



VOLUME COMPUTATIONS		
AREA A: BASIN		MLLW=0 CU. YD.
REMOVED TO PROJECT DEPTH (PD)	+3.3	2,941
REMOVED TO MAX PAY DEPTH (MP)	+2.0	4,938
REMOVED SIDE SLOPES (SS) AT 3:1 (H:V) & 25' WIDE	VARIES	654
AREA B: ENTRANCE CHANNEL		
REMOVED TO PROJECT DEPTH (PD)	+9.3	662
REMOVED TO MAX PAY DEPTH (MP)	+8.3	1,355
REMOVED SS AT 3:1 (H:V) & 25' WIDE	VARIES	398
TOTAL MAXIMUM VOLUME REMOVED (MP)		7,345
TOTAL VOLUME OVERDREDGED		1,429

NAVIGATION AIDS			
NO.	NORTHING	EASTING	DESCRIPTION
26255	2,215,716	1,336,195	CHANNEL ENTRANCE LIGHT
26260	2,215,624	1,336,257	ROCK SILL NORTH DAYBEACON
26265	2,215,686	1,336,047	ROCK SILL SOUTH DAYBEACON

PROJECT LIMITS		
CORNER#	NORTHING	EASTING
1	2,215,380.30	1,336,164.37
2	2,215,425.79	1,336,111.41
3	2,215,123.35	1,335,851.63
4	2,215,058.05	1,335,927.64
5	2,215,045.59	1,335,954.77
6	2,215,074.98	1,335,968.27
7	2,215,347.60	1,336,202.44

PROJECT LIMITS		
CORNER#	NORTHING	EASTING
8	2,215,404.96	1,336,265.99
9	2,215,588.16	1,336,268.15
10	2,216,017.64	1,335,816.29
11	2,215,980.40	1,335,782.90
12	2,215,551.92	1,336,233.70
13	2,215,442.00	1,336,232.41



NOTES

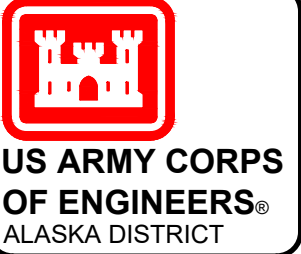
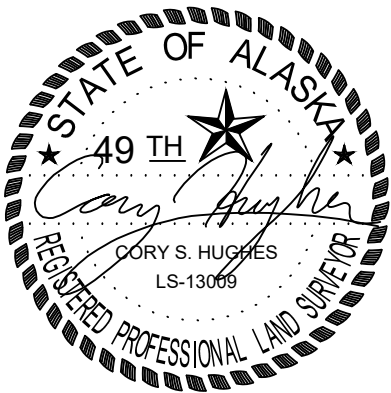
- PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 4, NAD83 (CORS), IN U.S. SURVEY FEET, BASED ON A STATIC GPS NETWORK HOLDING NGS EPOCH 2010.00 CORS L1 PHASE CENTER VALUES FOR "SOLDOTNA AK 2007 CORS ARP" (AC23 - PID DM7484) AND "MCNEIL CANYON ELE CORS ARP" (MCES - PID DP9272).
- LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 4, NAD83 (CORS96), IN US SURVEY FEET HOLDING "5653 E" HAVING A VALUE OF N 2,215,591.88 AND E 1,336,145.19.
- VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW = 0.0'), BASED ON THE NOAA/NOS TIDAL BENCHMARK LIST: "945 5653, NINILCHIK, COOK INLET, ALASKA" PUBLISHED 04/09/2018. THIS TIDAL DATUM IS BASED ON THE 2012-2016 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOS TIDAL BENCHMARK "5653 F 2011" (PID BBCM32/VM#20900) AS 29.50 FT AND NOAA/USACE TIDAL BENCHMARK "5653 E" (VM#14160) AS 30.62 FT.
- VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD88 (GEOID12B) ELEVATIONS HOLDING NOAA/NOS TIDAL BENCHMARK "5653 F 2011" (PID BBCM32/VM#20900) AS 23.30 FT.
- SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
- BATHYMETRY WAS COLLECTED MAY 7, 2020. SOUNDINGS WERE COLLECTED USING A CEESCOPE ECHO SOUNDER OPERATING AT 200 KHZ. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN AML BASE X2 SOUND VELOCITY PROBE POSITION AND TIDES WERE PROVIDED IN REAL TIME USING A TRIMBLE R8 RTK GPS RECEIVER OPERATING ON KINEMATICS CORRECTIONS BROADCAST FROM A TRIMBLE R8 RTK BASE RECEIVER SET AT CONTROL STATION, "5653 E". DATA WAS COLLECTED AND PROCESSED USING HYPACK 2020 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES ON A PREVIOUS SURVEY.
- THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.
- MAP SOUNDINGS, CONTOURS, COLOR RELIEF AND VOLUME COMPUTATIONS ARE BASED ON A 10 FOOT SORT.

SURVEY CONTROL DATA				
STATION	NORTHING	EASTING	MLLW	DESCRIPTION
5653 A 1979	2,215,064.14	1,335,753.21	32.03	3-1/2 IN. USACE SBC
5653 D 1979	2,215,008.61	1,335,746.60	29.44	3-1/2 IN. USACE SBC
5653 E	2,215,591.88	1,336,145.19	30.62	BRONZE ROD IN BW ROCK
5653 F	2,214,548.32	1,335,413.80	29.50	SS ROD IN PVC
5653 G	2,214,391.12	1,335,295.80	29.78	SS ROD IN PVC
5653 H 2011	2,213,478.03	1,335,045.36	36.33	3-1/2 IN. USACE SBC

THIS HYDROGRAPHIC SURVEY WAS COMPLETED
UNDER THE OVERSIGHT OF AN ACSMITHOSOA
CERTIFIED HYDROGRAPHER

Cory S. Hughes

CORY S. HUGHES C.H. (245)



VOLUME CALCULATION		DESCRIPTION	
1	6/30/20	REV.	DATE
		BY	APPR.

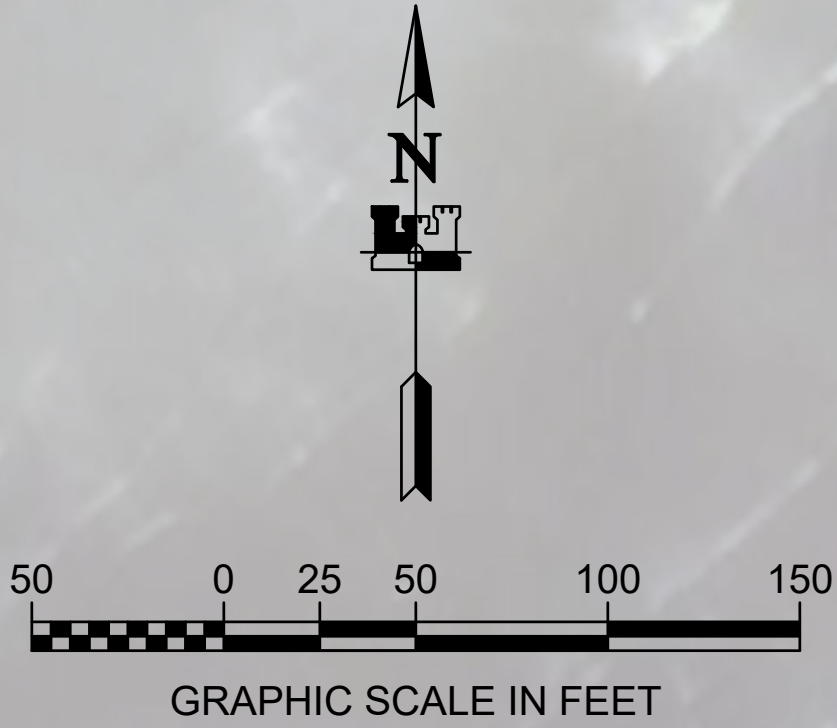
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DRAWN BY: DCA	TASK ORDER NO.:
CHECKED BY: CSH	JOB NO.:
APPROVED BY: THOMAS SLOAN, CHIEF GEOMATICS SECTION	CONTRACTOR: ALASKA MARINE EXCAVATION
U.S. ARMY CORPS OF ENGINEERS ALASKA DISTRICT 204 3RD STREET BER, ALASKA 99506-9888	CITY: STATE: ANCHOR POINT ALASKA
HUGHES & ASSOCIATES 204 3RD STREET WASILLA, ALASKA 99654	
NINILCHIK POST DREDGE_202007_REV1.DWG	

NINILCHIK, ALASKA
NINILCHIK HARBOR
POST-DREDGE SURVEY
APRIL 30 & MAY 7, 2020

REFERENCE
NUMBER:

2-NIN-92-07-56

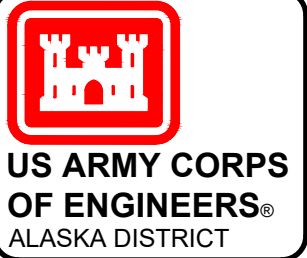
ALIGNMENT DATA (FT)						
NUMBER	LENGTH	LINE/CHORD BEARING	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD LENGTH
L1	491.35	N40° 39' 57"E	-----	-----	-----	-----
C3	-----	N44° 15' 53.00"E	25.13	200.00	7°11'52"	25.11
L2	76.04	N47° 51' 49"E	-----	-----	-----	-----
C4	-----	N00° 42' 17.31"E	164.62	100.00	94°19'04"	146.65
L3	622.68	N46° 27' 15"W	-----	-----	-----	-----



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1	6/30/20	REV.	DATE
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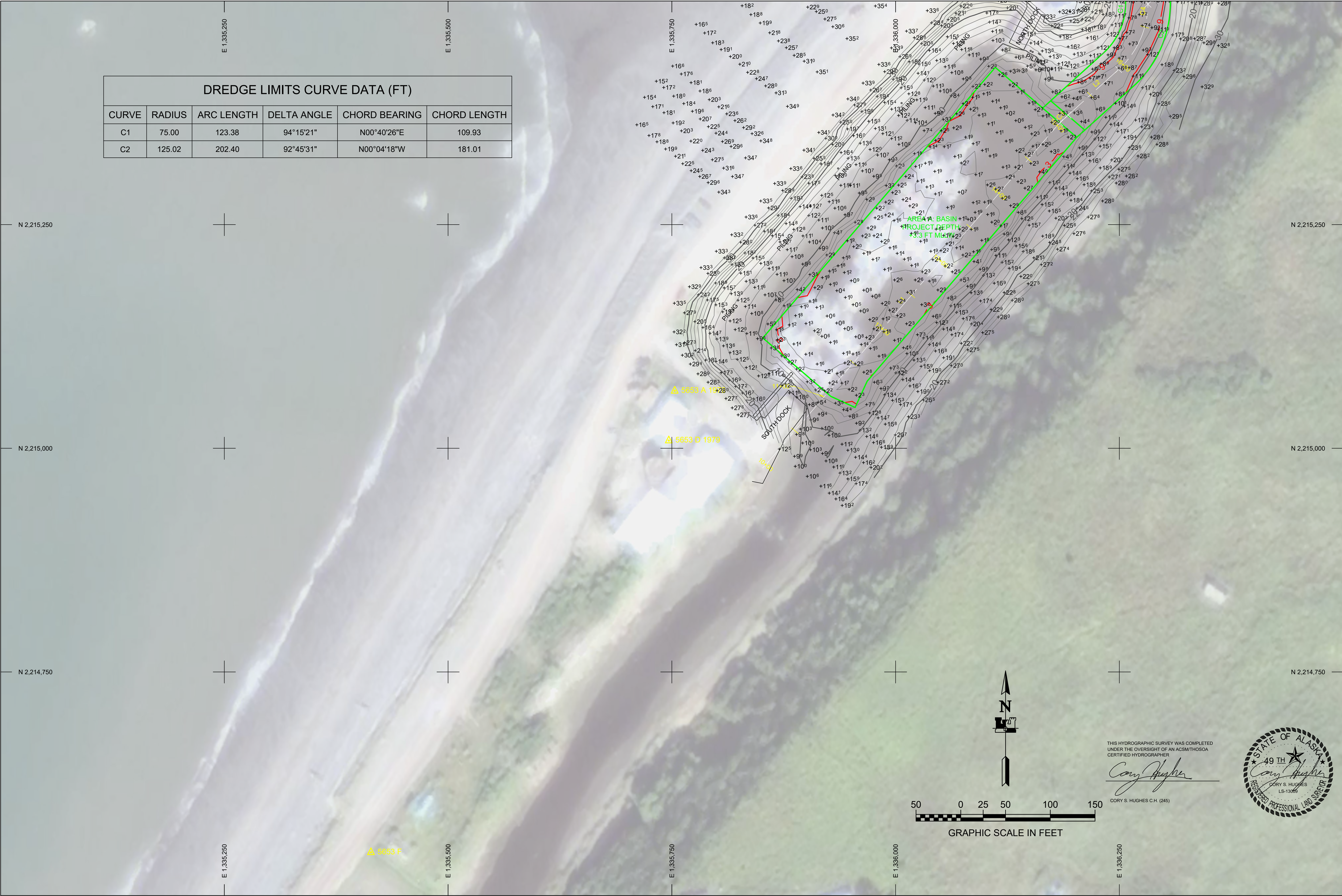
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DRAWN BY: DCA	TASK ORDER NO.:
CHECKED BY: CSH	JOB NO.:
APPROVED BY: HUGHES & ASSOCIATES	CONTRACTOR: COLUMBIA MARINE EXCAVATION
FILE: WASHLLA, ALASKA 99654	CITY: STATE: ANCHOR POINT, ALASKA
NINILCHIK POST DREDGE_2022907_REV1.DWG	

NINILCHIK, ALASKA
NINILCHIK HARBOR
POST-DREDGE SURVEY
APRIL 30 & MAY 7, 2020

REFERENCE
NUMBER:

2-NIN-92-07-56

SHEET 2 OF 5



DREDGE LIMITS CURVE DATA (FT)					
CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	75.00	123.38	94°15'21"	N00°40'26"E	109.93
C2	125.02	202.40	92°45'31"	N00°04'18"W	181.01



US ARMY CORPS
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ALASKA DISTRICT

VOLUME CALCULATION		DESCRIPTION	
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		BY	APPR.

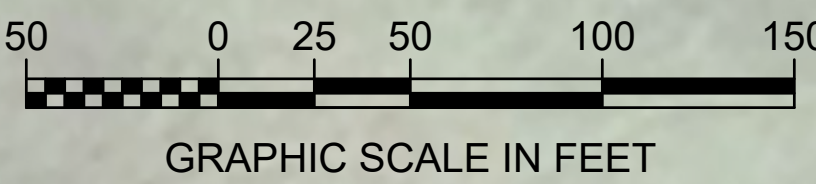
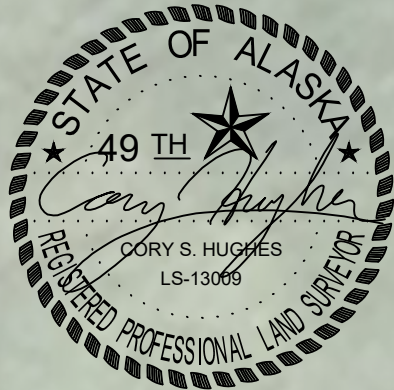
 U.S. ARMY CORPS OF ENGINEERS ALASKA DISTRICT 204 3RD STREET BER, ALASKA 99506-9888	SURVEYED BY: CSH & DCA	UPC: HN2022	CONTRACT NO.: W911K920C0003
	DRAWN BY: DCA	PLOT DATE: 06/30/2020	TASK ORDER NO.:
	CHECKED BY: CSH	SIZE: ANSI D	JOB NO.:
	APPROVED BY: THOMAS SLOAN, CHIEF GEOMATICS SECTION NINILCHIK POST DREDGE, 202007, REV1 DWG	SCALE: 1" = 50'	CONTRACTOR: HUGHES & ASSOCIATES WASILLA, ALASKA 99654

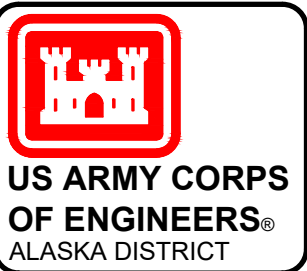
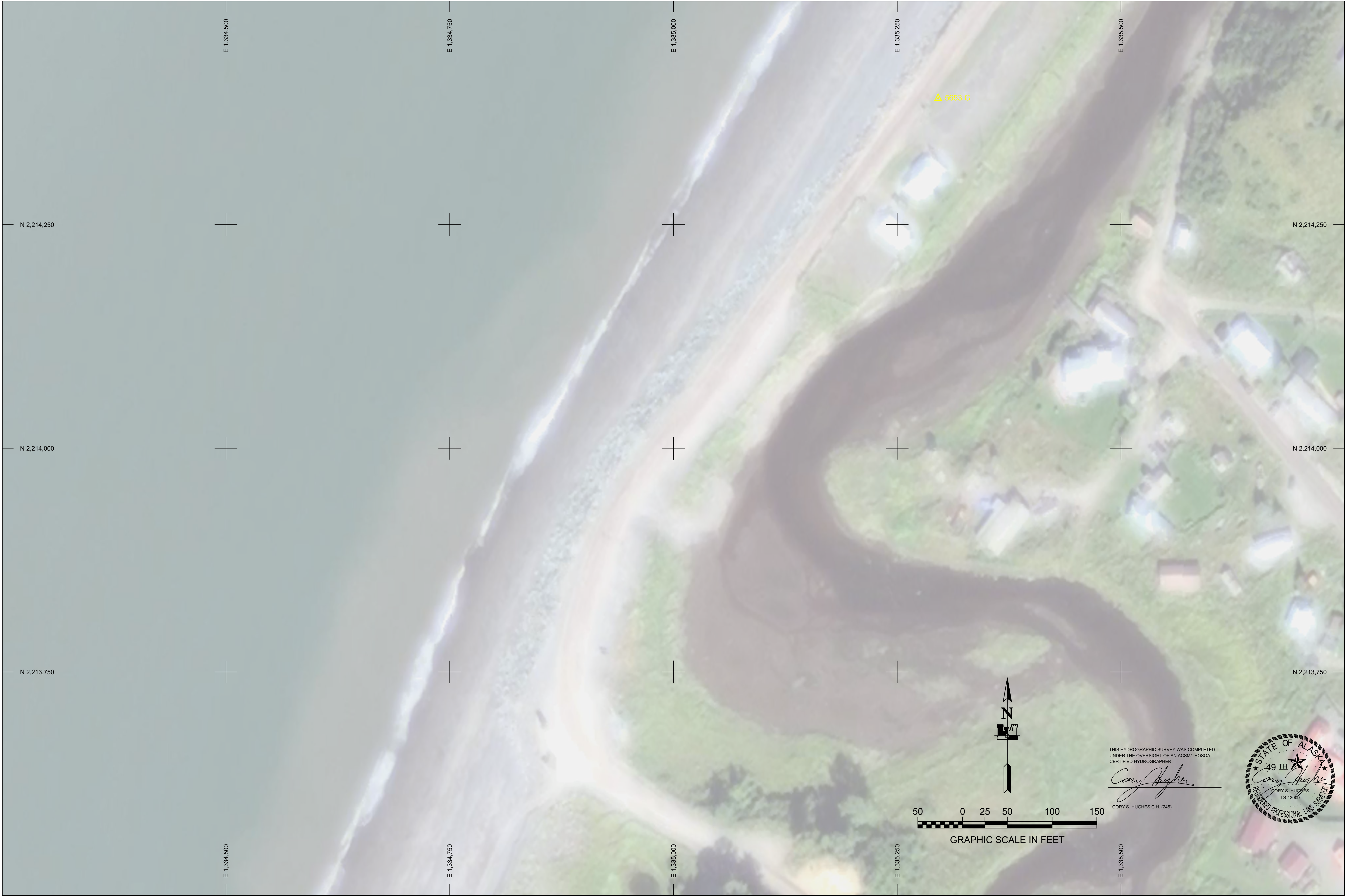
NINILCHIK, ALASKA
NINILCHIK HARBOR
POST-DREDGE SURVEY
APRIL 30 & MAY 7, 2020

REFERENCE
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2-NIN-92-07-56
SHEET 3 OF 5

THIS HYDROGRAPHIC SURVEY WAS COMPLETED
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CERTIFIED HYDROGRAPHER

Cory Hughes
CORY S. HUGHES C.H. (245)





REV.	DATE	BY	APPR.	DESCRIPTION
1	6/30/20			VOLUME CALCULATION

U.S. ARMY CORPS OF ENGINEERS ALASKA DISTRICT 204 3RD STREET JBER, ALASKA 99506-4988	SURVEYED BY: CSH & DCA DRAWN BY: DCA CHECKED BY: CSH APPROVED BY: JONAS SLOAN, CHIEF GEOMATICS SECTION NINILCHIK POST DREDGE_202007_REV1.DWG	UPC: HN2022 PLOT DATE: 06/30/2020 SIZE: ANSI D SCALE: 1" = 50'	CONTRACT NO.: IW911KB20C0003 TASK ORDER NO.: JOB NO.: CONTRACTOR: JUNAKA MARINE EXCAVATION CITY: STATE: ANCHOR POINT: ALASKA
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NINILCHIK, ALASKA
NINILCHIK HARBOR
POST-DREDGE SURVEY
APRIL 30 & MAY 7, 2020

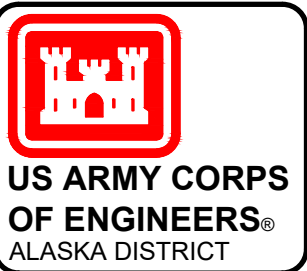
REFERENCE
NUMBER:
2-NIN-92-07-56
SHEET 4 OF 5

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CORY S. HUGHES
LS-13066





ELEVATION COLOR LEGEND			
#	MIN. ELEV.	MAX. ELEV.	COLOR
1	-4.0	-3.0	Light Blue
2	-3.0	-2.0	Dark Blue
3	-2.0	-1.0	Blue
4	-1.0	0.0	Light Blue
5	0.0	1.0	Light Green
6	1.0	2.0	Green
7	2.0	3.0	Light Green
8	3.0	4.0	Yellow
9	4.0	5.0	Light Orange
10	5.0	6.0	Orange
11	6.0	7.0	Dark Orange
12	7.0	8.0	Brown
13	8.0	9.0	Light Brown
14	9.0	10.0	Red
15	10.0	11.0	Dark Red
16	11.0	30.0	Dark Brown



REV.	DATE	BY	APPR.	DESCRIPTION
1	6/30/20			VOLUME CALCULATION

 HUGHES & ASSOCIATES 2014 3RD STREET BER, ALASKA 99506-9888	SURVEYED BY: CSH & DCA	UPC: HN2022	CONTRACT NO.: W911KB20C0003
	DRAWN BY: DCA	PLOT DATE: 06/30/2020	TASK ORDER NO.:
	CHECKED BY: CSH	SIZE: ANSI D	JOB NO.:
	APPROVED BY: THOMAS SLOAN, CHIEF GEOMATICS SECTION NINILCHIK POST DREDGE, 202007, REV1 DWG	SCALE: 1" = 150'	CONTRACTOR: ALASKA MARINE EXCAVATION CITY: STATE: ANCHOR POINT: ALASKA

NINILCHIK, ALASKA
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SHEET 5 OF 5