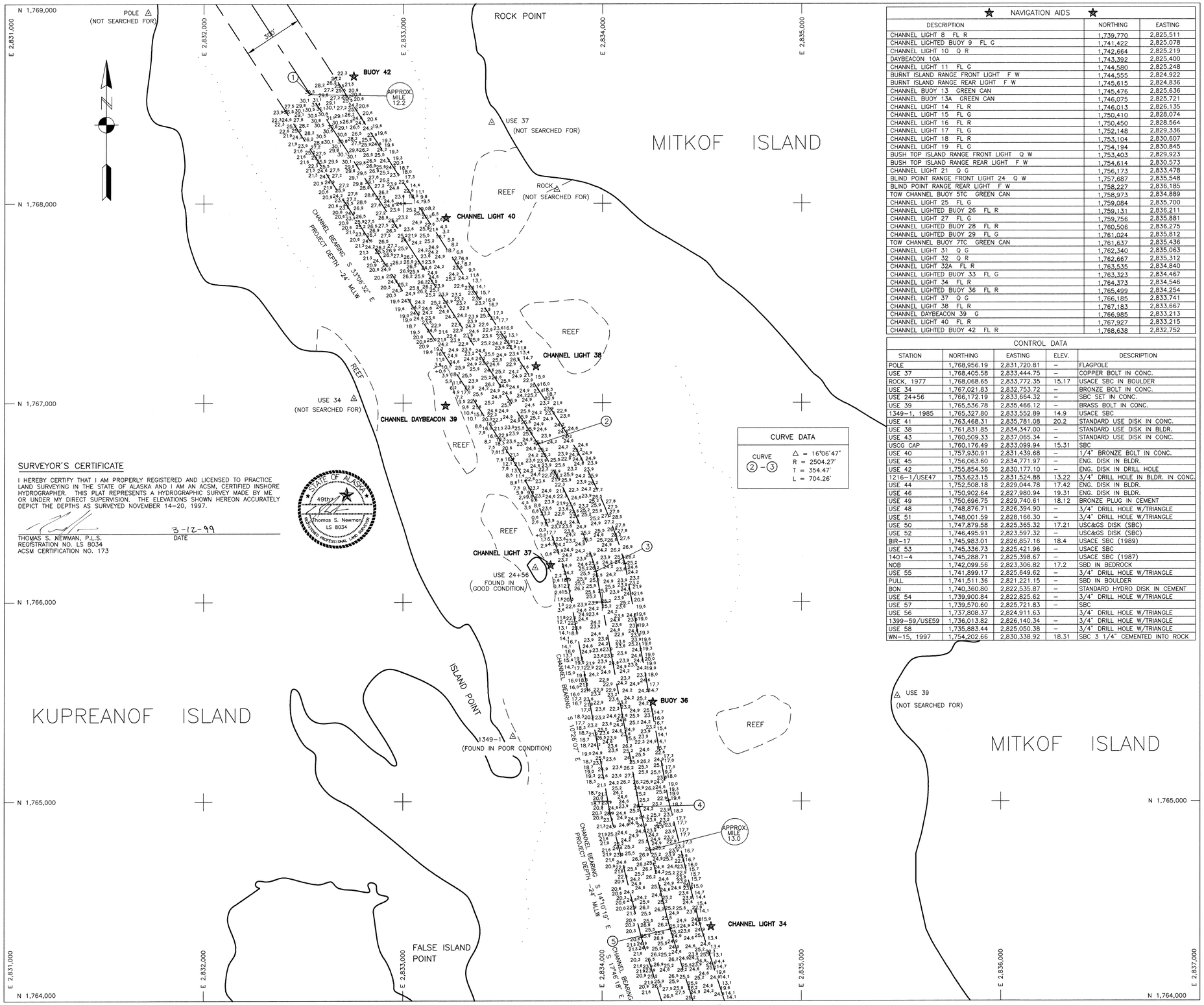


SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA AND I AM AN ACSM, CERTIFIED INSHORE HYDROGRAPHER. THIS PLAT REPRESENTS A HYDROGRAPHIC SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION. THE ELEVATIONS SHOWN HEREON ACCURATELY DEPICT THE DEPTHS AS SURVEYED NOVEMBER 14–20, 1997.

STATE OF ALASKA 49th Thomas S. Newman LS 8034 REGISTERED PROFESSIONAL LAND SURVEYOR

3-12-99

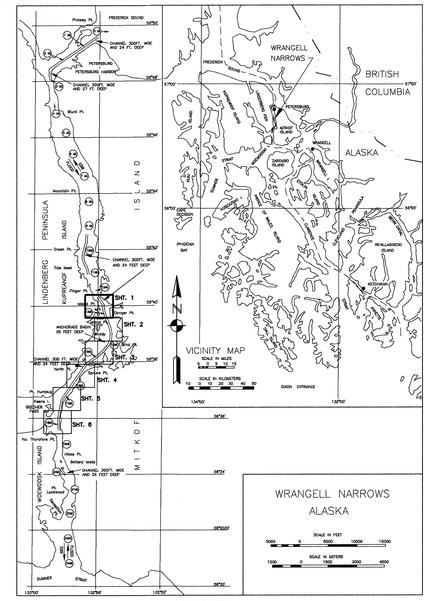
THOMAS S. NEWMAN, P.L.S.
REGISTRATION NO. LS 8034
ACSM CERTIFICATION NO. 173

DATE

CURVE DATA	
CURVE ② – ③	Δ = 16°06'47"
	R = 2504.27'
	T = 354.47'
	L = 704.26'

NAVIGATION AIDS		
DESCRIPTION	NORTHING	EASTING
CHANNEL LIGHT 8 FL R	1,739,770	2,825,511
CHANNEL LIGHTED BUOY 9 FL G	1,741,422	2,825,078
CHANNEL LIGHT 10 Q R	1,742,664	2,825,219
DAYBEACON 10A	1,743,392	2,825,400
CHANNEL LIGHT 11 FL G	1,744,580	2,825,248
BURNT ISLAND RANGE FRONT LIGHT F W	1,744,555	2,824,922
BURNT ISLAND RANGE REAR LIGHT F W	1,745,615	2,824,836
CHANNEL BUOY 13 GREEN CAN	1,745,476	2,825,636
CHANNEL BUOY 13A GREEN CAN	1,746,075	2,825,721
CHANNEL LIGHT 14 FL R	1,746,013	2,826,135
CHANNEL LIGHT 15 FL G	1,750,410	2,828,074
CHANNEL LIGHT 16 FL R	1,750,450	2,828,564
CHANNEL LIGHT 17 FL G	1,752,148	2,829,336
CHANNEL LIGHT 18 FL R	1,753,104	2,830,607
CHANNEL LIGHT 19 FL G	1,754,194	2,830,845
BUSH TOP ISLAND RANGE FRONT LIGHT Q W	1,753,403	2,829,923
BUSH TOP ISLAND RANGE REAR LIGHT F W	1,754,614	2,830,573
CHANNEL LIGHT 21 Q G	1,756,173	2,833,478
BLIND POINT RANGE FRONT LIGHT 24 Q W	1,757,687	2,835,548
BLIND POINT RANGE REAR LIGHT F W	1,758,227	2,836,185
TOW CHANNEL BUOY 5TC GREEN CAN	1,758,973	2,834,889
CHANNEL LIGHT 25 FL G	1,759,084	2,835,700
CHANNEL LIGHTED BUOY 26 FL R	1,759,131	2,836,211
CHANNEL LIGHT 27 FL G	1,759,756	2,835,881
CHANNEL LIGHTED BUOY 28 FL R	1,760,506	2,836,275
CHANNEL LIGHTED BUOY 29 FL G	1,761,024	2,835,812
TOW CHANNEL BUOY 7TC GREEN CAN	1,761,637	2,835,436
CHANNEL LIGHT 31 Q G	1,762,340	2,835,063
CHANNEL LIGHT 32 Q R	1,762,667	2,835,312
CHANNEL LIGHT 32A FL R	1,763,535	2,834,840
CHANNEL LIGHTED BUOY 33 FL G	1,763,323	2,834,467
CHANNEL LIGHT 34 FL R	1,764,373	2,834,546
CHANNEL LIGHTED BUOY 36 FL R	1,765,499	2,834,254
CHANNEL LIGHT 37 Q G	1,766,185	2,833,741
CHANNEL LIGHT 38 FL R	1,767,183	2,833,667
CHANNEL DAYBEACON 39 G	1,766,985	2,833,213
CHANNEL LIGHT 40 FL R	1,767,927	2,833,215
CHANNEL LIGHTED BUOY 42 FL R	1,768,638	2,832,752

CONTROL DATA				
STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
POLE	1,768,956.19	2,831,720.81	–	FLAGPOLE
USE 37	1,768,405.58	2,833,444.75	–	COPPER BOLT IN CONC.
ROCK, 1977	1,768,068.65	2,833,772.35	15.17	USACE SBC IN BOULDER
USE 34	1,767,021.83	2,832,753.72	–	BRONZE BOLT IN CONC.
USE 24+56	1,766,172.19	2,833,664.32	–	SBC SET IN CONC.
USE 39	1,765,536.78	2,835,466.12	–	BRASS BOLT IN CONC.
1349–1, 1985	1,765,327.80	2,833,552.89	14.9	USACE SBC
USE 41	1,763,468.31	2,835,781.08	20.2	STANDARD USE DISK IN CONC.
USE 38	1,761,831.85	2,834,347.00	–	STANDARD USE DISK IN BLDR.
USE 43	1,760,509.33	2,837,065.34	–	STANDARD USE DISK IN CONC.
USCG CAP	1,760,176.49	2,833,099.94	15.31	SBC
USE 40	1,757,930.91	2,831,439.68	–	1/4" BRONZE BOLT IN CONC.
USE 45	1,756,063.60	2,834,771.97	–	ENG. DISK IN BLDR.
USE 42	1,755,854.36	2,830,177.10	–	ENG. DISK IN DRILL HOLE
1216–1/USE47	1,753,623.15	2,831,524.88	13.22	3/4" DRILL HOLE IN BLDR. IN CONC.
USE 44	1,752,508.18	2,829,044.78	17.42	ENG. DISK IN BLDR.
USE 46	1,750,902.64	2,827,980.94	19.31	ENG. DISK IN BLDR.
USE 49	1,750,696.75	2,829,740.61	18.12	BRONZE PLUG IN CEMENT
USE 48	1,748,876.71	2,826,394.90	–	3/4" DRILL HOLE W/TRIANGLE
USE 51	1,748,001.59	2,828,166.30	–	3/4" DRILL HOLE W/TRIANGLE
USE 50	1,747,879.58	2,825,365.32	17.21	USC&GS DISK (SBC)
USE 52	1,746,495.91	2,823,597.32	–	USC&GS DISK (SBC)
BIR–17	1,745,983.01	2,826,857.16	18.4	USACE SBC (1989)
USE 53	1,745,336.73	2,825,421.96	–	USACE SBC
1401–4	1,745,288.71	2,825,398.67	–	USACE SBC (1987)
NOB	1,742,099.56	2,823,306.82	17.2	SBD IN BEDROCK
USE 55	1,741,899.17	2,825,649.62	–	3/4" DRILL HOLE W/TRIANGLE
PULL	1,741,511.36	2,821,221.15	–	SBD IN BOULDER
BON	1,740,360.80	2,822,535.87	–	STANDARD HYDRO DISK IN CEMENT
USE 54	1,739,900.84	2,822,825.62	–	3/4" DRILL HOLE W/TRIANGLE
USE 57	1,739,570.60	2,825,721.83	–	SBC
USE 56	1,737,808.37	2,824,911.63		3/4" DRILL HOLE W/TRIANGLE
1399–59/USE59	1,736,013.82	2,826,140.34	–	3/4" DRILL HOLE W/TRIANGLE
USE 58	1,735,883.44	2,825,050.38	–	3/4" DRILL HOLE W/TRIANGLE
WN–15, 1997	1,754,202.66	2,830,338.92	18.31	SBC 3 1/4" CEMENTED INTO ROCK



NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, IN FEET, NORTH AMERICAN DATUM OF 1927. CONTROL IS BASED ON THE PUBLISHED VALUE OF EXISTING USACE MONUMENTATION. HOLDING BC "WN–15" AS N 1,754,202.66, E 2,830,338.92.
2. VERTICAL CONTROL IS IN FEET, BASED ON MEAN LOWER LOW WATER (MLLW), HOLDING NATIONAL OCEAN SURVEY (NOS) BENCHES. BENCHES WERE RECOVERED AT NOS TIDE STATION 945–1348, "FINGER POINT, WRANGELL NARROWS" DATED 3/14/1951, AND NOS TIDE STATION 945–1317, "ANCHOR POINT, WRANGELL NARROWS" DATED 3/14/1951, AND NOS TIDE STATION 945–1287, "BEECHER PASS, WRANGELL NARROWS" DATED 3/14/1951.
3. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. THIS SURVEY WAS PERFORMED BETWEEN NOVEMBER 14–20, 1997. SOUNDINGS WERE COLLECTED USING A RESON 9001S MULTIBEAM DEPTHSOUNDER. POSITION OF THE VESSEL WAS TRACKED UTILIZING A TRIMBLE GPS RECEIVER WITH DGPS CORRECTORS FROM A TRIMBLE 4000SSE SET AT CONTROL POINT "WN–15". ATTITUDE OF THE VESSEL WAS MEASURED UTILIZING A SEATEX MRU–5 MOTION SENSOR. HEADING OF THE VESSEL WAS MEASURED USING A SG BROWN 1000S GYROCOMPASS. DATA WAS COLLECTED USING HYPACK AND ISIS SOFTWARE. SOUNDINGS WERE REDUCED WITH CARIS HIPS. SOUNDINGS ADJUSTED FOR TIDE USING TIDE DATA COLLECTED WITH ENDECO 1150T TIDE GAUGES WERE AT "FINGER POINT" (945–1348), "ANCHOR POINT" (945–1317) AND "BEECHER PASS" (945–1287).
5. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.

VOLUME COMPUTATIONS	
PROJECT DEPTH –24 MLLW (MAIN CHANNEL) & PROJECT DEPTH –26 MLLW (ANCHORAGE BASIN)	
MINIMUM PAY LINE (–24' MLLW & –26' MLLW)	24138 (cubic yards)
Between MINIMUM PAY LINE and MAXIMUM PAY LINE (–25' MLLW & –27 MLLW)	29945 (cubic yards)
	54083 (cubic yards)

* Volumes are within Project Limits and do not include SIDE SLOPES.

SCALE IN FEET

200 0 200 400 600 800

CENTERLINE OF 300 FOOT WIDE CHANNEL					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	1,768,548	2,832,534	10 (PT/PC)	1,759,604	2,836,082
2 (PT)	1,766,794	2,833,677	11 (PT)	1,756,830	2,834,567
3 (PC)	1,766,155	2,833,969	12	1,754,121	2,831,177
4	1,764,973	2,834,186	13	1,750,551	2,828,357
5	1,764,359	2,834,341	14	1,746,065	2,825,945
6	1,763,792	2,834,523	15	1,742,760	2,825,047
7	1,763,212	2,834,766	16	1,741,380	2,825,190
8	1,762,626	2,835,081	17	1,739,373	2,825,281
9 (PT)	1,762,019	2,835,495			

REV.	DATE	DESCRIPTION	BY	APP'D.
1	3/3/99	CORRECTED SOUNDINGS ON SHEET 1 OF 6.	RLW	TSN

CONTRACTOR TERRA SURVEYS, LLC
CONTRACT NO. DACW85–96–D–0003
CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: RK
DRAWN: MJP
CHECKED: TSN
SUBMITTED: AB

WRANGELL NARROWS, ALASKA
BUOY 8 TO BUOY 42
(THIS SHEET APPROXIMATELY MILE 12.2 TO 13.1)
PROJECT CONDITION SURVEY
NOVEMBER 14–20, 1997

RECOMMENDED: Andrew H. Brewer
PROJECT MANAGER

APPROVED: William Quindel
CHIEF OPERATIONS–READINESS BRANCH

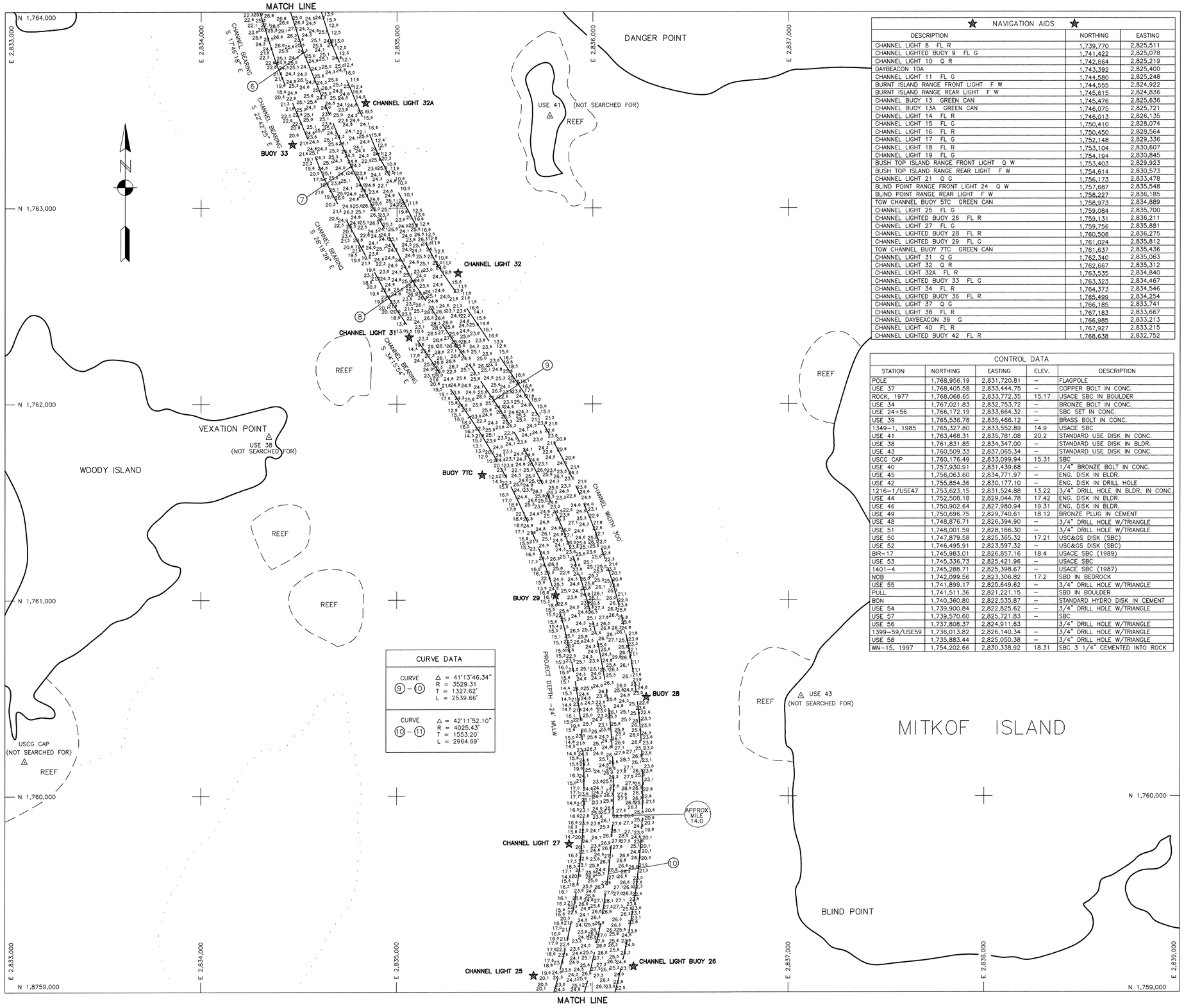
DATE: 3 May 1999

SURVEY NO. 1767–98

SCALE: 1" = 200'

SHEET 1 OF 6

DRAWING NO. Revised 3/3/99



CURVE DATA	
CURVE ⑨ – ⑩	Δ = 41°13'46.34" R = 3529.31 T = 1327.62' L = 2539.66'
CURVE ⑩ – ⑪	Δ = 42°11'52.10" R = 4025.43' T = 1553.20' L = 2964.69'

★ NAVIGATION AIDS ★		
DESCRIPTION	NORTHING	EASTING
CHANNEL LIGHT 8 FL R	1,739,770	2,825,511
CHANNEL LIGHTED BUOY 9 FL G	1,741,422	2,825,078
CHANNEL LIGHT 10 Q R	1,742,664	2,825,219
DAYBEACON 10A	1,743,392	2,825,400
CHANNEL LIGHT 11 FL G	1,744,580	2,825,248
BURNT ISLAND RANGE FRONT LIGHT F W	1,744,555	2,824,922
BURNT ISLAND RANGE REAR LIGHT F W	1,745,615	2,824,836
CHANNEL BUOY 13 GREEN CAN	1,745,476	2,825,636
CHANNEL BUOY 13A GREEN CAN	1,746,075	2,825,721
CHANNEL LIGHT 14 FL R	1,746,013	2,826,135
CHANNEL LIGHT 15 FL G	1,750,410	2,828,074
CHANNEL LIGHT 16 FL R	1,750,450	2,828,564
CHANNEL LIGHT 17 FL G	1,752,148	2,829,336
CHANNEL LIGHT 18 FL R	1,753,104	2,830,607
CHANNEL LIGHT 19 FL G	1,754,194	2,830,845
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BUSH TOP ISLAND RANGE REAR LIGHT F W	1,754,614	2,830,573
CHANNEL LIGHT 21 Q G	1,756,173	2,833,478
BLIND POINT RANGE FRONT LIGHT 24 Q W	1,757,687	2,835,548
BLIND POINT RANGE REAR LIGHT F W	1,758,227	2,836,185
TOW CHANNEL BUOY 5TC GREEN CAN	1,758,973	2,834,889
CHANNEL LIGHT 25 FL G	1,759,084	2,835,700
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CHANNEL LIGHT 31 Q G	1,762,340	2,835,063
CHANNEL LIGHT 32 Q R	1,762,667	2,835,312
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CHANNEL LIGHT 37 Q G	1,766,185	2,833,741
CHANNEL LIGHT 38 FL R	1,767,183	2,833,667
CHANNEL DAYBEACON 39 G	1,766,985	2,833,213
CHANNEL LIGHT 40 FL R	1,767,927	2,833,215
CHANNEL LIGHTED BUOY 42 FL R	1,768,638	2,832,752

CONTROL DATA				
STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
POLE	1,768,956.19	2,831,720.81	–	FLAGPOLE
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ROCK, 1977	1,768,068.65	2,833,772.35	15.17	USACE SBC IN BOULDER
USE 34	1,767,021.83	2,832,753.72	–	BRONZE BOLT IN CONC.
USE 24+56	1,766,172.19	2,833,664.32	–	SBC SET IN CONC.
USE 39	1,765,536.78	2,835,466.12	–	BRASS BOLT IN CONC.
1349–1, 1985	1,765,327.80	2,833,552.89	14.9	USACE SBC
USE 41	1,763,468.31	2,835,781.08	20.2	STANDARD USE DISK IN CONC.
USE 38	1,761,831.85	2,834,347.00	–	STANDARD USE DISK IN BLDR.
USE 43	1,760,509.33	2,837,065.34	–	STANDARD USE DISK IN CONC.
USCG CAP	1,760,176.49	2,833,099.94	15.31	SBC
USE 40	1,757,930.91	2,831,439.68	–	1/4" BRONZE BOLT IN CONC.
USE 45	1,756,063.60	2,834,771.97	–	ENG. DISK IN BLDR.
USE 42	1,755,854.36	2,830,177.10	–	ENG. DISK IN DRILL HOLE
1216–1/USE47	1,753,623.15	2,831,524.88	13.22	3/4" DRILL HOLE IN BLDR. IN CONC.
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USE 48	1,748,876.71	2,826,394.90	–	3/4" DRILL HOLE W/TRIANGLE
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USE 50	1,747,879.58	2,825,365.32	17.21	USC&GS DISK (SBC)
USE 52	1,746,495.91	2,823,597.32	–	USC&GS DISK (SBC)
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1401–4	1,745,288.71	2,825,398.67	–	USACE SBC (1987)
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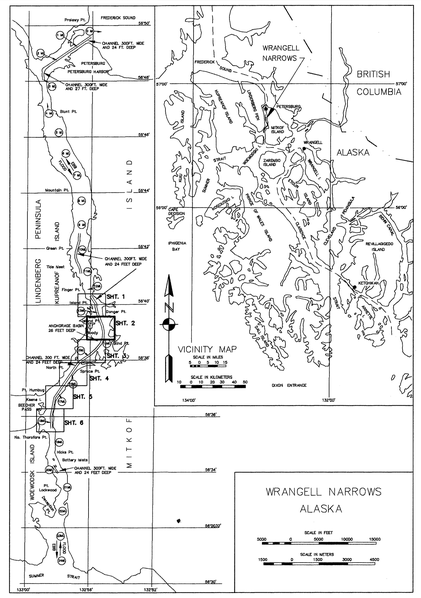
USE 55	1,741,899.17	2,825,649.62	–	3/4" DRILL HOLE W/TRIANGLE
PULL	1,741,511.36	2,821,221.15	–	SBD IN BOULDER
BON	1,740,360.80	2,822,535.87	–	STANDARD HYDRO DISK IN CEMENT
USE 54	1,739,900.84	2,822,825.62	–	3/4" DRILL HOLE W/TRIANGLE
USE 57	1,739,570.60	2,825,721.83	–	SBC
USE 56	1,737,808.37	2,824,911.63	–	3/4" DRILL HOLE W/TRIANGLE
1399–59/USE59	1,736,013.82	2,826,140.34	–	3/4" DRILL HOLE W/TRIANGLE
USE 58	1,735,883.44	2,825,050.38	–	3/4" DRILL HOLE W/TRIANGLE
WN–15, 1997	1,754,202.66	2,830,338.92	18.31	SBC 3 1/4" CEMENTED INTO ROCK



NOTES

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5. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.

SCALE IN FEET

200 0 200 400 600 800

CENTERLINE OF 300 FOOT WIDE CHANNEL					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	1,768,548	2,832,534	10 (PT/PC)	1,759,604	2,836,082
2 (PT)	1,766,794	2,833,677	11 (PT)	1,757,046	2,834,718
3 (PC)	1,766,155	2,833,969	12	1,753,477	2,830,588
4	1,764,973	2,834,186	13	1,750,493	2,828,327
5	1,764,359	2,834,341	14	1,746,065	2,825,945
6	1,763,792	2,834,523	15	1,742,760	2,825,047
7	1,763,212	2,834,766	16	1,741,380	2,825,190
8	1,762,626	2,835,081	17	1,739,373	2,825,281
9 (PT)	1,762,019	2,835,495			

REV.	DATE	DESCRIPTION	BY	APP'D.

CONTRACT NO. DACW85–96–D–0003

CONTRACTOR TERRA SURVEYS, LLC

CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: RK

DRAWN: MJP

CHECKED: TSN

SUBMITTED:

WRANGELL NARROWS, ALASKA
BUOY 8 TO BUOY 42
(THIS SHEET APPROXIMATELY MILE 13.1 TO 14.0)
PROJECT CONDITION SURVEY
NOVEMBER 14–20, 1997

RECOMMENDED: Andrew H. Brewer
PROJECT MANAGER

APPROVED: R. Allen Chandler
CHIEF OPERATIONS–READINESS BRANCH

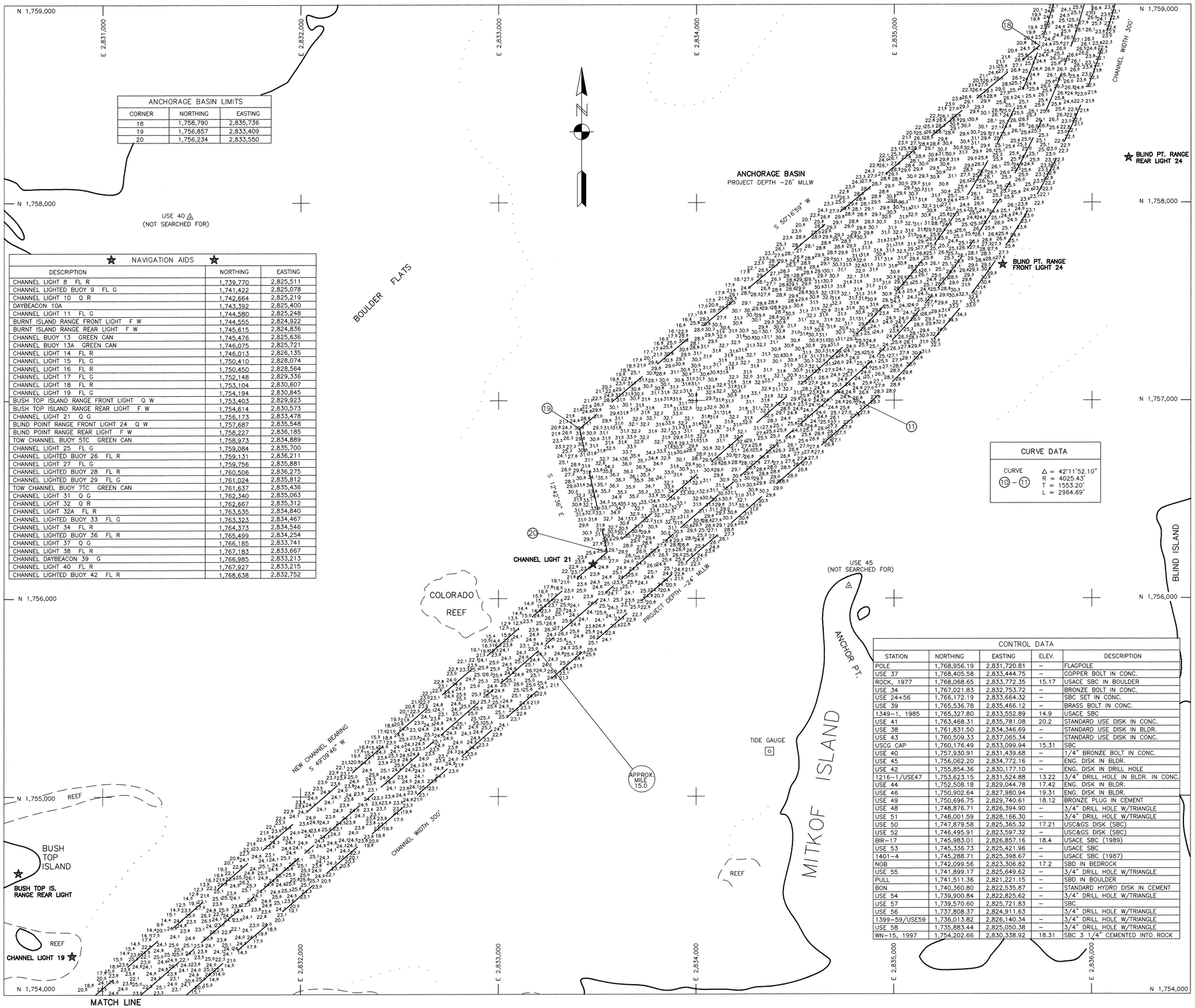
DATE: 9 March 1998

SURVEY NO. 1767–98

SCALE: 1" = 200'

SHEET 2 OF 6

DRAWING NO.



ANCHORAGE BASIN LIMITS		
CORNER	NORTHING	EASTING
18	1,758,790	2,835,736
19	1,756,857	2,833,409
20	1,756,234	2,833,550

NAVIGATION AIDS		
DESCRIPTION	NORTHING	EASTING
CHANNEL LIGHT 8 FL R	1,739,770	2,825,511
CHANNEL LIGHTED BUOY 9 FL G	1,741,422	2,825,078
CHANNEL LIGHT 10 Q R	1,742,664	2,825,219
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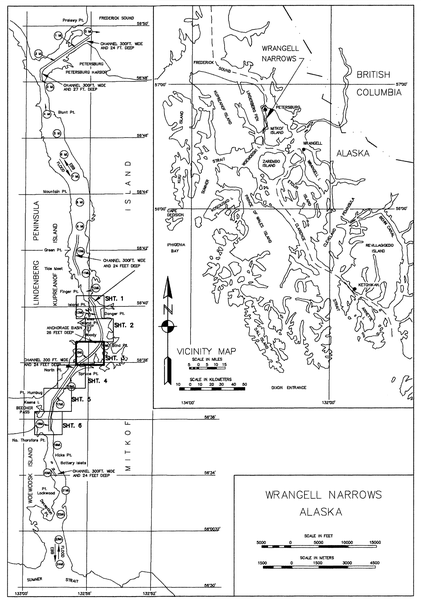
CHANNEL LIGHT 16 FL R	1,750,450	2,828,564
CHANNEL LIGHT 17 FL G	1,752,148	2,829,336
CHANNEL LIGHT 18 FL R	1,753,104	2,830,607
CHANNEL LIGHT 19 FL G	1,754,194	2,830,845
BUSH TOP ISLAND RANGE FRONT LIGHT Q W	1,753,403	2,829,923
BUSH TOP ISLAND RANGE REAR LIGHT F W	1,754,614	2,830,573
CHANNEL LIGHT 21 Q G	1,756,173	2,833,478
BLIND POINT RANGE FRONT LIGHT 24 Q W	1,757,687	2,835,548
BLIND POINT RANGE REAR LIGHT F W	1,758,227	2,836,185
TOW CHANNEL BUOY 5TC GREEN CAN	1,758,973	2,834,889
CHANNEL LIGHT 25 FL G	1,759,084	2,835,700
CHANNEL LIGHTED BUOY 26 FL R	1,759,131	2,836,211
CHANNEL LIGHT 27 FL G	1,759,756	2,835,881
CHANNEL LIGHTED BUOY 28 FL R	1,760,506	2,836,275
CHANNEL LIGHTED BUOY 29 FL G	1,761,024	2,835,812
TOW CHANNEL BUOY 7TC GREEN CAN	1,761,637	2,835,436
CHANNEL LIGHT 31 Q G	1,762,340	2,835,063
CHANNEL LIGHT 32 Q R	1,762,667	2,835,312
CHANNEL LIGHT 32A FL R	1,763,535	2,834,840
CHANNEL LIGHTED BUOY 33 FL G	1,763,323	2,834,467
CHANNEL LIGHT 34 FL R	1,764,373	2,834,546
CHANNEL LIGHTED BUOY 36 FL R	1,765,499	2,834,254
CHANNEL LIGHT 37 Q G	1,766,185	2,833,741
CHANNEL LIGHT 38 FL R	1,767,183	2,833,667
CHANNEL DAYBEACON 39 G	1,766,985	2,833,213
CHANNEL LIGHT 40 FL R	1,767,927	2,833,215
CHANNEL LIGHTED BUOY 42 FL R	1,768,638	2,832,752

CURVE DATA	
CURVE	Δ = 42°11'52.10"
10 – 11	R = 4025.43'
	T = 1553.20'
	L = 2964.69'



NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, IN FEET, NORTH AMERICAN DATUM OF 1927. CONTROL IS BASED ON THE PUBLISHED VALUE OF EXISTING USACE MONUMENTATION. HOLDING BC "WN–15" AS N 1,754,202.66, E 2,830,338.92.
2. VERTICAL CONTROL IS IN FEET, BASED ON MEAN LOWER LOW WATER (MLLW), HOLDING NATIONAL OCEAN SURVEY (NOS) BENCHES. BENCHES WERE RECOVERED AT NOS TIDE STATION 945–1348, "FINGER POINT, WRANGELL NARROWS" DATED 3/14/1951, AND NOS TIDE STATION 945–1317, "ANCHOR POINT, WRANGELL NARROWS" DATED 3/14/1951, AND NOS TIDE STATION 945–1287, "BEECHER PASS, WRANGELL NARROWS" DATED 3/14/1951.
3. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. THIS SURVEY WAS PERFORMED BETWEEN NOVEMBER 14–20, 1997. SOUNDINGS WERE COLLECTED USING A RESON 9001S MULTIBEAM DEPTHSOUNDER. POSITION OF THE VESSEL WAS TRACKED UTILIZING A TRIMBLE GPS RECEIVER WITH DGPS CORRECTORS FROM A TRIMBLE 4000SSE SET AT CONTROL POINT "WN–15". ATTITUDE OF THE VESSEL WAS MEASURED UTILIZING A SEATEX MRU–5 MOTION SENSOR. HEADING OF THE VESSEL WAS MEASURED USING A SG BROWN 1000S GYROCOMPASS. DATA WAS COLLECTED USING HYPACK AND ISIS SOFTWARE. SOUNDINGS WERE REDUCED WITH CARIS HIPS. SOUNDINGS ADJUSTED FOR TIDE USING TIDE DATA COLLECTED WITH ENDECO 1150T TIDE GAUGES WERE AT "FINGER POINT" (945–1348), "ANCHOR POINT" (945–1317) AND "BEECHER PASS" (945–1287).
5. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.

SCALE IN FEET

200 0 200 400 600 800

ANCHORAGE BASIN LIMITS		
CORNER	NORTHING	EASTING
18	1,758,790	2,835,736
19	1,756,857	2,833,409
20	1,756,234	2,833,550

CENTERLINE OF 300 FOOT WIDE CHANNEL					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	1,768,548	2,832,534	10 (PT/PC)	1,759,604	2,836,082
2 (PT)	1,766,794	2,833,677	11 (PT)	1,757,046	2,834,718
3 (PC)	1,766,155	2,833,969	12	1,753,477	2,830,588
4	1,764,973	2,834,186	13	1,750,493	2,828,327
5	1,764,359	2,834,341	14	1,746,065	2,825,945
6	1,763,792	2,834,523	15	1,742,760	2,825,047
7	1,763,212	2,834,766	16	1,741,380	2,825,190
8	1,762,626	2,835,081	17	1,739,373	2,825,281
9 (PT)	1,762,019	2,835,495			

CONTROL DATA				
STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
POLE	1,768,956.19	2,831,720.81	–	FLAGPOLE
USE 37	1,768,405.58	2,833,444.75	–	COPPER BOLT IN CONC.
ROCK, 1977	1,768,068.65	2,833,772.35	15.17	USACE SBC IN BOULDER
USE 34	1,767,021.83	2,832,753.72	–	BRONZE BOLT IN CONC.
USE 24+56	1,766,172.19	2,833,664.32	–	SBC SET IN CONC.
USE 39	1,765,536.78	2,835,466.12	–	BRASS BOLT IN CONC.
1349–1, 1985	1,765,327.80	2,833,552.89	14.9	USACE SBC
USE 41	1,763,468.31	2,835,781.08	20.2	STANDARD USE DISK IN CONC.
USE 38	1,761,831.50	2,834,346.69	–	STANDARD USE DISK IN BLDR.
USE 43	1,760,509.33	2,837,065.34	–	STANDARD USE DISK IN CONC.
USCG CAP	1,760,176.49	2,833,099.94	15.31	SBC
USE 40	1,757,930.91	2,831,439.68	–	1/4" BRONZE BOLT IN CONC.
USE 45	1,756,062.20	2,834,772.16	–	ENG. DISK IN BLDR.
USE 42	1,755,854.36	2,830,177.10	–	ENG. DISK IN DRILL HOLE
1216–1/USE47	1,753,623.15	2,831,524.88	13.22	3/4" DRILL HOLE IN BLDR. IN CONC.
USE 44	1,752,508.18	2,829,044.78	17.42	ENG. DISK IN BLDR.
USE 46	1,750,902.64	2,827,980.94	19.31	ENG. DISK IN BLDR.
USE 49	1,750,696.75	2,829,740.61	18.12	BRONZE PLUG IN CEMENT
USE 48	1,748,876.71	2,826,394.90	–	3/4" DRILL HOLE W/TRIANGLE
USE 51	1,748,001.59	2,828,166.30	–	3/4" DRILL HOLE W/TRIANGLE
USE 50	1,747,879.58	2,825,365.32	17.21	USC&GS DISK (SBC)
USE 52	1,746,495.91	2,823,597.32	–	USC&GS DISK (SBC)
BIR–17	1,745,983.01	2,826,857.16	18.4	USACE SBC (1989)
USE 53	1,745,336.73	2,825,421.96	–	USACE SBC
1401–4	1,745,288.71	2,825,398.67	–	USACE SBC (1987)
NOB	1,742,099.56	2,823,306.82	17.2	SBD IN BEDROCK
USE 55	1,741,899.17	2,825,649.62	–	3/4" DRILL HOLE W/TRIANGLE
PULL	1,741,511.36	2,821,221.15	–	SBD IN BOULDER
BON	1,740,360.80	2,822,535.87	–	STANDARD HYDRO DISK IN CEMENT
USE 54	1,739,900.84	2,822,825.62	–	3/4" DRILL HOLE W/TRIANGLE
USE 57	1,739,570.60	2,825,721.83	–	SBC
USE 56	1,737,808.37	2,824,911.63	–	3/4" DRILL HOLE W/TRIANGLE
1399–59/USE59	1,736,013.82	2,826,140.34	–	3/4" DRILL HOLE W/TRIANGLE
USE 58	1,735,883.44	2,825,050.38	–	3/4" DRILL HOLE W/TRIANGLE
WN–15, 1997	1,754,202.66	2,830,338.92	18.31	SBC 3 1/4" CEMENTED INTO ROCK

REV.	DATE	DESCRIPTION	BY	APP'D.

CONTRACTOR: TERRA SURVEYS, LLC
CONTRACT NO. DACW85–96–D–0003
CITY PALMER STATE ALASKA

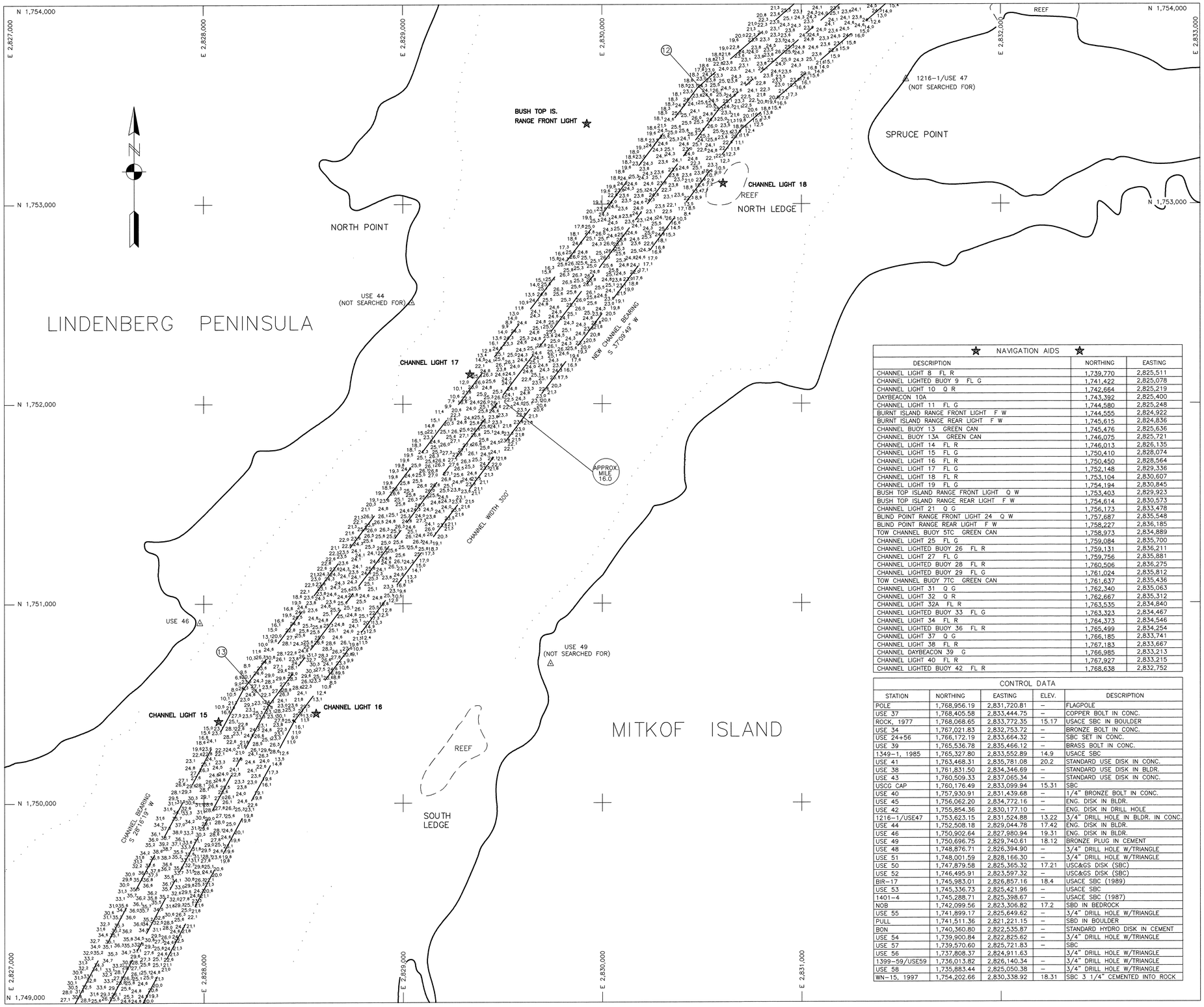
ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

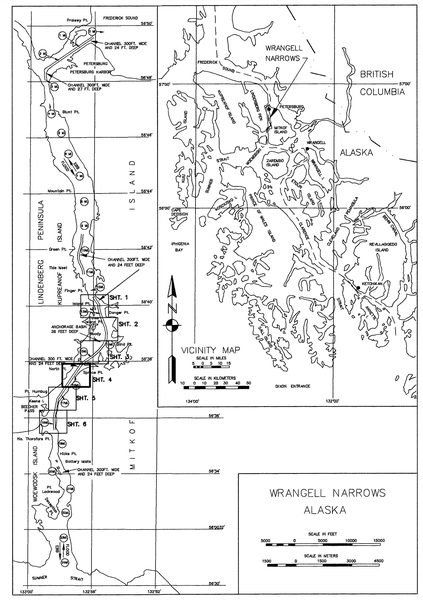
SURVEYED: RK
DRAWN: MJP
CHECKED: TSN
SUBMITTED:

WRANGELL NARROWS, ALASKA
BUOY 8 TO BUOY 42
(THIS SHEET APPROXIMATELY MILE 14.0 TO 15.4)
PROJECT CONDITION SURVEY
NOVEMBER 14–20, 1997

RECOMMENDED: Andrew H. Breve
PROJECT MANAGER
APPROVED: Allen Churchill
CHIEF OPERATIONS–READINESS BRANCH
DATE: 9 March 1998

SURVEY NO. 1767–98
SCALE: 1" = 200'
SHEET 3 OF 6





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5. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.

SCALE IN FEET

200 0 200 400 600 800

★ NAVIGATION AIDS ★

DESCRIPTION	NORTHING	EASTING
CHANNEL LIGHT 8 FL R	1,739,770	2,825,511
CHANNEL LIGHTED BUOY 9 FL G	1,741,422	2,825,078
CHANNEL LIGHT 10 Q R	1,742,664	2,825,219
DAYBEACON 10A	1,743,392	2,825,400
CHANNEL LIGHT 11 FL G	1,744,580	2,825,248
BURNT ISLAND RANGE FRONT LIGHT F W	1,744,555	2,824,922
BURNT ISLAND RANGE REAR LIGHT F W	1,745,615	2,824,836
CHANNEL BUOY 13 GREEN CAN	1,745,476	2,825,636
CHANNEL BUOY 13A GREEN CAN	1,746,075	2,825,721
CHANNEL LIGHT 14 FL R	1,746,013	2,826,135
CHANNEL LIGHT 15 FL G	1,750,410	2,828,074
CHANNEL LIGHT 16 FL R	1,750,450	2,828,564
CHANNEL LIGHT 17 FL G	1,752,148	2,829,336
CHANNEL LIGHT 18 FL R	1,753,104	2,830,607
CHANNEL LIGHT 19 FL G	1,754,194	2,830,845
BUSH TOP ISLAND RANGE FRONT LIGHT Q W	1,753,403	2,829,923
BUSH TOP ISLAND RANGE REAR LIGHT F W	1,754,614	2,830,573
CHANNEL LIGHT 21 Q G	1,756,173	2,833,478
BLIND POINT RANGE FRONT LIGHT 24 Q W	1,757,687	2,835,548
BLIND POINT RANGE REAR LIGHT F W	1,758,227	2,836,185
TOW CHANNEL BUOY 5TC GREEN CAN	1,758,973	2,834,889
CHANNEL LIGHT 25 FL G	1,759,084	2,835,700
CHANNEL LIGHTED BUOY 26 FL R	1,759,131	2,836,211
CHANNEL LIGHT 27 FL G	1,759,756	2,835,881
CHANNEL LIGHTED BUOY 28 FL R	1,760,506	2,836,275
CHANNEL LIGHTED BUOY 29 FL G	1,761,024	2,835,812
TOW CHANNEL BUOY 7TC GREEN CAN	1,761,637	2,835,436
CHANNEL LIGHT 31 Q G	1,762,340	2,835,063
CHANNEL LIGHT 32 Q R	1,762,667	2,835,312
CHANNEL LIGHT 32A FL R	1,763,535	2,834,840
CHANNEL LIGHTED BUOY 33 FL G	1,763,323	2,834,467
CHANNEL LIGHT 34 FL R	1,764,373	2,834,546
CHANNEL LIGHTED BUOY 36 FL R	1,765,499	2,834,254
CHANNEL LIGHT 37 Q G	1,766,185	2,833,741
CHANNEL LIGHT 38 FL R	1,767,183	2,833,667
CHANNEL DAYBEACON 39 G	1,766,985	2,833,213
CHANNEL LIGHT 40 FL R	1,767,927	2,833,215
CHANNEL LIGHTED BUOY 42 FL R	1,768,638	2,832,752

CONTROL DATA

STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
POLE	1,768,956.19	2,831,720.81	–	FLAGPOLE
USE 37	1,768,405.58	2,833,444.75	–	COPPER BOLT IN CONC.
ROCK, 1977	1,768,068.65	2,833,772.35	15.17	USACE SBC IN BOULDER
USE 34	1,767,021.83	2,832,753.72	–	BRONZE BOLT IN CONC.
USE 24+56	1,766,172.19	2,833,664.32	–	SBC SET IN CONC.
USE 39	1,765,536.78	2,835,466.12	–	BRASS BOLT IN CONC.
1349-1, 1985	1,765,327.80	2,833,552.89	14.9	USACE SBC
USE 41	1,763,468.31	2,835,781.08	20.2	STANDARD USE DISK IN CONC.
USE 38	1,761,831.50	2,834,346.69	–	STANDARD USE DISK IN BLDR.
USE 43	1,760,509.33	2,837,065.34	–	STANDARD USE DISK IN CONC.
USCG CAP	1,760,176.49	2,833,099.94	15.31	SBC
USE 40	1,757,930.91	2,831,439.68	–	1/4" BRONZE BOLT IN CONC.
USE 45	1,756,062.20	2,834,772.16	–	ENG. DISK IN BLDR.
USE 42	1,755,854.36	2,830,177.10	–	ENG. DISK IN DRILL HOLE
1216-1/USE47	1,753,623.15	2,831,524.88	13.22	3/4" DRILL HOLE IN BLDR. IN CONC.
USE 44	1,752,508.18	2,829,044.78	17.42	ENG. DISK IN BLDR.
USE 46	1,750,902.64	2,827,980.94	19.31	ENG. DISK IN BLDR.
USE 49	1,750,696.75	2,829,740.61	18.12	BRONZE PLUG IN CEMENT
USE 48	1,748,876.71	2,826,394.90	–	3/4" DRILL HOLE W/TRIANGLE
USE 51	1,748,001.59	2,828,166.30	–	3/4" DRILL HOLE W/TRIANGLE
USE 50	1,747,879.58	2,825,365.32	17.21	USC&GS DISK (SBC)
USE 52	1,746,495.91	2,823,597.32	–	USC&GS DISK (SBC)
BIR-17	1,745,983.01	2,826,857.16	18.4	USACE SBC (1989)
USE 53	1,745,336.73	2,825,421.96	–	USACE SBC
1401-4	1,745,288.71	2,825,398.67	–	USACE SBC (1987)
NOB	1,742,099.56	2,823,306.82	17.2	SBD IN BEDROCK
USE 55	1,741,899.17	2,825,649.62	–	3/4" DRILL HOLE W/TRIANGLE
PULL	1,741,511.36	2,821,221.15	–	SBD IN BOULDER
BON	1,740,360.80	2,822,535.87	–	STANDARD HYDRO DISK IN CEMENT
USE 54	1,739,900.84	2,822,825.62	–	3/4" DRILL HOLE W/TRIANGLE
USE 57	1,739,570.60	2,825,721.83	–	SBC
USE 56	1,737,808.37	2,824,911.63		3/4" DRILL HOLE W/TRIANGLE
1399-59/USE59	1,736,013.82	2,826,140.34	–	3/4" DRILL HOLE W/TRIANGLE
USE 58	1,735,883.44	2,825,050.38	–	3/4" DRILL HOLE W/TRIANGLE
WN-15, 1997	1,754,202.66	2,830,338.92	18.31	SBC 3 1/4" CEMENTED INTO ROCK

CENTERLINE OF 300 FOOT WIDE CHANNEL

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	1,768,548	2,832,534	10 (PT/PC)	1,759,604	2,836,082
2 (PT)	1,766,794	2,833,677	11 (PT)	1,757,046	2,834,718
3 (PC)	1,766,155	2,833,969	12	1,753,477	2,830,588
4	1,764,973	2,834,186	13	1,750,493	2,828,327
5	1,764,359	2,834,341	14	1,746,065	2,825,945
6	1,763,792	2,834,523	15	1,742,760	2,825,047
7	1,763,212	2,834,766	16	1,741,380	2,825,190
8	1,762,626	2,835,081	17	1,739,373	2,825,281
9 (PT)	1,762,019	2,835,495			

REV.	DATE	DESCRIPTION	BY	APP'D.

CONTRACTOR TERRA SURVEYS, LLC CONTRACT NO. DACW85-96-D-0003

CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: RK
DRAWN: MJP
CHECKED: TSN
SUBMITTED: AB

WRANGELL NARROWS, ALASKA
BUOY 8 TO BUOY 42
(THIS SHEET APPROXIMATELY MILE 15.4 TO 16.6)
PROJECT CONDITION SURVEY
NOVEMBER 14-20, 1997

RECOMMENDED: Andrew H. Barnes
PROJECT MANAGER

APPROVED: [signature]
CHIEF OPERATIONS-READINESS BRANCH

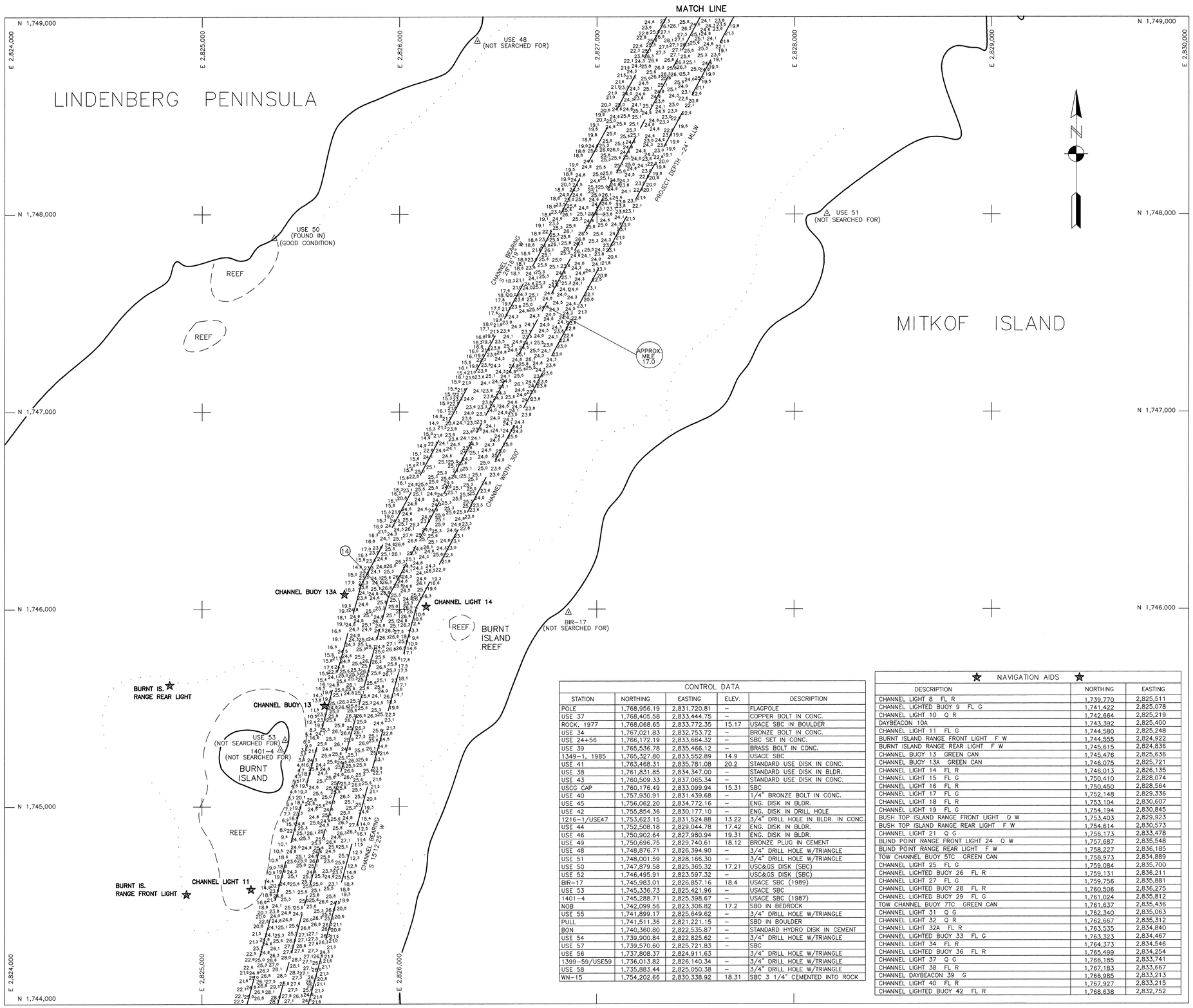
DATE: 9 March 1999

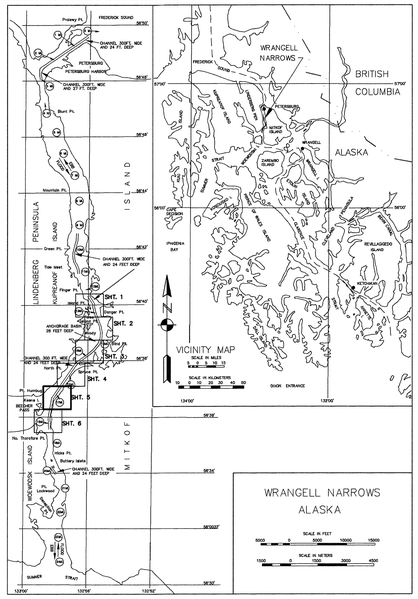
SURVEY NO. 1767-98

SCALE: 1" = 200'

SHEET 4 OF 6

DRAWING NO.





NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, IN FEET, NORTH AMERICAN DATUM OF 1927. CONTROL IS BASED ON THE PUBLISHED VALUE OF EXISTING USACE MONUMENTATION. HOLDING BC "WN-15" AS N 1,754,202.66, E 2,830,338.92.
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5. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.

SCALE

200 0 200 400 600 800

CENTERLINE OF 300 FOOT WIDE CHANNEL

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	1,768,548	2,832,534	10 (PT/PC)	1,759,604	2,836,082
2 (PT)	1,766,794	2,833,677	11 (PT)	1,756,830	2,834,567
3 (PC)	1,766,155	2,833,969	12	1,754,121	2,831,177
4	1,764,973	2,834,186	13	1,750,551	2,828,357
5	1,764,359	2,834,341	14	1,746,065	2,825,945
6	1,763,792	2,834,523	15	1,742,760	2,825,047
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USE 34	1,767,021.83	2,832,753.72	–	BRONZE BOLT IN CONC.
USE 24+56	1,766,172.19	2,833,664.32	–	SBC SET IN CONC.
USE 39	1,765,536.78	2,835,466.12	–	BRASS BOLT IN CONC.
1349-1, 1985	1,765,327.80	2,833,552.89	14.9	USACE SBC
USE 41	1,763,468.31	2,835,781.08	20.2	STANDARD USE DISK IN CONC.
USE 38	1,761,831.85	2,834,347.00	–	STANDARD USE DISK IN BLDR.
USE 43	1,760,509.33	2,837,065.34	–	STANDARD USE DISK IN CONC.
USCG CAP	1,760,176.49	2,833,099.94	15.31	SBC
USE 40	1,757,930.91	2,831,439.68	–	1/4" BRONZE BOLT IN CONC.
USE 45	1,756,062.20	2,834,772.16	–	ENG. DISK IN BLDR.
USE 42	1,755,854.36	2,830,177.10	–	ENG. DISK IN DRILL HOLE
1216-1/USE47	1,753,623.15	2,831,524.88	13.22	3/4" DRILL HOLE IN BLDR. IN CONC.
USE 44	1,752,508.18	2,829,044.78	17.42	ENG. DISK IN BLDR.
USE 46	1,750,902.64	2,827,980.94	19.31	ENG. DISK IN BLDR.
USE 49	1,750,696.75	2,829,740.61	18.12	BRONZE PLUG IN CEMENT
USE 48	1,748,876.71	2,826,394.90	–	3/4" DRILL HOLE W/TRIANGLE
USE 51	1,748,001.59	2,828,166.30	–	3/4" DRILL HOLE W/TRIANGLE
USE 50	1,747,879.58	2,825,365.32	17.21	USC&GS DISK (SBC)
USE 52	1,746,495.91	2,823,597.32	–	USC&GS DISK (SBC)
BIR-17	1,745,983.01	2,826,857.16	18.4	USACE SBC (1989)
USE 53	1,745,336.73	2,825,421.96	–	USACE SBC
1401-4	1,745,288.71	2,825,398.67	–	USACE SBC (1987)
NOB	1,742,099.56	2,823,306.82	17.2	SBD IN BEDROCK
USE 55	1,741,899.17	2,825,649.62	–	3/4" DRILL HOLE W/TRIANGLE
PULL	1,741,511.36	2,821,221.15	–	SBD IN BOULDER
BON	1,740,360.80	2,822,535.87	–	STANDARD HYDRO DISK IN CEMENT
USE 54	1,739,900.84	2,822,825.62	–	3/4" DRILL HOLE W/TRIANGLE
USE 57	1,739,570.60	2,825,721.83	–	SBC
USE 56	1,737,808.37	2,824,911.63		3/4" DRILL HOLE W/TRIANGLE
1399-59/USE59	1,736,013.82	2,826,140.34	–	3/4" DRILL HOLE W/TRIANGLE
USE 58	1,735,883.44	2,825,050.38	–	3/4" DRILL HOLE W/TRIANGLE
WN-15	1,754,202.66	2,830,338.92	18.31	SBC 3 1/4" CEMENTED INTO ROCK

★ NAVIGATION AIDS ★

DESCRIPTION	NORTHING	EASTING
CHANNEL LIGHT 8 FL R	1,739,770	2,825,511
CHANNEL LIGHTED BUOY 9 FL G	1,741,422	2,825,078
CHANNEL LIGHT 10 Q R	1,742,664	2,825,219
DAYBEACON 10A	1,743,392	2,825,400
CHANNEL LIGHT 11 FL G	1,744,580	2,825,248
BURNT ISLAND RANGE FRONT LIGHT F W	1,744,555	2,824,922
BURNT ISLAND RANGE REAR LIGHT F W	1,745,615	2,824,836
CHANNEL BUOY 13 GREEN CAN	1,745,476	2,825,636
CHANNEL BUOY 13A GREEN CAN	1,746,075	2,825,721
CHANNEL LIGHT 14 FL R	1,746,013	2,826,135
CHANNEL LIGHT 15 FL G	1,750,410	2,828,074
CHANNEL LIGHT 16 FL R	1,750,450	2,828,564
CHANNEL LIGHT 17 FL G	1,752,148	2,829,336
CHANNEL LIGHT 18 FL R	1,753,104	2,830,607
CHANNEL LIGHT 19 FL G	1,754,194	2,830,845
BUSH TOP ISLAND RANGE FRONT LIGHT Q W	1,753,403	2,829,923
BUSH TOP ISLAND RANGE REAR LIGHT F W	1,754,614	2,830,573
CHANNEL LIGHT 21 Q G	1,756,173	2,833,478
BLIND POINT RANGE FRONT LIGHT 24 Q W	1,757,687	2,835,548
BLIND POINT RANGE REAR LIGHT F W	1,758,227	2,836,185
TOW CHANNEL BUOY 5TC GREEN CAN	1,758,973	2,834,889
CHANNEL LIGHT 25 FL G	1,759,084	2,835,700
CHANNEL LIGHTED BUOY 26 FL R	1,759,131	2,836,211
CHANNEL LIGHT 27 FL G	1,759,756	2,835,881
CHANNEL LIGHTED BUOY 28 FL R	1,760,506	2,836,275
CHANNEL LIGHTED BUOY 29 FL G	1,761,024	2,835,812
TOW CHANNEL BUOY 7TC GREEN CAN	1,761,637	2,835,436
CHANNEL LIGHT 31 Q G	1,762,340	2,835,063
CHANNEL LIGHT 32 Q R	1,762,667	2,835,312
CHANNEL LIGHT 32A FL R	1,763,535	2,834,840
CHANNEL LIGHTED BUOY 33 FL G	1,763,323	2,834,467
CHANNEL LIGHT 34 FL R	1,764,373	2,834,546
CHANNEL LIGHTED BUOY 36 FL R	1,765,499	2,834,254
CHANNEL LIGHT 37 Q G	1,766,185	2,833,741
CHANNEL LIGHT 38 FL R	1,767,183	2,833,667
CHANNEL DAYBEACON 39 G	1,766,985	2,833,213
CHANNEL LIGHT 40 FL R	1,767,927	2,833,215
CHANNEL LIGHTED BUOY 42 FL R	1,768,638	2,832,752

REV.	DATE	DESCRIPTION	BY	APP'D.

CONTRACTOR TERRA SURVEYS, LLC
CONTRACT NO. DACW85-96-D-0003
CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

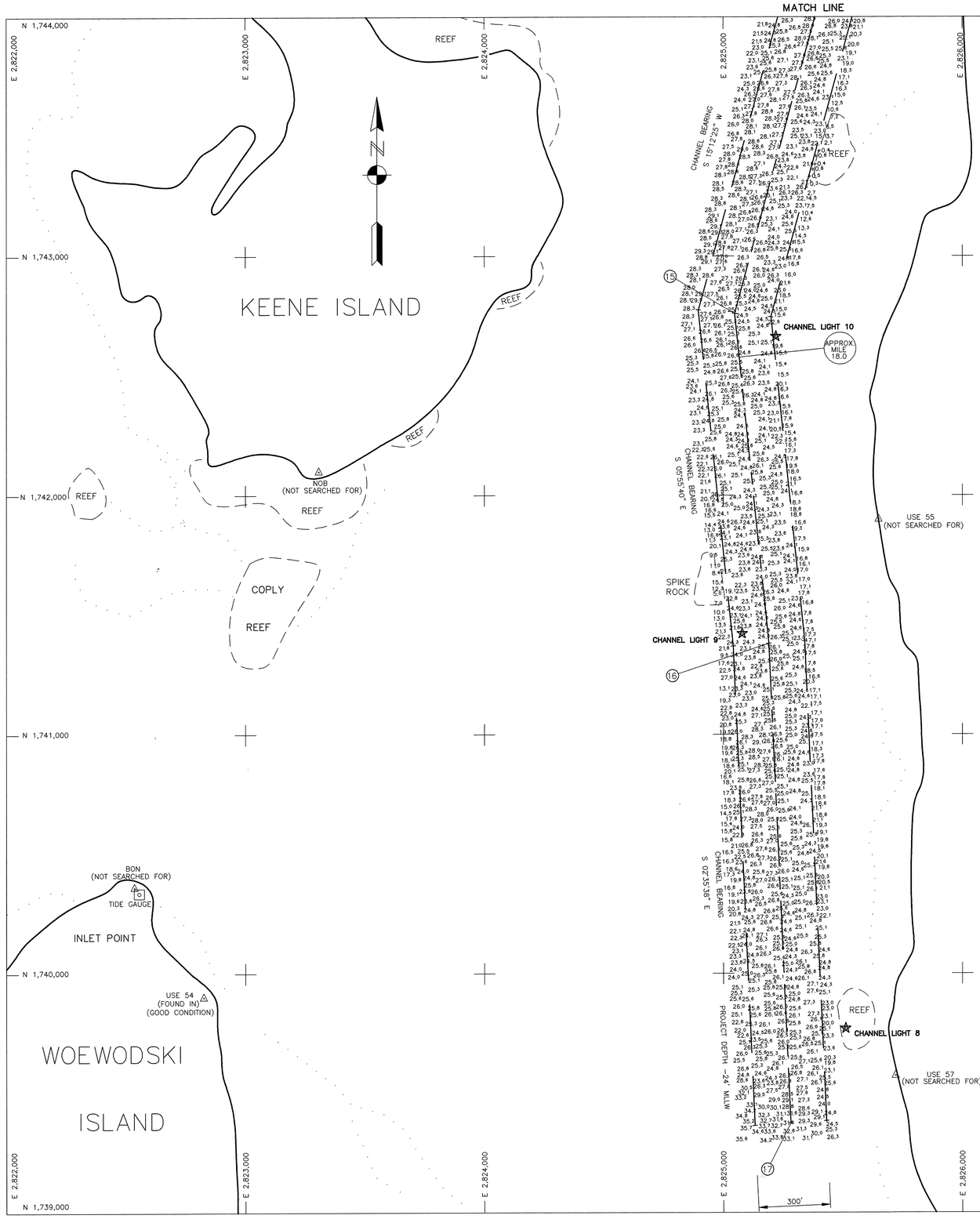
SURVEYED: RK
DRAWN: MJP
CHECKED: TSN
SUBMITTED:

WRANGELL NARROWS, ALASKA
BUOY 8 TO BUOY 42
(THIS SHEET APPROXIMATELY MILE 16.6 TO 17.6)
PROJECT CONDITION SURVEY
NOVEMBER 14-20, 1997

RECOMMENDED: Andrew H. Bunce
PROJECT MANAGER
APPROVED: Glenn Chenoweth
CHIEF OPERATIONS-PLANNING BRANCH
DATE: 4 March 1998

SURVEY NO. 1767-98
SCALE: 1" = 200'
SHEET 5 OF 6

DRAWING NO.



★ NAVIGATION AIDS ★		
DESCRIPTION	NORTHING	EASTING
CHANNEL LIGHT 8 FL R	1,739,770	2,825,511
CHANNEL LIGHTED BUOY 9 FL G	1,741,422	2,825,078
CHANNEL LIGHT 10 Q R	1,742,664	2,825,219
DAYBEACON 10A	1,743,392	2,825,400
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CHANNEL LIGHT 17 FL G	1,752,148	2,829,336
CHANNEL LIGHT 18 FL R	1,753,104	2,830,607
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CHANNEL LIGHTED BUOY 29 FL G	1,761,024	2,835,812
TOW CHANNEL BUOY 7TC GREEN CAN	1,761,637	2,835,436
CHANNEL LIGHT 31 Q G	1,762,340	2,835,063
CHANNEL LIGHT 32 Q R	1,762,667	2,835,312
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CHANNEL LIGHT 34 FL R	1,764,373	2,834,546
CHANNEL LIGHTED BUOY 36 FL R	1,765,499	2,834,254
CHANNEL LIGHT 37 Q G	1,766,185	2,833,741
CHANNEL LIGHT 38 FL R	1,767,183	2,833,667
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CHANNEL LIGHT 40 FL R	1,767,927	2,833,215
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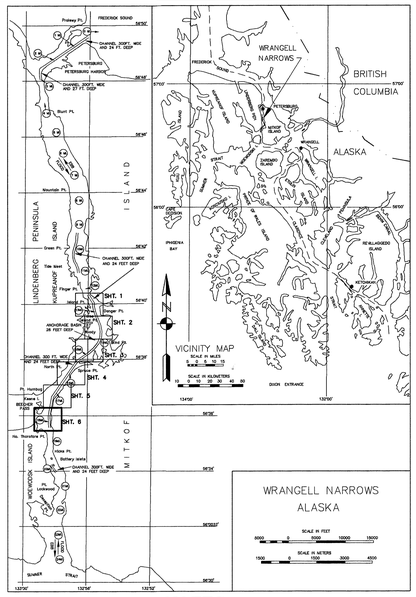

NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, IN FEET, NORTH AMERICAN DATUM OF 1927. CONTROL IS BASED ON THE PUBLISHED VALUE OF EXISTING USACE MONUMENTATION. HOLDING BC "WN-15" AS N 1,754,202.66, E 2,830,338.92.
2. VERTICAL CONTROL IS IN FEET, BASED ON MEAN LOWER LOW WATER (MLLW), HOLDING NATIONAL OCEAN SURVEY (NOS) BENCHES. BENCHES WERE RECOVERED AT NOS TIDE STATION 945-1348, "FINGER POINT, WRANGELL NARROWS" DATED 3/14/1951, AND NOS TIDE STATION 945-1317, "ANCHOR POINT, WRANGELL NARROWS" DATED 3/14/1951, AND NOS TIDE STATION 945-1287, "BEECHER PASS, WRANGELL NARROWS" DATED 3/14/1951.
3. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. THIS SURVEY WAS PERFORMED BETWEEN NOVEMBER 14-20, 1997. SOUNDINGS WERE COLLECTED USING A RESON 9001S MULTIBEAM DEPTHSOUNDER. POSITION OF THE VESSEL WAS TRACKED UTILIZING A TRIMBLE GPS RECEIVER WITH DGPS CORRECTORS FROM A TRIMBLE 4000SSE SET AT CONTROL POINT "WN-15". ATTITUDE OF THE VESSEL WAS MEASURED UTILIZING A SEATEX MRU-5 MOTION SENSOR. HEADING OF THE VESSEL WAS MEASURED USING A SC BROWN 1000S GYROCOMPASS. DATA WAS COLLECTED USING HYPACK AND ISIS SOFTWARE. SOUNDINGS WERE REDUCED WITH CARIS HIPS. SOUNDINGS ADJUSTED FOR TIDE USING TIDE DATA COLLECTED WITH ENDECO 1150T TIDE GAUGES WERE AT "FINGER POINT" (945-1348), "ANCHOR POINT" (945-1317) AND "BEECHER PASS" (945-1287).
5. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.

SCALE

200 0 200 400 600 800

CENTERLINE OF 300 FOOT WIDE CHANNEL					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	1,768,548	2,832,534	10 (PT/PC)	1,759,604	2,836,082
2 (PT)	1,766,794	2,833,677	11 (PT)	1,756,830	2,834,567
3 (PC)	1,766,155	2,833,969	12	1,754,121	2,831,177
4	1,764,973	2,834,186	13	1,750,551	2,828,357
5	1,764,359	2,834,341	14	1,746,065	2,825,945
6	1,763,792	2,834,523	15	1,742,760	2,825,047
7	1,763,212	2,834,766	16	1,741,380	2,825,190
8	1,762,626	2,835,081	17	1,739,373	2,825,281
9 (PT)	1,762,019	2,835,495			

CONTROL DATA				
STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
POLE	1,768,956.19	2,831,720.81	–	FLAGPOLE
USE 37	1,768,405.58	2,833,444.75	–	COPPER BOLT IN CONC.
ROCK, 1977	1,768,068.65	2,833,772.35	15.17	USACE SBC IN BOULDER
USE 34	1,767,021.83	2,832,753.72	–	BRONZE BOLT IN CONC.
USE 24+56	1,766,172.19	2,833,664.32	–	SBC SET IN CONC.
USE 39	1,765,536.78	2,835,466.12	–	BRASS BOLT IN CONC.
1349-1, 1985	1,765,327.80	2,833,552.89	14.9	USACE SBC
USE 41	1,763,468.31	2,835,781.08	20.2	STANDARD USE DISK IN CONC.
USE 38	1,761,831.85	2,834,347.00	–	STANDARD USE DISK IN BLDR.
USE 43	1,760,509.33	2,837,065.34	–	STANDARD USE DISK IN CONC.
USCG CAP	1,760,176.49	2,833,099.94	15.31	SBC
USE 40	1,757,930.91	2,831,439.68	–	1/4" BRONZE BOLT IN CONC.
USE 45	1,756,062.20	2,834,772.16	–	ENG. DISK IN BLDR.
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1216-1/USE47	1,753,623.15	2,831,524.88	13.22	3/4" DRILL HOLE IN BLDR. IN CONC.
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USE 46	1,750,902.64	2,827,980.94	19.31	ENG. DISK IN BLDR.
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USE 48	1,748,876.71	2,826,394.90	–	3/4" DRILL HOLE W/TRIANGLE
USE 51	1,748,001.59	2,828,166.30	–	3/4" DRILL HOLE W/TRIANGLE
USE 50	1,747,879.58	2,825,365.32	17.21	USC&GS DISK (SBC)
USE 52	1,746,495.91	2,823,597.32	–	USC&GS DISK (SBC)
BIR-17	1,745,983.01	2,826,857.16	18.4	USACE SBC (1989)
USE 53	1,745,336.73	2,825,421.96	–	USACE SBC
1401-4	1,745,288.71	2,825,398.67	–	USACE SBC (1987)
NOB	1,742,099.56	2,823,306.82	17.2	SBD IN BEDROCK
USE 55	1,741,899.17	2,825,649.62	–	3/4" DRILL HOLE W/TRIANGLE
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BON	1,740,360.80	2,822,535.87	–	STANDARD HYDRO DISK IN CEMENT
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USE 57	1,739,570.60	2,825,721.83	–	SBC
USE 56	1,737,808.37	2,824,911.63		3/4" DRILL HOLE W/TRIANGLE
1399-59/USE59	1,736,013.82	2,826,140.34	–	3/4" DRILL HOLE W/TRIANGLE
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WN-15	1,754,202.66	2,830,338.92	–	SBC 3 1/4" CEMENTED INTO ROCK

REV.	DATE	DESCRIPTION	BY	APP'D.

CONTRACTOR: TERRA SURVEYS, LLC
CONTRACT NO. DACW85-96-D-0003
CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: RK
DRAWN: MJP
CHECKED: TSN
SUBMITTED:
RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS-READINESS BRANCH
DATE: March 1998

WRANGELL NARROWS, ALASKA
BUOY 8 TO BUOY 42
(THIS SHEET APPROXIMATELY MILE 17.6 TO 18.4)
PROJECT CONDITION SURVEY
NOVEMBER 14-20,1997

SURVEY NO. 1767-98

SCALE: 1" = 200'

SHEET 6 OF 6

DRAWING NO.