

CULTURAL RESOURCES REPORT COVER SHEET

DAHP Project Number: 2021-07-04728

Author: Tom Ostrander, M.Sc., Chanda Schneider, and Micca A. Metz, M.S.

Title of Report: Cultural Resources Assessment for the Freeman Logistics
Development Project

Date of Report: 9/23/2021

County: Pierce Sections: 17,20 Township: 20 N Range: 4 E

Quad: NA Acres: 20.8

PDF of report submitted (REQUIRED) ☒ Yes

Historic Property Inventory Forms to be Approved Online? ☐ Yes ☒ No

Archaeological Site(s)/Isolate(s) Found or Amended? ☐ Yes ☒ No

TCP(s) found? ☐ Yes ☒ No

Replace a draft? ☐ Yes ☒ No

Satisfy a DAHP Archaeological Excavation Permit requirement? ☐ Yes # ☒ No

Were Human Remains Found? ☐ Yes DAHP Case # ☒ No

DAHP Archaeological Site #: NA

Final

FREEMAN LOGISTICS DEVELOPMENT PROJECT, PUYALLUP, PIERCE COUNTY, WASHINGTON

Cultural Resources Assessment

Prepared for
Vector Development Company

September 2021



Final

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PUYALLUP, PIERCE COUNTY, WASHINGTON**
Cultural Resources Assessment

Submitted to
Vector Development Company

Prepared by
Tom Ostrander, M.Sc., Chanda Schneider, and Micca A. Metz, M.S.

This report is exempt from public distribution and disclosure
(RCW 42.56.300)

ESA Project Number 202100711.0
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ABSTRACT

Environmental Science Associates (ESA) was retained by Vector Development Company (Vector) to conduct a Cultural Resources Assessment for the Freeman Logistics Development Project (Project) located at 4723–5117 Freeman Road E, in Pierce County, Washington. The 20.8-acre Project Area is currently used for residential and agricultural purposes. The Project will demolish existing buildings and structures, grade the property, and construct two new warehouses, Building A (approximately 330,000 square feet) and Building B (102,000 square feet). The facility will also include 202 paved parking spaces. General surface grading for buildings and parking lots will generally require less than 1 meter (3.3 feet) of excavation, although, in some cases, building foundations and utilities may extend up to 2 meters (6.6 feet) below surface (bs).

The Project is subject to Chapter 43.21C of the Revised Code of Washington (RCW) – the State Environmental Policy Act (SEPA). SEPA requires that Historic and Cultural Preservation be considered as part of the environmental review process. This report has been written to meet the standards required by SEPA. The local authority administering this SEPA action is the City of Puyallup.

The majority of the background research and literature review for this Cultural Resources Assessment is based off of a desktop analysis report previously completed for an earlier version of the Project (Berger 2020). The desktop analysis report is included in its entirety as Appendix B. ESA updated and supplemented this research as needed. ESA then conducted a surface and subsurface archaeological survey of the Project Area. The survey consisted of a total of 69 shovel/auger probes excavated to a target depth of 7 feet (210 cm) bs. No archaeological sites, isolates, or potential cultural indicators (such as concentrations of charcoal, ash, heat affected soil, or shell) were identified during the survey.

The survey found that the Project Area is entirely within the floodplain of the Puyallup River. It has been plowed and/or graded across its surface, and deeper deposits represent massive beds of alluvium with no buried surfaces, laminations, or other distinct contexts with an elevated probability of containing cultural resources. ESA recommends that no further cultural resources work be conducted as part of the Project. ESA does recommend that an Inadvertent Discovery Plan (IDP) be in place to establish protocols and chains of communication in the event that cultural resources are identified during construction of the Project.

The authors of this report meet the Secretary of the Interior Professional Qualifications Standards for Archaeologist and Historian.

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1. INTRODUCTION

Environmental Science Associates (ESA) was retained by Vector Development Company (Vector) to conduct a Cultural Resources Assessment for the Freeman Logistics Development Project (Project) located at 4723–5117 Freeman Road E, in Pierce County, Washington. The Project is located near the City of Puyallup, approximately a quarter-mile north of the Puyallup River, in Sections 17 and 20 of Township 20 North, Range 4 East on the Puyallup 7.5' series topographic map (Figure 1; Figure 2). It is located on Pierce County tax parcel numbers 0420174075, 0420201039, 0420201066, 0420201034, 0420201052, 0420201045, 0420201040, 0420205016, 0420201042, 0420201027, 0420201101, 0420205017, and 0420205003.

1.1 Project Description

The Project Area is currently used for residential and agricultural purposes (Figure 2). As a part of Project construction, the existing structures within the Project Area will be demolished. The Project will result in the construction of two new warehouse structures, Building A (approximately 330,000 square feet) and Building B (102,000 square feet). In addition to the two buildings, the facility will include 202 parking spaces. The Project Area will be graded across its extent and supporting infrastructure, such as revisions to the existing roadways, and utilities will be constructed. The Project Design is included as Appendix A.

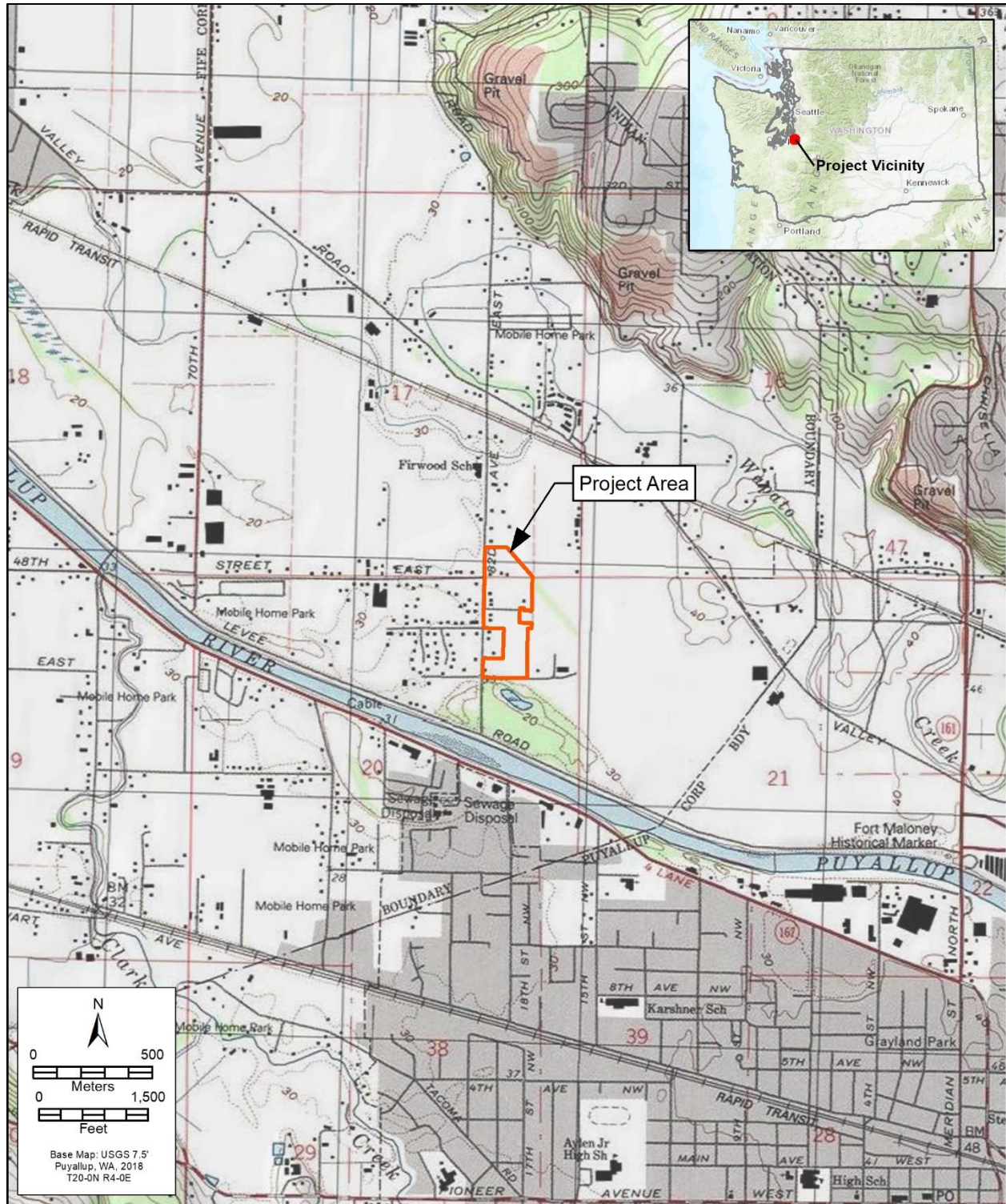
1.2 Regulatory Environment

Some development projects within the State of Washington are subject to Chapter 43.21C of the Revised Code of Washington (RCW) – the State Environmental Policy Act (SEPA). SEPA requires that Historic and Cultural Preservation be considered as part of the environmental review process. This report has been written to meet the standards required by SEPA. It has been prepared by a professional archaeologist who meets the requirements of the U.S. Secretary of the Interior. The local authority administering this SEPA action is the City of Puyallup (City). The City oversees/reviews cultural resources within its jurisdiction in cooperation with the Washington State Department of Archaeology and Historic Preservation (DAHP).

Additional laws that apply to archaeological projects conducted within the State of Washington include: Archaeological Sites and Resources (RCW 27.53), Indian Graves and Records (RCW 27.44), Human Remains (RCW 68.50), and Abandoned and Historic Cemeteries and Historic Graves (RCW 68.60).

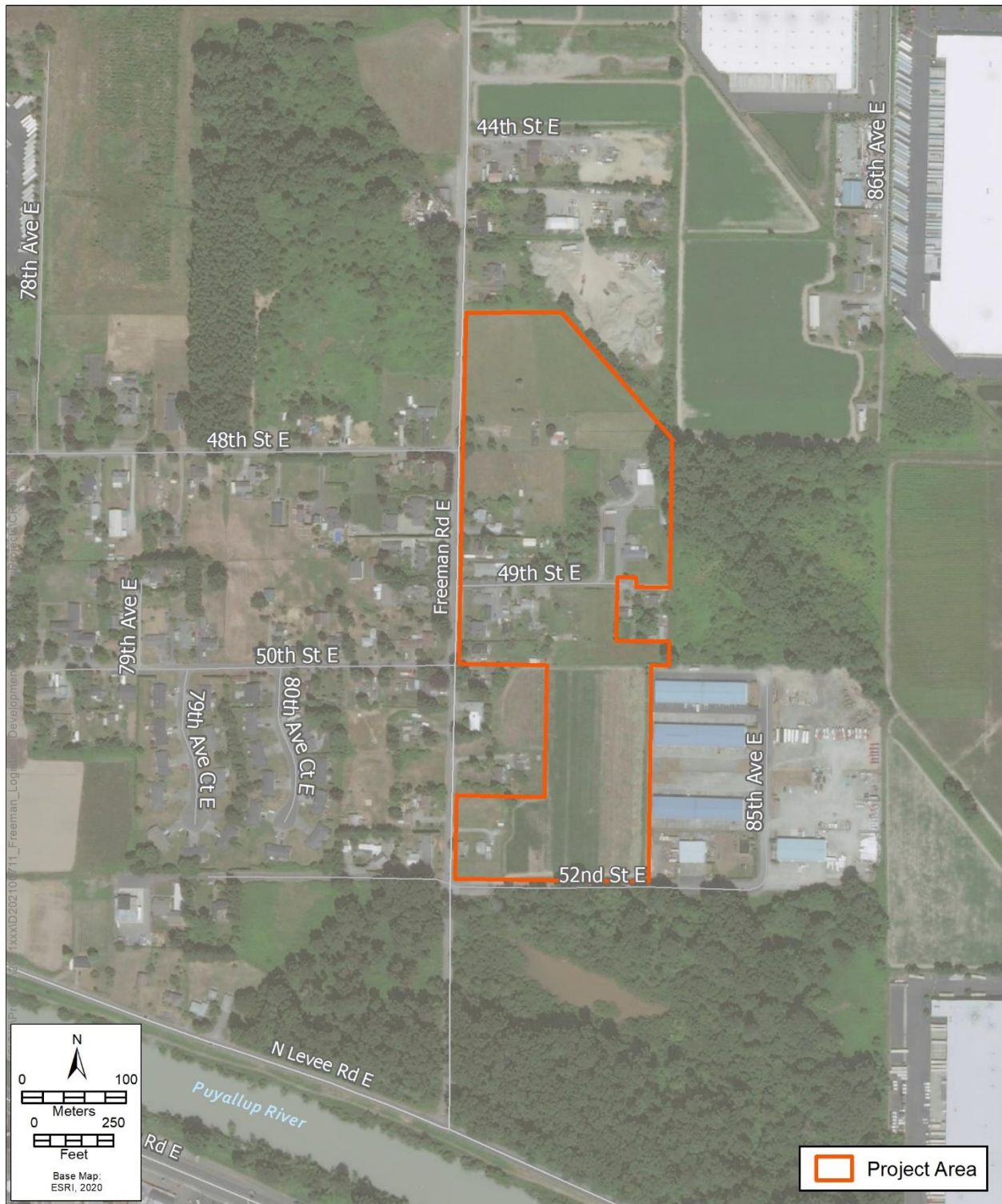
1.3 Project Area

The Project Area is approximately 20.8 acres and is currently split between single-family residential and agricultural use. Project construction will occur across the entire Project Area. Following demolition of existing buildings and structures, the Project Area will be graded. General surface grading for buildings and parking lots will typically require less than 1 meter (3.3 feet) of excavation, although, in some cases, building foundations and utilities may extend up to 2 meters (6.6 feet) below surface (bs).



Prepared by ESA

Figure 1
Location of the Freeman Logistics Development Project Area



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Figure 2
Aerial view of the Freeman Logistics Development Project Area

2. PROJECT SETTING

2.1 Research Methods

The majority of the background research and literature review for this Cultural Resources Assessment is based off of a desktop analysis report previously completed for an earlier version of the Project (Berger 2020). The desktop analysis report is included in its entirety as Appendix B.

The report sections presented here include additional information necessary to support the archaeological field survey, address the current version of the Project, and provide additional detail when appropriate. This update research was conducted in a one-mile study area surrounding the Project Area. Research included a review of the Washington Information System for Architectural and Archaeological Records Data (WISAARD) system maintained by DAHP; and digital collections of the U.S. Bureau of Land Management, Washington State Archives, Tacoma Public Library, University of Washington Libraries, Pierce County Assessor, and other online resources within ESA's research library.

In addition, ESA contacted cultural resources technical staff at the Nisqually Indian Tribe, Puyallup Tribe of Indians, and Squaxin Island Tribe to solicit Tribal information related to the Project Area. The Nisqually Indian Tribe responded that they had no specific knowledge regarding resources within or adjacent to the Project Area. At the time of this report, no response had been received from the Puyallup Tribe of Indians or Squaxin Island Tribe. The Puyallup Tribe of Indians had raised concerns about potential cultural resources within the Project Area during the initial rezoning application for the Project. This concern has led to the cultural resources literature review for the project, and this supplemental survey assessment.

2.2 Environmental Setting

No additions to the environmental setting contained in the existing desktop assessment report for the Project were identified during ESA's research. However, maps of the geological and soils conditions are presented here for reference. The Project Area is within the floodplain of the Puyallup River to the south and Wapato Creek to the North. Flooding from these waterways has deposited deeply bedded Holocene alluvial material across the Project Area (Berger 2020; Figure 3, Figure 4). The Puyallup fine sandy loam and Sultan Slit loam soils mapped in the Project Area are low to moderate energy alluvial soils (NRCS 2001, 2012). These soil types are capable of burying and preserving cultural resources and the Holocene deposits extend past the maximum vertical extent of the Project Area.

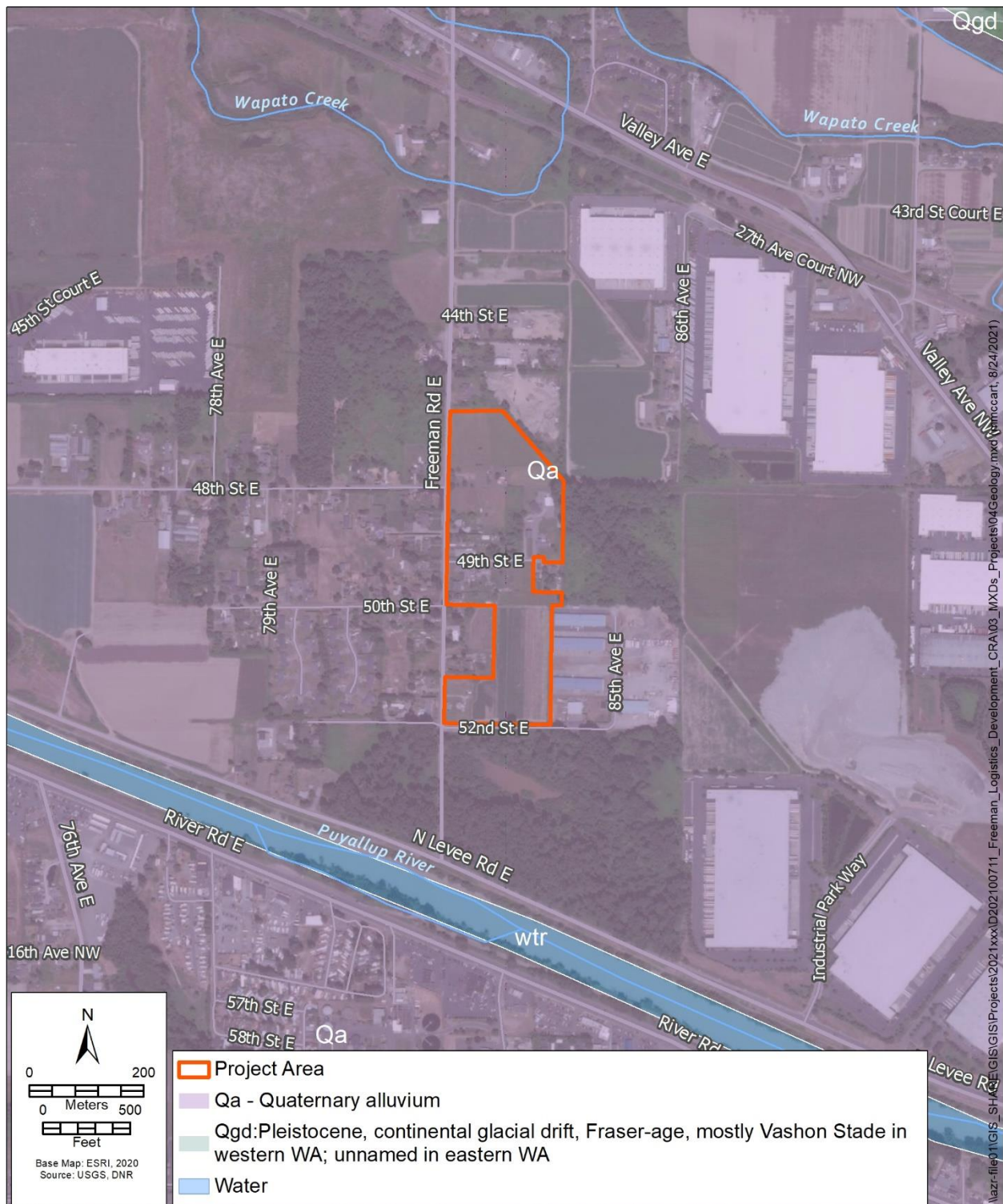
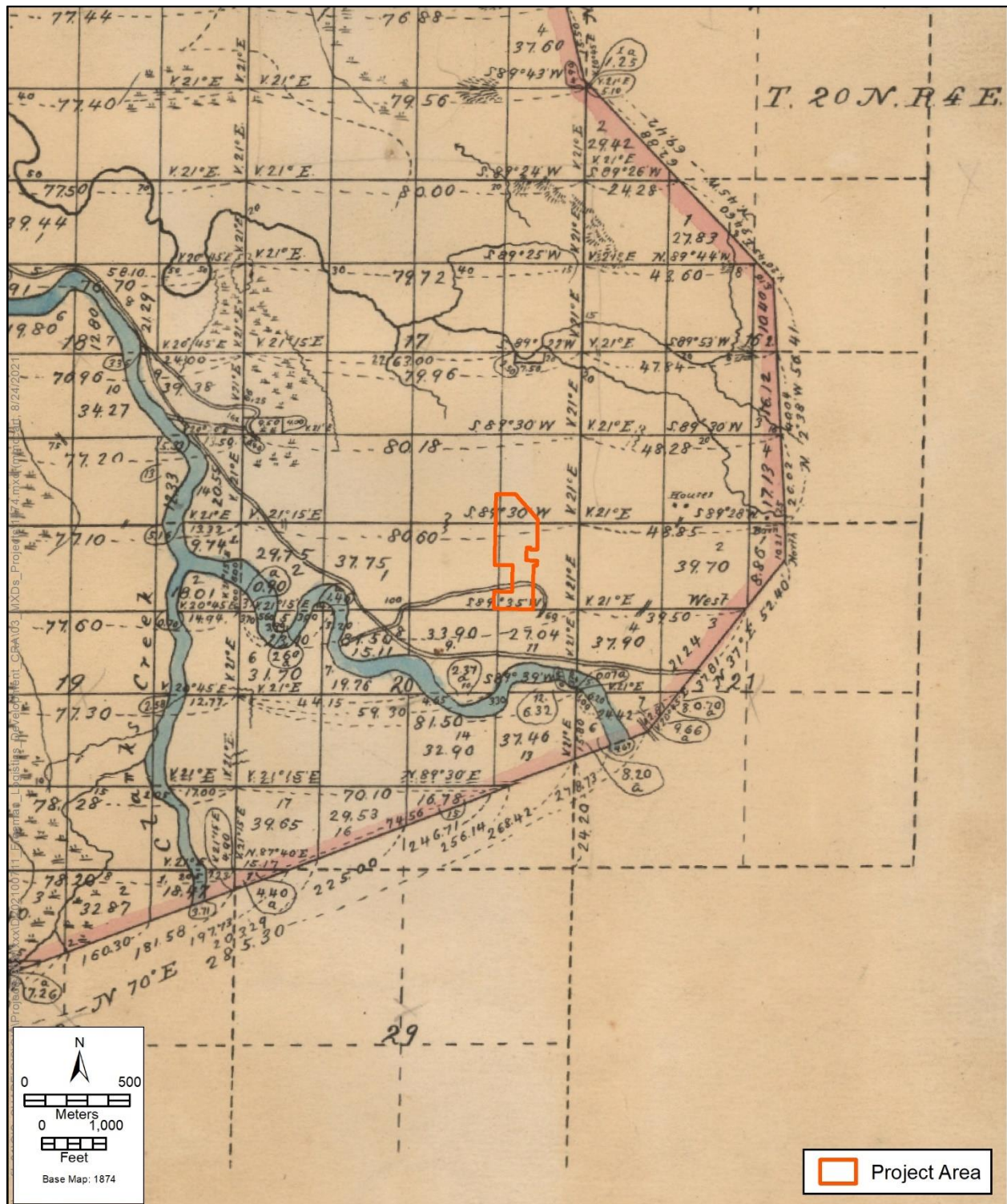


Figure 3
Geological map of the Freeman Logistics Development Project Area

2.3 Cultural Setting

As discussed previously by Berger (2020), the Project Area is located within the ancestral and reservation lands of the *spuyaləpabš*, who are also known today as the Puyallup Tribe of Indians (Douglas 2016; Lane 1975; Spier 1936; Suttles and Lane 1990). Coast Salish groups that live along Commencement Bay and surrounding lands have used the Project Area and its vicinity since time immemorial for various levels of habitation and resource gathering.

When surveyed in 1873, a southeast/northwest wagon road to Tacoma was identified along the eastern bank of the Puyallup River south of the Project Area; surveyors also noted a “Road to Indian Farm” within the Project Area vicinity (Figure 5) (U.S. Surveyor General 1873:3-20, 1874). The Project Area is within the late 19th century Puyallup Reservation and contains a portion of the land allotments of Coltus Jim (Jonas Tuckanom) and Kany-Arka-Jim (James Taylor) (Berger 2020). The Dawes Act of 1887 divided reservation lands into individual allotments; in 1893, allotments not required for homes or schools were put up for public auction. The program ended in 1934 and resulted in a large portion of these lands being lost or sold off due to various federal enactments (Berger 2020). By 1950, approximately ten families still owned their assigned lands (Puyallup Tribe of Indians 2017). The Puyallup began asserting their rights to lands and fishing in the mid-20th century. In the 1980s, the Puyallup Tribe successfully settled a claim to regain a portion of their lands.



Source: U.S. Surveyor General 1874

Figure 5
1874 General Land Office map showing the Project Area within the Puyallup Reservation

2.4 Previous Cultural Resources Work

ESA conducted a records search of DAHP's WISAARD system on August 5, 2021 (DAHP 2021a). No additional cultural resources assessments have been conducted within the Study Area since the previous desktop analysis report (Berger 2020; DAHP 2021a). No National Register of Historic Places (NRHP)-listed, determined Eligible, or recommended Eligible built environment resources are within or immediately adjacent to the Project Area. No Traditional Cultural Properties have been recorded within the Study Area. No additional cemeteries have been recorded within the Study Area. Five archaeological were identified within the Study Area (Table 1). Two, 45-PI-106 and 45-PI-1526, have been recorded since the initial desktop assessment for the Project. Each of the recorded sites is related to historic period activity.

TABLE 1
RECORDED ARCHAEOLOGICAL RESOURCES WITHIN THE STUDY AREA

NRHP Status	Site Number	Site Name	Site Type	Materials / Features Observed	Depth	Date / Period / Phase
Not evaluated	45-PI-106	--	Historic Debris Scatter Concentration	Glass and metal fragments	surface to 45+ cmbs	ca mid-1900s
Not evaluated	45-PI-826	--	Historic Debris Scatter/ Concentration, Historic Features	glass and metal fragments in two clusters and an associated fence	Surface	1900-1960
Not Evaluated	45-PI-1307	--	Historic Debris Scatter/ Concentration		Surface to 40 cmbs	Early 1900s
Not Evaluated	45-PI-1490	--	Historic Debris Scatter/ Concentration, Historic Features	Buried pit feature filled with historic debris including glass and ceramic vessels, personal items	40-100 cmbs	1920s
Determined Not Eligible	45-PI-1542	--	Historic Debris Scatter/ Concentration	Concrete and metal slab with associated artifacts, brick, concrete, glass, ceramic – possibly from a structure	surface	Unknown, likely 20th century

cmbs = centimeters below surface

Source: DAHP 2021a

2.4.1 Historic Built Environment Resources

There are 12 historic-aged¹ built environment resources within the Project Area that meet the minimum age threshold for listing in the NRHP (Table 2). Each of these structures have been previously determined Not Eligible for Listing in the NRHP. One barn/outbuilding, located on parcel 0420174075, 4723

¹ Historic-aged built environment resources are those that would meet the NRHP minimum age threshold for consideration as a Historic Property (50 years or older) at the time of Project construction. This Project is anticipated to begin in 2021. Therefore, resources built in or before 1971 are considered historic-aged and included in this review.

Freeman Road East is currently listed on the Pierce County Assessors page. However, this structure was demolished and is no longer present.

TABLE 2
HISTORIC-AGED BUILT ENVIRONMENT RESOURCES WITHIN THE PROJECT AREA

	Tax Parcel	Current Owner	Use	Register Status	Year Built²	DAHP Property ID
8319 49th Street East / 1801 22nd Avenue Northwest	0420205017	Westby, Lyle & Lavon	SFR	Determined Not Eligible	1900, 1981	680789
8305 49th Street East / 1817 22nd Ave Northwest	0420201040	Annon, Robert	SFR	Determined Not Eligible	1942, 1963	680790
8218 49th Street East / 1904 22nd Avenue Northwest	0420201042	Shadle, Danny & Wendy	SFR	Determined Not Eligible	1954, 1975	680794
2105 North Freeman Road / 4923 Freeman Road East	0420201027	Keaton, Samuel	SFR	Determined Not Eligible	1935, 1992	680797
4815 Freeman Road East	0420201066	Galloway, Gale	SFR w/ Detached Garage	Determined Not Eligible	1945	680785
4823 Freeman Road East	0420201034	O'Connor, Michael & Teresa	SFR w /Detached Garage	Determined Not Eligible	1900, 1950	680786
4827 Freeman Road East	0420201052	Lane, Alisha & Jereme	SFR	Determined Not Eligible	1948, 1966	680792
4917 Freeman Road East	0420201045	Grelis, Dennis	SFR Building 1 w/ Detached Garage	Determined Not Eligible	1900, 1961	680796
8204 49th Street East / 1918 22nd Avenue Northwest	0420201045	Grelis, Dennis	SFR Building 2	Determined Not Eligible	1900, 1961	680846
8212 49th Street East / 1912 22nd Avenue Northwest	0420201045	Grelis, Dennis	SFR Building 3	Determined Not Eligible	1900, 1961	680795
5117 Freeman Road East	0420205003	Johnson, Richard & Carol	SFR Building 2 w/ Detached Garage	Determined Not Eligible	1945, 1971 (garage 1963, 1980)	680878
5123 Freeman Road East	0420205003	Johnson, Richard & Carol	SFR Building 1	Determined Not Eligible	1940, 1968	680874

Source: Pierce County Assessor 2021; DAHP 2021a.

Notes: SFR = Single-Family Residence. ¹ = Old and current address listed; ² = Second date is remodel.

ESA reviewed Pierce County Assessor records to further identify all buildings located on Project parcels. Some addresses for previously assessed resources have been updated since their initial inventory. ESA did not identify any information that would suggest a need to reevaluate any of the previous determinations. All of the 12 structures will be demolished as part of Project construction.

2.5 Expectations

2.5.1 Precontact-Era Archaeological Resources

The Project Area is classified as High to Very High in DAHP's Statewide Predictive Model for containing precontact-era archaeological sites (DAHP 2010). The Statewide Predictive Model is a tool used by archaeologists and planners to evaluate potential archaeological risks on a broad scale. The model was developed to statistically evaluate multiple environmental factors (e.g., elevation, slope percent, aspect, distance to water, soils, and landforms) in order to predict where archaeological resources might be found (Kauhi 2013). It is not a substitute for conducting site-specific subsurface investigations.

Based on the background research for the Project Area, ESA concurs with DAHP's classification of the precontact archaeological sensitivity of the Project Area. ESA anticipates that the most likely types of precontact resources that would be encountered are resource gathering or processing sites, as well as potential small camp or kill locations. The proximity to the Puyallup River suggests that the area was likely used by precontact peoples. Furthermore, the presence of deeply bedded low to moderate energy alluvial deposits indicates that material evidence of that use may be buried and preserved within the soils.

2.5.2 Historic-Era Archaeological Resources

ESA considers the Project Area to have a moderate to high probability for containing historic period cultural resources. The area was traversed by a historic road and is known to have been allotments farmed by members of the Puyallup Tribe of Indians during the late 19th and early 20th centuries. Later historic period agricultural use has also occurred within the Project Area. Concentrations of artifacts or features related to the past use may still be present within the Project Area.

2.5.3 Historic Built Environment Resources

ESA considers that the Project will not have an effect on historic period built environment resources. The 12 historic-aged structures within the Project Area previously have been determined Not Eligible for listing in the NRHP.

3. ARCHAEOLOGICAL ASSESSMENT

3.1 Survey Methods

On August 9–13, 2021, ESA archaeologists Micca Metz, Gary Geiger, Robert Mitchell, and Kate Norgon conducted an archaeological field survey of the Project Area. The survey consisted of both pedestrian (surface) and subsurface investigations. Weather conditions at the time of survey consisted of clear skies and warm temperatures. Prior to the survey, ESA requested a utility locate of the Project Area.

3.1.1 Surface Survey

The surface survey was conducted across the Project Area prior to the subsurface investigations. Gridded transects were walked across the Project Area at an approximately 20-meter (66-foot) interval. The goals of the surface survey were to identify major landforms and their formation processes, find areas of significant historic and modern disturbance, and select locations suitable for subsurface probing. The results of the surface survey were used to inform the subsurface investigations.

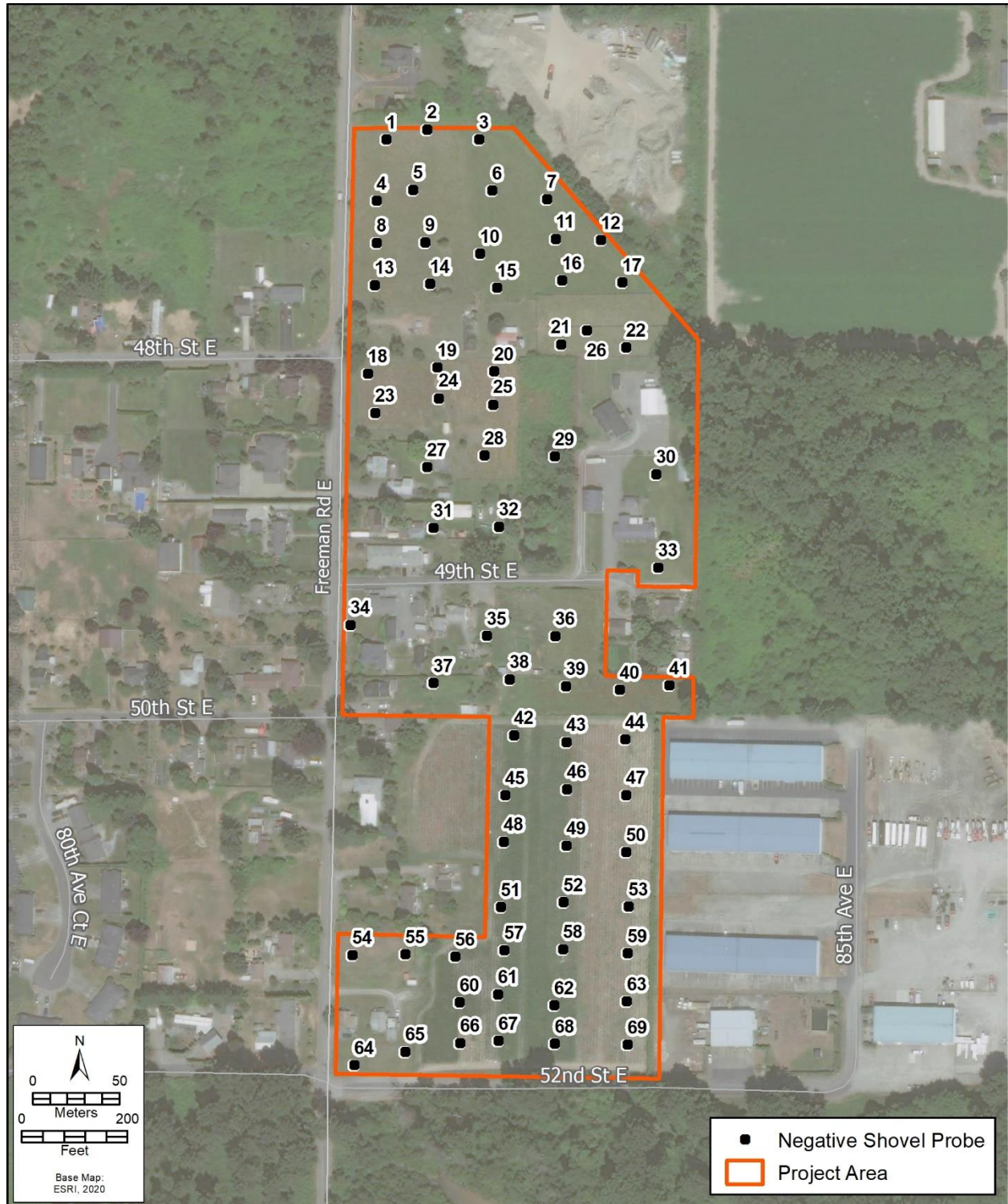
3.1.2 Subsurface Survey

The subsurface survey consisted of a total of 69 probes. Subsurface investigations were conducted in accessible portions of the Project Area that did not contain prohibitive conditions, such as existing structures, drainage fields, or laydown areas or roads. Probes were generally spaced at a 30-meter (100-foot) interval. Spacing was modified at the discretion of the field director in order to excavate probes in the areas deemed most likely to contain cultural resources within each transect interval. Probes were excavated with a round-nosed shovel with a 40-cm (1.3-foot) diameter, to a target depth of 100 cm (3.3 feet) bs, or until encountering prohibitive conditions, such as heavily compacted fill, cobble or boulder obstructions, or unconsolidated high energy alluvium such as gravel bar deposits and intact sandy gravel alluvium (channel or high energy flood deposits). If impassable conditions were not encountered, probes were extended to a target depth of 210 cm (7 feet) bs using 10-cm (4-inch) diameter bucket auger

Probes were excavated stratigraphically, or in 20-cm (8-inch) arbitrary levels within strata. Excavated material was screened through ¼-inch mesh. Relevant matrix data (such as color, grain size, gravel content and shape, presence of charcoal, oxidation, reduction, organics, and cultural content) were recorded for each stratum. Detailed notes regarding stratigraphy, probe location, presence or absence of cultural materials, documentation of buildings, general conditions, and photographs were taken. These data were recorded using smartphones and tablets with Global Positioning System/Global Navigation Satellite System (GPS+GLONASS), with a positional accuracy of 3 meters (9.8 feet) or less. Records are saved at ESA offices on a secure server. For full descriptions of the shovel probe data, see Appendix C.

3.2 Results

No archaeological sites, isolates, or potential indicators of past human activity, such as concentrations of ash, charcoal, heat-affected soil, or shell, were identified during the cultural resources survey of the Project Area (Figure 6).



Prepared by ESA

Figure 6
Locations of probes excavated within the Project Area

3.2.1 Surface Survey

The Project Area is located within the Puyallup River floodplain. The open level alluvial plain is the only distinct landform within the Project Area. No evidence of relict channels, terrace banks, or natural glacial high points was identified within the Project Area. There is, however, some variation within the floodplain landform. This is due to the current and past human use of the area. The surface survey identified three distinct environments within the Project Area: open pasture lands in the north, a central residential subdivision, and the southern agricultural fields.

The northern pasture area is relatively level. In this area, surface visibility is poor (less than 10%) due to dense surface vegetation. The general topography is undulating, showing some natural variation (Figure 7). This area does not appear to have not been graded, leveled, or plowed in the recent past. No areas of significant modification were noted outside of the road margins, which contain utilities and associated drainage. In general, it appears to be a relatively intact landscape, and within the general flood plain. It is not clear if this area is related to flooding activity from Wapato Creek of the Puyallup River. There are no topographic breaks, secondary terraces, or relict channel landforms evident.



Photo by ESA

Figure 7
Overview of the northern grazing fields from Probe #6, view direction south

The central portion of the Project Area has been subdivided into single-family homes. Ground visibility here is poor, and the topography here is extremely level. It is within the larger floodplain landform, but has been significantly modified by grading for the existing roadways, structures, and the associated drainage/septic fields (Figure 8). It lacks the undulating surface of the northern pasture. Some areas of dense overgrown vegetation are associated with unoccupied residential properties, but even in these areas the landscape is level and featureless, if heavily vegetated.



Photo by ESA

Figure 8
Overview of the central residential area from Probe #30, view south

The central residential portion of the Project Area is densely occupied by residential infrastructure. This modification to the landscape for residential use appears to have caused significant disturbance; however, no raised or filled areas, which would have the potential to have buried and preserved historic-aged materials or features, were identified. Portions of the central residential areas were excluded from the subsurface survey due to the evident grading and modifications and the associated risk of encountering and damaging existing utilities such as irrigation and septic lines. This area is the most heavily modified portion of the Project Area.

The southern end of the Project Area is predominantly occupied by active agricultural fields. The ground visibility here is excellent, with approximately 75% visibility. The ground has been plowed and is featureless (Figure 9). However, it lacks the grading and leveling activity evident in the central residential area. The topography in the south is more similar to the northern pasture, with some subtle topographic variation but no evident features, such as abandoned meander channels. It matches the grade of the landscape surrounding the Project Area. Other than plowing and clearing for agricultural use, there does not appear to have been wholesale modification of the landscape from its natural state.



Photo by ESA

Figure 9

Overview of southern agricultural fields from Probe #50, view south

3.2.2 Subsurface Survey

The subsurface survey encountered relatively uniform results across the Project Area. A consistent mixed A/B horizon, or plow zone, was found in each of the three environments identified during the surface survey. The variation in soils was related to the basal stratum. The northern pastures and central residential area contain a clayey loam at the base of excavation. The alluvial deposition events responsible for the stratigraphic units appear to have been massive, no fine laminations were identified during the probing. When distinct beds were identified they were most often associated with sharp increase in alluvial energy, and may represent temporary drainage channel. Soils within the northern pastures and southern residential area conform to expectations for areas containing Sultan series soils (NRCS 2000, Figure 10, Table 3).



Photo by ESA

Figure 10
Profile of Probe #39 north of the agricultural fields, typical stratigraphy for the Project Area

TABLE 3
TYPICAL SOIL PROFILE FOUND WITHIN NORTHERN PASTURES AND CENTRAL RESIDENTIAL AREAS (SULTAN SERIES SOILS)

Depth bs (ft/cm)	Description	Interpretation
0–1.9 / 0–55	Yellowish-brown silt loam, medium to fine granular / crumb structure, clear boundary	Mixed alluvial A/B horizon, plow zone
1.9–3.8 / 55–110	Brown sandy loam with less than 5% gravels, with a subangular blocky structure, clear boundary	Intact native alluvial B horizon derived from moderate to low energy alluvial deposition
3.8–7.0 / 110–210	Gray silt clay loam with no gravels and blocky structure	Intact mottled B and C horizons derived from older low energy alluvial activity

No significant areas of fill were noted, and no buried surfaces were identified in any of the probes. The only significant variation identified was that in the southern portion of the Project Area. Here, the basal stratum frequent consisted of fine to medium sands, as opposed to a clayey loam (Table 4). This change in energy is consistent with the mapped soil sequence change from Sultan silt loam to Puyallup fine sandy loam in the far southwestern extent of the Project Area (NRCS 2012). This area is in close proximity, less than a tenth of a mile, to the historic alignment of the Puyallup River. The sandy basal stratum likely the result of overbank flooding, in close proximity to the river channel.

TABLE 4
TYPICAL SOIL PROFILE FOUND WITHIN SOUTHERN AGRICULTURAL FIELDS (PUYALLUP SERIES SOILS)

Depth bs (ft/cm)	Description	Interpretation
0–1.9 / 0–55	Yellowish-brown silt loam, medium to fine granular / crumb structure, clear boundary	Mixed alluvial A/B horizon, plow zone
1.9–3.8 / 55–110	Brown sandy loam with less than 5% gravels, with a subangular blocky structure, clear boundary	Intact native alluvium derived from moderate to low energy deposition
3.8–7.0 / 110–210	Grey brown fine well sorted sands	Intact levee sand deposits, C- Horizon

3.3 Interpretation

The Project Area is within the floodplain of the Puyallup River. The near surface material has been deposited by moderate energy flood activity. This deposition has not preserved any secure contexts within the stratigraphy with an elevated probability of containing cultural resources. The near surface soils have been heavily disturbed by a combination of grading for existing and historic period infrastructure and plowing for agricultural use. No artifacts were noted during the pedestrian survey of the agricultural fields, which have excellent surface visibility. The near surface deposits would most likely contain material evidence of late Holocene precontact and the 19th or early 20th century. This pervasive disturbance significantly decreases the likelihood of encountering cultural resources within the Project Area.

The uniform landscape of the Project Area does not contain discrete landforms and presents as a level field (Figure 11). While the southern agricultural fields are in close proximity to the northern bank of the Puyallup River, and as a result are more likely used for habitation or resource gathering by Indigenous people, this area has experienced high to moderate energy flooding. The presence of deep levee sand deposits here is consistent with the mapped soil transition to Puyallup series soils (NRCS 2012). These moderate energy flood events are more likely to erode artifacts and features than to bury and preserve them.



Photo by ESA

Figure 11
Overview of typical conditions within the Project Area from Probe #9, view to the west

4. RECOMMENDATIONS

Based on the results of the survey, ESA extends no recommendations for further cultural resources work within the Project Area. ESA does recommend that an Inadvertent Discovery Plan (IDP) be in place to establish procedures and protocols to be followed in the event of a cultural resources discovery during construction.

The findings and professional opinions included in this report are based on standard archaeological techniques including pedestrian survey and shovel testing; however, each has its limitations. It is possible that unanticipated cultural resource materials may be encountered during construction. In the event that cultural resources are observed during implementation of the Project, then work should be temporarily suspended at that location and a professional archaeologist should be consulted.

The DAHP provides the following recommended language pursuant to RCWs 68.50.645, 27.44.055, and 68.60.055 regarding protocols for the inadvertent discovery of human skeletal remains on non-federal and non-tribal land in Washington (DAHP 2021b):

If ground-disturbing activities encounter human skeletal remains during the course of construction, then all activity will cease that may cause further disturbance to those remains. The area of the find will be secured and protected from further disturbance. The finding of human skeletal remains will be reported to the county medical examiner/coroner and local law enforcement in the most expeditious manner possible. The remains will not be touched, moved, or further disturbed. The county medical examiner/coroner will assume jurisdiction over the human skeletal remains and make a determination of whether those remains are forensic or non-forensic. If the county medical examiner/coroner determines the remains are non-forensic, then they will report that finding to the Department of Archaeology and Historic Preservation (DAHP) who will then take jurisdiction over the remains. DAHP will notify any appropriate cemeteries and all affected tribes of the find. The State Physical Anthropologist will make a determination of whether the remains are Indian or Non-Indian and report that finding to any appropriate cemeteries and the affected tribes. DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains.

5. REFERENCES CITED

Berger, M.

- 2020 *Cultural Resources Overview for the Freeman Road Logistics Project, Puyallup, Pierce County, Washington*. Cultural Resource Consultants LLC, Technical Memo 2011H-1. December 7, 2020.

Department of Archaeology and Historic Preservation (DAHP)

- 2010 Statewide Predictive Model. Last updated 2010. Electronic document, <http://www.dahp.wa.gov/>, accessed July 30, 2021.
- 2021a Washington Information System for Architectural and Archaeological Records Data (WISAARD) database. Secure database, <http://www.dahp.wa.gov/>, accessed August 5, 2021.
- 2021b Recommended Inadvertent Human Remains Discovery Language. Electronic document, <https://dahp.wa.gov/archaeology/human-remains/recommended-inadvertent-human-remains-discovery-language>, accessed August 30, 2021.

Douglas, M.

- 2016 *Puyallup Land Claims Settlement (1990)*. HistoryLink.org Essay 20157. Electronic document, <https://www.historylink.org/file/20157>, accessed August 5, 2021.

Kauhi, Tonya C.

- 2013 *Statewide Predictive Model*. Prepared for the Department of Archaeology and Historic Preservation by GeoEngineers, Tacoma, WA. On file, Washington State Department of Archaeology and Historic Preservation, Olympia.

Lane, B.

- 1975 *Anthropological Report on the Identity, Treaty Status and Fisheries of the Puyallup Tribe of Indians*. Prepared for the U.S. Department of the Interior and the Puyallup Indian Tribe. On file, ESA, Seattle.

Natural Resources Conservation Service (NRCS)

- 2000 Sultan Series. Electronic document, https://soilseries.sc.egov.usda.gov/OSD_Docs/S/SULTAN.html, accessed August 5, 2021.
- 2012 Puyallup Series. Electronic document, https://soilseries.sc.egov.usda.gov/OSD_Docs/P/PUYALLUP.html, accessed August 5, 2021.

Puyallup Indian Commission

- 1892 Map of the Puyallup Indian Reservation Washington. Electronic document, <https://content.libraries.wsu.edu/digital/collection/maps/id/219/rec/2>, accessed August 5, 2021.

Puyallup Tribe of Indians

- 2017 Puyallup Tribe of Indians All Hazards Mitigation Plan 2017-2022 Edition. Electronic document, <http://www.puyallup-tribe.com/publicsafety/>, accessed August 6, 2021.

Spier, L.

- 1936 *Tribal Distribution in Washington*. American Anthropological Association General Series in Anthropology No. 3. George Banta, Menasha, Wisconsin.

Suttles, W., and B. Lane

- 1990 Southern Coast Salish. In *Northwest Coast*, edited by Wayne Suttles, pp. 485-502. Handbook of North American Indians, Vol. 7, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

U.S. Geological Survey (USGS)

- 1944 *Tacoma South, WA*. 15' Series Quadrangle. U.S. Geological Survey, Reston, Virginia.

U.S. Surveyor General

- 1873 Township 20 North, Range 04 East - Survey Map Notes Pages 3-22 (508-525). Electronic document,
https://www.blm.gov/or/landrecords/survey/yNoteView1_2.php?R0036WA0506005510,
accessed August 5, 2021.
- 1874 Township 20 North, Range 04 East - Survey Map. Electronic document,
https://www.blm.gov/or/landrecords/survey/yPlatView1_2.php?path=PWA&name=t200n030e_002.jpg, accessed August 5, 2021.

Appendix A

Project Design Sheet

SITE AREA	905,629	SF
BUILDING AREA	431,484	SF
COVERAGE	47.6%	
PARKING REQUIRED	201.6	
20,000 SF OFFICE @ 1:300	66.7	
411,484 SF WHSE @ 1:3000	137.2	
PARKING PROVIDED	224	

- ▲ 9'x10' DOCK DOOR 66
● 14'x16' GRADE ACCESS DOOR 7

REVISIONS

B	03 19 21	SEPA APPLICATION
A	01 05 21	PRE-APPLICATION
ISSUE NO.	DATE	ITEM

PROFESSIONAL STAMP

PROGRESS
PRINTING

May 25, 2021

NOT FOR CONSTRUCTION

PROJECT INFORMATION

FREEMAN ROAD LOGISTICS

Puyallup, WA

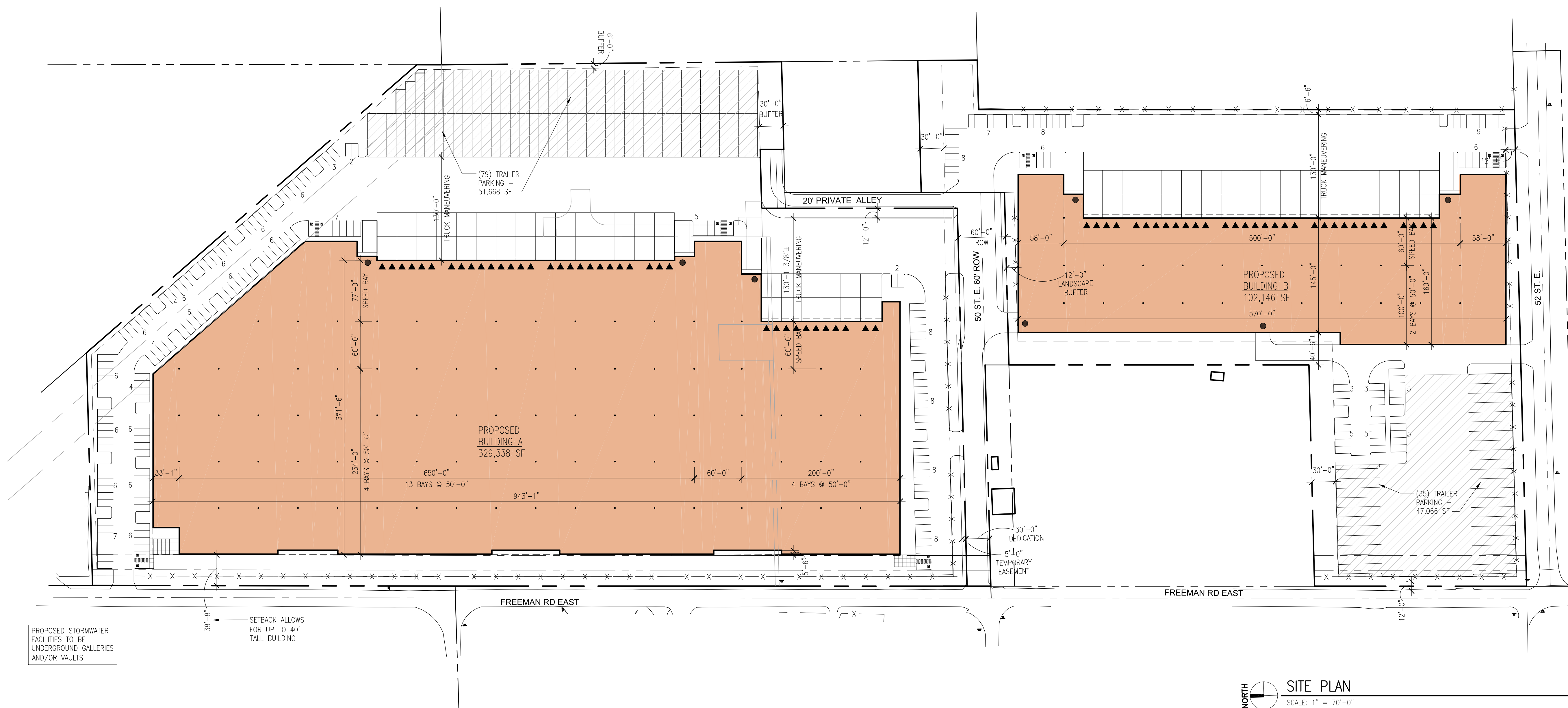
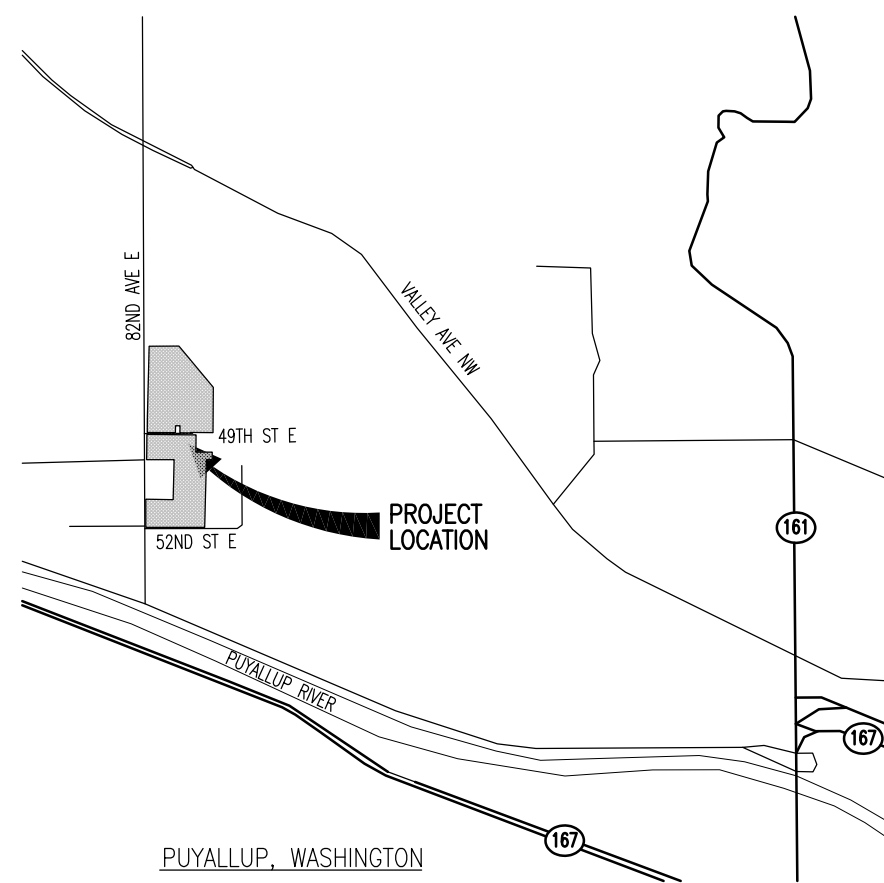
SHEET INFORMATION

RELEASE FOR: PRE-APPLICATION
TITLE: SITE PLAN

DESIGNED BY: _____ DRAWN BY: _____
 REVIEWED BY: _____ APPROVED BY: _____
 DATE: 01 05 21
 SHEET NO: _____
 PROJECT NO: 201401.13.031

A1.1

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Appendix B

Desktop Assessment Report



Cultural Resource Consultants

TECHNICAL MEMO 2011H-1

DATE: December 7, 2020

TO: Tyler Litzenberger
Vector Development Company

FROM: Margaret Berger, Principal Investigator

RE: Cultural Resources Overview for the Freeman Road Logistics Project, Puyallup,
Pierce County, Washington

The attached short report constitutes our final report for the above referenced project. This report provides an overview of the project location. Background research conducted by Cultural Resource Consultants, LLC did not identify any archaeological sites within the project location. There are nine historic inventory properties recorded within the project location but all have been determined not eligible for historic registers. Review of online assessor records identified one unrecorded historic (i.e. 50 years old or older) building within the project. Expectations for the types of cultural resources that may be present and anticipated cultural resources compliance needs for potential future development are presented. Please contact our office if you have any questions about our findings and/or recommendations.

**Cultural Resources Overview for the
Freeman Road Logistics Project,
Puyallup, Pierce County, Washington**

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Management Summary

This report provides a cultural resources overview for the Freeman Road Logistics Project, Puyallup, Pierce County, Washington. Vector Development requested a cultural resources overview as a part of due diligence prior to the property being annexed to City of Puyallup. No development or ground disturbance is proposed at this time. This overview sought to identify archaeological and historic sites at the project location and to evaluate the potential as-yet unrecorded cultural resources to be present. Background research conducted by Cultural Resource Consultants, LLC (CRC) did not result in the identification of any recorded archaeological sites on the property. Nine historic inventory properties have previously been recorded and determined not eligible for historic registers. Review of online assessor records indicated the presence of at least one building over 50 years old that has not been recorded or evaluated for historical significance. The reach of the Puyallup valley containing the project is considered to have high potential to contain as-yet unrecorded archaeological sites. Cultural resources compliance needs for any potential future development in this location are anticipated to include archaeological survey and documentation of unrecorded historic built environment resources.

1.0 Administrative Data

1.1 Overview

Report Title: Cultural Resources Overview for the Freeman Road Logistics Project, Puyallup, Pierce County, Washington

Author: Margaret Berger, Sonja Kleinschmidt, and Ian Kretzler

Report Date: December 7, 2020

Location: The project is located at 4723 - 5117 Freeman Rd E in Puyallup, Pierce County, WA. It includes Pierce County Tax Parcels 0420174075, 0420201039, 0420201066, 0420201034, 0420201052, 0420201040, 0420205016, 0420201042, 0420201027, 0420201101, & 0420205003. The legal description of the project is in the SW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 17 and the W $\frac{1}{2}$ of the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 20 in Township 20 North, Range 4 East, Willamette Meridian.

USGS 7.5' Topographic Map(s): Puyallup, WA (Figure 1).

Total Area Involved: 19.7 acres.

Regulatory Nexus: None.

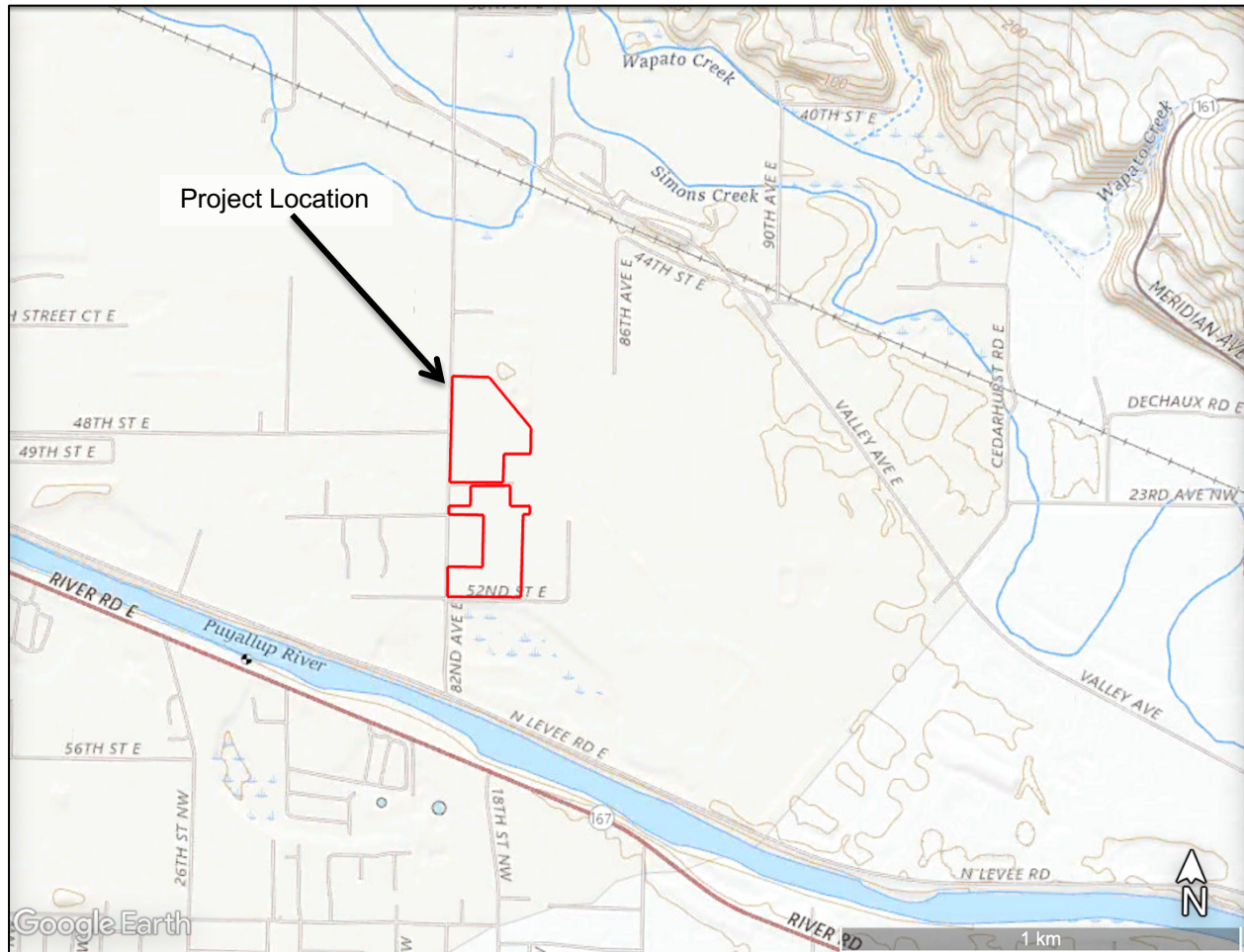


Figure 1. Puyallup, WA topographic map annotated with the project location in red.

1.2 Research Design

This cultural resources overview was completed as a component of preconstruction environmental review for the Freeman Road Logistics Project. It sought to identify potential impacts to cultural resources by evaluating whether archaeological sites and/or historic structures exist within the boundaries of the project. CRC's work was intended, in part, to assist in addressing state regulations pertaining to the identification and protection of cultural resources (e.g., RCW 27.44, RCW 27.53, RCW 68.60). The Archaeological Sites and Resources Act (RCW 27.53) prohibits knowingly disturbing archaeological sites without a permit from the Washington State Department of Archaeology and Historic Preservation (DAHP); the Indian Graves and Records Act (RCW 27.44) prohibits knowingly disturbing Native American or historic graves; and the Abandoned and Historic Cemeteries and Historic Graves Act (RCW 68.60) calls for the protection and preservation of historic era cemeteries and graves.

CRC's investigation consisted of (1) review of available project information provided by the project proponent, (2) examination of local environmental, historical, and archaeological datasets, and (3) field investigation. On December 1, 2020, CRC contacted cultural resources personnel at the Puyallup Tribe of Indians on a technical staff to technical staff basis to inquire about project-related cultural information or concerns (Appendix A). This correspondence was not intended to be or replace formal government-to-government consultation. Information

provided by Tribes' cultural resources personnel subsequent to the submission of this report will be included in a revised version. This assessment considered comments provided by Tribes, previous studies in the Puyallup area, the magnitude and nature of the undertaking, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties at the project location, as well as other applicable laws, standards, and guidelines (per 36CFR800.4 (b)(1)) (DAHP 2020a).

1.3 Project Description

Vector Development is requesting a cultural resources overview as a part of due diligence prior to annexation of the property to City of Puyallup. No development or ground disturbance is proposed at this time. For the purposes of this overview the area of interest for cultural resources (hereafter, "the project location") is understood to be the area described above and depicted in Figures 1 – 2.



Figure 2. Satellite imagery annotated with the project location in red.

2.0 Background Research

2.1 Overview

Background research was conducted in December 2020.

Recorded Cultural Resources Present: Yes [x] No []

Nine historic inventory properties have been recorded within the project (DAHP Property IDs 680874, 680878, 680797, 680795, 680794, 680790, 680792, 680786, and 680785). Each has been determined not eligible for the National Register of Historic Places (NRHP).

Context Overview: The following context overview summarizes environmental, historical, and archaeological information contained in local cultural resource reports; archaeological and historical data from DAHP and the Washington Information System for Architectural and Archaeological Records Data (WISAARD); ethnographic resources; geological and soils surveys (e.g. USDA NRCS 2020; WA DNR 2020); historical maps and documents from the Bureau of Land Management United States Surveyor General Land Status & Cadastral Survey Records database; HistoryLink; Historic Map Works; HistoricAerials (NETR 2020); University of Washington's Digital Collection; Washington State University's Early Washington Maps Collection; and CRC's library. This report's discussion of geology, archaeology, and history at the project location incorporates contextual information from CRC's previous work in the greater Puyallup area (e.g. Berger 2014a, 2014b; Kretzler and Berger 2020).

In this and subsequent sections, radiocarbon dates and age ranges based on those dates are presented in calibrated calendrical years ago (cal BP). This notation indicates that the radiocarbon date has been corrected using current methodologies. Other age estimates are given as years BP (before present).

2.2 Environmental Context

Overview: The project is geographically situated within the Willamette-Puget Lowland physiographic province. This province is characterized by the wide "trough" between the Coast and Cascade Ranges (McKee 1972:290). The project location is on the Puyallup River floodplain just north of an abandoned former channel of the river and within 0.5 mile south of Wapato Creek. Both streams drain to Commencement Bay approximately 4 miles to the northwest. This location is within the *Tsuga heterophylla* vegetation zone (Franklin and Dyrness 1973). Historically, vegetation in the vicinity included wetland and riparian forest species. Surface elevation in the project location is approximately 30 feet above sea level.

Geomorphology: The Puyallup valley is a relict meltwater channel that formed following the advance of several Late Pleistocene (110,000 to 12,000 years BP) glaciations that originated from Canada and extended between the Cascade and Olympic mountain ranges into the Puget Lowland (Kruckeberg 1991:12). The channel cut into glacial advance outwash deposits as the glacier retreated from the area between Orting and Puyallup approximately 14,000 years ago (Booth et al. 2003; Dragovich et al. 1994:9). Marine waters began to fill Puget Sound and tributary channels once the Strait of Juan de Fuca and Admiralty Inlet were no longer blocked by ice. In southern and central Puget Sound, sea levels began to rise rapidly after 8,000 years ago (Eronen et al. 1987) and then rates of increase slowed around 5,000 years ago (Booth et al. 2003:26). Eustatic sea levels were within one meter of present-day levels by about 1,000 years ago (Eronen et al. 1987). What is now the Puyallup River delta was submerged in the deep waters of the ancient Puyallup marine embayment, an extension of what is now called Commencement Bay that reached inland as far as the present-day city of Puyallup until a landslide that occurred approximately 5,700 years ago (Crandell 1971; Vallance and Scott 1997).

The landslide, called the Osceola Mudflow, originated on Mount Rainer and filled the White, Green, and Puyallup river channels with mud and alluvium (Crandell 1971; Dragovich et al. 1994:20; McKee 1972:206-207; Vallance and Scott 1997). The rivers etched the mudflow deposits, delivering suspended alluvial sediments to the embayment shoreline where they were deposited. This caused the ancient Puyallup River delta to prograde rapidly, moving the delta from present-day Puyallup northwestward to its present-day location at Tacoma (Dragovich et al. 1994: Figure 5). It is estimated that the Puyallup delta prograded at a rate of approximately 8.2 feet (2.5 meters) per year, over the last 5,700 years, filling over eight linear miles (13 kilometers) of the embayment to reach the historical Commencement Bay shoreline (Barnhardt et al. 2003; Dragovich 1994:22). Based upon rates provided by Dragovich et al. (1994:23), the Puyallup floodplain would have been established in the project vicinity by about 4,000 years ago (Murphy et al. 2000:30). More mudflows within the past 2,000 years or so, and as recently as the Electron Mudflow 500 years ago, contributed more sediment to the Puyallup valley (Crandell 1971).

Mapped Surface Geologic Unit: The project is located in the surface geologic unit of Quaternary alluvium (Qa) (WA DNR 2020). This unit is composed of unconsolidated or semi-consolidated alluvial clay, silt, sand, gravel, and (or) cobble deposits. Local variations within this area may include peat, muck, and diatomite; lacustrine, marsh, or lahar deposits; or modified land and artificial fill.

Mapped Soil Unit: Soils mapped within the project location consist of Puyallup fine sandy loam in the southwestern portion and Sultan silt loam in the northwestern portion of the project (USDA NRCS 2020). The Puyallup fine sandy loam unit is derived from a parent material of alluvium and forms on floodplains and terraces. A typical profile is ashy fine sandy loam from 0 to 13 inches, loamy fine sand from 13 to 29 inches, and fine sand from 29 to 60 inches below surface. This unit is well drained.

The Sultan silt loam unit is derived from a parent material of alluvium and forms on floodplains. A typical profile is ashy silt loam from 0 to 14 inches, silt loam from 14 to 23 inches, and stratified sand to silty clay loam from 23 to 60 inches below surface. This unit is moderately well drained.

2.3 Paleoclimate and Vegetation

The paleoclimate of the Pacific Northwest during the late Pleistocene and Holocene is defined by four periods, which exhibit general trends based on variations in temperature and moisture (Kopperl et al. 2016:37-38).

- 17,000 to 13,000 cal BP: the region was much cooler and drier compared to the present.
- 13,000 to 7000 cal BP: the retreat of glacial ice and increased solar radiation led to higher temperatures, less precipitation, colder winters, and more severe summer droughts compared to the present.
- 7000 to 5000 cal BP: cooler, moister conditions returned to the region, with temperature ranges similar to the present. The current maritime climate regime of the Puget Sound region was fully established by the end of this period.
- 5000 cal BP to present: climatic conditions have undergone short-term fluctuations such as the Little Ice Age (500 to 100 cal BP) and the Medieval Climatic Anomaly (1100 to 700 cal BP).

Regional fluctuations in temperature and moisture have supported different plant communities through time. Following glacial recession and meltwater subsidence, landforms stabilized and vegetation began to return. Newly exposed soils were first colonized by lodgepole pine, Sitka spruce, and western hemlock. As temperatures rose between 12,000 and 10,000 cal BP, trees advanced to higher elevations while lowland forests became dominated by Douglas-fir, red alder, and bracken fern. These patterns continued into the early and middle Holocene. Present-day vegetation communities emerged after 6000 cal BP. Western red cedar and western hemlock became important components of mid-low elevation forests while Alaska cedar, mountain hemlock, and silver fir emerged at cooler, moister higher elevations.

2.4 Archaeological Context

Thousands of years of human occupation in the Puget Sound region have been summarized in a number of archaeological, ethnographic, and historical investigations over the past several decades. These studies provide a regional context for evaluating the potential of archaeological deposits at the project location (e.g. Carlson 1990; Greengo 1983; Kopperl et al. 2016; Larson and Lewarch 1995; Nelson 1990).

Human presence in western Washington extends to at least 14,000 cal BP, a period corresponding with the most recent retreat of glacial ice in the region. Over the next six millennia, Native peoples lived in small, mobile groups that moved seasonally between productive hunting, fishing, and gathering locations. Archaeological evidence dating to the early part of this period is largely constrained to isolated projectile point finds. Native peoples' presence on the landscape around 11,000 cal BP is evidenced by site 45KI839 in Redmond, which contained stone artifacts situated at the interface of glacial and peat deposits and buried under thick alluvium. It is western Washington's only well-stratified, excavated site from the late Pleistocene-Holocene transition (Kopperl et al. 2015).

Middle and late Holocene sites are better represented in Washington's archaeological record due to the stabilization of sea levels and, in recent millennia, regional population increases. During the middle Holocene, roughly 8000 to 3000 cal BP, Native peoples established a broader range of residential and resource procurement site types and sizes. This shift coincided with decreased mobility as groups developed specialized adaptations to local environments.

These trends continued into the late Holocene. Beginning around 3000 cal BP, the archaeological record is characterized by diverse site and artifact types located in a range of environments. Settlement patterns revolved around semi-permanent winter villages while resource harvest relied in part on landscape management (e.g. culturally prescribed burning), mass capture of resources (e.g. fish weirs), and storage technologies. Intensive harvest of and occupation near littoral resources—activities that produced sizable shell middens—also emerged.

The arrival of Euro-Americans in the Pacific Northwest in the late eighteenth century marked the beginning of the colonial period. The establishment of the Pacific fur trade and later the transformation of Washington and Oregon into U.S. settler colonies, upended regional demography and ecology. Native societies grappled with the impacts of foreign diseases, the introduction of settler plants and animals, and land seizure and removal policies. Amid these changes, Native peoples acquired new materials and adapted settlement and subsistence practices to emerging economic opportunities and settler incursion (e.g. Wilson 2018).

2.5 Native Peoples

Traditional Territory: The project is located within the ancestral homelands of Lushootseed-speaking Puyallup peoples, whose territory stretched from the Gig Harbor Peninsula and Vashon Island up the Puyallup and Carbon Rivers to Mount Rainier (Haeberlin and Gunther 1930; Smith 1940; Spier 1936:42). During the nineteenth century, and for centuries prior, Puyallup peoples and their neighbors followed a seasonal round tied to the availability of resources. During the spring and summer, families travelled across the landscape, primarily via canoe, between seasonal camps situated in a variety of environmental zones. From these camps, they harvested salmon, shellfish, and other marine resources, hunted terrestrial mammals such as elk and deer, and collected berries, roots, and other plants. Many of these resources were present near the project along Hylebos Creek and the Puyallup River. Resources were dried and stored for consumption during the leaner winter months or processed for manufacture of clothing, medicines, baskets, and tools, whether stone, bone, or wood. As summer turned to winter, families relocated to large cedar plank houses in villages situated along waterways. Winter was a time for ceremonial activities and creating and strengthening social relations with members of other villages via marriage, trade, and cultural exchange. Knowledge of these and other lifeways continues to be passed down among contemporary Native peoples. Today, descendants of the original inhabitants of the lower Puyallup River are members of the Puyallup Tribe of Indians (Puyallup Tribe of Indians 2019; Ruby et al. 2010; Suttles and Lane 1990).

Place Names: The project location is part of a storied landscape. The names of waterways, settlements, food gathering areas, and other geographic markers encapsulate the creation and ordering of the world, stories for proper behavior toward human and non-human communities, and Native peoples' millennia-old and ongoing histories. The small sample of place names documented by ethnographers since the middle decades of the nineteenth century speaks to these connections and the nature of archaeological materials that may be encountered during this assessment.

Smith (1940) recorded the locations of 34 historical Puyallup and Nisqually villages across the southern Puget Sound region. These include the “large and important village” pu-ya'lup, on the southwest side of Commencement Bay (Waterman ca.1920:248), along with villages at the mouths of Clay Creek (Smith 1940; Swanton 1952), Wapato Creek (Smith 1940:9-10), and Clark's Creek (Swanton 1952). The mouth of Clark's Creek on the Puyallup River is approximately one mile west of the project location.

Waterman (2001:247-250) documented several named places in the lower Puyallup River area. A waterfall on Simon's Creek, which historically flowed from Surprise Lake into Wapato Creek north of the project, is known as QwEd. Wapato Creek is within 0.5 mile north of the project and is known as Qa'lqalEq^w, translated as “making many turns.” Wapato, a wetland plant with small starchy tubers, is an important traditional food for the region's Native peoples. The creek is also known as sto'lagwali, or “where the river used to be.” This name refers to a story in which Wapato Creek was the outlet for a large lake in the Puyallup Valley. Whales living in the lake carved the Puyallup River, leaving the Wapato outlet to dwindle into the creek that exists today. XaxtL!, or “brushy,” is the name for Hylebos Creek. The flats between Wapato Creek and Hylebos Creek located northwest of the project are known as kalka'laq^u, which translates as “place around which the water passes.” East of this area is stEx^u-gwL, or “plowing through with

a canoe.” This name refers to a swamp located between Wapato Creek and Hylebos Creek. Beaver hunting took place in the swamp.

2.6 Nineteenth and Twentieth Century History

During the early nineteenth century, the Pacific Northwest emerged as a center of British and U.S. exploration, mapping, and trade. The Hudson’s Bay Company established Fort Nisqually in present-day DuPont in 1843. For two decades, the fort was home to a diverse population of traders who established relationships with local Native groups. The Oregon Treaty, signed in 1846, ceded imperial interest in the Pacific Northwest to the United States. The region soon attracted interest as a site of economic potential, religious proselytization, and territorial expansion. In 1850, the federal government passed the Oregon Donation Land Act, which attracted settlers to the Pacific Northwest with the promise of free land. That title to the region remained held by Native groups did not prevent the act from passage. The act transformed Washington and Oregon into settler colonies, forms of territorial control that rely on the appropriation of Native land and the removal of Native peoples (Veracini 2011). As the local settler population increased, Native peoples came to be seen as antithetical to the region’s development.

It was against this backdrop that Washington territorial governor and ex officio superintendent of Indian affairs Isaac Stevens negotiated treaties with Native groups. In 1855, Native leaders representing Puyallup and other groups from across southern Puget Sound signed the Treaty of Medicine Creek. The treaty ceded title to over two million acres of Native land in exchange for small reservations and preservation of hunting and fishing rights. During the Puget Sound War of 1855 and 1856, which erupted in part due to the asymmetrical terms of the treaty, many Native people were forcibly interned on Fox Island (Carpenter 1996). After the conflict, Native groups were compelled to relocate to the Puyallup and other reservations. Some refused to relocate and remained in their homelands, in urban and rural settings.

The Homestead Act of 1862 brought an increase of settlers to the Puyallup valley. Early settlers farmed on the prairies and river valleys, logged the upland forests and extracted coal from the Carbon River coal seams (BOLA 2007; Bonney 1927; Marino 1990). Chinese and Japanese immigrants first arrived in the area in the latter part of the nineteenth century (CAPAA 2001). Coal and logging ventures brought about further settlement and development of the region. By the 1880s, the Northern Pacific Railroad had been constructed, connecting the coalfields in Wilkeson and Carbonado to the railroad terminus at Tacoma (Kelly 2012:5). In the early twentieth century, transportation routes connecting the Puyallup River valley to Tacoma, including Valley Road, allowed for the establishment of truck farms in the vicinity of the project (Yamamoto et al. 2015).

The Puyallup Reservation encompasses approximately 18,500 acres, including much of the land surrounding the lower Puyallup River, Swan Creek, Wapato Creek, Hylebos Creek, and the present-day Port of Tacoma. Though originally set aside for Puyallup peoples’ settlement and subsistence, over the latter half of the nineteenth century the General Allotment Act and other federal policies facilitated the transfer of reservation land to settlers. By 1873, the reservation was divided into several allotments. Allotment was designed to advance reservations’ assimilationist agenda by tethering Native people to individual plots. In the long run, however, it

transferred vast swaths of reservation land to non-Native parties. By 1934, when the allotment program officially ended, the Tribe held just 33 acres within the reservation.

During the Fish Wars of the 1960s and 1970s, Puyallup and other Native peoples reasserted their fishing and reservation rights. Their activism culminated with the Boldt decision, which upheld these rights and recognized Tribes as co-managers of the state's fish populations. The decision spurred additional pushes by Puyallup leaders to reacquire and/or receive just compensation for lands within the reservation's boundaries. Their efforts led to the \$162 million Puyallup Land Claims Settlement, signed in 1990. Under the agreement, the Tribe ceded title to the original reservation in exchange for 900 acres of land, including areas with development potential, funds for social programs and infrastructure upgrades, and an agreement between the Tribe and state and local governments to protect fishing habitat. Today, the Tribe owns several hundred acres of land in fee and in trust within and beyond the boundaries of the original reservation (Douglas 2016; Wilma 2006).

2.7 Historical Records Search

Information about nineteenth and twentieth century land ownership and use at the project is available via county atlases, topographic maps, and aerial imagery. The General Land Office (GLO) conducted early cadastral surveys of the area to define or reestablish the boundaries and subdivisions of federal lands so that land patents could be issued to individuals. The GLO maps from 1864, 1865, and 1874 depict the project location within the Puyallup Indian Reservation and do not include any other annotations regarding the project location (USSG 1864, 1865, 1874). The Bureau of Land Management does not have records of land patents on file for the project location (BLM 2020).

An 1892 map shows the Puyallup Reservation following the implementation of the General Allotment (Dawes) Act (Figure 3). The project location spans two 40-acre tracts in the allotments of Coltus Jim (Jonas Tuckanum) and Kany-Arka-Jim (James Taylor) (Puyallup Indian Commission 1892a). According to Boersema (2008a:9-10), most allotments consisted of two pieces, so that each person would have 40 acres of good agricultural land and 120 acres of tideflat or timbered uplands (Drake et al. 1892, in Boersema 2008a). The report accompanying the map notes that the SE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 17 was allotted to "Cultus Jim, or Jonas Tuckanum" (Patent No. 78) and denoted as "Homestead" land valued at \$150 per acre (Puyallup Indian Commission 1892b:77). The NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 20 was allotted to "Kanaka Jim, or James Taylor" (Patent No. 99), also denoted as "Homestead" land, and valued at \$250 per acre (Puyallup Indian Commission 1892b:79). This information points to likely occupation and cultivation of lands containing the project by these members of the Puyallup Tribe and their families during the allotment period.

An 1897 land classification sheet depicts the project location as in an area from which timber had been cut (Figure 4; USGS 1897). This map and the topographic map from 1900 show that a road had been established in the approximate route of present-day Valley Road, north of the project, another road followed the south bank of Wapato Creek, from which another road extended south-southeast towards two structures in the vicinity of the project (USGS 1897, 1900).

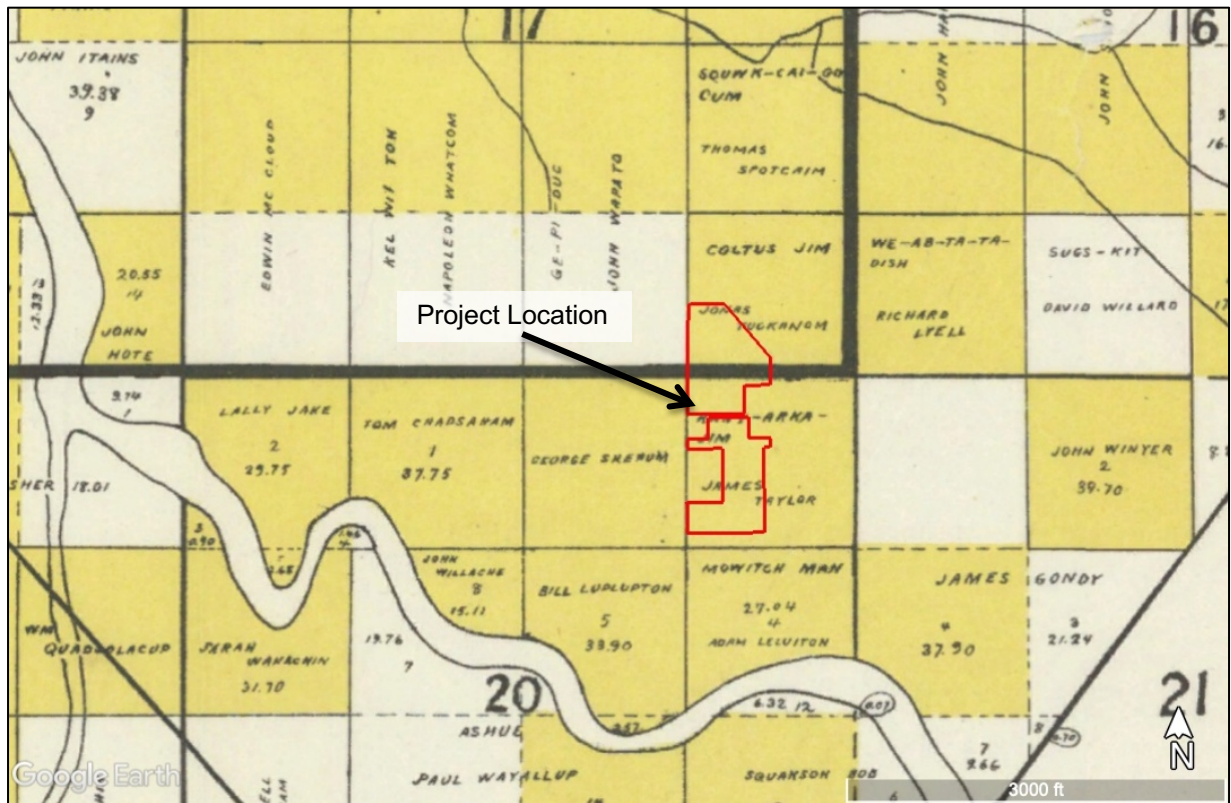


Figure 3. Map of allotments on the Puyallup Reservation (Puyallup Indian Commission 1892a) annotated with the project location in red.

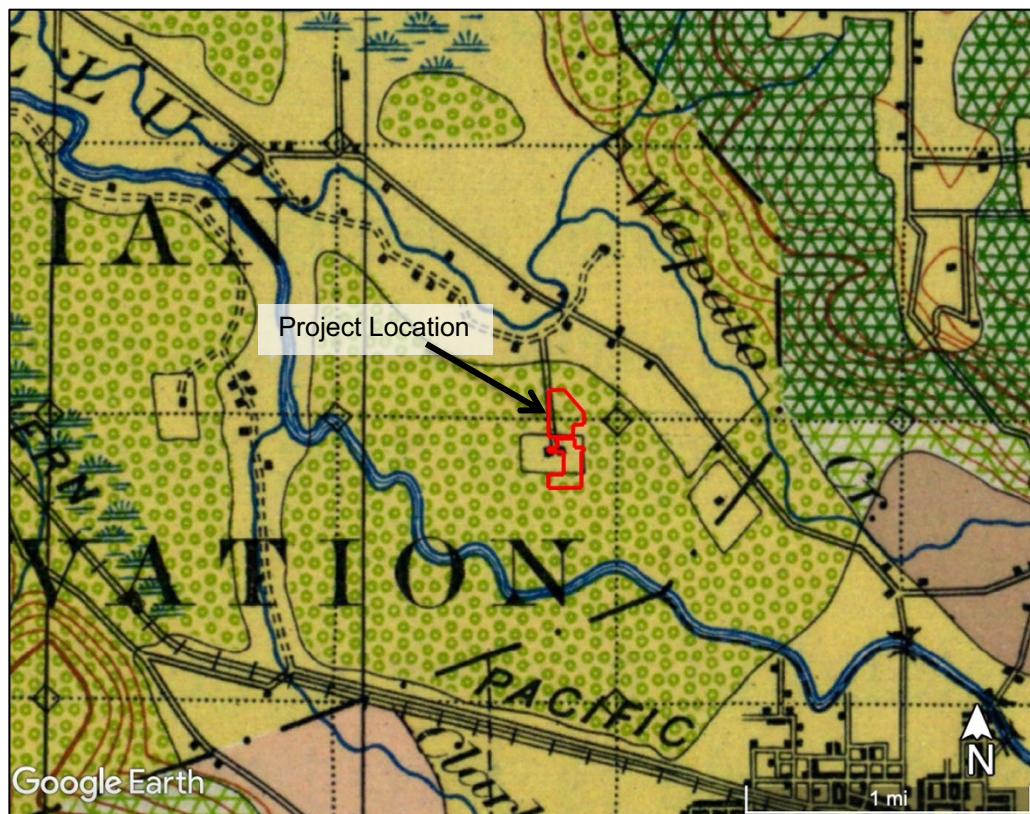


Figure 4. Project location marked on land classification sheet (USGS 1897).

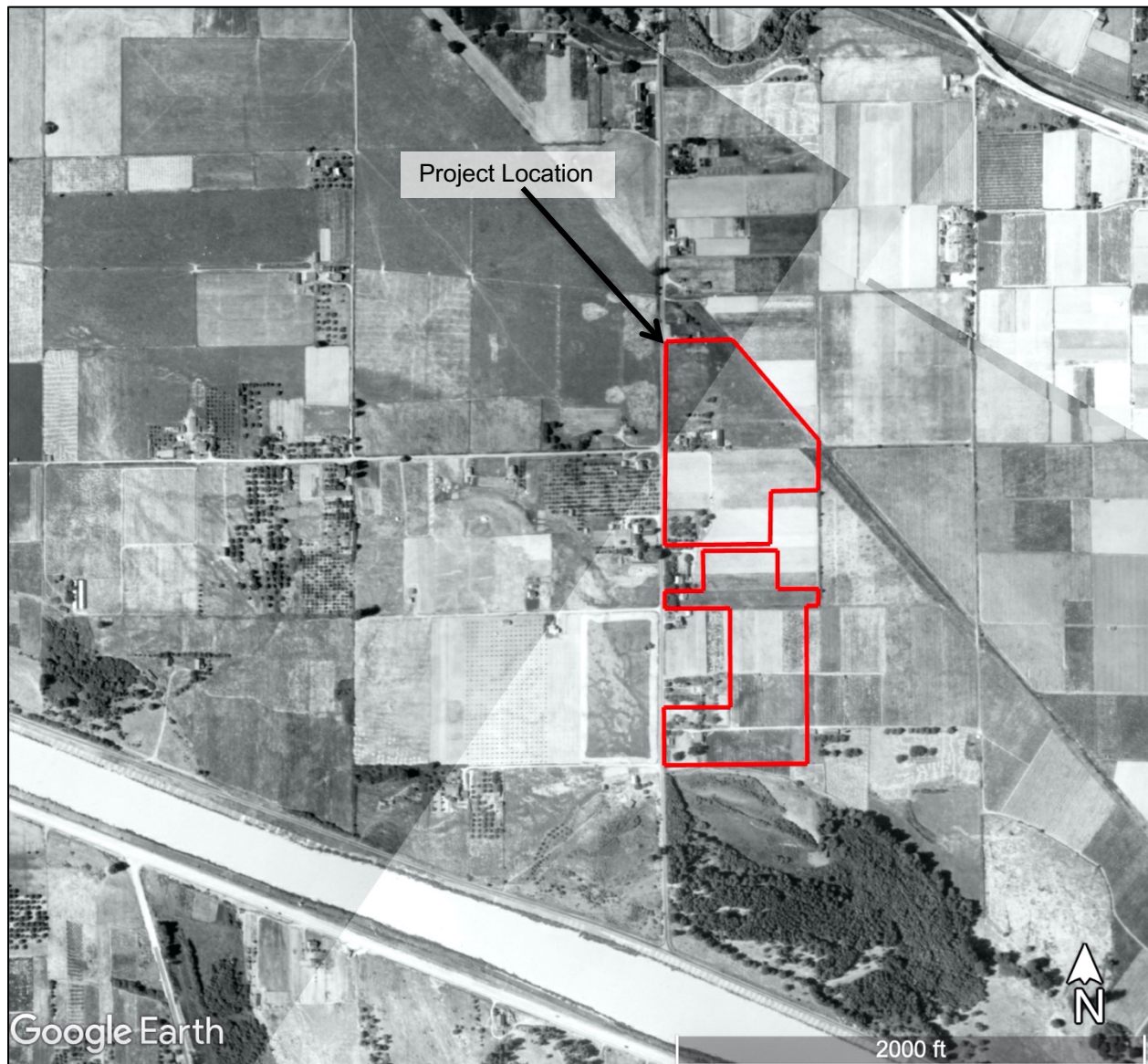


Figure 6. Project location marked on 1940 aerial imagery (PSRHP 2003).

2.8 Cultural Resources Database Review

A review of the WISAARD database identified cultural resource studies, precontact and postcontact archaeological sites, and historic properties in the vicinity of the project. This information provides details about the nature and likelihood of cultural resources at the project location (DAHP 2020b). Since 1995, 15 cultural resources assessments have been conducted within one mile from the project location. These have included cultural resources surveys for a variety of projects including transportation improvements (e.g. Berger 2014b; Yamamoto et al. 2015) and private developments (e.g. Berger 2014a; Cowan and Montgomery 2011).

Nearest to the current project, Yamamoto et al. (2015) conducted archaeological and historic built environment survey ahead of proposed construction of a new freeway from Tacoma to Puyallup. This included the excavation of shovel probes approximately 500 feet (~150 meters) northeast of the current project, and the documentation and evaluation of several historic

inventory properties in and adjacent to the current project. Each of the historic inventory properties recorded within the current project location was determined not eligible for listing on the NRHP (Table 1).

Table 1. Previously recorded historic inventory properties within the project location.

DAHP Property ID	Address (Name)	Build Date(s)	Historical Use	Historic Register Status
680874	5123 Freeman Rd E	1930	Domestic – Single Family	Determined not eligible for NRHP
680878	5117 Freeman Rd E	1930	Domestic – Single Family	Determined not eligible for NRHP
680797	4923 Freeman Rd E	1935, 1960	Domestic – Single Family	Determined not eligible for NRHP
680795	8212 49th St E	1950	Domestic – Single Family	Determined not eligible for NRHP
680794	8218 49th St E	1954, 1969	Domestic – Single Family	Determined not eligible for NRHP
680790	8305 49th St E	1942, 1963	Domestic – Single Family	Determined not eligible for NRHP
680792	4827 Freeman Rd E	1948, 1966	Domestic – Single Family	Determined not eligible for NRHP
680786	4823 Freeman Rd E	1900, 1950	Domestic – Single Family	Determined not eligible for NRHP
680785	4815 Freeman Rd E	1945, 1970	Domestic – Single Family	Determined not eligible for NRHP

Three archaeological sites have been recorded within one mile of the project location (Table 2). Each dates to the historic era. The nearest recorded precontact archaeological sites are over two miles away.

Table 2. Archaeological sites documented within one mile of the project.

Site Number	Site Type	Distance from Project	Historic Register Status
45PI826	Historic debris scatter and features	0.25 mile W	No determination
45PI1307	Historic debris scatter	0.63 mile NW	No determination
45PI490	Historic objects	0.70 mile NNW	No determination

Site 45PI826 consists of two low density scatters of fragmentary historic debris in an agricultural field and an associated fence line (Boersema 2008b). This site was historically in a farmstead that contained five buildings and an orchard according to a 1940 map. Site 45PI1307 represents a variety of isolated historic debris found on the surface and to 40 cm below surface and covering an area 32 meters by 27 meters (McWilliams 2013). The scatter was understood to represent dumping activity in the early 1900s. Site 45PI490 is a 1920s buried historic pit feature with no

surface manifestation identified during shovel probe testing and delineated by 1-x-1-meter excavation units (Luttrell 2001, 2004). Artifacts were primarily present between 40 and 100 cm below surface. Observed materials consisted of pieces of glass, ceramic, heavily oxidized pieces of unidentifiable ferrous objects, lamp chimney fragments, a light bulb base, wire nails, plastic, glass beads, a rubber shoe heel, milk glass, canning jar liner fragments, canning jar fragments, an automobile tire, cast iron wood stove parts, lumber, and tree stumps and branches. The site was located within land that was the Puyallup Indian allotment of the Tommy Lane family (Patent No. 72) who owned the property from 1884 until sometime in the early twentieth century. At the time the site was identified, the land was owned by the Kajimura family who had farmed it since before WWII.

Numerous historic inventory properties have been recorded within one mile from the project. Of these, three have been determined eligible for historic registers (Table 3). Each of these properties is a single-family home with demonstrable architectural and/or historical significance. No register-listed historic properties have been recorded within one mile of the project location. One cemetery is located within one mile of the project. Firwood Indian Cemetery, located approximately 0.45 mile to the east-northeast.

Table 3. Register-eligible historic properties within one mile of the project.

DAHP Property ID	Address (Name)	Build Date(s)	Historical Use	Historic Register Status
51552	4607 66th Ave E, Puyallup (1938 House of Tomorrow)	1941	Domestic – Single Family	Determined eligible for NRHP
100158	7717 Valley Ave E, Fife (A. Wydra House)	1910	Domestic – Single Family	Determined eligible for NRHP
680419	4403 Freeman Rd E, Puyallup (Boitano House)	1953	Domestic – Single Family	Determined eligible for NRHP

3.0 Archaeological Predictive Model

The DAHP statewide predictive model uses environmental data associated with documented archaeological sites to identify areas at which unknown sites may be found (Kauhi and Markert 2009). Environmental categories included in the model are elevation, slope, aspect, distance to water, geology, soils, and landforms. The model contains five probability ranks: (1) very high risk, (2) high risk, (3) moderate risk (survey recommended), (4) moderate risk (survey contingent on project parameters) and (5) low risk. The model ranks the project as very high to high risk for archaeological sites.

4.0 Results and Recommendations

4.1 Cultural Resources Identified

No previously recorded archaeological sites, cemeteries, or register-listed historic properties are in or adjacent to the project. Nine previously recorded historic inventory properties are within the project but were determined not eligible for listing on the NRHP. Additionally, based on review of county assessor records, at least one as-yet unrecorded historic (i.e. 50 years old or older) building is within the project. This is a barn built in 1960 on parcel 0420174075 at 4723 Freeman Rd E (Pierce County 2020).

4.2 Archaeological Expectations

This assessment combines the above cultural resources database review and predictive modeling results to evaluate the possibility that archaeological deposits may be present at the project location. Overall, the results of background research described above corroborate the predictive model. Surface geology and soils mapped within the project consist of alluvium that may contain buried archaeological deposits. Although precontact archaeological sites have not been recorded in close proximity to the project, geomorphological history of the Puyallup River valley, including rapid progradation of the Puyallup delta after the Osceola Mudflow, suggests that if precontact archaeological sites are present, they would date to the mid- to late Holocene. Precontact archaeological deposits that may be present within the project location would likely include evidence of resource procurement activities such as procurement and processing of plant, animal, and/or mineral resources, overland travel, temporary or more permanent camps or habitation sites as well as ceremonial or religious activities which may be represented by an array of deposits or materials such as fire-modified rock, lithic or bone tool or implements, lithic waste flake scatters, buried cultural surfaces, evidence of structural remains, etc.

The project location is situated between the historical Wapato Creek and Puyallup River channels approximately one mile up-valley from an ethnographically reported village at the mouth of Clarks Creek, and is within an area that was homesteaded by members of the Puyallup Tribe during the late nineteenth century. Archaeological deposits associated with the Cultus Jim (Jonas Tuckanum) and Kanaka Jim (James Taylor) allotments and early to mid-twentieth century occupation by others may be present within the project. Historic-era archaeological materials would likely be associated with domestic and agricultural activities and could consist of a variety of materials, most likely lost or discarded tools, household debris, or structural remains such as fence posts, old utilities, etc. These objects generally do not satisfy eligibility criteria for the NRHP, though exceptions may include intact floors or structural elements, or materials associated with particular individuals, ethnic groups, or events.

4.3 Future Compliance Expectations

It is anticipated that archaeological survey and documentation of as-yet unrecorded historic built environment resources would be required prior to any potential future development of the property. The location's environmental setting, precontact settlement patterns, and historical datasets including Puyallup Tribe allotment records place it in an area with high potential for archaeological sites to be present. Although some residential construction and demolition episodes have occurred, past ground disturbance in most of the project appears to have been limited to agricultural activities affecting only near surface sediments (i.e. plow zone). Archaeological sites may be preserved beyond the extents of prior disturbances.

Cultural resource compliance needs for any potential future development in this location may include: 1) supplementary background research as needed, 2) pedestrian survey to document existing conditions within the project and record any historic built environment or above ground historic ruins, 3) subsurface investigations by excavation of shovel and auger probes, 4) assessing impacts of project plans to known and any newly identified cultural resources, 5) developing and implementing an archaeological monitoring and inadvertent discovery protocol, if appropriate. No further work is anticipated to be needed for the nine previously recorded historic buildings since they were previously determined not eligible for the NRHP.

5.0 Limitations of this Assessment

No cultural resources study can assess with complete certainty whether archaeological sites, historic properties, or traditional cultural properties exist at a project location. The information presented in this report is based on professional opinions derived from CRC's analysis and interpretation of available documents, records, literature, and information identified in this report and on field investigation and observations. The conclusions and recommendations presented apply to current and reasonably foreseeable project conditions. The data, conclusions, and interpretations in this report should not be construed as a warranty of subsurface conditions. They do not apply to site changes of which CRC is not aware and has not had the opportunity to evaluate.

6.0 References

- Barnhardt, W. A., R. E. Kayen, J. D. Dragovich, S. P. Palmer, P. T. Pringle, B. L. Sherrod, and S. V. Dadisman
2003 The Effects of Volcanic Debris Flows (Lahars), Earthquakes and Landslides on Holocene Deltas at Puget Sound, Washington. Electronic document, <http://walrus.wr.usgs.gov/geotech/pugetposter/index.html>, accessed April 28, 2008.
- Berger, M.
2014a Cultural Resources Assessment for the Suncap Freeman Road Project, Fife, Pierce County, WA. Cultural Resource Consultants, Inc. Prepared for SunCap Property Group.
2014b Cultural Resources Assessment for the Valley Avenue Bridge Repair Project, Puyallup, Pierce County, WA. Cultural Resource Consultants, Inc. Prepared for City of Puyallup.
- Boersema, J.
2008a Cultural Resources Assessment for Storey Surface Mine, Tacoma. Cascadia Archaeology. Prepared for Woodworth and Company, Inc., Tacoma.
2008b State of Washington Archaeological Site Inventory Form, 45PI826. On file at DAHP, Olympia
- BOLA Architecture + Planning (BOLA)
2007 Puyallup Historic Survey Report, Puyallup, Washington. BOLA Architecture + Planning, Seattle. Prepared for the City of Puyallup, Pierce County and DAHP.
- Bonney, W. P.
1927 *History of Pierce County, Washington, Vol. 1*. Pioneer Historical Publishing Company, Chicago.
- Booth, D. B., R. A. Haugerud, and K. G. Troost
2003 The Geology of Puget Lowland Rivers. In *Restoration of Puget Sound Rivers*, edited by D. Montgomery, S. Bolton, and D. B. Booth, pp. 14-45. University of Washington Press, Seattle.
- Commission on Asian Pacific American Affairs (CAPAA)
2001 *Asian Pacific American Heritage Resource Guide*. State of Washington Commission on Asian Pacific American Affairs, Seattle.

- Carlson, R. L.
1990 Cultural Antecedents. In *Handbook of North American Indians, Volume 7: Northwest Coast*, pp. 60-69, edited by W. Suttles. Smithsonian Institution Press, Washington, D.C.
- Carpenter, C. S.
1996 *Tears of Internment: The Indian History of Fox Island and the Puget Sound Indian War*. Tahoma Research Service, Tacoma.
- Cowan, J., and M. Montgomery
2011 Cultural Resources Assessment for the Stowe Construction Warehouse Development on Wapato Creek, Fife, Washington. Cultural Resource Consultants, Inc. Prepared for Barghausen Consulting Engineers, Kent, Washington.
- Crandell, D. R.
1971 Postglacial Lahars from Mount Rainier Volcano, Washington. *U.S. Geological Survey Professional Paper 677*.
- Douglas, M.
2016 Puyallup Land Claims Settlement (1990). Electronic resource, <https://www.historylink.org/File/20157>, accessed December 11, 2019.
- Dragovich, J. D., P. T. Pringle, and T. J. Walsh
1994 Extent and Geometry of the Mid-Holocene Osceola Mudflow in the Puget Lowland—Implications for Holocene Sedimentation and Paleogeography. *Washington Geology* 22(3):3-26
- Eronen, M., T. Kankainen, and M. Tsukada
1987 Late Holocene Sea Level Record in a Core from the Puget Lowland, Washington. *Quaternary Research* 27(2):147-159.
- Franklin, J. F., and C. T. Dyrness
1973 *Natural Vegetation of Oregon and Washington*. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, General Technical Report PNW-8. U.S. Government Printing Office, Washington D.C.
- Greengo, R. E. (editor)
1983 *Prehistoric Places on the Southern Northwest Coast*. Thomas Burke Memorial Washington State Museum, University of Washington, Seattle.
- Haeberlin, H., and E. Gunther
1930 The Indians of Puget Sound. *University of Washington Publications in Anthropology* 4(1):1-84.

Kauhi, T. C., and J. Markert

2009 *Washington Statewide Archaeology Predictive Model*. GeoEngineers. Report submitted to DAHP, Olympia.

Kelly, K. M.

2012 Cultural Resources Assessment for the Prologis Fife Distribution Center, Fife, WA. Cultural Resource Consultants, Inc. Prepared for Prologis, Fremont, California.

Kopperl, R. E., A. K. Taylor, C. J. Miss, K. M. Ames, and C. M. Hodges

2015 The Bear Creek Site (45KI839), a Late Pleistocene-Holocene Transition Occupation in the Puget Sound Lowland, King County, Washington. *PaleoAmerica* 1(1):116-120.

Kopperl, R., C. Hodges, C. Miss, J. Shea, and A. Spooner

2016 *Archaeology of King County, Washington: A Context Statement for Native American Archaeological Resources*. SWCA Environmental Consultants. Report submitted to the King County Historic Preservation Program.

Kretzler, I., and M. Berger

2020 Cultural Resources Assessment for the Milton Trailhead/Interurban Trail Project, Milton, Pierce County, Washington. Cultural Resource Consultants, LLC. Submitted to Gray & Osborne.

Kroll Map Company

1915 *Kroll's Atlas of Pierce County, Wash., T. 20 N. R. 4 E*. Kroll Map Company, Seattle

Kruckeberg, A. R.

1991 *The Natural History of Puget Sound Country*. University of Washington Press. Seattle.

Larson, L. L., and D. E. Lewarch (editors)

1995 *The Archaeology of West Point, Seattle, Washington: 4,000 Years of Hunter-Fisher-Gatherer Land Use in Southern Puget Sound*. Larson Anthropological Archaeological Services.

Luttrell, C.

2001 Washington Site Inventory Form, 45PI490. On file at DAHP, Olympia.

2004 *Cultural Resources Investigations for the Washington State Department of Transportation's I-5: Pierce County to Tukwila State 4 HOV Project, Pierce County, Washington*. Archaeological and Historical Services, Eastern Washington University. Report submitted to Washington State Department of Transportation.

McKee, B.

1972 *Cascadia: The Geologic Evolution of the Pacific Northwest*. McGraw Hill, New York.

McWilliams, T.

2013 State of Washington Archaeological Site Inventory Form, 45PI1307. On file at DAHP, Olympia.

Metsker Maps

1951 Township 20 N., Range 4 E., W.M. *Pierce County*. Metsker Maps, Seattle.

Murphy, L. D. E. Lewarch, L. A Forsman, M. J. Madson, D. R. Iversen, and L. L. Larson

2000 Fiber Optic Line Between Portland and Seattle Cultural Resources Assessment Clark Cowlitz, Lewis, Thurston, Pierce and King Counties, Washington, and Multnomah County, Oregon. Larson Anthropological Archaeological Services Limited. Prepared for Jones & Stokes, Bellevue, Washington.

Nationwide Environmental Title Research, LLC (NETR)

2020 Historic Aerials. Electronic resource, <http://www.historicaerials.com/?javascript>, accessed December 3, 2020.

Nelson, C. M.

1990 Prehistory of the Puget Sound Region. In *Handbook of North American Indians, Volume 7: Northwest Coast*, edited by W. Suttles, pp. 481-484. Smithsonian Institution Press, Washington, D.C.

Pierce County

2020 Assessor-Treasurer Information Portal – 0420174075. Electronic resource, <https://atip.piercecountywa.gov/#/app/propertyDetail/0420174075/summary>, accessed December 4, 2020.

Puyallup Indian Commission

1892a *Map of the Puyallup Indian Reservation Washington to Accompany Report of the Puyallup Indian Commission*. Electronic resource, <https://content.libraries.wsu.edu/digital/collection/maps/id/219/rec/2>, accessed November 19, 2020.

1892b *Message from the President of the United States Transmitting the Report of the Puyallup Indian Commission and Accompanying Papers*. S. Ex. Doc. No. 34, 52nd Congress, 1st Session.

Puyallup Tribe of Indians

2019 Puyallup Tribal History. Electronic resource, <http://www.puyallup-tribe.com/ourtribe/>, accessed December 19, 2019.

Ruby, R. H., J. A. Brown, and C. C. Collins

2010 *A Guide to the Indian Tribes of the Pacific Northwest*. 3rd ed. University of Oklahoma Press, Norman.

Smith, M. W.

1940 *The Puyallup-Nisqually*. Columbia University Press, New York.

Spier, L.

- 1936 Tribal Distribution in Washington. *General Series in Anthropology, No 3*. George Banta Publishing Company, Menasha, Wisconsin.

Suttles, W., and B. Lane

- 1990 Southern Coast Salish. In *Handbook of North American Indians, Volume 7: Northwest Coast*, edited by Wayne Suttles, pp. 485-502. Smithsonian Institution Press, Washington, D.C.

Thorson, R. M.

- 1980 Ice-Sheet Glaciation of the Puget lowland, Washington, during the Vashon Stade (late Pleistocene). *Quaternary Research* 13(3):303-321.
1989 Glacio-Isostatic Response of the Puget Sound Area, Washington. *Geological Society of American Bulletin* 101(9):1163-1174.

United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS)

- 2020 Web Soil Survey, Washington. Electronic resource, <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>, accessed December 2, 2020.

United States Department of the Interior Bureau of Land Management (BLM)

- 2020 General Land Office Records Search. Electronic resource, <http://www.glorerecords.blm.gov/default.aspx>, accessed December 2, 2020.

United States General Land Office (GLO)

- 1864 *Puyallup Indian Reservation, Townships 20 & 21 North Ranges 3 & 4 East, Willamette Meridian*. General Land Office Survey Plat. Department of Interior General Land Office, Washington, D.C.
1865 *Puyallup Indian Reservation, Townships 20 & 21 North Ranges 3 & 4 East, Willamette Meridian*. General Land Office Survey Plat. Department of Interior General Land Office, Washington, D.C.
1874 *Puyallup Indian Reservation, Townships 20 & 21 North Ranges 3 & 4 East, Willamette Meridian*. General Land Office Survey Plat. Department of Interior General Land Office, Washington, D.C.

United States Geological Survey (USGS)

- 1897 *Twenty-First Annual Report Part V, Land Classification and Density of Standing Timber, Washington, Tacoma Quadrangle*. 1:125,000. U.S. Geological Survey, Washington, D.C.
1900 *Tacoma Quadrangle, Washington*. 1:125,000. U.S. Geological Survey, Washington, D.C.

Vallance, J. W., and K. M. Scott

- 1997 The Osceola Mudflow from Mount Rainier: Sedimentology and Hazard Implications of a Huge Clay-Rich Debris Flow. *Geological Society of America Bulletin* 109(2):143-163.

Veracini, L.

2011 Introducing Settler Colonial Studies. *Settler Colonial Studies* 1(1):1-12.

Washington State Department of Archaeology and Historic Preservation (DAHP)

2020a Washington State Standards for Cultural Resources Reporting 2020. On file at DAHP, Olympia.

2020b Washington Information System for Architectural and Archaeological Records Data (WISAARD) database. Electronic resource, <https://secureaccess.wa.gov/dahp/wisaard/>, accessed December 2, 2020.

Washington State Department of Natural Resources (WA DNR)

2020 Washington Interactive Geologic Map. Division of Geology and Earth Resources – Washington's Geological Survey. Electronic resource, <https://geologyportal.dnr.wa.gov/>, accessed December 2, 2020.

Waterman, T. T.

2001 *sda?da? gwel dibel lešucid ?acaciltalbixw Puget Sound Geography*. V. Hilbert, J. Miller, and Z. Zahir, contributing editors. Lushootseed Press, Federal Way, Washington.

White, D. H.

1928 *White's Atlas of Pierce County Washington, Tp. 20 N., R. 4 E., W. M. D. H. White*, Tacoma, Washington.

Wilma, D.

2006 Puyallup Tribe of Indians Accepts a \$162 Million Settlement for Lost Land on March 25, 1990. Electronic resource, <https://www.historylink.org/File/7969>, accessed December 11, 2019.

Wilson, D.

2018 The Fort and the Village: Landscape and Identity in the Colonial Period of Fort Vancouver. In *British Forts and Their Communities*, edited by C. R. DeCorse and Z. J. M. Beier, pp. 91-125. University Press of Florida, Gainesville.

Appendix A. Correspondence with Tribal Cultural Resources Staff



Puyallup Tribe of Indians
Brandon Reynon
3009 East Portland Ave
Tacoma, WA 98404

December 1, 2020

Re: Cultural Resources Assessment for the Freeman Road Logistics Project, Puyallup, Pierce County, Washington

Dear Brandon:

I am writing to inform you of a cultural resources assessment for the above referenced project and to seek additional information about the project area the Tribe may have that is not readily available through other written sources. This letter is on a technical staff-to-technical staff basis to inquire about project-related cultural information or concerns. It is not intended as formal government-to-government consultation to be initiated by the appropriate regulatory agency.

The project is located in Sections 17 & 20, Township 10 North, Range 04 East Willamette Meridian at 4723 - 5117 Freeman Rd E (Parcels 0420174075, 0420201039, 0420201066, 0420201034, 0420201052, 0420201040, 0420205016, 0420201042, 0420201027, 0420201101, & 0420205003) in Puyallup, Pierce County, Washington. Vector Development is requesting a cultural resources overview as a part of due diligence. No development or ground disturbance is proposed at this time.

We are in the process of reviewing available information. Background research will include a site files search at the Washington State Department of Archaeology and Historic Preservation, review of previously recorded cultural resource reports, and review of pertinent published literature and ethnographies. Results of our investigations will be presented in a technical memo.

We are aware that not all information is contained within published sources. Should the Tribe have additional information to support our assessment, we would very much like to include it in our study. Please contact me at sonja@crcwa.com or 360-395-8879 should you wish to provide any comments. I appreciate your assistance in this matter and look forward to hearing from you.

Sincerely,



Sonja Kleinschmidt, Projects Manager

CULTURAL RESOURCE CONSULTANTS, LLC. PO Box 4159, SEATTLE, WA 98194
PHONE 206.855.9020 - sonja@crcwa.com

Appendix C

Shovel Probe Data

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
1	1	0-45	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	<5% poorly-sorted subrounded-subangular mixed	slightly hard	granular/crumb weak fine	clear wavy	A	organics	no	no	Ap horizon with common rootlets..
1	2	45-170	Shovel, Auger	grayish-brown	silt loam (bedded)	fine well-sorted	no gravel	soft	structureless	clear wavy	B	oxidized	no	no	Floodplain alluvium, some bedding..
1	3	170-215	Auger	dark brown	sand (no bedding)	medium well-sorted	no gravel	loose	structureless	no horizon	B	groundwater	no	no	Floodplain alluvium.. Terminated at desired depth.
2	1	0-70	Shovel	light brown	silt loam (no bedding)	sand absent	<5% well-sorted angular medium	moderately hard	granular/crumb moderate medium	diffuse smooth	fill	mottled	no	no	
2	2	70-100	Shovel	brown	silt loam (no bedding)	sand absent	<5% well-sorted angular medium	moderately hard	granular/crumb moderate medium	diffuse no horizon topography	B	mottled	no	no	
2	3	100-115	Auger	reddish-brown	silt loam (no bedding)	sand absent	no gravel	slightly hard	granular/crumb weak medium	no horizon	B		no	no	Terminated at dense/impassable soils.
3	1	0-45	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	5-15% moderately-sorted subrounded mixed	hard	granular/crumb moderate fine	clear wavy	A	organics	no	no	Tall grass top with rootlets down to 45cmbs.
3	2	45-83	Shovel	yellowish-brown	clay loam (no bedding)	very fine well-sorted	<5% well-sorted subrounded fine	very hard	granular/crumb strong fine	no horizon	C	mottled	no	no	Terminated at dense/impassable soils.
4	1	0-37	Shovel	light brown	silt loam (no bedding)	fine well-sorted	<5% well-sorted rounded no dominant size	slightly hard	granular/crumb weak fine	diffuse wavy	A	organics	yes	no	Ap horizon with common rootlets. One clear glass fragment..
4	2	37-81	Shovel	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	hard	structureless	no horizon	B	oxidized	no	no	Floodplain/wetland alluvium.. Terminated at dense/impassable soils.
5	1	0-70	Shovel	light brown	silt loam (no bedding)	sand absent	no gravel	hard	granular/crumb strong fine	no horizon no horizon topography	B		no	no	Soil is homogeneous in color and texture throughout. The top 30 or so is sun Baked and hard, followed by some softer soil until a dense hard packed soil is encountered ~ 70cm depth.. Terminated at dense/impassable soils.
6	1	0-30	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	<5% moderately-sorted subrounded mixed	hard	granular/crumb strong medium	clear wavy	A	organics	no	no	Very compact.
6	2	30-85	Shovel	yellowish-brown	silty clay loam (no bedding)	very fine well-sorted	<5% well-sorted subrounded fine	extremely hard	granular/crumb strong medium	no horizon	B	mottled	no	no	Extremely compact. Terminated at dense/impassable soils.

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
7	1	0-61	Shovel	light brown	silty clay loam (no bedding)	very fine well-sorted	5-15% well-sorted subrounded fine	hard	granular/crumb moderate medium	diffuse irregular	A	organics	no	no	Organics consist of rootlets .
7	2	61-142	Shovel,Auger	yellowish-brown	silty clay loam (no bedding)	very fine well-sorted	<5% well-sorted subrounded fine	hard	granular/crumb moderate fine	Unseen in auger hole Unseen	B	mottled	no	no	Measurements taken when soil changed in auger.
7	3	142-203	Shovel,Auger	dark brown	silty clay loam (no bedding)	very fine well-sorted	<5% well-sorted subrounded fine	soft	granular/crumb weak fine	no horizon	C	mottled	no	no	Increased moisture content but no visible water. Terminated at desired depth.
8	1	0-34	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	slightly hard	granular/crumb weak fine	clear wavy	A	organics	yes	no	Ap horizon with common rootlets. One clear glass fragment..
8	2	34-62	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	no gravel	very hard	structureless	clear wavy	B	diatomaceous mottled oxidized	no	no	Very compact alluvium, maybe diatomaceous..
8	3	62-83	Shovel	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky weak medium	no horizon	B	mottled oxidized	no	no	Dense floodplain/wetland alluvium.. Terminated at dense/impassable soils.
9	1	0-80	Auger	light brown	silt loam (no bedding)	sand absent	no gravel	hard	granular/crumb strong medium	diffuse irregular	B	mottled	no	no	Hard packed silt loam for the first 30cms followed by slightly softer soil with light orangish mottles until impassable light brown silt loam at 75-80cms..
10	1	0-29	Shovel	light brown	silt loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	slightly hard	granular/crumb weak fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets..
10	2	29-58	Shovel	light brown	silt loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Very compact floodplain alluvium, oxidation mottling..
10	3	58-93	Shovel	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	moderately hard	subangular blocky weak medium	no horizon	B	mottled oxidized	no	no	Floodplain alluvium.. Terminated at dense/impassable soils.
11	1	0-63	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	5-15% moderately-sorted subrounded mixed	moderately hard	granular/crumb moderate medium	diffuse irregular	A	organics	no	no	Very compact and dry .
11	2	63-178	Shovel	dark brown	sandy loam (no bedding)	medium well-sorted	<5% well-sorted subrounded fine	soft	granular/crumb weak fine	Unseen Unseen	B		no	no	Wet sand.
11	3	178-203	Shovel,Auger	brown	clay loam (no bedding)	very fine moderately-sorted	no gravel	soft	subangular blocky weak coarse	Unseen Unseen	B	mottled	no	no	Soil damp but water not present . Terminated at desired depth.

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
12	1	0-22	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	15-35% poorly-sorted subrounded mixed	extremely hard	granular/crumb strong medium	no horizon	Fill		no	no	5 probes were attempted in this location and this was the most successful due to its location near the push pile (currently covered in blackberries) to the northeast and the electric fence we believe that this location has been heavily leveled and altered.. Terminated at gravel/cobble obstruction.
13	1	0-35	Shovel	light brown	silt loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular mixed	slightly hard	granular/crumb moderate fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets..
13	2	35-73	Shovel	light brown	silt loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Very compact floodplain alluvium..
13	3	73-140	Shovel, Auger	grayish-brown	loamy sand (bedded)	fine well-sorted	no gravel	soft	structureless	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium..
13	4	140-225	Auger	0	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	groundwater oxidized	no	no	Floodplain alluvium.. Terminated at desired depth.
14	1	0-85	Shovel	light brown	sandy loam (no bedding)	very fine well-sorted	<5% well-sorted crushed rock medium	hard	granular/crumb strong medium	no horizon	A	mottled oxidized	no	no	Soil is moderately hard to hard throughout this layer. Homogeneous color and texture throughout. Orangish mottles or oxidation? occurs at ~ 35-40 cmbs. STP is located under an apple tree..
14	2	85-100	Auger, Shovel	reddish-brown	sandy loam (no bedding)	fine well-sorted	no gravel	soft	granular/crumb weak fine	clear no horizon	B		no	no	
14	3	100-120	Auger, Shovel	grayish-brown	silty clay loam (no bedding)	very fine well-sorted	no gravel	soft	platy moderate medium	no horizon	B		no	no	
14	4	120-140	Auger, Shovel	light gray	silty clay (no bedding)	sand absent well-sorted	no gravel	soft	platy moderate medium	clear no horizon	C		no	no	
14	5	140-150	Auger, Shovel	gleyed	silty clay (no bedding)	sand absent	no gravel	loose	structureless	no horizon	C		no	no	Terminated at desired depth.
15	1	0-80	Shovel	light brown	silt loam (no bedding)	sand absent	<5% moderately-sorted crushed rock medium	hard	granular/crumb strong medium	very diffuse no horizon	A	mottled oxidized	no	no	Soil color and texture consistent throughout. Mottles and oxidation occur ~40-60 cmbs. .
15	2	80-110	Shovel	brown	sandy loam (no bedding)	very fine well-sorted	no gravel	slightly hard	structureless	clear smooth	B		no	no	
15	3	110-150	Auger	gleyed	sand (no bedding)	very fine well-sorted	no gravel	loose	structureless	no horizon	C		no	no	Terminated at desired depth.

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
16	1	0-27	Shovel	light brown	silt loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	moderately hard	granular/crumb moderate fine	diffuse wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets..
16	2	27-57	Shovel	light brown	silt loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Very compact floodplain alluvium..
16	3	57-85	Shovel	grayish-brown	silt loam (no bedding)	very fine well-sorted	no gravel	hard	subangular blocky weak medium	no horizon	B	mottled oxidized	no	no	Compact floodplain alluvium.. Terminated at dense/impassable soils.
17	1	0-31	Shovel	light brown	silt loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	moderately hard	granular/crumb weak fine	diffuse wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets..
17	2	31-78	Shovel	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	very hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Very compact floodplain alluvium..
17	3	78-135	Shovel,Auger	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	soft	structureless	clear wavy	B	mottled oxidized	no	no	Floodplain/wetland alluvium..
17	4	135-160	Auger	gray	silt (no bedding)	sand absent	no gravel	soft	structureless	clear wavy	B		no	no	Floodplain alluvium..
17	5	160-225	Auger	dark gray	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	groundwater	no	no	Floodplain alluvium.. Terminated at desired depth.
18	1	0-45	Shovel	light brown	silt loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	moderately hard	granular/crumb moderate fine	clear wavy	A	organics oxidized	no	no	Ap horizon formed in alluvium with common rootlets .
18	2	45-125	Shovel,Auger	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	moderately hard	subangular blocky weak medium	clear wavy	B	mottled oxidized	no	no	Floodplain/wetland alluvium .
18	3	125-210	Auger	gray	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	groundwater	no	no	Floodplain alluvium . Terminated at desired depth.
19	1	0-85	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	<5% no sorting angular coarse	hard	granular/crumb strong fine	Unseen no horizon topography	A		no	no	
19	2	85-130	Shovel	reddish-brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	Unseen no horizon topography	B		no	no	
19	3	130-165	Auger	gray	clay (no bedding)	fine no sand sorting	no gravel	soft	structureless	Unseen no horizon topography	C	organics groundwater mottled	no	no	Red sand inclusions and red mottles. Possible blackberry root was pulled out at the very bottom of this layer.. Terminated at groundwater.
20	1	0-55	Shovel,Auger	light brown	silt loam (no bedding)	fine moderately-sorted	5-15% moderately-sorted subrounded medium	extremely hard	granular/crumb moderate medium	diffuse wavy	A	organics mottled	no	no	Began using the auger at 45cmbs because the shovel was no longer useful .

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
20	2	55-183	Shovel,Auger	brown	loamy sand (no bedding)	medium poorly-sorted	<5% well-sorted subrounded fine	slightly hard	granular/crumb moderate fine	clear smooth	B	mottled	no	no	Difficult to measure but the transition was sudden in the auger.
20	3	183-188	Shovel,Auger	yellowish-brown	sandy loam (no bedding)	coarse moderately-sorted	<5% well-sorted rounded fine	soft	structureless	clear smooth	B	groundwater	no	no	This pocket of round sand graduals was clear in the auger.
20	4	188-200	Shovel,Auger	dark brown	sandy clay loam (no bedding)	very fine well-sorted	5-15% well-sorted subrounded fine	slightly hard	subangular blocky moderate medium	no horizon	C	groundwater mottled oxidized	no	no	Moisture present but not a clear water table. Terminated at desired depth.
21	1	0-70	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	5-15% moderately-sorted subrounded medium	hard	granular/crumb moderate medium	diffuse irregular	A	oxidized	no	no	Located two meters north of large blackberry patch.
21	2	70-110	Shovel	brown	silt loam (no bedding)	very fine well-sorted	<5% well-sorted subrounded fine	soft	granular/crumb moderate medium	Unseen Unseen	B	groundwater mottled	no	no	
21	3	110-160	Auger	brown	sandy loam (no bedding)	very fine well-sorted	no gravel	soft	structureless	Unseen Unseen	0	groundwater	no	no	
21	4	160-200	Auger	dark brown	silty clay loam (no bedding)	very fine well-sorted	no gravel	soft	subangular blocky moderate fine	no horizon	C	groundwater	no	no	Terminated at desired depth.
22	1	0-70	Shovel,Auger	light brown	silty clay loam (no bedding)	fine moderately-sorted	5-15% poorly-sorted subrounded medium	extremely hard	granular/crumb strong medium	abrupt smooth	A	organics mottled oxidized	no	no	Began using the auger at 40 cmbs because the shovel was no longer effective.
22	2	70-122	Auger	brown	sand (no bedding)	coarse moderately-sorted	no gravel	soft	structureless	clear smooth	B	mottled	no	no	Moisture holds sand in auger. Sand is dark grey and brown.
22	3	122-200	Auger	gleyed	silty clay loam (no bedding)	very fine well-sorted	no gravel	soft	subangular blocky moderate medium	very diffuse irregular	C	groundwater mottled oxidized	no	no	Moisture present but not the water table. Terminated at desired depth.
23	1	0-46	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	hard	granular/crumb moderate fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets.
23	2	46-83	Shovel	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	no horizon	B	mottled oxidized	no	no	Floodplain/wetland alluvium. Terminated at dense/impassable soils.
24	1	0-95	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	<5% well-sorted crushed rock medium	hard	granular/crumb strong fine	Unseen no horizon topography	A	mottled	no	no	
24	2	95-120	Shovel	reddish-brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	Unseen Unseen	B		no	no	
24	3	120-180	Auger	gray	silty clay (no bedding)	very fine no sand sorting	no gravel	soft	structureless	Unseen Unseen	B		no	no	

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
24	4	180-220	Auger	gleyed	silty clay (no bedding)	very fine well-sorted	no gravel	soft	structureless	Unseen Unseen	C		no	no	Gleyed silty clay, consists of more silt than the previous layer and possess gleyed washed-out grey/blue coloration. . Terminated at desired depth.
25	1	0-37	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	hard	granular/crumb moderate fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets .
25	2	37-88	Shovel, Auger	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
25	3	88-155	Auger	reddish-brown	sandy loam (no bedding)	fine well-sorted	no gravel	soft	structureless	clear smooth	B	mottled oxidized	no	no	Floodplain alluvium .
25	4	155-205	Auger	gray	silty clay (no bedding)	sand absent	no gravel	soft	structureless weak medium	no horizon	B		no	no	Floodplain alluvium .
25	5	205-220	Auger	0	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	groundwater	no	no	Floodplain alluvium . Terminated at desired depth.
26	1	0-117	Shovel	light brown	silty clay loam (no bedding)	very fine moderately-sorted	5-15% poorly-sorted subrounded mixed	hard	granular/crumb moderate medium	clear smooth	A	organics mottled	no	no	Probe located in agricultural field.
26	2	117-147	Auger	reddish-brown	sandy loam (no bedding)	medium poorly-sorted	<5% well-sorted subrounded fine	slightly hard	granular/crumb weak fine	clear wavy	B	mottled oxidized	no	no	Soil damp.
26	3	147-200	Auger	grayish-brown	silt loam (no bedding)	very fine well-sorted	<5% well-sorted subrounded fine	slightly hard	granular/crumb moderate medium	no horizon	C	mottled oxidized	no	no	Soil damp but no water table. Terminated at desired depth.
27	1	0-120	Shovel	light brown	silt loam (no bedding)	fine well-sorted	no gravel	very hard	granular/crumb strong fine	Unseen Unseen	A	trace charcoal mottled	yes	no	Modern glass and charcoal throughout the first ~75 cm.
27	2	120-180	Shovel	reddish-brown	sand (no bedding)	fine well-sorted	<5% no sorting crushed rock medium	soft	structureless	Unseen Unseen	C		no	no	Terminated at groundwater.
28	1	0-46	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	hard	granular/crumb moderate fine	clear wavy	A	organics mottled oxidized	yes	no	Ap horizon formed in alluvium with common rootlets. Plastic wrapper debris..
28	2	46-135	Shovel, Auger	grayish-brown	sandy loam (bedded)	fine well-sorted	no gravel	moderately hard	structureless	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
28	3	135-150	Shovel, Auger	gray	silty clay (no bedding)	sand absent	no gravel	soft	angular blocky weak medium	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
28	4	150-200	Auger	dark gray	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	groundwater	no	no	Floodplain alluvium . Terminated at desired depth.
29	1	0-65	Shovel, Auger	light brown	silt loam (no bedding)	fine well-sorted	5-15% poorly-sorted subrounded-subangular mixed	very hard	granular/crumb moderate medium	diffuse irregular	A	trace charcoal organics	yes	no	Lots of modern debris

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
29	2	65-170	Shovel,Auger	brown	sandy loam (no bedding)	medium moderately-sorted	5-15% moderately-sorted subrounded medium	moderately hard	granular/crumb moderate medium	diffuse irregular	B	mottled	yes	no	Some modern debris (possibly from upper layers).
29	3	170-200	Shovel,Auger	gleyed	silty clay loam (no bedding)	very fine poorly-sorted	<5% well-sorted subrounded fine	slightly hard	subangular blocky moderate medium	no horizon	C	organics groundwater mottled oxidized	no	no	Terminated at desired depth.
30	1	0-40	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	<5% well-sorted crushed rock medium	hard	granular/crumb moderate fine	clear smooth	A	mottled oxidized	yes	no	Modern glass fragment in the top ~20cms..
30	2	40-60	Shovel	brown	sandy loam (no bedding)	fine well-sorted	<5% well-sorted subangular fine	soft	granular/crumb weak fine	clear smooth	A		no	no	
30	3	60-90	Shovel	dark brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	Unseen Unseen	C		no	no	
30	4	90-190	Auger	grayish-brown	silty clay (no bedding)	fine well-sorted	no gravel	slightly hard	structureless	Unseen Unseen	C		no	no	Mix of clay and gleyed silt and sand comprise the bottom 110cms. Components came up mixed together in auger so precise depths on each are difficult. Generally it went from sand to more clay gradually, to silt dominated and gleyed. Throughout mixture or intrusion was present.. Terminated at desired depth.
31	1	0-83	Shovel,Auger	light brown	silt loam (no bedding)	very fine well-sorted	5-15% moderately-sorted subrounded medium	moderately hard	subangular blocky moderate medium	clear smooth	A	adundant charcoal organics mottled	yes	no	Compact soils in the corner of the yard near a wooden fence. Modern debris is abundant in the first 40 cm, including clear window glass, red brick fragments, charcoal.
31	2	83-147	Shovel,Auger	brown	silty clay loam (no bedding)	very fine well-sorted	<5% well-sorted subrounded fine	hard	angular blocky strong medium	no horizon	C	trace charcoal mottled oxidized	no	no	Soil too compact to penetrate with the auger. Terminated at dense/impassable soils.
32	1	0-34	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	hard	granular/crumb moderate fine	diffuse wavy	A	organics	yes	no	Ap horizon formed in alluvium with common rootlets to small roots..
32	2	34-100	Shovel,Auger	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
32	3	100-165	Auger	brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
32	4	165-180	Auger	gray	silty clay (no bedding)	sand absent	no gravel	soft	angular blocky weak medium	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
32	5	180-205	Auger	gray	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	C		no	no	Floodplain alluvium . Terminated at desired depth.
34	1	0-38	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	hard	granular/crumb moderate fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets..
34	1	38-70	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	very compact, floodplain alluvium with oxidation mottling..
34	3	70-125	Shovel, Auger	brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
34	4	125-155	Auger	gray	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	organics	no	no	Floodplain alluvium, woody obstruction.. Terminated at log/root/organic obstruction.
35	1	0-48	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	hard	granular/crumb moderate fine	clear wavy	A	organics mottled oxidized	no	no	Ap horizon formed in alluvium with common rootlets..
35	1	0-36	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	5-15% poorly-sorted rounded-subangular no dominant size	hard	granular/crumb moderate fine	diffuse wavy	A	organics	yes	no	Ap horizon formed in alluvium with common rootlets. Some modern trash..
35	2	48-105	Shovel	brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	organics	no	no	Floodplain alluvium, woody obstruction.. Terminated at log/root/organic obstruction.
35	2	36-55	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	hard	granular/crumb moderate fine	clear wavy	B	mottled oxidized	no	no	Very compact floodplain alluvium .
35	3	55-125	Shovel, Auger	grayish-brown	sandy loam (no bedding)	fine well-sorted	no gravel	soft	structureless	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
35	4	125-160	Auger	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	soft	subangular blocky weak medium	no horizon	B	organics mottled oxidized	no	no	Floodplain alluvium with some woody debris.. Terminated at log/root/organic obstruction.
36	1	0-90	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	no gravel	very hard	granular/crumb strong medium	diffuse smooth	A		no	no	
36	2	90-145	Auger	reddish-brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	clear smooth	B	mottled	no	no	
36	3	145-170	Auger	light gray	silty clay (no bedding)	very fine well-sorted	no gravel	soft	prismatic weak medium	Unseen Unseen	C	mottled	no	no	Silt component that increases towards level 4..
36	4	170-210	Auger	reddish-brown	silty clay (no bedding)	very fine no sand sorting	no gravel	soft	structureless	Unseen Unseen	C		no	no	Terminated at desired depth.
37	1	0-109	Shovel, Auger	light brown	silt (no bedding)	sand absent	<5% well-sorted subrounded fine	slightly hard	granular/crumb moderate medium	diffuse irregular	A	organics	no	no	Probe located near apple tree in manicured but not overly-leveled back yard.

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
37	2	109-183	Shovel,Auger	brown	silt loam (no bedding)	fine moderately-sorted	5-15% moderately-sorted subrounded medium	slightly hard	granular/crumb moderate medium	clear wavy	B	mottled oxidized	no	no	
37	3	183-190	Shovel,Auger	reddish-brown	sandy loam (no bedding)	coarse poorly-sorted	5-15% moderately-sorted subrounded fine	soft	granular/crumb weak fine	diffuse wavy	B	oxidized	no	no	
37	4	190-200	Shovel,Auger	brown	silty clay loam (no bedding)	medium poorly-sorted	5-15% moderately-sorted subrounded medium	slightly hard	subangular blocky moderate coarse	no horizon	C	mottled	no	no	Terminated at desired depth.
38	1	0-127	Shovel,Auger	light brown	silt loam (no bedding)	very fine moderately-sorted	5-15% poorly-sorted subrounded mixed	very hard	granular/crumb strong medium	clear irregular	A		no	no	
38	2	127-208	Shovel,Auger	brown	silty clay loam (no bedding)	medium moderately-sorted	<5% moderately-sorted subrounded fine	slightly hard	subangular blocky moderate medium	no horizon	B	mottled	no	no	Terminated at desired depth.
39	1	0-20	Shovel	brown	sandy loam (no bedding)	very fine well-sorted	no gravel	hard	granular/crumb moderate fine	abrupt smooth	A		no	no	
39	2	20-40	Shovel	brown	sand (no bedding)	fine well-sorted	no gravel	slightly hard	structureless	very abrupt smooth	B		no	no	
39	3	40-100	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	no gravel	moderately hard	granular/crumb strong fine	Unseen Unseen	B		no	no	
39	4	100-140	Auger	grayish-brown	sandy clay (no bedding)	medium well-sorted	no gravel	soft	structureless	Unseen Unseen	C		no	no	
39	5	140-210	Auger	dark brown	sand (no bedding)	medium well-sorted	no gravel	soft	structureless	Unseen Unseen	C		no	no	Terminated at desired depth.
40	1	0-163	Shovel,Auger	light brown	silt loam (no bedding)	very fine moderately-sorted	5-15% moderately-sorted subrounded mixed	hard	granular/crumb moderate medium	diffuse irregular	A	mottled oxidized	no	no	Probe located at east end of a leveled pasture area.
40	2	163-191	Shovel,Auger	reddish-brown	silt loam (no bedding)	medium moderately-sorted	5-15% moderately-sorted subrounded medium	slightly hard	granular/crumb weak fine	clear smooth	B	groundwater mottled oxidized	no	no	Sandy layer distinct in the auger .
40	3	191-213	Shovel,Auger	gleyed	silt loam (no bedding)	very fine well-sorted	no gravel	soft	granular/crumb moderate medium	diffuse irregular	C	groundwater	no	no	Soil is damp and the water helps it hold its shape. Terminated at desired depth.
41	1	0-90	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	no gravel	hard	granular/crumb moderate fine	abrupt smooth	A		no	no	
41	2	90-150	Auger,Shovel	reddish-brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	Unseen Unseen	C		no	no	
41	3	150-200	Auger,Shovel	dark brown	loamy sand (no bedding)	medium well-sorted	no gravel	soft	structureless	Unseen Unseen	C		no	no	Terminated at desired depth.
42	1	0-40	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	hard	granular/crumb moderate fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets .

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
42	2	40-58	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Very compact floodplain alluvium .
42	3	58-160	Shovel,Auger	grayish-brown	silt loam (bedded)	fine well-sorted	no gravel	soft	subangular blocky weak medium	clear wavy	B	mottled oxidized	no	no	Bedded floodplain/wetland alluvium .
42	4	160-180	Auger	gray	silty clay (no bedding)	sand absent	no gravel	soft	subangular blocky weak medium	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
42	5	180-210	Auger	gray	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	mottled oxidized	no	no	Floodplain alluvium . Terminated at desired depth.
43	1	0-47	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	granular/crumb moderate fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets .
43	2	47-80	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	subangular blocky weak medium	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
43	3	80-140	Shovel,Auger	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	soft	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Floodplain/wetland alluvium .
43	4	140-190	Auger	gray	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
43	5	190-205	Auger	gray	silty clay (no bedding)	fine well-sorted	no gravel	soft	subangular blocky weak medium	no horizon	B	mottled oxidized	no	no	Floodplain alluvium . Terminated at desired depth.
44	1	0-31	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets .
44	2	31-49	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
44	3	49-58	Shovel	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Floodplain/wetland alluvium .
44	4	58-75	Shovel	light gray	sandy loam (no bedding)	fine well-sorted	no gravel	very hard	subangular blocky moderate medium	no horizon	B	mottled oxidized	no	no	Very compact floodplain alluvium . Terminated at dense/impassable soils.
45	1	0-30	Shovel	light brown	sandy loam (no bedding)	very fine well-sorted	no gravel	loose	granular/crumb weak fine	abrupt smooth	0	organics	no	no	
45	2	30-90	Shovel	brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	structureless	no horizon	A		no	no	Increased moisture content with depth . Old agricultural roots throughout.. Terminated at desired depth.
46	1	0-21	Auger	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	soft	granular/crumb no ped grade fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets .
46	2	21-70	Shovel	brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	granular/crumb moderate fine	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
46	3	70-145	Shovel, Auger	grayish-brown	silt loam (bedded)	fine well-sorted	no gravel	soft	subangular blocky weak medium	clear wavy	B	mottled oxidized	no	no	Floodplain/wetland alluvium .
46	5	145-190	Shovel, Auger	gray	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	mottled oxidized	no	no	Floodplain alluvium . Terminated at desired depth.
47	1	0-29	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	clear wavy	A	organics	yes	no	Ap horizon formed in alluvium with common rootlets .
47	2	29-57	Shovel	light gray	sandy loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Very compact floodplain alluvium .
47	3	57-120	Shovel, Auger	grayish-brown	silt loam (bedded)	fine well-sorted	no gravel	slightly hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Floodplain/wetland alluvium .
47	4	120-200	Auger	gray	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	mottled oxidized	no	no	Floodplain alluvium . Terminated at desired depth.
48	1	0-40	Shovel	light brown	silt loam (no bedding)	very fine well-sorted	no gravel	loose	granular/crumb moderate fine	clear smooth	A		no	no	
48	2	40-55	Shovel	brown	sand (no bedding)	very fine no sand sorting	no gravel	soft	structureless	diffuse smooth	B		no	no	
48	3	55-90	Shovel	brown	sandy loam (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B		no	no	
48	4	90-150	Auger	dark brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B		no	no	
48	5	150-190	Auger	gleyed	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B		no	no	Terminated at desired depth.
49	1	0-24	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	soft	granular/crumb weak fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets .
49	2	24-75	Shovel	grayish-brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	subangular blocky weak medium	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
49	3	75-100	Shovel	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	soft	subangular blocky moderate medium	no horizon	B	mottled oxidized	no	no	Floodplain/wetland alluvium . Terminated at dense/impassable soils.
50	1	0-29	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	granular/crumb weak fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets .
50	2	29-95	Shovel	grayish-brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	subangular blocky weak medium	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
50	3	95-140	Auger	reddish-brown	silt loam (no bedding)	fine well-sorted	no gravel	hard	subangular blocky moderate medium	no horizon	B	mottled oxidized	no	no	Floodplain/wetland alluvium, very oxidized and compact from 125cms.. Terminated at dense/impassable soils.
51	1	0-25	Shovel	light brown	sandy loam (no bedding)	very fine well-sorted	no gravel	soft	granular/crumb moderate fine	clear smooth	A		no	no	
51	2	25-75	Shovel	brown	sandy loam (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B		no	no	

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
51	3	75-110	Shovel	dark brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	clear smooth	B		no	no	
52	1	0-24	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	soft	structureless	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets .
52	2	24-90	Shovel	grayish-brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	granular/crumb moderate fine	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
52	3	90-175	Shovel,Auger	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	soft	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Floodplain/wetland alluvium .
52	4	175-200	Auger	gray	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	mottled oxidized	no	no	Floodplain alluvium . Terminated at desired depth.
53	1	0-31	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	subangular blocky weak fine	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets .
53	2	31-75	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	subangular blocky weak medium	clear wavy	B	mottled oxidized	yes	no	Floodplain alluvium, with one clear glass fragment at ~50cmbs.
53	3	75-130	Auger	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	moderately hard	subangular blocky moderate medium	no horizon	B	mottled oxidized	no	no	Floodplain/wetland alluvium, very oxidized and compact at 125cmbs.. Terminated at dense/impassable soils.
54	1	0-51	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	subangular blocky moderate medium	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets..
54	2	51-77	Shovel	gray	sand (no bedding)	fine well-sorted	no gravel	loose	structureless	clear wavy	B		no	no	Floodplain alluvium .
54	3	77-84	Shovel	light gray	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	granular/crumb weak fine	clear wavy	B	mottled oxidized	no	no	Floodplain/wetland alluvium, buried surface between floods..
54	4	84-105	Shovel	gray	sand (no bedding)	fine well-sorted	no gravel	loose	structureless	no horizon	B		no	no	Floodplain alluvium.. Terminated at poor/no recovery.
55	1	0-58	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	subangular blocky weak fine	abrupt wavy	A	organics	yes	no	Ap horizon formed in alluvium with common rootlets. One clear glass fragment..
55	2	58-175	Shovel,Auger	gray	sand (no bedding)	fine well-sorted	no gravel	loose	structureless	diffuse wavy	B	organics	no	no	Floodplain alluvium with some organic debris..
55	3	175-220	Auger	grayish-brown	sandy loam (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	organics mottled oxidized	no	no	Floodplain alluvium, becomes siltier at depth, with some organic debris.. Terminated at desired depth.
56	1	0-38	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	<5% poorly-sorted rounded-subangular no dominant size	moderately hard	subangular blocky moderate medium	clear wavy	A	organics	yes	no	Ap horizon formed in alluvium with common rootlets, one brown glass fragment..
56	2	38-190	Shovel,Auger	grayish-brown	sand (no bedding)	fine well-sorted	no gravel	loose	structureless	clear wavy	B		no	no	Floodplain alluvium .

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
56	3	190-210	Shovel,Auger	gray	silt loam (no bedding)	very fine well-sorted	no gravel	soft	subangular blocky weak medium	no horizon	B	mottled oxidized	no	no	Floodplain alluvium.. Terminated at desired depth.
57	1	0-50	Shovel	light brown	sandy loam (no bedding)	very fine well-sorted	no gravel	moderately hard	granular/crumb moderate fine	diffuse irregular	A		no	no	
57	2	50-110	Shovel	brown	sandy loam (no bedding)	very fine well-sorted	<5% well-sorted rounded fine	soft	granular/crumb weak fine	no horizon	B		no	no	
57	3	110-180	Auger	reddish-brown	sand (no bedding)	medium well-sorted	no gravel	soft	structureless	no horizon	B		no	no	Terminated at desired depth.
58	1	0-25	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	loose	structureless	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets .
58	2	25-85	Shovel	brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	subangular blocky weak medium	clear wavy	B	mottled oxidized	no	no	Floodplain alluvium .
58	3	85-140	Shovel,Auger	grayish-brown	silt loam (no bedding)	fine well-sorted	no gravel	slightly hard	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Floodplain/wetland alluvium, very oxidized..
58	4	140-205	Auger	grayish-brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	no horizon	B	mottled oxidized	no	no	Floodplain alluvium becomes more gray below 185cms.. Terminated at desired depth.
59	1	0-178	Shovel	light brown	silt loam (no bedding)	fine moderately-sorted	<5% moderately-sorted subrounded mixed	hard	granular/crumb moderate medium	clear wavy	A	trace charcoal mottled	Yes	No	Probe located in large rhubarb field, Modern debris near surface
59	2	178-185	Auger	reddish-brown	sandy clay loam (no bedding)	medium moderately-sorted	5-15% poorly-sorted subrounded-subangular fine	soft	granular/crumb weak fine	diffuse irregular	B	oxidized	no	no	
59	3	185-220	Auger	brown	sandy loam (no bedding)	medium poorly-sorted	5-15% moderately-sorted subrounded fine	loose	granular/crumb weak fine	no horizon	C	mottled oxidized	no	no	Terminated at desired depth.
60	1	0-140	Auger,Shovel	light brown	sandy loam (no bedding)	fine moderately-sorted	<5% moderately-sorted subrounded-subangular fine	hard	granular/crumb strong medium	clear wavy	A		yes	no	Hard, compact soil. Two clear modern glass fragments observed.
60	2	140-180	Auger	grayish-brown	silty clay loam (no bedding)	fine moderately-sorted	no gravel	soft	subangular blocky moderate medium	no horizon	B	mottled oxidized	no	no	Terminated at desired depth.
61	1	0-70	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	<5% well-sorted crushed rock fine	slightly hard	granular/crumb weak fine	clear smooth	A		no	no	
61	2	70-110	Shovel,Auger	dark brown	sandy clay loam (no bedding)	fine well-sorted	no gravel	slightly hard	prismatic moderate medium	Unseen no horizon topography	A	mottled oxidized	no	no	

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
61	3	110-195	Auger	reddish-brown	sand (no bedding)	fine well-sorted	no gravel	soft	structureless	Unseen no horizon topography	C	oxidized	no	no	Terminated at desired depth.
62	1	0-30	Shovel	light brown	silt loam (no bedding)	fine no sand sorting	<5% moderately-sorted subrounded-subangular fine	soft	granular/crumb weak fine	clear wavy	A		no	no	Plow zone with alluvium and fine roots..
62	2	30-110	Shovel	grayish-brown	silt loam (no bedding)	fine no sand sorting	<5% poorly-sorted subrounded-subangular fine	slightly hard	granular/crumb moderate fine	clear wavy	B	mottled oxidized	no	no	Alluvium.
62	3	110-190	Shovel	grayish-brown	silt loam (no bedding)	fine no sand sorting	no gravel	soft	subangular blocky moderate medium	clear wavy	B	mottled oxidized	no	no	Alluvium. Terminated at desired depth.
63	1	0-144	Shovel	light brown	silt loam (no bedding)	fine moderately-sorted	5-15% poorly-sorted subrounded mixed	very hard	granular/crumb moderate medium	clear wavy	A	mottled	Yes	no	modern debris within plow zone
63	2	144-177	Shovel	brown	sandy clay loam (no bedding)	medium moderately-sorted	5-15% moderately-sorted subrounded fine	slightly hard	subangular blocky moderate medium	diffuse irregular	B	mottled oxidized	no	no	
63	3	177-190	Shovel	brown	(no bedding)	medium poorly-sorted	<5% poorly-sorted subrounded fine	soft	With mulch-like wood pieces moderate fine	no horizon	0	organics mottled oxidized	no	no	Terminated at poor/no recovery.
64	1	0-60	Shovel	light brown	sandy loam (no bedding)	very fine well-sorted	no gravel	slightly hard	granular/crumb moderate fine	no horizon	A		no	no	
64	2	60-100	Shovel	light gray	sand (no bedding)	very fine well-sorted	no gravel	loose	structureless	very abrupt smooth	C		no	no	Terminated at dense/impassable soils.
65	1	0-50	Shovel	light brown	sandy loam (no bedding)	very fine well-sorted	no gravel	slightly hard	granular/crumb moderate fine	clear smooth	A	mottled	no	no	
65	2	50-100	Shovel	light gray	sand (no bedding)	very fine well-sorted	no gravel	loose	structureless	clear smooth	C		no	no	Terminated at desired depth.
66	1	0-10	Shovel	light brown	silt loam (no bedding)	fine no sand sorting	no gravel	hard	subangular blocky moderate medium	clear smooth	A		no	no	Plow zone in rhubarb field. Very dry, compact soil..
66	2	10-100	Shovel	grayish-brown	silt loam (no bedding)	fine moderately-sorted	<5% moderately-sorted subrounded-subangular fine	soft	granular/crumb moderate medium	clear wavy	A	mottled oxidized	no	no	Alluvium.
66	3	100-175	Auger	grayish-brown	sandy loam (no bedding)	fine moderately-sorted	no gravel	soft	granular/crumb weak fine	clear smooth	B		no	no	
66	4	175-200	Auger	grayish-brown	clay loam (no bedding)	fine moderately-sorted	no gravel	soft	subangular blocky moderate medium	no horizon	C	mottled oxidized	no	no	Terminated at desired depth.

HOLE	LAYER	DEPTH (cm)	TOOL	COLOR	TEXTURE	SAND MODE	GRAVEL MODE	CONSISTENCE	PEDS	BOTTOM BOUNDARY	SOIL HORIZON	SPECIAL FEATURES	MODERN DEBRIS	CULTURAL	COMMENTS
67	1	0-85	Shovel	light brown	sandy loam (no bedding)	very fine well-sorted	<5% well-sorted crushed rock mixed	slightly hard	granular/crumb moderate medium	clear smooth	A	mottled	no	no	
67	2	85-200	Shovel, Auger	reddish-brown	sand (no bedding)	fine well-sorted	no gravel	loose	structureless	Unseen no horizon topography	C		no	no	Terminated at desired depth.
68	1	0-17	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	soft	structureless	clear wavy	A	organics	no	no	Ap horizon formed in alluvium with common rootlets .
68	2	17-75	Shovel	light brown	sandy loam (no bedding)	fine well-sorted	no gravel	slightly hard	subangular blocky weak medium	clear wavy	B	mottled oxidized	no	no	Slightly compact floodplain alluvium .
68	3	75-110	Shovel	gray	sand (no bedding)	fine well-sorted	no gravel	loose	structureless	no horizon	B	mottled oxidized	no	no	Loose floodplain alluvium.. Terminated at poor/no recovery.
69	1	0-152	Shovel	light brown	silt loam (no bedding)	very fine moderately-sorted	<5% moderately-sorted subrounded fine	very hard	granular/crumb strong medium	diffuse irregular	A		no	no	
69	2	152-187	Shovel	brown	sandy clay loam (no bedding)	fine moderately-sorted	<5% well-sorted subrounded fine	moderately hard	subangular blocky moderate medium	no horizon	B	mottled oxidized	no	no	Terminated at dense/impassable soils.