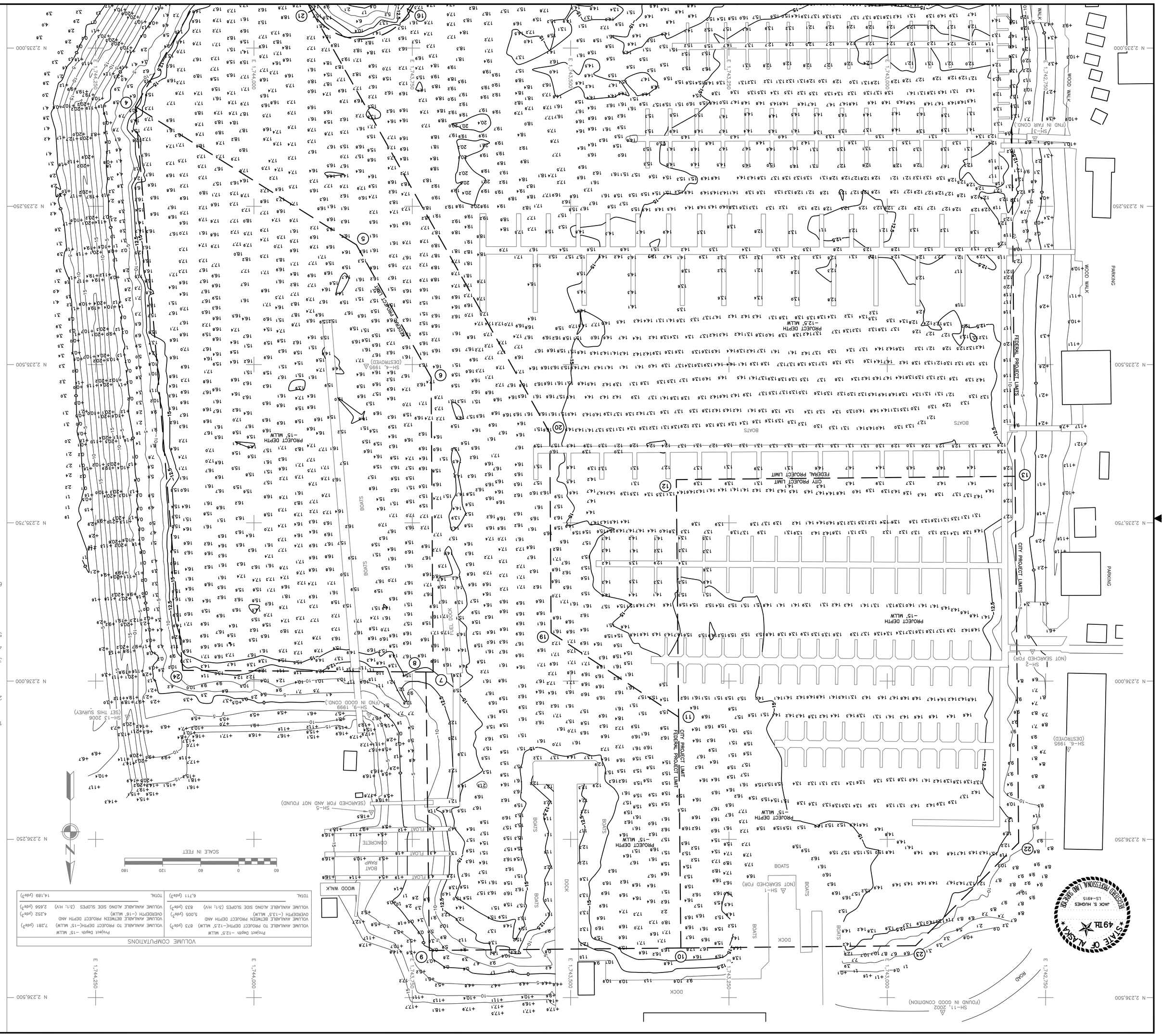


NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 4, NAD83, IN US SURVEY FEET, HOLDING DOMED BC "SH-11 2002" AS N 2,236,522.74, E 1,742,912 AND DOMED BC "SH-8 1999" AS N 2,234,556.68, E 1,742,936.42.
2. VERTICAL CONTROL IS IN FEET, REFERRING TO MEAN LOWER LOW WATER (MLLW=0.0'), HOLDING USCGS TIDAL BMK "NO 22 1966" AS 24.89'. TIDAL DATUM IS BASED ON 1983-2001 TIDAL EPOCH FROM NOAA/NOS TIDAL BENCH MARK LIST: 9465090 SEWARD, RESURRECTION BAY, ALASKA", PUBLISHED 4/21/2003. ALL CONTROL DATA ELEVATIONS HAVE BEEN ADJUSTED TO REFLECT THE ABOVE MENTIONED TIDAL DATUM PUBLICATION.
3. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.
5. SOUNDING OPERATIONS WERE CONDUCTED ON MAY 3-4, 2006 USING AN INTERSPACE 448 DEPTH SOUNDER WITH A 200KHZ, 3 DEGREE BEAM-WIDTH, SINGLE-BEAM TRANSDUCER BROADCAST FROM A TRIMBLE 5700 BASE STATION SET AT DOMED BC "SH-11 2002". POSITIONING WAS PROVIDED USING A TRIMBLE 5700 RECEIVER OPERATING ON RTK CORRECTIONS NAVIGATION. DATA COLLECTION AND DATA PROCESSING WERE PERFORMED USING HYPACK MAX INTEGRATED SOFTWARE. THE CORRECTIONS WERE PROVIDED BY TRIMBLE 5700 RTK GPS RECEIVER AND CHECKED THROUGH CONVENTIONAL METHODS.
6. VERTICAL CONTROL WAS SURVEYED APRIL 29, 2006 USING OPTICAL INSTRUMENTS AND DIFFERENTIAL LEVELING TECHNIQUES. HORIZONTAL CONTROL WAS SURVEYED APRIL 30-MAY 1, 2006 USING BOTH STATIC AND REAL-TIME-KINEMATIC GPS EQUIPMENT AND TECHNIQUES. ALL BREAKWATERS, BASINS, AND SURROUNDING AREAS WERE SURVEYED USING A TRIMBLE 5700 RTK SURVEY ROVER.

CONTROL DATA

STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
BJ-2	2,234,958.97	1,743,552.86	16.61	DESTROYED
LP-8 1995	2,234,892.45	1,743,821.61	16.45	USACE SBC IN ROCK
LP-9 1995	2,234,534.04	1,743,621.86	19.12	NOT SEARCHED FOR
SH-1	2,236,330.31	1,743,164.45	17.99	NOT SEARCHED FOR
SH-2	2,235,952.75	1,743,771.00	18.43	NOT SEARCHED FOR
SH-3	2,235,142.54	1,743,767.23	18.61	PK NAIL IN RAMP
SH-4 1995	2,235,501.77	1,743,822.95	17.04	DESTROYED
SH-5 1995	2,236,006.76	1,743,816.93	–	NOT SEARCHED FOR AND NOT FOUND
SH-6 1995	2,235,107.00	1,743,771.21	16.54	NOT SEARCHED FOR
SH-7 1995	2,234,548.70	1,743,253.68	17.57	DESTROYED
SH-8 1999	2,234,556.68	1,743,936.42	17.52	3 1/4" DOMED BC IN CONCRETE
SH-9 1999	2,236,052.97	1,743,818.33	16.44	3 1/4" DOMED BC IN ROCK
SH-10 2002	2,234,666.58	1,742,594.16	17.21	3 1/4" DOMED BC IN CONCRETE
SH-11 2002	2,236,522.74	1,742,912.85	18.91	3 1/4" DOMED BC IN ASPHALT
SH-12 2006	2,234,535.12	1,743,605.81	20.78	3 1/4" DOMED BC IN ROCK
SH-13 2006	2,236,058.26	1,744,199.96	20.64	SET 3 1/4" DOMED BC IN ROCK

NOTE: MONUMENTS WITH AN ASTERISK (*) WERE SET THIS SURVEY.

PROJECT LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	2,234,786.7	1,744,164.4	13	2,235,676.5	1,742,798.2
2	2,234,480.8	1,743,927.8	14	2,234,636.6	1,742,806.3
3	2,234,586.1	1,743,894.9	15	2,234,644.7	1,743,582.3
4	2,235,092.4	1,744,187.2	16	2,234,940.7	1,743,753.3
5	2,235,310.7	1,743,838.3	17	2,234,850.7	1,743,909.1
6	2,235,520.1	1,743,720.3	18	2,234,939.9	1,743,614.2
7	2,235,986.7	1,743,717.1	19	2,235,923.6	1,743,530.8
8	2,235,995.6	1,743,728.5	20	2,235,608.3	1,743,532.9
9	2,236,425.5	1,743,722.1	21	2,234,941.0	1,743,909.1
10	2,236,421.8	1,743,329.9	22	2,236,255.6	1,742,792.6
11	2,236,056.7	1,743,329.5	23	2,236,418.0	1,742,955.3
12	2,235,681.7	1,743,333.1	24	2,235,983.0	1,744,112.5

NAVIGATION AIDS

DESCRIPTION	USCG No.	NORTHING	EASTING
SEWARD BOAT HARBOR LIGHT 1	26015	2,235,863.0	1,743,589.1
SEWARD EAST BREAKWATER LIGHT 2	26020	2,234,539.1	1,743,624.8
SEWARD WEST BREAKWATER LIGHT 3	26025	2,234,556.3	1,743,303.0

CONTRACTOR: HUGHES & ASSOCIATES
CONTRACT NO. W91128-04-D-0007
CITY: WASILLA — STATE: ALASKA

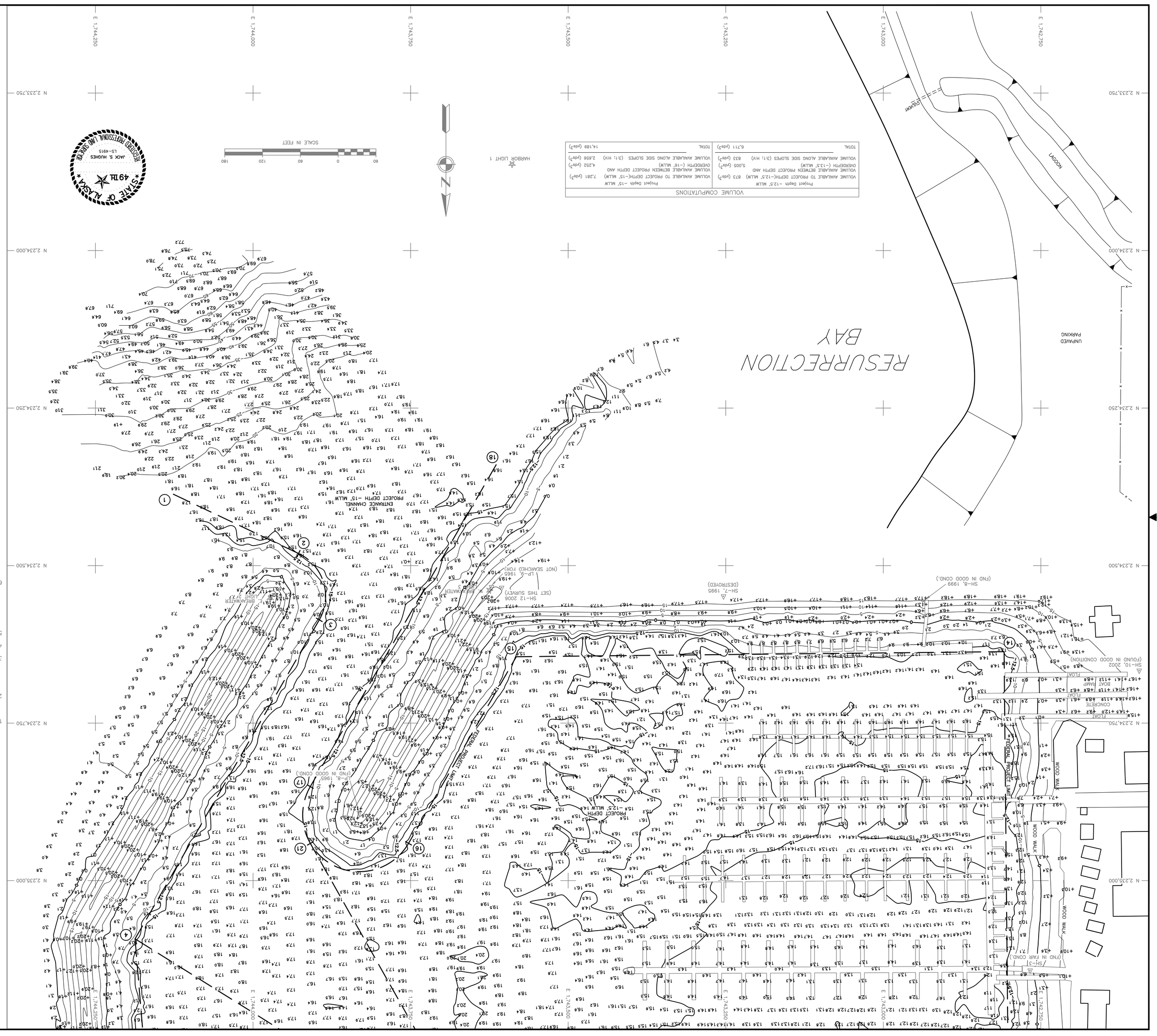
SURVEYED:
DRAWN: CSH
REV: REH
CHECKED: JSH
SUBMITTED:
RECOMMENDED: REVISION 2
PROJECT MANAGER
APPROVED: CHIEF ENGINEERING-ENGINEERING BRANCH
DATE:
SURVEY NO. 2318-06
SCALE: 1" = 60'
SHEET 1 OF 2

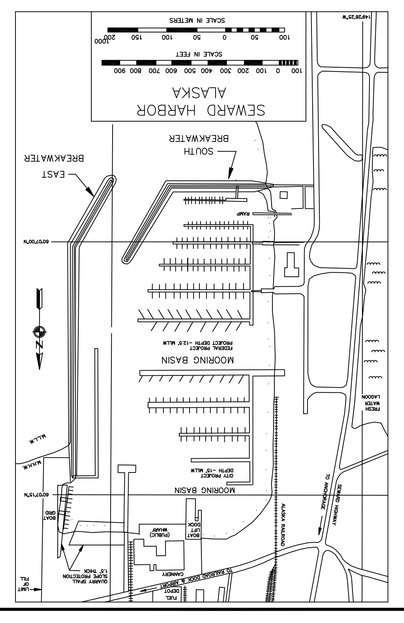
VOLUME COMPUTATIONS

Project Depth -12.5' MLLW		Project Depth -15' MLLW	
VOLUME AVAILABLE TO PROJECT DEPTH(-12.5' MLLW)	873 (yds³)	VOLUME AVAILABLE TO PROJECT DEPTH(-15' MLLW)	7,281 (yds³)
VOLUME AVAILABLE BETWEEN PROJECT DEPTH AND OVERDEPTH (-13.5' MLLW)	5,005 (yds³)	VOLUME AVAILABLE BETWEEN PROJECT DEPTH AND OVERDEPTH (-16 MLLW)	4,252 (yds³)
VOLUME AVAILABLE ALONG SIDE SLOPES (3:1 H/V)	833 (yds³)	VOLUME AVAILABLE ALONG SIDE SLOPES (3:1 H/V)	2,656 (yds³)
TOTAL	6,711 (yds³)	TOTAL	14,189 (yds³)

CORPS OF ENGINEERS

U. S. ARMY





NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 4, NAD83; IN US SURVEY FEET, HOLDING DONED BC "SH-11 2002" AS N 2,236,522.74, E 1,742,912 AND DONED BC "SH-8 1999" AS N 2,234,556.68, E 1,742,936.62.
2. VERTICAL CONTROL IS IN FEET, REFERRING TO MEAN LOWER LOW WATER (MLLW=0.0'), HOLDING USCGS TIDAL BMK "NO 22 1966" AS 24.89'. TIDAL DATUM IS BASED ON 1983–2001 TIDAL EPOCH FROM NOAA/NOS TIDAL BENCH MARK LIST: "9455090 SEWARD, RESURRECTION BAY, ALASKA", PUBLISHED 4/21/2003. ALL CONTROL DATA ELEVATIONS HAVE BEEN ADJUSTED TO REFLECT THE ABOVE MENTIONED TIDAL DATUM PUBLICATION.
3. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.
5. SOUNDING OPERATIONS WERE CONDUCTED ON MAY 3–4, 2006 USING AN INNERSPACE 448 DEPTH SOUNDER WITH A 200KHZ, 3 DEGREE BEAM–WIDTH, SINGLE–BEAM TRANSDUCER. POSITIONING WAS PROVIDED USING A TRIMBLE 5700 RECEIVER OPERATING ON RTK CORRECTIONS BROADCAST FROM A TRIMBLE 5700 BASE STATION SET AT DONED BC "SH-11 2002" NAVIGATION, DATA COLLECTION AND DATA PROCESSING WERE PERFORMED USING HYPACK MAX INTERFACED SOFTWARE. TIDE CORRECTIONS WERE PROVIDED BY TRIMBLE 5700 RTK GPS RECEIVER AND CHECKED THROUGH CONVENTIONAL METHODS.
6. VERTICAL CONTROL WAS SURVEYED APRIL 29, 2006 USING OPTICAL INSTRUMENTS AND DIFFERENTIAL LEVELING TECHNIQUES. HORIZONTAL CONTROL WAS SURVEYED APRIL 30–MAY 1, 2006 USING BOTH STATIC AND REAL–TIME–KINEMATIC GPS EQUIPMENT AND TECHNIQUES. ALL BREAKWATERS, BASINS, AND SURROUNDING AREAS WERE SURVEYED USING A TRIMBLE 5700 RTK SURVEY ROVER.

CONTROL DATA

STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
BJ-2	2,234,955.97	1,743,521.86	16.61	DESTROYED
LP-8 1965	2,234,892.45	1,743,831.61	16.45	USAGE SBC IN ROCK
LP-9 1965	2,234,534.04	1,743,621.86	19.12	NOT SEARCHED FOR
SH-1	2,236,330.31	1,743,164.45	17.99	NOT SEARCHED FOR
SH-2	2,235,952.75	1,742,711.00	18.43	NOT SEARCHED FOR
SH-3	2,235,142.54	1,742,767.23	18.61	PK NAIL IN RAMP
SH-4 1995	2,235,501.77	1,743,822.95	17.04	DESTROYED
SH-5 1995	2,236,206.76	1,743,814.93	–	SEARCHED FOR AND NOT FOUND
SH-6 1995	2,236,107.00	1,743,714.21	16.54	NOT SEARCHED FOR
SH-7 1995	2,234,253.68	1,743,253.68	17.57	DESTROYED
SH-8 1999	2,234,556.68	1,742,936.42	17.52	3 1/4" DONED BC IN CONCRETE
SH-9 1999	2,236,052.97	1,743,818.33	16.44	3 1/4" DONED BC IN ROCK
SH-10 2002	2,234,666.58	1,743,594.16	17.21	3 1/4" DONED BC IN CONCRETE
SH-11 2002	2,236,522.74	1,742,912.85	18.91	3 1/4" DONED BC IN ASPHALT
SH-12 2006	2,234,535.12	1,743,605.81	20.78	SET 3 1/4" DONED BC IN ROCK
*SH-13 2006	2,236,056.26	1,744,199.96	20.64	SET 3 1/4" DONED BC IN ROCK

NOTE: MONUMENTS WITH AN ASTERISK (*) WERE SET THIS SURVEY.

PROJECT LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	2,234,386.7	1,744,126.4	13	2,235,676.5	1,742,798.2
2	2,234,480.8	1,743,927.8	14	2,234,636.6	1,742,806.3
3	2,234,566.1	1,743,894.9	15	2,234,646.7	1,743,582.3
4	2,235,092.4	1,744,187.2	16	2,234,940.7	1,743,753.3
5	2,235,310.7	1,743,838.3	17	2,234,850.7	1,743,909.1
6	2,235,520.1	1,743,720.3	18	2,234,339.9	1,743,614.2
7	2,235,985.7	1,743,717.1	19	2,235,923.6	1,743,530.8
8	2,235,985.6	1,743,728.5	20	2,235,608.3	1,743,532.9
9	2,236,423.5	1,743,723.1	21	2,234,941.0	1,743,909.1
10	2,236,421.8	1,743,329.5	22	2,236,255.6	1,742,792.6
11	2,236,056.7	1,743,329.5	23	2,236,418.0	1,742,955.3
12	2,235,681.7	1,743,333.1	24	2,235,983.0	1,744,112.5

NAVIGATION AIDS

DESCRIPTION	USCG No.	NORTHING	EASTING
SEAWARD BOAT HARBOR LIGHT 1	26015	2,233,863.0	1,743,589.1
SEAWARD EAST BREAKWATER LIGHT 2	26020	2,234,539.1	1,743,624.8
SEAWARD WEST BREAKWATER LIGHT 3	26025	2,234,556.3	1,743,303.0

CONTRACTOR HUGHES & ASSOCIATES
CONTRACT NO. W91KB-04-D-0007
CITY WASILLA STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: CSH
DRAWN: REH
CHECKED: JSH
SUBMITTED:
RECOMMENDED:
REVISION 2
PROJECT MANAGER
CHIEF OPERATIONS–HYDROGRAPHIC BRANCH
APPROVED:
DATE:

SEWARD, ALASKA
SEWARD HARBOR
PROJECT CONDITION SURVEY
APRIL 28–MAY 4, 2006

SURVEY NO. 2318–06
SCALE: 1" = 60'
SHEET 2 OF 2

CORPS OF ENGINEERS U. S. ARMY