LEGACY
PARKWAY & PRESERVE

Denver & Rio Grande Corridor Evaluation

in support of the
Supplemental Environmental Impact Statement

Legacy Parkway
Technical Memorandum

December 2004

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1.0 Introduction

In September 2002, the U.S. Court of Appeals for the 10th Circuit issued its ruling in *Utahns for Better Transportation v. U.S. Department of Transportation* concerning the Legacy Parkway project. The Final Environmental Impact Statement (EIS) for the project had eliminated a regional highway corridor that followed the Denver & Rio Grande Railroad (D&RG) tracks. The Court's 2002 ruling found that the Final EIS was inadequate because it had eliminated the D&RG corridor based on unverified cost estimates (U.S. Court of Appeals 2002, 71). Moreover, the Court found that the U.S. Army Corps of Engineers (USACE) issued a Section 404(b) permit without enough information to determine whether the D&RG corridor was a practicable alternative under the Clean Water Act (U.S. Court of Appeals 2002, 72).

In addition—although the following two findings were not directed specifically at the elimination of the D&RG corridor—the Court found that the USACE acted arbitrarily and capriciously for failing to consider whether a narrower median was a practicable alternative and for failing to consider whether a right-of-way (ROW) without a future utility corridor or berm was practicable[1] (U.S. Court of Appeals 2002, 72).

At various times, the railroad corridors in the Legacy Parkway project area (the D&RG and Union Pacific Railroad) have been suggested for use as a roadway alignment to meet the transportation needs in the North Corridor. Proponents felt that such a roadway alignment would take advantage of the linear, underused railroad right-of-way.

In 1998, the Wasatch Front Regional Council (WFRC) completed the *Western Transportation Corridor Major Investment Study* (WFRC 1998), which considered, evaluated, and rejected a highway alignment using a portion of the D&RG corridor. In 2000, the D&RG regional corridor was analyzed in the Legacy Parkway Final EIS and was again found to be unreasonable.

Because of the Court's decision, the D&RG regional corridor from the Final EIS has been reconsidered in greater detail with particular attention to the limited deficiencies that the Court identified in the Final EIS administrative record. The following sections contain the results of the re-evaluation and, as a part of the Supplemental EIS, information has been updated where changes have occurred

[1] Even though this issue was raised for the reasonable alternatives only, because of the Court's questions regarding necessary and appropriate right-of-way, the lead agencies have directed the Utah Department of Transportation to re-examine the right-of-way needed on all alignments that were considered in the Final EIS. For more information, see the Legacy Parkway Technical Memorandum: Right-of-Way Issues (HDR 2004).

(including cost information for the other regional alignments considered in the Final EIS).

1.1 Court Ruling

The U.S. Court of Appeals for the 10th Circuit found that the elimination of the D&RG regional corridor in the Final EIS was based on insufficient information under both NEPA and the Clean Water Act. This section provides an overview of the Court's ruling and identifies the specific deficiencies found by the Court under NEPA and the Clean Water Act that will be addressed.

Deficiencies under NEPA. Regarding NEPA, the Court found the following deficiencies pertaining to the D&RG alignment:

- The lead agencies failed to follow their own regulations by not verifying the cost estimates used to eliminate the D&RG regional corridor and select the Great Salt Lake regional corridor[2] (U.S. Court of Appeals 2002, 14).

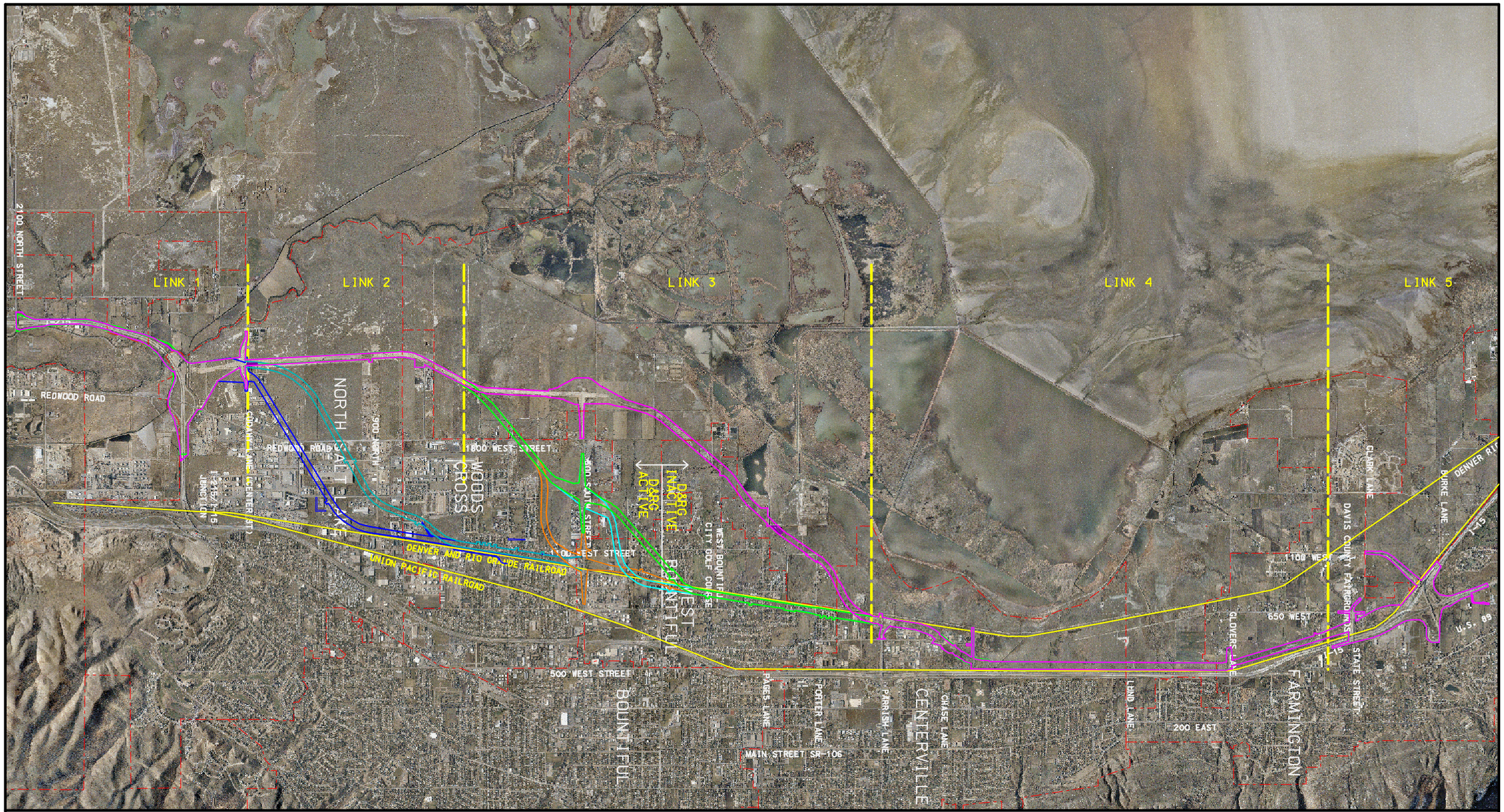
In response, the lead agencies directed the Utah Department of Transportation (UDOT) to update the cost estimates and document the cost-estimating methodology for all five regional corridors. The cost estimates and methodology documentation were then reviewed by lead agency staff, their independent consultants, and the cooperating agencies. To calculate the cost estimates, the Legacy Parkway project team re-examined the necessary right-of-way relative to the project's purpose and need, design standards from UDOT and the Federal Highway Administration (FHWA), and safety considerations. For more information, see the *Legacy Parkway Technical Memorandum: Right-of-Way Issues* (HDR 2004).

Deficiencies under the Clean Water Act. Regarding the Clean Water Act, the Court found the following deficiencies pertaining to the D&RG regional corridor:

- Similar to the deficiency identified regarding NEPA, the Court found that the USACE violated its own regulations by failing to verify the cost estimates provided by UDOT (U.S. Court of Appeals 2002, 60).
- The USACE's issuance of the Section 404 permit was deemed arbitrary and capricious because the evidence did not adequately address the impact on existing development.

[2] Even though this issue was raised for the D&RG regional corridor only, UDOT updated the information for all five regional corridors discussed in the Final EIS.

In response, the lead agencies conducted a thorough review of all information concerning the D&RG and railroad corridors. This review focused on the D&RG corridor. Since publication of the Final EIS, the Union Pacific Railroad corridor has been purchased by the Utah Transit Authority (UTA) for commuter rail. As part of this review, the lead agencies directed UDOT to further refine the D&RG regional corridor by identifying the right-of-way necessary to safely meet the transportation needs in the North Corridor and to create conceptual highway alignments within the D&RG regional corridor (see Figure 1-1, D&RG Conceptual Alignments). The intent of this analysis is to update the cost estimates, to document the cost-estimating methodology, and to quantify impacts.



LEGEND

- DRG1
- DRG2
- DRG3
- DRG4
- DRG5
- ALT E
- LINK DESIGNATION
- RAILROAD
- JURISDICTIONAL BOUNDARIES

0 1 2
KILOMETERS

0 0.5 1
MILES

W S N E

FIGURE 1-1

D&RG CONCEPTUAL ALIGNMENTS

LEGACY PARKWAY SUPPLEMENTAL EIS

1.2 Previous Analysis

This section summarizes previous efforts to evaluate a roadway along the D&RG right-of-way. This information is included to provide a historical context for the evaluation prior to the Supplemental EIS. As mentioned in Section 1.0, Introduction, two previous analyses were conducted for a roadway running along the D&RG tracks: one during the Major Investment Study and one during the EIS phase of the Legacy Parkway project. In both cases, a roadway along the D&RG was rejected.

1.2.1 Major Investment Study Analysis

In 1998, transportation alternatives were evaluated as part of the *Western Transportation Corridor Major Investment Study* (MIS) conducted by the WFRC, the metropolitan planning organization with jurisdiction over the area (WFRC 1998). Major Investment Studies were promoted by the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) to provide a focused analysis and evaluation of the mobility needs and related problems of a corridor or subarea within a region. One of the intents of an MIS is to streamline the decision-making process by creating continuity between the evaluations and decisions made during early regional planning and those made during the project-specific environmental review. Following the intent of the MIS process, UDOT built on the evaluation and recommendations from the 1998 MIS in pursuing the Legacy Parkway project.

During the MIS process, conceptual transportation solutions were identified and developed through public involvement and a search of local transportation plans. Viable alternatives were intended to satisfy the following conditions (WFRC 1998):

- Address the mobility problems in the study area and the purpose of and need for the project;
- Provide a match of the capacity of the proposed transportation improvement with the projected area travel demand;
- Have minimal or no major operational flaws;
- Have minimal or no major environmental impacts; and
- Balance costs with expected benefits.

MIS Alternatives

As part of the MIS, rail and roadway facilities were considered on more than a dozen alignments. Roadway facilities included collectors, arterials, parkways, expressways, and freeways (all of which included pedestrian and bicycle facilities) on rights-of-way between 60 and 90 m (200 and 300 ft) in width. Rail facilities included light rail, commuter rail, and freight rail. Transportation system management and a no-build alternative were also studied. Roadway alignments that approximated both the D&RG and the Great Salt Lake regional corridors were examined.[3]

As studied during the MIS, the D&RG roadway alignment would have begun at the interchange of Interstate 215 (I-215) and Interstate 80 (I-80), followed Redwood Road north, extended northeast to the D&RG right-of-way in Centerville, traversed along the D&RG right-of-way to the city of Roy, and then extended north to 12th Street in Weber County (WFRC 1998, 2-14).

The southern component of the MIS alternative that was titled the "West Roadway Alternative" approximates the Legacy Parkway alternative alignments studied in the Final EIS. Under this MIS alternative, a new parkway or freeway facility would be constructed starting at the 5600 West/I-80 interchange, traverse west of the power lines through Woods Cross, traverse west of and parallel to the D&RG right-of-way in Centerville, cross west of the power lines to Bluff Road, continue northwest, follow 4500 West in Davis County, then follow 5100 West in Weber County through the west side of Plain City, connecting to I-15 at the Hot Springs interchange. This alignment would have included a connection to I-215 in the vicinity of Redwood Road (WFRC 1998, 2-15).

MIS Community Input

The planning process followed for the Western Transportation Corridor MIS was cooperative and collaborative. To direct the process, the WFRC (which included locally elected officials) and a senior official from UDOT formed a steering committee. A number of public meetings and other public involvement activities were used to gather input on the alternatives. These activities were also used to help shape, evaluate, and temper the decision to have an alternative move beyond the initial screenings for further analysis.

The sentiment of the public and agency comments received was that building a roadway along the D&RG would cause too many impacts and too much community disruption. This comment from Mayor Mitchel from the Clinton City

[3] In addition to the D&RG and Great Salt Lake corridors, the MIS examined alignments that approximated the Antelope Island, Trans-Bay, and Farmington Bay alignments later examined in the Final EIS.

Council reflects the most widely expressed sentiment: “The abandoned D&RG lines would be a bad option for our city. That right-of-way should be reserved for a commuter rail system. If the expressway were pursued at that location, it would split our community in half. A lot of land acquisition would be required, much of that where new homes have been constructed” (Clinton City Council Meeting 6/25/96).

MIS Alternatives Screening

To evaluate alternatives, a multilevel screening process was used. Level I screening applied a number of broad criteria to screen out alternatives with obvious major flaws. Two alternatives that crossed over open waters of the Great Salt Lake were eliminated because they did not meet the project need, had high construction and maintenance costs, had substantial impacts to wildlife preserves, and had extensive impacts to Antelope Island State Park.[4] The remaining alternatives (including the Great Salt Lake and D&RG regional alternatives) were analyzed in a second-level screening process that applied more detailed criteria. In the Level II screening, the alternatives were evaluated against the criteria in Table 1-1.

Table 1-1. Western Transportation Corridor MIS Level II Screening Criteria

Category	Criteria
Purpose of and Need for the Project	• Existing and future mobility needs • Improve safety and emergency response
Operating Efficiencies	• Ease of construction • Major operational flaws
Environmental Benefits	• Major physical environmental impacts • Major social and economic environmental impacts
Costs Balance with Benefits	• Typical cost • Typical usage

Source: WFRC 1998, 2-16

[4] The MIS analysis also rejected the Antelope Island and Trans-Bay alternatives in the Level I screening and the Farmington Bay alternative in the Level II screening (WFRC 1998, 2-11). These alternatives were reanalyzed and eliminated from detailed analysis in the Legacy Parkway Final EIS.

MIS Screening Results

The MIS screening analysis resulted in the D&RG roadway alternative's being eliminated for the following reasons (WFRC 1998, Table 2.2-2):

- "Substantial public opposition.
- Would require substantial displacements of residences.
- Does not provide a western alternative to I-15.
- It would eliminate a potential commuter rail corridor."

Through an extensive public and agency involvement process, a general consensus formed around a locally preferred alternative. The locally preferred alternative included constructing a roadway, preserving the D&RG corridor for a commuter rail line or trail, and increasing commuter bus service. The southern component of the locally preferred roadway alignment lies within the same corridor as the Legacy Parkway alternative alignments. The locally preferred alternative was endorsed by the Western Transportation Corridor Steering Committee, which was made up of locally elected officials and representatives from UDOT and FHWA, to be advanced within an EIS. This decision resulted in the Great Salt Lake regional corridor being the preferred location for a highway and subsequently the Legacy Parkway EIS process, which was used to select the Preferred Alternative.

1.2.2 Previous Final EIS Analysis

The section briefly summarizes the alternatives considered and rejected in the Final EIS. To meet the overall needs of the traveling public, Utah's state and local officials developed a multi-tiered approach called the Shared Solution. The Shared Solution includes improving and expanding I-15, augmenting existing arterial streets, adding transportation management strategies, enhancing mass transit, and constructing a new facility (the Legacy Parkway). UDOT initiated the EIS process to begin development of the Legacy Parkway in 1996.

As proposed in the Final EIS, the Legacy Parkway is essentially the southern component of the corridor studied in the MIS—between roughly 2100 North in North Salt Lake and the US 89/I-15 interchange in Farmington, subsequently termed the North Corridor. To build on the MIS, the Final EIS evaluated five "regional alignments" (which are really broad corridors) examined originally in the MIS (see Figure 1-2, Final EIS Regional Corridors).

Based on the MIS analysis and additional analysis and public involvement during the Final EIS, the federal agencies rejected four of the corridors as unreasonable and impracticable and selected one corridor (the Great Salt Lake corridor) as

reasonable. Within the Great Salt Lake corridor, UDOT developed four specific alignments and analyzed those alignments in detail during the EIS process.

Final EIS Regional Corridors

The Final EIS initially evaluated the following five regional corridors: Antelope Island, Trans-Bay, Railroad (either the D&RG Railroad or Union Pacific Railroad), Great Salt Lake, and Farmington Bay. Figure 1-2, Final EIS Regional Corridors, shows the five regional corridors. The following descriptions of the regional corridors are taken from the Final EIS (2-25):

Antelope Island. The Antelope Island alignment would consist of a causeway from north of I-80 at 5600 West in Salt Lake City to Antelope Island, a new highway the entire length of the island, and a causeway from Antelope Island to west of I-15 in the vicinity of Kaysville.

Trans-Bay. The Trans-Bay alignment would consist of a new highway connection from I-80 at 5600 West in Salt Lake City to Farmington Bay, a causeway or bridge across Farmington Bay, and a new highway to the connection with I-15 and US 89 near Farmington.

Railroad. This alignment would generally follow the D&RG or Union Pacific Railroad tracks and would parallel I-15 throughout the North Corridor. This alignment would follow I-80 eastward from 5600 West and I-215 northward to the western side of either railroad and would require construction of a new roadway from I-80 northward to I-15 and US 89 near Farmington.

Great Salt Lake (GSL). This alignment consists of a new highway generally situated between the developed areas west of I-15 and the floodplain of the Great Salt Lake. It runs from I-80 at 5600 West to the Farmington/Kaysville area, where it would connect to I-15 and US 89.

Farmington Bay. This alignment would be similar to the Great Salt Lake alignment, except that it would be farther west and cross Farmington Bay on a causeway or bridge between West Bountiful and Farmington before turning east to connect to I-15.

LEGEND

- Antelope Island Alignment
- Trans-Bay Alignment
- Farmington Bay Alignment
- Great Salt Lake Alignment
- Railroad Alignment
- Jurisdiction Boundary
- Secondary Road
- Major Road
- Rail

Source: Utah AGRC - 1997, HDR - 1999 File: /home2/projects/utah/westdavis/aml/b-chap2maps.aml Plotted: 12 Jun 00

0 1 2 3 4
Kilometers

0 0.5 1 1.5 2
Miles

W S N E

UDOT GOING THE EXTRA MILE

HDR HDR Engineering, Inc.

Figure 1-2.
Final EIS Regional Corridors.

Final EIS Community Input

The D&RG and other corridors were addressed in the public involvement and agency coordination process for the Legacy Parkway Final EIS. This process included the following public involvement activities:

- A Notice of Intent (NOI)
- Agency coordination meetings with the U.S. Environmental Protection Agency (EPA), USACE, and FHWA
- Six public meetings
- A public hearing/open house on October 28, 1998, to formally release the Draft EIS to the public, which nearly 700 people attended
- Project Advisory Committee (PAC) meetings
- City and county meetings
- Environmental Task Force meetings with members of the Friends of the Great Salt Lake; Future Moves ASSIST, Inc.; the Great Salt Lake Audubon Society; the League of Women Voters; the Sierra Club–Ogden Group; and the Sierra Club, Utah Chapter
- A Transportation Information Center, which nearly 200 people visited
- Project representation at eight transportation fairs in Davis and Salt Lake Counties
- Eight project newsletters and three public meeting reports to nearly 4,000 members of the project mailing list.
- A Web site that received 20,000 hits between November 1997 and November 1999

Final EIS Regional Corridor Screening

The Final EIS evaluated the five regional corridors based on costs, wetland impacts, and impacts to existing development. For this initial screening, the project team used a planning-level approach to the evaluation that assumed a 100-m (328-ft) development corridor within each regional corridor. In each case, the alternatives were assumed to include a four-lane freeway. Costs were based on a 100-m right-of-way and generalized bridge requirements (Final EIS, 2-26). Aerial photographs, wetland inventory maps, and land development maps were used to position each corridor and identify potential impacts.

Final EIS Screening Results

Table 1-2 presents the screening criteria and evaluation results used in the Final EIS to evaluate and select a regional corridor. This table can be found in the Final EIS as Table 2-10 on page 2-26.

Table 1-2. Results of the Regional Corridor Screening in the Final EIS

Regional Corridor	Estimated Cost (millions)	Impact on Wetlands	Impact on Existing Land Development
Antelope Island	$1,400	High	Low
Trans-Bay	$1,460	High	Low
Railroad			
Denver & Rio Grande	$460	Low	High
Union Pacific	$1,900	Low	High
Great Salt Lake	$300	Medium	Medium
Farmington Bay	$520	High	Low

Source: Final EIS, 2-26

Based on the analysis in the Final EIS, the federal agencies selected the Great Salt Lake regional corridor for detailed analysis because it balanced impacts on environmental resources (wetlands) with impacts on local communities and businesses (development) while having a reasonable estimated cost. The other corridors, including the D&RG, were eliminated from further consideration because of high environmental impacts (on either wetlands or development) and high costs.

After selecting the Great Salt Lake regional corridor, UDOT developed four specific alignment alternatives within the corridor for detailed study and presentation in the Final EIS. These alternatives were labeled Alternative A, Alternative B, Alternative C, and the Preferred Alternative.

2.0 D&RG Corridor Reevaluation

For the initial screening in the Final EIS, a planning-level approach was used that assumed a four-lane freeway within a 100-m (328-ft) development corridor. Costs were based on a 100-m right-of-way width and generalized bridge requirements (see page 2-26 of the Final EIS). To ensure that all relevant information is provided, the cost estimates for all five regional corridors discussed in the Final EIS have been updated and are provided in Table 2-1.

Table 2-1. Regional Corridor Cost Estimates

Regional Corridor	2004 Cost Estimate (millions)[a]
Great Salt Lake	$439
Denver & Rio Grande	$589
Farmington Bay	$830
Antelope Island	$1,525
Union Pacific	$1,702
Trans-Bay	$1,868

The cost estimate as of the contract date for the Legacy Parkway (January 2001) was $451 million.

[a] Includes quantity estimates, wetland mitigation, displacements and relocations, and ROW. Excludes contractor pre-award engineering, incentives, and stipends.

The increase in the regional alignment cost estimates can be attributed primarily to inflation between 2000 and 2004, refining the cost-estimating assumptions, and applying a consistent cost-estimating methodology to all regional alignments. More detailed information on updated regional cost estimates and a comparison between the estimated cost of Great Salt Lake and D&RG regional corridors is provided in Attachment 1 (Section 3.3 and Appendix A).

Cost estimates were also developed for conceptual alignments within the D&RG regional corridor and for Alternative E, which was used to represent an alignment with the Great Salt Lake corridor. See Section 3.3, D&RG Alignment-Specific Costs, which follows the description of the conceptual alignments, and Attachment 1 (Section 6.1 and Appendix C) for more detailed information.

To re-evaluate the impacts that could be expected from a highway in the D&RG regional corridor and to ensure that a reasonable range of feasible alternatives was considered, conceptual highway alignments were developed in the corridor. Section 2.1, Conceptual Alignments, and Section 2.2, D&RG Alternatives Development and Assumptions, describe the rationale and assumptions for creating the conceptual alignments for the D&RG corridor which are described in Section 2.3, Description of D&RG Conceptual Alignments.

2.1 Conceptual Alignments

In the Final EIS, UDOT used a corridor approach, based in large part on the work done for the MIS, to estimate costs and impacts at a planning level to eliminate corridors that were so costly that they are unreasonable under NEPA.

For the Supplemental EIS, the lead agencies reviewed updated information on the D&RG regional corridor, as well as on alternative conceptual alignments placed within the D&RG regional corridor. This review included evaluation of the D&RG conceptual alignments based on various alternative ROW widths. It also included development of detailed information to document the impacts to wetlands and to existing development. Section 3.3, D&RG Alignment Specific Costs, presents refined cost information based on the right-of-way necessary for the D&RG conceptual alignments. Section 3.0, D&RG Conceptual Alignments Evaluation, presents detailed impact information relative to D&RG conceptual alignments.

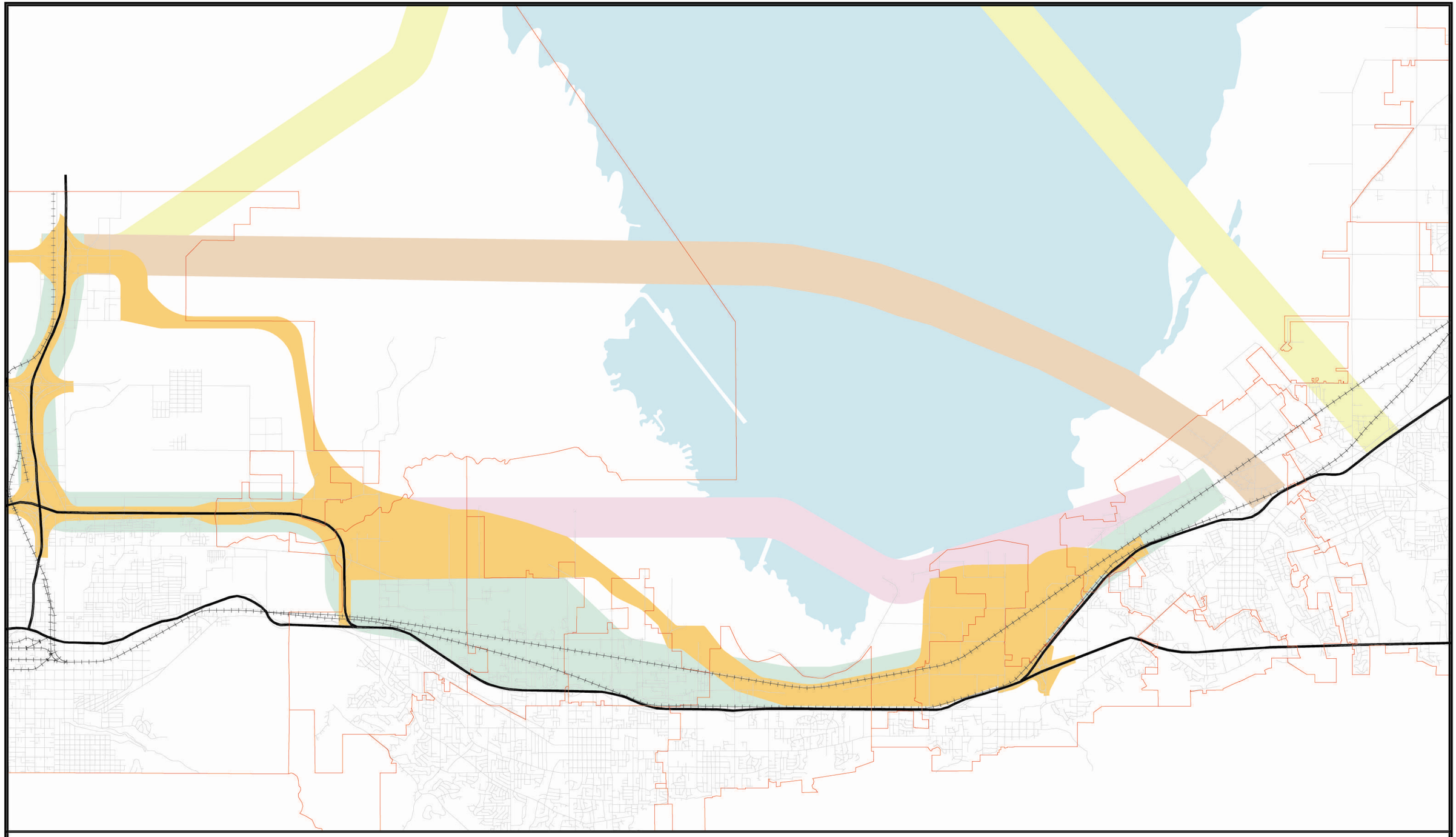
Agencies do not normally develop concept alignments with this level of detail to evaluate regional corridors at the planning stage. However, because of public interest, the evaluation in this section employs a higher level of detail for the D&RG corridor than what was developed for the other rejected regional corridors.

2.2 D&RG Alternatives Development and Assumptions

To evaluate the reasonableness or practicability of a highway within the D&RG corridor, UDOT developed five specific conceptual alignments within the corridor. These conceptual alignments are shown above in Figure 1-1, D&RG Conceptual Alignments. These alignments represent attempts to find a technically feasible, reasonable, and practicable alignment through the D&RG corridor that avoids or minimizes wetlands and development impacts.

To accommodate the D&RG conceptual alignments, the D&RG regional corridor depicted in the Final EIS needed to be expanded for the Supplemental EIS evaluation. Figure 1-2 above, Final EIS Regional Corridors, shows the original D&RG regional corridor. The corridor was expanded to the west through North Salt Lake, Woods Cross, and West Bountiful to meet the eastern boundary of the Great Salt Lake regional corridor. See Figure 2-1, Supplemental EIS Regional Corridors, for the expanded D&RG regional corridor.

During project scoping, the public was asked to list constraints and provide concepts for highway alignment options in the D&RG regional corridor. Conceptual D&RG alignments were developed based in part on the comments received at the focus group meeting on April 28, 2003. For additional information see Attachment 1 (Section 4.0 and Appendix B).



LEGEND

- Antelope Island Alignment
- Trans-Bay Alignment
- Farmington Bay Alignment
- Great Salt Lake Alignment
- Railroad Alignment
- Jurisdiction Boundary
- Secondary Road
- Major Road
- Rail

Source: Utah AGRC - 1997, HDR - 1999 File: .../projects/utah/westdavis/aml/b-chap2maps-re.aml Plotted: 29 Oct 03

0 1 2 3 4
Kilometers

0 0.5 1 1.5 2
Miles

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HDR HDR Engineering, Inc.

Figure 2-1.
Supplemental EIS Regional Corridors.

2.2.1 Southern Terminus Location

If a D&RG alignment were to follow a route straight down the D&RG railroad right-of-way, it would tie into I-215 at the I-15 interchange near where the D&RG right-of-way crosses I-215. UDOT found that an interchange where the D&RG tracks meet I-215 would be impracticable and unreasonable. This option was eliminated from further consideration because of its impacts, poor functionality, and physical constraints, and because an interchange at this location would not meet the purpose of and need for the project. More specifically, the interchange was eliminated for the following reasons:

- An interchange at this location would not meet the project's purpose of providing an alternate route through the North Corridor.
- A three-level bridging system would be needed to accommodate all the highway-to-highway movements. Because the bridge would need to pass over active Union Pacific and D&RG rail traffic, the bridge would need to be taller than one that passes over highway traffic only. For these reasons, an interchange at this location would be an extremely expensive solution and would require a considerable amount of physical space.
- Placing the interchange at this location would require cutting the mountainside to provide additional room to accommodate all the necessary traffic movements, which would be to and from I-15, I-215, and the Legacy Parkway.
- Directly north and west of the existing interchange is Hatch Park, which is a publicly owned recreation facility and is therefore a protected Section 4(f) property. This 4(f) property limits the area available for an interchange, and avoiding the property would be infeasible.
- Two oil refineries are located north and west of the existing I-15/I-215 interchange, and these refineries would need to be relocated. The estimated cost of relocating an oil refinery is about $500 million.[5] The locations of these refineries put both physical and financial constraints on an interchange at this location.
- The costs required to maintain existing traffic flow during I-15 reconstruction are anticipated to be extraordinarily high when considering both construction costs and commuter delays. See the *Legacy Parkway Technical Memorandum: Sequencing of the North*

[5] The estimated cost was from the *Marshall and Swift Valuation* 2003. This is a nationwide, industry standard handbook used by the UDOT right-of-way division to determine estimates for affecting certain types of businesses.

Corridor Shared Solution (HDR 2004). A benefit of the Legacy Parkway with an interchange farther west is that it would provide an alternate route while I-15 is being reconstructed.

2.2.2 Conceptual Alignment Criteria

As mentioned above, because the south interchange for a D&RG alignment could not be located where the D&RG tracks actually pass under I-215, the D&RG conceptual alignments must use the same southern terminus with I-215 as the Legacy Parkway Final EIS alternatives. From the southern interchange, UDOT explored alignments that cut to the west toward the D&RG right-of-way at varying distances north of Center Street.

The following criteria and methodology were used to develop D&RG conceptual alignments:

- Avoid properties that are eligible for the National Register of Historic Places (NRHP). The existing D&RG railroad corridor is eligible for the NRHP. Due to this fact, the D&RG alignments cannot lie within the D&RG right-of-way but must be placed adjacent to the right-of-way (except at rail crossings, where the alignments could lie within the right-of-way). The D&RG is also protected as a Section 4(f) property due to its eligibility as an NRHP historic resource.
- Avoid the most densely developed residential and commercial areas to ensure that the impacts on existing development within the corridor are not overstated.
- Avoid direct impacts that would require relocating an oil refinery. UDOT assumed that the impacts from taking an oil refinery would make the alignment unreasonable and impracticable because of the high cost of relocation and because the site would likely require extensive cleanup of hazardous materials.
- Avoid properties that would likely be subject to Section 4(f) of the U.S. Department of Transportation Act of 1966,[6] such as the Lakeside Golf Course (also called the West Bountiful golf course), which is a publicly owned recreation facility. This facility can be seen below in Figure 2-2, D&RG Existing Development. As shown in the figure, D&RG conceptual alignments DRG1 and DRG2 traverse the farthest south before cutting west to link back up with I-215. These alignments avoid

[6] Section 4(f) of the U.S. Department of Transportation Act of 1966 requires the selection of an alternative that avoids designated public parks, recreation areas, wildlife refuges, and historic sites if a prudent and feasible alternative exists.

all identified parks (Hatch, Hogan Memorial, Clover Dale, Mills, and West Bountiful City) by going around them on the south side. D&RG alignments DRG3, DRG4, and DRG5 traverse east of the Lakeside Golf Course. Any alignments that would traverse northeast on the north side of Lakeside Golf Course would essentially be located in the Great Salt Lake regional corridor (Alternative E). See Section 2.3, Description of D&RG Conceptual Alignments, for a description of these alignments.

- Determine the right-of-way width for the conceptual alignments. The standard right-of-way width for the D&RG conceptual alignments is 95 m (312 ft). A right-of-way width of 80 m (264 ft) is used to reduce impacts in areas with wetlands or existing development. Therefore, the right-of-way width varies between 95 and 80 m (312 and 264 ft). Within the right-of-way, the highway "footprint" could also vary depending on the height of the roadway embankment and location of the trail. This varying width is referred to as the "variable footprint." UDOT used the variable footprint to determine impacts of the alternative alignments to wetlands and existing development. For more information, see the *Legacy Parkway Technical Memorandum: Right-of-Way Issues* (HDR 2004).

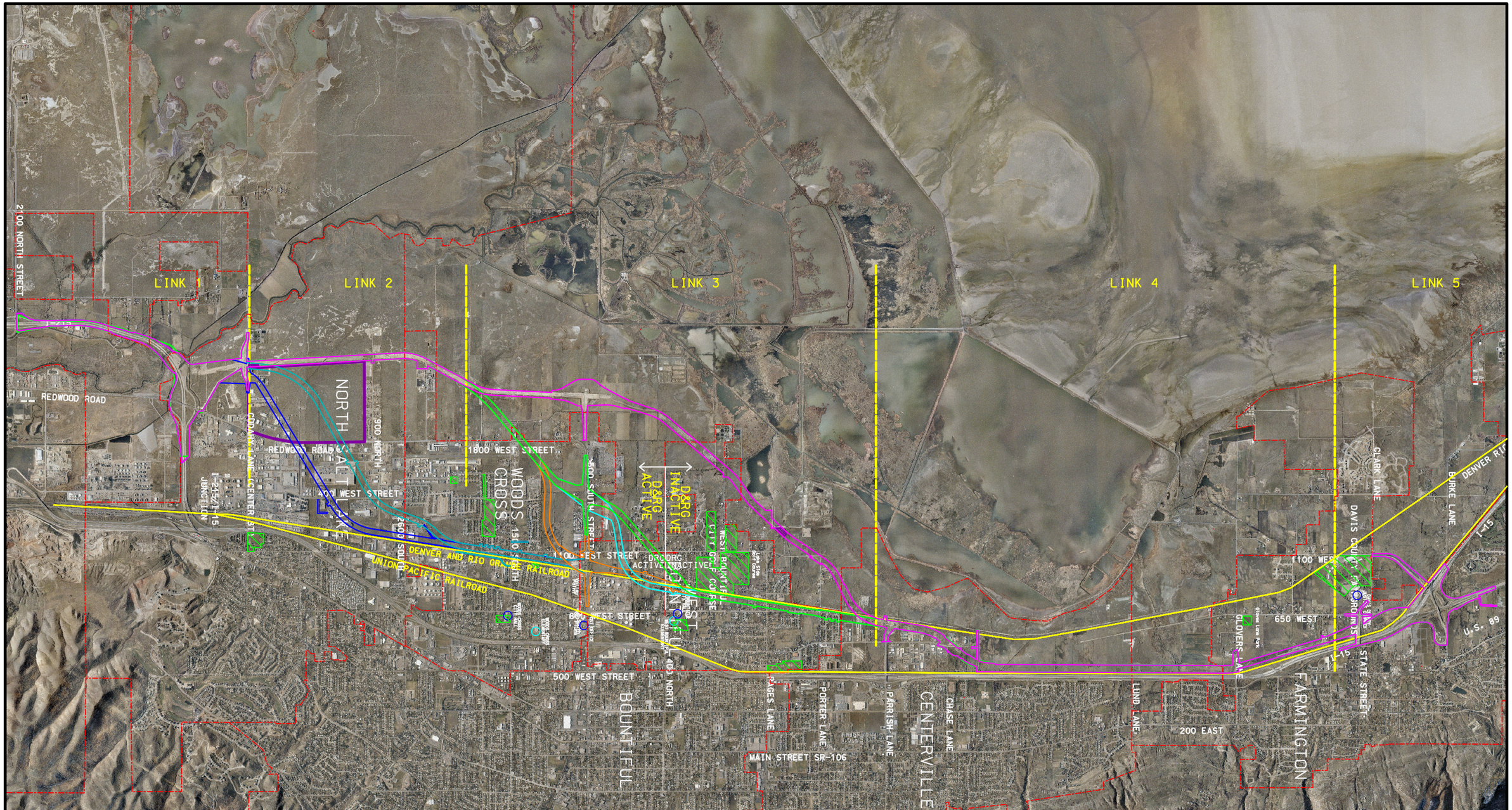
- Follow the Alternative E alignment from about Parrish Lane north to the northern project terminus. Through this portion of the study area, a relatively narrow strip of land between Farmington Bay and the existing developments on the foothills of the Wasatch Mountains is the only land corridor available for a highway alignment west of I-15. In this area, the Great Salt Lake and Railroad regional corridors overlap and the previous environmental analysis in the Final EIS found that the Alternative E alignment was the least environmentally damaging practicable alternative.

- Avoid active rail lines. The rail lines considered in the Final EIS and Supplemental EIS include those that are actively being used. The D&RG rail line is still active from the southern end of the North Corridor to 400 North in West Bountiful and provides a freight transportation link to the petroleum refineries in North Salt Lake, Woods Cross, and West Bountiful. UDOT assumed that taking this active rail line would require relocating it to continue to serve these industrial users. Therefore, in active areas, the roadway was located alongside the rail right-of-way to avoid relocating an active rail corridor. The rail right-of-way through this area averages only 18.3 to 30.5 m (60 to 100 ft) wide. If an alignment were to use the railroad right-of-way, UDOT would still need to purchase

an additional 48.8 to 76.8 m (160 to 252 ft) of right-of-way to accommodate a roadway within the rail corridor.

2.2.3 Northern Terminus Location

The Final EIS examined four locations for a northern terminus. The locations and rationale behind the selection can be found on page 2-24 of the Final EIS. Because the D&RG conceptual alignments are the same as Alternative E in this area, the D&RG conceptual alignments would also use the same northern terminus as the Final EIS Preferred Alternative. This terminus would allow a system-to-system connection between I-15, US 89, and the proposed alternative at the north end.



LEGEND

- DRG1
- DRG2
- DRG3
- DRG4
- DRG5
- ALT E
- LINK DESIGNATION
- RAILROAD
- JURISDICTIONAL BOUNDARIES
- GOVERNMENT FACILITY
- PUBLIC FACILITY
- PARK
- GOLF COURSE
- FOXBORO

0 1 2
KILOMETERS
0 0.5 1
MILES

N W S E

Figure 2-2

D&RG EXISTING DEVELOPMENT

Legacy Parkway Supplemental EIS

2.3 Description of D&RG Conceptual Alignments

All five D&RG conceptual alignments north of Parrish Lane, through Centerville and Farmington (Parrish Lane to I-15/US 89), would follow the same alignment as the Supplemental EIS Alternative E. Given the locations of the northern and southern termini and the nature of the corridor, many parts of the five D&RG conceptual alignments follow the same route as Alternative E. To help identify where the impacts occur and the differences between the conceptual alignments, the study area was divided into five sub-areas, or "links."

As described in Section 2.4, Formulation of Alternatives to Be Evaluated in Detail, of the Final EIS, a similar process was conducted to establish the proposed alternative alignments for analysis in the Legacy Parkway EIS. Information for the various alignments is presented within each link to allow a more detailed comparison. See Figure 1-1, D&RG Conceptual Alignments, and Figure 2-2, D&RG Existing Development.

- **Link 1** encompasses the southern interchange north through and including Center Street. All five of the D&RG conceptual alignments and Alternative E are essentially identical in Link 1.
- **Link 2** covers North Salt Lake and about half of Woods Cross. The boundary separating Link 2 from Link 3 was specifically drawn to be located where conceptual alignments DRG3, DRG4, and DRG5 diverge from the Alternative E alignment.
- **Link 3** extends from the north end of Link 2 to just south of Parrish Lane in Centerville. It was specifically drawn to highlight the segments where all the D&RG conceptual alignments differ from the Alternative E alignment.
- **Link 4** goes through Centerville to just south of State Street in Farmington. All the D&RG conceptual alignments are identical in Link 4.
- **Link 5** encompasses the northern interchange. All the D&RG conceptual alignments are identical in Link 5.

In the northern part of the study area (Links 4 and 5), the Great Salt Lake and D&RG regional corridors are the same. See Figure 1-2, Final EIS Regional Corridors. Farmington Bay and the Great Salt Lake are located just west of Alternative E. As mentioned in Section 2.2.2, Conceptual Alignment Criteria, most of this area is covered with wetlands, and the previous environmental analysis in the Final EIS found that the Preferred Alternative (Alternative E for

the Supplemental EIS) alignment was the least environmentally damaging practicable alternative within the overlapping Great Salt Lake and D&RG regional corridors.

Except at rail crossings, none of the D&RG conceptual alignments would actually lie within the D&RG right-of-way. South of 400 North, the rail line is active and the conceptual alignments parallel the tracks on the west side. North of 400 North, the conceptual alignments cross the tracks to avoid the Lakeside Golf Course, a Section 4(f) property. DRG1 and DRG2 follow the tracks for the longest length—from North Salt Lake to Parrish Lane in Centerville. DRG3, DRG4, and DRG5 follow the tracks through West Bountiful and Centerville only.

The five D&RG conceptual alignments and the locations where they would vary from Alternative E are described below, from south to north.

- **DRG1.** From the southern interchange at I-215, DRG1 runs north past Center Street and northeast to cross Redwood Road at 200 North. This alignment continues northeast to the D&RG tracks, where it runs along the west side of the D&RG tracks to avoid refineries and the active portions of the D&RG rail line that extend north to 400 North. At 400 North, it crosses the tracks to avoid the Lakeside Golf Course—a Section 4(f) property—and runs parallel to the east side of the tracks where it meets Alternative E and follows the same alignment through the remaining portion of the study area. DRG1 follows the D&RG right-of-way for the greatest distance.
- **DRG2.** From the southern interchange at I-215, DRG2 runs north past Center Street then northeast to cross Redwood Road between 200 North and 900 North (farther north than DRG1), continuing northeast until it intersects with 2600 North. At 2600 North, the alignment turns north and travels along the west side of the D&RG tracks. Like DRG1, this alignment runs on the west side of the D&RG tracks to 400 North, then crosses the tracks to avoid the Lakeside Golf Course and parallels the tracks on the east side where it meets Alternative E and follows the same alignment.
- **DRG3.** DRG3 follows Alternative E from the southern interchange at I-215 through North Salt Lake (Link 2) into Woods Cross. The alignment diverges from the Alternative E alignment just south of 1500 South in Woods Cross (Link 3) and runs east toward the D&RG rail line, then north toward an interchange at 500 South. This alignment follows along the west side of the D&RG tracks to 400 North before crossing the tracks on the east side to avoid the Lakeside Golf Course. This alignment then

turns north to parallel the D&RG tracks on the east side where it meets Alternative E and follows the same alignment.

- **DRG4.** DRG4 is identical to DRG3 through Link 2, where it crosses into Woods Cross. The alignment diverges from Alternative E just south of 1500 South in Woods Cross and continues northeast to an interchange at 500 South (on a more westerly alignment than DRG3), before turning to head east to intersect the D&RG tracks. This alignment then turns north to parallel the D&RG tracks on the east side where it meets Alternative E and follows the same alignment.
- **DRG5.** DRG5 follows the same alignment as DRG4 to the 500 South interchange. Unlike DRG4, this alignment continues northeast to intersect the D&RG tracks north of 400 North. This alignment then turns north just past where the D&RG tracks become inactive, but still avoids impacting the Lakeside Golf Course. The alignment parallels the D&RG tracks on the east where it meets Alternative E and follows the same alignment.

3.0 D&RG Conceptual Alignments Evaluation

The following sections evaluate the five D&RG conceptual alignments. Using the same criteria as used in the Final EIS, UDOT evaluated the alignments according to the following:

- Impacts to existing development, which include:
  - Relocation impacts (residential, business, and utilities)
  - Impacts on community cohesion, including impacts to schools and churches
  - Impacts on travel patterns, accessibility, and walkability
  - Noise and visual impacts
  - Impacts on Section 4(f) and historic properties
  - Impacts on environmental justice populations
- Impacts to wetlands
- Costs

UDOT evaluated the conceptual alignments, and the findings of this evaluation are presented on two levels. First, each of the five D&RG conceptual alignments was evaluated in its entirety—from terminus to terminus—and compared against the Supplemental EIS Alternative E in its entirety. Second, because the D&RG alignments and Alternative E are the same through much of the North Corridor, each alignment was evaluated link by link to compare their similarities and differences.

For the purposes of evaluating impacts associated with the D&RG conceptual alignments, a variable right-of-way width ("footprint") was used. For detailed information regarding the right-of-way width, see the findings in the *Legacy Parkway Technical Memorandum: Right-of-Way Issues* (HDR 2004). For each alignment, the right-of-way width was determined on a parcel-by-parcel basis. In areas where there were no wetlands or development, the right-of-way width used was 95 m (312 ft). In areas of existing development or wetlands, the right-of-way and/or the highway footprint was narrowed to 80 m (264 ft) to minimize impacts.

As an example of this variable footprint, UDOT might have reasons to purchase 95 m (312 ft) or more of right-of-way but impact only about 80 m (264 ft), or a width equal to the highway footprint. The highway footprint depends on the required height of the roadway in any specific location (for example, at an interchange or street crossing) and on the resulting height of the roadway embankment. Also, an alignment might impact a property such that the non-impacted portion of the parcel would be "landlocked" (not accessible by road). In this situation, the entire parcel would have to be purchased. The result of this procedure is a "variable width" right-of-way and/or footprint. This variable width

was used to determine the impacts and costs for each D&RG conceptual alignment.

3.1 Impacts to Existing Development

In the Final EIS, the D&RG regional corridor was rejected due in part to the "high impact on existing land development." This section documents the impacts to existing development from the D&RG conceptual alignments. All of the numbers and analysis in this section are based on the refined D&RG conceptual alignments and reflect a more detailed level of analysis than what was conducted for the Final EIS.

"Impacts to existing development" essentially means impacts to the built environment, which in turn means an impact on people, their communities, utilities, and their public and social institutions. This section summarizes community concerns about the project's impacts on the built environment, analyzes the numbers and types of buildings that would need to be taken, and discusses the effects of relocations on the surrounding cities and neighborhoods.

3.1.1 Public Sentiment

In addition to the public involvement conducted for the MIS and original EIS, a formal scoping process for the Supplemental EIS was also conducted. This was not required under NEPA, but was done to ensure complete public involvement in the environmental process. The scoping process for the Supplemental EIS began with the publication of the Notice of Intent (NOI) in the *Federal Register* on April 1, 2003, and ended on June 1, 2003. A full list of the public involvement activities and the comments received is included in the Supplemental EIS.

Through these public involvement activities, the communities in the study area identified specific community impacts associated with alignments in the D&RG regional corridor. See Appendix B of Attachment 1. The communities did not support building the Legacy Parkway along any alignment in the D&RG regional corridor because of the following impacts:

- Severe residential and business displacements
- Inconsistency with general plans
- Loss of tax base
- Loss of community cohesion and quality of life
- Visual and noise impacts
- Negative impacts on travel patterns and accessibility (longer trips for emergency vehicles to access existing development west of the DR&G alignments as well as longer trips for daily activities)

In particular, communities were concerned that a major new roadway in the D&RG corridor would create a physical and social barrier in the area that would sever neighborhoods and communities west of the alignments and negatively affect community cohesion. Members of the community stated that their cities had already experienced a loss of community cohesion from the placement of I-15 and the Union Pacific Railroad tracks and did not want further social impacts from an additional barrier on neighborhoods that had grown since then.

Community residents stated that the impacts associated with splitting neighborhoods or cities are not fully accounted for in the costs of relocating homes and businesses because the impact of splitting communities falls on those who remain rather than on those who are relocated. Section 5.6 of Attachment 1 provides additional details on the impacts of specific D&RG conceptual alignments. Based on these community concerns, UDOT conducted an analysis to more accurately quantify these community impacts. More information on social impacts and community cohesion is presented below.

3.1.2 Relocations

Table 3-1 below identifies relocation impacts on residences, businesses, and major utilities associated with each of the D&RG conceptual alignments. Table 3-1 groups the impacts by the municipalities that would be most impacted by the D&RG alignments. Impacts to the two other municipalities in the study area (Centerville and Farmington) would be the same for the D&RG alignments and Alternative E. Buildings within an alignment's right-of-way were included in the calculations of the number of relocations. Relocation impacts were determined using aerial imagery, Davis County parcel information, tax records, and field surveys to distinguish between residential and industrial/business structures and between a main building and an ancillary feature such as a barn or shed. A full description of the methodology for determining relocation impacts is presented in Section 5.4 of Attachment 1.

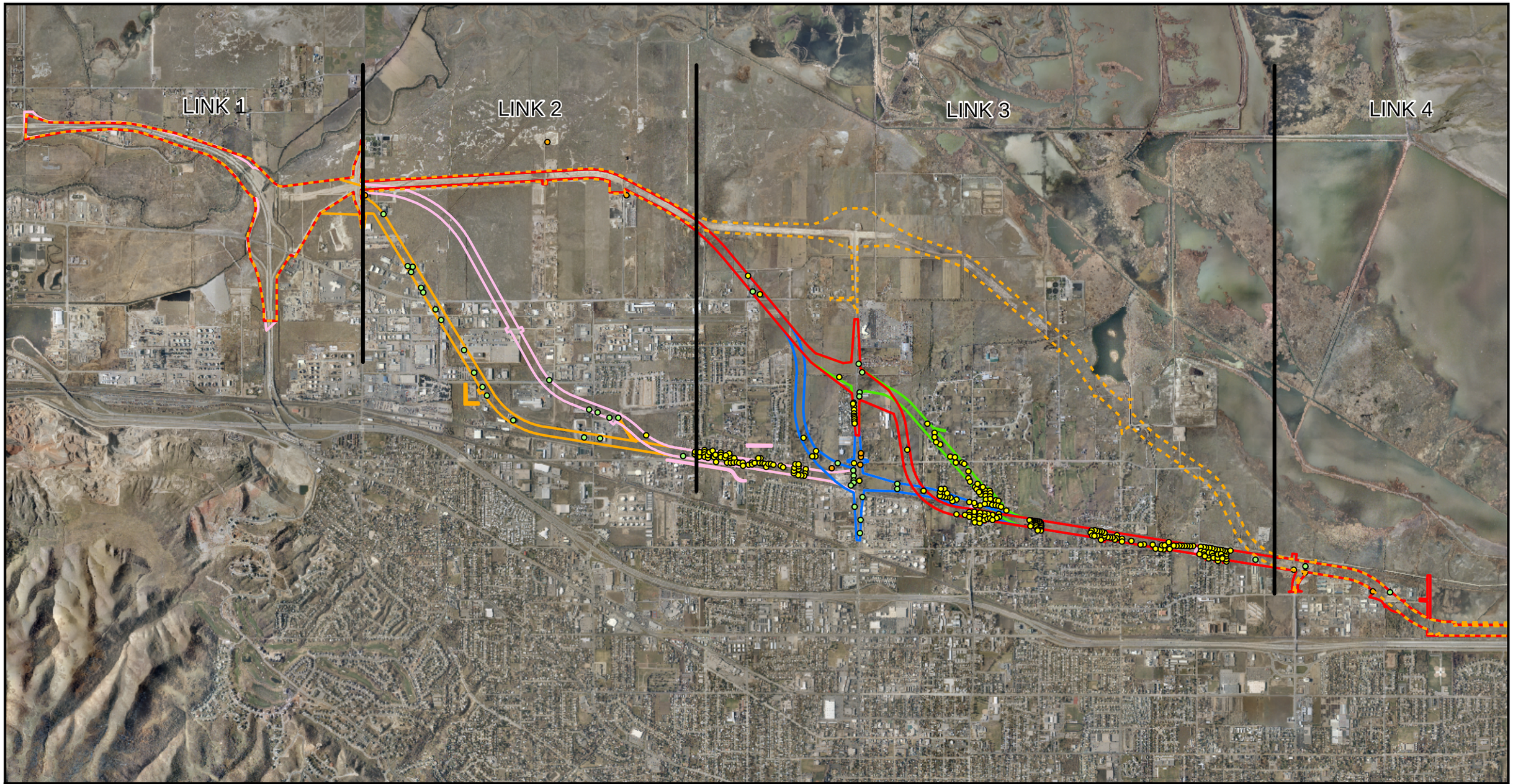
Table 3-1. Comparison of D&RG Alignment Relocations with Supplemental EIS Alternative E Relocations

Alignment (right-of-way width)	Relocations	Residential Relocations as a Percent of Total Households[a]			Major Utility Impacts
		North Salt Lake	Woods Cross	West Bountiful	
Alternative E (95 m)	Residential–4 Business–14 **Total–18**	NA[b]	NA[b]	NA[b]	Petroleum–5 Water–6 Power–5 Gas–5 **Total–21**
DRG1 (80–95 m)	Residential–193 Business–86 **Total–279**	0	3.5	9.3	Petroleum–13 Water–15 **Total–28**
DRG2 (80–95 m)	Residential–196 Business–46 **Total–242**	<1	3.5	9.3	Petroleum–9 Water–13 **Total–22**
DRG3 (80–95 m)	Residential–129 Business–39 **Total–168**	0	<1	9.5	Petroleum–4 Water–9 **Total–13**
DRG4 (80–95 m)	Residential–128 Business–21 **Total–149**	0	1	8.9	Petroleum–4 Water–10 **Total–14**
DRG5 (80–95 m)	Residential–139 Business–20 **Total–159**	0	1	9.8	Petroleum–4 Water–9 **Total–14**

[a] Percentages are based on the population distribution in the 2000 U.S. census. The percentage is calculated based on the number of residential relocations relative to the number of existing residences in the city.

[b] Alternative E would not displace populations in North Salt Lake, Woods Cross, or West Bountiful.

The relocation impacts on existing development under the D&RG conceptual alignments range from 149 to 279 residential and business relocations and from 13 to 28 major utility relocations, compared to 18 residential and business relocations and 21 major utility relocations under the Supplemental EIS Alternative E (see Figure 3-1, Relocations). See Section 5.5 of Attachment 1 for a more detailed description of utility line impacts.



LEGEND

- Preferred Alternative
- DRG 1
- DRG 2
- DRG 3
- DRG 4
- DRG 5
- Residential Relocation
- Commercial Relocation
- Industrial Relocation

W
S
E

0 0.2 0.4 0.8 1.2 1.6
Miles

Figure 3-1

Relocations

HDR
ONE COMPANY | Many Solutions™

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\\Slc-bdc1\SLC_GIS\projects\Legacy SEIS\map_docs\arcmap\b_drg_relocation_pts.mxd

See Figure 3-6, Link Impact Summary, for the number of relocation impacts in each link for each of the alternatives. See Table 3-2 for relocations in Links 2 and 3. Additional information is presented for Links 2 and 3 in this section and following sections because the D&RG conceptual alignments vary from each another, and from Alternative E, in these two corridor links only.

In West Bountiful, all D&RG alignments would be result in about a 10% reduction in the total number of existing households. Woods Cross would experience a 3.5% reduction in the total number of households with DRG1 and DRG2. These relocation impacts will have corresponding negative impacts to the local tax base and remaining neighborhoods.

Table 3-2. Relocations within Corridor Links 2 and 3

Alignment	Residential Displacements in Link 2	Residential Displacements in Link 3	Business Displacements in Link 2	Business Displacements in Link 3
Alternative E	0	0	2	1
DRG1	0	189	51	24
DRG2	3	189	11	24
DRG3	0	125	2	26
DRG4	0	124	2	8
DRG5	0	135	2	7

3.1.3 Community Cohesion

According to the FHWA (Technical Advisory T 6640.8A, 1987), changes in neighborhoods or community cohesion can include splitting neighborhoods, isolating a portion of a neighborhood or an ethnic group, generating new development, changing property values, or separating residents from community facilities. This section describes the community cohesion impacts anticipated from the D&RG conceptual alignments.

Community cohesion is the unity and sense of belonging that individuals have with their neighbors, the surrounding neighborhoods, and the suburb or city that they share. Community cohesion is important for the growth of viable communities. In addition to having a shared location, individuals achieve a sense of community through other common bonds, including racial and ethnic characteristics, school attendance, religious affiliation, and use of commercial districts.

Highways can be detrimental to communities when they bisect the community or interfere with other social bonds that promote cohesion. Although highways can promote economic growth and expansion in an area, they can also cause adverse social effects that may offset the economic benefits. For example, if a highway is

built through a community, potential negative impacts can include isolation, loss of housing, and segregation of the two halves of the community.

All of the D&RG conceptual alignments would place a four-lane freeway through established residential and commercial developments. These alignments would need to be elevated on bridges to cross over surface streets and railroad tracks. Also, ramps with embankments and possibly elevated bridges would be required at locations with interchanges. Where surface streets are not routed over or under the alignment, they would be terminated with cul-de-sacs or frontage roads running parallel to the freeway, cutting off movements across the alignment.

Where the alignment passes over surface streets, the elevated bridge creates its own visual impacts.

Because the alignments would be in close proximity to residential areas, UDOT noise abatement policy (UDOT 08A2-1) would likely require installation of noise walls. Since the Legacy Parkway would be a high-speed, controlled-access facility, the entire right-of-way would be fenced to keep pedestrians and bicyclists from crossing at unsafe locations. The earthen ramps, elevated bridges, noise walls, and fences would also cause visual impacts along the alignment.

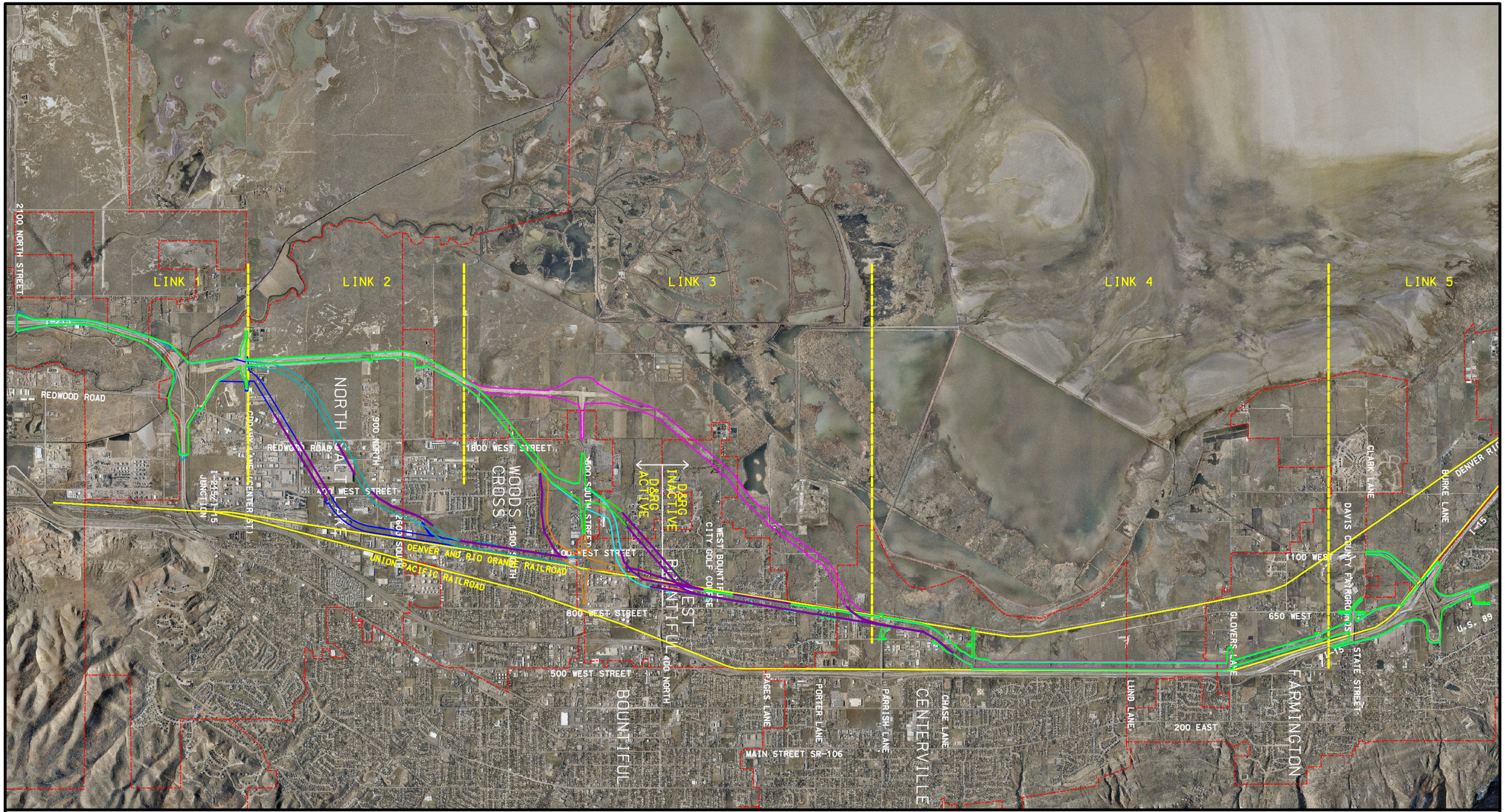
Table 3-3 below quantifies the physical barriers that would be created with each of the D&RG conceptual alignments compared to the Supplemental EIS Alternative E. See Figure 3-2, Noise Walls, Figure 3-3, Retaining Walls, and Figure 3-4, Bridges and Cul-de-Sacs, for the locations of these the physical barriers along the D&RG alignments.

Table 3-3. Community Impacts

Alignment	Number of Bridges (Cross Streets)	Number of Cul-de-Sacs and Cut-Off Roads	Length of Noise Wall, m (ft)[a]	Length of Retaining Wall Not Including Termini Interchanges, m (ft)[a]
Alternative E	4	4	0 (0)	500 (1,640)
DRG1	12	14	10,270 (33,694)	4,921 (16,145)
DRG2	12	17	11,990 (39,337)	4,921 (16,145)
DRG3	10	9	5,930 (19,455)	3,829 (12,562)
DRG4	10	8	5,600 (18,373)	3,773 (12,379)
DRG5	10	8	6,120 (20,079)	3,149 (10,331)

[a] Estimates only. More detailed design would be required to determine the exact lengths.

In some cases, the alignments would make it more difficult for residents to access schools, places of worship, community centers, and businesses, which would disrupt the residents' sense of community cohesion.



LEGEND

- DRG1
- DRG2
- DRG3
- DRG4
- DRG5
- ALT E
- LINK DESIGNATION
- RAILROAD
- JURISDICTIONAL BOUNDARIES
- NOISE WALLS

0 1 2
KILOMETERS

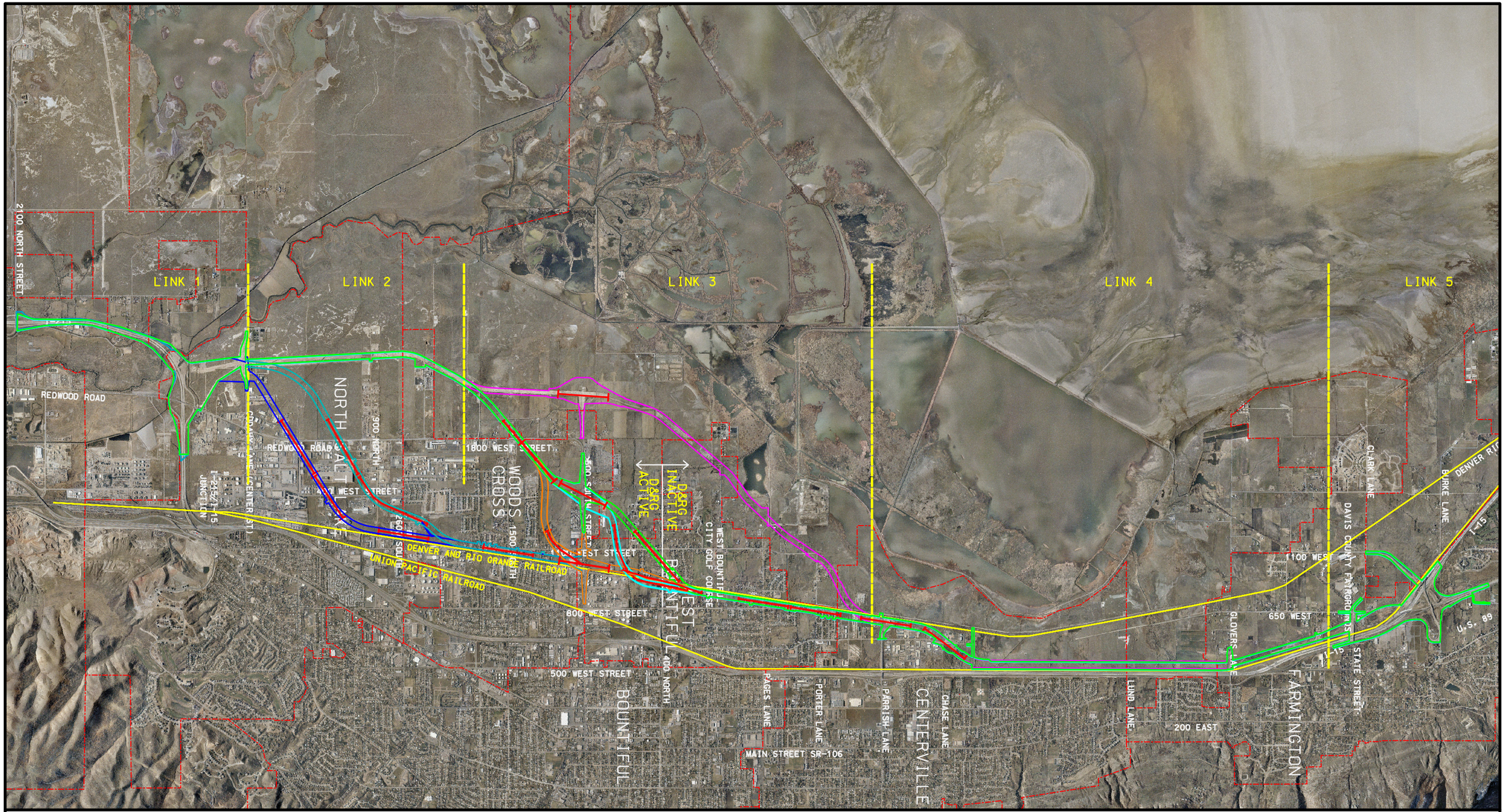
0 0.5 1
MILES

N S E

Figure 3-2

NOISE WALLS

Legacy Parkway Supplemental EIS



LEGEND

- DRG1
- DRG2
- DRG3
- DRG4
- DRG5
- ALT E
- LINK DESIGNATION
- RAILROAD
- JURISDICTIONAL BOUNDARIES
- RETAINING WALLS

0 1 2
KILOMETERS

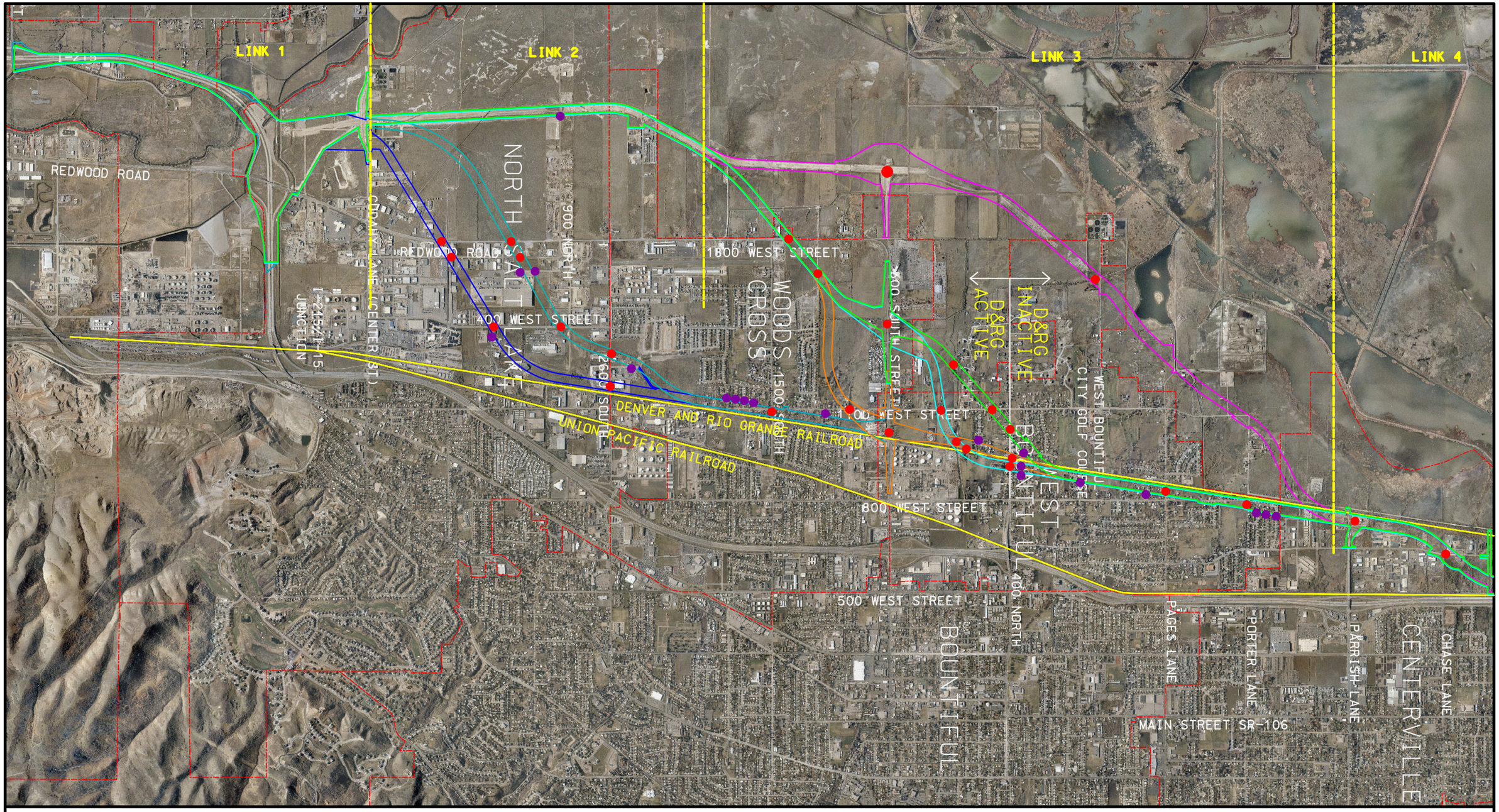
0 0.5 1
MILES

N W E S

Figure 3-3

RETAINING WALLS

Legacy Parkway Supplemental EIS



LEGEND

- DRG1
- DRG2
- DRG3
- DRG4
- DRG5
- ALT E
- LINK DESIGNATION
- RAILROAD
- JURISDICTIONAL BOUNDARIES
- BRIDGES
- CUL-DE-SAC

0 0.5 1
KILOMETERS
0 0.25 0.5
MILES

W S N

Figure 3-4

BRIDGES AND CUL-DE-SACS

Legacy Parkway Supplemental EIS

With respect to the physical barriers separating sections of the community from each other and from local schools, Table 3-4 and Table 3-5 below summarize these impacts for the three communities that would be most affected by the D&RG conceptual alignments. These tables show the distributions of overall population and school-age children on various sides of the existing and potential future barriers in these three communities.[7] These tables are discussed in the context of the affected communities.

Example of a retaining wall, embankment, and noise wall traversing a Salt Lake City neighborhood.

The community cohesion impacts associated with the D&RG conceptual alignments are adverse and would substantially affect the communities of North Salt Lake, Woods Cross, and West Bountiful.

- **North Salt Lake.** For North Salt Lake, conceptual alignments DRG1 and DRG2 would severely affect the industrial and commercial businesses west of I-15. These impacts involve major employers, including an oil refinery and manufacturing businesses. If these businesses are relocated, employees who had previously lived close by might move to avoid a longer commute. Other employees might have a shorter commute after these businesses relocate. Additionally, residents of the recently constructed homes on either side of Redwood Road would be west of the Legacy Parkway and would be isolated from the North Salt Lake community.

  Table 3-4 shows that a relatively small percentage of North Salt Lake's population would be isolated west of the conceptual alignments or between the D&RG railroad and I-15. The Foxboro development, which is currently under construction west of Redwood Road and east of

[7] Estimates of population on various sides of these physical barriers were obtained from 2000 Census Block data. Estimates of elementary school children crossing these barriers were obtained directly from counts of locations of school children obtained from Janet Gibbons, Davis County Schools, based on anticipated 2004-05 enrollment.

Alternative E, had zero population in 2000. The number of residences will increase in this part of the city when it is completely developed. The anticipated level of development is high enough that the Davis County School District plans to begin building a new elementary school in the Foxboro development in 2005. For DRG1 or DRG2, residences to the west would be isolated from the North Salt Lake community, which would affect cohesion. Table 3-5 shows that currently only about five students would have to cross DRG1 to get to school.

- **Woods Cross.** Woods Cross would be adversely affected by all of the D&RG conceptual alignments, although DRG1 and DRG2 would cause the highest number of residential displacements. DRG1 and DRG2 would split Woods Cross in half. As a result, the part of Woods Cross west of the Legacy Parkway would no longer be cohesive with the rest of Woods Cross. Alignments DRG3, DRG4, and DRG5 would also divide the community, but more along a north-south basis rather than east-west. With alignments DRG3 though DRG5, Woods Cross would be isolated from West Bountiful and other areas to the north. Most of the existing community would remain cohesive but isolated. However, new development west of the DR&G corridor would no longer be cohesive with the rest of Woods Cross. Table 3-4 shows that DRG1 and DRG2 would isolate over 30% of the population west of the alignment.
- **West Bountiful.** West Bountiful would be severely affected by all D&RG conceptual alignments, which would split West Bountiful in half (similar to the situation in Woods Cross). West Bountiful was incorporated as a municipality in 1962 partially because the construction of I-15 isolated it from the east side of Bountiful. A similar situation could arise within West Bountiful itself from the D&RG alignments. Community cohesion impacts would result from both bisecting the community and removing residential property. About 10% of West Bountiful's entire housing stock would be removed with any of the D&RG conceptual alignments.

Table 3-4. Population Proportions of Communities[a]

Alignment	West of Roadway	Between Roadway and D&RG Railroad	Between D&RG Railroad and UP Railroad	Between UP Railroad and I-15
North Salt Lake				
Alternative E	<1%	<1%	1%	19%
DRG1	<1%	<1%	1%	19%
DRG2	<1%	<1%	1%	19%
DRG3	<1%	<1%	1%	19%
DRG4	<1%	<1%	1%	19%
DRG5	<1%	<1%	1%	19%
Woods Cross				
Alternative E	2%	35%	6%	55%
DRG1	37%	0%	6%	55%
DRG2	33%	4%	6%	55%
DRG3	8%	29%	6%	55%
DRG4	4%	33%	6%	55%
DRG5	4%	33%	6%	55%
West Bountiful				
Alternative E	0%	35%	53%	12%
DRG1	28%	6%	53%	12%
DRG2	28%	6%	53%	12%
DRG3	28%	6%	53%	12%
DRG4	24%	11%	53%	12%
DRG5	17%	18%	53%	12%

[a] Proportions are based on the population distribution in the 2000 U.S. census. Table rows do not add up to 100% because some of these communities' populations live east of I-15, outside of the study area.

Table 3-5. Travel Patterns for Local Elementary School Children

	Alternative E		DRG 1		DRG 2		DRG 3		DRG 4		DRG 5	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Washington Elementary												
Students west of the alignment	0	0%	5	2%	0	0%	0	0%	0	0%	0	0%
Within the alignment and subsequently displaced	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Between the alignment and I-15	305	100%	300	98%	305	100%	305	100%	305	100%	305	100%
Total Elementary enrollment	305	100%	305	100%	305	100	305	100%	305	100%	305	100%
Woods Cross Elementary												
Students west of the alignment	0	0%	290	44%	290	44%	15	2%	5	1%	5	1%
Within the alignment and subsequently displaced	0	0%	20	3%	20	3%	10	2%	20	3%	20	3%
Students between the alignment and the UP corridor	367	56%	57	9%	57	9%	342	52%	342	52%	342	52%
Between the UP corridor and I-15	288	44%	288	44%	288	44%	288	44%	288	44%	288	44%
Total Elementary enrollment	655	100%	655	100%	655	100%	655	100%	655	100%	655	100%
West Bountiful Elementary												
Students west of the alignment	0	0%	170	32%	170	32%	170	32%	170	32%	140	26%
Within the alignment and subsequently displaced	0	0%	20	4%	20	4%	20	4%	20	4%	30	6%
Between the alignment and I-15	530	100%	340	64%	340	64%	340	64%	340	64%	360	68%
Total Elementary enrollment	530	100%	530	100%	530	100%	530	100%	530	100%	530	100%

The numbers presented for elementary school students west of the alignment are likely increasing for conceptual alignments DRG1 and DRG2. The Foxboro development is located west of Redwood Road in North Salt Lake, and residents are starting to occupy homes in that development.

Public Schools

The D&RG conceptual alignments would affect the service areas of two schools in the Davis County School District: West Bountiful Elementary and Woods Cross Elementary. The 2003–2004 service area boundaries are shown in Figure 3-5, School Boundaries and Church Locations. Alignments DRG1 and DRG2 bisect the service areas of both schools; DRG3, DRG4, and DRG5 primarily affect the service area for West Bountiful Elementary.

Alternative E traverses to the west of most development on the western edge of West Bountiful Elementary's service area. With the exception of five houses in West Bountiful, there is currently no housing west of Alternative E. The planned Legacy Nature Preserve would take up most of the land west of Alternative E, so future residential development west of Alternative E would be limited and few potential future students would be affected. Public officials support Alternative E as the western barrier to development.

West Bountiful Elementary Walkability

Current Conditions. West Bountiful Elementary draws students from all directions, but primarily from the north and west. Major north-south streets that children have to cross include 1100 West and 800 West. Based on the number and distribution of residences in the area, slightly less than half of the school's students currently cross 800 West, and a much smaller percentage cross both streets.[8] Major east-west streets include 500 South, 400 North, and Page's Lane. No students cross 500 South because it is the southern boundary of the school's service area, about half of the students cross 400 North, and about one-third of the students cross Page's Lane. About one-third or less of the students cross the current D&RG alignment. Very few students cross the Union Pacific alignment.

Future Impacts. As shown in Figure 3-6, Link Impact Summary, all of the D&RG conceptual alignments bisect West Bountiful and the West Bountiful Elementary service area. Students who have to cross any of the D&RG alignments (half of the students or less) would experience adverse impacts to their travel patterns. Students who travel to school by automobile or bus would experience minor adverse impacts because the vehicles would need to follow the major streets to cross the highway. Students who walk or ride bicycles to school from west or north of the alignments would also have to follow these major streets to cross the highway.

[8] Estimates of the numbers of elementary school children crossing these barriers were obtained directly from counts of locations of school children obtained from Janet Gibbons, Davis County Schools, based on anticipated 2004–2005 enrollment.

Woods Cross Elementary Walkability

Current Conditions. Woods Cross Elementary lies in the northeast quadrant of its service area, which lies entirely west of I-15. Major north-south streets in the area that students have to cross include 1800 West (Redwood Road). An extremely low percentage of students live west of Redwood Road; this area is not yet developed and the Foxboro development currently under construction will contain a new elementary school. The Foxboro development is located in North Salt Lake and would include the southwestern-most corner of the Woods Cross Elementary school boundary.

Future Impacts. As shown in Figure 3-5, School Boundaries and Church Locations, DRG1 and DRG2 bisect Woods Cross, leaving about half of its student population on the west side of the alignment. The impacts in this case are similar to those for West Bountiful. With the exception of a section of development on the south side of 500 South, DRG3, DRG4, DRG5, and Alternative E should have no impact on school children's travel patterns or safety.

A school and playground separated from nearby neighborhoods by a freeway.

Churches

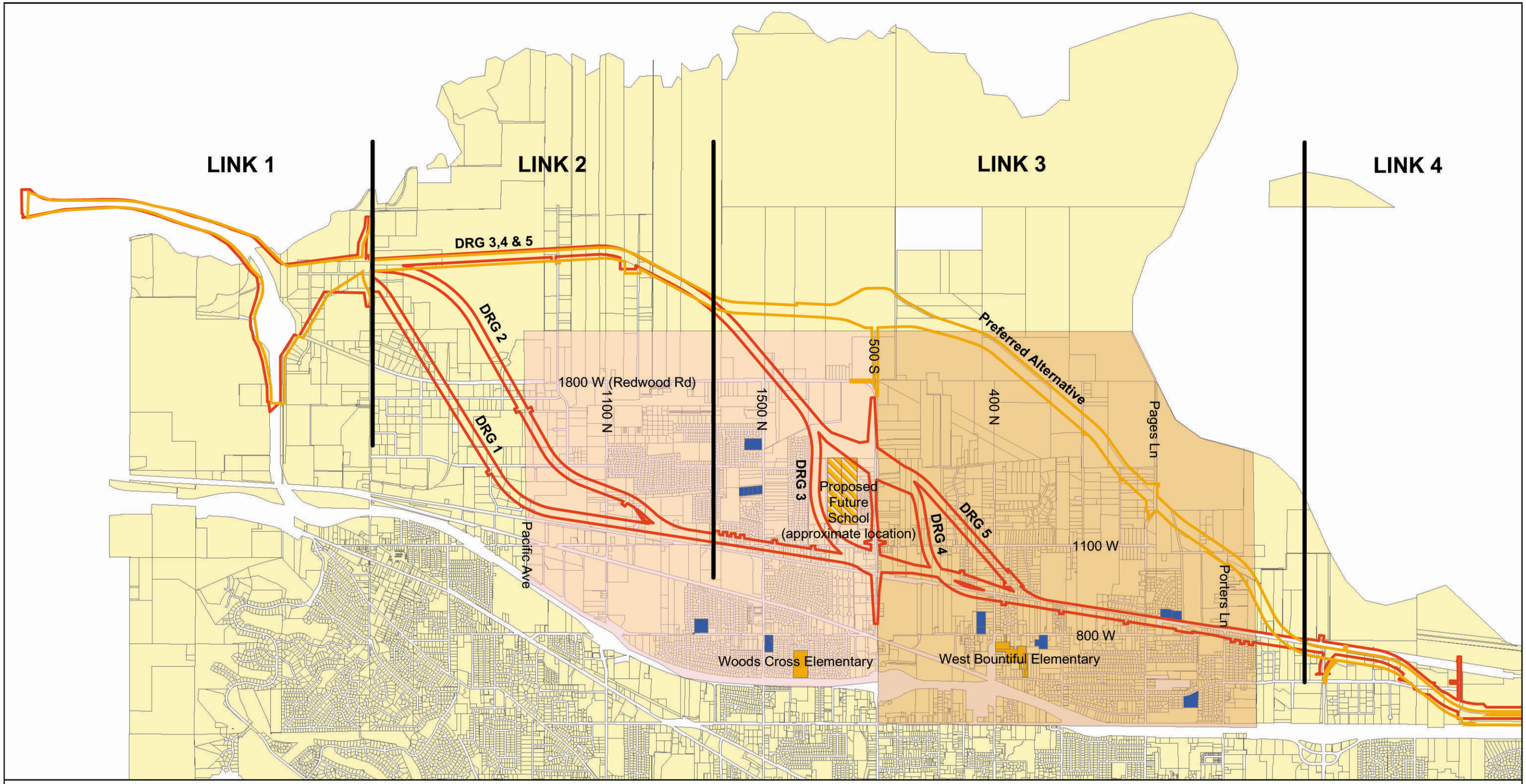
Current Conditions. Several religious buildings on the west side of I-15 are affiliated with the Church of Jesus Christ of Latter-day Saints (LDS). Congregations of this church are called wards, which are defined by geographic boundaries. Two or three wards typically hold worship services and other activities at one meetinghouse. These meetinghouses are shown in Figure 3-5, School Boundaries and Church Locations. Church members attend religious services and social gatherings at these meetinghouses throughout the week.

Future Impacts. The LDS Church does not make its ward boundary information publicly available. For this evaluation, UDOT obtained meetinghouse locations from parcel ownership data and the LDS Church's online meetinghouse locator.

Residential areas were also determined from the parcel data. General conclusions regarding the community cohesion impacts on church members were based on the geographic relationships between the D&RG conceptual alignments, meetinghouse locations, and residential areas.

The D&RG conceptual alignments would likely bisect several established LDS wards. Members of these congregations would experience minor adverse impacts because they would need to follow major streets to cross the highway. The alignments would also prevent easy pedestrian and bicycle access to the ward's meetinghouse for members on the other side of the alignment. Pedestrians and bicyclists would need to either travel by car or use major streets with heavier traffic. Because of these inconveniences, the alignments would reduce the sense of cohesion felt by ward members. The LDS church leadership could possibly redraw the ward boundaries so that the highway does not divide wards.

Where a controlled or limited-access freeway crosses through a school district or church ward/district, it interferes with pedestrians' ability to walk to the institution and can cause adverse impacts to community cohesion. The costs of such impacts can include busing students to school and higher private transportation costs.



LEGEND

- Preferred Alternative
- DRG Alignments

Community Buildings

- Church
- Public School
- Proposed Future School

Elementary School Boundaries

- Woods Cross
- West Bountiful

0 1,500 3,000 6,000 9,000 12,000 Feet

Figure 3-5.
School Boundaries and Churches.

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Travel Patterns, Accessibility, and Walkability

The D&RG conceptual alignments would bisect communities, school districts, and LDS church wards and would create cul-de-sacs, dead-end streets, and bridges with ramps on earthen embankments. These changes would have a major impact on local travel patterns. Trips that currently are relatively direct trips on a gridded street pattern would instead require circuitous routes to access an overpass or underpass to cross the highway.

Controlled-access freeways often cut off local streets and bisect the surrounding neighborhoods. The freeway negatively impacts community cohesion and adds time and distance to trips that must now cross the freeway.

Trips involving vehicles would require a few additional minutes per trip. Residents who live along streets with a highway overpass or underpass would likely experience greater impacts (impacts that used to be distributed and shared across the gridded street network). Overall, the D&RG alignments would increase vehicle-miles traveled.

Pedestrians and bicyclists would experience greater impacts than vehicle travelers. The more circuitous routes required to cross over or under the D&RG alignments could add considerably to their travel time and inconvenience, and elevated highway crossings would also be more inconvenient than level streets. It is likely that pedestrians and bicyclists would use vehicles for some trips due to the increased inconvenience, which would add to the number of automobiles on the street network and contribute to traffic impacts.

All of the D&RG conceptual alignments would adversely impact community walkability by introducing another physical barrier to pedestrians in a corridor that is already bisected by the UPRR tracks and I-15. The following key components of walkability would be impacted by the alignments:

- **Direct Access.** Individuals are more likely to walk when they can take a direct route to their destination.
- **Visual Characteristics.** Pleasant scenery also encourages walking. Placing highway bridges in the developed areas of communities would introduce adverse visual impacts.

Controlled-access freeways create a barrier to pedestrians. Pedestrian overpasses can help mitigate the impacts, but climbing stairs, out-of-direction travel, and lack of accessibility features that meet American Disability Act standards can still be inconvenient for pedestrians.

To cross the barrier created by a controlled-access freeway, residents often must travel parallel to the freeway to the nearest crossing location.

Because Alternative E mostly traverses at the edge of existing and proposed future development, it would have little effect on local travel patterns because there would be fewer reasons for residents to cross the alignment.

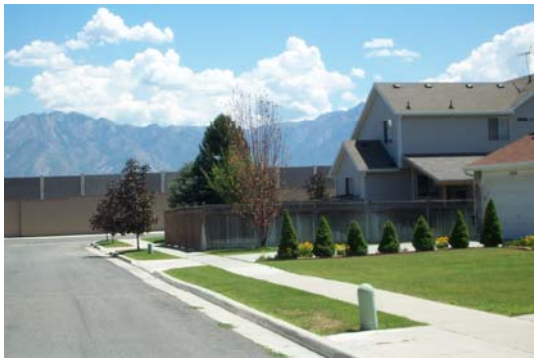
Table 3-6 quantifies the physical barriers created by the D&RG conceptual alignments and Supplemental EIS Alternative E that could affect local accessibility and travel patterns (see Figure 3-4, Bridges and Cul-de-Sacs). Every cut-off street may lead to a longer trip or greater inconvenience for travelers.

Table 3-6. Changes to Travel Patterns Caused by Physical Barriers

Alignment	Number of Bridges (Cross Streets)	Number of Cul-de-Sacs and Cut-Off Roads
Alternative E	4	4
DRG1	12	14
DRG2	12	17
DRG3	10	9
DRG4	10	8
DRG5	10	8

Visual and Noise Impacts

The D&RG conceptual alignments would go through established residential areas and so would cause major impacts on local viewsheds and increase ambient noise levels in residential neighborhoods adjacent to the alignments. This section describes the visual and noise impacts that could be anticipated.



Example of a Salt Lake City neighborhood visually impacted by a controlled-access freeway with noise walls.

The D&RG alignments would cross over a number of existing surface streets. At every location where two facilities cross, either the freeway or the cross street would be raised on an embankment. Traffic noise has its greatest impact at receptors locations closest to the roadway, which is one of the reasons that highway designers try to avoid placing highways through existing residential and

commercial development. Areas with adjacent residential properties would likely qualify for noise walls according to UDOT's Noise Abatement Policy (UDOT 08A2-I). The noise walls would add to the height of the overall facility and would increase the visual impacts.

Properties that are adjacent to the freeway (especially residences) are likely to experience the greatest visual and noise impacts. Many of these properties would have views of the surrounding city or distant mountains completely obstructed. Even with noise walls, the properties closest to a facility often experience noise increases. Properties that are more distant would have only a portion of their viewshed obstructed and the noise impacts would be less.

Noise walls are often necessary to mitigate noise impacts, but they also create a visual barrier that can impact the aesthetics of a neighborhood and obscure views of nearby mountains or cityscapes, as is the case in this Salt Lake City neighborhood.

Table 3-7 identifies the number of residential properties adjacent to the various alignments and the length of noise walls and retaining walls that would be constructed. These measurements provide a surrogate for the level of noise and visual impacts that could be anticipated. A higher number of residential properties adjacent to the alignment indicates a greater number of people directly affected by noise and visual impacts. A greater length of noise walls indicates a higher level of visual impacts and also indicates the length of the alignment that is likely to experience noise impacts. The length of retaining walls indicates the length of the alignment that would be raised and also indicates the length of the alignment that would experience visual impacts from a retaining wall.

Table 3-7. Noise and Visual Impacts Measures

Alignment	Residential Properties Adjacent to the Alignment	Length of Noise Wall, m (ft)[a]	Length of Retaining Wall Not Including Termini Interchanges, m (ft)[a]
Alternative E	7	0 (0)	500 (1,640)
DRG1	125	10,270 (33,694)	4,921 (16,145)
DRG2	129	11,990 (39,337)	4,921 (16,145)
DRG3	115	5,930 (19,455)	3,829 (12,562)
DRG4	89	5,600 (18,373)	3,773 (12,379)
DRG5	114	6,120 (20,079)	3,149 (10,331)

[a] Estimates only. More detailed design would be required to calculate the exact lengths.

Environmental Justice

As defined in Executive Order 12898, environmental justice issues address the proportionality of impacts from a project; that is, whether the adverse impacts from a project's construction and operation are disproportionately borne by minority or low-income households. Conversely, environmental justice also considers whether the positive impacts from a project are shared by these households. The D&RG conceptual alignments were analyzed for environmental justice issues using FHWA recommended procedures, and no environmental justice issues were identified.

3.2 D&RG Wetland Impacts

To complete the analysis, the D&RG conceptual alignments were surveyed in July 2003 for wetlands that were not previously delineated for the evaluation in the Final EIS. Reference materials used included National Wetlands Inventory mapping, aerial photography, and the Intermountain (Region 8) List from the *National List of Plant Species That Occur in Wetlands* (Reed 1988). Field surveys of the general composition of vegetation and hydrology were conducted on and adjacent to the right-of-way for the five D&RG conceptual alignments. Areas that appeared to exhibit predominantly hydrophytic vegetation and/or wetland hydrology were drawn on aerial imagery.

Many areas appeared very dry, apparently due to drought conditions and seasonal effects, but still exhibited hydrophytic vegetation and wetland hydrology indicators. If such areas consisted of vegetation dominated by plant species that occur in wetlands, they were identified as wetlands whether or not they exhibited other wetland criteria. Acreage impacts on the wetlands were calculated by determining the acreage located in the alignment right-of-way and those that would likely fall within the footprint of the roadway.

Table 3-8 below identifies the estimated direct impacts to wetlands within the D&RG conceptual alignments compared to Alternative E. See Figure 3-6, Link Impact Summary, for wetland impacts in each link for each of the alternatives. See Table 3-9 below for wetland impacts in Links 2 and 3. Links 1, 4, and 5 are the same for all alternatives (see Section 3.4, Summary of Impacts). Direct impacts on wetlands associated with each D&RG alignment ranged from about 105 to 114 acres of wetlands, compared to about 113 acres under Alternative E.

Through final detailed design for Alternative E, UDOT determined that 14 acres of wetlands within the right-of-way—primarily in the north (Link 5) and south (Link 1) interchanges, where all of the D&RG alignments and Alternative E are the same—would not be impacted during construction. These interchange areas would be similar for all alternatives because the design of the interchanges is based on the area needed to accommodate the ramps that connect to the roadway, not the right-of-way of the roadway itself. Therefore, this 14-acre reduction of wetland impacts was applied to all alternatives. Within the Alternative E right-of-way, UDOT has proposed changes that avoid an additional 2 acres of wetland impacts.[9] These 2 acres are in addition to the wetland impacts avoided in the right-of-way at interchanges.

[9]This value is determined by subtracting the estimated 16 acres of wetland impacts that can be avoided within the right-of-way from the total wetland acres that are located within the alignment right-of-way (as a result of the

Table 3-8. Wetland Impacts (in Acres)

Alignment	Wetland Located within ROW	Difference from Alt. E Based on ROW	Wetland Impact within Footprint[a]	Difference from Alt. E Based on Footprint
Alternative E	113	—	97	—
DRG1	105	–8	86	–11
DRG2	114	+1	93	–4
DRG3	111	–2	90	–7
DRG4	110	–3	89	–8
DRG5	106	–7	86	–11

[a] This includes the 14-acre reduction in wetland impacts identified by the design-builder plus the savings associated with the use of the 80-m (264-ft) footprint width in wetland areas and in areas of existing development; for Alternative E this avoidance is about 2 acres and varies for the D&RG conceptual alignments.

Table 3-9. Wetland Impacts in Links 2 and 3 (in Acres)

Alignment	Wetland Impacts in Link 2	Wetland Impacts in Link 3	Total Wetland Impacts in Links 2 and 3
Alternative E	9.2	28.5	37.7
DRG1	7.2	22.9	30.1
DRG2	18.0	21.1	39.1
DRG3	9.2	26.0	35.2
DRG4	9.2	25.0	34.2
DRG5	9.2	21.4	30.6

design-build approach at interchanges and the use of an 80-m (264-ft) reduced footprint to avoid wetland and other impacts). An estimated 14 acres could be avoided at the north and south interchanges, and for Alternative E an additional 2 acres could be avoided by using a reduced footprint in other locations along the alignment that have wetland resources within the right-of-way.

3.3 D&RG Alignment-Specific Costs

Section 2.0, D&RG Corridor Reevaluation, presents the regional cost estimates that were updated for the Supplemental EIS. Cost estimates also were developed and refined for the specific alignments within the D&RG regional corridor as well as for an alignment that follows the Alternative E alignment to represent the Great Salt Lake regional corridor. These cost estimates were based on a variable right-of-way width of 80 to 95 m (264 to 312 ft). Detailed cost estimates for the D&RG and Great Salt Lake regional corridors and the specific alignments within these corridors are included in Attachment 1 (Appendices A and C).

Table 3-10 below summarizes the cost estimates from the Final EIS, the updated 2004 regional corridor costs estimates (planning-level costs), and the range of estimated cost for the specific alignments within the D&RG and Great Salt Lake regional corridors. The revised regional corridor cost estimates show that costs of a highway within these corridors have increased since June 2000 when the cost estimates were prepared for the Final EIS. The increase in the regional alignment cost estimates can be attributed primarily to inflation between 2000 and 2004, refining the cost-estimating assumptions, and applying a consistent cost-estimating methodology.

Table 3-10 also shows that the refined alignment-specific cost estimates are lower than the estimates developed using a corridor-level approach. The main reason for this difference is that the refined alignment-specific cost estimates have fewer unknowns and therefore have lower contingencies. However, the corridor-level cost estimates should not be directly compared with those prepared for the more refined alignments because the cost-estimating methodology, assumptions, and associated contingencies used to develop these estimates are different and such a comparison would not be valid.

Table 3-11 below shows the costs for each specific D&RG conceptual alignment and Alternative E. Also see Figure 3-6, Link Impact Summary.

Table 3-12 below presents the estimated cost of each alternative within Links 2 and 3. Links 2 and 3 are presented separately because they are the only links where the D&RG alignments vary from each other and from Alternative E.

Table 3-10. Summary of Cost Estimates (in millions)

Regional Corridor	Final EIS Regional Estimate 2000	Regional Alignment Estimate 2004[a]	Alignment-Specific Estimate 2004
Alternative E	$300	$439	$416
D&RG	$460	$589	$515 to $611

[a] Estimates includes construction materials, right-of-way, and estimated wetland mitigation. Pre-award engineering, stipends, and incentives are items specific to the contract to construct the Legacy Parkway and were not included in the above estimates or the estimates in the Final EIS. These items were included in the total cost of the Legacy Parkway project ($451 million) which was publicized after the Final EIS was published.

Table 3-11. Alignment-Specific Costs

Alignment	Length Varying from Alternative E (miles)[a]	Length along D&RG Railroad (miles)	Alignment-Specific Cost (millions)[b]	Cost Difference Alternative E (millions)	Percent Cost Increase over Alternative E
Alternative E	—	—	$416	—	—
DRG1	6.2	4.5	$611	$195	47%
DRG2	6.2	3.6	$608	$192	46%
DRG3	4.5	2.5	$532	$116	28%
DRG4	4.4	2.2	$516	$100	25%
DRG5	4.3	1.5	$515	$99	24%

[a] Length varying is the length, in miles, that the D&RG conceptual alignments and Alternative E follow separate alignments. For the remainder of the 14 total miles of the North Corridor, the alternatives alignments are identical.

[b] Estimates includes construction materials, right-of-way, and estimated wetland mitigation but do not include items specific to the contract to construct the Legacy Parkway (pre-award engineering, stipends, and incentives).

Table 3-12. Alignment-Specific Costs in Links 2 and 3

Alignment	Link 2 (millions)	Link 3 (millions)	Total Cost for Links 2 and 3 (millions)[a]
Alternative E	$22.21	$77.11	$99.32
DRG1	$103.51	$190.25	$293.76
DRG2	$100.71	$190.25	$290.96
DRG3	$22.21	$192.62	$214.83
DRG4	$22.21	$177.11	$199.32
DRG5	$22.21	$175.57	$197.78

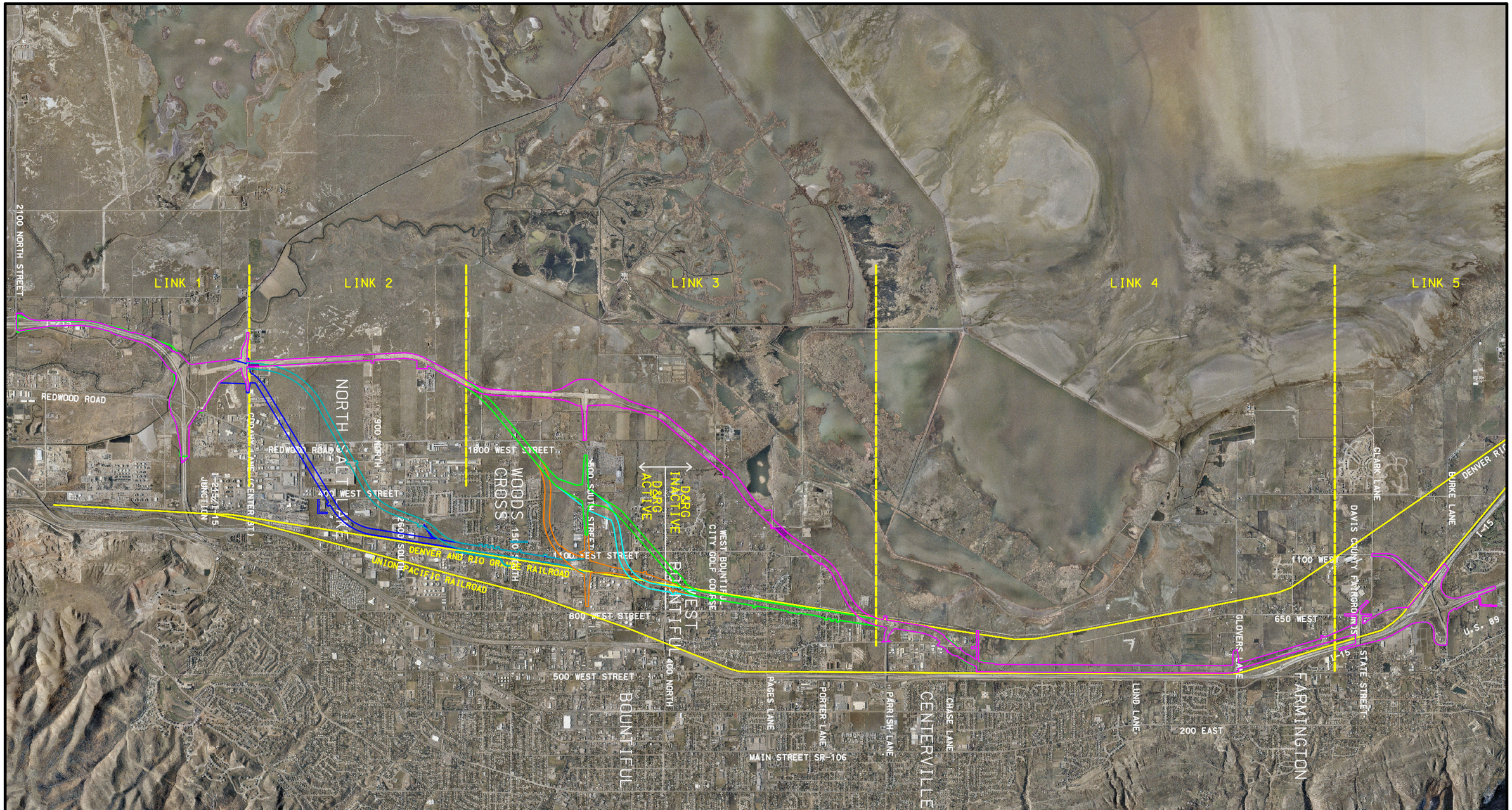
[a] The estimated cost of the conceptual alignments in Links 1, 4, and 5 is $317.02 million.

3.4 Summary of Impacts

Because the D&RG conceptual alignments are similar to Alternative E in much of the North Corridor, the study team divided the North Corridor into five subareas, or links, to examine in more detail the areas where the conceptual alignments differ and their associated impacts. See Figure 3-6, Link Impact Summary, for impacts to wetlands, relocations, and estimated cost within each link. As shown in Figure 3-6, impacts to wetlands and relocations are identical in Links 1, 4, and 5 (because the alternatives are identical in these links). These three areas contain over 75 acres of the wetland impact associated with Alternative E (about two-thirds of the total impacted acreage) based on the wetlands in the right-of-way. In other words, two-thirds of the wetland impacts would be the same regardless of the alternative developed.

Of the links that vary among the alternatives, Link 3 has the largest amount of wetland impacts. Within this link, Alternative E would have 28.5 acres of wetland impacts compared to about 21.1 to 26 acres for the D&RG conceptual alignments. Within Link 3, the D&RG alignments would save between 2.5 and 7.4 acres of wetlands at an additional cost of about $98 million to $116 million compared to Alternative E. Avoiding these 2.5 to 7.4 acres of wetland impacts would require between 124 and 189 more residential relocations and between 6 and 25 more business relocations.

In Link 2, only conceptual alignments DRG1 and DRG2 vary from Alternative E. Within this link, DRG1 would avoid 2 acres of wetlands compared to Alternative E (7.2 acres versus 9.2 acres). Avoiding these 2 acres of wetlands would require 51 additional business relocations (for DRG1) and would cost about $81 million more than Alternative E. DRG2 would impact 8.8 more wetland acres that Alternative E (18.0 acres versus 9.2 acres). Within Link 2, DRG2 would have 3 residential and 11 business relocations and an estimated cost of $101 million, or about $79 million more than Alternative E.



LEGEND

- DRG1
- DRG2
- DRG3
- DRG4
- DRG5
- ALT E
- LINK DESIGNATION
- RAILROAD

LINK1

ALTERNATIVE	RESIDENTIAL RELOCATIONS	BUISINESS RELOCATIONS	WETLANDS (ACRES)	COST (MILLIONS)
DRG1	0	0	19.7	66.63
DRG2	0	0	19.7	66.63
DRG3	0	0	19.7	66.63
DRG4	0	0	19.7	66.63
DRG5	0	0	19.7	66.63
ALT E	0	0	19.7	66.63

LINK2

ALTERNATIVE	RESIDENTIAL RELOCATIONS	BUISINESS RELOCATIONS	WETLANDS (ACRES)	COST (MILLIONS)
DRG1	0	51	7.2	103.51
DRG2	3	11	18.0	100.71
DRG3	0	2	9.2	22.21
DRG4	0	2	9.2	22.21
DRG5	0	2	9.2	22.21
ALT E	0	2	9.2	22.21

LINK3

ALTERNATIVE	RESIDENTIAL RELOCATIONS	BUISINESS RELOCATIONS	WETLANDS (ACRES)	COST (MILLIONS)
DRG1	189	24	22.9	190.25
DRG2	189	24	21.1	190.25
DRG3	125	26	26.0	192.62
DRG4	124	8	25.0	177.11
DRG5	135	7	21.4	175.57
ALT E	0	1	28.5	77.11

LINK4

ALTERNATIVE	RESIDENTIAL RELOCATIONS	BUISINESS RELOCATIONS	WETLANDS (ACRES)	COST (MILLIONS)
DRG1	2	5	41.4	86.25
DRG2	2	5	41.4	86.25
DRG3	2	5	41.4	86.25
DRG4	2	5	41.4	86.25
DRG5	2	5	41.4	86.25
ALT E	2	5	41.4	86.25

LINK5

ALTERNATIVE	RESIDENTIAL RELOCATIONS	BUISINESS RELOCATIONS	WETLANDS (ACRES)	COST (MILLIONS)
DRG1	2	6	14.2	164.14
DRG2	2	6	14.2	164.14
DRG3	2	6	14.2	164.14
DRG4	2	6	14.2	164.14
DRG5	2	6	14.2	164.14
ALT E	2	6	14.2	164.14

0 1 2
KILOMETERS
0 0.5 1
MILES

Figure 3-6

LINK IMPACT SUMMARY

Legacy Parkway Supplemental EIS

4.0 Summary and Conclusions

The lead agencies re-evaluated and updated their findings regarding the D&RG regional corridor. To develop the specific information necessary to evaluate the D&RG corridor, UDOT created five conceptual alignments within this corridor and evaluated them using a methodology similar to the one used in the Final EIS to evaluate the regional corridors (but with a much greater level of detail). The five alignments were evaluated based on costs, wetland impacts, and impacts on existing development, which include relocation impacts; impacts to community cohesion (including impacts to schools and churches); impacts to travel patterns, accessibility, and walkability; noise and visual impacts; and impacts to environmental justice populations.

Table 4-1 below, Summary of Impacts, summarizes the quantifiable elements of the D&RG evaluation. As shown in the table, all D&RG conceptual alignments would have substantially greater impacts on existing development, as well as higher costs, than Alternative E. The costs of the D&RG alignments range between $515 million and $611 million ($99 million to $195 million more than Alternative E).

The D&RG alignments would require relocating between 149 and 279 residential and commercial properties, compared to 18 relocations for Alternative E. The relocations for the D&RG alignments would be between 3% and about 10% of the total residences in Woods Cross and West Bountiful, respectively. Alternative E would not impact any residential properties in these communities. For properties that would not be relocated but would remain along the alignments, the impacts would also be substantially greater with the D&RG alignments. Because the D&RG alignments traverse directly through developed, established neighborhoods (as opposed to the western edge of development with Alternative E), they would have considerably more impacts to community cohesion (such as requiring between 8 and 17 cut-off roadways, compared to 4 for Alternative E).

Similarly, the D&RG alignments would have far greater noise and visual impacts (for example, between 89 and 129 residential properties would remain fronting the freeway, compared to 7 residential properties with Alternative E). The length of noise walls and retaining walls—two additional indicators of noise and visual impacts to remaining development—would likewise be substantially greater with the D&RG alignments.

The impacts in Links 2 and 3 are the only differences between the D&RG alignments and Alternative E. In Link 3, Alternative E would have between 3.5 and 7.4 more acres of wetland impacts than the conceptual D&RG alignments.

The D&RG alignments have an estimated cost of $98 million to $116 million more than the estimated cost of Alternative E in this link. Residential relocations in Link 3 would range between 124 and 189 for the D&RG alignments compared to 0 for Alternative E. Business relocations would range between 7 and 24 for the D&RG alignments compared to 1 for Alternative E in this link. As shown below in Table 4-1, the number of relocations for any of the D&RG alignments would be substantially higher than for Alternative E in Link 3.

In Link 2, only DRG1 and DRG2 differ from Alternative E. Within Link 2, DRG1 would have 51 business relocations and DRG2 would have 11, compared to 2 relocations for Alternative E. DRG1 would have 2 less acres of wetland impacts compared to Alternative E (9.2 acres) at a cost of about $81 million more than Alternative E in this link. DRG2 actually has more wetland impacts (18.0 acres) than Alternative E and would cost about $79 million more than Alternative E in this link.

The anticipated wetland impacts within the D&RG regional corridor are more similar to the impacts within the Great Salt Lake regional corridor as presented in the Final EIS (see Table 1-2 above, Results of the Regional Corridor Screening in the Final EIS). Therefore, if the same type of regional corridor analysis process was used for the Supplemental EIS as was conducted in the Final EIS, the lead federal agencies might rank the wetland impacts of the D&RG corridor as “medium,” the same as the Great Salt Lake. As stated in the Final EIS, the D&RG regional corridor was eliminated from further consideration due to its “high cost” and “high impact on existing development.” Based on the refined cost estimates and detailed information concerning development impacts provided in this evaluation, the conclusions of the Final EIS remain valid.

Table 4-1. Summary of Impacts

	Cost	Wetlands		Impacts on Existing Development							
				Relocations			Travel Patterns		Noise and Visual Impacts		
Alignment	Total Cost (millions)	Footprint (acres)	ROW (acres)	Residential (parcels)	Business (parcels)	Total	Number of Bridges (Cross Streets)	Number of Cul-de-Sacs and Cut-Off Roads	Residential Properties Adjacent to ROW	Length of Noise Wall, m (ft)	Length of Retaining Wall Not Including Termini Interchanges, m (ft)
Alternative E	$416	97	113	4	14	18	4	4	7	0 (0)	500 (1,640)
DRG1	$611	86	105	193	86	279	12	14	125	10,270 (33,694)	4,921 (16,145)
DRG2	$608	93	114	196	46	242	12	17	129	11,990 (39,337)	4,921 (16,145)
DRG3	$532	90	111	129	39	168	10	9	115	5,930 (19,455)	3,829 (12,562)
DRG4	$516	89	110	128	21	149	10	8	89	5,600 (18,373)	3,773 (12,379)
DRG5	$515	86	106	139	20	159	10	8	114	6,120 (20,079)	3,149 (10,331)

Based on the information provided in this evaluation, the D&RG conceptual alignments are not practicable and the impacts to development would be significant and adverse. The Clean Water Act defines practicable as "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes" (40 CFR 230.3). The fact that the D&RG alignments would cost between $98 million and $194 million more than Alternative E and would require 149 to 279 displacements (compared to 18 for Alternative E) makes the DR&G alignments impracticable from a cost standpoint given their significant adverse impacts.

Moreover, based on more refined wetland identification, the 86 to 93 acres of wetland impacts within the footprints of the D&RG conceptual alignments (compared to the 97 acres for Alternative E) and the 105 to 114 acres of wetland impacts within the right-of-way (compared to 113 acres for Alternative E) would *not* now be characterized as "low" compared to the wetland impacts from the Great Salt Lake regional corridor, which was characterized as having "medium" impacts in the Final EIS. Highway facilities in both corridors are likely to result in similar levels of wetland impacts. Given the high cost and high impacts to existing development, and considering the relatively modest difference in wetland impacts, the D&RG alignments are impracticable under the Clean Water Act.

In closing, this evaluation confirms the conclusion of the Final EIS and prior agency decisions that the D&RG regional corridor is not reasonable or practicable due to high costs and impacts to existing development. Furthermore, the Supplemental EIS analysis affirms that nothing has changed since the previous analysis that would lead to a different conclusion.

5.0 References

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