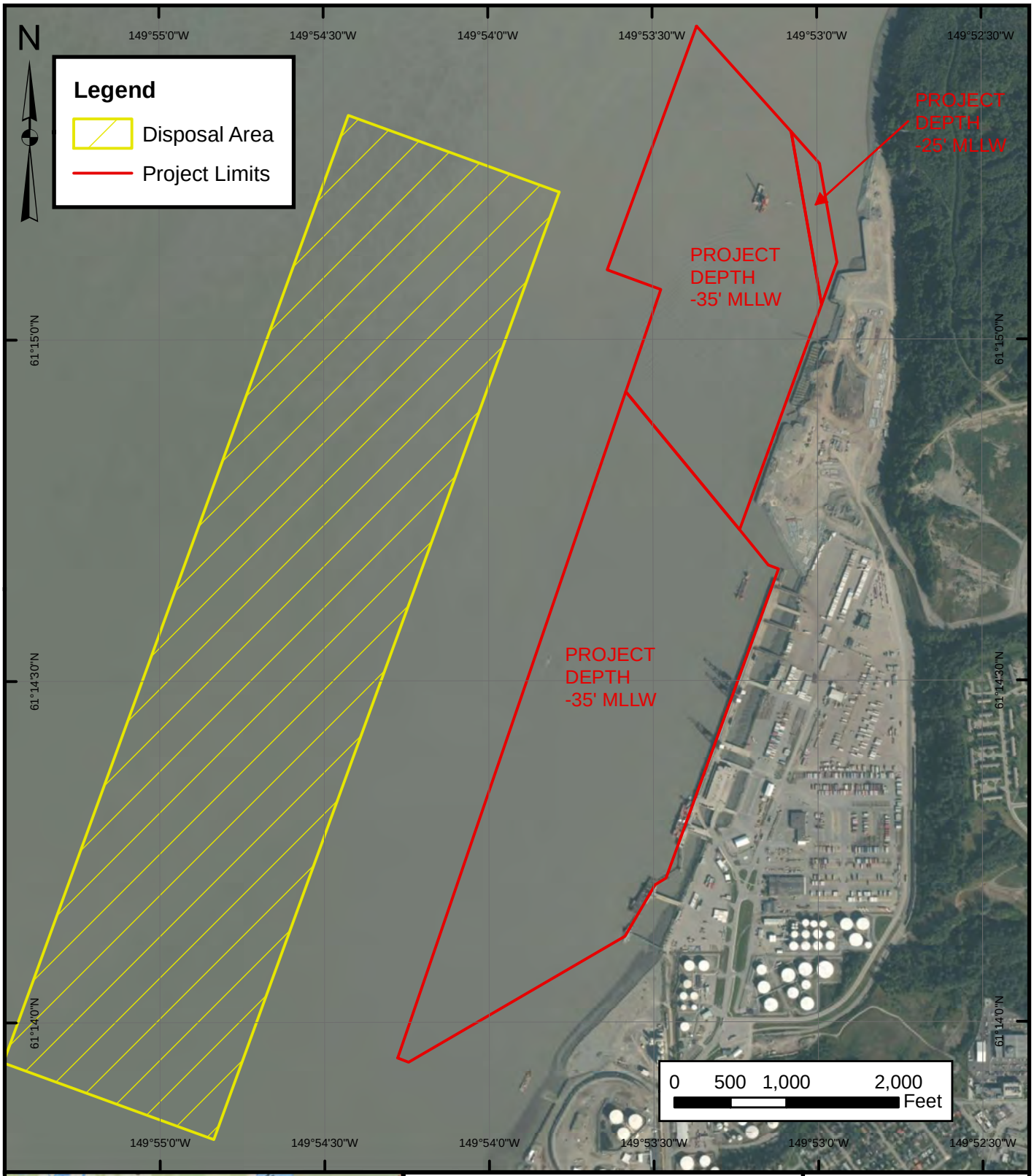
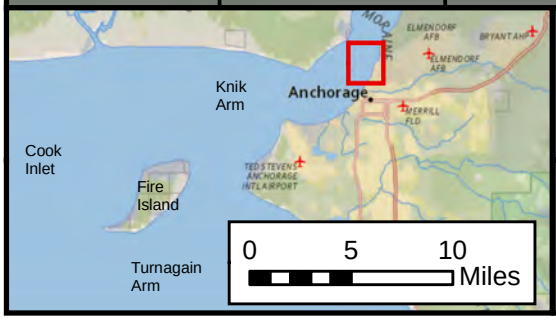
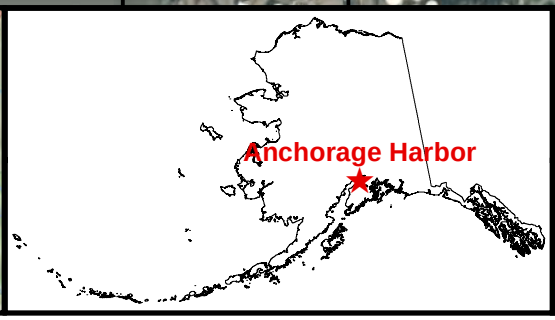
ANCHORAGE HARBOR







ANCHORAGE HARBOR
ALASKA

3 MAY 2013

NOTES:
1. THIS LOCALITY IS SHOWN ON NOAA CHART NOS. 16665, 16660, AND 500.

ANCHORAGE HARBOR, ALASKA
(CWIS NO. 00360, 010534)

Condition of Improvement 30 September 2013

AUTHORIZATION: (1) Rivers and Harbors Act, 3 July 1958 (House Doc. 34, P.L. 85-500, 85th Congress, 1st Session) as adopted, provides for a deep water harbor by dredging to a depth of -35 feet MLLW adjacent to docks and protected by two jetties or other works as required. **(2)** The Consolidated Appropriations Act, 2005, P.L. 108-447, Division C – Energy and Water Development Appropriations, Section 118(a) and 118(d) modified the project authorization for the Port of Anchorage in Anchorage, Alaska, directing the Secretary of the Army to construct a harbor depth to minus 45 feet mean lower low water for a length of 10,860 feet. Federal maintenance shall be in accordance with Section 101 of the River and Harbor Act of 1958, except that the project shall be maintained at a depth of minus 45 feet mean lower low water for a length 10,860 feet.

EXISTING PROJECT:	LENGTH	DEPTH	WIDTH
• Basin	3000 ft	-35 ft	varies

PROJECT USAGE: The Federal project accommodates three dry cargo berths and one oil handling facility. It is the main supply and distribution center for the south-central and interior areas and the large Joint Military Base (JBER) that lies within the Municipality of Anchorage. The Port of Anchorage is the largest cargo port in Alaska; 4,358,766 tons of cargo (all commodities) passed through the port in 2008. There were 2.7 million tons of cargo reported for 2010.

PROGRESS OF WORK:

1959 - The City of Anchorage constructs the first dry cargo berth at City Dock from 1959 through 1961, and dredges its approach to -35 feet MLLW.

1961 - The approach to Ocean Dock is increased to a depth of -32 feet MLLW at a distance of 50 feet from the dock face, and with a depth of -10 feet MLLW at the dock face.

1964 - The earthquake of March 27th destroys the federally owned Army Dock, and damages Terminal 1 and the POL Dock. Repairs are authorized under the River and Harbor Act of August 19, 1964 (P.L. 88-451) as amended. Terminal 1 and the POL Dock are repaired.

1965 - Emergency maintenance dredging is performed off the face of City Dock during July and August. The entire project basin is modified to a depth of -35 feet MLLW.

1966 - Dredging begins in October 1966 and is completed in June 1967; it includes 2 feet of advance maintenance to -37 feet MLLW.

1967 - Annual maintenance dredging begins by the Corps.

1968 - Terminal 2 construction begins.

1970 - Terminal 2 construction is completed.

1973 - Terminal 3 construction begins.

1977 - In early fiscal year 1977, Congress approves extending the original 2,000 foot project limit baseline to the present 3,000 foot length (P.L. 94-587, 22 OCT 76). Proposed jetties for the northern and southern ends of the project are de-authorized in November.

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ANCHORAGE HARBOR, ALASKA (continued)

30 September 2013

1978 - Development of large shoals in the northern and southern ends of the project necessitates emergency dredging from October 1978 through January 1979. All phases of Terminal 3 construction are completed.
1981 - Excessive shoaling during the spring and summer of 1981 requires using the Corps-owned dredge "BIDDLE", in addition to a contract dredge, to remove 894,076 cubic yards of material to reach project depth by the end of the ice free season.
1982 - Annual maintenance dredging by contract begins during the summer; an average of 350 to 400 thousand cubic yards is removed each year through 1988.
1988 - The angles of the dredging limits at the north and south ends of the project are changed from 45 to 30 degrees.
1992 - The POL 2 terminal is completed.
1994 - Sampling and testing of bottom sediments is conducted.
1995 - Maintenance dredging quantities since 1988 average 200,000 to 250,000 cubic yards per year.
1997 - The contractor removes 196,162 cubic yards of material during Phase I of the dredging which ended 15 August 1997.
1998 - During the second year of a five year continuing contract, the combined quantity from 1 October 1997 through 30 September 1998 equals 356,000 cubic yards.
1999 - Maintenance dredging removes 438,800 from 1 October 1998 through 30 September 1999.
2000 - The Corps hopper dredge ESSAYONS is mobilized to the port in November 1999, and removes 565,000 cubic yards of hazardous shoaling in 15 days of work. The annual maintenance dredging contract removes an additional 893,236 cubic yards from 1 October 1999 through 30 September 2000.
2001 - Two dredging contractors remove 167,140 cubic yards in October 2000 to achieve project depth. From June through September 2001, the dredging contractor removes 284,291 cubic yards of material. Dredging will continue through October.
2002 - The dredging contractor removes 631,728 cubic yards from June through September, and with a carryover of 131,540 yards from last October, a total of 763,268 cubic yards is removed in this fiscal year. New vertical aerial photography is also taken.
2003 - Dredging with clamshell only was insufficient to keep up with heavy infill to the project. Raise-the-Flag procedures were implemented in July and September to augment dredging needs with Manson's WESTPORT and Great Lakes' SUGAR ISLAND hopper dredges. With carryover yardage of 117,726 from October 2002 added to the clamshell yardage of 427,242 and the 300,000 cubic yards removed by the hopper dredge, we see a total of 844,968 cubic yards removed by contract in FY03.
2004 - Utilizing both clamshell and hopper dredges, dredging contractors remove 2,504,511 cubic yards in FY04.
2005 - The Consolidated Appropriations Act, 2005, P.L. 108-447, Division C – Energy and Water Development Appropriations, Section 118(a) and 118 (d) modified the original project authorization. Maintenance dredging removes 1,832,610 yards in FY05 using both a clamshell and hopper dredge. Plans for port expansion are underway.

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ANCHORAGE HARBOR, ALASKA (continued)

30 September 2013

2006 - Port expansion work begins with fill on the north end backlands. Maintenance dredging for FY06 saw the removal of 1,749,385 cubic yards utilizing both a clamshell and hopper dredge.

2007 - Port expansion continues with the completion of fill for the north end backlands. The planned expansion would move the dock face 400 feet seaward and lengthen it by about 5,000 feet. Annual maintenance dredging saw the removal of 1,766,357 cubic yards in FY07 using both a clamshell and hopper dredge. A total of 48 locations were bored for a geotechnical investigation of the sediments. Six of these locations were sampled to characterize the dredge material and newly exposed materials.

2008 - Maintenance dredging continues with 1,338,281 cubic yards of material removed from the original project area. Port expansion will continue to the north for barge berth and north port areas.

2009 - Installation of the new sheet pile structure is nearly completed in the north expansion. Transitional dredging begins and removes 936,831 cubic yards of material within the new project limits by clamshell. Maintenance dredging continues with 702,366 cubic yards removed by clamshell and hopper dredges. A heavy shoaling rate along the north dock face in terminal three deposits three to five feet of material between November and December.

2010 - Heavy shoaling along the dock face in Terminal 3 (TOTE berth) requires winter dredging during March and April. A Manitowoc 777 truck crane located on the dock edge and equipped with a clamshell bucket removed 8,275 cubic yards of material, which was hauled by truck to an upland disposal site at a cost of $835,000. The operation was considered unsuccessful due to high cost and inability to achieve project depth 100 feet seaward of the dock face. The TOTE ship had to pull away from the dock face four times between 27 February and 3 May due to insufficient keel clearances. The Port-MARAD dock expansion project continues with inspection and removal of some of the previously placed sheet pile in the north expansion area. Members of the Corps, Port of Anchorage, Port MacKenzie, Coast Guard, Knik Arm Bridge and Toll Authority, and State Senate visit the physical and numerical models at ERDC in September. Several of the Anchorage Baseline Profiles are surveyed again in late October to further the ERDC modeling efforts. Manson Construction continued transitional and maintenance dredging, removing 1,013,122 and 619,506 cubic yards of material, respectively. Manson also removed two 120 ton WWII concrete pill boxes from the transitional dredging area and placed them in the project disposal site 109 feet below the water surface. Finally, in preparation for another winter of heavy shoaling in the TOTE berth, Manson used the clamshell and hopper dredges to complete advance maintenance dredging in late October.

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ANCHORAGE HARBOR, ALASKA (continued) 30 September 2013

2011 - Manson Construction finished the last of their 3-year contract for transitional and maintenance dredging, removing 683,856 and 944,462 cubic yards, respectively. This completes the planned transitional dredging in the north extension area of the Port of Anchorage's dock expansion. In preparation for another winter of heavy shoaling in the TOTE berth, Manson used the clamshell NJORD and hopper dredge WESTPORT to complete advance maintenance dredging in late October. Sixty-nine surveys were completed during the dredge season.

2012 - Manson Construction completed the first of a 3-year maintenance dredging contract, removing 1,067,684 cubic yards. A total of fifty-surveys were completed this dredge season. Manson used the hopper dredge WESTPORT to complete advance maintenance dredging in preparation for heavy shoaling in the TOTE berth during the winter.

2013- Manson Construction completed the second of a 3-year maintenance dredging contract, removing 1,021,088 cubic yards. Ten winter condition surveys and 56 dredge surveys were completed this dredge season. Manson used the hopper dredge WESTPORT to complete advance maintenance dredging in preparation for heavy shoaling in the TOTE berth during the winter.

COST TO DATE:

CG Appropriation	$533,235
CG Costs	$533,235
O&M ARRA Appropriation	$26,874,313
O&M ARRA Costs 3135	$26,874,313
O&M Appropriation 3123	$156,506,723
O&M Costs 3123	$154,353,264
O&M Appropriation 5125	$3,274,000
O&M Costs 5125	$3,274,000
O&M Contributed Appropriation	$638,080
O&M Contributed Costs	$638,080

RANGE OF TIDE:

Mean Range	Diurnal Range	Extreme Range
26.2'	29.2'	41.0'

CONTROLLING DEPTH: The post-dredge survey conducted November 1, 2013 shows that project depth is available over most of the Federal project. The port is subject to heavy shoaling and strong tidal currents.

DREDGED QUANTITIES AND CONTRACT COSTS

Item	FY 2008*	FY 2009*	FY 2010*	FY 2011*	FY 2012*	FY 2013*
Quantity Cubic Yards	1,338,281	1,639,197	1,632,628	1,628,318	1,067,684	1,021,088
Contract Cost	$12,269,992	$19,745,417	$20,141,985	$13,326,782	$7,777,772	$7,084,970

***Quantities and costs are based on the dredging season.**

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ANCHORAGE HARBOR, ALASKA (continued)

30 September 2013

MAINTENANCE DREDGING SUPPLEMENT:

A. General

1. Anchorage Harbor is an annual maintenance dredging project; contract years have varied in duration from 1 to 5 years.
2. Heavy shoaling typically occurs along the main dock face, the POL dock, the area between the POL dock and the main dock, and along the 30 degree project limit extensions.
3. The project is open to dredge activity during the ice-free season. Work begins in the spring and continues through summer, when shoaling is greatest, and on into the fall until depth is achieved or ice conditions make further dredging untenable.
4. Historically, dredging operations were most often conducted with a clamshell and barge. Recently a small hopper dredge has been employed.

B. Sampling & Testing

1. Samples were taken at five sites within the project, June 1994; all material was classified as silt (ML). One disposal site sample was taken and classified as silty gravel (GM).
2. Chemical analysis was conducted using (7) test methods as outlined with results below:

Method 8080	Pesticides and PCB's	none detected
Series 6000-7000's	(8) RCRA Metals*	Arsenic 7-17 ppm
	(6 samples)	Barium 74-167 ppm
		Chromium 23-47 ppm
		Lead 4.1-13 ppm
Method 415.1	Total Organic Carbon (1 sample)	2,450 ppm
Method 418.1	Total Recoverable Petroleum Hydrocarbons	none detected
Method 160.3	Percent Solids	65.5 - 77.1 %
Method 8260	Volatile Organic Compounds	none detected
Method 8270	Semivolatile Organic Compounds	none detected

* All heavy metal concentrations well below management levels; no cadmium, mercury, selenium, or silver were detected.

1. Twelve primary samples were collected from six new borings, September 2007. Most of the sediments consisted of fine grained silts and clays, however some gravels were encountered in a few borings.
2. Chemical analysis was conducted using (6) test methods as outlined with results below:

Method 8260B	Volatile Organic Compounds	None detected (ND) or below minimum cleanup levels
Method 8270C	Semi-volatile Organic Compounds	ND or below cleanup levels

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ANCHORAGE HARBOR, ALASKA (continued)

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Method 8082	Polychlorinated Biphenyls	ND
Series 6000-7000's	(8) RCRA Metals	(8) of (8) detected; all below cleanup levels
Method 8081A	Chlorinated Pesticides	ND or below cleanup levels
Method 9060	Total Organic Carbon	2000-7000 ppm

Results were screened against Puget Sound Dredge Disposal Analysis (PSSDA) and the State of Washington Sediment Management Standards (SMS).

C. Disposal

1. Dredged material is moved by barge and tug to the deep water site, dumped, and dispersed by tidal activity.
2. Prior to the 2009 dredging season, material is disposed in a rectangular site (2,000' x 3,000') 3,000 feet seaward from the southern end of the project. The coordinates are as follows: Corner (1) lat. 61°14'17.49247"N & lon.149°54'29.23606"W, Corner (2) lat. 61°14'24.25516"N & lon. 149°55'07.62216"W, Corner (3) lat. 61°13'56.50589"N & lon. 149°55'28.66298"W, and Corner (4) lat. 61°13'49.74495"N & lon. 149°54'50.28481"W.
3. In 2009 the dredge disposal site was expanded to the north (2,000' x 6,000') to accommodate the new transitional dredging project. New coordinates are as follows:
   Alaska State Plane Zone 4 coordinates
   DS1 N 2,642,356.04 E 1,653697.24
   DS2 N 2,650,812.98 E 1,656.776.26
   DS3 N 2,650,128.76 E 1,658,655.55
   DS4 N 2,641,671.82 E 1,655,576.56

D. Environmental Permits and Reports

1. A Final Environmental Impact Statement (FEIS) for operation and maintenance was circulated in January 1974. Environmental Assessments for maintenance dredging were completed in January 1978, March 1983, March 2001, and most recently in August 2008 by the Corps of Engineers. Findings of No Significant Impact (FONSI's) for maintenance dredging were signed in January 1978, April 1980, May 1983, April 2001, October 2008, and most recently in June 2009. A Biological Assessment (BA) of the Cook Inlet beluga whale was completed in April 2009 for Port expansion and associated dredging. The U.S. Fish and Wildlife Service issued a Final Coordination Act Report in April 2008 for dredging and disposal operations.

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ANCHORAGE HARBOR, ALASKA (continued)

30 September 2013

2. The following permits or authorizations have been issued for current dredging operations:

Agency Name	Purpose	Date of Issue	Date of Expiration*
DNR	AK Coastal Management Program Review	September 30, 2008	N/A
ADEC	Clean Water Act - Section 401, Water Quality Certificate	May 20, 2009	May 20, 2014
NMFS	Section 7 Consultation - Endangered Species Act	May 12, 2009	N/A

*A substantial change in project scope would trigger additional agency review and project authorization.

3. Water Quality: Four physical parameters were measured through (40) feet of water column in June of 1994; temperature, pH, conductivity, and oxidation-reduction potential (ORP). No chemical analysis was conducted.
4. Water Quality Continued: A geotechnical investigation for the Harbor Deepening Study was conducted in September 2007. Six locations were chosen for chemical sampling. Analysis showed no contamination detected above or approaching the Puget Sound Dredge Disposal Analysis (PSDDA) screening levels.

Anchorage Harbor

Aerial view of Anchorage Harbor in May, 2010.

Westport hopper dredge dredging near the TOTE berth and north expansion September 29, 2011.

Anchorage Harbor

The Njord loading the Northport barge on June 7, 2011.

The North Expansion area on August 26, 2011.

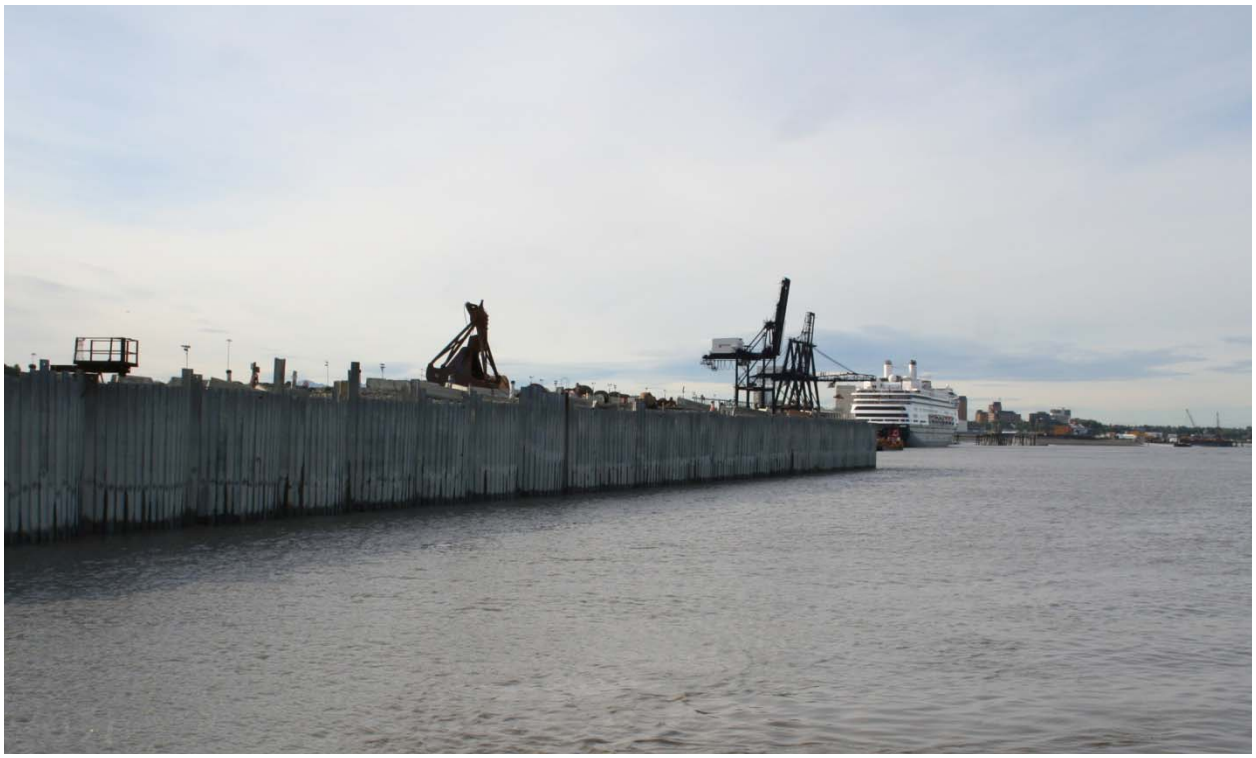
Anchorage Harbor

Tour ship and Anchorage Harbor traffic during August 2011.

Anchorage Harbor

Njord clam shell dredge dredging in the Port expansion area 8/26/2011 (top) and Manson's Westport dredging the Port of Anchorage during August of 2011 (bottom).

Anchorage Harbor



Port expansion sheet piles on 8/26/2011 looking southerly toward Anchorage (top) and container ship coming into the Port of Anchorage on September 20, 2011.

Anchorage Harbor

Looking South From the Stern Of A Horizon Ship, 2012

The Anchorage Dock On A Ship Day, 2012

Anchorage Harbor

The USS Anchorage at the Port of Anchorage for commissioning May 2013