

# Seward Harbor



**Condition of Improvements**  
**31 December 2019**  
**Seward Harbor, Alaska**  
 (CWIS No. 10391, 72765, 72766, 72767, 87173, 87667 &  
 87773)

**Authorization** The Water Resources Development Act of 1999 authorized the project. Authorization was based on the Chief of Engineers report dated 8 June 1999. The authorized cost of the project is \$12,240,000, with an estimated Federal share of \$4,089,000 and a non-Federal share of \$8,151,000. P.L. 107-66, Energy and Water Appropriations Act, 2002: “Provided further, That using \$1,000,000 of the funds provided herein, the Secretary of the Army, acting through the Chief of Engineers, is directed to initiate construction on the Seward Harbor, Alaska, project in accordance with the Report of the Chief of Engineers dated June 8, 1999 and the economic justification contained therein:”.

**Previous Authorization** (1) Rivers and Harbors Act, 3 July 1930 (House Doc. 109, 70th Congress, 1st Session) and modified by the Rivers and Harbors Act, 30 August 1935 (Rivers and Harbors Committee Doc. 3, 74th Congress, 1st Session) provides for a small boat basin of about 4.75 acres at a depth of 12.5 feet below MLLW protected by a south breakwater 580 feet long and a north breakwater 950 feet long. (2) Rivers and Harbors Act, 3 September 1954 (House Doc. 182, 83rd Congress, 1st Session) as adopted, provides for raising the elevation of the south breakwater, and construction of two pile breakwaters at the basin entrance. (3) Rivers and Harbors Act, 19 August 1964 (Public Law 88-451) provides for a sheltered small boat harbor through the relocation and reconstruction of the previous project (a 4.75 acre basin at -12.5 feet MLLW), and construction of a 12.45 acre expansion basin at -12.5 feet MLLW with an entrance channel at -15 feet MLLW protected by two rock-mound breakwaters of 1,060 and 1,750 feet in length; provision for future basin expansion is included.

**Table 1**

| <b>Existing Project</b>          | <b>Length ft.</b> | <b>Width ft.</b> | <b>Depth ft.</b> |
|----------------------------------|-------------------|------------------|------------------|
| Entrance and Maneuvering Channel | 13.13 acres       |                  | -15              |
| Mooring Basin, Federal           | 17.40 acres       |                  | -12.5            |
| Mooring Basin, City              | 20.58 acres       |                  | -15              |
| East Breakwater                  | 1915              |                  |                  |
| West Breakwater                  | 1350              |                  |                  |

**Project Usage** The small boat basin is used as a base of operations for fishing and pleasure craft and provides anchorage for 465 boats. The Port of Seward is considered to be one of the best containerized cargo ports and fishing boat harbors in the Pacific Northwest.

### **Progress of Work**

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|      |   |
|------|---|
| 1931 | The original south breakwater is constructed.   |
| 1932 | Dredging of the basin to project depth is completed.  |
| 1937 | The north breakwater is constructed.  |
| 1952 | Maintenance dredging is accomplished to restore project depth throughout the navigable limits.  |
| 1954 | The north breakwater is restored during March and April with the placement of 1,482 cubic yards of rock.  |
| 1956 | Two pile breakwaters are constructed to improve the entrance, and the elevation of the south breakwater is increased between June and September.  |
| 1962 | Maintenance dredging is conducted June through July with the removal of 61,346 cubic yards (including 2 feet advance maintenance).  |
| 1964 | The original project is completely destroyed by the earthquake of 27 March 1964. Restoration of the basin and construction of the breakwaters begins in August. Dredging for expansion proceeds incrementally with other water-front improvements.  |
| 1965 | The breakwaters are completed in June, and the final increment of basin expansion in November.  |
| 1972 | Beach slope repair and protection are carried out at the north end of the basin in October.   |
| 1986 | A post-flood survey reveals little impact on the Federal project; some bank erosion in the northwest corner produces shoaling in the city project.  |
| 1994 | A condition survey of the harbor is performed in April. Sampling and testing is completed.  |
| 1995 | The Resurrection River floods its banks in September carrying in excess of 20,000 cubic yards of material into the harbor. After damage assessment, survey, and sampling & testing, plans are made to dredge the harbor in FY96.  |
| 1996 | Dredging of the upper basin is accomplished in January with the removal of 20,005 cubic yards.  |
| 2002 | A condition survey is conducted in May. Vertical aerial photography is taken in June.   |
| 2004 | A construction contract for harbor expansion is awarded on February 3, 2004 for a new 1,700 foot rubble mound breakwater and entrance channel approximately 400 feet east of the existing harbor. 1,100 feet of the existing breakwater is to be removed. The expansion is to add 11.7 acres of moorage basin at two design depths and will accommodate 336 additional vessels. |

## Progress of Work

|      |   |
|------|---|
| 2005 | Harbor expansion work continues into the spring before shutting down for the summer tourism season. Dredging in various parts of the new project area is to be completed the following spring 2006.   |
| 2006 | Work on the harbor expansion is physically completed. A condition survey of the expanded project is conducted at the end of April.  |
| 2009 | A contract is awarded for construction of a breakwater extension to be completed in the following year. A project condition survey is conducted in late May to early June. The surveyors also collected aerial photography of the harbor  |
| 2010 | An additional 215 feet was added to the East Breakwater. Work was accomplished using American Reinvestment Recovery Act (ARRA) funding through both the Construction General and Operations and Maintenance appropriations. There was 49 cubic yards of material dredged from the entrance channel using ARRA O&M funds. Construction was completed in December 2010. |
| 2012 | A contract was awarded in August for maintenance dredging; dredging with a barge-based excavator started in late September and finished in December. USACE Comprehensive Evaluation of Project Datums (CEPD) Compliance report completed and recorded in September.   |
| 2017 | A project condition survey of the harbor and breakwaters was conducted in October.  |
| 2018 | A Section 408 request is approved for renovation of the south boat launch which will modify the Federally dredged basin.  |

**Table 2 Cost to Date**

| Project | Description                       | Cost \$   |
|---------|-----------------------------------|-----------|
| 010391  | GI PED Appropriations             | 196,036   |
|         | GI PED Costs                      | 196,035   |
|         | GI PED Contributed Appropriations | 242,536   |
|         | GI PED Contributed Costs          | 240,597   |
|         | CG Appropriations                 | 8,128,961 |
|         | CG Costs                          | 8,127,961 |
|         | CG ARRA Appropriations            | 3,840,656 |
|         | CG ARRA Cost                      | 3,840,656 |
|         | CG Contributed Appropriations     | 2,759,824 |
|         | CG Contributed Costs              | 2,604,149 |

| <b>Project</b> | <b>Description</b>      | <b>Cost \$</b> |
|----------------|-------------------------|----------------|
| 072765         | O&M Appropriations      | 2,130,603      |
|                | O&M Costs               | 1,852,129      |
|                | O&M ARRA Appropriations | 195,476        |
|                | O&M ARRA Costs          | 195,476        |
| 087173         | CG Appropriations       | 1,184,841      |
|                | CG Costs                | 1,184,841      |
| 087667         | CG Appropriations       | 89,017         |
|                | CG Costs                | 89,017         |
| 087773         | CG Appropriations       | 1,091,946      |
|                | CG Costs                | 136,463        |

**Table 3 Range of Tides in feet**

| <b>Tide Station</b> | <b>Mean Range</b> | <b>Diurnal Range</b> | <b>Extreme Range</b> |
|---------------------|-------------------|----------------------|----------------------|
| 945 5090 Seward AK  | 8.33              | 10.62                | 20.71                |

*NOAA Publication Date: 09/30/2011*

**Controlling Depth** Project depth is effectively available throughout the basins and channels, October 2017. Within the federal project limits of the mooring basin the controlling depth is -11.8 feet. Controlling depth in the entrance and maneuvering channel is -14.8 feet located on the NW side of the channel, NW of the South end of the East breakwater. Controlling depth in the NW basin is -8.3 feet located on the West boundary along the toe of the slope and in the East basin is -13.7 feet located along the floating dock.

## **Maintenance Dredging Supplement**

### **A. General**

1. Maintenance dredging was carried out in 1952 and in 1962. The project was restored after the 1964 earthquake and did not require maintenance dredging again until September 1995 when upland flood waters carried almost 23,000 cubic yards of material into the harbor.

2. The last two surveys, prior to the flood event of September 1995, showed shoaling in the outer entrance channel and along the project limits nearest to the breakwaters and shoreline.
3. The dredging window runs from 1 November to 1 April; a cut-off as early as 15 March is possible subject to agency review.
4. The 1995 dredging effort was conducted with hydraulic cutterhead and pipeline to return the coarse fines to the eroded site located immediately to the northeast of the basin.

**B. Sampling & Testing**

1. A total of 11 sediment samples were taken in the Seward Small Boat Harbor in June 2009. The results were compared to the PSDDA criteria in order to determine suitability of the dredged material for open water disposal. Results were also compared to ADEC screening levels to determine the suitability of unrestricted upland disposal. Several samples contained fuel-constituent compounds above PSDDA criteria (indicating fuel contamination), primarily in the northeastern corner of the harbor around T-Dock, the fuel float, and X-Float.
2. Five primary samples were taken from two different dredge management areas, August 2012. All samples consisted of a black, very fine, clay/silt type material
3. Chemical analysis was conducted using (5) tests as outlined with results below

**Table 4A Chemical Testing**

| <b>Method</b> | <b>Chemical analysis</b>                          | <b>Results</b>  |
|---------------|---|---|
| AK102/103     | Diesel Range Organics/<br>Residual Range Organics | All below project screening limits  |
| 6000-7000's   | (10) RCRA Metals                                  | (10) of (10) detected; Arsenic 14.1 – 22.5 ppm, Chromium 51.7 – 68.5 ppm, all others below minimum levels |
| 8270 SIM      | Polycyclic Aromatic<br>Hydrocarbons               | None Detected or below minimum levels   |
| A2540G        | Total Solids                                      | 66.4 – 74.7 %   |

4. The 2009 Chemical analysis was conducted using (9) test methods as outlined with results below:

**Table 4B Chemical Testing**

| <b>Method</b> | <b>Chemical analysis</b>         | <b>Results</b>   |
|---------------|----------------------------------|--|
| AK101         | Gasoline Range Organics          | ND (none detected)   |
| AK102         | Diesel Range Organics            | 35.6 – 257 ppm; one exceedance   |
| AK103         | Residual Range Organics          | All below project screening limits   |
| 6000-7000's   | (10) RCRA Metals                 | (10) of (10) detected; Arsenic 13.4 – 26.4 ppm, Chromium 44.4 – 67.8 ppm, all others below minimum levels  |
| 8270 SIM      | Polycyclic Aromatic Hydrocarbons | Acenaphthene ND – 0.758 ppm, one exceedance; Acenaphthylene ND – 0.768 ppm, one exceedance; Anthracene 0.0062 – 1.71 ppm, one exceedance; Benzo(a)anthracene 0.0089 – 9.03 ppm, two exceedances; Benzo(a)pyrene 0.0031 – 1.76 ppm, two exceedances; Benzo(b)fluoranthene 0.0099 – 5.41 ppm, one exceedance; Chrysene 0.019 – 5.27 ppm, two exceedances; Dibenzo(a,h)anthracene ND-0.266 ppm; one exceedance; Fluoranthene 0.0416 – 47.8 ppm, four exceedances; Fluorene 0.0032 – 0.649 ppm; one exceedance; Indeno(1,2,3-cd)pyrene ND – 0.742 ppm, one exceedance; Phenanthrene 0.0176 – 8.24 ppm, two exceedances; Pyrene 0.0266 – 27.7 ppm, three exceedances; Acenaphthene ND – 0.758 ppm, one exceedance; Acenaphthylene ND – 0.768 ppm, one exceedance; Anthracene 0.0062 – 1.71 ppm, one exceedance; Benzo(a)anthracene 0.0089 – 9.03 ppm, two exceedances; Benzo(a)pyrene 0.0031 – 1.76 ppm, two exceedances; Benzo(b)fluoranthene 0.0099 – 5.41 ppm, one exceedance; Chrysene 0.019 – 5.27 ppm, two exceedances; Dibenzo(a,h)anthracene ND-0.266 ppm; one exceedance; Fluoranthene 0.0416 – 47.8 ppm, four exceedances; Fluorene 0.0032 – 0.649 ppm; one exceedance; Indeno(1,2,3-cd)pyrene ND – 0.742 ppm, one exceedance; Phenanthrene 0.0176 – 8.24 ppm, two exceedances; Pyrene 0.0266 – 27.7 ppm, three exceedances |
| 8082          | Polychlorinated Biphenyls        | ND   |
| 8260B         | Volatile Organic Compounds       | ND or below minimum levels   |
| 9060          | Total Organic Carbon             | 0.765 – 1.13 %   |
| A2540G        | Total Solids                     | 55.3 – 78.2 %  |



### C. Disposal

1. Approximately 12,500 cubic yards of sediment were removed from the entrance channel and harbor basin Nov-Dec 2012. The dredged material was segregated by area based on the 2009 chemical data, with non-contaminated sediment (4,750 cubic yards) discharged at the open-water disposal site in Resurrection Bay. The remainder, believed to be contaminated with low levels of fuels, was land-farmed at the Seward Marine Industrial Center, in a separate project managed by the City of Seward.
2. The non-contaminated material disposal site is located in Resurrection Bay roughly 1,500 feet southeast of the harbor entrance, in waters more than 30 fathoms (180 feet) deep. The open water disposal site is defined as an approximately 1,500-by-1,200-foot rectangle with its northwest corner at 60° 06' 47"N, 149° 25' 27"W. This site has been used extensively as a material disposal area, particularly by the Alaska Railroad Corporation, which has discharged many hundreds of cubic yards of material in the area under permits with the Corps.

**D. Environmental Permits and Reports** The 2012 maintenance dredging of Federal areas was carried out under existing authorizations and NEPA documentation: the 1998 harbor expansion EA, with a FONSI revised in 2003, and a 401 WQC obtained in 2008. A new DA permit modification (POA-1994-426-M10) was issued by Regulatory Division in 2012 for dredging of the Local areas.

Current permits for the Federal action:

**Table 5 Environmental Permits**

| <b>Agency Name</b>                          | <b>Date of Issue</b> | <b>Date of Expiration</b> |
|---|----------------------|---------------------------|
| AK Department of Environmental Conservation | April 15, 2008       | April 15, 2013            |

# Seward Harbor, Seward, Alaska



Oblique of Seward Harbor, 2017



Oblique of Entrance Channel, Seward Harbor, 2017

# Seward Harbor, Seward, Alaska



Seward Harbor, 2017



Dredging operation in Seward Harbor, 2012