



June 28, 2010

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RE: **No Key, Southwest Corridor Plan Project, Clackamas, Multnomah, and Washington Counties, Oregon EA 11PF120-161-P30, Region 1, District 2A**

The Oregon Department of Transportation (ODOT), in cooperation with Metro, Washington County, and the Cities of Portland, Tigard, Tualatin, Sherwood, and King City, will examine a broad corridor within which transportation improvements and land use changes are being considered. The outcome is to identify a list of prioritized transportation projects and strategies to incorporate into the Metro regional transportation plan, local transportation plans, and a state highway facility plan that would include the sections of I-5 and 99W in the study area (Figure 1). This technical report will discuss known prehistoric and historic archaeological sites located within the project area, identify reported cultural resource studies conducted in and adjacent to the study area, and assess their adequacy in terms methods and reporting. The historic document searches, literature review, and GIS analysis were conducted by museum archaeologist Kaylon McAlister.

The current project area encompasses approximately 42 square mile, or 26,909 acres, in Washington, Multnomah, and Clackamas counties, Oregon. This large study area includes a great range of geophysical and biotic landscapes, and numerous distinct cultural areas. Located in the far northeast portion of the project area is the north slope of the Tualatin Mountains; a range of hills that separate the Portland Basin of western Multnomah County from the Tualatin Basin and the fertile rolling Tualatin plains of Washington County. The heavily forested and deeply ravined Tualatin Mountains dominate the northern central portion of the project area. Streams along the southern flanks of the range drain into the Tualatin River while streams along the mountain's northern flank drain directly into the Willamette River (Figure 2). To the west of the Tualatin Mountains, the land falls away gradually to the southwest into what is known as the Tualatin Valley. This area has a markedly different physical environment from that of the north slopes of the hills. Where Spruce and cedar forests dominate the hills, the plains can be better described as an oak savannah.

It was these fertile plains and wetlands that were found attractive to many of the early pioneers who decided to homestead here. In more ancient times, most of the study area was the homeland of Tualatin Kalapuya, whose linguistic relatives occupied the Willamette Valley to the south. The northeastern portion of the study corridor was home to the Clackamas Chinook, part of the Chinookan language family found along the Columbia River corridor from The Dalles to the Pacific coast.

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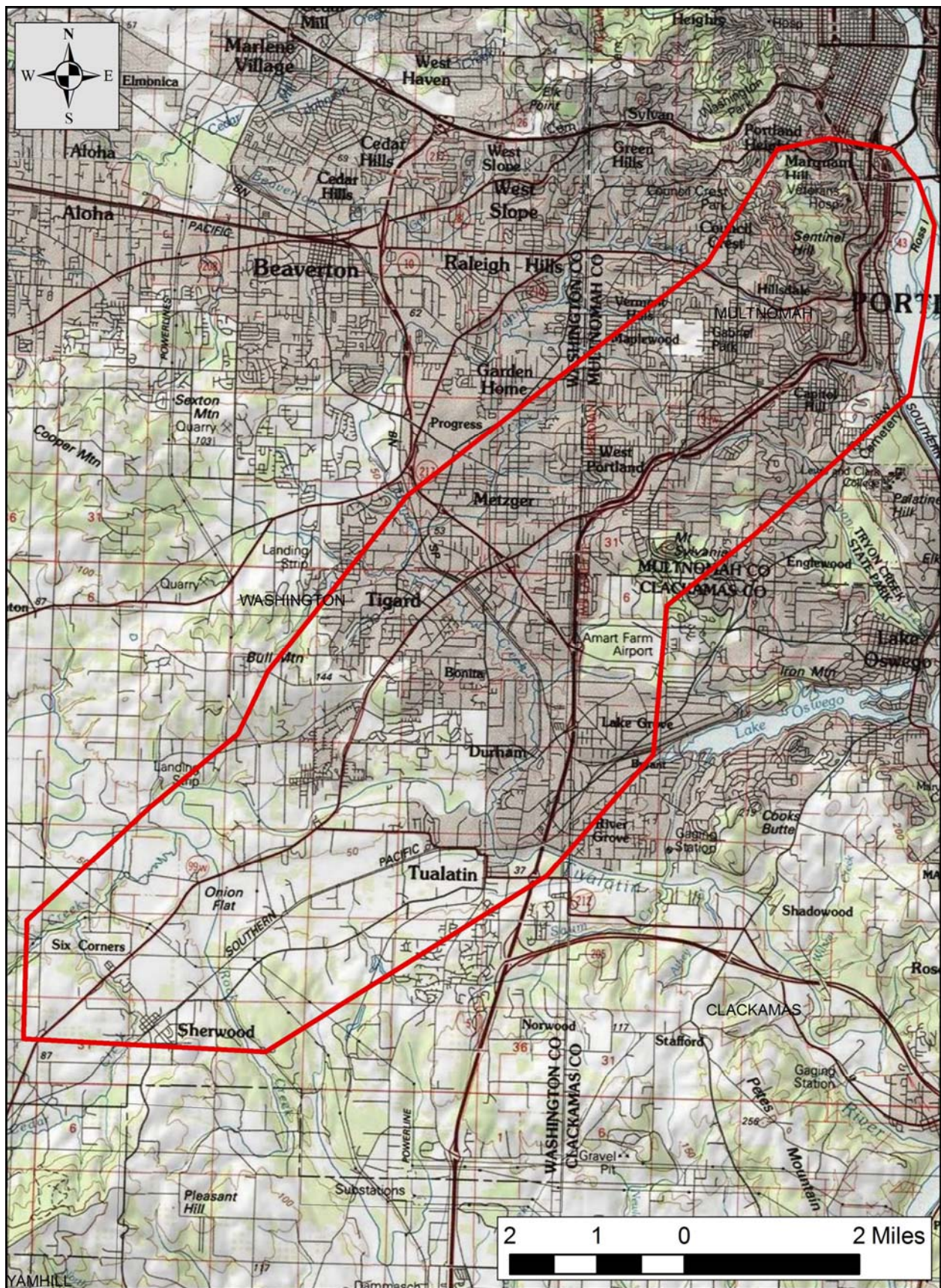


Figure 1. The project area, in Clackamas, Multnomah, and Washington counties.

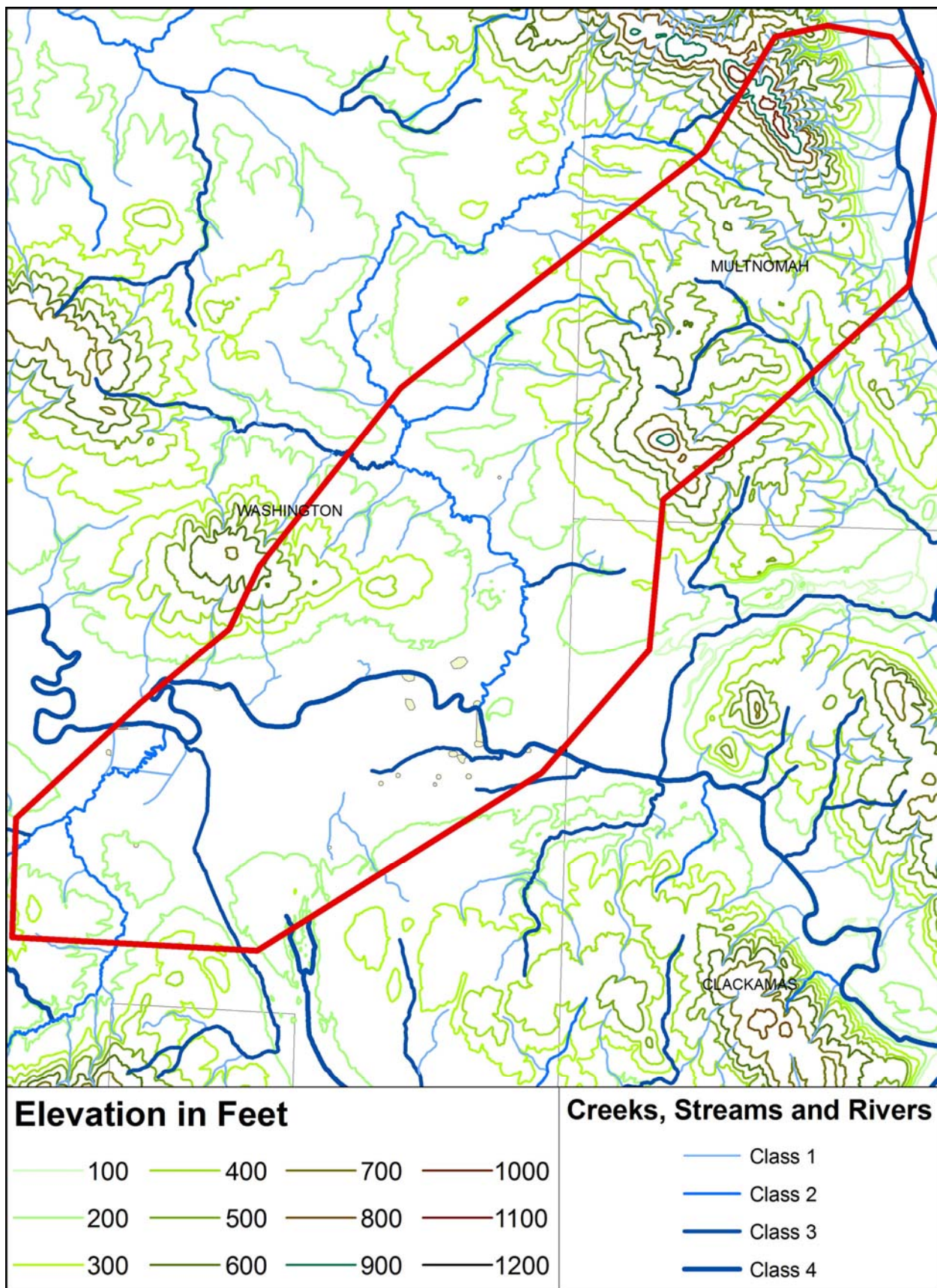


Figure 2. Topography and water courses in the study area.

The project area is underlain by rock of middle Miocene age, which flowed from vents that produced the Columbian River flood basalts (Franklin and Dyrness 1988). By the late Miocene, crustal buckling and uplift of the Columbia River basalts began to create the modern Cascade Range. The deforming basalt flows also created the Tualatin Mountains, along the northwest border of the Tualatin Valley, many Coast Range features, the Portland West Hills, the Chehalem Mountains, and the hilly lower course of the Tualatin River (Franklin and Dyrness 1988; Helzer 2004). The basalt was later covered by mudflow deposits, resulting from volcanism along the western flank of the newly formed Cascade Range. Volcanic vents, known as the Boring volcanoes, then dotted the land surface in the Portland vicinity. In the western portion of the project area the bowl-shaped Tualatin Basin captured and retained subsequent flood-deposited sediment, most recently that deposited by the Late Pleistocene Missoula Floods. Erosion of these deep silt deposits has resulted in the rolling landscape and soil morphology that now characterized much of the Tualatin Basin (Franklin and Dyrness 1988).

Elevations within the project area range from peaks more than 1000 feet tall in the Tualatin Mountains down to less than 50 feet along Willamette River. Coupled with these changing elevations is a wide variation in rainfall and soil depositions created by rain shadow effects of the surrounding mountain ranges. This large degree of variation has created a broad range of physical environments across the project area. Soils in the Tualatin Valley are somewhat different than those found in the Willamette Valley proper, a short distance to the south and east. Unlike the Willamette Valley soils and sediments, which are dominated by weakly organized drainages of late- and post-Pleistocene sediments, the Tualatin Valley is dominated by somewhat well organized drainages of middle- and late-Pleistocene sediments. The product of this difference is an erosional plain with a gently rolling topography composed of swales and hummocks, as opposed to the generally flat depositional floodplain of the Willamette Valley proper (Connolly 2001; Green 1982).

The climate of the northern slopes of the Tualatin Mountains is tempered by winds from the Pacific Ocean, which provides for cool winters. Summer rainfall is generally light; during the rest of the year rain is more frequent, especially in late fall and winter. Cottonwood thrives along riverbanks, along with stands of ash, willow and native apple. Areas situated above flood waters historically supported stands of Douglas-fir (Green 1993:3). Early Portland came to be known as Stump-Town, due to the hasty clearing of the surrounding forest (Snyder 1970). The 1852 General Land Office map describes the hills in west Portland as “Land hilly and broken with deep ravines and ridges” (Ruiz and Connolly 2009).

The Tualatin Valley is within the Willamette Valley physiographic province (Franklin and Dyrness 1988). The General Land Office (GLO) maps from the early 1850s note a rolling landscape, with prairie surrounded by hills mantled in “fir, oak, maple, &c.” Early historic accounts of the Willamette Valley indicate that the anthropologically manipulated grassland prairie became more prominent to the south while to the north, within the Tualatin Valley, the landscape was dominated by a mosaic of prairie and timbered areas (Zenk 1976:25-26, Boyd 1999). Possibly as a result of this biotic mosaic, and a rolling landscape that contrasted with the vast Willamette Valley floodplains, Zenk (1976:26) reports that the natives of the Tualatin Valley may have relied relatively more on hunting (as opposed to gathering of vegetable foods) than other Willamette Valley natives.

The climate of the northeastern portion of the project area is mild, with winter temperatures seldom dropping below 30 degrees or above 90 degrees Fahrenheit in the summer. The Coast Range Mountains, approximately forty miles to the west, help protect the Portland Basin from harsh winter storms and ocean-generated climate swings. The Cascade Range Mountains, located approximately forty miles to the east, shields the valley from more extreme weather associated with the continental climate east of the Cascades. Annual precipitation in this portion of the Willamette Valley is approximately 40 inches with the majority of precipitation falling in the winter months. Ample amounts of sun and water, available in and around the project area, encourages a rich biodiversity of plant and animal species.

Prehistoric Cultural Landscape

The Tualatin Mountains, running northwest to southeast through the eastern portion of the project areas, served as a natural divide between the Tualatin Kalapuya to the southwest and Chinookan peoples to the northeast. These two cultural groups are separated by both linguistics and subsistence strategies. The majority of the current project area, to the southwest of the mountain range, drops to the west into the Tualatin Valley. While there was extensive interaction between these groups, the contrasting geographies of these areas supported different subsistence strategies and settlement patterns. The Tualatin lived around meadows and marshlands where they harvested root crops, nuts, seeds, berries and a variety of terrestrial game. The Chinook, living along the lower course of the Willamette and the Columbia rivers, relied most heavily on riverine resources, particularly fish and sea mammals.

The Tualatin Kalapuya

The western portion of the project area, west of the crest of the Tualatin Mountains, is within the territory occupied at the time of contact by the Tualatin. The Tualatin represented one of 13 or more bands of Kalapuya speakers who occupied the Willamette Valley to the south. The Tualatin and adjacent Yamhill spoke a language or dialect that was “almost unintelligible” to other Kalapuyan speakers (Jacobs et al. 1945:145). This linguistic separation of the Tualatin from other Willamette Valley Kalapuya may reflect some degree of cultural separateness as well. Zenk (1976:5) notes that the Tualatin's social and economic ties with the Columbia River Chinook “imparted a Chinookan influence to Tualatin society and culture” that was not characteristic of other Willamette Valley groups.

Various sources list up to 23 Tualatin villages (e.g., Berreman 1937; Minor et al. 1980), based on names appearing in the ethnographic field notes collected by Albert Gatschet in the late 1870s (primarily from two Tualatin informants). Zenk (1994:154-155) notes that some of these may have been place names rather than villages, but counts “16 names used unambiguously by one or both informants to refer to winter village groups.” One of the Tualatin settlements within the current project area was probably in the area now occupied by the City of Tigard, possibly in the vicinity of Fanno Creek (Zenk 1990).

While much archaeological research has been conducted in the middle to upper Willamette Valley; relatively little archaeological work has been conducted in the project area. Recent archaeological work conducted in the Willamette Valley, outside of the Tualatin Valley, confirms the presence of human settlement as early as 11,000 BP (O'Neill et al. 1999). The abundance of camas ovens recorded during excavations throughout the valley, particularly dating to after 7,000 BP, indicate the importance of camas as a staple food for groups in the area (Cheatham 1988; Connolly et al. 1997; O'Neill et al. 1999). Boyd (1999) and Pearl (1999) have shown that systematic burning of portions of the valley have occurred after 3,500BP with the intention of increasing productivity of economic plants, especially those that produce seeds, nuts, and roots. This activity, coupled with the notable accumulation and formation of “Kalapuya mounds” common in many portions of the valley, indicates a relatively sedentary lifestyle and may indicate the initial development of the pattern of permanent villages recorded in the ethnographic record (Roulette 1993; Zenk 1976, 1994; Connolly 2001).

The Clackamas Chinook

The earliest recorded contact with aboriginal groups living in and around the Portland Basin, along the eastern side of the divide created by the Tualatin Mountains, was documented in 1805 by the Lewis and Clark expedition as they made their way west down the Columbia River. The lower Columbia River

corridor region supported one of the densest hunter-gather populations in North America (Kroeber 1939). The heart of region was controlled by the Multnomah Chinook, who occupied “a rather dense stretch of villages” throughout the Portland Basin. To their south, along the lower stretch of the Willamette River including the northeastern portion of the project study area) were the Clackamas Chinook. Their territory included the Willamette Falls, an important fishing and regional trade-center.

Wintering close to the Columbia River, this population was supported to a large extent by massive runs of anadromous fish such as salmon, steelhead, shad, and sturgeon. Sea lions and especially seals were taken when available (Silverstein 1990). Diet was supplemented by a variety of seeds, tubers (especially Wapato), and berries as well as game such as waterfowl, small game (i.e. rabbits, squirrels, etc.), deer and elk. The rivers were also the primary avenues of transportation and trade, and each Chinook community were economically linked to upstream and downstream neighbors.

As a result of the increasing sediment deposition in this area during the Late Holocene, the oldest known archaeological sites on the floodplain are only about 3000 years old. Older sites undoubtedly are present in the area, buried beneath massive sediment deposits (Peterson et al. 2010).

Although present in larger numbers prehistorically, introduced diseases decimated Native populations, particularly in the densely populated Portland Basin. Consequently, “Chinookan society as seen by Lewis and Clark was already a memory in most external respects” by the late nineteenth century (Silverstein 1990:535). For the Chinookan speaking Clackamas, for example, Boyd (1999a:265) estimates a pre-contact (ca. 1770) population of about 12,000, and a post-epidemic (ca. 1855) population of ca. 300, a nearly 98% mortality over just an 85 year span.

By 1851, after at least two generations of contact with Euro-Americans and exposure-introduced diseases, the Tualatin and Clackamas had been dramatically reduced by introduced diseases. For the Clackamas and their immediate Chinookan neighbors, Boyd (1999:265) estimates a pre-contact (ca. 1770) population of about 12,000, and a post-epidemic (ca. 1855) population of 300, a nearly 98% mortality over just an 85 year span. After participation in the Dayton Treaty of 1855, most surviving Clackamas and Kalapuya survivors were removed to the Grand Ronde Reservation.

Historic Cultural Landscape

The first non-Indian settlers of the Oregon Territory, in the late 1820s and 1830s, included fur trappers, missionaries, traders, and explorers. Many of these immigrants, many with Native wives, took up farming as a second career. The first major overland immigration to the Willamette Valley by American settlers occurred in 1842. Within a few years the Barlow Trail, which followed the southern flank of Mt. Hood, opened the valley to thousands of immigrants who arrived in the Multnomah and Wahsington County areas and quickly applied for land grants.

The Donation Land Law of 1850 was designed to encourage the settlement the development of lands in Oregon. A settler could claim 320 acres of land, and a married couple 640 acres. Title to the land would be conferred after the claimant lived on and cultivated it for four consecutive years. Claim boundaries established prior to the first cadastral survey (1852 in this area) had legal priority, and account for the irregularly-shaped parcels that do not conform to the subsequently established section lines. Donation land claims were assigned numbers starting with 37, to distinguish them from the 36 standard square-mile sections within a township.

The future site of Portland was recognized by settlers as early as 1830 as a convenient campsite on the west bank of the Willamette, situated roughly midway between Oregon City (Willamette Falls) and Fort

Vancouver. The area was popularly referred to as the “the Clearing.” The original land claim for the site of Portland was filed in 1843 by Tennessee pioneer William Overton and Oregon City lawyer Asa Lovejoy (Roulette et al. 1994:11). Overton’s share of the claim was soon acquired by Oregon City merchant Francis Pettygrove. Lovejoy and Pettygrove platted the site of early Portland in 1845. The original townsite grid consisted of 16 blocks which extended from the river to Second Street and from Washington to Jefferson Street (Snyder 1970:15).

The discovery of gold in California in the mid-nineteenth century brought increased demand for Oregon agricultural products and lumber, and the newly established town of Portland was in a position to take advantage of these opening markets. The construction of the “Great Plank Road” (later called Canyon Road) in the 1850s increased the speed and efficiency of transportation of agricultural goods from the Tualatin Plain to Portland for export. Portland also offered river access to goods in the Willamette Valley. Portland became officially recognized in 1851, with a charter granted by the Territorial Legislature (Snyder 1970:15). The town grew quickly to encompass additional claims and incorporated additions to the north, south, and west. On the east side of the river the communities of East Portland and Albina were established. At this time two ferry services provided passage between the communities on the east and west bank of the Willamette River.

While the majority of the project area today appears as a part of the greater of Portland metropolitan area, historically it was made up of a number of small towns and cities. Within the project area, and now a portion of the contiguous urban sprawl of Portland, are Hillsdale, Maplewood, Tigard, Metzger, Durham, Lake Grove, Tualatin, Bonita, and West Portland. Today, only the southwest portion of the project area contains rural/agricultural developments; even so, towns like Sherwood, Onion Flats, and Six Corner are begging to appear as a single city from aerial imagery.

Current Study

During the course of the current investigation a number of literature sources were reviewed. Available digitalized General Land Office (GLO) maps, from the University of Oregon’s Map Library, dating from 1852 through 1865 were collected and geo-referenced into ESRI’s ArcMap9.2 computer program. The geo-referenced maps were then used to identify early homestead details and locations in relation to the current project area. In addition, historic aerial photographs from 1936 up through 1973 were collected, scanned, and geo-referenced in order to observe the spread of urban development within the project area through time. Also utilized, in conjunction with the digitized maps and photographs were archaeological site and survey shape files which locate and detail all previously recorded cultural sites and cultural surveys that occurred in or overlapped the project area (a 100 foot buffer was created around the current project boundary and all sites and surveys that fell within the buffer were included as well).

In addition to reviewing the historic maps and aerial photographs, all records for previously recorded sites and surveys reports filed at the State Historic Preservation Office were compiled, reviewed, and assessed for adequacy. These are summarized below.

Previous Cultural Resource Surveys

Forty-six cultural resource investigations, in the form of a pedestrian survey or subsurface testing, have been conducted within the current project area. Although it appears, from a summation of acres covered from the survey reports that a significant portion of the project area has been surveyed, many of these surveys are overlapping each other or were larger surveys with the majority conducted outside of the current project area. Systematic surveys have covered only about 349 acres (Figure 3), just 1.3% of the

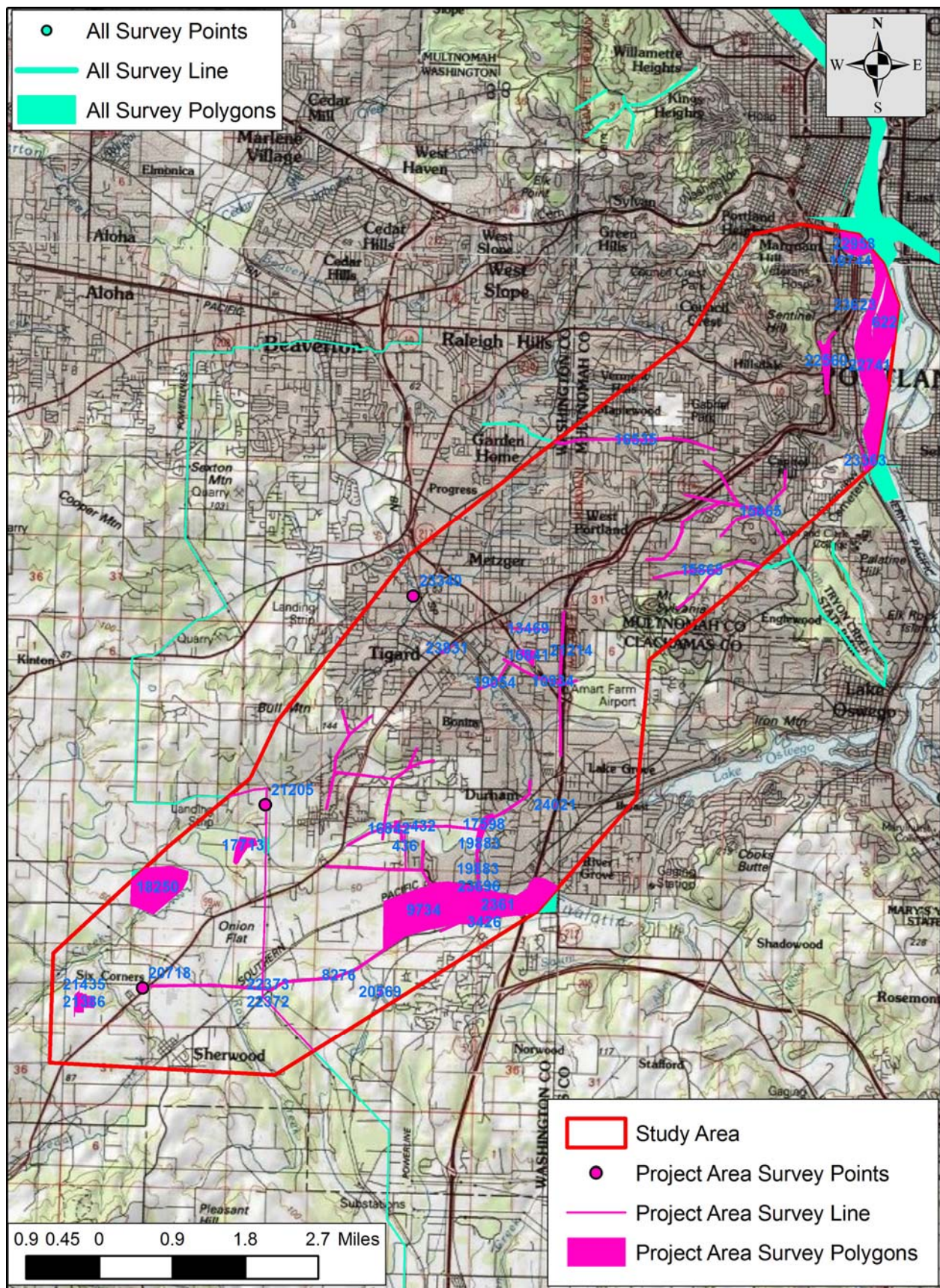


Figure 3. Location of archaeological surveys documented with the State Historic Preservation Office.

study area. To date, no large archaeological studies have been conducted in the study area. Table 1 lists the surveys, findings, and lists a determination of the projects validity to current planning projects in regards to accepted modern archaeological methodology. The list that follows includes the Oregon SHPO bibliographic reference and a quick synopsis of who conducted the cultural investigation and for whom, the size of the survey, finding, and the type work performed.

Cultural Resource Surveys In or Overlapping the Study Area

Report #	Year	Title	Author(s)	County	Township/Range
16841	1999	Letter Report: Eagle Hardware & Garden Inc, Cultural Resource Survey	John L. Fagan, Julie M. Schablitsky	Washington	

16841 (April 7, 1999): 14 acre pedestrian survey conducted by Julie Schablitsky and Ron Adams of Archaeological Investigations Northwest, Inc. for Eagle Hardware & Garden, Inc. as a requirement for a section 404 Clean Water Act permit from the U.S. Army Corp of Engineers for treatment of present wetlands. A literature search suggested a strong possibility of cultural material. A pedestrian survey with good ground visibility failed to identify archaeological or historical resources. No further cultural resource evaluation was recommended.

Report #	Year	Title	Author(s)	County	Township/Range
2361	1980	Tualatin Channel Improvement Study Cultural Resources	Robert A. Freed	Washington	

2361 (September 30, 1980): Survey acreage not reported and only selected portions of the project area were actually investigated by pedestrian survey. This report was prepared by Army Corps of Engineers staff archaeologist Robert Freed.

Report #	Year	Title	Author(s)	County	Township/Range
19883	2005	Letter Report - Archaeological Survey and Subsurface Probing at the City of Tualatin Bikeway and Pedestrian Bridge Project, City of Tualatin, Washington County, Oregon	Robert R. Musil	Washington	

19883 (July 25, 2005): Seven acre survey and subsurface archaeological investigation conducted by Robert R. Musil of Heritage research Associates, Inc. for the Tualatin Bikeway and Pedestrian Bridge Project. Archaeological investigations of the project area were conducted in three phases; pedestrian survey of the project area, auger probing of high probability locations, and shovel exploratory probes of high probability locations.

Report #	Year	Title	Author(s)	County	Township/Range
17007	1999	Dr James D Keyser's Yard A Preliminary Report On The Rock Art At Dr Keyser's Yard	Patricia McCoy	Multnomah	

17007 (May, 1999): Training report on an experimental replication site prepared by Patricia McCoy of the Oregon Archaeological Society. Replication site is located at Dr. James D. Keyser's private residence at 1815 SW Dewitt St., Oregon. Site consists of various forms of replicated rock art.

Report #	Year	Title	Author(s)	County	Township/Range
17713	2001	Morland Restoration-tualatin River Nwr	Nicholas Valentine	Washington	

17713 (February 27, 2001): 23 acre pedestrian survey (it reads "32 acres surveyed" on report cover (typo?) conducted by Nicholas Valentine, Alex Bourdeu and Jon Daehanke (US Fish & Wildlife Service Cultural Resources Team) for the Morand Restoration-Tualatin River NWR Project. [REDACTED]

Report #	Year	Title	Author(s)	County	Township/Range
22372	2006	A Cultural Resources Reconnaissance Survey of the Proposed Tualatin Basin Water Supply Project (Willamette Pipeline), Clackamas and Washington Counties, Oregon	Jason M. Allen, David V. Ellis, Elizabeth J. O'Brien, Nicholas J. Smits	Clackamas, Washington	1s/1w; 2s/1w; 3s/1w

22372 (June 6, 1993): Pipe line pedestrian survey conducted by AINW, Inc. for the proposed Tualatin River Basin Water Supply Project, including a limited records search at the Oregon SHPO and review of GLO maps and historic cartographic resources. A total of 5 historic buildings that may be eligible for the National Register cultural resources were identified. In addition, 18 high probability locations were identified with additional subsurface testing recommended. No archaeological cultural materials were noted during the survey in the project area.

Report #	Year	Title	Author(s)	County	Township/Range
22373	2007	Cultural Resource Survey and Selected Subsurface Testing for the Proposed Tualatin River Basin Water Supply Project, Clackamas and Washington Counties, Oregon	David V. Ellis, Elizabeth J. O'Brien, R. Todd Ogle, Michele L. Punke	Clackamas, Washington	1s/1w, 3w, 4w, 5w; 2s/1w, 2w; 3s/1w

22373 (June 6, 1993): Pipe line pedestrian survey and subsurface exploration investigation conducted by AINW, Inc. for the proposed Tualatin River Basin Water Supply Project. [REDACTED]

Report #	Year	Title	Author(s)	County	Township/Range
436	1977	Letter Report: Bluff Trunk and Upper Tualatin River Interceptor Portions of the Lower Tualatin Sewer Project	Julia A. Follansbee	Washington	

436 (February 28, 1977): Preliminary reconnaissance and subsequent subsurface testing report by Julia Follansbee prepared for Stevens, Thompson & Runyan, Inc. Test excavations were placed at 30 foot (ca.

9 m) intervals along the line, as the testing approached the river, probe intervals decreased to 10 feet (ca. 3 m). Test pits were 3 feet wide and were excavated to an average depth of 3.5 feet. [REDACTED]

Report #	Year	Title	Author(s)	County	Township/Range
13469	1992	Cultural Resource Assessment of the Proposed Dartmouth Road Extension, Tigard, Oregon	David V. Ellis	Washington	

13469 (November 12, 1992): A 3.9 acre pedestrian survey and literature search performed by David V. Ellis of Archaeological Investigations Northwest, Inc. (AINW) for the City of Tigard, for the proposed SW Dartmouth Road extension project. Pedestrian survey and literature searches identified no historic or prehistoric cultural resources in or near the project boundaries. Although dense groundcover obscured much of the surface visibility, no further work was recommended.

Report #	Year	Title	Author(s)	County	Township/Range
21435	2007	Results of a Formal Archaeological Survey of the Proposed Sherwood School Property, Washington County, Oregon	Julie J. Wilt	Washington	2s/1w

21435 (September 6, 2007): A 34 acre pedestrian survey and subsurface exploration was performed by Julie J. Wilt with Applied Archaeological Research, Inc. for Environmental Science and Assessment, LLC. in advance of construction of a new elementary and middle school in the town of Sherwood. Because the target landform was considered a high probability surface, shovel test pits (STPs) were excavated in areas where surface visibility was less than 50%. Fourteen STPs were excavated, all with negative results. No additional work was recommended.

Report #	Year	Title	Author(s)	County	Township/Range
21386	2007	Archaeological Reconnaissance and Shovel Test Surveys of the Proposed Sherwood School Site, Washington County, Oregon	Julie J. Wilt	Washington	2s/1w

21386 (September 4, 2007): Letter report to SHPO archaeologist Dr. Griffin summarizing the survey, field work, and findings of report number 21435.

Report #	Year	Title	Author(s)	County	Township/Range
19054	2004	Archaeological Survey and Subsurface Testing of the Wall Street Extension Project	R. Todd Baker, David V. Ellis	Washington	

19054 (June 28, 2004): A 2.3 acre pedestrian survey and subsurface testing performed by R. Todd Baker and David V. Ellis of Archaeological Investigations Northwest, Inc. (AINW) for DeHaas & Associates, Inc. in regards to the Wall Street Extension Project in the City of Tigard. AINW identified one high probability area obscured with thick grasses. [REDACTED]

Report #	Year	Title	Author(s)	County	Township/Range
21214	2007	Archaeological Survey and Shovel Testing of the Haines Street Swale for the 1-5 Corridor: Capital Highway to Willamette	R. Todd Baker, Jo Ann Reese	Washington	2s/1w

21214 (April 2, 2007): 1 acre archaeological survey and shovel testing performed by R. Todd Baker and David W. Cox of Archaeological Investigations Northwest, Inc. (AINW) for Murray, Smith & Associates, Inc. on behalf of ODOT in regards to the Haines Street Swale for the I-5 Corridor: Capital Highway to Willamette River Bridge Project. Pedestrian survey transects were conducted at 10 foot intervals; no prehistoric or historic-period archaeological resources were noted. No further archaeological investigations were recommended in the project area.

Report #	Year	Title	Author(s)	County	Township/Range
16842	1999	Letter Report: Jurgens Park Cultural Resource Survey	David V. Ellis	Washington	

16842 (March 30, 1999): Letter Report to Paul Hennon, Oregon Parks and Recreation Director concerning a 12 acre pedestrian survey for the proposed location of Jurgens Park, in Tualatin, performed by Archaeological Investigations Northwest, Inc. (AINW). Results of intensive pedestrian survey (transects spaced at 10 meter intervals) identified no archaeological resources.

Report # ▼	Year	Title	Author(s)	County	Township/Range
622	1974	Report on Archaeological Reconnaissance of Ross Island, Multnomah County, Oregon, June, 1974	Robert W. Bogue, Ruth D. McGilvra, Roger Wiggin	Multnomah	

622 (August 18, 1975): Archaeological reconnaissance of Ross Island was completed by Robert Bogue, Ruth D. McGilvra, and Roger Wiggin of Portland State University's Anthropology Department at the request of the Army Corps of Engineers. Plans to proceed with quarry operations by the Ross Island Sand and Gravel Company spawned the investigation. Archaeologists returned several times over the field season until the whole island could be surveyed (previous surveys were hampered by thick brush and/or high river levels. No cultural material was noted but only prehistoric materials were surveyed for; historic artifacts or features were not considered significant at this time. Report is vague as there is, in a cover letter to Mr. R. L. Stein of Engineering Division of the U.S. Corps of Engineers from Paul B. Hartwig with the Oregon SHPO, a mention of an "Oaks Amusement Park" that was determined to be eligible for the National Register but "paper work on it has not been submitted to date (as of 1975). Mr. Hartwig continues to say that he does not think this resource would be affected by gravel dredging operation on the Island. No mention of the amusement park is made in the survey report. No further work was recommended on Ross Island.

Report #	Year	Title	Author(s)	County	Township/Range
8276	1987	The Tualatin-Sherwood/Edy Road Project	Sara A. Scott	Washington	

8276 (April 1987): An 18 acre pedestrian survey was conducted by Sara Scott of CHM2 Hill for the Washington County Department of Land Use and Transportation in preparation for the Tualatin-Sherwood/Edy Road Project

Report # ▼	Year	Title	Author(s)	County	Township/Range
432	1976	The Archaeological Reconnaissance of the Proposed Lower Tualatin Sewer Project, Washington County, Oregon	David R. Brauner, William Robbins	Washington	

432 (June 21, 1976): A Pedestrian survey performed by David R. Brauner and William Robbins of the Department of Anthropology, Oregon State University. Approximately 15 miles of sewer line were surveyed

[REDACTED]

Report # ▼	Year	Title	Author(s)	County	Township/Range
14018	1993	Archaeological Probing For Site Discovery Purposes, Tualatin Development Project, Tualatin, Oregon			

14018 (July 26, 1993): A pedestrian survey of 130 acres and subsurface testing by R. Musil of Heritage Research Associates was conducted for a City of Tualatin development project.

[REDACTED]

In the vicinity of the purported historic structure, archaeologist failed to identify the location or nature of the building. Air photographs of the location place the structure in a very small temporal window of existence – apparently not long enough to accumulate a lasting physical presence. No further work was recommended for the project area.

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

Report #	Year	Title	Author(s)	County	Township/Range
15865	1996	Hra Letter Report 96-45: Cultural Resource Survey Of Four Portland Area Watersheds, Portland, Oregon	Julia A. Ricks, Laura White	Multnomah	

15865 (September 18, 1996): Report on a pedestrian cultural resource survey of four Portland area watersheds performed by Julie Ricks and Laura C. White of Heritage research Associates Inc., for a stream bank restoration project undertaken by the City of Portland. In areas with natural vegetation survey transects were walked at a distance of 10 meters from the stream corridor; developed areas were visited in an automobile [REDACTED]

Report #	Year	Title	Author(s)	County	Township/Range
19007	2004	Determination of No-Effect for the PGE Easement at Keeler-Oregon City No. 2	Nicole A. Stutte	Washington	

19007 (August 24, 2004): Pedestrian survey of a small parcel (10x100 ft.) performed by Nicole Stutte of Bonneville Power Administration for a land easement granted to Portland General Electric to bury a small line under a BPA power line. Area was found to be disturbed, no archaeological resources were found.

Report #	Year	Title	Author(s)	County	Township/Range
18250	2001	Steinborn Wetland Enhancement/Restoration-Tualatin River NWR	Nicholas Valentine	Washington	

18250 (November 20, 2001): A 420 acre pedestrian survey performed by Nicholas Valentine and crew of the U.S. Fish and Wildlife Service for the proposed Steinborn Wetland Enhancement/Restoration-Tualatin River NWR project. Freshly plowed fields provided excellent ground visibility [REDACTED]

Report #	Year	Title	Author(s)	County	Township/Range
16535	1998	Archaeological Survey Of The Fanno Pump Station And Pressure Line Project, Garden Home And Multnomah Sections, Washington & Multnomah	Robert R. Musil		

16535 (March 23, 1998): Report on an archaeological survey and subsurface exploration of the Fanno pump station and pressure line project, performed by Robert R. Musil and Robert Wenger of Heritage Resource Associates, Inc. for Thomas/Wright, Inc. Survey transects were spaced at either ten meters or five meter intervals, depending on the area being investigated. Because of thick ground cover in the region of the pump house, archaeologist employed a bucket auger to investigate subsurface deposits. No cultural material was noted, and no further archaeological investigations were recommended.

Report #	Year	Title	Author(s)	County	Township/Range
23623	2010	Cultural Resources Study of the 4310 SW Macadam Avenue Property. Portland, Multnomah County, Oregon	Aimee A. Finley, Melissa Lehman, Bill R. Roulette	Multnomah	1s/1e

23623 (June 2, 2010): A 1.24 acre survey performed by Bill R. Roulette, Aimee A. Finley, and Melissa L. Lehman of Applied Archaeological Research, Inc. for Lindquist Development Company, Inc. at the 4310 SW Macadam Avenue property. The project area is a large paved top parking lot and warehouse located approximately 600 feet from the Willamette River. Research indicates the project area was modified by residential development at the turn of the 20th century before being converted to industrial property. Because of the potential for both historic and prehistoric cultural materials, backhoe-assisted subsurface exploration or construction monitoring were recommended.

Report #	Year	Title	Author(s)	County	Township/Range
23340	2010	Results of a Cultural Resources Study of the OR-POR424-A Greton Cell Site, Tigard, Washington County, Oregon	Aimee A. Finley	Washington	1S/1W

23340 (April 26, 2010): A less than one acre survey of a proposed cell phone tower location was conducted by Archaeological Research, Inc. The investigation was designed to both investigate potential

impacts to cultural materials in the project area as well as a viewshed analysis of the proposed cell phone tower location as it relates to historic resources in the general project vicinity. It was noted at the time of the survey that the project area has been subjected to extreme cut/fill processes during development and the current ground surface of the project area was previously deeply buried. No cultural material of any type was noted as the area was extremely disturbed. No additional investigations were recommended.

Report #	Year	Title	Author(s)	County	Township/Range
23363	2010	Results of an Archaeological Survey of the Preferred Alternative (Alternative D Refined)	Julia J. Wilt	Multnomah	1s/1e

23363 (April 16, 2010): An archaeological pedestrian and exploratory survey on 7 acres of a 16.9 acre project area performed by Julie Wilt of CH2M Hill for Multnomah County in regards to the Sellwood Bridge Project. Steep river banks, asphalt parking lots and other urban development limited the area suitable for survey. Twenty-two shovel probes were dug. No cultural resources were identified, but monitoring during construction was recommended due to inaccessibility of the much of the APE.

Report #	Year	Title	Author(s)	County	Township/Range
22958	2008	Portland-Milwaukie Light Rail Project Archaeological Resources Reconnaissance Study	Michael J. Boynton, Jo Ann Reese		

22958 (February 22, 2008): Archaeological resource reconnaissance study report prepared by Jo Reese and Michael J. Boynton of Archaeological Investigations Northwest, Inc. for METRO of Portland in regard to the Portland-Milwaukie light rail project

[REDACTED]

[REDACTED] No new cultural resources were noted, but archaeological monitoring was recommended during construction on the high probability landforms.

Report #	Year	Title	Author(s)	County	Township/Range
21205	2007	A Cultural Resources Survey for the Matrix Corporation Waterline Easement	Nicole F. Brannan, Sunshine R. Clark	Washington	

21205 (April 25, 2007): A .04 acre survey conducted by Bonneville Power Administration Contract Archaeologist Nicole F. Brannan and Sunshine R. Clark Schmidt for a water line easement (15x100 ft.) requested by Matrix Development Corporation. No cultural resources were identified.

Report #	Year	Title	Author(s)	County	Township/Range
20718	1992	Letter Report: Archaeological Testing in the Vicinity of Six Corners along the Sherwood Section of the Pacific Highway (99W), Washington County, Oregon	Guy L. Tasa	Washington	

20718 (July 20, 1992):

[REDACTED]
[REDACTED]
[REDACTED]

Report #	Year	Title	Author(s)	County	Township/Range
20569	2006	Archaeological Survey of Select Portions of the Washington County Wilsonville to Beaverton Commuter Rail Project Alignment	Sarah McDaniel	Clackamas, Washington	

20569 (July 2006): Letter report of an archaeological survey of portions of Washington County's Wilsonville-Beaverton commuter rail alignment performed by Sarah McDaniel of URS Corp. Survey area totaled four acres, 20 meter transects when possible

Report #	Year	Title	Author(s)	County	Township/Range
24021	2010	Archaeological resources Study of Six 2009 ITS Rural and Urban Improvement Work Areas, Clackamas, Clatsop, Multnomah and Washington Counties, Oregon.	Aimee A. Finley, Jessica Hale	Clackamas, Clatsop, Multnomah, Washington	1n/1e; 2n/4w, 6w; 2s/1w; 3s/8e; 4n/6

24021 (January 14, 2010): A pedestrian survey of 66 acres on six parcels in Clackamas, Clatsop, and Washington counties reported by Jessica A. Hale and Aimee A. Finley of Applied Archaeological Research, Inc. Four parcels were examined with 5 meter transects; the other two were located within the freeway corridor either on fill or within road cuts, No cultural resources were identified, and additional cultural investigations or monitoring were recommended.

Report #	Year	Title	Author(s)	County	Township/Range
23831	2010	Archaeological Survey of the SW Main Street-Highway 99W to Railroad Corridor (Tigard) Project, Washington County, Oregon	Brian G. Buchanan	Washington	2s/1w

23831 (November 23, 2010): A 3.5 acre survey report produced by Brian G. Buchanan and Judith A. Chapman of AINW for the SW Main Street-Highway 99W railroad project. No archaeological resources were identified.

Report #	Year	Title	Author(s)	County	Township/Range
23696	2008	Archaeological Survey of the Lower Tualatin Pump Station, City of Tualatin, Washington County, Washington	Robert R. Musil	Washington	2S/1W

23696 (February 6, 2008): Letter report of the results of an archaeological survey undertaken within the project limits of the Lower Tualatin pump station by Robert Musil of Heritage Research Associates, Inc. The project area had originally been surveyed by Robert A. Freed for the U.S. Army Corp of Engineers (Freed 1980; refer to SHPO #2361). In late summer of 1982 Heritage Researchers Associates Inc., conducted survey on the south side of the trestle and recorded site 35WN70 (Minor and Toepel 1982). The general project location was then visited again by John Fagan for the U.S. Army Corp of Engineers in 1987 which noted a number of cultural resources needing additional investigation (Fagan 1987). During the current investigation, pedestrian survey was conducted by a single surveyor walking within the limits of the project boundaries, examining about one acre

Report #	Year	Title	Author(s)	County	Township/Range
23622	2010	Cultural Resource Survey of the Proposed Habitat Restoration at Hedges Creek in Tualatin, Washington County, Oregon	Krey N. Easton, Bill R. Roulette	Washington	2s/1w

23622 (May 21, 2010): Survey of 3.2 acres of a 20 acre project area was done surveyed by Applied Archaeological Research, Inc. for The Wetlands Conservancy, Inc. At the time of the survey 80% of the project area was inundated with water; pedestrian survey of exposed areas used five meter transects. Two high probability areas were noted at the time of the survey and further explored with 16 30x30 cm shovel probes. No cultural material was noted.

Report #	Year	Title	Author(s)	County	Township/Range
16744	1998	Cultural Resources Inventory of the Proposed FTV Western Build Part 1: Oregon (4 Vols)	Philip Fulton, Nancy Sharp		

16744 (1998): An across-state survey of a fiber optic line survey conducted by Northwest Research for the Bureau of Land Management. Only a very small portion of the corridor overlapped the study area, and no cultural resources were recorded in the current study area.

Report #	Year	Title	Author(s)	County	Township/Range
22560	2009	Cultural Resource Survey and Evaluation of the I-5 SW Iowa Street Viaduct Project (MP 298.2), Multnomah County	Thomas J. Connolly, Christopher L. Ruiz	Multnomah	1s/1e

22560 (2009): Cultural resource survey and evaluation of the I-5 SW Iowa street viaduct performed by Christopher Ruiz of the Museum of Natural and Cultural History for the Oregon Department of Transportation. During the course of the investigation a historic records search, intensive pedestrian survey, subsurface reconnaissance and evaluation were conducted

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Report #	Year	Title	Author(s)	County	Township/Range
10934	1990	Letter Report: Archaeological Survey of the I-5 at Highway 217/Kruse Way Project, Washington County, Oregon	Richard D. Cheatham	Washington	1S/1W; 2S/1W

10934 (January 2, 1990): Letter report by Richard Cheatham of the University of Oregon on a pedestrian survey of approximately 100 acres of ODOT highway right-of-way for the I-5 at Highway 217/Kruse Way Project in Washington County. No cultural resources were noted and no additional work was recommended.

Report #	Year	Title	Author(s)	County	Township/Range
3426	1981	Report on the Archaeological Survey of the S.W. 89th Pacific Highway (Tualatin) Section, S.W. Nyberg Road, Washington County	Richard M. Pettigrew	Washington	2S/1W

3426 (August 24, 1981): Pedestrian survey Richard Pettigrew of OSMA of four acres on the SW 89th- Pacific Highway Section of SW Nyberg Road project for the ODOT. No cultural material was noted and no additional archaeological investigations were recommended.



General Land Office Maps

The General Land Office (GLO) oversaw the surveying, platting, and sale of public lands in the Western United States, and administered the Homestead Act and the Preemption Act in disposal of public lands. The GLO maps represent the first cadastral survey of Oregon, establishing the township and range mapping grid, and formally dividing townships into 36 one mile square sections. A married

couple could apply for and were commonly granted 640 square acres designated for homesteading and farming (approximately a single square mile Section). This subdivision of the valley and plains created a pattern still visible in rural America today; straight roads with sudden ninety degree turns were developed along these property lines between farms which divided agricultural regions into square mile blocks.

Table 3. Homestead identified on 1852-1865 GLO maps.

Homestead Claimant	Range	Township	Section	Map Date
Cranfield	1W	2S	19	1852
S. Richardson	1W	2S	11	1852
J.C. Trulliger	1W	2S	12	1852
J. Hicklin	1W	2S	1	1852
Mathews	1W	2S	10	1852
S(?). Hicklin	1W	2S	2	1852
F. Mckinney	1W	2S	21	1852
John Jacobs	1W	2S	10	1852
John D. Richardson	1W	1S	25	1852
George Richardson	1W	1S	36	1852
Mitchell	1E	1S	31	1852
Thomas Stephens	1E	1S	22	1852
Thomas Tice	1E	1S	21	1852
Ruben Soper	1E	1S	30	1852
S. Ross	1E	1S	15	1852
Albert Kelly	1E	1S	17	1852
James Terwilliger	1E	1S	15	1852
John Donner	1E	1S	9	1852
Elizabeth Caruthers	1E	1S	10	1852
John B. Talbot	1E	1S	8	1852
Thomas Stott	1W	1S	36	1852
David Graham	1W	1S	35	1852
William Lavery	1W	2S	14	1852
William Hicklin	1W	2S	16	1852
William Graham	1W	2S	1	1852

During the course of this study the GLO maps with dates ranging from 1852 through 1865 were collected from the University of Oregon Knight Library and georeferenced in ArcMap 9.2. Noted homesteads and developments were digitized (Figure 5), and located within the framework of modern highway systems, developments, and landforms. From these maps, twenty five historic homestead locations were identified within the project area (Table 3).

Aerial Photography

Historic aerial photographs of the majority of the project area were also collected from the University of Oregon Knight Library. Aerial photographs from 1936 and 1955 were stitched together and geo-referenced into Arcmap project (Figure 6). A modern aerial view was also geo-referenced. This not only provides a sequence of imagery that captures the rate and nature of urban development, but serves as an aid to identify early developments of historic age (50 and 75 years using the federal and state guidelines, respectively). This imagery can be useful in identifying areas of cultural resource sensitivity that might allow for targeting more focused cultural resource investigations.

By comparing multiple years of aerial photographs from the same project area, usually available in more developed regions, the pattern and speed of expansion of residential and industrial development can be seen. Three photographs of a region just to the east of modern day Tigard, from the historic period to modern times, reveals dramatic changes in the urban growth (Figure 7).

Discussion

The purpose of this study is to evaluate previous cultural resource investigations of a particular project area. Aspects of the cultural investigations reviewed include the level of background research performed prior to beginning the physical investigation, location, size, and methodology of the pedestrian survey, the age of the survey and report, who created the report, for what agency and what project the report was created. The reports were scrutinized to determine the findings and to summarize the work completed. This was all performed with the goal determining the extent to which these investigations can serve to guide modern planning efforts; that is, assessing the nature and adequacy of coverage, and whether surveys were conducted to acceptable current standards.

Another aspect of the investigation was to determine what sort of landform analysis could be performed to help identify general areas with an increased probability for historic and prehistoric archaeological sites. During the course of the investigation all available site forms and survey reports pertinent to the were retrieved from the Oregon SHPO. In addition, historic maps and aerial photographs were gathered and digitized. These data were then digitized into ESRI's ArcMap GIS software.

The subject parcel is a large area of land containing a wide variation of natural and cultural landscapes. Prehistorically, the Tualatin Mountains separated two distinct cultural and linguistic communities. To the west aboriginal subsistence relied heavily on hunting game and gathering of roots, fruits, and seed crops from meadows and marshlands, while east of the mountains subsistence and residence patterns centered on the Willamette and the Columbia Rivers. Historically, settlers who were granted land claims to the west of the mountains, in the Tualatin plains, focused on an economy of farming and agriculture while early in the Portland Basin the economy relied heavily on trade and industrial pursuits.

A statistical landform analysis of cultural resources was not possible during the current investigation because the low number of cultural resources in the project area would not give a credible sample size. However, throughout the Willamette Valley there tends to be a positive association between prehistoric sites and landforms on or near water sources and wetlands. A predictive model focusing on the possible locations of prehistoric cultural sites in Washington County was created by Robert Keeler (1980) and, while dated, can still be considered pertinent. He made a number of broad generalizations about prehistoric site locations in the Tualatin Valley, in slightly modified form, can still be used to guide archaeological investigations today:

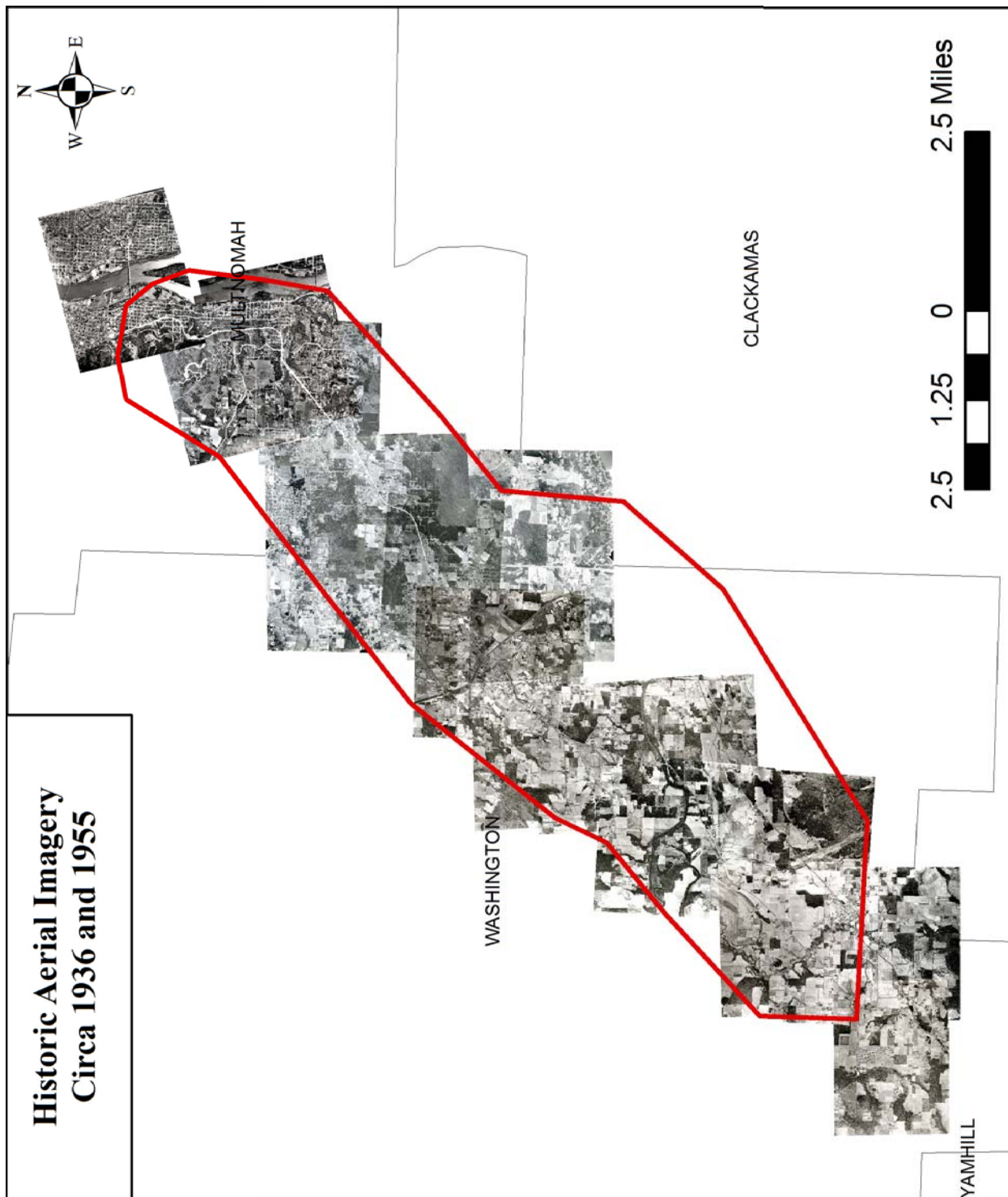


Figure 6. Georeferenced historical air photos.

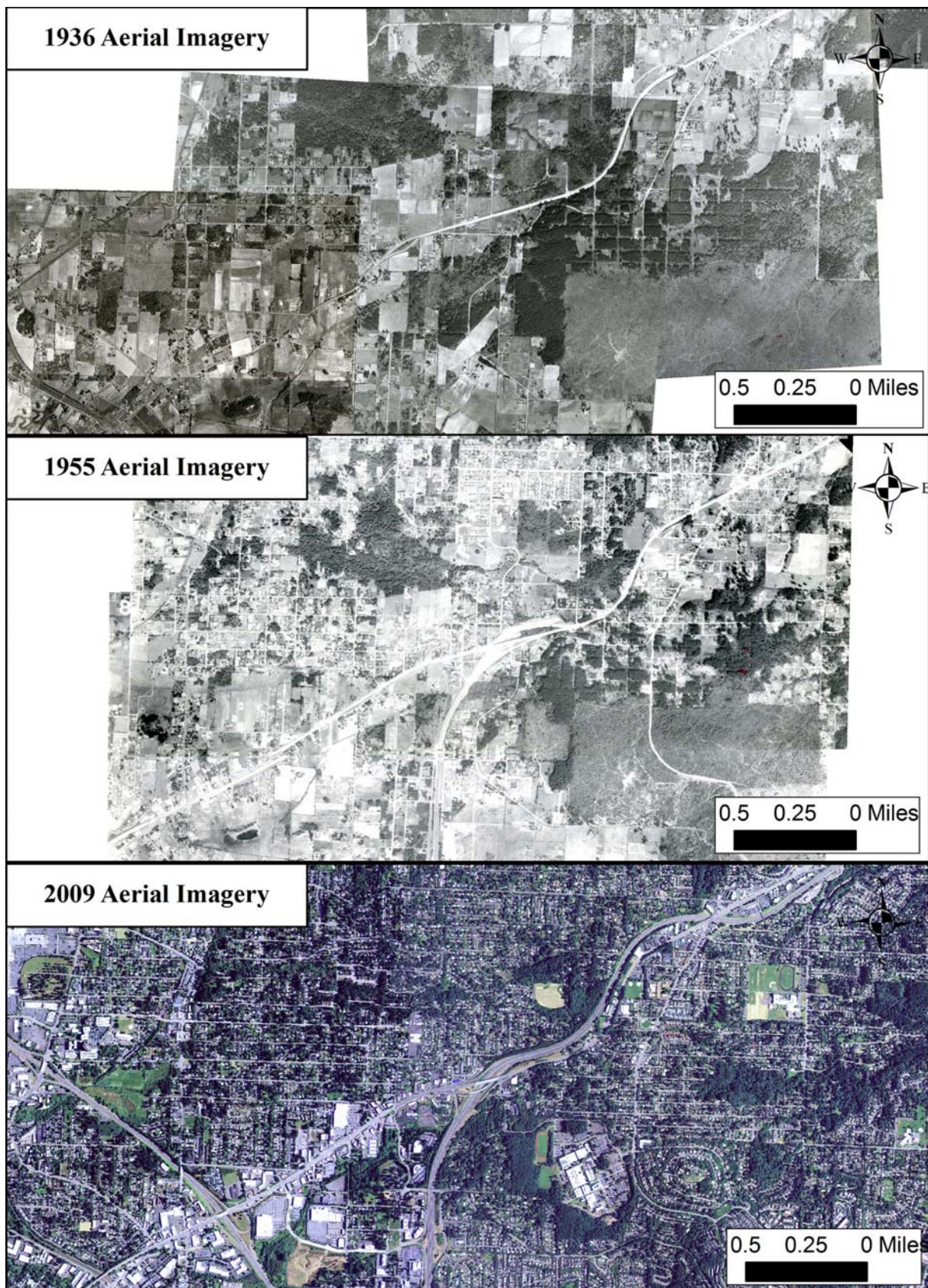


Figure 7. Aerial photo sequence showing the progress of development in part of the study area.

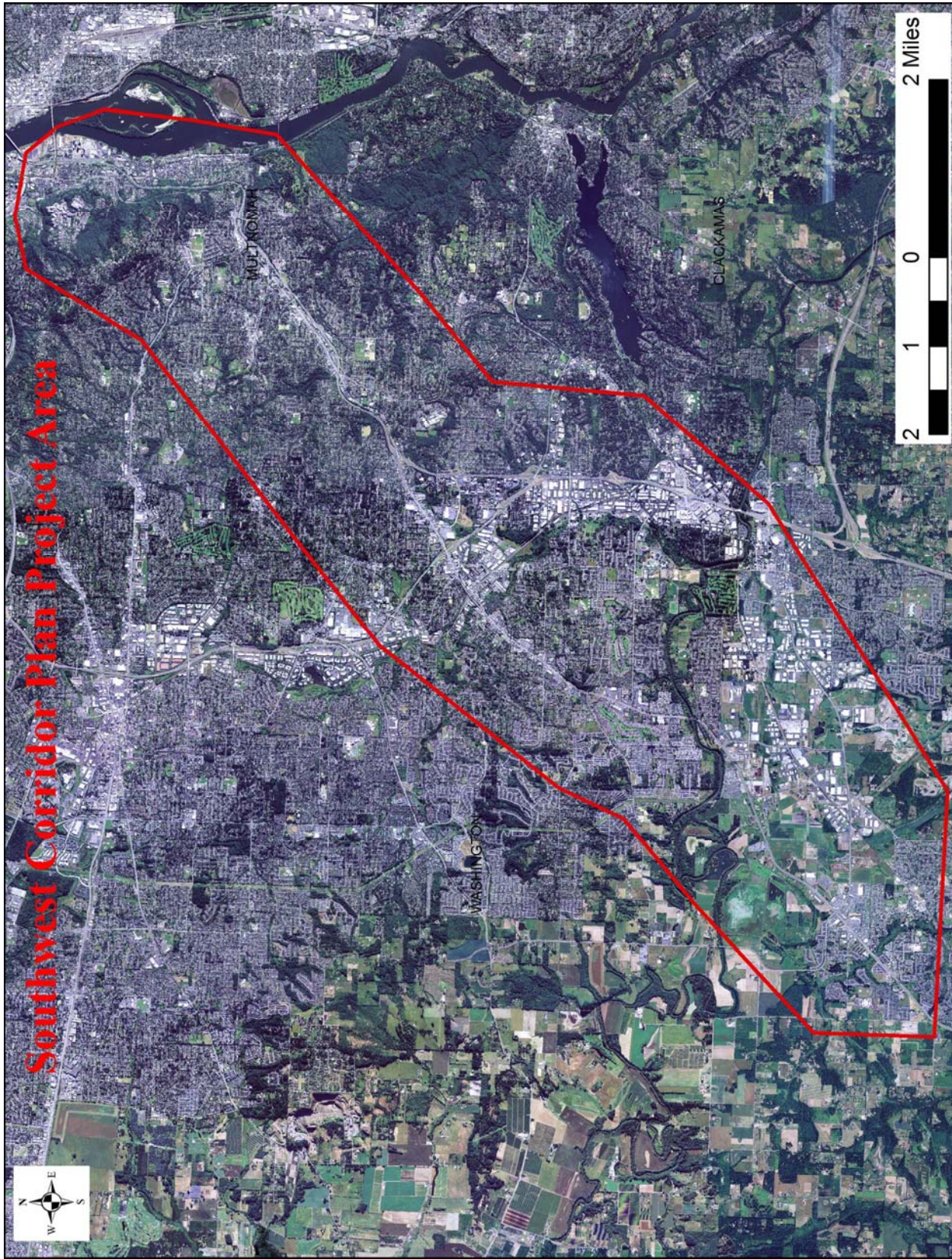


Figure 8. Current aerial imagery of the study area.

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