

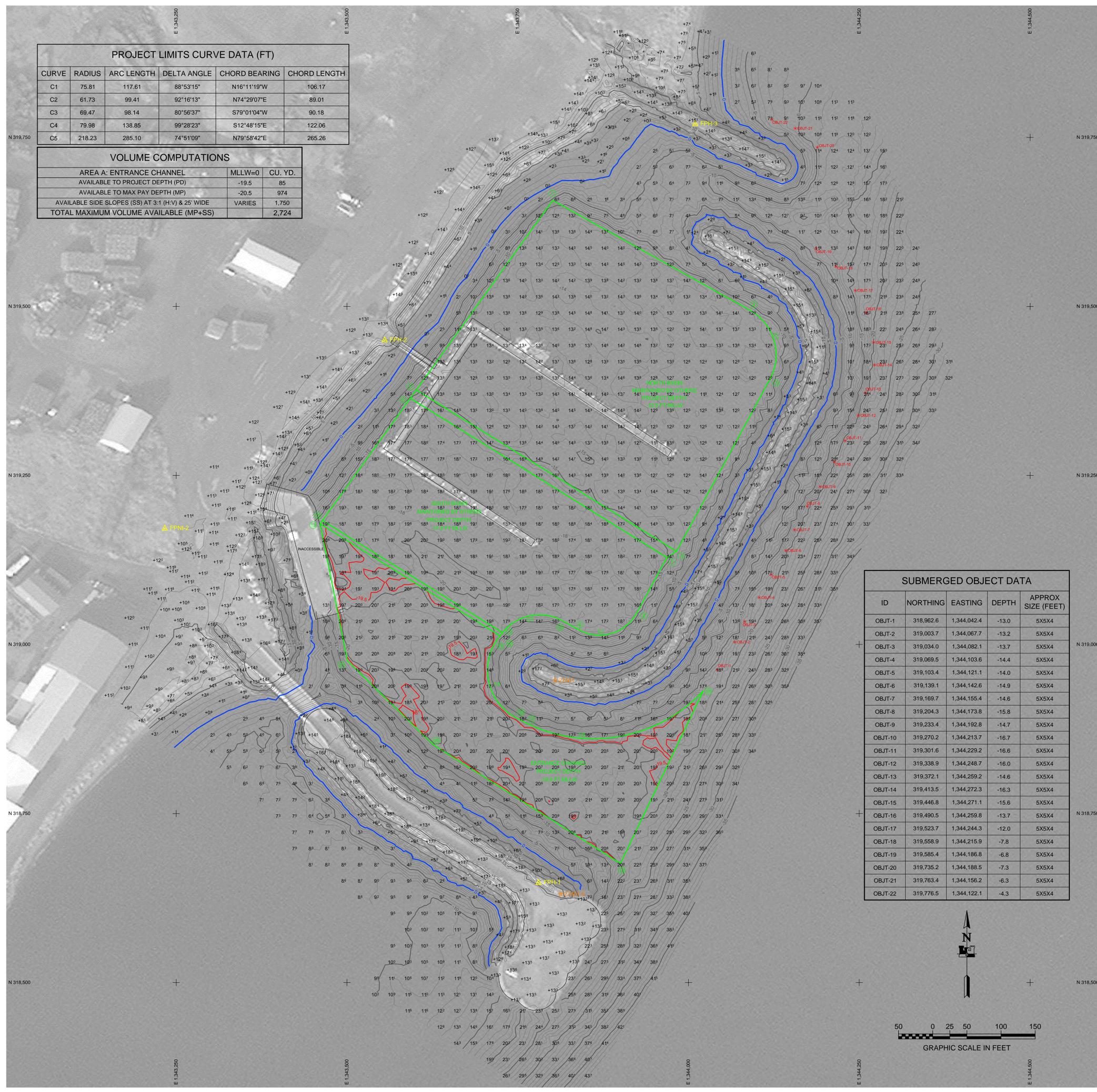


PROJECT LIMITS CURVE DATA (FT)

CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	75.81	117.61	88°53'15"	N16°11'19"W	106.17
C2	61.73	99.41	92°16'13"	N74°29'07"E	89.01
C3	69.47	98.14	80°56'37"	S79°01'04"W	90.18
C4	79.98	138.85	99°28'23"	S12°48'15"E	122.06
C5	218.23	285.10	74°51'09"	N79°58'42"E	265.26

VOLUME COMPUTATIONS

AREA A: ENTRANCE CHANNEL	MLLW=0	CU. YD.
AVAILABLE TO PROJECT DEPTH (PD)	-19.5	85
AVAILABLE TO MAX PAY DEPTH (MP)	-20.5	974
AVAILABLE SIDE SLOPES (SS) AT 3:1 (H:V) & 25' WIDE	VARIABLES	1,750
TOTAL MAXIMUM VOLUME AVAILABLE (MP+SS)		2,724



- NOTES**
- PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 7, NAD83, (2011)2010.00, IN US SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE PUBLISHED NAD83 2010.00 EPOCH VALUES OF NGS CORS STATIONS: "CDB8 COLD BAY WAAS 8 CORS ARP" (PID DL6500), "AC41 PORT MOLLER AK 2006 CORS ARP" (PID DM7490), AND "AB07 SANDPOINT AK 2004 CORS ARP" (PID DL7635).
 - LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 7, NAD83, IN US SURVEY FEET HOLDING "946 2955 TIDAL 1" AS N 315,074.83, E 1,343,307.99 AND "FPNI-2" AS N 319,171.50, E 1,343,233.34.
 - VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0.0 FT), BASED ON THE NOAA/NOS TIDAL BENCH MARK LIST "946 2955, FALSE PASS, UNIMAK ISLAND, ALASKA" (PID 22302014). THIS TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOS TIDAL BENCH MARK "946 2955 TIDAL 1" (VM# 20888/PID BBF093) AS 7.31 FT.
 - VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD88 (GEOID 12B) ELEVATIONS HOLDING NOAA/USACE TIDAL BENCHMARK "946 2955 TIDAL 1" (VM# 20888/PID BBF093) AS 7.75 FT.
 - SOUNDINGS ARE IN US SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
 - BATHYMETRY WAS COLLECTED JUNE 05, 2017. SOUNDINGS WERE COLLECTED USING AN R2SONIC 2022 MULTIBeam ECHOSOUNDER OPERATING AT 200 KHZ. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN AML BASE X SOUND VELOCITY PROBE. POSITIONING AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POS OCEANMASTER V5 SYSTEM. DATA WAS COLLECTED USING QINSY 8.1 SOFTWARE AND PROCESSED USING QIMERA 1.5 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING STATIC GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
 - TERRESTRIAL LASER SCANNING DATA COLLECTED JUNE 06, 2017. DATA WAS COLLECTED USING A RIEGL VZ400 LASER SCANNER. MOBILE SCANNING WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSV5 OCEANMASTER V5 SYSTEM. STATIC SCANNING WAS COLLECTED AND PROCESSED USING RIEGL RISCAN 2.3 SOFTWARE.
 - THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.
 - MAP SOUNDINGS ARE BINNED AT 24 FEET AND ARE SHOAL BIASED. CONTOURS ARE BASED ON 12 FEET BINNED SHOAL-BIASED SOUNDINGS. VOLUME SOUNDINGS ARE BINNED AT 3 FEET AND ARE MEAN VALUE.

SUBMERGED OBJECT DATA

ID	NORTHING	EASTING	DEPTH	APPROX SIZE (FEET)
OBJT-1	318,962.6	1,344,042.4	-13.0	5X5X4
OBJT-2	319,003.7	1,344,067.7	-13.2	5X5X4
OBJT-3	319,034.0	1,344,082.1	-13.7	5X5X4
OBJT-4	319,069.5	1,344,103.6	-14.4	5X5X4
OBJT-5	319,103.4	1,344,121.1	-14.0	5X5X4
OBJT-6	319,139.1	1,344,142.6	-14.9	5X5X4
OBJT-7	319,169.7	1,344,155.4	-14.6	5X5X4
OBJT-8	319,204.3	1,344,173.8	-15.8	5X5X4
OBJT-9	319,233.4	1,344,192.8	-14.7	5X5X4
OBJT-10	319,270.2	1,344,213.7	-16.7	5X5X4
OBJT-11	319,301.6	1,344,229.2	-16.6	5X5X4
OBJT-12	319,338.9	1,344,248.7	-16.0	5X5X4
OBJT-13	319,372.1	1,344,259.2	-14.6	5X5X4
OBJT-14	319,413.5	1,344,272.3	-16.3	5X5X4
OBJT-15	319,446.8	1,344,271.1	-15.6	5X5X4
OBJT-16	319,490.5	1,344,259.8	-13.7	5X5X4
OBJT-17	319,523.7	1,344,244.3	-12.0	5X5X4
OBJT-18	319,558.9	1,344,215.9	-7.8	5X5X4
OBJT-19	319,585.4	1,344,186.8	-6.8	5X5X4
OBJT-20	319,735.2	1,344,188.5	-7.3	5X5X4
OBJT-21	319,763.4	1,344,156.2	-6.3	5X5X4
OBJT-22	319,776.5	1,344,122.1	-4.3	5X5X4

SURVEY CONTROL DATA

STATION	NORTHING	EASTING	MLLW	DESCRIPTION
14C CB L2	319,212.75	1,342,851.92	15.61	DOMED BC
FPH-1	318,647.52	1,343,780.50	17.54	DOMED BC
FPH-2	319,449.95	1,343,555.14	15.61	DOMED BC
FPH-3	319,769.59	1,344,009.77	13.55	DOMED BC
FPNI-1	318,121.73	1,342,859.30	13.32	USACE SBC
FPNI-2	319,171.50	1,343,233.34	10.60	USACE SBC
FPNI-3	320,161.79	1,344,013.06	11.66	USACE SBC

PROJECT LIMITS

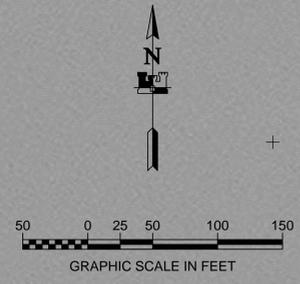
CORNER#	NORTHING	EASTING
1	319,656.91	1,343,801.23
2	319,494.54	1,344,089.77
3	319,392.58	1,344,119.37
4	319,137.81	1,343,982.45
5	319,376.40	1,343,601.46
6	319,364.16	1,343,592.84
7	319,128.54	1,343,968.43
8	319,046.16	1,343,923.98
9	319,022.35	1,343,838.21
10	319,034.82	1,343,816.16
11	319,017.64	1,343,727.63

PROJECT LIMITS

CORNER#	NORTHING	EASTING
12	319,183.45	1,343,464.21
13	319,178.58	1,343,460.74
14	319,012.89	1,343,724.05
15	319,009.95	1,343,721.84
16	318,890.93	1,343,748.89
17	318,885.03	1,343,760.27
18	318,931.19	1,344,021.48
19	318,676.13	1,343,900.42
20	318,851.81	1,343,626.32
21	318,976.22	1,343,500.60

NAVIGATION AIDS

USCG NO.	NORTHING	EASTING	DESCRIPTION
27401	318,947	1,343,805	BREAKWATER LIGHT 1
27401.5	318,631	1,343,813	BREAKWATER LIGHT 2



THIS HYDROGRAPHIC SURVEY WAS COMPLETED UNDER THE OVERSIGHT OF AN ACSM/THISOA CERTIFIED HYDROGRAPHER

David R. Neff C.H. (275)

