

NOTES

- HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83 (5001) IN U.S. SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE 2003 EPOCH VALUES PUBLISHED NAD83 (CORRS) OF NGS CORS STATIONS: "WHITEHORSE CORS ARP" (PID D6615), "JUNEAU WAAS 1 CORS ARP" (PID DF4367), "A155 ANNETTE ISLAND 5 CORS ARP" (PID DK6482).
- VERTICAL CONTROL IS IN U.S. SURVEY FEET AND REFERS TO MEAN-LOWER-LOW-WATER DATUM (MLLW=0.0). THE MLLW VALUES SHOWN ON THIS PLAN ARE BASED ON NOAA/NOS TIDAL STATION 9452210, JUNEAU, GASTINEAU CHANNEL, STEPHENS PASS, ALASKA, HOLDING NOAA TIDAL BENCH MARK DOME BC "JNU TIDAL GPS 1999" (PID A14908/W#16187) AS ELEVATION. THIS VALUE IS FROM TIDAL EPOCH 1983 - 2001, PUBLISHED 6 NOV 2007 FOR THIS STATION.
- VERTICAL CONTROL WAS ALSO TIED INTO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVB8) HOLDING THE OPUS DB PUBLISHED VALUES OF "JNU TIDAL GPS 1999" (PID A14908/W#16187) AS 20.30 APPLYING THE AVERAGE DELTA TO THE REMAINING PRIMARY CONTROL.
- THE VERTICAL AND HORIZONTAL CONTROL SURVEY WAS CONDUCTED 12 AUGUST 2009, USING RTK AND DIFFERENTIAL LEVELING TECHNIQUES ALONG WITH LONG PERIOD STATIC GPS OBSERVATIONS USING A TRIMBLE 5700 WHICH WAS THEN PROCESSED USING NATIONAL GEODETIC SURVEY ON LINE POSITIONING USER SERVICE (OPUS). THE DIFFERENTIAL LEVELING EQUIPMENT WAS A LEICA NI-2 SELF LEVELING LEVEL AND A LEVEL ROD. ALL PRIMARY CONTROL WAS DOUBLE-TIED USING REAL TIME KINEMATIC CONTROL METHODS AND INDEPENDENT BASELINE SOLUTIONS. MONUMENTS WERE CHECKED AGAINST THEIR PUBLISHED VALUES AS A QUALITY CONTROL PROCEDURE USING A TRIMBLE ROVER AND BASE STATION.
- HYDROGRAPHIC SOUNDING DATA ACQUISITION WAS COLLECTED ON 12 AUG 2009 USING A ROSS 835 SINGLE BEAM ECHOSOUNDER (3 DEGREE BEAM, 200KHZ TRANSDUCER), POSITIONING AND VESSEL ALTITUDE WERE MEASURED USING A TRIMBLE MS860 AND TSS DSM-05 INTERNAL NAVIGATION SYSTEMS OPERATING ON RTK CORRECTORS BROADCAST FROM A LOCAL BASE STATIONS OCCUPYING "DH-C". SOUND VELOCITY WAS MEASURED AT NUMEROUS LOCATIONS AND TIDE PHASES USING AN ODOM DIGI-BAR PRO SOUND VELOCITY PROFILER AND VERIFIED WITH A BAR CHECK AT 5-FOOT INCREMENTS TO PROJECT DEPTH. DATA WAS COLLECTED, FIELD PROCESSED AND POST-PROCESSED USING HYPACK 2008 SOFTWARE. TIDAL ELEVATIONS WERE MEASURED USING RTK GPS OFF THE 2006 ALASKA GEOD MODEL G200604 WITH A LOCAL ADJUSTMENT OF 4.7 FOOT SEPARATION VALUE BETWEEN NAVD88 AND MLLW AND VERIFIED THROUGH DATA COLLECTED AT NOAA TIDE STATION JUNEAU.
- SOUNDINGS ARE IN U.S. SURVEY FEET AND ARE MINUS UNLESS NOTED OTHERWISE.
- THIS SURVEY IS INDICATIVE OF CONDITIONS ON THE DATES OF SURVEY.
- THIS SURVEY WAS CONDUCTED/SURVEYED BY: PUGET SOUND SURVEY CREW, SEATTLE DISTRICT, U.S. CORPS OF ENGINEERS.

VOLUME COMPUTATIONS

Project Depth -12' MLLW	2265.9 (cubic yards)
VOLUME AVAILABLE TO PROJECT DEPTH (-10' MLLW)	1248.7 (cubic yards)
VOLUME AVAILABLE BETWEEN PROJECT DEPTH AND MAXIMUM PAY LINE (-11' MLLW)	1099.9 (cubic yards)
TOTAL	4610.1 (cubic yards)

STATION	CONTROL DATA				DESCRIPTION
	NORTHING	EASTING	MLLW ELEV	NAVD88 ELEV	
DL-1 1978	2,353,650.68	2,547,782.85	64.12	68.82	USACE SBC FLAGPOLE IN CONCRETE
RAMP 1975	2,353,048.30	2,547,438.98	22.82	27.53	USACE SBC W. SIDE RAMP END PYMT.
DHAR 1975	2,353,388.57	2,547,704.09	23.61	28.31	3 1/4" BC IN GRANITE BOULDER
DH-C 2000	2,353,359.31	2,546,726.69	25.44	30.14	3 1/4" DBC IN ASPHALT
DH-D 2000	2,353,103.36	2,547,126.72	25.20	29.90	3 1/4" DBC IN ASPHALT SIDEWALK

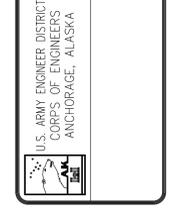
DESCRIPTION	NAVIGATION AIDS		
	USCG No.	NORTHING	EASTING
DOUGLAS BOAT HARBOR LIGHT ID	23680	2,353,939.56	2,547,136.93



CONTRACT NO. REP. # \_\_\_\_\_ DATE \_\_\_\_\_  
 CONTRACTOR \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_  
 Recommended By \_\_\_\_\_ Approved \_\_\_\_\_  
 Permit Contractor \_\_\_\_\_ Resubmit Engineer \_\_\_\_\_

Date	Description	By	Action

Issue 9 DEC 2009  
 Design: G-KING  
 Drawn: F GILBERT  
 Reviewed: A. CHURCHILL  
 Checked: A. CHURCHILL  
 Date: \_\_\_\_\_  
 Scale: \_\_\_\_\_  
 Drawing # DWG# \_\_\_\_\_



DOUGLAS, ALASKA  
 DOUGLAS SMALL BOAT HARBOR  
 CONDITION SURVEY  
 12 AUGUST 2009

Reference number:  
**V-001**  
 Sheet 1 of 1

**SURVEY**