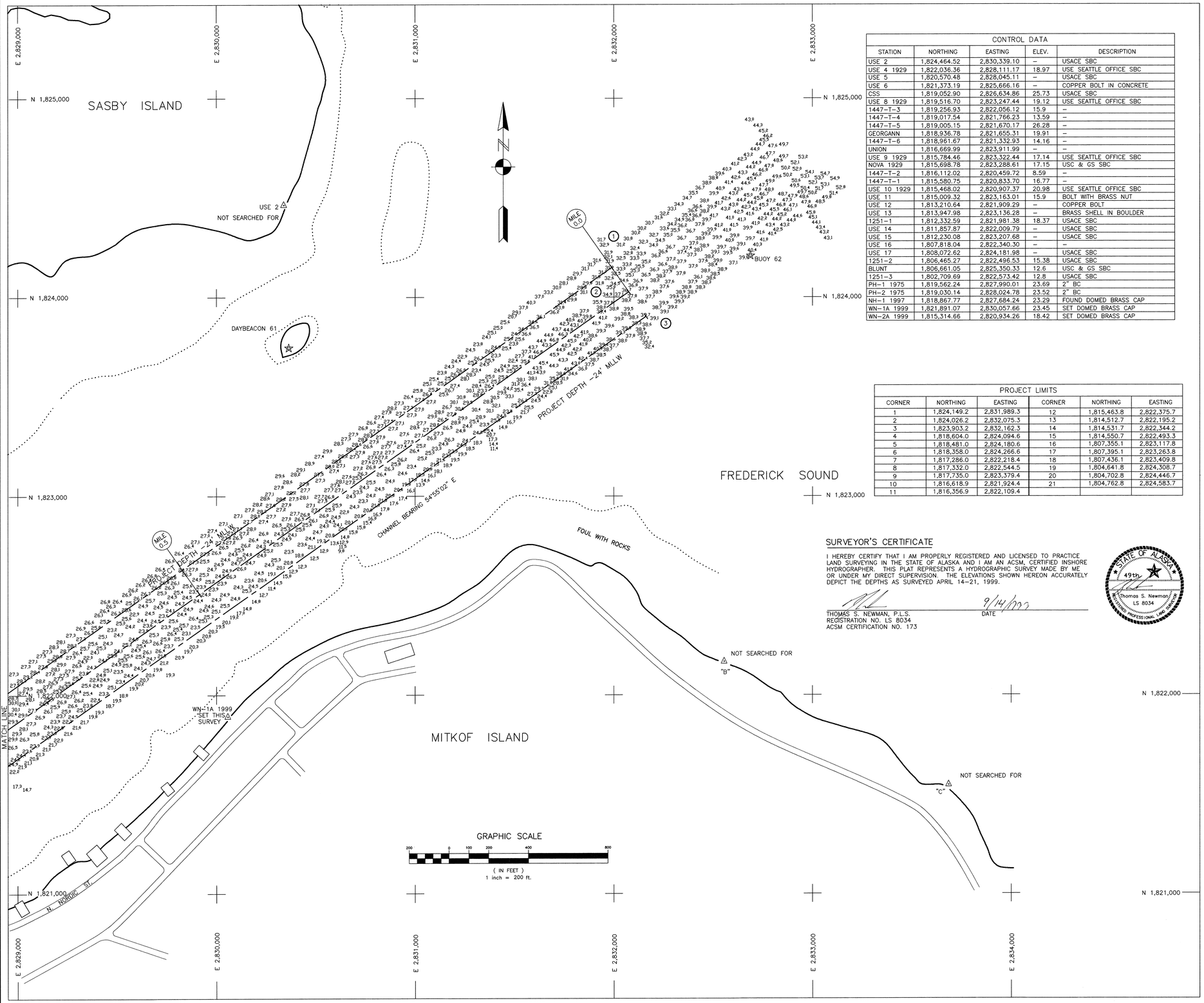



| CONTROL DATA | | | | |
|---|---|---|---|---|
| STATION | NORTHING | EASTING | ELEV. | DESCRIPTION |
| USE 2 | 1,824,464.52 | 2,830,339.10 | – | USACE SBC |
| USE 4 1929 | 1,822,036.36 | 2,828,111.17 | 18.97 | USE SEATTLE OFFICE SBC |
| USE 5 | 1,820,570.48 | 2,828,045.11 | – | USACE SBC |
| USE 6 | 1,821,373.19 | 2,825,666.16 | – | COPPER BOLT IN CONCRETE |
| CSS | 1,819,052.90 | 2,826,634.86 | 25.73 | USACE SBC |
| USE 8 1929 | 1,819,516.70 | 2,823,247.44 | 19.12 | USE SEATTLE OFFICE SBC |
| 1447–T–3 | 1,819,256.93 | 2,822,056.12 | 15.9 | – |
| 1447–T–4 | 1,819,017.54 | 2,821,766.23 | 13.59 | – |
| 1447–T–5 | 1,819,005.15 | 2,821,670.17 | 26.28 | – |
| GEORGANN | 1,818,936.78 | 2,821,655.31 | 19.91 | – |
| 1447–T–6 | 1,818,961.67 | 2,821,332.93 | 14.16 | – |
| UNION | 1,816,669.99 | 2,823,911.99 | – | – |
| USE 9 1929 | 1,815,784.46 | 2,823,322.44 | 17.14 | USE SEATTLE OFFICE SBC |
| NOVA 1929 | 1,815,698.78 | 2,823,288.61 | 17.15 | USC & GS SBC |
| 1447–T–2 | 1,816,112.02 | 2,820,459.72 | 8.59 | – |
| 1447–T–1 | 1,815,580.75 | 2,820,833.70 | 16.77 | – |
| USE 10 1929 | 1,815,468.02 | 2,820,907.37 | 20.98 | USE SEATTLE OFFICE SBC |
| USE 11 | 1,815,009.32 | 2,823,163.01 | 15.9 | BOLT WITH BRASS NUT |
| USE 12 | 1,813,210.64 | 2,821,909.29 | – | COPPER BOLT |
| USE 13 | 1,813,947.98 | 2,823,136.28 | – | BRASS SHELL IN BOULDER |
| 1251–1 | 1,812,332.59 | 2,821,981.38 | 18.37 | USACE SBC |
| USE 14 | 1,811,857.87 | 2,822,009.79 | – | USACE SBC |
| USE 15 | 1,812,230.08 | 2,823,207.68 | – | USACE SBC |
| USE 16 | 1,807,818.04 | 2,822,340.30 | – | – |
| USE 17 | 1,808,072.62 | 2,824,181.98 | – | USACE SBC |
| 1251–2 | 1,806,465.27 | 2,822,496.53 | 15.38 | USACE SBC |
| BLUNT | 1,806,661.05 | 2,825,350.33 | 12.6 | USC & GS SBC |
| 1251–3 | 1,802,709.69 | 2,822,573.42 | 12.8 | USACE SBC |
| PH–1 1975 | 1,819,562.24 | 2,827,990.01 | 23.69 | 2" BC |
| PH–2 1975 | 1,819,030.14 | 2,828,024.78 | 23.52 | 2" BC |
| NH–1 1997 | 1,818,867.77 | 2,827,684.24 | 23.29 | FOUND DOMED BRASS CAP |
| WN–1A 1999 | 1,821,891.07 | 2,830,057.66 | 23.45 | SET DOMED BRASS CAP |
| WN–2A 1999 | 1,815,314.66 | 2,820,934.26 | 18.42 | SET DOMED BRASS CAP |

| PROJECT LIMITS | | | | | |
|---|---|---|---|---|---|
| CORNER | NORTHING | EASTING | CORNER | NORTHING | EASTING |
| 1 | 1,824,149.2 | 2,831,989.3 | 12 | 1,815,463.8 | 2,822,375.7 |
| 2 | 1,824,026.2 | 2,832,075.3 | 13 | 1,814,512.7 | 2,822,195.2 |
| 3 | 1,823,903.2 | 2,832,162.3 | 14 | 1,814,531.7 | 2,822,344.2 |
| 4 | 1,818,604.0 | 2,824,094.6 | 15 | 1,814,550.7 | 2,822,493.3 |
| 5 | 1,818,481.0 | 2,824,180.6 | 16 | 1,807,355.1 | 2,823,117.8 |
| 6 | 1,818,358.0 | 2,824,266.6 | 17 | 1,807,395.1 | 2,823,263.8 |
| 7 | 1,817,286.0 | 2,822,218.4 | 18 | 1,807,436.1 | 2,823,409.8 |
| 8 | 1,817,332.0 | 2,822,544.5 | 19 | 1,804,641.8 | 2,824,308.7 |
| 9 | 1,817,735.0 | 2,823,379.4 | 20 | 1,804,702.8 | 2,824,446.7 |
| 10 | 1,816,618.9 | 2,821,924.4 | 21 | 1,804,762.8 | 2,824,583.7 |
| 11 | 1,816,356.9 | 2,822,109.4 | | | |

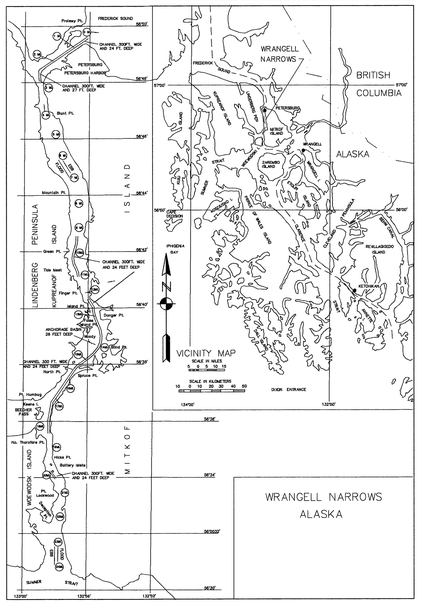
## SURVEYOR'S CERTIFICATE

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 APRIL 14–21, 1999.

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

DATE 9/14/1999

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




## NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83, IN FEET, HOLDING "USE 8" AS N = 1,819,516.70, E = 2,823,247.44 AND "USE 4" AS N = 1,822,036.36, E = 2,828,111.17.
2. VERTICAL CONTROL IS IN FEET, REFERRING TO MEAN LOWER LOW WATER (MLLW = 0.0'), HOLDING NOS TIDAL BENCHMARKS "NO STAMPING 1" AS 25.14' MLLW AND "1439 A 1978" AS 25.82' MLLW, AS DESCRIBED IN NOS TIDAL BENCHMARK LIST ALASKA 945 1439, PETERSBURG, WRANGELL NARROWS, BASED ON THE 1960–1978 TIDAL EPOCH, ISSUE DATE: 12/02/1991.
3. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. DATA AQUISITION WAS CONDUCTED ON APRIL 14–20, 1999. SOUNDINGS WERE OBTAINED WITH AN ODOM ECHOTRAC DF3200MKII AND A ROSS SMARTSOUNDER DEPTHSOUNDERS. POSITIONING WAS PROVIDED BY A TRIMBLE 4000SSE LOCAL BASE STATION SET AT "NH–1 1997", BROADCASTING CORRECTIONS TO A TRIMBLE 4000SSi RECIEVER AND A TRIMBLE AgGPS 122 RECIEVER BOTH OPERATING IN DGPS MODE. DEPTHS WERE CORRECTED FOR TIDE USING A VYNER LP1 TELEMETRY TIDE GAUGE INSTALLED BY TERRA SURVEYS, LLC. NAVIGATION AND DATA COLLECTION PERFORMED USING HYPACK INTEGRATED SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED UTILIZING STATIC GPS METHODS AND VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
5. THIS SURVEY WAS PERFORMED UNDER CONTRACT NO. DACW85–98–D–0004 BY TERRA SURVEYS, LLC.
6. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.
7. THIS SURVEY WAS CONDUCTED IN ALASKA STATE PLANE ZONE 1, NAD 27, IN FEET, AND WAS CONVERTED USING CORPSCON 5.11 TO ALASKA STATE PLANE ZONE 1, NAD 83, IN FEET. SURVEY DATA, CONTROL, PROJECT LIMITS AND NAVIGATIONAL AID COORDINATES WERE CONVERTED USING CORPSCON 5.11.

| VOLUME COMPUTATIONS | | |
|---|---|---|
| Project Depth –24' | | |
| MINIMUM PAY LINE (–24' MLLW) | 4446.5 | (cubic yards) |
| Between MINIMUM PAY LINE and MAXIMUM PAY LINE (–25' MLLW) | 4103.4 | (cubic yards) |
| TOTAL | 8549.9 | (cubic yards) |

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

| VOLUME COMPUTATIONS | | |
|---|---|---|
| Project Depth –27' | | |
| MINIMUM PAY LINE (–27' MLLW) | 48162.8 | (cubic yards) |
| Between MINIMUM PAY LINE and MAXIMUM PAY LINE (–28' MLLW) | 40048.8 | (cubic yards) |
| TOTAL | 88211.6 | (cubic yards) |

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

| NAVIGATION AIDS | | | |
|---|---|---|---|
| USCG No. | DESCRIPTION | NORTHING | EASTING |
| 23125 | CHANNEL LIGHT 52 (not tied this survey) | 1,807,567 | 2,823,449 |
| 23135 | CHANNEL LIGHTED BUOY 53 | 1,814,444 | 2,822,192 |
| 23140 | PETERSBURG CREEK RANGE FRONT LIGHT | 1,817,280 | 2,821,988 |
| 23145 | PETERSBURG CREEK RANGE REAR LIGHT | 1,818,297 | 2,821,858 |
| 23150 | CHANNEL LIGHT 54 | 1,815,688 | 2,822,409 |
| 23155 | CHANNEL LIGHT 56 | 1,816,592 | 2,822,552 |
| 23160 | CHANNEL LIGHT 58 | 1,817,340 | 2,823,042 |
| 23165 | PETERSBURG BAR RANGE FRONT LIGHT | 1,816,686 | 2,821,600 |
| 23170 | PETERSBURG BAR RANGE REAR LIGHT | 1,815,817 | 2,820,361 |
| 23185 | CHANNEL LIGHTED BUOY 59 | 1,819,971 | 2,826,058 |
| 23195 | CHANNEL LIGHTED BUOY 60 | 1,820,779 | 2,827,872 |
| 23200 | DAYBEACON 61 | 1,823,746 | 2,830,364 |
| 23205 | CHANNEL LIGHTED BUOY 62 | 1,824,208 | 2,832,688 |

| REV. | DATE | DESCRIPTION | BY | APP'D. |
|---|---|---|---|---|
| | | | | |

CONTRACT NO. DACW85–98–D–0004
CONTRACTOR TERRA SURVEYS, LLC
CITY PALMER STATE ALASKA

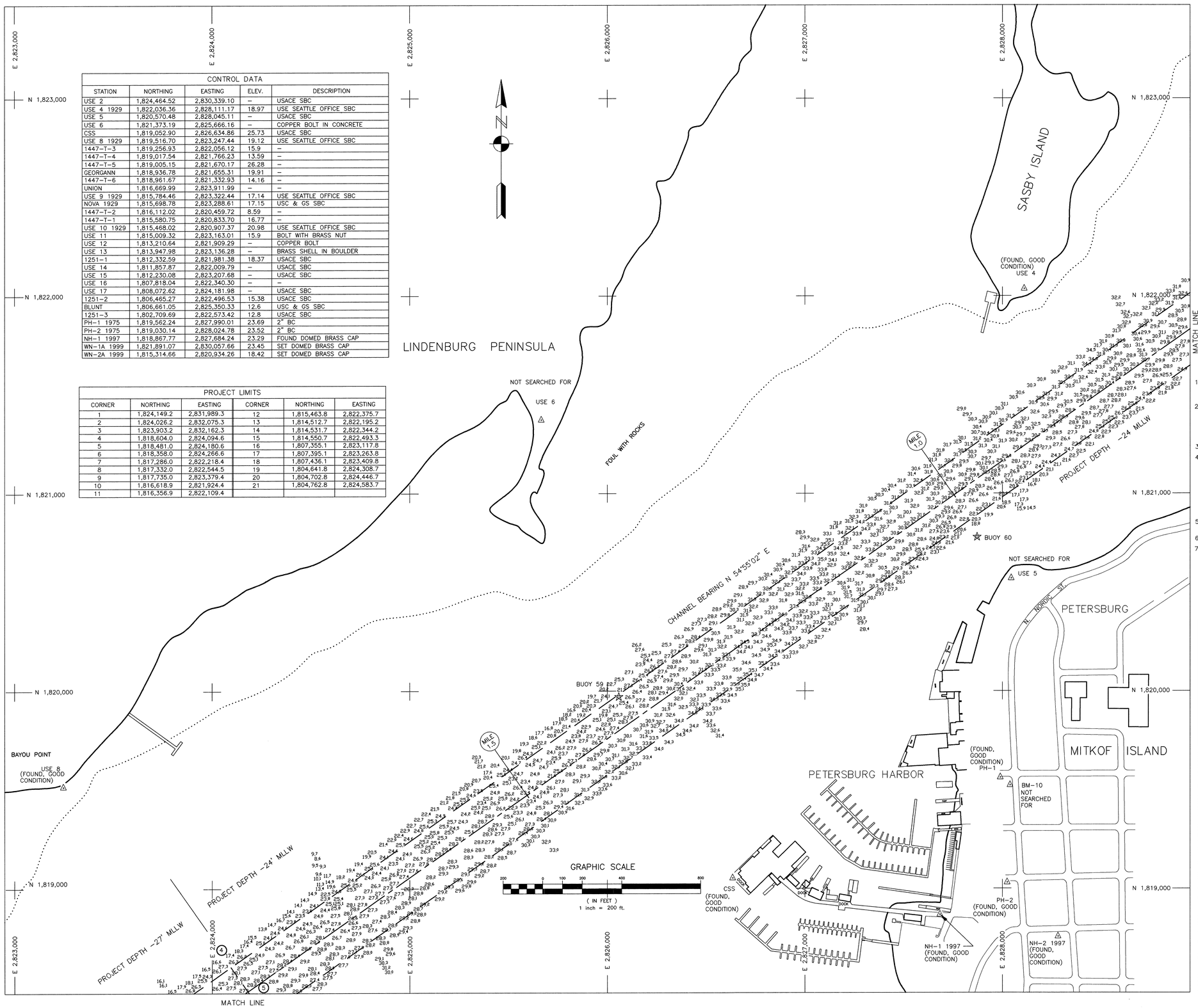
ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: KDW
DRAWN: J. ADAIR
CHECKED: TSN
SUBMITTED:

# WRANGELL NARROWS, ALASKA
## MILE 0.0 TO MILE 3.0
## PROJECT CONDITION SURVEY
## APRIL 14–20, 1999

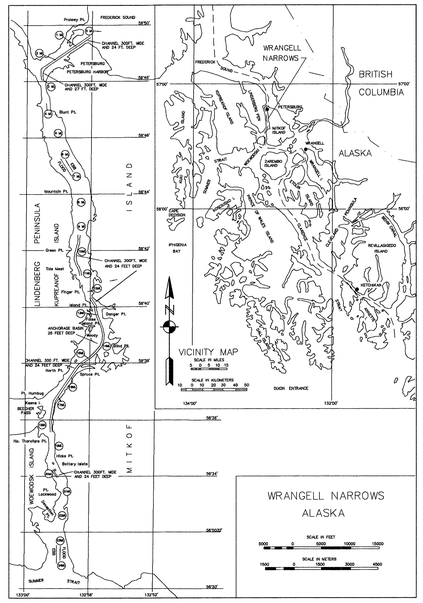
RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS–READINESS BRANCH
DATE:

SURVEY NO. 1804–99 (NAD 83)
SCALE: 1" = 200'
SHEET 1 OF 4




| CONTROL DATA | | | | |
|---|---|---|---|---|
| STATION | NORTHING | EASTING | ELEV. | DESCRIPTION |
| USE 2 | 1,824,464.52 | 2,830,339.10 | – | USACE SBC |
| USE 4 1929 | 1,822,036.36 | 2,828,111.17 | 18.97 | USE SEATTLE OFFICE SBC |
| USE 5 | 1,820,570.48 | 2,828,045.11 | – | USACE SBC |
| USE 6 | 1,821,373.19 | 2,825,666.16 | – | COPPER BOLT IN CONCRETE |
| CSS | 1,819,052.90 | 2,826,634.86 | 25.73 | USACE SBC |
| USE 8 1929 | 1,819,516.70 | 2,823,247.44 | 19.12 | USE SEATTLE OFFICE SBC |
| 1447–T–3 | 1,819,256.93 | 2,822,056.12 | 15.9 | – |
| 1447–T–4 | 1,819,017.54 | 2,821,766.23 | 13.59 | – |
| 1447–T–5 | 1,819,005.15 | 2,821,670.17 | 26.28 | – |
| GEORGANN | 1,818,936.78 | 2,821,655.31 | 19.91 | – |
| 1447–T–6 | 1,818,961.67 | 2,821,332.93 | 14.16 | – |
| UNION | 1,816,669.99 | 2,823,911.99 | – | – |
| USE 9 1929 | 1,815,784.46 | 2,823,322.44 | 17.14 | USE SEATTLE OFFICE SBC |
| NOVA 1929 | 1,815,698.78 | 2,823,288.61 | 17.15 | USC & GS SBC |
| 1447–T–2 | 1,816,112.02 | 2,820,459.72 | 8.59 | – |
| 1447–T–1 | 1,815,580.75 | 2,820,833.70 | 16.77 | – |
| USE 10 1929 | 1,815,468.02 | 2,820,907.37 | 20.98 | USE SEATTLE OFFICE SBC |
| USE 11 | 1,815,009.32 | 2,823,163.01 | 15.9 | BOLT WITH BRASS NUT |
| USE 12 | 1,813,210.64 | 2,821,909.29 | – | COPPER BOLT |
| USE 13 | 1,813,947.98 | 2,823,136.28 | – | BRASS SHELL IN BOULDER |
| 1251–1 | 1,812,332.59 | 2,821,981.38 | 18.37 | USACE SBC |
| USE 14 | 1,811,857.87 | 2,822,009.79 | – | USACE SBC |
| USE 15 | 1,812,230.08 | 2,823,207.68 | – | USACE SBC |
| USE 16 | 1,807,818.04 | 2,822,340.30 | – | – |
| USE 17 | 1,808,072.62 | 2,824,181.98 | – | USACE SBC |
| 1251–2 | 1,806,465.27 | 2,822,496.53 | 15.38 | USACE SBC |
| BLUNT | 1,806,661.05 | 2,825,350.33 | 12.6 | USC & GS SBC |
| 1251–3 | 1,802,709.69 | 2,822,573.42 | 12.8 | USACE SBC |
| PH–1 1975 | 1,819,562.24 | 2,827,990.01 | 23.69 | 2" BC |
| PH–2 1975 | 1,819,030.14 | 2,828,024.78 | 23.52 | 2" BC |
| NH–1 1997 | 1,818,867.77 | 2,827,684.24 | 23.29 | FOUND DOMED BRASS CAP |
| WN–1A 1999 | 1,821,891.07 | 2,830,057.66 | 23.45 | SET DOMED BRASS CAP |
| WN–2A 1999 | 1,815,314.66 | 2,820,934.26 | 18.42 | SET DOMED BRASS CAP |

| PROJECT LIMITS | | | | | |
|---|---|---|---|---|---|
| CORNER | NORTHING | EASTING | CORNER | NORTHING | EASTING |
| 1 | 1,824,149.2 | 2,831,989.3 | 12 | 1,815,463.8 | 2,822,375.7 |
| 2 | 1,824,026.2 | 2,832,075.3 | 13 | 1,814,512.7 | 2,822,195.2 |
| 3 | 1,823,903.2 | 2,832,162.3 | 14 | 1,814,531.7 | 2,822,344.2 |
| 4 | 1,818,604.0 | 2,824,094.6 | 15 | 1,814,550.7 | 2,822,493.3 |
| 5 | 1,818,481.0 | 2,824,180.6 | 16 | 1,807,355.1 | 2,823,117.8 |
| 6 | 1,818,358.0 | 2,824,266.6 | 17 | 1,807,395.1 | 2,823,263.8 |
| 7 | 1,817,286.0 | 2,822,218.4 | 18 | 1,807,436.1 | 2,823,409.8 |
| 8 | 1,817,332.0 | 2,822,544.5 | 19 | 1,804,641.8 | 2,824,308.7 |
| 9 | 1,817,735.0 | 2,823,379.4 | 20 | 1,804,702.8 | 2,824,446.7 |
| 10 | 1,816,618.9 | 2,821,924.4 | 21 | 1,804,762.8 | 2,824,583.7 |
| 11 | 1,816,356.9 | 2,822,109.4 | | | |




## NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83, IN FEET, HOLDING "USE 8" AS N = 1,819,516.70, E = 2,823,247.44 AND "USE 4" AS N = 1,822,036.36, E = 2,828,111.17.
2. VERTICAL CONTROL IS IN FEET, REFERRING TO MEAN LOWER LOW WATER (MLLW = 0.0'), HOLDING NOS TIDAL BENCHMARKS "NO STAMPING 1" AS 25.14' MLLW AND "1439 A 1978" AS 25.82' MLLW, AS DESCRIBED IN NOS TIDAL BENCHMARK LIST ALASKA 945 1439, PETERSBURG, WRANGELL NARROWS, BASED ON THE 1960–1978 TIDAL EPOCH, ISSUE DATE: 12/02/1991.
3. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. DATA AQUISITION WAS CONDUCTED ON APRIL 14–20, 1999. SOUNDINGS WERE OBTAINED WITH AN ODOM ECHOTRAC DF3200MKII AND A ROSS SMARTSOUNDER DEPTHSOUNDERS. POSITIONING WAS PROVIDED BY A TRIMBLE 4000SSE LOCAL BASE STATION SET AT "NH–1 1997". BROADCASTING CORRECTIONS TO A TRIMBLE 4000SSI RECIEVER AND A TRIMBLE AgGPS 122 RECIEVER BOTH OPERATING IN DGPS MODE. DEPTHS WERE CORRECTED FOR TIDE USING A VYNER LP1 TELEMETRY TIDE GAUGE INSTALLED BY TERRA SURVEYS, LLC. NAVIGATION AND DATA COLLECTION PERFORMED USING HYPACK INTEGRATED SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED UTILIZING STATIC GPS METHODS AND VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
5. THIS SURVEY WAS PERFORMED UNDER CONTRACT NO. DACW85–98–D–0004 BY TERRA SURVEYS, LLC.
6. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.
7. THIS SURVEY WAS CONDUCTED IN ALASKA STATE PLANE ZONE 1, NAD 27, IN FEET, AND WAS CONVERTED USING CORPSCON 5.11 TO ALASKA STATE PLANE ZONE 1, NAD 83, IN FEET. SURVEY DATA, CONTROL, PROJECT LIMITS AND NAVIGATIONAL AID COORDINATES WERE CONVERTED USING CORPSCON 5.11.

| ☆ NAVIGATION AIDS ☆ | | | |
|---|---|---|---|
| USCG No. | DESCRIPTION | NORTHING | EASTING |
| 23125 | CHANNEL LIGHT 52 (not tied this survey) | 1,807,567 | 2,823,449 |
| 23135 | CHANNEL LIGHTED BUOY 53 | 1,814,444 | 2,822,192 |
| 23140 | PETERSBURG CREEK RANGE FRONT LIGHT | 1,817,280 | 2,821,988 |
| 23145 | PETERSBURG CREEK RANGE REAR LIGHT | 1,818,297 | 2,821,858 |
| 23150 | CHANNEL LIGHT 54 | 1,815,688 | 2,822,409 |
| 23155 | CHANNEL LIGHT 56 | 1,816,592 | 2,822,552 |
| 23160 | CHANNEL LIGHT 58 | 1,817,340 | 2,823,042 |
| 23165 | PETERSBURG BAR RANGE FRONT LIGHT | 1,816,686 | 2,821,600 |
| 23170 | PETERSBURG BAR RANGE REAR LIGHT | 1,815,817 | 2,820,361 |
| 23185 | CHANNEL LIGHTED BUOY 59 | 1,819,971 | 2,826,058 |
| 23195 | CHANNEL LIGHTED BUOY 60 | 1,820,779 | 2,827,872 |
| 23200 | DAYBEACON 61 | 1,823,746 | 2,830,364 |
| 23205 | CHANNEL LIGHTED BUOY 62 | 1,824,208 | 2,832,688 |

| REV. | DATE | DESCRIPTION | BY | APP'D. |
|---|---|---|---|---|
| | | | | |

CONTRACT NO. DACW85–98–D–0004
CONTRACTOR TERRA SURVEYS, LLC
CITY PALMER STATE ALASKA

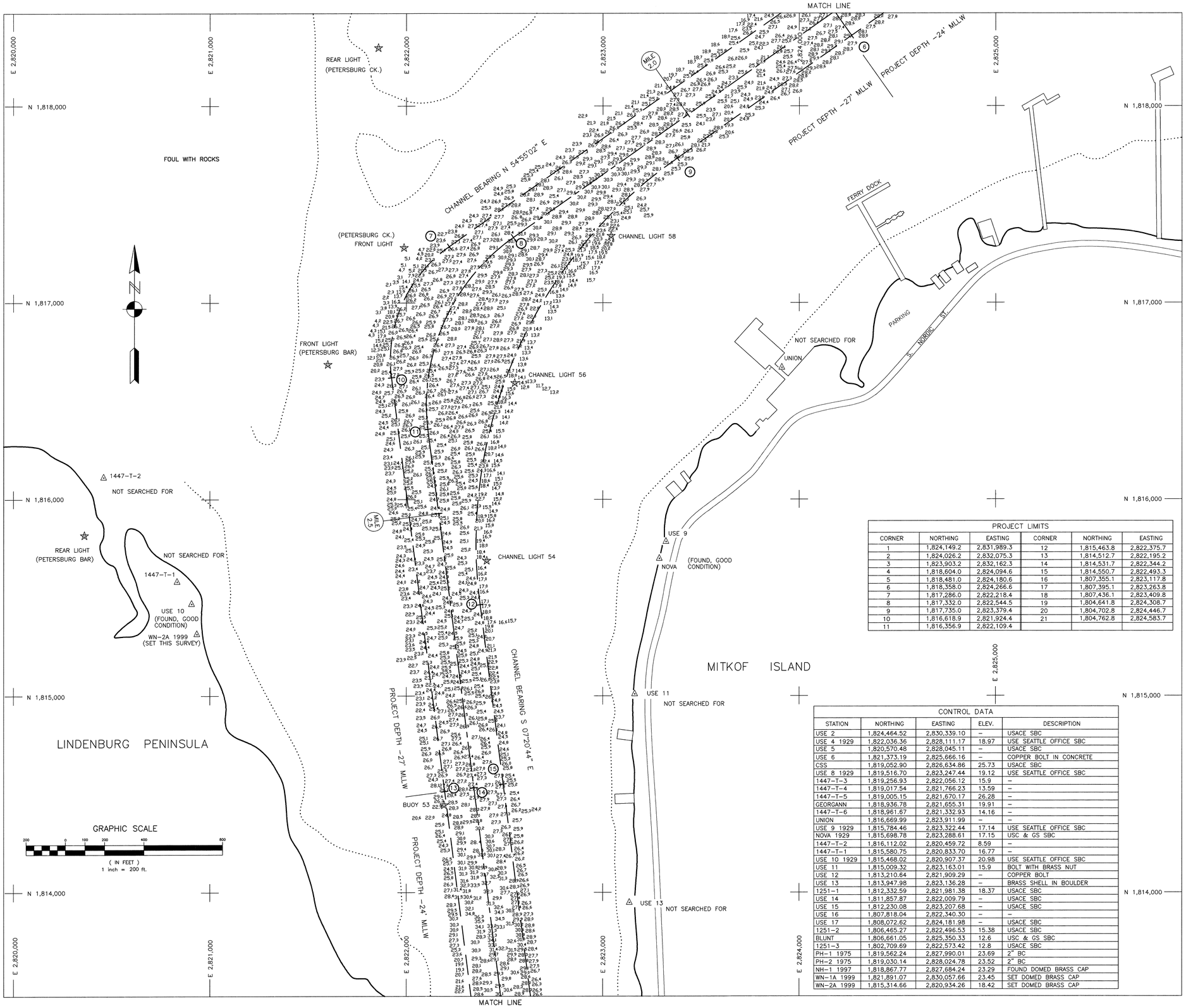
ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

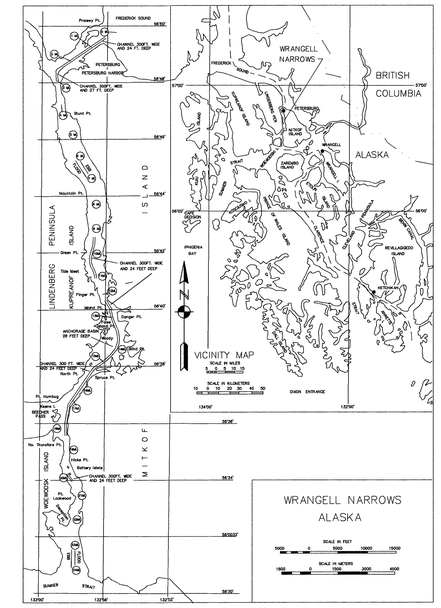
SURVEYED: KDW
DRAWN: J. ADAIR
CHECKED: TSN
SUBMITTED:

# WRANGELL NARROWS, ALASKA
# MILE 0.0 TO MILE 3.0
# PROJECT CONDITION SURVEY
# APRIL 14–20, 1999

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS–READINESS BRANCH
DATE:

SURVEY NO. 1804–99 (NAD 83)
SCALE: 1" = 200'
SHEET 2 OF 4




## NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83, IN FEET, HOLDING "USE 8" AS N = 1,819,516.70, E = 2,823,247.44 AND "USE 4" AS N = 1,822,036.36, E = 2,828,111.17.
2. VERTICAL CONTROL IS IN FEET, REFERRING TO MEAN LOWER LOW WATER (MLLW = 0.0'), HOLDING NOS TIDAL BENCHMARKS "NO STAMPING 1" AS 25.14' MLLW AND "1439 A 1978" AS 25.82' MLLW, AS DESCRIBED IN NOS TIDAL BENCHMARK LIST ALASKA 945 1439, PETERSBURG, WRANGELL NARROWS, BASED ON THE 1960-1978 TIDAL EPOCH, ISSUE DATE: 12/02/1991.
3. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. DATA AQUISITION WAS CONDUCTED ON APRIL 14-20, 1999. SOUNDINGS WERE OBTAINED WITH AN ODOM ECHOTRAC DF3200MKII AND A ROSS SMARTSOUNDER DEPTHSOUNDERS. POSITIONING WAS PROVIDED BY A TRIMBLE 4000SSE LOCAL BASE STATION SET AT "NH-1 1997", BROADCASTING CORRECTIONS TO A TRIMBLE 4000SSi RECIEVER AND A TRIMBLE AgGPS 122 RECIEVER BOTH OPERATING IN DGPS MODE. DEPTHS WERE CORRECTED FOR TIDE USING A VYNER LP1 TELEMETRY TIDE GAUGE INSTALLED BY TERRA SURVEYS, LLC. NAVIGATION AND DATA COLLECTION PERFORMED USING HYPACK INTEGRATED SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED UTILIZING STATIC GPS METHODS AND VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
5. THIS SURVEY WAS PERFORMED UNDER CONTRACT NO. DACW85-98-D-0004 BY TERRA SURVEYS, LLC.
6. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.
7. THIS SURVEY WAS CONDUCTED IN ALASKA STATE PLANE ZONE 1, NAD 27, IN FEET, AND WAS CONVERTED USING CORPSCON 5.11 TO ALASKA STATE PLANE ZONE 1, NAD 83, IN FEET. SURVEY DATA, CONTROL, PROJECT LIMITS AND NAVIGATIONAL AID COORDINATES WERE CONVERTED USING CORPSCON 5.11.

### PROJECT LIMITS

| CORNER | NORTHING | EASTING | CORNER | NORTHING | EASTING |
|---|---|---|---|---|---|
| 1 | 1,824,149.2 | 2,831,989.3 | 12 | 1,815,463.8 | 2,822,375.7 |
| 2 | 1,824,026.2 | 2,832,075.3 | 13 | 1,814,512.7 | 2,822,195.2 |
| 3 | 1,823,903.2 | 2,832,162.3 | 14 | 1,814,531.7 | 2,822,344.2 |
| 4 | 1,818,604.0 | 2,824,094.6 | 15 | 1,814,550.7 | 2,822,493.3 |
| 5 | 1,818,481.0 | 2,824,180.6 | 16 | 1,807,355.1 | 2,823,117.8 |
| 6 | 1,818,358.0 | 2,824,266.6 | 17 | 1,807,395.1 | 2,823,263.8 |
| 7 | 1,817,286.0 | 2,822,218.4 | 18 | 1,807,436.1 | 2,823,409.8 |
| 8 | 1,817,332.0 | 2,822,544.5 | 19 | 1,804,641.8 | 2,824,308.7 |
| 9 | 1,817,735.0 | 2,823,379.4 | 20 | 1,804,702.8 | 2,824,446.7 |
| 10 | 1,816,618.9 | 2,821,924.4 | 21 | 1,804,762.8 | 2,824,583.7 |
| 11 | 1,816,356.9 | 2,822,109.4 | | | |

### CONTROL DATA

| STATION | NORTHING | EASTING | ELEV. | DESCRIPTION |
|---|---|---|---|---|
| USE 2 | 1,824,464.52 | 2,830,339.10 | – | USACE SBC |
| USE 4 1929 | 1,822,036.36 | 2,828,111.17 | 18.97 | USE SEATTLE OFFICE SBC |
| USE 5 | 1,820,570.48 | 2,828,045.11 | – | USACE SBC |
| USE 6 | 1,821,373.19 | 2,825,666.16 | – | COPPER BOLT IN CONCRETE |
| CSS | 1,819,052.90 | 2,826,634.86 | 25.73 | USACE SBC |
| USE 8 1929 | 1,819,516.70 | 2,823,247.44 | 19.12 | USE SEATTLE OFFICE SBC |
| 1447-T-3 | 1,819,256.93 | 2,822,056.12 | 15.9 | – |
| 1447-T-4 | 1,819,017.54 | 2,821,766.23 | 13.59 | – |
| 1447-T-5 | 1,819,005.15 | 2,821,670.17 | 26.28 | – |
| GEORGANN | 1,818,936.78 | 2,821,655.31 | 19.91 | – |
| 1447-T-6 | 1,818,961.67 | 2,821,332.93 | 14.16 | – |
| UNION | 1,816,669.99 | 2,823,911.99 | – | – |
| USE 9 1929 | 1,815,784.46 | 2,823,322.44 | 17.14 | USE SEATTLE OFFICE SBC |
| NOVA 1929 | 1,815,698.78 | 2,823,288.61 | 17.15 | USC & GS SBC |
| 1447-T-2 | 1,816,112.02 | 2,820,459.72 | 8.59 | – |
| 1447-T-1 | 1,815,580.75 | 2,820,833.70 | 16.77 | – |
| USE 10 1929 | 1,815,468.02 | 2,820,907.37 | 20.98 | USE SEATTLE OFFICE SBC |
| USE 11 | 1,815,009.32 | 2,823,163.01 | 15.9 | BOLT WITH BRASS NUT |
| USE 12 | 1,813,210.64 | 2,821,909.29 | – | COPPER BOLT |
| USE 13 | 1,813,947.98 | 2,823,136.28 | – | BRASS SHELL IN BOULDER |
| 1251-1 | 1,812,332.59 | 2,821,981.38 | 18.37 | USACE SBC |
| USE 14 | 1,811,857.87 | 2,822,009.79 | – | USACE SBC |
| USE 15 | 1,812,230.08 | 2,823,207.68 | – | USACE SBC |
| USE 16 | 1,807,818.04 | 2,822,340.30 | – | – |
| USE 17 | 1,808,072.62 | 2,824,181.98 | – | USACE SBC |
| 1251-2 | 1,806,465.27 | 2,822,496.53 | 15.38 | USACE SBC |
| BLUNT | 1,806,661.05 | 2,825,350.33 | 12.6 | USC & GS SBC |
| 1251-3 | 1,802,709.69 | 2,822,573.42 | 12.8 | USACE SBC |
| PH-1 1975 | 1,819,562.24 | 2,827,990.01 | 23.69 | 2" BC |
| PH-2 1975 | 1,819,030.14 | 2,828,024.78 | 23.52 | 2" BC |
| NH-1 1997 | 1,818,867.77 | 2,827,684.24 | 23.29 | FOUND DOMED BRASS CAP |
| WN-1A 1999 | 1,821,891.07 | 2,830,057.66 | 23.45 | SET DOMED BRASS CAP |
| WN-2A 1999 | 1,815,314.66 | 2,820,934.26 | 18.42 | SET DOMED BRASS CAP |

### NAVIGATION AIDS

| USCG No. | DESCRIPTION | NORTHING | EASTING |
|---|---|---|---|
| 23125 | CHANNEL LIGHT 52 (not tied this survey) | 1,807,567 | 2,823,449 |
| 23135 | CHANNEL LIGHTED BUOY 53 | 1,814,444 | 2,822,192 |
| 23140 | PETERSBURG CREEK RANGE FRONT LIGHT | 1,817,280 | 2,821,988 |
| 23145 | PETERSBURG CREEK RANGE REAR LIGHT | 1,818,297 | 2,821,858 |
| 23150 | CHANNEL LIGHT 54 | 1,815,688 | 2,822,409 |
| 23155 | CHANNEL LIGHT 56 | 1,816,592 | 2,822,552 |
| 23160 | CHANNEL LIGHT 58 | 1,817,340 | 2,823,042 |
| 23165 | PETERSBURG BAR RANGE FRONT LIGHT | 1,816,686 | 2,821,600 |
| 23170 | PETERSBURG BAR RANGE REAR LIGHT | 1,815,817 | 2,820,361 |
| 23185 | CHANNEL LIGHTED BUOY 59 | 1,819,971 | 2,826,058 |
| 23195 | CHANNEL LIGHTED BUOY 60 | 1,820,779 | 2,827,872 |
| 23200 | DAYBEACON 61 | 1,823,746 | 2,830,364 |
| 23205 | CHANNEL LIGHTED BUOY 62 | 1,824,208 | 2,832,688 |

| REV. | DATE | DESCRIPTION | BY | APP'D. |
|---|---|---|---|---|

CONTRACT NO. DACW85-98-D-0004
CONTRACTOR TERRA SURVEYS, LLC
CITY PALMER STATE ALASKA

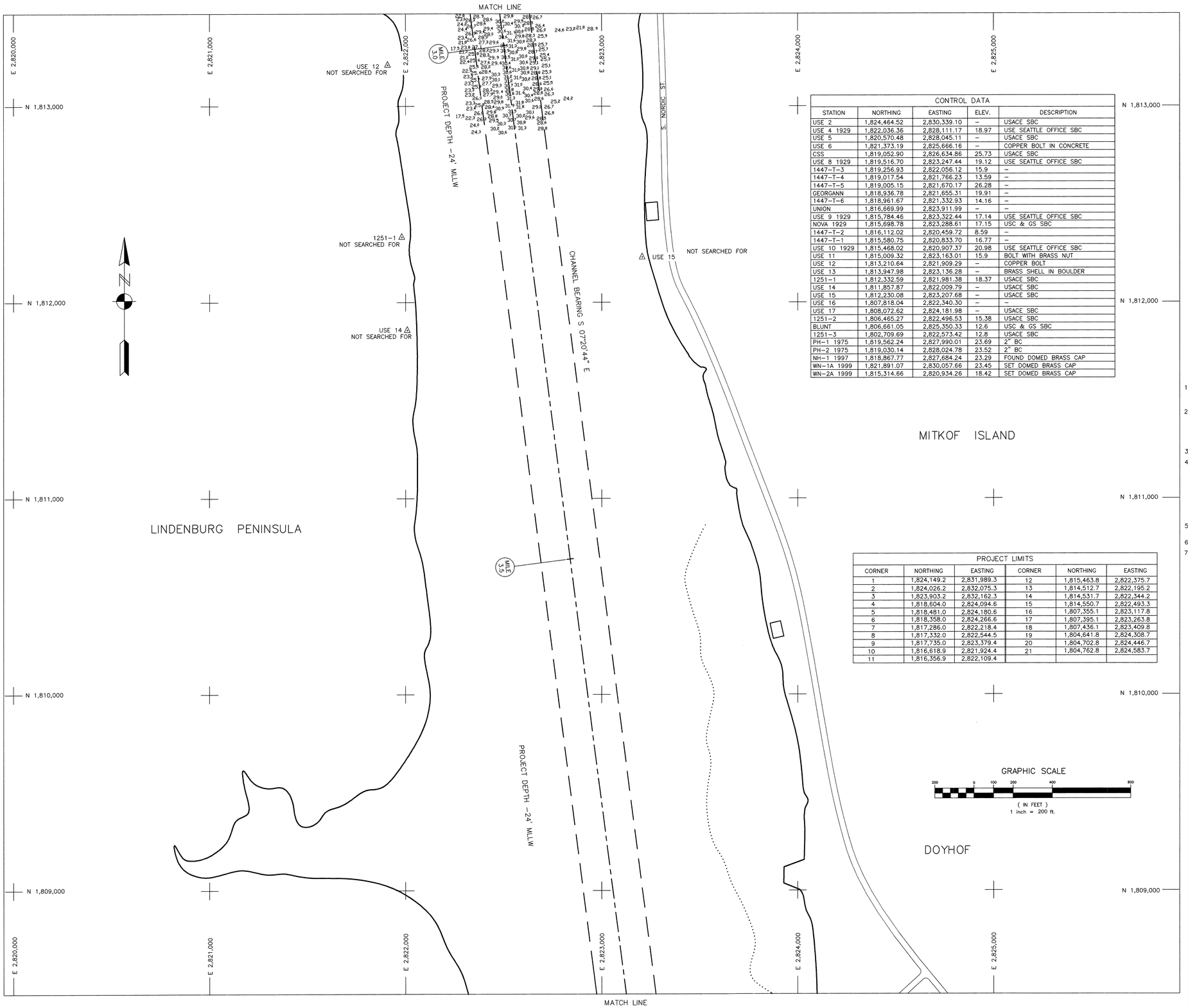
ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: KDW
DRAWN: J. ADAIR
CHECKED: TSN
SUBMITTED:

WRANGELL NARROWS, ALASKA
MILE 0.0 TO MILE 3.0
PROJECT CONDITION SURVEY
APRIL 14-20, 1999

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS-READINESS BRANCH
DATE:

SURVEY NO. 1804-99(NAD 83)
SCALE: 1" = 200'
SHEET 3 OF 4



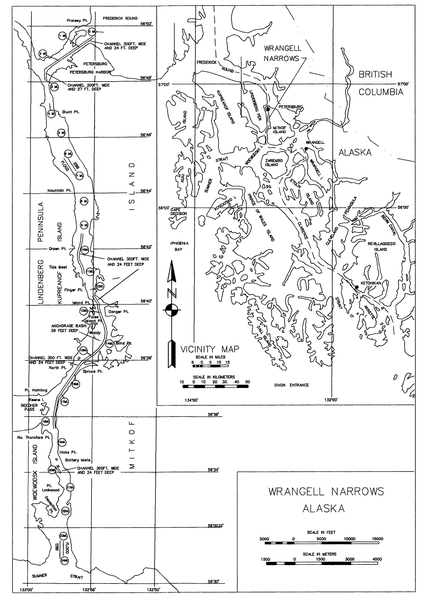

| CONTROL DATA | | | | |
|---|---|---|---|---|
| STATION | NORTHING | EASTING | ELEV. | DESCRIPTION |
| USE 2 | 1,824,464.52 | 2,830,339.10 | – | USACE SBC |
| USE 4 1929 | 1,822,036.36 | 2,828,111.17 | 18.97 | USE SEATTLE OFFICE SBC |
| USE 5 | 1,820,570.48 | 2,828,045.11 | – | USACE SBC |
| USE 6 | 1,821,373.19 | 2,825,666.16 | – | COPPER BOLT IN CONCRETE |
| CSS | 1,819,052.90 | 2,826,634.86 | 25.73 | USACE SBC |
| USE 8 1929 | 1,819,516.70 | 2,823,247.44 | 19.12 | USE SEATTLE OFFICE SBC |
| 1447-T-3 | 1,819,256.93 | 2,822,056.12 | 15.9 | – |
| 1447-T-4 | 1,819,017.54 | 2,821,766.23 | 13.59 | – |
| 1447-T-5 | 1,819,005.15 | 2,821,670.17 | 26.28 | – |
| GEORGANN | 1,818,936.78 | 2,821,655.31 | 19.91 | – |
| 1447-T-6 | 1,818,961.67 | 2,821,332.93 | 14.16 | – |
| UNION | 1,816,669.99 | 2,823,911.99 | – | – |
| USE 9 1929 | 1,815,784.46 | 2,823,322.44 | 17.14 | USE SEATTLE OFFICE SBC |
| NOVA 1929 | 1,815,698.78 | 2,823,288.61 | 17.15 | USC & GS SBC |
| 1447-T-2 | 1,816,112.02 | 2,820,459.72 | 8.59 | – |
| 1447-T-1 | 1,815,580.75 | 2,820,833.70 | 16.77 | – |
| USE 10 1929 | 1,815,468.02 | 2,820,907.37 | 20.98 | USE SEATTLE OFFICE SBC |
| USE 11 | 1,815,009.32 | 2,823,163.01 | 15.9 | BOLT WITH BRASS NUT |
| USE 12 | 1,813,210.64 | 2,821,909.29 | – | COPPER BOLT |
| USE 13 | 1,813,947.98 | 2,823,136.28 | – | BRASS SHELL IN BOULDER |
| 1251-1 | 1,812,332.59 | 2,821,981.38 | 18.37 | USACE SBC |
| USE 14 | 1,811,857.87 | 2,822,009.79 | – | USACE SBC |
| USE 15 | 1,812,230.08 | 2,823,207.68 | – | USACE SBC |
| USE 16 | 1,807,818.04 | 2,822,340.30 | – | – |
| USE 17 | 1,808,072.62 | 2,824,181.98 | – | USACE SBC |
| 1251-2 | 1,806,465.27 | 2,822,496.53 | 15.38 | USACE SBC |
| BLUNT | 1,806,661.05 | 2,825,350.33 | 12.6 | USC & GS SBC |
| 1251-3 | 1,802,709.69 | 2,822,573.42 | 12.8 | USACE SBC |
| PH-1 1975 | 1,819,562.24 | 2,827,990.01 | 23.69 | 2" BC |
| PH-2 1975 | 1,819,030.14 | 2,828,024.78 | 23.52 | 2" BC |
| NH-1 1997 | 1,818,867.77 | 2,827,684.24 | 23.29 | FOUND DOMED BRASS CAP |
| WN-1A 1999 | 1,821,891.07 | 2,830,057.66 | 23.45 | SET DOMED BRASS CAP |
| WN-2A 1999 | 1,815,314.66 | 2,820,934.26 | 18.42 | SET DOMED BRASS CAP |

| PROJECT LIMITS | | | | | |
|---|---|---|---|---|---|
| CORNER | NORTHING | EASTING | CORNER | NORTHING | EASTING |
| 1 | 1,824,149.2 | 2,831,989.3 | 12 | 1,815,463.8 | 2,822,375.7 |
| 2 | 1,824,026.2 | 2,832,075.3 | 13 | 1,814,512.7 | 2,822,195.2 |
| 3 | 1,823,903.2 | 2,832,162.3 | 14 | 1,814,531.7 | 2,822,344.2 |
| 4 | 1,818,604.0 | 2,824,094.6 | 15 | 1,814,550.7 | 2,822,493.3 |
| 5 | 1,818,481.0 | 2,824,180.6 | 16 | 1,807,355.1 | 2,823,117.8 |
| 6 | 1,818,358.0 | 2,824,266.6 | 17 | 1,807,395.1 | 2,823,263.8 |
| 7 | 1,817,286.0 | 2,822,218.4 | 18 | 1,807,436.1 | 2,823,409.8 |
| 8 | 1,817,332.0 | 2,822,544.5 | 19 | 1,804,641.8 | 2,824,308.7 |
| 9 | 1,817,735.0 | 2,823,379.4 | 20 | 1,804,702.8 | 2,824,446.7 |
| 10 | 1,816,618.9 | 2,821,924.4 | 21 | 1,804,762.8 | 2,824,583.7 |
| 11 | 1,816,356.9 | 2,822,109.4 | | | |

GRAPHIC SCALE

200 0 100 200 400 800

( IN FEET )
1 inch = 200 ft.




## NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83, IN FEET, HOLDING "USE 8" AS N = 1,819,516.70, E = 2,823,247.44 AND "USE 4" AS N = 1,822,036.36, E = 2,828,111.17.
2. VERTICAL CONTROL IS IN FEET, REFERRING TO MEAN LOWER LOW WATER (MLLW = 0.0'), HOLDING NOS TIDAL BENCHMARKS "NO STAMPING 1" AS 25.14' MLLW AND "1439 A 1978" AS 25.82' MLLW, AS DESCRIBED IN NOS TIDAL BENCHMARK LIST ALASKA 945 1439, PETERSBURG, WRANGELL NARROWS, BASED ON THE 1960-1978 TIDAL EPOCH, ISSUE DATE: 12/02/1991.
3. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. DATA AQUISITION WAS CONDUCTED ON APRIL 14-20, 1999. SOUNDINGS WERE OBTAINED WITH AN ODOM ECHOTRAC DF3200MKII AND A ROSS SMARTSOUNDER DEPTHSOUNDERS. POSITIONING WAS PROVIDED BY A TRIMBLE 4000SSE LOCAL BASE STATION SET AT "NH-1 1997", BROADCASTING CORRECTIONS TO A TRIMBLE 4000SSi RECIEVER AND A TRIMBLE AgGPS 122 RECIEVER BOTH OPERATING IN DGPS MODE. DEPTHS WERE CORRECTED FOR TIDE USING A VYNER LP1 TELEMETRY TIDE GAUGE INSTALLED BY TERRA SURVEYS, LLC. NAVIGATION AND DATA COLLECTION PERFORMED USING HYPACK INTEGRATED SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED UTILIZING STATIC GPS METHODS AND VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
5. THIS SURVEY WAS PERFORMED UNDER CONTRACT NO. DACW85-98-D-0004 BY TERRA SURVEYS, LLC.
6. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.
7. THIS SURVEY WAS CONDUCTED IN ALASKA STATE PLANE ZONE 1, NAD 27, IN FEET, AND WAS CONVERTED USING CORPSCON 5.11 TO ALASKA STATE PLANE ZONE 1, NAD 83, IN FEET. SURVEY DATA, CONTROL, PROJECT LIMITS AND NAVIGATIONAL AID COORDINATES WERE CONVERTED USING CORPSCON 5.11.

| ☆ NAVIGATION AIDS ☆ | | | |
|---|---|---|---|
| USCG No. | DESCRIPTION | NORTHING | EASTING |
| 23125 | CHANNEL LIGHT 52 (not tied this survey) | 1,807,567 | 2,823,449 |
| 23135 | CHANNEL LIGHTED BUOY 53 | 1,814,444 | 2,822,192 |
| 23140 | PETERSBURG CREEK RANGE FRONT LIGHT | 1,817,280 | 2,821,988 |
| 23145 | PETERSBURG CREEK RANGE REAR LIGHT | 1,818,297 | 2,821,858 |
| 23150 | CHANNEL LIGHT 54 | 1,815,688 | 2,822,409 |
| 23155 | CHANNEL LIGHT 56 | 1,816,592 | 2,822,552 |
| 23160 | CHANNEL LIGHT 58 | 1,817,340 | 2,823,042 |
| 23165 | PETERSBURG BAR RANGE FRONT LIGHT | 1,816,686 | 2,821,600 |
| 23170 | PETERSBURG BAR RANGE REAR LIGHT | 1,815,817 | 2,820,361 |
| 23185 | CHANNEL LIGHTED BUOY 59 | 1,819,971 | 2,826,058 |
| 23195 | CHANNEL LIGHTED BUOY 60 | 1,820,779 | 2,827,872 |
| 23200 | DAYBEACON 61 | 1,823,746 | 2,830,364 |
| 23205 | CHANNEL LIGHTED BUOY 62 | 1,824,208 | 2,832,688 |

| REV. | DATE | DESCRIPTION | BY | APP'D. |
|---|---|---|---|---|
| | | | | |

CONTRACT NO. DACW85-98-D-0004
CONTRACTOR TERRA SURVEYS, LLC
CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: KDW
DRAWN: J. ADAIR
CHECKED: TSN
SUBMITTED:

WRANGELL NARROWS, ALASKA
MILE 0.0 TO MILE 3.0
PROJECT CONDITION SURVEY
APRIL 14-20, 1999

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS-READINESS BRANCH
DATE:

SURVEY NO. 1804-99(NAD 83)
SCALE: 1" = 200'
SHEET 4 OF 4