

**DRAFT ENVIRONMENTAL IMPACT STATEMENT  
SR 520 BRIDGE REPLACEMENT AND HOV PROGRAM**

MAY 2010

## **SR 520 Pontoon Construction Project**

# **Transportation Technical Memorandum**



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THE INFORMATION IN THIS REPORT IS ACCURATE; HOWEVER, THE PONTOON CONSTRUCTION PROJECT DRAFT ENVIRONMENTAL IMPACT STATEMENT IS THE SOURCE OF THE MOST CURRENT PROJECT INFORMATION AND ANALYSIS.



# SR 520 Pontoon Construction Project Draft Environmental Impact Statement

## Transportation Technical Memorandum

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## Abbreviations and Acronyms

AADT	average annual daily traffic
ADT	average daily traffic
CTC	Concrete Technology Corporation, Inc.
EIS	environmental impact statement
LOS	level of service
mph	miles per hour
PDO	property damage only
SR	State Route
SRMP	State Route milepost
US 101	U.S Highway 101
WSDOT	Washington State Department of Transportation



# 1. Introduction

## Why is transportation considered in an EIS?

Good connections among various travel modes are critical to the efficient movement of people, goods, and services throughout an area. The National Environmental Policy Act requires that agencies consider environmental effects when making decisions about development proposals receiving federal funding or approval. Transportation plays an important role in building and operating any new development project. During construction and operation, the movement of materials and workers to and from a project site can have both temporary and long-term effects on transportation infrastructure and on travel patterns and efficiency. For these reasons, an environmental impact statement (EIS) must consider the potential effects of the proposed action on transportation.

## What are the key points of this report?

Washington State Department of Transportation (WSDOT) proposes building a casting basin facility at one of two alternative sites in the Grays Harbor area to manufacture large concrete floating bridge pontoons. These pontoons would be built to replace the floating portion of the Evergreen Point Bridge in the event of a catastrophic failure or to support the planned replacement of the bridge. In addition, Concrete Technology Corporation, Inc. (CTC) operates an existing business in Tacoma that has a casting basin facility and WSDOT might conduct business with CTC primarily to build smaller pontoons while the Grays Harbor casting basin is being built. Once completed, the pontoons manufactured at the Grays Harbor or CTC facility would be moored at approved locations in Grays Harbor and in Puget Sound until needed.

The Grays Harbor build alternatives would have the following effects on the transportation system:

- The Anderson & Middleton Alternative would have few effects on transportation. The main effects, including longer side-street delays at intersections, would be expected during construction and operation. If the CTC facility is used in conjunction with the Anderson & Middleton Alternative, then no intersection modifications are proposed because overall intersection performance would continue to be acceptable. If CTC is not used to help build pontoons and additional employees could be brought to Grays Harbor, signal timing might need to be optimized by WSDOT Olympic Region at the US Highway 101 (US 101) (Simpson Avenue) and 6th Street intersection to maintain acceptable overall intersection performance. Elsewhere, intersections would operate acceptably overall and not require modifications.
- The Aberdeen Log Yard Alternative would also have limited effects on transportation, but those effects would be slightly greater than those of the Anderson & Middleton Alternative at some locations. Longer side-street delays at intersections would also be expected during project construction and operation. Overall intersection performance,

however, would continue to be acceptable at most locations. For intersections where the level of service (LOS) would noticeably degrade or access become difficult, WSDOT could improve channelization at certain intersections to facilitate access to and from the site and to improve the flow of traffic at certain intersections. For instance, WSDOT could restripe and install a traffic island to better channel traffic at the West Heron Street and South Garfield Street intersection, and restripe at the Wishkah and Division intersections. If the CTC facility is not used to build pontoons and additional employees could be brought to the Grays Harbor site, then other intersections in the immediate site vicinity might need minor improvements on the side-street approaches, such as additional lane capacity or turning-movement restrictions. With mitigation, traffic effects during project construction and operation would be similar to those of the Anderson & Middleton Alternative.

## What are the project alternatives?

The Pontoon Construction Project Draft EIS evaluates two build alternatives that would involve constructing a new casting basin in Grays Harbor and one No Build Alternative. Two waterfront sites in the Grays Harbor area are being evaluated for the new casting basin facility:

- Anderson & Middleton property in Hoquiam
- Aberdeen Log Yard property in Aberdeen

The new Grays Harbor casting basin facility could produce all 33 pontoons needed for this project: 21 longitudinal pontoons (360 feet long by 75 feet wide), 10 supplemental stability pontoons (98 feet long by 60 feet wide), and 2 cross pontoons (240 feet long by 75 feet wide). To expedite pontoon construction, however, each build alternative could include using the existing CTC casting basin facility in Tacoma to build pontoons while the new casting basin facility at Grays Harbor is being constructed. If used, the CTC facility, which has a limited operations area, could build up to three longitudinal pontoons and up to ten supplemental stability pontoons.

### What is a casting basin facility?

Pontoons for this project would be built at a casting basin facility. The facility would consist of a casting basin (a large chamber in which pontoons are constructed, see the next text box for a more thorough description) and several supporting facilities, such as a batch plant to produce concrete, access roads, storage and laydown areas, office space for workers, and water treatment facilities.

WSDOT would float most of the completed pontoons built at the new casting basin facility out of the casting basin and tow them to a moorage location in the Grays Harbor area. The last pontoons built would be stored in the casting basin until needed. Any pontoons constructed at the CTC facility would be moored at existing marine berths in Puget Sound.

After the project is completed, the new casting basin would be available to produce additional pontoons needed for the planned Evergreen Point Bridge replacement, a component of the I-5 to Medina: Bridge Replacement and High-Occupancy Vehicle Project. Pontoons for other WSDOT bridge replacement projects in the future could also be produced at this facility.

Each alternative is described below. For more details, see the Description of Alternatives and Construction Techniques Discipline Report (WSDOT 2009a), included as Appendix B to the Draft EIS.

## **Site Descriptions**

### **Anderson & Middleton Alternative**

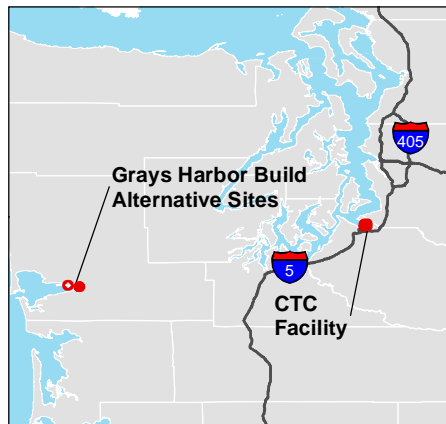
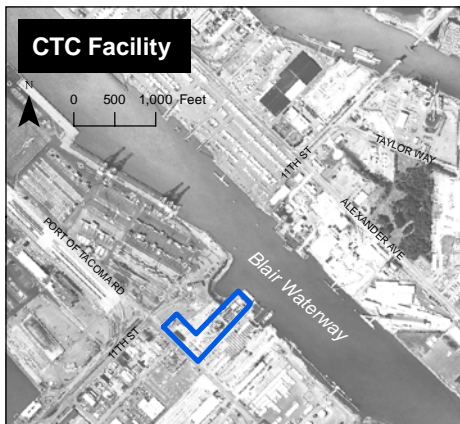
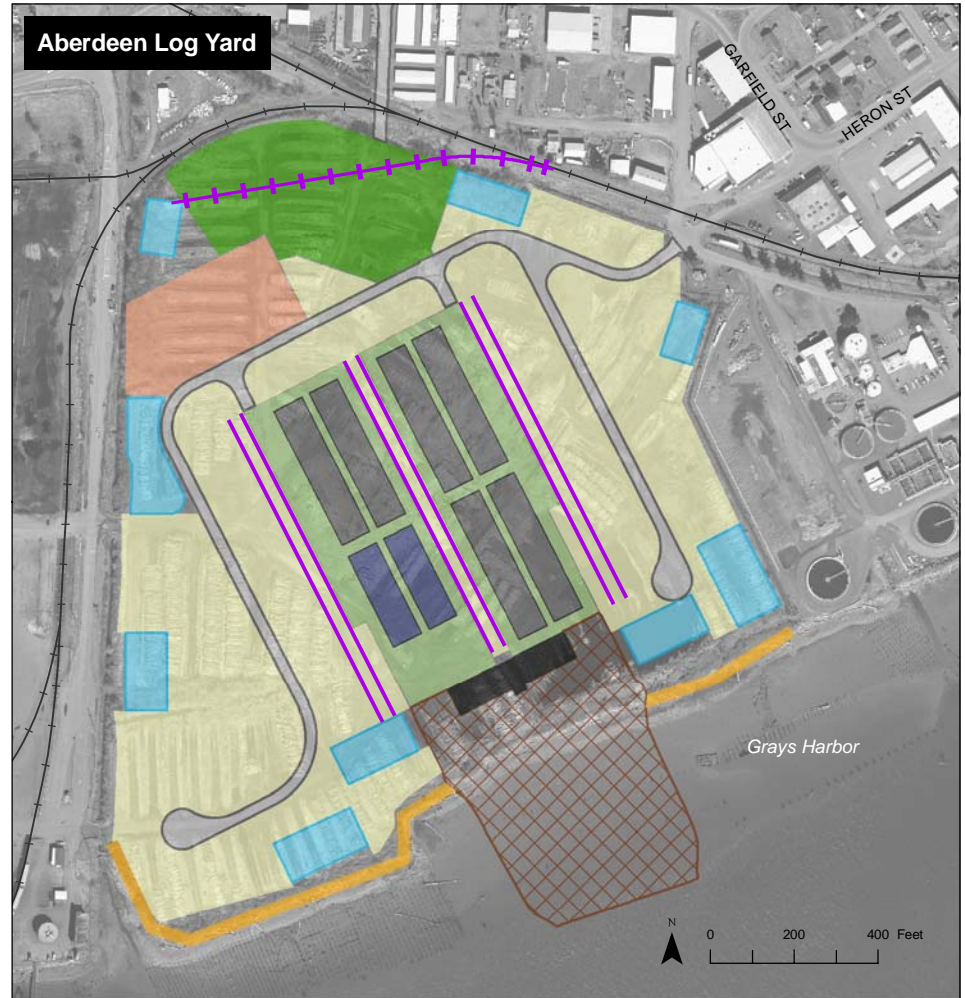
The 105-acre Anderson & Middleton Alternative site is on the north shore of Grays Harbor in Hoquiam, Washington (Exhibit 1). This generally flat property is privately owned and is zoned for industrial use. The site is surrounded by industrial maintenance shop buildings to the west, railroad tracks to the north, and vacant industrial property to the east; a rock berm borders the shoreline. The Anderson & Middleton site has no structures on it except for an existing small office building on the northern edge of the property. The site also has some gravel roads and an asphalt pad remaining from its former use as a log sorting yard. WSDOT would purchase 95 acres of this site for the project, and the casting basin and support facilities would occupy the eastern half of the site, amounting to approximately 55 acres.

Historically this site has been used for lumber industry activities. In the early twentieth century there was a sawmill and other related facilities, such as machine shops and burners, west of what was then an extension of 8th Street. Over the next several decades, fill from harbor dredging and refuse accumulation increased the land area of the site. By the late 1960s, the former mill structures were all gone. Since then, the site has been used for timber storage.

### **Aberdeen Log Yard Alternative**

The 51-acre Aberdeen Log Yard Alternative site lies on the north shore of Grays Harbor in Aberdeen, Washington, near the mouth of the Chehalis River (Exhibit 1). This generally flat site is zoned industrial and is currently owned and used for log storage by Weyerhaeuser Corporation. There are no structures on the site now but there is a system of unpaved access roads connecting to East Terminal Road to the west and State Street to the northeast. Immediately west of the site is paved Port of Grays Harbor industrially zoned property, the City of Aberdeen wastewater treatment plant borders the eastern boundary, and the Puget Sound & Pacific Railroad mainline and siding run along the northern boundary of the site. WSDOT would purchase all 51 acres, and the casting basin and support facilities would occupy the entire site.

Two sawmills operated on the site in the last century, but since 1971, the site has been used mostly for log storage. All former sawmill-related structures have been demolished. Between 1971 and 1981, the shoreline was extended to the south through backfilling with sediments dredged from the Chehalis River, accumulated wood waste, and other fill material.



- Crane rail
- Proposed rail spur
- Existing railroad
- CTC facility limits
- Cross pontoon
- Longitudinal pontoon
- Water treatment area
- Access road
- Batch plant
- Berm
- Casting basin
- Dry storage and laydown area
- Gate
- Launch channel
- Office and parking

Source: WSDOT (2005, 2006) Aerial Photo, USDA-FSA (2006) Aerial Photo, Grays Harbor County (2006) GIS Data (Roads), Horizontal datum for all layers is State Plane Washington South NAD 83; vertical datum for layers is NAVD88.

### Exhibit 1. Locations and Conceptual Layouts for Build Alternative Sites

Pontoon Construction Project



## No Build Alternative

For the Pontoon Construction Project, the No Build Alternative is continued existing conditions and uses at all proposed alternative sites. Specifically, this means that WSDOT would not construct or store any pontoons—either at a new Grays Harbor facility or at the existing Tacoma CTC facility—needed to respond to a catastrophic failure of the Evergreen Point Bridge. As a result, any environmental effects resulting from the proposed project activities would not occur.

For this Draft EIS, WSDOT assumes that, if unused by this project, the alternative site properties would continue to be used as they are today: the Aberdeen Log Yard would remain an active log yard, the Anderson & Middleton site would remain largely inactive, and the CTC site would be used as a casting basin for other projects and clients. While either Grays Harbor site could be developed for new uses should this project not occur, the use of these properties has remained unchanged since the 1990s. Potential future uses for these two properties, other than our proposed project, are speculative and therefore not considered under the No Build Alternative.

## Key Components of Both Build Alternatives

Both build alternatives would carry out the proposed action by constructing a casting basin in the Grays Harbor area. Use of the existing CTC facility in Tacoma to produce pontoons while the new casting basin is constructed could also occur.

### Potential Use of the Existing CTC Casting Basin Facility

The existing CTC facility is adjacent to the Blair Waterway on the eastern edge of Commencement Bay in Tacoma (Exhibit 1). This casting basin is too small to accommodate the timely construction of the pontoons required for the Pontoon Construction Project, but WSDOT could use this facility to supplement pontoon construction at the larger casting basin proposed in the Grays Harbor area. The pontoons manufactured at the CTC facility would most likely be the smaller supplemental stability pontoons.

WSDOT would moor the pontoons built at the CTC facility at existing marine berths in Puget Sound, subject to availability.

#### What is a casting basin?

A casting basin is a construction facility built next to a navigable waterway that consists of a concrete slab built deep below ground level and surrounded by high concrete walls. The interior area of the casting basin provides a flat dry space where several pontoons can be constructed side by side at the same time. After the pontoons are completed, the basin is flooded. The basin walls contain the flood water, allowing the pontoons to float. When the pontoons are floating, a gate is opened and the pontoons are towed from the casting basin into navigable waters.

### Proposed Grays Harbor Casting Basin

The design of the proposed Grays Harbor casting basin would be basically the same at both build alternative sites, with variations depending on site-specific features. (See the Description of Alternatives and Construction Techniques Discipline Report [WSDOT 2009a] for information on the casting basin conceptual design.) The casting basin would be positioned a few hundred feet from the shoreline and partitioned into two separate work areas—called chambers—connected to the water by a single launch channel. The launch

channel would consist of an onshore portion excavated between the casting basin and shoreline, a breach in the shoreline berm, and a dredged channel extending offshore to the federal navigation channel in Grays Harbor.

Up to four concrete pontoons could be cast and cured in each of the two chambers of the partitioned casting basin, allowing pontoon construction to be phased for efficiency. That is, while the second chamber is under construction, pontoon construction could be initiated in the first partitioned chamber as soon it was completed. Two reinforced floating concrete gates leading to each chamber would allow each to be independently flooded and drained, as well as control access to the launch channel.

Constructing a casting basin facility at either Grays Harbor build alternative site would require heavy construction activities to transform the vacant land into an industrial facility. Such activities include, but would not be limited to, the following:

- Grading (leveling) the site and excavating the casting basin
- Pile-driving to install support piles for the casting basin floor
- Paving onsite access roads
- Making multiple truck trips for hauling materials to and from the site
- Dewatering the soils during casting basin construction

All stormwater, process water, and groundwater collected onsite would be handled and treated in accordance with state water quality requirements and discharged to Grays Harbor. Project engineers are designing a water supply, distribution, and treatment system for each site to meet state standards.

### **Dewatering**

WSDOT would install two different dewatering systems to remove groundwater from the casting basin work area at either build alternative site. Before and during casting basin construction, a temporary construction dewatering system would operate at the site. During pontoon-building operations and after the Pontoon Construction Project is completed (but while the site is still maintained by WSDOT), a permanent operation dewatering system would operate.

### **Operational Support Facilities**

To support the use of the casting basin, each build alternative would include onsite operational support facilities such as an access road, a concrete batch plant, large laydown areas, water handling and treatment areas, office space, a rail spur, and a designated parking area for workers.

### **Pontoon Towing and Moorage**

If WSDOT uses the existing CTC facility in Tacoma, it would moor the pontoons built there at existing marine berths in Puget Sound. Using these berths would be subject to availability, but there are several locations in the Puget Sound region that could accommodate this project's needs. The first two cycles of eight pontoons manufactured at the new Grays Harbor

casting basin facility would be towed from the casting basin and moored in the Grays Harbor area outside of navigation channels. The last construction cycle of pontoons could be stored in the dry casting basin behind the closed gate.

For the pontoons to be moored in the Grays Harbor area, there are several existing berths that WSDOT could lease for pontoon moorage, if available when needed. In addition, WSDOT has identified another potential moorage location—open water moorage in Grays Harbor. Please see the Description of Alternatives and Construction Techniques Discipline Report (WSDOT 2009a) for more information on these potential moorage locations.

The constructed pontoons would be stored together until they are needed to replace the Evergreen Point Bridge in the event of a catastrophic failure, and they would be identified with navigation lighting in compliance with U.S. Coast Guard requirements.

## **Construction Schedule**

If WSDOT uses the existing CTC facility, pontoon construction would take 2 years there to complete. WSDOT would start site development for the new Grays Harbor casting basin facility about the same time pontoon construction begins at the CTC facility. For the Grays Harbor facility, casting basin construction would take 2 years, as would pontoon construction. In total, overall pontoon project construction would span 4 years.

WSDOT anticipates that it would take approximately 6 to 9 months to complete a pontoon construction cycle at either the existing Tacoma facility or at the new Grays Harbor facility. The new Grays Harbor facility could produce eight pontoons during one cycle; as a result, two and a half pontoon construction cycles would be required to produce 20 pontoons. At the existing CTC facility, five supplemental stability pontoons could be constructed during each pontoon construction cycle, and one longitudinal pontoon could be constructed during a cycle. As a result, three construction cycles would be needed to produce ten supplemental stability pontoons and one longitudinal pontoon.

## **2. Affected Environment**

### **How did WSDOT collect the information on transportation?**

#### **CTC Facility**

The CTC casting basin is a fully constructed facility and is routinely used by CTC for industrial activities, including building pontoons. Traffic count and intersection data were collected from City of Tacoma's Government Made Easy website (City of Tacoma 2009).

#### **Grays Harbor Build Alternatives**

For the Grays Harbor build alternative sites, the transportation analysts obtained data for evaluating existing traffic conditions, intersection operations, and transit service from the following sources:

- Traffic analysis and collision reports from the statewide Traffic Analysis Report, US 101 Regional Circulation Project (WSDOT 2007a)
- City of Hoquiam's comprehensive land use plan (City of Hoquiam 2008)
- City of Aberdeen's comprehensive plan (City of Aberdeen 2001)

The analysts supplemented this information with information such as intersection diagrams and photographs collected during field visits. Additionally, traffic counters recorded traffic volumes at intersections located near the two build alternative sites and along the proposed haul routes to supplement existing traffic counts from the US 101 Regional Circulation Project. Study area collisions reported to WSDOT between January 1, 2005, and December 31, 2007, were also summarized for the analysis.

## **What are the existing transportation characteristics of the study area?**

The analysts evaluated roadway, rail, and nonmotorized transportation facilities. Also, truck, automobile, and transit were the travel modes evaluated.

### **CTC Facility**

The CTC facility is located within an approximately 3-square-mile area of land zoned as an industrial center on the Blair Waterway in Tacoma. The CTC site contains a fully constructed facility that CTC routinely uses for industrial activities, including building pontoons. The transportation system in the area surrounding the CTC facility is industrial in character, with large trucks and heavy equipment operating throughout the area on most days. Two main routes lead to and from the CTC facility: East Portland Avenue to East 11th Street and Port of Tacoma Road. Both routes have direct access to I-5.

WSDOT's proposed use of CTC (to build pontoons) would not alter the conditions of the transportation system in the study area because CTC is a fully functional business today and would be expected to be fully functional in the future.

### **Grays Harbor Build Alternatives**

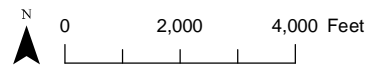
Exhibit 2 shows the existing roadway network in the transportation study area for the Anderson & Middleton and Aberdeen Log Yard alternatives. The study area is bounded on the south by State Route (SR) 105 (South Boone Street), Grays Harbor, and the Chehalis River; on the east by Tyler Street and SR 105 (South Boone Street); on the west by Paulson Road; and on the north by SR 109 (Emerson Avenue).



Source: Grays Harbor County (2006) GIS Data (Waterbody and Street), Grays Harbor County (2007) GIS Data (City Limit), WSDOT (2004) GIS Data (State Route). Horizontal datum for all layers is State Plane Washington South NAD 83; vertical datum for layers is NAVD88.



- Signalized study intersection
- Unsignalized study intersection
- Proposed project haul route common to both project sites
- Proposed project haul route: Aberdeen Log Yard
- Proposed project haul route: Anderson & Middleton
- Build Alternative Site
- - - City limits



**Exhibit 2. Transportation Study Area Intersections and Haul Routes**  
 Pontoon Construction Project

**Washington State Department of Transportation**

Access to the Anderson & Middleton site is along Earley Industrial Way, with one driveway located west of the 8th Street intersection and another to the east of the intersection. The proposed haul route for trucks transporting materials to and from the site would run along the 5th Street Extension out to SR 109 (via Paulson Road), US 101 and US 12, or SR 105, as shown in Exhibit 2. Bay Avenue and Port Industrial Road might be used as a potential haul route instead of or in addition to the proposed haul route. During detailed design, WSDOT would determine specific destination(s) for materials hauled from the site. One destination could be the Hoquiam wastewater treatment plant's lagoon, bordered by Paulson Road and Airport Way, to the west of the Anderson & Middleton site (see Exhibit 2).

### **Aberdeen Log Yard Alternative**

Exhibit 2 also shows the existing roadway network in the study area for the Aberdeen Log Yard Alternative, located in Aberdeen. The transportation study area for the Aberdeen Log Yard Alternative is the same as for the Anderson & Middleton Alternative.

Access to the Aberdeen Log Yard site for truck traffic would be from the West Heron Street and South Division Street intersection at the northeast corner of the site. Potentially all vehicle traffic would also use that route if another site access is not selected for nontruck traffic. Three options exist for a second site access point for nontruck traffic into the Aberdeen Log Yard: Thornton Street access, Williams Street access, or Hood Street access. During detailed design, WSDOT would determine specific destinations for material hauled from the site. As in the Middleton & Anderson Alternative, the Hoquiam wastewater treatment plant's lagoon is one possible destination (see Exhibit 2).

### **Hoquiam and Aberdeen Transportation Study Area Roadways**

#### **US 101**

US 101 is a major highway serving Hoquiam and Aberdeen. Between the 5th Street and Levee Street intersection in Hoquiam and the Chehalis River Bridge in Aberdeen, US 101 consists of two one-way streets (also known as a one-way couplet) that move traffic through these cities. US 101 is also designated by many different local street names along the one-way couplet. The southbound to eastbound portion of the US 101 couplet is also named as 5th Street, West Simpson Avenue, Simpson Avenue, North Park Street, South Park Street, West Heron Street, East Heron Street, and South H Street. The westbound to northbound portion of the US 101 couplet is also named as South G Street, East Wishkah Street, West Wishkah Street, South Alder Street, North Alder Street, Sumner Avenue, West Sumner Avenue, Riverside Avenue, and Levee Street.

Within the transportation study area, US 101 begins on the west side at the intersection of SR 109 (Emerson Avenue) and 5th Street, continues southeast through downtown Hoquiam, crosses the Hoquiam River, continues east into Aberdeen, and northeast through downtown Aberdeen. US 101 exits the transportation study area in South Aberdeen at the US 101 and SR 105 intersection.

At the US 101 crossing of the Hoquiam River, both the Riverside Avenue and Simpson Avenue bridges open for vessel traffic. In 2005, WSDOT determined that the Riverside Avenue Bridge opened an average of 24 times per month, with an average of 7 minutes per opening. The Simpson Avenue Bridge averaged 11 openings per month, at 6 minutes per opening.

Traffic flow on US 101 through Hoquiam and Aberdeen is affected by multiple signalized intersections, business access points, and residential driveways. In downtown Hoquiam, 2-hour on-street parking is designated on both sides of the highway. The posted speed limit on US 101 inside the Hoquiam city limits is 30 miles per hour (mph). In downtown Aberdeen, on-street parking is designated on both sides of the highway. The posted speed limit on US 101 inside the Aberdeen city limits is 30 mph.

### **SR 109**

SR 109, also known as Emerson Avenue in Hoquiam, begins at the intersection of US 101 (Lincoln Street) and continues westward. A short section is a one-way couplet (westbound on Emerson Avenue from US 101 to 3rd Street and southeast bound on Simpson Avenue from Emerson Avenue and 3rd Street to 5th Street). The speed limit in downtown Hoquiam is 30 mph along this two-lane roadway. Traffic flows freely on SR 109 with the exception of some interruptions at the SR 109 signalized intersections with US 101 (Lincoln Street), 3rd Street and Simpson Avenue, 5th Street, and South Adams Street.

### **US 12**

US 12 begins in downtown Aberdeen at the US 101 and South G Street intersection. US 12 operates as a one-way couplet between South G and Newell streets, with westbound movement served by East Wishkah Street and eastbound movement served by East Heron Street and Hornsby Way. With exception of the 20-mph speed limit across the historic Wishkah River Bridge, the speed limit along this four-lane roadway is 30 mph.

At the US 12 crossing of the Wishkah River, both the Wishkah Street and Heron Street bridges open for vessel traffic. In 2005, WSDOT determined that the Wishkah Street Bridge opened an average of 2 times per month, with an average of 8 minutes per opening. The Heron Street Bridge averaged 2 openings per month, at 9 minutes per opening.

### **City of Hoquiam Streets**

According to the City of Hoquiam's comprehensive plan, Hoquiam's city streets consist of an extensive network of arterials, collectors, local streets, and alleys. A total of 49.31 miles of paved roads and 0.42 mile of gravel roads lie within the city limits. Most street rights-of-way are 60 feet wide, except for the US 101 (West Simpson Avenue and West Sumner Avenue) rights-of-way, which are 80 feet wide. City streets in Hoquiam are primarily paved with asphalt and are generally in good condition, including access to the Anderson & Middleton site.

Streets designated as city arterials within the transportation study area are as follows:

- US 101 (West Sumner Avenue)
- US 101 (Riverside Avenue)
- SR 109 (Emerson Avenue)
- US 101 (West Simpson Avenue)
- 8th Street
- Earley Industrial Way
- 5th Street Extension
- Adams Street
- Airport Way
- Paulson Road
- Bay Avenue
- Port Industrial Road

Although sidewalks are common throughout Hoquiam, their condition varies widely. Many older sidewalks have substantial drop-offs (6 to 8 inches), cracking, and breakup.

### **City of Aberdeen Streets**

According to the City of Aberdeen's comprehensive plan, Aberdeen is a contiguous urban area of approximately 11.9 square miles. Aberdeen streets are a network of arterials, collectors, local streets, and alleys.

Streets designated as city arterials within the transportation study area are as follows:

- South Garfield Street
- US 101 (West Heron Street)
- US 101 (South Park Street)
- US 101 (South Alder Street)
- US 101 (West and East Wishkah Street)
- US 12 (East Heron Street)
- US 12 (East Wishkah Street)
- SR 105 (North and South Boone Street)
- Port Industrial Road
- West and East State Street

### **Key Intersections**

Exhibit 3 lists the key intersections in the transportation study area that could be affected by increased vehicular trips during project construction and operation. Exhibit 3 shows the relevance of each intersection to both the Anderson & Middleton and the Aberdeen Log Yard alternatives. The analysts considered potential alternate truck haul routes, which would divert truck trips off of US 101 at the two different segments south of US 101. In the second and third columns of Exhibit 3, the letter "S" designates intersections on a site access route, the

letter “H” designates intersections on the primary haul routes, and the letter “P” designates potential truck haul route intersections.

## EXHIBIT 3

## Transportation Study Area Intersections, Grays Harbor Build Alternatives

Intersection Description	Anderson & Middleton	Aberdeen Log Yard	Jurisdiction	Traffic Control
8th Avenue and Earley Industrial Way	S		Hoquiam	Unsignalized
5th Avenue and Earley Industrial Way	S		Hoquiam	Unsignalized
Paulson Road and SR 109 (Emerson Avenue)	H	P	Hoquiam	Unsignalized
SR 109 (Emerson Avenue) and South Adams Street	H	P	Hoquiam	Signalized
SR 109 (Emerson Avenue) and US 101 (West Simpson Avenue)	H	P	Hoquiam	Signalized
US 101 (West Simpson Avenue) and 5th Street	H	P	Hoquiam	Signalized
US 101 (West Simpson Avenue) and 6th Street	H	P	Hoquiam	Signalized
US 101 (West Simpson Avenue) and 7th Street	H	P	Hoquiam	Signalized
US 101 (West Simpson Avenue) and 8th Street	H	P	Hoquiam	Signalized
US 101 (West Simpson Avenue) and 23rd Street	H	P	Hoquiam	Signalized
US 101 (West Simpson Avenue) and Ontario Street	H	P	Hoquiam	Unsignalized
US 101 (West Simpson Avenue) and 30th Street	H	P	Hoquiam	Signalized
US 101 (West Sumner Avenue) and 30th Street	H	P	Hoquiam	Signalized
US 101 (West Sumner Avenue) and Ontario Street	H	P	Hoquiam	Unsignalized
US 101 (West Sumner Avenue) and 23rd Street	H	P	Hoquiam	Signalized
US 101 (Riverside Avenue) and 16th Street	H	P	Hoquiam	Unsignalized
US 101 (Levee Street) and 6th Street	H	P	Hoquiam	Unsignalized
US 101 (Lincoln Street) and 5th Street	H	P	Hoquiam	Signalized
US 101 (Lincoln Street) and SR 109 (Emerson Avenue)	H	P	Hoquiam	Signalized
Bay Avenue and 23rd Street	P		Hoquiam	Unsignalized
Port Industrial Road and Myrtle Street	P		Hoquiam	Unsignalized
Port Industrial Road and West 1st Street	P		Aberdeen	Unsignalized
Port Industrial Road and East Terminal Way	P		Aberdeen	Unsignalized
West Wishkah Street and US 101 (South Park Street)	P	H	Aberdeen	Signalized
West Heron Street and US 101 (South Park Street)	P	H	Aberdeen	Signalized
US 101 (West Heron Street) and South Alder Street	P	H	Aberdeen	Signalized

EXHIBIT 3  
 Transportation Study Area Intersections, Grays Harbor Build Alternatives

Intersection Description	Anderson & Middleton	Aberdeen Log Yard	Jurisdiction	Traffic Control
US 101 (West Heron Street) and South L Street	P	H	Aberdeen	Signalized
US 101 (West Heron Street) and South K Street	P	H	Aberdeen	Signalized
US 101 (West Heron Street) and South Broadway Street	P	H	Aberdeen	Signalized
US 101 (West Heron Street) and South I Street	P	H	Aberdeen	Signalized
US 101 and US 12 (East Heron Street) and South H Street	P	H	Aberdeen	Signalized
US 101 and US 12 (East Heron Street) and South G Street	P	H	Aberdeen	Signalized
US 101 (East Wishkah Street) and South Chehalis Street	P	H	Aberdeen	Unsignalized
US 101 (East Wishkah Street) and North Tyler Street	P	H	Aberdeen	Unsignalized
US 101 and US 12 (East Wishkah Street) and South G Street	P	H	Aberdeen	Signalized
US 101 (East Wishkah Street) and South H Street	P	H	Aberdeen	Signalized
US 101 (West Wishkah Street) and South I Street	P	H	Aberdeen	Signalized
US 101 (West Wishkah Street) and South Broadway Street	P	H	Aberdeen	Signalized
US 101 (West Wishkah Street) and South K St	P	H	Aberdeen	Signalized
US 101 (West Wishkah Street) and South L Street	P	H	Aberdeen	Signalized
US 101 (West Wishkah Street) and South Alder Street	P	H	Aberdeen	Signalized
US 101 (North Alder Street) and West Market Street	P	H	Aberdeen	Signalized
US 101 (West Sumner Avenue) and Oak Street	P	H	Aberdeen	Signalized
West Wishkah Street and South Thornton Street	P	S	Aberdeen	Unsignalized
West Wishkah Street and South Williams Street	P	S	Aberdeen	Unsignalized
South Division Street and Hood Street		S	Aberdeen	Unsignalized
West Wishkah Street and South Division Street	P	S	Aberdeen	Unsignalized
West Wishkah Street and South Garfield Street	P	S	Aberdeen	Unsignalized
West Heron Street and South Garfield Street	P	S	Aberdeen	Unsignalized
West Heron Street and South Monroe Street	P	S	Aberdeen	Unsignalized
West Heron Street and South Lincoln Street	P	S	Aberdeen	Unsignalized
West Heron Street and South Washington Street	P	S	Aberdeen	Unsignalized

EXHIBIT 3  
Transportation Study Area Intersections, Grays Harbor Build Alternatives

Intersection Description	Anderson & Middleton	Aberdeen Log Yard	Jurisdiction	Traffic Control
West Wishkah Street and South Washington Street	P	S	Aberdeen	Unsignalized
West Wishkah Street and South Lincoln Street	P	S	Aberdeen	Unsignalized
West Wishkah Street and South Monroe Street	P	S	Aberdeen	Unsignalized
West Heron Street and South Division Street	P	S	Aberdeen	Unsignalized
West State Street and South Park Street	P	P	Aberdeen	Unsignalized
West State Street and South Alder Street	P	P	Aberdeen	Unsignalized
West State Street and South L Street	P	P	Aberdeen	Unsignalized
West State Street and South M Street	P	P	Aberdeen	Unsignalized
SR 101 and SR 105	P	P	Aberdeen	Signalized

Source: WSDOT (2007a).

Notes:

- S = Site access route
- H = Primary haul route
- P = Potential haul route

## What are the existing traffic volumes?

### CTC Facility

Exhibit 4 shows existing average daily traffic (ADT) volumes at intersections leading to the CTC facility in Tacoma, of which a portion was likely contributed by employee traffic and trucks to or from CTC. Currently, the site is zoned for Manufacturing/Industrial Center and is permitted for manufacturing uses.

EXHIBIT 4  
CTC Facility Nearby Traffic Volume Data (rounded)

Location Description	ADT*
East Port of Tacoma Road south of East 11th Street	4,100
East Port of Tacoma Road north of East Lincoln Avenue	8,800
East 11th Street east of East Thorne Road	2,600
East 11th Street east of East Milwaukee Way	3,600
Lincoln Avenue west of East Port of Tacoma Road	3,300

Source: City of Tacoma (2009).

\* ADT (average daily traffic) counts, dated August 2005 to March 2006.

The Hood Canal Bridge Project was the most recent pontoon construction work at the CTC facility, which is comparable to the needs of the Pontoon Construction Project. The highest

volume of employees during the Hood Canal Bridge Project during operation was 158 day employees and the average was 140 day employees. As with any existing business operation, existing traffic volumes fluctuate with the number of employees needed to deliver the amount of work available.

## Grays Harbor Transportation Study Area Roadways

Existing traffic volumes along the project haul routes for the Grays Harbor build alternatives were obtained from the statewide 2007 and 2008 Annual Traffic Reports (WSDOT 2007b and 2008a) and the US 101 Regional Circulation Project (WSDOT 2008a<2007b?>). In addition, turning movement volumes were counted during the afternoon peak hour at several intersections to supplement that data. The supplemental data include an afternoon peak-hour turning movement count for the 3rd Street and US 101 intersection in the Hoquiam on May 13, 2008 and additional afternoon peak-hour turning movement counts in Aberdeen in early December 2008 and mid July 2009.

### US 101

Exhibit 5 shows ADT volumes at mileposts along US 101 in Hoquiam. US 101 carries the highest traffic volumes to and from Hoquiam, ranging from 8,900 to 14,000 vehicles per day in the transportation study area.

Exhibit 6 shows ADT volumes at mileposts along US 101 in Aberdeen. US 101 carries some of the highest traffic volumes to and from Aberdeen, ranging from 9,900 to 15,000 vehicles per day in the transportation study area.

### SR 109

Exhibit 5 shows ADT volumes at mileposts along SR 109 in Hoquiam. As shown in Exhibit 5, daily traffic volumes along SR 109 typically range between 4,300 and 9,600 vehicles per day in the study area. Although traffic volumes on SR 109 are lower than on US 101, SR 109 is also a main access road to and from Hoquiam.

### US 12

Exhibit 6 shows ADT volumes at mileposts along US 12 in Aberdeen. US 12 begins in Aberdeen and extends to the east and does not go through Hoquiam. As shown in Exhibit 6, daily traffic volumes along US 12 are about 22,000 vehicles per day just east of North Tyler Street.

## How well do local intersections operate?

The operational performance and quality of transportation systems are represented by their LOS, which rates congestion levels based on traffic delays (see sidebar). The Transportation Research Board *Highway Capacity Manual* (Transportation Research Board 2000) LOS ratings for

#### Traffic level of service

Level of service (LOS) measurements rate how well traffic operates on a given transportation facility (such as a road or exit ramp). The rating scale uses the letters A through F, similar to grading scales in schools where A is the best grade and F is the worst. The ratings are assigned based on the levels of delay that drivers experience at an intersection. The letter A represents the least delayed conditions, and F represents the longest delays.



















































































