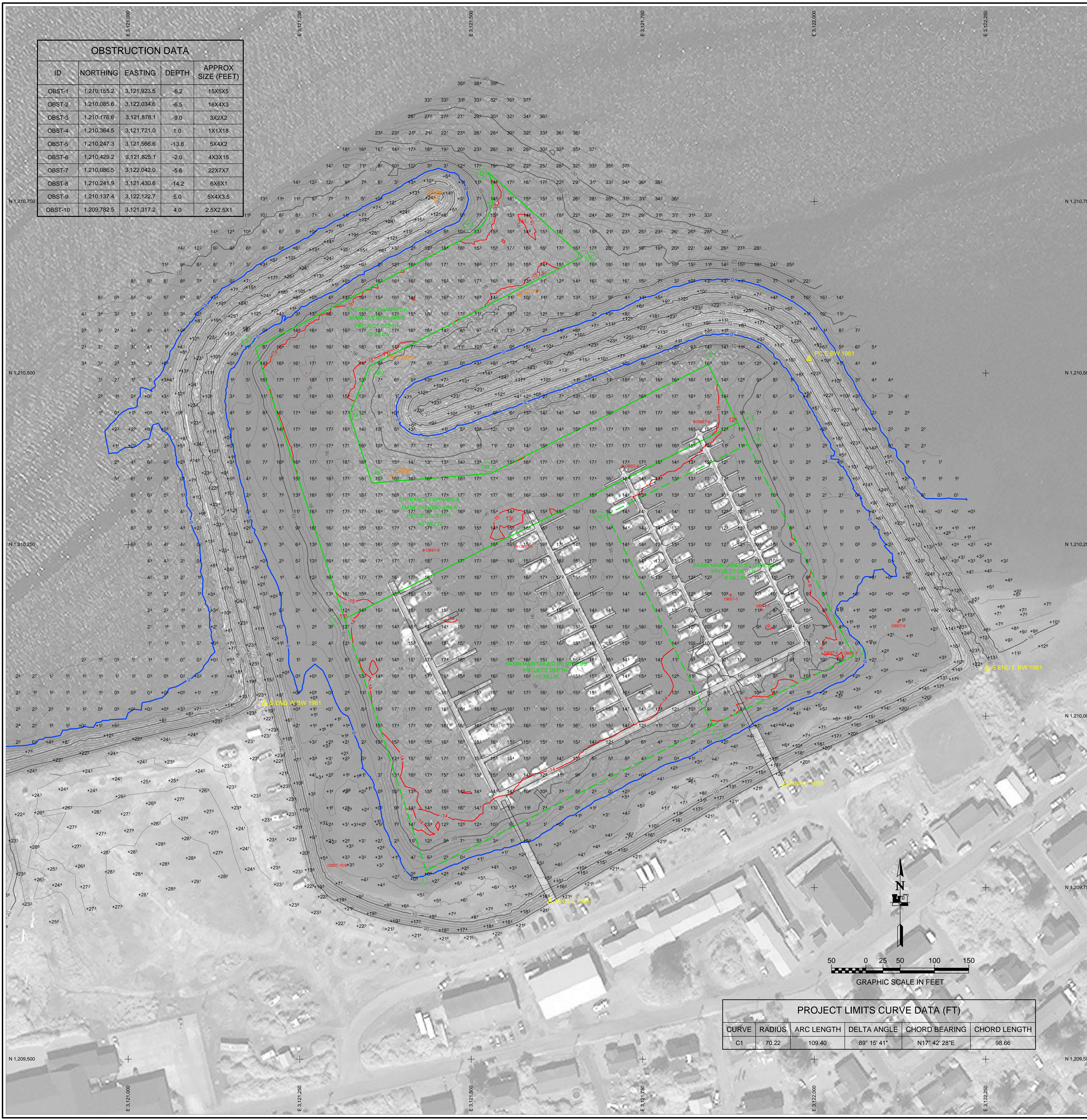


OBSTRUCTION DATA				
ID	NORTHING	EASTING	DEPTH	APPROX SIZE (FEET)
OBST-1	1,210,155.2	3,121,923.5	-6.2	15X5X5
OBST-2	1,210,085.6	3,122,034.6	-6.5	16X4X3
OBST-3	1,210,176.6	3,121,878.1	-9.0	3X2X2
OBST-4	1,210,364.5	3,121,721.0	1.0	1X1X18
OBST-5	1,210,247.3	3,121,566.6	-13.8	5X4X2
OBST-6	1,210,429.2	3,121,825.1	-2.0	4X3X15
OBST-7	1,210,086.5	3,122,042.0	-5.6	22X7X7
OBST-8	1,210,241.9	3,121,430.6	-14.2	6X6X1
OBST-9	1,210,137.4	3,122,122.7	5.0	5X4X3.5
OBST-10	1,209,782.5	3,121,317.2	4.0	2.5X2.5X1



NOTES

- PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, 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: "LEVEL ISLAND 6 CORS ARP" (PID DJ3035); "KLAWOAKAIRAK2006 CORS ARP" (PID DM7451); "ANNETTE ISLAND 5 CORS ARP" (PID DK6482).
- LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83(2011), IN US SURVEY FEET HOLDING "BM 11 1969" AS N 1,209,598.48; E 3,124,922.28 AND "S END W BW 1981" AS N 1,210,018.47, E 3,121,198.52.
- VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD83 (GEOID 12B) ELEVATIONS HOLDING NOAA/USACE TIDAL BENCHMARK "945 0314 NO 11" (PID BFF94/VH14121) AS 23.94.
- SOUNDINGS ARE IN US SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
- BATHYMETRY WAS COLLECTED MAY 29-31, 2016. 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. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV OCEANMASTER V5 SYSTEM. DATA WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING STATIC GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
- TERRRESTRIAL LASER SCANNING DATA COLLECTED MAY 28, 2016. DATA WAS COLLECTED USING A REIGL VZ400 LASER SCANNER. MOBILE SCANNING WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV OCEANMASTER V5 SYSTEM.
- THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.

SURVEY CONTROL DATA				
STATION	NORTHING	EASTING	MLLW	DESCRIPTION
MNH-1 1999	1,209,901.11	3,121,956.64	20.93	USACE 3" DOMED BC
MNH-2 1999	1,209,729.44	3,121,615.01	20.97	USACE 3" DOMED BC
PC E 1981	1,210,521.02	3,121,992.74	22.95	USACE 3.5" DOMED BC
S END E BW 1981	1,210,070.03	3,122,251.80	22.50	USACE 3.5" DOMED BC
S END W BW 1981	1,210,018.47	3,121,198.52	23.16	USACE 3.5" DOMED BC

NAVIGATION AIDS			
USCG NO.	NORTHING	EASTING	DESCRIPTION
22065	1,210,754	3,121,447	METLAKATLA BOAT HARBOR LIGHT 2
22070	1,210,614	3,121,570	METLAKATLA DAYBEACON 3
22075	1,210,523	3,121,385	METLAKATLA DAYBEACON 5
22080	1,210,350	3,121,383	METLAKATLA DAYBEACON 7

PROJECT LIMITS		
CORNER#	NORTHING	EASTING
1	1,209,774.73	3,121,434.37
2	1,210,087.67	3,122,057.41
3	1,210,512.69	3,121,845.45
4A	1,210,353.72	3,121,528.44
4B	1,210,339.74	3,121,353.43
5A	1,210,439.75	3,121,322.45
5B	1,210,507.74	3,121,353.45
5C	1,210,669.71	3,121,662.47

PROJECT LIMITS		
CORNER#	NORTHING	EASTING
6	1,210,536.76	3,121,185.46
7	1,210,141.75	3,121,315.41
8	1,210,427.69	3,121,888.44
9	1,210,396.68	3,121,903.44
10	1,210,293.71	3,121,697.43
11	1,209,986.69	3,121,852.40
12	1,210,792.72	3,121,524.48
PT 2	1,210,698.73	3,121,494.47

VOLUME COMPUTATIONS		
AREA A: ENTRANCE CHANNEL & MANEUVERING AREA	MLLW=0	CU. YD.
AVAILABLE TO PROJECT DEPTH (PD)	-15.0	242
AVAILABLE TO MAX PAY DEPTH (MP)	-16.0	703
AVAILABLE SIDE SLOPES (SS) AT 3:1 (H:V) & 25' WIDE	VARIABLES	1,929
TOTAL MAXIMUM VOLUME AVAILABLE (MP + SS)		2,632

PROJECT LIMITS CURVE DATA (FT)					
CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	70.22	109.40	89° 15' 41"	N17° 42' 28"E	98.66

CONTRACT NO. W110514-0013
 CONTRACTOR: ETAC INC.
 CITY: WASHILLA, ALASKA
 APPROVED BY: [Signature]
 PROJECT NO.: 15-09
 DATE: 06/02/2016

DATE: 7 July 2016
 DESIGNED BY: GREGORY W. GIBSON
 CHECKED BY: GREGORY W. GIBSON
 APPROVED BY: GREGORY W. GIBSON
 SCALE: AS SHOWN
 FILE NAME: 15-09 METLAKATLA NEW HARBOR
 SHEET: 1 OF 2

U.S. ARMY CORPS OF ENGINEERS
 ALASKA DISTRICT
 617 S. Kila-Goose Bay Road, Suite C
 Wasilla, AK 99684

METLAKATLA, ALASKA
METLAKATLA NEW HARBOR
PROJECT CONDITION SURVEY
 05/25 - 06/02/2016

SHEET IDENTIFICATION
 1-MET-92-07-26
 Sheet 1 of 2

OBSTRUCTION DATA				
ID	NORTHING	EASTING	DEPTH	APPROX SIZE (FEET)
OBST-1	1,210,155.2	3,121,923.5	-8.2	15X5X5
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OBST-10	1,209,782.5	3,121,317.2	4.0	2.5X2.5X1

ELEVATION COLOR LEGEND			
#	MIN. ELEV.	MAX. ELEV.	COLOR
1	-50.0	-32.0	Blue
2	-32.0	-28.0	Dark Blue
3	-28.0	-24.0	Light Blue
4	-24.0	-20.0	Light Blue
5	-20.0	-18.0	Light Blue
6	-18.0	-16.0	Light Green
7	-16.0	-15.0	Light Green
8	-15.0	-14.0	Light Green
9	-14.0	-12.0	Light Green
10	-12.0	-10.0	Light Green
11	-10.0	-8.0	Light Green
12	-8.0	-4.0	Light Green
13	-4.0	0.0	Light Green
14	0.0	4.0	Light Green
15	4.0	8.0	Light Green
16	8.0	12.0	Light Green



NOTES

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- VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0.0'), BASED ON THE NOAA/NO'S TIDAL BENCH MARK LIST "945 0314 11" (PID BFF94/VMH14121) AS 23.94'.
- VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD83 (GEOID 12B) ELEVATIONS HOLDING NOAA/USACE TIDAL BENCHMARK "945 0314 11" (PID BFF94/VMH14121) AS 20.09'.
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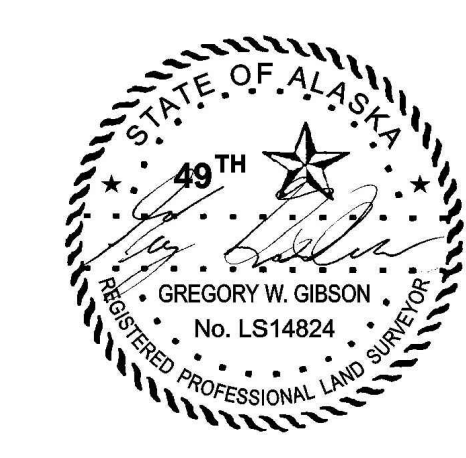
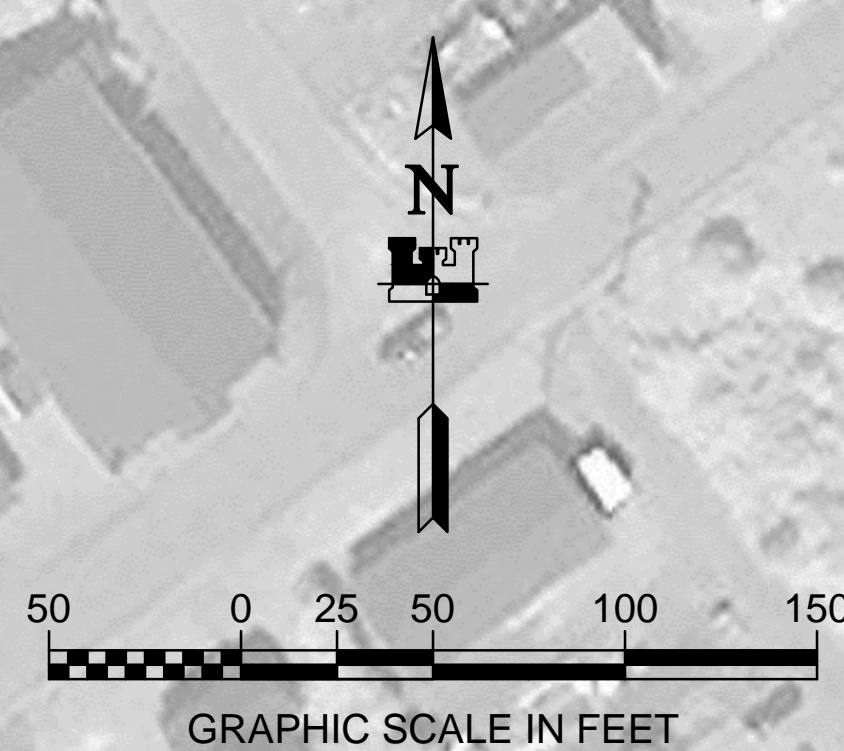
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THIS HYDROGRAPHIC SURVEY WAS COMPLETED UNDER THE OVERSIGHT OF AN ACSM/THISOA CERTIFIED HYDROGRAPHER
 David R. Neff C.H. (275)

US Army Corps of Engineers - ALASKA DISTRICT

CONTRACT NO. W110514-0013
 CONTRACTOR: ETAC INC.
 CITY: WASILLA, ALASKA
 APPROVED BY: [Signature]
 DATE: 05/25 - 06/02/2016

METLAKATLA, ALASKA
METLAKATLA NEW HARBOR
PROJECT CONDITION SURVEY
 05/25 - 06/02/2016

SHEET IDENTIFICATION
 1-MET-92-07-26
 Sheet 2 of 2