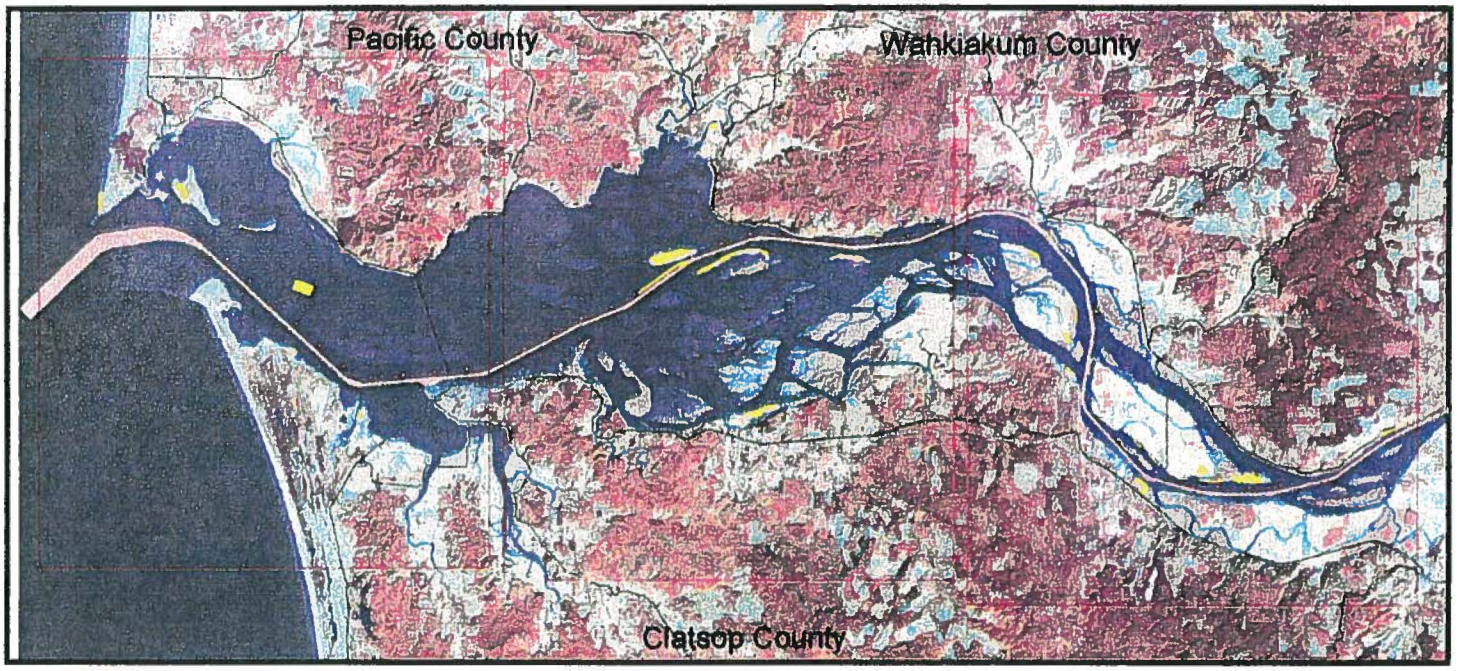
Columbia River Estuary Dredged Material Management Plan



Prepared by:

CREST
Columbia River Estuary Study Taskforce

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COLUMBIA RIVER ESTUARY DREDGED MATERIAL MANAGEMENT PLAN

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ACKNOWLEDGMENTS

CREST would like to acknowledge the contribution of the following jurisdictions and agencies for their assistance in the update to the *Columbia River Estuary Dredged Material Management Plan*.

Local Jurisdictions
City of Astoria
City of Warrenton
Clatsop County
Pacific County
Port of Astoria
Port of Chinook
Port of Ilwaco
Port of Wahkiakum No. 1
Port of Wahkiakum No. 2
Wahkiakum County

State Agencies
Oregon Department of Land Conservation and Development
Oregon Department of Environmental Quality
Oregon Department of Fish & Wildlife
Oregon Division of State Lands
Washington State Department of Ecology
Washington State Department of Fish & Wildlife
Washington State Department of Natural Resources

Federal Agencies
United States Army Corps of Engineers, Portland District
United States Environmental Protection Agency, Region 10
United States Fish and Wildlife Service
National Marine Fisheries Service

Other Organizations
Port of Portland
Columbia Deepening Opposition Group
Columbia River Crab Fisherman's Association

INTRODUCTION

Purpose and Plan Content

In 1979 the Columbia River Estuary Study Taskforce (CREST) completed a Dredged Material Management Plan for the Columbia River Estuary. The purpose of the plan was to establish policies and standards for regulating dredging and disposal in the estuary and to identify an adequate number of sites with sufficient capacity to meet projected disposal needs over a 20-year period. The original plan identified 98 dredged material sites located in Oregon and Washington, established priorities for their use, and recommended techniques for their protection and control. The sites were then protected through the comprehensive plans of Oregon and through the Shoreline Management Master Programs of the Washington jurisdictions. In 1986, CREST reevaluated and updated the plan to produce the *Columbia River Estuary Dredged Material Management Plan (DMMP).*

Since 1986, there have been changes in the dredged material disposal needs, limitations, and opportunities in the Columbia River estuary. Some identified sites are now developed with permanent structures in place. Other sites have received more material than was outlined in the *DMMP*, are currently at capacity, are no longer used or are not practical for dredged material placement. In addition, opportunities for beneficial use of dredged material need to be incorporated into the *DMMP*. Furthermore, an analysis and update of the dredged material disposal site inventory is necessary to ensure the adequacy of identified dredged material disposal sites for any future construction and maintenance activities. Updating the policies and disposal site inventory to reflect the changes that have occurred over the past 14 years will ensure that the *DMMP* remains useful.

The purpose of this revised *DMMP* is to refine the dredging and disposal policies and to inventory an adequate number of disposal sites with sufficient capacity to accommodate projected disposal needs for at least a 5-year period. Many of the inventoried sites provide for disposal over a much longer timeframe. The Plan is designed to be incorporated into local comprehensive plans in Oregon and shoreline management master programs in Washington to update these documents with respect to changes in disposal needs and regulatory policies.

The plan recognizes that the vast majority of dredging and disposal policies in the estuary are related to the Federal deep draft navigation channel. The U.S. Army Corps of Engineers completed a Dredged Material Management Plan (USACE 1998) for channel maintenance in 1998. That plan identified dredged material disposal needs for a 20-year period. The updated site inventory incorporates Corps disposal sites identified in their DMMP.

The plan also accounts for the disposal needs of local dredging projects. These projects include the dredging of entrance channels as well as commercial and recreational boat basins by local Port authorities.

The Plan is also intended to serve as a guide to dredging project proponents and regulatory agencies in planning and reviewing dredging projects. In order to be useful, it focuses on disposal sites that are both in the proximity of dredging areas and appear approvable under existing regulatory and zoning requirements. In this way, the plan can be used to expedite the dredging project proponents' search for appropriate disposal sites and regulatory agencies' permit review process.

The Plan is not intended to be an exhaustive list of all possible disposal sites and, therefore it includes a procedure for the designation of new sites. Also, the Plan does not guarantee site availability. In some cases designated sites are privately owned and their use will require owner approval. The Plan does not obviate the need to obtain dredging and disposal permits. In all cases, use of a site for dredged material disposal will have to conform to local, state, and federal regulatory requirements.

Plan Revision Process

CREST coordinated the revision of the Dredged Material Management Plan with government organizations, citizens, and dredging interests in the lower Columbia River. To accomplish this coordination, CREST established an Advisory Committee. The purpose of the Committee was to provide input regarding dredged material disposal needs, history, limitations, and policy for the Columbia River Estuary, as well as review the draft Plan and provide feedback to CREST. The Advisory Committee was made up of local governments, state and federal agencies, commercial fishing interests, and local citizens. CREST conducted meetings with the local planning officials as well as local and regional port officials to discuss the disposal sites within their jurisdiction. Meetings were also held with the Corps of Engineers to determine their disposal needs. A meeting of the Advisory Committee was held in March to review the Draft and work through outstanding issues.

CREST used the 1998 Army Corps of Engineers *Dredged Material Management Plan & Supplemental Environmental Impact Statement: Columbia and Lower Willamette River Federal Navigation Channel* as a main source of information. Because the Corps is the major dredging and disposal dredging project proponent within the Estuary it was important to coordinate with them to determine their projected disposal needs and to provide consistency between the two plans.

Definitions

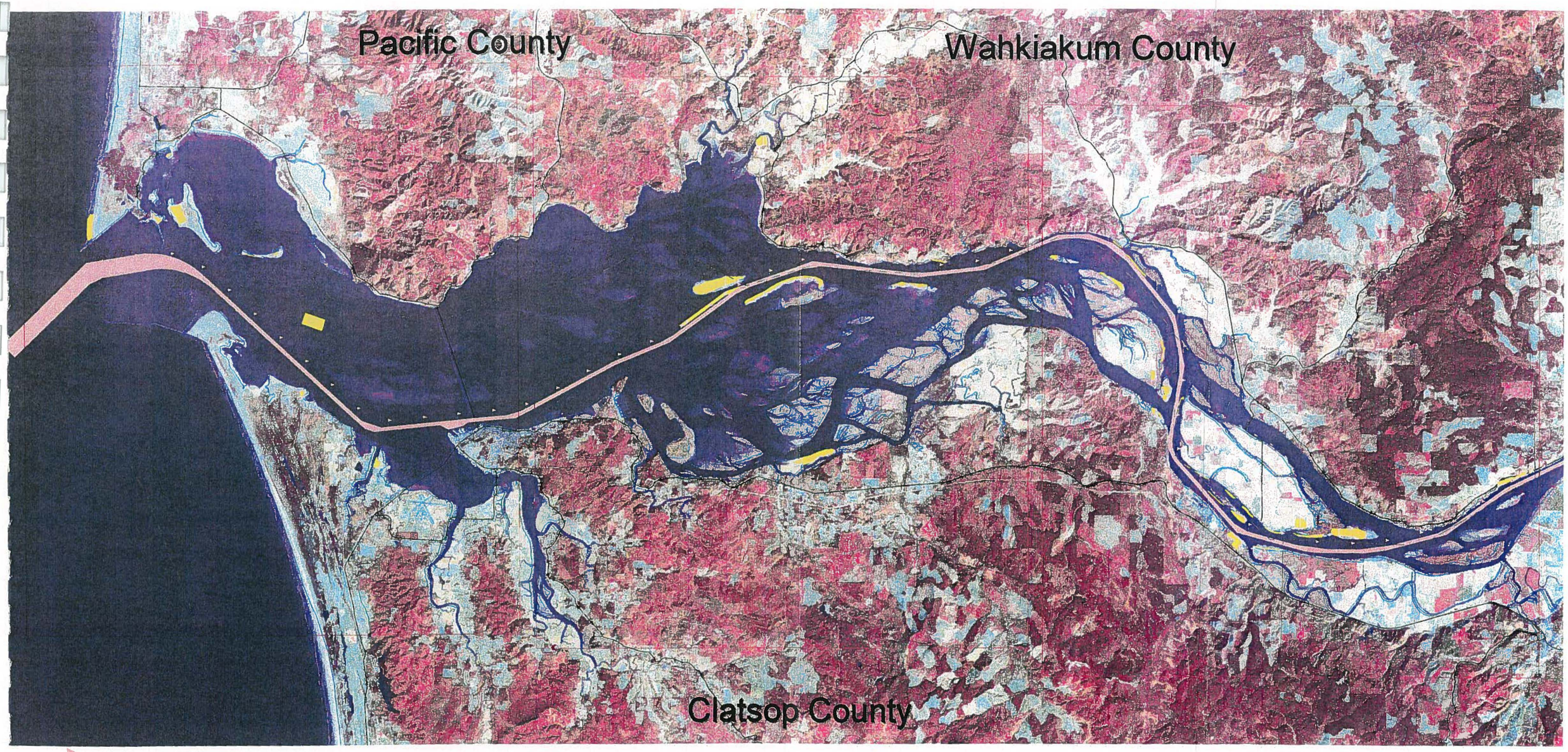
The terms and phrases listed below are defined in the context of their usage in this document. These definitions are to be considered regulatory in that they set important limits on actions associated with dredging and disposal projects.

Advance Maintenance Dredging	Dredging with the aim of providing year-round channel availability and to allow for an annual dredging cycle. Will not deepen the facility beyond its previously authorized depth.
Agitation Dredging	A sand bypasser dredge uses a propwash to stir up sediments. The current will then carry the sediments downstream away from the shoal area.
Aquatic area	The tidal waters and wetlands, and the land underlying these waters. The upper limit of aquatic areas is the upper limit of aquatic vegetation or, where such a line cannot be accurately determined, Mean Higher High Water.
Beach Nourishment	Deposition of sand material on actively eroding beach sites as a means of preventing further erosion of the bankline and to maintain the historic beach profile. Beach nourishment does not include creation of new upland area or beaches and must provide for the protection of estuarine resources (including habitat, nutrient, fish, wildlife, and aesthetic resources).
Beneficial Use	Placement or use of dredged material for some productive purpose. These uses may involve either the dredged material or the placement site as the integral component of the beneficial use.
Berm	A sloped wall or embankment used to prevent inflow or outflow of material and/or water into or from an area.

Clamshell Dredge	A mechanical cable excavator dredge that uses a single bucket attached to the dredge crane with cables. The dredge operates by lifting the bucket (the clamshell), dropping it into the bottom sediments, lifting the bucket and dredged material to the surface, and emptying the dredged material into a nearby disposal facility or barges for transportation to either an upland or in-water site disposal facility.
Confined Aquatic Disposal (CAD)	An in-water disposal location where dredged material is contained (see Confined Disposal Facility). Contaminated and capping material is placed in a natural or man-made bottom depression providing lateral support to the capped mound.
Confined Disposal Facility (CDF)	Include any disposal location where dredged material is contained, upland, in-water, or nearshore. Such disposal involves the controlled placement of the dredged material at a designated dredged material disposal site. Such a process may involve the construction of levees or other holding facilities as a means of containing the material.
Dredged material	Sediments, sand, gravel and other solids removed from an aquatic area.
Dredged material disposal	Deposition of dredged material in aquatic or upland areas.
Dredged Material Evaluation Framework (DMEF)	The *DMEF* provides a consistent technical framework to follow in identifying environmentally acceptable alternatives for the management of dredged material. This document represents the best available knowledge regarding dredged material assessment. As new information and technologies become available the document will be updated. The *DMEF* was prepared by a working group of the following agencies U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Washington Department of Ecology, Washington Department of Natural Resources, and Oregon Department of Environmental Quality. This document is available online at http://www.nwp.usace.army.mil/ec/h/hr/Final/
Corps of Engineers *Dredged Material Management Plan & Supplemental Environmental Impact Statement: Columbia and Lower Willamette River Federal Navigation Channel*	Presents the findings of studies conducted to determine how to best maintain the existing 40-foot Columbia and Lower Willamette River navigation channel over the next 20 years using the criteria of least cost, environmental acceptability and technical feasibility. The potential impacts to physical, cultural and biological resources have been evaluated in accordance with the requirements of the National Environmental Policy Act (NEPA). The proposed actions are also evaluated in accordance with the requirements of the Clean Water Act (CWA), Endangered Species Act (ESA), Coastal Zone Management Act, Marine Protection Research and Sanctuaries Act, and other applicable environmental laws and Executive Orders.
Dredging	The removal of sediment or other material from an aquatic area for the purpose of deepening the area, obtaining fill material, or maintaining existing structures.

Dredging project proponent	The entity that is undertaking the dredging and dredged material disposal project.
Drift Right	A specific area or section of river bottom that has been cleared of snags and sunken debris and is shared and actively maintained by a group of fishermen as their fishing grounds
Effluent	Water, including dissolved and suspended materials, which flows from a dredged material disposal site.
Estuarine Open-Water Disposal	All types of in-water dredged material disposal within the estuary which do not fall into the classifications of flow-lane disposal, beach nourishment, sump disposal, and disposal to provide fill material for an approved aquatic area fill project. Area D is the only such disposal site in the Estuary.
Flow-lane Disposal	In-water deposition of dredged material in or adjacent to the maintained navigation channel. Flow-lane disposal is allowed only in development management units between 20 and 65 feet below MLLW.
Hopper Dredge	A hopper dredge is a type of hydraulic dredging consisting of a propelled floating plant, capable of dredging material, storing it onboard, transporting it to the disposal area, and dumping it. Material from hopper dredges is disposed of in deep water in or alongside the navigation channel.
Inland Testing Manual (ITM)	*Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual* (U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Office of Water). The purpose of the ITM is to provide guidance regarding technical protocols under Section 404 of the Clean Water Act for evaluating proposed discharges of dredged material associated with navigational dredging projects into waters of the United States. This document can be found on-line at http://www.epa.gov/ost/itm/ITM/
In-water Disposal	Deposition of dredged material in a body of water. Methods include: beach nourishment, flow-lane disposal, estuarine open-water disposal, in-water sump disposal, agitation dredging and ocean disposal.
Levee	With regard to dredged material disposal, a structure consisting of sediments, rock, or other material designed to contain the dredged material and allow for settling of solids in a specific area while it is being deposited and after deposition has occurred. The term "levee" is also used in this plan to describe flood control structures. Flood control levees are sometimes repaired or reinforced with dredged material. (Note: referred to as a dike in the previous *Plan*).
Maintenance Dredging	Dredging of a channel, basin, or other water-dependent facility which has been dredged before and is currently in use or operation or has been in use of operation sometime during the past five years, provided that the dredging does not deepen the facility beyond its previously authorized or approved depth plus customary advanced maintenance dredging.

Columbia River Estuary Dredged Material Management Plan



River Miles
County Boundaries
Estuary Disposal Sites
Navigation Channel (Flow Lane Disposal)
Shoreline

CREST
Columbia River Estuary Study Taskforce

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New Work Dredging	Dredging a channel, basin, or other water-dependent facility that has not been dredged before; deepening an existing dredged channel, basin, or other water-dependent facility beyond its previously authorized or approved depth; dredging a channel, basin, or other water-dependent facility that has not been in use of operation in the past five years.
Ocean Disposal	The deposition of dredged material in approved ocean disposal sites.
Ocean Testing Manual (Green Book)	*Evaluation of Dredged Material Proposed for Ocean Disposal: Testing Manual* (U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Office of Water). The purpose of the Green Book is to provide technical guidance for determining the suitability of dredged material for ocean disposal through chemical, physical, and biological evaluations. The technical guidance is intended for use by dredging applicants, laboratory scientists, and regulators in evaluating dredged-material compliance with the United States Ocean Dumping Regulations. This document can be found on-line at http://www.epa.gov/OWOW/oceans/gbook/index.html
Pipeline Dredge	Pipeline dredges usually consist of a large centrifugal pump mounted on a non-propelled, specially designed barge. The bottom materials are then pumped up through a large diameter suction pipe to the barge, and then to the disposal area through a pipeline. The dredging end of the suction pipe is equipped with a revolving cutter-head that breaks up the bottom for easier transport
Sump Disposal	Deposition of dredged materials in a temporary in-water disposal site. The material is subsequently rehandled to an upland disposal site.
Tidegate	A flood control structure designed to regulate tidal exchange between the ocean or estuary and inland sloughs.
Upland Disposal	Deposition of dredged material on uplands or shorelands, including on the top and landward sides of flood control levees.

GUIDELINES

The guidelines located in this section are intended to be incorporated into local comprehensive plans in Oregon and shoreline management master programs in Washington.

General Dredging and Disposal

1. General

a. All relevant state and federal water quality standards shall be met by dredging and dredged material disposal activities.
b. When evaluating the feasibility of a disposal option, both environmental and economic factors shall be taken into consideration. However, the final selection shall favor the option with the fewest relative environmental impacts.
c. Projects shall avoid, minimize, and mitigate for unavoidable loss of habitat, resource, and use.
d. Preference shall be given to the use of those sites or methods that allow for the beneficial use of the dredged material.
e. Dredging and dredged material disposal shall not disturb more than the minimum area necessary for the project and shall be conducted so as to minimize impacts on wetlands and other estuarine resources. Loss or disruption of fish and wildlife habitat and damage to essential properties of the estuarine resources shall be minimized by careful location, design, and construction of:
    i. facilities requiring dredging
    ii. sites designated to receive dredged material, and
    iii. dredging operation staging areas and equipment marshalling yards.
f. Erosion, sedimentation, increased flood hazard, inhibited fish utilization and passage, and other undesirable changes in circulation shall be avoided in the dredging and disposal of dredged materials.
g. Adverse short-term effects of dredging and aquatic area disposal such as increased turbidity, release of organic and inorganic materials or toxic substances, depletion of dissolved oxygen, disruption of the food chain, loss of benthic productivity, and disturbance of fish foraging and rearing activities, fish runs and important localized biological communities shall be minimized.
h. The appropriate review/permitting process for impacts to an ESA-listed species has been followed and is approved/permitted by the appropriate Fisheries agency.

2. Coordination

a. The timing of dredging and dredged material disposal operations shall be coordinated with the appropriate State and Federal agencies, local governments, and private interests to protect estuarine aquatic and shoreland resources, and minimize interference with commercial and recreational fishing. All activity shall follow the guidelines for in-water work assigned by State and Federal resource agencies for the Columbia River Estuary.
b. Bottom sediments in the dredging area, including possible sloughing zones, shall be characterized by the applicant in accordance with the *DMEF*, as developed by the U.S. Army Corps of Engineers, Northwestern Division, Seattle and Portland Districts; U.S. Environmental Protection Agency Region 10; Oregon Department of Environmental Quality; Washington State Department of Ecology; and Washington State Department of Natural Resources. Information that may be required includes, but is not limited to, sediment grain size distribution, organic content, oil and grease, selected heavy metals, pesticides, and benthic biological studies.

3. Sediments

a. The *DMEF* shall be used as the model for sediment testing guidelines and criteria.
b. Bottom sediments in the dredging and disposal areas shall be adequately characterized before the operation begins. This information should include, as appropriate: particle size

and distribution; organic content; nutrients; sulfides; oxygen; DDT; DDE; PAH; PCB; TBT; dioxins and heavy metals; benthic studies or other tests.

c. All sediment testing shall be completed in compliance with *DMEF* requirements.

Dredging

a. Dredging in estuarine aquatic areas, subject to dredging and dredged material disposal policies and standards, shall be allowed only:
   i. If specifically allowed by the applicable zone and required for one or more of following uses and activities:
      a) navigation or navigational access;
      b) an approved water dependent use of aquatic areas or adjacent shorelands requiring an estuarine location;
      c) an approved restoration project;
      d) excavation necessary for approved bridge crossing support structures, pipeline, cable, or utility crossing;
      e) maintenance of existing tidegates and tidegate drainage channels (Oregon jurisdictions add "where a goal 16 exception has been approved");
      f) aquaculture facilities.
   ii. If a need (i.e. a substantial public benefit) is demonstrated and the use or alteration does not unreasonably interfere with public trust rights; and
   iii. If adverse impacts are avoided, minimized, and mitigated; and
   iv. The appropriate review/permitting process for impacts to an ESA-listed species has been followed and is approved/permitted by the appropriate Fisheries agency; and,
   v. The activity abides by all required local, state and federal permits.

b. When dredging is permitted, the dredging shall be the minimum necessary to accomplish the proposed use.

c. Impacts on areas adjacent to the dredging site such as destabilization of fine textured sediments, erosion, siltation, and other undesirable changes in circulation patterns shall be minimized.

d. The effects of both initial and subsequent maintenance dredging shall be considered prior to approval of new projects or expansion of existing projects.

e. Projects will not be approved unless disposal sites with adequate capacity to meet initial excavation dredging and at least five years of expected maintenance dredging requirements are available.

f. Minor dredging of existing tidegate drainage channels and drainage ways is limited to the amount necessary to maintain and restore flow capacity essential for the function of tidegates and to allow drainage and protection of agriculture and developed areas. Tidegate maintenance dredging does not include enlarging or extending the dimensions of, or changing the bottom elevations of, the affected tidegate drainage channel or drainage way as it existed prior to the accumulation of sediments.

g. Sand extraction projects shall be associated with an approved dredging project in the area.

h. Dredging for mining and mineral extraction is prohibited.

i. Dredging shall be allowed only where said dredging is consistent with the resource capabilities of the affected zone.

Oregon jurisdictions add the following policies:

j. New dredging in Aquatic Conservation zones may be permitted only for:
   i. Aquaculture;
   ii. High intensity water-dependent recreation, including boat ramps and marinas;
   iii. Minor navigational improvements;

iv. Active restoration;
v. Bridge crossing support structures;
vi. Pipelines, cables, and utility crossings;

k. New dredging in Aquatic Natural zones may be permitted only for:
   i. Maintenance or installation of bridge crossing support structures;
   ii. Pipelines, cables, and utility crossings.
l. Dredging for the installation of bridge crossing support structures and for pipelines, cables, and utility crossings shall be allowed only where said dredging is consistent with the resource capabilities of the affected area.

Disposal

1. In-Water Disposal*

a. General**

i. Proposals for in-water disposal of dredged materials shall:
   a) Demonstrate the need for the proposed action and that there are no alternative disposal sites or methods that entail less damaging environmental impacts;
   b) Demonstrate that the dredged sediments meet *DMEF* sediment testing requirements and state and federal water quality standards;
   c) Demonstrate that the proposed disposal will not create a hazard to safe navigation.
   d) Give priority to those disposal sites which allow for the beneficial use of the dredged material.
   e) Not be permitted in the vicinity of a public water intake.

ii. Proposals for in-water disposal shall be coordinated with commercial fishing interests, including, but not limited to: the Columbia River Fisherman's Protective Union, Northwest Gillnetters Association, Salmon for All, other known fishing organizations and the State fishery agencies. In-water disposal actions shall avoid drift rights whenever feasible. When it is not feasible to avoid drift rights, impacts shall be minimized in coordination with fisheries interests through:
   a) Disposal timing
   b) Gear placement
   c) Choice of disposal area within the drift, and
   d) Disposal techniques to avoid snag placement

iii. All in-water disposal and agitation dredging shall be monitored to assure that estuarine sedimentation has no adverse effects on biota, and is consistent with the resource capabilities and purpose of affected natural and conservation designations.

iv. With regard to in-water disposal in the river, estuary and ocean:
   a) Consideration shall be given to the need for the proposed disposal, the availability and desirability of alternate sites and methods of disposal that might be less damaging to the environment. No site should be used if insufficient sediment type and benthic population data are available to provide a general idea of the biological value of the site.
   b) The size and chemical characteristics of the dredged material should be compared with those of the disposal site, and consideration shall be given to matching the dredged material to the capabilities of the site.

* In-water disposal includes: flow-lane, estuarine, sump, and ocean disposal.
** These general policies apply to all forms of in-water disposal.

c) Erosion, sedimentation, increased flood hazard, inhibited fish utilization and passage, and other undesirable changes in circulation shall be avoided, minimized, and mitigated during the disposal of dredged material.
d) Adverse impacts to tidal marshes, tidal flats and other wetlands shall be avoided, minimized, and mitigated.
e) Dredged material disposal shall not be permitted in the vicinity of a public water supply intake.

v. For projects that involve disposal on three year or shorter intervals, the monitoring requirement may be waived by the affected jurisdiction(s) after adequate monitoring has been conducted to demonstrate that estuarine sedimentation has no adverse effects on biota, and is consistent with resource capabilities and purpose of the affected natural and conservation zones. If more than three years has elapsed since the previous disposal action or if disposal amounts have increased substantially over the previous disposal volume this requirement shall not be waived.

vi. Prior to undertaking disposal, a monitoring program designed to test whether or not the disposal is adversely affecting estuarine resources shall be established and agreed upon by local, state, and federal agencies. The dredging project proponent shall conduct the monitoring as specified in the program.

vii. After disposal has been completed, the project proponent shall report the volume of material placed at the site.

b. Flow-lane Disposal

i. The flow lane disposal area is limited to areas between 20 and 65 feet below MLLW. When utilizing flow lane disposal the following shall also be taken into consideration: potential impacts, proximity to sensitive habitats, and current patterns.

ii. Flow lane disposal shall be in identified areas and use of these sites shall not have adverse hydraulic effects. Use of disposal sites in the estuary shall be allowed only when no feasible alternative upland sites can be identified and the biological and physical impacts of flow lane disposal are demonstrated to be minimized. The feasibility and desirability of alternative sites shall take into account, at a minimum:
a) Operational constraints such as distance to alternative sites;
b) Sediment characteristics at the dredging site;
c) Timing of operation;
d) Environmental Protection Agency constraints on the use of designated ocean disposal sites;
e) The desirability of reserving some upland sites for potentially contaminated material.

iii. Long-term use of a flow lane disposal site may only be allowed if monitoring confirms that the impacts are insignificant. Flow lane disposal is contingent upon demonstration that:
a) Adverse effects due to changes in biological and physical estuarine properties will not result;
b) Flow lane disposal sites shall be shown able to transport sediment without excessive shoaling, interference with recreational and commercial fishing operations, including the removal of snags from gillnet drifts, undesirable hydraulic effects, or adverse effects on estuarine resources (fish runs, spawning activity, benthic productivity, wildlife habitat, etc.).

iv. Flow-lane disposal shall be conducted so that:
a) Disposal should not occur under fresh-water flow and tidal conditions where the predominant sediment transport at a site is upriver.
b) Use of the disposal site does not interfere with fishing activities by causing major changes in the circulation patterns or bottom configuration of the disposal site.

c. Estuarine In-Water Disposal

i. Estuarine in-water disposal shall be monitored to assure that estuarine sedimentation has no adverse effects on biota, and is consistent with the resource capabilities and purpose of affected natural and conservation zones.

ii. Estuarine in-water disposal shall be in areas identified as low in benthic productivity and use of these sites shall not have adverse hydraulic effects.

iii. Long-term use of an estuarine disposal site may only be allowed if monitoring confirms that the impacts are insignificant. Disposal is contingent upon demonstration that:

   a) Adverse effects due to changes in biological and physical estuarine properties will not result;

   b) Estuarine disposal sites shall minimize interference with recreational and commercial fishing operations, undesirable hydraulic effects, and any adverse effects on estuarine resources (fish runs, spawning activity, benthic productivity, wildlife habitat, etc.).

iv. Use of the disposal site does not interfere with fishing activities by causing major changes in the circulation patterns or bottom configuration of the disposal site.

d. Ocean Disposal

This plan is intended to manage dredged material disposal in the Columbia River Estuary and therefore does not regulate ocean disposal. All disposal in the ocean shall comply with local, state and federal law as they apply.

e. Monitoring

A monitoring program shall be established prior to undertaking in-water disposal. The program should, at a minimum, characterize baseline conditions both prior to and subsequent to disposal.

Prior to any in-water disposal the sediment shall be tested according to the procedures found in the *Dredged Material Evaluation Framework (DMEF).*

The monitoring requirement may be discontinued when adequate information has been gathered to determine impacts and establish an agreed-upon disposal volume and methodology. It can be reestablished upon any significant alterations to the disposal practice.

Monitoring may be waived on small projects where the impacts would be undetectable. A decision to waive the requirement shall be made in coordination with the appropriate State and Federal regulatory agency(s).

2. Upland Disposal

i. Dredged material disposal sites shall not impair scenic views and will be completely enclosed by levees or berms of sufficient capacity to allow for the settling of sediments before entrapped water leaves the leveed area. The outside face of the levees shall be sloped at 1 ½o 1 (horizontal to vertical) or flatter and seeded with grass or otherwise protected to prevent erosion. Outlet structures in levees shall be placed so that water discharged within the levees will take the longest possible time to reach the outlet and shall be designed so that only water having the least possible amount of turbidity is allowed to return to the receiving waters.

ii. Except as noted below, upland disposal and site preparation shall be conducted such that:

   a) Surface runoff from disposal sites is controlled to protect water quality and prevent sedimentation of adjacent water bodies, wetlands, and drainage

ways. Disposal runoff water must enter the receiving waterway through a controlled outfall at a location with adequate circulation and flushing characteristics. Underground springs and aquifers must be identified and protected;

b) Levees are constructed according to accepted engineering standards; are adequate to support and contain the maximum potential height and volume of dredged materials at the site; and form a sufficiently large containment area to encourage proper ponding and to prevent the return of dredged materials into the waterway or estuary. Containment ponds and outfall weirs shall be designed to maintain adequate standing water at all times to further encourage settling of dredged materials. The levees shall be constructed within the boundaries of the disposal site and shall be constructed of material obtained from within the site or other approved source.

c) Clean dredged material placed on upland disposal sites located directly adjacent to designated beach nourishment sites may be allowed to flow directly into the waterway without conforming to Items i and ii, above, provided that all policies and standards for in-water disposal and beach nourishment are met and the dredged materials are not allowed to enter wetlands or the waterway in areas other than the designated beach nourishment site.

iii. Upland disposal sites which are not intended for dredged material disposal or development use within a two year period following disposal shall be revegetated with native plant species as soon as site and weather conditions allow, unless habitat management plans agreed upon by resource management agencies specify that open sand areas should remain at the site. The dredging project proponent shall notify the local jurisdiction and State and Federal permitting and resource management agencies when disposal is completed and shall coordinate revegetation with these agencies. The notification shall be sent to at least the following agencies: the local jurisdiction, U.S. Army Corps of Engineers, National Marine Fisheries Service, Soil and Water Conservation District, Natural Resource Conservation Service, Division of State Lands, Oregon Department of Fish and Wildlife, Department of Ecology, Department of Natural Resources, and Washington Department of Fish and Wildlife. Revegetation of a disposal site does not preclude future uses of the sites for dredged material disposal.

iv. The disposal site design shall be reviewed to determine if wetlands or other habitats will form on the site during the period between disposal actions. The disposal permit may be conditioned to allow future disposal actions to fill the created wetlands or habitats.

v. Oregon jurisdictions add: "The area shall not be a significant Goal 17 wetland."

vi. The final height and slope after each use of a upland dredged material disposal site shall be such that:

a) The site does not enlarge itself by sloughing and erosion into adjacent areas;

b) Loss of materials from the site during storms and freshets is minimized;

c) Interference with the view from nearby residences, scenic points, and parks does not occur.

vii. Coordinate with Oregon Division of State Lands or Washington Department of Natural Resources to determine what, if any, royalties are required.

Beach Nourishment

i. Beach nourishment shall be conducted such that:

a) The beach is not widened beyond its historical profile. The historical profile shall be defined as the widest beach profile that existed prior to June 1986.

b) The material placed on the beach consists of sand of equal or greater grain size than the sand existing on the beach.

c) Placement and subsequent erosion of the materials does not adversely impact tidal marshes or productive intertidal and shallow subtidal areas.
d) Efforts shall be made to maintain a stable beach profile.
e) Dredged material shall be graded at a uniform slope and contoured to reduce cove and peninsula formation, to minimize juvenile fish stranding and hazards to beach users.
f) Erosion or deposition downstream from the disposal site is minimized. Particular care must be taken that erosion of the dredged material does not smother marsh or other shallow productive areas.
g) The volume and frequency of dredged material disposal is such as to maintain a stable beach profile, as nearly as possible.

Site Selection & Site Reservation

The purpose of designating sites is to protect important dredged material disposal sites from incompatible and preemptive uses that may limit their ultimate use for the deposition of dredged material, to ensure that an adequate number of sites will be reserved in order to accommodate dredged material disposal needs resulting from five years of existing and expected water-dependent development and navigation projects, and to promote the beneficial use of dredged materials.

Local jurisdictions should designate and reserve the acceptable dredged material disposal sites listed in this plan. Absence of this designation may allow development at a site to occur before any dredged material disposal use, resulting in a reduction of available disposal capacity for necessary dredging projects. The general management responsibility of a local jurisdiction for its dredged material disposal sites is to discourage preemptory uses of the site prior to use for disposal. This responsibility is fulfilled through the implementation of ordinance/plan and review procedures discussed in this Plan.

1. Dredged Material Disposal Sites

i. Dredged material disposal shall occur only at designated sites or at new sites that meet the requirements of the Dredged Material Disposal Site Selection Policies, as well as local, State and Federal regulations.
ii. Selection of dredged material disposal sites shall be in accord with the Dredged Material Disposal Plan Site Selection and Use Priorities.
iii. Preference shall be given to the use of those sites that allow for the beneficial use of the dredged material.
iv. Each jurisdiction shall cooperate with other jurisdictions on the Columbia River Estuary in monitoring of dredged material site availability and in any dredged material disposal plan update.
v. In order to ensure the adequacy of identified dredged material disposal site capacities for anticipated five-year disposal requirements, an analysis of the dredged material disposal site inventory shall be completed every five years. The analysis shall include:
    a) A determination of the sites utilized for dredged material disposal and the volume received by each site during the preceding period, noting also the project source of the dredged material and the interval separating the most recent from the next anticipated dredging event.
    b) A determination of the number and usable volume of sites remaining in the inventory, and the relationship between these sites and present or expected navigation-related dredging or water-dependent development projects in the following five year period.
    c) An identification of additional beneficial use sites to be added to the inventory.

d) An analysis of the adequacy of the dredged material site inventory shall include notification of a communication of updated inventory information to affected property owners and local, state and federal governmental agencies. Of particular importance is the addition, deletion, or change of dredged material disposal sites.

2. Permitted Uses

*See Use and Activity Matrices in following section.

3. Incompatible and Preemptive Uses

i. Incompatible or preemptive uses shall be discouraged at dredged material disposal sites unless the site is removed from the dredged material disposal plan by ordinance or plan amendment upon demonstration that either:
   a) The site has been filled to capacity and is available for other uses, or
   b) The site is, in fact, not required to accommodate anticipated five-year disposal needs, or
   c) A new site has been designated to replace the site being removed.

ii. Uses requiring substantial structural or capital improvements (e.g. construction of permanent buildings, water and sewer service connections)

iii. Uses that require alteration of the topography of the site, thereby affecting the drainage of the area or reducing the potential useable volume of the dredged material disposal site (e.g. extensive site grading or excavation, elevation by placement of fill materials other than dredged material);

iv. Uses that include changes made to the site that would prevent expeditious use of the site for dredged material disposal. Such uses would delay deposition of dredged material on the site beyond the period of time commonly required to obtain the necessary federal, state, and local dredging and dredged material disposal permits (approximately 90 days).

Development Freeze

A 30 day freeze shall be placed on preemptive development requests for the purpose of allowing affected government agencies or private interests to negotiate for the use of the property as a disposal site. Individual jurisdictions may choose to run this freeze concurrently or in addition to the normal permit process. If there is no expressed interest in use of the site for dredged material disposal during the freeze period, the development request shall be reviewed under normal procedures. If the request is approved, the entire site or affected portions of the site shall be removed from the dredged material disposal plan by ordinance/plan amendment.

4. Site Selection

Practicality and zoning will protect many of the dredged material disposal sites identified in this plan. However, ownership and development plans can change; therefore, it is necessary to take some action to ensure dredged material disposal use at a given site prior to allowing a development which could prevent all future disposal at the site.

Local jurisdictions may use a combination of special zoning and limited freezing of development proposals to reserve dredged material disposal sites. Model ordinance/plan language for an overlay zoning district for reserving dredged material disposal sites is given below. The overlay district protects sites by not allowing uses that preempt dredged material disposal unless the site is removed from the dredged material disposal plan by ordinance/plan amendment.

a. Site Selection

i. When identifying dredged material disposal sites, emphasis shall be placed on sites where (not in priority order):
   a) The site provides the opportunity for the beneficial use of dredged material.

b) The local comprehensive plan/ shoreline master program land use designation is development provided that the disposal does not preclude future development at the site;
c) The potential for the site's final use will benefit from deposition of dredged materials;
d) Material may be stockpiled for future use;
e) Dredged spoils containing organic, chemical, and/or other potentially toxic or polluted materials will be properly contained, presenting minimal health and environmental hazards due to leaching or other redistribution of contaminated materials;
f) Placement of dredged material will help restore degraded habitat;
g) Wetlands will not be impacted
h) (Washington jurisdictions add: "The land is owned by the state or, secondly, where the land is owned or leased by a county, port, or other public entity.")
i) The appropriate review/permitting process for impacts to an ESA-listed species has been followed and is approved/permitted by the appropriate Fisheries agency.

ii. Important fish and wildlife habitat or areas with scenic, recreational, archaeological, or historical values that would not benefit from dredged material disposal and sites where the present intensity of type of use is inconsistent with dredged material disposal shall be avoided.
iii. Oregon jurisdictions add: "The use of agricultural or forest lands for dredged material disposal shall occur only when the dredging project proponent can demonstrate that the soils can be restored to agricultural or forest productivity after disposal use is completed. In cases where this demonstration cannot be made, an exception to the Agricultural Lands or Forest Lands Goal must be taken and included as an amendment to the Comprehensive Plan prior to the use of the site for dredged material disposal. The use of shoreland water dependent development sites for dredged material disposal shall occur only when the dredging project proponent can demonstrate that the dredged material placed on the site will be compatible with current or future water dependent development. Dredged material disposal shall not occur in any significant Goal 17 resource areas."
iv. Engineering factors to be considered in site selection shall include:
a) size and capacity of the site
b) dredging method
c) composition of dredged materials
d) distance from dredging operation
e) control of drainage from the site
f) elevation
g) costs of site acquisition, preparation and revegetation
v. Flow lane disposal sites shall only be allowed in development designate areas within or adjacent to the Federally Authorized Navigation channel where:
a) Sediments can reasonably be expected to be transported without excessive shoaling,
b) Interference with recreational and commercial fishing operations will be minimal or can be minimized by applying specific timing restrictions,
c) Adverse hydraulic effects will be minimal,
d) Adverse effects on estuarine resources can be shown to be minimal, and
e) The disposal site depth is between 20 and 65 feet below MLLW.
f) The disposal site does not create a hazard for safe navigation.
vi. Estuarine in-water disposal sites shall be in areas identified as low in benthic productivity, unless the disposal is to provide fill material for an approved fill project, and where disposal at the site will not have adverse hydraulic effects.

vii. Estuarine in-water disposal sites shall only be designated and used when it is demonstrated that no feasible upland or EPA-designated ocean disposal sites can be identified and biological and physical impacts are minimal[1].
viii. An in-water disposal site shall not be used if sufficient sediment type and benthic data are not available to characterize the site.
ix. Beach nourishment sites shall only be designated on sandy beaches currently experiencing active erosion. Dredged material disposal at beach nourishment sites shall only be used to offset the erosion and not to permanently create new beach or upland areas. Beach nourishment sites shall not be designated in areas where placement or subsequent erosion of the dredged materials would adversely impact tidal marshes or productive intertidal or shallow subtidal areas. (Oregon Jurisdictions add: " Designation of new beach nourishment sites shall require an exception to Statewide Planning Goal 16.")
x. Dredged material disposal sites with adequate capacity to accommodate anticipated dredging needs for at least a five-year period shall be identified and designated in local plans and zoning ordinances. Additional sites may also be designated.

5. Removal of Site Designation

Sites may be removed by ordinance/plan amendment to the Plan in the following situations:

i. If the site is no longer viable for the beneficial use of dredged material.
ii. Provision is made for a replacement dredged material disposal site of suitable characteristics; or
iii. The dredging need for which the site was initially designed for dredged material disposal is withdrawn or reevaluated.
iv. It is no longer in the interest of the landowner to receive dredged material on their property.
v. Significant environmental considerations

Dredging and Dredged Material Disposal Use and Activity

Dredging and dredged material disposal can only be allowed in selected zoning designations (Oregon) and shoreline management designations (Washington).

Only those development uses and activities allowed in the underlying zone which are determined not to preempt the site's future use for dredged material disposal are allowed, subject to the policies and procedural requirements of the underlying zone.

[1] This requirement may be construed to conflict with two other existing dredged material disposal policies. First, it may be desirable to reserve upland sites for fine or contaminated material only, even when there is a dredging project within an economical distance from the site that removes coarse, clean material. The descriptions of sites in the Dredged Material Disposal Site Inventory states which sites are reserved for fine grained sediments only. The reservation of such sites for fine material renders them "not feasible" sites for use in coarse-grained disposal projects. The second apparent conflict is with the Marine Protection Research and Sanctuaries Act (1972). Provisions of this act state that ocean disposal will not be allowed if alternative areas of disposal are available. Oregon's Statewide Planning Goal 16 states that ocean disposal must be considered prior to estuarine in-water disposal. The policies in this plan are consistent with the Statewide Planning Goals.

Types of dredging and dredged material disposal uses and activities are listed below. Tables showing the zone or shoreline management designation in which the uses and activities may be permitted follow the list.

Uses and Activities Associated with Dredging and Dredged Material Disposal

1. Maintenance dredging of existing facilities.
2. Dredging shoaled areas within a currently maintained federally-authorized navigation channel.
3. Minor navigational improvements limited to minor dredging of shoals in naturally existing channels that have been traditionally used for navigation.
4. New dredging for existing or planned and approved public boat ramps and marinas.
5. Dredged material disposal at land sites designated in the Dredged Material Management Plan.
6. Beach nourishment at sites designated in the Dredged Material Management Plan (Oregon jurisdictions add, "where a Goal 16 exception has been approved").
7. Minor dredging of existing tidegate channels and drainageways (Oregon jurisdictions add, "where a Goal 16 exception has been approved").
8. Flow-lane, estuarine open-water, and sump disposal of dredged materials within areas designated in the Dredged Material Management Plan.
9. Dredging subtidal aquatic areas as a source of fill material for levee maintenance (Oregon jurisdictions add, "where a Goal 16 exception has been approved").
10. New dredging for approved aquaculture facilities.

TABLE 1: City of Warrenton

USE/ ACTIVITY	ZONE				
	A-1	A-2	A-3	I-2	C-2
1	P	P	C	-	-
2	C	C	N	-	-
3	P	C	N	-	-
4	P	C	N	-	-
5	-	-	-	C	C
6	C	P	N	-	-
7	P	P	C	-	-
8	P	N	N	-	-
9	P	P	N	-	-
10	C	C	N	-	-

A-1	Aquatic Development	P	Permitted Use
A-2	Aquatic Conservation	C	Conditional Use
A-3	Aquatic Natural	N	Not allowed
I-2	Water-Dependent Industrial Shorelands		
C-2	Marine Commercial Shorelands		

TABLE 2: City of Astoria

Use/ Activity	Zone									
	A-1	A-2	A-2a	A-3	A-4	TP	S-1	S-2	S-2a	S-5
1	P	P	P	P	C		-	-	-	-
2	C	C	C	C	N		-	-	-	-
3	P	P	P	C	N		-	-	-	-
4	P	P	P	C	N		-	-	-	-
5	-	-	-	-	-		P	N	N	N
6	N	C	N	C	N		N	N	N	N
7	P	P	P	P	C		-	-	-	-
8	P	P	P	N	N		-	-	-	-
9	P	P	P	P	C		-	-	-	-
10	C	C	C	C	N		-	-	-	-

A-1 Aquatic One Development
A-2 Aquatic Two Development
A-2a Aquatic Two-A Development
A-3 Aquatic Conservation
A-4 Aquatic Natural
TP Tongue Point Mediated Development
S-1 Marine Industrial Shorelands
S-2 General Development Shorelands
S-2a Tourist-Oriented Shorelands
S-5 Natural Shorelands

P Permitted Use
C Conditional Use
N Not allowed
- not applicable

TABLE 3: Clatsop County

Use/ Activity	Zone							
	A-D	AC-2	AC-1	AN	MI	CS	NS	/SO
1	P	R	R	R	-	-	-	-
2	C	C	C	N	-	-	-	-
3	R	C	C	N	-	-	-	-
4	R	C	N	N	-	-	-	-
5	-	-	-	-	P	P	N	-
6	N	R	R	N	P	P	N	?
7	P	R	R	R	-	-	-	?
8	R	N	N	N	-	-	-	-
9	R	R	R	R	-	-	-	-
10	C	C	C	N	-	-	-	-

AD Aquatic Development
AC-2 Aquatic Conservation Two
AC-1 Aquatic Conservation One
AN Aquatic Natural
MI Marine Industrial Shorelands
CS Conservation Shorelands (category 2 only)
NS Natural Shorelands
/SO Shoreland Overlay District (category 2 only)

P Permitted Use
R Review Use
C Conditional Use
N Not allowed
- not applicable

TABLE 4: Wahkiakum County

USE/ ACTIVITY	ZONE							
	U-a	R-a	C-a	N-a	U-s	R-s	C-s	N-s
1	PS	PS	PS	N	-	-	-	-
2	PS	PS	PS	N	-	-	-	-
3	PS	PS	PS	N	-	-	-	-
4	PS	PS	C	N	-	-	-	-
5	-	-	-	-	PS	PS	C	N
6	PS	C	C	N	PS	PS	C	N
7	PS	PS	C	N	-	-	-	-
8	PS	C	C	N	-	-	-	-
9	PS	C	C	N	-	-	-	-
10	PS	PS	C	N	-	-	-	-

U-a Urban Aquatic
R-a Rural Aquatic
C-a Conservation Aquatic
N-a Natural Aquatic
U-s Urban Shorelands
R-s Rural Shorelands
C-s Conservation Shorelands
N-s Natural Shorelands

P Permitted Use
PS Permitted with Standards
C Conditional Use
N Not allowed
- not applicable

TABLE 5: Pacific County

USE/ ACTIVITY	ZONE							
	D-a	C-a	N-a	WD-s	D-s	R-s	C-s	N-s
1	P	P	N	-	-	-	-	-
2	P	P	N	-	-	-	-	-
3	P	P	N	-	-	-	-	-
4	P	N	N	-	-	-	-	-
5	-	-	-	P	P	P	P	N
6	P	P	N	P	P	P	P	N
7	P	P	P	-	-	-	-	-
8	P	P	N	P	P	P	P	N
9	P	P	N	-	-	-	-	-
10	P	P	N	-	-	-	-	-

D-a Development Aquatic
C-a Conservation Aquatic
N-a Natural Aquatic
WD-s Water Dependent Development Shorelands
D-s General Development Shorelands
R-s Rural Shorelands
C-s Conservation Shorelands
N-s Natural Shorelands

P Permitted Use
N Not allowed
- not applicable

PLAN IMPLEMENTATION

Local Jurisdiction Review

There are three situations where a local jurisdiction must review dredging or disposal issues:

1. dredging within the jurisdiction
2. disposal within the jurisdiction
3. development proposal for a designated disposal site

Local land-use permits or consistency reviews are required for all three situations. These situations may also be required to be reviewed through the State and Federal permit processes.

At the local level, dredging, dredged material disposal, and the intended use of the dredged area shall be reviewed for consistency with the policies, standards, and other requirements of the comprehensive plan or shoreline master program.

Non-federal dredging and disposal shall be reviewed through the established permit process of the local jurisdictions. Federal projects shall be reviewed through the consistency review procedures set forth in the Coastal Zone Management Act. This act states that federal projects which affects the coastal zone must be consistent "to the maximum extent practicable" with the State's Coastal Zone Management Program. To demonstrate consistency the Federal agency should submit a written determination to the affected state which demonstrates how the federal action complies with each of the applicable requirements set forth in the local comprehensive plan or shoreline master program. The affected state and local jurisdiction should review the consistency determination to check for compliance with their plan. The applicant, Federal agency and the state should be notified of any concerns.

In addition to reviewing for consistency with policies and standards, the local jurisdiction should be able to encourage early use of dredged material disposal sites that should be used first. A development may be proposed at a dredged material disposal site, and there may be no zoning or code objection other than the fact that the site should be used for dredged material disposal first.

Tracking the Use of Disposal Sites

In order to effectively implement and periodically update the Dredged Material Management Plan, the amount of material placed in each disposal site must be monitored. Local jurisdictions shall require that dredging and disposal permit applicant's report the location and amount of material actually disposed of to CREST. Sponsors of on-going projects, such as the Corps of Engineers maintenance dredging, shall periodically report disposal volumes, sites and pre- and post-bathymetry of estuarine in-water disposal sites to affected local jurisdictions and to CREST, notwithstanding the reporting requirements of State and Federal agencies. CREST will compile records of all dredged material disposals in the estuary area in order to assist local jurisdictions in plan implementation and update. CREST has accumulated disposal site use history and will continue to track and update this information.

Regional Coordination

Dredged material disposal planning, plan update, and project review should be undertaken at the regional level. The importance of regional dredged material management stems from two significant problems: dredging and disposal in one jurisdiction may affect other jurisdictions and

dredging projects and their related disposal sites are not always located within the same jurisdiction.

It is essential that large projects such as federal navigation channel maintenance be reviewed at a regional level. CREST will assist in this regional review by helping local jurisdictions review dredging permits and federal consistency determinations in the context of a regional Dredged Material Management Plan and by monitoring and periodically updating the Plan. Likewise, for the Corps channel maintenance project, public notice and review takes place periodically for coastal zone consistency and state water quality certification. Coastal zone consistency review is required if modifications to the project are proposed or if new information indicates that coastal zone impacts are different that what had originally been expected.

SITE INVENTORY

Dredged Material disposal sites reviewed and designated in this plan are listed in the following inventory. The inventory includes all sites required to accommodate anticipated five-year disposal needs and many sites suitable for meeting longer-term disposal requirements. The sites should be designated in the Local Comprehensive Plan (Oregon) and the Shoreline Master Programs (Washington).

The following inventory includes all types of currently utilized dredged material disposal sites in the estuary area except for flow-lane, ocean and levee top disposal sites. Rather than identifying specific flow-lane sites, a general area suitable for flow-lane disposal was identified. This area encompasses the main Columbia River Navigation Channel plus a 600-foot wide strip along each side of the channel (see attached map). Individual flow-lane disposal sites within this area will be chosen prior to each dredging project based on the policies and standards applicable to flow-lane disposal.

Preference should be given to those disposal sites that provide an opportunity for beneficial use of the dredged material.

The EPA designates Ocean disposal sites. Although they are not described in this plan, use of ocean sites must comply with the plan's policies and standards, in addition to the MPRSA standards and regulations. The currently designated sites can be seen on the overall dredged material disposal site map included with this plan.

Levee top disposal is undertaken primarily for the purpose of maintaining and reinforcing levees. In Oregon, an exception to Statewide Planning Goal 16 identifies levees that can be maintained with dredged material.

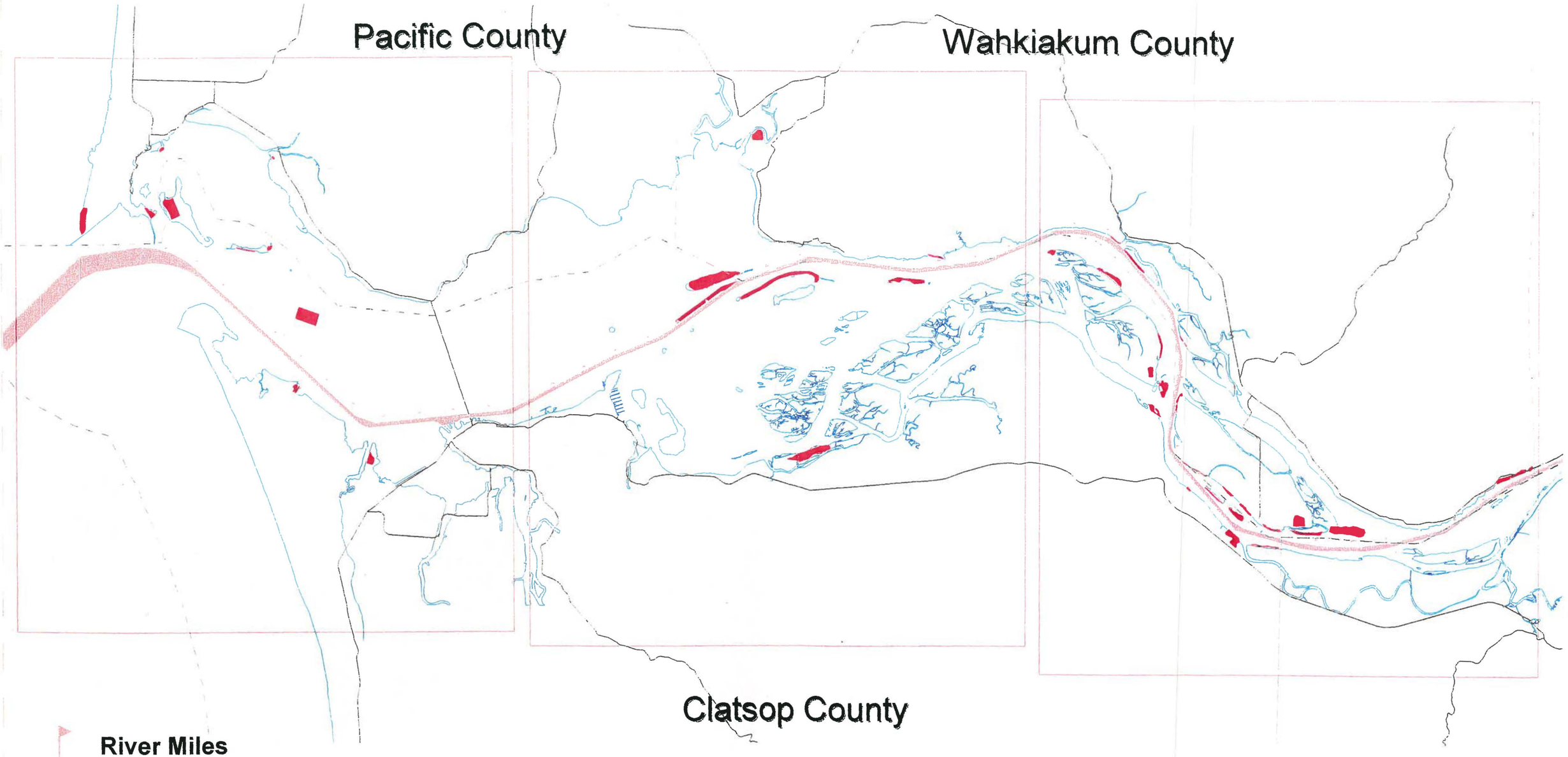
The information included in the following inventory consists of a standardized description of each site and site maps. Portions of each description are intended to provide planning information only while other portions are intended to be regulatory. A dredged material disposal proposal must comply with the regulatory portions but need not comply with the informational items. The standardized descriptions explained below indicate which items are informational and which are regulatory.

Most of these sites are also identified in the Corps of Engineers 1998 Dredged Material Management Plan. These sites have been determined necessary for maintenance of the Federal navigation channel over the next 20 years.

Site # (informational) State - approx. river mile. (O-Oregon; W-Washington)
Common Name (informational)
Ownership (informational)
Local Jurisdiction (regulatory)
Acreage (informational)
Capacities: (informational) The total capacity is the approximate cubic yard volume of the site based on surface area and disposal height. In cases where the site has been used in the past, the amount of material previously placed at the site is given, along with the site's remaining capacity.
Local Zoning Designation (regulatory)
Environmental, Engineering, and Land Use Issues: (regulatory) The major environmental, engineering, and land use issues that must be addressed prior to obtaining approval to use the site are listed under this heading.

Special Conditions on Use: (regulatory) This list gives regulatory conditions that ensure that the major issues are addressed. These should be attached to the local permit or federal consistency review for the site.

Columbia River Estuary Dredged Material Management Plan



River Miles
County Boundaries
Estuary Disposal Sites
Navigation Channel (Flow Lane Disposal)
Shoreline

CREST
Columbia River Estuary Study Taskforce

July 2002

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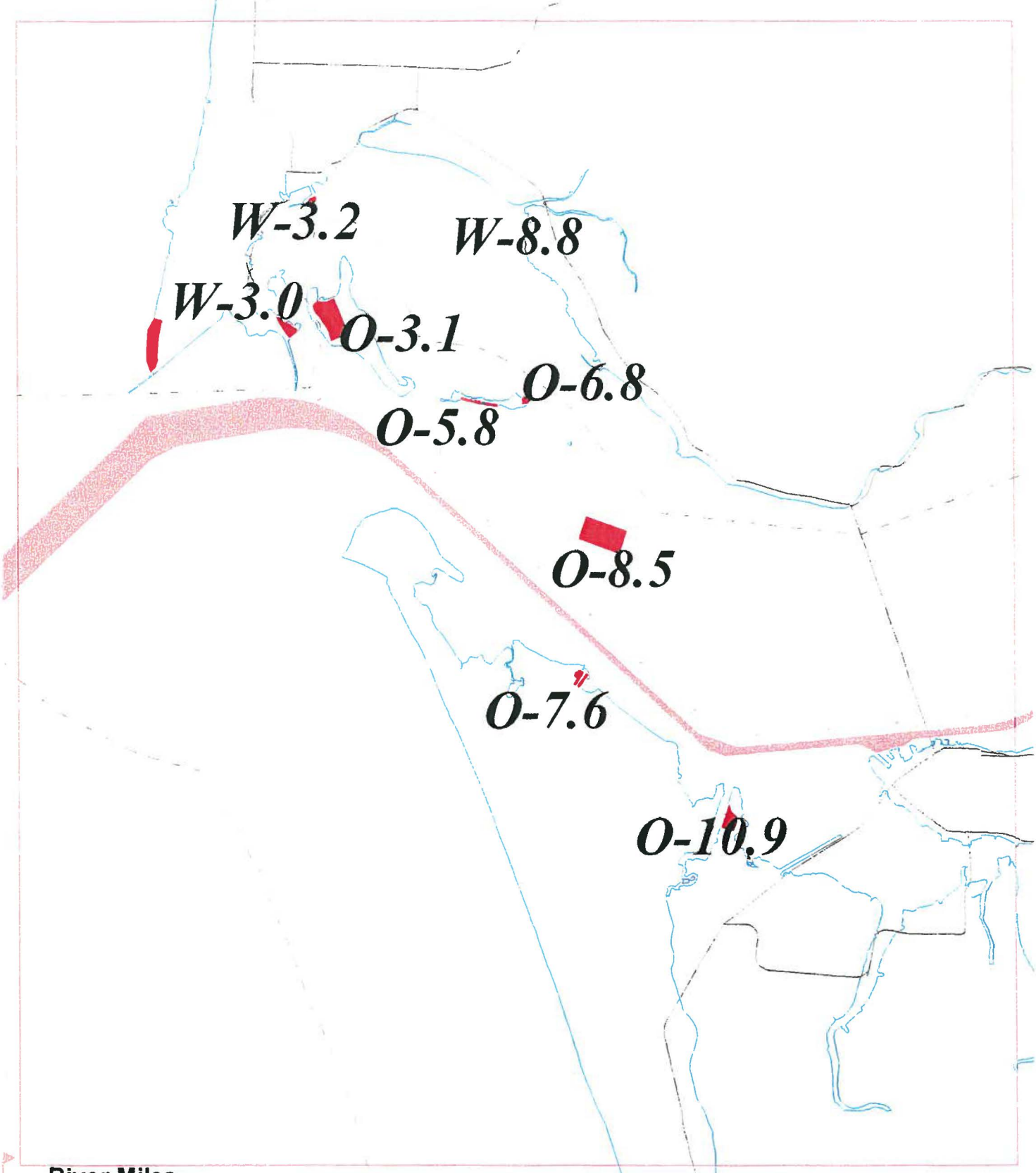
Columbia River Estuary Dredged Material Management Plan

Site Map 1 - Baker Bay, Trestle Bay, Youngs Bay



River Miles
County Boundaries
Estuary Disposal Sites
Navigation Channel (Flow Lane Disposal)
Shoreline

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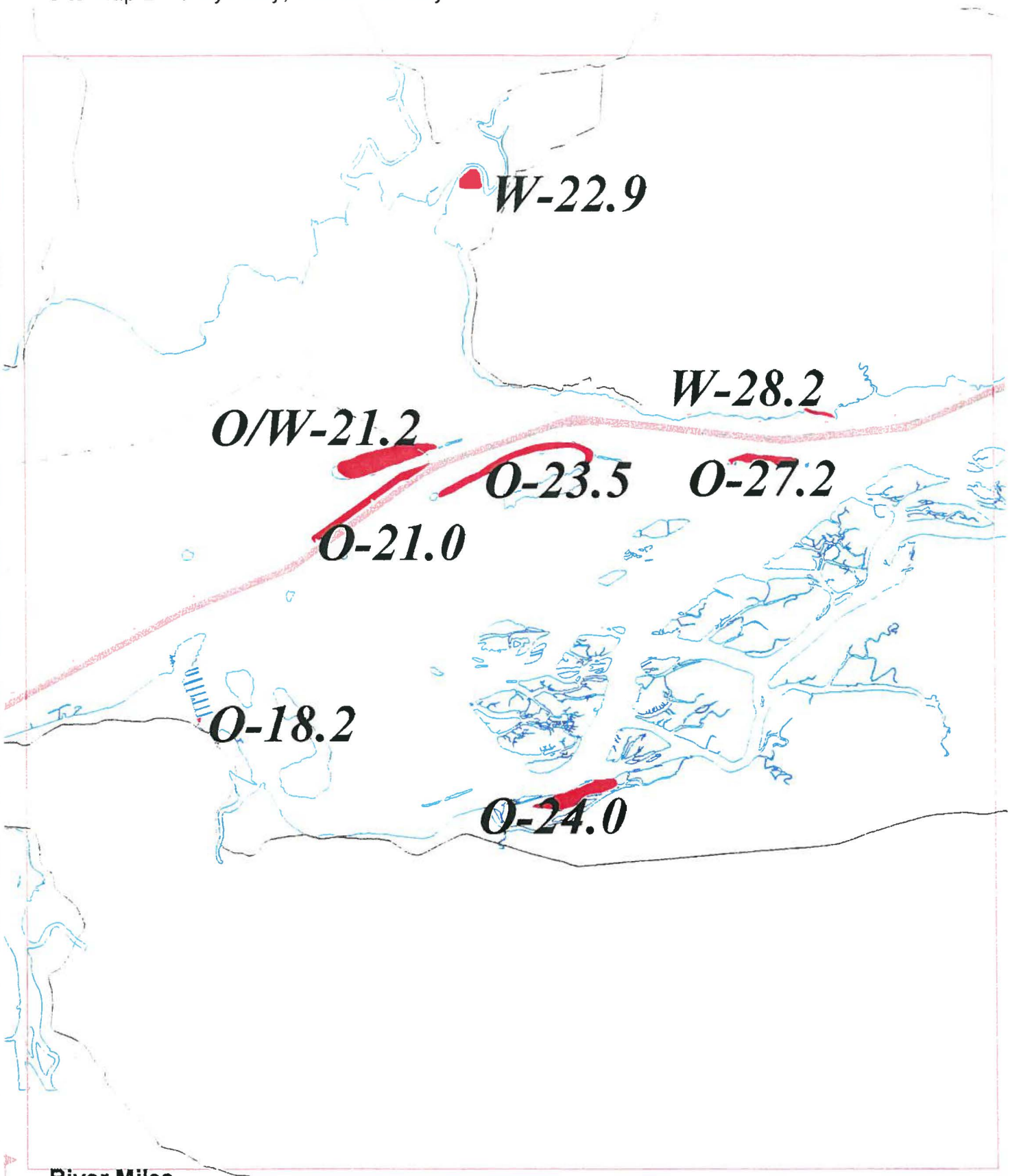
Columbia River Estuary Dredged Material Management Plan

Site Map 2 - Grays Bay, Cathlamet Bay



River Miles
County Boundaries
Estuary Disposal Sites
Navigation Channel (Flow Lane Disposal)
Shoreline

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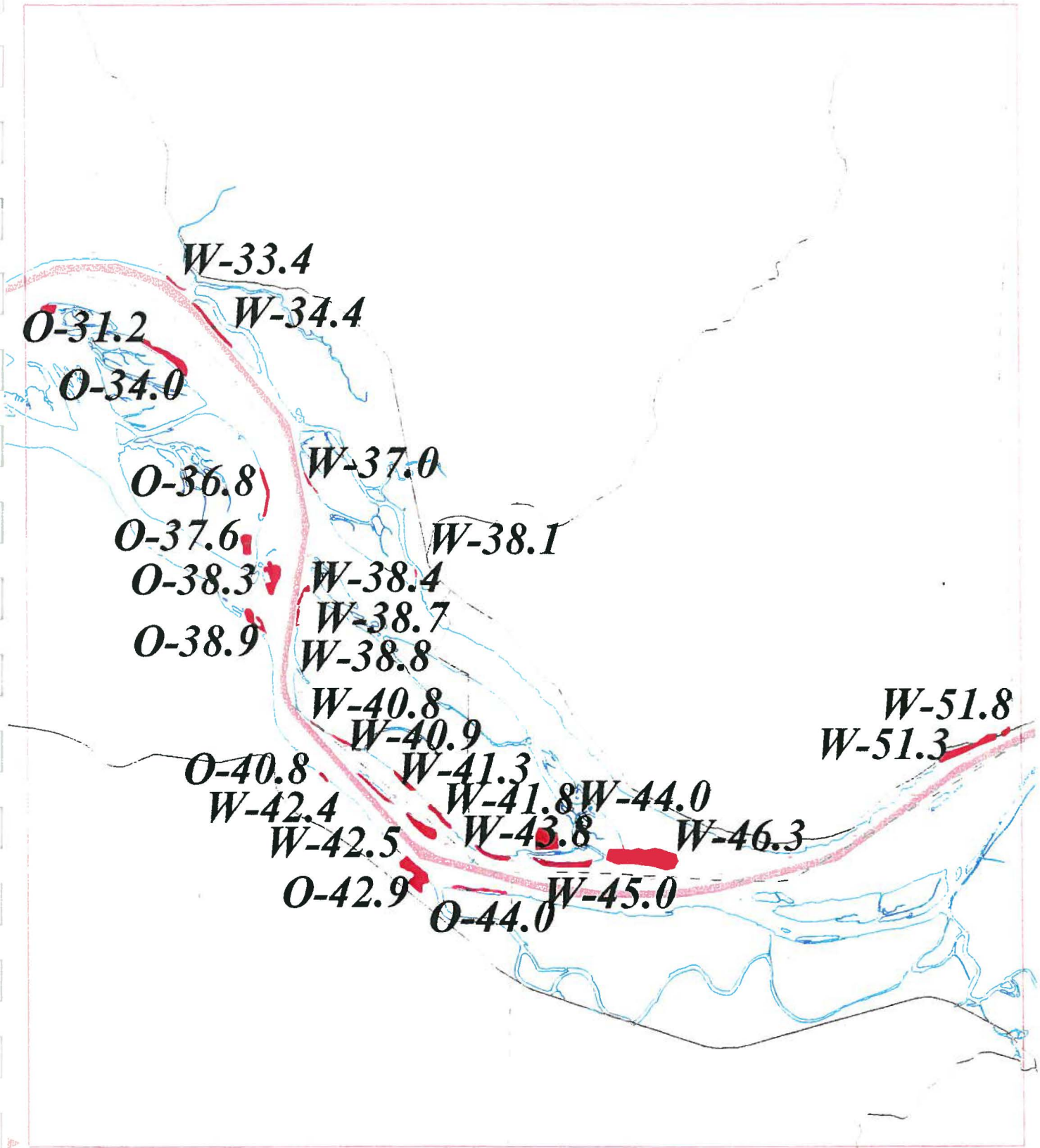
Columbia River Estuary Dredged Material Management Plan

Site Map 3 - Tenasillahe Island, Puget Island



River Miles
County Boundaries
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SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
O-3.1	West Sand Island	Corps	Clatsop County	83.3	2,500,000 20' above elevation	420,000	1979-1986		Conservation Shoreland

Environmental, Engineering and Land Use Issues:

SIGNIFICANT HABITAT: The portion of Sand Island to the south of the site contains significant examples of native dunegrass communities and has been proposed for designation as a national natural landmark. Dredged material disposal shall not occur south of the designated site. There is a concern about non-native plan species encroaching upon the native dunegrass communities. Revegetation of the site shall be restricted to plant species and planting techniques that will not negatively impact the native dunegrass communities.

SEQUENCE OF SITE USE: This is the first priority pipeline disposal site for Baker Bay West Channel. W-3.0 should be used after O-3.1 is filled.

Special Conditions on Use (include but not limited to):

1. No material shall be placed beyond the boundaries depicted on the map of O-3.1. These boundaries are defined by aquatic areas to the north and west, the southern containment levee existing as of 1986 to the south (this outlines the northern limit of a proposed national natural landmark), and the containment levee existing as of 1986 to the east.
2. The site shall be revegetated as soon as practicable after disposal. The revegetation plan shall be coordinated with the agency responsible for overseeing the national natural landmark (or The Nature Conservancy if the landmark designation has not been made) to ensure that plant species and planting techniques do not adversely impact the native dune communities.

O-5.8	East Sand Island	State; Corps	Clatsop County	4,100 ft (beach length)	450,000 10' deep x 300' wide				Aquatic conservation 2 Conservation shoreland

Environmental, Engineering and Land Use Issues:

COMMERCIAL FISHERY: The disposal site is within a gillnet fishing area. Prior to undertaking disposal, the dredging project proponent will be required to contact the local fishermen's associations and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The dredging project proponent will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

GULL NESTING COLONY: western and glaucous-winged gulls use the area shoreward of the site as a nesting colony.

RESTRICTIONS ON DESIGNATED PROJECT AND TYPE OF MATERIAL: This site is reserved for coarse-grained materials dredged from the southern portion of Chinook Channel only. Site O-6.8 is reserved for fine-grained material dredged from the northern portion of Chinook Channel

SITE BOUNDARIES: The site consists of a sandy beach and intertidal area located waterward of a rip-rapped bank. The east and west ends of the site are bound by existing pile levees extending from the shore.

GOAL EXCEPTION: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to designating the site in the Comprehensive Plan.

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
O-5.8 (cont'd) Special Conditions on Use (include but not limited to): 1. Dredged materials shall not be placed beyond the site boundaries depicted on the map of O-5.8 2. The final elevation of the dredged materials shall not exceed the elevation at the top of the existing rip-rapped bankline at the site. 3. Prior to undertaking disposal, the dredging project proponent shall consult with the Columbia River Fisherman's Protective Union, NW Gillnetters Association, and the Oregon Department of Fish and Wildlife to determine project timing and disposal methods that will minimize impacts to the gillnet fishery. 4. Prior to undertaking disposal, the dredging project proponent shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon, and nesting western/glaucous-winged gulls.									
O-6.8	East Sand Island	Corps	Clatsop County	18	1,020,000 35' above elevation	440,000	Prior to June '86		Conservation shorelands
Environmental, Engineering and Land Use Issues: CASPIAN TERN NESTING COLONY: A nesting colony of Caspian terns utilize the site from about mid-May to the end of July. Because terns nest in open sand, it is preferable not to revegetate the site after disposal. Disposal shall be timed to allow an adequate period for the site to de-water prior to the nesting season. GULL NESTING COLONY: Western and Glaucous-winged gulls use the site as a nesting colony. RESTRICTIONS ON DESIGNATED PROJECT AND TYPE OF MATERIAL: This site is reserved for fine-grained materials dredged from the northern portion of Chinook Channel only. Site O-5.8 is reserved for coarse-grained material removed by pipeline dredge from Chinook Channel. Special Conditions on Use (include but not limited to): 1. The site shall not be expanded beyond its January 1986 boundaries as depicted on the map. 2. The containment levee shall be constructed from material obtained from within the existing disposal site. This material shall be placed on top and/or inside of the existing levee surrounding the site. No material shall be placed beyond the outside toe of the existing levee. 3. Care shall be taken not to disturb the vegetation on the outside face of the existing levee. 4. The timing of dredged material disposal shall be determined in coordination with state and federal fish and wildlife management agencies to minimize impacts to nesting Caspian Terns and Western Glaucous winged gulls and other resources affected by the dredging.									
O-7.6	Hammond	Federal	Warrenton	9.5 6.0	150,000 10' above elevation; 145,000 15' above elevation	 ~100,000			Recreation Commercial (Ha) Recreation Management (CC)

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
Environmental, Engineering and Land Use Issues: WETLANDS: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps and Oregon DSL must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the dredging project proponent will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and State approval to fill the wetlands. The federal and state agencies may require the dredging project proponent to mitigate for the lost wetland as part of the approval for the fill. OWNER COORDINATION: A Coast Guard station is adjacent to the southern portion of the site. Use of the site should not interfere with the station. The northern portion of the site is within Fort Stevens State Park. Disposal at the site will need to be coordinated with the Coast Guard and Fort Stevens State Park. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the dredging project proponent shall consult with the Army Corps and Oregon DSL to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the dredging project proponent shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps and DLS permits to fill the wetlands. 2. The dredging project proponent shall coordinate site preparation and disposal plans with Coast Guard and Fort Stevens State Park representatives.									
O-8.5	Area D	State of Oregon	Clatsop County		3,250,000/ 5 yr. (COE projects) AND 100,000/yr (non-federal projects)	297,710* 284,401* 115,497* 147,631* 17,586✦ 177,623* 9,974✦ 197,190* 15,872✦ 169,527* 124,081*	10/99-11/99 11/95-02/96 01/95-03/95 09/91-11/91 10/89 08/89-11/89 11/88 05/88-10/88 10/87 08/87-10/87 11/85-01/86	Chinook Channel* Baker Bay✦	Aquatic development
Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within a gillnet and crab fishing area. Prior to undertaking disposal, the dredging project proponent will be required to contact the local fishermen's associations and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fisheries. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The dredging project proponent will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon AREA D USE: The use of Area D shall be kept to an absolute minimum. The shoaling problems that result from dredged material disposal at Area D present an ongoing concern in the estuary. A large portion of the material deposited at the site moves upriver and is eventually redeposited in the navigation channel. A smaller portion of the Area D material moves into Baker Bay and is deposited. The COE should continue to examine alternative disposal sites and methods that would result in fewer adverse shoaling impacts. The use of Area D shall be discontinued when feasible alternatives are found.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards) (elevation above MLLW)	Volume (cubic yards)	Date	Source	
O-8.5 (cont'd) Special Conditions on Use (include but not limited to): 1. Dredged disposal at Area D shall be allowed for the following Corps dredging projects and sites: Chinook Channel and Baker Bay West Channel. Non-federal projects proposed in estuarine locations between the mouth of the Columbia River and Tongue Point may also be eligible for disposal in Area D, provided they meet the policies and standards for estuarine in-water disposal. 2. Total disposal for COE projects at Area D shall not exceed 3,250,000 cubic yards over a 5 year period. 3. Total annual disposal for non-federal projects shall not exceed 100,000 cubic yards. 4. Disposal shall be controlled so as to minimize impacts to commercial gillnet and crab fishermen. 5. Prior to undertaking disposal, the dredging project proponent shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon									
O-18.2	Tongue Point	State (DSL)	Astoria	8	128,000 10' above elevation	~40,000	2000/2001	Pier 4	Tongue Point Mediated Development Zone
Environmental, Engineering and Land Use Issues: SITE BOUNDARIES: an existing cyclone fence defines the southeastern boundary of the site. BALD EAGLES: This site is within the home range of a nesting pair of bald eagles. The dredging project proponent will be required to consult with USF&W and WA Dept. of Fish & Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site. WATER-DEPENDENT INDUSTRIAL ZONING: Portions of the site are zoned for water-dependent industrial development. The dredging project proponent must demonstrate that the dredged material disposal will not preclude present or future water-dependent use at the site. Special Conditions on Use (include but not limited to): 1. Dredged material shall not be placed waterward of the existing cyclone fence at the southeastern side of the site. 2. Prior to undertaking disposal, the dredging project proponent shall consult with the U.S. Fish and Wildlife Service and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles. 3. Prior to undertaking disposal, the dredging project proponent shall demonstrate that the placement of dredged material at the site will not preclude present or future water-dependent use									
O-21.0	Harrington Sump	State	Clatsop County			*material placed in Harrington Sump is subsequently pumped onto Rice Island			Aquatic development

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
O-21.0 (cont'd) Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the dredging project proponent will be required to contact the local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The dredging project proponent will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. REHANDLING: Material placed in this site should be pumped to Rice Island when the sump has reached capacity. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the dredging project proponent shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. 2. Prior to undertaking disposal, the dredging project proponent shall consult with the Columbia River Fishermans' Protective Union, Salmon for All, the NW Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery									
O/W-21.2	Rice Island	State	Clatsop/ Wahkiakum County	227	22,455,950	547,643 223,526 906,765 371,564 294,670 575,712 468,663 138,640 1,041,925 205,565 1,114,277 142,507 998,986 448,384 118,458 721,185 563,892 863,885 1,279,592 996,334 589,813	2000 1999 1998 1997 1995 1992 1991 1989 1987 1985 1984 1983 1981 1979 1977 1976 1973 1972 1970 1969 1968	COE	Conservation shorelands

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
O/W-21.2						2,118,522 694,400 807,723 723,319	1966 1965 1964 1963		
Environmental, Engineering and Land Use Issues: RUNOFF: Runoff from the disposal site shall not be allowed to enter the sensitive tidal flats north of Rice Island. BALD EAGLES: This site is within the home range of a nesting pair of bald eagles. The dredging project proponent will be required to consult with USF&W and WA Dept. of Fish & Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site. NESTING GEESE, GULLS, AND TERNS: Geese, gulls, and Caspian terns nest on Rice Island. The dredging project proponent will be required to consult with the U.S. Fish and Wildlife Service to determine timing and disposal methods to reduce impacts to the nesting birds. Special Conditions on Use (include but not limited to): 1. The northern boundary of the site shall be leveed to prevent dredged materials from entering the intertidal area north of the island. 2. Prior to undertaking disposal, the dredging project proponent shall consult with the U.S. Fish and Wildlife Service, the Washington Department of Fish & Wildlife, and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles and nesting geese, gulls and terns.									
O-23.5	Miller Sands	State/ federal	Clatsop County	150.6	1,580,000 10' above elevation	201,770 313,499 960,809 236,325 175,235 642,388 158,677 239,011 353,283 144,744 337,660 314,335 507,538 186,677 861,904 493,211	2000 1998 1997 1996 1995 1994 1992 1991 1990 1989 1988 1987 1986 1985 1983 1979	COE	Aquatic Conservation Two; Conservation Shorelands

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
O-23.5 (cont'd) Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the dredging project proponent will be required to contact the local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The dredging project proponent will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. BALD EAGLES: This site is within the home range of a nesting pair of bald eagles. The dredging project proponent will be required to consult with USF&W and WA Dept. of Fish & Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site. NESTING GEESE, GULLS, AND TERNS: Geese, gulls, and Caspian terns nest on Rice Island. The dredging project proponent will be required to consult with the U.S. Fish and Wildlife Service to determine timing and disposal methods to reduce impacts to the nesting birds. RUNOFF: Runoff from the disposal site shall not be allowed to flow through potentially sensitive wetlands south of the site. GOAL EXCEPTION: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to designating the site in the Comprehensive Plan. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the dredging project proponent shall consult with the Columbia River Fisherman's Protective Union, Salmon for All, the NW Gillnetters Association, other known fishing organizations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery. 2. Prior to undertaking disposal, the dredging project proponent shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. 3. Prior to undertaking disposal, the dredging project proponent shall consult with the U.S. Fish and Wildlife Service, the Washington Department of Fish & Wildlife, and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles and nesting geese, gulls and terns. 4. The southern boundary of the site shall be leveed to prevent dredged material or associated runoff from entering the tidal wetlands south of the site.									
O-24.0	Svenson Island	Private	Clatsop County	282	4,500,000 10' above elevation	100,000	Prior to June '86	contract dredge; Coast Guard	Exclusive Farm Use

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
O-24.0 (cont'd)									

Environmental, Engineering and Land Use Issues:

MITIGATION SITE: The western portion of the island is designated as a mitigation site in Clatsop County's Plan. With the exception of dredged material disposal for levee maintenance, this area cannot be used as a disposal site unless it is clearly demonstrated that the mitigation site is either not needed or has been replaced by a site of equal restoration value in the same region of the estuary.

SIGNIFICANT NONTIDAL WETLANDS: The western portion of the island contains a large wetland designated as significant in the Goal 17 element of Clatsop County's Plan (see map). With the exception of dredged material disposal for levee maintenance this area cannot be used as a disposal site unless the dredging project proponent obtains an exception to Goal 17 to allow for disposal in the wetland.

ZONING: The site is zoned Exclusive Farm Use. The dredging project proponent must either demonstrate that the site will be suitable for agricultural use after disposal or obtain an exception to Statewide Planning Goal 3 for disposal on agricultural land.

OTHER WETLANDS: The site may contain non-tidal wetlands that, in addition to the Goal 17 wetland, fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps and Oregon DSL must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the dredging project proponent will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and State approval to fill the wetlands. The federal and state agencies may require the dredging project proponent to mitigate for the lost wetland as part of the approval for the fill.

Special Conditions on Use (include but not limited to):

1. Prior to undertaking disposal, the dredging project proponent shall consult with the COE and Oregon DSL to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the dredging project proponent shall either alter the disposal site boundaries to avoid the wetlands and leave and acceptable protective buffer, or obtain the necessary COE and DSL permits to fill the wetlands.

O-27.2	Pillar Rock/ Jim Crow Sands	Federal	Clatsop County	140	2,540,000 10' above elevation	421,672 218,383 655,614 304,720 296,599 620,024	1998 1997 1996 1988 1984 1983	COE	Conservation Shorelands; Aquatic Conservation 2

Environmental, Engineering and Land Use Issues:

RUNOFF: Runoff from the disposal site shall not be allowed to flow through potentially sensitive wetlands to the south of the island.

BALD EAGLES: This site is within the home range of a nesting pair of bald eagles. The dredging project proponent will be required to consult with USF&W and WA Dept. of Fish & Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
O-27.2 (cont'd)									

NESTING GEESE, GULLS, AND TERNS: Geese, gulls, and Caspian terns nest on Rice Island. The dredging project proponent will be required to consult with the U.S. Fish and Wildlife Service to determine timing and disposal methods to reduce impacts to the nesting birds.

COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the dredging project proponent will be required to contact the local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The dredging project proponent will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

GOAL EXCEPTION: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to designating the site in the Comprehensive Plan.

Special Conditions on Use (include but not limited to):

1. The southern boundary of the site shall be leveed to prevent dredged material or associated runoff from entering the tidal wetlands south of the site.
2. The site is within the known home range of a nesting pair of bald eagles and is used by nesting geese, gulls, and terns. Prior to undertaking disposal, the dredging project proponent shall consult with the U.S. Fish and Wildlife Service, the Washington Department of Fish & Wildlife, and Oregon Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles and nesting geese, gulls and terns.
3. Prior to undertaking disposal, the dredging project proponent shall consult with the Columbia River Fisherman's Protective Union, Salmon for All, the NW Gillnetters Association, other known fishing organizations, and the state fishery agency to determine project timing & disposal methods that will minimize impacts to the gillnet fishery.
4. Prior to undertaking disposal, the dredging project proponent shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

O-31.2	Fitzpatrick Island	Federal; state	Clatsop County	26	425,000 10' above elevation	used over 10 years ago			Conservation Shorelands

Environmental, Engineering and Land Use Issues:

JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The dredging project proponent will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

WILDLIFE REFUGE: The site is within the boundaries of a National Wildlife Refuge.

Special Conditions on Use (include but not limited to):

1. Prior to undertaking disposal, the dredging project proponent shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.
2. Prior to undertaking disposal, the project sponsor shall consult with the National Wildlife Refuge managers.

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
O-34.0	Welch Island	Federal; state	Clatsop County	42	90,000 10' above elevation width of 100'	227,896 217,859 136,118 291,131 362,318 519,789	1998 1991 1989 1988 1986 1973	COE	Aquatic Conservation Two; Conservation Shorelands

Environmental, Engineering and Land Use Issues:

BALD EAGLES: This site is within the home range of a nesting pair of bald eagles. The dredging project proponent will be required to consult with USF&W and WA Dept. of Fish & Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the dredging project proponent will be required to contact the local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The dredging project proponent will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

GOAL EXCEPTION: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to designating the site in the Comprehensive Plan.

Special Conditions on Use (include but not limited to):

1. Prior to undertaking disposal, the dredging project proponent shall consult with the U.S. Fish and Wildlife Service and Oregon Dept. of Fish & Wildlife to determine methods of reducing potential impacts to bald eagles.
2. Prior to undertaking disposal, the dredging project proponent shall consult with the Columbia River Fisherman's Protective Union, Salmon for All, the NW Gillnetters Association, other known fishing organizations, and the state fisher agency to determine project timing & disposal methods that will minimize impacts to the gillnet fishery.
3. Prior to undertaking disposal, the dredging project proponent shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

O-37.6	Tenasillahe Island		Clatsop County	42					Conservation Shoreland

Environmental, Engineering and Land Use Issues:

WETLANDS: The site may contain non-tidal wetlands that fall within Federal Section 404 or Oregon State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps and Oregon DSL must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the dredging project proponent will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and State approval to fill the wetlands. The federal and state agencies may require the dredging project proponent to mitigate for the lost wetland as part of the approval for the fill.

WILDLIFE REFUGE: The Island is within the boundaries of a wildlife refuge or management area.

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
O-37.6 (cont'd)									
Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the dredging project proponent shall consult with the COE and Oregon DSL to determine if the disposal site contains wetlands that are regulated under permit programs administered by those agencies. If the site contains regulated wetlands, the dredging project proponent shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary COE and DSL permits to fill the wetlands. 2. Prior to undertaking disposal, the project sponsor shall consult with the National Wildlife Refuge managers.									
O-38.3	Tenasillahe Island	State	Clatsop County	42	595,000 10' above elevation	151,773 244,108 244,557 441,082 507,611 415,003 311,741 267,947 181,977 162,165 81,628 70,702 26,102	1991 1990 1988 1983 1982 1970 1968 1967 1966 1963 1962 1957 1955	COE	Conservation Shorelands; Aquatic Conservation 2
Environmental, Engineering and Land Use Issues: RUNOFF: Runoff from the disposal site shall not be allowed to flow through potentially sensitive wetlands west of the site. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The dredging project proponent will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. GOAL EXCEPTION: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to designating the site in the Comprehensive Plan. REHANDLING: Placement of material for beach nourishment would result in rehandling of material or creation of a shoal. Special Conditions on Use (include but not limited to): 1. The western boundary of the site shall be leveed to prevent dredged materials from entering the intertidal area west of the site. 2. Prior to undertaking disposal, the dredging project proponent shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
O-38.9	Bradwood	Private	Clatsop County	26	420,000 10' above elevation		Used over 10 yrs ago		Marine Industrial Shorelands
Environmental, Engineering and Land Use Issues: RUNOFF: Runoff from the disposal site shall not be allowed to flow through potentially sensitive wetlands to the south and west of the site. WATER-DEPENDENT INDUSTRIAL ZONING: The site is zoned for water-dependent industrial development. The dredging project proponent must demonstrate that the dredged material disposal will not preclude present or future water-dependent use at the site. Special Conditions on Use (include but not limited to): 1. The western boundary of the site shall be leveed to prevent dredged materials from entering the intertidal area west of the site. 2. Prior to undertaking disposal, the dredging project proponent shall demonstrate that the placement of dredged material at the site will not preclude present or future water-dependent use.									
O-40.8	Wauna Mill	private	Clatsop County	14		126,475 109,048 133,741 158,911 208,580 163,086 314,740 90,002	1996 1993 1990 1985 1973 1968 1967 1965	COE	Water Dependent Development Shorelands
Environmental, Engineering and Land Use Issues: Special Conditions on Use (include but not limited to):									
O-42.9	Westport	Private	Clatsop County	95	1,500,000 10' above elevation	97,344 121,449 113,870 160,281 535,256 315,741	1996 1983 1978 1975 1965 1963	COE	Heavy Industrial
Environmental, Engineering and Land Use Issues: RUNOFF: Runoff from a disposal operation will have to be directed into the main river channel so that it does not flow into and adversely impact the swamps south and west of the disposal site.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
O-42.9 (cont'd)									
Special Conditions on Use (include but not limited to): Runoff from the dredged material disposal operation shall be directed so as not to flow into the swamps south and west of the disposal site.									
O-44.0	River Ranch	Private; state	Clatsop County	71	340,000 (~200x10)	483,264 164,561 32,592 70,620 71,058 140,497 946,180 176,614 181,260	1982 1979 1975 1972 1970 1968 1967 1965 1963	COE	Residential-Agriculture One; Open space, parks and recreation
Environmental, Engineering and Land Use Issues: JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The dredging project proponent will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. GOAL EXCEPTION: An exception to Statewide Planning Goal 16 for beach nourishment at the site must be approved prior to designating the site in the Comprehensive Plan. BEACH NOURISHMENT: Site not currently cleared, or studied, and determined to be productive for benthic invertebrates. REHANDLING: Placement of material for beach nourishment would result in rehandling of material or creation of a shoal. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the dredging project proponent shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-3.0	Cape Dis-appointment	Federal (Coast Guard)	Pacific County	26.1	420,000 10' above elevation	1,500 6,500 10,000	1993 1998 2001		Conservation Shorelands
Environmental, Engineering and Land Use Issues:									
W-3.2	Port of Ilwaco	Port of Ilwaco	Pacific County	10.7	260,000	85,000 95,000	2000 2001		General Development Shorelands
Environmental, Engineering and Land Use Issues: STOCKPILING: site is intended as a stockpile for eventual removal for other uses									
W-8.8	Port of Chinook	Port of Chinook	Pacific County	3	20,000 4' above elevation	Several thousand			Water Dependent Development Shorelands
Environmental, Engineering and Land Use Issues: STOCKPILING: site is intended to act as a stockpile for eventual removal for other uses									
W-21.2	Rice Island	State	Wahkiakum County	215	6,900,000 20' above elevation				Conservation shorelands
Environmental, Engineering and Land Use Issues: RUNOFF: Runoff from the disposal site shall not be allowed to enter the sensitive tidal flats north of Rice Island. BALD EAGLES: This site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with USF&W and WA Dept. of Fish & Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site. NESTING GEESE, GULLS, AND TERNS: Geese, gulls, and Caspian terns nest on Rice Island. The project sponsor will be required to consult with the U.S. Fish and Wildlife Service to determine timing and disposal methods to reduce impacts to the nesting birds. Special Conditions on Use (include but not limited to): 1. The northern boundary of the site shall be leveed to prevent dredged materials from entering the intertidal area north of the island. 2. The site is within the known home range of a nesting pair of bald eagles and is used by nesting geese, gulls, and terns. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service, the Washington Department of Fish & Wildlife, and Washington Department of Fish and Wildlife to determine methods of reducing potential impacts to bald eagles and nesting geese, gulls and terns.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-20.7	Mouth of Deep River	Private	Wahkiakum County	15	240,000 10' above elevation				Rural Shorelands

Environmental, Engineering and Land Use Issues:

WETLANDS: The site may contain non-tidal wetlands that fall within Federal Section 404 or Washington State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps and WA Dept. of Ecology must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and State approval to fill the wetlands. The federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

RUNOFF: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

BALD EAGLES: This site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with USF&W and WA Dept. of Fish & Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Special Conditions on Use (include but not limited to):

1. Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands.
2. The site is within the known home range of a nesting pair of bald eagles. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Washington Dept. of Fish & Wildlife to determine methods of reducing potential impacts to bald eagles.

W-21.1	Deep River	Private	Wahkiakum County	22	350,000 10' above elevation				Rural Shorelands

Environmental, Engineering and Land Use Issues:

WETLANDS: The site may contain non-tidal wetlands that fall within Federal Section 404 or Washington State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps and WA Dept. of Ecology must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and State approval to fill the wetlands. The federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Special Conditions on Use (include but not limited to):

1. Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands.

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-22.4	Mouth of Grays River	Private	Wahkiakum County	19	307,000 10' above elevation				Rural Shorelands

Environmental, Engineering and Land Use Issues:

WETLANDS: The site may contain non-tidal wetlands that fall within Federal Section 404 or Washington State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps and WA Dept. of Ecology must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and State approval to fill the wetlands. The federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

RUNOFF: Runoff from the disposal site will flow through potentially sensitive wetlands prior to entering the main body of the estuary. For hydraulic dredging operations the disposal site must be prepared with settling ponds and drainage weir systems adequate to ensure that the disposal effluent will have minimal impacts on the wetland.

BALD EAGLES: This site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with USF&W and WA Dept. of Fish & Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site.

Special Conditions on Use (include but not limited to):

1. Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands.
2. The site is within the known home range of a nesting pair of bald eagles. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Washington Dept. of Fish & Wildlife to determine methods of reducing potential impacts to bald eagles.

W-22.9	Grays River	Private	Wahkiakum County	25	400,000 10' above elevation				Rural Shorelands

Environmental, Engineering and Land Use Issues:

WETLANDS: The site may contain non-tidal wetlands that fall within Federal Section 404 or Washington State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps and WA Dept. of Ecology must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and State approval to fill the wetlands. The federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.

Special Conditions on Use (include but not limited to):

Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands.

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-28.2	Jim Crow Point						used over 10 years ago		Conservation Aquatic; Conservation Shoreland
Environmental, Engineering and Land Use Issues: BEACH NOURISHMENT: Site not currently cleared, or studied, and determined to be productive for benthic invertebrates. BALD EAGLES: This site is within the home range of a nesting pair of bald eagles. The project sponsor will be required to consult with USF&W and WA Dept. of Fish & Wildlife prior to undertaking disposal to determine methods of reducing potential impacts to bald eagles. Possible methods of reducing impacts may include, but are not limited to, timing the project to avoid the nesting season and leaving a buffer between the eagle use area and the disposal site. Special Conditions on Use (include but not limited to): 3. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Washington Dept. of Fish & Wildlife to determine methods of reducing potential impacts to bald eagles.									
W-33.4	Skamokawa Vista Park	Wahkiakum Port District No.2	Wahkiakum County	3,300' (beach length)	250,000 (~200x10)	535,443 308,590	1992 2000		Conservation Aquatic; Urban Shoreland
Environmental, Engineering and Land Use Issues: JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									
W-34.4	Skamokawa Bar						Used over 10 years ago		Conservation Aquatic; Conservation Shoreland
Environmental, Engineering and Land Use Issues: JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. BEACH NOURISHMENT: Site not currently cleared, or studied, and determined to be productive for benthic invertebrates. WILDLIFE REFUGE: The site is within the boundaries of a National Wildlife Refuge.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-34.4 (cont'd) REHANDLING: Placement of material for beach nourishment would result in rehandling of material or creation of a shoal. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. 2. Prior to undertaking disposal, the project sponsor shall consult with the National Wildlife Refuge managers.									
W-36.9	Elochoman	Private	Wahkiakum County	7.5	120,000 10' above elevation				Urban Shorelands
Environmental, Engineering and Land Use Issues: WETLANDS: The site may contain non-tidal wetlands that fall within Federal Section 404 or Washington State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps and WA Dept. of Ecology must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and State approval to fill the wetlands. The federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill. COLUMBIAN WHITE-TAILED DEER: The site provides habitat for the endangered Columbian white-tailed deer. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands. 2. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Washington Dept. of Fish & Wildlife to minimize potential impacts to Columbian White-tailed deer.									
W-38.1	Hunting Island	unknown	Wahkiakum County	3.6	58,000 10' above elevation				Natural Shorelands
Environmental, Engineering and Land Use Issues: COLUMBIAN WHITE-TAILED DEER: The site provides habitat for the endangered Columbian white-tailed deer. WETLANDS: The site may contain non-tidal wetlands that fall within Federal Section 404 or Washington State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps and WA Dept. of Ecology must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and State approval to fill the wetlands. The federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-38.1 (cont'd) Environmental, Engineering and Land Use Issues: COLUMBIAN WHITE-TAILED DEER: The site provides habitat for the endangered Columbian white-tailed deer. WETLANDS: The site may contain non-tidal wetlands that fall within Federal Section 404 or Washington State Removal-Fill permit jurisdictions. Prior to undertaking disposal, the Corps and WA Dept. of Ecology must be consulted to determine if the site contains wetlands within their respective regulatory jurisdictions. If regulated wetlands are present at the site, the project sponsor will be required to either adjust the disposal site boundaries to avoid the wetlands and provide an adequate buffer or obtain Federal and State approval to fill the wetlands. The federal and state agencies may require the project sponsor to mitigate for the lost wetland as part of the approval for the fill. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the Army Corps of Engineers to determine if the disposal site contains wetlands that are regulated under Corps permit programs. If the site contains regulated wetlands, the project sponsor shall either alter the disposal site boundaries to avoid the wetlands and leave an acceptable protective buffer, or obtain the necessary Corps permits to fill the wetlands. 2. Prior to undertaking disposal, the project sponsor shall consult with the U.S. Fish and Wildlife Service and Washington Dept. of Fish & Wildlife to minimize potential impacts to Columbian White-tailed deer.								
W-38.4	County Sand Pit	Wahkiakum County	Wahkiakum County	8	128,000 10' above elevation				Rural Shorelands
Environmental, Engineering and Land Use Issues: STOCKPILING: The site is intended to act as a stockpile for eventual removal of the dredged material for construction fills or other uses. Special Conditions on Use (include but not limited to):									
W-38.7	Orhberg's Beach	Unknown	Wahkiakum County	2,900' (beach length)	216,000 (~200x10)	436,138	1996		Conservation Aquatic
Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fisherman's Protective Union, the NW Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery. 2. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									
W-38.8	Brown's Slough	Private	Wahkiakum County	800'	62,000 (~200x10)				Conservation Aquatic
Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fisherman's Protective Union, the NW Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery. 2. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									
W-40.8	Puget Island	Private	Wahkiakum County	900'	33,000 (~100x10)				Conservation Aquatic
Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-40.8 (cont'd) Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fisherman's Protective Union, the NW Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery. 2. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									
W-40.9	Puget Island	Unknown	Wahkiakum County	2,500'	92,500 (~100x10)		Used within past 10 years, and over 10 yrs ago		Conservation Aquatic
Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fisherman's Protective Union, the NW Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery. 2. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									
W-41.2	Welcome Slough (Puget I.)	Private	Wahkiakum County	5.3	85,000 10' above elevation				Rural Shorelands
Environmental, Engineering and Land Use Issues: DRAINAGE: Because the site is located shoreward of a road, runoff from the disposal will need to flow to and under the road through drainageways and culverts prior to entering the main waterway. Existing culverts and drainageways may not be adequate to handle the runoff from a hydraulic dredging operation. The project sponsor must either demonstrate that the existing drainage system is adequate or install an adequate drainage system prior to undertaking disposal. STOCKPILING: The site is intended to act as a stockpile for eventual removal of the dredged material for construction fills or other uses.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-41.2 (cont'd) Special Conditions on Use (include but not limited to): 1. Project sponsor shall demonstrate that the existing drainageways and culverts are adequate to carry the runoff associated with the dredging operation from the disposal site to the main waterway. If the existing drainage system is not adequate, the project sponsor shall submit a proposal for increasing its capacity. All necessary approvals from property owners, road departments, and other agencies must be obtained prior to altering or installing drainageways and culverts.									
W-41.3	Coffee Pot Island	Private	Wahkiakum County	4,000'	148,000 (~100x10)	Used within past 10 years, and over 10 yrs ago			Conservation Aquatic
Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fisherman's Protective Union, the NW Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery. 2. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									
W-41.8	Puget Island	Wahkiakum County	Wahkiakum County	6.2	100,000 10' above elevation				Rural Shorelands
Environmental, Engineering and Land Use Issues: Special Conditions on Use (include but not limited to):									
W-42.4	Puget Island	Private	Wahkiakum County	4,200'	310,000 (~200x10)				Conservation Aquatic

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-42.4 (cont'd)									
Environmental, Engineering and Land Use Issues: JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									
W-42.5	Coffee Pot Island (upstream)	Federal	Wahkiakum County	35	560,000 10' above elevation		last used in 1988		Conservation Shoreland
Environmental, Engineering and Land Use Issues: Special Conditions on Use (include but not limited to):									
W-43.8	Pancake Point	Private	Wahkiakum County	3,250'	120,000 (~100x10)		Used within past 10 years, and over 10 yrs ago		Conservation Aquatic
Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fisherman's Protective Union, the NW Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery. 2. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-44.0	Vik Property		Wahkiakum County	100	3,200,000				Rural Shoreland
Environmental, Engineering and Land Use Issues: Special Conditions on Use (include but not limited to):									
W-45.0 **beach**	White Island	State	Wahkiakum County	5,400'	300,000 (~150x10)		Used within past 10 years, and over 10 yrs ago		Conservation Aquatic
Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. RUNOFF: Runoff from the disposal site shall not be allowed to flow through potentially sensitive wetlands to the north of the site. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fisherman's Protective Union, the NW Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery. 2. The northern boundary of the site shall be leveed to prevent material from entering the wetland north of the disposal area. 3. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									
W-46.3	Brown Island	State	Wahkiakum County	6,000'	330,000 (~150x10)	264,151 191,679 573,504 920,905 790,099	1993 1995 1996 1997 1999		Conservation Aquatic/ Conservation Shoreland
Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-46.3 (cont'd) Environmental, Engineering and Land Use Issues: COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery. JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fisherman's Protective Union, the NW Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery. 2. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.									
W-51.3	Eagle Cliff		Wahkiakum County				Site was used over 10 years ago		Development Shoreland
Environmental, Engineering and Land Use Issues: JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon. BEACH NOURISHMENT: Site not currently cleared, or studied, and determined to be productive for benthic invertebrates. REHANDLING: Placement of material for beach nourishment would result in rehandling of material or creation of a shoal. Special Conditions on Use (include but not limited to): 1. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon									
W-51.8	County Line Park	Wahkiakum County	Wahkiakum County	3,100'	230,000 (~200x10)				Development Shoreland

SITE INFORMATION						DREDGED MATERIAL DISPOSAL			LAND USE DESIGNATION
Site*	Common Name	Owner	Local Jurisdiction	Acres/ Feet	Capacity (cubic yards)	Volume (cubic yards)	Date	Source	
W-51.8 (cont'd)									

Environmental, Engineering and Land Use Issues:

COMMERCIAL FISHERY: The disposal site is within an organized gillnet drift. Prior to undertaking disposal, the project sponsor will be required to contact the drift captain, local fishermen's associations, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the fishery.

JUVENILE SALMON: Juvenile salmon migrate through and adjacent to the site. The project sponsor will be required to consult with the state fishery agency, the National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

COUNTY LINE PARK: The disposal site is within County Line Park. The project sponsor must coordinate with park officials.

Special Conditions on Use (include but not limited to):

1. Prior to undertaking disposal, the project sponsor shall consult with the local drift captain, Columbia River Fisherman's Protective Union, the NW Gillnetters Association, and the state fishery agency to determine project timing and disposal methods that will minimize impacts to the gillnet fishery.
2. Prior to undertaking disposal, the project sponsor shall consult with the state fishery agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service to determine project timing and disposal methods that will minimize impacts to juvenile salmon.

APPENDIX A: Dredging Options

Dredges available in the Pacific Northwest today include pipeline dredges, sea-going hopper dredges, clamshell and barge dredges, and land-based equipment such as drag lines and back hoes. Pipeline and hopper dredges are commonly used for port development and maintenance and in larger dredging projects such as navigation channel maintenance by the U.S. Army Corps of Engineers. Clamshell and barge equipment is typically involved in smaller port and private dredging jobs but is sometimes used in larger navigation channel maintenance jobs. Land-based equipment is usually used for very small projects such as maintenance dredging at boat ramps.

Pipeline Dredges

Pipeline dredges are commonly used in larger dredging projects such as navigation channel maintenance by the U.S. Army Corps of Engineers or port development and maintenance. Generally, pipeline dredges are used for either large cutline shoals or areas with multiple sandwave shoals.

Pipeline dredges usually consist of a large centrifugal pump mounted on a non-propelled, specially designed barge. The bottom materials are then pumped up through a large diameter suction pipe to the barge, and then to the disposal area through a pipeline. The dredging end of the suction pipe is equipped with a revolving cutter-head that breaks up the bottom for easier transport. The pipeline is floated on pontoons, extending as far as 4,000 to 5,000 feet to the disposal site. Greater piping distances can be attained through the use of booster pumps.

The major limitation of pipeline dredging is that the disposal areas must be relatively close to the dredging site. The main advantage is the ability to dredge a large volume of material in a short period of time.

Pipeline dredges are typically classified by the diameter of their discharge pipeline. Dredges available in the Pacific Northwest range from a minimum size of 8 inches to a maximum of 30 inches. Pumping distance and production capability of the pipeline dredges is directly related to pipeline diameter; larger diameter yields greater discharge distances and higher production capability.

FIGURE A-1: Pipeline Dredge

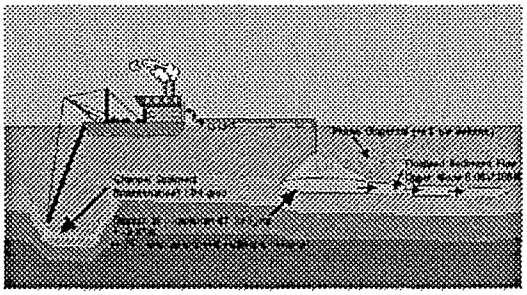


Diagram courtesy of www.mgs.md.gov/coastal/dredge/sedstudy.html

Hopper Dredges

A hopper dredge is a type of hydraulic dredging consisting of a propelled floating plant which is capable of dredging material, storing it onboard, transporting it to the disposal area, and dumping it. Material from hopper dredges is disposed in deep water in or alongside the navigation channel, generally described as flow lane disposal, or in approved/designated disposal sites.

Hopper dredges are commonly used on sandwave shoals and in river entrances and ocean environments.

The advantage of hopper dredges is that they are flexible, they can operate anywhere on the river and are mobile. Hopper dredges reduce the generation of suspended sediment but, as a result, produce large volumes of dredged material that must be dewatered. However, dewatering of sand takes place in a short period of time.

A limitation of the hopper dredges is that they will not load as well with finer sediments because the overflow will carry fines, that have settling rates slower than sand, out of the hopper and back into the river or harbor.

FIGURE A-2: Dredge Essayons

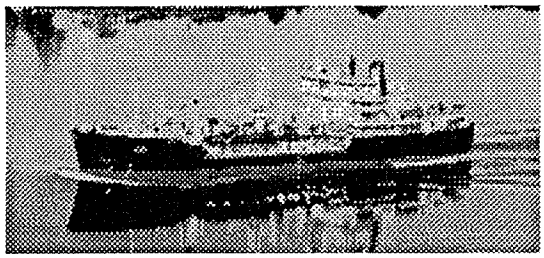
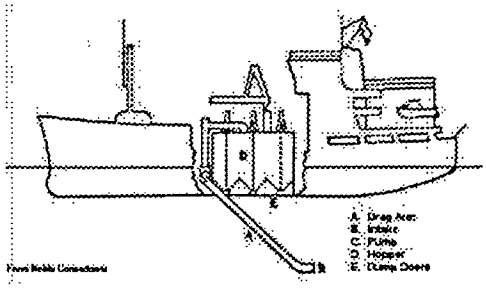


Photo Courtesy of U.S. Army Corps of Engineers

FIGURE A-3: Hopper Dredge

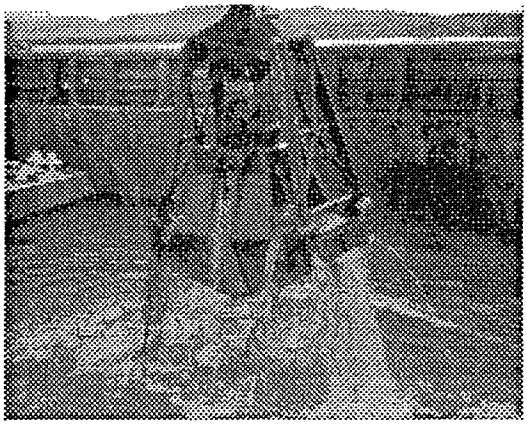


Clamshell Dredges

A clamshell dredge is a mechanical cable excavator dredge that uses a single bucket attached to the dredge crane with cables. The dredge operates by lifting the bucket (the clamshell), dropping it into the bottom sediments, lifting the bucket and dredged material to the surface, and emptying the dredged material into a nearby disposal facility or barges for transportation to either an upland or in-water site disposal facility.

The advantage of bucket dredges is that they can be used in tight quarters (e.g. around dock or piers). They can also be used in shallow areas where draft restrictions limit other methods. Furthermore, the dredge material comes up virtually *in situ*, making the clamshell particularly effective in silts or contaminated material.

FIGURE A-4: Clamshell Dredge



APPENDIX B: Disposal Options

Materials that meet the standards in Clean Water Act (CWA) and the Marine Protection Research and Sanctuaries Act (MPRSA) will generally be available for all disposal options and methods. Those materials that do not meet these standards will require treatment, confinement or a combination of the two. A variety of treatment methods are available that can target different contaminants and contaminant levels. Examples of treatment methods include: Pretreatment (dewatering, washing, separation), Thermal treatment (incineration, vitrification), Chemical treatment, Biological treatment, and Stabilization.

Upland Disposal

The major factors controlling choice of upland (including shoreland) sites are cost, land use, and availability. Increased distance from a dredging operation and extensive site preparation both increase costs. The sediment to be deposited must be compatible with the future use of the site: for example, fine sediments will not always produce stable land for industrial development while coarse sands may not enhance productive farmland or be useful for levee maintenance.

The primary engineering consideration is the degree of confinement that the site and the proposed deposition will require. The Army Corps of Engineers has developed specific guidelines for designing containment areas at the disposal site that both maximize the site's capacity and control effluent quality. The guidelines address technical issues, such as, possible geochemical changes subsequent to disposal that causes the release of contaminants and effective dewatering of sediments. In general, diking around the site offers maximum confinement while berming (the creation of mounds of sediment during deposition) may suffice for certain sediments.

FIGURE B-1: Bermed upland disposal site (O 18.2)

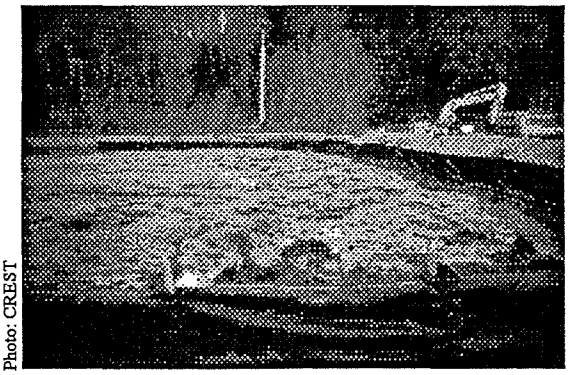


Photo: CREST

Material dredged by clamshell dredge and transported to site by barge and dump trucks.

FIGURE B-2: Leveed upland disposal site (W 3.2)

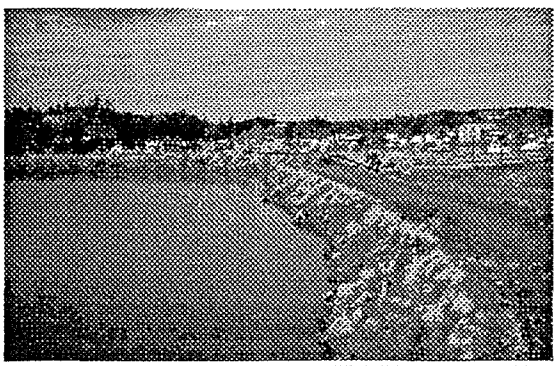


Photo: CREST

Material dredged and deposited by a hydraulic pipeline dredge.

Levee Disposal

Dredged material disposal on levees may prove cost effective for the combined goals of levee maintenance and disposal of otherwise unused dredged materials. The major environmental consideration is that the material be disposed in such a way that it not run-off into productive aquatic areas. The major engineering issues are effective dewatering of the sediments and careful levee stabilization, preferably through revegetation, after disposal.

In-water Disposal

Regardless of the type of in-water disposal, placing dredged materials in the aquatic area raises several key concerns, including sediment and water quality, sediment transport, water circulation, impacts to fisheries, and impacts to biological communities, especially endangered/threatened species. Sediments placed in water must meet sediment quality regulations outlined in the *Dredged Material Evaluation Framework*. The majority of sediment disposed in the estuary's aquatic area consists of coarse, clean sand dredged from maintained navigation channels. This material must meet the water and sediment quality standards.

After sediment is placed in an in-water disposal site, some or all of it is eventually transported to other areas, potentially resulting in adverse impacts to shallow productive areas and fishing areas, resulting in an increase in dredging requirements on other projects. The sediment transport patterns at in-water sites need to be assessed prior to disposal. Disposing of material in-water usually creates a mound or otherwise obstructs water flow. Consequently, water circulation patterns in the vicinity of the disposal site are altered. These changes can have detrimental effects. For instance, unexpected erosion or accretion can occur downstream from the disposal site. Conversely, the changes can sometimes be beneficial. For example, the scouring of the channel can be increased. In all cases, the potential effects that may result from circulation changes need to be assessed prior to undertaking disposal. In-water disposal often results in the direct smothering of benthic organisms at the disposal sites and indirect impacts to organisms downstream from the sites. Disposal often impacts commercial fisheries by decreasing the size and depth of gillnet drifts, placing snags in fishing areas, and obstructing fishing access with dredging equipment.

FIGURE B-3: Flowlane disposal from a Hopper Dredge

Photo: Courtesy U.S. Army Corps of Engineers

a. Flow-lane disposal

Flow-lane disposal is the placement of dredged material in or adjacent to a channel where the material will continue downstream movement. Material is generally placed adjacent to the main navigation channel in 20 to 65 feet of water. In the Columbia River, this depth regime is often an area where sediment moves slowly from the site in the bedload. In this way, permanent

mounding is avoided as might occur if the site were shallow, and rapid sediment transport to downstream areas of the navigation channel does not occur, as in deeper scour-holes. Flow-lane disposal is undertaken by hopper, pipeline, and clamshell/bucket dredges.

b. Estuarine Open-Water Disposal

This method involves the placement of material in open water areas other than those used for flow-lane disposal. Disposals at estuarine open-water sites occur from hopper or clamshell dredging projects.

Area D (site O-8.5) is the only open water disposal site currently in the estuary.

c. Sump Disposal

Sump disposal is the placement of dredged material in a temporary in-water holding site with subsequent rehandling to an upland area. Dredged material is disposed of in the sump primarily from hopper dredges. When a sufficient quantity of material accumulates in the sump, it is subsequently pumped with a pipeline dredge.

The only such disposal area currently operation is Harrington Sump. The material is placed in Harrington Sump and subsequently pumped onto Rice Island.

FIGURE B-4: Pipeline Dredge pumping dredged material from Harrington Sump (O-21.0) to Rice Island (O-21.2)

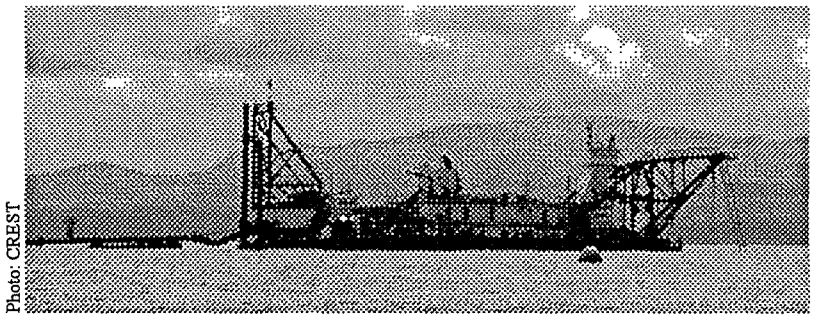


Photo: CREST

FIGURE B-5: Dredge pipes transporting dredged material from the Pipeline Dredge to Rice Island (O-21.2)

Photo: CREST

d. Ocean Disposal

Ocean disposal involves the transport of dredged material over the Columbia River Bar to designated ocean disposal sites. Material is transported by hopper dredges or barges. The Environmental Protection Agency, in conjunction with other resource management agencies, designates Ocean disposal sites.

Beach Nourishment

Dredged material is placed on a beach and in the aquatic areas adjacent to the beach. Beach nourishment disposal is undertaken on eroding beaches and serves a dual purpose of disposing of dredged materials and restoring the beaches to their historic profile. Subsequent to disposal, the beach must be graded at a uniform and gentle slope to minimize fish stranding problems and provide a safe beach for users.

Containment Options

a. Confined Disposal Facilities (CDF)

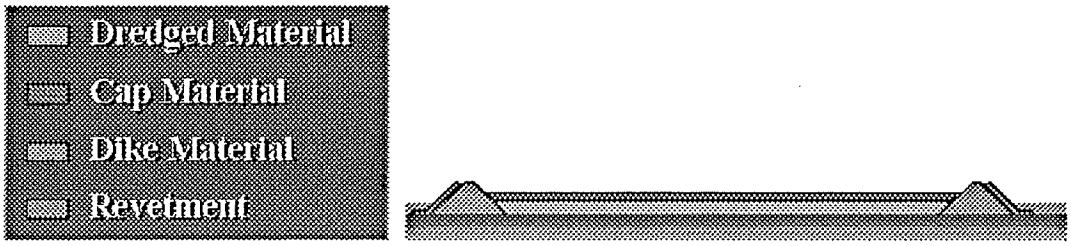
Any disposal location where dredged material is contained, upland, in-water, or nearshore. Such disposal involves the controlled placement of the dredged material at a designated dredged material disposal site. In-water placement of contaminated materials involve covering the site with a clean material ("capping"). Such a process may involve the construction of levees or other holding facilities as a means of containing the material.

e.g. inactive quarry areas, abandoned mines, landfill disposal

Considerations to keep in mind:

i. Physical impacts: alteration of habitat, hydrological conditions, navigation impacts, land-use impacts, aesthetic and cultural impacts
ii. Storage Capacity
iii. Management and Monitoring
iv. Contaminant Pathways:
v. Geochemical environments
vi. Surface run-off
vii. Effluent discharge
viii. Leachate
ix. Plant and animal uptake
x. Volitization to air

FIGURE B-6: Confined disposal facility

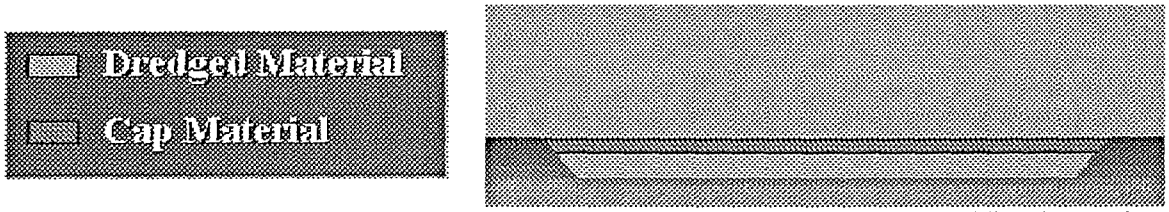


http://www.spl.usace.army.mil/pd/coastal/dmca.html

b. Confined Aquatic Disposal (CAD)

These facilities contain the dredged material and prevent them from spreading. Such facilities include subaqueous pits, containment areas, containment islands, and nearshore disposal sites. The unsuitable material may also be contained in geotextile bags; the disposal of the bags will then be capped with clean material (generally sand).

FIGURE B-7: Confined aquatic disposal



http://www.spl.usace.army.mil/pd/coastal/cont_ad.html

TABLE B-1: Advantages and Disadvantages of Disposal Options

DISPOSAL OPTION	ADVANTAGES	DISADVANTAGES
Land disposal in leveed sites	- can be used to enhance industrial sites or farmland - can be stockpiled for use in levee maintenance or development projects - provided that wetlands are not filled, environmental impacts are generally considered to be lower than with in-water disposal - contaminated sediments can be isolated from the aquatic environment	- number of sites and total disposal capacity is limited - sites usually have to be very near to the dredging project - use of the site for development, etc., is delayed while the dredged material is dewatering - costly site preparation is usually required prior to disposal - usually requires a significant expenditure for property acquisition (majority of available sites are in private ownership)
Levee disposal	- levees are maintained and enhanced - provided that wetlands are not filled, environmental impacts are generally considered to be lower than those associated with in-water disposal	- disposal is generally limited to clamshell type operations - disposal often requires double handling of dredged material - dredged sediment has to be spread over a large area - levees are generally remote from the dredging operation - there are limitations on the types of sediment suitable for levee maintenance
Flow-lane Disposal	- presents an inexpensive disposal option available to most types of dredges (hopper, clamshell, pipeline)	- suitable sediments are generally limited to coarse-grained clean sand - impacts to aquatic resources can be high - use of this option usually requires extensive sediment testing and ecological monitoring - there are often uncertainties regarding the transport and final fate of the sediments
Sump Disposal	- presents an inexpensive disposal option available to most types of dredges - environmental impacts are reduced by removing material from the aquatic area	- sediments suitable for disposal are generally limited to coarse-grained clean sand - some material placed in the sump is transported away prior to rehandling
Estuarine open-water disposal	- presents an inexpensive disposal option available to most types of dredges - can be used to help control and direct river flow for the purpose of increasing channel self-scouring	- impacts to aquatic resources are generally high - there are significant uncertainties regarding the transport and final fate of the sediments - sediments suitable for disposal are generally limited to coarse-grained clean sand - use of this option usually requires extensive sediment testing and ecological monitoring
Ocean Disposal	- presents no direct impacts to the estuarine ecosystem	- disposal is restricted due to potential impacts to the ocean ecosystem - periodic rough sea and weather conditions make use of the sites unpredictable - use of the sites is prohibitively expensive for projects in the upper estuary
Beach Nourishment	- presents an inexpensive disposal option for pipeline dredging - can enhance recreational use of a beach - can help offset beach erosion - can be used to help control and direct river flow for the purpose of increasing channel self-scouring	- disposal is limited to coarse-grained clean sand - the transport and final fate of the sediment is often uncertain - beach nourishment involves fill in intertidal and subtidal areas
Upland creation	- can be used to create or enhance wildlife habitat - can be used to help control and direct river flow for the purpose of enhancing channel self-scouring - inexpensive disposal option for large quantities of material	- significantly alters or reduces aquatic habitat - involves fill in subtidal and intertidal areas - effect on water circulation, sediment transport, and adjacent accretion and erosion are uncertain

APPENDIX C: Beneficial Use Options

Before deciding amongst beneficial uses it is important to first determine whether the dredged material is acceptable for beneficial use. Evaluation of the contaminant status of the dredged material is the first step. In general, contaminated sediments will not be suitable for a majority of beneficial use applications. Thus, different applications may require decontamination or treatment prior to use. Other things to take into account are technical feasibility, environmental acceptability, physical alterations, costs/benefits, and legal constraints.

The distance of the proposed site from dredging project site, accessibility, mode of transport, rehandling requirements, and timing of the beneficial use need in relation to the dredging needs are things that need to be considered when evaluating the technical feasibility of a beneficial use application.

The use of dredged material in beneficial use applications must first consider all applicable legal constraints, including, but not limited to: state, county and local land use zoning laws; ownership of disposal sites; national, state and local regulations and standards.

Potential beneficial uses must take into account any compelling environmental considerations on a site-specific basis. Consideration must also be given to likely interference with other uses at or adjacent to the site. For instance, the creation of berms must avoid interference with other uses such as fisheries, ports, harbors, outfalls and intakes. The cleanliness of the sediment must also be considered due to the different degrees of contamination that would/would not be acceptable for some of the uses.

It is important for the physical, chemical and engineering characteristics of dredged material to be identified, including an examination of contaminants, prior to application to a beneficial use. These characteristics will largely determine which beneficial uses the specific dredged material is suitable for. Ecological impacts of the discharge of dredged material must also be taken into consideration.

Logistics must also be considered such as site utilization, transport, handling, storage, and dewatering.

Categories of Beneficial Use:

1. Land Improvement/Enhancement

a. replacement fill

E.g. - fill for abandoned/closed gravel or clay mines
- fill for obsolete canals/docks
- strip mine reclamation: would require large quantities of dewatered dredged material

b. capping

Dredged material is utilized as a cover for contaminated dredged sediment disposed in open water or on upland sites as a method of isolating the contaminated material from the surrounding environment.
E.g. Brownfield remediation

c. land improvement

Dredged material can be used to improve the quality of land where the current land is not adequate to support a planned use or where the elevation is too low to prevent flooding.

d. Topsoil

Maintenance dredging produces sediment mixtures of sand, silt, clay and organic matter that can be excellent topsoil for use on agriculture fields.

e. Agriculture, Horticulture, Forestry

i. **Agriculture:** Livestock pastures requiring natural grass colonization; incorporation of dredged materials into marginal soils to provide additional nutrients
Considerations - heavy metal uptake by plants; salinity; oil and grease; nutrient availability; pH; water content

ii. **Horticulture:** Production of crops of vegetables, fruits, nuts, commercially grown plants, sod farms

iii. **Forestry:** used for improving marginal soil on timber land; dredged material can have higher contaminant levels than required for food production

f. Parks and Recreation

Include such developments as riverside/coastal picnic areas, water parks, marinas, athletic fields, golf courses, campgrounds, trails, and playgrounds

2. Shore Protection

a. beach nourishment

May be necessary along eroding beaches to protect the historic profile of the beach and to moderate the wave climate along the shoreline. Must also take into account the effects of dredged material placement on beach organisms. The dredged sediment used to nourish the beach must closely match the sediment composition of the eroding beach and be low in pollutants.

Concerns to keep in mind when considering this option include:

- impacts on benthic organisms
- impacts on offshore organisms
- impacts of dredge anchors and pipelines on environmentally sensitive habitats (e.g. seagrass beds, dunes)

b. in-water disposal

In-water disposal of dredged material is a beneficial use of the material. In recent years scientists have noted that the net sediment transport of the Columbia River has decreased. As a result, the beaches along the shores are not receiving the quantities of sand that they once did and erosion is threatening them. In-water disposal keeps the sand within the littoral system and helps feed the beaches.

c. berm creation

Berms are used to improve beach stability by modifying the shoreline wave climate. The berm may be designed to alter wave direction and to modify the rate/direction of local sediment transport. Could simultaneously be used for stockpiling sand for beach nourishment purposes

3. Habitat Enhancement

Habitat enhancement is attractive as a low-cost mitigation procedure that can be used to offset any environmental impacts that were incurred during disposal. Restoration or enhancement is preferable to habitat development.

Some environmental concerns related to these activities include the loss of open water habitat, loss of wetland systems, changes in the hydraulic and energy regimes and potential pollutant mobilization by plants growing on contaminated sediments.

Site selection should be based on knowledge of the ecological characteristics of the site. Including, but not limited to, foundation characteristics, salinity, tidal influences, bottom topography, benthic communities, adjacent habitat, and energy conditions.

a. Wildlife / Upland

Habitat development uses dredged material as a substrate in the establishment and management of relatively permanent and biologically productive plant and animal habitats. Creation of wildlife islands for colonial nesting waterbirds.

Potential for creation/enhancement of a variety of terrestrial communities ranging from dense forest to bare soil.

Disadvantages to this form of beneficial use include the possible need for long term management of the site, limitations on future land use at the site, costs associated with the rehandling of the sediment, management and control of resulting effluent to ensure it meets water quality standards

Factors to consider during site selection include: availability, capacity of disposal need, dredging area proximity, physical and engineering characteristics, environmental suitability, public acceptability, tidal considerations, and habitat development feasibility.

b. Island

Primarily for migratory colonial nesting waterbirds (e.g. Caspian terns, pelicans, cormorants, herons, egrets etc). Confined disposal facilities (generally designed for the permanent containment of contaminated sediments) may also be useful for such habitat

Additional sediment can be added to the island during the fall or winter when the birds are not there.

These islands tend to be attractive to nesting waterbirds because they offer isolation from ground predators and human disturbance; they have the ability to provide a wide range of habitat diversity to accommodate the nesting birds (e.g. bare ground, sparse cover, dense cover, and tall shrubs and trees); ongoing dredging operations can keep this type of successional habitat available.

c. Fisheries

Bottom mounding may improve fish habitat when combined with stabilization techniques such as planting seagrasses or capping with shell.

Creation of salt marshes for fishery organisms.

d. Wetland restoration

The are different ways in which dredged material can be used in the restoration of wetlands. Dredged sediment could be applied in thin layers to bring degraded wetlands up to an intertidal elevation. Wind and wave barriers may be created to allow the regrowth of native vegetation and to prevent erosion.

Potential problems with wetland restoration/creation are:

- project timing: coordination of biological and dredging schedules
- bioaccumulation: contaminant uptake by plants
- invasion of non-native plant species

e. Aquatic

The establishment of biological communities on dredged material at or below mean tide in coastal areas or in permanent waters in lakes and rivers. These include tidal flats, seagrass meadows, clam flats, oyster beds, fishing reefs, and freshwater aquatic plant establishment. Aquatic habitats have the potential to be highly productive biological units. In many cases, it may be feasible to include aquatic habitat establishment/enhancement as part of a wetland

restoration project. A major disadvantage, to date, is the lack of knowledge concerning the techniques for the establishment of such biological communities.

4. Other

a. Construction products

Dredged material can be used in the creation of the following products: concrete aggregates, backfill, bituminous mixtures and mortar, bricks, ceramics, and insulation pellets. It may also be used as riprap/blocks for the protection of levees and slopes against erosion and for use on public roads for snow and ice.

b. aquaculture

Dredged material containment areas commonly possess structural features that enhance their suitability as aquaculture areas. These features include levees and water control devices. For instance, levees that would be constructed or that currently exist to contain dredged material could also serve to impound the water necessary for aquaculture.

Aquaculture has the potential to for production of low-cost protein, contributing to demand for seafood, increasing employment in supporting industries.

c. Industrial/Commercial Development

Port enhancement or expansion

d. Residential and Urban use

Use for fill, erosion control, foundation material

e. Airports

Runways and facilities

f. Roads

Foundation material for highway/road construction

TABLE C-1: Examples of beneficial uses in the Columbia River (& other sites):

Project/Site Name	Beneficial Use
Columbia River Shoreline	Beach nourishment
Columbia River	Shoreline stabilization
Columbia River levees	Flood control
Coos Bay berms	Clam bed development
Miller sands	Wetland/habitat development
Skamokawa Vista Park, WA	sold for construction uses
Benson Beach, WA	Beach nourishment

APPENDIX D: Agency Standard Removal/Fill Permit Conditions

The following is a list of standard conditions that may be added to removal/fill permits by the U.S. Army Corps of Engineers and the Oregon Division of State Lands. The list is provided for informational purposes.

Division of State Lands

a. General

i. Care shall be taken to prevent any petroleum products, chemicals, or other deleterious materials from entering water.

b. Water Quality, Riparian, Fish & Wildlife

ii. Work in the waterway shall be done so as to minimize turbidity increases in the water that would degrade water quality and damage aquatic life. Turbidity shall not exceed 10% above natural stream turbidities, except as allowed by OAR 340-41.
iii. Turbid waste waters from the project shall be provided adequate settling time.
iv. Waste materials and spoils shall be placed above the bankline behind previously constructed berms and not in any unauthorized wetland areas.
v. Waste water from hydraulic dredging operation shall comply with appropriate water quality standards.
vi. Rock riprapping and placement of bulkheads shall be done between March 1 and January 1 and shall be constructed in a manner that does not appreciably increase the upland surface area. Only clean, durable riprap should be used, and the completed revetment shall have a slope no steeper than 1 $^{1/2}$:1.
vii. The disturbed areas above the riprap shall be revegetated and landscaped to prevent soil erosion.
viii. The Division of State Lands retains the authority to temporarily halt of modify the project in case of excessive turbidity of damage to natural resources.
ix. Removal of existing woody vegetation shall be minimal.

c. In-water dredging and disposal

x. Dredging in the permit area shall be conducted between November 1 and February 28.
xi. If a bucket dredge of any type, including but not limited to grab or clamshell, dipper, dragline or backhaul bucket is used, all digging passes of the bucket shall be completed without any material, once in the bucket, being returned to the wetted area except as approved.
xii. If a hydraulic dredge is used, the dredge is to be operated with the intake on or below the surface of the material being removed.
xiii. During hydraulic dredging, the return water discharge from the disposal area must be over a weir structure that is designed and operated so the water crest height over the weir does not exceed three inches at maximum flows.
xiv. Levees and weirs should be designed to regulate disposal pond water depth to an average of two feet whenever a discharge is occurring.
xv. Material shall not be removed to a depth greater than depicted on the permit drawing.
xvi. The maintenance dredge spoil site shall be limited to the minimum area needed.
xvii. The maintenance dredge spoil site shall be replanted with after disposal is completed.
xviii. A drag-line bucket dredge shall only be used adjacent to the shoreline or if debris precludes using a hydraulic dredge. A single pass with the bucket shall be made each time from the point of dredging to a bermed disposal area or a dump truck.

Army Corps of Engineers

a. General

i. All construction debris shall be disposed of in such a manner that it cannot enter the waterway.
ii. Care shall be taken to prevent any petroleum products, chemicals, or other deleterious materials from entering the waterway.
iii. Your use of the permitted activity must not interfere with the publics right to free navigation on all navigable waters of the United States.
iv. You must advise this office in writing at least two weeks before you start maintenance dredging activities under the authority of this permit.
v. You must install and maintain, at your expense, any safety lights and signals prescribed by the U.S. Coast Guard through regulations or otherwise, on your authorized facilities.
vi. The Coast Guard must be notified by letter 14 days prior to commencing dredge operations.
vii. The method of dredging or disposal or the dredge or disposal locations may not be changed without the prior written approval of the District Engineer.
viii. You must have a copy of this permit available on the vessel used for the authorized transportation and disposal of dredged material.

b. Water Quality, Riparian, Fish & Wildlife

ix. Work in the waterway shall be done so as to minimize turbidity increases in the water that tend to degrade water quality and damage aquatic life.
x. All areas along the bank, disturbed or newly created by the construction activity, shall be seeded, sodded, revegetated, or given some other equivalent type of protection against subsequent erosion.
xi. When the District Engineer has been notified by a fishery agency that a filling activity is adversely affecting fish or wildlife resources or the harvest thereof, and when the District Engineer subsequently directs remedial measures, the permittee shall comply with such directions as may be received to suspend or modify the activity, to the extent required to mitigate or eliminate the adverse effect.
xii. When the District Engineer has been notified by the Department of Environmental Quality that the dredging activity is adversely affecting water quality, and the District Engineer subsequently directs remedial measures, the permittee shall comply with directions to suspend or modify the activity to mitigate or eliminate the adverse effect.

c. In-water dredging and disposal

xiii. All in-water work, including temporary fills, shall occur within the Oregon Department of Fish and Wildlife preferred work period, which is between November 1 and February 28 for the lower Columbia River.
xiv. Material shall not be removed to a depth greater than -40 feet Mean Lower Low Water.
xv. The discharge point shall be subsurface (-5 feet MLLW) and directed downstream. The discharge pipe shall be marked according to Coast Guard Standards.
xvi. Discharge may commence disposal operations when the bottom water is ebbing or approximately one-hour after the beginning of the start of surface ebb.
xvii. The hydraulic dredge is to be operated with the intake on or below the surface of the material being removed.
xviii. Back washing of the hydraulic dredge intake line shall be held to an absolute minimum. When backwashing is necessary, the intake shall be raised no more than 3 feet above the river bottom.
xix. The discharge pipe shall be sunk when not in use to a depth sufficient to insure it does not impede or create a hazard to navigation
xx. If a bucket dredge of any type, including but not limited to grab or clamshell, dipper, dragline, or backhaul bucket, is used, all digging passes of the bucket shall be completed without any material, once in the bucket, being returned to the wetted areas.

d. testing

xxi. Contact the Portland District Corps Regulatory Office to evaluate the need for sediment testing. The notification shall be a minimum of 4 months before the desired start date. The decision regarding testing requirements will be based on the protocol established in the "Dredged Material Evaluation Framework - Lower Columbia River Management Area, November 1998."

APPENDIX E: Summary of Site Inventory Revisions

Sites in the Inventory were all renamed to create consistency between the *Columbia River Estuary Dredged Material Management Plan* and the U.S. Army Corps of Engineers 1998 *Dredged Material Management Plan & Supplemental Environmental Impact Statement: Columbia and Lower Willamette River Federal Navigation Channel.* Previously, a name was assigned to each site in the following format: planning jurisdiction[1] - type of disposal site[2] - approximate river mile (e.g. As-S-18.7). The sites were renamed to reflect the state and the approximate river mile (e.g. O-18.7). As a result, the inventory is organized by State in order of river mile, starting at river mile 3, instead of by planning jurisdiction.

Site specific information was also updated for all the sites, where necessary. This information included any of the following: owner; jurisdiction; acres/feet; capacity; volume of disposed material; date of disposal; source of disposed material; land-use designation; current use; and projected use. A common name for each site was added, where appropriate (e.g. Tongue Point for O-18.2).

It is important to note that flow-lane disposal is the preferred alternative of the Port of Astoria and the Corps of Engineers for dredging projects within the Estuary. Consequently, many of the smaller sites that had not received dredged material in many years and/or were no longer required for any of the projected dredging projects were removed from the site inventory.

The designations of "site priority" was removed from the plan. Most of the sites designated "Priority 2" in the previous plan were not required to meet the dredged material disposal needs of the past 15 years. Dredging project proponents indicated that they would not be required for projected dredging needs either. Likewise, the sites presented as "Additional Dredged Material Disposal Sites" were removed from the inventory due to significant environmental, land-use or engineering issues related to those sites.

TABLE E-1: Site Inventory Amendments

Site	Action	Explanation
Ha-S-7.6 Ha-S-7.9 Ha-S-8.0	Combined	
Wa-S-9.4	Removed	Owner had not expressed interest in receiving dredged material at this site. The site had not been used for dredged material disposal and dredging sponsors in the area did not indicate a need for this site.
Wa-S-10.1	Removed	The site had not recently been used for dredged material disposal and dredging sponsors in the area did not indicate a need for this site.
Wa-S-10.5	Removed	The site had not recently been used for dredged material disposal and dredging sponsors in the area did not indicate a need for this site.
Wa-S-10.7	Removed	The site had not recently been used for dredged material disposal and dredging sponsors in the area did not indicate a need for this site.
Wa-S-10.9	Removed	The Port of Astoria Board of Commissioners voted to remove this site from the inventory (3/20/01). Dredging sponsors indicated that the sites provided a good option but were not necessary because flow-lane disposal is used for dredging of

[1] CC - Clatsop County; Wa - City of Warrenton; Ha - City of Hammond; As - City of Astoria

[2] S - Shoreland; B - Beach Nourishment; E - Estuarine In-water

		the Skipanon.
Wa-S-11.7	Removed	The site had not recently been used for dredged material disposal and dredging sponsors in the area did not indicate a need for this site.
Wa-S-11.8	Removed	The site had not recently been used for dredged material disposal and dredging sponsors in the area did not indicate a need for this site.
Wa-S-11.9	Removed	This site was not required for any dredging projects in the area. Dredged material has not been disposed of at this site since its designation in the 1986 Plan.
Wa-S-12.1	Removed	The site had not recently been used for dredged material disposal and dredging sponsors in the area did not indicate a need for this site.
Wa-S-12.5	Removed	The site had not recently been used for dredged material disposal and dredging sponsors in the area did not indicate a need for this site.
Wa-S-12.6	Removed	The site had not recently been used for dredged material disposal and dredging sponsors in the area did not indicate a need for this site.
Wa-S-12.9	Removed	The site had not recently been used for dredged material disposal and dredging sponsors in the area did not indicate a need for this site.
As-S-16.3	Removed	Was initially used for disposal of material from the East Mooring Basin. Currently, flow-lane disposal is the Ports preferred method of dredged material disposal.
As-S-18.7	Removed	The Clatsop County Community College Marine and Environmental Research and Training Station (MERTS) facility has since been constructed on the northern portion of this site. The remainder of the site primarily consists of wetlands.
CC-S-12.7	Removed	This site was not required for any dredging projects in the area. Dredged material has not been disposed of at this site since its designation in the 1986 Plan.
CC-S-18.6	Removed	Owner has not expressed interest in receiving dredged material at this site. Dredged material has not been disposed of at this site since its designation in the 1986 Plan.
CC-S-18.8	Removed	Dredged material has not been disposed of at this site since its designation in the 1986 Plan.
CC-B-23.1 CC-S-23.5	Combined	now OR 23.5
CC-S-27.2 CC-B-27.2	Combined	
O-34.0	Added	COE DMMP site
CC-B-36.8	Removed	
CC-S-38.3 CC-B-38.3	Combined	
O-37.6	Added	COE DMMP site
O-40.8	Added	COE DMMP site
W-28.2	Added	COE DMMP site
W-34.4	Added	COE DMMP site
W-51.3	Added	COE DMMP site
Pa-S-8.1 Pa-S-8.9	Removed	This site is part of a restoration project for the Chinook River watershed. There is no interest by the owners in maintaining

		it as a dredged material disposal site.
W-44.0	Added	COE DMMP site

APPENDIX F: Overview of Dredged Material Management Regulations

Dredged material management is shared by a variety of state and federal agencies. The U.S. Army Corps of Engineers and the Environmental Protection Agency share the responsibility for regulating the discharge of dredged material. In Oregon, the agencies tasked with this responsibility are the Department of Environmental Quality, the Division of State Lands, and the Department of Land Conservation and Development. In Washington, regulation is shared by the Departments of Ecology, Natural Resources, and Fish and Wildlife.

Federal Regulations

Clean Water Act (CWA)

The CWA governs the discharge of dredged material into the "waters of the United States". "Waters of the United States" includes all waters, including lakes, streams, mudflats, wetlands, and sloughs, "the use, degradation or destruction of which" could affect interstate or foreign commerce.

§404 - Regulatory permit program administered by the Corps for any discharge of dredge or fill material into the waters of the United States. 404 permit is required for dredged material disposal in an aquatic or nearshore environment. It is also required for hydraulic dredging that places the material on an upland site if the effluent from the disposal will be returned to waters of the US.

River and Harbors Act §10 - regulatory program administered by the Corps of Engineers that requires approval by the Secretary of the Army for any work in navigable waters of the United States. Section 10 permits are required for dredging activity in any navigable waters.

The EPA and the COE have developed guidelines for evaluating specific proposed aquatic or nearshore disposal sites. The Guidelines evaluate potential disposal sites based on potential impacts on the physical, chemical, and biological characteristics of the aquatic environment. They specify four conditions for the selection of any aquatic disposal site for dredged material (40 CFR 230):

a) There must be no other practicable alternatives available that would have less adverse impacts on the aquatic environment.
b) The disposal must not result in violations of applicable state water quality standards, toxic effluent standards, marine sanctuary requirements, or requirements of the Endangered Species Act.
c) The disposal must not cause or contribute to significant degradation of the waters of the United States.
d) The permit applicant must show that all appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic environment.

EPA has oversight authority over the Corps' decision to issue a permit and may veto it if they determine that it will have an "unacceptable adverse effect" on the environment.

Marine Protection, Research, and Sanctuaries Act (MPRSA)

The MPRSA governs the transportation of dredged material seaward of the baseline of the territorial sea for the purpose of disposal. MPRSA requires that any ocean disposal must be first evaluated to determine the potential environmental impact of such an activity. The Corps is the permitting agency subject to EPA oversight and review. EPA, in consultation with the Corps, is required to develop environmental criteria that must be complied with before any proposed ocean disposal activity is allowed to proceed.

In developing the criteria for the evaluation of permit applications, MPRSA provides that the following elements must be considered: (1) the need for the proposed dumping; (2) the effect of the dumping on human health and welfare, fisheries resources, marine ecosystems, and shorelines; (3) the persistence and permanence of the effects of the dumping; (4) the effect of dumping particular volumes and concentrations; (5) appropriate locations and methods of disposal or recycling, including land-based alternatives; and (6) the effect of dumping an alternate uses of the oceans.
The criteria for evaluating environmental impact calls for: (a) No unacceptable adverse effects on human health and no significant damage to the resources of the marine environment; (b) No unacceptable adverse effect on the marine ecosystem; (c) No unacceptable adverse persistent or permanent effects due to the dumping of particular volumes or concentrations of these materials; and (d) No unacceptable adverse effect on the ocean for other uses as a result of direct environmental impact.

National Environmental Policy Act (NEPA)

NEPA acts as an umbrella authority that assures that all applicable environmental requirements are complied with for federal dredging projects. All activities that are regulated by the CWA and MPRSA must also comply with NEPA.

Coastal Zone Management Act (CZMA)

The CZMA grants state and local governments the primary responsibility for planning and regulation of land and water uses in the coastal zone. States may develop and administer land and water use management programs for the coastal zone. Federal projects within the coastal zone must be consistent to the maximum extent practicable with the approved state programs. For non-federal projects, a permit cannot be issued until the appropriate state agency (Oregon - DLCD; Washington - DOE) has concurred that the project is in compliance with the approved coastal zone management plan.

Endangered Species Act (ESA)

Section 7 of the ESA requires all Federal agencies to ensure that their actions do not jeopardize endangered or threatened species or their critical habitat. Consultation with the U.S. Fish and Wildlife Service or National Marine Fisheries Service is required if the project could affect those species.

Oregon State Regulations

Coastal Program

Federal projects and projects requiring a federal permit must be reviewed by the Department of Land Conservation and Development for consistency with the Oregon coastal management program.

Clean Water Act, Section 401 Certification

Section 401 of the federal Clean Water Act requires that any federally permitted projects discharging into U.S. waters be certified by the state that the discharge will not violate state water quality standards. For non-federal dredging, §401 certification is a precondition to compliance with §404 guidelines and is required before receiving a §404 permit for disposal of dredged or fill material.

Oregon Department of Environmental Quality is the agency responsible for certifying under §401 that a proposed discharge will comply with the state water quality standards. DEQ may also add as conditions to the §401 certification any requirement or policy of state law that protects aquatic habitat. In situations where the state does not have jurisdiction, the EPA will provide the §401 certification.

Removal/Fill Permit

Oregon Division of State Lands issues a permit for any activity that proposes dredging or filling exceeding 50 cubic yards of material within the beds or banks of the waters of the state of Oregon.

State Beaches

Oregon State Parks issues permits for any activity on state beaches. This includes the placement of dredged material.

Washington State Regulations

Clean Water Act, Section 401 Certification

Section 401 of the federal Clean Water Act requires that any federally permitted projects discharging into U.S. waters be certified by the state that the discharge will not violate state water quality standards. For non-federal dredging, §401 certification is a precondition to compliance with §404 guidelines and is required before receiving a §404 permit for disposal of dredged or fill material.

Washington State Department of Ecology is the agency responsible for certifying under §401 that a proposed discharge will comply with the state water quality standards. DOE may also add as conditions to the §401 certification any requirement or policy of state law that protects aquatic habitat. In situations where the state does not have jurisdiction, the EPA will provide the §401 certification.

State Environmental Policy Act

SEPA environmental review is required for any action that involves a government "action". An environmental impact statement must be prepared when the lead agency determines a proposal is likely to have significant adverse environmental impacts. The EIS provides an impartial discussion of significant environmental impacts, reasonable alternatives, and mitigation measures that would avoid or minimize adverse impacts.

The SEPA Rules direct agencies to: (1) consider environmental information (impacts, alternatives, and mitigation) before committing to a particular course of action; (2) identify and evaluate probable impacts, alternatives and mitigation measures, emphasizing important environmental impacts and alternatives (including cumulative, short-term, long-term, direct and indirect impacts); (3) encourage public involvement in decisions; prepare environmental documents that are concise, clear, and to the point; (4) integrate SEPA with existing agency planning and licensing procedures, so that the procedures run concurrently rather than consecutively; and, (5) integrate SEPA with agency activities at the earliest possible time to ensure that planning and decisions reflect environmental values, to avoid delays later in the process, and seek to resolve potential problems.

To deny a proposal under SEPA, an agency must find that the proposal would be likely to result in a significant adverse environmental impact identified in a final EIS or final supplemental EIS; and reasonable mitigation measures are not sufficient to mitigate the identified impact to a non-significant level.

Ocean Resources Management Act

Requires that priority be given to resource uses and activities that will not adversely impact renewable resources over those uses that are likely to have an adverse impact. Requires that adverse impacts are avoided, minimized and mitigated.

Hydraulic Project Approval

Any actions affecting the natural flow of waters requires a State Hydraulic Project Approval permit. This generally means any action in saltwater or a stream below the ordinary high water mark. The Washington State Department of Fish and Wildlife must act upon this permit application within 30 days of receipt of a complete application package, including the determination of compliance with the State Environmental Policy Act.

Aquatic Lands Act

Department of Natural Resources has proprietary authority to manage state-owned aquatic lands in trust for the public. DNR has the power to lease state-owned aquatic lands for development and charge a fee for the discharge or use of dredged material. Aquatic or nearshore disposal sites can be subject to DNR management.

Sediment Management Standards

The State of Washington adopted Sediment Management Standards (SMS) for the purpose of reducing and ultimately eliminating adverse effects on biological resources and significant health threats to humans from surface sediment contamination. These standards apply to marine, estuarine, and freshwater surface sediments within the State.

The SMS provide two levels of effects specific to the contamination of marine sediments. that guide decisions pertaining to sediment cleanup and source control activities.

Shoreline Management Act

The Shoreline Management Act requires a permit for any "substantial development" within the shorelines of the state. "Shorelines of the State" are defined to include designated water bodies and their submerged beds with the state's territorial limits and all land areas 200 feet landward of ordinary high water and adjacent wetlands. Local jurisdictions are responsible for overseeing compliance, the Department of Ecology reviews and oversees the local jurisdictions' plans and decisions.

Local Shoreline Master Programs have been adopted as state regulations. Thus, a local Shoreline Permit that has been issued and survived any appeals is the mechanism for determining compliance with Federal Coastal Zone Management Act.

Local Jurisdiction Regulations

Dredging and dredged material disposal must comply with local shoreline management master plans and zoning ordinances.

APPENDIX G: Summary of Sediment Quality

The Clean Water Act (PL 92-500) and the Marine Protection, Research, and Sanctuaries Act (PL 92-532) both require sediment quality analyses. In response to this, the *DMEF* was prepared and adopted (1998) by the following agencies: U.S. Army Corps of Engineers, Northwestern Division, Seattle and Portland Districts; U.S. Environmental Protection Agency Region 10; Oregon Department of Environmental Quality; Washington State Department of Ecology; and Washington State Department of Natural Resources. The *DMEF* provides a consistent technical framework to provide guidance for the evaluation of dredged material proposed for unconfined in-water disposal.

The *DMEF* provides a comprehensive discussion of sediment quality analyses for the lower Columbia River in their description of the Lower Columbia River Management Area. The Bi-state study provides the most comprehensive survey done to date on the Lower Columbia River sediments, however, the data was collected in the early 1990's.

Sources of information concerning the quality of sediments in the Columbia River Estuary are available from a variety of sources:

Bi-State Water Quality Data

- Sediment chemistry data (1,045KB zipped) collected by Tetra Tech as part of the 1991 Reconnaissance Survey and the 1993 Backwater Areas Reconnaissance Survey can be downloaded from the LCREP website (http://www.lcrep.org/bistatedata.htm) or from the EPA Region 10 website (http://www.epa.gov/r10earth/data/crbdata.html).

U.S. Army Corps of Engineers, Portland District

- The Corps of Engineers has, on file, the results of sediment testing complete by the Port of Astoria for their various dredging projects. This information is also available at the Port or at CREST.
- Sediment testing was completed by the Corps for the *Columbia River Channel Improvement Study* in June 1997.
- The *Dredged Material Management Plan and Supplemental Environmental Impact Statement Appendices: Columbia and Lower Willamette River Federal Navigation Channel* - Appendix I provides a list of sediment evaluations conducted by the Corps of Engineers. It includes a brief discussion of the testing results.
- Published and unpublished surveys done by the Portland District Corps of Engineers

Columbia River Estuary Study Taskforce (CREST)

CREST has a variety of reports and documents discussing sediment quality in the Columbia River. Including sediment reports from local port dredging project.

Other

- USGS Surveys
- Contaminant specific surveys