is not eligible for listing in the NRHP.

**Site 42WS4388** is the historic-era Cottonwood Pipeline. The pipeline is considered eligible for listing in the NRHP under Criteria A, C, and D because it made an important contribution to the early development of the St. George community and utilized a unique construction method. The Brigham Young University Office of Public Archaeology (OPA) conducted mitigation for the pipeline, which included archaeological documentation of approximately 3 miles and archival research regarding the background and history of approximately 12 miles.

**Site 42WS4387** is a rock shelter containing a surface prehistoric deposit, two subsurface ash lenses, and a historic-era trash scatter. The site was originally recorded by OPA in 2003 and contains potentially important data regarding prehistory in the St. George area. Therefore, it is eligible for listing in the NRHP under Criterion D.

**Site 42WS4988** is a rock shelter with a surface prehistoric artifact scatter and modern trash identified by Jones & Stokes in 2006. This site is located just outside of the project APE. The site was not tested, but its unique location and large size suggest it has the potential to contain important data regarding prehistory in the St. George area. Therefore, it is eligible for listing in the NRHP under Criterion D.

**Site 42WS4990** is a large sandstone monolith known as Dixie Rock. The painted word “Dixie” on the south face of the rock has persisted for the last 92 years and has become the site of an annual community-wide celebration. Dixie Rock is eligible for listing in the NRHP as a traditional cultural property under Criterion A for its association with events that made a significant contribution to the broad patterns of St. George history.

**Site 42WS4386** is a rock shelter containing a surface prehistoric deposit representing Virgin Anasazi culture and a subsurface ash lens. The site was originally recorded by OPA in 2003 and contains potentially important data regarding prehistory in the St. George area. Therefore, it is eligible for listing in the NRHP under Criterion D.

**Site 42WS4989** is the site of Temple Springs. The collection system for Temple Springs includes concrete boxes, metal pipes, and a conduit that collect water from five different springs; most of the collection system is underground. The construction of the collection system began in 1881, and the components appear to have been continuously updated. Temple Springs was evaluated within the context of the evolution of the St. George water system and is not eligible for listing in the NRHP.

**Site 42WS4991** is the site of a prehistoric bedrock milling feature with four mortars and historic-era graffiti consisting of initials and the date 1898. Jones & Stokes archaeologists recorded the site in 2006. There are no artifacts or subsurface deposits associated with the site. The site demonstrates no potential for producing additional data important to the understanding of local or regional prehistory or history and therefore is not eligible for listing in the NRHP.

**Site 42WS5059** is a sparse surface scatter possessing six non-diagnostic flaked stone artifacts: three pieces of debitage, one core, and two possible tools. These artifacts occur on residual soils lying on decomposing sandstone, and no indications of cultural features exist at the site. It is unlikely that testing would yield information important to our understanding of prehistory; therefore, the site does not meet the eligibility requirements of Criterion D and is not eligible for listing in the NRHP.

## Impacts

The project can result in a finding of “no historic properties affected,” “no adverse effect,” or “adverse effect,” as defined below.

- **No Historic Properties Affected:** There are either no historic properties present in the APE or there are historic properties present in the APE, but the undertaking will have no effect on them as defined in 36 CFR 800.11(d).
- **No Adverse Effect:** There could be an effect on a historic property, but the effect would not be harmful to those characteristics that qualify the property for inclusion in the NRHP.
- **Adverse Effect:** Project impacts may directly or indirectly alter any of the characteristics that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association or a property's ability to offer research potential.

The criteria of adverse effect described in the guidelines for NHPA Section 106 (36 CFR 800.5[a]) define adverse effects to significant cultural resources as any of the following actions, regardless of whether they occur singly or in combination with one another:

- physical destruction of or damage to all or part of the resource;
- alteration of a resource, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines;
- removal of the resource from its historic location;
- change of the character of the resource's use or of physical features within the setting that contribute to its historic significance;
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features; or
- neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe.

A determination of eligibility and finding of effect (DOE/FOE) has been submitted, and SHPO has concurred with the NHPA Section 106 eligibility and effects determinations for each historic property as a result of construction of the Build Alternative. The eligibility determinations are included in Table 3.12-2 and effects determinations in Table 3.12-3. A copy of the DOE/FOE is included in Appendix A of this EA.

## **No-Build Alternative**

Under the No-Build Alternative, no impacts to historical, archaeological, or paleontological resources are expected. The City of St. George and UDOT are currently in the process of improving the intersection of Skyline Drive and Red Hills Parkway. As part of that project, approximately 200 feet of Cottonwood Pipeline would be removed. A report prepared by Pamela Higgins, a UDOT archaeologist, and submitted to the SHPO stated that

For public safety reasons, the upgrade of the current intersection is urgent. Construction will result in the destruction of 0.01 percent of the documented pipeline. Nevertheless, historic archival research has been completed for the 12 miles of the pipeline from its origination point in the Cottonwood Creek on the southwest slopes of the Pine Valley Mountains to the points of truncation on the current parkway alignment, and 6 miles of the pipeline will remain intact within the Red Hills Desert Reserve. Hence UDOT is making a determination of No Historic Properties Adversely Affected for the project as proposed.

On October 10, 2006, the SHPO concurred with UDOT's determination of No Historic Properties Adversely Affected with respect to removal of 200 feet of the pipeline for the improvements at the intersection of Skyline Drive and Red Hills Parkway.

## **Build Alternative**

### **Construction Impacts**

Under the Build Alternative, earthwork in the vicinity of identified NRHP-eligible cultural resources would be necessary. Construction associated with the proposed action would entail excavation, grading, road paving, and miscellaneous finish work. Potential impacts of the Build Alternative are considered for only the six cultural resources located within the APE that are eligible for listing in the NRHP (see Table 3.12-3). Impacts to cultural resources that are not eligible for the NRHP are not considered significant effects and do not require mitigation.

Accumulated data from previous studies indicate that portions of the APE have been determined highly sensitive for the presence of prehistoric archaeological deposits. These areas contain all of the six archaeological sites that are eligible for listing in the NRHP. Mitigation measure CR-1 would be followed during project construction to protect NRHP-eligible historical and prehistoric resources and areas that possess high archaeological sensitivity. Additionally, ground-disturbing activities have the potential to unearth and damage previously undetected archaeological resources, including the potential to discover prehistoric human remains. Mitigation measures CR-2 and CR-3 would be followed in case of accidental discovery of historic-era and prehistoric archaeological resources.

Construction activities would adversely affect site 42WS2872. The project would require excavating an area of hillside approximately 15–20 feet wide and 2,000 feet long to construct an interchange ramp in the southeastern quadrant of the Red Hills Parkway/Bluff Street intersection, which would affect approximately 1.25 acres of the lithic scatter.

While there are no known paleontological resources within the APE, it does contain surficial geologic deposits that have the potential to contain significant fossil remains. Therefore, mitigation measure CR-5 would be followed during construction in case of accidental discovery of previously unidentified paleontological resources.

**Table 3.12-3.** Impacts to Significant Cultural Resources within the APE

Site	Description	Effect	Mitigation
42WS2871	Prehistoric rock shelter/historic-era refuse	No Effect. Construction would not disturb this resource.	Mitigation measures CR-1, CR-2
42WS2872	Prehistoric lithic scatter	Adverse Effect. Construction would disturb this resource. An MOA will be developed in consultation with SHPO.	Mitigation measures CR-1, CR-2, CR-4
42WS4388	Cottonwood Pipeline	No Adverse Effect. Construction would affect a small portion of this long linear feature.	No additional mitigation is needed.
42WS4387	Prehistoric rock shelter	No Effect. Construction would occur close to this resource but would not physically disturb the site.	Mitigation measures CR-1, CR-2
42WS4990	Dixie Rock	No Effect. Construction would occur close to this resource but would not physically disturb the site.	Mitigation measures CR-1, CR-2
42WS4386	Prehistoric rock shelter	No Effect. Construction would occur close to this resource but would not physically disturb the site.	Mitigation measures CR-1, CR-2

Source: Jones & Stokes, 2007.

## Operational Impacts

Routine maintenance operations would occur within the previously disturbed right-of-way and would not adversely affect significant cultural resources or unearth previously unidentified historical, archaeological, or paleontological resources.

## Cumulative Effects

The geographical scope of the area affected by potential cumulative archaeological impacts is defined by the cultural setting and ethnographic territory of the prehistoric and historic peoples who occupied the St. George area. The proposed action would be located in a region that was inhabited by the Paiute cultural group. Historically, it has experienced a strong legacy of Mormon settlement.

The project would affect a small portion of the Cottonwood Pipeline, a significant linear resource. Most of the pipeline is located within the Red Cliffs Desert Reserve and would be protected from physical disturbances. However, a utility corridor exists within the reserve, and there is the potential for additional sections of the pipeline to be removed during future utility projects. Historic archival research and documentation to satisfy Section 106 of the NHPA has already been completed for 12 miles of the pipeline from its origination point at Cottonwood Creek to the points of truncation on the current parkway alignment. This documentation reduced potential impacts on this resource. Because this program would implement site-specific mitigation consistent with Section 106 of the NHPA, the incremental effect of the proposed action is not cumulatively considerable, particularly when compared to other past, present, and reasonable foreseeable projects. Therefore this impact is less than significant.

In addition, cumulative development in the project vicinity could result in a progressive loss of as yet unrecorded prehistoric and historic-era cultural resources. Such a loss, without proper mitigation, would be a significant cumulative impact. However the proposed action includes mitigation, such as discovery procedures, that would reduce potential project impacts. After mitigation, the proposed action would not substantially contribute to a significant cumulative impact on cultural resources.

## **Avoidance, Minimization, and/or Mitigation Measures**

### **No-Build Alternative**

No minimization or mitigation measures would be required.

### **Build Alternative**

Implementing the following mitigation measures would minimize impacts to significant cultural resources.

#### **Mitigation Measure CR-1: Avoidance and Monitoring of Significant Cultural Resources**

Prior to commencement of work, avoid all NRHP-eligible cultural resources by constructing temporary environmental fencing around the sites located within 50 feet of construction. Archaeological monitoring will be conducted in the immediate vicinity of identified archaeological sites during all ground-disturbing activities. A monitoring plan will be prepared by an archeologist who meets the Secretary of the Interior's Standards for Professional Qualifications for an archeologist to guide the actions of monitors and construction crews in the event of an archaeological discovery.

#### **Mitigation Measure CR-2: Discovery of Historical or Archaeological Resources**

If buried cultural resources, such as chipped stone, ground stone, historic debris, building foundations, or nonhuman bone, are inadvertently discovered during ground-disturbing activities, follow the procedures detailed in UDOT's Standard Specification Section 01355, Part 1.10, Discovery of Historical and Archaeological Objects. When unanticipated archeological resources are uncovered in a contractor-furnished site, the contractor will notify the UDOT regional archaeologist, who will determine the appropriate action to pursue regarding the resource.

#### **Mitigation Measure CR-3: Comply with State Laws Pertaining to the Discovery of Human Remains**

Buried human remains that were not identified during research or field surveys could be inadvertently unearthed during excavation activities, which could result

in damage to the human remains. If human remains of Native American origin are discovered during ground-disturbing activities, it is necessary to comply with state and federal laws relating to the disposition of Native American burials, following state regulation UCA 9-9-401, Utah Native American Graves and Repatriation Act of 1992; UDOT Standard Specification 01355, Part 1.10 Appendix B; and 43 CFR 10, Native American Graves Protection and Repatriation Act (if discovery is made on federal lands).

If aboriginal human remains are inadvertently discovered on public lands administered by BLM, the City will notify BLM in writing of such a discovery. Construction will cease and the materials will be protected until BLM can respond to the situation. Upon receipt of written confirmation of the discovery, 43 CFR 10.4 requires BLM to do the following: 1) certify receipt of the notification; 2) take immediate steps, if necessary, to protect the materials further; 3) notify by telephone, with written confirmation, the tribes likely to be culturally affiliated with the materials; and 4) initiate consultation with such tribes. If, after consultation with tribes, BLM determines that the material will be adequately protected in situ, without the need to excavate or remove the material from the area of discovery, then the requirements under the Native American Graves Protection and Repatriation Act have been completed. The materials remain in federal ownership, adequately protected by BLM as provided for in the law. If, after consultation with the tribes, BLM determines that the circumstances warrant intentional excavation or removal of the materials from the area of discovery, then 43 CFR 10.3 applies, and BLM must complete steps outlined therein for intentional excavations.

#### **Mitigation Measure CR-4: Physical Disturbance to Site 42WS2872**

Mitigation will be required for physical disruptions to NRHP-eligible site 42WS2872. A Memorandum of Agreement (MOA) will be executed that stipulates how the adverse effects will be resolved. Mitigation measures will likely include data recovery in advance of construction.

#### **Mitigation Measure CR-5: Potential to Damage a Unique Paleontological Resource**

Prior to construction, a paleontologist will survey the construction area to determine if any Lower Jurassic Moenave or Kayenta Formations would be disturbed by construction. If these formations would be disturbed by construction, a qualified paleontologist will be retained to monitor these locations during construction. In the event potential paleontological resources are encountered prior to or during construction, the discovery procedures specified in UDOT's Standard Specification Section 01355, Part 1.10, and Section G of the MOU between UDOT and UGS pursuant to UCA 63-73-19 will be followed.

## **3.13 Hazardous Materials**

This section identifies potentially hazardous materials that are located within, or have the capability of migrating into, the project study area. This section also discusses potential environmental impacts of the Build and No-Build Alternatives resulting from mobilization of contaminants and hazardous materials exposure.

### **Regulatory Setting, Studies, and Coordination**

#### **Regulations Governing Hazardous Waste**

Hazardous waste sites are regulated under the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). RCRA mandates strict federal requirements for treatment, storage, and disposal of hazardous waste to minimize present and future risks. CERCLA provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA also establishes hazardous waste cleanup liability requirements. According to CERCLA, owners of property or those who acquire property may be held accountable for contamination found on their property.

In Utah, Title 19, Chapter 06, of the Utah Administrative Code provides guidelines for siting hazardous waste treatment, storage, and disposal facilities.

#### **Hazardous Materials Study Report**

A hazardous materials database search was conducted by Environmental Data Resources that compiled information regarding reported releases of hazardous materials or petroleum products within or near the project study area. Additionally, a site survey was completed by Landmark Testing and Engineering (Landmark) to identify potential hazardous material sources located within or near the study area (Landmark 2006).

### **Affected Environment**

Current and previous land uses within the study area west of 500 East indicate a low potential for hazardous material contamination. The land between 500 East and Bluff Street has never been developed and is devoid of facilities capable of generating hazardous materials.

North of Red Hills Parkway and east of 500 East land uses are primarily industrial and municipal. Activities that occur at some of these sites have the potential to release contaminants that could be encountered as a result of the proposed action. Landmark Testing and Engineering identified nine potential

hazardous material sites located within or near the study area (Landmark 2006). The topographic and groundwater gradient within this portion of the study area migrates to the south. Potential hazardous materials sites located downgradient of Red Hills Parkway or sites that are a substantial distance upgradient of Red Hills Parkway were not considered potential contaminant sources (Landmark 2006). For the nine potential hazardous material sites located within or near the study area, information pertaining to facility type, ownership, potential contaminants, and facility status is presented in Table 3.13-1. The locations of these nine sites are shown in Figure 3.13-1.

## Impacts

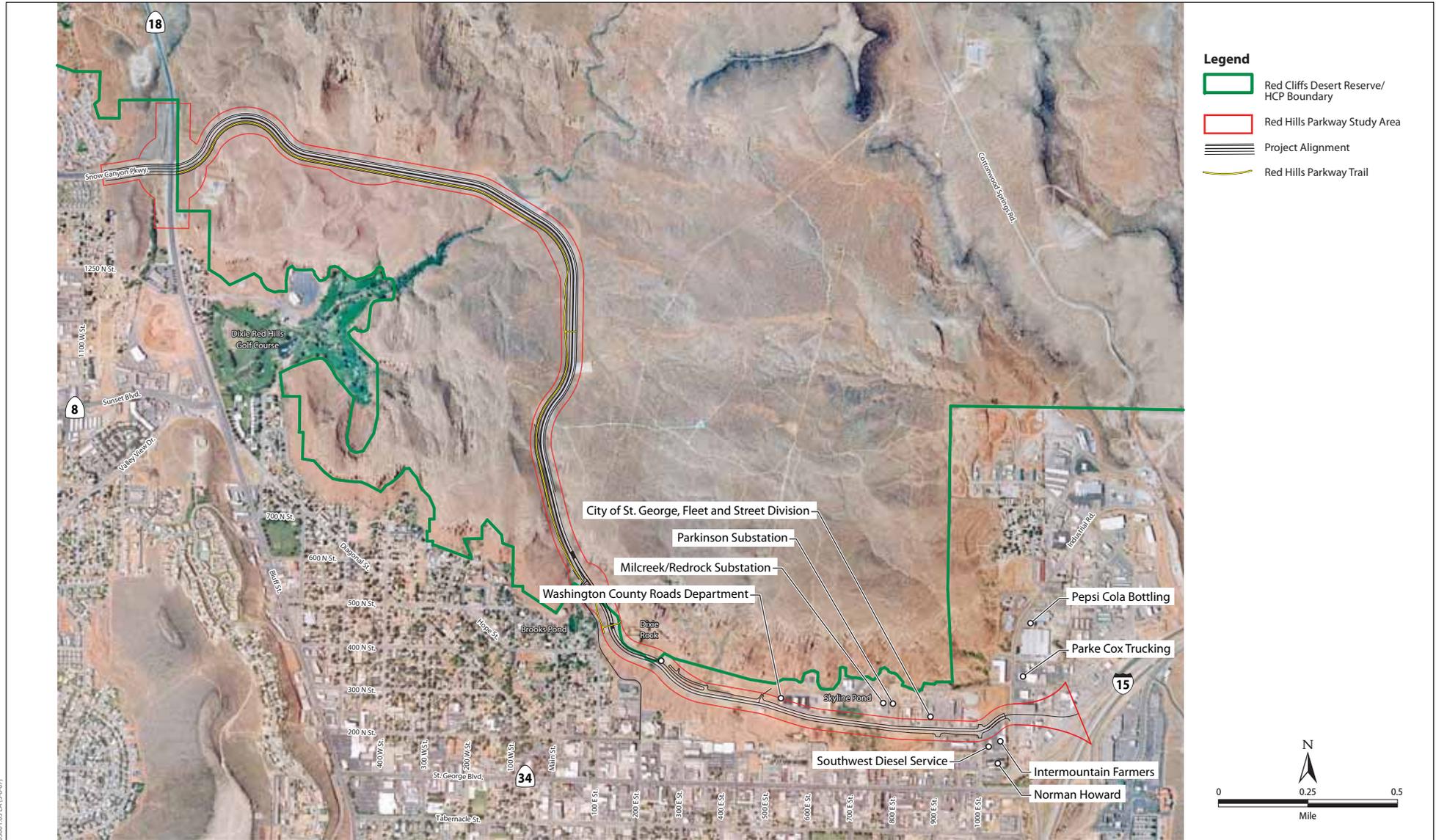
### No-Build Alternative

Under this alternative no ground-disturbing activities would occur in the vicinity of the identified hazardous material sites, and there would be no impact.

### Build Alternative

#### Construction Impacts

- The principal environmental impact involving hazardous waste is the mobilization of contaminants, resulting in exposure of workers and the general public (i.e., through excavation and handling of soil that might be contaminated by past and current uses). Of the nine potential hazardous material sites identified in or near the study area, it was determined that four of the sites would not affect soils within the proposed construction limits, and no additional actions were recommended (Landmark 2006). These sites include the former Washington County Roads Department, which has been relocated and the tanks removed from the site; the Norman Howard property, which is downgradient from Red Hills Parkway (leaking underground storage tanks have been removed from the property); Intermountain Farmers, which has not reported any leaks in its underground storage tank; and the Pepsi Cola Bottling Company, which is located approximately 0.25 mile upgradient from Red Hills Parkway (Landmark 2006). Monitoring in the vicinity of the remaining five properties was recommended during excavation. Three facilities—Parkinson Substation, City of St. George Fleet and Street Division, and Parke Cox Trucking—reported leaking underground storage tanks that have been removed from the sites (Landmark 2006). Two facilities—Millcreek/Red Rock Substation and Southwest Diesel Service—store hazardous materials. No ongoing cleanup measures have been reported at any of these sites (Landmark 2006).



**Figure 3.13-1**  
**Location of Hazardous Material Sites**

**Table 3.13-1. Hazardous Materials Sites**

Facility Number	Facility Name	Owner	Address	Contact/Phone	Potential Contaminant	Status	Recommendations
1	Parkinson Substation	City of St. George	Red Hills Parkway	(435) 634-5800	Two LUSTs	Closed, tanks removed	Monitor excavations with #4
A	Washington County Roads Department	Washington County	500 E. Red Hills Parkway	(435) 634-5700	Three LUSTs, four ASTs	Closed, tanks removed	Facility has moved
4	Millcreek/Red Rock Substation	City of St. George	795 E. Red Hills Parkway	(435) 634-5800	Transformer storage	Current storage area	Monitor excavations
B	City of St. George Fleet and Street Division	City of St. George	895 E. Red Hills Parkway	(435) 634-5800	Three LUSTs, two USTs, two ASTs	Closed, tanks removed; in use	Monitor excavations
7	Norman Howard	Norman Howard	214 N. Industrial Rd.	(435) 634-9800	Two LUSTs	Closed, tanks removed	No action (LUSTs are downgradient)
8	Intermountain Farmers	Intermountain Farmers	310 N. Industrial Rd.	(801) 571-9390	Two UST	Closed, tanks removed	No action (UST)
Not Listed	Parke Cox Trucking	Parke Cox Trucking	396 N. Industrial Rd.		One LUST, one UST	Closed, tank removed; in use	Monitor excavations
20	Pepsi Cola Bottling Company	Neal Lundberg	477 N. Industrial Rd.	(435) 628-3677	Two LUSTs	Closed, tanks removed	No action (LUSTs are far upgradient)
Not Listed	Southwest Diesel Service		1150 E. 350 N.	(435) 673-6342	Lubricant drums, fuel tanks, old engines	Open storage	Monitor excavations

Notes:

LUST = leaking underground storage tank.

UST = underground storage tank.

AST = aboveground storage tank.

Source: Landmark, 2006.

If hazardous materials from these sites have migrated into the project vicinity and are encountered during construction, special handling would be required to minimize the exposure risk to workers and the general public during excavation and transport. If contaminated soil were removed from the construction area it would be transported according to state and federal regulations and replaced by import soil approved for backfill. Mitigation measure H-1 would ensure that any potential hazardous materials encountered during construction would be handled in a manner that would minimize exposure risk to workers and the public.

### **Operational Impacts**

Once road construction is complete and the facility is operational, no potential hazardous materials exposure would occur.

### **Cumulative Effects**

Cumulative hazardous materials impacts would occur if a population or resource is exposed to the cumulative adverse effects of hazardous materials released by the proposed project and one or more related projects. The geographic scope of the area affected by potential cumulative hazardous materials impacts would depend on the migration characteristics of the hazardous materials as they are released into the soil, air, or groundwater. Given the characteristics of the proposed project, the study area for cumulative hazardous materials analysis would consist of the immediate project vicinity. No additional projects have been proposed in the immediate study area, and consequently, there would be no potential for cumulative hazardous materials effects beyond the direct and indirect impacts discussed above.

## **Avoidance, Minimization, and/or Mitigation Measures**

### **No-Build Alternative**

No minimization or mitigation measures would be required.

### **Build Alternative**

To ensure no adverse health or safety impacts would occur, the following measures shall be implemented.

#### **Mitigation Measure H-1: Hazardous Material Monitoring during Construction**

During excavation for the proposed road, the contractor shall observe the exposed soil for visual evidence of abnormal conditions. In accordance with

UDOT Specification 01355, abnormal conditions include, but are not limited to, the following: presence of barrels; buried storage tanks; aboveground tanks; obnoxious odors; excessively hot earth; stained and discolored soils; smoke; unidentifiable powders, sludge, or pellets; or any other condition that could be a possible indicator of hazardous material and/or toxic or hazardous waste. The contractor shall closely monitor excavations in accordance with UDOT Specification 01355 in the vicinity of the following facilities: Parkinson Substation, City of St. George Fleet and Street Division, Parke Cox Trucking, Millcreek/Red Rock Substation, and Southwest Diesel Service. If contaminated soil or hazardous substances are encountered during construction, all work in the immediate vicinity of the discovery will stop. The contractor shall contact the Engineer for direction on how to proceed.

### **Mitigation Measure H-2: Hazardous Material Spills during Construction**

In accordance with UDOT Specification 01355, the contractor will notify the Engineer and UDEQ of spills of petroleum-based products or hazardous waste if the release meets the definition of a hazardous waste as defined in 40 CFR 261. The contractor will implement the following procedures:

- notify the Engineer immediately after the discovery of the spill,
- notify UDEQ in writing within 5 calendar days of the discovery,
- notify UDEQ in accordance with R315.9 of the Utah Administrative Code (24-hour phone number: (801) 536-4123), and dispose of spilled material according to the requirements and regulations of UDEQ.



## 3.14 Visual Quality

This section describes the visual setting of the Red Hills Parkway corridor and provides an evaluation of the potential effects of the proposed action on visual quality and character.

### Regulatory Setting, Studies, and Coordination

#### FHWA Visual Impact Assessment Guidelines

Evaluating visual impacts is inherently subjective; therefore, FHWA developed visual assessment guidelines. These guidelines are used to evaluate visual impacts from implementation of federal highway projects as well as those highway projects under jurisdictional oversight of state transportation agencies, such as UDOT.

The visual resource impact analysis presented in this section follows FHWA guidelines (Visual Impact Assessment 1981). The FHWA guidelines provide three steps for identifying and evaluating visual impacts. These include:

1. objectively identifying the features found in the visual setting,
2. assessing the character and quality of those resources relative to overall visual character, and
3. determining viewer sensitivity to views of the resources in the visual setting.

#### Visual Character and Quality Evaluation

The evaluation of visual character is a descriptive process in which the natural and built elements that define the environment are described as objectively as possible (see Affected Environment). The perception of visual character can vary substantially seasonally as weather, light, shadow, and elements that define the viewshed change. The basic components used to describe visual character include form, line, color, and texture of landscape features. The appearance of the visual setting is described in terms of the dominance of each of these components (FHWA 1981).

The assessment of visual quality is the evaluative portion of the visual impact assessment process. It takes into account the relative degree of vividness, intactness, and unity as shaped by viewer sensitivity. Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive patterns. Intactness is the visual integrity of the natural and man-made landscape and its freedom from encroaching elements. Unity is the visual coherence and compositional harmony of the landscape considered as a whole (FHWA 1981).

## Local Policies Governing Aesthetics

The City of St. George General Plan (City of St. George 2002) and Zoning Ordinance (City of St. George 2006e) are the principal policy documents governing the aesthetics of the proposed action. Under the provisions of the Hillside Development Overlay (City of St. George 2006d) zoning regulations, the City's Hillside Review Board has primary responsibility for ensuring that projects proposed for the hillsides bordering the City are appropriately designed to avoid or minimize adverse effects to aesthetics. The land use designation for approximately 90 percent of the project vicinity is Open Space or HCP Open Space (see Figure 3.1-1). Per the general plan, land designated open space is intended "to be preserved permanently, free from development and left in a natural state" (City of St. George 2002). Only the westernmost segment at Bluff Street and the easternmost segment of the study area are not zoned open space. The westernmost segment adjacent to Bluff Street is designated Low Density Residential, while the easternmost segment of the study area (east from 500 East) is designated Public Facilities and Commercial (City of St. George 2004c). The City of St. George General Plan (City of St. George 2002) includes the visual policies identified below.

### Conservation Element Policies

- The aesthetic qualities of the hillsides shall be preserved by minimizing the amount of hillside excavation and requiring that where hillside excavation occurs, cuts are fully reclaimed to a natural appearance through regrading and landscaping or screening from general view by buildings (p. 9-4).
- The Hillside Review Board will review and recommend measures to mitigate potential ... concerns and issues related to aesthetics and slope and/or soil stability (p. 5-7).
- Buildings on mesa tops shall be set back to avoid hazardous geologic conditions as well as lessen visual impacts. A minimum 100-foot setback is recommended (p. 5-7).

### Community Appearance Policies

- Upgrade entryways into St. George to give a pleasant first impression of the community (p. 7-8).
- Continue to improve the appearance of the community through landscaping, signage improvements, lighting, street tree planting, street furnishings, etc. (p. 7-8).
- Community Design Guidelines manual will be used to promote good design throughout the community (p. 7-8) (City of St. George 2002).

## Affected Environment

### Visual Setting

Red Hills Parkway is located on a plateau that overlooks the City of St. George. The road ranges from 2,760 to 3,200 feet in elevation and occurs at an elevation well below that of the more distant ridgelines, stepping back from the steep south-facing escarpments that form a strong visual backdrop to the City (Figure 3.14-1). The City is located in the flat to gently sloping St. George Valley below (2,600 to 2,860 feet in elevation). Direct views of Red Hills Parkway from lower elevations are essentially precluded because the road is located on top of a plateau.

Beginning at the Bluff Street intersection, the area adjoining Red Hills Parkway is undeveloped; however, a residential area is located roughly 1,000 feet west of the intersection (Figures 3.14-2, 3.14-3, and 3.14-4). These residences are largely screened from direct views of the intersection by intervening topography.

From the Bluff Street Intersection, Red Hills Parkway traverses large expanses of undeveloped desert for approximately 2 miles (Figure 3.14-5). This area is sensitive for biological and cultural resources and is located within the Red Cliffs Desert Reserve. The topography along this segment of the road is undulating. During the reconstruction of Red Hills Parkway in 2004, the road was realigned slightly to flatten curves and widen shoulders. As part of the construction process, cuts were made into the adjoining uplift embankments, leaving areas of exposed rock rubble and soil without plant cover abutting some portions of the road. Some of the larger cut-and-fill slopes occur near the City Creek Debris Basin, approximately 1 mile east of Bluff Street. By contrast, desert plants sparsely cover the gentle slopes outside the road's right-of-way. Dominant plant species in this setting are sagebrush, cacti, yucca, rabbitbush, blackbush, saltbush, and ephedra.

Red Cliffs Desert Reserve provides recreational opportunities for pedestrians and bicyclists. Several trails, including Pioneer Rim, Rusty Cliffs, and Owens Loop trails, cross or are adjacent to Red Hills Parkway.

Approximately 1.25 mile east of the Bluff Street intersection, the road curves to the south. Views of Pine Valley Mountain to the north along this segment of the road are high quality (Figure 3.14-6).

A small number of single-family residential dwellings are located downslope of the south-facing plateaus at the intersection of Red Hills Parkway and Skyline Drive. These residences are within 200 to 300 feet of Red Hills Parkway. No significant visual resources, such as historic districts, historic buildings, historic landscapes, or noteworthy specimen trees, were noted in the developed areas immediately downslope from Red Hills Parkway. Although the City was incorporated in 1862, settlement during the 19<sup>th</sup> and early 20<sup>th</sup> centuries occurred generally south of Diagonal Street and 200 North on the flatter terrain and, thus, a considerable distance away from the present-day Red Hills Parkway. Above those streets, the terrain rises moderately then sharply to form the plateau upon

which Red Hills Parkway is sited. As a result, development on the slopes below Red Hills Parkway appears to date from the recent past (often 30 years or less in age).

Two local parks, Pioneer Park and Brooks Pond Park, are located in the vicinity of the intersection of Red Hills Parkway and Skyline Drive. Brooks Pond Park is located approximately 100 feet in elevation below Red Hills Parkway (Figure 3.14-7).

Pioneer Park provides access to Dixie Rock, which is immediately north of Red Hills Parkway. Dixie Rock is one of the key visual landmarks along Red Hills Parkway. This flat-topped red sandstone rock rises approximately 65 feet above the road (Figures 3.14-8 and 3.14-9). Since pioneer settlement of St. George began during the 1860s, Dixie Rock has been an important part of the cultural history of the area. Its prominent location overlooking the St. George Valley, visual prominence, unusual geomorphic appearance, and nearby rock shelters serve to make it both a visual landmark and a popular recreation destination. The annual custom of painting the word “Dixie” on the rock dates back to the 1913–1914 period and remains a cultural event of communitywide significance.

City-owned utilities dominate the land uses along the eastern 0.75-mile segment of Red Hills Parkway. These facilities include chain-link-fenced maintenance yards, warehouses, and water treatment/storage structures (Figure 3.14-10). A private water collection system, known as Temple Springs, is located between 900 East and 600 East and includes a 143,600-gallon concrete water tank and various underground collection boxes and pipes. Office and industrial buildings dating from the recent past (often less than 25 years old) are also found in this visual setting (Figure 3.14-11). One recreational facility, Skyline Pond Park, is located in the area between the City maintenance yard and the water department facility (Figure 3.14-12).

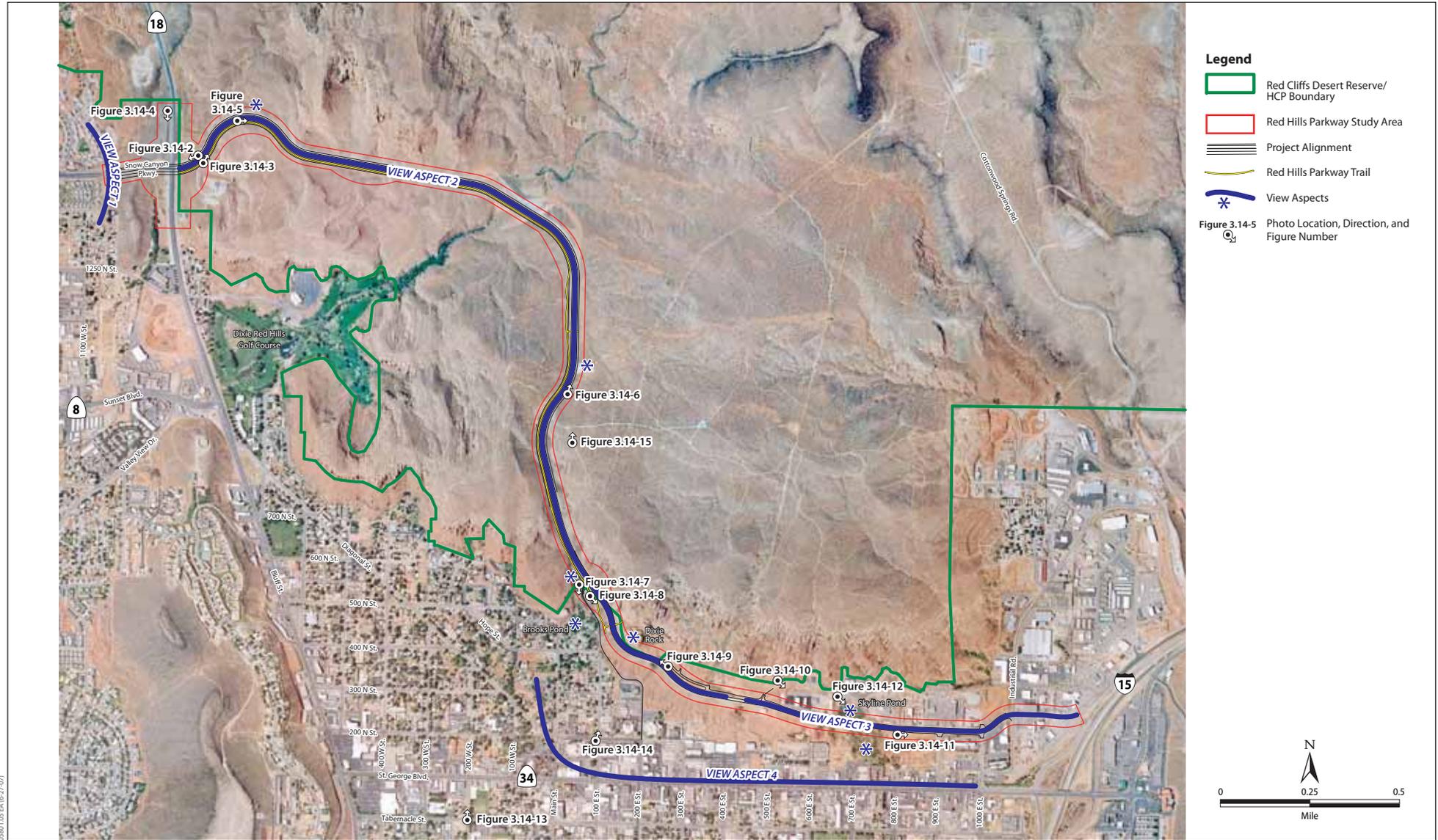
## Visual Assessment

To assess the potential impacts of the proposed action on visual quality, a windshield survey of Red Hills Parkway was conducted. Features in the visual setting (visual resources) were identified and documented photographically between August 30 and September 1, 2006.

### Identification of View Aspects

The perception of visual quality of Red Hills Parkway varies based upon the differing aspects of the view. Five different aspects of the view (shown in Figure 3.14-1) have been identified as follows:

- View Aspect 1: Views presented of the road corridor to residents located west of Bluff Street when facing east.



**Figure 3.14-1**  
View Aspects and Photo Locations



**Figure 3.14-2.** View west to Bluff Street.



**Figure 3.14-3.** View 200 feet east of Bluff Street intersection.



**Figure 3.14-4.** View south toward the Bluff Street / Red Hills Parkway intersection.



**Figure 3.14-5.** Typical view along Red Hills Parkway.



**Figure 3.14-6.** High quality view, north toward Pine Mountain Valley.



**Figure 3.14-7.** View of Brooks Pond from Red Hills Parkway.



**Figure 3.14-8.** View east toward Dixie Rock, near Skyline Drive intersection.



**Figure 3.14-9.** View west toward Dixie Rock.



**Figure 3.14-10.** View southeast, showing City Maintenance Yard.



**Figure 3.14-11.** View East toward easternmost segment of Red Hills Parkway.

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**Figure 3.14-12.** View southeast toward Skyline Pond Park.



**Figure 3.14-13.** View north toward Red Hills at Tabernacle and 200 West Streets.

- View Aspect 2: The appearance of the road corridor along the westernmost 2.5-mile segment as seen from Red Hills Parkway by motorists. Included are peripheral views of the Red Hills, Black Knolls, and Pine Valley Mountain (north) as well as views to the south overlooking the St. George Valley.
- View Aspect 3: The appearance of the road corridor along the easternmost 1-mile portion as seen by Red Hills Parkway motorists, including peripheral views of the bordering commercial/institutional structures and the Red Hills and views to the south overlooking the St. George Valley.
- View Aspect 4: Views toward the road from the south, from lower elevations at close and mid-range, or from distant locations. In such views, Red Hills Parkway and the plateau upon which it is sited are seen as part of an overall hillside landscape by motorists and residents alike
- View Aspect 5: Views of the road as seen from adjacent parks and hiking trails (e.g., Pioneer Rim Trail, Owen's Loop Trail) by recreationists and motorists who stop at scenic overlooks (e.g., the viewing area along the southern road border approximately 1,000 feet west of Skyline Pond, Pioneer Park, Skyline Pond Park, and the Pioneer Rim Trail).

## Identification of Viewer Group Sensitivity

Two of the elements in assessing potential project-related effects on visual resources are viewer group sensitivity and view duration. Viewer group refers to those who have access to the subject view; an associated sensitivity ranking is provided for those viewers. Residents are usually keenly aware of changes in the viewshed, and in some cases, the quality of the view contributes to their preference for a particular residence. Therefore, this viewer group is considered to have high sensitivity. Motorist sensitivity can vary depending on the purposes of the trip. Recreational motorists may be more sensitive to their views than commuters or commercial drivers who may pay little or no attention to views outside the road. In general, due to travel speed and one's focus on driving activities, motorist sensitivity is not considered high. The duration of a view refers to the amount of time the view is seen by a particular viewer group. Fleeting or intermittent views acquired by motorists over a short distance are generally rated low, whereas long-term or constant views from residences or workstations are generally rated high.

For the proposed action, the general viewer groups include residents with mid-frame (0.25 to 0.5 mile away) and far-off (more than 0.5 mile away) views when facing the road from the west; residents who possess close-in views (less than 0.25 mile away) from the south, looking up the escarpments toward the road while not actually being able to see the road; recreationists visiting adjacent hiking trails and parks; and motorists. Due to topographic separation, only mid-frame residents west of Bluff Street and far-off residents (1 mile or more away from Skyline Drive and at higher elevations) have views of the road. The viewer sensitivity of these residents is low because Red Hills Parkway is a small, insignificant element within a broad panorama. Despite high-quality views in portions of the scenic setting, viewer sensitivity for motorists is considered to be medium because a majority of the corridor is visually undistinguished. Also, the

overwhelming majority of the motorists are commuters who are engaged in everyday driving activities and not driving for pleasure. Only recreationists are considered to have a high level of sensitivity because they are visiting this visual setting for pleasure seeking and thus acquire views of longer duration. Such viewers are likely to view their experience in a more holistic (as opposed to episodic) way.

## Identification of Visual Quality

Views of high visual quality possess features that provide topographic relief, a variety of vegetation, rich colors, impressive scenery, and/or unique natural and/or built features. Areas of medium visual quality have interesting but minor landforms, some vegetative variety, some color variety, and/or moderate scenery. Areas of low visual quality have uninteresting features, little variety in vegetation, minor color variations, uninteresting scenery, and/or other common elements. Visual resources may include historic buildings that uniquely identify a setting, areas of special natural beauty within the viewshed, and/or views from scenic highways identified as significant in local plans.

Visual quality in the study area can be assessed in the following way based upon five different aspects of the view.

- View Aspect 1: Views of the road corridor presented to residents located west of Bluff Street were deemed to be of low to moderate quality when facing east because such views were dominated by the Bluff Street intersection, pavement, and traffic. Only distant views of the ridgelines in the Red Hills seem significant because these are key defining aspects of the hills and plateaus that form the City backdrop.
- View Aspect 2: Due to the wilderness character of much of the westernmost 2-mile segment of the road corridor, views available to motorists in this portion of Red Hills Parkway were determined to be of moderate quality. The visual features are sometimes interesting in character, with some variety in vegetation and color, and the landforms are moderately interesting. Previous grading to construct Red Hills Parkway changed landforms, and landforms bordering Red Hills Parkway often block views from the road in this corridor segment (Figure 3.14-5). The exception is the eastern portion of this segment where the corridor is oriented north/south. Here north-facing views of the Black Knolls and Pine Valley Mountain are dramatic (Figure 3.14-6). In this same segment of Red Hills Parkway, south-facing views overlooking the St. George Valley are also attractive.
- View Aspect 3: Due to the presence of commercial/industrial and municipal facilities along the easternmost 1-mile portion of the road corridor, views available to motorists were determined to be of low quality. Most views in this location are of ordinary prefabricated metal and concrete-block structures, telecommunications towers, concrete retaining walls, and chain-link-fence enclosed asphalt-paved parking lots. In addition, 1960s-era motels are located adjacent to the intersection of 1000 East and Red Hills Parkway. A majority of the landscape is disturbed, containing few interesting natural and man-made landscape elements (Figures 3.14-10 and 3.14-11).

- View Aspect 3: Views toward the road from the south, from lower elevations at close and mid-range, or from distant locations were deemed to be of moderate to high quality. For such views, Red Hills Parkway and the plateau upon which it is sited are seen as part of the overall hillside landscape of the Red Hills. Despite the importance of the Red Hills as a visual backdrop to the St. George Valley, Red Hills Parkway is not an apparent feature to the casual viewer. At present, only the plateau upon which it is sited is a visual feature, not the road itself (Figures 3.14-13 and 3.14-14).
- View Aspect 5: Views of the road as seen from adjacent parks and hiking trails (e.g., Pioneer Park, Owens Loop Trail) by recreationists and motorists who stop at view locations to sightsee were determined to be of high quality because the impressive panoramic views afforded from such vantage points are highly vivid and possess a high level of visual unity (Figure 3.14-15).

## Impacts

### No-Build Alternative

Under this alternative, minor improvements would occur along Red Hills Parkway, including improvements at the intersection of Skyline Drive. However, no major excavation would occur, and the visual character and quality along Red Hills Parkway would remain largely unchanged.

### Build Alternative

#### Construction Impacts

Construction associated with the proposed action would entail excavation, grading, road paving, and miscellaneous finish work. It is anticipated that the road would remain open to vehicular and pedestrian traffic for the entire construction period. Access to adjoining recreation sites, such as Pioneer Park, Brooks Pond, and Skyline Pond would be maintained during construction.

The existing visual setting is not pristine due to prior road improvement activities. This includes construction of Skyline Drive (circa 1930) and the subsequent improvements to Turtle Road, leading ultimately to construction of the existing Red Hills Parkway in 2004. During the course of prior road construction, adverse impacts to visual resources occurred. Natural landforms and native vegetation patterns adjoining the road were altered through grading activities. Those activities also included destruction of a portion of the Cottonwood Pipeline, a significant cultural resource, and the placement of the road within 50 to 60 feet of Dixie Rock, a key visual landmark along Red Hills Parkway. During construction, cuts into hill slopes would occur on a strictly limited basis and only when necessary to address safety concerns. No adverse visual resource impacts are anticipated during construction because the Build Alternative would re-create the existing visual characteristics of the road in nearly all essential respects.

Construction-related staging would introduce construction equipment and stockpiles of road building materials close to visual resources (e.g., Dixie Rock and Brooks Pond) and important viewsheds. The impact would be of short-term duration and visible to only a small number of sensitive viewers. Such sensitive viewers would include recreationists and a small number of residents who may occasionally view construction activity and equipment. Such impacts are not substantial because they would be of an episodic nature, and all combined potential construction-related impacts to visual resources would be of short duration.

Construction activities would not be noticeable to mid-frame and far-off viewers on the floor of the St. George Valley. Views of construction activities from residents from hilltop locations ringing the St. George Valley would appear as insignificant, incidental elements in panoramic views.

## **Operational Impacts**

The following discussion summarizes the impacts on the visual environment in terms of visual quality and character, scenic vistas/views, shading/glare, and artificial light, taking viewer sensitivity into account.

### **Visual Quality and Character**

The existing parkway dates from 2004, replacing the earlier Skyline Drive and Turtle Road. It is considered to have moderate visual quality due to both its setting upon a plateau overlooking St. George and its traversing a natural landscape of low to high visual quality.

The Build Alternative would not substantially degrade the visual character of Red Hills Parkway and its visual setting. The road is already a prominent element in the visual setting and serves as an important cross-town arterial road that is utilized on a daily basis by numerous motorists. Proposed improvements, including grading to widen the roadbed and installation of a landscape median, bike lanes, and a sidewalk/pedestrian path, would match the existing road in aesthetic terms in all basic respects. Motorists and recreationists traveling on Red Hills Parkway would, essentially, experience the road in the same way they currently do. The proposed improvements, such as road pavement and retaining walls, would match the existing road in terms of color, texture, and placement in relationship to vistas. To mitigate construction effects to the Hopkins Spring collection box, a retaining wall would be built south of Red Hills Parkway at approximately 700 East (see Section 3.8). The retaining wall would be approximately 200 feet long and 15 feet high. The wall would be visible to viewers south of Red Hills Parkway but would be constructed of materials similar in texture and color to the sandstone bluff. The view of Red Hills Parkway from any distance would generally remain unchanged. Therefore, no impacts to visual quality or the character of the visual setting are expected to occur as a result of the Build Alternative.



**Figure 3.14-14.** View north toward Dixie Rock, near 200 North and 100 East Streets.



**Figure 3.14-15.** View north adjacent to Pioneer Rim Trail.

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**Figures 3.14-14 and 3.14-15  
Visual Resources**

### **Scenic Vistas and Views**

Although no scenic vistas in proximity to Red Hills Parkway are identified in the City's General Plan, there are noteworthy segments of the road that afford dramatic vistas that overlook the City. The road, which was constructed in 2004, is neither historically significant nor a visual or scenic resource in and of itself. It is also a small part of the viewshed of a small number of close-in residential viewers but is not easily discernable to most such sensitive viewers (e.g., nearly all vantage points in the St. George Valley). Scenic trails would have views of the proposed Red Hills Parkway; however, the road would not be a more prominent visual element in the viewshed than the existing Red Hills Parkway. Hence, views would remain essentially unchanged.

The Build Alternative would leave the appearance of the road essentially the same as the existing road with regard to construction materials and overall configuration and would not substantially affect views or visual resources. Also, the views from Red Hills Parkway of the surrounding landscape and overlooking St. George would remain essentially unchanged. Hence, no adverse impact would occur to views that can be seen from Red Hills Parkway by motorists.

### **Shading/Glare**

The Build Alternative would not result in shade/shadow effects because the only structural element associated with the project is the interchange at Bluff Street and Red Hills Parkway, which would not cast shade/shadows on any sensitive viewers. The interchange would generally not be visible from the residences located west of the intersection due to intervening topography and would not cast shade or shadows on the residences. Mitigation measure VQ-1 would ensure that materials and methods used to construct the new road would be visually similar to the existing road.

### **Artificial Light**

Red Hills Parkway is not currently lighted except at the intersections of Bluff Street, Skyline Drive, and 1000 East. Additional lighting is not proposed. Therefore, no adverse lighting-related effects are expected as a result of the proposed action.

### **Cumulative Effects**

A large portion (approximately 85 percent) of the visual setting for the proposed action is designated Open Space and therefore intended to be preserved in a permanent natural state. The majority of the land in the project setting is owned or administered by the City, the State, or BLM. None of these landowners/administrators are proposing, or likely to propose, actions that would have the potential to substantially change the visual character or adversely affect visual quality in or adjoining the area of potential effect for the proposed action. Only two small segments of the study area have land use designations that permit commercial, public facility, or residential uses. These occur at the eastern and western ends of the project corridor where visual quality is currently low. No cumulatively substantial visual effects are anticipated as a result of the proposed action.

## Avoidance, Minimization, and/or Mitigation Measures

### No-Build Alternative

No mitigation is necessary.

### Build Alternative

The following mitigation measures would ensure that impacts to visual resources resulting from the project would be minimized.

#### **Mitigation Measure VQ 1: Limitations on Building Materials**

No reflective materials or colors will be incorporated into the project. Hardscape features, such as retaining walls (proposed along limited portions of the corridor), will be constructed of a nonreflective, neutral earth color to match the color of the adjoining soil. Embankments will utilize earth and gravel and other nonshade-/nonglare-producing materials to integrate the road features into the natural landscape to the greatest extent possible.

#### **Mitigation Measure VQ 2: Limitations on Excavation**

At the direction of the St. George Hillside Review Board, cuts into sandstone landforms adjoining the road will be minimized. To further limit the number of such cuts, permitted road slopes will be steepened from 1:1 to 1:0.5 ratios where necessary. In addition, straight-line cuts into adjoining landforms will be avoided. As shown in the current design, the final design will shift the alignment approximately 15 feet to the west to avoid the rock formations along the north/south segment of the corridor.

## 3.15 Energy

This section discusses both current and projected energy consumption associated with traffic along Red Hills Parkway. Estimated daily energy consumption quantities were developed based on traffic volumes compiled for the existing conditions in the study area. The traffic volumes were also used to estimate daily energy consumption in 2030 in order to analyze potential energy-related environmental impacts associated with the proposed action.

### Regulatory Setting

NEPA regulations require an environmental assessment to address energy and natural or depletable resources, the conservation potential of various alternatives, and applicable mitigation measures (40 CFR 1502.16(e)(f)).

### Affected Environment

The specific study area for energy consumption analysis includes Red Hills Parkway from Bluff Street to Industrial Road. In addition, this section presents energy consumption information for the northern St. George area, which includes Bluff Street, St. George Boulevard, and Red Hills Parkway. These thoroughfares are primary traffic routes for northern St. George, and energy consumption in the northern St. George area is considered because changes to Red Hills Parkway could result in traffic distribution shifts on Bluff Street and St. George Boulevard.

As described in Chapter 1, traffic volume is projected to increase along the existing Red Hills Parkway and surrounding roads in the St. George area. Current (2006) vehicle miles traveled (VMT) in the study area was determined by using traffic volumes compiled for the project (Fehr & Peers 2006). Existing traffic demand and related energy consumption data are reported in Table 3.15-1. The numbers for estimated gallons of gasoline used (fuel consumption) in Table 3.15-1 were compiled based on VMT and the assumed vehicle gasoline consumption rates in 2006 and 2030.

Since different fuel sources produce different amounts of energy output, the British thermal unit (Btu) was also used to show the amount of energy consumed. The Btu is a precise measure of energy; it's the amount of energy required to raise the temperature of 1 pound of water by 1 degree Fahrenheit (Energy Information Administration 2006). The Btu is used to demonstrate and compare energy consumption. According to the Energy Information Administration (EIA), the average single-family household consumed 92 million Btu of energy in 2001 (EIA 2006).

**Table 3.15-1.** Existing (2006) and Future (2030) Daily Traffic-Related Fuel Consumption

Area	Existing Conditions (2006)			Future Conditions 2030									
	VMT	Fuel Consumption (gallons)	Energy Consumption (million Btu)	No-Build Alternative			Build Alternative						
				VMT	VMT % Increase <sup>3</sup>	Fuel Consumption (gallons)	Energy Consumption (million Btu)	Energy % Increase <sup>3</sup>	VMT	VMT % Increase <sup>3</sup>	Fuel Consumption (gallons)	Energy Consumption (million Btu)	Energy % Increase <sup>3</sup>
Red Hills Parkway	49,275	1,670	208.75	116,334	136.1%	3,442	430.25	106.1%	175,076	255.3%	5,178	647.25	210.1%
Northern St. George <sup>1</sup>	182,575 <sup>2</sup>	6,189	773.6	446,356	144.5%	13,205	1,650.6	113.4%	482,025	164%	14,261	1,782.6	130.4%

Notes:

<sup>1</sup> VMT totals for the northern St. George area include Red Hills Parkway, Bluff Street, and St. George Boulevard.

<sup>2</sup> Estimated 2006 VMT for Bluff Street and St. George Boulevard was based on 2005 data from the Utah Department of Transportation.

<sup>3</sup> Rate of change over existing 2006 conditions.

VMT = vehicle miles traveled; Btu = British thermal unit; 1 gallon of gasoline = 125,000 Btu (Energy Information Administration 2006).

According to EPA, with respect to rated mpg, passenger vehicles are assumed to achieve gasoline fuel efficiency of 29.5 mpg in 2006 and 33.8 mpg in 2030 (Energy Information Administration/Annual Energy Outlook 2006 with Projections to 2030, December 2005).

Source: Fehr & Peers, 2006; Energy Information Administration, 2005.

## Impacts

The primary energy use in the study area is associated with vehicles using the transportation facilities. Energy impacts associated with the No-Build Alternative and the Build Alternative are discussed below.

### No-Build Alternative

Minor improvements to Red Hills Parkway, including the realignment of the Skyline Drive intersection, would occur under the No-Build Alternative and, therefore, would require the use of diesel-operated equipment or gasoline associated with employee vehicle trips and haul trips. This increase in energy consumption would be minor and short term.

Under the No-Build Alternative future conditions (2030), VMT along Red Hills Parkway is projected to increase approximately 136.1 percent over the 2006 levels (Fehr and Peers 2006), and related energy consumption is projected to increase by approximately 106.1 percent (see Table 3.15-1). The VMT in the northern St. George area in 2030 is projected to increase 144.5 percent over the 2006 levels (Fehr and Peers 2006) and related energy consumption by approximately 113.4 percent. Average fuel efficiency of vehicles is expected to improve by about 14.57 percent (or by 4.3 miles per gallon) during the same period (U.S. Department of Energy 2006). This projected increase in fuel efficiency is included in the energy calculations shown in Table 3.15-1.

As illustrated in Table 3.15-1, under the No-Build Alternative future conditions, VMT in the study area in 2030 would be less than that under the Build Alternative. However, one factor not considered in the table is the reduction in fuel efficiency resulting from extreme traffic congestion under the No-Build Alternative. Increased traffic congestion consumes more fuel because of increased vehicle idling times. Consequently, the difference between the Build and No-Build Alternatives may be slightly less than what is shown in the table.

### Build Alternative

#### Construction Impacts

During construction, short-term energy consumption would result from the use of petroleum fuels for construction equipment, the manufacture of construction materials, delivery and removal of construction materials at the site, and construction personnel transport to and from the project site. This increase in energy consumption would be minor and short term.

## Operational Impacts

The Build Alternative would increase traffic capacity and use and, therefore, would result in increased energy consumption along Red Hills Parkway. Under the Build Alternative, VMT in the study area in 2030 is projected to increase approximately 255.3 percent over the 2006 levels (Fehr and Peers 2006), and related energy consumption is projected to increase by approximately 210.1 percent (see Table 3.15-1). Under the Build Alternative, VMT in the northern St. George area in 2030 is projected to increase 164 percent over 2006 levels (Fehr and Peers 2006), and related energy consumption by approximately 130.4 percent. The increase in total VMT in the northern St. George area is less than the VMT increase on Red Hills Parkway because some of the additional trips on Red Hills Parkway are diverted from Bluff Street and St. George Boulevard, thus reducing congestion on all three roads.

The increases in VMT and energy consumption along Red Hills Parkway and in the northern St. George area are higher than those that would be experienced in 2030 if the Build Alternative were not constructed. For Red Hills Parkway, the difference in daily energy consumption between the Build Alternative and the No-Build Alternative is 217 million Btu, which would be equivalent to the annual energy consumption of 2.36 households. For the northern St. George area, the difference in daily energy consumption between the Build Alternative and the No-Build Alternative is 132 million Btu, which would be equivalent to the annual energy consumption of 1.43 households. This increase in energy consumption would be minor. In addition, the Build Alternative would also result in improved vehicle energy efficiency by reducing traffic congestion and stop-and-go traffic movement.

## Cumulative Effects

Cumulative impacts to energy would occur if the proposed action, in conjunction with other projects, collectively results in excessive and inefficient energy uses. Development projects in St. George and surrounding communities would have a tendency to result in increased energy consumption locally. However, none of the projected development projects are expected to result in excessive and inefficient energy uses. Future developments would include residential, commercial, and industrial uses that are similar to existing development in St. George. Operation of the Build Alternative would reduce traffic congestion and improve vehicle efficiency but would also induce some vehicle trips. Overall the project would not contribute substantially to any cumulative energy impacts.

## Avoidance, Minimization, and/or Mitigation Measures

The energy increase associated with the proposed action would be minor, and therefore, no avoidance, minimization, and/or mitigation measures are necessary.

## Introduction

### Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966, amended and codified in federal law at 49 USC 303, declares that “it is the policy of the United States government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.”

Further, Section 4(f) prohibits the Secretary of Transportation from approving any program or project that

...requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance as determined by federal, state, or local officials having jurisdiction thereof, or any land from an historic site of national, state, or local significance as so determined by such officials unless (1) there is no feasible and prudent alternative to the use of such land and (2) such program includes all possible planning to minimize harm to such park, recreation area, wildlife and waterfowl refuge, or historic site resulting from such use (Department of Transportation Act of 1983, 49 USC 303).

Section 4(f) use, as defined in 23 CFR 771.135(p), occurs in any of the following cases:

- Land is permanently incorporated into a transportation facility,
- There is a temporary occupancy of land that is adverse in terms of the statute’s preservationist purposes as determined by the criteria in 23 CFR 771.135(p)(7), or
- There is a constructive use of land.

Constructive use occurs when the transportation project does not incorporate land from a Section 4(f) resource, but the project’s proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs when the protected activities, features, or attributes of the resource are substantially diminished.

Depending on the resource, a constructive use would involve permanent and severe noise, vibration, aesthetic, or access impacts. As outlined in 23 CFR 771.135 (p)(4), a constructive use of a protected resource occurs under any of the following situations:

- (i) The projected noise-level increase attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility of a resource protected by Section 4(f), such as hearing the performances at an outdoor amphitheater, sleeping in the sleeping area of a campground, enjoyment of a historic site where a quiet setting is a generally a recognized feature or attribute of the site's significance, or enjoyment of an urban park where serenity and quiet are significant attributes.
- (ii) The proximity of the proposed project substantially impairs the aesthetic features or attributes of a resource protected by Section 4(f), where such features or attributes are considered important contributing elements to the value of the resource.
- (iii) The project results in a restriction on access which substantially diminishes the utility of a significant publicly owned park, recreation area, or historic site.
- (iv) The vibration impact from operation of the project substantially impairs the use of a Section 4(f) resource, such as projected vibration levels from a rail transit project that are great enough to affect the structural integrity of a historic building or substantially diminish the utility of the building.
- (v) The ecological intrusion of the project substantially diminishes the value of wildlife habitat in a wildlife or waterfowl refuge adjacent to the project or substantially interferes with the access to a wildlife or waterfowl refuge, when such access is necessary for established wildlife migration or critical life processes.

Section 4(f) applies to historic properties only when the property or resource is included in or eligible for listing in the NRHP. Section 4(f) applies only to archaeological sites that are in or eligible for inclusion in the NRHP and warrant preservation in place. Section 4(f) does not apply if it is determined that the archaeological resource is important chiefly because of what can be learned by data recovery (even if it is decided that the resource would not be recovered) and it has minimal value for preservation in place. The criteria for eligibility for the NRHP are defined in Section 3.12 of this EA and are incorporated herein by reference.

## Section 6009 of SAFETEA-LU

In August of 2005, SAFETEA-LU was enacted as Public Law 109-59. SAFETEA-LU authorizes funding for highways, highway safety, and transit for the 5-year period 2005 to 2009. In December 2005, FHWA and the Federal Transit Administration (FTA) issued a joint memorandum providing guidance to field offices for implementing Section 6009 of SAFETEA-LU. Section 6009 of SAFETEA-LU amended the Section 4(f) legislation to simplify the processing and approval of a program or project that may have only a *de minimis* impact on

a resource eligible for protection under Section 4(f). When it is determined that a *de minimis* impact finding can be made and the agency with jurisdiction over the resource agrees in writing, compliance with Section 4(f) is simplified. The full Section 4(f) process requires the development and analysis of alternatives that avoid use and minimize harm to a resource; however, when a *de minimis* impact finding can be made, this analysis is not required, and the Section 4(f) evaluation process is complete.

Impact criteria specified in Section 6009(a) of SAFETEA-LU for historic sites and parks, recreation areas, and wildlife and waterfowl refuges are summarized below.

A finding of *de minimis* impact on a historic site may be determined when

- the process required by Section 106 of the NHPA results in the determination of either “no adverse effect” or “no historic properties affected,” with concurrence of the SHPO and ACHP if participating in the Section 106 consultation;
- the SHPO is informed of FHWA’s intent to make a *de minimis* impact finding based on the SHPO’s written concurrence on the Section 106 determination of effect; and
- FHWA has considered the views of any consulting parties participating in the Section 106 consultation.

A finding of *de minimis* impact on a park, recreation area, or wildlife and waterfowl refuge may be determined when

- the *de minimis* impact finding is based on the degree or level of impact, including any avoidance, minimization, and mitigation or enhancement measures that are included in the project to address the Section 4(f) use. The expected positive effects of any measures included in a project to mitigate the adverse effects on a Section 4(f) resource must be taken into account when determining whether the impact to the Section 4(f) resource is *de minimis*;
- the transportation use of the Section 4(f) resource, together with any impact avoidance, minimization, and mitigation or enhancement measures incorporated into the project, does not adversely affect the activities, features, or attributes that qualify the resource for protection under Section 4(f);
- the official(s) with jurisdiction over the affected property are informed of FHWA’s intent to make a *de minimis* impact finding based on their agency’s written concurrence that the project will not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f).; and
- the public has been afforded an opportunity to review and comment on the effects of the project on the protected activities, features, and attributes of the Section 4(f) resource (FHWA; FTA 2005).

## Joint Development of Red Cliffs Desert Reserve and Red Hills Parkway

Guidance provided in the Section 4(f) Policy Paper (FHWA 2005) indicates that when a public park, recreation area, or wildlife and waterfowl refuge is established and an area is reserved for highway use prior to or simultaneously with the establishment of the resource, the requirements of Section 4(f) do not apply to the subsequent use of the reserved area for the intended highway purpose. At the time that Washington County developed the HCP that protects the Red Cliffs Desert Reserve as mitigation for a countywide ESA Section 10(a) Incidental Take Permit from USFWS, approximately 2.5 miles of existing road, known as Skyline Drive (currently designated as Red Hills Parkway), was located within the HCP boundaries. The original HCP documents acknowledge the presence of the road and anticipate future road improvements.

The HCP and the Final EIS for the Proposed Issuance of an Incidental Take Permit for Desert Tortoise in Washington County included provisions for future reconstruction and maintenance of Skyline Drive and stated that the road improvements should follow the existing alignment as near as possible, except where engineering and/or safety considerations require deviations (Washington County 1995). The Build Alternative would be constructed according to the provisions identified in the HCP and Final EIS. Detailed discussions of the reserve are provided in Sections 3.9 and 3.10 of this EA.

In a letter dated January 12, 2007, FHWA concurred with UDOT that the reserve was jointly developed with the existing highway corridor (Red Hills Parkway) and in its boundaries; therefore, the requirements of Section 4(f) are not applicable to the reserve for purposes of this evaluation. This letter is included in Appendix A.

This joint development determination would not apply to other recreational or historic resources within the Red Cliffs Desert Reserve's boundaries determined eligible for protection under Section 4(f). Trails and trailheads within the reserve, as well as other resources eligible for protection under Section 4(f) located within the boundaries of the reserve, are discussed separately in this Section 4(f) evaluation.

## Land Acquired under the Land and Water Conservation Fund Act

BLM is authorized to receive funding under the Land and Water Conservation Fund Act of 1965, as amended (16 USC 4601-4 et. seq.), through annual Congressional appropriations. The LWCF program allows for the purchase of public lands administered by BLM to manage key natural resources, enhance the management of existing public land and resources, and provide public access. The Red Cliffs Desert Reserve includes several parcels of land administered by BLM and purchased using LWCF funds. One of these parcels, SG-1743-A,

comprises 19 acres and is located immediately adjacent to Red Hills Parkway, north of the intersection with Skyline Drive. Parcel SG-1743-A was purchased in 1998 after the right-of-way for Red Hills Parkway was established.

Funds under the LWCF program are appropriated under two sections of the LWCF Act: for financial assistance to states under Section 6 and for federal purposes under Section 7. Under Section 6, financial assistance to states is administered by the National Park Service (NPS) and includes provisions prohibiting the conversion of property acquired or developed with these grants to nonrecreational uses without the approval of NPS. Section 6(f)(3) directs NPS to ensure that replacement lands are provided as conditions to such conversions. Section 7 does not include provisions prohibiting property conversions or requiring replacement lands; these federal appropriations are administered by the agency receiving the funds, in this case BLM. BLM does not prohibit the issuance of rights-of-way on public lands acquired under the LWCF program; the usual right-of-way application process would apply pursuant to Title V of the Federal Land Policy and Management Act (FLPMA). Federal ownership of the land would be retained.

Widening Red Hills Parkway would require obtaining 2.05 acres of right-of-way from the two parcels of land administered by BLM and purchased using LWCF funds.

## Description of Proposed Action

The following is a summary of the proposed action, previously described in detail in Chapter 1 and Chapter 2 of this EA.

FHWA, UDOT, and the City propose to make transportation improvements to Red Hills Parkway between SR-18 (Bluff Street) and Industrial Road, a distance of approximately 3.5 miles (see Figure 4-1). Red Hills Parkway is currently a two-lane facility with left-turn lanes provided at intersections. Five existing intersections occur along Red Hills Parkway, at Bluff Street, Skyline Drive, 900 East, 1000 East, and Industrial Road. The road west of the Red Hills Parkway intersection with Bluff Street is named Snow Canyon Parkway.

The proposed action would involve widening Red Hills Parkway to two lanes in each direction, with a center turn lane between Skyline Drive and Industrial Road. Between Bluff Street and Skyline Drive, an unpaved median would separate the eastbound and westbound lanes. Sidewalk, curb, and gutter would be installed between Industrial Road and the eastern entrance to Pioneer Park. A grade-separated diamond interchange configuration would be constructed at the intersection of Red Hills Parkway and Bluff Street. Bluff Street would be elevated to span over Red Hills Parkway. Signals would be installed on Red Hills Parkway at the interchange ramps to accommodate turning movements between Bluff Street and Red Hills Parkway. Signals at the intersections of Skyline Drive and Red Hills Parkway and at 1000 East and Red Hills Parkway would be upgraded to accommodate the new lanes of traffic. A separate paved pedestrian/bike trail would be constructed along the Red Hills Parkway alignment between Bluff Street and the trailhead located at Pioneer Park.

## Purpose and Need

The following is a summary of the project Purpose and Need previously described in detail in Chapter 1 of this EA.

The purpose of the proposed action is to accommodate east/west travel demand on Red Hills Parkway between Bluff Street and Industrial Road better. The needs the proposed action is intended to address have been identified as follows:

- insufficient transportation system capacity to accommodate growing travel demand,
- insufficient east/west transportation capacity to serve areas in the City that attract large traffic volumes,
- excessive projected vehicle hours of delay along Red Hills Parkway,
- insufficient multi-modal trail connectivity,
- safe intersections and trail crossings,
- Mojave Desert tortoise habitat adjacent to Red Hills Parkway,
- lack of continuous east/west traffic lanes, and
- congestion on St. George Boulevard.

## Alternatives

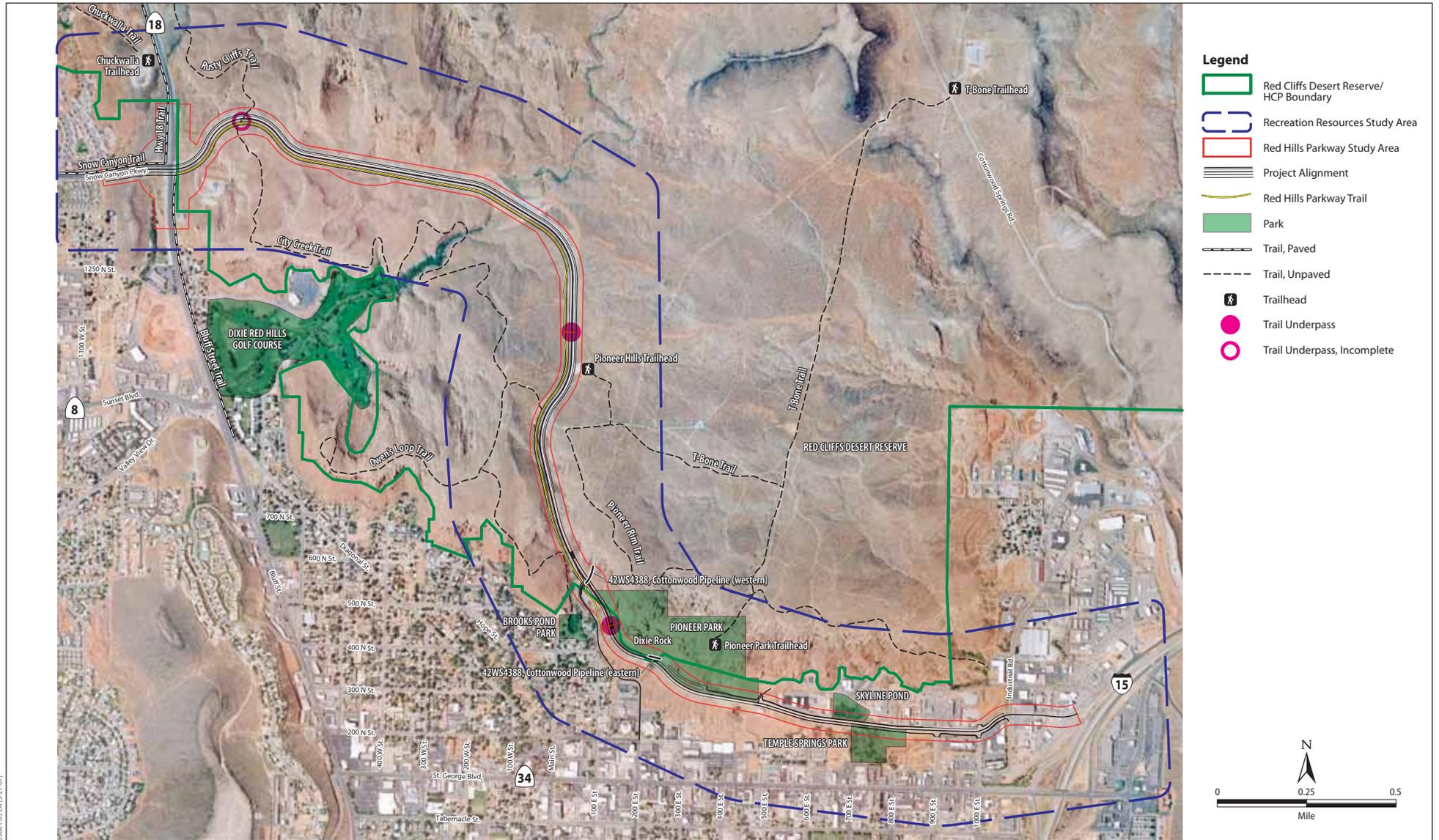
The following is a brief summary of the alternatives previously described in detail in Chapter 2 of this EA. Five alternatives were evaluated: the TSM/TDM Alternative, the 7-Lane Alternative, the Northern Corridor, the Build Alternative (5-Lane Alternative), and the No-Build Alternative. The Build Alternative was selected as the locally preferred alternative. The EA, as well as this evaluation, includes an in-depth analysis of the Build Alternative and the No-Build Alternative. A brief description of each alternative is presented below.

### TSM/TDM Alternative

The TSM/TDM Alternative would use the existing transportation system better by improving the efficiency of vehicles, roads, and signals and managing demand for the system, without changing the total number of travel lanes on the road.

### 7-Lane Alternative

The 7-Lane Alternative would follow the existing Red Hills Parkway alignment from Bluff Street to Industrial Road. This alternative would require a 175-foot-wide right-of-way and be designed for three traffic lanes in each direction, with an unpaved center median or paved turn lane. This alternative would also include a separate paved bike/pedestrian path and shoulders that would be striped to accommodate bike lanes.



**Figure 4-1**  
**Section 4(f) Properties**

## Northern Corridor

The Northern Corridor would begin at Red Hills Parkway approximately 1 mile east of Bluff Street and continue through the Red Cliffs Desert Reserve, eventually connecting to I-15 at milepost 13. This alternative would include three lanes of traffic in each direction, with an unpaved center median or paved turn lane. The Northern Corridor would include a separate paved bike/pedestrian path and shoulders that would be striped to accommodate bike lanes.

## Build Alternative (5-Lane Alternative)

The Build Alternative would include widening the existing Red Hills Parkway alignment from Bluff Street to Industrial Road. This alternative would be designed for two lanes in each direction, with an unpaved center median or paved turn lane. This alternative would also include a separate paved bike/pedestrian path and shoulders that would be striped to accommodate bike lanes.

On October 19, 2006, the City of St. George passed a resolution affirming its support for the Build Alternative as the locally preferred alternative, considering this alternative the best for meeting transportation goals while minimizing impacts on important visual, cultural, and biological resources.

## No-Build Alternative

Under the No-Build Alternative, Red Hills Parkway would continue to operate as a two-lane road. Planned improvements listed on the adopted Regional Transportation Plan or projects with funding currently available would be implemented. The intersection of Skyline Drive and Red Hills Parkway would be realigned approximately 100 feet north of its existing alignment and signalized. Additional minor improvements anticipated along Red Hills Parkway under the No-Build Alternative are presented in Chapter 2.

## Section 4(f) Properties

Historic and archaeological resources eligible for protection under Section 4(f) were identified within the APE. Recreational resources eligible for protection under Section 4(f) were identified within 0.25 mile on either side of Red Hills Parkway. Recreational resources include publicly owned trails, parks, and recreational facilities. Section 4(f) resources located outside the APE and the 0.25-mile limits would not be subject to effects from the proposed action. The Section 4(f) properties are listed in Table 4-1 and shown in Figure 4-1.

**Table 4-1. Section 4(f) Properties**

Section 4(f) Property	Location/Description
Site 42WS4990, Dixie Rock	A large rock outcrop of the Kayenta Formation, visible throughout most of St. George, with “Dixie” painted on it in white letters. Located in Pioneer Park west of the main entrance. The NHPA Section 106 consultation is complete and SHPO concurred that this resource is eligible for NRHP under Criterion A.
Site 42WS4388, Cottonwood Pipeline	Two segments of historic cement pipeline. Construction of the pipeline began in 1921 and was completed in 1936. Previously determined eligible for NRHP listing under Criteria A, C, and D. The NHPA Section 106 consultation is complete.
St. George Trails	Three paved multiuse trails at intersection of Bluff Street and Red Hills Parkway. These trails are the Highway 18, Snow Canyon, and Bluff Street trails.
Red Cliffs Desert Reserve Trails	Six unpaved hiking/biking trails and three trailheads are located within the recreation study area. These are the Chuckwalla, Rusty Cliffs, City Creek, Pioneer Rim, T-Bone, and Owens Loop trails and the Chuckwalla, Pioneer Hills, and Pioneer Park trailheads.
Dixie Red Hills Golf Course	Nine-hole, 50-acre golf course located at 1250 North 645 West.
Brooks Pond Park	Primarily undeveloped 4-acre park with a pond and trail. Designated as a future planned neighborhood park in the Parks Master Plan. Located in Brooks Canyon, south and west of Skyline Drive. A trail encircles the pond and exits Brooks Canyon near the intersection of Skyline Drive and Red Hills Parkway, and ultimately connects to the Owens Loop Trail.
Pioneer Park	A 200-acre park north of Red Hills Parkway at approximately 200 East. Majority of the park is located within boundaries of Red Cliffs Desert Reserve.
Skyline Pond	Urban fishing pond located at 600 East.
Temple Springs Park	Seven acres of primarily undeveloped natural park located between 700 East and 800 East, south of Red Hills Parkway. Designated as a future planned park in the Parks Master Plan

There are no planned or proposed trails in the 0.25-mile study area, with the exception of the proposed Red Hills Parkway Trail. The proposed Red Hills Parkway Trail is being developed as part of the proposed action and, therefore, is not subject to the provisions of Section 4(f).

## Use of Section 4(f) Properties

The definitions of use under Section 4(f) are provided at the beginning of this chapter. Direct use of a Section 4(f) resource occurs when land is permanently incorporated into a transportation facility. This may occur as a result of partial or full acquisition of a fee simple interest, permanent easement, or temporary use conditions that exceed the regulatory limits defined in 23 CFR 771.135(p)(7). The No-Build Alternative would not result in a use of any Section 4(f) properties. Potential uses of Section 4(f) properties that may result from implementation of the Build Alternative are summarized in Table 4-2.

**Table 4-2.** Use of Section 4(f) Properties by Build Alternative

Property	Section 4(f) Use? (Yes/No)
Site 42WS4990, Dixie Rock	No Section 4(f) use; SHPO has concurred with the NHPA Section 106 eligibility and effects determinations.
Site 42WS4388, Cottonwood Pipeline	Yes, direct use required of a small, isolated eastern section of pipeline that would be removed. SHPO has concurred with the NHPA Section 106 eligibility and effects determinations. Recommend <i>de minimis</i> impact finding based on SHPO written concurrence in the NHPA Section 106 determination of no adverse effect. <sup>1</sup>
St. George Trails	Yes, direct use of portions of the Highway 18, Snow Canyon, and Bluff Street trails. Detour would be provided during construction to ensure uninterrupted use of the trails. Recommend <i>de minimis</i> impact finding.
Red Cliffs Desert Reserve Trails	No Section 4(f) use of six trails or three trailheads. Trail connectivity and safety would be increased.
Dixie Red Hills Golf Course	No Section 4(f) use. Located more than 1,500 feet from the Red Hills Parkway alignment.
Brooks Pond Park	No Section 4(f) use of future park. The trail exiting Brooks Canyon may require realignment.
Pioneer Park	Yes, direct use of 1.7 acres of frontage area along road required to relocate the main park entrance for safety reasons. Recommend <i>de minimis</i> impact finding.
Skyline Pond	No Section 4(f) use. A retaining wall would be built to avoid impact on the pond and associated property.
Temple Springs Park	Yes, direct use of 0.62-acre strip of frontage area along road required. Recommend <i>de minimis</i> impact finding. No effect on the recreational use, activities, features, or attributes of the park.

Note:

<sup>1</sup> The terms *adverse effect* and *no adverse effect* are taken from Section 106 of the NHPA determinations; see Section 3.12 of this EA.

Implementation of the Build Alternative would require the direct use of one cultural resource and three recreational resources, as shown in Table 4-2. UDOT considers the direct use of these Section 4(f) resources as meeting the impact criteria and requirements for a *de minimis* impact finding and is presenting this information to FHWA for concurrence.

The following sections provide detailed descriptions of the Section 4(f) properties, including a discussion of the Section 4(f) use, if applicable, resulting from implementation of the Build Alternative.

## Site 42WS4990, Dixie Rock

Site 42WS4990, Dixie Rock, is a large rock outcrop of the Kayenta Formation above and north of St. George. Dixie Rock is located within Pioneer Park on land owned by the City and within the boundaries of Red Cliffs Desert Reserve.

Dixie Rock is immediately adjacent to Red Hills Parkway. The painted word “Dixie” on the south face of the rock has persisted for the last 92 years and has become the site of an annual community-wide celebration.

Dixie Rock has been recommended eligible for listing on the NRHP under Criterion A. SHPO has concurred with the NHPA Section 106 eligibility and effects determinations. Dixie Rock was determined eligible for the NRHP under Criterion A, and it is eligible for protection under Section 4(f).

## **Section 4(f) Use of Dixie Rock**

### **Direct Use**

There would not be a permanent direct use of Dixie Rock as a result of implementation of the proposed action. The improvements to Red Hills Parkway would not occur any closer to the rock formation than the existing road. A small cut would be required to accommodate the improvements to the road in this area; however, this would occur within the existing embankment and would not affect the rock.

### **Constructive Use**

Due to the proximity of Dixie Rock to the Build Alternative, it was evaluated for potential constructive use impacts. Dixie Rock is not considered a noise-sensitive receptor, and there would be no constructive use of this resource due to noise. Vibration from the proposed transportation facility would not affect the structural integrity of the rock formation, so there would be no constructive use due to vibration. Dixie Rock is located immediately adjacent to the existing Red Hills Parkway, and implementation of the Build Alternative would not affect its eligibility for listing on the NRHP. Access to the Dixie Rock would not be affected.

Because there would be no direct or constructive use of this historic property, it is not discussed further in this draft evaluation.

## **Site 42WS4388, Cottonwood Pipeline**

Site 42WS4388, Cottonwood Pipeline, was constructed between 1921 and 1936 to convey water from Cottonwood Creek in the Pine Valley Mountains to the residents of St. George. Two sections of the pipeline occur in the APE, a western section and the small isolated eastern section. The western section extends into Red Cliffs Desert Reserve for approximately 6 miles, continues westerly for approximately 12 miles and terminates at Cottonwood Creek. The eastern section is approximately 150 feet in length and isolated from the western section. Both pipeline sections are located in Pioneer Park on land owned by the City within the boundaries of the Red Cliffs Desert Reserve.

Site 42WS4388, Cottonwood Pipeline, was previously determined eligible for listing on the NRHP under Criteria A, C, and D and therefore is considered eligible for protection under Section 4(f). SHPO has concurred with the NHPA Section 106 eligibility and effects determinations.

### **Section 4(f) Use of Site 42WS4388, Cottonwood Pipeline**

#### **Direct Use**

Implementation of the Build Alternative would require removal of the 150-foot-long eastern pipeline section. There would be no effect on the western section of the pipeline. The direct use of the eastern pipeline section would not diminish the qualities that qualify the pipeline for listing on the NRHP, because the majority of the pipeline (the western pipeline section) would be preserved, and the primary contributing elements of the pipeline as a whole would not be affected.

UDOT considers that the direct use of the eastern pipeline section meets the impact criteria and requirements for a *de minimis* impact finding specified in SAFETEA-LU Section 6009(a). This consideration is based on the SHPO's written concurrence in the NHPA Section 106 determination of no adverse effect.

#### **Constructive Use**

A direct use of the eastern section of Site 42WS4388, Cottonwood Pipeline would be required, and therefore, there would not be a constructive use.<sup>1</sup>

## **City of St. George Trails**

The City maintains an existing trail system with 35.31 miles of developed off-street multiuse trails. The Highway 18, Snow Canyon, and Bluff Street trails are located within the recreation study area. These trails are described in Table 4-3 and shown in Figure 4-1.

To access to the Snow Canyon, Highway 18, or Bluff Street Trails, trail users are required to cross Bluff Street and Snow Canyon Parkway at the signalized crosswalks.

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<sup>1</sup> Constructive use does not occur when the process required by Section 106 of the NHPA results in an agreement of either no effect or no adverse effect (23 CFR 771.35 (p)(5)(i)).

**Table 4-3.** City of St. George Trails

Trails	
Highway 18	A 5.3-mile paved multiuse trail west of and parallel to Bluff Street. Begins at the intersection with Snow Canyon Parkway and Red Hills Parkway. This trail connects with the Snow Canyon Trail at this intersection and extends north to the Winchester Hills area. Trail does not cross Red Hills Parkway.
Snow Canyon	A 3.1-mile paved multiuse trail north of Snow Canyon Parkway. It begins at the intersection with Bluff Street and extends west to the city limits of Ivins. Trail can be also be accessed from the Tawa Pond Trailhead or the connecting Highway 18, Halfway Wash, and Bluff Street trails. Future plans call for this trail to connect with the city of Ivins trail system.
Bluff Street	A 0.8-mile paved multiuse trail east of Bluff Street. This trail begins at the intersection of Diagonal Street and Bluff Street and extends north to Red Hills Parkway. The Bluff Street Trail would connect with the proposed Red Hills Parkway Trail at this intersection.

### Section 4(f) Use of City of St. George Trails

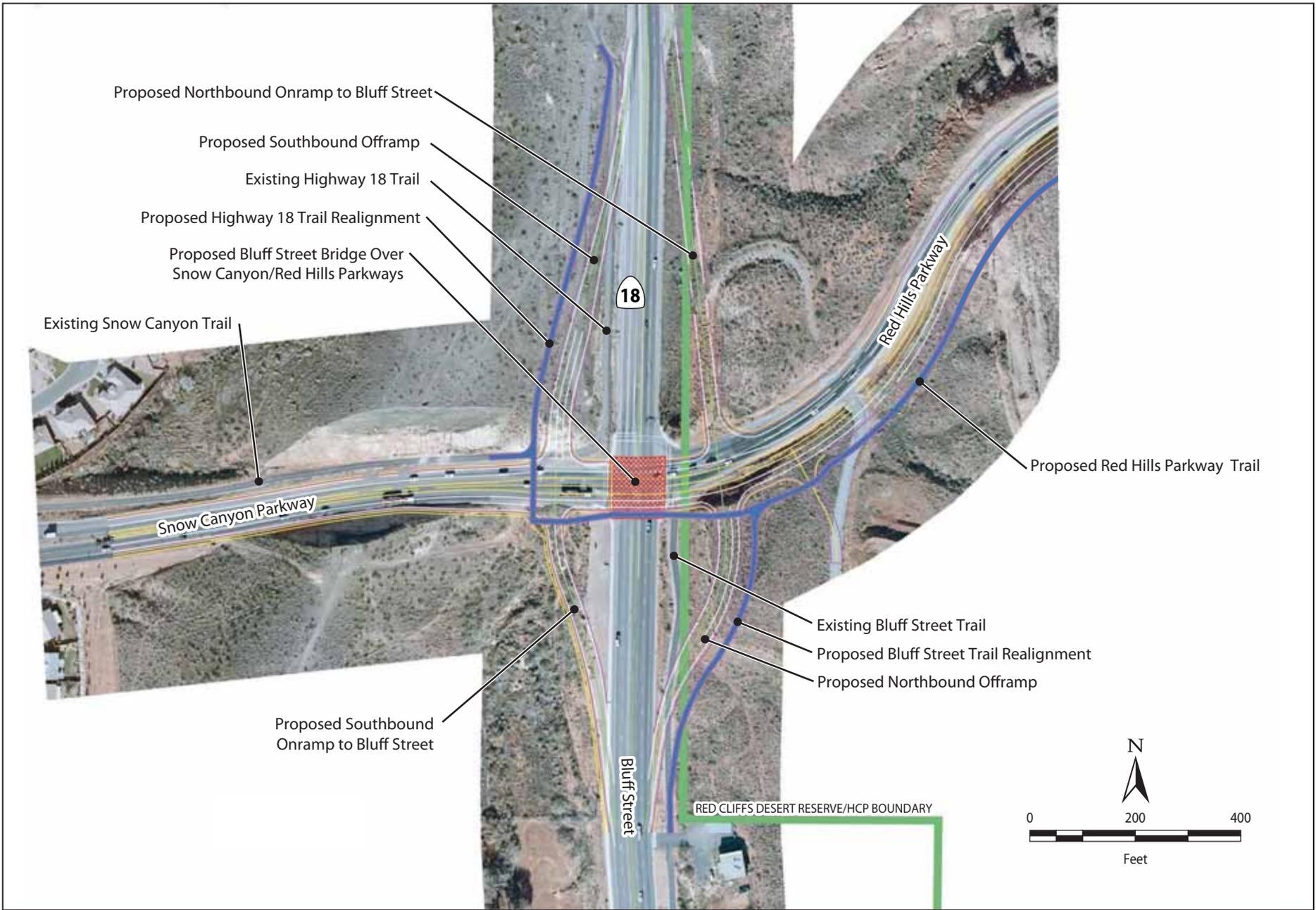
#### Direct Use

Construction of the Red Hills Parkway/Bluff Street interchange would require a permanent direct use of portions of the Highway 18, Snow Canyon, and Bluff Street trails. Approximately 540 feet of Highway 18 Trail, 90 feet of the Snow Canyon Trail, and 450 feet of the Bluff Street Trail would be incorporated into the right-of-way required to construct the proposed on- and off-ramps for the Bluff Street overpass. This area is shown in Figure 4-2. The Highway 18 Trail would be relocated west of the existing trail alignment and parallel to the proposed off-ramp to Snow Canyon Parkway, then connect to the existing Snow Canyon Trail. Approximately 68 feet of the existing Snow Canyon Trail would be reconstructed for the trail connection. The Bluff Street Trail would be relocated east of the existing trail alignment and proposed off-ramp to Red Hills Parkway. The Bluff Street Trail would connect to the proposed Red Hills Parkway Trail at this location. Trail access would be provided underneath the southern end of the proposed Bluff Street overpass, as shown in Figure 4-2. A detour for trail users would be provided during construction of the interchange to ensure uninterrupted use of the trails during construction.

Realignment and incorporation of portions of the trails into the transportation facility would not affect recreational use or enjoyment of the trails, nor would it adversely affect the activities, features, or attributes that qualify the trails for protection under Section 4(f).

Coordination with the Director of Leisure Services for the City, the official with jurisdiction over the Highway 18, Snow Canyon, and Bluff Street trails, has been ongoing and will continue during project development. At this time, UDOT considers the direct use of land from the Highway 18, Snow Canyon, and Bluff Street trails as meeting the impact criteria and requirements for a *de minimis* impact finding as specified in SAFETEA-LU Section 6009(a). This

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**Figure 4-2**  
**Realignment of City of St. George Trails**

consideration would be based on written concurrence from the Director of Leisure Services that the proposed action would not adversely affect the activities, features, and attributes that qualify these trails for protection under Section 4(f). Once this written concurrence has been obtained and the public has reviewed and commented on the effects of the proposed action, FHWA may concur with the UDOT recommendation that a *de minimis* impact finding is appropriate for these Section 4(f) resources.

### **Constructive Use**

Implementing the Build Alternative would require a direct use of portions of the Highway 18, Snow Canyon, and Bluff Street trails; for this reason, the trails were not evaluated for constructive use impacts.<sup>2</sup>

## **Red Cliffs Desert Reserve Trails**

An extensive trail system has been developed throughout the 62,000-acre reserve. The trail system includes 130 miles of designated trails, with more than 61 trails available for hiking, horseback riding, and mountain biking. More than 30 trailheads provide access to the trail system.

Three trailheads and portions of six trails are located within the recreation study area for the proposed project. The trailheads and trails are described in Table 4-4 and shown in Figure 4-1.

During previous work on Red Hills Parkway, the Pioneer Hills Trailhead was relocated, and trail underpasses were installed in three locations in 2004. Two of these underpasses are complete, and one is partially complete. The underpasses are shown in Figure 4-1. The incomplete underpass is located where the Rusty Cliffs Trail begins on Red Hills Parkway; only the northern half of the underpass has been constructed. Trail users cross Red Hills Parkway at grade to gain access to the trails. The two completed underpasses are located north of the Pioneer Hills Trailhead and in the Rotary parking area in Pioneer Park. The underpass north of Pioneer Hills Trailhead was completed and is functional; however, the City Creek Trail was not realigned to connect to the underpass. City Creek Trail users cross the road at grade to access the trailhead. The underpass in the Rotary parking area is complete but is not functional at this time due to steep grades leading into and out of the crossing. Additional excavation would be required to make this underpass functional for trail users.

At-grade pedestrian crossings of Red Hills Parkway have become increasingly dangerous as traffic volumes increase. In addition, relatively high speed limits (40 mph) and short sight distances resulting from the undulating terrain further increase hazards for trail users.

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<sup>2</sup> Constructive use does not occur when the transportation project requires a direct use of land from a Section 4(f) resource; see the definitions of use in the Introduction section of this chapter.

**Table 4-4.** Red Cliffs Desert Reserve Trailheads and Trails

Trailheads	
Chuckwalla	Located on SR-18 approximately 0.25 mile north of intersection of Bluff Street with Red Hills Parkway. Facilities include a restroom, parking area, and a trailer parking area.
Pioneer Hills	Located on Red Hills Parkway approximately 0.75 mile north of the Skyline Drive Red Hills Parkway intersection. Facilities include parking and trailer parking areas.
Pioneer Park	Located on north end of picnic loop in Pioneer Park; facilities include a parking area.
Trails	
Chuckwalla	The trail is an unpaved hiking/biking double-track trail, approximately 0.6 mile in length. The trail begins on the north end of the trailhead and connects to trails in the Paradise Canyon area of the reserve. This trail is the primary access to the Paradise Canyon area located west of Bluff Street. The trail does not cross Red Hills Parkway.
Rusty Cliffs	This trail is an unpaved hiking/biking trail with sections of single- and double-track trail, approximately 3 miles in length. The trail begins on the north side of Red Hills Parkway, approximately 0.25 mile east of the Bluff Street intersection, directly across from City Creek Trail. The trail does not cross Red Hills Parkway. Trail users cross Red Hills Parkway at grade to access City Creek Trail on the south.
City Creek	This trail is an unpaved hiking/biking trail with sections of single- and double-track trail, approximately 2.25 miles in length. The trail begins on the south side of Red Hills Parkway (across from Rusty Cliffs Trail) and extends south to the Owens Loop Trail. Trail users cross Red Hills Parkway at grade to access the Rusty Cliffs Trail on the north and the Pioneer Hills Trailhead.
Pioneer Rim	The 1.25-mile Pioneer Rim Trail originates at this trailhead and is designated as an unpaved hiking/biking single-track trail. The trail connects to the T-Bone Trail north of the Pioneer Park Trailhead and continues on to the developed area near 1000 East. The trail does not cross Red Hills Parkway.
T-Bone	This 2.4-mile trail is designated as an unpaved hiking/biking single-track trail. The trail begins at the T-Bone Trailhead on Cottonwood Road and extends south to the Pioneer Park Trailhead. Within the first mile of the trail, an extension leaves the main trail, heads west, and intersects Pioneer Rim Trail east of the Pioneer Hills Trailhead. The trail does not cross Red Hills Parkway.
Owens Loop	This trail is approximately 1 mile in length and designated as an unpaved hiking/biking trail. The trail begins on the west side of Red Hills Parkway, north of the intersection with Skyline Drive, and travels northwest on the bluff above the City. City Creek Trail and a trail exiting Brooks Canyon connect to this trail. This trail does not cross Red Hills Parkway.

Implementation of the Build Alternative would include improving the existing underpasses and trail connections to the underpasses. The underpass near the Rusty Cliffs Trail would be completed on both sides of the road. Approximately 100 feet of new trail would be constructed to connect the existing Rusty Cliffs Trail to the underpass. Approximately 300 feet of new trail would be constructed south of Red Hills Parkway to connect the existing City Creek Trail to the underpass. Once the improvements to the underpass have been made and the new trail sections are in use, the abandoned sections of trail would be reclaimed.

Reclamation of the abandoned sections of trail would occur in accordance with provisions contained in the reclamation plan (refer to Section 3.10, Special-Status Species). The new trail connections are shown in Figure 3.4-2.

During construction, the underpass north of the Pioneer Hills Trailhead would be lengthened and trail connections constructed. A 400-foot section of new trail would be constructed on the east side of Red Hills Parkway from the Pioneer Hills Trailhead to the underpass. This new section of trail would be located west of the existing tortoise exclusionary fence. Construction of a new trail section would also be required to connect the underpass to the existing City Creek Trail. This connection would be made utilizing the proposed Red Hills Parkway Trail located along the west side of Red Hills Parkway. Approximately 400 feet south of the underpass, an unpaved section of trail would leave the proposed Red Hills Parkway Trail to connect to the existing City Creek Trail. The new section of trail, approximately 700 feet in length, would be located on the west side of the existing tortoise exclusionary fence. This trail detail is depicted in Figure 3.4-2.

Once the improvements to the underpass have been made and the new trail sections are in use, the abandoned sections of trail would be reclaimed as described previously.

## **Section 4(f) Use of Red Cliffs Desert Reserve Trails**

### **Direct Use**

There would be no permanent direct use of any of the trailheads or trails in the Reserve as a result of implementation of the Build Alternative. However, as described above, improvements to the underpasses and trail realignments are proposed as part of the Build Alternative. The underpasses would be lengthened, and the southern extension of the incomplete underpass near the Rusty Cliffs Trail would be constructed. Access to the trails and Pioneer Hills Trailhead would be maintained to the extent feasible during construction. Short-term trail detours may be required near the road to ensure trail user safety. The trail realignments to connect to the underpasses would be coordinated with, and approved by the Washington County HCAC prior to construction. Construction of the proposed improvements would not require acquisition of right-of-way, and access would be maintained during construction. As a result of these improvements, safety and trail connectivity would be improved.

### **Constructive Use**

Recreation use of the trailheads and trails consists of activities that are transitory in nature (e.g., walking, bike riding, horseback riding), and therefore, the trails and trailheads are not considered noise-sensitive receptors. Increased noise levels along Red Hills Parkway would not substantially impair the recreational use or enjoyment of the trailheads or trails. There would be no constructive use attributable to noise.

Trails and trailheads in the recreation study area would not be affected by vibration associated with the Build Alternative. There are no buildings or other structures associated with the trails or trailheads that could be affected by

increased vibration. The restroom at the Chuckwalla Trailhead is located more than 0.25 mile north of Red Hills Parkway and would not be affected by vibration. There would be no constructive use attributable to vibration.

Views from the trailheads and trails toward Red Hills Parkway would change as a result of the proposed improvements. There may be some minor visual impacts during construction; however, these impacts would be temporary in nature. After construction, Red Hills Parkway would have features similar to the existing road and would not substantially detract from the setting of the trailheads and trails. There would be no constructive use of the Red Cliffs Desert Reserve trails attributable to aesthetics.

Access to the trailheads and trails would not change. Access to the trails and Pioneer Hills Trailhead would be maintained to the extent feasible during construction. Short-term detours may be required around construction and near the road to ensure trail user safety. As a result of the improvements to the underpasses and trail realignments to connect to the underpasses, access to the trails in the vicinity of Red Hills Parkway would be improved. These improvements would also increase safety for trail users.

Implementation of the Build Alternative would occur in accordance with the provisions contained in the HCP and the Final EIS for the Proposed Issuance of an Incidental Take Permit for Desert Tortoise in Washington County. There would be no constructive use attributable to ecological intrusion.

Avoidance alternatives and measures to minimize harm are not presented for the Red Cliffs Desert Reserve trails in this Section 4(f) evaluation because the proposed action would not result in a direct or constructive use. The Red Cliffs Desert Reserve trails are not discussed further in this evaluation.

## **Dixie Red Hills Golf Course**

The Dixie Red Hills Golf Course encompasses 50 acres located at 1250 North 645 West. The golf course is a 9-hole par-34 course and is accessed from 1250 North. Opened in the mid-1960s, it was the first golf course developed by the City. The golf course is open daily to the general public on a year-round basis. Amenities offered at the golf course include a driving range, cart and club rentals, and snack bar. Dixie Red Hills Golf Course is one of three public golf courses owned and operated by the City. Greens fees are \$11 from June to September and \$19 the remainder of the year (Red Rock Golf Trail 2007).

### **Section 4(f) Use of Dixie Red Hills Golf Course**

#### **Direct Use**

The Dixie Red Hills Golf Course is located more than 1,500 feet from Red Hills Parkway (see Figure 4-1). Implementation of the Build Alternative would not require a direct use of the golf course property.

### **Constructive Use**

As a result of the distance between the golf course and Red Hills Parkway, impacts attributable to noise and vibration are not expected to occur, and there would not be a constructive use attributable to noise or vibration. The golf course is located in an area that does not have a direct view of Red Hills Parkway. There would be no constructive use attributable to visual impacts.

Access to the golf course would not be affected, and there would be no constructive use due to changes in access.

Avoidance alternatives and measures to minimize harm are not presented for the Dixie Red Hills Golf Course in this Section 4(f) evaluation because the proposed action would not result in a direct or constructive use. Therefore, the Dixie Red Hills Golf Course is not discussed further in this evaluation.

## **Brooks Pond Park**

Brooks Pond Park is designated in the Parks Master Plan as a future planned neighborhood park. Currently, the park is primarily undeveloped, with limited recreational amenities. It is located on a 4-acre parcel in Brooks Canyon, southwest of Skyline Drive. There is a small pond encircled by a trail. The trail extends northward up Brooks Canyon and connects to the Owens Loop Trail in the reserve. The trail is not included in the Parks Master Plan as an existing or future trail; it is considered an amenity associated with this future park in this evaluation. The City owns the Brooks Pond Park property and the adjacent property that extends up Brooks Canyon to Red Hills Parkway. Brooks Pond Park is one of four future planned neighborhood parks in the Parks Master Plan. The Parks Master Plan indicates that there are plans to develop the 4-acre area with amenities that include limited parking, restrooms, picnic shelters, playground structures, open grass and shaded areas, and at least one additional amenity, such as a basketball standard, tennis court, volleyball court, sports court, paved walking trail, climbing wall, or other neighborhood-desired facility. Access to Brooks Pond Park is from Main Street.

According to guidance in the FHWA 2005 Section 4(f) Policy Paper, Section 4(f) applies to planned facilities that occupy presently owned public lands designated in a city or county master plan and determined to be significant for park, recreation area, or wildlife and/or waterfowl refuge purposes. Brooks Pond Park is formally designated as such and is considered eligible for protection under Section 4(f).

### **Section 4(f) Use of Brooks Pond Park**

#### **Direct Use**

There would be no direct use of land from the Brooks Pond Park property due to implementation of the Build Alternative. Realignment of a short section of the trail that exits Brooks Canyon and connects to the Owens Loop Trail may be required due to the placement of fill in that location. If realignment of the trail is necessary, the relocated section would be constructed prior to the placement of any fill to ensure uninterrupted use of the trail in this location.

### **Constructive Use**

Brooks Pond Park is located more than 200 feet south of Red Hills Parkway and shielded from view by steep terrain (at an elevation of approximately 100 feet below the road). There is a very low potential for noise levels to increase at this location as a result of implementation of the Build Alternative. Therefore, there would be no constructive use of Brooks Pond Park attributable to noise.

Additionally, due to the distance from Red Hills Parkway, there would be no constructive use attributable to vibration or visual impacts.

Access to Brooks Pond Park would not change, and there would not be a constructive use attributable to changes in access.

Avoidance alternatives and measures to minimize harm are not presented for Brooks Pond Park in this Section 4(f) evaluation because the proposed action would not result in a direct or constructive use. Therefore, Brooks Pond Park is not discussed further in this evaluation.

## **Pioneer Park**

Pioneer Park is a 200-acre community park located on Red Hills Parkway between 100 East and 500 East. The park is located on land owned by the City, and the majority of the park is located within the reserve boundaries, as shown in Figure 4-1. The City maintains 3 acres of developed land in the park and plans to develop permanent restroom facilities. The remaining 197 acres would not be developed and would remain as natural open space. Pioneer Park is one of nine community parks owned and maintained by the City (City of St. George 2007c).

A picnic pavilion is located immediately west of the main parking area. Five additional picnic sites are situated around a 0.5-mile, paved, one-way loop road east of the main parking area entrance. The parking area is an unpaved gravel lot with a portable lavatory and waste receptacles. The entrance to the main parking area has been paved.

The Rotary parking area is an unpaved gravel lot located west of Dixie Rock. There is a St. George Rotary sponsorship sign and waste receptacle in this parking area. The existing pedestrian underpass in this parking area is not functional due to steep grades leading into and out of the crossing. No trails currently connect to the underpass.

The park is open year-round during daylight hours. The City requires a fee and permit to reserve use of the picnic facilities. The Pioneer Park Trailhead is located within the park and was previously discussed in this evaluation under Red Cliffs Desert Reserve Trails. Dixie Rock, eligible for protection under Section 4(f), is also located within the park and reserve boundaries and was previously discussed under Site 42WS4990, Dixie Rock.

Recreational activities that occur within the park include picnicking, hiking, rock scrambling, and rappelling. The park can be accessed from three locations along Red Hills Parkway: the Rotary parking area, the main parking area, and the eastern entrance.

## Section 4(f) Use of Pioneer Park

### Direct Use

Implementation of the Build Alternative would require the use of 1.7 acres of park property to facilitate widening the alignment, reconfiguring the main access to the park, and providing for a right-turn lane. The required park property is immediately adjacent to the alignment, and extends from approximately 250 feet west of the existing main entrance to the 600 East entrance to Skyline Pond. The existing entrance to the main parking area would be closed off with barriers, and approximately 200 feet of new road would be constructed to connect the main parking area to the existing loop road. Approximately 400 feet of the existing loop road would be utilized, as shown in Figure 4-3. The land located between the new road alignment and the new access road is included in the 1.7-acres of park property that would be required for the project. However, this area would remain undisturbed. The space available for parking would not change. The existing pavement at the entrance to the main parking area would be removed to facilitate reclaiming of the abandoned entrance area. Reconfiguration of access to Pioneer Park would help to alleviate safety concerns related to reduced sight distances for motorists entering and exiting the park. Construction of a center turn lane to access the park would eliminate vehicles that stop in travel lanes to turn left. It would also reduce the number of access points, which would reduce turning movement conflicts. Safety would be improved for users accessing the park and vehicles traveling on Red Hills Parkway. New signage for access to the park would also be provided.

A paved entrance to the Rotary parking area would be constructed, similar to the existing entrance to the main parking area. The parking area would not be paved and logs would be placed as barriers. As described previously, the existing pedestrian underpass located in this parking area would be lengthened and regraded to make the underpass functional for trail users. The proposed Red Hills Parkway Trail would connect to the park via this underpass. This parking area would serve as the main access point or trailhead for the proposed trail.

Incorporation of the 1.7 acres into the transportation facility would not affect recreational use of Pioneer Park, nor would it adversely affect the activities, features, or attributes that qualify Pioneer Park for protection under Section 4(f).

Coordination with the Director of Leisure Services for the City, the official with jurisdiction over Pioneer Park, has been ongoing and will continue during project development. At this time, UDOT considers that the direct use of land from Pioneer Park meets the impact criteria and requirements for a *de minimis* impact finding specified in SAFETEA-LU Section 6009(a). This consideration would be based on written concurrence from the Director of Leisure Services that the proposed action would not adversely affect the activities, features, and attributes that qualify Pioneer Park for protection under Section 4(f). Once this written concurrence has been obtained and the public has reviewed and commented on the effects of the proposed action, FHWA may concur with the UDOT recommendation that a *de minimis* impact finding is appropriate for this Section 4(f) resource.

### **Constructive Use**

As described above, implementation of the Build Alternative would require a direct use of land from Pioneer Park, and for this reason, Pioneer Park was not evaluated for constructive use impacts.<sup>3</sup>

## **Skyline Pond**

Skyline Pond is a urban fishery located on 3.2 acres of land at 600 East. Facilities include a 1-acre pond with a dock, fishing pier, parking lot, and public restroom. The City owns and operates the Skyline Pond property. The pond was originally built to provide irrigation and cooling for the adjacent power plant. Excess water from the pond provides irrigation water for Dixie High School. In 2001, the Utah Division of Wildlife Resources (UDWR) provided a grant for improvements to the pond as part the community fishing program. It is one of four urban fishing ponds in Washington County sponsored by UDWR. UDWR stocks the pond with rainbow trout, bluegill, and largemouth bass (City of St. George 2007d). The pond is open for fishing year-round during daylight hours. Access to the park is at 600 East and Red Hills Parkway.

### **Section 4(f) Use of Skyline Pond**

#### **Direct Use**

There would be no direct use of land as a result of implementing the Build Alternative. A short retaining wall would be built between the pond property and the alignment that would maintain the property boundary and avoid any effects on the property.

#### **Constructive Use**

Skyline Pond is located immediately adjacent to the existing road. According to FHWA and UDOT noise abatement criteria, as described in Section 3.6, Noise, Skyline Pond is not a noise-sensitive facility where quiet and serenity are significant attributes; however, Skyline Pond would qualify as an Activity Category B resource. Activity Category B includes areas such as picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals. Modeled noise levels at Skyline Pond were 58.8 dBA, and the noise analysis estimated that the overall traffic noise increase would be 4 dBA. This expected noise increase is not considered a noise impact according to FHWA or UDOT noise abatement policy and would not substantially interfere with the use and enjoyment of the pond for its intended purpose. There would be no constructive use attributable to noise.

Red Hills Parkway is not visible from the northern edge of the pond because the elevation of the pond is higher than the road. The road is visible from the south side of the pond located immediately adjacent to the road. Views from Skyline Pond in the direction of Red Hills Parkway could change as a result of the proposed action. However, the proposed action would have features similar to the existing conditions; it is not expected to detract from the use and enjoyment of the pond.

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<sup>3</sup> Constructive use does not occur when the transportation project requires a direct use of land from a Section 4(f) resource; see the definitions of use provided in the Introduction section of this chapter.



**Figure 4-3**  
**Impacts—Pioneer Park and Temple Springs Park**

Vibration from the proposed action would not increase enough to affect the structural integrity of buildings located on the pond property or the pond itself. There would be no constructive use as a result of vibration.

Access to Skyline Pond would not change, and there would be no constructive use due to changes in access.

Avoidance alternatives and measures to minimize harm are not presented for Skyline Pond in this Section 4(f) evaluation because the proposed action would not result in a direct or constructive use. Therefore, Skyline Pond is not discussed further in this evaluation.

## Temple Springs Park

Temple Springs Park is a 7-acre primarily undeveloped park located between 700 East and 800 East, south of Red Hills Parkway. The City owns the park. There is a system of underground concrete boxes and pipelines collecting water from several springs occurring just below the nearby cliff face. Existing facilities on the property include a bench and a bridge near the springs, some informal trails, and picnic tables. A trail extends from the picnic area, up the cliff face, to an unpaved shoulder off Red Hills Parkway that is used for parking. There is also a section of trail that accesses the spring area. Access to Temple Springs Park is from Red Hills Parkway at approximately 750 East and from 700 East south of the park.

The Parks Master Plan describes small parks, ponds, recreational facilities, and areas with unique features that do not function as neighborhood or community parks but are available for limited recreational opportunities for the public. Temple Springs Park is included in this category, and the City intends to further develop this property in the future for recreational use. There are eight recreational facilities in this category within the City, including Skyline Pond (City of St. George 2006a).

### Section 4(f) Use of Temple Springs Park

#### Direct Use

Implementation of the Build Alternative would require the direct use of 0.62 acre of Temple Springs Park property located immediately adjacent to Red Hills Parkway. The 0.62-acre strip of land is located along the existing road and is currently used for parking; this area would still be accessible for parking after construction. The Build Alternative includes plans for a retaining wall approximately 300 feet in length in the area immediately above the springs. Constructing the retaining wall would minimize the amount of fill material needed and minimize impacts to the springs, vegetation, bench, or bridge. Construction of the retaining wall is accounted for in the 0.62-acre direct use. Incorporation of the 0.62-acre property into the transportation facility and construction of the retaining wall would not affect future recreational development or use of the area, nor would it adversely affect the activities, features, or attributes that qualify Temple Springs Park for protection under Section 4(f).

Coordination with the Director of Leisure Services for the City, the official with jurisdiction over Temple Springs Park, has been ongoing and will continue during project development. At this time, UDOT considers that the direct use of land from Temple Springs Park meets the impact criteria and requirements for a *de minimis* impact finding specified in SAFETEA-LU Section 6009(a). This consideration would be based on written concurrence from the Director of Leisure Services that the proposed action would not adversely affect the activities, features, and attributes that qualify Temple Springs Park for protection under Section 4(f). Once this written concurrence has been obtained and the public has reviewed and commented on the effects of the proposed action, FHWA may concur with the UDOT recommendation that a *de minimis* impact finding is appropriate for this Section 4(f) resource.

**Constructive Use**

Implementation of the Build Alternative would require the direct use of 0.62 acre of property from Temple Springs Park, and for this reason the park was not evaluated for constructive use impacts.<sup>4</sup>

## Summary of Use of Section 4(f) Properties

Table 4-5 summarizes the use of Section 4(f) properties that would occur as a result of implementing the Build Alternative.

**Table 4-5.** Summary of Use of Section 4(f) Properties

Property	Section 4(f) Use
Site 42WS4990, Dixie Rock	No Section 4(f) use.
Site 42WS4388, Cottonwood Pipeline	Direct use of 150 feet; <i>de minimis</i> impact finding recommended.
St. George Trails	Direct use of 1,080 feet (0.20 mile); <i>de minimis</i> impact finding recommended.
Red Cliffs Desert Reserve Trails	No Section 4(f) use.
Dixie Red Hills Golf Course	No Section 4(f) use.
Brooks Pond Park	No Section 4(f) use.
Pioneer Park	Direct use of 1.7 acres; <i>de minimis</i> impact finding recommended.
Skyline Pond	No Section 4(f) use.
Temple Springs Park	Direct use of 0.62 acres; <i>de minimis</i> impact finding recommended.

<sup>4</sup> Constructive use does not occur when the transportation project requires a direct use of land from a Section 4(f) resource; see the definitions of use provided in the introduction to this chapter.

The direct use of the Section 4(f) resources identified in Table 4-5 appears to meet the impact criteria and requirements for a *de minimis* impact finding specified in SAFETEA-LU Section 6009(a). Given the UDOT recommendations of *de minimis* impact findings for the Section 4(f) resources where a direct use occurs, an analysis of avoidance alternatives is not presented in this EA. Once comments provided by Section 106 consulting parties have been considered, the public has reviewed and commented on the effects of the proposed action, and written concurrence from the agencies with jurisdiction over the respective resources has been received, FHWA may concur with the UDOT recommendations that the *de minimis* impact findings are appropriate for the Section 4(f) resources.

## Section 4(f) Consultation and Coordination

Consultation and coordination with the agencies with jurisdiction over the Section 4(f) resources is ongoing and will continue throughout development of the EA.

The Utah SHPO and the Advisory Council on Historic Properties have jurisdiction over the historic and archaeological resources, pursuant to NHPA Section 106. A Class III cultural resources inventory was performed, and a determination of effect and finding of effect (DOE/FOE) was submitted to SHPO by UDOT. The SHPO was also notified that UDOT would consider a *de minimis* impact finding appropriate, based on SHPO's written concurrence with the NHPA Section 106 determination of effect. SHPO has concurred with the NHPA Section 106 eligibility and effects determinations.

FHWA conducted Native American consultations for the proposed action. On June 29, 2006, a letter requesting consultation was prepared for the Hopi tribe, the Paiute Indian tribe of Utah, the Shivwits band of the Paiutes, and the Kanosh band of the Paiutes, along with a project description and vicinity map. The letter invited the tribes to be consulting parties, requested information they may have on cultural resources in the APE, and invited comments about the project. In addition, a draft of the Class III Cultural Resources Inventory report for this project was sent to the tribes on April 12, 2007, for comment. Responses have been received from the Paiute Indian Tribe of Utah, and the Hopi Tribe requesting additional information as it becomes available and notification of project changes. A follow-up letter was sent to the tribes on November 8, 2007, to notify them that an additional cultural resources survey had been conducted. A copy of the Determination of Eligibility and Finding of Effect (DOE/FOE) was also provided.

Consultation with the City has occurred regularly and will continue throughout the development of this EA. Consultation with the Department of Leisure Services specifically regarding the Section 4(f) resources occurred in July and November of 2006. A letter was sent to the Director of Leisure Services on November 5, 2007, requesting the City's concurrence with UDOT's assessment that implementation of the project would not have an adverse effect on resources under the City's jurisdiction. Concurrence has been received, and the letter is included in Appendix A of this EA.

Consultation with the St. George BLM Field Office and the Utah State BLM Office occurred in October, November, and December 2006 and in January 2007 regarding lands within the project study area and lands administered by BLM and purchased using LWCF funds. BLM determined that there were no specific regulations prohibiting issuance of a right-of-way from lands acquired under the LWCF, except that federal ownership of the land must be retained. Consultation will continue with BLM regarding the right-of-way application process pursuant to Title V of FLPMA.

The Washington County Commission (WCC) and HCAC have jurisdiction over the reserve. In July of 2006, consultation was initiated with the reserve administrator to provide information on the project. Consultation with HCAC and WCC will be ongoing throughout development of the project. The agencies will review the environmental document to ensure consistency with the HCP and approve construction of the proposed improvements to Red Hills Parkway within the boundaries of the reserve.

## Chapter 5

# Mitigation Commitments

Mitigation measures from Chapter 3 that the City of St. George will implement to reduce impacts resulting from the proposed action are listed below. Mitigation measures are organized by resource.

## Land Use

No mitigation is necessary.

## Social Impacts

### **Mitigation Measure SI-1: Development of a Construction Access Management Plan**

Prior to the start of construction, the City of St. George and/or its contractors will develop a construction access management plan. The plan will identify vehicular detour routes and congestion management methods to be used in the construction zone. The plan will also identify detours for pedestrian trails that may be affected by construction. The City and/or its contractors will coordinate with emergency service providers to provide prior notice of any closures or detours. The City and/or its contractors will also coordinate with utility providers that may be affected by construction to minimize service disruptions.

### **Mitigation Measure SI-2: Minimize Impacts on Recreational Facilities and Parks**

The following measures will be implemented to minimize impacts on Pioneer Park:

- Barriers will be placed to close off the existing entrance to the main parking area in Pioneer Park. The abandoned entrance area between the new road alignment and the barriers will be reclaimed and the existing paving material removed. Materials used for the barriers will be similar to materials used elsewhere in the park, such as the logs used in the main parking area.
- The area separating the new road alignment from the new access road to the main parking area will remain undisturbed. Any areas that are disturbed during construction will be reclaimed.

- Park entrance signs will be relocated to direct access to the park and the main parking area. Any signage that is removed or disturbed during construction will be restored prior to construction completion.
- The entrance to the Rotary parking area will be paved, and barriers will be placed to direct and formalize the entrance. Materials used for the barriers will be similar to materials used elsewhere in the park, such as the logs used in the main parking area.

The following measures will be implemented to minimize impacts on other recreational resources:

- A retaining wall will be installed along the property frontage with Skyline Pond to avoid possible impacts on the pond property. Another retaining wall will be installed above the spring area at Temple Springs Park to avoid impacts to the springs, vegetation, bridge, and bench. The walls will be constructed of materials that match the texture and color of the sandstone bluff to minimize visual effects.
- The trail exiting Brooks Canyon and connecting to Owens Loop Trail will be realigned prior to placement of fill material that would disturb the existing trail.
- If construction of the Red Hills Parkway/Bluff Street interchange has not been completed prior to the annual St. George Marathon, a route through the construction area will be provided for race participants. Coordination related to the location of the route will occur prior to the race to ensure the route is acceptable and approved by Leisure Services.

## Economics

No mitigation is necessary.

## Pedestrian and Bicyclist Considerations

### **Mitigation Measure PED-1: Minimize Impacts on Pedestrian and Bicyclist Facilities**

The following measures will be implemented to minimize impacts on pedestrian and bicyclist facilities.

- Temporary detours for sidewalks and trails will be provided during construction to maintain continuity with and access to existing facilities. Signs will be used to direct pedestrians and bicyclists around the construction activities.
- Construction of connections to the reserve trails and improvements to the underpasses will be completed prior to abandonment of the existing trail sections. Reclamation of the abandoned trail sections will occur in accordance with provisions contained in the reclamation plan (see Section 3.10, Sensitive Species).

## Air Quality

### **Mitigation Measure AQ-1: Minimize Fugitive Dust Emissions**

The City of St. George and/or its contractors will implement UDAQ regulations (Utah Administrative Code R307-205) during construction, which require all construction operations to employ best management practices (BMPs) to minimize fugitive dust emissions and prevent soil, sediment, and mud trackout onto public roads.

### **Mitigation Measure AQ-2: Implement Best Available Control Technology to Reduce Construction Emissions from Stationary Equipment**

The City of St. George and/or its contractors will obtain an operating permit for all stationary construction equipment from UDAQ (Utah Administrative Code Rule 307-401) and will use BACT to minimize emissions.

### **Mitigation Measure AQ-3: Implement Construction Emissions Controls**

The City of St. George will implement measures to minimize pollutant emissions, dust, and odors. Typical BACT used to minimize air quality impacts during construction include the following:

- maintaining the engines of construction equipment according to manufacturers' specifications,
- minimizing idling of equipment while the equipment is not in use, and
- installing emission controls on temporary portable stationary construction equipment.

## Noise

### **Mitigation Measure N-1: Construction Mitigation**

If construction occurs within 200 feet of a residence, the City and/or its contractor shall implement the following:

- locate stationary equipment as far as practical from sensitive receptors, and
- comply with the City of St. George Nuisance Ordinance.

## Geology, Soils, and Topography

### Mitigation Measure G-1: Grading and Earthwork Procedures

Compliance with the grading and earthwork recommendations described in the Geotechnical Investigation Report (Landmark 2003) will ensure fill stability. These measures are summarized below.

- All vegetation, organic material, non-engineered fill material, construction debris, soft/wet areas, and deleterious materials will be removed from any area that will be structurally loaded.
- Fill placement will be scarified to a minimum depth of 8 inches, moisture conditioned to near optimum moisture, then compacted to 95 percent of the maximum dry density.
- Excavated sandstone fragments of up to 3 to 4 feet will be used in deeper fills provided the fragments are incorporated into a matrix of finer material and placed in a manner so that they do not nest or create voids between adjacent fragments.
- Sandstone fragments will be used as structural fill beneath the road provided they are crushed or otherwise screened to remove larger fragments and the overall fill is uniformly graded.

## Water Quality and Wetlands

### Mitigation Measure WQ-1: Implement Best Management Practices to Control Discharge of Construction-Related Pollutants to Surface Waters

As part of the process of obtaining coverage under the UPDES General Construction Permit, the contractor for the City of St. George will submit a NOI to UDEQ and develop and implement a SWPPP to minimize the potential for and effects from spills of hazardous, toxic, or petroleum-based substances during project construction. The SWPPP will meet the requirements of UDEQ as well as any City and county requirements.

The SWPPP will identify BMPs to maintain water quality and minimize the potential for pollutants and sediments to enter the aquatic system. The final selection and design of pollutant and sediment controls will be subject to UDEQ approval. The BMPs in the SWPPP may include, but are not limited to, the following elements.

- All construction work shall be conducted according to site-specific construction plans designed to retain sediment on-site to the maximum extent possible.

- All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or incorrectly, the permittee must replace or modify the control for site situations.
- If sediments escape the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize off-site impacts (e.g., fugitive sediment in the street could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets).
- Sediment must be removed from sediment traps or sedimentation ponds when design capacity has been reduced by 50 percent.
- Litter, construction debris, and construction chemicals exposed to storm water shall be picked up prior to anticipated storm events (e.g., forecast local weather reports) or otherwise prevented from becoming a pollutant source for storm water discharges (e.g., by screening outfalls, daily removal, etc.).
- Off-site material storage areas (including overburden and stockpiles of dirt, etc.) used solely by the permitted project are considered a part of the project and shall be addressed in the pollution prevention plan.
- Roads leaving the construction site shall be continually swept and cleaned during construction to remove accumulated earth and debris in the construction zone during project construction, particularly before predicted rainfall events.

The contractor for the City of St. George will implement a monitoring program to verify the effectiveness of BMPs. The monitoring program will begin at the outset of construction and terminate upon completion of the project. Upon completion of the project, the contractor for the City of St. George will submit a NOT to UDEQ to conclude compliance with the construction general permit.

### **Mitigation Measure WQ-2: Develop and Implement a Toxic Materials Spill Prevention and Control Program**

As part of obtaining coverage under the UPDES General Construction Permit, the contractor for the City of St. George will develop and implement a spill prevention and control program to minimize the potential for and effects from spills of hazardous, toxic, or petroleum-based substances during project construction. The contractor may utilize the City's SWPPP template, which includes a spill control prevention component, or prepare a separate plan. A spill control and prevention plan will be completed before any construction activities begin and will include provisions for preventing, containing, and reporting spills of hazardous materials. The plan could contain the following measures.

- Prevent raw cement, concrete, or concrete washings; asphalt, paint, or other coating material; oil or other petroleum-based products; or any other substances that could be hazardous to aquatic life from contaminating the soil or entering watercourses.

- Establish a spill prevention and countermeasure plan before construction that includes strict on-site handling rules regarding construction and maintenance materials to keep them from entering drainages and waterways.
- Clean up all spills immediately according to the spill prevention and countermeasure plan, and notify the UDEQ Division of Environmental Response and Remediation immediately of any reportable spills and cleanup activities.
- Provide areas located outside the ordinary high-water mark for staging and storing equipment, materials, fuels, lubricants, solvents, and other possible contaminants.
- Avoid operation of equipment in flowing water.

Implementation of measures to avoid or minimize the effects of increased sediment input will also avoid and minimize increased input of pollutants associated with sediments. If a spill is reportable, the contractor's superintendent will notify 911 emergency services and the UDEQ Division of Environmental Response and Remediation.

### **Mitigation Measure WQ-3: Build Retaining Wall and Avoid or Replace Buried Pipeline**

To mitigate construction effects to the Hopkins Spring collection box, a retaining wall will be built approximately 25 feet north of the spring. The retaining wall will be approximately 200 feet long by 15 feet high. This will reduce the amount of surface disturbance by approximately 7,000 square feet. The wall will be constructed of materials that match the texture and color of the sandstone bluff to minimize visual effects. Water from the spring associated with the wetland will be collected and piped under the retaining wall to allow flow to continue.

It is anticipated that construction would not affect the buried pipeline connecting Kemp Springs to the main collection box. However, prior to construction, consultation with staff from the St. George Temple will occur to determine the best approach in avoiding or replacing the pipeline should it be damaged during construction.

### **Mitigation Measure WQ-4: Implement Measures to Treat Storm Water Runoff**

To ensure that runoff from the road does not degrade the quality of waters within the Santa Clara and Virgin Rivers and associated aquifers, the project proponent will comply with conditions of the General Construction Storm Water permit (UTR 100000) and the City's UPDES permit (UTR 090051), which require implementation of measures to treat storm runoff during construction and operation of the road.

Additionally, during final design peak discharge of the completed project will be determined. If the project would generate peak discharges of 5 cfs or greater for the 10-year storm event with a duration corresponding to  $T_c$ , the project proponent will include the necessary storm water treatment systems in the construction scope of work and in bid documents (UDEQ 2004c).

### **Mitigation Measure WQ-5: Create, Enhance, or Restore Wetlands**

Coordination with USACE will be necessary to obtain a permit to discharge fill material into waters of the United States. In order to comply with FHWA's goal of no net loss of wetlands, the project proponent will mitigate for 0.0275 acres (1,200 square feet) of impacted wetlands. Coordination with FHWA and the USACE will determine whether creation, enhancement, or restoration of wetlands would be appropriate.

## **Wildlife**

See Special-Status Species mitigation.

## **Special-Status Species**

### **Mitigation Measure BIO-1: Treatment of All Lands within the Reserve**

1. The City shall provide qualified desert tortoise biologists to survey the construction area prior to initiating construction activities and relocate any desert tortoise or other sensitive species occurring within the construction area. Biologists will also identify any nesting migratory birds prior to construction activities. Any active nests found will be avoided until the chicks fledge. The City shall also provide qualified desert tortoise monitors that will be available during construction activities to monitor the area for desert tortoise and other sensitive species and relocate live desert tortoises or other sensitive species that may occur within the construction area. Monitors would visit the construction site once a week to inspect construction activities and inspect fencing. Monitors would be available to relocate any sensitive species encountered during construction but would not be present during all construction activities.
2. The City shall prepare a restoration/reclamation plan to be approved by the USFWS that includes stockpiling and replacing topsoil, observing construction practices that limit damage to the reserve, applying BLM-certified seed mixes to areas disturbed during construction, and placing boulders and rocks in reclaimed areas. Stockpiles would be located within the fenced construction area.

3. Prior to initiating construction, the City shall prepare a fencing plan to be approved by the USFWS and install USFWS-recommended temporary desert tortoise exclusionary fencing around the limits of disturbance (see Figure 3.10-1). This fencing shall be erected in areas that require disturbance outside of the existing tortoise exclusionary fence. The temporary construction fence will be inspected on a weekly basis to insure it is functioning properly.
4. After construction, the City shall install permanent tortoise exclusionary fencing along the permanent right-of-way in accordance with USFWS specifications and the fencing plan.

### **Mitigation Measure BIO-2: Treatment of Areas within the Existing Tortoise Exclusionary Fence**

1. The City shall install 5 culverts spaced approximately 2,500 feet apart to allow desert tortoise movement under Red Hills Parkway. The final type, design, and location of the said crossings shall be coordinated with USFWS. The crossings will consist of open grating on top except for where the crossings cross under the roadway. The bottom of the crossings shall consist of native material.
2. Once operational, the City shall maintain the right-of-way, including removal of illegally dumped garbage and roadkill, which can attract ravens. During construction of the proposed facility, trash will be kept in an airtight garbage container. No trash or debris from construction of the project will be left within the project area outside of an approved disposal container for more than 24 hours.

### **Mitigation Measure BIO-3: Treatment of Areas outside of the Existing Tortoise Exclusionary Fence**

The City shall rehabilitate identified areas of desert tortoise habitat within the reserve to offset additional impacts from this project. Mitigation ratios for project-related impacts on tortoise habitat will be coordinated with USFWS.

### **Mitigation Measure BIO-4: Compensation for Property Purchased with ESA Section 6 Funds**

The City shall provide State Parks with compensatory mitigation for property originally purchased with ESA Section 6 funds at a 1:1 ratio. The replacement property will fulfill the following three criteria: 1) The property will be manageable and adjacent to existing park property, 2) the property will have recreational value, and 3) the property will have biological value for desert tortoise. The replacement property is identified in Figure 1-2.

## **Invasive Species**

### **Mitigation Measure IS-1: Avoid the Dispersal of Noxious Weeds into Noninfested Areas**

To avoid the introduction or spread of noxious weeds into noninfested areas, the project proponent shall incorporate the following measures into the project plans and specifications.

1. Clean construction equipment prior to entering noninfested areas.
2. Minimize native vegetation disturbances during construction.
3. Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of noxious weeds.
4. If fill material or erosion-control materials are brought in from off-site, use certified weed-free materials.
5. Manage invasive weeds found within the construction disturbance area prior to the start of construction and at the end of construction, if necessary.

### **Mitigation Measure IS-2: Revegetate Disturbed Portions of the Study Area with Native Plant Species**

To avoid introduction of potentially invasive exotic landscape species and reestablish vegetation cover on disturbed sites that are vulnerable to invasive plants, the City of St. George will specify on construction contract documents and in the reclamation plan that seed mixes used for landscaping and/or erosion control must be free of noxious weeds and other invasive plant species.

## **Historic, Archaeological, and Paleontological Resources**

### **Mitigation Measure CR-1: Avoidance and Monitoring of Significant Cultural Resources**

Prior to commencement of work, avoid all NRHP-eligible cultural resources by constructing temporary environmental fencing around the sites located within 50 feet of construction. Archaeological monitoring will be conducted in the immediate vicinity of identified archaeological sites during all ground-disturbing activities. A monitoring plan will be prepared by an archeologist who meets the Secretary of the Interior's Standards for Professional Qualifications for an archaeologist to guide the actions of monitors and construction crews in the event of an archaeological discovery.

## **Mitigation Measure CR-2: Discovery of Historical or Archaeological Resources**

If buried cultural resources, such as chipped stone, ground stone, historic debris, building foundations, or nonhuman bone, are inadvertently discovered during ground-disturbing activities, the procedures detailed in UDOT's Standard Specification Section 01355, Part 1.10, Discovery of Historical and Archaeological Objects, will be followed. When unanticipated archeological resources are uncovered in a contractor-furnished site, the contractor will notify the UDOT regional archaeologist, who will determine the appropriate action to pursue regarding the resource.

## **Mitigation Measure CR-3: Comply with State Laws Pertaining to the Discovery of Human Remains**

Buried human remains that were not identified during research or field surveys could be inadvertently unearthed during excavation activities, which could result in damage to the human remains. If human remains of Native American origin are discovered during ground-disturbing activities, it is necessary to comply with state and federal laws relating to the disposition of Native American burials, following state regulation UCA 9-9-401, Utah Native American Graves and Repatriation Act of 1992; UDOT Standard Specification 01355, Part 1.10 Appendix B; and 43 CFR 10, Native American Graves Protection and Repatriation Act (if discovery is made on federal lands).

If aboriginal human remains are inadvertently discovered on public lands administered by BLM, the City will notify BLM in writing of such a discovery. Construction will cease and the materials will be protected until BLM can respond to the situation. Upon receipt of written confirmation of the discovery, 43 CFR 10.4 requires BLM to do the following: 1) certify receipt of the notification; 2) take immediate steps, if necessary, to protect the materials further; 3) notify by telephone, with written confirmation, the tribes likely to be culturally affiliated with the materials; and 4) initiate consultation with such tribes. If, after consultation with tribes, BLM determines that the material will be adequately protected in situ, without the need to excavate or remove the material from the area of discovery, then the requirements under the Native American Graves Protection and Repatriation Act have been completed. The materials remain in federal ownership, adequately protected by BLM as provided in the law. If, after consultation with the tribes, BLM determines that circumstances warrant intentional excavation or removal of the materials from the area of discovery, then 43 CFR 10.3 applies, and BLM must complete steps outlined therein for intentional excavations.

### **Mitigation Measure CR-4: Physical Disturbance to Site 42WS2872**

Mitigation will be required for physical disruptions to NRHP-eligible site 42WS2872. A Memorandum of Agreement (MOA) will be executed that stipulates how the adverse effects will be resolved. Mitigation measures will likely include data recovery in advance of construction.

### **Mitigation Measure CR-5: Potential to Damage a Unique Paleontological Resource**

Prior to construction, a paleontologist will survey the construction area to determine if any Lower Jurassic Moenave or Kayenta Formations would be disturbed by construction. If these formations would be disturbed by construction, a qualified paleontologist will be retained to monitor the locations during construction. In the event potential paleontological resources are encountered prior to or during construction, the discovery procedures specified in UDOT's Standard Specification Section 01355, Part 1.10, and Section G of the MOU between UDOT and UGS pursuant to UCA 63-73-19 will be followed.

## **Hazardous Materials**

### **Mitigation Measure H-1: Hazardous Material Monitoring during Construction**

During excavation for the proposed road, the contractor shall observe the exposed soil for visual evidence of abnormal conditions. In accordance with UDOT Specification 01355, abnormal conditions include, but are not limited to, the following: presence of barrels; buried storage tanks; aboveground tanks; obnoxious odors; excessively hot earth; stained and discolored soils; smoke; unidentifiable powders, sludge, or pellets; or any other condition that could be a possible indicator of hazardous material and/or toxic or hazardous waste. The contractor shall closely monitor excavations in accordance with UDOT Specification 01355 in the vicinity of the following facilities: Parkinson Substation, City of St. George Fleet and Street Division, Parke Cox Trucking, Millcreek/Red Rock Substation, and Southwest Diesel Service. If contaminated soil or hazardous substances are encountered during construction, all work in the immediate vicinity of the discovery will stop. The contractor shall contact the Engineer for direction on how to proceed.

### **Mitigation Measure H-2: Hazardous Material Spills during Construction**

In accordance with UDOT Specification 01355, the contractor will notify the Engineer and UDEQ of spills of petroleum-based products or hazardous waste if the release meets the definition of a hazardous waste as defined in 40 CFR 261. The contractor will implement the following procedures:

- notify the Engineer immediately after the discovery of the spill,
- notify UDEQ in writing within 5 calendar days of the discovery,
- notify UDEQ in accordance with R315.9 of the Utah Administrative Code (24-hour phone number: (801) 536-4123), and
- dispose of spilled material according to the requirements and regulations of UDEQ.

## Visual Quality

### **Mitigation Measure VQ 1: Limitations on Building Materials**

No reflective materials or colors will be incorporated into the project. Hardscape features, such as retaining walls (proposed along limited portions of the corridor), will be constructed of a nonreflective, neutral earth color to match the color of the adjoining soil. Embankments will utilize earth and gravel and other nonshade-/nonglare-producing materials to integrate the road features into the natural landscape to the greatest extent possible.

### **Mitigation Measure VQ 2: Limitations on Excavation**

At the direction of the St. George Hillside Review Board, cuts into sandstone landforms adjoining the road will be minimized. To further limit the number of such cuts, permitted road slopes will be steepened from 1:1 to 1:0.5 ratios where necessary. In addition, straight-line cuts into adjoining landforms will be avoided. As shown in the current design, the final design will shift the alignment approximately 15 feet to the west to avoid the rock formations along the north/south segment of the corridor.

## Energy

No mitigation is necessary.

## Chapter 6

# Comments and Coordination

## Public and Agency Participation

Early and continuing coordination with the general public and appropriate agencies is an essential part of the NEPA environmental process. Scoping is the process by which lead agencies solicit input from the public and interested agencies on the nature and extent of the actions, alternatives, and impacts to be addressed in an environmental document and the methods by which they will be evaluated. Scoping provides an opportunity for active participation from a variety of audiences, including proponents and opponents of a project, and encourages the expression of thoughts and concerns during the decision-making process.

This chapter documents public and agency coordination that occurred during preparation of this EA. Public coordination was associated primarily with the initial scoping meeting, an alternatives open house, and the City of St. George's Transportation Expo in February 2006 and 2007. These efforts, and the public comments that were received, are summarized below.

Agencies with jurisdiction over resources that may occur within the project study area were sent letters in February 2006 requesting comments on the project and inviting them to attend an agency meeting to discuss the proposed Red Hills Parkway project. Continuing coordination has also occurred with the Washington County HCAC, the St. George field office of BLM, and USFWS. These efforts and the agency comments received are also summarized in this chapter.

## Public Scoping Meeting

A public scoping meeting was held at the St. George Opera House (212 North Main Street) on February 15, 2006, from 5:00 to 7:00 p.m. The purpose of the meeting was to provide information to the public and solicit meaningful input about the proposed action and any issues or concerns associated with the project.

At the meeting attendees were offered a project fact sheet, frequently asked questions, and a comment card. Display boards with detailed project information, including the project map, project timeline, transportation issues, and environmental and recreational issues, were stationed throughout the meeting room. Eight staff members from UDOT, the City of St. George, and the project consultants were on hand to answer questions and take comments from the public.

## Public Notice

A notice regarding the public scoping meeting was developed and then mailed on January 25, 2006, to 56 organizations and individuals, including local business owners, non-governmental organizations, the local Native American tribe, environmental organizations, and the public. The notices contained information about the project, advertised the public meeting, and provided contact information. A follow-up postcard was sent on February 1, 2006, to clarify the meeting date, time, and location. Scoping meeting notices were also distributed at the Southern Utah Transportation Expo (see below) and the Spring Conference of the American Public Works Association/American Society of Civil Engineers, Southern Utah Branch, on February 9, 2006.

## News Release and Advertisements

The City of St. George distributed a news release to 12 local television, print, and radio outlets. In response to this news release, the local newspaper, the *St. George Spectrum*, published three news articles (February 14, 15, and 16, 2006). Several radio stations ran public service announcements on February 14 and 15 regarding the meeting. Additionally, the local news station, KCSG, ran two news segments on February 15, one at 5:00 p.m. and the other at 9:00 p.m. All of the media broadcasts included requests from the City and UDOT for input from the public and provided information on how to comment on the project. Additionally, a display advertisement publicizing the scoping meeting and requesting public comment ran in the *St. George Spectrum* on Sunday, February 12, and Tuesday, February 14, 2006.

## Community Newsletters

The St. George Chamber of Commerce included a meeting notice in its online and printed newsletter published February 6, 2006. The *Main Street Business Journal*, a local business publication, also included a meeting notice in its online and printed publication.

## Public Comments

Members of the public were asked to submit their comments in writing that evening or by mail, fax, or email at a later date. Comment cards were distributed at the scoping meeting to those individuals wishing to comment. The formal comment period for scoping ended March 6, 2006. A total of 25 public comments were received during the scoping comment period.

The following is a summary of the comments received during the scoping period. The comments are paraphrased and categorized by main points of interest to reflect the key concerns, issues, and ideas. These comments have been reviewed and considered by the project team, including the City, FHWA, and UDOT, in the preparation of this EA.

## Bicycle Lanes and Trails

- A bicycle trail would help bicyclists avoid downtown traffic and provide a safe and pleasant ride around the area.
- Please strongly consider wide bicycle lanes. A trail may be useful, but walkers, runners, and recreational cyclists typically use trails at slower speeds than “serious” bicyclists.
- Implement bicycle lanes, not paths, that are 8 feet in width, limited to bicycles, well marked, without shoulder warning devices, and available for travel both east and west.
- Implement bicycle lanes/trails along the model of the City of Davis in California.
- Provide bicycle lanes on both sides of the road.

### Response

Bicycle lanes were added to the Build Alternative (see Chapter 2) in response to public input.

## Biological Resources

- Long-term ecological integrity of the desert tortoise may be destroyed by incremental losses. Commenter asks what mitigation or compensation would be provided for the loss of desert tortoise habitat.
- Increased traffic would result in increased roadkill and litter, attracting more ravens to prey on hatchling tortoises. Commenter asks how the raven population would be controlled.
- Ground disturbance to widen the highway would encourage the spread of invasive weeds, such as cheatgrass, and alter the natural fuel load.
- Tortoise fencing would have to be replaced, but the existing fencing is not effective. Commenter asks what can be done to improve the installation, monitoring, and overall effectiveness of the fencing.
- Increased traffic may increase visitation to the reserve pullout areas and parking lots, and trails may undermine the environmental purposes of the reserve.
- The proposed action should make only modifications within the reserve that might enhance protection of the desert tortoise or be required for public safety.
- Commenter asks whether culverts could be built under the road to allow tortoises to cross safely and improve genetic diversity.
- The Utah chapter of the Sierra Club opposes any actions, specifically highway widening, that would compromise the integrity and effectiveness of the Red Cliffs Desert Reserve, which enhances the quality of life in Washington County.

### **Response**

Impacts to biological resources located within the Red Cliffs Desert Reserve are discussed in Sections 3.9, 3.10, and 3.11. Coordination with USFWS has resulted in the development of mitigation measures that would minimize impacts to desert tortoise and tortoise habitat.

### **Traffic**

- Support widening project to four lanes.
- Commenter asks that construction of the proposed action not impede traffic until the Boulevard is completed.
- Concerned with access to the Paradise Canyon development.
- Provide longer light cycles for cars traveling east/west at the Bluff Street intersection.
- Provide a signal at the intersection of Red Hills Parkway and Skyline Drive.
- Connect Red Hills Parkway to I-15 exit 13 to eliminate the need for another road that would bisect the reserve.

### **Response**

The comments above were considered during development of alternatives. The Build Alternative now includes a grade-separated interchange that would increase the capacity of the intersection of Red Hills Parkway and Bluff Street. The project also includes four traffic lanes. Construction on the Boulevard is now complete and would not conflict with implementation of the Build Alternative. Changing access at the Paradise Canyon development is outside of the study area for this project. Installation of a traffic signal is planned at the intersection of Red Hills Parkway and Skyline Drive as part of the intersection improvement project that will be completed in 2007. It was determined that connecting Red Hills Parkway to I-15 would not be feasible to implement due to engineering and funding constraints.

### **Safety**

- Making a left-hand turn onto Snow Canyon Parkway from Paradise Canyon is dangerous.
- Commenter suggests adding a traffic circle or traffic light at the entrance to Paradise Canyon to control traffic speed and improve safety.
- Commenter suggests that better enforcement of speed limits is needed.
- Commenter suggests that the speed limit in developed areas be reduced.
- Commenter asks that the meaning of “enhance safety on public roads” be articulated in the project description.
- Commenter does not support widening Red Hills Parkway due to safety concerns. It is very difficult to turn left on Snow Canyon with no traffic signal.

- Commenter suggests that a signalman be supplied at the dangerous detour for St. George Boulevard and Red Hills Parkway.
- HCP trails that cross Red Hills Parkway need underpasses or overpasses to ensure pedestrian safety.
- The intersection of 1000 East and Red Hills Parkway is unsafe and needs to be addressed for improved safety.
- Trails in the Red Cliffs Desert Reserve cross Red Hills Parkway. A wider road with increased traffic could make these trails dangerous. Underpasses or overpasses, improved signage, and traffic slowing could be needed.

### **Response**

The comments above were considered during development of alternatives. Changing access at the Paradise Canyon development is outside of the study area for this project. Speed limits for the project were based on the design speed of the road and surrounding land uses. The SGPD is responsible for enforcement of speed limits. Construction on the Boulevard is now complete, and the traffic detour has been eliminated. A signal has been installed at the intersection of 1000 East and Red Hills Parkway subsequent to this comment. The project design includes underpasses to accommodate reserve trail crossings.

### **Public Transportation**

- Commenter suggests increasing bus service.
- Commenter suggests considering a monorail system.

### **Response**

The comments above were considered during development of alternatives. It was determined that improvements to public transportation alone would not meet the transportation need (see Chapter 2).

### **Noise**

- Commenter suggests a noise abatement wall along Snow Canyon Parkway and the Paradise Canyon development.

### **Response**

A block wall already exists along the perimeter of the Paradise Canyon development. Section 3.6 of this EA includes an analysis of noise at this location.

### **Transportation Planning**

- Commenter asks how this project relates to other proposed actions, such as the Northern Corridor.
- Red Hills Parkway should have been four lanes when it was redone.
- Another north/south road is needed.

### **Response**

Chapter 1 discusses the proposed Red Hills Parkway project in the context of local and regional transportation plans.

### **Landowner Concerns**

- Commenter asks whether landowners would have access to their property adjacent to Red Hills Parkway.
- Commenter asks whether landowners would be compensated for land occupied by the parkway.

### **Response**

Section 3.2 of this EA discusses right-of-way acquisitions that would occur as a result of the Build Alternative. Landowners would be compensated for their property and would retain access to their property.

### **Pioneer Park**

- Red Hills Parkway should not further encroach on Pioneer Park.
- Red Hills Parkway should provide safe and easy access to Pioneer Park.

### **Response**

Section 3.2 of this EA discusses impacts to Pioneer Park. Some additional property would be required from Pioneer Park. Accesses to Pioneer Park would be improved as part of the Build Alternative.

## **Alternatives Workshop**

During the alternatives analysis process, lead agencies identify, develop, and evaluate project alternatives based on the project's purpose and need. In compliance with SAFETEA-LU, a public alternatives workshop was conducted to allow the public and interested agencies to comment on project alternatives.

An alternatives workshop was held on Thursday, August 3, 2006. The intent of the workshop was to provide a description of the proposed alternatives for the public and solicit input concerning those alternatives. At the meeting, attendees were offered a project information sheet and a comment card. Attendees were asked to submit their comments in writing that evening or by mail, fax, or e-mail at a later date.

Display boards with detailed project information, including project alternatives descriptions, cross sections, alignment maps, and screening criteria, were stationed throughout the meeting room.

## Public Notice

A notice regarding the public alternatives workshop was developed and then mailed on July 21, 2006, to 139 organizations and individuals, including local business owners, agencies with jurisdiction over resources located in the study area, non-governmental organizations, the local Native American tribe, environmental organizations, and members of the public. The public notices contained information about the project, advertised the meeting, and provided contact information.

## News Release and Advertisements

The City of St. George distributed a news release to 12 local television, print, and radio outlets. In response to this news release, the local newspaper, the *St. George Spectrum*, published two news articles (August 4 and 6, 2006). The *Deseret Morning News* also published two news articles in response to the news release (August 5 and 6, 2006).

## Community Newsletters

The St. George Chamber of Commerce included a meeting notice in its online and printed newsletter published July 18, 2006.

## Public Comment Process

Members of the public were asked to submit their comments in writing that evening or by mail, fax, or e-mail at a later date. Comment cards were distributed to meeting attendees wishing to comment. The comment period for the alternatives workshop ended September 1, 2006. A total of 58 public comments were received during the alternatives workshop comment period.

## Public Comment Summary

The following is a summary of the comments received. The comments are paraphrased and categorized by main points of interest to reflect the key concerns, issues, and ideas submitted during the alternatives workshop comment period. These comments have been reviewed and considered by the project team in the preparation of this EA.

### No-Build Alternative

- There were a number of comments received supporting a No-Build Alternative.

### Response

This EA includes an evaluation of the No-Build Alternative.

## **Build Alternative**

- Project evaluation should clearly document why road widening has expanded to a proposal for five lanes and the utility of the fifth lane.
- Five lanes may be only an interim measure for the traffic problem.
- Support for five lanes as long as they don't destroy Dixie Rock and leave most of the rock formations intact.

### **Response**

A discussion of future traffic volumes under the Build Alternative is included in Chapter 2. The Build Alternative includes four travel lanes, with a center turn lane east of Skyline Drive to accommodate turning movements. It is acknowledged that widening Red Hills Parkway to five lanes would not provide a complete solution to transportation problems in the northern St. George Area. Other projects are being considered to help address additional long-term traffic needs. The Build Alternative would not affect Dixie Rock and would minimize impacts to adjacent rock formations.

## **7-Lane Alternative**

- Construct the 7-lane Alternative to accommodate future traffic. It would be cheaper to build it now rather than later.

### **Response**

Chapter 2 provides the rationale for why the 7-lane Alternative was eliminated from further consideration.

## **Northern Corridor Alternative**

- This alternative should not be selected and/or dropped from consideration because it cuts through the reserve and would affect the reserve that was set aside for tortoise protection.
- The Northern Corridor Alternative would affect property values near milepost 13.
- Commenter believes that the desire of citizens for an increased speed limit is not a valid reason for building a road.
- The termination point of the Northern Corridor Alternative at milepost 13 was selected before analysis.
- The Northern Corridor Alternative presents biological, engineering, and traffic problems.
- Northern Corridor Alternative grade appears too steep (20 percent). Commenter wants to know if switchbacks would be required.
- Implementation of the Northern Corridor Alternative could result in significant biological, economic, social, and legal impacts. An EIS should be developed prior to taking action.

- The best way to solve the traffic problem is to build a seven-lane Northern Corridor Alternative. This alternative would alleviate traffic from the St. George area.
- Putting in the Northern Corridor Alternative opens up the reserve to additional development and disturbance.
- The Northern Corridor Alternative might be possible if it were elevated across the reserve to reduce impacts.
- The environmental assessment should include a discussion as to why this project is not being designed to comply with the proposed Washington County Growth and Conservation Act and clarify the relationship between this project and the proposed act.
- A commenter suggested that the best alternative would be to have four traffic lanes, or at least two traffic lanes going uphill and one traffic lane going downhill, immediately off of Highway 18, then if space is available on top, provide four traffic lanes and the trail. Then, have the Northern Corridor Alternative five or seven lanes across to I-15 at exit 13. This Northern Corridor Alternative needs to be a limited-access freeway with speeds of 65 mph. This would alleviate St. George streets of a tremendous amount of traffic.
- Expanding Red Hills Parkway and building the Northern Corridor Alternative would help relieve traffic congestion on Red Hills Parkway and St. George Boulevard.

### **Response**

Chapter 2 provides the rationale for why the Northern Corridor Alternative was eliminated from further consideration. The proposed Washington County Growth and Conservation Act has not been passed and is not law; therefore, there is no relationship between the proposed project and the proposed act.

### **Bicycle Lanes and Trails**

- The off-corridor trail option needs to be closely analyzed and discussed because it cuts through the most sensitive tortoise habitat.
- Comment received that supported the bike lanes on all alternatives.
- All alternatives should have shoulders wide enough in both directions to provide safe lanes for bicyclists.
- Build the pedestrian trail as far away from the road as possible for pedestrian safety and comfort.
- Do not build a pedestrian sidewalk along the parkway. People would rather use the trail.

### **Response**

Public comments were considered in the design of the bicycle lanes, trail, and sidewalks. The off-corridor trail was eliminated from consideration due to potential biological impacts and pavement limitations. Bicycle lanes are included in the Build Alternative. Red Hills Parkway Trail was designed with topographic constraints considered and impacts to the tortoise reserve minimized.

Sidewalk is included in the urban portion of the project east of Skyline Drive to minimize the cross-section width and reduce cuts and fills along the bluff.

## **Design/Construction**

- Concern with quality of proposed road surface; an example of poor quality was the chip seal process.
- Concern that grade is too steep east of Bluff Street, which would create unsafe conditions.
- Consider no artificial lighting along Red Hills Parkway.

## **Response**

The Build Alternative would include new asphalt paving, not chip seal. Grades along the road comply with City, UDOT, and FHWA design guidelines. The Build Alternative would not include artificial lighting.

## **Biological Resources**

- Red Cliffs Desert Reserve provides unique habitat, aesthetic value, and educational resources that should not be divided by a traffic corridor.
- Make sure that tortoise fences are adequate enough to keep tortoise from crossing the highway.
- Land taken from the reserve must be replaced, per the HCP.
- Land used for previous Red Hills Parkway project was not replaced.
- A road through the reserve is illegal, per the HCP. The City should be concerned about potential lawsuits and wasting public money fighting suits.
- The HCP does not allow taking of tortoise. How did you take 16 for the previous project? How can you take more for the proposed action?
- The best way to protect tortoise habitat (an objective of the project) is to leave it alone. The No-Build Alternative is the preferred alternative.
- The Northern Corridor would fragment tortoise habitat and decrease the value of the reserve and decrease genetic exchange.
- If the road were built through important tortoise habitat in the reserve, the tortoise would experience additional light, noise, vibration, traffic, and air quality impacts.
- A road through the reserve would result in visual and recreational impacts.
- The USFWS could revoke the HCP if it was determined that the project would degrade the HCP.
- Roads constructed through the reserve should be restricted to commercial and residential development along the route. It should be a traffic corridor only.
- Construction of a road through the reserve would pave the way for future development to occur.

- A number of comments were received that were in opposition to constructing roads through the reserve.
- The EA should include a detailed discussion with appropriate citation as to whether each alternative is in compliance with the existing HCP or whether a plan amendment would be necessary.

### **Response**

Impacts to biological resources located within the Red Cliffs Desert Reserve are discussed in Sections 3.9, 3.10, and 3.11. Coordination with USFWS has resulted in the development of mitigation measures that would minimize impacts on desert tortoise and tortoise habitat. Previous work along Red Hills Parkway and mitigation requirements were approved by USFWS. Widening of Red Hills Parkway would be consistent with the HCP. The 1995 HCP included provisions for the reconstruction of Skyline Drive (now designated as Red Hills Parkway) and stated that the road improvement project should follow the existing alignment as near as possible except where engineering and/or safety considerations require deviations (Washington County 1995). Implementation of the Build Alternative would not result in additional land development within the reserve.

### **Traffic**

- The EA should explain why the Red Hills Parkway project is segmented and analyzed as a discrete project rather than part of a larger transportation network, including a Northern, Western, and Southern Corridor.
- Traffic projections are unrealistically high because future vehicle trips would be significantly reduced because of fuel price increases and supply interruptions.
- A commenter suggested that a true Envision Utah process should be followed rather than a targeted group of stakeholders deciding what future congestion is going to be.
- Traffic projections presented for the project are not consistent with City projections.
- Please explain how traffic volumes were projected.
- A smooth entrance onto I-15 is needed near the Washington end.
- The current Red Hills Parkway should be two lanes in each direction, and no median is necessary.
- Impacts on traffic on Snow Canyon Parkway should be considered.

### **Response**

The Red Hills Parkway project has independent utility and logical termini; it is not a segment of a larger project (see Chapter 2). Future transportation and land use projects are considered in the cumulative impact analysis. Traffic projections are based on the adopted traffic model provided by the Dixie MPO. City projections also are based on the Dixie MPO model. Differences in projections occurred because City projections included a different study area. The center median is included in the project to meet UDOT and City road standards.

Washington County and the City are considering future improvements east of the Red Hills Parkway project to improve traffic circulation. The I-15 entrance in Washington County is not included in the project study area.

## Safety

- The intersection of smaller roads with Red Hills Parkway is dangerous because of unsafe drivers that run traffic lights/stop signs. How would accidents be minimized?
- More traffic lanes on Red Hills Parkway would increase speed on the road, which would be unsafe.
- A small median would increase safety along Red Hills Parkway.
- The exit down into St George at approximately 100 East [Skyline Drive] needs to be redone; it is too abrupt and narrow.
- Pedestrian overpasses or underpasses should be included at trail crossings.

## Response

The Build Alternative includes a center turn lane east of Skyline Drive and a grade-separated interchange at the intersection of Bluff Street and Red Hills Parkway to improve safety and minimize turning conflicts. The design speed and posted speed of Red Hills Parkway would remain unchanged as a result of the proposed action. The City and UDOT are currently implementing intersection improvements at Skyline Drive as part of a separate project; construction at the intersection should begin in 2007. The Build Alternative includes three pedestrian underpasses (see Chapter 2).

## Noise

- Noise impact on humans and wildlife should be evaluated.

## Response

Noise analysis is included in Section 3.6. Noise analysis was conducted in accordance with UDOT guidelines. Biological impacts are discussed in Sections 3.9, 3.10, and 3.11. The biological impact analysis did not include noise analysis because there are no species within the reserve that are known to be noise sensitive. According to Borman, “there are no studies to test the masking effect of noise on tortoise behavior, but the effect is likely to be relatively low given that vocal communication is probably not extremely important in mediating social interactions” (Borman 2002).

## NEPA Process/Procedures

- Other alternatives considered in the past should be presented to the public, including an alignment that would run north of Pioneer Park and reduce the impact on the HCP and the four-lane expansion alternative that included a pedestrian/recreation trail adjacent to the road.

- If the Northern Corridor is included, the Danish Ranch Road Alternative should also be considered.
- Alternatives that minimize traffic growth should be considered instead of increasing road capacity. Examples given are mixed-use development, infill, carpooling, telecommuting, bike trails, and improved transit.
- The EA process is compromised by the inclusion of the Northern Corridor Alternative. Original scoping did not include Northern Corridor Alternative. A new scoping process should be initiated.
- The original public scoping notice for preparation of the EA did not include discussion of the Northern Corridor. The Northern Corridor raises unique issues, which the public had no opportunity to comment on during the earlier scoping period. A revised scoping notice should be released and a new comment period initiated.
- An EIS is required to evaluate the Northern Corridor Alternative. Under NEPA, an EIS is required for all “major federal actions significantly affecting the quality of the human environment” to ensure that agencies possess and consider “detailed information concerning significant environmental impact” and guarantee “that the relevant information will be made available to the larger audience that may also play a role in both the decision-making process and the implementation of that decision.”
- An EIS is likely to be necessary for all action alternatives. The reserve is already smaller than what is normally recommended, so any further intrusions would have a relatively greater impact on the desert tortoise. The tortoise populations have been stressed additionally by disease and fire. The decision as to whether and EIS is necessary should be made within this context.
- Open house format did not provide an opportunity for all in attendance to hear the same material and ask questions.
- Cumulative environmental impacts from the southern and western corridors, I-15 interchanges, and construction of the new airport should be considered.
- The EA should provide for a meaningful cumulative impact analysis.
- The EA should clarify whether any new or expansion of existing rights-of-way would be requested from BLM.
- The EA should clarify what role if any BLM and the Habitat Conservation Advisory Committee would play in the decision-making process.
- It should be clarified whether mitigation is part of the intended project and if mitigation would be used to justify a finding of no significant impact.
- Mitigation should be discussed in terms of the Endangered Species Act.
- The EA should provide information about the cost and ratio of mitigation.

### **Response**

A discussion of alternatives eliminated from further consideration is included in Chapter 2. Chapter 2 also includes a discussion of the rationale for eliminating the TSM/TDM Alternative from further consideration. The TSM/TDM

Alternative creates better use of the existing transportation system by improving the efficiency of vehicles, roads, and signals and managing the demand for the system rather than widening road facilities.

The Northern Corridor Alternative was considered during the alternatives evaluation process because members of the public and agencies asked UDOT and the City to consider it as an alternative. Since it met some of the objectives of the purpose and need, it was included in the alternatives screening process. Commenters were invited to comment on all of the alternatives, including the Northern Corridor Alternative, at the alternatives open house and during the comment period following the open house.

According to Council on Environmental Quality (CEQ) guidance, a lead agency's decision to prepare an EIS can be made if the EA demonstrates that the project would result in significant impacts on the environment. The proposed Build Alternative would not result in significant impacts on the environment.

An open house public meeting format was selected because it provides an opportunity for the public to ask questions and get specific answers to their questions.

Chapter 1 and Section 3.2 discuss the right-of-way that would be needed from BLM. The introduction to Chapter 3 discusses other agency approvals that would be required.

Mitigation is recommended throughout Chapter 3, and mitigation measures that would be implemented by the City and UDOT are listed in Chapter 5. Mitigation that has been developed in coordination with USFWS is included in Section 3.10. The Biological Assessment prepared between the draft and the final EA will further specify minimization and mitigation measures to reduce impacts on desert tortoise populations and habitat.

## **Land Acquisition**

- Land acquisition for road construction is not a legitimate conservation purpose and is not consistent with Section 6 of the Endangered Species Act and Section 6(f) grants used to purchase HCP land.
- Would equally valued tortoise habitat in Washington County be required to mitigate for the loss of habitat resulting from road construction? Is land available? What would the compensation rate be?
- Cost associated with land acquisition would be excessive.

## **Response**

The Endangered Species Act Section 7 consultation process would include consideration of lands purchased with Section 6 funds. Land and Water Conservation Fund Act Section 6(f) does not apply to this project (see Chapter 4). Mitigation measures have been determined in coordination with the USFWS (see Section 3.10).

## Public Transportation

- Commenter suggests that the City assess alternatives such as tax-supported free public transportation similar to Cache County and Park City.

### Response

Chapter 2 includes a discussion of the rationale for eliminating the TSM/TDM Alternative, which includes public transportation, from further consideration.

## Pioneer Park

- Red Hills Parkway should not further encroach on Pioneer Park.
- Protect Dixie Rock and the adjacent Pioneer Park.

### Response

The Build Alternative would not affect Dixie Rock. Impacts to Pioneer Park would be minimized to the extent feasible (see Section 3.2).

# Southern Utah Transportation Expo

Project representatives from UDOT, FHWA, and Creamer and Noble Engineering participated in the Southern Utah Transportation Expo held at the Dixie Center on February 7, 2006, and February 6, 2007. Information about a variety of local transportation projects, including the proposed Red Hills Parkway project, was provided. More than 750 people attended the event in 2006 and in 2007. An opportunity was provided to submit comments on all southern Utah transportation projects. No comments specific to Red Hills Parkway were received in 2006 or 2007.

# Agency Coordination

Public agency representatives were invited to attend an agency scoping meeting. A notice was sent to 35 public agencies and elected officials. The notice provided a description of the project and the environmental process and requested agency input on resources under the agencies' jurisdiction. The agency scoping meeting was held prior to the public scoping meeting on February 15, 2006, between 2:00 and 3:30 p.m. at the St. George Opera House. Representatives from BLM, the City of St. George, the office of Congressman Matheson, the Dixie Transportation Planning Office, Utah State Parks, the Washington County Economic Development Council, and Washington County HCP participated in a facilitated round-table discussion of the project. Agencies were invited to submit written comments by fax, mail, or e-mail before March 6, 2006. No agency comments were received.<sup>1</sup>

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<sup>1</sup> USFWS did provide a comment letter during the alternatives screening process. Those comments are reflected in the Alternatives Workshop section. Correspondence from USFWS is included in Appendix A.

## Agency Concerns

The following is a bulleted list of concerns raised by the agency representatives during the meeting.

- Representatives have concerns about the effects on land purchased with funds from Section 6 of the Endangered Species Act in the vicinity of the Bluff Street intersection.
- Representatives have concerns about the effects on public land administered by BLM and purchased using LWCF funds (Section 6(f) funds) that may be located in the project vicinity.
- The character of the natural formations in the area should be retained.
- The Northern Corridor and the Great Northern Corridor should be integrated into the project analysis.
- Design speed of the project should be determined.
- The representatives suggest coordinating with BLM since part of the proposed action would be located on BLM-administered public land.
- A safe trail that is integrated into the existing trail system and accommodates increased pedestrian and bicycle traffic should be provided.
- High-speed bicycle traffic should be accommodated.
- Solutions for the 1000 East intersection should be provided.
- Scenic overlooks should be preserved.
- Traffic congestion on Red Hills Parkway should be reduced.
- Traffic turn lanes near the Pioneer Hills Trailhead entrance should be added.
- Existing fencing that separates the HCP from the road should be relocated.
- Additional signage that directs visitors from I-15 to Snow Canyon State Park should be provided.

## Response

The Endangered Species Act Section 7 consultation process would include consideration of lands purchased with Section 6 funds. Land and Water Conservation Fund Act Section 6(f) does not apply to this project (see Chapter 4).

The Build Alternative has been designed to minimize impacts to adjacent rock formations (see Section 3.14).

The Northern Corridor was included in the alternatives evaluation (see Chapter 2). The Great Northern Corridor did not meet the purpose and need of the project and is not included as a funded project in the adopted Regional Transportation Plan, so it was not included in the analysis.

Ongoing information coordination with BLM has occurred.

A pedestrian trail and high-speed bicycle lanes have been incorporated into the project.

The City has installed a traffic light at 1000 East.

Scenic overlooks would still be accessible after implementation of the Build Alternative.

The Build Alternative would reduce congestion on Red Hills Parkway.

The Build Alternative includes a center turn lane for southbound/eastbound traffic to access the Pioneer Hills Trailhead.

Prior to construction, a fencing plan would be developed and approved by the Washington County HCAC.

The City would coordinate signage with Utah State Parks.

## Agency Coordination

Information coordination has continued to occur with BLM, USFWS, and Washington County HCAC throughout the development of this EA. BLM and USFWS were provided an opportunity to comment on the draft EA prior to its release for public review.

A wetland delineation was submitted to the St. George office of USACE on November 2, 2007. On November 6, 2007, a representative from USACE verbally confirmed that the wetland would be considered a jurisdictional water of the United States and that 404 permitting would be required prior to project construction.

The City of St. George, USFWS, and the state are in the process of preparing an amendment to the state's Section 6 grant agreement that would allow the City to transfer ownership of a parcel of property located north of Red Hills Parkway (see Figure 1-2) to Utah State Parks in exchange for 2 acres of property located south of Red Hills Parkway. A meeting was held on October 30, 2007, to present two alternate locations that the City would be willing to transfer to the state. On November 8, 2007, the state met with the HCAC and selected the parcel shown in Figure 1-2.

FHWA conducted Native American consultations for the proposed action. On June 29, 2006, a letter requesting consultation was prepared for the Hopi tribe, the Paiute Indian tribe of Utah, the Shivwits band of the Paiutes, and the Kanosh band of the Paiutes, along with a project description and vicinity map. The letter invited the tribes to be consulting parties, requested information they may have on cultural resources in the APE, and invited comments about the project. In addition, a draft of the Class III Cultural Resources Inventory report for this project was sent to the tribes on April 12, 2007, for comment. Responses have been received from the Paiute Indian tribe of Utah, and the Hopi tribe requesting additional information as it becomes available and notification of project changes. A follow-up letter was sent to the tribes on November 8, 2007, to notify them that an additional cultural resources survey had been conducted. A copy of

the Determination of Eligibility and Finding of Effect (DOE/FOE) was also provided.

The Utah SHPO and the Advisory Council on Historic Properties have jurisdiction over historic and archaeological resources, pursuant to NHPA Section 106. A Class III cultural resources inventory was performed, and a DOE/FOE was submitted to SHPO by UDOT. SHPO was also notified that UDOT would consider a *de minimis* impact finding appropriate based on SHPO's written concurrence with the NHPA Section 106 determination of effect. SHPO has concurred with the NHPA Section 106 eligibility and effects determinations.

Consultation with the St. George Department of Leisure Services specifically regarding the Section 4(f) resources occurred in July and November 2006. A letter was sent to the Director of Leisure Services on November 5, 2007, requesting the City's concurrence with UDOT's assessment that implementation of the project would not have an adverse effect on the resources under the City's jurisdiction. Concurrence has been received.

Copies of agency consultation letters are included in Appendix A of this EA.

## Chapter 7 References

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## Organizations and Persons Consulted

Baker, Aron. City of St. George. November 1, 2006—phone conversation with Jennifer Bassett-Hales.

Carpenter, Jamie. City of St. George. July 11, 2006—meeting with Jennifer Bassett-Hales, Kim Stevens, Jamie Carpenter, and Scott Taylor.

Dastrup, Yvonne. St. George Fire Department. December 18, 2006—phone conversation with Susan Wilson.

Giles, Phil. Project engineer. Creamer and Noble Engineers. September 13, 2006—phone conversation with Chris Coelho.

Harding, Craig. St. George Police Department. December 18, 2006—phone conversation with Susan Wilson.

McArthur, Ellen. Washington County School District. December 28, 2006—phone conversation with Susan Wilson.

Randall, Kacee. Dixie Ambulance. December 18, 2006—phone conversation with Susan Wilson.

Rushing, Tom. Utah Division of Water Quality. November 6, 2006—phone conversation with Jill Sunahara.

# **Appendix A**

## **Agency Consultation Letters**

**Native American Correspondence**

**United States Fish & Wildlife Service Correspondence**

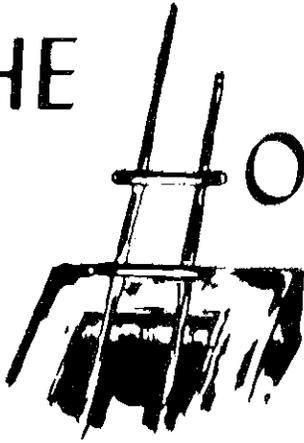
**Utah State Historic Preservation Office Correspondence**

**St. George Parks and Recreation Correspondence**

**Note:** Consultation letters have not been received prior to publication of this draft of the Environmental Assessment, but will be included in the public draft of the Environmental Assessment.



THE



OPI TRIBE

CHAIRMAN

**Todd Honyaoma, Sr.**

VICE CHAIRMAN

April 16, 2007

Laurel H. Glidden, NEPA/NHPA Specialist  
Utah Department of Transportation, Cedar City District  
1470 North Airport Road  
Cedar City, Utah 84721-1009

Re: Project #: STP-3190(5)E; Red Hills Parkway; SR-18 (Bluff St.) to Industrial Road

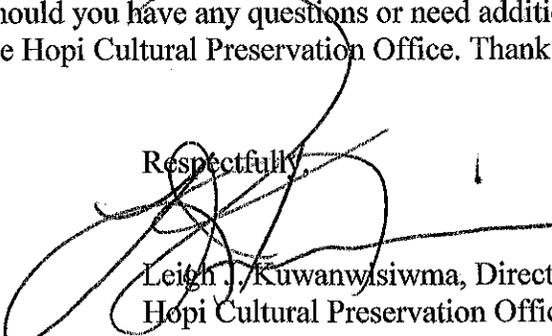
Dear Ms. Glidden,

Thank you for your correspondence dated April 12, 2007, regarding the Federal Highway Administration (FHWA), Utah Department of Transportation (UDOT) and City of St. George initiating an Environmental Assessment for the improvement of 3.5 miles of the Red Hills Parkway. As you know, the Hopi Tribe claims ancestral and cultural affiliation to prehistoric cultural groups in Utah, and the Hopi Cultural Preservation Office supports identification and avoidance of prehistoric archaeological sites.

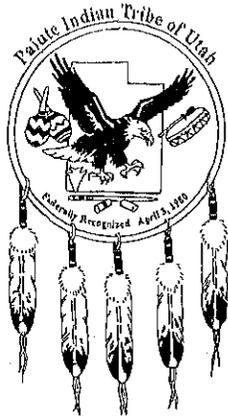
We have reviewed the enclosed cultural resources survey report that identifies 8 prehistoric cultural sites in this project area, 5 of which are recommended as National Register eligible. We understand it has not been determined what impacts, if any, the project will have on eligible sites. Therefore, we request additional consultation on this proposal. If prehistoric cultural resources will be adversely effected by this proposal, please provide us with a copy of the draft Treatment Plan for review and comment.

As you also know, we appreciate UDOT's continuing solicitation of our input and your efforts to address our concerns. Should you have any questions or need additional information, please contact Terry Morgart at the Hopi Cultural Preservation Office. Thank you again for your consideration.

Respectfully,

  
Leigh J. Kuwanwisiwma, Director  
Hopi Cultural Preservation Office





# THE PAIUTE INDIAN TRIBE OF UTAH

440 North Paiute Drive • Cedar City, Utah 84720 • (435) 586-1112

October 26, 2006

Edward T. Woolford  
Environmental Program Manager  
Department of Transportation  
2520 West 4700 South, Ste. 9A  
Salt Lake City, Utah 84118-1847

Dear Mr. Woolford,

**SUBJECT: Red Hills Parkway, St George**

The Paiute Indian Tribe of Utah is in receipt of your letter dated June 29, 2006 and have reviewed the material and have no objections pertaining to the project. Our interest is not limited to cultural resources but include plants and animals as well as natural springs or other places of cultural significance. At this time we are not aware of any archaeological resources in or near the proposed project. We do appreciate your solicitation of the Paiute Indian Tribe of Utah's input and your effort to address our concerns.

Please notify the Paiute Indian Tribe of Utah of any cultural information that is found including type and location, also any updates or changes to the project.

Thank You,

*Dorena Martineau*

Dorena Martineau  
Cultural Resources  
Paiute Indian Tribe of Utah  
440 North Paiute Drive  
Cedar City, Utah 84720  
435-586-1112 (Ext. 107)





United States Department of the Interior  
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE  
2369 WEST ORTON CIRCLE, SUITE 50  
WEST VALLEY CITY, UTAH 84119

In Reply Refer To  
FWS/R6  
ES/UT  
FA-0436

August 30, 2006

Jennifer Bassett-Hales  
Jones & Stokes Associates  
9 Exchange Place, Suite 401  
Salt Lake City, Utah 84111

RE: Scoping for Red Hills Parkway

Dear Ms. Bassett-Hales,

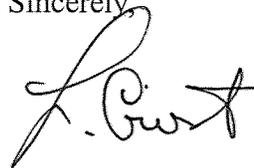
The U.S. Fish and Wildlife Service (Service) has reviewed the preliminary alternatives being considered for the Draft Environmental Assessment (EA) for the Red Hills Parkway road widening project. Three alternatives were identified in the July 22, 2006 pamphlet announcing Red Hills Parkway expansion project to the public. There was a Preferred and Proposed Action Alternative, a 5-lane expansion of Red Hills Parkway; an Alternative of a 7-lane expansion of Red Hills Parkway, and a Northern Corridor Alternative.

General Comments:

The location of this road goes through the Red Cliffs Desert Reserve. The Reserve has been set aside as mitigation to off-set the development of other desert tortoise habitat in Washington County through the Washington County Habitat Conservation Plan (HCP). Based on previous discussions captured in meeting minutes from City Council and Washington County Habitat Conservation Advisory Committee meetings over the last 10 years, a four-lane road expansion with a pedestrian/recreation trail adjacent to the road was the original Red Hills Parkway expansion plan. It would be appropriate to include this 4-lane expansion as one of the alternatives. Project evaluation should clearly document the reasons the road widening has expanded to a 5-lane proposal and the utility of the fifth lane. In addition, the proposed off-corridor trail option needs to be closely analyzed and discussed as this cuts through the most sensitive desert tortoise habitat. The Northern Corridor Alignment Alternative as outlined in the scoping document would significantly impact the threatened desert tortoise and the ability of the Red Cliffs Desert Reserve to mitigate for impacts to desert tortoise in Washington County and we therefore recommend that it be dropped from consideration as one of the alternatives.

In the future, as this project progresses, FWS would appreciate information on upcoming field visits and interagency coordination. We appreciate the opportunity to provide these preliminary comments. If you need further assistance, please contact Renee Chi, Biologist, at (801) 975-3330 ext. 135.

Sincerely,

A handwritten signature in black ink, appearing to read "L. Crist". The signature is fluid and cursive, with a large initial "L" and a distinct "Crist" following.

Larry Crist  
Acting Utah Field Supervisor

cc: Greg Punske, Structural Environmental Engineer, Federal Highways Administration, Utah Division, 2520 West 4700 South, Suite 9A, Salt Lake City, Utah 84118

Paul West, Utah Department of Transportation, 4501 South 2700 West, Mail Stop 141200, Salt Lake City, Utah 84114

James Snyder, Creamer & Noble Incorporated, P.O. Box 37, St. George, Utah 84771

Jim Crisp, Bureau of Land Management, St. George, 345 East Riverside Drive, St. George, Utah 84790

CASE FILE COPY



United States Department of the Interior  
FISH AND WILDLIFE SERVICE

UTAH FIELD OFFICE  
2369 WEST ORTON CIRCLE, SUITE 50  
WEST VALLEY CITY, UTAH 84119

In Reply Refer To  
FWS/R6  
ES/UT  
8-FA-0011

October 19, 2007

BUREAU OF LAND MANAGEMENT  
ST. GEORGE FIELD OFFICE  
OCT 22 2007

Jennifer Bassett-Hales  
Jones & Stokes Associates  
9 Exchange Place, Suite 401  
Salt Lake City, Utah 84111

RE: Comments for Red Hills Parkway Widening Project Environmental Assessment

Dear Ms. Bassett-Hales,

The U.S. Fish and Wildlife Service (Service) has reviewed the September 2007 Draft Environmental Assessment (EA) for the Red Hills Parkway road widening project, received September 24, 2007. Five alternatives were identified: no action alternative, Preferred and Proposed Action Alternative (5-lane expansion of Red Hills Parkway), 7-lane expansion of Red Hills Parkway Alternative, Northern Corridor Alternative and transportation system management (TSM) alternative.

The alignment for the Red Hills Parkway goes through the Red Cliffs Desert Reserve (Reserve). The Reserve has been set aside, as identified in the Washington County Habitat Conservation Plan (HCP), as mitigation to off-set the development of other occupied and potential desert tortoise habitat in Washington County. In the agreement under which the county-wide incidental take permit was issued, lands within the Reserve will be conserved in perpetuity. The Red Hills Parkway widening project was identified in the HCP as an approved and necessary future impact to the Reserve. The biological impacts of the road expansion (150-foot project footprint) were included in the Biological Opinion for the Washington County HCP. The project description has been altered to include a diamond interchange at the current intersection of Red Hills Parkway and Bluff Street/SR-18 and the 150-foot wide project footprint is wider in some areas and narrower in some areas.

General Comments:

We provided comments on an informational pamphlet announcing Red Hills Parkway expansion project to the public in an August 30, 2006 letter. The pamphlet presented the alternatives considered for the project. In our letter we emphasized that the "Northern Corridor alternative" is not appropriate to include as an alternative:

“The Northern Corridor Alignment Alternative as outlined in the scoping document would significantly impact the threatened desert tortoise and the ability of the Red Cliffs Desert Reserve to mitigate for impacts to desert tortoise in Washington County and we therefore recommend that it be removed from consideration as one of the alternatives.”

In addition, the USFWS Desert Tortoise Recovery Office and our Utah USFWS Field Office issued a letter dated June 4, 2007, to the Washington County Commission, the HCP Advisory Committee, and “Vision Dixie” emphasizing that the USFWS does not support any new road through Zone 3 of the Red Cliffs Desert Reserve (see Attachment A). Such a road would compromise the commitments on which the Washington County HCP was based, is likely to compromise the biological integrity of the Upper Virgin River Recovery Unit (already the smallest recovery unit), and may result in adverse modification of designated critical habitat. Therefore, we recommend that Chapter 2 include full disclosure of all the detail, implications and impacts of the Northern Corridor alternative and why it is not further considered. Thereafter, the Northern Corridor should not be discussed or mentioned throughout the rest of the document.

Throughout the EA, there are references to the Dixie Metropolitan Planning Organization Regional Transportation Plan and the City of St. George plans (St. George Road Master Plan). Due to the agreements on which the HCP incidental take permit was based, we do not endorse or support any reference that refers to any new road planned through Zone 3. To reiterate, such a road would compromise the commitments on which the Washington County HCP was based, is likely to compromise the biological integrity of the Upper Virgin River Recovery Unit, and may result in adverse modification of designated critical habitat.

The preferred alternative, 5-lane road, could further minimize its impacts by decreasing the width of the 12-foot unpaved center median between the two lanes going east and two lanes going west. This would be an additional way to decrease the acres of permanent habitat loss.

#### Specific Comments:

##### Summary Section

Page S-4, Table S-1: Under the “Permit/Approval” needed from USFWS, it should read, “...Approval of the grant agreement amendment on land purchased by Utah State Parks with Federal Endangered Species Act Section 6 grants monies.”

##### Chapter 1

Page 1-2, first paragraph: The last sentence should be worded as, “The U.S. Fish and Wildlife Service (USFWS) is responsible for approving amendments to Section 6 grant agreements. This project will have impacts on the lands purchased with Federal Section 6 grant monies. The impacts will be inconsistent with the intended purposes (conservation and recovery of Desert tortoises) of the

lands. Therefore, the replacement of Section 6 lands (of equal biological and economic value) will be required and subsequently approved by the USFWS.

Page 1-4, third paragraph: Remove this paragraph.

Page 1-7, first paragraph after the table: The first sentence seems contradictory. In addition, please clearly define what "excessive" is relative to time delay and cite the literature from which this info came.

Page 1-11, "Protection of Mojave Desert Tortoise Habitat": Change the way this paragraph is worded. The bold italics are new, "The Red Cliffs Desert Reserve (*Reserve*) is located north of St. George between the cities of Ivins, Washington, and Hurricane in Washington County. *The 62,000-acre reserve was established to conserve the desert tortoise (Upper Virgin River Recovery Unit) and its habitat into perpetuity. The Mojave desert tortoise has been federally listed as threatened with designated critical habitat since 1994. The Reserve encompasses all of the critical habitat designated within the Upper Virgin River Recovery Unit.*

*In 1995, the Washington County Habitat Conservation Plan (WCHCP) was completed. The WCHCP was developed to provide a comprehensive approach to preserving and protecting desert tortoise habitat in Washington County while allowing controlled growth and development in portions of desert tortoise habitat deemed less essential to the species survival and recovery. As a result, USFWS issued an incidental take permit [10 (a) 1 (B)] based on terms and conditions of an agreement with Washington County. The Reserve was established to protect the majority of the densest desert tortoise habitat and thereby protect the habitat in perpetuity to off-set Washington County development of tortoise habitat outside the reserve boundaries."*

".....The HCP is designed to allow for the take of desert tortoises in Washington County...."

## Chapter 2

Page 2-1, third paragraph: Include a description of the width of the "limits of disturbance" and include a description of the width (or area) of the permanent disturbance footprint. It is misleading to only include the 300-foot width of the project study area and not mention the width of the allowable disturbance areas (temporary and permanent).

Page 2-1, fourth paragraph: Include a description of the type of change (including the amount of change).

Page 2-5, first paragraph under "Proposed Build Alternative": Looking at the 12-foot unpaved median between the two lanes going east and two lanes going west, it seems as if additional minimization is possible if this center median was much smaller. This would be an additional way to decrease the acres of permanent habitat loss.

Page 2-8, last paragraph going halfway through page 2-10: This is an important section as it is necessary to provide background information on the Northern Corridor alternative and to completely

describe the details of why it was eliminated from further consideration (full disclosure). Include in this section a full and complete description of the impacts to the Upper Virgin River Desert Tortoise Recovery Unit population including biological impacts and an explanation of how the road contradicts the recovery goals identified in the 1994 and draft 2007 Desert Tortoise Recovery Plans. Discuss the implications of a potential adverse modification of designated desert tortoise critical habitat. Discuss all the commitments on which Washington County HCP is based and the implications if the Washington County HCP incidental take permit were to be revoked (economic, social, and biological). Do not discuss the Northern Corridor after chapter 2 (chapters 3 through 6).

Page 2-9, first paragraph, fourth sentence: Change wording to, "Both the Northern Corridor and Red Hills Parkway *were* identified as arterial roads on the St. George Road Master Plan."

Page 2-13, Table 2-5: As the TSM/TDM Alternative was not included in this table. Similarly, the Northern Corridor should not be part of the table.

### Chapter 3

Page 3-3, Table 3-1. Required Permits and Approvals: Under USFWS Permit/approval, change the language pertaining to Section 6 (second sentence). Include: Approval of a land exchange and amendment to the grant agreement on the lands purchased with an Endangered Species Act Section 6 grant. Under "Status": Add in, "Grant amendment request has not been submitted to USFWS for review and approval".

Page 3-3, Table 3-1: Under State of Utah, Department of Natural Resources, Division of State Parks and Recreation, under "status", the statement, "Application of right-of-way ...." is not accurate. The State of Utah, Division of State Parks and Recreation will need to provide, to the U.S. Fish and Wildlife Service, a land exchange proposal (in cooperation with the project proponent) due to a "loss of control" of the intended purposes for which the land was purchased with Federal ESA Section 6 grant, conserving and recovering the Mojave desert tortoise.

### Chapter 3.1

Page 3.1-1, "Land Use": In addition to mentioning the 300-foot study area, include the agreed upon width for the permanent fencing and the project footprint.

Page 3.1-2, "Washington County Habitat Conservation Plan", first paragraph: Change "62,000-acre reserve *protects and conserves* habitat for the Mojave Desert tortoise." Also include language that the Reserve encompasses desert tortoise federally designated critical habitat and is the entire Upper Virgin River Recovery Unit.

Page 3.1-2, "Washington County Habitat Conservation Plan", second paragraph: The first sentence suggests that the reserve was established first. Change language to, "The establishment of the reserve was, in part, mitigation required to offset the incidental take allowable on lands outside the reserve boundaries."

Page 3.1-2, "Washington County Habitat Conservation Plan", third paragraph, first sentence: This sentence needs to more accurately reflect the Habitat Conservation Advisory Committee's (HCAC) responsibilities. If it is decided to only mention a few, indicate that those are not all the HCAC's responsibilities. For example, they are responsible for approving expenditures, budget items, staff priorities, project proposals, research, land management practices, and maintenance activities.

Page 3.1-3, bullets: If the document is going to mention a list of land management practices that pertain to Zone 3, it would be useful to mention all land management practices that pertain to Zone 3...for example: on page 110 of the HCP: "no incidental take of desert tortoises will be allowed on reserve lands." This will require going through the entire HCP.

Page 3.1-5, "Existing Land Uses", second paragraph, third sentence: Re-word this sentence to read, "The primary purpose of Reserve lands is to protect Mojave desert tortoise habitat for conservation and recovery of desert tortoise populations. Secondly, the land provides recreational trail opportunities."

### Chapter 3.9

Page 3.9-5, "Construction Impacts": Include a sentence referring to the likelihood of impacting nesting birds in the spring and summer.

Page 3.9-5, "Construction Impacts", second paragraph: This paragraph states that the road "would not fragment habitat". This is not accurate. As the road becomes wider, the impacts of fragmentation increase. The EA should describe this.

Page 3.9-5, "Operational Impacts": Please include information on changes that may or may not occur relative to speed limits on this road. Also, in the last sentence, explain what this means, "These larger wildlife species are relatively common and are familiar with human-disturbed environments" and explain what the possible implications may be.

Page 3.9-5, second to last paragraph: The habitat may not be substantially reduced or diminished by the Build Alternative but it would increase fragmentation.

Page 3.9-6, "Cumulative Impacts", sixth sentence: Explain how the term, "low impact" is used in this sentence and how you arrived at this conclusion.

Page 3.9-6, "Cumulative Impacts": Again, take out the language pertaining to any mention of the Northern Corridor.

Page 3.9-6, "Cumulative Impacts", second paragraph, last sentence: "The project would affect a very small portion of the reserve and would not be cumulatively significant." – The project bisects the densest desert tortoise population that occurs throughout California, Nevada, Arizona, and Utah. Your statement downplays the significance of the Upper Virgin River Desert Tortoise population and the impacts.

### Chapter 3.10

Page 3.10-1, fourth paragraph: The second sentence should be re-worded... "The Washington County HCP was developed to authorize incidental take of Mojave desert tortoise under Section 10(a)1(B) of the ESA.

Page 3.10-1, last paragraph, last sentence: Explain that this land was purchased and intended to be managed for the conservation and recovery of desert tortoise populations.

Page 3.10-2, last paragraph, last sentence: Include a more detailed description of the Section 6 land situation.

Page 3.10-4, "Western burrowing owl": The Distribution/Habitat Association suggests that western burrowing owl surveys were conducted in the project area. The previous survey did not indicate that specific western burrowing owl surveys were conducted. If they were, please include description. If they were not done, change the wording of the statement in this table to reflect that they were not being specifically surveyed for during the biological survey.

Page 3.10-4, "Gray wolf": Change the language in this portion because gray wolves have been spotted in Northern Utah.

Page 3.10-5, "Kit fox": The last sentence misleadingly suggests that kit foxes may not be in the study area because they have not been sighted since 1996. There is a high likelihood that they may be in the project study area.

Page 3.10-5, general statement: Comments suggesting that certain species have not been sighted recently are misleading. Unless specific, rigorous surveys have been done for each of these species, it is inappropriate to suggest they may not be in the project study area. This comment especially pertains to Gila monster (3.10-6) and the rest of the species throughout the rest of the table. Please revise.

Page 3.10-10, "Federally Listed Species", second paragraph, last sentence: Take this last sentence out, there are occasional tortoises observed within the ROW of the Red Hills Parkway.

Page 3.10-10, last paragraph: Re-word sentence, "Overall, the project would affect a small amount of the available habitat." This wording misleadingly undervalues the density and quality of desert tortoise habitat that exists in the area (see comment for Page 3.9-6, "Cumulative Impacts", second paragraph, last sentence).

Page 3.10-11, "Operational Impacts", first sentence: This sentence is inaccurate. The entire area adjacent to and surrounding the project area has very high desert tortoise densities.

Page 3.10-11, "Operational Impacts", second paragraph, last sentence: Please clarify what the term, "restored to the reserve" means. It is unclear if this "restored" land is pristine or disturbed habitat. It would also be helpful to cite a map that identifies all such areas.

Page 3.10-11, "Operational Impacts", third paragraph, last sentence: This last sentence inappropriately makes an assumption about availability of territory for tortoises displaced by the road construction. Without understanding the territorial behaviors of the local tortoise populations, one cannot assume that undisturbed habitat nearby automatically means that it is territorially "available".

Page 3.10-11, "Operational Impacts", fourth paragraph: This project does increase habitat and population fragmentation. When roads become wider, they further impede movement of animals and therefore, increase fragmentation. Also, in the last sentence: Change wording, "Since there are few existing opportunities for *tortoises* to cross under the existing road facility, this measure may increase the movement *and connectivity of habitat on both sides of the road*."

Page 3.10-11: In general, an additional minimization measure that would aid in discouraging garbage dumping along the roadway would be signs that state, "NO STOPPING EXCEPT FOR EMERGENCY".

Page 3.10-12, "State Sensitive Species": There is increased fragmentation, see comment for Page 3.9-6, "Cumulative Impacts", second paragraph, last sentence.

Page 3.10-12, "Cumulative Effects": In the second paragraph, the description of the development of the HCP, the incidental take permit is inaccurate. The HCP was not developed as a result of the issuance of an incidental take permit. The rest of the paragraph is awkwardly worded.

Page 3.10-12, "Cumulative Effects", last paragraph: Change first sentence, "The reserve was established to compensate for the *permitted incidental "take" of desert tortoises and loss of habitat* resulting from development in Washington County. Also, add "disease" into the sentence identifying the suspected causes of population decline. The sentence, "The Build Alternative would occur on a small area within the 62,000-acre reserve."--- is irrelevant relative to desert tortoise populations because only half of the 62,000-acre reserve is tortoise habitat. Again, this wording is misleadingly undervaluing the density and quality of desert tortoise habitat that exists in the area (see comment for Page 3.9-6, "Cumulative Impacts", second paragraph, last sentence).

Page 3.10-13, *Minimization* Measure BIO-1, #2: Please clarify if the stockpiles will be located in already disturbed areas.

Page 3.10-13, *Minimization* Measure BIO-1, #3: In the fencing plan, include detailed information about the human and tortoise culverts (dimensions, material, design).

Page 3.10-13, *Minimization* Measure BIO-2, #1: Include that the *tortoise culvert* locations will be planned and placed in coordination with the Utah Division of Wildlife Resources.

Page 3.10-14, *Minimization* Measure BIO-3: Change first sentence language, "The City shall *rehabilitate identified areas of desert tortoise habitat within the reserve to offset the additional impacts from this project*."

Chapter 3.11

Page 3.11-3, "Cumulative Effects": Reword the sentence that starts with, "Invasive cheatgrass *and red brome presence* fueled the fires". For the last sentence, please reference what measures would minimize the introduction or spread of noxious weeds.

Page 3.11-4, last sentence of last paragraph: Include "and/or live plants" when talking about the reclamation plan and the seed mixes.

In the future, as project details progress, FWS will look forward to planning the rehabilitation efforts with you and we would appreciate information on upcoming field visits and interagency coordination. We appreciate the opportunity to provide these comments on the draft EA. If you need further assistance, please contact Renee Chi, Biologist, at (801) 975-3330 ext. 135.

Sincerely,



Larry Crist  
Utah Field Supervisor

cc: Greg Punske, Structural Environmental Engineer, Federal Highways Administration, Utah Division, 2520 West 4700 South, Suite 9A, Salt Lake City, Utah 84118

Paul West, Utah Department of Transportation, 4501 South 2700 West, Mail Stop 141200, Salt Lake City, Utah 84114

Washington County Habitat Conservation Plan Administration, 197 East Tabernacle, St. George, Utah 84770

James Snyder, Creamer & Noble Incorporated, P.O. Box 37, St. George, Utah 84771

Jim Crisp, Bureau of Land Management, St. George, 345 East Riverside Drive, St. George, Utah 84790

Kristen Comella, Snow Canyon State Park, 1002 North Snow Canyon Drive, Ivins, Utah 84738

ATTACHMENT A.

READING FILE



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Nevada Fish and Wildlife Office

1340 Financial Blvd., Suite 234

Reno, Nevada 89502

Ph: (775) 861-6300 ~ Fax: (775) 861-6301

June 4, 2007

James J. Eardley, Chairman  
Washington County Commission  
Vision Dixie Steering Committee  
197 East Tabernacle  
St. George, Utah 84770

Dear Chairman Eardley:

Subject: Fragmentation of the Red Cliffs Desert Reserve

The Fish and Wildlife Service (Service) is interested in the implementation of Washington County's Habitat Conservation Plan relative to the ongoing "Vision Dixie" initiative to help steer urban growth. The Service's Nevada Fish and Wildlife Office, through its role as range-wide lead for desert tortoise recovery, and the Utah Fish and Wildlife Office, through its role in local desert tortoise recovery and HCP implementation, are providing comments on the implications of fragmenting the Red Cliffs Desert Reserve with transportation corridors.

The Upper Virgin River Recovery Unit, which includes all tortoise habitat in Washington County except for the Beaver Dam Slope, is the smallest recovery unit in the desert tortoise's range. This relatively small area is fragmented by Interstate Highway 15, State Highway 18, and the rapidly growing St. George and neighboring urban areas. As a result, the 1994 desert tortoise recovery plan recognized the need for intensive management to ensure the long-term persistence of the tortoise in the recovery unit. In December 1995, Washington County completed a Habitat Conservation Plan that established the Red Cliffs Desert Reserve (RCDR) and committed to implement management actions that place the desert tortoise as the highest priority.

The 30,000 acres or so of tortoise habitat within the RCDR is a fragile cornerstone of the Upper Virgin River Recovery Unit, and this habitat has already been subjected to severe pressures and fragmentation. In addition to the highways and urban areas noted above, the tortoise population within RCDR has recently declined in association with extended drought and an outbreak of upper respiratory tract disease. In 2005, wildfires burned about 25% of the tortoise habitat within the reserve.



James J. Eardley, Chairman

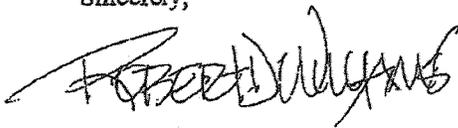
June 4, 2007

As a result of these existing pressures and the already small size of the reserve, current proposals in the Vision Dixie process to construct a "Northern Corridor" transportation route through the RCDR would severely threaten the survival and recovery of the desert tortoise within this recovery unit. Any transportation corridor would further increase the risk to the desert tortoise population and accelerate its decline by increasing fire frequency, noise disturbance, increased human access, and direct mortality along the corridor.

We appreciate Washington County's need to plan for and steer the direction of urban growth. However, scenarios routing transportation corridors through the RCDR were considered and eliminated during the original development of Washington County's Habitat Conservation Plan due to their incompatibility with maintaining the tortoise population within the reserve. Construction of a new road or highway through the RCDR conflicts with the desert tortoise recovery plan and is inconsistent with the terms of the county's Habitat Conservation Plan and incidental take permit. Therefore, it will be important to develop alternatives that avoid the need for a northern corridor through the reserve.

If you would like to further discuss our concerns about the desert tortoise population within the RCDR, we would be happy to arrange for Roy Averill-Murray, the Service's Desert Tortoise Recovery Coordinator, to meet with the Habitat Conservation Advisory Committee. Please let either of us know if you would like to schedule such a meeting, or call Roy at 775-861-6362.

Sincerely,



Robert D. Williams  
Field Supervisor  
Nevada Fish and Wildlife Office



Larry Crist  
Field Supervisor  
Utah Fish and Wildlife Office

cc:

Karl Wilson, Chairman, Washington County Habitat Conservation Advisory Committee  
Bill Mader, Administrator, Washington County Habitat Conservation Plan  
Alan Matheson, Executive Director, Envision Utah



State of Utah

JON M. HUNTSMAN, JR.  
*Governor*

GARY R. HERBERT  
*Lieutenant Governor*

DEPARTMENT OF TRANSPORTATION

JOHN R. NJORD, P.E.  
*Executive Director*

CARLOS M. BRACERAS, P.E.  
*Deputy Director*

November 9, 2007

Dr. Matthew Seddon  
Deputy State Historic Preservation Officer  
Utah Division of State History  
300 Rio Grande  
Salt Lake City, UT 84101-1182

Subject: Project #STP-3190(5)E  
Red Hills Parkway; SR-18 (Bluff St.) to Industrial Road  
Determination of Adverse Affect to Historic Properties

Dear Dr. Seddon:

In cooperation with the Federal Highway Administration (FHWA), the Utah Department of Transportation (UDOT), and the City of St. George (City) are proposing to improve the Red Hills Parkway, from Bluff Street (SR 18) to Industrial Road, a distance of approximately 3.5 miles.

In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, 16 U.S.C. § 470 et seq., and Utah Code Annotated (U.C.A.) § 9-8-404, the FHWA, in partnership with the UDOT, has taken into account the effects of this undertaking on historic properties, and has afforded the Advisory Council and Utah State Historic Preservation Officer (SHPO) an opportunity to comment on the undertaking. Please review this letter and, providing you agree with the finding contained herein, sign and date the signature line at the end of this letter.

Red Hills Parkway is currently a two-lane facility with left turn lanes provided at most of the intersections. The preferred alternative would involve widening Red Hills Parkway to two lanes in each direction, with a center turn lane between Skyline Drive and Industrial Road. Between Bluff Street and Skyline Drive, an unpaved median would separate the eastbound and westbound lanes. Sidewalk, curb, and gutter would be installed between Industrial Road and the eastern entrance to Pioneer Park. A grade-separated diamond interchange configuration would be constructed at the intersection of Red Hills Parkway and Bluff Street. Bluff Street would be elevated to span over Red Hills Parkway. Signals would be installed on Red Hills Parkway at the interchange ramps to accommodate turning movements between Bluff Street and Red Hills Parkway.

Signals at the intersections of Skyline Drive and Red Hills Parkway and at 1000 East and Red Hills Parkway would be upgraded to accommodate the new lanes of traffic. A separate paved pedestrian/bike trail would be constructed along the Red Hills Parkway alignment between Bluff Street and the trailhead located at Pioneer Park.

The City of St. George and UDOT are considering using all or part of three parcels of land located on the west end of the project to mitigate for the loss of desert tortoise habitat. Surface disturbance on these parcels associated with the project would be limited to fencing around the perimeter of the parcels and possible reclamation of disturbed areas.

The project area is located in St. George, Washington County, Utah within lands administered by the Bureau of Land Management (BLM), Utah School and Institutional Trust Lands Administration (SITLA), the State of Utah Department of Natural Resources, Division of State Parks and Recreation, and the City of St. George. The legal location is T42S R16W Sections 12, 13, 14, (11, 17, 23, 24) on the Washington and T42S R15W Sections 18, 19, 20, (24, 29, 30) on the St. George, Utah 7.5' USGS Topographic Quadrangles.<sup>1</sup>

The area of potential effects (APE) for paleontological and cultural resources is defined as 200 feet from the edge of the pavement on both sides of Red Hills Parkway, beginning at Industrial Road and continuing west to a location 1,000 feet west of Bluff Street. An additional area 200 feet from the edge of the pavement on both sides of Bluff Street, beginning 1,000 feet north of Red Hills Parkway and ending 1,000 feet south of Red Hills Parkway, was also included in the APE to allow construction of a grade-separated interchange.

The three proposed mitigation parcels are also considered part of the APE. Parcel 1 is located approximately 183 meters south of Red Hills Parkway and measures 5.1 acres in size. Parcel 2 is located south east of the Bluff St./Red Hills Parkway intersection, and is 537 acres in size. Parcel 2 is currently the location of the St. George Police firing range. Parcel 3 is an L-shaped area, approximately 6.4 acres in size. The lower left hand corner of the parcel is 475 meters east of Bluff St and 210 meters north of Red Hills Parkway.

In the fall of 2006, a related project, the Red Hills Parkway and Skyline Drive Intersection Upgrade, underwent an environmental assessment resulting in a Level III Categorical Exclusion. Due to a threat to safety, this assessment was conducted separately to expedite construction of a traffic signal and the realignment of the intersection at Skyline Drive and Red Hills Parkway. In a letter dated October 4, 2006 (case 03-2224) UDOT made a determination of No Historic Properties Adversely Affected, which the SHPO concurred with, October 10, 2006.

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<sup>1</sup> Sections within parentheses are those located outside of the APE but within the 1-mile study area.

### Archaeological Resources

Native American consultation was initiated by sending letters requesting information on any historic properties of traditional religious and/or cultural importance and notification of interest in being a consulting party on the project. The Hopi Tribe, the Paiute Indian Tribe of Utah and their Shivwits and Kanosh Bands were notified of the original project on June 29, 2006. On December 11, 2006, a notification that UDOT had made a determination of No Historic Properties Adversely Affected for the Skyline Drive intersection improvement project was sent. Responses have been received from the Paiute Indian Tribe of Utah, and the Hopi Tribe requesting additional information as it becomes available and notification of project changes. A copy of the draft cultural resource report and addendum was sent to all consulting parties on April 12, 2007 and November 9, 2007, respectively.

Associated government agencies notified include the Bureau of Land Management, St. George Field Office (BLM) and the Utah State Trust Lands Administration (SITLA). A copy of the draft report was mailed to the appropriate offices on June 14, 2007. Via phone call, Dawna Ferris-Rowley, the BLM St. George Field Office Assistant Manager relayed her concern that future segments of the Cottonwood Pipeline may be removed as a utility corridor exists within the Preserve. Although she did not disagree with UDOT's overall decision, she felt it would be necessary to take this issue into consideration for future projects.

The St. George chapter of the Utah Statewide Archaeological Society was notified as well and offered the opportunity to consult on the project. At this time, a response has not been received.

### **Determination of Eligibility**

A cultural resource investigation was conducted by Jones & Stokes under the authority of Utah State Project No. U-06-JS-1523b,s. A records search was conducted in December 2005 at the Antiquities Section of the Utah State Division of History. Several studies have been conducted within a 1-mile radius of the project APE, most occurring along the Red Hills Parkway alignment. Previous inventories resulted in the identification of eight cultural resource sites within the APE. Of these resources, three are historic-era features and five are prehistoric sites. Five of these previously recorded resources have been recommended or determined eligible for listing in the NRHP (Table 1).

A field survey of the project area was conducted between September 2-5, 2006 under the direction of Karen Crawford of Jones & Stokes. A second field survey was conducted on October 30, 2007 to investigate the three parcels proposed for wildlife mitigation. This survey was also under the direction of Ms. Crawford. A copy of the resulting cultural resource report and addendum are enclosed for your review.

The project area was surveyed in 15 to 20 meter transects or less, due to the narrow nature of the APE. In many cases, 100% coverage was easily achieved because the project area was so narrow, and visibility was generally excellent. Each of the eight

previously recorded sites within the APE were revisited and field-checked. In addition, six newly discovered sites were recorded in or adjacent to the study area, with two sites (42WS4988 and 42WS4990) determined as eligible for the NRHP. One prehistoric site, 42WS4988, lies outside the project area, but was included for inventory and reporting purposes. A total of five isolates were located within the APE.

**Table 1. Cultural resource sites identified**

Site	Recorded	Description	APE	Eligibility	Effect
42WS2428.1	previous	Historic-era road bed segment	Inside	Not Eligible	No effect
42WS2871	previous	Prehistoric rock shelter/historic-era refuse	Inside	Eligible	No effect
42WS2872	previous	Prehistoric lithic scatter	Inside	Eligible	Adverse Effect
42WS2873	previous	Prehistoric lithic scatter	Inside	Not Eligible	No effect
42WS4386	previous	Prehistoric rock shelter	Inside	Eligible	No effect
42WS4387	previous	Prehistoric rock shelter	Inside	Eligible	No effect
42WS4388	previous	Cottonwood Pipeline	Inside	Eligible	No adverse effect
42WS4438	previous	Historic-era rock wall segment	Inside	Not Eligible	No effect
42WS4987	new	Prehistoric lithic scatter	Inside	Not Eligible	No effect
42WS4988	new	Prehistoric rock shelter	Outside	Eligible	No effect
42WS4989	new	Temple Springs	Inside	Not Eligible	No effect
42WS4990	new	Dixie Rock	Inside	Eligible	No effect
42WS4991	new	Prehistoric bedrock mortars, historic-period inscription	Inside	Not Eligible	No effect
42WS5059	new	Prehistoric lithic scatter	Inside	Not Eligible	No effect

**Finding of Effect**

Under the preferred alternative, earthwork in the vicinity of identified NRHP eligible sites would be necessary. Construction activities would include excavation, grading, road paving, and miscellaneous finish work. Potential impacts are considered for only the six identified NRHP eligible sites located within the project APE. If the preferred alternative is selected, sites 42WS2872 and 42WS4388 may be affected.

Site 42WS2872 is a Virgin Anasazi temporary camp measuring 50 meters by 28 meters, consisting of various lithic and ceramic artifacts, and a hearth feature. The artifact assemblage includes approximately 20 pieces of debitage from various stages of core

reduction and tool manufacturing. Material types include gray quartzite; red, white, and gray opaque chert; and red white chalcedony. Ceramic artifacts include a single Virgin series grayware body sherd. Features include a basin-shaped hearth/firepit with about 8 centimeters of cultural fill (no artifacts). The site was originally recorded in 1994 by Abajo Archaeology who tested the site via three test units and a series of shovel probes. Testing revealed at least 15cm of cultural fill but no subsurface artifacts. The site remains in good condition and is considered eligible for nomination to the NRHP (Criterion D) due to the potential to extract additional information from the hearth feature.

Preliminary project designs indicate that site 42WS2872 would be impacted by the construction of the grade-separated interchange at SR-18 and Red Hills Parkway, resulting in the destruction of a significant portion of the site. Therefore, UDOT has determined the proposed project would have an adverse effect on site 42WS2872.

As a part of the Skyline Intersection improvement project, approximately 200 feet of site 42WS4388, the Cottonwood Pipeline, will be removed. On October 10, 2006, the SHPO concurred with UDOT's determination of No Historic Properties Adversely Affected (case 03-2224) with respect to removal of 200 feet of the pipeline. This determination was based on the fact that historic archival research has already been completed and approximately 6 miles of the pipeline will remain intact within the Red Cliffs Desert Reserve. As a part of the Red Hills Parkway, Bluff to Industrial Road widening project, an additional 150 foot section of the pipeline would need to be removed. Due to the fact that the pipeline is a very long linear feature, with approximately 6 miles intact within the Red Cliffs Desert Reserve, the removal of approximately 0.05% of the pipeline would have no effect on the feature's integrity or the criteria which make it eligible for the NRHP, thus the proposed project will have no adverse effect on site 42WS4388.

For all other NRHP eligible sites within the project APE where construction activities will take place within 50 feet of the site (42WS2871, 42WS4386, 42WS4387), temporary environmental fencing will be constructed to aid in the avoidance of the site.

#### Paleontology

As advised by the Utah Geological Society (UGS), this project qualifies for treatment under the UDOT/UGS executed memorandum of agreement. A paleontological file search conducted by UGS at the request of UDOT and Jones & Stokes indicated that surficial deposits found within the project area have a low potential for yielding significant fossil localities. However, there may also be some exposures of the Lower Jurassic Moenave and Kayenta Formations which have the potential for yielding significant vertebrate fossil and track localities. Prior to construction, a paleontologist will survey the construction area to determine if any Lower Jurassic Moenave or Kayenta Formations would be disturbed by construction. If these formations would be disturbed by construction, a qualified paleontologist will be retained to monitor these locations during construction. In the event potential paleontological resources are encountered prior to or during construction, the discovery procedures specified in UDOT's Standard

Specification Section 01355, Part 1.10, and Section G of the MOU between UDOT and UGS pursuant to UCA 63-73-19 will be followed.

Summary

A total of 14 sites were identified within or nearby the project area, either during previous or recent cultural resource surveys. Of those sites, seven have been identified as eligible for the NRHP, six within the APE. Sites 42WS2871, 42WS4386, and 42WS4387 will be avoided by erecting temporary environmental fencing around areas where construction will take place within 50 feet of the site, therefore, having no effect on these three sites. As a part of the preferred alternative, approximately 150 feet of pipeline would be removed from site 42WS4388, the Cottonwood Pipeline, resulting in no adverse effect to this site. Site 42WS2872 will potentially be impacted by construction activities, resulting in an adverse effect to the site.

Therefore, UDOT is making an overall determination of Adverse Effect to Historic Properties as a result of the proposed project. UDOT will continue to work towards resolution of adverse effects. If the adverse effects cannot be avoided, additional measures will be explored during design to minimize or mitigate the impacts. A Memorandum of Agreement (MOA) will be executed that stipulates how the adverse effects will be resolved. Mitigation measures will likely include additional testing of site 42WS2872 and/or data recovery in advance of construction.

Thank you for your efforts regarding this project, and if you have any questions, please feel free to contact me at (435) 865-5562 or [lglidden@utah.gov](mailto:lglidden@utah.gov).

Respectfully,

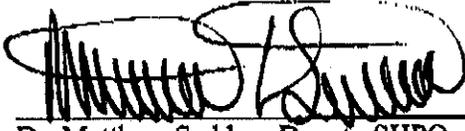


Laurel H. Glidden, NEPA/NHPA Specialist  
UDOT Region 4 Environmental

cc: Jennifer Bassett-Hales/Jones & Stokes  
Brenda Redwing/FHWA  
Elizabeth Skinner/UDOT/Environmental  
Randall Taylor/UDOT/R4  
Clayton Wilson/UDOT/R4

Re: Red Hills Parkway  
November 9, 2007  
Page 7

I concur with the finding of historic properties adversely affected for the preferred alternative for UDOT Project no. STP-3190(5)E, Red Hills Parkway; SR-18 (Bluff St.) to Industrial Road, and that the FHWA and UDOT have taken into account effects of the undertaking upon historic and archaeological resources in accordance with Section 106 and U.C.A. 9-8-404.



Dr. Matthew Seddon, Deputy SHPO

11/15/07

Date





State of Utah

JON M. HUNTSMAN, JR.  
Governor

GARY R. HERBERT  
Lieutenant Governor

DEPARTMENT OF TRANSPORTATION

JOHN R. NJORD, P.E.  
Executive Director

CARLOS M. BRACERAS, P.E.  
Deputy Director

05 November 2007

Kent Perkins  
Director of Leisure Services  
City of St. George  
86 South Main St.  
St. George, UT 84770

Subject: Red Hills Parkway Project, SR-18 to Industrial Road, Washington County, Utah.

Section 4(f) De Minimis Impact Finding Concurrence Request

Dear Mr. Perkins:

In accordance with the National Environmental Policy Act of 1969 (NEPA), the Federal Highway Administration (FHWA), the Utah Department of Transportation (UDOT) and the City of St. George (City) are preparing an environmental document, an Environmental Assessment, to assess potential environmental impacts resulting from the proposed project. As part of the NEPA process, FHWA and UDOT are also preparing documentation required by Section 4(f) of the Department of Transportation Act of 1966 (see 49 USC §303), hereinafter referred to as the Section 4(f) evaluation.

Section 4(f) declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." In 2005, Section 4(f) was amended when the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was enacted as Public Law 109-59. Section 6009 of SAFETEA-LU, amended the existing Section 4(f) legislation at 23 USC Section 138 and 49 USC Section 303 to simplify the processing and approval of a program or project that may only have a "de minimis" impact on a resource eligible for protection under Section 4(f).

Based on review of the 2006 Parks Master Plan and based on our meeting with you on November 7, 2006, the recreational resources listed in Table 1 were identified as being located within the project study area and were determined to be eligible for protection under Section 4(f).

Table 1. Section 4(f) Resources Under the Jurisdiction of St. George Leisure Services

Property	Section 4(f) Use
St. George Trails (Highway 18 Trail, Bluff Street Trail, and Snow Canyon Trail)	Direct use of 1,080 feet (0.20 mile); <i>de minimis</i> impact finding recommended.
Dixie Red Hills Golf Course	No Section 4(f) use.
Brooks Pond Park	No Section 4(f) use.
Pioneer Park	Direct use of 1.7 acres; <i>de minimis</i> impact finding recommended.

Skyline Pond	No Section 4(f) use.
Temple Springs Park	Direct use of 0.62 acres; <i>de minimis</i> impact finding recommended.

The recreational resources in the project study area are shown on Figure 1. The effects of the Red Hills Parkway project on the recreational resources under the jurisdiction of the City of St. George Leisure Services are described below.

**Section 4(f) Use of City of St. George Trails:** Construction of the Red Hills Parkway/Bluff Street interchange would require a permanent direct use of portions of the Highway 18, Snow Canyon, and Bluff Street trails. Approximately 540 feet of Highway 18 Trail, 90 feet of the Snow Canyon Trail, and 450 feet of the Bluff Street Trail would be incorporated into the right-of-way required to construct the proposed on- and off-ramps for the Bluff Street overpass. This area is shown in Figure 2. The Highway 18 Trail would be relocated west of the existing trail alignment and parallel to the proposed off-ramp to Snow Canyon Parkway, then connect to the existing Snow Canyon Trail. Approximately 68 feet of the existing Snow Canyon Trail would be reconstructed for the trail connection. The Bluff Street Trail would be relocated east of the existing trail alignment and proposed off-ramp to Red Hills Parkway. The Bluff Street Trail would connect to the proposed Red Hills Parkway Trail at this location. Trail access would be provided underneath the southern end of the proposed Bluff Street overpass, as shown in Figure 2. A detour for trail users would be provided during construction of the interchange to ensure uninterrupted use of the trails during construction.

**Section 4(f) Use of Dixie Red Hills Golf Course:** The Dixie Red Hills Golf Course is located more than 1,500 feet from Red Hills Parkway (see Figure 1). Implementation of the Build Alternative would not require a direct use of the golf course property.

**Section 4(f) Use of Brooks Pond Park:** There would be no direct use of land from the Brooks Pond Park property due to implementation of the Build Alternative. Realignment of a short section of the trail that exits Brooks Canyon and connects to the Owens Loop Trail may be required due to the placement of fill in that location. If realignment of the trail is necessary, the relocated section would be constructed prior to the placement of any fill to ensure uninterrupted use of the trail in this location.

**Section 4(f) Use of Pioneer Park:** Implementation of the Build Alternative would require the use of 1.7 acres of park property to facilitate widening the alignment, reconfiguring the main access to the park, and providing for a right-turn lane. The required park property is immediately adjacent to the alignment, and extends from approximately 250 feet west of the existing main entrance to the 600 East entrance to Skyline Pond. The existing entrance to the main parking area would be closed off with barriers, and approximately 200 feet of new road would be constructed to connect the main parking area to the existing loop road. Approximately 400 feet of the existing loop road would be utilized, as shown in Figure 3. The land located between the new road alignment and the new access road is included in the 1.7-acres of park property that would be required for the project. However, this area would remain undisturbed. The space available for parking would not change. The existing pavement at the entrance to the main parking area would be removed to facilitate reclaiming of the abandoned entrance area. Reconfiguration of access to Pioneer Park would help to alleviate safety concerns related to reduced sight distances for motorists entering and exiting the park. Construction of a center turn lane to access the park would eliminate vehicles that stop in travel lanes to turn left. It would also reduce the number of access points, which

would reduce turning movement conflicts. Safety would be improved for users accessing the park and vehicles traveling on Red Hills Parkway. Park access signage would also be provided.

A paved entrance to the Rotary parking area would be constructed, similar to the existing entrance to the main parking area. The parking area would not be paved and logs would be placed as barriers. The existing pedestrian underpass located in this parking area would be lengthened and regraded to make the underpass functional for trail users. The proposed Red Hills Parkway Trail would connect to the park via this underpass. This parking area would serve as the main access point or trailhead for the proposed trail.

**Section 4(f) Use of Skyline Pond:** There would be no direct use of land as a result of implementing the Build Alternative. A short retaining wall would be built between the pond property and the alignment that would maintain the property boundary and avoid any effects on the property.

**Section 4(f) Use of Temple Springs Park:** Implementation of the Build Alternative would require the direct use of 0.62 acre of Temple Springs Park property located immediately adjacent to Red Hills Parkway. The 0.62-acre strip of land is located along the existing road and is currently used for parking; this area would still be accessible for parking after construction. The Build Alternative includes plans for a retaining wall approximately 300 feet in length in the area immediately above the springs. Constructing the retaining wall would minimize the amount of fill material needed and minimize impacts to the springs, vegetation, bench, or bridge. Construction of the retaining wall is accounted for in the 0.62-acre direct use.

During preparation of the Section 4(f) evaluation, UDOT determined that pursuant to Section 6009 of SAFETEA-LU and the associated FHWA guidance dated December 13, 2005, the effects of the proposed project on the St. George trails, Pioneer Park, and Temple Springs Park appear to meet the impact criteria and requirements specified in Section 6009(a) of SAFETEA-LU for a de minimis impact finding. The de minimis impact criteria and associated determined requirements are those impacts that do not "adversely affect the activities, features and attributes" of the resource. UDOT is recommending that the Red Hills Parkway Project would not adversely affect the activities, features or attributes that qualify the St. George trails, Pioneer Park, and Temple Springs Park for protection under Section 4(f).

UDOT intends to recommend to FHWA that a Section 4(f) de minimis impact finding is appropriate for the St. George trails, Pioneer Park, and Temple Springs Park. Prior to making this recommendation to FHWA, UDOT is required to obtain written concurrence from the agency with jurisdiction over these resources. The purpose of this letter is to request St. George Leisure Service's concurrence with UDOT's assessment that implementation of the Red Hills Parkway Project would not have an adverse effect on the activities, features or attributes of the St. George trails, Pioneer Park, and Temple Springs Park. Your signature below will indicate the City of St. George's concurrence with this finding.

Additional requirements for a de minimis impact finding include providing the public an opportunity to review and comment on the effects of the proposed project on the Section 4(f) resource. Two public meetings have been held on the project and an additional public hearing is scheduled for later this year.

Once St. George Leisure Service's written concurrence has been received, UDOT will make the recommendation to FHWA. After the public has been afforded an opportunity to review and comment on the effects of the project on the St. George trails, Pioneer Park, and Temple Springs Park, FHWA may concur with UDOT's recommendation that a de minimis impact finding is appropriate.

If you have any questions or would like to discuss this further, please call me at 435-893-4714. I sincerely appreciate your assistance with this important matter, and look forward to working with you.

Sincerely,



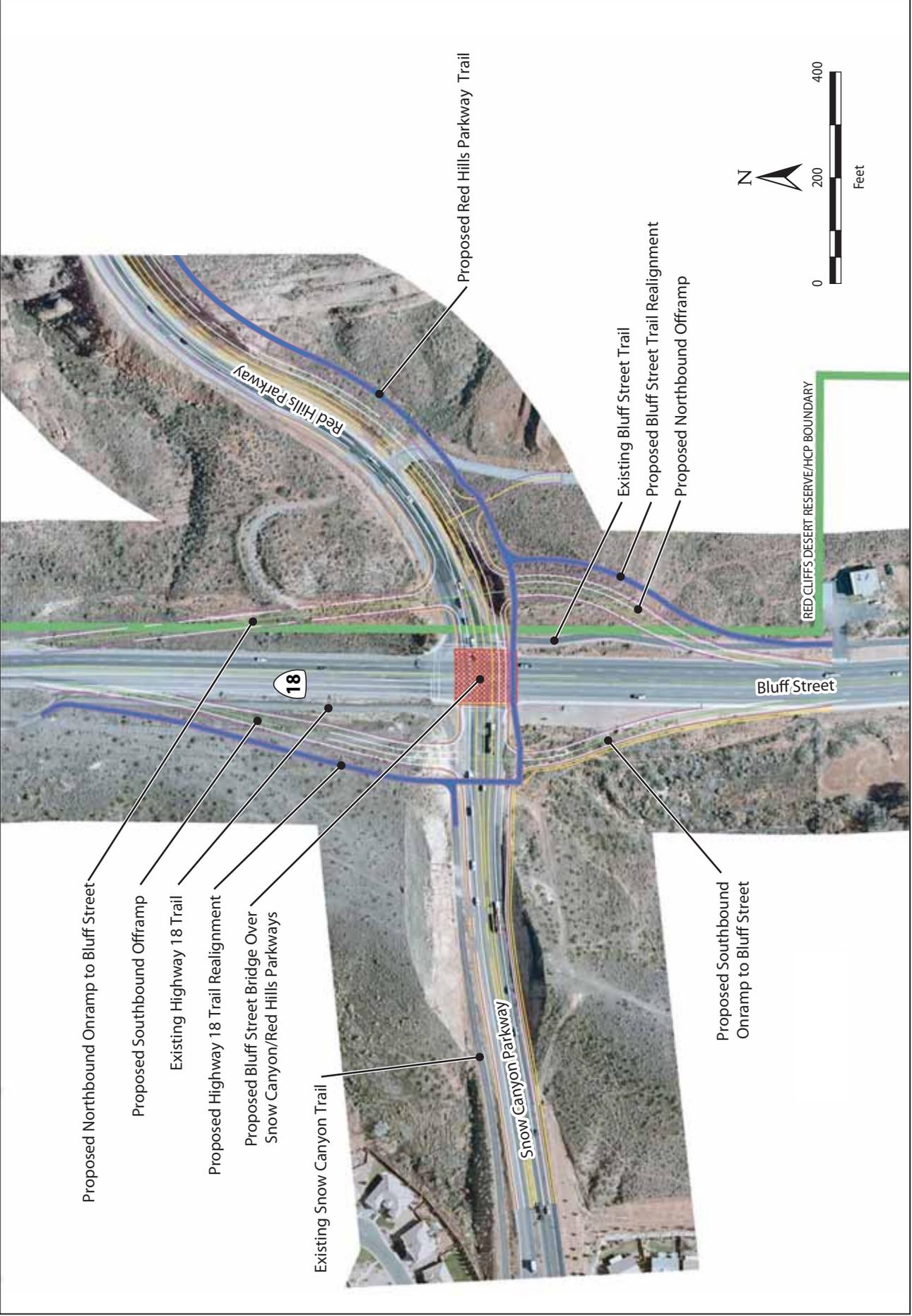
Randall Taylor  
Region 4 Environmental Engineer  
1345 South 350 West  
Richfield, UT 84701

Enclosures (3 figures)

Cc: Jim Snyder, Creamer and Noble Engineers  
Aron Baker, City of St. George  
Jennifer Bassett Hales, Jones & Stokes  
Clayton Wilson, UDOT Region 4 Project Manager  
Laurel Glidden, UDOT Region 4 NEPA/NHPA Specialist







**Figure 2**  
**Realignment of City of St. George Trails**





**Figure 3**  
**Impacts—Pioneer Park and Temple Springs Park**

