
**SUNRISE PROJECT, I-205 TO ROCK CREEK
JUNCTION (HIGHWAY 212/224)**

HAZARDOUS MATERIALS TECHNICAL REPORT

October 2008

TO: Readers of the Sunrise Technical Reports

FROM: Sunrise Project Team

SUBJECT: Differences between Sunrise SDEIS and Technical Reports

The Sunrise Project: I-205 to Rock Creek Junction Supplemental Draft Environmental Impact Statement (SDEIS) presents information summarized from numerous technical documents. Most of these documents are discipline specific technical reports (e.g., cultural resources, noise, wetlands, etc.). These reports include a detailed explanation of the data gathering and analytical methods used by each discipline team.

The technical reports are longer and more detailed than the SDEIS and should be referred to for information beyond that which is presented in the SDEIS. Findings summarized in the SDEIS are supported by analysis in the technical reports and their appendices. References used to develop the reports and underlying data are presented in the technical reports.

The draft technical reports were largely completed in late 2007. Since the technical reports were completed, new information has been discovered that has been incorporated into the SDEIS. Thus, the SDEIS reflects more recent public and agency input than is included in the technical reports. For example, since the technical reports were completed, additional work has been conducted for the cultural resource documentation for Camp Withycombe and the RTP planning process has progressed with federal approvals of local plans. Also, the cumulative effects section of the document was written after reviewing all of the technical reports. No one technical report includes this comprehensive analysis.

Please refer to the appropriate section of the SDEIS for the most current information.

SUMMARY

The hazardous materials technical study consisted of a review of land use history from the 1930s to the present; review of federal and state regulatory agency databases of hazardous material investigations; site reconnaissance; tour of Camp Withycombe and interview with the Restoration Manager of the Oregon Military Department (OMD); and documentation of findings that could affect future development of the Sunrise Project corridor.

Federal and state regulatory databases were reviewed to identify properties within the Sunrise Project area where regulatory investigations have occurred. A total of 22 Environmental Cleanup Site Information (ESCI) System and Confirmed Release List (CRL) facilities were found. Of these facilities, 12 were located within the proposed right-of-way, and 10 were located adjacent to the proposed right-of-way. A total of 34 leaking underground storage tank (LUST) sites were located within the project area. Of these, 11 were located within the proposed right-of-way, and 23 were located adjacent to it. All but one of the LUST facilities had received a No Further Action (NFA) determination from the Oregon Department of Environmental Quality (DEQ). However, some residual contamination could remain and have the potential for exposure during construction activities.

We performed a reconnaissance of the project area to look for obvious, visual indications of historical or current operations from the public right-of-way that may have resulted in possible soil and/or groundwater contamination. Generally, views of the properties from the right-of-way revealed only the land use types and the names and types of businesses located within the proposed project corridor. It is presumed that many of businesses along the proposed alignment store, use, and/or transport for disposal hazardous materials, which is confirmed by the extensive listing of Resource Conservation and Recovery Act (RCRA) generators of hazardous waste within 0.25 mile of the proposed corridor.

Table 1 lists the 45 sites identified as having potential hazardous materials issues based on the records review and field visits. (See Figures 7 and 8 for the locations of the sites identified below.) All but three of the 45 sites listed on Table 1 were within the areas of Alternatives 2 and 3. Three of the sites on Table 1 were within the Alternative 2 area only. Twenty-four of the listed sites were also within the Option A-2 project area.

Table S1. Potential Hazardous Materials Sites

Map ID Number (Figures 7 and 8)	Site Name and Address	Agency List	Design Alternative(s) / Option(s)
1	Ellsworth Dump Site 14570 SE 82 nd Drive	U.S. EPA: CERCLIS- NFRAP DEQ: ECSI	Alt. 2, Alt. 3, Option A-2
2	Enoch Manufacturing 14242 SE 82 nd Drive	DEQ: ECSI, LUST	Alt. 2, Alt. 3, Option A-2
3	Northwest Pipe & Casing/Hall Process Company SE Mather Road at SE Industrial Way	U.S. EPA: NPL, CERCLIS DEQ: ECSI, CRL, LUST	Alt. 2, Alt. 3, Option A-2
4	Northwest Development 9460 SE Lawnfield Road	DEQ: ECSI	Alt. 2, Alt. 3, Option A-2
5	McFarlane's Bark 13345 SE Johnson Road	DEQ: LUST	Alt. 2, Alt. 3, Option A-2
6	Neptune Pool 13785 SE Ambler Road	DEQ: LUST	Alt. 2, Alt. 3, Option A-2
7	Townes Property 9885 SE Mather Road	DEQ: ECSI	Alt. 2, Alt. 3, Option A-2
8	Timfab 10037 SE Mather Road	DEQ: LUST	Alt. 2, Alt. 3, Option A-2
9	Keller Property 10248 SE Mather Road	DEQ: ECSI	Alt. 2, Alt. 3, Option A-2
10	Temco Metal Products 10240 SE Mather Road	DEQ: ECSI, CRL, LUST	Alt. 2, Alt. 3, Option A-2
11	Portable Equipment Salvage Company 10281 SE Mather Road	U.S. EPA: CERCLIS NFRAP DEQ: ECSI, CRL	Alt. 2, Alt. 3, Option A-2
12	RS Davis Recycling 10105 SE Mather Road	DEQ: ECSI, CRL	Alt. 2, Alt. 3, Option A-2
13	ORARNG (Oregon Air National Guard) Camp Withycombe – Firing Range – Landfill 10101 SE Clackamas Road	U.S. EPA: RCRA DEQ: ECSI, LUST DEQ: ECSI, LUST	Alt. 2, Alt. 3, Option A-2
14	ODOT Ambler Road West SE Ambler Road and SE 82 nd Avenue	DEQ: ECSI, CRL	Alt. 2, Alt. 3, Option A-2
15	Gem Top Manufacturing 8811 SE Herbert Court	DEQ: ECSI, LUST	Alt. 2, Alt. 3, Option A-2
16	Howard S. Wright Construction 14235 SE 98 th Court	DEQ: LUST	Alt. 2, Alt. 3, Option A-2
17	Dietrich Property 9825 SE Lawnfield Road	DEQ: LUST	Alt. 2, Alt. 3, Option A-2
18	Precision Castparts Small Structures Business Operations 13340 SE 84 th Avenue	DEQ: ECSI, CRL	Alt. 2, Alt. 3, Option A-2
19	Interstate Industrial Park 13101 SE 84 th Avenue	DEQ: ECSI	Alt. 2, Alt. 3, Option A-2

20	Met-Tek, Inc. 15651 SE 125 th Court	DEQ: ECSI, CRL	Alt. 2, Alt. 3, Option B-2
21	American Wood Dryers 15495 SE For Mor Court	U.S. EPA: CERCLIS NFRAP DEQ: ECSI	Alt. 2, Alt. 3, Option C-2, Option C-3
22	D&M Pallets 13150 SE Highway 212	DEQ: ECSI, CRL	Alt. 2, Alt. 3, Option C-3
23	Smith Masonry Contractors 14489 SE Highway 212	DEQ: LUST	Alt. 2, Alt. 3, Option C-2, Option C3
24	Safety Kleen Corp. 7-148 11843 SE Highway 212	U.S. EPA: CERCLIS NFRAP, CORRACTS DEQ: ECSI, CRL, LUST	Alt. 2, Option B-2
25	Pritchard's Truck Center 11857 SE Highway 212	DEQ: ECSI, LUST	Alt. 2, Alt. 3, Option B-2
26	Cascade Chemical, Inc. 16081 SE Evelyn Street	U.S. EPA: CERCLIS NFRAP DEQ: ECSI, CRL, LUST	Alt. 2, Alt. 3
27	CMD Transportation. 12340 SE Jennifer Street	DEQ: ECSI, LUST	Alt. 2, Option B-2
28	Panoco 53 16010 SE 82 nd Drive	DEQ: LUST	Alt. 2, Alt. 3, Option A-2
29	Chevron USA Inc. 15901 SE 82 nd Drive	DEQ: LUST	Alt. 2, Alt. 3
30	Coremark Distributors 13551 SE Johnson Road	DEQ: LUST	Alt. 2, Alt. 3, Option A-2
31	Western Oregon Conference of Seventh Day Adventists 13455 SE 97 th Avenue	DEQ: LUST	Alt. 2, Alt. 3, Option A-2
32	Transportation Center 14211 SE Johnson Road	DEQ: LUST	Alt. 2, Alt. 3
33	General Furnace & Air Conditioning, Inc. 15536 SE 82 nd Drive	DEQ: LUST	Alt. 2, Alt. 3
34	GTS Drywall 9500 SE Mather Road	DEQ: LUST	Alt. 2, Alt. 3, Option A-2
35	ODOT Maintenance Facility 9200 SE Lawnfield Road	DEQ: LUST	Alt. 2, Alt. 3, Option A-2
36	Clackamas Distribution Center 11500 SE Hwy 212	DEQ: LUST	Alt. 2, Alt. 3, Option B-2
37	Fred Meyer Distribution Center 12108 SE Hwy 212	DEQ: LUST	Alt. 2, Alt. 3, Option B-2
38	Fred Meyer Clackamas 16301 SE 82 nd Drive	DEQ: LUST	Alt. 2, Alt. 3
39	Knez Building Supply 12301 SE Hwy 212	DEQ: LUST	Alt. 2, Alt. 3, Option B-2
40	Elting Pekkola Properties 12441/12623 SE Hwy 212	DEQ: LUST	Alt. 2, Alt. 3, Option B-2
41	Ray's Food Service (currently Tree of Life Gourmet Foods NW) 12601 SE Hwy 212	DEQ: LUST	Alt. 2, Alt. 3, Option B-2

42	ODOT 10287 SE Highway 212	DEQ: LUST	Alt. 2, Alt. 3
43	Safeway Bakery 9450 SE Morgan Way	DEQ: LUST	Alt. 2, Option B-2
44	Lumbermens of Oregon 15877 SE 98 th Avenue	DEQ: LUST	Alt. 2, Alt. 3
45	Clackamas Elementary School 15301 SE 92 nd Avenue	DEQ: LUST	Alt. 2, Alt. 3

The Northwest Pipe & Casing facility is the most significant hazardous materials site located within the proposed right-of-way. The facility was added to the National Priority List (NPL) in 1992. The site operated as a steel pipe coating facility from around 1956 to 1985. Wastes resulting from business operations were reportedly spilled, burned, or buried at the facility.

Sampling performed at the Northwest Pipe & Casing site by EPA prior to 1990 indicated the presence of widespread surficial soil contamination by polynuclear aromatic hydrocarbons (PAHs) from coal tar, polychlorinated biphenyls (PCBs), and some volatile organic compounds (VOCs). Concentrations of these compounds were detected in soil, sediment, surface water, and groundwater at the facility. DEQ reported four distinct groundwater contamination plumes of perchloroethene (PCE) and other compounds. Contaminated soil cleanup began in December 2001, and groundwater remediation began in 2003 with in-ground, air-stripping wells for VOCs. Some PCB and PAH-contaminated soils exceeding cleanup goals were covered with a 2-foot clean fill cap. EPA and DEQ expected that the groundwater treatment would continue for 5 to 10 years. The regulatory agencies would then rely on natural attenuation of remaining concentrations of VOCs. DEQ has indicated that the groundwater treatment is undergoing review as of May 2007 because of an insufficient drop in VOC concentrations in groundwater. DEQ has also stated that construction of the highway could occur, but there would need to be proper notifications and an understanding that contaminated soils management may be necessary if the clean fill cap is excavated.

Camp Withycombe is another significant facility with potentially extensive contamination that is located within the proposed alignment. This facility reportedly had a rifle range since 1909, and it was used as a mobilization camp for cavalry and artillery until the end of World War I. Firing ranges with backstops constructed at the base of the hill still exist at the facility. The camp was later used to repair heavy equipment and light electrical equipment. According to DEQ, there are concentrations of lead in shallow soils at the firing ranges, and the agency estimates the volume of impacted soil to be “as much as 12,000 cubic yards.” The firing ranges are currently being investigated and cleaned up by OMD under DEQ’s Voluntary Cleanup Program. A remedial investigation has been performed and a feasibility study is being prepared. A supplemental remedial investigation is planned to better define areas of impact exceeding hot spot concentrations, and cleanup of the firing ranges should be complete by 2009. It does not appear that the Sunrise Project alignment is located directly over the lead remediation area, but portions of these lead remediation areas do appear to be within the “construction impact line.” There does not appear to be significant cuts related to the roadway planned for construction within the remediation area. However, the “multi-use” path that runs parallel and north of the roadway alignment appears to intersect the backstop of the short distance firing range.

Potentially, demolition and grading during roadway construction may uncover contamination that has not been previously documented. Examples include previously unknown contamination in soil and/or groundwater; the existence of underground injection control (UIC) features, such as dry wells (although none were noted during the site reconnaissance); and hazardous building materials (e.g., asbestos-containing materials or lead-containing paint coatings) present in structures along the alignment. Because the nature of the contamination and the constituents involved would not necessarily be readily apparent, appropriate measures would need to be taken during construction activities to protect human health and the environment. If potentially contaminated materials are encountered, proper handling and disposal would need to be exercised as well.

This page intentionally left blank

TABLE OF CONTENTS

SUMMARY	1
INTRODUCTION	9
PROJECT LOCATION.....	9
PROJECT PURPOSE AND NEED.....	9
PROPOSED ACTION.....	9
ALTERNATIVES	10
ALTERNATIVE 1: NO-BUILD.....	10
ALTERNATIVE 2: BUILD WITH MIDPOINT INTERCHANGE.....	10
ALTERNATIVE 3: BUILD WITH NO MIDPOINT INTERCHANGE.....	10
DESIGN OPTIONS.....	10
<i>Design Option A-2: Modified 1996 Design</i>	11
<i>Design Option B-2: 1996 Split Interchange (Modified)</i>	11
<i>Design Option C-2: Central Alignment</i>	11
<i>Design Option C-3: Modified Follow Tree-Line Alignment</i>	11
<i>Design Option D-2: Alignment through Knoll (Folded Diamond Interchange)</i>	11
<i>Design Option D-3: Single-Point Diamond Interchange</i>	11
METHODOLOGY AND DATA SOURCES	35
AFFECTED ENVIRONMENT	36
SITE HISTORY.....	36
RECORDS REVIEW.....	38
<i>Environmental Protection Agency</i>	39
<i>Oregon Department of Environmental Quality</i>	40
DISCUSSION OF GENERAL ENVIRONMENTAL ISSUES.....	53
<i>Transportation of Hazardous Materials</i>	53
<i>Asbestos-Containing Materials within Structures</i>	54
<i>Lead-Containing Paint within Buildings</i>	54
<i>Fluorescent Light Fixtures (PCBs and Mercury)</i>	54
<i>Lead-Containing Paint on Non-Building Structures</i>	55
<i>Treated Wood</i>	55
<i>Persistent Pesticides/Herbicides in Rural Lands</i>	56
<i>Potential for Heating Oil and Fuel USTs in Rural Area</i>	56
<i>Chemical Containers</i>	56
SITE RECONNAISSANCE.....	57
ENVIRONMENTAL CONSEQUENCES	59
ALTERNATIVE 1 - NO BUILD.....	59
ALTERNATIVE 2 - BUILD WITH MIDPOINT INTERCHANGE.....	59
<i>Sites with Contaminated Soil and/or Groundwater</i>	59
<i>Hazardous Building Materials</i>	60
ALTERNATIVE 3- BUILD WITH NO MIDPOINT INTERCHANGE.....	61
DESIGN OPTIONS.....	61
<i>Option A-2</i>	61
<i>Option B-2</i>	62
<i>Option C-2</i>	63
<i>Option C-3</i>	63
<i>Option D-2</i>	63
<i>Option D-3</i>	63
INDIRECT EFFECTS.....	64
<i>Risk of Spills and Exacerbation of Existing Environmental Issues</i>	64

<i>Transportation of Hazardous Materials and/or Hazardous Waste</i>	64
CUMULATIVE EFFECTS	64
SUMMARY OF PERMITS REQUIRED	64
MITIGATION MEASURES	65
ENHANCEMENT OPPORTUNITIES.....	66
REFERENCES AND AGENCY CONSULTATIONS.....	67
ACRONYMS AND ABBREVIATIONS.....	68
LIST OF PREPARERS.....	70

LIST OF FIGURES

Figure 1 Vicinity Map.....	12
Figure 2 Alternative 1: No-Build.....	13
Figure 3 Alternative 2 with Design Options	15
Figure 4 Alternative 2	17
Figure 5 Alternative 3 with Design Options	19
Figure 6 Alternative 3	21
Figure 7 Option A2: Lawnfield 82nd Connection	23
Figure 8 Option B2: Split Interchange.....	25
Figure 9 Option C2: Central Alignment	27
Figure 10 Option C3: Modified Follow Tree-Line Alignment.....	29
Figure 11 Option D2: Alignment Through Knoll Folded Diamond Interchange	31
Figure 12 Option D3: Alignment North of Knoll - Single Point Diamond Interchange	33

LIST OF TABLES

Table S1. Potential Hazardous Materials Sites	2
Table 1. Aerial Photographs Reviewed	36

INTRODUCTION

Project Location

The proposed project is located in the western, urbanized portion of Clackamas County in the vicinity of State Highway 212/224 (see Figure 1, Project Vicinity). The project limits extend approximately 4.9 miles from approximately 1,000 feet west of SE Johnson Road to SE 172nd Avenue, just beyond Rock Creek Junction where Highways 212 and 224 diverge.

Project Purpose and Need

The purpose of this project is to effectively address congestion and safety problems in the Highway 212/224 corridor between its interchange with Interstate 205 (I-205) and Rock Creek Junction, and to serve the growing demand for regional travel and access to the state highway system.

The need for the project is generated by the following factors:

- Highway 212/224 between I-205 and Rock Creek Junction is currently experiencing unacceptable levels of congestion and delay during the peak travel periods. By 2030, the projected traffic volume will exceed the volume that the existing four-lane arterial can be expected to handle at an acceptable level of service.
- By 2030, the numbers of households and jobs in the area served by this section of Highway 212/224 are expected to increase by 136 percent and 85 percent, respectively.
- Both the north and southbound weave sections of I-205 between SE 82nd Avenue and Highway 212/224 are approaching capacity, resulting in frequent stop-and-go movements, difficulty in changing lanes, and long queues forming because of minor incidents. By 2015, this section of I-205 is expected to exceed its design capacity and the extent of these stop-and-go movements may continue to grow if no action is taken. Some traffic traveling on the Milwaukie Expressway (Highway 224) heading east on Highway 212/224, as well as the reverse direction, may have to use either the above section of I-205 or the currently congested SE 82nd Avenue.
- Highway 212/224 near I-205 is ranked in the top 10 percent of state routes for vehicle crash rate. A vehicle crash rate of 3.10 was reported for this area during the 5-year period from 1998 through 2002. The comparable statewide facility rate is 2.47. The high crash rate is attributed to severe congestion and roadway deficiencies. Inadequate bicycle and pedestrian facilities reduce the safety and connectivity for these modes of travel in the project area.

Proposed Action

The proposed action would provide a new limited-access expressway between I-205 and the Rock Creek Junction. The facility would be comprised of six lanes, plus auxiliary lanes, and would include an improved interchange at I-205. This new expressway would become the designated State Highway 212/224, with the existing route reverting to a county arterial.

ALTERNATIVES

A no-build alternative and two build alternatives are being evaluated. Design options within each of the build alternatives are also being considered. Both build alternatives and all design options would incorporate an improved interchange at I-205 and an interchange at Rock Creek Junction. The alignment of the facility would generally follow a natural bluff-line that extends from Mt. Talbert east to Rock Creek on the north side of Highway 212/224. Associated improvements to address local circulation are also included.

Alternative 1: No-Build

The National Environmental Policy Act (NEPA), Oregon Department of Transportation (ODOT), and Federal Highway Administration (FHWA) guidelines require that a no-build option be evaluated. The No-Build Alternative (see Figure 2) would maintain the existing roadway except for committed improvements scheduled in ODOT's four-year Statewide Transportation Improvement Program (STIP) and Metro's Financially Constrained Projects listed in the Regional Transportation Plan (RTP). These listed projects include the following:

- Widen SE 82nd Avenue between Lawnfield Road and Highway 212/224.
- Improve the Highway 212 connection to Mather Road via SE 102nd Avenue and Industrial Way.
- Construct a new northerly extension of Highway 224 at Rock Creek Junction that curves east to connect to SE 162nd and SE 172nd Avenues.
- Create a climbing lane on Highway 212 between Rock Creek Junction and SE 172nd Avenue.
- Widen SE 172nd Avenue between Foster Road and Highway 212.
- Widen Highway 224 between Rock Creek Junction and the Carver Bridge.
- Widen the Carver Bridge to five lanes.

Alternative 2: Build with Midpoint Interchange

This alternative is distinguished by the inclusion of a midpoint interchange in the vicinity of SE 122nd Avenue, which would connect the expressway to the existing Highway 212/224 (see Figure 3).

Alternative 3: Build with No Midpoint Interchange

In contrast to Alternative 2, this alternative would not have a midpoint interchange, resulting in no access to the expressway between I-205 and Rock Creek Junction (see Figure 4).

Design Options

In addition to the two build alternatives described above, a number of design options are under consideration. These options are organized by geographic zones, as described below.

- **Zone A** is the westernmost portion of the corridor and represents the I-205 Interchange Area and the Lawnfield Business Area, with a western terminus aligned with SE Johnson Road and an eastern terminus bisecting Camp Withycombe. The north and south boundaries extend from Clackamas Town Center to south of SE Jennifer Street.
- **Zone B** is the “Midpoint Area” and extends from Camp Withycombe to SE 135th Avenue, north to Clackamas High School and south to SE Jennifer Street.
- **Zone C** has the same north and south boundaries as Zone B and extends from SE 135th Avenue east to the Rock Creek area.
- **Zone D** represents the eastern end of the corridor and stretches east to SE 172nd Avenue with the same north and south boundaries as Zones B and C.

Many design options were considered, but only a few were carried forward for study. The design options described below retain their original numbering system.

Design Option A-2: Modified 1996 Design

This design option, located in Zone A, would extend SE Lawnfield Road west and south toward SE Clackamas Road (see Figures 5, 6 and 7). A further change would be to route SE Mather Road west to the SE Lawnfield Road extension, instead of south along SE Industrial Way.

Design Option B-2: 1996 Split Interchange (Modified)

Located in Zone B, this design option for the midpoint interchange would incorporate a modified split interchange involving both SE 122nd Avenue and SE 135th Avenue. This option would be applicable only to Alternative 2, as displayed in Figures 5, 6, and 8.

Design Option C-2: Central Alignment

This design option, located in Zone C and displayed in Figures 5, 6, and 9, would adjust the corridor alignment in the vicinity of Rock Creek closer to the existing Highway 212/224 alignment.

Design Option C-3: Modified Follow Tree-Line Alignment

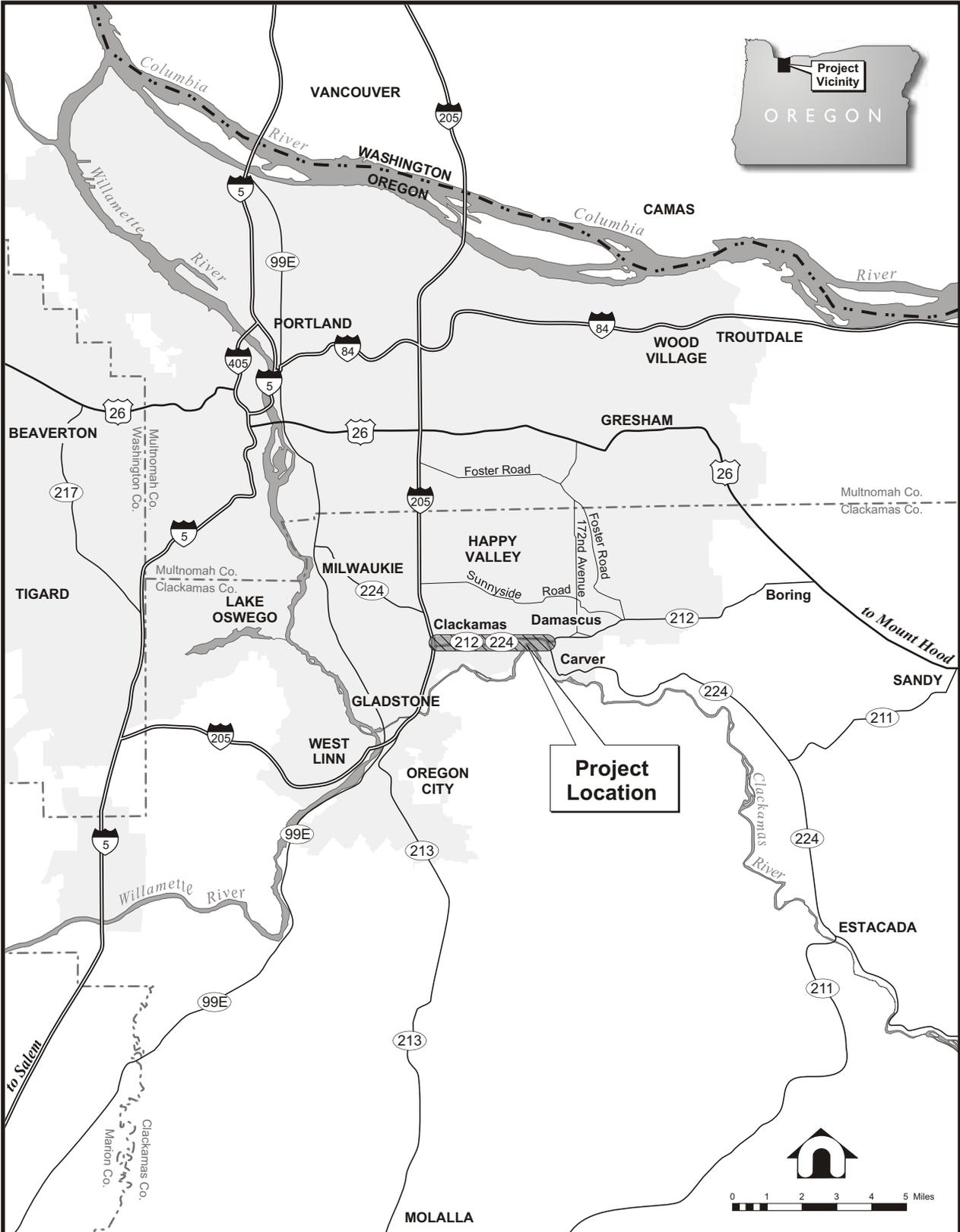
In contrast to Option C-2, this option would more closely follow the existing tree line to the north, as shown in Figures 5, 6, and 10.

Design Option D-2: Alignment through Knoll (Folded Diamond Interchange)

Instead of incorporating a folded diamond interchange north of a natural knoll in Zone D, this option would place the alignment through the knoll, as depicted in Figures 5, 6, and 11.

Design Option D-3: Single-Point Diamond Interchange

This design option replaces the folded diamond interchange with a single-point diamond- design interchange situated farther south in Zone D, as shown in Figures 5, 6, and 12.



Legend

- County Boundary
-  Project Location
-  Rivers
- . - . State Boundary
-  Urban Growth Boundary
- INCORPORATED CITY
- Unincorporated Community
-  Interstate
-  U.S. Highway
-  State Highway
- Other Major Roads

Figure 1

Project Vicinity

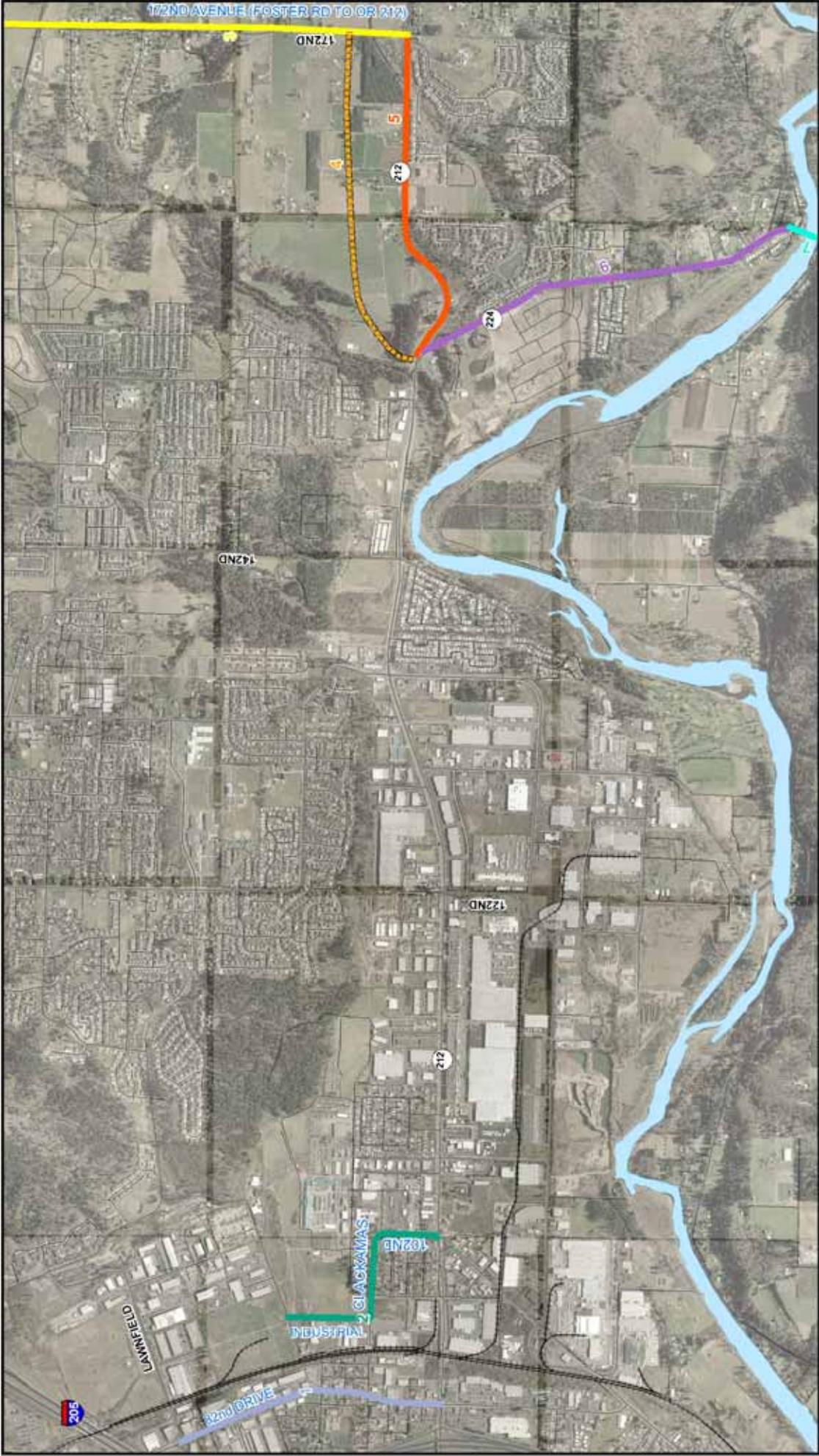


Figure 2

Alternative 1: No-Build

Future Funded Projects

- 1 Widen to 5 Lanes
- 2 Upgrade Roadway
- 3 Widen to 5 Lanes
- 4 New Arterial
- 5 Widen to 5 Lanes
- 6 Hwy 212 Widening
- 7 Widen to 5 Lanes
- 8 Hwy 224 Widening

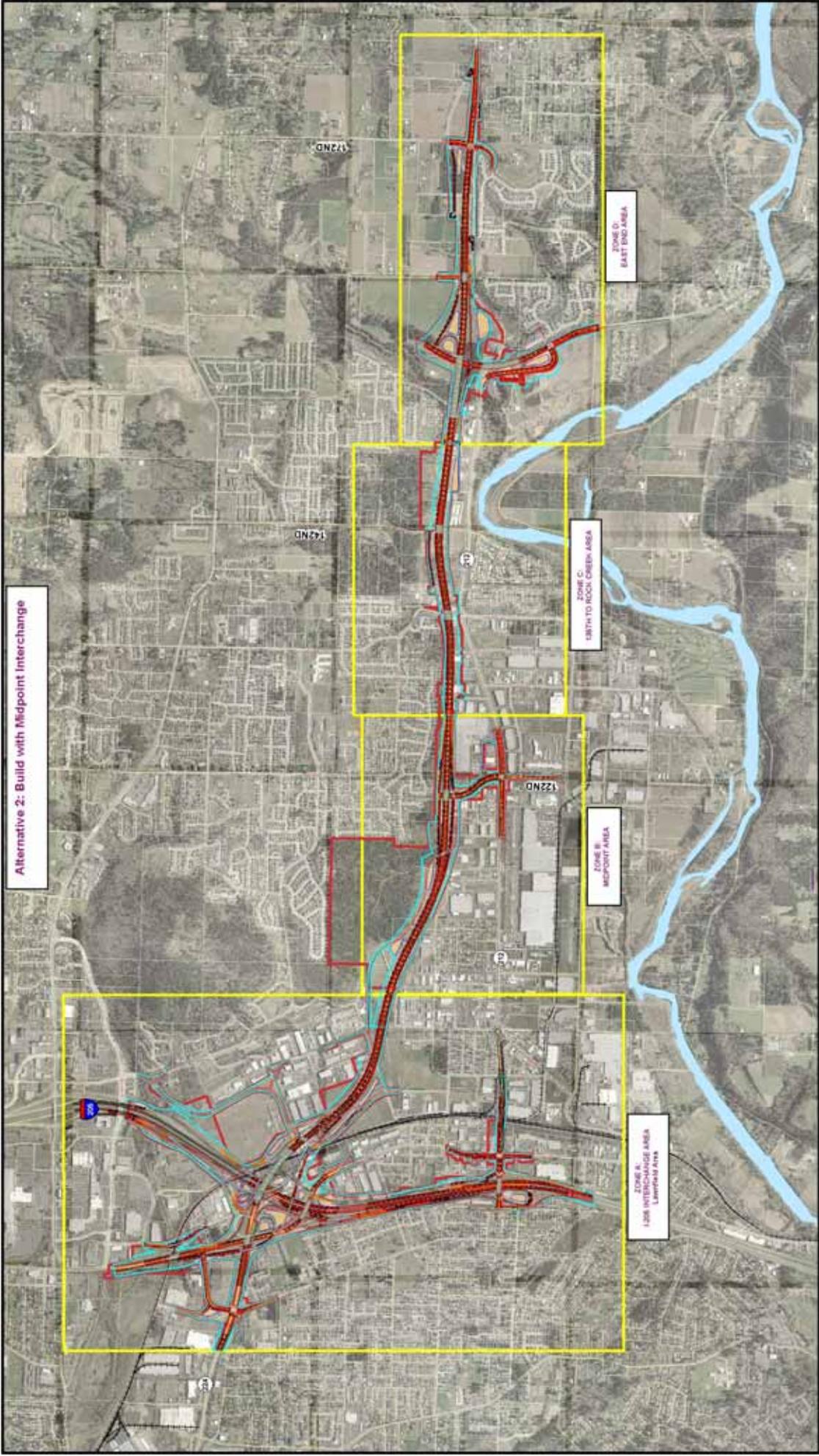
Legend

- Railroad

2,000 1,000 0 2,000 Feet

Sources: ODOT and Metro, Portland OR

Sunrise Project, I-205 to Rock Creek Junction



Alternative 2: Build with Midpoint Interchange

ZONE K
LOS INTERCHANGE AREA
Lower East Area

ZONE J
MIDPOINT AREA

ZONE C
817th TO ROCK CREEK AREA

ZONE D
EAST END AREA



2,000 1,000 0 2,000 Feet

- Legend**
- Zone Boundary
 - Construction Impact Line
 - Lane Marking
 - Lane Striping
 - Median
 - Proposed Digital/Way Line
 - Water
 - Water Quality/Retention
 - Sewer
 - Railroad
 - Structure
 - Fire Line

Sources: ODOT and Metro, Portland OR

Figure 3

Alternative 2: Build with Midpoint Interchange

Summit Project, I-205 to Rock Creek Junction

Alternative 3: Build with No Midpoint Interchange

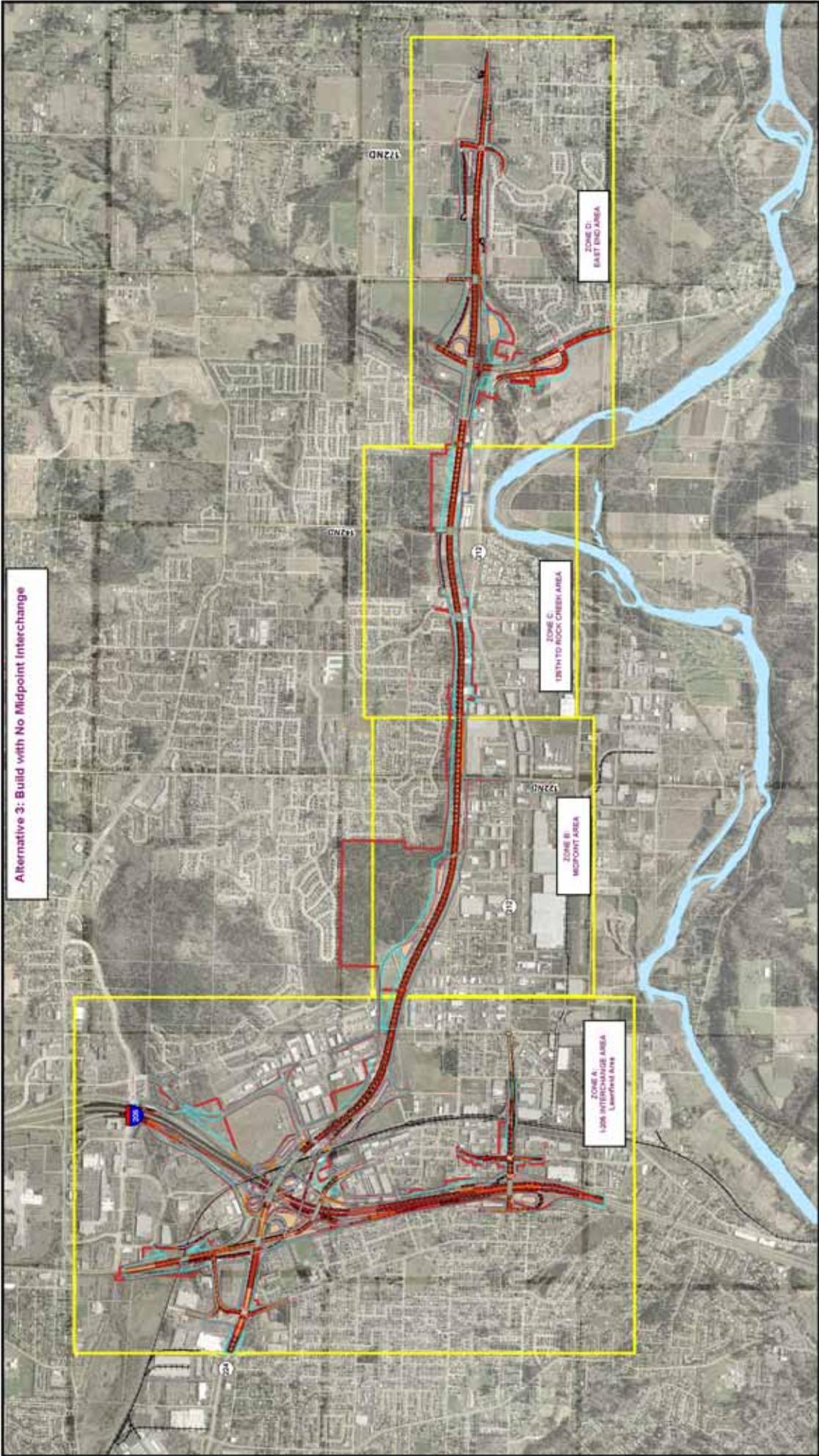


Figure 4
Alternative 3: Build with No Midpoint Interchange
Sunrise Project, I-205 to Rock Creek Junction



2,000 1,000 0 2,000 Feet

Source: ODOT and Metro, Portland OR

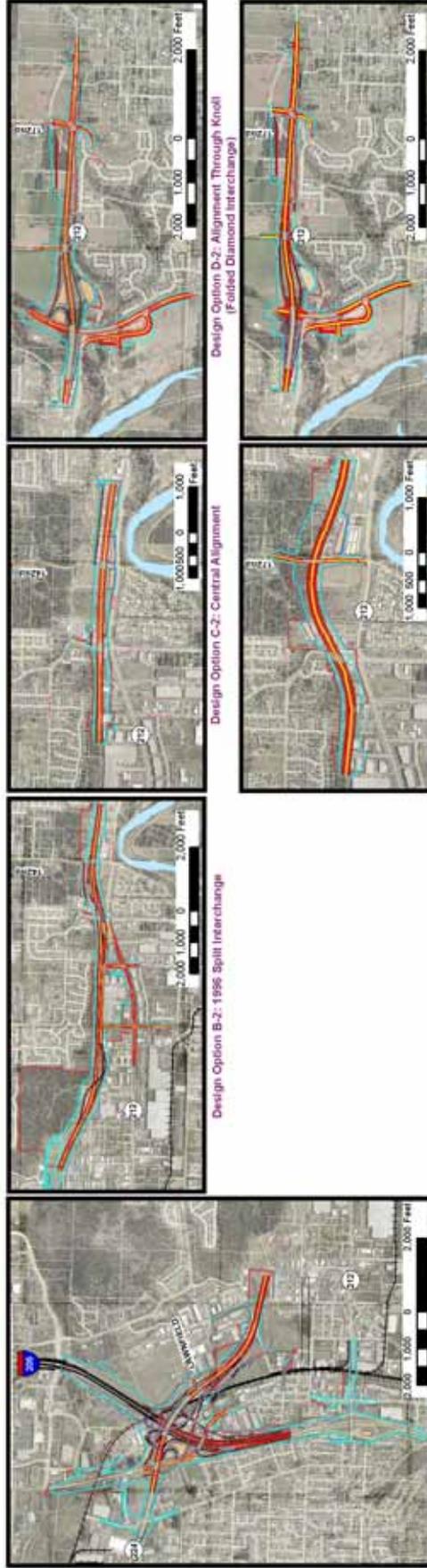
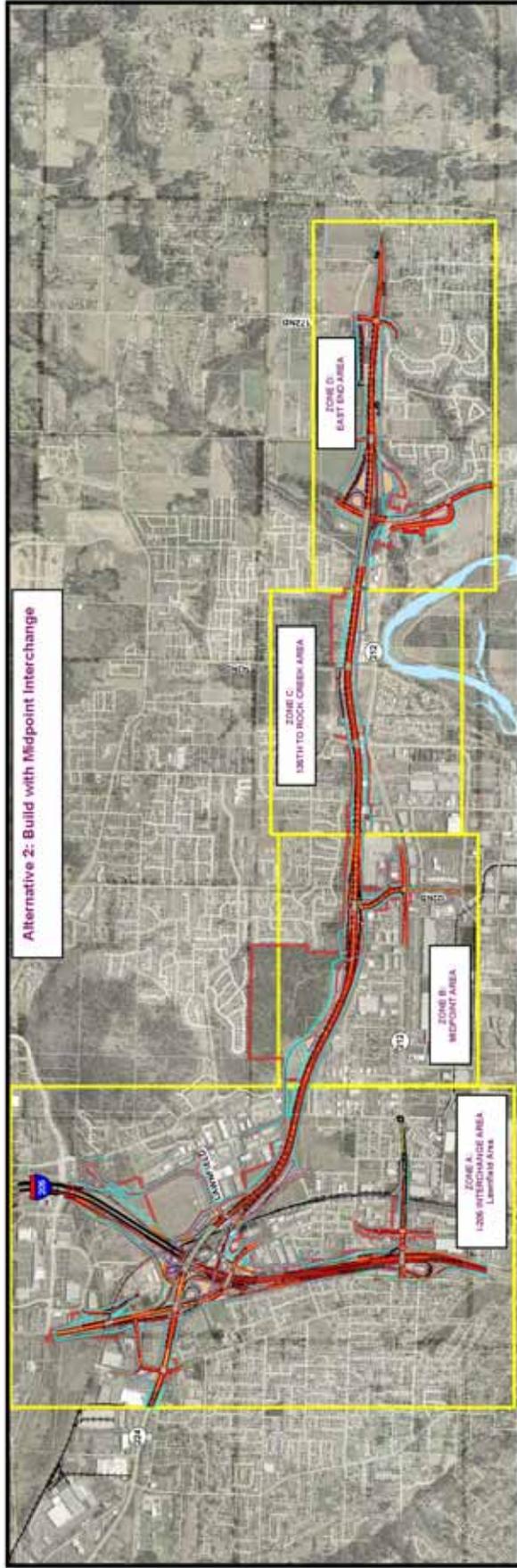


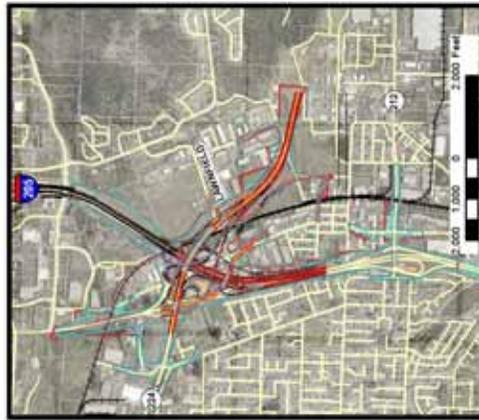
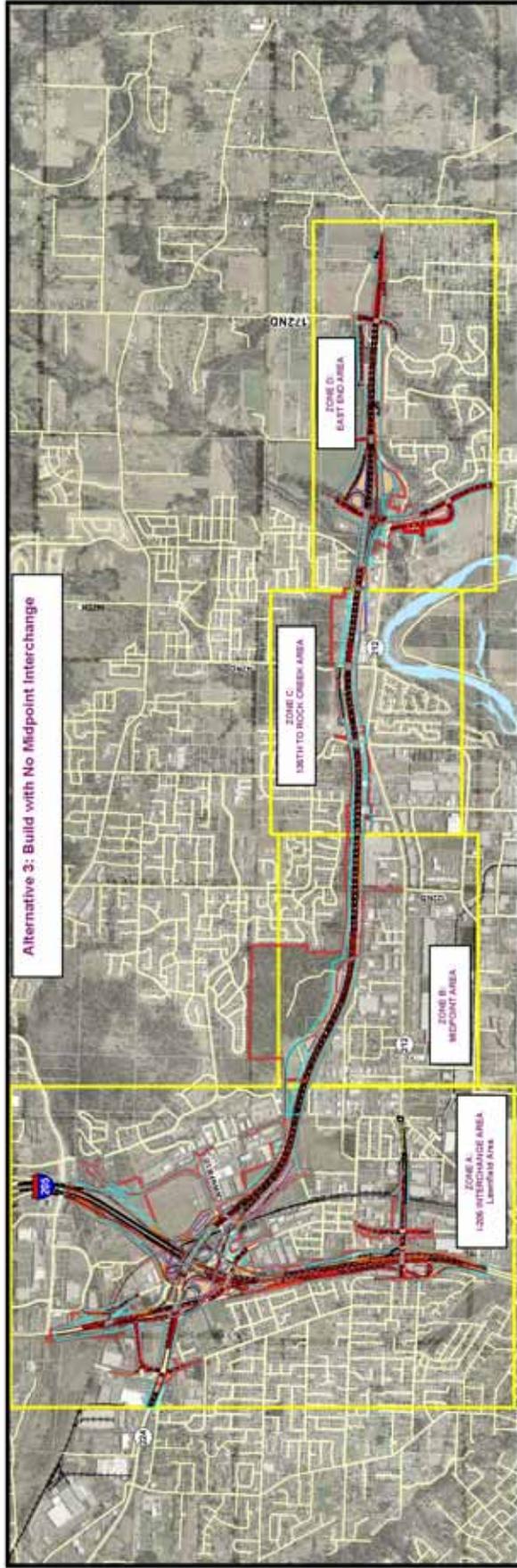
Figure 5
Alternative 2 with Design Options
Summit Project, I-205 to Rock Creek Junction

Legend

- Zone Boundary
- Construction Impact Line
- Landline
- Median
- Proposed Right-of-Way Line
- Traffic Light
- Well
- Water Quality/Retention
- Station
- Structure

Scale bar: 0 1,500 3,000 Feet
Note: Scale bar represents main Alternative 2 data frame

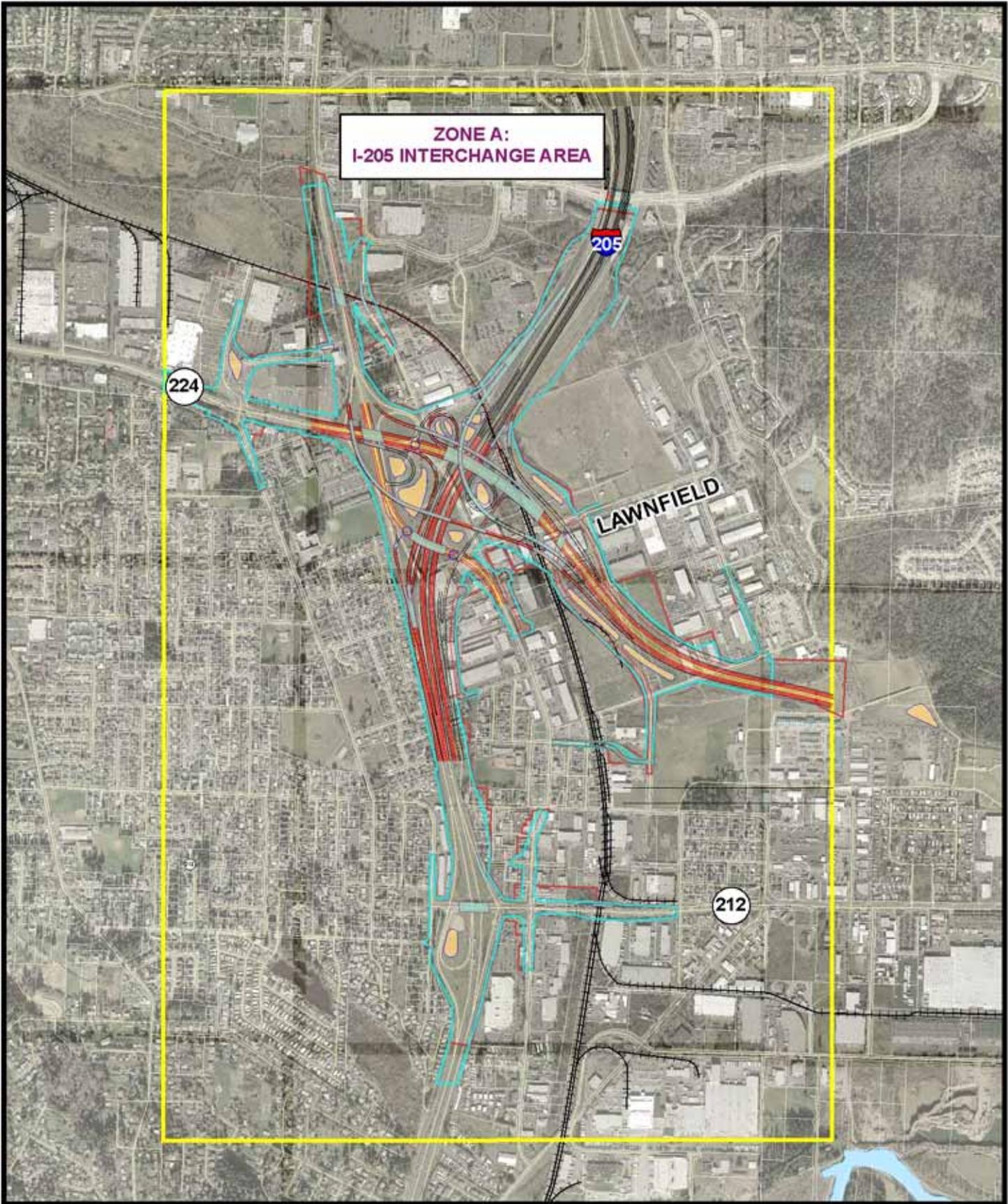
Sources: ODOT and Metro, Portland OR



3,000 1,500 0 3,000 Feet
 Note: Scale bar represents main Alternative 3 data frame

- Legend**
- Zone Boundary
 - Construction Impact Line
 - Limiting
 - Median
 - Proposed Right-of-Way Line
 - Tree Line
 - Wall
 - Water Quality/Retention
 - Subroad
 - Structure

Sources: ODOT and Metro, Portland OR



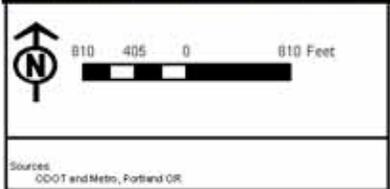
**ZONE A:
I-205 INTERCHANGE AREA**

LAWNFIELD

224

205

212



Legend	
— Zone Boundary	— Wall
— Construction Impact Line	— Water Quality/Retention
— Lane/line	— Railroad
— Median	— Structure
— Proposed Right-Of-Way Line	
— Tax Lots	

Figure 7
**Option A-2:
Modified 1996 Design**

Sources:
ODOT and Metro, Portland OR

Sunrise Project, I-205 to Rock Creek Junction

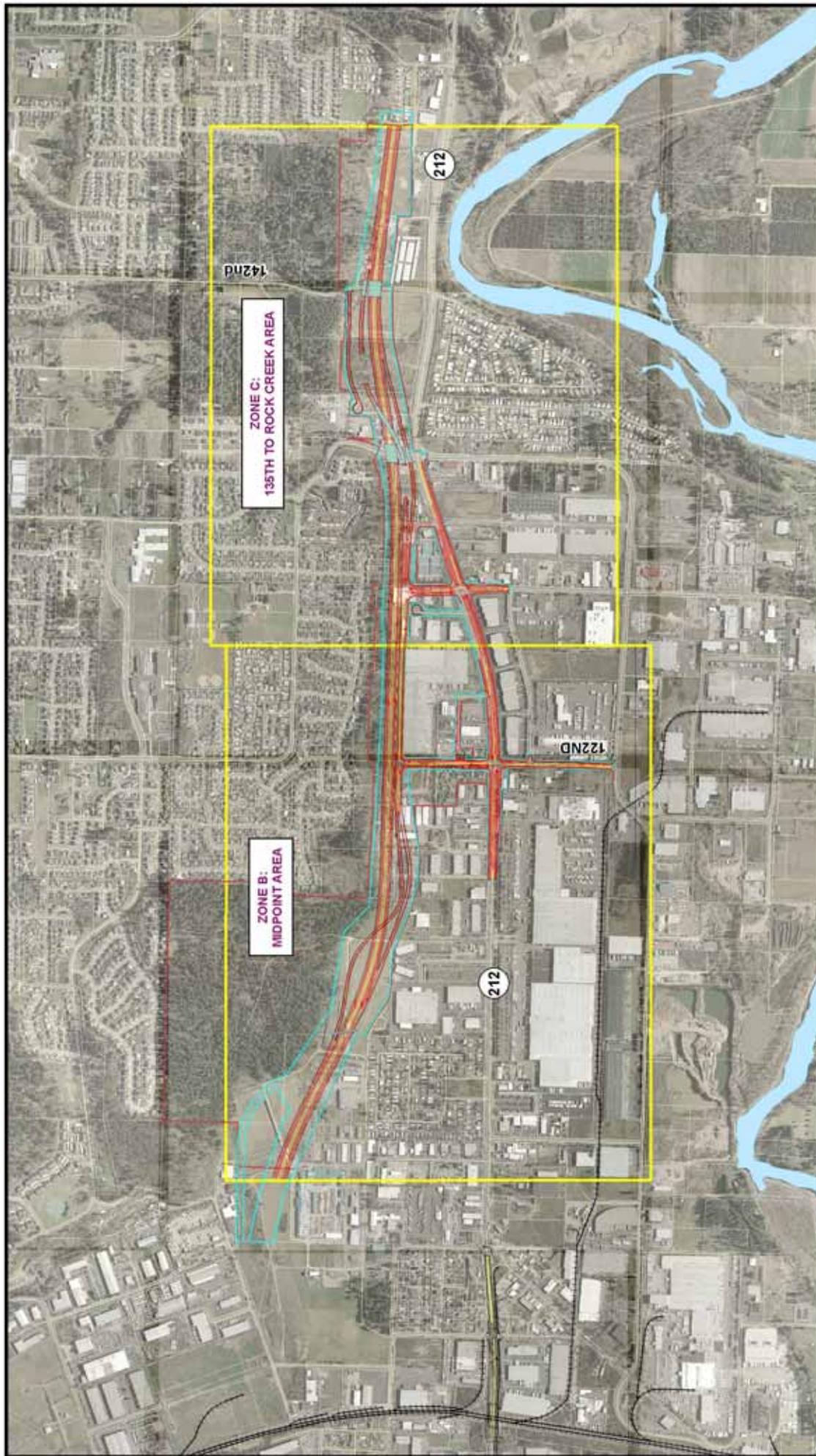


Figure 8
Option B-2: 1996 Split Interchange
Summit Project, I-205 to Rock Creek Junction

- Legend**
- Zone Boundary
 - Construction Impact Line
 - Lane Line
 - Median
 - Proposed Right-of-Way Line
 - Tax Lot
 - Well
 - Water Quality Measure
 - Right-of-Way
 - Structure

Sources:
 ODOT and Metro, Portland OR



**ZONE C:
135TH TO ROCK CREEK AREA**

Figure 9
Option C-2: Central Alignment
Sunrise Project, I-205 to Rock Creek Junction

- Legend**
- Well
 - Zone Boundary
 - Contribution Impact Line
 - Limbs
 - Mobile
 - Proposed Right-of-Way Line
 - Tax Lot
 - Water Quality/Enhance
 - Station
 - Structure

800 400 0 800 Feet

Source: ODOT and Metro, Portland OR

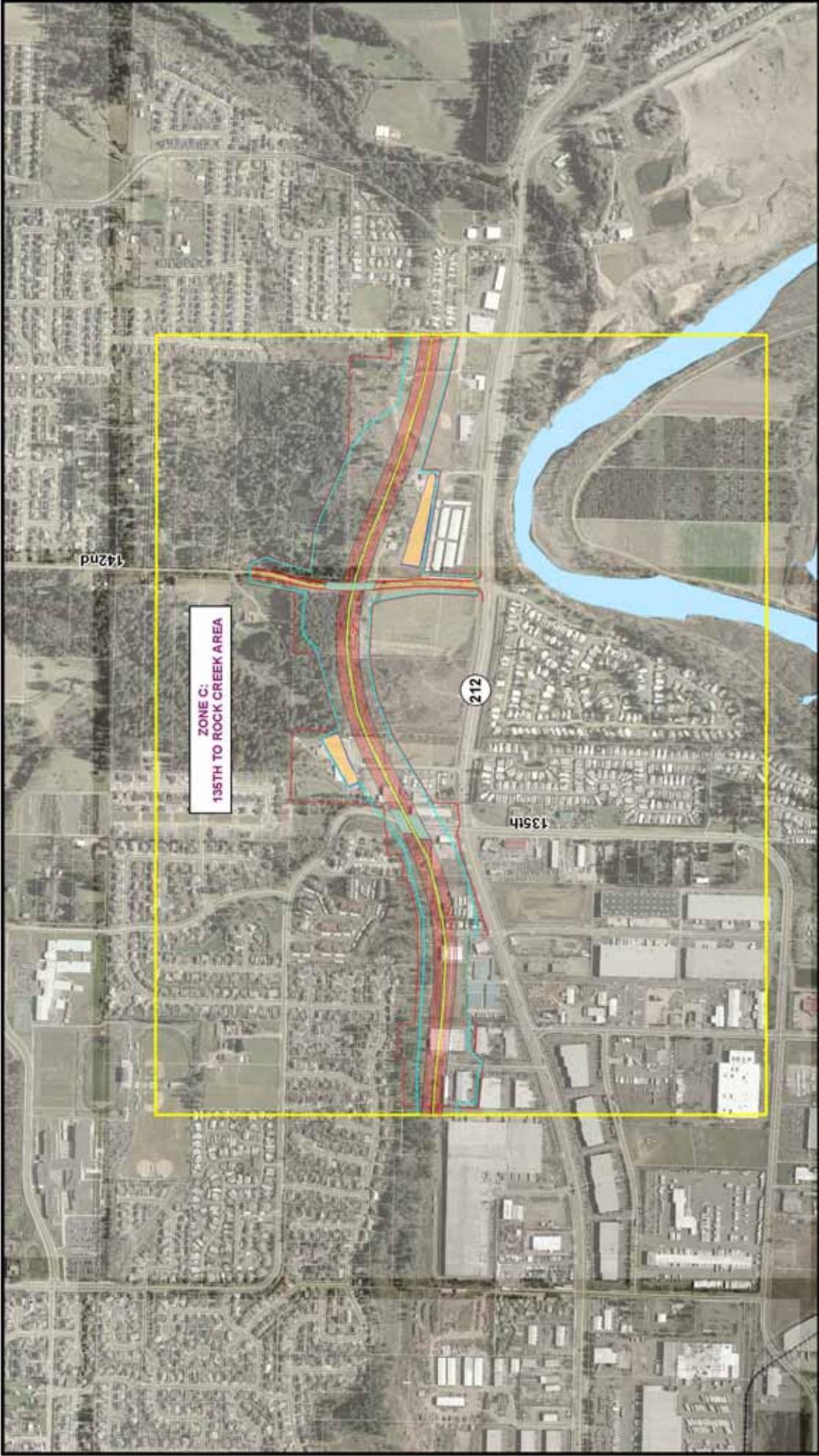


Figure 10

Option C-3: Modified Follow Tree-line Alignment

Summit Project, I-205 to Rock Creek Junction

- Legend**
- Zone Boundary
 - Contribution Impact Line
 - Limits
 - Middle
 - Proposed Right-of-Way Line
 - Tree Line
 - Well
 - Water Quality/Retention
 - Riparian
 - Structure



Sources: ODOT and Metro, Portland OR

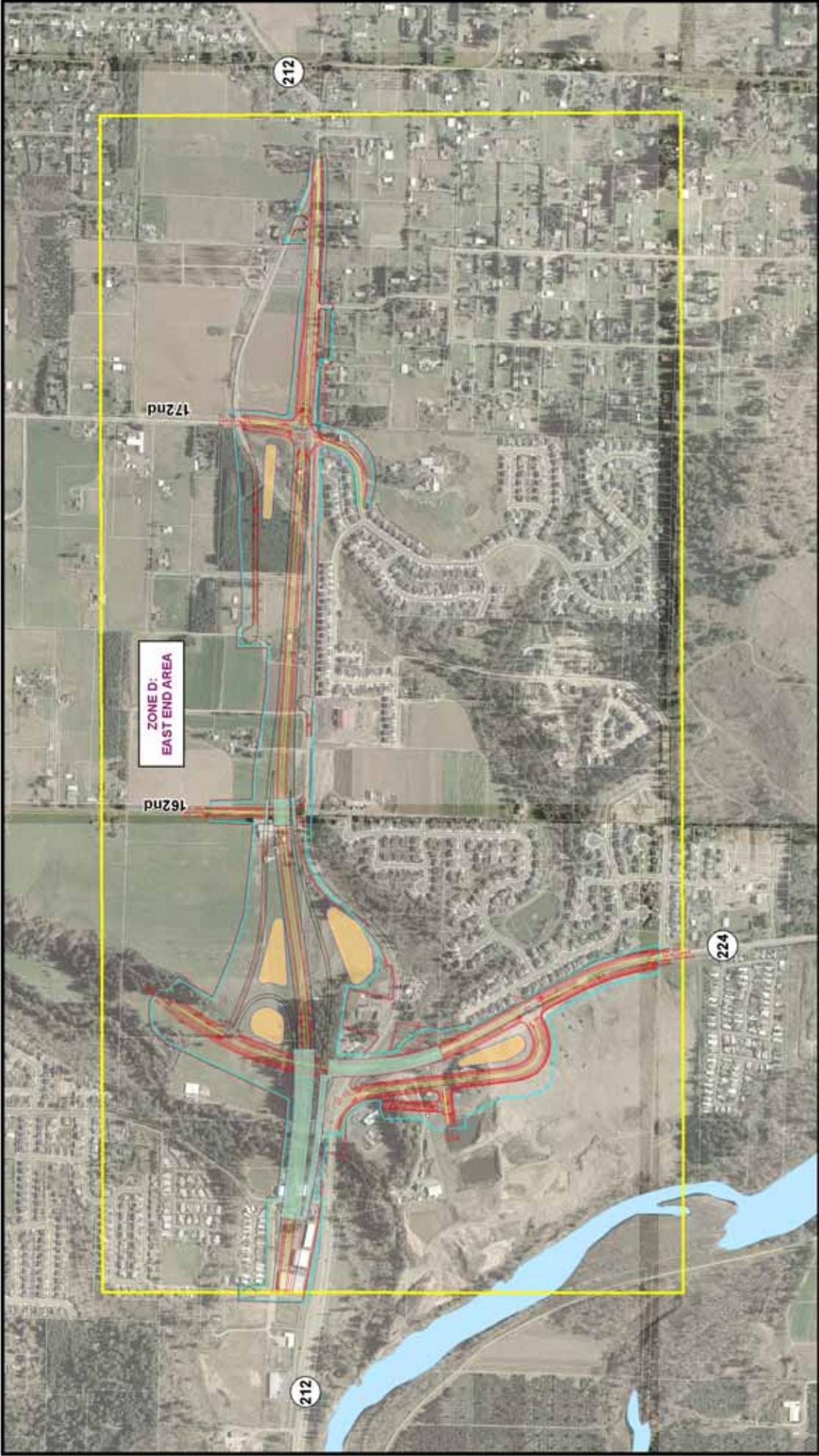


Figure 11

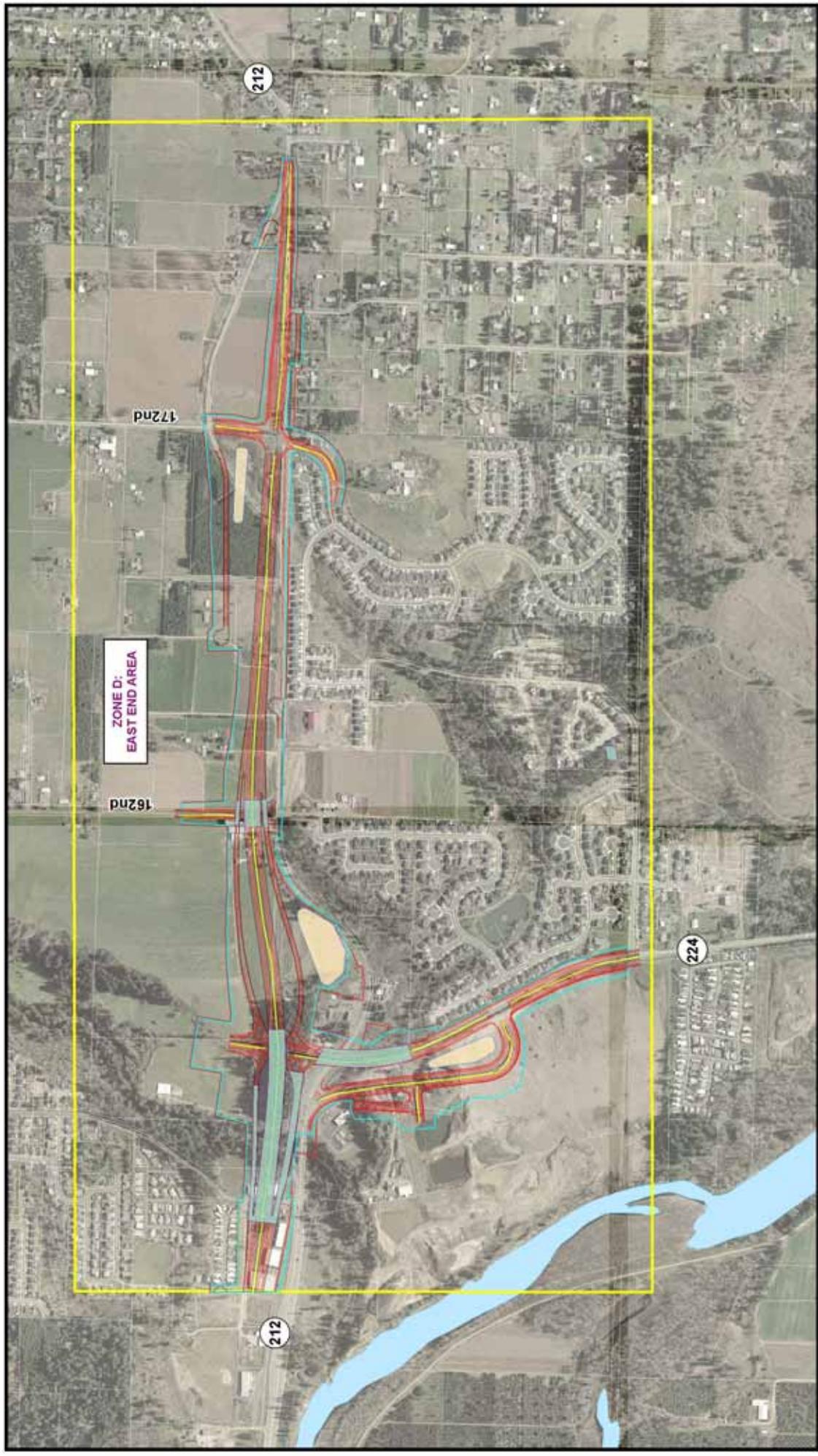
Option D-2: Alignment Through Knoll
(Folded Diamond Interchange)

Summit Project, I-205 to Rock Creek Junction

- Legend**
- Zone Boundary
 - Water Quality Measure
 - Construction Impact Line
 - Lane
 - Median
 - Proposed Right-of-Way Line
 - Tax Lot
 - Well
 - Water Quality Measure
 - Right-of-Way
 - Structure



Sources: ODOT and Metro, Portland OR



**ZONE D:
EAST END AREA**

172nd

162nd

212

224

212



Sources:
ODOT and Metro, Portland OR

- Legend**
- Zone Boundary
 - Well
 - Construction Impact Line
 - Water Quality Influence
 - Lane
 - Right-of-Way
 - Median
 - Proposed Right-of-Way Line
 - Structure
 - Taxi Lane

Figure 12

Option D-3: Single Point Diamond Interchange

Sunrise Project, I-205 to Rock Creek Junction

METHODOLOGY AND DATA SOURCES

The focus of the work described in this section was to identify, to the extent feasible, the documented and potential hazardous materials issues existing in the Sunrise Project area. The methodology consisted of the following:

- A review of background documents (available hazardous material sections of previous environmental impact statement (EIS) reports completed for David Evans and Associates (DEA)), the Sunrise Project Environmental Baseline Report (DEA, 2004), and a hazardous material issues review completed for Hatch Mott MacDonald by Kleinfelder (2006).
- A review of publicly available historical resources such as aerial photographs and topographic maps to note changes in land use patterns within the project area. Sanborn Maps were not available for the project area.
- A review of federal and state regulatory agency lists and databases of facilities that use, store, and/or generate hazardous chemicals or have released hazardous chemicals to the soil and/or groundwater, which would help reveal potential recognized environmental conditions within a 0.25-mile buffer of the Sunrise Project. A review of agency summary records and file information for facilities that appeared to be located within or immediately adjacent to the proposed project area were reviewed for potential hazardous materials impacts to future construction and/or right-of-way acquisition. The individual data sources were searched by Environmental Data Resources (EDR) and documented in a DataMap Corridor Study.
- A site reconnaissance of properties undertaken from the public right-of-way in the project area to assess visually obvious features or materials that may present a potential for recognized environmental conditions.

The facilities revealed during the database review were evaluated as to their potential for presenting a “recognized environmental condition” to the Sunrise Project. This term is borrowed from the ASTM E 1527-05 Phase I Environmental Site Assessment Standard, though this study did not follow all aspects of the ASTM standard. A recognized environmental condition is defined as: “the presence, or likely presence, of hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes *hazardous substances* or *petroleum products* even under conditions in compliance with laws.”

AFFECTED ENVIRONMENT

Site History

An existing conditions summary related to hazardous materials takes into account both current and historical conditions. Current conditions may be the result of past land uses. The following information regarding past uses of the project area was obtained from various public and private sources. Such information is usually incomplete but may provide a general outline of historical uses in the project area.

A review of historical aerial photography may indicate past activities at a property not documented by other means or observed during a property visit. The effectiveness of this method depends on the scale and quality of the photographs and the available coverage. Available aerial photographs providing coverage of all or portions of the project area were obtained from the U.S. Army Corps of Engineers in Portland, Oregon. Table 1 lists the aerial photographs that were reviewed.

Table 1. Aerial Photographs Reviewed

Date	Flight/Photo No.	Scale	Color	Stereo
1937	37-6226 to 6231	---	B/W	No
1944 partial coverage	---	---	B/W	No
July 4, 1953	53-409, 410, 411, 412	1:12,000	B/W	No
February 18, 1969	69-171, 172, 173	1:24,000	B/W	No
September 11, 1979	79-1673, 1674	1:30,000	Infrared	No
September 15, 1983	83-862, 864, 965	1:24,000	Infrared	No
February 9, 1996	96-57, 59	1:24,000	Color	No
July 18, 1999	99-666	1:48,000	B/W	No

In addition to the aerial photographs listed in Table 1, color, aerial photographs taken in May 2002 (available at www.terraserver-usa.com) were reviewed.

In general, the aerial photographs record various changes in land use over the years between 1937 and 2002. This period coincides with the transition from rural and agricultural to commercial and industrial, including scattered residential development as well. Camp Withycombe is a notable facility where various military activities have been conducted from the 1930s to the present. Such uses have been accompanied by a corresponding growth in infrastructure.

The results of the aerial photography review are presented below.

1937 The far western end of the project area was not covered by the 1937 aerial photograph. Land uses from SE 82nd Drive and SE Lawnfield Road consisted of open fields, agricultural-type developments (north of SE Mather Road), and what appeared to be Camp Withycombe. Camp Withycombe was a grouping of warehouse-sized buildings located southeast of SE Mather Road, northeast of SE Clackamas Road, and east of SE 102nd Avenue. The camp appeared to include open fields to the west, north, and east of

the core complex of buildings. There appeared to be 13 buildings ranging in size from shed-sized to warehouse-sized. Various unpaved roads circled or transected the camp property. The land uses between the base of the Mount Talbert foothills and Highway 212 were predominantly agricultural, with farm buildings extending to the eastern limits of the proposed project corridor.

- 1944 The 1944 aerial photograph included partial coverage of the project area from the western end to approximately SE 122nd Avenue. The general land uses of this corridor were unchanged from the 1937 aerial photograph. There appeared to be an equipment storage area at the northwestern corner of the Camp Withycombe complex of buildings. The type of equipment stored was not apparent.
- 1953 The far western end of the project area was not covered by the 1953 aerial photograph. Some commercial/industrial development was apparent along SE Mather Road, but other properties still maintained a rural agricultural appearance. Three new warehouse buildings had been constructed on the eastern side of the Camp Withycombe complex. A new, long, and narrow building was constructed in the center of the complex. Additional smaller buildings had been constructed. The equipment storage area noted in 1944 was no longer visible. The area from Camp Withycombe to the eastern end of the project area was generally unchanged from the 1944 aerial photograph.
- 1969 At the western end of the project area, I-205 had been constructed. The project included building an overpass to carry SE 82nd Drive traffic over the freeway. Some commercial/industrial-type buildings were apparent along SE 82nd Drive from the overpass to “downtown” Clackamas. Some significant industrial development had occurred between SE Lawnfield and SE Mather Roads, east of the railroad. One of the facilities appeared to be a junkyard. Another business appeared to be a lumber mill. Some agricultural fields were still present, but the change from agricultural and rural residential land uses was well under way by 1969. Camp Withycombe appeared to be relatively active, based on a large materials storage area (north of the buildings), a dirt airstrip, and a bermed firing range. The firing range was located northeast of the complex of buildings and at the foot of the northern hills. Areas of Camp Withycombe appeared to be used for vehicle maneuvers based on ground ruts and other related land disturbances. A trailer park had been constructed to the southeast of Camp Withycombe. Agricultural and rural land uses were still apparent from the 11800 block of Highway 212 to the eastern end of the project area.
- 1979 The western end of the project area (Highway 224/Milwaukie Expressway) showed retail-type commercial development (Kmart and Levitz). A major interchange was readily visible in this photograph, showing the connections of SE 82nd Drive, Highway 224, and I-205. Significant industrial land uses were present between the railroad, SE Lawnfield Road, and SE Mather Road. Many businesses had large outside storage areas for equipment and materials. Numerous warehouse buildings were located in this area. Camp Withycombe’s complex of buildings was generally unchanged from the 1969 aerial photograph. The location of equipment and materials storage was generally unchanged. A straight section of asphalt was apparent in the north-central portion of the

camp. The area east of the asphalt appeared to be another firing range. New commercial/industrial development was present between Camp Withycombe and Highway 212 to the south.

The previously described agricultural land uses from Camp Withycombe to the eastern end of the proposed project area had undergone some redevelopment along new streets, such as SE 118th Avenue, SE 122nd Avenue, SE 125th Court, and For Mor Court. A trailer park was situated between Highway 212 and the Clackamas River bend. Agricultural land uses were still present north of Highway 212 to the east end of the project area.

- 1983 The project area appeared generally unchanged from the 1979 aerial photograph.
- 1996 The industrial area between SE Lawnfield and SE Mather Roads was still apparent. Additional development may have occurred in the area since 1983. An area at the northeastern corner of the Union Pacific railroad and SE Mather Road appeared to have been cleared of buildings and equipment storage. A concrete slab is all that remains of a former building. This was likely the location of the former Northwest Pipe & Casing Company facility that is currently listed on the National Priorities List (Superfund). Camp Withycombe appeared to still be in use. Additional materials/equipment storage was apparent to the north of the complex of buildings. An additional firing range was also present at the eastern end of the property. Between Camp Withycombe and the Clackamas River bend, there was evidence of increased industrial/commercial development. Some of the businesses had large outside materials/equipment storage areas. The project area from the Clackamas River bend to the eastern end appeared to be undeveloped land, trailer park, and agricultural.
- 1999 The land uses of the project area were generally unchanged from the 1996 aerial photograph, though additional development was apparent north of Highway 212.
- 2002 The land uses of the project area were generally unchanged from the 1999 aerial photograph, though additional development was apparent north of Highway 212.

Note: Aerial photographs only provide indications of land use, and therefore no conclusions can be drawn solely from the photographs.

Records Review

The information in this section was obtained from regulatory listings and contacted agencies and individuals. The databases reviewed by Environmental Data Resources, Inc., and the associated areas of study are described below. The search distances used by EDR were customized for this project and included a 0.25-mile buffer outside of the project corridor for general database searches, and the project corridor and adjacent properties buffer for specific agency summary record and file reviews. The distances were measured from the 2006 boundary for the construction impact line. The EDR findings were reviewed and screened, and the discussions in this technical review focus on facilities and immediately adjacent properties crossed by one of the alternative roadway routes.

Figures 7 and 8 show the locations of the 45 sites identified as having potential hazardous materials issues based on the records review and field visits, and these sites are also summarized in Table 1, Potential Hazardous Materials Sites. The various federal and state agency data sources are described below.

Environmental Protection Agency

The following lists from the Environmental Protection Agency (EPA) Region 10 Office were reviewed: National Priority List (NPL), Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS), Resource Conservation and Recovery Act (RCRA), Corrective Action Sites (CORRACTS), and Emergency Response Notification System (ERNS) site lists.

Federal NPL Database

The NPL (Superfund) database is a subset of CERCLIS properties and identifies facilities for priority cleanup under the Superfund Program. The Northwest Pipe & Casing/Hall Process Company at SE Mather Road and SE Industrial Way (ECSI No. 139) was located within the search buffer (0.25 miles from project corridor) for the database. The build alternatives indicate that this site is crossed by the proposed Highway 212/224 expressway. This Superfund site is discussed in more detail under the State ECSI and CRL Lists subheading.

Federal CERCLIS List

The CERCLIS list is a database of known and potentially hazardous waste facilities reported to EPA by state and local agencies and the general public in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The CERCLIS database was reviewed for facilities within and adjacent to the Sunrise Project. The Northwest Pipe & Casing Superfund site was listed in this database as well as on the NPL. The following five facilities listed in the CERCLIS No Further Remedial Action Planned (NFRAP) database are within or adjacent to the project area:

- Portable Equipment Salvage Company
- Ellsworth Dump Site
- Cascade Chemical, Inc.
- Safety Kleen Corp. 7-148
- American Wood Dryers

Federal RCRA List

The RCRA list identifies facilities that have obtained identification numbers from EPA, which designate these businesses as generators, transporters, or storers/disposers of hazardous waste. Obtaining an identification number does not necessarily mean that hazardous materials have been improperly handled at any of these facilities. The list of generators and the Treatment, Storage, and Disposal (TSD) list were reviewed for facilities within and adjacent to the project

area. The RCRA database listed 71 facilities within the search area. No facilities were listed in the TSD database within the search area. Camp Withycombe was one of the RCRA listings. It was listed as a “large quantity generator,” and violations were listed for 1996 and 2000. A 2001 Biennial Report indicated that various hazardous wastes were generated at the Camp Withycombe facility.

Federal CORRACTS Report

The Corrective Action Sites report developed by EPA identifies hazardous waste handlers with RCRA corrective action activity. The database listed the following facility within or adjacent to the project area: Safety Kleen Corp. 7-148.

The Safety Kleen Corp. 7-148 facility was listed on CORRACTS sometime in October 1991 and again in January 1994. The EPA summary data reported by EDR indicate there was “contaminated groundwater” at the facility. Reportedly, a groundwater pump and treat system was in operation in January 1994. Soil was excavated, and a deed restriction was placed on the property to limit groundwater use to landscape irrigation. DEQ published a public notice for a proposed NFA determination in 2002.

Federal ERNS Database

The ERNS database records and stores information on reported releases of oil and hazardous substances. The database was checked for records of emergency responses in the project area. Two facilities were listed: (1) Precision Castparts Corporation Small Structures Business Operations, and (2) Fred Meyer Distribution Center.

Oregon Department of Environmental Quality

The following summarizes the information obtained from DEQ. The search distance is 0.25 miles from the proposed project corridor.

State ESCI and CRL LISTS

The ECSI system includes facilities entered into the DEQ database according to the site discovery requirements of Oregon Revised Statutes (ORS) 466.560. The ECSI list includes facilities where a release of hazardous substances has been confirmed, facilities where investigation or cleanup has been initiated, and facilities suspected of a release of hazardous substances. Twenty-two facilities were located within or adjacent to the Sunrise Project alignment.

Ten of these facilities were also listed on the CRL database. The database lists facilities that are contaminated with hazardous wastes, petroleum products, and other hazardous substances. Facilities listed on this database are included on the ECSI database.

Northwest Pipe & Casing/Hall Process Company

SE Mather Road at SE Industrial Way
Within Proposed Right-of-Way

The build alternatives indicate that this site is crossed by the proposed Highway 212/224 expressway. EPA is the funding lead for the site. This facility was listed on the NPL, CERCLIS, ECSI, and CRL databases. The northern portion of the abandoned facility is reportedly owned jointly by ODOT and DEQ. According to Debbie Bailey, project manager with Oregon Department of Environmental Quality (DEQ), DEQ's investigation of Northwest Pipe included two parcels: "Parcel A" and "Parcel B". The western half of "Parcel A" (9200 Lawnfield) is owned by ODOT. The eastern half of Parcel A is currently owned by NW Development. This portion of the facility (Parcel A) was formerly owned by Northwest Pipe. "Parcel B," which was leased by Northwest Pipe in the past, was owned in trust by DEQ prior to its purchase by Clackamas County in 2005. The facility consists of approximately 53 acres within an industrial park. For approximately 30 years (between 1956 and 1985), the site operated as a steel pipe coating facility. Business operations included sandblasting, priming, and painting of steel pipe. The pipe coatings included coal tar or pitch, coal tar epoxy, cement mortar, and asphalt. Wastes were reportedly spilled, burned, or buried at the facility.

Contaminants included spent solvents, primers, coal tar, coating product containers, coal tar residues, and oils. EPA performed limited sampling on at least two occasions before 1990 that indicated widespread contamination of surficial soil (upper 6 inches) by PAHs from coal tar, PCBs, and some chlorinated VOCs. Concentrations of these compounds were detected in soil, sediment, surface water, and groundwater at the facility. According to DEQ, the most widespread contaminants in shallow groundwater are chlorinated VOCs, including PCE; trichloroethene (TCE); cis-1,2-dichloroethene (DCE); and vinyl chloride. DEQ reported four distinct groundwater contamination plumes of PCE and other compounds. The site was added to EPA's NPL in 1992

Early cleanup activity started in 1993. In 1996, EPA initiated a Remedial Investigation/ Feasibility Study (RI/FS) to determine the nature and extent of contamination at the site. In December 1998, two underground fuel tanks were decommissioned and removed from the site. In 1999, security patrols at the site started to keep trespassers out.

Following issuance of the RI/FS and receipt of public comments in 1999, EPA issued a final decision about the soil cleanup in fall 2000 and later issued a final decision about groundwater cleanup in early 2001. Phase 1 of the soil remedy, which included excavation and off-site treatment or disposal of contaminated soil from "hot spots" and removal of underground tanks and process piping, was conducted between August and December 2001. A total of 23,000 tons of contaminated soil was removed from the site. Phase 2 of the soil remedy, which entailed placement of a 2-foot cap of clean soil over areas where surface materials contained PCBs and PAHs at concentrations exceeding the cleanup goals, was performed in 2003. The selected groundwater remedy included installation of approximately 15 in-ground, air-stripping wells in areas where groundwater had the highest VOC concentrations. The wells were installed in 2003. It is estimated that the treatment wells will be operated for 5 to 10 years, after which natural processes will be relied on to further attenuate groundwater contaminant levels and groundwater monitoring will continue or will be ongoing. EPA will also place institutional controls on groundwater to restrict its use until groundwater cleanup goals are met.

On May 20, 2007, Ms. Debbie Bailey, DEQ Project Manager for the property, stated that the soil contamination issues have been addressed. According to Ms. Bailey, PAHs and PCBs were the primary contaminants of concern in the site soil. Contaminated “hot spots” of soil were excavated, treated, and placed back in the excavations, prior to the placement of a 2-foot cap over the surface. The soil is currently in an operation and maintenance stage, which includes maintaining the cap to prevent runoff, erosion, and vegetation removal.

Ms. Bailey stated that chlorinated VOCs had affected site groundwater. Groundwater circulation wells, which pump groundwater into individual air stripping systems before re-injection of the treated water, had been installed in 2003. According to Ms. Bailey, the system had not worked as well as planned, as it was not removing enough contaminants to keep it running. She stated that EPA had requested a technical review of the system, during which time the system would potentially be shut down. She speculated that alternative remedies would be considered, which could include salvaging part of the existing system.

Ms. Bailey stated that if construction were to occur on the property, there would be restrictions on soil disturbance. Soil encountered beneath the 2-foot cap would require proper management. The cap would need to be restored following removal. Ms. Bailey stated that if buildings were to be constructed on the site, an indoor air analysis would need to be conducted. Additionally, a 1-acre wetland on the northeast part of the property would have to be maintained or mitigated.

Northwest Development

9460 SE Lawnfield Road
Within Proposed Right-of-Way

This facility was reportedly part of Northwest Pipe & Casing, discussed earlier. The DEQ summary record indicated that no hazardous substances are known to be at this facility. The responsible party submitted a Preliminary Assessment in October 1989. Implementation of the work plan was put on hold by Northwest Development.

ODOT Ambler Road West

SE Ambler Road and SE 82nd Avenue (9200 SE Lawnfield Road)
Within Proposed Right-of-Way

This facility was listed on the ECSI and CRL databases. Elevated levels of chlorinated solvents in groundwater were discovered at the facility following a similar discovery at an adjacent property. The suspected source was illegal dumping of industrial or drycleaning solvents. An agreement to conduct an RI/FS was signed in September 1994, and an RI investigation commenced in March 1995 with soil borings and the installation of monitoring wells. The investigation resulted in the discovery of widespread TCE and PCE contamination in groundwater near the southern side of the site. A Phase II investigation was completed in October 1995. An Interim Remedial Action (IRA) work plan was submitted to DEQ in November 1995. A Phase III investigation was completed in January 1996 to address data gaps in the IRA work plan.

A phytoremediation pilot was planned in conjunction with EPA. Poplar trees were planted on site from 1999 to 2000 to treat contaminant concentrations. A quarterly monitoring program completed around 2003 showed steadily declining contaminant concentrations. Additional soil samples were collected in January 2005. DEQ received a Draft Baseline Risk Assessment dated March 2005. Following receipt of comments on the draft report, a revised Baseline Risk Assessment was submitted to DEQ in January 2006. Mr. Jim Orr of ODOT reported that DEQ issued an NFA, which required a deed restriction on the facility. ODOT's ongoing responsibility was to sample and analyze surface water from a creek for VOCs until 2011. The trees were to be maintained and the property use is restricted. Mr. Orr indicated that there are two operating USTs at the facility. The EPA has reportedly planned to conduct a vapor intrusion study of the facility in Summer of 2007.

Portable Equipment Salvage Company

10281 SE Mather Road

Adjacent to Proposed Right-of-Way

This facility was listed on the ECSI and CRL databases. The facility salvaged copper, lead, and other metals from discarded electrical equipment. Site investigations conducted from 1987 to 1990 revealed that soil was contaminated with lead, copper, PAHs, and PCBs. These compounds were also found in adjacent property soils to the north and west of this facility. Groundwater reportedly contained low concentrations of PCBs, lead, and VOCs. An RI/FS was conducted from May 1987 to November 1991. DEQ assumed the project lead from EPA in October 1990. According to DEQ summary information, facility operations that led to the contamination included scrapping and recycling of power transformers, processing and recycling of salvageable metals from internal wiring and transformer carcasses, and burning of transformers and other electrical equipment in an on-site furnace. Ash contaminated with dioxins and furans were disposed of in an on-site pit. Spills and leaks had occurred during the facility operations.

Remedial actions initiated in August 1993 included removal and decontamination of scrap metal and debris. Contaminated soils were excavated and transported off-site or stabilized on-site. A closeout report was submitted to DEQ in June 1995. DEQ issued a draft Certificate of Completion in January 1996. Operations and maintenance activities include semiannual inspections of the soil cover.

The Oregon Institutional Controls database listed Portable Equipment Salvage Company as being in an operation and maintenance status. No other summary data were provided.

Camp Withycombe – Firing Range

2S/2E/S10BD (10101 SE Clackamas Road)

Within Proposed Right-of-Way

DEQ summary information indicates Camp Withycombe had a rifle range beginning in 1909, and the camp was used as a mobilization camp for cavalry and artillery until the end of World War I. After the war, the camp was used to repair heavy equipment and light electrical equipment. In 1995, portions of the camp were transferred to ODOT as part of a potential

highway project. The firing ranges, apparently no longer in use, were located on a flat portion of the camp, at the foot of Mount Talbert. According to DEQ, there are concentrations of lead in soil at the firing ranges, and the agency estimates the volume of contaminated soil to be “as much as 12,000 cubic yards.” Lead concentrations in soil ranged up to 180,000 milligrams per kilogram (mg/kg), primarily in the upper 2 feet. Concentrations apparently attenuate below 2 feet. Leachable lead was reported at concentrations up to 2,000 milligrams per liter (mg/L) in soil. Materials destined for disposal are considered hazardous waste according to RCRA regulations if they exceed 5 mg/L leachable lead.

OMD entered DEQ’s Voluntary Cleanup Program in 1995. Additional soil sampling indicated the presence of other metals, nitroglycerin, and 2,4-DNT in the impacted areas. Groundwater sampling in 1998 did not indicate the presence of lead and explosive chemical compounds in groundwater samples. [See additional information in the following paragraphs.]

Camp Withycombe – Landfill

2S/2E/S10AB (10101 SE Clackamas Road)

Within Proposed Right-of-Way

According to DEQ, the landfill occupies about 0.5 acre in the northeastern corner of the 234-acre camp. The landfill received trash and debris from 1952 until 1979 from base maintenance, construction, and landscaping activities at the camp. The debris was periodically burned. The burn pit has been filled. An environmental investigation found that landfill debris extended to depths between approximately 6 and 16 feet below ground surface. Fill and debris included metal cables, auto parts, glass, and ceramics mixed with gravelly sand. The following compounds were detected in environmental soil samples: total petroleum hydrocarbons (TPH) up to 3,100 mg/kg; carcinogenic PAHs up to 6.24 mg/kg; lead up to 4,470 mg/kg; cadmium up to 5.9 mg/kg; and chromium up to 590 mg/kg. VOCs were not detected. Native soil below the fill material reportedly had lower or non-detectable concentrations of metals, TPH, PAHs, lead, and chromium. Impacts to groundwater have not been investigated or documented.

OMD entered DEQ’s Voluntary Cleanup Program in 1995 for the landfill. Approximately 6,000 tons of soil and debris were excavated and transported to Hillsboro Landfill. DEQ provided a No Further Action determination in 1998 after receiving acceptable confirmation sampling results in 1997.

Enoch Manufacturing

14242 SE 82nd Drive

Within Proposed Right-of-Way

Six underground storage tanks (USTs) containing Stoddard solvent and cutting oil were removed in June 1995. Contaminated soil was discovered during the work. The soil contained TCE, PCE, trimethylbenzene, and barium. Approximately 148 tons of contaminated soils were removed from the former UST pit, and the pit was backfilled without collection of confirmation samples. Additional soil characterization occurred in August 1998 near the former USTs, sumps, a dry well, and a former TCE storage area (within building area). VOCs (the main contaminants

of concern) were not detected. DEQ concluded that no further investigation was required unless additional information indicates a different area of release.

Precision Castparts Corporation Small Structures Business Operations

13340 SE 84th Avenue

Adjacent to Proposed Right-of-Way

This facility was listed on the ECSI and CRL databases. A Preliminary Assessment conducted in June 2002 revealed the presence of TCE, DCE, and vinyl chloride in shallow groundwater beneath the property, reportedly originating from an off-site source. Subsequent investigations in August and September 2002 determined the source of contamination to be beneath the facility's parts cleaning area, where a vapor degreaser was used until around 1992. Further investigation in January 2003 confirmed the presence of TCE and its breakdown products in groundwater in several areas at the facility where it was used or stored. Concentrations exceeded EPA Preliminary Remediation Goals (PRGs) for tap water and DEQ Risk-Based Concentrations (RBCs) for several other possible exposure pathways. Deep groundwater monitoring wells were installed in May 2003 to determine the vertical extent of contamination. The facility was proposed for addition to the CRL in July 2003. An investigation to determine the extent of TCE free solvent in the shallow water-bearing zone was completed in November 2003. A bio-remediation plan was implemented, with the installation of 18 injection wells in May 2005. Injection of soybean oil was planned for bioremediation treatment.

RS Davis Recycling

10105 SE Mather Road

Adjacent to Proposed Right-of-Way

This facility was listed on the ECSI and CRL databases. The facility was a historic auto wrecking yard, reportedly one of Oregon's largest whole-auto crushing operations. The facility was developed in 1949. Until October 1996, auto fluids were not collected before the vehicles were crushed. Runoff from the facility discharged to a storm sewer at the northwest corner of the property. Oil-contaminated sediments blocked a 4-foot-diameter culvert, which caused flooding of nearby properties. PCBs and metals were detected in the soil. Sampling was conducted in 1993, 1995, 1996, and 1997. Used motor oil, PCBs, lead, mercury, chromium, and cadmium were the chemicals and metals of concern at the facility. Local groundwater is reportedly very shallow (approximately 6 feet below the ground surface).

RS Davis conducted investigation and removal activities between October 1996 and August 1997 in the most heavily impacted areas: car processing area, former car crusher area, former motor block storage area, east drainage ditch, and west drainage ditch and culvert. Sampling and removal activities focused primarily on petroleum hydrocarbons and metals. Approximately 1,100 cubic yards of contaminated soils were excavated and disposed of at an off-site location. About 130 cubic yards of contaminated sediments were excavated from the culvert and drainage ditch in July and August 1997.

DEQ indicated that the excavation had removed the major sources of hydrocarbon contamination in site runoff. DEQ believes that the facility does not pose a significant environmental threat

based on the facility upgrades and soil removal. However, DEQ has referred the facility to its Site Assessment Section for re-evaluation of its environmental priority.

Temco Metal Products

10240 SE Mather Road
Within Proposed Right-of-Way

This facility was listed on the ECSI and CRL databases. Soil, groundwater, and surface water were reported to have been contaminated by TCE and PCE, according to information provided to DEQ by Temco. TCE ceased to be used by 1990. Groundwater is reported to be shallow. An on-site, 128-foot deep, domestic water well was also contaminated by TCE (1.5 micrograms per liter in a 1989 water sample). DEQ information indicates that groundwater flows to the west and northwest. A Phase I Remedial Investigation Work Plan was approved by DEQ in April 1999, and the investigation was completed in August 1999. An additional component of the work plan was completed in December 1999. The Phase II RI was implemented in early 2001. Indoor air sampling, stormwater sampling, and push probe drilling were conducted. Soil was removed from the adjacent Keller Property in fall 2005. Additional investigation is required by DEQ for the Temco Metal Products property.

Keller Property

10248 SE Mather Road
Adjacent to Proposed Right-of-Way

Chlorinated volatile organic compounds (CVOCs) were found in groundwater following an investigation at the Keller Property, which was suspected to be a source for the Temco Metal Products groundwater contamination. The Keller Property and Temco are both owned by the Russell Keller Trust. According to the DEQ summary, further investigation is required and negotiations are under way to combine the two properties into one investigation.

Interstate Industrial Park

13101 SE 84th Avenue
Adjacent to Proposed Right-of-Way

Groundwater was reported to have been contaminated by TCE, PAHs, and DCE from an off-site source. Three Phase I ESA reports and one Phase II ESA report have been submitted for the site.

Townes Property

9885 SE Mather Road
Within Proposed Right-of-Way

In 1999 and 2000, a buyer of the property requested a Prospective Purchaser Agreement from DEQ after the cleanup of contaminated soils. The buyer excavated and stockpiled petroleum-contaminated soil. Monitoring wells were installed on site. Remaining soil was sampled to locate potential sources of groundwater and sediment contamination. Surface water and sediment samples collected upgradient of the site indicated off-site sources were contributing to VOC, PCB, and petroleum hydrocarbon contamination observed at the facility. Groundwater

sampling has not located the on-site sources of contamination, and the site soils reportedly do not contain significant levels of metals. DEQ issued a No Further Action determination in May 2000.

Cascade Chemical, Inc.

16081 SE Evelyn Street
Adjacent to Proposed Right-of-Way

This facility was listed on the ECSI and CRL databases. DEQ attempted to investigate this facility after receiving several complaints. The building was found to be too hazardous to enter due to solvent pooled on the floor. The Oregon Occupational Safety and Health Administration (OSHA) investigated in May 1993 and cited 24 violations. Several spills of unknown hazardous materials have been documented, most recently in June 1995. DEQ referred the site to EPA. A Site Inspection was completed in December 1996. Elevated concentrations of VOCs were found in surface and subsurface soils around the edges of the building, and toluene was found in the shallow groundwater. Based on the findings, documented spills, and site history, DEQ indicated that a remedial investigation was needed to assess the extent of contamination and the associated risks. The site was placed on the CRL and assigned “medium priority” status for further state action.

Pritchard’s Truck Center

11857 SE Highway 212
Adjacent to Proposed Right-of-Way

The DEQ summary record indicated three sources of contamination at this facility. Two of the sources were related to oil contamination from a waste oil UST. Other contamination was apparently the result of spillage from a diesel aboveground storage tank. The groundwater depth at the facility is estimated to be 10 feet below the ground surface. The inferred direction of groundwater flow is toward the south. The four on-site monitoring wells have not detected hydrocarbon contamination, according to DEQ. DEQ recommended further subsurface evaluation to delineate the vertical extent of contamination.

Met-Tek, Inc.

15651 SE 125th Court
Within Proposed Right-of-Way

This facility was listed on the ECSI and CRL databases. The facility housed a concrete-lined, oil-quenching tank within the building. In 1992, a subsurface investigation was recommended by DEQ. In 1993, Met-Tek investigated this issue and found petroleum hydrocarbons below the vault and beneath the asphalt parking lot. Although DEQ required further evaluation, no other work has been completed by Met-Tek. In 1994, PGE found an on-site transformer that had leaked about 100 gallons of cooling oil to the ground below a subsurface vault that contained 13 mg/L PCBs. PGE removed the contaminated soil that exceeded concentrations of 1,000 mg/kg TPH.

D&M Pallets

13150 SE Highway 212

Adjacent to Proposed Right-of-Way

This facility was listed on the ECSI and CRL databases. The facility was first investigated by DEQ in 1998 after receiving complaints about what appeared to be oil-contaminated runoff. Subsequent attempts by DEQ to contact and require the operator to adjust the activities that led to the release and to investigate on-site soils were not answered. DEQ believes further investigation is required to determine the nature and extent of contamination of PAHs; benzene, toluene, ethyl benzene, and total xylenes (BTEX, constituents in gasoline); and metals. DEQ recommends excavating and removing the sediments containing petroleum hydrocarbons from the ditch and collecting confirmation samples. Some sediment samples have indicated the presence of petroleum hydrocarbons in an off-site, downstream ditch.

Safety Kleen Corp. 7-148

11843 SE Highway 212

Adjacent to Proposed Right-of-Way

This facility was listed on the ECSI and CRL databases. Safety Kleen leased this property until 1990. In March 1990, closure of waste-management units, consisting of a drum storage area and three USTs, was initiated. When the USTs were removed in 1993, groundwater contamination was discovered. The contaminants included mineral spirits, BTEX, and chlorinated solvents. Nine monitoring wells were installed to characterize the groundwater plume. Safety Kleen stored hazardous wastes in the USTs removed in 1993. In January 1994, Safety-Kleen implemented interim corrective measures consisting of a pump-and-treat remediation system for groundwater, soil-vapor extraction, and soil excavation.

Safety-Kleen has reported effective reduction of contaminant concentrations based on these methods. An Equitable Servitude and Easement (deed restriction) was placed on the property to restrict the use of groundwater to landscape irrigation only. DEQ determined that the investigations and cleanup at the site were complete and no further action was necessary.

CMD Transportation Inc.

12340 SE Jennifer Street

Adjacent to Proposed Right-of-Way

Petroleum-contaminated soil and groundwater were discovered at this facility during the decommissioning of a UST. An estimated 476 cubic yards of contaminated soil were found next to a former steam-cleaning area where wastewater was directed toward a drain. Other parts of the site were reportedly contaminated from previous spills and disposal of waste oil. Approximately 2,000 yards of contaminated soil were excavated and bioremediated on site in 1993. Treated soil was backfilled on site. Some soil with lower levels of waste oil contamination was left on site. Treatment and excavation were completed in 1995. The DEQ Voluntary Cleanup Section issued an NFA for the site in September 1996.

American Wood Dryers
15495 SE For Mor Court
Within Proposed Right-of-Way

This facility was identified through EPA's Site Discovery Program. The facility reportedly produces approximately one 55-gallon drum of paint waste or paint waste thinner per year. Waste is well contained and is not considered a threat to the environment, according to DEQ. DEQ and EPA determined that no further action was necessary.

Gem Top Manufacturing, Inc.
8811 SE Herbert Court
Within Proposed Right-of-Way

An aboveground storage tank (AST) containing waste paint was removed sometime prior to 1988. An unknown quantity of waste paint had contaminated soil beneath the tank. Soil samples collected in 1993 showed low levels of BTEX; styrene; and 1,2,4-trimethylbenzene. A diesel UST was also removed. Soils below the former AST location and around the former UST location showed residual levels of contaminants well below soil cleanup levels and risk-based standards. An NFA was issued for the diesel tank in August 1994. The DEQ Site Assessment Section has recommended an NFA determination for the whole site.

Ellsworth Dump Site
14570 SE 82nd Drive
Within Proposed Right-of-Way

According to DEQ summary information, the facility was listed on the ECSI database because of alleged illegal dumping of liquid and/or chemical wastes on site and to an adjacent drainage ditch. Ellsworth was cited for illegal dumping via on-site septic systems. A federal Site Inspection was performed in March 1988. In May 1994, however, DEQ noted that there was no evidence of hazardous substance dumping at the property. A subsequent Site Assessment by DEQ has recommended sampling of site soils.

State LUST Incident Reports

This DEQ database lists belowground releases from petroleum UST systems or reportable surface spills. The list also includes aboveground releases to water that result in a surface sheen. The search buffer for facilities listed in this database is 0.25 mile, and 63 facilities were listed as being within the search area. The following 34 facilities were located within or adjacent to the project area. Only one of the LUST facilities listed below had not received an NFA determination from DEQ.

- Coremark Distributors
LUST NFA: November 1990
Adjacent to Proposed Right-of-Way
- McFarlane's Bark, Inc.
Adjacent to Proposed Right-of-Way

- Transportation Center
LUST NFA: October 1988
Adjacent to Proposed Right-of-Way
- Panoco 53
LUST NFA: November 1990
Adjacent to Proposed Right-of-Way
- Chevron USA Inc. 96731
LUST NFAs: June 1999 and March 2003
Adjacent to Proposed Right-of-Way
- General Furnace & Air Conditioning, Inc.
LUST NFA: October 2002
Adjacent to Proposed Right-of-Way
- Western Oregon Conference of Seventh Day Adventists
LUST NFA: November 1993
Within Proposed Right-of-Way
- Clackamas Elementary School
LUST NFAs: February 2004 and February 2005
Adjacent to Proposed Right-of-Way
- GTS Drywall Supply
LUST NFA: May 1992
Adjacent to Proposed Right-of-Way
- Northwest Pipe & Casing/Hall Process Company
LUST NFA: November 1998
Within Proposed Right-of-Way
- Gem Top Manufacturing
LUST NFA: August 1994
Within Proposed Right-of-Way
- Enoch Manufacturing Corporation
LUST NFA: April 1996
Within Proposed Right-of-Way
- ODOT Dist. 2B Maintenance Facility
LUST NFA: September 2000

Within Proposed Right-of-Way

- Clackamas Distribution Center
LUST NFA: February 2001
Adjacent to Proposed Right-of-Way
- Knez Building Supply
LUST NFA: January 1991
Within Proposed Right-of-Way
- Elting Pekkola Properties
LUST NFA: December 1990
Within Proposed Right-of-Way
- Ray's Food Service, Inc.
LUST NFA: September 1996
Adjacent to Proposed Right-of-Way
- Lumbermens of Oregon
LUST NFA: April 1992
Adjacent to Proposed Right-of-Way
- Fred Meyer Distribution Center
LUST NFA: May 1992
Adjacent to Proposed Right-of-Way
- Safety-Kleen Corporation 7-148
LUST NFA: March 1996
Adjacent to Proposed Right-of-Way
- Pritchard's Truck Repair
LUST NFA: September 1999
Adjacent to Proposed Right-of-Way
- Fred Meyer Clackamas
LUST NFA: April 2001
Adjacent to Proposed Right-of-Way
- Safeway Bakery
LUST NFA: March 1994
Adjacent to Proposed Right-of-Way
- Cascade Chemical, Inc.
LUST NFA: January 1991

Adjacent to Proposed Right-of-Way

- ODOT
LUST NFA: February 2003
Adjacent to Proposed Right-of-Way
- CMD Transportation, Inc.
LUST NFA: May 1992
Adjacent to Proposed Right-of-Way
- Neptune Swimming Pool Co.
LUST NFA: September 1989
Adjacent to Proposed Right-of-Way
- Howard S. Wright Construction
LUST NFA: September 2001
Adjacent to Proposed Right-of-Way
- Dietrich, John
LUST NFA: November 2001
Adjacent to Proposed Right-of-Way
- Timfab, Inc.
LUST NFA: August 1994
Adjacent to Proposed Right-of-Way
- Temco, Inc.
LUST NFA: September 1996
Within Proposed Right-of-Way
- Camp Withycombe/Clackamas OMS
LUST NFAs: October 1991, December 1991, July 1996, and June 2002
Within Proposed Right-of-Way
- Withycombe National Guard
LUST NFAs: May 2003 and November 2003
Within Proposed Right-of-Way

- Smith's Masonry Contractors
LUST NFA: May 1995
Within Proposed Right-of-Way

State Registered UST List, AST List, and UIC List

These DEQ databases list facilities with registered USTs, ASTs, and UICs. Decommissioned USTs are listed as well. Although these databases list registered USTs, ASTs, and UICs, it is possible that there are unregistered tanks and UICs located throughout the project area.

State Landfill and/or Solid Waste Disposal Site Lists

Three state landfills and/or solid waste disposal sites were located in proximity to the project area: (1) McFarlane's Bark, (2) KB Recycling Center, and (3) KB Recycling Materials Recovery Facility. The permit status for the KB Recycling Center was listed as "closed." McFarlane's Bark and KB Recycling Materials Recovery Facility were listed as "active." The Camp Withycombe landfill is discussed under the ECSI heading, above.

Discussion of General Environmental Issues

Transportation of Hazardous Materials

This section addresses the current and projected transportation of hazardous materials in the project area. To assess the current transportation of hazardous materials, the RCRA facilities list was reviewed. RCRA facilities are defined as sites that generate, transport, store and/or treat hazardous wastes. The database did not identify active TSD facilities for the project area. However, the list did include a number of facilities that generate hazardous waste as part of their business or manufacturing activities and presumably transport these materials for off-site disposal on a regular basis. The types of generators listed in the Sunrise Project area include conditionally exempt, small and large quantity generators. Conditionally exempt small quantity generators generate less than 100 kg of hazardous waste or 1 kg of acutely hazardous waste per month. Small quantity generators generate between 100 and 1,000 kg of hazardous waste per month. Large quantity generators generate more than 1,000 kg of hazardous waste per month. RCRA-regulated facilities that generate hazardous materials usually contract with licensed hazardous waste haulers to transport their hazardous waste to TSD facilities.

The regulatory database search identified 71 RCRA-regulated facilities within and adjacent to the proposed corridor. Three of these sites are defined as large quantity generators, and 68 are defined as small quantity generators. These facilities include businesses, military installations, and school district properties. Business types range from manufacturing, fabrication, construction, and vehicle maintenance to auto body repair and auto wrecking. The large and small quantity generators currently transport their hazardous materials and waste on existing surface streets, state highways, and interstate roadways. It is assumed that the RCRA facilities that are not displaced by the proposed project development will continue to use surface streets, state highways, and interstate roadways to transport their hazardous wastes.

To assess both the current and the potential future use of the proposed corridor for transportation of hazardous materials the ODOT Statewide Hazardous Materials Coordinator, Jenny Armstrong, was contacted regarding regulations for hauling hazardous materials on the I-205

corridor. Ms. Armstrong stated that there are no limitations for hazardous material or hazardous waste hauling on I-205, and in fact waste haulers are encouraged to take this route through the Portland metro area. ODOT's Motor Carrier Division was also contacted, and a representative stated that there are no restrictions or limitations to the type and quantity of hazardous materials that can be hauled through this corridor except for loads that require specific route plans. Specific route plans are required for haulers of radioactive or explosive wastes.

Given the current unrestricted use of I-205 as a corridor through which hazardous materials can be hauled, it is likely that ODOT will regulate the hauling of hazardous materials similarly on the improved Sunrise Project roadways. Evaluation of the existing RCRA-regulated facilities indicates that hazardous materials will continue to be hauled to and from the project area. If the area is developed for additional industrial purposes, it is likely that some of these new facilities will be RCRA-regulated (large and small quantity generators) businesses and entities. If additional RCRA-regulated industries are located in the project corridor, additional traffic from vehicles traveling from the I-205 corridor to Highway 26 will likely increase.

Asbestos-Containing Materials within Structures

Construction of the project corridor will likely result in the demolition of structures along the alignment. Unless these structures have been constructed in recent years, asbestos-containing materials (ACMs) could be present. According to U.S. EPA and DEQ regulations, building materials must be assumed to contain asbestos, and managed as such, unless they are sampled and proven otherwise (40 CFR 763). U.S. EPA, DEQ, and OSHA regulations require that an asbestos survey of the site buildings be conducted prior to their demolition or renovation. Moreover, a project design for abatement should be performed where ACMs must be abated. Depending on the number of buildings affected by the alignment, this requirement could be a significant cost issue.

Lead-Containing Paint within Buildings

There is also a potential for lead-containing paint coatings to be present within buildings (e.g., houses, commercial businesses, outbuildings) in the project corridor. Should these buildings need to be demolished, the demolition contractor must be notified if lead-containing paints are present so that properly trained employees are used. Additionally, the disposal of building debris will be based on whether the building materials with lead-containing paint are considered hazardous or not. An evaluation of whether buildings have lead-containing paint and are planned for demolition can be conducted concurrently with the asbestos surveys.

Fluorescent Light Fixtures (PCBs and Mercury)

PCBs in small capacitors within light ballasts were banned in 1978. If light fixtures pre-date 1978, there is a possibility that the ballasts contain PCBs. Ballasts that do not have PCBs must have a label that states, "non-PCB." Even light fixtures installed after 1978 should be checked for non-PCB labels. Unlabeled ballasts must be assumed to contain PCBs. Ballasts that contain PCBs must be handled and disposed of as waste in an appropriate facility according to the requirements of the Toxic Substances Control Act (TSCA). Additionally, fluorescent light tubes and high-intensity discharge fixtures can contain mercury vapor. It is commonly considered that light tubes with silver ends contain mercury. In general, mercury-containing light tubes should be properly recycled (as universal waste) prior to demolition or re-lamping.

Lead-Containing Paint on Non-Building Structures

There is a high potential that lead (including cadmium and chromium) is present in paint coatings applied to various structures within the I-205 right-of-way, including bridge structural components, abutments, curbing, and rails. Future construction work has the potential to disturb lead-containing paint; therefore, an evaluation of the presence of lead-containing paint should be conducted. The evaluation would include both a literature search of the Oregon Transportation Investment Act (OTIA) documentation maintained by ODOT and fieldwork to collect paint samples for lead analysis and core samples for toxicity characteristic analysis. The purpose of the evaluation is to:

- Notify contractors of a potential workplace hazard (disturbing lead-containing paint during construction activities)
- Recommend engineering controls to reduce the potential exposure to workers of lead-containing paint
- Provide a decision matrix for acceptable management and disposal options for demolition debris

ODOT has developed a manual to help plan for the management of hazardous materials. The Materials and Contamination Performance Standards (MCPS) (Oregon Department of Transportation, OTIA III Bridge Delivery Program, *Materials and Contamination Performance Standards*, September 12, 2005) provides a management matrix for demolition debris with lead-containing paint. Some matrix options require analytical data. As an example, if total lead concentrations are below 1,000-mg/kg lead in paint, the MCPS indicates that demolished concrete can be managed as follows:

1. Use in new concrete
2. Remove paint prior to use in new concrete
3. Use in ODOT highway road prism or embankments
4. Dispose of at a landfill

If steel structural components will be modified, then it is likely that lead-containing paint would have to be abated by qualified personnel before other work is conducted. The abatement can be limited to the area planned for the modification.

Treated Wood

There are structures (guardrails and signposts) within the I-205 right-of-way that contain treated wood. Such materials are likely located elsewhere within the project area as well. The MCPS offers management options, like lead, for treated wood. The MCPS includes recommendations for sampling and analysis for PAHs and metals. However, treated wood is generally considered exempt from designation as a RCRA hazardous waste. In other words, treated wood can generally be disposed of in a landfill as construction and demolition debris.

Persistent Pesticides/Herbicides in Rural Lands

Because the project corridor will likely cross rural lands that have an agricultural history (primarily Zones C and D), persistent pesticides/herbicides could be encountered in near-surface soil. Concentrations of these compounds and metals may occur in site soils as they are commonly encountered in agricultural areas. Environmental liability generally arises as the land use changes from agricultural to some other use where exposure to pesticides may be a concern—for example, exposure to construction workers or future occupants. The risk to future occupants of exposure to the site's native soils is considered to be low, but there may be a potential hazard to construction workers. Additionally, there may be regulatory liability if concentrations of pesticides/herbicides exceed state cleanup levels.

It is Kleinfelder's opinion that if historical pesticides and herbicides were applied according to label instructions and detectable concentrations are below the U.S. EPA Region 9 Preliminary Remediation Goals, then there should not be requirements for soil remediation or a significant health risk to construction workers. DEQ has a guidance document for evaluating residual pesticides on lands formerly used for agricultural production. The DEQ guidance document states that a "pesticide product 'applied for its intended purpose in accordance with label directions' is exempted as a hazardous-substance release under OAR 340-122-0073(d)." DEQ's jurisdiction appears to apply when DEQ has "determined that application of the [State of Oregon] cleanup rules might be necessary to protect public health, safety, welfare, and the environment from the deposition, accumulation, or migration of pesticides on agricultural land that has been, or is proposed to be converted to...commercial, or industrial uses." The land use "change" proposed will eventually be asphalt- and/or concrete-paved, but soil will be disturbed during construction. Whether or not there is a risk to construction workers can be answered by sampling and analysis that confirms that the detected concentrations are below the U.S. EPA's risk-based PRGs.

Potential for Heating Oil and Fuel USTs in Rural Area

The east end of the proposed project corridor in Zone D will cover some rural residential and agricultural properties. The use of heating oil USTs and farm tanks containing gasoline and diesel is likely at certain locations. Depending on the placement of the proposed project corridor, decommissioning of USTs may be required. Decommissioning of USTs can lead to discovery of petroleum-contaminated soil that must be excavated and properly disposed of or evaluated and left in-place based on risk-based criteria. Assessment of affected properties for the presence of USTs and potential, contaminated subsurface soils can be performed after completing a Hazardous Material Corridor Assessment (HMCA) to identify these potential issues.

Chemical Containers

It has been assumed that current owners and tenants are likely to store and use various hazardous materials, such as solvents, garden chemicals, cleaning chemicals, small lubricants, paint, and fuel. Farm properties may use and store larger quantities of fuel products, pesticides, and herbicides. It is possible that some spillage and leaking containers would be observed during site-specific visits. Prior to project development, all chemicals related to the former residences will require proper handling and disposal or recycling.

Site Reconnaissance

Colleen Martin and Wayne Lambert of Kleinfelder conducted a site reconnaissance in the general vicinity of the proposed corridor on July 24, 2006. The purpose of the visit was to look for obvious visual indications of historical or current operations from the public right-of-way that may have resulted in possible soil and/or groundwater contamination. The site reconnaissance did not include a detailed, visual evaluation of each property for indications of hazardous-waste storage and disposal areas, storm drainage, underground and aboveground storage tank locations, and hazardous-material storage and use areas. Refer to Figures 7 and 8, the Site Plans, for locations of features referenced in this section.

The majority of the corridor is characterized by commercial, light industrial, industrial, and military base land uses. The topography of the corridor is generally level from the western end to the Highway 212/224 split. A significant portion of the proposed alignment runs along the base of a west-east trending slope south and southeast of Mount Talbert. A portion of the western end, in the vicinity of SE Lawnfield Road, is in an area of lower elevation with potentially shallow groundwater conditions.

From I-205 to Camp Withycombe, the area exhibits predominantly light industrial or industrial land uses. Businesses include recycling centers, salvage yards, distribution warehouses, manufacturing warehouses, the ODOT Region 1 yard, wood products, and construction companies. Some commercial offices are also located within the area. Generally, views of the properties from the right-of-way only revealed the predominant industrial land use types and the names and types of businesses located within the proposed corridor. It is presumed that many of these businesses store, use, and dispose of hazardous materials, which is confirmed by the extensive listing of RCRA generators listed in the EDR database report.

One of the facilities, also listed on EPA's NPL database, is a large acreage between SE Lawnfield Road and SE Mather Road—Northwest Pipe & Casing. The area is fenced with warning signs indicating jurisdiction by EPA and the presence of hazardous substances.

Much of the land from Camp Withycombe to the east is privately owned. Kleinfelder did not access these properties and instead relied on views of them from other public locations. Much of the land between the base of the Mount Talbert and the buildings located south of the west-east trending slope are being used for equipment and materials storage. A few residential properties are located east of SE 135th Avenue. From the Highway 212/224 split to the east, the land use gradually changes to agricultural-type properties.

Mark Underhill of Kleinfelder conducted a site visit for the ODOT-owned property that was formerly part of Camp Withycombe on August 1, 2006.

Camp Withycombe – Site Reconnaissance and Personnel Interview
2S/2E/S10BD (10101 SE Clackamas Road)
Within Proposed Right-of-Way

On August 1, 2006, Mark Underhill of Kleinfelder conducted a site visit for the ODOT-owned property that was formerly part of Camp Withycombe. James Arnold, Restoration Manager with OMD, served as escort around the site. The purpose of the site visit was to look for obvious visual indications of historical or current operations that might have resulted in possible soil and/or groundwater contamination. The site visit included a visual evaluation of the grounds for indications of hazardous-waste storage and disposal areas, underground and aboveground storage tank locations, and hazardous-material storage and use areas. Areas of interest that were observed include the former long- and short-distance firing ranges, ammunition bunkers, the former landfill, and outdoor equipment storage areas.

According to Mr. Arnold, OMD is currently investigating and cleaning up the firing ranges (where lead, antimony, arsenic, copper, and zinc associated with bullet fragments are primarily present in the surface soil near the pre-impact areas, target lines, and post-impact areas) under DEQ's Voluntary Cleanup Program. A remedial investigation has been performed and a feasibility study is being prepared. A supplemental RI is planned to better define areas of impact exceeding hot spot concentrations, and cleanup of the firing ranges should be complete by 2009.

According to Mr. Arnold, the ammunition bunkers that store 50-caliber or smaller ammunition will be decommissioned by OMD.

The outdoor equipment storage areas contained vehicles and generators. Fluids associated with the stored equipment include hydraulic, differential, and transmission fluids; engine fuel (JP-8); and radiator coolant. Surface staining was not observed; however, Mr. Arnold indicated fluids occasionally leaked onto the gravel surface beneath the equipment.

ENVIRONMENTAL CONSEQUENCES

Alternative 1 - No Build

If the No-Build Alternative is selected, then sites with hazardous waste issues would be dealt with at the current regulatory pace. If smaller, road-widening projects occur, site-specific Phase I Environmental Site Assessments or Hazardous Material Corridor Assessments would likely be conducted when new right-of-way is purchased. Issues related to hazardous building materials (e.g., asbestos, lead, PCBs, and mercury) would be expected to be managed at their current regulatory pace, in time frames specific to each individual property and the long-term management of those properties.

Alternative 2 - Build with Midpoint Interchange

Sites with Contaminated Soil and/or Groundwater

Three categories of sites have the potential to constrain roadway development in the project area: (1) sites with known contamination that are still being investigated and remediated, (2) sites that had historical contamination but have received NFA determinations, and (3) sites without known contamination whose land and business uses are commonly associated with hazardous materials. The first two categories of sites are listed in the Records Review section (see subsections titled LUST Incident Reports and ECSI and CRL Lists).

Within and adjacent to the Alternative 2 alignment, the following numbers of sites were identified as having some regulatory status (see Table 1 for a facility names and corresponding database listings).

- NPL (Federal Superfund) - 1
- CERCLIS - 1
- CERCLIS-NFRAP - 5
- CORRACTS - 1
- ECSI - 22
- CRL - 10
- LUST - 34

The midpoint interchange proposed in Alternative 2 incorporates adjacent facilities that once had leaking USTs; however, these facilities have received NFA determinations from DEQ. Although they are not considered significant cleanup sites, there are still several more hazardous materials sites in the Alternative 2 alignment (with the midpoint interchange) than in Alternative 3 (without the midpoint interchange). The Alternative 2 midpoint interchange construction area occupies a larger footprint compared to Alternative 3, and therefore overlaps with additional sites.

The current regulatory environment allows sites with residual contamination to be granted an NFA status from DEQ. Cleanup standards are based on potential risk to human health and the environment. Sites with mild contamination can be acceptable for closure (i.e., NFA) if the chemicals do not pose a significant risk of exposure. Mitigation may be allowed to a specified

Risk-Based Concentration (RBC) that is deemed protective of human health and the environment. Also, DEQ can grant an NFA determination when a pocket of contamination is located under a structure; however, the agency usually stipulates that, if the structure were to be removed, further cleanup would be required. Therefore, a site with an NFA determination does not necessarily mean the site is free of contamination.

Sites with ongoing regulatory investigations can indicate a potential impediment to redevelopment; however, it is possible to design characterization and remediation efforts around a construction project. Similarly, construction projects can be designed around or run concurrently with remediation projects.

The third category of potential environmental sites applies to those sites whose land and business uses involve the storage, use, and disposal of hazardous materials, but the site does not have a documented release. Based on experience with roadway projects on former industrial land, areas of undocumented contamination will likely be encountered during construction. It is difficult to design around these areas in the planning process because of their unknown nature.

Excavated construction fill must be completely free of any contamination to be considered “clean.” In other words, any excavated materials generated during construction that contain any level of contamination will require special handling (segregated) and disposal (landfill or soil burning) and cannot be used as clean fill either for the project or for another grading site. Potentially, some fill that does not meet this definition might be demonstrated to be “substantially the same as clean fill,” thereby allowing disposal of the material if approved by DEQ. The Sunrise Project will likely encounter construction-excavated soils that do not require cleanup in accordance with DEQ regulations. However, because slightly contaminated soils could be excavated during grading and/or utility trench work, they will require special handling and disposal as contaminated materials.

Hazardous Building Materials

Construction of the proposed project will likely involve the demolition of structures (buildings and roadways) prior to site development. Therefore, surveys for asbestos-containing materials in buildings planned for demolition will be required. ACMs must be properly abated and disposed of before they can be disturbed by renovation or demolition. This issue will result in increased costs and presents some scheduling considerations for the project.

Lead-containing paint, if present, is typically allowed to remain in place for demolition as long as the paint is in good condition and assuming the toxicity characteristic for lead is not exceeded in core samples collected during the pre-demolition survey. There are notification and handling requirements if lead-containing paint remains either within buildings or on road structures planned for demolition. ODOT’s Materials and Contamination Performance Standards allow re-use of material with lead-containing paint in certain circumstances.

Mercury-containing light tubes and thermostats can be recycled as universal waste. PCB-containing light ballasts must be collected and disposed of as TSCA waste. Surveys for hazardous building materials and abatement of such may occur sporadically even if the Sunrise

Project does not occur; however, the scale of this project would likely result in a significant amount of work prior to site development in order to properly manage this issue.

Alternative 3- Build with No Midpoint Interchange

Within and adjacent to the Alternative 3 alignment, the following numbers of sites were identified as having some regulatory status (see Table 1 for a facility names and corresponding database listings):

- NPL - 1
- CERCLIS - 1
- CERCLIS-NFRAP - 3
- CORRACTS - 0
- ECSI - 19
- CRL - 9
- LUST - 32

The hazardous material environmental consequences for Alternative 3 are the same as for Alternative 2, except the numbers of database listings shown above. There is no significant difference in the environmental consequences because the proposed corridors for Alternatives 2 and 3 are substantially similar. Although the hazardous materials sites are not significant, as noted above, the number of sites with regulatory status is slightly greater in the Alternative 2 alignment than in the Alternative 3 alignment because the midpoint interchange has a larger footprint.

Design Options

Option A-2

Since both Option A-2 and Zone A in Alternatives 2 and 3 incorporate an NPL site (Northwest Pipe & Casing) and substantially similar ECSI and LUST listings. There does not appear to be a hazardous material advantage of one option versus the other. Within and adjacent to the Option A-2 alignment, the following numbers of sites were identified with some regulatory status (see Table 1 for a facility names and corresponding database listings):

Option A-2

- NPL - 1
- CERCLIS - 1
- CERCLIS-NFRAP - 2
- CORRACTS - 0
- ECSI - 13
- CRL - 6
- LUST - 17

Within and adjacent to Zone A alignment with Alternatives 2 and 3, the following numbers of sites were identified with some regulatory status (see Table 1 for a facility names and corresponding database listings):

Zone A (Alternatives 2 and 3)

- NPL - 1
- CERCLIS - 1
- CERCLIS-NFRAP - 3
- CORRACTS - 0
- ECSI - 14
- CRL - 7
- LUST - 24

Future construction of Alternative 2 or 3 could result in the modification or disturbance of the engineered cap of the Northwest Pipe & Casing site. The engineered cap was placed, in part, to reduce the spread of contamination in the subsurface soil and groundwater beneath the site, and also to protect personnel who are allowed access to the site. During project design, it is likely that significant coordination among the regulatory agencies, the site owner, and the engineers will be necessary to protect the integrity of the current protective cap and other site engineering controls as well as construction worker health and safety.

Option B-2

There are substantially similar ECSI and LUST listings between Options B-2 and the portion of Alternatives 2 and 3 in Zone B; therefore, there does not appear to be a hazardous material advantage of one option versus the other. Within and adjacent to the Option B-2 alignment, the following numbers of regulatory investigations were found (see Table 1 for a facility names and corresponding database listings):

Option B-2

- NPL - 0
- CERCLIS - 0
- CERCLIS-NFRAP - 2
- CORRACTS - 1
- ECSI - 5
- CRL - 2
- LUST - 9

Within and adjacent to the Zone B alignment, the following numbers of sites were identified with some regulatory status (see Table 1 for a facility names and corresponding database listings):

Zone B (Alternatives 2 and 3)

- NPL: 0
- CERCLIS - 0
- CERCLIS-NFRAP - 0
- CORRACTS - 0
- ECSI - 2
- CRL - 1
- LUST - 6

Option C-2

There are an equal number of ECSI and LUST listings between Options C-2 and the portions of Alternative 2 and 3 within Zone C; therefore, there does not appear to be a hazardous material advantage of one option versus the other. Within and adjacent to the Option C-2 and Zone C alignments within Alternatives 2 and 3, the following numbers of sites were identified with some regulatory status (see Table 1 for a facility names and corresponding database listings):

Options C-2 and Zone C (Alternatives 2 and 3)

- NPL - 0
- CERCLIS - 0
- CERCLIS-NFRAP - 0
- CORRACTS - 0
- ECSI - 1
- CRL - 1
- LUST - 1

Option C-3

Option C-3 had the same number of regulatory investigations listed as Option C-2 and the Zone C portion of Alternatives 2 and 3. There is no apparent hazardous material advantage of one Zone C option over the others.

Option D-2

There are an equal number of ECSI and LUST listings between Options D-2 and the portion of Alternatives 2 and 3 within Zone D; therefore, there does not appear to be a hazardous material advantage of one option versus the other. Within and adjacent to the Option D-2 alignment, the following numbers of sites were identified with some regulatory status (see Table 1 for a facility names and corresponding database listings):

Options D-2/Zone D (Alternatives 2 and 3)

- NPL - 0
- CERCLIS - 0
- CERCLIS-NFRAP - 0
- CORRACTS - 0
- ECSI - 0
- CRL - 0
- LUST - 0

Option D-3

Option D-3 had the same number of regulatory investigations listed as Option D-2 and the portion of Zone D within Alternatives 2 and 3. There is no apparent hazardous material advantage of one Zone D option over the others.

Indirect Effects

Risk of Spills and Exacerbation of Existing Environmental Issues

During construction of the Sunrise Project, there is a probability that soil contaminated with hazardous substances will be encountered that would require special handling and disposal. Because excavation work for the remediation of contaminated soil and/or groundwater is commonly performed by qualified contractors throughout the Metro area, there does not appear to be a significant marginal increase in the risk of accidental spills to public roads/highways or the exacerbation of existing contamination issues when comparing the No-Build Alternative 1 to Build Alternatives 2 and 3.

Transportation of Hazardous Materials and/or Hazardous Waste

The Sunrise Project may result in a more efficient means of transporting hazardous *materials* to and from industrial businesses in the vicinity of the proposed project and between the Portland metro area and central Oregon. However, since Highway 212 currently connects I-205 and Highway 26 (east of Boring, Oregon), it is not known what impacts would occur if haulers of hazardous materials find the Sunrise Project route faster than using I-84 and crossing through Gresham to reach Highway 26.

Hazardous *waste* being hauled for disposal is not as likely to be routed toward Highway 26 via Highway 212 because the hazardous waste disposal facility is located in Arlington, Oregon, which is reached via I-84. Therefore, hauling of hazardous waste within the Sunrise Project corridor would more likely occur because it originated from businesses within the Sunrise Project industrial area between I-205 and Rock Creek. Depending on land use zoning, more businesses that generate hazardous waste may locate in the Sunrise Project area with Alternatives 2 and 3, increasing the volume of hazardous waste shipping in the area compared to the No-Build Alternative.

Cumulative Effects

Significant cumulative effects related to remediation of contaminated soil/groundwater resulting from project construction are not anticipated. Even if there is an increase in overall remediation projects of this type within a short scheduling window, qualified contractors can likely absorb this work. The same is true of cumulative effects related to the abatement of hazardous building materials due to the demolition of buildings/structures within the project corridor. It should be noted that abatement contractors generally require longer lead times during summer months because similar work is scheduled by school districts in the metro area at that same time. This is a normal business cycle that can be anticipated if enough lead time is allowed to survey, design abatement plans, obtain bids for abatement, and perform abatement activities before demolition occurs. Currently, no future large-scale projects are known that would occur simultaneously with the Sunrise Project construction.

Summary of Permits Required

Collection of the baseline information revealed that there have been numerous state-led hazardous materials investigations of contaminated soil and groundwater related to facilities

within or immediately adjacent to the Sunrise Project, and one federal-led project (Northwest Pipe & Casing Superfund site). For federal- or state-listed facilities located where the Sunrise Project roadway development is planned, coordination with EPA and/or DEQ will be required to ensure that ongoing investigations for characterization, remediation, and/or long-term operations and maintenance, and monitoring continue. Consultations with EPA (for Northwest Pipe & Casing) and DEQ (for other facilities) should be conducted to determine property-specific restrictions and/or considerations for construction of the Sunrise Project.

Roadway construction will likely encounter contaminated soils and shallow groundwater that will require special management and disposal. Protocols for excavating, stockpiling, dewatering, and disposing of contaminated materials should be coordinated with DEQ prior to construction. Disposal facilities generally require a permit. Sample analytical data must be submitted to the disposal facility to demonstrate that the materials are in compliance with the facility's operating permit criteria. Usually a permit is obtained from the disposal facility prior to hauling waste materials to be disposed.

Right-of-way acquisition by ODOT where environmental impact is known will need to be coordinated with the appropriate lead agency (EPA or DEQ). ODOT should not take on the environmental liability of the acquired property. Environmental liability can be reduced through an agreement with the former owner where environmental liability is not transferred by the purchase. This agreement can take the form of a direct ODOT–Seller purchase agreement, the use of a DEQ Prospective Purchaser Agreement, or both. Prospective Purchaser Agreements specify that the new owner is not responsible for the contaminated condition of the property; however, DEQ will generally require that the purchaser conduct some cleanup action to provide public benefit to balance the state's elimination of long-term liability. Prospective Purchaser Agreements must be finalized prior to the property transfer.

DEQ requires the abatement of most ACMs prior to demolition or disturbance. DEQ requires notification by the abatement contractor five days (for non-friable ACMs) or ten days (for friable ACMs) prior to abatement. DEQ also requires that clearance air samples be collected and the data submitted within 30 days of the completion of the abatement project. Abatement contractors are responsible for the notifications and submission of data to DEQ. Contractors also arrange for disposal of ACMs at appropriate disposal landfills.

Mitigation Measures

The following items would promote or help facilitate mitigation measures relating to potential hazardous materials issues during construction.

- Spill Prevention and Countermeasures Plan – This plan assesses where hazardous materials will be stored and handled and provides guidelines for proper management and containment.
- Emergency Action Plan – This plan defines the protocol to follow and identifies the chain of command in the event of a chemical or fuel release or if unsafe hazardous materials conditions are encountered that have the potential for immediate harm to human health or the environment.

- Contaminated Media Management Plan – This plan documents what is known about hazardous material conditions in the proposed construction area; recommends the level of health and safety training required for workers handling hazardous materials; identifies the chain of command for decisions dealing with excavation, handling, storage, and disposal of hazardous materials; and defines the overall protocol for hazardous materials management during construction.
- Hazardous Building Material Surveys and Specifications for Abatement (asbestos, lead, and mercury/PCB-containing fixtures) – State and federal regulations require that an asbestos survey be conducted for structures planned for demolition or alteration so that if asbestos is present, it can be abated properly prior to demolition. The regulations have been developed to protect workers who may be exposed to asbestos-containing materials unknowingly. As a best management practice, similar surveys should be conducted for lead-containing paint and mercury and PCB-containing fixtures so that appropriate actions can be taken to protect worker safety. Typically an Abatement Plan is prepared after the surveys to define the scope of abatement.

Enhancement Opportunities

Potentially, the Sunrise Project could accelerate the cleanup of contaminated soils as they are encountered within the project area. However, it is typical that road construction projects do not include comprehensive cleanup of sites unless the contamination is an impediment to construction or is a risk to worker health and safety.

REFERENCES AND AGENCY CONSULTATIONS

Environmental Data Resources (EDR). July 11, 2006. *EDR DataMap Corridor Study*, Sunrise Corridor, Clackamas, Oregon.

Oregon Department of Transportation, OTIA III Bridge Delivery Program, *Materials and Contamination Performance Standards*, September 12, 2005.

Telephone conversation between Jennie Armstrong, ODOT Statewide Hazardous Materials Coordinator, and the ODOT Motor Carrier Division and Kleinfelder, August 2004. Telephone conversation with Mr. James Orr, Geo/Hydro Unit, Hazardous Materials Group, August 29, 2007.

Environmental Issues Commentary: Sunrise Corridor. 2006. Prepared by Kleinfelder for Hatch Mott MacDonald, May 2006.

James Arnold, Restoration Manager with the Oregon Military Department, personal interview conducted by Kleinfelder on August 1, 2006.

ACRONYMS AND ABBREVIATIONS

ACM	asbestos-containing material
AST	aboveground storage tank
ASTM	American Society for Testing & Materials
BTEX	benzene, toluene, ethyl benzene, and total xylenes
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CORRACTS	Corrective Action Reports
CRL	Confirmed Release List
CVOC	chlorinated volatile organic compound
DCE	cis-1,2-dichloroethene
DEQ	Department of Environmental Quality (Oregon)
ECSI	Environmental Cleanup Site Information
EDR	Environmental Data Resources
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System
FHWA	Federal Highway Administration
FS	Feasibility Study
IRA	Interim Remedial Action
LUST	leaking underground storage tank
MCPS	Materials and Contamination Performance Standards (ODOT)
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NFA	No Further Action
NFRAP	No Further Remedial Action Planned
NPL	National Priority List
ODOT	Oregon Department of Transportation
OMD	Oregon Military Department

OSHA	Occupational Safety and Health Administration
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	perchloroethene
PRG	Preliminary Remediation Goal
RBC	Risk-Based Concentration
RI	Remedial Investigation
RCRA	Resource Conservation and Recovery Act
RTP	Regional Transportation Plan
STIP	Statewide Transportation Improvement Program
TCE	trichloroethene
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal
UIC	Underground Injection Control
UST	underground storage tank
VOC	volatile organic compounds

LIST OF PREPARERS

Randall A. Reid

Primary Author

Date

Peter L. Stroud, CEG

Senior Peer Reviewer

Date