

Portland District

To link a rapidly developing and sprawling nation, the Congress in 1824 delegated the responsibility for building canals and improving natural harbors and waterways to the U.S. Army Corps of Engineers. Since that time, a major role of the Corps of Engineers has been to develop and maintain rivers and harbors to accommodate the expansion of waterborne commerce.

The importance of the Columbia and Willamette rivers to the economy of the Northwest led to the establishment of the Portland District in 1871. At first, one of the main goals of the District was to remove obstacles to navigation in the two rivers.

Today, the region's commercial development is still dependent on safe passage of seagoing ships across the bars and up the waterways. The Portland District's hopper dredges, *Yaquina* and *Essayons*, help maintain the harbors and river

inlets for navigation. Contractor-owned pipeline and bucket dredges perform the majority of dredging in the river channels.

In addition to working the Oregon harbors and others in California, Washington and Alaska, the District's dredges are assigned as needed to the Hawaiian Islands.



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US Army Corps
of Engineers
Portland District



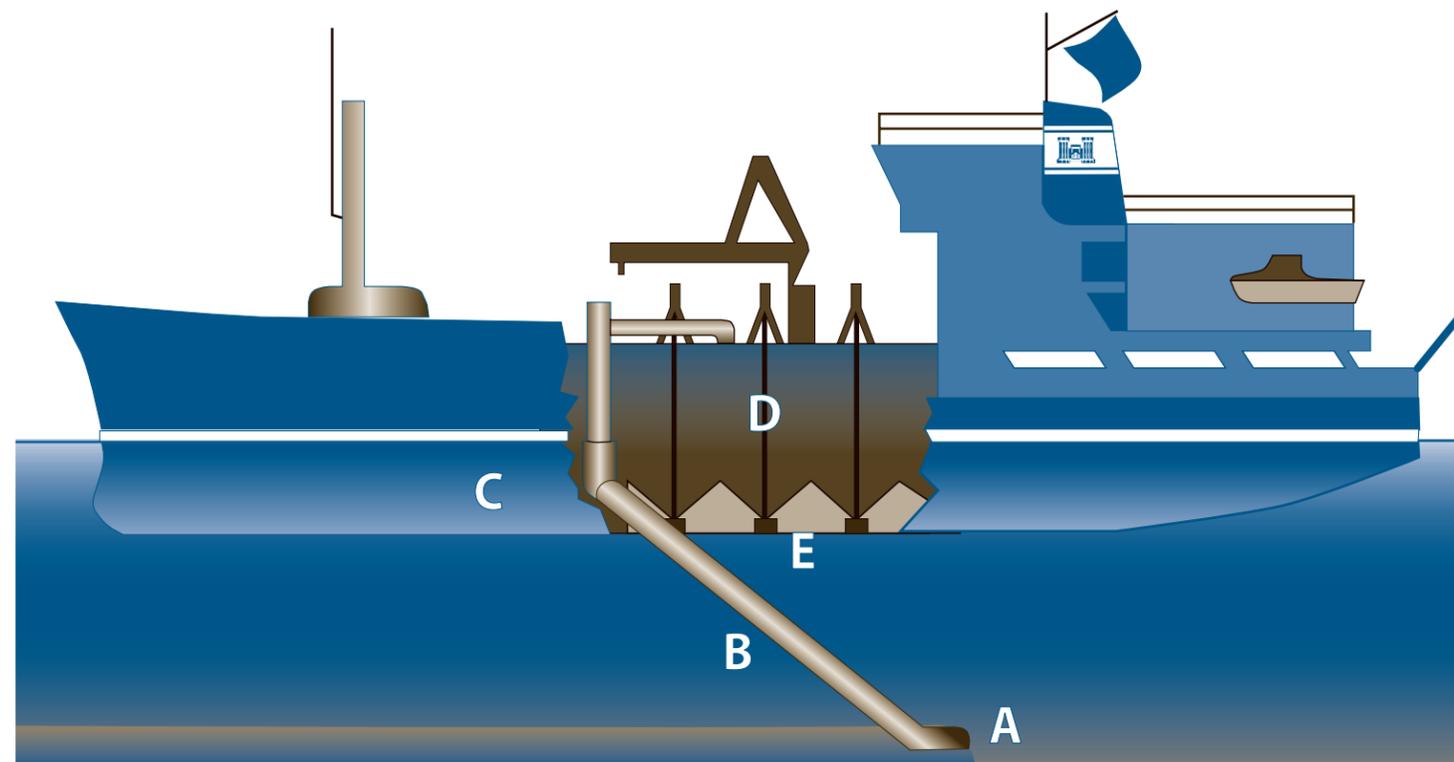
DREDGE YAQUINA

About the dredge

The U.S. Army Corps of Engineers' hopper dredge *Yaquina*, operated by a merchant marine crew, was delivered to the Portland District in 1981. The *Yaquina* helps to maintain the entrance bars, rivers and harbors on the coasts of California, Oregon and Washington. Because of its size, the *Yaquina* is particularly well-suited for dredging the small, shallow coastal entrances.

The *Yaquina's* semiautomatic dragarm handling system and sophisticated instrumentation allow constant production monitoring and enable the dredge crew to maintain maximum dredging efficiency 24 hours a day. The dredge normally works continuously, tying up eight hours or less per week for fuel, water, supplies and maintenance. The *Yaquina's* crew consists of 40 civil service mariners. The crew is divided into two operating tours, each of 20 men and women normally alternating on an 8-day-on/6-day-off schedule, working 10-hour days.

Hopper Dredge Yaquina

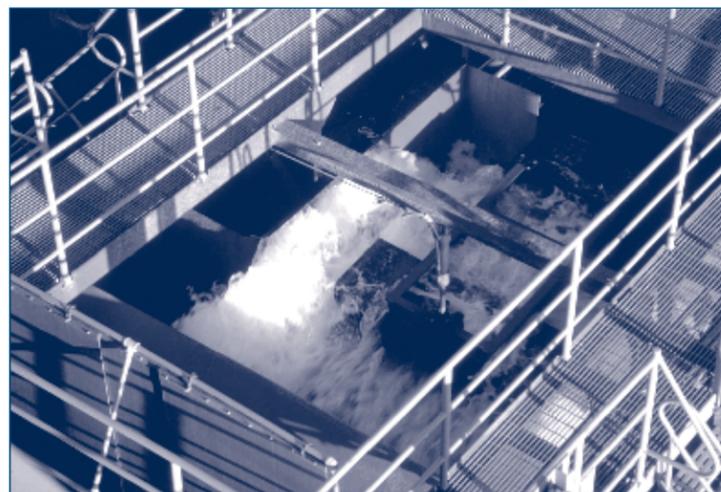


Hopper dredge components

Hopper dredges are seagoing vessels designed to dredge and transport dredged material to open-water relocation areas. The working of a hopper dredge is similar to that of a vacuum cleaner.

Dragheads (A) with dragarms (B) extend from each side of the ship's hull. The dragheads are lowered to the channel bottom and slowly pulled over the area to be dredged. The dredge pumps (C) create suction in the dragarm and the silt or sand is drawn up through the arms and deposited in hopper bins (D) in the vessel's midsection. When the bins are full, the dredge sails to the designated disposal area and empties the dredged material through large hopper doors (E) in the bottom of the hull.

Hydrographic survey boats, using sophisticated electronic equipment, survey the river and harbor bottoms to determine if dredging is required and, after dredging is completed, to ensure that the desired channel depths have been attained.



Dredge hopper bin

The *Yaquina* was designed by the U.S. Army Corps of Engineers and constructed by the Norfolk Shipbuilding and Drydock Corporation of Norfolk, Virginia, in 1981.



Hopper dredge physical features

Dredge YAQUINA

Hull

Length over all.....	200'
Beam	58'
Minimum Height Clearance	100'

Draft

Light	8'
Mean draft.....	9'
Loaded	16'
Gross tons.....	2,001
Light displacement.....	1,686 Long tons
Dead weight tonnage.....	1,310 Long tons
Hopper volume	1,042 Cubic yards

Dredging Depth

Normal.....	10' - 45'
Extended Dragarms.....	20' - 55'
Minimum Disposal Depth	5' keel clearance
(Calm Condition - Min 18' depth of water required at zero tide)	

Main Propulsion Engines

Tier II MTU 8V 4000 M60	1,140 h.p. each (2)
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Ship Service Generator Engines

Tier II MTU 12V 2000 P82	805 h.p. each (2)
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Dredge Pumps

Tier II MTU 12V 2000 P12	805 h.p. each (2)
Intake	20"
Discharge	20"

Vessel Speed

Light	10.5 knots
Loaded	10 knots

