# Supplemental Draft Environmental Impact Statement and 4(f) Evaluation for the proposed **DesertXpress High-Speed Passenger Train**

## Victorville, California to Las Vegas, Nevada




## Volume I: Report

U.S. Department of Transportation
**Federal Railroad Administration**

Prepared by:
USDOT Federal Railroad Administration
1200 New Jersey Ave SE
Washington, DC 20590

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# DESERTXPRESS HIGH-SPEED PASSENGER TRAIN
# SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT
# AND 4(F) EVALUATION

**Prepared by**
**USDOT Federal Railroad Administration**

With Cooperating Agencies
**Bureau of Land Management**
**Surface Transportation Board**
**Federal Highway Administration**
**National Park Service**

Pursuant to:

National Environmental Policy Act (42 U.S.C. § 4332 et seq), and implementing regulations (40 C.F.R. Parts 1500-1508), 64 FR § 28545, 23 CFR §771, 65 FR § 33960, 49 C.F.R. § 1105; 49 U.S.C. § 303 (formerly Department of Transportation Act of 1966, Section 4(f)); National Historic Preservation Act (16 U.S.C. § 470); Clean Air Act as amended (42 USC §§ 7401 et seq. and 40 CFR Parts 51 and 93); the Endangered Species Act of 1973 (16 USC § 1531-1544); the Clean Water Act (33 USC § 1251-1387); and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC § 4601)

**Joseph C. Szabo**
**Administrator**
**Federal Railroad Administration**
**U.S. Department of Transportation**

**Date** 8/25/10

Contact the following individual for additional information concerning this document:

Ms. Wendy Messenger
USDOT Federal Railroad Administration
1200 New Jersey Avenue S.E.
Washington, DC 20590
(202) 493-6396

**Abstract:** In March 2009, the Federal Railroad Administration published a Draft Environmental Impact Statement (EIS) for the DesertXpress High-Speed Passenger Train project. DesertXpress Enterprises Inc. proposes the construction and operation of a fully grade-separated, dedicated double track passenger-only railroad along an approximately 200-mile corridor, from Victorville, California to Las Vegas, Nevada. Following publication of the Draft EIS, DesertXpress Enterprises Inc. proposed several project modifications and additions to address substantive comments received during public and agency review of the Draft EIS and to reduce or avoid significant environmental effects. This Supplemental Draft EIS evaluates the environmental effects of the proposed project modifications and additions.

The proposed project modifications and additions include a new Victorville passenger station site option, a Barstow area rail alignment routing following I-15 from Lenwood through Yermo, a new rail alignment through the Clark Mountains near the Mojave National Preserve, new sites for maintenance and operation facilities in unincorporated Clark County, relocation of portions of the rail alignment in metropolitan Las Vegas from the immediate I-15 corridor to the Industrial Road/Dean Martin Drive

metropolitan Las Vegas from the immediate I-15 corridor to the Industrial Road/Dean Martin Drive corridor, and other minor shifts in the rail alignment to avoid or reduce effects or improve operating characteristics of the rail service.

The proposed project modifications and additions do not in any way change the underlying purpose of, or need for the project. The need for a high-speed rail service system stems from several factors, including high and increasing travel demand with limited increases in capacity on Interstate-15 (I-15), constraints to the expansion of air travel, and frequent automobile accidents on the I-15 corridor. The DesertXpress high-speed passenger train would provide reliable and safe passenger rail transportation using proven high-speed rail technology that would be a convenient alternative to automobile travel on I-15 or air travel to and from Las Vegas, and that would add transportation capacity along the I-15 corridor.

Potential environmental impacts of the project modifications and additions include land use and community effects, conversion of grazing land, impacts on sensitive biological resources and wetlands, visual impacts in scenic areas of the Mojave Desert, impacts on historic properties and archaeological sites, impacts on parks and recreation resources, impacts to hydrological resources, air quality effects, noise, and effects on utility and public service providers. Mitigation measures and strategies are described to avoid or minimize potential impacts.

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This Supplemental Draft EIS is being made available to the public in accordance with the National Environmental Policy Act for a public review and comment period ending October 18, 2010. Public hearings will be held as shown below.

| **Las Vegas Area** | **Victorville/Barstow Area** |
|---|---|
| **October 13, 2010** | **October 14, 2010** |
| **5:30 p.m.- 8:00 p.m** | **5:30 p.m.- 8:00 p.m.** |
| Hampton Inn Tropicana | Lenwood Hampton Inn |
| SW Event Center B | Jackrabbit Room 1 |
| 4975 Dean Martin Drive | 2710 Lenwood Road |
| Las Vegas, NV 89118 | Barstow, CA 92311 |

Locations, dates, and times of hearings will also be posted on the Federal Railroad Administration Web Site (*www.fra.dot.gov*), and notice will be mailed to interested parties and published in newspapers of general circulation.

**Comments on this Supplemental Draft EIS are due by October 18, 2010**, and should be sent to the Federal Railroad Administration by mail addressed to:

Ms. Wendy Messenger
Federal Railroad Administration
1200 New Jersey Avenue S.E. MS-20
Washington, DC 20590
Attn: DesertXpress SDEIS

**Comments on the Supplemental Draft DesertXpress High-Speed Train EIS must be received by FRA by October 18, 2010.**

Visit the Federal Railroad Administration Web Site [*www.fra.dot.gov*] to view and download the Supplemental Draft and Draft EIS.

Printed copies of the Supplemental Draft and Draft EIS have been placed in the following locations:

| | | | |
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# Table of Contents

**EXECUTIVE SUMMARY ..... ES-1**

ES-1 Introduction and Background ..... ES-1
ES-2 Purpose and Need ..... ES-1
ES-3 Alternatives ..... ES-2
ES-4 Summary of Environmental Effects ..... ES-4
ES-5 Avoidance and Minimization of Adverse Effects ..... ES-42
ES-6 Public and Agency Involvement ..... ES-42

**1.0 PURPOSE AND NEED ..... 1-1**

1.1 Purpose Of The Proposed Project ..... 1-1
1.2 Need for The Proposed Project ..... 1-2
1.3 Major Authorizing Laws And Regulations ..... 1-3
1.4 Relationship To Other Transportation Projects and Plans In The Study Area ..... 1-4

**2.0 ALTERNATIVES ..... 2-1**

2.1 Summary of Draft EIS Alternatives ..... 2-1
2.2 Proposed Project modifications and Additions ..... 2-2
2.3 No Action Alternative ..... 2-9

**3.0 REGULATORY SETTING ..... 3-1**

**Affected Environment, Environmental Consequences, and Mitigation Measures**

3.1 Land Use and Community Impacts ..... 3.1-1
3.2 Growth ..... 3.2-1
3.3 Farmlands and Grazing Lands ..... 3.3-1
3.4 Utilities/Emergency Services ..... 3.4-1
3.5 Traffic and Transportation ..... 3.5-1
3.6 Visual Resources ..... 3.6-1
3.7 Cultural and Paleontological Resources ..... 3.7-1
3.8 Hydrology and Water Quality ..... 3.8-1

3.9 Geology and Soils ..... 3.9-1
3.10 Hazardous Materials ..... 3.10-1
3.11 Air Quality and Global Climate Change ..... 3.11-1
3.12 Noise and Vibration ..... 3.12-1
3.13 Energy ..... 3.13-1
3.14 Biological Resources ..... 3.14-1
3.15 Section 4(f) Evaluation ..... 3.15-1
3.16 Cumulative Impacts ..... 3.16-1
3.17 Irretrievable and Irreversible Committments of Public Resources ..... 3.17-1
3.18 Short Term Uses Versus Long Term Productivity ..... 3.18-1
3.19 Unavoidable Adverse Effects ..... 3.19-1

**4.0 COMMENTS AND COORDINATION ..... 4-1**
4.1 Public involvement and Outreach ..... 4-1
4.2 Agency Involvement ..... 4-3

**5.0 PREPARERS AND REFERENCES ..... 5-1**
5.1 List of Preparers ..... 5-1
5.2 References ..... 5-3

# List of Figures


| | | |
|---|---|---|
| Figure S-ES-1 | Project Modifications and Additions (1) | ES-43 |
| Figure S-ES-2 | Project Modifications and Additions (2) | ES-44 |
| Figure S-ES-3 | Project Modifications and Additions (3) | ES-45 |
| Figure S-ES-4 | Project Modifications and Additions (4) | ES-46 |
| Figure S-ES-5 | Project Modifications and Additions (5) | ES-47 |
| Figure S-2-1 | New Project Features and Modifications (1) | 2-13 |
| Figure S-2-2 | New Project Features and Modifications (2) | 2-14 |
| Figure S-2-3 | New Project Features and Modifications (3) | 2-15 |
| Figure S-2-4 | New Project Features and Modifications (4) | 2-16 |
| Figure S-2-5 | New Project Features and Modifications (5) | 2-17 |
| Figure S-2-6 | Victorville Station Site 3A/3B - Site Plans | 2-18 |
| Figure S-2-7 | Segment 2C – Side Running and Median Options | 2-19 |
| Figure S-2-8 | Frias Substation Site Plan | 2-20 |
| Figure S-2-9 | Profile Modification Cross Section | 2-21 |
| Figure S-2-10 | Cross Section From California/Nevada State Line at Primm to Sloan Road (East Side Running) | 2-22 |
| Figure S-2-11 | Cross Section From California/Nevada State Line at Primm to Sloan Road (West Side Running) | 2-23 |
| Figure S-3.1-1 | Land Ownership (1) | 3.1-17 |
| Figure S-3.1-2 | Land Ownership (2) | 3.1-18 |
| Figure S-3.1-3 | Land Ownership (3) | 3.1-19 |
| Figure S-3.1-4 | Land Ownership (4) | 3.1-20 |
| Figure S-3.1-5 | Land Ownership (5) | 3.1-21 |
| Figure S-3.1-6 | Land Use/Zoning Designations (1) | 3.1-22 |
| Figure S-3.1-7 | Land Use/Zoning Designations (2) | 3.1-23 |
| Figure S-3.1-8 | Land Use/Zoning Designations (3) | 3.1-24 |
| Figure S-3.1-9 | Land Use/Zoning Designations (4) | 3.1-25 |
| Figure S-3.1-10 | Land Use/Zoning Designations (5) | 3.1-26 |
| Figure S-3.1-11 | Bureau of Land Management (BLM) Multiple Use Classifications, California Desert Conservation Area | 3.1-27 |
| Figure S-3.1-12 | Environmental Justice Census Blocks (1) | 3.1-28 |
| Figure S-3.1-13 | Environmental Justice Census Blocks (2) | 3.1-29 |
| Figure S-3.3-1 | BLM Grazing Allotments | 3.3-4 |

Figure S-3.3-2 Segment 4C – Grazing Land Allotments ..... 3.3-5
Figure S-3.5-1 Existing Intersection Lane Geometry ..... 3.5-12
Figure S-3.5-2 Existing Intersection Traffic Volumes ..... 3.5-13
Figure S-3.5-3 Future Year 2013 Intersection Geometry ..... 3.5-14
Figure S-3.5-4 Future Year 2030 Intersection Geometry ..... 3.5-15
Figure S-3.5-5 Trip Distribution ..... 3.5-16
Figure S-3.6-1 Visual Quality/Sensitivity Map (1) ..... 3.6-14
Figure S-3.6-2 Visual Quality/Sensitivity Map (2) ..... 3.6-15
Figure S-3.6-3 Visual Quality/Sensitivity Map (3) ..... 3.6-16
Figure S-3.6-4 Visual Quality/Sensitivity Map (4) ..... 3.6-17
Figure S-3.6-5 Visual Quality/Sensitivity Map (5) ..... 3.6-18
Figure S-3.6-6 Areas of Critical Environmental Concern ..... 3.6-19
Figure S-3.6-7 View Comparison, Victorville Station Site 3 ..... 3.6-20
Figure S-3.6-8 Existing Conditions, Segment 2C (Central Barstow) ..... 3.6-21
Figure S-3.6-9 View Comparison, Alignment Adjustment Area 8 ..... 3.6-22
Figure S-3.6-10 View Comparison, Wigwam MSF Modification ..... 3.6-23
Figure S-3.6-11 View Comparison, Profile Modification ..... 3.6-24
Figure S-3.6-12 View Comparison, Segment 2C Side Running (Central Barstow) ..... 3.6-25
Figure S-3.6-13 View Comparison, Segment 2C Median (Central Barstow) ..... 3.6-26
Figure S-3.8-1 Hydrology and Floodplains (1) ..... 3.8-21
Figure S-3.8-2 Hydrology and Floodplains (2) ..... 3.8-22
Figure S-3.8-3 Hydrology and Floodplains (3) ..... 3.8-23
Figure S-3.8-4 Hydrology and Floodplains (4) ..... 3.8-24
Figure S-3.8-5 Hydrology and Floodplains (5) ..... 3.8-25
Figure S-3.9-1 Faults and Earth Fissures (1) ..... 3.9-10
Figure S-3.9-2 Faults and Earth Fissures (2) ..... 3.9-11
Figure S-3.9-3 Faults and Earth Fissures (3) ..... 3.9-12
Figure S-3.9-4 Regional Geologic Map (1) ..... 3.9-13
Figure S-3.9-5 Regional Geologic Map (2) ..... 3.9-14
Figure S-3.9-6 Regional Geologic Map (3) ..... 3.9-15
Figure S-3.9-7 Regional Geologic Map (4) ..... 3.9-16
Figure S-3.9-8 Regional Geologic Map ..... 3.9-17
Figure S-3.9-9 Regional Geologic Map ..... 3.9-18
Figure S-3.10-1 Hazardous Sites of Environmental Concern - Segment 2C ..... 3.10-9
Figure S-3.12-1 Noise Measurements, Segment 2C ..... 3.12-34
Figure S-3.12-2 Noise Measurements, AAA 8 ..... 3.12-35
Figure S-3.12-3 Noise Mitigation Locations, Segment 2C ..... 3.12-36

Figure S-3.12-4 Noise Mitigation Locations, Segment 6 (Revised from Draft EIS). 3.12-37
Figure S-3.12-5 Noise Mitigation Locations, AAA 8 (Segment 6B) ..... 3.12-38
Figure S-3.14-1 Biological Resources (1) ..... 3.14-37
Figure S-3.14-2 Biological Resources (2) ..... 3.14-38
Figure S-3.14-3 Biological Resources (3) ..... 3.14-39
Figure S-3.14-4 Biological Resources (4) ..... 3.14-40
Figure S-3.14-5 Biological Resources (5) ..... 3.14-41
Figure S-3.14-6 Biological Resources (6) ..... 3.14-42
Figures S-3.15.1 Section 4(f) Resources (1) ..... 3.15-8
Figures S-3.15.2 Section 4(f) Resources (2) ..... 3.15-9
Figures S-3.15.3 Section 4(f) Resources (3) ..... 3.15-10
Figures S-3.15.4 Section 4(f) Resources (4) ..... 3.15-11
Figures S-3.15.5 Section 4(f) Resources (5) ..... 3.15-12
Figure S-3.16-1 Related Cumulative Projects (1) ..... 3.16-15
Figure S-3.16-2 Related Cumulative Projects (2) ..... 3.16-16
Figure S-3.16-3 Related Cumulative Projects (3) ..... 3.16-17
Figure S-3.16-4 Related Cumulative Projects (4) ..... 3.16-18
Figure S-3.16-5 Related Cumulative Projects (5) ..... 3.16-19
Figure S-3.16-6 Related Cumulative Projects (6) ..... 3.16-20
Figure S-3.16-7 Related Cumulative Projects (7) ..... 3.16-21

# List of Tables


| | | |
|---|---|---|
| Table S-ES-1 | Comparison of Segment 1 Alternatives | ES-5 |
| Table S-ES-2 | Comparison of Segment 2 Alternatives | ES-12 |
| Table S-ES-3 | Comparison of Segment 3 Alternatives | ES-18 |
| Table S-ES-4 | Comparison of Segment 4 Alternatives | ES-23 |
| Table S-ES-5 | Comparison of Segment 5 Alternatives | ES-29 |
| Table S-ES-6 | Comparison of Segment 6 Alternatives | ES-35 |
| Table S-2-1 | Summary of Routing Alternatives Evaluated in the Draft EIS | 2-1 |
| Table S-2-2 | Summary of Alignment Modification Areas | 2-8 |
| Table S-3.1-1 | Existing Land Use Summary – AAAs | 3.1-5 |
| Table S-3.1-2 | Compatibility with Adjacent Land Uses | 3.1-7 |
| Table S-3.1-3 | Compatibility with Land Use Designations | 3.1-7 |
| Table S-3.2-1 | City of Victorville Growth Projections | 3.2-2 |
| Table S-3.2-2 | Clark County Growth Projections | 3.2-3 |
| Table S-3.4-1 | Utility/Service Providers Necessary | 3.4-1 |
| Table S-3.4-2 | Potential Utility Crossings | 3.4-3 |
| Table S-3.4-3 | Summary of the Regional Environment | 3.4-5 |
| Table S-3.5-1 | Intersections Level of Service - Existing Conditions LOS | 3.5-2 |
| Table S-3.5-2 | Ramp Junction Level of Service – Existing Conditions | 3.5-2 |
| Table S-3.5-3 | Existing, 2013, & 2030 Baseline plus DEMU- LOS Conditions on Local Streets | 3.5-6 |
| Table S-3.5-4 | Existing, 2013, & 2030 Baseline plus EMU- LOS Conditions on Local Streets | 3.5-7 |
| Table S-3.5-5 | I-15/Dale Evans Parkway Ramp Junction Level of Service – 2013 Conditions | 3.5-8 |
| Table S-3.5-6 | I-15/Dale Evans Parkway Ramp Junction Level of Service – 2030 Conditions | 3.5-8 |
| Table S-3.5-7 | VV3 Mitigation Measures – DEMU Technology Option | 3.5-10 |
| Table S-3.5-8 | VV 3 Mitigation Measures – EMU Technology Option | 3.5-11 |
| Table S-3.6-1 | Summary of Existing Landscape Sensitivities for Project Modifications and Additions | 3.6-2 |
| Table S-3.7-1 | Additional Identified Archaeological Resources at Project Modifications and Additions | 3.7-2 |

| | | |
|---|---|---|
| Table S-3.7-2 | Known NRHP Eligible or Assumed Eligible Archaeological Resources in the Modified APE[a] | 3.7-14 |
| Table S-3.9-1 | Likelihood of Geologic Hazards | 3.9-5 |
| Table S-3.9-2 | Project Modifications and Additions - Mitigation Measure Applicability | 3.9-8 |
| Table S-3.11-1 | Summary of 2008 and 2009 Air Quality Data at Victorville, Park Avenue Station | 3.11-2 |
| Table S-3.11-2 | Summary of 2009 and 2009 Air Quality Data, Clark County Monitoring Stations | 3.11-4 |
| Table S-3.11-3 | Year 2007 Greenhouse Gas Emissions | 3.11-6 |
| Table S-3.11-4 | Regional Criteria Pollutant and Greenhouse Gas Emissions, No Action Alternative, 2013 and 2030 | 3.11-8 |
| Table S-3.11-5 | Revised Regional Criteria Pollutant and Greenhouse Gas Emissions, Mojave Desert Air Basin, 2013 | 3.11-9 |
| Table S-3.11-6 | Revised Regional Criteria Pollutant and Greenhouse Gas Emissions, Mojave Desert Air Basin, 2030 | 3.11-10 |
| Table S-3.11-7 | Revised Regional Criteria Pollutant and Greenhouse Gas Emissions, Clark County Air Basin, 2013 | 3.11-11 |
| Table S-3.11-8 | Revised Regional Criteria Pollutant and Greenhouse Gas Emissions, Clark County Air Basin, 2030 | 3.11-12 |
| Table S-3.11-9 | VV3 Local Area Hotspot Analysis, 2013 | 3.11-14 |
| Table S-3.11-10 | VV3 Local Area Hotspot Analysis, 2030 | 3.11-15 |
| Table S-3.12-1 | Existing Ambient Noise Measurements – Segment 2C | 3.12-2 |
| Table S-3.12-2 | Existing Ambient Noise Levels – Segment 6 | 3.12-4 |
| Table S-3.12-3 | Vibration Impact Criteria | 3.12-6 |
| Table S-3.12-4 | Noise Impacts for Segment 2C Side Running – EMU | 3.12-8 |
| Table S-3.12-5 | Noise Impacts for Segment 2C Side Running – DEMU | 3.12-9 |
| Table S-3.12-6 | Noise Impacts for Segment 2C Median – EMU | 3.12-11 |
| Table S-3.12-7 | Noise Impacts for Segment 2C Median – DEMU | 3.12-12 |
| Table S-3.12-8 | Revised Noise Impacts for Segment 6A - EMU | 3.12-17 |
| Table S-3.12-9 | Revised Noise Impacts for Segment 6A – DEMU | 3.12-18 |
| Table S-3.12-10 | Revised Noise Impacts for Segment 6B - EMU | 3.12-20 |
| Table S-3.12-11 | Revised Noise Impacts for Segment 6B – DEMU | 3.12-21 |
| Table S-3.12-12 | Noise Impacts for Segment 6B as Modified by AAA 8– EMU | 3.12-24 |
| Table S-3.12-13 | Noise Impacts for Segment 6B as Modified by AAA 8 – DEMU | 3.12-25 |
| Table S-3.12-14 | Noise Mitigation Locations, Segment 2C Side Running | 3.12-30 |
| Table S-3.12-15 | Noise Mitigation Locations, Segment 2C Median | 3.12-31 |
| Table S-3.12-16 | Noise Mitigation Locations, Segment 6 – Revised Draft EIS Analysis | 3.12-32 |
| Table S-3.12-17 | Noise Mitigation Locations, Segment 6B as Modified by AAA 8 | 3.12-33 |

Table S-3.13-1 EMM Regional Data and Projections, Regions 12 and 13 ..... 3.13-3
Table S-3.13-2 Operational Energy Consumption Factors ..... 3.13-4
Table S-3.13-3 Construction-Related Energy Consumption Factors ..... 3.13-5
Table S-3.13-4 Annual Overall Operational Energy Consumption ..... 3.13-7
Table S-3.13-5 Construction Energy Consumption ..... 3.13-8
Table S-3.14-1 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of VV3 ..... 3.14-1
Table S-3.14-2 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of Segment 2C ..... 3.14-4
Table S-3.14-3 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of the Segment 4C ..... 3.14-7
Table S-3.14-4 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of the RSMSF ..... 3.14-10
Table S-3.14-5 Sensitive Biological Resources with Potential to Occur on Frias Substation Site ..... 3.14-13

# List of Appendices


| | |
|---|---|
| Appendix S-A-1 | Segment SC – Side Running and Median Options |
| Appendix S-A-2 | Segment 4C Alignment |
| Appendix S-A-3 | Relocated Sloan MSF Site |
| Appendix S-A-4 | Wigwam Avenue MSF Modification |
| Appendix S-B | VV3 Supplemental Traffic Impact Analysis |
| Appendix S-C | Supplemental Hazardous Material Reports and Environmental Database Review for Frias Substation |
| Appendix S-D | Noise and Vibration Analyses |

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# ES Executive Summary

## ES-1 INTRODUCTION AND BACKGROUND

In March 2009, the Federal Railroad Administration (FRA) published a Draft Environmental Impact Statement (EIS) for the DesertXpress high-speed passenger rail project (project). The project entails the construction and operation of a privately financed interstate high-speed passenger train between Victorville, California and Las Vegas, Nevada. DesertXpress Enterprises, LLC (Applicant) proposes to a fully grade-separated, dedicated double track passenger-only railroad along an approximately 200-mile corridor that would generally follow the I-15 freeway. The project would also include construction of a passenger station in Victorville, California, a passenger station in Las Vegas, Nevada, a maintenance and operation facility in Victorville, an overnight maintenance and storage facility in the Las Vegas area and associated ancillary facilities needed to maintain and operate the proposed rail line.

Following publication of the Draft EIS, the project Applicant proposed several project modifications and additions to address substantive comments received during public and agency review of the Draft EIS and to reduce or avoid significant environmental effects. This Supplemental Draft EIS evaluates the environmental effects of these proposed modifications and additions.

## ES-2 PURPOSE AND NEED

The purpose of the project is to provide reliable and safe passenger rail transportation using proven high-speed rail technology between Southern California (Victorville) to Las Vegas that is a convenient alternative to automobile travel on the Interstate-15 freeway (I-15), or air travel to and from Las Vegas, and that adds transportation capacity in the I-15 corridor.

The need for a high-speed rail service stems from several factors: high and increasing travel demand amidst lagging capacity on the I-15 corridor, frequent accidents in the I-15 corridor, and constraints to expansion of air travel. **Chapter 1.0, Purpose and Need**, of this Supplemental Draft EIS summarizes the purpose and need of the project. **Chapter 1.0, Purpose and Need**, of the Draft EIS provides a detailed discussion of the purpose and need of the project.

## ES-3 ALTERNATIVES

The Draft EIS considered action alternatives categorized into two primary sets: Alternative A and Alternative B. These are based on potential alignment routings for the 200 mile corridor.

***Alternative A*** consists primarily of rail alignment segments that would be within the ***median*** of the I-15 freeway.

***Alternative B*** consists primarily of rail alignment segments that would be within the ***fenced area*** of the I-15 freeway, adjacent to automobile travel lanes.

In addition, the Draft EIS examined a third alignment option within the Las Vegas metropolitan area, ***Option C***.

For analytical purposes, each of the alignments along the 200 mile corridor was divided into seven segments. **Figure ES-1** shows the location of the action alternatives. FRA organized the analysis in this manner to allow FRA and the cooperating agencies to "mix and match" various segments in composing a preferred alternative.

The action alternatives evaluated in the Draft EIS also included one of each of the following permanent physical facilities in addition to the rail alignment:

- **Victorville passenger station:** Two site options (Site 1 and Site 2) immediately west of the I-15 freeway were considered.
- **Victorville Operations, Maintenance, and Storage Facility (OMSF):** Two site options (OMSF 1 and OMSF 2) immediately west of the I-15 freeway were considered.
- **Maintenance of Way (MOW) facility:** One site option adjacent to the I-15 freeway near the community of Baker was considered.
- **Las Vegas area Maintenance and Storage Facility (MSF):** Three site options, Sloan Road MSF, Wigwam Avenue MSF, and Robindale Avenue MSF are under consideration.
- **Las Vegas area passenger station:** Four site options in Clark County/City of Las Vegas: Southern Station, Central Station A, Central Station B, and Downtown Station were considered.

In addition, two train technologies, each fully applicable to any set of the action alternatives, were considered in the Draft EIS: a diesel-electric multiple unit train (DEMU) or an electric multiple unit train (EMU). The two technology options would have similar right-of-way width requirements and largely the same construction footprint. However, the EMU option, as considered in t he Draft EIS, also included overhead catenary wires and supports (located along the length of the rail alignment), three electrical substations (one at an OMSF, one at the MOW, and one at an MSF),

approximately seventeen transformers (each located on 4,000 to 5,000 square foot parcels at 10 mile intervals along the rail corridor), and three electrical utility connections from the existing electrical grid, one in Victorville, one in Baker, and one near Sloan.

Subsequent to the publication of the Draft EIS, the Applicant proposed several project modifications and additions to address substantive comments received during public and agency review of the Draft EIS and to reduce or avoid significant environmental effects. This Supplemental Draft EIS considers these proposed modifications and additions, which are summarized below and described in more detail in **Chapter 2.0, Alternatives**, of this Supplemental Draft EIS.

- **Victorville Station Site 3 (VV3):** An additional station site option is proposed immediately west of the I-15 freeway near the Dale Evans Parkway.
- **Victorville OMSF2:** The footprint of OMSF 2 has been reduced from 260 acres as analyzed in the Draft EIS to approximately 68 acres. The location of the facility is not changed.
- **Segment 2C:** Two alignments, side running and median, have been proposed within the I-15 freeway corridor through Lenwood and Barstow, for Segment 2
- **Segment 4C:** An additional alignment for Segment 4 has been proposed. Segment 4C is a similar alignment to Segment 4B as presented in the Draft EIS, but would travel north of planned solar energy projects and the Ivanpah Dry Lake bed before connecting back to the I-15 freeway corridor in the vicinity of Primm, Nevada.
- **Relocated Sloan MSF (RSMSF):** A modified location for the Sloan MSF has been proposed approximately 9 miles south of Sloan Road and approximately 2 miles south of the Sloan Road MSF analyzed in the Draft EIS.
- **Frias Substation Site:** An additional electrical substation site has been proposed at the intersection of West Frias Avenue and South Dean Martin Drive in unincorporated Clark County, to provide electrical power in the event the EMU technology is selected.
- **Alignment Adjustment Areas (AAAs):** Eight minor modifications to the alignment locations analyzed in the Draft EIS have been proposed.
- **Wigwam Avenue MSF Modification:** A modification has been proposed to the Wigwam MSF to reorient the tail tracks from the south, rather than the north as evaluated in the Draft EIS. The size of the site is otherwise unchanged.
- **Profile Modification:** A modification has been proposed to the profile and width of a 1.3 mile portion of Segment 3B. The alignment is otherwise unchanged.

**Figures S-ES-1** through **S-ES-5** show the locations of the proposed project modifications and additions.

## ES-4 SUMMARY OF ENVIRONMENTAL EFFECTS

**Tables S-ES -1** through **S-ES 6** summarize by affected project segment the impacts of the project modifications and additions, including all permanent facilities, relative to their counterpart project components as well as the No Action Alternative.

Project modifications and additions evaluated in this Supplemental Draft EIS affect portions of and/or features along Segments 1 through 6. None of the project modifications affect any of the Las Vegas area stations (Southern, Central A, Central B, Downtown), Segment 7, nor the two technology options (DEMU and EMU), which were fully evaluated in the Draft EIS. Therefore, summary Tables S-ES-1 through S-ES-6 only presents impacts Segments 1 through 6. The information contained in the following tables is derived from the information, analysis and conclusions contained in this Supplemental Draft EIS, the Draft EIS, and supporting appendices.

New information from the analysis contained in this Supplemental Draft EIS is highlighted in the table.

Table S-ES-1 Comparison of Segment 1 Alternatives

| Environmental Topic | Segment 1 Rail Alignment and Associated TCAs | Victorville Station Site 1 | Victorville OMSF Site 1 | Victorville Station Site 2 | Victorville Station Site 3 (3A/3B) | Reduced Size Victorville OMSF Site 2 | No Action Alternative |
|---|---|---|---|---|---|---|---|
| **Land Use & Community Impacts** | | | | | | | |
| *Compatibility with Adjacent Land Uses* | High within I-15 corridor, Low outside | Medium | Medium | High | High | High | High |
| *Compatibility with Land Use Plans* | High within I-15 corridor, Low outside | Medium-High | Medium-High | High, except for Low (residential) | High, except for Low (residential) | High, except for Low (residential) | High |
| *Number of housing units displaced* | 0 | 0 | 0 | 0 | 0 | 0 | Unknown |
| *Extent of community disruption/severance* | None expected | None expected | None expected | None expected | None expected | None expected | None expected |
| *Number of environmental justice (EJ) communities crossed by or within 1 mile of facilities* | Would cross 2 EJ census blocks (minority/poverty) | Within EJ census block (minority) | Within EJ census block (minority) | Within 1 mile of 2 EJ census blocks | Within 1 mile of 2 EJ census blocks | Within 1 mile of 1 EJ census block | Expected to be similar to Segment 1 rail alignment |
| **Growth** | | | | | | | |
| *Estimated permanent employment* | NA | 361 to 463 permanent jobs in the Victorville Station and OMSF regardless of location | | | | | None expected |
| *Removal of obstacles to growth* | None expected | None expected | None expected | None expected | None | None expected | None expected |
| *Extent of effects to TOD potential* | Beneficial effect | Beneficial effect | Beneficial effect | Beneficial effect | Beneficial effect | Beneficial effect | None expected |
| *Extent of effects to economic vitality* | Construction period employment | Beneficial construction and operational employment effects similar for all station/OMSF sites | | | | | None expected |

| Environmental Topic | Segment 1 Rail Alignment and Associated TCAs | Victorville Station Site 1 | Victorville OMSF Site 1 | Victorville Station Site 2 | Victorville Station Site 3 (3A/3B) | Reduced Size Victorville OMSF Site 2 | No Action Alternative |
|---|---|---|---|---|---|---|---|
| **Farmlands & Agriculture** | | | | | | | |
| *Acres of Directly Impacted Farmland* | 0 | 0 | 0 | 0 | 0 | 0 | 0 expected |
| *Acres of Indirectly Impacted Farmland* | 0 | 0 | 0 | 0 | 0 | 0 | 0 expected |
| *Potential Severance of Grazing Allotment* | Yes; would traverse a BLM grazing allotment | All Victorville station/OMSF site options are on land identified as a grazing allotment but are immediately adjacent to I-15 freeway, minimizing severance potential | | | | | None expected |
| **Utilities & Emergency Services** | | | | | | | |
| *Exceed capacity of utility or service systems:* | | | | | | | |
| *Electricity and Gas* | No demand associated, unless EMU selected | No | No | No | No | No | Not expected |
| *Water Supply* | No demand associated | No | No | No | No | No | Not expected |
| *Sewage/Wastewater* | No demand associated | No | No | No | No | No | Not expected |
| *Stormwater* | Would require connections to existing and/or new facilities | New conveyances would be required at all station/maintenance sites in Victorville | | | | | Not expected |
| *Solid Waste* | No generation | No | No | No | No | No | Not expected |
| *Police Services* | No | No | No | No | No | No | Not expected |

| Environmental Topic | Segment 1 Rail Alignment and Associated TCAs | Victorville Station Site 1 | Victorville OMSF Site 1 | Victorville Station Site 2 | Victorville Station Site 3 (3A/3B) | Reduced Size Victorville OMSF Site 2 | No Action Alternative |
|---|---|---|---|---|---|---|---|
| ***Utilities & Emergency Services Cont'd*** | | | | | | | |
| *Fire/Emergency Services* | New staff, equipment and facility | New staff, equipment and facility | (Assumed No) | New staff, equipment and facility | New staff, equipment and facility | (Assumed No) | Not expected |
| *Potential conflict with existing utility distribution systems* | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated; VV3A requires approval of LADWP for long term parking in utility corridor | Yes, but conflicts can be mitigated | Assumed yes, and that conflicts can be mitigated |
| **Traffic & Transportation** | | | | | | | |
| *Result in substantial traffic increases:* | | | | | | | |
| *Freeway Mainlines* | | Between Victorville and I-40, traffic reduction associated with either DEMU or EMU levels of traffic would reduce freeway volumes and positively affect LOS | | | | | LOS would degrade from D to F between Victorville and I-40 |
| *Station Area Intersections* | NA | Delays would worsen at 4 intersections (EMU and DEMU) | Same as Station Site 1 | Delays would worsen at 2 intersections (EMU)<br><br>Delays would worsen at 1 intersections (DEMU) | Delays would worsen at 3 intersections (EMU)<br><br>Delays would worsen at 5 intersections (DEMU) | Same as Station Site 2 | None expected |

| Environmental Topic | Segment 1 Rail Alignment and Associated TCAs | Victorville Station Site 1 | Victorville OMSF Site 1 | Victorville Station Site 2 | Victorville Station Site 3 (3A/3B) | Reduced Size Victorville OMSF Site 2 | No Action Alternative |
|---|---|---|---|---|---|---|---|
| **Visual Resources** | | | | | | | |
| *Extent of consistency with BLM VRM Objectives* | Somewhat consistent within I-15 corridor; not consistent outside I-15 corridor | All station and OMSF site options would be somewhat consistent | | | | | Consistent if impacts remain in existing corridor |
| *Effect to FHWA Visual Quality/Sensitivity With Project* | In I-15 corridor, quality would be reduced from moderate to low. Outside corridor, quality would be reduced from mod/high to mod/low | All station and OMSF site options would be somewhat consistent | | | | | Consistent if impacts remain in existing corridor |
| **Cultural & Paleontological** | | | | | | | |
| *Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected* | 16 | 2 | 5 | 1 | 7 | 5 | Assumed to be same as Segment 1 - about 16 |
| *Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected* | 0 | 0 | 0 | 0 | 0 | 0 | Assumed to be same as Segment 1 - about 0 |
| *Number of Historic Architectural Resources Directly/Indirectly Affected* | 0 | 0 | 0 | 0 | 0 | 0 | Assumed 0 |

| Environmental Topic | Segment 1 Rail Alignment and Associated TCAs | Victorville Station Site 1 | Victorville OMSF Site 1 | Victorville Station Site 2 | Victorville Station Site 3 (3A/3B) | Reduced Size Victorville OMSF Site 2 | No Action Alternative |
|---|---|---|---|---|---|---|---|
| **Hydrology & Water Quality** | | | | | | | |
| *Linear feet of impact to water resources* | 2491 | 0 | 12 | 0 | 2257 (VV3A)<br>2075 (VV3B) | 825 | Assumed similar to Segment 1 - about 2490 |
| *Acres within a 100-year floodplain* | 2.8 | 13.5 | 1.9 | 0 | 0 | 0 | Assumed similar to Segment 1 - about 2.8 |
| *Result in substantial drainage pattern alteration* | No | No | No | No | Yes but can be mitigated | Yes but can be mitigated | Not expected |
| *Estimated peak stormwater discharge (cubic feet/second)* | NA | 227 | Mostly unpaved; not quantified | 243 | 275 (VV3A)<br>235 (VV3B) | Mostly unpaved; not quantified | NA |
| **Geology & Soils** | | | | | | | |
| *Expected likelihood of Surface Fault Rupture* | High | High | High | High | High | High | High |
| *Expected likelihood of ground shaking* | High | High | High | High | High | High | High |
| *Expected difficulty of excavation* | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate |
| *Expected likelihood of landslides* | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate | Moderate |
| **Hazardous Materials** | | | | | | | |
| *Number of properties of environmental concern* | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Air Quality & Global Climate Change** | | | | | | | |
| *Exceed a state or federal standard?* | No | No | No | No | No | No | Not expected |
| *Result in CO Hotspot?* | No | No | No | No | No | No | No |

| Environmental Topic | Segment 1 Rail Alignment and Associated TCAs | Victorville Station Site 1 | Victorville OMSF Site 1 | Victorville Station Site 2 | Victorville Station Site 3 (3A/3B) | Reduced Size Victorville OMSF Site 2 | No Action Alternative |
|---|---|---|---|---|---|---|---|
| ***Air Quality & Global Climate Change Cont'd*** | | | | | | | |
| *Expected adverse construction period impact?* | No | No | No | No | No | No | No |
| **Noise & Vibration** | | | | | | | |
| *Expected number of impacts under FRA criteria* | 3 for EMU, 4 DEMU | NA | NA | NA | NA | NA | None expected |
| *Expected number of severe impacts under FRA criteria* | 0 for EMU, 1 for DEMU | NA | NA | NA | NA | NA | None expected |
| *Expected number of vibration impacts* | 0 | 0 | 0 | 0 | 0 | 0 | None expected |
| **Energy** | | | | | | | |
| *Result in Significant Change in Energy Consumption?* | Analysis examined project as a whole, comparing DEMU, EMU, and No Action. | | | | | | |
| **Biological Resources** | | | | | | | |
| *Impose Barrier to wildlife movement* | Yes, outside I-15 corridor | No | No | No | No | No | No new barriers |
| *Number of stream crossings* | 24 | 0 | 0 | 2 | 1 | 2 (no change from DEIS) | No new crossings |
| *Sensitive plant community acreage affected* | | | | | | | |
| *Permanent* | 0 | 0 | 0 | 0 | 0 | 0 | Assumed 0 |
| *Temporary* | 0 | 0 | 0 | 0 | 0 | 0 | Assumed 0 |
| *Desert Tortoise habitat acreage affected* | | | | | | | |
| *Permanent* | 159 | 93 | 92.4 | 114.5 | 205.5 (VV3A)<br>223.5 (VV3B) | 195.2 | 0 |
| *Temporary* | 832.1 | 0 | 0 | 0 | 38.5 (VV3A)<br>40.8 (VV3B) | 0 | 0 |

| Environmental Topic | Segment 1 Rail Alignment and Associated TCAs | Victorville Station Site 1 | Victorville OMSF Site 1 | Victorville Station Site 2 | Victorville Station Site 3 (3A/3B) | Reduced Size Victorville OMSF Site 2 | No Action Alternative |
|---|---|---|---|---|---|---|---|
| ***Biological Resources Cont'd*** | | | | | | | |
| *Mohave Ground Squirrel habitat acreage affected* | | | | | | | |
| *Permanent* | 198.5 | 85.1 | 22.6 | 105.2 | 205.5 (VV3A)<br>223.5 (VV3B) | 339.7 | 0 |
| *Temporary* | 803.3 | 0 | 0 | 0 | 38.5 (VV3A)<br>40.8 (VV3B) | 0 | 0 |
| *Potential to result in direct mortality/loss/disturbance to:* | | | | | | | |
| *Mojave Fringe-toed Lizard* | Yes | No | No | No | No | No | No |
| *Nesting raptors/migratory birds* | Yes | No | No | No | No | No | No |
| *Banded Gila Monster* | No | No | No | No | No | No | No |
| *Burrowing Owls* | Yes | Yes | Yes | Yes | Yes | Yes | No |
| *Roosting Bats* | Yes, at bridge crossings | Yes, rock outcrops | No | No | No | No | No |
| *American Badger* | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *Desert Bighorn Sheep* | No | No | No | No | No | No | No |
| *Clark County MSHCP Covered Reptiles* | No | No | No | No | No | No | No |
| *Acres of Special Management Lands Lost* | 0 | 0 | 0 | 0 | No | 0 | 0 |
| **Section 4(f)** | | | | | | | |
| *Number of Section 4(f) properties used* | | | | | | | |
| *Park and Recreation* | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Cultural Resources* | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

Source: CirclePoint, 2010.

Table S-ES-2 Comparison of Segment 2 Alternatives

| Environmental Topic | Segment 2A/2B, 2A Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2A/2B, 2B Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2C (Side Running and Median Options) and Associated TCA | No Action Alternative |
|---|---|---|---|---|
| **Land Use & Community Impacts** | | | | |
| *Compatibility with Adjacent Land Uses* | High within I-15 corridor, Low near Barstow, Low to medium near Yermo | High within I-15 corridor, High near commercial uses, Low near Barstow, Low near residential uses | High within I-15 corridor, Medium near commercial/industrial uses, Low near Barstow, Low near residential uses | High |
| *Compatibility with Land Use Plans* | High within I-15 corridor, Low outside | Medium-High | Medium-High | High |
| *Number of housing units displaced* | 0 | 0 | 0 | Unknown |
| *Extent of community disruption/severance* | Linear division through Lenwood and Yermo | Linear division through Lenwood | None Expected | None expected |
| *Number of environmental justice(EJ) communities crossed by or within 1 mile of facilities* | Within 1 mile of 4 EJ census blocks (minority/poverty) | Within 1 mile of 4 EJ census blocks (minority/poverty) | Would cross 2 EJ census blocks (minority/poverty) | Expected to be similar to Segment 1 rail alignment |
| **Growth** | | | | |
| *Estimated permanent employment* | NA | NA | NA | None expected |
| *Removal of obstacles to growth* | None expected | None expected | None expected | None expected |
| *Extent of effects to TOD potential* | None | None | None expected | None expected |
| *Extent of effects to economic vitality* | Construction period employment | Construction period employment | Construction period employment | None expected |
| **Farmlands & Agriculture** | | | | |
| *Acres of Directly Impacted Farmland* | 3.37 acres | 3.37 acres | 0 | 0 expected |
| *Acres of Indirectly Impacted Farmland* | 6.75 acres | 6.75 acres | 0 | 0 expected |
| *Potential Severance of Grazing Allotment* | No | No | No | None expected |

| Environmental Topic | Segment 2A/2B, 2A Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2A/2B, 2B Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2C (Side Running and Median Options) and Associated TCA | No Action Alternative |
|---|---|---|---|---|
| **Utilities & Emergency Services** | | | | |
| *Exceed capacity of utility or service systems:* | | | | |
| *Electricity and Gas* | No demand associated, unless EMU selected | No demand associated, unless EMU selected | No demand associated, unless EMU selected | Not expected |
| *Water Supply* | No demand associated | No demand associated | No demand associated | Not expected |
| *Sewage/Wastewater* | No demand associated | No demand associated | No demand associated | Not expected |
| *Stormwater* | Would require connections to new conveyance facilities | Would require connections to existing and/or new conveyance facilities | Would require connections to existing and/or new conveyance facilities | Not expected |
| *Solid Waste* | No generation | No generation | No generation | Not expected |
| *Police Services* | SBCPD concern of train derailment emergency | SBCPD concern of train derailment emergency | SBCPD concern of train derailment emergency | Not expected |
| *Fire/Emergency Services* | New staff, equipment and facility | New staff, equipment and facility | New staff, equipment and facility | Not expected |
| *Potential conflict with existing utility distribution systems* | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Assumed yes, and that conflicts can be mitigated |
| **Traffic & Transportation** | | | | |
| *Result in substantial traffic increases:* | | | | |
| *Freeway Mainlines* | Between I-40 and the California-Nevada state line, traffic reduction associated with either DEMU or EMU levels of traffic would reduce freeway volumes and positively affect LOS | | | LOS would degrade from D to F between Victorville and I-40 |
| *Station Area Intersections* | NA | NA | NA | None expected |

| Environmental Topic | Segment 2A/2B, 2A Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2A/2B, 2B Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2C (Side Running and Median Options) and Associated TCA | No Action Alternative |
|---|---|---|---|---|
| **Visual Resources** | | | | |
| *Extent of consistency with BLM VRM Objectives* | Somewhat consistent in undeveloped and developed areas. | Somewhat consistent in undeveloped and developed areas. | Somewhat consistent in undeveloped and developed areas | Consistent if impacts remain in existing corridor |
| *Effect to FHWA Visual Quality/Sensitivity With Project* | In undeveloped areas, quality decreased from moderate/high to moderate. Low/moderate quality in developed areas. | In undeveloped areas, quality decreased from moderate/high to moderate. Near I-15, quality decreased from moderate to low. | At Barstow, disrupt visual unity. Near I-15 no substantial changes to existing low. | Consistent if impacts remain in existing corridor |
| **Cultural & Paleontological** | | | | |
| *Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected* | 16 | 23 | 14 | Assumed to be same as Segment 2C - about 14 |
| *Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected* | 3 | 7 | 0 | Assumed to be same as Segment 2C - 0 |
| *Number of Historic Architectural Resources Directly/Indirectly Affected* | 0 | 0 | 0 | Assumed 0 |
| **Hydrology & Water Quality** | | | | |
| *Linear feet of impact to water resources* | 1157 | 11,064 | 2344 (side running)<br>2342 (median running) | Assumed similar to Segment 2C- about 2340 |
| *Acres within a 100-year floodplain* | 12 | 22 | 11 (side running)<br>10 (median running) | Assumed similar to Segment 2C - about 11 |
| *Result in substantial drainage pattern alteration* | No | No | No | Not expected |
| *Estimated peak stormwater discharge (cubic feet/second)* | NA | NA | No | NA |

| Environmental Topic | Segment 2A/2B, 2A Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2A/2B, 2B Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2C (Side Running and Median Options) and Associated TCA | No Action Alternative |
|---|---|---|---|---|
| **Geology & Soils** | | | | |
| *Expected likelihood of Surface Fault Rupture* | High near Barstow, Low near Yermo. | High near Barstow, Low near Yermo. | High | High |
| *Expected likelihood of ground shaking* | High | High | High | High |
| *Expected difficulty of excavation* | Moderate | Moderate | Moderate | Moderate |
| *Expected likelihood of landslides* | Moderate near Barstow, Low near Yermo. | Moderate near Barstow, Low near Yermo. | Low | Moderate |
| **Hazardous Materials** | | | | |
| *Number of properties of environmental concern* | 4 | 6 | 5 | 0 |
| **Air Quality & Global Climate Change** | | | | |
| *Exceed a state or federal standard?* | No | No | No | Not expected |
| *Result in CO Hotspot?* | No | No | No | No |
| *Expected adverse construction period impact?* | No | No | No | No |
| **Noise & Vibration** | | | | |
| *Expected number of impacts under FRA criteria* | 57 for EMU, 77 for DEMU | 60 for EMU, 83 for DEMU | 60 for EMU, 139 for DEMU (side running)<br>80 for EMU, 127 for DEMU (median running) | None expected |
| *Expected number of severe impacts under FRA criteria* | 31 for EMU, 41 for DEMU | 35 for EMU, 46 for DEMU | 33 for EMU, 48 for DEMU (side running)<br>0 for EMU, 22 for DEMU (median running) | None expected |
| *Expected number of vibration impacts* | 19 | 23 | 0 | None expected |

| Environmental Topic | Segment 2A/2B, 2A Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2A/2B, 2B Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2C (Side Running and Median Options) and Associated TCA | No Action Alternative |
|---|---|---|---|---|
| **Energy** | | | | |
| *Result in Significant Change in Energy Consumption?* | Analysis examined project as a whole, comparing DEMU, EMU, and No Action. | | | |
| **Biological Resources** | | | | |
| *Impose Barrier to wildlife movement* | No | No | No | No new barriers |
| *Number of stream crossings* | 16 | 12 | 12 | No new crossings |
| *Sensitive plant community acreage affected* | | | | |
| *Permanent* | 0 | 0 | 0 | Assumed 0 |
| *Temporary* | 4.6 acres of Mesquite Shrubland | 0 | 0 | Assumed 0 |
| *Desert Tortoise habitat acreage affected* | | | | |
| *Permanent* | 171 | 151 | 37.5 (side running)<br>37.4 (median running) | 0 |
| *Temporary* | 700 | 548 | 101 (side running)<br>97.(median running) | 0 |
| *Mohave Ground Squirrel habitat acreage affected* | | | | |
| *Permanent* | 23 | 40 | 36 (side running)<br>36 (median running) | 0 |
| *Temporary* | 863 | 319 | 89.1 (side running)<br>89.1 (median running) | 0 |
| *Potential to result in direct mortality/loss/disturbance to:* | | | | |
| *Mojave Fringe-toed Lizard* | Yes, near Mojave River | No | Yes, near Mojave River (side running)<br>No for median running | No |
| *Nesting raptors/migratory birds* | Yes | Yes | Yes (both options) | No |

| Environmental Topic | Segment 2A/2B, 2A Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2A/2B, 2B Rail Alignment and Associated TCAs *(including AAAs 1-2)* | Segment 2C (Side Running and Median Options) and Associated TCA | No Action Alternative |
|---|---|---|---|---|
| ***Biological Resources Cont'd*** | | | | |
| *Banded Gila Monster* | No | No | No (both options) | No |
| *Burrowing Owls* | Yes | Yes | Yes (both options) | No |
| *Roosting Bats* | Yes, in caves and mines | Yes, in caves and mines | No (both options) | No |
| *American Badger* | Yes | Yes | Yes (both options) | Yes |
| *Desert Bighorn Sheep* | No | No | No (both options) | No |
| *Clark County MSHCP Covered Reptiles* | No | No | No (both options) | No |
| *Acres of Special Management Lands Lost* | 60.9 acres of Superior-Cronese Desert Tortoise Critical Habitat | 60.9 acres of Superior-Cronese Desert Tortoise Critical Habitat | 0 | 0 |
| **Section 4(f)** | | | | |
| *Number of Section 4(f) properties used* | | | | |
| *Park and Recreation* | 0 | 0 | 0 | 0 |
| *Cultural Resources* | 6 | 7 | 2 | 0 |

Source: CirclePoint, 2010.

Table S-ES-3 Comparison of Segment 3 Alternatives

| Environmental Topic | Segment 3A Rail Alignment and Associated TCAs | Segment 3B Rail Alignment and Associated TCAs (with Profile Modification and AAA 3-6) | Baker Maintenance of Way Facility | No Action Alternative |
|---|---|---|---|---|
| **Land Use & Community Impacts** | | | | |
| *Compatibility with Adjacent Land Uses* | High within I-15 corridor, Low outside | High within I-15 corridor, Low outside | High | High |
| *Compatibility with Land Use Plans* | High within I-15 corridor, Low outside | Medium-High | Medium-High | High |
| *Number of housing units displaced* | 0 | 0 | 0 | Unknown |
| *Extent of community disruption/severance* | None expected | None expected | None expected | None expected |
| *Number of environmental justice (EJ) communities crossed by or within 1 mile of facilities* | Would cross 3 EJ census blocks (minority and poverty) | Would cross 3 EJ census blocks (minority and poverty) | Outside any EJ census block | Expected to be similar to Segment 3A rail alignment |
| **Growth** | | | | |
| *Estimated permanent employment* | NA | NA | 8 employees | None expected |
| *Removal of obstacles to growth* | None expected | None expected | None expected | None expected |
| *Extent of effects to TOD potential* | None | None | None | None expected |
| *Extent of effects to economic vitality* | Construction period employment | Construction period employment | Beneficial construction and operational employment effects | None expected |
| **Farmlands & Agriculture** | | | | |
| *Acres of Directly Impacted Farmland* | 0 | 0 | 0 | 0 expected |
| *Acres of Indirectly Impacted Farmland* | 0.3 | 0 | 0 | 0 expected |
| *Potential Severance of Grazing Allotment* | No, Adjacent to grazing lands | No, Adjacent to grazing lands | No, Adjacent to grazing lands | None expected |
| **Utilities & Emergency Services** | | | | |
| *Exceed capacity of utility or service systems:* | | | | |
| *Electricity and Gas* | No demand associated, unless EMU selected | No demand associated, unless EMU selected | No | Not expected |
| *Water Supply* | No demand associated | No demand associated | No | Not expected |

| Environmental Topic | Segment 3A Rail Alignment and Associated TCAs | Segment 3B Rail Alignment and Associated TCAs (with Profile Modification and AAA 3-6) | Baker Maintenance of Way Facility | No Action Alternative |
|---|---|---|---|---|
| ***Utilities & Emergency Services Cont'd*** | | | | |
| *Sewage/Wastewater* | No demand associated | No demand associated | No | Not expected |
| *Stormwater* | Would require connections to existing and/or new conveyance facilities | Would require connections to existing and/or new conveyance facilities | New conveyances would be required | Not expected |
| *Solid Waste* | No generation | No generation | No | Not expected |
| *Police Services* | No | No | No | Not expected |
| *Fire/Emergency Services* | New staff, equipment, and facility | New staff, equipment, and facility | New staff, equipment, and facility | Not expected |
| *Potential conflict with existing utility distribution systems* | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Assumed yes, and that conflicts can be mitigated |
| **Traffic & Transportation** | | | | |
| *Result in substantial traffic increases:* | | | | |
| *Freeway Mainlines* | Between I-40 and the California-Nevada state line, traffic reduction associated with either DEMU or EMU levels of traffic would reduce freeway volumes and positively affect LOS | | NA | LOS would degrade between I-40 and the Nevada state line |
| *Station Area Intersections* | NA | NA | NA | None expected |
| **Visual Resources** | | | | |
| *Extent of consistency with BLM VRM Objectives* | Somewhat consistent in I-15 corridor. Not consistent near wilderness areas in Preserve. | Somewhat consistent in I-15 corridor. Not consistent near wilderness areas in the Mojave National Preserve. | High level of contrast with views from Preserve. | Consistent if impacts remain in existing corridor |
| *Effect to FHWA Visual Quality/Sensitivity With Project* | In Preserve, quality reduced from high to moderate. Outside Preserve, quality reduced from moderate/high to moderate. | In Preserve, quality reduced from high to moderate. Outside Preserve, quality reduced from moderate/high to moderate. | Consistent, as constructed near I-15 corridor. | Consistent if impacts remain in existing corridor |

| Environmental Topic | Segment 3A Rail Alignment and Associated TCAs | Segment 3B Rail Alignment and Associated TCAs (with Profile Modification and AAA 3-6) | Baker Maintenance of Way Facility | No Action Alternative |
|---|---|---|---|---|
| **Cultural & Paleontological Resources** | | | | |
| *Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected* | 19 | 39 (1 fewer than unaltered Segment 3B) | 0 | Assumed to be same as Segment 3A - about 19 |
| *Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected* | 6 | 9 | 0 | Assumed to be same as Segment 3A - about 9 |
| *Number of Historic Architectural Resources Directly/Indirectly Affected* | 0 | 0 | 0 | Assumed 0 |
| **Hydrology & Water Quality** | | | | |
| *Linear feet of impact to water resources* | 4059 | 7608 | 0 | Assumed similar to Segment 3A - about 4059 |
| *Acres within a 100-year floodplain* | 0 | 2.7 | 0 | Assumed similar to Segment 3A - 0 |
| *Result in substantial drainage pattern alteration* | No | No | No | Not expected |
| *Estimated peak stormwater discharge (cubic feet/second)* | NA | NA | NA | NA |
| **Geology & Soils** | | | | |
| *Expected likelihood of Surface Fault Rupture* | High from Yermo to Baker, low from the east of Baker. | High from Yermo to Baker, low from the east of Baker. | High | High |
| *Expected likelihood of ground shaking* | Low/moderate from Yermo to Baker, moderate from the east of Baker. | Low/moderate from Yermo to Baker, moderate from the east of Baker. | Low/Moderate | High |
| *Expected difficulty of excavation* | Moderate | Moderate | Moderate | Moderate |
| *Expected likelihood of landslides* | Moderate | Moderate | Moderate | Moderate |

| Environmental Topic | Segment 3A Rail Alignment and Associated TCAs | Segment 3B Rail Alignment and Associated TCAs (with Profile Modification and AAA 3-6) | Baker Maintenance of Way Facility | No Action Alternative |
|---|---|---|---|---|
| **Hazardous Materials** | | | | |
| *Number of properties of environmental concern* | 2 | 2 | 0 | 0 |
| **Air Quality & Global Climate Change** | | | | |
| *Exceed a state or federal standard?* | No | No | No | Not expected |
| *Result in CO Hotspot?* | No | No | No | No |
| *Expected adverse construction period impact?* | No | No | No | No |
| **Noise & Vibration** | | | | |
| *Expected number of impacts under FRA criteria* | 0 | 0 | 0 | None expected |
| *Expected number of severe impacts under FRA criteria* | 0 | 0 | 0 | None expected |
| *Expected number of vibration impacts* | 0 | 0 | 0 | None expected |
| **Energy** | | | | |
| *Result in Significant Change in Energy Consumption?* | Analysis examined project as a whole, comparing DEMU, EMU, and No Action. | | | |
| **Biological Resources** | | | | |
| *Impose Barrier to wildlife movement* | No | No | No | No new barriers |
| *Number of stream crossings* | 105 | 117 | 1 | No new crossings |
| *Sensitive plant community acreage affected* | | | | |
| *Permanent* | 0 | 84 acres of Joshua Tree Woodland; 2 acres of Mesquite Shrubland | 0 | Assumed 0 |
| *Temporary* | 0 | 194 acres of Joshua Tree Woodland; 13 acres of Mesquite Shrubland | 0 | Assumed 0 |

| Environmental Topic | Segment 3A Rail Alignment and Associated TCAs | Segment 3B Rail Alignment and Associated TCAs (with Profile Modification and AAA 3-6) | Baker Maintenance of Way Facility | No Action Alternative |
|---|---|---|---|---|
| ***Biological Resources Cont'd*** | | | | |
| *Desert Tortoise habitat acreage affected* | | | | |
| *Permanent* | 7.6 | 620 | 0 | 0 |
| *Temporary* | 40.9 | 1848 | 0 | 0 |
| *Mohave Ground Squirrel habitat acreage affected* | | | | |
| *Permanent* | 0 | 0 | 0 | 0 |
| *Temporary* | 70.1 | 61.5 | 0 | 0 |
| *Potential to result in direct mortality/loss/disturbance to:* | | | | |
| *Mojave Fringe-toed Lizard* | No | No | No | No |
| *Nesting raptors/migratory birds* | No | Yes | Yes | No |
| *Banded Gila Monster* | No | Yes | No | No |
| *Burrowing Owls* | No | Yes | Yes | No |
| *Roosting Bats* | No | Yes, in caves and mines | No | No |
| *American Badger* | Yes | Yes | Yes | Yes |
| *Desert Bighorn Sheep* | No | Yes | No | No |
| *Clark County MSHCP Covered Reptiles* | No | No | No | No |
| *Acres of Special Management Lands Lost* | 0 | 268.5 acres of Superior-Cronese Desert Tortoise Critical Habitat, 226 acres of Ivanpah Desert Tortoise Critical Habitat, 3.6 acres of Cronese ACEC. | 0 | 0 |
| **Section 4(f)** | | | | |
| *Number of Section 4(f) properties used* | | | | |
| *Park and Recreation* | 0 | 0 | 0 | 0 |
| *Cultural Resources* | 7 | 8 | 0 | 0 |

Source: CirclePoint, 2010.

Table S-ES-4 Comparison of Segment 4 Alternatives

| Environmental Topic | Segment 4A Rail Alignment and Associated TCAs | Segment 4B Rail Alignment and Associated TCAs | Segment 4C Rail Alignment and Associated TCAs | No Action Alternative |
|---|---|---|---|---|
| **Land Use & Community Impacts** | | | | |
| *Compatibility with Adjacent Land Uses* | Low within the Preserve | Low | High within vacant and institutional land uses. Low within residential land uses. High within BLM Class M Lands, Low within BLM Class L Lands | High |
| *Compatibility with Land Use Plans* | High-Low | Medium-High | Medium-High | High |
| *Number of housing units displaced* | 0 | 0 | 0 | Unknown |
| *Extent of community disruption/severance* | None expected | None expected | None expected | None expected |
| *Number of environmental justice (EJ) communities crossed by or within 1 mile of facilities* | 2 | 1 | 1 | 2 |
| **Growth** | | | | |
| *Estimated permanent employment* | NA | NA | NA | None expected |
| *Removal of obstacles to growth* | None expected | None expected | None expected | None expected |
| *Extent of effects to TOD potential* | None | None | None | None expected |
| *Extent of effects to economic vitality* | Construction period employment | Construction period employment | Construction period employment | None expected |
| **Farmlands & Agriculture** | | | | |
| *Acres of Directly Impacted Farmland* | 0 | 0 | 0 | 0 expected |
| *Acres of Indirectly Impacted Farmland* | 0 | 0 | 0 | 0 expected |
| *Potential Severance of Grazing Allotment* | None | Yes; would traverse an allotment | Yes; would traverse an allotment | None expected |

| Environmental Topic | Segment 4A Rail Alignment and Associated TCAs | Segment 4B Rail Alignment and Associated TCAs | Segment 4C Rail Alignment and Associated TCAs | No Action Alternative |
|---|---|---|---|---|
| **Utilities & Emergency Services** | | | | |
| *Exceed capacity of utility or service systems:* | | | | |
| *Electricity and Gas* | No demand associated, unless EMU selected | No demand associated, unless EMU selected | No demand associated, unless EMU selected | Not expected |
| *Water Supply* | No demand associated | No demand associated | No demand associated | Not expected |
| *Sewage/Wastewater* | No demand associated | No demand associated | No demand associated | Not expected |
| *Stormwater* | Would require connections to existing and/or new facilities | Would require connections to new facilities | Would require connections to new facilities | Not expected |
| *Solid Waste* | No generation | No generation | No generation | Not expected |
| *Police Services* | No | No | No | Not expected |
| *Fire/Emergency Services* | New staff, equipment and facility | New staff, equipment and facility | New staff, equipment and facility | Not expected |
| *Potential conflict with existing utility distribution systems* | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Assumed yes, and that conflicts can be mitigated |
| **Traffic & Transportation** | | | | |
| *Result in substantial traffic increases:* | | | | |
| *Freeway Mainlines* | Between I-40 and the California-Nevada state line, traffic reduction associated with either DEMU or EMU levels of traffic would reduce freeway volumes and positively affect LOS | | | LOS would degrade between I-40 and the Nevada state line |
| *Station Area Intersections* | NA | NA | NA | None expected |

| Environmental Topic | Segment 4A Rail Alignment and Associated TCAs | Segment 4B Rail Alignment and Associated TCAs | Segment 4C Rail Alignment and Associated TCAs | No Action Alternative |
|---|---|---|---|---|
| **Visual Resources** | | | | |
| *Extent of consistency with BLM VRM Objectives* | Not consistent within and outside Clark Mountains. | Somewhat within and outside Clark Mountains. | Somewhat within and outside Clark Mountains. | Consistent if impacts remain in existing corridor |
| *Effect to FHWA Visual Quality/Sensitivity With Project* | Within Preserve, quality reduced from high to moderate. Moderate quality outside the Preserve. | Moderate quality in Clark Mountains. High quality outside Clark Mountains. | Moderate quality in and outside Clark Mountains. | Consistent if impacts remain in existing corridor |
| **Cultural & Paleontological** | | | | |
| *Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected* | 7 | 8 | 10 | Unknown |
| *Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected* | 1 | 1 | 3 | Unknown |
| *Number of Historic Architectural Resources Directly/Indirectly Affected* | 0 | 0 | 0 | Assumed 0 |
| **Hydrology & Water Quality** | | | | |
| *Linear feet of impact to water resources* | 734 | 319 | 1485 | Likely substantial due to presence of wash in I-15 median |
| *Acres within a 100-year floodplain* | 0 | 0 | 0 | Assumed 0 |
| *Result in substantial drainage pattern alteration* | No | No | No | Not expected |
| *Estimated peak stormwater discharge (cubic feet/second)* | NA | NA | NA | NA |

| Environmental Topic | Segment 4A Rail Alignment and Associated TCAs | Segment 4B Rail Alignment and Associated TCAs | Segment 4C Rail Alignment and Associated TCAs | No Action Alternative |
|---|---|---|---|---|
| **Geology & Soils** | | | | |
| *Expected likelihood of Surface Fault Rupture* | High | High | Low | High |
| *Expected likelihood of ground shaking* | Low/Moderate | Low/Moderate | Moderate/High | High |
| *Expected difficulty of excavation* | Moderate | High | Moderate | Moderate |
| *Expected likelihood of landslides* | Moderate | High | Moderate | Moderate |
| **Hazardous Materials** | | | | |
| *Number of properties of environmental concern* | 1 | 0 | 0 | 0 |
| **Air Quality & Global Climate Change** | | | | |
| *Exceed a state or federal standard?* | No | No | No | Not expected |
| *Result in CO Hotspot?* | No | No | No | No |
| *Expected adverse construction period impact?* | No | No | Yes, but can be mitigated | No |
| **Noise & Vibration** | | | | |
| *Expected number of impacts under FRA criteria* | 0 | 0 | 0 | None expected |
| *Expected number of severe impacts under FRA criteria* | 0 | 0 | 0 | None expected |
| *Expected number of vibration impacts* | 0 | 0 | 0 | None expected |
| **Energy** | | | | |
| *Result in Significant Change in Energy Consumption?* | Analysis examined project as a whole, comparing DEMU, EMU, and No Action. | | | |
| **Biological Resources** | | | | |
| *Impose Barrier to wildlife movement* | Yes, outside I-15 | Yes, outside I-15 | Yes, outside I-15 | No new barriers |
| *Number of stream crossings* | 29 | 42 | 48 | No new crossings |

| Environmental Topic | Segment 4A Rail Alignment and Associated TCAs | Segment 4B Rail Alignment and Associated TCAs | Segment 4C Rail Alignment and Associated TCAs | No Action Alternative |
|---|---|---|---|---|
| ***Biological Resources Cont'd*** | | | | |
| *Sensitive plant community acreage affected* | | | | |
| *Permanent* | 0.5 acres of Mesquite Shrubland | 0 | 1.9 acres of Mesquite Shrubland | Assumed 0 |
| *Temporary* | 0 | 0 | 3.1 acres of Mesquite Shrubland | Assumed 0 |
| *Desert Tortoise habitat acreage affected* | | | | |
| *Permanent* | 42.2 | 111.8 | 182.9 | 0 |
| *Temporary* | 371.7 | 500.3 | 490 | 0 |
| *Mohave Ground Squirrel habitat acreage affected* | | | | |
| *Permanent* | 0 | 0 | 0 | 0 |
| *Temporary* | 0 | 0 | 0 | 0 |
| *Potential to result in direct mortality/loss/disturbance to:* | | | | |
| *Mojave Fringe-toed Lizard* | No | No | No | No |
| *Nesting raptors/migratory birds* | Yes | Yes | Yes | No |
| *Banded Gila Monster* | Yes | Yes | Yes | No |
| *Burrowing Owls* | Yes | Yes | Yes | No |
| *Roosting Bats* | Yes, in caves and mines | Yes, in caves and mines | Yes, in caves and mines | No |
| *American Badger* | Yes | Yes | Yes | Yes |
| *Desert Bighorn Sheep* | Yes | Yes | Yes | No |
| *Clark County MSHCP Covered Reptiles* | No | No | Yes | No |
| *Acres of Special Management Lands Lost* | 20.4 acres of Ivanpah Desert Tortoise Critical Habitat, 13.8 acres of the Mojave National Preserve | 0 | 0 | 0 |

| Environmental Topic | Segment 4A Rail Alignment and Associated TCAs | Segment 4B Rail Alignment and Associated TCAs | Segment 4C Rail Alignment and Associated TCAs | No Action Alternative |
|---|---|---|---|---|
| **Section 4(f)** | | | | |
| *Number of Section 4(f) properties used* | | | | |
| *Park and Recreation* | 1 (Mojave National Preserve) | 0 | 0 | 0 |
| *Cultural Resources* | 0 | 0 | 0 | 0 |

Source: CirclePoint, 2010.

Table S-ES-5 Comparison of Segment 5 Alternatives

| Environmental Topic | Segment 5A Rail Alignment and Associated TCAs | Segment 5B Rail Alignment and Associated TCAs | Sloan Road MSF | Relocated Sloan MSF (RSMSF) | No Action Alternative |
|---|---|---|---|---|---|
| **Land Use & Community Impacts** | | | | | |
| *Compatibility with Adjacent Land Uses* | High | High | High | High | High |
| *Compatibility with Land Use Plans* | Low near limited residential areas, Medium to high elsewhere | Low near limited residential areas, Medium to high elsewhere | Low | High within existing undeveloped, Low within residential areas | High |
| *Number of housing units displaced* | 0 | 0 | 0 | 0 | Unknown |
| *Extent of community disruption/severance* | None | None | None | None | None expected |
| *Number of environmental justice (EJ) communities crossed by or within 1 mile of facilities* | 0 | 0 | 0 | 0 | Expected to be similar to Segment 5A rail alignment |
| **Growth** | | | | | |
| *Estimated permanent employment* | None | None | 154 to 251 jobs from the station/maintenance facility regardless of location | | None expected |
| *Removal of obstacles to growth* | None expected | None expected | None expected | None expected | None expected |
| *Extent of effects to TOD potential* | None | None | None | None | None expected |
| *Extent of effects to economic vitality* | Slight adverse effects to Primm and Jean | Slight adverse effects to Primm and Jean | None | None | None expected |
| **Farmlands & Agriculture** | | | | | |
| *Acres of Directly Impacted Farmland* | None | None | None | None | 0 expected |
| *Acres of Indirectly Impacted Farmland* | None | None | None | None | 0 expected |
| *Potential Severance of Grazing Allotment* | None | None | None | None | None expected |

| Environmental Topic | Segment 5A Rail Alignment and Associated TCAs | Segment 5B Rail Alignment and Associated TCAs | Sloan Road MSF | Relocated Sloan MSF (RSMSF) | No Action Alternative |
|---|---|---|---|---|---|
| **Utilities & Emergency Services** | | | | | |
| *Exceed capacity of utility or service systems:* | | | | | |
| *Electricity and Gas* | No demand associated, unless EMU selected | No demand associated, unless EMU selected | No | No | Not expected |
| *Water Supply* | NA | NA | New conveyance systems would be required | New conveyance systems would be required | Not expected |
| *Sewage/Wastewater* | NA | NA | No | New conveyance systems would be required | Not expected |
| *Stormwater* | No | No | NA | NA | Not expected |
| *Solid Waste* | NA | NA | No | No | Not expected |
| *Police Services* | No | No | No | No | Not expected |
| *Fire/Emergency Services* | New staff, equipment and a new station | New staff, equipment and a new station | No | No | Not expected |
| *Potential conflict with existing utility distribution systems* | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Unlikely, but any conflicts can be mitigated | Unlikely, but any conflicts can be mitigated | Assumed yes, and that conflicts can be mitigated |
| **Traffic & Transportation** | | | | | |
| *Result in substantial traffic increases:* | | | | | |
| *Freeway Mainlines* | DEMU or EMU options would reduce freeway volumes and positively affect LOS | | | | LOS would degrade between Primm and Sloan |
| *Station Area Intersections* | NA | NA | NA | NA | None expected |

| Environmental Topic | Segment 5A Rail Alignment and Associated TCAs | Segment 5B Rail Alignment and Associated TCAs | Sloan Road MSF | Relocated Sloan MSF (RSMSF) | No Action Alternative |
|---|---|---|---|---|---|
| **Visual Resources** | | | | | |
| *Extent of consistency with BLM VRM Objectives* | Consistent in Primm and Jean. Somewhat consistent elsewhere. | Consistent | Not consistent | Consistent | Consistent if impacts remain in existing corridor |
| *Effect to FHWA Visual Quality/Sensitivity With Project* | No change within Primm and Jean. Slight decrease in visual quality elsewhere. | No change within Primm and Jean. Slight decrease in visual quality elsewhere. | Minimal adverse change in visual quality | Minimal adverse change in visual quality | Consistent if impacts remain in existing corridor |
| **Cultural & Paleontological** | | | | | |
| *Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected* | 4 | 16 | 0 | 1 | Assumed to be same as Segment 5A – 4 |
| *Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected* | 2 | 10 | 0 | 0 | Assumed to be same as Segment 5A - 2 |
| *Number of Historic Architectural Resources Directly/Indirectly Affected* | 0 | 0 | 0 | 0 | Assumed 0 |
| **Hydrology & Water Quality** | | | | | |
| *Linear feet of impact to water resources* | 0 | 0 | 0 | 0 | Assumed similar to Segment 5A - 0 |
| *Acres within a 100-year floodplain* | 0 | 0.9 | 0 | 0 | Assumed similar to Segment 5A – 0 |
| *Result in substantial drainage pattern alteration* | No | No | No | No | Not expected |
| *Estimated peak stormwater discharge (cubic feet/second)* | NA | NA | Unknown | Unknown | NA |

| Environmental Topic | Segment 5A Rail Alignment and Associated TCAs | Segment 5B Rail Alignment and Associated TCAs | Sloan Road MSF | Relocated Sloan MSF (RSMSF) | No Action Alternative |
|---|---|---|---|---|---|
| **Geology & Soils** | | | | | |
| *Expected likelihood of Surface Fault Rupture* | None | None | None | None | High |
| *Expected likelihood of ground shaking* | Low to High | Low to High | Low to High | Low to High | High |
| *Expected difficulty of excavation* | Moderate | Moderate | Moderate | Moderate | Moderate |
| *Expected likelihood of landslides* | Moderate | Moderate | Moderate | Moderate | Moderate |
| **Hazardous Materials** | | | | | |
| *Number of properties of environmental concern* | 0 | 0 | 0 | 0 | 0 |
| **Air Quality & Global Climate Change** | | | | | |
| *Exceed a state or federal standard?* | No | No | No | No | Not expected |
| *Result in CO Hotspot?* | No | No | No | No | No |
| *Expected adverse construction period impact?* | No | No | No | No | No |
| **Noise & Vibration** | | | | | |
| *Expected number of impacts under FRA criteria* | 0 | 0 | 0 | 0 | None expected |
| *Expected number of severe impacts under FRA criteria* | 0 | 0 | 0 | 0 | None expected |
| *Expected number of vibration impacts* | 0 | 0 | 0 | 0 | None expected |
| **Energy** | | | | | |
| *Result in Significant Change in Energy Consumption?* | Analysis examined project as a whole, comparing DEMU, EMU, and No Action. | | | | |

| Environmental Topic | Segment 5A Rail Alignment and Associated TCAs | Segment 5B Rail Alignment and Associated TCAs | Sloan Road MSF | Relocated Sloan MSF (RSMSF) | No Action Alternative |
|---|---|---|---|---|---|
| **Biological Resources** | | | | | |
| *Impose Barrier to wildlife movement* | No | No | No | No | No new barriers |
| *Number of stream crossings* | 49 | 49 | 1 | 0 | No new crossings |
| *Sensitive plant community acreage affected* | | | | | |
| *Permanent* | 0 | 0 | 0 | 0 | Assumed 0 |
| *Temporary* | 0 | 0 | 0 | 0 | Assumed 0 |
| *Desert Tortoise habitat acreage affected* | | | | | |
| *Permanent* | 0.2 | 203.2 | 9.7 to 13.9 | 9.1 | 0 |
| *Temporary* | 8.7 | 685.6 | 0 | 11.4 | 0 |
| *Mohave Ground Squirrel habitat acreage affected* | | | | | |
| *Permanent* | 0 | 0 | 0 | 0 | 0 |
| *Temporary* | 0 | 0 | 0 | 0 | 0 |
| *Potential to result in direct mortality/loss/disturbance to:* | | | | | |
| *Mojave Fringe-toed Lizard* | No | No | No | No | No |
| *Nesting raptors/migratory birds* | Yes | Yes | Yes | Yes | No |
| *Banded Gila Monster* | No | No | No | Yes | No |
| *Burrowing Owls* | No | Yes | No | Yes | No |
| *Roosting Bats* | No | Yes | No | No | No |
| *American Badger* | Yes | Yes | Yes | Yes | Yes |
| *Desert Bighorn Sheep* | No | No | No | No | No |
| *Clark County MSHCP Covered Reptiles* | Yes | Yes | Yes | Yes | No |
| *Acres of Special Management Lands* | 0 | 0 | 0 | 0 | 0 |

| Environmental Topic | Segment 5A Rail Alignment and Associated TCAs | Segment 5B Rail Alignment and Associated TCAs | Sloan Road MSF | Relocated Sloan MSF (RSMSF) | No Action Alternative |
|---|---|---|---|---|---|
| **Section 4(f)** | | | | | |
| *Number of Section 4(f) properties used* | | | | | |
| *Park and Recreation* | 0 | 0 | 0 | 0 | 0 |
| *Cultural Resources* | 0 | 4 | 0 | 0 | 0 |

Source: CirclePoint, 2010.

Table S-ES-6 Comparison of Segment 6 Alternatives

| Environmental Topic | Segment 6A Rail Alignment and Associated TCAs | Segment 6B Rail Alignment and Associated TCAs (with AAAs 7-8) | Segment 6C Rail Alignment and Associated TCAs | Wigwam MSF Modification | Robindale MSF | Frias Substation | No Action Alternative |
|---|---|---|---|---|---|---|---|
| **Land Use & Community Impacts** | | | | | | | |
| *Compatibility with Adjacent Land Uses* | High near undeveloped and commercial/industrial uses, Low near residential uses | High near undeveloped and commercial/industrial uses, Low near residential uses | High near undeveloped and commercial/industrial uses, Low near residential uses | Medium to High | Medium | Medium to High | High |
| *Compatibility with Land Use Plans* | Low near residential areas, Medium to high elsewhere* | Low near residential areas, Medium to high elsewhere* | Low near residential areas, Medium to high elsewhere | Medium to High | Low | Medium within residential areas, High within Business & Design and Research land uses | High |
| *Number of housing units displaced* | 0 | 0 | 0 | 0 | 1 | 0 | Unknown |
| *Extent of community disruption/severance* | None | None | Division through Sloan | None | None | None | None expected |
| *Number of environmental justice (EJ) communities crossed by or within 1 mile of facilities* | Would cross 4 EJ census blocks (minority and poverty) | Would cross 4 EJ census blocks (minority and poverty) | Would cross 2 EJ census blocks (minority and poverty) | 0 | 0 | 0 | Expected to be similar to Segment 6A rail alignment |
| **Growth** | | | | | | | |
| *Estimated permanent employment* | None | None | None | 154 to 251 jobs from the station/MSF regardless of location | 154 to 251 jobs from the station/MSF regardless of location | None | None expected |
| *Removal of obstacles to growth* | None | None | None | None | None | None | None expected |

| Environmental Topic | Segment 6A Rail Alignment and Associated TCAs | Segment 6B Rail Alignment and Associated TCAs (with AAAs 7-8) | Segment 6C Rail Alignment and Associated TCAs | Wigwam MSF Modification | Robindale MSF | Frias Substation | No Action Alternative |
|---|---|---|---|---|---|---|---|
| ***Growth Cont'd*** | | | | | | | |
| *Extent of effects to TOD potential* | None | None | None | None | None | None | None expected |
| *Extent of effects to economic vitality* | Construction Period Employment | Construction Period Employment | Construction Period Employment | Beneficial construction and operational employment effects similar for all station/ OMSF sites | Beneficial construction and operational employment effects similar for all station/ OMSF sites | Construction Period Employment | None expected |
| **Farmlands & Agriculture** | | | | | | | |
| *Acres of Directly Impacted Farmland* | None | None | None | None | None | None | None expected |
| *Acres of Indirectly Impacted Farmland* | None | None | None | None | None | None | None expected |
| *Potential Severance of Grazing Allotment* | None | None | None | None | None | None | None expected |
| **Utilities & Emergency Services** | | | | | | | |
| *Exceed capacity of utility or service systems:* | | | | | | | |
| *Electricity and Gas* | No demand associated, unless EMU selected | No demand associated, unless EMU selected | No demand associated, unless EMU selected | No | No | No | Not expected |
| *Water Supply* | No | No | No | No | No | No | Not expected |
| *Sewage/Wastewater* | No | No | No | No | No | No | Not expected |
| *Stormwater* | No | No | No | No | No | No | Not expected |
| *Solid Waste* | No | No | No | No | No | No | Not expected |

| Environmental Topic | Segment 6A Rail Alignment and Associated TCAs | Segment 6B Rail Alignment and Associated TCAs (with AAAs 7-8) | Segment 6C Rail Alignment and Associated TCAs | Wigwam MSF Modification | Robindale MSF | Frias Substation | No Action Alternative |
|---|---|---|---|---|---|---|---|
| ***Utilities & Emergency Services Cont'd*** | | | | | | | |
| *Police Services* | No | No | No | No | No | No | Not expected |
| *Fire/Emergency Services* | New staff, equipment and a new station | New staff, equipment and a new station | New staff, equipment and a new station | No | No | None expected | Not expected |
| *Potential conflict with existing utility distribution systems* | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Yes, but conflicts can be mitigated | Assumed yes, and that conflicts can be mitigated |
| **Traffic & Transportation** | | | | | | | |
| *Result in substantial traffic increases:* | | | | | | | |
| *Freeway Mainlines* | DEMU and EMU options would reduce freeway volumes and positively affect LOS | | | | | | LOS would degrade between Sloan and I-215 |
| *Station Area Intersections* | NA | NA | NA | NA | NA | NA | None expected |
| **Visual Resources** | | | | | | | |
| *Extent of consistency with BLM VRM Objectives* | Somewhat consistent in undeveloped southern portions, consistent elsewhere. | Somewhat consistent in undeveloped southern portions, consistent elsewhere. | Consistent | Consistent | Consistent | Somewhat consistent near residential areas | Consistent if impacts remain in existing corridor |
| *Effect to FHWA Visual Quality/Sensitivity With Project* | No change | No change | No change | No change | No change | No change | Consistent if impacts remain in existing corridor |

| Environmental Topic | Segment 6A Rail Alignment and Associated TCAs | Segment 6B Rail Alignment and Associated TCAs (with AAAs 7-8) | Segment 6C Rail Alignment and Associated TCAs | Wigwam MSF Modification | Robindale MSF | Frias Substation | No Action Alternative |
|---|---|---|---|---|---|---|---|
| **Cultural & Paleontological** | | | | | | | |
| *Number of Eligible or Assumed Eligible Archaeological Resources Directly Affected* | 1 | 0 | 19 | 0 | 0 | 0 | Assumed to be same as Segment 6A - 1 |
| *Number of Eligible or Assumed Eligible Archaeological Resources Indirectly Affected* | 0 | 1 | 4 | 0 | 0 | 0 | Assumed to be same as Segment 6A - 0 |
| *Number of Historic Architectural Resources Directly/Indirectly Affected* | 0 | 0 | 0 | 0 | 0 | 0 | Assumed 0 |
| **Hydrology & Water Quality** | | | | | | | |
| *Linear feet of impact to water resources* | 0 | 0 | 77 | 0 | 0 | 50 | Assumed similar to Segment 6A - 0 |
| *Acres within a 100-year floodplain* | 0.8 to 12.6 | 23 | 3.7 to 4.2 | 1.7 to 2.1 | 0 | 0 | Assumed similar to Segment 6A – up to 12.6 |
| *Result in substantial drainage pattern alteration* | No | No | No | No | No | No | Not expected |
| *Estimated peak stormwater discharge (cubic feet/second)* | NA | NA | NA | Unknown | Unknown | Unknown | NA |

| Environmental Topic | Segment 6A Rail Alignment and Associated TCAs | Segment 6B Rail Alignment and Associated TCAs (with AAAs 7-8) | Segment 6C Rail Alignment and Associated TCAs | Wigwam MSF Modification | Robindale MSF | Frias Substation | No Action Alternative |
|---|---|---|---|---|---|---|---|
| **Geology & Soils** | | | | | | | |
| *Expected likelihood of Surface Fault Rupture* | None | None | None | None | None | None | High |
| *Expected likelihood of ground shaking* | Low to Moderate | Low to Moderate | Low to Moderate | Low to Moderate | Low to Moderate | Low | High |
| *Expected difficulty of excavation* | High | High | High | High | High | High | Moderate |
| *Expected likelihood of landslides* | Moderate | Moderate | Low to Moderate | Moderate | Low to Moderate | Low | Moderate |
| **Hazardous Materials** | | | | | | | |
| *Number of properties of environmental concern* | 6 | 6 | 3 | 0 | 0 | 0 | 0 |
| **Air Quality & Global Climate Change** | | | | | | | |
| *Exceed a state or federal standard?* | No | No | No | No | No | No | Not expected |
| *Result in CO Hotspot?* | No | No | No | No | No | No | No |
| *Expected adverse construction period impact?* | No | No | No | No | No | Yes, but can be mitigated | No |
| **Noise & Vibration** | | | | | | | |
| *Expected number of impacts under FRA criteria* | 358 for EMU, 268 for DEMU | 371 for EMU, 303 for DEMU | 0 | 0 | 0 | 0 | None expected |
| *Expected number of severe impacts under FRA criteria* | 0 | 13 for EMU, 37 for DEMU | 0 | 0 | 0 | 0 | None expected |
| *Expected number of vibration impacts* | 0 | 0 | 0 | 0 | 0 | 0 | None expected |

| Environmental Topic | Segment 6A Rail Alignment and Associated TCAs | Segment 6B Rail Alignment and Associated TCAs (with AAAs 7-8) | Segment 6C Rail Alignment and Associated TCAs | Wigwam MSF Modification | Robindale MSF | Frias Substation | No Action Alternative |
|---|---|---|---|---|---|---|---|
| **Energy** | | | | | | | |
| *Result in Significant Change in Energy Consumption?* | Analysis examined project as a whole, comparing DEMU, EMU, and No Action. | | | | | | |
| **Biological Resources** | | | | | | | |
| *Impose Barrier to wildlife movement* | No | No | Yes | No | No | No | No new barriers |
| *Number of stream crossings* | 16 to 18 | 16 to 18 | 26 to 27 | 1 | 1 | 0 | No new crossings |
| *Sensitive plant community acreage affected* | | | | | | | |
| *Permanent* | 0 | 0 | 0 | 0 | 0 | 4.6 acres of Mojave Creosote habitat | Assumed 0 |
| *Temporary* | 0 | 0 | 0 | 0 | 0 | 0 | Assumed 0 |
| *Desert Tortoise habitat acreage affected* | | | | | | | |
| *Permanent* | 40.2 | 38 | 78.2 | 3 | 8.8 | 0 | 0 |
| *Temporary* | 116.6 | 116.6 | 329.2 | 0 | 0 | 0 | 0 |
| *Mohave Ground Squirrel habitat acreage affected* | | | | | | | |
| *Permanent* | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Temporary* | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Potential to result in direct mortality/loss/ disturbance to:* | | | | | | | |

| Environmental Topic | Segment 6A Rail Alignment and Associated TCAs | Segment 6B Rail Alignment and Associated TCAs (with AAAs 7-8) | Segment 6C Rail Alignment and Associated TCAs | Wigwam MSF Modification | Robindale MSF | Frias Substation | No Action Alternative |
|---|---|---|---|---|---|---|---|
| ***Biological Resources Cont'd*** | | | | | | | |
| *Mojave Fringe-toed Lizard* | No | No | No | No | No | No | No |
| *Nesting raptors/migratory birds* | No | Yes | Yes | No | No | No | No |
| *Banded Gila Monster* | No | No | No | No | No | No | No |
| *Burrowing Owls* | No | Yes | Yes | No | No | Yes | No |
| *Roosting Bats* | No | Yes | Yes | No | No | No | No |
| *American Badger* | Yes | Yes | Yes | Yes | Yes | No | Yes |
| *Desert Bighorn Sheep* | No | No | No | No | No | No | No |
| *Clark County MSHCP Covered Reptiles* | Yes | Yes | Yes | Yes | Yes | No | No |
| *Acres of Special Management Lands Lost* | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Section 4(f)** | | | | | | | |
| *Number of Section 4(f) properties used* | | | | | | | |
| *Park and Recreation* | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Cultural Resources* | 0 | 0 | 2 | 0 | 0 | 0 | 0 |

Source: CirclePoint, 2010.

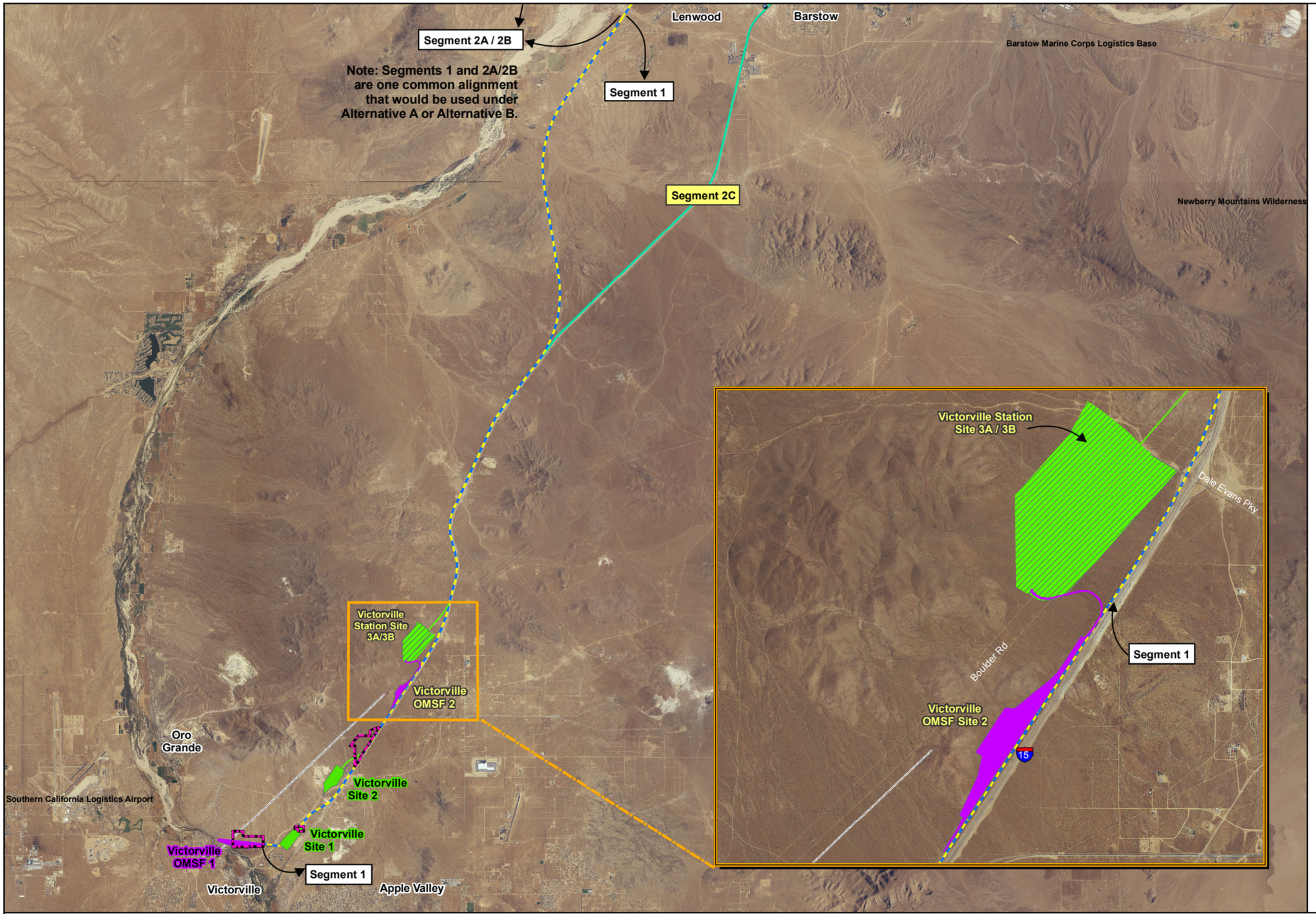
## ES-5 AVOIDANCE AND MINIMIZATION OF ADVERSE EFFECTS

As currently planned, the DesertXpress Project would avoid and minimize many potential adverse environmental effects. **Chapter 3**, includes in each topic area a discussion of mitigation measures and strategies. In addition, design and construction practices have been identified that would be employed as the DesertXpress project is developed further in the final design phase and construction stages. Key aspects of the design practices include, but are not limited to the following:

- Minimize impact footprint and associated direct impacts to farmlands, parklands, biological, and water resources through maximum use of existing transportation corridors.
- Increase safety and circulation and potentially reduce air pollution and noise impacts through use of grade separation at road crossings.
- Placement of the majority of the DesertXpress alignment within existing highway and railroad rights-of-way, to reduce the need for additional right-of-way and minimize potential impacts to agricultural resources and other natural resources.
- Cooperate with regulatory agencies to develop acceptable specific design and construction standards for steam crossings, including but not limited to maintaining open surface (bridged versus closed culvert) crossings, infrastructure setbacks, erosion control measures, sediment-controlling excavation/fill practices, and other best management practices.
- Fully lined tunnels with impermeable material to prevent infiltration of groundwater or surface waters.

## ES-6 PUBLIC AND AGENCY INVOLVEMENT

This Draft EIS has been prepared with extensive public and agency involvement, which is summarized in **Chapter 4.0, Comments and Coordination**.




## Legend

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

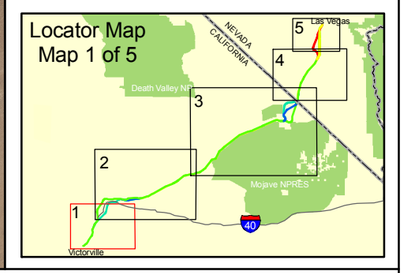
1 inch equals 3 miles

Kilometers
0 2 4

Miles
0 1.5 3

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006,

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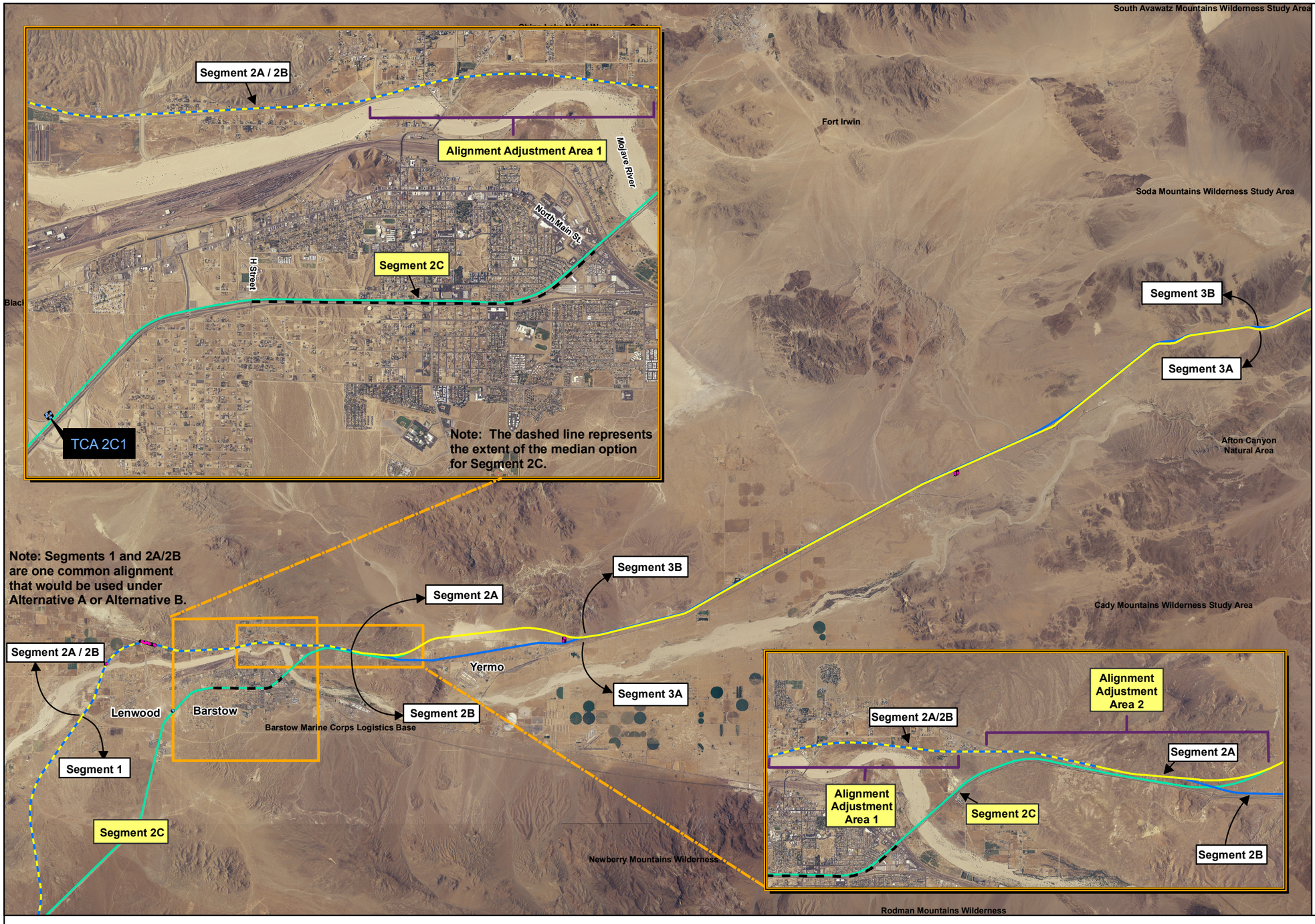
**DesertXpress - Supplemental EIS**

***Project Modifications and Additions (1)***

FIG **S-ES-1**

Geografika Consulting 06.16.10




## Legend

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

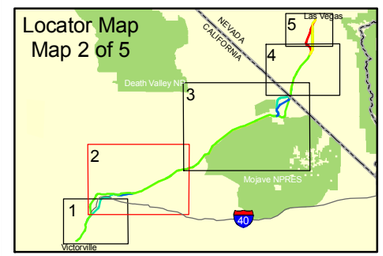
1 inch equals 4 miles

NORTH

0 5 10 Kilometers

0 4 8 Miles

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006,

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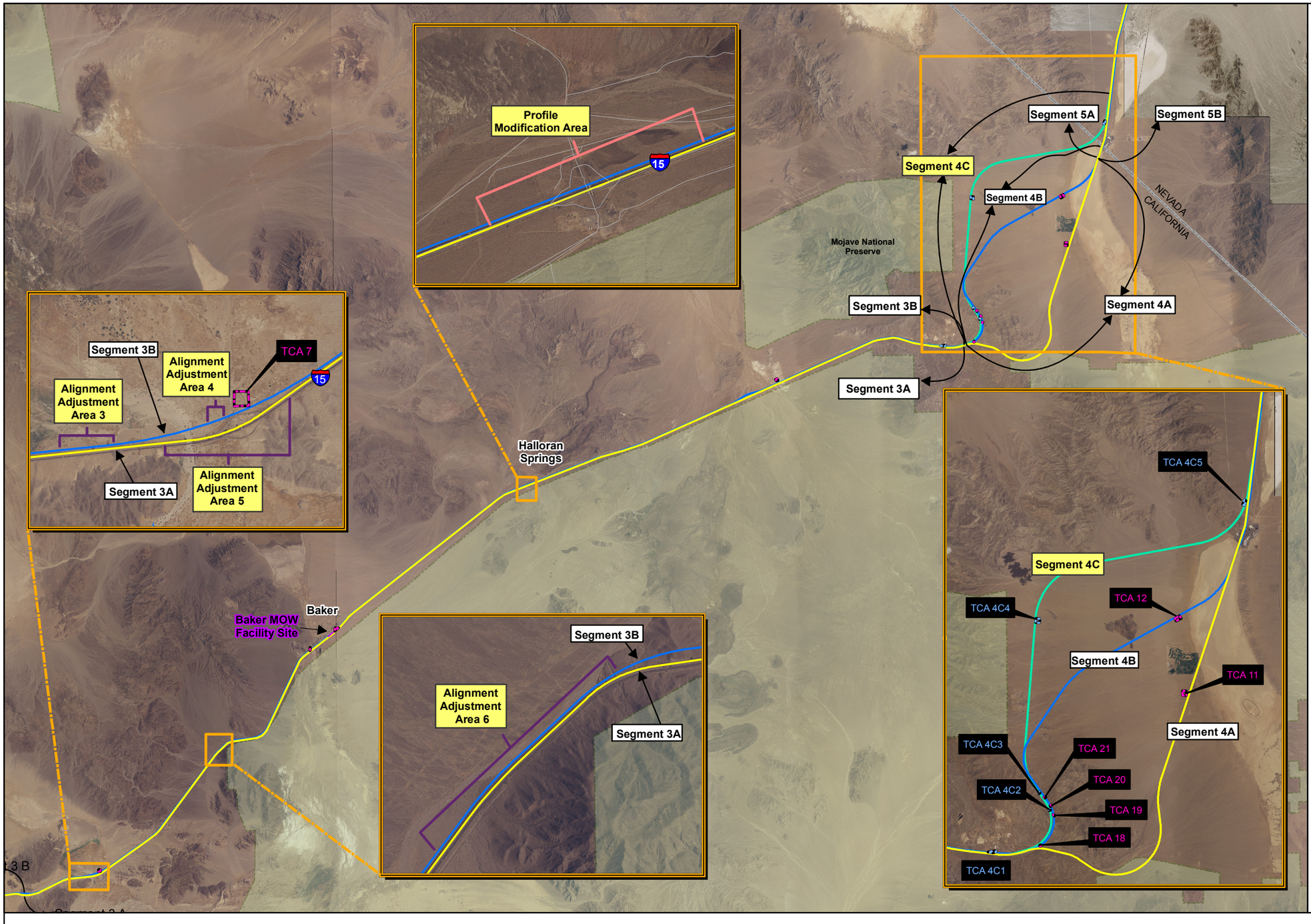
**DesertXpress - Supplemental EIS**

***Project Modifications and Additions (2)***

FIG **S-ES-2**

Geografika Consulting 06.016.10




## Legend

### Faults and Earth Fissures

- Fault
- Overall outline of fissure area

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

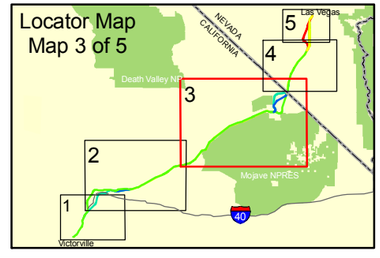
1 inch equals 4 miles

NORTH

0 5 10 Kilometers

0 4 8 Miles

Source: Bell and Price 1992, NV Bureau of Mines & Geology 1996, CA Division of Mines & Geology 2000, DesertXpress 2007, ESRI 2005, NAIP 2003-2006, US Census Bureau

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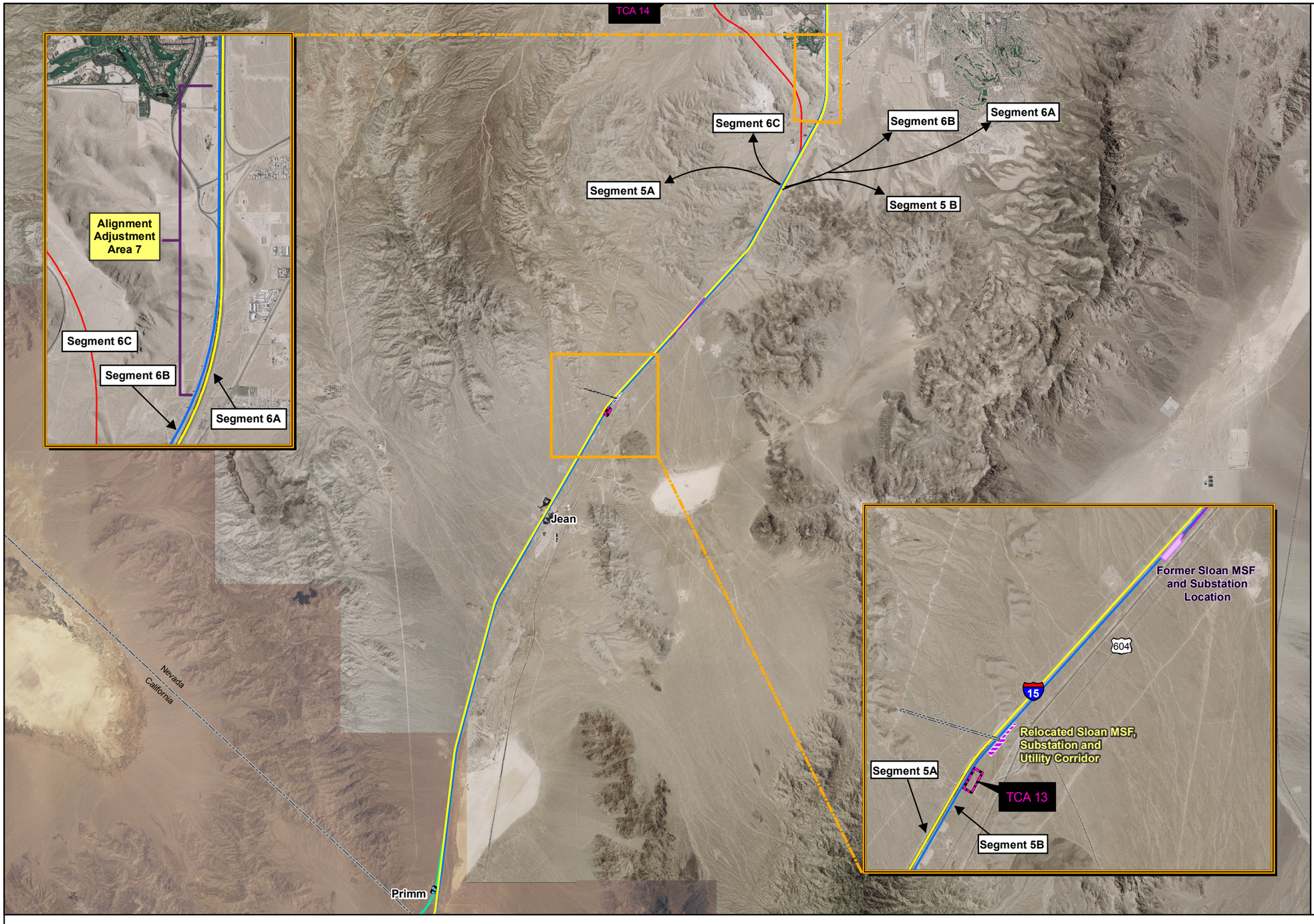
**DesertXpress - Supplemental EIS**

***Project Modifications and Additions (3)***

**FIG S-ES-3**

Geografika Consulting 06.16.10




## Legend

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Relocation Sloan MSF / Substation Site Option
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

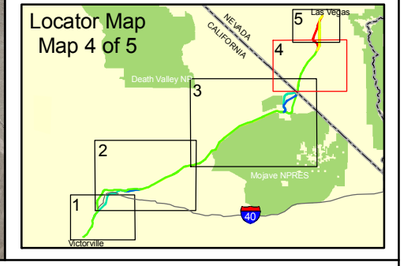
1 inch equals 3 miles

0 2.5 5 Kilometers

0 3 6 Miles

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

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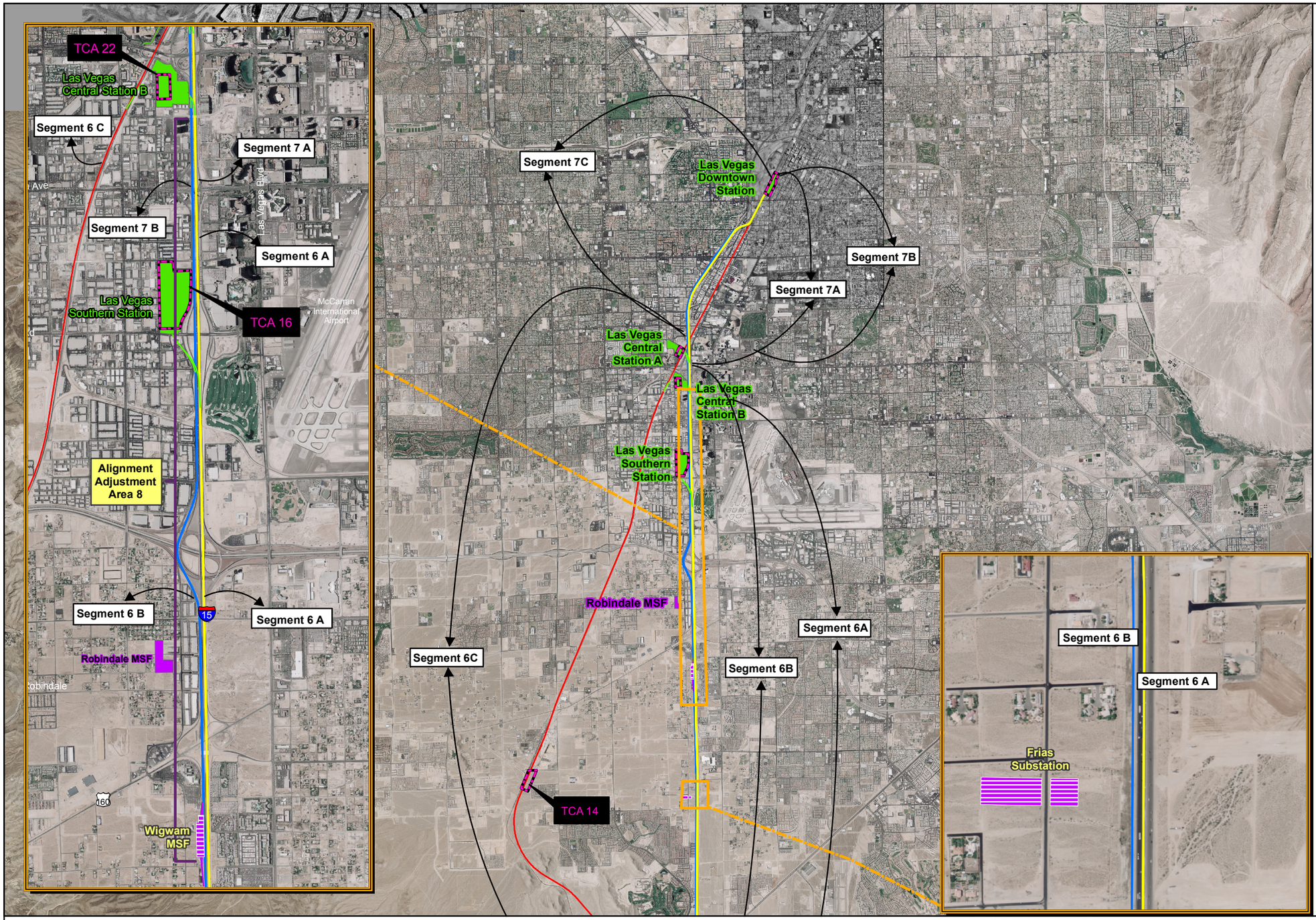
**DesertXpress - Supplemental EIS**

***Project Modification and Additions (4)***

FIG **S-ES-4**

Geografika Consulting 06.16.10




## Legend

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Frias Substation and Wigwam MSF Modifications
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

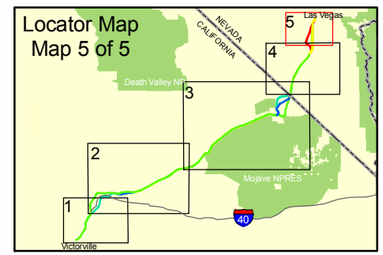
1 inch equals 2 miles

Kilometers
0 1.25 2.5

Miles
0 1 2

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

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**DesertXpress - Supplemental EIS**

***Project Modifications and Additions (5)***

FIG **S-ES-5**

Geografika Consulting 06.16.10

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# 1.0 Purpose and Need

The Draft Environmental Impact Statement (EIS) for the DesertXpress Project, which was published in March 2009, included a detailed purpose and need statement in **Chapter 1.0, Purpose and Need**. This statement identified a number of factors, including improved safety, convenience, travel speed, and existing corridor capacity constraints that collectively established the purpose and need for the project.

Following publication of the Draft EIS, the project Applicant (DesertXpress Enterprises, LLC) proposed several project modifications and additions to address substantive comments received during public and agency review of the Draft EIS and to reduce or avoid significant environmental effects. These project modifications and additions are detailed in **Chapter 2.0, Alternatives,** of this Supplemental Draft EIS. After evaluating the proposed project modifications and additions, FRA determined, pursuant to 40 C.F.R. 1502.9, it was necessary to prepare a supplement to the Draft EIS. The FRA is issuing this Supplemental Draft EIS consistent with the policy goals of the National Environmental Policy Act (NEPA) to inform both the public and the decision makers of the potential for environmental impacts as a result of the DesertXpress Project. This Supplemental Draft EIS focuses specifically on these proposed modifications and additions and the associated environmental effects and mitigation strategies, as well as any relevant changes to the regulatory context or existing environment.

The proposed project modifications and additions do not in any way change the underlying purpose and need for the project.

## 1.1 PURPOSE OF THE PROPOSED PROJECT

The purpose of the project is to provide reliable and safe passenger rail transportation using proven high-speed rail technology between Southern California (Victorville) to Las Vegas that is a convenient alternative to automobile travel on the Interstate-15 freeway (I-15), or air travel to and from Las Vegas, and that adds transportation capacity in the I-15 corridor.

Extending nearly 200 miles on new, high-speed double track with no at-grade crossings, DesertXpress would provide trains departing both ends of the line at least hourly and as frequently as every 20 minutes on Fridays and Sundays. DesertXpress would travel at speeds up to 150 mph. The 200-mile trip would take between 1 hour and 45 minutes and 2 hours, and would operate every day of the year. The trains would be based on high-

speed trains used in Europe and customized for the unique setting of the high desert. The trains tracks would utilize (to the extent feasible) existing railroad rights-of-way and an existing freeway (I-15) corridor, thereby increasing the overall capacity of I-15 corridor while minimizing the disturbance of lands outside the corridor. Each car would be self-propelled to provide the high power-to-weight ratio needed to follow the alignment and negotiate its relatively steep grades as it travels through two desert mountain passes.

In **Section 1.2** of the Draft EIS there is a more detailed discussion of the project's purpose of increasing the capacity of the I-15 corridor.

## 1.2 NEED FOR THE PROPOSED PROJECT

The need for a high-speed rail service stems from several factors: high and increasing travel demand amidst lagging capacity on the I-15 corridor and constraints to expansion of air travel, and frequent accidents in the I-15 corridor.

In **Section 1.3** of the Draft EIS there is a more detailed discussion of the travel demand and capacity constraints between Southern California and Las Vegas and safety considerations, which are summarized below.

### Relief of Traffic Congestion

In its opening year, the project is expected to reduce auto emissions and save fuel by diverting an estimated 2.7 million automobile trips from I-15. Over time, this diversion rate is expected to increase.

### Increasing Capacity of I-15 Corridor

The approximate 60-foot right-of-way width required for project rail alignments would be narrower than the width of additional highway lanes needed to carry a comparable number of people in automobiles on the I-15 corridor. The project could potentially reduce the need for programmed and/or planned but unfunded improvements.

### Improving Traveler Safety

By reducing the number of automobiles on I-15, the project could potentially reduce the accident rate thus improving traffic safety. Accident rates along the I-15 freeway corridor are higher than respective statewide averages in California and Nevada. In California, the fatal accident rate in the I-15 corridor exceeds the statewide average for highway facilities. In the Nevada portion of the I-15 corridor, higher than average rear-end collision rates suggest that excessive congestion is a factor in causing accidents.

### Inability for Increased Air Traffic to Meet Forecast Travel Demand

The rapid increase travel demand between Southern California and Law Vegas, coupled with the growth in population in the areas surrounding Victorville, Barstow and Las Vegas

has placed increasing pressures on the highways and airports servicing the region. Constraints on the expansion of airports in Southern California limit the ability for increased air traffic to relieve freeway congestion and provide a more reliable travel mode. In addition, capacity constraints at McCarran International Airport in Las Vegas are such that a secondary metropolitan airport is being studied for a site near Primm.

## 1.3 MAJOR AUTHORIZING LAWS AND REGULATIONS

**Chapter 1.0, Purpose and Need**, of the Draft EIS identified several laws and regulations of the lead and cooperating agencies and described how these were pertinent to the project. None of these authorizing laws or regulations has been substantively amended since publication of the Draft EIS.

Of particular relevance is that there has been no change in the statutory authority of the National Park Service (NPS) that permits NPS to grant the private transportation right-of-way through the Preserve necessary to construct Segment 4A analyzed in the Draft EIS. Segment 4A would traverse a 1.55 mile portion of the Mojave National Preserve (Preserve). As of July 2010, no legislative or land exchange option has been formally promulgated that would potentially allow NPS to grant this right-of-way.

In addition, **Section 1.4** of the Draft EIS identified numerous permits and licenses that would be required in order for the project to be constructed and implemented. There has been no change to this list of such permits and licenses since publication of the Draft EIS.

### STB Preemption Authority

**Section 1.4.1.1** of the Draft EIS discussed the STB decision in DesertXpress Enterprises, LLC-Petition for Declaratory Order finding that the project is not subject to state and local land use and environmental review and permitting. STB issued this finding under its authority contained in 49 U.S.C. 10501 (b), as broadened by the ICC Termination Act of 1995, Pub L. No. 104-88, 109 Stat. 803 (1995) (ICCTA). STB's decision was issued in STB Finance Docket No. 34914 (STB served June 27, 2007).

Subsequent to the March 2009 publication of the Draft EIS, STB's decision was appealed by the California-Nevada Super Speed Train Commission and the American Magline Group. The appeal argued that changed circumstances, new evidence, and material error constituted sufficient grounds to reopen and reconsider the STB's 2007 decision. The STB held an oral hearing on the matter in October 2009. In a decision issued on May 6, 2010, STB denied the petitioner's request to reopen and reverse the June, 2007 finding and reaffirmed its 2007 decision asserting STB jurisdiction over the DesertXpress project.

## 1.4 RELATIONSHIP TO OTHER TRANSPORTATION PROJECTS AND PLANS IN THE STUDY AREA

The Draft EIS included a discussion of the project's relationship to other transportation projects and plans in the study area. For some of these projects, additional pertinent information has become available following the March 2009 publication of the Draft EIS.

### High Desert Corridor Project

This project would provide improved linkage between the Victor Valley and the Antelope Valley through a variety of new facilities and facility expansions. The City of Victorville received federal funds to develop a portion of the corridor between US 395 and I-15 and westerly to State Route 18.

This Supplemental Draft EIS includes a new Victorville Station Site option, which would be located to the north of the proposed new freeway (E-220).

### US 395 Realignment and Widening

The San Bernardino County Association of Governments (SANBAG) is no longer the lead agency for this project. Caltrans is continuing to pursue this project; completion of environmental studies is anticipated in 2015.

### Southern Nevada Supplemental Airport

The Clark County Department of Aviation (CCDOA) is continuing its planning and studies of a new commercial airport in the Ivanpah Valley north of Primm, east of I-15. As elaborated further in Chapter 2.0, Alternatives, consultation with CCDOA subsequent to publication of the Draft EIS led to the introduction of a new location for a maintenance facility (the Relocated Sloan Maintenance and Storage Facility or RSMSF).

### ACE Rapid Transit System

The Regional Transportation Commission of Southern Nevada (RTC) has started rapid bus transit service on two of several scheduled lines. In March 2010, service began on the Gold and C Lines. The Gold Line serves Downtown Las Vegas and The Strip; the C Line provides express service from Northeast Las Vegas towards the University of Nevada Las Vegas (UNLV) campus, northwest of McCarran International Airport. Other lines in the system are expected to be operational by late 2010.

# 2.0 Alternatives

## 2.1 SUMMARY OF DRAFT EIS ALTERNATIVES

DesertXpress Enterprises, LLC proposes to construct and operate an interstate high-speed passenger train between Victorville, California and Las Vegas, Nevada along an approximately 200 mile corridor. The Draft EIS evaluated and analyzed action alternatives for the construction of a proposed steel wheel on steel rail high-speed train, and a "No Action" alternative. The Draft EIS analyzed the environmental effects of the action alternatives categorized as two primary routing alternatives for the proposed high-speed passenger rail system, which were identified by the project applicant and found to satisfy the project's purpose and need as described in **Chapter 1.0, Purpose and Need**, of the Draft EIS. These were identified as Alternative A and Alternative B.

*Alternative A* was based primarily on a rail alignment in the I-15 freeway median.

*Alternative B* was based primarily on a rail alignment running alongside the I-15 freeway.

In addition, the Draft EIS examined a third alignment option within the Las Vegas metropolitan area (Option C).

The Draft EIS evaluated the routing alternatives along the nearly 200 mile corridor between Victorville and Las Vegas by dividing the route into seven segments. **Table S-2-1** summarizes the segments and alignment options the Draft EIS evaluated.

Table S-2-1 Summary of Routing Alternatives Evaluated in the Draft EIS

| Segment | Alternative A | Alternative B | Other |
|---|---|---|---|
| 1: Victorville to Lenwood | Segment 1: One routing alternative along the north/west side of I-15 corridor | | NA |
| 2: Lenwood to Yermo | Segment 2A/2B, 2A Joint alignment through Barstow, then about 1 mile north of I-15 to Yermo | Segment 2A/2B, 2B Joint alignment through Barstow, then adjacent to I-15 to Yermo | NA |
| 3: Yermo to Mountain Pass | Segment 3A: Within I-15 median | Segment 3B: West of I-15, running alongside freeway | NA |
| 4: Mountain Pass to Primm | Segment 4A: Includes approx. 2 mile portion of MNP, then east of I-15 | Segment 4B: Through new tunnels in mountains northwest of I-15, through BLM-managed land | NA |

| Segment | Alternative A | Alternative B | Other |
|---|---|---|---|
| 5: Primm to Sloan Road | Segment 5A: Within I-15 median | Segment 5B: Along east side of I-15 | NA |
| 6: Sloan Road to Las Vegas (Southern or Central A/B Stations)[1] | Segment 6A: Within I-15 median | Segment 6B: Varying from east to west side of I-15 | Segment 6C: UPRR Corridor |
| 7: West Twain Avenue to Downtown Station | Segment 7A: Within I-15 median | Segment 7B: West side of I-15 | Segment 7C: UPRR Corridor |

Source: CirclePoint, 2010.

In addition to the routing alternatives, the Draft EIS analyzed the environmental effects of several project station and maintenance facility site options identified by the project applicant:

***Victorville passenger station***: Two site options (Victorville Station Site 1 (VV1) and Victorville Station Site 2 (VV2)) immediately west of the I-15 freeway corridor.

***Victorville Operations, Maintenance, and Storage Facility (OMSF):*** Two site options (OMSF 1 and OMSF 2) immediately west of the I-15 freeway corridor.

***Maintenance of Way (MOW) Facility***: One site option adjacent to the I-15 freeway corridor near the community of Baker.

***Las Vegas area Maintenance and Storage Facility (MSF):*** Three site options (Sloan Road MSF, Wigwam Avenue MSF, and Robindale Avenue MSF) adjacent to the I-15 freeway corridor.

***Las Vegas area passenger station:*** Four site options (Southern Station, Central Station A, Central Station B, and Downtown Station) in Clark County and the City of Las Vegas.

The Draft EIS also evaluated the environmental effects of two locomotive technology options proposed by the project applicant: 1) a diesel-electric multiple unit technology (DEMU); and 2) an electrical multiple unit technology (EMU).

Refer to **Chapter 2.0, Alternatives**, of the Draft EIS for a full discussion of the action alternatives evaluated in the Draft EIS.

## 2.2 PROPOSED PROJECT MODIFICATIONS AND ADDITIONS

Subsequent to the publication of the Draft EIS, the project applicant proposed several project modifications and additions to address substantive comments received during public and agency review of the Draft EIS and to reduce or avoid significant environmental effects. This Supplemental Draft EIS analyzes the potential environmental

[1] If Option C is selected for Segment 6, the terminus would be either Central Station A or B or the Downtown Station, via Segment 7A, 7B or Option C. Segment 6 Option C would not terminate at the Southern Station.

effects of these proposed project modifications and additions. **Figures S-2-1** through **S-2-5** show the locations of the proposed project modifications and additions.

## 2.2.1 VICTORVILLE STATION SITE 3

The Applicant has proposed an additional passenger station site option for the Victorville area near the I-15 /Dale Evans Parkway interchange. The Victorville station would offer train ticketing, baggage handling, and hotel room check-in for Las Vegas resorts. The proposed train station would be compatible with land use plans already proposed by the City of Victorville for mixed-use development served by local transit, and with highway access.

The Draft EIS concluded that VV1 would result in adverse traffic impacts at local intersections and would significantly contribute to future adverse cumulative effects, even with the implementation of mitigation measures. The Draft EIS also concluded that VV2 would result in potentially significant effects to existing intersections, but that mitigation measures (included in the Draft EIS) could reduce the significance of these impacts such that affected intersections would operate at acceptable service levels. For more information, please refer to the Draft EIS, **Section 3.5, Traffic and Transportation**.

In response to these potential effects, the Applicant has proposed a third Victorville Station site (VV3). **Figure S-2-6** shows the location of VV3 on the west side of the I-15 freeway near Dale Evans Parkway, immediately north of OMSF 2. VV3 is about six miles north of VV1 and 4.5 miles north of VV2.

The Applicant has proposed two options for the surface parking provided at the station. Option A (or VV3A) includes approximately 15,000 surface parking spaces to the south and east of the station building, beneath electrical utility lines located in an easement owned by the Los Angeles Department of Water and Power (LADWP). This option would require an agreement between the Applicant and LADWP to allow parking within LADWP's utility easement. Because such an agreement is not currently in place, the applicant has also proposed a site plan with a different surface parking option. Option B (VV3B) would place approximately 12,700 surface parking spaces in areas north and west of the station building. **Figure S-2-6** depicts the site plans for VV3A and VV3B.

The railroad tracks and the station building are proposed for the exact same location for both surface parking options. In addition to the surface parking spaces, under both options, the station building would include structured parking for approximately 1,650 cars.

VV3A would have a station area footprint of about 205 acres, inclusive of tail tracks. In comparison, VV3B would encompass approximately 218 acres. Either of the VV3 site options would have a larger footprint than VV1 or VV2, which are each about 100 acres in area).

## 2.2.2 OMSF 2 REDUCED SITE SIZE

The Applicant has proposed a new site footprint for OMSF 2. The OMSF 2 facility would include a train washing facility, repair shop, parts storage, operations control center, and a fueling station (for the DEMU option only). Approximately 400 employees would be employed at the facility.

The Draft EIS analyzed the impacts of an approximately 260 acre site envelope for the OMSF 2 facility, but noted that the final footprint of the OMSF facilities were expected to be notably smaller (see **Section 2.4.9.3** of the DEIS).

Since publication of the Draft EIS the applicant has conducted further engineering studies and has proposed a reduced footprint for OMSF 2 that now encompasses approximately 68 acres. **Figure S-2-1** depicts OMSF 2 at its reduced size. Proposed operations at the OMSF 2 site would not change from those described in the Draft EIS. Refer to **Appendix A-4** of the Draft EIS for a detailed layout of OMSF 2**.**

## 2.2.3 SEGMENT 2C

In response to comments by the City of Barstow, the Applicant has proposed a new alignment following the I-15 freeway through Barstow, referred to as Segment 2C. The Draft EIS analyzed a single routing option (Segment 2A/2B) between the cities of Lenwood and Barstow. **Section 1.7.1** of the Draft EIS discussed a possible additional routing option for Segment 2 that would follow the I-15 freeway median through the City of Barstow, including a possible station option in the vicinity of Lenwood Road. The Draft EIS did not, however, include full analysis of any such routing or station option, as the feasibility studies and detailed plans had not advanced enough by the time of Draft EIS publication. However, upon publication of Draft EIS, FRA mailed special notices to property owners along this corridor in an effort to seek comment and input about such an alternative if it were determined feasible. The notices advised that the analysis related to this corridor would be provided within subsequent environmental documentation, pending the outcome of the feasibility studies.

During the Draft EIS public review period (March 18, 2009 – May 22, 2009), the City of Barstow submitted comments requesting that Segment 2 be relocated to the I-15 corridor to avoid potential impacts to a planned industrial park in the Lenwood area.

In response, the Applicant completed a feasibility analysis and detailed plans for a rail alignment Segment 2C.

The applicant has proposed two alignment options for Segment 2C, both of which would be located within the I-15 freeway corridor.

- **Side Running (2C Side Running):** From the end of Segment 1 approximately 7 miles southwest of Lenwood, the 2C Side Running alignment would run along the north and west side of the I-15 freeway through Lenwood, central Barstow, and eastward to Yermo, where it would join Segment 3.
- **Median Option (2C Median):** From the end of Segment 1, this alignment would run along the north and west side of the I-15 freeway through Lenwood. As the alignment approaches Central Barstow it would transition into the I-15 freeway median for approximately 3 miles from H Street to East Main Street. At East Main Street, the alignment would transition back to the north and west side of the I-15 freeway and then connect with Segment 3.

**Figures S-2-2** and **S-2-7** depict the 2C Side Running and Median options. **Appendix S-A-1** includes detailed plans of the Segment 2C alignment options.

Within Central Barstow, both alignment options would be constructed on elevated structures and would cross over local interchanges and overpasses. Implementation of either Segment 2C alignment would result in a 12 mile reduction in the length of Segment 1 because the portion of Segment 1 that extends away from the I-15 corridor to travel around the west and northern edges of Barstow would not be required. Both Segment 2C alignments would follow a more direct route relative to Segment 2A and Segment 2B.

Either alignment option for Segment 2C would also entail one temporary construction area (TCA) along the proposed alignment for construction staging equipment. TCA 2C1 would have a total area of 1 acre and would be located between the cities of Lenwood and Barstow. This Supplemental Draft EIS examines potential effects of the TCA as part of the alignment options.

The Applicant has not proposed a Barstow station site and FRA has not included analysis of one as ridership projections indicated that the anticipated number of passengers boarding at a potential Barstow station would be insufficient to support a station. Moreover, VV1, VV2, and VV3 are all located within 25 miles of Barstow, and thus in reasonable proximity to serve any demand originating from the Barstow area.

### 2.2.4 SEGMENT 4C

The Applicant has proposed a modified Segment 4 rail alignment to avoid impacts identified in the Draft EIS associated with Segments 4A and 4B. The Draft EIS identified a 1.55 mile portion of Segment 4A which traversed the Mojave National Preserve (MNP) near Nipton Road as well as a portion of the Ivanpah Desert Wildlife Management Area (Ivanpah DWMA), an important resource area for the desert tortoise. The Draft EIS identified that Segment 4B would conflict with a planned solar power project located to the west of Ivanpah Dry Lake.

**Figure S-2-3** shows Segment 4C, which the Applicant proposed in response to these impacts. Segment 4C would be approximately 20.7 miles long, or about 7 miles longer than Segment 4A and 8 miles longer than Segment 4B. The west end of Segment 4C would follow the same alignment as Segment 4B, as it moves away from the I-15 freeway corridor and through a series of three tunnels to be constructed through the Clark Mountains. Segment 4C would then travel north of the planned solar energy projects and the Ivanpah Dry Lake bed before connecting back to the I-15 freeway corridor in the vicinity of Primm, NV.

Segment 4C would connect with Segment 5 north of Primm, NV, where the rail alignment would cross over from the west side of I-15 to the east side of I-15 on an aerial structure. (**Figures S-2-10** and **S-2-11** show the cross sections where Segment 4C would connect with Segment 5 and cross over the I-15 freeway corridor.)

Segment 4C would also require five additional TCAs for construction staging equipment. TCA 4C1 through TCA 4C5 would range in size from 1 to 9.7 acres. **Figure S-2-3** shows the locations of these new temporary construction areas.

**Appendix S-A-2** includes detailed plans of the Segment 4C alignment, including TCAs.

## 2.2.5 RELOCATED SLOAN MSF SITE

The Applicant has proposed a modified location for the Sloan Road Maintenance and Storage Facility (Sloan Road MSF) in response to comments on the Draft EIS. During public review of the Draft EIS, the Clark County Department of Aviation (CCDOA) submitted comments indicating that the Sloan Road MSF would be in direct conflict with the location of a proposed "super arterial" roadway that would provide future vehicle access to the planned Southern Nevada Supplemental Airport (SNSA) to be located north of Primm, NV.

In response to this comment, the Applicant has proposed a modified location for this facility approximately 9 miles south of Sloan Road and approximately 2 miles south of the Sloan Road MSF analyzed in the Draft EIS (see **Figure S-2-4**). Similar to the Sloan Road MSF, the Relocated Sloan MSF (RSMSF) would include a utility corridor (also shown on **Figure S-2-4**) that would connect an electrical substation (incorporated within the RSMSF site) to electrical transmission lines to the west under the EMU technology option.

The RSMSF would be located on the east side of the I-15 freeway corridor. The associated proposed utility corridor would cross over the I-15 freeway and continue approximately 1 mile to the west in order to connect with an existing Nevada Energy electric transmission line. **Appendix S-A-3** includes detailed drawings of the RSMSF site, which would also serve as an additional temporary construction area for the project overall.

## 2.2.6 FRIAS SUBSTATION SITE

The Applicant has proposed an additional electrical substation site, the Frias Substation, in order to provide electrical power in the event the EMU technology is selected.

The Draft EIS included three MSF sites (Wigwam, Robindale, and Sloan) of which, only the Sloan site included an electrical substation and utility corridor that would provide power for the EMU technology option. No such substation and utility corridor was provided for the Wigwam or Robindale sites. The Applicant has added the Frias Substation to the project to serve the Wigwam or Robindale MSF sites under the EMU option.

**Figure S-2-5** depicts the general location of the proposed Frias Substation site, which would be west of the I-15 freeway at the intersection of West Frias Avenue and South Dean Martin Drive in unincorporated Clark County. **Figure S-2-8** shows a detailed site plan.

The substation would be located immediately adjacent to an existing Nevada Energy electrical transmission line (the Arden-Tolson Transmission line) on undeveloped land in an area of sparse residential development and open lands.

Overhead electrical connections between the substation and the transmission line are included. The substation would be constructed on two separate sites: 1) a 3.2 acre substation on the west side of South Dean Martin Drive; and, 2) a 1.4 acre substation to the east side of South Dean Martin Drive. Other components of the Frias Substation include undergrounded 25 kilovolt feeder lines, which would connect to a new autotransformer that would be located immediately adjacent to the I-15 freeway. The autotransformer at Frias would be in addition to the 17 autotransformers identified in **Section 2.4.9.4** of the Draft EIS.

## 2.2.7 ALIGNMENT ADJUSTMENT AREAS

Following publication of the Draft EIS, the Applicant performed more detailed engineering studies which resulted in eight locations where the Alternative A and Alternative B rail alignments would be modified to improve operating characteristics, reduce or avoid environmental impacts identified in the Draft EIS, reduce project construction costs, or avoid potential conflicts with a constrained freeway right of way area. This Supplemental EIS refers to these eight locations of minor modifications (less than 400 feet) as Alignment Adjustment Areas (or AAAs). **Figures S-2-1** through **S-2-5** show AAA1 through AAA8. **Table S-2-2** summarizes each of the eight AAAs.

Table S-2-2 Summary of Alignment Modification Areas

| Alignment Modification Area | DesertXpress Alignment | Location | Reason for Alignment Modification | Relevant Figure |
|---|---|---|---|---|
| 1 | Segments 2A/2B | Through Barstow, north of the Mojave River | Avoids developed properties, improves constructability of alignment | S-2-2 |
| 2 | Segments 2A/2B | Through Barstow, north of the Mojave River | Improves constructability of alignment | S-2-2 |
| 3 | Segment 3B | Southwest of Baker at Basin Road | Avoids known resource area | S-2-3 |
| 4 | Segment 3B | Southwest of Baker | Avoids known resource area | S-2-3 |
| 5 | Segment 3B | Southwest of Baker | Moves side-running alignment closer to I-15 | S-2-3 |
| 6 | Segment 3B | Southwest of Baker, near Mojave National Preserve | Moves side-running alignment closer to I-15 | S-2-3 |
| 7 | Segment 6B | East of Sloan | Moves alignment to edge of right-of-way to accommodate potential freeway widening project. | S-2-4 |
| 8 | Segment 6B | From the Wigwam MSF site northerly to Las Vegas Central Station “B” | A 5 mile portion of this alignment would be shifted approximately 40 feet to the west; portions of this shifted alignment would be outside the I-15 right of way on lands adjacent to Industrial Road/Dean Martin Drive, owned by Clark County ; the shifted alignment would avoid potential conflicts with future improvements in the freeway corridor. | S-2-5 |

Source: CirclePoint, 2010.

Of particular note is AAA8 because of its 5-mile length. AAA8 shifts the alignment of Segment 6B approximately 40 feet to the west in unincorporated urban Clark County, between the Wigwam MSF and Central Station B. In doing so, portions of the alignment would be located outside the I-15 freeway right-of -way on right-of-way owned by Clark County in the following areas:

- Between the I-15/State Route 215 interchange and West Russell Road the alignment would be located on elevated structure along the shoulder of Industrial Road/Dean Martin Drive.

- Between West Russell Road and West Tropicana Avenue the alignment would be located on an elevated structure in the median of Industrial Road/Dean Martin Drive.
- Between West Tropicana Avenue and the Las Vegas Central Station B site the alignment would be located on an elevated structure along the shoulder of Industrial Road/Dean Martin Drive.

### 2.2.8 WIGWAM AVENUE MSF MODIFICATION

Near AAA8, the applicant has proposed a modification to the Wigwam Avenue Maintenance and Storage Facility (Wigwam MSF) that would reorient the tail tracks connecting the facility to enter/exit the MSF site from the south. The Draft EIS evaluated tail tracks into and out of the north of the MSF site. The size of the site itself is otherwise unchanged. **Figure S-2-5** shows the location of the Wigwam MSF site; **Appendix S-A-4** includes detailed facility plans.

### 2.2.9 PROFILE MODIFICATION

The Applicant has proposed a profile modification in Segment 3B near the Halloran Springs Road and I-15 interchange. **Figure S-2-3** shows the general location of this profile modification.

An approximately 1.3 mile portion of Segment 3B would be placed within a retained cut approximately 6 to 8 feet below the ground surface to reduce/avoid visual, noise, and vibration effects. The modification would also entail narrowing the rail alignment to approximately 41 feet in this area (as opposed to 60 feet in most locations). **Figure S-2-9** shows the modified cross section for the limited portion of Segment 3B.

## 2.3 NO ACTION ALTERNATIVE

Since publication of the Draft EIS, there have been several changes and updates to the No Action Alternative, including additional planned and programmed transportation improvements. Refer to **Section 2.1.3** of the Draft EIS for a full discussion of the No Action Alternative.

Consistent with the Draft EIS, the existing roadway conditions on I-15 from Victorville to Las Vegas are as follows:

- ***Victorville to SR 58 (Barstow) -*** Three lanes each way with a 4th southbound truck lane coming out of Barstow up to the summit;
- ***SR-58 to I-40 (Barstow) -*** Three lanes each way plus some auxiliary lanes,
- ***I-40 to Baker -*** Two lanes each way;
- ***Baker to California/Nevada state line -*** Two lanes each way with a truck lane northbound approaching Halloran Summit (~17 miles north of Baker) and southbound at Mountain Pass (~15 miles south of the state line);
- ***California/Nevada state line to I-215 -*** Three southbound lanes and two northbound lanes, with an additional northbound lane currently being constructed;

- ***I-215 to Flamingo Road (Clark County) -*** Three lanes each way plus auxiliary lanes; and
- ***North of Flamingo Road (Clark County and City of Las Vegas) -*** Four lanes each way.

## 2.3.1 PLANNED AND PROGRAMMED TRANSPORTATION IMPROVEMENTS

**Section 2.1.3.1** of the Draft EIS identified planned and programmed (funded) highway improvements along I-15 between Victorville and Las Vegas, by the California Department of Transportation (Caltrans) or the Nevada Department of Transportation (NDOT). Several additional planned and programmed transportation improvements have been identified since publication of the Draft EIS and are listed below. These improvements are anticipated to proceed with or without approval of the DesertXpress project. Since publication of the Draft EIS, some of the previously identified improvements have been completed. All of the planned and programmed improvements are identified below, along with their status as of August 2010.

***Caltrans***

- Widen the bridge crossing over the Mojave River in Victorville: Completed.
- Reconstruct the D Street, E Street, and South Stoddard Wells Road interchanges along I-15: Environmental review.
- Near Barstow, widen a 1-mile segment of I-15 to 6 lanes and reconstruct an I-15 interchange in Barstow. No start date at present.
- Add truck climbing lanes on I-15 in sections with steep grades. Completed east of Baker.
- High Desert Corridor roadway project, which would develop a new freeway/expressway from SR-14 to I-15: Preliminary design and environmental review.

***NDOT***

- "NEON" project: Preliminary engineering underway.
  - Reconstruct the I-15/Charleston interchange
  - Implement local access improvements
  - Add a High-Occupancy Vehicle (HOV) direct connector lane from US 95 to I-15.
- The "I-15 South" project: Preliminary engineering, right of way acquisition, and construction underway from between Silverado Boulevard and Tropicana Avenue (first phase of design-build project)[2];
  - New flyover at Blue Diamond Boulevard, new overpasses at Sunset Road, Warm Springs Road, and Pebble Road
  - New interchanges on I-15 at:

[2] Project as a whole spans from Sloan Road in the south to Tropicana Avenue in the north.

        - Bermuda Road
        - Starr Avenue
        - Cactus Road
    - Widening of:
        - I-15 mainline from Sloan Road to Blue Diamond Road (6 lanes to 10 lanes)
        - Las Vegas Boulevard
    - Reconstruct the Sloan Road and I-15 interchange.
    - New sound barriers and other improvements long I-15 corridor
- Other New I-15 Interchanges:
    - At Milepost 3 (new interchange to serve future airport): preliminary engineering, right-of-way acquisition
- Other Road Widenings:
    - I-15 between Russell Road and Sahara Avenue: widen from 8 to 10 lanes (preliminary engineering and right-of-way acquisition)
    - I-15 between I-215 and I-515: widen from 10 to 14 lanes (preliminary engineering)

## 2.3.2 PLANNED BUT UNPROGRAMMED TRANSPORTATION IMPROVEMENTS

**Section 2.1.3.2** of the Draft EIS identified several planned, but unprogrammed, transportation improvements. These improvements were understood to be in early planning phases and would be considered as part of the cumulative impact analysis. These projects are typically included in long-range transportation planning documents, (such as a Regional Transportation Plan or RTP or similar document), but are not funded in the current year (through a Regional Transportation Improvement Program or RTIP or similar).

Since publication of the Draft EIS, several additional projects within Clark County have been identified in regional transportation planning documents with a potential bearing on the DesertXpress project. These include two new roads, three road widening projects, and two other projects (Las Vegas intermodal terminal and high-occupancy toll lanes; each described below).

***Victorville***

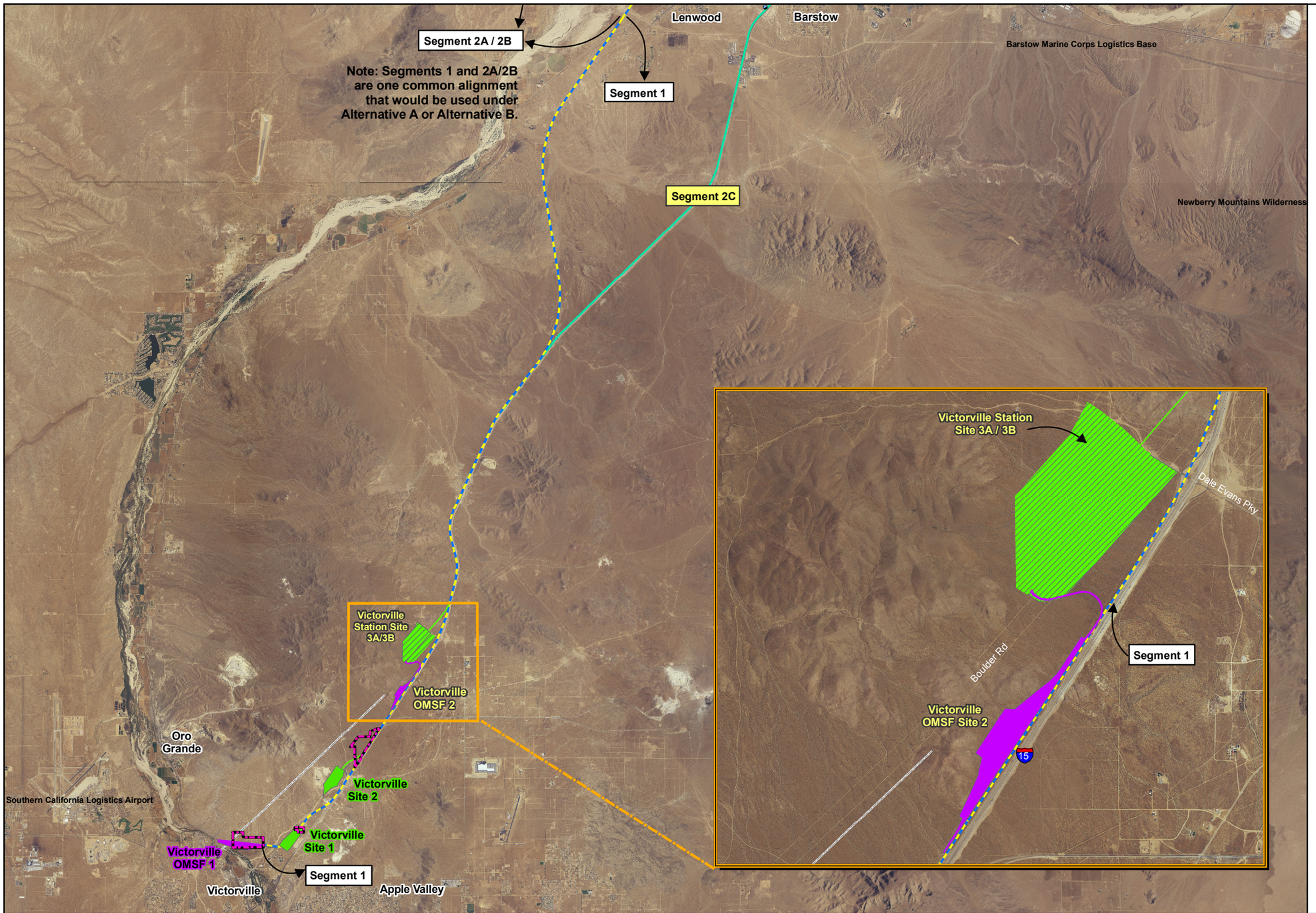
- North Mojave area specific plan

***Clark County***

- Urban Resort Corridor Study (upgrades to I-15 and parallel roadways between I-215 and US-95)
- Supplemental Commercial Airport in Ivanpah Valley
- Southern Nevada Regional Heliport
- New roads:
    - Starr Avenue: construction of a 6 lane roadway from I-15 to St. Rose Parkway

- I-15 at I-215: construction of new direct connector high-occupancy vehicle ramps

- Road widening:
  - I-15 from California state line to Sloan Road: widen from 6 to 8 lanes
  - Dean Martin Drive: widen to 4 lanes for approximately 1 mile between Blue Diamond Road and Warm Springs Road
  - Tropicana Boulevard: add 4th westbound lane between Decatur Boulevard and Polaris Avenue
- Other projects:
  - Intermodal Transport Terminal near Downtown Las Vegas
  - Las Vegas Managed Lanes Demonstration Project (trial of high occupancy toll (HOT) lanes on I-15 from the intersection of I-215 in the south to north of Downtown Las Vegas, and beyond the proposed terminus of the DesertXpress project)




## Legend

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

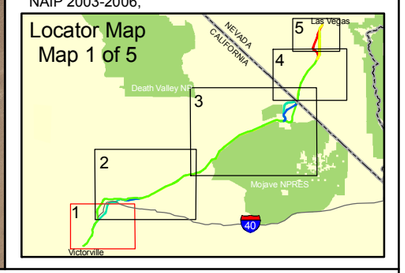
1 inch equals 3 miles

Kilometers
0 2 4

Miles
0 1.5 3

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006,

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**DesertXpress - Supplemental EIS**

***Project Modifications and Additions (1)***

**FIG S-2-1**

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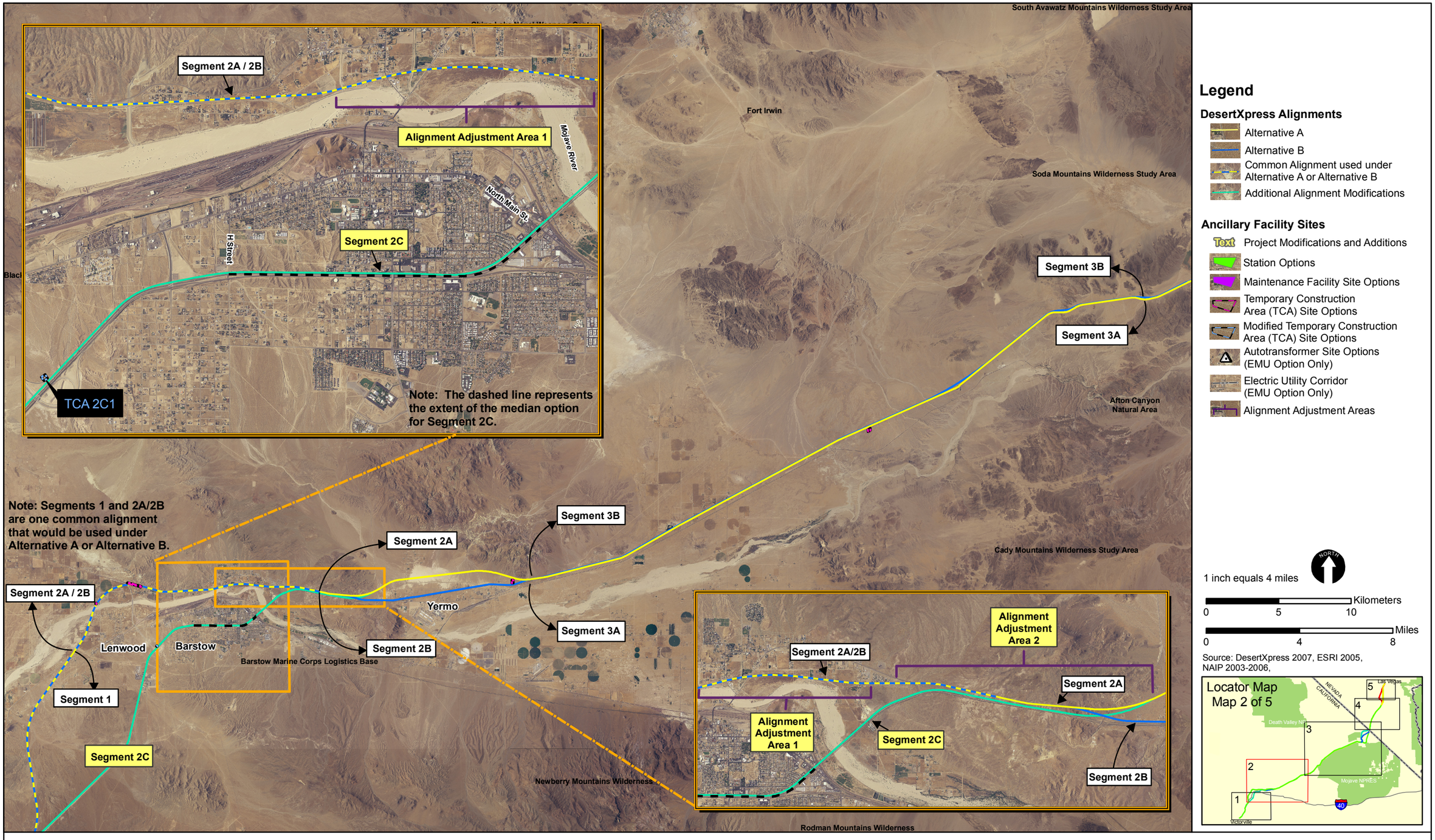


## Legend

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 4 miles

NORTH

Kilometers
0 5 10

Miles
0 4 8

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006,




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**DesertXpress - Supplemental EIS**

***Project Modifications and Additions (2)***

FIG **S-2-2**

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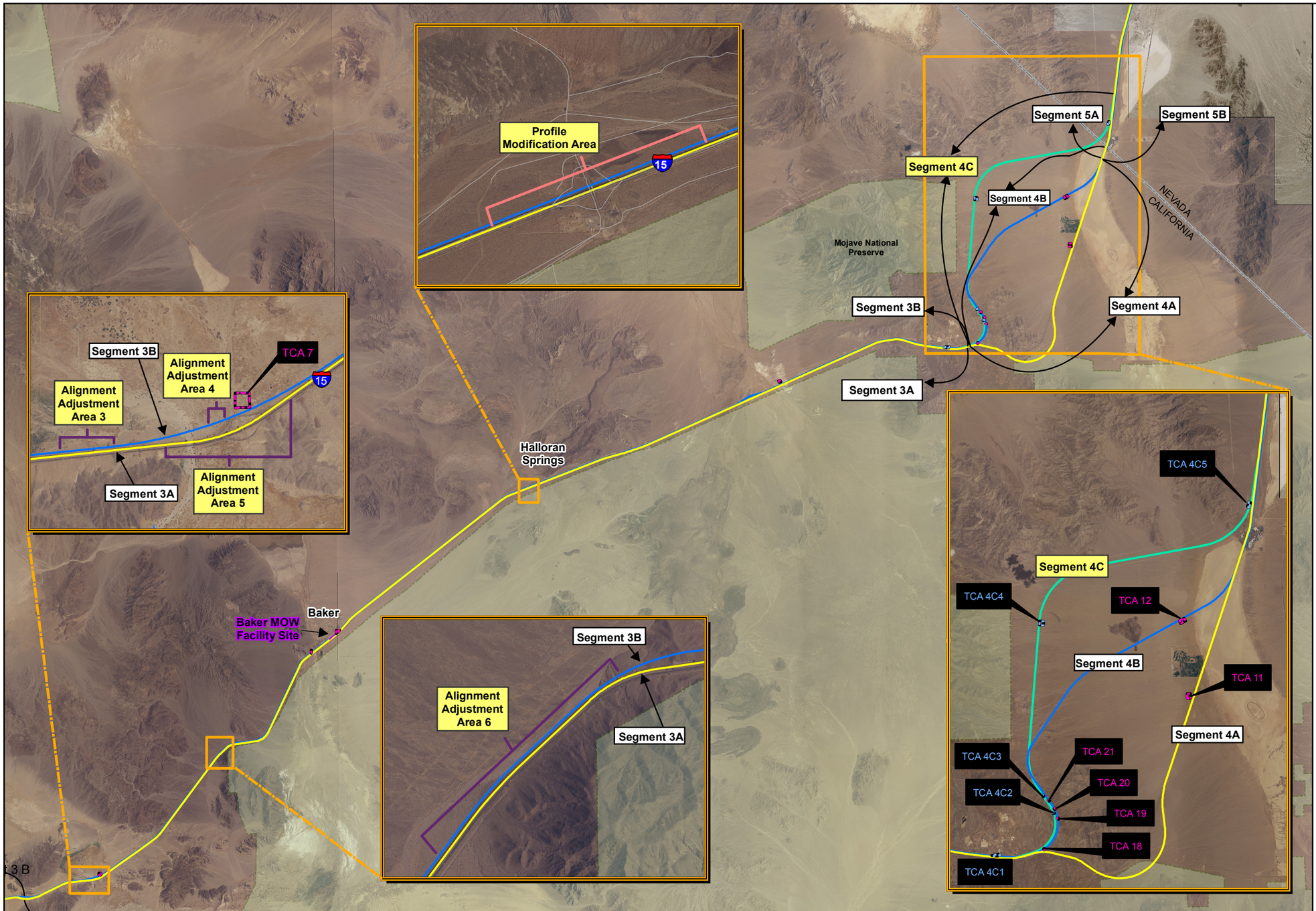


## Legend

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 5 miles

Kilometers
0 3 6

Miles
0 2.5 5

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery




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**DesertXpress - Supplemental EIS**

***Project Modifications and Additions (3)***

FIG **S-2-3**

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TCA 14

Segment 6C

Segment 6B

Segment 6A

Segment 5A

Segment 5 B

Alignment Adjustment Area 7

Segment 6C

Segment 6B

Segment 6A

Jean

Nevada

California

Primm

Former Sloan MSF and Substation Location

604

15

Relocated Sloan MSF, Substation and Utility Corridor

Segment 5A

TCA 13

Segment 5B

## Legend

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Relocation Sloan MSF / Substation Site Option
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

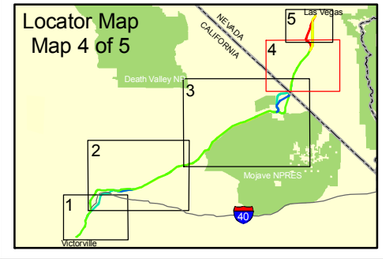
NORTH

0 2.5 5 Kilometers

0 3 6 Miles

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 4 of 5

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**DesertXpress - Supplemental EIS**

***Project Modifications and Additions (4)***

FIG **S-2-4**

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TCA 22
Las Vegas Central Station B
Segment 6 C
Segment 7 A
Segment 7 B
Segment 6 A
Las Vegas Southern Station
TCA 16
Alignment Adjustment Area 8
Segment 6 B
Segment 6 A
Robindale MSF
Wigwam MSF
Segment 7C
Las Vegas Downtown Station
Segment 7B
Segment 7A
Las Vegas Central Station A
Las Vegas Central Station B
Las Vegas Southern Station
Robindale MSF
Segment 6A
Segment 6C
Segment 6B
TCA 14
Segment 6 B
Segment 6 A
Frias Substation

## Legend

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Frias Substation and Wigwam MSF Modifications
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 2 miles

Kilometers
0 1.25 2.5

Miles
0 1 2

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 5 of 5

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**DesertXpress - Supplemental EIS**

***Project Modifications and Additions (5)***

FIG **S-2-5**

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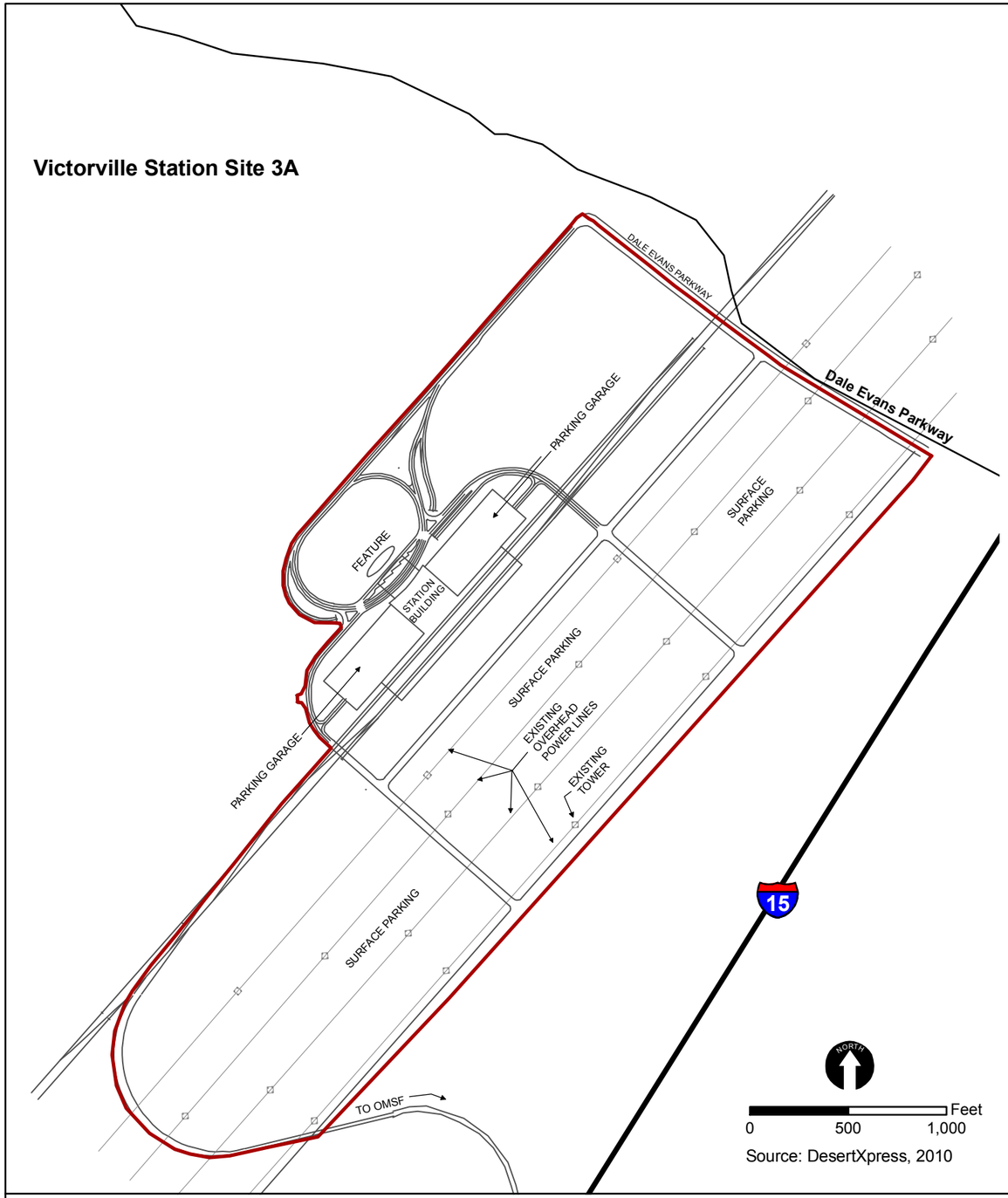
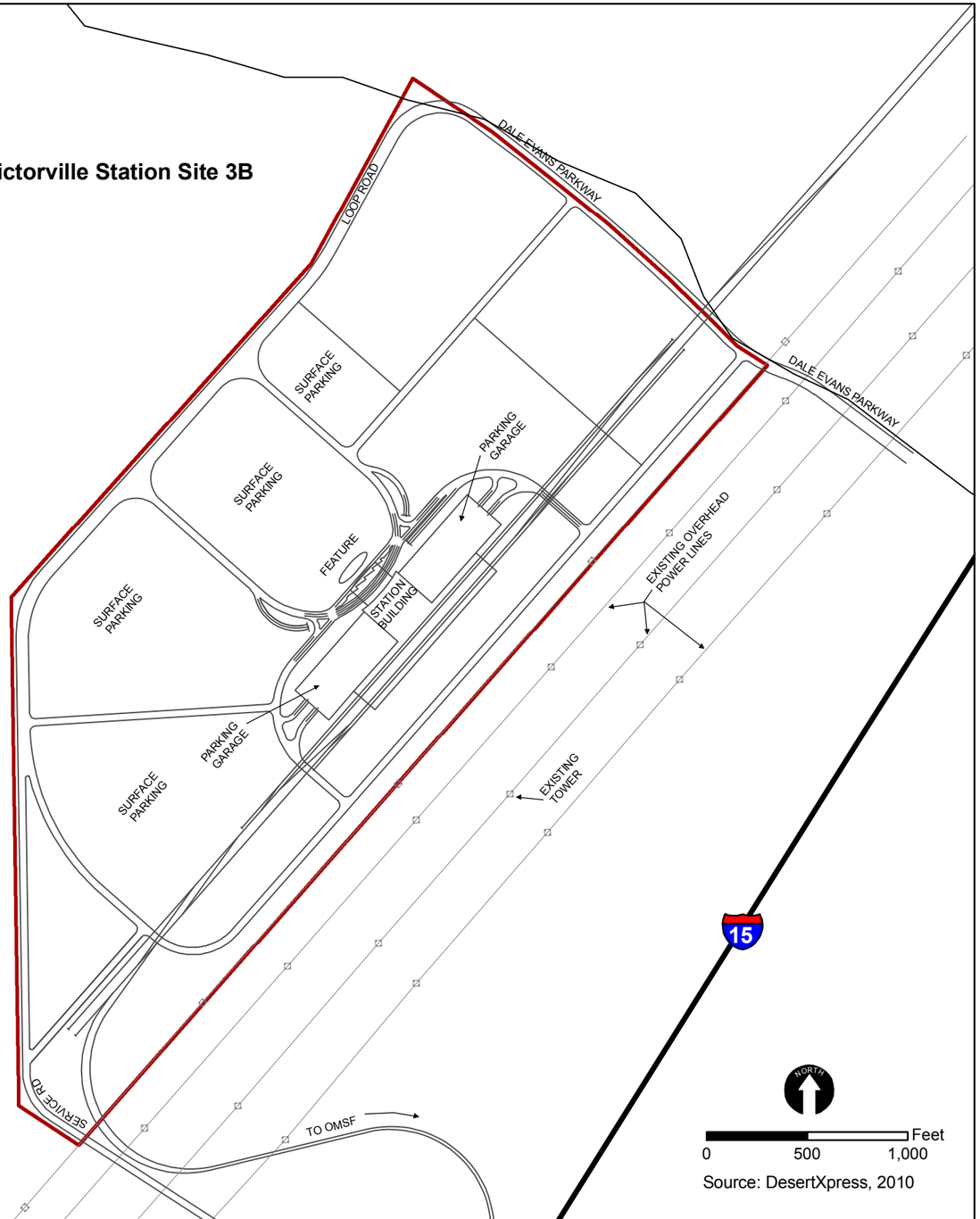
## Victorville Station Site 3A




Source: DesertXpress, 2010

## Victorville Station Site 3B




Source: DesertXpress, 2010

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**DesertXpress - Supplemental EIS**

*Victorville Station Site 3A / 3B - Site Plans*

FIG **S-2-6**

Geografika Consulting 06.09.10




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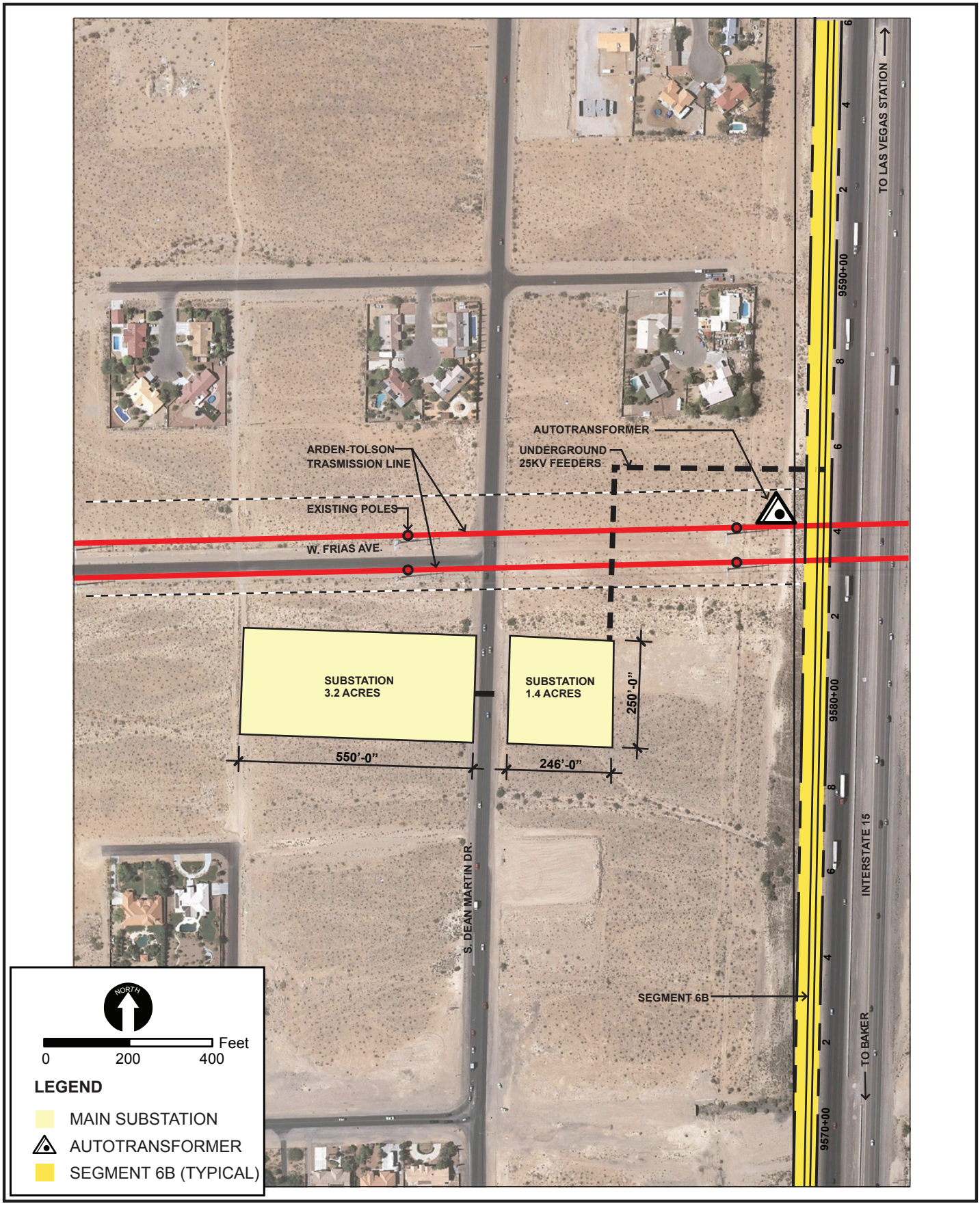
**DesertXpress - Supplemental EIS**

***Segment 2C - Median Option***

FIG **S-2-7**

Geografika Consulting 06.07.10

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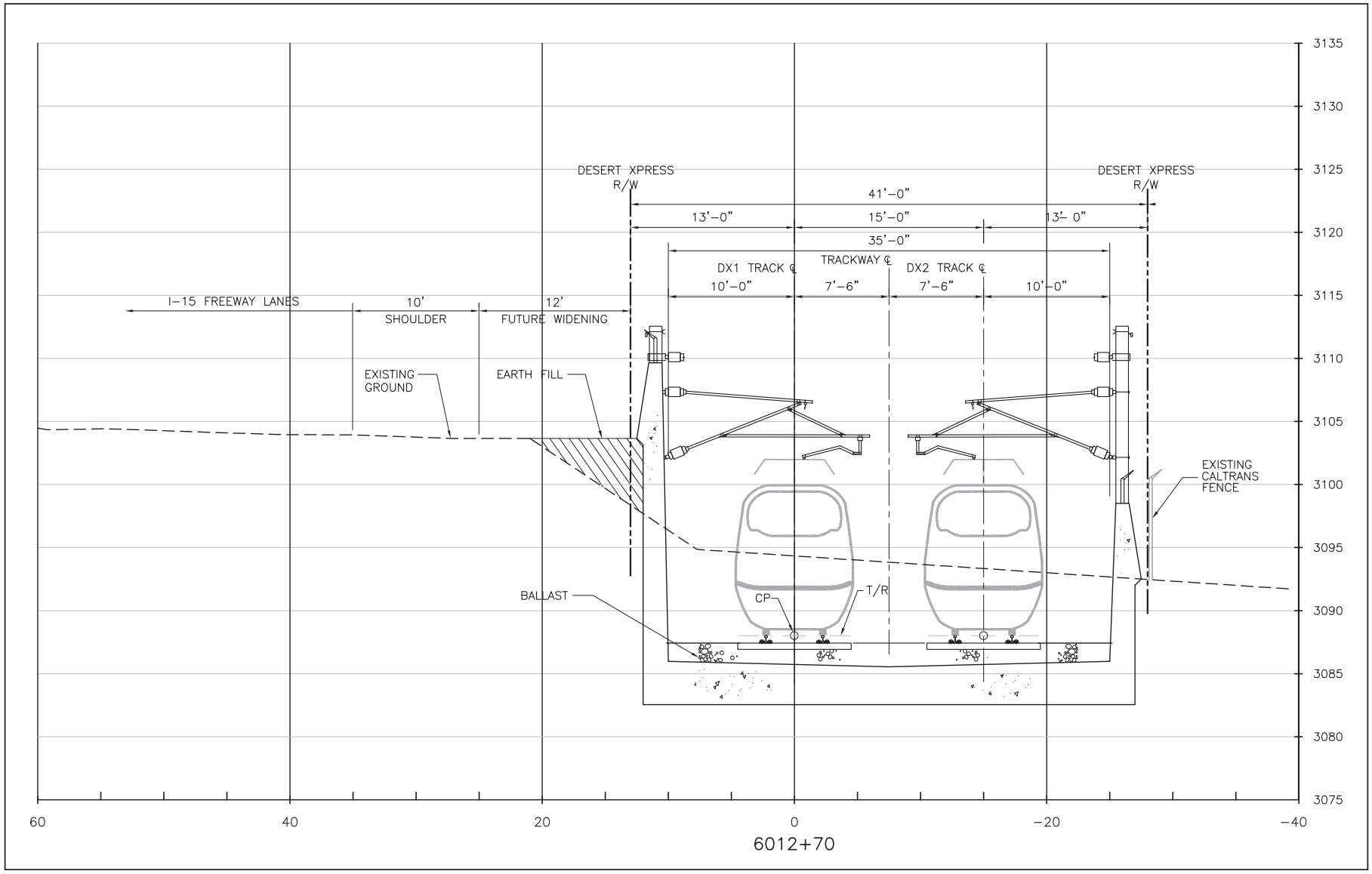
**DesertXpress - Supplemental Draft EIS**

*Frias Substation Site Plan* FIG **S-2-8**

*Source: Marnell Consulting, 2010.*

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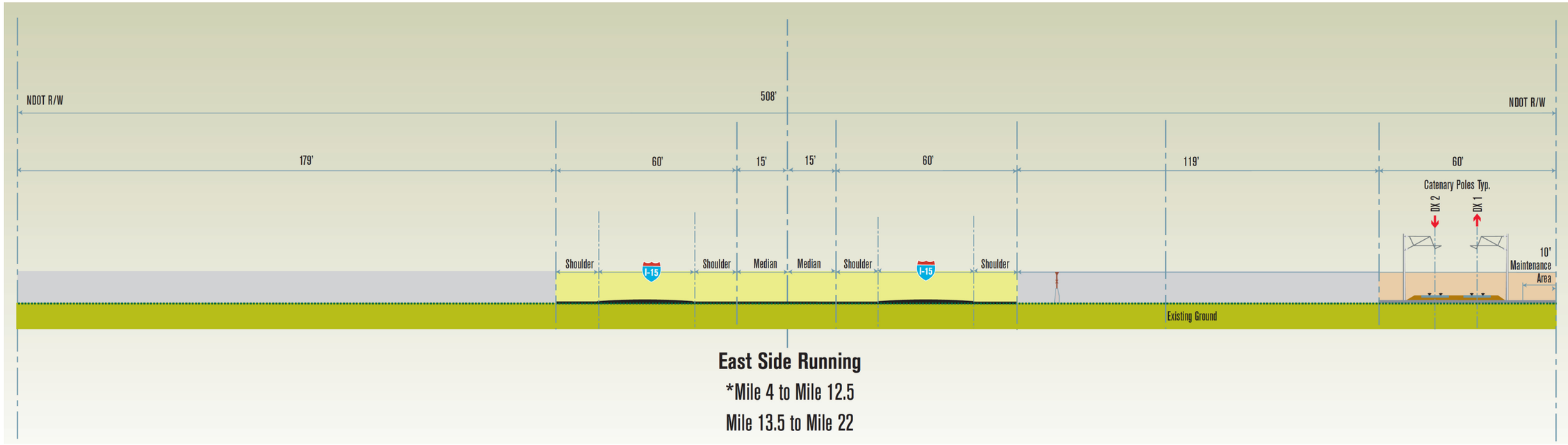
**DesertXpress - Supplemental EIS**

*Profile Modification Cross Section*

FIG **S-2-9**

*Source: AECOM, 2009.*




1 inch equals 30 feet

Feet

0 30 60

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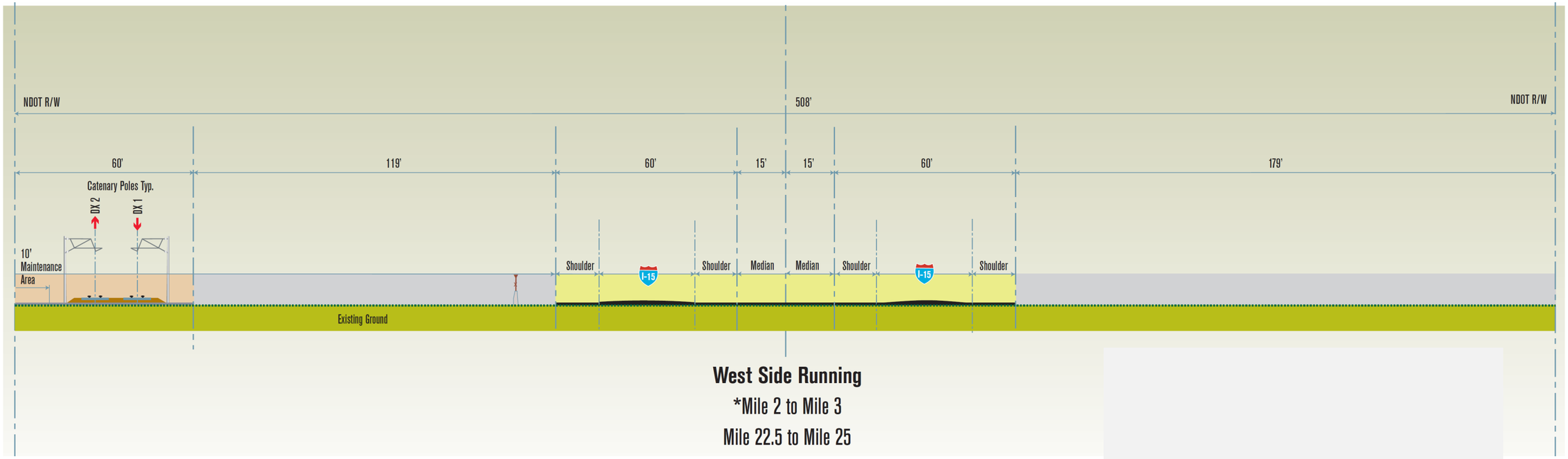
**DesertXpress - Supplemental EIS**

***Figure S-2-10: Cross Section From California/Nevada State Line at Primm to Sloan Road (East Side Running)***

FIG **S-2-10**

Geografika Consulting 08.20.10




1 inch equals 30 feet

Feet
0
30
60

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DesertXpress - Supplemental EIS

***Figure S-2-10: Cross Section From California/Nevada State Line at Primm to Sloan Road (West Side Running)***

FIG S-2-11

Geographics Consulting 08.20.10

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# 3.0 Regulatory Setting

The regulatory setting governing the affected environment of the DesertXpress project, including the new project features, has not substantially changed since the publication of the Draft EIS. However, some environmental resource areas, including growth, hydrology and water quality, and climate change, have seen minor shifts and/or amendments to the regulatory statutes. This section focuses on the regulations and planning documents that have been added or updated since publication of the Draft EIS. For all other regulations and standards that have not changed since the Draft EIS, refer to the specific environmental resource discussions within **Chapter 3.0, Affected Environment, Environmental Consequences, and Mitigation Measures**, of the Draft EIS.

## 3.0-1 GROWTH

### Southern Nevada Regional Policy Plan

As stated in **Section 3.2.1.3** of the Draft EIS, Clark County and the cities of Boulder City, Henderson, Las Vegas, and North Las Vegas comprise the Southern Nevada Regional Planning Coalition (SNRPC). The SNRPC was created to focus on the rapid growth of Clark County and the effects of this growth on education, health care, the natural environment, public safety, recreation and culture, and transportation. A summary of the SNRPC *Southern Nevada Regional Policy Plan*, as discussed below, was mistakenly omitted from **Section 3.2.1.3** of the Draft EIS, and has been added to the list of Regulations and Standards governing the affected environment of the project, including the new project features.

In 1997, the Nevada Legislature adopted Assembly Bill 493 requiring communities in the Las Vegas Valley to come together to produce a "regional policy plan" through designated Regional Planning Coalitions. As the Regional Planning Coalition for the Las Vegas Valley, the SNRPC is charged with crafting a regional plan that promotes the efficient use of land within existing urban areas, allows for the conversion of rural lands to other uses in a well-planned fashion, and promotes sustainable growth. In 2001, the SNRPC published the final *Southern Nevada Regional Policy Plan*, which includes regional planning guidelines that will be followed by Las Vegas, North Las Vegas, Henderson,

Boulder City, Clark County, the Clark County School District, regional and state agencies, and public utilities.[1] These guidelines address:

- Conservation, Open Space, and Natural Resource Protection
- Population Forecasts
- Land Use
- Transportation
- Public Facilities
- Air Quality
- Infill Development

The SNRPC subsequently sought to continue the initiatives within the *Southern Nevada Regional Policy Plan* by holding a series of Regional Growth Summit Workshops in the winter and spring of 2003. The Regional Growth Summits were designed to provide a forum for the region's elected officials to have an informed and facilitated discussion, which included an identification of principles and outcomes for moving forward in future growth planning and implementing actions. A summary of the workshops was published by SNRPC in 2004.[2]

## 3.0-2 HYDROLOGY AND WATER QUALITY

### California Watershed Improvement Act of 2009

Since the publication of the Draft EIS, the Porter-Cologne Water Quality Control Act (California Water Code, Division 7) was amended to include the provisions of the California Watershed Improvement Act of 2009. Under the Watershed Improvement Act, each county, city, or special district that is a permittee or co-permittee under a National Pollutant Discharge Elimination System (NPDES) permit for municipal separate storm sewer systems may develop a watershed improvement plan that addresses major sources of pollutants in receiving water, stormwater, urban runoff, or other surface runoff pollution within the watershed to which the plan applies. The principal purpose of a watershed improvement plan is to implement existing and future water quality requirements and regulations by identifying opportunities for stormwater detention, infiltration, use of natural treatment systems, water recycling, reuse, and supply augmentation.

[1] Southern Nevada Regional Planning Coalition (2001). *Southern Nevada Regional Policy Plan*, http://www.snrpc.org/Reports/s_nevada_plan1.pdf.

[2] Southern Nevada Regional Planning Coalition (2004). *Regional Growth Summits Report.* http://www.snrpc.org/Reports/SNRPCReport.pdf.

As of March 2010, no known watershed improvement plans have been published for the watersheds surrounding the project area.

## 3.0-3 Air Quality and Global Climate Change

### United States Environmental Protection Agency

In October 2009, United States Environmental Protection Agency (U.S. EPA) issued a Final Rule for mandatory reporting of green house gas (GHG) emissions. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufactures of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. The Final Rule went into effect on December 29, 2009, with data collection to begin on January 1, 2010, and the first annual reports due in March 2011.

This rule does not regulate the emission of GHGs; it only requires the monitoring and reporting of greenhouse gas emissions for those sources above certain thresholds.[3] EPA adopted a Final Endangerment Finding for the six defined GHGs on December 7, 2009 which was published in the Federal Register as a final rule on December 15, 2009.[4] The Endangerment Finding is required before EPA can regulate GHG emissions under Section 202(a)(1) of the federal Clean Air Act (CAA). The regulations are in response to the U.S. Supreme Court decision in *Massachusetts v. Environmental Protection Agency* 549 U.S. 497 (2007), where the Court held that the EPA has authority to regulate greenhouse gases from new motor vehicles.

[3] US EPA, October 30, 2009. 40 CFR Parts 98 Mandatory Reporting of Greenhouse Gases; Final Rule.

[4] US EPA, Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, December 15, 2009. (74 Fed. Reg. 66496.)

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# 3.1 LAND USE AND COMMUNITY IMPACTS

This section pertains to the land use implications of the project modification and additions. The section also includes an analysis of the potential community effects, including a environmental justice, and describes related mitigation measures.

## 3.1.1 AFFECTED ENVIRONMENT

Land use and community impact regulations and standards governing the affected environment of the DesertXpress project, including the new project features, have not changed since publication of the Draft EIS and thus remain applicable to the project modifications and additions. Refer to **Sections 3.1.1** and **3.1.2** of the Draft EIS for a discussion of land use and community impact regulations and standards.

### Regional Conditions

The general community demographics of Victorville, Lenwood, Barstow, Yermo, Baker, Sloan, and the Las Vegas metropolitan area have not changed since publication of the Draft EIS. No new environmental justice community designations have been established since publication of the Draft EIS since the 2000 Census data is used to identify environmental justice census blocks.

**Figures S-3.1-1** through **S-3.1-5** show the existing land ownership within the vicinity of the project modifications and additions. **Figures S-3.6-6** through **S-3.1-10** show the existing land use designations of pertinent land use planning documents. **Figure S-3.1-11** shows the Bureau of Land Management (BLM) Multiple Use Classifications within the vicinity of the project modifications and additions. **Figures S-3.1-12** and **S-3.1-13** identify the environmental justice census groups within the project region.

### Victorville Station Site 3

VV3 is located on the west side of I-15 within the jurisdiction of San Bernardino County. **Figure S-3.1-1** shows the land ownership within the vicinity of VV3. Approximately 10 percent of the VV3 site (combined physical footprint for VV3A and VV3B site options) is owned by the Federal Government and managed by the BLM; the remaining 90 percent is under private ownership.

The proposed site for VV3 is currently undeveloped and vacant, with the Victorville Refuse Disposal Site located nearby. Overhead electric transmission lines, operated by the Los Angeles Department of Water and Power (LADWP), cross over the eastern portion of the VV3A site plan, while the VV3B site plan excludes this existing LADWP utility corridor .

**Figure S-3.1-6** shows the land use designations on and within the vicinity of VV3. The San Bernardino County General Plan designates the area proposed for VV3 for residential and institutional uses.

The VV3 site is located within BLM's West Mojave Plan, which defines a regional strategy for conserving plant and animal species and their habitats and an efficient, equitable, and cost-effective process for complying with threatened and endangered species laws.[1] The BLM, however, has not assigned a Multiple Use Classification to the VV3 site. The BLM established Multiple Use Classifications to specify the type of use permitted on the land base upon the sensitivity of resources within the geographic area.

VV3 would also be located near several BLM mining claims in the mountainous area north of the site. Dirt roads leading away from Dale Evans Parkway provide access to BLM mining claims in this area. The actual location and physical footprint of the mining activities is not recorded by BLM and is thus not available for detailed analysis.

**Figure S-3.1-12** shows the location of the VV3 site which is within two census blocks meeting the minority and low-income criteria for evaluation of environmental justice impacts.

### OMSF 2

Since the publication of the Draft EIS, there has been no change to the location, land ownership pattern, or existing land uses at the OMSF 2 site. OMSF 2 would still be located on and surrounded by undeveloped lands. **Figure S-3.1-1** illustrates the land ownership for the OMSF 2 site and **Figure S-3.1-6** shows the land use designations on and surrounding the OMSF 2 site. **Figure S-3.1-12** shows that OMSF 2, as revised, would not be located within an environmental justice census block.

### Segment 2C

Segment 2C would travel through the communities of Lenwood, Barstow, and Yermo along the I-15 freeway corridor. Segment 2C would be located on lands within the California Department of Transportation (Caltrans) right-of-way. Adjacent lands are a combination of private lands and lands under the management of the BLM. **Figure S-3.1-2** shows the land ownership within the vicinity of the Segment 2C. Due to the scale of **Figure S-3.1-2**, it is difficult to show the precise boundary of the Caltrans right-of-way (ranging generally from 300 to 500 feet in width) for the I-15 freeway corridor. For more information refer to **Appendix S-A-1**, which contains detailed plan and profile drawings for Segment 2C.

Existing lands immediately adjacent to the I-15 corridor outside of Lenwood, Barstow, and Yermo are primarily undeveloped and vacant. Within these communities, existing commercial, residential, and industrial developments are located immediately adjacent to both sides of the I-15 freeway corridor, and thus the proposed Segment 2C rail alignments.

[1] BLM, Land Use Planning. West Mojave Plan. 2006.

**Figure S-3.1-7** shows the land use designations along Segment 2C. Segment 2C would be located within the BLM West Mojave Plan. There is no BLM Multiple Use Classification for lands in the vicinity of Segment 2C.

As shown in **Figure S-3.1-12**, Segment 2C would cross through two census blocks meeting the criteria for evaluation of environmental justice impacts.

### Segment 4C

Segment 4C would be located in an undeveloped area of the desert, traversing through the Clark Mountain range. As shown on **Figure S-3.1-3**, Segment 4C would be located on lands under the ownership of the BLM and the State of California. The northern portion of Segment 4C would parallel an existing utility corridor, with overhead electric transmission lines above ground and several utilities underground.

**Figure S-3.1-8** shows the land use designations in the vicinity of Segment 4C. Within California, San Bernardino County has designated lands within the vicinity of Segment 4C for institutional use. Within Nevada, Clark County has designated lands within the vicinity of Segment 4C for residential use. Segment 4C would be located within the BLM Northern and Eastern Mojave Plan area.

As shown in **Figure S-3.1-11**, Segment 4C would traverse through BLM land designated for Multiple-Use Classes under the California Desert Conservation Area Plan. Segment 4C would travel through lands designated as Class M and Class L. Class M lands provide for a wide variety of uses, including mining, livestock grazing, recreation, energy, and utility development, as well as to conserve desert resources. Class L lands are managed to provide for generally lower-intensity, carefully controlled multiple use of resources (including limited human use), while ensuring that sensitive natural, scenic, ecological, and cultural resource values are not significantly diminished.

As shown on **Figure S-3.1-12**, Segment 4C would also traverse one census block with a minority population that meets the criteria for evaluation of environmental justice impacts. All of the Segment 4 alignment options would cross this census block, which covers an area north of I-15 of about 40 miles in length, where there are no concentrated areas of human settlement. Notably, the census block group excludes the only substantial community in the vicinity of Segment 4 (the community of Baker), which is about 30 miles east of the various Segment 4 rail alignment routings.

### Relocated Sloan MSF

The Relocated Sloan MSF (RSMSF) site is located on the east side of I-15, about 9 miles south of Sloan Road. The RSMSF site is located on BLM managed lands. **Figure S-3.1-4** shows the current land ownership on and within the vicinity of the RSMSF site. Adjacent land uses include undeveloped, vacant lands. The closest residential development is located 9 miles to the north.

Clark County has designated the RSMSF site for residential land uses. The RSMSF is also located within the BLM Las Vegas Field Office Resource Management Planning Area. **Figure S-3.1-9** shows the land use designations on and within the vicinity of the RSMSF. The BLM has not designated a Multiple Use Classification for the RSMSF site or surrounding lands.

As shown in **Figure S-3.1-13**, the RSMSF site is not located within or adjacent to any census blocks meeting environmental justice criteria.

### Frias Substation

As shown on **Figure S-3.1-5**, the Frias Substation site is located on lands under the management of the BLM. The Frias Substation site is undeveloped and vacant. Existing land uses surrounding the site include overhead electric transmission lines (owned by Nevada Energy) immediately to the north, single-family residential homes to the north and west, and the I-15 freeway corridor to the east. Dean Martin Drive is located between the two portions of the Frias Substation site.

The Frias Substation is located within Clark County's Enterprise Regional Land Use Plan, which is part of the Clark County Comprehensive Plan. **Figure 3.2-4** of the Draft EIS shows the location and boundary of the Enterprise Regional Land Use Plan.

**Figure S-3.1-10** shows the Enterprise Regional Land Use Plan designations for the Frias Substation site. The Enterprise Regional Land Use Plan designates the eastern portion of the Frias Substation site as Business and Design Research Park. The Enterprise Regional Land Use Plan designates the western portion of the site as Residential. The Frias Substation site is also located within the BLM Las Vegas Field Office Resource Management Plan Area.

As shown in **Figure S-3.1-13**, the Frias Substation site is not located within a census block meeting environmental justice criteria.

### Alignment Adjustment Areas

AAAs1 through 8 would involve only a minor shifting of the rail alignment or profile for Segment 2A/2B, Segment 3B, and Segment 6B. **Table S-3.1-1** summarizes the land ownership, adjacent land uses, land use designations, and environmental justice communities for each AAA.

***AAAs 1 through 7:*** AAAs 1 through 7 would not shift the rail alignments into any new land use designations or new types of adjacent land uses than what was presented in the Draft EIS.

AAAs 1 through 7 would not shift the rail alignments through any environmental justice census blocks not previously evaluated for each respective rail alignment in the Draft EIS.

Table S-3.1-1 Existing Land Use Summary – AAAs

| AAAs and Affected Segment | Land Ownership | Adjacent Land Uses | Land Use Designations | Environmental Justice Census Block |
|---|---|---|---|---|
| AAA 1 (Segment 2A/2B) | Private | Residential, Commercial, Vacant | Residential, Commercial, Institutional | None |
| AAA 2 (Segment 2A/2B) | BLM, Private | Residential, Commercial, Vacant | Residential, Institutional | None |
| AAA 3 (Segment 3B) | BLM, Private | Vacant, Transportation Corridor | Residential, Institutional | 1 – Minority |
| AAA 4 (Segment 3B) | Private | Vacant, Transportation Corridor | Residential | 1 – Minority |
| AAA 5 (Segment 3B) | BLM, Private | Vacant, Transportation Corridor | Residential, Institutional | 1 – Minority |
| AAA 6 (Segment 3B) | BLM | Vacant, Transportation Corridor | Institutional | 1 - Minority |
| AAA 7 (Segment 6B) | BLM, Private | Vacant, Transportation Corridor | Residential, Planned Development/Mixed-Use | None |
| AAA 8 (Segment 6B) | Private | Commercial, Industrial, Hotel/Motel, Transportation Corridor | Commercial | 1 - Minority |

Source: CirclePoint, 2010.

***AAA 8:*** AAA 8 would shift portions of the Segment 6B rail alignment outside of the Nevada Department of Transportation (NDOT) right-of-way for I-15 and into a Clark County owned right-of-way on Dean Martin Drive/Industrial Road. AAA 8 would diverge from the NDOT right-of-way in 3 locations:

- Between West Sunset Road and West Patrick Lane
- Between Hacienda Avenue and Tropicana Avenue
- Between Tropicana Avenue to St. Harmon Avenue

However, AAA 8 would not shift the rail alignment into any new land use designations or new types of adjacent land uses than what was presented in the Draft EIS. South of East Sunset Road, AAA 8 would shift portions of Segment 6B within Clark County's Enterprise Regional Land Use Plan and would be located on and adjacent to lands designated for residential, industrial, and civic use. North of East Sunset Road, AAA 8 would shift portions of Segment 6B within Clark County's Winchester/Paradise Land Use Plan near industrial, commercial, and planned development land use designations.[2] The draft version of the Winchester/Paradise Land Use Plan was published in May 2010 and has not yet been formally adopted by Clark County.

[2] Winchester/Paradise Land Use Plan, Clark County, April 2010.

Adjacent land uses include commercial, industrial, and limited residential developments. Where AAA 8 would shift portions of Segment 6B outside of NDOT right-of-way between Hacienda Avenue and Tropicana Avenue, the rail alignment would be located within the median of a local transportation corridor – Dean Martin Drive/Industrial Road.

AAA8 would shift portions of Segment 6B within census blocks meeting the minority and poverty population criteria for evaluation of environmental justice impacts. As shown in **Figures 3-1.19** and **3-1.20** of the Draft EIS, Segment 6B would cross three environmental justice census blocks, two of which meet the minority population criteria, and the third meeting the poverty criteria. The alignment shift associated with AAA8 would not alter Segment 6B's traversing of these census blocks.

**Wigwam MSF Modification**

The orientation of the Wigwam MSF site has been modified, but the location of the Wigwam MSF site has not changed. As such, the existing land ownership and land use designations have not changed from what is presented in **Section 3.1.3.2** the Draft EIS. **Figure S-3.1-5** illustrates the land ownership for the Wigwam MSF site and **Figure S-3.1-10** shows the land use designations on and surrounding the Wigwam MSF site. As shown in **Figure S-3.1-13**, the Wigwam MSF site is not located within a census block meeting the criteria for evaluation of environmental justice impacts.

**Profile Modification**

The Segment 3B profile modification would not relocate the rail alignment from its location previously evaluated in **Section 3.1.3.2** of the Draft EIS. While the Profile Modification would result in a vertical change in the elevation of the rail alignment to a depressed section, no horizontal change in the location of the rail alignment would occur. Refer to **Section 3.1.3** of the Draft EIS for a discussion of the existing and designated land uses within the vicinity of Segment 3B.

## 3.1.2 Methods of Evaluation of Impacts

The methodology described in **Section 3.1.3.3** of the Draft EIS was used to evaluate potential land use and environmental justice impacts of the project modifications and additions. **Table S-3.1-2** shows the compatibility of various land use types for each of the proposed project modifications and additions. **Table S-3.1-3** shows the applicable compatibility of land use designations for each of the project modifications and additions.

An adverse effect related to land use or community character would occur if the project modifications and/or additions:

- Interfere with the normal functioning of adjacent land uses
- Conflict with any applicable land use plan, policy, or regulation
- Cause displacement of a significant number of local residents

- Disrupt or sever community interactions or otherwise divide an established community

The analysis also considers impacts to environmental justice communities. A census block meeting the criteria for environmental justice analysis is defined as having a low-income population of greater than 25 percent or a minority population greater than 50 percent of the total community population. A census block also meets the criteria for environmental justice analysis if the low-income and/or minority population is more than 10 percentage points higher than the city or county average. In order to identify census blocks meeting these criteria, the 2000 Census block groups within a two-mile radius were examined.

Table S-3.1-2 Compatibility with Adjacent Land Uses

| Project Feature Type | Level of Compatibility | | |
|---|---|---|---|
| | High | Medium | Low |
| Rail Alignments, Utility Corridors | Transportation corridors, utility corridors, institutional land uses, vacant/undeveloped lands, airports, BLM Multiple Use Class I designated land | Agricultural lands, medium to high intensity commercial development, hotels/casinos, administrative/professional uses, BLM Multiple Use Class M designated land | Residential land uses, habitat/open space conservation areas, schools, hospitals, parks/recreational use, BLM Multiple Use Class L and C designated land |
| Stations/Maintenance Facilities, Temporary Construction Areas | Commercial/industrial land uses, business parks, transportation corridors, utility corridors, agricultural lands, vacant/undeveloped lands, airports, landfills, BLM Multiple Use Class I designated land | Residential land uses, BLM Multiple Use Class M designated land | Habitat/open space conservation areas, schools, parks/recreational use, BLM Multiple Use Class L and C designated land |

Source: CirclePoint, 2010.

Table S-3.1-3 Compatibility with Land Use Designations

| Project Feature Type | Level of Compatibility | | |
|---|---|---|---|
| | High | Medium | Low |
| Rail Alignments, Utility Corridors | Institutional/Public Facilities, Industrial, Restrictive, Hotel/Casino, Desert/Mountain | Commercial, Agricultural, Business and Design Research | Residential |
| Stations/Maintenance Facilities, Temporary Construction Areas | Institutional/Public Facilities, Commercial, Industrial, Hotel/Casino, Commercial, Business and Design Research | Residential, Restrictive | Agricultural |

Source: CirclePoint, 2010.

An adverse effect related to environmental justice would occur if:

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

STB issued a declaratory order on June 25, 2007 regarding STB's authority under 49 U.S.C. 10901. In this order, STB found the project to be exempt from state and local land use and environmental regulations, including the California Environmental Quality Act (CEQA) and local/regional zoning ordinances. Therefore, similar to the action alternatives evaluated in the Draft EIS, the project modifications and additions would not be subject to local land use plans. Thus, consistency with local policies is not required. Notwithstanding, an analysis of consistency with existing land use designations was conducted.

The project would be allowed under various county land use designations and zoning districts because it is a transportation facility that will be available to the public. The San Bernardino General Plan specifically allows public transportation uses in various land use districts.[3] The project modifications and additions would not change this determination. Additionally, Clark County planning staff indicated that there are no goals or policies within the Clark County Comprehensive Plan that would specifically limit construction or implementation of the project features.[4]

## 3.1.3 Environmental Consequences

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. The discussions below consider the project modifications and additions per these criteria.

### Victorville Station Site 3

*Interference with Normal Functioning of Adjacent Land Uses*

VV3 would not interfere with the normal functioning of adjacent land uses insofar as adjacent lands are undeveloped and vacant. VV3 would have high compatibility with the existing vacant land uses.

[3] John Schatz, San Bernardino County Planning Department. Personal Communication, July 2007.

[4] Bob Klein, Clark County Planning Department. Personal Communication, July 2007.

*Conflict with Applicable Land Use Plans*

VV3 would have high compatibility with the institutional land use designations and low compatibility with the residential land use designations.

VV3A would place parking areas under an existing overhead electrical utility corridor owned and operated by LADWP. Parking may result in a conflict with LADWP's utility corridor. The VV3B site option would avoid the LADWP utility corridor by placing parking areas north and west of the station building. See **Section 3.4.4.6** for further discussion of this issue.

VV3 would be located immediately adjacent to access roads for several BLM mining claims located to the north of the site. Access to the dirt roads that extend from Dale Evans Parkway and provide access to the BLM mining claims north of the VV3 site would be maintained.

*Cause Displacement of a Significant Number of Local Residents and/or Disrupt or Sever Community Interactions or Otherwise Divide an Established Community*

VV3 would be constructed on currently vacant land and would not displace any residence or business or sever an established community.

*Result in Environmental Effects Disproportionately Borne by a Low-Income or Minority Population*

VV3 would be located within two census blocks meeting the minority and low-income population criteria for evaluation of environmental justice impacts. However, VV3 would be located in a portion of these census blocks that is currently undeveloped. There are no residences or community facilities within 1 mile of the VV3 site. Thus, VV3 would not present potential direct or indirect adverse effects to environmental justice communities.

**OMSF 2**

*Potential Direct and Indirect Effects on Land Use and the Community*

Since the location of the facility has not changed and the size of the facility has been reduced, the potential land use impacts of the OMSF 2 facility would be the same as those discussed in **Section 3.1.4.2** of the Draft EIS.

**Segment 2C**

*Interference with Normal Functioning of Adjacent Land Uses*

Segment 2C would be located within the existing I-15 freeway corridor and therefore has no direct effect on the functioning of adjacent lands. Intensifying the use of the I-15 freeway corridor would have a medium to low compatibility with the adjacent industrial/commercial and residential developments, respectively. Within Barstow, the

Segment 2C Side Running alignment option could result in greater interference with the adjacent land uses due to its slightly closer placement to the existing urban development north of the I-15 freeway.

*Conflict with Applicable Land Use Plans*

Because both alignment options for Segment 2C would be located within the existing Caltrans right-of-way for the I-15 freeway corridor, Segment 2C would not result in direct conflicts with applicable land use plans and designations. However, the Segment 2C alignment options would result in an intensification of the use of the I-15 corridor. This intensification could result in minor conflicts with land use designations, particularly in areas designated for residential use.

Notably, the Segment 2C alignment options would avoid potential conflicts associated with Segment 2A/2B which would traverse lands designated by the City of Barstow for Industrial Park development in Lenwood (located on the west side of Lenwood Road north of the Burlington Northern & Santa Fe Railway tracks).

*Cause Displacement of a Significant Number of Local Residents*

Since the Segment 2C alignment options would be located within the I-15 corridor, Segment 2C would not displace any residence or business.

Segment 2C could result in indirect noise effects associated with the high-speed train passby. The Segment 2C Side Running alignment option would have the potential for slightly greater indirect noise impacts since the rail alignment would be in closer proximity to the existing residential developments. Refer to **Section 3.12, Noise and Vibration**, for a discussion of noise effects associated with the Segment 2C alignment options.

*Disrupt or Sever Community Interactions or Otherwise Divide an Established Community*

Barstow is already divided by the I-15 freeway corridor. Several local roadways span over the I-15 freeway. Because Segment 2C would be located within the I-15 right of way and involve no changes to local roadways, it would not contribute to further severance of the community or otherwise disrupt community interactions.

*Result in Environmental Effects Disproportionately Borne by a Low-Income or Minority Population*

Through Barstow, Segment 2C would cross through two census blocks identified as having low-income and minority populations that meet the criteria for evaluation of environmental justice impacts. However, Segment 2C would not result in the displacement of any residence or business. Existing populations within these census blocks are already exposed to substantial transportation infrastructure (i.e., I-15) and the associated traffic, noise, air quality, and aesthetic effects. Segment 2C would intensify the

use of the I-15 freeway corridor which could result in increased indirect effects on these populations in the form of increased noise and air pollution levels. Noise impacts would be similar under both technology options under consideration (DEMU or EMU). When comparing existing and expected future air quality conditions through the entire project corridor, both the DEMU and the EMU options would result in beneficial air quality impacts relative to taking no action, insofar as both would divert automobile traffic to train use. However, the EMU option would result in substantially greater beneficial effects on local air quality relative to the DEMU option due to the avoidance of air quality effects related to the diesel fuel need to operate the high-speed trains. Overall, no adverse effect on environmental justice populations would occur.

### Segment 4C

*Potential Direct and Indirect Effects on Land Use and the Community*

Segment 4C would have high compatibility with the existing vacant lands and high to low compatibility with the institutional and residential land use designations, respectively. Segment 4C would also have high compatibility with the BLM Class M lands and low compatibility with the BLM Class L lands. Segment 4C would not displace any residence or business, nor sever an established community due to the undeveloped nature of the area it would cross. Segment 4C would have similar effects on environmental justice populations as Segment 4B because it traverses through the same census block. However, development within this census block is sparse and is concentrated well outside the vicinity of the Segment 4 rail alignment options. No adverse effect on environmental justice populations would occur.

### Relocated Sloan MSF

*Interference with Normal Functioning of Adjacent Land Uses*

The RSMSF would not interfere with the normal function of adjacent land uses due to the undeveloped and vacant nature of the surrounding area. The RSMSF would have high compatibility with the existing vacant land uses.

*Conflict with Applicable Land Use Plans*

As discussed in **Chapter 2.0, Alternatives**, the Applicant proposed the RSMSF in response to public comment from the Clark County Department of Aviation (CCDOA). The CCDOA identified potential adverse conflicts between the Sloan Road MSF as evaluated in the Draft EIS and the proposed "super arterial" that would provide vehicular access to the planned Southern Nevada Supplemental Airport near Primm. As a result, the Applicant relocated the RSMSF approximately 2 miles south of the Sloan Road MSF to avoid potential conflicts with future planned airport-related uses. The RSMSF would have high compatibility with the existing undeveloped, vacant lands and low compatibility with the residential land use designations under the Clark County Comprehensive Plan.

*Cause Displacement of a Significant Number of Local Residents and/or Disrupt or Sever Community Interactions or Otherwise Divide an Established Community*

The RSMSF would be located on land currently vacant and undeveloped and therefore would not result in the displacement of any residence or business or community severance.

*Result in Environmental Effects Disproportionately Borne by a Low-Income or Minority Population*

The RSMSF would not be located within an environmental justice census block and would therefore not result in any direct or indirect adverse effects to an environmental justice community.

**Frias Substation**

*Interference with Normal Functioning of Adjacent Land Uses*

As the Frias Substation would be located on vacant land, the substation would have high compatibility with existing lands on the proposed site. However, the Frias Substation would have medium compatibility with the residential development approximately 300 feet to the north and south.

*Conflict with Applicable Land Use Plans*

The Frias Substation would have medium compatibility with the residential land use designations on the west side of Dean Martin Drive and high compatibility with the Business and Design Research land use designations to the east of Dean Martin Drive.

*Cause Displacement of a Significant Number of Local Residents and/or Disrupt or Sever Community Interactions or Otherwise Divide an Established Community*

While the Frias Substation would be within proximity of existing single family homes, the site itself is currently vacant. Development of the Frias Substation would not result in the displacement of any residence or business nor sever an established community. Further, due to its location south of existing residential developments, the Frias Substation would not place a barrier or built feature between existing groups of homes and/or businesses. The Frias Substation would not interrupt the access along Dean Martin Drive. Thus, no adverse effects would occur in regards to displacement or community severance.

*Result in Environmental Effects Disproportionately Borne by a Low-Income or Minority Population*

The Frias Substation would not be located within an environmental justice census block and would therefore not result in any direct or indirect adverse effects to an environmental justice community.

### Alignment Adjustment Areas

*Conflict with Adjacent Land Uses and Land Use Plans and Displacement and Community Severance*

The AAAs would not present any changes in land use compatibility and would not result in the displacement of any residence or business or severance of an existing community. A summary of the AAAs is provided below.

- ***AAAs 1 and 2:*** AAAs 1 and 2 would move Segment 2A/2B about 200 feet to the south and thus farther away from residential areas north of the Mojave River on Poplar Street in the greater Barstow area. This adjustment would slightly improve the compatibility with existing adjacent residential and commercial land uses.
- ***AAAs 3 through 6:*** AAAs 3 through 6 would shift portions of Segment 3B immediately adjacent to the I-15 corridor between Yermo and Baker, without incurring any additional land use changes. These adjustments would occur well outside of any established communities and thus have no impact relative to severance or community disruption.
- ***AAA 7:*** AAA 7 would shift Segment 6B to the outside (western) edge of the freeway right of way so as to better accommodate potential future widening of I-15. Nearly all of the land adjacent to the west of Segment 6B is designated for residential use. The only area proximate to Segment 6B currently in residential use is north and west of Robert Trent Jones Lane, a minimum distance of 1,000 feet from the I-15 corridor. Due to this distance, the modified rail alignment would not result in any interference with existing land uses nor in any community severance or disruption.
- ***AAA 8:*** AAA 8 would shift portions of Segment 6B outside of the NDOT right-of-way and into the adjacent Clark County right-of-way on Dean Martin Drive/Industrial Road. This adjustment would have high compatibility with the existing industrial developments, medium compatibility with the hotels/motels and commercial developments, and low compatibility with the nearby residential developments.

  In regards to land use designations, Segment 6B would continue to have medium compatibility with the commercial and high compatibility with the industrial land use designations with implementation of AAA 8.

  While the rail alignment would be shifted to the west towards existing industrial, commercial, residential, and hotel/motel developments, the adjustment associated with AAA 8 would remain within existing transportation corridors and no residential or business displacements would occur. Where the alignment adjustment would traverse within the median of Dean Martin Drive/Industrial Road (between Hacienda Avenue and Tropicana Avenue), access to existing roadways and properties would be maintained. Therefore, no severance of an existing community would occur.

*Result in Environmental Effects Disproportionately Borne by a Low-Income or Minority Population*

- ***AAAs 1 and 2:*** AAAs 1 and 2 would not shift portions of Segment 2A/2B within an environmental justice census block and would not result in any direct or indirect adverse effects to an environmental justice community.
- ***AAAs 3 through 6:*** AAAs 3 through 6 would shift portions of Segment 3B within the same two environmental justice census blocks as those identified for Segment 3B in the Draft EIS. Since the alignment adjustments would continue to follow the existing I-15 corridor, they would not introduce substantial new impacts to environmental justice areas to those analyzed in the Draft EIS.
- ***AAA 7:*** AAA 7 would not shift portions of Segment 6B within an environmental justice census block and would not result in any direct or indirect adverse effects to an environmental justice community.
- ***AAA 8:*** AAAs 8 would shift portions of Segment 6B within the same environmental justice census block as identified for Segment 6B in the Draft EIS. Since the alignment adjustment would continue to be located within existing transportation corridors (I-15 and Dean Martin Drive/Industrial Road), they would not introduce substantial new impacts to environmental justice areas.

**Wigwam MSF Modification**

*Interference with Normal Functioning of Adjacent Land Uses*

The location of the Wigwam MSF has not changed since publication of the Draft EIS. The Wigwam MSF Modification would maintain high compatibility with adjacent industrial uses, but medium compatibility with nearby residential uses.

*Conflict with Applicable Land Use Plans*

The Wigwam MSF Modification would not result in additional or new conflicts to applicable land use plans from what was evaluated in the Draft EIS. The Wigwam MSF would maintain high compatibility with Clark County's planned development/mixed-use land use designations and medium compatibility with the commercial land use designations.

*Cause Displacement of a Significant Number of Local Residents*

The modification of the trackway connection to the Wigwam MSF (from the northern end to the southern end) would result in the displacement of one additional business not previously affected by the Wigwam MSF evaluated in the Draft EIS. The Wigwam MSF Modification would continue to result in the displacement of the Southwest Rock and Landscape business (3020 West Wigwam Avenue) and would further result in the displacement of the Little Baja Garden and Design business (3033 West Ford Avenue).

*Disrupt or Sever Community Interactions or Otherwise Divide an Established Community*

The Wigwam MSF Modification would not result in division or severance of an existing community, consistent with the conclusion in the Draft EIS. Access within the vicinity of the Wigwam MSF would not be altered.

*Result in Environmental Effects Disproportionately Borne by a Low-Income or Minority Population*

The Wigwam MSF would not be located within an environmental justice census block and would not result in any direct or indirect adverse effects to an environmental justice community.

**Profile Modification**

*Potential Direct and Indirect Effects on Land Use and the Community*

The Segment 3B Profile Modification would not relocate the rail alignment from its location previously evaluated in **Section 3.1.3** of the Draft EIS. While the Profile Modification would result in a vertical change in the elevation of the rail alignment to a depressed section, no horizontal change in the location of the rail alignment would occur. Thus, there is no change to the land use and community impacts in regards to the Profile Modification.

## 3.1.4 MITIGATION MEASURES

The mitigation measures identified in the Draft EIS would be applied to the project additions and modifications to reduce any adverse land use or environmental justice effects. Specifically, mitigation identified in the sections of the Draft EIS cited below would be applicable to the project modifications and additions to further reduce potential indirect effects on adjacent land uses and environmental justice populations. Measures identified in these sections of the Draft EIS include:

- ***Section 3.4.5, Utilities:*** Avoidance or minimization of conflict with existing utility infrastructure (including coordination with existing utility providers).
- ***Section 3.5.5, Traffic:*** The addition of signalization and/or lanes to the intersection approaches.
- ***Section 3.6.5, Visual Resources:*** Use of aesthetically pleasing materials for the rail alignment that minimize reflectivity, use of architecture and colors and the Victorville Station that reflect the surrounding desert landscape, design or signage at the Victorville Station to reflect the scale and character of the site and surroundings, use of contour grading, orderly construction site management, minimization of light spillover during construction, and use of visual screening construction areas as appropriate.

- ***Section 3.11.5, Air Quality:*** Use of best management dust control practices to minimize air quality impacts during construction.
- ***Section 3.12.7, Noise:*** Installation of noise barriers, use of sound and vibration reducing materials, relocation of crossovers or special track work, property acquisitions, limited construction times, limited locations of construction related activities, and use of sounds-reducing construction equipment.

## 3.1.5 Residual Impacts Following Mitigation

The incorporation of mitigation measures would mitigate permanent effects related to project construction and operation. However, even with this mitigation, the project additions and modifications would nonetheless result in the permanent conversion of lands to transportation uses.

Segment 2A / 2B

Note: Segments 1 and 2A/2B are one common alignment that would be used under Alternative A or Alternative B.

Segment 1

Segment 2C

Lenwood

Barstow

Barstow Marine Corps Logistics Base

Newberry Mountains Wilderness

Victorville Station Site 3A / 3B

Victorville OMSF 2

Victorville Site 2

Victorville Site 1

Victorville OMSF 1

Segment 1

Victorville

Apple Valley

Oro Grande

Southern California Logistics Airport

Victorville Station Site 3A / 3B

Dale Evans Pky

Boulder Rd

Segment 1

Victorville OMSF Site 2

15

## Legend

### Land Ownership

- Bureau of Land Management
- Department of Defense
- National Parks Service
- Private
- State of California

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

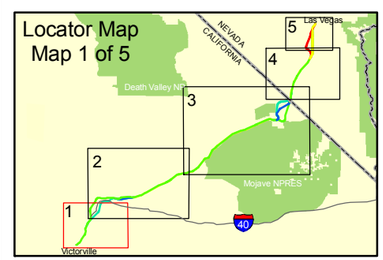
Kilometers
0 2 4

Miles
0 1.5 3

NORTH

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 1 of 5

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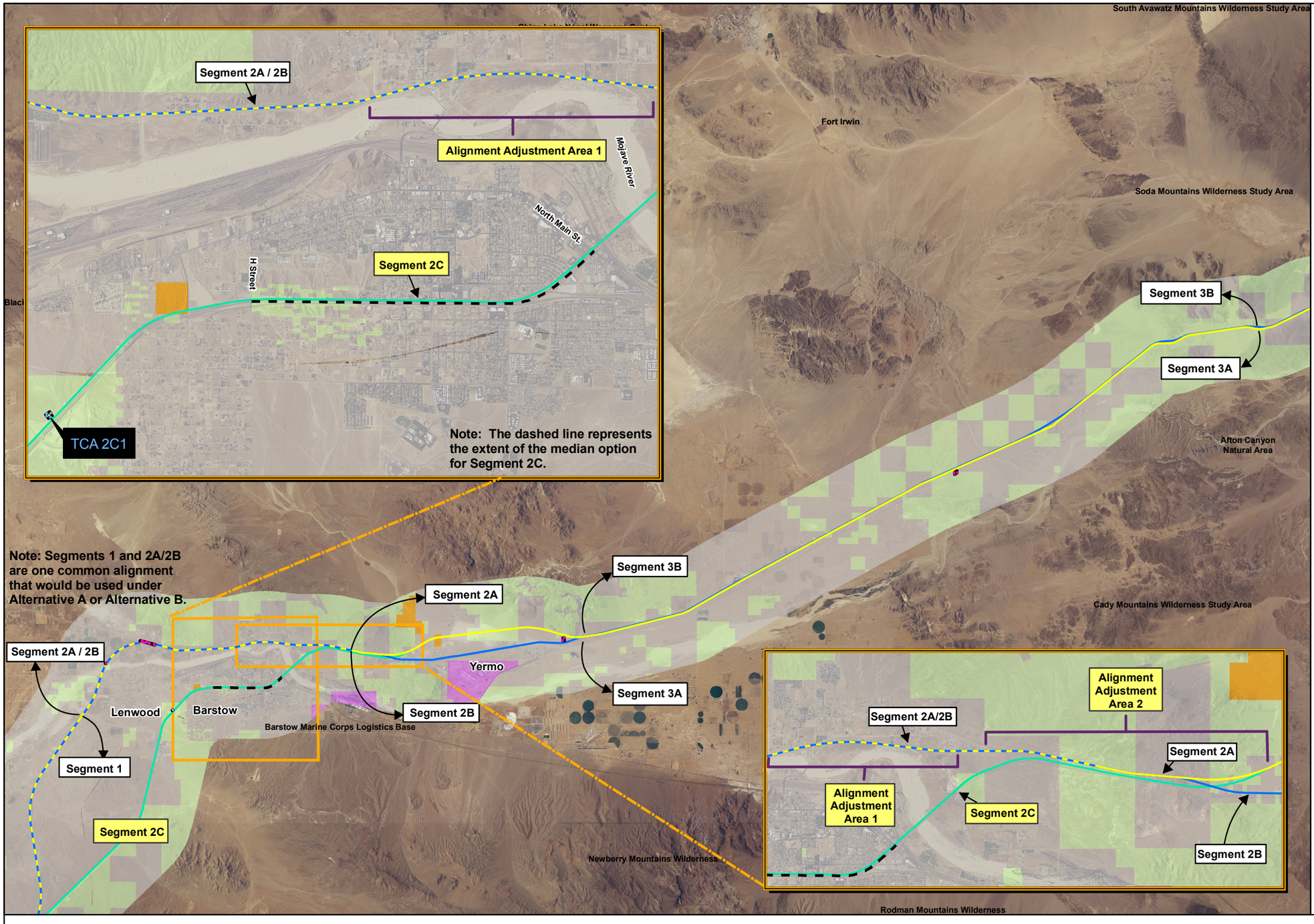
**DesertXpress - Supplemental EIS**

***Land Ownership (1)***

FIG **S-3.1-1**

Geografika Consulting 06.07.10




## Legend

### Land Ownership

- Bureau of Land Management
- Department of Defense
- National Parks Service
- Private
- State of California

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

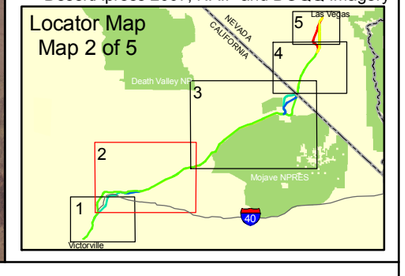
1 inch equals 4 miles

NORTH

0 5 10 Kilometers

0 4 8 Miles

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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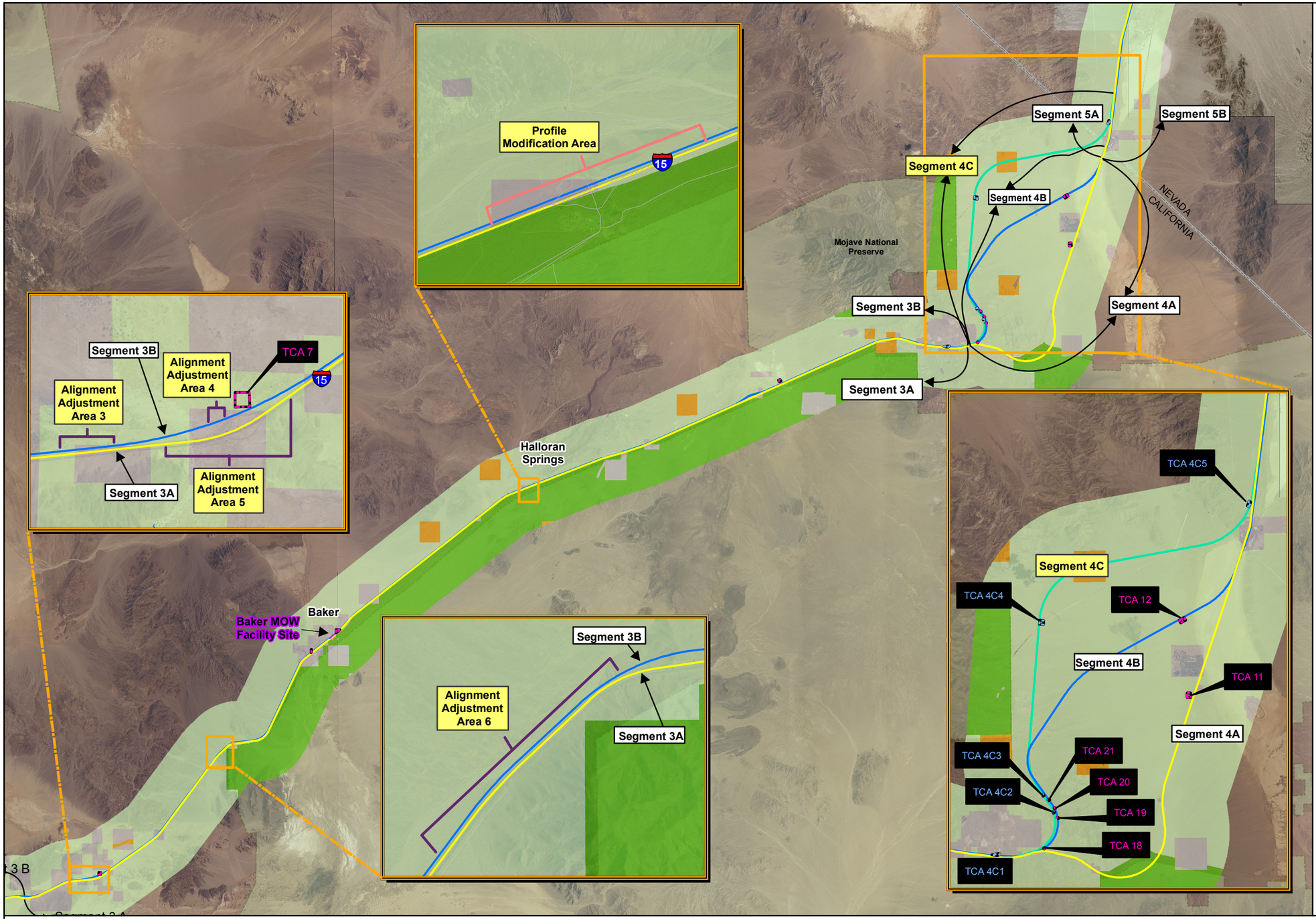
**DesertXpress - Supplemental EIS**

***Land Ownership (2)***

FIG **S-3.1-2**

Geografika Consulting 06.07.10




## Legend

### Land Ownership

- Bureau of Land Management
- Department of Defense
- National Parks Service
- Private
- State of California

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

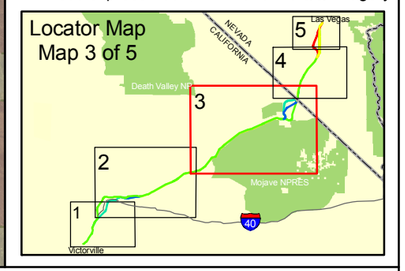
1 inch equals 4 miles

NORTH

0 5 10 Kilometers

0 4 8 Miles

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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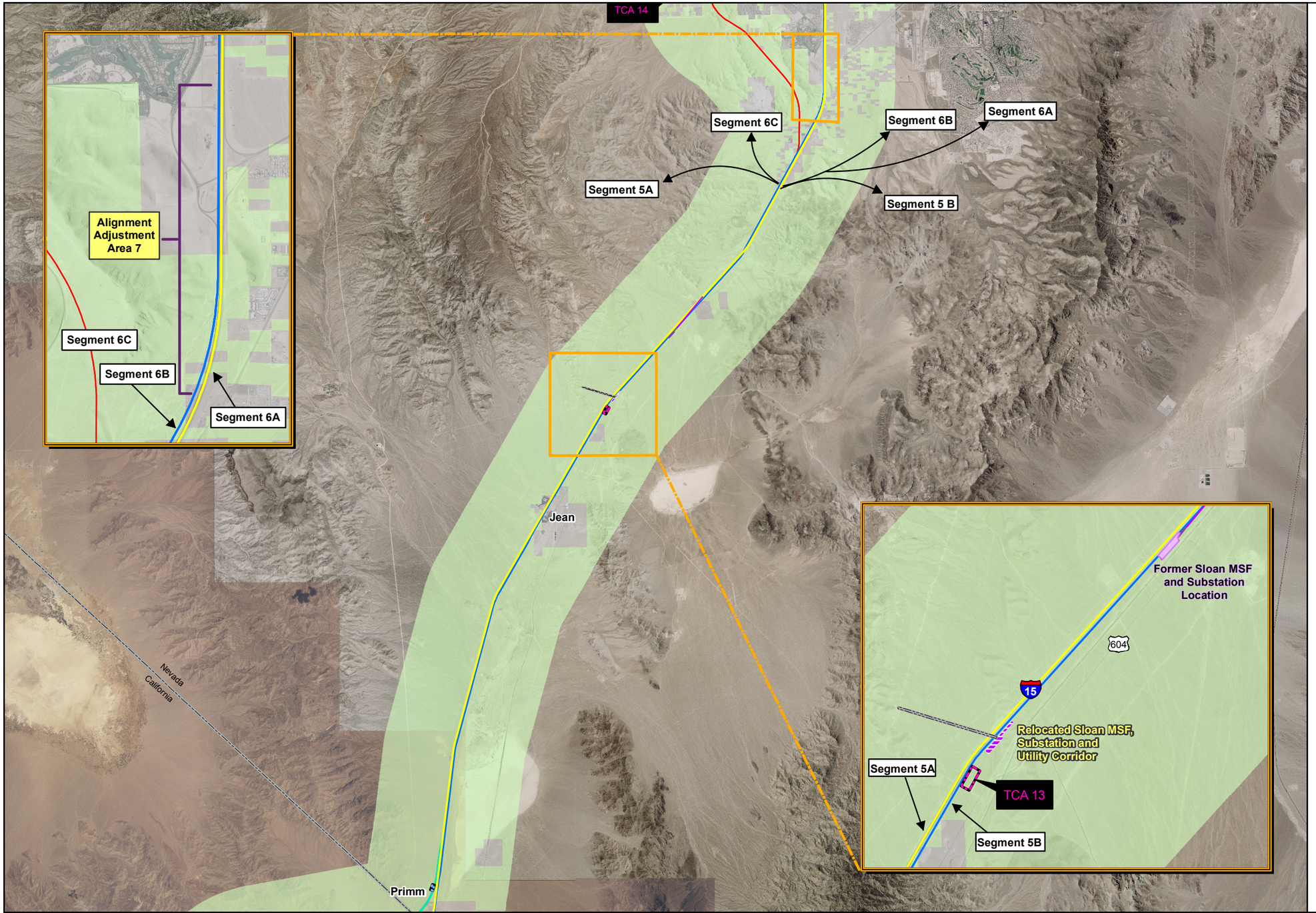
**DesertXpress - Supplemental EIS**

***Land Ownership (3)***

FIG **S-3.1-3**

Geografika Consulting 06.07.10




## Legend

### Land Ownership

- Bureau of Land Management
- Department of Defense
- National Parks Service
- Private
- State of California

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Relocation Sloan MSF / Substation Site Option
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

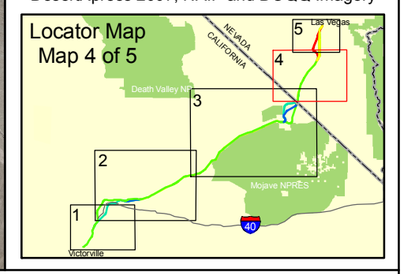
1 inch equals 3 miles

0 2.5 5 Kilometers

0 3 6 Miles

NORTH

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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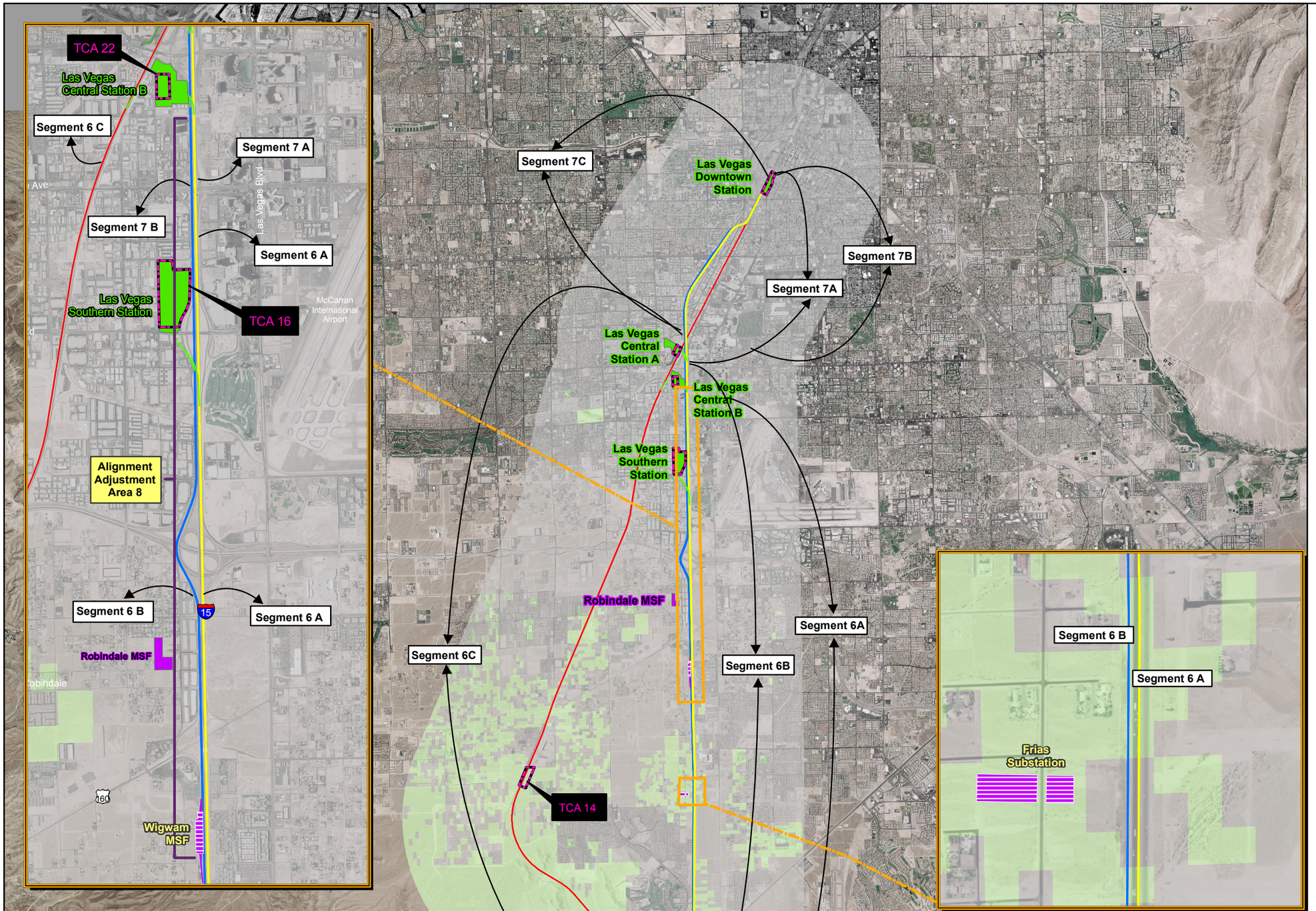
**DesertXpress - Supplemental EIS**

*Land Ownership (4)*

**FIG S-3.1-4**

Geografika Consulting 06.07.10




## Legend

### Land Ownership

- Bureau of Land Management
- Department of Defense
- National Parks Service
- Private
- State of California

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Frias Substation and Wigwam MSF Modifications
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

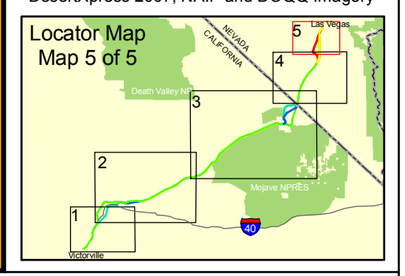
1 inch equals 2 miles

Kilometers
0 1.25 2.5

Miles
0 1 2

NORTH

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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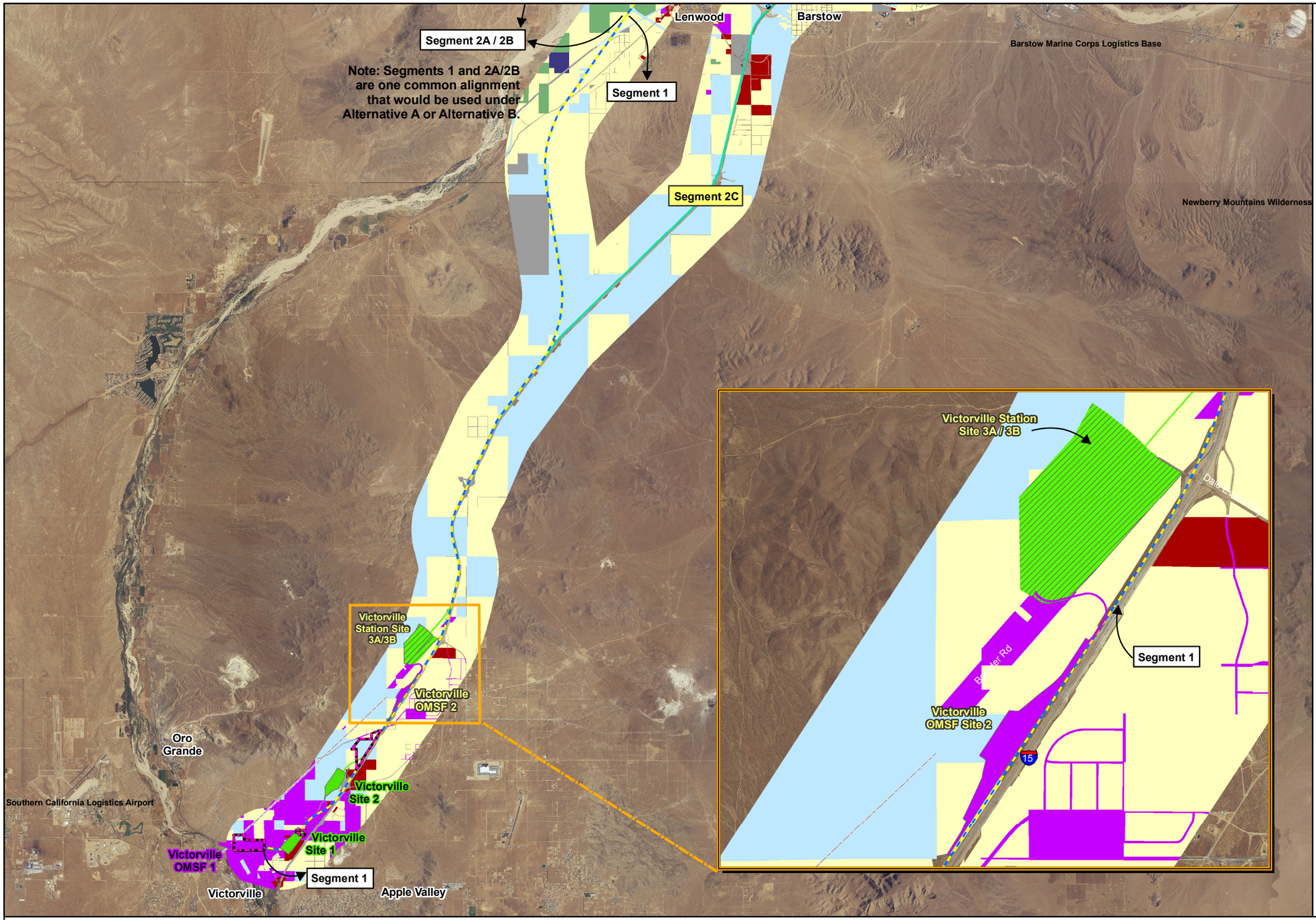
**DesertXpress - Supplemental EIS**

*Land Ownership (5)*

FIG **S-3.1-5**

Geografika Consulting 06.08.10




## Legend

### Land Use Designation (California)

- Administrative and Professional
- Agricultural
- Commercial
- Desert and Mountain
- Industrial-Manufacturing
- Institutional/Annual Exemption
- Open Space Contracts
- Residential
- Restrictive
- Other

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

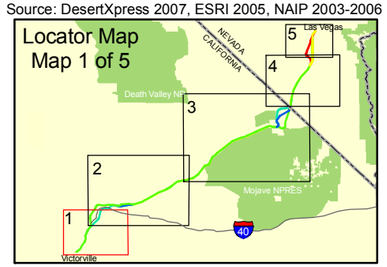
1 inch equals 3 miles

Kilometers: 0 2 4

Miles: 0 1.5 3

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006

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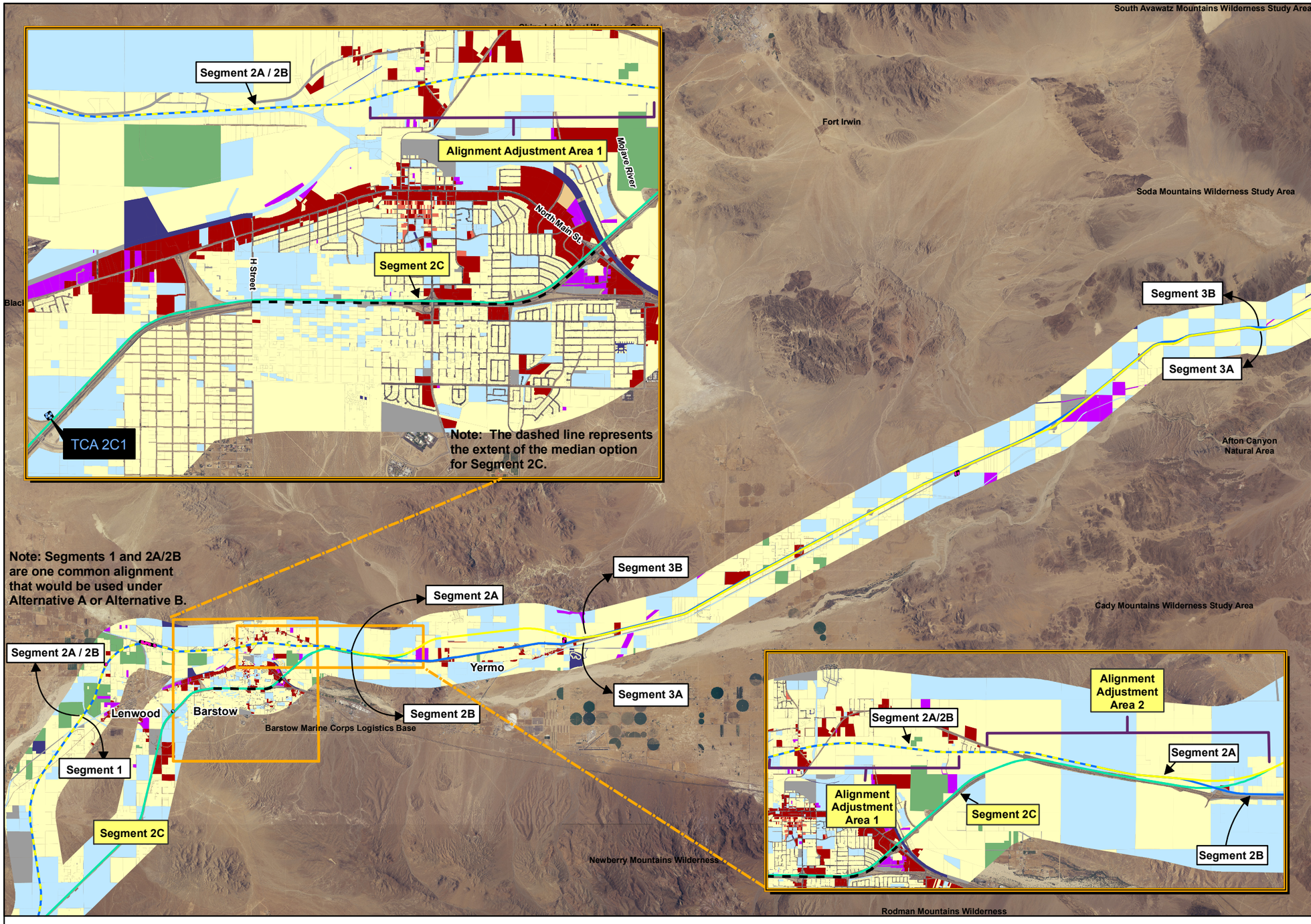
**DesertXpress - Supplemental EIS**

***Land Use / Zoning Designation (1)***

**FIG S-3.1- 6**

Geografika Consulting 06.07.10




## Legend

### Land Use Designation (California)

- Administrative and Professional
- Agricultural
- Commercial
- Desert and Mountain
- Industrial-Manufacturing
- Institutional/Annual Exemption
- Open Space Contracts
- Residential
- Restrictive
- Other

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

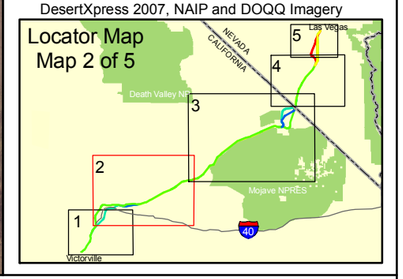
- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 4 miles

NORTH

0 4 8 Miles

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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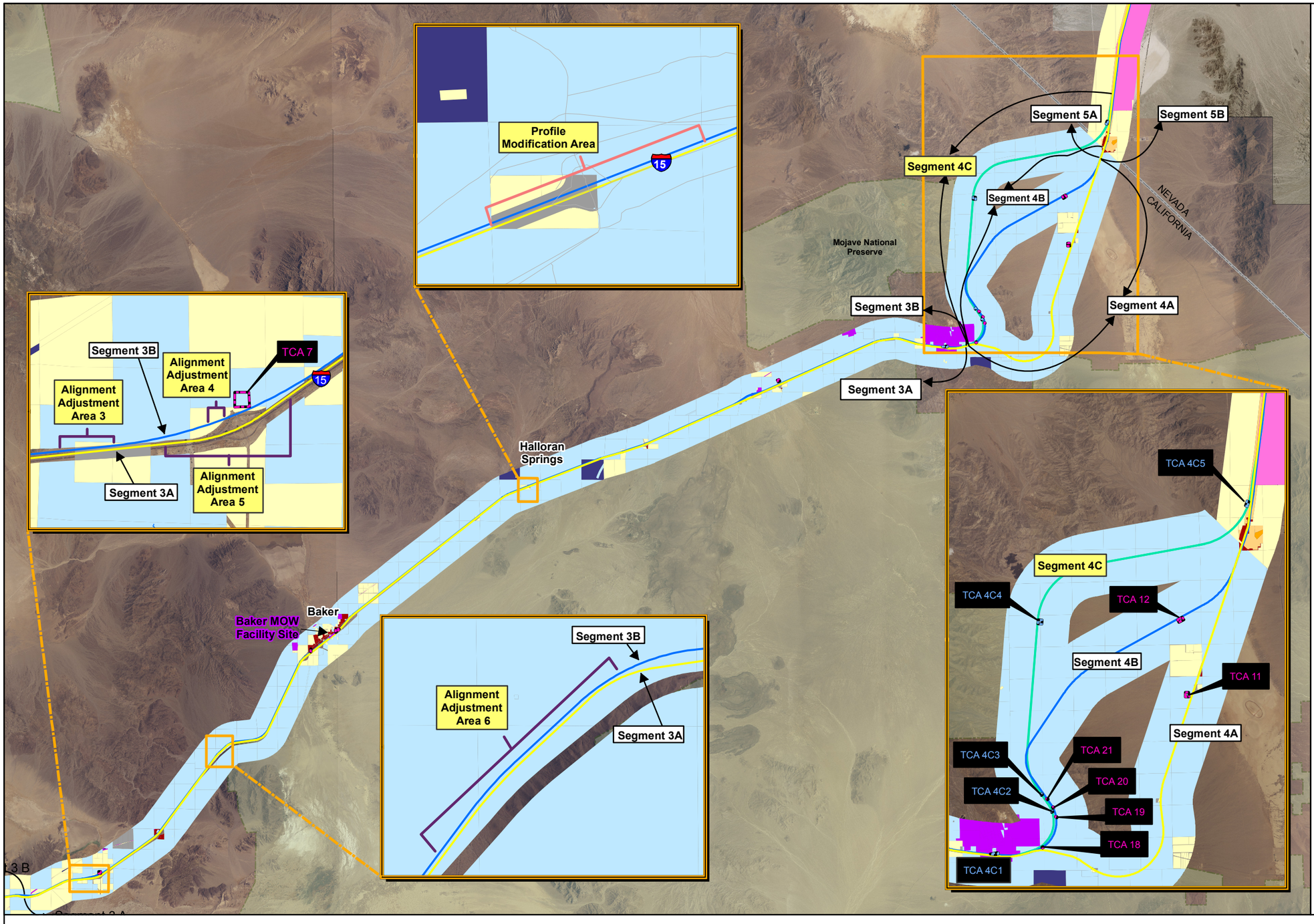
**DesertXpress - Supplemental EIS**

***Land Use / Zoning Designation (2)***

**FIG S-3.1-7**

Geografika Consulting 06.07.10




## Legend

### Land Use Designation (California)

- Administrative and Professional
- Agricultural
- Commercial
- Desert and Mountain
- Industrial-Manufacturing
- Institutional/Annual Exemption
- Open Space Contracts
- Residential
- Restrictive
- Other

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

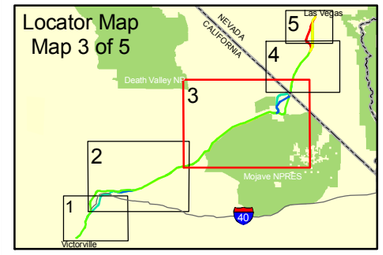
- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 4 miles

NORTH

0 4 8 Miles

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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**DesertXpress - Supplemental EIS**

***Land Use / Zoning Designation (3)***

**FIG S-3.1.8**

Geografika Consulting 06.07.10

TCA 14

Stonewater Park

Segment 6C

Segment 6B

Segment 6A

Segment 5A

Segment 5 B

Alignment Adjustment Area 7

Segment 6C

Segment 6B

Segment 6A

Jean

Nevada

California

Primm

Former Sloan MSF and Substation Location

604

15

Relocated Sloan MSF, Substation and Utility Corridor

Segment 5A

TCA 13

Segment 5B

## Legend

### Zoning Designation (Nevada)

- Administrative and Professional
- Civic
- Commercial
- Commercial/Residential Transition
- Industrial-Manufacturing
- Planned Development/Mixed Use
- Public Facility
- Residential

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Relocation Sloan MSF / Substation Site Option
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

NORTH

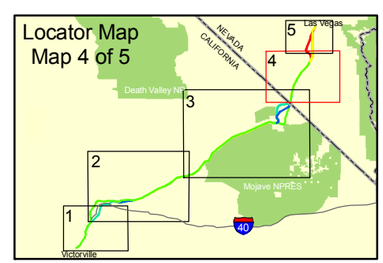
1 inch equals 3 miles

Miles

0 3 6

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 4 of 5

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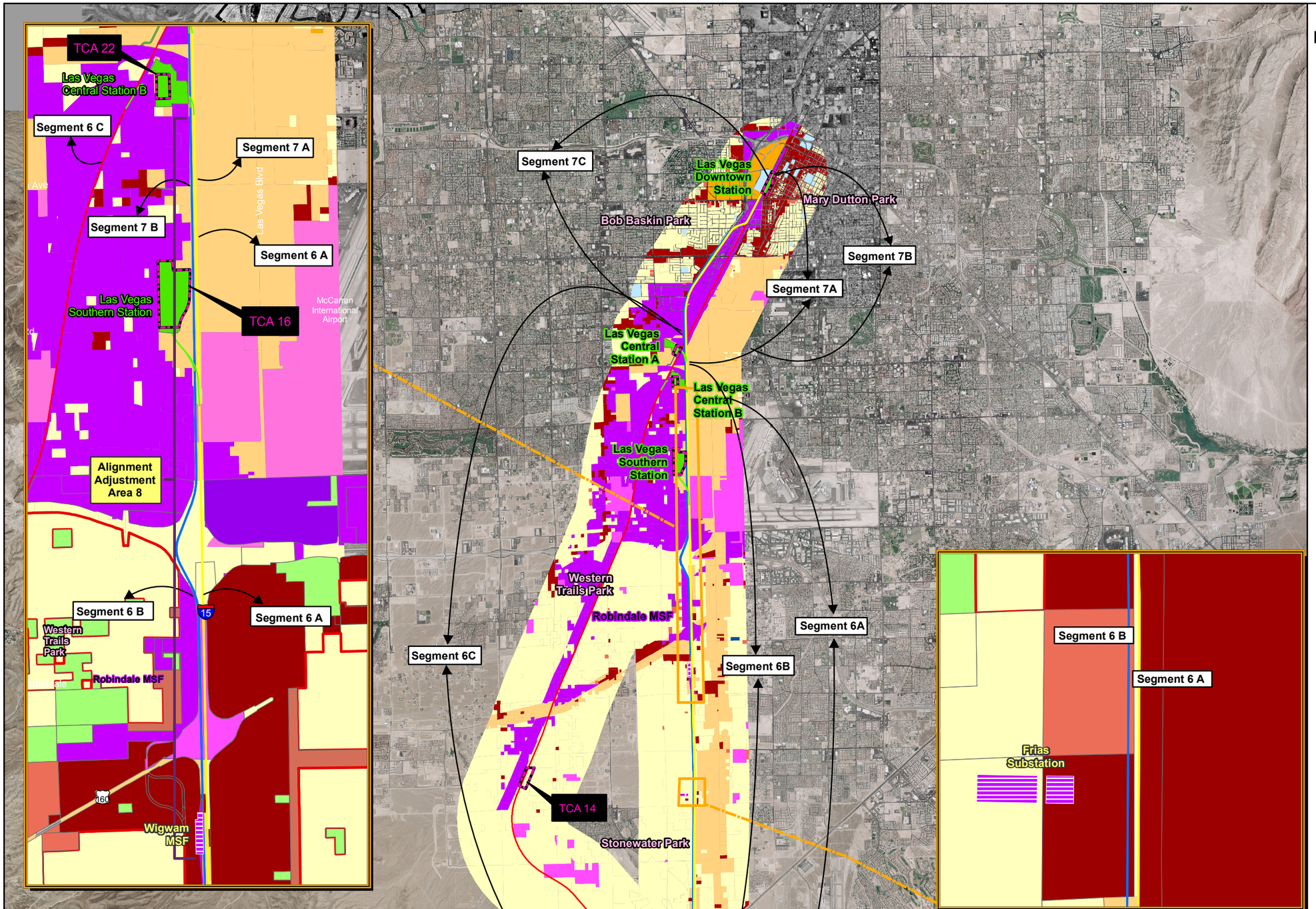
Federal Railroad Administration

**DesertXpress - Supplemental EIS**

***Land Use / Zoning Designation (4)***

FIG **S-3.1-9**

Geografika Consulting 06.17.10




## Legend

### Zoning Designation (Nevada)

- Administrative and Professional
- Civic
- Commercial
- Commercial/Residential Transition
- Industrial-Manufacturing
- Planned Development/Mixed Use
- Public Facility
- Open Space
- Residential

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

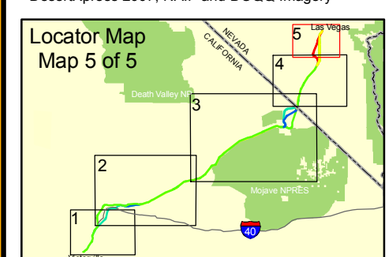
- Text Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Frias Substation and Wigwam MSF Modifications
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 2 miles

0 1 2 Miles

NORTH

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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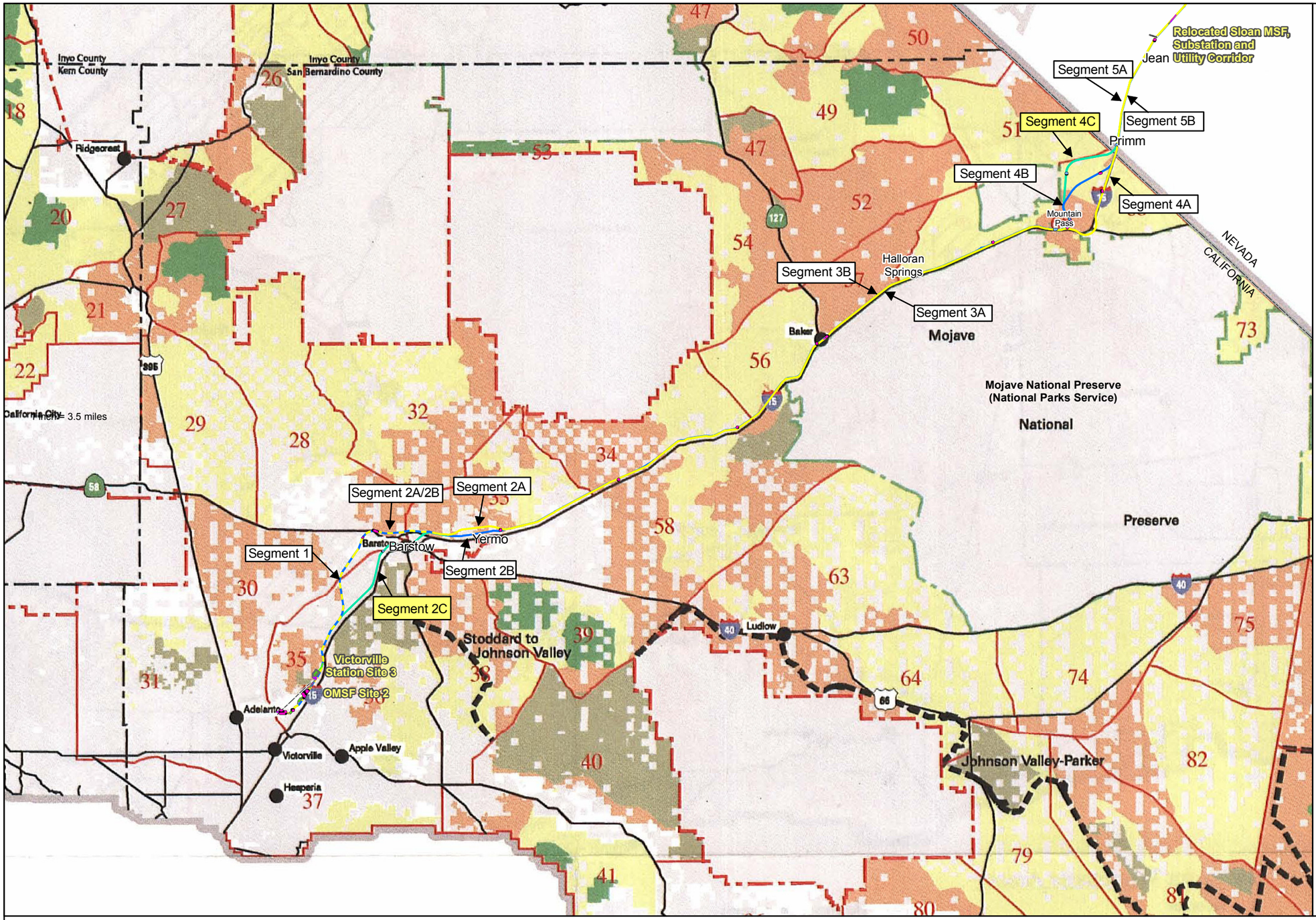
***Land Use / Zoning Designation (5)***

FIG **S-3.1-10**

Geografika Consulting 06.17.10




## Legend

### California Desert Conservation Area

- Class I Intensive Use
- Class M Moderate Use
- Class L Limited Use
- Class C Controlled Use
- CDCA Boundary
- # Planning Units

### Other Features

- Private, State and Other Federally Managed Lands
- County Lines
- Military Boundary
- National Park Boundary
- Competitive Even Corridor

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

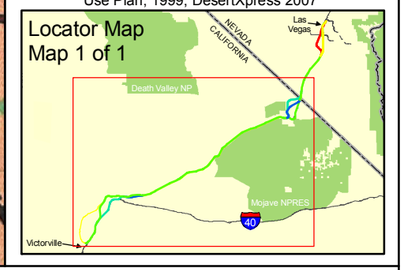
- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3
- Station Options
- Maintenance Facility Site Options
- Relocated Sloan MSF / Substation Site; Frias Substation Site, Wigwam MSF
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 13 miles

0 5 10 Miles

NORTH

Source: Bureau of Land Management, California Desert Conservation Area Land Use Plan, 1999; DesertXpress 2007

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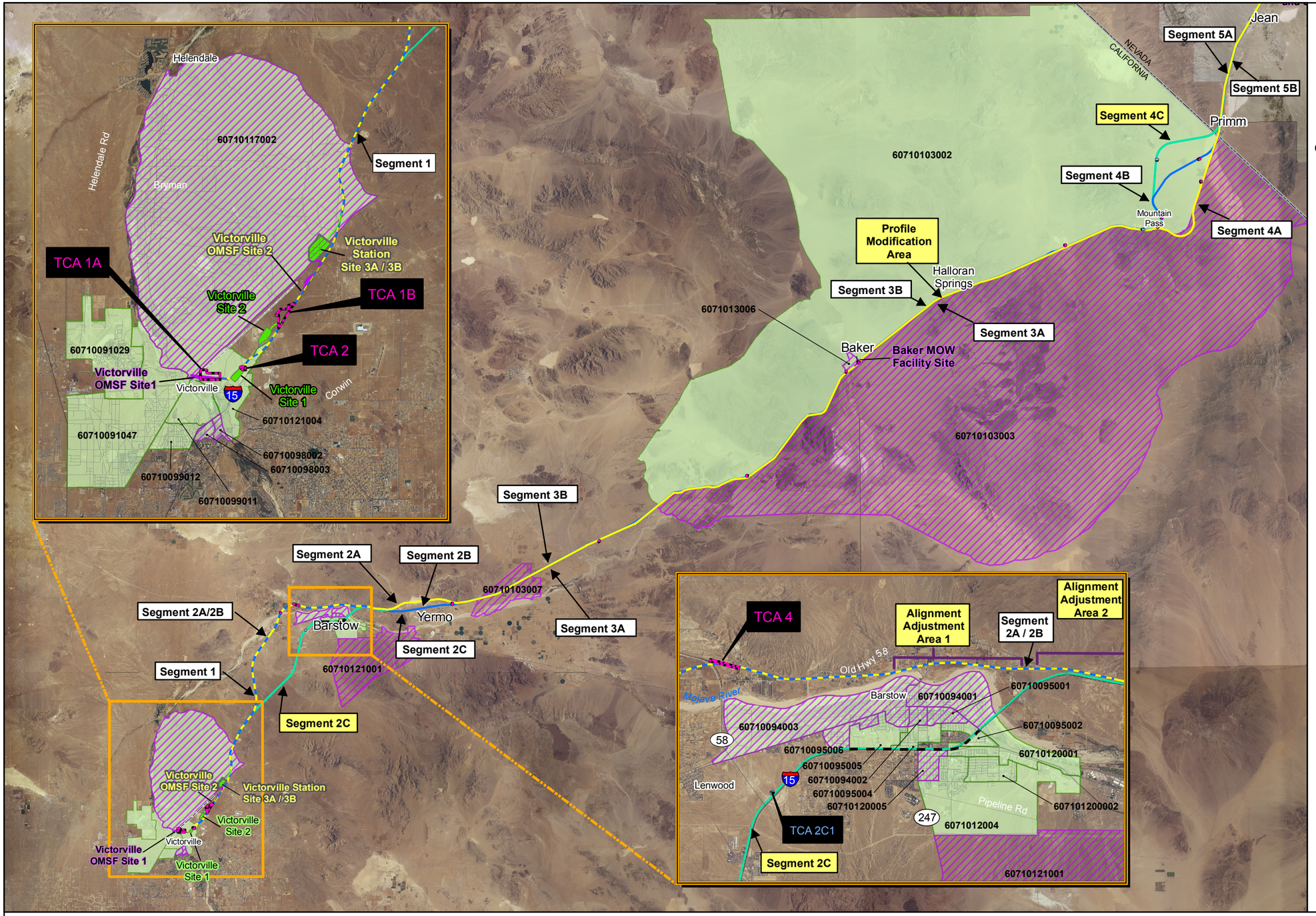
**DesertXpress - Supplemental EIS**

***Bureau of Land Management (BLM) Multiple Use Classifications, California Desert Conservation Area***

FIG **S-3.1-11**

Source: Geografika Consulting 06.07.10




## Legend

**Environmental Justice Data**

Census Block Groups That Meet Environmental Criteria For:

- Minority Population
- Poverty Level

60700000001 Census Block Number

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals10.5 miles

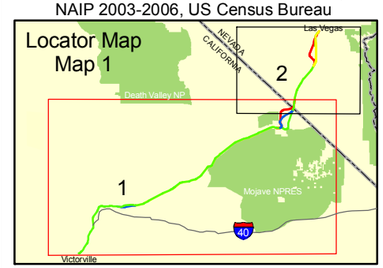
0 10 20 Kilometers

0 5 10 Miles

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006, US Census Bureau

Locator Map Map 1

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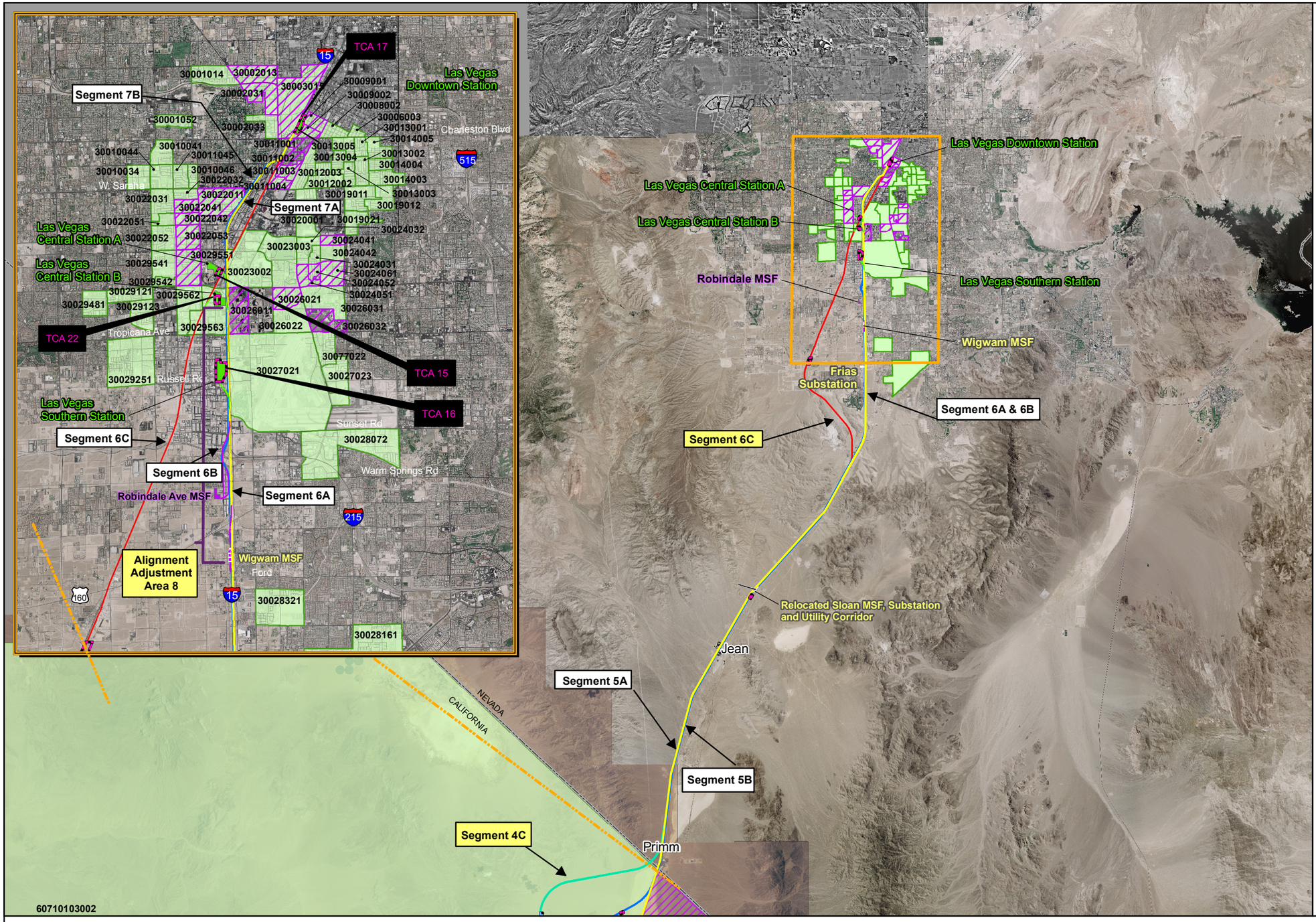
**DesertXpress - Supplemental EIS**

***Environmental Justice: California (1)***

FIG **S-3.1-12**

Geografika Consulting 06.17.10




## Legend

### Environmental Justice Data

Census Block Groups That Meet Environmental Criteria For:

- Minority Population
- Poverty Level

60700000001 Census Block Number

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

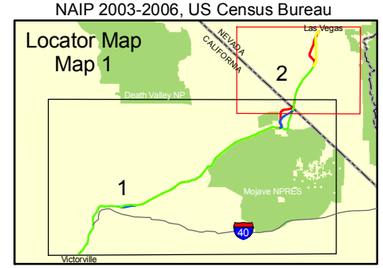
1 inch equals10.5 miles

Kilometers
0 5 10

Miles
0 2.5 5

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006, US Census Bureau

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***Environmental Justice: Nevada (1)***

FIG **S-3.1-13**

Geografika Consulting 06.17.10

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# 3.2 GROWTH

This section discusses the potential growth-inducing effects that could result from the project modifications and additions.

## 3.2.1 AFFECTED ENVIRONMENT

The federal, state, and local regulations related to population, household, and employment growth identified in **Section 3.2.1** of the Draft EIS have not changed since publication of the Draft EIS and remain applicable to the project modifications and additions. However, growth projections and forecasts within the regional and local planning documents have been modified since publication of the Draft EIS. As a result, an updated discussion is provided below including information regarding growth projections for the project region.

In addition, **Chapter 3.0, Regulatory Setting**, of this Supplemental Draft EIS includes a summary of the *Southern Nevada Regional Policy Plan*, which includes regional planning guidelines that will be followed by Las Vegas, North Las Vegas, Henderson, Boulder City, Clark County, the Clark County School District, regional and state agencies, and public utilities. A summary of the regional plan was not previously included in the Draft EIS. The policies and guidelines included in the *Southern Nevada Regional Policy Plan* do not affect the analysis in **Section 3.2.4** of the Draft EIS.

### Regional Conditions

*San Bernardino County*

The Draft EIS used the Southern California Association of Governments (SCAG) 2005 growth projections, which were the most current available projections at the time of publication. In 2008, SCAG released updated growth projections for the County and the incorporated cities within the County.

For San Bernardino County, SCAG's 2008 Growth Projections estimate a population increase of about 1.1 million people, or nearly 59 percent, between 2005 and 2030. This projection is larger than previously reported in **Section 3.2.3.1** of the Draft EIS, which assumed an increase of 700,000 people between the same time period.

As discussed in **Section 3.2.1.2** of the Draft EIS, the DesertXpress project would be located in the "Desert Region" of San Bernardino County. SCAG has not updated its growth projections specific to the Desert Region of San Bernardino County since publication of the Draft EIS. Therefore, the information presented in the Draft EIS regarding the Desert Region remains the most current projections at the regional level.

*City of Victorville*

Since publication of the Draft EIS, SCAG updated its growth projections for the City of Victorville as part of its 2008 projections. SCAG's 2008 Growth Projections continue to project substantial increases in population, household, and employment growth, but slightly less employment growth than was forecast previously.

**Table S-3.2-1** lists SCAG's 2008 Growth Projections for Victorville. The data forecast a population increase of 52 percent for Victorville between 2005 and 2020, with an additional increase of 22 percent by 2030. This is larger than SCAG's forecasted population growth for San Bernardino County (31 percent from 2005 to 2020 and an additional 15 percent from 2020 to 2030).

**Table S-3.2-1** also shows growth projections for households in Victorville. Similar to population, the number of households in Victorville is expected to increase. SCAG projects an increase of 61 percent in the number of households from 2005 to 2020 and an additional increase of 21 percent by 2030 in Victorville. The number of households in Victorville is expected to increase at a faster rate than in San Bernardino County as a whole, which indicates projected concentrated growth in the Victorville area.

SCAG projects the number of jobs in Victorville will also increase substantially. Specifically, SCAG's 2008 projections estimate a 75 percent increase in jobs between 2005 and 2020 (from about 31,000 in 2005 to around 55,000 by 2020).

Table S-3.2-1 City of Victorville Growth Projections

| Year | Population / Percent Growth[a] | | Households / Percent Growth[a] | | Employment / Percent Growth[a] | |
|---|---|---|---|---|---|---|
| 2005 (actual)[b] | 90,913 | NA | 27,108 | NA | 31,425 | NA |
| 2010 | 106,649 | +17.3 | 32,392 | +19.5 | 41,280 | +31.4 |
| 2015 | 122,205 | +14.6 | 38,919 | +20.2 | 49,131 | +19.0 |
| 2020 | 138,023 | +12.9 | 43,766 | +12.5 | 55,044 | +12.0 |
| 2025 | 153,376 | +11.1 | 48,421 | +10.6 | 61,972 | +12.6 |
| 2030 | 168,134 | +9.6 | 52,775 | +9.0 | 69,861 | +12.7 |

Source: SCAG Projections, 2008.
a Percent Growth from last measured year (5-year increments)
b Growth projections in the Draft EIS were based upon SCAG 2005 projections. The 2005 data has been revised to reflect the historic 2005 demographics rather than an estimate.

*Clark County*

According to updated growth projections, the population growth estimates for Clark County between 2005 and 2030 have slightly decreased since publication of the Draft EIS. The growth projection data included in **Section 3.2.3.1** of the Draft EIS for Clark County was obtained from the UNLV Center for Business and Economic Research, which provided the most recent growth projections at the time of the publication of the Draft EIS. Since publication of the Draft EIS, the Regional Transportation Commission of Southern Nevada (RTC) published updated growth projections as part of their Regional Transportation Plan. The Comprehensive Planning Department of Clark County also updated its growth projections since publication of the Draft EIS. These more recent growth projections for Clark County identify a slower growth rate than previously anticipated.

**Table S-3.2-2** summarizes the estimated population and housing growth projections within the County for the period of 2005 to 2030. According to the Comprehensive Planning Department of Clark County, the County is anticipated to grow from 1.8 million in 2005 to 2.7 million in 2020 and 3.1 million by 2030. This represents a 50 percent increase from 2005 to 2020 and an additional 15 percent increase by 2030 under the updated growth projections. This is a slight downward adjustment when compared to predictions outlined in the Draft EIS, which projected a 62 percent increase between 2005 and 2020 and additional 16 percent by 2030.

Table S-3.2-2 Clark County Growth Projections

| Year | Population / Percent Growth[a] | | Households / Percent Growth[a] | | Employment / Percent Growth[a] | |
|---|---|---|---|---|---|---|
| 2005 (actual) | 1,815,700 | NA | 796,255 (year 2009) | NA | 966,725 | NA |
| 2010 | 2,122,000 | +16.9 | 822,480 | +3.3 | 1,081,521 | +11.9 |
| 2015 | 2,446,000 | +15.3 | 948,062 | +15.3 | 1,150,648 | +6.4 |
| 2020 | 2,715,000 | +11.0 | 1,053,325 | +11.1 | 1,198,169 | +4.1 |
| 2025 | 2,933,000 | +8.0 | 1,136,821 | +7.9 | 1,243,209 | +3.8 |
| 2030 | 3,126,000 | +6.6 | 1,211,627 | +6.6 | 1,299,167 | +4.5 |

a Percent Growth from last measured year (5-year increments)
Source: Comprehensive Planning Department of Clark County, 2009; Regional Transportation Commission of Southern Nevada, Regional Transportation Plan FY 2006-2030 Final Draft, 2006

The Clark County household growth forecasts have also been slightly reduced since publication of the Draft EIS. According to the Comprehensive Planning Department of Clark County, there were an estimated 796,255 households in the County in 2009, with an average of 2.58 people per household. The number of households within Clark County is expected to increase by 52 percent between 2009 and 2030, for an anticipated total of 1,212,418 households.[1]

**Table S-3.2-2** summarizes the employment projections in Clark County. According to the RTC, there were 966,725 jobs in Clark County in 2005. According to their projections, employment is expected to increase to 1,198,169, or by 24 percent, by 2020 and an additional eight percent by 2030.

*City of Las Vegas*

None of the project modifications and additions would be located within the City of Las Vegas. However, since the publication of the Draft EIS, some growth projections for the City of Las Vegas have been revised through the year 2020.

In February 2010, the City of Las Vegas updated its growth projections within the Population Element of its 2020 Master Plan to show a slower rate of growth than assumed in **Section 3.2.3.1** of the Draft EIS. The growth rate has been adjusted to reflect the economic downturn in 2009 and the substantially slower rate of development of vacant lands over the last few years.

## 3.2.2 Methods of Evaluation of Impacts

Consistent with the analysis in **Section 3.2.4** of the Draft EIS, the evaluation of growth effects is focused on areas immediately surrounding the proposed station and maintenance facilities. Growth inducing effects are foreseeable only around station and maintenance facilities, as they serve as the only "interfaces" of the project where passengers would board or exit trains and where the vast majority of DesertXpress employees would be based.

An adverse, direct growth effect would occur if the anticipated growth associated with the project changes would exceed growth projections at local and/or regional levels. An adverse, indirect growth effect would occur if the project modification and additions would involve the removal of obstacles to growth, result in negative growth impacts to local and/or regional economic vitality, and or positive or negative growth in population numbers or patterns.

[1] 2030 household information obtained by dividing the projected 2030 population by the person per household average of 2.58.

## 3.2.3 ENVIRONMENTAL CONSEQUENCES

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. The discussions below consider the project modifications and additions per these criteria.

### Victorville Station Site 3, OMSF 2, Relocated Sloan MSF, and Wigwam MSF Modification

*Potential Direct and Indirect Effects on Growth*

VV3, OMSF 2, the RSMSF, and the Wigwam MSF modification would result in the same direct and indirect growth effects as the station and maintenance facilities evaluated in **Section 3.2.4** of the Draft EIS. These station and maintenance facility additions and modifications merely alter the footprint of these sites, not the program of their expected uses or employment capacity of each facility. The same number of temporary construction employees as identified in the Draft EIS would be utilized during the construction of these facilities. Additionally, the same number of permanent jobs as identified in the Draft EIS would be created by these facilities at project buildout.

VV3, OMSF2, RSMSF and Wigwam MSF modification would not alter the finding the Draft EIS that the project would result in beneficial effects on local employment and growth and would not be anticipated to result in a significant relocation of construction workers from outside of the project area to inside the project area. The permanent increase in jobs with project operation would also not exceed the projected employment growth for the area, as the facilities would continue to represent less than one percent of all anticipated job growth in 2030.

Indirectly, VV3, OMSF 2, the RSMSF, and the modified Wigwam MSF would not alter the conclusion in the Draft EIS that the project would result in beneficial environmental consequences on growth in the surrounding community by increasing economic vitality, employment opportunities, and the potential for transit oriented development.

### Segment 2C, Segment 4C, Frias Substation, Alignment Adjustment Areas, and Profile Modification

*Potential Direct and Indirect Effects on Growth*

The new rail alignments (the Segment 2C alignment options or Segment 4C), the AAAs, the Profile Modification, and the Frias Substation would not have any “interface” that would result in either a direct or indirect change in population, households, or jobs.

### 3.2.4 MITIGATION MEASURES

As none of the project modifications and additions would result in a substantial direct or indirect change in population, households, or jobs, no mitigation measures would be required.

### 3.2.5 RESIDUAL IMPACTS FOLLOWING MITIGATION

The project modifications and additions would not result in any adverse growth impacts.

# 3.3 FARMLANDS AND GRAZING LANDS

This section describes the potential effects of the project modifications and additions on farmlands and grazing lands within the project area.

## 3.3.1 AFFECTED ENVIRONMENT

Regulations and standards related to farmlands and grazing lands identified in **Section 3.3.1** of the Draft EIS have not changed and remain applicable to the proposed project.

Prime farmlands and farmlands of statewide importance within the project area are found only in isolated locations near Segment 1, 2, and 3. None of the proposed project modifications or additions are located on or within close proximity to lands designated as Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, or Unique Farmland[1] or lands under a Williamson Act contract. Furthermore, the selection of the 2C Action Alternative would avoid farmlands otherwise impacted by Segment 2A/2B.

As shown on **Figure S-3.3-1**, VV3, OMSF 2, and Segment 4C would be located on BLM grazing allotment areas. None of the other project modifications or changes would be located on BLM grazing allotments.

## 3.3.2 METHODS OF EVALUATION OF IMPACTS

The same methodology as described in **Section 3.3.2** of the Draft EIS was used to evaluate direct and indirect effects. Direct effects would occur on any farmland or grazing land that would be crossed by the rail alignment or on sites proposed for stations or other permanent facilities. Indirect effects were assumed to occur within a 37.5 foot buffer on either side of the rail alignment, as a result of parcel severance (blocking water resources for livestock) or cutting off access to a farmed or grazed parcel.

## 3.3.3 ENVIRONMENTAL CONSEQUENCES

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. However, none of the proposed project modifications or additions are located on or within close proximity to lands designated as Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, or Unique Farmland[2] As such, the discussions below focus only on potential effects to grazing land.

---

[1] San Bernardino County Important Farmland, 2008. Farmland Mapping and Monitoring Program, California Department of Conservation.

[2] San Bernardino County Important Farmland, 2008. Farmland Mapping and Monitoring Program, California Department of Conservation.

**Victorville Station Site 3 and OMSF 2**

*Potential Direct and Indirect Effects on Grazing Land*

VV3 and OMSF 2 would be located on lands under BLM grazing allotments and would result in the permanent conversion of grazing lands to other uses. VV3 would permanently affect about 205 acres of grazing land, as compared to approximately 100 acres for both VV1 and VV2. With the reduced footprint of OMSF2, the permanently affected acreage of grazing land would be reduced to about 61 acres. Neither VV3 nor OMSF2 would result in additional indirect impacts to grazing lands because they would not cut off livestock access to available water sources, as no water sources would be covered or blocked by the project.

**Segment 2C, Relocated Sloan MSF, Frias Substation, Alignment Adjustment Areas, Wigwam MSF Modification, and Profile Modification**

*Potential Direct and Indirect Effects on Grazing Land*

Segment 2C, RSMSF, Frias Substation, AAAs, Wigwam MSF Modification, and Profile Modification would not be located on BLM grazing allotments. These project modifications and additions would therefore have no affect on farmlands or grazing lands.

**Segment 4C**

*Potential Direct and Indirect Effects on Grazing Land*

**Figure S-3.3-2** shows the location of Segment 4C in relation to the joint NPS/BLM grazing allotment in this area. Segment 4C would result in the direct conversion of grazing lands to other uses. Segment 4C would directly affect approximately 176 acres of grazing land. In addition, Segment 4C could result in indirect impacts by cutting off livestock access to available water sources or result in the removal of livestock fencing, which would allow livestock to trespass, become lost, or potentially struck by vehicles on nearby roadways, including I-15. According to the NPS, the primary water sources for cattle within this allotment area are located within the Northern Unit of the Mojave National Preserve.[3] Segment 4C could thus form a barrier within the allotment, concentrating cattle closer to the water sources and thus resulting in overuse of the Mojave National Preserve for grazing activities.

As such, implementation of Segment 4C could result in potentially direct and indirect adverse effects related to grazing lands and activities.

## 3.3.4 Mitigation Measures

**Mitigation Measures FAR-3** and **FAR-4** identified in **Section 3.3.5** of the Draft EIS would apply to VV3, OMSF 2, and Segment 4C to reduce potentially adverse effects related to grazing land. **Mitigation Measure FAR-3** would ensure the provision of livestock access to water and **Mitigation Measure FAR-4** would require new fencing and/or gate modifications.

[3] Personal communication with Larry Whalon, National Park Service. 2010.

However, **Mitigation Measures FAR-3** and **FAR-4** would not specifically address the impacts associated with Segment 4C and so **Mitigation Measure FAR-5** has been added. In addition, FRA has added **Mitigation Measure FAR-6** as an alternative to **Mitigation Measures FAR-3**, **4**, and **5**.

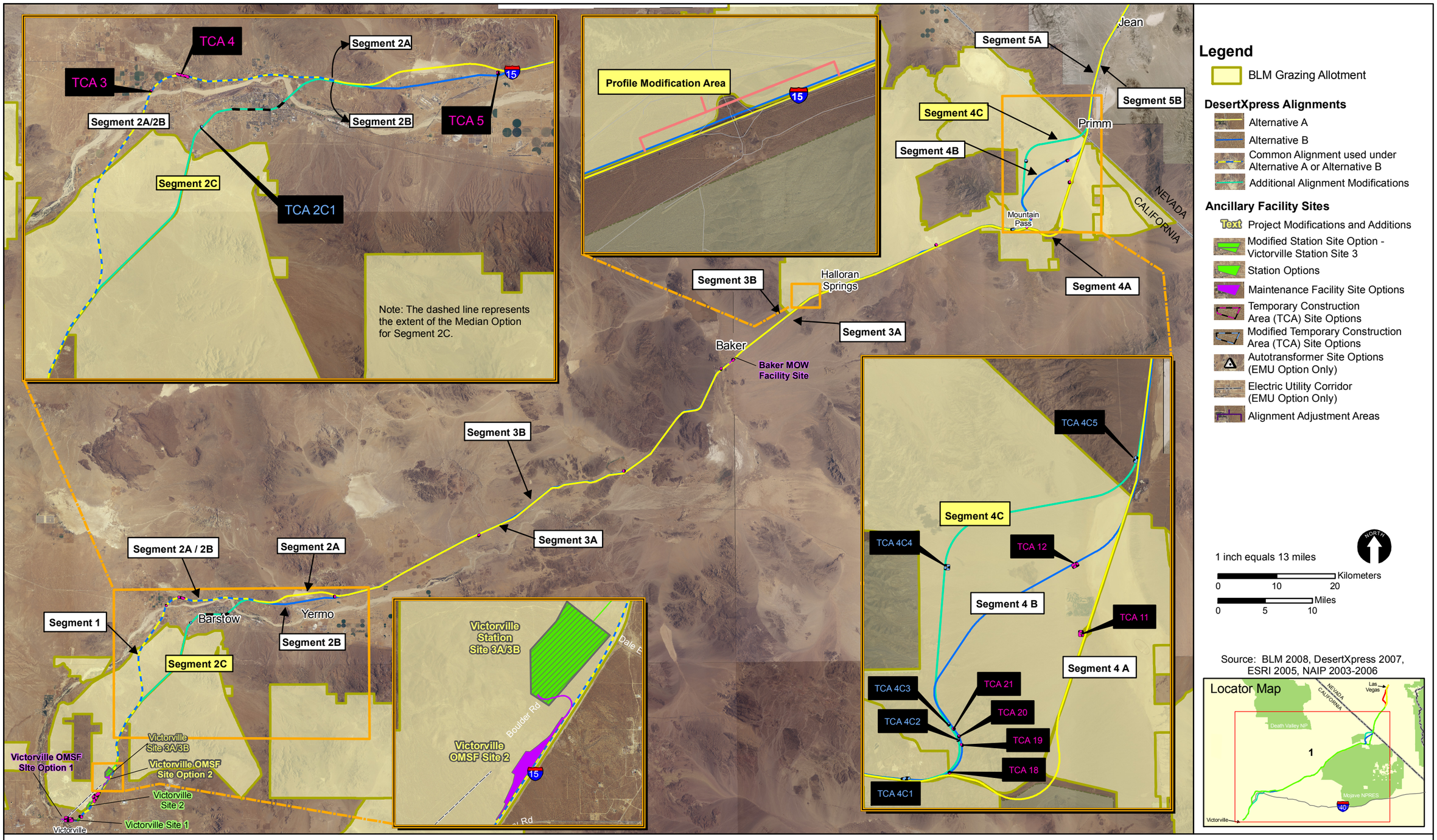
**Mitigation Measure FAR-5: Provide Adequate Cattle Access in Areas of the Joint NPS/BLM Grazing Allotment (Segment 4C)[4].** Prior to issuance of the permit to construct, the project sponsor shall prepare revised plans for Segment 4C which include adequate cattle crossings to allow movement of cattle within the joint NPS/BLM grazing allotment. The location, number and design of the crossings shall be reviewed and approved by the General Manager of the Mojave National Preserve.

**Mitigation Measure FAR-6: Purchase Grazing Allotment (VV3, OMSF2, Segment 4C).** Prior to issuance of the permit to construct, the project sponsor shall purchase the rights to the grazing allotment(s) directly affected by VV3, OMSF2, and Segment 4C and discontinue grazing activities. The purchase of the rights and discontinuing of grazing activities shall be reviewed and approved by the BLM and the General Manager of the Mojave National Preserve as appropriate.

## 3.3.5 Residual Impacts Following Mitigation

**Mitigation Measure FAR-5** would minimize impacts to grazing lands and associated indirect effects on grazing in the joint NPS/BLM grazing allotment. **Mitigation Measure FAR-6** would avoid grazing impacts entirely through compensation for existing grazing rights and the removal of the lands from grazing use. However, even with mitigation, the project would result in the direct conversion of grazing lands to transportation uses.

[4] Mitigation Measure FAR 5 would not be required if Mitigation Measure FAR 6 is implemented.




## Legend

- BLM Grazing Allotment

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text — Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 13 miles

NORTH

Kilometers: 0 10 20

Miles: 0 5 10

Source: BLM 2008, DesertXpress 2007, ESRI 2005, NAIP 2003-2006

Locator Map

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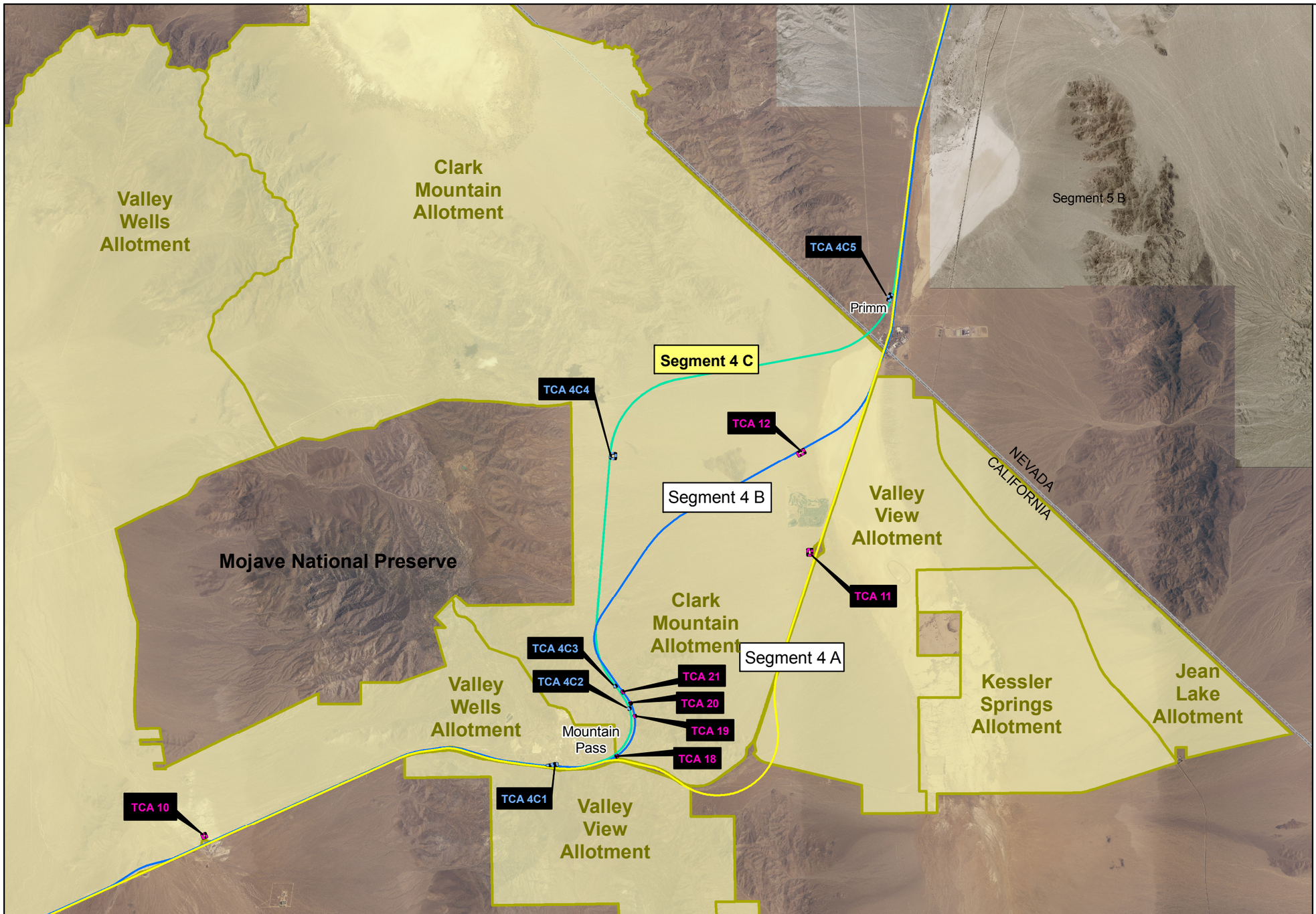
***BLM Grazing Allotments***

**FIG S-3.3-1**

Source: Geografika Consulting 06.15.10




## Legend

- BLM Grazing Allotment

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text: Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

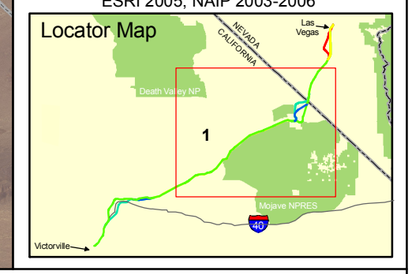
1 inch equals 13 miles

NORTH

0 2.5 5 Kilometers

0 1.5 3 Miles

Source: BLM 2008, DesertXpress 2007, ESRI 2005, NAIP 2003-2006

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***Segment 4C, BLM Grazing Allotments***

**FIG S-3.3-2**

Source: Geografika Consulting 06.15.10

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# 3.4 UTILITIES/EMERGENCY SERVICES

This section identifies the potential affect of the project modifications and additions on utilities and emergency service systems and associated service providers operating in the study area. The utilities evaluated in this section include electricity and gas, water, wastewater facilities, and solid waste providers. Emergency services evaluated in this section include police, fire, and emergency response. The analysis also covers potential physical impacts to existing pipelines and electrical transmission infrastructure.

## 3.4.1 AFFECTED ENVIRONMENT

Regulations and standards related to utilities and emergency services identified in **Section 3.4.1** of the Draft EIS have not changed since publication of the Draft EIS and remain applicable to the proposed project.

**Table S-3.4-1** summarizes the utility service providers for electricity and gas, water, wastewater, solid waste, police services, and fire and emergency services for the project modifications and additions. **Table S-3.4-2** summarizes the physical utility delivery systems that would be crossed by the project modifications and additions. A discussion of each project modification and addition relative to these utility service providers and delivery systems is provided below.

Table S-3.4-1 Utility/Service Providers Necessary

| Project Modifications & Additions | Electricity and Gas Service | Water Supply and Service | Sewage and Wastewater | Solid Waste | Police Services | Fire and Emergency Response Services |
|---|---|---|---|---|---|---|
| Victorville Station Site 3 (VV3A and VV3B) | SCE<br>SGC | VWD | VVWRA | Victorville Landfill | SBCSD | SBCFD |
| OMSF 2 | SCE<br>SGC | VWD | VVWRA | Victorville Landfill | SBCSD | SBCFD |
| Segment 2C | SCE<br>SGC | N/A | N/A | N/A | SBCSD<br>CHP | SBCFD<br>BFPD |
| Segment 4C | SCE<br>SGC | N/A | N/A | N/A | SBCSD<br>CHP (near I-15) | SBCFD |
| Frias Substation | Nevada Energy<br>SGC | N/A | N/A | N/A | METRO | CCFD |

| Project Modifications & Additions | Electricity and Gas Service | Water Supply and Service | Sewage and Wastewater | Solid Waste | Police Services | Fire and Emergency Response Services |
|---|---|---|---|---|---|---|
| Relocated Sloan MSF | Nevada Energy<br>SGC | LVVWD | CCWRD or private septic system | Apex Regional Landfill | METRO | CCFD |
| Alignment Adjustment Areas | SCE<br>Nevada Energy<br>SGC | N/A | N/A | N/A | *AAAs 1 – 2:* SBCSD, BPD, CHP<br>*AAAs 3- 6:* SBCSD, CHP<br>*AAAs 7 – 8:* METRO, NHP | *AAAs 1 – 2:* SBCFD, BFPD<br>*AAAs 3 – 6:* SBCFD<br>*AAAs 7 – 8:* CCFD, LVFR |
| Wigwam MSF Modification | Nevada Energy<br>SGC | LVVWD | CCWRD | Apex Regional Landfill | METRO | CCFD |
| Profile Modification | SCE<br>SGC | N/A | N/A | N/A | SBCSD<br>CHP | SBCFD |

Source: CirclePoint, 2010.
Notes: BFPD – Barstow Fire Protection District; BPD – Baker Police Department ; CCFD – Clark County Fire Department; CCWRD – Clark County Water Reclamation District; CHP – California Highway Patrol; LVFR – Las Vegas Fire and Rescue; LVVWD – Las Vegas Valley Water District; METRO – Las Vegas Metropolitan Police Department; NHP – Nevada Highway Patrol; SBCSD – San Bernardino County Sherriff's Department; SBCFD – San Bernardino County Fire Department; SCE – Southern California Edison; SGC – Southwest Gas Corporation; VVWRA – Victorville Valley Wastewater Reclamation Authority; VWD – Victorville Water District.

Table S-3.4-2 Potential Utility Crossings

| Project Modifications & Changes | Utility Crossings |
|---|---|
| VV3A | *Electrical Transmission*<br>LA Department of Water and Power |
| VV3B | None |
| OMSF 2 | None |
| Segment 2C | *Natural Gas*<br>Mojave-Kern Pipeline<br>SGC Pipelines<br>Kinder Morgan CalNev Pipeline<br>*Communications/Fiber Optic*<br>No information available from Caltrans. Potential Communications/Fiber Optic lines could exist in the vicinity<br>*Electrical Transmission*<br>SCE<br>PG & E<br>*Water*<br>Mojave River Pipeline |
| Segment 4C | *Natural Gas*<br>Mojave-Kern Pipeline<br>Kinder Morgan CalNev Pipeline<br>Specific communication, electrical transmission, petroleum, water, and sewer line crossings outside of the I-15 corridor are not known. However, conflicts with utilities are likely to exist especially in the northern part of the alignment which is located adjacent to an existing utility easement. |
| RSMSF | None |
| Frias Substation | *Natural Gas*<br>Southwest Gas Corporation Pipelines<br>Kinder Morgan CalNev Pipeline<br>*Communications/Fiber Optic*<br>AT&T Communications Nevada<br>Sprint Central Telephone 2<br>COX Communication, Las Vegas<br>Sprint Nevada<br>*Electrical Transmission*<br>Nevada Energy<br>*Water*<br>Las Vegas Valley Water<br>*Sewage*<br>Clark County Water Reclamation District |

| Project Modifications & Changes | Utility Crossings |
|---|---|
| Alignment Adjustment Areas | |
| AAAs 1 – 2 (Segment 2A/2B) | *Electrical Transmission*<br>SCE<br>PG & E<br>LA Department of Water and Power<br>*Regional Water*<br>Mojave River Pipeline<br>Sewage/Stormwater<br>Victor Valley Wastewater Reclamation Authority North Apple Valley Inceptor (Sewage only) |
| AAAs 3 – 6 (Segment 3B) | *Electrical Transmission*<br>SCE<br>LA Department of Water and Power |
| AAAs 7 – 8 (Segment 6B) | *Natural Gas*<br>SGC Pipelines<br>Kinder Morgan CalNev Pipeline<br>*Communications/Fiber Optic*<br>AT&T Communications Nevada<br>Sprint Central Telephone 2<br>Electric Lightware<br>COX Communication, Las Vegas<br>IDA Communications<br>Level 3 Communications<br>Nextlink Nevada<br>Sprint Nevada<br>*Electrical Transmission*<br>Sierra Pacific/Nevada Power<br>*Regional Water*<br>Las Vegas Valley Water District<br>*Sewage/Stormwater*<br>Clark County Water Reclamation District<br>Clark County Flood Control District |
| Wigwam MSF Modification | *Electrical Transmission*<br>Nevada Energy |
| Profile Modification | *Natural Gas*<br>Kern River Gas Pipeline<br>Kinder Morgan CalNev Pipeline<br>*Electrical Transmission*<br>SCE<br>LA Department of Water and Power |

Source: CirclePoint, 2010

## Regional Conditions

Construction and operation of the action alternatives require electricity, water, and other public utilities. In addition, action alternatives trigger the need for such public services as police protection, and fire/emergency response services.

The proposed modifications and additions would need the same kinds of utilities as those

identified in **Section 3.4.3** of the Draft EIS. **Table S-3.4-3** summarizes the types of utilities needed to serve the project modifications and additions. In addition, **Table S-3.4-3** identifies the types of utilities that could be crossed by the proposed modifications and additions, leading to potential utility conflicts. The utility crossings would also be similar to those identified in **Section 3.4.3.2** of the Draft EIS.

Table S-3.4-3 Summary of the Regional Environment

| Proposed Modifications and Additions | Utilities/Services Needed | Possible Utility Crossings |
|---|---|---|
| Stations and Maintenance Facilities<br>Victorville Station Site 3 (VV3A and VV3B)<br>OMSF 2<br>Relocated Sloan MSF(RSMSF)<br>Wigwam MSF Modification | Electricity and Gas<br>Water Supply and Service<br>Sewage and Wastewater<br>Stormwater<br>Solid Waste<br>Police Services<br>Fire and Emergency Response Services | Electrical transmissions at VV3A and Wigwam MSF Modification sites |
| Rail Alignments<br>Segment 2C<br>Segment 4C<br>Alignment Adjustments<br>Profile Modification | Electricity (EMU option)<br>Police Services<br>Fire and Emergency Response Services | Pipelines<br>Communications/Fiber Optic<br>Electrical Transmission<br>Regional Water Pipelines |
| Frias Substation | Electricity (EMU Option)<br>Police Services<br>Fire and Emergency Response Services | Pipelines<br>Communications/Fiber Optic<br>Electrical Transmission<br>Water and Sewer Pipelines |

Source: CirclePoint, 2010.

### Victorville Station Site 3

*Utility Service Providers*

**Table S-3.4-1** summarizes the utility service providers for electricity and gas, water, wastewater, solid waste, police services, and fire and emergency services for VV3 under both parking options. Currently, no stormwater conveyance systems are present on the VV3 site for either parking option.

The Victorville Valley Wastewater Reclamation Authority (VVWRA) would be responsible for providing wastewater services to VV3. However, the VV3 site is currently outside of the established VVWRA service area. The VVWRA service area would need to be expanded to serve the VV3 site.

*Physical Utility Delivery Systems*

**Table S-3.4-2** summarizes the physical utility delivery systems that would be crossed by VV3 under both parking options.

**Figure S-2-6** of **Chapter 2, Alternatives** shows that the parking lot for VV3A would be located directly below electrical transmission lines. These transmission lines are owned by the Los Angeles Department of Water and Power (LADWP). VV3B is configured so that parking would be located north of the station building which would avoid areas under the existing utility lines.

### OMSF 2

*Utility Service Providers*

**Table S-3.4-1** summarizes the utility service providers for electricity and gas, water, wastewater, solid waste, police services, and fire and emergency services for OMSF 2. The same utility service providers identified in **Section 3.4.3.1** of the Draft EIS would serve OMSF 2 since only the size, not the location, of OMSF 2 has been modified.

The VVWRA would be responsible for providing sewage and wastewater services to OMSF 2. However, the OMSF 2 site is currently outside of the established VVWRA service area and a service area expansion would be required to serve the OMSF 2 site.

*Physical Utility Delivery Systems*

There are no utility transmission and/or distribution facilities that cross the OMSF 2 site. Electrical transmission lines owned by the LADWP would be located west of the OMSF 2 site.

### Segment 2C

*Utility Service Providers*

**Table S-3.4-1** summarizes the utility service providers for electricity and gas, police services, and fire and emergency services for Segment 2C. As a rail alignment, no water, wastewater, or solid waste service would be required. Stormwater conveyance systems are present within the median of the I-15 freeway.

*Physical Utility Delivery Systems*

**Table S-3.4-2** summarizes the physical utility delivery systems that would be crossed by Segment 2C. Segment 2C would cross and/or overlap with the Kinder Morgan CalNev Pipeline. The pipeline transports gasoline, oil, and jet fuel from refineries in Southern California to Las Vegas. Near Yermo, Segment 2C would also cross the Mojave-Kern Pipeline, an interstate gas pipeline. Furthermore, Segment 2C would be located beneath electrical transmission lines near the cities of Lenwood and Barstow. Segment 2C would cross the Mojave River Pipeline near the Mojave River as well as various underground telecommunications lines.

### Segment 4C

*Utility Service Providers*

**Table S-3.4-1** summarizes the utility service providers for electricity and gas, police services, and fire and emergency services for Segment 4C. As a rail alignment, no water, wastewater, or solid waste service would be required. Where Segment 4C parallels the existing I-15 freeway near Mountain Pass there are existing stormwater conveyance systems within the median of I-15. No stormwater conveyance systems exist in the undeveloped portions of Segment 4C north of Mountain Pass.

*Physical Utility Delivery Systems*

**Table S-3.4-2** summarizes the physical utility delivery systems that would be crossed by Segment 4C. Portions of Segment 4C within the I-15 freeway corridor (the westernmost portions, where the alignment is similar to Segment 4B) would cross two major interstate pipelines, specifically the Kern River Gas Pipeline and Kinder Morgan CalNev Pipeline. Segment 4C would also have the potential to cross communication lines located in areas where the rail alignment would be located within the I-15 freeway corridor. Furthermore, the northern portion of Segment 4C would be located adjacent to an existing utility easement with similar underground utility conveyances, including telephone, electrical, water, natural gas, and petroleum, and electrical transmission lines.

### Relocated Sloan MSF

*Utility Service Providers*

**Table S-3.4-1** summarizes the utility service providers for electricity and gas, water, wastewater, solid waste, police services, and fire and emergency services for the RSMSF site. No stormwater conveyance systems are present on the RSMSF site.

The RSMSF would be located outside of the Clark County Water Reclamation District's (CCWRD) service area. Therefore, the service area of CCWRD would need to be expanded in order to provide service to the RSMSF.

*Physical Utility Delivery Systems*

There are no utility transmission and/or distribution facilities that cross the RSMSF site.

### Frias Substation

*Utility Service Providers*

**Table S-3.4-1** summarizes the utility service providers for electricity and gas, police services, and fire and emergency services for the Frias Substation site. As a substation with no permanent employees, no water, wastewater, or solid waste service demand would occur at this site. No stormwater conveyance systems are present on the Frias Substation

site, but existing drainages are located to the north and south of the Frias Substation site that cross under the I-15 freeway to the east.

*Physical Utility Delivery Systems*

**Table S-3.4-2** summarizes the physical utility delivery systems that would be crossed by the Frias Substation site. The Frias Substation footprint does not contain any known utilities. However, the Frias Substation would include 25 kilovolt (kV) electrical lines that would cross underground, below an existing overhead Nevada Energy electricity line. The underground feeder lines would then cross into the I-15 right of way to deliver electricity to the train. The Frias Substation would also have aboveground connections to the Arden-Tolson electric transmission line, operated by Nevada Energy, south of the site.

### Alignment Adjustment Areas

*Utility Service Providers*

**Table S-3.4-1** summarizes the utility service providers for electricity and gas, police services, and fire and emergency services for Alignment Adjustment Areas (AAA) 1 through 8. As a rail alignment, no water, wastewater, or solid waste service would be required for the AAAs. Existing stormwater conveyance systems are located in portions of the I-15 freeway corridor.

*Physical Utility Delivery Systems*

AAAs 1 through 8 would not be located in areas with new utility delivery systems not previously identified for Segment 2A/2B, Segment 3B, and Segment 6B in the Draft EIS. The AAAs would not create any new utility crossings. **Table S-3.4-2** summarizes the physical utility delivery systems that would be crossed by the rail alignments with implementation of the AAAs.

### Wigwam MSF Modification

*Utility Service Providers*

**Table S-3.4-1** summarizes the utility service providers for electricity and gas, water, wastewater, solid waste, police services, and fire and emergency services for the Wigwam MSF modification. The same utility service providers identified in **Section 3.4.3.1** of the Draft EIS would serve the Wigwam MSF site since the orientation not the location of the Wigwam MSF has been modified.

*Physical Utility Delivery Systems*

**Table S-3.4-2** summarizes the physical utility delivery systems that would be crossed by the modified Wigwam MSF. Although not identified in **Section 3.4.3.2** of the Draft EIS, the Wigwam MSF site would be located beneath an existing Nevada Energy electric

transmission line. This line cuts diagonally across the proposed site. The Wigwam MSF modification would not require altering or otherwise impact this line.

**Profile Modification**

*Utility Service Providers*

**Table S-3.4-1** summarizes the utility service providers for electricity and gas, police services, and fire and emergency services for the Profile Modification. The same utility service providers identified in **Section 3.4.3.1** of the Draft EIS would serve the Profile Modification since the depth of the rail alignment (within a depressed section), not the location, of the 1.3 mile portion of Segment 3B has been modified.

*Physical Utility Delivery Systems*

Since the Profile Modification would not cross any new service or utility areas not previously evaluated for Segment 3B in the Draft EIS, the Profile Modification would cross the same utility transmission and/or distribution facilities as Segment 3B as identified in **Section 3.4.3.2** of the Draft EIS. **Table S-3.4-2** summarizes the physical utility delivery systems that would be crossed by Segment 3B with implementation of the Profile Modification.

## 3.4.2 METHODS OF EVALUATION OF IMPACTS

The same methodology described in **Section 3.4.2** of the Draft EIS was used to evaluate potential utility and emergency service effects of the project modifications and additions. Consistent with the methodology identified in the Draft EIS, the project modifications and additions would result in adverse effects if:

- Utility or service demands of the action alternative exceeded the existing or planned capacity of existing or planned utility and service systems, or
- The action alternative would physically interrupt or otherwise constrain or impede existing utilities distribution systems.

## 3.4.3 ENVIRONMENTAL CONSEQUENCES

**Victorville Station Site 3**

*Electricity and Gas Service*

Under either technology option (DEMU or EMU), VV3 would require electrical energy for station operations. **Section 3.4.4.2** of the Draft EIS noted that Southern California Edison (SCE) reports sufficient equipment and facility conditions to serve the existing and

future needs of the project's passenger station in Victorville.[1] Southwest Gas Corporation (SGC) has provided a "will-serve" letter for the project.[2] SGC states that current operating conditions are sufficient to serve existing needs plus those associated with the project. Therefore, the electrical and gas demands that would be created by VV3 would not exceed the capacity of service providers. Please also see **Section 3.13, Energy**, of this Supplemental Draft EIS for a discussion of energy use associated with the project modifications and additions.

*Water Supply and Service*

VV3 would generate demand for water associated with restrooms, restaurant/food service uses, and landscaping. As discussed in **Section 3.4.4.2** of the Draft EIS, the Applicant provided estimates of water needs for a Victorville Station site option combined with an OMSF site option. The combined station and maintenance facilities would require approximately 3.3 acre-feet of water per year (AFY). It is assumed that VV3 would generate the same demand for water as the Victorville Station site options evaluated in the Draft EIS, as the station size and types of uses would be comparable. Although the size of OMSF 2 has been reduced since publication of the Draft EIS, there is no change in its proposed function. Therefore, the change to the size of OMSF 2 has no bearing on the amount of water needed.

Water necessary to serve the needs of customers and workers at VV3 and OMSF 2 is determined by the Victorville Water District (VWD), the local water service provider. VWD computes estimated water usage based on gross acreage of a property and the type of land use at the property. Specifically, for the type of land use closest to the proposed station and maintenance facilities, VWD assumes each acre of development (no matter what use is proposed) would generate approximately 1,800 gallons per day of water demand.

According to VWD's water generation rates, VV3 and OMSF 2 would yield a daily usage of approximately 461,700 gallons of water per day (about 1.4 acre-feet per day or about 511 AFY). This estimate likely overstates water demand for several reasons. Except for proposed buildings, most of the land associated with these facilities would be used for parking, train tracks, or undeveloped areas where water usage would be minimal.

Despite this potential overestimation of water use, the VWD has indicated that it would have adequate water supplies to serve the needs of VV3 and OMSF 2 since the daily water demands of the station would be small in comparison to VWD's overall water production.

Although VWD would have adequate water supply to serve VV3 and OMSF 2, there are no existing pipelines that could deliver water to the VV3 site currently available.

[1] Nancy Jackson, Southern California Edison. Personal communication, January 16, 2007.

[2] Letter from Southwest Gas Corporation, June 12, 2008.

Consultation with VWD following the publication of the Draft EIS clarified that the construction of VV2, VV3, and OMSF 2 would not be adequately served by existing water facilities due to their distance from existing water mains. The nearest existing water facility to VV2, VV3 and OMSF 2 is approximately 7 miles south at a substantially lower elevation. The existing main does not extent far enough to serve the station sites or the OMSF. Therefore, VV3 and OMSF 2 would require the construction and/or expansion of new water facilities, including storage facilities, wells, and/or transmission and distribution pipelines.

**Section 3.4.4.2** of the Draft EIS noted that a water supply assessment would be required before the eventual use of any of the Victorville station and OMSF options. This assessment would determine the size and extent of new water facilities needed. This requirement continues to apply to the project modifications and additions.

*Sewage and Wastewater*

Similar to water demands, the sewage and wastewater demands for VV3 (for both parking options) are considered in combination with OMSF 2, consistent with the evaluation of the Victorville Station site options in **Section 3.4.4.2** in the Draft EIS.

VV3 and OMSF 2 would generate wastewater associated with anticipated water usage. According to the VVWRA, the station and maintenance facilities would not create a substantial need for additional wastewater equipment, facilities, or personnel. In its 2005 Sewerage Facilities Plan Update, as well as a policy adopted in August 2005 regarding anticipated community growth, VVWRA acknowledges the robust growth projections forecast for the Victor Valley area. Specifically, the sewerage plan anticipates the City of Victorville's population will double between 2005 and 2025 and that wastewater flows from the City would more than double over the same period.[3] As the VVWRA facility planning assumes robust growth projections in the Victor Valley area; VV3 and OMSF 2 would be served by existing or planned VVWRA facilities.

Although VVWRA has adequate capacity to serve the station and maintenance facility, land underlying VV3 and OMSF 2 would need to be annexed to the VVWRA, as this land is currently outside of the VVWRA boundaries. **Section 3.4.4.2** of the Draft EIS identified a similar annexation requirement for VV2 and OMSF 2.

*Stormwater*

VV3 is located in an undeveloped area without existing stormwater conveyances or stormwater providers. Any necessary drainage features would need to be provided on site.

*Solid Waste*

[3] VVWRA 2005 Sewerage Facilities Plan, p. 1-3.

VV3 under both parking options would generate waste from employees and/or passengers. Since the projected number of employees or passengers at VV3 would not change from what was considered in the Draft EIS, the solid waste generation projections contained in **Section 3.4.4.2** of the Draft EIS remains accurate. The Victorville Landfill reports sufficient existing capacity to accommodate the solid waste generated by VV3.

*Police Services*

VV3 would be located in the San Bernardino County Sheriff's Department (SBCSD) service area. The SBCSD anticipates that current and projected staffing would be sufficient to serve VV3.[4]

*Fire and Emergency Response Services*

Based on additional consultation following publication of the Draft EIS, the San Bernardino County Fire Department (SBCFD) has indicated that the implementation of any of the Victorville Station site options (VV1, VV2, VV3A, or VV3B) would require additional staffing, training, equipment, vehicles, and facilities to adequately serve the project in the event of an emergency. The SBCFD also expressed concern of emergency access.[5] As a result, VV3 would result in new adverse effects from exceeding the capacity of the fire department.

*Utility Infrastructure Crossings*

The VV3 site options would result in varying effects to utility infrastructure crossings.

***VV3A:*** VV3A surface parking areas would be located directly underneath an electrical transmission corridor owned and operated by LADWP. According to LADWP guidelines for vehicle parking, vehicles cannot be left under the overhead electrical utility lines for more than 24 hours. Most vehicle parking at VV3A is expected to extend for more than 24 hours, because rail passengers would likely be traveling to Las Vegas for more than one day. The Applicant is pursuing a lease agreement with LADWP, which would allow long term parking under the utility lines and ensure compliance with LADWP regulations to maintain access to and normal operation of the electric transmission lines.

***VV3B:*** The VV3B station layout avoids use of the lands under the overhead LADWP lines, locating surface parking to areas northwest of the station building. This site option was included in the event the Applicant is unable to reach an agreement with LADWP to allow for long-term parking beneath the electric transmission lines.

[4] Dan Riser, Operations Lieutenant, San Bernardino County Sheriff's Department. Personal communication, October 9, 2009.

[5] Pat A. Dennen, San Bernardino County Fire Department. Personal Communication, November 2, 2009.

**OMSF 2**

*Electricity and Gas Service*

While the OMSF 2 footprint has been reduced, OMSF 2 would continue to have the same functions as identified in the Draft EIS. Electrical and gas demands would not exceed the capacity of the service providers. Please also see **Section 3.13, Energy**, of this Supplemental Draft EIS for a discussion of energy use associated with the project modifications and additions.

*Water Supply and Service*

Consistent with the evaluation of water supply and service in **Section 3.4.4.2** in the Draft EIS, the estimated water demand associated with OMSF 2 has been considered in combination with the Victorville Station site option. Refer to the heading "Victorville Station Site 3" above for a discussion of the combined water demand and associated effects for VV3 and OMSF 2.

*Sewage and Wastewater*

Consistent with the evaluation of sewage and wastewater in **Section 3.4.4.2** in the Draft EIS, the wastewater generation associated with OMSF 2 has been considered in combination with the Victorville Station site option. Refer to the discussion under heading "Victorville Station Site 3" above for a discussion of the combined wastewater generation and associated effects for VV3 and OMSF 2.

*Stormwater*

Since the location of OMSF 2 has not changed since the Draft EIS, effects related to stormwater would be the same as presented in **Section 3.4.4.2** in the Draft EIS. Any necessary drainage features would need to be provided on site.

*Solid Waste*

OMSF 2 would generate waste from employees and/or passengers. Since the projected number of employees or passengers at OMSF 2 would not change as a result of the reduced footprint, the solid waste generation projections contained in **Section 3.4.4.2** of the Draft EIS would be applicable and no adverse effects would occur.

*Police Services*

Consistent with the conclusion for OMSF 2 in the Draft EIS, the SBCSD anticipates that current and projected staffing would be sufficient to serve OMSF 2 and no adverse effects would occur with regard to police service.[6]

*Fire and Emergency Services*

Based on additional consultation following publication of the Draft EIS, SBCFD has indicated that the project as a whole, including OMSF 2, would require additional staffing, training, equipment, vehicles, and facilities to adequately serve the project in the event of an emergency. The SBCFD also expressed concern of emergency access.[7] The SBCFD's comments are similar to all project features, individually and collectively.

*Utility Infrastructure Crossings*

As shown in **Table S-3.4-2**, OMSF 2 would not have the potential to cross any utility lines. As a result, no interruption or impediment of utility services would occur.

**Segment 2C**

*Electricity and Gas Service*

Electricity would be needed to power the trains if the EMU technology option is implemented. The electric service providers have indicated they would be able to provide sufficient electricity to meet this demand.[8] SGC indicated that current natural gas operating conditions are sufficient to serve the project.[9] Additionally, the Segment 2C alignment options would not substantially alter the amount of energy needed to operate the action alternatives as evaluated in **Section 3.4.4.2** in the Draft EIS and no new environmental effects would occur.

Please also see **Section 3.13, Energy**, of this Supplemental Draft EIS for a discussion of energy use associated with the project modifications and additions.

*Water Supply and Service*

As a rail alignment, the Segment 2C alignment options would not generate demand for water. There would not be any landscaping nor any other water related use associated with the rail segments that would create an ongoing demand for water. The new rail

[6] Dan Riser, Operations Lieutenant, San Bernardino County Sheriff's Department. Personal communication, October 9, 2009.

[7] Pat A. Dennen, San Bernardino County Fire Department. Personal Communication, November 2, 2009.

[8] Nancy Jackson, Southern California Edison, Personal Communication, January 16, 2007.

[9] Southwest Gas Corporation, Personal Community, June 12, 2008.

alignments and alignment adjustments would therefore not result in any water service issues and no effects would occur. Refer to **Section 3.8, Hydrology and Water Quality**, of this Supplemental Draft EIS for a discussion of construction related water use.

*Sewage and Wastewater*

Since the Segment 2C alignment options would not generate demand for water, there would be no resultant wastewater generation and no required wastewater services. No effects related to sewage or wastewater treatment would occur.

*Stormwater*

The Segment 2C alignment options would be located within or adjacent to the I-15 freeway corridor and could tie into the existing stormwater discharge systems associated with I-15.

*Solid Waste*

The Segment 2C rail alignment would not generate solid waste. Daily maintenance-of-way activities may be required to dispose of waste items that may have strayed onto the tracks. However, this amount of waste is expected to be incidental/negligible. Therefore, the Segment 2C alignment options would not result in any effects from exceeding solid waste disposal capacity.

*Police Services*

The SBCSD anticipates that current and projected staffing would be sufficient to serve the Segment 2C alignment options.[10] However, portions of Segment 2C next to the I-15 freeway corridor would introduce the concern that a catastrophic event, such as a train derailment, could result in a blockage of the I-15 freeway. Segment 2C would include crash barriers at all supporting columns or bridges to reduce effects to I-15 during potential train derailment.

*Fire and Emergency Services*

Based on additional consultation following publication of the Draft EIS, the SBCFD indicated that the Segment 2C alignment options, as well as Segment 2A and Segment 2B, would require additional staffing, training, equipment, vehicles, and facilities to adequately serve the project in the event of an emergency.

The SBCFD also expressed concern of the rail alignment within the I-15 freeway median.[11] While the Segment 2C alignment options would incorporate cross-median emergency

[10] Dan Riser, Operations Lieutenant, San Bernardino County Sheriff's Department. Personal communication, October 9, 2009.

[11] Pat A. Dennen, San Bernardino County Fire Department. Personal Communication, November 2, 2009.

access, the SBCFD expressed concern that the use of the median with the rail alignment would affect the SBCFD's ability to use the median during an emergency response.

The portion of the Segment 2C alignment options through Barstow would be served by the Barstow Fire Protection District (BFPD). The BFPD has indicated that present staffing levels are insufficient to meet present demands. The BFPD indicates that a new facility north of the Mojave River would be required to meet acceptable emergency response times in the area. Existing and future staff also would need to be trained for fire and other emergencies that might be associated with a high-speed passenger train.[12]

*Utility Infrastructure Crossings*

The Segment 2C alignment options would cross existing utility conveyance systems. The I-15 freeway corridor contains utility infrastructure, such as overhead electrical and telephone lines. Consultation with utility providers during the preparation of the Draft EIS indicated that no major conflicts are anticipated with the proposed rail alignment running beneath electrical and telephone transmission lines, provided appropriate measures are taken.

**Segment 4C**

*Electricity and Gas Service*

Electricity would be needed to power the trains if the EMU technology option is implemented. Electric service providers have indicated they would be able to provide sufficient electricity to meet this demand.[13] As Segment 4C is 8 miles longer than its Segment 4 counterparts as evaluated in the Draft EIS, additional energy would be needed to propel the train over this distance. Although more energy will be needed than identified in **Section 3.4.4.2** of the Draft EIS, energy demand would not exceed regional supply capacity. With regard to natural gas, SGC indicates that natural gas service would be available to serve the project, but that connection to the local natural gas system in Nevada could incur fees that would be required for the Applicant.[14] No adverse effects would occur. Please also see **Section 3.13, Energy**, of this Supplemental draft EIS for a discussion of energy use associated with the project modifications and additions.

*Water Supply and Service*

As a rail alignment, Segment 4C would not generate demand for water. There would not be any landscaping nor any other water related use associated with the rail segments that would create an ongoing demand for water. Segment 4C would therefore not result in any

[12] Barstow Fire Protection District, Personal Communication, April 2008.

[13] Nancy Jackson, Southern California Edison, Personal Communication, January 16, 2007.

[14] Southwest Gas Corporation, Personal Communication, June 12, 2008.

water service issues and no effects would occur.

*Sewage and Wastewater*

Since Segment 4C would not generate demand for water, there would be no resultant wastewater generation and no required wastewater services. No effects related to sewage or wastewater treatment would occur.

*Stormwater*

Where Segment 4C would be adjacent to the I-15 freeway corridor, there would be an opportunity to tie into the existing stormwater discharge systems associated with I-15. Where Segment 4C would traverse through undeveloped areas north of Mountain Pass, new stormwater conveyance may be required.

*Solid Waste*

Daily maintenance-of-way activities may be required to dispose of waste items that may have strayed onto the tracks. However, this amount of waste is expected to be incidental/negligible. Therefore, Segment 4C would not result in any effects from exceeding solid waste disposal capacity.

*Police Services*

The SBCSD anticipates that current and projected staffing would be sufficient to serve Segment 4C.[15] Response times to Segment 4C would be affected by the lack of access roads to the proposed rail alignment. After Segment 4C exits the I-15 freeway corridor via a tunnel through the Clark Mountains, it would traverse lands without public rights-of-way; reaching the alignment would therefore be challenging if not impossible for conventional modes of transportation. As the Segment 4C alignment routing does not include public interfaces such as passenger stations, the need for police services would likely be required only in limited and emergency circumstances.

*Fire and Emergency Response Services*

Segment 4C would be located in the SBCFD service area. SBCFD indicated that existing services are inadequate to serve the project as a whole, including Segment 4C. Project features, inclusive and collectively, would require additional staffing, training, equipment, vehicles, and facilities to adequately serve the remote area in the event of an emergency. Specific to Segment 4C, a new station facility may be needed near Mountain Pass due the segment's distance from an existing SBCFD fire station.

[15] Dan Riser, Operations Lieutenant, San Bernardino County Sheriff's Department. Personal communication, October 9, 2009.

The SBCFD also expressed concern regarding access to the rail tracks where the rail alignment would be outside the I-15 freeway corridor or within a tunnel, as it may be difficult to pinpoint the exact location of the train in the event of an emergency.

*Utility Infrastructure Crossings*

**Section 3.16.4** of the Draft EIS noted that Segment 4B would conflict with a proposed solar project located to the west of Ivanpah Dry Lake. Because of this potential conflict, the Applicant proposed Segment 4C, which avoids the conflicts with the proposed solar project.

Notwithstanding, Segment 4C has the potential to conflict with other utilities. Segment 4C is located parallel to, but outside of, an existing utilities corridor. Segment 4C could result in physical conflicts with these utilities as they travel to and from the corridor.

**Relocated Sloan MSF**

*Electricity and Gas Service*

The change in the location of the RSMSF would not affect the amount of energy that would be needed to operate this maintenance facility, as compared to the evaluation in **Section 3.4.4.2** in the Draft EIS. Nevada Energy would provide electricity to the RSMSF. SGC has indicated that natural gas service would be available, but that connection to the local natural gas system could incur fees that would be required for the Applicant.[16]

*Water Supply and Service*

At the direction of Las Vegas Valley Water District (LVVWD), a water consumption rate based on an assumed commercial land use and property size was used to determine water demands. LVVWD requested that water demand flow rates be estimated based on maximum day gallons per minute (gpm). **Section 3.4.4.2** of the Draft EIS indicated that the largest Las Vegas MSF site would be 10 acres in size, with a resultant water demand of 48.4 AFY. The RSMSF would be 9.1 acres in size and thus comparable to the water demand assumption for the MSFs in **Section 3.4.4.2** of the Draft EIS. The LVVWD indicated that the water demand projection would be within estimations for water use within their service area.[17] LVVWD has also established a "water commitment" application process.

While adequate water supply would be available for the RSMSF, the LVVWD indicated that there is not adequate infrastructure to bring water to the RSMSF. Based on additional consultation with the LVVWD following the publication of the Draft EIS, it was

[16] Barbara Demaree, Southwest Gas Corporation. Personal communication, June 18, 2008.

[17] LVVWD, Personal Communication, June 2009.

identified that both the Sloan Road MSF and the RSMSF would require the extension and construction of new water facilities and pipelines to serve them. Notably, the LVVWD has plans to extend water infrastructure from the metropolitan Las Vegas area to the vicinity of the Jean Heliport and the Southern Nevada Supplemental Airport (SNSA) beginning as soon as 2011. However, this infrastructure is not currently in place and the Sloan Road MSF and the RSMSF would require the creation of one or more connections to the planned expanded facilities.

*Sewage and Wastewater*

The RSMSF would generate wastewater from water usage. Based on additional consultation with CCWRD following the publication of the Draft EIS, CCWRD indicated that current services do not extend to either the Sloan Road MSF or the RSMSF. These MSF sites are approximately 5 to 7 miles, respectively, south of the nearest existing municipal sewer line. Therefore, implementation of the Sloan Road MSF or the RSMSF would require the extension of sewer lines to connect with the existing service system or the construction of a septic system pursuant to CCWRD regulations.

*Stormwater*

The RSMSF is located in an undeveloped area without existing stormwater conveyances or stormwater providers. Any necessary drainage features would need to be provided on site. As no connections to stormwater services would occur, the RSMSF would not affect the ability of stormwater providers to serve their service area.

*Solid Waste*

The RSMSF would generate waste from employees and/or passengers. Since the projected number of employees or passengers at the RSMSF would be the same as the assumptions for the Las Vegas MSFs in the Draft EIS, the solid waste generation projections contained in **Section 3.4.4.2** of the Draft EIS would be applicable. The Apex Landfill would have sufficient capacity to accommodate solid waste generated at the RSMSF and no adverse effects would occur.

*Police Services*

Based on additional consultation with the Las Vegas Metropolitan Police Department (METRO)[18] following publication of the Draft EIS, METRO indicated that there has been a temporary suspension on the hiring of additional police officers due to the economic downtown. **Section 3.4.4.2** of the Draft EIS noted that although METRO is not considered understaffed, it is seeking to hire more personnel to meet local initiatives and

[18] The Draft EIS defined the Las Vegas Metropolitan Police Department as both METO and LVMPD. For the purposes of this Supplemental Draft EIS, the acronym METRO will be used in reference to the Las Vegas Metropolitan Police Department.

it is not anticipated that the project would impact service to the community.[19] With the hiring freeze, the primary concern expressed by the METRO following publication of the Draft EIS was that of police services for the Las Vegas Station site options because an emergency event could draw officers away from the existing needs of the community and that additional officers may be required.[20] Thus, it is not anticipated that the RSMSF would introduce any new environmental effects beyond those identified in **Section 3.4.4.2** of the Draft EIS.

*Fire and Emergency Services*

Based on additional consultation with the Clark County Fire Department (CCFD) following publication of the Draft EIS, the CCFD identified several changes to their department. The CCFD indicated that the Clark County's Heavy Rescue Team and the Hazardous Materials Emergency Response Team were decommissioned since publication of the Draft EIS.[21] Similar to the concerns identified in **Section 3.4.4.2** of the Draft EIS, the CCFD indicated that new staff, equipment, and most likely, a new station would still be required as a result of the project, including the project modifications and additions. However, the changes in the location of the Sloan Road MSF would not alter employment projections or otherwise change operating characteristics of either of these facilities in a way that would change the fire emergency response effects identified in **Section 3.4.4.2** of the Draft EIS. The RSMSF would actually be 2 miles closer to the nearest fire and police stations than the Sloan Road MSF analyzed in the Draft EIS.

*Utility Infrastructure Crossings*

As shown in **Table S-3.4-3**, the RSMSF would not have the potential to cross any utility lines. As a result, no interruption or impediment of utility services would occur.

**Frias Substation**

*Electricity and Gas Service*

The Frias Substation would be needed to connect the project to a source of electrical power. Nevada Energy would provide electricity to the Frias Substation, through a connection to the adjacent electric transmission lines. SGC has indicated that natural gas service would be available, but that connection to the local natural gas system could incur fees that would be required for the Applicant.[22] The substation would not change the amount of energy needed by the action alternatives and would be required to operate the

[19] Las Vegas Police Department, Personal Communication, January 2007.

[20] A.J. Delap, Office of Intergovernmental Services, Las Vegas Metropolitan Police Department, June 18, 2010.

[21] Girard Page, Senior Deputy Fire Chief, Clark County Fire Department. Personal communication, June 8, 2010.

[22] Barbara Demaree, Southwest Gas Corporation. Personal communication, June 18, 2008.

EMU technology option if either the Wigwam or Robindale MSFs are selected. Therefore, no new environmental effects would occur.

*Water Supply and Service*

The Frias Substation would not require water supply or service and no effects would occur.

*Sewage and Wastewater*

Since the Frias Substation would not require or use water, there would be no wastewater generation. No wastewater service would be required and no effects would occur.

*Stormwater*

The Frias Substation is located in an undeveloped area without existing stormwater conveyances or stormwater providers. Any necessary drainage features would need to be provided on site. As no connections to stormwater services would occur, the Frias Substation would not affect the ability of stormwater providers to serve their service area.

*Solid Waste*

The Frias Substation would not generate solid waste and would not result in any effects to solid waste service or the capacity of landfills.

*Police Services*

Based on additional consultation with the METRO following publication of the Draft EIS, METRO indicated that there has been a temporary suspension on the hiring of additional police officers due to the economic downtown. **Section 3.4.4.2** of the Draft EIS noted that although METRO is not considered understaffed, it is seeking to hire more personnel to meet local initiatives and it is not anticipated that the project would impact service to the community.[23] The primary concern expressed by the METRO was that of police services for the Las Vegas Station site options in that an emergency event could draw officers away from the existing needs of the community and that additional officers may be required.[24] As a substation, it is not anticipated that the Frias Substation would require general police service.

[23] Las Vegas Metropolitan Police Department, Personal Communication, January 2007.

[24] A.J. Delap, Office of Intergovernmental Services, Las Vegas Metropolitan Police Department, June 18, 2010.

*Fire and Emergency Services*

As previously discussed, the CCFD identified several changes to their department. Similar to the concerns identified in **Section 3.4.4.2** of the Draft EIS, the CCFD indicated that new staff, equipment, and most likely, a new station would still be required as a result of the project, including the project modifications and additions.[25] However, the Frias Substation would not create new adverse effects since the employment projections or operating characteristics of the project would not be altered.

*Utility Infrastructure Crossings*

The Frias Substation would connect directly to existing overhead electrical lines in the area and would provide electrical service to the project. There are no known utility conflicts associated with construction or operation of the Frias Substation.

**Alignment Adjustment Areas**

*Electricity and Gas Service*

Electrical energy would be needed to power the trains if the EMU technology option is implemented. The electricity service providers have indicated they would be able to provide sufficient electricity to meet this demand. Implementation of AAAs would not substantially alter the amount of energy needed to operate the action alternatives as evaluated in **Section 3.4.4.2** in the Draft EIS and no new environmental effects would occur. SGC has indicated that natural gas service would be available, but that connection to the local natural gas system in Nevada could incur fees that would be required for the Applicant.[26] Please also see **Section 3.13, Energy**, of this Supplemental draft EIS for a discussion of energy use associated with the project modifications and additions.

*Water Supply and Service*

The AAAs would not result in any change in demand for water for their associated rail alignments. There would not be any landscaping nor any other water related use associated with the rail segments that would create an ongoing demand for water. The AAAs would therefore not result in any water service issues and no effects would occur.

*Sewage and Wastewater*

Since the AAAs would not generate demand for water, there would be no resultant wastewater generation and no required wastewater services. No effects related to sewage or wastewater treatment would occur.

[25] Girard Page, Senior Deputy Fire Chief, Clark County Fire Department. Personal communication, June 8, 2010.

*Stormwater*

AAAs 1 and 2 would be located in areas outside of the I-15 freeway corridor and would have the potential to require new stormwater conveyances or connections to existing systems (unless they are constructed on ballast, which would reduce the amount of stormwater runoff associated with the rail alignment). AAAs 3 through 8 would be adjacent to the I-15 freeway and could tie into the existing stormwater discharge systems associated with I-15.

*Solid Waste*

The AAAs would not result in any change to solid waste generation relative to their associated rail alignments. Daily maintenance-of-way activities may be required to dispose of waste items that may have strayed onto the tracks. However, this amount of waste is expected to be incidental/negligible. Therefore, the AAAs would not result in any effects from exceeding solid waste disposal capacity.

*Police Services*

The AAAs would only result in minor shifts to portions of Segment 2A/2B, Segment 3B, and Segment 6B and would not alter the police service effects nor introduce any new environmental effects related to police services. The effects identified for Segment 2A/2B, Segment 3B, and Segment 6B in **Section 3.4.4.2** of the Draft EIS would remain.

*Fire and Emergency Services*

The AAAs would only result in minor shifts to portions of Segment 2A/2B, Segment 3B, and Segment 6B and would not alter the fire and emergency service effects nor introduce any new environmental effects. The effects identified for Segment 2A/2B, Segment 3B, and Segment 6B in **Section 3.4.4.2** of the Draft EIS would remain.

*Utility Infrastructure Crossings*

The AAAs would not change the nature of the utility conflicts that would occur during construction of the rail segments. Accounting for the AAAs, Segment 2A/2B, Segment 3B, and Segment 6B would continue to cross or be in close proximity to a number of utilities, including gas pipelines, electric transmission lines, water/wastewater infrastructure, and communications/fiber-optic lines. AAA 1 occurs within Segment 2A/2B, in the vicinity of a known crossing of the Mojave Kern Pipeline. The resultant change to the rail alignment may modify the precise location where the rail alignment and the pipeline intersect. With AAA 8, Segment 6B would leave the I-15 right of way in three places and could conflict with overhead utility lines and drainage features in these areas.

[26] Barbara Demaree, Southwest Gas Corporation. Personal communication, June 18, 2008.

Although the types of conflicts from the alignment adjustments would be similar in number and nature to those discussed in **Section 3.4.4.2** of the Draft EIS, the physical location of utility conflicts may be different.

### Wigwam MSF Modification

*Electricity and Gas Service*

The modification to the orientation of the Wigwam MSF would not affect the amount of energy that would be needed to operate this facility. The modified Wigwam MSF would result in the same energy and natural gas demand as the Wigwam MSF evaluated in **Section 3.4.4.2** of the Draft EIS and no new environmental effects would occur.

*Water Supply and Service*

Since only the orientation of the Wigwam MSF has been changed since publication of the Draft EIS, the assumed water demand would be the same as presented in **Section 3.4.4.2** of the Draft EIS. LVVWD reports adequate water supply and infrastructure to serve the Wigwam MSF.[27]

*Sewage and Wastewater*

Since only the orientation of the Wigwam MSF has been changed since publication of the Draft EIS, the estimated wastewater generation would be the same as presented in **Section 3.4.4.2** of the Draft EIS. The CCWRD and LVPWD would have adequate capacity to serve the Wigwam MSF.

*Stormwater*

Since the location of the Wigwam MSF has not changed since the Draft EIS, the effects related to stormwater would be the same as presented in **Section 3.4.4.2** in the Draft EIS. Any necessary drainage features would need to be provided on site.

*Solid Waste*

Since the size and employment capacity of the Wigwam MSF has not changed since the Draft EIS, the effects related to solid waste would be the same as presented in **Section 3.4.4.2** in the Draft EIS. No adverse effects related to solid waste generation or landfill capacity would occur with the modification.

[27] LVVWD, Personal Communication, June 2009.

*Police Services*

Since the location of the Wigwam MSF has not changed since the Draft EIS, the effects related to police services would be the same as presented in **Section 3.4.4.2** in the Draft EIS. It is not anticipated that the Wigwam MSF modification would affect the ability of the METRO or Nevada Highway Patrol (NHP) to provide police service.

*Fire and Emergency Services*

As previously discussed, the CCFD identified several changes to their department. Similar to the concerns identified in **Section 3.4.4.2** of the Draft EIS, the CCFD indicated that new staff, equipment, and most likely, a new station would still be required as a result of the project, including the project modifications and additions.[28] However, the Wigwam MSF modification would not create new adverse effects since the employment projections or operating characteristics of the project would not be altered.

*Utility Infrastructure Crossings*

Portions of the Wigwam MSF site would be located under an electric transmission line.

**Profile Modification**

*Electricity and Gas Service*

As the Profile Modification would place a portion of the Segment 3B rail alignment within a retained cut, no change to the required electricity and gas service as identified in **Section 3.4.4.**2 of the Draft EIS would occur. No new environmental effects would occur. Please also see **Section 3.13, Energy**, of this Supplemental draft EIS for a discussion of energy use associated with the project modifications and additions.

*Water Supply and Service*

The Profile Modification would not generate demand for water. There would not be any landscaping nor any other water related use associated with the rail segments that would create an ongoing demand for water. The Profile Modification would therefore not result in any water service issues and no effects would occur.

[28] Girard Page, Senior Deputy Fire Chief, Clark County Fire Department. Personal communication, June 8, 2010.

*Sewage and Wastewater*

Since the Profile Modification would not generate demand for water, there would be no resultant wastewater generation and no required wastewater services. No effects related to sewage or wastewater treatment would occur.

*Stormwater*

With the Profile Modification, this portion of Segment 3B would be situated within a retained cut and would not have the ability to tie into the existing I-15 stormwater drainage system because the rail alignment would be below grade. However, it is assumed that the rail alignment would be constructed on ballast and would not generate substantial amounts of stormwater runoff.

*Solid Waste*

The Profile Modification would not generate solid waste. Daily maintenance-of-way activities may be required to dispose of waste items that may have strayed onto the tracks. However, this amount of waste is expected to be incidental/negligible. Therefore, the Profile Modification would not result in any effects from exceeding solid waste disposal capacity.

*Police Services*

The Profile Modification is located in the same physical footprint as Segment 3B in the Draft EIS and therefore introduces no additional effects related to police services.

*Fire and Emergency Services*

The Profile Modification is located in the same physical footprint as Segment 3B in the Draft EIS and therefore introduces no additional effects related to fire and emergency services.

*Utility Infrastructure Crossings*

The Profile Modification is located in the same physical footprint as Segment 3B in the Draft EIS and therefore introduces no additional utility conflicts.

## 3.4.4 MITIGATION MEASURES

The mitigation measures identified in **Section 3.4.5** of the Draft EIS would be applied to the project modifications and additions to avoid, minimize, and mitigation for any adverse effects related to utilities and emergency services. These mitigation measures would also be applied to the project modifications and additions to reduce any new adverse effects related to utilities and emergency services. The relevant mitigation measures from the

Draft EIS are summarized below:

- **Mitigation Measure 1** would require the payment of connection and/or service/user/tipping fees, would be applied to all Las Vegas area MSF site options, VV3 (both parking options), and OMSF 2 to reduce effects related to connections to water facilities.
- In addition to the preparation of a Water Supply Assessment, **Mitigation Measure 2**, which is intended to minimize water usage through the incorporation of water-saving devices and drought-tolerant landscaping, would be applied to VV3 (both parking options), and continue to be applied to OMSF 2, to reduce effects related to water supply.
- **Mitigation Measure 3** would be applied to the RSMSF Site to ensure a water commitment from the LVVWD during the design phase of the project.
- **Mitigation Measure 4** would apply to rail segments within the freeway rights-of-way, including the rail alignments, alignment adjustments, and the Profile Modification. This mitigation measure would require that the Applicant coordinate with the state transportation agencies in California and Nevada to ensure that the proposed rail alignments connect to existing freeway stormwater conveyance devices.
- **Mitigation Measure 5** would be applied to all proposed modifications and additions, which would require that the project develop appropriate stormwater conveyance structures/systems at station and maintenance facility sites.
- **Mitigation Measure 6** would continue to be applied to all proposed modifications and additions, which would require the payment of impact fees for fire and emergency services. The Applicant would be required to pay a fair share development impact fee for improving the fire service and emergency response level to a level proportionate to the project's impact.
- **Mitigation Measure 7** would also be applied to all proposed modifications and additions, which would require the development of an emergency operations plan for the rail alignments, which would address concerns of accessing the rail alignments outside of the I-15 corridor.
- **Mitigation Measure 8** would be applied to all of proposed modifications and additions, which would avoid or minimize conflicts with existing utility infrastructure crossings.

### 3.4.5 Residual Impacts Following Mitigation

The incorporation of mitigation measures would minimize permanent effects related to the adequate provision of services and conflicts from utility crossings. Where proposed modifications and additions require the expansion of utility infrastructure, their location would be determined during the final design phase of the project. If additional facilities

were located outside of the footprint of the project features or were fundamentally different in nature to previous proposals, separate environmental review of the water facilities' construction and operation would be required. Additionally, if groundwater wells or other sources of water are considered during project operation or construction, development of these features would be subject to subsequent environmental review.

# 3.5 TRAFFIC AND TRANSPORTATION

This section identifies the potential effect on traffic and transportation within the project area as a result of the project modifications and additions and discusses the related mitigation measures.

## 3.5.1 AFFECTED ENVIRONMENT

Regulations and standards related to traffic and transportation identified in **Section 3.5.1** of the Draft EIS have not changed since publication of the Draft EIS and thus remain applicable to the proposed project.

**Victorville Station Site 3**

VV3A and VV3B parking options differ only in terms of parking configuration. Therefore, the study assumes equivalent traffic levels for both. Furthermore, traffic going to and from VV3A and VV3B would use the same roadways, intersections, and station access points.

*Study Area Roadways and Intersections*

The Dale Evans Parkway interchanges with I-15 would provide the only access to and from the VV3 site. Currently, this roadway has a single travel lane in each direction. On the east side of I-15, Dale Evans Parkway extends to the City of Apple Valley about five miles to the southeast. However, on the west side of I-15, the paved portion of Dale Evans Parkway terminates after a few hundred feet, and Dale Evans Parkway continues to the northwest as a dirt road, providing access into the nearby mountains. Owing to relatively low traffic volumes in this area, intersections in the area are stop-sign controlled (unsignalized).

The following existing intersections in the station vicinity have been identified for analysis:

- Dale Evans Parkway and I-15 Northbound (NB) Ramps
- Dale Evans Parkway and I-15 Southbound (SB) Ramps

**Figure S-3.5-1** shows existing lane geometry at the Victorville study intersections**.**

Evening peak hour turning movement counts were obtained at these study intersections on Thursday, May 28, 2009. **Figure S-3.5-2** presents these volumes in Intersection Level of Service (LOS) for the weekday PM peak period (4:00 PM to 6:00 PM) for the study intersections. **Table S-3.5-1** indicates that both study area intersections currently operate at acceptable conditions (LOS A).

Table S-3.5-1 Intersections Level of Service – Existing Conditions LOS

| | Intersection | Traffic Control | Existing Conditions LOS | Existing Conditions Delay[a] |
|---|---|---|---|---|
| 1 | I-15 Northbound Ramps / Dale Evans Parkway | Unsignalized[b] | A (NB)[c] | 9.3 |
| 2 | I-15 Southbound Ramps / Dale Evans Parkway | Unsignalized[b] | A (SB)[c] | 9.8 |

Source: AECOM, 2009.

[a] Delay reported in seconds per vehicle

[b] LOS and Delay reported for worst approach

[c] SB=Southbound, NB=Northbound

*Study Area Ramp Junctions*

The term "ramp junction" refers to both "merge" areas where on-ramps enter freeways, and "diverge" areas where cars prepare to exit freeways via off-ramps. For the freeway-ramp junctions, the *Highway Capacity Manual* methodology determines the LOS based on density of vehicles in the area of the freeway directly downstream or upstream of the studied ramps (presented in passenger cars per mile per lane, or pc/mi/ln). **Table 3.5-2** of the Draft EIS presents the definitions for LOS values for ramp junctions. The planned transportation improvements assumed under the Draft EIS were also used in this analysis, and are incorporated into the forecasts for both the No Action Alternative and the Action Alternatives in the 2030 scenario.

A ramp junction analysis was performed to calculate the existing LOS conditions of the I-15 on- and off-ramps to Dale Evans Parkway.

**Table S-3.5-2** shows that under existing conditions, the I-15 NB ramp junctions operate at an acceptable LOS B, and the SB ramp junctions operate at an acceptable LOS C.

Table S-3.5-2 Ramp Junction Level of Service – Existing Conditions

| | Location | LOS[a] | Density of Ramp (pc/mi/ln) |
|---|---|---|---|
| 1 | I-15 NB[b] Off-ramp to Dale Evans Parkway | B | 16.0 |
| 2 | I-15 SB[b] Off-ramp to Dale Evans Parkway | C | 26.6 |
| 3 | I-15 NB[b] On-ramp from Dale Evans Parkway | B | 16.1 |
| 4 | I-15 SB[b] On-ramp from Dale Evans Parkway | C | 26.3 |

Source: AECOM, 2010.

Notes: Bold indicates unacceptable conditions

[a] LOS = Level of Service

[b] NB = Northbound; SB = Southbound

### OMSF2, Relocated Sloan MSF, and Wigwam MSF Modification

The revised OMSF2 site, RSMSF site, and the Wigwam MSF Modification would not result in changes to the anticipated number of workers at the MSF/OMSF facilities considered in **Section 3.5.4** of the Draft EIS. Furthermore, these modifications and additions would not result in any changes in access points from the local roads that would affect traffic patterns.

**Segment 2C, Segment 4C, Alignment Adjustment Areas, and Profile Modification**

Segment 2C and Segment 4C would not include any interface with passengers or employees (e.g. station or maintenance facility) nor create any at-grade crossings or require modification or changes to existing local roadways.

Likewise, the eight proposed AAAs and Profile Modification involve shifts of the location of the proposed rail alignment but would not include any interface with passengers or employees.

**Frias Substation**

The Frias substation would be unmanned and therefore would not generate any new vehicle trips during project operations.

## 3.5.2 Methods of Evaluation of Impacts

**Rail Ridership Study**

In response to the proposed VV3 station alternative, a Supplemental Traffic Impact Assessment (TIA) was prepared by AECOM in April 2010. The 2010 TIA supplements the TIA that was prepared for the project and was included as **Appendix E** in the Draft EIS. The new 2010 TIA is included in this document as **Appendix S-B**.

The 2010 TIA only addresses the affects from VV3, as the remainder of the project modifications and additions would not include any interface with passengers or employees (e.g. station or maintenance facility) nor create any at-grade crossings or require modification or changes to existing local roadways.

The Draft EIS ridership projections were calculated assuming VV2 as the southern terminus of the route. Since VV3 is 4.5 miles further north from southern California population centers than VV2, the ridership forecasts were reviewed to determine the potential impact of VV3 on ridership. The review determined the location of VV3 would result in a less than one percent decrease in ridership. Given this minimal change in anticipated ridership, approximately the same number of vehicles would be traveling to and from the VV3 station as would travel to the other station options. Vehicle travel time to access the VV3 station would be three to four minutes longer than trips to VV1 or VV2 for vehicles coming from southern California, which would not substantially increase overall vehicle travel time for travelers from southern California.[1] At the same time, VV3's closer proximity to Las Vegas would result in slightly reduced train trip times, partially offsetting longer automobile trips. Given this, the TIA prepared for VV3 assumes the same level of traffic to and from the station as assumed for the other station site options.

[1] Stantec Consulting Services, April 13, 2010.

Notably, ridership forecasts differ between the EMU and DEMU technology options. The EMU technology offers higher speeds, larger trains, and shorter travel times than the DEMU and therefore would attract more riders than the slower, less frequent DEMU option. The EMU is thus anticipated to attract a higher level of ridership than the DEMU, which translates to higher traffic volumes to and from passenger stations.

**Scenarios Evaluated**

Two horizon years were selected for the traffic analysis: 2013 and 2030. The year 2013 was selected because it is the year the DesertXpress high speed passenger train is expected to begin operations. The year of 2030 was also selected to evaluate cumulative conditions because it is about 20 years after the start of construction, and because it was the farthest year in the future for which regional travel forecasts were available for the metropolitan Las Vegas area.

The same LOS thresholds for the Victorville area used in **Section 3.5.2.2** the Draft EIS are used here. According to the City of Victorville and the San Bernardino County Congestion Management Plan, the LOS at the study intersections for this analysis would be considered unacceptable if it falls below LOS D or adds five percent or more to the peak hour traffic volumes of an intersection.

## 3.5.3 Environmental Consequences

**Victorville Station Site 3**

*Potential Direct and Indirect Effects on Intersections*

**Figures S-3.5-3** and **S-3.5-4** show that the intersection geometry would change between 2013 and 2030, respectively, when station access roads are constructed. Dale Evans Parkway is the only existing street that would serve the proposed VV3 station site. **Figure S-3.5-5** shows the overall trip distribution for the station.

The following intersections were evaluated under future conditions with VV3:

- Intersection 1: I-15 NB Ramps/Dale Evans Parkway
- Intersection 2: I-15 SB Ramps/Dale Evans Parkway
- Intersection 3: Station Access #1/Dale Evans Parkway
- Intersection 4: Station Access #2/Dale Evans Parkway
- Intersection 5: Future Street/Dale Evens Parkway
- Intersection 6: Future Street/Station Access #3
- Intersection 7: Future Street/Station Access #4
- Intersection 8: Future Street/Station Access #5

**Tables S-3.5-3** and **S-3.5-4** show future conditions at the intersections listed above under baseline conditions for the DEMU and EMU option respectively.

**DEMU Technology Option**

***Existing Plus DEMU – Adverse Effects:*** When compared to existing conditions, the DEMU option would have an adverse effect on two study area intersections: the I-15 NB Ramps/Dale Evans Parkway and I-15 SB Ramps/Dale Evans Parkway intersections. As shown in **Table S-3.5-5**, LOS at both of these intersections would deteriorate from an acceptable to unacceptable level, resulting in an adverse effect. **Section 3.5.5** below provides mitigation.

***2013 Plus DEMU – Adverse Effects:*** The addition of traffic generated by the DEMU option to 2013 Baseline Conditions would change the LOS from acceptable to unacceptable at three study area intersections, resulting in adverse effects. The affected intersections would be the I-15 NB Ramps/Dale Evans Parkway, I-15 SB Ramps/Dale Evans Parkway, and Future Street/Dale Evans Parkway intersections. **Section 3.5.5** below provides mitigation. As shown in **Table S-3.5-5**, all other study intersections would continue to operate at an acceptable LOS.

***2030 Plus DEMU – Adverse Effects:*** The addition of traffic generated by the DEMU option to 2030 Baseline Conditions would change LOS from acceptable to unacceptable at three study area intersections, resulting in adverse effects. The affected intersections would be the I-15 NB Ramps/Dale Evans Parkway, I-15 SB Ramps/Dale Evans Parkway, and Future Street/Dale Evans Parkway intersections. **Section 3.5.5** below provides mitigation. As shown in **Table S-3.5-5**, all other study intersections would continue to operate at an acceptable LOS.

**EMU Technology Option**

***Existing Plus EMU – Adverse Effects:*** When compared to existing conditions, the EMU option would have an adverse effect on two study area intersections: the I-15 NB Ramps/Dale Evans Parkway and I-15 SB Ramps/Dale Evans Parkway intersections. As shown in **Table S-3.5-6**, LOS at both of these intersections would deteriorate from an acceptable to unacceptable level, resulting in an adverse effect. **Section 3.5.5** below provides mitigation.

***2013 Plus EMU – Adverse Effects:*** The addition of traffic generated by the EMU option to 2013 Baseline Conditions would change LOS from acceptable to unacceptable at five study area intersections, resulting in adverse effects. The affected intersections would be the I-15 NB Ramps/Dale Evans Parkway, I-15 SB Ramps/Dale Evans Parkway, Station Access #1/Dale Evans Parkway, Future Street/Dale Evans Parkway, and Future Street/Station Access #4 intersections. **Section 3.5.5** below provides mitigation. As shown in **Table S-3.5-6**, all other study intersections would continue to operate at acceptable LOS.

***2030 Plus EMU – Adverse Effects:*** The addition of traffic generated by the EMU option to 2030 Baseline Conditions would change LOS from acceptable to unacceptable at three study area intersections, resulting in adverse effects. The affected intersections would be the I-15 NB Ramps/Dale Evans Parkway, I-15 SB Ramps/Dale Evans Parkway, and Future Street/Dale Evans Parkway intersections. **Section 3.5.5** below provides mitigation for these cumulative effects. As shown in **Table S-3.5-6**, no cumulative effects would occur at the other study intersections since they would continue to operate at acceptable LOS.

Table S-3.5-3 Existing, 2013, & 2030 Baseline plus DEMU- LOS Conditions on Local Streets

| Intersection | | Existing Conditions[a] | | Existing Conditions Plus DEMU Conditions[a] | | 2013 Baseline Conditions[a] | | 2013 Baseline Plus DEMU Conditions[a] | | 2030 Baseline Conditions[a,e] | | 2030 Baseline Plus DEMU Conditions[a,e] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **LOS** | **Delay[b]** | **LOS** | **Delay[b]** | **LOS** | **Delay[b]** | **LOS** | **Delay[b]** | **LOS** | **Delay[b]** | **LOS** | **Delay[b]** |
| 1 | I-15 Northbound Ramps & Dale Evans Parkway | A (NB)[c] | 9.3 | **F(NB)[c]** | **163.4** | B (NB)[c] | 12.0 | **F(NB)[c]** | **586.3** | C | 30.8 | **F** | **89.9** |
| 2 | I-15 Southbound Ramps & Dale Evans Parkway | A (SB)[c] | 9.8 | **F(SB)[c]** | **115.3** | C (NB)[c] | 15.5 | **F(SB)[c]** | **666.9** | C | 24.3 | **F** | **83.0** |
| 3 | Station Access #1 & Dale Evans Parkway | NA | NA | B(NB)[c] | 12.6 | NA | NA | C(NB)[c] | 19.3 | NA | NA | B | 18.5 |
| 4 | Station Access #2 & Dale Evans Parkway | NA | NA | A(NB)[c] | 9.6 | NA | NA | B(NB)[c] | 11.7 | NA | NA | B | 13.4 |
| 5 | Future Street & Dale Evans Parkway | NA | NA | A(NB)[c] | 9.1 | C (SB)[c] | 16.0 | **F(NB)[c]** | **2028.4** | D | 49.3 | **E** | **56.6** |
| 6 | Future Street & Station Access #3[d] | NA | NA | A(WB)[c] | 9.3 | B (EB)[c] | 11.9 | C(EB)[c] | 21.7 | A | 7.4 | A | 9.1 |
| 7 | Future Street & Station Access #4[d] | NA | NA | A(WB)[c] | 9.0 | B (EB)[c] | 13.2 | D(EB)[c] | 27.6 | B | 12.4 | B | 15.5 |
| 8 | Future Street & Station Access #5 | NA | NA | A(WB)[c] | 8.7 | NA | NA | B(WB)[c] | 11.5 | NA | NA | A | 6.5 |

Source: AECOM, 2010.

Notes:

a) LOS and Delay reported for worst approach
b) Delay reported in seconds per vehicle
c) NB = Northbound, SB=Southbound, EB = Eastbound, WB=Westbound
d) Intersections 6 and 7 are T-intersections under 2013 and 2030 Baseline conditions
e) Signalization of all intersection occurs only under 2030 Baseline conditions

**Bold** text indicates unacceptable conditions.

Table S-3.5-4 Existing, 2013, & 2030 Baseline plus EMU- LOS Conditions on Local Streets

| Intersection | | Existing Conditions[a] | | Existing Conditions Plus EMU Conditions[a] | | 2013 Baseline Conditions[a] | | 2013 Baseline Plus EMU Conditions[a] | | 2030 Baseline Conditions[a,e] | | 2030 Baseline Plus EMU Conditions[a,e] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **LOS** | **Delay[b]** | **LOS** | **Delay[b]** | **LOS** | **Delay[b]** | **LOS** | **Delay[b]** | **LOS** | **Delay[b]** | **LOS** | **Delay[b]** |
| 1 | I-15 Northbound Ramps & Dale Evans Parkway | A (NB)[c] | 9.3 | **F(NB)[c]** | **529.5** | B (NB)[c] | 12.0 | **F(NB)[c]** | **---** | C | 30.8 | **F** | **162.3** |
| 2 | I-15 Southbound Ramps & Dale Evans Parkway | A (SB)[c] | 9.8 | **F(SB)[c]** | **567.8** | C (SB)[c] | 15.5 | **F(SB)[c]** | **---** | C | 24.3 | **F** | **150.6** |
| 3 | Station Access #1 & Dale Evans Parkway | NA | NA | C(NB)[c] | 19.4 | NA | NA | **F(NB)[c]** | **65.1** | NA | NA | C | 31.4 |
| 4 | Station Access #2 & Dale Evans Parkway | NA | NA | B(NB)[c] | 10.4 | NA | NA | B(NB)[c] | 13.0 | NA | NA | B | 13.6 |
| 5 | Future Street & Dale Evans Parkway | NA | NA | A(NB)[c] | 9.5 | C (SB)[c] | 16.0 | **F(NB)[c]** | **---** | D | 49.3 | **E** | **58.7** |
| 6 | Future Street & Station Access #3[d] | NA | NA | A(WB)[c] | 9.8 | B (EB)[c] | 11.9 | D(EB)[c] | 29.9 | A | 7.4 | A | 9.5 |
| 7 | Future Street & Station Access #4[d] | NA | NA | A(WB)[c] | 9.4 | B (EB)[c] | 13.2 | **E(EB)[c]** | **40.7** | B | 12.4 | B | 15.8 |
| 8 | Future Street & Station Access #5 | NA | NA | A(WB)[c] | 8.8 | NA | NA | B(WB)[c] | 12.0 | NA | NA | A | 8.2 |

Source: AECOM, 2010.

Notes:

a) LOS and Delay reported for worst approach
b) Delay reported in seconds per vehicle
c) NB = Northbound, SB=Southbound, EB = Eastbound, WB=Westbound
d) Intersections 6 and 7 are T-intersections under 2013 and 2030 Baseline conditions
e) Signalization of all intersection occurs only under 2030 Baseline conditions

**Bold** text indicates unacceptable conditions.

Table S-3.5-5 I-15/Dale Evans Parkway Ramp Junction Level of Service – 2013 Conditions

| | | 2013 Baseline | | 2013 Baseline Plus DEMU | | 2013 Baseline Plus EMU | |
|---|---|---|---|---|---|---|---|
| | Ramp Junction | LOS[a] | Density of Ramp | LOS[a] | Density of Ramp | LOS[a] | Density of Ramp |
| 1 | I-15 NB[b] Off-ramp to Dale Evans Parkway | B | 18.8 | C | 23.4 | C | 25.3 |
| 2 | I-15 SB[b] Off-ramp to Dale Evans Parkway | D | 28.8 | D | 29.0 | D | 29.1 |
| 3 | I-15 NB[b] On-ramp from Dale Evans Parkway | B | 18.8 | C | 22.2 | C | 23.6 |
| 4 | I-15 SB[b] On-ramp from Dale Evans Parkway | D | 29.6 | D | 30.2 | D | 34.8 |

Source: AECOM, 2010.

Notes: Bold indicates unacceptable conditions

[a] LOS = Level of Service

[b] NB = Northbound; SB = Southbound

Table S-3.5-6 I-15/Dale Evans Parkway Ramp Junction Level of Service – 2030 Conditions

| | | 2030 Baseline | | 2030 Baseline Plus DEMU | | 2030 Baseline Plus EMU | |
|---|---|---|---|---|---|---|---|
| | Ramp Junction | LOS[a] | Density of Ramp | LOS[a] | Density of Ramp | LOS[a] | Density of Ramp |
| 1 | I-15 NB[b] Off-ramp to Dale Evans Parkway | D | 28.2 | D | 32.0 | D | 33.5 |
| **2** | **I-15 SB[b] Off-ramp to Dale Evans Parkway** | **E** | **35.5** | **E** | **35.6** | **E** | **35.7** |
| 3 | I-15 NB[b] On-ramp from Dale Evans Parkway | D | 29.1 | D | 32.4 | D | 33.7 |
| **4** | **I-15 SB[b] On-ramp from Dale Evans Parkway** | **F** | **41.6** | **F** | **42.2** | **F** | **46.5** |

Source: AECOM, 2010.

Notes: Bold indicates unacceptable conditions

[a] LOS = Level of Service

[b] NB = Northbound; SB = Southbound

*Ramp Junction Analysis*

All traffic accessing the proposed VV3 station site would use the northern I-15 /Dale Evans Parkway interchange. **Figure S-3.5-3** shows the overall trip distribution for the station area. These distributions were incorporated into the traffic forecasts for the 2013 and 2030 conditions at the I-15 on and off ramps at Dale Evens Parkway.

**Table S-3.5-3** summarizes the 2013 conditions at the I-15/Dale Evans Parkway ramp junctions under both baseline (No Project) and with project conditions (Both DEMU and EMU technology options). Under the 2013 Baseline Conditions, all ramp junctions are expected to operate at acceptable conditions (LOS D or better).

Implementation of the project with the proposed VV3 station site would worsen delays at the I-15 and Dale Evans Parkway ramp junctions in year 2013 under both technology options. However, the LOS would remain acceptable at all ramp junctions under both technology options.

**Table S-3.5-4** summarizes the 2030 conditions at the I-15/Dale Evans Parkway ramp junctions. Under the 2030 Baseline Conditions, NB ramp junctions are expected to operate at acceptable conditions (LOS D), while SB ramp junctions would operate at unacceptable conditions (LOS E and F). When compared to the 2030 Baseline Conditions, the SB ramp junctions would continue to operate at unacceptable conditions with implementation of VV3 under both the DEMU and EMU options, while the NB ramp junctions would continue to operate at an acceptable LOS D.

### OMSF2, Relocated Sloan MSF, and Wigwam MSF Modification

As previously stated, the revised OMSF2 site, RSMSF site, and the Wigwam MSF Modification would not result in changes to the anticipated number of workers at the MSF/OMSF facilities considered in the Draft EIS. Therefore these project modifications would not change the conclusion in **Section 3.5.4** of the Draft EIS that these facilities would not result in adverse traffic effects on nearby local roadways.

### Segment 2C, Segment 4C, Alignment Adjustment Areas, and Profile Modification

As previously stated, Segment 2C, Segment 4C, and AAAs would not include any interface with passengers or employees (e.g. station or maintenance facility) nor create any at-grade crossings or require modification or changes to existing local roadways. Therefore, there are no traffic effects related to these features.

### Frias Substation

The Frias substation would be unmanned and therefore would not generate any new vehicle trips during project operations. As a result, the Frias Substation would not result in any traffic related effects.

## 3.5.4 MITIGATION MEASURES

The addition of project traffic to future projected traffic in 2013 and 2030 would contribute to unacceptable delays at the affected intersections. **Table S-3.5-7** lists mitigation requirements for VV3 under the DEMU technology option. **Table S-3.5-8** lists mitigation requirements for VV3 under the EMU technology option. The project Applicant would be responsible to contribute to these mitigations equal to their fair-share of the adverse effect as determined by the appropriate jurisdictional authority.

**Mitigation Measures TRAF-25** and **TRAF-26** would avoid or reduce the adverse traffic effects associated with the proposed VV3 station site. **Appendix S-B,** the Supplemental TIA for VV3, provides LOS calculations at intersections after implementation of **Mitigation Measures TRAF-25** and **TRAF-26**. These calculations show that mitigation measures would improve the level of service (LOS) to acceptable (LOS D or better) conditions at all study intersections.

Table S-3.5-7 VV3 Mitigation Measures – DEMU Technology Option

| Station Site Option | Intersection | Existing | 2013 | 2030 |
|---|---|---|---|---|
| **Mitigation TRAF-25: Victorville Site Option 3 – Project Mitigation**<br><br>The project Applicant would be responsible to contribute to these mitigations equal to their fair-share of the adverse effect as determined by the appropriate jurisdictional authority. | 1. I-15 Northbound Ramps/Dale Evans Parkway | ▪ Signalize | ▪ Add northbound left turn lane | ▪ Add second northbound left turn lane |
| | 2. I-15 Southbound Ramps/Dale Evans Parkway | ▪ Signalize | ▪ Add eastbound right turn lane<br>▪ Add westbound left turn lane | ▪ Optimize signal timing |
| | 5. Future Street/Dale Evans Parkway | N/A | ▪ Signalize | ▪ Optimize signal timing |

Source: AECOM, 2010.
Note: The number of each improvement needed corresponds with the intersection numbers as discussed in the rest of this section.

Table S-3.5-8 VV 3 Mitigation Measures – EMU Technology Option

| Station Site Option | Intersection | Existing | 2013 | 2030 |
|---|---|---|---|---|
| **Mitigation TRAF-26: Victorville Site Option 3 – Project Mitigation**<br><br>The project Applicant would be responsible to contribute to these mitigations equal to their fair-share of the adverse effect as determined by the appropriate jurisdictional authority. | 1. I-15 Northbound Ramps/Dale Evans Parkway | ▪ Signalize | ▪ Add two northbound left turn lanes[a] | ▪ Add northbound left turn lane[a] |
| | 2. I-15 Southbound Ramps/Dale Evans Parkway | ▪ Signalize | ▪ Add eastbound right turn lane<br>▪ Add second westbound through lane<br>▪ Add westbound left turn lane | ▪ Add second eastbound right turn lane |
| | 3. Station Access #1/Dale Evans Parkway | N/A | ▪ Signalize<br>▪ Add second westbound left turn lane | N/A |
| | 5. Future Street/Dale Evans Parkway | N/A | ▪ Signalize<br>▪ Add second westbound left turn lane | ▪ Add third westbound left turn lane |
| | 7. Future Street/Station Access #4 | N/A | ▪ Signalize | N/A |

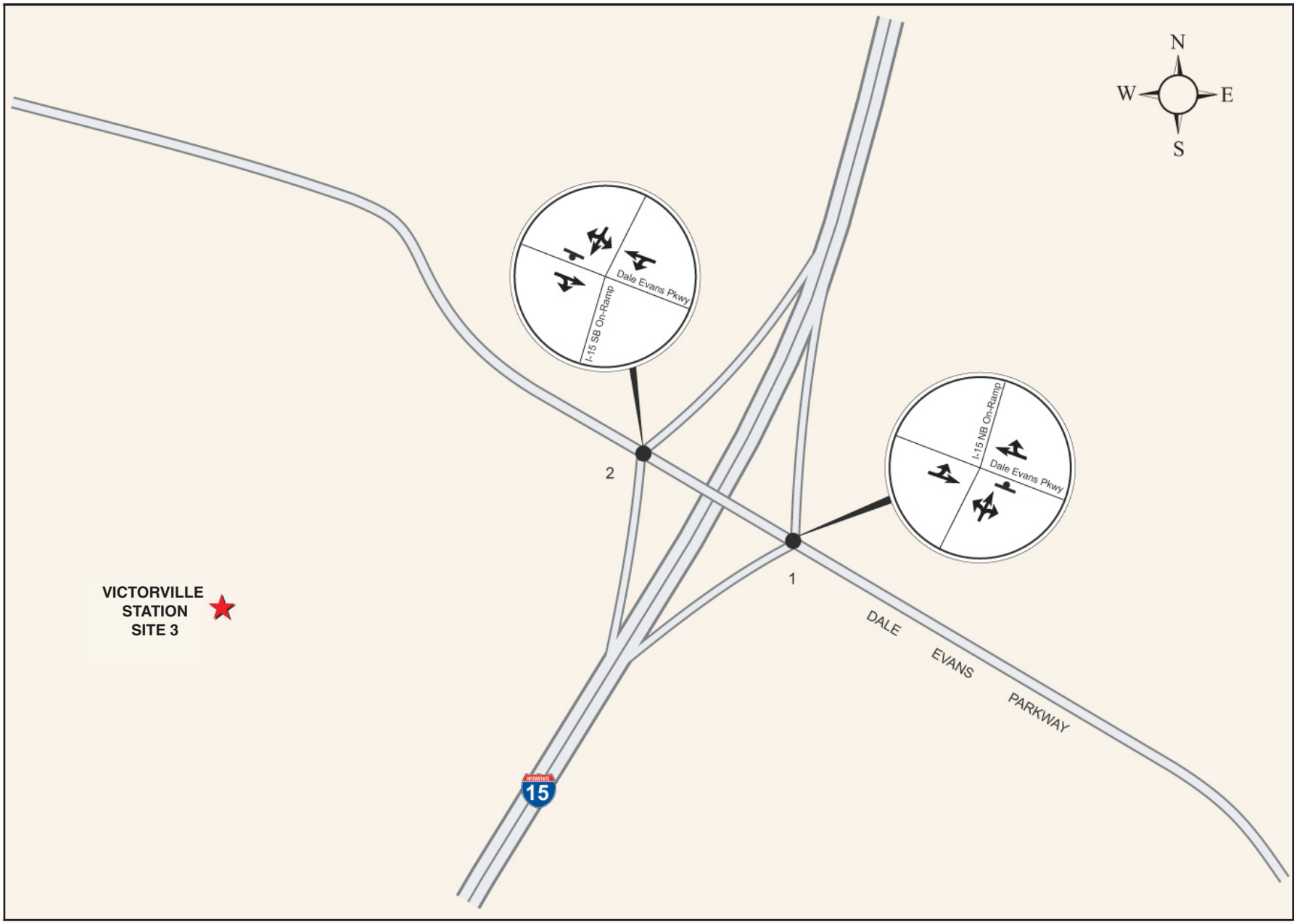
Source: AECOM, 2010.

Note: The number of each improvement needed corresponds with the intersection numbers as discussed in the body of this section and in the referenced 2010 TIA.

[a] The 2013 geometry at intersection 1 is assumed to be unsignalized (the same as existing geometry) and the 2013 mitigation measure reflects what is needed to improve the intersection under these conditions. By 2030, the intersection geometry would change and the intersection is expected to be signalized with one left-turn lane and two through lanes. The 2030 mitigation reflects changes needed to the anticipated 2030 intersection geometry.

## 3.5.5 Residual Impacts Following Mitigation

The mitigation identified in **Tables S-3.5-7** and **S-3.5-8** would reduce the delay at the affected intersections so that the LOS would operate at an acceptable LOS (LOS D or better) at all intersections. Therefore, all potential traffic and transportation effects can be successfully reduced through the implementation of the mitigation measures. No residual impacts from the project are anticipated after implementation of mitigation.

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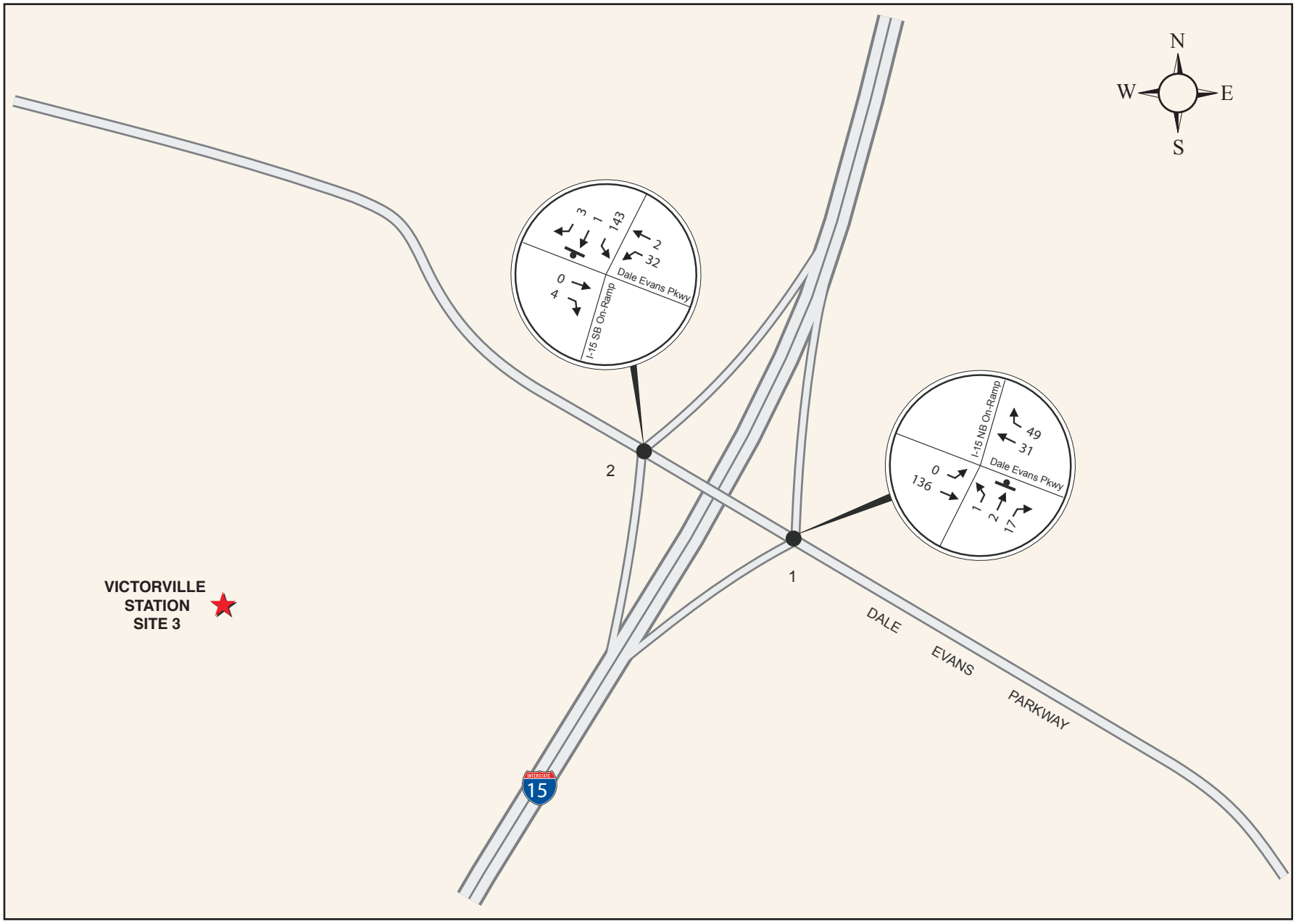
***EXISTING INTERSECTION LANE GEOMETRY***
***Victorville Station Site 3***

**FIG S-3.5-1**

*Source: AECOM, 2009.*

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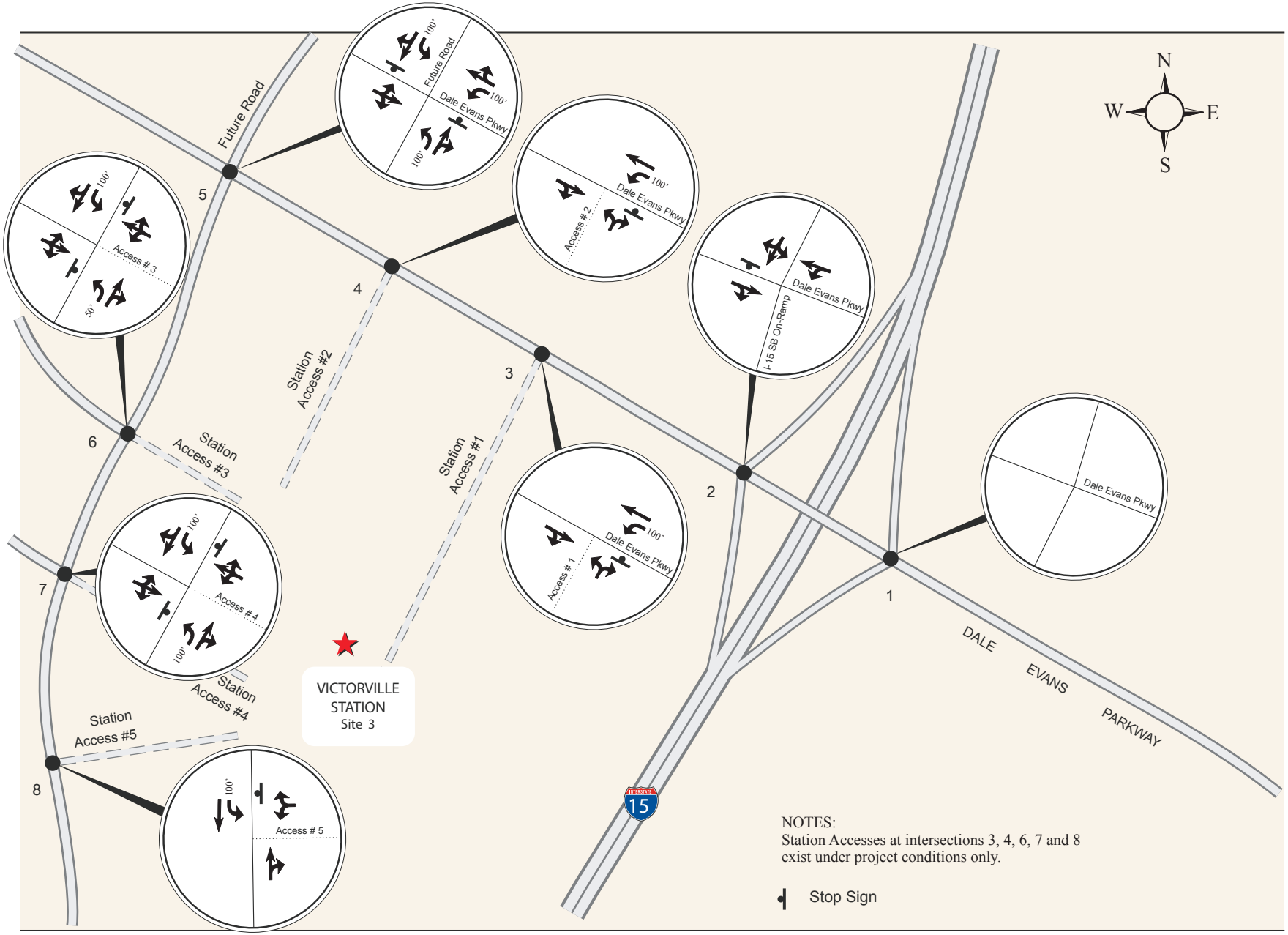
***EXISTING INTERSECTION TRAFFIC VOLUMES***
***Victorville Station Site 3***

**FIG S-3.5-2**

*Source: AECOM, 2009.*

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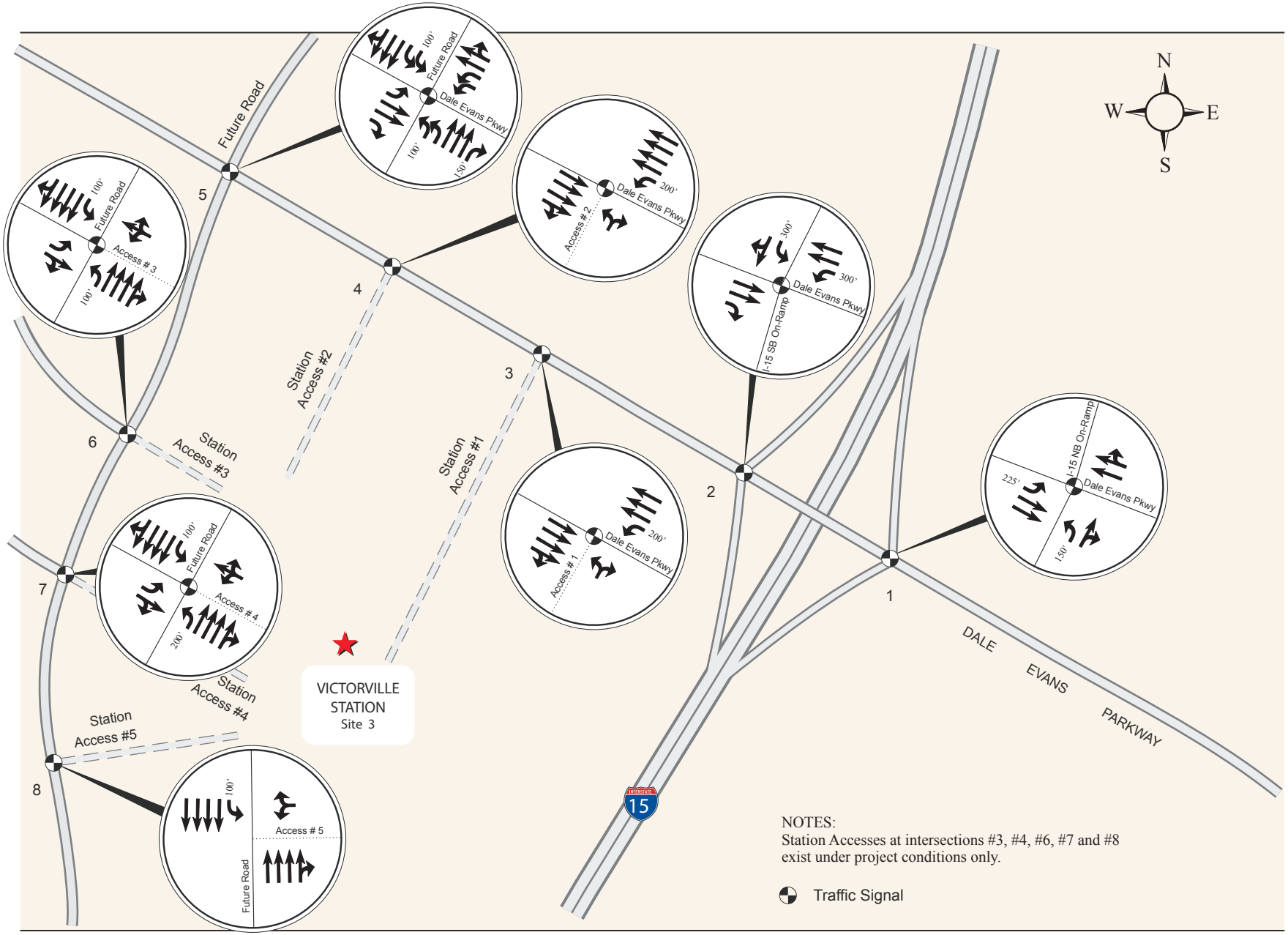
***FUTURE YEAR 2013 INTERSECTION GEOMETRY***
***Victorville Station Site 3***

**FIG S-3.5-3**

*Source: AECOM, 2009.*

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***FUTURE YEAR 2030 INTERSECTION GEOMETRY***
***Victorville Station Site 3***

**FIG S-3.5-4**

Source: AECOM, 2009.

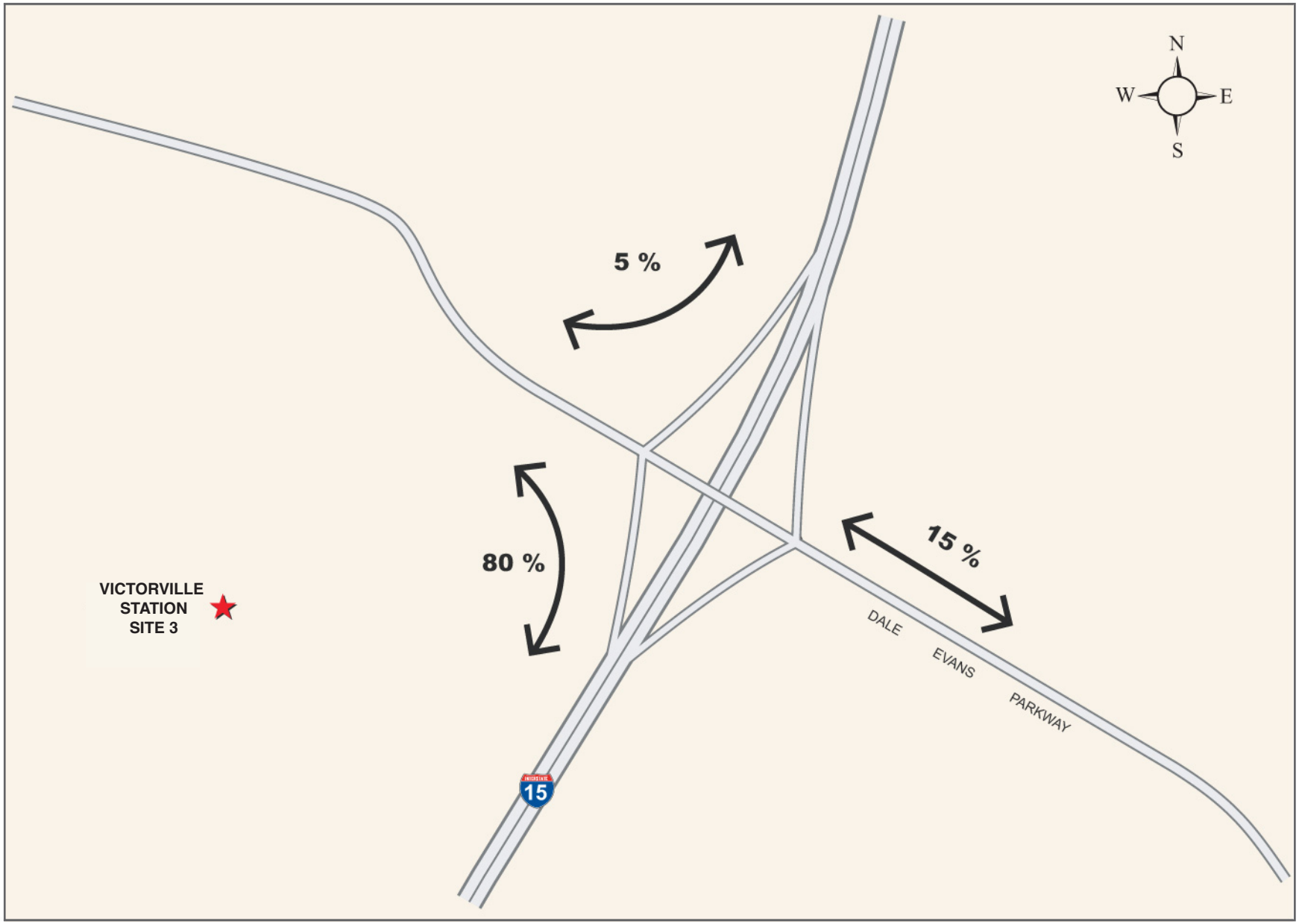


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FIG **S-3.5-5**

*Source: AECOM, 2009.*

# 3.6 VISUAL RESOURCES

This section describes the potential impacts to the visual environment related to the project modifications and additions and appropriate mitigation measures.

## 3.6.1 AFFECTED ENVIRONMENT

Regulations and standards related to visual resources identified in **Section 3.6.1** of the Draft EIS have not changed since publication of the Draft EIS and remain applicable to the project modifications and additions.

As noted in **Section 3.6.2** of the Draft EIS, FRA has grouped the project corridor landscapes into three visual quality and sensitivity categories – low, medium, and high. **Figures S-3.6-1** and **S-3.6-5** show these visual quality and sensitivity classifications for the areas of the project modifications and additions.

**Section 3.6.2** of the Draft EIS also describes the FHWA and BLM visual methodologies. The FHWA and the BLM identify the visual quality and sensitivity of visual landscapes, using ratings of low, medium, and high. **Table S-3.6-1** identifies the FRA, FHWA, and BLM landscape sensitivities and summarizes the landscape types and notable visual resources in the areas of the project modifications and additions.

The BLM has also established visual management land classifications, using ratings of Class I through Class IV. Class I and II lands are relatively undisturbed and have vistas towards undeveloped natural areas. Class III lands include areas with established transportation corridors, but which look out onto landscaped with moderate to low visual disruption. Class IV lands represent visually disturbed areas and look out onto other visually disturbed areas.

None of the project modifications and additions would be located within a BLM designated Area of Critical Environmental Concern (ACEC). ACECs can contain sensitive visual resources, in addition to sensitive biological and paleontological resources. **Figure S-3.6-6** shows the location of the designated ACECs in relation to the project modifications and additions.

### Victorville Station Site 3

The VV3 site (including both parking options (VV3A and VV3B)) would be located on undeveloped lands with low lying shrubs and desert soils as well as overhead electric transmission lines. The I-15 freeway corridor is located immediately east of the proposed VV3 site. FRA considers the overall existing visual quality of the VV3 site and surroundings to be moderate. The VV3 site is located on BLM visual management Class III lands. **Figure S-3.6-7** illustrates the existing visual conditions at the VV3 site.

Table S-3.6-1 Summary of Existing Landscape Sensitivities for Project Modifications and Additions

| Modifications and Additions | Relevant Figure | BLM Objective Class | FHWA Visual Quality/Sensitivity Rating | FRA Visual Quality Rating | Typical Visual Resources Present |
|---|---|---|---|---|---|
| VV3A and VV3B | S-3.6-1 | Class III | Moderate | Medium | Mountains with limited vegetation in middle ground and background, undeveloped lands with low lying shrubs and desert soil in foreground |
| OMSF 2 | S-3.6-1 | Class III | Moderate | Medium | Mountains with limited vegetation in middle ground and background, undeveloped lands with low lying shrubs and desert soil in foreground |
| Segment 2C (Side Running and Median) | S-3.6-1 | Class II-III outside Barstow/Lenwood; Class IV in Barstow/ Lenwood | Low to Moderate | Medium outside Barstow; Low within Barstow | Outside Barstow/Lenwood: Mountains with limited vegetation in middle ground and background, undeveloped lands with low lying shrubs and desert soil in foreground<br>In Barstow/Lenwood: Urban and suburban development |
| Segment 4C | S-3.6-2 | Class I | High | Low to High | Mountains with limited vegetation and undeveloped lands with low lying shrubs and desert soil in foreground and background |
| Relocated Sloan MSF | S-3.6-3 | Class II/III | Moderate | Medium | Undeveloped lands with low lying shrubs, desert soil, and rock outcroppings in foreground, rolling hills with limited vegetation in middle ground and background |
| Frias Substation | S-3.6-3 | Class IV | Low | Low | Suburban development, undeveloped lands with low lying shrubs and desert soil |
| AAAs 1 & 2 (Segment 2A/2B) | S-3.6-2 | Class II | Moderate | Medium | Suburban development combined with undeveloped lands with low lying shrubs and desert soils; Mojave River. |
| AAAs 3 – 6 (Segment 3B) | S-3.6-3 | Class II | Moderate | Medium | Undeveloped lands with low lying shrubs and desert soils |
| AAA 7 (Segment 6B) | S-3.6-4 | Class II/III | Moderate | Medium | Mountains in the background, undeveloped lands with low lying shrubs and desert soils in the foreground |
| AAA 8 (Segment 6B) | S-3.6-5 | Class IV | Low | Low | Urban development, views of Las Vegas Strip and downtown |
| Wigwam MSF Modification | S-3.6-3 | Class IV | Low | Low | Suburban development combined with undeveloped lands with low lying shrubs and desert soil in foreground |
| Profile Modification | S-3.6-3 | Class III | Moderate | Medium | Undeveloped lands with low lying shrubs and desert soil in foreground, mountains with limited vegetation in middle ground and background |

Source: CirclePoint, 2010.

### OMSF 2

Since the location of the OMSF 2 is the same as presented in the Draft EIS, the existing visual character of the site remains as described in **Section 3.6.2.2** of the Draft EIS. The existing visual environment consists of undeveloped lands with low lying shrubs and desert soils immediately adjacent to the I-15 freeway corridor. Views of mountains are also afforded from the site. **Table S-3.6-1** and **Figure S-3.6-1** summarize the existing visual quality and sensitivity of OMSF 2.

### Segment 2C

The visual character along the Segment 2C alignment options varies by location. Between the transition from Segment 1 and Lenwood, the existing visual environment consists of undeveloped areas with low lying shrubs and desert soils.

The presence of the I-15 corridor and interspersed manmade features (i.e., billboards) fragment the natural landscape south of Lenwood and Barstow, but the corridor affords vivid views of undeveloped areas, hillsides, and distant mountains, representing moderate visual quality. The Segment 2C alignment would be located on BLM visual management Class II-III lands outside of Barstow and Lenwood.

Through Lenwood, Barstow, and into Yermo, the visual environment consists of urban and suburban development. **Figure S-3.6-8** illustrates a typical view of the existing visual character along Segment 2C within central Barstow. The combination of the I-15 freeway and urbanized development through Lenwood and Barstow represent an area of low visual quality and sensitivity. The Mojave River becomes a prominent visual feature in the eastern portion of Segment 2C. Though this urbanized area, Segment 2C would be located on BLM visual management Class IV lands.

### Segment 4C

The existing visual character of Segment 4C is largely similar to that of Segment 4B as described in **Section 3.6.2.2** of the Draft EIS. **Figure 3.6-28** in the Draft EIS depicts an existing view looking from the I-15 freeway towards the area proposed for Segment 4C with the Clark Mountains in the background. When entering the Clark Mountain area, the existing visual environment is dominated by rocky mountains and undeveloped lands. North of the Clark Mountains, the existing visual environment is dominated by undeveloped lands with low lying shrubs and desert soils. Segment 4C would traverse lands considered to have a high level of visual quality and integrity. As with Segment 4B, Segment 4C would be located on BLM visual management Class I lands. Views of Segment 4C would be possible from higher elevation vantage points within the northern unit of the adjacent Mojave National Preserve.

### Relocated Sloan MSF

The visual character of the RSMSF site consists of undeveloped lands with rocky outcroppings, low lying shrubs and hills adjacent to the I-15 freeway. Billboards and industrial areas are located nearby. The RSMSF site is located in an area with moderate visual quality and is located on BLM visual management Class II/III lands. **Figure S-3.6-4** shows the existing visual quality and sensitivity at the RSMSF site.

### Frias Substation

The Frias Substation site is located in a mixed suburban and undeveloped visual environment immediately west of the I-15 freeway corridor. The site is undeveloped with desert soil and scattered shrubbery with adjacent single-family development to the north and west. The site is semi-disturbed due to the presence of overhead electric transmission lines that traverse in an east-west direction just north of the site. Dean Martin Drive bisects the two sites that make up the Frias Substation. The Frias Substation is located on BLM visual management Class IV lands, with low visual quality and sensitivity due to the metropolitan nature of the surround Las Vegas visual environment.

### Alignment Adjustment Areas

The proposed AAAs are located in close proximity to the I-15 freeway corridor in Segment 2A/2B, Segment 3B, and Segment 6B. AAAs 1 through 7 are within the same existing visual environment analyzed within the Draft EIS, as the adjustments would have a maximum horizontal shift of no more than 400 feet from the center of the rail line evaluated in the Draft EIS. These shifts occur in largely undeveloped areas near the I-15 freeway corridor. The visual character of these AAAs would be similar to the areas described for Segment 2A/2B, Segment 3B, and Segment 6B in **Section 3.6.4.2** of the Draft EIS.

AAA 8 would shift a portion of the Segment 6B rail alignment outside of the existing I-15 freeway corridor into a local roadway. Between Hacienda Avenue and Tropicana Avenue, this alignment adjustment would traverse through the median of Dean Martin Drive/Industrial Road. **Figure S-3.6-9** shows the existing visual character of AAA 8 between Hacienda Avenue and Tropicana Avenue. As documented in **Section 3.6.2.2** of the Draft EIS, the visual environment in this area is predominately urbanization, with residential, commercial, and industrial developments lining the I-15 freeway corridor, representing low visual quality. Views of the distant mountains to the north are available from this location.

### Wigwam MSF Modification

Since the location of the Wigwam MSF site is the same as presented in the Draft EIS, the existing visual character of the site remains as described in **Section 3.6.2.2** of the Draft EIS. **Figure S-3.6-10** shows the existing visual environment at the Wigwam MSF site. The existing visual environment consists of suburban development, such as RV parks, single-family residential development, and large multi-story neutral colored hotels and casinos, immediately adjacent to the I-15 freeway corridor. The site itself is largely undeveloped with low lying shrubs and desert soil with two small buildings housing commercial/industrial uses. **Table S-3.6-1** and **Figure S-3.6-5** summarize the existing visual quality and sensitivity of the Wigwam MSF site.

### Profile Modification

The Profile Modification would not involve any new visual environments. The existing visual environment along Segment 3B has not changed since the Draft EIS. As shown in **Figure S-3.6-11**, existing views include undeveloped lands with low lying shrubs and desert soils, distant mountains, and an existing overhead transmission line in the mid-

range view. As with Segment 3B, the Profile Modification would traverse through lands considered to have a moderate level of existing visual quality and integrity. The Profile Modification would be located on Class III lands. Views of the Profile Modification area are available to the north from motorists traveling southbound on I-15.

## 3.6.2 METHODS OF EVALUATION OF IMPACTS

The same methodology used in **Section 3.6.3** of the Draft EIS is used to evaluate potential effects of the project modifications and additions, providing a comparison of existing visual character to conditions following implementation. The same blended methodological approach of incorporating key aspects of both BLM and FHWA visual guidance documents and regulations is utilized. **Section 3.6.3** of the Draft EIS provides a discussion of the BLM visual contrast rating process and FHWA visual impact assessment methodologies.

BLM visual management class assignments were based on a qualitative review of site photography and field reconnaissance. FHWA visual quality and visual sensitivity ratings were determined by assessing the vividness, intactness, unity, and adjacent character of the existing sites. New viewpoints or "key observation point" (KOP) consistent with BLM and FHWA guidance were selected for VV3, Segment 2C, and AAA 8 due to their public visibility from the I-15 freeway and adjacent roadways.

## 3.6.3 ENVIRONMENTAL CONSEQUENCES

**Victorville Station Site 3**

The VV3 site would be visible from the I-15 freeway. **Figure S-3.6-7** illustrates the visual comparison between existing and future conditions at the VV3 site showing the VV3A parking option, which would have surface parking areas between the station building and the I-15 freeway. Under the VV3B parking option, the surface parking areas seen in **Figure S-3.6-7** would be located on the northwestern side of the VV3 station building and would not be visible from this viewpoint on I-15.

*Evaluation under BLM Criteria*

As shown in **Figure S-3.6-7**, the VV3 site would somewhat dominate the middle ground, partially obstructing views to distant hills and open desert lands for motorists on I-15. The VV3 station building would be located approximately 2,000 feet from I-15, which would reduce the visual intensity of the station building for motorists on I-15. With the presence of the I-15 freeway and overhead electric transmission lines, the addition of a new rail station facility as an adjacent transportation facility would not substantially detract from the existing landscape.

The VV3 site would also create a new source of light and glare; sunlight could reflect from the new station building creating a new source of glare, while overhead parking lighting and outdoor building lighting would introduce new sources of light during nighttime

hours. As the parking area for VV3B would be located on the northwestern side of the VV3 station, the lighting associated with the overhead parking lighting would be less intense for motorists on I-15 as compared to VV3A.

The VV3 site would be stationary images primarily observed by passing motorists on I-15 traveling at speeds of about 70 miles per hour (mph), representing brief viewer duration. VV3 would be located approximately 6 miles north of central Victorville and would not be visible from the City's more developed/populated portions, resulting in very few stationary, non-motorist views of the station. As such, the VV3 site would not create significant adverse visual effects.

*Evaluation under FHWA Criteria*

Implementation of VV3 would reduce the vividness of the existing desert landscape visible to the west from I-15. Due to the presence of the overhead electric transmission lines and adjacent I-15 transportation corridor, VV3 would not result in a change to the already low unity of the visual environment. Development of the station building and parking areas and the associated light and glare would result in a less intact desert setting, thereby decreasing the intactness of the existing setting. Under VV3B, the surface parking areas would be constructed on the northwestern side of the station building and the light associated with the overhead parking lighting would be less intense for motorists on I-15 as compared to VV3A, whose parking area would be under the existing overhead electric transmission lines. However, due to the brief viewer duration from motorists on I-15, visual effects from lighting would not be significantly adverse.

**OMSF 2**

The visual effects associated with the reduced footprint for OMSF 2 would be similar to the effects of OMSF 2 discussed in **Section 3.6.4.2** of the Draft EIS. OMSF 2 would introduce a new manmade, utilitarian visual feature into the existing environment. While OMSF 2 would partially obstruct views of the adjacent desert mountains and open desert lands, OMSF 2 would not represent the dominant visual feature for motorists on I-15. In fact, the reduced footprint of OMSF 2 would further reduce the visual dominance of OMSF 2.

Additionally, the existing overhead electric transmission lines already disrupt the natural landscape and the viewer duration from motorists traveling on the I-15 freeway would be brief. Thus, no adverse visual effects would occur from OMSF 2, as previously concluded in **Section 3.6.4.2** of the Draft EIS.

**Segment 2C**

Segment 2C would traverse two distinct visual environments: 1) the undeveloped landscape between Segment 1 and Lenwood; and 2) the more urbanized landscape through Lenwood and Barstow.

*Evaluation under BLM Criteria*

***Segment 1 to Lenwood:*** As discussed in **Chapter 2.0, Alternatives**, of this Supplemental Draft EIS, Segment 2C would follow the existing I-15 freeway starting at a

point south of Lenwood. Constructing the rail trackway, concrete pillars, and trains necessary for Segment 2C would contrast with the form, color, and texture of the open desert areas and hillsides within the BLM visual management Class II-III landscape. However since the I-15 freeway corridor already creates a substantial contrast in the visual environment, the construction of Segment 2C would not constitute a substantially new visual feature within the existing landscape. Passing trains would briefly block views from the I-15 freeway to the north or west, however, this view blockage would be for only short durations due to the expected train frequency and speeds, resulting in a minor effect on views from the freeway.

***Within Lenwood and Barstow:*** Through Lenwood and Barstow, the I-15 freeway corridor travels through an urban environment. Segment 2C would be highly visible to motorists on the I-15 freeway but would not be out of character within the surrounding urban landscape.

As shown in **Figure S-3.6-12**, the Segment 2C Side Running alignment option would be visible in the foreground for motorists, pedestrians, and visitors near the I-15/Main Street interchange within Barstow. Segment 2C would be on elevated structure as it crosses over Main Street immediately west of the I-15 freeway. The elevated trackway would be highly visible in this commercial and urban landscape but would not block significant views.

Similarly, as shown in **Figure S-3.6-13**, the Segment 2C Median alignment option would also be visible in the foreground but slightly shifted to the east within the median of the I-15 freeway. No significant views would be blocked by either alignment option. The visual effects of the two alignment options would be similar due to their location within an existing transportation corridor.

While Segment 2C would result in the construction of a new crossing of the Mojave River, the crossing would occur immediately adjacent to the existing I-15 freeway bridges. As such, the new bridge would not stand out or create a substantial new visual element in the immediate landscape.

*Evaluation under FHWA Criteria*

***South of Lenwood and Barstow:*** The visual effects of the Segment 2C alignment options would be the same for this visual environment since both alignment options would be located immediately west of the I-15 freeway. The concrete barriers, trackway, and passing trains along the west side of the I-15 freeway would detract from the vividness, intactness, and unity of views from I-15 towards the open desert lands and rolling hills. The Segment 2C alignment options would be visible to motorists traveling in either direction on I-15, looking north or west. The presence of autotransformers would also disrupt views of the desert landscape from I-15. The Segment 2C alignment options would decrease visual quality in undeveloped areas as seen from I-15. However, since the majority of these views would remain unobstructed when a train is not present, the overall visual quality rating for the undeveloped portions of Segment 2C would remain moderate.

***Within Lenwood and Barstow:*** The Segment 2C alignment options would introduce railway elements such as elevated trackways and passing trains into motorists' views from I-15. Although these elements would change existing views, they would not block scenic

views or breakup the intactness of the urban landscape. **Figures S-3.6-12** and **S-3.6-13** show the elevated crossing of the Segment 2C Side Running and Segment 2C Median alignment options at the I-15/Main Street interchange within Barstow would disrupt the unity of the existing visual environment, as a new overhead trackway and concrete pillars would be visible from motorists and pedestrians on Main Street near I-15. Through Barstow and Lenwood, existing views from I-15 are not highly vivid, as manmade development, including residential and commercial developments and billboards, dominate the views and there are very few natural elements present. Thus, the addition of the rail elements, including concrete pillars, trackways, and trains, would not substantially lower this already low level of visual quality.

**Segment 4C**

*Evaluation under BLM Criteria*

Concrete trackways, pillars, and tunnel portals associated with Segment 4C would have the greatest potential for visual effects because they would contrast with the form, color, and texture of the desert mountain surroundings. Refer to **Figure 3.6-28** in the Draft EIS for a visual simulation of a tunnel portal that would be utilized under Segment 4C near I-15. However, the I-15 freeway already presents a substantial linear transportation corridor in this area. Therefore, the introduction of Segment 4C would not be completely out of character within the landscape.

In areas further north where Segment 4C diverges from the I-15 freeway corridor, the rail alignment would be located within BLM visual management Class I lands and would traverse diverse landscapes, including rocky hills, mountains, open desert terrain and a mesa just north of the Ivanpah dry lakebed. The rail alignment would then follow adjacent to an existing overhead electrical utility corridor back to the I-15 corridor near Primm. While the new railroad would contrast with the natural landscape of the open desert, the rail line would be located in a remote area and not highly visible from the I-15 freeway. Once within the overhead electric utility corridor the new rail line would be in an area of highly visible manmade features. Overall, Segment 4C would contrast with the texture and form of the desert landscape. Although not visible from any vantage point readily accessible to a substantial numbers of viewers, Segment 4C could be visible from wilderness areas of the Mojave National Preserve to the west from the air or from the peaks of the Clark Mountains.

*Evaluation under FHWA Criteria*

West of Mountain Pass, prior to traversing through the Clark Mountains, Segment 4C would be visible to the north for motorists on I-15, representing brief viewer duration. The vividness of current views from I-15 to the north of the desert mountains would be diminished through the addition of concrete pillars and track structures. Segment 4C would introduce a manmade linear structure through this undeveloped landscape, thus detracting from the intactness and unity of the view. While the visual quality would decrease within this portion of Segment 4C, Segment 4C would be a co-dominate visual feature since views of the Clark Mountains would remain above and beyond the rail

alignment. Once crossing into the mountains, Segment 4C would no longer be visible from I-15. Therefore, the overall visual quality would remain moderate.

North of the Clark Mountains, Segment 4C would not be visible by motorists travelling on I-15. Although Segment 4C could be seen from wilderness areas of the Mojave National Preserve to the west, from aerial views, or from the peaks of the Clark Mountains, views of Segment 4C would be seen in the distant background and the rail alignment would be a distinctly subordinate visual feature in the overall landscape. The intactness, unity, and vividness of the existing environment would be slightly diminished. Thus, the visual quality in this portion would be moderate with implementation of Segment 4C.

**Relocated Sloan MSF**

The RSMSF would be located in close proximity and at a site with similar visual character as the Sloan Road MSF evaluated in **Section 3.6.4.2** of the Draft EIS. As with the Sloan Road MSF, the RSMSF structure would be visible to motorists traveling on I-15 and would contrast with the adjacent undeveloped desert lands. At night, the RSMSF would be a new source of light in a largely undeveloped area. However, given that motorists traveling at freeway speeds would have brief viewer duration, adverse effects to the visual quality of the RSMSF area would be minimal.

**Frias Substation**

*Evaluation under BLM Criteria*

While the Frias Substation would be located immediately adjacent to the I-15 corridor, views of the substation from motorists traveling on I-15 would be blocked in part by a concrete wall constructed along the rail alignment. As such, the Frias Substation would not dominate the viewshed for motorists looking west from I-15. The substation would introduce new overhead electric transmission lines; however, these new transmission lines would be immediately adjacent to existing overhead transmission lines that cross I-15 near West Frias Avenue.

The Frias Substation would also be visible to motorists and/or pedestrians traveling on nearby residential streets, including West Frias Avenue, West Haleh Avenue, and South Dean Martin Drive. Views of the substation would also be available from nearby single-family homes. Due to the proximity to the single-family homes and lands designated for future commercial and residential development, the Frias Substation could create some limited visual incompatibility with surrounding uses. While the substation would introduce new utility towers, the towers would be of the same scale, form, and color as the existing overhead electric transmission lines that parallel West Frias Avenue and cross over just north of the Frias Substation site. Further, the I-15 transportation corridor is already visible from these locations and the addition of new substation would not represent a substantial contrast from the existing environment.

*Evaluation under FHWA Criteria*

As previously stated, the Frias Substation would not be seen by motorists on I-15 but would be seen by motorists on surrounding roadways. Due to the disturbed nature of views at this location with the presence of suburban development and overhead electric

transmission lines, the addition of the Frias Substation would not introduce a new type of development to the area. The vividness, intactness, and unity of the visual environment would remain low with the addition of the substation. The Frias Substation would be a co-dominate element in the landscape and no adverse visual effect would occur. As previously stated, mitigation to reduce the visual effects of the Frias Substation would be applied.

**Alignment Adjustment Areas**

AAAs 1 through 7 would be minor in nature and would not traverse new visual environments nor result in new visual effects beyond those discussed in **Section 3.6.4.2** of the Draft EIS for Segment 2A/2B, Segment 3B, or Segment 6B.

While the visual environment of AAA 8 was previously considered with Segment 6B in **Section 3.6.4.2** of the Draft EIS, this adjustment would shift a portion of the rail alignment outside of the I-15 freeway corridor and into the median of Dean Martin Dive/Industrial Road between Hacienda Avenue and Tropicana Avenue. Therefore, this evaluation focuses only on AAA 8.

*Evaluation under BLM Criteria*

***Portions of AAA 8 Within I-15 Freeway Corridor:*** Although implementation of AAA 8 would shift portions of Segment 6B to the west, much of the rail alignment would remain within the existing I-15 freeway corridor (immediately adjacent to I-15 southbound travel lanes). The rail alignment shift in this area would not result in new visual effects beyond those previously considered for Segment 6B in **Section 3.6.4.2** of the Draft EIS. Although passing trains in this area would temporarily block views from the freeway, this effect would be temporary and AAA 8 would not dominate views for motorists on I-15. Since greater visual change is allowed by BLM Class IV lands, the portions of AAA 8 within the I-15 freeway corridor would not be inconsistent with the existing urban visual landscape.

***Portions of AAA 8 Outside of I-15 Freeway Corridor:*** **Figure S-3.6-9** shows a visual simulation of a portion of AAA 8 that has been shifted outside of the existing I-15 freeway corridor and into the median of Dean Martin Drive/Industrial Road between Hacienda Avenue and Tropicana Avenue. The elevated rail alignment would dominate views from motorists on Dean Martin Drive/Industrial Road, as the elevated alignment and concrete pillars would be placed within the median of the roadway. Shifting the rail alignment outside of the freeway corridor and into this local roadway would alter the scale of the rail alignment for viewers on Dean Martin Drive/Industrial Road and at the adjacent industrial, commercial, and hotel uses. This portion of the elevated structure would intensify the transportation use of the local roadway. However, given the urban and developed nature of the area, the elevated alignment would not conflict or substantially contrast with the existing urban visual landscape.

*Evaluation under FHWA Criteria*

***Portions of AAA 8 Within I-15 Freeway Corridor:*** Within the I-15 freeway corridor, AAA 8 would traverse through an area of low visual quality due to the

surrounding urban development and utilitarian visual features. Since the existing landscape is not unified or intact, AAA 8 would do little to detract from the intactness or unity of the viewshed. The elevated structure and passing trains would disrupt views to the west. The overall visual quality would remain low with AAA 8.

***Portions of AAA 8 Outside of I-15 Freeway Corridor:*** Similar to Segment 6B evaluated in **Section 3.6.4.2** of the Draft EIS, the alignment adjustment would traverse through an area of low visual quality. **Figure S-3.6-9** shows that while the alignment adjustment would traverse through the median of Dean Martin Drive/Industrial Road, the elevated rail alignment and associated concrete pillars would not detract from the limited intactness and unity of the existing view. The alignment adjustment would result in a reduction in vividness, as views to the north of the distant mountains for motorists traveling on northbound I-15 and Dean Martin Drive/Industrial Road would be disrupted by the elevated structure. The visual quality with the alignment adjustment would remain low with implementation of AAA 8.

### Wigwam MSF Modification

The visual effects associated with the Wigwam MSF modification would be similar to the effects of the Wigwam MSF evaluated in **Section 3.6.4.2** of the Draft EIS. **Figure S-3.6-10** illustrates that the Wigwam MSF would be located behind a concrete wall when viewed from the I-15 freeway. The Wigwam MSF modification would not substantially change this condition but would reorient the trackway to enter the MSF from the south rather than the north as shown in the figure. The modification to the Wigwam MSF would not be out of character with the existing landscape due to the presence of the existing I-15 transportation corridor and existing overhead electric transmission lines. With the modification, the Wigwam MSF would not decrease the already low visual quality of the existing environment.

### Profile Modification

*Evaluation under BLM Criteria*

The Segment 3B profile modification would depress the rail alignment approximately 6 to 8 feet below grade within a retained cut for a distance of about 1.3 miles. Implementation of this profile modification would reduce the visibility of the train from the I-15 freeway when compared to the Segment 3B evaluated in **Section 3.6.4.2** of the Draft EIS. Additionally, a wall would be constructed between the I-15 freeway and rail alignment, which would preclude views of the profile modification for motorists on the I-15 freeway corridor. **Figure S-3.6-11** provides a visual simulation of the Segment 3B profile modification, as seen from the southbound I-15 freeway corridor. The wall and upper portions of the overhead catenary features would be visible to the north from motorists traveling on I-15. The wall would become the primary visual feature and would block views of the mountains to the north. Views of the mountains to the south and west would remain undisturbed. Similar to Segment 3B evaluated in **Section 3.6.4.2** of the Draft EIS, the profile modification would remain contrast with the existing environment.

*Evaluation under FHWA Criteria*

The Segment 3B profile modification would be seen by motorists traveling on I-15 when looking north. The wall and upper portions of the overhead catenary features would be visible, resulting in a decrease in the overall vividness of the undeveloped desert landscape. Views of undeveloped lands and mountains to the north would be replaced with less vivid views of a wall in the foreground of the landscape. Refer to **Figure S-3.6-11** for a visual simulation of the Segment 3B profile modification for motorists travelling southbound on the I-15 freeway corridor. The profile modification would result in a reduction in intactness and unity as well. Nonetheless, the profile modification would result in a decrease in the existing visual quality, similar to Segment 3B as evaluated in **Section 3.6.4.2** of the Draft EIS.

## 3.6.4 MITIGATION MEASURES

**Mitigation Measures VIS-1** through **VIS-6** identified in **Section 3.6.5.1** of the Draft EIS would be applied to the new rail alignments, station site option, operations and maintenance facilities, alignment adjustments, and profile modifications to reduce potentially adverse effects related to operational visual effects. In regards to potential visual compatibility issues associated with the Frias Substation, **Mitigation Measure VIS-3** would be applied.

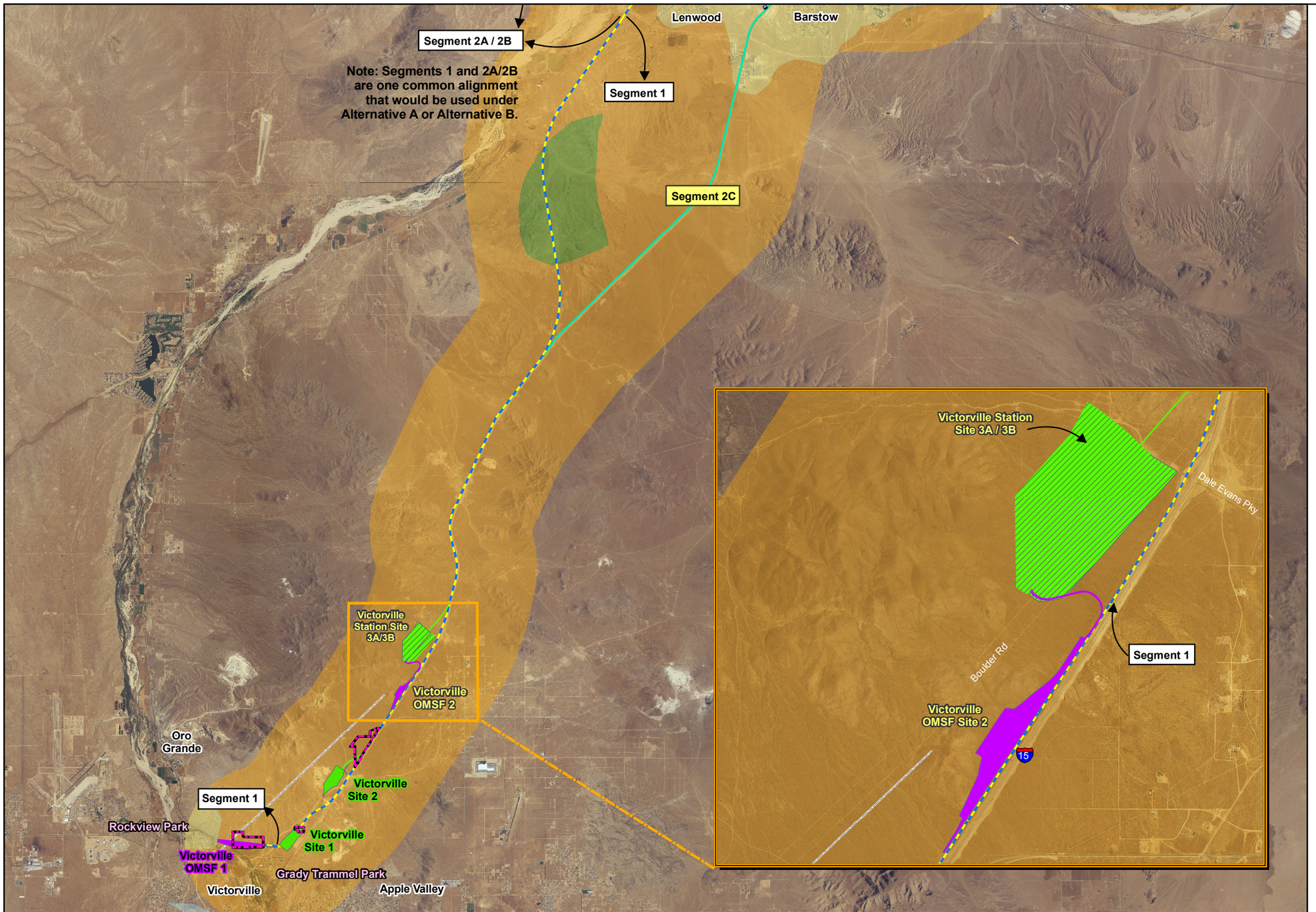
**Mitigation Measures VIS-7** through **VIS-10** identified in **Section 3.6.5.2** of the Draft EIS would also be applied to the additional alternatives to reduce potentially significant effects associated with construction of the project modifications and additions. No new mitigation would be required. The relevant mitigation measures from **Sections 3.6.5.1** and **3.6.5.2** of the Draft EIS are summarized below:

- **Mitigation Measure VIS-1** – Requires rail features, including pillars, raised tracks, catenary structures, embankments, and crash barriers, to be designed to blend with or represent the surrounding desert environment. Final design of the rail features within the I-15 right-of-way shall be reviewed by the California Department of Transportation (Caltrans) or the Nevada Department of Transportation (NDOT) as appropriate.
- **Mitigation Measure VIS-2** – Requires the Victorville Station and associated elements to be developed with architecture, muted colors, and landscaping that reflect the surrounding desert aesthetic.
- **Mitigation Measure VIS-3** – Requires maintenance facilities to be aesthetically appropriate for the surrounding desert landscape through the use of muted colors and desert landscaping.
- **Mitigation Measure VIS-4** – Requires contour grading techniques to be applied where feasible to reduce the visual appearance of cut and fill slopes.**Mitigation Measure VIS-5** – Requires lighting at station and maintenance facilities outside of the Las Vegas metropolitan area to be designed to m**in**imize disruption of the natural dark at night in the desert landscape.

- **Mitigation Measure VIS-6** – Requires stations to provide interpretive displays and artwork in pedestrian areas in order to create a coherent pedestrian landscape and sense of place.
- **Mitigation Measure VIS-7** – Requires construction to be maintained in an orderly manner, including proper containment and disposal of litter and debris to prevent dispersal onto adjacent properties or streets.
- **Mitigation Measure VIS-8** – Requires construction crews working at night to direct any artificial lighting into the work area to minimize the spillover of light or glare onto adjacent areas.
- **Mitigation Measure VIS-9** – Requires visual screening to be erected along construction and staging areas as appropriate.
- **Mitigation Measure VIS-10** – Requires the replacement of landscaping that will be removed during construction, as directed by Caltrans or NDOT as appropriate. Replacement landscaping shall occur within 6 months of construction.

## 3.6.5 Residual Impacts Following Mitigation

Despite the incorporation of the aforementioned mitigation measures, the modifications and additions to the project would result in the permanent introduction of new elements to the project area, ultimately resulting in a permanent visual change within the viewshed. This residual impact is consistent with that of the action alternatives evaluated in **Section 3.6.5.3** of the Draft EIS.




## Legend

**Visual Quality / Sensitivity (Representative Locations)**

- High
- Medium
- Low

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

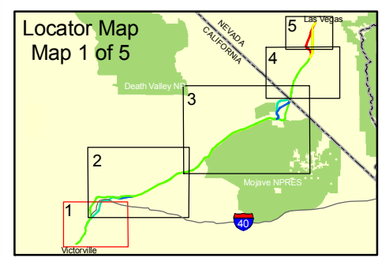
1 inch equals 3 miles

Kilometers: 0 2 4

Miles: 0 1.5 3

NORTH

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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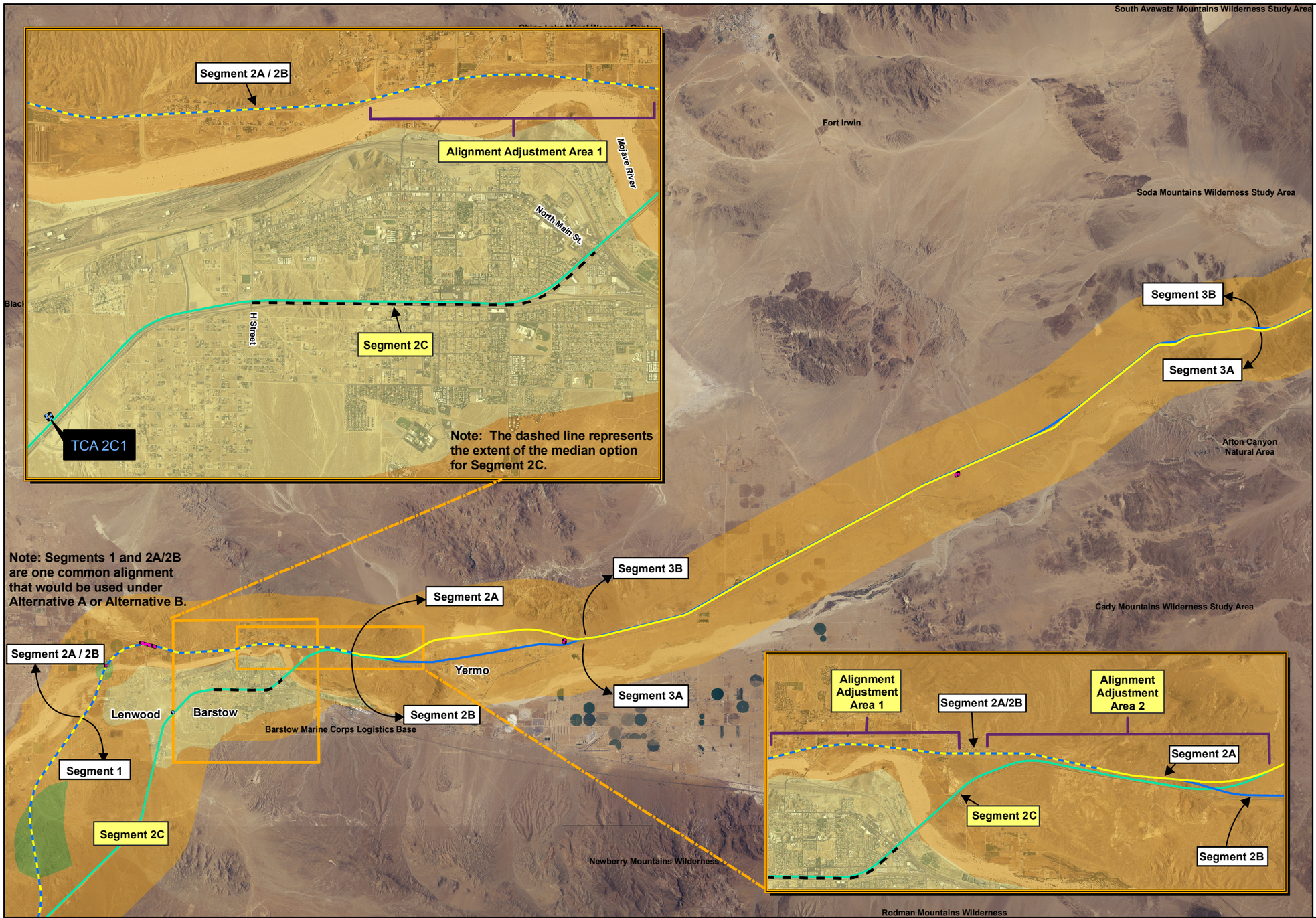
**DesertXpress - Supplemental EIS**

*Visual Quality / Sensitivity (1)*

**FIG S-3.6-1**

Geografika Consulting 08.20.10




## Legend

**Visual Quality / Sensitivity (Representative Locations)**

- High
- Medium
- Low

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

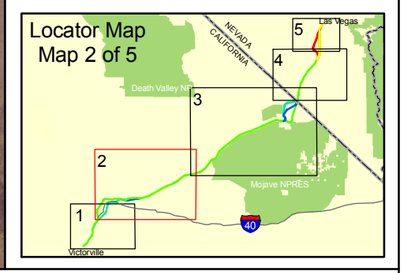
- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 4 miles

Kilometers: 0 5 10

Miles: 0 4 8

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

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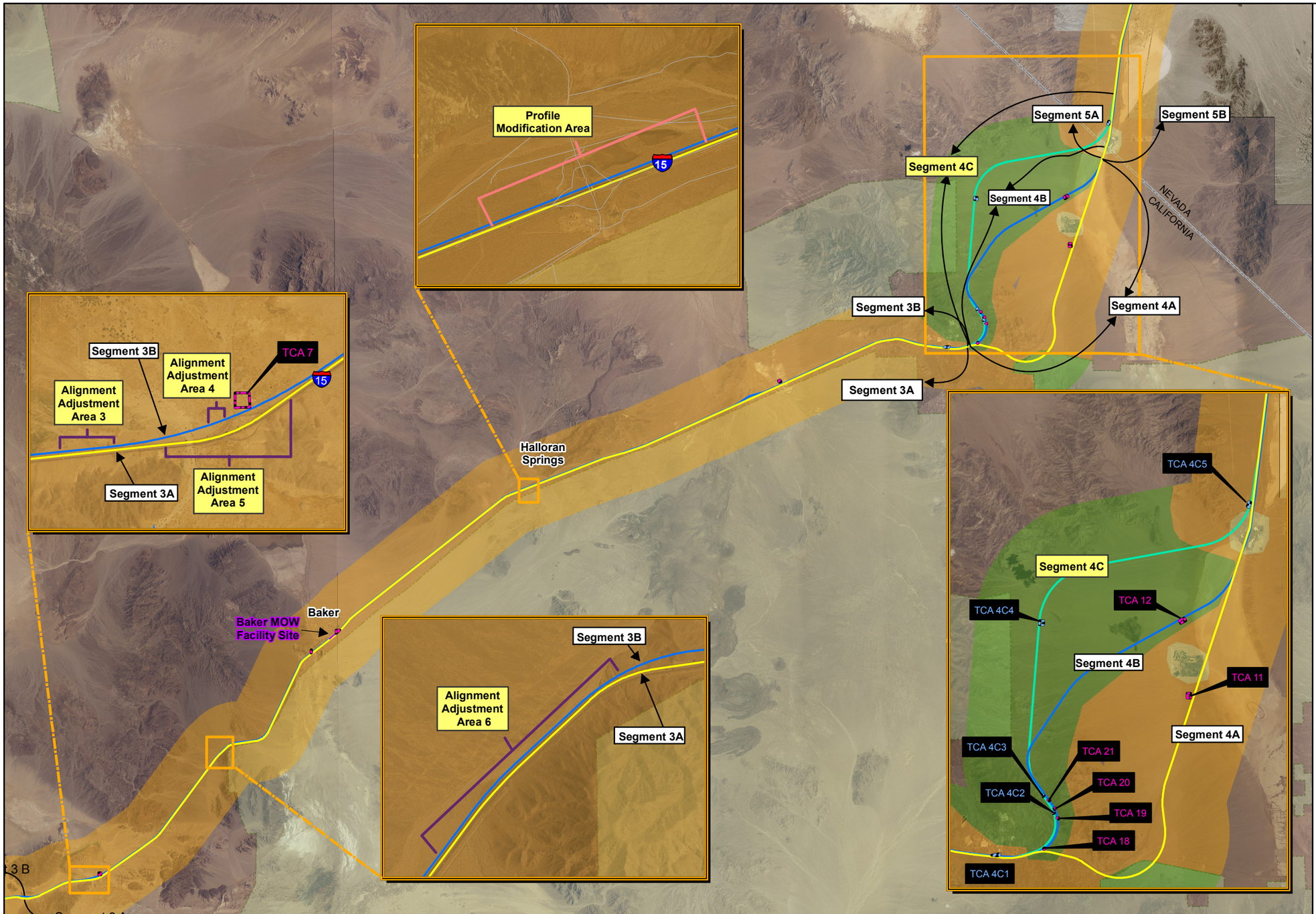
**DesertXpress - Supplemental EIS**

*Visual Quality / Sensitivity (2)*

FIG **S-3.6-2**

Geografika Consulting 08.20.10




## Legend

**Visual Quality / Sensitivity (Representative Locations)**

- High
- Medium
- Low

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

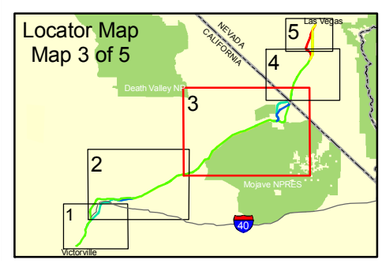
1 inch equals 4 miles

NORTH

0 5 10 Kilometers

0 4 8 Miles

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

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**DesertXpress - Supplemental EIS**

***Visual Quality / Sensitivity (3)***

FIG **S-3.6-3**

Geografika Consulting 08.20.10

TCA 14

Stonewater Park

Segment 6C

Segment 6B

Segment 6A

Segment 5A

Segment 5 B

Alignment Adjustment Area 7

Segment 6C

Segment 6B

Segment 6A

Jean

Nevada

California

Primm

604

15

Relocated Sloan MSF, Substation and Utility Corridor

Segment 5A

TCA 13

Segment 5B

## Legend

### Visual Quality / Sensitivity (Representative Locations)

- High
- Medium
- Low

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Relocation Sloan MSF / Substation Site Option
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

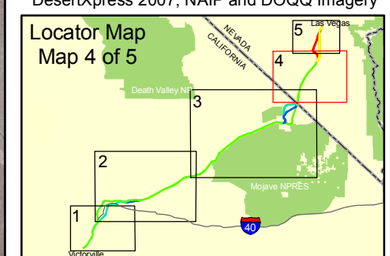
NORTH

Kilometers: 0 2.5 5

Miles: 0 3 6

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 4 of 5

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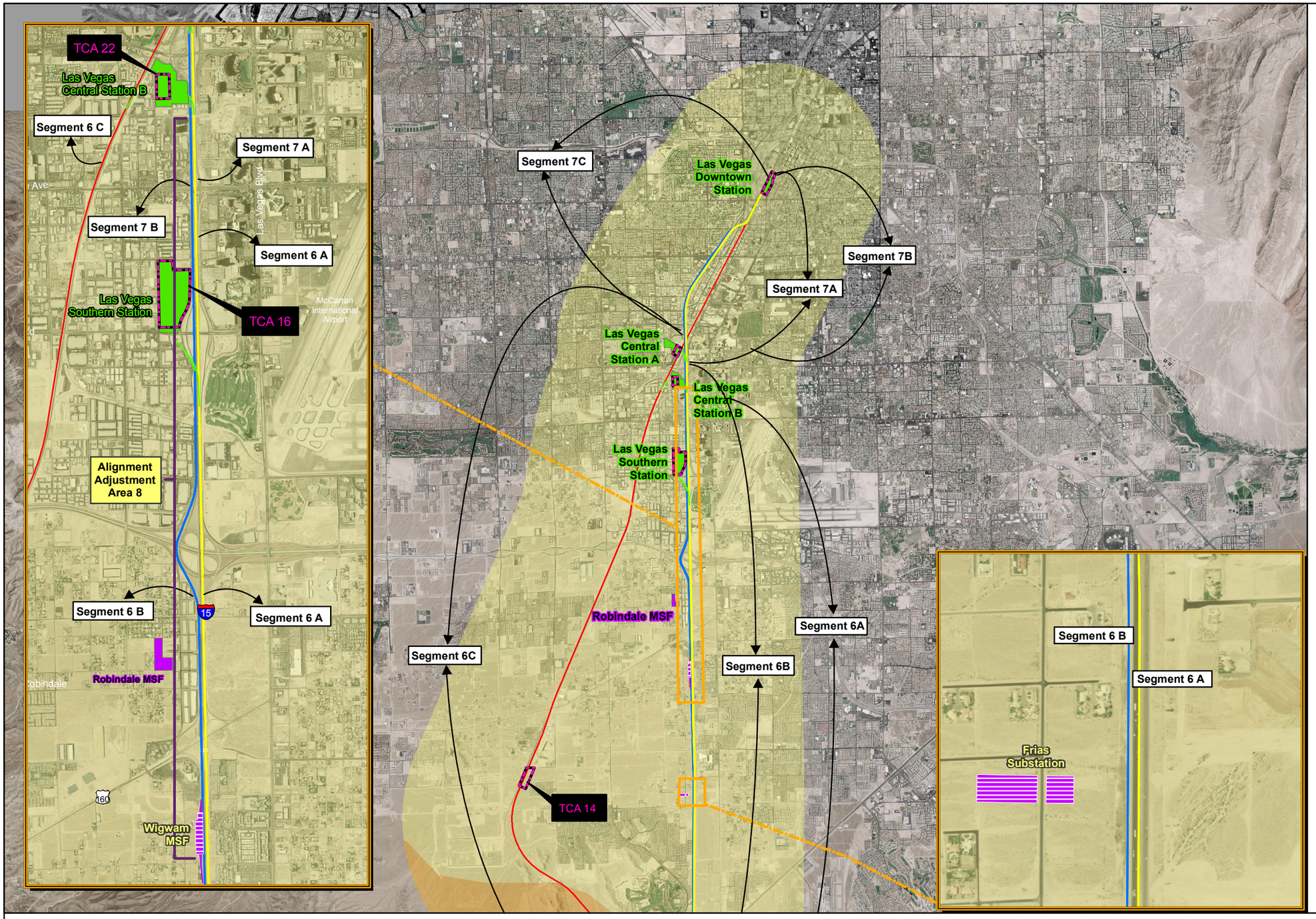
**DesertXpress - Supplemental EIS**

*Visual Quality / Sensitivity (4)*

FIG **S-3.6-4**

Geografika Consulting 08.20.10




## Legend

**Visual Quality / Sensitivity (Representative Locations)**

- High
- Medium
- Low

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Frias Substation and Wigwam MSF Modifications
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

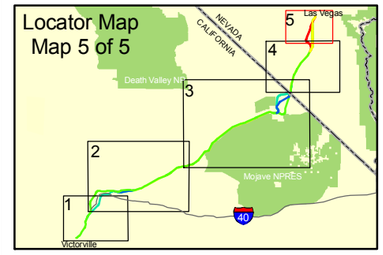
1 inch equals 2 miles

Kilometers: 0 1.25 2.5

Miles: 0 1 2

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

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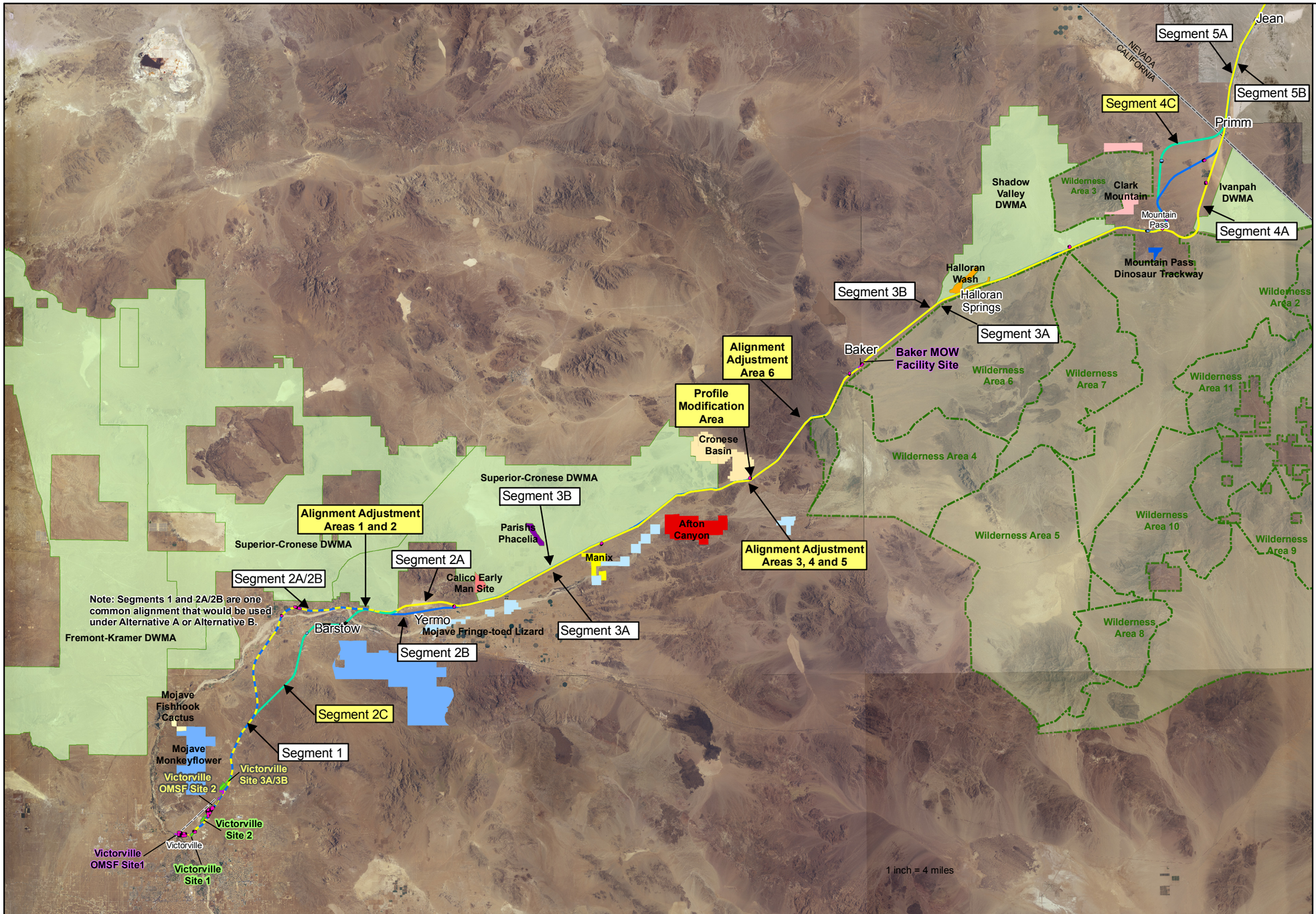
**DesertXpress - Supplemental EIS**

*Visual Quality / Sensitivity (5)*

FIG **S-3.6-5**

Geografika Consulting 08.20.10




## Legend

### Areas of Critical Environmental Concern

- Afton Canyon
- Calico Early Man Site
- Clark Mountain
- Cronese Basin
- Halloran Wash
- Manix
- Mojave Fishhook Cactus
- Mojave Fringe-toed Lizard
- Mojave Monkeyflower
- Mountain Pass Dinosaur Trackway
- Parishs Phacelia
- BLM Designated Wilderness Mngt Area

### National Park Lands

- Mojave National Preserve
- Wilderness Areas

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

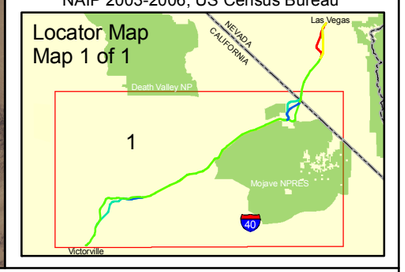
- Text Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Electric Utility Corridor (EMU Option Only)

1 inch equals 10.5 miles

0 5 10 Miles

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006, US Census Bureau

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**DesertXpress - Supplemental EIS**

*Areas of Critical Environmental Concern*

FIG **S-3.6-6**

Source: Geografika Consulting 06.30.10



Existing view from I-15 eastbound




Visual simulation of Victorville Station 3A

*Note: The visual simulation of the VV3B site option would be similar to the conditions shown here, as the railroad tracks and station building are proposed for the exact same location. However, the surface parking shown here, beneath the electrical utility lines, would be located behind the station building under option VV3B*



Source: Environmental Vision, 2009




Existing view from Main Street looking southeast (Barstow, CA)



Source: Environmental Vision, 2009



Existing view of Dean Martin Drive/Industrial Road near
West Ali Baba Lane looking northeast (Las Vegas)




Visual simulation of Alignment Adjustment Area 8 on Dean Martin Drive



Source: Environmental Vision, 2009




Existing view from westbound I-15 of Wigwam MSF site option




KOP 8, Visual simulation of Wigwam MSF Modification



Source: Environmental Vision, 2009



Existing view from I-15 westbound near Halloran Springs




Visual simulation of Profile Modification Area
from westbound I-15 near Halloran Springs



Source: Environmental Vision, 2009



Existing view from Main Street looking southeast



Visual simulation of Segment 2C Side Running
at Main Street overcrossing (Barstow)

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**DesertXpress - Modifications to the Draft EIS**

***View Comparison, Segment 2C Side Running Option***

**FIG S-3.6-12**

Source: Environmental Vision, 2009




Existing view from Main Street looking southeast (Barstow, CA)




Visual simulation of Segment 2C Median
at Main Street overcrossing (Barstow)



Source: Environmental Vision, 2009

# 3.7 CULTURAL AND PALEONTOLOGICAL RESOURCES

This section describes the potential impacts on cultural resources from the project modification and additions and the mitigation measures that would reduce these impacts. Cultural resources customarily include archaeological resources, such as artifacts; ethnographic resources; and those of the historic built environment (historic architectural resources). Paleontological resources, which include the fossilized remains of vertebrates, invertebrates, and plants, as well as fossil tracks and trackways, are also considered in this section.

## 3.7.1 AFFECTED ENVIRONMENT

The regulations and standards pertinent to archaeological, historic architecture, and paleontological resources as described in **Section 3.7.1** of the Draft EIS have not changed since publication of the Draft EIS and remain applicable to the proposed project. **Section 3.7.2.1** of the Draft EIS describes the Area of Potential Effect (APE) defined for the project consistent with Section 106 of the National Historic Preservation Act (NHPA). [1]

Project modifications and additions that occur within the previously recorded APE include the modification to OMSF 2, the Wigwam MSF Modification, and the Profile Modification. The affected environment for these project modifications and additions are the same as those discussed in **Section 3.7.3.1** of the Draft EIS for archaeological resources, **Section 3.7.3.2** of the Draft EIS for historic architectural resources, and **Section 3.7.3.3** of the Draft EIS for paleontological resources. These project modifications and additions relative to cultural and paleontological resources are not discussed further as part of this Supplemental Draft EIS.

The remaining project modifications and additions require an expansion of the APE. **Table S-3.7-1** lists the additional archaeological resources recorded within the expanded APE as a result of the project modifications and additions. As discussed in **Section 3.7.1.1** of the DEIS, the FRA and the cooperating agencies, with input from DesertXpress Enterprises Inc. and Native American Tribes, are developing a Programmatic Agreement (PA) for the project in compliance with Section 106. Since under the PA, a formal determination of the eligibility of cultural resources would be deferred until after the ROD is issued for the project, all potential resources have been considered and an assumption of their eligibility has been presented to inform the NEPA process. This process for deferring the PA until after the ROD has been issued has been endorsed by the signatory cooperating agencies for the PA, including the Surface Transportation Board (STB), the

[1] Per 36 CFR § 800.16(d ), the APE is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

California and Nevada State Historic Preservation Officers (SHPOs), the California and Nevada Bureau of Land Management (BLM), the Federal Highway Administration (FHWA), and the National Park Service (NPS), and the Advisory Council on Historic Preservation (ACHP).

Table S-3.7-1 Additional Identified Archaeological Resources at Project Modifications and Additions[2]

| Site Number | Period | Type | NRHP Eligibility [a] | Impact Area (Direct or Indirect) [b] |
|---|---|---|---|---|
| ***VV3*** | | | | |
| JSA-CS-S-005H | Historic | Habitation site with foundation, refuse deposits, and privy. | Assumption of Eligibility | Direct |
| JSA-CS-S-073H | Historic | Historic fence line | Not Eligible | Direct |
| JSA-CS-S-074H | Historic | Domestic refuse deposit with glass, ceramics and metal | Not Eligible | Direct |
| JSA-CS-S-076H | Historic | Habitation site with road, mound, fire ring, and refuse deposits | Assumption of Eligibility | Direct |
| JSA-CS-S-212H | Historic | Habitation site with refuse deposits, privy, chimney remnant, and rock alignments | Assumption of Eligibility | Direct |
| JSA-CS-S-213H | Historic | US BLM cadastral marker | Not Eligible | Direct |
| JSA-CS-S-214H | Historic | Segment of historic dirt road | Not Eligible | Direct |
| JSA-CS-S-215H | Historic | Domestic refuse deposit | Not Eligible | Direct |
| JSA-CS-S-216H | Historic | Refuse deposit associated with construction of NRHP eligible transmission line (CA-SBR-7694H) | Assumption of Eligibility | Direct |
| CA-SBR-3161H | Historic | Habitation site with rock alignments, privy, cellar, and refuse deposits | Assumption of Eligibility | Direct |
| CA-SBR-7694H | Historic | Boulder power transmission line | Eligible | Direct |
| CA-SBR-10315H | Historic | Boulder to Hoover power transmission line | Eligible | Direct |

[2] For those resources identified as ineligible, neither direct nor indirect impacts would result in an adverse environmental effect. Since formal NRHP eligibility status will be determined through a PA process following conclusion of the environmental review, all potential resources, both eligible and ineligible are listed.

| Site Number | Period | Type | NRHP Eligibility [a] | Impact Area (Direct or Indirect) [b] |
|---|---|---|---|---|
| ***Segment 2C – Median*** | | | | |
| CA-SBR-562 | Prehistoric | Prehistoric lithic quarry and reduction site; non-contributing element of Sidewinder Quarry Archaeological District | Not Eligible | Direct |
| CA-SBR-2283 | Prehistoric | Prehistoric lithic quarry and reduction site with rock rings; contributing element of Sidewinder Quarry Archaeological District | Eligible | Direct |
| CA-SBR-2910H | Historic | Segment of Route 66, part of the old National Trails Highway | Eligible | Direct |
| CA-SBR-3486 | Prehistoric | Prehistoric lithic quarry and reduction site; contributing element of Sidewinder Quarry Archaeological District | Eligible | Direct |
| CA-SBR-4085H | Historic | Earthen railroad berm | Assumption of Eligibility | Direct |
| CA-SBR-6023H | Historic | Extensive residential and commercial refuse deposit, known as the Yermo Dump | Assumption of Eligibility | Indirect |
| CA-SBR-6693H | Historic | Atchison, Topeka & Santa Fe railroad | Eligible | Direct |
| CA-SBR-8321 | Prehistoric | Prehistoric lithic quarry and reduction site; contributing element of Sidewinder Quarry Archaeological District | Eligible | Direct |
| CA-SBR-8322 | Prehistoric | Prehistoric lithic quarry and reduction site; contributing element of Sidewinder Quarry Archaeological District | Eligible | Direct |
| CA-SBR-8323 | Prehistoric | Prehistoric trail; contributing element of Sidewinder Quarry Archaeological District | Eligible | Direct |
| CA-SBR-8923 | Multicomponent | Prehistoric lithic quarry and reduction site with historic to modern period rock cairns | Determined Not Eligible | Direct |
| CA-SBR-9357 | Prehistoric | Prehistoric site with rock rings | Assumption of Eligibility | Direct |
| CA-SBR-9361H | Historic | Sidewinder Road wagon trail | Assumption of Eligibility | Direct |
| P-36-20375 | Prehistoric | Sidewinder Quarry Archaeological District, with 45 identified contributing elements | Eligible | Direct |

| Site Number | Period | Type | NRHP Eligibility [a] | Impact Area (Direct or Indirect) [b] |
|---|---|---|---|---|
| **Segment 2 C – Side Running** | | | | |
| JSA-CS-S-229H | Historic | Homestead site with treelines and redeposited trash and structural debris | Not Eligible | Direct |
| JSA-CS-S-230H | Historic | Concrete road monument | Not Eligible | Direct |
| JSA-CS-S-231H | Historic | Segment of transmission line | Not Eligible | Direct |
| JSA-CS-S-232H | Historic | Rock cairn | Not Eligible | Indirect |
| JSA-CS-S-233 | Prehistoric | Cobble quarry | Assumption of Eligibility | Direct |
| JSA-CS-S-234H | Historic | Historic refuse deposit containing cans, wire, metal and glass | Assumption of Eligibility | Direct |
| JSA-CS-S-235H | Historic | Foundation and light scatter of debris | Not Eligible | Indirect |
| JSA-CS-S-236H | Historic | Foundation and light scatter of debris | Not Eligible | Direct |
| JSA-CS-S-237H | Historic | Foundation and light scatter of debris | Not Eligible | Direct |
| JSA-CS-S-238H | Historic | Foundation and scatter of debris and artifacts | Not Eligible | Direct |
| JSA-CS-S-239H | Historic | Redeposited refuse deposit of glass, ceramics, and metal | Not Eligible | Direct |
| JSA-CS-S-240H | Historic | Two foundations and light scatter of debris | Not Eligible | Direct |
| JSA-CS-S-241H | Historic | Foundation and scatter of debris and artifacts | Not Eligible | Direct |
| JSA-CS-S-242H | Historic | Foundation and light scatter of debris | Not Eligible | Direct |
| JSA-CS-S-243H | Historic | Foundation and light scatter of debris | Not Eligible | Indirect |
| JSA-CS-S-244H | Historic | Foundation, fence line and light scatter of debris | Not Eligible | Indirect |
| JSA-CS-S-245H | Historic | Redeposited residential debris | Not Eligible | Direct |
| JSA-CS-S-246H | Historic | Dense refuse deposit with cans, ceramics, metal, glass, and firearm cartridges | Assumption of Eligibility | Direct |
| CA-SBR-2910H | Historic | Segment of Route 66, part of the old National Trails Highway | Eligible | Direct |
| CA-SBR-3485 | Prehistoric | Prehistoric lithic quarry and reduction site; contributing element of Sidewinder Quarry Archaeological District | Eligible | Direct |

| Site Number | Period | Type | NRHP Eligibility [a] | Impact Area (Direct or Indirect) [b] |
|---|---|---|---|---|
| CA-SBR-3486 | Prehistoric | Prehistoric lithic quarry and reduction site; contributing element of Sidewinder Quarry Archaeological District | Eligible | Direct |
| CA-SBR-3548 | Prehistoric | Prehistoric rock rings | Assumption of Eligibility | Direct |
| CA-SBR-6693H | Historic | Atchison, Topeka & Santa Fe railroad | Eligible | Direct |
| CA-SBR-8313H | Historic | Fence line | Assumption of Eligibility | Direct |
| CA-SBR-8321 | Prehistoric | Prehistoric lithic quarry and reduction site; contributing element of Sidewinder Quarry Archaeological District | Eligible | Direct |
| CA-SBR-8322 | Prehistoric | Prehistoric lithic quarry and reduction site; contributing element of Sidewinder Quarry Archaeological District | Eligible | Direct |
| CA-SBR-9361H | Historic | Sidewinder Road wagon trail | Assumption of Eligibility | Direct |
| P-36-13644 | Prehistoric | Lithic scatter and reduction site | Eligible | Direct |
| P-36-20375 | Prehistoric | Sidewinder Quarry Archaeological District, with 45 identified contributing elements | Eligible | Direct |
| **Segment 4C** | | | | |
| JSA-CS-S-108H | Historic | Road segment | Assumption of Eligibility | Direct |
| JSA-CS-S-109H | Historic | Road segment | Not Eligible | Direct |
| JSA-CS-S-111H | Historic | Road segment | Not Eligible | Direct |
| JSA-CS-S-112H | Historic | Rock cairn | Not Eligible | Direct |
| JSA-CS-S-113H | Historic | Road segment | Assumption of Eligibility | Direct |
| JSA-CS-S-116H | Historic | Rock cairn | Not Eligible | Indirect |
| JSA-CS-S-117H | Historic | Rock cairn | Not Eligible | Direct |
| JSA-CS-S-118H | Historic | Rock cairn | Assumption of Eligibility | Direct |
| JSA-CS-S-200H | Historic | Utility pole | Assumption of Eligibility | Direct |
| JSA-CS-S-201H | Historic | Rock cairns | Not Eligible | Direct |
| JSA-CS-S-203H | Historic | Rock cairn | Not Eligible | Direct |
| JSA-CS-S-204H | Historic | Mining site with adit and rock cairn | Assumption of Eligibility | Indirect |

| Site Number | Period | Type | NRHP Eligibility [a] | Impact Area (Direct or Indirect) [b] |
|---|---|---|---|---|
| JSA-CS-S-205H | Historic | Rock cairn | Not Eligible | Direct |
| JSA-CS-S-206H | Historic | Rock cairn | Not Eligible | Indirect |
| JSA-CS-S-207H | Historic | Cobble support for water conveyance pipe | Assumption of Eligibility | Direct |
| JSA-CS-S-208H | Historic | US GLO cadastral marker | Not Eligible | Direct |
| JSA-CS-S-210H | Historic | Road segment | Not Eligible | Direct |
| CA-SBR-3048H | Historic | Road segment and refuse deposit | Assumption of Eligibility | Direct |
| CA-SBR-6835H | Historic | Survey marker, part of Von Schmidt Line | Assumption of Eligibility | Direct |
| CA-SBR-6955/H | Multicomponent | Prehistoric habitation site with lithics, hearth features, and a projectile point; and a historic refuse deposit and fire ring | Assumption of Eligibility | Direct |
| CA-SBR-7098/H | Multicomponent | Prehistoric habitation site with lithics, ground stone and hearth ; historic well and refuse deposits | Assumption of Eligibility | Indirect |
| CA-SBR-7347H | Historic | Road segment | Assumption of Eligibility | Direct |
| CA-SBR-10315H | Historic | Boulder to Hoover power transmission line | Eligible | Direct |
| CA-SBR-10872 | Prehistoric | Habitation site with lithics, projectile points, ground stone, and pottery. | Eligible | Indirect |
| **RSMSF** | | | | |
| JSA-CS-S-217H | Historic | Residential refuse deposit | Not Eligible | Direct |
| **Alignment Adjustment Areas** | | | | |
| JSA-CS-S-222H | Historic | Residential refuse deposit with cans, glass, ceramics, and faunal remains | Assumption of Eligibility | Direct |
| CA-SBR-4525H | Historic | Road segment | Assumption of Eligibility | Direct |
| JSA-CS-S-030H | Historic | Residential refuse deposit | Not Eligible | Direct |
| JSA-CS-S-031/H | Multicomponent | Prehistoric quarry site and historic rock cairns | Assumption of Eligibility | Direct |
| JSA-CS-S-032 | Prehistoric | Prehistoric quarry site | Assumption of Eligibility | Direct |
| JSA-CS-S-218H | Historic | Rock rings and historic refuse deposit | Not Eligible | Direct |
| JSA-CS-S-219H | Historic | Concrete foundation | Not Eligible | Direct |
| P-2044-5 | Prehistoric | Habitation and food processing site | Assumption of Eligibility | Direct |

| Site Number | Period | Type | NRHP Eligibility [a] | Impact Area (Direct or Indirect) [b] |
|---|---|---|---|---|
| CA-SBR-4198 | Prehistoric | Habitation site with pottery, lithics, fire affected rock, faunal remains, ground stone, and possible human remains | Assumption of Eligibility | Direct |
| P-2044-11 | Prehistoric | Quarry and habitation site | Assumption of Eligibility | Direct |
| 26CK3542 | Historic | Railroad grade segment | Not Eligible | Direct |

Source: ICF, 2010.

[a] Preliminary recommendations of *not eligible* for inclusion on the NRHP were based on the results of the field survey, follow-up archival research, and BLM consultation. The preliminary notations of "Not Eligible" and "Assumption of Eligibility" are based on existing data and are not a determination of eligibility. SHPO has not concurred on these findings.

[b] Direct APE impacts would likely occur within 115 feet on either side of the DesertXpress alignment centerline, within 50 feet on either side of the utility corridor (EMU option only), and within the footprint of project facilities. Indirect APE impacts, related to construction, would likely occur within 116 to 200 feet on either side of the DesertXpress alignment centerline and within 51 to 100 feet on either side of the utility corridor (EMU option only).

### Victorville Station Site 3

*Archaeological Resources*

**Table S-3.7-1** lists the archaeological resources within the APE for VV3 under both parking options. A total of 12 sites were identified within the APE for VV3, all of which were identified as historic . Preliminary evaluations of these sites indicate that five sites would not be eligible for inclusion in the NRHP, five would be assumed eligible, and two would be eligible.

*Historic Architectural Resources*

Field investigation of the APE around the VV3 site did not identify any historic architectural resources.

*Paleontological Resources*

Paleontological resources (fossils) tend to occur within certain layers of geologic units. The majority of the VV3 station footprint for both parking options is situated on surface exposures of younger (Holocene) alluvial materials, not considered paleontologically sensitive. However, these layers are presumed to be underlain at an unknown depth by highly sensitive strata of Pleistocene age.

### Segment 2C

*Archaeological Resources*

**Table S-3.7-1** lists the archaeological resources within the APE around the Segment 2C alignment options.

A total of 14 sites were identified within the APE for the Segment 2C Median alignment option. Of these, five were identified as being in the historic period, eight were identified as within the prehistoric period, and one identified as multicomponent. Preliminary evaluations of these sites indicate that two sites would not be eligible for inclusion in the NRHP, four would be assumed eligible, and eight would be eligible.

A total of 29 sites were identified within the APE for the Segment 2C Side Running alignment option. Of these, 21 were identified as being in the historic period and eight were identified as within the prehistoric period. Preliminary evaluations of these sites indicate that 15 sites would not be eligible for inclusion in the NRHP, six would be assumed eligible, and eight would be eligible.

*Historic Architectural Resources*

The Segment 2C alignment options traverse central Barstow, which includes several notable architectural features. While none of these are eligible or assumed eligible NRHP historical architectural resources, they are discussed in greater detail below.

The Segment 2C alignment options would rise roughly 35 feet over East Main Street and I-15 in Barstow. Buildings along East Main Street and its surrounding environs are predominantly commercial, with some residential and manufactured homes to the north and south. Most of these buildings date from the 1970s or later, and include strip retail, hotels, gas stations, and the like. One such building is "Barstow Station," popularly known as the "Train McDonalds."

Barstow Station is a novel, western-themed collection of 17 train cars, including a caboose, used as dining space and a gift shop for the adjacent two-story McDonalds fast-food restaurant. Although the train cars are older and the facility is well known by Los Angeles-to-Las Vegas travelers, the buildings are not 50 years old, they have had numerous alterations to the exterior cladding since their 1975 completion, and the McDonalds itself is a rebuild from an earlier fire that destroyed the original 1975 facility. Based on the reconnaissance survey along East Main Street, the vast majority of buildings, including Barstow Station, do not appear to be 50 years old and do not demonstrate exceptional significance to meet Criteria Consideration G of the NRHP.

One feature of note at Barstow Station is a wood water tower and tank. Although the tank itself appears to be over 50 years old, the tower/support structure is understood to have been recently built. The tank is not of a type associated with historic railroad usage. For these reasons, the tower does not appear to be eligible for the NRHP.

The Segment 2C alignment options would also be approximately 30 feet above the existing Burlington Northern Santa Fe Railroad (BNSF) bridge over I-15 at a point due northeast of East Main Street in Barstow. The BNSF bridge is a double-span deck plate girder bridge supported on concrete abutments with a central pier. I-15 was completed through Barstow in 1958. Since the piers and abutments were constructed at that time, the bridge is now greater than 50 years old. However, deck plate girder bridges are a common type,

and this example does not appear to have any exceptional qualities. The I-15 abutments and piers may have been altered for seismic safety since construction. Given lack of quality and probable alterations, the BNSF bridge is unlikely to meet NRHP criteria.

*Paleontological Resources*

The Segment 2C alignment options would cross extensive exposures of Pleistocene alluvial units that may be in part correlative with the richly fossiliferous vertebrate-bearing Lake Manix/Lake Mojave deposits and are accordingly considered highly sensitive for paleontological resources. Construction along this alignment would therefore have the potential for adverse effects on paleontological resources. However, both Segment 2C alignment options would be within the existing I-15 right-of-way, and thus the ground has likely been subject to prior disturbance during grading for 1-15 or trenching for underground utilities adjacent to the freeway. Prior site disturbance reduces the potential of finding intact paleontological resources, but would not eliminate it entirely.

**Segment 4C**

*Archaeological Resources*

**Table S-3.7-1** lists the archaeological resources within the APE around Segment 4C. A total of 24 sites were identified within the APE for the Segment 4C. Of these, 21 were identified as being in the historic period, one was identified as within the prehistoric period, and two were identified as exhibiting components from multiple periods. Preliminary evaluations of these sites indicate that 11 sites would not be eligible for inclusion in the NRHP, 11 would be assumed eligible, and two would be eligible.

*Historic Architectural Resources*

Field investigation of the APE around Segment 4C did not identify any historic architectural resources.

*Paleontological Resources*

Much of Segment 4C would be situated on alluvial deposits of the Holocene age, which are not considered paleontologically sensitive. However, older alluvial strata presumably present in the subsurface would be highly sensitive. Segment 4C would also traverse areas of metamorphic rocks, particularly in mountainous areas, where tunnels are proposed. None of these metamorphic rock areas have strong potential to harbor paleontological resources.

### Relocated Sloan MSF

*Archaeological Resources*

**Table S-3.7-1** lists the archaeological resources identified by project archaeologists within the APE around the RSMSF. One historic period site was identified, but would be assumed to not be eligible for inclusion in the NRHP.

*Historic Architectural Resources*

Field investigation of the APE around the RSMSF site did not identify any historic architectural resources.

*Paleontological Resources*

Approximately 75 percent of the RSMSF site is underlain by sedimentary rocks of Oligocene-Miocene age. A portion of this sequence may correlate with the Barstow Formation, which is famous for its vertebrate fauna; this sequence is therefore considered highly sensitive. The remaining 25 percent (south end) of the RSMSF site is underlain by alluvial deposits of Holocene age, which could include underlying sensitive strata.

### Frias Substation

*Archaeological Resources*

No archaeological resources were identified within the APE for the Frias Substation.

*Historic Architectural Resources*

Field investigation of the APE around the Frias Substation site did not identify any historic architectural resources.

*Paleontological Resources*

The Frias Substation is underlain by younger alluvial deposits of active fans and washes. These deposits have low sensitivity in regards to paleontological resources because of the Holocene age. However, these layers could be underlain by more paleontologically sensitive older units in the subsurface.

### Alignment Adjustment Areas

**Table S-3.7-1** lists the archaeological resources identified by project archaeologists within the APE around the rail alignments as modified by the AAAs. A total of 11 sites were identified within the APE for the AAAs. Of these, six were identified as being in the historic period, four were identified as within the prehistoric period, and one was

identified as exhibiting multicomponent periods. Preliminary evaluations of these sites indicate that four sites would not be eligible for inclusion in the NRHP and seven would be assumed eligible.

*Historic Architectural Resources*

Field investigation of the expanded APE around the AAAs did not identify any new historic architectural resources.

*Paleontological Resources*

The AAAs do not shift any of their associated segments to such an extent that any different geologic units would become relevant. Therefore, conclusions regarding paleontological resources for the affected rail alignments of Segment 2A/2B, Segment 3B, and Segment 6B are as described in **Section 3.7.3.3** of the Draft EIS.

## 3.7.2 Methods of Evaluation of Impacts

The same methodology outlined in **Section 3.7.2** of the Draft EIS was used to evaluate potential effects of the project modifications and additions. NEPA and NHPA require federal agencies to consider the effect of their undertakings on significant resources, known as historic properties. The federal significance of an archaeological site or an architectural resource is defined by the NRHP. These criteria, defined in 36 CFR § 60.4, state that a resource must be at least 50 years old (unless meeting exceptional criteria) and possess the quality of significance in American history, architecture, archaeology, engineering, and culture and is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the following criteria:

A. Is associated with events that have made a significant contribution to the broad patterns of history;

B. Is associated with the lives of persons significant in the past;

C. Embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or

D. Has yielded, or may be likely to yield, information important in prehistory or history.

If a particular resource meets one of these criteria and retains integrity, it is considered as an eligible "historic property" for listing in the NRHP. To comply with Section 106 of the NHPA, any effects of the proposed undertaking on properties listed in or determined eligible for inclusion in the NRHP must be analyzed by applying the Criteria of Adverse Effect, as follows:

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration is given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Adverse effects on historic properties include, but are not limited to:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long term preservation of the property's historic significance.

NRHP eligibility status of resources potentially affected in the APE has not yet been determined. The project will achieve compliance with Section 106 requirements through a PA, which defers eligibility determinations until after the execution of a ROD for the project. **Table S-3.7-2** summarizes these findings and the assumed eligibility status of all potentially affected archaeological resources.

Impacts on paleontological resources were evaluated following guidelines published by the Society of Vertebrate Paleontology (SVP).[3] Paleontological resources can be affected from soil disturbing activities during construction. Construction of the project would likely result in adverse effects on paleontological resources in the following two situations:

[3] Society of Vertebrate Paleontology Conformable Impact Mitigation Guidelines Committee, 1995.

- Where the proposed rail alignment or facility crosses paleontologically sensitive geologic units exposed at the surface.
- Where the rail alignment or facility is situated on Holocene materials that overlie highly sensitive materials, and ground disturbance would be deep enough to affect underlying sensitive strata.

For the purposes of this project's analysis, the APE as a whole has been divided into areas of potential direct and indirect effects.

The Direct APE has been defined accordingly:

- **Rail alignments:** 115 feet on either side of rail alignment centerlines.
- **Stations/maintenance facilities:** 0 additional feet around the boundaries of these facilities.
- **Utility corridors**: 50 feet on either side of utility corridors.

The Indirect APE has been defined accordingly:

- **Rail alignments:** 116 to 200 feet on either side of rail alignment centerlines.
- **Utility corridors**: 51 to 100 feet on either side of utility corridors.

As part of this Supplemental Draft EIS, project archaeologists conducted field surveys of the expanded APE, consistent with methods described in **Section 3.7.2** of the Draft EIS.

## 3.7.3 Environmental Consequences

**Table S-3.7-2** summarizes the known NRHP eligible or assumed eligible archaeological resources within the expanded APE for the project modifications and additions. The environmental consequences of the modifications to Wigwam MSF and the profile of Segment 3B do not differ from those presented in the Draft EIS. **Section 3.7.4.2** of the Draft EIS presents a discussion of potential impacts from the Wigwam MSF and Segment 3B on archaeological, historic architectural and paleontological resources.

Specific discussions of the environmental consequences for the modifications and additions within the modified APE are provided below and illustrated in **Table S-3.7-2**.

Table S-3.7-2 Known NRHP Eligible or Assumed Eligible Archaeological Resources in the Modified APE[a]

| Project Modifications and Additions | Archaeological Resources Directly Affected[b] | Archaeological Resources Indirectly Affected[b] |
|---|---|---|
| | Number | Number |
| VV3 (both parking options) | 7 | 0 |
| OMSF 2 | 5 | 0 |
| Segment 2C Median | 11 | 1 |
| Segment 2C Side Running | 14 | 0 |
| Segment 4C | 10 | 3 |
| Relocated Sloan MSF | 1 | 0 |
| Frias Substation | 0 | 0 |
| AAAs | 7 | 0 |

Source: ICF, 2010.

[a] Preliminary recommendations of *not eligible* for inclusion on the NRHP were based on the results of the field survey, follow-up archival research, and BLM consultation. The preliminary notations of "Not Eligible" and "Assumption of Eligibility" are based on existing data and are not a determination of eligibility. SHPO has not concurred on these findings. Formal determinations of eligibility will be established as outlined in the programmatic agreement prepared for the project.

[b] Direct APE impacts would likely occur within 115 feet on either side of the DesertXpress alignment centerline, within 50 feet on either side of the utility corridor (EMU option only), and within the footprint of project facilities. Indirect APE impacts, related to construction, would likely occur within 116 to 200 feet on either side of the DesertXpress alignment centerline and within 51 to 100 feet on either side of the utility corridor (EMU option only).

## Victorville Station Site 3

*Archaeological Resources*

Construction of either parking option for VV3 may result in direct adverse effects to cultural resources eligible or assumed eligible for the NRHP. **Tables S-3.7-1** and **S-3.7-2** summarize the resources that could be affected. A total of 7 eligible or assumed eligible archaeological resources are potentially affected by VV3.

All of the eligible or assumed eligible cultural resources in the APE of VV3 are historic period resources, and include habitation sites, refuse scatters, a power transmission line, and rock cairns. The power line (CA-SBR-10315H) has been found eligible for the NRHP.

*Architectural Resources*

VV3, inclusive of both parking options, would not involve any direct or indirect effects to historic architectural resources since no such resources have been identified within the expanded APE for VV3.

*Paleontological Resources*

Depending on the thickness of Holocene materials at the VV3 site for either parking option, excavations during construction could disrupt underlying sensitive strata and damage paleontological resources.

**OMSF 2**

*Archaeological Resources*

The reduction of the footprint of OMSF 2 results in one fewer directly affected archaeological resource than the larger OMSF 2 evaluated in **Section 3.7.4.2** of the Draft EIS. With the reduction in size, OMSF 2 would continue to directly affect five historical period resources, including refuse deposits, homestead remnants, and mining sites, which are discussed in **Section 3.7.4.2** the Draft EIS.

*Architectural Resources*

As discussed in **Section 3.7.4.2** of the Draft EIS, OMSF 2 would not result in any direct or indirect effects to historic architectural resources since no such resources have been identified within the APE for OMSF 2.

*Paleontological Resources*

OMSF 2 is located on the same land as considered in **Section 3.7.3.3** of the Draft EIS and no new geologic units or paleontological sensitivity have been identified. Construction activities could disrupt underlying sensitive strata and damage paleontological resources, representing an adverse effect.

**Segment 2C**

*Archaeological Resources*

Implementation of the Segment 2C alignment options may result in direct and indirect adverse effects to cultural resources eligible or assumed eligible for the NRHP. The Segment 2C alignment options would be located within the I-15 right-of-way. While this area has likely been subject to prior disturbance during grading for I-15 or trenching for underground utilities known to run adjacent to the roadway, ground disturbing activities associated with constructing either Segment 2C option may nonetheless result in adverse effects to cultural resources.

As described below, the Segment 2C Side Running alignment option could directly affect 13 archaeological sites eligible or assumed eligible for inclusion in the NRHP, while the Segment 2C Median alignment option could directly affect 11 sites. **Tables S-3.7-1** and **S-3.7-2** summarize the resources that could be affected.

***Segment 2C Median:*** Eleven archaeological sites eligible or assumed eligible could be directly impacted by the Segment 2C Median option, including seven prehistoric sites and four historical period sites. The historic period resources consist of two railroad grades, one of which has been determined eligible for the NRHP (CA-SBR-6693H); the eligible National Old Trails Highway (CA-SBR-2910H); a segment of the Sidewinder Road wagon trail. CA-SBR-2910H was recommended as eligible under Criteria A and C of the NRHP. However, within the alignment for the Segment 2C Median option, CA-SBR-2910H occurs in a disturbed area within the median of I-15, and likely has lost its integrity in this area. The eligible or assumed eligible prehistoric sites include five stone quarries, and a site with rock rings.

Five of the NRHP-eligible prehistoric archaeological sites found in the Segment 2C Median option are contributing elements of the Sidewinder Quarry Archaeological District, a National Register District (P36-020365). The district is composed of a total of 45 prehistoric sites found within and on both sides of I-15. Although only five of these sites occur in the Segment 2C Median option, impacts to any of these sites must be treated as impacts to the entire district. The district was found eligible under Criterion D, for its data potential.

One assumed eligible site would be indirectly affected by the Segment 2C Median alignment option (CA-SBR-6023H), which is a residential and commercial deposit known as the Yermo Dump.

***Segment 2C Side Running:*** For the side running option, 14 archaeological sites eligible or assumed eligible could be directly affected, including eight prehistoric sites and six historical period sites. Four of these eligible or assumed eligible also occur within the Segment 2C Median alignment option, since these alignment options would follow the same rail alignment south and east of Barstow. These four sites include a historic railroad grade, the National Old Trails highway, the Sidewinder Road wagon trail, and elements of the Sidewinder Quarry Archaeological District. Additional historic period resources affected by the Segment 2C Side Running option independent of the Segment 2C Median alignment option consist of a fence line and two refuse deposits. The prehistoric sites include six stone quarries and a site with rock rings. Six of the NRHP-eligible prehistoric archaeological sites found in the Segment 2C Side Running option are contributing elements of the Sidewinder Quarry Archaeological District, a National Register District (P36-020365). As with the Segment 2C Median option, impacts to any of these sites must be treated as impacts to the entire district. The district was found eligible under Criterion D, for its data potential.

*Architectural Resources*

While there are several historic architectural resources within the APE for the Segment 2C alignment options, these resources are not eligible for inclusion in the NRHP. The Segment 2C alignment options would thus have no adverse effects to historic architectural resources.

*Paleontological Resources*

The Segment 2C alignment options would be within the I-15 right-of-way, an area previously disturbed during freeway construction and trenching for underground utilities. However, much of the Segment 2C alignment options would be constructed on elevated trackway. This method of construction will require less ground disturbance, but deeper excavation for foundations. Therefore, the elevated structure would result in a greater potential to encounter fossil resources than at grade trackway.

Should maintenance activities along the rail alignment disturb areas not previously disturbed by construction of the Segment 2C alignment options, potentially adverse effects to paleontological resources could occur if substrate of high or undetermined sensitivity is present in that area.

**Segment 4C**

*Archaeological Resources*

Implementation of Segment 4C may result in direct adverse effects to ten eligible or potentially eligible resources. **Tables S-3.7-1** and **S-3.7-2** summarize the resources that could be affected. The 10 eligible or assumed eligible resources include one previously determined NRHP-eligible site, a historic power transmission line (CA-SBR-10315H) that was also identified in the APE considered in the Draft EIS. Other resources include historic period sites and a multicomponent site with both prehistoric and historic artifacts and features. Many of the historic period sites are likely associated with historic mining that occurred in the area. These historic sites include roads, survey lines, mines, and water conveyance features. The multicomponent site is a prehistoric habitation site with hearths, overlain by an historic refuse deposit.

Within the indirect APE for Segment 4C, three sites assumed eligible have been identified, including an historic period site, a prehistoric site, and a multicomponent site. The multicomponent site includes a prehistoric habitation site located in shallow dunes, which is associated with a lake shore.

*Architectural Resources*

Segment 4C would not involve any direct or indirect effects to historic architectural resources as no such resources have been identified within the APE for Segment 4C.

*Paleontological Resources*

Construction of Segment 4C could have an adverse effect on paleontological resources, particularly in areas of high sensitivity. Should maintenance activities along the rail alignment disturb areas not previously disturbed by construction of Segment 4C, potentially adverse effects to paleontological resources could occur if substrate of high or undetermined sensitivity is present in that area.

**Relocated Sloan MSF**

*Archaeological Resources*

Construction of the RSMSF would result in direct adverse effects to one cultural resource eligible or assumed eligible for the NRHP. **Tables S-3.7-1** and **S-3.7-2** summarize the resource that could be affected. The site, JSA-CS-S-217H, consists of three separate locations of historic period household refuse, probably dating to the 1940s to early 1950s.

*Architectural Resources*

The RSMSF would not involve any direct or indirect effects to historic architectural resources as no such resources have been identified within the APE of the RSMSF.

*Paleontological Resources*

Excavations during construction could disrupt underlying sensitive strata and damage paleontological resources on the RSMSF site, representing a potentially adverse effect.

**Frias Substation**

*Archaeological Resources*

The Frias Substation would not involve any direct or indirect effects to archaeological resources as no such resources have been identified within the APE of the Frias Substation.

*Architectural Resources*

The Frias Substation would not involve any direct or indirect effects to historic architectural resources as no such resources have been identified within the APE for the Frias Substation.

*Paleontological Resources*

Construction activities could disrupt underlying sensitive strata and damage paleontological resources, representing an adverse effect.

**Alignment Adjustment Areas**

*Archaeological Resources*

**Tables S-3.7-1** and **S-3.7-2** summarize the resources that could be affected by the AAAs.

Construction of the AAAs would result in direct adverse effects to seven cultural resources assumed eligible for the NRHP. **Tables S-3.7-1** and **S-3.7-2** summarize the resources that could be affected. The resources affected include an assumed eligible road segment (Barstow-Silver Lake Road), a historic period refuse deposit, a prehistoric rock quarry, a multicomponent prehistoric rock quarry and historic cairns site, a combined prehistoric quarry and habitation site, a large prehistoric habitation and burial site, and a prehistoric habitation and food processing site.

Notably, only one of these seven affected resources, the historic period refuse deposit, was not considered in **Section 3.7.4.2** of the Draft EIS. In addition, the AAAs will result in avoidance of six archeological resources that were listed as affected in **Section 3.7.4.2** of the Draft EIS.

*Architectural Resources*

The AAAs would not involve any new direct or indirect effects to historic architectural resources as no such resources have been identified within the APE for the AAAs.

*Paleontological Resources*

Construction activities could disrupt underlying sensitive strata and damage paleontological resources, representing an adverse effect. Ground-disturbing maintenance activities in areas of sensitive substrate would also have some potential for adverse effects on paleontological resources, specifically in areas not previously disturbed by construction.

## 3.7.4 MITIGATION MEASURES

**Mitigation Measures CR-1** through **CR-3** in **Section 3.7.5.1** of the Draft EIS would reduce effects to archaeological resources.

**Mitigation Measure CR-1** encourages avoidance of archaeological resources where feasible. **Mitigation Measure CR-2** requires test excavations to determine the significance of archaeological resources that would be affected by construction of the action alternatives. If such resources are determined significant, they would be subject to data recovery. **Mitigation Measure CR-3** requires that archaeological monitoring be conducted for areas with a moderate to high sensitivity according to the historic property treatment plan (HPTP) that will be developed in accordance with the PA.

**Mitigation Measures CR-5** through **CR-11** in **Section 3.7.5.3** of the Draft EIS address potential affects to paleontological resources. As identified in **Mitigation Measure CR-5**, the Applicant will ensure site-specific engineering geologic studies which will be used to guide mitigation requirements on a site-specific basis during construction and during maintenance activities that require ground disturbance, as follows.

- **Mitigation Measure CR-7** will apply to all ground-disturbing construction and maintenance activities, although this measure will likely only need to be implemented once, during project design.
- **Mitigation Measures CR-8, CR-9, CR-11**, and **CR-12** will apply to all ground-disturbing construction and maintenance activities.
- **Mitigation Measures CR-10** will apply to all ground-disturbing construction activities that affect geologic units identified as highly sensitive for paleontological resources, and to all maintenance activities that would involve new or extended ground disturbance in highly sensitive units.

**Mitigation Measure CR-6** and **CR-7** of the Draft EIS require further evaluation for paleontological resources prior to construction. **Mitigation Measure CR-8** requires paleontological resources awareness training prior to the commencement of construction activity. **Mitigation Measures CR-9** requires construction monitoring for areas with a high likelihood of paleontological materials. **Mitigation Measure CR-10** requires that if fossil materials are discovered, all construction work is stopped. **Mitigation Measure CR-11** identifies steps for fossil recovery and curation if fossils are discovered during construction.

## 3.7.5 Residual Impacts Following Mitigation

All effects to cultural resources associated with the project modifications and additions can be mitigated through avoidance, evaluation and data recovery, or other mitigation through archaeological investigation and monitoring during construction as described in **Section 3.7.4** above. These measures will form the basis of the stipulations to be outlined in the HPTP and the PA to resolve the adverse effects of the project.

# 3.8 HYDROLOGY AND WATER QUALITY

This section examines the potential impacts of the project modifications and additions related to hydrology and water quality. The aspects of water resources that are specifically analyzed are surface water hydrology, groundwater hydrology, surface water quality, and groundwater quality, and flooding.

## 3.8.1 AFFECTED ENVIRONMENT

**Section 3.8.1** of the Draft EIS provides a summary of regulations and standards related to hydrology and water quality. Since publication of the Draft EIS, there has been one change to the regulatory setting governing hydrology and water quality in the affected environment of the proposed project. The State of California amended the Porter-Cologne Water Quality Control Act to incorporate provisions of the California Watershed Improvement Act of 2009. The details of this amendment are discussed within this Supplemental Draft EIS in **Chapter 3.0, Regulatory Setting**.

### Regional Conditions

The regional environment of the project area has remained unchanged since publication of the Draft EIS. There are no known substantial changes in existing point-source and nonpoint-source pollutant discharges contributing contaminants to surface water and groundwater within the project area.[1] **Figures S-3.8-1** through **S-3.8-5** show the existing hydrologic resources, including water bodies, streams, dry lakes, and the 100-year floodplain, in the vicinity of the proposed project modifications and additions.

### Victorville Station Site 3

VV3, for either parking option VV3A or VV3B, would be bisected by a branch of Bell Mountain Wash. **Figure S-3.8-1** shows the location of the VV3 site in relation to existing hydrologic features.

VV3 would be located in the Upper Mojave Groundwater Basin, which is bounded by the San Bernardino Mountains on the south, follows the Mojave River through Victorville in Apple Valley, and ends near the community of Helendale.[2] Groundwater impairments include high nitrate concentrations in the southern portion of the basin and high iron and manganese concentrations near Oro Grande.

The VV3 site is not located within a designated Federal Emergency Management Agency (FEMA) 100-year floodplain.

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[1] Point source is a stationary location or fixed facility, such as the end of a pipe, from which pollutants are discharged. Nonpoint source pollution is caused by rainfall moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutant, finally depositing them into lakes, rivers, wetlands, coastal waters, and even underground sources of drinking water.

[2] Department of Water Resources, State of California. Groundwater Basins in California. October 2003. <http://www.dpla2.water.ca.gov/publications/groundwater/bulletin118/maps/correct_statewide_basin_map_V3_subbas.pdf>. Accessed February 19, 2010.

### OMSF 2

The size, not the location, of OMSF 2 has been changed. Therefore, existing water resources, groundwater resources, and flooding hazards remain unaltered as presented for OMSF 2 in **Section 3.8.3.4** of the Draft EIS. **Figure S-3.8-1** shows the location of OMSF 2 in relation to existing hydrologic features. OMSF 2 is located within the vicinity of minor drainages and would bisect two small washes of Bell Mountain Wash.

OMSF 2 is not located within a designated 100-year floodplain or other flood hazard zone.

### Segment 2C

Segment 2C would traverse a number of intermittent streams, washes, and channels, as well as the Mojave River. In the immediate vicinity of Segment 2C, the Mojave River exhibits intermittent surface flows. An intermittent canal also extends along both sides of I-15 east of Calico Road. **Figure S-3.8-2** shows the location of the Segment 2C alignment options in relation to existing hydrologic features.

Segment 2C would be located within the Middle Mojave River Valley Groundwater Basin and the Lower Mojave River Valley Groundwater Basin. As discussed in **Section 3.8.3.4** of the Draft EIS, the Lower Mojave River Valley Groundwater Basin includes elevated levels of fluoride near Newberry Springs. There are also nine sites in Barstow where underground fuel storage tanks are leaking and introducing hazardous materials into the groundwater. Superfund sites are also located in the Nebo and Yermo Marine Corps depots for contaminated plumes contaminated with trichloroethane.[3] The Middle Mojave River Valley Groundwater Basin is affected by volatile organic compounds, salts, and nitrates that have leached into the groundwater from the Lenwood landfill in the lower portion of the basin.

Segment 2C would cross the designated 100-year floodplain of the Mojave River and would cross the designated 100-year floodplain south of Barstow, near Lenwood Road.

### Segment 4C

There are multiple small drainages, including unnamed washes, intermittent streams, and ditches, within the vicinity of Segment 4C. **Figure S-3.8-4** shows the location of Segment 4C in relation to existing hydrologic features.

Segment 4C would be located within the Ivanpah Valley Groundwater Basin.[4] As stated in **Section 3.8.3.4** of the Draft EIS, the Ivanpah Groundwater Basin is rated marginal for both domestic and irrigation purposes due to elevated levels of fluoride and sodium.

Segment 4C would not be located within a designated 100-year floodplain.

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[3] For a discussion of groundwater contamination, refer to **Section 3.10, Hazards and Hazardous Materials**, of this Supplemental Draft EIS.

[4] State of California, Department of Water Resources. Ivanpah Valley Groundwater Basin. 2004. <http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/6-30.pdf>. Accessed March 15, 2010.

### Relocated Sloan MSF

Given the 2 mile proximity of the Relocated Sloan MSF (RSMSF) site to the Sloan Road MSF evaluated in the Draft EIS, the existing regional hydrology is similar to that evaluated in **Section 3.8.3.4** of the Draft EIS. There are no existing drainages, channels, or washes on the RSMSF site, nor would it be located within a designated 100-year floodplain or other flood hazard zone. The RSMSF would be located within the Jean Lake Valley Groundwater Basin.

### Frias Substation

**Figure S-3.8-5** shows the location of the Frias Substation in relation to existing hydrologic features. The Frias Substation site is located between two existing drainages. These drainages cross under the I-15 freeway corridor to the east and are channeled into Duck Creek. Duck Creek is a tributary to Las Vegas Wash, which drains to Lake Mead and the Colorado River. The area proposed for the underground 25 kilovolt (kV) feeders would cross beneath one of the existing drainages.

The site is located in the Las Vegas Groundwater Basin (Nevada Basin Number 212).[5] This is the same groundwater basin atop which all Las Vegas Valley MSF options lie, as discussed in **Section 3.8.3.4** of the Draft EIS. The quality of the shallow groundwater in the Las Vegas Valley is saline.

The Frias Substation site would not be located within a designated 100-year floodplain. However, the western limit of the 100-year floodplain for Duck Creek is immediately adjacent to the eastern boundary of the site.

### Alignment Adjustment Areas

The Alignment Adjustment Areas (AAAs) would result in few, relatively minor shifts to limited portions of the rail alignment (no more than 400 feet from the center line of the rail alignment evaluated in the Draft EIS). Segment 2A/2B, Segment 3B, and Segment 6B as described in **Section 3.8.3.4** of the Draft EIS would affect the same water and groundwater resources and flood hazard areas with implementation of the AAAs.

### Wigwam MSF Modification

The orientation, not the location of the Wigwam MSF has been changed. Therefore, existing water resources, groundwater resources, and flooding hazards are the same as presented for the Wigwam MSF in **Section 3.8.3.4** of the Draft EIS. The Wigwam MSF would not cross any existing drainages and would not be located in the 100-year floodplain.

Refer to **Section 3.4, Utilities and Service Systems**, of this Supplemental Draft EIS for a discussion of water supply effects associated with the modified Wigwam MSF.

[5] State of Nevada, Department of Conservation and Natural Resources. Division of Water Resources. <http://water.nv.gov/WaterPlanning/cty-bsn/cl_basin.cfm>. Accessed March 15, 2010.

**Profile Modification**

The Segment 3B Profile Modification would result in placing a 1.3 mile portion of the rail alignment within a retained cut. There are no notable hydrologic features within the area of the proposed Profile Modification. An existing culverted wash is at the north/east end of the Profile Modification. Existing groundwater depths in this area are estimated to range from 45 to 76 feet below ground level.[6] The Profile Modification is not within a designated 100-year floodplain or other flood hazard zone.

## 3.8.2 METHODS OF EVALUATION OF IMPACTS

The same methodology discussed in **Section 3.8.2** of the Draft EIS applies in this evaluation of potential direct and indirect hydrology and water quality effects of the proposed modifications and additions. The number of linear feet of water resources has been calculated to determine the level of impact related to hydrology and water quality.

An effect on hydrology and water quality was considered adverse and would require mitigation if the project modification and addition would:

- Violate any water quality standards or waste discharge requirements, or substantially degrade water quality;
- Place structures within a 100-year floodplain or place structures that would impede or redirect flood flows;
- Substantially alter existing drainage patterns in a manner that would result in substantial erosion, siltation, or flooding onsite or offsite;
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff; or
- Use surface groundwater in a wasteful or inefficient manner resulting in a reduction in water availability.

This evaluation considers both the operational and construction period effects of the project modifications and additions relative to hydrology and water quality, consistent with the evaluation of the action alternatives in **Section 3.8.4.3** of the Draft EIS. Operational effects are considered permanent effects, while construction period effects are assumed to be temporary in nature and would only occur during the active constriction period.

[6] State of California, Department of Water Resources. Water Data Library. <http://www.water.ca.gov/waterdatalibrary/>. Accessed March 19, 2010.

## 3.8.3 ENVIRONMENTAL CONSEQUENCES

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. The discussions below consider the project modifications and additions per these criteria.

**Victorville Station Site 3**

*Violate Any Water Quality Standards or Waste Discharge Requirements, or Substantially Degrade Water Quality*

***Permanent Effects:*** VV3 would impact a branch of Bell Mountain Wash. VV3A would affect approximately 2,257 linear feet of the wash, while VV3B would affect approximately 2,075 linear feet. In addition to this direct impact, VV3 could result in potential indirect effects to water quality due to pollutants deposited from vehicles at the station site and associated parking area being carried in water runoff into the local drainages. As a result, operation of VV3 would have the potential to violate water quality standards, create additional sources of polluted runoff, or otherwise degrade water quality.

***Construction Period:*** Construction of VV3 under either parking option could degrade existing water quality. Construction activities, such as grading and site preparation, could result in increased erosion and sedimentation to surface waters. If precautions are not taken to contain such contaminants, construction could produce contaminated stormwater runoff with a resultant degradation of water quality. Hazardous materials associated with construction equipment could also adversely affect water quality if spilled or improperly stored. Construction of VV3 atop a branch of Bell Mountain Wash could provide a direct path for construction related contaminants. Water quality impacts from construction activities at the VV3 site could violate water quality standards, exceed contaminant loadings, create additional sources of polluted runoff, or otherwise degrade water quality.

*Substantially Alter Existing Drainage Patterns in a Manner That Would Result in Substantial Erosion, Siltation, or Flooding Onsite or Offsite*

***Permanent Effects:*** VV3 would impact a portion of Bell Mountain Wash and require the local drainage pattern to be altered to accommodate the station and parking areas. If drainage systems are not properly designed, VV3 could experience periodic flooding.

***Construction Period:*** Construction of VV3 would involve the use of earth moving machinery, which could expose disturbed and loosened soils to erosion from rainfall, runoff, and wind. The protective vegetation cover would also be removed, which would reduce natural soil resistance to erosion. Such erosion could have an effect on the drainage patterns of the existing water resources within proximity of VV3, including Bell Mountain Wash.

*Place Housing or Structures Within 100-Year Floodplain or Place Structures That Would Impede or Redirect Flood Flows*

VV3 would not be located within a designated 100-year floodplain and would therefore not place any structures within the 100-year floodplain that could impede or redirect flood flows.

*Create or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems, or Provide Substantial Additional Sources of Polluted Runoff*

***Permanent Effects:*** VV3A would include approximately 130 acres of surface parking area, while VV3B would include approximately 111 acres of surface parking area. VV3A would introduce a greater amount of impervious surface than VV3B. Using the methodology for calculating peak discharge as in **Section 3.8.4.3** of the Draft EIS, VV3A would produce approximately 275 cubic feet per second (cfs) of runoff during the 100-year, 24-hour storm event, while VV3B would produce approximately 235 cfs under the same conditions. VV3A and VV3B would therefore produce additional stormwater runoff. Refer to **Section 3.4, Utilities/Emergency Services**, of this Supplemental Draft EIS for a discussion of stormwater conveyance systems.

Because there are numerous other locations in the watersheds for groundwater recharge, the increase of impervious surface associated with VV3 under either parking option would not result in a considerable loss of groundwater recharge and would not substantially affect groundwater levels.

***Construction Period:*** Construction of VV3 under either parking option may result in additional sources of polluted runoff (i.e., soil erosion or construction machinery fuel leakage), which could adversely affect water quality.

*Use Surface or Groundwater in Wasteful or Inefficient Manner Resulting in a Reduction in Water Availability*

***Permanent Effects:*** VV3 with either parking option would not result in a new or increased use of surface water and/or groundwater during operation beyond what was analyzed in **Section 3.8.4.3** of the Draft EIS as the size and use would be consistent with the other Victorville Station site options considered in the Draft EIS. It is assumed that water service would be obtained from existing water utility providers. Refer to **Section 3.4, Utilities**, of this Supplemental Draft EIS for a discussion of water supply.

***Construction Period:*** Construction of VV3 (under either parking option) would require water for concrete batching, washing vehicles and equipment, and dust control. The Applicant has not identified a source(s) of water from construction activities. It is assumed that water for construction will be obtained from existing commercially available sources such as water utility service providers in the project area.

**OMSF 2**

*Violate Any Water Quality Standards or Waste Discharge Requirements, or Substantially Degrade Water Quality*

***Permanent Effects:*** The modified OMSF 2 facility would affect approximately 825 linear feet of water resources, as compared to the 2,581 linear feet noted for OMSF 2 in **Section 3.8.4.3** of the Draft EIS. While the amount of affected linear feet would be reduced as a result of the smaller development footprint, operation of OMSF 2 would still have the potential to violate water quality standards, create additional sources of polluted runoff, or otherwise degrade water quality, consistent with the conclusion in **Section 3.8.4.3** of the Draft EIS.

***Construction Period:*** Construction of OMSF 2 could degrade existing water quality. Construction activities, such as grading and site preparation, could result in increased erosion and sedimentation to surface waters. If precautions are not taken to contain such contaminants, construction could produce contaminated stormwater runoff with a resultant degradation of water quality. Hazardous materials associated with construction equipment could also adversely affect water quality if spilled or improperly stored. Water quality impacts from construction activities at the OMSF 2 site could violate water quality standards, exceed contaminant loadings, create additional sources of polluted runoff, or otherwise degrade water quality.

*Substantially Alter Existing Drainage Patterns in a Manner That Would Result in Substantial Erosion, Siltation, or Flooding Onsite or Offsite*

***Permanent Effects:*** The modified OMSF 2 would affect approximately 825 linear feet of water resources and bisect two small washes that connect to Bell Mountain Wash. Depending on the final design of the OMSF, these washes may be altered and result in flooding on the west side of the site is drainage facilities are not properly designed.

***Construction Period:*** Consistent with the conclusion in **Section 3.8.4.3** of the Draft EIS, construction activities associated with the development of OMSF 2 could expose disturbed and loosened soils to erosion from rainfall, runoff, and wind. The existing protective vegetation cover would be removed, which would reduce natural soil resistance to erosion and could affect the drainage patterns of the existing water resources within proximity of OMSF 2, including Bell Mountain Wash.

*Place Housing or Structures Within 100-Year Floodplain or Place Structures That Would Impede or Redirect Flood Flows*

OMSF 2 is not located within a designated 100-year floodplain and would therefore not place housing or structures within the 100-year floodplain that could impede or redirect flood flows.

*Create or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems, or Provide Substantial Additional Sources of Polluted Runoff*

***Permanent Effects:*** OMSF 2 would result in the development of impervious surfaces on previously undeveloped lands, which would result in additional runoff related to access roads and parking facilities. The modified OMSF 2 would result in a reduction in impervious surface area and associated runoff as compared to the OMSF 2 evaluated in **Section 3.8.4.3** of the Draft EIS.

***Construction Period:*** Construction of OMSF 2 may result in additional sources of polluted runoff (i.e., from soil erosion or construction machinery fuel leakage), which could adversely affect water quality.

*Use Surface or Groundwater in Wasteful or Inefficient Manner Resulting in a Reduction in Water Availability*

***Permanent Effects:*** OMSF 2 would not result in a new or increased use of surface water and/or groundwater during operation beyond what was analyzed in **Section 3.8.4.3** of the Draft EIS, as the types of uses and employment capacity would be the same as considered in **Section 3.8.4.3** of the Draft EIS. Water service would be obtained from existing water utility providers. Refer to **Section 3.4, Utilities**, of this Supplemental Draft EIS for a discussion of water supply.

***Construction Period:*** Consistent with the conclusion in **Section 3.8.4.3** of the Draft EIS for OMSF 2, the modified OMSF 2 would still require water for concrete batching, washing vehicles and equipment, and dust control. The Applicant has not identified a source(s) of water from construction activities. It is assumed that water for construction will be obtained from existing commercially available sources such as water utility service providers in the project area.

**Segment 2C**

*Violate Any Water Quality Standards or Waste Discharge Requirements, or Substantially Degrade Water Quality*

***Permanent Effects:*** The Segment 2C alignment options would result in potential impacts to water quality due to pollutants deposited within the proposed rail right-of-way from train operations that could contaminate adjacent drainages and washes following a storm event. Depending on the train technology option, contaminants associated with train operation would vary. For example, the DEMU technology option could result in diesel particulate deposits that would be avoided by the EMU technology option. Segment 2C would cross several intermittent stream and washes which could result in impacts to water quality during operation.

- The Segment 2C Side Running alignment option would directly affect approximately 2,344 linear feet of channels, intermittent streams, and washes, including the Mojave River.

- The Segment 2C Median alignment option would directly affect approximately 2,342 linear feet of channels, intermittent streams, and washes, including the Mojave River.

The Segment 2C alignment options would have the potential to violate water quality standards, provide additional sources of polluted runoff, or otherwise degrade water quality.

***Construction Period:*** Construction of the Segment 2C alignment options would involve soil disturbance, excavation, cutting/filling, and grading, which could result in increased erosion and sedimentation to surface waters. Hazardous materials from construction machinery could also introduce additional contaminants to stormwater runoff. Construction of the Segment 2C alignment options would require intermittent stream, wash, and ditch crossings which could provide a direct path for construction related contaminants. Construction near the high groundwater table within the Mojave River could also require dewatering for bridge column construction, with subsequent discharge to surface waters, which could result in the release of sediment or other contaminants to surface waters. Construction activities at the TCA could also affect water quality, as contaminants and sediments from stockpiles could produce contaminated stormwater runoff. Water quality impacts from construction activities could violate water quality standards, exceed contaminant loadings, create additional sources of polluted runoff, or otherwise degrade water quality.

*Substantially Alter Existing Drainage Patterns in a Manner That Would Result in Substantial Erosion, Siltation, or Flooding Onsite or Offsite*

***Permanent Effects:*** The Segment 2C alignment option would directly affect channels, intermittent streams, and washes, including the Mojave River. Segment 2C would cross the Mojave River immediately north of the existing I-15 freeway bridge. Due to the width of the Mojave River in this location, concrete pillars would be placed within the Mojave River and would have the potential to redirect flows. The Mojave River runs primarily underground at the proposed location of the Segment 2C crossing. While the placement of columns within the riverbed could affect underground flows, the number of columns would be limited with wide spacing between each column.

In regards to the other affected channels, streams, and washes, it is assumed that culverts could be provided within the channel and that no change to the bed elevation, to the waterway's ability to convey water, or to the ability to convey flood flows would occur. Based on this design information, the crossings of these water resources would not permanently alter the course or flows of these water resources.

Similar to the rail alignments evaluated in **Section 3.8.4.3** of the Draft EIS, stormwater runoff from the Segment 2C would be directed away from the trackway and into existing drainage facilities associated with the I-15 freeway or other local drainage system.

***Construction Period:*** Construction activities associated with development of the Segment 2C alignment options could expose disturbed and loosened soils to erosion from rainfall, runoff, and wind. The existing protective vegetation cover would be removed, which would reduce natural soil resistance to erosion and could affect the drainage

patterns of the existing water resources within proximity of Segment 2C. Similar impacts could also occur at the TCA.

*Place Housing or Structures Within 100-Year Floodplain or Place Structures That Would Impede or Redirect Flood Flows*

***Permanent Effects:*** **Figure S-3.8-1** shows the Segment 2C alignment options in relation to the 100-year floodplain. The Segment 2C alignment options would cross a portion of the designated 100-year floodplains near the Mojave River and south of Barstow, near Lenwood Road.

- The Segment 2C Side Running alignment option would impact approximately 11 acres of the 100-year floodplain.
- The Segment 2C Median alignment option would impacts approximately 10 acres of the 100-year floodplain.

Impacts to the 100-year floodplain could result in impeding or redirecting flood flows.

***Construction Period:*** Construction of the Segment 2C alignment options could result in temporary impacts due to construction workers, equipment, and structures located within the 100-year floodplain. The placement of construction activities within the 100-year floodplain could impede or redirect flood flows depending on the type of activity. The TCA would not be located within the 100-year floodplain.

*Create or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems, or Provide Substantial Additional Sources of Polluted Runoff*

***Permanent Effects:*** Segment 2C would include drainage along the proposed trackway to channel stormwater runoff away from the trackway. As portions of the Segment 2C would be elevated, the placement of columns to support the trackway would not substantially increase the amount of impervious surface area. Runoff produced along the elevated rail alignment would be captured and directed to existing designated drainage features. For at-grade portions of Segment 2C the trackway would not produce any considerable amount of runoff given the permeable nature of construction on ballast rather than paved or solid impervious surfaces. Refer to **Section 3.4, Utilities/Emergency Services**, of this Supplemental Draft EIS for a discussion of stormwater conveyance systems.

***Construction Period:*** Construction of the Segment 2C alignment options may result in additional sources of polluted runoff from soil disturbances or construction equipment, which could impact water quality on and around the TCA and limits of construction.

*Use Surface or Groundwater in Wasteful or Inefficient Manner Resulting in a Reduction in Water Availability*

***Permanent Effects:*** The Segment 2C alignment options would not use surface or groundwater resources and no effects would occur during operation.

***Construction Period:*** Construction of the Segment 2C alignment options would require water for concrete batching, washing vehicles and equipment, and dust control.

The Applicant has not identified a source(s) of water from construction activities. It is assumed that water for construction will be obtained from existing commercially available sources such as water utility service providers in the project area.

**Segment 4C**

*Violate Any Water Quality Standards or Waste Discharge Requirements, or Substantially Degrade Water Quality*

***Permanent Effects:*** Segment 4C would result in potential impacts to water quality due to pollutants deposited within the proposed rail right-of-way from train operation that could contaminate adjacent drainages and washes following a storm event. Depending on the train technology option, contaminants associated with train operation would vary. For example, the DEMU technology option could result in diesel particulate deposits that would be avoided by the EMU technology option. Segment 4C would directly affect approximately 1,485 linear feet of intermittent streams, drainages, and washes. Segment 4C would have the potential to violate water quality standards, create additional sources of polluted runoff, or otherwise degrade water quality.

***Construction Period:*** Construction of Segment 4C would involve soil disturbance, excavation, cutting/filling, and grading, which could result in increased erosion and sedimentation to surface waters. Hazardous materials from construction machinery could also introduce additional contaminants to stormwater runoff. Construction of Segment 4C would require intermittent stream, wash, and ditch crossings, which could provide a direct path for construction related contaminants. Construction activities at the TCAs could also affect water quality, as contaminants and sediments from stockpiles could produce contaminated stormwater runoff. Water quality impacts from construction activities could violate water quality standards, exceed contaminant loadings, provide additional sources of polluted runoff, or otherwise degrade water quality.

*Substantially Alter Existing Drainage Patterns in a Manner That Would Result in Substantial Erosion, Siltation, or Flooding Onsite or Offsite*

***Permanent Effects:*** Segment 4C would directly affect approximately 1,485 linear feet of water resources. It is assumed that culverts could be provided within the affected channels and that no change to the bed elevation, to the waterway's ability to convey water, or to the ability to convey flood flows would occur. Based on this design information, the crossings would not permanently alter the course or flow of these water resources, similar to the rail alignments evaluated in **Section 3.8.4.3** of the Draft EIS. Furthermore, runoff from Segment 4C would be directed away from the trackway.

There is a potential that tunneling in Segment 4C could result in the redirection of some surface water that currently permeates into the groundwater system within the Clark Mountains. However, the amount of water that could be potentially redirected is considered minimal in comparison to the overall surface flow that would continue to recharge the current groundwater system.

***Construction Period:*** Construction activities associated with development of the Segment 4C rail alignment could expose disturbed and loosened soils to erosion from rainfall, runoff, and wind. The existing protective vegetation cover would be removed, which would reduce natural soil resistance to erosion and could affect the drainage patterns of the existing water resources within proximity of Segment 4C. Similar impacts could also occur at the TCAs.

*Place Housing or Structures Within 100-Year Floodplain or Place Structures That Would Impede or Redirect Flood Flows*

Segment 4C would not cross a designated 100-year floodplain and would therefore not place any structures within the 100-year floodplain that could impede or redirect flood flows.

*Create or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems, or Provide Substantial Additional Sources of Polluted Runoff*

***Permanent Effects:*** Segment 4C would include drainage along the proposed trackway to channel stormwater runoff away from the trackway. For the portions of Segment 4C that are at-grade, the trackway itself would not produce any considerable amount of runoff given the permeable nature of construction on ballast rather than paved or solid impervious surfaces. In areas where Segment 4C would be elevated, the placement of columns to support the trackway would not substantially increase the amount of impervious surface area. Runoff produced along the elevated rail alignment would be captured and directed away from the trackway or into newly created drainage features since there are no existing drainage features in the undeveloped areas north of Mountain Pass. Portions of Segment 4C would also be within tunnels through the Clark Mountains. Through the tunnels, no rainfall would fall directly onto the trackway; however, runoff could enter the tunneled portions of the rail alignment at the tunnel portal areas. Runoff that enters the tunnels would be captured and directed to designated drainage features. Refer to **Section 3.4, Utilities/Emergency Services**, of this Supplemental Draft EIS for a discussion of stormwater conveyance systems.

***Construction Period:*** Construction of Segment 4C may result in additional sources of polluted runoff from soil disturbances or construction equipment, which could impact water quality on and around the TCAs and limits of construction.

*Use Surface or Groundwater in Wasteful or Inefficient Manner Resulting in a Reduction in Water Availability*

***Permanent Effects:*** The Segment 4C rail alignment would not use surface or groundwater resources and no effects would occur during operation.

***Construction Period:*** Construction of Segment 4C would require water for concrete batching, washing vehicles and equipment, and dust control. The Applicant has not identified a source(s) of water from construction activities. It is assumed that water for construction will be obtained from existing commercially available sources such as water utility service providers in the project area.

**Relocated Sloan MSF**

*Violate Any Water Quality Standards or Waste Discharge Requirements, or Substantially Degrade Water Quality*

The RSMSF would not impact any intermittent washes, stream, or drainages. Operation of the RSMSF would not violate any water quality standards, waste discharge requirements, or degrade water quality during construction or operation.

*Substantially Alter Existing Drainage Patterns in a Manner That Would Result in Substantial Erosion, Siltation, or Flooding Onsite or Offsite*

The RSMSF would not directly affect any water resources and would therefore not alter the existing drainage patterns in the area during construction or operation.

*Place Housing or Structures Within 100-Year Floodplain or Place Structures That Would Impede or Redirect Flood Flows*

The RSMSF would not be located within the designated 100-year floodplain and would therefore not place any structures within the 100-year floodplain that could impede or redirect flood flows.

*Create or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems, or Provide Substantial Additional Sources of Polluted Runoff*

***Permanent Effects:*** Implementation of the RSMSF on previously undeveloped, vacant lands would increase the amount of impervious surface on the site. However, it is assumed that the majority of this site would not be paved over and that the increase in associated runoff would not be substantial. Because there are numerous other locations in the watersheds for groundwater recharge, the minimal increase in impervious surface associated with the RSMSF would not result in a considerable loss of groundwater recharge and would not affect groundwater levels.

***Construction Period:*** Construction of the RSMSF may result in additional sources of polluted runoff (i.e., from soil erosion or construction machinery fuel leakage), which could adversely affect water quality of the nearby drainages, washes, and streams.

*Use Surface or Groundwater in Wasteful or Inefficient Manner Resulting in a Reduction in Water Availability*

***Permanent Effects:*** The RSMSF would not result in a new or increased use of surface water and/or groundwater during operation beyond what was analyzed in **Section 3.8.4.3** of the Draft EIS as the types of uses and employment capacity would be the same as considered for the Las Vegas MSF site options. Water service would be obtained from existing water utility providers. Refer to **Section 3.4, Utilities**, of this Supplemental Draft EIS for a discussion of water supply.

***Construction Period:*** Consistent with the conclusion in **Section 3.8.4.3** of the Draft EIS for the Sloan Road MSF, the RSMSF would still require water for concrete batching, washing vehicles and equipment, and dust control. The Applicant has not identified a source(s) of water from construction activities. It is assumed that water for construction

will be obtained from existing commercially available sources such as water utility service providers in the project area.

**Frias Substation**

*Violate Any Water Quality Standards or Waste Discharge Requirements, or Substantially Degrade Water Quality*

***Permanent Effects:*** The Frias Substation would not impact any intermittent washes, stream, or drainages. However, the underground 25 kV feeder that connects the Frias Substation to the autotransformer and rail alignment would cross beneath an adjacent drainage to the north, affecting approximately 50 linear feet of the drainage. It is not anticipated that operation of the 25 kV feeder would transport or emit contaminants that would violate water quality.

***Construction Period:*** Construction of the Frias Substation could degrade existing water quality, particularly as a result of trenching activities associated with construction of the underground 25 kV feeder. If precautions are not taken to contain such contaminants, construction could produce contaminated stormwater runoff with a resultant degradation of water quality. Hazardous materials associated with construction equipment could also adversely affect water quality if spilled or improperly stored. Water quality impacts from construction activities at the Frias Substation site could violate water quality standards, exceed contaminant loadings, provide addition sources of polluted runoff, or otherwise degrade water quality.

*Substantially Alter Existing Drainage Patterns in a Manner That Would Result in Substantial Erosion, Siltation, or Flooding Onsite of Offsite*

***Permanent Effects:*** The underground 25 kV feeder associated with the Frias Substation would be cross beneath the existing drainage to the north. However, drainage patterns in the area have been previously modified by residential development and roadway construction and it is not anticipated that the 25 kV feeder would alter the direction or course of this drainage.

***Construction Period:*** Construction activities associated with the development of the Frias Substation could expose disturbed and loosened soils to erosion from rainfall, runoff, and wind. The existing protective vegetation cover would be removed, which would reduce natural soil resistance to erosion and could affect the drainage patterns of the existing water resources within proximity of the Frias Substation.

*Place Housing or Structures Within 100-Year Floodplain or Place Structures That Would Impede or Redirect Flood Flows*

The Frias Substation would not be located within the designated 100-year floodplain and would therefore not place any structures within the 100-year floodplain that would impede or redirect flood flows. However, the western boundary of the 100-year floodplain of Duck Creek is located immediately east of the Frias Substation. **Figure S-3.8-3** shows the Frias Substation in relation to the 100-year floodplain.

*Create or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems, or Provide Substantial Additional Sources of Polluted Runoff*

***Permanent Effects:*** Development of the Frias Substation on previously undeveloped, vacant lands would increase the amount of impervious surface on the site. However, as the site would only encompass a 4.6 acre area, the potential to create additional stormwater runoff would be minimal.

***Construction Period:*** The Frias Substation may result in additional sources of polluted runoff during construction, but such sources would be confined to the construction limits.

*Use Surface or Groundwater in Wasteful or Inefficient Manner Resulting in a Reduction in Water Availability*

***Permanent Effects:*** The Frias Substation would not use surface or groundwater resources and no effects would occur during operation.

***Construction Period:*** Construction of the Frias Substation would require water for concrete batching, washing vehicles and equipment, and dust control. The Applicant has not identified a source(s) of water from construction activities. It is assumed that water for construction will be obtained from existing commercially available sources such as water utility service providers in the project area.

**Alignment Adjustment Areas**

*Violate Any Water Quality Standards or Waste Discharge Requirements, or Substantially Degrade Water Quality*

***Permanent Effects:*** AAAs 3, 4, and 7 would not affect any channels, intermittent streams, or washes.

AAAs 1 and 2 along Segment 2A/2B would result in an increase of 17.2 linear feet of channels, intermittent streams, and washes that would be potentially affected, as compared to Segment 2A/2B evaluated in **Section 3.8.4.3** of the Draft EIS.

- AAA 1 would result in Segment 2A/2B affecting an additional 29.4 linear feet of channels, streams, and washes, an increase of 4 percent over Segment 2A/2B without the AAA 1 shift.
- AAA 2 would result in Segment 2A/2B affecting 12.2 less linear feet of channels, streams, and washes, a decrease of 2 percent over Segment 2A/2B without the AAA 2 shift.

AAAs 5 and 6 along Segment 3B would result in an overall decrease of approximately 479 linear feet of potentially affected water resources as compared to Segment 3B evaluated in **Section 3.8.4.3** of the Draft EIS. These AAAs would result in a decrease from 8,087 linear feet to 7,608 linear feet of water resources affected by Segment 3B.

- AAA 5 would result in Segment 3B affecting additional 16.9 linear feet of channels, streams, and washes, an increase of 1 percent over Segment 3B without the AAA 5 shift.

- AAA 6 would result in Segment 3B affecting 496 less linear feet of channels, streams, and washes, a decrease of 7 percent over Segment 3B without the AAA 6 shift.

AAA 8 would not result in Segment 6B affecting additional linear feet of channels, intermittent streams, or washes than Segment 6B evaluated in **Section 3.8.4.3** of the Draft EIS.

Regardless, Segment 2A/2B, Segment 3B, and Segment 6B with the AAAs would have the potential to violate water quality standards, provide additional sources of polluted runoff, or otherwise degrade water quality, similar to the conclusions for Segment 2A/2B, Segment 3B, and Segment 6B in **Section 3.8.4.3** of the Draft EIS.

***Construction Period:*** Similar to the conclusions for construction of Segment 2A/2B, Segment 3B, and Segment 6B in **Section 3.8.4.3** of the Draft EIS, construction of the rail alignments with the AAAs would involve soil disturbance, excavation, cutting/filling, and grading, which could result in increased erosion and sedimentation to surface waters. Hazardous materials from construction machinery could also introduce additional contaminants to stormwater runoff. Construction of the AAAs would require intermittent stream, wash, and ditch crossings, which could provide a direct path for construction related contaminants. Water quality impacts from construction activities could violate water quality standards, exceed contaminant loadings, provide additional sources of polluted runoff, or otherwise degrade water quality.

*Substantially Alter Existing Drainage Patterns in a Manner That Would Result in Substantial Erosion, Siltation, or Flooding Onsite of Offsite*

***Permanent Effects:*** There would be an overall decrease in the length (linear feet) of water resources affected by all rail alignments with implementation of the AAAs. The additional water resources crossings associated with the AAAs would not permanently alter the course of flow of the water resources based on preliminary design information from the project Applicant. The same design measures identified for the rail alignments identified in **Section 3.8.4.3** of the Draft EIS would be applied to the alignment adjustments. Furthermore, runoff would be directed away from the trackway and into existing drainage facilities associated with the I-15 freeway or other local drainage systems where possible.

***Construction Period:*** Construction activities associated with the rail alignments with the AAAs could expose disturbed and loosened soils to erosion from rainfall, runoff, and wind, consistent with the construction effects related to the rail alignment evaluated in **Section 3.8.4.3** of the Draft EIS. With the exception of AAA 8, which would shift the rail alignment into areas already disturbed by the I-15 freeway corridor and into the median of already paved local roads (Dean Martin Drive), the existing protective vegetation cover would be removed by the rail alignments, which would reduce natural soil resistance to erosion and could affect the drainage patterns of the existing water resources within proximity of the AAAs.

*Place Housing or Structures Within 100-Year Floodplain or Place Structures That Would Impede or Redirect Flood Flows*

***Permanent Effects:*** Segment 2A/2B, Segment 3B, and Segment 6B with the AAAs would have the potential to place structures within the 100-year floodplain which could impede or redirect flood flows.

- ***AAA1:*** AAA 1 would cross or run adjacent to the same 100-year floodplain of the Mojave River that would be crossed by Segment 2A/2B as evaluated in **Section 3.8.4.3** of the Draft EIS. AAA 1 would encroach upon approximately 7.6 acres of the 100-year floodplain, resulting in an increase of about 1 acre of floodplain affected, as compared to Segment 2A/2B evaluated in **Section 3.8.4.3** of the Draft EIS.
- ***AAA 2:*** The westernmost portion of AAA 2 would also cross the same 100-year floodplain of the Mojave River that would be crossed by Segment 2A/2B as discussed in **Section 3.8.4.3** of the Draft EIS. AAA 2 would encroach upon approximately 3.2 acres of the 100-year floodplain, representing an increase of approximately 1.7 acres of affected floodplain to Segment 2A/2B. Overall, implementation of the alignment adjustments would increase the floodplain encroachment of Segment 2A/2B by approximately 2.7 acres.
- ***AAA 3 through 7:*** AAAs 3 through 7 would not be located within a designated 100-year floodplain.
- ***AAA8:*** AAA 8 would cross or run adjacent to the same 100-year floodplain that would be crossed by Segment 6B evaluated in **Section 3.8.4.3** of the Draft EIS. AAA 8 would encroach upon approximately 23 acres of the 100-year floodplain, result in an increase of about 3 acres of affected floodplain to Segment 6B.

***Construction Period:*** Consistent with the conclusion for Segment 2A/2B and Segment 6B in **Section 3.8.4.3** of the Draft EIS, construction of the rail alignments with AAAs 1, 2, and 8 would have the potential place to equipment, workers, and structures within the 100-year floodplain, which could impede or redirect flood flows during the construction period.

*Create or Contribute Runoff Water That Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems, or Provide Substantial Additional Sources of Polluted Runoff*

***Permanent Effects:*** The AAAs would not result in any change to runoff beyond what was evaluated in **Section 3.8.4.3** of the Draft EIS for Segment 2A/2B, Segment 3B, and Segment 6B. Similar to all rail alignments evaluated in **Section 3.8.4.3** of the Draft EIS, the proposed trackways would be designed to channel stormwater runoff away from the trackway. Where the rail alignment would be at-grade, the trackway itself would not produce a considerable amount of runoff given the permeable nature of construction on ballast rather than paved or solid impervious surfaces. Runoff along the elevated portions of Segment 6B (AAA 8) would be captured and directed to designated drainage areas. Refer to **Section 3.4, Utilities/Emergency Services**, of this Supplemental Draft EIS for a discussion of stormwater conveyance systems.

Furthermore, where AAA 8 would shift outside of the existing I-15 freeway corridor and into the median of Dean Martin Drive/Industrial Road (between Hacienda Avenue and Tropicana Avenue), the columns and median barrier would be placed in areas of existing impervious (paved) surfaces and Segment 6B as adjusted by AAA 8 would not impede local runoff potential. **Figure S-3.6-8** in **Section 3.6, Visual Resources**, of this Supplemental Draft EIS depicts a simulation of the proposed AAA 8 in this area.

***Construction Period:*** Construction of the rail alignments, including implementation of the AAAs, may result in additional sources of polluted runoff from soil disturbances or construction equipment, which could impact water quality on and around the TCAs and limits of construction.

*Use Surface or Groundwater in Wasteful or Inefficient Manner Resulting in a Reduction in Water Availability*

***Permanent Effects:*** The AAAs would not use surface or groundwater resources and no effects would occur during operation.

***Construction Period:*** Construction of the rail alignments with the AAAs would require water for concrete batching, washing vehicles and equipment, and dust control, similar to the rail alignments evaluated in **Section 3.8.4.3** of the Draft EIS. The Applicant has not identified a source(s) of water from construction activities. It is assumed that water for construction will be obtained from existing commercially available sources such as water utility service providers in the project area.

**Wigwam MSF Modification**

The location and size of the Wigwam MSF has not changed and the construction and operation effects of the Wigwam MSF identified in **Section 3.8.4.3** of the Draft EIS relative to hydrology and water quality would remain unaltered. The Wigwam MSF would not impact any drainage, washes, or channels and would not be located within the 100-year floodplain; thus, no construction or operation effects relative to water quality standards, drainage patterns, or flood flows would occur over what was assumed in **Section 3.8.4.3** of the Draft EIS. While the Wigwam MSF modification would result in an increase in impervious surface, it is assumed that the majority of the site would not be paved and that the increase in associated runoff would not be substantial. Water service for operation and construction of the MSF would be obtained from existing water utility providers. Refer to **Section 3.4, Utilities**, of this Supplemental Draft EIS for a discussion of water supply.

**Profile Modification**

The location of Segment 3B rail alignment would not change as a result of implementation of the Profile Modification and the construction and operation effects of Segment 3B identified in **Section 3.8.4.3** of the Draft EIS relative to hydrology and water quality would remain unchanged. Although the Profile Modification would result in a retained cut of about 8 feet below grade, no effects related to the groundwater table would occur due to the depth of the groundwater table (approximately 45 to 76 feet) at this location. As concluded in **Section 3.8.4.3** of the Draft EIS, Segment 3B would have the potential

to violate water quality standards, exceed contaminant loadings, provide additional sources of polluted runoff, or otherwise degrade water quality during construction and operation; would not permanently alter the course or flow of existing drainages; could increase the size of the 100-year floodplain and impede or redirect flood flows; and would not result in a considerable increase in runoff. The Profile Modification does not change these impacts of Segment 3B as presented in **Section 3.8.4.3** of the Draft EIS. While no water service would be required during operation of the rail alignment, water it is assumed that water for construction activities would be obtained from existing utility providers. Refer to **Section 3.4, Utilities**, of this Supplemental Draft EIS for a discussion of water supply.

## 3.8.4 MITIGATION MEASURES

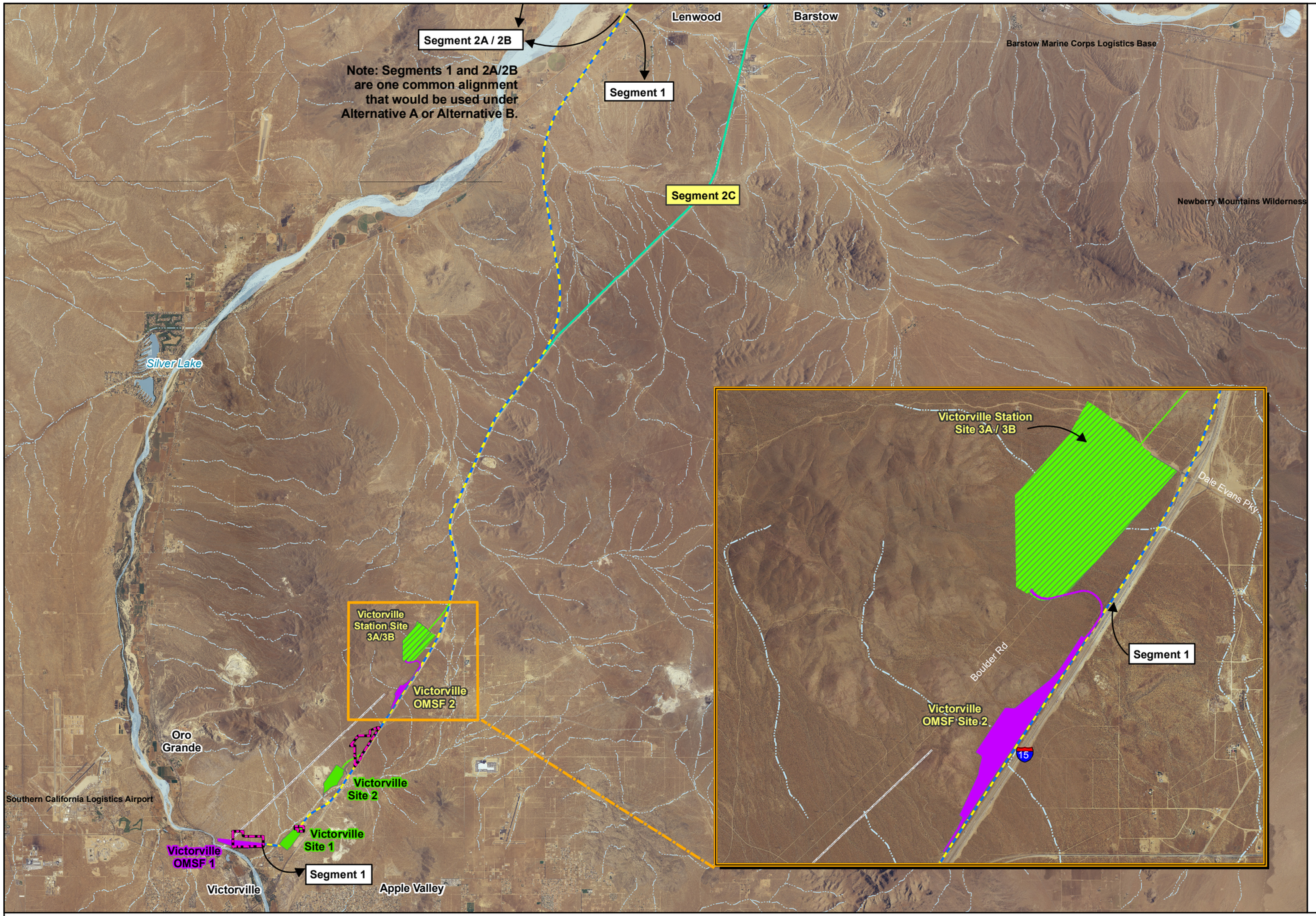
The **Mitigation Measures HYD-1** through **HYD-9** and **Mitigation Measure HYD-11** identified in **Section 3.8.5** of the Draft EIS would apply to the proposed project modifications and additions to address potential hydrologic and water quality related impacts described above. **Mitigation Measure HYD-10** from **Section 3.8.5** of the Draft EIS would not apply as it is specifically related to mitigating impacts associated with Autotransformers #7 and #11. No additional mitigation would be required for the project modifications and additions. The relevant mitigation measures from **Section 3.8.5** of the Draft EIS are summarized below:

- **Mitigation Measure HYD-1** – Requires the incorporation of site-specific permanent water quality treatment devices and Best Management Practices (BMPs) to protect water quality. BMPs could include vegetated swales, traction sand traps, or settling basins and should be sized properly so that untreated stormwater does not reach the Mojave River or any washes along the rail alignment.
- **Mitigation Measure HYD-2** – Requires implementation of construction-related best management practices.
- **Mitigation Measure HYD-3** – Requires all action alternatives to comply with the NPDES Construction General Permit.
- **Mitigation Measure HYD-4** – Requires implementation of a stormwater pollution prevention program.
- **Mitigation Measure HYD-5** – Requires implementation of a spill prevention, control, and countermeasure plan to prevent accidental releases of chemicals that are stored on site and measures to use in case of a hazardous materials spill.
- **Mitigation Measure HYD-6** – Requires the proper design of station and maintenance facility drainage systems to handle adequate flow.
- **Mitigation Measure HYD-7** – Requires a reduction of encroachment into the designated 100-year floodplain by elevating the base-elevation of rail alignments, station, and maintenance facilities above the floodplain.
- **Mitigation Measure HYD-8** – Prohibits the presence of construction equipment or construction materials within the designated 100-year floodplain.

- **Mitigation Measure HYD-9** – Minimizes impact of OMSF 2 on water resources.
- **Mitigation Measure HYD-11** – Minimize impacts on water availability during construction activities.

## 3.8.5 Residual Impacts Following Mitigation

While mitigation would be incorporated to reduce construction and operational period effects to water resources, development of the project modifications and additions would result in permanent impacts to existing channels, streams, drainages, and intermittent washes whereby flows could be redirected. The project modifications and additions would also result in an overall increase in impervious surface, which could increase the stormwater runoff in the project region.




## Legend

### Hydro Features

- FEMA 100-year floodplain
- Water Bodies
- Dry Lake
- Streams

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

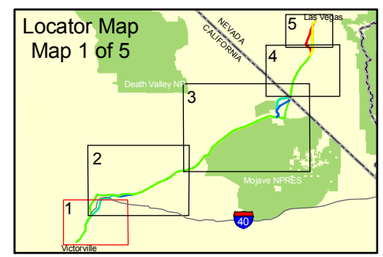
- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

Kilometers: 0 2 4

Miles: 0 1.5 3

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006,

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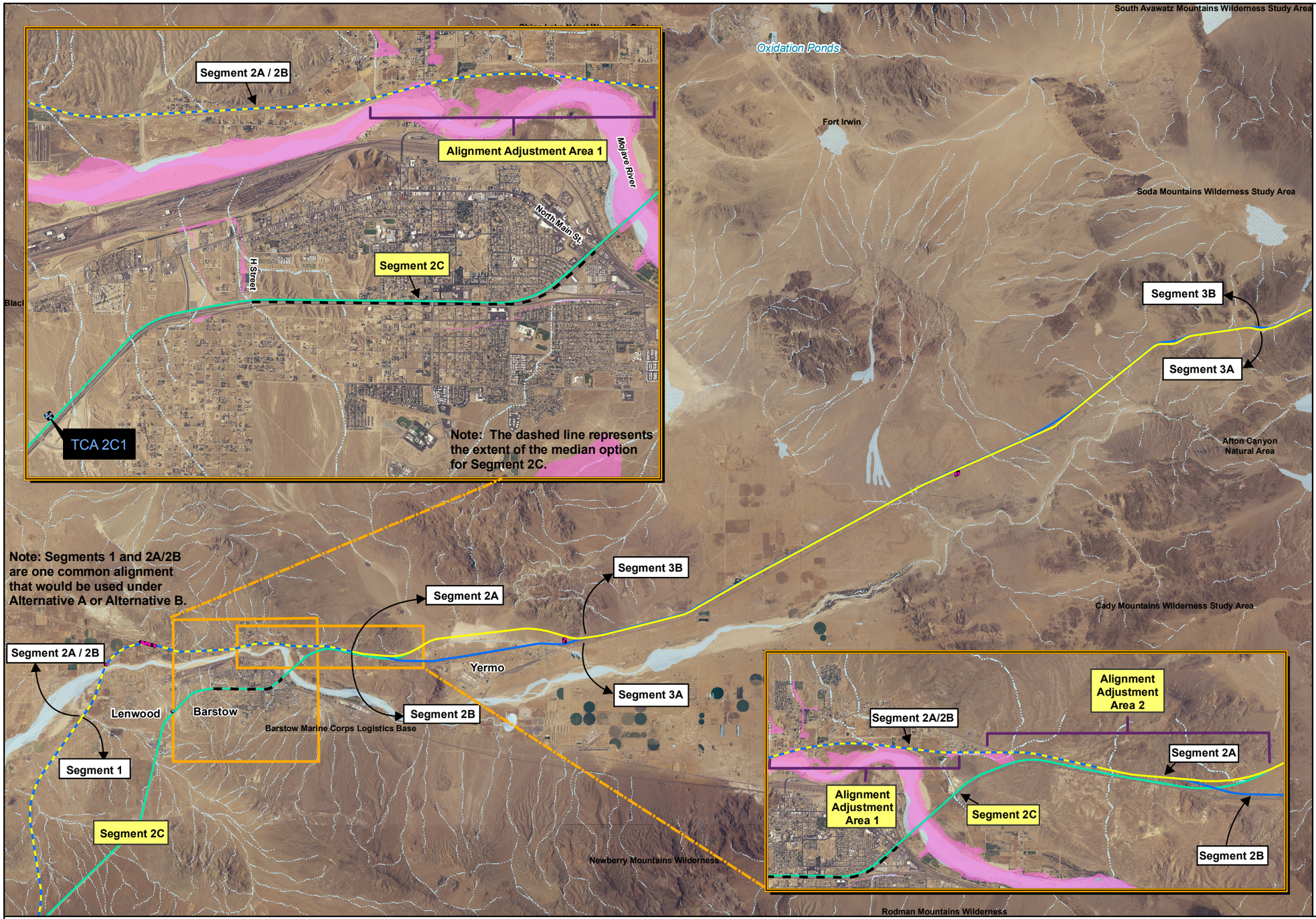
*Hydrology and Floodplains (1)*

FIG **S-3.8-1**

Geografika Consulting 06.15.10




## Legend

### Hydro Features
- FEMA 100-year floodplain
- Water Bodies
- Dry Lake
- Streams

### DesertXpress Alignments
- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

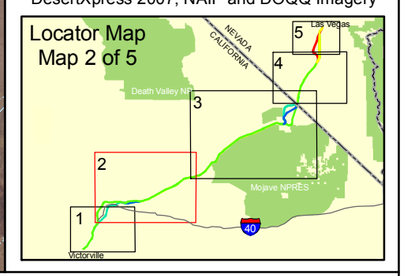
### Ancillary Facility Sites
- Text: Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 4 miles

0 5 10 Kilometers

0 4 8 Miles

Source: ICFI 2009, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

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**DesertXpress - Supplemental EIS**

*Hydrology and Floodplains (2)*

FIG **S-3.8-2**

Geografika Consulting 06.015.10

Amargosa River
Salt Creek
Kingston Wash
Halloran Wash
Profile Modification Area
15
Segment 5A
Segment 5B
Segment 4C
Segment 4B
NEVADA
CALIFORNIA
Mojave National Preserve
Ivanpah Ditch
Segment 3B
Segment 4A
Kingston Wash
Mescal Ditch
Segment 3A
Hot Wash
West Valley Ditch
Riggs Wash
Halloran Springs
Segment 3B
Alignment Adjustment Area 4
TCA 7
Alignment Adjustment Area 3
Segment 3A
Alignment Adjustment Area 5
TCA 4C5
Ivanpah La
Segment 4C
TCA 4C4
TCA 12
Segment 4B
TCA 11
Segment 4A
TCA 4C3
TCA 21
TCA 4C2
TCA 20
TCA 19
TCA 18
TCA 4C1
Wheaton Wash
Cedar Wash
Baker MOW Facility Site
Baker
Segment 3B
Alignment Adjustment Area 6
Segment 3A
Tecopa Ditch
Ocpeh Ditch
Tono ditch
3 B

## Legend

### Hydro Features
- FEMA 100-year floodplain
- Water Bodies
- Dry Lake
- Streams

### DesertXpress Alignments
- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites
- Text: Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

NORTH

1 inch equals 4 miles

0 5 10 Kilometers

0 4 8 Miles

Source: ICFI 2009, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 3 of 5
NEVADA
CALIFORNIA
Las Vegas
Death Valley N.P.
Mojave NPRES
Victorville
1
2
3
4
5
40

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**DesertXpress - Supplemental EIS**

*Hydrology and Floodplains (3)*

FIG **S-3.8-3**

Geografika Consulting 06.15.10

TCA 14

Segment 6C

Segment 6B

Segment 6A

Segment 5A

Segment 5 B

Alignment Adjustment Area 7

Segment 6C

Segment 6B

Segment 6A

Jean

Nevada

California

Primm

Former Sloan MSF and Substation Location

604

15

Relocated Sloan MSF, Substation and Utility Corridor

Segment 5A

TCA 13

Segment 5B

## Legend

### Hydro Features

- FEMA 100-year floodplain
- Water Bodies
- Dry Lake
- Streams

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Relocation Sloan MSF / Substation Site Option
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

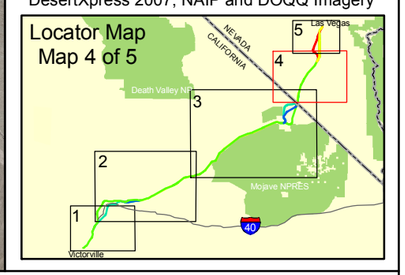
0 2.5 5 Kilometers

0 3 6 Miles

NORTH

Source: ICFI 2009, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 4 of 5

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**DesertXpress - Supplemental EIS**

*Hydrology and Floodplains (4)*

FIG **S-3.8-4**

Geografika Consulting 06.15.10

TCA 22
Las Vegas Central Station B
Segment 6 C
Segment 7 A
Segment 7 B
Segment 6 A
Las Vegas Southern Station
TCA 16
Alignment Adjustment Area 8
Segment 6 B
Segment 6 A
Robindale MSF
Wigwam MSF
Segment 7C
Las Vegas Downtown Station
Segment 7B
Segment 7A
Las Vegas Central Station A
Las Vegas Central Station B
Las Vegas Southern Station
Robindale MSF
Segment 6A
Segment 6C
Segment 6B
TCA 14
Segment 6 B
Segment 6 A
Frias Substation

## Legend

### Hydro Features
- FEMA 100-year floodplain
- Water Bodies
- Dry Lake
- Streams

### DesertXpress Alignments
- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites
- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Frias Substation and Wigwam MSF Modifications
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 2 miles

Kilometers
0 1.25 2.5

Miles
0 1 2

NORTH

Source: ICFI 2009, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 5 of 5

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# 3.9 GEOLOGY AND SOILS

This section summarizes the existing geological and soil conditions, describes the potential impacts as a result of the project modifications and additions, and presents appropriate mitigation measures.

## 3.9.1 AFFECTED ENVIRONMENT

Geologic and seismic related regulations and standards identified in **Section 3.9.1** of the Draft EIS have not changed and remain applicable to the proposed project.

The following text describes the geologic concerns identified within the areas of proposed modifications and additions. The affected environment relative to the proposed modifications and additions are described regionally first and then by segment.

**Regional Conditions**

**Figures S-3.9-1** through **S-3.9-3** show the proposed modifications and additions would be located in a seismically active region near active faults in California, similar to the features evaluated in **Section 3.9.3** of the Draft EIS.

**Figures S-3.9-4** and **S-3.9-5** shows faults in the Nevada portion of the study area. Geologic maps indicate these as active or potentially active. However, activity on these faults is attributed to land subsidence, not tectonic activity (e.g. earthquakes).[1]

As shown in **Figures S-3.9-6** through **S-3.9-9,** the project modifications and additions are in the same general geological areas discussed in **Section 3.9.3** of the Draft EIS and therefore the regional geologic and hydrologic conditions have not changed.

**Victorville Station Site 3**

Existing geological and soil conditions at VV3 would be the same as those discussed for the Victorville Stations which were presented as part of the Segment 1 discussion in **Section 3.9.3.6** of the Draft EIS.

VV3 is outside of areas identified as having the potential for landslides, dam inundation, ground fissures, or shallow groundwater. Corrosive soils may be present and the area may be subject to settlement and expansive soils. Hard soils may exist at VV3, which may be difficult to excavate.

VV3 is located in a seismically active area of California, where numerous active and potentially active faults have been mapped. VV3 would therefore be subject to seismic-related hazards.

[1] Land subsidence occurs when large amounts of ground water have been withdrawn from certain types of rocks, such as fine-grained sediments. The rock compacts because the water is partly responsible for holding the ground up. When the water is withdrawn, the rocks falls in on itself.

### OMSF 2

The location of OMSF 2 has not changed; the size of the site is about 21 acres smaller than the site reviewed in the Draft EIS. As the location is the same, the affected geological environment would not change from that presented in **Section 3.9.3.6** of the Draft EIS.

### Segment 2C

The geologic environment of Segment 2C is the same as that discussed for Segment 2A and 2B in **Section 3.9.3.6** of the Draft EIS. Segment 2C would be closer to several fault lines than Segments 2A and 2B. **Section 3.9.3.2** of the Draft EIS describes these faults. The Lenwood – Lockhart – Old Woman Springs fault and the Gravel Hills – Harper Lake fault are considered active or potentially active. Segment 2C would cross the Lenwood - Lockhart – Old Woman Springs fault line. Due to proximate active faults, the area of Segment 2C has a moderate to high probability of experiencing ground shaking and associated seismic effects.

As Segment 2C crosses the Mojave River, it would have a high potential to encounter shallow groundwater. Due to the alluvial soils present in this area and the shallow groundwater, the potential for liquefaction is high. Expansive and corrosive soils could also be present in this area.

### Segment 4C

Existing geological and soil conditions in the area of Segment 4C would be the same as those discussed for Segment 4B in **Section 3.9.3.6** of the Draft EIS. Conditions include a moderately steep to steep terrain near Mountain Pass where landslides are likely. This area may also contain hard rock that could be difficult to excavate. Due to proximate active faults, the area of Segment 4C has a moderate to high probability of experiencing ground shaking and associated seismic effects. Expansive and corrosive soils could be present. The potential for liquefaction, dam inundation, and shallow groundwater is low in this area.

### Relocated Sloan MSF

Existing geological and soil conditions at the RSMSF site would be the same as those discussed for the Sloan Road MSF, since they are both located in the same region along Segment 5. Geological conditions at the Sloan Road MSF were presented as part of the Segment 5 discussion in **Section 3.9.3.6** of the Draft EIS.

The RSMSF may be located near active faults and therefore has a potential for ground shaking and other seismic related activity. Expansive and corrosive soils could be present. The RSMSF has a moderate potential for settlement and may contain hard soils, which may be difficult to excavate.

Although ground fissures have not been identified in this area, there is the potential for them to occur. Ground fissures in the area of Segment 5 are caused by differential stress resulting from regional and local subsidence associated with withdrawal of groundwater which may occur near faults in the Las Vegas Valley.

The potential for liquefaction, dam inundation, and shallow groundwater is low in this area.

### Frias Substation

As the Frias Substation site would be located adjacent to the Segment 6 alignment, the geologic environment is the same as Segment 6 described in **Section 3.9.3.6** of the Draft EIS. The Frias Substation site is also near several washes and could be located in an area with shallow groundwater and a moderate potential for liquefaction. Expansive and corrosive soils could be present. The Frias Substation site has a moderate potential for settlement and may contain hard soils, which may be difficult to excavate.

### Alignment Adjustment Areas

***AAAs 1 and 2:*** AAA 1 and 2 would shift portions of Segment 2A/2B within a region with high potential for shallow groundwater and liquefaction. The soils underlying these areas would have the potential for expansion and a moderate potential for landslides and settlement. Due to proximate active faults, the soils underlying these areas have a moderate to high probability of experiencing ground shaking and associated seismic effects. Expansive and corrosive soils could also be present in this area. The alignment adjustments associated with AAA 1 and 2 may also be underlain by crystalline bedrock, and other rock types that may be difficult to excavate.

***AAAs 3 through 6:*** AAA 3 through AAA 6 would shift portions of Segment 3B within a region facing a moderate potential for landslides and proximity to a projected dam inundation area . The earth underlying AAA 3 through AAA 6 may consist of hard rock. AAA 3 through 6 would shift portions of Segment 2A/2B within a region with high potential for shallow groundwater and liquefaction. There is also a moderate potential for settlement and potentially corrosive or expansive soils in these areas.

AAAs 3 through 6 would shift portions of Segment 3B within an area where ground fissures have not been identified and where there is a moderate probability of experiencing ground shaking and associated seismic effects..

***AAAs 7 and 8:*** AAAs 7 and 8 would shift portions of Segment 6B within an area where there is a moderate possibility of encountering shallow groundwater, as these alignment adjustments cross a number of drainage features. The potential for liquefaction, expansive soils, settlement, and corrosive soils in the area is also moderate. The potential for ground shaking and landslides is low.

### Wigwam MSF Modification

The Wigwam MSF Modification does not entail any change to the existing geological and soil conditions insofar as the location is essentially the same as the Wigwam MSF as evaluated in the Draft EIS. **Section 3.9.2** of the Draft EIS presented geological conditions at the Wigwam MSF as part of the discussion of Segment 6. The Wigwam MSF site is underlain by alluvial deposits that are moderately to well consolidated to strongly cemented. The potential for liquefaction, expansive soils, settlement, and corrosive soils at the site is moderate. The potential for ground shaking and landslide is low.

**Profile Modification**

The geologic setting in the area of the Profile Modification would be the same as that discussed for Segment 3 in **Section 3.9.2** of the Draft EIS. In this particular location, however, dam inundation would not be likely as the Profile Modification is not located near a dam or in an area that would be flooded if a dam would fail. Seismic hazards, including fault rupture would also be less likely in this particularly location within Segment 3.

## 3.9.2 METHODS OF EVALUATION OF IMPACTS

The methodology described in **Section 3.9.2** of the Draft EIS was used to evaluate potential effects of the project modifications and additions. This section is based upon research and analysis conducted as part of the Draft EIS.[2] As geologic conditions are regional in nature and are not known to have changed in any substantial way since the publication of the Draft EIS, no additional geological studies were performed.

## 3.9.3 ENVIRONMENTAL CONSEQUENCES

**Table S-3.9-1** below shows the likelihood of potential geologic hazards relative to the proposed modifications and additions. The table uses a series of rating systems, ranging from 1 to 3:

"1" signifies the known presence or greatest likelihood of the selected hazard (shaded)

"2" signifies a moderate potential effect of the selected hazard.

"3" signifies minimal or no presence of the selected hazard.

The proposed modifications and additions would be constructed in compliance with safety/seismic regulations discussed in **Section 3.9.1** of the Draft EIS, including existing building codes and regulations.

[2] Preliminary Geotechnical Evaluation, DesertXpress Rail Line, Victorville, California to Las Vegas, Nevada. Ninyo and Moore, 2007.

## Table S-3.9-1 Likelihood of Geologic Hazards

| Project Modification or Addition | Potential Geotechnical Consequences | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Surface Fault Rupture[1] | Ground Shaking[2] | Liquefaction[3] | Dam Inundation[4] | Settlement(Natural & Fill Soils)[5] | Corrosive Soils[6] | Expansive Soils[7] | Landslides[8] | Excavation[9] | Ground Fissures[10] | Shallow Groundwater[11] |
| VV3 and OMSF 2 | 1 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 |
| Segment 2C | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 3 | 2 | 3 | 1 |
| Segment 4C | 3 | 1 to 2 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 3 | 3 |
| RSMSF | 3 | 1 to 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| Frias Substation | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 1 | 2 |
| AAAs 1 and 2 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 3 | 2 | 3 | 1 |
| AAAs 3 through 6 | 3 | 1 to 2 | 1 to 2 | 2 to 3 | 2 | 2 | 2 | 2 | 2 | 3 | 1 to 2 |
| AAAs 7 and 8 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 1 | 2 |
| Wigwam MSF Modification | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 1 | 2 |
| Profile Modification | 3 | 2 | 1 to 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 1 to 3 |

Source: Ninyo and Moore, Preliminary Geotechnical Evaluation, 2007.

Shaded cells show areas with high likelihoods for geotechnical hazards.

[1]Rating 1 = Route crosses active fault or very close to an active fault; Rating 2 = Route crosses potentially active fault; Rating 3 = Route crosses inactive fault or does not cross any known fault.

[2]Rating 1 = Estimated peak horizontal ground acceleration (PGA) of 0.4g to 0.6g; Rating 2 = Estimated PGA of 0.2g to 0.4g; Rating 3 = Estimated PGA of 0.1g to 0.2g.

[3]Rating 1 = Areas of known, reported shallow groundwater and potentially liquefiable soils; Rating 2 = Areas of potentially shallow groundwater and potentially liquefiable soils; Rating 3 = Areas with no reported shallow groundwater and with potentially liquefiable soils.

[4]Rating 1 = Areas of reported dam inundation; Rating 2 = Areas near reported potential dam inundation; Rating 3 = Areas with no reported potential for dam inundation.

[5]Rating 1 = Areas of reported compressible/collapsible soils; Rating 2 = Areas with potential for compressible/collapsible soils; Rating 3 = Areas with no potential for compressible/collapsible soils.

[6]Rating 1 = Areas of reported corrosive soils; Rating 2 = Areas with potential for corrosive soils; Rating 3 = Areas with no potential for corrosive soils.

[7]Rating 1 = Areas of mapped clay units or known expansive soils; Rating 2 = Areas with potential for expansive soils; Rating 3 = Areas with no potential for expansive soils.

[8]Rating 1 = Areas of known steep terrain with relatively higher potential landslide hazard; Rating 2 = Areas of potential landslide hazard; Rating 3 = Areas of little potential landslide hazard.

[9]Rating 1 = Areas of reported hard rock or caliche with anticipated difficult excavation; Rating 2 = Areas of potentially difficult excavation; Rating 3 = Areas of no potential difficult excavations.

[10] Rating 1 = Areas of known, reported ground fissures in site vicinity; Rating 2 = Areas with potential for ground fissures; Rating 3 = Areas with no reported ground fissures.

[11]Rating 1 = Areas of known, reported shallow groundwater; Rating 2 = Areas of potentially shallow groundwater; Rating 3 = Areas with no reported shallow groundwater.

## 3.9.4 MITIGATION MEASURES

**Mitigation Measures GEO-1** through **GEO-12** identified in **Section 3.9.5** of the Draft EIS would apply to the proposed modifications and additions to address and limit the adverse effects of the potential geologic and soils related impacts described above. These include:

- **Mitigation GEO-1 – Surface Fault Rupture –** Requires site specific surface fault rupture evaluations by a qualified geologist prior to construction so that in the event a fault-rupture hazard exists, the recommendations of the geologist can be implemented into the final design.
- **Mitigation GEO-2 – Ground Shaking –** Requires site specific evaluation of the potential ground shaking hazard, which shall be performed by a qualified geologist during design development and prior to construction.
- **Mitigation GEO-3 – Liquefaction –** Requires site specific evaluations of the potential liquefaction, which shall be performed by a qualified geotechnical engineer during design development and prior to construction.
- **Mitigation GEO-4 – Dam-Inundation –** Requires the preparation of a detailed hydrologic evaluation by a qualified hydrologist during design development and prior to construction to assess the risks and potential effects of dam inundation.
- **Mitigation GEO-5 – Settlement –** Requires a site specific geotechnical evaluation to be prepared by a qualified geologist to assess the settlement potential of the on-site natural soils and undocumented fill.
- **Mitigation GEO-6 – Corrosive Soils –** Requires a subsurface evaluation to be performed by a qualified corrosion engineer prior to design and construction.
- **Mitigation GEO-7 – Expansive Soils –** Requires a site specific subsurface evaluation, including laboratory testing, to be performed by a qualified geologist to evaluate the extent of which expansive soils are present along the alignment.
- **Mitigation GEO-8 – Landslides –** Requires that surface reconnaissance and subsurface evaluations be performed by a qualified geotechnical engineer during project design to evaluate the condition of slopes relative to the alignment and the potential for landslides and superficial slope failures.
- **Mitigation GEO-9 – Caliche/Hard Rock Excavation –** Requires surface reconnaissance and subsurface evaluations to be performed by a qualified geotechnical engineer during project design to assess the potential to excavate soil.
- **Mitigation GEO-10 – Shallow Groundwater –** Requires that a qualified geotechnical engineer assess groundwater conditions in the project area. In the event shallow groundwater is detected or suspected, mitigation techniques shall be incorporated into final design documents.

- **Mitigation GEO-11 - Tunneling -** Requires that excavations for underground structures be performed with care to reduce the potential for lateral deflection of excavation sidewalls and/or shoring, which could also cause differential movement of structures located near the excavation. The ground surface and/or structures around the excavation shall be monitored for movement with a variety of instrumentation.
- **Mitigation GEO-12 – Ground Fissures –** Requires that a qualified geologist conduct surface reconnaissance and prepare an evaluation of ground fissures during the design phase of the project.

**Table S-3.9-2** identifies the applicable mitigation measures for each project modification and addition. The mitigation measures require further evaluation of specific potential effects during or prior to project design. Recommendations of technical specialists shall be implemented.

## 3.9.5 Residual Impacts Following Mitigation

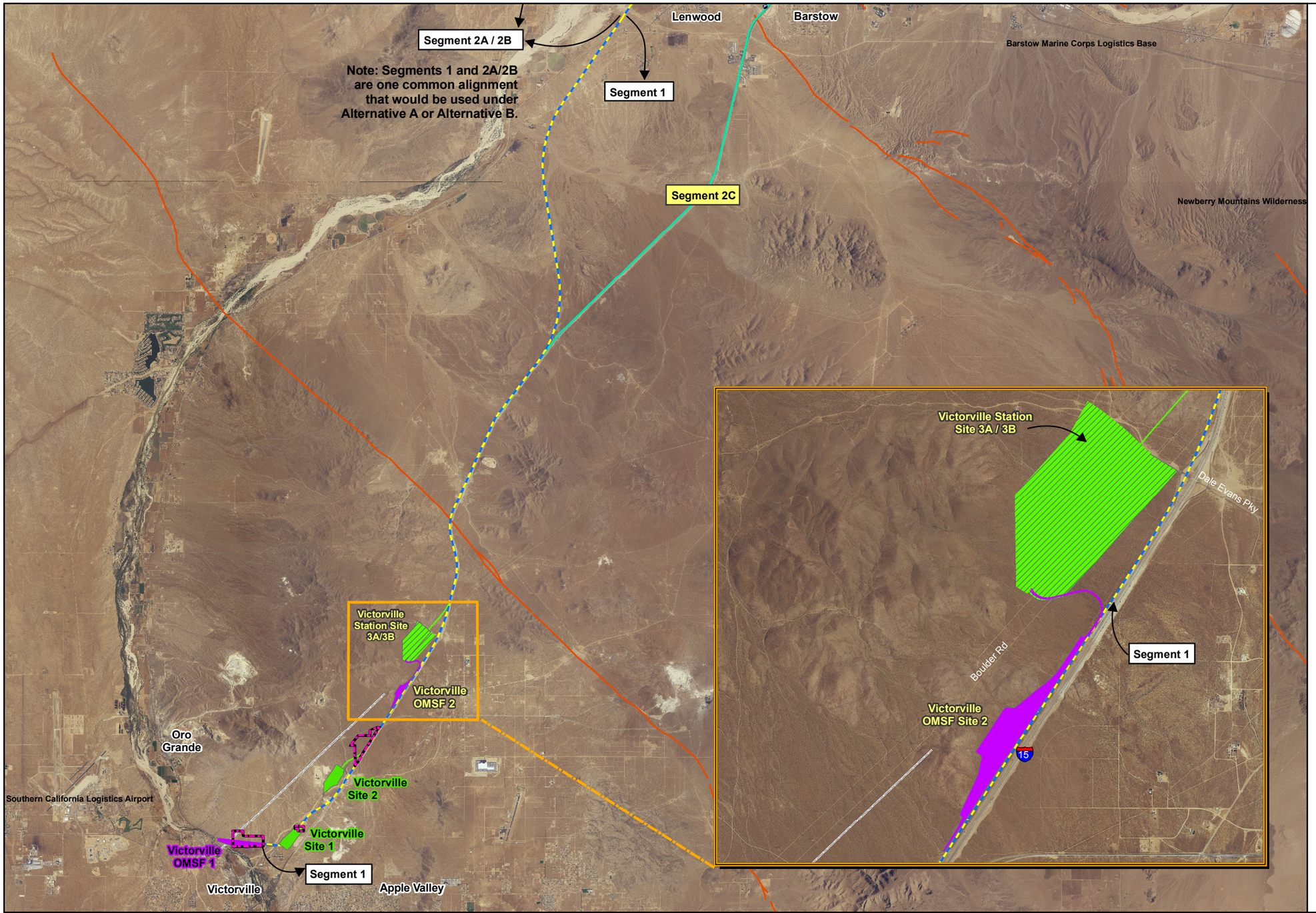
All potential geologic and seismic hazards can be controlled successfully through the application of standard engineering methods and practices identified in the mitigation measures above. Following implementation of these mitigation measures, the project modifications and additions would not result in any residual impacts.

Table S-3.9-2 Project Modifications and Additions – Mitigation Measure Applicability

| Project Modification and Addition | Mitigation GEO-1: Surface Fault Rupture | Mitigation GEO-2: Ground Shaking | Mitigation GEO-3: Liquefaction | Mitigation GEO-4: Dam-Inundation | Mitigation GEO-5: Settlement | Mitigation GEO-6: Corrosive Soils | Mitigation GEO-7: Expansive Soils | Mitigation GEO-8: Landslides | Mitigation GEO-9: Caliche/Hard Rock Excavations | Mitigation GEO-10: Shallows Groundwater | Mitigation GEO-11: Tunneling | Mitigation GEO-12: Ground Fissures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VV3 (both parking options) | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes, hard rock | Yes | NA | NA |
| OMSF2 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes, hard rock | Yes | NA | NA |
| Segment 2C | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes, hard rock | Yes | NA | NA |
| Segment 4C | NA | Yes | Yes | NA | Yes | Yes | Yes | Yes | Yes, hard rock | Yes | Yes | NA |
| RSMSF | NA | Yes | Yes | NA | Yes | Yes | Yes | Yes | Yes, caliche | Yes | NA | Yes |
| Frias Substation | NA | Yes | Yes | NA | Yes | Yes | Yes | NA | Yes, caliche and hard rock | Yes | NA | Yes |
| AAAs 1 and 2 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes, hard rock | Yes | NA | NA |
| AAAs 3 through 6 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes, hard rock | Yes | NA | NA |
| AAAs 7 and 8 | NA | Yes | Yes | NA | Yes | Yes | Yes | NA | Yes, caliche and hard | Yes | NA | Yes |

| Project Modification and Addition | Mitigation GEO-1: Surface Fault Rupture | Mitigation GEO-2: Ground Shaking | Mitigation GEO-3: Liquefaction | Mitigation GEO-4: Dam-Inundation | Mitigation GEO-5: Settlement | Mitigation GEO-6: Corrosive Soils | Mitigation GEO-7: Expansive Soils | Mitigation GEO-8: Landslides | Mitigation GEO-9: Caliche/Hard Rock Excavations | Mitigation GEO-10: Shallows Groundwater | Mitigation GEO-11: Tunneling | Mitigation GEO-12: Ground Fissures |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | rock | | | |
| Wigwam MSF Modification | NA | Yes | Yes | NA | Yes | Yes | Yes | NA | Yes, caliche and hard rock | Yes | NA | Yes |
| Profile Modification | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes, hard rock | Yes | NA | NA |

Source: Ninyo and Moore, Preliminary Geotechnical Evaluation, 2007.




## Legend

### Faults and Earth Fissures

- Fault
- Overall outline of fissure area

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

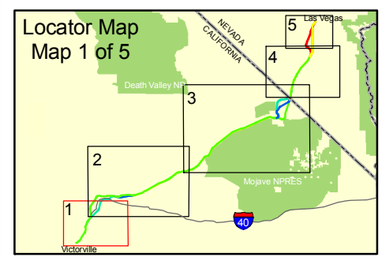
1 inch equals 3 miles

0 2 4 Kilometers

0 1.5 3 Miles

NORTH

Source: Bell and Price 1992, NV Bureau of Mines & Geology 1996, CA Division of Mines & Geology 2000, DesertXpress 2007, ESRI 2005, NAIP 2003-2006, US Census Bureau

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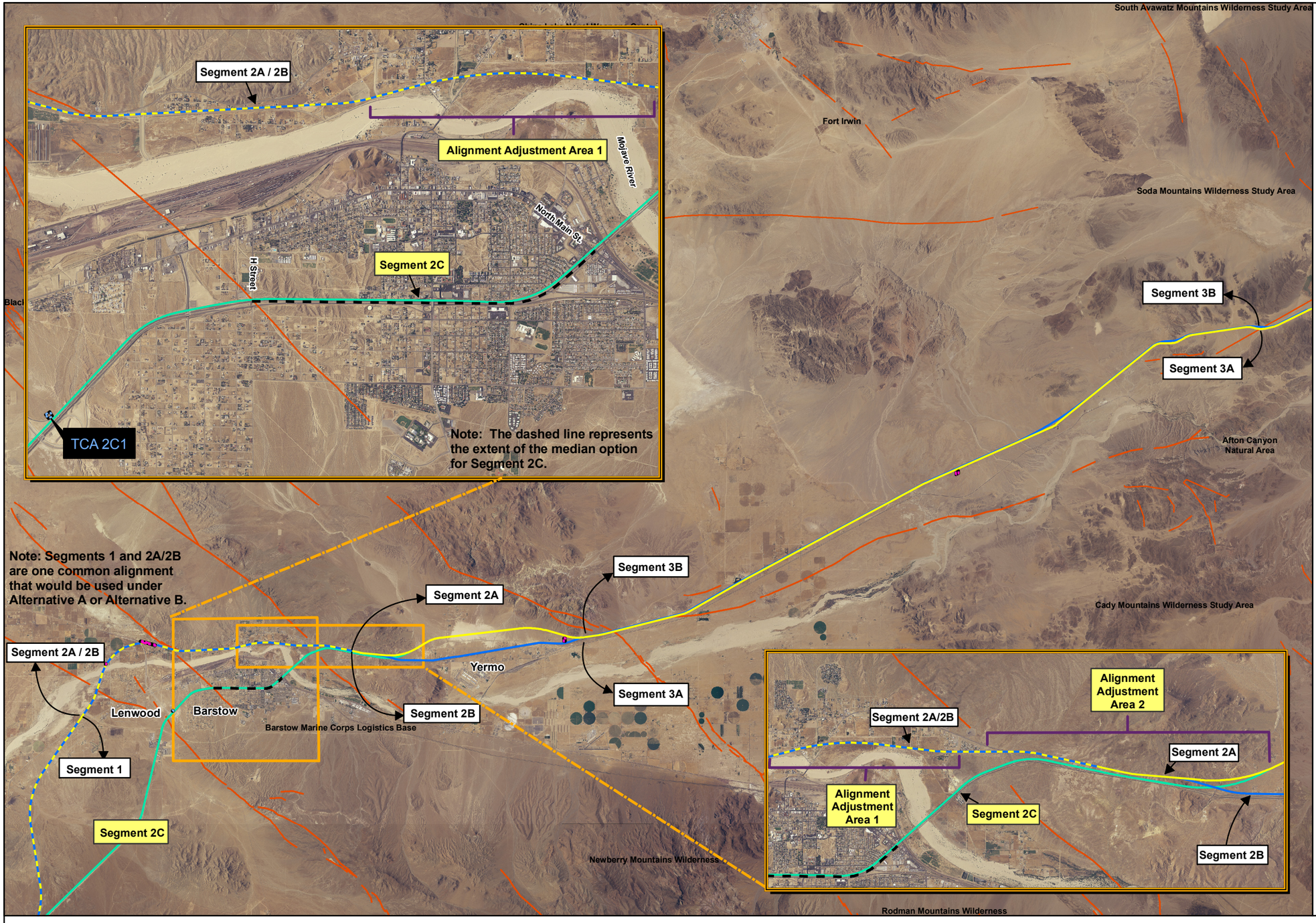
*Faults and Earth Fissures (1)*

FIG **S-3.9-1**

Geografika Consulting 06.15.10




## Legend

### Faults and Earth Fissures
- Fault
- Overall outline of fissure area

### DesertXpress Alignments
- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites
- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

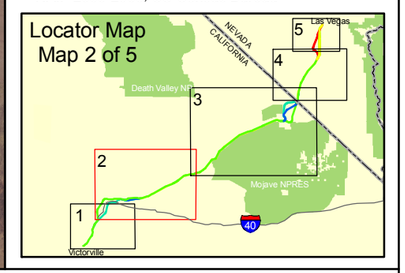
1 inch equals 4 miles

NORTH

0 5 10 Kilometers

0 4 8 Miles

Source: Bell and Price 1992, NV Bureau of Mines & Geology 1996, CA Division of Mines & Geology 2000, DesertXpress 2007, ESRI 2005, NAIP 2003-2006, US Census Bureau

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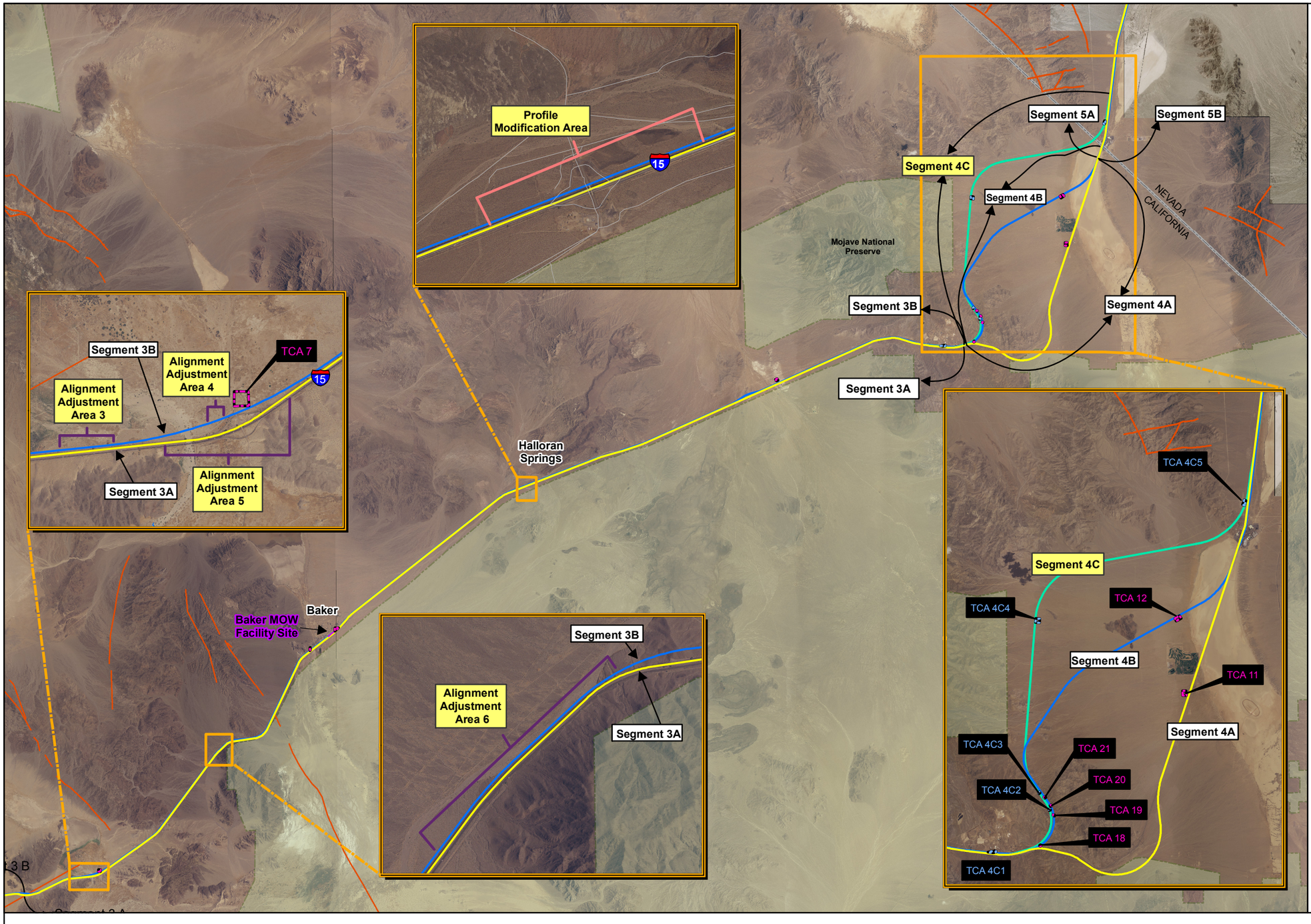
***Faults and Earth Fissures (2)***

FIG **S-3.9-2**

Geografika Consulting 06.015.10




## Legend

### Faults and Earth Fissures

- Fault
- Overall outline of fissure area

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

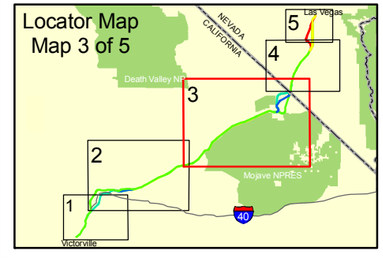
1 inch equals 4 miles

NORTH

0 5 10 Kilometers

0 4 8 Miles

Source: Bell and Price 1992, NV Bureau of Mines & Geology 1996, CA Division of Mines & Geology 2000, DesertXpress 2007, ESRI 2005, NAIP 2003-2006, US Census Bureau

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***Faults and Earth Fissures (3)***

**FIG S-3.9-3**

Geografika Consulting 06.16.10

TCA 14

Segment 6C

Segment 6B

Segment 6A

Segment 5A

Segment 5 B

Alignment Adjustment Area 7

Segment 6C

Segment 6B

Segment 6A

Jean

Nevada

California

Primm

Former Sloan MSF and Substation Location

604

15

Relocated Sloan MSF, Substation and Utility Corridor

Segment 5A

TCA 13

Segment 5B

## Legend

### Faults and Earth Fissures

- Fault
- Overall outline of fissure area

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Relocation Sloan MSF / Substation Site Option
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

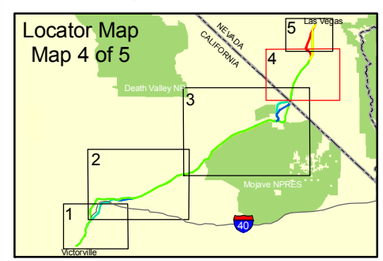
Kilometers: 0 2.5 5

Miles: 0 3 6

NORTH

Source: Bell and Price 1992, NV Bureau of Mines & Geology 1996, CA Division of Mines & Geology 2000, DesertXpress 2007, ESRI 2005, NAIP 2003-2006, US Census Bureau

Locator Map
Map 4 of 5

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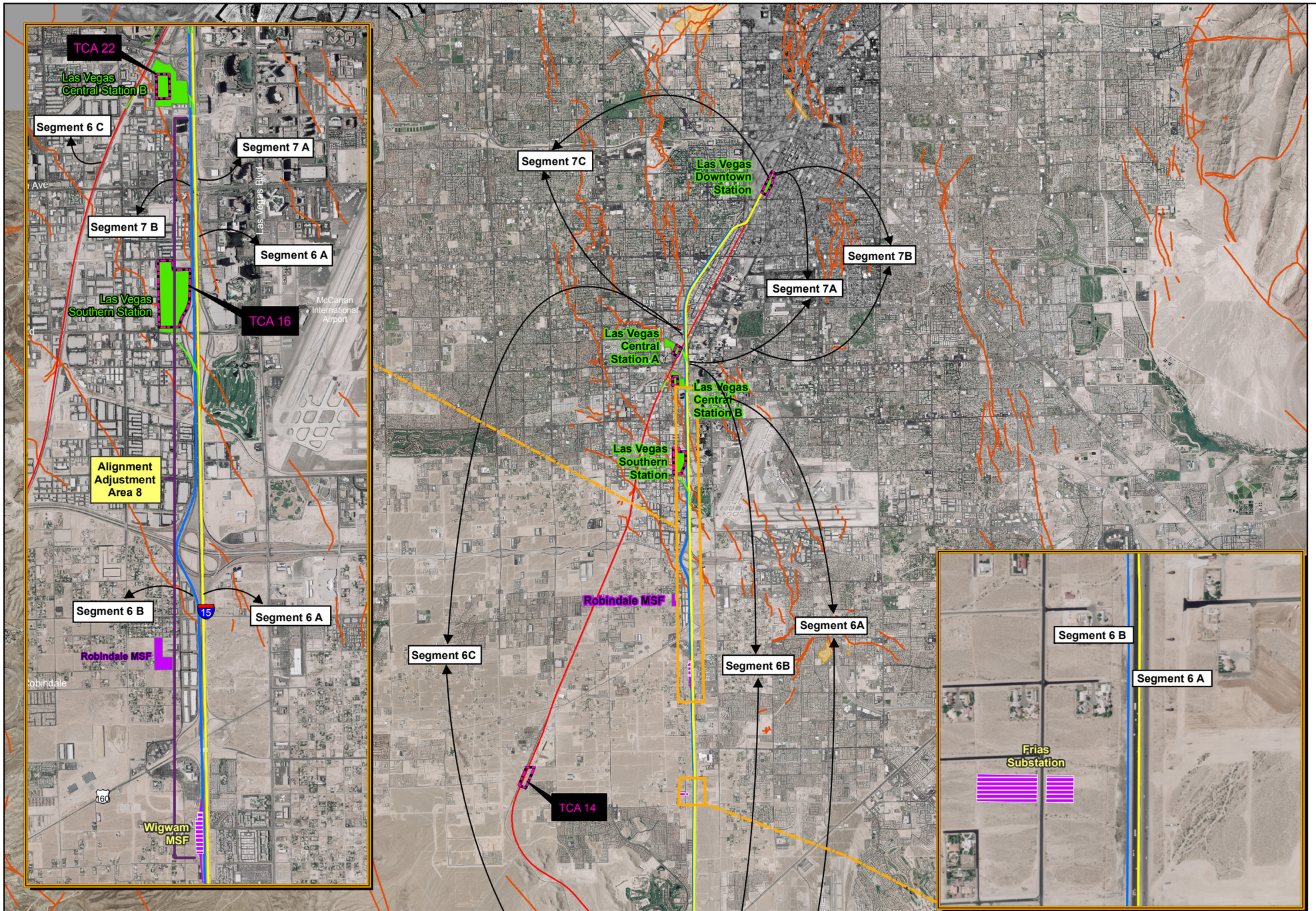
***Faults and Earth Fissures (4)***

**FIG S-3.9-4**

Geografika Consulting 06.15.10




## Legend

### Faults and Earth Fissures
- Fault
- Overall outline of fissure area

### DesertXpress Alignments
- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites
- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Frias Substation and Wigwam MSF Modifications
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

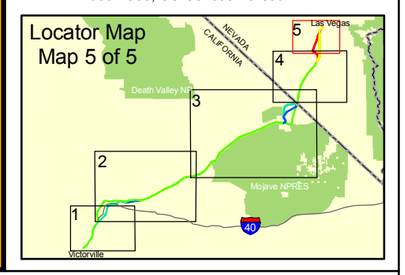
1 inch equals 2 miles

0 1.25 2.5 Kilometers

0 1 2 Miles

NORTH

Source: Bell and Price 1992, NV Bureau of Mines & Geology 1996, CA Division of Mines & Geology 2000, DesertXpress 2007, ESRI 2005, NAIP 2003-2006, US Census Bureau

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***Faults and Earth Fissures (5)***

**FIG S-3.9-5**

Geografika Consulting 06.15.10

ALIGNMENT ADJUSTMENT AREAS 1 AND 2

SEGMENT 2A

SEGMENT 3A & B

SEGMENT 2A

SEGMENT 2B

SEGMENT 2 C

SEGMENT 1

VICTORVILLE STATION SITE 3A / 3B AND OMSF SITE 2

VICTORVILLE STATION

NORTH

APPROXIMATE SCALE IN MILES

0 5 10

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

EXPLANATION

| | | | |
|---|---|---|---|
| Q | Alluvium | Qol | Older lake deposits |
| Qw | Wash deposits | QT | Continental deposits |
| Qs | Wind-blown sand | Mc / Mcls | Unnamed Miocene continental deposits |
| Ql | Lake deposits | Mzv | Mesozoic metavolcanic rocks |
| Qo | Older Alluvium | Kjqm | Cretacious or Jurassic quartz monzonite |
| Qod | Well dissected alluvial fans | Jhd | Jurassic hornblend diorite and minor gabbro |

Source: Ninyo & Moore., 2007

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Regional Geological Map (1)

FIG S-3.9-6

Geografika Consulting 06.08.10

EXPLANATION

- Qal — Alluvium
- Ql — Quaternary lake deposits
- Qpv — Pleistocene volcanic
- Qc — Pleistocene nonmarine
- QP — Plio-Pleistocene nonmarine
- Tv — Tertiary volcanic
- Tc — Tertiary nonmarine
- gr — Mesozoic granitic
- P Is — Paleozoic marine

NORTH

ALIGNMENT ADJUSTMENT AREA 6

SEGMENT 3A & B

ALIGNMENT ADJUSTMENT AREAS 3, 4 AND 5

Source: Ninyo & Moore., 2007

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APPROXIMATE SCALE IN MILES

0 5 10

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Regional Geological Map (2)

FIG S-3.9-7

Geografika Consulting 06.08.10

EXPLANATION

- Qal — Alluvium
- Ql — Quaternary lake deposits
- Qpv — Volcanic rocks
- Qc — Older alluvial deposits
- gr — Granitic rocks
- CM — Mississippian Marine rocks
- P ls — Marine sedimentary and metasedimentary rocks
- epC — Earlier Precambrian metamorphic rocks

SEGMENT 5A & B

SEGMENT 4C

SEGMENT 4B

SEGMENT 4A

SEGMENT 3A & B

NORTH

APPROXIMATE SCALE IN MILES

0 5 10

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Source: Ninyo & Moore., 2007

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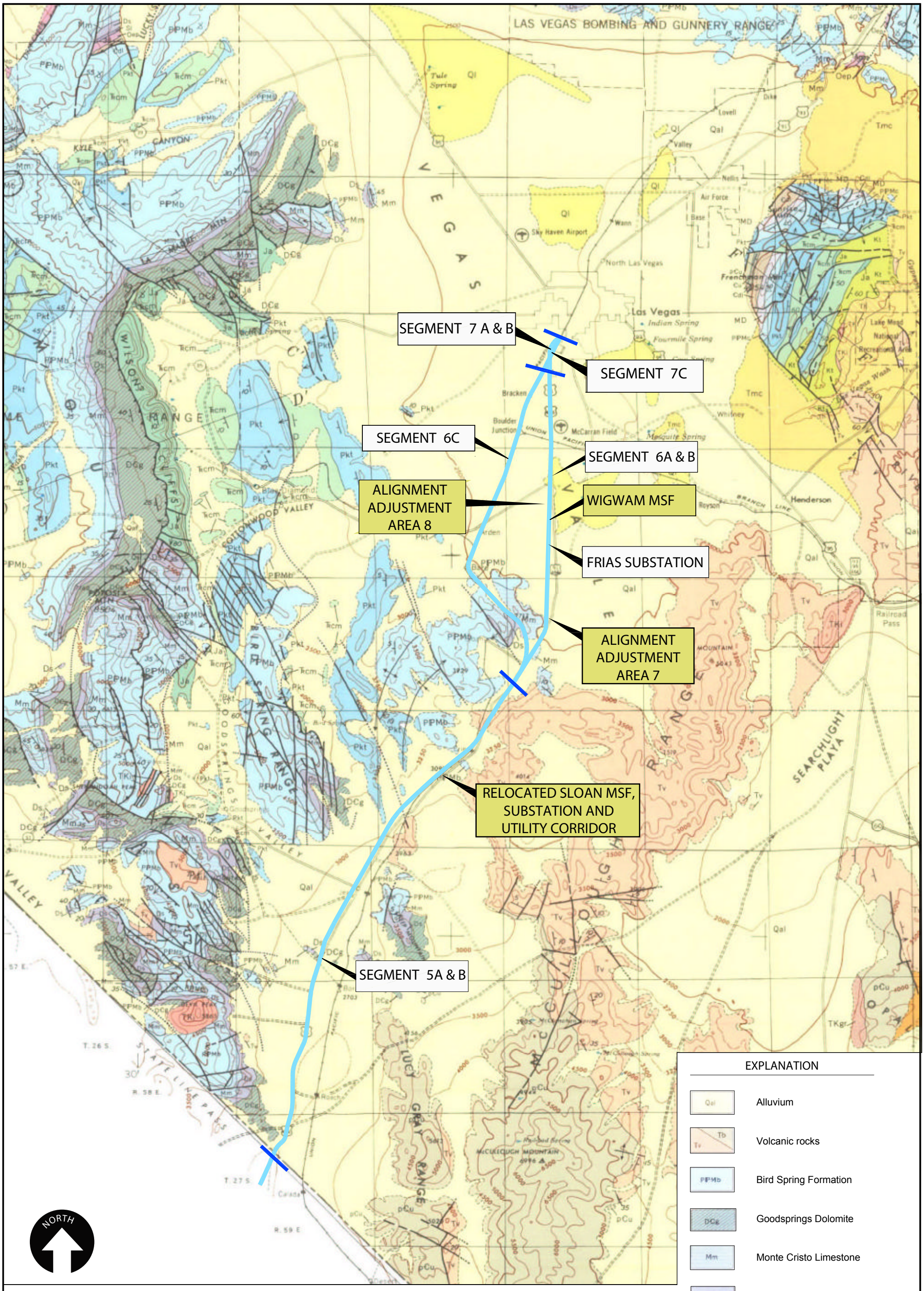
Regional Geological Map (3)

FIG S.3.9-8

Geografika Consulting 06.08.10

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**DesertXpress Supplemental EIS**

Source: Ninyo & Moore., 2007

Regional Geological Map (4)

FIG S-3.9-9

Geografika Consulting, 06.08.10

# 3.10 HAZARDOUS MATERIALS

This section describes the hazardous materials impacts related to the project modifications and additions and presents appropriate mitigation measures.

## 3.10.1 AFFECTED ENVIRONMENT

The regulations and standards identified in **Section 3.10.1** of the Draft EIS have not changed and remain applicable to the proposed project.

### Regional Conditions

The general hazardous risks associated with the 200-mile study area corridor have not changed since publication of the Draft EIS. In addition, the project modifications and additions would not introduce new operational effects related to use of hazardous materials at proposed maintenance facilities and elsewhere within the study area.

However, hazardous materials may be present in or around some of the proposed project modifications and additions not previously evaluated in the Draft EIS. The likelihood of contamination in specific portions of the study area was ranked as high, moderate, or low based on the following descriptions:

- ***High:*** This rank was given to property in the study area with known or probable contamination. An example of a property in this category would be a leaking underground storage tank (LUST) property where remediation had not been started or was not yet finished.
- ***Moderate:*** This rank was given to property with potential or suspected contamination. Examples of properties in this category would be LUST properties in the vicinity of the study area that are in final stages of remediation or in post-remediation monitoring. Any LUST properties adjacent to the site would be included in this category, regardless of case status (deed restrictions may exist for closed LUST cases).

  Another example of a "moderate" ranking would be a property within or adjoining the study area with known use or storage of hazardous materials which had received violation notices from an inspecting agency or where visual evidence of inadequate chemical and storage practices (such as significant staining) were observed but where no environmental assessments had occurred.

  Also included in the "moderate" category are facilities within or adjoining the study area where USTs are likely present, but that appeared to be abandoned by their former operators.
- ***Low:*** This rank was given to property where use or storage of hazardous materials occurs but with no significant violations, known releases, or evidence of inadequate chemical-handling practices. Example properties would be active UST or dry cleaning facilities with no documented releases. Also included would be properties outside the immediate study area where remediation of previous releases had been completed.

Where no use or storage of hazardous materials in a particular area was identified, no potential effect is assumed.

The classification of each property was based on the type of operation (current or historical), proximity to the project alignments, hydrogeologic conditions, field observations, and regulatory information. If a property was given a High or Moderate ranking, it is considered to have potential effects related to hazardous materials.

**Victorville Station Site 3**

A review of federal and state database listings for the area in which the VV3 site options (VV3A and VV3B) are proposed identified one facility listed on the State Permits Database located within ⅛ of a mile of the proposed station. This site is located at I-15 and Dale Evans Road and has an inactive County of San Bernardino hazardous waste special generator permit. Due to the status of this facility (where use or storage of hazardous materials occurs but with no known releases), this listing would be considered as having a low ranking of potential effects related to hazardous materials, and is not considered an environmental concern.

**OMSF 2**

The footprint of OMSF 2 has been reduced to 61 acres from 83 acres, as evaluated in the Draft EIS. However, the location of the OMSF 2 is the same as was evaluated in the Draft EIS. As stated in **Section 3.10.3.1** of the Draft EIS, database and aerial photograph review, along with field reconnaissance, did not reveal evidence of significant hazardous material concerns in the area of the OMSF 2 site.

**Segment 2C**

A review of federal and state database listings identified five facilities within ⅛ of a mile of the Segment 2C alignment options as having a moderate potential for hazardous material contamination; these are shown on **Figure S-3.10-1**.[1] The first three sites, 1) the Exxon Mobil Oil Corporation (Station No. 1249) at 1600 East Main Street; 2)Shell Service Station at 1601 East Main Street, and 3) Chevron Station at 2890 Lenwood Road, are listed on both Resource Conservation and Recovery Act (RCRA) and the Leaking Underground Storage Tank (LUST) databases. Due to the proximity of these sites to the project, they would be considered an environmental concern.

The fourth site, a former E-Z Serve at 1700 East Main Street, is listed on the LUST database as having a gasoline release affecting the aquifer used for the drinking water supply. According to the most recent (2009) groundwater monitoring report, this area is contaminated with chemicals associated with gasoline and would be considered an environmental concern.

The fifth site, Terrible Herbst Inc 74 at 1710 East Main Street, is listed as having at least

[1] A supplemental Hazardous Materials Assessment (HMA) was prepared for Segment 2C. The analysis included a review of potential sites of concern within a 1/8-mile wide corridor based on an alignment running down the median of the I-15 freeway. This study area includes the entire I-15 freeway right of way and immediately adjacent land uses. As such the supplemental HMA covers both Segment 2C alignment options.

The fifth site, Terrible Herbst Inc 74 at 1710 East Main Street, is listed as having at least four LUSTs. Based on the review of the State Water Resources Control Board (SWRCB) GeoTracker website, this facility has LUSTs. According to the website, a release of gasoline and fuel oxygenates affected the local aquifer used for drinking water. The regulatory status of this facility is "open-referred." Based on the facility's close proximity to the alignment and regulatory status, this facility would be considered an environmental concern.

**Segment 4C**

A review of federal and state database listings did not identify any facilities within ⅛ of a mile of Segment 4C. Two facilities between ½ and 1 mile from the alignment were listed in the environmental database review; however, neither facility would be of environmental concern. The first site, Primm Valley Resort and Casino at 31900 South Las Vegas Boulevard, located approximately ½ of a mile east the alignment, was listed on the LUST database. The report indicated that a gasoline release of approximately 25 gallons was reported in 2006 and affected soil only. The case was closed on July 20, 2007. Based on the distance from the alignment, media affected, and closure status, this facility would not be considered an environmental concern. The second site, Coloseum Mine at 1000 Coloseum Mine Road, was determined to be the unmapped source listed as a small quantity generator under the RCRA generators database. This site had no violations, has a low ranking of potential effects related to hazardous materials, and would not be considered an environmental concern.

**Relocated Sloan MSF**

The RSMSF site would be located on the east side of the I-15 corridor, approximately nine miles south of Sloan Road, and two miles south of the Sloan Road MSF. A review of federal and state database listings for the RSMSF site did not identify any sites of concern within ⅛ of a mile of proposed modification.

**Frias Substation**

The proposed 1.5-acre Frias Substation site would be located outside of the area previously evaluated in the HMA prepared for the Draft EIS. A review of federal and state database listings for the Frias Substation site did not identify any sites of concern within ⅛ of a mile of the proposed modification (see **Appendix S-C**).[2]

**Alignment Adjustment Areas**

***AAAs 1 and 2:*** AAAs 1 and 2 would shift portions of Segment 2A/ 2B within areas previously evaluated in the HMA prepared for the Draft EIS. **Table 3.10-5** of the Draft EIS identified six sites within ⅛ of a mile of Segments 2A and 2B as having a moderate to high ranking of potential effects related to hazardous materials. These same sites would pose similar potential hazardous material risks to the alignment adjustments associated with AAAs 1 and 2.

[2] EDR environmental database search conducted April 2010.

***AAAs 3 through 6:*** AAAs 3 through 6 would shift portions of Segment 3B within areas previously evaluated in the HMA prepared for the Draft EIS. **Table 3.10-7** of the Draft EIS identified two sites within ⅛ of a mile of Segments 3B as having a moderate ranking of potential effects related to hazardous materials. These same sites would pose potential hazardous material risks to the alignment adjustments associated with AAAs 3 through 6.

***AAAs 7 and 8:*** AAAs 7 and 8 would shift portions of Segment 6B within areas previously evaluated in the Draft EIS. **Table 3.10-13** of the Draft EIS identified nine sites within ⅛ of a mile of Segment 6B as having a moderate ranking of potential effects related to hazardous materials. These same sites would pose potential hazardous material risks to the alignment adjustment areas within Segments 6B.

#### Wigwam Avenue MSF Modification

The Wigwam Avenue MSF Modification would be located within Segment 6B. **Table 3.10-13** of the Draft EIS identified nine sites within ⅛ of a mile of Segment 6B as having a moderate ranking of potential effects related to hazardous materials. However, none of the identified sites within Segment 6B would be within ⅛ of a mile of the proposed Wigwam Avenue MSF site.

#### Profile Modification

The Profile Modification entails locating a portion of Segment 3B within a retained cut, without a shift in the location of the alignment. The Draft EIS did not identify any sites within ⅛ of a mile of Segment 3B that would pose potential hazardous material risks to the profile modification area.

## 3.10.2 Methods of Evaluation of Impacts

This Supplemental Draft EIS uses the same methodology as was used in **Sections 3.10.1** and **3.10.2** of the Draft EIS in the review of potential effects related to hazardous materials.

#### Construction Period – Structures Built Prior to 1980

Demolition of structures built prior to 1980 could expose the public and/or the environment to hazardous materials, such as lead-based paint and asbestos-containing material.

#### Operational Period --- Storage of Hazardous Materials

Operation of the project modifications and additions will include such activities as train operations, track maintenance, and equipment maintenance. Within maintenance facility sites, it is anticipated that some hazardous materials, including fuels, lubricants, solvents, paints, compressed gases, and associated waste products would be stored and/or staged in buildings and storage tanks (above and below ground). Equipment such as paint booths, sumps, clarifiers, and wastewater treatment units may also be used at the maintenance facilities.

**Contaminated Soil/Groundwater**

Construction activities associated with the project features (including the changes and modifications examined in this Supplemental Draft EIS) may encounter contaminated soils and/or groundwater or other previously identified hazardous materials that must be removed, disposed of, and remediated. Contaminated soils and groundwater are anticipated to be found in the following locations in the project area:

1) On and/or near properties identified above as being of moderate to high environmental concern.
2) Within and/or near existing or abandoned railroad corridors, where herbicides, petroleum hydrocarbons, and metals may be found in soils and/or groundwater.
3) Within or near existing freeway corridors, where petroleum hydrocarbons and aerially deposited lead may be found in soils and/or groundwater.

In addition to the potential adverse effects associated with known or suspected areas of contaminated soil and/or groundwater, additional adverse effects may result if previously unidentified hazardous materials were encountered during construction of any of the project modifications and additions.

In addition to the HMA that was prepared for the Draft EIS, information in this section was drawn from supplemental hazardous materials reports that examined the proposed locations of the VV3A and VV3B site options, the Segment 2C alignment options, Segment 4C, and the RSMSF (see **Appendix S-C**).[3],[4] The HMA that was prepared for the Draft EIS covered those lands now proposed for OMSF 2, the Alignment Adjustment Areas, and the Frias substation, and thus, no supplemental information was needed for these features.[5]

## 3.10.3 Environmental Consequences

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. The discussions below consider the project modifications and additions per the potential effects related to project construction, project operation, and existing soil and/or groundwater contamination within the project area.

[3] Ninyo & Moore (2009a). *Hazardous Materials Assessment: Proposed Desert Xpress Rail Line Segment 4, Options C and D, Victorville 3 Station.*

[4] Ninyo & Moore (2009b). *Hazardous Materials Assessment: Proposed Desert Xpress Rail Line Segment 2, Alternative C, Sloan Substation.*

[5] Ninyo & Moore (2007). *Hazardous Materials Assessment: Proposed Desert Xpress Rail Corridor.*

### Victorville Station Site 3

*Construction Period – Structures Built Prior to 1980*

The VV3 site options are traversed by electric utility lines constructed prior to 1980, but there would be no demolition of these lines and thus no hazards related to demolition. Therefore, VV3 would not have the potential to result in impacts related to the demolition of structures built prior to 1980.

*Operational Period --- Storage of Hazardous Materials*

The VV3 site options would not involve the use or storage of significant quantities of hazardous materials. Any storage of hazardous materials at VV3 would be similar to what would be stored at either of the other two Victorville Station site options as identified and discussed in **Section 4.10.4** of the Draft EIS. As such, VV3 would not result in adverse effects related to hazardous materials during project operation. No new adverse effects would occur.

*Contaminated Soil/Groundwater*

VV3 is located in close proximity to the I-15 freeway corridor, where petroleum hydrocarbons and aerially deposited lead may be found in soils and/or groundwater. Any hazardous materials encountered during the construction process for VV3 would require safe handling and disposal to avoid a potential adverse environmental effect.

### OMSF 2, Relocated Sloan MSF, and Wigwam MSF Modification

*Construction Period – Structures Built Prior to 1980*

Project modifications propose to locate portions of the Wigwam Avenue MSF site on existing businesses between the end of West Ford Avenue and the I-15 freeway, which could result in the displacement and/or demolition of minor commercial structures. However, based on a review of the Clark County assessor's records, none of the existing improvements in this area were constructed prior to 1980.[6] As such, it is unlikely that these structures would have lead-based paint and/or asbestos-containing materials that would represent an environmental hazard.

None of the remaining MSF facility modifications (OMSF 2 or RSMSF) considered in this Supplemental Draft EIS would be on sites containing any such structures.

*Operational Period --- Storage of Hazardous Materials*

As with the other Las Vegas area MSF site options indentified in the Draft EIS, it is anticipated that some hazardous materials, including fuels, lubricants, solvents, paints, compressed gases, and associated waste products would be stored and/or staged in buildings and storage tanks (above and below ground) at the OMSF 2, RSMSF, and Wigwam MSF Modification sites. Equipment such as paint booths, sumps, clarifiers, and

[6] Real Property Parcel Record Search: Parcels 177-17-308-002 and -003; and 177-17-404-014. Clark County Assessor Records and Maps. Available at: http://www.accessclarkcounty.com/depts/assessor/pages/disclaim.aspx; Last accessed, May 21, 2010.

wastewater treatment units may also be used at the maintenance facilities. Similar to the other MSF site options, the OMSF 2, RSMSF and Wigwam MSF Modification sites will require the safe handling, use, storage, and disposal of these materials.

*Contaminated Soil/Groundwater*

The OMSF 2, RSMSF, and Wigwam MSF Modification sites are located in close proximity to the I-15 freeway corridor, where petroleum hydrocarbons and aerially deposited lead may be found in soils and/or groundwater. Any hazardous materials encountered during the construction process for these MSF facilities would require safe handling and disposal to avoid a potential adverse environmental effect.

**Segment 2C, Segment 4C, and Alignment Adjustment Areas**

*Construction Period – Structures Built Prior to 1980*

Segment 2C, Segment 4C, and the AAAs would not require the demolition of existing structures and therefore would not have the potential to result in adverse effects related to the demolition of structures built prior to 1980.

*Operational Period --- Storage of Hazardous Materials*

Segment 2C, Segment 4C, and the AAAs would not involve the use or storage of significant quantities of hazardous materials and therefore would not result in adverse effects related to hazardous materials during project operation.

*Contaminated Soil/Groundwater*

Segment 2C and the AAAs are located near properties identified above as being of moderate to high environmental concern. Segment 4C is not located on or near any site that would pose an environmental risk.

Portions of Segment 2C and Segment 4C, as well as the AAAs are located in close proximity to the I-15 freeway corridor, where petroleum hydrocarbons and aerially deposited lead may be found in soils and/or groundwater.

Any hazardous materials encountered during the construction process for these alignments would require safe handling and disposal to avoid a potential adverse environmental effect.

**Frias Substation and Profile Modification**

*Construction Period – Structures Built Prior to 1980*

Construction of the Frias Substation and Profile Modification would not require the demolition of existing structures. Therefore, neither the Frias Substation nor the Profile Modification would have the potential to result in adverse effects related to the demolition of structures built prior to 1980.

*Operational Period --- Storage of Hazardous Materials*

The Frias Substation and the Profile Modification would not involve the use or storage of significant quantities of hazardous materials. As such, neither the Frias Substation nor the Profile Modification would result in adverse effects related to hazardous materials during project operation.

*Contaminated Soil/Groundwater*

The Frias Substation and Profile Modification are not located on or near any site that would pose an environmental risk. As such, neither the Frias Substation nor the Profile Modification would result in adverse effects related to existing soil and/or groundwater contamination within the project area.

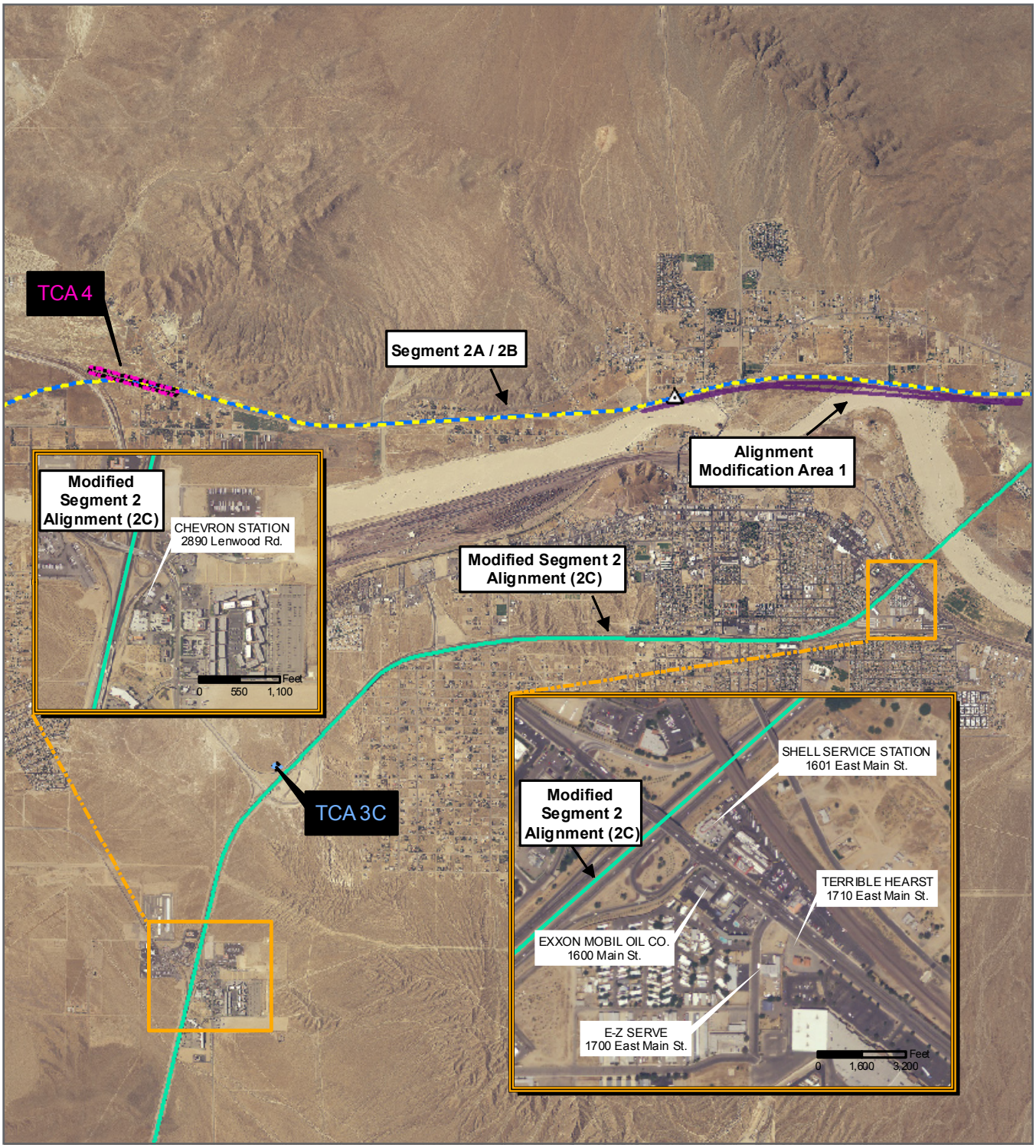
## 3.10.4 Mitigation Measures

**Mitigation Measures HAZ-1** through **HAZ-5** identified in **Section 3.10.5** of the Draft EIS would be applied to all project modifications and additions to address and limit the adverse effects of the potential hazardous material impacts described above.

Table 3.10-16 of the Draft EIS identifies the applicable mitigation measures by segment. These measures are also intended to apply to any project features (stations, maintenance facilities, etc.) located within each segment. For example, any mitigation measures applicable to Segment 1 are also applicable to the VV3 and OMSF 2 sites.

## 3.10.5 Residual Impacts Following Mitigation

All potential effects related to hazardous materials can be controlled successfully through the application of standard safety planning methods and practices identified in the mitigation measures above. Following implementation of the mitigation measures identified above, the project modifications and additions would not result in any residual impacts.




## Legend

**DesertXpress Alignments**

- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Alignment Deviation Areas

U.S. Department of Transportation
Federal Railroad Administration

**DesertXpress - Supplemental Draft EIS**

*Hazardous Sites of Environmental Concern - Segment 2C*

FIG **S-3.10-1**

*Source: Geografika Consulting, 11/14/2009.*

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# 3.11 AIR QUALITY AND GLOBAL CLIMATE CHANGE

This section provides an update of the existing air quality conditions along the proposed rail corridor, analyzes the potential effects of the modifications and additions, and presents appropriate mitigation measures.

## 3.11.1 AFFECTED ENVIRONMENT

The proposed project would be located within two regional air quality jurisdictions: the Mojave Desert Air Quality Management District in California, and the Clark County Department of Air Quality and Environmental Management in Nevada. These jurisdictions correspond with two air basins relative to the project, the Clark County Air Basin and the Mojave Desert Air Basin.

Air basins are found to be in or out of "attainment" status based on compliance with Federal standards for regulated air pollutants. The Mojave Desert Air Basin is still in moderate nonattainment of ozone ($O_3$) and inhalable particulate matter ($PM_{10}$). The Clark County Air Basin is still in nonattainment of $O_3$ and serious non-attainment of carbon monoxide (CO) and $PM_{10}$.

The affected environment relative to air quality remains as discussed in **Section 3.11.3.3** of the Draft EIS. However, as noted below, updated baseline conditions information became available in the Victorville area and in Clark County. In addition, included below is a correction of the baseline greenhouse gas (GHG) emissions.

**Regional Conditions**

**Table 3.11-5** of the Draft EIS presented air quality monitoring data in Victorville from 2005 until 2007. Since publication of the Draft EIS, air quality data for 2008 and 2009 has become available. **Table S-3.11-1** below provides recent data to supplement the information presented in the Draft EIS.

**Table 3.11-6** of the Draft EIS presented air quality monitoring data in Clark County from 2005 until 2007. Since publication of the Draft EIS, air quality data for 2008 and 2009 has become available. **Table S-3.11-2** below provides recent data to supplement the information in **Table 3.11-6** of the Draft EIS.

None of the updated data changes the attainment status for either air basin.

Of note, 2008 and 2009 measurements of $PM_{10}$in Victorville are generally consistent with measurements taken in 2005 and 2006. In 2007, measurements of $PM_{10}$ spiked at this monitoring station, but 2009 measurements are the lowest of the 5 years evaluated.

Table S-3.11-1 Summary of 2008 and 2009 Air Quality Data at Victorville, Park Avenue Station

| Pollutant Standards | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| **Ozone ($O_3$)** | | | | | |
| *State Standard (1-hr avg 0.09 ppm; 8-hr avg 0.08 ppm)* | | | | | |
| *National Standard (8-hr avg 0.075 ppm)* | | | | | |
| Maximum concentration 1-hr period (ppm) | 0.131 | 0.136 | 0.107 | 0.109 | 0.111 |
| Maximum concentration 8-hr period (ppm) | 0.107 | 0.105 | 0.090 | 0.098 | 0.097 |
| Days state 1-hr standard exceeded | 16 | 9 | 7 | 16 | 8 |
| Days national 8-hr standard exceeded | 33 | 28 | 27 | 30 | 23 |
| Days state/national 8-hr standard exceeded | 53 | 47 | 45 | 59 | 53 |
| **Carbon Monoxide (CO)** | | | | | |
| *State Standard (8-hr avg 9 ppm)* | | | | | |
| *National Standard (8-hr avg 9 ppm)* | | | | | |
| Maximum concentration 8-hr period (ppm) | 1.63 | 1.56 | 1.61 | 1.04 | 1.14 |
| Days state/national 8-hr standard exceeded | 0 | 0 | 0 | 0 | 0 |
| **Nitrogen Dioxide ($NO_2$)** | | | | | |
| *State standard (1-hr avg 0.25 ppm; Annual arithmetic mean 0.030 ppm)*<br>*National standard (Annual arithmetic mean 0.053 ppm)* | | | | | |
| Maximum 1-hr concentration | 0.077 | 0.079 | 0.071 | 0.074 | 0.064 |
| Annual average | 0.019 | 0.020 | 0.018 | 0.016 | 0.015 |
| Days state standard exceeded [a] | 0 | 0 | 0 | 0 | 0 |
| **Suspended Particulates ($PM_{10}$)** | | | | | |
| *State standard (24-hr avg 50 µg/$m^3$)* | | | | | |
| *National standard (24-hr avg 150 µg/$m^3$)* | | | | | |

| Pollutant Standards | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| Maximum State 24-hr concentration | 57.0 | 56.0 | 339.0 | 72.0 | 43.0 |
| Maximum National 24-hr concentration | 61.2 | 62.0 | 358.0 | 77.0 | 53.0 |
| State annual average | 26.1 | 30.5 | 36.0 | n/a | n/a |
| National annual average | 28.9 | 33.0 | 38.4 | 27.0 | n/a |
| Days exceeding state standard | 1 | 2 | 4 | 2 | 0 |
| Days exceeding national standard | 0 | 0 | 1 | 0 | 0 |
| **Suspended Particulates ($PM_{2.5}$)** | | | | | |
| *National standard (24-hr avg 35 µg/$m^3$)* | | | | | |
| Maximum 24-hr concentration | 27.0 | 22.0 | 28.0 | 17.0 | 20.0 |
| State annual average | -- | 10.3 | 9.7 | n/a | 9.3 |
| National annual average | 9.7 | 10.4 | 9.7 | n/a | 8.9 |
| Days exceeding national standard [b] | 0 | 0 | 0 | 0 | 0 |

Notes:

ppm = parts per million; µg/m3 = micrograms per cubic meter

a Number of exceedances based on California ambient air quality standards applicable during period shown (0.25 ppm). Standard was changed to 0.18 ppm in February 2007, to be applied to 2007.

b Number of exceedances based on national ambient air quality standards applicable during period shown (65 µg/m3). Standard was changed to 35 µg/m3 in November 2006, to be applied to 2007.

Source: California Air Resources Board (2008a), compiled by ICF Jones & Stokes, September 2008; California Air Resources Board (2010a), compiled by ICF International, May 2010. CARB Site 36306

Table S-3.11-2 Summary of 2008 and 2009 Air Quality Data Clark County Monitoring Stations

| Pollutant Standards | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| **Ozone ($O_3$) [Orr, JD Smith][a]** | | | | | |
| *National standard (1-hr avg 0.125 ppm)* | | | | | |
| *National standard (8-hr avg 0.075 ppm)* | | | | | |
| Maximum concentration 1-hr period (ppm) | 0.113 | 0.109 | 0.112 | 0.089 | n/a |
| Maximum concentration 8-hr period (ppm) | 0.098 | 0.09 | 0.079 | 0.077 | n/a |
| Days national 1-hr standard exceeded | 0 | 0 | 0 | 0 | n/a |
| Days national 8-hr standard exceeded | 0 | 9 | 4 | 3 | n/a |
| **Carbon Monoxide (CO) [Orr]** | | | | | |
| *National standard (1-hr avg 35 ppm)* | | | | | |
| *National standard (8-hr avg 9 ppm)* | | | | | |
| Maximum concentration 1-hr period (ppm) | 5.1 | 4.8 | 4.5 | 3.2 | n/a |
| Maximum concentration 8-hr period (ppm) | 4.2 | 3.9 | 3.4 | 2.1 | n/a |
| Days national 1-hr standard exceeded | 0 | 0 | 0 | 0 | n/a |
| Days national 8-hr standard exceeded | 0 | 0 | 0 | 0 | n/a |
| **Nitrogen Dioxide ($NO_2$) [JD Smith]** | | | | | |
| *National standard (annual avg 0.053 ppm)* | | | | | |
| Annual average concentration | 0.075 | 0.072 | 0.224 | 0.016 | n/a |
| Days national standard exceeded | 0 | 0 | 0 | 0 | n/a |
| **Suspended Particulates ($PM_{10}$) [Orr]** | | | | | |
| *National standard (24-hr avg 150 µg/$m^3$)* | | | | | |
| Maximum 24-hr concentration | 75 | 94 | 103 | 72 | 43 |
| Days national standard exceeded | 0 | 0 | 0 | 0 | 0 |

| Pollutant Standards | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| **Suspended Particulates ($PM_{2.5}$) [Sunrise Acres]** | | | | | |
| *National standard (annual avg 15 µg/$m^3$)* | | | | | |
| *National standard (24-hr avg 35 µg/$m^3$)* | | | | | |
| Annual average concentration | 10.01 | 9.41 | 10.29 | 9.07 | n/a |
| Maximum national 24-hr concentration | 35 | 30.7 | 32.1 | 22.5 | n/a |
| Days national standard exceeded | 0 | 0 | 0 | 0 | n/a |

Notes:

[a] Orr station began monitoring $O_3$ during year 2006. Year 2005 concentration from JD Smith station. Years 2006 and 2007 concentrations from Orr station. 2008 and 2009 data from Orr and JD Smith stations.

ppm = parts per million; µg/m3 = micrograms per cubic meter

Source: USEPA 2008c, compiled by ICF Jones & Stokes, September 2008; USEPA 2010c, compiled by ICF International, May 2010.

**Greenhouse Gases**

GHG emissions, measured in terms of carbon dioxide equivalent gases (or $CO_2e$), represent emissions from daily vehicle traffic on the I-15 corridor within the respective air basins.

Following publication of the Draft EIS, FRA noted an error regarding baseline GHG emissions which caused existing $CO_2e$ emissions from vehicle trips to be understated. **Table S-3.11-3** below shows corrected GHG emissions which replaces the information presented in **Table 3.11-4** in the Draft EIS.

Table S-3.11-3 Year 2007 Greenhouse Gas Emissions

| Air Basin | $CO_2e$ Emissions, Metric Tons Per Year |
|---|---|
| Mojave Desert Air Basin | 2,310,285 |
| Clark County Nevada | 963,797 |
| Total Annual Emissions | 3,274,082 |

Note: $CO_2e$ emissions expressed in metric tons (1 ton = 2,204.62 lbs)
Source: ICF International, June 2010.

## 3.11.2 Methods of Evaluation of Impacts

The same methodology as described in **Section 3.11.2** of the Draft EIS was used to evaluate potential effects of the project modifications and additions. The analysis focuses on potential regional and localized impacts on air quality. Pollutant burdens generated by on-road (vehicles), off-road (trains), and stationary (electric power generation) sources for the two technology options were combined and compared to the No Action Alternative. Localized impacts for California were calculated and evaluated using CALINE4 and Emfac 2007 emissions factors; while such impacts for Nevada were calculated and evaluated using CAL3QHC and Mobile 6 emissions factors. GHG emissions of carbon dioxide ($CO_2$), methane ($CH_4$) and nitrous oxide ($N_2O$) were calculated using the formulas provided in the *California Climate Action Registry, General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, version 2.2*. GHG emissions are reported in terms of $CO_2e$. Changes in the amounts of $CO_2e$ emissions as a result of the project alternatives were estimated on a statewide basis for both California and Nevada. Emission burdens were projected for the years 2013 and 2030.

## 3.11.3 Environmental Consequences

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. The discussions below consider the project modifications and additions and their potential to result in adverse effects to air quality. Temporary, short-term adverse air quality effects can result from project construction activities, specifically with exhaust emissions (including GHGs) from construction equipment and truck haul trips, and with fugitive dust from soil

disturbance activity.[1]

### Regional Operations Effects

As in **Section 3.11.4** of the Draft EIS, the project modifications and additions were analyzed for air quality effects under two potential technology options: DEMU and EMU. The No Action Alternative is used to compare the relative impacts and benefits of the proposed project improvements. The No Action Alternative assumes that no new passenger rail system to divert vehicular travel between the southern California region and Las Vegas would be built. Trips between southern California and Las Vegas would continue to occur under current modal splits.

**Tables S-3.11-4** through **S-3.11-8** below show the criteria pollutant and $CO_2e$ emissions for the No Action Alternative and the action alternatives taking into account the proposed project modifications and additions for the years 2013 and 2030. The analysis takes into the account the differing air quality effects of the two technology options (diesel and electric) and presents findings in terms of applicable air basins.

Since publication of the Draft EIS, two factors have affected the calculations of air quality pollutant and GHG emissions used to determine the air quality impacts provided in the Draft EIS: 1) the location of VV3 relative to VV2, which was assumed for air quality calculations in the Draft EIS, and 2) the correction of a GHG calculation error for existing and future No Action Alternative Conditions.

**Tables S-3.11-4** through **S-3.11-8** below provide updated air pollutant and GHG emissions and replace the information previously presented in **Section 3.11.4** of the Draft EIS. The following tables show that inclusion of the project modifications and additions do not have a substantial effect on direct impacts to air quality.

[1] The Draft EIS characterized construction related impacts to air quality and GHG emissions as "indirect." This was an error. In this Supplemental Draft EIS, such impacts are properly noted as direct, temporary construction impacts.

Table S-3.11-4 Regional Criteria Pollutant and Greenhouse Gas Emissions, No Action Alternative, 2013 and 2030

| | Criteria Pollutant Emissions | | | | | | $CO_2e$ Emissions, tons per year[a] |
|---|---|---|---|---|---|---|---|
| | ROC | $NO_X$ | CO | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ | |
| **Year 2013** | | | | | | | |
| Mojave Desert Air Basin | 342 | 2,408 | 7,372 | 15 | 170 | 156 | 1,464,461 |
| Clark County Nevada | 930 | 1,348 | 18,990 | 18 | 61 | 31 | 970,312 |
| Total Annual Emissions | 1,272 | 3,756 | 26,362 | 33 | 231 | 187 | 2,434,773 |
| **Year 2030** | | | | | | | |
| Mojave Desert Air Basin | 197 | 941 | 3,895 | 20 | 176 | 162 | 1,977,278 |
| Clark County Nevada | 882 | 769 | 29,504 | 35 | 105 | 48 | 1,807,732 |
| Total Annual Emissions | 1,079 | 1,710 | 33,399 | 55 | 281 | 210 | 3,785,010 |

[a] Criteria pollutant emissions expressed in short tons (1 ton = 2,000 lbs); $CO_2e$ emissions expressed in metric tons (1 ton = 2,204.62 lbs)

Source: ICF International, May 2010.

Table S-3.11-5 Revised Regional Criteria Pollutant and Greenhouse Gas Emissions Mojave Desert Air Basin, 2013

| | Criteria Pollutant Emissions | | | | | | $CO_2e$ Emissions, tons per year[a] |
|---|---|---|---|---|---|---|---|
| | ROC | $NO_X$ | CO | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ | |
| **DEMU Technology Option** | | | | | | | |
| Railway Emissions | 34 | 621 | 573 | 43 | 33 | 31 | 116,449 |
| Mobile-source Emissions | (61) | (428) | (1,311) | (3) | (30) | (28) | (260,358) |
| Net Emissions | (27) | 193 | (738) | 40 | 3 | 3 | (143,909) |
| General Conformity Threshold | 50 | 50 | 100 | -- | 100 | 100 | -- |
| Exceed Threshold? | No | Yes | No | N/A | No | No | N/A |
| **EMU Technology Option** | | | | | | | |
| Railway Emissions | 1 | 75 | 13 | 8 | 3 | 2 | 47,463 |
| Mobile-source Emissions | (76) | (530) | (1,621) | (3) | (37) | (34) | (322,115) |
| Net Emissions | (75) | (455) | (1,608) | 5 | (34) | (32) | (274,652) |
| General Conformity Threshold | 50 | 50 | 100 | -- | 100 | 100 | -- |
| Exceed Threshold? | No | No | No | N/A | No | No | N/A |

[a] Criteria pollutant emissions expressed in short tons (1 ton = 2,000 lbs); $CO_2e$ emissions expressed in metric tons (1 ton = 2,204.62 lbs)

Source: ICF International, May 2010.

Table S-3.11-6 Revised Regional Criteria Pollutant and Greenhouse Gas Emissions, Mojave Desert Air Basin, 2030

| | Criteria Pollutant Emissions | | | | | | $CO_2e$ Emissions, tons per year[a] |
|---|---|---|---|---|---|---|---|
| | ROC | $NO_X$ | CO | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ | |
| **DEMU Technology Option** | | | | | | | |
| Railway Emissions | 56 | 1,007 | 928 | 70 | 54 | 49 | 188,728 |
| Mobile-source Emissions | (60) | (289) | (1,195) | (6) | (54) | (49) | (606,711) |
| Net Emissions | (4) | 718 | (267) | 64 | (0) | (0) | (417,983) |
| General Conformity Threshold | 50 | 50 | 100 | 100 | 70 | 70 | -- |
| Exceed Threshold? | No | Yes | No | No | No | No | N/A |
| **EMU Technology Option** | | | | | | | |
| Railway Emissions | 1 | 118 | 21 | 12 | 4 | 4 | 75,122 |
| Mobile-source Emissions | (77) | (366) | (1,516) | (8) | (69) | (63) | (769,715) |
| Net Emissions | (76) | (248) | (1,495) | 4 | (65) | (59) | (694,593) |
| General Conformity Threshold | 50 | 50 | 100 | 100 | 70 | 70 | -- |
| Exceed Threshold? | No | No | No | No | No | No | N/A |

Criteria pollutant emissions expressed in short tons (1 ton = 2,000 lbs); $CO_2e$ emissions expressed in metric tons (1 ton = 2,204.62 lbs)

Source: ICF International, May 2010.

Table S-3.11-7 Revised Regional Criteria Pollutant and Greenhouse Gas Emissions, Clark County Air Basin, 2013

| | Criteria Pollutant Emissions | | | | | | $CO_2e$ Emissions, tons per year[a] |
|---|---|---|---|---|---|---|---|
| | ROC | $NO_X$ | CO | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ | |
| **DEMU Technology Option** | | | | | | | |
| Railway Emissions | 27 | 482 | 86 | 11 | 17 | 16 | 28,195 |
| Mobile-source Emissions | (91) | (132) | (1,853) | (2) | (6) | (3) | (94,697) |
| Net Emissions | (64) | 350 | (1,767) | 9 | 11 | 13 | (66,502) |
| General Conformity Threshold | 50 | 50 | 100 | -- | 100 | 100 | -- |
| Exceed Threshold? | No | Yes | No | N/A | No | No | N/A |
| **EMU Technology Option** | | | | | | | |
| Railway Emissions | <1 | 18 | 3 | 2 | 1 | 1 | 11,497 |
| Mobile-source Emissions | (104) | (151) | (2,130) | (2) | (7) | (4) | (108,808) |
| Net Emissions | (104) | (133) | (2,127) | <1 | (6) | (3) | (97,311) |
| General Conformity Threshold | 50 | 50 | 100 | -- | 100 | 100 | -- |
| Exceed Threshold? | No | No | No | N/A | No | No | N/A |

[a] Criteria pollutant emissions expressed in short tons (1 ton = 2,000 lbs); $CO_2e$ emissions expressed in metric tons (1 ton = 2,204.62 lbs)

Source: ICF International, May 2010.

Table S-3.11-8 Revised Regional Criteria Pollutant and Greenhouse Gas Emissions Clark County Air Basin, 2030

| | Criteria Pollutant Emissions | | | | | | $CO_2e$ Emissions, tons per year[a] |
|---|---|---|---|---|---|---|---|
| | ROC | $NO_X$ | CO | $SO_X$ | $PM_{10}$ | $PM_{2.5}$ | |
| **DEMU Technology Option** | | | | | | | |
| Railway Emissions | 35 | 612 | 137 | 17 | 21 | 19 | 45,695 |
| Mobile-source Emissions | (67) | (58) | (2,231) | (3) | (8) | (4) | (136,696) |
| Net Emissions | (32) | 554 | (2,094) | 14 | 13 | 15 | (91,001) |
| General Conformity Threshold | 50 | 50 | 100 | 100 | 70 | 70 | -- |
| Exceed Threshold? | No | Yes | No | No | No | No | N/A |
| **EMU Technology Option** | | | | | | | |
| Railway Emissions | <1 | 29 | 5 | 3 | 1 | 1 | 18,197 |
| Mobile-source Emissions | (85) | (74) | (2,830) | (3) | (10) | (5) | (173,422) |
| Net Emissions | (85) | (45) | (2,825) | <1 | (9) | (4) | (155,225) |
| General Conformity Threshold | 50 | 50 | 100 | 100 | 70 | 70 | -- |
| Exceed Threshold? | No | No | No | No | No | No | N/A |

[a] Criteria pollutant emissions expressed in short tons (1 ton = 2,000 lbs); $CO_2e$ emissions expressed in metric tons (1 ton = 2,204.62 lbs)

Source: ICF International, May 2010.

### Victorville Station Site 3

*Permanent Effects*

Relative to the Victorville station options evaluated in the Draft EIS, VV3 is 4.5 miles north of VV2, and 6 miles north of VV1. The facilities and associated activities at VV3 would be the same as either VV1 or VV2.

The air quality analysis in **Section 3.11.4** of the Draft EIS utilized VV2 to calculate emissions. VV3 would be located 4.5 miles further north along the I-15 freeway resulting in a slightly longer vehicle trip from for most southern California based passengers and slightly shorter train trip to Las Vegas.

To determine if VV3 would substantially change ridership, the ridership forecasts were reviewed. The review determined the location of VV3 would result in a less than one percent change in ridership. It was also determined that while vehicle travel time to VV3 would be three to four minutes longer than trips to VV1 or VV2, this would not constitute a

substantially increase in overall vehicle travel time from southern California origins.[2] Because of the modest increase in travel time, traffic-related air quality effects would remain similar to those discussed in the Draft EIS.

However, vehicles accessing VV3 would use different local roadways, primarily Dale Evans Parkway to access the station. A CO hotspot analysis was conducted to determine localized air quality effects from project-related traffic. **Tables S-3.11-9** and **S-3.11-10** summarize the results of the CO hotspot analysis which determined that traffic associated with VV3 would not result in localized CO concentrations exceeding either 1-hour or 8-hour national ambient air quality standards for CO.

*Temporary Effects*

The parking options for VV3 plan for surface parking areas ranging from about 111 acres (VV3B) to 130 acres (VV3A). VV3A would thus have a slightly larger surface parking area than VV1 or VV2 (107 and 115 acres respectively). The increase in parking area size would result in VV3A having a marginal increase in criteria pollutant emissions and GHG emissions associated with site grading, asphalt paving activity, and truck haul trips relative to VV1 or VV2.

**OMSF 2**

*Permanent Effects*

The proposed revision to OMSF 2 would reduce the footprint size but would not alter the number of employees or overall activities occurring at the site. Since pollutant emissions were calculated based on the proposed activities at the site, and these have not changed, there would be no change to the air pollutant emissions previously calculated for this site.

*Temporary Effects*

The total construction footprint for OMSF2 has been reduced by 21.7 acres since completion of the Draft EIS and therefore less grading and construction equipment would be required at this site. As a result of the reduced construction footprint, the revised OMSF2 site would result in fewer adverse construction period air quality and global climate effects when compared to the OMSF 2 site in the Draft EIS.

[2] Stantec Consulting Services, April 13, 2010.

Table S-3.11-9 VV3 Local Area Hotspot Analysis, 2013

| Intersection | Technology Option | Maximum 1-Hour 2013 Base Concentration (ppm)[b] | Maximum 1-Hour 2013 With Project Concentration (ppm)[b] | Significant 1-Hour Concentration Impact?[c] | Maximum 8-Hour 2013 Base Concentration (ppm)[d] | Maximum 8-Hour 2013 With Project Concentration (ppm)[d] | Significant 8-Hour Concentration Impact?[e] |
|---|---|---|---|---|---|---|---|
| I-15 NB Ramps and Dale Evans Parkway | DEMU | 3.0 | 3.7 | No | 1.9 | 2.4 | No |
| | EMU | 3.0 | 4.3 | No | 1.9 | 2.8 | No |
| I-15 SB Ramps and Dale Evans Parkway | DEMU | 3.0 | 3.7 | No | 1.9 | 2.4 | No |
| | EMU | 3.0 | 4.2 | No | 1.9 | 2.7 | No |
| Station Access #1 and Dale Evans Parkway | DEMU | 2.9 | 3.8 | No | 1.8 | 2.4 | No |
| | EMU | 2.9 | 4.2 | No | 1.8 | 2.7 | No |
| Future Street and Dale Evans Parkway | DEMU | 2.6 | 3.4 | No | 1.6 | 2.2 | No |
| | EMU | 3.0 | 3.5 | No | 1.9 | 2.2 | No |
| Future Street and Station Access #5 | DEMU | 3.1 | 3.3 | No | 2.0 | 2.1 | No |
| | EMU | 3.1 | 3.4 | No | 2.0 | 2.2 | No |

DEMU=Diesel-electric multiple unit train
EMU=Electric multiple unit train
ppm = parts per million
[a] Peak hour traffic volumes are based on the Traffic Impact Analysis prepared for the project by DMJM Harris/AECOM, October 2009.
[b] Includes 1-hour background concentration of 2.6 ppm.
[c] The state standard for the 1-hour average CO concentration is 20 ppm.
[d] Includes 8-hour ambient background concentration of 1.6 ppm.
[e] The state standard for the 8-hour average CO concentration is 9 ppm.

Source: ICF Jones & Stokes, November 2009.

Table S-3.11-10 VV3, Local Area Hotspot Analysis, 2030

| Intersection | Technology Option | Maximum 1-Hour 2030 Base Concentration (ppm)[b] | Maximum 1-Hour 2030 With Project Concentration (ppm)[b] | Significant 1-Hour Concentration Impact?[c] | Maximum 8-Hour 2030 Base Concentration (ppm)[d] | Maximum 8-Hour 2030With Project Concentration (ppm)[d] | Significant 8-Hour Concentration Impact?[e] |
|---|---|---|---|---|---|---|---|
| I-15 NB Ramps and Dale Evans Parkway | DEMU | 2.9 | 3.1 | No | 1.8 | 2.0 | No |
| | EMU | 2.9 | 3.1 | No | 1.8 | 2.0 | No |
| I-15 SB Ramps and Dale Evans Parkway | DEMU | 3.1 | 3.3 | No | 2.0 | 2.1 | No |
| | EMU | 3.1 | 3.4 | No | 2.0 | 2.2 | No |
| Future Street and Dale Evans Parkway | DEMU | 3.2 | 3.2 | No | 2.0 | 2.0 | No |
| | EMU | 3.2 | 3.2 | No | 2.0 | 2.0 | No |

DEMU=Diesel-electric multiple unit train
EMU=Electric multiple unit train
ppm = parts per million
[a] Peak hour traffic volumes are based on the Traffic Impact Analysis prepared for the project by DMJM Harris/AECOM, October 2009.
[b] Includes 1-hour background concentration of 2.6 ppm.
[c] The state standard for the 1-hour average CO concentration is 20 ppm.
[d] Includes 8-hour ambient background concentration of 1.6 ppm.
[e] The state standard for the 8-hour average CO concentration is 9 ppm.

Source: ICF Jones & Stokes, November 2009.

### Segment 2C

*Permanent Effects*

Segment 2C would reduce the total track mileage compared to Segment 1 and Segments 2A/2B alignments because it would follow a more direct route along the I-15 Freeway. This would result in a slight reduction in train emissions when compared to the project alternative evaluated in the Draft EIS. Segment 2C would not affect ridership and therefore would not result in any change in automobile related emissions.

*Temporary Effects*

Segment 2C would be shorter than the combination of Segment 1 and either Segment 2A or Segment 2B, and would therefore require less construction. The shorter rail alignment would result in less construction activity, and less construction period air quality impacts, including GHG emissions related to construction equipment and truck haul trips, when compared with the analysis for the alignment in the Draft EIS. No new adverse construction period effects would occur.

### Segment 4C

*Permanent Effects*

Segment 4C would result in a marginal increase in the emissions of criteria pollutants, GHGs, and toxic air contaminant (TAC) relative to Segment 4A or Segment 4B, insofar as Segment 4C would be about 8 miles longer than Segment 4A or 4B routing options.

Air quality analysis in the Draft EIS utilized Segment 4A as part of the total action alternative for quantitative air quality modeling. Substituting Segment 4C for Segment 4A would result in a marginal increase in total project air pollutant emissions, but would not result in a significant change in overall air pollutant emissions. The proposed project utilizing Segment 4C would continue to result in an overall reduction in total criteria pollutant, GHG, and TAC emissions compared to the No Action Alternative.

*Temporary Effects*

Construction of Segment 4C would require tunneling at three locations and would result in higher air pollutant emissions during temporary construction than either Segment 4A or Segment 4B. Mitigation Measures in **Section 3.11.5** of the Draft EIS would be applied for construction to ensure compliance with fugitive dust control requirements.

### Relocated Sloan MSF and Wigwam MSF Modification

*Permanent Effects*

Any MSF in the Las Vegas area would result in minor contributions of air pollutant emissions and GHGs. Operational air pollutant emissions from any of the proposed MSFs (Wigwam, Robindale, or the RSMSF) would be generated by employee travel to and from the site. The RSMSF is located the greatest distance from metropolitan Las Vegas; employee trips to this site would thus likely be the longest and thus have an incremental potential to result in the greatest air pollutant and GHG emissions impacts of the three sites under consideration.

*Temporary Effects*

The proposed changes to these MSFs would not substantially reduce the footprint or other aspects of these facilities that would change the construction air quality effects, including the generation of GHGs, discussed in the Draft EIS. No new adverse effects would occur.

**Frias Substation**

*Permanent Effects*

The proposed Frias Substation would be an unmanned electrical substation. The substation would not itself directly generate air pollutants or GHGs. Vehicle trips to the site (which could cause air pollutant or GHG emissions) would be limited to maintenance visits. As such, no substantial operational impacts would result. Moreover, the Frias Substation would be located immediately adjacent to the Arden-Tolson electrical transmission line and would therefore not require an extensive utility corridor, such as would be required to connect the electrical substation that is a component of the RSMSF.

*Temporary Effects*

The Frias Substation is a project addition and therefore construction related air quality effects would be in addition to those analyzed in **Section 3.11.4** of the Draft EIS.

The proposed Frias Substation would have a footprint of approximately 4.6 acres. Construction would require site grading, trenching, foundation construction, and utility structure/power line installations. Construction duration is anticipated to be two months or less. Facility construction would occur concurrent with adjacent track installation and require similar construction equipment.

The criteria air pollutant, TAC, and GHG emissions that would occur as a result of facility construction would represent a small fraction of the total regional emissions that would result from overall project construction. With respect to localized impacts, sensitive receptors closest to the proposed facility include areas of single-family residential development approximately 250 feet to the north and to the south of the proposed substation site. During the approximately two months of facility construction, these sensitive uses would experience a marginal exposure increase to localized criteria pollutant and TAC emissions. Mitigation Measures prescribed in **Section 3.11.5** of the Draft EIS, however, would, be applied to the Frias Substation. There would be no long-term emissions associated with this proposed facility following short-term construction.

**Alignment Adjustment Areas and Profile Modification**

*Permanent Effects*

The proposed AAAs would be minor alignment shifts (up to 400 feet) that would not substantially affect operating characteristics and therefore not result in a change in air quality effects discussed in the Draft EIS.

*Temporary Effects*

The AAAs would only result in minor shifts to the railway, the construction footprint would be similar to the alignments analyzed in the Draft EIS. The slight shift in the construction footprint would have no material effect on the anticipated construction-related emissions.

The Profile Modification is a 1.3 mile portion of the alignment in Segment 3B in the Mojave Desert Air Basin that would be depressed and constructed in a retained cut. This Profile Modification would require additional site work as well as retaining wall construction, when compared to the project alignment as evaluated in the Draft EIS.

The criteria air pollutant, TAC, and GHG emissions that would occur as a result of this Profile Modification would represent a small fraction of the total regional emissions that would result from overall project construction. With respect to localized impacts, there are no sensitive receptors present within a radius of several miles that have potential to be adversely affected by the marginal increase in localized pollutant emissions. Mitigation Measures prescribed in **Section 3.11.5** of the Draft EIS, however, would be applied to the Profile Modification. There would be no long-term emissions associated with this proposed facility following short-term construction.

## 3.11.4 Mitigation Measures

**Mitigation Measures AQ-1** and **AQ-3** identified in **Section 3.11.5** of the Draft EIS would be applied during the construction of new rail alignments, station site options, operations and maintenance facilities, substation, Profile Modification and alignment adjustments. These mitigation measures would reduce fugitive dust emissions by requiring a fugitive dust control plan for each of the two air basins. Control measures required by the dust control plans would include watering for stabilization of disturbed surface area, covering loaded haul vehicles, and reducing non-essential earth-moving activities during high wind conditions. No additional mitigation would be required.

**Mitigation Measures AQ-2** and **AQ-4**, would continue to apply to the Alignment Adjustments, Profile Modification, and new rail alignments to reduce $NO_X$ if the DEMU technology option is chosen. These mitigation measures require the purchase or acquisition of $NO_X$ emission offset credits in each air basin.

## 3.11.5 Residual Impacts Following Mitigation

**Mitigation Measures AQ-1** and **AQ-3** would minimize fugitive dust impacts during project construction and **Mitigation Measures AQ-2** and **AQ-4** would mitigate $NO_X$ if the DEMU technology option is selected. Following implementation of these mitigation measures, the project modifications and additions would not result in any residual impacts.

# 3.12 NOISE AND VIBRATION

This section describes the noise and vibration conditions and impacts for the project modifications and additions. The section also discusses appropriate mitigation measures for the project modifications and additions.

## 3.12.1 AFFECTED ENVIRONMENT

Procedures and standards pertinent to noise and vibration identified in **Section 3.12.3** of the Draft EIS have not changed since publication of the Draft EIS and remain applicable to the project modifications and additions.

In addition to evaluating the noise and vibration impacts of the proposed project modifications and additions, the noise analysis for Segment 6 contained in **Section 3.12.6.2** of the Draft EIS has also been updated to reflect the plan and profile of the rail alignment alternatives through the metropolitan Las Vegas area between Blue Diamond Road and Flamingo Road, which are on an elevated structure at a height of approximately 63 feet. In addition, the noise analysis is updated to reflect the addition of a noise-sensitive land use in Segment 6, a mobile home park immediately east of I-15 at Blue Mountain Road.

### Regional Conditions

Since publication of the Draft EIS, there has been no substantial change to the regional noise and vibration environment within the project area. No major changes to the transportation patterns or land uses have occurred since publication of the Draft EIS other than the construction of a mobile home park immediately adjacent to Segment 6.

Of the proposed project modifications and additions, Segment 2C and Segment 4C would occur in areas not previously studied. Segment 2C would follow the I-15 freeway corridor through central Barstow. In Segment 4, Segment 4C would traverse undeveloped desert lands north and west of Segment 4B evaluated in **Section 3.12.6.2** of the Draft EIS. A discussion of the specific noise and vibration environments within the vicinity of Segment 2C and Segment 4C is provided below.

For project modifications and additions other than Segment 2C, the analysis relies upon the noise measurements identified in **Section 3.12.5.1** of the Draft EIS. Refer to **Table 3.12-6** of the Draft EIS for existing noise measurements.

### Victorville Station Site 3

VV3, including either parking option, would be located to the west of the I-15 freeway corridor in a generally undeveloped area near the Dale Evans Parkway/I-15 interchange. There are no noise- or vibration-sensitive land uses, such as residential developments or public parks, located within 1,000 feet of the proposed VV3 site. Existing noise in the vicinity of this site is dominated by traffic on I-15 and limited traffic volumes on Dale Evans Parkway.

The primary vibration source in this area is the I-15 freeway. The surrounding land is undeveloped and vacant and there are no other primary vibration sources in the vicinity of the VV3 site that would contribute to the existing vibration conditions.

### OMSF 2

The location of this facility has not changed. Only the site's footprint has been reduced. There are no noise- or vibration-sensitive uses located within 1,000 feet of OMSF 2.

### Segment 2C

**Appendix S-D** provides the detailed noise and vibration evaluation for the Segment 2C alignment options.

The Segment 2C alignment options would follow the existing I-15 corridor through the community of Lenwood and the City of Barstow. For both Segment 2C alignment options, there are a number of hotels located on the east side of the I-15 freeway near an outlet mall. There are a number of single-family residential areas adjacent to the Segment 2C alignment options through Barstow. The residential areas are located on the south side of the I-15 freeway in the western portion of Barstow and on the north and south sides of the I-15 freeway in central and eastern Barstow.

Existing noise within the vicinity of the Segment 2C alignment options is dominated by traffic on the I-15 freeway with traffic on local roads and neighborhood activity also contributing to the ambient noise level.

Noise measurements were taken within Barstow along the I-15 freeway corridor, near existing residential neighborhoods. **Table S.3-12-1** shows the existing ambient noise levels in the vicinity of the Segment 2C alignment options. **Figure S-3.12-1** depicts the location of these noise measurements. The existing noise levels at these residential areas range from approximately 62 dBA to 66dBA. Noise levels of 66 dBA are typical of urban environments but are at the limit for normally acceptable noise levels for residential uses.

Table S-3.12-1 Existing Ambient Noise Measurements – Segment 2C

| Site No. | Measurement Location | Start of Measurement | | Measurement Time (hrs) | Noise Exposure Ldn (dBA) |
|---|---|---|---|---|---|
| | | Date | Time | | |
| LT-S1 | 27788 Church Avenue, Barstow | 10-13-09 | 11:00 | 24 | 62 |
| LT-S2 | 1204 Virginia Way, Barstow | 10-13-09 | 13:00 | 24 | 66 |

Source: HMMH, 2010.

### Segment 4C

The proposed rail alignment for Segment 4C traverses through undeveloped desert lands and the Clark Mountain range north of Mountain Pass, east of the northern unit of the Mojave National Preserve. There are no noise- or vibration-sensitive uses located within 1,000 feet of Segment 4C. There are no residential developments near Mountain Pass. The closest potential noise- and vibration-sensitive receptors are located in Primm, NV, which include several hotels immediately adjacent to the I-15 corridor at the California-

Nevada border. The nearest noise- or vibration-sensitive use is located more than 2,000 feet from the proposed rail alignment.

Existing noise in this area is dominated by traffic on the I-15 freeway corridor. Through the Clark Mountains and into the undeveloped desert area, there are no substantial permanent noise sources.

There are no substantial vibration sources within the vicinity of the majority of Segment 4C, given the undeveloped nature of the desert lands southwest of the California-Nevada state line. Northeast of the state line, the northern portion of Segment 4C would be located north/northwest of Primm and the I-15 corridor. In this northern portion, the primary vibration source is the existing I-15 freeway corridor.

**Relocated Sloan MSF**

The Relocated Sloan MSF (RSMSF) site is located immediately adjacent to the I-15 freeway corridor within an undeveloped area. The lands surrounding the RSMSF site are vacant, with the nearest development located approximately 4 miles to the south in Jean. There are no noise- or vibration-sensitive uses located within 1,000 feet of the RSMSF site. Existing noise in the vicinity is dominated by traffic on the I-15 freeway.

The primary vibration source in this area is the I-15 freeway. The surrounding land is undeveloped and vacant and there are no other primary vibration sources in the vicinity of the RSMSF site that would contribute to the existing vibration conditions.

**Frias Substation**

The Frias Substation site is located in the southern Las Vegas metropolitan area, immediately adjacent to the I-15 freeway corridor. There are a number of single-family residential uses within 1,000 feet of the proposed site, including several clusters of 3 to 4 homes. Residential uses are located to the north on West Haleh Avenue and south on Dean Martin Drive and Polaris Avenue. Existing noise in this area is dominated by traffic on the I-15 freeway, and to a lesser extent, neighborhood traffic on local roads.

The primary source of vibration in the area is the I-15 freeway, located immediately east of the substation site. No other major vibration sources exist within close proximity to the site that would contribute to the existing vibration condition.

**Segment 6 – Revised Draft EIS Evaluation**

Since the original noise measurements taken for the Draft EIS, which are detailed in **Section 3.12.5.1** of the Draft EIS, a mobile home park (the Oasis Las Vegas Motor Coach Park) was developed immediately east of the I-15 freeway in the southeastern quadrant of the I-15/Blue Mountain Road interchange. Development of this mobile home park introduced new noise- and vibration-sensitive uses within close proximity of the Segment 6 rail alignments.

Other noise- and vibration- sensitive uses within the vicinity of Segment 6 include residential developments west of the I-15 freeway and hotels and motels on both side of the I-15 freeway corridor.

While there are new noise- and vibration sensitive uses, there has not been any substantial change in the ambient noise environment. As a result, the original noise measurements taken for Segment 6 and reported in **Section 3.12.5.1** of the Draft EIS still apply.

**Table S-3.12-2** shows the existing ambient noise levels for Segment 6. The existing noise environment ranges from 66 dBA to 71 dBA, which are typical of an urban environment but at the general limit for normally acceptable noise environments for residential areas.

Table S-3.12-2 Existing Ambient Noise Levels – Segment 6

| Site No. | Measurement Location | Start of Measurement | | Measurement Time (hrs) | Noise Exposure Ldn (dBA) |
|---|---|---|---|---|---|
| | | Date | Time | | |
| LT-7 | 3075 Haleh St, Las Vegas, NV | 7-25-06 | 19:00 | 24 | 66 |
| LT-8 | 7592 Thistle Poppy St, Las Vegas, NV | 7-25-06 | 20:00 | 24 | 71 |
| LT-9 | 4205 W. Tropicana Ave, Las Vegas, NV | 7-26-06 | 16:00 | 24 | 70 |

Source: HMMH, 2010.

### Alignment Adjustment Areas

AAAs 1 through 7 would not change noise and vibration levels associated with portions of Segments 2A/2B, 3B, and 6B. Existing noise and vibration in these areas is dominated by traffic on the I-15 freeway corridor.

AAA 8 would shift a portion of Segment 6B outside of the existing I-15 freeway corridor and into the median of Dean Martin Drive/Industrial Road between Hacienda Avenue and Tropicana Avenue, closer to existing noise- and vibration-sensitive uses located along Dean Martin Drive/Industrial Road. The existing noise- and vibration-sensitive uses include residential areas west of the I-15 freeway, a large mobile home park on the east side of I-15, and numerous hotels on both sides of the I-15 freeway. The primary source of noise and vibration in the area is the I-15 freeway corridor. To a lesser extent, neighborhood traffic also contributes to the existing noise environment.

Noise measurement LT-7 listed in **Table S-3.12-2** provides a representative existing noise level for the general vicinity of AAA 8. **Appendix S-D** provides the detailed noise and vibration evaluation for Segment 6B ad modified by AAA 8.

### Wigwam MSF Modification

While the development footprint of the Wigwam MSF has been modified, the location of this facility has not changed since publication of the Draft EIS. The existing noise and vibration levels are the same as presented for the Wigwam MSF in **Section 3.12.5.2** of the Draft EIS. There are a number of single-family residential uses within 1,000 feet of the Wigwam MSF site, including small clusters of three to four residences to the west on Dean Martin Drive and north on Wigwam Avenue. Existing noise in this area is dominated by traffic on the I-15 freeway, and to a lesser extent, neighborhood traffic on the nearby local roads.

The primary vibration source within this area is the I-15 freeway to the east. No other major vibration sources exiting within close proximity to the site that would contribute to the existing vibration condition.

**Profile Modification**

The proposed profile modification is located in the same existing noise and vibration environment as Segment 3B as described in **Section 3.12.5.2** of the Draft EIS. Existing noise and vibration in the vicinity of the profile modification is dominated by traffic on the I-15 freeway.

## 3.12.2 Methods of Evaluation of Impacts

The same methodology used in **Section 3.12.4** of the Draft EIS was used to evaluate potential noise and vibration effects of the project modifications and additions. Future noise levels were modeled and compared to the existing noise measurements to determine the change in noise levels and specific noise impacts.

There are two levels of noise impact considered – "severe" and "impact." These two classifications are consistent with FRA noise impact criteria.

- *Severe:* Severe noise impacts identify locations where a significant percentage of people would be highly annoyed by noise from the high-speed rail alignment. FRA particularly encourages noise abatement on high-speed train projects where such severe noise impacts are identified.
- *Impact:* A noise impact identifies an area where the change in the cumulative noise level is noticeable to most people, but may not be sufficient to cause strong, adverse reactions from the community. In this transitional area, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation. These other factors can include the predicted increase over existing noise levels and the types and numbers of noise-sensitive land uses affected.

Noise is typically defined as unwanted or undesirable sound. The basic parameters of environmental noise that affect human response are (1) intensity or level, (2) frequency content, and (3) variation with time. The intensity of level of noise is expressed on a compressed scale in units of decibels (dB). By using this scale, the range of normally encountered sound can be expressed by values between 0 and 120 dB. On a relative scale, a 3 dB change in sound is usually the smallest of unit of change in noise levels perceptible to the human ear, whereas a 10 dB change in sound level would typically be perceived as a doubly (or halving) in the loudness of a sound. Noise levels and intensity also involve varying frequencies. As the sensitivity of human hearing varies with frequency, the A-weighting system is commonly used when measuring environmental noise to provide a single number descriptor that correlates with the human subjective response. Sound levels measured using this weighting system are called "A-weighted" sound level, and are expressed in dB notation a dBA. At a distance of 50 feet, a noise level of 60 dBA is

equivalent to a commercial air conditioner, 70 dBA is equivalent to a lawn mower, 80 dBA is equivalent to a bus travelling at 55 miles per hour (mph), and 90 dBA is equivalent to a jack hammer.

Sensitivity to noise also increases at night, as the background noise levels are typically limited and the overall ambient noise levels are usually lower than noise levels during the day. The Day-Night Sound Level ($L_{dn}$) is used to calculate a 24-hour period of cumulative noise exposure, with an added 10 dB penalty imposed on noise that occurs during the nighttime hours (between 10:00 PM and 7:00 AM).

In regards to vibration, the potential vibration impact from the project modifications and additions was assessed on an absolute basis using FRA criteria, which is based on land use and train frequency. **Table S-3.12-3** summarizes the vibration impact criteria. The vibration propagation tests conducted for the evaluation in **Section 3.12.6.2** of the Draft EIS were utilized as part of this Supplemental Draft EIS. The train vibration characteristics were combined with the ground vibration propagation test results to project vibration levels as a function of distance for the project modifications and additions.

Table S-3.12-3 Vibration Impact Criteria

| Land Use Category | Ground-Borne Vibration Impact (VdB re: 1 mico-inch/sec) | |
|---|---|---|
| | Frequent Events[1] | Infrequent Events[2] |
| Category 1: Buildings where vibration would interfere with interior operations | 65 VdB[3] | 65 VdB[3] |
| Category 2: Residences are buildings where people normally sleep | 72 VdB | 80 VdB |
| Category 3: Institutional land uses with primarily daytime use | 75 VdB | 83VdB |

Source: Federal Railroad Administration, 2005.
Notes:
1 – Frequent Events is defined as more than 70 vibration events per day.
2 – Infrequent events is defined as fewer than 70 vibration events per day.
3 – This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often require special design of the HVAC systems and stiffened floors.

This evaluation considers noise and vibration effects of the project modifications and additions for both the operational period and construction period, consistent with the evaluation of the action alternatives in **Section 3.12.6.2** of the Draft EIS. It is assumed that operation period effects would be permanent, while construction period effects would be temporary in nature.

## 3.12.3 Environmental Consequences

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. The discussions below consider the project modifications and additions per these criteria.

### Regional Conditions

The proposed project modifications and additions would not introduce any new type of feature not previously considered in **Section 3.12.6.2** of the Draft EIS. Thus, there would be no substantial change to the conclusions of the regional noise and vibration effects as presented in **Section 3.12.5.1** of the Draft EIS.

### Victorville Station Site 3

*Operational Period Noise and Vibration*

VV3 would introduce new noise and vibration sources associated with train activities within the station area during operation. However, there are no noise- or vibration-sensitive receptors in close proximity to the site. As such, no operational period noise or vibration effects would occur.

*Construction Effects*

Construction of VV3 for either parking option would introduce temporary noise and vibration sources during construction activities. Since there are no sensitive receptors within 1,000 feet of VV3 for either parking option, no construction noise or vibration effects would occur.

### Segment 2C

**Appendix S-D** provides the detailed noise and vibration evaluation for the Segment 2C alignment options.

*Operational Period Noise*

Operation of the Segment 2C alignment options would result in an increase in noise associated with train pass-bys and would result in adverse noise effects on the adjacent noise- and vibration-sensitive hotel and residential uses.

The EMU and DEMU technology options would result in varying noise effects. The DEMU has a higher reference noise level (a noise level at a specific distance and speed) than the EMU. While the EMU technology option has a maximum speed of 150 mph and the DEMU technology option has a maximum speed of 125 mph, the speed difference is not large enough to overcome the higher reference level for the DEMU technology option at the maximum speed conditions.

***Segment 2C Side Running:*** **Tables S-3.12-4** and **S-3.12-5** summarize the noise effects associated with operation of the Segment 2C Side Running alignment for the EMU and DEMU technology options, respectively.

Noise effects along the Segment 2C Side Running alignment would be limited to areas within Barstow and Yermo, where the rail alignment would be in close proximity to the hotel and residential uses immediately adjacent to the I-15 freeway.

Table S-3.12-4 Noise Impacts for Segment 2C Side Running – EMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Lenwood Rd, Days Inn | SB | 215 | 62 | 63 | 58 | 64 | 65 | 3.6 | 1 | 0 |
| Lenwood Rd, Country Inn and Suites | NB | 365 | 62 | 60 | 58 | 64 | 64 | 2.3 | 1 | 0 |
| L St to H St | SB | 130-350 | 62 | 58-63 | 58 | 64 | 63-65 | 1.7-3.7 | 4 | 0 |
| Grace St | SB | 45-150 | 66 | 61-69 | 61 | 66 | 67-71 | 1.3-5.0 | 7 | 15 |
| Mount Vernon Ave, Church of the Nazarene | SB | 45 | 60 | 71 | 62 | 68 | 71 | 11.0 | 0 | 1 |
| Coolwater Ln, Days Inn | SB | 110 | 66 | 64 | 61 | 66 | 68 | 2.3 | 1 | 0 |
| Western Whip Ct to Muriel Dr | SB | 60-190 | 66 | 61-68 | 61 | 66 | 67-70 | 1.2-4.0 | 7 | 8 |
| Muriel Dr to Kelly Dr | SB | 50-200 | 66 | 61-69 | 61 | 66 | 67-70 | 1.2-4.7 | 35 | 9 |
| Elephant Mountain Rd | SB | 170 | 63 | 60 | 60 | 65 | 65 | 1.6 | 3 | 0 |
| Ghost Town Rd, Oak Tree Inn | NB | 160 | 63 | 60 | 60 | 65 | 65 | 1.8 | 1 | 0 |
| Total | | | | | | | | | 60 | 33 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

Table S-3.12-5 Noise Impacts for Segment 2C Side Running – DEMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Lenwood Rd, Days Inn | SB | 215 | 62 | 64 | 58 | 64 | 66 | 4.2 | 1 | 0 |
| Lenwood Rd, Country Inn and Suites | NB | 365 | 62 | 61 | 58 | 64 | 64 | 2.7 | 1 | 0 |
| Ironwood Rd to L St. | NB | 225-295 | 62 | 59-60 | 58 | 64 | 63-64 | 1.9-2.5 | 4 | 0 |
| L St to H St | SB | 130-775 | 62 | 59-65 | 58 | 64 | 63-67 | 1.8-5.3 | 11 | 1 |
| Grace St | SB | 45-250 | 66 | 61-72 | 61 | 66 | 67-73 | 1.2-6.9 | 26 | 17 |
| Mount Vernon Ave, Church of the Nazarene | SB | 45 | 60 | 73 | 62 | 68 | 73 | 13.4 | 0 | 1 |
| Grace St, Victory Outreach | SB | 220 | 60 | 63 | 62 | 68 | 65 | 4.8 | 1 | 0 |
| Sandalwood Ct | NB | 220-325 | 66 | 61-63 | 61 | 66 | 67-68 | 1.3-1.9 | 12 | 0 |
| Coolwater Ln, Days Inn | SB | 110 | 66 | 67 | 61 | 66 | 69 | 3.5 | 0 | 1 |
| Western Whip Ct to Muriel Dr | SB | 60-270 | 66 | 61-70 | 61 | 66 | 67-71 | 1.4-5.4 | 15 | 14 |
| Muriel Dr to Kelly Dr | SB | 50-290 | 66 | 61-71 | 61 | 66 | 67-72 | 1.3-6.5 | 57 | 14 |
| Center Ln to Mojave River | NB | 330 | 66 | 61 | 61 | 66 | 67 | 1.3 | 2 | 0 |
| Hacienda Ln | NB | 300 | 63 | 60 | 60 | 65 | 65 | 1.8 | 5 | 0 |
| Elephant Mountain Rd | SB | 170 | 63 | 61 | 60 | 65 | 65 | 2.0 | 3 | 0 |
| Ghost Town Rd, Oak Tree Inn, | NB | 160 | 63 | 61 | 60 | 65 | 65 | 2.2 | 1 | 0 |
| Total | | | | | | | | | 139 | 48 |

Source: HMMH, 2010 Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

*Lenwood Road, Days Inn/Country Inn and Suites, Barstow* – There are several motels, including the Days Inn and County Inn and Suites, on the east side of I-15 freeway. The Segment 2C Side Running alignment would be located across the I-15 freeway to the west. The noise impact is due to the low existing noise levels at this location.

*Ironwood Road to H Street, Barstow* – There are a number of single-family residences to the north and south of the I-15 freeway corridor within western Barstow. The noise impacts in this location are due to the low existing noise levels and the proximity of the residences to the rail alignment.

*Grace Street, Barstow* – There are a number of single-family and multi-family residences to the north of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the rail alignment.

*Mount Vernon Avenue, Church of the Nazarene, Barstow* – There is a church adjacent to the residential area on Grace Street to the north of I-15. The noise impact at this location is due to the close proximity of the church to the rail alignment.

*Grace Street, Victory Outreach, Barstow* – There is a second church adjacent to the residential area on Grace Street to the north of I-15. The noise impact at this location is due to the close proximity of the church to the rail alignment.

*Sandalwood Court, Barstow* – There are a number of single-family residences to the south of I-15 in this area. The noise impacts at this location are due to the close proximity of the residence to the rail alignment.

*Coolwater Lane, Days Inn, Barstow* – There is a motel adjacent to a single-family residential area to the north of I-15 in the center of Barstow. The noise impact at this location is due to the close proximity of the motel to the rail alignment.

*Western Whip Court to Mojave River, Barstow* – There are a number of single-family residences to the north of I-15 and a mobile home park and several scattered residences to the south of I-15 in this portion of Barstow. The noise impacts are due to the proximity of the residences and mobile home park to the rail alignment.

*Hacienda Lane, Barstow* – There are several single-family residences to the south of I-15 at this location. The noise impacts are due to the low existing noise levels and the close proximity of the residences to the rail alignment.

*Elephant Mountain Road, Yermo* – There are a number of single-family residences to the north of I-15 at this location. The noise impacts are due to the low existing noise levels and the close proximity of the residences to the rail alignment.

*Ghost Town Road, Oak Tree Inn, Yermo* – There is a motel to the south of I-15 at this location. The noise impact is due to the low existing noise levels and the close proximity of the motel to the rail alignment.

***Segment 2C Median:*** **Tables S-3.12-6** and **S-3.12-7** summarizes noise effects associated with operation of the Segment 2C Median alignment option for the EMU and DEMU technology options, respectively.

Table S-3.12-6 Noise Impacts for Segment 2C Median – EMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Days Inn, Lenwood Rd | SB | 215 | 62 | 63 | 58 | 64 | 65 | 3.6 | 1 | 0 |
| Country Inn and Suites, Lenwood Rd | NB | 365 | 62 | 60 | 58 | 64 | 64 | 2.3 | 1 | 0 |
| L St to H St | SB | 130-350 | 62 | 58-63 | 58 | 64 | 63-65 | 1.7-3.7 | 4 | 0 |
| Grace St | SB | 150-170 | 66 | 61-62 | 61 | 66 | 67 | 1.3-1.5 | 14 | 0 |
| Church of the Nazarene, Mount Vernon Ave | SB | 150 | 60 | 63 | 62 | 68 | 65 | 5.2 | 1 | 0 |
| Sandalwood Ct | NB | 120-180 | 66 | 62-64 | 61 | 66 | 67-68 | 1.4-2.1 | 9 | 0 |
| Western Whip Ct to Muriel Dr | SB | 110 | 66 | 64 | 61 | 66 | 68 | 2.3 | 14 | 0 |
| Muriel Dr to Kelly Dr | SB | 125-170 | 66 | 61-64 | 61 | 66 | 67-68 | 1.2-2.1 | 29 | 0 |
| Center Ln to Mojave River | NB | 190 | 66 | 61 | 61 | 66 | 67 | 1.3 | 3 | 0 |
| Elephant Mountain Rd | SB | 170 | 63 | 60 | 60 | 65 | 65 | 1.6 | 3 | 0 |
| Oak Tree Inn, Ghost Town Rd | NB | 160 | 63 | 60 | 60 | 65 | 65 | 1.8 | 1 | 0 |
| Total | | | | | | | | | 80 | 0 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

Table S-3.12-7 Noise Impacts for Segment 2C Median – DEMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Days Inn, Lenwood Rd | SB | 215 | 62 | 64 | 58 | 64 | 66 | 4.2 | 1 | 0 |
| Country Inn and Suites, Lenwood Rd | NB | 365 | 62 | 61 | 58 | 64 | 64 | 2.7 | 1 | 0 |
| Ironwood Rd to L St. | NB | 225-295 | 62 | 59-60 | 58 | 64 | 63-64 | 1.9-2.5 | 4 | 0 |
| L St to H St | SB | 130-775 | 62 | 59-65 | 58 | 64 | 63-67 | 1.8-5.3 | 11 | 1 |
| L St to H St | NB | 330 | 62 | 59 | 58 | 64 | 64 | 1.9 | 1 | 0 |
| Grace St | SB | 150-250 | 66 | 61-64 | 61 | 66 | 67-68 | 1.3-2.3 | 22 | 0 |
| Church of the Nazarene, Mount Vernon Ave | SB | 150 | 60 | 66 | 62 | 68 | 67 | 7.0 | 1 | 0 |
| Sandalwood Ct | NB | 120-350 | 66 | 61-66 | 61 | 66 | 67-69 | 1.2-3.3 | 21 | 2 |
| Western Whip Ct to Muriel Dr | SB | 110-250 | 66 | 62-67 | 61 | 66 | 67-69 | 1.6-3.5 | 12 | 14 |
| Muriel Dr to Kelly Dr | SB | 100-250 | 66 | 61-66 | 61 | 66 | 67-69 | 1.3-3.3 | 38 | 5 |
| Center Ln to Mojave River | NB | 190-270 | 66 | 61-63 | 61 | 66 | 67-68 | 1.3-2.0 | 6 | 0 |
| Hacienda Ln | NB | 300 | 63 | 60 | 60 | 65 | 65 | 1.8 | 5 | 0 |
| Elephant Mountain Rd | SB | 170 | 63 | 61 | 60 | 65 | 65 | 2.0 | 3 | 0 |
| Oak Tree Inn, Ghost Town Rd | NB | 160 | 63 | 61 | 60 | 65 | 65 | 2.2 | 1 | 0 |
| Total | | | | | | | | | 127 | 22 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

Similar to the Segment 2C Side Running alignment option, the noise effects along the Segment 2C Median alignment would be limited to areas within Barstow and Yermo, where the rail alignment would be in close proximity to the hotel and residential uses immediately adjacent to the I-15 freeway. The noise effects for the Segment 2C Median alignment option would be the same as those for the Segment 2C Side Running alignment option west of L Street in Barstow, as both rail alignments would follow the same I-15 side running corridor.

The noise impacts from the Segment 2C Median alignment option are the same as the Segment 2C Side Running alignment option at the following locations:

- Lenwood Road, Days Inn/Country Inn and Suites, Barstow
- Ironwood Road to H Street, Barstow
- Grace Street, Barstow
- Mount Vernon Avenue, Church of the Nazarene, Barstow
- Sandalwood Court, Barstow
- Western Whip Court to Mojave River, Barstow
- Hacienda Lane, Barstow
- Elephant Mountain Road, Yermo
- Ghost Town Road, Oak Tree Inn, Yermo

The Segment 2C Median alignment option would avoid impacts of the Segment 2C Side Running alignment option to the Victory Outreach Church on Grace Street and the Days Inn on Coolwater Lane in Barstow. No new areas of noise impact would occur.

Under the EMU technology option, the Segment 2C Median alignment option would result in a greater amount of noise impacts than the Segment 2C Side Running alignment option as the rail alignment would be located slightly closer to the residential uses to the south of the I-15 freeway corridor. However, the Segment 2C Median alignment option would avoid severe noise impacts of the Segment 2C Side Running alignment option due to its placement within the I-15 freeway median near the residential areas within central Barstow.

Under the DEMU technology option, the Segment 2C Median alignment option would result in fewer noise impacts and severe noise impacts as compared to the Segment 2C Side Running alignment option.

*Operational Period Vibration*

In terms of vibration, where near noise and vibration sensitive uses, the Segment 2C Side Running alignment would be constructed on an elevated structure. Under FRA criteria, the vibration criterion used for this assessment is 80 VdB, as the project operations would entail fewer than 70 train passbys per day. The use of elevated structures for the Segment 2C Side Running alignment would result in a 10 VdB reduction in vibration levels due to the attenuation of vibration as it travels through the elevated structure to the ground. The resulting vibration levels with the train passbys on the Segment 2C Side Running alignment would range from 50 VdB to 74 VdB at residences in the project area. These

vibration levels would not exceed the 80 VdB criterion and therefore not be considered significant.

The Segment 2C Median alignment would be constructed on an elevated structure within the vicinity of noise- and vibration-sensitive uses. Because there would be less than 70 train passbys per day, the vibration criterion used for this assessment is 80 VdB. The use of elevated structures for the Segment 2C Side Running alignment would result in a 10 VdB reduction in vibration levels due to the attenuation of vibration as it travels through the elevated structure to the ground. The resulting vibration levels associated with the train passbys on the Segment 2C median alignment would range from 50 VdB to 69 VdB at the closest residences. These vibration levels would not exceed the 80 VdB criterion and therefore not be considered significant.

*Construction Effects*

Construction of Segment 2C would introduce temporary construction related noise and vibration to areas not previously evaluated. As documented in **Section 3.12.6.1** of the Draft EIS, temporary noise during construction has the potential of being intrusive to sensitive receptors, such as residential developments, near the construction sites. Most of the construction would consist of site preparation and laying new track, and would only occur during daytime hours.

Segment 2C would include one temporary construction area (TCA), which could also generate construction noise related to mechanical equipment during construction hours. The TCA would not, however, be located within the vicinity of any noise- or vibration-sensitive uses. Potential construction noise impacts will be further evaluated and mitigated during final project design.

Construction activities would be carried out in compliance with all applicable local noise regulations. Specific residential property line noise limits will be developed during final design and included in the construction specifications for the project, and noise monitoring will be performed during construction to verify compliance with the limits.

**Segment 4C**

*Operational Period Noise and Vibration*

While Segment 4C would result in noise and vibration associated with passby of the high-speed train during operation, no sensitive receptors would be affected. There are no noise- or vibration-sensitive uses located within close proximity to the rail alignment. In the southern portion of Segment 4C, the rail alignment would traverse through undeveloped desert lands, with no noise- or vibration-sensitive uses. Within the vicinity of the northern portion of Segment 4C, there are several hotels immediately adjacent to the I-15 freeway corridor in Primm, however, the hotels would be more than 2,000 feet from the proposed rail alignment and would not be adversely affected by the operation of the high speed train.

*Construction Effects*

Construction of Segment 4C would introduce temporary construction related noise and vibration to areas not previously evaluated. As documented in **Section 3.12.6.1** of the Draft EIS, temporary noise during construction has the potential of being intrusive to sensitive receptors, such as residential developments, near the construction sites. Most of the construction would consist of site preparation and laying new track, and would only occur during daytime hours.

Segment 4C would include five TCAs, which could also generate construction noise related to mechanical equipment during construction hours. The TCAs would not, however, be located within the vicinity of any noise- or vibration-sensitive uses. Segment 4C would also introduce construction noise related to tunneling, which could result in temporary construction noise and vibration effects. Potential construction noise impacts will be further evaluated and mitigated during final project design.

Construction activities would be carried out in compliance with all applicable local noise regulations. Specific residential property line noise limits will be developed during final design and included in the construction specifications for the project, and noise monitoring will be performed during construction to verify compliance with the limits.

**Relocated Sloan MSF**

*Operational Period Noise and Vibration*

Operation of the RSMSF would introduce new noise and vibration sources associated with train activities and maintenance operations (i.e., mechanical equipment noise) within the vicinity of this facility. However, there are no noise- or vibration-sensitive receptors within 1,000 feet of this facility. Thus, no noise or vibration effects would occur from the operation of the RSMSF.

*Construction Effects*

Construction of the RSMSF would introduce temporary noise and vibration sources during construction activities. Since there are no sensitive receptors within 1,000 feet of the RSMSF, no construction noise or vibration effects would occur.

**Frias Substation**

*Operational Period Noise and Vibration*

The substation would be constructed as an open facility and would not require the use of fans or ventilation units, which typically serve as a primary noise source for this type of facility. While there could be a minor humming noise associated with the operation of the substation, this noise would not result in an impact to the adjacent or nearby residential developments. Further, the traffic noise associated with the I-15 freeway immediately adjacent to the Frias Substation site would remain the dominant noise source. No adverse operational noise or vibration effects would occur.

*Construction Effects*

Construction of the Frias Substation could result in temporary construction noise and vibration impacts to the adjacent residential developments. Construction noise associated with mechanical equipment, construction vehicles, and site preparation could introduce temporary noise and vibration beyond existing levels, which could temporarily affect the nearby noise- and vibration-sensitive residential developments. Potential construction noise impacts will be further evaluated and mitigated during final project design.

Construction activities would be carried out in compliance with all applicable local noise regulations. Specific residential property line noise limits will be developed during final design and included in the construction specifications for the project, and noise monitoring will be performed during construction to verify compliance with the limits.

**Segment 6A – Revised Draft EIS Evaluation**

This analysis updates the evaluation of noise and vibration effects of Segment 6A contained in **Sections 3.12.6.1** and **3.12.6.2** of the Draft EIS.

*Operational Period Noise*

**Tables S-3.12-8** and **3.12-9** provide a revised summary of the projected noise impacts for Segment 6A for the EMU and DEMU technology options, respectively.

*Saffredi Lane* – There is a single-family residential development to the west of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the proposed alignment and the higher noise levels generated by the DEMU vehicle. This impact is the same as presented for Segment 6A in **Section 3.12.6.2** of the Draft EIS.

*Deluna Street* - There is a single-family residential development to the west of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the proposed alignment and the higher noise levels generated by the DEMU vehicle. This impact is the same as presented for Segment 6A in **Section 3.12.6.2** of the Draft EIS.

*Wigwam Avenue to Blue Diamond Road, Las Vegas* – There is a mobile home park to the east of I-15 in this area. The number of potential impacts at this location is an estimate based on aerial photography. The impacts are due to the high speeds and the elevated structure.

*Industrial Road, Silverton Casino Lodge, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Residence Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure. *Dean Martin Drive, Courtyard Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

Table S-3.12-8 Revised Noise Impacts for Segment 6A – EMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Wigwam Ave to Blue Diamond Rd | NB | 180-500 | 66 | 61-67 | 61 | 66 | 67-69 | 1.4-3.5 | 352 | 55 |
| Industrial Road, Silverton Casino Lodge | SB | 500 | 66 | 62 | 61 | 66 | 67 | 1.4 | 1 | 0 |
| Dean Martin Dr, Residence Inn | SB | 385 | 66 | 62 | 61 | 66 | 67 | 1.7 | 1 | 0 |
| Dean Martin Dr, Courtyard Hotel | SB | 400 | 66 | 61 | 61 | 66 | 67 | 1.3 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 230 | 66 | 64 | 61 | 66 | 68 | 2.2 | 1 | 0 |
| Dean Martin Dr, Motel 6 | SB | 270 | 66 | 63 | 61 | 66 | 68 | 1.7 | 1 | 0 |
| Dean Martin Dr, Golden Palm Hotel | SB | 280 | 66 | 63 | 61 | 66 | 67 | 1.7 | 1 | 0 |
| Total | | | | | | | | | 358 | 55 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

Table S-3.12-9 Revised Noise Impacts for Segment 6A – DEMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Saffredi Ln | SB | 150 | 66 | 61 | 61 | 66 | 67 | 1.3 | 5 | 0 |
| Deluna St | SB | 140 | 66 | 62 | 61 | 66 | 67 | 1.5 | 12 | 0 |
| Wigwam Ave to Blue Diamond Rd | NB | 180-500 | 66 | 62-68 | 61 | 66 | 67-70 | 1.6-4.2 | 242 | 165 |
| Industrial Road, Silverton Casino Lodge | SB | 500 | 66 | 63 | 61 | 66 | 67 | 1.7 | 1 | 0 |
| Dean Martin Dr, Residence Inn | SB | 385 | 66 | 63 | 61 | 66 | 68 | 2.0 | 1 | 0 |
| Dean Martin Dr, Courtyard Hotel | SB | 400 | 66 | 62 | 61 | 66 | 67 | 1.7 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 230 | 66 | 65 | 61 | 66 | 68 | 2.6 | 1 | 0 |
| Dean Martin Dr, Motel 6 | SB | 270 | 66 | 64 | 61 | 66 | 64 | 2.2 | 1 | 0 |
| Dean Martin Dr, Golden Palm Hotel | SB | 280 | 66 | 64 | 61 | 66 | 68 | 2.1 | 1 | 0 |
| Dean Martin Dr, Panorama Towers | SB | 300 | 66 | 61 | 61 | 66 | 67 | 1.3 | 3 | 0 |
| Total | | | | | | | | | 268 | 165 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.

Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

*Dean Martin Drive, Fairfield Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Americana 5 Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Golden Palm Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Panorama Towers, Las Vegas* – There is a group of high-rise condominiums to the west of I-15 in this area. The number of impacts shown is the number of buildings in the complex. A count of the number of residences was not

possible. The noise impact at this location is due to the high speeds and the elevated structure.

Segment 6A under the EMU technology option would result in 358 noise impacts and 55 severe noise impacts while the DEMU technology option would result in 268 noise impacts and 165 severe noise impacts.

*Operational Period Vibration*

Consistent with the conclusion in **Section 3.12.6.2** of the Draft EIS, there are no vibration impacts projected for Segment 6A due to the distance of the nearest vibration-sensitive uses and use of an elevated structure. The elevated structure would provide vibration attenuation prior to the vibration reaching the ground.

*Construction Effects*

There has been no change to the construction noise and vibration effects for Segment 6A as described in **Section 3.12.6.1** of the Draft EIS. No revision to this evaluation is required.

**Segment 6B – Revised Draft EIS Evaluation**

This analysis updates the evaluation of noise and vibration effects of Segment 6B contained in **Sections 3.12.6.1** and **3.12.6.2** of the Draft EIS. A discussion of AAAs 7 and 8 relative to Segment 6B are discussed under the heading "Alignment Adjustment Areas" below.

*Operational Period Noise*

**Tables S-3.12-10** and **3.12-11** provide a revised summary of the projected noise impacts for Segment 6B for the EMU and DEMU technology options, respectively.

*Saffredi Lane* – There is a single-family residential development to the west of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the proposed alignment. This impact is the same as presented for Segment 6B in **Section 3.12.6.2** of the Draft EIS.

*Deluna Street* - There is a single-family residential development to the west of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the proposed alignment. This impact is the same as presented for Segment 6B in **Section 3.12.6.2** of the Draft EIS.

*Tremezzo Bay Street* - There is a single-family residential development to the west of I-15 in this area. The noise impacts at this location are due to the close proximity of the residences to the proposed alignment and the higher noise levels generated by the DEMU vehicle. This impact is the same as presented for Segment 6B under the DEMU option in **Section 3.12.6.2** of the Draft EIS.

*Dean Martin Drive/West Ali Baba Lane* - There a hotel located at the corner of this intersection. The noise impact at this location is due to the close proximity of the hotel to the proposed alignment and the higher noise levels generated by the DEMU vehicle.

Table S-3.12-10 Revised Noise Impacts for Segment 6B – EMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Saffredi Ln | SB | 50-70 | 66 | 64-66 | 61 | 66 | 68-69 | 2.2-3.2 | 11 | 0 |
| Deluna St | SB | 40-60 | 66 | 65-67 | 61 | 66 | 68-70 | 2.6-4 | 11 | 12 |
| Wigwam Ave to Blue Diamond Rd | NB | 140-490 | 66 | 61-68 | 61 | 66 | 67-70 | 1.2-4.2 | 336 | 0 |
| Industrial Road, Silverton Casino Lodge | SB | 300 | 66 | 68 | 61 | 66 | 67 | 4.2 | 0 | 1 |
| Dean Martin Dr/W, Ali Baba Ln | SB | 210-300 | 66 | 62-64 | 61 | 66 | 67-68 | 1.6-2.4 | 5 | 0 |
| Dean Martin Dr, Residence Inn | SB | 345 | 66 | 63 | 61 | 66 | 67 | 1.8 | 1 | 0 |
| Dean Martin Dr, Courtyard Hotel | SB | 360 | 66 | 62 | 61 | 66 | 67 | 1.7 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 130 | 66 | 63 | 61 | 66 | 68 | 1.8 | 1 | 0 |
| Dean Martin Dr, Motel 6 | SB | 170 | 66 | 61 | 61 | 66 | 67 | 1.3 | 1 | 0 |
| Dean Martin Dr, Golden Palm Hotel | SB | 180 | 66 | 61 | 61 | 66 | 67 | 1.3 | 1 | 0 |
| Dean Martin Dr, Panorama Towers | SB | 360 | 66 | 63 | 61 | 66 | 68 | 1.9 | 3 | 0 |
| Total | | | | | | | | | 371 | 13 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

Table S-3.12-11 Revised Noise Impacts for Segment 6B – DEMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Saffredi Ln | SB | 50-70 | 66 | 66-68 | 61 | 66 | 69-70 | 3.3-4.6 | 0 | 11 |
| Deluna St | SB | 40-60 | 66 | 67-70 | 61 | 66 | 70-71 | 3.9-5.5 | 0 | 23 |
| Tremezzo Bay St | SB | 120 | 66 | 63 | 61 | 66 | 67 | 1.8 | 6 | 0 |
| Dean Martin Dr/W. Ali Baba Ln | SB | 210-300 | 66 | 61-65 | 61 | 66 | 67-69 | 1.3-2.9 | 8 | 0 |
| Wigwam Ave to Blue Diamond Rd | NB | 140-490 | 66 | 61-69 | 61 | 66 | 67-71 | 1.4-4.9 | 407 | 0 |
| Industrial Road, Silverton Casino Lodge | SB | 300 | 66 | 69 | 61 | 66 | 67 | 4.9 | 0 | 1 |
| Dean Martin Dr, Marriott | SB | 350 | 66 | 64 | 61 | 66 | 68 | 2.2 | 0 | 1 |
| Dean Martin Dr, Residence Inn | SB | 345 | 66 | 64 | 61 | 66 | 68 | 2.1 | 1 | 0 |
| Dean Martin Dr, Courtyard Hotel | SB | 360 | 66 | 64 | 61 | 66 | 68 | 2.1 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 130 | 66 | 69 | 61 | 66 | 70 | 4.7 | 1 | 0 |
| Dean Martin Dr, Motel 6 | SB | 170 | 66 | 64 | 61 | 66 | 68 | 2.2 | 1 | 0 |
| Dean Martin Dr, Golden Palm Hotel | SB | 180 | 66 | 64 | 61 | 66 | 68 | 2.1 | 1 | 0 |
| Dean Martin Dr, Panorama Towers | SB | 360 | 66 | 61 | 61 | 66 | 67 | 1.3 | 3 | 0 |
| Total | | | | | | | | | 429 | 36 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

*Industrial Road, Silverton Casino Lodge, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Wigwam Avenue to Blue Diamond Road, Las Vegas* – There is a mobile home park to the east of I-15 in this area. The number of potential impacts at this location is an estimate based on aerial photography. The impacts are due to the high speeds and the elevated structure.

*Dean Martin Drive, Residence Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Courtyard Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Fairfield Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Americana 5 Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Golden Palm Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the elevated structure.

*Dean Martin Drive, Panorama Towers, Las Vegas* – There is a group of high-rise condominiums to the west of I-15 in this area. The number of impacts shown is the number of buildings in the complex. A count of the number of residences was not possible. The noise impact at this location is due to the high speeds and the elevated structure.

Segment 6B under the EMU technology option would result in 371 noise impacts, and 13 severe noise impact. Under the DEMU technology option, Segment 6B would result in 429 noise impacts and 36 severe noise impacts.

This revised analysis for Segment 6B will serve as the point of comparison when considering the noise effects associated with AAAs 7 and 8.

*Operational Period Vibration*

Consistent with the conclusion in **Section 3.12.6.2** of the Draft EIS, there are no vibration impacts projected for Segment 6B due to the distance of the nearest vibration-sensitive uses and use of an elevated structure. The elevated structure would provide vibration attenuation prior to the vibration reaching the ground.

*Construction Effects*

There has been no change to the construction noise and vibration effects for Segment 6B as described in **Section 3.12.6.1** of the Draft EIS. No revision to this evaluation is required.

**Alignment Adjustment Areas**

*Operational Period Noise and Vibration*

***AAAs 1 through 7:*** The operational and construction noise and vibration effects Segments 2A/2B, 3B, and 6B as modified by AAAs 1 through 7 would be similar to those identified in **Section 3.12.6.2** of the Draft EIS, as no new noise environments would be

crossed and would not locate the rail alignment closer to noise- or vibration sensitive uses. The noise and vibration effects associated with AAAs 1 through 7 are summarized below:

- AAA 1 would shift a portion of Segment 2A/2B approximately 300 feet to the south and therefore farther away from the residential and commercial uses located in northern Barstow.
- AAAs 2 through 6 would not be located within 1,000 feet of any noise- or vibration-sensitive land uses, such as residential developments. As such, the alignment adjustments would not result in any additional noise or vibration effects beyond what was documented in **Section 3.12.6.2** of the Draft EIS for Segment 2A/2B, Segment 3B, and Segment 6B.
- AAA 7 would shift a portion of Segment 6B approximately 200 feet to the west of the I-15 freeway corridor, and thus farther away from the residential developments on the eastern side of the I-15 freeway corridor.

***AAA 8:*** **Appendix S-D** provides the detailed noise and vibration evaluation for AAA 8. AAA 8 would shift portions of the Segment 6B rail alignment to the west of the I-15 freeway corridor. Specifically between Hacienda Avenue and Tropicana Avenue, AAA 8 would shift the rail alignment into the median of Dean Martin Drive/Industrial Road and approximately 80 feet closer to noise- and vibration-sensitive uses, such as residences and hotels.

**Tables S-3.12-12** and **S-3.12-13** summarize the projected noise effects associated with operation of Segment 6B as modified by AAA 8 for the EMU and DEMU technology options, respectively. This evaluation considers the revised affected environment and environmental consequences identified for Segment 6B since publication of the Draft EIS. The noise effects associated with AAA 8 would be limited to areas west of the I-15 freeway near or along Dean Martin Drive.

As shown in **Appendix S-D**, the plan and profile set for AAA 8 provide detailed information related to train speed based on refined engineering performed after publication of the Draft EIS. While the evaluation of Segment 6B in **Section 3.12.6.2** of the Draft EIS assumed a maximum train speed of 150 mph for the entire rail alignment based on the most current information available at the time, the evaluation of Segment 6B as modified by AAA 8 considers the defined speeds along the rail alignment in this area.

In many cases, the maximum train speed has been reduced, with a resultant reduction in projected noise levels associated with train passby for both the EMU and DEMU technology options. As such, there are fewer anticipated noise impacts identified for Segment 6B as modified by AAA 8 even though the rail alignment would be shifted to the west and thereby closer to existing noise- and vibration-sensitive uses.

Table S-3.12-12 Noise Impacts for Segment 6B as Modified by AAA 8- EMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Saffredi Ln | SB | 50-70 | 66 | 64-66 | 61 | 66 | 68-69 | 2.2-3.2 | 11 | 0 |
| Deluna St | SB | 40-60 | 66 | 65-67 | 61 | 66 | 68-70 | 2.6-4 | 11 | 12 |
| Industrial Rd, Silverton Casino Lodge | SB | 80 | 66 | 66 | 61 | 66 | 69 | 3.0 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 55 | 66 | 67 | 61 | 66 | 70 | 4.0 | 0 | 1 |
| Total | | | | | | | | | 23 | 13 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

As the Segment 6B rail alignment would not be altered south of Wigwam Avenue, the noise impacts for Saffredi Lane, Deluna Street, and Tremezzo Bay Street are the same as identified for Segment 6B in **Section 3.12.6.2** of the Draft EIS.

*Industrial Road, Silverton Casino Lodge, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

*Wigwam Avenue to Blue Diamond Road, Las Vegas* – There is a mobile home park to the east of I-15 in this area. The number of potential impacts at this location is an estimate based on aerial photography. The impacts are due to the high speeds and the aerial structure.

*Dean Martin Drive, Residence Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

*Dean Martin Drive, Courtyard Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

*Dean Martin Drive, Fairfield Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

*Dean Martin Drive, Americana 5 Inn, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

Table S-3.12-13 Noise Impacts for Segment 6B as Modified by AAA 8 – DEMU

| Location | Side of Track | Dist to Near Track (feet) | Exist. Noise Level[1] | Project Noise Level (dBA) | | | Total Noise Level | Increase in Noise Level[1] | Number of Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Pred.[2] | Impact Criteria | | | | | |
| | | | | | Imp | Sev | | | Imp | Sev |
| Saffredi Ln | SB | 50-70 | 66 | 66-68 | 61 | 66 | 69-70 | 3.3-4.6 | 0 | 11 |
| Deluna St | SB | 40-60 | 66 | 67-70 | 61 | 66 | 70-71 | 3.9-5.5 | 0 | 23 |
| Tremezzo Bay St | SB | 120 | 66 | 63 | 61 | 66 | 67 | 1.8 | 6 | 0 |
| Wigwam Ave to Blue Diamond Rd | NB | 310-460 | 66 | 61-63 | 61 | 66 | 67-68 | 1.2-1.8 | 209 | 0 |
| Industrial Road, Silverton Lodge Casino | SB | 80 | 66 | 70 | 61 | 66 | 71 | 5.8 | 0 | 1 |
| Dean Martin Dr, Residence Inn | SB | 265 | 66 | 63 | 61 | 66 | 68 | 2.0 | 1 | 0 |
| Dean Martin Dr, Courtyard Hotel | SB | 300 | 66 | 63 | 61 | 66 | 67 | 1.8 | 1 | 0 |
| Dean Martin Drive, Fairfield Inn | SB | 350 | 66 | 62 | 61 | 66 | 67 | 1.6 | 1 | 0 |
| Dean Martin Dr, Americana 5 Inn | SB | 55 | 66 | 72 | 61 | 66 | 73 | 7.2 | 0 | 1 |
| Dean Martin Dr, Motel 6 | SB | 105 | 66 | 65 | 61 | 66 | 68 | 2.7 | 1 | 0 |
| Dean Martin Dr, Golden Palm Hotel | SB | 80 | 66 | 67 | 61 | 66 | 69 | 3.5 | 0 | 1 |
| Dean Martin Dr, Panorama Towers | SB | 300 | 66 | 63 | 61 | 66 | 68 | 2.0 | 3 | 0 |
| Total | | | | | | | | | 303 | 37 |

Source: HMMH, 2010. Pred – Predicted Noise Levels, Imp – Impact, Sev – Severe Impact.
Notes: 1. Noise levels are based on Ldn and are measured in dBA. Noise levels are rounded to the nearest decibel except for the increase in noise level, which is given to the nearest one-tenth decibel to provide a better resolution for assessing noise impact. 2. The reported noise levels represent the range of projected noise levels for each location.

*Dean Martin Drive, Golden Palm Hotel, Las Vegas* – There is a motel on the west side of I-15. The noise impact at this location is due to the proximity of the hotel to the proposed alignment and the aerial structure.

*Dean Martin Drive, Panorama Towers, Las Vegas* – There is a group of high-rise condominiums to the west of I-15 in this area. The number of impacts shown is the number of buildings in the complex. A count of the number of residences was not possible. The noise impact at this location is due to the high speeds and the aerial structure.

Segment 6B as modified by AAA 8 would be constructed on an elevated structure. Because there would be less than 70 train passbys per day, the vibration criterion used for this assessment is 80 VdB. The use of elevated structures for the Segment 6B rail alignment would result in a 10 VdB reduction in vibration levels due to the attenuation of vibration as it travels through the elevated structure to the ground. The resulting vibration levels associated with the train passbys on Segment 6B with implementation of AAA 8 would range from 50 VdB to 67 VdB at the closest residences. These vibration levels would not exceed the 80 VdB criterion and therefore not considered significant.

*Construction Effects*

Construction of the AAAs would result in similar noise and vibration effects as identified in **Section 3.12.6.1** of the Draft EIS for Segment 2A/2B, Segment 3B, and Segment 6B. With implementation of AAA 8, temporary construction noise sources would be shifted slightly closer to sensitive receptors to the west of the I-15 freeway. Potential construction noise impacts will be further evaluated and mitigated during final project design.

Construction activities would be carried out in compliance with all applicable local noise regulations. Specific residential property line noise limits will be developed during final design and included in the construction specifications for the project, and noise monitoring will be performed during construction to verify compliance with the limits.

**Wigwam MSF Modification**

*Operational Period Noise and Vibration*

There has been no change in the location of the Wigwam MSF since publication of the Draft EIS. While the Wigwam MSF would be modified to allow for the trackway connection from the south rather than the north, the Wigwam MSF would continue to have the same maintenance activities, and thus similar noise and vibration sources, as considered in **Section 3.12.6.2** of the Draft EIS. Placement of the trackway on the south side of the Wigwam MSF would, however, shift the rail alignment slightly closer to the residential developments west of Dean Martin Drive. Trains at this location would be traveling at low speeds of approximately 35 miles per hour (mph) when entering the Wigwam MSF, which would reduce the noise and vibration associated with train passby as compared to the high-speed trains traveling at full speed (125 mph to 150 mph). **Section 3.12.6.2** of the Draft EIS concluded that no adverse noise or vibration effects would occur within the vicinity of the Wigwam MSF.

*Construction Effects*

Since there has been to change in the location of the Wigwam MSF since publication of the Draft EIS, the same construction noise and vibration effects as described in **Section 3.12.6.1** of the Draft EIS would occur. Construction of the Wigwam MSF modification would have the potential to introduce temporary increases in noise related to the construction activities and equipment. Potential construction noise impacts will be further evaluated and mitigated during final project design.

Construction activities would be carried out in compliance with all applicable local noise regulations. Specific residential property line noise limits will be developed during final design and included in the construction specifications for the project, and noise monitoring will be performed during construction to verify compliance with the limits.

**Profile Modification**

*Operational Period Noise and Vibration*

The Profile Modification would not change the lateral location of the Segment 3B and the noise generated by the high-speed trains at this location would be comparable to what was evaluated for Segment 3B in **Section 3.12.6.2** of the Draft EIS. At this location, the noise generated by the high-speed train passby would be comparable to that of a semi-truck traveling at full speed on the existing I-15 freeway. However, as the profile modification would be within a retained cut approximately 6 to 8 feet below grade, the walls lining the rail alignment would help to absorb some of the existing and project generated noise. The profile modification would have the potential to reduce noise associated with train passbys for this portion of Segment 3B. Regardless, there are no noise- or vibration-sensitive uses or users located within the vicinity of the Segment 3B Profile Modification. No adverse effects would thus occur.

*Construction Effects*

Construction of the profile modification would introduce temporary noise and vibration sources during construction activities. Since there are no sensitive receptors within 1,000 feet of the profile modification, no construction noise or vibration effects would occur.

## 3.12.4 Mitigation Measures

The same types of mitigation measures identified in **Sections 3.12.7.1**, **3.12.7.2**, and **3.12.7.3** of the Draft EIS would be applied to the project modifications and additions to address potential operational and construction noise and vibration effects.

**Noise**

Potential mitigation measures for reducing noise effects from high-speed rail operations identified in **Section 3.12.7.1** of the Draft EIS are summarized below:

- Noise Barriers – The primary requirements for an effective noise barrier are that 1) the barrier must be high enough and long enough to break the line-of-sight between the sound source and receiver, 2) the barrier must be of an impervious material with maximum surface density of 4 pounds per square foot, and 3) the

barrier must not have any gaps or holes between the panels or at the bottom.

- Relocation of Crossovers or Special Trackwork at Crossovers – Relocate track crossovers away from residential areas or use spring-rail or moveable point frogs in place of standard rigid frogs at rail turnouts.
- Building Sound Insulation – Where the rail alignment would be located at-grade and where sensitive receptors would be dispersed or limited in nature, sound insulation to improve the outdoor-to-indoor noise reduction could be considered in lieu of a noise barrier. Substantial improvements in building sound insulation (5 to 10 dBA) can often be achieved by adding an extra layer of glazing to windows, sealing holes in exterior surfaces, and providing forced ventilation and air-conditioning so windows need not be opened.
- Property Acquisitions or Easements – Where the rail alignment would be located at-grade and where sensitive receptors would be dispersed or limited in nature, property acquisitions or easements could be considered in lieu of a noise barrier. The Applicant could purchase properties likely to be impacted by train operations or could acquire easements for residences by paying homeowners to accept future train noise conditions.

**Tables S-3.12-14** and **S-3.12-15** show the noise mitigation locations for the Segment 2C alignment options. **Figure S-3.12-3** shows the general locations of the identified noise mitigation for the Segment 2C alignment options.

**Tables S-3.12-16** and **S-3.12-17** shows the updated noise mitigation locations for the Segment 6 rail alignments as revised from **Section 3.12.7.1** of the Draft EIS. **Figure S-3.12-4** shows the general locations of the identified noise mitigation for Segment 6 as revised from **Section 3.12.7.1** of the Draft EIS.

**Table S-3.12-12** shows the noise mitigation locations for AAA 8. **Figure S-3.12-5** shows the general locations of the identified noise mitigation for AAA 8.

The tables identify where noise barriers would be effective to reduce noise associated with high-speed rail operations based on FRA noise criteria. These noise mitigation locations should be taken in combination with the noise mitigation locations identified in **Section 3.12.7.1** in the Draft EIS, which identify mitigation locations for all project features evaluated in the Draft EIS.

For the Segment 2C alignment options, Segment 6, and Segment 6B with implementation of AAA 8, the noise barriers could be at the wayside or on the elevated structure. If feasible, the most effective location for the noise barriers would be on the elevated structure. It is assumed that a 4-foot barrier constructed on the elevated structure would be sufficient to reduce noise impacts and severe noise impacts associated with the Segment 2C alignment options, Segment 6, and Segment 6B with implementation of AAA 8.

However, where the rail alignment would be at-grade, noise barriers should be located on the wayside of the rail alignment where feasible. In areas where the noise-sensitive uses are not concentrated within a single area, such as the scattered residential uses along

Segment 2C, implementation of sound insulation or property acquisitions/easements may be required to mitigate these noise impacts.

### Vibration

There are several approaches to reduce ground-borne vibration from high-speed rail operations as identified in **Section 3.12.7.2** of the Draft EIS. No significant vibration effects were found for the project modifications and additions and no additional mitigation would be required.

### Construction

The relevant construction period noise control measures from **Section 3.12.7.3** of the Draft EIS are also summarized below. These construction mitigation measures would be applied to the construction of the new project features and modifications.

- Avoid nighttime construction in residential neighborhoods.
- Using specially quieted equipment with enclosed engines and/or high-performance mufflers.
- Locating stationary construction equipment as far as possible from noise-sensitive sites.
- Constructing noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers.
- Re-routing construction-related truck traffic along roadway that will cause the least disturbance to residents.
- Avoiding impact pile driving near noise-sensitive areas, where possible. If impact pile drivers must be used, their use will be limited to the period between 8:00 AM and 5:00 PM on weekdays only.

Table S-3.12-14 Noise Mitigation Locations, Segment 2C Side Running

| Location | Technology Option | Side of Track | Civil Station | Length (ft) |
|---|---|---|---|---|
| Lenwood Road | EMU | NB | 1557 – 1563 | 600 |
| Lenwood Road | EMU | SB | 1580 – 1587 | 700 |
| L Street to H Street | EMU | SB | 1735 – 1743 | 800 |
| Grace Street | EMU | SB | 1791 – 1821 | 3,000 |
| Coolwater Lane | EMU | SB | 1882 – 1892 | 1,000 |
| Western Whip Court to Kelly Drive | EMU | SB | 1842 – 1886 | 4,400 |
| Elephant Mountain Road | EMU | SB | 2225 – 2235 | 1,000 |
| Ghost Town Road | EMU | NB | 2245 – 2255 | 1,000 |
| *Total* | | | | *12,500* |
| Lenwood Road | DEMU | NB | 1557 – 1563 | 600 |
| Lenwood Road | DEMU | SB | 1580 – 1587 | 700 |
| Ironwood Road to L Street | DEMU | NB | 1690 – 1713 | 2,300 |
| L Street to H Street | DEMU | SB | 1732 – 1743 | 1,100 |
| Grace Street | DEMU | SB | 1791 – 1822 | 3,100 |
| Sandalwood Court | DEMU | NB | 1824 – 1842 | 1,800 |
| Coolwater Lane | DEMU | SB | 1882 – 1892 | 1,000 |
| Western Whip Court to Kelly Drive | DEMU | SB | 1838 – 1886 | 4,800 |
| Center Lane to Mojave River | DEMU | NB | 1888 – 1891 | 300 |
| Hacienda Lane | DEMU | NB | 1945 – 1955 | 1,000 |
| Elephant Mountain Road | DEMU | SB | 2225 – 2235 | 1,000 |
| Ghost Town Road | DEMU | NB | 2245 – 2255 | 1,000 |
| *Total* | | | | *18,700* |

Source: HMMH, 2010.

Table S-3.12-15 Noise Mitigation Locations, Segment 2C Median

| Location | Technology Option | Side of Track | Civil Station | Length (ft) |
|---|---|---|---|---|
| Lenwood Road | EMU | NB | 1557 – 1563 | 600 |
| Lenwood Road | EMU | SB | 1580 – 1587 | 700 |
| L Street to H Street | EMU | SB | 1735 – 1743 | 800 |
| Grace Street | EMU | SB | 1791 – 1812 | 2,100 |
| Sandalwood Court | EMU | NB | 1824 – 1842 | 1,800 |
| Western Whip Court to Kelly Drive | EMU | SB | 1842 – 1886 | 4,400 |
| Center Lane to Mojave River | EMU | NB | 1888 – 1891 | 300 |
| Elephant Mountain Road | EMU | SB | 2225 – 2235 | 1,000 |
| Ghost Town Road | EMU | NB | 2245 – 2255 | 1,000 |
| *Total* | | | | *12,700* |
| Lenwood Road | DEMU | NB | 1557 – 1563 | 600 |
| Lenwood Road | DEMU | SB | 1580 – 1587 | 700 |
| Ironwood Road to L Street | DEMU | NB | 1690 – 1713 | 2,300 |
| L Street to H Street | DEMU | SB | 1732 – 1743 | 1,100 |
| Grace Street | DEMU | SB | 1791 – 1821 | 3,000 |
| Sandalwood Court | DEMU | NB | 1822 – 1844 | 2,300 |
| Western Whip Court to Kelly Drive | DEMU | SB | 1842 – 1886 | 4,400 |
| Center Lane to Mojave River | DEMU | NB | 1887 – 1892 | 500 |
| Hacienda Lane | DEMU | NB | 1945 – 1955 | 1,000 |
| Elephant Mountain Road | DEMU | SB | 2225 – 2235 | 1,000 |
| Ghost Town Road | DEMU | NB | 2245 – 2255 | 1,000 |
| *Total* | | | | *17,900* |

Source: HMMH, 2010.

Table S-3.12-16 Noise Mitigation Locations, Segment 6 – Revised Draft EIS Analysis

| Location | Segment | Technology Option | Side of Track | Civil Station | Length (ft) |
|---|---|---|---|---|---|
| Saffredi Ln/Deluna St | 6B | EMU | SB | 9469 – 9531 | 6,200 |
| South of Blue Diamond Rd | 6A/6B | EMU | NB | 9697-9732 | 3,500 |
| South of W Russell Rd | 6A/6B | EMU | SB | 9872 – 9888 | 1,600 |
| South of W Tropicana Ave | 6A/6B | EMU | SB | 9926 – 9942 | 1,600 |
| Harmon Ave | 6A/6B | EMU | SB | 9957 – 9975 | 1,800 |
| *Total* | | | | | *6A: 8,500*<br>*6B: 14,700* |
| Saffredi Ln/Deluna St | 6A | DEMU | SB | 9469 – 9531 | 6,200 |
| Saffredi Ln/Deluna St/Tremezzo Bay St | 6B | DEMU | SB | 9469 – 9548 | 7,900 |
| South of Blue Diamond Rd | 6A/6B | DEMU | NB | 9697-9732 | 3,500 |
| Dean Martin Dr | 6B | DEMU | SB | 9790-9810 | 1,500 |
| South of W Russell Rd | 6A/6B | DEMU | SB | 9872 – 9888 | 1,600 |
| South of W Tropicana Ave | 6A/6B | DEMU | SB | 9926 – 9942 | 1,600 |
| Harmon Ave | 6A/6B | DEMU | SB | 9957 – 9975 | 1,800 |
| *Total* | | | | | *6A: 14,700*<br>*6B: 16,400* |

Source: HMMH, 2010.

Table S-3.12-17 Noise Mitigation Locations, Segment 6B as Modified by AAA 8

| Location | Technology Option | Side of Track | Civil Station | Length (ft) |
|---|---|---|---|---|
| Saffredi Ln/Deluna St | EMU | SB | 9469 – 9531 | 6,200 |
| South of Blue Diamond Rd | EMU | SB | 9715 – 9732 | 1,700 |
| South of W Tropicana Ave | EMU | SB | 9926 – 9934 | 800 |
| *Total* | | | | *8,700* |
| Saffredi Ln/Deluna St/Tremezzo Bay St | DEMU | SB | 9469 – 9548 | 7,900 |
| South of Blue Diamond Rd | DEMU | SB | 9715 – 9732 | 1,700 |
| South of Blue Diamond Rd | DEMU | NB | 9702 – 9732 | 3,000 |
| South of W Russell Rd | DEMU | SB | 9872 – 9888 | 1,600 |
| South of W Tropicana Ave | DEMU | SB | 9926 – 9942 | 1,600 |
| Harmon Ave | DEMU | SB | 9957 – 9975 | 1,800 |
| *Total* | | | | *17,600* |

Source: HMMH, 2010.

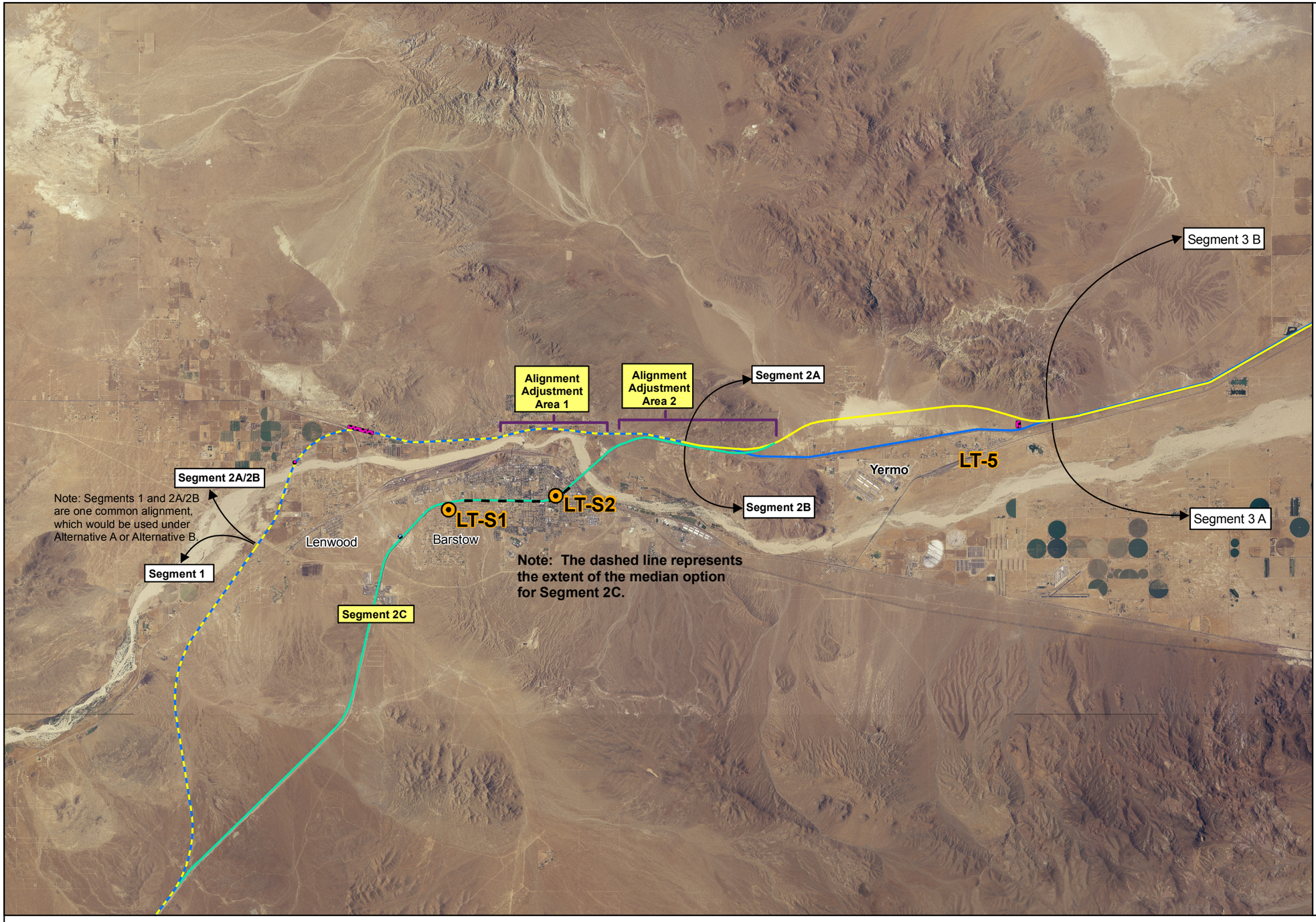
## 3.12.5 Residual Impacts Following Mitigation

The noise impacts associated with the Segment 2C alignment options where the rail alignment would be elevated through Barstow would be fully mitigated with implementation of the 4-foot noise barriers on the elevated structure at the specified lengths in **Tables S-3.12-14** and **S-3.12-15**. The noise impacts associated with the elevated portions of Segment 6A, Segment 6B, and Segment 6B as modified by AAA 8 would also be fully mitigated with implementation of 4-foot noise barriers on the elevated structure at the specific lengths in **Table S-3.12-16** and **S-3.12-17**.

In areas where the rail alignment would be located at-grade, at-grade noise barriers would fully mitigate noise impacts and severe noise impacts associated with operation of the project. Where sensitive receptors would be dispersed or limited in nature (i.e. one residence in generally undeveloped area), sound insulation or property acquisitions/easements could be considered in lieu of construction of a noise barrier.

Overall, implementation of the noise mitigation would fully mitigate noise impacts and severe noise impacts associated with operation of the project modifications and additions and no residual effects would remain.

As no adverse vibration effects would occur with the project modifications and additions, no residual vibration effects would remain.




## Legend

**Noise Measurements**

- Measurement Location
- # Monitoring Site ID

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

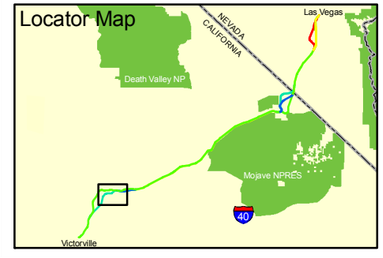
Kilometers
0 2.5 5

Miles
0 1.5 3

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map




U.S. Department of Transportation
Federal Railroad Administration

**DesertXpress - Supplemental EIS**

***Noise Measurement Locations, Segment 2C***

**FIG S-3.12-1**

Source: Geografika Consulting 06.17.10




## Legend

**Noise Measurements**

- Measurement Location
- Monitoring Site ID

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text: Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

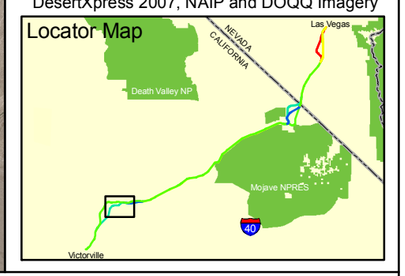
Kilometers: 0 — 2.5 — 5

Miles: 0 — 1.5 — 3

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map



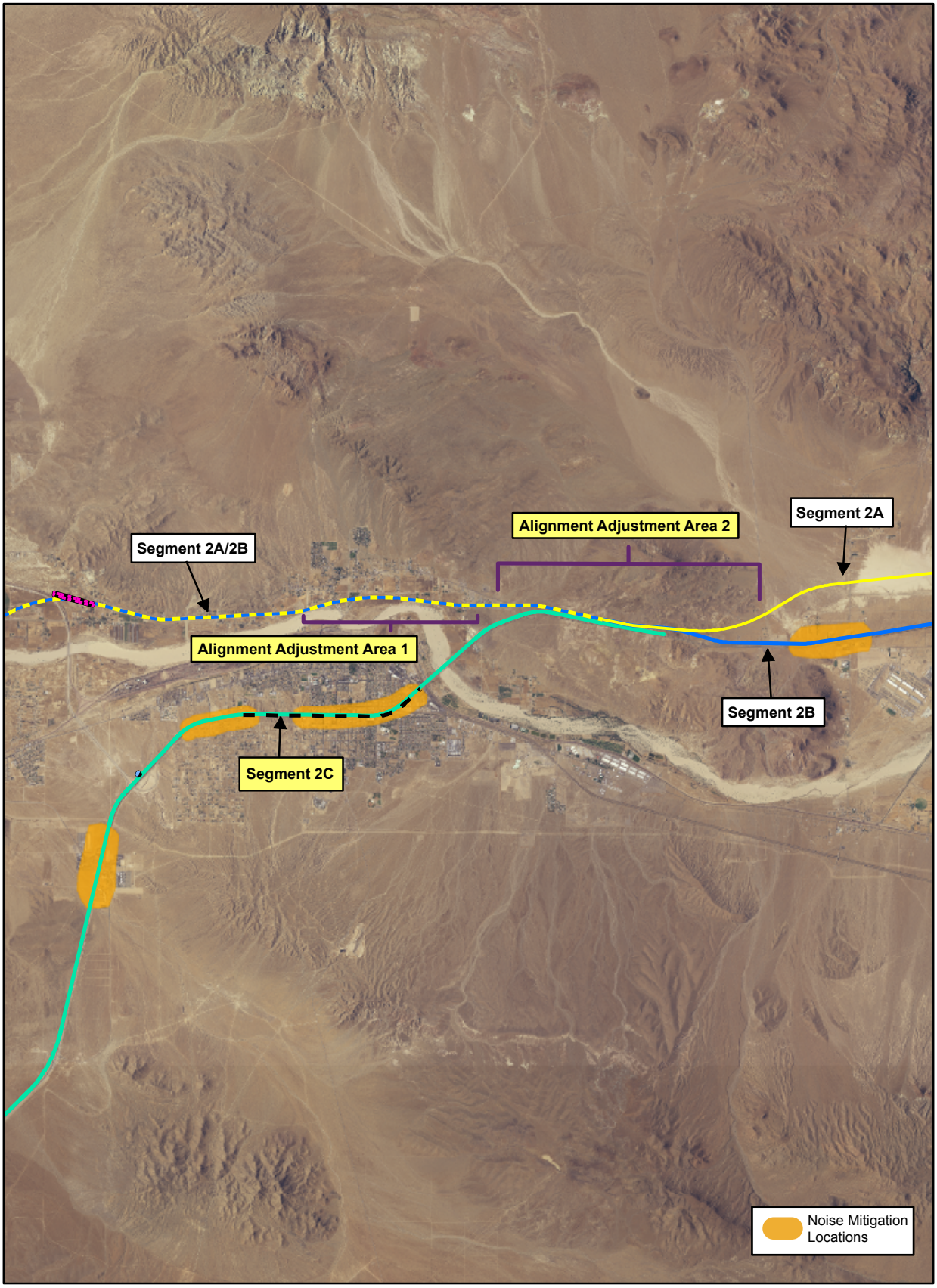

U.S. Department of Transportation
Federal Railroad Administration

**DesertXpress - Supplemental EIS**

***Noise Measurement Locations, AAA 8***

FIG **S-3.12-2**

Source: Geografika Consulting 06.16.10



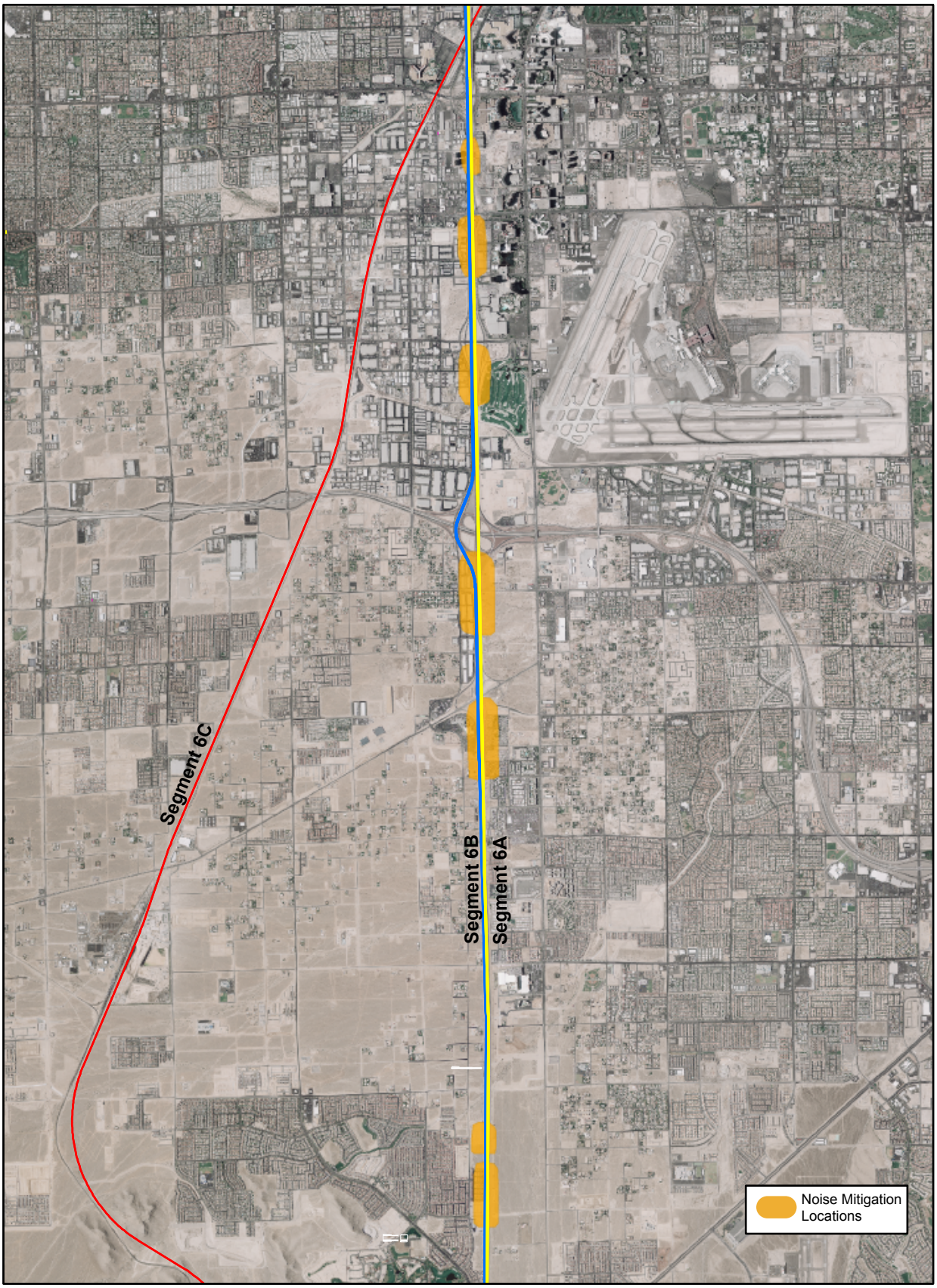

U.S. Department of Transportation
Federal Railroad Administration

**DesertXpress - Supplemental EIS**

***Noise Mitigation Locations, Segment 2C***

**FIG S-3.12-3**

Geografika Consulting 06.10.10



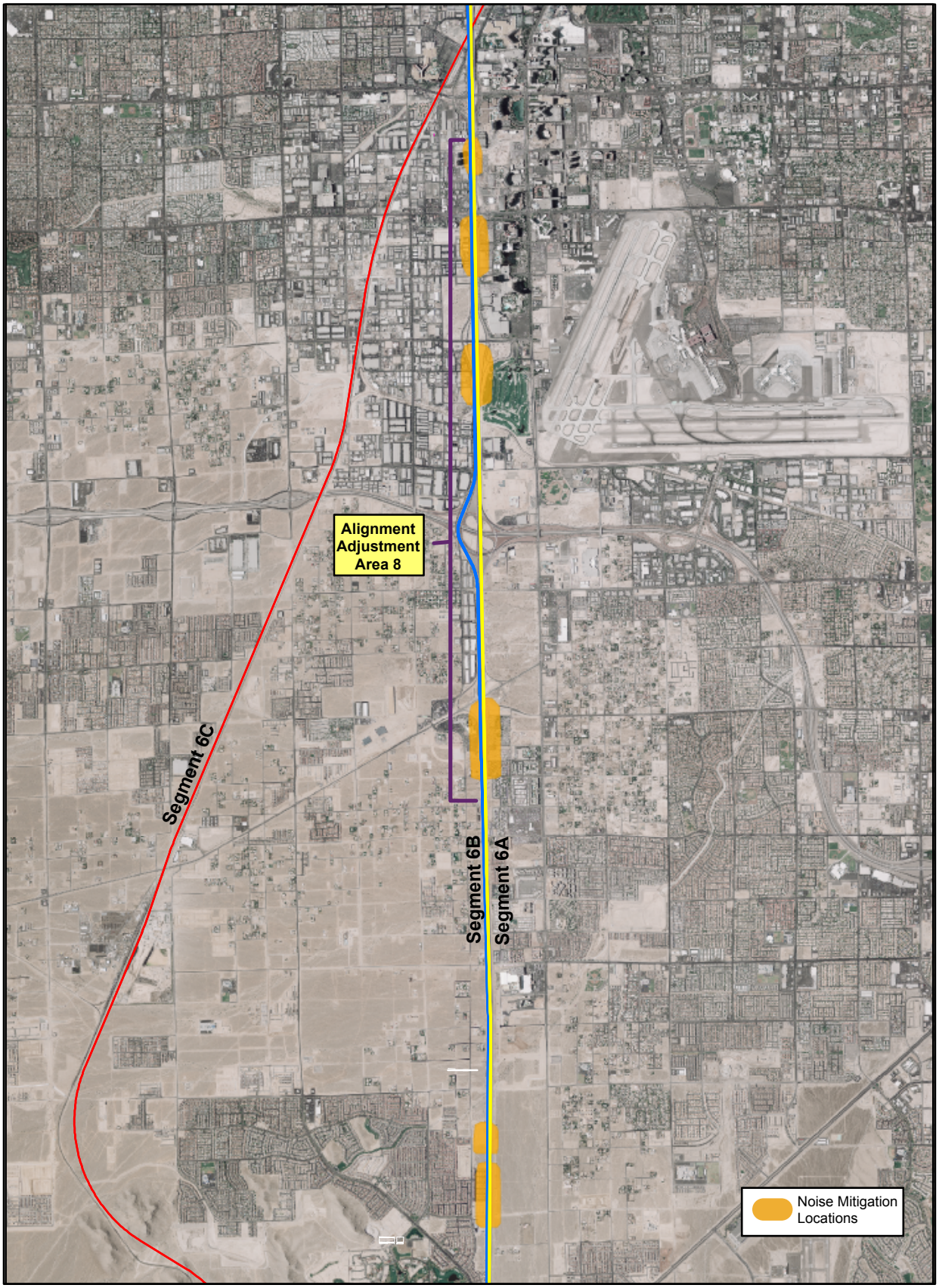

U.S. Department of Transportation
Federal Railroad Administration

**DesertXpress - Supplemental EIS**

***Noise Mitigation Locations, Segment 6 (Revised Draft EIS Evaluation)***

**FIG S-3.12-4**

Geografika Consulting 06.17.10




U.S. Department of Transportation
Federal Railroad Administration

**DesertXpress - Supplemental EIS**

***Noise Mitigation Locations, Segment 6B with AAA 8***

FIG **S-3.12-5**

Geografika Consulting 06.17.10

# 3.13 ENERGY

This section analyzes the potential impact of the project modifications and additions on energy resources, both on an overall energy budget basis, as well as, on an electricity resources basis.

## 3.13.1 AFFECTED ENVIRONMENT

Regulations and standards related to Energy identified in **Section 3.13.1** of the Draft EIS have not changed since publication of the Draft EIS and therefore remain applicable to the project modifications and additions.

**Section 3.13.3** of the Draft EIS set forth the parameters for considering the energy resources in the affected environment. The geographies examined included the state level, and transportation energy used within the I-15 freeway corridor in California and Nevada. The project modifications and additions are appropriately examined within these same geographic regions. Since publication of the Draft EIS, new background information has become available for these geographies to supplement information provided in the Draft EIS on the affected environment.

### Regional Conditions

*Total Energy Consumption*

California remains second among all U.S. states in total energy consumption. On a per capita basis, California's energy usage remains ranked at 49th among all 50 states. [1] [2] Of all energy consumed in California, the transportation sector continues to represent the largest portion (40 percent), followed by the industrial, commercial and residential sectors (23 percent, 19 percent, and 18 percent, respectively).[3]

Nevada's total energy consumption is now 37th in the United States in terms of overall energy consumption,[4] and 36th on a per-capita basis.[5] Thirty three percent of Nevada's energy consumption is spent on transportation, followed by the industrial, residential, and commercial sectors, at 26 percent, 24 percent, and 17 percent, respectively.[6]

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[1] USDOE, 2005a. << http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=CA. accessed May 26, 2010>>

[2] USDOE, 2005b. << http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=CA. accessed May 26, 2010>>

[3] Calculated from USDOE, 2005a. << http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=CA. accessed May 26, 2010>>

[4] USDOE 2005a

[5] USDOE 2005b

[6] Calculated from USDOE 2005a

*Transportation Energy Consumption*

Since publication of the Draft EIS, the California Energy Commission (CEC) has revised its forecasts for on-road miles traveled in the state.

CEC now estimates that on-road mileage will increase by 53 percent between 2005 and 2030—from 332 billion to 507 billion.[7] Notwithstanding this large increase, the CEC predicts that in-state road transportation fuel gasoline usage is anticipated to drop between 2007 and 2030 from 15.4 billion gallons of gasoline to 13.4 billion gallons (367 million to 319 million barrels of oil) per year, as a result of the introduction of more fuel-efficient cars, fleet hybridization, and the increased use of diesel and alternative fuel vehicles.[8]

There has been no change to projected fuel usage for the state of Nevada. In-state Nevada gasoline fuel usage remains much smaller, presently estimated to be just more than 1 billion gallons (25 million barrels of oil-equivalent). [9]

There is no more recent data available than 2007 for automobile transportation on the I-15 freeway within the limits of the project study area. During year 2007, this area saw 3.67 vehicle miles traveled (VMT), which in turn required 177,441,000 gallons of gasoline, equivalent to 3.7 million barrels of oil.

*Electricity Demand*

The California portion of the project remains within service area of Southern California Edison (SCE), a large publicly-owned utility (POU) that served more than 13 million people at a peak demand of 21,786 MW in 2009. [10] [11]

The Nevada portion of the project remains within the service area of Nevada Energy, also a POU, which served 2.4 million customers at a peak load of 5,586 MW in 2009. [12] [13]

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[7] California Energy Commission (CEC). 2007. Transportation Energy Forecasts for the 2007 Integrated Energy Policy Report, Final Staff Report. Available at: www.energy.ca.gov/2007publications/CEC-600-2007-009/CEC-600-2007-009-SF.PDF. Accessed: May 26, 2010.

8 CEC 2010

California Energy Commission (CEC). 2010. Transportation Energy Forecasts and Analyses for the 2009 Integrated Energy Policy Report, Final Staff Report. Available at: www.energy.ca.gov/2010publications/CEC-600-2010-002/CEC-600-2010-002-SF.PDF. Accessed: May 26, 2010.

[9] Calculated based on Nevada per-capita gasoline production from data from U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy (USDOE 2008e) and Nevada's 2006 population count (U.S. Census Bureau 2000)

[10] Southern California Edison (SCE). 2010. Southern California Edison. Available: http://www.sce.com/AboutSCE/CompanyOverview/. Accessed: May 26, 2010.

[11] Southern California Edison (SCE). 2009. Southern California Edison, Power Bulletin, Vol. 9, No. 11 November/December 2009. Available: http://www.sce.com/NR/rdonlyres/28CD1A3E-113F-4CE6-8ABA-A36A3353E9B8/0/091202_200911_Government.pdf. Accessed: May 26, 2010.

[12] NV Energy. 2010. About Us. Available: http://www.nvenergy.com/company/. Accessed: May 26, 2010.

[13] NV Energy. 2009. Nevada Power Company's Triennial Integrated Resource Plan for 2010-2029, Docket No. 09-07003. Volume 4 of 6, Technical Appendix. Available: http://www.nvenergy.com/company/rates/filings/images/vol4espta1-16.pdf. Accessed: May 26, 2010.

Because the project would cross service area boundaries in addition to state borders, it remains most fitting to analyze anticipated energy of the project in relation to total existing and forecasted regional electricity generating capacity, rather than to restrict the analysis to the specific utility generating resources themselves.

The National Energy Modeling System (NEMS) has been updated since publication of the Draft EIS to extend through 2030. The NEMS is a computer-based, energy-economy modeling system of U.S. energy markets. NEMS balances energy supply and demand, accounting for economic competition among the various energy fuels and sources.

In order to represent regional differences in energy markets, the component modules of NEMS function at the regional level. For electricity, the component modules are the regions and subregions used by the North American Electric Reliability Council. Figure 3-13.1 of the Draft EIS illustrates these regions, called Electricity Market Modular (EMM) Regions: Southern Nevada is part of Region 12 (Rocky Mountain Power area, Arizona, New Mexico and Southern Nevada (RMPA-NMSN), and California is a region unto itself (Region 13).

**Table S-3.13-1** provides updated electricity supply and demand data and projections for selected years regarding EMM Regions 12 and 13. The data continue to show a steady increase in anticipated demand for the respective regions through 2030.

Table S-3.13-1 EMM Regional Data and Projections, Regions 12 and 13

| Total Capacity (GW)[a] | 2009 | 2010 | 2013 | 2020 | 2030 |
|---|---|---|---|---|---|
| Region 12 | 53.86 | 55.56 | 59.16 | 59.88 | 69.87 |
| Region 13 | 67.69 | 72.24 | 84.04 | 84.16 | 91.34 |

Source: U.S. Department of Energy (USDOE), Energy Information Administration. 2009. Annual Energy Outlook 2010: Supplemental Tables (Table 87). Available: < http://www.eia.doe.gov/oiaf/aeo/supplement/>. Accessed: May 26, 2010. Washington, D.C.

[a] Total capacity is expressed in gigawatts (one billion watts) and is related to Net summer capacity. Net summer capacity is the steady hourly output that generating equipment is expected to supply to system load as demonstrated by tests during summer peak load. Includes small power producers and exempt wholesale generators.

## 3.13.2 Methods of Evaluation of Impacts

The evaluation of energy supply and demand compares potential energy consumption of the action alternatives and the No Action, which are described below.

Primary energy consideration is the energy required for train propulsion, which is based upon energy consumption factors for fossil fuels and electricity.

Energy consumption factors have been updated since publication of the Draft EIS, as the US Department of Energy has published a new edition of its Transportation Energy Data Book. **Table S-3.13-2** reflects a slightly increased consumption factor for passenger vehicles consistent with the updated Transportation Energy Data Book. No other

consumption factors have been updated, and thus remain as presented in the Draft EIS.

The analysis of train propulsion energy focuses on two analytical methods of energy consumption. The first is the overall energy consumption differences between the No Action Alternative and the project, considering the sum of fossil fuel consumption and electricity. The analysis identifies if the project would consume more or less energy, regardless of the source, compared to the No Action Alternative.

Table S-3.13-2 Operational Energy Consumption Factors

| Mode | Factor[c] |
|---|---|
| Passenger vehicles[a] | 5,517 BTUs/VMT |
| DEMU[b] | 408,779 BTUs/TMT |
| EMU[b] | 569,163 BTUs/TMT |

Source: ICF International, 2010.

BTUs = British thermal units.

TMT = Train-mile traveled.

[a] U.S. Department of Energy (USDOE), Energy Information Administration. 2009. Office of Energy Efficiency and Renewable Energy. Transportation Energy Data Book: Edition 28. Prepared by Oak Ridge National Laboratory, Oak Ridge, TN.

[b] The values in this table are on a per-train-mile basis, converted from the annual energy consumption values that this source provided using the planned mileage in the planned operating schedule. The values were also adjusted to reflect the planned 2030 operating schedule (from the planned 2027 operating schedule, as provided by the source (DesertXpress 2007).

[c] The conversion from diesel fuel consumption to heat content (BTUs) is 130,500 BTUs/gallon (bioenergy.ornl.gov/papers/misc/energy_conv.html). The conversion from electricity consumption (kWh) to heat content (BTU) for EMU is 10,812 BTUs/ kWh, accounts for generation, transmission and distribution losses. Calculated from generation loss factor of 9,919 BTUs/kWh for petroleum generation and a T&D loss factor of 1.07 (USDOE 2008c).

**Section 3.13.4** of the Draft EIS analysis focused on the relationship between projected VMT and the intensity of energy use by each passenger transportation mode in order to estimate the magnitude and direction of the potential change in total energy consumption between the No Action Alternative and the action alternatives with DEMU and EMU technology.

The second energy use analysis focuses specifically on electricity consumption by the EMU option, as this technology option would use electricity to propel the train. Electricity consumption gets special attention because it is not storable. The estimated EMU energy demand was compared to estimates of supply capacity within the relevant North American Electric Reliability Council Regions, which in this case are the 1) Rocky Mountain Power area, Arizona, New Mexico and Southern Nevada region and 2) the California region.

Whereas other sections in the Draft EIS discuss environmental consequences on a segment-by-segment basis, energy is evaluated in terms of operating the system as a whole, insofar as individual segments/components do not significantly influence the total anticipated energy usage of the project as a whole. Therefore, the environmental consequences and mitigation measures are discussed on a project-wide basis.

This Supplemental Draft EIS qualitatively evaluates if and how project modifications and additions would affects total energy use.

Energy is also required to construct the railroad tracks, stations, and maintenance facilities. **Table S-3.13-3** shows the construction-related energy factors associated with the project. These factors have been updated since publication of the Draft EIS to include a factor for railway tunnel construction. This Supplemental DEIS section uses these factors to calculate construction-related energy, based on the number of track miles at-grade, above-grade (elevated), and in a tunnel, in addition to the number of stations.

This Supplemental EIS evaluates how project modifications and additions do or do not result in a change in system-wide energy use.

Table S-3.13-3 Construction-Related Energy Consumption Factors

| Type of Facility | Rural Compared to Urban[g] | Factor (billions of BTUs) |
|---|---|---|
| Highway - At grade | Rural[a] | 17.07/one-way lane mi |
| | Urban[b] | 26.28/one-way lane mi |
| Highway - Elevated | Rural[a] | 130.38/one-way lane mi |
| | Urban[b] | 327.31/one-way lane mi |
| Railway - At grade | Rural[c] | 12.29/one-way trackway mile |
| | Urban[d] | 19.11/one-way trackway mile |
| Railway - Elevated | Rural[c] | 55.46/one-way trackway mile |
| | Urban[d] | 55.63/one-way trackway mile |
| Railway - Tunnel | NA[d] | 99.51/one-way trackway mile |
| Railway - Station | NA[e] | 78[f]/station |

Source: U.S. Congress, Budget Office 1977; U.S. Congress, Budget Office 1982; and California State Department of Transportation 1983.

[a] Estimates reflect average roadway construction energy consumption.

[b] Estimates reflect range maximum for roadway construction energy consumption.

[c] Estimates reflect typical rail system construction energy consumption.

[d] Estimates reflect energy consumption for BART system construction as surrogate for DesertXpress construction through urban area.

[e] Discreet (i.e., non-alignment-related facilities) are not differentiated between rural or urban because the data used to develop the respective values were not differentiated as such. Some difference between the actual values might be expected.

[f] Value for construction of freight terminal. Used as proxy for DesertXpress station consumption factors.

[g] Differences between the construction-related energy consumption factors for urban and rural settings reflect differences in construction methods, demolition requirements, utility accommodation, etc.

### Energy Payback

The energy payback period measures the number of years that would be required to pay back the energy used in construction with operational energy consumption savings. The payback period is calculated by dividing the estimate of construction energy by the amount of energy that would later be saved by the action alternatives compared to the No

Action Alternative condition. It is assumed that the amount of energy saved in the study year (2030) would remain constant throughout the payback period.

## 3.13.3 Environmental Consequences

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. The discussions below consider the project modifications and additions per the criteria for potential operational and construction effects.[14]

### Common Effects to All Project Modifications and Additions

*Overall Operational Energy Consumption*

The Draft EIS established that implementation of the project with either of the proposed technology options (DEMU or EMU) would result in lower operational energy consumption when compared to future conditions without the railway (the No Action Alternative). This change is associated with a shift from automobile usage relative to train usage. The proposed project modifications and additions do not alter this conclusion for the project as a whole. The shift is expected to result in a reduction in annual automobile travel on I-15. This reduction is expected to range between 733 million and 931 million VMT for the DEMU and EMU technologies, respectively. Although the train would require energy to operate, the reduction in automobile VMT would reduce gasoline use, and thus result in a net decrease in energy consumption.

*Peak-Period Electricity Demand*

The proposed project modifications and additions would not change the electricity demands of the EMU technology (see the Draft EIS, **Section 3.13, Energy**).

### Victorville Station Site 3, Segment 2C, and Segment 4C

*Operational Effects*

Several of the project modifications and additions would influence energy usage. VV3, Segment 2C, and Segment 4C would each individually modify the total length of the proposed rail alignment, thus influencing the total amount of energy required to power the system.

**Table S-3.13-4** shows the energy consumption of the project as a whole, adjusted for the inclusion of VV3, Segment 2C and Segment 4C.

As shown in **Table S-3.13-4**, the project as modified by VV3, 2C, and 4C would continue to result in a reduction in energy usage (expressed in barrels of oil) compared to the No Action Alternative. Specifically, in 2030, the EMU technology option would result in an energy savings of 445,000 barrels of oil per year. The DEMU would result in an energy savings of 196,200 barrels of oil per year.

[14] The Draft EIS characterized construction related impacts to energy as "indirect." This was an error. In this Supplemental Draft EIS, such impacts are properly noted as direct, temporary construction impacts."

Table S-3.13-4 Annual Overall Operational Energy Consumption

| | 2007 Existing | 2030 No Action Alternative | Project: DEMU with the variant considered in the DEIS [a] | Project: EMU with the variant considered in the DEIS [a] | Project: DEMU with VV3, 2C & 4C | Project EMU with VV3, 2C & 4C |
|---|---|---|---|---|---|---|
| Annual Auto VMT in Study Area (billions of miles)[b] | 3.67 | 7.44 | 6.70 | 6.51 | 6.72 | 6.53 |
| Estimated Project VMT (millions of miles)[c] | NA | NA | 7.33 | 5.12 | 7.05 | 4.93 |
| Annual Auto Energy Consumption[d] (MMBTUs) | 20,260,000 | 41,030,000 | 37,000,000 | 35,900,000 | 37.090.000 | 36,020,000 |
| With Project Energy Consumption [d] (MMBTUs) | 0 | 0 | 2,995,000 | 2,691,000 | 2,880,000 | 2,588,000 |
| TOTAL ENERGY CONSUMPTION (MMBTUs) | 20,260,000 | 41,030,000 | 39,981,000 | 38,588,000 | 39,966,000 | 38,611,000 |
| Change in Total Energy from Existing (MMBTUs) | NA | 20,775,000 | 19,724,000 | 18,331,000 | 19,709,000 | 18,354,000 |
| Change in Total Energy from No Action (MMBTUs) | NA | NA | -1,051,000 | -2,444,000 | -1,066,300 | -2,420,000 |
| TOTAL ENERGY CONSUMPTION (Barrels of Oil[e]) | 3,729,200 | 7,553,700 | 7,360,300 | 7,103,800 | 7,358,100 | 7,108,800 |
| Change in Total Energy from Existing (Barrels of Oil[e]) | NA | 3,824,500 | 3,631,100 | 3,374,600 | 3,628,300 | 3,378,900 |
| Change in Total Energy from No Action (Barrels of Oil[e]) | NA | NA | -193,400 | -449,900 | -196,200 | -445,600 |

Source: ICF, 2010.

[a] This is based on an action alternative with VV2, Segment 1B, Segment 2A, Segment 3B, Segment 4A, Segment 5B, Segment 6B, and Central Station B.

[b] DMJM 2008.

[c] DesertXpress 2007 and 2008.

[d] Calculated using the operational energy consumption factors from **Table S-3.13-2** which have been updated since publication of the Draft EIS.

[e] One barrel of crude oil is equal to 5.8 MMBTUs.

*Construction Effects*

Project modifications and additions that would affect energy consumption are VV3, Segment 2C and Segment 4C, insofar as they affect overall alignment length and thus energy required to construct.

**Table S-3.13-5** shows the construction energy consumption of the project as a whole, accounting for the inclusion of VV3, Segment 2C, and Segment 4C.

Construction of the project, with or without the project modifications and additions, would require the commitment of energy resources. **Table S-3.13-5** shows the level of construction energy differs between the project as evaluated in the Draft EIS and the project as altered by the modifications and additions considered in this Supplemental EIS. However, the data shows that energy consumption with the proposed project modifications and additions would not be substantially different and in most cases slightly lower than the project as analyzed in the Draft EIS. The decrease in construction energy consumption is closely linked to the overall shorter track mileage associated with the VV3 and Segment 2C project modifications/additions.

Although energy would be required for construction that energy spent would be made up by energy saved during operations in approximately 2 to 5 years. **Table S-3.13-5** shows the anticipated energy payback periods under each technology option.

Table S-3.13-5 Construction Energy Consumption

| Alternative | Facility Quantity (trackway miles & number of stations) | Energy Consumption (MMBTUS; rounded) | Payback Period (years) | |
|---|---|---|---|---|
| | | | DEMU | EMU |
| **Project as Evaluated in DEIS[a]** | | | | |
| At-Grade Rural | 120 | 1,470,936 | | |
| Above Grade Rural | 55 | 3,025,616 | | |
| Above Grade Urban | 9 | 487,289 | | |
| Stations | 2 | 156,000 | | |
| ***TOTAL*** | | **5,139,841** | **5.1** | **2.2** |
| **Project w/VV3** | | | | |
| At-Grade Rural | 116 | 1,431,343 | | |
| Above Grade Rural | 53 | 2,954,716 | | |
| Above Grade Urban | 9 | 487,289 | | |
| Stations | 2 | 156,000 | | |
| ***TOTAL*** | | **5,029,348** | **5.2** | **2.2** |
| **Project w/2C & 4C** | | | | |
| At-Grade Rural | 121 | 1,490,512 | | |
| Above Grade Rural | 47 | 2,628,048 | | |

| Alternative | Facility Quantity (trackway miles & number of stations) | Energy Consumption (MMBTUS; rounded) | Payback Period (years) | |
|---|---|---|---|---|
| | | | DEMU | EMU |
| Above Grade Urban | 11 | 630,579 | | |
| Tunnel | 2.3 | 228,873 | | |
| Stations | 2 | 156,000 | | |
| ***TOTAL*** | | **5,134,011** | **4.9** | **2.2** |
| **Project w/VV3, 2C, & 4C** | | | | |
| At-Grade Rural | 119 | 1,457,063 | | |
| Above Grade Rural | 46 | 2,557,147 | | |
| Above Grade Urban | 11 | 630,579 | | |
| Tunnel | 2.3 | 228,873 | | |
| Stations | 2 | 156,000 | | |
| ***TOTAL*** | | **5,029,662** | **4.9** | **2.2** |

Source: ICF International, 2010.
[a] This is based on an action alternative with VV2, Segment 1B, Segment 2A, Segment 3B, Segment 4A, Segment 5B, Segment 6B, and Central Station B.

### OMSF 2, Relocated Sloan MSF, Frias Substation, Alignment Adjustment Areas, Wigwam MSF Modification, and Profile Modification

*Operational Effects*

None of the other project modifications and additions, including the OMSF 2, RSMSF, Frias Substation, Alignment Adjustment Areas, Wigwam MSF Modification, and Profile Modification would influence energy consumption because they would not substantially modify the length of the proposed alignment.

*Construction Effects*

The Alignment Adjustment Areas and the Profile Modification would not substantially increase the overall alignment length and thus would have a negligible impact on the amount of energy required to construct the project as a whole. Similarly, the RSMSF, the reduced OMSF 2, and Wigwam MSF would not substantially change the amount of energy needed to construct or operate these facilities.

Construction of the Frias Substation would require additional energy to construct this 4 acre facility. The Frias Substation is needed if an MSF option in the Las Vegas Valley is selected, either Wigwam or Robindale, since neither include substations.

The addition of the Frias Substation would be minor compared to the size of the project as a whole. Moreover, the Frias Substation is directly adjacent to electrical transmission lines and thus does not require construction of a separate utility corridor. Therefore, the Frias Substation would not substantially increase energy use of the project as a whole.

When considering the potential long term effects, construction energy use is a temporary commitment of energy resources and, after constructed, the railway would reduce energy usage overall.

As stated in **Section 3.13.4.2** of the Draft EIS, construction-related energy consumption would not be anticipated to result in a substantial adverse effect as implementation of the project would result in energy payback over time when compared to the No Action Alternative.

## 3.13.4 Mitigation Measures

The project, incorporating the modifications and additions, would result in an overall reduction in total energy consumption (electric power demand and petroleum-based consumption) under either the DEMU or EMU technology options. The project, with incorporation of the modifications and additions, would continue to result in a reduction in automobile traffic that would be greater than the new energy required by the railway. As a result, operational effects of the project modifications and additions would not require mitigation.

The project modifications and additions would not change the conclusion that construction of the project would result in one-time temporary energy consumption effects related to construction. However, the following measures from **Section 3.13.5** of the Draft EIS remain applicable means to further conserve energy resources during construction:

- Develop and implement a construction energy conservation plan.
- Use energy efficient construction equipment and vehicles.
- Develop and implement a program encouraging construction workers to carpool for travel to and from construction sites.

## 3.13.5 Residual Impacts Following Mitigation

The energy analysis presented in **Section 3.13.4** of the Draft EIS identified a net energy benefit (over the No Action Alternative) as a result of implementing either technology option. Therefore, no mitigation measures were presented. The energy savings during operation of the DesertXpress High-Speed Passenger Train, when compared to future conditions without the project, would offset temporary energy consumption during construction so that it is not considered an adverse effect. The measures above were identified to further conserve energy consumption during the construction period. As DesertXpress would have the beneficial overall effect of reducing energy use over time, no residual adverse effects related to energy would occur.

# 3.14 BIOLOGICAL RESOURCES

This section discusses the potential impacts to biological resources related to the project modifications and additions and appropriate mitigation measures.

## 3.14.1 AFFECTED ENVIRONMENT

Regulations and standards pertinent to biological resources as described in **Section 3.14.1** of the Draft EIS have not changed since publication of the Draft EIS and remain applicable to the proposed project.

### Regional Conditions

The regional biological environment has not changed since publication of the Draft EIS. **Table 3.14-1** of the Draft EIS provides a summary of the vegetation community types, wetlands, invasive plant species, special-status plants, and special-status wildlife vegetation communities and other land use types in the project study area.

**Figures S-3.14-1** through **S-3.14-5** show the locations of known occurrences of special-status plant and wildlife species in the vicinity of the project modifications and additions.

### Victorville Station Site 3

The VV3 site is located immediately adjacent to the I-15 freeway corridor on undeveloped lands. **Table S-3.14-1** identifies sensitive biological resources specific to the vicinity of VV3. **Figure S-3.14.1** shows the location and distribution of these sensitive biological resources.

As noted in **Table S-3.14.1**, the VV3 site crosses one stream, the Bell Mountain Wash. There are no identified sensitive plant communities within the vicinity of the VV3 site.

Table S-3.14-1 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of VV3

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential Occurrence |
|---|---|---|---|
| **Sensitive Plant Communities & Wetlands** | | | |
| Waters of the United States including Wetlands | | Coordination regarding jurisdiction of surface water resources within the project study area is currently underway with the USACE. The drainages within the study area are ephemeral. The principal drainage in this area is Bell Mountain Wash. | Yes |
| **Special-Status Plant Species** | | | |
| None | | | |

| Biological Resource | Status | Description | Potential Occurrence |
|---|---|---|---|
| **Special-Status Wildlife Species** | | | |
| Desert tortoise | T/T/--/W, NE | California Natural Diversity Database (CNDDB) identified suitable habitat in the area and several tortoises were observed near the study area in 2007 surveys. Suitable habitat occurs in desert scrub habitats. | Yes |
| Mojave fringe-toed lizard | --/SSC/S/W, NE | No CNDDB occurrences in project study area and no suitable habitat within vicinity of VV3. | No |
| Cooper's hawk | --/SSC/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Least Bell's vireo | E/E/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Le Conte's thrasher | --/SSC/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Loggerhead shrike | --/SSC/--/W | Suitable habitat occurs within vicinity of VV3 and throughout project study area. | Yes |
| Southwestern willow flycatcher | E/E/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Prairie falcon | --/SSC/--/NE | No CNDDB occurrences within 10 miles of VV3. May occur in cliff areas near Victorville. | Yes |
| Summer tanager | --/SSC/--W. NE | No suitable habitat within vicinity of VV3. | No |
| Swainson's hawk | | No suitable nesting habitat within vicinity of VV3. | No |
| Western burrowing owl | --/T/--/W, NE | Several occurrences within 10 miles of project study area and one owl pellet observed during 2007 surveys. Suitable habitat occurs in desert scrub habitat. | Yes |
| Western yellow-billed cuckoo | C/E/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Vermillion flycatcher | --/SSC/--/ W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Yellow warbler | --/SSC/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Yellow breasted chat | --/SSC/--/W, NE | No suitable nesting habitat within vicinity of VV3. | No |
| Pallid bat | --/SSC/S/W, NE | No CNDDB occurrence within 10 miles of VV3; may occur in cliff areas near Victorville. | Yes |

| Biological Resource | Status | Description | Potential Occurrence |
|---|---|---|---|
| Townsend's big-eared bat | --/SSC/S/W, NE | No CNDDB occurrence within 10 miles of VV3; may occur in cliff areas near Victorville. | Yes |
| Greater western mastiff bat | --/SSC/--/W, NE | No CNDDB occurrence within 10 miles of VV3; may occur in cliff areas near Victorville. | Yes |
| Spotted bat | --/SSC/S/W, NE | No CNDDB occurrences within 10 miles of project study area; may occur in cliff area at southern end of alignment near Victorville. | Yes |
| Silver-haired bat | --/SSC/--/-- | No CNDDB occurrences within 10 miles of project study area. No suitable roosting habitat within vicinity of VV3. | No |
| Mojave River vole | --/SSC/--/W | No suitable habitat within VV3. | No |
| Mohave ground squirrel | --/T/--/W, NE | Several CNDDB occurrences within 10 miles of project study area. Habitat assessment indicates suitable habitat occurs in vicinity of VV3. | Yes |
| American badger | –/SSC/--/-- | Several CNDDB occurrences within 10 miles of project study area. Suitable habitat throughout project study area in desert scrub communities within vicinity of VV3. | Yes |
| Banded gila monster | --/--/--/C | No suitable habitat within the vicinity of VV3. | No |
| Desert bighorn sheep | --/ FP/S/W, NE | No suitable habitat within the vicinity of VV3. | No |
| **Special Management Lands** | | | |
| None | | | |

Source: ICF, 2010.
Status explanations:
CNDDB – California Natural Diversity Database

**Federal**
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**BLM**
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**HCP**
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### OMSF 2

The size, not the location, of OMSF 2 has been modified since publication of the Draft EIS. Therefore, the assessment of existing and potential biological resources is unchanged from the information presented in **Section 3.14.4.5** of the Draft EIS. **Figure S-3.14-1** shows the sensitive biological resources within the vicinity of OMSF 2.

### Segment 2C

Both Segment 2C alignment options would be located on disturbed lands within the existing I-15 freeway corridor. **Table S-3.14-2** lists the sensitive biological resources known or with potential to occur within the vicinity of the Segment 2C alignment options. **Figure S-3.14-2** shows Segment 2C and the distributions of these sensitive biological resources near the alignment options.

Table S-3.14-2 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of Segment 2C

| Biological Resource | Status | Description | Potential for Occurrence | |
|---|---|---|---|---|
| | Federal/State/BLM/HCP | | 2C Side Running | 2C Median[1] |
| **Special Plant Communities and Wetlands** | | | | |
| None | | | | |
| **Special-Status Plant Species** | | | | |
| Barstow woolly sunflower | –/–/–/W | One CNDDB occurrence approximately 2 miles south of project study area west of Barstow. | Yes | No |
| Creamy blazing star | –/–/–/– | One CNDDB occurrence approximately 2.5 miles south of project study area at Yermo. | Yes | No |
| Crucifixion thorn | –/–/–/NE, W | One CNDDB occurrence approximately 2.5 miles south of project study area at Yermo. | Yes | No |
| Parish's phacelia | –/–/–/W | One CNDDB occurrence approximately 2.5 miles south of project study area at Yermo. | Yes | Yes |

[1] Information for the Segment 2C Median alignment option relates to areas where the Segment 2C Median alignment does not overlap with the Segment 2C Side Running alignment option (where the rail alignment is located within the I-15 median through central Barstow).

| Biological Resource | Status Federal/State/BLM/HCP | Description | Potential for Occurrence 2C Side Running | 2C Median[1] |
|---|---|---|---|---|
| Mojave monkeyflower | –/–/S/– | One CNDDB occurrence approximately 3 miles north of project study area at Yermo; others located further from project study area south of Barstow and Yermo. | Yes | No |
| **Special-Status Wildlife Species** | | | | |
| Desert tortoise | T/T/--/W, NE | Desert tortoises observed during 2007 surveys. Suitable habitat occurs throughout project study area. | Yes | No |
| Mojave fringe-toed lizard | --/SSC/S/W, NE | No CNDDB occurrences in project study area. Suitable habitat occurs in sandy habitat south of Mojave River crossing. | Yes | No |
| Western burrowing owl | --/SSC/S/W, NE | No CNDDB occurrences within 10 miles of project study area. Suitable habitat occurs throughout project study area in desert scrub and agricultural habitats. | Yes | Yes |
| Le Conte's thrasher | --/SSC/--/W, NE | Several CNDDB occurrences within 10 miles of project study area. Suitable habitat throughout project study area in desert scrub communities. | Yes | No |
| Loggerhead shrike | --/SSC/--/W | Observed in 2007 desert tortoise surveys. Suitable habitat occurs throughout project study area. | Yes | No |
| Western snowy plover | --/SSC/--/W, NE | No CNDDB occurrences within 10 miles of project study area. Potential nesting habitat in portion of project study area that crosses dry lakebed. | Yes | No |
| Desert bighorn sheep | --/ FP/S/W, NE | CNDDB records indicate suitable habitat within 10 miles of project study area. Suitable habitat does not occur within project study area. | No | No |
| Mohave ground squirrel | --/T/--/W, NE | Several CNDDB occurrences within 10 miles of project study area. Habitat assessment indicates suitable habitat in areas with desert scrub. | Yes | No |

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence<br>2C Side Running | <br>2C Median[1] |
|---|---|---|---|---|
| Townsend's big-eared bat | --/SSC/S/W, NE | One CNDDB occurrence within 10 miles of project study area. No suitable roosting habitat in project study area. | No | No |
| Banded Gila monster | --/--/--/C | No suitable habitat within the vicinity of Segment 2C. | No | No |
| Roosting Bats | | No suitable habitat within the vicinity of Segment 2C. | No | No |
| American badger | –/SSC/--/-- | Several CNDDB occurrences within 10 miles of project study area. Suitable habitat throughout project study area in desert scrub communities. | Yes | No |
| **Special Management Lands** | | | | |
| Desert Tortoise Critical Habitat | | Superior-Cronese Unit | Yes | No |

Source: ICF, 2010.
Status explanations:
CNDDB – California Natural Diversity Database

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FS = U.S. Forest Service sensitive species (Region).
-- = no listing.

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-- = no listing.

**BLM**
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NE = species covered by the Northern and Eastern Mojave Plan
-- = no listing

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### Segment 4C

In the Mountain Pass area, Segment 4C would be located on lands dominated by blackbrush shrubland. Segment 4C would cross the northeast flank of the Clark Mountains through steep rocky, sparsely vegetated shrubland, before descending into creosote bush scrub around Wheaton Wash and areas of mesquite shrubland.

**Table S-3.14-3** lists the sensitive biological resources known or potentially occurring within the vicinity of the Segment 4C. **Figure S-3.14-4** shows Segment 4C and the distributions of these sensitive biological resources near the rail alignment.

Table S-3.14-3 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of the Segment 4C

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence |
|---|---|---|---|
| **Sensitive Plant Communities & Wetlands** | | | |
| Mesquite bosque | –/S/–/– | Three occurrence mapped in Wheaton Wash on east side of Mountain Pass. | Yes |
| **Special-Status Plant Species** | | | |
| Mormon needle grass | –/–/–/– | One CNDDB occurrence approximately 1 mile west of alignment at Mountain Pass. | Yes |
| Jaeger's ivesia | –/–/1B.3/Sensitive | Several CNDDB occurrences approximately 0.5 to 1 mile west of alignment. | Yes |
| Rusby's desert-mallow | –/–/S/NE | One CNDDB occurrence approximately 1.5 miles west of alignment at Mountain Pass. | Yes |
| Viviparous foxtail cactus | –/–/–/– | One CNDDB occurrence approximately 1.5 miles west of alignment at Mountain Pass. | Yes |
| **Special-Status Wildlife Species** | | | |
| Desert tortoise | T/T/--/W, NE | Desert tortoises observed during 2007 surveys. Suitable habitat occurs throughout project study area in desert scrub habitats. | Yes |
| Banded Gila monster | --/SSC/S/W, NE | No CNDDB occurrences within 10 miles of project study area. Suitable habitat occurs in rocky habitat. | Yes |
| Bendire's thrasher | --/SSC/S/W, NE | No occurrences in project study area. Potential nesting habitat in Joshua tree woodland. | Yes |
| Crissal thrasher | --/SSC/--/NE | No CNDDB occurrences within 10 miles of project study area. Suitable habitat in larger washes. | Yes |

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence |
|---|---|---|---|
| Golden eagle | PR/SSC,FP/--/NE | No CNDDB occurrences within 10 miles of project study area. Suitable nesting habitat occurs in rocky habitat. | Yes |
| Le Conte's thrasher | --/SSC/--/W, NE | No occurrences within project study area. Suitable habitat in desert scrub communities. | Yes |
| Prairie falcon | --/SSC/--/NE | No CNDDB occurrences within 10 miles of project study area. Suitable nesting habitat occurs in rocky habitat. | Yes |
| Western burrowing owl | --/SSC/S/W, NE | No occurrences within 10 miles of project study area. Suitable habitat occurs in desert scrub habitat. | Yes |
| Western snowy plover | --/SSC/--/W, NE | No CNDDB occurrences within 10 miles of project study area. Potential nesting habitat on Ivanpah Dry Lake. | No |
| California leaf-nosed bat | SC/SSC/S | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Desert bighorn sheep | --/ FP/S/W, NE | CNDDB records indicate suitable habitat within 10 miles of project study area. Suitable habitat does occur within project study area. Bighorn sheep maybe especially dependent on springs as a water source in the Clark Mountains. | Yes |
| Greater western mastiff bat | --/SSC/--/W, NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Hoary bat | --/SSC/--/-- | One CNDDB occurrence within 10 miles of project study area. No suitable roosting habitat in project study area. | No |
| Long-legged myotis | --/--/S/NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Pallid bat | --/SSC/S/W, NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Townsend's big-eared bat | --/SSC/S/W, NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Spotted bat | --/SSC/S/W, NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |
| Western small-footed myotis | --/--/S/NE | No CNDDB occurrences in 10 miles of project study area. Potential to roost in caves located in project study area. | Yes |

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence |
|---|---|---|---|
| American Badger | –/SSC/--/-- | Several CNDDB occurrences within 10 miles of project study area. Suitable habitat throughout project study area in desert scrub communities | Yes |
| Mojave fringe-toed lizard | --/SSC/S/W, NE | No CNDDB occurrences in project study area. Suitable habitat does not occur in Segment 4. | No |
| Mohave ground squirrel | --/T/--/W, NE | Habitat assessment indicates suitable habitat does not occur in Segment 4. | No |
| **Special Management Lands** | | | |
| None | | | |

Source: ICF, 2010.
Status explanations:
CNDDB – California Natural Diversity Database

**Federal**
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T = listed as threatened under the federal Endangered Species Act.
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-- = no listing

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### Relocated Sloan MSF

The RSMSF is two miles from the Sloan Road MSF evaluated in the Draft EIS, within a similar biological region. Therefore, existing biological resources on and near the RSMSF are similar to those of the Sloan Road MSF site evaluated in **Section 3.14.3.2** of the Draft EIS.

**Table S-3.14-4** identifies sensitive resource types specific to the vicinity of the RSMSF. **Figure S-3.14-4** shows the RSMSF site and the locations and distributions of these sensitive biological resources.

No sensitive plant communities occur within the vicinity of the RSMSF.

Table S-3.14-4 Sensitive Biological Resources Known or with Potential to Occur in Vicinity of the RSMSF

| Biological Resource | Status Federal/State/BLM/HCP | Description | Potential Occurrence |
|---|---|---|---|
| **Special Plant Communities and Wetlands** | | | |
| None | | | |
| **Special-Status Plant Species** | | | |
| Rosy two-tone beardtongue | --/--/S/C | Three NNHP occurrences within the project study area northeast of Jean. Species is known to occur within the vicinity of the RSMSF. | Yes |
| **Special-Status Wildlife Species** | | | |
| Banded gecko | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Great Basin collard lizard | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Desert iguana | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Large-spotted leopard lizard | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Desert tortoise | T/T/--/W, NE | Nevada Natural Heritage Program occurrence in project study area just north of Jean. Suitable habitat occurs. | Yes |
| Banded Gila monster | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable habitat occurs within the vicinity of the RSMSF near the North McCullough Mountain pass. | Yes |
| Western chuckwalla | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable habitat does not occur within the vicinity of the RSMSF. | No |

| Biological Resource | Status Federal/State/BLM/HCP | Description | Potential Occurrence |
|---|---|---|---|
| Sidewinder | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Speckled rattlesnake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Mojave green rattlesnake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Glossy snake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Common king snake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Western leaf-nosed snake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Western long-nosed snake | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Species is known to occur within the vicinity of the RSMSF. | Yes |
| Sonoran lyre snake | --/P/S/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable habitat occurs within the vicinity of the RSMSF. | Yes |
| American peregrine falcon | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable habitat does not occur within the vicinity of the RSMSF. | No |

| Biological Resource | Status Federal/State/BLM/HCP | Description | Potential Occurrence |
|---|---|---|---|
| Blue grosbeak | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of the project study area. Suitable habitat occurs in larger washes that are crossed by the project. | Yes |
| Phainopepla | --/--/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable habitat occurs in larger washes that are crossed by the project. | Yes |
| Nesting raptors/migratory birds | -- | Suitable foraging habitat occurs in the vicinity of the RSMSF. | Yes |
| Western burrowing owls | --/P/S/W | No Nevada Natural Heritage Program occurrences in vicinity of project study area. Suitable nesting habitat occurs within the vicinity of the RSMSF. | Yes |
| Mohave ground squirrel | --/T/--/W, NE | Habitat assessment indicates suitable habitat does not occur in vicinity of the RSMSF. | No |
| Mojave fringe-toed lizard | --/SSC/S/W, NE | No CNDDB occurrences in project study area. Suitable habitat does not occur in vicinity of the RSMSF. | No |
| American Badger | –/SSC/--/-- | Several CNDDB occurrences within 10 miles of project study area. Suitable habitat throughout project study area in desert scrub communities | Yes |
| **Special Management Lands** | | | |
| None | | | |

Source: ICF, 2010.
Status explanations:
CNDDB – California Natural Diversity Database

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### Frias Substation

The proposed site for the Frias Substation is located immediately west of the I-15 freeway corridor in the southern Las Vegas metropolitan area. Due to the urbanized nature of the area, with the exception of western burrowing owl, no sensitive wildlife species exist on the site.3

**Table S-3.14-5** documents the special-status plant species with potential to occur on the Frias Substation site. The Frias Substation site is characterized as eastern Mojave Desert creosote-bursage with some *acacia gregii* (mistletoe) adjacent to Dean Martin Drive and Haleh Road intersection just north of the site.

**Figure S-3.14-3** shows the location of the substation site in relation to nearby biological resources. The Frias Substation site is not located within any designated special management lands.

### Alignment Adjustment Areas

The Alignment Adjustment Areas (AAAs) would result in slight modifications to portions of Segment 2A/2B, Segment 3B, and Segment 6B. Due to the minor shift (no more than 400 feet) associated with the AAAs, the biological environments for each rail segment (Segment 2A/2B, Segment 3B, and Segment 6B) are the same as described in **Section 3.14.3.2** of the Draft EIS.

### Wigwam MSF Modification

The orientation, not the location, of the Wigwam MSF has been modified since publication of the Draft EIS. Therefore, existing and potential biological resources at this site are the same as presented in **Section 3.14.3.2** of the Draft EIS. **Figure S-3.14-5** shows the sensitive biological resources within the vicinity of the Wigwam MSF modification.

### Profile Modification

The Profile Modification entails depressing a portion of the Segment 3B rail alignment within a retained cut and therefore would not cross any new biological resource environments not previously identified for Segment 3B in **Section 3.14.3.2** of the Draft EIS. **Figure S-3.14-3** shows the sensitive biological resources within the vicinity of the Profile Modification.

Table S-3.14-5 Sensitive Biological Resources with Potential to Occur on Frias Substation Site

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence |
|---|---|---|---|
| **Sensitive Plant Communities & Wetlands** | | | |
| None | | | |
| **Special-Status Plant Species** | | | |
| Las Vegas bearpoppy | --/SS/--/C | No Nevada Natural Heritage Program occurrences in vicinity of project study area. | No |

| Biological Resource | Status<br>Federal/State/BLM/HCP | Description | Potential for Occurrence |
|---|---|---|---|
| Las Vegas catseye | --/SS/--/E | No Nevada Natural Heritage Program occurrences in vicinity of project study area. | No |
| Las Vegas buckwheat | --/--/S/-- | Suitable habitat known to occur within the Segment 6 rail alignment. | No |
| Yellow two-tone beardtongue | --/--/S/E | Suitable habitat known to occur within the Segment 6 rail alignment and on Frias Substation site. | Yes |
| **Special-Status Wildlife Species** | | | |
| Western burrowing owl | --/T/--/W, NE | Several occurrences within 10 miles of project study area. Suitable habitat occurs in desert scrub habitat. | Yes |
| **Special Management Lands** | | | |
| None | | | |

Source: ICF, 2010.
Status explanations:
CNDDB – California Natural Diversity Database
**Federal**
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## 3.14.2 METHODS OF EVALUATION OF IMPACTS

The same methodology used in **Section 3.14.2.2** of the Draft EIS was used to evaluate potential direct and indirect biological resources effects of the proposed modifications and additions.

Direct effects would include, but are not limited to, grubbing, grading, and other construction and operation activities that disturb vegetation and soil resources and disrupt the biological or hydrologic function of surface water features.

- Permanent direct effects would result from the placement of fill material for the railway bed and associated stations, operation, and maintenance facilities thus converting the area from its current condition to a transportation facility.

- Temporary direct effects would result from soil compaction, construction dust, water and contaminant runoff from the construction area, and construction-related noise and vibrations from construction equipment.

Indirect effects include, but are not limited to, the modification of habitat functions resulting from wind-blown dust, erosion of sediments, noxious weed invasion, or hydrologic modifications.

FRA has coordinated with the U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), and California Department of Fish and Game (CDFG) throughout the development of the Supplemental Draft EIS. For a discussion of agency coordination, refer to **Section 3.14.2.2** of the Draft EIS and **Chapter 4.0** of this Supplemental Draft EIS.

Additional field surveys to document existing biological conditions and evaluate potential effects were conducted for the project modifications and additions.

Consistent with the thresholds established in **Section 3.14.4.2** of the Draft EIS, effects on vegetation and wildlife would be considered adverse if any of the following impacts were to occur:

- Loss of individual or populations of a Federal or state-listed threatened or endangered species or their habitat
- Loss of critical habitat for Federally listed threatened or endangered species
- Loss of habitat that is sensitive or rare in the region, such as mesquite shrubland, Joshua tree wooded shrubland, wetlands, cliff face formations, and surface water sources
- Substantial loss of populations or habitat of a species that is a Federal candidate, is federally proposed for listing, is a BLM sensitive species, is a California species of special concern, is on the CNPS Inventory 1B or 2, is identified as a covered species in the Clark County MSHCP, is regionally rare, or is otherwise so sensitive as to jeopardize the continued existence of the species in the region
- Loss of long-term disruption of wildlife movement corridor
- Substantial permanent loss of natural vegetation
- Substantial loss of diversity of species or natural communities and wildlife habitat
- Incompatibility with local, state, or Federal land management plans

## 3.14.3 Environmental Consequences

Each of the project modifications and additions were evaluated against the criteria identified above to determine whether any adverse effects would occur. The discussions below consider the project modifications and additions per these criteria.

**Victorville Station Site 3**

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

The construction of VV3 for either parking option would have the potential to introduce or spread noxious weeds. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blown deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert. However, implementation of VV3 would not increase or decrease the risk of introducing or spreading noxious weeds as concluded in **Section 3.14.4.5** of the Draft EIS.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. The construction and operation of VV3 for either parking option would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

There are no sensitive vegetation communities on or within the vicinity of the VV3 site. No effects would occur.

*Impacts to Special-Status Plant Populations*

Within the footprint of VV3 under either parking option, special-status plant populations and their habitat would be permanently removed and converted to transportation use. VV3A would have the potential to result in fewer impacts to special-status plant species as compared to VV3B, since the parking area would be constructed within an already disturbed utility corridor below overhead electrical transmission lines as opposed to being developed on currently undisturbed lands. As documented in **Section 3.14.4.5** of the Draft EIS, focused presence/absence surveys have not been conducted for the project alignment due to prolonged drought in the region between 2005 and 2009. These surveys will be conducted prior to initiating construction and stipulated project avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

Construction and operation of VV3 would remove or degrade desert tortoise habitat. The affected acreage of each VV3 parking option, including the tail tracks connecting the station to the rail alignment, is summarized below:

- VV3A would permanently impact 205.5 acres and temporarily impact 38.5 acres of desert tortoise habitat.
- VV3B would permanently impact 217.9 acres and temporarily impact 38.5 acres of desert tortoise habitat.

*Barrier to Wildlife Movement*

I-15 serves as an existing barrier to wildlife movement within the vicinity of VV3 due to its linear nature. VV3 would not introduce a new linear barrier to wildlife movement, since movement around the station building and the associated parking areas would be maintained. VV3's proximity to I-15 blunts the potential for the station area to serve as a barrier to wildlife movement. No effects would occur.

*Direct Mortality of Mohave Ground Squirrels*

Construction of VV3 could result in injury or mortality of Mohave ground squirrel and remove foraging habitat. Operation of VV3 would convert suitable habitat to transportation use. The affected acreage of each VV3 parking option, including the tail tracks connecting the station to the rail alignment, is summarized below:

- VV3A would permanently impact 205.5 acres of Mohave ground squirrel habitat. VV3A would temporarily impact 38.5 acres of Mohave ground squirrel habitat.
- VV3B would permanently impact 217.9 acres of Mohave ground squirrel habitat. VV3B would temporarily impact 38.5 acres of Mohave ground squirrel habitat.

*Direct Mortality of Mojave fringe-toed Lizard*

There are no known occurrences of Mojave fringe-toed lizard in the VV3 area nor is there suitable habitat for this species in the vicinity of VV3. No permanent or temporary effects would occur.

*Potential Loss or Disturbance of Nesting Raptors and Migratory Birds*

No suitable nesting habitat for raptors or migratory birds is located on or within the vicinity of VV3 under either parking option. No permanent or temporary effects would occur.

*Direct Mortality of Banded Gila Monster*

There are no known occurrences of banded gila monster in the VV3 area nor is there suitable habitat in the vicinity of VV3. No permanent or temporary effects would occur.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

VV3 is not located within Clark County and is therefore not subject to the Clark County MSHCP.

*Potential Loss of Disturbance to Burrowing Owls*

Construction and operation of VV3 could include the direct loss of burrows and foraging habitat for burrowing owls. The shoulders or roads, dirt mounds and berms, and open areas provide suitable habitat for burrowing owls, especially where open culverts, ground squirrel burrows, desert tortoise burrows, and badger burrows occur. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs during the nesting season (February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). As burrowing owls utilize the same

habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for VV3 for either parking option.

*Potential Loss or Disturbance to Roosting Bats*

No suitable nursery or roosting habitats for bats are located on or within the vicinity of VV3. No permanent or temporary effects would occur.

*Effects to American Badger*

Construction of the VV3 parking options could result in the injury or mortality of badgers. As American badgers utilize the same habitat as desert tortoise, the affected acreage of American badger habitat is comparable to the affected acreage of desert tortoise habitat.

*Direct Effects to Desert Bighorn Sheep*

There are no known occurrences of desert bighorn sheep in the VV3 area nor is there suitable habitat in the vicinity of VV3. No permanent or temporary effects would occur.

*Loss of Special Management Lands*

VV3 would not be located within a Desert Wildlife Management Area (DWMA) or Area of Critical Environmental Concern (ACEC), as defined by the BLM. No effects to critical habitat would occur.

*Direct and Indirect Impacts to Wetlands/Waters of the United States*

VV3 would result in the bisection of Bell Mountain Wash. Construction of VV3A or VV3B would permanently remove vegetation from Bell Mountain Wash and would cause soil and vegetation disturbance within the channel and banks. This includes permanent disturbance from the placement of culverts within the drainage and temporary impacts resulting from construction activity, such as sedimentation and erosion. Construction pollutants could also be spilled into the drainage.

**OMSF 2**

The reduced size of OMSF 2 would not result in any new direct or indirect biological resource effects beyond those described in **Section 3.14.4.5** of the Draft EIS since the location of the facility has not changed. Construction and operation of OMSF 2 could introduce or spread noxious weeds; could result in the loss or damage to native vegetation communities; impact special-status plant populations; permanently and temporarily impact desert tortoise, Mohave ground squirrel, Mojave fringe-toed lizard, burrowing owls, and American badger; and result in direct and indirect impacts to wetlands and Waters of the United States.

**Segment 2C**

Segment 2C would truncate the length of Segment 1 by 12 miles by removing the northern reaches of Segment 1; Segment 1 and Segment 2C would connect about 7 miles southwest of Lenwood. Therefore, Segment 2C would reduce impacts to biological resources associated with the northern reaches of Segment 1. These resources include sensitive plant and wildlife habitat areas, as shown on **Figure S-3.14-1**.

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

Construction of the Segment 2C alignment options would have the potential to introduce or spread noxious weeds. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blow deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert. However, implementation of the Segment 2C alignment options would not increase or decrease the risk of introducing or spreading noxious weeds as described in **Section 3.14.4.5** of the Draft EIS.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. The construction and operation the Segment 2C alignment options would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

There are no sensitive vegetation communities on or within the vicinity of Segment 2C.

*Impacts to Special-Status Plant Populations*

Within the footprint the Segment 2C alignment options, special-status plant populations and their habitat would be permanently removed and converted to transportation use. As previously stated, focused presence/absence surveys have not been conducted but will be completed prior to initiating construction. Stipulated avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

Construction and operation of Segment 2C would result in the removal or degradation of desert tortoise habitat. During the construction period, construction activities within the temporary construction area (TCA) along Segment 2C would also temporarily affect desert tortoise habitat. Affected acreages of each Segment 2C alignment option are below:

- Segment 2C Side Running: Permanent impacts to 37.5 acres and temporary impacts to 101.4 acres of desert tortoise habitat.
- Segment 2C Median: Permanent impacts to 37.4 acres and temporary impacts to 97.1 acres of desert tortoise habitat.

*Barrier to Wildlife Movement*

No wildlife fragmentation would occur as a result of Segment 2C, as the rail alignment would be within the existing I-15 freeway corridor whether side running or within the

median. I-15 already establishes an existing linear barrier for wildlife movement to the east and west south of Lenwood and to the north and south through Barstow.

*Direct Mortality of Mohave Ground Squirrels*

Construction of Segment 2C could result in injury or mortality of Mohave ground squirrel and removal of foraging habitat. Construction activities within the TCA along Segment 2C could also result in temporary impacts to Mohave ground squirrels and associated habitat. Each option would result in permanent impacts to 36 acres and temporary impacts to 89.1 acres of Mohave ground squirrel habitat.

*Direct Mortality of Mojave Fringe-toed Lizard*

Suitable habitat for the Mojave fringe-toed lizard is present in the vicinity of the Mojave River. The Segment 2C Side Running option would traverse through areas near the Mojave River and would convert Mojave fringe-toed lizard habitat to transportation use and permanently remove suitable habitat.

The Segment 2C Median option would be located within the existing I-15 median immediately west of the Mojave River which does not contain suitable habitat for the Mojave fringe-toed lizard. The Segment 2C Median option would not have an adverse effect on Mojave fringe-toed lizard.

*Potential Loss or Disturbance to Nesting Raptors and Migratory Birds*

The Segment 2C alignment options could affect suitable nesting habitat for raptors and migratory birds south of and through Barstow, where each alignment options would follow the same rail alignment immediately adjacent to the I-15 freeway. There is no suitable nesting habitat for raptors or migratory birds within the median of the I-15 freeway. As such, where the Segment 2C Median alignment option would cross into the I-15 median in central Barstow, no effects to nesting raptors or migratory birds would occur.

Construction activities could result in the removal or disturbance of shrubs that provide potential nesting habitat. The impacted acreage of suitable nesting habitat for raptors and migratory birds would be comparable to the affected acreage described for desert tortoise habitat for the Segment 2C alignment options.

*Direct Mortality of Banded Gila Monster*

There are no known occurrences of banded gila monster in Segment 2C nor is there suitable habitat located in the vicinity of the Segment 2C. No permanent or temporary effects would occur.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

Segment 2C is not located within Clark County and is therefore not subject to the Clark County MSHCP.

*Potential Loss of Disturbance to Burrowing Owls*

Development of the Segment 2C alignment options could include the direct loss of burrows and foraging habitat for burrowing owls. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs

during the nesting season (February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). The Segment 2C Side Running alignment option would traverse areas of suitable burrowing owl habitat within the I-15 freeway corridor. The portion of Segment 2C Median alignment option located within the median of the I-15 freeway would not affect suitable burrowing owl habitat and therefore have slightly less impact on burrowing owl habitat than Segment 2C Side Running.

As burrowing owls utilize the same habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for the Segment 2C alignment options. Permanent impacts to burrowing owl would be similar for the Segment 2C alignment options, while the Segment 2C Side Running alignment option would result in slightly greater temporary impacts than the Segment 2C Median alignment option.

*Potential Loss or Disturbance to Roosting Bats*

No suitable nursery or roosting habitats for bats are located in or within the vicinity of Segment 2C. No permanent or temporary effects would occur.

*Effects to American Badger*

Segment 2C could affect suitable habitat for American badger south of Barstow, where the alignment would be located immediately adjacent to the I-15 freeway. Construction of the rail alignment immediately adjacent to the I-15 freeway could result in the injury or mortality of badgers. The impacted acreage of suitable habitat for American badger would be comparable to the affected acreage described for desert tortoise habitat for the Segment 2C alignment options.

*Direct Effects to Desert Bighorn Sheep*

There are no known occurrences of desert bighorn sheep in Segment 2C nor is there any suitable habitat located in the vicinity of Segment 2C. No permanent or temporary effects would occur.

*Loss of Special Management Lands*

Segment 2C would be located within the existing I-15 transportation corridor and would not traverse through lands within a DWMA or ACEC. Segment 2C would avoid impacts to the Superior-Cronese Desert Tortoise Critical Habitat area associated with Segment 2A and Segment 2B, as evaluated in the Draft EIS.

*Direct and Indirect Impacts to Wetlands/Waters of the United States*

The Segment 2C alignment options would cross 12 streams. Construction of the rail alignment would cause soil and vegetation disturbance within the channel and banks of these streams. Permanent disturbance would occur as a result of the placement of culverts within the drainages. Temporary impacts would result from construction activity, which could cause sedimentation, erosion, and runoff of construction pollutants into the drainage.

**Segment 4C**

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

The construction of Segment 4C would have the potential to introduce or spread noxious weeds. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blow deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert. However, implementation of Segment 4C would not increase or decrease the risk of introducing or spreading noxious weeds as concluded in **Section 3.14.4.5** of the Draft EIS.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. The construction and operation of Segment 4C would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

Construction and operation of Segment 4C would convert sensitive vegetation and sensitive plant habitat areas to transportation use. Segment 4C would permanently impact 1.9 acres and temporarily impact 3.1 acres of Mesquite Shrubland.

*Impacts to Special-Status Plant Populations*

Within the footprint of Segment 4C, special-status plant populations and their habitat would be permanently removed and converted to transportation use. Focused presence/absence surveys will be completed in 2010. Stipulated avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

Construction of Segment 4C would involve the removal or degradation of desert tortoise habitat. Construction activities within the five TCAs along Segment 4C would also result in temporary impacts to desert tortoise and habitat. Segment 4C would permanently impact 182.9 acres and temporarily impact 490.0 acres of desert tortoise habitat.

*Barrier to Wildlife Movement*

Segment 4C would travel away from the I-15 freeway corridor north of Mountain Pass and would cause habitat fragmentation by creating a new linear feature through currently undeveloped lands. The rail alignment would create a barrier to wildlife movement for species including, but not limited to, desert bighorn sheep and desert tortoise. Segment 4C could isolate or block existing habitat east of the proposed rail alignment and west of the existing I-15 corridor.

*Direct Mortality of Mohave Ground Squirrels*

There are no known occurrences of Mohave ground squirrels nor is there suitable habitat located in the vicinity of Segment 4C. No permanent or temporary effects would occur.

*Direct Mortality of Mojave fringe-toed Lizard*

There are no known occurrences of Mojave fringe-toed lizard nor is there suitable habitat located in the vicinity of Segment 4C. No permanent or temporary effects would occur.

*Potential Loss or Disturbance to Nesting Raptors and Migratory Birds*

Segment 4C could disturb nesting habitat for raptors and migratory birds. The cliff areas through the Clark Mountains provide potential nesting habitat for American peregrine falcons, prairie falcons, and golden eagles. Construction activities, such as grading and tunneling, could result in the removal or disturbance of these areas that provide suitable habitat for migratory birds and raptors.

*Direct Mortality of Banded Gila Monster*

Segment 4C could affect suitable habitat for the banded gila monster, particularly near the Mountain Pass area. Construction activities within this area, specifically the use of heavy machinery, could result in direct mortality of banded gila monsters.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

The northern portion of Segment 4C within Nevada is located within the planning jurisdiction of the Clark County MSHCP. Construction of the rail alignment would temporarily impact suitable habitat for Clark County MSHCP covered reptile species. The affected acreage of retile habitat would be comparable to the impacted acreage for desert tortoise habitat.

*Potential Loss of Disturbance to Burrowing Owls*

Development of Segment 4C could include the direct loss of burrows and foraging habitat for burrowing owls. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs during the nesting season (February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). As burrowing owls utilize the same habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for Segment 4C.

*Potential Loss or Disturbance to Roosting Bats*

Caves and mines located within the vicinity of Segment 4C, specifically within the Clark Mountains, provide potential roosting and nursery sites for bats. Disturbance of these roosting and/or nursery sites during construction activities, such as tunneling, or operation of the trains could result in the injury or mortality of roosting bats.

*Effects to American Badger*

Segment 4C would be located within an area with suitable habitat for American badger. Construction activities such a grubbing and off-road travel could result in adverse effects to the badger. Since American badgers utilize similar habitat as the desert tortoise, the amount of impacted acreage is the same as described for desert tortoise habitat for Segment 4C.

*Direct Effects to Desert Bighorn Sheep*

Suitable habitat for desert bighorn sheep occurs in the Mountain Pass area of Segment 4C. Construction activities associated with Segment 4C, particularly proposed tunneling, could directly affect desert bighorn sheep by disrupting lambing areas and by altering the flow of natural springs, which provide critical water supply.

*Loss of Special Management Lands*

Segment 4C would not traverse through lands within a DWMA or ACEC. *Direct and Indirect Impacts to Wetlands/Waters of the United States*

Segment 4C would cross 48 streams. Construction of the rail alignment would cause soil and vegetation disturbance within the channel and banks of these streams. Permanent disturbance would occur as a result of the placement of culverts within the drainages. Temporary impacts would result from construction activity, which could cause sedimentation, erosion, and runoff of construction pollutants into the drainage.

**Relocated Sloan MSF**

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

The construction of the RSMSF would have the potential to introduce or spread noxious weeds. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blow deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert. However, implementation of the RSMSF would not increase or decrease the risk of introducing or spreading noxious weeds as concluded in **Section 3.14.4.5** of the Draft EIS.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. The construction and operation of the RSMSF would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

There are no sensitive vegetation communities on or within the vicinity of the RSMSF site. No effects would occur.

*Impacts to Special-Status Plant Populations*

Within the footprint of the RSMSF, special-status plant populations and their habitat would be permanently removed and converted to transportation use. Focused presence/absence surveys have not been conducted but will be completed prior to initiating construction. Stipulated avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

The RSMSF would result in permanent and temporary impacts to desert tortoise habitat. The RSMSF would permanently impact 9.1 acres of habitat and temporarily impact 11.4 acres of habitat. The RSMSF would result in an adverse effect because it would reduce the areas suitable for foraging habitat and for the construction of burrows.

*Barrier to Wildlife Movement*

The linear nature of I-15 creates a barrier to wildlife movement in the vicinity of the RSMSF. The RSMSF would not introduce a new barrier to wildlife movement. No adverse effects would occur.

*Direct Mortality of Mohave Ground Squirrels*

There are no known occurrences of Mohave ground squirrels nor suitable habitat located in the vicinity of the RSMSF. No permanent or temporary effects would occur.

*Direct Mortality of Mojave fringe-toed Lizard*

There are no known occurrences of Mojave fringe-toed lizard nor suitable habitat located in the vicinity of the RSMSF. No permanent or temporary effects would occur.

*Potential Loss or Disturbance to Nesting Raptors and Migratory Birds*

Construction and operation of the RSMSF may impact nesting habitat for raptors and migratory birds. Construction activities could remove or disturb shrubs and trees that provide suitable nesting habitat.

*Direct Mortality of Banded Gila Monster*

Construction activities could result in direct mortality of gila monsters and permanently remove suitable habitat.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

The RSMSF could impact reptile species covered under the Clark County MSHCP. The impact to suitable Clark County MSHCP covered reptile species habitat is comparable to the affected acreage of desert tortoise habitat.

*Potential Loss of Disturbance to Burrowing Owls*

Development of the RSMSF could include the direct loss of burrows and foraging habitat for burrowing owls. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs during the nesting season

(February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). As burrowing owls utilize the same habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for the RSMSF.

*Potential Loss or Disturbance to Roosting Bats*

No suitable nursery or roosting habitats for bats are located on or within the vicinity of the RSMSF. No permanent or temporary effects would occur.

*Effects to American Badger*

Construction of the RSMSF would have the potential to affect American badger habitat, which could result in the injury or mortality of badgers. The impact to suitable American badger habitat is comparable to the affected acreage of desert tortoise habitat.

*Direct Effects to Desert Bighorn Sheep*

There are no known occurrences of desert bighorn sheep nor suitable habitat in the vicinity of the RSMSF. No permanent or temporary effects would occur.

*Loss of Special Management Lands*

The RSMSF would not be located within a DWMA or ACEC. No adverse effects to critical habitat would occur.

*Direct and Indirect Impacts to Wetlands/Water of the United States*

The RSMSF would not impact any stream and would therefore not have an effect on wetlands or Waters of the United States. The RSMSF would avoid the stream crossings associated with the Las Vegas MSF site options evaluated in the Draft EIS.

**Frias Substation**

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

The construction of the Frias Substation would have the potential to introduce or spread noxious weeds. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blow deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert. However, development of the Frias Substation would not increase or decrease the risk of introducing or spreading noxious weeds as concluded in **Section 3.14.4.5** of the Draft EIS.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. The construction and operation of the Frias Substation would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

Construction activities associated with the Frias Substation would result in the loss of sensitive vegetation communities, which could result in long-term degradation of a sensitive plant community. The Frias Substation would impact approximately 4.6 acres of Mojave creosote vegetation.

*Impacts to Special-Status Plant Populations*

Within the footprint the Frias Substation, special-status plant populations and their habitat would be permanently removed and converted to transportation use. As previously stated, focused presence/absence surveys have not been conducted but will be completed prior to initiating construction. Stipulated avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

The Frias Substation site does not include any suitable habitat for desert tortoise given its disturbed nature within the suburban context of the metropolitan Las Vegas area. No permanent or temporary effects would occur.

*Barrier to Wildlife Movement*

The areas surrounding the Frias Substation is no longer viable as a wildlife movement corridor due to the surrounding urbanization, including I-15. No effects to an existing wildlife movement corridor would occur.

*Direct Mortality of Mohave Ground Squirrels*

There are no known occurrences of Mohave ground squirrel or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Direct Mortality of Mojave-fringe Toed Lizard*

There are no known occurrences of Mojave fringe-toed lizard or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Potential Loss or Disturbance to Nesting Raptors and Migratory Birds*

There are no known occurrences of nesting raptors or migratory birds or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Direct Mortality of Banded Gila Monster*

There are no known occurrences of banded gila monster or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

There are no known occurrences of Clark County MSHCP covered reptile species or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Potential Loss of Disturbance to Burrowing Owls*

Development of the Frias Substation could include the direct loss of burrows and foraging habitat for burrowing owls. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs during the nesting season (February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). As burrowing owls utilize the same habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for the Frias Substation.

*Potential Loss or Disturbance to Roosting Bats*

There are no known occurrences of roosting bats or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Project-Related Effects to American Badger*

There are no known occurrences of American badger or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Direct Effects to Desert Bighorn Sheep*

There are no known occurrences of desert bighorn sheep or areas of suitable habitat on or in the vicinity of the Frias Substation site. No permanent or temporary effects would occur.

*Loss of Special Management Lands*

The Frias Substation would not be located within a DWMA or ACEC. No adverse effects to critical habitat would occur.

*Direct and Indirect Impacts to Wetlands/Water of the United States*

The Frias Substation would be situated between two existing drainages to the north and south. The underground 25 kilovolt (kV) feeder that connects the Frias Substation to the autotransformer and rail alignment would, however, cross beneath the existing drainage to the north. It is assumed that these drainages have been previously disturbed due to the development of Dean Martin Drive to the west and the nearby residential development. Temporary impacts would result from construction activity, which could cause sedimentation, erosion, and runoff of construction pollutants into the drainage.

The Frias Substation would not cross any streams and would therefore not have an effect on wetlands or Waters of the United States.

### Alignment Adjustment Areas

*Potential Introduction or Spread of Noxious Weeds into Natural Vegetation Communities*

Construction associated with the AAAs would have the potential to introduce or spread noxious weeds. These effects would be the same as described for Segment 2A/2B, Segment 3B, and Segment 6B in **Section 3.14.4.5** of the Draft EIS, as the AAAs would only involve a shift of the rail alignments. Ground disturbing activities and seed dispersal associated with construction equipment or wind-blow deposits would have the potential to introduce and/or spread noxious weeds and adversely impact the natural vegetation communities and could increase the frequency of wildland fires within the project region due to an increase in the fuel load within the non-fire adapted Mojave Desert.

*Loss of or Damage to Native Vegetation Communities*

**Section 3.14.4.5** of the Draft EIS concluded that project construction would result in the loss of native vegetation in areas cleared for facility development. Implementation of the AAAs would not change the nature of this potential loss and any damage to or loss of these communities would be considered an adverse effect.

*Loss of Sensitive Vegetation Communities*

Implementation of the AAAs would not result in additional impacts to sensitive vegetation communities beyond the impacts identified for the respective rail alignments (Segment 2A/2B, Segment 3B, and Segment 6B) in the Draft EIS. The effects to sensitive vegetation communities for each rail alignment with the implementation of the AAAs are summarized below:

- **AAAs 1 and 2:** AAAs 1 and 2 would not result in any additional impacts to sensitive vegetation communities beyond the impacts for Segment 2A/2B in the Draft EIS. Segment 2A/2B, 2A and Segment 2A/2B, 2B would still each result in an impact to 4.6 acres of Mesquite Shrubland.
- **AAAs 3 through 6:** AAAs 3 through 6 would not result in any additional impacts to sensitive vegetation communities beyond the impacts for Segment 3B in the Draft EIS. Segment 3B would still result in permanent impacts to 1.9 acres of Mesquite Shrubland and 83.8 acres of Joshua tree wooded shrubland and temporary impacts to 13.4 acres of Mesquite Shrubland and 194.4 acres of Joshua tree wooded shrubland.
- **AAAs 7 and 8:** No sensitive vegetation communities occur within the vicinity of AAAs 7 and 8 and no effects would occur.

*Impacts to Special-Status Plant Populations*

Within the footprint of the AAAs, special-status plant populations and their habitat would be permanently removed and converted to transportation use. Focused presence/absence surveys have not been conducted but will be completed prior to initiating construction.

Stipulated avoidance, minimization, and mitigation requirements would be revised in cooperation with resource agencies to reduce or mitigate adverse impacts to special-status plant populations.

*Impacts to Desert Tortoise and Desert Tortoise Habitat*

The effects of each AAA to desert tortoise are summarized below:

- **AAAs 1 and 2:** AAAs 1 and 2 would result in a slight reduction in permanent and temporary impacts to desert tortoise for Segment 2A/2B.
    - With AAAs 1 and 2, Segment 2A/2B, 2A would permanently impact 171.1 acres of desert tortoise habitat, as compared to 174.1 acres without the AAAs. With AAAs 1 and 2, Segment 2A/2B, 2A would temporarily impact 700.8 acres of desert tortoise habitat, as compared to 731.5 acres without the AAAs.
    - With AAAs 1 and 2, Segment 2A/2B, 2B would permanently impact 150.7 acres of desert tortoise habitat, as compared to 152.5 acres without the AAAs. With AAAs 1 and 2, Segment 2A/2B, 2B would temporarily impact 547.8 acres of desert tortoise habitat, as compared to 585.2 acres without the AAAs.
- **AAAs 3 through 6:** AAAs 3 through 6 would result in an increase in permanent and temporary impacts to desert tortoise for Segment 3B. With AAAs 3 through 6, Segment 3B would permanently impact 619.9 acres of desert tortoise habitat as compared to 616.5 acres without the AAAs. With AAAs 3 through 6, Segment 3B would temporarily impact 1,848.3 acres of desert tortoise habitat as compared to 1,840 acres without the AAAs.
- **AAA 7:** AAA 7 would result in an increase in permanent and temporary impacts to desert tortoise for Segment 6B. With AAA 7, Segment 6B would permanently impact 39.5 acres of desert tortoise habitat as compared to 37.8 acres without the AAA. With AAA 7, Segment 6B would temporarily impact 127.5 acres of desert tortoise habitat as compared to 116.6 acres without the AAA.
- **AAA 8:** AAA 8 would not cross any suitable habitat for desert tortoise. No permanent or temporary impacts would occur.

*Barrier to Wildlife Movement*

The AAAs would not introduce any new barriers to wildlife movement than already presented in the respective rail alignments (Segment 2A/2B, Segment 3B, and Segment 6B) considered in the Draft EIS.

*Direct Mortality of Mohave Ground Squirrels*

The effects of each AAA to Mohave ground squirrel are summarized below:

- **AAAs 1 and 2:** AAAs 1 and 2 would result in a slight increase in permanent impacts and a reduction in temporary impacts to Mohave ground squirrel for Segment 2A/2B.
    - With AAAs 1 and 2, Segment 2A/2B, 2A would permanently impact 23.4

acres of Mohave ground squirrel habitat, as compared to 23.2 acres without the AAAs. No change to the temporary effects of Segment 2A/2B, 2A would occur with AAAs 1 and 2; Segment 2A/2B, 2A would still temporarily impact 864.6 acres of Mohave ground squirrel habitat.

- With AAAs 1 and 2, Segment 2A/2B, 2B would permanently impact 40.2 acres of Mohave ground squirrel habitat, as compared to 40.3 acres without the AAAs. No change to the temporary effects of Segment 2A/2B, 2B would occur with AAAs 1 and 2; Segment 2A/2B, 2B would still temporarily impact 319.4 acres of Mohave ground squirrel habitat.

- **AAAs 3 through 6:** AAAs 3 through 6 would not alter the affected acreage of Mohave ground squirrel for Segment 3B. No permanent impacts would occur, as Segment 3B would continue to temporarily impact 61.5 acres of Mohave ground squirrel habitat.
- **AAAs 7 and 8:** AAAs 7 and 8 would not result in Segment 6B crossing through any suitable habitat for Mohave ground squirrel. No permanent or temporary impacts would occur.

*Direct Mortality of Mojave Fringe-toed Lizard*

The potential effects of each AAA to Mojave fringe-toed lizard are summarized below:

- **AAAs 1 and 2:** Similar to Segment 2A/2B evaluated in **Section 3.14.4.5** of the Draft EIS, these alignment adjustments would traverse through suitable habitat for Mojave fringe-toed lizard near the sand dunes associated with the Mojave River. Implementation of the alignment adjustments would convert Mojave fringe-toed lizard habitat to transportation use and permanently remove suitable habitat. With AAAs 1 and 2, Segment 2A/2B would continue to affect a similar amount of habitat for Mojave fringe-toed lizards as assumed in the Draft EIS.
- **AAAs 3 through 6:** No suitable habitat for Mojave fringe-toed lizard occurs in or within the vicinity of the alignment adjustments to Segment 3B. AAAs 3 through 6 would thus result in no additional effects.
- **AAAs 7 and 8:** Since the Mojave fringe-toed lizard is not considered a threatened or sensitive species within Nevada, AAAs 7 and 8 would not introduce any such impacts to Segment 6B.

*Potential Loss or Disturbance to Nesting Raptors and Migratory Birds*

Segment 2A/2B, Segment 3B, and Segment 6B with incorporation of the AAAs would traverse through suitable nesting habitat for raptors and migratory birds. Construction and operation of the rail alignments with the AAAs could remove or disturb trees or shrubs which provide suitable habitat, representing an adverse effect similar to the effect identified in **Section 3.14.4.5** of the Draft EIS.

*Direct Mortality of Banded Gila Monster*

The potential effects or each AAA to banded gila monster are summarized below:

- **AAAs 1 and 2:** No suitable habitat for banded gila monster occurs in or within the vicinity of the alignment adjustments to Segment 2A/Segment 2B. No effects would occur.
- **AAAs 3 through 6:** Similar to Segment 3B evaluated in the Draft EIS, these alignment adjustments would traverse through suitable habitat for banded gila monster. Construction of the alignment adjustment areas could result in direct mortality of banded gila monsters. With AAAs 3 through 6, Segment 3B would continue to affect a similar amount of habitat for banded gila monster as assumed in the Draft EIS.
- **AAAs 7 and 8:** No suitable habitat for banded gila monster occurs in or within the vicinity of the alignment adjustments to Segment 2A/Segment 2B. No effects would occur.

*Direct Mortality of Clark County MSHCP Covered Reptile Species*

The potential effects of each AAA to the Clark County MSHCP covered reptile species are summarized below:

- **AAAs 1 through 6:** AAAs 1 through 6 would not be located within Clark County and would not be subject to the Clark County MSHCP.
- **AAAs 7 and 8:** Construction of AAAs 7 and 8 would temporarily impact suitable habitat for banded gecko, Great Basin collard lizard, desert iguana, large-spotted leopard lizard, desert tortoise, chuckwalla, sidewinder, specked rattlesnake, Mojave green rattlesnake, glossy snake, common king snake, western leaf-nosed snake, western long-nosed snake, and Sonoran lyre snake. Construction activities may result in the injury or mortality of these species. Since the impacted acreage of habitat suitable for Clark County MSHCP covered reptile species is the same as for the desert tortoise, implementation of AAA 7 would result in a slight increase in temporary and permanent effects to the Clark County MSHCP covered reptile species.

*Potential Loss of Disturbance to Burrowing Owls*

Development of the AAAs could include the direct loss of burrows and foraging habitat for burrowing owls, similar to the effects of Segment 2A/2B, Segment 3B, and Segment 6B in **Section 3.14.4.5** of the Draft EIS. Construction activities, such as grading and site preparation, could result in the removal of active nests if construction occurs during the nesting season (February 1 through August 31). Construction activities could also affect burrowing owls and their burrows during the non-breeding season (September 1 through January 31). As burrowing owls utilize the same habitat as desert tortoise, it is assumed that the affected acreage of burrowing owl habitat is comparable to the affected acreage of desert tortoise habitat described for the AAAs.

*Potential Loss or Disturbance to Roosting Bats*

Bridges, caves, and rock outcrops within the vicinity of the AAAs provide potential roosting and nursery sites for bats. Similar to Segments 2A/2B, Segment 3B, and Segment 6B in the Draft EIS, AAAs 1 through 8 could disturb roosting or nursery sites and could cause injury or mortality of bats.

*Effects to American Badger*

The potential effects of each AAA to American badger are summarized below:

- **AAAs 1 through 6:** Segment 2A/2B and Segment 3B with implementation of AAAs 1 through 6 would be located in areas suitable for American badger habitat. Similar to the conclusion in **Section 3.14.4.5** of the Draft EIS, construction of the rail alignments with the AAAs could result in the injury or mortality of badgers. Since American badgers utilize similar habitat as the desert tortoise, the amount of impact by AAAs 1 through 6 is anticipated to be the same as described for desert tortoise. With AAAs 1 and 2, Segment 2A/2B would result in a slight reduction in permanent and temporary impacts to American badger, while Segment 3B with AAAs 3 through 6 would result in a slight increase in permanent and temporary impacts to American badger.
- **AAAs 7 and 8:** AAAs 7 and 8 do not result in Segment 6B crossing suitable habitat for American badger and no effects would occur.

*Direct Effects to Desert Bighorn Sheep*

The potential effects of each AAA to desert bighorn sheep are summarized below:

- **AAAs 1, 2, 7, and 8:** AAAs 1, 2, 7, and 8 do not result in Segment 2A/2B or Segment 6B crossing suitable habitat for desert bighorn sheep and no effects would occur.
- **AAAs 3 through 6:** AAAs 3 through 6 would affect portions of Segment 3B which cross through suitable habitat for desert bighorn sheep. Construction-related activities could directly affect desert bighorn sheep by disrupting lambing and by altering the flow of natural springs, which provide critical water supply. Desert bighorn sheep could also use the rail corridor for movement and as a result, operation of the passenger train could result in the mortality of sheep. With AAAs 3 through 6, Segment 3B would continue to affect a similar amount of habitat for desert bighorn sheep as assumed in **Section 3.14.4.5** of the Draft EIS.

*Loss of Special Management Lands*

Implementation of the alignment adjustments would not alter the affected acreage of special management lands for Segment 2A/2B, Segment 3B, and Segment 6B.

- **AAAs 1 and 2:** Implementation of AAAs 1 and 2 would not alter the affected acreage of special management lands for Segment 2A/2B. Segment 2A/2B would continue to impact 60.9 acres of Superior-Cronese Desert Tortoise Critical Habitat.
- **AAAs 3 through 6:** Implementation of AAAs 3 through 6 would not alter the affected acreage of special management lands for Segment 3B. Segment 3B would

continue to impact 268.5 acres of Superior-Cronese Desert Tortoise Critical Habitat, 225.7 acres of Ivanpah Desert Tortoise Critical Habitat, and 3.6 acres of the Cronese ACEC.

- **AAAs 7 and 8:** AAAs 7 and 8 would not be located within any special management lands. Segment 6B with implementation of AAAs 7 and 8 would result in no effects to special management lands.

*Direct and Indirect Impacts to Wetlands/Waters of the United States*

The AAAs would not result in any new stream crossings for Segment 2A/2B, Segment 3B, and Segment 6B. Segment 2A/2B would cross 16 streams, Segment 3B would cross 117 streams, and Segment 6B would cross 16 to 18 streams.

**Wigwam MSF Modification**

The modification to the Wigwam MSF would not introduce any new direct or indirect biological resource effects beyond those described in **Section 3.14.4.5** of the Draft EIS. Construction and operation of the Wigwam MSF modification could introduce or spread noxious weeds; could result in the loss or damage to native vegetation communities; impact special-status plant populations; permanently and temporarily impact desert tortoise, Mojave fringe-toed lizard, nesting raptors and migratory birds, Clark County MSHCP covered reptile species, and burrowing owls; and result in direct and indirect impacts to wetlands and Waters of the United States.

**Profile Modification**

The Profile Modification would not create any new direct or indirect biological resource impacts beyond those previously identified for Segment 3B in **Section 3.14.4.5** of the Draft EIS as the location of the rail alignment has not changed. Placing the rail alignment in a 1.3 mile long retained cut would not foreseeably alter the potential biological resources associated with this portion og Segment 3B. Segment 3B with implementation of the Profile Modification could continue to introduce or spread noxious weeds; could result in the loss or damage to native vegetation communities; result in the loss of sensitive vegetation communities; impact special-status plant populations; permanently and temporarily impact desert tortoise, Mohave ground squirrel, Mojave fringe-toed lizard, nesting raptors and migratory birds, banded gila monster, burrowing owls, roosting bats, and American badger; impacts to special management lands; and result in direct and indirect impacts to wetlands and Waters of the United States.

## 3.14.4 MITIGATION MEASURES

**Section 3.14.5** of the Draft EIS included **Mitigation Measures BIO-1** through **BIO-21**, which are applicable to the project modifications and additions. The relevant mitigation measures from **Section 3.14.5** of the Draft EIS are summarized below:

- **Mitigation Measure BIO-1:** Requires implementation of a mandatory environmental awareness training program for all personnel working within the project area.
- **Mitigation Measure BIO-2:** Requires preconstruction surveys for special-

status species, to be conducted by a qualified biologist prior to the start of construction. Preconstruction surveys for Mohave ground squirrel, Mojave fringe-toed lizard, banded gila monster, BLM sensitive and Clark Coounty MSHCP covered reptile species, burrowing owls, roosting bats, American badger, desert bighorn sheep, sensitive botanical species, and noxious weeds shall be required.

- **Mitigation Measure BIO-3:** Requires implementation of construction monitoring measures.
- **Mitigation Measure BIO-4:** Requires the implementation of specific measures to avoid the dispersal of noxious weed into uninfested areas.
- **Mitigation Measure BIO-5:** Requires the confinement of construction equipment to a designated work zone (including access roads) at each project site.
- **Mitigation Measure BIO-6:** Requires the reestablishment of preconstruction site conditions to allow for revegetation.
- **Mitigation Measure BIO-7:** Requires the retention and stockpiling of topsoil.
- **Mitigation Measure BIO-8:** Requires the restoration of natural site topography to pre-project contours.
- **Mitigation Measure BIO-9:** Requires the implementation of erosion control measures as part of an erosion control and restoration plan, as appropriate.
- **Mitigation Measure BIO-10:** Requires a tree or plant removal permit from San Bernardino County and the Nevada Division of Forestry and/or the BLM in order to relocate succulents within the project alignment.
- **Mitigation Measure BIO-11:** Compensate for the loss of sensitive vegetation communities prior to initiating construction.
- **Mitigation Measure BIO-12:**[2] Requires implementation of preconstruction surveys for sensitive vegetation and the identification of sensitive areas.
- **Mitigation Measure BIO-13:** Requires the avoidance of known special-status plant populations during project design.
- **Mitigation Measure BIO-14:** Requires compensation for adverse effects on special-status plant populations, per the direction of the USFWS and CDFG.
- **Mitigation Measure BIO-15:** Requires the preparation of a desert tortoise relocation plan in conjunction with the USFWS Las Vegas and Ventura Ecological Services Offices, BLM, NPS, and the CDFG.
- **Mitigation Measure BIO-16:** Requires the preparation of a final mitigation monitoring report for USFWS, BLM, and state agencies.

[2] The Draft EIS did not include a Mitigation Measure BIO-12. To correct this error from the Draft EIS, Mitigation Measure BIO-13 from the Draft EIS is reflected as Mitigation Measure BIO-12 in this Supplemental Draft EIS. Subsequent mitigation measure numbers were revised accordingly.

- **Mitigation Measure BIO-17:** Requires the implementation of mitigation measures outlines by the Nevada USFWS ecological services office to protect desert tortoise.
- **Mitigation Measure BIO-18:** Requires the compensation for the permanent loss of desert tortoise habitat.
- **Mitigation Measure BIO-19:** Requires the construction of exclusion fencing and culverts to match the existing I-15 or UPRR culverts.
- **Mitigation Measure BIO-20:** Requires the compensation for the permanent loss of Mohave ground squirrel habitat.
- **Mitigation Measure BIO-21:** Requires the avoidance of active burrows or the passive relocation of owls.

## 3.14.5 Residual Impacts Following Mitigation

While the mitigation measures above would mitigate permanent biological resources effects related to the construction and operation of the project modifications and additions, the modifications and additions would result in the permanent conversion of lands identified as sensitive habitat areas to transportation use.

Segment 2A / 2B

Note: Segments 1 and 2A/2B are one common alignment that would be used under Alternative A or Alternative B.

Segment 1

Segment 2C

Lenwood

Barstow

Barstow Marine Corps Logistics Base

Superior-Cronese DWMA

Fremont-Kramer DWMA

Newberry Mountains Wilderness

Victorville Station Site 3A / 3B

Victorville Station Site 3A/3B

Victorville OMSF 2

Victorville Site 2

Victorville Site 1

Victorville OMSF 1

Oro Grande

Southern California Logistics Airport

Victorville

Apple Valley

Segment 1

Dale Evans Pky

Boulder Rd

Victorville OMSF Site 2

Segment 1

## Legend

### Biological Resources

**Sensitive Vegetation Community**

- Joshua Tree Woodland
- Mesquite bosque

**Special Status Species***

- Plants
- Animals

* See Figure S-3.14-6 for list of species names

Note: Undeveloped areas below 5000 feet in elevation are potential Desert Tortoise habitat.

- Area of Critical Environmental Concern
- Desert Wildlife Management Area (DWMA)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

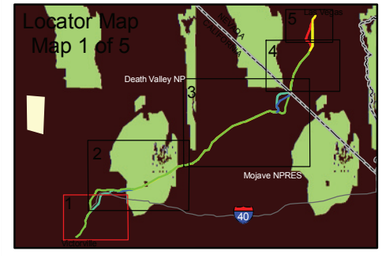
1 inch equals 3 miles

Kilometers: 0 2 4

Miles: 0 1.5 3

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 1 of 5

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*Biological Resources (1)*

FIG **S-3.14-1**

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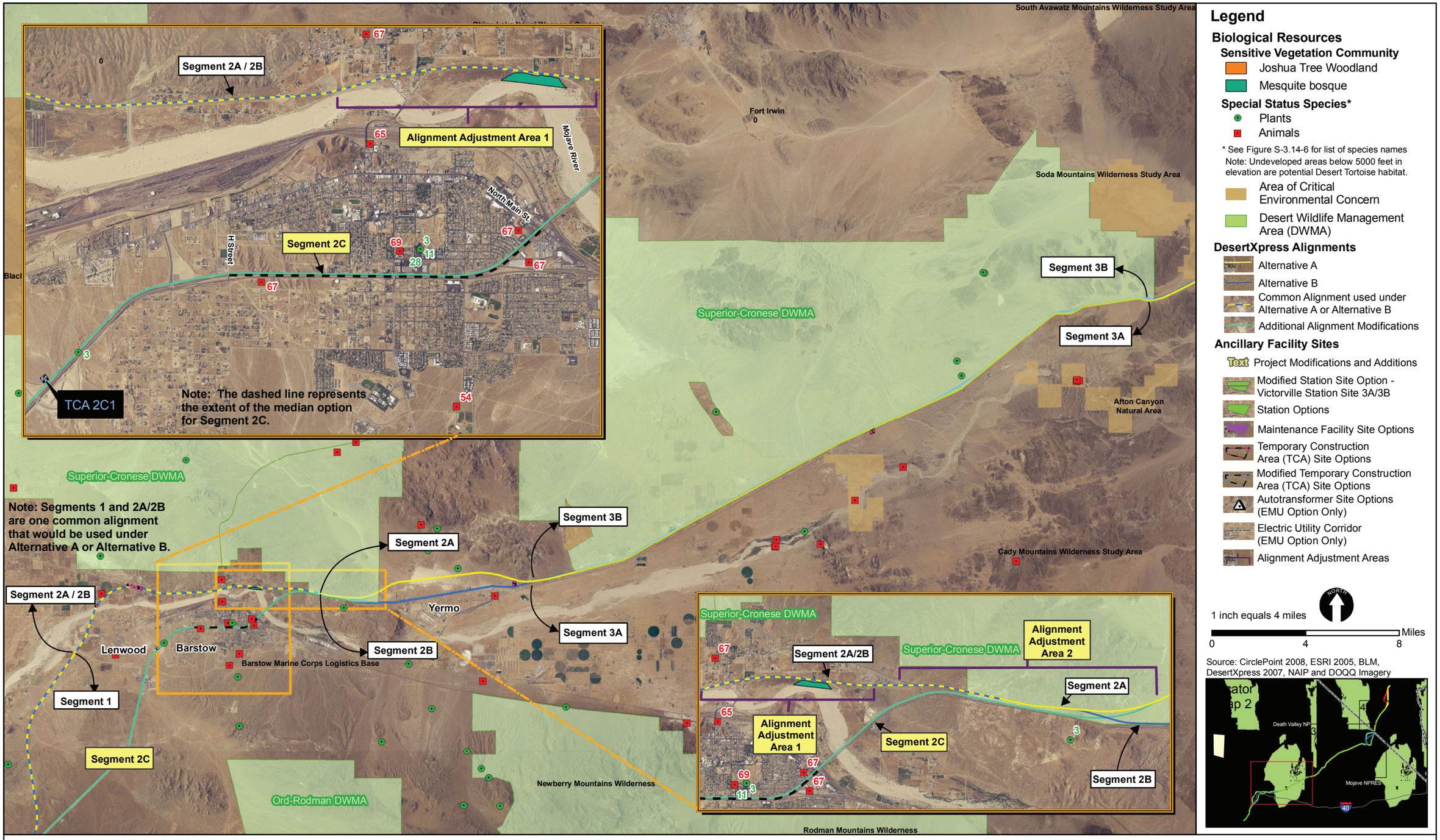


## Legend

### Biological Resources

**Sensitive Vegetation Community**

- Joshua Tree Woodland
- Mesquite bosque

**Special Status Species***

- Plants
- Animals

* See Figure S-3.14-6 for list of species names
Note: Undeveloped areas below 5000 feet in elevation are potential Desert Tortoise habitat.

- Area of Critical Environmental Concern
- Desert Wildlife Management Area (DWMA)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 4 miles

0 4 8 Miles

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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***Biological Resources (2)***

FIG **S-3.14-2**

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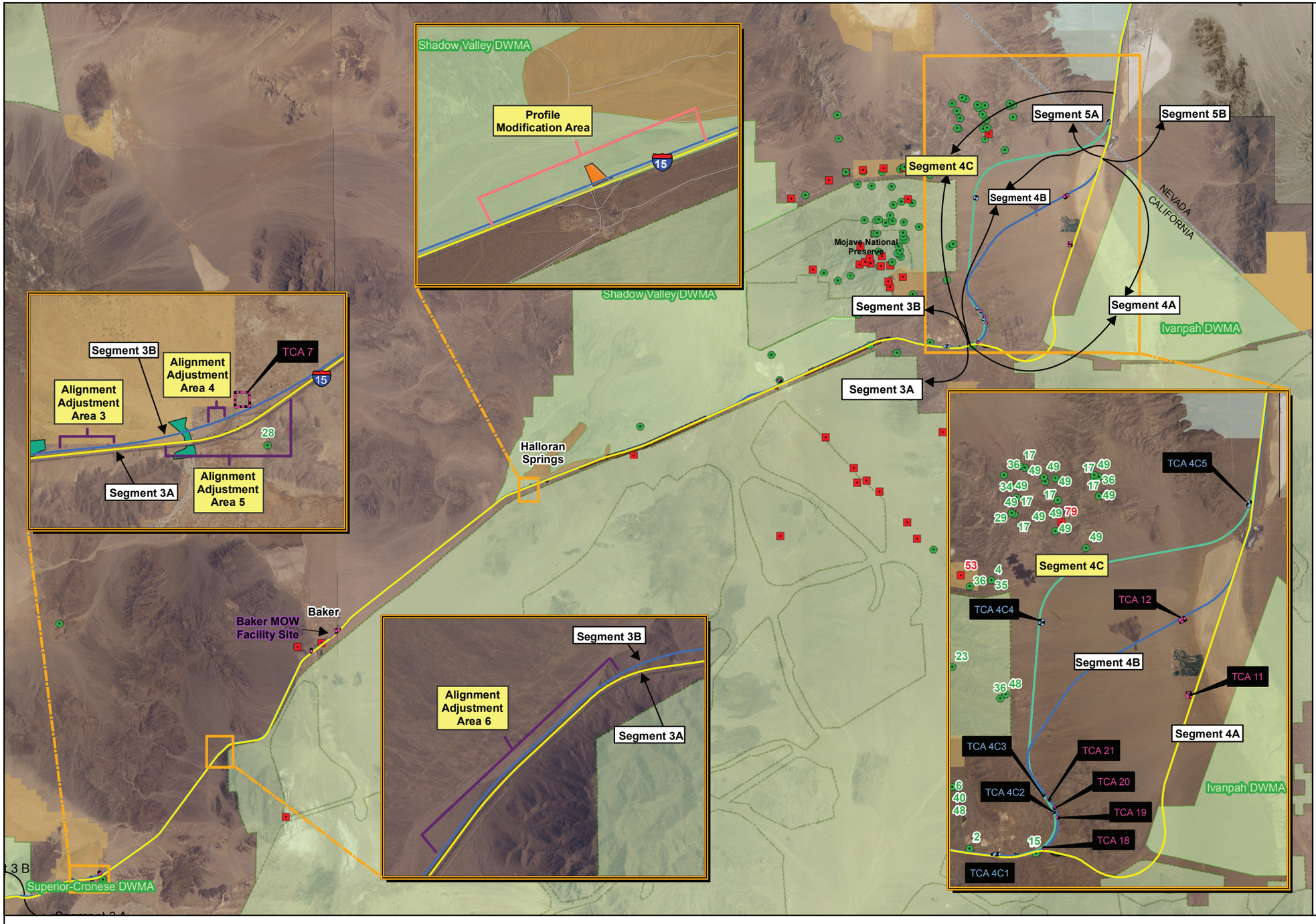



## Legend

### Biological Resources

**Sensitive Vegetation Community**

- Joshua Tree Woodland
- Mesquite bosque

**Special Status Species***

- Plants
- Animals

* See Figure S-3.14-6 for list of species names
Note: Undeveloped areas below 5000 feet in elevation are potential Desert Tortoise habitat.

- Area of Critical Environmental Concern
- Desert Wildlife Management Area (DWMA)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

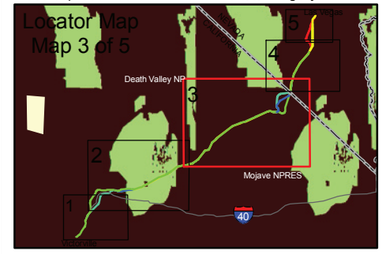
- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 5 miles

0 2.5 5 Miles

NORTH

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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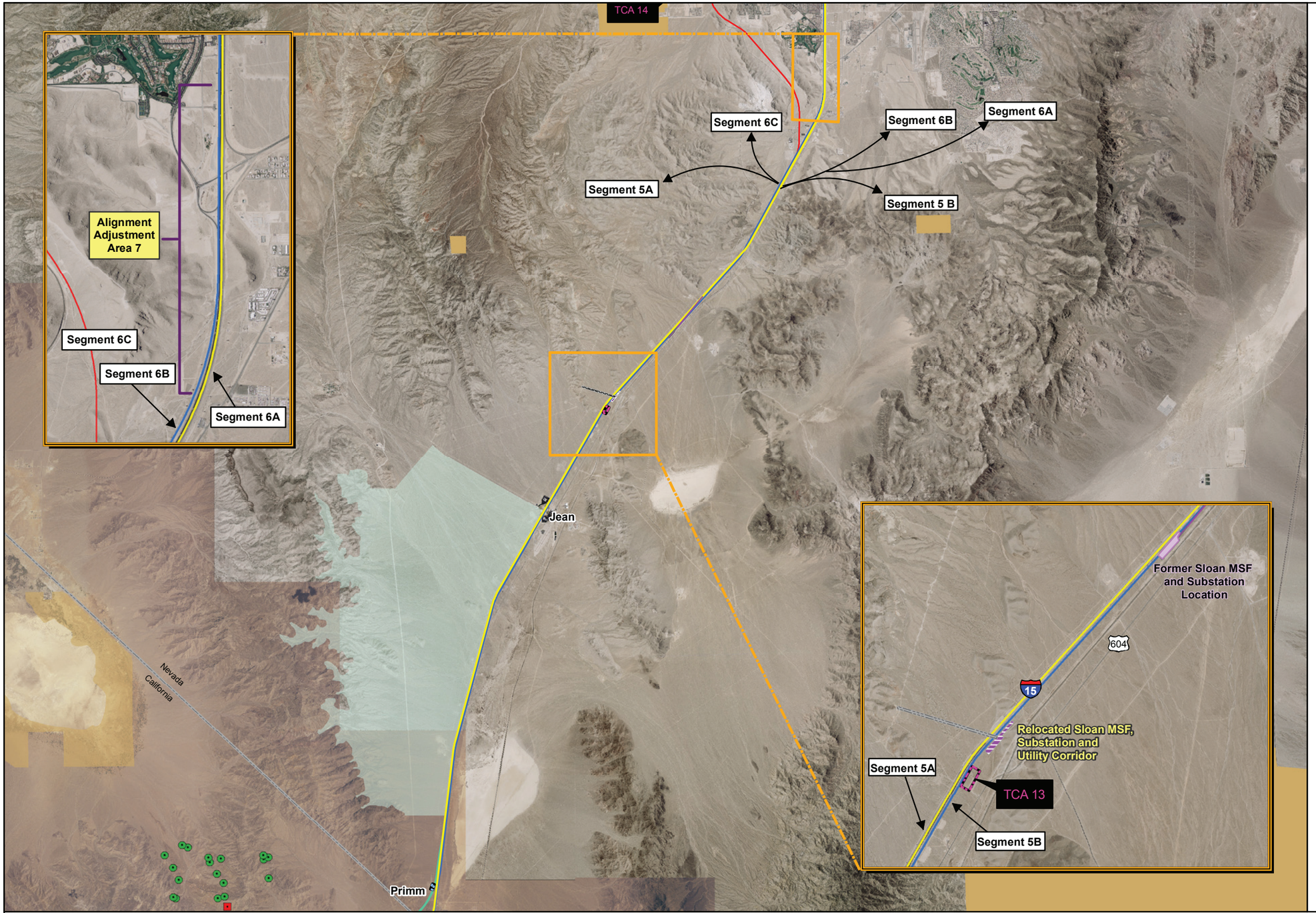
***Biological Resources (3)***

FIG **S-3.14-3**

Geografika Consulting 06.15.10




## Legend

### Biological Resources

**Sensitive Vegetation Community**

- Joshua Tree Woodland
- Mesquite bosque

**Special Status Species***

- Plants
- Animals

* See Figure S-3.14-6 for list of species names

Note: Undeveloped areas below 5000 feet in elevation are potential Desert Tortoise habitat.

- Area of Critical Environmental Concern
- Desert Wildlife Management Area (DWMA)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

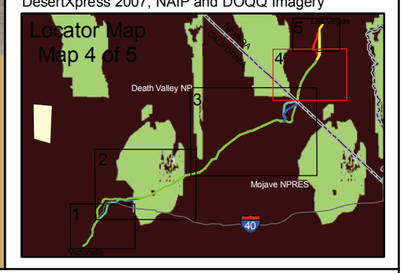
- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Relocation Sloan MSF / Substation Site Option
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

NORTH

0 3 6 Miles

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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***Biological Resources (4)***

FIG **S-3.14-4**

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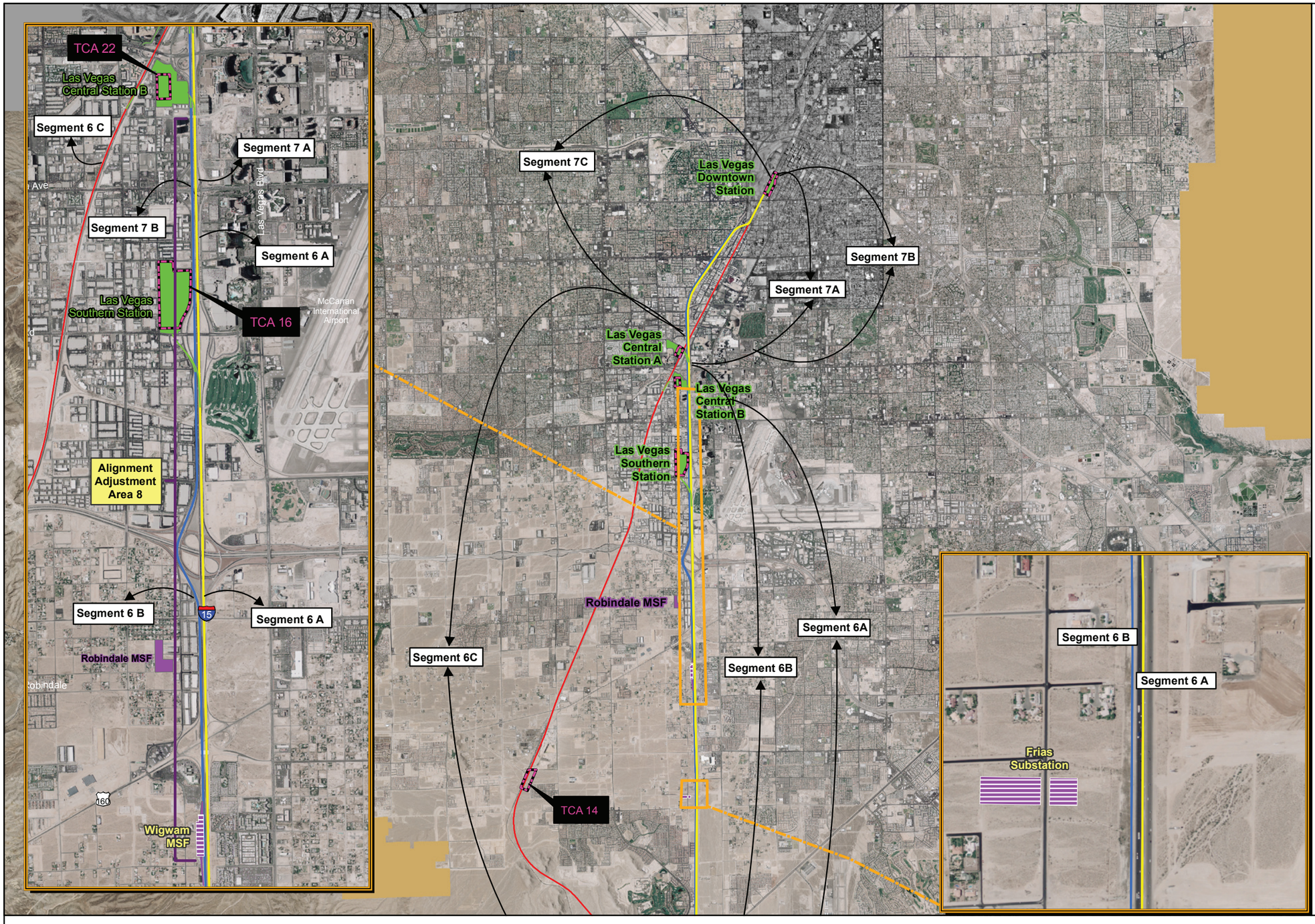



## Legend

### Biological Resources

**Sensitive Vegetation Community**

- Joshua Tree Woodland
- Mesquite bosque

**Special Status Species***

- Plants
- Animals

* See Figure S-3.14-6 for list of species names

Note: Undeveloped areas below 5000 feet in elevation are potential Desert Tortoise habitat.

- Area of Critical Environmental Concern
- Desert Wildlife Management Area (DWMA)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

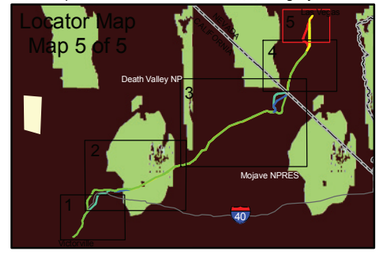
- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Frias Substation and Wigwam MSF Modifications
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 2 miles

0 1 2 Miles

NORTH

Source: CirclePoint 2008, ESRI 2005, BLM, DesertXpress 2007, NAIP and DOQQ Imagery

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*Biological Resources (5)*

FIG **S-3.14-5**

Geografika Consulting 06.15.10




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***Special Status Species Within the Project Region***

FIG **S-3.14-6**

Geografika Consulting 06 08.10

# 3.15 SECTION 4(F) EVALUATION

This section discusses the potential impacts of the project modifications and additions on resources protected by Section 4(f) of the Department of Transportation Act of 1966.

## 3.15.1 AFFECTED ENVIRONMENT

Regulations and standards related to Section 4(f) identified in **Section 3.15.1.1** of the Draft EIS have not changed since publication of the Draft EIS and therefore remain applicable to the project modifications and additions.

### Regional Conditions

**Figures S-3.15.1** through **S-3.15.5** show the proposed project modifications and additions in relation to public park and recreation facilities within the project area.

*Historic Architectural Resources*

The Draft EIS identified two historic architectural resources in the vicinity of the proposed project. However, the Draft EIS concluded that there would be no direct use of these resources and with mitigation, no constructive use of the resources would occur.

The project modifications and additions are not located near the historic architectural resources identified in the Draft EIS and no new resources are present. The project modifications and additions would not change the conclusion that there would be no use of historic resources within the project area that qualify for protection under Section 4(f).

*Clean Air Act Class 1 Areas*

The Draft EIS identified eight wilderness and national park resources that, while not being directly affected by the proposed action, are located within 100 miles and meet certain criteria under the Clean Air Act[1] that qualify these resources as being sensitive to air pollution and thus qualifying for protection under Section 4(f):

- Domeland Wilderness
- San Gabriel Wilderness
- San Gorgonio Wilderness
- Agua Tibia Wilderness
- San Jacinto Wilderness
- Cucamonga Wilderness
- Grand Canyon National Park
- Joshua Tree National Park

[1] 42 U.S.C. 7472

The project modifications and additions would not substantially alter the air quality analysis or conclusions (see **Section 3.12, Air Quality,** of this Supplemental Draft EIS) contained in the Draft EIS. Based on this analysis the Draft EIS concluded that emissions from the action alternatives would be greatly dispersed prior to entering the airsheds of these resources and would, therefore, not have a substantial impact on the visibility in any of these areas.

**Public Parks and Recreational Facilities**

*Victorville Station Site 3*

There are no public parks or recreational areas in close proximity to VV3. **Figure S-3.15.1** shows that the closest such resources are located south of VV1 in the City of Victorville. As such, no direct or constructive use of recreational resource properties would occur with regard to VV3.

*OMSF 2*

There are no public parks or recreational areas in proximity to OMSF 2. **Figure S-3.15.1** shows that the closest such resources are located south of VV1 in the City of Victorville. As such, no direct or constructive use of recreational resource properties would occur with modification to OMSF 2.

*Segment 2C*

Segment 2C would be located near several public parks and recreation facilities. **Figure S-13.5-2** shows the locations of these facilities relative to Segment 2C.

***Barstow Heights Park:*** Barstow Heights Park is an approximately 0.8 acres public park located in Barstow at Rimrock Road and H Street. This neighborhood park includes a playground and picnic area.

***Dana Park:*** Dana Park is an approximately 8.8 acre public park located in Barstow to the north of I-15 at 850 Barstow Road. Park amenities include a playground, indoor pool, and tennis courts.

***Cameron Park:*** Cameron Park is a small neighborhood public park located just north of I-15 within Barstow at the intersection of Yucca Street and Kelly Drive.

***Lillian Park:*** Lillian Park is an approximately 3.7 acre public park located in Barstow north of I-15 at 901 Bigger Street. Park amenities include a picnic area and baseball field.

***John Sturnacle Park:*** John Sturnacle Park is an approximately 10.4 acre public park located in Barstow to the north of I-15 at 1434 Sage Drive. Park amenities include a playground, picnic area, baseball field, and basketball court.

***Foglesong Park:*** Foglesong Park is an approximately 35 acre park located in Barstow to the north of I-15 at 300 Avenue G. Park amenities include a playground, athletic field, swimming pool, and picnic area.

***Daha Park:*** Daha Park is a small neighborhood park located in Barstow just north of I-15 at East Virginia Way and Barstow Road.

***H Street Soccer Fields:*** The H Street Soccer Fields is an approximately 15 acre public recreation field located in Barstow just north of I-15 at Avenue H and Vineyard Street. Amenities include soccer fields.

***Smith Park[2]:*** Smith Park is a neighborhood park located in Yermo to the south of I-15 at Yermo Road and McCormick Street.

***Hurst Park[2]:*** Hurst Park is a neighborhood park located in Yermo to the south of I-15 at Yermo Road and Calico Road.

*Segment 4C*

The northern unit of the Mojave National Preserve is located more than one mile to the west of Segment 4C.

*Relocated Sloan MSF*

There are no public parks or recreation areas located near the RSMSF site.

*Frias Substation*

Western Trails Park is a public park located near the Frias Substation site.

*Alignment Adjustment Areas*

The Section 4(f) evaluation in the Draft EIS identifies public parks and recreation facilities that qualify for protection along the proposed rail corridor. The AAAs involve minor modifications to the rail alignment and would not result in direct use, nor indirect use of the public parks and recreation facilities qualifying for protection under Section 4(f).

***AAA 1:*** AAA 1 would shift a portion of Segment 2A/2B near Barstow fewer than 400 feet to the south, and incrementally closer to numerous park and recreational facilities in the City of Barstow. However, the shift associated would nonetheless keep Segment 2A/2B on

[2] The Section 4(f) evaluation within the Draft EIS did not include Smith Park or Hurst Park. Subsequent to the Draft EIS publication, it was determined that Smith Park would be in close proximity to Segment 2B and thus should have been included in the Draft EIS as a Section 4(f) resource potentially affected by Segment 2B. If Segment 2B is selected as part of the Agency Preferred Alternative, the Final EIS will include an evaluation of Smith Park relative to Segment 2B.

the north side of the Mojave River and thus substantially separate from the various parks and recreational facilities within urbanized Barstow.

***AAAs 7 and 8:*** AAAs 7 and 8 would shift portions of the Segment 6B alignment to the outer edge of the I-15 freeway right of way or into the right-of-way associated with Industrial Road/South Dean Martin Drive. These minor shifts would move the rail line incrementally closer to several parks in the Las Vegas area but the closest public park would still be over 1 mile away.

*Wigwam MSF Modification*

Western Trails Park is a public park located near the Wigwam Avenue MSF site.

*Profile Modification*

The Mojave National Preserve is located south of the I-15 freeway in the vicinity of the proposed profile modification.

**Cultural Resources**

There is one cultural resource located in close proximity to Segment 2C that could qualify for protection under Section 4(f), the Old National Trails Highway (CA-SBR-2910H). In addition, there is one cultural resource located in close proximity to the AAAs and Profile Modification that could qualify for protection under Section 4(f).

## 3.15.2 Methods of Evaluation of Impacts

**Section 3.15-4** of the Draft EIS included a preliminary Section 4(f) Evaluation, developed pursuant to 23 U.S.C. 138 and 49 U.S.C. 303. Following these legislative requirements, the Draft EIS's Section 4(f) evaluation restated the project's purpose and need, described major action alternatives, the project's use of Section 4(f) resources, presented avoidance alternatives, and measures to minimize harm.

This Supplemental 4(f) evaluation examines the project modifications and additions articulated in **Chapter 2.0, Alternatives**, of this Supplemental DEIS to determine if they would result in the use a Section 4(f) resource. The Final EIS will include a Final Section 4(f) evaluation, which examines potential Section 4(f) uses associated with the Agency Preferred Alternative.

## 3.15.3 Environmental Consequences

Each project modifications and addition was evaluated based on the criteria for adverse effects related to Section 4(f) Resources as described in **Section 3.15.1.1** of the Draft EIS. The discussions below consider the potential effects of the project modifications and additions to public parks and recreational facilities and cultural resources.

## Public Parks and Recreation Facilities

*Victorville Station Site 3, OMSF 2, and Relocated Sloan MSF*

There are no public parks or recreation areas located near the VV3, OMSF 2, or RSMSF sites.

*Segment 2C*

The closest public park or recreational facility is 0.8 miles away from Segment 2C. As a result, Segment 2C would not result in the direct use of any of these facilities. Segment 2C would also not result in constructive use of these facilities. The public parks and recreational facilities are of sufficient distance from Segment 2C to not be affected by noise, dust, or other potential indirect effects that would result in constructive use.

*Segment 4C*

Segment 4C would be located near the northern Clark Mountain unit of the Mojave National Preserve. The northern unit of the Preserve is accessible only by off-road vehicle or foot. Segment 4C would be located largely atop a plain located at a substantial elevation below the mostly rugged terrain of the northern unit of the Preserve. Given the distance between Segment 4C and the Preserve as well as local topographic considerations, Segment 4C would not result in a direct or constructive use of the Preserve.

*Frias Substation, Alignment Adjustment Areas, and Wigwam MSF Modification*

AAA 8, the Wigwam MSF, and the Frias Substation would result in built portions of the project being located outside the I-15 corridor. Of these, only the Frias Substation would include the addition of a facility to the west of South Dean Martin Drive, a largely commercial/industrial corridor paralleling the I-15 freeway and South Las Vegas Boulevard throughout much of the Las Vegas metropolitan area.

**Figure S-3.15-5** depicts the location of Western Trails Park in relation to project features. Given the distance of this park from the Frias Substation site (over 1 mile to the west) no use or constructive use of this resource would occur.

*Profile Modification*

The profile modification would occur on the opposite side of the I-15 freeway from the Mojave National Preserve and therefore would not result in direct use of the Preserve. Placing the rail alignment in a retained cut would further reduce any potential for constructive use of the Preserve as potential noise and visual effects would be further reduced.

**Cultural Resources**

The majority of project modifications and additions will not have any impact on cultural resources protected under Section 4(f). However, one of the project modifications and additions was designed by the applicant to avoid the use of a 4(f) property by minimizing the impact of the project on the integrity of the site. The FRA is consulting with the BLM and Native American tribes regarding potential impacts to this site and will make a final determination regarding impacts to this site in the Final Section 4(f) evaluation.

As a result of FRA's continuing tribal consultation efforts, FRA has determined that the disclosure of any information about the location, character, or ownership of the property may risk harm to the resource. Therefore, FRA is withholding additional information that has the potential to disclose the location or character of the resource.

## 3.15.4 Avoidance Alternatives

The proposed project modifications and additions would not affect the conclusion in **Section 3.15.4** of the Draft EIS Section 4(f) evaluation regarding avoidance alternatives. Other than the No Action alternative, there are no feasible and prudent alternatives that would avoid all Section 4(f) resources.

**Alternative Development Process**

As documented in **Section 3.15.5** of the Draft EIS Section 4(f) evaluation, several alignment alternatives were studied by the Applicant and were rejected from further consideration using standardized technical and environmental criteria. These criteria were developed largely by the Applicant. The process used by the applicant to evaluate conceptual alignment alternatives and to make feasibility and practicability determinations in consultation with the Lead and Cooperating agencies during the environmental review process is further described in the Draft EIS (see Chapter 2, Alternatives).

As noted above, certain project modifications and additions were proposed by the Applicant subsequent to publication of the Draft EIS in order to present additional alternatives that would, among other things, avoid or minimize the potential for a Section 4(f) use to occur. For example, Segment 4C provides a routing alternative through the Clark Mountain area that would avoid the direct Section 4(f) use associated with Segment 4A. Additional modifications have been proposed to avoid and minimize impacts to cultural resource sites.

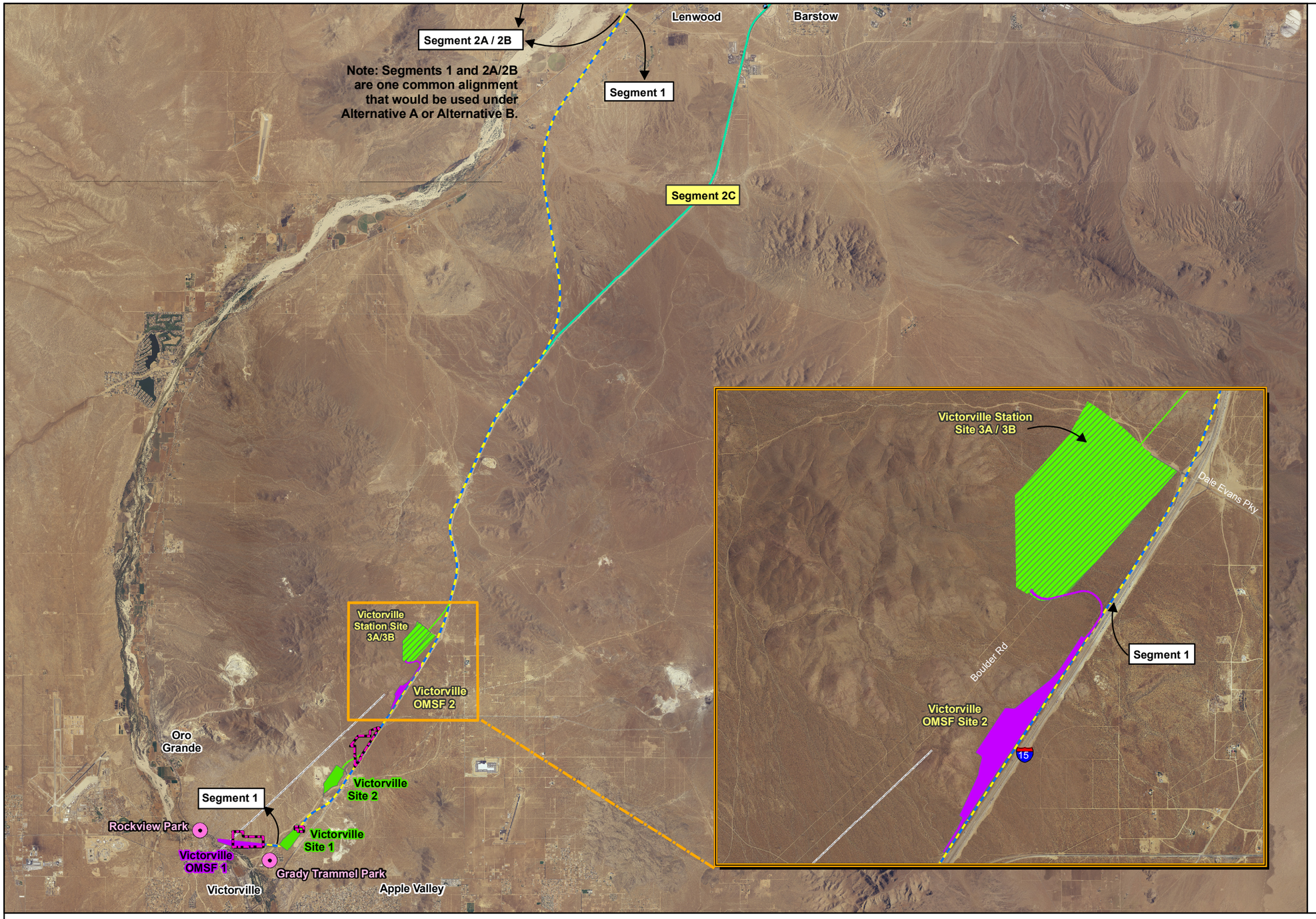
## 3.15.5 Least Harm Analysis and Concluding Statement

Under Section 4(f), the determination of least overall harm will evaluate and balance the following factors:

- The ability to mitigate adverse impacts to each Section 4(f) property;

- The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
- The relative significance of each Section 4(f) property;
- The views of the officials with jurisdiction over each Section 4(f) property;
- The degree to which each alternative meets the purpose and need for the project;
- After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
- Substantial differences in costs among the alternatives.

The Final EIS will include a final Section 4(f) evaluation that examines the Agency Preferred Alternative and any Section 4(f) uses that may result. The final evaluation will incorporate input from the agencies and members of the public during circulation of the Draft and Supplemental Draft EIS, as well as from the outcome of the Section 106 consultation process.




## Legend

**Public Parks and Recreation Facilities**

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

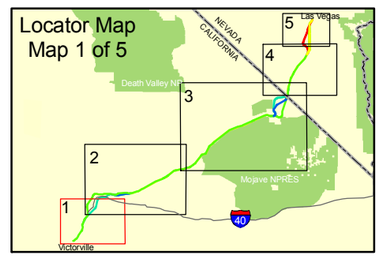
- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

Kilometers
0 2 4

Miles
0 1.5 3

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006,

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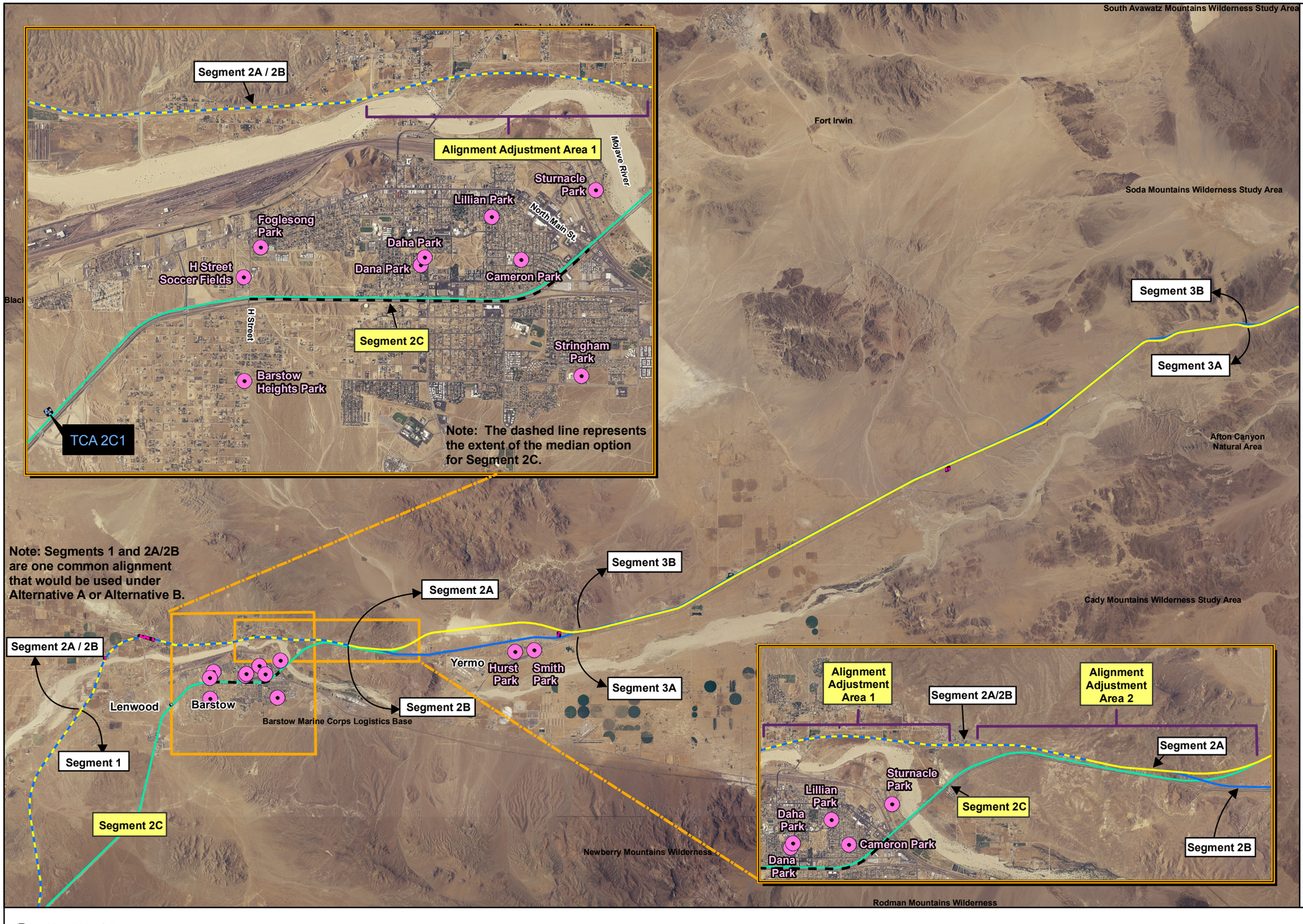
*Section 4(f) Resources (1)*

FIG **S-3.15-1**

Geografika Consulting 06.16.10




## Legend

**Public Parks and Recreation Facilities**

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

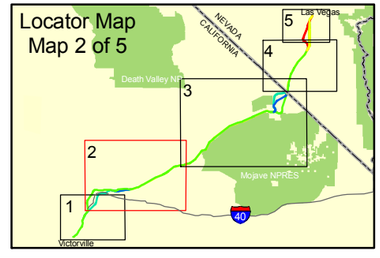
- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 4 miles

0 5 10 Kilometers

0 4 8 Miles

Source: DesertXpress 2007, ESRI 2005, NAIP 2003-2006,

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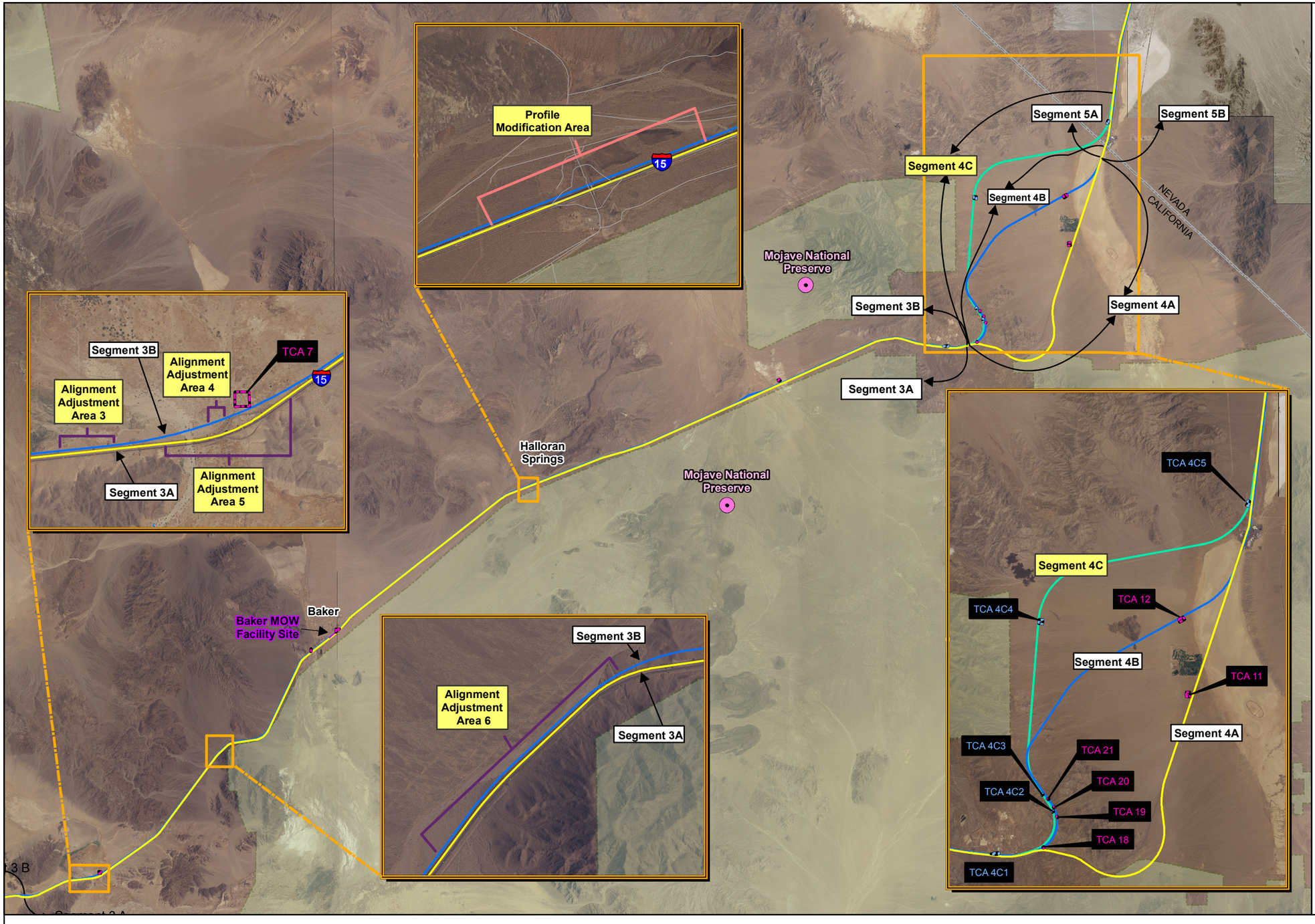
*Section 4(f) Resources (2)*

FIG **S-3.15-2**

Geografika Consulting 06.016.10




## Legend

**Public Parks and Recreation Facilities**

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

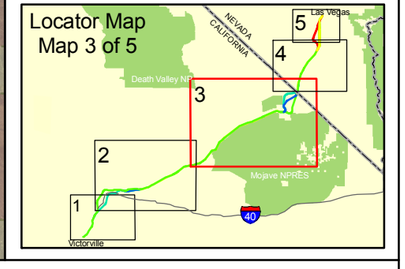
1 inch equals 5 miles

0 3 6 Kilometers

0 2.5 5 Miles

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

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*Section 4(f) Resources (3)*

FIG **S-3.15-3**

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TCA 14

Stonewater Park

Segment 6C

Segment 6B

Segment 6A

Segment 5A

Segment 5 B

Alignment Adjustment Area 7

Segment 6C

Segment 6B

Segment 6A

Jean

Nevada

California

Primm

Former Sloan MSF and Substation Location

604

15

Relocated Sloan MSF, Substation and Utility Corridor

Segment 5A

TCA 13

Segment 5B

## Legend

**Public Parks and Recreation Facilities**

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text — Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Relocation Sloan MSF / Substation Site Option
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 3 miles

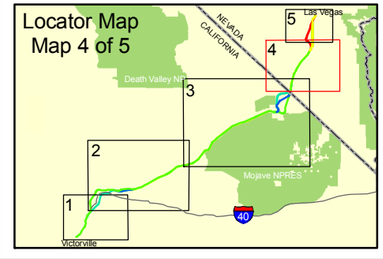
0 2.5 5 Kilometers

0 3 6 Miles

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 4 of 5

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**DesertXpress - Supplemental EIS**

*Section 4(f) Resources (4)*

FIG S-3.15-4

Geografika Consulting 06.16.10

TCA 22
Las Vegas Central Station B
Segment 6 C
Segment 7 A
Segment 7 B
Segment 6 A
Las Vegas Southern Station
TCA 16
Alignment Adjustment Area 8
Las Vegas Blvd
McCarran International Airport
Segment 6 B
Segment 6 A
Western Trails Park
Robindale MSF
Wigwam MSF
160
15
Segment 7C
Las Vegas Downtown Station
Mary Dutton Park
Bob Baskin Park
Segment 7B
Segment 7A
Las Vegas Central Station A
Las Vegas Central Station B
Las Vegas Southern Station
Western Trails Park
Robindale MSF
Segment 6A
Segment 6C
Segment 6B
TCA 14
Stonewater Park
Segment 6 B
Segment 6 A
Frias Substation

## Legend

**Public Parks and Recreation Facilities**

**DesertXpress Alignments**

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

**Ancillary Facility Sites**

- Text Project Modifications and Additions
- Station Options
- Maintenance Facility Site Options
- Frias Substation and Wigwam MSF Modifications
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

1 inch equals 2 miles

Kilometers
0 1.25 2.5

Miles
0 1 2

NORTH

Source: CirclePoint 2008, ESRI 2005, DesertXpress 2007, NAIP and DOQQ Imagery

Locator Map
Map 5 of 5
NEVADA
CALIFORNIA
Las Vegas
Death Valley NP
Mojave NPRES
Victorville
1
2
3
4
5
40

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**DesertXpress - Supplemental EIS**

*Section 4(f) Resources (5)*

FIG **S-3.15-5**

Geografika Consulting 06.16.10

# 3.16 CUMULATIVE IMPACTS

This chapter summarizes the potential cumulative physical and growth-related environmental consequences associated with the project modifications and additions.

## 3.16.1 RELATED PROJECTS CONSIDERED IN THE CUMULATIVE ANALYSIS

### Past Activities and Actions

Past activities and projects described in the cumulative analysis within **Section 3.16.2** of the Draft EIS are considered as part of this analysis. Over the past decade, numerous past projects, such as residential, industrial, commercial, or service area projects, have been completed and developed as a result of the rapid urbanization in Victorville and Las Vegas. Between Victorville and Las Vegas, the trend in urbanization has not been as rapid, with a limited number of isolated projects between the two cities. The action alternatives evaluated in the Draft EIS as well as the project modifications and additions were designed considering the location of these past projects, so as to limit disruption or displacement where possible. These past projects are part of the existing environmental conditions and establish a baseline for the potentially affected environment.

### Reasonably Foreseeable Present and Future Actions and Projects

**Section 3.16.3** of the Draft EIS presented information describing the reasonably foreseeable present and future actions considered in the cumulative analysis. Since publication of the Draft EIS, several new transportation improvement projects have been identified within Clark County and are discussed in this section under the heading "Transportation Projects." No new reasonably foreseeable present or future project related to parks, recreation, or natural preservation; development; energy; or public utilities have been identified within the project region since publication of the Draft EIS. Summaries of all reasonably foreseeable present and future actions considered in the cumulative analysis are provided below.

**Figures S-3.16-1** through **S-3.16-5** show the location of the reasonably foreseeable present and future projects in relation to the project modifications and additions. The related present and future projects are summarized below.

#### *Transportation Projects*

*Interstate 15 Capacity Improvements* –Caltrans and NDOT are planning for future highway improvements along I-15 between Victorville and Las Vegas. **Figures S-3.16-1** through **S-3.16-5** show the location of the I-15 capacity improvements. The Caltrans improvements include widening the I-15 bridge over the Mojave River, several interchange modifications, widening portions of the I-15 freeway to increase capacity, and the addition of truck lanes near Mountain Pass.

> NDOT is proposing several improvements and projects along the I-15 corridor, including the NEON project and the I-15 South project, which involve the reconstruction of existing interchanges, local access improvements, a High-

Occupancy Vehicle (HOV) lane connecting I-15 to US 95, construction of new interchanges. Other planned capacity improvements on the I-15 freeway between I-215 and US 95 include:

- I-15 from California state line to Sloan Road: widen from 6 to 8 lanes
- I-15 from Sloan Road to Blue Diamond Road (6 lanes to 10 lanes)
- I-15 between I-215 and I-515: widen from 10 to 14 lanes (preliminary engineering)
- I-15 between Russell Road and Sahara Avenue: widen from 8 to 10 lanes (preliminary engineering and right-of-way acquisition)

*New Roadways intersecting I-15 or the proposed rail alignment:*

- Starr Avenue: construction of a 6 lane roadway from I-15 to St. Rose Parkway (Clark County)
- I-15 at I-215: construction of new direct connector high-occupancy vehicle ramps (Clark County)

*Interstate 15 Joint Point of Entry* – This project proposes the construction of a Commercial Vehicle Enforcement Facility and an Agricultural Inspection Facility between Nipton Road and Yates Road on southbound I-15 just south of the California-Nevada state line. **Figure S-3.16-5** shows the location of the Joint Point of Entry project.

*California High Speed Rail* – This project is a proposed high-speed rail system in California. The high-speed train system would serve Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. Due to the proposed distance of the California High Speed Rail and the number of alignment options, this future project is not shown on a figure.

*Supplemental Commercial Airport in Ivanpah Valley* – This project would involve the construction of a new airport in the Ivanpah Valley, just south of Las Vegas, to serve as a supplement facility to the existing McCarran airport in Las Vegas. **Figure S-3.16-6** shows the location of the proposed airport.

*Southern Nevada Regional Heliport* – The Clark County Department of Aviation (CCDOA) has proposed a new heliport site just south of Sloan to the west of I-15. **Figure S-3.16-6** shows the location of the proposed helipad.

- *Intermodal Transport Terminal near Downtown Las Vegas* – This project would be located north of the northernmost DesertXpress passenger station option (Downtown Las Vegas). Should this Terminal be constructed, it would be complementary to DesertXpress service in providing train passengers with connections to local transit services.
- *Las Vegas Managed Lanes Demonstration Project* – This is a trial project of high occupancy toll (HOT) lanes on I-15 from the intersection of I-215 in the south to north of Downtown Las Vegas, and beyond the proposed terminus of the DesertXpress project)

*The California-Nevada Interstate Maglev Train* - This project proposes to construct a new rail line using magnetic levitation technology between Las Vegas and Primm, Nevada

as a segment of the high-speed MAGLEV system between Las Vegas, Nevada, and Anaheim, California. Congress provided $45 million through Section 102 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59, 119 Stat. 1144, August 10, 2005) (SAFETEA-LU) as amended by the SAFETEA-LU Technical Corrections Act of 2008 (Public Law 110-244, 122 Stat. 1572, June 6, 2008) to fund deployment of a maglev project between Las Vegas and Primm, Nevada. NDOT is working with FRA to define the scope of work for a funding agreement to support the preparation of an environmental impact statement analyzing the impacts associated with the proposed Maglev project.

### *Parks, Recreation, or Natural Preservation Projects*

*West Mojave Coordinated Management Plan* – The BLM has proposed the West Mojave Coordinated Management Plan to define a regional strategy for conserving plant and animal species and their habitats. The plan would also define an efficient, equitable, and cost-effective process for complying with regulations and policies related to threatened and endangered species (i.e., Endangered Species Act), such as desert tortoise and Mohave ground squirrel. The plan area would cover approximately 9.4 million acres of public land managed by the BLM. Due to the large expanse covered under this plan, this area is not shown on a figure.

*Mixed-Use Recreation – Ivanpah Dry Lake* – This project would allow for the continued issuance of Casual Use permits and Permitted and Organized event permits in the Ivanpah Dry Lake area. **Figure S-3.16-5** shows the location of the Mixed-Use Recreation area.

### *Development Projects*

*North Triangle Specific Plan* – This plan is proposed within the North Mojave Plan area in Victorville. The North Triangle Specific Plan anticipates the inclusion of transportation related facilities, such as the Victorville passenger station and OMSF. **Figure S-3.16-1** shows the location of the North Triangle Specific Plan.

*Mixed-Use Development – Jean*– This project would involve the development of approximately 166 acres near Jean. The project would develop a mixed-use community, including affordable housing, commercial business, retail, and a new hotel and casino. **Figure S-3.16-6** shows the location of this mixed-used development.

- *Fast Food Restaurant Development – Primm*– This project would involve the development of a fast food restaurant in Primm. **Figure S-3.16-5** shows the location of this development.

### *Energy Projects*

*BLM Solar and Wind Energy Projects* –BLM has receive**d several propo**sals for solar energy and wind energy projects in the California Desert. The Ivanpah Solar Electric Generating System project is one of the solar energy projects under consideration. **Figures S-3.16-4** and **S-3.16-5** show the location of the proposed energy projects.

*Ivanpah Energy Center* – The Ivanpah Energy Center would be located in Primm on the east side of I-15 and would include the development of a 500- Mw gas-turbine combined-cycle power plant. **Figure S-3.16-5** shows the location of this energy center.

*Primm Solar Generating Plant* – The Primm Solar Generating Plant project would involve the construction of a 250 Mw solar trough plant on approximately 2,500 acres in Primm. **Figure S-3.16-5** shows the location of this solar generating plant.

***Public Utilities Projects***

*Expansion of Kinder-Morgan CalNev Pipeline System* – Kinder Morgan is proposing the addition of a third gasoline pipeline alongside the two existing pipelines that currently comprise the CalNev pipeline system from southern California to Las Vegas. **Figures S-3.16-1** though **S-3.16-7** show the location of the Kinder Morgan CalNev Pipeline.

*Ivanpah Substation* – Southern California Edison (SCE) has proposed to construct a new Ivanpah Substation sized to accommodate 230/115 kV facilities. **Figure S-3.16-5** shows the location of this substation.

## 3.16.2 Methods of Evaluation of Impacts

NEPA regulations and standards related to cumulative impacts have not changed since publication of the Draft EIS. A cumulative impact is defined as an impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts may result from individually minor actions by collectively significant actions taking place over a defined period of time.[1]

The same methodology and regulations and standards pertinent to the analysis of cumulative effects as identified in **Section 3.16.1** of the Draft EIS was used to evaluate the potential cumulative effects associated with the implementation of the project modifications and additions. The analysis focuses on determining if the proposed project modifications and additions would alter the analysis or conclusions regarding cumulative effects contained in the Draft EIS.

## 3.16.3 Analysis of Cumulative Impacts

**Land Use and Community Impacts**

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis for land use and community impacts considered in **Section 3.16.4** of the Draft EIS includes San Bernardino County and Clark County. As concluded in **Section 3.16.4** of the Draft EIS, the DesertXpress project, in combination with the cumulative projects, would further the land use trend of concentrating urban land uses (i.e., residential, commercial, industrial) within Victorville and Las Vegas. As the DesertXpress project does not propose significant land use changes along the rail alignment, the related projects between Victorville and Las Vegas (i.e., the energy projects, public utilities projects, and transportation project) would maintain the slow trend of land

[1] 40 CFR 1508.8(b)

use changes in this generally undeveloped area. Since the construction of the DesertXpress project would occur primarily within existing freeway or railroad rights-of-way, except at the proposed station and maintenance facility sites, and since the land use effects resulting from the DesertXpress project and the related projects would be site and project-specific the cumulative impacts related to land use and community would not be substantial.

*Cumulative Effects with Implementation of Project Modifications and Additions*

VV3 would be located outside of the North Triangle Specific Plan area, which could foster urban development outside of the central Victorville area. Segment 4C would avoid land use conflicts associated with Segment 4A which include the Mojave National Preserve and the Joint Port of Entry project site. Segment 4C would avoid land use conflicts associated with Segment 4B which include the Ivanpah Solar Electric Generating System project site. Segment 4C would therefore reduce the overall cumulative effect to conflicts with adjacent land uses.

Overall, implementation of the project modifications and additions would not substantially alter the cumulative conclusions contained in **Section 3.16.4** of the Draft EIS. The DesertXpress project with the modifications and additions, in combination with the related projects would not result in a cumulative impact to land use and the community.

**Growth**

*Summary of Cumulative Effects Identified in Draft EIS*

Cumulative growth effects were evaluated on a county-wide basis (within San Bernardino County and Clark County). Both San Bernardino County and Clark County are expected to experience population, household, and employment growth through 2030. The DesertXpress project in combination with the transportation improvement and development projects could contribute to growth in San Bernardino County and Clark County. Cumulatively, the DesertXpress project in combination with the related transportation projects could increase the number of visitors to the Las Vegas area, but would not necessarily result in a new permanent population or housing stock. The DesertXpress project would contribute less than one percent of the anticipated employment growth in San Bernardino County and Clark County and would not result in a cumulative impact to employment growth. Overall, cumulative effects to growth would not be substantial.

*Cumulative Effects with Implementation of Project Modifications and Additions*

Implementation of the project modifications and additions would not change the direct and indirect growth effects described in **Section 3.16.4** of the Draft EIS. The modifications and additions alter the locations and/or sizes of the station and maintenance facilities but do not change the program of their expected uses or employment capacity.

### Farmlands/Agricultural Lands

*Summary of Cumulative Effects Identified in Draft EIS*

The area considered for cumulative impacts to farmlands includes only San Bernardino County, as no farmlands or grazing lands are present in the project region within Clark County.

As concluded in **Section 3.16.4** of the Draft EIS, the DesertXpress project in combination with the future widening and capacity improvements to I-15 near Victorville and Barstow, the North Triangle Specific Plan, and the California High Speed Rail project, as well as other projects and development in San Bernardino County, would continue the regional trend of converting farmland and grazing land to non-agricultural use. However, in relation to San Bernardino County's annual farmland conversion rate, the amount of important farmland affected by the project would be less than one percent of total conversions. **Section 3.16.4** of the Draft EIS concluded that the DesertXpress project would not have a considerable contribution to the cumulative farmland effects, as specific farmland and grazing land impacts would be mitigated.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not change the cumulative effects to farmland and grazing land identified in **Section 3.16.4** of the Draft EIS. Similar to VV2, VV3 would be located within a BLM grazing allotment and would result in the permanent conversion of grazing lands to transportation use. Segment 4C would also be located within a designated grazing allotment, similar to Segment 4B, and could affect grazing activities. However, these effects would be similar to those identified in **Section 3.3.4.2** of the Draft EIS. Conversely, implementation of the Segment 2C would reduce impacts to farmland and grazing land because it would be located within the I-15 freeway corridor rather than undeveloped lands which Segment 2A/2B would cross. Overall, the project modifications and additions would not affect the cumulative farmland and grazing land effects identified in **Section 3.16.4** of the Draft EIS.

### Utilities and Emergency Services

*Summary of Cumulative Effects Identified in Draft EIS*

The area considered for cumulative effects related to utilities and emergency services in **Section 3.16.4** of the Draft EIS includes the utility and emergency service provider service areas. As concluded in **Section 3.16.4** of the Draft EIS, the DesertXpress project in combination with the related transportation and development projects would place additional demand on the existing public utilities and service providers. These projects would cumulatively affect the capacity of the existing public utilities and the ability of service provides to provide adequate levels of service. Conversely, public utility projects, such as the expansion of the Kinder-Morgan CalNev Pipeline and the development of the Ivanpah Substation would increase the capacity of existing utilities which could serve the DesertXpress project and other cumulative developments. Since the DesertXpress project incorporates mitigation requirements to reduce effects related to utilities and emergency

services and that the future projects would be required to undergo a similar environmental review process, the cumulative impact related to public utilities in San Bernardino County and Clark County would be negligible.

The DesertXpress project in combination with development of the related projects could also result in utility infrastructure conflicts, such as crossing overhead electric transmission lines or underground utility mains. Coordination with local utility providers would be required for the DesertXpress project and the cumulative development projects, thereby reducing the cumulative effects related to utility crossings.

*Cumulative Effects with Implementation of Project Modifications and Additions*

Regarding water, wastewater, and stormwater services, the project modifications and additions would not change the cumulative analysis contained in **Section 3.16.4** of the Draft EIS. The project modifications and additions would not alter the water demands, wastewater generation, or stormwater runoff of the project as a whole.

However, based on additional consultation with the Victorville Water District (VWD) following publication of the Draft EIS, VWD clarified that the construction of VV2, VV3, and OMSF 2 would not be adequately served by existing water facilities due to their distance from existing water mains. In combination with development associated with the North Triangle Specific Plan, the Victorville Station site options and OMSF 2 could cumulatively contribute to the need for additional water facilities to adequately serve the area. As stated in **Section 3.4.4.2** of the Draft EIS, a Water Supply Assessment would be required to determine the size and extent of the new water facilities needed, which would mitigate the effects of the DesertXpress project to water services and facilities. With this mitigation, the project modifications and additions would not alter the cumulative effects related to water, wastewater, and stormwater service providers and cumulative effects would remain negligible.

Implementation of Segment 4C would result in slightly greater effects related to emergency services as compared to Segment 4A or Segment 4B. Portions of Segment 4C are more remote which would affect the ability to access and respond quickly in the event of an emergency. Segment 4C, in combination with the Ivanpah Solar Electric Generating System project, would create a cumulative need for basic emergency services in this otherwise undeveloped area. Thus, the cumulative effects on emergency services would be slightly greater with Segment 4C.

Regarding utility conflicts, implementation of the project modifications and additions would not result in a substantial change to the nature or number of utility infrastructure crossings considered in **Section 3.4.4.2** of the Draft EIS. Cumulative effects would remain negligible.

### Traffic

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis considered in **Section 3.16.4** of the Draft EIS includes transportation corridors between Southern California and Las Vegas, such as the I-15 freeway mainline and surrounding local roadways. As stated in **Section 3.16.4** of the

Draft EIS, the DesertXpress project in combination with the related transportation and development projects would cumulatively affect traffic in the area of cumulative analysis. Along the I-15 freeway corridor, the DesertXpress project in combination with the I-15 transportation improvements would improve traffic conditions on I-15 in year 2030, thereby resulting in a beneficial cumulative impact. However, the DesertXpress project in combination with the related development projects within Victorville and Las Vegas would result in adverse cumulative effects to study intersections near the station site options. The adverse cumulative effects would be isolated at the DesertXpress project termini. Mitigation measures identified in **Section 3.5.5** of the Draft EIS would lessen the adverse effects related to traffic as a result of the DesertXpress project. It is also anticipated that the agencies responsible for review, approval, and permitting of the related projects would require similar mitigation to alleviate potential adverse traffic effects. As such, the cumulative impact of the related projects in combination with the DesertXpress project would not be substantial.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not change the overall beneficial effect of the project which would reduce mainline traffic on the I-15 freeway, as the project would continue to be located within the same region and would continue to provide high-speed passenger train service between Victorville and Las Vegas.

Regarding cumulative traffic effects at local intersections, **Section 3.5, Traffic and Transportation**, of this Supplemental Draft EIS contains analysis of the cumulative traffic impacts associated with VV3.

### Visual Resources

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis for effects related to visual resources includes the viewshed, or the visible environment, surrounding the DesertXpress project. The DesertXpress project in combination with the related projects would result in a cumulative impact to visual resources. The DesertXpress project and the related projects would also cumulatively contribute to an overall increase in light and glare in the area of cumulative analysis. While cumulative development would introduce new urban visual features into the open, expansive undeveloped areas between Victorville and Las Vegas, cumulative visual effects would be isolated to the viewshed in the related projects' sites. Thus, the cumulative impact of the transportation, development, and energy projects in combination with the DesertXpress project would not be substantial.

*Cumulative Effects with Implementation of Project Modifications and Additions*

VV3 and Segment 4C would introduce new facilities in areas not previously analyzed from a cumulative visual perspective. VV3 would spread urban development further into the undeveloped area between Victorville and Barstow. Due to the presence of overhead electric transmission lines, the I-15 freeway, and periodic billboards, the addition of VV3 would not substantially detract from the existing landscape.

Similar to Segment 4B, Segment 4C would combine with the Ivanpah Solar Electric Generating System and would introduce prominent man-made elements into the otherwise largely undeveloped visual landscape. Since the Ivanpah Solar Electric Generating System would have a larger, concentrated footprint, implementation of Segment 4C would not have a considerable contribution to the cumulative visual change. Additionally, views of this area would be limited and would only be distantly visible from wilderness areas of the Mojave National Preserve or peaks of the Clark Mountains. Overall, the cumulative impact of the DesertXpress project with the project modifications and additions and related projects would not be substantial.

### Cultural and Paleontological Resources

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis for effects related to cultural resources includes the identified historic and archeological sites within the Area of Potential Effect (APE). Cumulative impacts to historical, archeological, and paleontological resources can occur when development of an area results in the removal of a substantial number of historic structures or archeological sites that when taken in combination could degrade the physical historical record of an area. While impacts associated with cultural resources tend to be limited to individual project sites and do not generally result in substantial cumulative impacts, the DesertXpress project in combination with the capacity improvements to I-15, the Joint Port of Entry project, and wind energy projects would result in cumulative impacts to such resources. The action alternatives evaluated in the Draft EIS would cross through the same lands identified for the use of these projects, which could combine to further degrade or damage recorded or unknown cultural and paleontological resources within the vicinity. The DesertXpress project includes site specific mitigation measures to reduce effects to cultural and paleontological resources and would thereby not have a considerable contribution to the overall cumulative effect.

*Cumulative Effects With Implementation of Project Modifications and Additions*

Similar to the action alternatives identified in the Draft EIS, the project modifications and additions, when combined with the related projects, could cumulatively affect cultural and paleontological resources within the area of cumulative analysis. For example, Segment 2C could combine with the I-15 capacity improvement projects to affect cultural or paleontological resources. However, the same mitigation measures as identified in **Section 3.7.5** of the Draft EIS would be applied to the project modifications and additions to reduce adverse effects related to recorded and unknown cultural and paleontological resources.

### Hydrology

*Summary of Cumulative Effects Identified in Draft EIS*

The area considered for cumulative effects to hydrology and water quality includes the watersheds affected by the DesertXpress project. As stated in **Section 3.16.4** of the Draft EIS, the DesertXpress project in combination with the past, present, and future transportation, development, public utility, and energy projects would cumulatively effect

hydrology and water quality within the area of cumulative analysis due to the crossing of existing drainages, streams, and channels. The cumulative development could also contribute to the increase in impervious surfaces in the region, thereby resulting in additional stormwater runoff. Construction activities associated with the DesertXpress project and the related projects could also result in cumulative effects to water quality, as contaminants or sedimentation could be released into nearby waterways. The related projects located within the 100-year floodplain, such as the Southern Nevada Supplemental Airport, could also combine with the DesertXpress project to cumulatively affect the floodplain. However, the DesertXpress project includes site specific mitigation measures, such as compliance with NPDES permit requirements, the use of Best Management Practices (BMPs), proper design of drainage facilities, and reducing encroachment to the 100-year floodplain. With implementation of these mitigation measures, the DesertXpress project would not considerably contribute to the cumulative impacts to hydrology and water quality.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not substantially change the cumulative effects related to stormwater runoff and impacts to water resources. Construction and operation of VV3 in combination with the related transportation improvements along the I-15 corridor could result in additional cumulative effects to water quality and drainage patterns, as VV3 would impact a branch of Bell Mountain Wash not previously bisected by VV1 or VV2. VV3 would also result in more impervious surface than VV1 or VV2, which could cumulatively combine with the related projects and result in a slight increase in cumulative effects related to stormwater runoff. Segment 4C would also result in a longer rail alignment than Segment 4A or Segment 4B, which could also increase the cumulative stormwater runoff when combined with the anticipated runoff of the related projects. However, the same site specific mitigation measures in **Section 3.8.5** of the Draft EIS would be applied to the project modifications and additions to reduce effects to hydrology and water effects. Even with implementation of the project modifications and additions, the DesertXpress project would not have a considerable contribution to the overall cumulative effect related to hydrology and water quality.

### Geology and Soils

*Summary of Cumulative Effects Identified in Draft EIS*

The area considered for cumulative effects related to geology and soils includes the seismic fault zones that underlie the DesertXpress project alternatives. Geotechnical impacts related to the DesertXpress project in combination with past, present, and future projects in the area of cumulative analysis would involve hazards associated with site-specific soil conditions, erosion, and ground shaking during earthquakes which could expose individuals to risk. The impacts for each cumulative project would be specific to each site and would not be common to contribute to (or shared with, in an additive sense) the impacts on other sites. Thus, no cumulative impacts would occur.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not change the nature of the project's geologic impacts, since the modifications and additions would be located within the same project region and would be exposed to the same geologic and seismic hazards as identified in **Section 3.9.4.3** of the Draft EIS.

### Hazardous Materials

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis considered for hazardous materials effects includes the properties of moderate to high environmental concern identified within a 1/8-mile radius around the DesertXpress project. Environmental effects related to hazardous materials generally occur on a site-specific basis and do not cumulatively combine with other related projects. The related projects within close proximity to the DesertXpress project are generally geographically disperse and it is not anticipated that they would use quantities of hazardous materials that would combine in such a way to endanger human or environmental health. Hazardous materials are also strictly regulated by state and federal laws to ensure that they do not result in a gradual toxification of the environment. Therefore, it is not anticipated that there would be any cumulative effects related to hazards or hazardous materials.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would be located within the same regional environment considered for the cumulative analysis in **Section 3.16.4** of the Draft EIS and would not introduce any new effects related to hazards or hazardous materials than the action alternatives evaluated in **Section 3.10.4.2** of the Draft EIS. Since impacts related to hazards and hazardous materials are site specific in nature, implementation of the project modifications and additions in combination with the related projects would not result in any cumulative effects, consistent with the conclusion in **Section 3.16.4** of the Draft EIS.

### Air Quality and Global Climate Change

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis considered for air quality effects includes the Mojave Desert Air Basin in California and the Clark County Air Basin in Nevada. The DesertXpress project in combination with the related transportation, development, energy, and public utility projects would cumulatively contribute to air quality and greenhouse gas effects. However, the DesertXpress project would not substantially contribute to the cumulative impact, as operation of the either the EMU or DEMU technology options would not exceed criteria pollutant emissions standards within either affected air basin, with the exception of NOx emissions under the DEMU technology option. Mitigation measures would be implemented to reduce construction and operational air quality impacts. Thus, the DesertXpress project would not considerably contribute to the cumulative effect related to air quality and global climate change.

*Cumulative Effects with Implementation of Project Modifications and Additions*

Implementation of the project modifications and additions would not result in a change to the anticipated ridership or train technology options considered in **Section 3.11.4.2** of the Draft EIS. Therefore, the modifications and additions would not affect the anticipated criteria air pollutant or greenhouse gas emission effects identified in **Section 3.11.4.2** of the Draft EIS. The DesertXpress project, with implementation of the project modifications and additions, would continue to improve air quality and would reduce greenhouse gas emissions in the respective air basins due to the anticipated transportation mode shift from automobile traffic to high-speed passenger train. Segment 2C would be shorter than the combination of Segment 1 and either Segment 2A or Segment 2B and would therefore require less construction activity, which would reduce construction period air quality and greenhouse gas emissions. Conversely, construction of Segment 4C would require slightly greater construction activities than Segment 4A or Segment 4B due to increased tunneling and an increased length in the rail alignment. However, overall air pollutant emissions would be reduced with implementation of the DesertXpress project and would not have a considerable contribution to the cumulative air quality or greenhouse gas effects.

**Noise and Vibration**

*Summary of Cumulative Effects Identified in Draft EIS*

The area for cumulative analysis includes a ¼-mile radius from the DesertXpress project. As noise attenuates with distance, significant noise impacts are not anticipated beyond the ¼-mile radius. The DesertXpress project in combination with the related transportation, development, and energy projects would increase noise and vibration levels in urbanized areas along the rail alignment, including Victorville, Lenwood, Barstow, Yermo, and southern Las Vegas, resulting in potentially adverse cumulative effects. Recommended mitigation measures for the DesertXpress project would lessen the adverse effects of the project related to noise and vibration. It is reasonable to assume that similar mitigation measures would be applied to the related projects to reduce potentially adverse effects and that each project would be required under separate environmental review to evaluate the existing noise environment and whether such development would exceed the established noise and vibration level standards. Nonetheless, when taken collectively, the DesertXpress project in combination with the related projects would result in a cumulative increase in noise and vibration within in the area of cumulative analysis.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not change the cumulative analysis as the project would continue to result in an overall increase in noise and vibration levels within the area of cumulative analysis. The project modifications and additions would not introduce new sources of noise not previously considered. The project modifications and additions would change the location of specific noise and vibration effects. However, the nature of the noise and vibration impacts would remain the same and the same types of mitigation from **Section 3.12.7** of the Draft EIS would be applied.

### Energy

*Summary of Cumulative Effects Identified in Draft EIS*

The area of analysis for cumulative effects related to energy includes California and Nevada, specifically San Bernardino County and Clark County. The DesertXpress project in combination with the related transportation, development, public utility, and energy projects would result in cumulative impacts related to energy and electricity consumption. While the transportation projects, such as the I-15 capacity improvements, SNSA, and Southern Nevada Regional Heliport, would contribute to an increase in transportation energy consumption. Conversely, the California High Speed Rail and the proposed energy projects could have a positive effect on energy consumption and generation. Operation of the DesertXpress project would constitute less than one percent of the projected statewide electricity demand in California and Nevada and would reduce overall energy consumption in effecting a substantial mode shift from automobile to train. Mitigation to reduce construction period energy use, such as an energy conservation plan, would also be applied. As such, the DesertXpress project would not considerably contribute to the overall cumulative energy effect.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not change the anticipated ridership or train technology options considered in **Section 3.13.4.2** of the Draft EIS. Since the cumulative analysis related to energy in **Section 3.16.4** of the Draft EIS was based on the train technology options and ridership levels, the project modifications and additions would not alter the conclusion in **Section 3.16.4** of the Draft EIS and the DesertXpress project would continue to not considerably contribute to the overall cumulative energy effect.

### Biological Resources

*Summary of Cumulative Effects Identified in Draft EIS*

The area of cumulative analysis includes the areas and site of identified biological resources within a 400-foot-wide corridor surrounding the DesertXpress project. The DesertXpress project in combination with the related projects would result in the conversion of open space lands to developed land, contributing to the loss of ruderal habitats, wetland habitats, and other biological resources in the area of cumulative analysis. Transportation, development, energy, and public utility projects would cumulatively affect plant and animal species, including desert tortoise, Mohave ground squirrel, and numerous special-status plant species. Conversely, the West Mojave Coordinated Management Plan would provide a regional strategy for conserving plant and animal species in the area of cumulative analysis. Recommended mitigation measures for the DesertXpress project have lessened the adverse effects related to biological resources. Nonetheless, the DesertXpress project would result in the permanent conversion of biological resources to transportation use and would have a considerable contribution to the overall cumulative effect.

*Cumulative Effects with Implementation of Project Modifications and Additions*

The project modifications and additions would not substantially change the overall cumulative effect to biological resources.

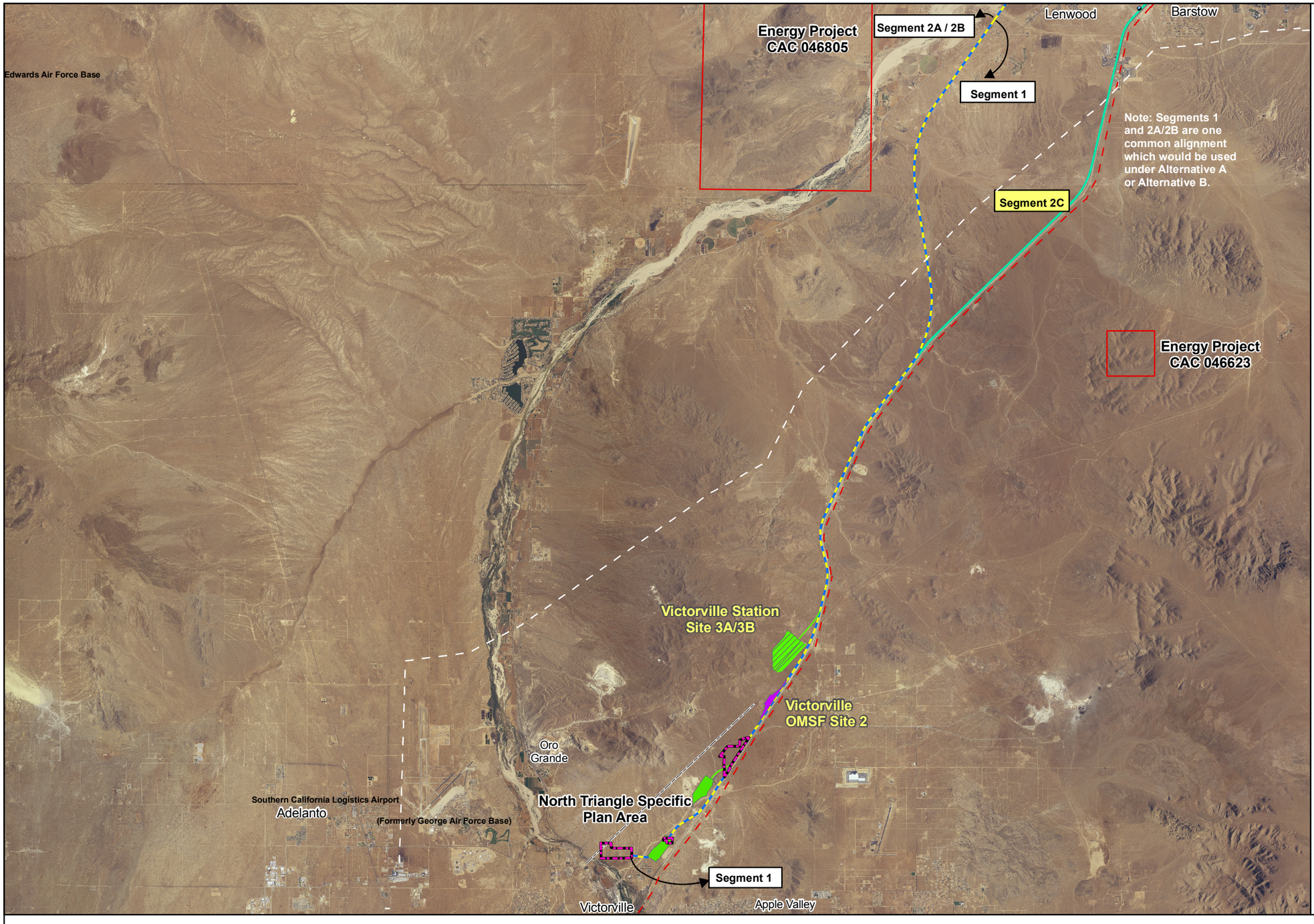
Segments 4C would result in slightly greater effects to desert tortoise habitat and sensitive vegetation communities than Segment 4A or Segment 4B evaluated in the Draft EIS.

Segment 2C would follow the existing I-15 corridor rather than traversing through undeveloped lands as would Segment 2A/2B, and would result in a slight reduction in impacts to special-status plant and wildlife species, including desert tortoise and Mohave ground squirrel.

Although the acreage of affected biological resources would be slightly altered with implementation of the project modifications and additions, no new species would be impacted. The DesertXpress project would continue to result in the permanent conversion of biological resources to transportation use and would continue to have a considerable contribution to the overall cumulative effect.

## 3.16.4 Cumulative Effects Related to the No Action Alternative

The No Action Alternative would not involve the construction and operation of the DesertXpress project, nor any of the project modifications and additions evaluated as part of this Supplemental Draft EIS. Therefore, the same cumulative effects associated with the related projects as documented in **Section 3.16.4.1** of the Draft EIS would continue to occur.




## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

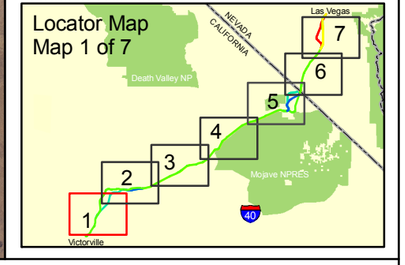
Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

0 1.5 3 Miles

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP, CirclePoint 2008, Clark County Department of Aviation Website 2008

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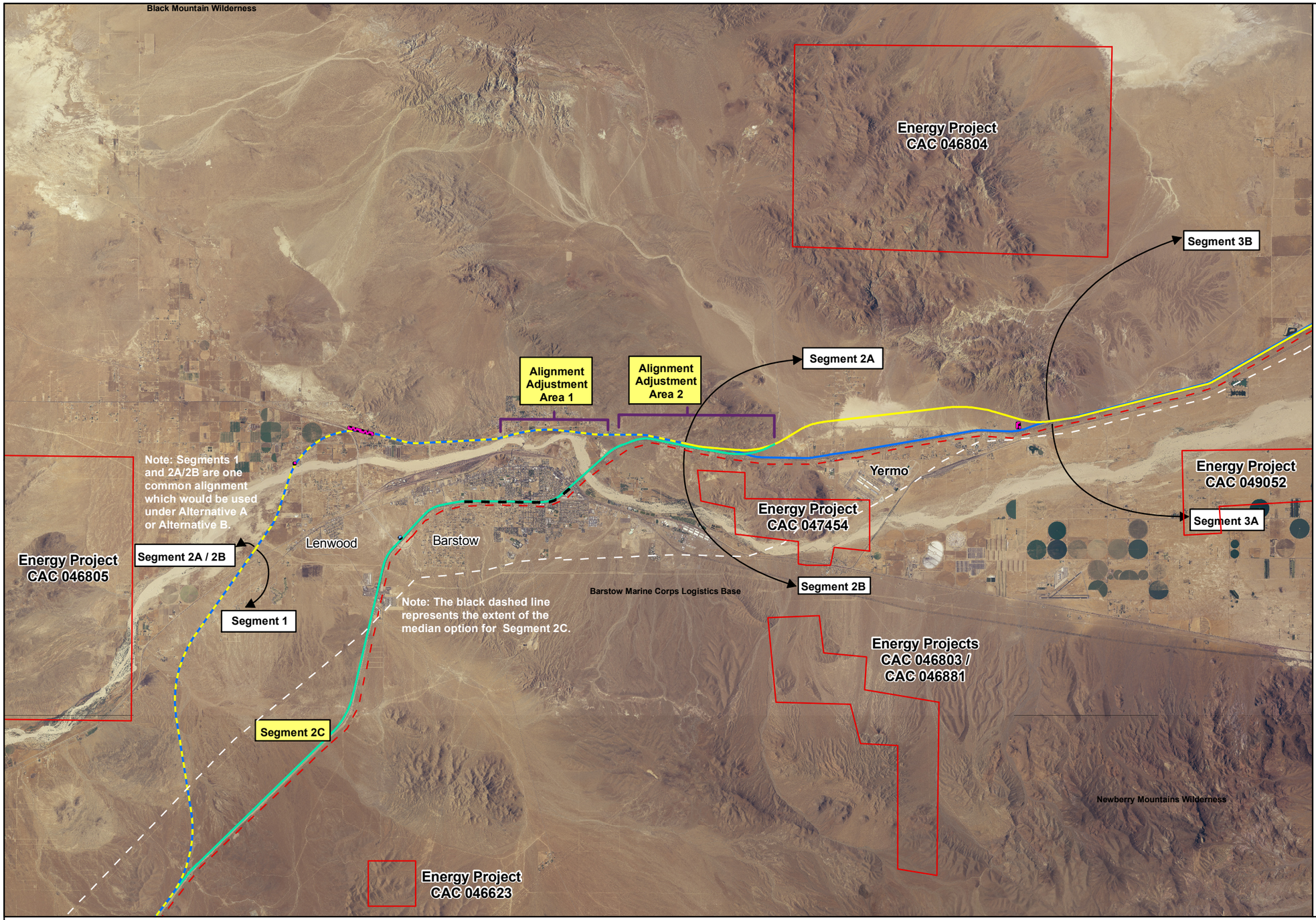
**DesertXpress - Supplemental EIS**

*Potential Cumulative Projects (1)*

FIG **S-3.16-1**

Source: Geografika Consulting 06.10.10




## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

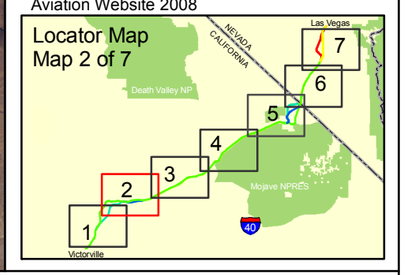
Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

0 1.5 3 Miles

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP, CirclePoint 2008, Clark County Department of Aviation Website 2008

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**DesertXpress - Supplemental EIS**

***Potential Cumulative Projects (2)***

**FIG S-3.16-2**

Source: Geografika Consulting 06.10.10

Fort Irwin

Soda Mountains Wilderness Study Area

Alignment Adjustment Areas 3, 4 & 5

Segment 3B

Segment 3A

Afton Canyon Natural Area

Cady Mountains Wilderness Study Area

Segment 3B

Energy Project CAC 049052

Segment 3A

## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

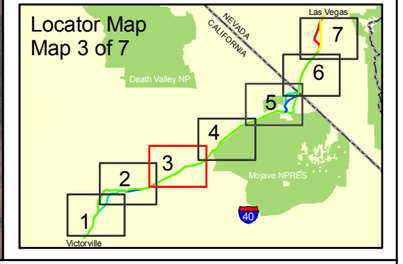
Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

0 1.5 3 Miles

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP, CirclePoint 2008, Clark County Department of Aviation Website 2008

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**DesertXpress - Supplemental EIS**

***Potential Cumulative Projects (3)***

**FIG S-3.16-3**

Source: Geografika Consulting 06.10.10




## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

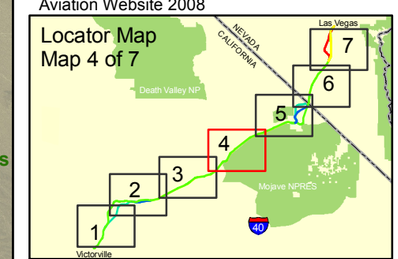
Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

0 1.5 3 Miles

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP, CirclePoint 2008, Clark County Department of Aviation Website 2008




U.S. Department of Transportation
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**DesertXpress - Supplemental EIS**

***Potential Cumulative Projects (4)***

**FIG S-3.16-4**

Source: Geografika Consulting 06.10.10

North Mesquite Mountains Wilderness

Mesquite Wilderness

Stateline Wilderness

Kingston Range Wilderness

Segment 5A

Segment 5B

Primm

Ivanpah Energy Center

Fast Food Restaurant

Segment 4C

Energy Project CAC 648669

Mixed Use/ Recreation

Primm Solar Generating Plant

ISEGS Project Site

NEVADA

CALIFORNIA

Energy Project CAC 648668

Wilderness Area 3

Ivanpah Substation (Approximate Location)

Wind Energy Project CACA 44236 (Approximate Location)

Port of Entry Site (Approximate Location)

Segment 4B

Segment 3B

Segment 4A

Segment 3A

Wind Energy Project CACA 44988 (Approximate Location)

Mojave National Preserve

Wilderness Area 7

Wilderness Area 6

Wilderness Area 11

## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

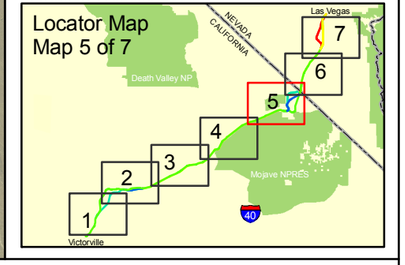
Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

0 1.5 3 Miles

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP, CirclePoint 2008, Clark County Department of Aviation Website 2008

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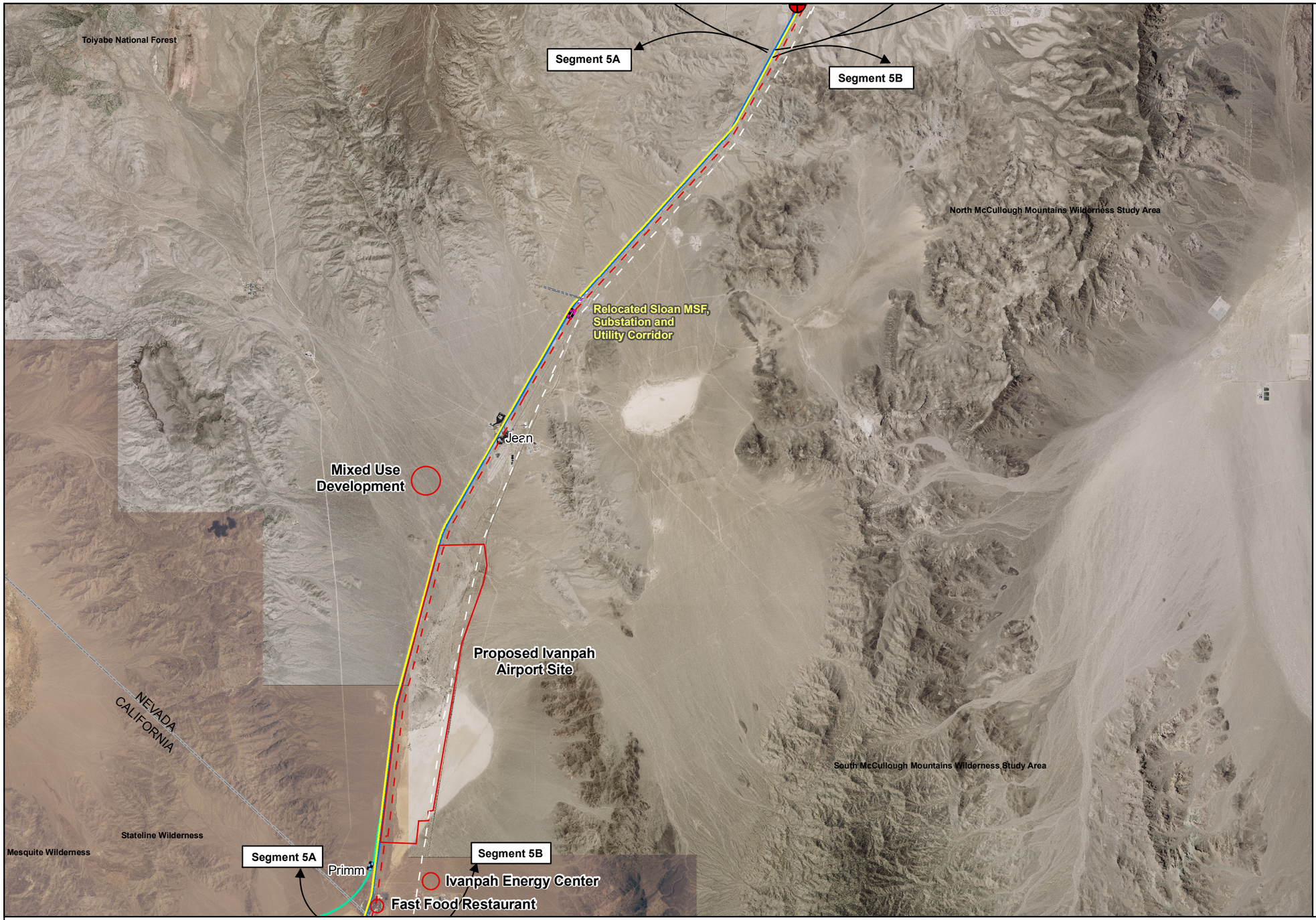
**DesertXpress - Supplemental EIS**

***Potential Cumulative Projects (5)***

**FIG S-3.16-5**

Source: Geografika Consulting 06.10.10




## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

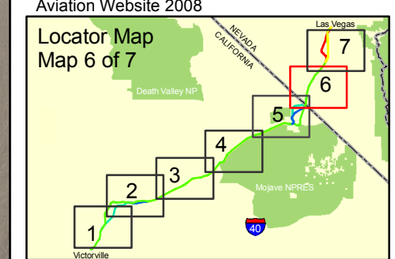
Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

0 1.5 3 Miles

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP, CirclePoint 2008, Clark County Department of Aviation Website 2008

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**DesertXpress - Supplemental EIS**

***Potential Cumulative Projects (6)***

**FIG S-3.16-6**

Source: Geografika Consulting 06.10.10

La Madre Mountains Wilderness Study Area

Nellis Air Force Base

Lake Mead National Recreation Area

Lake Mead

Red Rock Canyon National Conservation Area

Toiyabe National Forest

North McCullough Mountains Wilderness Study Area

Segment 7C

Segment 7A

Segment 7B

Segment 6A

Segment 6B

Segment 6C

Segment 5A

Segment 5B

Wigwam MSF

Alignment Adjustment Area 8

Frias Substation

Alignment Adjustment Area 7

Proposed Southern Nevada Regional Heliport (Approximate Location)

## Legend

### Potential Cumulative Projects

- Related Project Site
- I-15 Capacity Improvements
- Expansion of Kinder-Morgan CalNev Pipeline System (Approximate Location)

### DesertXpress Alignments

- Alternative A
- Alternative B
- Common Alignment used under Alternative A or Alternative B
- Additional Alignment Modifications

### Ancillary Facility Sites

- Text Project Modifications and Additions
- Modified Station Site Option - Victorville Station Site 3A/3B
- Station Options
- Maintenance Facility Site Options
- Temporary Construction Area (TCA) Site Options
- Modified Temporary Construction Area (TCA) Site Options
- Autotransformer Site Options (EMU Option Only)
- Electric Utility Corridor (EMU Option Only)
- Alignment Adjustment Areas

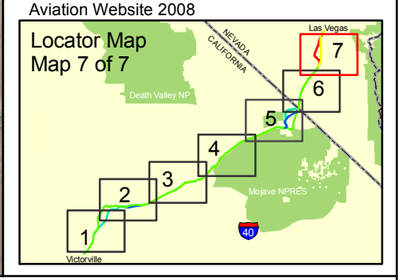
Note: Please refer to Appendix A of the DEIS and Appendix S-A of the SDEIS, which includes plan and profile drawings at 1"1000', seven fold-out maps depicting the DesertXpress project in full, and detailed site plans for all ancillary facilities.

1 inch equals 2.5 miles

0 1.5 3 Miles

NORTH

Source: DesertXpress 2007, ESRI 2005, NAIP, CirclePoint 2008, Clark County Department of Aviation Website 2008




U.S. Department of Transportation
Federal Railroad Administration

DesertXpress - Supplemental EIS

*Potential Cumulative Projects (7)*

FIG S-3.16-7

Source: Geografika Consulting 06.10.10

# 3.17 IRRETRIEVABLE AND IRREVERSIBLE COMMITTMENTS OF PUBLIC RESOURCES

The irretrievable and irreversible commitments of public resources identified in **Chapter 3.17, Irretrievable and Irreversible Commitments of Public Resources,** of the Draft EIS are not substantially changed by the proposed project modifications and additions.

As stated in **Chapter 3.17, Irretrievable and Irreversible Commitments of Public Resources**, of the Draft EIS, implementation of the action alternatives would involve a commitment of a range of natural, physical, human, and fiscal resources. Land used in the construction of the rail line, stations, maintenance and other ancillary facilities associated with this project would be considered an irreversible commitment during the time period that the land is used for a project. However, if a greater need arises for use of the land or if the rail line and facilities are no longer needed, the land could be converted to another use. At present, there is no reason to believe such a conversion would ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and construction materials such as cement, aggregate, and bituminous material would be expended to construct the project. Additionally, large amounts of labor and natural resources are used in the making of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use would not have an adverse effect upon continued availability of these resources. Any construction would also require a substantial one-time expenditure of funds, which are not retrievable.

The commitment of these resources is based on the concept that residents and businesses within the region would benefit from the improved quality of the transportation system. These benefits would consist of improved accessibility, increased capacity and energy savings, which are expected to outweigh the commitment of these resources.

The project modifications and additions evaluated in this Supplemental Draft EIS do not substantially change the irretrievable and irreversible commitment of public resources associated with the DesertXpress project. As noted in the Supplemental Draft EIS, the project modifications and additions contribute to a decrease in total energy demand (fewer barrels of oil), and thus could be considered to reduce the commitment of irretrievable resources, relative to the conclusions made in the Draft EIS.

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# 3.18 SHORT TERM USES VERSUS LONG TERM PRODUCTIVITY

Project implementation, including the project modifications and additions, would result in attainment of short-term and long-term transportation and economic objectives at the expense of some long-term social, aesthetic, biological, noise, parkland, and other land use impacts.

## 3.18.1 BUILD ALTERNATIVES

**Chapter 3.18, Short Term Uses Versus Long Term Productivity**, of the Draft EIS identified various losses and benefits associated with the action alternatives. The proposed project modifications and additions would not change the conclusions in the Draft EIS pertaining to short term uses and long term productivity.

**Short-term losses include:** Economic losses experienced by businesses affected by construction impacts such as noise, motorized and non-motorized traffic delays or detours; and recreational impacts such as access inconveniences to the little league fields and/or the regional park, and trail detours or closures.

**Short-term benefits include:** Increased jobs and revenue generated during construction.

**Long-term losses would include:** Permanent loss of plant and wildlife resources, visual impacts, conversion of farmlands and grazing lands, noise increases, cultural resource site values lost, use of construction materials and energy.

**Long-term gains include:** Improvement of the transportation network in the region and the project vicinity, increased capacity and reduction of congestion on the I-15 freeway, use of private funds to construct and operate the project, more expeditious project delivery through use of private funds, increased jobs, revenue through creation of new passenger train operation, and support of approved development.

## 3.18.2 NO ACTION ALTERNATIVE

The No Action Alternative would offer none of the gains or have the losses listed above. Private funding to provide public transportation facilities would not be available.

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# 3.19 UNAVOIDABLE ADVERSE EFFECTS

The development of a high-speed passenger rail service from Victorville, CA to Las Vegas, NV would result in unavoidable adverse effects to the physical and human environment, which were described in **Chapter 3.19, Unavoidable Adverse Effects**, of the Draft EIS and included effects in the following resource categories: Traffic and Transportation, Cultural and Paleontological Resources, and Section 4(f) Resources. The unavoidable adverse effects for the DesertXpress project have not substantially changed since the publication of the Draft EIS. However, the project modifications and additions would reduce impacts in several areas, which are described below.

## 3.19.1 TRAFFIC AND TRANSPORTATION

In **Chapter 3.19, Unavoidable Adverse Effects,** of the Draft EIS, the unavoidable adverse effects at a Victorville Station Site 1 and two Stoddard Wells Road intersections were detailed. VV3 (VV3A or VV3B parking options) would avoid the significant impacts associated with VV1 and VV2 and would not result in any unavoidable adverse effects.

## 3.19.2 CULTURAL AND PALEONTOLOGICAL RESOURCES

There is the potential for unavoidable adverse effects to cultural resources sites resulting from direct impacts from placement of the rail line and facilities and the use of TCAs within the APE. Project modifications and additions would result in differing numbers of impacts to cultural resources, as summarized in **Table S-3.7-2**.

## 3.19.3 SECTION 4(F) RESOURCES

One of the project modifications and additions was designed by the Applicant to reduce the potential impact of the project on the integrity of a cultural resource site assumed to qualify for protection under Section 4(f).

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# 4.0 Comments and Coordination

## 4.1 PUBLIC INVOLVEMENT AND OUTREACH

The **Section 4.1** of the Draft EIS included a summary of scoping meetings and distribution of the Draft EIS. This section summarizes additional public and agency involvement and outreach since publication of the Draft EIS.

### 4.1.1 SUPPLEMENTAL DRAFT EIS NOTICING AND PUBLIC HEARINGS

FRA initiated the public review and comment period of the Supplemental Draft EIS by publishing a Notice of Availability (NOA) of a Supplemental Draft EIS in the Federal Register on September 3, 2010.

FRA mailed notice of the Supplemental Draft EIS availability to approximately 2,500 individuals on the project mailing list (including property owners within 500 feet of the proposed rail alignments). This list was updated in June 2010 to help ensure greater accuracy. The notice included information on how to obtain a copy of the Supplemental Draft EIS, the deadline for comments to be submitted, a brief description of the project modifications and additions since publication of the Draft EIS, and the date, location and time of two public hearings to be held in the project area as follows:

**Las Vegas: Wednesday, October 13, 2010, 5:30 – 8:00 p. m.**

Hampton Inn Tropicana
SW Event Center B
4975 Dean Martin Drive
Las Vegas, NV 89118

**Victorville/Barstow Area: Thursday, October 14, 2010, 5:30 – 8:00 p.m.**

Lenwood Hampton Inn
Jackrabbit Room 1
2710 Lenwood Road
Barstow, CA 92311

Notice was also published in the Victorville *Daily Press*, the Barstow *Desert Dispatch*, the Las Vegas *Sun*, and the Las Vegas *Review-Journal*. These notices described the project, indicated where and how to obtain copies of the Supplemental Draft EIS, informed the public of the deadline to submit comments, and provided the dates and locations of the public hearings.

**Document Availability**

FRA placed copies of the Supplemental Draft EIS and appendices at following libraries:

- Victorville City Library: 15011 Circle Drive, Victorville, CA 92395
- Barstow Library: 304 East Buena Vista, Barstow, CA 92311
- Las Vegas Library: 833 Las Vegas Boulevard North, Las Vegas, NV 89101
- Clark County Library: 1401 E. Flamingo, Las Vegas, NV, 89119

FRA also made electronic versions of the Supplemental Draft EIS and appendices accessible through FRA's website: ***www.fra.dot.gov*.**

## 4.1.2 DRAFT EIS NOTICING AND PUBLIC HEARINGS

### Draft EIS Formal Scoping Meeting Notification

The scoping process for the Draft EIS began with the publication of the Notice of Intent (NOI) in the Federal Register. The NOI was printed in the Federal Register on July 14, 2006.

Three public scoping meetings were held as part of the public scoping process for the Draft EIS:

- ***Las Vegas:*** July 25, 2006, 5:00pm – 8:00pm. The White House, 3260 Joe Brown Drive
- ***Barstow:*** July 26, 2006, 12:00pm – 2:00pm. Ramada Inn, 1571 East Main Street
- ***Victorville:*** July 26, 2006, 5:00pm – 8:00pm. San Bernardino County Fair Grounds, 14800 Seventh Street, Building 3

These meetings provided an opportunity for the public and agencies to comment on the scope of environmental topics to be analyzed in the EIS.

Notices regarding the public scoping meetings were published in local newspapers. Notices describing the proposed project and listing the dates and locations of the scoping meetings were printed in the Victorville *Daily Press* and the Las Vegas *Sun*/Las Vegas *Review Journal* (July 14 and July 23, 2006) and in the Barstow *Desert Dispatch* (July 14 and July 23, 2006). FRA sent notification mailers to approximately 2,500 individuals on the project mailing list (including property owners within 500 feet of the proposed rail alignments). The notice provided information on the scoping meetings and briefly described the proposed elements of the project. The notice also included details on how and where to submit formal comments on the project. A telephone hotline was also established to provide a contact for the scoping meetings.

Public scoping meeting attendees were asked to submit their completed comment sheets at the meeting attended, or to mail the sheets (by August 15, 2006) to 455 Capitol Mall, Suite 305, Sacramento, California. Approximately 24 comment letters were received from meeting attendees. In addition to the comment sheets, 12 letters were received by the FRA at 1120 Vermont Avenue, Washington, DC 20590. No comments were received

via the project hotline; however, one meeting participant called the hotline to request additional project information.

The Draft EIS included **Appendix P**, summarizing all comments received during the scoping process. The Final EIS for the DesertXpress project will compile and respond to all comments received on the Draft EIS and this Supplemental Draft EIS.

### Circulation and Notification of the Draft EIS

FRA initiated the public review and comment period of the Draft EIS by publishing a Notice of Availability (NOA) of a Draft EIS in the Federal Register on March 27, 2009.

FRA mailed notice of the Draft EIS availability to approximately 2,500 indivisuals on the project mailing list (including property owners within 500 feet of the proposed rail alignments). Notice was also published in the Victorville *Daily Press*, the Barstow *Desert Dispatch*, the Las Vegas *Sun*, and the Las Vegas *Review-Journal*. The notice included information on how to obtain a copy of the Draft EIS, the deadline for comments to be submitted, a brief description of the Action Alternatives and proposed elements of the project, and the date, location and time of three public hearings to be held in the project area. Three public hearings were held on the Draft EIS, as follows:

- ***Las Vegas:*** April 28, 2009, 5:30pm – 8:00pm. Hampton Inn Tropicana, 4975 Dean Martin Drive
- ***Barstow:*** April 29, 2009, 5:30pm – 8:00pm. Ramada Inn, 1511 East Main Street
- ***Victorville:*** April 30, 2009, 5:30pm – 8:00pm. Green Tree Golf Course, 14144 Green Tree Boulevard

FRA placed copies of the Draft EIS and appendices at the following libraries:

- Victorville City Library, 15011 Circle Drive, Victorville, CA 92395
- Barstow Library, 304 East Buena Vista, Barstow, CA 92311
- Las Vegas Library, 833 Las Vegas Boulevard North, Las Vegas, NV 89101
- Clark County Library: 1401 East Flamingo, Las Vegas, NV, 89119

FRA also made electronic versions of the Draft EIS and appendices accessible through FRA's website: ***www.fra.dot.gov***

## 4.2 AGENCY INVOLVEMENT

Since the publication of the Draft EIS, FRA has continued its consultation efforts with the Cooperating Federal Agencies (Bureau of Land Management (BLM), Surface Transportation Board (STB), Federal Highways Administration (FHWA), National Park Service (NPS)) as well as state agencies, resource agencies, and other governmental agencies.

### 4.2.1 Interagency Meetings Prior to Publication of the Supplemental Draft EIS

**Section 4.2.1** of the Draft EIS summarized interagency meetings FRA and its third-party contractor held during preparation of the Draft EIS to seek input and obtain information from other governmental agencies with unique expertise or knowledge of the project area. This list shows meetings convened following publication of the Draft EIS in March 2009.

- March 3, 2009, Interagency conference call to discuss the Section 106 process. Agencies: FRA, BLM, FHWA, Caltrans, NDOT, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the Nevada State Historic Preservation Officer.
- April 28, 2009, Informational meeting with Native American Tribes regarding the Draft EIS.

  *Agencies*: FRA, STB, BLM

  *Tribes*: Chemehuevi Tribe
- April 30, 2009, Informational meeting with Native American Tribes regarding Draft EIS and Section 106 Process.

  *Agencies*: FRA, STB, BLM

  *Tribes*: San Manuel Band of Mission Indians, Soboba Band of Luiseño Indians.
- October 23, 2009, Teleconference regarding Section 404 of the Clean Water Act. Agencies: FRA, U.S. Army Corps of Engineers.
- November 13, 2009, Meeting regarding Section 404. Agencies: FRA, U.S. Army Corps of Engineers
- November 19, 2009, Teleconference with Native American Tribes regarding Section 106 Process.

  *Agencies*: FRA, STB, BLM, FHWA, Caltrans, the California State Historic Preservation Officer

  *Tribes*: San Manuel Band of Mission Indians.
- January 6, 2010: Informational Meeting and Field Trip with Native American Tribes regarding prehistoric sites.

  *Agencies*: FRA, BLM

  *Tribes*: Timbisha Shoshone, San Manuel Band of Mission Indians, Soboba Band of Luiseño Indians, Twenty-Nine Palms Band of Mission Indians, Chemehuevi Indian Tribe

- January 7, 2010: Government-to-Government Consultation Meeting at BLM Barstow Field Office

  *Agencies*: FRA, BLM

  Tribe: Timbisha Shoshone

- January 8, 2010, Government-to-Government Consultation Meeting, Highland, California

  *Agencies*: FRA, BLM

  *Tribe*: Soboba Band of Luiseño Indians

- January 8, 2010, Government-to-Government Consultation Meeting, San Manuel Band of Mission Indians Reservation

  *Agencies*: FRA, BLM, Caltrans

  *Tribe*: San Manuel Band of Mission Indians

- February 8, 2010, Interagency teleconference to discuss the Section 7 consultation with FRA and USFWS.
- February 24, 2010, Interagency teleconference to discuss Section 404 compliance. Agencies: FRA and USACE (Los Angeles District)
- March 3 2010, Interagency teleconference. Agencies: FRA, FAA, Clark County Department of Aviation.
- April 6, 2010, Informational Meeting with Native American Tribes to discuss archaeological site data, San Manuel Band of Mission Indians Reservation

  *Agencies*: FRA (represented by project archeologist consultants), BLM

  *Tribes*: San Manuel Band of Mission Indians, Soboba Band of Luiseño Indians, Twenty-Nine Palms Band of Mission Indians

- April 19 2010, Interagency teleconference. Agencies: FRA and EPA.

### 4.2.2 Cooperating Agency and EIS Working Group Consultation During Preparation of the Draft EIS

FRA held regular meetings with the Cooperating Agencies and EIS Working Group throughout preparation of the Draft EIS. This list of meetings has been updated to include additional meetings convened following publication of the Draft EIS:

- November 12, 2009, Interagency meeting, Washington, D.C. Agencies: FRA and STB.
- November 17,2009, Interagency teleconference. Agencies: FRA, STB, and BLM.
- November 18,2009, EIS Working Group teleconference. Agencies: FRA, STB, BLM, NPS, FHWA, NDOT, and Caltrans.
- November 25, 2009, Interagency teleconference. Agencies: FRA and NPS.
- December 8, 2009, Interagency teleconference. Agencies: FRA and FHWA.
- December 9, 2009, EIS Working Group teleconference. Agencies: FRA, STB, BLM, NPS, FHWA, NDOT, and Caltrans.

- December 10, 2009, Interagency teleconference. Agencies: FRA and STB.
- January 20, 2010, Interagency meeting, Washington, D.C. Agencies: FRA and NDOT.
- February 18,2010, Interagency teleconference. Agencies: FRA, BLM, FHWA, and NDOT.
- March 5, 2010, Interagency meeting, Washington, D.C. Agencies: FRA and FHWA.
- April 15, 2010, Interagency meeting, Washington, D.C. Agencies: FRA and FHWA.
- July 1, 2010, Interagency teleconference. Agencies: FRA and FHWA.
- July 21, 2010, Interagency meeting, Washington, D.C. Agencies: FRA and NDOT.
- August 25, 2010, Interagency meeting, Washington, D.C. Agencies: FRA and FHWA.

# 5.0 Preparers and References

## 5.1 LIST OF PREPARERS

### CirclePoint

135 Main Street, Suite 1600
San Francisco, CA 94105

Scott Steinwert, Principal-In-Charge
John Cook, Project Manager
Megan Wessel, Sr. Associate
Jennifer Gallerani, Associate
Heidi Loeffler, Sr. Associate

### Geografika Consulting

1108 Palm Avenue
San Mateo, CA 94401

Megan Gosch, GIS Specialist and Graphic Designer

### ICF/Jones and Stokes

1 Ada Parkway
Irvine, CA 92618

David Freytag, AICP, Principal
Rick Starzak, Senior Architectural Historian, Principal
Bobby Tuttle, Senior Environmental Scientist
Christopher Shaver, Project Archaeologist
Dana McGowan, Principal Archaeologist
Keith Cooper, Meteorologist

### Harris Miller Miller and Hanson

77 South Bedford Street
Burlington, MA 01803

Lance Meister, Vice President
Linda Fitch, Vice President

## Ninyo and Moore

475 Goddard, Suite 200
Irvine, CA 92618

R. Scott Kurtz, Director, Environmental Sciences
David Shaler, Senior Project Environmental Geologist

## AECOM (formerly DMJM Harris)

725 South Figueroa Street, Suite 2350
Los Angeles, CA 90017

Greg Gleichman, PE, Project Coordinator
Peter Zimmerman, PE, Designer

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