Chapter 2 Project Alternatives

This chapter describes the alternatives WSDOT evaluated in this Draft EIS, including two build alternatives and the No Build Alternative, and then generally describes how the alternatives would be built. This chapter then discusses how WSDOT evaluated and screened all potential sites before being advanced as alternatives for analysis in this Draft EIS. This chapter concludes by describing the key features of the design-builder's proposed approach to the project build alternatives.

What alternatives does WSDOT evaluate in this Draft EIS?

This Draft EIS evaluates the following three alternatives:

- Anderson & Middleton Alternative in Hoquiam, Washington
- Aberdeen Log Yard Alternative in Aberdeen, Washington
- No Build Alternative

Each build alternative would include the following actions:

- Constructing a new casting basin facility
- Constructing the 33 pontoons needed to replace the existing capacity of the Evergreen Point Bridge
- Potentially using the existing CTC casting basin facility in Tacoma to construct some of the 33 pontoons
- Storing and/or mooring the 33 pontoons built for this project
- Transporting pontoons from the casting basin to approved moorage locations in Grays Harbor and, if the CTC facility is used, Puget Sound
- Maintaining the Grays Harbor casting basin facility while owned by WSDOT

The build alternatives do *not* include the following actions:

- Constructing additional pontoons needed for the I-5 to Medina: Bridge Replacement and HOV Project
- Transporting pontoons built at the proposed Grays Harbor facility to Lake Washington
- Transporting pontoons built at the existing CTC facility to Lake Washington

- Building the Evergreen Point Bridge roadway structure on top of the pontoons
- Constructing the emergency replacement of the Evergreen Point Bridge
- Using the Grays Harbor casting basin facility for unforeseen uses

Of the six actions (listed above) not included in the SR 520 Pontoon Construction Project, the first four are proposed under the SR 520 Program's I-5 to Medina: Bridge Replacement and HOV Project. The last two actions listed above would be covered under a separate environmental review process for emergency bridge replacement or other unforeseen projects.

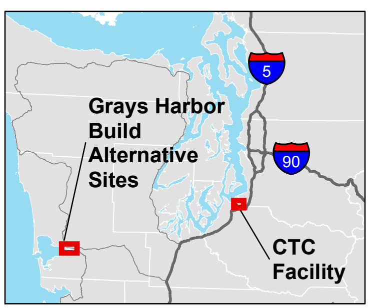
As noted above, WSDOT might elect to use the existing CTC casting basin facility in Tacoma with either of the build alternatives for pontoon construction during the life of the project. Because the CTC site has an existing facility that can accommodate pontoon construction, WSDOT could start building pontoons at the CTC facility while the new Grays Harbor casting basin facility is being constructed. Once built and operating, WSDOT could begin accelerated pontoon production at the new casting basin facility where more pontoons could be built at the same time. At the new casting basin facility, WSDOT would launch the completed pontoons into Grays Harbor and tow them to an approved moorage location in the harbor until needed, and some pontoons could be stored in the casting basin.

When the SR 520 Pontoon Construction Project is completed, WSDOT could build additional pontoons needed for the Evergreen Point Bridge replacement in the Grays Harbor casting basin. The environmental effects of constructing those pontoons, however, are analyzed under the separate environmental process for the SR 520 Program's I-5 to Medina: Bridge Replacement and HOV Project. Pontoons for future WSDOT bridge replacement projects could also be produced at this facility if it is still available, although there are no plans to replace other floating bridges at this time. Appendix B, Description of the Alternatives and Construction Techniques Discipline Report, describes in detail the alternatives and conceptual design for the new casting basin facility and pontoons.

What are the Grays Harbor build alternative site characteristics?

Anderson & Middleton Alternative

The privately owned Anderson & Middleton Alternative site is located about 2,000 feet west of the Hoquiam River on the north shore of Grays Harbor in Hoquiam (Exhibit 2-1). The site is surrounded by industrial



- Potential haul route
- Build Alternative Site
- Existing CTC facility
- City limits

N 0 2,000 4,000 Feet

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

Exhibit 2-1. **Project Vicinity Map**

SR 520 Pontoon Construction Project

Washington State Department of Transportation

\\JAFAR\PROJ\PARAMETRIX_180171\MAPFILES\PONTOON\DEIS\PON_DEIS_VICINITYMAP.MXD 1/27/2010 maintenance shop buildings to the west, railroad tracks to the north, and vacant industrial property to the east. The site is currently vacant except for a small office building on the northern edge of the property, some gravel roads, an asphalt pad, and a truck scale; a rock berm borders the shoreline of the 105-acre property. WSDOT would purchase 95 acres of this property, and the casting basin and support facilities would occupy about 55 acres. In the early twentieth century, there were machine shops, burners, and a lumber mill on part of this site, but by the late 1960s all former mill structures were gone. The site was used for timber storage until the late 1980s and has been mostly unused since. For more information about the prehistoric and historical uses of this site, please see Section 3.7, Cultural Resources, in Chapter 3 of this Draft EIS.

Anderson & Middleton property (view from site looking east)

Aberdeen Log Yard Alternative

The 51-acre Aberdeen Log Yard Alternative site lies on the north shore of Grays Harbor in Aberdeen near the mouth of the Chehalis River (Exhibit 2-1). Weyerhaeuser Corporation owns and uses this site for log storage. The mostly flat site is undeveloped except for unpaved access roads and bounded on the west by a Port of Grays Harbor industrial terminal property, on the east by a wastewater treatment plant, and on the north by railroad tracks. The casting basin and support facilities would occupy the entire site.

Aberdeen Log Yard property (view looking north)

The site's shoreline is relatively natural, with gradual vegetated slopes and limited hard armoring (using stone, concrete, or rock to minimize erosion potential). A lumber mill was built on the site in the early 1900s. All mill structures were removed before 1971, and the site has since been used mostly to store logs. Between 1971 and 1981, the shoreline was extended southward through backfilling with sediments dredged from the Chehalis River, accumulated wood waste, and other fill material. Section 3.7, Cultural Resources, in Chapter 3 provides information about the prehistoric and historic uses of this site.

What project features are common to both build alternatives?

As described in Chapter 1, WSDOT and FHWA have contracted a design-builder to design and construct the SR 520 Pontoon Construction Project. The project features described below are based on WSDOT's preliminary casting basin facility design for each build alternative, which is similar to the design-builder's design concept. The key features of the design-builder's conceptual design are presented under *What is the design-builder's approach to the project alternatives?* at the end of this chapter.

After reviewing the design-builder's proposed approach to project design and construction, WSDOT does not anticipate that any design-builder modifications to the preliminary design would generate greater or different environmental effects than the features presented below. WSDOT's preliminary design represents the maximum potential project effects and is, therefore, analyzed in this Draft EIS. The environmental effects analysis in Chapter 3—although conducted for WSDOT's preliminary design—accommodates for all potential effects that could occur with the design-builder's concept as currently understood by WSDOT.

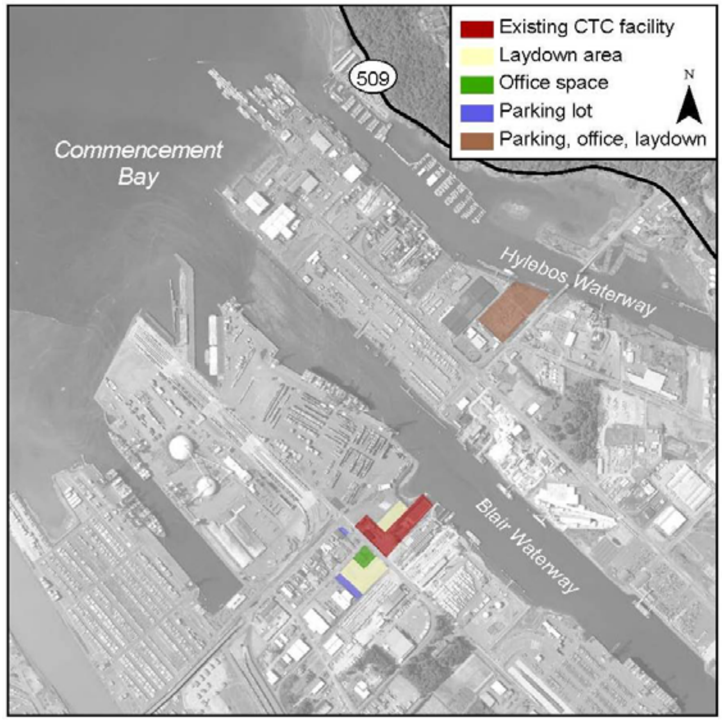
Use of Existing CTC Facility

The existing CTC casting basin is too small to accommodate the timely construction of the 33 pontoons required for the SR 520 Pontoon Construction Project; however, WSDOT could use this facility to supplement pontoon construction at the proposed Grays Harbor casting basin facility. WSDOT could build up to ten smaller supplemental stability pontoons and up to three large longitudinal pontoons at the CTC facility over the life of the project. The different types of pontoons WSDOT would construct for this project are described in detail later in this chapter in *Types of Pontoons to Be Constructed*.

The CTC casting basin is next to an existing concrete batch plant that could sufficiently serve pontoon-building operations at the CTC facility. For the SR 104 Hood Canal Bridge Project, WSDOT leased about 17 additional acres at several nearby properties for construction laydown areas, parking areas, and office space to support pontoon construction activities at the CTC site; WSDOT would lease those and/or other nearby properties to support this project. Exhibit 2-2 shows the existing CTC facility and other nearby parcels leased to support the Hood Canal Bridge Project. WSDOT would moor the pontoons built at the CTC facility at existing marine berths in Puget Sound, subject to availability.

Proposed Grays Harbor Facility

EXHIBIT 2-2
Aerial View of CTC Facility as Used for the Hood Canal Project

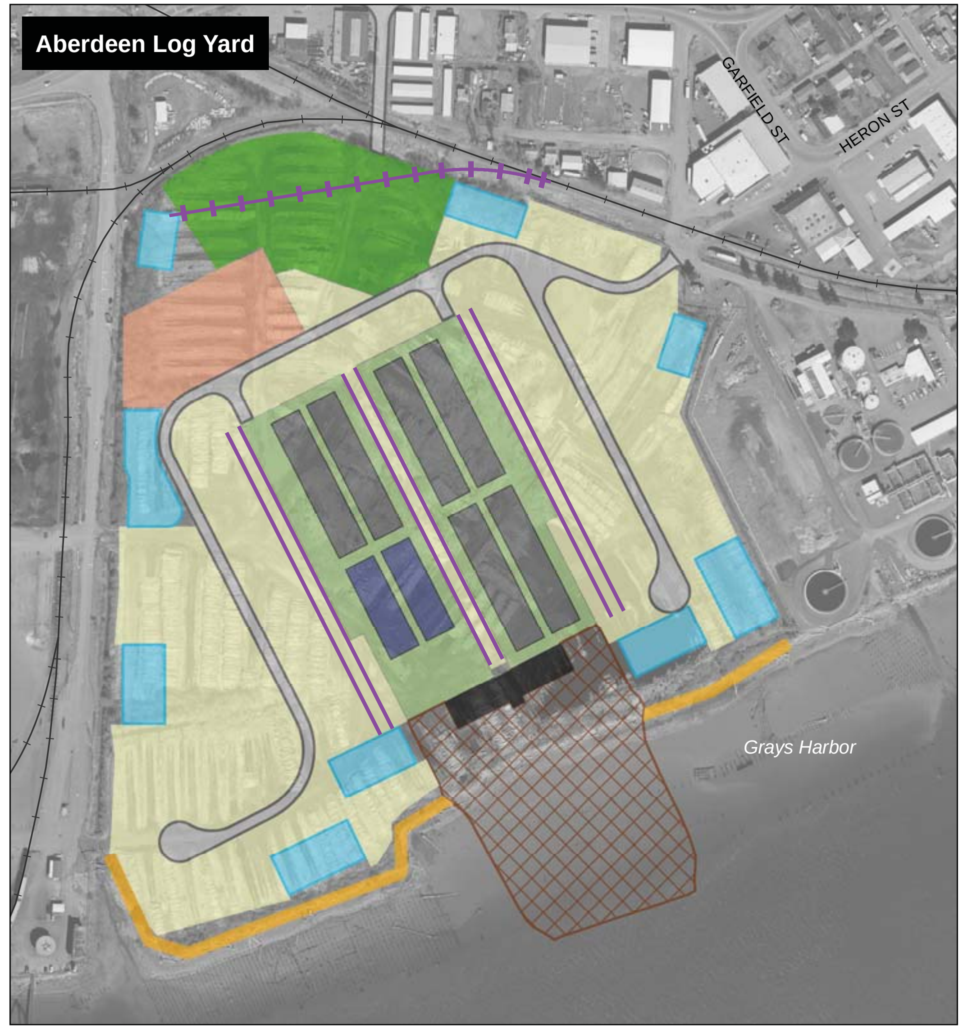


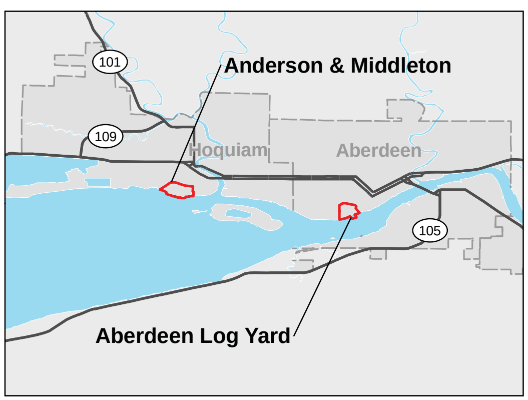
WSDOT engineers prepared preliminary designs for a new casting basin facility at both Grays Harbor build alternative sites. Exhibit 2-3 presents features common to both alternatives based on these designs and indicates the differences in square feet required for each site. Exhibit 2-4 shows the conceptual site design layout of the two proposed build alternative sites.

To support pontoon construction activities at the casting basin, both build alternatives would require several support facilities, such as access roads, a concrete batch plant where concrete for the casting basin and pontoons would be produced, large laydown areas, stormwater handling and water treatment areas, office space, a rail spur, and a designated parking area for workers. These features are described briefly in the following sections and in more detail in Appendix B, Description of the Alternatives and Construction Techniques Discipline Report.

EXHIBIT 2-3
Approximate Areas of Features Common to Grays Harbor Build Alternatives

Feature	Anderson & Middleton Alternative (square feet)	Aberdeen Log Yard Alternative (square feet)
Casting basin	470,000	470,000
Concrete batch plant	100,000	100,000
Laydown and dry storage areas	900,000	900,000
Office space and parking	180,000	180,000
Water treatment area	121,000	161,000
Access roads	170,000	114,000





- Crane rail
- Proposed rail spur
- Existing railroad
- 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

N
0 125 250 500 Feet

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

Exhibit 2-4. **Conceptual Layouts for Grays Harbor Build Alternative Sites**

SR 520 Pontoon Construction Project

Washington State Department of Transportation

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Casting Basin

The design of the proposed Grays Harbor casting basin would be basically the same at both alternative sites, with variations depending on site-specific features, such as geology and soil characteristics, shoreline characteristics, site geometry, and adjacent haul routes.

Variations might also result from different municipal codes and requirements. Trucks would haul to the site the materials required to build the facility and haul excavated soils and construction debris away from the site along designated haul routes (Exhibit 2-1). Trains and/or barges could also be used to support facility construction.

The casting basin would be positioned a few hundred feet from the shoreline and partitioned into two separate work chambers; the two chambers would be separated by a concrete wall and connected to the water by a single launch channel. Two reinforced concrete floating gates leading to each partitioned chamber would allow each area to be independently flooded and drained as needed and would also control access to the launch channel. The two-chamber design would also allow pontoon construction to be phased so that, while the second chamber of the casting basin is still being constructed, pontoon construction could begin in the first chamber as soon as it is completed.

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 deep water near the navigation channel in Grays Harbor. The state harbor line would have to be relocated farther offshore to accommodate the launch channel at either Grays Harbor build alternative site. (See Section 3.12, Land Use, for further discussion on this.)

Completed pontoons would be stored in Grays Harbor until needed. The last construction cycle of pontoons could be stored in the dry casting basin behind the closed gate, which would require maintaining an operational dewatering system at the site to reduce pressure on the casting basin walls and keep the casting basin from floating off its foundation. (See the *Operation (Permanent) Dewatering System* section later in this chapter for a description of this dewatering system.)

Support Facilities

The amount of concrete needed to construct the proposed casting basin and pontoons (as much as 1,000 cubic yards per day) easily warrants a dedicated onsite concrete batch plant. Therefore, for this Draft EIS WSDOT assumes a batch plant would be built onsite; however, WSDOT might ultimately decide to use an offsite concrete provider.

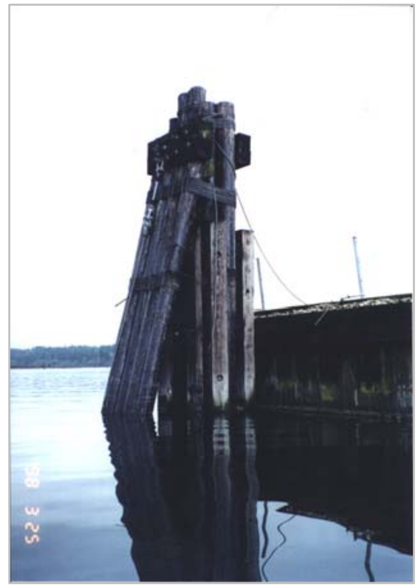
What are harbor lines?

Harbor lines establish areas that are— under the Washington State Constitution—to be reserved for landings, wharves, streets, and other conveniences of navigation and commerce. The Harbor Line Commission is charged with establishing new harbor lines or relocating existing lines as deemed appropriate. The Washington Department of Natural Resources is responsible for responding to requests for relocating harbor lines.

What is dewatering?

Dewatering is the removal of groundwater from a work area during site construction and operation and is necessary to maintain reasonably dry working conditions. During construction of the new casting basin facility, vacuum pumps would extract groundwater from wells installed across the work area and carry the water to a collection system. Once the casting basin is built, the soils surrounding it would be passively dewatered (via gravity) to reduce pressure on the basin walls and keep the casting basin from floating off of its foundation.

WSDOT would use flat, gravel- or asphalt-surfaced laydown areas surrounding the casting basin to store and assemble pontoon construction materials, such as steel rebar and wooden or steel forms. These areas would also provide space to store materials and construct items such as precast concrete elements and rebar cages that form the internal reinforcing skeleton of concrete pontoons. A covered area would also be provided so that some materials sensitive to corrosion could be kept dry while being stored.



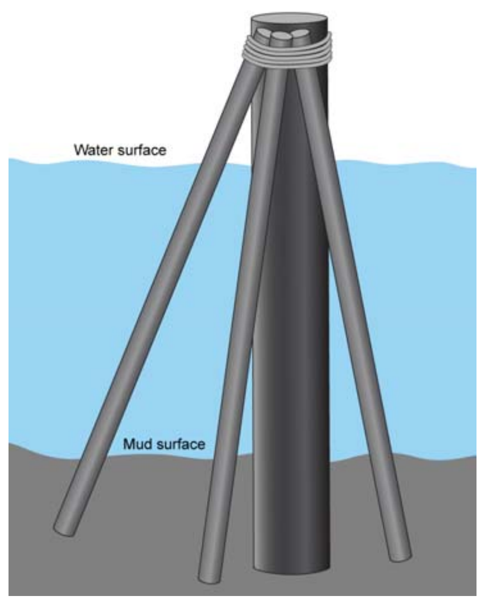
This photograph shows an example of a mooring dolphin.

WSDOT would set up indoor office space in temporary work trailers where approximately 80 construction officials and supervisors would coordinate and manage the casting basin and pontoon construction. Parking areas would serve onsite workers and would provide several hundred parking spaces. WSDOT anticipates that all employee-parking areas would be located onsite.

WSDOT would need to modify the existing berms along the property shorelines of both build alternative sites to accommodate the pontoon launch channel. To do this, WSDOT would excavate through and remove a portion of the existing berm to connect the casting basin with Grays Harbor. Currently the Anderson & Middleton Alternative site has a rock berm along its shoreline. The Aberdeen Log Yard Alternative shoreline berm, however, is much different; it is composed of soil and wood debris and covered with blackberry brambles and alder tree saplings.

WSDOT plans to install up to 20 mooring dolphins within the launch channel. These dolphins would aid in maneuvering pontoons out of the casting basin and provide temporary moorage for the floating basin gate, tugboats, barges, or pontoons. Exhibit 2-5 shows an example of a mooring dolphin. WSDOT could also use monopile dolphins, which consist of a single pile.

EXHIBIT 2-5
Example Mooring Dolphin Construction



Water, sanitary sewer, communication, and electrical service would be extended to serve the project site as needed, and local utility providers would provide service. Additionally, a fire suppression water line would be installed.

Stormwater and Water Treatment

WSDOT would design a water handling and treatment system to address stormwater runoff, casting basin process water, and water from the dewatering systems. For typical stormwater runoff, WSDOT would apply basic water quality treatment best management practices in accordance with either WSDOT's *Highway Runoff Manual* (WSDOT 2008a) or the Washington State Department of Ecology (Ecology) *2005 Stormwater Management*

Manual for Western Washington (Ecology 2005a) as applicable. Enhanced treatment options, such as using a media filter drain, would be used where possible; however, such opportunities would vary. All process water would be pumped from the casting basin to a collection system where the water would be monitored and treated as appropriate before being discharged into Grays Harbor or an approved offsite facility.

Temporary erosion and sediment control best management practices would be installed before breaking ground at the site in accordance with either the *2005 Stormwater Management Manual for Western Washington* or WSDOT's *Highway Runoff Manual* as appropriate, and in accordance with the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit. Potential best management practices applied during site construction might include covering fueling and materials transfer areas and collecting and treating water pumped to lower the groundwater table during initial site development; these features would be designed to meet the terms of the NPDES Construction Stormwater General Permit issued for the site. Best management practices implemented during pontoon construction would be governed by an NPDES Sand and Gravel Permit issued by Ecology.

What is process water?

Process water is created as pontoons are built and results from any water that comes into direct contact with uncured concrete. The pontoons must be kept wet while they are curing so that the concrete will reach the proper strength when fully cured. Any rainfall or water applied to the pontoons while they are curing that runs off would be considered process water.

What are best management practices?

Best management practices are effective and practical policies, managerial practices, maintenance procedures, and structural or nonstructural methods that, when used individually or in combination, prevent or reduce adverse environmental effects. Best management practices are designed and implemented to protect ecosystems, water resources, communities, structures, and landscapes, and they can include physical structures, such as silt fences or settling ponds, and construction approaches, such as conducting certain activities during dry periods.

Dewatering

WSDOT would install two different types of dewatering systems to remove groundwater from the casting basin work area. Before and during construction of the casting basin facility, a temporary construction dewatering system would operate at the site. During pontoon-building operations and after the SR 520 Pontoon Construction Project is completed, but while the site is still maintained, a permanent dewatering system would be in place. These two systems are described in the following sections.

Construction (Temporary) Dewatering System

Keeping excavation areas reasonably dry during casting basin construction would require a temporary construction dewatering system at either Grays Harbor build alternative site. WSDOT would install a construction dewatering system before any excavation activities begin. This system would consist of dewatering wells and active pumps that carry groundwater to a collection system, where the groundwater would be monitored and treated as necessary to meet applicable water quality standards before being discharged (pumped) into Grays Harbor.

Operation (Permanent) Dewatering System

Dewatering would also be required at either Grays Harbor build alternative site to keep the casting basin reasonably dry during pontoon construction and while the site is being maintained when not in use. WSDOT would construct this operation dewatering system during site development, and it would include both passive (water flow via gravity) and active (water pumping) components. WSDOT would install coarse gravels around the exterior walls and bottom of the casting basin to capture groundwater, which would then seep through the gravel layer and flow by gravity through a system of perforated pipes placed at the bottom of the granular layer to a collection system. At this collection system, the groundwater would be monitored and treated as needed to meet applicable water quality standards before being discharged (pumped) into the harbor or an approved offsite facility.

Cofferdams

Cofferdams are temporary, water-tight structures that would be used during the construction of the launch channel, portions of the casting basin, and casting-basin gates. Cofferdams isolate in-water construction areas so that the water can be pumped out and construction can occur in reasonably dry conditions. WSDOT could install cofferdams at the entrance of the to-be-constructed launch channel and then subsequently remove them when the launch channel and gates are completed.

What are the variations of pontoons?

Cross pontoons are used to support the western and eastern highrise portion of the Evergreen Point Bridge; this project would require two cross pontoons.

Longitudinal pontoons make up most of the floating bridge section that crosses Lake Washington.

Supplemental stability pontoons are the smallest of the three types of pontoons and are strategically placed alongside longitudinal pontoons to provide additional stability.

Types of Pontoons to Be Constructed

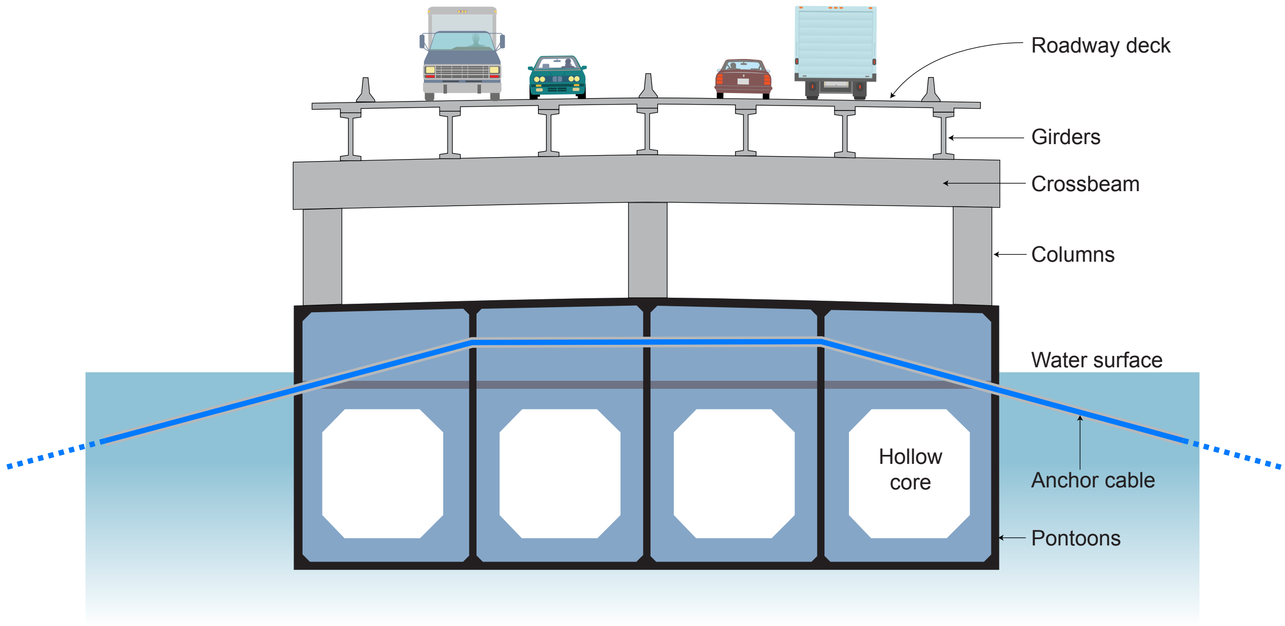
For this project, WSDOT would construct three types of pontoons needed for a 4-lane replacement of the Evergreen Point Bridge if the bridge failed. Exhibit 2-6 lists the types of pontoons to be built, how many of each would be built, and their approximate dimensions. Exhibit 2-7 illustrates how these pontoons would be configured to replace the Evergreen Point Bridge in the event of catastrophic failure.

How big are the longest pontoons?

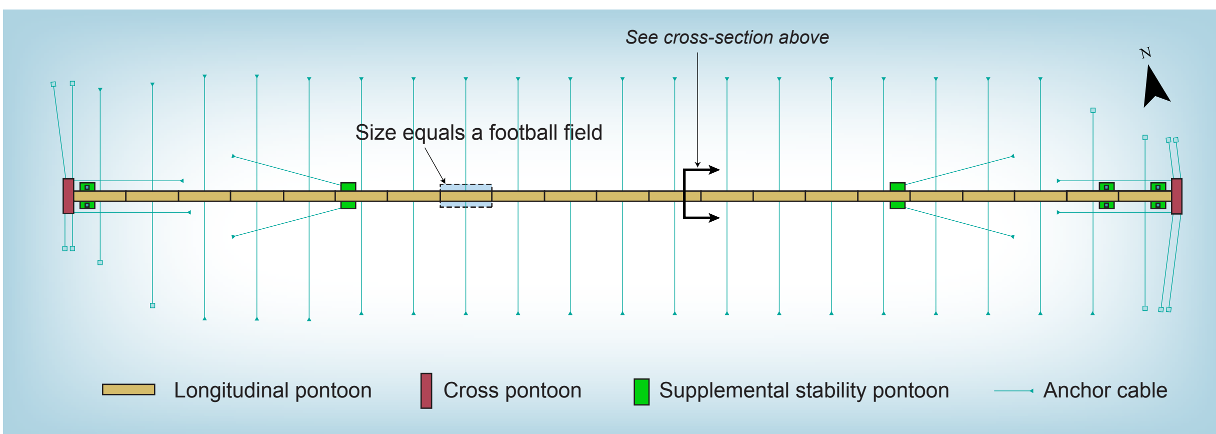
Each of the longest pontoons—longitudinal pontoons—would stretch from goal post to goal post on a football field and weigh twice as much as WSDOT's largest ferry.

EXHIBIT 2-6
Pontoon Types, Quantity, and Approximate Dimensions

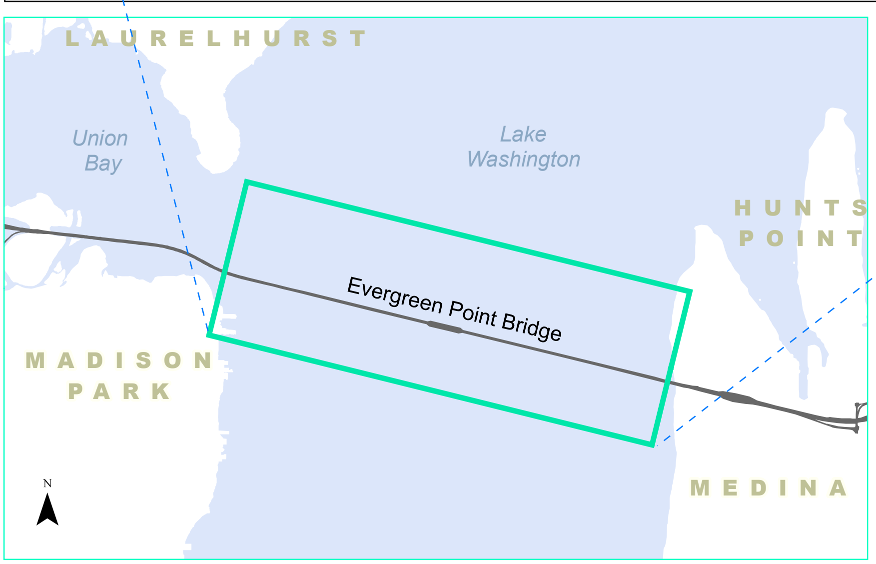
Pontoon Type	Quantity	Width (feet)	Length (feet)	Depth (feet)	Weigh (tons)
Cross (western portion of bridge)	1	75	240	34	10,100
Cross (eastern portion of bridge)	1	75	240	35	10,550
Longitudinal	21	75	360	29	11,100
Supplemental stability	10	60	98	29	2,650 to 3,000 (depending on whether an anchor cable is attached)



Bridge and Pontoon Cross-Section



Aerial View of Pontoon Configuration



Area of Detail

Exhibit 2-7. **Pontoon Configuration to Replace the Existing Evergreen Point Bridge**

Pontoon Construction Project

Washington State Department of Transportation

Pontoon Towing and Moorage

WSDOT would store the pontoons built at the new proposed casting basin as they are completed. At the end of each construction cycle, the completed pontoons would be towed out of the casting basin and moored until needed for either catastrophic failure response or the planned replacement of the Evergreen Point Bridge. If catastrophic failure occurs before the planned bridge replacement, pontoons would be towed as soon as seasonal towing windows allow. However, if planned replacement occurs before catastrophic failure, pontoons could be stored in Grays Harbor for up to 1.5 years, based on the current proposed bridge replacement schedule. Pontoons built at the CTC facility in Tacoma would be stored at existing marine berths in Puget Sound for up to 4 years. If catastrophic failure were to precede planned replacement, the maximum storage periods would be shorter. If the schedule for the planned bridge replacement were delayed, the storage periods would likely be longer.

Towing each pontoon from the casting basin to its moorage location would require up to two tugboats and be similar to moving a barge or other large vessel. This type of activity regularly occurs throughout Puget Sound and Grays Harbor as part of normal port operations.

WSDOT would moor pontoons built in Tacoma at existing available marine berths within Puget Sound. Based on a 2009 preliminary assessment of available marine berth space, WSDOT concluded that suitable space would be available for securing pontoons among the major ports in Puget Sound. Existing marine berths in Grays Harbor, on the other hand, are limited and could not accommodate moorage of pontoons built for this project; therefore, WSDOT is analyzing a new pontoon moorage site in the Grays Harbor area (Exhibit 2-8) as part of the proposed project. This moorage site, which is about 2 nautical miles from the Grays Harbor shoreline near the Johns River, could be used to store pontoons built at the Grays Harbor casting basin facility. No submerged aquatic vegetation or shipwrecks were identified by sonar scanning and underwater video profiling at this proposed location. This area is between 25 and 65 feet deep (relative to mean lower low water [MLLW]) with a relatively featureless bottom characterized by sand waves.

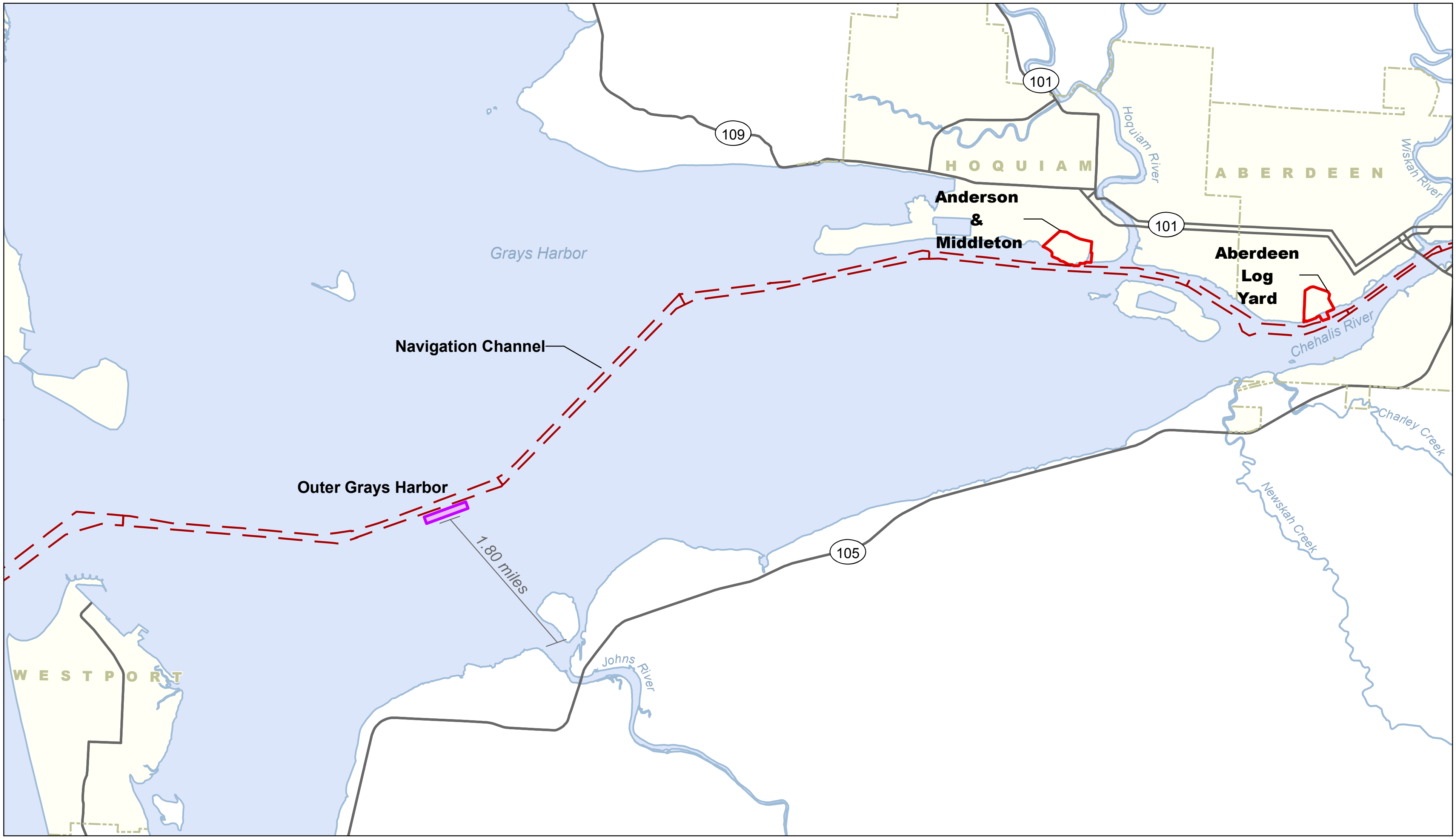
The proposed Grays Harbor moorage location could moor up to 33 pontoons by rafting pontoons in groups of four and attaching them to anchors (Exhibit 2-9).

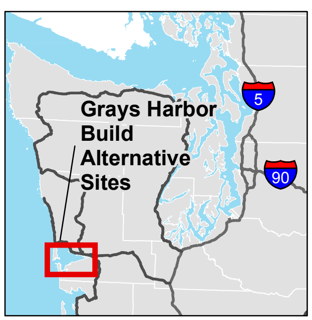
What is mean lower low water?

The height of mean lower low water (MLLW) is the average daily lowest tide, recalculated every 19 years.

What is mean higher high water?

Mean higher high water (MHHW) is the average daily highest tide, recalculated every 19 years.





Proposed pontoon moorage location

Build Alternative Site

Navigation channel

City limits

N

0 0.5 1 2 Miles

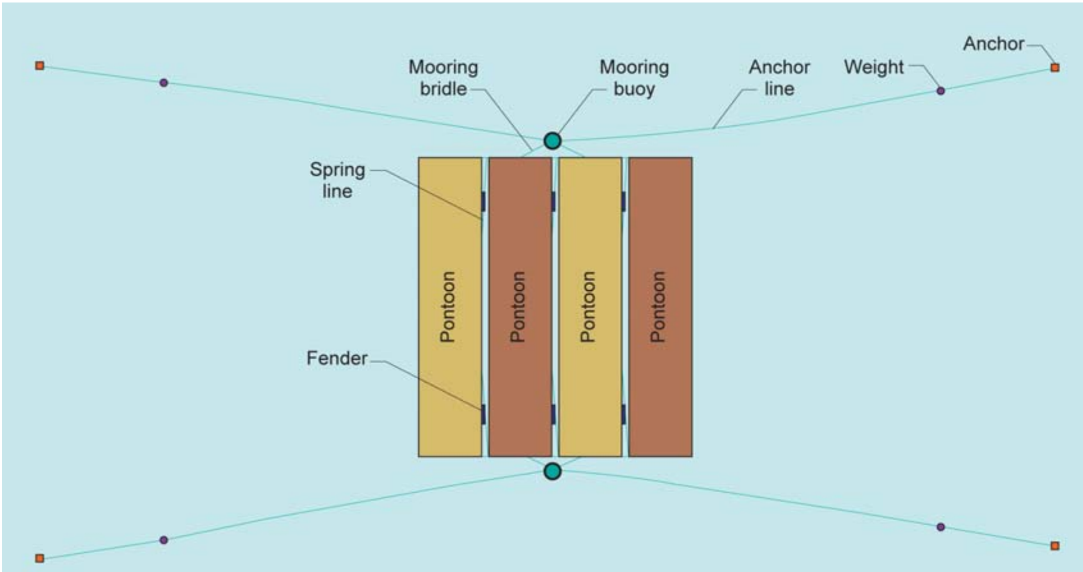
Source: Grays Harbor County (2006) GIS Data (Waterbody and Street). Horizontal datum for all layers is State Plane Washington South NAD 83; vertical datum for layers is NAVD88.

Exhibit 2-8. **Grays Harbor Proposed Pontoon Moorage Location**

SR 520 Pontoon Construction Project

Washington State Department of Transportation

EXHIBIT 2-9
Conceptual Pontoon Open Water Anchorage Design



Pontoons would be anchored in at least 30 feet of water, and while floating, the underside of the pontoons would extend about 15 feet underwater. There would always be at least 10 feet of water under the pontoons, and they would never rest on the harbor bottom, even during the lowest tides. WSDOT would equip all moored pontoons with transmitters and remotely monitor them for spatial location, proper position in the water, and whether any water intrudes inside them. WSDOT would keep the pontoons out of maintained and marked navigation channels and identify the pontoons with navigation lighting in compliance with U.S. Coast Guard requirements.

Pontoons from the last construction cycle at the WSDOT-controlled Grays Harbor facility could be stored in the dry casting basin behind the closed gate. This would require periodically pumping stormwater out of the basin and draining the surrounding soil of groundwater via the operation dewatering system to reduce pressure on the casting basin.

How would the build alternatives differ?

The Anderson & Middleton Alternative site is located on a 105-acre parcel; WSDOT would purchase 95 of these acres, and the casting basin and support facilities would occupy about 55 acres. The Aberdeen Log Yard Alternative site encompasses 51 acres, and WSDOT expects that the entire site would be needed for the casting basin and support facilities.

Each build alternative would require construction and design modifications tailored to the unique physical characteristics of the selected site. For example, the soils and geology of each site are different, which would influence foundation type, pile length, and construction approaches. The topography and nearshore characteristics of each site are also different and would influence launch channel dimensions and shoreline armoring, among other things. Local regulations and codes unique to each site would also influence the design of both the casting basin facility and support facilities. Exhibit 2-10 presents examples of potential differences based on the current preliminary design completed for each alternative for this analysis.

EXHIBIT 2-10
Examples of Potential Construction Differences between the Grays Harbor Build Alternatives

Component	Anderson & Middleton Alternative	Aberdeen Log Yard Alternative
Casting basin		
Approximate volume material excavated from casting basin	740,000 cubic yards	887,000 cubic yards
Average pile length	130 feet	100 feet
Launch channel		
Approximate launch channel size	Onshore: 240 feet x 300 feet = 72,000 square feet Offshore: 110 feet x 300 feet = 33,000 square feet	Onshore: 220 feet x 300 feet = 66,000 square feet Offshore: 440 feet x 300 feet = 133,000 square feet
Approximate volume material excavated for launch channel	Onshore: 100,000 cubic yards Offshore: 23,000 cubic yards	Onshore: 112,000 cubic yards Offshore: 111,000 cubic yards

What is the No Build Alternative?

An EIS provides a No Build Alternative to assess what would happen if the project were not built. The No Build Alternative is also used as a baseline condition against which to measure and compare the project's build alternatives. For the SR 520 Pontoon Construction Project, the No Build Alternative means that WSDOT would not construct or store pontoons needed to respond to a catastrophic failure of the Evergreen Point Bridge. Under the No Build Alternative, WSDOT would not build a new casting basin facility, nor would WSDOT use the existing CTC casting basin facility to manufacture pontoons for Evergreen Point Bridge catastrophic failure response. Therefore, the resulting environmental effects of the proposed project activities would not occur.

Under the No Build Alternative, pontoons would not be available for catastrophic failure response, and emergency bridge replacement would take approximately 5 years, opposed to 1.5 years with either build alternative. As described in Chapter 1, the Evergreen Point Bridge is a critical component of the Puget Sound region's transportation system, and the economic consequences of a catastrophic failure and subsequent 5-year closure would be severe.

For this Draft EIS, WSDOT assumes that, if unused by this project, the build alternative sites 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 mostly inactive, and the CTC facility would continue to be used as a casting basin for other projects. The use of the Grays Harbor properties has remained unchanged since the 1990s, and no known plans for further development of either site are being considered at this time. Potential future uses for these two properties—other than the proposed SR 520 Pontoon Construction Project—are speculative and, therefore, not considered under the No Build Alternative. In summary, the No Build Alternative for this project would be continued existing conditions and uses at all proposed alternative sites.

How did WSDOT choose potential sites to evaluate?

In 2004, WSDOT began constructing a casting basin in Port Angeles to build pontoons for both the SR 104 Hood Canal Bridge and the SR 520 Evergreen Point Bridge. In late 2004, WSDOT left the Port Angeles site after discovering buried human remains and cultural artifacts belonging to the lower Elwha Klallam Tribe and its ancestors and immediately solicited port authorities, private land owners, and tribal nations in search of a new site. In early 2005, the urgency of constructing pontoons for the SR 104 Hood Canal Bridge Project—which was already underway—led WSDOT to decide to build pontoons at CTC's existing casting basin in Tacoma. Efforts to find a new casting basin site for the SR 520 Program's I-5 to Medina: Bridge Replacement and HOV Project—and then for the SR 520 Pontoon Construction Project—continued. WSDOT identified potential casting basin facility sites between 2004 and 2008 through the following activities:

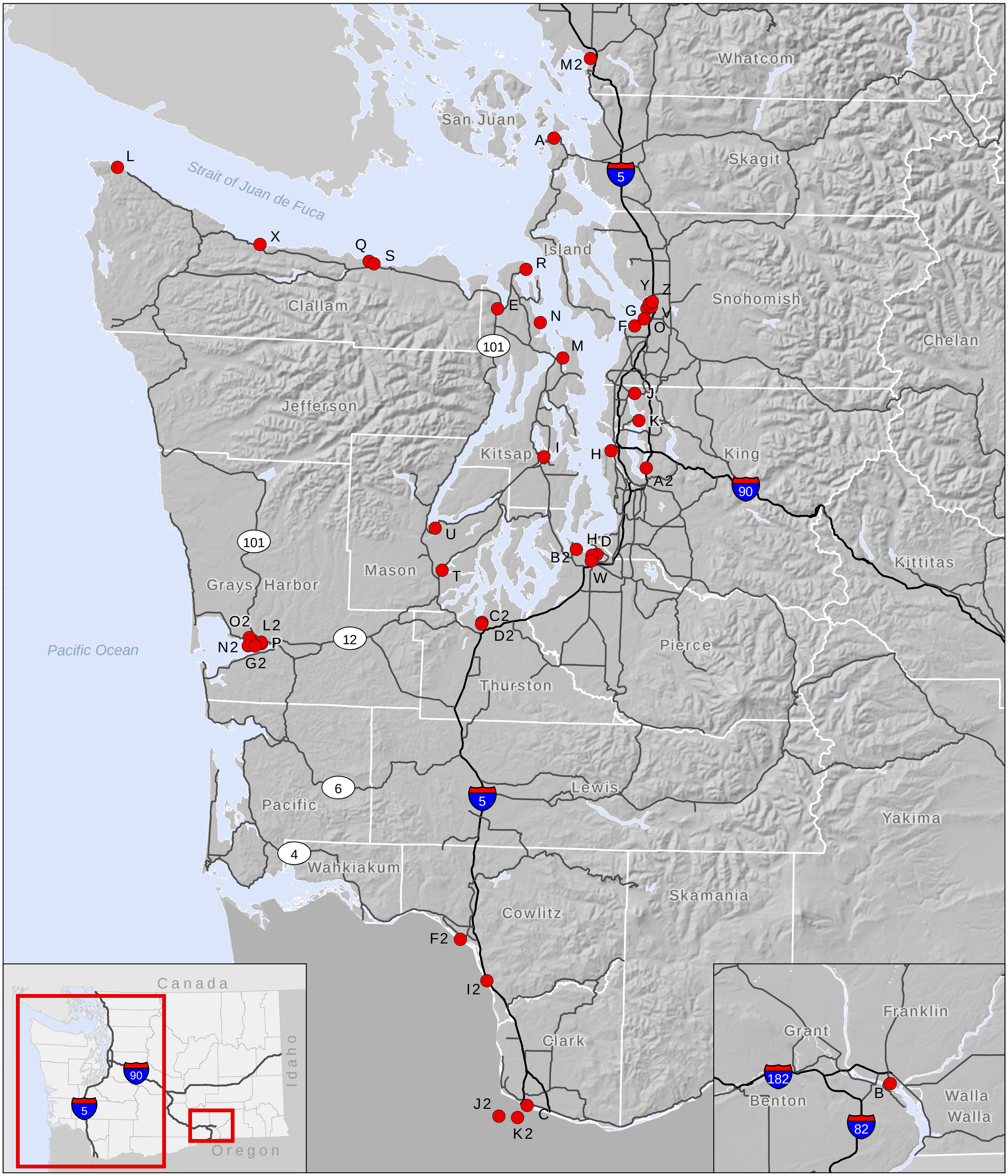
- Direct solicitation via letter sent to 38 port districts, six private landowners or land development companies, and two tribes
- Advertisement in the *Seattle Daily Journal of Commerce*
- Advertisement on WSDOT's Contract Ad & Award Web page
- Suggestions from expert review panels
- Real estate property searches

Based on the project's purpose and need, WSDOT established several key criteria for identifying potential casting basin sites for initial consideration: it had to be at least 30 contiguous acres and have 900 to 1,000 feet of waterfront in a protected harbor or channel with adequate depth and room to move large tugboats and pontoons. Ultimately, WSDOT considered sites smaller than 30 acres if adjacent properties were available that—together with the originally considered site—comprised at least 30 contiguous acres. Both developed and undeveloped sites were considered. WSDOT's search for potential casting basin facility construction sites resulted in a list of 39 candidate sites to consider for further analysis (see Exhibit 2-11 for the locations of these sites). For complete details on the search for potential casting basin facility construction sites, including required site features and criteria, please see Appendix B, Description of the Alternatives and Construction Techniques Discipline Report.

How did WSDOT screen and select potential sites for analysis?

The process WSDOT used to identify the range of alternatives included conducting public scoping, collaborating with participating and cooperating agencies, and consulting with tribes. This section describes that process and provides the rationale for eliminating candidate sites.

To determine which sites would make up the range of alternatives to be fully analyzed in the Draft EIS, WSDOT developed criteria to screen potential alternatives with the help of an advisory environmental review panel and participating agencies and tribes (the PCPACT team). The screening criteria (Exhibit 2-12) included required physical site characteristics, logistical constraints, and consideration of unacceptable adverse effects and regulatory constraints. If a site failed on any screening criterion, then it was considered an unreasonable or impracticable site and was eliminated from further consideration. Before developing site-screening criteria with the PCPACT team, WSDOT had identified the casting basin method as the preferred pontoon construction method (see *Why is WSDOT analyzing the casting basin method for building pontoons?* later in this chapter). Sites that could not accommodate the casting basin method were dismissed from further consideration before the screening criteria (in Exhibit 2-12) were developed.



Candidate casting basin facility site

County boundary

Note: Site H includes locations in Seattle and Tacoma.
Site M is the same as site E2 listed in Exhibit 2-13.
Site A is the same as site H2 listed in Exhibit 2-13.

Exhibit 2-11. **Candidate Casting Basin Facility Sites**

SR 520 Pontoon Construction Project

Washington State Department of Transportation

Source: WSDOT (1995) GIS Data (County). Horizontal datum for all layers is State Plane Washington South NAD 83; vertical datum for layers is NAVD88.

N

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EXHIBIT 2-12
Screening Criteria for Casting Basin Facility Construction Site

Criteria	Rationale
Physical site characteristics	
1. Sufficient draft achievable and appropriate channel characteristics	The site must have 22 feet of draft logistically and economically achievable with the initial dredging effort to accommodate pontoon floatouts. Maintaining the needed 22-foot draft during active construction must be logistically and economically achievable after considering dredging volume, frequency, area, and environmentally sensitive areas. There must be reliable access between the casting basin and deep water.
2. Size	A minimum of 30 contiguous acres is needed to accommodate a single pontoon construction and/or storage facility, critical onsite infrastructure, laydown area, and stormwater treatment facilities.
3. Appropriate shoreline characteristics	The site must have direct water access with at least 150 feet of shoreline length to accommodate an entrance channel for the casting basin. The site must have an elevation between MHHW levels and 10 feet above MHHW. The site must have a nearshore protected area for temporary pontoon moorage to ensure that pontoons do not sustain damage while in holding before transport.
Logistical constraints	
4. Towing feasibility	There must be established navigable water routes between the site and Lake Washington. The costs and risks associated with the tow must be acceptable.
5. Domestic location	Purchase of materials, long-term leasing strategies, foreign environmental processes, overseeing construction in another country, and challenging interagency coordination all excluded foreign sites from consideration for this project.
Unacceptable adverse effects	
6. Unacceptable adverse effects on natural resources and noncompliance with environmental regulations	Developing and operating the facility must comply with all environmental regulations; developing and operating the facility must not result in unacceptable adverse effects that could not be mitigated. Unacceptable effects on natural resources that could not be mitigated would likely lead to permit or approval denials.
7. Cultural resources	Site development must not require direct effects on significant archaeological resources for which effects could not be mitigated or direct effects on historical structures or sites that must be preserved in place.
Unacceptable constraints	
8. Cultural resources	Known large-scale or complicated recovery work cannot begin until completion of NEPA process and would delay schedule and prevent expedited construction. The extent and significance of resources might not be fully understood until excavation is underway, presenting unanticipated costs and schedule risks.

EXHIBIT 2-12
Screening Criteria for Casting Basin Facility Construction Site

Criteria	Rationale
9. Hazardous materials: MTCA or federal or state superfund site	Hazardous materials cleanup cannot begin until completion of NEPA process and would delay schedule and prevent expedited construction. Extent of contamination might not be fully understood until cleanup actions are underway, presenting unanticipated costs and schedule risks.
10. Compatibility with zoning and land use regulations	Rezoning or major land use action process cannot begin until NEPA completion and would delay schedule and prevent expedited construction. Site must not require a substantial zoning change or land use action that would undermine the intent of local comprehensive plans or result in unacceptable degradation of the surrounding area and its current character.
11. Site availability and term of availability	The site cannot require condemnation; the owner must be a willing seller or lessor. The site must be available to WSDOT for construction of additional floating bridge structures supporting the full buildout of the SR 520 Evergreen Point Bridge.

MHHW mean higher high water
MTCA Model Toxics Control Act
NEPA National Environmental Policy Act
SR State Route
WSDOT Washington State Department of Transportation

Exhibit 2-13 presents all of the sites considered and dismissed from further study and the criteria on which their dismissal was based; Exhibit 2-11 also shows these sites. For a more detailed description of the alternatives that were dismissed from further consideration and the rationale for their dismissal, please see Appendix B, Description of the Alternatives and Construction Techniques Discipline Report.

Information gathering and the screening process continued until WSDOT reviewed all of the sites. Of the 39 sites evaluated, the screening process eliminated 36 sites because they failed at least one of the screening criterions. Three sites—IDD #1, Anderson & Middleton, and Aberdeen Log Yard—were further analyzed. WSDOT initiated a 30-day comment period on this potential range of alternatives. WSDOT received 144 comments from the public and participating agencies. The scoping comments addressed various topics, including lack of support for IDD #1 given the potential for extensive wetland effects, concerns about effects on fish and wildlife, and effects related to increased traffic and noise. Public comments indicated a general consensus regarding the need for the project and no direct opposition for locating the new pontoon construction facility in the Grays Harbor area.

EXHIBIT 2-13
Casting Basin Facility Sites Considered and Dismissed

ID	Site	Eliminating Criteria
A	MJB Properties, Anacortes, WA	Size
B	Big Pasco Industrial Center, Pasco, WA	Sufficient draft, towing feasibility
C	Columbia Industrial Park, Vancouver, WA	Towing feasibility
D	Concrete Technology Corporation, Hylebos Waterway, Tacoma, WA[a]	Hazardous materials
E	Discovery Bay, Jefferson County, WA	Compatibility with zoning and land use regulations
F	KLB Construction property, Everett, WA	Sufficient draft, size
G	Snohomish Delta Partners, Everett, WA	Proposal withdrawn by the proponent and resubmitted as Site V (listed below in this exhibit)
H	FCB Facilities Team (various sites), Seattle and Tacoma, WA	Size
I	Puget Sound Naval Shipyard drydock or other floating drydocks, Bremerton, WA	Drydocks unavailable or in disrepair would require a construction method dismissed from consideration (floating drydock)
J	Glacier Northwest Kenmore Premix Plant, Kenmore, WA	Size would require a construction method dismissed from consideration (segmental match-casting)
K	Lake Washington (in-lake), Seattle, WA	Eliminated before the site-screening criteria process because construction method (vertical casting) dismissed from consideration
L	Makah Reservation, Neah Bay, WA	Sufficient draft, appropriate shoreline characteristics, cultural resources
M	Port Gamble Mill site, Port Gamble, WA	Hazardous materials
N	Port Ludlow quarry, Jefferson County, WA	Compatibility with zoning and land use regulations
O	Port of Everett South Terminal, Everett, WA	Site availability
P	Port of Grays Harbor Industrial Development District Parcel #1, Hoquiam, WA	Noncompliance with environmental regulations
Q	Port of Port Angeles Terminal 7, Port Angeles, WA	Size, cultural resources
R	Port of Port Townsend, Port Townsend, WA	Size
S	Rayonier properties, Port Angeles, WA	Cultural resources, hazardous materials
T	Sanderson Field Industrial Park, Shelton, WA	Sufficient draft, appropriate shoreline characteristics, towing feasibility
U	Skokomish River, Mason County, WA	Sufficient draft
V	Snohomish Delta Partners (Miller Shingle Mill), Everett, WA	Sufficient draft
W	Thea Foss Waterway, Tacoma, WA	Size
X	Twin River Clay Quarry, Clallam County, WA	Sufficient draft, appropriate shoreline characteristics

EXHIBIT 2-13
Casting Basin Facility Sites Considered and Dismissed

ID	Site	Eliminating Criteria
Y	Port of Everett Riverside Business Park, Everett, WA	Sufficient draft
Z	Cedar Grove Composting, Snohomish County, WA	Sufficient draft
A2	Lake Washington, Renton, WA	Hazardous materials, compatibility with zoning and land use regulations
B2	Port of Tacoma, Tacoma, WA	Hazardous materials, compatibility with zoning and land use regulations
C2	Washington Department of Natural Resources tidelands, Olympia, WA	Sufficient draft
D2	Port of Olympia, Olympia, WA	Hazardous materials, site availability
E2	Port Gamble, Port Gamble, WA	Hazardous materials
F2	Port of Longview, Longview, WA	Towing feasibility
G2	Weyerhaeuser (Cosmopolis), Aberdeen, WA	Site availability
H2	Port of Anacortes, Anacortes, WA	Size
I2	Port of Kalama, Kalama, WA	Towing feasibility
J2	Northwest Industrial Center, Multnomah County, OR	Towing feasibility, hazardous materials
K2	Hayden Island, Multnomah County, OR	Towing feasibility
M2	Whatcom Waterway, Bellingham, WA	Hazardous materials
O2	Port of Grays Harbor Terminal 3, Hoquiam, WA	Sufficient draft

[a] This CTC differs from the CTC site that is considered in this Draft EIS which is on the Blair Waterway.

In February 2009, WSDOT removed IDD #1 as a potential alternative site because adverse effects on wetlands would be comparatively too great relative to the other two sites identified for further analysis in the EIS. The disproportionately high wetland impacts on the IDD #1 site put this site at risk of noncompliance with Section 404 of the Clean Water Act, which protects wetlands and special aquatic sites; Section 404 permits are issued only for the least environmentally damaging practicable alternative. Because the site-screening process identified two other sites—both practicable and less environmentally damaging—the IDD #1 was no longer viable under screening criteria number 6 (Exhibit 2-12). A second 30-day comment period was conducted to solicit comments on WSDOT's proposal to drop IDD #1 from further consideration, and most comments supported the dismissal (see Appendix A).

What is Section 404 of the Clean Water Act?

Section 404 of the Clean Water Act requires U.S. Army Corps of Engineers approval before dredging or placing any fill materials in U.S. waters, including special aquatic sites. The fundamental rationale of the program is that no discharge of dredged or fill material will be permitted if there is a practicable alternative that would be less damaging to the environment or if the discharge would lead to unacceptable degradation to the nation's waters. Special aquatic sites regulated by this program include wetlands, mudflats, and vegetated shallows.

Why is WSDOT analyzing the casting basin method for building pontoons?

Several construction methods were considered during the initial stages of the SR 520 Pontoon Construction Project site design process. A casting basin is the preferred construction method because WSDOT has substantial experience with this method, which has been successfully used to build pontoons for all of WSDOT's floating bridges. WSDOT has a high level of confidence that constructing pontoons using the casting basin method would proceed smoothly with low risk of delays or unanticipated costs. As a result, for the purpose of this Draft EIS, the casting basin method was analyzed.

What other construction methods did WSDOT review?

Alternative pontoon construction methods that WSDOT and FHWA reviewed are described briefly below. WSDOT determined that the risks associated with each of these methods would be greater than the benefits. Appendix B, Description of Alternatives and Construction Techniques Discipline Report, more thoroughly describes these methods and reasons why they were not considered for further analysis in this Draft EIS:

- **Floating drydock or construction on barges.** This method involves constructing pontoons on a floating drydock, which is a U-shaped barge. After the pontoons are complete, the drydock would be ballasted down so that the bottom portion of the U is submerged, and the pontoons would be floated out. This method does not require a land-based facility and can be used in open water.

  This method was not considered for further analysis for a couple reasons: (1) working over water is more expensive than working on land, and (2) facility construction time would be substantially longer than a casting basin.

- **Vertical casting on Lake Washington.** This method involves working from barges on Lake Washington to construct pontoons vertically, section-by-section, while sinking the completed portion of the pontoon vertically into the lake, then rotating the finished pontoon to a horizontal position.

  This method was not considered for further analysis for several reasons: (1) there are higher risks of pontoon damage during construction; (2) working over water is more expensive than working on land; and (3) this method has never been used to construct large floating concrete structures.

- **Segmental match casting on Lake Washington.** This method—proposed as a way to make a smaller site on Lake Washington viable for pontoon construction—involves building each pontoon incrementally and pushing it out into the lake as it is built.

  This method was not considered for further analysis for several reasons: (1) each incremental movement of the pontoon into the lake presents a damage risk to the pontoon; (2) the mechanism to launch the pontoons into the water are expensive and prone to failure; and (3) each pontoon would require about ten flooding and dewatering cycles, which presents great environmental risks and challenges.

- **Barge launch and barge slip.** Both of these methods have a casting slab at ground level with a system to transfer a finished pontoon onto a grounded barge. The barge rests on an underwater support grid located offshore (barge launch) or in an excavated slip notched into the shoreline (barge slip). Once the pontoon is built and loaded onto the barge, the barge is floated and moved to deeper water and submerged, thus allowing the pontoon to float off the barge and then be towed away. The barge is refloated and regrounded on the support grid.

  This method was not considered for further analysis for several reasons: (1) loss of or damage to the barge would significantly affect pontoon delivery; (2) transporting pontoons over land creates stresses that pontoons are not designed to withstand and could result in pontoon damage; and (3) obtaining the type of barge necessary for this project would be difficult because they are not readily available.

In late 2009, two additional pontoon construction methods were submitted to WSDOT and FHWA in design-build proposals. These methods (listed below) were not advanced for further analysis because they did not offer substantial environmental or cost advantages over WSDOT's casting basin concept:

- **At-grade superflooded casting basin facility.** This method would move pontoons in a way similar to Seattle's Hiram M. Chittenden Locks in Ballard, with water lowered and raised to different levels. Pontoons would be built on an at-grade concrete slab next to a permanently flooded, deep launching slot in the middle of the basin. Temporary walls would be erected around the completed pontoons, the slot gate closed, and that portion of the basin would be superflooded using a pumping system. The pontoons would be floated and moved into the launching slot, then water within the temporary walls would be drained, the slot gate opened, the temporary walls removed, and pontoons towed into the launch channel.

- **Enclosed, at-grade casting building with elevator-lift platform.** This method involves building pontoons in an enclosed, at-grade building, then using a transport system to move the finished pontoons to an offshore "elevator-lift" lowering system to launch the pontoons into deep water.

How would WSDOT construct the new casting basin facility?

This section briefly describes the activities that would occur during casting basin facility construction. For more detailed information on construction techniques, see Appendix B, Description of the Alternatives and Construction Techniques Discipline Report. Constructing the casting basin facility would require three parts: constructing the site, constructing the launch channel, and modifying the shoreline berm. Because the physical conditions at both build alternative sites are mostly similar, construction sequencing would be typical for either site.

Site Construction

The cofferdam proposed for the new casting basin facility construction would be the same type as shown in this photograph from the U.S. Army Corps of Engineers.

WSDOT anticipates a 14-hour workday, 6 days per week, for casting basin construction, with the possibility of a multiple shifts working 24 hours a day, 7 days a week. WSDOT would prepare the casting basin facility site by first installing silt fencing and other temporary erosion and sediment control facilities. Vegetation would then be removed along with any remnants of previous site development, such as old pavement, building foundations, and utility poles. Next, WSDOT would grade the site to remove the top 1 to 2 feet of soil and debris across the site, install temporary utilities to serve construction needs, and place gravel on the site to accommodate heavy equipment needed for facility construction activities. Excavated material could be stored onsite in the short or long term or taken offsite and disposed of in a manner compliant with applicable federal, state, and local regulations.

WSDOT would then proceed with site construction by installing the construction (temporary) dewatering system to keep working areas reasonably dry and to initiate excavation for the casting basin. Either proposed build alternative site would require a construction dewatering system to dewater the excavation during casting basin construction. The system, which could include active pumps, would dewater the bottom of the excavation to prevent heaving (hydrostatic uplift) on the excavation floor.

The casting basin excavation effort would be substantial and require a combination of backhoes, loaders, excavators, and dump trucks to haul the material away. WSDOT would construct the casting basin concrete slab floor with pile-supported, reinforced concrete. Once the floor is in place, concrete workers would erect the formwork for the casting basin walls. Like the process for creating the casting basin floor, concrete would be poured into the wall formwork and cured. A construction dewatering system would pump groundwater from the basin’s perimeter to maintain dry conditions while the casting basin is being constructed. WSDOT might also install temporary cofferdams parallel to the shoreline and across the launch channel area to keep work areas dry. The completed casting basin would measure approximately 565 feet wide, 810 feet long, with 30-foot-deep walls on each side.

Activities necessary for adding other essential site features, such as access roads, utilities, parking, and laydown areas, would also occur during casting basin construction; WSDOT would complete these activities after the area behind the casting basin walls was backfilled so that the site could be graded. WSDOT would likely place the required utilities (water, sewer, electrical, and communications lines) underground and install water treatment ponds. The batch plant used to supply concrete for the casting basin and pontoons would then be built on a concrete pad base, along with loading and storage areas.

Launch Channel Construction

Before excavation activities and launch channel construction begins, WSDOT’s preliminary design includes the installation of a temporary cofferdam upland of and adjacent to the mean higher high water (MHHW) level of Grays Harbor. The cofferdam would separate the in-water portion from the upland portion of the launch channel excavation area. The cofferdam would keep the upland portion of the construction area stable and dry during launch channel excavation, casting basin gate construction, casting basin excavation, and casting basin walls and launch channel sides installation.

In-water dredging would be used during launch channel construction.

After the upland excavation and construction activities, WSDOT would excavate the in-water portion of the launch channel. Then, when the casting basin gate is operational, the casting basin gate would be closed to isolate the casting basin from the launch channel and flood the portion of launch channel upland of the cofferdam (in a controlled manner) to equalize the water level on both sides of the cofferdam. WSDOT would then remove the cofferdam to join the upland and in-water portions of the launch channel. WSDOT would implement best management practices during dredging, excavation, temporary cofferdam installation and removal, and other construction activities to prevent sediments from being released into Grays Harbor.

Berm Construction

WSDOT would modify the existing berm along the shorelines at either Grays Harbor build alternative site to accommodate the launch channel for the pontoons. About 300 linear feet of the existing berm would be removed for the launch channel to connect the casting basin to Grays Harbor. WSDOT would not completely remove and replace the berm at either alternative site. However, berms at both sites are weathered and degraded, and reinforcing the berm at either site would be necessary to prevent further degradation of the berm, flooding of the site during storms, and resulting damage to the front part of the site and any structures on it.

At the selected site WSDOT would—at a minimum—repair the berm's eroded portions to their original shape. Additionally, WSDOT might need to reinforce and shore up the existing shoreline berm in vulnerable areas where it has eroded or been damaged over the years by storms. The berm height could also be increased to prevent waves from overtopping it, and the bottom of the berm could be armored to better protect the shoreline against wave action.

Material Exported from and Imported to the Site

Total loaded and unloaded truck trips for excavation, site construction, and material import and export during pontoon construction are estimated to range from 219,000 to 238,000, depending on which site is chosen. These truck trips would occur over approximately 3.5 years. See Section 3.14, Transportation, for more detail about estimated truck trips for each alternative.

WSDOT anticipates that one casting basin chamber would be completely constructed before the other is finished and could immediately accommodate pontoon construction as soon as it is available for use. This would result in an approximate 6-month period when trucks would be serving both casting basin construction and pontoon construction. Exhibit 2-1 shows the proposed haul routes; where possible, the haul routes primarily would be on established state routes. WSDOT might also elect to import and/or export some material by barge or rail. Use of barge or rail to move material to and from the Grays Harbor site would result in fewer truck trips than indicated above.

How would WSDOT construct the pontoons?

WSDOT would take the following steps to construct and store the pontoons:

- Deliver materials to the facility
- Form pontoon components
- Prepare reinforcing steel for the pontoons
- Manufacture concrete
- Place concrete in formwork
- Cure concrete
- Perform water quality treatment activities
- Flood casting basin and open gate
- Tow pontoons out and moor them
- Close gate and drain casting basin

Pontoons are reinforced concrete structures. To build them, concrete would be poured around steel rebar cages surrounded by wooden or steel forms. When the concrete is set, the forms would be removed and the pontoons would be cured in the casting basin. The pontoon construction process would be generally the same at both the proposed Grays Harbor build alternative sites and the existing CTC facility.

When a cycle of pontoons is complete, WSDOT would thoroughly clean and pressure wash the work area and collect and treat the washwater before discharging into Grays Harbor. The basin then would be flooded to allow the pontoons to safely float within the casting basin. After the water level inside the basin reaches the water level in Grays Harbor (or the Blair Waterway at the CTC facility), the casting basin access gates would be opened and the pontoons towed out of the basin by a tugboat.

Trenches would run along the perimeter of the casting basin to collect and convey rain water and construction process water. These trenches would also provide channels for any fish that entered the basin during gate openings to be collected and released back into open water when the gate is closed and the water pumped slowly from the basin.

The casting basin would require an operation (permanent) dewatering system to lower the ground water level, thereby reducing the buoyant uplift pressures from groundwater that could destabilize the casting basin structure. This system is described earlier in this chapter under *Operation (Permanent) Dewatering.*

What is the concrete curing process?

Curing involves keeping the concrete moist while it hardens and is the process by which concrete achieves its best strength. Concrete strengthens as a result of a chemical reaction that occurs when it is in contact with water; this reaction bonds the components of the cement together, creating a stonelike material. To keep the concrete moist, any surface that is not covered by the forms is covered with plastic or wet tarps or kept wet with a mister or sprinkler. Proper curing can take 3 to 14 days, depending on external conditions and the elements in the concrete.

How long would it take WSDOT to build the new facility and pontoons?

The new casting basin facility would take approximately 2 years to construct. As shown in Exhibit 1-4 in Chapter 1, the current project schedule shows that construction of the new casting basin could begin in late 2010. Pontoon construction at the new facility could begin as early as February 2012.

Pontoon construction at the existing CTC facility would occur over a 3-year period, and pontoon construction at the new casting basin facility would take more than 2 years. Total pontoon construction would take about 4 years, with production at the two facilities overlapping for 1 year.

WSDOT anticipates that approximately 6 to 9 months would be needed to complete each pontoon-construction cycle. The new casting basin facility at Grays Harbor could produce 20 pontoons in two-and-a-half, eight-pontoon construction cycles. The existing CTC facility could produce five small supplemental stability pontoons in each of the first two pontoon construction cycles (for a total of 10), and one longitudinal pontoon each in three more cycles.

How would WSDOT maintain the casting basin after pontoons for this project are built?

Maintenance during Pontoon Storage

WSDOT anticipates that the last cycle of pontoons (up to eight pontoons) would be stored in the casting basin until they are needed for emergency response, or until the casting basin is needed for the SR 520 Program's I-5 to Medina: Bridge Replacement and HOV Project. While pontoons are stored in the casting basin, WSDOT would keep the basin dry and keep the pontoons grounded on the floor of the basin. To accomplish this, WSDOT would keep the operation (permanent) dewatering system functioning and periodically pump stormwater from the basin. As a result, water associated with storing the pontoons in the basin would periodically be discharged. WSDOT anticipates that routine monitoring and maintenance would be required to ensure that these systems continue to function properly and that the facility remains in a stable state.

Long-Term Maintenance

After all pontoons needed for the SR 520 Pontoon Construction Project are built and towed out of the basin, WSDOT would maintain the facility in a manner compliant with all site permits and approvals for the period of time the facility remains in WSDOT's ownership. Use of the casting basin for anything other than building pontoons for the Evergreen Point Bridge would require that all applicable environmental regulatory and permitting processes were reinitiated as appropriate.

During periods of nonuse—and while under WSDOT's ownership—the casting basin would be kept dry, thereby allowing for easier maintenance and inspection activities. The casting basin would also be kept dry because the gate would not be designed to withstand water pressure from the inside. (When the tide is out, the water level inside the casting basin might be higher than the water level in Grays Harbor, thus putting pressure on the casting basin gate from the inside as it mimics a dam.)

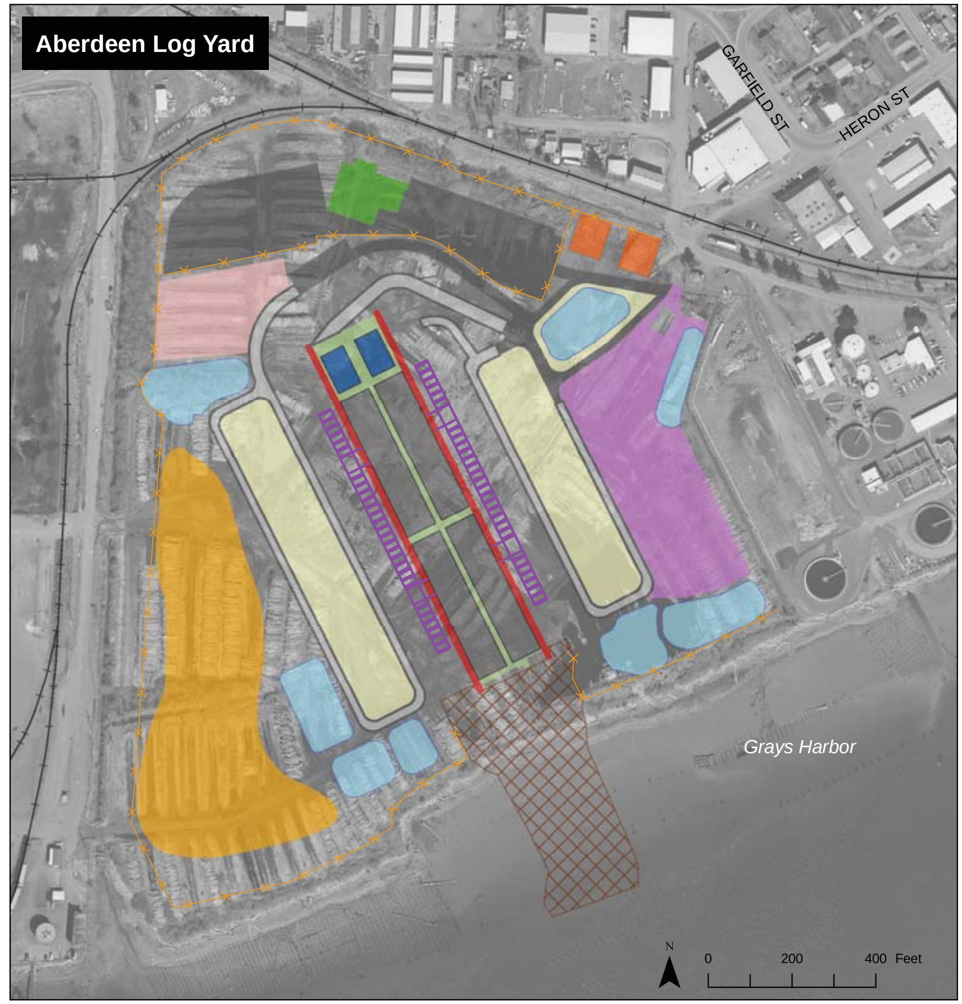
What is the design-builder's proposed approach to the project alternatives?

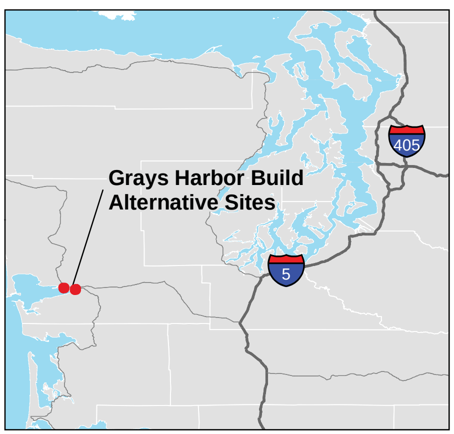
The following paragraphs present only key features of the design-builder's proposed approach to the project alternatives and casting basin facility design, and these descriptions are based on WSDOT's current understanding of the design-builder's conceptual design. Their design effort is ongoing, and WSDOT anticipates that elements of their design concept will be refined as needed to support the environmental process. At this time, the design-builder does not propose using the CTC facility to build pontoons. This Draft EIS, however, analyzes using CTC to allow for its possible use for this project.

The design-builder's conceptual approach would build a single-chamber, single-gate casting basin on either Grays Harbor build alternative site (Exhibit 2-14). The design-builder's conceptual design is within the same site boundaries as described earlier in this chapter and includes the same ancillary facilities—an onsite concrete batch plant, water treatment ponds, parking, access roads, and offices. The design also includes an over-water trestle structure to allow crane access to open and close the casting basin gate. The crane would lift the gate open to flood the basin in order to move the pontoon and then lower the gate back in place.

Casting Basin

The casting basin would be not as deep or wide as WSDOT's preliminary design, but it would be longer, possibly measuring approximately 20 to 30 feet deep, 900 feet long, and 200 feet wide. The casting basin side walls would be sloped instead of straight vertical concrete walls, and the walls would be lined with riprap.





- Fence
- Fish trench
- Tower crane rail
- Gravel access road
- Berm
- Casting basin
- Launch channel
- Longitudinal pontoon
- Supplemental stability pontoon
- Batch plant
- Form fabrication and saw shop
- Laydown area
- Office
- Paved access road and parking
- Receiving area
- Water treatment area

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

Exhibit 2-14. **Design-Build Conceptual Layouts for the Grays Harbor Build Alternative Sites**

SR 520 Pontoon Construction Project

Washington State Department of Transportation

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With a smaller casting basin, there would be less excavation and, therefore, fewer truck trips for hauling material to and from the site during facility construction. Also, the design-builder's approach would place some or all of the excavated material onsite as an earthen berm rather than hauling it offsite for disposal, thus further reducing truck trips.

Laydown Areas

Instead of paving the construction laydown and parking areas with impervious concrete or asphalt, the design-builder proposes to cover these surfaces with gravel, thus allowing surface water to drain and be absorbed into the site soils naturally.

Wastewater Treatment

Treating groundwater, stormwater, and process water would be similar as described in the *Stormwater and Water Treatment* subsection earlier in this chapter and would include onsite treatment ponds. Some process water might be discharged to the local wastewater treatment plant instead of being treated and discharged directly to Grays Harbor.

Launch Channel

The pontoon launch channel would be narrower than the preliminary design presented earlier in this chapter (100-feet-wide versus 300-feet-wide), although the channel would be the same proposed length. With a narrower launch channel, substantially less nearshore and subtidal material would need to be excavated and dredged.

The design-builder does not propose using a cofferdam during launch channel construction to separate the launch channel's in-water portion from the onshore portion. Rather, the design-builder proposes leaving a portion of the shoreline berm in place while they excavate the onshore portion of the launch channel and build the casting basin gate. The shoreline (in-water) side of the launch channel would then be dredged. After the channel is excavated and dredged on either side of the berm and the basin gate is in place, the berm would be breached to connect the onshore and shoreline portions of the channel.

Pontoon Construction and Storage

The design-builder's approach would build 33 pontoons in 6 construction cycles over about 41 months (a little less than 3.5 years). This translates to shorter pontoon construction cycles than described earlier in this chapter (as little as 4.5 months per cycle as opposed to 6 months), which would shorten the time between openings but be the same number of openings and maintenance dredging as with WSDOT's preliminary design. The pontoon towing and mooring approach would remain the same as described earlier.

Next Steps

The design-builder's design is at the conceptual level, and preliminary engineering will continue throughout the NEPA/SEPA process. The Final EIS will focus on the design-builder's preliminary design and associated impacts and mitigation. If at any time during the NEPA/SEPA process the design-builder's approach to casting basin construction is found to result in substantial, adverse environmental effects not disclosed in this Draft EIS, then WSDOT will provide additional documentation as required by NEPA and SEPA.