DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, PORTLAND DISTRICT
PO BOX 2946
PORTLAND OR 97208-2946

REPLY TO ATTENTION OF

CENWP-PM-E

Ms. Juna Hickner
Oregon Department of Land Conservation and Development
635 Capitol St. NE
Suite 150
Salem, OR 97301-2540

Ms. Juna Hickner:

Pursuant to requirements of Oregon Administrative Rules (OAR) 660-015-0010(4) and Coastal Zone Management Act (CZMA) of 1972, we are submitting a CZMA Consistency Determination that details the proposed project involving reintroduction of clean sediment into the Clatsop Plains sub-littoral cell. The reintroduction of sediment would be generated from routine dredging at the Mouth of Columbia River (MCR), into the proposed South Jetty Nearshore Site, located in Clatsop County, Oregon. This project entails the beneficial use of dredged material and is intended to restore the littoral budget along the MCR nearshore environment.

Enclosed are documents required by the Oregon Territorial Sea Plan. If you have any questions regarding this project, please contact Gretchen Smith at Gretchen.V.Smith@usace.army.mil or at (503)964-6972.

Sincerely,

Joyce E. Casey
Chief, Environmental Resources Branch

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COASTAL ZONE MANAGEMENT ACT

CONSISTENCY DETERMINATION

PROPOSED DREDGED MATERIAL PLACEMENT AREA

CLATSOP COUNTY

Introduction

The U.S. Army Corps of Engineers (Corps) is proposing to use existing and new disposal sites as part of the overall disposal plan for maintenance of the Mouth of Columbia River entrance channel (MCR). The following existing disposal sites have been already been reviewed and approved for consistency with Oregon and Washington coastal management programs: North Jetty Site, Shallow Water Site, and the Deep Water Site. This Coastal Zone Management Act (CZMA) Consistency Determination (CD) is for the proposed South Jetty Nearshore Site, located in the Oregon's offshore adjacent to Clatsop Spit. The intent of this project is to positively benefit the nearshore environment.

The proposed action meets the intent and objectives put forth by the Regional Sediment Management Plan (RSMP). The RSMP focuses on promoting a sustainable approach towards the management of sediment resources within the MCR, and adopts a long-range plan that strives to adaptively manage a dynamically changing environment. The RSMP can be accessed here: http://www.lowercolumbiasolutions.org/index.php?option=com_content&task=category&sectionid=5&id=35&Itemid=52

Proposed Disposal Site – South Jetty Nearshore Site

The South Jetty Nearshore Site (SJNS) is within the nearshore zone located approximately 1 ¼ miles offshore of Clatsop Spit and approximately 1 mile south of the MCR's South Jetty.

The site has the following coordinates and dimensions:

Corner Coordinates:	Dimensions:
46° 12' 11.90" N, 124° 01' 09.47" W	9,540 feet long by 7,040 feet wide
46° 13' 23.97" N, 124° 02' 36.89" W	Depth -40 feet to -60 feet
46° 13' 20.90" N, 124° 04' 17.11" W	
46° 12' 08.86" N, 124° 02' 49.65" W	

Dredging

Maintenance dredging of the MCR channel has been reviewed for consistency with state and local plans in conjunction with the *1999 Columbia River Channel Improvement Project Environmental Impact Statement*. The consistency review determined that maintenance of the MCR Federal Navigation Channel is an allowable activity in state and local plans.

Disposal

Currently, MCR's dredged material placement is authorized at the North Jetty Site, Shallow Water Site, and the Deep Water Site. The use of these sites have been applied through the regulating agencies (DEQ, DOE, and EPA) and subsequently authorized in compliance with the Clean Water Act, Section 401 and Section 404, and Marine Protection, Research, and Sanctuaries Act of 1972. The Corps is seeking for authorization to place material at the SNJS as a Clean Water Act site. An application has been submitted to DEQ for the proposed use of the SJNS.

Oregon State-wide Planning Goals and Guidelines

Goal 19: Ocean Resources: This goal requires that agencies determine the impact of the proposed project or actions. Goal 19 states that "agencies… shall, 1.) protect and encourage the beneficial uses of ocean resources such as navigation… provided that such activities do not adversely affect the resources protected in subsection 1.) avoid, to the extent possible, adverse effects on or operational conflicts with other ocean uses and activities; and 2.), comply with applicable requirements of the Oregon Territorial Sea Plan." According to the provisions of Goal 19 and the Oregon Territorial Sea Plan, decisions to take such an action, such as using an ocean disposal site, are to be preceded by "inventory information necessary to understand potential impacts and relationship of the proposed activity to the continental shelf and nearshore ocean resources." The inventory conducted for specifically for the SJNS is attached as appendix 1. In addition, the Supplemental Biological Assessment (BA) provided to National Marine Fisheries Services (NMFS) evaluated the proposed SJNS for impacts to Endangered Species (appendix 2). The draft *Proposed Nearshore Disposal Locations at the Mouth of the Columbia River Federal Navigation Project, Oregon and Washington Environmental Assessment* (hereon known as the draft EA) evaluates applicable Federal laws and regulations for this proposed action (appendix 3).

Applicable Oregon Revised Statues (ORS) and Local Land Use Planning to the Oregon Coastal Management Program

ORS 274 – Submersible and Submerged Lands: This statue applies to disposal of dredged material below ordinary high water of navigable state waters. The *Nearshore Disposal Locations at the Mouth of the Columbia River Federal Navigation Project, Oregon and Washington Environmental Assessment* (otherwise known as the draft EA) and the Clean Water Act Section 401 and Section 404(b)(1) evaluations satisfies the substantive federal requirement of this statute.

ORS 496 – Application, Administration, and Enforcement of Wildlife Laws: The wildlife inventory and impact analysis contained in the draft EA and the Endangered Species Act evaluation conducted in the supplemental BA, meets the requirements of this statute. Any state-listed species have been addressed through either of these assessments and/or coordination.

ORS 506 – Commercial Fishing and Fisheries: Although this statute does not apply directly to the proposed action, the proposed action may affect commercial fishing in the ocean. The draft EA describes the potential impact to these fisheries and means that will be taken to avoid or minimize these impacts.

ORS – General Protective Regulations: The draft EA describes the mechanisms to be used to minimize habitat loss as a result of proposed dredged material placement at the SJNS.

ORS 468B – Water Quality: The draft EA and Section 401 and Section 404(b)(1) evaluation prepared for this action addresses all water quality evaluations required by this statute.

Clatsop County Land Use Planning: As required by the Oregon Department of Environmental Quality, a Land Use Compatibility statement was sought and obtained from the Clatsop County Planning Department. The statement is included as a part of the 401 WQC application. This project does not violate local land use planning regulations.

Impact Assessment

The proposed disposal location has been evaluated through the draft EA, the BA, and subject to extensive scientific research and inquiry. The draft EA also makes provisions to continually assess and minimize adverse environmental impacts over the course of the project through the use of a variety of monitoring actions. The RSMP outlines the demonstrated need for the proposed action. There are multiple local, state, and regional stakeholders all working towards the implementation of addressing the rapidly eroding coastal environment adjacent to MCR.

There may be short-term losses to the benthic community immediately following disposal actions; however, it is expected that the biotic community will recolonize following dredged material placement. By providing sediment to the littoral cell, the shoals upon which the South Jetty will be consistently rejuvenated and strengthened against the dynamic wave and storm events. The protection of the South Jetty will ensure that the Columbia River Federal Navigation Channel remains a safe, navigable commercial and recreational waterway. Additionally, Clatsop Spit will benefit from the continual feeding from the re-balanced littoral cell continuing the beach's significance as an important recreational and socio-economic resource. In addition to the information provided in this document, the inventory, the draft EA and supplemental BA, the impact assessment procedures for determining CZM CD has been followed. The proposed action complies with all applicable local, state, and federal laws and regulations.

Statement of Consistency

Based on the above evaluation, the Corps has determined that the actions proposed for the use of SJNS are consistent with the state of Oregon's Coastal Zone Management program.

Appendix 1

Inventory

Proposed Action

The proposed action is to add additional, long-term dredged material disposal sites to the existing network of disposal sites for the MCR operations and maintenance project. Additional disposal sites are needed to supplement sediment within a naturally erosive environment, obtain needed information on nearshore processes, and divert a sand resource that is otherwise "lost" if it goes to deep-water disposal rather than to beneficial use in the littoral zone. The addition of nearshore disposal sites also would give the Corps' flexibility for disposal options. The use of additional nearshore disposal sites would improve the following aspects of the overall operation and maintenance of the MCR project:

- Provide additional long-term dredged material disposal options for the MCR dredged material disposal site network;
- Increase efficiency of dredging operations by using sites closer to the federal navigation channel;
- Protect the existing jetties that are a part of the MCR navigation system;
- Reduce the need to place dredged material in the DWS;
- Beneficially use dredged material by keeping it in the Columbia River littoral cell; and

The existing SWS is the current disposal site utilized as a feeder of sediment back into the littoral system. Strategic placement of sediment in this disposal site has improved the movement of sediment into Peacock Spit (to the north of the North Jetty). However, the littoral cell is still experiencing depletion of sediment. Due to the variability of each dredging season, definitive actions cannot be predefined; sediment must be distributed among disposal sites in order to not overload one disposal zone. Although they are dispersive sites, disposal at the SWS and NJS has been limited because of bathymetric restrictions (i.e., potential for dredged material mounding). Therefore, the Corps is seeking to add other nearshore sites to aid in returning sand to the littoral cell and, in the process, reducing the need to place dredged material in the DWS.

Every year, 3 to 5 million cubic yards (mcy) of sand is dredged by the U.S. Army Corps of Engineers (Corps) from the MCR entrance channel to keep the Columbia River deep-draft federal navigation channel open. Currently, the sediment dredged is disposed of at three existing dredged material disposal sites. Two of these sites are within the nearshore littoral area – the Shallow Water Site (SWS) and the North Jetty Site (NJS). The third site is a Deep Water Ocean Disposal Site (DWS) that is used when the other two sites are at capacity or when the weather is too treacherous to use them. Over the past 5 years, approximately one-third of the sand dredged at the MCR has been taken to the DWS. This removes a large portion of this clean (uncontaminated) resource from the Columbia River littoral cell, where it would help sustain the jetties, beaches, and marine habitats in the MCR area.

For the State of Oregon, the applicable site is the South Jetty Nearshore Site (SJNS). The SJNS would be located nearshore, south of the South Jetty in waters -40 to -60 feet deep (Figure 1). The site is projected to have an annual capacity of between 300,000 and 500,000 cy. This subtidal site is intended to provide sand needed to mitigate recent erosion and supplement the sediment budget in the nearshore

area adjacent to the South Jetty. Dredged material disposal at this location would be a beneficial use, as the intent would be for dredged material to enter the littoral drift system along the coastline, mimicking conditions that existed historically at the MCR.

The use of the SJNS would be limited by site management provisions that only allow material placement after August 15, when the crab season in Oregon ends. The SJNS will be configured with a grid pattern and allocated a maximum load per cell. Bathymetric surveys would be conducted throughout the dredging season. The surveys will then be compared to the spring baseline conditions. The dredges will minimize the overlapping of disposal tracks in the sites.

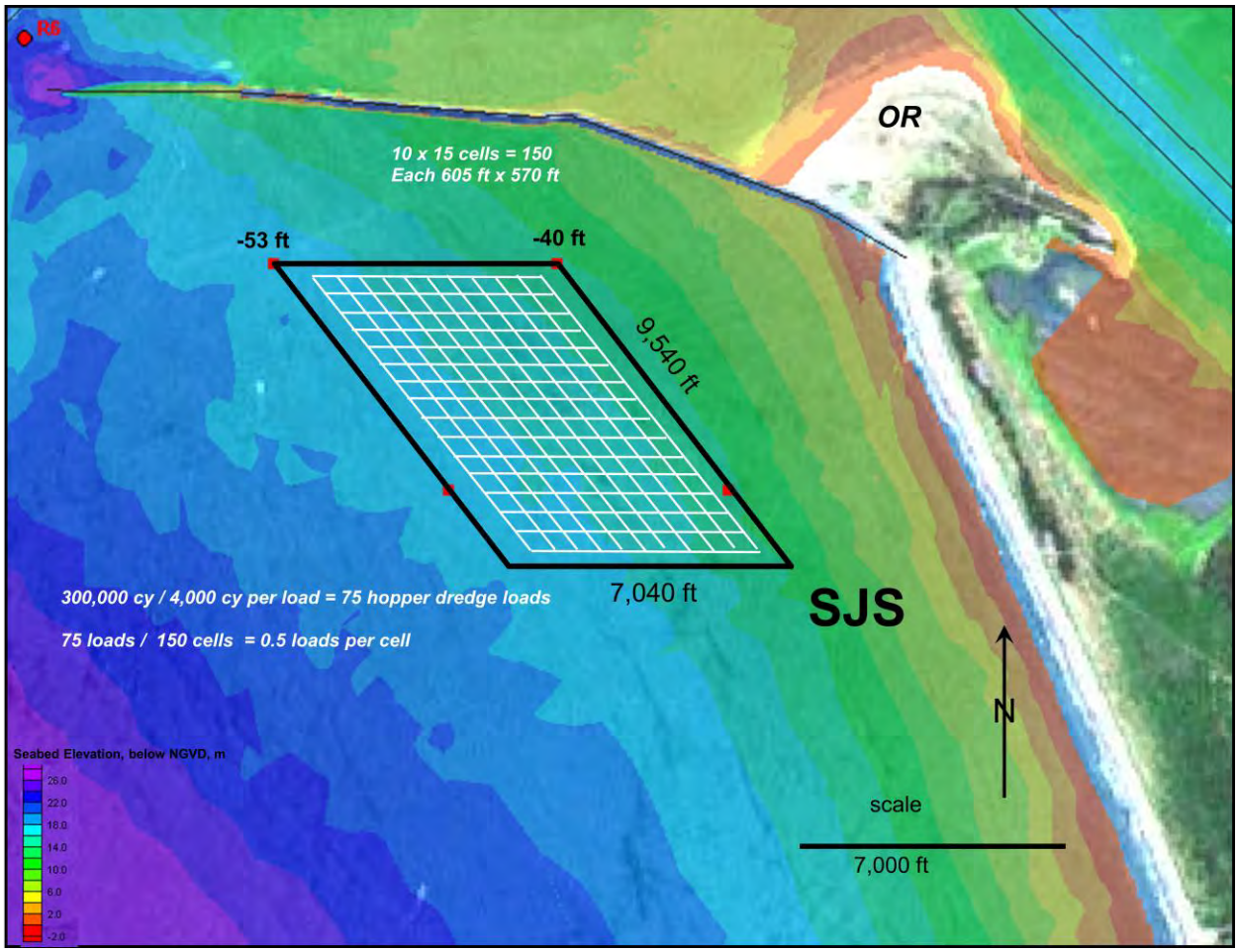

Figure 1. The proposed SJNS.

Location and Description

The site has the following coordinates and dimensions:

Corner Coordinates:	Dimensions:
46° 12’ 11.90” N, 124° 01’ 09.47” W	9,540 feet long by 7,040 feet wide
46° 13’ 23.97” N, 124° 02’ 36.89” W	Depth -43 feet to -53 feet
46° 13’ 20.90” N, 124° 04’ 17.11” W	
46° 12’ 08.86” N, 124° 02’ 49.65” W	

Physical and Chemical Conditions

The MCR is a high energy environment. The ocean entrance is characterized by large waves and strong currents interacting with spatially variable bathymetry. Approximately 70% of all waves approaching the MCR are from the west-northwest. During winter storm conditions, the ocean offshore of the jettied river entrance is characterized by high swells approaching from the northwest to southwest combined with locally generated wind waves from the south to southwest. From October to April, average offshore wave height is 9 feet. From May to September, average offshore wave height is 5 feet and waves approach mostly from the west-northwest. Occasional summer storms produce waves from the south-southwest with wave heights of 6.5 to 13 feet.

Tides at MCR are mixed semi-diurnal with a diurnal range of 7.5 feet. The instantaneous flow rate of estuarine water through the MCR inlet during ebb tide can reach 1.8 million cubic feet per second. Tidally dominated currents at the MCR can exceed 8.2 feet per second. A large, clockwise-rotating eddy current has been observed to form between the North Jetty, the navigation channel, and Jetty A during ebb tide. A less pronounced counter-clockwise eddy forms in response to flood tide. Horizontal circulation is generally clockwise (when viewed from above), with incoming ocean waters moving upstream in the northern portion of the estuary and river waters moving downstream in the southern portion. Vertical circulation is variable, reflecting the complex interaction of tides with river flows and bottom topography and roughness (Corps 1983). The North Jetty eddy has varying strength and direction (based on location and timing of tide) ranging from 0.3 to 3.3 feet per second.

As waves propagate shoreward toward the MCR, the waves are modified by the asymmetry (irregularity) of the MCR's underwater morphology (form). Nearshore currents and tidal currents are also modified by the jetties and the MCR morphology. These modified currents interact with the shoaling waves to produce a complex and agitated wave environment within the MCR. The asymmetric configuration of the MCR and its morphology is characterized by the protruding offshore extent of Peacock Spit on the north side of the North Jetty, southwesterly alignment of the North/South jetties and channel, and the absence of a large shoal on the south side of the MCR. This asymmetry causes incoming waves to be focused onto areas which would not otherwise be exposed to direct wave action.

The cross-shore profile for the South Jetty Nearshore site is shown in Figure 2. The shore area along the South Jetty root has experienced profound changes since the time of jetty construction. Before South Jetty construction, the nearshore area immediately south of the jetty was dominated by a broad, shallow ebb tidal shoal, exhibiting relatively shallow water depth. Construction of the jetty dissipated this shoal, resulting in a rapid trend of increasing water depth through time. As the water depth along the south side of the jetty increased, wave action along the jetty root and adjacent shore area increased. The increased wave environment motivated rapid deterioration of the entire south jetty and culminated with the breaching event along the South Jetty root in the late 1920s. During the 1930s, extensive efforts were undertaken to rebuild the South Jetty and re-establish the shore-land interface along the south-side root of the jetty. The effort was successful; however, the result has been subjected to an increasingly harsh environment of wave action and related circulation since the 1930s. A cross-shore profile of the proposed South Jetty Nearshore site is shown in Figure 2.

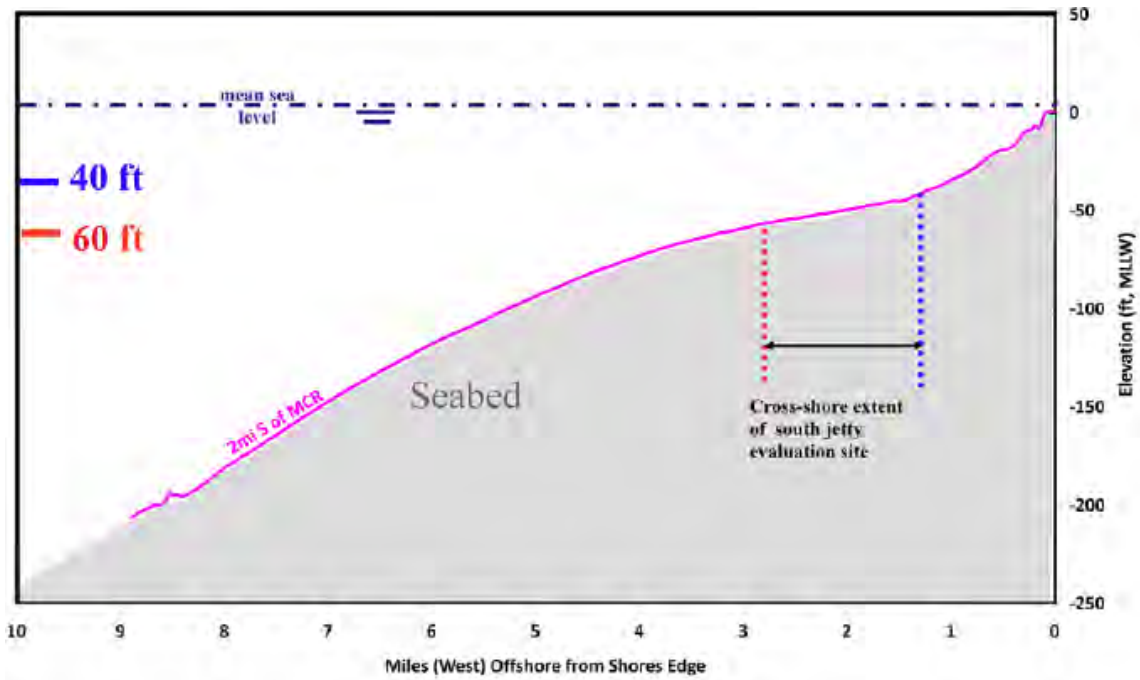

Figure 2. Cross-shore Profile of South Jetty Nearshore Site

The wave energy environment at the SJNS is highly seasonal and variable from day-to-day, influenced by a wide range of changing weather and current environment. The following 4 figures (figures 3 - 6) depict the current movement and weather that would be likely to occur during the summer and fall, when the proposed SJNS would be utilized as a dredged material placement site.

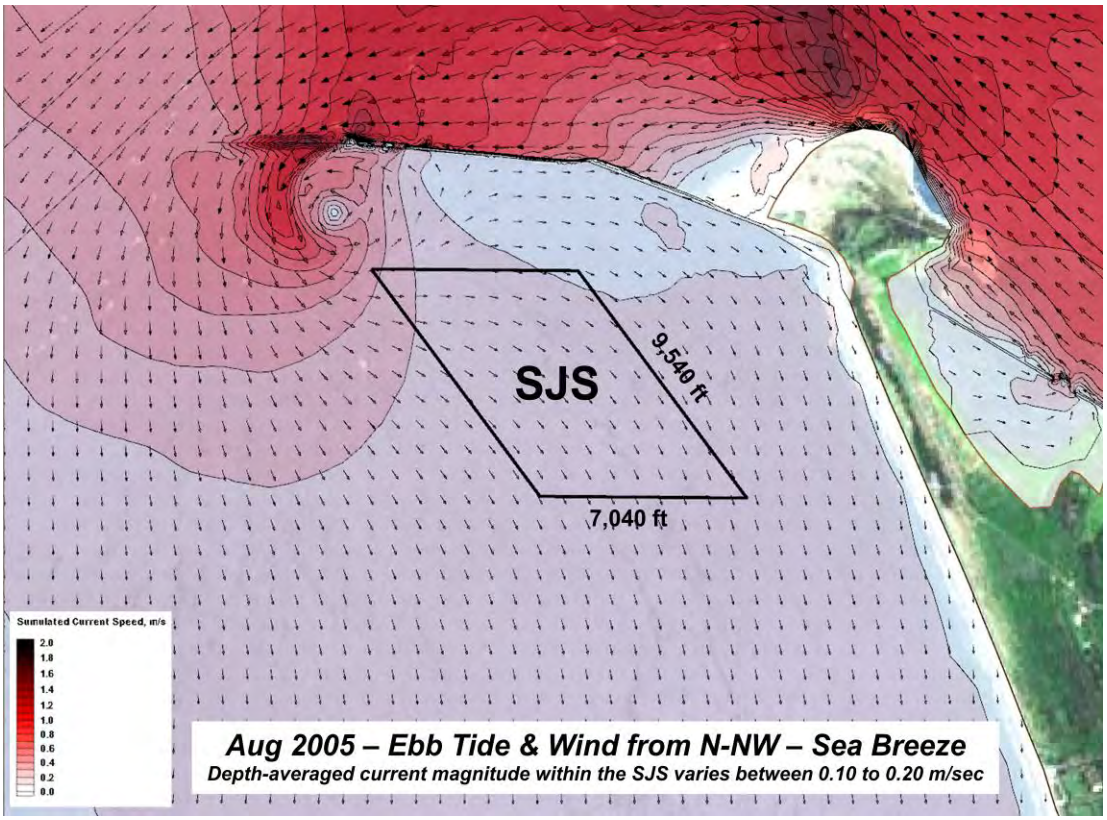

Figure 3. Summer season, minimal breeze, ebb tide.

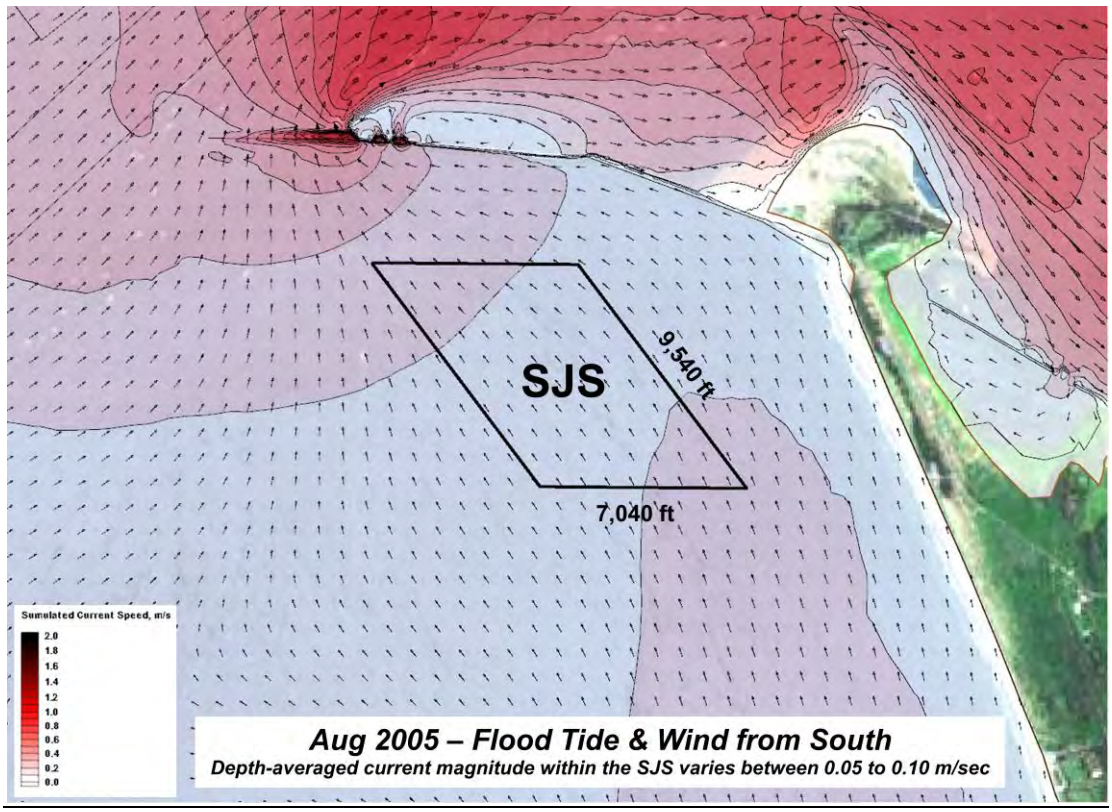

Figure 4. Summer Season, wind, flood tide.

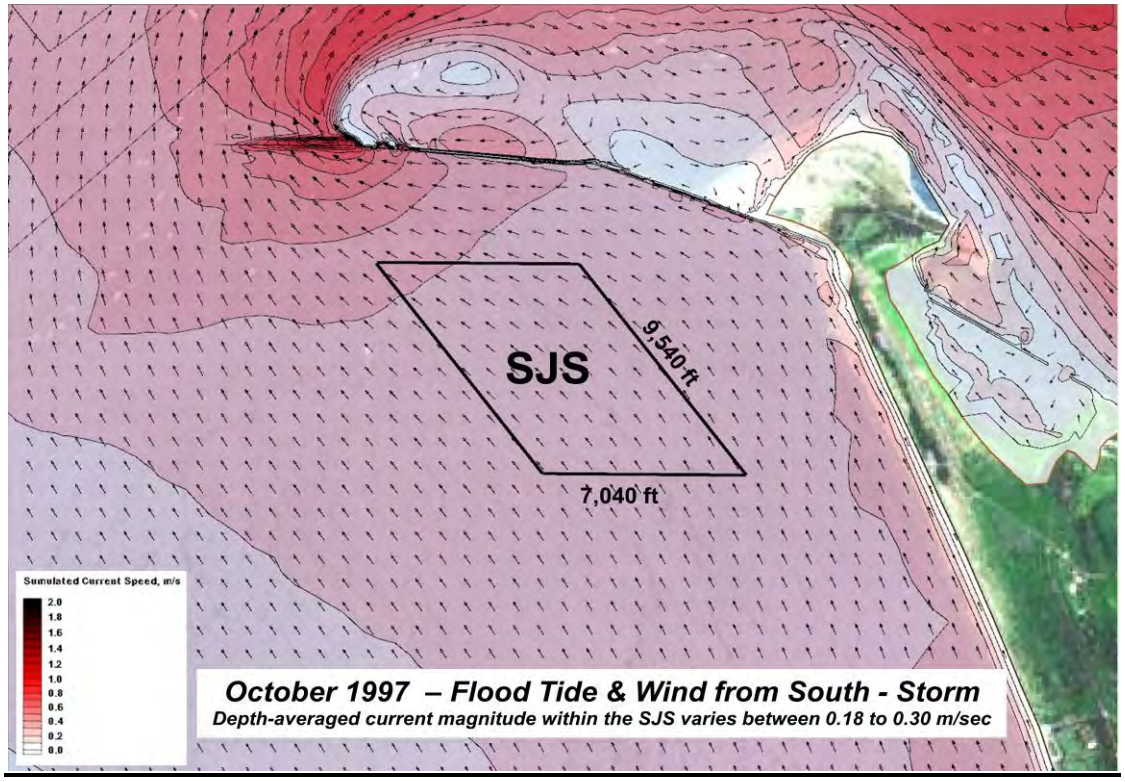

Figure 5. Fall season, Storm Event, Flood tide.

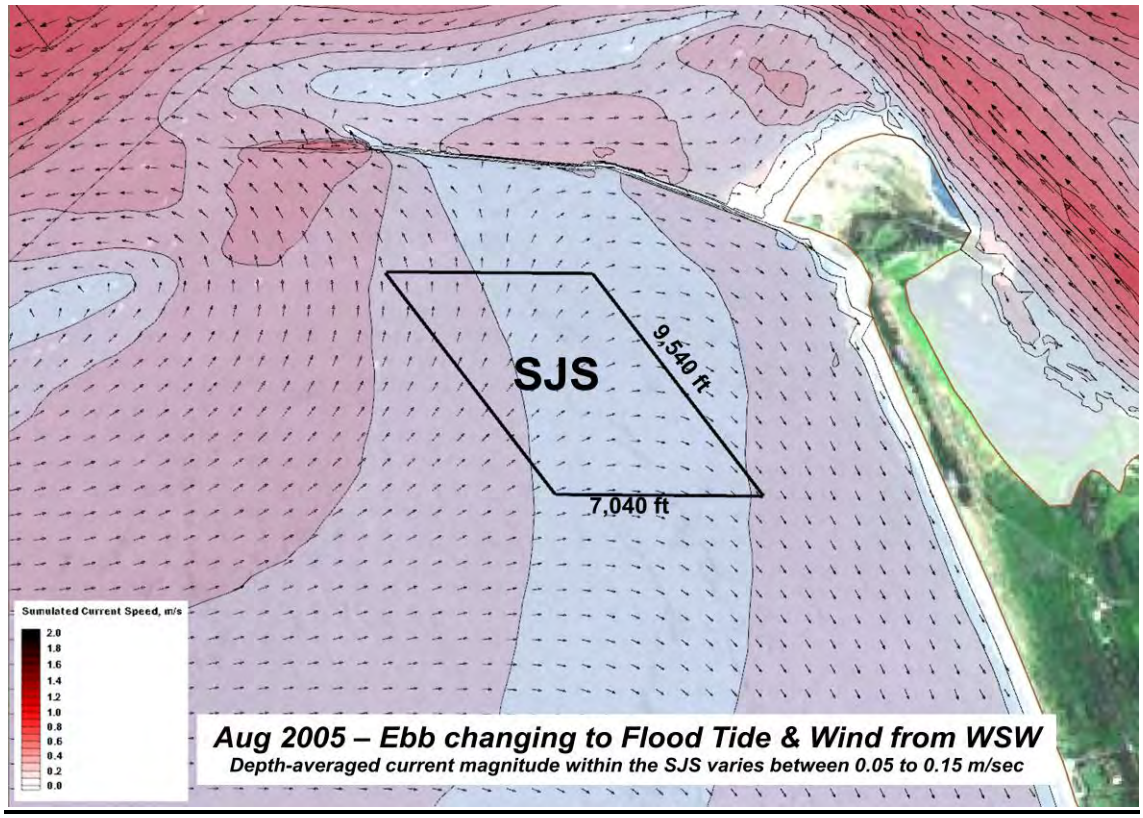

Figure 6. Summer season, Moderate Wind, Ebb Tide.

Bathymetry

A colorscale bathymetric image is provided in Figure 7. If contour numbers are desired as the form of bathymetric information, the images can be requested via FTP as the maps are too large to be emailed.

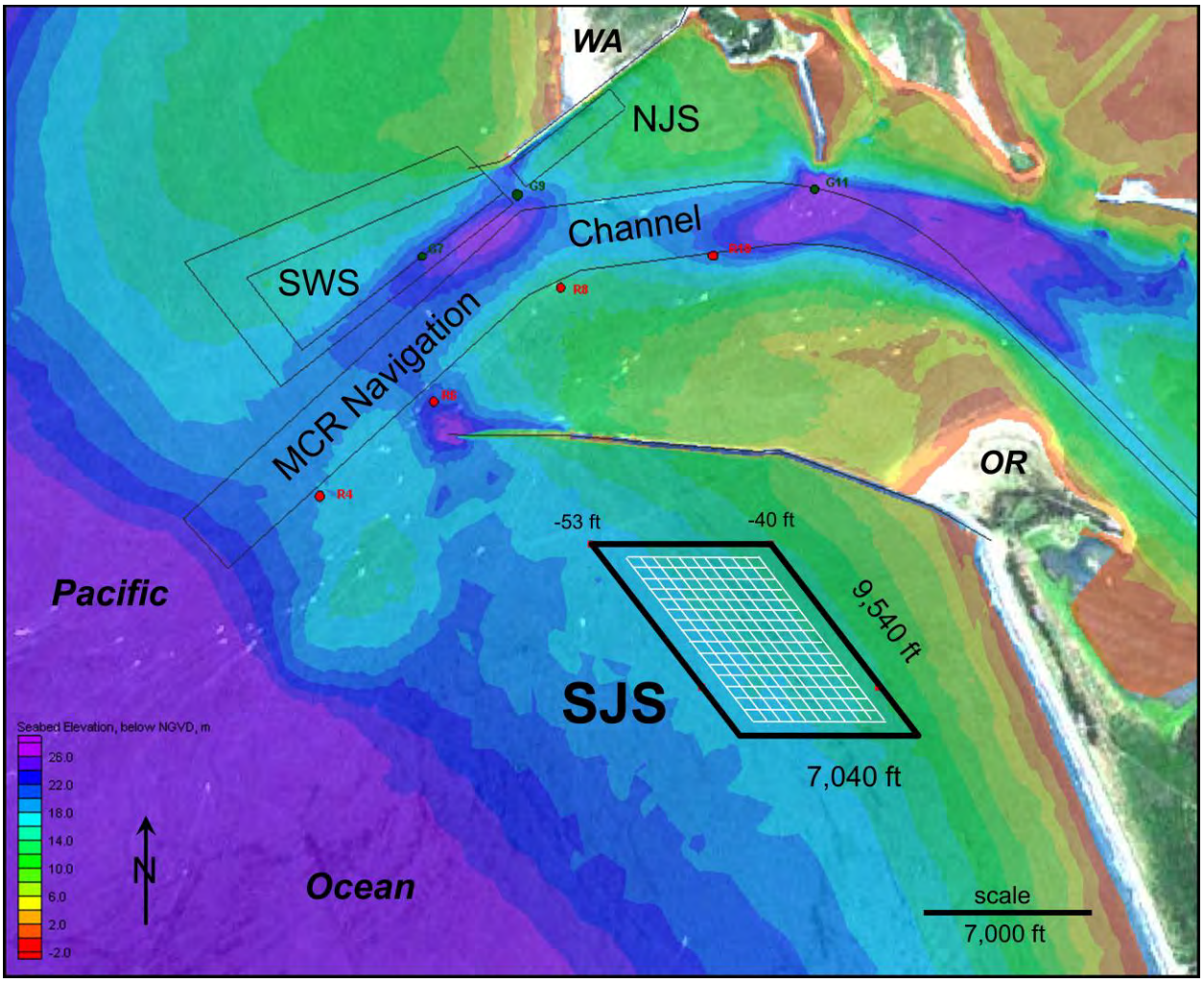

Figure 7. Bathymetry of SJNS

Geological structure and hazards

The South Jetty Nearshore site has been identified as the area in the greatest need of dredged material, with scouring of the seabed expected to accelerate without the input of sand into the littoral zone. Erosion in this area increases the intensity of waves hitting the jetty; any catastrophic jetty failure or breach would create new ecosystem changes and result in dramatic impacts to the navigation channel and estuary. Modeling in conjunction with a November 2010 science/policy workshop indicates that this site is ideally located for circulation of sand to the South Jetty. Monitoring will be required after placement to ensure that material placed at the site effectively contributes material to the littoral system and stability to the South Jetty shoals.

Based on previous bathymetric and vibracore studies, this area is losing between 88,000 and 270,000 cy per year and pre-historic clay layers are being exposed. Use of this site is intended to reverse this trend and as the material gradually builds up at the new site, it would also serve to break waves at a distance from the South Jetty with the intent of decreasing wave damage to the jetty itself.

Biological Features

Data indicated that this area does not have an established, complex infaunal community (Hammermeister 2006). Previous studies of the area determined this area to be the least productive area within the South Jetty vicinity in terms of benthic productivity.

The Corps regularly evaluates sediments from federal navigation channels to determine if they are acceptable for in-water disposal in accordance with the requirements of the Clean Water Act and the Marine Protection, Research, and Sanctuaries Act. Sampling and analysis is conducted in accordance with the guidance of the *Sediment Evaluation Framework for the Pacific Northwest* (2009). Project sediment sampling is typically performed on a 10-year rotational cycle, unless an event occurs that warrants more frequent sampling. The MCR navigation channel was sampled in 1990, 2000, and 2008 (see http://www.nwp.usace.army.mil/environment/sediment.asp). In 2008, ten surface grab sediment samples were collected from sites previously sampled in 2000. Percent sand averaged 98.45% with a range of 99.3% to 97.0%, and percent silt and clay averaged 1.59% ranging from 3.0% to 0.7%. Physical results for the 2000 and 2008 samples were compared. The mean percent sand for all samples in 2000 was 98.11%, and in 2008 was 98.45%. Within both data sets, sediment towards the outer portion of the MCR is finer than sediments towards the center (Corps 2008b).

In 2000, a sediment trend analysis was conducted at the MCR and surrounding offshore locations by GeoSea Consulting (McLaren and Hill 2000, Corps 2005). Over 1,200 samples were collected. Physical analyses of the samples surrounding the MCR area (six samples selected) indicate that the sediments consisted of greater than 99% sand. Ten samples in the MCR area were analyzed for physical and chemical contamination. No contaminants were detected at or near screening levels.

A full review of the Biologic Community for SJNS can be found in Chapter 3 of the Draft EA and in Supplemental BA.

Water Quality

Water quality in nearshore waters at the MCR is expected to be typical for seawater in the Pacific Ocean. For example, in 1980 the U.S. Geological Survey (USGS) collected seawater samples from 14 stations offshore of Yaquina Bay and conducted elutriate tests (see Fuhrer and Rinella 1983). All parameters measured were well within normal ranges expected for nearshore ocean waters and met the state's water quality standards. Currently, water column tests are rarely performed in nearshore ocean waters unless there is a "reason to believe" a water column release may occur.

The Columbia River is listed under Section 303(d) of the CWA as water quality limited for temperature from the MCR to Bonneville Dam. The listings pertain to the summer months. Modeling work on a temperature total maximum daily load for the Columbia River and the Snake River, from its mouth at the Columbia to its confluence with the Salmon River, discloses that the major impacts to temperature occur as a result of impoundments behind dams, and with the confluence of the Snake River.

The Columbia River is also water quality limited under Section 303(d) for the toxics parameters of DDE (DDT metabolite), polychlorinated biphenyls, and arsenic. Other toxics parameters listed of potential concern include cadmium; copper; iron; lead; mercury; nickel; silver; tributltin; zinc; aldrin; alpha-BNC; benzo(a)anthracene; benzo(g, h, i)perylene; BHC; chlordane; chrysene; cyanide; DDD; DDT; dieldrin; endrin; hexavalent chromium; phenol; polynuclear aromatic hydrocarbons; pyrene; and radionuclides. The proposed disposal sites are located in the ocean environment or intertidal zone north of the MCR; therefore, these toxics parameters are not a concern at the proposed locations. The Oregon Department of Environmental Quality (ODEQ) indicates that the Columbia River has naturally occurring turbidity levels at the river and ocean interface, rising to high levels during high flow events (ODEQ 2008).

Salinity distribution in the Columbia River plume is determined by the circulation patterns and the mixing process driven by tidal currents. The variability in river flow, tides, and currents also result in large variability in salinity. Modeling by USGS (figure 4) showed that in near surface waters near the landward portions of the North Jetty, salinity naturally varied with tides to 20 parts per thousand during October-November (USGS 2007).

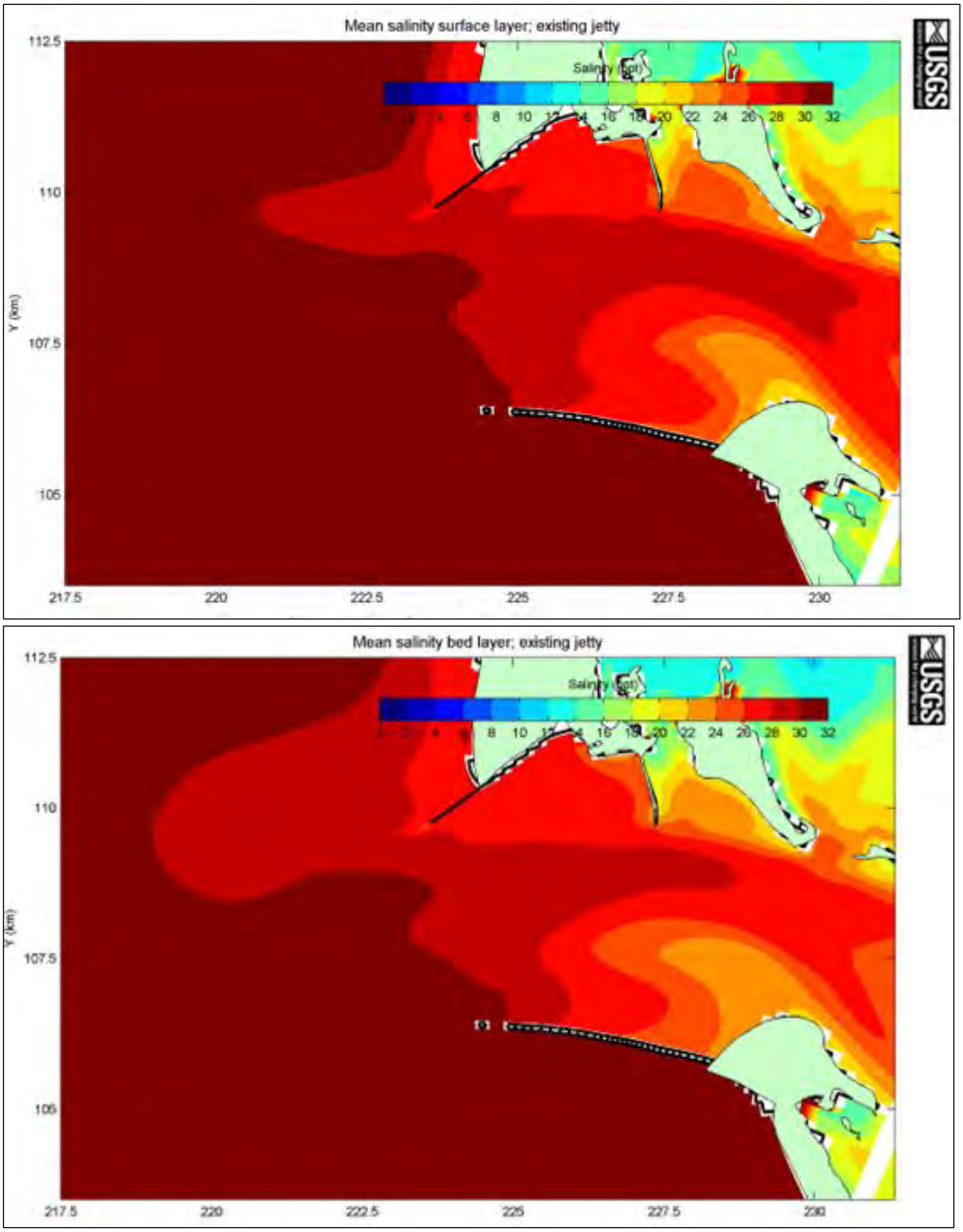

Figure 8. Mean Salinity for Surface Layer for August/September (top map) and October/November (bottom map) at the MCR

Cultural, economic, and social uses

There are no recorded historic properties within the MCR boundaries of the disposal area.
The MCR and nearshore areas to the north and south are littered with shipwrecks (Figure 9). Well over 200 major shipwrecks have occurred near the mouth – known for a century as "The Graveyard of the Pacific" (Astoria and Warrenton Chamber of Commerce, http://www.oldoregon.com/about/entry/about-the-astoria-warrenton-area/). The Columbia River bar is one of the most difficult river crossings in the world. These shipwrecks date to the early 1800s, although there is circumstantial evidence of shipwrecks before that. Spanish ships may have wrecked in the early 1700s, probably driven ashore in storms.

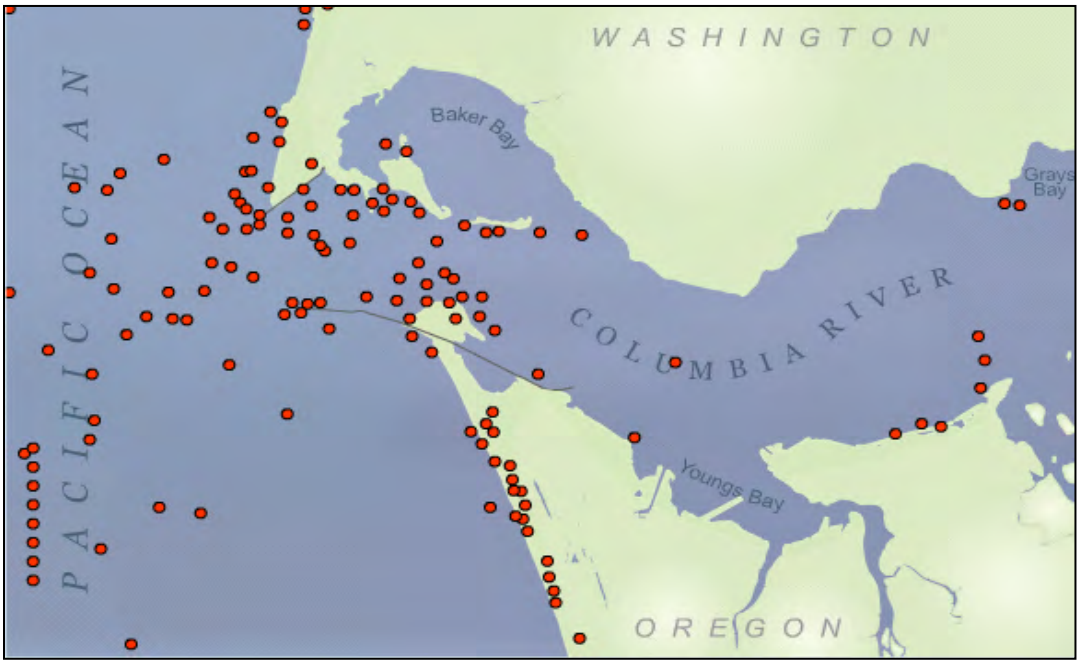

Figure 9. Shipwrecks at the MCR, Source: National Oceanic and Atmospheric Administration

Socio-Economic Resources

The following socioeconomic information was taken from the draft community profiles prepared by the NMFS (2006) and U.S. Census data. The MCR area encompasses Pacific County, Washington, near the communities of Ilwaco and Long Beach on the Long Beach Peninsula and Clatsop County, Oregon, near the communities of Warrenton and Astoria.

Warrenton, Oregon

Warrenton had a total population of 4,096 people in the 2000 Census and 4,989 people in the 2010 Census. A total of 82.4% of the population lived in family households in 2000. In 2000, the main occupational fields were education, health, and social services (19.3%) and retail (18.6%). The agriculture, forestry, fishing and hunting occupations represented 3.4% of the employed population, and 14.2% of the labor force was employed by local, state, or federal governments. Warrenton's per capita income was $16,874, compared to the national average of $21,587. The median household income was

$33,472, which was lower than the national average of $41,944. About 14.2% of the population was living below the poverty level, which was higher than the national average of 12.4%.

In 2000, Warrenton residents owned 52 vessels that participated in commercial fisheries. A total of 334 commercial vessels delivered landings to the Astoria-Warrenton port complex in 2000. These fishery landings included (data shown represents landings in metric tons/value of said landings/number of vessels landing): coastal pelagic fish (5907 t/$794,612/29), crab (1399 t/$6,530,137/92), groundfish (45,284 t/$12,980,569/151), highly migratory fish species (1682 t/$3,273,354/112), other fish species (178 t/$633,751/84), salmon (52 t/$138,537/82), and shrimp (3947 t/$3,816,430/48). In 2000, there were at least four seafood processors operating in Warrenton with about 168 employees. Approximately 39,523,763 pounds of fish were processed at a value of $22,361,265. In 2000, the top three processed products in the community, in terms of pounds landed and revenue earned, were Dungeness crab, flounder, and shrimp. In 2003, at least two outfitter guide businesses and two licensed charter vessel businesses were based in Warrenton. For the Astoria-Warrenton port complex, the 2000 recreational salmonid catch in the Ocean Boat Fishery was 766 Chinook and 13,712 coho salmon. The recreational non-salmonid catch totaled 1,533 fish, with most being black rockfish (*Sebastes melanops*).

Fort Stevens State Park is situated just outside of Warrenton. This 3,700-acre, year-round park is a very popular recreation area and offers camping, beachcombing, freshwater lake swimming, 9 miles of bicycle trails, 6 miles of hiking trails, wildlife viewing, a historic shipwreck, and a historic military area. Fort Stevens is also known for providing quality recreational fishing and clamming access.

Astoria, Oregon

Astoria had a total population of 9,813 people in the 2000 Census and 9,477 people in the 2010 Census. While the fishing industry has long formed the economic foundation of Astoria, the largest employers in 2003 were the U.S. Coast Guard, the Astoria School District, the Columbia Memorial Hospital, Clatsop County, and the Clatsop Community College. Other main industries in Astoria in 2000 were education, health and social services, retail trade, recreation, and accommodation and food services. According to the 2000 Census 17.1% of the surveyed population worked for the local, state, or federal government and 2.5% were in the armed forces. Astoria's per capita income was $18,759, compared to the national average of $21,587. The median household income was $33,011, which was lower than the national average of $41,944. About 15.9% of the population was living below the poverty level, which was higher than the national average of 12.4%.

In 2000, Astoria residents owned 184 vessels that participated in commercial fisheries. For information about commercial fishery landings, see the Warrenton data reported above. There were at least four seafood processors operating in Astoria in 2000. About 154 employees were employed by these processors and about 10,119,325 pounds of fish were processed at an estimated value of $16,870,071. The top three processed products were flounders, Dungeness crab, and shrimp. Astoria had at least six outfitter guide businesses in 2003, and six licensed charter vessel businesses.

Significant historical or archeological sites

Portland District staff archaeologists have reviewed the proposed action and concluded that there would be no effect on historic properties as there are no properties found within the boundaries of the SJNS. The Oregon State Historic Preservation Office concurs with the no effect to historic or archeological resources determination as determined by the Corps' Portland District archaeological staff.