DESIGNATION OF THE COLUMBIA/SNAKE/WILLAMETTE RIVER SYSTEM

AS A MARINE HIGHWAY CORRIDOR

On October 9, 2008, the Maritime Administration in the U.S. Department of Transportation published an interim final rule (Docket No. MARAD-2008-0096) in the Federal Register. This interim final rule solicited recommendations for short sea transportation routes to be designated as Marine Highway Corridors.

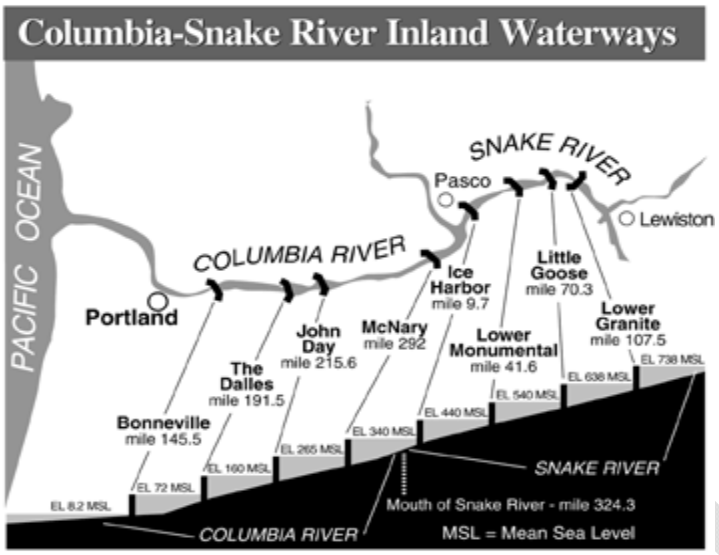
In response to DOT Docket Number MARAD-2008-0096, the Port of Portland and other stakeholders recommend that the Maritime Administration designate the Columbia/Snake/Willamette river system as a Marine Highway Corridor. We believe that this recommendation meets the goal of the designation process: "… to accelerate the development of multi-State and multi-jurisdictional Marine Highway Corridors to relieve landside congestion along highway and railroad corridors" (interim section 393.3(a)).

The following recommendation provides the information requested for designation of a Marine Highway Corridor in interim section 393.3(c).

Physical Description of Proposed Marine Highway Corridor

The recommendation should describe the proposed Marine Highway Corridor, and its connection to existing or planned transportation infrastructure and intermodal facilities. Include key navigational factors such as available draft, channel width, bridge or lock clearance and identify if they could limit service.

The Columbia/Snake/Willamette river system is comprised of a main stem, the Columbia River, and two commercially significant tributaries, the Snake and Willamette Rivers. The Columbia River's headwaters are in Canada from where it flows southward into Washington State, where it is joined first by the Snake River near Kennewick in eastern Washington, and then by the Willamette River, approximately 10 miles north of Portland, Oregon. From there it flows 105 miles to the Pacific Ocean, where the Columbia flows out over the Columbia River Bar, one of the most challenging ocean/river transitions over which deep draft ocean vessels are regularly transited.



The Columbia/Snake/Willamette river system has a long history as a cargo transport pathway. Starting with the Lewis and Clark expedition and continuing to the present day, the river system has been critical to the development of trade in the western United States. Its navigational infrastructure has experienced steady long-term development, beginning with the construction of the Willamette Falls locks at Oregon City and continuing through major dam and lock building programs and channel-deepening projects.

The following are the major ports and terminals and key components of its navigational infrastructure (the data that follows is taken from facility websites and the Columbia/Snake River System and Oregon Coastal Cargo Ports: Marine Transportation System Study, prepared for the Center for Economic Development, Education and Research, June 2005):

Ports, Terminals & Infrastructure on the Columbia River:					
Name	River	Mile	Type	Description & Details	Location
Port of Astoria	Columbia River	13	Publicly Owned	Total of nearly 7,250 feet of dock space on three piers. **Pier 1: -**Modern Concrete Dock Accommodates Vessels up to 1,100 ft, -40 ft Depth, 16 ft Pier Height, -Yokahama Fender System, -Modern Pier Facilities (8000 ppsf load capacity), -3 acres of additional upland staging area, -Fully paved, lighted, utilities, phone, -Gangway 5 ft. wide by 76 ft. long or 4 ft wide by 50 ft. long, **Pier 2: -**Dock accommodates Vessels up to 1,100 ft., -On dock warehouse (71,800 sqft.), -1,300 ft Dock on East side on Pier II 900 ft., -Dock on West side of Pier II, -425 ft Dock on face of Pier, 25'-35' Depth, 16 foot Pier Height, -Lighted, Utilities, Phone, -Gangway 5 ft wide by 76 ft long or 4 ft wide by 50 ft long. **Pier III:** Haul-Out/Boatyard facility and 10 acre boatyard.	Mouth of the Columbia River

Port of Longview	Columbia River	66	Publicly Owned	**Berth 1 (General Cargo and Cruise Line Terminal):** Serves Panamax Vessels, -800 ft in length,- 30 feet MLLW height, -40 ft. MLLW draft, -lights, water, phone, rail access, truck access **Berth 2 (White Bulk Export Facility; Agriproducts, Chemicals, Minerals):** Serves Panamax vessels, -850 ft in length, -30 feet MLLS height, -open width, -no beam restrictions, -40 foot MLLW draft, -77 foot Shiploader Outreach, 67 foot Shiploader Air Draft, dust control, water containment, dry bulk loader, covered conveyer system , hot water and air cleaning system, lights water, phone, direct transfer rail access, storage facilities **Berth 4 (Form bulk loading terminal available for redevelopment):** Lay berth for up to Panamax sized ships, 705 feet long, 30 ft MLLW high, 20 feet wide, no beam restrictions, 40 feet MLLW draft, lights, water, phone, direct transfer or transfer into storage rail service, truck access, grain silo storage. **Berth 5 (Calcined Petroleum Coke Export Facility)**: Panamax vessel capacity, 720 ft. total length, 20 foot MLLW height, 30 foot width, 105 foot beam, 40 foot MLLW draft, 71 foot Shiploader Outreach, 47 foot MLLW Shiploader Air Draft, dust control, electric hydraulic rotating ship loader and electric belt conveyor handling facility, covered storage tanks. **Berth 6 (Breakbulk cargo terminal-steel, project, over dimensional, heavy lift, forest products and general cargo)**: Panamax sized vessel capacity, Berth 6 and 7 have continuous 1,500 foot terminal, 30 foot MLLW height, no beam restrictions, 40 foot MLLW draft, transit equipment handling facilities, lights, water, phone, 3 on dock rail lines, rail spur on inland side of transit shed 6, delivery truck access, covered storage, 35 acres uncovered storage **Berth 7 (Bulk, Breakbulk and container handling terminal)**: Up to Panamax sized vessel capacity, 30 foot MLLW height, no beam restrictions, 40 foot MLLW draft, 104 foot Bulk Unloader Outreach, 70 foot air draft, dust control, water containment, electrically operated container crane, bulk loader, clam shell buckets, portable hopper conveyor system, lights, water, phone, hopper to rail access, hopper to truck access covered storage, 35 paved acres uncovered storage **Berth 8 (Multi-purpose breakbulk and general cargo terminal):** Panamax sized vessel capacity, 617 feet overall length, 120 feet wide, 30 foot MLLW height, no beam restrictions, 40 foot MLLW draft, transit equipment handling facilities, lights, water, phone, truck access, 5 acre uncovered storage **Berth 9 (future terminal expansion site) Ro-Ro (Breakbulk direct to Barge Terminal):** barge vessel capacity, 96 feet long, 22 feet high, 40 feet MLLW, pass/pass handling facilities, lights, water, phone, truck access.	Located 66 miles from the Pacific Ocean in southwest Washington State

Port of Kalama	Columbia River	72	Public and Private Facilities	**North Port Marine Terminal:** 1 berth with 2 trestles, 600'x100' working surface, total dock length 900' (including mooring dolphins, 40' water depth, 18' dock height, cargo handling capacity-heavy equipment or 1000 psf equivalent live load. **Kalama Export Company:** 1 berth, 1,088' length, 40-67' water depth, 25' foot high dock, 2,000,000 bu. storage, 1 belt, 4 spouts, 3,000 tons/hr rated load. **Cenex/United Harvest:** 1 berth, 840' length, 40-45' water depth, 25 foot high dock, 6,400,000 bu. storage, 2 belts, 7 spouts, 850 tons/hr rated load. **Privately Owned Facility Noveon (Formerly BF Goodrich Co.):** 1 berth-680 ft. MLW height-23 ft., Apron width-open, MLW depth-40-50 ft. Use-Receipt of Toluene. **Privately Operated RSG Forest Products:** 1 berth-29 feet, MLW height -16 ft, Apron width-open, MLW depth-23 ft., Handling Facilities-two 10 ton diesel forklift trucks, Use- lumber shipment by ocean-going barges.	Located 72 miles from the Pacific Ocean in southwest Washington State
Warrenton, OR	Columbia River		Public and Private Facilities	300 ft. public wharf, 300 ft. privately owned cannery wharf, Privately owned boat and marina (capacity 80 small boats), small boat basin with facilities for numerous fishing and recreational craft, privately owned lumber mill	Mouth of the Columbia River
Bradwood	Columbia River	38		Proposal to develop an LNG receiving terminal on 55 acres . The terminal will be designed to have a peak capacity of 1.3 billion cubic ft. per day of natural gas	Located between Astoria and Clatskanie on the Columbia River
Ilwaco, WA	Columbia River			800 slip marina	Southwest WA just inside the Columbia River Bar
Port of Rainier	Columbia River		Public and Private Facilities	**Foss shipyard:** vessel construction and major conversions. Foss' Green Assist™ Hybrid Tug, developed for harbor ship assist work, joined the fleet in the ports of Long Beach and Los Angeles in January 2009. / **Teevin Bros.**: log reload facility / **USG**: wallboard manufacturing and distribution.	
Port of St. Helens	Columbia River		Public and Private Facilities	**Scappoose Bay Marine Park:** 21 boat houses, 3 lane boat ramps, 4 floating homes, 100 boat slips, Columbia Co. Marine Patrol home base	Columbia City, OR

Port of Portland	Columbia River	102	Publicly Owned	**Terminal 6 (Container, automobile, and breakbulk complex):** 3 container berths, 2,850 ft. container berth length, 40 ft. min, draft alongside, 125 acres (container facility), 8 container cranes (3 post Panamax) 500,000 TEU throughput, fully grounded reach stacker/top pick operation. 17 acres of breakbulk operated by Oregon Steel Mills, 1 million tons per year of import steel slabs, 130 acres of automobile and light truck handling, processing, and storage facilities (operated by Auto Warehousing Co.), floating dock, autos received by vessel and delivered by rail/truck, direct BNSF Railway service, 62 acres of light truck handling/storage (operated by American Honda Motor Co), 120,000 units per year, receive via ship/rail/truck, BNSF Railway served. **Hayden Island (future maritime expansion):** In order to respond to regional cargo growth projections, the Port has purchased 750 acres in the north Portland Harbor on Hayden Island.	Located near the confluence of the Willamette River and the Columbia River in Portland, OR
Port of Vancouver	Columbia River	105	Publicly Owned	**Terminal 4 Berth 10 (Auto Dock):** 1,040 foot floating auto dock with dolphins, 15 foot dock height, 40 foot MLW berth depth. **Terminal 2 Berth 7 (Dry Bulk Export Dock):** 800 lineal foot dock length with dolphins, 30 foot dock height, 40 foot MLW berth depth. **Terminal 4 Berth 13 and 14 T-Docks (Layberth):** Two t-shaped mooring dolphins, 1,360 lineal foot dock length with dolphins, 30 foot dock height, 40 foot MLW berth depth. **Terminal 2 Berth 5 (Liquid Bulk Dock):** 400 lineal foot dock length with dolphins, 25 foot dock height, 40 foot MLW berth depth.	Located near the confluence of the Willamette River and the Columbia River in Vancouver, WA
Skamania, WA	Columbia River			Skamania, WA: 10 acres of commercially zones waterfront property	
Port of Cascade Locks	Columbia River	148.5	Publicly Owned	**Marina:** 36 slips, 7-10 foot deep entrance, 12-15 foot deep marina depth, sewage dump, home to Sternwheel Columbia Gorge	Located on the Columbia River 40 miles east of Portland, OR
Port of Hood River	Columbia River	169	Publicly Owned	**Marina:** wet moorage, transient tie up, boat launch/retrieval, fueling/pump out, sea plane moorage, tour boat facilities, and small vessel facilities	Located on the Columbia River at I-84 exit #64
Port of Klickitat	Columbia River		Publicly Owned	No marine services	Bingen, WA
Port of The Dalles	Columbia River	190	Publicly Owned	**Marina:** space for 60 boathouses and approx. 63 open moorage positions, boat launch, gas and diesel, boat holding tank pumpout, boat waste dump station	Located on the Columbia River at I-84 exit 85
Port of Rufus	Columbia River				
Port of Arlington	Columbia River			**Marina:** April 1st-Oct. 31st full hook up, Nov. 1st to March 30th electrical and sewer-no water restrooms closed, windsurfing, boat ramps, ramp dock, paved interior road.	Arlington, OR

Port of Morrow	Columbia River		Publicly Owned	**Boardman Industrial Park:** Tidewater Terminal's public container and chip reload, 40 refrigerated container capacity, 20 acres of container yard	Exit 165 off of I-84
Port of Umatilla	Columbia River		Publicly Owned	14' minimum river depth at dock face, 330' dock face with 400' dolphins of each end. Equipped to handle containers, grain, petroleum, and project cargo	Umatilla, OR
Port of Walla Walla	Columbia River	320	Publicly Owned	**Burbank Business Park:** Cargo dock with a berthing space of 60x250 ft, height of 12 feet, 2.7 acre apron, 14 foot water depth, used for general cargo. Barge Slips: space for 2 barge slips, 15 foot normal pool elevation, 16-20 foot normal pool depth, on site rail access, electrical, water, sewer, and gas.	Located at the confluence of the Columbia and Snake Rivers approx. 35 miles west of Walla Walla, WA
Port of Pasco	Columbia River				
Port of Kennewick	Columbia River		Publicly Owned	**Clover Island Marina:** accommodates over 150 vessels 30 to 60 feet with covered and open moorage, 24 hour diesel and gasoline, potable water, 30-amp shore power, seasonal marine dump station, boat haul out trailer.	Kennewick, WA
Port of Benton	Columbia River	343	Publicly Owned	Water depth at dock 17 feet, dock length 100 feet, dock width 60 feet, dock surface loading capacity 5,000 lbs per square foot.	Richland, WA

Ports, Terminals & Infrastructure on the Snake River:					
Name	River	Mile	Type	Description & Details	Location
Mountain Fir Chip Co., Lewiston Division Dock	Snake River	0.5	Privately Owned	Mile 0.5, right bank, Clearwater River, North Lewiston, below Camas Prairie Railroad Bridge. Shipment of wood chips and hogged fuel.	North Lewiston, ID
Port of Lewiston Container Terminal Dock	Snake River	1.1	Publicly Owned	Mile 1.1, right bank, Clearwater River, North Lewiston, approximately 2,500 feet above Camas Prairie. Receipt and shipment of containerized and conventional general cargo, lumber, and paper products. One surface track serving terminal in rear connects with Camas Prairie Railroad.	North Lewiston, ID
Lewis-Clark Terminal, Lewiston Dock	Snake River	1.4	Privately Owned	Mile 1.4, right bank, Snake River, Lewiston, approximately 3,100 feet below Clearwater River Memorial. Shipment of grain. Two surface tracks, total capacity 12 cars each serve an undertrack pit, connect with Camas Prairie Railroad.	North Lewiston, ID
Port of Walla Walla Dock	Snake River	1.7	Publicly Owned	Mile 1.7, left bank Snake River, Burbank, approximately 1,000 feet above Burlington Northern Railroad Br. Mooring river excursion vessels, boarding passengers.	Burbank, WA
Co-Grain, Burbank Elevator Barge Slip	Snake River	1.8	Privately Owned	Mile 1.8, left bank Snake River, Burbank, approximately 2,000 feet below U.S. Highway 12 Bridge. Shipment of grain.	Burbank, WA

Cargill, Burbank Grain Elevator Dock	Snake River	2	Privately Owned	Mile 2.0,, Left bank Snake River, Burbank, approximately 1,000 feet below U.S. Highway 12 Bridge. Shipment of grain. One surface track, total capacity 26 cars, serves loading spout; connects with Burlington Northern Railroad.	Burbank, WA
Northwest Terminalling Co., East Pasco Terminal Dock	Snake River	2.2	Privately Owned	Mile 2.2, Right bank Snake River, Pasco, below U.S. Highway 12 Bridge. Receipt and shipment of petroleum products.	Pasco, WA
Tidewater Terminal Co., Pasco Terminal, Mooring Docks	Snake River	2.7	Privately Owned	Mile 2.7, Right bank Snake River, Pasco, approximately 2,500 feet above U.S. Highway 12 Bridge. Mooring vessels and barges; handling supplies. Two surface tracks serve terminal in rear; connect with Burlington Northern Railroad.	Pasco, WA
Tidewater Terminal Co., Pasco Terminal, Petroleum Dock	Snake River	2.9	Privately Owned	Mile 2.9, Right bank Snake River, Pasco, approximately 0.7 mile above U.S. Highway 12 Bridge. Receipt and shipment of petroleum products. Two surface tracks serve terminal in rear; connect with Burlington Northern Railroad.	Pasco, WA
Tidewater Terminal Co., Pasco Terminal, Fertilizer Dock	Snake River	3	Privately Owned	Mile 3.0, Right bank Snake River, Pasco, approximately 0.9 mile above U.S. Highway 12 Bridge. Receipt and occasional shipment of liquid fertilizer. Two surface tracks serve terminal in rear, connect with Burlington Northern Railroad.	Pasco, WA
Walla Walla Grain Growers, Sheffler Dock	Snake River	29	Privately Owned	Mile 29.0, left bank Snake River, Sheffler. Shipment of grain.	Sheffler, WA
Louis Dreyfus Corp., Windust Elevator Dock	Snake River	38.5	Privately Owned	Mile 38.5, right bank Snake River, Windust, approximately 3 miles below Lower Monumental Lock and Dam. Shipment of grain.	Windust, WA
Columbia County Grain Growers, Lyons Ferry Dock	Snake River	62.1	Privately Owned	Mile 61.1, Left bank Snake River, Lyons Ferry, approximately 0.6 mile below Union Pacific Railroad Bridge. Shipment of grain.	Lyons Ferry, WA
Pomeroy Grain Growers Dock	Snake River	83.0	Privately Owned	Mile 83.0, left bank Snake River, Central Ferry, below Central Ferry (State Highway 127) Bridge. Shipment of grain.	Central Ferry, WA
Columbia Grain International, Central Ferry Elevator Dock	Snake River	83.5	Privately Owned	Mile 83.5, right bank, Snake River, Central Ferry, approximately 1,500 feet above Central Ferry. Shipment of grain.	Central Ferry, WA
Central Ferry Terminal Association Grain Dock	Snake River	83.7	Privately Owned	Mile 83.7, right bank Snake River, Central Ferry, approximately 0.5 mile above Central Ferry. Shipment of grain.	Central Ferry, WA
Port of Whitman; Boettcher Landing Dock	Snake River	84.0	Publicly Owned	Mile 84.0, Right bank Snake River, Central Ferry, approximately 0.8 mile above Central Ferry. Receipt of anhydrous ammonia; Mooring barges. One 5-car capacity surface track serves tankage in rear connects with Camas Prairie Railroad.	Central Ferry, WA
Almota Elevator Co. Dock	Snake River	103.6	Privately Owned	Mile 103.6, right bank, Snake River, Almota, approximately 3.8 miles below Lower Granite Lock and Dam. Shipment of grain.	Almota, WA
S & R Grain Co., Port of Almota Dock	Snake River	10.0	Privately Owned	Mile 103.7, right bank, Snake River, Almota, approximately 3.8 miles below Lower Granite Lock and Dam. Shipment of grain.	Almota, WA

Tidewater Terminal Co., Wilma Dock	Snake River	135.3	Privately Owned	Mile 135.3, right bank Snake River, Wilma, approximately 2 miles below Red Wolf (State Highway 193). Receipt of petroleum products and liquid fertilizer; Receipt and shipment of containerized general cargo; Mooring for fleeting and repair (See Remarks). One 12-car capacity surface track, serves terminal in rear; connects with Camas Prairie Railroad.	Wilma, WA
Granger Co., Wilma Dock	Snake River	136.0	Privately Owned	Mile 136.0, right bank, Snake River, Wilma, approximately 1.8 miles below Red Wolf (State Highway 193). Shipment of wood chips. One surface track serves open storage area in rear; connects with Camas Prairie Railroad.	Wilma, WA
Port of Whitman County, Site I Wharf	Snake River	135.6	Publicly Owned	Mile 135.6, right bank Snake River, Wilma, approximately 1.6 miles below Red Wolf (State Highway 193). Shipment of logs. One surface track serves open storage area in rear; connects with Camas Prairie Railroad.	Wilma, WA
Foss Maritime Co. Wood Chip Dock	Snake River	135.7	Privately Owned	Mile 135.7, right bank Snake River, Wilma, approximately 1.5 miles below Red Wolf (State Highway 193). Shipment of wood chips.	Wilma, WA
Mountain Fir Chip Co., Wilma Division, Dock	Snake River	136.0	Privately Owned	Mile 136.0, right bank Snake River, Wilma, approximately 1.3 miles below Red Wolf (State Highway 193) Br. Shipment of wood chips.	Wilma, WA
Stegner Grain Terminal Dock	Snake River	136.5	Privately Owned	Mile 136.5, right bank Snake River, Wilma, approximately 0.8 mile below Red Wolf (State Highway 193) Bridge. Shipment of grain. One surface track serves separate grain elevator in rear; connects with Camas Prairie Railroad.	Wilma, WA
Port of Whitman County, Site A Dock	Snake River	137.0	Publicly Owned	Mile 137.0, right bank Snake River, Wilma, approximately 1,000 feet below Red Wolf (State Highway 193) Br. Receipt and shipment of logs and miscellaneous general cargo; mooring barges.	Wilma, WA
Port of Clarkston Dock	Snake River	137.8	Publicly Owned	Mile 137.8, left bank, Snake River, Clarkston, approximately 2,000 feet above Red Wolf (State Highway 193). Receipt and shipment of containerized and conventional general cargo, logs and heavy-lift items.	Clarkston, WA
Lewis-Clark Terminal, Clarkston Grain Terminal Dock	Snake River	138.4	Privately Owned	Mile 138.4, left bank, Snake River, Clarkston, approximately one mile below mouth of Clearwater River. Shipment of grain.	Clarkston, WA

Ports, Terminals & Infrastructure on the Willamette River:					
Name	River	Mile	Type	Description & Details	Location
Port of Portland Terminal 5, Berth 501 Grain Terminal Dock	Willamette River	1	Publicly Owned	Willamette River, Mile 1.0, right bank, above entrance to Columbia Slough. Receipt and shipment of grain. Four surface tracks encircle elevator and serve two undertrack pits, total capacity 125 cars, connect with Union Pacific Railroad.	Portland, OR, Metro Region

STC Submarine Systems Dock	Willamette River	1.2	Privately Owned	Right bank, Willamette River Mile 1.2, approximately 0.4 mile above entrance to Columbia Slough. Specialty berth designed for the loading of subsea fiber optic cable. Not in operation. Trackage serving plant in rear connects with Union Pacific Railroad.	Portland, OR, Metro Region
Port of Portland Terminal 5, Berth 503 Bulk Handling Wharf	Willamette River	1.4	Publicly Owned	Right bank, Willamette River Mile 1.4, approximately 0.5 mile above entrance to Columbia Slough. One surface track serves rotary rail car dumpers; connects with Union Pacific Railroad.	Portland, OR, Metro Region
Linnton Plywood Association, Portland Dock	Willamette River	1.4	Privately Owned	Mile 4.5, left bank, Willamette River, approximately 1.4 miles below St. Johns Bridge, Portland.	Portland, OR, Metro Region
Oregon Steel Mills Dock	Willamette River	2.3	Privately Owned	Right bank, Willamette River Mile 2.3, approximately 1.2 miles above entrance to Columbia Slough. Mooring miscellaneous vessels, occasionally for repair. One surface track at rear of wharf approach joins additional plant trackage; connects with Union Pacific Railroad.	Portland, OR, Metro Region
Unocal Rivergate/Portland Agricultural Terminal Dock	Willamette River	2.6	Privately Owned	Right bank, Willamette River, mile 2.6, approximately 1.5 miles above entrance to Columbia Slough. Receipt of granulated bulk urea; receipt and shipment of anhydrous ammonia; shipment of caustic soda and sulfuric acid.	Portland, OR, Metro Region
Ash Grove Cement Co. Rivergate Plant, Dock	Willamette River	2.8	Privately Owned	Right bank, Willamette River, mile 2.8, approximately 3.1 miles below St. Johns Bridge. Receipt of limestone. One surface track serves open storage area in rear; connects with Union Pacific Railroad.	Portland, OR, Metro Region
James River Corp., Western Transportation, Rivergate Barge Wharf	Willamette River	3	Privately Owned	Right bank, Willamette River, mile 3.0, approximately 2.9 miles below St. Johns Bridge. Receipt and shipment of general cargo, Receipt of starch and woodpulp; shipment of paper products by barge. Two platform-level tracks inside transit shed with 25 carloading positions; connect with Union Pacific Railroad.	Portland, OR, Metro Region
Time Oil Co., Rivergate Terminal Wharf	Willamette River	3.4	Privately Owned	Right bank, Willamette River, mile 3.4, approximately 2.5 miles below St. Johns Bridge. Receipt and shipment of petroleum products. One 6-car-capacity surface track serving tank car loading rack at rear, connects with Union Pacific Railroad.	Portland, OR, Metro Region
Georgia-Pacific Corp. Linton Wood Chip Dock	Willamette River	3.5	Privately Owned	Mile 3.5, left bank, Willamette River, approximately 2.4 miles below St. Johns Bridge, Portland. Shipment of wood chips. Three surface tracks in rear, total capacity 46 cars, serve rotary rail car dumper; connect with Burlington Northern Railroad.	Portland, OR, Metro Region
Premier Edible Oils Corp Dock	Willamette River	3.6	Privately Owned	Right bank, Willamette River, mile 3.6, approximately 2.3 miles below St. Johns Bridge. Receipt of crude palm, coconut, and palm kernel oil; occasional shipment of coconut oil. Two surface tracks serve 2 tank car loading racks at plant in rear; connect with Union Pacific Railroad.	Portland, OR, Metro Region

Trumbull Asphalt, Linnton Terminal Wharf	Willamette River	3.7	Privately Owned	Mile 3.7, left bank, Willamette River, approximately 2.2 miles below St. Johns Bridge, Portland. Occasional receipt of asphalt. One surface track serving plant in rear connects with Burlington Northern Railroad.	Portland, OR, Metro Region
International Terminals Berths 1, 2, and 3 Wharf	Willamette River	3.9	Privately Owned	Right bank, Willamette River, mile 3.9, approximately 2.2 miles below St. Johns Bridge. Shipment of scrap metal; Receipt and shipment of steel products, and miscellaneous bulk materials, including pig iron and magnesite; Mooring for ship breaking. Two surface tracks on wharf and 4 in rear join additional yard trackage total length approximately 15 miles; connect with Union Pacific Railroad.	Portland, OR, Metro Region
International Terminals Berth 5, Layup Mooring	Willamette River	4	Privately Owned	Right bank, Willamette River, mile 4.0, approximately 2.1 miles below St. Johns Bridge. Mooring vessels. Trackage serving terminal at rear, connects with Union Pacific Railroad.	Portland, OR, Metro Region
International Terminals Berth 4, Bulk Loader Dock	Willamette River	4.1	Privately Owned	Right bank, Willamette River, mile 4.1, approximately 2 miles below St. Johns Bridge. Shipment of miscellaneous bulk commodities, including scrap metal, ore, sand and petroleum coke. Trackage serving terminal at rear, total length approximately 15 miles, connects with Union Pacific Railroad.	Portland, OR, Metro Region
GATX Tank Storage Terminals Corp., Portland Dock	Willamette River	4.1	Privately Owned	Mile 4.1, left bank, Willamette River, approximately 1.8 miles below St. Johns Bridge, Portland. Receipt and shipment of liquid bulk commodities and petroleum products. Two tracks in rear, total capacity 9 cars, connect with Burlington Northern Railroad.	Portland, OR, Metro Region
Port of Portland Terminal 4, Grain Elevator, Berth 401	Willamette River	4.2	Publicly Owned	Right bank, Willamette River, mile 4.2, approximately 1.7 miles below St. Johns Bridge. Shipment of grain. Four surface tracks serve undertrack pits and loading spout at grain elevator in rear, connect with Union Pacific Railroad.	Portland, OR, Metro Region
Port of Portland Terminal 4, Berths 406, 407, and 408	Willamette River	4.4	Publicly Owned	Right bank, Willamette River, mile 4.4, approximately 1.5 miles below St. Johns Bridge. Receipt and shipment of conventional and containerized general cargo in foreign and domestic trade. Two surface tracks along face, Berth 408 and one along rear of transit sheds connect with Union Pacific Railroad.	Portland, OR, Metro Region
Port of Portland Terminal 4, Roll-on Roll-off Facility, Berth 408	Willamette River	4.4	Publicly Owned	Right bank, Willamette River, mile 4.4, approximately 1.5 miles below St. Johns Bridge, head of Slip 1. Receipt and shipment of roll-on roll-off general cargo in foreign and domestic trade. Trackage serving terminal at rear connects with Union Pacific Railroad.	Portland, OR, Metro Region
Port of Portland Terminal 4, Pier 1, Berths 403, 404, and 405	Willamette River	4.4	Publicly Owned	Right bank, Willamette River, mile 4.4, approximately 1.5 miles below St. Johns Bridge. Receipt and shipment of molasses and liquid fertilizer. Receipt of grain. Four surface tracks serve undertrack pits and loading spout at grain elevator and two serve tankage at molasses terminal in rear, connect with Union Pacific Railroad.	Portland, OR, Metro Region

Port of Portland Terminal 4, Harbor Patrol and Fireboat Mooring	Willamette River	4.5	Publicly Owned	Right bank, Willamette River, mile 4.5, approximately 1.4 miles below St. Johns Bridge. Mooring fireboats and harbor patrol vessels. City of Portland Fire Bureau; and Multnomah County, Division of Public Safety.	Portland, OR, Metro Region
Port of Portland Terminal 4, Berth 412	Willamette River	4.6	Publicly Owned	Right bank, Willamette River, mile 4.6, south side of Slip 3 approximately 1.3 miles below St. Johns Bridge. Mooring vessels and barges. Terminal trackage in rear connects with Union Pacific Railroad.	Portland, OR, Metro Region
Port of Portland Terminal 4, Berths 411 and 410	Willamette River	4.6	Publicly Owned	Right bank, Willamette River, mile 4.6, approximately 1.3 miles below St. Johns Bridge. Receipt and shipment of miscellaneous bulk commodities; including receipt of coal tar pitch and alumina; and shipment of soda ash, bentonite clay, talc, sodium sulphite and soybean meal. Three surface tracks along face join 2 serving undertrack pits and 2 storage tracks in rear; total capacity 300 cars; connect with Union Pacific Railroad.	Portland, OR, Metro Region
Port of Portland Terminal 4, Berths 415 and 414	Willamette River	4.8	Publicly Owned	Right bank, Willamette River, mile 4.8, approximately 1.1 mile below St. Johns Bridge. Receipt and shipment of conventional, general cargo, steel and lumber. Two parallel, 800-foot-long, connecting surface tracks perpendicular to face of wharf extend through center of open storage area, connect with Union Pacific Railroad.	Portland, OR, Metro Region
ARCO Products Co., Linnton Terminal Wharf	Willamette River	4.9	Privately Owned	Mile 4.9, left bank, Willamette River, approximately 1.0 mile below St. Johns Bridge, Portland. Receipt and shipment of petroleum products. One surface track in rear connects with Burlington Northern Railroad.	Portland, OR, Metro Region
Mobil Oil Corp., Linnton Terminal Wharf	Willamette River	5	Privately Owned	Mile 5.0, left bank, Willamette River, approximately 0.9 mile below St. Johns Bridge, Portland. Receipt and shipment of petroleum products; loading barges for bunkering vessels at berth. Plant trackage in rear connects with Burlington Northern Railroad.	Portland, OR, Metro Region
Port of Portland Terminal 4, Automobile Unloading Dock, Berth 416	Willamette River	5.1	Publicly Owned	Right Bank, Willamette River, mile 5.1, approximately 0.8 mile below St. Johns Bridge. Receipt of automobiles. One surface ladder track with five body tracks, total capacity 25 cars, in rear of open storage area connects with Union Pacific Railroad.	Portland, OR, Metro Region
Time Oil Co., Linnton Terminal Wharf	Willamette River	5.3	Privately Owned	Mile 5.3, left bank, Willamette River, approximately 0.6 mile below St. Johns Bridge, Portland. Receipt and shipment of petroleum products.	Portland, OR, Metro Region
Foss Maritime Co., Portland Mooring	Willamette River	5.5	Privately Owned	Mile 5.5, left bank, Willamette River, approximately 0.4 mile below St. Johns Bridge, Portland. Mooring and repairing company-owned floating equipment.	Portland, OR, Metro Region
Nichols Marine Ways Portland, Wharf	Willamette River	5.7	Privately Owned	Right Bank, Willamette River, mile 5.7, approximately 0.2 mile below St. Johns Bridge. Mooring vessels awaiting repair.	Portland, OR, Metro Region
Riverside Industrial Park, Piers and Barge Slips	Willamette River	5.9	Privately Owned	Mile 5.9, left bank, Willamette River, beneath St. Johns Bridge, Portland. Mooring company-owned floating equipment; handling construction equipment and supplies.	Portland, OR, Metro Region

U. S. Army Corps of Engineers, Portland Mooring Docks A and B	Willamette River	6	Publicly Owned	Mile 6.0, left bank, Willamette River, approximately 0.1 mile above St. Johns Bridge, Portland. Mooring, repairing and outfitting Corps of Engineers' floating equipment. One surface track at rear of property connects with Burlington Northern Railroad.	Portland, OR, Metro Region
Pacific Northern Oil Corp., Portland Terminal Wharf	Willamette River	6.2	Privately Owned	Mile 6.2, left bank, Willamette River, approximately 0.3 mile above St. Johns Bridge, Portland. Receipt and shipment of petroleum products; fueling towboats. Plant trackage in rear connects with Burlington Northern Railroad.	Portland, OR, Metro Region
McCormick & Baxter Wharf	Willamette River	7	Privately Owned	Right Bank, Willamette River, mile 7.0, above Burlington Northern Railroad Bridge. Mooring miscellaneous vessels and barges. Trackage in rear connects with Union Pacific Railroad.	Portland, OR, Metro Region
Elf Atochem North America, Portland Plant, Dock 2	Willamette River	7.3	Privately Owned	Mile 7.3, left bank, Willamette River, approximately 0.4 mile above Burlington Northern Railroad bridge. Shipment and occasional receipt of liquid caustic soda, chlorine, and sodium chlorate solutions. Six surface tracks serve plant in rear; connect with Burlington Northern Railroad.	Portland, OR, Metro Region
Elf Atochem North America, Portland Plant, Dock 1	Willamette River	7.4	Privately Owned	Mile 7.4, left bank, Willamette River, approximately 0.5 mile above Burlington Northern Railroad bridge. Mooring vessels. Six surface tracks serve plant in rear; connect with Burlington Northern Railroad.	Portland, OR, Metro Region
Willamette Western Corp., Piers	Willamette River	7.5	Privately Owned	Right Bank, Willamette River, mile 7.5, approximately 0.8 mile above Burlington Northern Railroad Bridge. Mooring floating equipment for repair. Trackage in rear connects with Union Pacific Railroad.	Portland, OR, Metro Region
Elf Atochem North America, Portland Plant, Dock 3	Willamette River	7.5	Privately Owned	Mile 7.5, left bank, Willamette River, approximately 0.6 mile above Burlington Northern Railroad bridge. Receipt of salt by self-unloading vessels. Six surface tracks serve plant in rear; connect with Burlington Northern Railroad.	Portland, OR, Metro Region
GATX Terminals Corp., Willbridge Plant Pier	Willamette River	7.6	Privately Owned	Mile 7.6, left bank, Willamette River, approximately 0.7 mile above Burlington Northern Railroad bridge. Receipt and shipment of petroleum products. Terminal trackage in rear connects with Burlington Northern Railroad.	Portland, OR, Metro Region
Chevron U.S.A., Willbridge Terminal Pier	Willamette River	7.7	Privately Owned	Mile 7.7, left bank, Willamette River, approximately 0.8 mile above Burlington Northern Railroad bridge. Receipt and shipment of petroleum products; receipt of crude oil; bunkering tugboats. Terminal trackage in rear connects with Burlington Northern Railroad.	Portland, OR, Metro Region
Unocal Petroleum Products and Chemicals Division, Portland Terminal	Willamette River	7.8	Privately Owned	Mile 7.8, left bank, Willamette River, approximately 0.9 mile above Burlington Northern Railroad bridge. Receipt and shipment of petroleum products; loading barges for bunkering vessels at berth. Terminal trackage in rear connects with Burlington Northern Railroad.	Portland, OR, Metro Region

Swan Island Ship Repair Yard, Berths 315, 314, 31	Willamette River	8	Privately Owned	Right bank, Willamette River, mile 8.0, lower end, south side of Swan Island. Mooring vessels for repair, conversion, and outfitting; mooring floating drydock. Trackage serving shipyard in rear connect with Union Pacific Railroad.	Portland, OR, Metro Region
U.S. Coast Guard Group, Portland; Mooring Floats and Pier	Willamette River	8	Publicly Owned	Right bank, Willamette River, mile 8.0, north side at entrance to Swan Island Basin. Mooring and repairing U.S. Coast Guard vessels.	Portland, OR, Metro Region
McCall Oil and Chemical Co., Portland Terminal Wharf	Willamette River	8	Privately Owned	Mile 8.0, left bank, Willamette River, approximately 1.1 miles above Burlington Northern Railroad bridge. Receipt and shipment of petroleum products; fueling towboats, and loading barges for bunkering vessels at berth. One surface track at rear connects with Burlington Northern Railroad.	Portland, OR, Metro Region
Swan Island Ship Repair Yard, Pier C, Berths 309	Willamette River	8.1	Privately Owned	Right bank, Willamette River, mile 8.1, lower end of Swan Island. Mooring vessels for repair, conversion, and outfitting; mooring floating drydock. One surface track in center of pier joins additional yard trackage; connects with Union Pacific Railroad.	Portland, OR, Metro Region
U.S. Naval and Marine Corps Reserve Portland Pier	Willamette River	8.1	Publicly Owned	Right bank, Willamette River, mile 8.1, north side of Swan Island Basin. Mooring Naval Reserve vessels.	Portland, OR, Metro Region
Lone Star Northwest, Front Avenue Plant Pier	Willamette River	8.1	Privately Owned	Mile 8.1, left bank, Willamette River, approximately 1.2 miles above Burlington Northern Railroad bridge. Receipt of sand and gravel by self-unloading vessels.	Portland, OR, Metro Region
Swan Island Ship Repair Yard, Small Craft Mooring	Willamette River	8.2	Privately Owned	Right bank, Willamette River, mile 8.2, south side slip on lower end of Swan Island. Mooring small craft and floating staging for ship repair. Trackage serving shipyard in rear connect with Union Pacific Railroad.	Portland, OR, Metro Region
Fred Devine Diving & Salvage Co. Dock	Willamette River	8.2	Privately Owned	Right bank, Willamette River, mile 8.2, north side of Swan Island Basin. Mooring company-owned floating equipment; Handling supplies and equipment.	Portland, OR, Metro Region
Swan Island Ship Repair Yard Pier A, Berths 301	Willamette River	8.3	Privately Owned	Right bank, Willamette River, mile 8.3, south side of Swan Island Basin. Mooring vessels for repair, conversion, and outfitting; mooring floating drydock. Trackage serving shipyard in rear connects with Union Pacific Railroad.	Portland, OR, Metro Region
Seaplane Hangar Dock	Willamette River	8.3		Right bank, Willamette River, mile 8.3, north side of Swan Island Basin. Mooring miscellaneous vessels and barges.	Portland, OR, Metro Region
Shaver Transportation Co., Portland Mooring	Willamette River	8.3	Privately Owned	Mile 8.3, left bank, Willamette River, approximately 1.4 miles above Burlington Northern Railroad bridge. Mooring company-owned floating equipment.	Portland, OR, Metro Region

Lakeside Industries, Portland Pier	Willamette River	8.4	Privately Owned	Mile 8.4, left bank, Willamette River, approximately 1.5 miles above Burlington Northern Railroad bridge. Receipt of aggregate by self-unloading vessels.	Portland, OR, Metro Region
Gunderson Marine, Portland Outfitting Pier	Willamette River	8.5	Privately Owned	Mile 8.5, left bank, Willamette River, approximately 1.6 miles above Burlington Northern Railroad bridge. Mooring vessels and barges for occasional outfitting and repair. Plant trackage in rear connects with Burlington Northern Railroad	Portland, OR, Metro Region
Texaco Refining and Marketing, Portland Terminal Wharf	Willamette River	8.7	Privately Owned	Mile 8.7, left bank, Willamette River, approximately 1.8 miles above Burlington Northern Railroad bridge. Receipt and shipment of petroleum products.	Portland, OR, Metro Region
Swan Island Ship Repair Yard, Berths 306, 307	Willamette River	8.9	Privately Owned	Right bank, Willamette River, mile 8.9, south side of Swan Island Basin. Trackage serving shipyard in rear connects with Union Pacific Railroad.	Portland, OR, Metro Region
Swan Island Ship Repair Yard, Berth 311	Willamette River	8.9	Privately Owned	Right bank, Willamette River, mile 8.9, north side of Swan Island Basin.	Portland, OR, Metro Region
Gunderson Marine, Portland Berthing and Outfitting Dock	Willamette River	9	Privately Owned	Mile 9.0, left bank, Willamette River, approximately 2.1 miles above Burlington Northern Railroad bridge. Mooring vessels for outfitting and repair. Two surface tracks join additional trackage serving shipyard connect with Burlington Northern Railroad.	Portland, OR, Metro Region
Waterway Terminals Co., Portland Front Avenue Wharf	Willamette River	9.3	Privately Owned	Mile 9.3, left bank, Willamette River, approximately 2.4 miles above Burlington Northern Railroad bridge. Receipt and shipment of conventional general cargo in foreign and domestic trade by barge.	Portland, OR, Metro Region
Western Transportation, Portland Mooring Wharf	Willamette River	9.6	Privately Owned	Mile 9.6, left bank, Willamette River, approximately 2.7 miles above Burlington Northern Railroad bridge. Mooring company-owned vessels.	Portland, OR, Metro Region
City of Portland, Fireboat No. 2 Dock	Willamette River	9.6	Publicly Owned	Mile 9.6, left bank, Willamette River, approximately 2.7 miles above Burlington Northern Railroad bridge. Mooring fireboats and harbor patrol vessels.	Portland, OR, Metro Region
Port of Portland Terminal 2, Berth 203	Willamette River	9.7	Publicly Owned	Left bank, Willamette River, mile 9.7, approximately 1.3 miles below Fremont Bridge. Receipt and shipment of wood pulp and paper products by vessel and barge; Mooring excursion vessels.	Portland, OR, Metro Region
Port of Portland Terminal 2, Berths 204, 205 and 206	Willamette River	10	Publicly Owned	Left bank, Willamette River, mile 10.0, approximately 1.1 mile below Fremont Bridge. Receipt and shipment of conventional, containerized, roll-on, roll -off general and refrigerated cargo in foreign and domestic trade, including receipt of steel, shipment of lumber. etc.	Portland, OR, Metro Region
Columbia Aluminum, Portland Wharf	Willamette River	10	Privately Owned	Mile 10.0, right bank, Willamette River, approximately 1.0 mile below Fremont Bridge, Portland. Receipt of alumina by vessel.	Portland, OR, Metro Region
Sulzer-Bingham Pumps, Dock	Willamette River	10.6	Privately Owned	Left bank, Willamette River, mile 10.3, approximately 0.8 mile below Fremont Bridge. Mooring vessels, Handling various supplies and equipment.	Portland, OR, Metro Region

Ash Grove Cement Co., Portland Wharf	Willamette River	10.6	Privately Owned	Mile 10.6, right bank, Willamette River, approximately 0.5 mile below Fremont Bridge, Portland. Receipt of bulk cement.	Portland, OR, Metro Region
Terminal 1; Berth 104	Willamette River	10.7	Privately Owned	Left bank, Willamette River, mile 10.7, approximately 0.3 mile above Fremont Bridge	Portland, OR, Metro Region
Terminal 1, Berths 105 and 106	Willamette River	11	Privately Owned	Left bank, Willamette River, mile 11.0 above Fremont Bridge.	Portland, OR, Metro Region
Lone Star Northwest, River Street Terminal Mooring	Willamette River	11.2	Privately Owned	Mile 11.2, right bank, Willamette River, approximately 0.1 mile above Fremont Bridge, Portland. Mooring company-owned floating equipment.	Portland, OR, Metro Region
Ross Island Sand & Gravel Co., Albina Plant Dock	Willamette River	11.2	Privately Owned	Mile 11.2, right bank, Willamette River, above Fremont Bridge, Portland. Receipt of sand and gravel by barge.	Portland, OR, Metro Region
Lone Star Northwest, River Street Terminal Dock	Willamette River	11.3	Privately Owned	Mile 11.3, right bank, Willamette River, approximately 0.2 mile above Fremont Bridge, Portland. Receipt of bulk cement.	Portland, OR, Metro Region
Cargill, Portland Wharf	Willamette River	11.5	Privately Owned	Mile 11.5, right bank, Willamette River, approximately 0.2 mile below Broadway Bridge, Portland. Shipment of grain.	Portland, OR, Metro Region
Cargill, Portland Barge Dock	Willamette River	11.6	Privately Owned	Mile 11.6, right bank, Willamette River, approximately 0.1 mile below Broadway Bridge, Portland. Receipt of grain by barge.	Portland, OR, Metro Region
Louis Dreyfus Corp., Portland Barge Dock	Willamette River	11.9	Privately Owned	Mile 11.9, right bank, Willamette River, approximately 0.2 mile below Steel Bridge, Portland. Receipt of grain by barge.	Portland, OR, Metro Region
Louis Dreyfus Corp., Portland Wharf	Willamette River	12	Privately Owned	Mile 12.0, right bank, Willamette River, approximately 0.1 mile below Steel Bridge, Portland. Shipment of grain.	Portland, OR, Metro Region
City of Portland Governor Tom McCall Waterfront Park Landing	Willamette River	12.4	Publicly Owned	Left bank, Willamette River, mile 12.4, between Burnside and Morrison Bridges. Mooring excursion vessel 'Spirit of Portland'; Boarding passengers.	Portland, OR, Metro Region
City of Portland, Engine 7 Dock	Willamette River	13	Publicly Owned	Mile 13.0, right bank, Willamette River, below Hawthorne Bridge, Portland.	Portland, OR, Metro Region
Portland General Electric Co., Station L, Upper Dock	Willamette River	13.6	Privately Owned	Mile 13.6, right bank, Willamette River, approximately 0.1 mile above Marquam Bridge, Portland.	Portland, OR, Metro Region
Lone Star Northwest, Portland Mooring	Willamette River	13.8	Privately Owned	Mile 13.8, right bank, Willamette River, approximately 0.2 mile below Ross Island Bridge, Portland.	Portland, OR, Metro Region
Zidell Marine Group Wharf	Willamette River	13.9	Privately Owned	Left bank, Willamette River, mile 13.9, below Ross Island Bridge. Mooring floating equipment; Handling supplies and equipment.	Portland, OR, Metro Region
Ross Island Sand & Gravel Co., Tait Plant Dock	Willamette River	13.9	Privately Owned	Mile 13.9, right bank, Willamette River, below Ross Island Bridge, Portland. Receipt of sand and gravel.	Portland, OR, Metro Region
Lone Star Northwest, City Center Plant Dock	Willamette River	13.9	Privately Owned	Mile 13.9, right bank, Willamette River, approximately 750 feet below Ross Island Bridge, Portland.	Portland, OR, Metro Region
Ross Island Sand & Gravel Co., Hardtack Island Mooring	Willamette River	14	Privately Owned	Mile 14.0, right bank, Willamette River, southwest side of Hardtack Island, Portland. Receipt and shipment of sand and gravel.	Portland, OR, Metro Region

James River Corp.; Lake Oswego Wood Chip Transfer Dock	Willamette River	20.4	Privately Owned	Left bank, Willamette River, mile 20.4, 0.4 mile above Southern Pacific Transportation Co. bridge. Shipment of wood chips by barge.	Lake Oswego, OR
Simpson Paper Co.; Evergreen Mill Wharf	Willamette River	26.4	Privately Owned	Willamette River, mile 26.4, left bank, southeast side of Willamette Falls canal basin. Receipt of bagged starch, clay and baled wood pulp; Shipment of paper rolls.	Oregon City, OR

Navigational Infrastructure on the Columbia River: Name	River	Mile (start)	Mile (end)	Type	Location	Description
Ilwaco Channel	C	5	at Ilwaco	Dredged and maintained channel	Baker Bay	
Columbia River 40' Deepwater Channel	C	12	105	Dredged and maintained channel	Lower Columbia River from Astoria, OR to Vancouver, WA.	The Columbia River, from the inside of the Columbia River Bar to Portland, OR/ Vancouver, WA is maintained by the US Army Corps of Engineers to a depth of -40' CRD and a width of 600'. In 2010 a channel deepening project will be completed which will deepen this channel to -43' CRD.
Astoria North Anchorage	C	14	17.73	Anchorage	On N side of main navigation channel at Astoria, OR	This anchorage is approximately 2.5 miles long. Under normal conditions, there is room for six vessels to be anchored within this anchorage area. Depths in this anchorage range from 24' (7.315M) to over 45' (13.716M) *M*ean *L*ower *L*ow *W*ater (MLLW). Deeper anchorages are to the east.
Astoria South Anchorage	C	15	18.21	Anchorage	On S side of main navigation channel at Astoria, OR	This anchorage is approximately 2.75 miles long and is divided into anchorage spots approximately every ½ mile. Under normal conditions, there is room for four vessels to be anchored within this anchorage area. Depths in this anchorage range from 20' (6.096M) to over 45' (13.716M) Mean Lower Low Water (MLLW). Deeper anchorages are on either end.
Longview Anchorage	C	64	65.75	Anchorage	About 0.5 Mi. downstream of the interstate bridge in Longview, WA	This anchorage runs from buoy #23 to the Longview Bridge (approx.. 1.5 nautical miles) and can accommodate five vessels. Depths in this anchorage range from 29' to 40' Columbia River Datum (CRD).
Kalama Anchorage	C	73.21	76.16	Anchorage	Kalama, WA	This anchorage is approximately 1.25 miles long and will accommodate six vessels. Depths in the anchorage range from 26' to over 40' Columbia River Datum (CRD).

Woodland Anchorage	C	83.56	84.25	Anchorage		This is a small anchorage approximately .75 miles long. This anchorage will accommodate up to three vessels. Depths range from 8’ to over 40’ Columbia River Datum (CRD).
Henrici Bar Anchorage	C	91.62	93.93	Anchorage	Approximately 10 miles to the downstream of the Willamette/Columbia confluence	This narrow anchorage is about 2 miles long and will accommodate up to eight vessels. Useable depths range from 22’ to over 33’ Columbia River Datum (CRD).
Willow Bar Anchorage	C	96.17	101	Anchorage	Immediately to the W of the Willamette/ Columbia confluence	This anchorage is approximately 4 miles long. Under normal conditions, up to fourteen vessels may be anchored within this anchorage area and are arrayed from upstream to downstream. Normally this anchorage is limited to vessels under 600’ (182.88M) LOA. Depths in this anchorage range from 25’ to over 40’ Columbia River Datum (CRD).
Kelley Pont Anchorage	C	101.66	101.91	Anchorage	To S of Vancouver, WA, immediately to the E of the Columbia/Willamette confluence	One vessel may be anchored within this anchorage. The anchorage is open to vessels of any size. Depth in this anchorage is a minimum of 50’ (15.24M) Columbia River Datum (CRD).
Hayden Island Anchorage	C	102.57	105.2	Anchorage	To S of Vancouver, WA, and to the N of the Western end of Hayden Island	The anchorage is open to vessels of any size. Vessels over 650’ (198.12M) LOA will use one of the two stern buoys if available. Under normal conditions Vessels of 650’ (198.12M) LOA or under may elect to anchor without using a stern buoy. Depths in this anchorage range from 35’ (10.668M) to over 50’ (15.24M) Columbia River Datum (CRD).
Vancouver, WA / The Dalles, OR Channel	C	105	189.4	Dredged and maintained channel	From Vancouver, WA, extending to The Dalles, OR.	This federally authorized project provides for a channel 27' deep at low water and 300' wide, with spur channels of various depths at Camas, WA; Washougal; WA; Hood River, OR; and Bingen, WA.
Bonneville Lock	C	145.5	N/A	Lock	Bonneville Dam at	Lock chamber dimensions: 86' W x 675' L x

					Bonneville	65' Lift
Dalles/ Pasco Channel	C	189.4	Pasco, WA	Dredged and maintained channel	The Dalles, OR to Pasco, WA	Columbia River navigation channel from The Dalles to its confluence with the Snake. The shipping channel is authorized to be at least 14 feet (4.3 m) deep and 250 feet (76 m) wide.
The Dalles Lock	C	191.5	N/A	Lock	The Dalles Dam at The Dalles, OR	Lock chamber dimensions: 86' W x 675' L x 87.5' Lift
John Day Lock	C	215.5	N/A	Lock	John Day Dam, 2.5 Miles above Rufus, OR	Lock chamber dimensions: 86' W x 675' L x 110' Lift
McNary Lock	C	292	N/A	Lock	McNary Dam, near Umatilla, WA	Lock chamber dimensions: 86' W x 675' L x 75' Lift

Navigational Infrastructure on the Snake River:						
Name	**River**	**Mile (start)**	**Mile (end)**	**Type**	**Location**	**Description**
Columbia/ Lewiston Channel	S	0	Lewiston, ID	Dredged and maintained channel	From the confluence of the Snake & the Columbia Rivers to Lewiston, ID.	From its confluence with the Columbia to Lewiston, ID. The shipping channel is authorized to be at least 14 feet (4.3 m) deep and 250 feet (76 m) wide.
Ice Harbor Lock	S	9.7	N/A	Lock	Ice Harbor Dam, 10 miles above Pasco, WA	Lock chamber dimensions: 86' W x 675' L x 100' Lift
Lower Monumental Lock	S	41.5	N/A	Lock	Lower Monumental Dam, 4 miles above Windust, WA	Lock chamber dimensions: 86' W x 675' L x 98' Lift
Little Goose Lock	S	70.3	N/A	Lock	Little Goose Dam, 13 miles below Central Ferry, WA	Lock chamber dimensions: 86' W x 675' L x 98' Lift
Lower Granite Lock	S	107.7	N/A	Lock	Lower Granite Dam, 3.5 miles above Almota, WA	Lock chamber dimensions: 86' W x 675' L x 100' Lift

Navigational Infrastructure on the Willamette River:						
Name	**River**	**Mile (start)**	**Mile (end)**	**Type**	**Location**	**Description**
Willamette Deep Draft Channel	W	0	~ 9	Authorized Channel	From the confluence of the Willamette and the Columbia to the southern Portland, OR	The US Army Corps is authorized to maintain a 40' deep channel from Willamette Mile 0 to N end of the Portland downtown area.

					outskirts.	
Upper Portland Channel	W	~9	~14	Authorized channel	Downtown Portland	The Port of Portland is authorized to maintain this channel.
Willamette Locks	W	26	N/A	Locks	Willamette Falls Dam at Oregon City, OR	As of 4/09, locks are closed pending inspection and possible repair. Lock chamber dimensions: 37' W x 175' L x 50.2' Total Lift (The lift occurs in 4 lock chambers: 22.5', 8.7', 10.9' and 8.1')
Oregon City / Santiam River Channel	W	26	108.5	Authorized channel	From Oregon City, OR to the mouth of the Santiam River	A 6' deep channel is authorized from above the locks at Oregon City, OR to the mouth of the Santiam River at Mile 108.5.
Santiam River / Albany Channel	W	108.5	120	Authorized channel	From the mouth of the Santiam River to Albany, OR	A 5' deep channel is authorized from the mouth of the Santiam River at Mile 108.5 to Albany, OR at Mile 120.
Albany/Corvallis Channel	W	120	132	Authorized channel	From Albany, OR to Corvallis, OR	A 2.5' to 3.5' deep channel is authorized from Albany, OR at Mile 120 to Corvallis, OR at Mile 132.

Surface Transportation Corridor Served

Provide a summary of the surface transportation corridor that the Marine Highway would benefit. Include a description of the Corridor, its primary users, the nature, locations and occurrence of congestion, urban areas affected, and other geographic or jurisdictional issues that impact its overall operation and performance.

The proposed Marine Highway would benefit two surface transportation corridors: (1) the Columbia River road and rail corridor from Idaho through Oregon and Washington; and (2) the Interstate 5 road and rail corridor between Portland, Oregon and the Seattle/Tacoma, Washington region.

Columbia River Road and Rail Corridor

Between Pasco, Washington, and Portland, Oregon, the Columbia River corridor is served by the Interstate freeway system, with Interstate 82 connecting to Interstate 84, the main east-west Interstate in the region, near Hermiston, Oregon. Between Portland and Astoria, the highway linkage is via U.S. 30. Both Interstate 84 and U.S. 30 run along the southern bank of the Columbia River. Washington State highway 14 runs parallel to the river on the northern bank of the river. Interstate 84's western terminus is at its junction with Interstate 5 in downtown Portland.

Rail service in the Columbia River corridor is provided by the Union Pacific and the Burlington Northern Santa Fe (BNSF) class I railroads and short-line railroads. The Union Pacific track parallels Interstate 84 on the southern bank of the Columbia River, while the BNSF track runs along the Columbia River's northern bank in Washington. Both rail lines are dual-track with double-stack container capacity, and both terminate their east-west routing in the Portland/Vancouver area. Short line rail service exists along the southern bank of the lower Columbia River beyond Portland to the west.

Due to the geography of the Columbia River Gorge, which sits in the middle of the proposed Marine Highway, the ability to expand road and rail infrastructure is limited at best and, in most places, not possible. The Gorge is the only break in the Cascade Mountain Range, which runs from northern California into southern British Columbia. Created by a pre-historic cataclysmic flood, the Gorge provides the only river-grade level route through the mountain range, precluding the need to cross steep and high-elevation mountain passes. By definition, a gorge is a narrow geographic feature, and there is very little land between the river and the steep, abrupt cliffs on both sides.

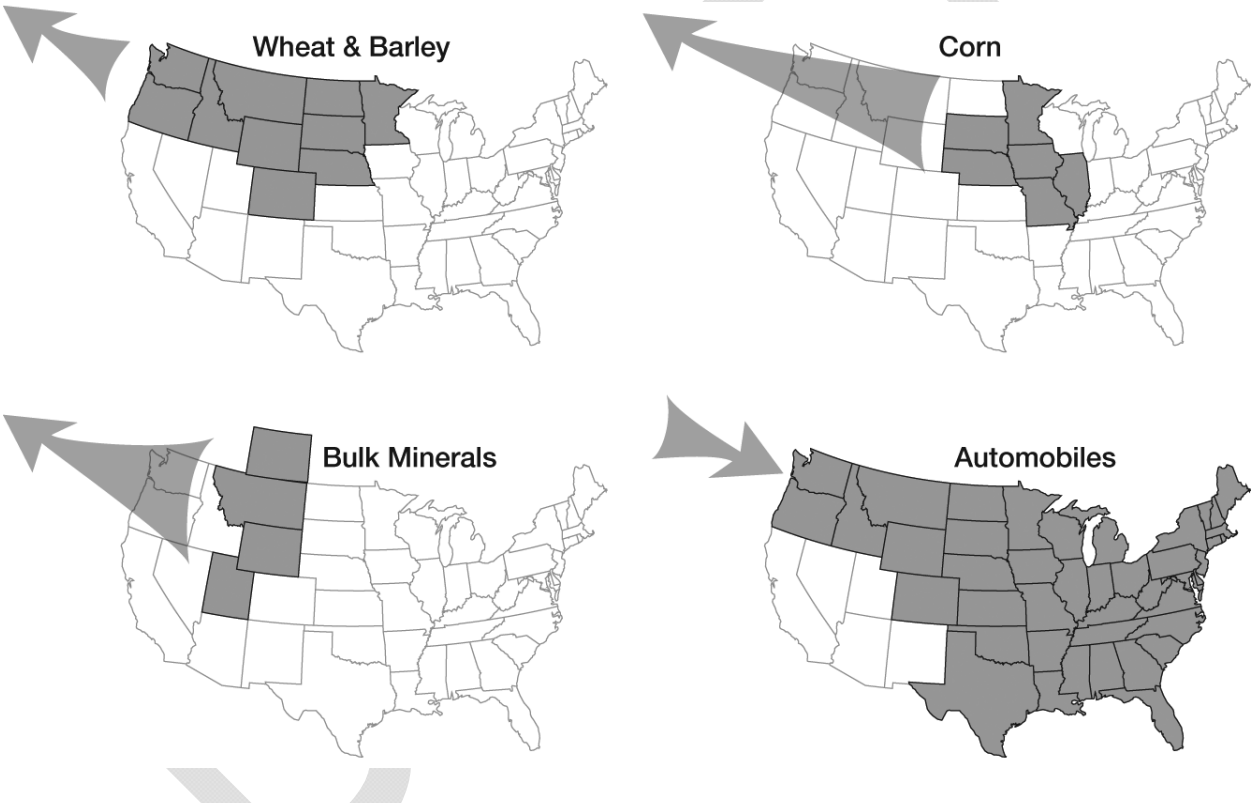
The Columbia River corridor is the main east-west artery between Oregon and southern Washington and inland markets to the east. It is the only major route of access for agricultural products, both raw and processed, from the rich agricultural production areas of eastern Oregon, eastern Washington, and southern Idaho. It is also the primary container corridor for the two rail carriers serving the three primary container ports in the Pacific Northwest: Portland, Tacoma, and Seattle.

The Columbia/Snake/Willamette river system is the largest wheat-exporting region in North America. U.S. wheat farmers from Minnesota, North Dakota, Montana, Idaho, Washington, and Oregon export their annual harvest through this system. Long distance shipments move by rail; elevators serving farms near the rivers themselves load wheat onto barges for shipment to export elevators in Portland, Vancouver, and Kalama (a new export elevator is under development in Longview). This corridor provides container-on-barge access for food

processors exporting their products from plants along the upper Columbia and the Snake Rivers, as well. Adding to the corridor's status as an export gateway, the corridor serves the export of more than 2 million tons annually of mineral bulks from Wyoming and over 3 million tons annually of mineral bulks from Saskatchewan, Canada.

The Port of Portland is the 3rd largest auto import port in the United States. Combined with auto imports moving through the Port of Vancouver USA, the Columbia River corridor is one of the nation's primary auto distribution corridors for serving the Pacific Northwest and Midwest markets.

Regional and National Markets Served by the Columbia/Snake/Willamette River System



Several issues affect the efficient flow of goods and commerce in this corridor. Urban congestion in the Portland/Vancouver area, with only two bridges across the Columbia River and the usual urban traffic volumes, slows the movement of freight. Peak period delay over the next 20 to 30 years on this urban system is projected to encroach on the mid-day period when freight flows relatively freely today. Road connections to the Pacific Ocean are limited. On the Oregon side of the Columbia River, U.S. 30 is the major route, but it is mostly two lanes, and, with road geometry such as inclines and curves, does not allow for constant freeway speed. It also passes through many small towns with reduced maximum speeds, and stretches have been closed by landslides. On the Washington side, Washington State highway 4 follows along the Columbia River's northern bank. However, it is two lanes as well, passes through several small towns, and is a popular tourist route.

In the Columbia River Gorge, Interstate 84 moves at freeway speed with little congestion. However, geography does reduce its reliability. In the winter, heavy snow and ice can close the freeway along a 50- to 70-mile stretch for days at a time. The steep cliffs are prone to landslides during heavy rainfall, particularly in the fall and spring. Landslides have historically closed the Interstate in one or both directions for a few days while clean-up operations are underway. The rail corridor can also be closed by the landslides. In addition, major efforts are made to maintain and improve air quality within the Columbia River Gorge. Strengthening transportation modes that produce the least emissions would contribute to these efforts.

Interstate 5 Road and Rail Corridor

Interstate 5 is the only Pacific Coast north/south Interstate freeway corridor running from Mexico to Canada. In September 2007, the U.S. Department of Transportation designated the entire length of Interstate 5 as a "Corridor of the Future." As part of its designation, the Department allocated $15 million to the development of a new Columbia River Crossing between Portland and Vancouver, Washington.

Designating the Columbia/Snake/Willamette river system as a Marine Highway Corridor would directly benefit the portion of Interstate 5 and the parallel railroad track between Portland and the Seattle/Tacoma region. This stretch of Interstate 5 is about 175 miles long and passes through or near the cities and ports of Vancouver, Kalama, Longview, and Olympia before reaching Tacoma and Seattle. It also bisects and directly serves the U.S. Army base at Fort Lewis, Washington. Interstate 5 crosses the Columbia River in the Portland/Vancouver region over a severely congested drawbridge and set of interchanges. Interstate 205, which bypasses the Portland/Vancouver downtown area to the east, crosses the Columbia River on the Glenn Jackson Bridge.

BNSF railroad track generally runs parallel to Interstate 5 in Washington. By agreement, Union Pacific, Amtrak, and commuter trains also operate on the BNSF track. The line operates at between 40 and 60 percent of practical capacity in most sections, but is subject to frequent stoppages when trains tie up the mainline to enter and exit the many ports, terminals, and industrial yards along the corridor (Statewide Rail Capacity and System Needs Study, Washington State Transportation Commission, December 2006). Only one rail bridge, which is owned by the BNSF railroad but used by all three railroads, exists across the Columbia River in the Portland/Vancouver area. More than 70 trains cross it every day.

In the last five years, severe weather has caused flooding on at least two occasions that has shut down Interstate 5 for extended periods of time. Freight truck traffic has either come to a standstill or, when weather has permitted, diverted onto long, looping detours through central Washington.

In addition to domestic freight traffic, a large number of trucks carrying international containerized cargo travel on Interstate 5 between Portland and Seattle/Tacoma. These trucks are traveling between the Ports of Seattle and Tacoma, on the one hand, and points in Oregon and southwest Washington, on the other hand. In addition, a short-haul rail service carries international containers to and from the Puget Sound and Portland. As explained later in this recommendation, a substantial amount of this international freight could be removed from the Interstate 5 road and rail corridor if it were imported or exported at the Port of Portland.

Involved Parties

Provide the organizational structure of parties recommending the Corridor designation, including business affiliations and private sector stakeholders.

Passengers and Freight

Identify number of likely passengers and/or quantity of freight that are candidates for shifting to the proposed Marine Highway Corridor.

Regular passenger ferry service does not now exist on the proposed corridor and is unlikely to be feasible in the future. Therefore, this section will focus on the freight that could be shifted to the proposed corridor.

According to the 2006 Portland and Vancouver International and Domestic Trade Capacity Analysis, the largest commodity groups moving through the Columbia River corridor on all modes are:

Cereal grains	11.8 million tons/year
Base chemicals	7.3 million tons/year
Food/alcoholic beverages	6.2 million tons/year
Wood products	4.8 million tons/year
Non-metallic minerals	3.7 million tons/year
Gas/fuel/petroleum	3.5 million tons/year

The greatest area of potential for shifting freight to the proposed Marine Highway Corridor is found in attracting freight that could, but does not, move through the proposed corridor at present. The ability to barge containers on the Columbia and Snake Rivers draws cargo to the proposed corridor that would otherwise move by truck to the Ports of Portland, Tacoma, or Seattle. Much of the wheat and other grains grown in eastern Oregon, eastern Washington, and Idaho already move by barge to lower Columbia River ports for export. If overseas markets should grow and production is increased, the barging system and river infrastructure could accommodate higher volumes.

In addition to this east-west movement of freight, much of the opportunity to attract new freight to the proposed Marine Highway Corridor centers around containerized cargo that currently moves north-south. The Port of Portland is an under-tonnage container market. Roughly 55% of the region's container volumes moves through Puget Sound ports due to a lack of carrier service and international destinations available through the Port of Portland.

The region's gas pipeline runs from refineries in the Puget Sound to storage and distribution facilities on the Willamette River in Portland. The pipeline is nearing capacity. The ability to barge petroleum products by water offers a lower cost and more environmentally friendly way of moving that vital cargo between the Puget Sound and Portland than moving it by truck.

Both wood chips/pulp and aggregate are commodities that move in large volumes within the proposed corridor (in other words originate and terminate within the proposed corridor). Transporting more of these heavy, bulky, and high volume commodities on the proposed corridor could alleviate urban congestion and road maintenance.

Solid waste from the Portland area has moved by truck through the Columbia River corridor since 1990. Every year, over 600,000 tons of material has been trucked through the Columbia River Gorge on I-84 to a landfill near Arlington, Oregon, located 140 miles east of Portland. This is an example of a commodity that is not time-sensitive with regard to delivery and is well-positioned to be shifted from highway to waterborne transportation.

Congestion Reduction

Describe extent to which the proposed Corridor could relieve landside congestion in measurable terms. Include any known offsetting infrastructure savings (either construction or maintenance) that would result from the project.

As described in the previous section, the proposed corridor offers the greatest potential for relieving landside congestion by encouraging more export and import cargo to move through deep-draft ports on the lower Columbia River. The proposed corridor could displace more of the landside movement of cargo by (1) delivering more cargo from upriver ports through the barging system to lower Columbia ports; and (2) attracting containerized cargo to the Port of Portland that now travels on highways and rail to and from the Ports of Seattle and Tacoma for export and import.

Upriver Barging System

In 2008, about 10 million tons of cargo (valued at about $1.5-2.0 billion) moved by barge from upriver ports and grain elevators to the Ports of Portland, Vancouver, Kalama, and Longview for export in deep-draft oceangoing ships. Most of this tonnage consisted of wheat grown in eastern Oregon, eastern Washington, and Idaho. The remaining tonnage consisted of containerized cargo loaded on barges at the Ports of Lewiston, Pasco, Umatilla, and Morrow for delivery to the Port of Portland's container terminal.

To reach the lower Columbia River ports, a barge beginning its voyage at the Port of Lewiston must pass through eight locks. The lock at the Bonneville Dam is the final lock that must be transited in order to reach the lower Columbia River ports. Therefore, the capacity of the Bonneville lock represents the maximum capacity of the upriver barging system to deliver bulk and containerized cargo to the lower Columbia River ports.

In May 1985, the U.S. Army Corps of Engineers prepared a design report on the new, larger lock to be built at the Bonneville Dam. In that report, the Corps estimated the maximum capacity of the new lock to be about 36 million tons of cargo per year. The new lock was completed in 1993.

Using a maximum capacity of about 36 million tons, approximately 26 million more tons of cargo than moved in 2008 could be barged from upriver ports and grain elevators to lower Columbia River ports. Some of that additional cargo, primarily in containers, now moves by road and rail from eastern Oregon, eastern Washington, and Idaho to the Ports of Seattle and Tacoma for export. Although a market for all of the additional cargo does not now exist, it does represent the potential growth that the upriver navigation infrastructure could accommodate. Of course, some private investment in additional barges and tugs would be necessary. Nonetheless, a substantial amount of additional cargo, which would otherwise move by road or rail, could be barged on the Columbia/Snake/Willamette river system.

Port of Portland Container Terminal

In 2008, more than 245,000 containers (twenty-foot equivalent units or TEUs) were exported and imported through the Port of Portland's container terminal (Terminal 6). Terminal 6 is the only deep-draft container terminal on the Columbia/Snake/Willamette river system. Without any additional investment, Terminal 6 has the capacity to handle about 700,000 TEUs of containerized cargo, or about 450,000 TEUs more than the 2008 volume. .

For containerized cargo, the "capture" region for the Port of Portland generally constitutes almost all of Oregon, eastern and southwest Washington, and much of Idaho. Containerized cargo originating from or destined to this region would typically move most economically through the Port of Portland, rather than ports in the Puget Sound. However, almost 200,000 containers (TEUs) per year, or about 55 percent of the containers originating from or destined to this region annually, now move through the Ports of Seattle or Tacoma. Most of these containers travel to and from the Puget Sound ports by truck, generating many different kinds of pressure on the east-west and north-south Interstate and state highways in the Pacific Northwest. The smaller number of containers that are railed between the Portland area and the Ports of Seattle or Tacoma take up valuable capacity on the rail mainline.

Much of this "leakage" of containerized cargo from the Port of Portland's capture region can be attributed to the relatively small number of container carrier services at the Port. Many reasons explain this situation. However, designating the Columbia/Snake/Willamette river system as a Marine Highway Corridor could enhance the Port of Portland as a container gateway. In this way, as many as 200,000 containers per year could be removed from the region's road and rail network.

Among other benefits, shifting cargo from trucks to waterborne transportation reduces congestion growth and wear on the highways. According to America's Deep Blue Highway: How Coastal Shipping Could Reduce Traffic Congestion, Lower Pollution, and Bolster National Security (September 2008; Institute for Global Maritime Studies), trucks account for only 10 percent of vehicle miles traveled in the United States. However, the Federal Highway Administration attributes 40 percent of its costs and over 75 percent of pavement maintenance costs to truck traffic. These estimates of truck impacts suggest the order of magnitude savings in maintenance that might be realized for Pacific Northwest highways by shifting cargo from trucks to the Columbia/Snake/Willamette river system.

Public Environmental, Energy or Safety Benefits

The recommendation should provide, if known, the savings over status quo in fuel, emissions, or safety improvements that could be derived from shifting some capacity to the proposed Marine Highway Corridor.

The fuel, emissions, and safety benefits of shifting landside cargo to the Columbia/Snake/Willamette river system are based on an assumption that the maximum lock throughput capacity of 36 million tons per year defines the maximum capacity of the current river system. At this point, the utilization of these locks is approximately 10 million tons per year, which yields excess available capacity of approximately 26 million tons per year.

With that base, several additional assumptions are made to estimate the energy, environmental, and safety benefits of shifting cargo to the river system. The assumed average length of a new cargo transport on the river system would be 250 miles. So, for example, 10 tons of cargo

moved an average distance of 250 miles would yield a movement of 2,500 ton-miles. This distance would roughly approximate a movement from the Tri-Cities area of eastern Washington to the Port of Kalama in southwest Washington. Obviously, some new cargoes will move shorter and longer distances.

For purposes of comparison, any new cargo tonnage shifted to the river system is assumed to be comprised of two-thirds (66.6%) from existing regional truck traffic and one-third (33.3%) from existing rail traffic. The logic driving this assumption is that many of the larger, heavier cargoes that enter the Columbia/Snake/Willamette basin are already entering on rail and would not support additional transshipment costs. Thus, these numbers do not include possible future innovations (such as rail-barge intermodal transfers).

Also, where applicable, any new cargo on the river system is assumed to be comprised of 31.6% petroleum products, reflecting the current national average across inland waterways. And, in fact, a significant amount of petroleum already moves on the Columbia/Snake/Willamette river system.

Finally, all statistics and constants are taken from A Modal Comparison of Domestic Freight Transportation Effects on the General Public, Texas Transportation Institute, December 2007.

As estimated in the following tables, for every ton of cargo moved from truck or rail to the Columbia/Snake/Willamette river system:

- diesel usage would be 77.3 percent lower,
- hydrocarbon emissions would be 18.9 percent lower,
- carbon monoxide emissions would be 58.8 percent lower,
- nitrous oxide emissions would be 33.6 percent lower,
- particulate emissions would be 33.1 percent lower,
- operator fatalities per year would be 99.1 percent lower,
- other fatalities per year would be 99.1 percent lower, and
- injuries per year would be 99.9 percent lower.

ENERGY Impacts of a Shift of Cargo to Columbia/Snake/Willamette Waterway (CSW)

Assumption: Two thirds (66.6%) of any new tonnages moving on the CSW would be taken from current truck traffic, and one third (33.3%) would be taken from current rail traffic. This is a very rough assumption based on the fact that most large volume cargoes coming from longer distances into the CSW basin are already moving by rail, and would probably not support the intermodal transshipment costs.

Maximum CSW Lock Capacity (in T/YR)	**36,000,000**
Current CSW Lock Utilization (in T/YR)	**10,000,000**
Assumed Trip Length (mi)	**250**

Assumed Ton-Mile / GAL: TRUCK	**155**
Assumed Ton-Mile / GAL: RAIL	**413**
Assumed Ton-Mile / GAL: BARGE	**576**

Assumed Ton-Miles	6,500,000,000
(or) Million Ton-Miles	6,500
(or) Billion Ton-Miles	6.50

100% of Available CSW Capacity in (T / YR)	26,000,000
66% of Available CSW Capacity in (T / YR)	17,331,600
33% of Available CSW Capacity in (T / YR)	8,666,580

Impact	**Units**	**CSW Utilization factor**	**M Gal TRUCK (+)**	**M Gal RAIL (=)**	**M Gal TOTAL**	**M Gal BARGE on CSW**
Energy Usage	Gal Diesel	Using 100% of excess CSW capacity	27.96	5.25	33.20	7.52
	Gal Diesel	Using 66% of excess CSW capacity	18.64	3.50	22.13	5.01
	Gal Diesel	Using 33% of excess CSW capacity	9.32	1.75	11.07	2.51

Based on the assumptions noted above, these are the diesel fuel usage decreases we should expect to see for every ton of cargo moved from truck or rail to the CSW.	
Decreased diesel usage/ton on CSW:	**77.3%**

(All Statistics and Constants taken from A Modal Comparison of Domestic Freight Transportation Effects on the General Public, Texas Transportation Institute, December 2007.)

ENVIRONMENTAL Impacts of a Shift of Cargo to Columbia/Snake/Willamette Waterway (CSW)

(All Statistics and Constants taken from A Modal Comparison of Domestic Freight Transportation Effects on the General Public, Texas Transportation Institute, December 2007.)

Assumption: Two thirds (66.6%) of any new tonnages moving on the CSW would be taken from current truck traffic, and one third (33.3%) would be taken from current rail traffic. This is a very rough assumption based on the fact that most large volume cargoes coming from longer distances into the CSW basin are already moving by rail, and would probably not support the intermodal transshipment costs.

Maximum CSW Lock Capacity (in T/YR)	**36,000,000**
Current CSW Lock Utilization (in T/YR)	**10,000,000**
Assumed Trip Length (mi)	**250**

Ton-Miles	6,500,000,000
(or) Million Ton-Miles	6,500
(or) Billion Ton-Miles	6.50

100% of Available CSW Capacity in (T / YR)	26,000,000
66% of Available CSW Capacity in (T / YR)	17,331,600
33% of Available CSW Capacity in (T / YR)	8,666,580

Based on the assumptions noted above, these are the emissions decreases we should expect to see for every ton of cargo moved from truck or rail to the CSW Waterway.	
Decreased HC emissions	**18.9%**
Decreased CO emissions	**58.8%**
Decreased N0x emissions	**33.6%**
Decreased Particulate emissions	**33.1%**

Impact	Units	CSW Utilization Factor	Kg if 66% shipped by TRUCK	(+) Kg if 33% shipped by RAIL	(=) COMBIMED Kg	Kg if on BARGE on CSW
HC emissions	kilograms	Using 100% of excess CSW capacity	86,658	52,493	139,151	112,905
		Using 66% of excess CSW capacity	57,766	34,992	92,758	75,262
		Using 33% of excess CSW capacity	28,857	17,480	46,337	37,597
CO emissions	kilograms	Using 100% of excess CSW capacity	589,274	139,628	728,902	300,365
		Using 66% of excess CSW capacity	392,810	93,076	485,886	200,223
		Using 33% of excess CSW capacity	196,228	46,496	242,724	100,022
N0x emissions	kilograms	Using 100% of excess CSW capacity	3,171,683	1,417,357	4,589,039	3,048,955
		Using 66% of excess CSW capacity	2,114,244	944,810	3,059,054	2,032,433
		Using 33% of excess CSW capacity	1,056,170	471,980	1,528,150	1,015,302
Particulate emissions	kilograms	Using 100% of excess CSW capacity	77,992	35,118	113,110	75,660
		Using 66% of excess CSW capacity	51,990	23,410	75,399	50,435
		Using 33% of excess CSW capacity	25,971	11,694	37,666	25,195

Pollutant Generation:	Truck	Western Rail	Barge
HC emissions (gr/ton-mi)	0.02000	0.02423	0.01737
CO emissions (gr/ton-mi)	0.13600	0.06445	0.04621
N0x emissions (gr/ton-mi)	0.73200	0.65423	0.46907
Particulate emissions (gr/ton-mi)	0.01800	0.01621	0.01164

SAFETY Impacts of a Shift of Cargo to Columbia/Snake/Willamette Waterway (CSW)

Assumption: Two thirds (66.6%) of any new tonnages moving on the CSW would be taken from current truck traffic, and one third (33.3%) would be taken from current rail traffic. This is a very rough assumption based on the fact that most large volume cargoes coming from longer distances into the CSW basin are already moving by rail, and would probably not support the intermodal transshipment costs.

Current Maximum CSW Lock Capacity (in T/YR)	**36,000,000**
Current CSW Lock Utilization (in T/YR)	**10,000,000**
Assumed Trip Length (mi)	**250**

Ton-Miles	6,500,000,000
(or) Million Ton-Miles	6,500
(or) Billion Ton-Miles	6.50

100% of Available CSW Capacity in (T / YR)	26,000,000
66% of Available CSW Capacity in (T / YR)	17,331,600
33% of Available CSW Capacity in (T / YR)	8,666,580

Based on the assumptions noted above, these are the annual safety improvements we should expect to see for every ton of cargo moved from truck or rail to the CSW Waterway.	
Decreased operator fatalities per year:	**99.1%**
Decreased other fatalities per year:	**99.1%**
Decreased injuries per year:	**99.9%**

Impact	Units	Utilization Factor	66% via TRUCK (+)	33% via RAIL (=)	COMBIMED Impact	If via BARGE on CSW
Fatalities	(operator fatalities per year)	Using 100% of excess CSW capacity	2.48	0.04	2.52	0.02
		Using 66% of excess CSW capacity	1.65	0.03	1.68	0.02
		Using 33% of excess CSW capacity	0.83	0.01	0.84	0.01
Fatalities	(other fatalities per year)	Using 100% of excess CSW capacity	16.37	1.23	17.60	0.16
		Using 66% of excess CSW capacity	10.90	0.82	11.72	0.11
		Using 33% of excess CSW capacity	5.45	0.41	5.86	0.05
Injuries	(injuries per year)	Using 100% of excess CSW capacity	429.15	12.60	441.74	0.29
		Using 66% of excess CSW capacity	285.81	8.39	294.20	0.19
		Using 33% of excess CSW capacity	142.91	4.19	147.10	0.10

(All Statistics and Constants taken from A Modal Comparison of Domestic Freight Transportation Effects on the General Public, Texas Transportation Institute, December 2007.)

Impediments

Describe known or anticipated obstacles to shifting capacity to the proposed Marine Highway Corridor. Include any strategies, either in place or proposed, to deal with the impediments.

Obstacle	Strategies
Shallow-Draft Navigation Channels and Locks The channels and locks along the shallow-draft portion of the proposed Marine Highway Corridor are in need of regular maintenance and, in some cases, repair.	• Fund the maintenance and repair of the navigation locks along the proposed Marine Highway Corridor. • Fund the on-going maintenance of the shallow-draft channels on the proposed Marine Highway Corridor. • Support the construction of a new Interstate 5 Columbia River bridge that will resolve the existing barge navigation problem involving the BNSF railway bridge.
Deep-Draft Navigation Channels The channels and jetties along the deep-draft portion of the proposed Marine Highway Corridor are in need of regular maintenance and, in some cases, repair and rehabilitation.	• Fund the on-going maintenance of the Mouth of the Columbia and the Columbia River channel deep-draft navigation projects. • Complete the 43-foot deep-draft channel deepening project (Columbia River Improvement Project). • Fund the maintenance, repair, and rehabilitation of the Columbia River jetties.
Anchorages Anchorage capacity on the Columbia River is insufficient to handle vessel activity growth which may occur as a result of increased short sea shipping.	• Support and fund efforts to increase the number of anchorages on the Columbia River.
Navigation Aids The successful transfer of domestic cargos to the proposed Marine Highway Corridor will require reliable and timely vessel transits and schedules. The reduction of delays related to weather and river levels will be of critical importance.	• Support and fund the development, improvement, and maintenance of navigation aids such as LOADMAX and Dynamic Under Keel Clearance (DUKC).
Marine Terminal Capacity The capacity of existing terminals on the proposed Marine Highway Corridor may not be sufficient to meet long-term short-sea shipping demand.	• Support planning and land-use efforts to preserve and increase the number of marine terminals sites along the proposed Marine Highway Corridor. • Support the redevelopment of brownfield sites within urban areas for use as marine terminals.
Marine Terminal Efficiency To compete with surface transit modes, modal transfer at terminals along the proposed Marine Highway Corridor must be highly efficient and low-cost. To achieve	• Support and fund investments in cargo-handling technologies at existing and new terminals along the proposed Marine Highway Corridor. • In conjunction with these technologies,

Obstacle	Strategies
these efficiencies, modern cargo-handling technologies and flexible labor practices are required.	provide incentives to existing terminal workforces to adopt labor practices designed to increase the competitiveness of marine terminals in the movement of domestic freight. Labor should be engaged with other stakeholders to develop short-sea shipping options that meet service requirements.
<u>Cabotage Laws</u> U.S. cabotage laws restrict the carriage of goods between United States ports to U.S. built and flagged vessels. Critics note that these laws result in costs for moving cargoes between U.S. ports that are far higher than if such restrictions did not apply.	• Encourage revisions to the existing cabotage laws that improve the cost-effectiveness of short-sea shipping while protecting safety and national security interests.
<u>Harbor Maintenance Tax (HMT)</u> The collection of the HMT on domestic shipments is a disincentive for short-sea services.	• Exempt domestic intermodal cargo containers and cargo loaded on a vessel by means of wheeled technology from the Harbor Maintenance Tax. • Remove the "double" HMT as applied to domestic transshipment of international imports.
<u>Customs</u> New security rules add costs to marine transportation. U.S. Customs and Border Protection (CBP) and the Canada Border Services Agency (CBSA) have enacted requirements for the electronic transmission of manifest data for marine shipments 24 hours before the vessel is loaded in a foreign port.	• Promote simplified customs procedures for the transport of vessels and cargos between U.S. and Canadian ports.
<u>Availability of market data</u>	• Support a West Coast commodity flow forecast to estimate the freight demand potentially served by short-sea shipping.