FINAL

Archaeological Resources Technical Report

I-5 Rose Quarter Improvement Project

Oregon Department of Transportation

January 8, 2019

Contents

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Figures[1]

Appendices

[1] Appendix C includes written descriptions of all figures referenced in this Technical Report. If needed, additional figure interpretation is available from the ODOT Senior Environmental Project Manager at (503) 731-4804.

Appendix C. Figure Descriptions

Acronyms and Abbreviations

ADRP	archaeological data recovery plan
amsl	above mean sea level
APE	Area of Potential Effect
API	Area of Potential Impact
BLM	[United States] Bureau of Land Management
CFR	Code of Federal Regulations
cm	centimeter
EB	eastbound
DLC	Donation Land Claim
DOGAMI	Oregon Department of Geology and Mineral Industries
FHWA	Federal Highway Administration
GIS	geographic information system
GLO	General Land Office
HPA	High Probability Area
IDP	Inadvertent Discovery Plan
MAX	Metropolitan Area Express
m	meter
mvmt	million vehicle miles travelled
mya	million years ago
NB	northbound
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OAR	Oregon Administrative Rules
ODOT	Oregon Department of Transportation
ORNC	Oregon Railway & Navigation Company
ORS	Oregon Revised Statute
PA	Programmatic Agreement
SAC	Stakeholder Advisory Committee
SB	southbound
SHPO	State Historic Preservation Office
SPIS	Safety Priority Index System

TCPs	Traditional Cultural Properties
U.S.C.	United States Code
USGS	United States Geological Survey
WB	westbound

Executive Summary

The Build and No-Build Alternatives have been reviewed for effects on potential archaeological resources within the Area of Potential Impact (API). Table ES-1 provides a summary of environmental consequences of the No-Build and Build Alternatives. In summary, the Build Alternative is not anticipated to have a significant impact on archaeological resources.

Although no archaeological resources have been identified to date, below-ground investigations targeting archaeological resources have not occurred. Short-term construction direct impacts associated with the Build Alternative have the greatest potential to discover archaeological resources because of the greater amount of ground-disturbing activities associated with construction. However, incorporating avoidance, minimization, and mitigation measures could reduce the physical extent of potential below-ground disturbance and provide a plan for treating, evaluating, and mitigating archaeological resources if any are discovered as a result of constructing the Project. No long-term impacts are anticipated that would result in appreciable changes to potential archaeological resources. No impacts associated with cumulative effects have been identified.

Table ES-1. Summary of Environmental Consequences

Impact Type	No-Build Alternative	Build Alternative
Short-Term Direct Impacts	None anticipated. Potential archaeological resources would remain in their current locations.	No significant impacts anticipated. Substantial ground-disturbing construction activities that have the potential to uncover archaeological resources would result in direct impacts. • If no archaeological resources are present, or if they are present but it may be feasible to avoid or minimize impacts, then the Project would have no significant impact. • If impacts to archaeological resources are unavoidable and would diminish integrity of a site that is eligible for the NRHP, the Project impacts would be resolved through implementation of an Inadvertent Discovery Plan and a Project-specific Programmatic Agreement between FHWA, SHPO, and ODOT that outlines protocol for identifying, evaluating, and resolving impacts pursuant to 36 CFR 800.13 and 36 CFR 800.14.
Long-Term Indirect Impacts	None anticipated.	No significant impacts anticipated. • Most archaeological resources would have been identified, evaluated, and mitigated as necessary, as a result of short-term, direct construction impacts. • If long-term operations result in impacts to archaeological resources, the Project impacts would be resolved through implementation of and Inadvertent Discovery Plan and a Project-specific Programmatic Agreement between FHWA, SHPO, and ODOT that outlines protocol for identifying, evaluating, and resolving impacts pursuant to 36 CFR 800.13 and 36 CFR 800.14.
Cumulative Effects	None anticipated.	There are no impacts to archaeological resources at this time. As the Project Area becomes increasingly developed, there may be a further loss of archaeological resources. Past actions have not considered impacts on archaeological resources, while present and reasonably foreseeable future actions with a federal nexus would continue to follow Section 106 of the NHPA protocol for resource identification, evaluation, and mitigation.

Notes: CFR = Code of Federal Regulations; FHWA = Federal Highway Administration; NHPA = National Historic Preservation Act; NRHP = National Register of Historic Places; ODOT = Oregon Department of Transportation; SHPO = State Historic Preservation Office

1 Introduction

1.1 Project Location

The I-5 Rose Quarter Improvement Project (Project) is located in Portland, Oregon, along the 1.7-mile segment of Interstate 5 (I-5) between Interstate 405 (I-405) to the north (milepost 303.2) and Interstate 84 (I-84) to the south (milepost 301.5). The Project also includes the interchange of I-5 and N Broadway and NE Weidler Street (Broadway/Weidler interchange) and the surrounding transportation network, from approximately N/NE Hancock Street to the north, N Benton Avenue to the west, N/NE Multnomah Street to the south, and NE 2nd Avenue to the east.

Figure 1 illustrates the Project Area in which the proposed improvements are located. The Project Area represents the estimated area within which improvements are proposed, including where permanent modifications to adjacent parcels may occur and where potential temporary impacts from construction activities could result.

1.2 Project Purpose

The purpose of the Project is to improve the safety and operations on I-5 between I-405 and I-84, of the Broadway/Weidler interchange, and on adjacent surface streets in the vicinity of the Broadway/Weidler interchange and to enhance multimodal facilities in the Project Area.

In achieving the purpose, the Project would also support improved local connectivity and multimodal access in the vicinity of the Broadway/Weidler interchange and improve multimodal connections between neighborhoods located east and west of I-5.

1.3 Project Need

The Project would address the following primary needs:

- **I-5 Safety:** I-5 between I-405 and I-84 has the highest crash rate on urban interstates in Oregon. Crash data from 2011 to 2015 indicate that I-5 between I-84 and the merge point from the N Broadway ramp on to I-5 had a crash rate (for all types of crashes[2]) that was approximately 3.5 times higher than the statewide average for comparable urban interstate facilities (ODOT 2015a).

[2] Motor vehicle crashes are reported and classified by whether they involve property damage, injury, or death.

Figure 1. Project Area

  - o Seventy-five percent of crashes occurred on southbound (SB) I-5, and 79 percent of all the crashes were rear-end collisions. Crashes during this 5-year period included one fatality, which was a pedestrian fatality. A total of seven crashes resulted in serious injury.
  - o The Safety Priority Index System (SPIS) is the systematic scoring method used by the Oregon Department of Transportation (ODOT) for identifying potential safety problems on state highways based on the frequency, rate, and severity of crashes (ODOT 2015b). The 2015 SPIS shows two SB sites in the top 5 percent and two northbound (NB) sites in the top 10 percent of the SPIS list.
  - o The 2015 crash rate on the I-5 segment between I-84 and the Broadway ramp on to I-5 is 2.70 crashes per million vehicle miles. The statewide average for comparable urban highway facilities is 0.77 crashes per million vehicle miles travelled (mvmt).
  - o The existing short weaving distances and lack of shoulders for accident/incident recovery in this segment of I-5 are physical factors that may contribute to the high number of crashes and safety problems.
- **I-5 Operations:** The Project Area is at the crossroads of three regionally significant freight and commuter routes: I-5, I-84, and I-405. As a result, I-5 in the vicinity of the Broadway/Weidler interchange experiences some of the highest traffic volumes in the State of Oregon, carrying approximately 121,400 vehicles each day (ODOT 2017), and experiences 12 hours of congestion each day (ODOT 2012a). The following factors affect I-5 operations:
  - o Close spacing of multiple interchange ramps results in short weaving segments where traffic merging on and off I-5 has limited space to complete movements, thus becoming congested. There are five on-ramps (two NB and three SB) and six off-ramps (three NB and three SB) in this short stretch of highway. Weaving segments on I-5 NB between the I-84 westbound (WB) on-ramp and the NE Weidler off-ramp, and on I-5 SB between the N Wheeler Avenue on-ramp and I-84 eastbound (EB) off-ramp, currently perform at a failing level-of-service during the morning and afternoon peak periods.
  - o The high crash rate within the Project Area can periodically contribute to congestion on this segment of the highway. As noted with respect to safety, the absence of shoulders on I-5 contributes to congestion because vehicles involved in crashes cannot get out of the travel lanes.
  - o Future (2045) traffic estimates indicate that the I-5 SB section between the N Wheeler on-ramp and EB I-84 off-ramp is projected to have the most critical congestion in the Project Area, with capacity and geometric constraints that result in severe queuing.
- **Broadway/Weidler Interchange Operations:** The complexity and congestion at the I-5 Broadway/Weidler interchange configuration is difficult to navigate for vehicles (including transit vehicles), bicyclists, and pedestrians, which impacts

access to and from I-5 as well as to and from local streets. The high volumes of traffic on I-5 and Broadway/Weidler in this area contribute to congestion and safety issues (for all modes) at the interchange ramps, the Broadway and Weidler overcrossings of I-5, and on local streets in the vicinity of the interchange.

- The Broadway/Weidler couplet provides east-west connectivity for multiple modes throughout the Project Area, including automobiles, freight, people walking and biking, and Portland Streetcar and TriMet buses. The highest volumes of vehicle traffic on the local street network in the Project Area occur on NE Broadway and NE Weidler in the vicinity of I-5. The N Vancouver Avenue/N Williams couplet, which forms a critical north-south link and is a Major City Bikeway within the Project Area with over 5,000 bicycle users during the peak season, crosses Broadway/Weidler in the immediate vicinity of the I-5 interchange.
- The entire length of N/NE Broadway is included in the Portland High Crash Network—streets designated by the City of Portland for the high number of deadly crashes involving pedestrians, bicyclists, and vehicles.[3]
- The SB on-ramp from N Wheeler and SB off-ramp to N Broadway experienced a relatively high number of crashes per mile (50-70 crashes per mile) compared to other ramps in the Project Area during years 2011-2015. Most collisions on these ramps were rear-end collisions.
- Of all I-5 highway segments in the corridor, those that included weaving maneuvers to/from the Broadway/Weidler ramps tend to experience the highest crash rates:
  - SB I-5 between the on-ramp from N Wheeler and the off-ramp to I-84 (SB-S5) has the highest crash rate (15.71 crashes/mvmt).
  - NB I-5 between the I-84 on-ramp and off-ramp to NE Weidler (NB-S5) has the second highest crash rate (5.66 crashes/mvmt).
  - SB I-5 between the on-ramp from I-405 and the off-ramp to NE Broadway (SB-S3) has the third highest crash rate (4.94 crashes/mvmt).

- **Travel Reliability on the Transportation Network:** Travel reliability on the transportation network decreases as congestion increases and safety issues expand. The most unreliable travel times tend to occur at the end of congested areas and on the shoulders of the peak periods. Due to these problems, reliability has decreased on I-5 between I-84 and I-405 for most of the day. Periods of congested conditions on I-5 in the Project Area have grown over time from morning and afternoon peak periods to longer periods throughout the day.

[3] Information on the City of Portland's High Crash Network is available at https://www.portlandoregon.gov/transportation/54892.

1.4 Project Goals and Objectives

In addition to the purpose and need, which focus on the state's transportation system, the Project includes related goals and objectives developed through the joint ODOT and City of Portland N/NE Quadrant and I-5 Broadway/Weidler Interchange Plan process, which included extensive coordination with other public agencies and citizen outreach. The following goals and objectives may be carried forward beyond the National Environmental Policy Act (NEPA) process to help guide final design and construction of the Project:

- Enhance pedestrian and bicycle safety and mobility in the vicinity of the Broadway/Weidler interchange.
- Address congestion and improve safety for all modes on the transportation network connected to the Broadway/Weidler interchange and I-5 crossings.
- Support and integrate the land use and urban design elements of the Adopted N/NE Quadrant Plan (City of Portland et al. 2012) related to I-5 and the Broadway/Weidler interchange, which include the following:
    - Diverse mix of commercial, cultural, entertainment, industrial, recreational, and residential uses, including affordable housing
    - Infrastructure that supports economic development
    - Infrastructure for healthy, safe, and vibrant communities that respects and complements adjacent neighborhoods
    - A multimodal transportation system that addresses present and future needs, both locally and on the highway system
    - An improved local circulation system for safe access for all modes
    - Equitable access to community amenities and economic opportunities
    - Protected and enhanced cultural heritage of the area
    - Improved urban design conditions
- Improve freight reliability.
- Provide multimodal transportation facilities to support planned development in the Rose Quarter, Lower Albina, and Lloyd.
- Improve connectivity across I-5 for all modes.

2 Project Alternatives

This technical report describes the potential effects of no action (No-Build Alternative) and the proposed action (Build Alternative).

2.1 No-Build Alternative

NEPA regulations require an evaluation of the No-Build Alternative to provide a baseline for comparison with the potential impacts of the proposed action. The No-Build Alternative consists of existing conditions and any planned actions with committed funding in the Project Area.

I-5 is the primary north-south highway serving the West Coast of the United States from Mexico to Canada. At the northern portion of the Project Area, I-5 connects with I-405 and the Fremont Bridge; I-405 provides the downtown highway loop on the western edge of downtown Portland. At the southern end of the Project Area, I-5 connects with the western terminus of I-84, which is the east-west highway for the State of Oregon. Because the Project Area includes the crossroads of three regionally significant freight and commuter routes, the highway interchanges within the Project Area experience some of the highest traffic volumes found in the state (approximately 121,400 average annual daily trips). The existing lane configurations consist primarily of two through lanes (NB and SB), with one auxiliary lane between interchanges. I-5 SB between I-405 and Broadway includes two auxiliary lanes.

I-5 is part of the National Truck Network, which designates highways (including most of the Interstate Highway System) for use by large trucks. In the Portland-Vancouver area, I-5 is the most critical component of this national network because it provides access to the transcontinental rail system, deep-water shipping and barge traffic on the Columbia River, and connections to the ports of Vancouver and Portland, as well as to most of the area's freight consolidation facilities and distribution terminals. Congestion on I-5 throughout the Project Area delays the movement of freight both within the Portland metropolitan area and on the I-5 corridor. I-5 through the Rose Quarter is ranked as one of the 50 worst freight bottlenecks in the United States (ATRI 2017).

Within the approximately 1.5 miles that I-5 runs through the Project Area, I-5 NB connects with five on- and off-ramps, and I-5 SB connects with six on- and off-ramps. Drivers entering and exiting I-5 at these closely spaced intervals, coupled with high traffic volumes, slow traffic and increase the potential for crashes. Table 1 presents the I-5 on- and off-ramps in the Project Area. Table 2 shows distances of the weaving areas between the on- and off-ramps on I-5 in the Project Area. Each of the distances noted for these weave transitions is less than adequate per current highway design standards (ODOT 2012b). In the shortest weave section, only 1,075 feet is available for drivers to merge onto I-5 from NE Broadway NB in the same area where drivers are exiting from I-5 onto I-405 and the Fremont Bridge.

Table 1. I-5 Ramps in the Project Area

I-5 Travel Direction	On-Ramps From	Off-Ramps To
Northbound	• I-84 • N Broadway/N Williams Avenue	• NE Weidler Street/NE Victoria Avenue • I-405 • N Greeley Avenue
Southbound	• N Greeley Avenue • I-405 • N Wheeler Avenue/N Ramsay Way	• N Broadway/N Vancouver Avenue • I-84 • Morrison Bridge/Highway 99E

Notes: I = Interstate

Table 2. Weave Distances within the Project Area

I-5 Travel Direction	Weave Section	Weave Distance
Northbound	I-84 to NE Weidler Street/NE Victoria Avenue	1,360 feet
Northbound	N Broadway/N Williams Avenue to I-405	1,075 feet
Southbound	I-405 to N Broadway	2,060 feet
Southbound	N Wheeler Avenue/N Ramsay Way to I-84	1,300 feet

Notes: I = Interstate

As described in Section 1.3, the high volumes, closely spaced interchanges, and weaving movements result in operational and safety issues, which are compounded by the lack of standard highway shoulders on I-5 throughout much of the Project Area.

Under the No-Build Alternative, I-5 and the Broadway/Weidler interchange and most of the local transportation network in the Project Area would remain in its current configuration, with the exception of those actions included in the Metro 2014 *Regional Transportation Plan* financially constrained project list (Metro 2014).[4] One of these actions includes improvements to the local street network on the Broadway/Weidler corridor within the Project Area. The proposed improvements include changes to N/NE Broadway and N/NE Weidler from the Broadway Bridge to NE 7th Avenue. The current design concept would remove and reallocate one travel lane on both N/NE Broadway and N/NE Weidler to establish protected bike lanes and reduce pedestrian crossing distances. Proposed improvements also include

[4] Metro Regional Transportation Plan ID 11646. Available at: https://www.oregonmetro.gov/sites/default/files/Appendix%201.1%20Final%202014%20RTP%20%20Project%20List%208.5x11%20for%20webpage_1.xls

changes to turn lanes and transitions to minimize pedestrian exposure and improve safety. The improvements are expected to enhance safety for people walking, bicycling, and driving through the Project Area. Implementation is expected in 2018-2027.

2.2 Build Alternative

The Project alternatives development process was completed during the ODOT and City of Portland 2010-2012 N/NE Quadrant and I-5 Broadway/Weidler Interchange planning process. A series of concept alternatives were considered following the definition of Project purpose and need and consideration of a range of transportation-related problems and issues that the Project is intended to address.

In conjunction with the Stakeholder Advisory Committee (SAC) and the public during this multi-year process, ODOT and the City of Portland studied more than 70 design concepts, including the Build Alternative, via public design workshops and extensive agency and stakeholder input. Existing conditions, issues, opportunities, and constraints were reviewed for the highway and the local transportation network. A total of 19 full SAC meetings and 13 subcommittee meetings were held; each was open to the public and provided opportunity for public comment. Another 10 public events were held, with over 100 attendees at the Project open houses providing input on the design process. Of the 70 design concepts, 13 concepts advanced for further study based on SAC, agency, and public input, with six concepts passing into final consideration.

One recommended design concept, the Build Alternative, was selected for development as a result of the final screening and evaluation process. The final I-5 Broadway/Weidler Facility Plan (ODOT 2012a) and recommended design concept, herein referred to as the Build Alternative, were supported by the SAC and unanimously adopted in 2012 by the Oregon Transportation Commission and the Portland City Council.[5] The features of the Build Alternative are described below.

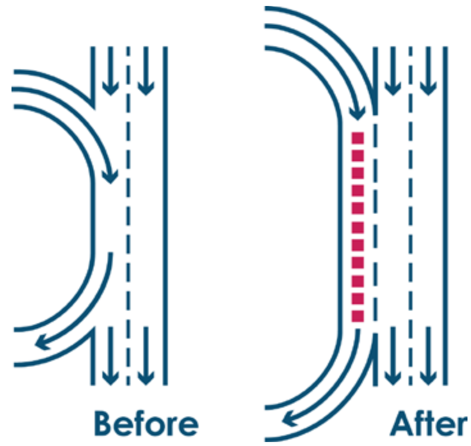
The Build Alternative includes I-5 mainline improvements and multimodal improvements to the surface street network in the vicinity of the Broadway/Weidler interchange. The proposed I-5 mainline improvements include the construction of auxiliary lanes (also referred to as ramp-to-ramp lanes) and full shoulders between I-84 to the south and I-405 to the north, in both the NB and SB directions. See Section 2.2.1 for more detail.

Construction of the I-5 mainline improvements would require the rebuilding of the N/NE Weidler, N/NE Broadway, N Williams, and N Vancouver structures over I-5.

[5] Resolution No. 36972, adopted by City Council October 25, 2012. Available at: https://www.portlandoregon.gov/citycode/article/422365

With the Build Alternative, the existing N/NE Weidler, N/NE Broadway, and N Williams overcrossings would be removed and rebuilt as a single highway cover structure over I-5 (see Section 2.2.2). The existing N Vancouver structure would be removed and rebuilt as a second highway cover, including a new roadway crossing connecting N Hancock and N Dixon Streets. The existing N Flint Avenue structure over I-5 would be removed. The I-5 SB on-ramp at N Wheeler would also be relocated to N/NE Weidler at N Williams, via the new Weidler/ Broadway/Williams highway cover. A new bicycle and pedestrian bridge over I-5 would be constructed at NE Clackamas Street, connecting Lloyd with the Rose Quarter (see Section 2.2.4.3).

Surface street improvements are also proposed, including upgrades to existing bicycle and pedestrian facilities and a new center-median bicycle and pedestrian path on N Williams between N/NE Weidler and N/NE Broadway (see Section 2.2.4.4).



What are Ramp-to-Ramp or Auxiliary Lanes?

Ramp-to-Ramp lanes provide a direct connection from one ramp to the next. They separate on-and off-ramp merging from through traffic, and create better balance and smoother maneuverability, which improves safety and reduces congestion.

2.2.1 I-5 Mainline Improvements

The Build Alternative would modify I-5 between I-84 and I-405 by adding safety and operational improvements. The Build Alternative would extend the existing auxiliary lanes approximately 4,300 feet in both NB and SB directions and add 12-foot shoulders (both inside and outside) in both directions in the areas where the auxiliary lane would be extended. Figure 2 illustrates the location of the proposed auxiliary lanes. Figure 3 illustrates the auxiliary lane configuration, showing the proposed improvements in relation to the existing conditions. Figure 4 provides a cross section comparison of existing and proposed conditions, including the location of through lanes, auxiliary lanes, and highway shoulders.

A new NB auxiliary lane would be added to connect the I-84 WB on-ramp to the N Greeley off-ramp. The existing auxiliary lane on I-5 NB from the I-84 WB on-ramp to the NE Weidler off-ramp and from the N Broadway on-ramp to the I-405 off-ramp would remain.

The new SB auxiliary lane would extend the existing auxiliary lane that enters I-5 SB from the N Greeley on-ramp. The existing SB auxiliary lane currently ends just south of the N Broadway off-ramp, in the vicinity of the Broadway overcrossing structure.

Figure 2. Auxiliary Lane/Shoulder Improvements

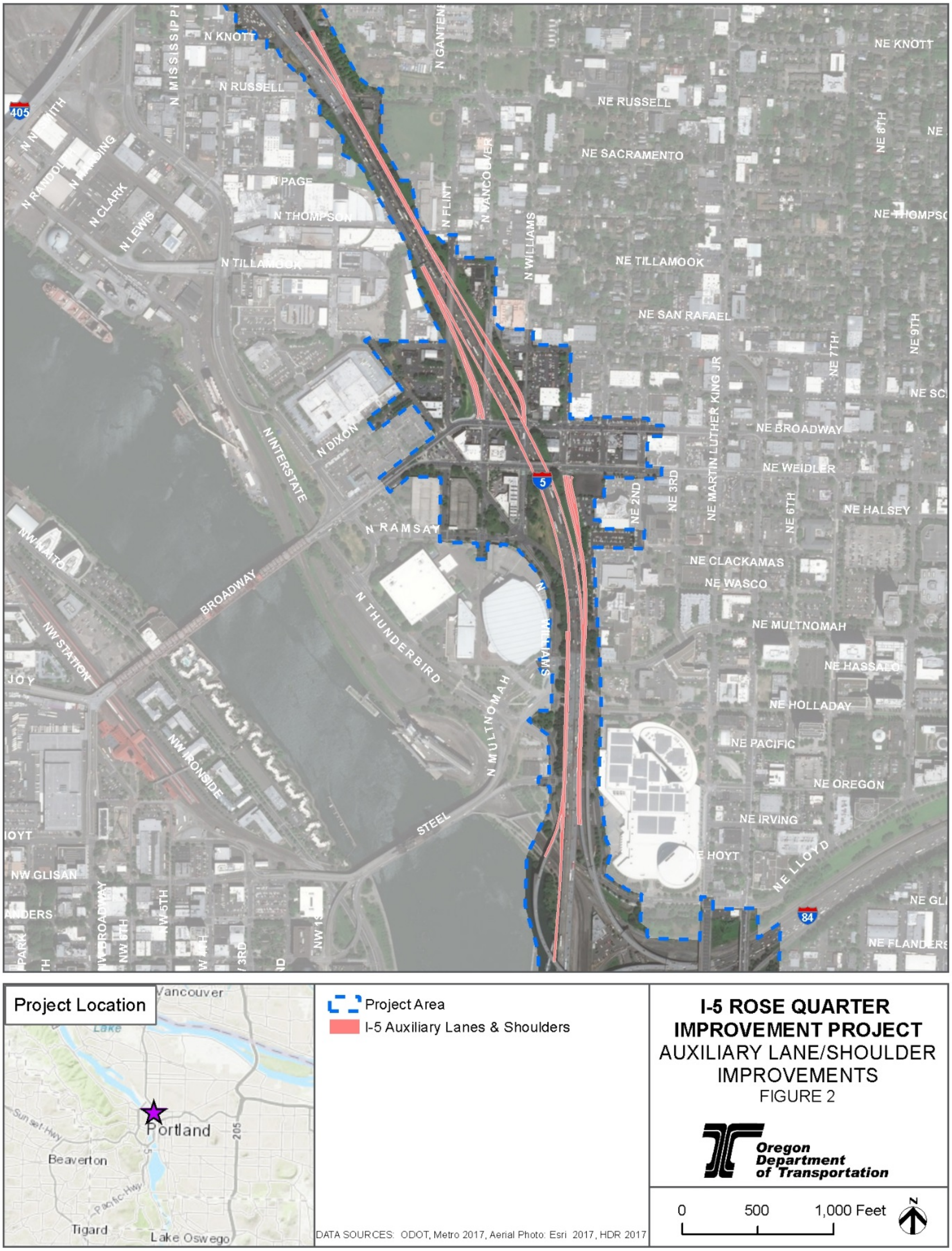


Figure 3. I-5 Auxiliary (Ramp-to-Ramp) Lanes – Existing Conditions and Proposed Improvements

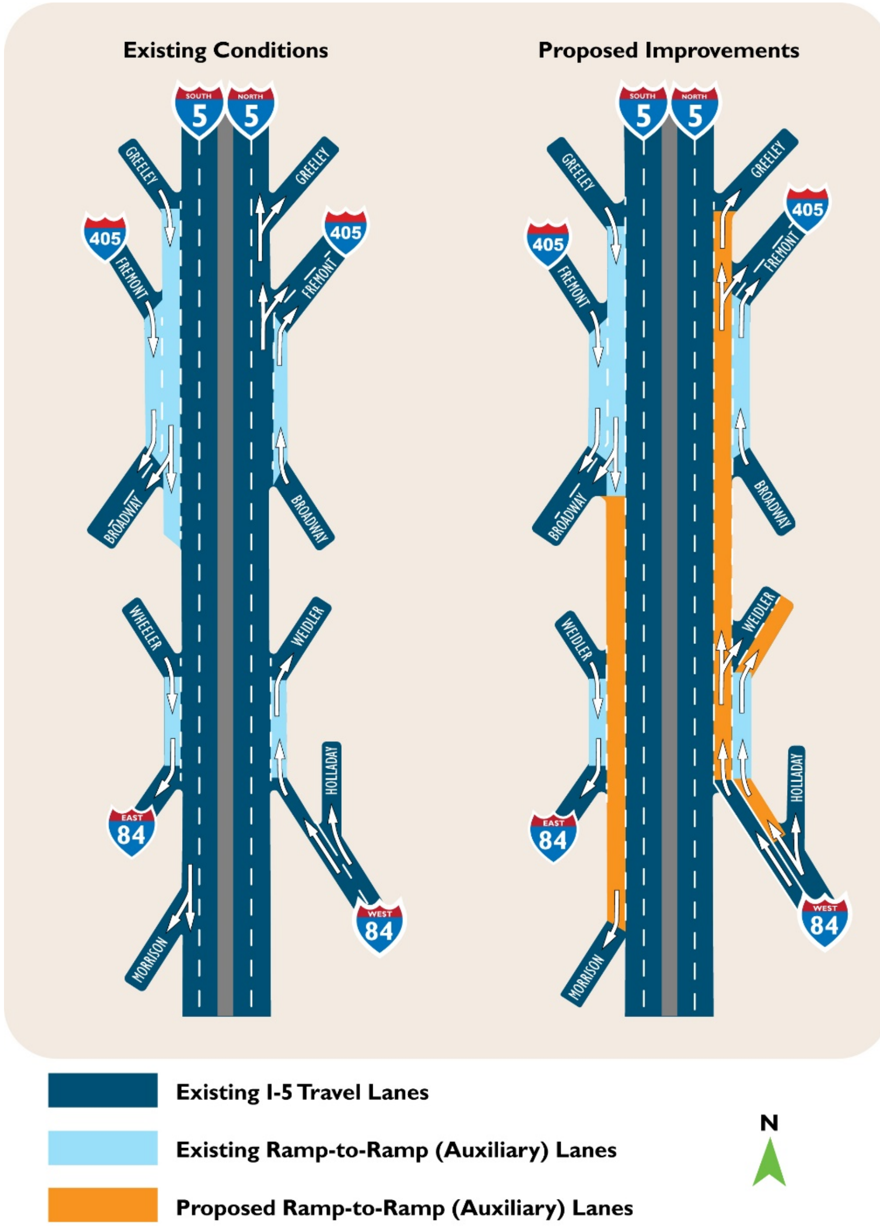
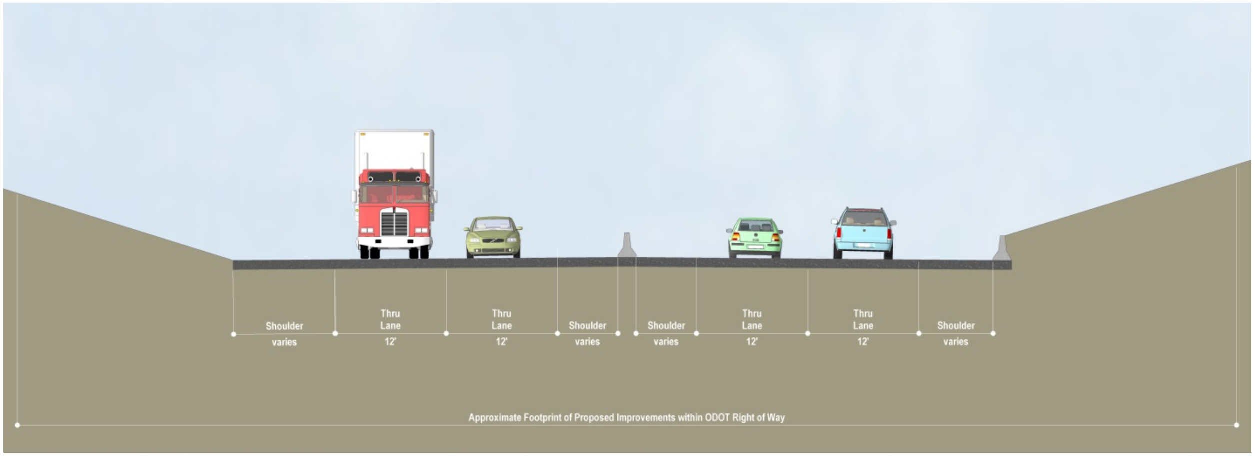
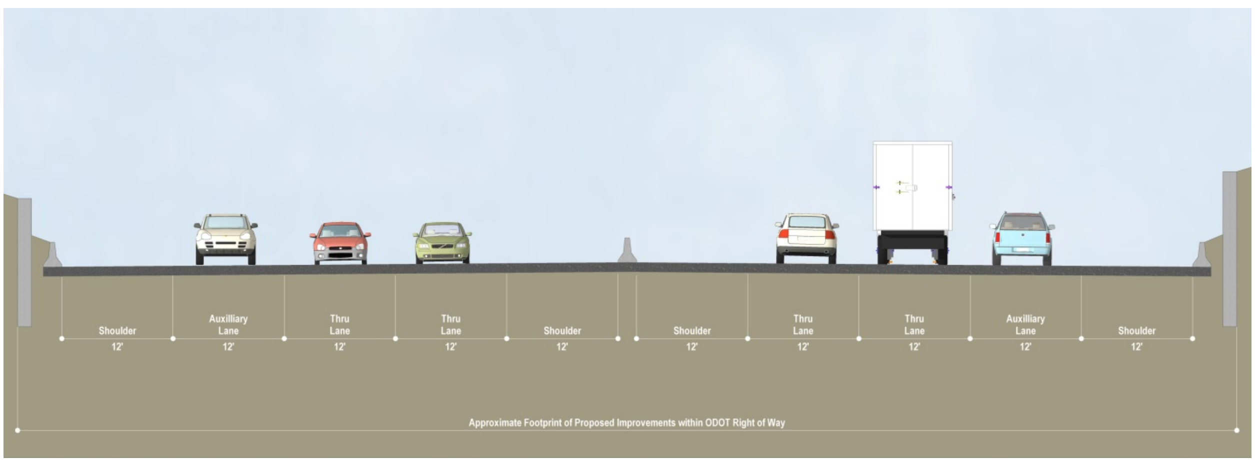


Figure 4. I-5 Cross Section (N/NE Weidler Overcrossing) – Existing Conditions and Proposed Improvements



Existing Lane Configuration



Proposed Lane Configuration

Under the Build Alternative, the SB auxiliary lane would be extended as a continuous auxiliary lane from N Greeley to the Morrison Bridge and the SE Portland/Oregon Museum of Science and Industry off-ramp. Figure 4 presents a representative cross section of I-5 (south of the N/NE Weidler overcrossing within the Broadway/Weidler interchange area), with the proposed auxiliary lanes and shoulder, to provide a comparison with the existing cross section.

The addition of 12-foot shoulders (both inside and outside) in both directions in the areas where the auxiliary lanes would be extended would provide more space to allow vehicles that are stalled or involved in a crash to move out of the travel lanes. New shoulders would also provide space for emergency response vehicles to use to access an incident within or beyond the Project Area.

No new through lanes would be added to I-5 as part of the Build Alternative; I-5 would maintain the existing two through lanes in both the NB and SB directions.

2.2.2 Highway Covers

2.2.2.1 Broadway/Weidler/Williams Highway Cover

To complete the proposed I-5 mainline improvements, the existing structures crossing over I-5 must be removed, including the roads and the columns that support the structures. The Build Alternative would remove the existing N/NE Broadway, N/NE Weidler, and N Williams structures over I-5 to accommodate the auxiliary lane extension and new shoulders described in Section 2.2.1.

The structure replacement would be in the form of the Broadway/Weidler/Williams highway cover (Figure 5). The highway cover would be a wide bridge that spans east-west across I-5, extending from immediately south of N/NE Weidler to immediately north of N/NE Broadway to accommodate passage of the Broadway/Weidler couplet. The highway cover would include design upgrades to make the structure more resilient in the event of an earthquake.

The highway cover would connect both sides of I-5, reducing the physical barrier of I-5 between neighborhoods to the east and west of the highway while providing additional surface area above I-5. The added surface space would provide an opportunity for new and modern bicycle and pedestrian facilities and public spaces when construction is complete, making the area more connected, walkable, and bike friendly.

Figure 5. Broadway/Weidler/Williams and Vancouver/Hancock Highway Covers

2.2.2.2 N Vancouver/N Hancock Highway Cover

The Build Alternative would remove and rebuild the existing N Vancouver structure over I-5 as a highway cover (Figure 5). The Vancouver/Hancock highway cover would be a concrete or steel platform that spans east-west across I-5 and to the north and south of N/NE Hancock. Similar to the Broadway/Weidler/Williams highway cover, this highway cover would provide additional surface area above I-5. The highway cover would provide an opportunity for public space and a new connection across I-5 for all modes of travel. A new roadway connecting neighborhoods to the east with the Lower Albina area and connecting N/NE Hancock to N Dixon would be added to the Vancouver/Hancock highway cover (see element "A" in Figure 6).

2.2.3 Broadway/Weidler Interchange Improvements

Improvements to the Broadway/Weidler interchange to address connections between I-5, the interchange, and the local street network are described in the following subsections and illustrated in Figure 6.

2.2.3.1 Relocate I-5 Southbound On-Ramp

The I-5 SB on-ramp is currently one block south of N Weidler near where N Wheeler, N Williams, and N Ramsay come together at the north end of the Moda Center. The Build Alternative would remove the N Wheeler on-ramp and relocate the I-5 SB on-ramp north to N Weidler. Figure 6 element "B" illustrates the on-ramp relocation.

2.2.3.2 Modify N Williams between Ramsay and Weidler

The Build Alternative would modify the travel circulation on N Williams between N Ramsay and N Weidler. This one-block segment of N Williams would be closed to through-travel for private motor vehicles and would only be permitted for pedestrians, bicycles, and public transit (buses) (Figures 6 and 7). Private motor vehicle and loading access to the facilities at Madrona Studios would be maintained.

2.2.3.3 Revise Traffic Flow on N Williams between Weidler and Broadway

The Build Alternative would revise the traffic flow on N Williams between N/NE Weidler and N/NE Broadway. For this one-block segment, N Williams would be converted from its current configuration as a two-lane, one-way street in the NB direction with a center NB bike lane to a reverse traffic flow two-way street with a 36-foot-wide median multi-use path for bicycles and pedestrians. These improvements are illustrated in Figures 6 and 7.

Figure 6. Broadway/Weidler Interchange Area Improvements

Figure 7. Conceptual Illustration of Proposed N Williams Multi-Use Path and Revised Traffic Flow

The revised N Williams configuration would be designed as follows:

- Two NB travel lanes along the western side of N Williams to provide access to the I-5 NB on-ramp, through movements NB on N Williams, and left-turn movements onto N Broadway.
- A 36-foot-wide center median with a multi-use path permitted only for bicycles and pedestrians. The median multi-use path would also include landscaping on both the east and west sides of the path.
- Two SB lanes along the eastern side of N Williams to provide access to the I-5 SB on-ramp or left-turn movements onto NE Weidler.

2.2.4 Related Local System Multimodal Improvements

2.2.4.1 New Hancock-Dixon Crossing

A new roadway crossing would be constructed to extend N/NE Hancock west across and over I-5, connecting it to N Dixon (see Figure 6, element “E”). The new crossing would be constructed on the Vancouver/Hancock highway cover and would provide a new east-west crossing over I-5. Traffic calming measures would be incorporated east of the intersection of N/NE Hancock and N Williams to discourage use of NE Hancock by through motor vehicle traffic. Bicycle and pedestrian through travel would be permitted (see Figure 6, element “F”).

2.2.4.2 Removal of N Flint South of N Tillamook and Addition of New Multi-Use Path

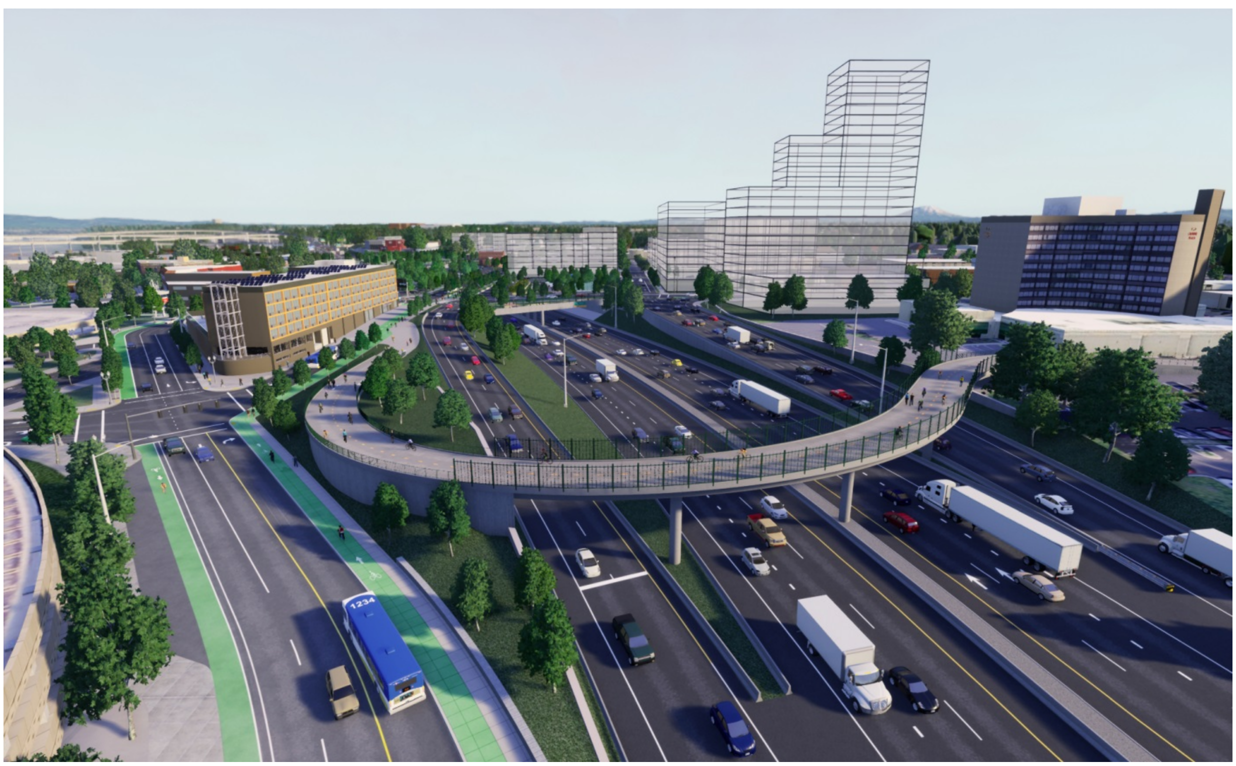
The existing N Flint structure over I-5 would be removed, and N Flint south of N Russell Street would terminate at and connect directly to N Tillamook (see Figure 6, element “G”). The portion of Flint between the existing I-5 overcrossing and Broadway would be closed as a through street for motor vehicles. Driveway access would be maintained on this portion of N Flint to maintain local access.

A new multi-use path would be added between the new Hancock-Dixon crossing and Broadway at a grade of 5 percent or less to provide an additional travel route option for people walking and biking. The new multi-use path would follow existing N Flint alignment between N Hancock and N Broadway (see Figure 6, element “G”).

2.2.4.3 Clackamas Bicycle and Pedestrian Bridge

South of N/NE Weidler, a new pedestrian- and bicycle-only bridge over I-5 would be constructed to connect NE Clackamas Street near NE 2nd Avenue to the N Williams/ N Ramsay area (see Figure 6, element “H,” and Figure 8). The Clackamas bicycle and pedestrian bridge would offer a new connection over I-5 and would provide an alternative route for people walking or riding a bike through the Broadway/Weidler interchange.

Figure 8. Clackamas Bicycle and Pedestrian Crossing



2.2.4.4 Other Local Street, Bicycle, and Pedestrian Improvements

The Build Alternative would include new widened and well-lit sidewalks, Americans with Disabilities Act-accessible ramps, high visibility and marked crosswalks, widened and improved bicycle facilities, and stormwater management on the streets connected to the Broadway/Weidler interchange.[6]

A new two-way cycle track would be implemented on N Williams between N/NE Hancock and N/NE Broadway. A two-way cycle track would allow bicycle movement in both directions and would be physically separated from motor vehicle travel lanes and sidewalks. This two-way cycle track would connect to the median multi-use path on N Williams between N/NE Broadway and N/NE Weidler.

The bicycle lane on N Vancouver would also be upgraded between N Hancock and N Broadway, including a new bicycle jug-handle at the N Vancouver and N Broadway intersection to facilitate right-turn movements for bicycles from N Vancouver to N Broadway.

Existing bicycle facilities on N/NE Broadway and N/NE Weidler within the Project Area would also be upgraded, including replacing the existing bike lanes with wider, separated bicycle lanes. New bicycle and pedestrian connections would also be made between the N Flint/N Tillamook intersection and the new Hancock-Dixon connection.

These improvements would be in addition to the new Clackamas bicycle and pedestrian bridge, upgrades to bicycle and pedestrian facilities on the new Broadway/Weidler/Williams and Vancouver/Hancock highway covers, and new median multi-use path on N Williams between N/NE Broadway and N/NE Weidler described above and illustrated in Figure 6.

[6] Additional details on which streets are included are available at http://i5rosequarter.org/local-street-bicycle-and-pedestrian-facilities/

3 Regulatory Framework

For the purposes of this Project, "cultural resources" are defined as all buildings, sites, structures, objects, districts, and landscapes that are considered to have historical or cultural value. A wide range of cultural resource types can include, but are not limited to, the following:

- "Historic properties," as used in Section 106 of the National Historic Preservation Act (NHPA) compliance and defined in 36 Code of Federal Regulations (CFR) Part 800.16(l)(1), as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior."
- Native American cultural items such as human remains, funerary items, sacred objects, and objects of cultural patrimony.
- Archaeological resources, which include "precontact" (i.e., dating to the period before the advent of writing) and "historic" archaeological sites that may or may not be historic properties.
- Cultural uses of the natural environment, such as ceremonial or other religious use of places, plants, animals, and minerals. These types of resources can include Indian sacred sites that may or may not be considered as "Traditional Cultural Properties" (TCPs), cultural landscapes, ethnographic landscapes, rural historic landscapes including trails and transportation routes, and historic mining landscapes, for example.

The following regulations were considered in the historic, archaeological, and cultural analysis:

- NEPA of 1969
- Section 106 of the NHPA of 1966 (Pub. L. 89-665, as amended; 54 United States Code [U.S.C.] 300101 et seq. [formerly 16 U.S.C. 470 et seq.] and as codified in 36 CFR 800
- U.S. Department of Transportation Act of 1966 (23 U.S.C. Section 138 and 49 U.S.C. 303 [formerly 49 U.S.C. 1653]; 23 CFR 774), Section 4(f), as amended
- Oregon State Historic Preservation Office (SHPO) guidelines and Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation
- Oregon State Laws and Regulations:
    - Oregon Revised Statutes (ORS) 358.905–358.961 (Archaeological Objects and Sites)
    - ORS 390.235 (issuance of archaeological permits) and Oregon Administrative Rules (OAR) 736-051-0000–0090 (Archaeological Permits)

- ORS 97.740–97.760 (Indian Graves and Protected Objects)
- Oregon Statewide Planning Goal 5 (OAR 660-015-0000) Natural Resources, Scenic and Historic Areas, and Open Spaces, Oregon's Statewide Planning Goals and Guidelines (OAR 660-015-0000), amendments effective August 30, 1996

The NEPA, the Council on Environmental Quality regulations implementing NEPA (40 CFR 1500-1508), and regulations for NEPA compliance (44 CFR Part 10) direct federal agencies to consider environmental consequences of proposed projects having federal funding or permitting. Under NEPA, the Federal Highway Administration (FHWA) and ODOT must evaluate Project impacts on historic and cultural resources. Consideration of impacts to cultural resources is also mandated under Section 106 of the NHPA of 1966, as amended. As codified in 36 CFR Part 800, Section 106 requires federal agencies to consider the effects of their actions on properties listed in or eligible for listing in the National Register of Historic Places (NRHP).

The NRHP is a list maintained by the Secretary of the Interior of "districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering and culture" (36 CFR 60.1(a)). Criteria applied to determine whether a property is eligible for nomination to NRHP are set forth in 36 CFR 60.4. A property is evaluated as "significant" when that property possesses historical integrity and meets one or more criteria. A property is eligible for the NRHP when:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:
>
> (a) are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) are associated with the lives or persons significant in our past; or
>
> (c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) have yielded, or may be likely to yield, information important in prehistory and history.

For significant (i.e., NRHP-eligible or listed) resources (that is, "historic properties") that may be affected by the undertaking, FHWA/ODOT would assess the Project's potential effects in consultation with the consulting parties by applying the criteria of adverse effect set forth in 36 CFR 800.5. A program-level Programmatic Agreement

(PA) among the FHWA, Oregon SHPO, and ODOT, dated December 23, 2011, outlines Section 106 responsibilities for FHWA undertakings within Oregon and delegates some of FHWA's Section 106 responsibilities to ODOT.

If the FHWA/ODOT determine the proposed action may adversely affect properties listed on or eligible for listing on the NRHP, they will notify the Advisory Council on Historic Preservation (Advisory Council) and consult with the SHPO, Indian tribes, and other consulting parties to develop and evaluate alternatives that could avoid, minimize, or mitigate adverse impacts on such properties. If the FHWA/ODOT and SHPO (and Advisory Council, if participating) agree on such measures, they execute a memorandum of agreement to resolve the adverse effects.

Section 4(f) of the Department of Transportation Act as described in 49 U.S.C. 303 provides for the preservation of the natural beauty of park and recreation lands, wildlife refuges, and historic sites. Section 4(f) applies to all historic sites of national, state, or local significance as well as publicly owned and accessible parks, recreational areas, and wildlife and waterfowl refuges. A project that affects Section 4(f) properties must include a Section 4(f) assessment, and the project requiring use of the land would only be approved if there is no prudent and feasible alternative.

Oregon State laws are also applicable to the Project. The Indian Graves and Protected Objects (ORS 97.740-97.760) statutes protect all Native American cairns and graves and associated cultural items. The Archaeological Objects and Sites (ORS 358.905-358.955) statutes provide definitions of archaeological resources, significance, and cultural patrimony and prohibit the sale and exchange of cultural items or damage to archaeological resources on public and private lands. Items of cultural patrimony or associated with human remains are protected everywhere unless the activity is authorized by an archaeological excavation permit. Permits and Conditions for Excavation or Removal of Archaeological or Historical Materials are provided in ORS 390.235.

4 Methodology and Data Sources

This section describes the methods and data sources used to identify archaeological resources within the Project Area. Architectural or above-ground historic resources are documented in a separate technical report for the Project.

4.1 Project Area and Area of Potential Impact

The purpose of this section is to describe cultural resources within the Project's Area of Potential Impact (API). The API defines the maximum geographic area where the Project could potentially affect archaeological resources, if any are present; for archaeological resources, this is typically defined as the area where direct ground disturbances are likely to occur. The API for historic resources, as discussed in a separate technical report for the Project, is larger than the API for archaeological resources to account for indirect Project effects such as noise.

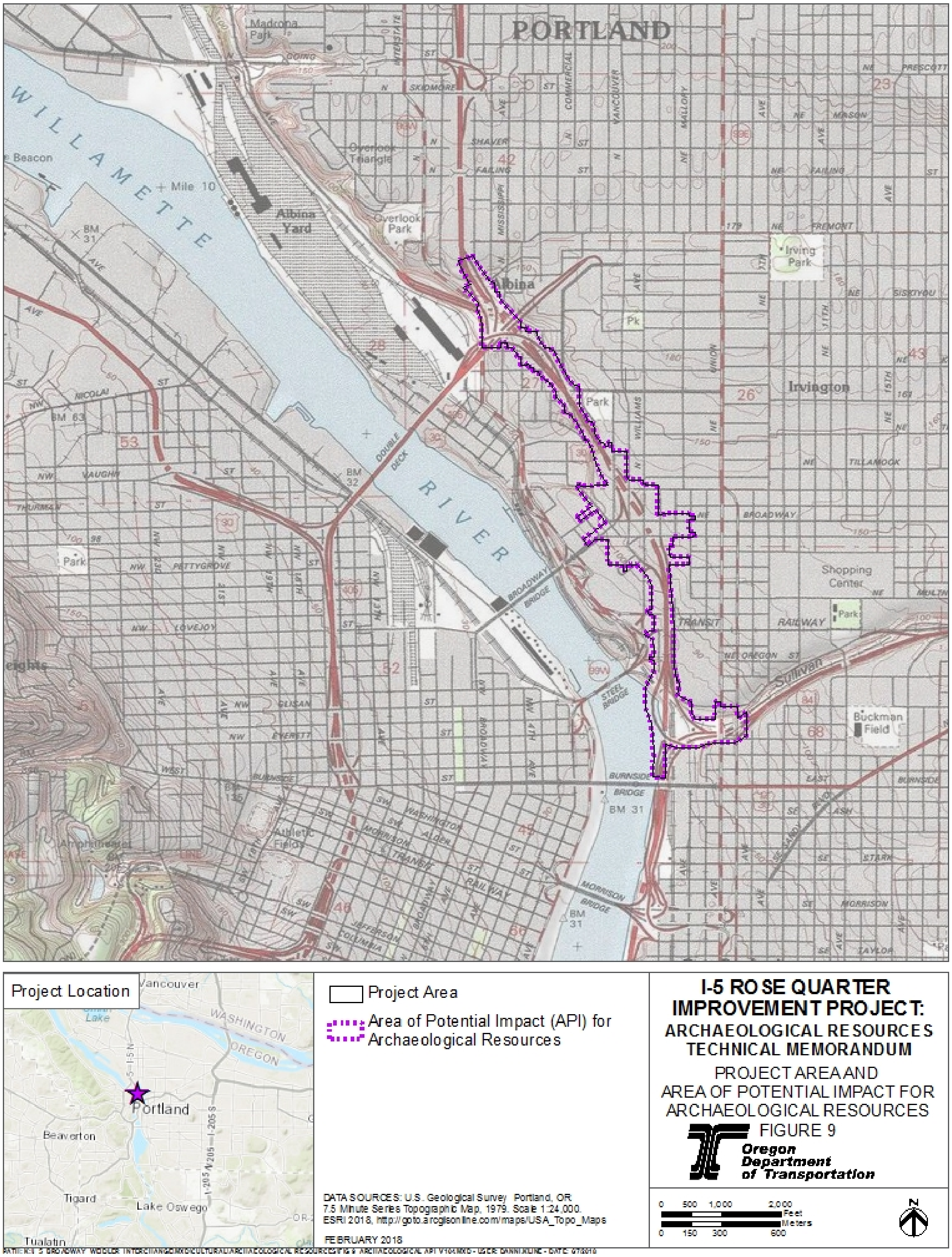
Section 106 also requires ODOT/FHWA to delineate an area of potential effects (APE), "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties." For this Project, the API is synonymous with the Section 106 process's APE.

The API for archaeological resources is identical to the geographic extent of the "Project Area" established by ODOT for the Project. All Project-related analysis for archaeological resources was performed within the enclosed limits of the API.

The Project Area/API is defined as an approximately 127-acre area on the east side of the Willamette River within Sections 27, 34, and 35 of Township 1 North, Range 1 East, Willamette Meridian, as shown on the Portland, Oregon, US Geological Survey (USGS) 7.5-minute quadrangle (1990) (Figure 9).

Within the broader 127-acre API are preliminary delineated "permanent impact areas" and "temporary impact areas." The permanent and temporary impact areas are the specific areas where archaeological resources would be most likely to be directly impacted because archaeological resources are found on or below the ground surface, and ground-disturbing construction would only be anticipated to occur within the permanent and temporary impact areas. However, the API for archaeology expands beyond the permanent and temporary impact areas to include the entire Project Area, to allow for flexibility in Project design.

Figure 9. Project Area and Area of Potential Impact for Archaeological Resources



4.2 Resource Identification and Evaluation

This analysis was based on a desktop review of historical sources to identify areas of potential archaeological sensitivity. Project team cultural resources specialists, who meet the Secretary of the Interior's Professional Qualification Standards (36 CFR Part 61) for archaeology, completed this review during the development stage of the Project.

Due to the existing development and urban setting of the Project, traditional methods of archaeological surface survey and exploratory shovel probing are not practicable. The desktop review for this Project included an extensive literature review of agency documents and review of available online information, secondary sources, historic maps, and aerial photographs. On-going consultation between the agencies, tribes, and other pertinent parties could identify additional resources not yet documented for the Project.

The literature review establishes the relative potential for archaeological resources to be potentially affected by the Project and provides direction for further investigations and other protective measures. The purpose of this analysis is to inform a protocol and treatment plan for inadvertent discoveries. The analysis would be used to support the preparation of a Project-specific PA Memorandum by ODOT staff.

4.2.1 Data Sources

The Project team reviewed the following historic maps, topographic quadrangles, and aerial photographs for information about the history of the Project Area:

- General Land Office (GLO) plat for Township 1 North, Range 1 East (1897)
- Portland, Oregon, 15-minute topographic quadrangle (1897 and 1940) (USGS 2017)
- Portland, OR, 7.5-minute topographic quadrangle (1961, 1975, 1990) (USGS 2017)
- Aerial Photographs, Portland (1948, c. 1950, 1955, 1962, 1964, 1970)
- Sanborn Fire Insurance Map, Volume 2 (Sanborn Fire Insurance Company 1901)
- Sanborn Fire Insurance Map, Volume 3 (Sanborn Fire Insurance Company 1908-1909)
- Sanborn Fire Insurance Map, Volume 6 (Sanborn Fire Insurance Company 1924-1950)

In addition to maps and aerial photographs, the Project team reviewed ethnographic and archaeological literature and the following sources:

- Historic ODOT right of way files
- Oregon SHPO Archaeological Database
- NRHP (National Park Service)

- Vintage Portland (2017) web portal
- Portland Metsker maps (1927, 1936, 1944) (Historic Mapworks 2017)
- Oregon Burial Site Guide (Byrd et al. 2001)
- Bureau of Land Management (BLM) GLO surveys and land patents (USDI-BLM 2017)
- USGS Geologic Map of the Portland Quadrangle (1991) (Beeson, Tolan, and Madin 1991)
- Natural Resources Conservation Service (NRCS) Soil Survey Data
- Oregon Department of Geology and Mineral Industries (DOGAMI) Digital Data Series

This analysis involved research at several local repositories including the Multnomah County Division of Assessment, Recording, and Taxation; Multnomah County Library (Central Library); Oregon Historical Society; Portland City Archives; and Portland State University. Several online subscription and free research repositories were also reviewed, including the public records contained in Ancestry.com, Multnomah County Survey and Assessor Image Locator, GeneaologyBank.com, Newsbank, newspapers.com, historicmapworks.com, and jstor.com.

4.2.2 Consultation and Traditional Cultural Properties

The Project team is unaware of specific TCPs or properties of religious significance within the API based on the preliminary records review. Given that this information is culturally sensitive, however, the reviewed records are not likely to contain specific references to traditional or sacred sites that could occur within the API. Tribal consultation has been initiated by ODOT to address their potential presence.

ODOT and FHWA will continue to conduct consultation with pertinent descendant communities (i.e., as identified by the Commission of Indian Services) as well as other consulting parties with a demonstrated interest in cultural resources such as the Architectural Heritage Center, Oregon Black Pioneers, and Restore Oregon.

4.3 Assessment of Impacts

Under NEPA, the determination of a “significant” impact is a function of both context and intensity. An impact may exceed the significance threshold depending upon the degree to which it affects the unique characteristics of the geographic area such as proximity to historic or cultural resources and the degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources (FHWA 2018). To determine significance, the severity of the impact is examined in terms of type, quality, and sensitivity of the resource involved; the location of the proposed Project; the duration of the effect (short- or long-term); and other consideration of context. Examples of significant impacts to archaeological resources under NEPA could include the following:

- A significant archaeological site's loss of integrity for eligibility to the NRHP and inability to mitigate impacts through data recovery or public interpretation
- Long-term and chronic project effects (such as from project-related noise, vibration, or atmospheric impacts) such that a NRHP-eligible resource's integrity and significance would not be anticipated to return to previous levels

In considering impact significance under NEPA, the significance of the resource itself must first be determined. As noted in Section 3, the NRHP Criteria for Evaluation in 36 CFR Part 60 provide a tool for evaluating the relative historical significance of cultural resources and determining whether a resource is eligible for or listed in the NRHP. If a historic property would be affected by Project activities, the agency would make a Finding of Effect for the Project. This effects analysis would be based on the Criteria of Adverse Effect established in 36 CFR Part 800.5(a) and would include an assessment of direct, indirect, and cumulative impacts. The Criteria of Adverse Effect are applied when a project "may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association" (36 CFR 800.5(a)). Examples of adverse effects include, but are not limited to, the following:

- Physical destruction of or damage to all or part of the property
- Alteration of a property
- Removal of the property from its historic location
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features
- Neglect
- Transfer, lease, or sale of property out of federal ownership or control

Following the effects analysis, the federal agency would make a finding of "no historic properties affected," "no adverse effects," or "adverse effects." A finding of "no adverse effect" is made when FHWA/ODOT determines the project would not diminish the integrity of historic properties. A finding of "no historic properties affected" is made for resources when there are no historic properties present or the project would not affect historic properties that are present. If FHWA/ODOT determines the proposed action may adversely affect historic properties, they notify the Advisory Council and consult with the SHPO, Indian tribes, and other consulting parties to develop and evaluate alternatives that could avoid, minimize, or mitigate adverse impacts on such properties.

4.4 Cumulative Impacts

The cumulative impacts analysis considered the Project's impacts combined with other past, present, and reasonably foreseeable future actions that would have environmental impacts in the API. A list of reasonably foreseeable future actions was developed through consultation with City of Portland and Metro staff; see Appendix A. This list includes any permitted public and private projects within the API and projects that are in the permit application process. The cumulative impact assessment qualitatively assessed the magnitude of impacts expected from reasonably foreseeable future actions in combination with anticipated Project impacts. This assessment also identified the contribution of the Project to overall cumulative impacts.

5 Affected Environment

This section discusses cultural resources known to be present based on previous studies, as well as the Project's potential to affect as yet undiscovered cultural resources.

The first half of this section contains a discussion of the existing environment of the API as it relates to archaeological and cultural resources. It begins with an overview of the physical and cultural setting of the API to provide context to the analysis. Following this introductory material is a summary of previous archaeological investigations that have been conducted within the Project vicinity and their results as well as a review of historical maps and aerial photography that document changes to the API over time.

The second half of this section provides an Archaeological Treatment Plan, including a general probability assessment for archaeological resources, expectations for the types of resources that might be encountered, and protocol regarding the identification and assessment of archaeological resources in the future.

5.1 Physical Setting

5.1.1 Geology and Environment

The API is located at the northern end of the Willamette Valley physiographic and geographical province, closely bordered by the Puget Trough province to the north (Franklin and Dyrness 1988:15–17, Figure 2). These two provinces, separated only by the Columbia River, are also referred to as the Puget-Willamette Lowland (Sobel et al. 2013:Map 1). The API is further located within the Portland Basin, a lowland that is part of the larger Puget-Willamette Lowland alluvial plain that stretches some 137 miles from the Puget Sound to southwest Oregon along the Willamette Valley and is flanked by the Coast Range Mountains to the west and the Cascade Mountains to the east (Sobel et al. 2013:24, Map 1, Map 4). The Portland Basin includes 53 miles of the Columbia River and contains five of its tributaries: the Kalama, Lewis, and Washougal Rivers in Washington and the Willamette (with its tributary, the Clackamas River) and Sandy Rivers in Oregon. The Columbia River courses through a portion of the basin known as Wapato Valley, which includes the cities of Portland and Gresham in Oregon and Vancouver, Washington, and is described as broad and slow as it moves through swampy bottomland, winds around islands, and separates into sloughs (Sobel et al. 2013:24).

The overall topography of the Willamette Valley is flat with a gentle slope to the north, punctuated throughout the valley bottom by rolling hills and margins and includes local topographic variability associated with alluvial geomorphic processes, such as development of terraces and floodplains along the Columbia River and its tributaries (Franklin and Dyrness 1988:15–17). Along the western edge of the Willamette Valley are a variety of sedimentary and volcanic rocks of the Eocene age

(56 to 33.9 million years ago [mya]), including submarine pillow basalts, conglomerates, and tuffaceous sandstones and siltstones, which are eastward extensions of the Coast Range formations. Along the eastern edge of the valley are outcrops of marine sedimentary rocks of the Oligocene and Miocene age (33.9 to 23 mya and 23 to 5.3 mya, respectively). Capping the Portland Hills is Columbia River basalt from the Miocene age. The northern floor of the Willamette Valley is underlain by thick, non-marine sedimentary deposits of the Plio-Pleistocene age (5.3 million to 11,700 years ago) (Franklin and Dyrness 1988:15–17).

The Willamette Valley floor is characterized as an alluvial plain separated by basalt ridges and rolling hills, generally below 1,000 feet in elevation, which are dissected by a number of rivers and creeks that feed into the Willamette River. Bordering the Willamette River to the west are the Tualatin Hills, more commonly known as the Portland Hills or West Hills, and to the north, a linear gravel bar known as the Alameda Ridge defines the area with the Willamette River bisecting the ridge and flowing into the Columbia River. The areas directly east of the Willamette River are not defined by hills or mountains except for low outcroppings of basalt; much of this area was formed with flood deposits of the late Pleistocene (Ellis et al. 2005; Schlicker and Finlayson 1979).

In the last 20,000 years, the region's landscape has been significantly shaped by repeated flooding from the Missoula Floods and landslides in the gorge known as the Cascade Landslides. Between 19,000 and 12,500 years ago, outburst floods from glacial Lake Missoula in Montana repeatedly breached ice dams and produced a succession of catastrophic floods across eastern Washington and along the Lower Columbia River Basin that inundated the Willamette Valley as far south as Eugene (Sobel et al. 2013:25). The floods, carrying ice, debris, and huge boulders, scoured the Washington landscape before entering the Columbia River (Sobel et al. 2013:25). Flood deposits at the northern end of the Willamette Valley include bouldery, cobbly, and sandy gravel. Throughout the remainder of the valley, the flood deposits consist of fine-grained (silt and clay) alluvium, which is still present on older geomorphic surfaces that have not undergone modification by the Willamette River and its tributaries during the Holocene period. The floods deposited erratics along with a thin layer of silt up to the 122-meter (m) (400-foot) elevation. Soils forming along terrace positions typically display silt loam surface horizons underlain by silty clay loam (Franklin and Dyrness 1988:15–17).

The Lower Columbia River area was also modified by the Cascade Landslides, with the most recent large-scale landslide, known as the Bonneville Landslide, occurring between AD 1400 and AD 1500 (Sobel et al. 2013:25). The debris from this landslide created a natural dam, which temporarily blocked the Columbia River; once breached, the waters destructively spilled out into the valley downstream causing significant flooding and changing the topographic floodplain (Sobel et al. 2013:25-26; Pettigrew 1990:523-524).

The Puget-Willamette Lowland is described as humid, with high biodiversity, high biomass, and a long growing season. Historically, this landscape encompassed many habitats that included wetlands, riparian forests, oak woodland savannas, and meadows, with the adjoining foothills containing coniferous forests (Sobel et al. 2013:24). In the last century, the vegetation in the Project Area has been significantly altered and eradicated by commercial, industrial, and residential development. The urbanization of the landscape has prevented the cultivation and use of native plant resources of the prairies and marshes that defined the valley. Just 150 years ago, the west side of Portland was defined by forest and lakes and the eastside by gently rolling low-lying hills with gullies and gulches, forested with fir, maple, cedar, and hemlock.

5.1.2 Geomorphology

Elevation of the Project Area ranges from around 9 m (30 feet) above mean sea level (amsl) at the Willamette River, up to approximately the 40 m (130-foot) elevation contour. At these elevations, the landscape of the Project Area is predominantly characterized by Pleistocene sand and silt and pebble to boulder gravel deposits, from repeated outburst floods that occurred from 15 to 23,000 years ago (Evarts et al. 2009:8; Madin 2009).

Also, about 13,000 years ago during the terminal Pleistocene, sea level was significantly lower than in modern times. The Columbia River was approximately 113 m (370 feet) below present sea level, and sand and silt filled this incised channel below the modern floodplain in the Portland Basin (Evarts et al. 2009:8). Although the Project Area would have been well above, and unaffected by, fluvial geomorphic processes associated with the Willamette River during the terminal Pleistocene, ongoing scouring and deposition associated with the Missoula Floods modified the landscape of the Project Area. Missoula flood deposits exposed during excavation of the Oregon Convention Center display paleosols on top of rhythmites (silt and fine sand deposits ranging from 10- to 100-centimeter (cm) (4- to 39-inch) thick, each deposited by a single flood), with dozens of floods yielding 15 to 20 m (49- to 66-foot) thick deposits (Madin 2009:79). Similar flood deposits dated for the Tualatin Basin were dated from 16,100 to 21,600 years old. (Madin 2009:79). After the cessation of major ice and flood events, the present Columbia River floodplain, which is now less than 10 m (33 feet) amsl, historically aggraded by overbank deposition and bar accretion.

Sullivan’s Gulch, at the south end of the Project Area, is a flood-related drainage channel connected to Rocky Butte (Madin 2009:79). Here, flood waters reached an elevation of 115 m (377 feet) amsl, with water depth at this site up to 110 m (360 feet).

Pliocene Troutdale gravel is exposed along the western portion of the Project Area along the Willamette River and represents bedrock in this geologic setting. Small amounts of Troutdale gravels (Map unit Tt) manifest as conglomerate, as described below (Madin 2009:79; Beeson, Tolan, and Madin 1991).

Three geomorphic units are represented in the Project Area (Figures 10 and 11):

- **Qff (Fine-grained facies—Pleistocene):** This unit covers the majority of the Project Area and consists of Missoula Flood deposits of coarse sand to silt. Silt and fine sands consist of quartz and feldspar, with coarser sand composed of Columbia River basalt. Beds of 30 cm to 1 m (12 inches to 3 feet) thickness are present and separated by accumulations of clay and iron oxide 1 to 6 cm (0.4 to 2.4 inches) thick (possible paleosols). Modern soil development is represented by abundant clay and iron oxides into the upper 2 to 3 m (6.5 to 10 feet) of deposits. This unit has a maximum thickness of 30 to 40 m (98 to 131 feet) and is thick in lower elevations, extending upslope to elevations between 90 and 105 m (322 and 344 feet) (Beeson, Tolan, and Madin 1991).
- **Qaf (Artificial Fill—Holocene):** This unit covers a small percentage of the API, primarily at Sullivan's Gulch at the I-84 interchange and a small amount near Weidler Street Crossing (based on historical maps, the latter was likely in-filling of a natural drainage that was formerly mapped in the Weidler Street Crossing area). This unit consists of sand, silt, and clay with gravel, debris, sawdust, and mill ends. Fill from 1.5 to 5 m (5 to 16 feet) thick is common in developed areas along the Willamette Floodplain but is not depicted on Figure 11 because thickness and distribution are highly variable (Beeson, Tolan, and Madin 1991).
- **Tt (Troutdale Formation—Miocene to Pliocene):** This unit is composed of conglomerates with minor interbeds of sandstone, siltstone, and claystone. Conglomerates may consist of well-rounded pebbles and cobbles. This unit reaches a maximum thickness of 60 to 90 m (197 to 295 feet) in the Portland area (Beeson, Tolan, and Madin 1991).

To summarize, during the Late Pleistocene, Missoula floods scoured the landscape down locally to Pliocene bedrock and deposited flood sediments in several layers, including fine-grained rythmites. With sea level rise during the Terminal Pleistocene and Early Holocene, the Willamette River aggraded through Holocene sediment deposition, but at an elevation lower than much of the Project Area such that Willamette River alluvial deposits are not present in the Project Area. Consequently, only Missoula flood deposits are mapped in the Project Area. Throughout the Holocene, the geomorphic surface associated with the last Missoula flood deposits is modified by soil formation and perhaps localized soil erosion and re-deposition along drainages such as Sullivan's Gulch. There is little or no net Holocene deposition on a mapable scale throughout the Project Area, although modern soil development, represented by abundant clay and iron oxides, is noted within the upper 2 to 3 m (6.5 to 10 feet) of deposits (Beeson, Tolan, and Madin 1991). Therefore, potential precontact cultural materials would not be expected at great depths in the API. Historically, development and filling activities have intermixed the upper stratigraphic levels of the geomorphic surface, as reflected in mapped (Qaf) (as well as unmapped units) (Beeson, Tolan, and Madin 1991).

Figure 10. Missoula Flood Deposits and Troutdale Formation "Bedrock" Exposures Adjacent to the Project Area (Source: Madin 2009). Precontact sites would not be expected to occur at great depths (i.e., less than 10 feet depth) within these geomorphic units.

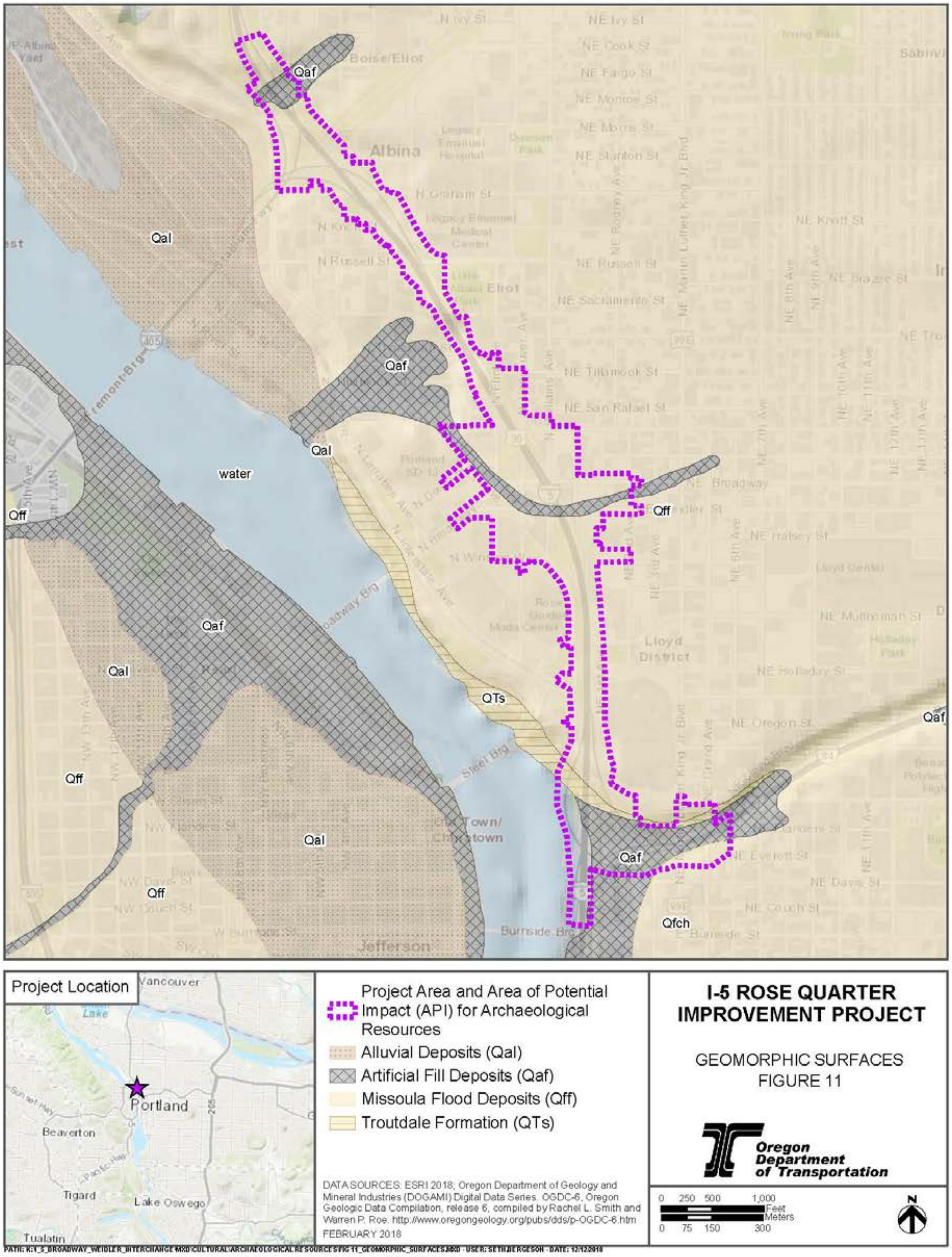
Figure 1-3. Fine-grained Bretz/Missoula flood deposits exposed in the foundation excavation of the Oregon Convention Center. Dark bands are damp paleosols mark the tops of some rhythmites.

Figure 1-4. Troutdale Formation conglomerate on the east bank of the Willamette River, just upstream of the Steel Bridge. The Marquam Bridge is visible in the background.

5.1.3 Soils

Soils in the Project Area are mapped by the NRCS as Urban land, specifically 94 percent Urban land, 3 to 15 percent slopes, located almost over the entire Project Area; 5 percent Urban land, 0 to 3 percent slopes, located at the southwestern end and northwestern end of the Project Area as pockets; and 1 percent Urban land-Latourell complex, 0 to 3 percent slopes, located centrally, at the eastern boundary edge of the Project Area (NRCS 2017). Unit maps for Urban land do not provide further soil descriptions other than "Urban land." Urban land-Latourell is formed in medium textured alluvium. A typical profile is loam from 0 to 142 cm (0 to 56 inches) underlain by very gravelly sandy loam from 142 to 168 cm (56 to 66 inches).

Figure 11. Geomorphic Surfaces



5.1.4 Previous Geotechnical Studies

Select areas along I-5 have been subject to previous geotechnical investigations by ODOT (ODOT 1961a, 1961b, 1969, 1983, 1999) (Table 3). Geotechnical subsurface investigations that overlap the API were conducted for overpass and underpass connections in the 1960s and 1980s and for sign footing installations in 1999. Collectively, these investigations show variable amounts of fill, ranging in depth from the ground surface to up to a maximum of 15 m (50 feet) below the ground surface within specific areas of the API along I-5 including Flint, Greeley, and Vancouver crossings. The fill overlays fine-grained silt and sand deposits, reflecting Missoula flood deposits (Qff) and associated rythmites as discussed in Section 5.1.2. For the current Project, past data regarding depth of fill would be used in conjunction with engineering design plans to address the potential presence or absence of archaeological sites, as discussed in Section 5.7.

Table 3. Previous ODOT Geotechnical Investigations in the API

Project	Year	Location	Results
Rose Quarter Variable Message Signs MP 302.23 (Project 11481)	1999	N Flint Avenue overcrossing at Exit 302A	Fill from 0 to 2 meters (0 to 7 feet) underlain by fine-grained flood deposits (Qff) to terminal depth of 10 meters (33 feet).
East Fremont Bridge Footing Plan and Foundation Data (Drawing 25348)	1969, as constructed 1973	Fremont Bridge	Fill from 0 to 2 meters (0 to 7 feet) underlain by clay, silt, and sand deposits.
Eliot School Viaduct Footing Plan and Foundation Data (Drawings 17251 and 17252)	1961, as constructed 1963	N Flint Avenue connection to I-5	Twelve borings indicate variable amounts of fill ranging from ~10 to 40 feet below the ground surface. Plan shows removal and demolition of 1 building and indicate foundations and walls were removed to 2 feet below the finished slope.
Eliot School Viaduct; Greeley Ave. Connection to I-5 Foundation Data (Drawings 38581 and 38582)	1983, as constructed 1987	N Greeley Avenue connection to I-5	Three foundation borings yielded silty fine sand with thin layers of coarse gray clean sand from surface to depths of 50 feet.
Pacific Highway Undercrossing of Vancouver Avenue (Drawing 16901)	1961, as constructed 1965	N Vancouver Avenue at I-5	Four test holes indicate presence of fill from 5 to 30 feet below the ground surface.

Notes: API = Area of Potential Impact; I-5 = Interstate 5; MP = milepost; ODOT = Oregon Department of Transportation

5.2 Cultural Context

5.2.1 Precontact Context

Evidence of early occupation in northwestern Oregon is relatively scarce. Early sites that have been identified in the Lower Columbia River drainage and Willamette Valley appear to reflect a hunting emphasis, which characterized the pre-6000 B.C. ancestral cultures of the southern Northwest Coast. By 6000 B.C., diverging developmental trends become apparent (Pettigrew 1990:518–529). In the Lower Columbia region, signs of precontact human occupation are found primarily in a narrow lowland belt along the river. For the past 10,000 years, the Columbia River has for the most part been at sea level; however, the sea level began to rise just before 8000 B.C. and did not stabilize at its present elevation until about 3000 B.C. As a result, sites located on the floodplain before 3000 B.C. have likely been flooded and covered with alluvium. Consequently, the earliest known sites are located well above the floodplain, in upland areas (Pettigrew 1990:518–529).

Two chronologies have been compiled for the Lower Columbia Valley based on geographic location: the Portland Basin and the Columbia Estuary—the Project Area falls within the Portland Basin. In the Portland Basin, flanked by the Cascade Range to the east and the Coast Range to the west, a well-documented cultural sequence does not begin until about 600 B.C., while in the vicinity of the Columbia Estuary, located from the Coast Range to the Pacific Ocean, the sequence has been pushed back to 6000 B.C (Pettigrew 1990:518–529; Sobel et al. 2013:24-25). These chronologies document stylistic and functional changes in artifacts but indicate that no fundamental changes in lifeways occurred during the final 3,000 years of prehistory (Pettigrew 1990:518–529).

The Portland Basin sequence includes two cultural phases, Merrybell (600 B.C. to A.D. 250) and Multnomah, with three subphases (A.D. 250 to Euro-American contact in the eighteenth century). Multiple house remains have been recorded dating to the Merrybell Phase; the most fully excavated is the Kersting site (45CL21), which contains several rectangular structures (Sobel et al. 2013:33). The site is located on the Washington side of the Columbia River, approximately 20 miles north of the Project Area. Preserved plant and animal remains are generally lacking in this phase; however, studies suggest that the inhabitants of this period focused on wetland and riverine environments (Sobel et al. 2013:33).

Projectile points from the Merrybell Phase tend to be large, broad necked, and stemmed, whereas points from the Multnomah Phase are smaller, with narrow necks, and are corner notched (Pettigrew 1990:518–529; Sobel et al. 2013:33). The smaller flaked projectile points have been interpreted as arrow points, the prevalence of which indicate the use of bow-and-arrow technology and abandonment of the atlatl, or spear thrower, requiring larger points (Sobel et al. 2013:33). Other Merrybell Phase diagnostics include flaked cylindrical bipoints and crescents, peripherally flaked pebbles, and atlatl weights. Diagnostics from the Multnomah Phase include netsinkers that are either notched or perforated, mule ear knives, clay figurines, and incised clay tablets (Pettigrew 1990:518–529).

The most fully studied period of the Lower Columbia prehistory is the Late Pacific Period (A.D. 200/400– A.D. 1750), during which the Merrybell Phase from the Portland Basin and the Ilwaco Phase from the Columbia Estuary sub-regions coincide. Excavations focusing on residential sites have observed similarities between these two sub-regions indicating the material culture had developed uniformly across the Lower Columbia region by this point (Sobel et al. 2013:33).

The Modern Period (A.D. 1750–Present) brought direct contact with European-Americans, bringing with it trade items, the spurring of a fur trade industry, and the introduction of diseases. Prestige trade items with Native people included glass beads and metal bracelets. Innovative use of traded items included projectile points made from glass, cut iron, and chipped porcelain. Extensively excavated sites from the Portland Basin during this period include the Meier (25 miles north on the Oregon side) and Cathlapotle (40 miles north on the Washington side) sites. Residents of the Meier site were minimally involved with European-American trade, whereas Cathlapotle were moderately involved (Sobel et al. 2013:34). Up until the 1840s, Native material culture and technology remained relatively stable despite the participation in the fur trade economy. Emphasis on plant and animal products continued, as did the use of stone raw materials (Sobel et al. 2013:34).

5.2.2 Ethnographic Context

At the onset of Euro-American contact and settlement in western Oregon, the territory surrounding the Project Area was likely inhabited and shared by the Upper Chinookan-speaking Multnomah and Clackamas people. The Multnomah and Clackamas people, along with the Cathlamet and Lower Chinook people, were part of the same linguistic and geographical group collectively known as the Chinookan people. The Chinookans resided from the mouth of the Columbia River to Willamette Falls, a point on the Willamette River at the present-day location of Oregon City (Silverstein 1990:Fig.1, 534).

At the time of contact, the lower Columbia River and its Oregon tributaries were divided into two culturally distinct regions. Native groups that were located downriver from the Willamette Falls were part of the Lower Columbia Valley region and included the Multnomah, Clackamas, and aforementioned groups, and those that were located upriver from the falls were part of the Willamette Basin. The falls posed a major barrier to a variety of fish, leaving the Lower Columbia Valley region with at least 13 fish varieties. These differing food sources were a major influence in the divergence of these two neighboring cultural regions that shared the same Columbia River tributary (Pettigrew 1990:518–529).

Chinookan villages were primarily located along the floodplain and main channel of the Columbia River, along its major tributaries and channels, and along sloughs, lakes, and ponds (Boyd and Hajda 1987; Ellis et al. 1999). Multnomah territory included land on either side of the Columbia River from a point south of present-day

Kalama to a point just east of present-day Washougal, which included the confluence of the Willamette River with the Columbia River. Multnomah villages were densely situated along the mouth of the Willamette River and Sauvie Island and along the Columbia River from Government Island to Deer Island; downriver from the Multnomah were the Cathlamet and Lower Chinook people (Silverstein 1990:Fig.1, 534). Clackamas territory was located upriver from the Multnomah, along both sides of the Willamette River from approximately present-day downtown Portland to present-day Oregon City (Silverstein 1990:Fig.1, 534). The Clackamas also occupied and lived extensively along the Clackamas and Sandy Rivers and along the south bank of the lower Columbia River, overlapping the Multnomah, and east of the Willamette River to the Cascade Mountains (Ruby and Brown 1992:25). However, in spite of well-known use of this area, no specific ethnographic village locations are known to overlap the Project Area (Boyd and Zenk 2017; Zenk, Hajda, and Boyd 2016).

The Chinookans practiced a seasonal round of hunting and fishing and gathered roots, shoots, and berries over the Lower Columbia area, though the variety of fauna and flora varied from area to area. Resources were for immediate consumption, winter storage, and trade. Aquatic resources included five species of salmon, sturgeon, steelhead trout, eulachon, herring, seals, sea lions, and whales when washed up on shore. Hunted land mammals included elk, deer, bear, and other large animals, with the following hunted for food and skins: raccoons, squirrels, beavers, rabbits, and otters. Ducks, swans, and geese were also hunted and traded. Flora gathered by the Chinookans included the wapato tuber, camas, edible thistle, lupine, bracken fern, horsetail, shoots of horsetail, cattail roots, salmonberry, cow parsnip, and water parsley. Fruits included salmonberry, cranberry, strawberry, blueberry, huckleberry, salal berry, and bearberry (Silverstein 1990:533-546).

The Chinookans lived in permanent winter villages with cedar plank houses, oblong in shape and gable roofed. “Permanent villages were situated so that local groups could control access to certain resources – primarily fish – and could control the traffic along a waterway” (Hajda and Boyd 1988:2, as cited in Roulette et al. 2012). The number of village dwellings varied from a single dwelling to villages with 15 to 20 houses (Silverstein 1990:533-546), with each house sheltering three or four families totaling approximately 20 or more people living communally (Ruby and Brown 1992:25-26). Temporary summer villages, especially located at fishing, hunting, and root-gathering camps, consisted of dwellings with cattail mat sides with possibly a cedar bark roof over a light wood frame (Silverstein 1990:533-546).

Fishing techniques of the Chinookans included the use of nets for large fish; spears for steelhead, seals, and sea lions; scoop nets and rakes to take eulachon; gaff hooks for taking sturgeon; and dip-nets used from a staging platform to take salmon. Hunting techniques included various deadfall and pit traps, snares, spears, and the use of a bow and arrow. Tubers and roots were harvested using a digging stick (Silverstein 1990:533-546).

Chinookans’ early contact with explorers occurred due to their habitation at the mouth of and along the Columbia River. In 1792, the Chinookans are mentioned during two different ocean-faring expeditions: one by Robert Gray and John Boit and the other by George Vancouver. In 1805-1806, Lewis and Clark provided extensive accounts of the Chinookans' culture and place names. One such appears to have been downriver from the Project and was identified as "Nemalquinner" (Boyd and Hajda 1987:Fig. 2; Hibbs and Ellis 1988:Fig. 23). Nemalquinner was located on the east side of the Willamette near the modern day community of St. Johns, approximately 5 miles downriver from the Project, and had a population of 100-200 at the time of their visit (Boyd and Hajda 1987:Table 1; Ellis et al. 1999; Hajda and Boyd 1988:7) (Figure 12).

In 1825, the Hudson's Bay Company's Fort Vancouver opened on the north side of the Columbia River, opposite the mouth of the Willamette River at present-day Vancouver and provided the Chinookans with direct access to traders and trappers. Early settlers and missionaries arrived from 1830 to 1855, but by this time, the Chinookans had suffered huge population declines due to smallpox, measles, malaria, and other diseases (Silverstein 1990:533-546).

In 1780, the Clackamas estimated population was 2,500 individuals, and by the early 1800s, the Clackamas were estimated to be 1,800 individuals. It would take another 65 years to have their population count reduced to 55 individuals, as recorded for the Grand Ronde Reservation in 1871 (Ruby and Brown 1992:25-26). In 1805–1806, the Multnomah population numbered some 800 individuals, as reported by Lewis and Clark. By 1834, the population had been decimated by the malaria epidemic of 1830, as reported by Rev. Samuel Parker who had visited the area (Ruby and Brown 1992:142).

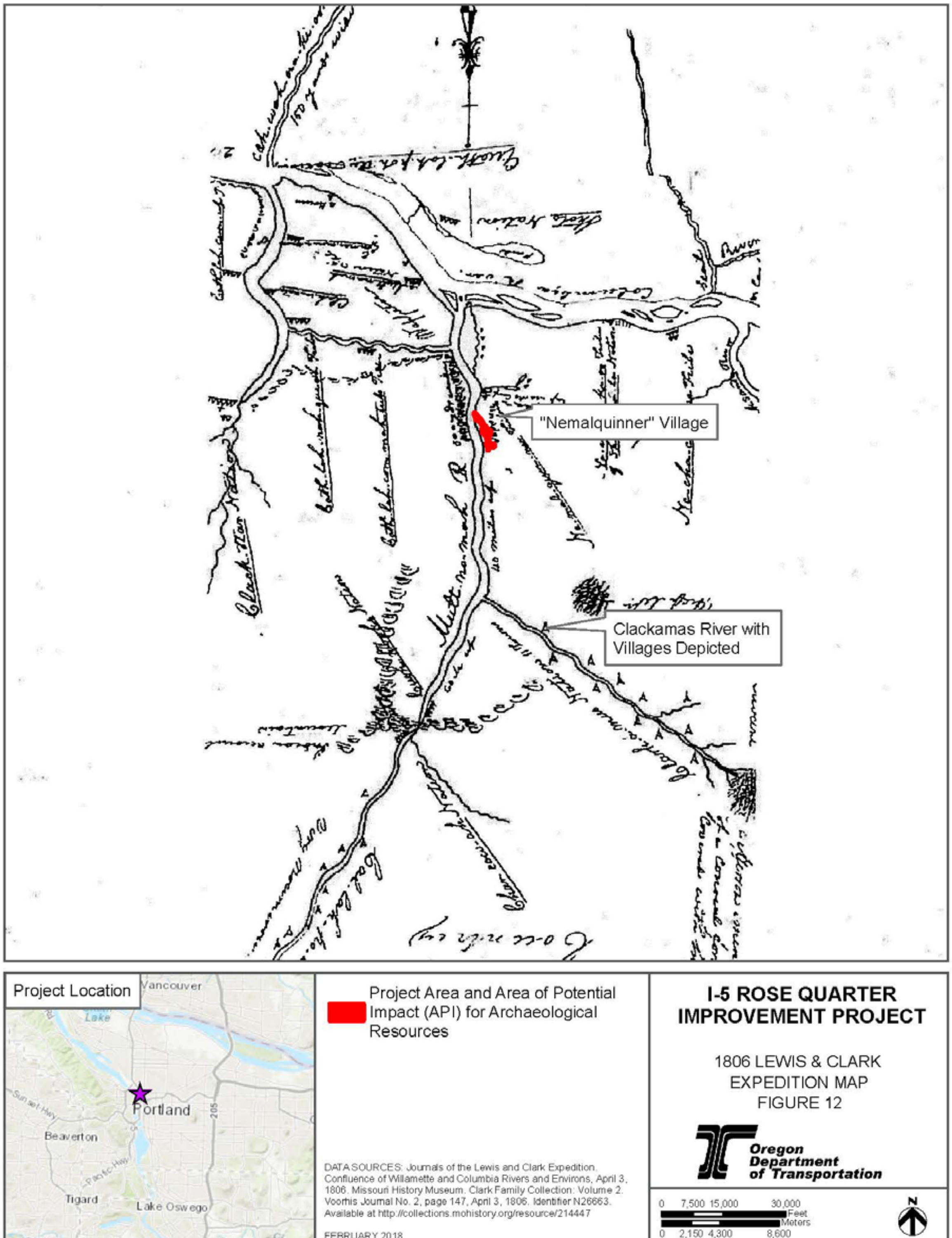
In the 1850s, several rounds of treaty negotiations were initiated with the few remaining Chinookan groups. The 1851 treaty was not ratified, and the 1854–1855 treaties did not include Chinookan groups. In the decade following the treaties, the Chinookans were forced to relocate to the Siletz and Grand Ronde Reservations, and upriver Chinookans were moved to the Warm Springs Reservation (Ellis et al. 1999; Ruby and Brown 1992:25–26).

5.2.3 Historical Context

5.2.3.1 Early Development of Portland (1830s to 1890s)

The development of Portland began in the first half of the nineteenth century with the arrival of Euro-American explorers, fur-trappers, and traders. The then-undeveloped town site, with its ideal location between Oregon City and the Hudson Bay Company at Fort Vancouver, provided a rest stop for traders and Native groups on the west bank of the Willamette River (MacColl and Stein 1988:6; Roulette et al. 2004). In 1845, Asa Lovejoy and Francis Pettygrove, from Massachusetts and Maine, respectively, bought William Overton's Donation Land Claim (DLC), located on the west side of the Willamette River across from the Project Area, and platted the original sixteen 200-foot-square blocks that would later become the location of the City of Portland (MacColl and Stein 1988:6; Roulette et al. 2004).

Figure 12. 1806 Lewis & Clark Expedition Map, Showing Approximate Location of the Project Area (red shape) in Relation to Chinookan Villages



PATH: K:\I_5_BROADWAY_WEIDLER_INTERCHANGE\MXD\CULTURAL\ARCHAEOLOGICAL RESOURCES\FIG 12_1806 LC EXPEDITION MAP.MXD - USER: SETH.BERGESON - DATE: 12/12/2018

Portland's early growth depended heavily on the northern California gold rush of 1849. The rapid growth of San Francisco created a heavy dependency on Oregon's timber, and Portland, with its ideal location along deep waters, became the center for California trade (MacColl and Stein 1988:12; Roulette et al. 2004). Oregon's abundant and fertile land along the Willamette Valley also drew Californian prospectors who had been successful in the gold fields and were looking for ways to invest their money. Portland's rapid development in the 1850s was also attributed to the many businessmen, merchant capitalists, and real estate and land speculators who were attracted to the area's growing opportunities (Roulette et al. 2004).

Between 1870 and 1890, the population of Portland grew sixfold, from 8,293 to 46,385 (Roulette et al. 2004; Merriam 1971:35) and was linked to the extensive expansion of access and transportation across land and water with the creation of roads throughout the Willamette Valley, commercial steam navigation on the Willamette and Columbia Rivers, and the completion of the transcontinental railway in 1883. All these modes of transportation aided in creating a large shipping and manufacturing center for wheat, flour, lumber, and salmon for both foreign and domestic export (Roulette et al. 2004). An 1879 bird's eye view etching of the entire Portland area, with platted streets and commerce along the river banks, illustrates this growth and the space for further development (Figures 13-16).

Figure 13. 1879 Etching of Portland, Oregon

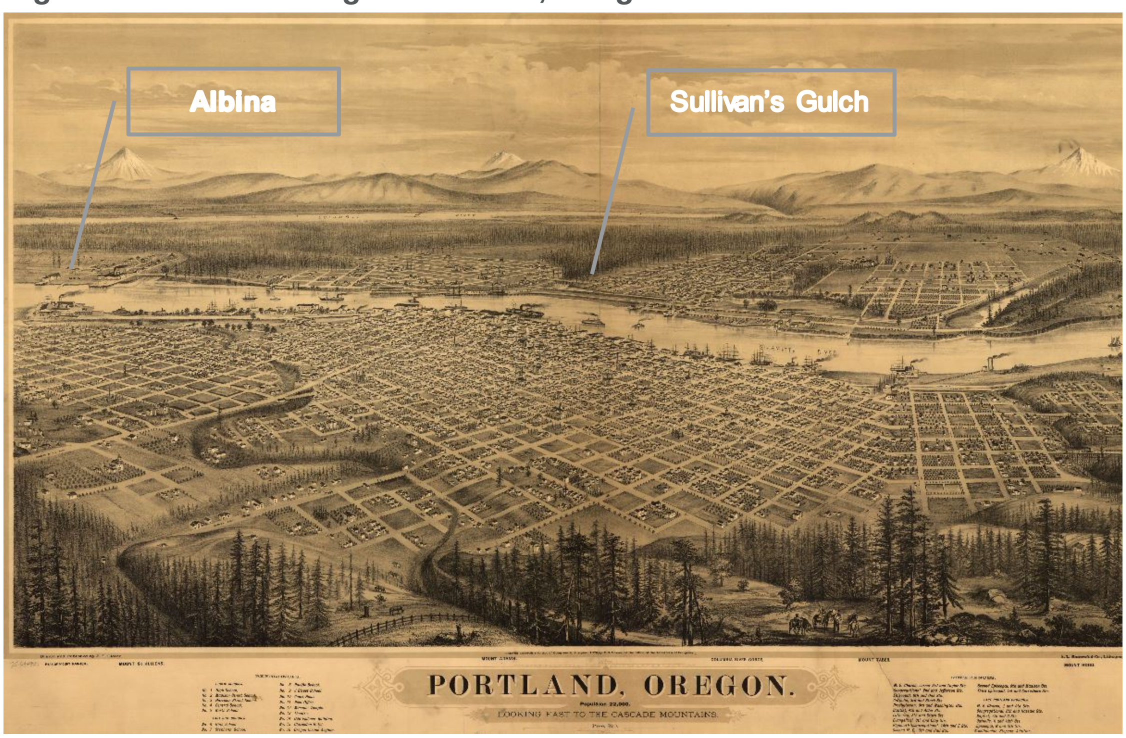


Figure 14. Close up of an 1879 Etching of Portland, showing Albina (northern end of the Project).

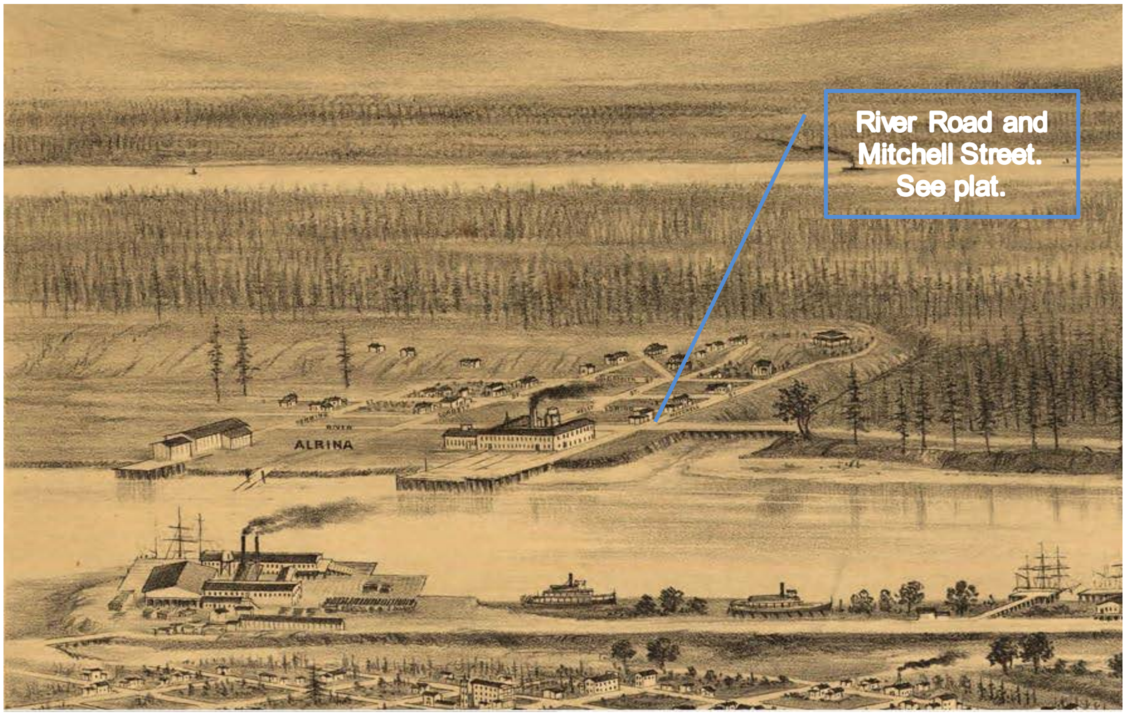


Figure 15. Close up of an 1879 Etching of Portland, showing central portion of the Project Area.

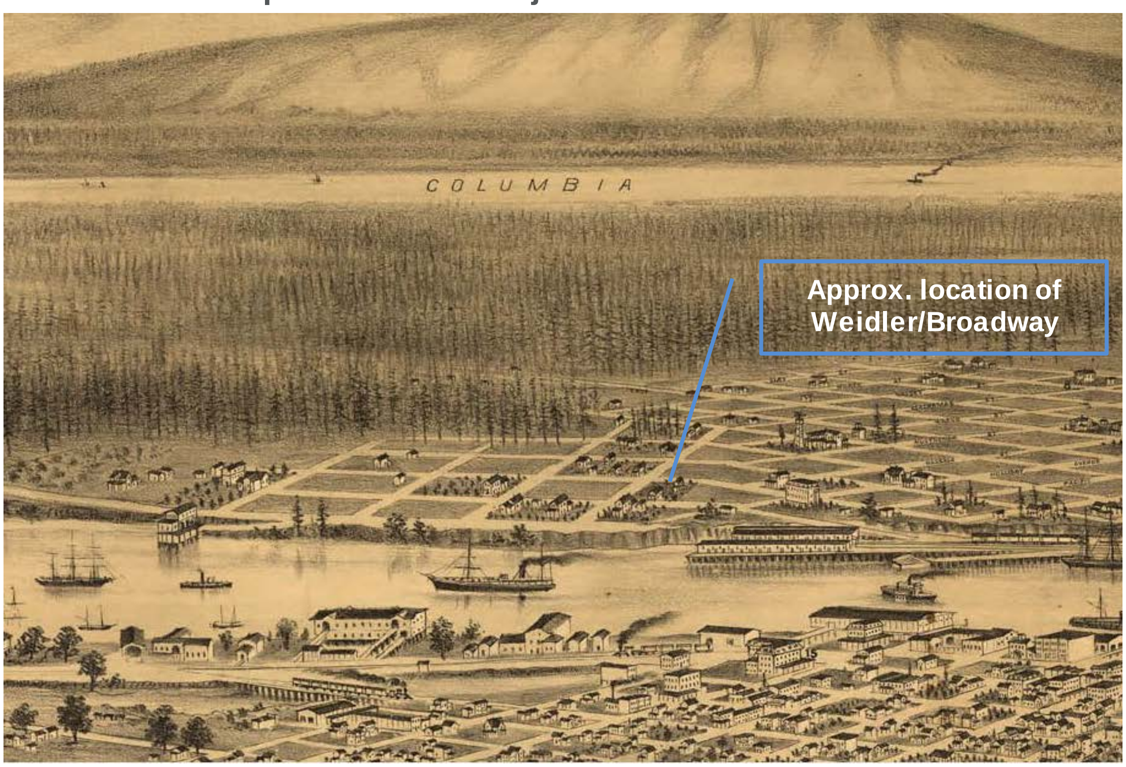
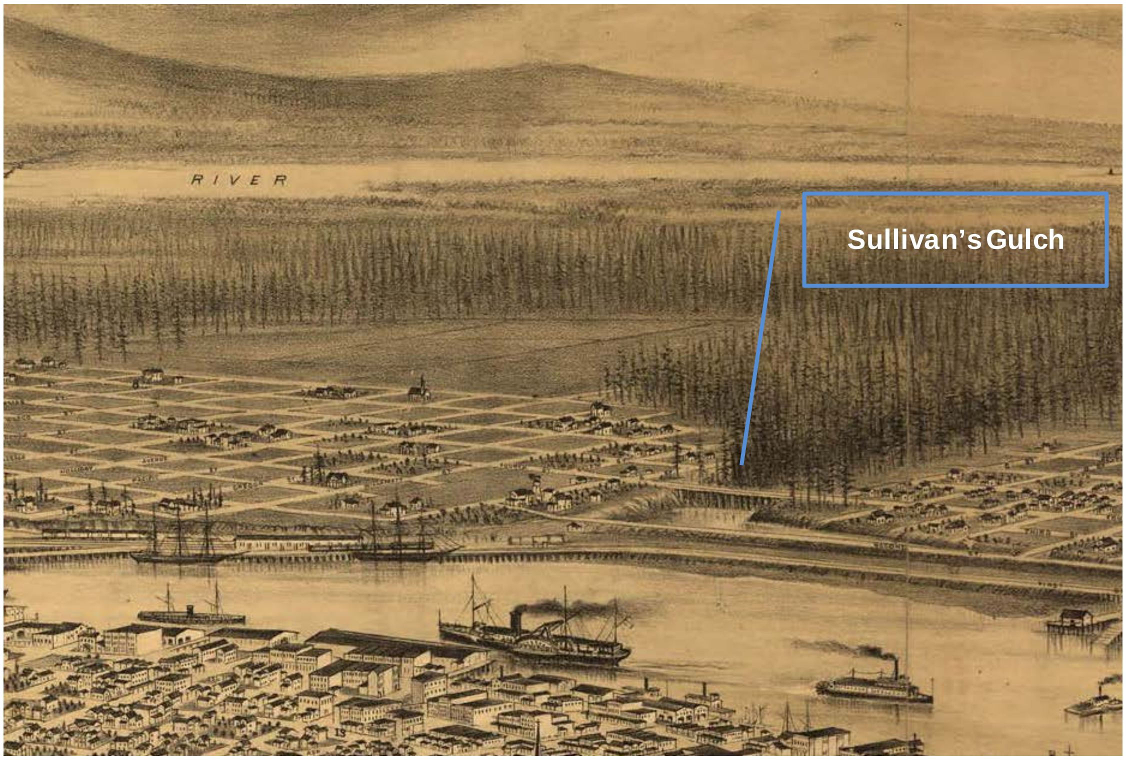


Figure 16. Close up of an 1879 Etching of Portland, showing southern end of the Project Area.

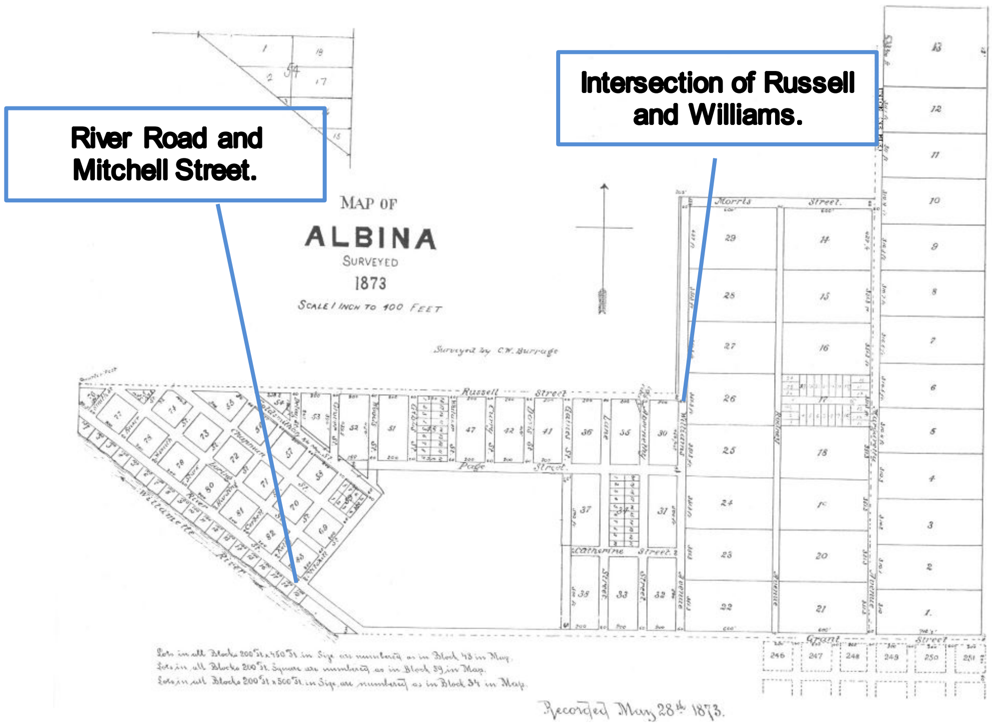


5.2.3.2 Development of Albina (1850s – 1890)

The historical development and settlement of Albina began in 1852 with the DLC made by James L. Loring. Located along the Willamette River, this L-shaped claim became "quite desirable due to the fact that it bordered transportation by the river frontage on the west side (Roos 2008:3)" of Portland. After Loring's death, Joseph Delay took ownership of the claim and later divided and sold it to Lansing Stout in 1864 and William W. Page in 1869 (Roos 2008:3). Stout in turn then sold his parcels to Edwin Russel and George H. Williams in 1870 (Roos 2008:4).

In 1873, Albina was officially laid out and its plat for a new town was filed with the County Clerk's office by Russell, Page, and Williams (Snyder 1979: 83) (Figure 17). Designed with the intent for riverfront industry, which exists today, Albina was poised to grow given its location and early investors, such as Ben Holladay, who platted a portion of the modern-day Eliot Neighborhood (Holladays Addition [1871]) north of NE Hancock Street. At that time of early investment, Albina lacked graded streets and was heavily forested (Comprehensive Planning Workshop 1990:3). Unfortunately, the investment in Albina did not pay off early given the financial crisis of 1873. By 1879, many of the unsold and foreclosed parcels that were left by Holladay and Russell were purchased by partners William Reid and James B. Montgomery. Montgomery later took control of Albina from Reid in 1880. Although Albina's development was slow during the 1870s, due in part to a collection of issues including its limited accessibility to Portland and unimproved roads, there was fundamental development that projected its growth into the 1880s, such as the Albina Ferry and hotel in 1874, existing shops, and houses (Roos 2008:9).

Figure 17. 1873 Albina Plat.



Beginning in the early 1880s, Albina once again was in a position to grow and did so with the help of Henry Villard, who “made large-scale investments in building projects in Portland, East Portland, and Albina” (Roos 2008:10). Villard’s investments in Albina included railroad shops and a freight terminal, as well as the Northern Pacific Terminal Company in 1882. In turn, this prompted the influx of Albina’s population from 100 in 1880 to 800 by 1883 (Roos 2008:11). Primarily inhabited by “second generation Germans, Swedes, Norwegians, and Danes” (Snyder 1979:83) at this time, Albina also experienced growth in its existing Irish community as the town as a whole witnessed its growth in local manufacturing facilities. Led by its strong waterfront presence, Albina’s boundary once again began to expand with the addition of the modern-day Boise Neighborhood through additions platted by Montgomery, Elizabeth Proebstel, and Daniel Abrams (Roos 2008:3). By 1885, Albina’s highly developed riverfront included grain warehouses, lumber sheds, and mills, as well as boarding houses and the Albina Hotel. Its downtown along N Russell Street and modern-day N Interstate Avenue consisted of hotels such as the Villard Hotel, the Union Hall Skating Rink, boarding houses, shops, grocery stores, a United States Post Office, and fraternal organizations, as well as one- to two-story street-facing dwellings (Sanborn Fire Insurance Company 1884, 1885).

In 1887, Albina’s industrial economy continued to grow, which in turn supported the demand for more housing as it became a premium. This influx in population, which reached 3,000 by 1888 (Comprehensive Planning Workshop 1990:5), included large Scandinavian, Polish, and German-Russians communities (Comprehensive Planning Workshop 1990:38). Along with the rise in new business, Albina became incorporated that same year. At this time, most of the parcels along N Russell and N Interstate Avenue were partitioned and developed with larger one- and two-story street-facing dwellings. Water pipes were installed under major roads, and new businesses that addressed social and domestic needs, such as grocery stores, butcher shops, bakeries, and drug stores, infilled the vacant lots along N Russell Street (Sanborn Fire Insurance Company 1887). This development was supported by recently established local utilities, such as Albina Water Company and Albina Light & Water Company, as well as fire hydrants on major streets, a power plant, and a network of power lines that served a new streetcar to Portland (Roos 2008:18).

In 1888, the Oregon Railway & Navigation Company constructed the new streetcar line and first Steel Bridge, which provided a direct link to Portland and connected Albina with its upper and lower communities. Additional steam-powered streetcars were installed throughout Albina during this time, linking it to St. Johns to the northwest and East Portland to the south. This linear extension of Albina prompted its annexation in 1889 and 1891 of large portions of unplatted farm and wilderness to the north, northwest, and northeast of the city, including modern-day Portland neighborhoods Overlook, University Park, Portsmouth, Kenton, Arbor Lodge, Piedmont, Woodlawn, Vernon, King, Humboldt, Sabin, Concordia, and Irvington (Reed 1915). Neighborhoods such as Boise (Central Albina [1887]), King and Sabin (Lincoln Park [1889]; Lincoln Park Annex [1891]), and Piedmont and Woodlawn (Piedmont [1889]) were quickly expanded, platted, and developed during this time of growth and annexation (Roos 2008:19-23).

By 1889, the northern part of East Portland was relatively undeveloped with low lands and ponds making up most of the western blocks along the Willamette River. Blocks where habitable were densely filled with one-story street-facing dwellings (Sanborn Fire Insurance Company 1889). Modern-day Lloyd was platted but had only a few one- and two-story dwellings as it served home to the Southern Pacific Railroad East Side Division Freight Depot and Oregon Railroad & Navigation Company’s railroads and passenger depot near the Willamette River (Sanborn Fire Insurance Company 1889). Downtown Albina also showed growth in the extension and development of some of its blocks, the continued development of Proebstel’s Addition to the east of N Russell Street with tenements and simple one-story street-facing dwellings one to quarter parcel (Sanborn Fire Insurance Company 1889). During this time of growth, “it was estimated that about 300 dwelling were built in the Albina city limits” (Roos 2008:22), and its population was around 6,000 persons. It was this continued growth, as intended, that led to the consolidation of Portland, East Portland, and Albina in 1891.

5.2.3.3 After Consolidation & Transportation Improvements (1891-1940)

Quickly after the great consolidation of the tri-cities, Portland grew to include 62,000 residents and 26 square miles, most of which was Albina (Figure 18). As it did prior to the consolidation, Albina, now a neighborhood of inner-eastside Portland, continued to grow and develop in parallel with its transportation systems. By 1891, Albina housed the terminus for the Oregon Railway & Navigation Company (ORNC) and was linked to Portland by way of the Morrison Bridge (1887) and Steel Bridge (1888). In 1894, Albina's roads were graded, gravel, or were plank roadways as on N Russell Street, N Interstate Avenue, and N Lewis Avenue (Hurlburt 1894). Graded and gravel roads were also common in most of the surrounding neighborhoods and northern East Portland. It was also during this time that nearly all of Albina's street names were changed to their existing names. Only N Russell, Page, NE San Rafael, Sacramento Street, and N Williams Avenue remain today (Ross 2008:5). But, like the rest of Portland's east side, it was the expansive network of street cars and trolleys that allowed for the growth in the housing and businesses (Comprehensive Planning Workshop 1990:16).

In 1904, Albina neighborhoods thrived given their central location and the streetcar lines, supported by the City & Suburban Railway Company trolley line that ran through Lloyd and Eliot, and Boise and Portland Railway Company and Oregon Water Power & Railway trolleys that ran north on what is today NE Martin Luther King Jr. Boulevard in 1904 (Thompson 2014). This improvement in transportation "spurred speculators to promote subdivisions for the middle-class" (Comprehensive Planning Workshop 1990:6). By this time, inner-eastside Portland north of the Burnside Bridge (1891) near the Willamette River was relatively unchanged from 1889. Lloyd experienced a slight increase in residential and commercial development including large one- and two-story street-facing dwelling and duplexes concentrated around N Larrabee Avenue to the southwest, NE Broadway to the north, NE 2nd Avenue to the east, and N/NE Multnomah Street to the south (Sanborn Fire Insurance Company 1901). Albina also continued to grow with much of its commercial development along N Russell Street (Sanborn Fire Insurance Company 1901).

By 1908, Lloyd was heavily residential with one- and two-story street-facing dwelling, two-story flats, and a row of stores on NE Holladay Street (Sanborn Fire Insurance Company 1908). At this time, Albina's blocks were partitioned and developed with one-, one-and-one-half-, and two-story street-facing dwellings, and commercial storefronts, churches, boarding houses along NE Russell Street (Sanborn Fire Insurance Company 1908). Much of the area bounded by N Gantenbein Avenue, N Page and Hancock Streets, and N Larrabee Avenue consisted of a deep wooded gulch (Sanborn Fire Insurance Company 1908). This influx in residential development was contributed to the residential boom of 1905-13, which was matched in 1922-28. Between the two periods of increased population, over 20,000 new bungalow-style homes and large apartment buildings were built in the area (Comprehensive Planning Workshop 1990:17). Collectively, the combination of transportation improvements and the proximity to the railroad industry continued to change the demographic and physical setting of the Albina neighborhoods. By 1917, "the Vancouver ferry was replaced by the Interstate Bridge" (Comprehensive Planning Workshop 1990:17), and the second and existing Steel Bridge (1913) and Broadway Bridge (1913) were completed, leading to the construction of more large, inexpensive apartment houses near the industrial area in lower Albina (Comprehensive Planning Workshop 1990:18).

Figure 18. Section of 1889 Portland, Oregon, Etching. Figure shows the City of Albina, with Oregon Railway & Navigation Company shops and yards in the foreground. The two bridges depicted are the Steel Bridge and Morrison Bridge. View is to the south.

5.2.3.4 The Emergence of the African American Community in Albina (1850s-1940s)

During this time of growth, Albina's ethnic boundaries became more defined and Portland's Black community, predominantly settled in downtown Portland, began to be forced out and steered toward Albina around 1910. The history of the African American community in Portland is one of continuous struggle and survival—beginning in 1857, voters approved a state constitution that did not allow slavery, but did allow the exclusion of "Black persons, slave or free, from Oregon" (Pearson 1996:5). At this time, a few African Americans lived in the state, but only as personal servants of Euro-American settlers (Pearson 1996:5-6). Oregon's "Black laws" prohibited any African American from owning property or voting, and until 1870, a 10-dollar poll tax was required to be paid for every Black person living in the state. In the following years, the African American population increased slightly as Portland became a significant terminal for railroad and shipping and positions of porters, waiters, dining car attendants, and ship attendants became in demand (Pearson 1996:6, 13).

At the turn of the nineteenth century, Albina underwent a significant transition as the community's ethnic landscape made up of mostly first- and second-generation Euro-American immigrants gradually began to shift with the migration of a small African American community that had resided next to Union Station on the west bank of the Willamette in northwest Portland. The land next to Union Station had become desirable to downtown businesses looking to expand; the development caused the displacement of around 800 African Americans (Pearson 1996:7). Albina, historically a working-class community, offered low rents and proximity to jobs in the railroad industry on the eastside of Portland.

This racial migration continued, contributing to the growth of the Black population in Albina, in neighborhoods such as Eliot and Boise (Gibson 2007:7). During World War I, the Black community of Albina continued to grow as the flow of immigrants slowed and work became plentiful in the railroad and service industries (Roos 2008: 33). With this increase in Black population also came a new Black community with "hotels, restaurants, and other businesses; and fraternal and social organizations and clubs" (Millner 2014:4).

After World War I, Albina's first zoning regulation in 1919 reshaped the community by allowing higher density housing and commercial use where previously residential uses prevailed (Roos 2008: 34). This change was accompanied by the impacts from the rise in automobile use. By the 1920s, affordable automobiles, rising labor costs, and improved roads lead to the downfall and demobilization of trolleys (Thompson 2014). By 1924, larger businesses such as the Mack International Motor Truck Corporation, manufacturing companies, and garages were located next to bridge landings, apartment buildings became more prominent, new two- and two-and-one-half-story street-facing dwellings were constructed, and parcels became more densely developed (Sanborn Fire Insurance Company 1924). In turn, this change in Albina from its early founding as an investment to its post-World-War I reputation of being "rough and rowdy (Roos 2008:34), allowed for the Black community to fill in the gaps. By 1920, Albina was home to "five black churches and two missions"

(Comprehensive Planning Workshop 1990:43), more Black businesses were established, and most of Portland's Black population now lived in Albina within a large community near the industrial waterfront bounded by N Broadway, N Larrabee Avenue, N Hassalo Street, and N Williams (formerly NE Wheeler Avenue) (City of Portland Bureau of Planning 1993:31), and along N Williams Avenue to the north (Gibson 2007:7) (Figures 19 and 20).

A small turning point came in 1926, when Oregon's "Black laws" were repealed, and African Americans were allowed the vote; however, this did little to change discrimination (Pearson 1996:8). Racial segregation was substantially enforced by the manipulation of the housing market by white politicians and businessmen by limiting African Americans to the most impoverished and run-down parts of the city. The Albina area contained some of the oldest and poorest housing in the city (Pearson 1996:4, 7). Despite these socio-economic impositions, the African American community grew through the 1920s and 30s and reshaped the existing built environment as Albina garnered Black churches, religious missions, and businesses to serve the community. It was also not uncommon to find small-scale businesses at individual homes as barbers, beauticians, and grocers erected additions to their homes to allow for neighborhood-scale commerce. This development continued into the 1940 and 1950s as Albina's Black population grew from 1,600 to 4,500 (Comprehensive Planning Workshop 1990:44) despite unwritten restrictions that placed barriers on Blacks renting property or patronizing stores and restaurants outside of Albina (Pearson 1996:5-8).

In the 1930s, the investment in the automobile started to reshape the Albina community. NE Martin Luther King Jr. Boulevard (Union Avenue) was widened in 1929, buildings were moved or cut back and demolished, and large department stores, auto-supply stores, and other businesses were constructed along major thoroughfares. By 1939, the City of Portland invested in the construction of N Interstate Avenue through Albina's old commercial part of town, removing original streets and economically suffocating retail businesses. However, like the Black community in Albina 20 years earlier, the N Interstate Avenue area was able to take advantage of the change and thrived through new investments and entertainment that made the area attractive to African American residents (Roos 2008:36).

Figure 19. Hill Block Building, 1910. Located on the NW corner of N Russell and N Williams.

Figure 20. N Williams Avenue Looking North, 1927. At the intersection of N Russell Street.

5.2.3.5 Post-War Changes and Development

The wartime industries in Portland fostered significant population growth and economic productivity. At the peak of wartime production (1943-1944), the federal government identified 140,000 defense workers in the city and 100,000 in the metropolitan area. This substantial growth stressed public facilities such as transportation, housing, schooling, and recreation (City of Portland Bureau of Planning and Sustainability 2009:47-48). The wartime population growth also significantly intensified racial tensions within the city as the Black population had increased from 2,100 in 1940 to 15,000 in 1945. The combination of Portland's housing shortage which had begun following World War I and discriminatory housing practices created a housing crisis for Black families who were limited to only certain types of housing located in specific areas (Oregon Black Pioneers & Moreland 2013: 53). In response to this crisis, the housing project of Vanport was constructed in 1942 in North Portland along the Columbia River to provide 10,000 temporary housing units. Vanport would develop to become the largest wartime housing project in the country and the second largest city in the state with 42,000 residents. It was also one of the few areas within the city that Black residents were allowed to settle due to discriminatory housing practices (City of Portland Bureau of Planning 1993:48).

Although intended as temporary housing for the war effort, approximately 18,000 residents remained in 1946. Two years later, Vanport was devastated by the flooding of the Columbia River, which destroyed all of the buildings and displaced all of its residents. Many residents left the Portland area, and those who stayed moved throughout the city, with the exception of Black residents who were confined primarily to the Albina neighborhood and the surrounding area (City of Portland Bureau of Planning 1993:86). Prior to the flooding, Albina was home to both white and Black families. However, as the Black population increased, the white population decreased with more than 21,000 whites leaving the Albina neighborhood for the suburbs or other Portland neighborhoods between 1940 and 1960 (Gibson 2007:7-8). The Albina neighborhood was divided into the lower and upper sections by Fremont Street. Lower Albina, consisting of the Eliot, Irvington, and Lloyd neighborhoods, was the center for the Black community during the 1940s and 1950s, during which time Albina's Black population grew from 1,600 to 4,500 (Comprehensive Planning Workshop 1990:44).

Throughout the 1960s, the close-knit Albina neighborhood grew in political activism as it became a center for civil rights activities. Black civic organizations and churches played a leading role in exacting change in the city and state's governance to gain improvements in education, employment, and civil rights for Black Oregonians. Unfortunately, from the 1950s and through the 1970s, urban renewal campaigns and an interstate highway destroyed dozens of residential and commercial blocks in Albina including the heart of the African American community at the intersection of N Russell and N Williams. Upper Albina, consisting of the Boise, Humboldt, King, Sabin, and Woodlawn neighborhoods, became the new center in the 1960s and 1970s as urban renewal projects and the construction of I-5 forced residents north.

Portland's postwar economy heavily relied on new industries such as metal working, chemicals, and electronics, benefitting from the abundance of cheap electricity. Fifty percent of the postwar population was working in industry, a substantial increase from 17 percent in the pre-war years (City of Portland Bureau of Planning and Sustainability 2009:52-53). The postwar economic growth was short lived as the economy became stagnant by the end of the decade. The weakened economy hindered commercial development efforts, as only a minority of voters supported plans for port expansion, downtown renewal, and a new civic center. In 1959, the city adopted a new zoning code than stressed protections for single family residential areas and discouraged mixed-use development.

Entering the 1960s, Portland's city planners aligned with the nationally accepted planning principles of viewing older inner city residential areas such as the Albina neighborhood as "blighted." Despite active and sometime thriving communities, city planners believed that these areas would be better off repurposed for institutional and commercial uses. At this time, inner-city areas were in high demand for a growing downtown office district, light industry, warehousing, and highway development (City of Portland Bureau of Planning 1993:103-104). Through the 1950s, 1960s and 1970s, Portland executed several Urban Renewal projects that significantly altered the urban landscape and irrevocably changed the Black community of North Portland. The major infrastructure projects conducted during this time include the construction of Memorial Coliseum (1960), Lloyd Center (1960), I-5 (1966), Fremont Bridge (1973), and the expansion of Emanuel Hospital (1970s). Hundreds of houses and businesses in the Albina neighborhood were demolished and residents displaced, occasionally multiple times and often with little compensation (Gibson 2007:14).

5.2.3.6 Reshaping Albina

Beginning in the 1950s, a number of large-scale developments mentioned above, occurred in the Rose Quarter that reshaped the Albina neighborhood. Several of these are discussed below in more detail.

Memorial Coliseum

In 1956, Portland voters approved the construction of Memorial Coliseum along the east bank of the Willamette River and the south end of the historic Black community. The construction of the sports complex required the demolition of multiple businesses and 476 homes (Gibson 2007:11). The City Planning Commission approved the clearance of residential houses in this area, after a land survey conducted of the Broadway-Steel Bridge area concluded that more than 60 percent of the housing was substandard (City of Portland Bureau of Planning 1993:104). The construction of the Memorial Coliseum not only resulted in the clearance of homes, businesses, and institutions, but also marked the beginning of more projects that would drastically alter the area in the decades to follow.

Lloyd

Lloyd in northeast Portland is bound by NE Broadway to the north, the Willamette River to the west, I-84 to the south, and NE 16th Avenue to the east. Today it is characterized by large facilities and office buildings such as the Rose Quarter, the Oregon Convention Center, and the Lloyd Center shopping mall. The district grew out of the vision of Ralph Lloyd, who in the early 1900s saw the sparsely populated area of the Holladay Addition as a potential eastside city center with shops, apartments, and government buildings. After earning millions in the oil industry in California, Lloyd purchased the Holladay Addition and 170 surrounding parcels in 1926, demolishing multiple houses for his envisioned development (Andersen 2015). His plans were spurned twice, by the Great Depression and then World War II. The construction of I-5 and I-84 were the catalyst for success, as they created the necessary access to the Lloyd area to sustain its operation, but he would die before seeing their completion (Anonymous 2017). Lloyd passed away in 1953, but his family pursued his vision and constructed a hotel in 1959 and the Lloyd Center shopping mall in 1960. When completed, the Lloyd Center was the largest mall in the country and one of the first covered pedestrian malls (Engeman 2014). The mall featured ample parking, which aided the development of office buildings in the surrounding district. In the mid-1990s, 17 blocks of Lloyd were purchased and redeveloped by an East Coast firm to provide additional housing and encourage biking and walking through the area (Andersen 2015).

Interstate 5

The development of I-5 was the result of state and federal efforts to improve transportation. Oregon roadways experienced excessive traffic loads with the development of industries and population growth during World War II. The combination of increased usage and minimal maintenance resulted in accelerated degradation (Kramer 2004:11). Aided by the 1956 Federal-Aid Highway Act, I-5 ran throughout the state with a portion, referred to as the Minnesota Freeway, going through the Albina neighborhood. Although multiple alternative routes were discussed, the approved location for the Minnesota Freeway was deemed to cause the least damage to property values and would be the most economical option for the city. Beginning in 1959, approximately 180 dwellings were demolished, and more than 400 residents were relocated for construction (Kramer 2004:35-36).

Fremont Bridge

Completed in 1973, the Fremont Bridge crosses the Willamette River, connecting I-405 and US-30 on the west side of the river to I-5 on the east side. The double-deck four-lane bridge terminates at the western end of the Albina neighborhood and Emanuel Hospital (now Legacy Emanuel Medical Center). Responding to public outcry over the simplicity of the design of the Marquam Bridge (1966), ODOT collaborated with the Portland Art Commission on its design (Pilorget 2015). The bridge features tall and expansive archways, making it the tallest bridge in the city and one of the longest in the country when constructed (Wheeler 2017).

Emanuel Hospital

Portland's Emanuel Hospital was established in 1912 in southwest Portland but relocated to the Albina neighborhood in 1915. The hospital underwent renovations and expansions in 1925, 1931, and 1952. Beginning in 1960, hospital administrators began discussions with Urban Renewal consultants and the Portland Development Commission (now named Prosper Portland) about using the Urban Renewal program to expand the hospital's campus in the Central Albina neighborhood (Parks 2016). From 1971 to 1973, the Portland Development Commission purchased and subsequently demolished 188 properties within the proposed expansion area. Seventy-six acres of land were cleared for the expansion with the expectation of the construction of a federally supported veterans hospital that never came to fruition (Gibson 2007:13). Large sections of this cleared land remained vacant for the proceeding decades.

MAX Line/Street Car

In September 1986, TriMet inaugurated the 15-mile Metropolitan Area Express (MAX) light rail line to Gresham (Thompson 2006:123). Additional MAX lines would open beginning in the early 2000s, with the Red, Blue, and Green lines providing access to the Rose Quarter and Lloyd. The Portland Streetcar system began operation in 2001 providing access between downtown and northwest Portland. In 2012, the streetcar system was expanded to provide access to the east side of the city including the Oregon Convention Center, Lloyd, and the Rose Quarter.

Rose Quarter

Thirty years after the completion of the Memorial Coliseum (now Veterans Memorial Coliseum), plans for a new multi-use arena and entertainment district on the same site were being developed. With the approval of the Rose Quarter by the Portland City Council in 1993, the groundbreaking of its center piece, the Rose Garden arena, followed later that year. The multi-purpose Rose Garden arena was envisioned as a state-of-the-art venue that would be the new home of the Portland Trailblazers basketball team (Baker 1993). A portion of the Veterans Memorial Coliseum parking lot was dedicated as the site of the new arena. The 43-acre Rose Quarter district was completed in 1995 and consisted of the Rose Garden arena (now the Moda Center), Veterans Memorial Coliseum, the Rose Quarter Commons, four parking garages, and the One Center Court office complex.

5.3 Previous Cultural Resource Investigations

A search of records was conducted in July 2017 using the online SHPO Geographical Information System (GIS) Archaeological Inventory Database to determine the extent of previously recorded archaeological resources and past cultural resources investigation within 1 mile of the Project.

5.3.1 Prior Inventories

The results of the SHPO records search indicate that nearly 40 cultural resource inventories have been conducted within a 1-mile radius of the Project Area (Table 4), nearly all of which were undertaken as compliance-related projects. Of the 39 investigations, three (Ellis 1977; Dumond and Pettigrew 1980; Ellis, Chapman, and Fagan 1999) have occurred within the Project Area. Ellis' survey includes the southern portion of the API that runs along I-84; Dumond and Pettigrew's survey includes a thin, bisected portion of the API from the approximate location of the Steel Bridge to the Oregon Convention Center; and Ellis, Chapman, and Fagan's survey includes the intersection of I-5 and I-84.

Table 4. Previous Cultural Resource Investigations within 1 Mile of the Project Area

Title of Report	Author/Year	Report No.
Cultural Resources Monitoring Report: PGE River Mile 13.1 & 13.5 Sediment Investigation, Portland, Oregon	Becker and Butler 2013	28933
Historic Properties Inventory and Documentation for the Union Pacific Railroad PORT. OR.57 Communications Tower	Boos and Larson 2017	28932
Historic Properties Inventory and Documentation for the Union Pacific Railroad PORT.OR.29 Communications Tower, Multnomah County, Oregon	Larson and Carpenter 2017	28723
Historic Archaeological Review for the Burnside Bridge Pier 1 Reinforcement, Portland, Oregon	Beckham and Minor 2016	28590
Archaeological Resource Survey Report POR Kerns, Portland, Multnomah County, Oregon	Baker 2015	27909
Memo Regarding Site 35MU253, Block 8L, Inadvertent Discovery of a Brick-Lined Cesspool	Smits 2015	27738
Data Recovery Excavation of a Historic Brick-Lined Cesspool Feature, Archaeological Site 35MU220, Portland, Multnomah County, Oregon	Smits, Chapman, and Dubois 2015	27737
Archaeological Monitoring and Site Testing for the Construction Phase for the Portland-Milwaukie Light Rail Project, Multnomah and Clackamas Counties, Oregon	Chapman et al. 2014	27121
Archaeological Survey for the Block 8L Mixed-Use Development, Portland, Multnomah County, Oregon	Smits 2014	26856
Cultural Resource Survey for the Proposed Multi-Unit St. Francis Park Apartment, Portland, Oregon	Ellis and Goodwin 2014	26802
Literature Review for the Flanders and NW 14th Telecommunications Facility (PD84) Project Area, Multnomah County, Oregon	Holschuh 2013	26094
Discovery of a Brick-Lined Shaft Feature, Archaeological Site 35MU220, Portland-Milwaukie Light Rail Project, Portland, Multnomah County, Oregon	Chapman et al. 2012	25333
Cultural Resource Survey for the Portland-Milwaukie Light Rail Project, Multnomah and Clackamas Counties, Oregon, Addendum Three: New Acquisitions and Easements	Blaser and Adams 2011	25098

Title of Report	Author/Year	Report No.
Cultural Resource Survey for the Portland-Milwaukie Light Rail Project, Multnomah and Clackamas Counties, Oregon. Addendum Two: Expanded APE Locations	Blaser et al. 2011	25097
A Cultural Resource Study for the Project Network and Supportive Housing Project, Portland, Oregon	Goodwin and Ellis 2012	24945
Letter Report: Stadium (PR48) Collocation Cultural Resource Survey	Sharma Ogle 2011	24684
Archaeological Survey for the Portland-Milwaukie Light Rail Project, Multnomah and Clackamas Counties, Oregon. Addendum One: Supplemental Survey Area Along Naito Parkway	Blaser and Punke 2011	24492
Archaeological resources Study of Six 2009 ITS Rural and Urban Improvement Work Areas, Clackamas, Clatsop, Multnomah and Washington Counties, Oregon.	Hale and Finley 2010	24021
Portland-Milwaukie Light Rail Project Archaeological Resources Reconnaissance Study	Reese and Boynton 2008	22958
NOAA Descriptive Report: Columbia River - Kelly Point to Sellwood	Dasler 2009	22741
Assessment of Damage to 35MU197, Portland, Oregon	Solimano 2009	22602
Archaeological Baseline Report E. Burnside/Couch Couplet Project Multnomah County, Oregon	Chapman 2008	22084
Portland Processing and Distribution Center at 715 NW Hoyt Street	Stegner 2008	22044
Letter Report: Archaeological Survey of Bridge 09254D (U.S. Highway 26 Eastbound Connection to Southwest Market Street at Mile Point 73.94).	Cabebe 2006	20862
Letter Report: Morrison Building Demolition, Archaeological Monitoring Report	Smits and Reese 2005	20486
An Archaeological Reconnaissance of the Westside Light Rail Transit Corridor Including Highway Improvements, City of Portland, Multnomah County and Washington County, Oregon	Keeler 1989	20027
Archaeological Exploration of Multnomah County's Morrison Property at SE 20th and Morrison, Portland, Oregon	Smits et al. 2005	19579
An Archaeological Plan for the Proposed Seismic Upgrade and Rehabilitation of the Pioneer Courthouse, Portland, Oregon.	Ellis 2003	18625
Field Reconnaissance of Alternate Routes for the Proposed Fiber Optic Line Between Portland and Seattle Project Cowlitz County, Washington and Multnomah and Columbia Counties, Oregon.	Iversen et al. 2000	17257
Fiber Optic Line Between Portland and Seattle Cultural Resources Assessment Clark, Cowlitz, Lewis, Thurston, Pierce and King Counties, Washington, and Multnomah County, Oregon	Murphy et al. 2000	17215
Cultural Resources Reconnaissance Survey and Inventory of the Portland Segment of Level 3's Proposed Fiber Optic Line from Portland, Oregon to Seattle, Washington	**Ellis et al. 1999**	**17115**

Title of Report	Author/Year	Report No.
Supplemental Site Investigations for the FTV Western Build, Oregon	Fulton and Fulton 1999	16745
Cultural Resource Inventory of the Proposed FTV Western Build Part 1: Oregon Volume I	Sharp et al. 1998	16744
Data Recovery at OR-MU-57, The U.S. Courthouse Site, Portland, Oregon	Roulette et al. 1994	14868
A Cultural Resource Inventory of AT&T's Lightguide Fiber Optic Route, Portland, Oregon	Sanders and Harder 1991	13281
Portland General Mail Facility Parking Structure: Archaeological Literature Search	Ellis 1986	7558
Letter Report: Report on the Archaeological Survey of the Banfield Transitway, Multnomah County	**Dumond and Pettigrew 1980**	**1519**
An Assessment of the Cultural Resources to be Affected by the Proposed Southeast Relieving Interceptor Project, City of Portland, Oregon	**Ellis 1977**	**312**

*Bolded text indicates surveys within Area of Potential Impact.

In 1977, David Ellis conducted a field reconnaissance survey for proposed new sewer lines located in northeast and southeast Portland. The reconnaissance survey was conducted from a point along I-84 near the Willamette River and headed southeast to the approximate location of the Eastmoreland Golf Course; no map was provided with the report, and the SHPO GIS outlines a much larger area, but stipulates not all of the large area was surveyed. The survey did not result in the identification of cultural resources (Ellis 1977).

In 1979, Richard Pettigrew of Oregon State Museum of Anthropology conducted an archaeological survey of the proposed Banfield Transitway (located along I-84), a commuter railway to connect Gresham with Portland. The linear project was proposed along the west bank of the Willamette River, crossing over the Steel Bridge, and continuing along I-84, connecting I-84 at the approximate location of 9th Street. The project was proposed in an already heavily built-up area that was covered with asphalt with no surface visibility and along the I-84 route that had previously been excavated for the Union Pacific Rail-line and construction of I-84. Much of the project area was not subjected to a surface or subsurface survey due to visibility constraints or previous construction disturbance. No cultural resources were identified as a result of the survey (Dumond and Pettigrew 1980).

In 1999, Archaeological Investigations Northwest conducted a reconnaissance survey for a proposed fiber optic line located from Portland to Seattle. This segment of the project ran along the bank of the Willamette before crossing under the Willamette River at the Fremont Bridge and continuing along the western bank of the Willamette to a point just south of Sauvie Island. Much of the survey occurred in built-up areas of Portland, including dense industrial areas on the east and west side of the Willamette. As a result, much of the reconnaissance survey was conducted by vehicle save for a few areas where pedestrian survey was possible. No cultural resources were identified during the reconnaissance survey (Ellis, Chapman, and Fagan 1999).

In summary, although there have been investigations overlapping portions of the API, these have been at a reconnaissance level because the amount of surface development has precluded more thorough ground investigations. Previous investigations have not resulted in the identification of archaeological resources, as discussed in the following section. A survey of the API does not appear to have been conducted prior to or related to the construction of the I-5 corridor in the 1950s and 1960s.

5.3.2 Previously Identified Archaeological Resources

Previously recorded archaeological resources within a 1-mile radius of the Project Area include 10 archaeological sites and two possible locations for archaeological resources, as noted on the SHPO GIS maps (Table 5). None of the previously recorded archaeological resources are located within the Project API.

The previously recorded archaeological sites consist of one historic cemetery (35MU126), two historic debris concentrations (35MU257 and 35MU197); four historic structural remains sites (35MU249, 35MU248, 35MU122, 35MU121); and three sites with historic structure remains with debris concentrations (35MU253, 35MU246, and 35MU169). The two noted site locations include the “Possible (location of an) Indian Camp” per Le Gilsen’s digitized SHPO topo map, and the location of the Portland’s “First Cabin” as identified from a 1911 article in *The Oregonian* that may yield cultural resources.

The majority of the previously identified sites are historic debris concentrations, historic structural remains, or sites that contain both components. With the exception of pilings (35MU248) and the remnants of a dock (35MU249) recorded on the banks of the Willamette River, the rest of the historic sites were discovered during construction phases or during the cultural survey phase with the aid of a mechanical excavator. Most of these historic sites date from the late-nineteenth century to the early-twentieth century. The historic cemetery site documents the Chinese section of the Lone Fir Cemetery.

Eligibility status for the sites include two that were recommended as eligible for listing in the NRHP in a previous archaeological investigation (the historic cemetery and a historic concentration [35MU197] were recorded after a looter was observed exposing historic-period archaeological deposits); two were recommended as not eligible (the pilings and dock recorded on the east bank of the Willamette River); and the remaining six sites recommended as undetermined.

Table 5. Previously Identified Archaeological Resources within 1 Mile of the Project API

Site No.	Site Class	Site Type	NRHP Status	Attributes	Distance from API	Date Recorded	Size	Report No.
35MU257	Historic	Historic Debris/Scatter Concentration	U	Site consists of glass, ceramics, metal, and one brick exposed during street construction in 2003. Site dates from 1870 to 1930 and is located adjacent to Union Station.	0.50 mi west	12/09/2014	50 x 40 m (164 x 131 ft.) Depth-unknown	--
35MU253	Historic	Historic Structural Remains, Historic Debris/Scatter Concentration	U	The site is located below a parking area covered in asphalt/compacted soil/gravels. Test pits excavated by mechanical excavator. Artifacts include bottles, ceramics, faunal remains, metal, glass and 10,000 bricks. Site date range is 1860 to 1950.	0.25 mi west	10/11/2014	64 x 57 m (210 x 187 ft.) Depth 200 cm	26856 27738
35MU249	Historic	Historic Structural Remains	NE	The site consists of a derelict dock resting on the bank/bottom of the Willamette River, only visible during low tide. The dock remains consist of water-logged wood tied together with metal rebar. This site is located in the approximate location as site 35MU248. It is unknown if the dock remnants of 35MU249 are associated with 35MU248 pilings.	0.25 mi south	04/21/2014	20 x 40 m (66 x 164 ft.)	--
35MU248	Historic	Historic Structural Remains	NE	The site consists of approximately 27 wood pilings that appear to be the remnants of a dock. Site date range is 1880-1960.	0.25 mi south	07/22/2013	100 x 25 ft.	28933
35MU246	Historic	Historic Structural Remains, Historic Debris/Scatter Concentration	E	The site is located beneath an existing 1911 constructed building that underwent renovations in 2011. The site contains approximately 10,000 artifacts consisting of bottles, ceramics, glass, brick, and faunal remains. The site dates from 1865 to 1911.	0.25 mi west	07/26/2011	100 x 90 ft.	--

Site No.	Site Class	Site Type	NRHP Status	Attributes	Distance from API	Date Recorded	Size	Report No.
35MU197	Historic	Historic Debris Scatter/Concentration	E	The site located within the district of China Town was recorded after historic-period archaeological deposits were observed by an archaeologist during digging by a looter in 2008. SHPO database notes that this could be a possible Chinese site.	0.40 mi west	10/28/2008	100 x 80 ft.	22602
35MU169	Historic	Historic Structural Remains, Historic Debris Scatter/Concentration	U	The site consists of Chinese ceramics, bottle and ceramic fragments, brick vault foundation, linear arrangement of bricks, and faunal remains such as mammal, bird, marine, and egg shell.	0.40 mi west	02/08/1993	30 x 15 m (98 x 49 ft.) Depth is 30 cm (12 in.) bgs.	14868
35MU126	Historic	Historic Burial/ Grave/ Cemetery	E	Chinese section of the Lone Fir Cemetery	1 mi southeast	01/19/2005	310 x 140 ft.	19579
35MU122	Historic	Historic Structural Remains	U	The site consists of a shaft. Excavation exposed remains of a building dating to late 19th century – includes wood pilings, concrete slab, basalt block wall, ceramics and bottles.	0.25 mi west	04/30/2004	Depth is 8 m, 90 cm (29 ft.)	--
35MU121	Historic	Historic Structural Remains	U	The site is a brick-lined cesspool constructed in 1870-1875 in association with the U.S. Post Office and Courthouse. It was abandoned and filled in 1903-1904.	0.60 mi southwest	04/23/2002	3 x 3 ft. Depth is 15 cm (6 in.) bgs	19579
Location of Portland's First Cabin	Historic	Historic Debris/Scatter Concentration (possible)	U	Site has not been discovered – this is marked as a potential site based on historic context. February 4, 1911, article in *The Oregonian* … "The first cabin on the original town site of Portland…was built by Francis Pettygrove in 1844 on the southeast corner of Front and Washington Streets"	0.25 mi west	unknown	unknown	--

Site No.	Site Class	Site Type	NRHP Status	Attributes	Distance from API	Date Recorded	Size	Report No.
"Possible Indian Camp**"**	Precontact	Precontact Camp	U	The site was noted on Le Gilsen's topo overlay maps at SHPO. Comments simply say "possible Indian camp." No site form or other information exists.	0.65 mi south	unknown	unknown	--

Notes: API = Area of Potential Impact; bgs = below ground surface; cm = centimeter; E = Eligible; ft. = feet; in. = inch; m = meter; mi = mile; NE = Not Eligible; NRHP = National Register of Historic Places; SHPO = State Historic Preservation Office; U = Unevaluated.

Most of the sites are located on the west side of the Willamette River. The closest sites to the Project Area are the pilings and dock located on the east bank of the Willamette River, just south of the Hawthorne Bridge.

5.3.3 Previously Identified Architectural/Above-Ground Historic Resources

The *Historic Resources Technical Report* (ODOT 2019) includes the results of the record search, field surveys, and evaluation of above-ground built environment resources located within the API. The API for Historic Resources expands beyond the API for archaeological resources to account for indirect effects such as noise.

5.3.4 Cemeteries

The Oregon Burial Site Guide lists three cemeteries within Township 1 N, Range 1 E, Sections 27, 34, 35. These include North Pacific Dental College, City Cemetery #1, and Emanuel Hospital. Additional online research indicates two of these cemeteries are not within or near the API. The North Pacific Dental College, which used cadavers for training students, had a building constructed in 1911 at 6th Avenue and Oregon Street (Byrd et al. 2001:723; Smith 1945). This building is about 0.5 mile east of the API; therefore, potential human remains affiliated with the college's use are not likely to have been impacted by I-5's construction. Similarly, City Cemetery #1 for pioneers (1847-1854) was located on the west side of the Willamette River in the area of Southwest Naito Parkway (Byrd et al.:704-705), well outside the API.

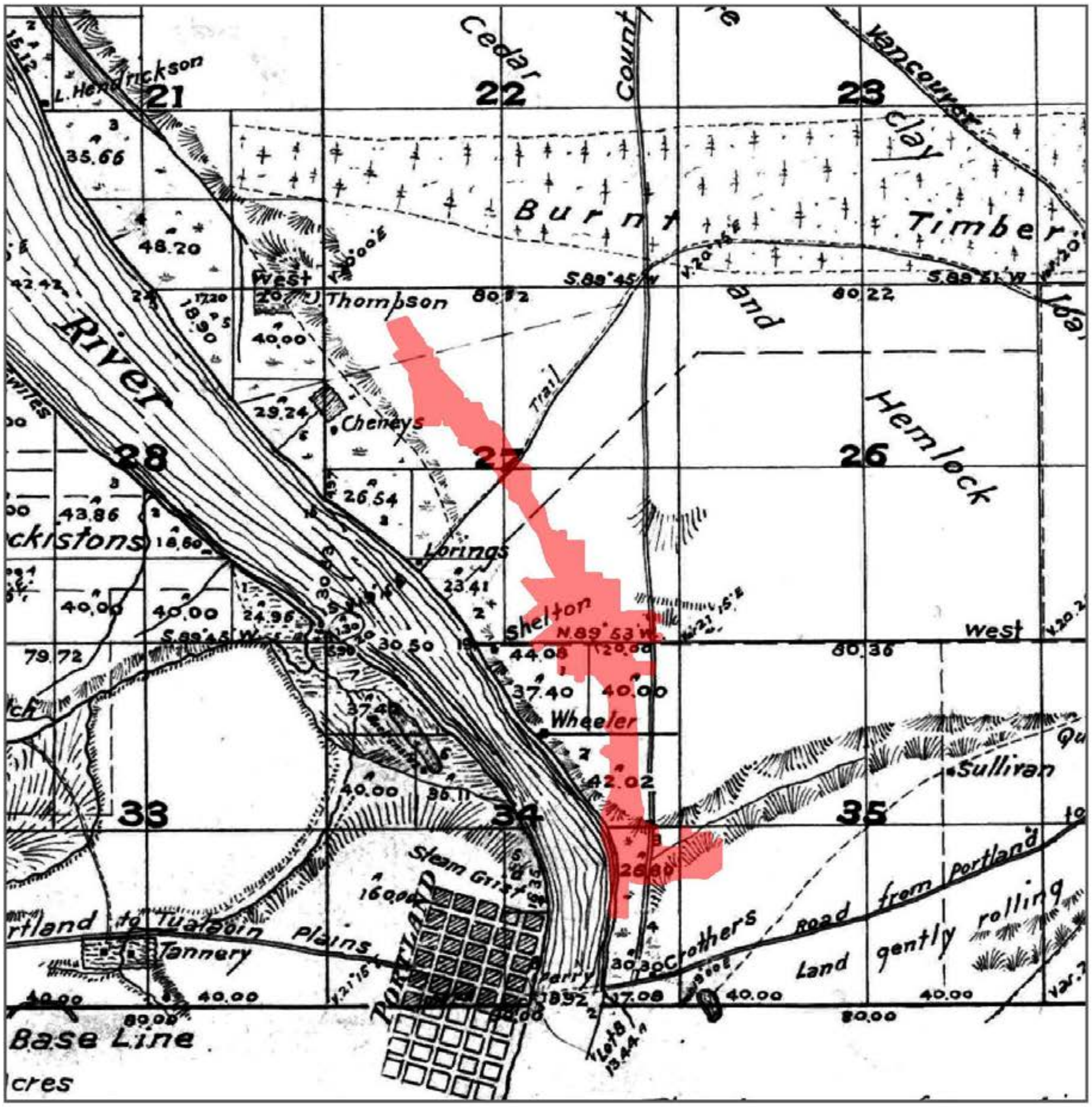
One site listed in the Burial Guide is within/adjacent to the API. Emanuel Hospital, located in Section 27 at N Commercial Avenue and N Stanton Street, operated a crematory for children who died at birth. No further information is provided about the location of the crematorium in the Oregon Burial Sites Guide (Byrd et al. 2001). Emanuel Hospital was sited at its current location at Stanton and Commercial Streets by 1915 (*The Oregonian* 1915), where it slowly expanded over the decades to its current configuration. The northern end of the API abuts Emanuel Hospital (now Legacy Emanuel Medical Center). The Sanborn map shows the historic boundary of the hospital about 800 feet east of the Project Area, with a block of residential dwellings in between what is now I-5 and the hospital property (Sanborn Fire Insurance Company 1924-1950).

5.4 Historic Maps Review

5.4.1 General Land Office Survey Plats

The earliest GLO map is dated 1852 (Figure 21). The townsite of Portland is depicted as a 45-block grid aligned with the Willamette River on the western bank. Steep hills and ridges and once extant lakes define the western side. No bridges exist over the Willamette River at this time. Land on the east side of the Willamette

Figure 21. 1852 GLO Map



Project Area and Area of Potential Impact (API) for Archaeological Resources

DATA SOURCES: USDI-BLM General Land Office (GLO) Cadastral Survey Plat - 1852, for Township No. 1 North, Range No 1 East, Willamette Meridian.
https://www.blm.gov/or/landrecords/survey/ySrvy1.php

FEBRUARY 2018

I-5 ROSE QUARTER IMPROVEMENT PROJECT

1852 GLO MAP
FIGURE 21

Oregon Department of Transportation

0 500 1,000 2,000 Feet
0 150 300 600 Meters

N

PATH: K:\I_5_BROADWAY_WEIDLER_INTERCHANGE\MXD\CULTURAL\ARCHAEOLOGICAL RESOURCES\FIG 21_1852 GLO MAP.MXD - USER: SETH.BERGESON - DATE: 12/12/2018

River, by contrast, is defined by low-lying hills and is devoid of lakes. The GLO map labels the east side as "gently rolling" and describes the soil as "good 2nd rate clay loam."

A few wagon roads and trails are depicted providing access across the landscape. These historic roads include the north-to-south aligned "Country Road" that connected Vancouver to Portland, portions of which overlap the API at the approximate present-day location of NE 1st Ave; the "Road from Portland to Sandy River," aligned southwest-to-northeast and located immediately south of the API; a "Trail" that ran southwest-to-northeast bisecting the northern portion of the API at the approximate present-day location of Lillis Albina City Park and leading to the river and to "Lorings" homestead; and a "Path from Portland to Vancouver" that formed a large semi-circle (USDI-BLM 2017).

Other features on the landscape include the natural feature of Sullivan's Gulch and a few homesteads mostly located adjacent to the eastern river bank. Sullivan's Gulch is located within the API at the southeastern end within the present-day location of I-84. Several rural homestead buildings were located in the vicinity of, but not directly within, the API at that time, including (from north to south), the Crothers, Wheeler, Shelton, Lorings, Cheneys, and Thompson residences (USDI-BLM 2017).

An 1860 DLC map shows the southern half of the API within Jacob Wheeler's DLC, the central portion in William Irving's DLC, and the northern half in Wendel and Jane Probstel's DLC (USDI-BLM 2017). In summary, the entire Project Area was settled by the early 1850s and formed part of large rural homesteads, with trails and wagon roads traversing the area.

5.4.2 United States Geological Survey Maps

The earliest USGS map dates to 1897 (scale 1:62,000) and shows a rapidly developing Portland with dense gridded blocks found within the API (Figure 22). Four bridges and a ferry crossing span the Willamette River, with the ferry crossing located west of the API, further north of the present-day location of the Broadway Bridge, at the approximate location of the platted townsite of Albina. The ORNC Rail line (Union Pacific) is evident along Sullivan's Gulch and along the east bank (USGS 2017).

The 1940 USGS map (scale 1:62,500) shows a densely built-up environment with a few arterial roads, namely Highway 99E, the present-day location of Martin Luther King Jr. Boulevard, and Highway 30, the present-day location of the Burnside Bridge and Sandy Boulevard. Bridge locations are at their present-day locations (USGS 2017) (Figure 23).

Figure 22. 1897 USGS Map

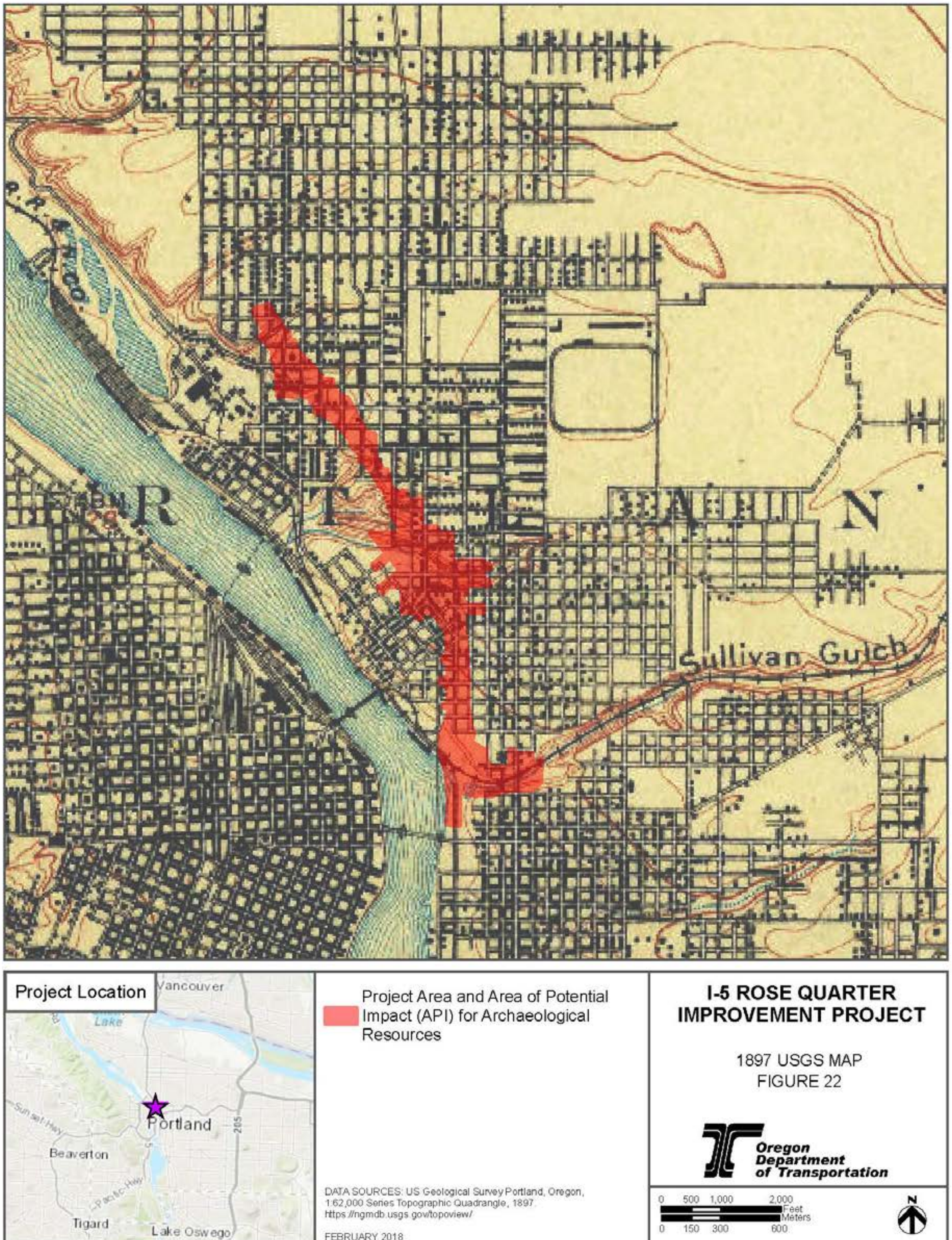
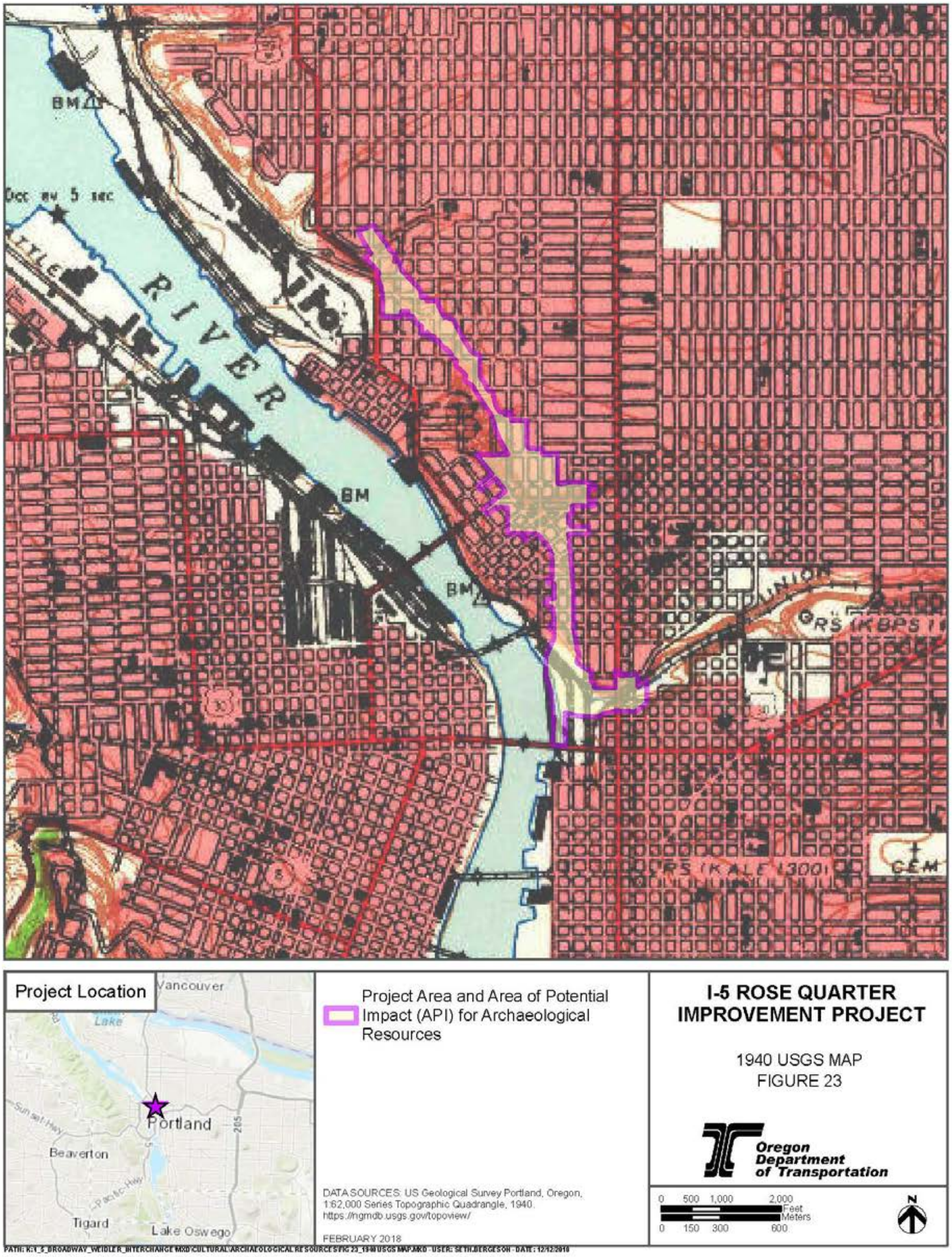


Figure 23. 1940 USGS Map



The 1961 USGS map (scale 1:24,000) shows much the same density as the 1940 map. However, significant changes include the development of industrial shipping areas along the east and west banks of the Willamette River, the widening of roads to create arterial roads such as Broadway, Martin Luther King Jr. Boulevard, and Highway 99W, which crossed over the Steel Bridge. New construction included Highway 80 (the Banfield, the predecessor to I-84), the demolishing of house and gridded blocks to make way for the Memorial Coliseum located adjacent to the west side of the Project Area, and the Lloyd Center, located to the east (USGS 2017).

The 1975 USGS map (scale 1:24,000) continues to show an extremely dense built-up environment, much the same as the 1961 map. I-5 and I-84 have both now been constructed with their on- and off-ramps, and the area for the future Rose Garden Arena/Moda Center, adjacent to the Memorial Coliseum, has been cleared (USGS 2017). The 1990 USGS map (scale 1:24,000) shows that the Moda Center had been constructed, and the gridded block area for the construction of the Convention Center had been cleared (USGS 2017).

5.4.3 Sanborn Fire Insurance Maps

Sanborn Fire Insurance Maps were reviewed for the years 1901 and 1924-1950. The Sanborn maps were georeferenced to modern aerial imagery to demonstrate those areas where historic buildings and features were located prior to I-5 construction (Figure 24). The maps show the I-5 corridor was a mix of industrial, commercial, and residential use. Over 100 historical buildings and features are mapped within the Project Area's permanent impact footprint. Examples of the types or resources are listed in Table 6. Many of these were likely removed as a result of I-5's construction. Appendix B provides a detailed map set with these features.

5.5 Aerial Photograph Review

Aerial photographs were reviewed for the Project Area depicting pre-, during, and post- I-5 construction conditions. Of importance for archaeological resources especially are the oblique angle photographs depicting massive cut and fill construction methods (Figures 25-30). The 1955 plan view aerial photograph also depicts the buildings that were soon to be removed for construction of the interstate (Figure 31). It is unclear how the buildings were removed or if foundations may still be present beneath the interstate in areas less affected by cut and fill construction activities.

Figure 24. Example of Sanborn Fire Insurance Map Georeferenced to the Project Area

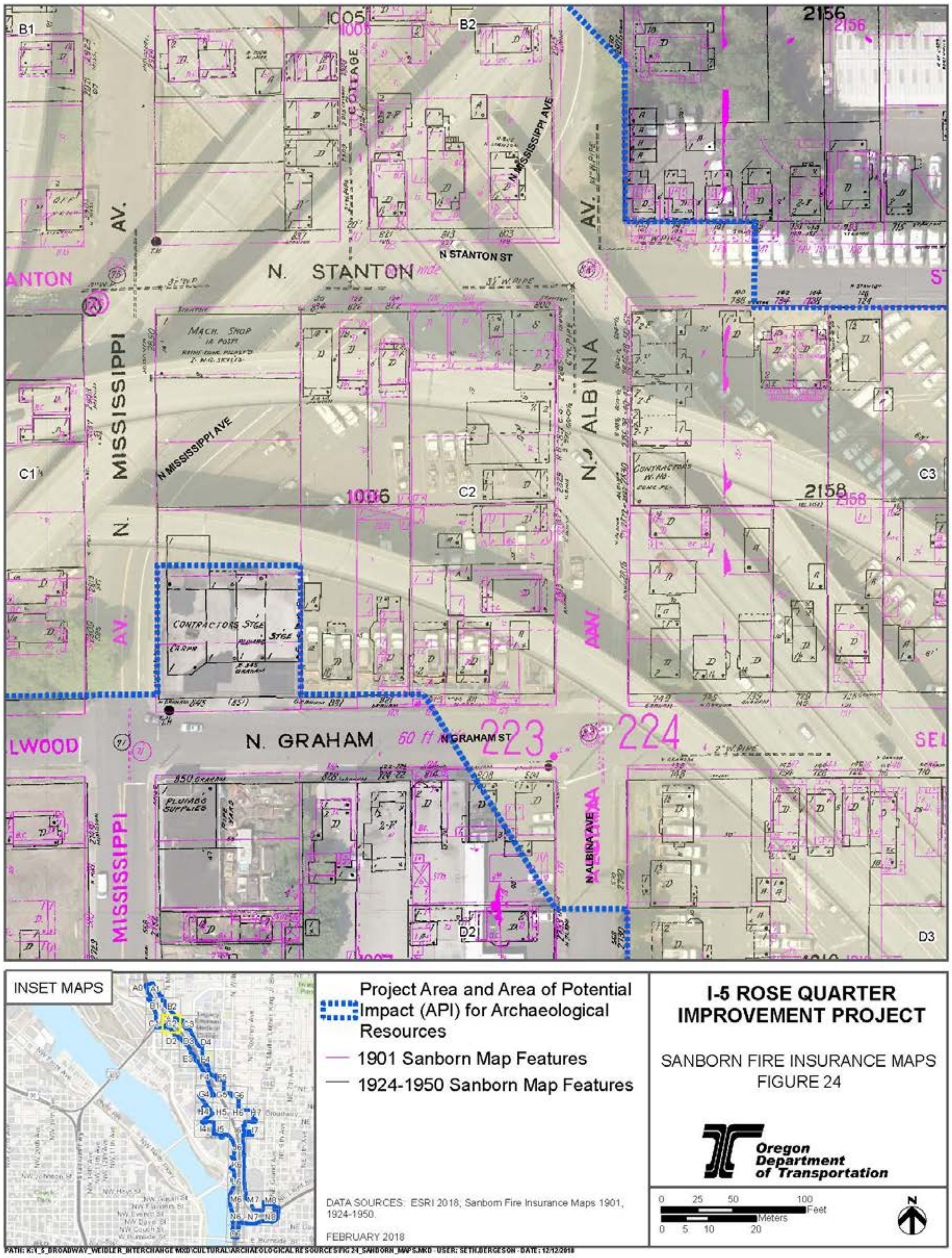


Table 6. Examples of Types of Historic Buildings and Features Present on Sanborn Maps

Category	Examples on Sanborn Maps within the Permanent Impacts Area
Residential	• Dwellings with garages and accessory buildings • Apartments/Flats
Commercial/Industrial	• Warehouses (Contractor's, Machinery, etc.) • Machinery Shops • Machinery Storage • Cabinet Shop • Electrical Shop • Metal Processing/Welding • Metal Signs and Painting • Greasing Shop • Upholstery Shop • Cleaning Shop • Auto Glass Repair • Bike Repair • Scientific Research Co. • Furniture Shop • Drug Store • Gas and Oil Station • Trailer Manufacturing • Dorhman's Hotel Supply Company • International Harvester Company Sales • Eastside Union Passenger Depot • South Pacific Warehouse
Other (Social/Religious/Recreation)	• Dania Hall (Kerby and Russell Streets) • Church of God (Wasco and Multnomah Streets) • Vancouver Baptist Church (Hancock and Vancouver Streets) • Club Rooms (Cherry Court) • Miniature Golf Course and Lodge (Halsey)
Infrastructure	• Several sets of railroad tracks • Wooden approach to Steel Bridge • Water and sewer lines

Figure 25. Location of the Memorial Coliseum Site – Pre-Construction (photo dated 1948). View is northwest.

Figure 26. Location of the Memorial Coliseum – During Construction (ca. 1955). Photo shows houses and streets from Figure 25 demolished. View is to the northeast.

Figure 27. Southern Part of the Project Area Pre-I-5 and I-84 Construction (ca. 1950s). Union (MLK Jr) and Grand viaducts are visible spanning Sullivan's Gulch. View is to the northwest.

Figure 28. Cut and Clearing for I-5 in the Central Part of the Project Area (photo dated 1962). Overpasses for Broadway and Weidler are in the middle ground. View is to the northwest.

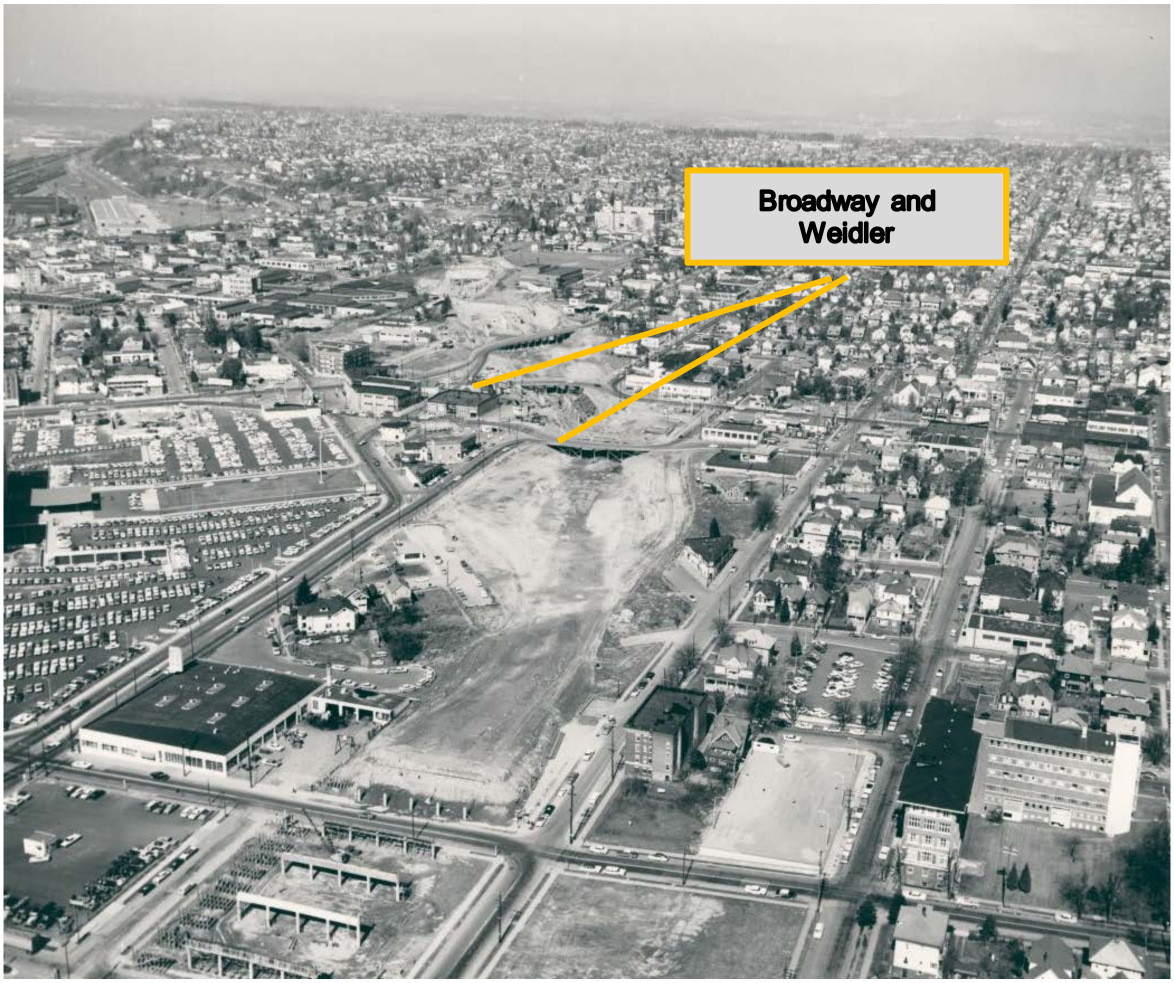


Figure 29. Cut and Clearing for I-5 in the Northern Part of the Project Area (photo dated 1962). Overpasses for Broadway and Weidler are in the middle ground. View is to the southeast.

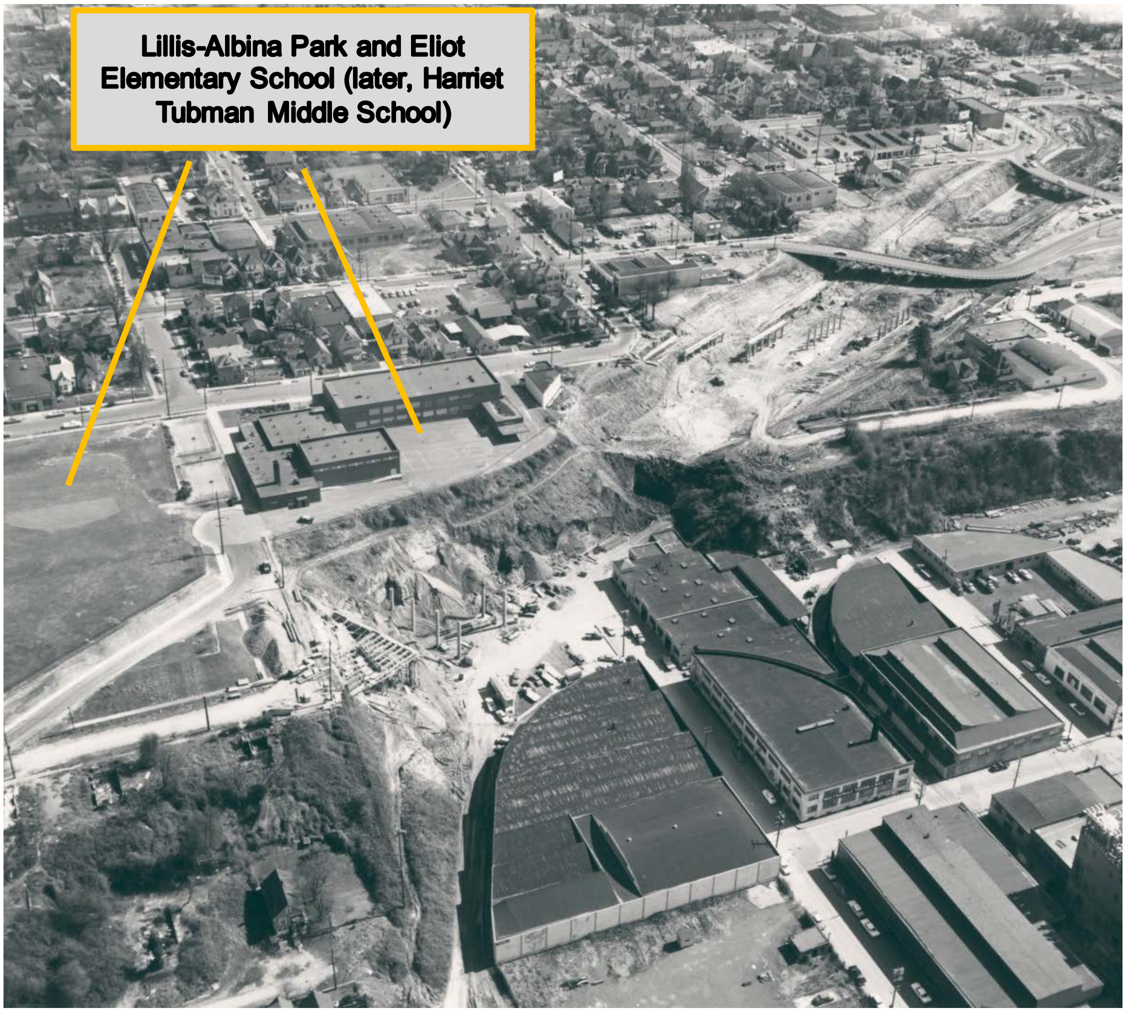
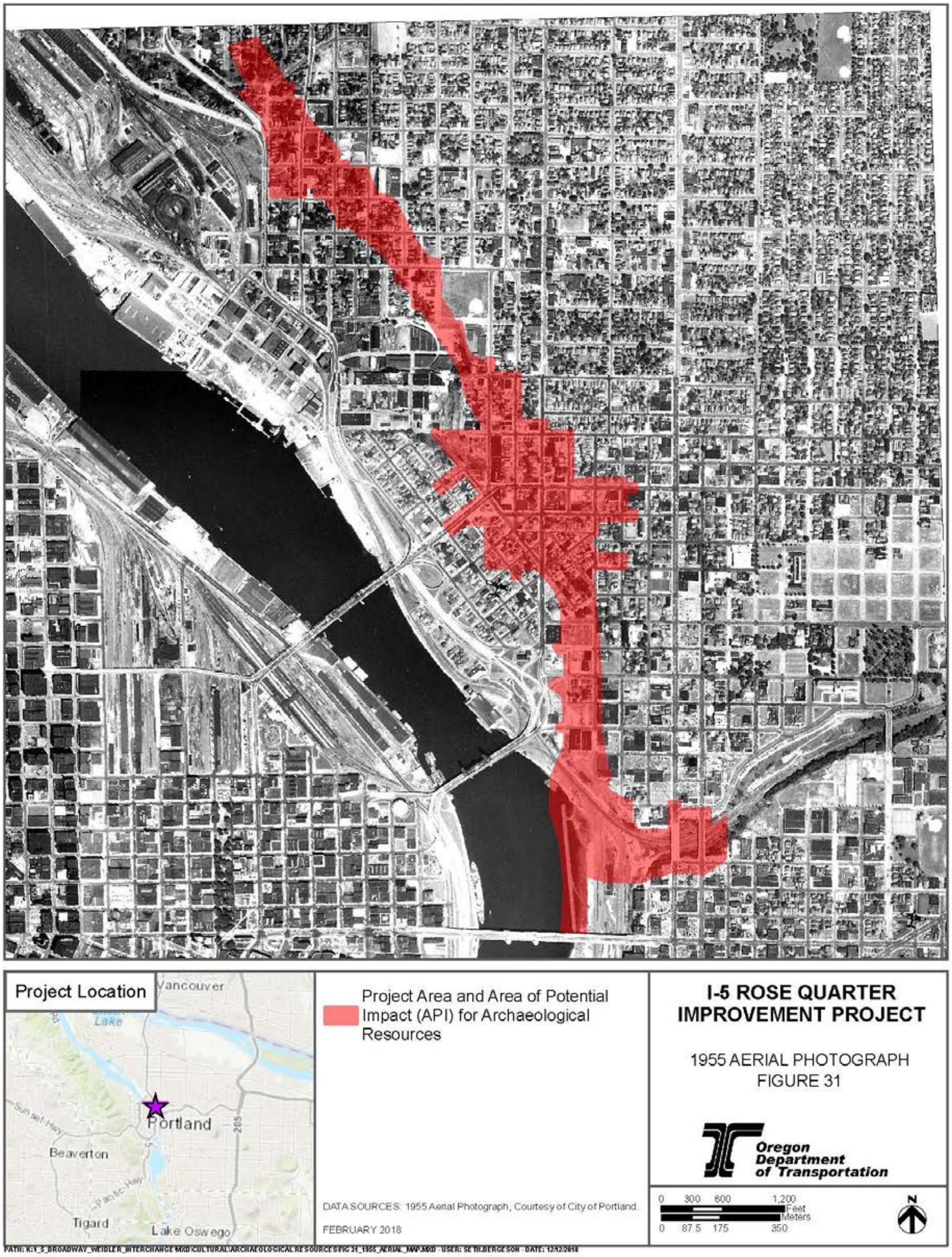


Figure 30. Completed I-5 Corridor through Project Area (photo dated 1964). Weidler and Broadway overpasses in the foreground, and Williams, Vancouver, and Flint overpasses in the middleground. View is to the northwest.

Figure 31. 1955 Aerial Photograph



5.6 Literature Review Summary

The Project Area is located on the east bank of the Willamette River, an important resource for the Upper Chinookan Multnomah and Clackamas people and early to mid-nineteenth century Euro-American settlers. Although no specific ethnographic-era villages are reported within the Project Area, Chinookans relied on a seasonal round of fishing, hunting, and plant gathering and based their winter villages along the tributaries and major drainages of the Portland Basin, and the Project Area would have been part of the usual areas traversed and utilized by Chinookans and other groups on a temporary, if not permanent, basis. For the early Euro-American settlers, an 1852 GLO map depicts numerous homesteads along the eastern banks and terraces of the Willamette River and a few roads and trails, which may have had their origins in Native American travel routes, traversing the landscape, all of which appear to begin or end at the river's edge; two of these routes, including a trail and a wagon road, were located within the Project Area.

Throughout the nineteenth and twentieth centuries, the area underwent dramatic changes to the landscape in the form of construction of residential, commercial, and industrial buildings and structures along with infrastructure such as roads, bridges, rail lines, viaducts, and sewer and utility lines. This development required the filling in of gulches, streams, and depressions, extensive grading, and cutting into the landscape. The built environment has been built, demolished, rebuilt, moved, improved upon, and abandoned, only to begin the cycle again. Residential areas have been leveled and turned into commercial and business districts. Large arterial roads have been cut into the landscape, taking with them any building in their path, and street car lines have been laid, removed, and reinstalled over the subsequent decades.

The Project Area has not undergone an intensive-level archaeological survey because of a lack of ground visibility due to paving, roads, and buildings. Therefore, no previously recorded archaeological resources have been recorded within the Project Area. SHPO records indicate that historic archaeological resources have been recorded within a mile of the Project Area; these sites have been observed in conjunction with construction activities that had penetrated the asphalt/paving layer. Encountered historic sites have included structural remains and features and debris scatters and concentrations. The lack of precontact archaeological resources does not indicate that they do not exist, but rather a lack of survey and systematic investigation prior to the rapid development of the Portland area that has obscured or obliterated evidence for earlier precontact occupation. A summary of the soils and geomorphic data and other predictors of archaeological site probability are discussed in more detail in the following section.

5.7 Archaeological Sensitivity Analysis

This section summarizes baseline archaeological sensitivity based on a desktop analysis. Areas with a high likelihood for buried archaeological resources are designated as High Probability Areas (HPAs). A Testing and Treatment Plan is also presented.

5.7.1 Methods for Identification of High Probability Areas (HPAs)

No previous subsurface archaeological identification efforts have occurred within the API, and no archaeological resources have been identified to date. The potential for encountering archaeological material during construction is variable due to the intensive historic and modern use of the area which has resulted in disturbances to the ground surface. The depth to which intact archaeological resources may be found is dependent on several factors including geomorphology and soils, the depth to which historic and modern cut and fill has occurred, and the depth to which the Project impacts would occur.

To address HPAs, the Project team created a GIS dataset with baseline environmental and historical data as indicators of sensitivity, including the following:

- Geomorphic surfaces and soils mapping. This provides a general overview of the distribution and depth of Late Pleistocene and Holocene soils, which is important for understanding potential depth of precontact human occupation, as well as changes to the landscape that may be observable via subsurface profiles.
- Ethnographic sites data. The intent is to identify specific place names or villages known in the vicinity of the API and flag those as HPAs. No specific ethnographic resources (i.e., Chinookan villages or specific placenames) were identified within the Project Area as a result of the literature review. Proximity to the Willamette River indicates an overall high probability that the API would have been used by local Chinookan populations and their predecessors prior to Euro-American settlement, for transportation (trails), resource procurement (fishing, hunting, and gathering activities), or temporary camps (habitation); however, this is equally true for the entire API. Therefore, ethnographic sites are not a mapped sensitivity indicator.
- Historic maps. The purpose is to note any historic features such as buildings, roads, trails, and cemeteries and flag these areas as HPAs. GLO, USGS, and Sanborn maps were geo-referenced to highlight specific buildings and features overlapping the Project Area. The Sanborn maps in particular illustrate diachronic development changes over several decades, at a small scale, and are the focus of defining HPAs for historic archaeological resources.
- Aerial photographs. Aerial photographs showing extensive cut and fill activities associated with I-5’s initial construction were used to address changes over time and to refine areas of extensive ground disturbance. Plan view aerial photographs of pre-I-5 construction conditions were compared to determine locations of buildings no longer present. Oblique aerial photographs (1950s-1960s) were georeferenced to modern imagery. Areas where soils were removed (cut) and placed (filled) during the construction of I-5 (visibly apparent to at least 10 feet) were delineated (Figures 28-30).

Collectively, this dataset was used to define HPAs. To help further define HPAs in the future, this initial dataset would be compared with the following Project-specific details, as available:

- ODOT past geotechnical/environmental boring investigations and as-built construction engineering design plans for I-5. These records may delineate depth of disturbance and depict buildings that were removed when the highway was built. Deep and even shallow borings may provide information about the vertical extent and nature of fill materials to help guide archaeological expectations and recommendations. For example, the locations of past geotechnical investigations, as summarized in Section 5.1.4, have been added as a GIS layer to the HPA model so that future assessments may incorporate the findings at these specific locations.
- Detailed engineering design plans for the Project. To help determine where impacts to potential cultural resources are likely to occur, the vertical API in relation to delineated horizontal areas where significant ground disturbance would occur must be defined.

5.7.2 Results

Based on the reviewed data sources, much of the API has the potential for buried archaeological resources, especially in areas beyond the original I-5 cut-and-fill construction corridor. The Project has a much higher probability of encountering historic archaeological materials than precontact-era resources because of the longstanding historic and modern developments that have affected surface and near-surface soil deposits where older sites may have been located.

Precontact and historic sites have different sensitivity indicators. For example, the geologic record indicates that precontact-era sites, if present, would be expected to occur within stable surfaces and soils that developed during the Holocene. Within the majority of the API, this surface is within the upper 2 to 3 m (7 to 10 feet) of the Late Pleistocene Missoula flood deposits (Geologic Map Unit Qff) (Madin 2009; Beeson, Tolan, and Madin 1991). Evidence for more deeply buried precontact sites would have been scoured by the multiple flood episodes prior to current landform stabilization during the Holocene, and limited soil development has occurred on this surface since that time. Therefore, there is a moderate probability for precontact sites to occur within undisturbed upper horizons of this geologic unit. However, the presence of Missoula flood deposits is not a reliable sensitivity indicator for the presence or absence of historic sites, which could occur tens of feet below ground. Most historic and modern development has nonetheless occurred on this geologic surface. Overall, this predictive indicator is keyed as “high” because of the likelihood for historic sites.

Conversely, pockets of urban soils (Artificial Fill; Geologic Map Unit Qaf) are present and are described as “sand, silt, and clay fills with subordinate amounts of gravel, debris, and local concentrations of sawdust and mill ends” (Beeson, Tolan, and Madin 1991), the latter materials likely indicating historic industrial waste. These are areas where precontact sites are not likely to occur, but where historic materials may be present. The expectation is that cultural materials would likely be from a disturbed context and would therefore not likely meet NRHP eligibility criteria; however, it is still possible for intact features to have been buried within, or surrounded by, artificial fill. Therefore, the delineated Artificial Fill zones are characterized as low probability for precontact sites but moderate probability for historic materials. Overall, this predictive indicator is keyed as “moderate” probability.

Historic maps demonstrate numerous buildings, features, and infrastructure were formerly located throughout the API prior to I-5’s construction; evidence for some of these buildings and features associated with residential and business development of Albina is likely to exist subsurface and use and redevelopment over the past century have likely created multiple layers of historic archaeological resources. However, because historic development affected surface soils, and because precontact sites are predicted to have occurred within this same landform at relatively shallow depths, precontact sites have a much lower probability of being encountered where historic development has occurred. Overall, this predictive indicator is keyed as “high” probability because of the potential for historic archaeological resources.

The cut and fill footprint of I-5 as it was being built in the late 1950s to early 1960s is visible in historic aerial photography. In some areas, this disturbance has clearly affected the top 10 feet of the native landform. As discussed in relation to geologic map units, landforms where previous disturbances have affected the top 10 feet of the native soil profile in the API would be characterized as low probability for precontact resources. The cut and fill construction methods also indicate a low probability for intact historic sites within this zone. Therefore, the predictive indicator of the cut and fill footprint, as conservatively drawn from oblique and plan aerial photographs, is characterized as “low” probability. Historic ODOT highway maps and construction records may help further refine or expand this area.

Figure 32 is a compilation of sources and presents the overall predictive ratings as summarized here and in Tables 7 and 8:

- **Low** = Areas deeply cut and filled and disturbed by I-5 construction. While inadvertent discoveries of secondarily deposited cultural materials are possible in this area, the likelihood of intact, NRHP-eligible archaeological historic properties being present and unaffected by the previous interstate construction footprint is low. Approximately 7 acres (6 percent) of the API are characterized as low probability.

Figure 32. Probability Map for Archaeological Resources

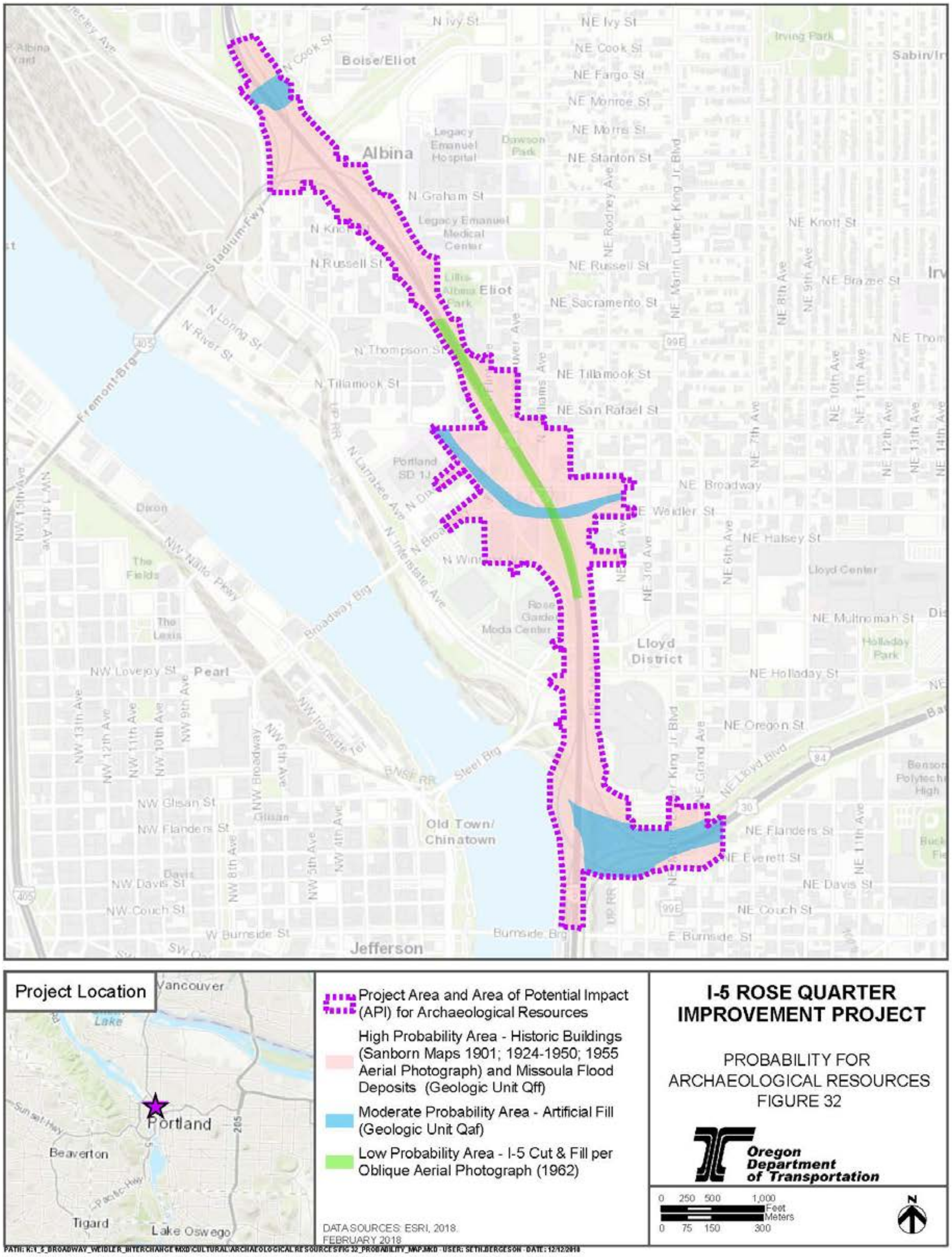


Table 7. Total Acreage of High, Moderate, and Low Probability Areas for the Project Area, Permanent Impacts Area, and Temporary Impacts Areas

Areal Extent	Total Acres	Acres High Probability Areas	Acres Moderate Probability Areas	Acres Low Probability Areas
Project Area (Total API)	127	100 (78%)	20 (16%)	7 (6%)
Permanent Impacts Area	47	36 (77%)	4 (8%)	7 (15%)
Temporary Construction Impacts Area	3	3 (100%)	0	0

Notes: API = Area of Potential Impact

- **Moderate** = Areas of Artificial Fill (Geologic Unit Qaf) are present, which will likely have historic materials, but these materials are expected to lack integrity. However, subsurface conditions have not been determined and intact features beneath or surrounded by fill, while not probable, are possible. Approximately 20 acres (16 percent) of the API are characterized as moderate probability.
- **High** = Areas where historic buildings, infrastructure, and features were formerly or are currently present based on historic maps; these also primarily overlap the Missoula Flood geomorphic surface (Geologic Unit Qff). Subsurface conditions have not been determined. Approximately 100 acres (78 percent) of the API is characterized as high probability.

Table 8. Sensitivity Indicators for Determining High Probability Areas and Recommendations

Sensitivity Indicator	Probability for Cultural Resources: Precontact Sites	Probability for Cultural Resources: Historic Sites	Probability for Cultural Resources: Overall Probability as Keyed to Figure 32	Recommendations
Areas of Fill (Qaf) per Geologic Map (Beeson, Tolan, and Madin 1991) and soils mapped as Urban Land (NRCS)	Low (Possible but not probable; if present, likely redeposited)	Moderate (Redeposited historic materials lacking integrity probable; intact features beneath fill possible)	**Moderate**	Implement IDP and spot monitor invasive construction to confirm nature and extent of fill in these areas.
Missoula Flood Geomorphic Surfaces (Qff) per Geologic Map (Beeson, Tolan, and Madin 1991)	Moderate (Potential precontact materials, if present, would likely be within upper horizons i.e., <10 feet depth of an undisturbed profile).	High (Historic development has occurred largely within this geologic unit)	**High**	Further refine HPAs within Lake Missoula flood deposits once vertical API is established for the Project and extent of prior disturbance is known. Monitoring would occur for invasive environmental or geotechnical investigations prior to construction. In addition, monitoring may be appropriate in HPAs not accessible for those types of investigations prior to construction.
Areas where historic buildings, infrastructure, and other features were located per historic maps (i.e., Sanborn Fire Insurance Maps)	Low (Historic development likely jumbled upper horizons where these sites may have been located)	High (Intact and disturbed buried features and materials may be encountered)	**High**	Further refine HPAs for specific mapped historic buildings and structures once vertical API is established for the Project and construction elements are further defined. Monitoring would occur for invasive environmental or geotechnical investigations prior to construction. In addition, monitoring may be appropriate in HPAs not accessible for those types of investigations prior to construction.

Sensitivity Indicator	Probability for Cultural Resources			Recommendations
	Precontact Sites	Historic Sites	Overall Probability as Keyed to Figure 32	
Areas where massive cut and fill associated with I-5 construction have occurred (per aerial photographs indicating removal or infilling of 10+ ft. of soils)	Low	Low	**Low**	Implement IDP. No further investigative work is recommended for these areas.

Notes: API = Area of Potential Impact; ft. = foot/feet; HPA = High Probability Area; I-5 = Interstate 5; IDP = Inadvertent Discovery Plan; NRCS = Natural Resource Conservation Service

5.7.3 Archaeological Expectations

Based on the literature review, including previously recorded archaeological resources within the Portland city area, probable archaeological site types in the Project Area that may be encountered during ground-disturbing activity could include historic structure remains and features, historic infrastructure, historic debris scatters/concentrations, historic railroad properties, historic roads, and precontact resources such as lithic scatters or features (Table 9). Historic and precontact resources are discussed separately below.

Table 9. Potential Types of Archaeological Resources and Artifacts in the Project Area

Site Type	Artifacts/Features	Source
Historic Structure Remains	Privy, cesspool, foundations, well, brick, wood, metal nails.	SHPO database of previously recorded sites in vicinity
Historic Debris Scatters/ Concentrations	Glass bottles, jars, and fragments; ceramic plates, bowls, cups and fragments; metal cans, lids, flatware and other miscellaneous items	SHPO database of previously recorded sites in vicinity
Historic Railroad Properties	Rail track, metal nails, graded and compacted bed	Historic literature
Infrastructure	Sewer pipes, waterlines, utility trenches, power lines, wood plank bridge approaches	Sanborn maps
Historic Roads/Trails	Compacted road bed, ruts, wood planks, depressions, bricks and stone, gravel	GLO maps, historic literature
Precontact Lithic Isolates and Scatters	Lithic debitage, lithic tools – projectile points, groundstone.	Ethnographic literature
Precontact Camps/ Villages	Lithic debitage, lithic tools – projectile points, groundstone, middens, stained soil, hearth	SHPO notation, ethnographic literature
Human Remains	Bones and bone fragments, funerary objects	Historic, ethnoographic, and precontact context

Notes: GLO = General Lands Office; SHPO = State Historic Preservation Office

5.7.3.1 Precontact Artifacts and Features

The Project's location in proximity to the Willamette River is considered to have elevated sensitivity for the presence of previously undocumented precontact archaeological resources. Although no specific areas of increased or decreased precontact sensitivity were identified as a result of the background and archival research, future investigative efforts would attempt to identify the presence of buried precontact archaeological resources.

Precontact archaeological resources would be expected to occur on top of glacial landforms and within post-glacial sediments. In the Project Area, the upper Missoula flood deposits (Unit Qff) represent the primary geomorphic conditions in which precontact sites might be expected. Although historic development in the Portland area has affected the overlying post-glacial landforms, it is difficult to ascertain varying depths at which this has occurred within the Project Area without any specific geotechnical or other subsurface data for review. Post-glacial surfaces have likely been entirely removed in some areas, especially within the I-5 original construction footprint, but may have been buried or only partially removed and built on top of in other areas.

The elevated landform that defines the Project Area is currently approximately about 30 to 100 feet above the Willamette River floodplain. Upland areas may have had seasonal wetlands but would have been drier than the lower elevation active floodplain, especially during the terminal Pleistocene when the river was over 300 feet lower than it is today. Upland archaeological site types such as occupation camps, trails, animal hunting and processing sites, plant resource procurement and processing locales, or possibly burials may have been located on this type of landform.

Occurrences of precontact materials may include, but are not limited to, the following:

- Artifacts (lithic scatters, projectile points, shell beads, ground stone, cobble tools, fishing technology, etc.)
- Habitations (house-pit depressions, shell and/or midden deposits, fire-affected rock, heat-treated rock, manuports, etc.)
- Features (hearths, stone features, artifact caches, etc.)
- Human remains (burials or isolated bone fragments)

General research themes that may be addressed by precontact sites (and requisite data needs) include the following:

- Landscape Evolution and Human Occupation (documentation of geomorphic and stratigraphic setting of archaeological deposits)
- Chronology and Culture History (diagnostic artifact types and features that have established temporal association [e.g., shell beads, projectile points]; radiocarbon assay [e.g., bone, charcoal, shell in primary context and in association with intact features]; obsidian artifacts for hydration dating)
- Technology (sufficient quantities of debitage, flake lithic tools, and groundstone)
- Interaction and Exchange (exotic materials not immediately available within the Portland Basin)
- Settlement Patterns (classification of site type and location with reference to other sites within the Portland Basin)

5.7.3.2 Historic Artifacts and Features

The Albina area was settled by European Americans by the mid-1800s, with intensive development occurring over the following 170 years. Historic archaeological materials will almost certainly be encountered during construction because of the continuous historical development in this area. Even areas that have been previously disturbed by modern development would be expected to have evidence of historic materials. However, specific depth of historic materials and the intactness of the deposits are not known at this time. Such materials would be expected to occur primarily within post-glacial sediments and to vary in depth across the Project Area given site-specific developments. As with precontact sites, archaeological resources may be found below impervious surfaces and may be in a primary (undisturbed) or secondary (redeposited, fill) context.

Historic materials that could be encountered include, but are not limited to, the following:

- Buildings and structures, or the remains thereof
- Trash pits, privies, wells, and associated artifacts, surface dumps, and artifact scatters
- Isolated artifacts or isolated clusters of artifacts (metal cans, glass bottles, ceramic vessels, etc.)
- Infrastructure and related features (rail ties, graded beds, wood planks, pipelines, etc.)

Sanborn maps depict numerous residential buildings and features in the pre-I-5 corridor. Background research suggests that historic features (i.e., privies and trash pits associated with the residences) may exist along the perimeters (i.e., backyards) of these buildings' lots. In areas of fill, features may occur below the fill throughout the Project Area. It is also possible that disturbed and/or truncated (e.g., the upper half of a historic privy was graded away) historic deposits and features may occur on site if cutting occurred before filling took place. Although it depends on the extent of disturbance and the nature of the find, these may still qualify as archaeological resources.

Refuse Deposits and Other Features

The most common historic era, non-architectural archaeological resource types are typically refuse or trash deposits, which can contain a wide spectrum of cultural materials. Refuse scatters can consist of localized, dense deposits in excavated pits, privies, or wells; or they can consist of dispersed scatters spread over large areas (sheet refuse). Refuse scatters can reveal important information on the daily activities of the area's inhabitants, and this information can assist in addressing research themes and questions about topics such as foodways, the domestic material environment, or trade and interregional contact. Potential domestic-related artifacts and features could include ceramics, glass bottles and glassware, faunal material, and personal effects such as buttons, buckles, and jewelry.

Late-nineteenth and early-twentieth century maps suggest that historic features (i.e., privies and trash pits associated with the residences or businesses) may exist along the perimeters (i.e., backyards) of the I-5 corridor.

Non-architectural archaeological deposits and features must be evaluated in the field with respect to their ability to answer potentially significant research questions. Isolated and/or fragmentary artifacts with no provenience or from clearly disturbed contexts are unlikely to yield valuable information because they are not attributable to a specific individual, household, or occupation. On the other hand, intact artifact-rich features/concentrations may be significant regarding their ability to answer these questions.

Research themes (and requisite data needs) that may be addressed by historic refuse deposits and other non-architectural features associated with residential properties include the following:

- Reconstruction of the built environment and cultural landscape, including social and class differentiation of space (documentation of spatial arrangements of buildings, outbuildings, and associated artifacts; correlated demographic data)
- Foodways and the domestic material environment (faunal remains, tableware, food storage containers, the presence or absence of exotic goods)
- Subsistence and agricultural strategies (faunal remains, tableware, food storage containers, evidence of farming or animal husbandry)
- Consumer behavior (personal effects and other aspects of the domestic material environment, the presence or absence of exotic goods, correlated demographic data, data from the same household or neighborhood over time)
- Waste and refuse disposal practices (intact refuse pits, sheet scatters, municipal utility records)

Refuse deposits and other non-architectural features associated with industrial and commercial properties may be able to address research themes such as the following:

- Reconstructing specific industrial and manufacturing processes (remains associated with manufacturing processes sited in the Project; room-specific artifact assemblages; machine mounts or other large industrial remains)
- Assessing the relationship between the availability of a technology and its acceptance (artifacts that can be associated with specific businesses and time periods, artifacts correlated with information on technology of the period)
- Documenting working conditions and industrial pollution (co-mingling of personal or dietary materials with industrial materials)
- Documenting workers' use of space (room-specific artifact assemblages or refuse caches, unexpected artifact types such as liquor bottles).

Architectural Features

Architectural remnants, which may be present at the Project Area, include structural remains such as foundations, wall footings, fence alignments, and collapsed wood and brick buildings. This resource type essentially encompasses all buildings and structures, including residential, agricultural, commercial, and industrial. In addition to architectural resources, infrastructure resources (sewer lines, drain pipes, power lines, roads, hydrants, etc.), which typically encompass archaeological features encountered in an urban setting, may be present.

Architectural features (e.g., foundations, bricks, etc.) related to buildings depicted on the twentieth-century Sanborn maps would be the most likely archaeological deposits encountered during construction activities at the Project site, as suggested by the typical abundance of these materials at historic-period archaeological resources. Given the availability of other documentary evidence related to these buildings, including the detailed information provided by the Sanborn Fire Insurance Maps, these architectural features are generally not considered historically significant.

Architectural features related to mid-nineteenth century buildings may also be encountered. Documentary evidence for these features is limited, so any identified architectural remnants may be able to address research themes related to construction methods, technology, and infrastructure design.

5.8 Treatment Plan

This section outlines the steps that would be taken to identify, evaluate, and treat archaeological discoveries or human remains that could be made as a result of the Project.

5.8.1 Pre-Construction and Construction Monitoring

Due to the amount of development and impervious surfaces in the Project Area, archaeological monitoring of ground-disturbing (invasive) Project activities would occur. Monitoring would be expected to occur during pre-construction investigations and may also occur during construction.

5.8.1.1 Pre-Construction Monitoring of Invasive Investigations

Archaeological monitoring would initially occur for any Project-related invasive pre-construction environmental and geotechnical work. This type of monitoring is differentiated from construction-phase monitoring because the intent is to identify, evaluate, and avoid or mitigate significant resources prior to construction. Archaeological monitoring of invasive work related to engineering design and environmental borings for the Project would help characterize HPAs. HPAs would be further refined once engineering design is advanced so that investigations are efficient and focused on the areas and depths where impacts are most likely to occur.

Ground-disturbing environmental/geotechnical investigations within areas covered with impervious surfaces typically include mechanical trenching using an excavator, or environmental probing using a Geoprobe, sonic drill, or similar drilling machine.

Demolition of existing structures and paved surfaces may also be required. Given the potential for previously undocumented archaeological resources to be exposed during the removal of foundation elements and paved surfaces, an archaeologist would be present to monitor these phases of the demolition process in HPAs. The archaeological monitoring would be conducted in accordance with the procedures outlined below.

5.8.1.2 Construction Monitoring

It is anticipated that archaeological monitoring of pre-construction activities would further inform recommendations for monitoring during construction. Monitoring objectives and protocol would remain the same.

5.8.2 Artifact Treatment

Archaeological monitoring efforts would be focused on exposing previously undisturbed soils (or intact historic features) to determine the presence or absence of potentially significant archaeological resources. If archaeological features and stratification are encountered during mechanical test excavations, mechanical excavation would stop, and manual excavation would be employed to expose the archaeological feature or strata. The field crew would produce plans to scale, take digital photographs, and map all features and deposits to a fixed-site datum. The evaluation of the archaeological remains would occur in the field; the structure and stratigraphic integrity, the date of the deposition, and the range and quantity of evidence from associated artifacts would be determined. An appropriate portion of each feature would be excavated manually to assess its content and integrity. Emphasis would be given to features such as a refuse-filled privy: a detailed profile of the feature would be produced, and each layer investigated for contents and date.

All manually excavated soils would be screened using 1⁄4-inch wire mesh. Artifacts would be initially identified, and when possible, dated in the field.

Artifacts would be collected for cataloging. If artifacts are observed in contaminated soil, these may not be collected, and collection methods would be coordinated with ODOT, FHWA, SHPO, and Consulting Parties.

Many different classes and types of artifacts may be encountered during the proposed testing activities. Some of these materials, such as embossed glass, porcelain, and other recognizable cultural materials, possess inherent significance because they can be associated with a relatively narrow range of dates; others, such as scattered brick fragments, metal, and wood tend to yield less data of importance due to their broad distribution and longer time frames of use. In recognition of this, some types of artifacts may be recovered throughout the proposed testing as they are encountered; these include, but are not limited to, the following:

- Whole or fragmentary embossed glass
- Transferware or embossed porcelain or ceramics
- Any other type or class of artifact not yet represented in the catalog of materials thus far recovered during construction

In contrast, the types of artifacts or materials for which a sample might provide adequate representation include, but is not limited to, the following:

- Rock, brick rubble, and sand used as fill material
- Wood fragments from building material
- Glass or ceramic fragments without embossment
- Nails and miscellaneous metal fragments
- Fragmentary cultural material that is non-diagnostic in nature

The exact amount of material that qualifies as an adequate sample would be established by the principal investigator, based on the nature and quantity of cultural material encountered during archaeological testing and previous investigations in the area.

5.8.2.1 Evaluation Criteria

If an archaeological resource is identified, significance of the resource would be assessed by applying the NRHP Criteria for Evaluation, as described in Section 3.

Archaeological resources potentially discovered during monitoring would be evaluated initially for significance according to Criterion D (the potential to yield information important in prehistory or history), and then for integrity. Data requirements to verify eligibility for the NRHP would include the need for an adequate archaeological context in the form of intact archaeological strata, features with discernible relations, and diagnostic artifacts that could establish a time frame. It is important for archaeological interpretation that the physical context not be disturbed or mixed; otherwise, the associations between site components that make reasonable interpretation possible are lost. Depending on the type of archaeological resource(s) encountered, evaluation under other NRHP Criteria may also be warranted.

Monitoring would occur in archaeologically sensitive areas (see Table 8) that have the potential to contain historic materials associated with buildings identified on Sanborn maps, as described above. Areas where identified refuse scatters may be associated with known inhabitants, such as individuals and families identified in the census records, or areas of unique cultural places such as recreational club houses/lodges, would be targeted. It is likely hollow-filled features or surface dumps would have been located in the backyards of many of these structures. Architectural remains may also be encountered. Some commercial and industrial areas may also be investigated. Most of these areas are noted on Sanborn maps (i.e., auto glass repair shop, gas station, painting shops, welding and machinery warehouses) (see Table 6).

5.8.2.2 Data Recovery Approach

In the event that an archaeological data recovery program is required, ODOT would establish a data recovery program in accordance with an archaeological data recovery plan (ADRP). The ADRP would identify which scientific/historical research questions are applicable to the resource identified, which data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery generally should be limited to the portions of the historical property that could be adversely affected by the proposed Project. Destructive data recovery methods would not be applied to portions of the archaeological resources if nondestructive methods are practical.

The scope of the ADRP would include the following elements:

- **Field Methods and Procedures.** Descriptions of proposed field strategies, procedures, and operations.
- **Cataloging and Laboratory Analysis.** Description of selected cataloguing system and artifact analysis procedures.
- **Discard and Deaccession Policy.** Description of and rationale for field and post-field discard and deaccession policies.
- **Interpretive Program.** Consideration of an on-site/off-site public interpretive program during the course of the archaeological data recovery program.
- **Security Measures.** Recommended security measures to protect the archaeological resource from vandalism, looting, and unintentionally damaging activities.
- **Final Report.** Description of proposed report format and distribution of results.
- **Curation.** Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities.

5.8.2.3 Human Remains

In the event that human remains are encountered during the proposed investigations, work in the vicinity of the discovery would stop immediately and the location would be secured. The Oregon State Police, FHWA, ODOT, and the SHPO Archaeologist would be immediately notified. If the discovered remains are determined to be Indian, officials from the Legislative Commission on Indian Services would be asked to determine their tribal affiliation, and appropriate Tribal governments would be contacted by FHWA and ODOT (pursuant to ORS

97.745(4)[7]). The tribes, SHPO, FHWA, and ODOT would then confer on an appropriate course of action for reinterment.

5.8.2.4 Curation

It is anticipated that archaeological materials collected from non-federal public lands in the API, as well as copies of field notes and site documentation, would be curated at the University of Oregon Museum of Natural and Cultural History. Private landowners would determine collection and curation for archaeological materials on private property.

5.8.2.5 Archaeological Testing Report

Following the completion of testing and the initial monitoring program, the archaeological consultant would submit a Draft Archaeological Testing Report to the ODOT Archaeologist documenting the results of the field investigation and providing recommendations for the further management of cultural resources (as needed) consistent with the mitigation measures. Additional measures could include a more extensive Archaeological Monitoring Program ADRP.

5.8.3 Archaeological Monitoring Plan

As stated previously, there is a high likelihood that cultural materials would be encountered during construction. This section describes the process that would be followed if archaeological resources are identified during monitoring.

5.8.3.1 Construction Worker Training

Prior to commencement of ground-disturbing activities associated with the Project, a brief training for construction workers would be conducted by ODOT or its designee for Project excavation contractors. The training session would inform construction personnel of the potential presence and nature of potentially significant archaeological resources and human remains in the Project Area; of the laws protecting these resources, and associated penalties; and of the procedures to follow should they discover cultural resources during Project-related work.

If construction personnel identify what they think may be an archaeological resource, then construction activities in the vicinity of the find would halt. The archaeological monitor would determine whether the material is an archaeological resource or not, and work would not resume in that location until directed by the archaeological monitor.

[7]"Any discovered human remains suspected to be native Indian shall be reported to the state police, the State Historic Preservation Office, the appropriate Indian tribe and the Commission on Indian Services. [1977 c.647 §2; 1979 c.420 §1; 1981 c.442 §4; 1985 c.198 §1; 1993 c.459 §10])"

5.8.3.2 Methods

The on-site archaeological monitor would follow and observe earth-moving equipment (e.g., backhoes, and excavators) and examine excavated soils for evidence of buried archaeological resources. At the end of each workday, the archaeological monitor would complete a Daily Monitoring Log, which documents the day's activities, any work stoppages or redirects, and any archaeological discoveries.

5.8.3.3 Archaeological Discovery

ODOT would, on behalf of FHWA, comply with the requirements of 36 CFR 800.13 if a post-review discovery is made. ODOT would coordinate with FHWA and work directly with SHPO and the tribes to evaluate discoveries as needed and move forward. ODOT would also comply with Section 00290.50 of ODOT's *Oregon Standard Specifications for Construction* and the procedures for inadvertent discovery in the ODOT *Archaeology Manual*. If the discovery is made on federally managed lands, ODOT would notify the authorized land manager.

In the event of the discovery of an archaeological resource, all soil-disturbing activities in the vicinity of the find would cease. Should ODOT determine that a significant archaeological resource is present and that the resource could be adversely affected by the proposed Project:

- The proposed Project would be re-designed to avoid any adverse effect on the significant archaeological resource; or
- An ADRP would be implemented; or
- Another form of mitigation may be determined.

5.8.3.4 Final Archaeological Resources Report

The archaeological consultant would submit to the ODOT Archaeologist a Draft and Final Archaeological Resources Report that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods employed in the archaeological testing/monitoring/data recovery program(s) undertaken.

5.8.4 Inadvertent Discovery Plan

An Inadvertent Discovery Plan (IDP) outlining protocol to be followed in the event of an unexpected discovery of archaeological materials or human remains would be prepared for the Project by ODOT.

In summary, ODOT's protocol for coordination in the event of an inadvertent discovery is as follows:

- All work would stop immediately in the vicinity of the find.
- The area would be secured.
- The Inspector, Project Manager, and ODOT Archaeologist would be notified.

- No work would resume until ODOT Archaeology staff were on-site and able to assess the situation.
- The ODOT Archaeologist would consult with SHPO and appropriate Tribal governments and determine an appropriate course of action.
- Any specified areas for close monitoring or “no work” would be identified to the Inspector, Project Manager, and appropriate Contractor personnel.
- In coordination with the ODOT Archaeologist, the Inspector would verify these identified areas by engineer’s station if available, mark them on-site if appropriate, and communicate the location to the Contractor in a written memo.
- The Contractor would follow ODOT specifications 290.51 and Special Provisions 170.51 throughout the duration of the Project.

6 Environmental Consequences

This section identifies the potential impacts to archaeological resources in the API as the result of construction and operation of the proposed Project and No-Build Alternative.

6.1 No-Build Alternative

As described in Section 2.1, the No-Build Alternative consists of existing conditions and other planned and funded transportation improvement projects that would be completed in and around the Project Area by 2045.

6.1.1 Direct Impacts

Under the No-Build Alternative, the proposed I-5 mainline and Broadway/Weidler interchange area improvements would not be constructed, and the current road system would remain in place. The Section 106 process would apply to any other projects in the area that qualify as a federal undertaking under 36 CFR Part 800. Consequently, if these other projects were implemented, direct impacts to identified historic properties could occur as a result of implementation of the No-Build Alternative. Impact analyses and mitigation would occur for those projects, separate from this Project.

6.1.2 Indirect Impacts

As with direct impacts, indirect impacts to historic properties could occur under the No-Build Alternative from other federal undertakings that could occur within the Project API.

6.2 Build Alternative

6.2.1 Short-Term (Construction) Impacts

No previously documented archaeological resources are within the API. A general discussion of impacts is presented in the event future investigations or construction reveal archaeological resources.

Most Project effects to archaeological resources, if present, would occur during short-term construction due to potential destruction and displacement caused by invasive ground disturbances (Table 10). Direct effects to archaeological resources could result from alteration or partial or complete destruction through mobilization of heavy equipment, compaction or excavation of soils within a site, or displacement of cultural materials. It is likely that construction could remove archaeological resources from their original locations, and these would not be anticipated to return to previous levels even after actions that caused the impacts were to cease.

There are no known archaeological resources within the Build Alternative footprint. ODOT's IDP would be followed in the event of a new discovery of archaeological resources or human remains.

Table 10. Project Improvements and Potential Impacts to Archaeological Resources

Proposed Improvement	Potential Archaeological Resource Impacts
Widening I-5 Structures	New foundations or temporary construction requirements for excavations may impact buried archaeological resources, if present.
New I-5 Auxiliary Lanes	New retaining walls, retaining wall tieback anchors, widened roadway prisms, and stormwater and utilities installations may impact buried archaeological resources, if present.
Removal of Existing Local Street Overcrossings	Demolition activities and new grading may impact buried archaeological resources, if present.
Surface Street Modifications	New traffic signals and street lighting could have foundations that impact buried archaeological resources, if present.
New Bicycle and Pedestrian Facilities	New sidewalk ramps and bicycle facilities could have foundations that impact buried archaeological resources, if present.

6.2.2 Long-Term and Operational Direct Impacts

The assessment for long-term and operational direct impacts considers how the Build Alternative could diminish the integrity of archaeological historic properties through the alteration of the setting, feeling, and/or association by means of direct physical alterations to archaeological historic properties associated with the Build Alternative. During operations in the long-term, there remains a possibility that additional subsurface construction related to repairs, maintenance, and operations could identify archaeological resources that were not previously identified, and these actions could result in diminished integrity of archaeological historic properties. However, most buried resources are anticipated to have been impacted during short-term construction, and long-term and operational direct impacts would likely have no significant impact on archaeological historic properties.

6.2.3 Long-Term and Operational Indirect Impacts

The assessment for long-term and operational indirect impacts considers how the Build Alternative could diminish the integrity of archaeological historic properties through the alteration of the setting, feeling, and/or association by means of visual, atmospheric, and audible elements associated with the Project. Indirect impacts for cultural resources of the Build Alternative are not anticipated to result in measurable changes to, and diminished integrity of, archaeological resources. I-5 has been used for over 50 years and no significant long-term or operational indirect effects to archaeological resources have been reported. Therefore, the Build Alternative would likely have no significant long-term or operational indirect effects to potential archaeological resources.

6.3 Cumulative Effects

Cumulative effects are the environmental effects that result from the incremental effect of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

The analysis of cumulative impacts involves a series of steps conducted in the following order:

- Identify the resource topics that could potentially experience direct or indirect impacts from construction and operation of the proposed Project.
- Define the geographic area (spatial boundary) within which cumulative impacts would be assessed, as well as the time frame (temporal boundary) over which other past, present, and reasonably foreseeable future actions would be considered.
- Describe the current status or condition of the resource being analyzed, as well as its historic condition (prior to any notable change) and indicate whether the status or condition of the resource is improving, stable, or in decline.
- Identify other actions or projects that are reasonably likely to occur within the area of potential impact during the established time frame and assess whether they could positively or negatively affect the resource being analyzed.
- Describe the combined effect on the resource being analyzed when the direct and indirect impacts of the Project are combined with the impacts of other actions or projects assumed to occur within the same geographic area during the established time frame.

6.3.1 Spatial and Temporal Boundaries

The geographic area used for the cumulative impact analysis is the same as the API described in Section 4.1 and shown in Figure 9.

The time frame for the cumulative impact analysis extends from the beginning of large-scale urban development in and around the Project Area in the 1950s beginning with I-5 construction to 2045, the horizon year for the analysis of transportation system changes.

6.3.2 Past, Present, and Reasonably Foreseeable Future Actions

The past, present, and reasonably foreseeable future actions that were considered in assessing cumulative effects from the Project are described in the following subsections.

6.3.2.1 Past Actions

Past actions include the following:

- Neighborhood and community development
  - Historical development of Portland area and accompanying changes in land use
  - Development of local transportation system (including roads, bicycle and pedestrian facilities, and bus transit)
  - Utilities (water, sewer, electric, and telecommunications)
  - Parks, trails, bikeways
- Commercial and residential development in and around the Project Area
  - Veterans Memorial Coliseum (1960)
  - Lloyd Center (1960)
  - Legacy Emanuel Medical Center (1970)
  - Oregon Convention Center (1990)
  - Rose Garden (1995)
- Regional transportation system development
  - Marine terminal facilities on the Willamette River
    - Port of Portland (1892)
    - Commission of Public Docks (1910)
    - Port of Portland (1970; consolidation of Port of Portland and Commission of Public Docks)
  - Freight rail lines (late 1800s and early 1900s)
  - Highways
    - I-84 (1963)
    - I-5 (1966)
    - I-405 (1973)
  - Rail transit system
    - MAX light rail (1986)
    - Portland Streetcar (2001)

6.3.2.2 Present Actions

Present actions include the ongoing operation and maintenance of existing infrastructure and land uses, including the following:

- Ongoing safety improvements for bicycles and pedestrians
- Local and regional transportation system maintenance
- Utility maintenance

6.3.2.3 Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions were identified collaboratively with the City of Portland and consist of the following:

- Redevelopment of existing urban areas in the Project Area and vicinity
- Ongoing maintenance and development of existing urban infrastructure in the Project Area and vicinity

These actions include private redevelopment, public development, and infrastructure projects, as well as combined public/private redevelopments. Specific projects and the plans identifying them are described in detail in the memorandum presented in Appendix A. Given the highly developed nature of the Project Area and vicinity, the reasonably foreseeable future actions are not expected to substantially change the types or intensities of existing land uses.

6.3.3 Results of Cumulative Impact Analysis

Throughout the twentieth century, increased urbanization has affected the types and distribution of archaeological resources that may have originally been encountered in the Project Area. Past development projects have occurred without consideration of archaeological resources. For example, when I-5 was initially constructed in the 1950s, few environmental laws and regulations were in place to protect archaeological resources.

The trend for present actions, especially those with NEPA and NHPA applicability, requires consideration of archaeological resources early in the design process. Identification efforts are increasingly undertaken for local, state, and federal transportation projects in urban areas. For reasonably foreseeable future actions, archaeological resources encountered during construction are expected to continue during soil disturbing activities associated with development projects and mitigated primarily through data recovery at the time of their discovery.

The Project may result in the identification of buried archaeological resources, resulting in an incremental impact over time as these resources are discovered and removed as a result of development projects. Because lands within the API have been previously disturbed, the Project’s contribution to overall cumulative impacts, and those of reasonably foreseeable future actions, is expected to be less than the initial disturbance resulting from past actions.

Therefore, based on the short-term construction impacts and long-term operational impacts, the Project is not expected to meaningfully contribute to a cumulative impact to archaeological historic properties.

6.4 Conclusion

No archaeological sites have been identified within the Project Area, and much of the Project Area has been previously disturbed by prior development. However, subsurface conditions are not well characterized, and it is possible that archaeological resources would be discovered as the Project is implemented. If archaeological resources are identified as a result of the Project, impacts would be resolved through implementation of an IDP and the PA among FWHA, SHPO, and ODOT, which outlines protocol for identifying and evaluating resources and resolving impacts.

As summarized in Table 11, minimal short-term impacts, long-term, and operational direct and indirect impacts on archaeological resources are expected. Because the Project would occur in a previously disturbed area, the Project's contribution to cumulative impacts is expected to be less than that of past actions. The Project design would incorporate the avoidance, minimization, and mitigation recommendations of Section 7.

Table 11. Impact Significance

Impacts	Impact Significance	Reasoning
Short-Term (Construction) Impacts	No Significant Impact Anticipated	If no archaeological resources are present, or if they are present but it may be feasible to avoid or minimize impacts, then the Project would have no significant impact. If impacts to archaeological resources are unavoidable and would diminish integrity of a site that is eligible for the NRHP, the Project impacts would be resolved through implementation of an Inadvertent Discovery Plan and a Project-specific Programmatic Agreement between FHWA, SHPO, and ODOT that outlines protocol for identifying, evaluating, and resolving impacts pursuant to 36 CFR 800.13 and 36 CFR 800.14.
Long-Term (Operational) Impacts	No Significant Impact Anticipated	Indirect impacts for cultural resources are not anticipated to result in measurable changes to, and diminished integrity of, archaeological resources because most of these would have been identified and impacted during short-term construction. Potential long-term impacts would be resolved through implementation of and Inadvertent Discovery Plan and a Project-specific Programmatic Agreement between FHWA, SHPO, and ODOT that outlines protocol for identifying, evaluating, and resolving impacts pursuant to 36 CFR 800.13 and 36 CFR 800.14.
Cumulative Effects	No Significant Impact Anticipated	Phased improvements could require development affecting archaeological resources thereby accumulating impacts. As the Project Area becomes increasingly developed, there may be loss of archaeological resources. Past actions have not considered impacts on archaeological resources, while present and reasonably foreseeable future actions with a federal nexus would continue to follow Section 106 of the NHPA protocol for resource identification, evaluation, and mitigation.

Notes: CFR = Code of Federal Regulations; FHWA = Federal Highway Administration; NRHP = National Register of Historic Places; ODOT = Oregon Department of Transportation; SHPO = State Historic Preservation Office

7 Avoidance, Minimization, and Mitigation Measures

Avoidance, minimization, or mitigation measures, as identified through consultation with the Oregon SHPO, consulting parties, and tribes, could help to mitigate adverse effects for potential historic properties. Actions that may be important for reducing impacts to cultural resources could include the following:

- Road design or narrower right of way to avoid identified archaeological resources
- Use of horizontal directional drilling under sensitive resources
- Measures to avoid or minimize impacts to archaeological resources (e.g., flagging, monitoring)
- Training of workers regarding archaeological resource issues and responsibilities
- Archaeological monitoring of pre-construction ground-invasive geotechnical and environmental studies for the Project to identify archaeological historic properties prior to construction
- Archaeological monitoring during construction within HPAs
- Preparation and implementation of a Project-specific Monitoring and Inadvertent Discovery Plan including prescribed actions to be taken in the event that unanticipated cultural resources or human remains are discovered, or known resources are impacted in an unanticipated manner
- Evaluation of the discovery and implementation of appropriate mitigation measures would occur in a timely manner to avoid long construction delays per the procedures established in the PA (December 2011) between FHWA, SHPO, and ODOT. Construction would only resume at the site when FHWA verifies that appropriate mitigation has been completed
- Consultation with descendant communities to foster community-based excavation projects. In the event of a discovery of an archaeological resources associated with descendant Native Americans or African Americans, an appropriate representative (i.e., as identified by the Commission of Indian Services) of the pertinent group would be given the opportunity to monitor archaeological field investigations and to consult with ODOT regarding appropriate archaeological treatment of a resource, or recovered data from the resource, and if applicable, any interpretive treatment of the associated archaeological resource

8 Contacts and Coordination

Methods for data collection are described in Section 4. ODOT has initiated consultation with affected Native American tribes.

9 Preparers

Name	Discipline	Education	Years of Experience
Anisa Becker, AECOM	Historic Preservation	MA, Historic Preservation	15
Sarah McDaniel, AECOM	Archaeology	MA, Anthropology	20
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Michelle Stegner, AECOM	Archaeology	BA, Anthropology	20
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