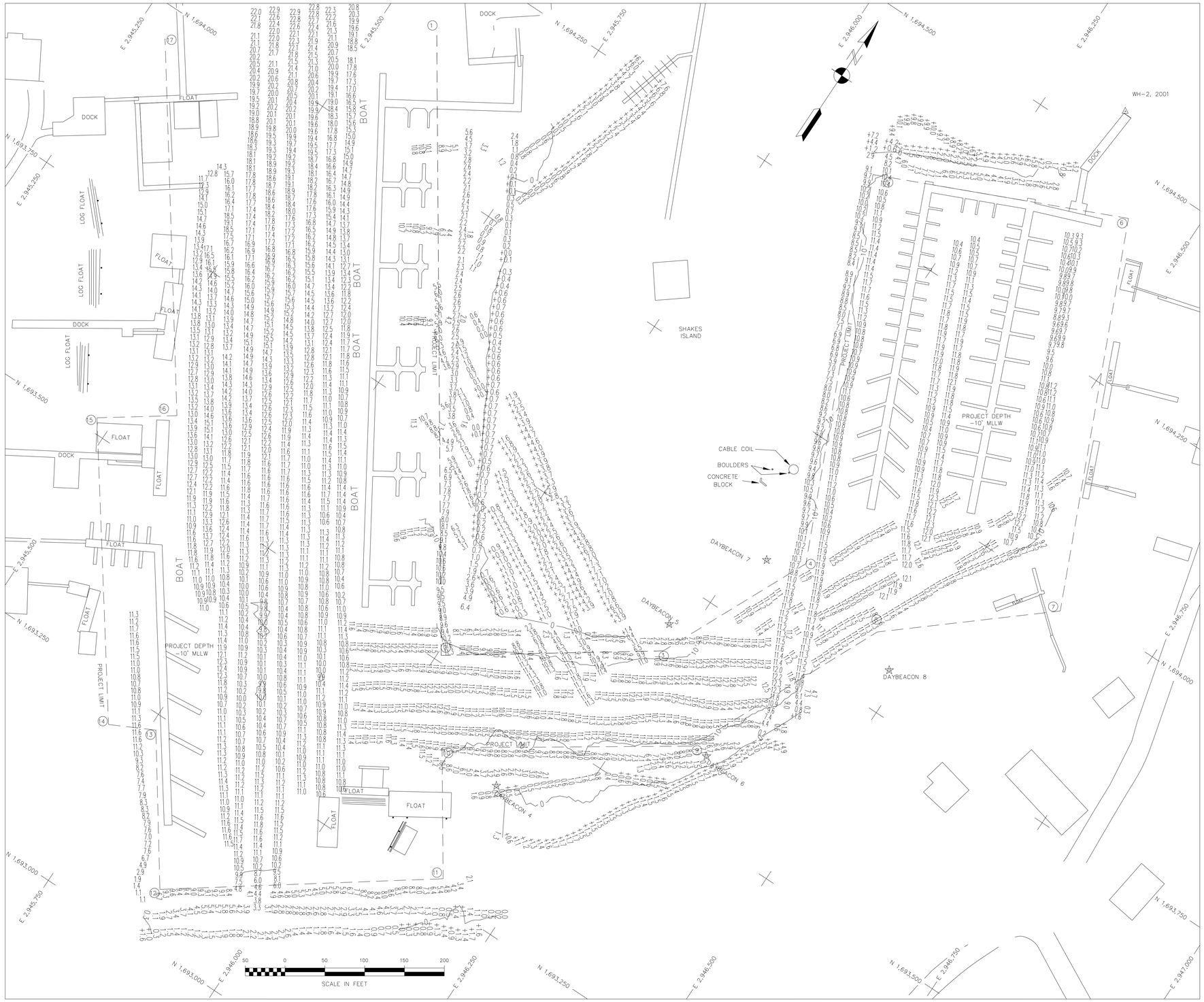
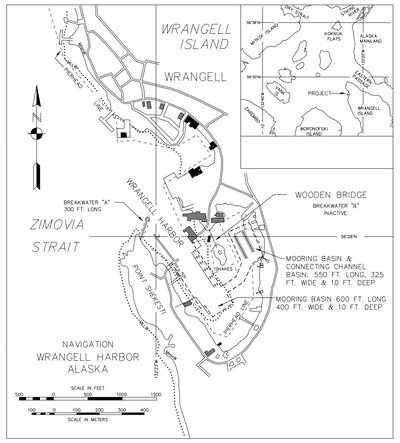
CORPS OF ENGINEERS





NOTES

1. 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" (PID DE6615); "JUNEAU WAAS 1 CORS ARP" (PID DF4367); "A1S5 ANNETTE ISLAND 5 CORS ARP" (PID DK6482).

2. 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 BC "JNU TIDAL GPS 1999" (PID A14908/VM#16187) AS ELEVATION. THIS VALUE IS FROM TIDAL EPOCH 1983 - 2001, PUBLISHED 6 NOV 2007 FOR THIS STATION.

3. VERTICAL CONTROL WAS ALSO TIED INTO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) HOLDING THE OPUS DB PUBLISHED VALUES OF "JNU TIDAL GPS 1999" (PID A14908/VM#16187) AS 20.30 APPLYING THE AVERAGE DELTA TO THE REMAINING PRIMARY CONTROL.

4. THE VERTICAL AND HORIZONTAL CONTROL SURVEY WAS CONDUCTED 18 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 N1-2 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.

5. HYDROGRAPHIC SOUNDING DATA ACQUISITION WAS CONDUCTED 18 AUG 2009 USING A ROSS 835 SINGLE BEAM ECHOSOUNDER (3 DEGREE BEAM, 200 kHZ TRANSDUCER). POSITIONING AND VESSEL ALTITUDE WERE MEASURED USING A TRIMBLE MS860 AND TSS DSM-05 INTERNAL NAVIGATION SYSTEMS OPERATING ON RTK CORRECTORS WERE BROADCAST FROM LOCAL BASE STATION OCCUPYING "DH-C" SOUND VELOCITY WAS MEASURED NUMEROUS LOCATIONS AND TIDE PHASES USING AN ODOM DIGI-BAR PRO AND VERIFIED WITH A BAR CHECK AT 5-FOOT INCREMENTS TO PROJECT DEPTH. DATA WAS COLLECTED, FIELD PROCESSED, AND POST-PROCESS USING HYPACK 2008. TIDE ELEVATIONS WERE MEASURED USING RTK GPS OFF THE 2006 ALASKA GEOID MODEL G2006A04 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.

6. SOUNDINGS ARE IN US SURVEY FEET AND ARE MINUS UNLESS NOTED OTHERWISE.

7. THIS SURVEY IS INDICATIVE OF CONDITIONS ON THE DATES OF THE SURVEY.

8. THIS SURVEY WAS CONDUCTED/SURVEYED BY: PUGET SOUND SURVEY CREW, SEATTLE DISTRICT, U.S. CORPS OF ENGINEERS.

VOLUME COMPUTATIONS

Project Depth -10' MLLW

VOLUME AVAILABLE TO PROJECT DEPTH (-10' MLLW)	892.5	(cubic yards)
VOLUME BETWEEN PROJECT DEPTH AND MAXIMUM PAY LINE (-11' MLLW)	2519.7	(cubic yards)
VOLUME AVAILABLE ALONG SIDE SLOPES (3:1, H:V)	1,214.8	(cubic yards)
TOTAL	4627.0	(cubic yards)

CONTROL DATA

STATION	NORTHING	EASTING	MLLW ELEV.	NAVD88 ELEV.	DESCRIPTION
NOAA TIDAL 1204A	1,696,238.32	2,944,596.63	39.32	44.02	USC&GS SBC (OFF THE SHEET)
WH-2 2001	1,694,550.73	2,946,339.21	21.50	26.20	USACE DOMED BC
WH-P 2009	1,694,308.30	2,945,664.52	25.70	30.40	USACE DOMED BC

PROJECT LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	1,694,154	2,945,570	10	1,693,412	2,946,070
2	1,693,508	2,946,005	11	1,693,276	2,946,162
3	1,693,667	2,946,234	12	1,693,068	2,945,873
4	1,693,857	2,946,323	13	1,693,232	2,945,758
5	1,694,311	2,946,123	14	1,693,205	2,945,705
6	1,694,442	2,946,421	15	1,693,518	2,945,480
7	1,693,984	2,946,622	16	1,693,568	2,945,554
8	1,693,835	2,946,445	17	1,693,962	2,945,288
9	1,693,587	2,946,330			

NAVIGATION AIDS

DESCRIPTION	USCG No.	NORTHING	EASTING
BREAKWATER LIGHT 2	22630	1,694,511	2,944,940
DAYBEACON 4	22640	1,693,410	2,946,153
DAYBEACON 5	22645	1,693,699	2,946,222
DAYBEACON 6	22650	1,693,587	2,946,353
DAYBEACON 7	22655	1,693,834	2,946,279
DAYBEACON 8	22660	1,693,803	2,946,484

US ARMY CORPS OF ENGINEERS
ALASKA DISTRICT

CONTRACT NO./RFP # XXXXXX-XX-X-XXXX
CONTRACTOR
CITY STATE
Recommended: Approved: Date:
PRIME CONTRACTOR RESIDENT ENGINEER

Sym	Action	Description	Date	Appvd

Designed: G. KING
Drawn: F. GILBERT/L. TOKUNAGA
Reviewed: A. CHURCHILL
Chief, Survey Section
Chief, Survey Branch
Date: 2/19/2009
Dwg Scale: AS NOTED
Plot Scale:
File:
Drawing #:

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

WRANGELL, ALASKA
WRANGELL SMALL BOAT HARBOR
CONDITION SURVEY
18 AUG 2009

Reference number:
V-001
Sheet 1 of 1

SURVEY