

SR 520 Pontoon Construction Project

Section 4(f) Documentation Technical Memorandum





MEMORANDUM

To: Project File

Contract and Task Order: 180171.AR.06.21

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Task Order: Y 8393 AR 6.21.4

Copies To:

Subject: SR 520 Pontoon Construction Project Section 4(f) Applicability

Introduction

Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 USC 303) and related U.S. Department of Transportation (USDOT) policies require that USDOT avoid using any Section 4(f) property (which includes any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance as determined by the federal, state, or local officials having jurisdiction or any land from a historic site of national, state, or local significance as determined by such officials) unless there is no feasible and prudent alternative to using the land or unless the impact will be de minimis.

The analysts identified the following properties within the study area that meet criteria for protection under Section 4(f) if “use” should occur:

- Grays Harbor National Wildlife Refuge (GHNWR)
- The historic resources survey identified eleven historic properties (depicted in Exhibit 1), located near the alternative sites, along the designated truck haul routes, and at the existing Concrete Technology Corporation, Inc. (CTC) facility:
 - Seven are in the Aberdeen Log Yard Alternative part of the Area of Potential Effect (APE) and are all examples of residential architecture from the 1900s through the 1920s: 1408 Hood Street, 118 South Washington Street, 201 South Washington Street, 919 West Wishkah Street, 1019 West Wishkah Street, 1101 West Wishkah Street, and 411 22nd Street in Aberdeen.
 - One is in the Anderson & Middleton Alternative part of the APE: the Northern Pacific Railroad Depot at 719 8th Street in Hoquiam.

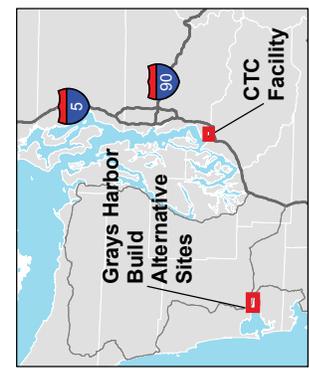
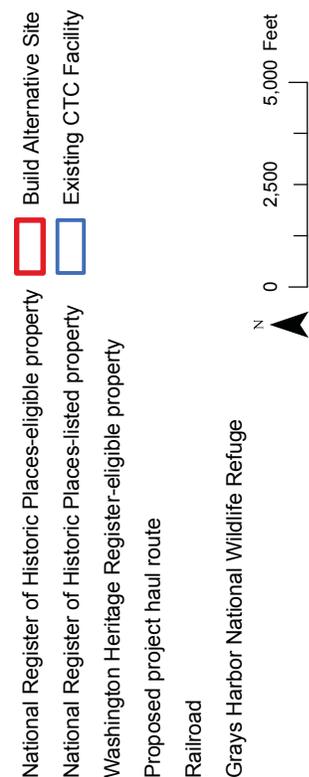
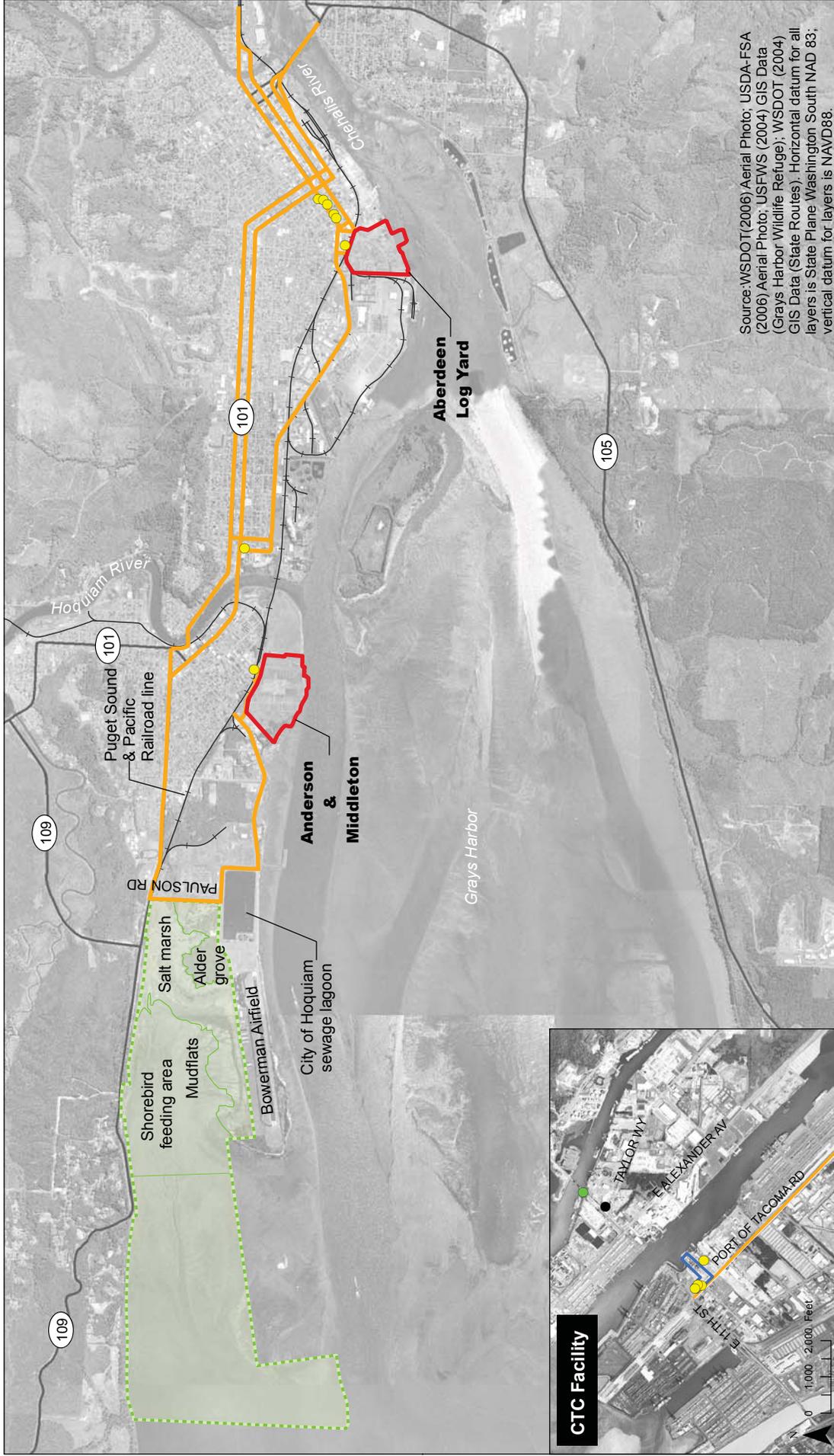
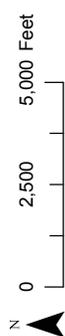


Exhibit 1. Section 4(f) Resources in the Study Area

Pontoon Construction Project





- Three are in the CTC facility part of the APE: Fire Station 15 at 3510 East 11th Street, the Hylebos Waterway Bridge at 3600 East 11th Street, and four separate buildings comprising part of the CTC facility at 1123 Port of Tacoma Road in Tacoma.

A Section 4(f) “use” is defined and addressed in the Federal Highway Administration/Federal Transit Administration Regulations at 23 CFR 771.135(p). A “use” occurs when the following criteria are met:

1. Land from a 4(f) site is permanently incorporated into a transportation facility,
2. There is a temporary occupancy of land that is adverse in terms of the Section 4(f) statute’s preservationist purposes (23 CFR 771.135[p][7]), or
3. When there is a constructive use of land (23 CFR 771.135[p][2]), which occurs when the transportation project does not incorporate land from a section 4(f) resource, but the project’s proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under section 4(f) are substantially impaired; substantial impairment occurs only when the protected activities, features, or attributes of the resource are substantially diminished.

The following information demonstrates that constructing and operating the proposed project would not constitute a “use”—as defined under Section 4(f)—of the GHNWR or of the eleven identified historic properties.

Grays Harbor National Wildlife Refuge

GHNWR is one of four major staging areas for migrating shorebirds in the Pacific Flyway. To protect this important shorebird habitat, Congress authorized the establishment of the GHNWR in 1988 (see Exhibit 1). The U.S. Fish and Wildlife Service (USFWS) manages the refuge (which was established in 1990) as part of the National Wildlife Refuge System. GHNWR encompasses about 1,500 acres of intertidal mudflats, salt marshes, and uplands. In 1996, the Western Hemisphere Shorebird Reserve Network designated Grays Harbor Estuary a hemispheric reserve site of international significance; as many as 24 species of shorebirds use the GHNWR. The most abundant species are western sandpiper (*Calidris mauri*) and dunlin (*Calidris alpina*). A wide variety of wildlife exists on the tidal flats, salt marshes, and nearby uplands (USFWS 2008).

Use Determination

As shown on Exhibit 1, no land would be acquired or temporarily occupied within the GHNWR; however, because the GHNWR boundary is just within a 1-mile (5,280-foot) radius of the proposed Anderson & Middleton Alternative site and adjacent to a proposed haul route, the



analysts conducted a more detailed assessment to determine if construction noise or noise from the haul route would constitute a constructive use of the GHNWR. Based on the subsequent noise analysis results summarized below, the analysts determined that there would be no constructive use; that is, noise levels would not increase to the extent that they would cause substantial impairment to shorebird use of the tidal flats, salt marshes, and nearby uplands within the GHNWR.

Noise Analysis

Daily ambient noise (for example, traffic noise from cars and trucks, airplanes, or industrial enterprises) from Paulson Road, Willis Enterprises (a wood-processing facility), Bowerman Airfield, and the City of Hoquiam sewage lagoon occurs year-round near the GHNWR. Most of the Pontoon Construction Project construction activities, which would be more than 1 mile (5,280 feet) from the GHNWR boundary, would not likely raise noise levels above the existing ambient noise levels in most areas of the GHNWR. Construction activities would begin in late 2010 and continue to spring 2013. Because heavy trucks and logging equipment already use the roads in the area frequently, noise levels would likely not be above the typical background noise levels to which the shorebirds are accustomed.

Exhibit 2 lists potential construction equipment and expected noise levels. A single-point noise source would attenuate at a rate of 6 decibels (dB) each time the distance from the source doubles. Therefore, a point source that produces a noise level of 60 dB at a distance of 50 feet would attenuate to 54 dB at 100 feet and to 48 dB at 200 feet. Exhibit 3 shows how pile-driving noise would attenuate, starting with a 105 A-weighted decibel (dBA) noise level at a distance of 50 feet from the source. At 1,000 feet from the source, the sound level would attenuate to 78 dBA. Actual noise-level reduction at large distances could vary substantially with different ground types and topography. For example, while noise travels well across hard surfaces (such as water), its transmission over varying topography and through areas that contain dense foliage can result in additional attenuation beyond the 6-dB-factor previously discussed. Using the information in Exhibit 2, typical construction noise levels were estimated for several distances from the potential project work area at the Anderson & Middleton Alternative site.

The shorebird-feeding area is approximately 2 miles (10,560 feet) from the nearest potential pile-driving location, which is well beyond the 1,000 feet shown in Exhibit 3. Based on the noise analysis, noise from pile-driving would not likely affect birds because the sound level from pile-driving would attenuate to between 53 and 81 dBA at that distance. These noise level ranges are based on a maximum pile-driving noise of 105 dBA at 50 feet, with a 3.0 to 7.5 dBA reduction per doubling of distance. More detailed information on construction noise and its effects on local wildlife and fish can be found in the Ecosystems Discipline Report (WSDOT 2009a) and the Noise Technical Memorandum (WSDOT 2009b).



EXHIBIT 2

Construction Equipment, Use, and Reference Maximum Noise Levels

Equipment	Typical Expected Use ¹	L _{max} ² (dBA)	Source ³
Air compressors	Powering pneumatic tools and general maintenance (all phases)	70 to 76	a, b, c
Backhoe	General construction and yard work	78 to 82	b, c
Concrete pump	Pumping concrete	78 to 82	b, c
Concrete saws	Concrete removal and utilities access	75 to 80	b, c
Crane	Materials handling, removal, and replacement	78 to 84	b, c
Excavator	General construction and materials handling	82 to 88	b, c
Forklifts	Staging area work and hauling materials	72	a, b, c
Haul trucks	Materials handling and general hauling (at 45 miles per hour)	84 to 86	b, c
Jackhammers	Pavement removal	74 to 82	b, c
Loader	General construction and materials handling	86	b, c
Pavers	Roadway paving	88	b
Pile drivers	Support for structure and hillside	99 to 105	b, c
Power plants	General construction use and nighttime work	72	b, c
Pumps	General construction use and water removal	62	b, c
Pneumatic tools	Miscellaneous construction work	78 to 86	c
Service trucks	Equipment repair and maintenance	72	b, c
Tractor trailers	Material removal and delivery	86	c
Utility trucks	General project work	72	b
Vibratory equipment	Shore up hillside to prevent slides and soil compacting	82 to 88	b, c
Welders	General project work	76	b, c

¹ Typical maximum noise level under normal use as measured at 50 feet from the noise source.

² L_{max} is the maximum noise level as measured at a distance of 50 feet under normal operation.

³ Sources of noise levels presented:

a Portland, Oregon Light Rail, Interstate 5 Preservation, and Hawthorne Bridge construction projects.

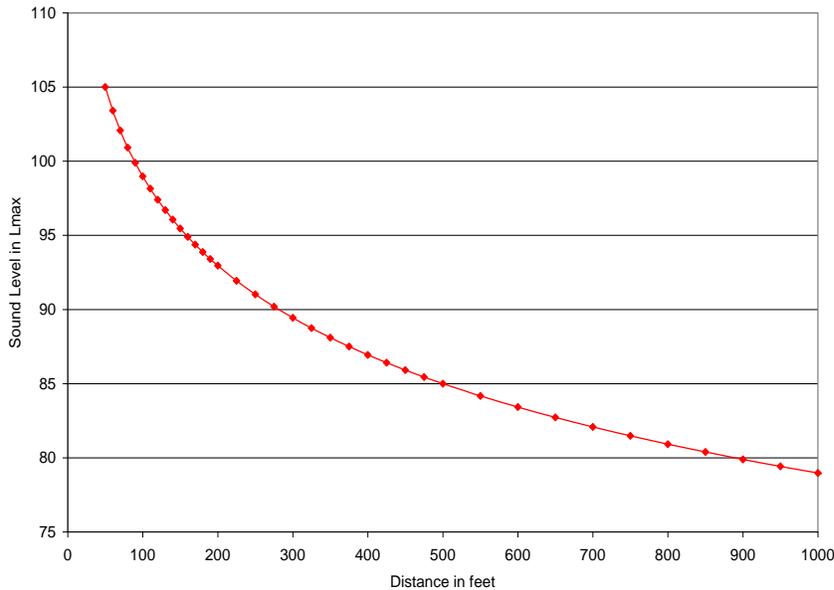
b Measured data from other projects in the Portland, Oregon, area.

c USDOT or other construction noise source.



EXHIBIT 3

Typical Maximum Pile-Driving Noise Levels, Assuming 105 dBA at 50 Feet



Source: WSDOT 2009b

As shown on Exhibit 1, part of the proposed haul route for the Anderson & Middleton Alternative is on Paulson Road adjacent to the GHNWR. Haul trucks would import and export materials to and from the site, and thousands of truck trips would be required. Maximum noise levels from the project-related haul trucks would range from 72 to 84 dBA over a preset measurement period (L_{max}) at 50 to 100 feet from the roadway, depending on speed and grade. Noise levels in the GHNWR could be lower than noise levels right along the haul route because of the shielding effects of topography and vegetation. As a result, noise from the haul trucks would not likely adversely affect birds within the GHNWR.

General construction noise, including that from haul trucks, would also not likely affect shorebird feeding areas within the GHNWR because noise at distances greater than 750 to 1,000 feet from the construction area would be dominated by existing ambient—not construction—noise. Major noise sources, such as the airport and traffic on State Route 109 (West Emerson Street), would likely remain the dominant noise sources experienced by most wildlife in and near the GHNWR.

Historic Properties

The historic resources survey identified eleven properties are likely historically significant based on the criteria for listing in the National Register of Historic Places. These properties are located



near the alternative sites, along the designated truck haul routes, and at the CTC facility; following are the properties:

- Seven are in the Aberdeen Log Yard Alternative part of the APE and are all examples of residential architecture from the 1900s through the 1920s: 1408 Hood Street, 118 South Washington Street, 201 South Washington Street, 919 West Wishkah Street, 1019 West Wishkah Street, 1101 West Wishkah Street, and 411 22nd Street in Aberdeen.
- One is in the Anderson & Middleton Alternative part of the APE: the Northern Pacific Railroad Depot at 719 8th Street in Hoquiam.
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Use Determination

None of the identified historic resources would be altered by either build alternative. All but the Northern Pacific Railroad Depot property are separated by a substantial distance from proposed project-related activities. Despite a possible increase in visual and audible intrusions and vibrations, the build alternatives would not likely adversely affect any of the identified historic resources. Changes in the resources' physical settings would likely be minimal due to their distance from project site activities or because they are already subject to conditions that would be the same or similar to that possibly introduced by the build alternatives (see Cultural Resources Discipline Report [WSDOT 2009c]).

Because the Northern Pacific Railroad Depot property is located near the Anderson & Middleton Alternative site and its proposed access point (Exhibit 1), the analysts more thoroughly assessed whether visual changes, construction noise, or noise from the haul route would constitute a constructive use of the property. Based on the information prepared as part of the Cultural Resources Discipline Report, the analysts determined that there would be no constructive use of the Northern Pacific Railroad Depot. Potential direct effects on the property would include an increase in visual and audible intrusions caused by potential rail and truck traffic associated with developing the Anderson & Middleton Alternative site. However, the railroad depot is located on an active rail line and was originally constructed as a terminal associated with rail traffic. Because the railroad depot is physically separated from the proposed build alternative site and is not located on a designated haul route, neither the structure nor property would be altered, and changes in the physical setting of the depot would be minimal.



Conclusion

The above analysis demonstrates that the proposed project would not use or cause constructive use of the GHNWR or any of the identified historic properties. No Section 4(f) issues would be associated with the Aberdeen Log Yard Alternative site, Anderson & Middleton Alternative site, or with WSDOT's possible use of the CTC casting basin facility in Tacoma.

References

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- WSDOT. 2009a. Ecosystems Discipline Report, Pontoon Construction Project, SR 520 Bridge Replacement and HOV Program. Washington State Department of Transportation, Olympia, Washington.
- WSDOT. 2009b. Noise Technical Memorandum, Pontoon Construction Project, SR 520 Bridge Replacement and HOV Program. Washington State Department of Transportation, Olympia, Washington.
- WSDOT. 2009c. Cultural Resources Discipline Report, Pontoon Construction Project, SR 520 Bridge Replacement and HOV Program. Washington State Department of Transportation, Olympia, Washington.

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Washington State
Department of Transportation

SR 520 Bridge Replacement and HOV Program



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