



NOTES

- HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83 (5001) IN US SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE 2003 EPOCH VALUES PUBLISHED NAD83 (CORS) OF NGS CORS STATIONS: "WHITEHORSE CORS ARP" (PD D66515), "JUNEAU WAAS 1 CORS ARP" (PD D74367), "MISS ANNETTE ISLAND 5 CORS ARP" (PD D64822).
- 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 PLAT ARE BASED ON NOAA/NOS TIDAL STATION 9452210, JUNEAU, GASTINEAU CHANNEL, STEPHENS PASS, ALASKA, HOLDING NOAA TIDAL BENCH MARK DOMED B5 "ANU TIDAL GPS 1997" (PD A14908, WAF6187) 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 (NAVB88) HOLDING THE OPUS DE PUBLISHED VALUES OF "ANU TIDAL GPS 1997" (PD A14908, WAF6187) AS 20.20 APPLYING THE AVERAGE DELTA TO THE REMAINING PRIMARY CONTROL.
- THE VERTICAL AND HORIZONTAL CONTROL SURVEY WAS CONDUCTED 20 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 LECIA 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 CONDUCTED 20 AUG 2009 USING A ROSS 835 SINGLE BEAM ECHOSOUNDER (3 DEGREE BEAM, 200 KHZ TRANSDUCER). POSITIONING AND VESSEL ALTITUDE WERE MEASURED USING A TRIMBLE M960 AND TSS DSM-05 INTERNAL NAVIGATION SYSTEMS OPERATING ON RTK CORRECTORS BROADCAST FROM A LOCAL BASE STATIONS OCCUPYING "OH-C". SOUND VELOCITY WAS MEASURED AT NUMEROUS LOCATIONS AND TIDE PHASES USING AN ODOM DIGI-BAR PRO AND VERIFIED WITH A BAR CHECK AT 6-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 2008 ALASKA GEOD MODEL 02080604 WITH A LOCAL ADJUSTMENT OF 4.7 FOOT SEPARATION VALUE BETWEEN NAVD88 AND M.L.L.W. 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.

CONTROL DATA					
STATION	NORTHING	EASTING	MLLW ELEV/NAVD88 ELEV	CORNER	DESCRIPTION
NOAA TIDAL 1204A	1,696,238.32	2,944,596.63	25.55	30.25	NOS MONUMENT
WNI-1	1,690,472.62	2,945,829.29	30.50	35.20	STEEL USACE CAP
HH-1 2007	1,690,366.49	2,945,747.54	24.26	28.96	SET 3 1/4" BRASS CAP
HH-2 2007	1,690,380.27	2,944,958.11	25.18	29.88	SET 3 1/4" BRASS CAP

PROJECT LIMITS					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	1,691,649	2,944,990	10	1,690,605	2,945,060
2	1,691,547	2,945,052	11	1,690,433	2,945,048
3	1,691,644	2,945,213	12	1,690,430	2,945,108
4	1,691,641	2,945,270	13	1,691,330	2,945,170
5	1,691,607	2,945,307	14	1,691,489	2,945,432
6	1,691,560	2,945,320	15	1,691,573	2,945,500
7	1,691,515	2,945,300	16	1,691,655	2,945,480
8	1,691,389	2,945,094	17	1,691,600	2,945,322
9	1,690,631	2,945,042	18	1,691,805	2,945,246

NAVIGATION AIDS		
DESCRIPTION	NORTHING	EASTING
BREAKWATER LIGHT 1	1,691,564	2,945,239
BREAKWATER LIGHT 2	1,691,792	2,945,073

VOLUME COMPUTATIONS			
Project Depth -12' MLLW		Project Depth -16' MLLW	
VOLUME AVAILABLE TO PROJECT DEPTH (MLLW)	211.4 (cubic yards)	VOLUME AVAILABLE TO PROJECT DEPTH (MLLW)	1048.7 (cubic yards)
VOLUME BETWEEN PROJECT DEPTH AND MAXIMUM TIDE LINE (-17' MLLW)	352.1 (cubic yards)	VOLUME BETWEEN PROJECT DEPTH AND MAXIMUM TIDE LINE (-17' MLLW)	1142.4 (cubic yards)
VOLUME AVAILABLE ALONG SIDE SLOPE OUT IN 7'	197.8 (cubic yards)	VOLUME AVAILABLE ALONG SIDE SLOPE OUT IN 7'	1955.3 (cubic yards)
TOTAL (-12')	761.3 (cubic yards)	TOTAL (-16')	4146.4 (cubic yards)



CONTRACT NO. REP. # _____
 CONTRACTOR _____
 CITY _____ STATE _____
 Recommended: _____ Date: _____
 Approved: _____
 PRIME CONTRACTOR _____
 RESIDENT ENGINEER _____

Date	Appr.	Description

Date: 9 DEC 09
 Dwg. Scale: AS NOTED
 Plot. Scale: _____
 File: _____
 Drawing #: _____

Designed: G. KING
 Drawn: F. GILBERT
 Reviewed: A. CHURCHILL
 Checked: _____
 Submitted: _____
 Date: _____
 By: _____

U.S. ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS
 ANCHORAGE, ALASKA

WRANGELL, ALASKA
 HERITAGE SMALL BOAT HARBOR
 PROJECT CONDITION SURVEY
 20 AUGUST 2009

Reference number:
 V-001
 Sheet 1 of 1

