FEDERAL HIGHWAY ADMINISTRATION
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
FOR

PROJECT

I-190/Silver Street Interchange (Exit 1)

SDDOT Project No. IM 1902(61)0, PCN 1162

Pennington County
Rapid City, South Dakota

The FHWA has determined that the Preferred Alternative will have no significant impact on the human environment. This FONSI is based on the attached Final Environmental Assessment (EA) and Section 4(f) *De Minimis* Impact Finding, which has been independently evaluated by the FHWA and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project, and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an EIS is not required. The FHWA takes full responsibility for the accuracy, scope and content of the attached EA.

7/12/2013
Date

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Final Environmental Assessment and Section 4(f) *De Minimis* Impact Finding

FOR

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Pennington County
Rapid City, South Dakota

Submitted Pursuant to 42 U.S.C. 4332(2)(c) and 49 U.S.C. 303
By the
United States Department of Transportation
Federal Highway Administration & South Dakota Department of Transportation

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July 11, 2013
Date of Approval

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ACRONYMS, ABBREVIATIONS, AND SHORT FORMS

AASHTO	American Association of State Highway and Transportation Officials
ACHP	Advisory Council on Historic Places
AIRS	Facilities with Air Emissions
ARSD	Administrative Rules of South Dakota
AST	Above Ground Storage Tank
Ave	Avenue
BA	Programmatic Biological Assessment
BMPs	Best Management Practices
BO	Biological Opinion
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
dB	decibel
dBA	A-weighted decibel(s)
EA	Environmental Assessment
EDR	Environmental Data Resources, Inc.
ESA	Endangered Species Act
et seq.	*et sequentia* (and the following)
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FINDS	Facility Index System
FIS	Federal Insurance Study
FR	Federal Register
FSA	Food Security Act of 1985
FY	Fiscal Year
HDR	HDR Engineering, Inc.
I-90	Interstate 90
I-190	Interstate 190
IMJR	Interchange Modification Justification Report
LOMR	Letter of Map Revision
LOS	Level of Service
LWCF	Land and Water Conservation Fund

Mph	Miles per hour
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NE	Northeast
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NOI	Notice of Intent
NPS	National Parks Service
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PCS	Permit Compliance System
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental conditions
ROW	right-of-way
RPM	Reasonable and prudent measures
S	south
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SD 44	South Dakota Highway 44
SDDENR	South Dakota Department of Environment and Natural Resources
SDDGFP	South Dakota Department of Game, Fish, and Parks
SDDOT	South Dakota Department of Transportation
SE	southeast
SHPO	State Historic Preservation Officer
SPILLS	South Dakota spills database
SQG	Small quantity generator
the State	the State of South Dakota
STIP	State Transportation Improvement Plan
SWPPP	Stormwater Pollution Prevention Plan
T&E	threatened and endangered
TNM	Traffic Noise Model
TRIS	Toxic Chemical Release Inventory System

US 16	United States Highway 16
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish & Wildlife Service
UST	Underground Storage Tank
vpd	vehicles per day

CHAPTER 1
PURPOSE OF AND NEED FOR PROPOSED ACTION

In 2010, the South Dakota Department of Transportation (SDDOT) initiated a multi-phase study to evaluate the design, operations, policy and funding implications of replacing the Silver Street interchange (the Project) on Interstate 190 (I-190) in Rapid City, SD (Rapid City). The completion of an Environmental Assessment (EA) is included in the multi-phase study due to the utilization of federal funds from the Federal Highway Administration (FHWA) triggering the National Environmental Policy Act of 1969 (NEPA)[1].

This EA has been prepared in compliance with the requirements of NEPA. The purpose of this EA is to analyze the proposed action and determine if there is a potential for significant environmental impacts and to inform and allow input from the decision makers and the public.

1.1 Project Background

The Study was spurred by structural deficiencies with the Silver Street Interchange bridges and included build alternatives that designated I-190 from the Interstate system to an expressway or arterial street, designated as U.S. Highway 16 (US 16). The first phase of the study:

- Developed interchange and intersection alternatives to replace the existing interchange,
- Coordinated the alternatives with SDDOT and Rapid City,
- Measured public opinion regarding potential changes,
- Estimated long term cost implications of removing roadway from the Interstate system,
- Recommended a path for regulatory approval, and
- Forecasted the impacts on transportation operations and the environment.

After completion of the first study phase, the SDDOT made the decision to maintain I-190 and construct a grade separated interchange instead of an at-grade intersection build alternative (HDR, 2010). The decision to retain I-190 as an Interstate Highway was supported by Rapid City and public opinion. Additionally, future funding from FHWA would be limited if the Interstate Highway designation was forfeited and the Silver Street interchange was modified to an at-grade intersection.

The second phase of this study included the development of an Interchange Modification Justification Report (IMJR) and this EA to screen alternatives and assess the potential for environmental impacts on remaining alternatives, including the No-Build Alternative. Throughout the Project, documents have been prepared for this Project. For a list of these documents, see Chapter 6 References, which are available upon request.

1.2 Project Location

The Project is located in central Pennington County, South Dakota (SD), within the city limits of Rapid City (see Figure 1-1, Project Location). The figure shows the Project and Study Areas designated for this EA. The Study Area is a general boundary to initiate coordination for the Phase 1 Study and EA process, while the Project Area is a refined boundary to assess the potential for environmental impacts based on alternatives.

[1] NEPA (42 United States Code [USC] 4321-4347) is the foundation of environmental policy making in the U.S. The NEPA process is intended to help public officials make decisions based on an understanding of environmental consequences and take actions that protect, restore, and enhance the environment. It includes an environmental review process early in the planning for proposed actions.

1.2.1 Study Area

The area of the study is a general area that was defined to include the I-190/Silver Street Interchange, as well as the surrounding transportation system (see Figure 1-1). The Study Area includes the I-90/I-190 Interchange and I-190 corridor that extends to the surrounding neighborhoods on the west and east side of the I-190 corridor.

1.2.2 Project Area

The Project Area is an area identified for further study of the impact of the alternatives to be carried forward for detailed evaluation in this EA. The Project Area includes land that would be affected during reconstruction of the I-I90 Exit 1 Interchange, as well as construction of connections and access points. The area extends approximately from north of Anamosa Street south to Omaha Street, and Eighth Street to west of High Street (see Figure 1-2).

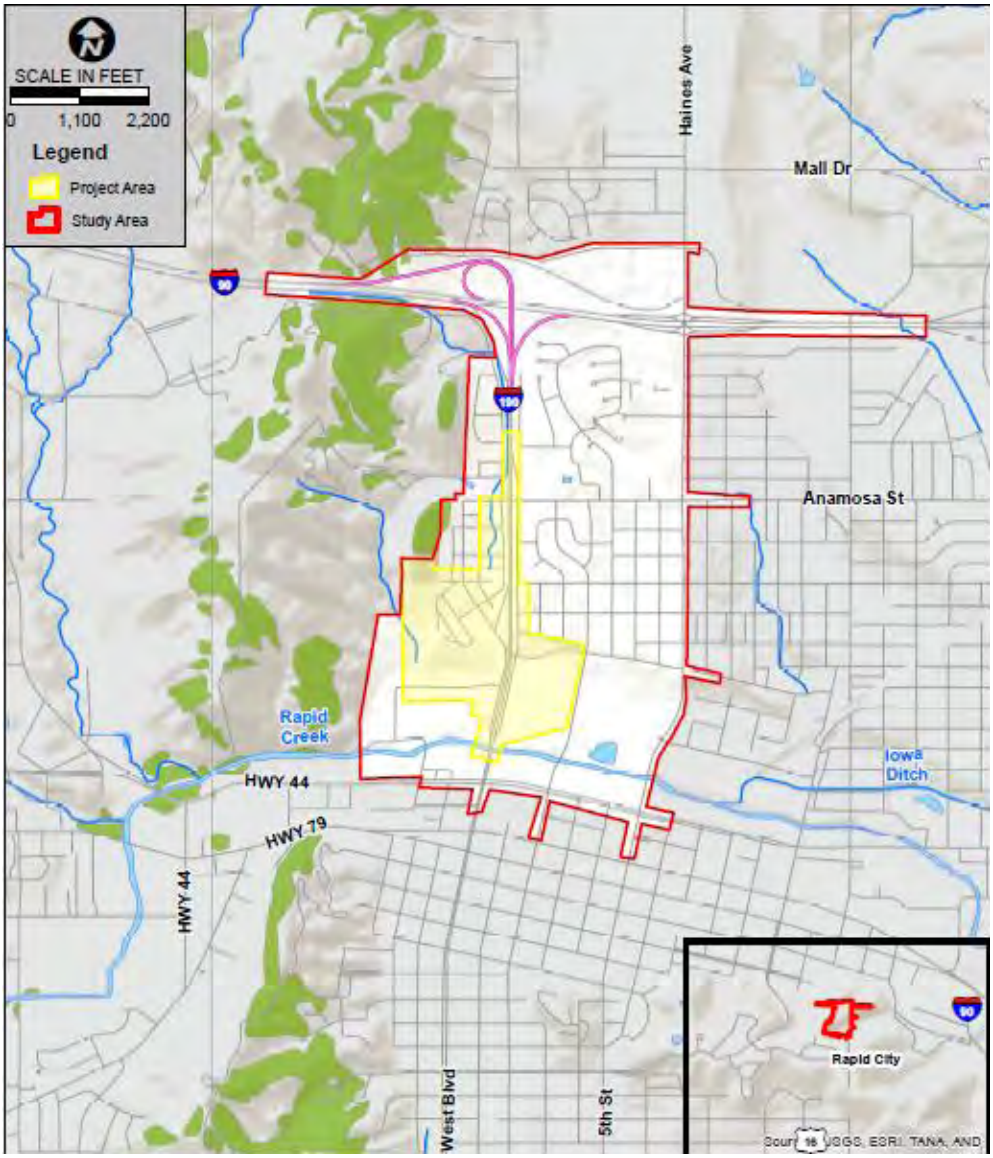


Figure 1-1 Study Location Map

1.3 Project Description

I-190 is a spur route on the Interstate Highway System connecting I-90 with Omaha Street (SD Highway 44) in the central business district of Rapid City. I-190 is an auxiliary Interstate Highway that runs 1.72 miles from I-90 Exit 57 southward into downtown Rapid City. It also carries the designation US 16 and was opened in 1962. The purpose of the I-190 spur was to fulfill part of the Interstate's original mission of connecting major cities. At the time I-90 was being developed, Rapid City did not extend as far north as it currently does. Consequently, the I-190 link was built to provide the desired Interstate link between downtown Rapid City and the rest of the Interstate system. Rapid City has now grown to encompass roughly six miles of I-90 and is served by six I-90 interchanges.

Omaha Street is the primary east-west arterial street in Rapid City and intersects with the south termini of I-190. West Boulevard forms the south leg of the I-190/Omaha Street intersection and also exists as the frontage road on both sides of I-190. The Silver Street/North Street Interchange (Exit 1), the only service interchange on I-190, is configured as a non-traditional diamond interchange with the ramps having minimal separation from the I-190 mainline (see Figure 1-2). Rapid City roadways North Street and Silver Street intersect at the existing Silver Street interchange creating a crossroad with a forty five degree skew to the west of the interchange and a more standard right-angle approach to the east. An all-way stop intersection serves the northbound off-ramp (which also serves as an I-190 frontage road) at the east portion of West Boulevard, North Street and Silver Street. The southbound on-ramp is also served by a channelized movement from the all-way stop intersection. The southbound off-ramp intersects with Silver Street west of the all-way stop intersection. The northbound on-ramp intersects with West Boulevard, north of Anamosa Street.

The existing interchange has deficiencies related to its non-standard configuration and limited overhead clearance. While the existing interchange was acceptable 50 years ago, this configuration would likely not be constructed today.

Figure 1-2 Project Area

1.4 Purpose and Need of the Project

It is important to establish a Purpose and Need for a project during its early stages. The Purpose defines the primary intended transportation objective and related goals to be achieved by a proposed transportation improvement and the Need is a condition sought to be relieved. The Need proves that the problem exists and provides data to support the Purpose. Alternatives were developed, evaluated, and compared based on the Purpose and Need. The Purpose and Need were identified through coordination with the Study Advisory Team, consisting of FHWA, Rapid City, and SDDOT and public input.

1.4.1 Purpose of the Project

The Purpose of the Project is to reconstruct the interchange to meet current design standards, improve the safety and mobility of the traveling public, and implement Rapid City's long-range plan to provide improved connectivity of the local transportation system.

1.4.2 Project Need

The Project Need guides the decision-making process throughout this document. The need for the I-190/Silver Street Interchange replacement is based on the following:

- ***Structural Deficiencies***
  - Need to replace the existing structures due to deficiencies
- ***Geometric Deficiencies***
  - Need to improve the geometrics and functionality of the intersection
- ***Transportation Demand***
  - Need to construct an interchange that is consistent with the City's long-range transportation plan
- ***System Linkage***
  - Need to continue access to the neighborhoods on the west side of the interchange from Silver Street and access on the east side of the interchange to the Rapid City Central High School and Rushmore Plaza Civic Center.
- ***Safety***
  - Need to construct an interchange that meets current design standards, specifically for safety

1.4.3 Support: Data shows Need for the Project

1.4.3.1 Structural Deficiencies

The I-190/Silver Street interchange structures were originally constructed in 1959. Currently maintenance is required every year for these structures to maintain SDDOT standards and avoid closure of the interchange. Although SDDOT maintains the interchange, recent inspections have noted several deficiencies such as rusting, fatigue cracking, deteriorated concrete, and exposed rebar[2]. Also, the current interchange design does not allow for the proper clearance below the structures. Therefore, it has been hit and scraped numerous times by trucks. Due to these structural deficiencies, increased maintenance and inspection costs are needed to ensure the bridges maintain structural integrity. *The alternative chosen will need to replace the two existing structures. The alternative chosen will need to meet the current design standards that include human factors and traffic considerations.*

1.4.3.2 Geometric Deficiencies

Geometric deficiencies have been documented in previous studies, including the 2000 and 2010 Decennial Interstate Corridor Studies conducted for SDDOT. The deficiencies included intersecting driveways on the northbound off ramp and southbound on ramp, the northbound on ramp separated from the actual

[2] The SDDOT inspection noted the following: section loss of the girders due to rust, some fatigue cracking in the girders, caps have a history of deteriorated concrete, bearings have moderate to heavy rust -with numerous bearings have misaligned plates, deck cantilever has some spalling with exposed rebar, and underside edges have discoloration and efflorescence.

interchange area, non-standard traffic control on the crossroad, and lack of pedestrian and bicycle facilities. *The alternative chosen will need to meet the current design standards, specifically geometrics.*

1.4.3.3 Transportation Demands

The final Major Street Plan, as amended, reflects Rapid City's plan to remove the street connection between North Street and Silver Street replacing it with a connection between North Street and Philadelphia Street (see Appendix A). *The alternative chosen will need to be consistent with the City's current transportation plans and Major Street Plan.*

1.4.3.4 System Linkage

The existing interchange for Exit 1 of I-190 connection between North Street and Silver Street, provides access to the neighborhoods on the west side of the interchange from Silver Street and access on the east side of the interchange to the Rapid City Central High School and Rushmore Plaza Civic Center. Connectivity, or the connection of neighborhoods and areas that traffic is generated by, was an important project consideration. This project would affect the following streets and surrounding neighborhoods:

- **Philadelphia Street**- The existing roadway network provides access to Philadelphia Street through indirect links to Omaha Street and I-190. Philadelphia Street is a recently constructed roadway and has been identified as a future collector street. Direct access from Philadelphia Street would create an improved east-west connection from I-190 to the surrounding current and future developments. *The alternative chosen will need to provide a better east-west connection of I-190 to surrounding neighborhoods*.
- **Silver Street**- Consideration was given to the neighborhoods that currently gain access through Silver Street. The neighborhoods are south of Short Street to Philadelphia Street and currently gain access from I-190 to Silver Street. The connection of Silver Street and I-190 is skewed and does not meet current design standards. *The alternative chosen will need to provide access to Silver Street and surrounding neighborhoods that meets current design standards.*
- **North Street**- Rapid City Central High School and Rushmore Plaza Civic Center are accessed from North Street which is connected to I-190. In addition, Rapid City Central High School also has access from the northbound off-ramp of the existing interchange. Rapid City Central and Rushmore Plaza Center will need to maintain access to North Street, while meeting current design standards. *The alternative chosen will need to consider continuing access to North Street.*
- **Northbound On-Ramp of Existing Interchange-** The existing interchange northbound on-ramp is located at Anamosa Street, approximately 2300 feet north of the current interchange. This configuration does not meet current design standards and does not provide ideal connectivity for northbound traffic. *The alternative chosen will need to design a northbound on- ramp that meets current design standards.*

1.4.3.5 Safety

The existing interchange has several features that are potential safety hazards for drivers. The following are the potential safety hazards:

- Four way stop at the northbound off-ramp – as volumes increase the stop sign becomes disregarded.
- Lack of driver familiarity in the area where North Street splits into Silver Street and the southbound on-ramp.
- Direct access points along the ramps for Rapid City Central High School and the Friendship House lead to vehicles occasionally going the wrong direction against one-way traffic.
- Northbound on-ramp at Anamosa Street does not allow for sufficient distance to accelerate in order to merge on to I-190.

The alternative chosen will need to meet current design standards, in order to meet or exceed current safety standards.

1.5 Other Projects

Several projects are planned in the vicinity of the Project and are listed below. Many of the transportation projects have been or will be addressed in separate NEPA documents.

- SD 44- *Project No. P0044(167)44*-PCN027K-2016- Omaha Street from Mt. View Road to the divided lanes east of Mt. View Road and SD 231, SD 231 N, and SD 231 S from the junction with SD 44 to Sheffer Street in Rapid City- Project would include grading and surfacing (SDDOT, 2012).
- US 16- *Project No. P0016(78)67*-PCN01TH-2014- From the end of the divided segment on the south side of Rapid City to Saint Patrick Street in Rapid City. The Project would include urban grading, storm sewer, curb and gutter, sidewalk, lighting, signals, and surfacing (SDDOT, 2012).
- US 16- *Project No. P0016(79)67*-PCN027C-2015-From Saint Patrick Street to Kansas City Street. Project would include urban grading, storm sewer, curb and gutter, sidewalk, lighting, signals, and surfacing (SDDOT, 2012).
- I-190- Project No. PH1902(65)0- PCN 03AZ- 2014- From Intersection of US 16 to West Boulevard. Traffic signals (SDDOT, 2012).
- I-190 -*Project No. IM 0040(18)*-PCN 035F-2015- Project would include structure repair.
- Rapid City Project- CIP 50826- 2014- Minnekahta Drive Area Water Main and Sanitary Sewer.
- Rapid City Project- CIP 50879- 2016- West Boulevard NE Reconstruction, North Street to Anamosa Street.
- Continued residential development in the area surrounding Philadelphia Street.

CHAPTER 2
ALTERNATIVES

This chapter presents the process used to identify alternatives, explains the process for determining which alternatives to carry forward for detailed study, summarizes the potential impacts of implementing the alternatives studied, and presents the rationale for selecting the preferred alternative.

2.1 Identification of Alternatives

The No-Build Alternative was identified for study in accordance with the NEPA requirement that the impacts of no action be considered; this alternative also serves as a basis of comparison with the build alternatives. The build alternatives were identified for preliminary evaluation during the Phase 1 Study. The criteria used to initially screen the build alternatives were meeting the Purpose and Need, design criteria, property impacts, and other environmental issues.

2.1.1 No-Build Alternative

Under the No-Build Alternative, short-term minor reconstruction and maintenance activities such as replacement of existing structures can be considered but the reconfiguration of the I-190/Silver Street Interchange would not be addressed. The No-Build Alternative does not meet the needs of the Project for the following reasons:

- The need for the Project to meet the transportation demands. Rapid City's Major Street Plan indicates a connection of North Street to Philadelphia Street at I-190. The No-Build Alternative would not meet this need by continuing the current Silver Street to North Street connection.
- The need for the Project to meet design standards and increase safety. The current configuration of the I-190/ Silver Street Interchange is a non-traditional diamond interchange that does not meet several design standards. Therefore, the No-Build Alternative would not meet several design standards as noted on Figure 1-2.

Although the No-Build Alternative would not meet the needs of this Project, it is included for analysis in this EA because it provides a baseline for comparison of impacts of the build alternatives and meets the NEPA requirement to analyze the impacts of no action.

2.1.2 Build Alternatives

The Phase 1 Study determined the I-190 mainline roadway corridor did not have deficiencies necessitating reconstruction of I-190, but the I-190/Silver Street Interchange would need to be reconstructed to correct structural deficiencies and reconfigured to meet current interstate design standards (HDR, 2010). Phase 1 Study developed eight build alternatives for the I-190/Silver Street Interchange with input from FHWA, SDDOT, Rapid City, and the public. Diamond, single point, and partial cloverleaf interchanges, along with various combinations of connections for the local street network, were assessed. During analysis of the Project, the City also identified the need to incorporate storm water detention basins for all build alternatives (see Figures 2-1 through 2-8).

2.1.3 Evaluation of Build Alternatives

The following were considered in order to assess the potential benefits and the drawbacks of each build alternative:

- The Purpose and Need of the Project,
- Public input,
- Interchange layouts and project footprints, and
- Natural and human environmental resources and potential impacts.

The initial eight build alternatives were presented to the public in March 2011 and the Study Advisory Team met on April 19, 2011 to review the feedback on the initial build alternatives (see Figures 2-1 through 2-8). Comments

regarding the benefits and drawbacks of each build alternative were documented. Based on the benefits and the drawbacks of each build alternative, Alternatives 1, 1a, 2a, and 3a were carried forward for further analysis and Alternatives 2, 2 Hybrid, 3, and 3b were eliminated from further analysis.

- Alternative 2 was eliminated due to potential safety issues; drivers would be unfamiliar with the design and merging with I-190 would be tight.
- Alternative 2 Hybrid was eliminated due to the skewed connection and potential for inefficient signal operation.
- Alternative 3 was eliminated due to not meeting all the FHWA movement requirements and requiring longer bridge lengths.
- Alternative 3b was eliminated due to requiring a widened/modified I-190 bridge over Rapid Creek.

Connectivity of the surrounding neighborhoods was further analyzed for each of the build alternatives. Refer to the "Philadelphia Street Connection Alignments Memo" in Appendix A for this analysis along with the recommended neighborhood street connectors associated with each alternative.

The four build alternatives, along with the related neighborhood street connection, were presented for public comment during a public information meeting on September 14, 2011. Table 2-1 presents a comparison of alternatives and their associated impacts. Constructability was analyzed for each alternative and each presents similar routine issues (HDR, 2011).

Table 2-1
Comparison of Alternatives

	No-Build Alternative	Alternative 1	Alternative 1a	Alternative 2a	Alternative 3a
Cost					
Roadway cost (million $) • Interim construction	0	6.63	6.89	6.20	6.98
Structure cost (million $) • Steel Beam Bridge • MSE Large Panel Wall	0	3.28	2.74	3.11	2.68
Subtotal construction cost (million $)	0	9.91	9.63	9.31	9.66
Utility Relocation costs (million $)	0	0.20	0.20	0.20	0.20
ROW and relocation cost (million $)	0	2.03	2.07	1.03	3.55
15% contingencies	0	1.82	1.79	1.58	2.01
Total roadway, structure, right-of-way, utility relocation costs, (million $[1])	**0[2]**	**13.96**	**13.69**	**12.12**	**15.42**
Other Considerations					
Right-of-way acquisitions Open residential areas (sf @ $2.50/sf) Potential residential acquisitions (each @ 30% markup of assessed value)	0 0	171,500 15	184,200 13	94,800 4	255,900 13
Meets all AASHTO design criteria	Yes[3]	Yes	Yes	Yes	Yes
Utility Conflicts					
Storm Sewer	No	Yes	Yes	Yes	Yes
Water main	No	Yes	Yes	Yes	Yes
Sanitary Sewer	No	Yes	Yes	Yes	Yes
Natural Gas	No	Yes	Yes	Yes	Yes
Electrical	No	Yes	Yes	Yes	Yes
Communication	No	Yes	Yes	Yes	Yes
Rail crossings	0	0	0	0	0
Meets Purpose and Need of Project	No	No	Yes	Yes	Yes

Notes:
[1] *All ROW, roadway, structure, and total construction costs are in 2011 dollars.*
[2] *Ongoing maintenance and structure repair would be required with No-Build Alternative.*
[3] *Ramp configurations are not standard and vertical clearance under the I-190 Bridge is inadequate.*

After the September 2011 public information meeting, Alternative 1 and Alternative 3a were eliminated from further analysis, leaving Alternative 1a and 2a for further review. The following is the rationale for the Study Advisory Team's decision to eliminate Alternatives 1 and 3a:

- ***Alternative 1-*** Alternative 1 is a full diamond interchange at Silver Street/North Street with I-190 shifted west (see Figure 2-1) maintaining the North Street connection to Silver Street west of I-190. The southbound I-190 ramp terminal in this option intersects the cross road at a fairly sharp angle. This angle restricts the driver's sight distance during turning movements creating an increased potential for accidents. In comparison with the other build alternatives, this alternative has higher safety risks. The mainline bridges would be longer than the other alternatives due to the cross road skew and cost more to construct than other build alternatives (see Table 2-1). Alternative 1 would also require additional property acquisitions and impacts due to the larger footprint of a diamond interchange. Finally, maintaining the existing connection from Silver Street to North Street, as discussed in Chapter 1, would need to meet the City's transportation plans and Major Street Plan. Based on these considerations, Alternative 1 was eliminated from further analysis.

- ***Alternative 3a-*** Alternative 3a is a partial loop interchange shifted west with a North Street to Philadelphia Street connection (see Figure 2-7). This concept is similar to Alternative 3, but a connection is provided to North Street via Philadelphia Street from the neighborhood north of Philadelphia Street and for eastbound Philadelphia Street traffic to access the southbound I-190 loop. The loop for westbound to southbound traffic would be a non-stop movement with improved traffic capacity that would meet peak demands from the Rapid City Central High School and Rushmore Plaza Civic Center. A traffic analysis was completed to evaluate the movements of the build alternatives and is available upon request (see Chapter 6). Based on this analysis, Alternatives 1a and 2a would also have sufficient capacity to carry the projected southbound traffic; with a footprint larger than the other remaining alternatives, this alternative has larger costs associated with bridge construction, right-of-way, and relocations (see Table 2-1). During the September 2011 public information meeting, several landowners in the area also were not in favor of this alternative due to the large area the southbound loop would require in their neighborhood. Based on these considerations, Alternative 3a was eliminated from further analysis.

The following discusses the remaining two Alternatives 1a and 2a.

Alternative 1a

Alternative 1a is a full diamond interchange at North Street with I-190 shifted west (see Figure 2-2). The shift west is to eliminate the sharp skew in the I-190 alignment and improve constructability of this build alternative. This build alternative is similar to Alternative 1, except the North Street cross road has been realigned to connect to the new local connector Philadelphia Street west of the interchange. By eliminating the skew of the cross road connecting Silver Street to North Street, Alternative 1a would reduce potential safety issues and allow for a more standard interchange configuration. Alternative 1a also incorporates a trail on the west side of the interchange that would be approximately 10 feet wide to accommodate pedestrians and bicyclists. Impacts of this alternative are shown in Table 2-2 and summarized below.

Benefits of Alternative 1a:

- Standard diamond interchange meets interstate design standards, and improves safety and traffic capacity.
- Connection of North Street to Philadelphia Street instead of Silver Street is consistent with the City's Major Street Plan.

Drawbacks of Alternative 1a:

- Alters traffic patterns in area due to cross roads connecting North Street to Philadelphia Street. An alternative connector road is required to maintain neighborhood connectivity and provide access to Philadelphia Street west of I-190 and North Street east of I-190.
- Larger project footprint would require additional property acquisitions and impacts in comparison to Alternative 2a.
- Impacts from roadway crossing of unnamed intermittent stream for the extension of Van Buren Street to West Boulevard North.
- Encroaches on Greenway, an area designated by the City for flood control.
- Encroaches on a private recreational area (not a Section 4(f) or 6(f) resource), Cowboy Hill.
- Encroaches on a Section 4(f) property, Executive Golf Course.

Alternative 2a

Alternative 2a is a single point diamond interchange at North Street with I-190 shifted west (see Figure 2-4). This build alternative is similar to Alternative 2, except the cross road has been realigned to connect to the new local connector Philadelphia Street west of the interchange. The geometry of the ramp terminal I-190/Silver Street intersection is improved over the existing interchange and less ROW than Alternative 1a would be required. Alternative 2a also incorporates a trail on the west side of the interchange that would be approximately 10 feet wide to accommodate pedestrians and bicyclists.

West Boulevard would be realigned to connect with Philadelphia Street at a new location west of the interchange in this alternative. This new intersection was analyzed for potential traffic control and for interactions with interchange operations. This analysis found that the intersection could be controlled by either a roundabout or traffic signal in the future, but that stop sign control on West Boulevard is sufficient based on current traffic projections within the planning horizon (HDR, 2011).

Benefits of Alternative 2a:

- Standard single point interchange meets interstate design standards and improves safety and traffic capacity.
- Connection of North Street to Philadelphia Street instead of Silver Street would follow the City's Major Street Plan.
- Smallest interchange footprint minimizes impacts to property in comparison to Alternative 1a.
- Avoids crossing of unnamed intermittent stream and impacts to wetlands.
- Minor encroachment to Greenway, an area designated by the City for flood control.

Drawbacks of Alternative 2a:

- Alters traffic patterns in area due to cross road connecting North Street to Philadelphia Street. A City neighborhood roadway connection is required to maintain connectivity and provide access to Philadelphia Street west of I-190.
- The project footprint would require some property acquisition and relocations, although there would be fewer relocations and less ROW needed than Alternative 1a.
- Encroaches on Section 4(f) property, Executive Golf Course.

Table 2-2 summarizes the affected environment and environmental impacts associated with these two build alternatives and the No-Build Alternative.

Section 4(f) properties regulated under 23 CFR Part 774 requires protection of public parks, recreation areas, wildlife and waterfowl refuges and historic sites. Alternative 1a and 2a would have a *de minimis* use of the Executive Golf Course. A *de minimis* use was determined since the Project would not adversely affect the activities, features, or attributes qualifying the Executive Golf Course, as a Section 4(f) resource. Alternative 2a would have less area of impact to the Executive Golf Course than Alternative 1a and would not have any wetland impacts. Alternative 2a would also have fewer impacts to family residences and apartment buildings. Therefore, Alternative 1a was dismissed from further review.

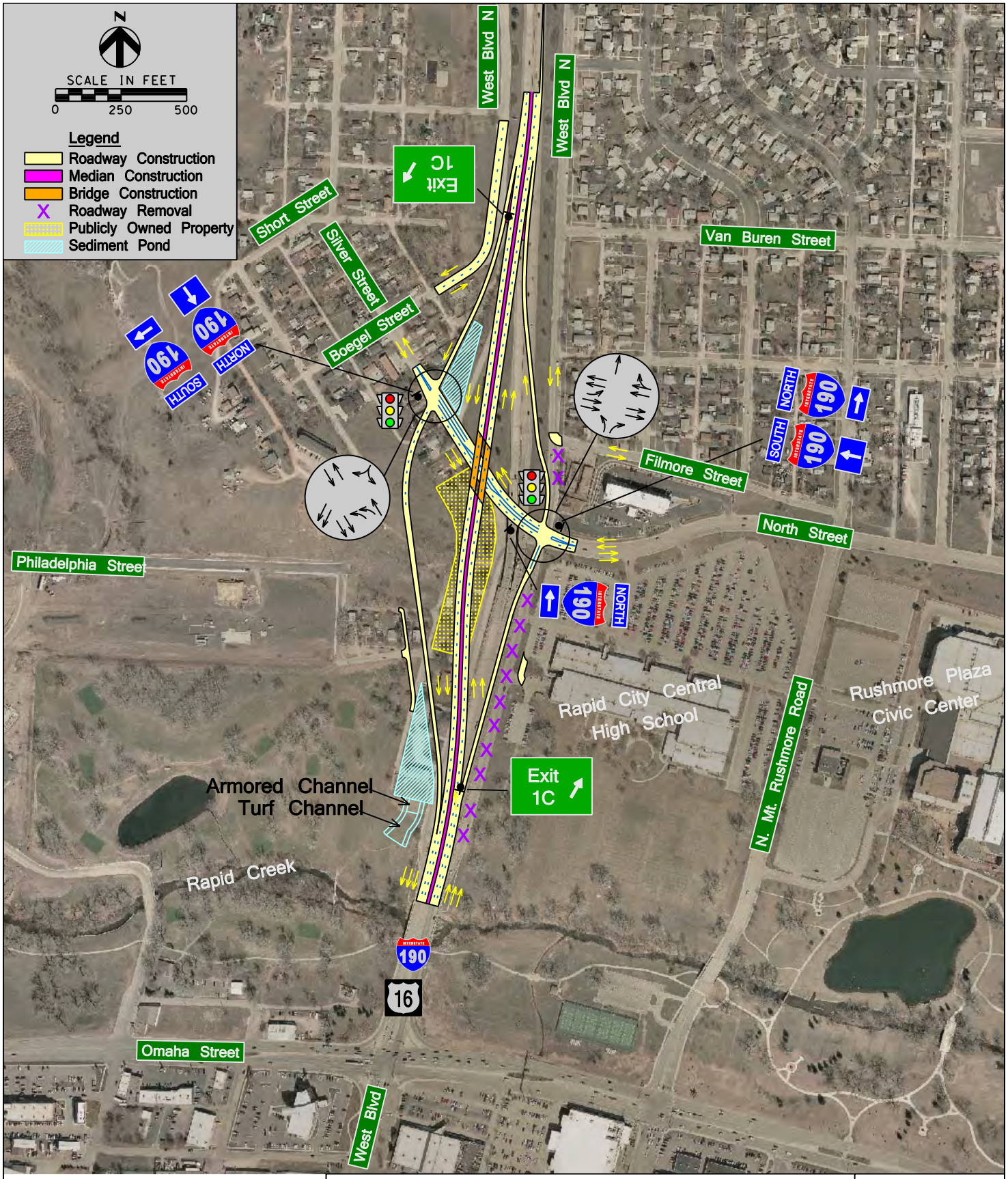
Chapter 3, Environmental Impacts Analysis, contains a summary of potential impacts to environmental resources, as well as potential impacts to traffic and maintenance under the improved transportation system for the remaining build alternative, Alternative 2a, in comparison to the No-Build Alternative.

Table 2-2
Summary of Impacts for Alternatives 1a and 2a

Resource	No-Build Alternative	Build Alternatives	
		Alternative 1a	Alternative 2a
Public Facilities and Services	No Impact	Access to public buildings would be altered to meet design standards.	Access to public buildings would be altered to meet design standards.
Visual Impacts and Aesthetics	No Impact	Use of visual barriers to prevent impacts from car headlights.	Use of visual barriers to prevent impacts from car headlights.
Economic Resources	Temporary Impacts Access to Businesses for closures due to structural deficiencies.	Improve access to businesses. Small encroachment of Executive Golf Course.	Improve access to businesses. Small encroachment of Executive Golf Course.
Environmental Justice	No Impact	No disproportionate impacts	No disproportionate impacts
Noise	Three receptors above NAC.	No Impact	Four receptors above NAC.
Relocations	No Impact	13 Single Family Residences Three Apartment Buildings Friendship House	Five Residences Two Apartment Buildings Friendship House
Wetlands and Waters of the U.S.	No Impact	0.08 acres of Impact	No Impact
Floodplain	No Impact	1.09 acres- 100 yr. Floodplain 4.17 acres- 500 yr. Floodplain	0.94 acre- 100 yr. Floodplain 3.80 acres– 500 y. Floodplain
Section 4(f) and 6(f) Resources	No Impact	Encroaches on Executive Golf Course	Encroaches on Executive Golf Course

2.2 Preferred Alternative

Based on an evaluation of potential impacts, Alternative 2a has been identified as the preferred alternative for the Project.



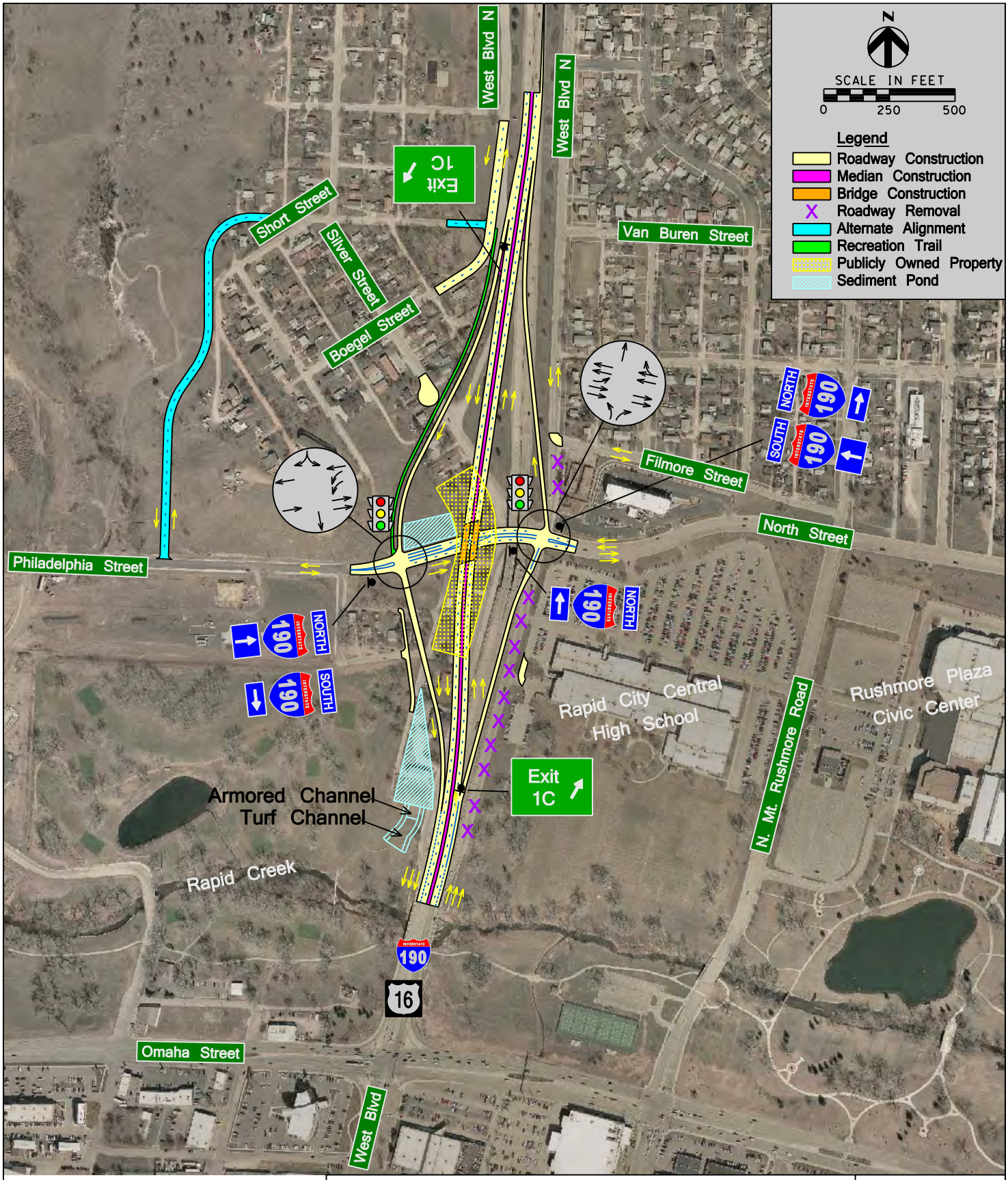
Interchange Alternative 1

Full Diamond Interchange at Silver Street/North Street with I-190 shifted west

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

July 2013

Figure 2-1



Interchange Alternative 1a

Full Diamond Interchange at North Street with I-190 shifted west

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

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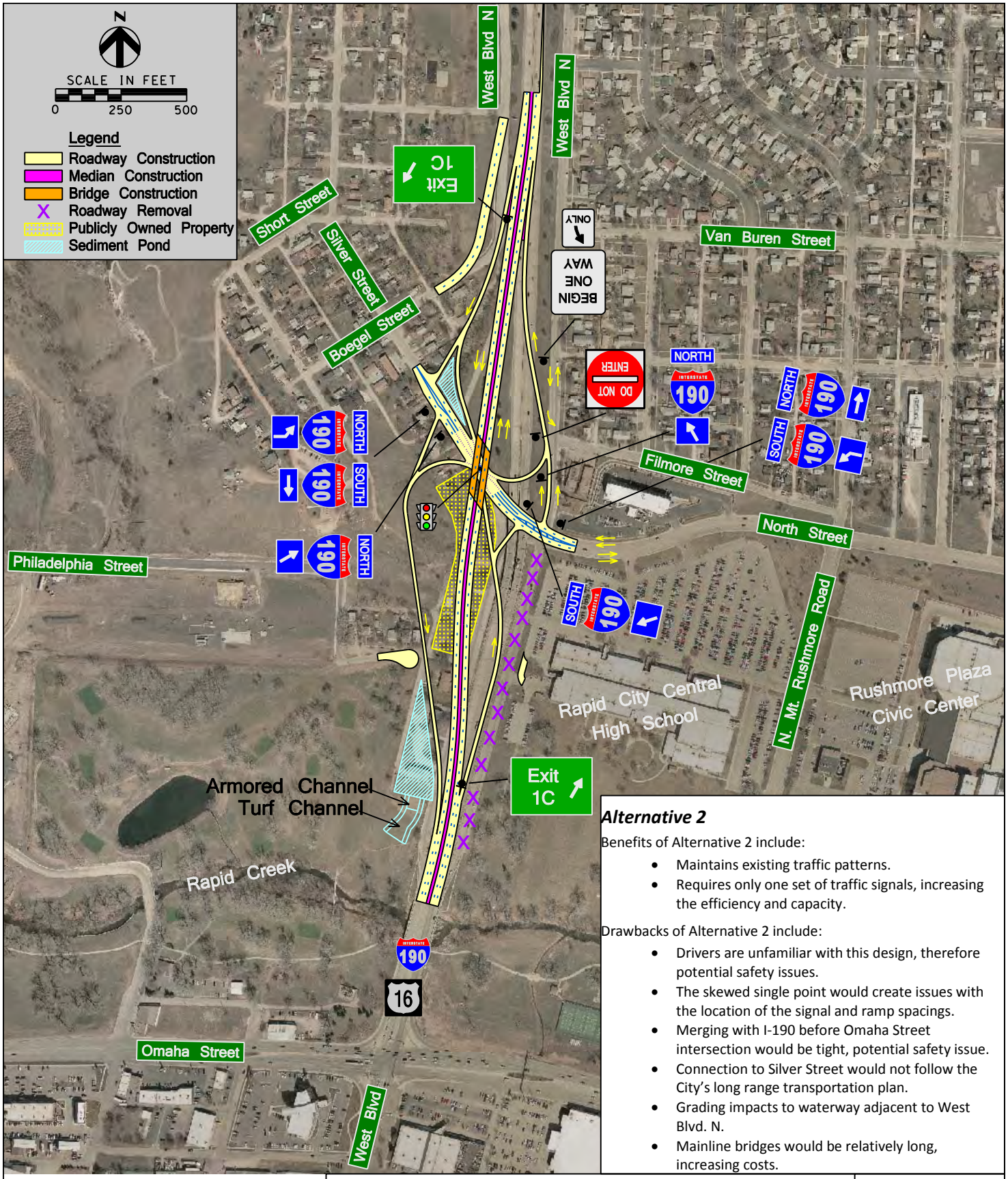
Figure 2-2



Alternative 2

Benefits of Alternative 2 include:

- Maintains existing traffic patterns.
- Requires only one set of traffic signals, increasing the efficiency and capacity.

Drawbacks of Alternative 2 include:

- Drivers are unfamiliar with this design, therefore potential safety issues.
- The skewed single point would create issues with the location of the signal and ramp spacings.
- Merging with I-190 before Omaha Street intersection would be tight, potential safety issue.
- Connection to Silver Street would not follow the City's long range transportation plan.
- Grading impacts to waterway adjacent to West Blvd. N.
- Mainline bridges would be relatively long, increasing costs.

Interchange Alternative 2

Single Point Diamond Interchange at Silver Street with I-190 shifted west

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

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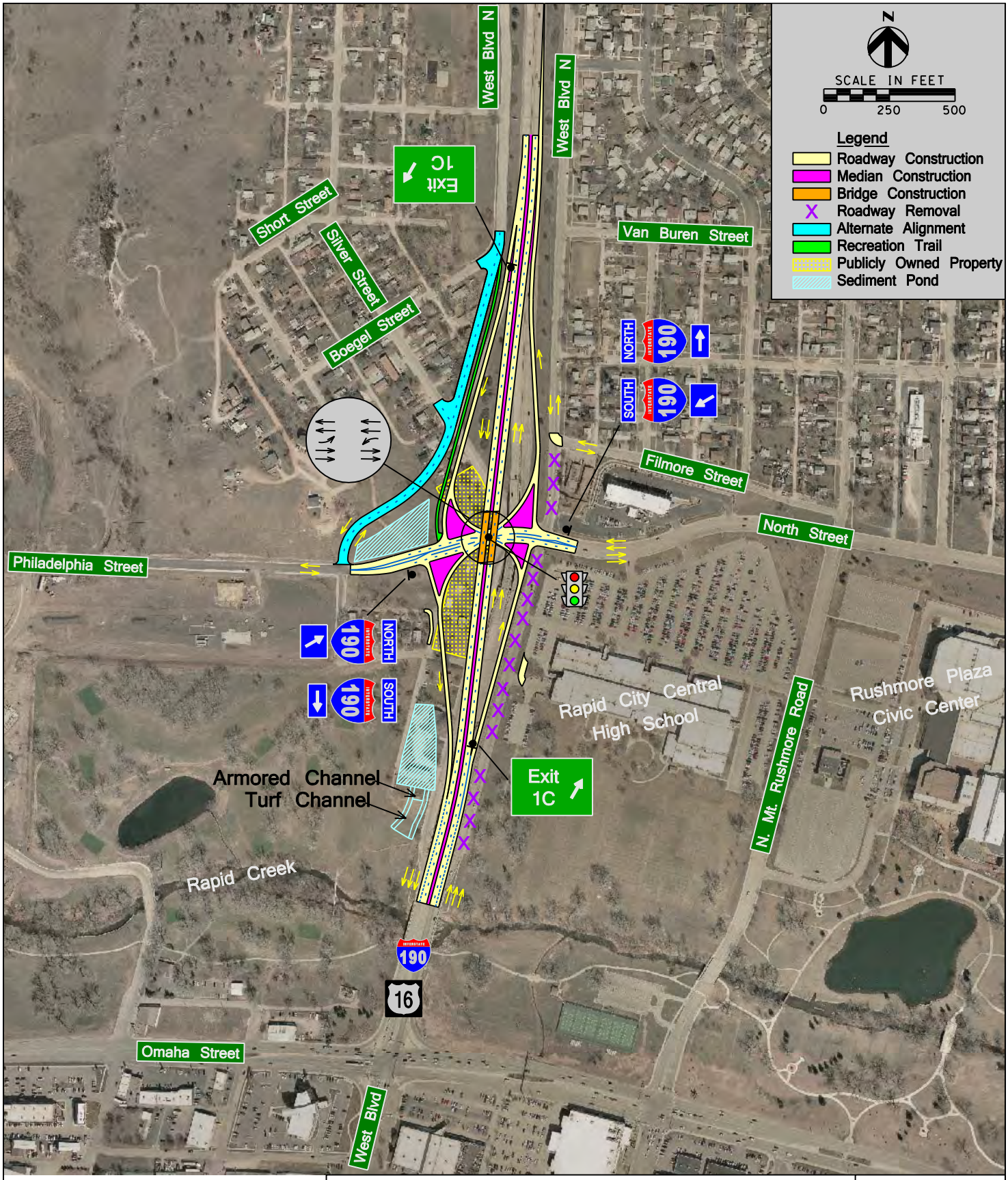
Figure 2-3



Interchange Alternative 2a

Single Point Diamond Interchange at North Street with I-190 shifted west

Interstate 190/Silver Street Interchange Study
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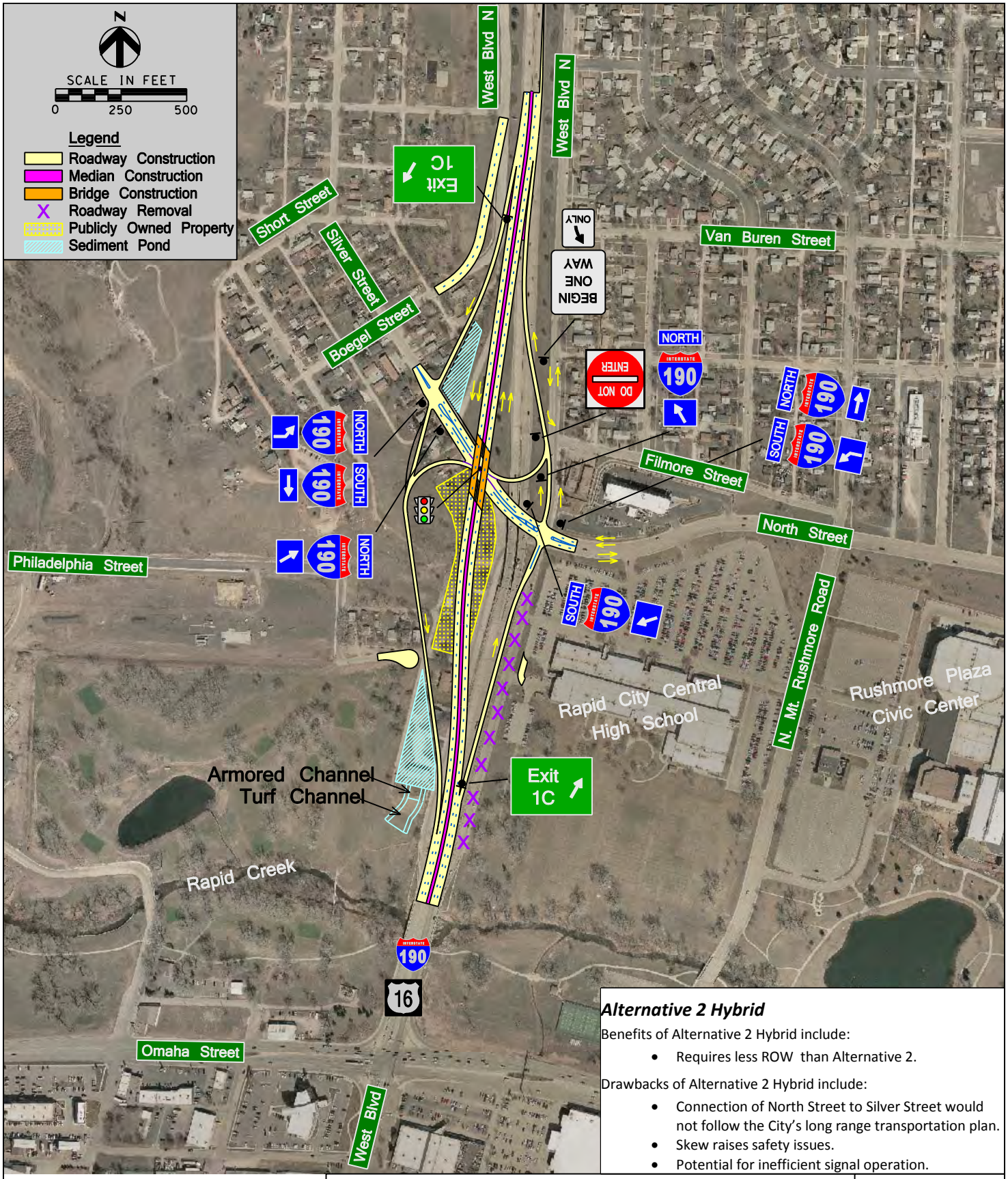
Figure 2-4



Alternative 2 Hybrid

Benefits of Alternative 2 Hybrid include:

- Requires less ROW than Alternative 2.

Drawbacks of Alternative 2 Hybrid include:

- Connection of North Street to Silver Street would not follow the City's long range transportation plan.
- Skew raises safety issues.
- Potential for inefficient signal operation.

Interchange Alternative 2 Hybrid

Hybrid Single Point Diamond Interchange at Silver Street with I-190 shifted west

Interstate 190/Silver Street Interchange Study
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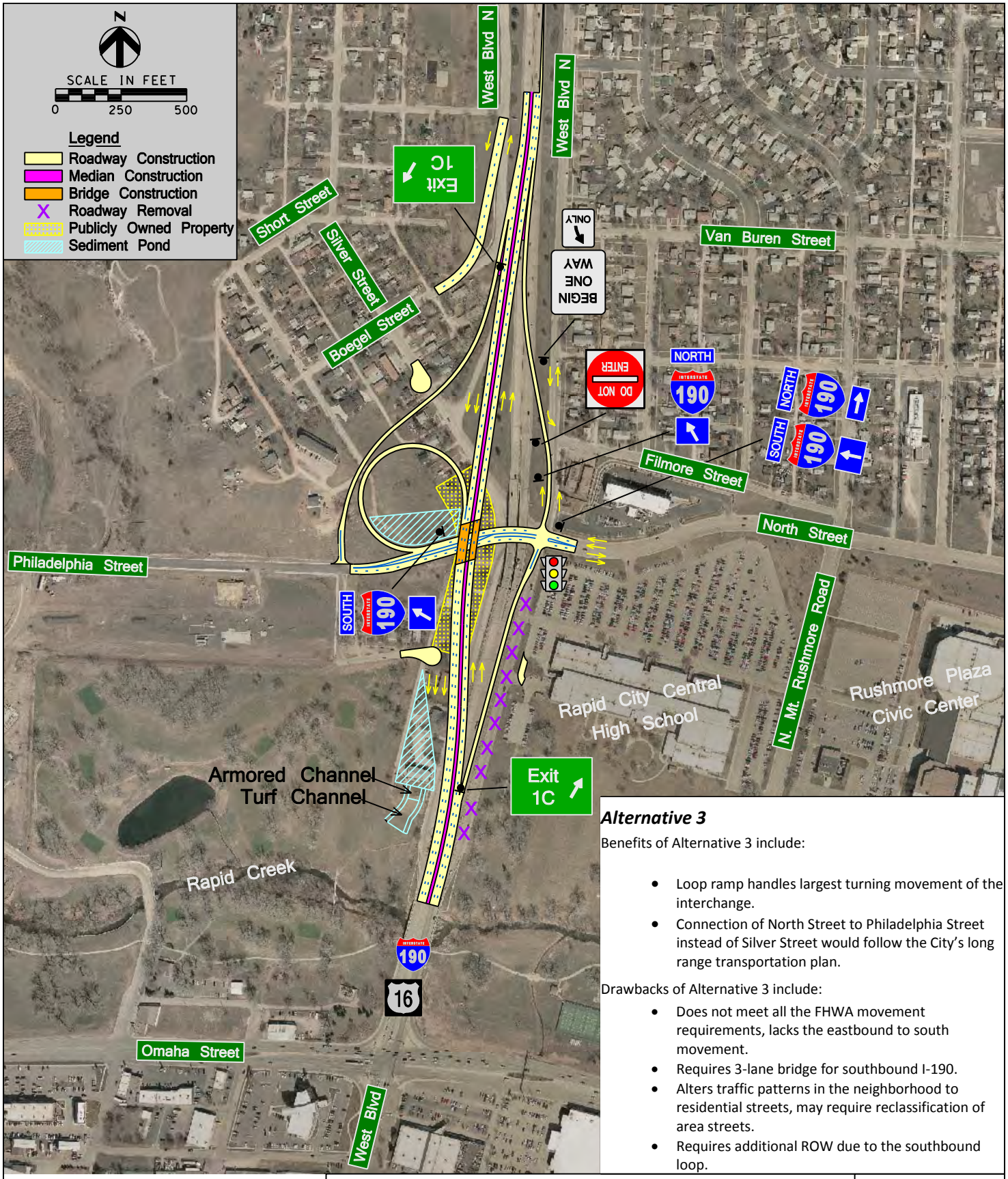
Figure 2-5



Alternative 3

Benefits of Alternative 3 include:

- Loop ramp handles largest turning movement of the interchange.
- Connection of North Street to Philadelphia Street instead of Silver Street would follow the City's long range transportation plan.

Drawbacks of Alternative 3 include:

- Does not meet all the FHWA movement requirements, lacks the eastbound to south movement.
- Requires 3-lane bridge for southbound I-190.
- Alters traffic patterns in the neighborhood to residential streets, may require reclassification of area streets.
- Requires additional ROW due to the southbound loop.

Interchange Alternative 3

I-190 Interchange with Loop at North Street

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

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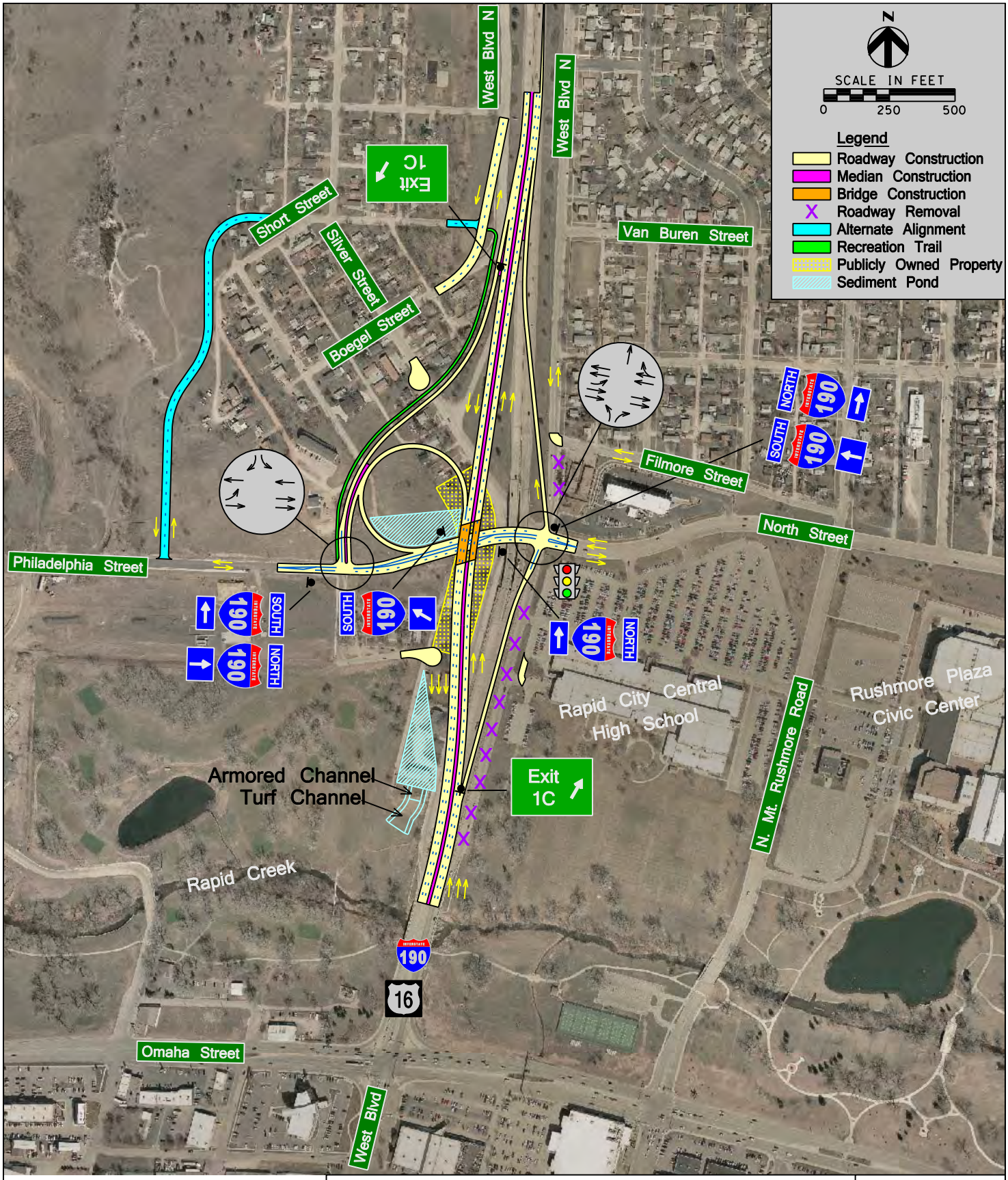
Figure 2-6



Interchange Alternative 3a

I-190 Interchange with Loop at North Street and EB to SB access

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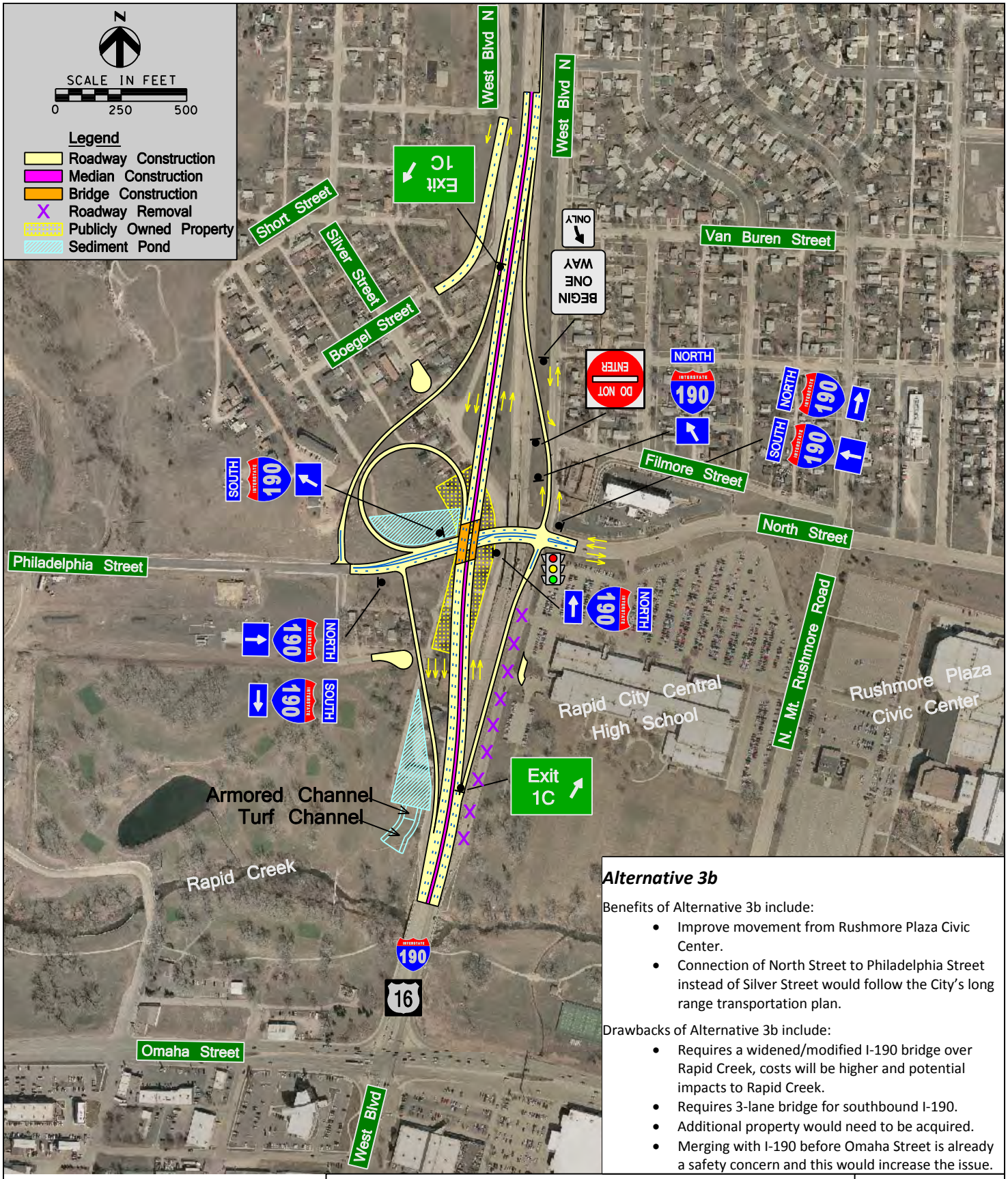
Figure 2-7



Alternative 3b

Benefits of Alternative 3b include:

- Improve movement from Rushmore Plaza Civic Center.
- Connection of North Street to Philadelphia Street instead of Silver Street would follow the City's long range transportation plan.

Drawbacks of Alternative 3b include:

- Requires a widened/modified I-190 bridge over Rapid Creek, costs will be higher and potential impacts to Rapid Creek.
- Requires 3-lane bridge for southbound I-190.
- Additional property would need to be acquired.
- Merging with I-190 before Omaha Street is already a safety concern and this would increase the issue.

Interchange Alternative 3b

I-190 Interchange with Loop at North Street and EB to SB on-ramp

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

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Figure 2-8

CHAPTER 3
ENVIRONMENTAL IMPACTS ANALYSIS

This chapter describes the environmental impacts for Alternative 2a. This EA does not evaluate the following resources, which are not present in the Project Area: wild and scenic rivers, railroads, coastal barriers and coastal zones. This chapter does not discuss the environmental resources which were not impacted by Alternative 2a, which includes utilities, farmlands, and invasive species.

3.1 Land Use

3.1.1 Existing Conditions

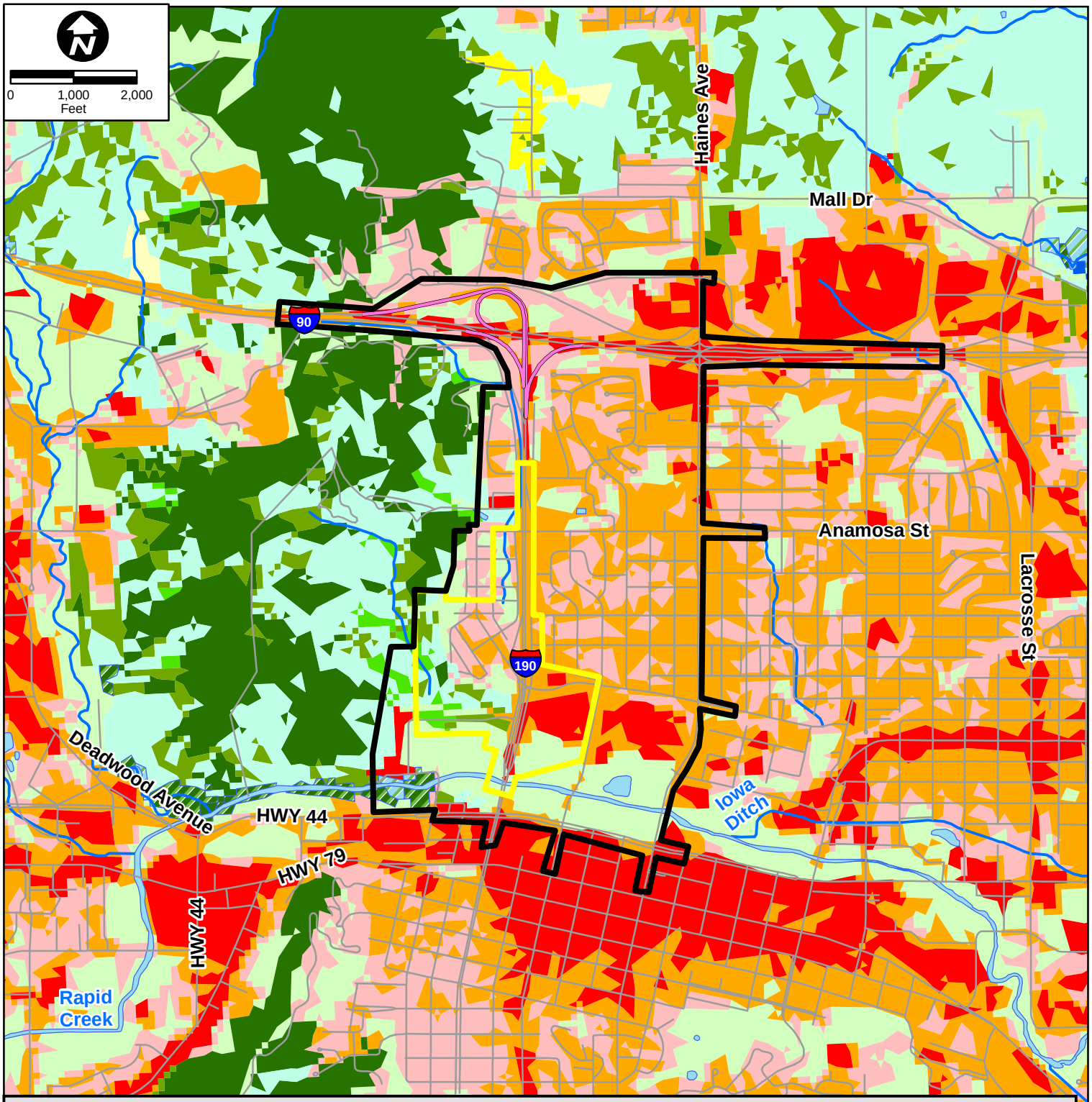
The Project Area has a variety of land uses (see Figure 3-1). Within the urban portion of the Project Area, land use within the area is predominately residential with some designated park and recreational areas and scattered businesses. The western portion of the Project Area is primarily grassland area that is not currently developed. The Rapid City Future Land Use plan identified North Rapid as the neighborhood within the Project Area. The North Rapid neighborhood boundaries are south of I-90, east of Deadwood Avenue, west of LaCrosse Avenue, and north of Main Street (Rapid City MPO, 2010). This area increased by 51 single family and 82 multi family dwelling units from 2000 to 2007. The annual future increase for the North Rapid neighborhood area is anticipated to be 0.1 percent, based on the 2035 projections (Rapid City MPO, 2010). The portion of the Project Area that is undeveloped has dramatic changes in topography. A portion of this area, the west side of the Project Area, has been identified for future development, while the northwestern portion has been identified for preservation as Cowboy Hill.

The Rapid City Land Use plan notes that there is sufficient undeveloped land within Rapid City to host future growth (Rapid City MPO, 2008). The Rapid City Land Use plan also documents how local citizens want the community to develop in the future. Continued planning will outline the means by which Rapid City can measure its current resources, map out goals which are in line with its values, and allocate its resources in a planned and efficient manner to accomplish those stated goals (Rapid City MPO, 2008).

3.1.2 Impacts of Alternatives

The No-Build Alternative would not be consistent with the comprehensive plans. Rapid City's Major Street Plan identifies a connection from Philadelphia Street to North Street as the cross road for the interchange. Currently the cross road is Silver Street to North Street.

Alternative 2a is consistent with the comprehensive plans for the area: Rapid City Area, 2030 Long Range Transportation Plan, Rapid Trip 2035, Rapid City's Major Street Plan, and Rapid City Area Future Land Use Plan. The reconstruction of the I-190/Silver Street Interchange is noted as part of Rapid City's Major Street Plan (see Rapid City, 2011c). As noted in Rapid City's Major Street Plan, the connection from Silver Street to Philadelphia Street coordinates with land use patterns and provides connectivity in the collector street network.



Legend

- Study Area
- Project Area
- Waterway (NHD)
- Water Body (NHD)

Land Use

- Barren Land
- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Open Water
- Shrub/Scrub
- Woody Wetlands

Land Use

Interstate190/Silver Street Interchange

Rapid City, South Dakota

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Figure 3-1

3.2 Public Facilities and Services

3.2.1 Existing Conditions

Public facilities include the City Hall, library, auditorium, schools, emergency response buildings, communication, power, gas, water, and wastewater utilities. Figure 3-2 shows the location of the public buildings within the Project Area or in the vicinity of the Project Area. The following are descriptions of each public facility located within or directly adjacent to the Project Area:

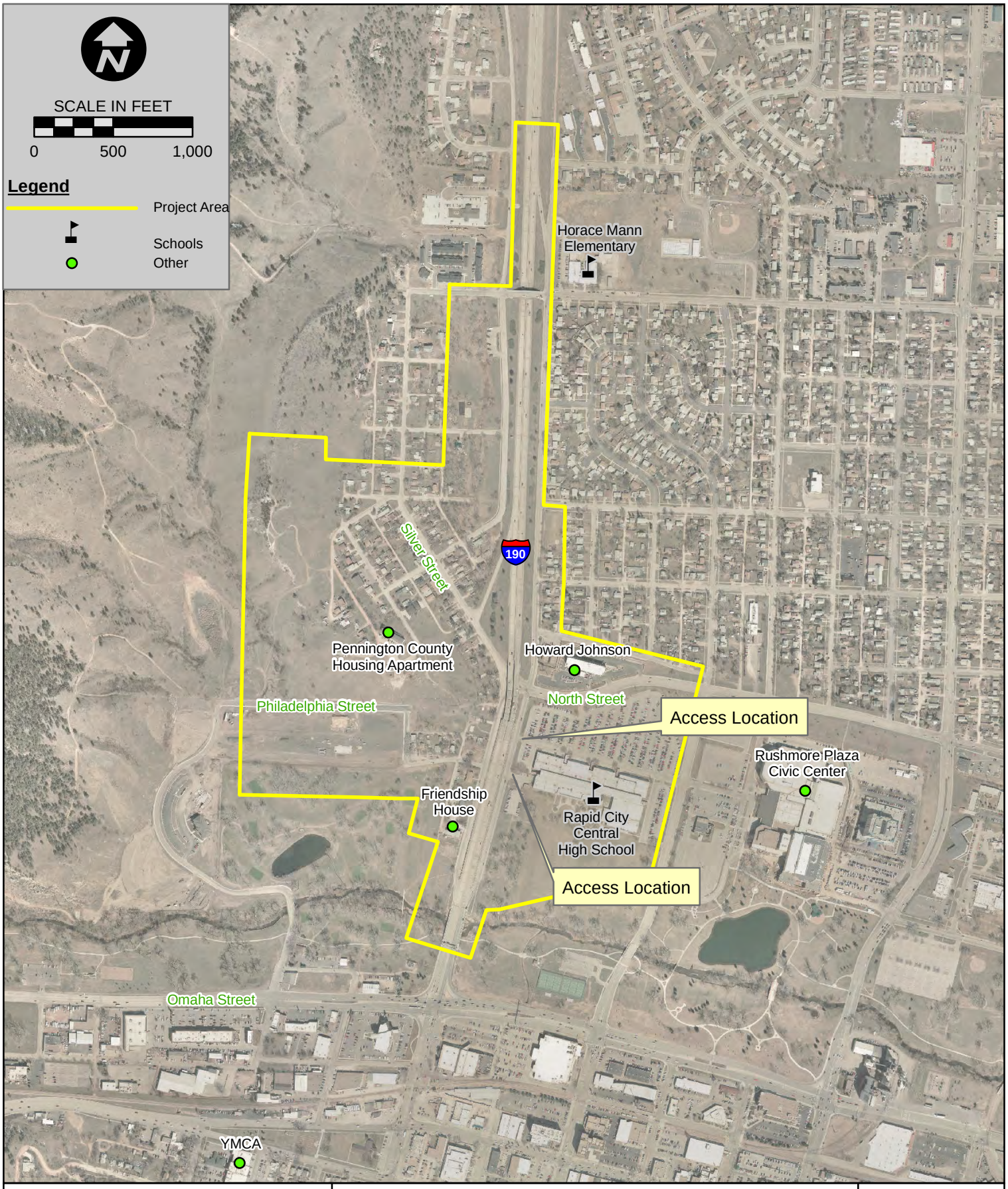
- **Rushmore Plaza Civic Center** is a multi-purpose arena that is one of the largest venue centers in South Dakota. Depending upon the event, capacity varies from 5,000 seats for a hockey game to over 10,000 seats for a concert (Rushmore Plaza Civic Center, 2011).
- **Rapid City Central High School** is one of several high schools that serve the Rapid City area. Approximately 2,050 students attend the high school.
- **Horace Mann Elementary School** has approximately 350 students that attend the elementary school.
- The **Pennington County Housing Apartment** is part of the Pennington County Housing Program, which offers housing programs to low-income families (Pennington County Housing, 2011).
- **YMCA** Center of Rapid City serves the community with programs that focus on physical, social, mental and spiritual needs of Rapid City residents.
- **Friendship House** was a half-way house and rehabilitation center at the end of this Project, Rapid City and the County decided to move this facility to a new location. This building is now vacant.
- **Emergency Response**, such as fire stations and police, services this Project Area. No fire stations are located within the Project Area, but the Project Area is within Fire Stations 1, 3, and 7 Response Areas (Rapid City Fire Department, 2010). The Project Area also receives ambulance services from the Rapid City Regional Hospital, as well as the Rapid City Police Department. No facilities for either public service are located in the Project Area.

3.2.2 Impacts of Alternatives

The No-Build Alternative would not impact public buildings (such as schools) in the vicinity of the Project Area. The No-Build Alternative would potentially cause delays in emergency response time in and near the Project Area due to the potential closures as the roadway structures would continue to deteriorate. The No-Build Alternative would also continue the existing hazardous conditions of direct access from Rapid City Central High School and residences to the existing ramps.

Alternative 2a would not impact public buildings in the vicinity of the Project Area. Access to Rapid City Central High would be altered by Alternative 2a in order to meet safety design standards. The existing interchange allows two access locations to Rapid City Central High School on the existing southeast ramp (see Figure 3-2). Alternative 2a would allow access to Rapid City High School only from North Street. Coordination with the Rapid City Central High School and School Board occurred as part of the Project. The Rapid City Central High School property manager would be included during final design to address the closure of the access points to the existing ramp.

Traffic patterns would be altered by Alternative 2a, due to the connection currently from North Street to Silver Street would change to North Street to Philadelphia Street. The neighborhood and emergency response services within the vicinity of Silver Street would take West Boulevard connection to head north, south or east of the interchange. For example, residents of the Silver Street area will need to take these connection options to travel to Rapid City Central High School. Alternative 2a would include a recreation trail that will be adjacent on the west side of the interchange. While some travel patterns will be altered, by maintaining neighborhood street connections from both the north and south. With the improved interchange capacity/function travel time delays are expected to be negligible, if not improved (HDR, 2011).



Public Facilities and Services

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

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Figure 3-2

3.3 Visual Impacts and Aesthetics

3.3.1 Existing Conditions

The Project Area is located in an urban setting surrounding the existing I-190/Silver Street Interchange. The landscape is residential development with park areas surrounding Rapid Creek, with infrastructure such as utilities and existing roadways.

3.3.2 Impacts of Alternatives

The No-Build Alternative would not involve Project construction and therefore would not directly alter visual impacts or aesthetics.

Alternative 2a would reconstruct an existing interchange, therefore altering the interchange but not the urban setting of the Project Area. Alternative 2a would also construct a roadway that connects West Boulevard North to Philadelphia Street (see Figure 3-4). Residents on the south side of the Philadelphia Street and West Boulevard North intersection proposed for Alternative 2a, noted that headlights might shine into their homes. During final design, grading or landscaping features such as placement of vegetation would be included to create a visual barrier. For Alternative 2a, the impacts on visual resources in the Project Area would be typical of what is normally associated with this type of highway project.

3.4 Archaeological and Historic Resources

3.4.1 Existing Conditions

No properties included in the National Register of Historic Places (NRHP) were identified within the Project Area. Cultural resources surveys were completed within the Project Area by the Archaeological Research Center (ARC), Renewable Technologies, Incorporated (RTI), and HDR (ARC, 2011; RTI, 2011; and HDR, 2013). Early coordination letters were also sent to the Native American Tribes who may have an interest in the initiation of the Project. Coordination is further discussed in Section 5.2, Tribal Coordination.

Due to the location of the Project within an urban setting, numerous residences, referred to as standing structures within the cultural resource reports, are within the Project Area. The focus of the cultural resources surveys were on the standing structures that could potentially be directly impacted by the Project. The following standing structures were considered:

- Twenty-three structures were recommended as not eligible to the NRHP based on the cultural resources reports (ARC, 2011; RTI, 2011; and HDR, 2013).
- In a letter dated March 25, 2013, two additional buildings were recommended as not eligible to the NRHP based on the criterion of age, less than 50 years old. No additional work was recommended if these structures are impacted by the Project (SDDOT, 2013).

ARC survey also identified 18 newly discovered archaeological sites. These sites are not noted on Figure 3-4; state law SDCL Section 1-20-21-2, and Section 304 of the NHPA direct that the location of specific sites be withheld as confidential to protect their integrity and cannot be specifically referred to in public documents or figures. Of the 18 sites:

- Site 39PN3379 is a multi-component site with both Prehistoric period and Historic period artifact scatters. The prehistoric component is likely buried and the site's National Register eligibility status cannot be determined from the survey level data. The ARC report recommends a determination of No Historic Properties Affected based on the avoidance of site 39PN3379. If avoidance is not possible, the site should be evaluated to determine its National Register eligibility status.
- Site 39PN3380 is a remnant concrete foundation and Historic artifact scatter. The site lacks integrity and does not meet the NRHP eligibility criteria. The ARC report recommends that site 39PN3380 is Not Eligible for listing on the NRHP.
- Site 39PN3381 consists of a Historic period remnant concrete pad feature and sparse artifact scatter. The site lacks integrity and does not meet the NRHP eligibility criteria. ARC recommends this site as Not Eligible for listing on the NRHP.

- The remaining 15 sites (39PN3382, 39PN3383, 39PN3384, 39PN3385, 39PN3386, 39PN3387, 39PN3388, 39PN3389, 39PN3390, 39PN3391, 39PN3392, 39PN3393, 39PN3394, 39PN3395, and 39PN3396) were previously residences that have been moved or demolished. The sites were recommended as Not Eligible for listing on the NRHP.

3.4.2 Impacts of Alternatives

The No-Build Alternative would not impact cultural resources in the Project Area.

Of the sites and structures noted in the ARC, RTI, and HDR reports and the SDDOT letter, all were recommended as not eligible for the NRHP except for Site 39PN3379. The determination of effect has been coordinated with SHPO. SHPO concurred with a determination of No Historic Properties Affected for this undertaking, with the condition that Site 39PN3379 is avoided by all construction activities including staging and borrow areas (SDDOT, 2013). Alternative 2a avoids Site 39PN3379.

If during construction, any buried undocumented cultural sites are found, project construction activities would be immediately halted and the SD SHPO would be notified so that an appropriate course of action can be determined.

Archaeological and Historic Resources

Interstate 190/Silver Street Interchange

Rapid City, South Dakota

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Figure 3-3

3.5 Economic Resources

This section addresses the social and economic character of the Project Area. The sources used for this socioeconomic analysis were the most recent available: the U.S. Census Bureau 2010 census data was utilized. Additionally, the long range plans for Rapid City, RapidTRIP 2035 and Rapid City's Long Range Transportation Plan (Rapid City MPO, 2010) were utilized for applicable economic data needs.

3.5.1 Existing Conditions

3.5.1.1 Income and Employment

The median household income from 2007-2011 was approximately $44,740 for Rapid City and $48,378 for Pennington County. Rapid City falls below the 2007-2011 statewide median household income of $48,010 and Pennington County is above.

In the Rapid City Area Future Land Use report, utilizing the SD Department of Labor information to assess the non-farm employment levels by major industrial sectors for 2000 and 2006, the following trends were noted:

- the service industry represents the greatest gain,
- mining and construction has the second highest gain during the six year period, and
- manufacturing and transportation/public utilities both experienced average annual employment decreases.

RapidTRIP 2035 noted that the projected employment for Pennington County in 2035 would be an increase in office/service industry, retail, industrial, and the public categories. RapidTRIP 2035 also noted the projected locations of the employment growth, which are scattered throughout Rapid City (Rapid City MPO, 2010).

3.5.1.2 Businesses and Access

The majority of commercial development in the Project Area is concentrated along I-190. Commercial development is also located adjacent to the Project Area and I-190 provides access to these areas.

Two businesses are located within the Project Area:

- Howard Johnson Inn and Suites is located at 950 North Street (see Figure 3-4).
- Executive Golf Course is a City owned golf course located at 200 12th Street (see Figure 3-4).

3.5.2 Impacts of Alternatives

The No-Build Alternative would potentially impact access to the Howard Johnson Inn and Suites if structural bridge deficiencies required temporary closures of the existing interchange.

Alternative 2a would temporarily impact the Executive Golf Course for the construction of the channel associated with the detention pond. The construction of the channel and channel will not impact the golf course activities and would be a minor change to the landscape for this business. Alternative 2a would improve access to the businesses within the area by eliminating the potential closure of the interchange due to deficiencies and improving traffic operations of the interchange.

3.6 Environmental Justice

3.6.1 Existing Conditions

3.6.1.1 Population

Title VI of the Civil Rights Act of 1964 (42 U.S. Code 2000d et seq.) ensures that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving Federal financial assistance on the basis of race, color, national origin, age, sex, and disability. In addition, Executive Order 12898 on environmental justice (EJ), dated February 11, 1994, directs that a Federal agency shall make achieving EJ part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on racial minority (as defined by the census: Black or African American, American Indian and Alaska

Native, Asian, and Native Hawaiian and other Pacific Islander), ethnic minority (Hispanic or Latino), vulnerable age group (under 18 years of age), and low-income populations, referred to as EJ populations.

To determine if there would be any disproportionately high and adverse human health or environmental impacts from the Project, the percentages of minority, vulnerable age group, and low-income populations within the Project Area were compared to the percentage of these populations residing in Rapid City as a whole to determine if the population that could be affected by the project alternative is substantially[1] higher in minority, vulnerable age group, and low-income populations than the total population of Rapid City. Populations were analyzed with 2010 US Census data at the smallest geographical unit available (Census blocks for minorities and age, and Census block groups for income). Figure 3-5 illustrates the census boundaries within and near the Project Area. The percentage of the population of American Indians and Alaska Natives, Hispanic, and low-income people are substantially above the percentage of the population of Rapid City. Table 3-1 lists the percentages of racial minorities and ethnic minorities in Rapid City and the Project Area. Shaded boxes indicate that the designated racial and ethnic characteristics within the Project Area exceed the substantial threshold for a given EJ population.

Table 3-1
Demographics Overview (2010)

	Rapid City, South Dakota	Percentage of Overall Population	Substantial Thresholds	Project Area Blocks, Total	Percentages
Total:	67,956			1,304	
Population of one race:	65,162	95.89%		1,228	
White alone	54,658	80.43%		844	64.72%
Black or African American alone	764	1.12%	1.57%	15	1.15%
American Indian and Alaska Native alone	8,416	12.38%	17.34%	347	26.61%
Asian alone	795	1.17%	1.64%	7	0.54%
Native Hawaiian and Other Pacific Islander alone	52	0.08%	0.11%	0	0.00%
Some Other Race alone	477	0.70%	0.98%	15	1.15%
Two or More Races:	2,794	4.11%	5.76%	76	5.83%
Hispanic	2,816	4.14%	5.80%	102	7.82%
Children	16,241	23.90%	33.46%	978	21.00%

Source: 2010 US Census, Redistricting Data (Public Law 94-171) Summary File

The 2006 to 2010 American Community Survey indicated a population of 4,308 persons within the block groups within the Project Area. Potential low-income populations were analyzed based on the percentage of households below the poverty level (households in which the total annual income of the family or of the non-family householder is below the relevant poverty threshold) in 2010 and by comparison of median household income with the City average. Table 3-2 displays that the proportion of low-income households within the Project Area is substantially higher (double) than the City's proportion.

[1] Substantial is defined as statistically significant, that is, one standard deviation (approximately 40 percent) above the general population of the area (in this EA, the population of Rapid City).

Table 3-2
Low Income Households

	Rapid City, South Dakota	Percentages	Thresholds	Project Area Block Groups, Total	Percentages
Total:	64,423			4,308	
Poverty	10,483	16.27%	22.78%	1,395	32.38%

Source: 2006 – 2010 American Community Survey, U.S. Census Bureau

3.6.2 Impacts of Alternatives

The No-Build Alternative would not disproportionately affect racial minority, ethnic minority, or low income populations. Under the No-Build Alternative, existing conditions would continue, leading to potential future disruptions (including road closures) to address repairs. The No-Build Alternative could present problems in the future with road closures to continually maintain the interchange due to deficiencies. It is possible that access to public facilities such as Rapid City Central High School could be temporarily affected and some out-of-distance travel could occur for EJ populations living in the Project Area. The No-Build Alternative could present problems in the future with road closures to continually maintain the interchange due to deficiencies, therefore impacting the access to public facilities such as Rapid City Central.

Potential concerns for EJ populations are access to public facilities (as measured by out-of-distance travel), safety, visual impacts, relocations, and noise. As discussed in Section 3.7.1.1, Existing Conditions, the following EJ populations exist within the Project Area:

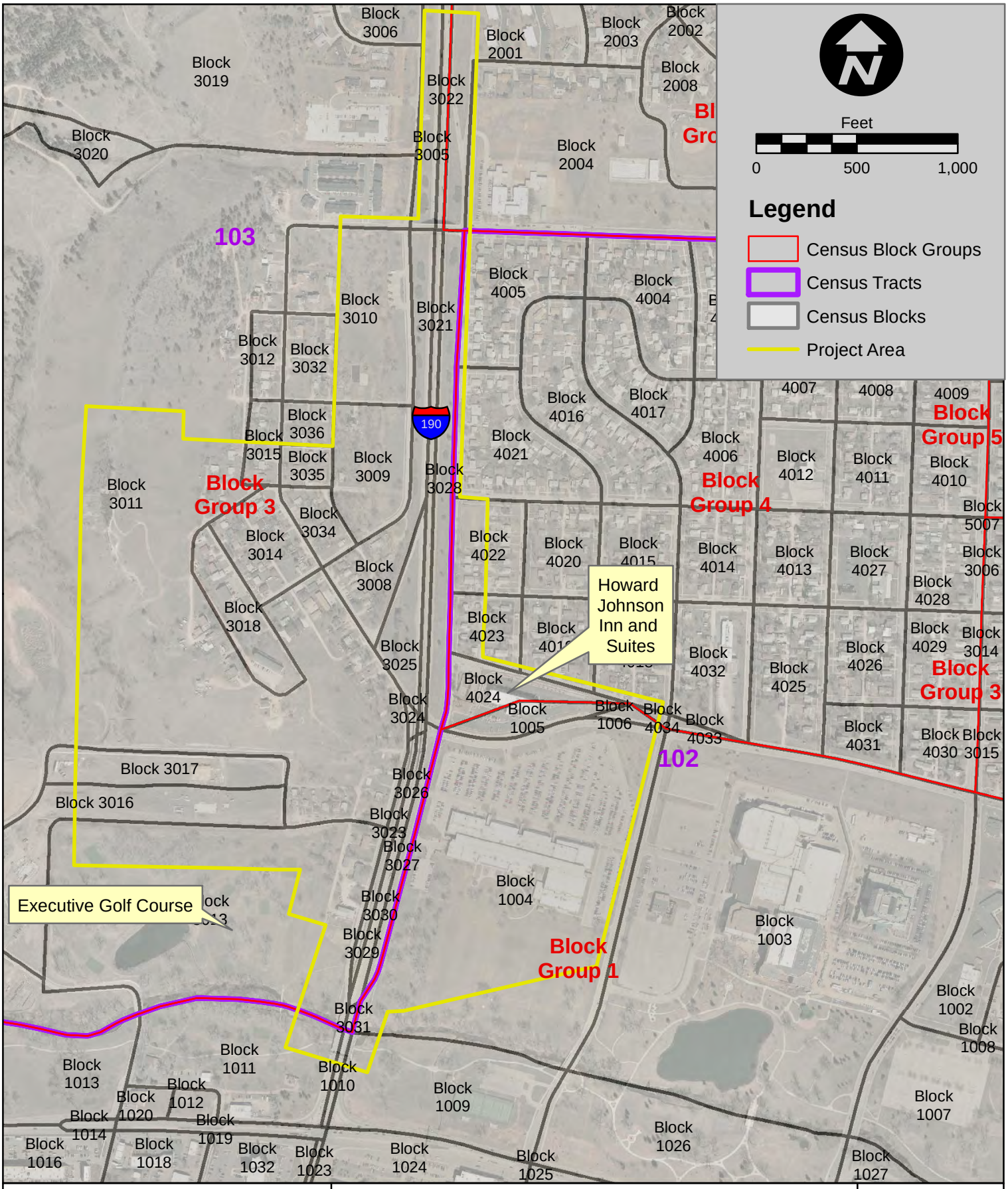
- High population of racial minorities in some blocks located within the Project Area.
- High populations of low income populations in some block groups located within the Project Area.

Environmental justice is grounded in the practice of making sure that both benefits and burdens of transportation investments are shared as equitably as possible among all affected communities (FHWA, 2011). Therefore, the following considerations were incorporated into the design of Alternative 2a:

- **Access** to jobs, schools, health care facilities, and shopping is a consideration for the build alternative. Alternative 2a would require out-of-distance travel to and from the Silver Street area to public facilities that are located east of the proposed reconstructed I-190 interchange to increase slightly. Racial minorities in or near the Project would be affected to the same or lesser extent as other populations, so there would not be any disproportionate impacts. Also the build alternative would continue to provide traffic with a throughway to public facilities and a new recreational trail will provide improved pedestrian and bicycle access from the Silver Street neighborhood to the east side of I-190 (see Figures 2-7 and 2-8). By incorporating connections and trails into the build alternative, disruption to the EJ populations, as well as the non-EJ populations, would be minimized.
- **Safety** for drivers as well as pedestrians was considered for Alternative 2a. Alternative 2a meets the current design standards. Therefore, the build alternative would provide an interchange for the EJ populations, as well as the non-EJ populations, that meets current design safety standards. The existing interchange does not meet design standards; therefore there are several potential safety hazards as discussed in Section 1.4.3.4, Safety.
- **Visual** impacts of Alternative 2a would be minor for all residents and would not disproportionately affect racial minority populations. The EJ populations, as well as the non-EJ populations, are currently located next to an interchange; therefore the view shed will remain similar to the existing conditions. During public coordination, a few residents that live on Philadelphia Street noted the potential for headlights to shine toward their houses. During final design, the placement of vegetation can change the view shed and shield the homes from headlights.
- **Relocations** were considered for Alternative 2a. The properties proposed for acquisition are due to the larger footprint of Alternative 2a than the existing interchange. The larger footprint can be

attributed to the redesign of the interchange to meet current safety design standards. The EJ populations, as well as the non-EJ populations, located next to the existing interchange will be impacted similarly. The need for property acquisition was minimized through design by incorporating design features such as retaining walls when feasible. See Section 3.9, Relocations, for a discussion of the specific residences.

- **Noise** analysis was completed for the build alternatives. Four residences will be impacted for Alternative 2a. For Alternative 2a, a noise barrier was considered and the noise barrier is not considered reasonable cost based on SDDOT noise policy ($21,000 per household). EJ populations, as well as non-EJ populations, will be impacted similarly. See Section 3.8, Noise for a further discussion of the noise analysis.



SD DOT / HDR	Economic Resources and Environmental Justice Interstate I-190/Silver Street Interchange Rapid City, South Dakota	July 2013 Figure 3-4

3.7 Air Quality

3.7.1 Existing Conditions

The South Dakota Annual Ambient Air Monitoring Plan report notes the Rapid City area has three monitoring sites collecting data (SDDENR, 2010a). As noted in the report, South Dakota is in attainment of federal National Ambient Air Quality Standards (NAAQS). Therefore, the Project Area is in attainment of primary and secondary regulatory standards for ambient air quality (SDDENR, 2010a).

Although the area is within attainment, coordination with the SDDENR noted that the Project Area is within the Rapid City Air Quality Control Zone. The Rapid City area has a long history of dust problems and fugitive dust sources contribute a big portion of the dust measured at the air monitoring sites in the city. Air pollution levels for dust can occasionally exceed the NAAQS during periods with dry soil and of high wind events. Control of these sources is important to protect public health and the continued growth of Rapid City.

3.7.2 Impacts of Alternatives

The No-Build Alternative would not adversely impact air quality in the Project Area. Although there would not be any emissions generated from construction of the Project, air emissions from vehicles within the area would continue.

Alternative 2a would have no significant long-term impact on air quality. Transportation conformity rules[2] only apply in designated nonattainment areas or areas that have maintenance plans for transportation-related criteria pollutants (40 CFR 93.102).

Due to the Project location within the Rapid City Air Quality Control Zone, regulations require the contractor to fill out an application and obtain a permit to control fugitive sources during the construction process. The type of permit to be filled out depends on the type of property being modified: private or city owned versus state owned or controlled property. If the majority of a project is located on city or private property, a dust control permit would be filed with the Rapid City Air Quality Program. If a project was built on primarily state owned or controlled property, the project would be subject to South Dakota State Law Chapter 74:36:18- Regulations for State Facilities in the Rapid City Area and a permit would be filed with SDDENR. This Project would primarily be constructed on state owned or controlled property; therefore, it is assumed that a permit would need to be filed with SDDENR. During final design, this should be confirmed with both the City and SDDENR to ensure the correct permit is completed.

3.8 Noise

3.8.1 Existing Conditions

In general, noise can be defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, such as sleep, work, speech or recreation. Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires. Noise levels from highway traffic are affected by three factors: (1) the volume of the traffic (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic. Noise is measured in decibels (dB) - a logarithmic scale. Because human hearing is not equally sensitive to all frequencies of sound, certain frequencies are given more "weight." The A-weighted scale corresponds to the sensitivity range for human hearing, therefore noise levels are measured in dBA.

SDDOT has developed guidance consistent with the FHWA noise abatement criteria (NAC) and procedures to use in the planning and design of highways (SDDOT, July 2011). The FHWA policy and associated criteria and procedures are set forth in 23 CFR 772 (see Table 3-3). Traffic noise impacts occur when the predicted traffic noise levels approach (reach 1 decibel less than) or exceed the noise levels to each land use assigned in the SDDOT guidance document.

[2] Transportation conformity is required by the Clean Air Act to ensure that Federally supported highway and transit project activities are consistent with (or conform to) the purpose of a state air quality implementation plan (SIP). If an area does not meet the USEPA air quality standards for any one of the criteria pollutants during a prescribed timeframe, it is designated a nonattainment area.

Table 3-3. 23 CFR 772 Noise Abatement Criteria
[Hourly A-Weighted Sound Level, decibels (dBA)]

Activity Category	Leq(h)	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve as an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	Exterior	Residential
C	67	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools television studios, trails and trail crossings
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, office, restaurant/bars, and other developed lands, properties or activities not included in A-D or F.
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical) and warehousing
G	--	--	Undeveloped lands that are not permitted

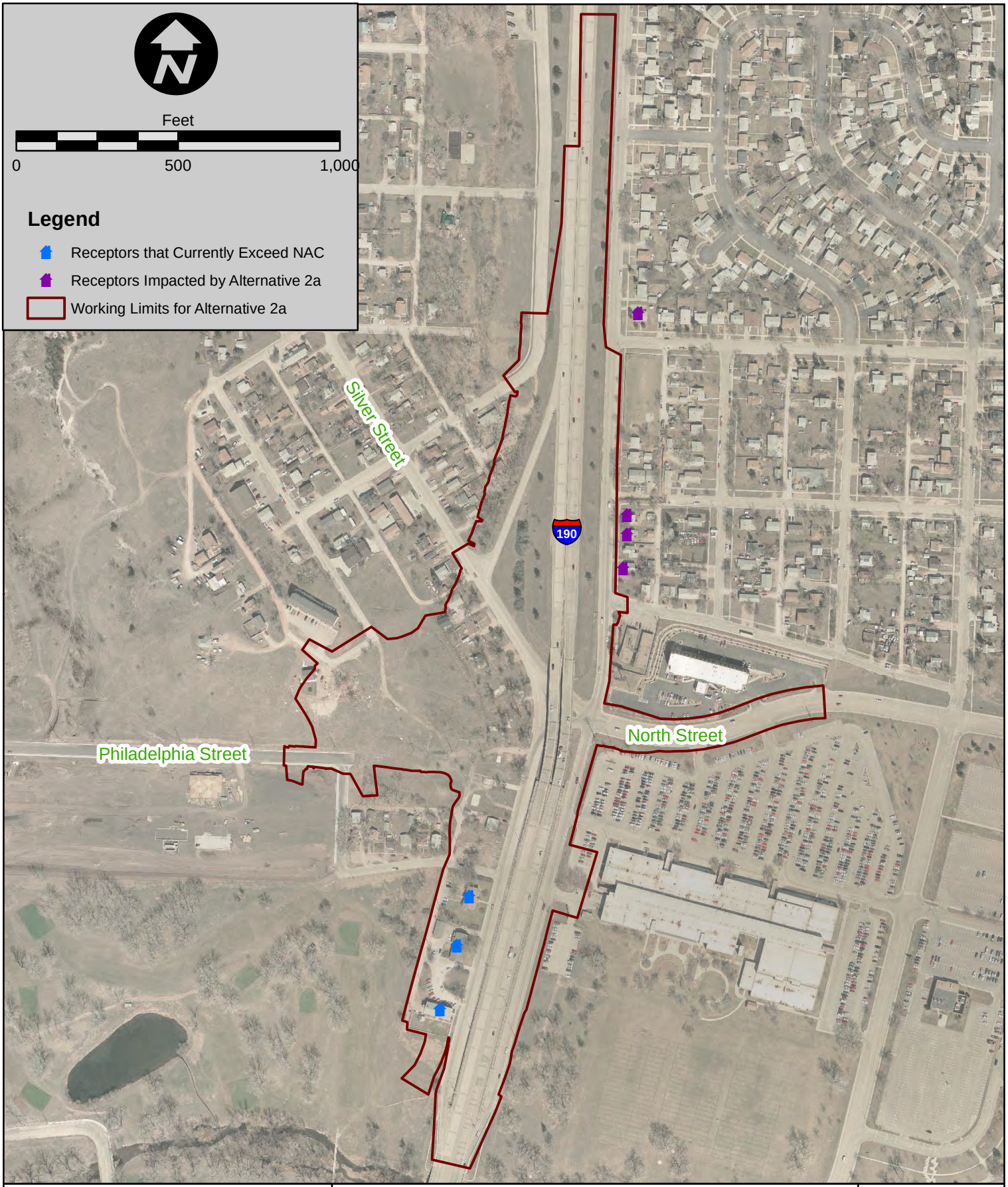
3.8.2 Impacts of Alternatives

Noise levels for receptors located along the Project that may be impacted by the noise levels were evaluated for the existing I-190/Silver Street Interchange, No-Build Alternative, and Alternative 2a. Receptors along the entire length of the Project were considered to ensure all impacts were analyzed. A noise study report was prepared (HDR, 2011a). Noise levels were evaluated from the current estimated levels to those projected in 2030 under the evaluated build alternatives.

Two apartment buildings and the Friendship House are currently above the noise levels as defined by the NAC for residents in both the existing and projected 2030 conditions.

Under the No-Build Alternative, noise levels at these three receptors are projected to increase based on the 2030 traffic levels (see Figure 3-5). Under Alternative 2a, the apartment buildings and the Friendship House will be acquired.

For Alternative 2a, results of the noise analysis indicates that noise levels would impact four residences. Noise abatement measures were considered and evaluated for feasibility and reasonableness by comparing cost and effect of the abatement measure against the amount of benefit. A noise barrier was modeled between the interstate and the impacted residences on the east side of I-190. Given the calculated cost of the wall and the number of benefited receptors, this barrier was not considered cost reasonable based on SDDOT guidance document; the cost estimate of $1,163,536 greatly exceeded the allowable cost of $21,000 per household.



Noise

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Figure 3-5

3.9 Relocations

3.9.1 Existing Conditions

A field survey identified businesses and residences within the Project Area. The Project Area is primarily residential with rental properties as well as owner occupied residences, and also includes two businesses (Howard Johnson Inn and Suites and Executive Golf Course).

3.9.2 Impacts of Alternatives

The No-Build Alternative would not cause relocations of business or residences in the Project Area.

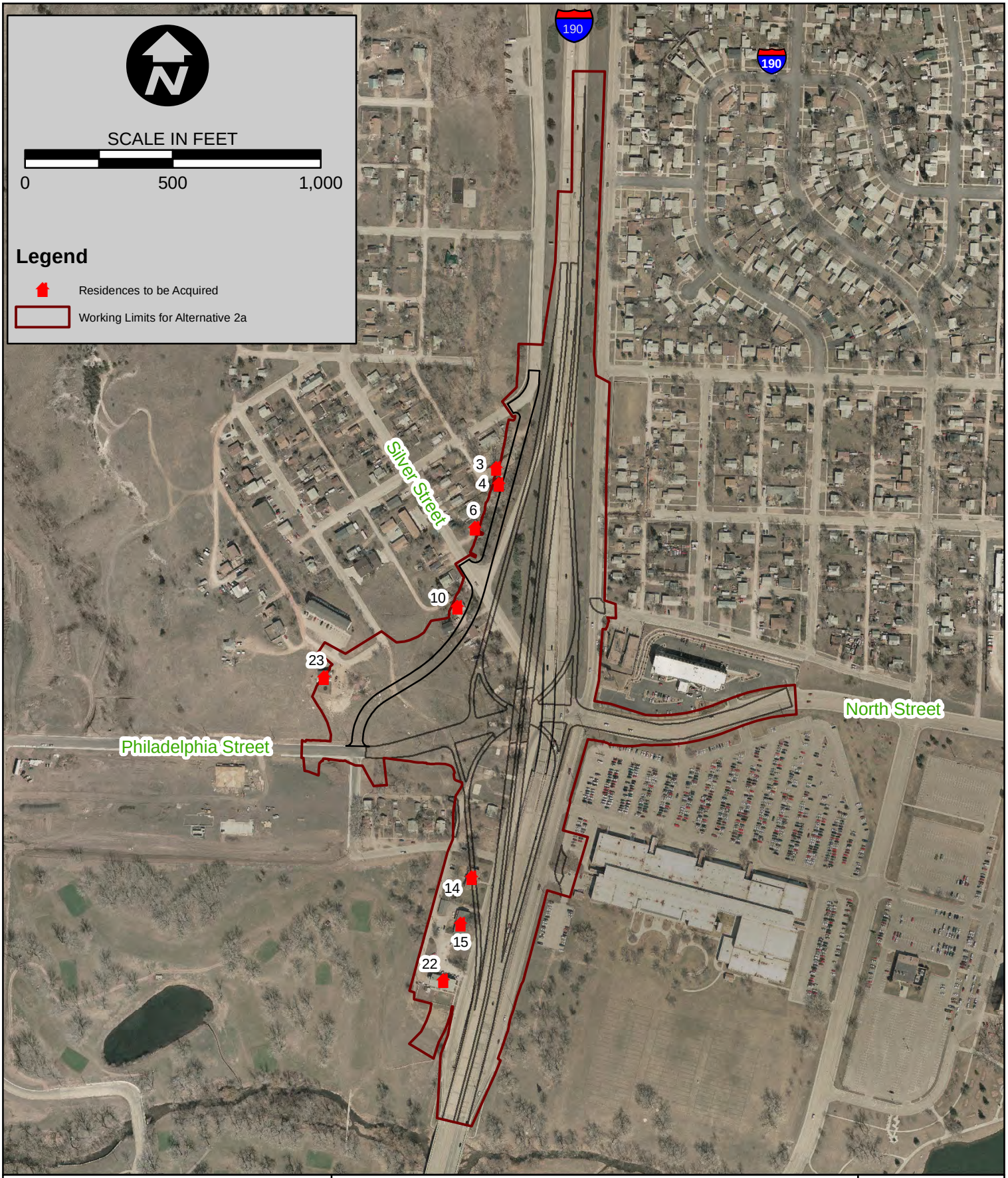
Table 3-4 is the list of residences that would be acquired if Alternative 2a would be implemented. Figure 3-6 shows the location of the proposed relocations for Alternative 2a.

Table 3-4. Residences Proposed for Acquisition

Property ID[1]	Address	Type of Building	Built In
3	727 Gold St	Single Family Residence	1940
4	725 Gold St	Single Family Residence	1947
6	712 Silver St	Single Family Residence	1936
10	639 Silver St	Single Family Residence	1979
14	303 West Boulevard N	Apartment Building	1981
15	301 West Boulevard N	Apartment Building	1979
22	211 West Boulevard N	Friendship House	1954
23	605 Mallow St	Single Family Residence	2006

[1]Numbers were developed early in the study to identify possible structures that could be acquired, therefore are not in numerical order.

As noted in Table 3-4, Alternative 2a would require the acquisition of five residences, two apartment buildings, and the Friendship House. The Friendship House is currently vacant. Five units are in the apartment building located at 303 West Boulevard N and six units at 301 West Boulevard. The buildings and associated property would be acquired, with relocation assistance provided for the displaced residents. Alternative 2a would also require Right-of-Way (ROW) and temporary easements of properties along the interchange corridor. All ROW and relocation impacts would be mitigated in conformance with the Uniform Relocation Assistance and Real Property Acquisition Act (UA) of 1970, as amended by the Surface Transportation Assistance Act of 1987 and as codified in 49 CFR 24, effective April 1989. SDDOT's ROW program is responsible for acquiring the property necessary for highway purposes and performing services related to acquisition per the UA.



Relocations-Alternative 2a

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Figure 3-6

3.10 Wetlands and other Waters of the U.S.

3.10.1 Existing Conditions

3.10.1.1 Wetlands

The Project is located within an urban setting, therefore the wetlands present were associated with stormwater runoff, an unnamed intermittent stream, or Rapid Creek. Wetlands within a riparian area adjacent to Rapid Creek and one unnamed intermittent stream are located within the Project Area (see Figure 3-7, Wetlands and Waterways). Wetland delineation was completed in June 2011.

3.10.1.2 Other Waters of the U.S.

For purposes of this discussion, other waters of the U.S. focuses on non-wetland areas such as rivers, perennial streams, ponds, and intermittent streams (33 CFR 328). Waterways in the Project Area were determined by identifying perennial and intermittent waterways on USGS 7.5-minute quadrangle topographic maps and aerial photography and during field observations. Within the Project Area, a jurisdictional determination has been completed. Rapid Creek is considered a jurisdictional water of the U.S. under the Clean Water Act. The unnamed intermittent stream would be an isolated water that would not be subject to the Corps of Engineers regulatory authority (USACE, 2012).

3.10.2 Impacts of Alternatives

The No-Build Alternative would not impact wetlands or other Waters of the U.S.

For the build alternative, if fill activities within jurisdictional wetlands or waters of the U.S. occurs, a U.S. Army Corps of Engineers (USACE) Section 404 permit, with Section 401 Water Quality Certification would be required. A jurisdictional determination has been received from the USACE. Also, in order to comply with Executive Order 11990, a Wetland Finding is required if documented wetlands could not be avoided by the Project. For wetlands found not to be under USACE jurisdiction, FHWA regulations (23 CFR 777.9) would apply and mitigation for permanent impacts to wetlands would be conducted.

Based on preliminary design and the delineated wetland boundaries, Alternative 2a would not impact any wetlands. Alternative 2a would also avoid crossing the unnamed intermittent stream and Rapid Creek. While not anticipated, should final design impact any wetlands, these impacts would be coordinated and mitigated through established regulatory agency permitting processes.

3.11 Water Quality

3.11.1 Existing Conditions

Water resources within the Project Area include a perennial stream, an intermittent stream, and riparian wetlands. The largest hydrological feature is the perennial stream, Rapid Creek, located at the southern portion of the Project Area. Rapid Creek is a tributary of the Cheyenne River that rises in the Black Hills National Forest in the Black Hills, flowing east through Rapid City to join the Cheyenne River approximately 13 miles southwest of Wasta, SD.

All streams in the State of South Dakota (the State) which have sufficient quantities of water for a sufficient duration are assigned the beneficial uses of irrigation, fish and wildlife propagation, recreation, and stock watering. Rapid Creek has been assigned these beneficial uses. Additional beneficial uses assigned to Rapid Creek include domestic supply waters, fish/wildlife propagation recreation stock, and limited contact recreation waters (SDDENR, 2010). The classifications only designate the quality at which the waters are to be maintained and protected (ARSD Article 74:51).

According to the South Dakota Department of Environment and Natural Resources (SDDENR) 2010 Integrated Report, the water quality in Rapid Creek is good in its upper reaches, but is not meeting its designated beneficial uses downstream of Rapid City. The downstream segments of Rapid Creek are listed in the 2010 Integrated Report for excessive fecal coliform bacteria levels, and do not support immersion recreation use. Lower Rapid Creek is also now listed as impaired for Total Suspended Solids (TSS) and *E coli* (SDDENR, 2010).

The segment of Rapid Creek within the Project Area is designated by the SDDENR as Segment R39, Canyon Lake to S15, T1N, R8E. This segment of Rapid Creek is listed as not supporting its designated use as a coldwater permanent fish life due to temperature.

Rapid City is designated as municipal separate storm sewer systems (MS4) for stormwater discharge. As a designated MS4, Rapid City holds a National Pollutant Discharge Elimination System (NPDES) permit for the stormwater discharge from the city. Each regulated MS4 is required to develop and implement a stormwater management program (SWMP) to reduce the contamination of stormwater runoff and prohibit illicit discharges.

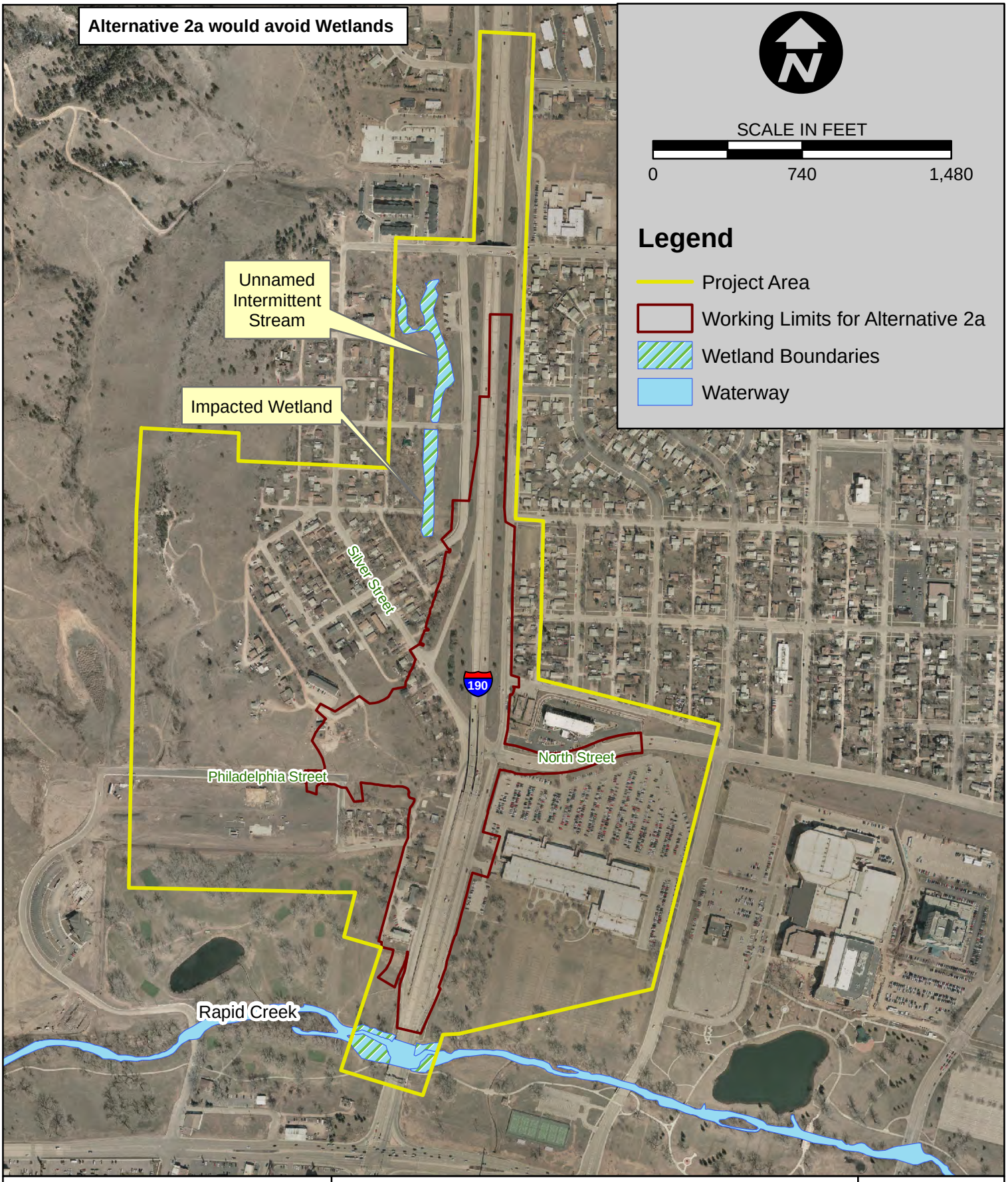
Rapid City relies on a number of sources for drinking water. The sources include: two structures that collect groundwater along Rapid Creek, eight wells that draw water from the Minnelusa and Madison Aquifers, and surface water from Rapid Creek including Pactola Reservoir and Deerfield Lake on the Rapid Creek tributary of Castle Creek. The water is collected from these systems and undergoes treatment at the Rapid City Water Treatment Plant. The Project Area is not within a designated groundwater protection area and does not include the eight wells or structures along Rapid Creek. In 2001 and 2002, Pennington County investigated implementing a groundwater protection ordinance but it was not adopted (Pennington County, 2003).

Various pollutants are commonly encountered in roadway runoff generated during storm events. Some of the pollutants include eroded soil, nutrients, metals, and oil. The potential effect of roadway runoff on water quality is considered in Section 3.13.2, Impacts of Alternatives, due to the water resources mentioned above located within the Project Area.

3.11.2 Impacts of Alternatives

The No-Build Alternative would minimally impact water quality in the Project Area. Runoff from existing roads within the Project Area would continue to carry roadway pollutants into Rapid Creek and the intermittent waterway to the west of I-190. Water quality would not change from baseline conditions.

Alternative 2a would avoid impacts to the adjacent intermittent stream and would construct an interchange in an area that is an existing roadway. Alternative 2a would not be directly adjacent to any waterbodies and would incorporate two detention ponds (see Figure 2-8). Therefore the potential runoff from the build alternative would be directed to the detention ponds, which allow the opportunity for pollutants to be absorbed before reaching a waterbody.



Wetlands and Waterways

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Figure 3-7

3.12 Floodplain

3.12.1 Existing Conditions

A floodplain is defined as the area adjacent to a watercourse, including the floodway, inundated by a particular flood event. A floodway is the channel and any adjacent floodplain areas that must be kept free of encroachment to ensure that the 100-year (1 percent annual chance) flood is conveyed without increasing the flood height by more than 1 foot. The current FEMA digital Flood Insurance Rate Map (FIRM) for the 100-year flood event was used to identify floodplains for the Project. For purposes of discussion in this EA, floodplain is synonymous with the 100-year floodplain.

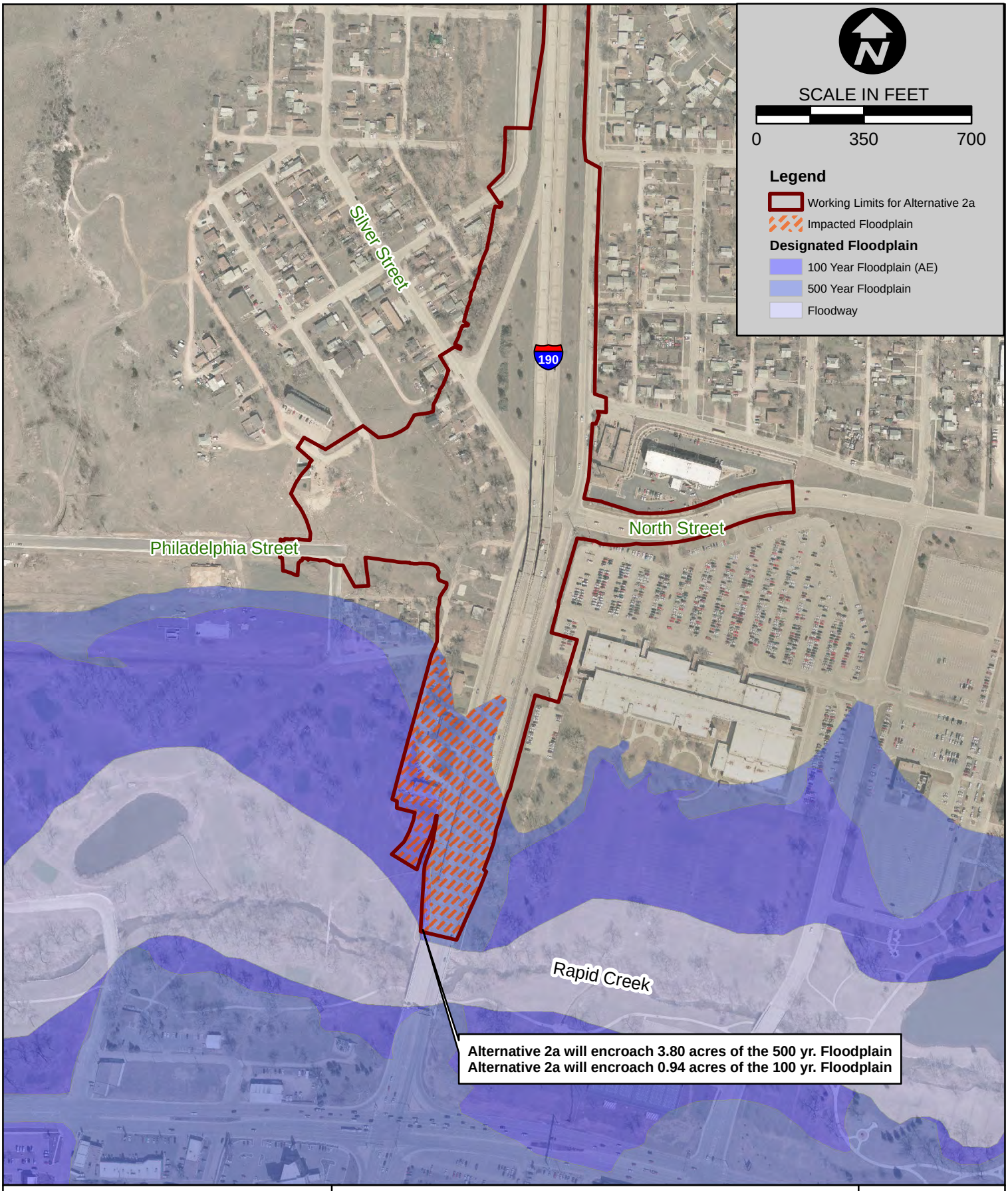
FEMA requirements are enforced by local jurisdictions (counties and cities) in order to maintain participation in the FEMA National Flood Insurance Program. Rapid City and Pennington County participate in this program. Due to the project's location within City limits, Rapid City would be the local jurisdiction to be coordinated with on this project. Coordination occurred with the South Dakota Department of Public Safety Emergency Management, and their response letter noted that, "the local jurisdiction has land use authority to approve or deny projects within their jurisdiction, and they have specific permits and ordinances that must be met."(South Dakota Department of Public Safety, 2011)

The current FIRM is dated February 16, 1996. The Project Area includes a floodway and 100-year and 500-year floodplains associated with Rapid Creek. The FIRM is being revised and will become effective June 3, 2013 (Rapid City, 2013). Areas designated as floodplains (Zone AE) and floodways by FEMA are associated with Rapid Creek in the Project Area. Figure 3-8 displays the proposed revised FIRM that would need to be confirmed after the FIRM is adopted.

3.12.2 Impacts of Alternatives

The No-Build Alternative would not affect existing floodplains of Rapid Creek.

Alternative 2a includes fill in the floodplain fringe outside of the defined floodway. By the definition of floodway, any fill placed in the floodplain but outside the floodway will not increase flood heights by more than one foot. For this reason, the Project meets the Rapid City, SD Code of Ordinances *Title 17 Zoning, Chapter 17.28: FH Flood Hazard District* requirement of not increasing the flood heights more than one foot. For this Project, coordination occurred with the Floodplain Administrator and a Floodplain Development Permit was completed (Rapid City Floodplain Program, 2011).



Floodplain

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Figure 3-8

3.13 Threatened or Endangered Species

3.13.1 Existing Conditions

According to the U.S. Fish and Wildlife Service (USFWS) SD Ecological Services website, the federally-listed threatened or endangered (T&E) species listed in Pennington County are the whooping crane, least tern, and black-footed ferret, as well as a candidate species, the Sprague's pipet. According to the South Dakota Comprehensive Wildlife Conservation Plan, the state listed species for western Pennington County are osprey, peregrine falcon, and longnose sucker (SDGFP, 2006). The following are brief descriptions of each species and required habitat:

- **Whooping cranes (*Grus americana*)** breed and nest along lake margins or among rushes and sedges in marshes and meadows. The water in these wetlands range in depth from 8 to 10 inches to as much as 18 inches. Whooping cranes prefer sites with minimal human disturbance.
- **Interior least tern (*Sterna antillarum*)** nest on open shorelines, riverine sandbars, and mudflats throughout the Mississippi and Missouri river drainages.
- **Black-footed ferret (*Mustela nigripes*)** depends upon prairie dogs for food and on prairie dog burrows for shelter. The Black-footed ferret is associated with mixed and shortgrass prairies but any prairie dog town of suitable size may be potential ferret habitat.
- **Sprague's pipet (*Anthus spragueii*)** has a plain buff colored face with a large eye-ring and occurs within North American grasslands. Sprague's pipets use grassland of intermediate height and sparse to intermediate vegetation density. Other habitat features require low visual obstruction, moderate litter cover, and little or no woody vegetation. The following are habitat indicators that are not associated with the presence of the Sprague's pipet: litter depth, density of low-growing shrubs, and vegetation density, and with plant communities dominated by Kentucky bluegrass (Poa pratensis).
- **Osprey (*Pandion haliaetus*)** is always found near water such as rivers, lakes, and ponds. Large open-top trees are used for nesting and hatching (SDGFP, 2006).
- **Peregrine falcon (*Falco peregrinus*)** are found in open grasslands with suitable nesting cliffs and rock outcroppings near a concentrated prey base such as waterfowl or colonial ground squirrels (SDGFP, 2006).
- **Longnose sucker (*Catostomus catostomus*)** are found in cool, spring-fed creeks and spawns in lakes or shallow-flowing streams over gravel (SDGFP, 2006).

Although bald and golden eagles are not listed as a threatened and endangered species, they are protected under the Bald and Golden Eagle Protection Act. Bald eagles and golden eagles are found near rivers, lakes, and reservoirs. Large cottonwood trees are used for nesting and roosting (SDGFP, 2006).

An early coordination letter was sent to the South Dakota Game Fish and Parks Department (SDGFP) and USFWS discussing the project and requesting comments and responses regarding T&E species (SDGFP, 2011 and USFWS, 2011).

3.13.2 Impacts of Alternatives

The No-Build Alternative would not result in a conversion of land to highway and related uses for the Project, although current development in the area may result in land conversion. The No-Build Alternative is not anticipated to affect T&E species, or their critical habitat.

The Project Area is located within the Rapid City limits. The majority of the Project Area is residential with the southern portion encroaching on parks and recreational areas. The habitat within the Project Area can be described as urban residential areas and maintained park areas. Based on a comparison of the required habitats of the above mentioned species--whooping crane, interior least tern, black-footed ferret, sprague's pipet, osprey, peregrine falcon, longnose sucker, bald eagle, and golden eagle--and the habitat present in the Project Area, it is assumed that no federally-listed and state-listed T&E species are present within the Project Area and the Project will not adversely affect any listed endangered T&E species.

In a letter dated June 15, 2011, SDGFP noted that "Based upon the information submitted with the preliminary coordination letter, our department has reviewed documented species occurrences in Pennington County. Based on this survey we do not anticipate that improvements to I-190/Silver Interchange will have any

significant impacts to fish and wildlife resources." (SDGFP, 2011). In a letter dated June 17, 2011, USFWS indicated, "The Service concurs with your conclusion that the described project will not adversely affect listed species." (USFWS, 2011).

3.14 Section 4(f) and 6(f) Resources

3.14.1 Existing Conditions

Section 4(f) of the Department of Transportation Act provides protection for four main categories of resources: public parks, public recreational areas, public wildlife and waterfowl refuges, and historic properties (23 CFR 774).

The Rapid City Parks and Recreation Department maintains approximately 1,650 acres of park land within Rapid City. The size of these parks varies from smaller areas such as Scott Mallow Park, to larger parks such as Sioux Park (Rapid City, 2011a). Coordination occurred throughout the Study with the Director and Park Manager to determine the park and recreational areas within the Project Area (Rapid City Parks Department, 2011). The following are the Rapid City public parks and multi use paths within the Project Area:

- **Scott Mallow Park** is a small public recreational area, therefore is a Section 4(f) resource. The park contains an informal ball field with a backstop, a small basketball court, and a playground (Rapid City, 2011b).
- **Executive Golf Course** is a nine hole facility with seven par threes and two par fours (Meadowbrook Golf Course, 2011). The Executive Golf Course is a publicly owned golf course and despite the fact that green fees are charged to users, this property is a Section 4(f) resource (FHWA, 2012).
- **Memorial Park West** includes tennis courts, Memorial Lake, Flood Memorial Fountain, picnic areas, Formal Rose Garden, Legacy statue, Leonard "Swanny" Swanson Memorial Pathway, Berlin Wall Memorial, Veterans Memorial, Band Shell, and restrooms (Rapid City, 2011b). This public recreational area is a Section 4(f) resource.
- **American Legion Park** includes a basketball court and playground equipment (Rapid City, 2011b). This public recreational area is a Section 4(f) resource.
- A **multi use path** is located on the south side of the Project Area (see Figure 3-9). This path is a publicly owned, shared use path, therefore is a Section 4(f) resource (FHWA, 2012).
- Future bike and pedestrian paths have been planned for development by the City and interest groups. Recently, a **multi use path** along Philadelphia Street was constructed. This path is not considered to be a Section 4(f) resource since it is a part of the local transportation system (FHWA, 2012). The Rapid City Parks and Recreation Department hopes to continue a multi use path from the east end to the north to eventually cross I-90. No alignment has been identified and no property has been acquired to construct this extension.

The Project Area contains **Cowboy Hill**, also known as M Hill and Hanson Larsen Memorial Park, consisting of a network of hiking and biking trails. M Hill is located to the west of the Project Area (see Figure 3-9). Cowboy Hill is a recreational area with portions owned by Rapid City, South Dakota School of Mines, and a trust (Hanson-Larsen Memorial Park (HLMP) Foundation). The portion of the Cowboy Hill within the Project Area is owned by the HLMP Foundation, a 501 (c) (3) South Dakota non-profit corporation (HLMP, 2011). Section 4(f) guidance notes that parks and recreational areas must be owned publicly (which also includes lease, easement, or other arrangement). Because the portion of Cowboy Hill within the Project Area is owned by the HLMP Foundation and currently there is no lease or easement with a public entity for this property, the property is not considered a Section 4(f) resource.

The Project Area contains **Greenways** (also shown on Figure 3-9), designated open areas that are typically near drainage ways, streams and rivers. After the flood of 1972, several areas were reserved for drainage and flooding throughout Rapid City (Rapid City GIS Department, 2011). Although not designated as parks or recreation areas, these areas are sometimes used for ad hoc recreational activities. Greenway areas primary purpose is for flood control. Section 4(f) guidance notes that if an areas primary purpose is not recreational or refuge activities then it does not qualify as a Section 4(f) property; therefore the Greenway areas are not considered Section 4(f) properties. The Rapid City Parks and Recreation Department concurred that the areas

identified as greenway, are not Section 4(f) resources (Rapid City Parks Department, 2012). Also, there are no public wildlife or waterfowl refuges near the Project Area.

No wildlife refuges or water fowl production areas are within 20 miles of the Project Area. The closest Game Production Area, New Underwood Dam, is 19 miles to the east of the Project Area (SDGS, 2010).

Section 3.4 addresses potential historic structures and archeology sites that were documented in the Project Area. Sites eligible for listing on the NRHP would be considered Section 4(f) resources except for archaeological sites important for preservation in place (with eligibility criteria including A, B, and/or C in addition to D). No archaeological sites or historic structures eligible for Section 4(f) protection are known to occur in the Project Area, further study for eligibility to the NRHP is recommended for the multi-component archaeological site (39PN3379).

Section 6(f) protects parks and recreation areas that were acquired, developed, or rehabilitated, even in part, with the use of any Land and Water Conservation Funds. Section 6(f) resources exist within the Project Area, within Memorial Park West and the Greenway area north of Memorial Park West (Rapid City Parks Department, 2011).

3.14.2 Impacts of Alternatives

Section 4(f) protects certain properties (identified previously) from two types of impacts, as follows:

Direct Use. A direct use impact occurs when a property protected by Section 4(f) is permanently incorporated into a transportation facility or is temporarily occupied, causing effects that are considered adverse.

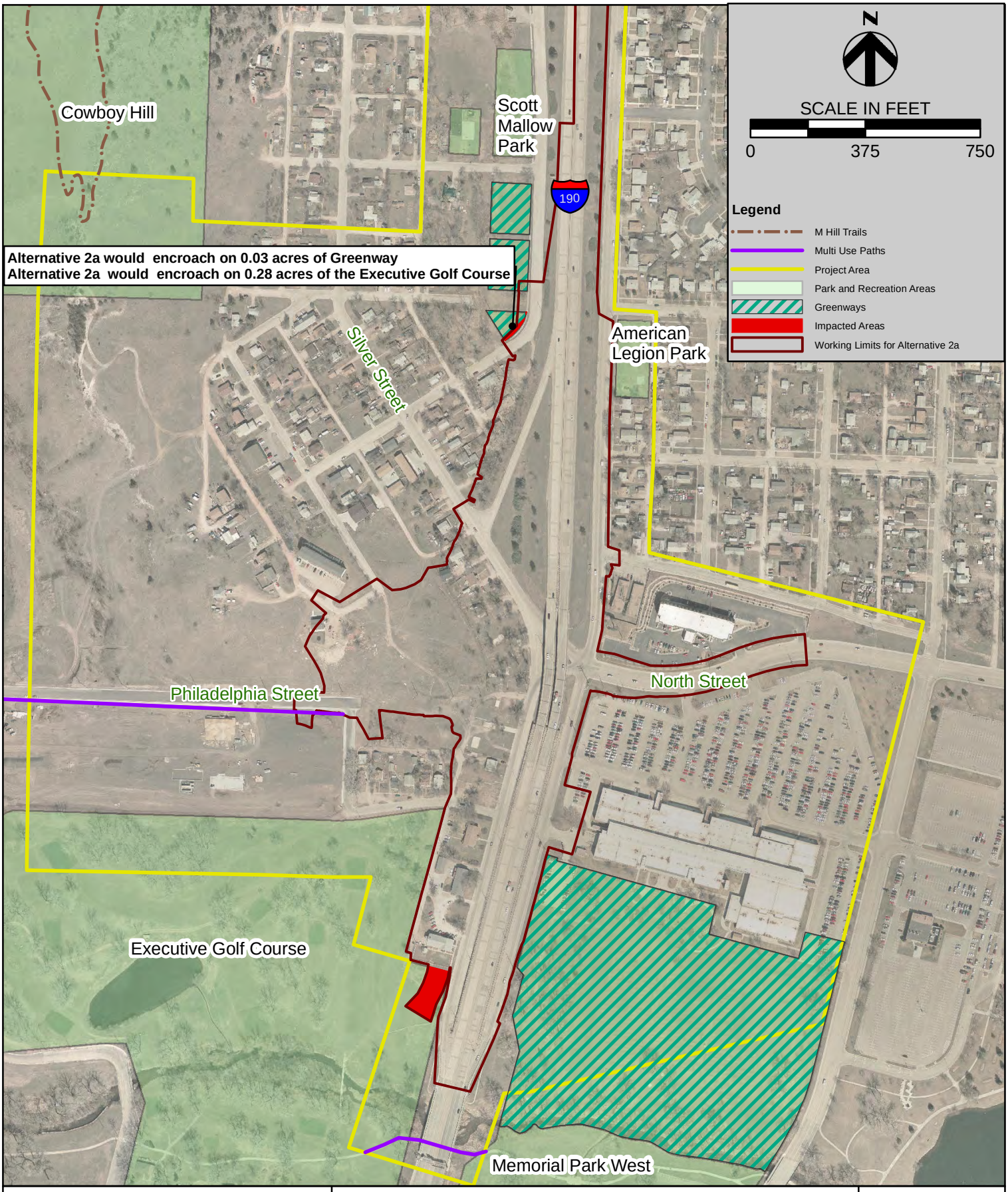
Constructive Use. A constructive use impact occurs when a project does not incorporate (or remove), either partially or fully, a property protected by Section 4(f) but is so close to the property that the activities, features, or attributes of the property are substantially impaired. Five criteria are used to evaluate this type of impact: noise, aesthetic characteristics of the property, property access, vibration, and ecological intrusion, such as substantially diminished wildlife habitat.

The No-Build Alternative would not impact any parks or other recreational resources. Access to existing facilities would continue under the existing roadway system. The No-Build Alternative could potentially cause delays for access to the park and recreational areas in the vicinity of the Project Area due to the potential closure of the interchange as the roadway structures would continue to deteriorate.

Alternative 2a would encroach on the greenway located south of the Scott Mallow Park (see Figure 3-9). Alternative 2a would require a minimal ROW acquisition, approximately 0.03 acre, due to the need to connect to West Boulevard. Alternative 2a would avoid Memorial Park West and the greenway north of the park; consequently, there would be no Section 6(f) impacts.

During the analysis for this Project, the City and SDDOT determined that storm water detention basins should be incorporated into the design of the build alternatives. An outfall channel from the proposed storm water detention basin located on the southwest side of the proposed interchange would encroach on the Executive Golf Course. In order to minimize the encroachment, the detention basin was proposed outside of the golf course. However, in order for the drainage to reach Rapid Creek, an outfall channel is necessary within the Executive Golf Course property. The outfall channel will not affect any of the existing uses of the golf course including fairways and the temporary impacts would be limited to the southeastern edge of the golf course. Coordination occurred with the Rapid City Parks and Recreation Department for a *de minimis* finding for the Executive Golf Course (see Appendix D).

A ***de minimis*** finding is a determination that the Project will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f) with concurrence from the official(s) with jurisdiction. This determination includes consideration of measures stated to avoid, minimize, mitigate, and enhance the Section 4(f) resources. In order to finalize the *de minimis* finding for this Project, FHWA's determination is required, which is completed through signature of the Final EA and Section 4(f) ***de minimis*** Impact Finding.



Section 4(f) Resource Impacts

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Figure 3-9

3.15 Regulated Materials

Properties where hazardous material spills or leaks have occurred may present risk to the purchaser of that property. Contaminated, or potentially contaminated, properties are a concern to transportation projects because of the associated liability of acquiring the property for ROW, the potential cleanup costs, and the safety concerns related to exposure to contaminated soil, surface water, and/or groundwater.

3.15.1 Existing Conditions

Both a file search and a field survey of the Project Area were conducted to identify sites with recognized environmental conditions (RECs).[3] Environmental Data Resources, Inc. (EDR) conducted a file search for an area slightly larger than the Project Area (EDR, 2011). HDR conducted a field survey to confirm locations of sites listed in the EDR report and identify other potential REC sites not listed by EDR. A review of both file searches and the field survey indicated the presence of the following RECs within the Project Area. Figure 3-10 shows the location of all identified sites within the Project Area.

The site numbers listed below are those assigned by EDR (see Table 3-5).

Table 3-5
Sites with Potential RECs within or adjacent to the Project Area

Site Name	Site Number	Reason for Listing	Location	Field Survey Confirmed Location
SDDOT Project No. 5617, Mt. View Reconstruction	1	Site has a NPDES permit.	Northwest of Founders Park Drive	No
Keil Trucking Spill	2	Site is listed on the South Dakota SPILLS Database. A spill of approximately 40 gallons of diesel fuel at this site. This site is listed as closed, which indicates no further remediation is needed at this location.	Exit off I-190	No
Rushmore Plaza Civic Center	3	Site has a NPDES permit.	444 North Mt. Rushmore	Yes
Federal Beef Processors South	4	Site which generates, transports, stores, treats, and/or disposes of hazardous waste; Site was reported due to chemicals or other items that indicated the presence of either drug laboratories or dumpsites; Site previously had a NPDES permit; and This site is currently listed as closed, and has been redeveloped.	1330 West Chicago Street	No

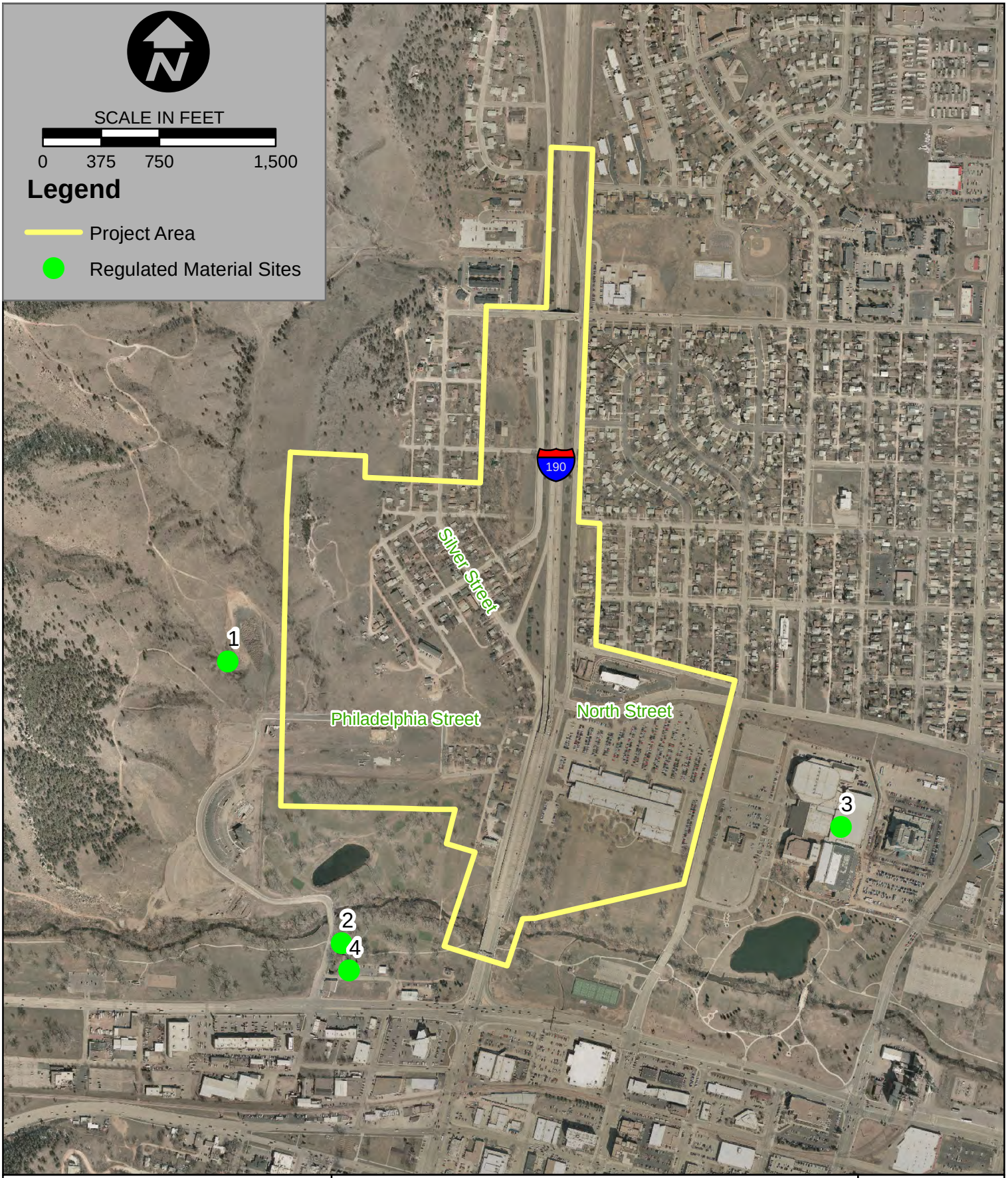
[3] According to the American Society for Testing and Materials, an REC is the presence or likely presence of hazardous substances or petroleum products that may release into structures on a property or into the ground, groundwater, or surface water of that property.

Site Name	Site Number	Reason for Listing	Location	Field Survey Confirmed Location
Black Hills Packing Plant Now	4	Site previously had a Leaking Underground Storage Tank (UST) Incident Report; Site previously had an Above Ground Storage Tank; Site was reported due to chemicals or other items that indicated the presence of either drug laboratories or dumpsites. Site is listed on the Facility Index System. This site is currently listed as closed, and has been redeveloped.	1330 West Chicago Street	No
Founders Park LLC	4	Site had a NPDES permit.	1350 West Chicago Street	No

3.15.2 Impacts of Alternatives

The No-Build Alternative would not impact regulated material sites in the Project Area.

The sites noted in Table 3-5 are not anticipated to be affected nor affect the Project due to either a site being listed as closed or the site has a minimal potential for spills or other hazardous material impacts. As soil borings and construction occurs as part of the next phases of the Project, the contractor should be alert for large areas of soil staining, buried drums, undiscovered USTs, or other obvious signs of contamination, and coordinate with SDDOT and SDDENR prior to continuing with work in those areas.



Regulated Materials

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Figure 3-10

3.16 Cumulative Impacts

Cumulative effects analysis seeks to identify the impact on the human and natural environment which results from the direct and indirect impacts of a particular action or project when added to past, present, and reasonably foreseeable future actions of others.

The following paragraphs identify past, present and reasonably foreseeable future actions, discuss the potential resulting cumulative impacts, and evaluate the impacts on affected resources. Sources of information for proposed projects include:

- RapidTrip 2035 (Rapid City MPO, 2010),
- Rapid City Bicycle and Pedestrian Master Plan (Rapid City, 2011),
- Rapid City Area Future Land Use Plan (Rapid City MPO, 2008),
- Rapid City Area 2030 Long Range Transportation Plan (Rapid City, 2005), and
- Personal communication with the SDDOT and Rapid City.

The list of projects that are planned within the vicinity of the Project are noted in Section 1.5., Other Projects, and Section 3.21.1, Past, Present, and Reasonably Foreseeable Future Actions.

3.16.1 Past, Present, and Reasonably Foreseeable Future Actions

Prior to the Euro-American settlement, the landscape of western South Dakota consisted of open terrain varying from rangeland to forests. Settlement of South Dakota started in southeastern South Dakota in the 1850s and expanded through the western plains through the 1910s (SD SHPO, 1998). In the western portion of the state, small farms were out numbered by previous settlement of open-range ranches. Between the 1930s and 1990s, Pennington County quadrupled in size and Rapid City began to emerge as an urban center on the west side of the state (SD SHPO, 1998). Therefore the following are past actions that have affected resources within the Project Area:

- Industrial development previously occurred within the vicinity of Philadelphia Street. This area is currently being developed as a residential area; therefore industrial businesses are no longer located in this area.
- Residential development has occurred in the area.
- Other development, such as roads and utilities has occurred in the area.

These past actions have resulted in impacts to water quality, wildlife, land use, and waters of the U.S. in the Project Area. The cumulative effects of these impacts are not significant in the Project Area.

The following are the present and reasonably foreseeable future actions within the Project Area:

- SDDOT and Rapid City projects continue to improve the infrastructure within Rapid City. Infrastructure improvements are discussed further in Section 1.5, Other Projects.
- Sewer and water infrastructure projects are ongoing in order for Rapid City to continue to service the residences within the Project Area. The following are the infrastructure project areas: Silver Street, North Street, West Omaha, Minnekahta Drive, and West Boulevard.
- Rapid City Parks and Recreation Department has plans for improvements to existing parks and recreational areas such as Memorial Park.
- Continued residential development south of Philadelphia Street and the western portion of the Project Area.

The present and reasonably foreseeable future actions would temporarily impact resources due to construction impacts such as noise, air quality etc. The temporary impacts would be limited due to the requirements of construction permits such as the General Permit for Stormwater Discharges Associated with Construction Activities and Rapid City Air Quality Control Zone permit.

Long term impacts to resources, such as water quality, air quality, etc., would be limited by the regulatory requirements for each project. For each project, impacts to wetlands, waters of the U.S., or threatened and

endangered species habitat would be further limited by federal regulations, which may include permits and/or mitigation requirements. Long-term impacts to air quality would not be significant, as the area impacted and the degree of impact is anticipated to be slight. The development of designated floodplain, parks, and greenways would be limited due to these areas serving as water storage areas to minimize future damage in naturally flood-prone areas. Impacts to the designated floodplain would require coordination with the local designated floodplain manager.

The past actions did convert areas that were previously rangeland areas to developed urban areas. Due to this previous conversion, most of the impacts from the present and reasonably foreseeable future actions would be short-term, primarily during construction since many are occurring within previously disturbed areas. Therefore, cumulative impacts are not anticipated to be significant.

3.17 Construction

Although, the No-Build Alternative would include maintenance of existing facilities, no construction would occur.

The impacts of construction would be temporary and limited to the period of construction including noise impacts, air quality, and visual resources. In addition, there would be temporary impacts on travel patterns and accessibility.

The location and type of borrow material required for the Project would be identified during final design. If off-site borrow locations would be required, environmental impacts will be limited through the permitting process. A detailed discussion of specific constructions is not feasible until the final design; however, based on the current design and general practical precautions, the following list describes the precautions taken to minimize these impacts.

- Temporary easements would affect land use during construction. These areas would be returned to their previous land use after construction is complete.
- A traffic control plan would be developed during design to minimize the amount of traffic disruption. Access to the two businesses, Howard Johnson Inn and Suites and Executive Golf Course, within the Project Area would be considered as part of the traffic control plan. The traffic control plan would also address continuous access to areas for emergency response services (such as police).
- Previously defined BMPs, in accordance with SDDOT construction manuals, would be used to mitigate construction-related noise impacts. An example of one BMP would be to limit construction to daylight hours, typically 6 a.m. to 6 p.m. This BMP would reduce noise levels in any neighboring residential areas during the evening and at night, the most sensitive timeframes for noise impacts.
- Emissions caused by vehicle delays, construction vehicles, and related equipment and activities generating dust would be minimized to the extent possible by implementing smooth traffic-flow patterns and water sprinkling. As mentioned above in Section 3.7, Air Quality, a permit would be required during the construction process by either Rapid City or the SDDENR. Therefore, the Project is not expected to change the attainment air quality status of the area.
- A General Permit for Stormwater Discharges Associated with Construction Activities is required for the Project. A Notice of Intent will be filed with the SDDENR and a Stormwater Pollution Prevention Plan (SWPPP) will be developed that would prevent impacts to the water resources in the Study Area through the implementation of BMPs. Some examples of BMPs are silt fencing or re-vegetating disturbed soil. For any construction areas that would remain un-vegetated for an extended period of time, such as over the winter, temporary seeding would be required in accordance with the SWPPP.
- All build alternatives would require fossil fuel and labor as well as construction materials. The use of energy, labor, and raw materials is largely irreversible and irretrievable, with the exception of items that can be salvaged during demolition and removal at the end of the facility's design life and possibly recycled.

Construction-related impacts for the Project are not considered to be significant due to compliance with provisions of the SDDOT Construction Field Manual (SDDOT, 2004a) and South Dakota Standard Specifications for Road and Bridges (SDDOT, 2004b).

CHAPTER 4
ENVIRONMENTAL COMMITMENTS

4.1 Summary of Environmental Commitments

This section outlines the actions required for the Project as final design and before construction can begin. Section 3.17, Construction, outlines the requirements for construction; environmental commitments and permits mentioned in the EA are summarized in this chapter, as well as other relevant requirements.

- A traffic control plan would be developed prior to construction. Access to the two businesses, Howard Johnson Inn and Suites and Executive Golf Course, within the Project Area would be considered as part of the traffic control plan. The traffic control plan would also address continuous access to areas for emergency response services (such as police).
- Coordination is required to coordinate the relocation of disturbed utilities, if needed.
- Landscaping features such as placement of vegetation would be included to create a visual barrier for residences on the south side of the Philadelphia Street and West Boulevard North intersection.
- Cultural resources Site 39PN3379 will be avoided by all construction activities including staging and borrow areas.
- If buried cultural sites are found during construction, project construction activities would be immediately halted and the SD SHPO notified so an appropriate course of action can be determined.
- An air quality permit would be required during the construction process by either Rapid City or the SDDENR.
- Previously defined BMPs, in accordance with SDDOT construction manuals, would be used to mitigate construction-related noise impacts. An example of one BMP would be to limit construction to daylight hours, typically 6 a.m. to 6 p.m.
- All Right Of Way and relocation impacts would be mitigated in conformance with the Uniform Act of 1970, as amended by the Surface Transportation Assistance Act of 1987 and as codified in 49 CRF 24, effectively April 1989.
- Based on preliminary design and the delineated wetland boundaries, Alternative 2a would not impact any wetlands. Alternative 2a would also avoid crossing the unnamed intermittent stream and Rapid Creek. During final design, a final calculation of the wetlands impacted would be completed. If the FHWA and USACE concur that Alternative 2a does not impact any wetlands, a Wetland Finding and 404 permit would not be required. If wetland areas are impacted, coordination will occur between the SDDOT, FHWA, and USACE.
- A General Permit for Stormwater Discharges Associated with Construction Activities is required for the Project. A Notice of Intent will be filed with the SDDENR and a Stormwater Pollution Prevention Plan (SWPPP) will be developed that would prevent impacts to the water resources in the Project Area through the implementation of BMPs. Some examples of BMPs are silt fencing or revegetating disturbed soil. For any construction areas that would remain un-vegetated for an extended period of time, such as over the winter, temporary seeding would be required in accordance with the SWPPP.
- The contractor should be alert for large areas of soil staining, buried drums, undiscovered USTs, or other obvious sources of contamination, and coordinate with SDDOT and SDDENR if any such area is found, prior to continuing with work in those areas.

CHAPTER 5
COMMENTS AND COORDINATION

This chapter includes a summary of agency coordination and public involvement that has taken place during development of this EA.

Federal and State agencies that were consulted regarding the Project include:

- USFWS- South Dakota Ecological Services
- USACE- SD Regulatory Office
- USDA- NRCS
- SDGFP
- SD SHPO
- SDDENR- Surface Water Quality Program
- SDDENR- Air Quality Program
- Rapid City Parks and Recreation Department
- South Dakota Division of Emergency Management

5.1 Agency/City Coordination

Early agency coordination commenced on May 23, 2011 through letters to Federal and State agencies as well as local government agencies to announce the initiation of the I-190/Silver Street Interchange EA. Thirteen responses were received and one meeting was held with Rapid City Department of Parks and Recreation.

Table 5-1 summarizes these responses as well as additional correspondence/coordination with agencies.

Table 5-1
Agency/City Responses

Agency	Date	Response
USFWS- South Dakota Ecological Services	June 17, 2011	The Service concurs with your conclusion that the described project will not adversely affect listed species.
USACE- SD Regulatory Office	June 23, 2011	If the proposed project involves either the discharge or dredge of fill material into waters subject to Federal regulations, it is requested that the project proponent submit an application for a Department of the Army permit.
	August 30, 2012	An approved jurisdictional determination (JD) has been completed for your project. The activities within this project area that would result in discharge or dredge or fill material into Wetland ID 2/Rapid Creek as identified in the submitted wetland delineation report. Aquatic resources labeled as Wetland ID 1/Unnamed Intermittent Stream per the above mentioned delineation report are

Agency	Date	Response
		isolated waters that would not be subject to Corps of Engineers regulatory authority.
NRCS	June 10, 2011	This project will have no effect on prime or important farmland.
SDDENR- Surface Water Quality Program	June 13, 2011	A Surface Water Discharge (SWD) permit may be required if any construction dewatering should occur. Any construction activity that disturbs an area of one or more acres of land must have authorization under the General Permit for Storm Water Discharges Associated with Construction Activities.
SDGFP	June 15, 2011	Based on this survey we do not anticipate that improvements to the I-190/Silver Street Interchange will have any significant impacts to fish and wildlife resources.
SDDENR- Air Quality Program	June 22, 2011	If the project is built on state owned or controlled property, the project is subject to Chapter 74:36:18- Regulations for State Facilities in the Rapid City Area. The regulations require the contractor to fill out an application and obtain a permit to control the fugitive dust sources during the construction process.
Rapid City Parks and Recreation Department	July 14, 2011	Meeting with Jerry Cole, Director and Lon VanDeusen, Parks and Recreation to discuss relevant Parks and Recreation areas.
	September 6, 2012	Upon review of the I-190/Silver Street Interchange Environmental Assessment, in regards to the Section 4(f) resources adjacent to the working limits of Alternative 2a, it is our opinion that all 4(f) resources have been accurately identified and accounted for.
	March 1, 2013	Rapid City Parks and Recreation Dept. concurs with the Section 4(f) *de minimis* finding for Executive Golf Course.
SD Division of Emergency Management	July 26, 2011	After reviewing the project materials provided, it appears the proposed location is located near or possibly in a special flood hazard area and a floodway.
SD SHPO	May 29, 2012	SHPO concurs with your determination of No Historic Properties Affected for this undertaking.
	February 19, 2013	SHPO concurs with your determination that 211 West Blvd. North be classified as Not Eligible for the National Register of Historic Places.
	April 16, 2013	Based upon the information provided to the South Dakota State Historic Preservation Office on May 21, 2012 and April 8, 2013, we concur with your agency's determination of "No Historic Properties Affected" for this undertaking.
City of Rapid City	January 24, 2013	Floodplain permit issued.

5.2 Tribal Coordination

The SDDOT prepared and sent early coordination letters to Native American Tribes who may have an interest in the initiation of the I-190/Silver Street Interchange Environmental Assessment.

The tribal parties consulted regarding the Project Area:

- Cheyenne River Sioux Tribe
- Lower Brule Sioux Tribe
- Oglala Sioux Tribe
- Sisseton-Wahpeton Oyate
- Standing Rock Sioux Tribe
- Yankton Sioux Tribe
- Three Affiliated Tribes

No responses have been received to date.

5.3 Public Involvement

Extensive public involvement has been carried out as part of this EA. Additional public involvement occurred as part of a preliminary phase of the I-190/Silver Street study which helped develop interchange alternatives and consider administrative issues. During both phases of the study, documents and presentations were provided on a website maintained by the South Dakota Department of Transportation, with links from Rapid City and other sources. Public meetings were conducted or are planned for the Interchange Modification Justification Report and EA on the following occasions:

- March 29, 2011 – a public meeting was held in the Community Room at the Rapid City Municipal School District Facility. The public had the opportunity to discuss improvement alternatives with staff. Verbal and written comments were received at the meeting and via electronic and mail transmittal after the meeting.

- September 14, 2011 – a public meeting was held in the ballroom at the Howard Johnson Inn and Suites adjacent to the Silver Street interchange. Details of the interchange alternatives were presented, concentrating on environmental issues developed to date. The public had the opportunity to discuss improvement alternatives and environmental issues with staff. Verbal and written comments were received at the meeting and via electronic and mail transmittal after the meeting.

- Metropolitan Planning Organization (MPO) meetings – three updates on the study were presented to the MPO committees throughout the study process.
- Web presence – a study web page (http://www.sddot.com/transportation/highways/planning/specialstudies/i190/default.aspx) was established and maintained to provide the public easy access to study documents and other information.

Through out the course of the Project, correspondence received from the public was logged, and, if requested, a response was sent to the specific entity or individual.

CHAPTER 6
REFERENCES

Technical Reports completed for this Project that are available upon request.

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EDR, June 2011. DataMap Area Study.

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Renewable Technologies, Incorporated (RTI), December 2011. Interstate I-190/Silver Street Interchange Study Area, Rapid City, South Dakota: Evaluation of Previously-Recorded Architectural Resources.

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23 CFR 772. Procedures for Abatement of Highway Traffic Noise and Construction Noise.

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33 CFR 328. Definition of Waters of the United States.

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Rapid City Parks Department, 2011. Personal communication between Lon Van Deusen and Jerry Cole.

Rapid City Parks Department, September 6, 2012. Section 4(f) response letter from Alex DeSmidt and Lon Van Deusen.

Rapid City Parks Department, March 1, 2013. Section 4(f) *de minimis* concurrence.

Rushmore Plaza Civic Center, Viewed on September 18, 2011, http://www.gotmine.com/Facility/

SD Code of Ordinances. Title 17 Zoning, Chapter 17:28: FH Flood Hazard District

SDDENR, 2010. The 2010 South Dakota Integrated Report for Surface Water Quality Assessment.

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APPENDIX A

PHILADELPHIA STREET CONNECTION ALIGNMENT MEMO

HDR | ONE COMPANY *Many Solutions*℠

Memo

To: I-190/Silver Street Interchange Study Advisory Team	
From: HDR Engineering	Project: I-190/Silver Street Interchange
CC: File	
Date: June 16, 2011 (revised April 12, 2012)	Job No: 137390

RE: Philadelphia Street Connection Alignments

INTRODUCTION

The purpose of this memo is to discuss alignment options for the City of Rapid City street network connecting the existing residential neighborhood to the west of I-190. Depending on the chosen interchange alternative, the current configuration with Silver Street to the west of I-190 connecting directly to North Street east of I-190 through the existing interchange may be modified to improve the interchange configuration and meet the long range goals of the City of Rapid City. This current connection would be replaced by extending Philadelphia Street to a new connection with North Street through a reconfigured interchange. In order to modify the current street network configuration, a viable access from the neighborhood to Philadelphia Street and the Interstate must be developed.

To address the access concerns, four connection options have been brought forward to be discussed in this memo. The four options are:

1. Option 1: Van Buren Street Connection (Figure 1);
2. Option 2: Boegel Street Connection (Figure 2);
3. Option 3: Silver Street Connection (Figure 3); and
4. Option 4: West Boulevard Connection (Figure 4).

A more detailed description of the connection along with advantages and disadvantages are discussed later in this document.

CONNECTION OPTION CRITERIA

Criteria used in developing and evaluating the options include:

1. Construction and ROW costs;
2. Ability to meet design criteria;
3. Constructability;
4. Adequately accommodate traffic volumes and patterns;
5. Environmental issues (including relocations, historical impacts, etc.)

CONNECTION INTERSECTION TYPE

The Traffic Analysis Memo dated 7/20/11 found that the intersection formed by any of the connection options and Philadelphia Street would operate at an acceptable level of service with simple stop-sign control. Any of these intersections would also operate well with a roundabout intersection. The Silver Street and West Boulevard options, in particular, would benefit from the use of a roundabout because of their relatively close spacing to the interchange area. Roundabout intersections typically operate with little vehicular delay or queuing, preventing interference with interchange-area operations.

CONNECTION OPTION DESCRIPTIONS

Option #1: Van Buren Street Connection

This option consists of extending Van Buren Street from the intersection of Short Street to the west to avoid existing housing. Once past the existing housing, the alignment turns south following the east edge of a

drainage channel and connecting to Philadelphia Street approximately 1,100 feet west of I-190. In addition to the extension of Van Buren Street at the west end of the street, an extension of Van Buren east to West Boulevard will be required to assist with traffic flow within the development.

The alignment was selected to minimize excavation by following the side slope of a significant hill that exists between the development and Philadelphia Street. Advantages identified with this option include:

- Minimal excavation quantities due to the location of the alignment with respect to the hill;
- Alignment can be modified to eliminate the need for family relocations; and
- Meets minimum standards for separation of a major intersection to an interchange.
- Minimal to no impacts to residential structures.

Disadvantages identified with this option include:

- The extension to the west will impact the property known as "Cowboy Hill" which may be a 4(f) resource;
- The extension to West Boulevard would impact a City owned greenway, a Section 4(f) resource;
- Increase traffic along Van Buren Street altering the existing neighborhood traffic pattern;
- Possible drainage impacts since the proposed alignment follows a drainage swale;
- The profile would exceed preferred grade standards for a city street (10.0%);
- Extensive use of retaining walls needed to reduce the impact to the drainage swale;
- Provides minimal embankment material for use in constructing the interchange; and
- Possible impacts to a potential prehistoric archeological site.
- Due to the large amount of Right of Way purchase required, this would be the most expensive connection option.

Option #2: Boegel Street Connection

This option consists of extending Boegel Street from the intersection of Mallow Street to the southwest and turns south to intersect with Philadelphia Street approximately 1,100 feet west of I-190. The extension of Boegel Street does require traversing through a hill requiring significant excavation, which as a benefit may be used as embankment for the construction of the interchange.

Advantages identified with this option include:

- Excess embankment material that can be used for the construction of the interchange thus reducing the need for borrow material;
- The section of existing Boegel Street is wider and may be able to accommodate the additional traffic with minimal improvements;
- Meets minimum standards for separation of a major intersection to an interchange; and
- This option would be the least expensive.

Disadvantages identified with this option include:

- The extension would require the acquisition of four (4) residences;
- Increase traffic along Boegel Street to the southwest of Silver Street;
- The profile would exceed preferred grade standards for a city street (10.0%);
- Drifting of snow may be an issue as the alignment cuts through a hill;
- Extensive use of retaining walls to reduce the impacts could be considered and could reduce the number of impacted residences to three (3); and
- Possible impacts to a potential prehistoric archeological site.

Option #3: Silver Street Connection

This option consists of re-aligning Silver Street from the intersection of West Boulevard. At the intersection of West Boulevard, Silver Street would turn south and tie into Philadelphia Street at the existing 11th Street intersection. The revised intersection at 11th Street/Philadephia St. was analyzed for traffic control and potential interactions with the proposed interchange. The analysis found that a roundabout or traffic signal may be used at this location, but that stop-sign control on the West Boulevard and 11th Street approaches should be sufficient through the current planning horizon. The extension of Silver Street does require traversing through a hill requiring significant excavation, which as a benefit may be used as embankment for the construction of the interchange. Strategic use of retaining walls could reduce the impact to private property and add/reduce the amount of excess embankment material.

Advantages identified with this option include:

- Excess embankment material can be used for the construction of the interchange;

- The vertical alignment would fall below the preferred standards with a maximum grade at 3.10%;
- Closely follows existing traffic patterns with very minimal modifications to the existing street network; and
- Connects to Philadelphia Street to create a four legged intersection with the existing roadway connection to the south.

Disadvantages identified with this option include:

- The Silver Street option would require the relocation of one (1) residence which has been previously acquired by the SDDOT;
- Use of retaining walls may be required to reduce property impacts (approximately 4,500 ft^2);
- Drifting of snow may be an issue as the alignment cuts through a hill;
- The Philadelphia Street connection separation is 300' from the proposed interchange on/off ramps. This does not meet minimum spacing requirements for Access Control at an interchange and would require an exception to the policy (current SDDOT policy is 660' from ramp to first intersection); and
- Due to the proximity to the interchange location, this connection option will work with Interchange Alternative 2a only.

Option #4: West Boulevard Connection

This option is an extension of the previously discussed Silver Street connection. Instead of starting the alignment at Silver Street and curving to the south, Silver Street would become a "T" intersection as the connection extends north to tie into West Boulevard at Boegel Street. This option would improve the traffic patterns over what currently exists by allowing West Boulevard to connect directly to Philadelphia Street and the interchange. Currently, West Boulevard becomes Boegel Street and the traffic is directed onto neighborhood streets. Additional discussions included with the Silver Street Connection also apply to this option.

Advantages identified with this option include:

- Excess embankment material can be used for the construction of the interchange;
- The vertical alignment would fall below the preferred standards with a maximum grade at 3.10%;
- The frontage road could be considered as a buffer between the interchange ramps and the neighborhood;
- Closely follows existing traffic patterns with very minimal modifications to the existing street network;
- Best follows the City of Rapid City Major Street Plan which identifies Philadelphia Street and West Boulevard North as arterial roadways; and
- Improves connection to the interchange for the development north of Silver Street.

Disadvantages identified with this option include:

- The West Boulevard option would require the relocation of up to three (3) residences. However, two of the residences are impacted by all of the interchange options except for Alternative 2a and the other residence has previously been acquired by the SDDOT;
- Use of retaining walls may be required to reduce property impacts (approximately 4,500 ft^2);
- Drifting of snow may be an issue as the alignment cuts through a hill;
- Impacts the City owned greenway, a Section 4(f) resource, on the west side of West Boulevard;
- The Philadelphia Street connection separation is 300' from the proposed interchange on/off ramps. This does not meet minimum spacing requirements for Access Control at an interchange and would require an exception to the policy (current SDDOT policy is 660' from ramp to first intersection); and
- This connection option will work with Interchange Alternative 2a only.

CONSTRUCTION AND ROW COSTS

The following are the estimates of probable costs for each of the connection options as shown in the figures.

	Option #1 Van Buren	Option #2 Boegel	Option #3 Silver	Option #4 West
Roadway Construction Costs	$ 727,000	$ 683,000	$ 563,000	$ 764,000
Structure and Wall Costs	$ 359,000	$ -	$ 269,000	$ 269,000
Right of Way and Property Acquisition Costs	$ 876,000	$ 406,000	$ 276,000	$ 333,000
Utility Relocations	$ 58,000	$ 58,000	$ 58,000	$ 58,000
Total Estimate	$ 2,020,000	$ 1,147,000	$ 1,166,000	$ 1,424,000

ENVIRONMENTAL IMPACTS AND MITIGATION

Option #1: Van Buren Street Connection

Impacts	Mitigation[1]	Description[2]	+/-[3]
Cowboy Hill (4(f))	Yes	Use of retaining walls between the roadway and Cowboy Hill would greatly reduce impacts to the property. May result in "*de minimus impact*".	+
Prehistoric Site	Yes	The horizontal alignment can be modified to avoid the site. A shift of the alignment either east or west would result in significant cost increases.	-

[1] Potential mitigation measure to minimize environmental impacts.
[2] Description of the mitigation measure.
[3] Measure of impact to the goal of the project.

Option #2: Boegel Street Connection

Impacts	Mitigation[1]	Description[2]	+/-[3]
Resident Relocation	Yes	As a part of the environmental process, identification of suitable housing similar to the current location. This would include comparable size, price, and location.	-
Prehistoric Site	Yes	The horizontal alignment would need to be modified to avoid the site. A shift of the alignment either east or west would result in significant cost increases.	-

[1] Potential mitigation measure to minimize environmental impact.
[2] Description of the mitigation measure.
[3] Measure of impact to the goal of the project.

Option #3: Silver Street Connection

Impacts	Mitigation[1]	Description[2]	+/-[3]
Resident Relocation	Yes	This property has been previously acquired by the SDDOT. Relocation remains an issue however the current resident is aware of the goal of the SDDOT and is aware of relocation in the future.	+

[1] Potential mitigation measure to minimize environmental impact.
[2] Description of the mitigation measure.
[3] Measure of impact towards the goal of the project.

Option #4: West Boulevard Connection

Impacts	Mitigation[1]	Description[2]	+/-[3]
Resident Relocation	Yes	This property has been previously acquired by the SDDOT. Relocation remains an issue; however the current resident is aware of the goal of the SDDOT and is aware of relocation in the future.	+
Impact to a Section 4(f) Resource	Yes	During previous discussions with the park board, their opinion is that the proposed improvements would not negatively impact the current purpose of the park. The parks department would be further coordinated with to receive approve of the preferred option due to impacts to a Section 4(f) resource.	+

[1] Potential mitigation measure to minimize environmental impact.
[2] Description of the mitigation measure.
[3] Measure of impact towards the goal of the project.

RECOMMENDATION OF PREFERRED CONNECTIONS

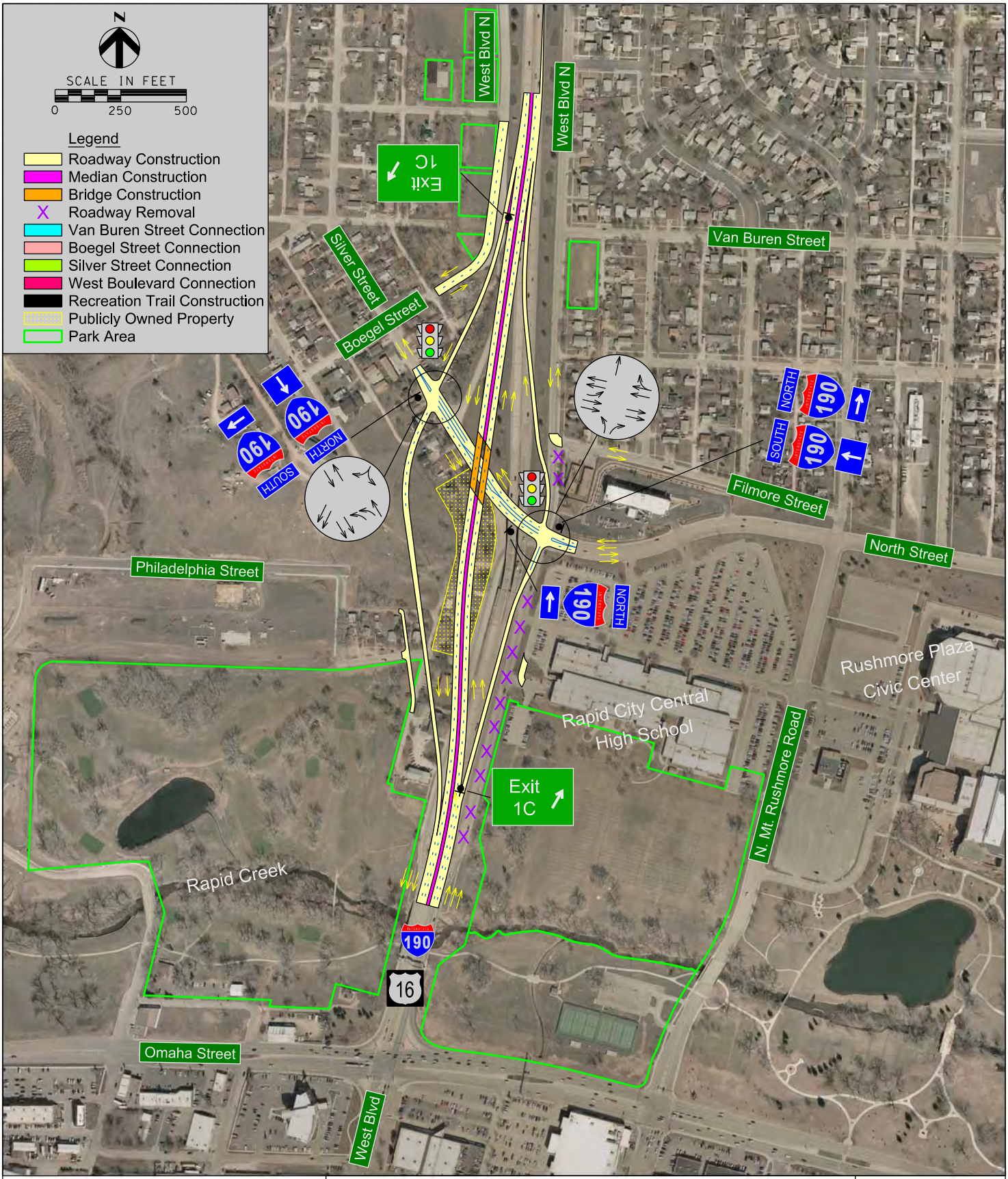
After careful consideration and review of the analysis described above and discussion from the Study Advisory Team, HDR offers the following recommendation for preferred neighborhood connection options for each of the respective I-190/Silver Street Interchange Alternatives:

Interchange Alternative 1 – No Neighborhood Connection needed.

Interchange Alternative 1a – Van Buren Street Connection. Based on the previous discussions, it is determined that the Van Buren Street connection would have the least environmental impacts and more importantly, least residential impacts.

Interchange Alternative 2a – West Boulevard Connection. This option best meets the traffic needs of the neighborhood by creating a direct link from West Boulevard North to Philadelphia Street. Although this option does impact three (3) homes, other impacts are minimized since the connection option would be constructed in an area previously developed.

Interchange Alternative 3a - Van Buren Street Connection. Based on the previous discussions, it is determined that the Van Buren Street connection would have the least environmental impacts and more importantly, least residential impacts.



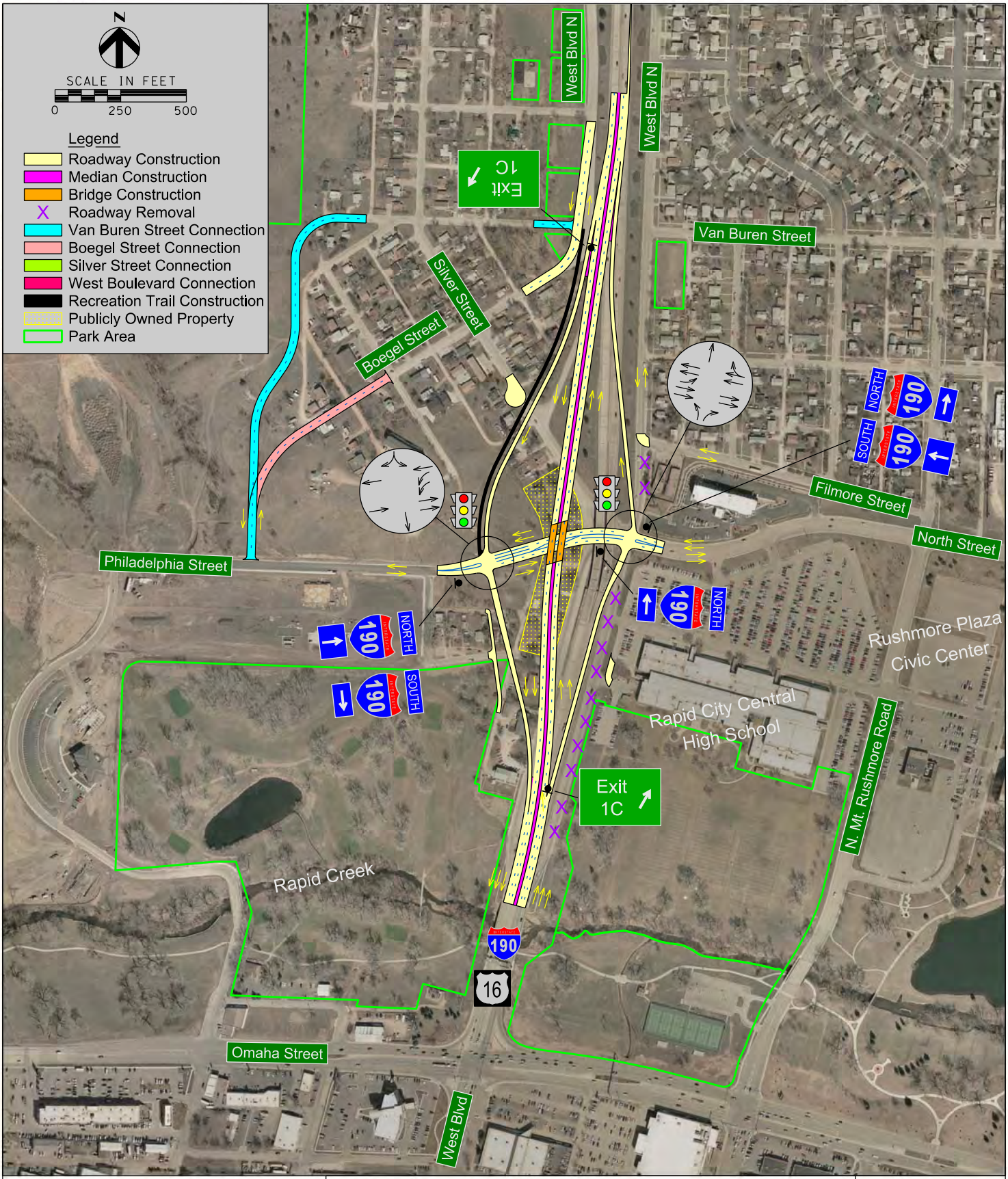
Interchange Alternative 1

Philadelphia Street Connection Options

Figure 1

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

August 2011



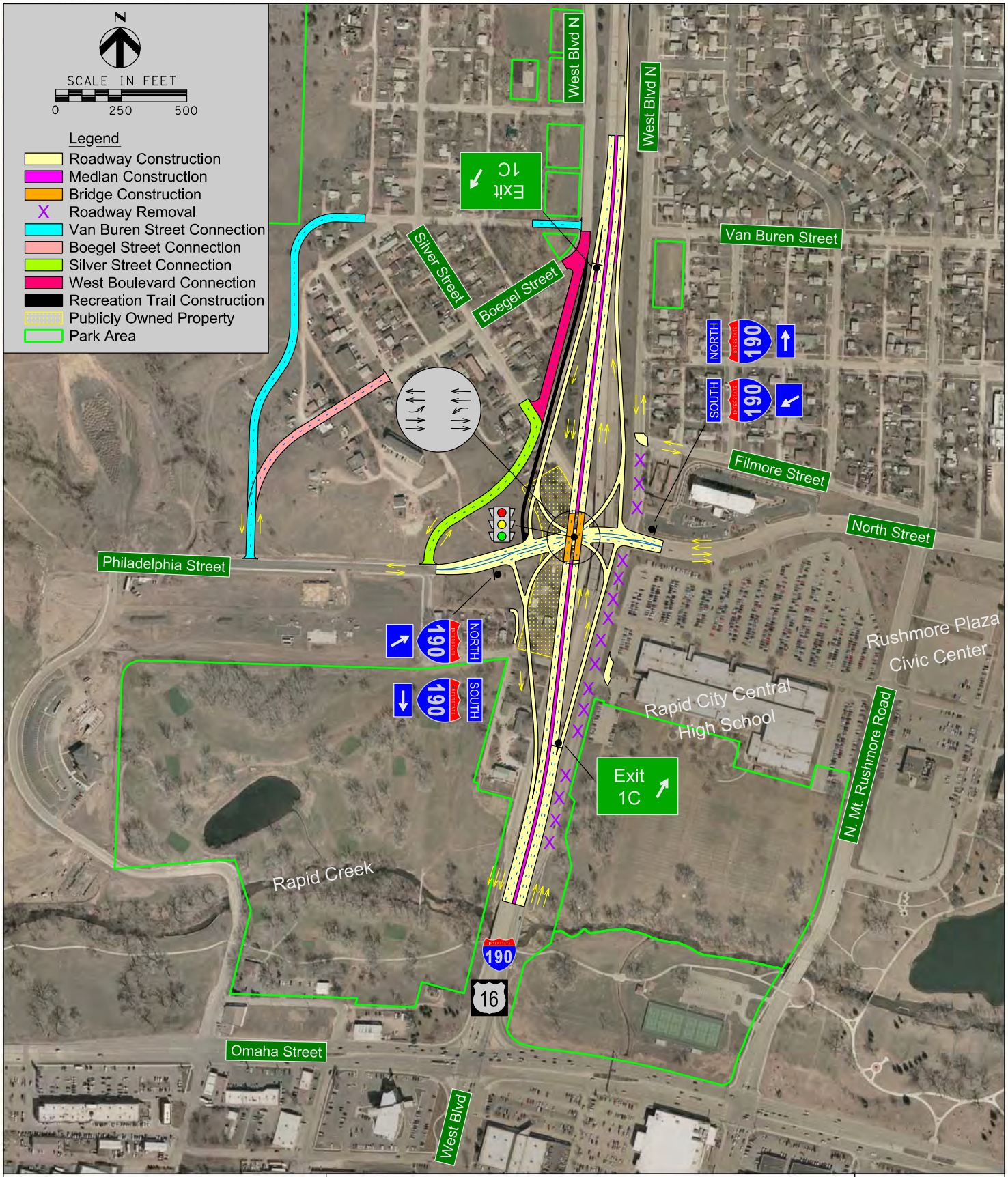
Interchange Alternative 1a

Philadelphia Street Connection Options

Figure 2

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

August 2011



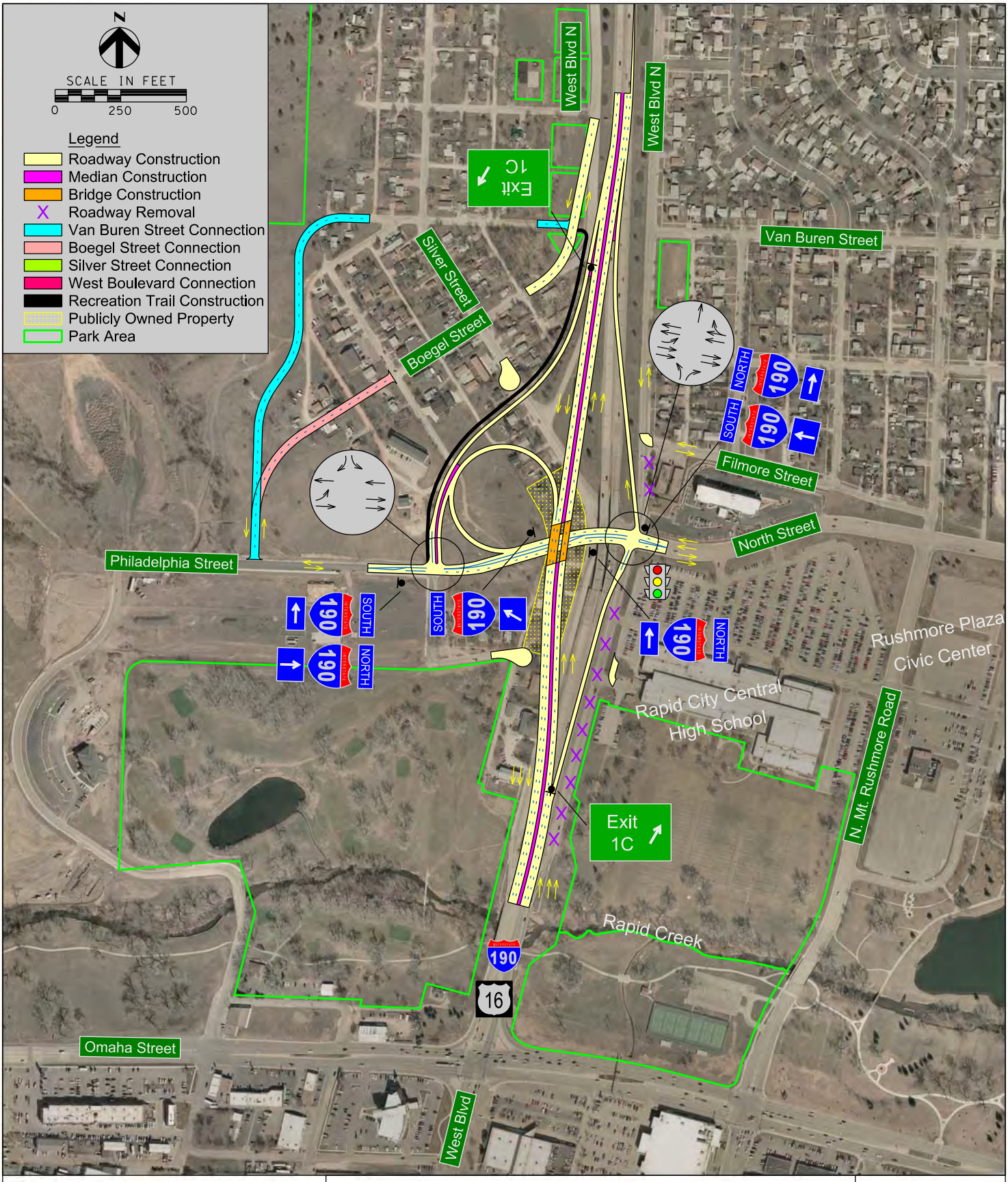
Interchange Alternative 2a

Philadelphia Street Connection Options

Figure 3

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

August 2011



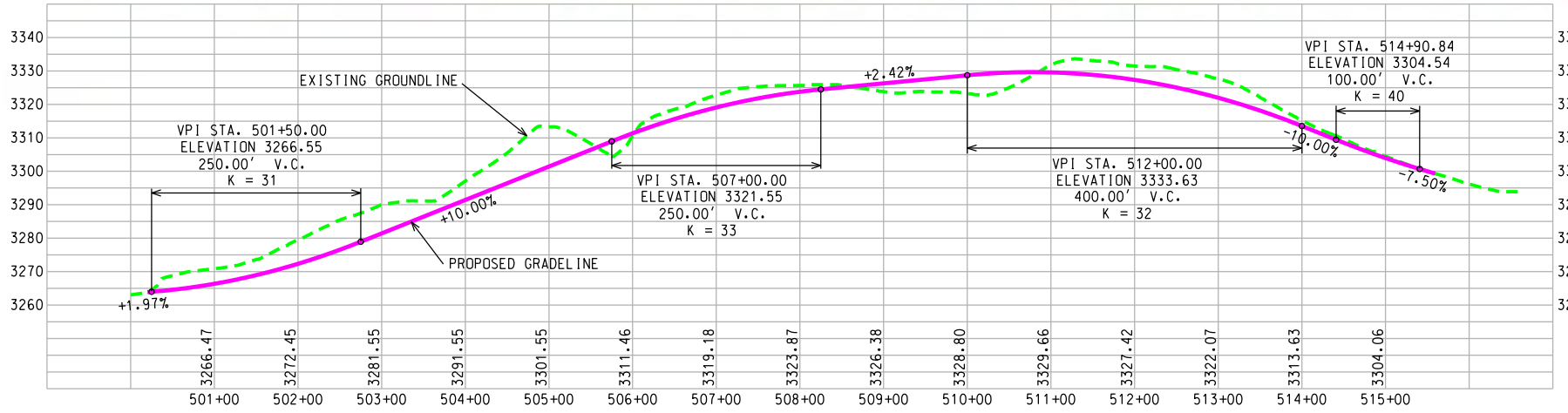
Interchange Alternative 3a

Philadelphia Street Connection Options

Figure 4

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

August 2011



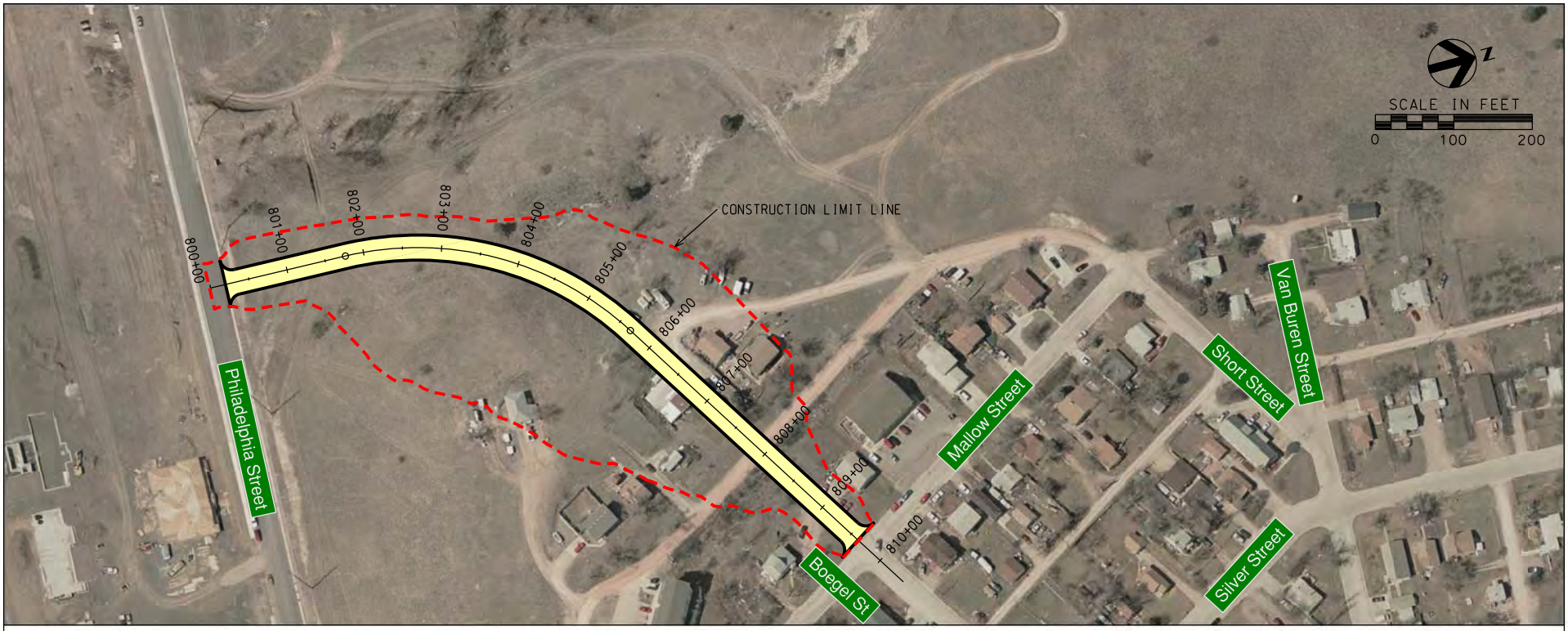
Van Buren Street Connection Option

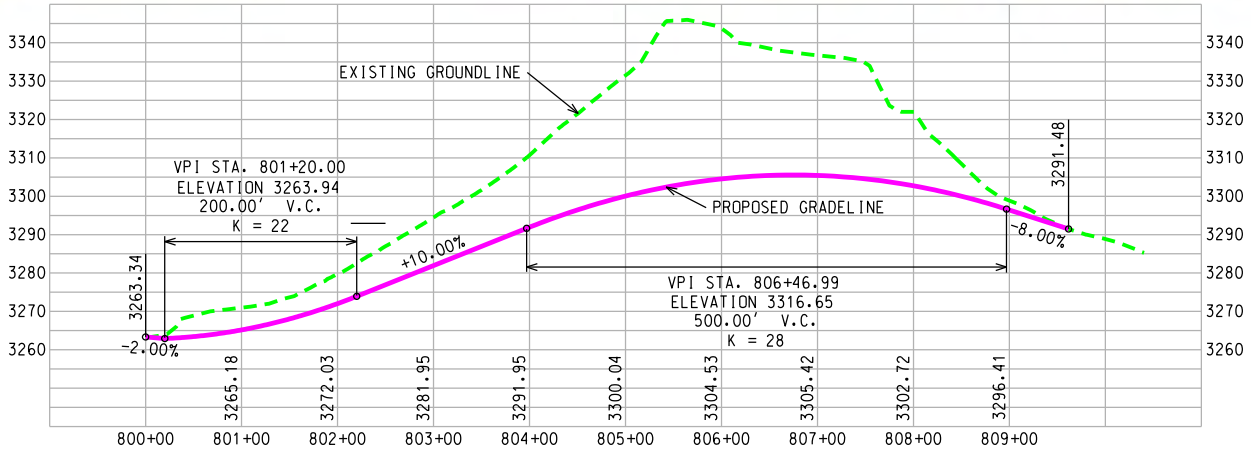
Philadelphia Street Connection Options

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

Figure 5

August 2011





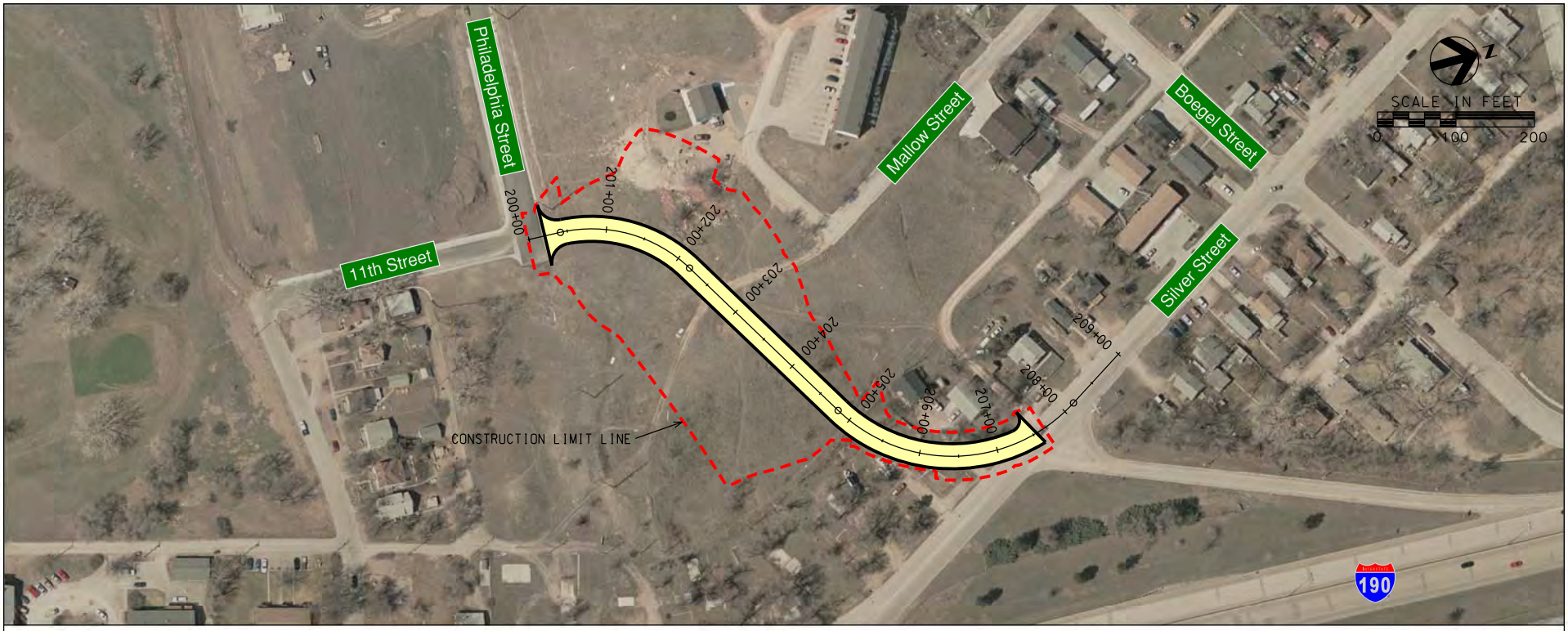
Boegel Street Connection Option

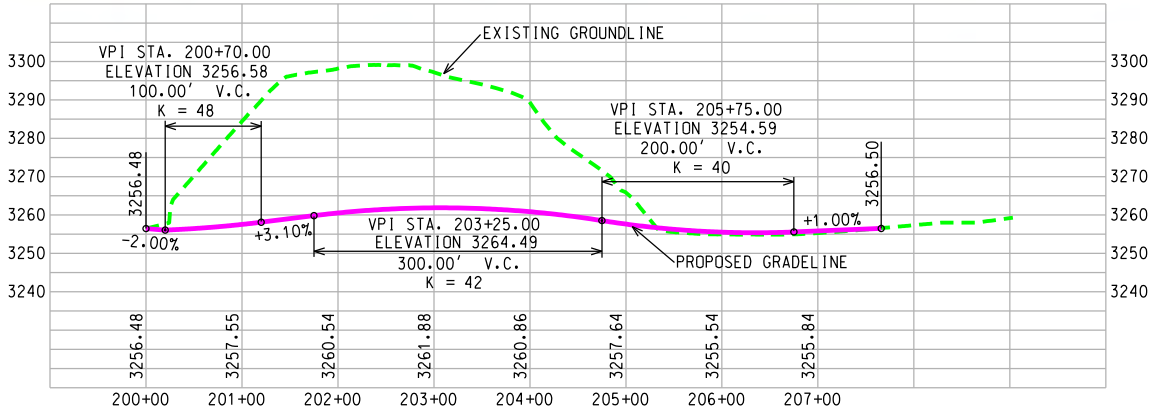
Philadelphia Street Connection Options

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

Figure 6

August 2011





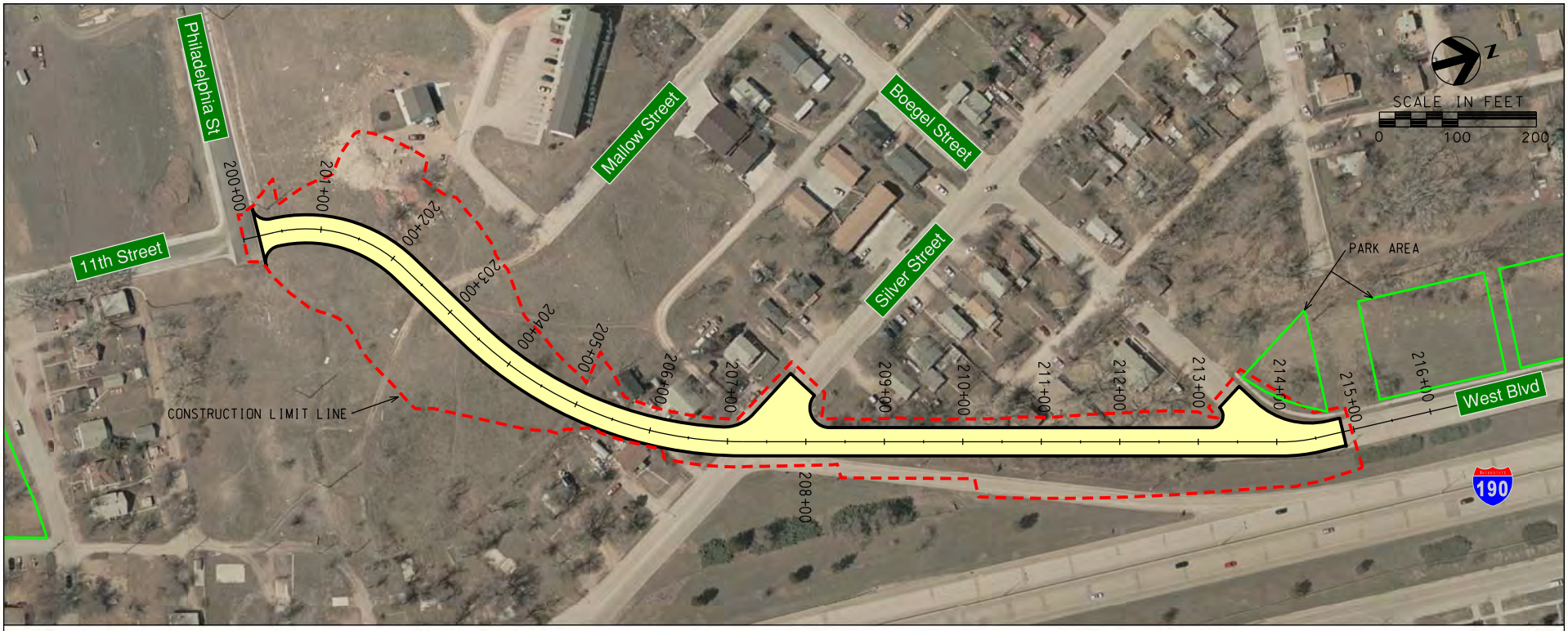
Silver Street Connection Option

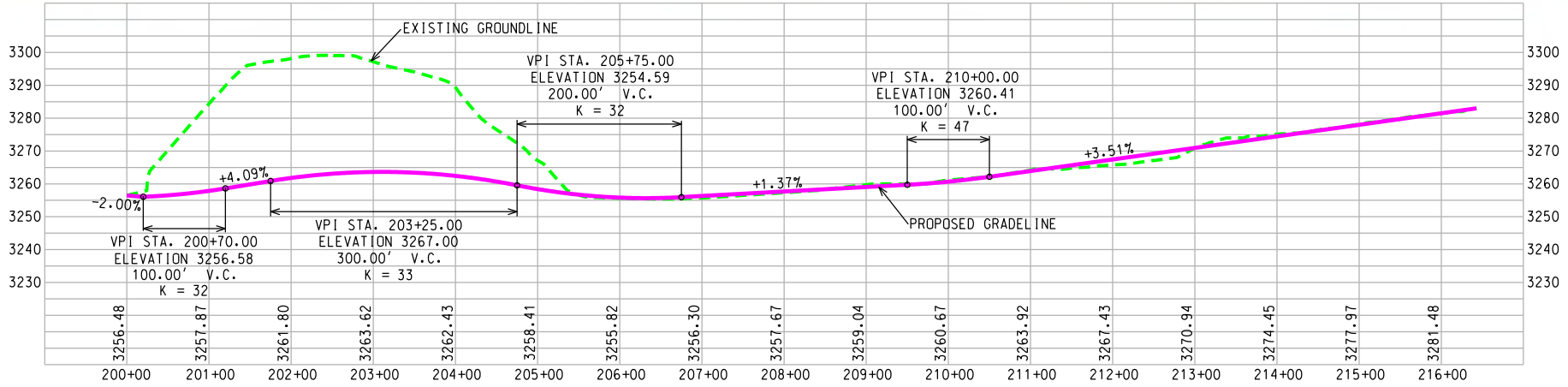
Philadelphia Street Connection Options

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

Figure 7

August 2011





West Blvd. Connection Option

Philadelphia Street Connection Options

Interstate 190/Silver Street Interchange Study
Rapid City, South Dakota

Figure 8

August 2011