

Appendix A New Discipline Studies and List of Preparers

Cultural Resources

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Traffic Analysis

Jim Norman, WSDOT, Olympic Region Traffic Office, February 2012, *SR 167 – Puyallup to SR 509 Environmental Impact Statement Memo*.

John Donahue, WSDOT, Olympic Region Planning Office, May 2012, *Traffic forecasting update for the SR 167 Puyallup River Bridge Memo*.

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Cultural Resources Discipline Report

**State Route 167 Puyallup River/Meridian Street Bridge Phase,
SR 167 Extension – Puyallup to SR 509 Freeway Construction
Project, Pierce County, Washington**

Cultural Resources Program Report No. 12-10



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Executive Summary

The Washington State Department of Transportation (WSDOT) is proposing the State Route (SR) 167 Puyallup River/Meridian Street Bridge Project to construct a new two-lane, three-span bridge across the Puyallup River on State Route (SR) 167 and to take the existing Meridian Street Bridge out of service. The project is located in the City of Puyallup, Pierce County, in Township 20 North, Range 4 East, Sections 21 and 22.

This bridge project is a recently-funded phase of a larger undertaking – the SR 167 Extension – Puyallup to SR 509 Freeway Construction Project – which is an unfunded corridor project that will extend SR 167 between SR 161 in Edgewood and SR 509 in Tacoma. The northbound lanes of SR 167 currently cross the Puyallup River on the existing Meridian Street Bridge (Bridge No. 167/20E), which is a structurally deficient steel truss bridge built in 1925 and modified in 1951. The bridge was added to the *P2 Program Bridge Replacement List* funded in the 2011-2013 biennium and the Legislature subsequently mandated that this project use the Design-Build process for project delivery. A new two-lane, three-span bridge over the Puyallup River is proposed downstream of the current crossing. Approaches and new alignments will also be constructed to tie into the existing highway. Project work will include bridge piers, abutments, roadway approaches, bridge superstructure, and improvements to the stormwater system.

As part of the SR 167 Extension – Puyallup to SR 509 Project documentation completed in 2000, the existing Meridian Street Bridge was determined not eligible for listing in the National Register of Historic Places (NRHP). However, recent reevaluation has indicated that the bridge is eligible for the NRHP under Criterion C. In addition to documenting and evaluating the Meridian Street Bridge, the current report supplements the cultural resources survey previously completed for the SR 167 Extension Project between 2000 and 2004 by Archaeological and Historical Services (AHS) (Luttrell 2004), in order to assist the Federal Highway Administration (FHWA) and WSDOT in compliance with the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA). The current effort included drilling of sonic boreholes where deep excavation will be required for the new bridge abutments, excavation of shovel probes within an area of proposed stormwater improvements, and an inventory of additional historic structures within the Meridian Street Bridge Area of Potential Effects.

No archaeological resources were identified within the Meridian Street Bridge project area. Of the historic cultural resources recorded within the project area, only the Meridian Street Bridge is eligible for listing in the NRHP. WSDOT and FHWA will continue Section 106 consultation and seek ways to avoid, minimize, or mitigate adverse effects to the Meridian Street Bridge.

*Cultural Resources Discipline Report, Washington State Department of Transportation
SR 167 Puyallup River/Meridian Street Bridge, Pierce County, WA*

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Project Description and Location

The Washington State Department of Transportation (WSDOT) is proposing the State Route (SR) 167 Puyallup River/Meridian Street Bridge Project to construct a new two-lane, three-span bridge across the Puyallup River on State Route (SR) 167 and to take the existing Meridian Street Bridge out of service. The project is located in the City of Puyallup, Pierce County, in Township 20 North, Range 4 East, Sections 21 and 22 (Figure 1).

This bridge project is a recently-funded phase of a larger undertaking – the SR 167 Extension – Puyallup to SR 509 Freeway Construction Project – which is an unfunded corridor project that will extend SR 167 between SR 161 in Edgewood and SR 509 in Tacoma. The northbound lanes of SR 167 currently cross the Puyallup River on the existing Meridian Street Bridge (Bridge No. 167/20E), which is a structurally deficient steel truss bridge built in 1925 and modified in 1951. In 2011, WSDOT implemented a load restriction requiring vehicles larger than 10,000 pounds to use the right lane only, due to floor beam deterioration that was detected during a routine bridge inspection. The bridge was added to the *P2 Program Bridge Replacement List* funded in the 2011-2013 biennium and the Legislature subsequently mandated that this project use the Design-Build process for project delivery. The goal of this project is to provide bridges and a roadway profile compatible with the larger SR 167 Extension – Puyallup to SR 509 undertaking, which is currently in the preliminary engineering stage and for which new right-of-way has been acquired.

The new two-lane, three-span bridge over the Puyallup River will have abutments on both banks and a pier in the river. Approaches and new alignments will also be constructed to tie into the existing highway. The new bridge will require a higher profile than the existing roadway to provide adequate clearance over frontage roads on both sides of the Puyallup River. Retaining wall construction will be included to minimize right-of-way impacts. Project work will include bridge piers, abutments, roadway approaches, bridge superstructure, and some grading and re-vegetation. It also includes improvements to the stormwater system, which, on the west side of SR 167 north of the river, will be completely replaced, including construction of a stormwater retention pond.

Project History

The Federal Highway Administration (FHWA) approved the Tier I Environmental Impact Statement (EIS) for the larger SR 167 Puyallup to SR 509 undertaking, identifying a preferred route, in 1999. WSDOT began further study of the selected corridor in spring of 1999 with the Tier II EIS, and FHWA published the Tier II Final EIS, outlining plans to avoid or lessen the undertaking's potential environmental impacts, in December 2006. FHWA approved the Tier II FEIS by signing the Record of Decision in October 2007, completing the environmental documentation process and allowing WSDOT to proceed with advanced engineering and design work. Right-of-way acquisition and engineering have proceeded as funding allowed, but construction funding has not yet been identified.

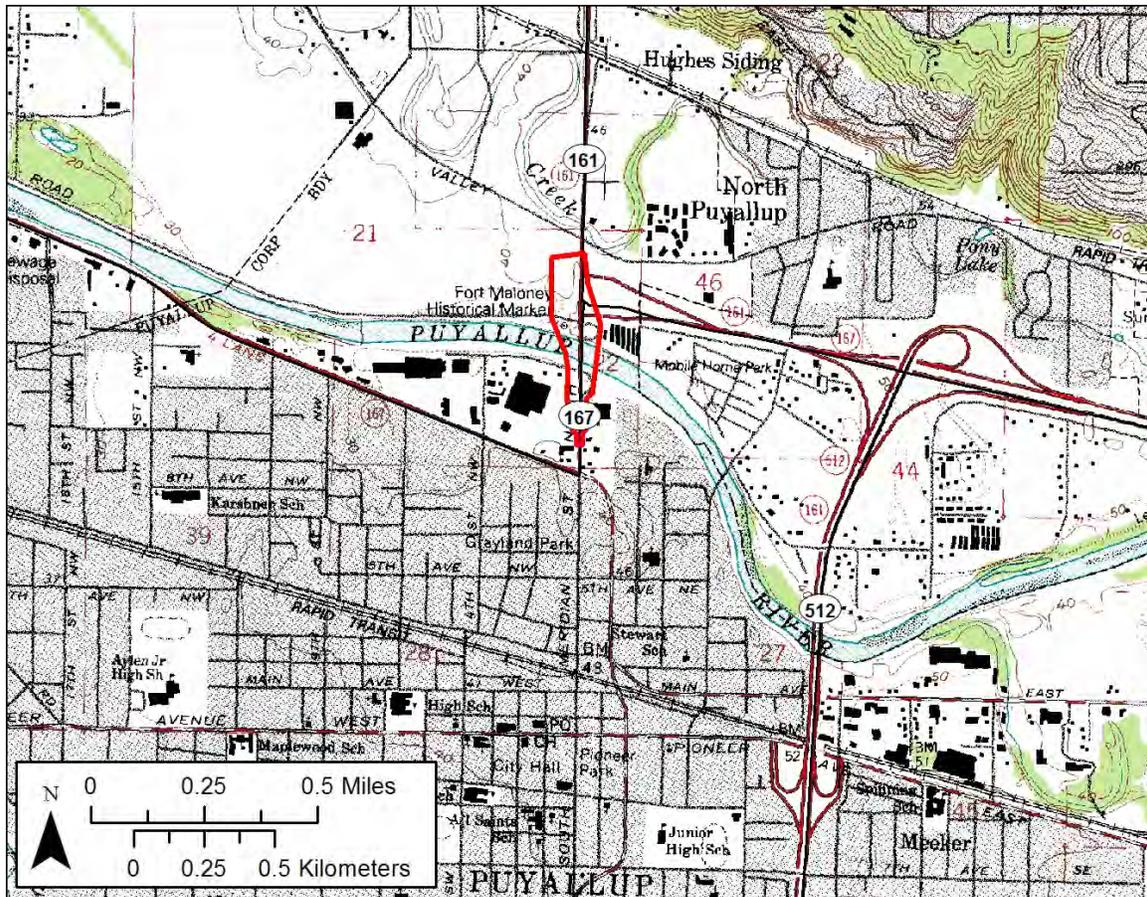


Figure 1. Project area vicinity, on USGS 7.5' Puyallup Quadrangle.

The delivery strategy identified in the SR 167 – Puyallup to SR 509 EIS was to replace the steel truss Puyallup River Bridge with a new five-lane structure and to perform a seismic retrofit and a small taper widening to the existing 1971 concrete bridge. This was to be done by utilizing a detour structure to shift northbound traffic off of the steel truss, and far enough to the east to allow a five-lane structure to be constructed. The next step was to remove the steel truss and construct the new five-lane structure. Northbound traffic would then be shifted onto the new five-lane bridge, and the temporary detour structure would be removed. The final stage was to be seismic retrofit of the existing concrete bridge and a taper widening of the north end to match into the new SR 161/167 Interchange. This configuration of five northbound lanes across the Puyallup River is necessary to accommodate anticipated traffic and attendant lane-changing in the relatively short distance between the Puyallup River and the new SR 161/167 Interchange to the north.

Since the EIS was completed, seismic standards have been revised to render retrofitting of the 1971 concrete bridge economically unfeasible. In addition, as part of the SR 167 Extension – Puyallup to SR 509 Project documentation completed in 2000, the existing Meridian Street Bridge was determined not eligible for listing in the National Register of Historic Places (NRHP). However, subsequent reevaluation indicated that the bridge is eligible for the NRHP.

In addition to documenting and evaluating the Meridian Street Bridge, the current report supplements the cultural resources survey previously completed for the SR 167 Extension Project between 2000 and 2004 by Archaeological and Historical Services (AHS) (Luttrell 2004). Particular attention is given to areas where deep excavation will be required for the Puyallup River Bridge project.

Regulatory Context

The objective of this inventory is to assist FHWA and WSDOT in compliance with NEPA and Section 106 of the NHPA of 1966, as amended, and its implementing regulation (36 CFR 800). The NHPA requires that federal agencies identify and assess the effects of federally assisted undertakings on historic properties, and consult with others to find acceptable ways to avoid, minimize, or mitigate adverse effects.

This inventory seeks to identify archaeological and historic resources within the project area of potential effects (APE), assess any identified resources for eligibility to the National Register of Historic Places, and recommend any additional measures for further characterization or evaluation of cultural resources within the APE.

Area of Potential Effects (APE)

WSDOT defined the Area of Potential Effects for the larger SR 167 Extension, Puyallup to SR 509 Project to include an area of direct effects within a 200 foot offset on either side of the new highway centerline established in the EIS process, as well as any additional right-of-way required for actual construction including interchanges, stormwater facilities, and mitigation sites. The vertical extent of this area of potential direct effects was considered to be three feet. The APE also included an additional 200 foot offset, extending 400 feet from either side of the centerline, to account for potential indirect visual or audible effects.

The APE defined for the SR 167, Puyallup to SR 509 Project did not encompass the entire area that will be affected by the replacement of the Meridian Street Bridge. WSDOT has therefore revised the horizontal and vertical APE to include all areas where ground-disturbing activities associated with the new bridge will occur as shown on Figure 2. The APE also includes the area within which the historic bridge and adjacent historic structures may be directly or indirectly affected by the project. Project work will include bridge piers, abutments, roadway approaches, bridge superstructure, and some grading and re-vegetation. It also includes improvements to the stormwater system, which, on the west side of SR 167 north of the river, will be completely replaced, including construction of a stormwater retention pond, where the depth of excavation will be up to four feet. At the locations of the new bridge abutments, which will require deep excavation, the vertical APE has been considered as 100 feet, based on the anticipated depth of the Osceola Mudflow and subsequent alluvial deposition. Only the Puyallup River Bridge project area is the subject of the current report; any outstanding areas of the larger SR 167 APE requiring Section 106 review or reevaluation will be addressed during future project phases.

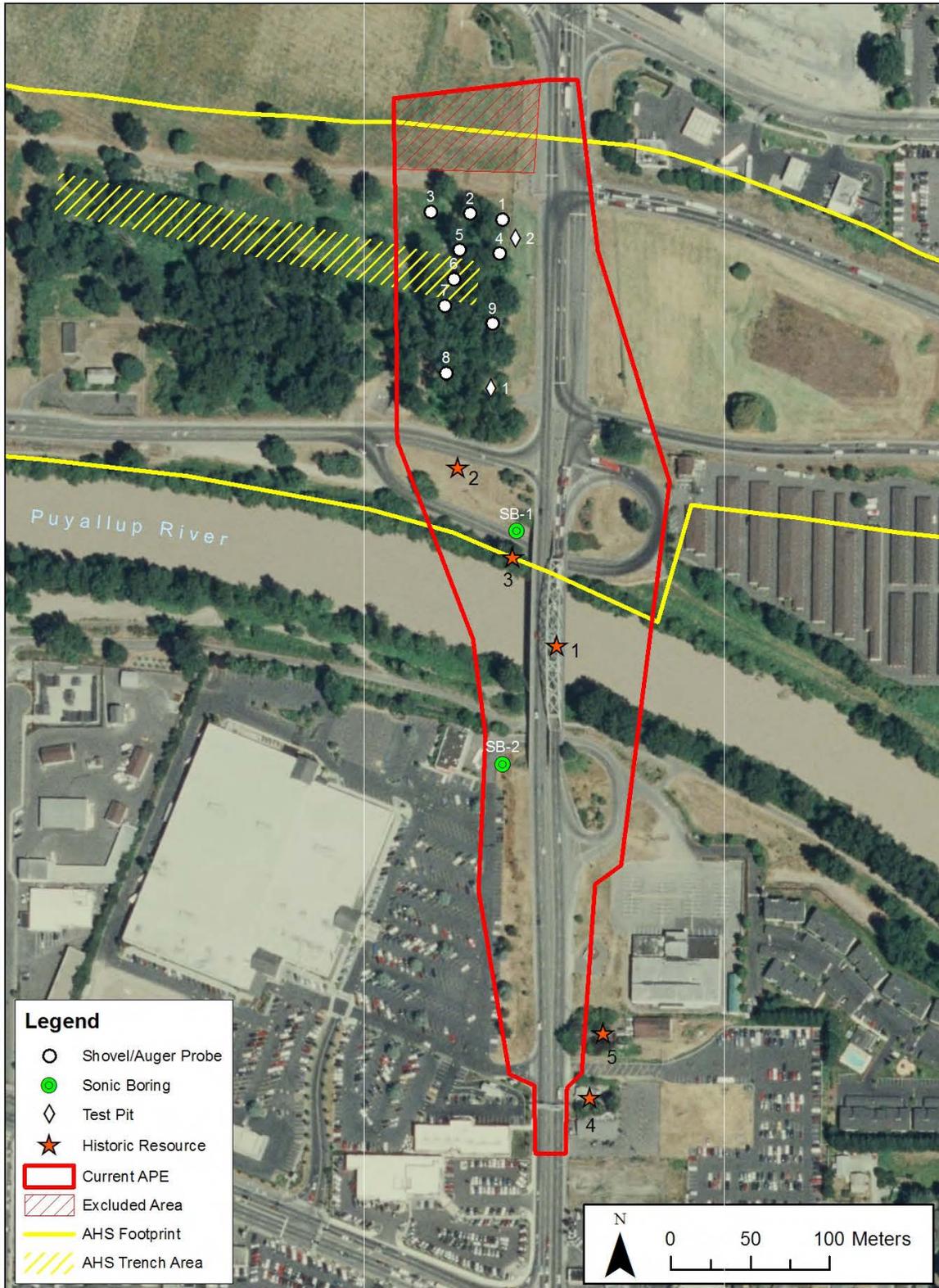


Figure 2. Area of Potential Effects, showing locations of previous survey work by AHS, and survey locations included within the present study.

NRHP Eligibility Criteria

The National Historic Preservation Act requires federal agencies to identify and consider the effects of federally assisted projects on historic properties. Historic properties generally must be at least 50 years old and meet at least one of four criteria of significance. According to the National Register of Historic Places (NRHP) Criteria for Evaluation:

“The quality of significance in American history, architecture, archeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of significant persons in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded or may be likely to yield, information important in history or prehistory (NRHP).”

Amendments to Section 101 of the NHPA in 1992 allowed inclusion of eligible properties of traditional cultural or religious importance to the National Register.

Consultation

WSDOT, on behalf of FHWA, consults with the Washington State Historic Preservation Officer (SHPO) and the appropriate Native American Tribes who may have an interest in the project area, pursuant to the *First Amended Programmatic Agreement Implementing Section 106 of the National Historic Preservation Act for the Federal-aid Highway Program in Washington State Administered by the Federal Highway Administration*. In January 2012, WSDOT initiated consultation with the Muckleshoot Indian Tribe, Puyallup Tribe, Squaxin Island Tribe, and Yakama Nation. The Squaxin Island Tribe responded and deferred further consultation to the Puyallup Tribe. The Puyallup Tribal Archaeologist visited the project area during the sonic borehole fieldwork.

WSDOT also initiated Section 106 consultation with local governments and a number of individuals and organizations considered likely to have an interest in the undertaking due to potential effects to the Meridian Street Bridge. To date, WSDOT has convened two consulting party meetings, on March 26 and June 20, 2012. Section 106 consultation will continue as FHWA and WSDOT seek ways to avoid, minimize, or mitigate adverse effects to the Meridian Street Bridge that could result from the project.

Study Methodology

Records Review

Background research completed for this study included a review of available literature on the natural and cultural history of the project area, including previous survey reports on file at DAHP, with a focus on reports completed since the 2004 AHS report. Project records, including field notes, were obtained from AHS for this study, providing specific details about the methods and results of the AHS survey not included in their 2004 report.

Other archival sources included the Washington State Library, the library of the WSDOT Cultural Resources Program, the Washington Department of Archaeology and Historic Preservation (DAHP) WISAARD database, Bureau of Land Management Land Status and Cadastral Records Viewer, Puget Sound River History Project, University of Washington Library, and Pierce County Assessor's Office.

Field Methods

Archaeological fieldwork was conducted by WSDOT Archaeologist Roger Kiers, who meets the Secretary of Interior Standards for Archaeology, with assistance from WSDOT Cultural Resources Specialist Erin Littauer. WSDOT Historian Craig Holstine conducted the built environment survey.

Sonicore

Deep excavation will be required for construction of the new bridge abutments. The valley floor in the project area is covered by thick Holocene alluvium and lahar deposits, and archaeological materials could potentially be buried at significant depths. Two sonic borings were drilled to test these deep deposits on both the north and south sides of the Puyallup River. The sonic drilling method used a rapidly oscillating drill head to advance an 8-inch diameter core barrel. The resulting core sample was extruded incrementally from the core barrel into plastic sleeves. Coring started at the surface and advanced in increments of 5 or 10 feet, reaching depths of 100 feet.

The cores were examined, described, and assessed for their potential to contain intact cultural resources. Cores were stored in wooden boxes and transported to the WSDOT Materials Laboratory for further analysis. Samples considered to have the potential to contain cultural materials were selected for screening through 1/4-inch mesh hardware cloth. Sonic boring was completed by Boart Longyear using a track-mounted sonic drill, and was inspected by the WSDOT Archaeologist.

Shovel probing

Shovel/auger probes were excavated within previously unsurveyed, or inadequately surveyed, portions of the APE considered to have potential for intact archaeological deposits. Probing focused on the northwest quadrant of the APE, north of Levee Road and west of Meridian, in the area of the proposed stormwater improvements. Shovel probes measured approximately 40-cm in diameter at the ground surface and, when possible, their depth was extended through the use of an 8-inch-diameter auger. All sediments were screened through 1/4-inch mesh hardware cloth. A portion of the

northernmost end of the APE was excluded from the survey based on indications from the project office that no work was planned in that area (Figure 2).

Subsequent to the shovel probing, two backhoe test pits were excavated by WSDOT for geotechnical purposes. Both were monitored by the WSDOT Archaeologist and visually inspected for evidence of buried cultural resources.

Affected Environment

Natural Setting

The project area is located in the Puyallup River valley within a geographic province known as the Puget Trough, a valley system that extends from the Puget Sound south through the Willamette Valley, and which separates the Olympic Mountains from the Western Cascades (Franklin and Dyrness 1973). The headwaters of the Puyallup River are on Mount Rainier, and the modern delta reaches west to Commencement Bay in Tacoma.

The Puget Sound Lowland generally lacks bedrock exposures due to a thick blanket of sediments removed and deposited with the advance and retreat of the continental ice sheets that played a major role in carving out the landscape. During the most recent glacial advance, the Puget Lobe of the Cordilleran Ice Sheet expanded southward from southwestern British Columbia into the Puget Lowland. As the advancing glacier blocked northward-flowing streams, valleys were dammed, causing the formation of proglacial lakes and depositing outwash beyond the advancing glacier, and eroding subglacial channels into the drift plain (Booth 1994). As the ice sheet began to retreat at the end of the Pleistocene, meltwater drained into the lowland, creating locally broad plains of recessional outwash, proglacial lakes, and eventually incursion of marine waters through the Strait of Juan de Fuca. The glacial troughs of the lower Puyallup River and Duwamish valleys became marine embayments.

For much of the Holocene, the lower Puyallup River valley below Sumner remained an embayment of Puget Sound. Mid- to late Holocene alluvial sand, silt, and gravel have filled the former embayment with significant sediment input from lahars originating on Mount Rainier (Palmer 1997). Prior to the Osceola Mudflow approximately 5,600 years ago, the ancient Puyallup River entered the former Puyallup Embayment near the present day City of Puyallup (Dragovich et al. 1994:15; Vallance and Scott 1997). The Osceola Mudflow, or lahar, originated on Mount Rainier and flowed down the White River drainage into the Green and Puyallup drainages, blanketing a 195 square mile area with as much as 100 feet of muddy sand, gravel, cobbles, and boulders (Dragovich et al. 1994:3). Dragovich and others (1994) have reconstructed the pre-Osceola topography of the Puyallup and Duwamish valleys using the base of the Osceola Mudflow interpreted from geotechnical borings and water well logs. The pre-Osceola Puyallup delta platform appears to be at an elevation of roughly -40 ft. (present) mean sea level (MSL) near the City of Puyallup. Since that time, the Puyallup River valley has infilled from delta progradation as mudflow deposits (and other Mount Rainier source materials, including

post-Osceola lahars) have been eroded and redeposited downstream, leaving deltaic and floodplain silts and sands overlying the Osceola deposit.

Mapped soils in the project area consist predominantly of Briscot loam in the northern portion of the APE, Pilchuck fine sand near the Puyallup River channel, and fill in the southern portion of the APE (Zulauf 1979). Briscot loam formed in alluvium under hardwoods and conifers. In a typical profile the surface layer is dark brown loam about 11 inches thick. The underlying material, to a depth of 29 inches is mottled, dark grayish brown fine sandy loam and silt loam; between depths of 29 and more than 60 inches, it is mottled, very dark grayish brown sand and gray silty clay loam. Pilchuck fine sand formed in mixed alluvium under hardwoods and conifers. In a typical profile the surface layer is very dark brown fine sand about 7 inches thick. The underlying material to a depth of 36 inches is very dark brown fine sand, and very dark brown very gravelly sand to a depth of 60 inches or more (Zulauf 1979).

Cultural Setting

Human occupation of the region followed the retreat of the glaciers during the terminal Pleistocene and occurred as early as 13,800 years ago at the Manis Site on the northern Olympic Peninsula, where evidence indicates that humans were hunting megafauna with bone projectile points (Waters et al. 2011). Following this earliest period of occupation, the precontact material culture of the area has been generally described as an early adaptation of inland technologies such as Fluted Point and Stemmed Point traditions of the interior and a subsequent assimilation, transition and development to later coastal-adapted technologies focused upon marine, littoral, riverine, and inland resources (Ames and Maschner 1999). The primary economic resource base was dominated by salmon and supplemented by marine fish, mammals, riverine resources, and vegetable foods (Suttles and Lane 1990). The regional adaptation to coastal and riverine resources allowed for the cultural evolution of the distinctive, though internally variable, Northwest Coast culture pattern of complex sedentary hunter-gatherers with intensive winter villages and extensive seasonal dispersal (Ames 1994; Ames and Maschner 1999).

The project area lies within the traditional territory of the Southern Coast Salish, which refers to speakers of two Coast Salish languages, Lushootseed and Twana, who lived on and around Puget Sound and its drainages (Suttles and Lane 1990:485). Southern Coast Salish bands shared many ethnographically-described practices in common with other coastal groups. Communities congregated at winter villages, which were the primary economic and social units. During the spring, summer, and fall, smaller groups of villagers dispersed across a wide territory to gather food, and to prepare surpluses for winter use.

Within the broader Southern Coast Salish designation, the Southern Lushootseed-speaking Puyallup are directly associated with the area surrounding the Puyallup River. Puyallup villages were typically located along creeks and rivers away from shores of Puget Sound (Smith 1940:9). Villages near the project area included *tsaqwéqwabc*, where Clarks Creek emptied into the Puyallup River, approximately 2.4 miles downstream of the project area, and *stáxabc* located where the Stuck River enters the Puyallup,

approximately 1.7 miles east of the project area (Smith 1940:10). Another village was located along Wapato Creek, *sq'wádabc*, to the northwest of the project area (Smith 1940:10). T. T. Waterman recorded other named places in the project vicinity, including *Sti'lagwats*, meaning “where wild strawberries grow,” for the site of the town of Puyallup, and *SExuba'lt'*, meaning “dance house,” referring to certain religious performances held there, for the site of the town of Meeker (Waterman 2001:250). The town of Meeker was located due east of Puyallup, centered approximately 1.3 miles southeast of the current project.

Epidemic disease, economic stress, and social disruption among the Southern Coast Salish followed the first contact and interaction with Europeans in the late 18th century (Boyd 1990; Cole and Darling 1990). With the establishment of Washington Territory in 1853 and increasing numbers of white settlers, the federal government soon desired to negotiate treaties with the Indians in the territory in order to persuade them to transfer their lands and move onto reservations. The signing of the Treaty of Medicine Creek in 1854 created the Puyallup, Nisqually and Squaxin Reservations.

The first Euroamerican settlers came to the Puyallup vicinity by wagon train, crossing over the Cascades on the Naches Pass Trail, in October of 1853. Among the early settlers in the Puyallup vicinity was John Carson, who claimed property on the north bank of the Puyallup River including land within the current project APE. Carson's 316 acres were bisected by a crude road, and Carson operated a ferry across the Puyallup River near today's Meridian Street Bridge (Bonney 1927). During Indian uprisings in 1855, Carson's family and other local settlers fled to Fort Steilacoom. A military blockhouse known as Fort Maloney was constructed in 1856 on the south bank of the Puyallup River to guard the ferry crossing. After the settling of the Indian War in 1856, Carson and his neighbors slowly returned the Puyallup area and resumed development. Fort Maloney was occupied by the Carson family upon their return, becoming known as Fort Carson. Mrs. Carson taught school there in 1861 (Bonney 1926), and a post office was established there in 1862 (Price and Anderson 2002:26). Today, a lone chestnut tree stands on the former Carson claim near a SR 167 entry ramp, just outside the project APE, reportedly the sole remnant of an orchard planted by John Carson as early as the 1850s (Luttrell 2004).

Carson's ferry eventually became inoperative, and he constructed a wooden toll bridge across the river in 1858 (Bonney 1926). By that time, the road past Carson's place and over his bridge had become a military road connecting Steilacoom and Bellingham, and the state's first telegraph line was strung over this road (*ibid.*). The bridge was washed out by flooding during the winter of 1862-1863, but Carson continued to operate a ferry at the crossing.

Another early settler to the area, James P. Stewart, claimed property near the Carson claim on the opposite (south) bank of the Puyallup River in 1859. In 1862, J. P. Stewart donated land for a school building that replaced Fort Carson (Price and Anderson 2002:28). Settlers who followed included John Meeker, the brother of Ezra Meeker, who arrived with his family in 1859 and claimed property adjoining the Stewart homestead.

Several years later in 1862, Ezra Meeker, who is credited as being the founder of Puyallup, joined his brother in the valley. Meeker and others went on to prosper during the hop boom of the 1880s.

Historically, the Puyallup area has been subject to extensive flooding. During one particular flood event, Stewart spent a perilous night in the riverbank schoolhouse and had to be rescued by Carson the next morning (Price and Anderson 2002:44). Stewart later approached Carson about digging a ditch across the Carson place in order to connect the river above and below the huge meander that was eroding into Stewart's property. In 1883, a Chinese contractor brought 25 laborers to dig a new channel by hand, eliminating the meander directly upstream of today's Meridian Street Bridge (Figure 3).

During a destructive flood in 1906, a massive jam formed in the lower White River causing the backflow to spill into the Stuck River, and adding another flooding river system to the already flooding Puyallup. With the White River now flowing south and the Puyallup River even more susceptible to destructive flooding, Puyallup city officials persuaded the Washington State Legislature to pass an appropriation to help straighten the Puyallup River in 1909. Significant efforts to build levees and widen, straighten, and deepen the Puyallup River between Tacoma and Puyallup began soon thereafter, including elimination of the meander directly downstream of the current project area (Figures 3 and 4) (Roberts 1920). By 1914, the river was dredged and channeled and a concrete levee was constructed from the harbor to the City of Puyallup (City of Tacoma 1981). Continued flooding eventually led to the construction of the Mud Mountain Dam on the White River, completed in 1953, for additional flood control.

In November 1924, Pierce County applied for federal aid to build a steel highway bridge across the Puyallup River, and in early February 1925 awarded a construction contract for \$77,200 to the Puget Sound Bridge & Dredging Company of Seattle. In announcing the award, the Puyallup Valley Tribune noted that "The new road [Meridian Street] will considerably shorten, by the northern route, the distance to Tacoma, and will also bring the big [Puyallup Indian] Reservation district a mile closer to Puyallup (2/7/1925:1)." The bridge was finished in time for the opening of the Western Washington State Fair on 21 September 1925, but Meridian Street remained unpaved, due to refusal by the City Council to fund improvements (9/19/1925:1). Finally County Commissioner Henry Ball had the street "put in shape" for Fair traffic, despite the Council's recalcitrance (9/26/1925:1). The bridge originally carried a lane of traffic in each direction until 1971 when a concrete bridge was built immediately adjacent to the west truss to carry southbound traffic.

During the 1925 construction of the Meridian Street Bridge, the Washington State Historical Society installed a four-sided pyramidal cobblestone marker with concrete base near the northeast end of the bridge. Four incised granite slabs on the marker commemorate the 1855 warning from Abraham Salat of the impending Indian war, the 1856 erection of Fort Maloney, the school taught by Mrs. Carson in the former blockhouse, John Carson's toll bridge, the river crossing of the military road from

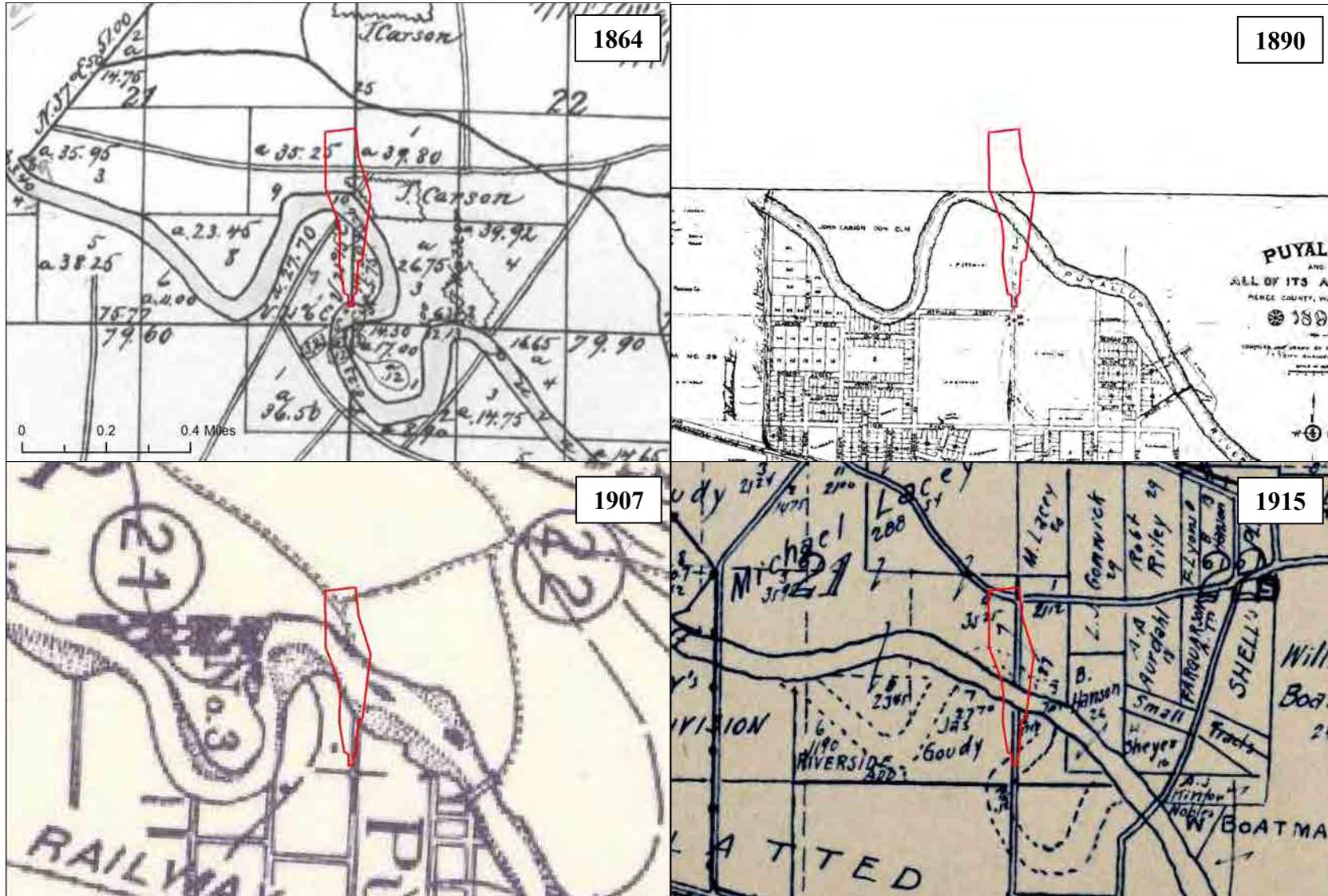


Figure 3. Project area overlaid on historic maps, showing cultural features and changes to the river channel, including General Land Office plat (USSG 1864), 1890 City of Puyallup map (in Price and Anderson 2002), Kielland's (1907) map of the Duwamish-Puyallup Valley, and Kroll's Pierce County Atlas (Kroll Map Company 1915).



Figure 4. Project area overlaid on 1940 U.S. Army Corps of Engineers Aerial Photograph. Dashed line added to show former river meanders prior to channel straightening in the late 19th and early 20th centuries.

Steilacoom to Bellingham, and the first telegraph wire. The marker was moved roughly 220 feet west to its current location on Levee Road by WSDOT during the Meridian St. No. to Sumner No. C/L Project, which was completed in 1973.

Commercial development of former agricultural fields around the south end of the APE began in the 1960s. In 1963, the Hi Ho Shopping Center opened up southwest of the Meridian Bridge at the location of today's Fred Meyer store. Other business joined the shopping complex, and in 1966 the shopping center owners sponsored the construction of the underpass beneath the south end of the Meridian Bridge, which carries northbound shoppers to the area (Price and Anderson 2002:121). Tiffany's Skate Inn, southeast of the bridge, opened in 1969. The Fred Meyer Corporation purchased the Hi Ho Shopping Center in 1980, and eventually tore down the complex to build a new store.

Previous Cultural Resources Surveys

This report supplements the archaeological survey investigations previously completed for the SR 167 Extension Project over a four-year period between 2000 and 2004 by Archaeological and Historical Services (AHS), as summarized in their 2004 report

(Luttrell 2004). The APE for the SR 167 corridor surveyed by AHS was offset 200 ft. from centerline for direct effects, and 400 ft. for indirect effects (Figure 2). The vertical APE was 3 feet. The entire APE was subject to pedestrian survey; probing was conducted in high probability areas where right-of-entry was acquired, at 20-30 meter intervals, using either a shovel or mechanical auger.

At the south end of the SR 167 project area near Puyallup, AHS was unable to excavate shovel probes in one high potential area due to heavy vegetation and the fact that it was continuously occupied as a homeless camp for approximately 50 years. This area, described as a bench on the north bank of an abandoned meander channel of the Puyallup River, is in the vicinity of the northwest portion of the current project APE. Instead of shovel probes, AHS excavated a backhoe trench measuring ca. 265 m (870 ft.) long and 61 cm (2 ft.) wide to an approximate depth of 0.9 m (3 ft.). Two AHS archaeologists monitored the excavation of the trench and inspected, profiled, and photographed the sidewalls.

No maps of probe or trench locations are provided in the AHS survey report. Based on shovel probe records obtained from AHS, probes extended over a length of 700 meters starting at the west end of WSDOT parcel 0420214040. Based on those records, the east end of the line of probes would have extended to within approximately 250 meters of the current APE's western edge, which is at the edge of a wooded area that probably coincides with the former homeless camp. Assuming the east-west trench began near the terminus of the shovel probe line, the 870-foot-long trench would have extended into the current project APE by at least 100 feet (Figure 2). The records suggest that no AHS excavations occurred within the current project APE outside of the backhoe trench.

The current scope of archaeological survey was intended to supplement the previous work by AHS. The AHS survey acknowledged that the project area had potential for deeply buried archaeological resources but, because they were considered beyond the limits of standard testing methodology, no attempts were made to identify deeply buried sites below a depth of three feet. The AHS survey did not extend to the south side of the Puyallup River.

Subsequent to the AHS survey, two cultural resources surveys were completed along the City of Puyallup's Riverfront Trail, within a mile upstream and downstream of the Meridian Street Bridge (Shong 2003a, 2003b). The Riverfront Trail is a multi-use trail on top of, and adjacent to, the flood-control levee along the south side of the Puyallup River. No cultural resources were recorded during the survey for the upstream or downstream portions of the trail, although evidence of the historic levee is discussed, as are a series of wooden pilings within the Puyallup River. The segment of Puyallup River levee within the trail project area was described but not inventoried. According to Shong (2003b), the levee currently exists as a rip-rapped river margin, and multi-terraced landscape. A small segment of the levee exists as a two-sided earthen feature with rock and concrete rip-rap on the river side, but much of the non-river side of the project area had been filled to the levee grade obscuring all signs of the original form. The segment of levee within the trail project area did not retain its original form or design that would distinguish it as a typical

levee. Segments further downstream (and outside the trail project APE) were said to better define the original form, design and construction techniques used to build the levee, including concrete surfaces, and two-sided construction.

The City of Puyallup undertook a reconnaissance-level survey of historic buildings in its downtown in 2007, resulting in a context statement about the development of Puyallup, general observations, recommendations, and Washington State Historic Property Inventory forms for 96 properties dating from 1888 to 1964 (BOLA 2007). In 2009, the City identified the residential neighborhood northwest of downtown for additional survey at the reconnaissance level, recording a total of 33 properties dating largely from 1900 to the 1920s (BOLA 2010). Both the downtown and northwest neighborhoods are outside and south of the current project APE.

No archaeological sites have been previously recorded within one mile of the Meridian Street Bridge project area.

Expectations

The project area has a dynamic history of natural processes and cultural uses and modifications that influence the types and locations of cultural resources that can be expected within the APE. The APE has evolved from a late Pleistocene glacial trough, to an early Holocene marine embayment, to mid-Holocene delta front, to late Holocene meandering river floodplain and channel. The mid-Holocene Osceola Mudflow dramatically influenced sedimentation in the valley, and is recognized in the subsurface of the project area as a poorly sorted, deposit of gravel- to boulder-size clasts in a silty, sandy matrix, tens of feet thick. Subsequent fluvial reworking of these and later deposits has left secondary deposits of Mount Rainier source materials overlying the Osceola deposit. The formerly meandering Puyallup River channel has been straightened, leaving remnant channels and fills in the APE.

Native Americans have utilized the Puyallup River and its floodplain for thousands of years. If intact, buried surfaces remain in the APE, they could potentially contain evidence of Native use and occupation. Given the significant amount of sedimentation that has occurred in the valley, particularly since the mid-Holocene, such archaeological evidence could be deeply buried. Due to the proximity of much of the project area to the active river channel and recent land alterations, however, the probability of preservation of intact archaeology may be somewhat reduced, with higher potential further out on the floodplain. Similarly, although the APE has experienced multiple historic uses since the mid-1800s, expectations for intact historic archaeology are tempered by historic and modern developments that have altered the landscape, including channel improvements and thick fills under Meridian Street and the bridge approaches.

Results of Fieldwork

The two sonic boreholes were drilled between March 27 and March 29, 2012 under cloudy skies, with rain on the 29th. Shovel/auger probing was completed on April 24, 2012 under overcast but dry skies. Monitoring of geotechnical trenching was done on May 7, 2012.

Sonic Borings

Sonic bore #1 (SB-1) was drilled on the north bank of the Puyallup River, on the north shoulder of the SR 167 underpass to N. Levee Road, directly west of the Meridian Street Bridge (Figures 2 and 5). SB-2 was drilled on the south side of the Puyallup River, west of Meridian Street, on the grassy lawn between Meridian Street and the underpass that carries northbound traffic to and from the Fred Meyer shopping complex (Figures 2 and 6).

Both boreholes generally encountered a similar depositional sequence. Lithologic units encountered in each borehole are represented in Figure 7. Depths were measured in the field from the ground surface. In order to more easily compare data between sonic boreholes, elevations of lithologic units have been adjusted to relative mean sea level (msl) as measured from the ground surface elevation extrapolated from the LiDAR Digital Elevation Model (DEM). SB-1 was drilled from an approximate surface elevation of 35 feet msl; SB-2 was drilled from an approximate elevation of 44 feet msl.

The lithology of sediments encountered in the boreholes is designated in Figure 7 by a capital letter indicating the dominant grain size of the deposit. This capital letter is typically followed to its right by a lowercase letter describing a secondary property of the



Figure 5. View of sonic bore #1, looking southeast towards the Puyallup River bridges.



Figure 6. View of sonic bore #2 from the bridge, looking southwest towards Fred Meyer.

same deposit. For example, a primarily sandy deposit would be identified by a capital “S.” A silty sand deposit would be designated “Sz.” Other modifiers can be added indefinitely. The exception to this sequence are the prefixes used to describe sand grainsize classes (very fine to coarse), which are placed to the left of the sand identifier. The lithologic units defined in this way represent single depositional events that occurred under specific conditions in a particular setting. These units can then be grouped together into more inclusive strata, which represent various types of depositional events that occur together in the same overall depositional environment.

Both sonic boreholes were drilled to depths of 100 feet below ground surface, although the bottom nine feet of SB-2 fell out of the core and could not be recovered. Sediments are described below as encountered from bottom to top. At the greatest depths, fine- to coarse-grained sand was recovered (from SB-1), at an elevation of -65 to -50 feet (Figure 7). These sands were overlain by several feet of gray silt and fine sand containing a few fibrous organics and wood fragments and, in SB-2, also by dark gray medium to coarse sand and sandy rounded gravel. These sediments are interpreted as fluvial and deltaic silts and sands deposited at a time when the Puyallup River delta was near the City of Puyallup in the vicinity of the project area. This is consistent with other estimates of the elevation of the delta platform that existed in the area prior to deposition of the Osceola Mudflow (Dragovich et al. 1994; Palmer 1997).

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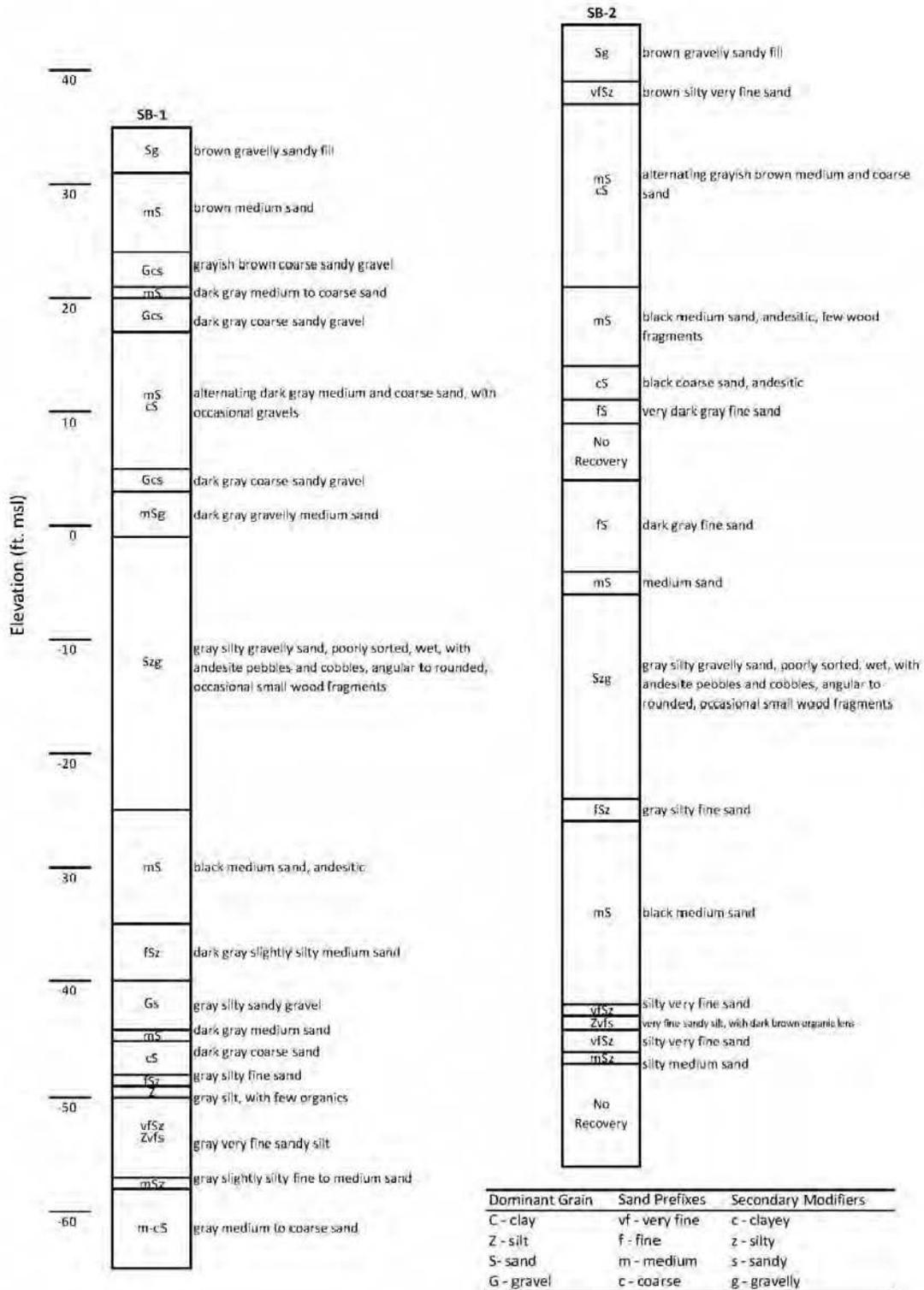


Figure 7. Sonic borehole logs.

A poorly sorted silty, sandy gravel deposit was found at a depth of -44 to -40 ft. in SB-1, but was absent from SB-2. This gravelly deposit resembles, but is clearly separate from, the later Osceola lahar deposit, and may represent a pre-Osceola lahar from the Cowlitz Park eruptive episode on Mount Rainier (Pringle 2008:35).

Between elevations of -40 and -25 feet, a massive deposit of very dark gray to black, andesitic medium sand was encountered. The andesitic composition of the sand indicates an origin on the flanks of Mount Rainier, and it may represent a transition facies deposit left by the dilute flow front of the Osceola Mudflow (Scott 1988), or fluvial redeposition of earlier lahar sands. At an approximate bottom elevation of -25 feet, both boreholes encountered a thick deposit of poorly sorted, wet, gray muddy sand with gravels and cobbles (Figure 8). Gravels were angular to well-rounded, and were mostly andesite. A few small wood fragments were encountered as well. This deposit, interpreted as the debris flow from the Osceola lahar event, was approximately 18- to 24-feet thick in the two boreholes.



Figure 8. Osceola debris flow deposit in SB-1, at approximately -23 ft. msl.

Above the Osceola Mudflow in SB-1, deposits consisted of dark gray, alternating fine to coarse andesitic sands and fine gravels, representing fluvial sands and gravels deposited in and near the former river channel prior to realignment. In SB-2, gravels are largely absent above the mudflow deposit, with sediments consisting of fine to coarse fluvial sands. The andesitic composition of the sands in both boreholes indicates their origin in upstream Osceola deposits or reworking of other volcanic sources that originated on the flanks of Mount Rainier. A deposit of black volcanoclastic sand in SB-2 between 11 and 21 ft. msl may represent a late-Holocene lahar event. The uppermost deposits in both boreholes, above 21 ft. msl, are browner in color, and in SB-1 consist of medium sands likely deposited within the abandoned channel after river straightening roughly 100 years ago, either naturally during flood events, or as intentional fill during the realignment. The top five feet of both boreholes encountered more recent gravelly sandy fill likely deposited during road and bridge construction.

No evidence was observed of buried, stable surfaces likely to have preserved evidence of past human occupation.

A number of borehole logs generated for the project by the WSDOT Geotechnical Division were also examined. Two geotechnical boreholes had been drilled in close proximity to the two sonic boreholes: geotechnical borehole H-5p-11 was drilled near SB-1, and H-3p-11 was drilled near SB-2. The H-5p-11 core reached 251 feet below ground surface, and H-3p-11 reached 236 feet below surface.

Dense sands and gravels encountered below 130-140 feet below surface in both boreholes may represent Pleistocene outwash deposits, overlain by silty deposits possibly representing incursion of the Puyallup Embayment, followed by sands and silts representing arrival of the Puyallup delta. The poorly-sorted Osceola Mudflow deposits are found between depths of approximately 70 and 40 feet. These are overlain by post-Osceola alluvial sands.

Shovel/Auger Probing

A total of nine shovel/auger probes were completed in the northwest portion of the APE, reaching depths ranging from 40 to 220 cm below ground surface (Table 1). Soils ranged from silt loam to sandy loam soils that have developed within floodplain alluvium, resembling the Briscot loam mapped in the area, with thin layers of fill encountered at the surface of several of the probes. No cultural materials or evidence of intact buried surfaces were identified.

Table 1. Shovel/Auger Probe Descriptions.

Shovel Probe #	Sediments	Interpretation
1	0-25 cm: 10YR 3/2 very dark grayish brown silt loam, w/ 10% angular to rounded gravel including a few larger cobbles; 25-55 cm: 10YR 4/2 dark grayish brown clayey silt, very dense	Fill above floodplain silts or fill compacted by roadway construction
2	0-40 cm: 10YR 3/2 very dark grayish brown loam transitioning to silty fine sand; 40-200 cm: 7.5YR 3/4 dark brown fine sand, becomes 10YR 4/2 dark grayish brown fine sand	Soil developed in floodplain alluvium
3	0-20 cm: 10YR 3/2 very dark grayish brown silt loam; 20-60 cm: 10YR 4/2 dark grayish brown silt loam; 60-105 cm: 10YR 3/2 very dark grayish brown fine sand	Soil developed in floodplain alluvium
4	0-25 cm: 10YR 3/2 very dark grayish brown silt loam, w/ 10% angular to rounded gravel including a few larger cobbles; 25-55 cm: 10YR 4/2 dark grayish brown clayey silt, very dense	Fill above floodplain silts or fill compacted by roadway construction
5	0-20 cm: 10YR 3/2 very dark grayish brown loam; 20-75 cm: 10YR 4/3 brown fine sandy loam; 75-170 cm: 7.5YR 3/4 to 10YR 3/1 dark brown to very dark gray fine sand	Soil developed in floodplain alluvium
6	0-20 cm: 10YR 3/2 very dark grayish brown loam; 20-90 cm: 10YR 4/3 brown fine sandy loam; 90-200 cm: 7.5YR 3/4 to 10YR 3/1 dark brown to very dark gray fine sand; 200-212 cm: 10YR 4/3 brown silty very fine sand	Soil developed in floodplain alluvium
7	0-20 cm: 10YR 3/2 loam, with 10% rounded to angular gravel; 20-105 cm: 10YR 4/3 brown fine sandy loam, dense	Fill above soil developed in floodplain alluvium
8	0-35 cm: 10YR 2/2 very dark brown gravelly loam; 35-80 cm: 10YR 4/2 dark grayish brown fine sandy loam becoming fine sand; 80-220 cm: 10YR 3/1 very dark gray fine to medium sand	Fill above soil developed in floodplain alluvium
9	0-25 cm: 10YR 3/2 very dark grayish brown silt loam, w/ 10% angular to rounded gravel including a few larger cobbles; 25-40 cm: 10YR 4/2 dark grayish brown clayey silt, very dense	Fill above floodplain silts or fill compacted by roadway construction

Geotechnical Trenches

Two geotechnical test pits were excavated by backhoe on May 7, 2012 in the northwest portion of the APE near the previously-excavated shovel probes (Figure 2). Test pit #1, which was visually determined to be within an area of fill extending west from the

highway, encountered silt, sand, and gravel fill. The trench terminated on a broken slab of concrete at a depth of five feet. Test pit #2 was excavated to a depth of nine feet, and encountered loam soils that have developed within sandy floodplain alluvium. No cultural materials or evidence of intact buried surface were identified.

Historic Structures Survey

WSDOT Historian Craig Holstine reevaluated the Puyallup River/Meridian Street Bridge in December 2011, and surveyed the additional historic structures (dating 45 years or older) within the APE on June 8, 2012 (see Figure 2 for locations).

Puyallup River/Meridian Street Bridge

The 1925 Puyallup River/Meridian Street Bridge's main span is a 371-foot long steel riveted, subdivided Warren through truss (Figure 9). Unlike the standard Warren truss, this bridge has parabolic top chords and alternating diagonal truss members, longitudinal braces between diagonals in alternating panels, and vertical members adjacent to the portals. In 1991 the portal sway braces and interior panel sway bracing was modified to increase vertical clearance for over-sized traffic from 14 feet 7 inches to 18 feet 7 inches. Although the modifications were sensitive to the original truss configuration, retaining as much of the old bracing as possible, the truss appearance has changed somewhat when viewed from the roadway. Among the changes to the deck are the 21 inch-high metal thrie beams attached to the traffic-facing side of the trusses, reducing the roadway width by 9 inches to 21 feet. The south approach to the truss consists of a 21-foot long precast, prestressed girder span and two 19-foot long timber trestle spans (which replaced earlier timber spans), all added in 1951. The north approach consists of two 19-foot long timber trestle spans, also dating to 1951, bringing the total length of the structure to 468 feet. The truss piers are founded on timber piles, while the approach piers rest on concrete spread footings. A five-foot wide timber sidewalk is attached to the east side of the bridge. A decorative, cross-hatched lattice steel rail is attached to the outer edge of the sidewalk along the full length of the truss span, providing both improved safety for pedestrians and a somewhat aesthetic appearance to the east elevation. The bridge originally carried a lane of traffic in each direction until 1971 when a concrete bridge was built immediately adjacent to the west truss to carry southbound traffic. The modern concrete bridge rises several feet above the roadway of the historic truss bridge, detracting considerably from the aesthetics of the older bridge.



Figure 9. Meridian Street Bridge.

Fort Maloney Historical Marker

The Fort Maloney Historical Marker (Figure 10), dedicated in 1925, commemorates several important historical events that occurred in the vicinity of the Meridian Street Bridge, as described in the Cultural Setting section of this report. The

mortared cobblestone pyramid on a concrete base was moved from the Meridian Street Bridge's northern approach to its current location on N. Levee Road in the early 1970s.

North Bank Puyallup River Revetment

A revetment consisting of boulders up to two feet in diameter stacked at an angle greater than 45 degrees armors the north bank of the Puyallup River under the SR 167 bridges (Figure 11). The revetment rises approximately 8 feet above an inclined base of similar sized boulders that

extends into the river. Unconsolidated boulders, rocks, and gravels have been dumped atop the revetment to add protection to the roadway loop under the bridges connecting northbound SR 167 traffic with North Levee Road. Extending beyond the bridges in both directions for undetermined distances, the revetment has been built up around the piers of both the 1925-built and 1971-built bridges, suggesting its installation being contemporaneous with, or after, the latter bridge's construction date. This rock revetment is therefore the most recent iteration of Puyallup River flood control efforts that date back to the late 1800s. No similar rock revetment exists on the south bank of the river under the bridges, although revetments and levees exist beyond the SR 167 right-of-way both upstream and downstream.

Paul A. Lindsay House

Pierce County Assessor-Treasurer's information shows this house's construction date as 1955. However, given the house's style and construction, it seems likely it was built earlier. The City Directory indicates that Paul A. Lindsay, a janitor at Maplewood School, and his wife Adolphine lived at this address in 1947. By 1950 Lindsay had become a teacher at the school. Despite his probable salary increase, it seems unlikely that the



Figure 10. Fort Maloney Historical Marker, looking southeast, with SR 167 bridges in background.



Figure 11. North Bank Revetment.



Figure 12. Paul A. Lindsay House.

Lindsays would have built a new house here five years later. They continued living in the house at least through 1961.

Mead M. Murray House

This vernacular two-story house facing N. Meridian Street is largely screened from view by maple, oak, birch and other large trees and shrubs that have overgrown the property. In 1936 Mead M. and Wilma Murray lived in this house, which at that time was 103 N. Meridian (three years later it was 1003 N. Meridian, and by 1947 the address had become 1103 N. Meridian). The Murrays continued to live there at least through 1958. By 1961 Glen M. and Jean B. Freeman lived in the house. Pierce County records say the house



Figure 13. Mead M. Murray House.

was built in 1900. That date appears to be too early, given the style and materials used in the house’s construction (especially the drop siding), and the probable age of N. Meridian Street. The roadway may not have existed in its present alignment until shortly before the Puyallup River Bridge was built in 1925. At the time of the bridge’s construction, N. Meridian was an unimproved, unpaved roadway. It took action by a county commissioner and the approaching opening of the Western Washington Fair of 1925 to finally improve the street.

Table 2. Inventoried Historic Properties.

Property # (see Fig. 2)	Property Name	Construction Date	NRHP Status
1	Meridian Street Bridge	1925	Eligible
2	Fort Maloney Historical Marker	1925	Not eligible
3	North Bank Puyallup River Revetment	ca. 1971	Not eligible
4	Paul A. Lindsay House	ca. 1940	Not eligible
5	Mead M. Murray House	ca. 1920	Not eligible

Assessments of Significance

Meridian Street Bridge

As part of the SR 167 Extension – Puyallup to SR 509 Project documentation completed in 2000, the existing Meridian Street Bridge was determined not eligible for listing in the National Register of Historic Places (NRHP). Reevaluation of the bridge for the current phase of the project yielded additional information on the unique nature of its design. The Puyallup River/Meridian Street Bridge is currently the longest, simply supported, steel riveted Warren through truss span built prior to 1940 remaining on the Washington State highway system. The popularity of the Warren truss emerged in the late 1930s, and continued through the 1950s. Very few truss bridges were built on State-owned highways

after 1960. Although a modest number of Warren trusses still remain on the system, the number has declined. Narrow bridges with restricted vertical clearance, such as through trusses, are routinely replaced by wider concrete bridges.

The Puyallup River/Meridian Street is also significant for its unusual, perhaps unique truss configuration. As a variation from the standard Warren truss' horizontal top chord, the bridge has a parabolic top chord allowing for a longer span length than possible with the standard top chord. The parabolic configuration also avoided the need for heavier, or additional, truss components to reach the entire span length. Its subdivided panels and the addition of longitudinal members at the mid-panel heights in five truss panels achieved both strength and economy of steel. The bridge is significant for its design, which is the only one of its kind in Washington, and may very well be unique in the United States if not the world, although additional research would be needed to confirm that conclusion. Despite modest alterations over the years, and additions made for safety and structural improvement, the bridge retains integrity of design, materials and workmanship, and is thus eligible for inclusion in the NRHP under Criterion C. The SHPO concurred with WSDOT's determination of eligibility on February 8, 2012.

Fort Maloney Historical Marker

The historical marker was previously evaluated in 2000 by Charles Luttrell, who recommended the structure not be determined eligible because "its design, age, tradition or symbolic value has not invested it with its own significance." WSDOT determined the marker not NRHP eligible in 2003, and the SHPO concurred. Since the monument does not appear to possess aesthetic values of the period of its creation; nor has it defined the historic identity of the area; nor has it come to symbolize the values, ideas, or contributions valued by the generation that erected it, the marker is not eligible for inclusion in the NRHP per the requirements of Criteria Consideration F: Commemorative Properties. The marker will not be touched by the proposed project.

North Bank Puyallup River Revetment

With the 1909 passage by the Washington State Legislature of an appropriation to help straighten the Puyallup River, significant efforts to build levees and widen, straighten, and deepen the Puyallup River between Tacoma and Puyallup began in earnest, including elimination of the meander directly downstream of the current project area. By 1914, the river was dredged and channeled and a concrete levee was constructed from the harbor to the City of Puyallup (City of Tacoma 1981). Undated photos show the 1925-built bridge atop massive concrete levees on both banks of the river (Dorpat and McCoy 1998:264). Those levees do not presently exist under the two SR 167 bridges. The levee on the south bank is still in place a short distance downstream of the APE and, although not visible, may still be in place upstream and downstream from the APE on the north bank. In 1950 the US Army Corps of Engineers rebuilt revetments and levees when the river's channel capacity was increased, and some of that work may have involved the structures under the bridges.

The current north bank revetment appears to be of more recent construction, with rocks probably larger than early trucks and construction equipment could have easily moved

into place. A 1971 “Plan” drawing for the new SR 167 bridge shows “concrete slope protection” on the river’s north bank, indicating that the present rock revetment dates to the 1971 bridge construction or sometime thereafter when the earlier flood control structure was either removed or covered by a new structure. Thus the original revetment or levee in this location has lost integrity of materials, workmanship, and feeling (if not design), and is not NRHP eligible.

Lindsay House

Although the house retains much of its exterior integrity, it lacks architectural distinction and is not eligible for inclusion in the National Register of Historic Places. Installation of vinyl windows has compromised that integrity, most prominently on the structure’s primary façade.

Murray House

This abandoned, vernacular house retains considerable integrity of design and materials on its exterior, most notably its cladding, wood windows, and wood rain gutters. Despite the house’s retention of some historic appearance, however, its deteriorated condition and lack of architectural distinction render it ineligible for inclusion in the National Register of Historic Places.

Conclusions and Recommendations

This supplemental survey for the Meridian Street Bridge phase of the SR 167 Extension Project resulted in the inventory and/or reevaluation of five historic structures, one of which (the Meridian Street Bridge) is eligible for listing in the NRHP. WSDOT and FHWA will continue consultation with interested parties in order to seek ways to avoid, minimize, or mitigate adverse effects to the Meridian Street Bridge that could result from the project. If adverse effects to the Meridian Street Bridge cannot be avoided, an amendment to the existing Memorandum of Agreement (MOA) for the SR 167 Extension Project should be developed in consultation to stipulate mitigation measures.

The MOA should also stipulate additional Section 106 review of future phases of the SR 167 Extension Project in order to ensure that historic properties outside the Meridian Street Bridge project area have been adequately taken into account.

Notes and photographs for this survey will be kept on file at the WSDOT Environmental Services Office, Olympia, Washington. A copy of this report should be forwarded to the Washington State Department of Archaeology and Historic Preservation, and the interested and affected tribes.

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1979 *Soil Survey of Pierce County Area, Washington*. USDA Soil Conservation Service, in cooperation with the Washington Agricultural Experiment Station.

Appendix A – Historic Property Inventory Forms



Historic Inventory Report

Location

Field Site No. _____ DAHP No. _____
Historic Name: Meridian Street Bridge
Common Name: Puyallup River Bridge 167/20E
Property Address: 0000 N Meridian St N, Puyallup, WA 98424
Comments:
Tax No./Parcel No.
Plat/Block/Lot
Acreage
Supplemental Map(s) _____

Township/Range/EW	Section	1/4 Sec	1/4 1/4 Sec	County	Quadrangle
T20R04E	21			Pierce	PUYALLUP

Coordinate Reference

Easting: 1194635
Northing: 686851
Projection: Washington State Plane South
Datum: HARN (feet)

Identification

Survey Name: Puyallup River Bridge _____ Date Recorded: 12/30/2011
Field Recorder: Craig Holstine
Owner's Name: Washington State Department of Transportation
Owner Address: 310 Maple Park Blvd.
City: Olympia _____ State: WA _____ Zip: 98504
Classification: Structure
Resource Status: _____ Comments:
Survey/Inventory
Within a District? No
Contributing? No
National Register:
Local District:
National Register District/Thematic Nomination Name:
Eligibility Status: Not Determined - SHPO
Determination Date: 1/1/0001
Determination Comments:



Historic Inventory Report

Description

Historic Use: Transportation - Road-Related (vehicular)		Current Use: Transportation - Road-Related (vehicular)	
Plan: Unknown	Stories: not applic	Structural System: Steel	
Changes to Plan: Slight		Changes to Interior: Not Applicable	
Changes to Original Cladding: Not Applicable		Changes to Windows: Not Applicable	
Changes to Other: Not Applicable			
Other (specify):			
Style:	Cladding:	Roof Type:	Roof Material:
Other	None	None	None
Foundation:	Form/Type:		
Concrete - Poured	Other		

Narrative

Study Unit

Other

Transportation

Date of Construction:	1925 Built Date	Builder:	Puget Sound Bridge & Dredging Co., Seattle
	1951 Remodel	Engineer:	M.M. Caldwell
		Architect:	

Property appears to meet criteria for the National Register of Historic Places: Yes

Property is located in a potential historic district (National and/or local): No

Property potentially contributes to a historic district (National and/or local): No

Statement of Significance: The Puyallup River/Meridian Street Bridge is currently the longest, simply supported, steel riveted Warren through truss span built prior to 1940 remaining on the Washington State highway system. The popularity of the Warren truss emerged in the late 1930s, and continued through the 1950s. Very few truss bridges were built on State-owned highways after 1960. Although a modest number of Warren trusses still remain on the system, the number has declined. Narrow bridges with restricted vertical clearance, such as through trusses, are routinely replaced by wider concrete bridges.

Historic Inventory Report

The Puyallup River/Meridian Street is also significant for its unusual, perhaps unique truss configuration. As a variation from the standard Warren truss' horizontal top chord, the bridge has a parabolic top chord allowing for a longer span length than possible with the standard top chord. The parabolic configuration also avoided the need for heavier, or additional, truss components to reach the entire span length. Its subdivided panels and the addition of longitudinal members at the mid-panel heights in five truss panels achieved both strength and economy of steel. Those highly unusual modifications to the original Warren truss appear strikingly similar to the so-called Turner truss, patented by Claude A.P. Turner in 1923. Turner wrote that "The type of truss is one originated by the writer to eliminate the multiplicity of nominal members" (Turner 1922:180). In his patent description, Turner wrote that one important element of his design were the longitudinal struts connected to diagonal web members "at a point substantially midlength thereof" and that "the framework thus formed by said struts is applied only to alternate panels. The arrangement . . . works out very economically of material in practice. By my invention a truss as provided that uses a minimum of material, it has great stiffness and it eliminates, or greatly reduces, secondary stresses" (Turner 1923). In her *Historic American Engineering* report for the Liberty Memorial Bridge in North Dakota, Nancy Ross writes: "The primary modification [to the Warren truss] is the reinforcing of alternate panels with a framework of steel struts. Intended to increase the overall rigidity of the truss web, the modification gives the trusses a distinctive appearance that differs considerably from the conventional Warren profile. In spite of the advantages of this novel variant of the Warren truss, the Liberty Memorial Bridge is the only example of the application of this design" (Ross 1991:11).

Ross' conclusion seems to be borne out by the Puyallup River/Meridian Street Bridge in that, although very similar to the design used for the Liberty Memorial Bridge, including longitudinal bracing in alternate panels, it is not a Turner truss. The primary difference between the two designs is that the only vertical struts in the Puyallup/Meridian Bridge are those adjacent to each portal, whereas vertical members connect the longitudinal substruts and diagonals to the bottom chords in every panel on the Liberty Memorial Bridge. In his comparison of the two bridges, retired WSDOT bridge engineer Robert Krier noted: "the absence of vertical members [on the Puyallup/Meridian Bridge] requires the diagonals of the Meridian Truss to act directly, in both compression and tension," whereas in the Liberty Memorial Bridge, the numerous verticals in the truss panels transfer some of the vertical loads indirectly into the diagonals. In addition the panel lengths are significantly different on the two bridges: 26.5 feet on the Puyallup/Meridian Bridge; 17 feet on the Liberty Memorial Bridge. Although not visibly apparent, the resulting structural requirements for the relative floor systems of the two bridges are considerably different. In order to have a more complete understanding of the load distribution of the truss members and thereby perform a structural comparison between the two bridges, it would be necessary to have the details of the sequence of the steel erection, roadway deck construction and release of falsework (Krier 2010).

When comparing the Puyallup River/Meridian Street Bridge with the Liberty Memorial Bridge in North Dakota, structures of similar design, it seems unavoidable to ask: In designing the Puyallup Bridge in 1924, did M.M. Caldwell use or borrow details from Claude A.P. Turner's truss design, patented in 1923? Given that Turner published an article about his design of the Liberty Memorial Bridge in the *Engineering News-Record*, the most popular nation-wide trade journal of the day, in February 1922, Caldwell probably knew of the design. The article included small drawings of the bridge's elevation and floor system, and a somewhat more detailed drawing of "SUBDIVIDED TRIANGULAR TRUSSES." Those, along with simple drawings and explanations included in the patent, published in January 1923, would have provided ample inspiration for an engineer to adapt the Turner truss details to design any long-span bridge. Turner in fact labeled his patent "LONG-SPAN BRIDGE," perhaps in case the design's applicability was unclear (Turner 1922 and 1923). However, it is questionable whether Caldwell actually would have considered it necessary to incorporate any of Turner's "Long-Span" structural features into the Puyallup Bridge, since its span of 371 feet is 105 feet shorter (22%, a significant structural difference) than Turner's bridge. Further, the subdivided Warren truss (developed in the late 1800s) and the Pennsylvania truss (developed by the Pennsylvania Railroad in 1875 with the polygonal top chord for use in long-span railroad bridges) provided Caldwell with sufficient structural features for utilization in his bridge if he so desired. As no evidence is known to exist that Caldwell either legally used the patent, or perhaps simply borrowed liberally from it without acknowledging the source, further research may reveal Caldwell's awareness of Turner's design. Regardless of his possible knowledge of Turner's truss, Caldwell's design is nevertheless another variation of a subdivided Warren through truss with its own characteristics perhaps unique to this structure.

Although it is not actually a Turner truss, the Puyallup River/Meridian Street Bridge is significant for its design, which is the only one of its kind in Washington, and may very well be unique in the US if not the world, although additional research would be needed to confirm that conclusion. Despite modest alterations over the years, and additions made for safety and structural improvement, the bridge retains integrity of design, materials and workmanship, and is thus eligible for inclusion in the NRHP under Criterion C.

Historical Background

M.M. Caldwell, as he signed his name to drawings and documents, and as his name appears on bronze plaques on the structure, designed the Puyallup River/Meridian Street Bridge. Maury M. Caldwell first appears in Seattle city directories in 1917 as simply "engineer." The next year he is identified as a clerk with the C.G. Huber Company, a Seattle firm then constructing a steel Petit truss bridge on the Cowlitz River in southwest Washington. By 1920 Caldwell had become "Chief Engineer" with the Union Bridge Company (Polks' 1916-1920). In that capacity he oversaw construction in 1921 of the James O'Farrell Bridge over the Carbon River in Pierce County, as well as construction of one mile of highway (presently SR 162) leading to the bridge (Clarke 1993:5; Hall 1994:303; Pierce County Public Works, Fairfax/O'Farrell/Carbon River Bridge file). By 1923 Caldwell was representing the Strauss Bascule Bridge Company of Chicago in promoting a movable bridge in Aberdeen, Washington (Pacific Builder and Engineer 1923:13). The company built the Wishkah River Bridge there the next year under Caldwell's direction (Lawrence 1993:3). By then he had become (in the city directory) a "consulting engineer," apparently no longer affiliated with the Union Bridge Company. Caldwell retained that status until 1942, when his name disappeared from the Seattle City directories (Polks' 1921-1942).

In November 1924 Pierce County applied for federal aid to build what was called a "Steel Highway Bridge Crossing Puyallup River Between Secs. 21 & 22, T20N, R4E." On the drawing submitted with the application, the bridge appears in elevation view to be the design used to build the bridge the next year. M.M. Caldwell's name does not appear on the drawing, however, the only signature being that of C.H. Votaw, the County Engineer. Clifford Votaw eventually supervised construction of the Puyallup River/Meridian Street Bridge, as well as the Hylebos Bridge in Tacoma, among many other Pierce County road and bridge projects (Bonney 1927:491). Undated drawings in the County's Public Works Office do, however, bear the designer's name "M.M. CALDWELL, CONSULTING ENGINEER."

In early February 1925 Pierce County awarded a construction contract for \$77,200 to the Puget Sound Bridge & Dredging Company of Seattle. Nine other firms had submitted bids, ranging in cost estimates from \$78,989 to \$93,905 (Pierce County Public Works, Meridian Street Bridge file). In announcing the award, the Puyallup Valley Tribune noted that "The new road [Meridian Street] will considerably shorten, by the northern route, the distance to Tacoma, and will also bring the big [Puyallup Indian] Reservation district a mile closer to Puyallup" (2/7/1925:1; all following citations in this paragraph are from that newspaper, except where noted). Piling and falsework had been erected across the river by mid May when the same newspaper reported that construction was ahead of schedule on the bridge, but that Meridian Street "is not in condition, nor have any definite steps been taken toward improvement or paving" (5/16/1925:1 & 10). Concrete piers were "virtually" complete when 380 tons of steel from the Virginia Bridge and Iron Company in Roanoke, Virginia, arrived on site the next month (6/13/1925:1; Pierce County Public Works, Meridian Street Bridge file). On July 4th C.J. Flem, superintendent of construction for the Company, reported that riveters had started work on the steel in place across the river, and that the 5 ½ inch-thick concrete deck was "virtually completed" (7/4/1925:1). The bridge was finished in time for the opening of the Western Washington State Fair on 21 September 1925, but Meridian Street remained unpaved, due to refusal by the City Council to fund improvements (9/19/1925:1). Finally County Commissioner Henry Ball had the street "put in shape" for Fair traffic, despite the Council's recalcitrance (9/26/1925:1). In October, work commenced near the bridge on the pyramidal concrete and stone marker with bronze plaque commemorating the first road or Indian trail across the river at the site, the first school in the Puyallup Valley housed in the Indian War blockhouse that stood "Near the north approach," and the first telegraph line to reach the community (7/26/1925:1; 10/17/1925:1).

Description of
Physical
Appearance:

The Puyallup River/Meridian Street Bridge's main span is a 371-foot long steel riveted, subdivided Warren through truss. Unlike the standard Warren truss, this bridge has parabolic top chords and alternating diagonal truss members, longitudinal braces between diagonals in alternating panels, and vertical members adjacent to the portals. In 1991 the portal sway braces and interior panel sway bracing was modified to increase vertical clearance for over-sized traffic from 14 feet 7 inches to 18 feet 7 inches. Although the modifications were sensitive to the original truss configuration, retaining as much of the old bracing as possible, the truss appearance has changed somewhat when viewed from the roadway. Among the changes to the deck are the 21 inch-high metal thrie beams attached to the inside (traffic) side of the trusses, reducing the roadway width by 9 inches to 21 feet. The south approach to the truss consists of a 21-foot long precast, prestressed girder span and two 19-foot long timber trestle spans (which replaced earlier timber spans), all added in 1951. The north approach consists of two 19-foot long timber trestle spans, also dating to 1951, bringing the total length of the structure to 468 feet. The truss piers are founded on timber piles, while the approach piers rest on concrete spread footings. A five-foot wide timber sidewalk is attached to the east side of the bridge. A decorative, cross-hatched lattice steel rail is attached to the outer edge of the sidewalk along the full length of the truss span, providing both improved safety for pedestrians and a somewhat aesthetic appearance to the east elevation. The bridge originally carried a lane of traffic in each direction until 1971 when a concrete bridge was built immediately adjacent to the west truss to carry southbound traffic. The modern concrete bridge rises several feet above the roadway of the historic truss bridge, detracting considerably from the aesthetics of the older bridge.



Historic Inventory Report

Major
Bibliographic
References:

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Clarke, Jonathan. Fairfax (James O'Farrell) Bridge Historic American Engineering Record report, HAER No. WA-72. August 1993.

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_____. Puyallup River/Meridian Street Bridge historic property inventory form. On file, DAHP, Olympia. 2000.

Pierce County Public Works. Meridian Street Bridge and Fairfax/O'Farrell/Carbon River Bridge files. Tacoma.

Polks' Seattle City Directories. Chicago. 1916-1942.

Puyallup Valley Tribune, all 1925, all page 1: "Contract for North Meridian Street Bridge Let For \$77,200," 2/7; "Work Progresses On New Bridge," 5/16; "Receive Steel For New Bridge," 6/13; "Bridge Will Be Completed Soon," 7/4; "Huge Span at Puyallup Opens Soon," 7/26; "Puyallup Bridge Near Completion," 8/9; "New Bridge To Be Open For Fair," 8/15; "Bridge Finished; Street Unpaved," 9/19; "Ball Continues To Aid In Improving Meridian," 9/26; "Work Commenced On Concrete Marker," 10/17.

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Soderberg, Lisa. Historic American Engineering Record inventory sheet for Category 2 Puyallup River/Meridian Street Bridge. On file, Department of Archaeology and Historic Preservation, Olympia, March 1979.

Turner, Claude A.P. "Open-Well Piers and Subdivided Warren Trusses of Bismarck-Mandan Bridge." Engineering News Record, Vol. 88, No. 5, 2 February 1922:180-83.

_____. Patent 1,441,387. United States Patent Office, Washington, D.C. Applied for 10 July 1913, renewed 21 January 1921, issued 9 January 1923.

WSDOT. Cardex and correspondence files. Bridge and Structures Office, Tumwater.

WSDOT. Plan drawings, inspection reports, etc. On line Bridge Engineering Information System (BEIS). Olympia.

Photos



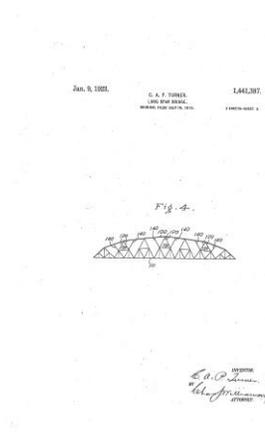
2011



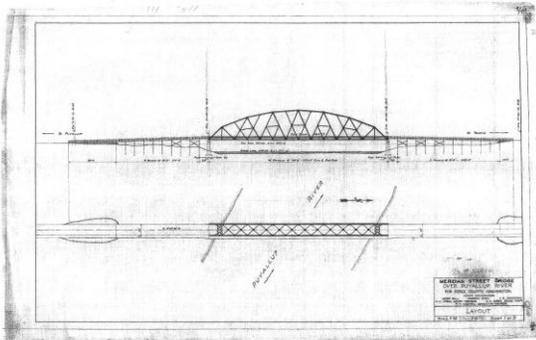
Deck view to north.
2011



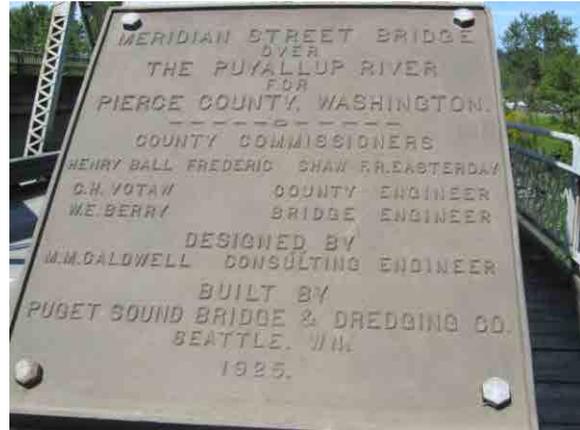
Original portal braces prior to removal and replacement.
1947



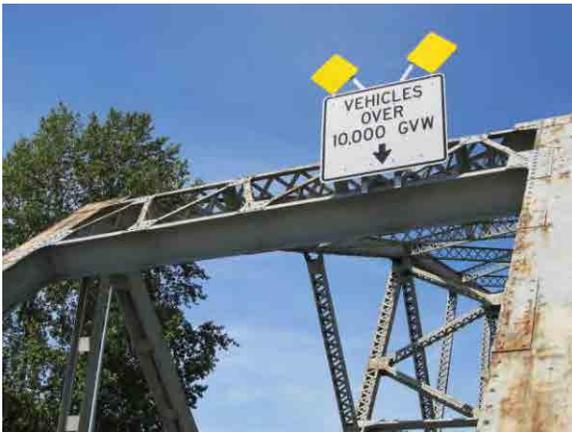
C.A.P. Turner's 1923 patent for a "long-span" truss bridge.
1923



Meridian St. Bridge elevation drawing by M.M. Caldwell
2011



Plaque on bridge showing M.M. Caldwell, designer, and Puget Sound Bridge & Dredging Co., Seattle, builder.
2011



Replaced portal brace.
2011



Newer bridge (#167/20W, foreground) and older (1925) bridge to northeast.
2011



Sidewalk on east side.
2011



Subdeck to north.
2011

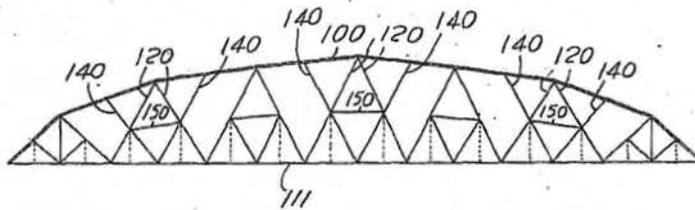
Jan. 9, 1923.

1,441,387.

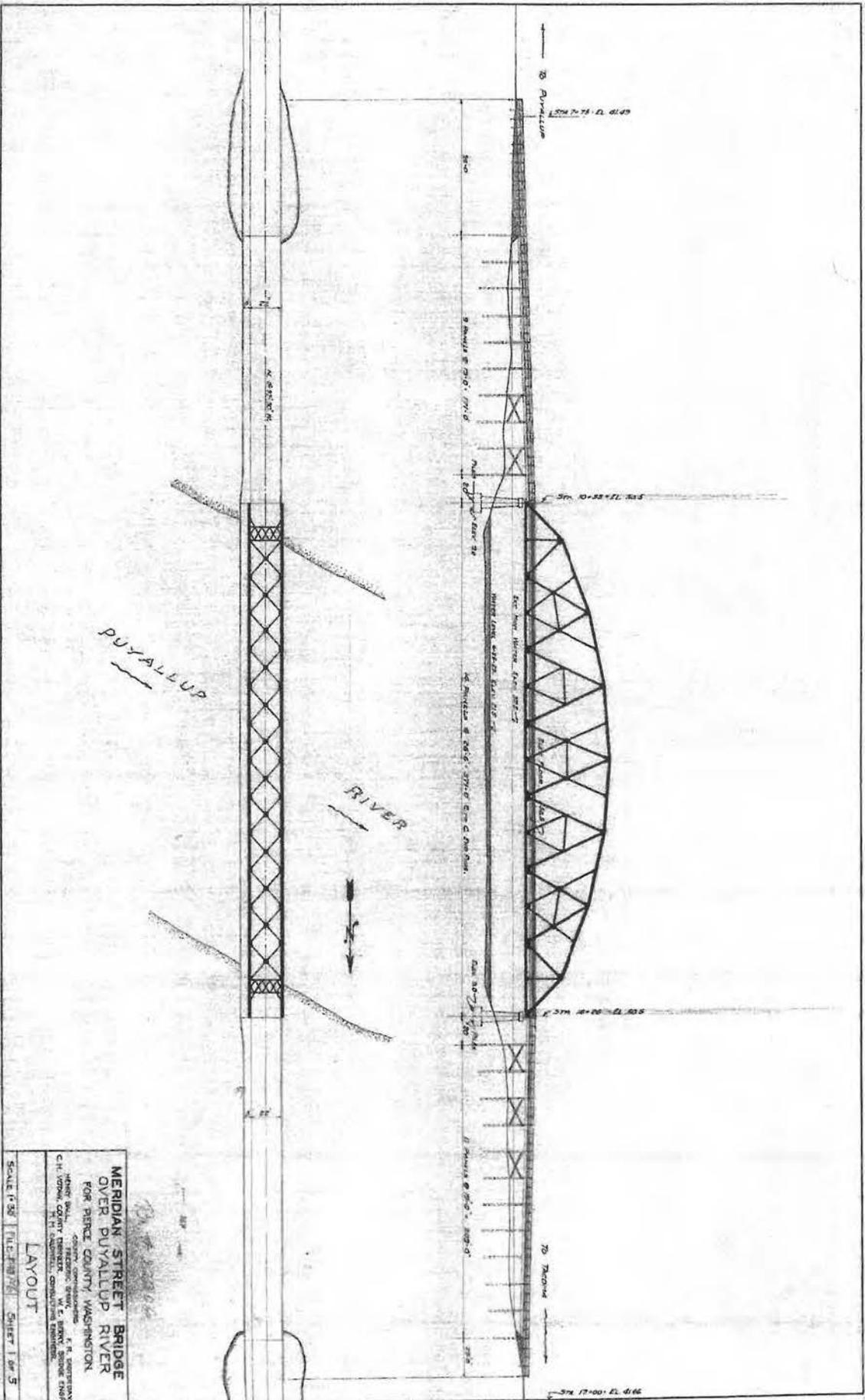
C. A. P. TURNER.
LONG SPAN BRIDGE.
ORIGINAL FILED JULY 10, 1913.

3 SHEETS—SHEET 3.

Fig. 4.



INVENTOR.
C. A. P. Turner.
BY *W. J. Millican*
ATTORNEY.



MERIDIAN STREET BRIDGE
OVER PUYALLUP RIVER
 FOR PERCE COUNTY WASHINGTON
 ENGINEER: **W. E. BERRY, BRIDGE ENGINEER**
 ARCHITECT: **F. R. SHERMAN**
 SCALE 1" = 50' FILE NO. 720 SHEET 1 OF 5
LAYOUT

111
111

914



Historic Inventory Report

Location

Field Site No. _____ DAHP No. _____
Historic Name: Fort Maloney Historical Marker
Common Name: Ft. Steilacoom-Ft. Bellingham Military Marker
Property Address: 0000 N Levee Rd N, Puyallup, WA
Comments:
Tax No./Parcel No.
Plat/Block/Lot
Acreage
Supplemental Map(s) _____

Township/Range/EW	Section	1/4 Sec	1/4 1/4 Sec	County	Quadrangle
T20R04E	21	SE	SE	Pierce	PUYALLUP

Coordinate Reference

Easting: 1194448
Northing: 687108
Projection: Washington State Plane South
Datum: HARN (feet)

Identification

Survey Name: Puyallup River Bridge 167/20E Project Date Recorded: 06/08/2012
Field Recorder: Craig Holstine
Owner's Name: Pierce County
Owner Address: 0000
City: Tacoma State: WA Zip: 98409
Classification: Structure
Resource Status: _____ Comments:
Survey/Inventory
Within a District? No
Contributing? Yes
National Register:
Local District:
National Register District/Thematic Nomination Name:
Eligibility Status: Not Determined - SHPO
Determination Date: 1/1/0001
Determination Comments:



Historic Inventory Report

Description

Historic Use: Recreation and Culture - Monument/Marker	Current Use: Recreation and Culture - Monument/Marker
Plan: Unknown Stories: 0	Structural System: Mixed
Changes to Plan: Not Applicable	Changes to Interior: Not Applicable
Changes to Original Cladding: Not Applicable	Changes to Windows: Not Applicable
Changes to Other: Extensive	
Other (specify): location is not original (1925)	
Style: Cladding: Roof Type: Roof Material:	
Other None None None	
Foundation: Form/Type:	
Concrete - Poured None	

Narrative

Study Unit	Other
Politics/Government/Law	
Date of Construction: 1925 Built Date	Builder: Washington State Historical Society
	Engineer:
	Architect: Washington State Historical Society

Property appears to meet criteria for the National Register of Historic Places: No
 Property is located in a potential historic district (National and/or local): No
 Property potentially contributes to a historic district (National and/or local): No

Statement of
Significance:

Construction of this monument began "at the north end of the Meridian Street Bridge" on 16 October 1925. It was completed by 30 October when dedicated "under the auspices of the Washington State Historical Society" (Bonney 1926:36). The marker has been recorded previously: by Gary Fuller Reese as the "Fort Steilacoom-Fort Bellingham Military Marker" in 1974; by Caroline Gallacci as the "Fort Malone [sic] Historical Marker (PC-96-15)" in 1982; and by Charles T. Luttrell (per Gallacci's title) in 2000, who recommended the structure not be determined NRHP eligible because "its design, age, tradition or symbolic value has not invested it with its own significance." On 14 April 2003 the WSDOT determined the marker not NRHP eligible, and the Washington SHPO agreed 10 February 2004. Since the monument does not appear to possess aesthetic values of the period of its creation; nor has it defined the historic identity of the area; nor has it come to symbolize the values, ideas, or contributions valued by the generation that erected it, the marker is not eligible for inclusion in the NRHP meeting the requirements of Criteria Consideration F: Commemorative Properties. In addition, the monument has been moved from its original construction location. According to a 1971 WSDOT plan map for the new bridge on SR 167, the marker was shown as "Relocated," either previous to, or a part of, the planned bridge construction. During the Indian War of 1855-56 in Western Washington, soldiers with the 4th Infantry under US Army Capt. Maurice Maloney built a blockhouse in the vicinity of the present historical marker to protect the Carson Ferry. Standing on the north bank of the Puyallup River, the blockhouse apparently consisted of a two-story log building with the upper story overhanging an unusually low main floor. It was named for Capt. Maloney, who was born in Ireland ca. 1812. He had begun his Army career when he enlisted as a private in 1836; was commissioned a second lieutenant in 1846, and fought in the Seminole War and at the Battle of Chapultepec in the Mexican War. For a brief time during the Indian War of 1855-56, he was the commanding officer of Fort Steilacoom. While in the Pacific Northwest, Maloney commanded Co. A of the 4th Infantry at Forts Steilacoom and Chehalis, and at Camp Montgomery. During the Civil War, he was promoted to the rank of major in 1862 and commanded siege guns at Vicksburg in 1863. Known as Battery Maloney, the position is today known as Maloney's Circle in Vicksburg National Military Park. In 1865 Maloney was promoted to colonel and commanded the 13th Wisconsin Volunteers. Maloney retired in 1870 and died in Green Bay, Wisconsin, in January 1872.

Description of
Physical
Appearance:

Standing ca. 7 meters south of the N. Levee Road fog line and ca. 45 meters west of the stop sign at the intersection of N. Levee Road and the SR 167 southbound lanes is a mortared cobblestone pyramid on a ca. 7 ft square concrete base. Four granite slabs have been attached to the upper face of each of the pyramid's sides. The stone plaques read:
"ONE NIGHT IN OCTOBER 1855, ABRAHAM SALATAT, AN INDIAN, RODE THROUGH THE PUYALLUP VALLEY WARNING WHITE SETTLERS THAT A WAR PARTY OF INDIANS WAS COMING.
IN 1855 UNDER TERRITORIAL CHARTER JOHN CARSON BUILT A TOLL BRIDGE HERE. IT WAS CARRIED AWAY BY FLOODS DURING THE WINTER OF 1862-63.
IN FEBRUARY 1856 U.S. SOLDIERS ERECTED FORT MALONEY HERE TO PROTECT THE JOHN CARSON FERRY. THE SUMMER OF 1861 MRS. E. L. CARSON TAUGHT SCHOOL AT FORT MALONEY.
MILITARY ROAD FROM STEILACOOM TO BELLINGHAM CROSSED PUYALLUP RIVER HERE 1864. FIRST TELEGRAPH LINE THROUGH STATE WAS STRUNG OVER THIS ROAD. WASHINGTON STATE HISTORICAL SOCIETY, 1925."



Historic Inventory Report

Major Bibliographic References:

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Forts of Washington Website: <http://themossback.tripod.com/forts/forts2.htm>.

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Washington State Department of Transportation. Plan map for new bridge on SR 167. Sheet 49 of 202 sheets. Bridge Engineering Information System (BEIS), on line, Olympia. 11 February 1971.

"Work Commenced on Concrete Marker." *Puyallup Valley Tribune*, 17 October 1925, p. 1.

Photos



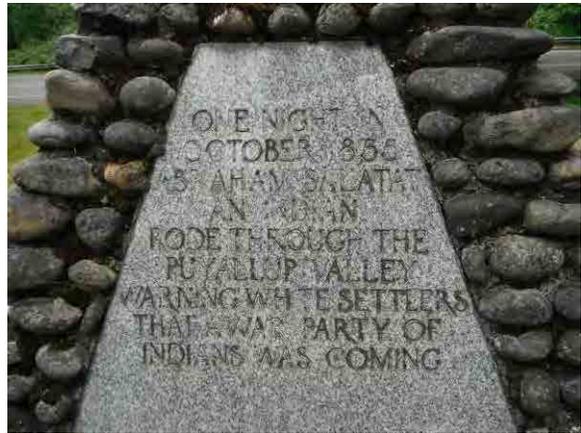
Marker to West
2012



Monument to SE, with SR 167 bridges over Puyallup River behind.
2012



Marker to West
2012



Plaque on east side of marker
2012



Historic Inventory Report

Location

Field Site No. _____ DAHP No. _____
Historic Name: North Bank Puyallup River Revetment
Common Name:
Property Address: 0000 Meridian St N, Puyallup, WA 98424
Comments:
Tax No./Parcel No.
Plat/Block/Lot
Acreage
Supplemental Map(s) _____

Township/Range/EW	Section	1/4 Sec	1/4 1/4 Sec	County	Quadrangle
T20R04E	22			Pierce	PUYALLUP

Coordinate Reference

Easting: 1194611
Northing: 686971
Projection: Washington State Plane South
Datum: HARN (feet)

Identification

Survey Name: Puyallup River Bridge 167/20E Project Date Recorded: 06/08/2012
Field Recorder: Craig Holstine
Owner's Name: Pierce County Public Works
Owner Address:
City: Tacoma State: WA Zip:
Classification: Structure
Resource Status: _____ Comments:
Survey/Inventory
Within a District? Not Identified
Contributing? No
National Register:
Local District:
National Register District/Thematic Nomination Name:
Eligibility Status: Not Determined - SHPO
Determination Date: 1/1/0001
Determination Comments:



Historic Inventory Report

Description

Historic Use: Government - Public Works	Current Use: Government - Public Works		
Plan: Other	Stories: 0		
Changes to Plan: Intact	Structural System: Mixed		
Changes to Original Cladding: Not Applicable	Changes to Interior: Not Applicable		
Changes to Other:	Changes to Windows: Not Applicable		
Other (specify):			
Style:	Cladding:	Roof Type:	Roof Material:
None	Stone - Cobble Stone	None	None
Foundation:	Form/Type:		
Concrete - Poured	Utilitarian		

Narrative

Study Unit	Other
Politics/Government/Law	
Date of Construction:	1971 Built Date
	Builder:
	Engineer:
	Architect:

Property appears to meet criteria for the National Register of Historic Places: No
 Property is located in a potential historic district (National and/or local): No
 Property potentially contributes to a historic district (National and/or local): No

Statement of
Significance:

Typical of Western Washington rivers, the Puyallup has over-spilled its banks and, in historic times, flood control structures with great regularity. Subsequent to massive flooding in December 1906, Pierce and King counties agreed to form taxing districts to support flood control efforts. Construction of dams, dikes, levees and revetments began in 1914 under the auspices of the Inter-County River Improvement organization (Roberts 1920). Flood waters remained undaunted, however, topping and undermining new facilities; in 1917 and 1933 floods destroyed most existing structures, which were subsequently rebuilt over the years. Even construction of Mud Mountain Dam in the 1940s failed to prevent periodic high-water damage (Dorpat and McCoy 1998:259-61). Today the counties continue to replace rock on existing revetments. In 2009 the City of Puyallup placed riprap atop the north bank revetment in an unsuccessful attempt to keep flood waters and debris off the roadway leading to North Levee Road (Dixon). The rock revetment on the north bank of the Puyallup River under the SR 167 bridges is the most recent iteration of earlier flood barriers. By 1915 the oxbow meanders immediately upstream and downstream of the older bridge had been eliminated, forcing the river into its present channel now crossed by the highway bridges (Kroll 1915). Presumably a revetment was built at that time to stabilize the north bank. A ca. 1924 design drawing of the 1925-built bridge does not show any flood control structures under the approaches or around the piers (Caldwell drawing, BEISt). Two later, although undated, photos show the 1925-built bridge atop massive concrete levees on both banks of the river (Dorpat and McCoy 1998:264; WSDOT Bridge and Structures Office). Those levees do not presently exist under the two SR 167 bridges. The levee on the south bank is still in place a short distance downstream from (west of) the newer (1971-built) bridge, and although not visible, may still be in place upstream and downstream from the bridges on the north bank. In 1950 the US Army Corps of Engineers rebuilt revetments and levees when the river's channel capacity was increased, and some of that work may have involved the structures under the bridges. A reconfiguration of flood control structures could have been at least part of the reason the approaches to the 1925-built bridge were rebuilt in 1951 (CARDEX file, WSDOT Bridge and Structures Office; Stevens 1951). The north-bank revetment appears to be of recent construction, with rocks probably larger than early trucks and construction equipment could easily have moved into place. A Pierce County Public Works official believes it has been rebuilt in the recent past (Dixon). A 1971 "Plan" drawing for the new bridge shows "Top of Exist. Concrete Slope Protection" on the river's north bank where the present roadway accessing North Levee Road passes under the bridges (WSDOT 1971). The present revetment apparently dates to the 1971 bridge construction or sometime thereafter when the earlier flood control structure was either removed or covered by a new structure. Thus the original revetment or levee in this location has lost integrity of materials, workmanship, and feeling (if not design), and is not NRHP eligible.

Description of
Physical
Appearance:

A revetment consisting of boulders up to two feet in diameter stacked at an angle greater than 45 degrees armors the north bank of the Puyallup River under the SR 167 bridges. (No similar revetment exists on the south bank of the river under the bridges, although revetments and levees exist beyond the SR 167 right-of-way both upstream and downstream.) The revetment rises approximately 8 feet above an inclined base of similar sized boulders that extends into the river. Unconsolidated boulders, rocks and gravels have been dumped atop the revetment to add protection to the roadway under the bridges connecting North Levee Road with northbound traffic off the 1925-built bridge. Extending beyond the bridges in both directions for undetermined distances, the revetment has been built up around the piers of both the 1925-built and 1971-built bridges, suggesting its installation being contemporaneous with, or after, the latter bridge's construction date.



Historic Inventory Report

Major
Bibliographic
References:

BEIS (Bridge Engineering Information System). WSDOT, on line, Olympia.

Caldwell, M.M. Meridian Street Bridge over Puyallup River "Layout" drawing. BEIS, ca. 1924. BEIS, WSDOT, on line, Olympia.

Dixon, Dennis. Surface Water Management Office, Pierce County Public Works Department, Tacoma. Personal communication, 2012.

Kroll's Atlas of Pierce County. 1915. Washington State University Libraries Digital Collections, Early Washington Maps. On line:
<http://content.wsulibs.wsu.edu/cdm/singleitem/collection/maps/id/887/rec/27>.

Roberts, W.J. Report of W.J. Roberts, Chief Engineer Inter-County River Improvement, on White-Stuck and Puyallup River in King and Pierce County, Washington, Period January 1914 to December 31, 1919. Published by King and Pierce Counties. Copy in Washington State Library, January 1920.

Stevens, George. Secondary State Highway No. 5-D, Puyallup River Bridge No. 5D-1 "Layout" drawing. BEIS, 6 March 1951.

WSDOT Bridge and Structures Office. CARDEX, correspondence and photograph files. Tumwater.

Washington State Department of Transportation. Plan map for new bridge on SR 167. Sheet 49 of 202 sheets. Bridge Engineering Information System (BEIS), on line, Olympia. 11 February 1971.

Photos



North bank revetment under SR 167 bridges
2012



N. bank revetment under SR 167 bridges
2012



Revetment wall on N. bank Puyallup River, view to east
2012



Riprap atop north bank Puyallup River Bridges revetment
2012



Historic Inventory Report

Location

Field Site No.

DAHP No.

Historic Name: Paul A. Lindsay House

Common Name:

Property Address: 1029 Meridian St N, Puyallup, WA 98371

Comments:

Tax No./Parcel No. 0420223045

Plat/Block/Lot

Acreage

Supplemental Map(s)

Township/Range/EW	Section	1/4 Sec	1/4 1/4 Sec	County	Quadrangle
T20R04E	22			Pierce	PUYALLUP

Coordinate Reference

Easting: 1194613

Northing: 685830

Projection: Washington State Plane South

Datum: HARN (feet)

Identification

Survey Name: Puyallup River Bridge 167/20E Project

Date Recorded: 06/08/2012

Field Recorder: Craig Holstine

Owner's Name: Northeast Corner Properties LLC

Owner Address: POB 538

City: Puyallup

State: WA

Zip: 98371

Classification: Building

Resource Status:

Comments:

Survey/Inventory

Within a District? No

Contributing? No

National Register:

Local District:

National Register District/Thematic Nomination Name:

Eligibility Status: Not Determined - SHPO

Determination Date: 1/1/0001

Determination Comments:



Historic Inventory Report

Description

Historic Use: Domestic - Single Family House	Current Use: Domestic - Single Family House		
Plan: Rectangle	Stories: 1		
Changes to Plan: Intact	Structural System: Braced Frame		
Changes to Original Cladding: Intact	Changes to Interior: Extensive		
Changes to Other:	Changes to Windows: Intact		
Other (specify):			
Style:	Cladding:	Roof Type:	Roof Material:
Vernacular	Shingle - Coursed	Gable - Side Gable	Asphalt / Composition
Foundation:	Form/Type:		
Concrete - Poured	Single Family - Side Gable		

Narrative

Study Unit	Other
Architecture/Landscape Architecture	
Date of Construction:	1940 Built Date
	Builder:
	Engineer:
	Architect:

Property appears to meet criteria for the National Register of Historic Places:No

Property is located in a potential historic district (National and/or local): No

Property potentially contributes to a historic district (National and/or local): No

Statement of Significance: Although the house retains much of its exterior integrity, it lacks architectural distinction and is not eligible for inclusion in the National Register of Historic Places. Installation of vinyl windows has compromised that integrity, most prominently on the structure's primary façade. Pierce County Assessor-Treasurer's information shows the house's construction date as 1955. However, given the house's style and construction, it seems likely it was built earlier. The City Directory indicates that Paul A. Lindsay, a janitor at Maplewood School, and his wife Adolphine lived at this address in 1947. By 1950 Lindsay had become a teacher at the school. Despite his probable salary increase, it seems unlikely that the Lindsays would have built a new house here five years later. They continued living in the house at least through 1961.



Historic Inventory Report

**Description of
Physical
Appearance:**

This one-story vernacular house is clad in wood shingle siding. Its side-facing gable roof is covered in composition shingles. A short brick chimney protrudes from the roof ridge, and a full-height brick chimney is on the south wall. The walk-in basement is accessible via a pedestrian door centered on the rear (east) concrete wall. Fixed windows in that wall provide light to the basement's interior. A concrete driveway off Meridian descends to a sunken gravel parking area behind the basement. A pedestrian door opens onto a modern wood deck that extends off the rear (northeast corner) of the house. Abutting four-light windows join on the northeast corner of the house, and a matching window is on the north wall. Three-light windows are on the south and east walls. Modern vinyl slider windows are in the gables on the north and south walls. Larger vinyl slider windows flank the front entry. A small gable awning covers the two concrete steps leading to the modern front door, which is centered in the west wall facing onto Meridian Street. Corrugated plexiglass is attached to the posts supporting the front entry awning.

**Major
Bibliographic
References:**

Pierce County Assessor-Treasurer. Building Characteristics for Parcel 0420223045. On line at <http://epip.co.pierce.wa.us>.
R.L. Polk & Company. Polk's Puyallup City Directory. Seattle, 1947, 1950, and 1961.

Photos



West (front) & south elevations
2012



West & north elevations
2012



East (east) and south elevations
2012



West (front) elevation
2012



Historic Inventory Report

Location

Field Site No. _____ **DAHP No.** _____

Historic Name: Mead M. Murray House

Common Name:

Property Address: 1103 Meridian St N, Puyallup, WA 98371

Comments:

Tax No./Parcel No. 0420223025

Plat/Block/Lot

Acreage

Supplemental Map(s) _____

Township/Range/EW	Section	1/4 Sec	1/4 1/4 Sec	County	Quadrangle
T20R04E	22			Pierce	PUYALLUP

Coordinate Reference

Easting: 1194652

Northing: 685929

Projection: Washington State Plane South

Datum: HARN (feet)

Identification

Survey Name: Puyallup River Bridge 167/20E Project

Date Recorded: 06/08/2012

Field Recorder: Craig Holstine

Owner's Name: Northeast Corner Properties LLC

Owner Address: POB 538

City: Puyallup

State: WA

Zip: 98371

Classification: Building

Resource Status:

Comments:

Survey/Inventory

Within a District? No

Contributing? No

National Register:

Local District:

National Register District/Thematic Nomination Name:

Eligibility Status: Not Determined - SHPO

Determination Date: 1/1/0001

Determination Comments:



Historic Inventory Report

Description

Historic Use: Domestic - Single Family House	Current Use: Vacant/Not in Use		
Plan: Rectangle	Stories: 2		
Changes to Plan: Intact	Structural System: Braced Frame		
Changes to Original Cladding: Intact	Changes to Interior: Unknown		
Changes to Other:	Changes to Windows: Intact		
Other (specify):			
Style:	Cladding:	Roof Type:	Roof Material:
Vernacular	Wood - Drop Siding	Gable - Side Gable	Asphalt / Composition
Foundation:	Form/Type:		
Concrete - Poured	Single Family		

Narrative

Study Unit	Other
Architecture/Landscape Architecture	
Date of Construction:	1920 Built Date
	Builder:
	Engineer:
	Architect:

Property appears to meet criteria for the National Register of Historic Places:No

Property is located in a potential historic district (National and/or local): No

Property potentially contributes to a historic district (National and/or local): No

Statement of Significance: This abandoned, vernacular house retains considerable integrity of design and materials on its exterior, most notably its cladding, wood windows, and wood rain gutters. Despite the house's retention of some historic appearance, however, its deteriorated condition and lack of architectural distinction render it ineligible for inclusion in the National Register of Historic Places. In 1936 Mead M. and Wilma Murray lived in this house, which at that time was 103 N. Meridian. (Three years later it was 1003 N. Meridian; by 1947 the address had become 1103 N. Meridian.) The Murrays continued to live there at least through 1958. By 1961 Glen M. and Jean B. Freeman lived in the house. Pierce County records say the house was built in 1900. That date appears to be too early, given the style and materials used in the house's construction (especially the drop siding), and the probable age of N. Meridian Street. The roadway may not have existed in its present alignment until shortly before the Puyallup River Bridge was built in 1925. At the time of the bridge's construction, N. Meridian was an unimproved, unpaved roadway. It took action by a county commissioner and the approaching opening of the Western Washington Fair of 1925 to finally improve the street.

**Description of
Physical
Appearance:**

This vernacular two-story house facing N. Meridian Street is largely screened from view by maple, oak, birch and other large trees and shrubs that have overgrown the property. A side-facing gable roof with composition shingles covers the house. Gabled dormers protrude from the west-facing (front) roof. The second level is enlarged off the east-facing roof by what amounts to a large shed-roof wall dormer that extends nearly the entire length of the elevation. What appears to be original wide, horizontal wood siding covers all the house's walls. Most windows are double-hung sash, with large plate-glass windows in the west (front) and north walls. Fixed three-light windows are in the basement's concrete window wells. Brick steps access the brick-edged front porch in front of the main entry, which is recessed behind wood corner pilasters, a wide wood frieze, and a missing capital or awning. North of the front entry, the northwest corner of the house is a bumped-out bay with cornice returns shaped to function as rain gutters. Elsewhere on the house, as well as on the garage to the rear of the house, the rain gutters are wooden, although sections are extremely deteriorated or altogether missing. Under a shed-roofed awning supported by knee braces, the back door is centered on the house's rear (east) wall. Accessed by concrete steps and a small concrete porch, the door has been boarded over with plywood. South of the back entry is a recessed concrete porch. Squared wood posts with decorative capitals support the overhanging second story that covers the porch. Ten-light French doors open onto the porch from what was presumably the dining room. A corbeled and battered full-height chimney is on the house's south wall. Behind the house is a frame, single-car garage accessed by a concrete driveway off N. Meridian along the north side of the house. The garage's wide, horizontal wood siding matches that of the house, probably indicating contemporary construction. A plastic tarpaulin covers the wood-shingled gable roof. The vehicle door is missing, but a wood pedestrian door is in place on the garage's west wall, as is a 6-light fixed window. The concrete floor on the interior is intact, although the building itself is leaning to the northeast, thanks to an elm tree leaning on the garage's roof at its southwest corner.

**Major
Bibliographic
References:**

E.T. Krefting. *The Puyallup Valley Directory*. Puyallup, 1936 and 1939.

Pierce County Assessor-Treasurer. *Building Characteristics for Parcel 0420223025*. On line at <http://epip.co.pierce.wa.us>.

Puyallup Valley Tribune. "New Bridge to Open for Fair," 2/15; "Bridge Finished; Street Unpaved," 9/19; "Ball Continues To Aid in Improving Meridian," 9/26. 1925.

R.L. Polk & Company. *Polk's Puyallup City Directory*. Seattle, 1947, 1950, and 1961.

Photos



West & north elevations
2012



South elevation
2012



East and north elevations
2012



East (rear) elevation
2012

Historic Inventory Report



2012



Garage and rear of house
2012



Wood rain gutter on garage
2012



Wood rain gutter on house rear
2012



February 1, 2012

TO: Brenden Clarke
47440

THRU: Michael Villnave / Rob Peterson *RV*

FROM: Jim Norman
(360) 357-2633

SUBJECT: SR 167 – Puyallup to SR 509
Environmental Impact Statement

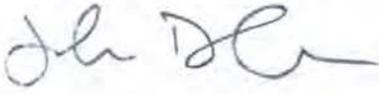
The sections of the above referenced subject relating to the traffic analysis have been reviewed. The traffic analysis supporting documentation is still valid as stated in the document.

If you need additional information or have any questions please call.



DATE 5/31/2012

TO: Brendan Clarke / Olympic Region Project Engineer

FROM: John Donahue, P.E. / Olympic Region Planning Office 

SUBJECT: Traffic forecasting update for the SR 167 Puyallup River Bridge

Introduction

At your request, our office performed an analysis the traffic count forecast documented in the reports supporting the SR 167 Extension environmental impact statement and ROD. The purpose of the review was to determine a valid approach to traffic forecasting for the Puyallup River bridge location in 2035. In this review, the 2005 baseline traffic counts and 2030 forecast reported in the 2008 Traffic Analysis Report by Perteet, Inc for the SR 167 build condition are compared to more recent model and count information, in order to verify whether growth rates and baseline traffic assumptions represented in the previous work may have changed at the Puyallup River Bridge location since that report was published. The results show that it would be reasonable to use the previous forecasts for the 2030 build condition at the north leg of the River Rd/Meridian intersection location as the 2035 traffic forecast.

Method

The PSRC model version 1.0bb (May 2008) was used in this comparative analysis. The Pierce County TPU model (January 2008) was also checked to ensure the more conservative result was used. Intersection counts from 2011 provided to WSDOT by the City of Puyallup in January, 2012 were used as forecasting baseline. Model forecast period was assumed to be 2006 – 2030. Forecast volume calculations were post-processed using an average between ratio and difference methods. Model output at two nearby bridge crossings was also checked to verify whether the model indicates any shift in traffic balance across the river due to changes in demand characteristics or overcapacity conditions in the network. The results of this comparison showed no substantial percentage shift in traffic among these three crossings, so traffic forecasts were performed at the link level, and not adjusted to account for any potential shifts among these nearby river crossings.

Results

The 2008 report includes baseline traffic counts forecasts at the intersection of River Rd and Meridian Ave, immediately south of the Puyallup River bridge. The report provides PM peak hour 2005 counts and 2030 forecasts for the SR 167 Extension build condition at the northerly approach to, and departure from, this intersection:

Year	SB	NB
2005	1655	1380
2030	2090	1970
Annual growth rate	0.94%	1.43%

2030 forecast taken from the SR 167 Extension Traffic Analysis Report (Perteet, Inc, 2008)

To: Brendan Clarke
 Date: May 25, 2012
 Page 2

Our office researched PM peak hour counts taken at this same location in 2011, and developed a 2030 forecast at this same location. Forecasts were performed using both the PSRC PM period model, and the Pierce County models. The PSRC model results were used as they represented, on average, the more conservative figures:

Year	SB	NB
2011	1512	1187
2030	1777	1475
Annual growth rate	0.85%	1.15%

2030 forecast based on 2011 traffic counts and current PSRC PM period model

Note that although there was a lane restriction introduced on the bridge in February, 2011, its not expected that this has reduced traffic below what would be expected. This is because the restriction did not disallow heavy vehicles, but only moved them to the outside lane. This assumption is corroborated by the annual traffic report record immediately north of the River Rd/Meridian Ave intersection, which shows that daily traffic has remained constant, ranging between 32,000 and 33,000, from 2005 – 2011.

The current PSRC model was also used to verify the anticipated growth rate from 2030 to 2040, and this rate was applied to the forecast using the current PSRC model to determine the 2035 forecast for the River Rd/Meridian Ave location:

Year	SB	NB
2030	1777	1475
2035	1936	1562
Annual growth rate	1.73%	1.15%

2035 forecast based on 2011 traffic counts and current PSRC PM period model

A comparison of the 2030 forecast, from the 2008 report, and the most recent counts and current PSRC model follows:

Year	From	SB	NB
2030	2008 report	2090	1970
2035	Current counts/model	1936	1562
Difference		154	408
% Difference		+8%	+26%

Comparison of 2030 forecast from the 2008 Perteet report, and the 2035 forecast based on 2011 traffic counts and current PSRC PM period model

Summary and Conclusion

To: Brendan Clarke
Date: May 25, 2012
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The results show that the 2030 forecast from the 2008 report is higher than the 2035 forecast by 8% and 26% respectively. Reasons for these differences include the use of the 2011 traffic count as a forecasting baseline, which is lower than the 2005 count that was previously used, and the lower growth rate for both directions from 2006 – 2030 found in the most recent model. Although the PSRC model is projecting a higher growth rate between 2030 and 2040, this is not enough of an increase to overcome the difference between the previous and current, and lower, 2030 forecasts.

We recommend assuming that it would be reasonable to use the previous forecasts for the 2030 build condition at the north leg of the River Rd/Meridian intersection location as the 2035 traffic forecast., and that this approach represents a conservative approach to updating environmental documentation for this project.