

Applicant's Proposed Mitigation Statements
Seward Highway 75-90, POA 2013-448, Turnagain Arm
Phase 1 – May 2017

Avoidance

The project is geographically constrained by Turnagain Arm tidal mudflats on one side and mountain slope or broad perpendicular valleys on the other; total avoidance of impacts to waters of the U.S. would not be practicable.

The applicant's avoidance measures include:

- Avoiding the placement of fill into the high value wetlands on the inland side between Ingram Creek and the Placer River Overflow, at the request of multiple agencies, by designing the project to include passing lanes in this location on the Turnagain Arm side.
- Not selecting the design alternative that included a causeway across Turnagain Arm, avoiding impacts to the marine environment.
- Not selecting the design alternative that included a four-lane highway, avoiding potential impacts to wetlands and the marine environment associated with the wider highway footprint.
- Not selecting the design alternative that included separation of opposing travel lanes, avoiding a larger overall footprint and increased impacts to wetlands and the marine environment.
- Not selecting the design alternative that included re-design of the MP 75 Ingram Creek curve, avoiding potential impacts to wetlands associated with relocation of the roadbed in at location.
- Not selecting the design alternative that included a grade-separated interchange at Portage Glacier Road, avoiding potential impacts to wetlands associated with a larger project footprint.
- Not selecting the design alternative that included at-grade improvements, a grade-separated interchange, and a bypass at the Girdwood-Alyeska Highway intersection, avoiding potential impacts to wetlands associated with a larger project footprint.

Minimization

The project has been adjusted several times over the course of environmental and preliminary engineering studies to minimize impacts, such as limiting the amount of fill to the minimum amount necessary, reducing the number of pilings, and aligning the new roadbed with the existing roadbed whenever possible.

The applicant's minimization measures to limit impacts to waters of the U.S. are summarized as follows:

- Replacement bridges were designed to accommodate base flood conditions as well as, or better than, the existing bridges.
- Bridge abutments will span the high tide line and the number of piers is the minimum necessary to meet design standards. The bridge crossings have been designed to minimize impacts to waters of the U.S. and EFH by placing as few piers as feasible within wetlands and waters. Reducing the number of piers below the MHW level also minimizes impacts to Critical Habitat for the Cook Inlet beluga whale. The old bridges and piles will be removed. Existing bridge piles will be removed down to the natural stream bottom and outside of streams 12 inches below the natural ground surface.

- Existing road alignments and other existing fill footprints were incorporated into the design as much as possible to minimize fill in waters of the U.S. Roadway expansion areas reflect the minimum necessary to achieve project safety goals in accordance with highway design standards.
- The proposed project has been designed to maintain existing surface water courses. Natural drainage patterns will be maintained by installing cross-drainage culverts.
- Storm Water Pollution Prevention (SWPPP). The project would comply with the Alaska Pollutant Discharge Elimination System Construction General Permit. The applicant will prepare and provide the contractor with a project-specific Erosion and Sediment Control Plan. The contractor would be required to prepare a SWPPP for DOT&PF approval prior to construction. The SWPPP would identify receiving waters and specify the specific structural and procedural best management practices (BMPs) to be used during construction to prevent erosion and untreated runoff from reaching nearby waterbodies. BMPs would be refined in accordance with DOT&PF's Alaska SWPPP Guide (DOT&PF 2011) and ADEC's Alaska Stormwater Guide (ADEC 2011). The following BMPS would be employed and described as part of the plan.
- Construction limits would be clearly staked prior to construction so that ground-disturbing impacts are limited.
- BMPs for erosion and sediment control, such as furrow ditches, check dams, and detention basins, would be used. Silt fences would be used adjacent to waterways just beyond the estimated toe of fill.
- Cut and fill slopes would be seeded as soon as possible with fast-growing annual species (to establish root mass) and with native species for long-term growth and soil stabilization.
- Only clean fill material would be used for the roadway embankment.
- Regular visual inspection of slopes would be performed to monitor for slope erosion.
- Coarse rock rubble would be used to stabilize toes of slopes at stream crossings to prevent the erosion of fine-grained material into adjacent waters and wetlands.
- Proposed reclamation areas would be revegetated using native species.
- The construction contractor would be required to dispose of unusable soils and overburden (cleared vegetation) materials at permitted disposal areas, approved by DOT&PF.
- Construction staging sites would be located in upland areas and stabilized during and after use to avoid water quality impacts to wetlands and waterbodies.
- Hazardous Material Control Plan (HMCP). The contractor would be required to prepare an HCMP for DOT&PF approval prior to construction. The HMCP would establish procedures for responding to accidental spills. If leaks or spills should occur, contaminated material and soils would be contained and disposed of offsite in an approved DOT&PF/ADEC location. In general, to prevent sediment and chemical water quality impacts during construction, all vehicles, trucks, and heavy equipment would be kept within construction limits and operated in a manner that would limit unnecessary ground disturbance and all equipment would be routinely inspected and serviced to prevent leaks and accidental spills.
- No vehicles or equipment would be fueled or serviced within 100 feet of wetlands or fish-bearing streams, with the exception of "low-mobility" equipment used for pile driving, drilled shaft construction, or other bridge construction or removal. The HMCP would detail the process for fueling, which includes the "low-mobility" equipment within 100 feet of wetlands or fish-bearing streams. The HMCP would include mobile fueling operations. The project would follow EPA and ADEC refueling and containment regulations.
- Fuel would be stored a minimum of 100 feet from any wetland or waterbody, except for mobile re-fueling as described above.

- Fuel trucks and service vehicles would be equipped with adequate materials (e.g., absorbent pads, booms, etc.) to immediately contain and commence clean-up of spilled fuels and other petroleum products if necessary.
- Fuel would be stored a minimum of 100 feet from any wetland or waterbody. Spill-response equipment would be readily available, and construction personnel would be trained in spill response and would be able to contain accidental leaks of oil or fuel from construction equipment.
- Temporary Fill. Where it is necessary for equipment to enter creeks or wetland areas for construction, temporary fill may be required. Where temporary fill would be required, the contractor would be required to place temporary fill on geotextile mats or other suitable materials of sufficient thickness to facilitate the removal of the fill when it is no longer needed for construction. Wetlands would be stabilized against erosion once construction equipment and protective mats were removed. Wetlands that had been temporarily filled would be restored by reseeding or revegetating the disturbed areas as necessary using native species.
- Fish. Construction would be timed to minimize adverse effects to fish (salmon and hooligan) during critical life stages by adhering to in-water work windows identified through agency consultation. Streams may be temporarily re-routed during culvert or bridge replacement; however, all streams will be restored as close to their natural conditions as possible following completion of construction. Fish passage culverts would be replaced according to Tier 3 design criteria of the Memorandum of Agreement dated August 29, 2001 between ADF&G and the ADOT&PF.
- Beluga Whales. To minimize construction impacts noise to beluga whales, Protected Species Observers (PSOs) will be on site during all in-water impact and vibratory pile-driving activities. PSOs will search for, monitor, and track marine mammals around and within the harassment zone in accord with the marine mammal monitoring plan. PSOs will be authorized to halt construction activity if a marine mammal(s) is observed which may enter the harassment zone. PSOs would also determine when a marine mammal(s) has left the harassment zone and in-water construction activities may recommence.
- To minimize potential impacts to fish and beluga whales, marine fill placement would only occur within three hours of low tides or when an area is de-watered.

Compensatory Mitigation

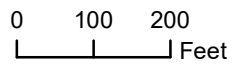
For unavoidable permanent impacts to waters of the U.S., the applicant proposes to:

- Replace existing culverts that are undersized and/or in poor condition to improve fish passage to upstream habitats.
- Remove old bridges in their entirety to eliminate impacts to existing waters of the U.S. at those locations.
- Pay an in-lieu fee (ILF) to an approved ILF sponsor, at a mitigation ratio as deemed appropriate during the permit evaluation process and in consideration of the above mitigation measures.



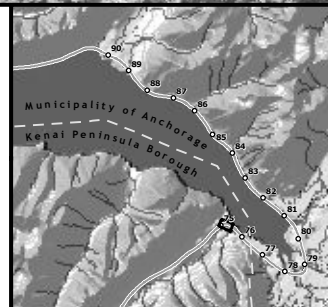
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90



HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- Mile post
- Maintain Existing Culvert
- Remove Culvert
- Replace Culvert
- Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland



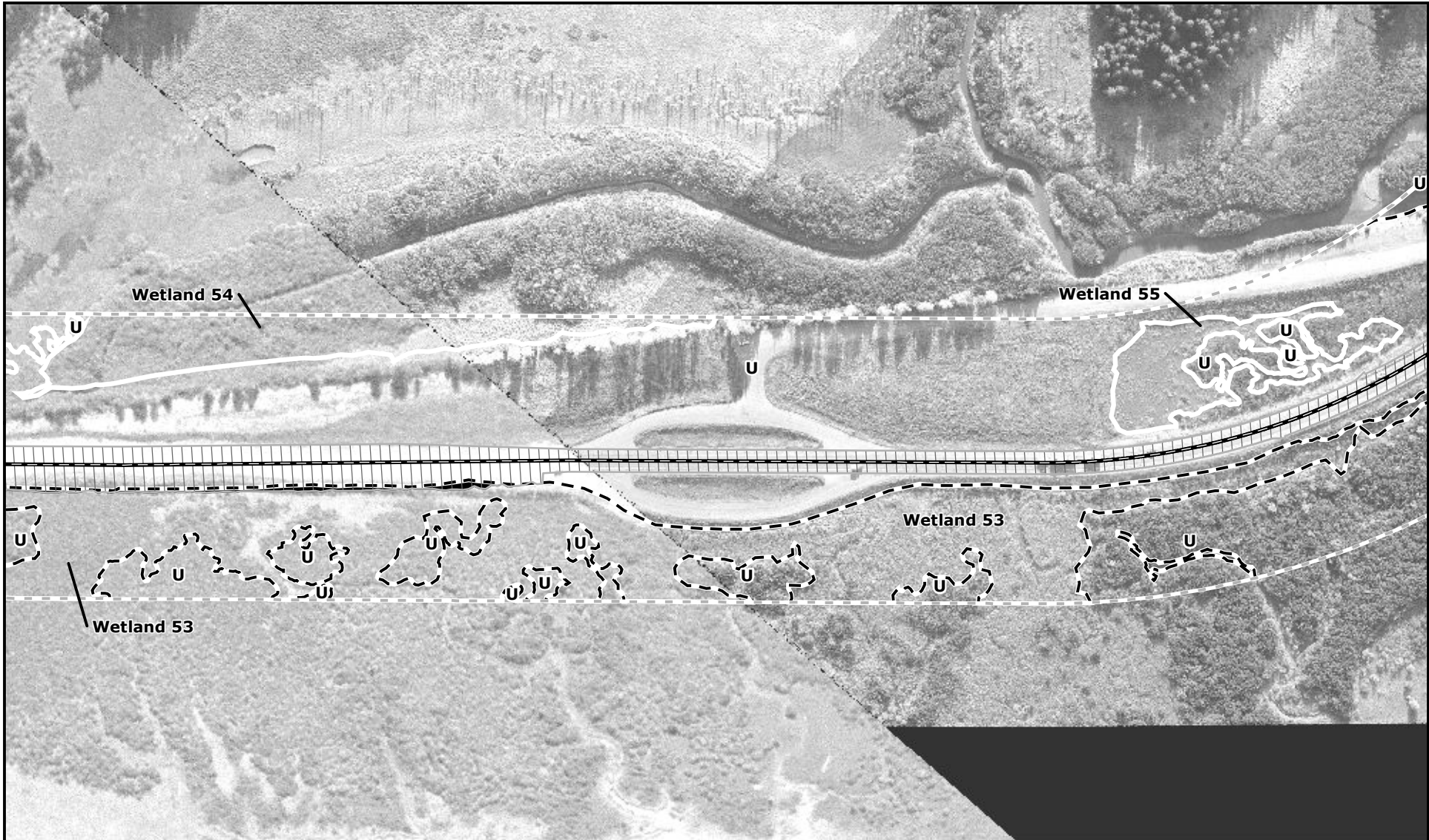
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

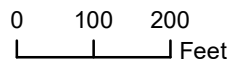
LOCATION: Section: SEC 22, 23, 26, 27 |
Township: T9N | Range: R2E
Lat/Long: 60.846° N, -149.059° W

SHEET 1 of 29 DATE: May 23, 2017



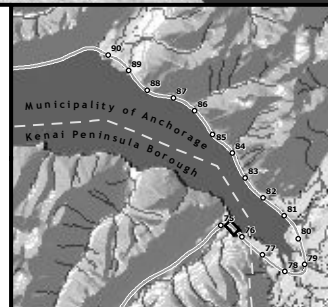
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90



HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- | | | |
|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |



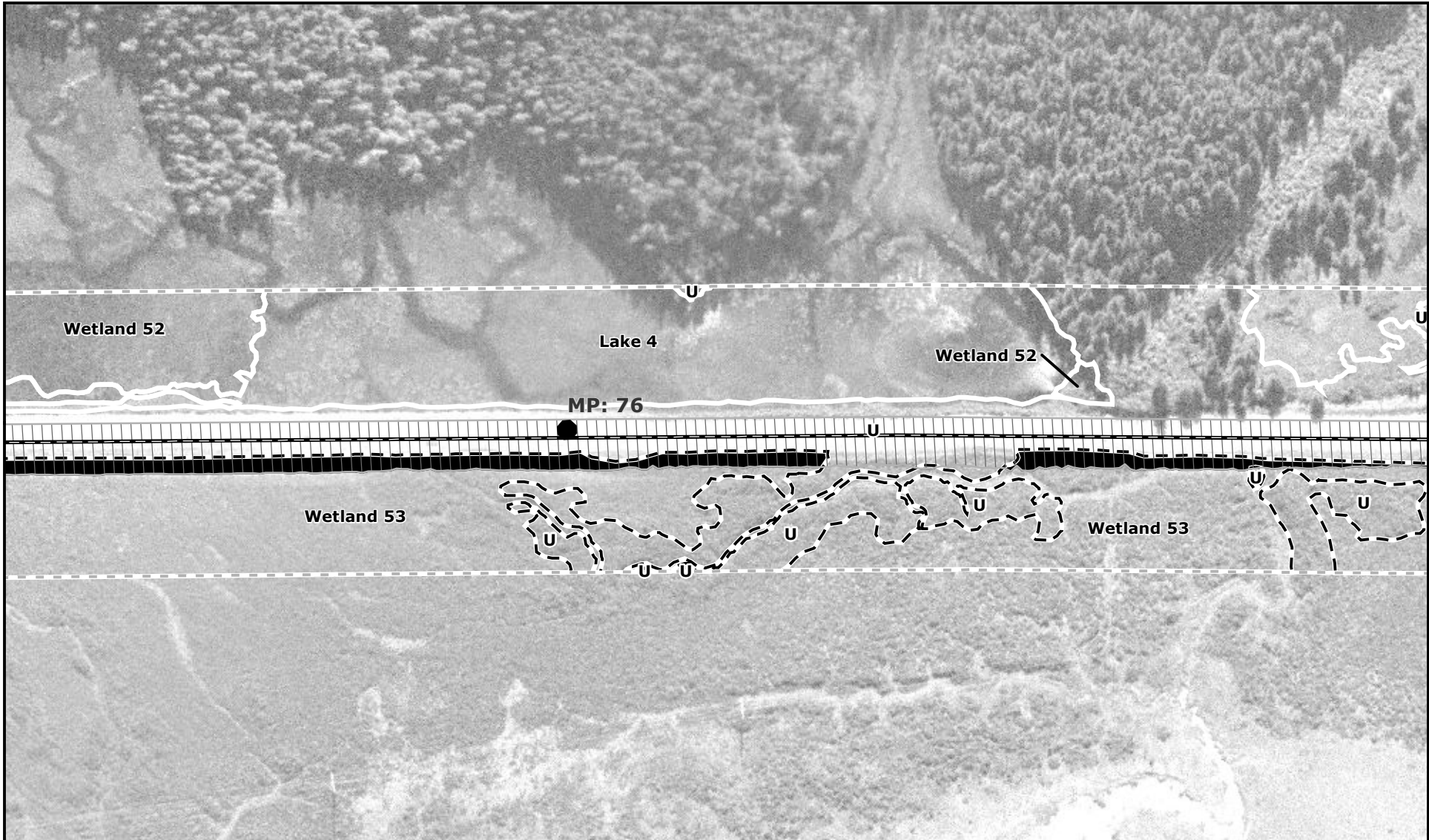
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

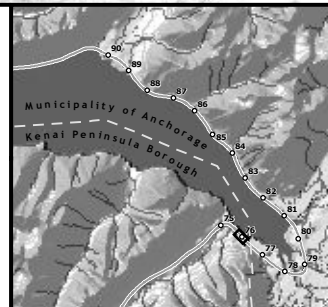
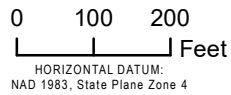
LOCATION: Section: SEC 26 | Township: T9N | Range: R2E
Lat/Long: 60.844° N, -149.053° W

SHEET 2 of 29 DATE: May 23, 2017

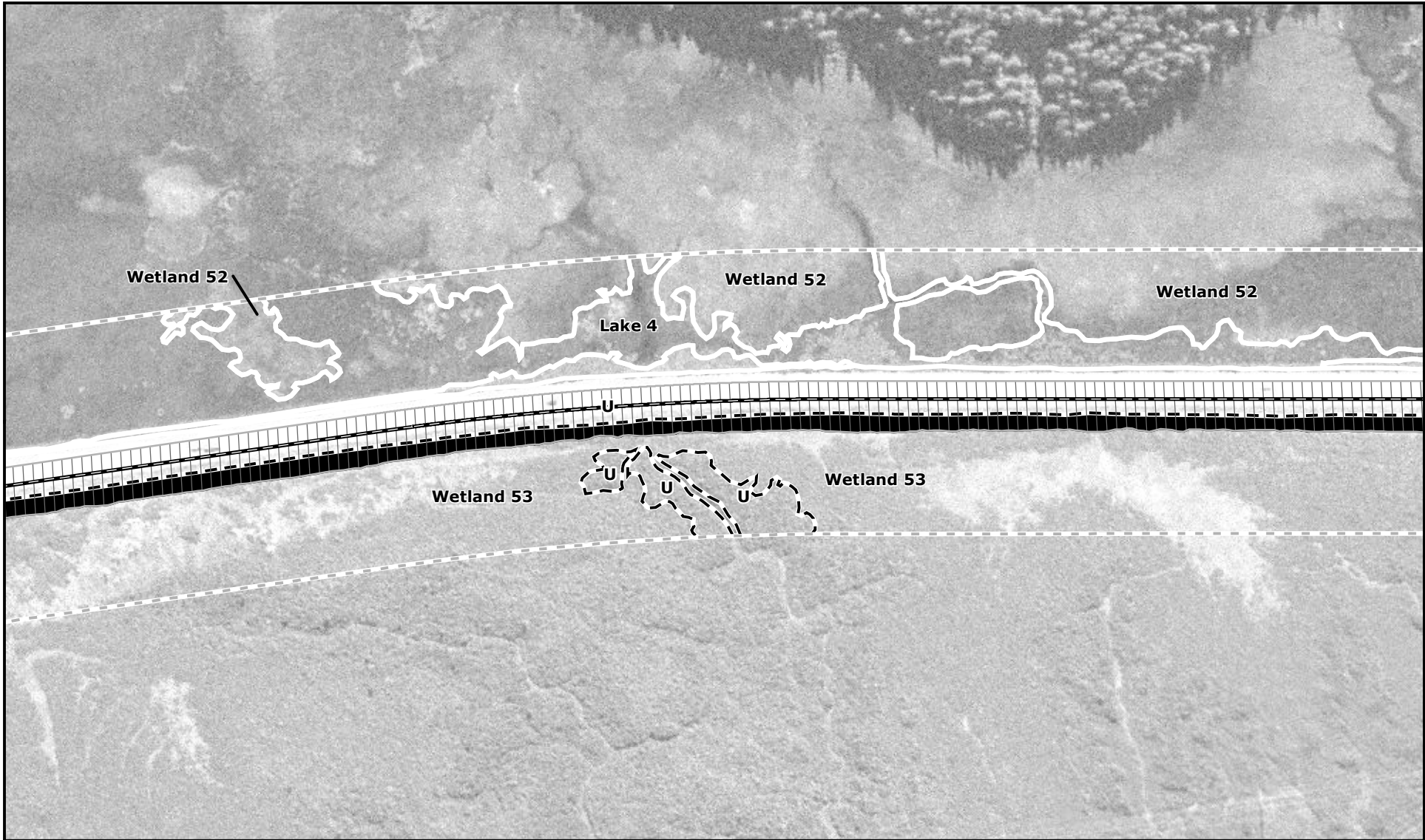


MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska
 Seward Highway from Milepost 75 to Milepost 90

- Mile post
- Maintain Existing Culvert
- Remove Culvert
- Replace Culvert
- Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland

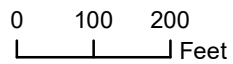


APPLICANT: Alaska Department of Transportation and Public Facilities
 FILE NO: POA-2013-448
 WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River
 LOCATION: Section: SEC 26 | Township: T9N | Range: R2E
 Lat/Long: 60.839° N, -149.044° W
 SHEET 3 of 29 DATE: May 23, 2017



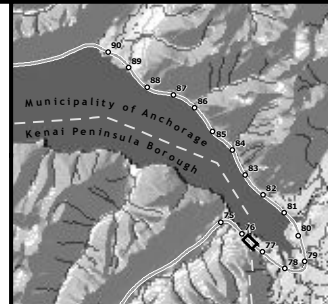
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90



HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

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|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |



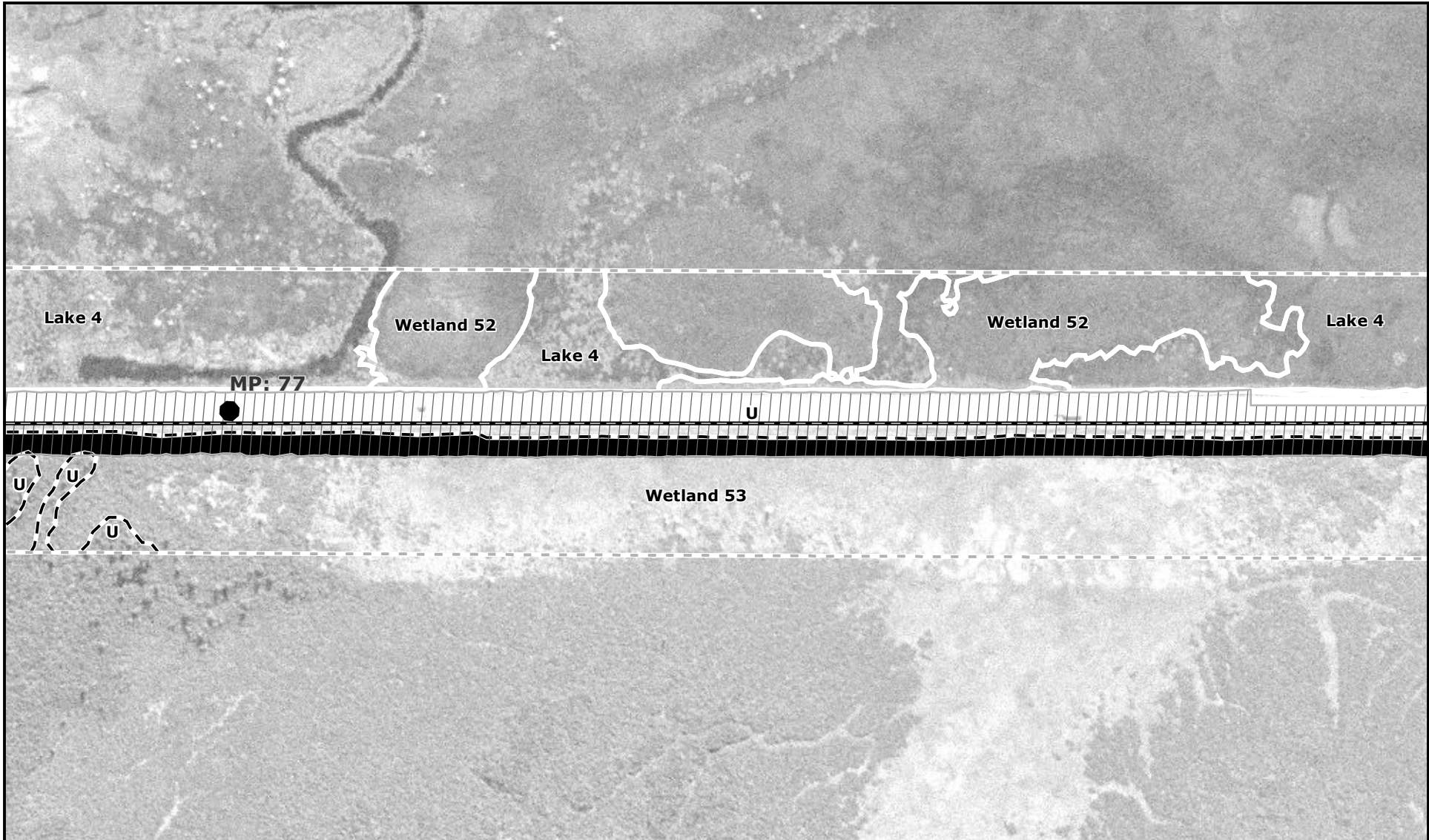
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 25, 26, 35, 36 |
Township: T9N | Range: R2E
Lat/Long: 60.835° N, -149.035° W

SHEET 4 of 29 DATE: May 23, 2017



MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90

0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- Mile post
- Maintain Existing Culvert
- ▒▒▒ Remove Culvert
- ▬ Replace Culvert
- +— Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Wetland Boundary
- Wetland Project Review Boundary
- ▨ Project Footprint
- Impacts to Wetlands
- *U = Upland



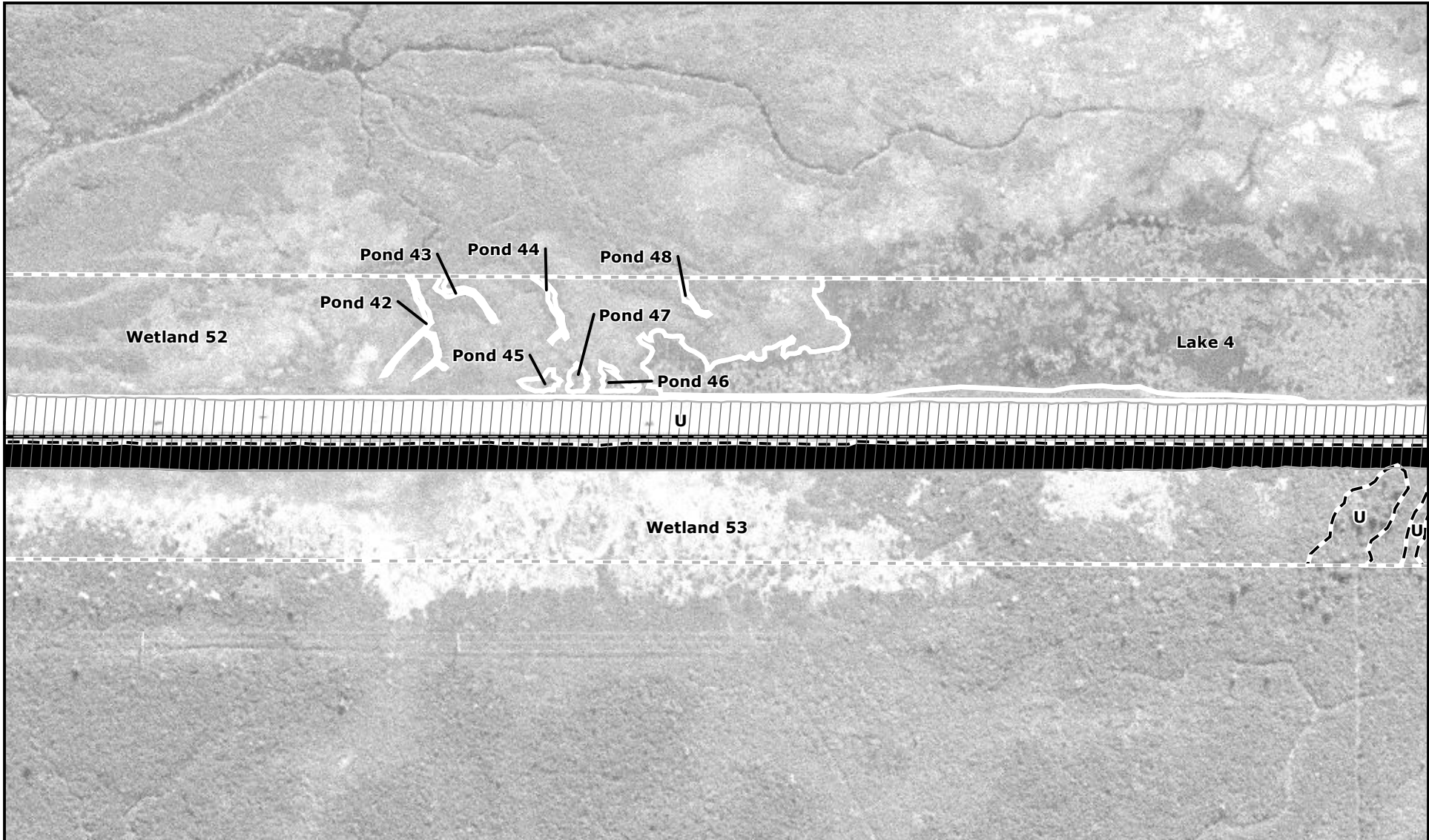
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

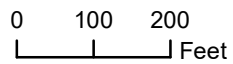
LOCATION: Section: SEC 36 | Township: T9N | Range: R2E
Lat/Long: 60.83° N, -149.025° W

SHEET 5 of 29 DATE: May 23, 2017



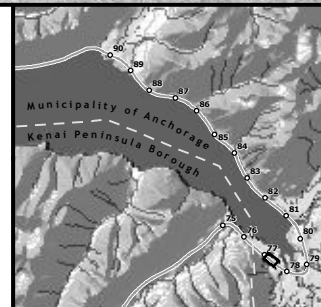
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90



HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- | | | |
|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |



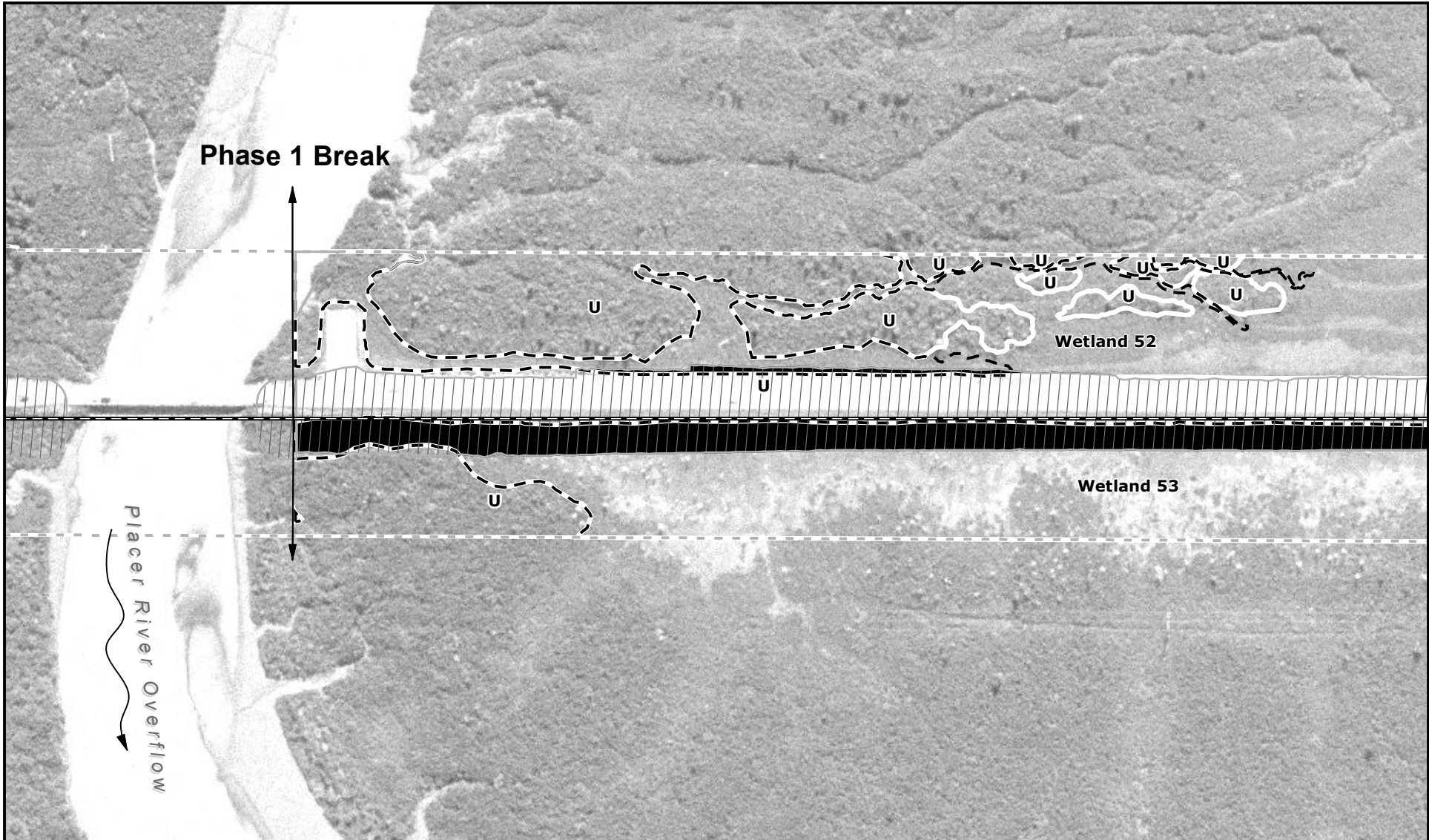
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 36 | Township: T9N | Range: R2E
Lat/Long: 60.826° N, -149.015° W

SHEET 6 of 29 DATE: May 23, 2017



MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

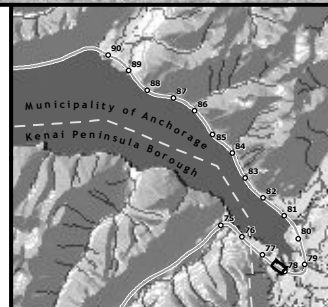
Seward Highway from Milepost 75 to Milepost 90



0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- | | | |
|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |



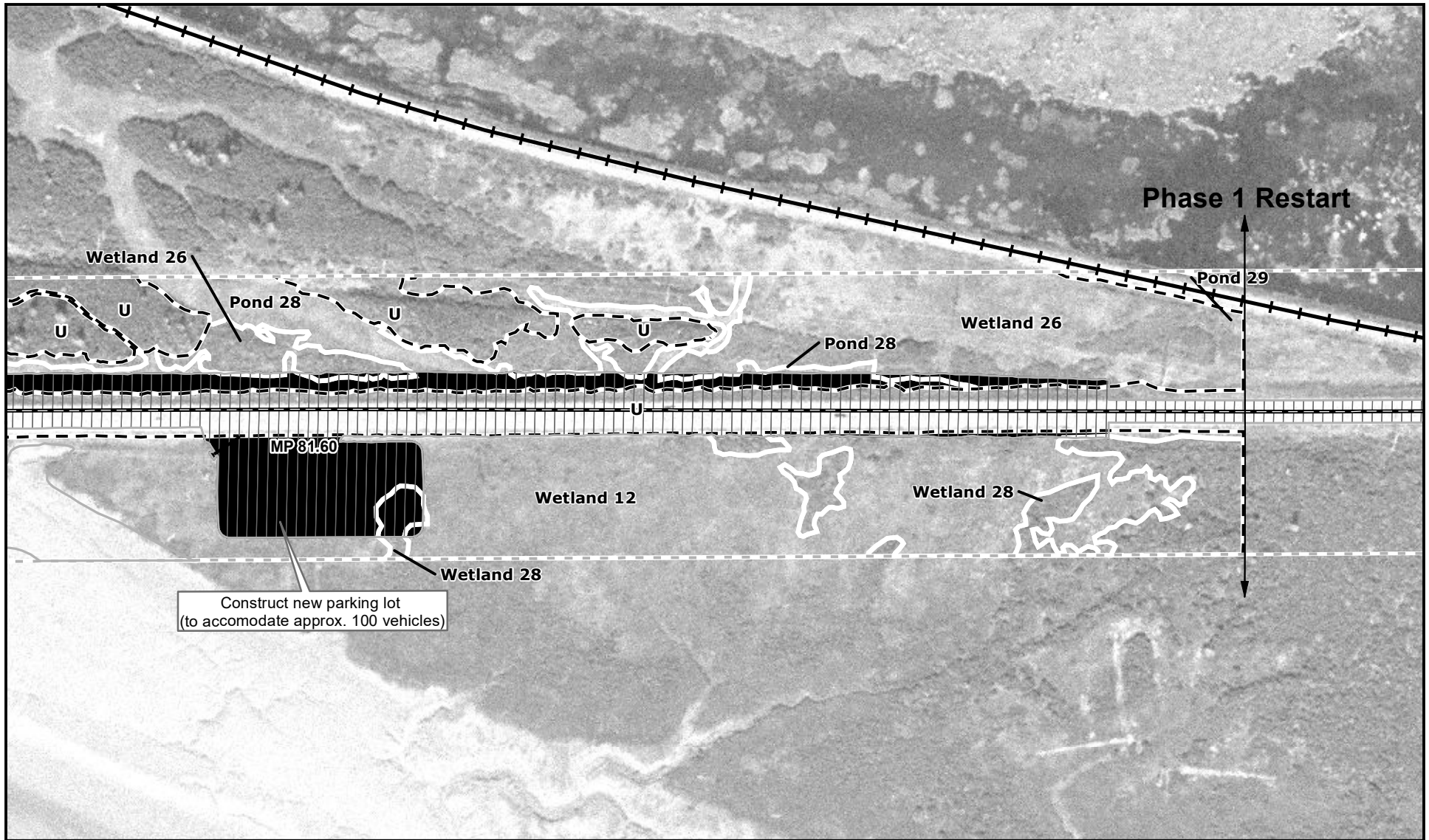
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

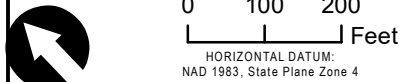
WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 6, 31, 36 | Township: T8N, T9N | Range: R2E, R3E
Lat/Long: 60.822° N, -149.005° W

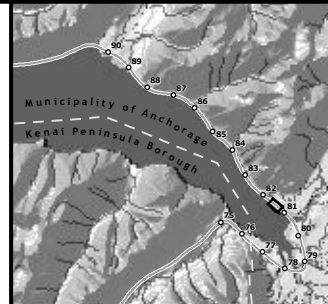
SHEET 7 of 29 DATE: May 23, 2017



MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska
 Seward Highway from Milepost 75 to Milepost 90

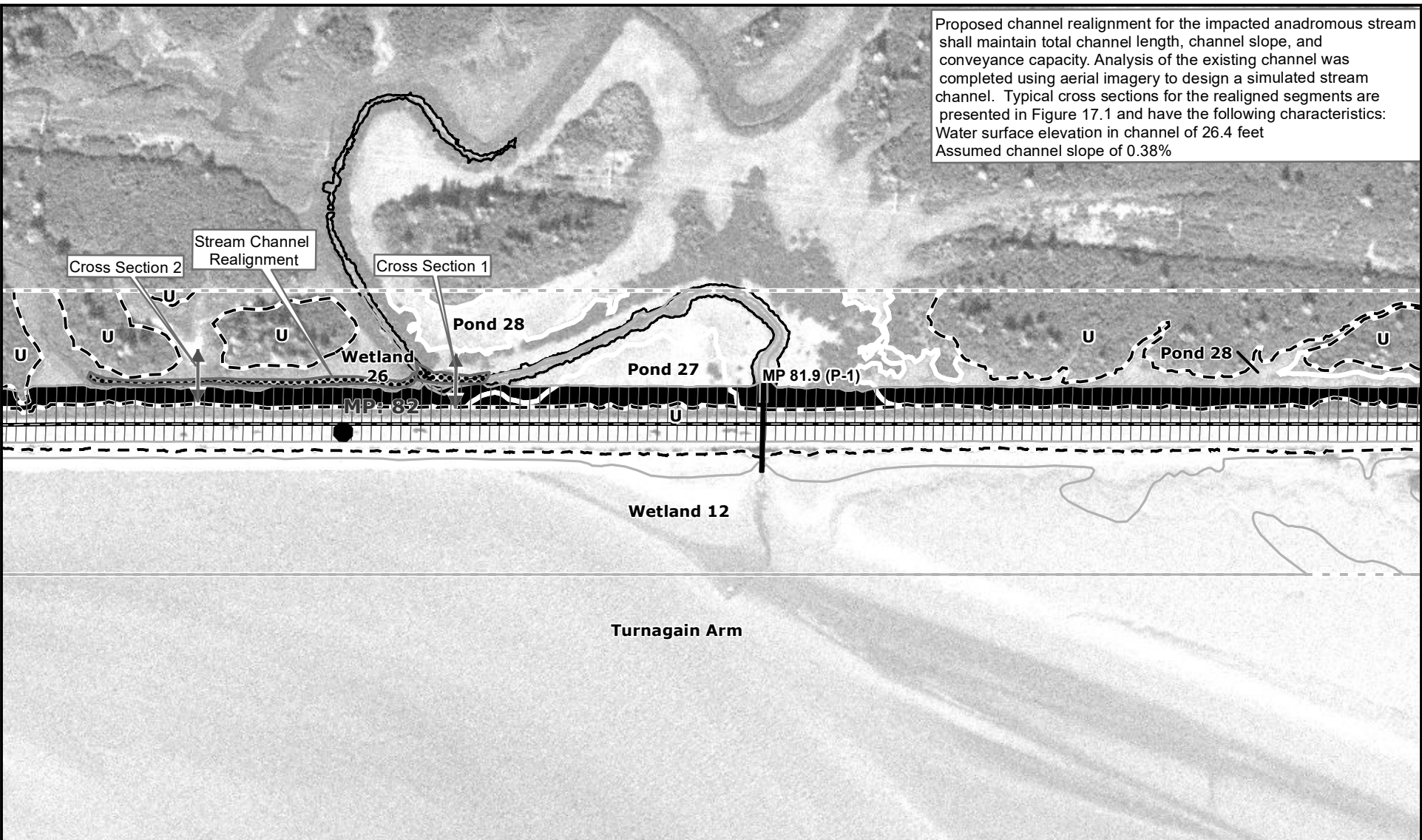


- Mile post
- Maintain Existing Culvert
- Remove Culvert
- Replace Culvert
- Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland



APPLICANT: Alaska Department of Transportation and Public Facilities
 FILE NO: POA-2013-448
 WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River
 LOCATION: Section: SEC 19, 24 | Township: T9N | Range: R2E, R3E
 Lat/Long: 60.853° N, -149.004° W
 SHEET 8 of 29 DATE: May 23, 2017

Proposed channel realignment for the impacted anadromous stream shall maintain total channel length, channel slope, and conveyance capacity. Analysis of the existing channel was completed using aerial imagery to design a simulated stream channel. Typical cross sections for the realigned segments are presented in Figure 17.1 and have the following characteristics:
 Water surface elevation in channel of 26.4 feet
 Assumed channel slope of 0.38%



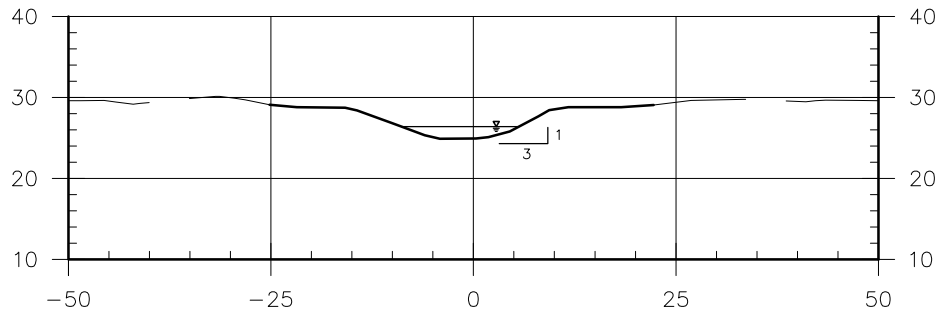
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska
 Seward Highway from Milepost 75 to Milepost 90

0 100 200 Feet
 HORIZONTAL DATUM:
 NAD 1983, State Plane Zone 4

- Mile post
- Maintain Existing Culvert
- Remove Culvert
- Replace Culvert
- Channel Cross Section
- Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Channel Realignment
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland

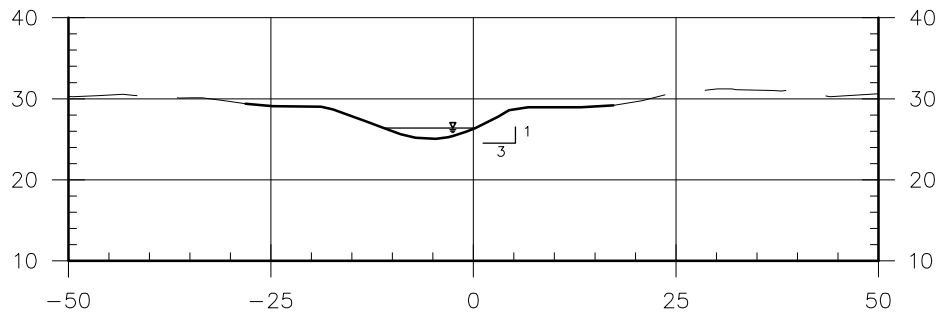


APPLICANT: Alaska Department of Transportation and Public Facilities
 FILE NO: POA-2013-448
 WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River
 LOCATION: Section: SEC 24 | Township: T9N | Range: R2E
 Lat/Long: 60.857° N, -149.013° W
 SHEET 9 of 29 DATE: May 23, 2017



Cross Section 1

THALWEG ELEVATION: 24.9 FEET
 SIDE SLOPES: 3H:1V
 CONVEYANCE AREA: 16 SF
 CHANNEL SLOPE: 0.38%
 STREAMBED WIDTH: 5 FEET
 WATER SURFACE ELEV.: 26.4 FEET

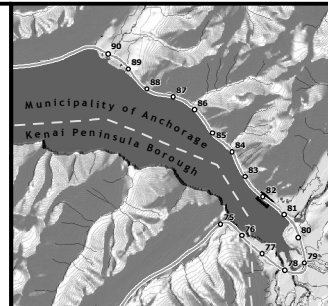


Cross Section 2

THALWEG ELEVATION: 25.0 FEET
 SIDE SLOPES: 3H:1V
 CONVEYANCE AREA: 10 SF
 CHANNEL SLOPE: 0.38%
 STREAMBED WIDTH: 3 FEET
 WATER SURFACE ELEV.: 26.4 FEET

MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90



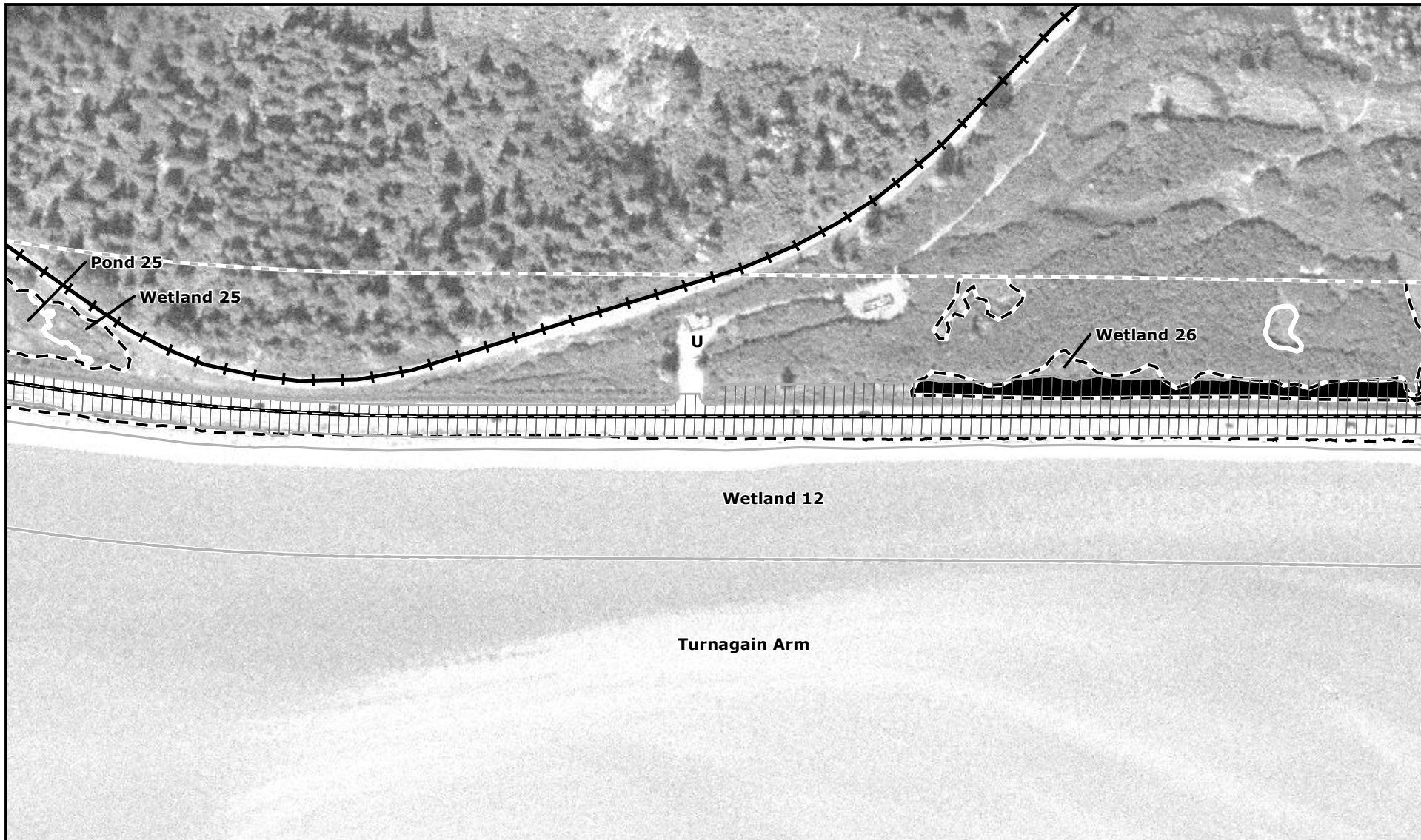
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek, and Glacier River

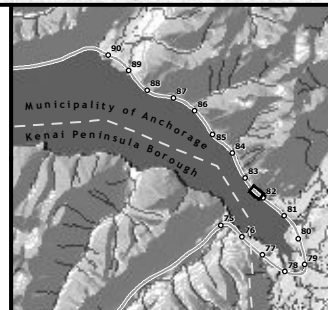
LOCATION: Section: SEC 24 | Township: T9N | Range: R2E
 Lat/Long: 60.857° N, -149.013° W

SHEET 9.1 of 29 DATE: May 23, 2017

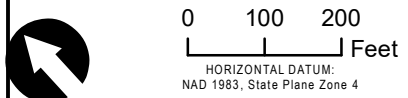


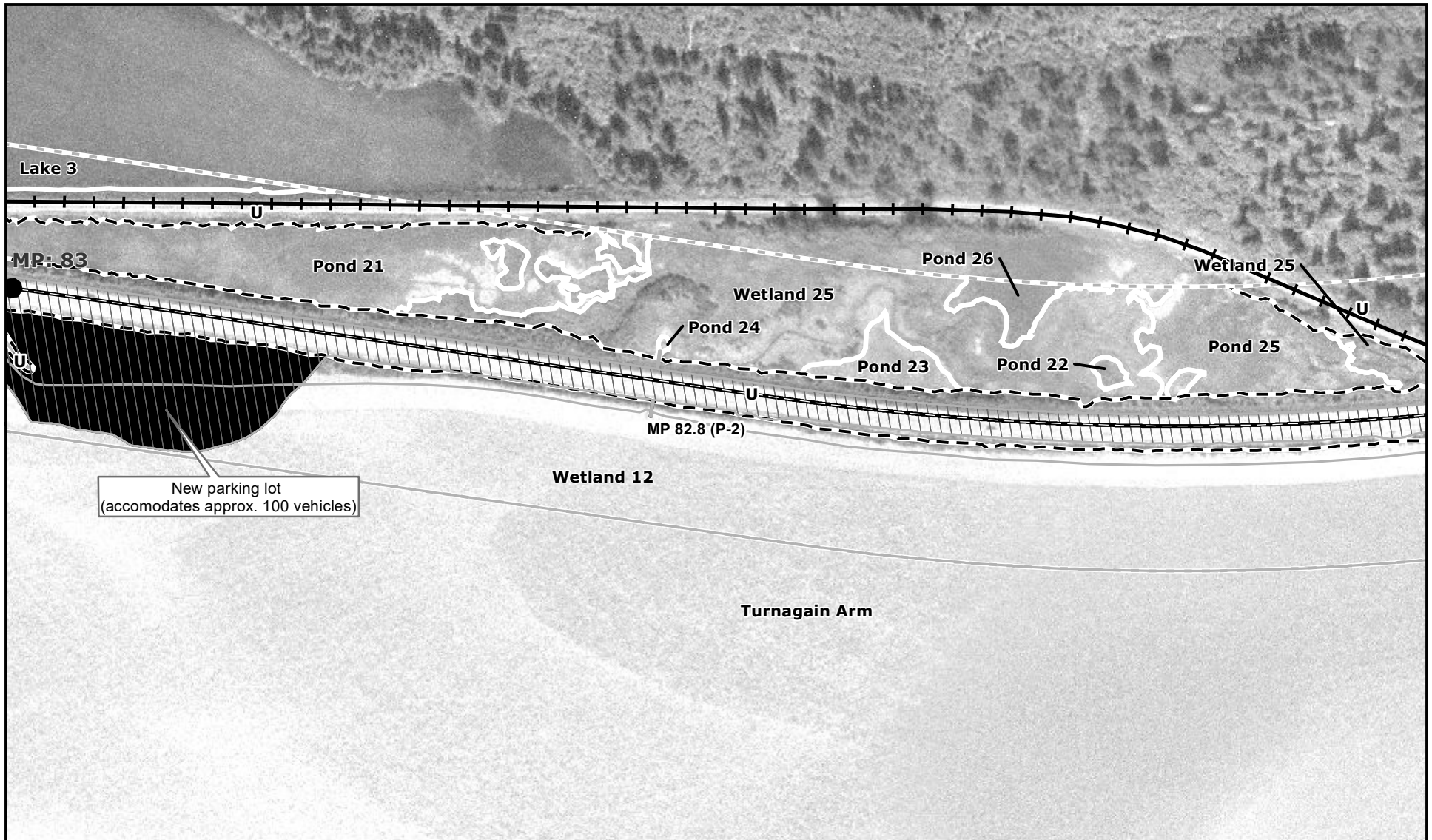
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska
 Seward Highway from Milepost 75 to Milepost 90

- Mile post
- Railroad
- Wetland Boundary
- Maintain Existing Culvert
- Proposed Centerline
- Wetland Project Review Boundary
- Remove Culvert
- High Tide Line
- Project Footprint
- Replace Culvert
- Mean High Water
- Impacts to Wetlands
- *U = Upland



APPLICANT: Alaska Department of Transportation and Public Facilities
 FILE NO: POA-2013-448
 WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River
 LOCATION: Section: SEC 13, 24 | Township: T9N | Range: R2E
 Lat/Long: 60.862° N, -149.023° W
 SHEET 10 of 29 DATE: May 23, 2017





MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90

0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- Mile post
- Maintain Existing Culvert
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- High Tide Line
- Mean High Water
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland



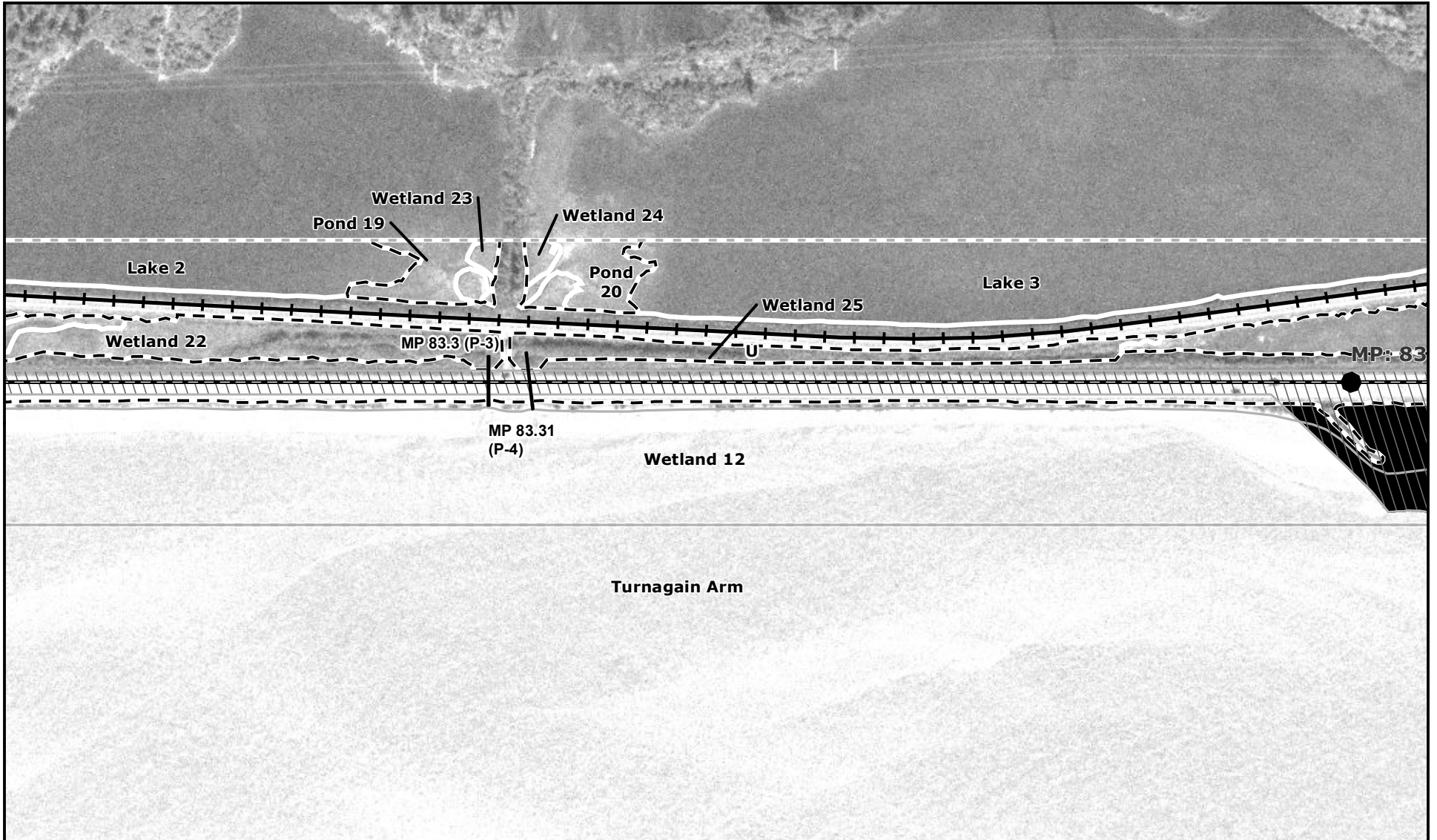
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

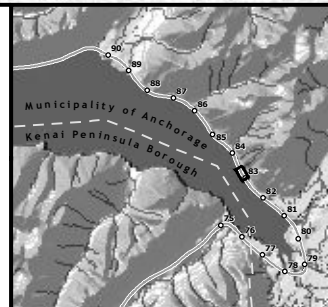
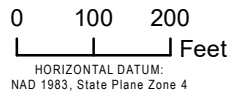
LOCATION: Section: SEC 13, 14 | Township: T9N | Range: R2E
Lat/Long: 60.867° N, -149.031° W

SHEET 11 of 29 DATE: May 23, 2017



MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska
 Seward Highway from Milepost 75 to Milepost 90

- Mile post
- Maintain Existing Culvert
- Remove Culvert
- Replace Culvert
- Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland



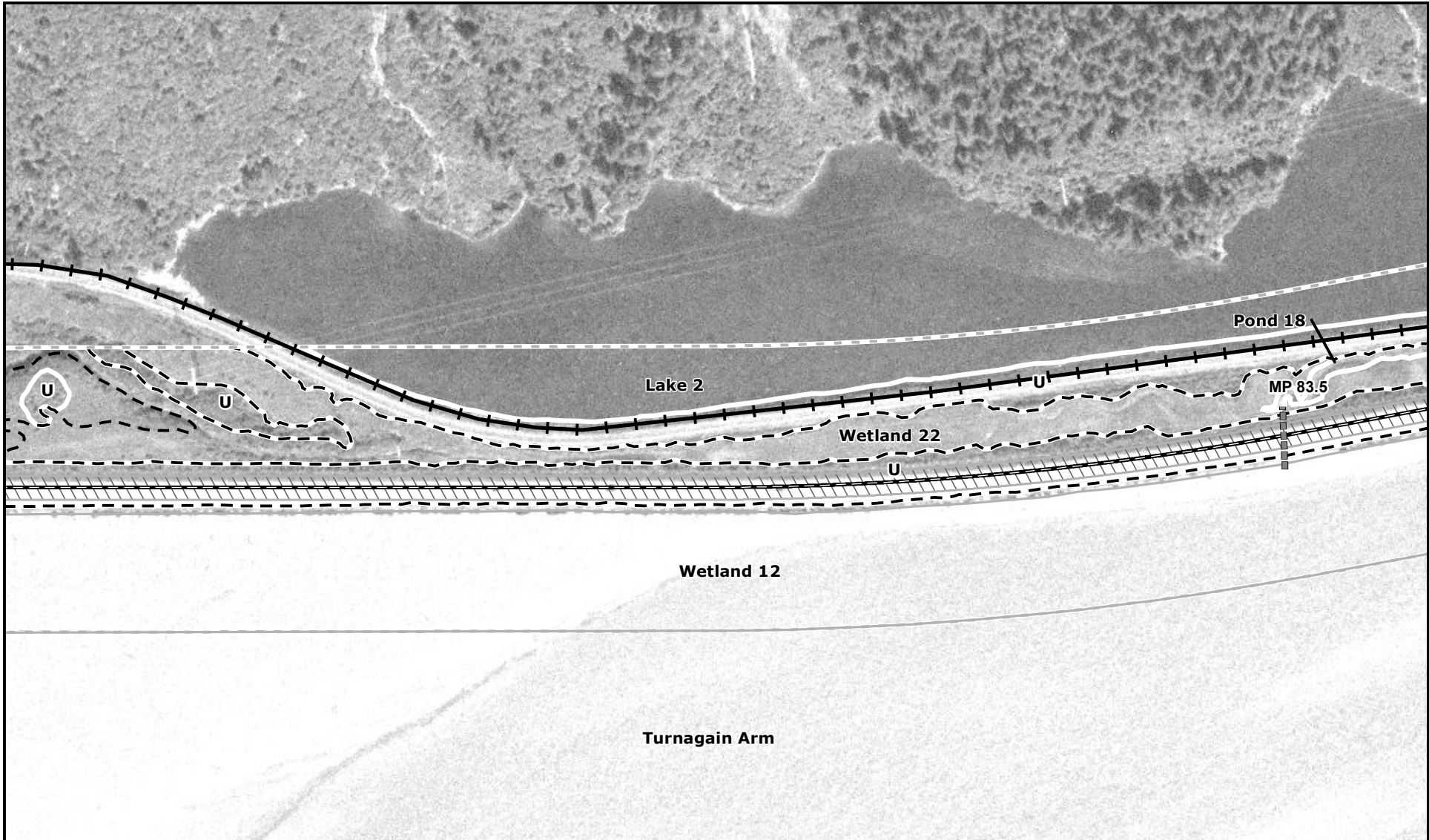
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

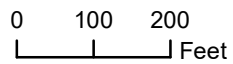
LOCATION: Section: SEC 13, 14 | Township: T9N | Range: R2E
 Lat/Long: 60.873° N, -149.037° W

SHEET 12 of 29 DATE: May 23, 2017



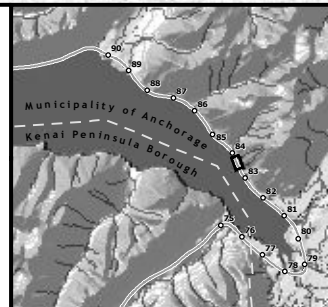
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90



HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- | | | |
|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |



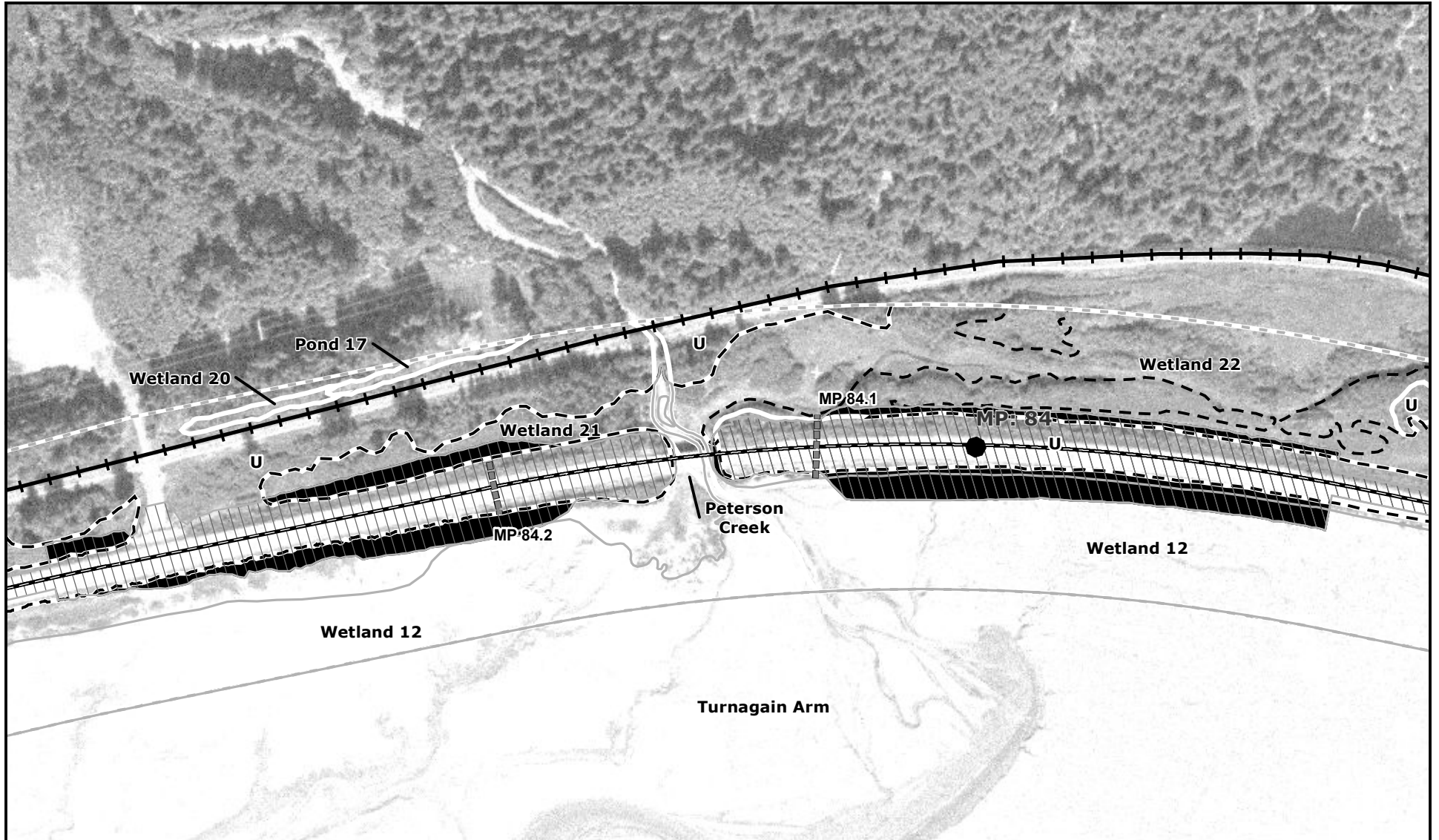
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 11, 14 | Township: T9N | Range: R2E
Lat/Long: 60.879° N, -149.042° W

SHEET 13 of 29 DATE: May 23, 2017




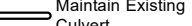



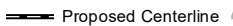


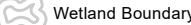
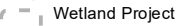
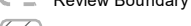
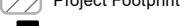
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

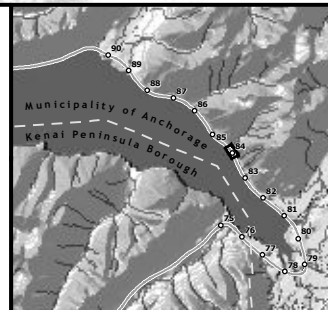
Seward Highway from Milepost 75 to Milepost 90



0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

-  Mile post
-  Maintain Existing Culvert
-  Remove Culvert
-  Replace Culvert
-  Railroad
-  Proposed Centerline
-  High Tide Line
-  Mean High Water
-  Wetland Boundary
-  Wetland Project Review Boundary
-  Project Footprint
-  Impacts to Wetlands
- *U = Upland



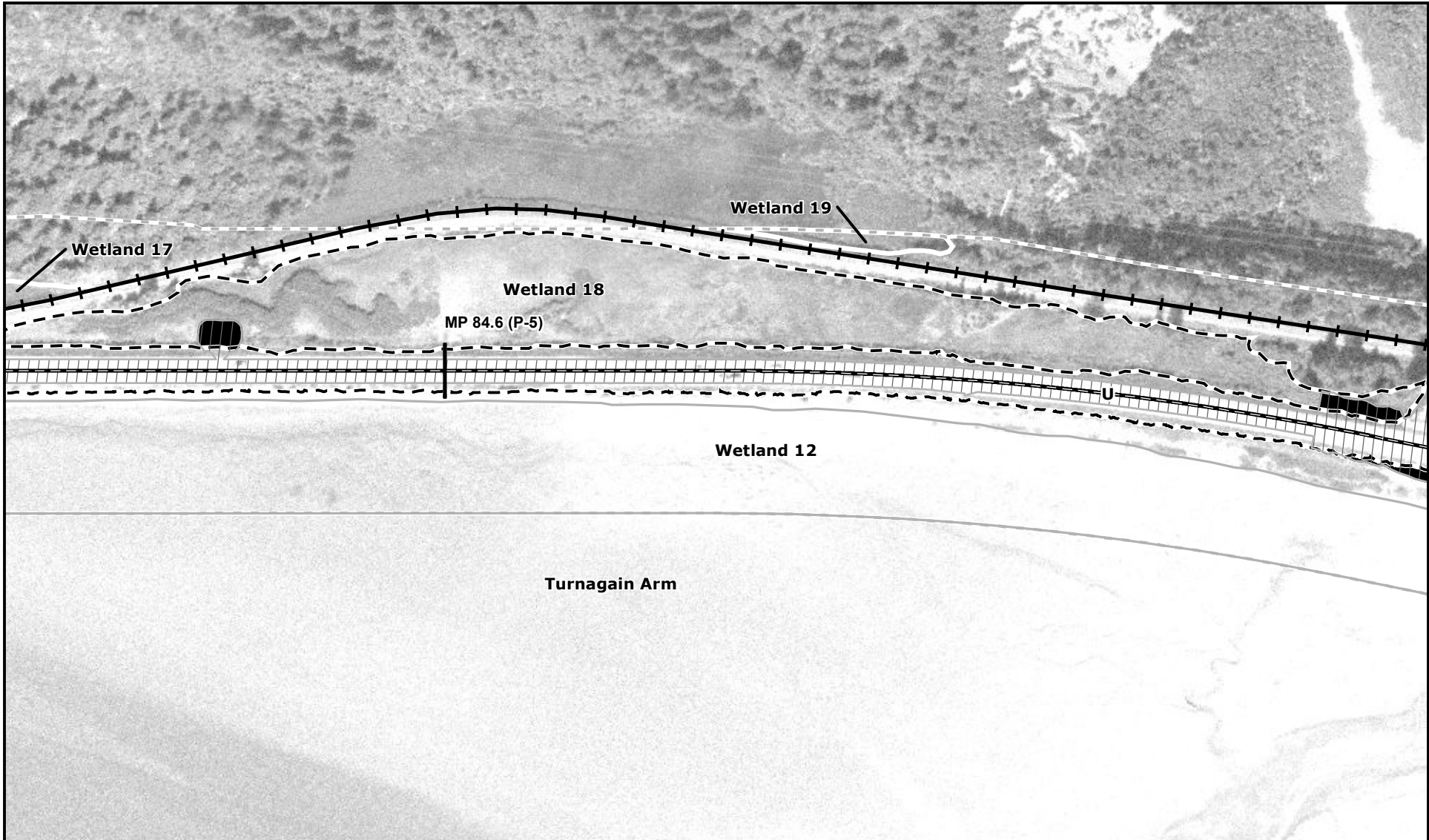
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

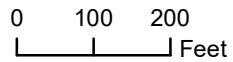
LOCATION: Section: SEC 11 | Township: T9N | Range: R2E
Lat/Long: 60.885° N, -149.047° W

SHEET 14 of 29 DATE: May 23, 2017



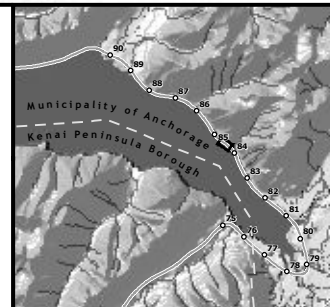
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90



HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- | | | |
|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |



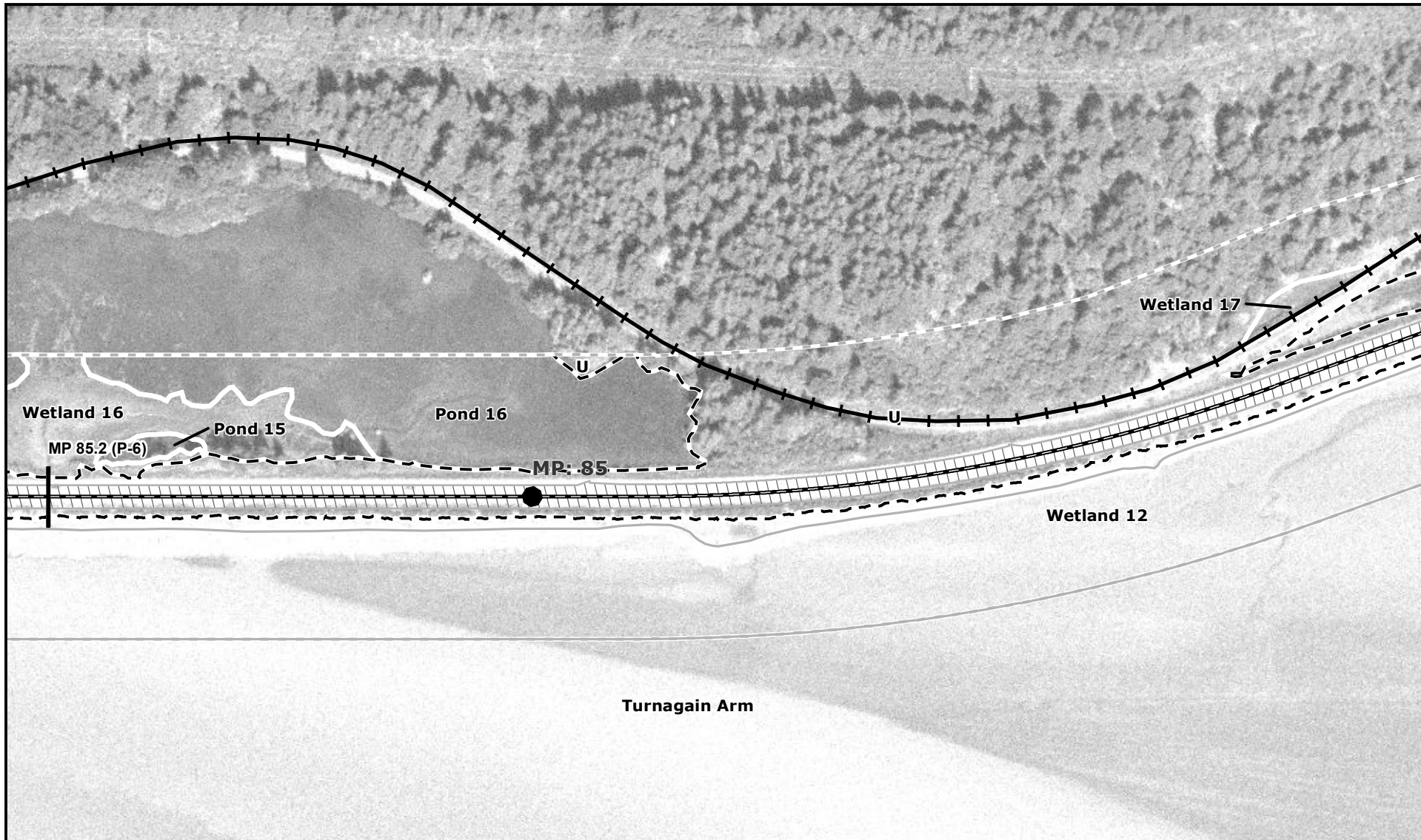
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 2, 11 | Township: T9N | Range: R2E
Lat/Long: 60.889° N, -149.056° W

SHEET 15 of 29 DATE: May 23, 2017



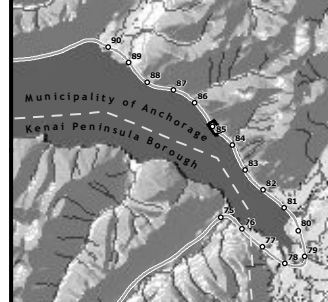
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90

0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- Mile post
- Maintain Existing Culvert
- Remove Culvert
- Replace Culvert
- Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland



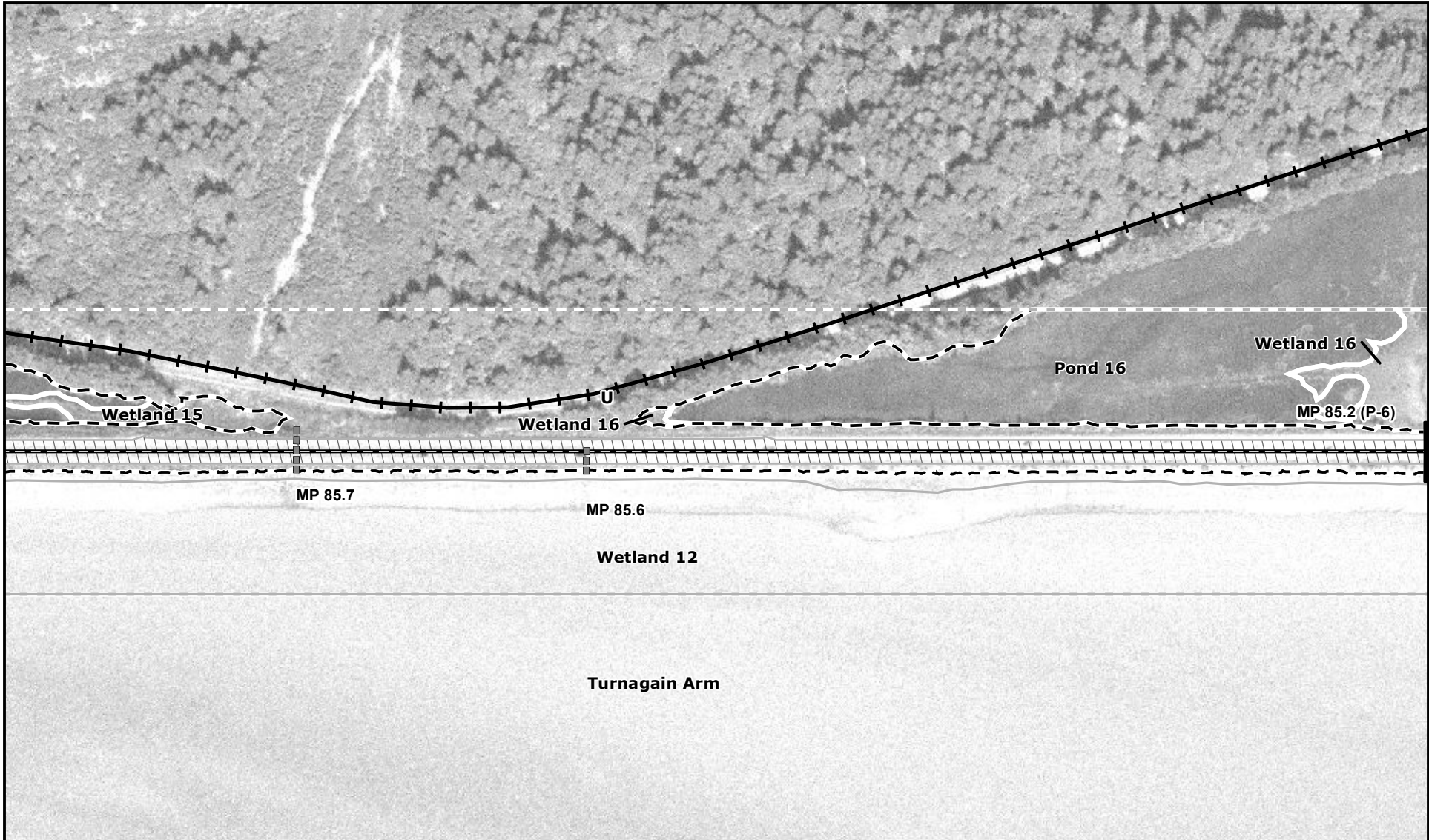
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 2, 3, 10, 11 | Township: T9N | Range: R2E
Lat/Long: 60.894° N, -149.064° W

SHEET 16 of 29 DATE: May 23, 2017



MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

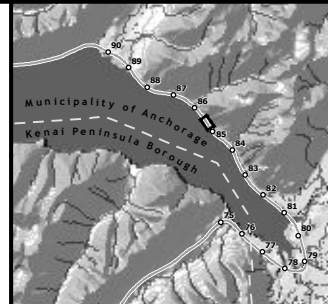
Seward Highway from Milepost 75 to Milepost 90



0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- | | | |
|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |



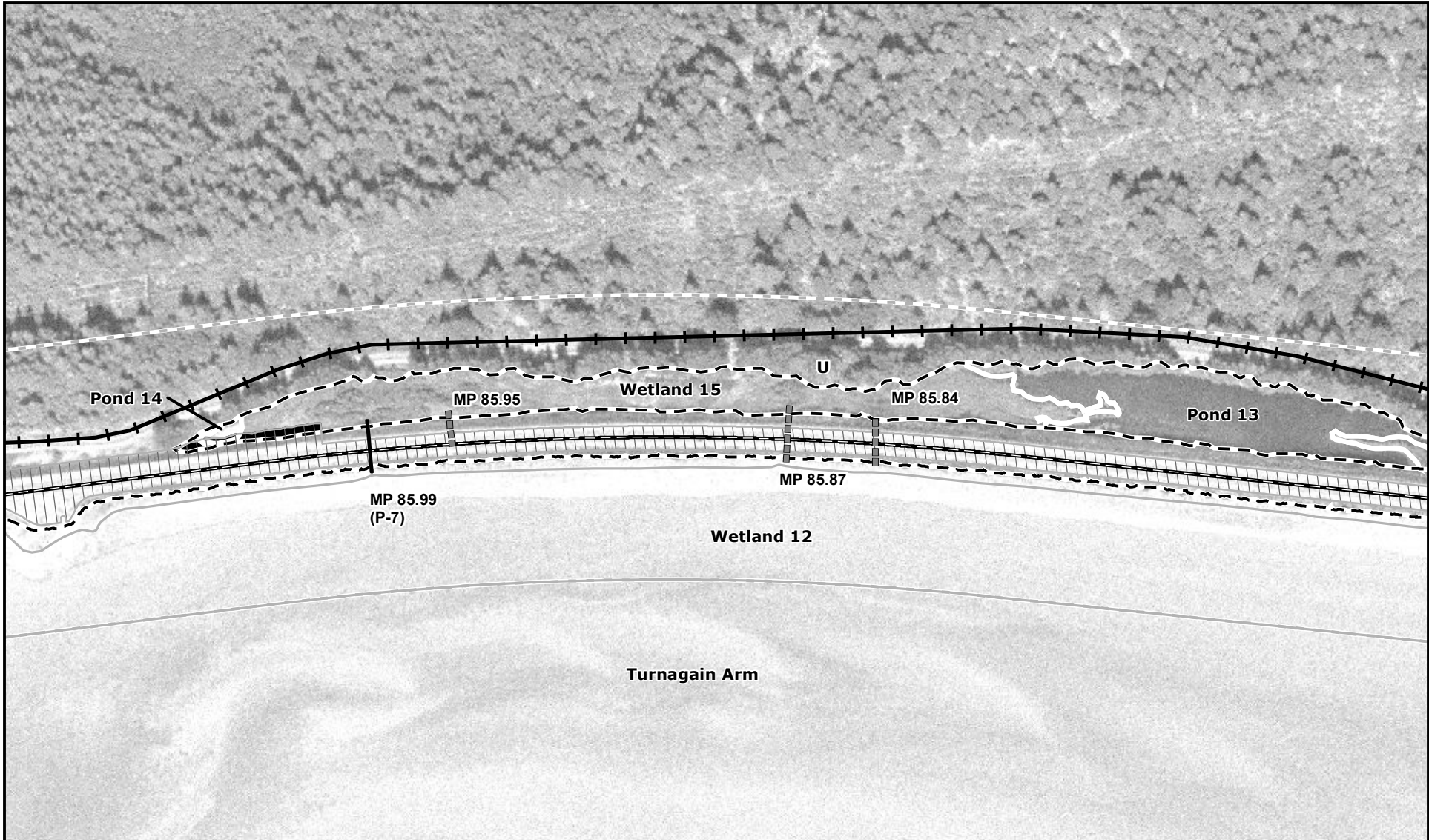
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 3 | Township: T9N
Range: R2E
Lat/Long: 60.899° N, -149.072° W

SHEET 17 of 29 DATE: May 23, 2017



MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

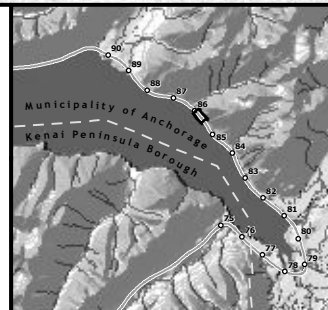
Seward Highway from Milepost 75 to Milepost 90



0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- | | | |
|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |



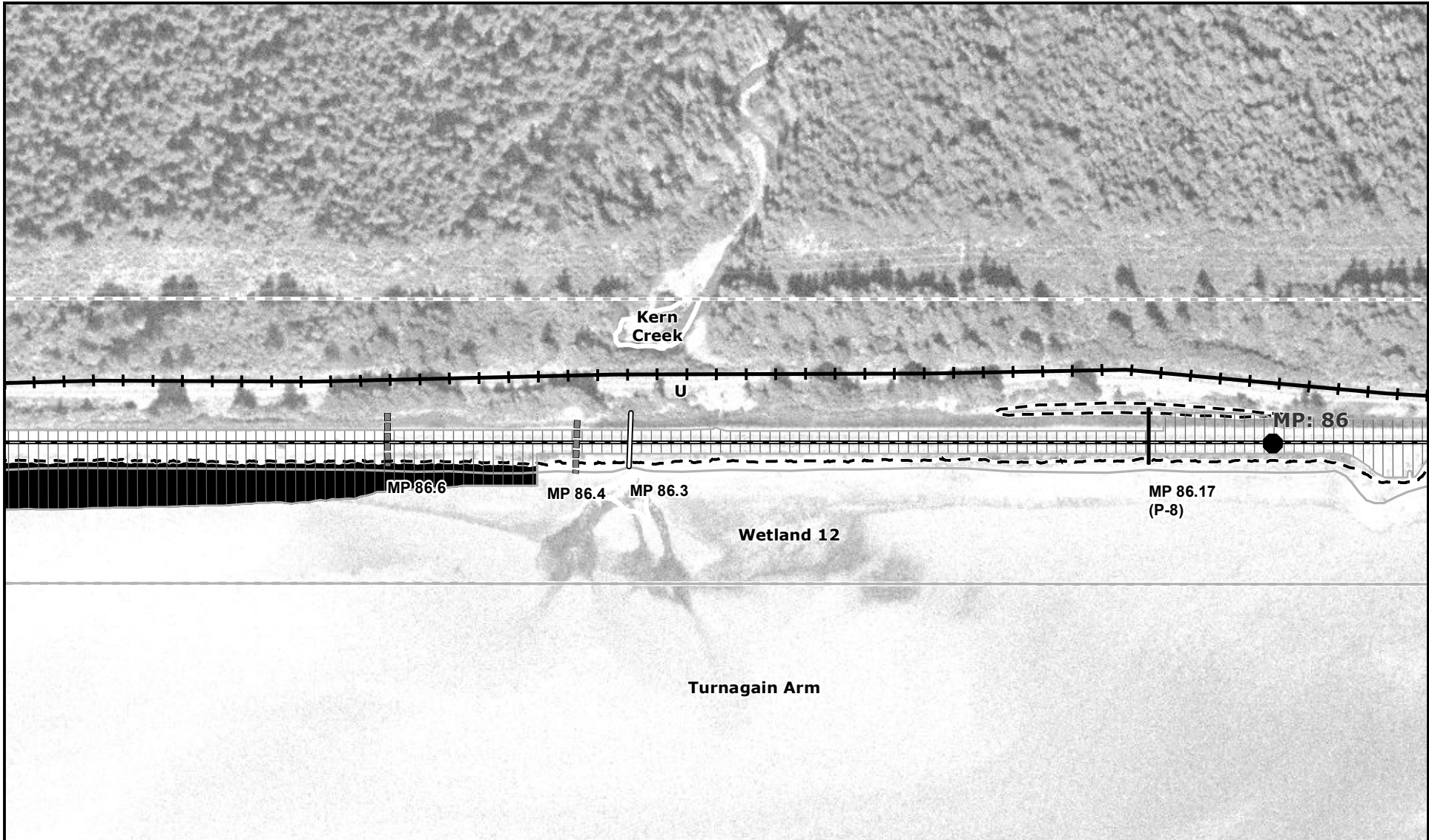
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

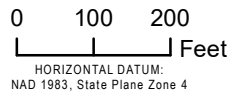
WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 3, 34 | Township: T10N, T9N | Range: R2E
Lat/Long: 60.905° N, -149.079° W

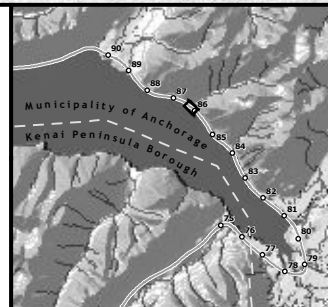
SHEET 18 of 29 DATE: May 23, 2017



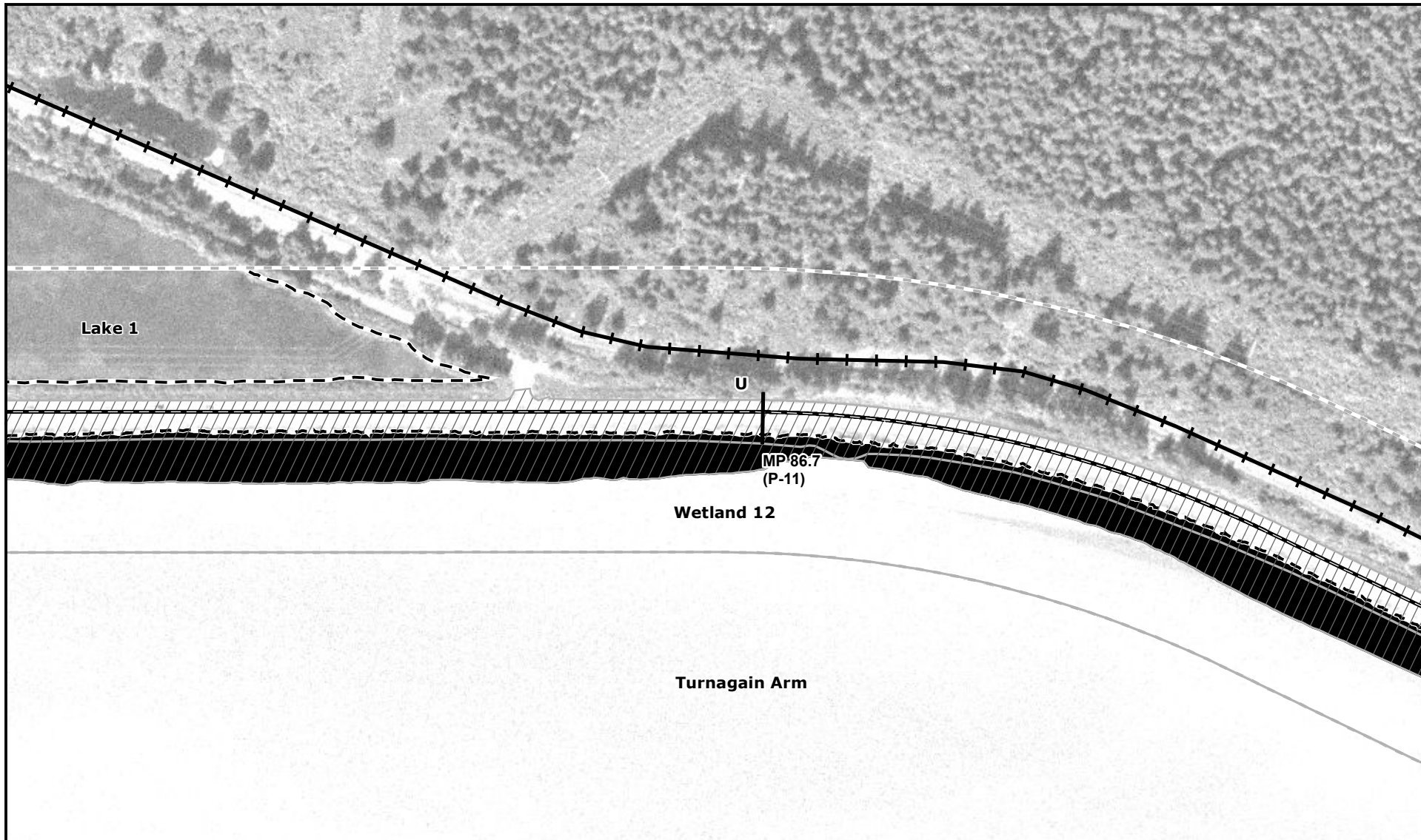
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska
 Seward Highway from Milepost 75 to Milepost 90



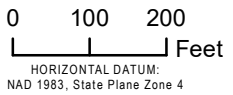
- Mile post
- Maintain Existing Culvert
- Remove Culvert
- Replace Culvert
- Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland



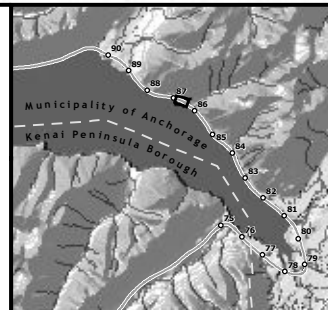
APPLICANT: Alaska Department of Transportation and Public Facilities
 FILE NO: POA-2013-448
 WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River
 LOCATION: Section: SEC 3, 33, 34 | Township: T9N, T10N | Range: R2E
 Lat/Long: 60.91° N, -149.088° W
 SHEET 19 of 29 DATE: May 23, 2017



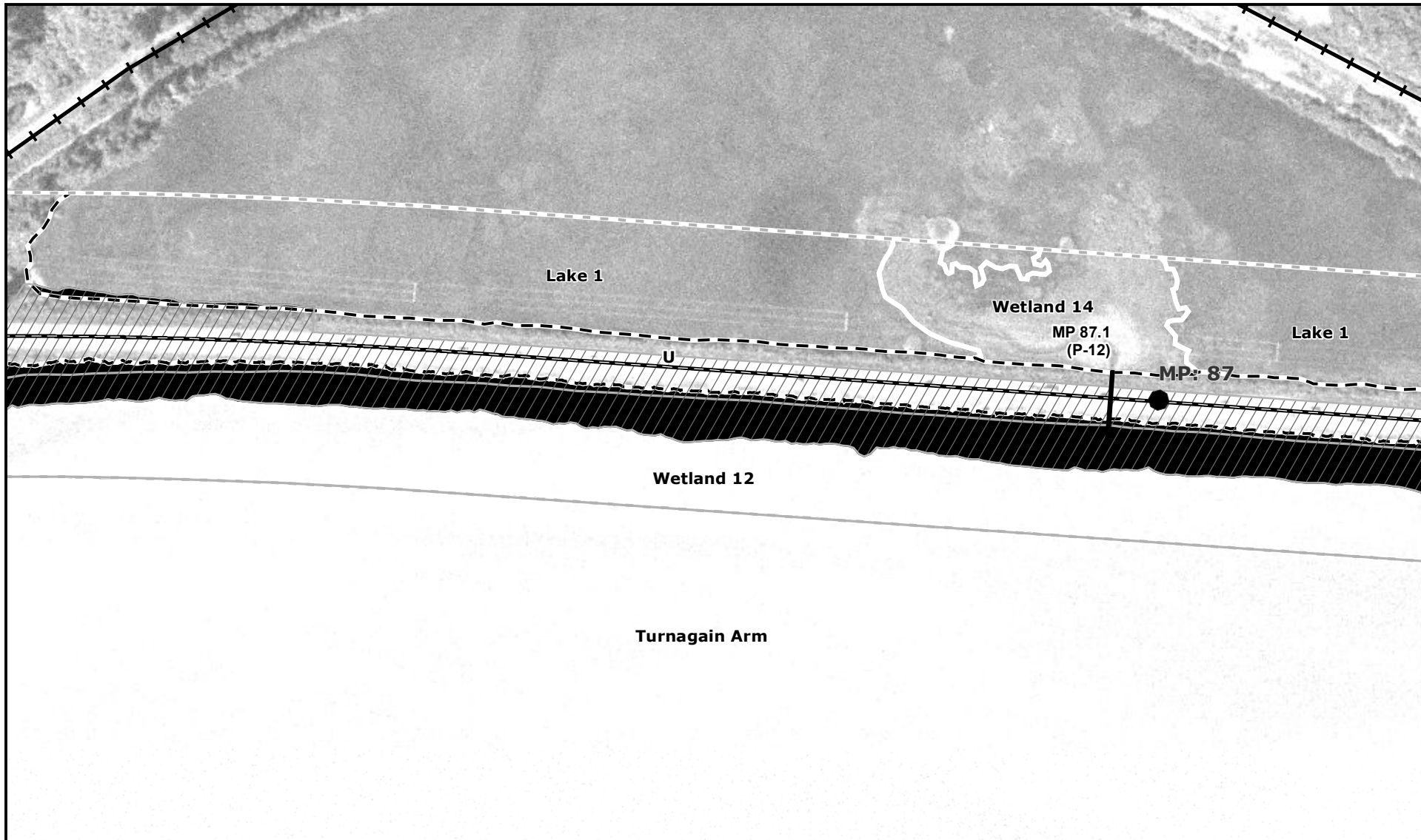
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska
 Seward Highway from Milepost 75 to Milepost 90



- Mile post
- Railroad
- Wetland Boundary
- Maintain Existing Culvert
- Proposed Centerline
- Wetland Project Review Boundary
- Remove Culvert
- High Tide Line
- Project Footprint
- Replace Culvert
- Mean High Water
- Impacts to Wetlands
- *U = Upland



APPLICANT: Alaska Department of Transportation and Public Facilities
 FILE NO: POA-2013-448
 WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River
 LOCATION: Section: SEC 33, 34 | Township: T10N | Range: R2E
 Lat/Long: 60.913° N, -149.098° W
 SHEET 20 of 29 DATE: May 23, 2017



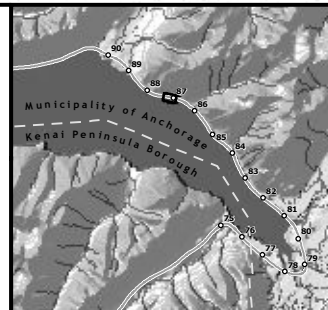
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90

0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- Mile post
- Maintain Existing Culvert
- Remove Culvert
- Replace Culvert
- Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland



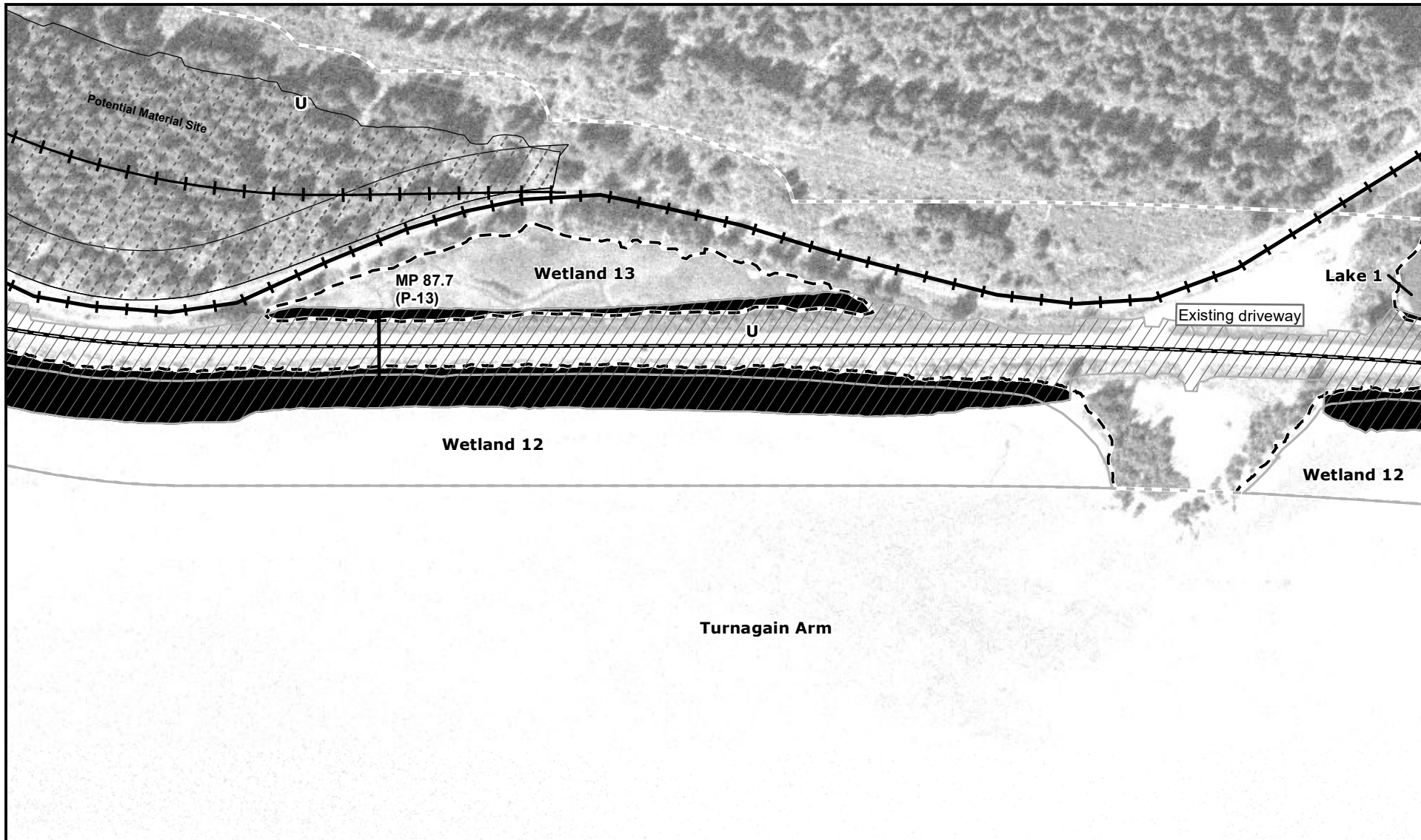
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 33 | Township: T10N | Range: R2E
Lat/Long: 60.915° N, -149.11° W

SHEET 21 of 29 DATE: May 23, 2017



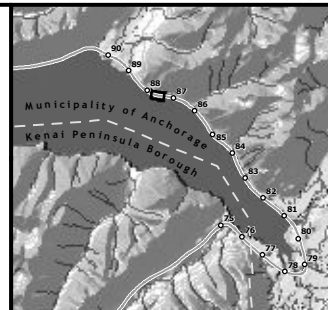
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90

0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4

- Mile post
- Maintain Existing Culvert
- Remove Culvert
- Replace Culvert
- Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Potential Material Site
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland



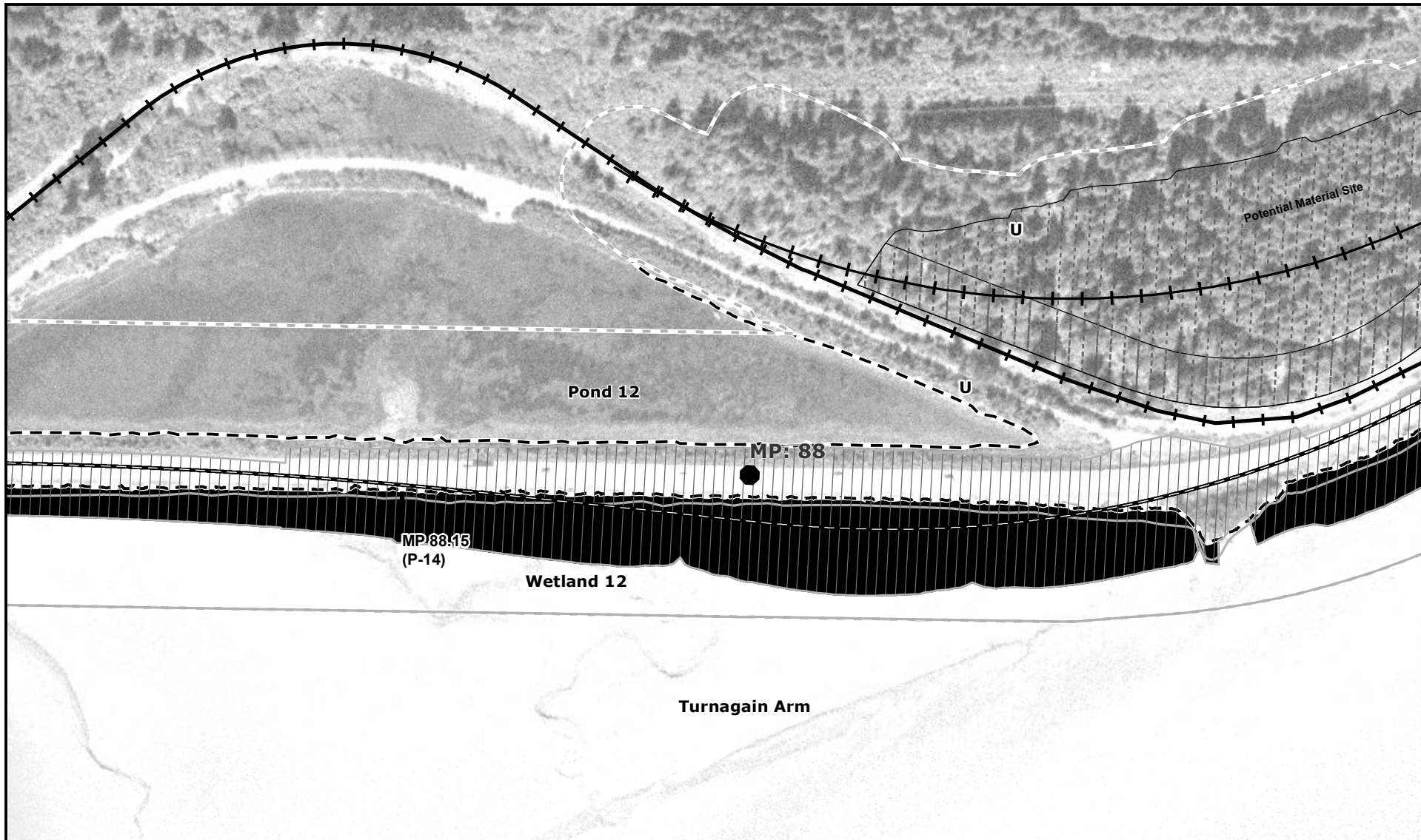
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448


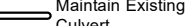



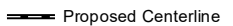



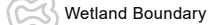
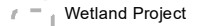


WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

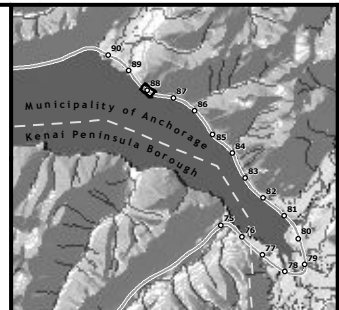
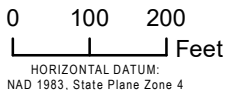
LOCATION: Section: SEC 32, 33 | Township: T10N | Range: R2E
Lat/Long: 60.917° N, -149.123° W

SHEET 22 of 29 DATE: May 23, 2017

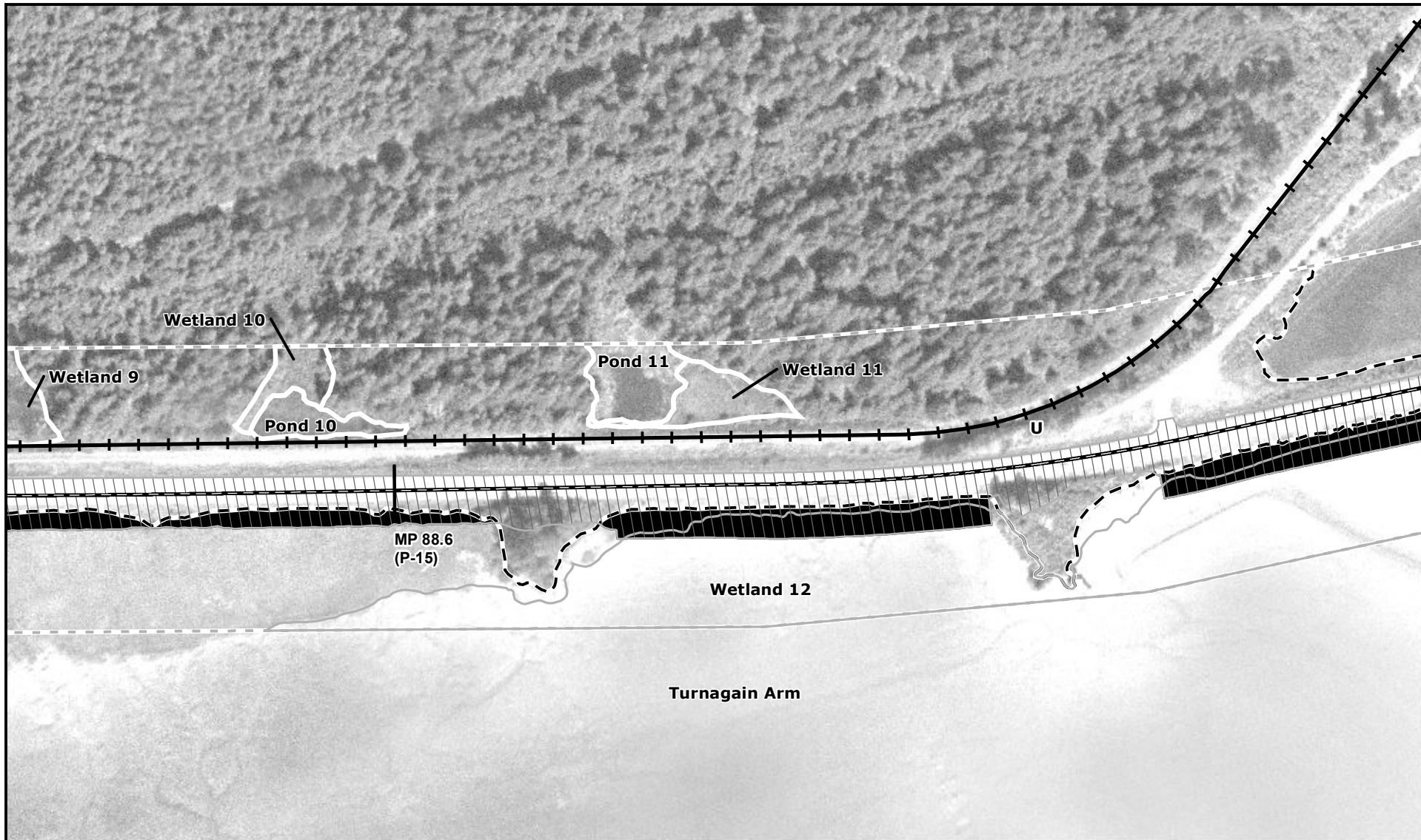


MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska
 Seward Highway from Milepost 75 to Milepost 90

-  Mile post
-  Maintain Existing Culvert
-  Remove Culvert
-  Replace Culvert
-  Railroad
-  Proposed Centerline
-  High Tide Line
-  Mean High Water
-  Potential Material Site
-  Wetland Boundary
-  Wetland Project Review Boundary
-  Project Footprint
-  Impacts to Wetlands
- *U = Upland



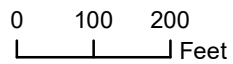
APPLICANT: Alaska Department of Transportation and Public Facilities
 FILE NO: POA-2013-448
 WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River
 LOCATION: Section: SEC 29, 32 | Township: T10N | Range: R2E
 Lat/Long: 60.92° N, -149.134° W
 SHEET 23 of 29 DATE: May 23, 2017



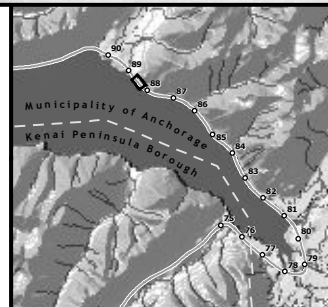
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90

- | | | |
|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |



HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4



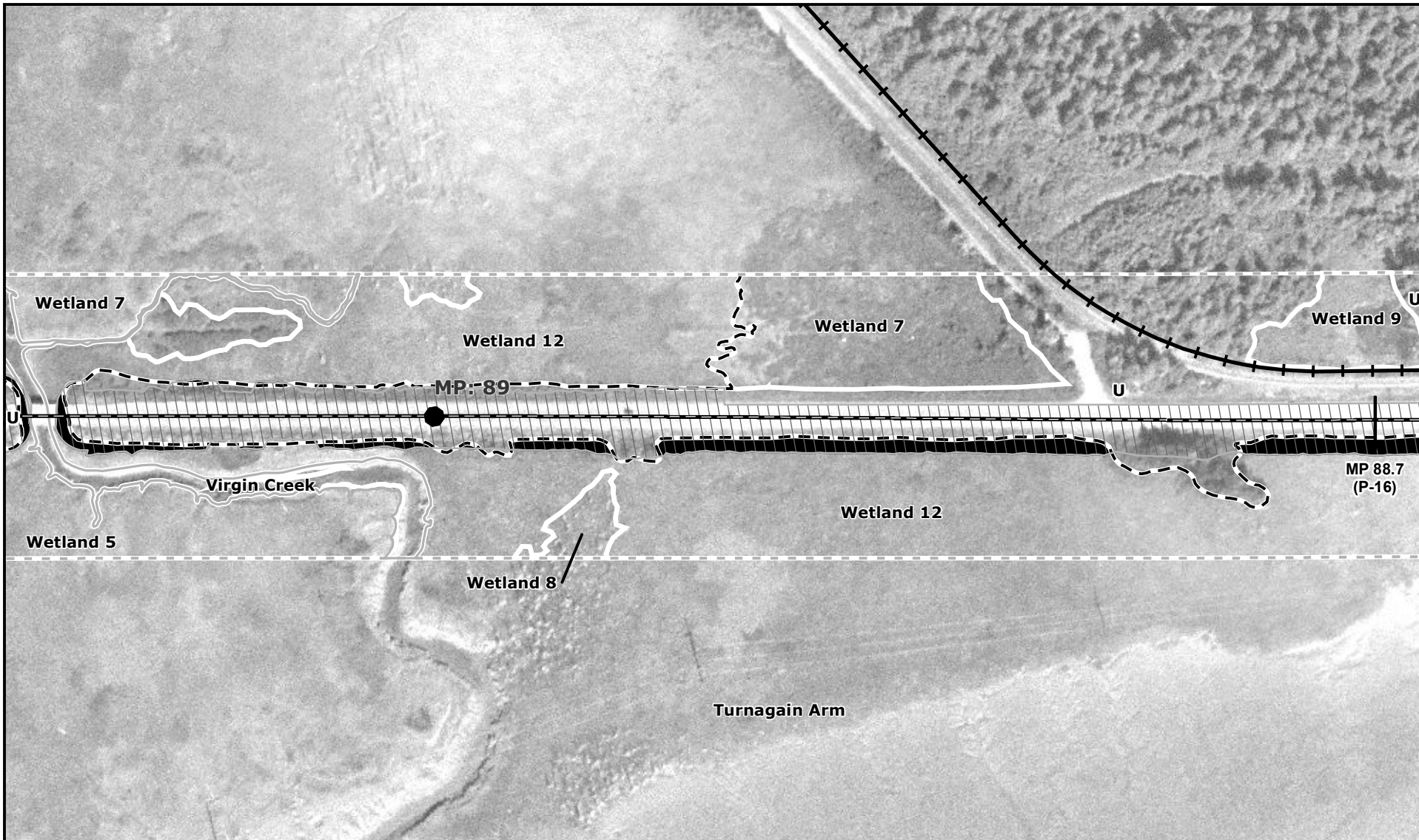
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 29 | Township: T10N | Range: R2E
Lat/Long: 60.925° N, -149.143° W

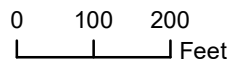
SHEET 24 of 29 DATE: May 23, 2017



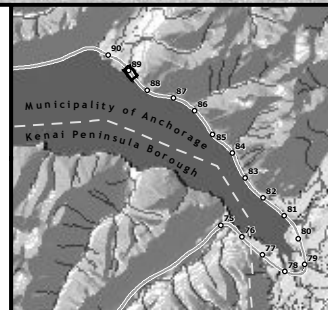
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90

- Mile post
- Maintain Existing Culvert
- Remove Culvert
- Replace Culvert
- Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland



HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4



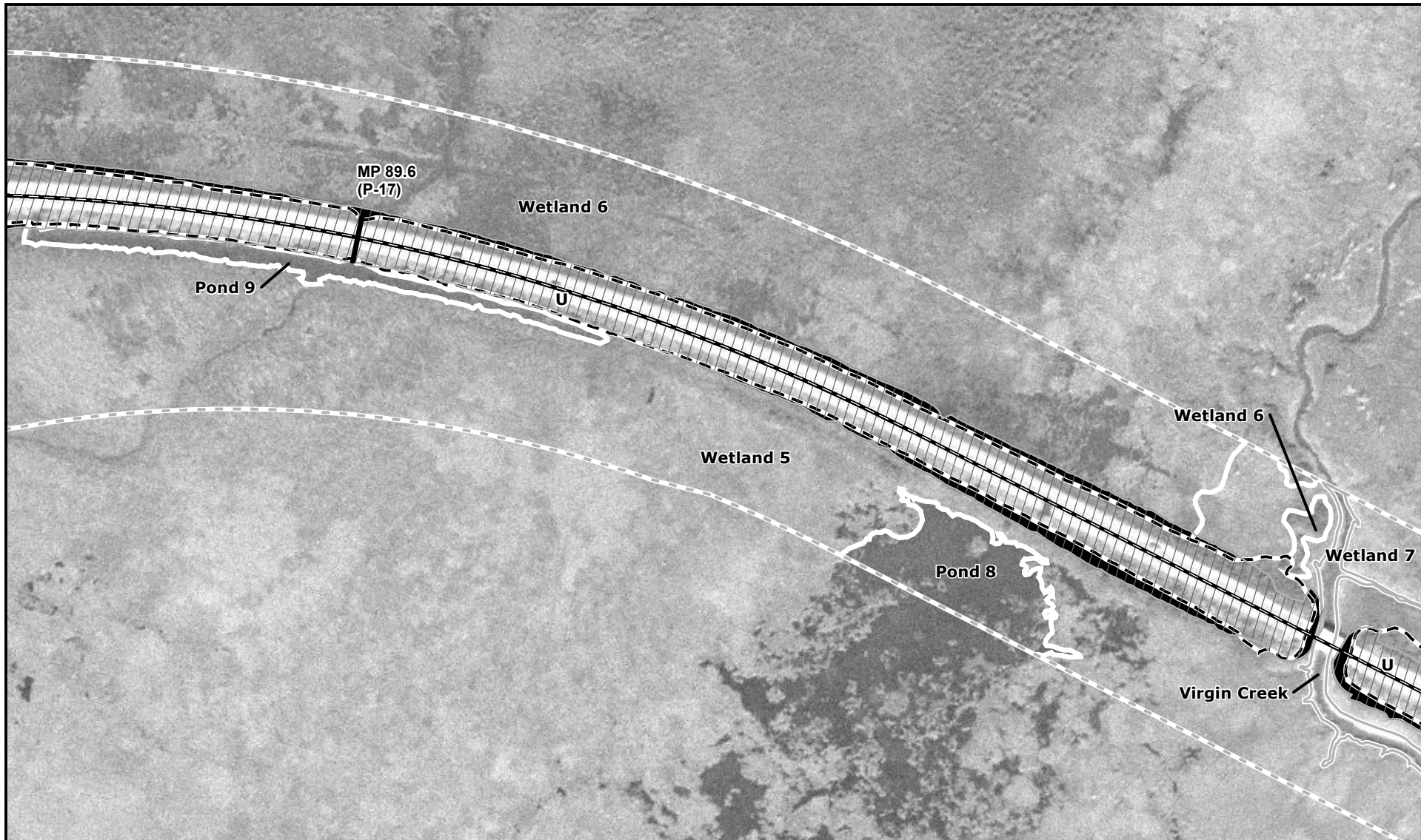
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 29, 30 | Township: T10N | Range: R2E
Lat/Long: 60.93° N, -149.152° W

SHEET 25 of 29 DATE: May 23, 2017



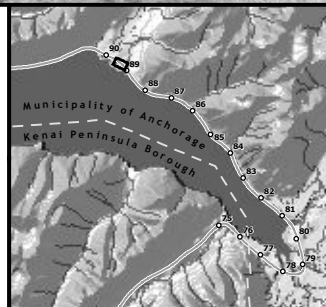
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90

- | | | |
|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |

0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4



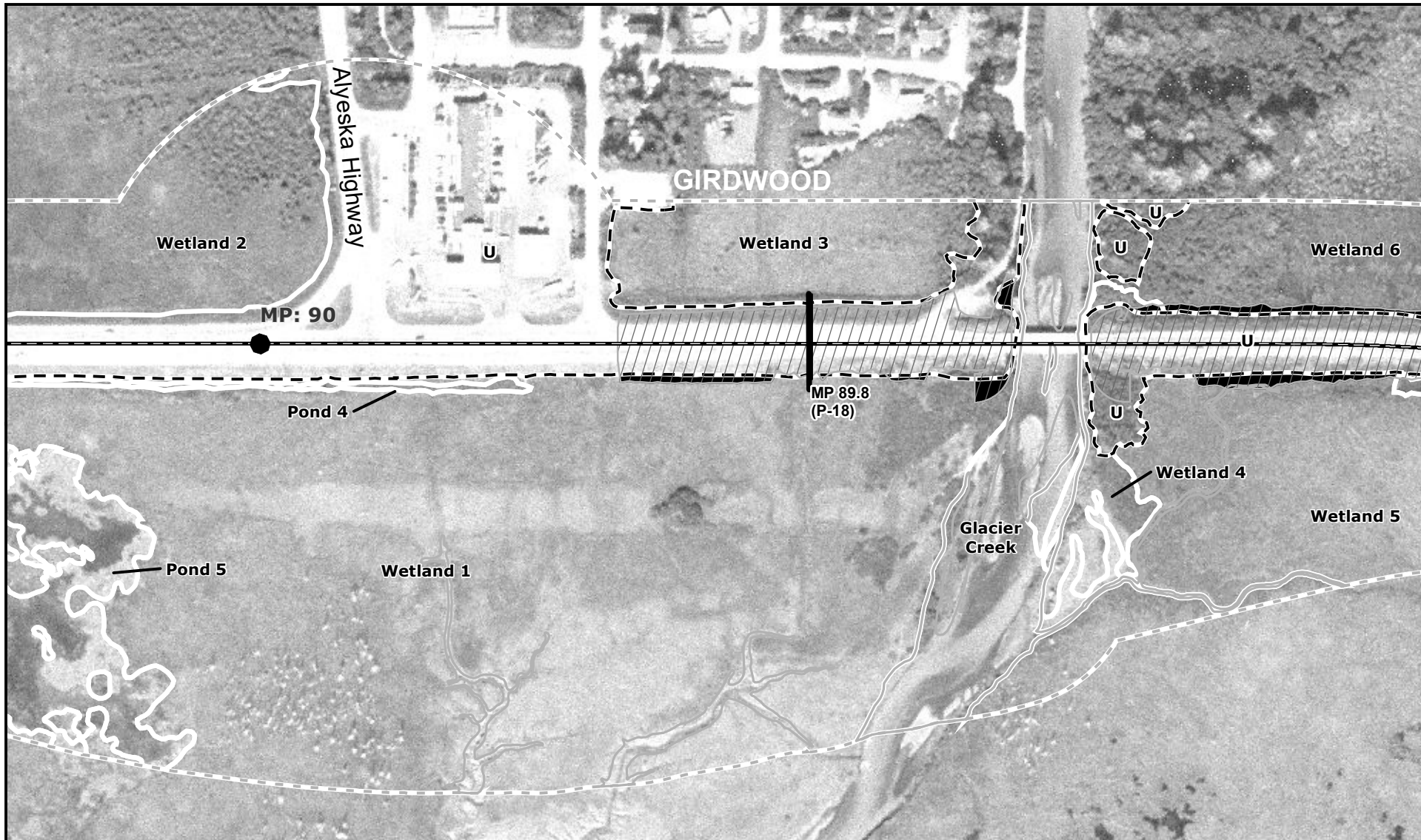
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

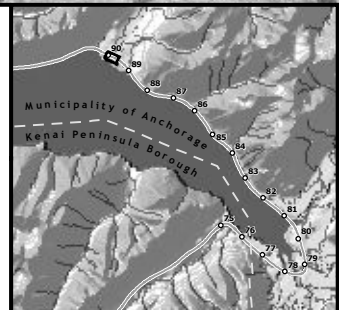
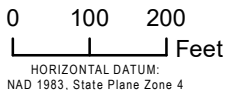
LOCATION: Section: SEC 19, 20, 29, 30 |
Township: T10N | Range: R2E
Lat/Long: 60.935° N, -149.159° W

SHEET 26 of 29 DATE: May 23, 2017

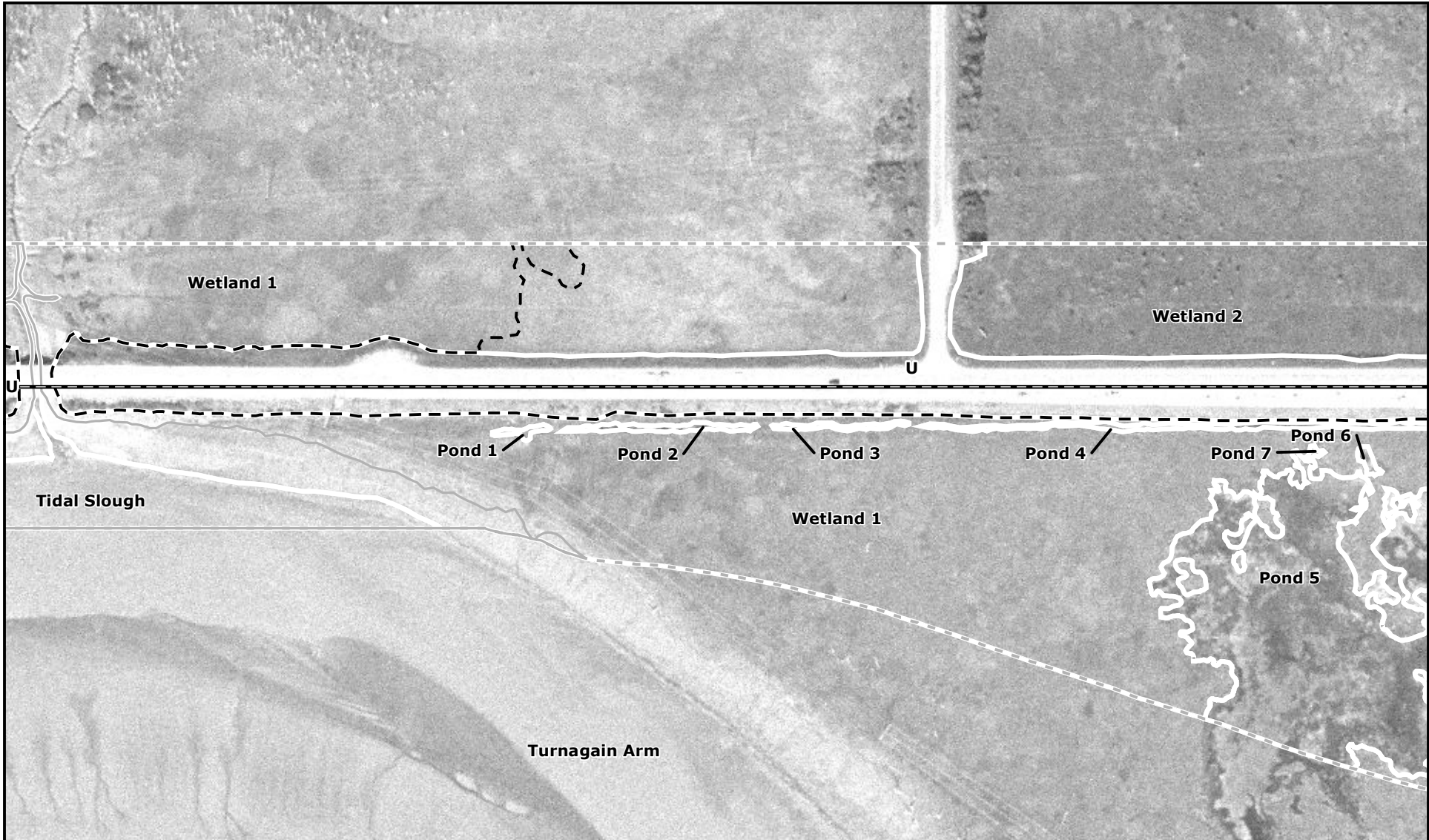


MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska
 Seward Highway from Milepost 75 to Milepost 90

- Mile post
- Maintain Existing Culvert
- Remove Culvert
- Replace Culvert
- Railroad
- Proposed Centerline
- High Tide Line
- Mean High Water
- Wetland Boundary
- Wetland Project Review Boundary
- Project Footprint
- Impacts to Wetlands
- *U = Upland



APPLICANT: Alaska Department of Transportation and Public Facilities
 FILE NO: POA-2013-448
 WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River
 LOCATION: Section: SEC 19 | Township: T10N | Range: R2E
 Lat/Long: 60.939° N, -149.171° W
 SHEET 27 of 29 DATE: May 23, 2017



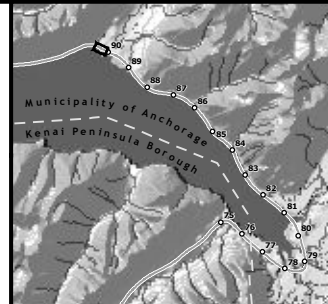
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90

- | | | |
|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |

0 100 200 Feet

HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4



APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 19, 24 | Township: T10N | Range: R1E, R2E
Lat/Long: 60.943° N, -149.182° W

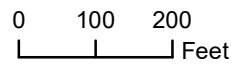
SHEET 28 of 29 DATE: May 23, 2017



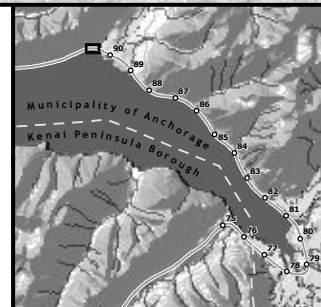
MP 75-90, Municipality of Anchorage and Kenai Peninsula Borough, Alaska

Seward Highway from Milepost 75 to Milepost 90

- | | | |
|---------------------------|---------------------|---------------------------------|
| Mile post | Railroad | Wetland Boundary |
| Maintain Existing Culvert | Proposed Centerline | Wetland Project Review Boundary |
| Remove Culvert | High Tide Line | Project Footprint |
| Replace Culvert | Mean High Water | Impacts to Wetlands |
| | | *U = Upland |



HORIZONTAL DATUM:
NAD 1983, State Plane Zone 4



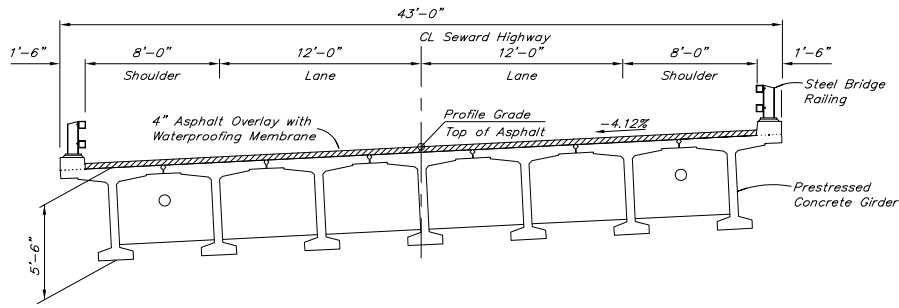
APPLICANT: Alaska Department of Transportation and Public Facilities

FILE NO: POA-2013-448

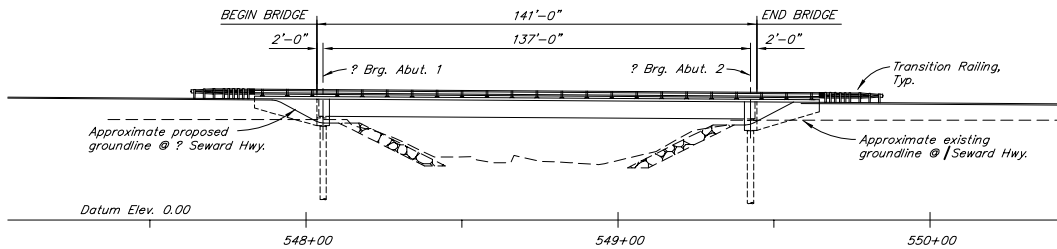
WATERWAY: Peterson Creek, Kern Creek, Ingram Creek and Glacier River

LOCATION: Section: SEC 24 | Township: T10N | Range: R1E
Lat/Long: 60.945° N, -149.193° W

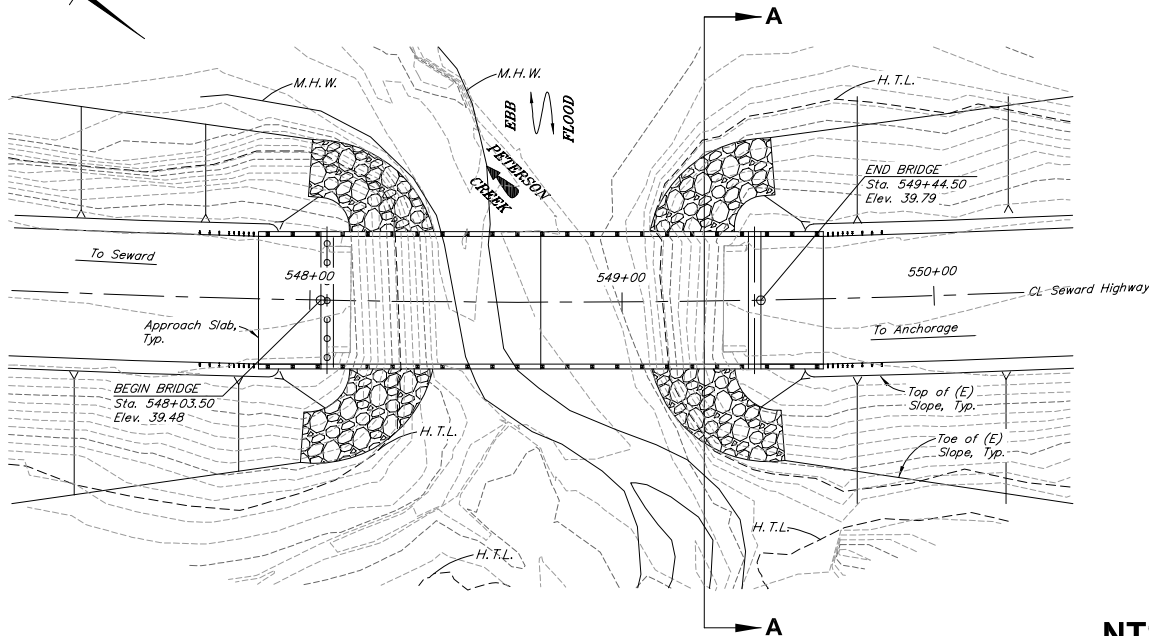
SHEET 29 of 29 DATE: May 23, 2017



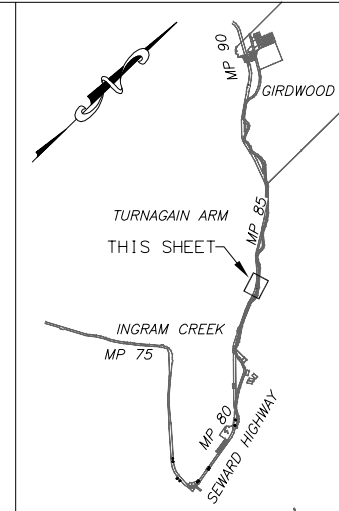
TYPICAL SECTION A



ROAD BRIDGE ELEVATION



ROAD BRIDGE PLAN



VICINITY MAP

NTS

Tide Elevation Table

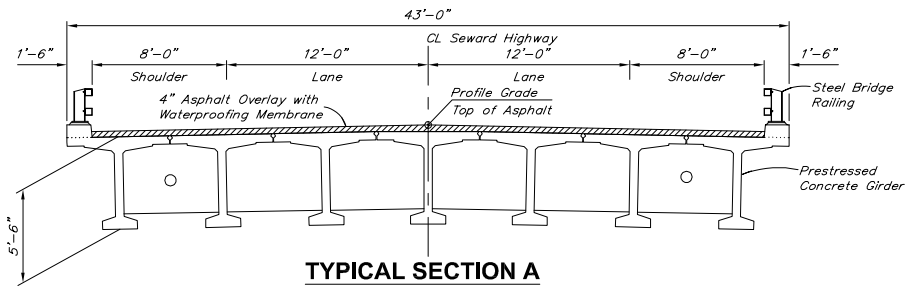
	NAVD 88	ANC 72
HTL	28.8'	39.3'
MHW	21.1'	34.6'
MLLW	0.0'	10.5'

Fill Below MHW (acreage/cyds)	0
Fill Below HTL, Above MHW (acreage/cyds)	0.033 / 224
Total # 48" Piles ^a	0
# 48" Piles Below MHW	0
# 48" Piles Below HTL	0

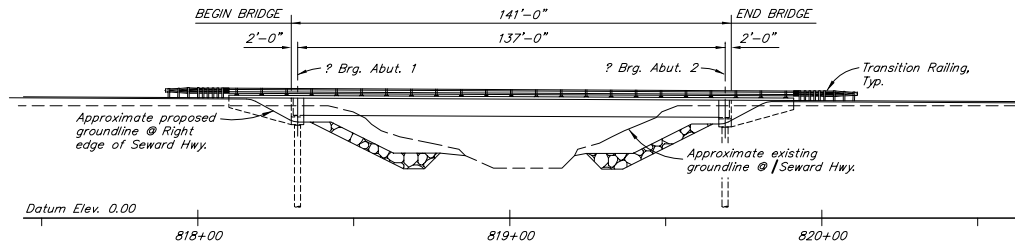
APPLICANT: Alaska Department of Transportation and Public Facilities
 PROJECT: Seward Highway MP 75-90
 FILE NO: POA-2013-448

WATERWAY: Peterson Creek
 LOCATION: Section: 11;
 Township: T9N; Range: R2E
 SHEET: BR-6 of 8
 DATE: May 2017

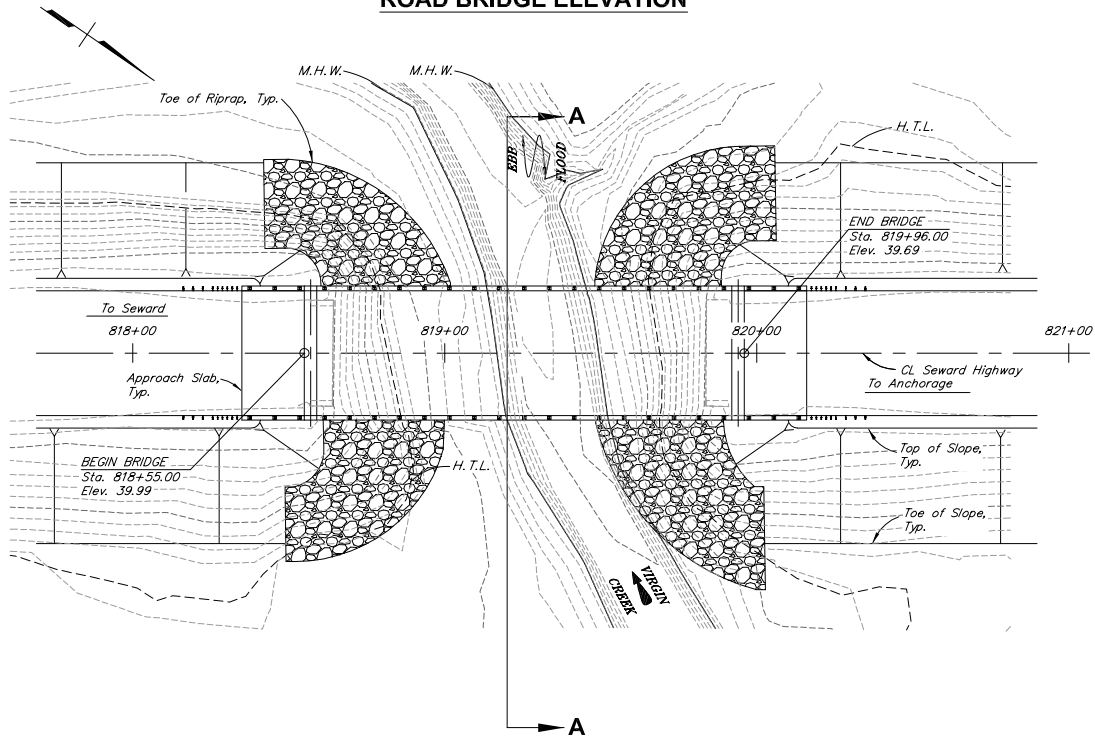
NTS



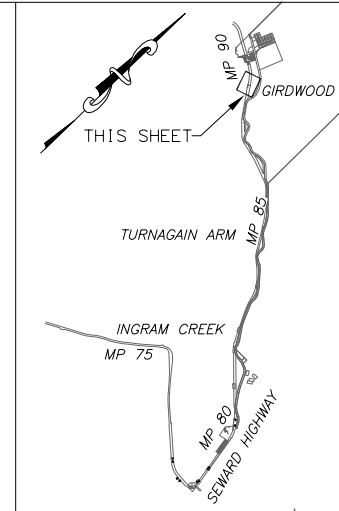
TYPICAL SECTION A



ROAD BRIDGE ELEVATION



ROAD BRIDGE PLAN



VICINITY MAP

NTS

Tide Elevation Table

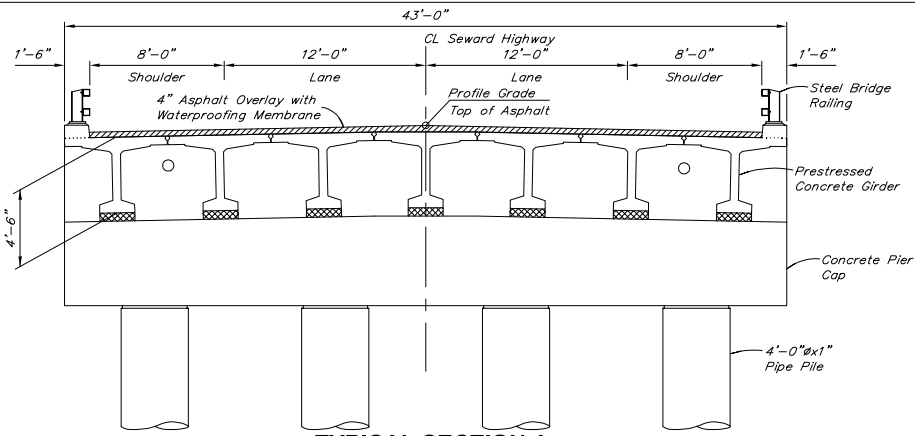
	NAVD 88	ANC 72
HTL	27.5'	38.0'
MHW	20.1'	30.6'
MLLW	0.0'	10.5'

Fill Below MHW (acreage/cyds)	0.006 / 31.6
Fill Below HTL, Above MHW (acreage/cyds)	0.114 / 546
Total # 48" Piles ^a	0
# 48" Piles Below MHW	0
# 48" Piles Below HTL	0

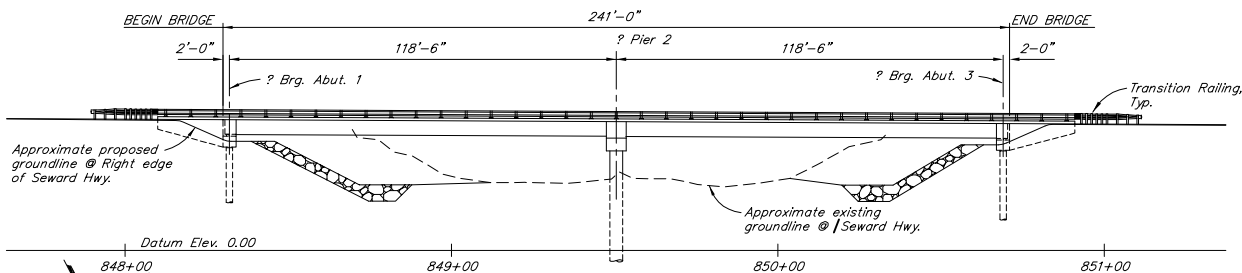
APPLICANT: Alaska Department of Transportation and Public Facilities
 PROJECT: Seward Highway MP 75-90
 FILE NO: POA-2013-448

WATERWAY: Virgin Creek
 LOCATION: Section: 30;
 Township: T10N; Range: R2E
 SHEET: BR-7 of 8
 DATE: May 2017

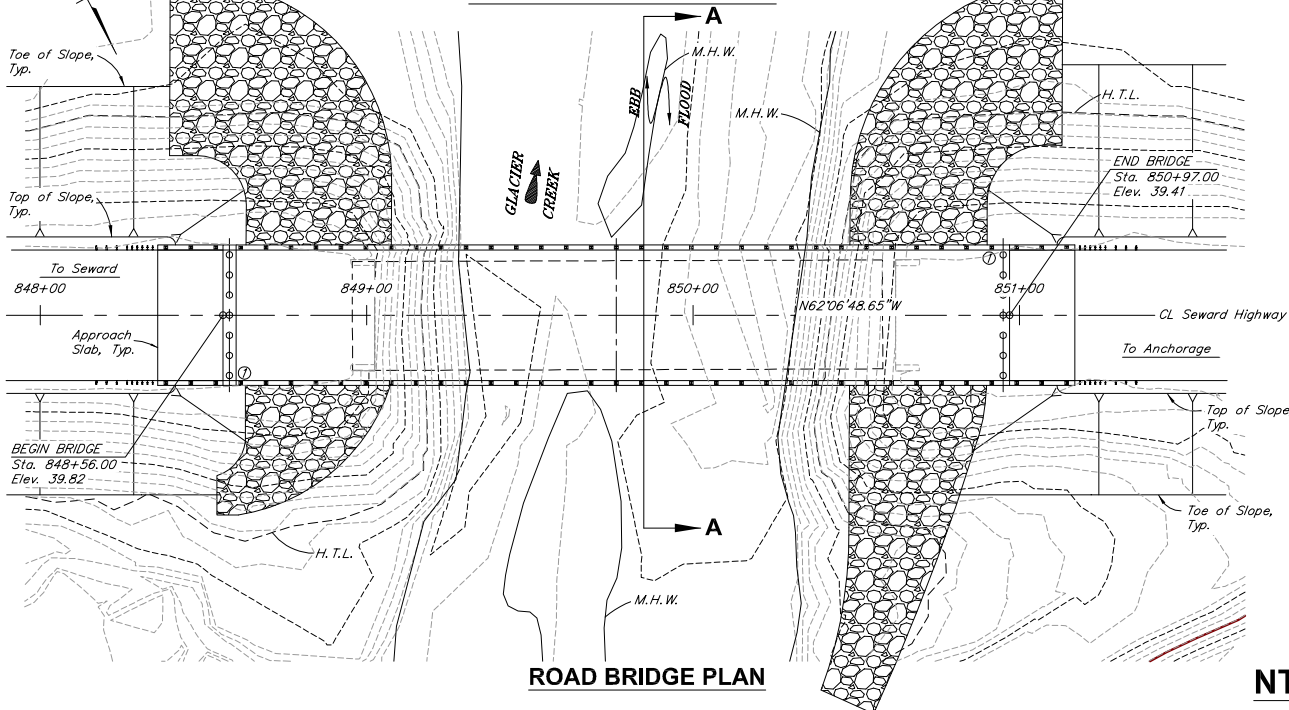
NTS



TYPICAL SECTION A

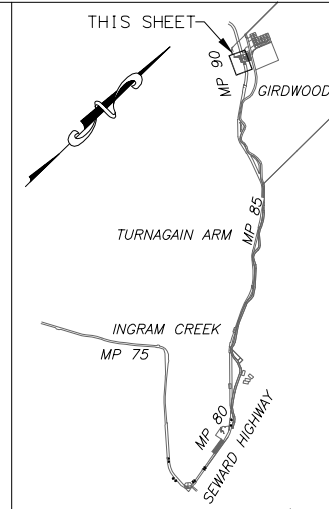


ROAD BRIDGE ELEVATION



ROAD BRIDGE PLAN

NTS



VICINITY MAP

NTS

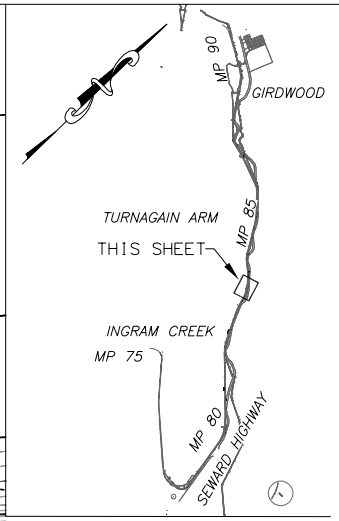
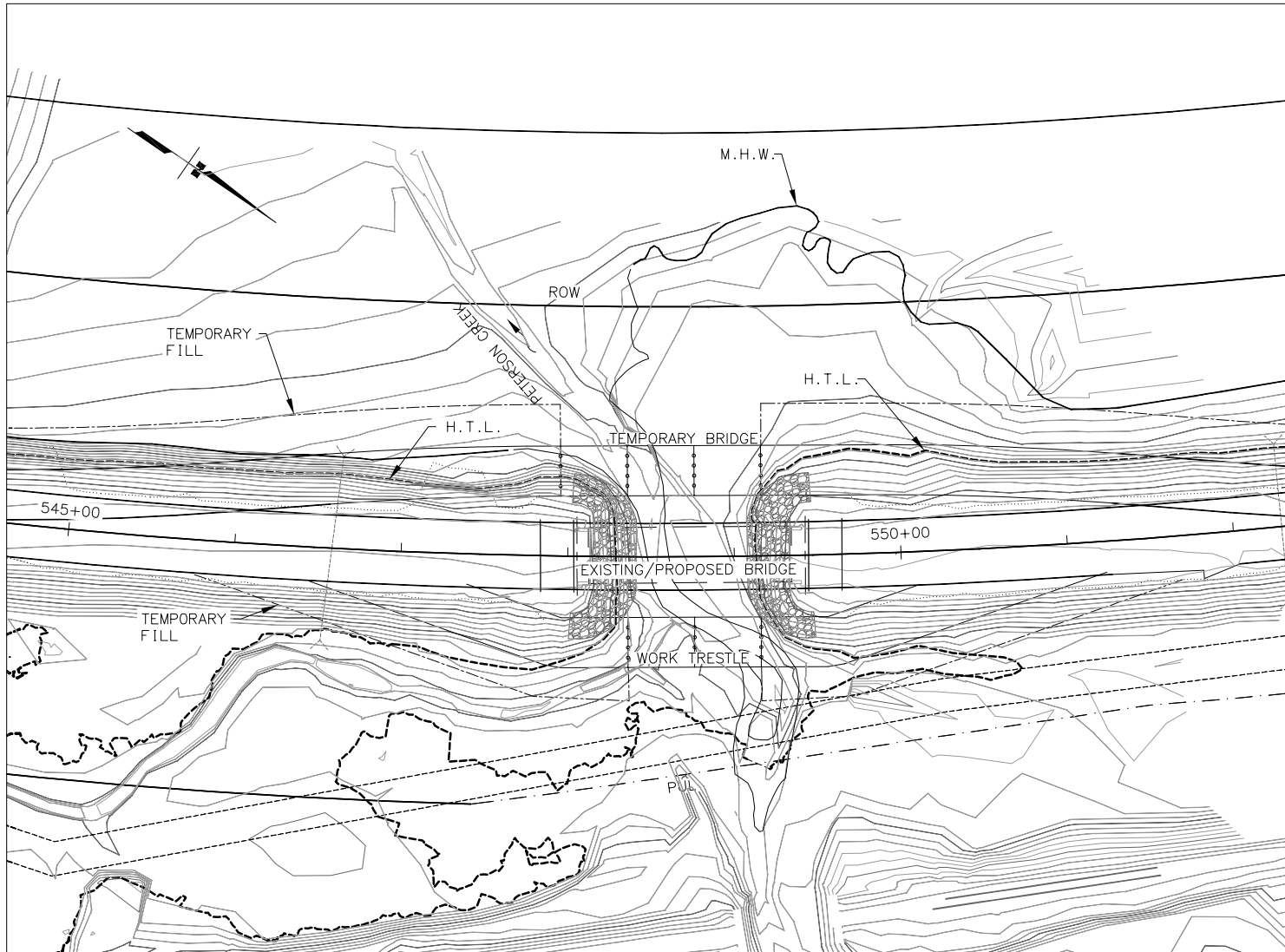
Tide Elevation Table

	NAVD 88	ANC 72
HTL	26.9'	37.4'
MHW	20.8'	31.3'
MLLW	0.0'	10.5'

Fill Below MHW (acreage/cyds)	0
Fill Below HTL, Above MHW (acreage/cyds)	0.114/400
Total # 48" Piles ^a	4
# 48" Piles Below MHW	4
# 48" Piles Below HTL	4

APPLICANT: Alaska Department of Transportation and Public Facilities
 PROJECT: Seward Highway MP 75-90
 FILE NO: POA-2013-448

WATERWAY: Glacier Creek
 LOCATION: Section: 19;
 Township: T10N; Range: R2E
 SHEET: BR-8 of 8
 DATE: May 2017

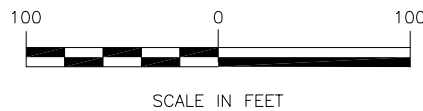


VICINITY MAP NTS

	NAVD 88	ANC 72
HTL	28.8'	39.3'
MHW	21.1'	31.6'
MLLW	0.0'	10.5'

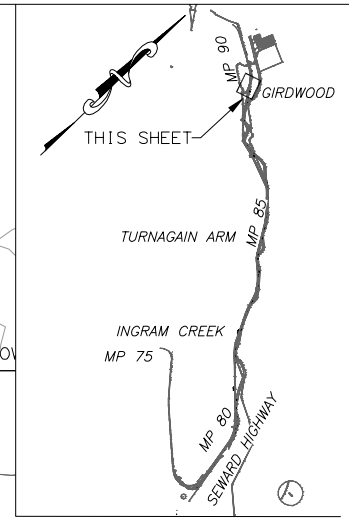
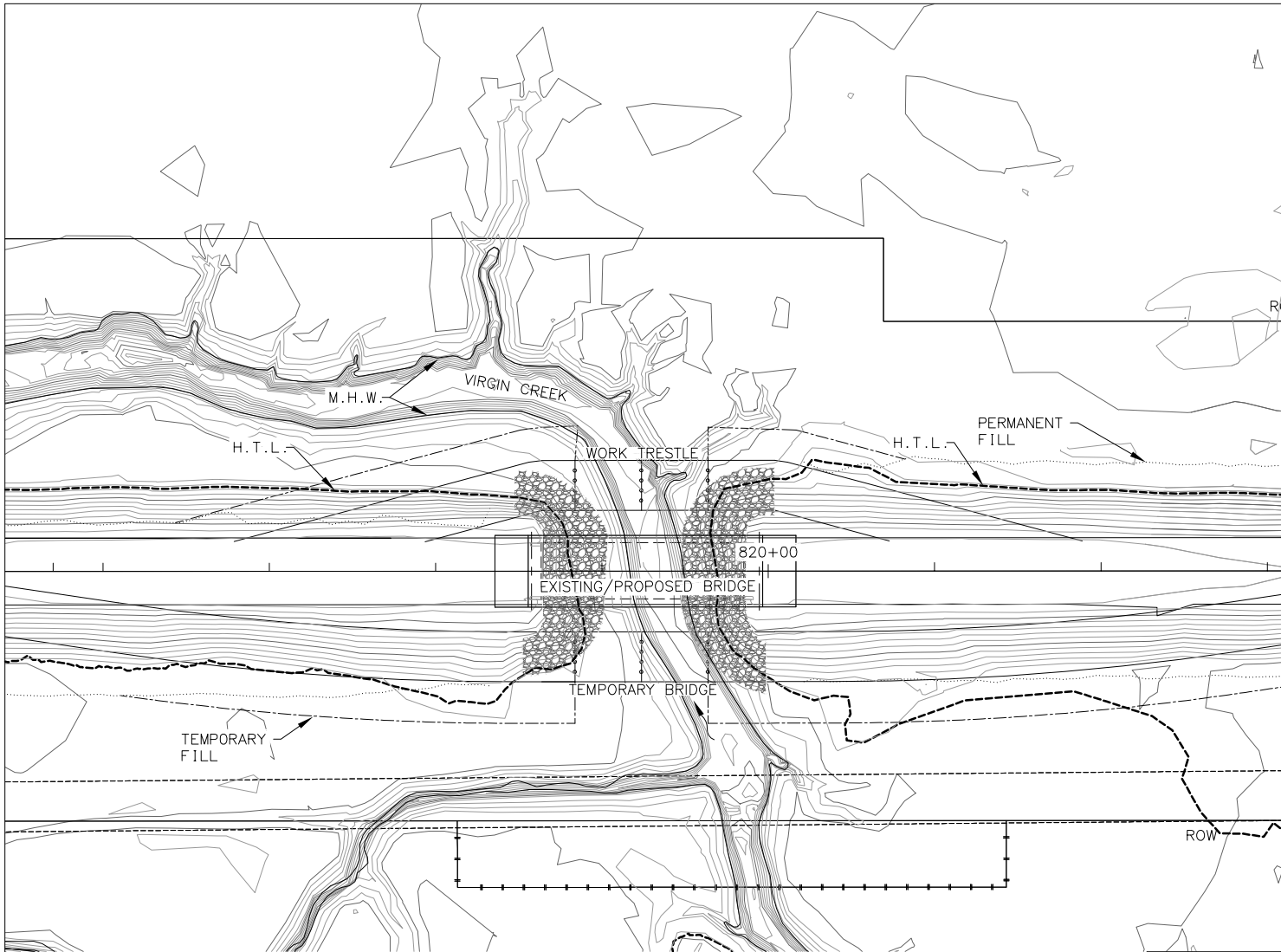
Anticipated Temporary Impacts:	
Fill Below MHW (acreage/cyds)	0.026/120
Fill Below HTL, Above MHW (acreage/cyds)	0.141 / 950
Fill in Wetlands and Waters above HTL (acreage/cyds)	0.026 / 200
Total # 24" Piles ^a	28
# 24" Piles Below MHW	8
# 24" Piles Below HTL, Above MHW	19
# 24" Piles in Wetlands and Waters above HTL	0

^a Number of temporary piles is estimated based upon anticipated conditions, actual number of piles will be based upon conditions at the time of construction.



APPLICANT: Alaska Department of Transportation and Public Facilities
 PROJECT: Seward Highway MP 75-90
 FILE NO: POA-2013-448

WATERWAY: Peterson Creek
 LOCATION: Section: 11; Township: T9N;
 Range: R2E
 SHEET: TBR-6 of 8
 DATE: May 2017



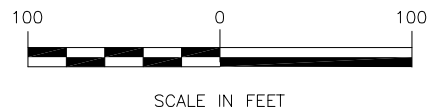
VICINITY MAP NTS

Tide Elevation Table

	NAVD 88	ANC 72
HTL	27.5'	38.0'
MHW	20.1'	30.6'
MLLW	0.0'	10.5'

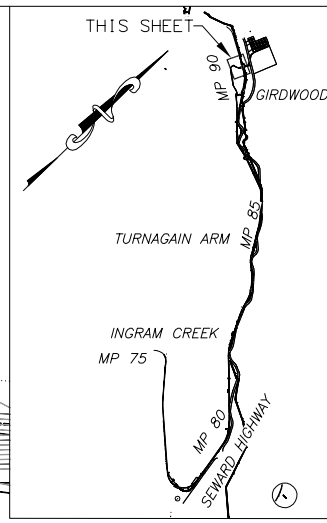
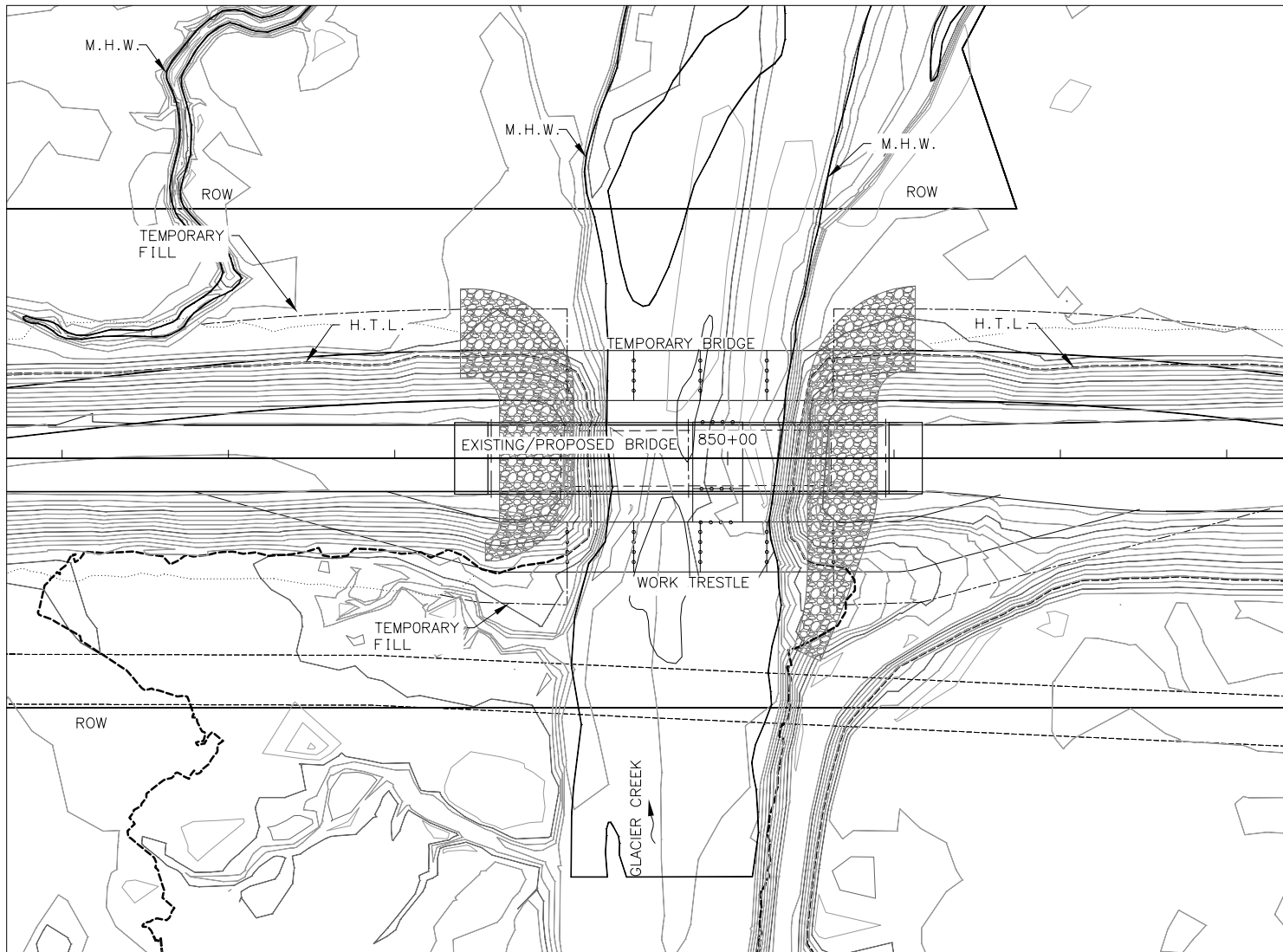
Anticipated Temporary Impacts:	
Fill Below MHW (acreage/cyds)	0.0002/5
Fill Below HTL, Above MHW (acreage/cyds)	0.220 / 1150
Fill in Wetlands and Waters above HTL (acreage/cyds)	0
Total # 24" Piles ^a	24
# 24" Piles Below MHW	6
#24" Piles Below HTL, Above MHW	16
# 24" Piles in Wetlands and Waters above HTL	0

^a Number of temporary piles is estimated based upon anticipated conditions, actual number of piles will be based upon conditions at the time of construction.



APPLICANT: Alaska Department of Transportation and Public Facilities
 PROJECT: Seward Highway MP 75-90
 FILE NO: POA-2013-448

WATERWAY: Virgin Creek
 LOCATION: Section: 30; Township: T10N; Range: R2E
 SHEET: TBR-7 of 8
 DATE: May 2017

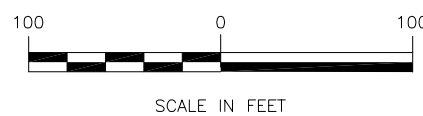


VICINITY MAP NTS

Tide Elevation Table		
	NAVD 88	ANC 72
HTL	26.9'	37.4'
MHW	20.8'	31.3'
MLLW	0.0'	10.5'

Anticipated Temporary Impacts:	
Fill Below MHW (acreage/cyds)	0.0004/10
Fill Below HTL, Above MHW (acreage/cyds)	0.263 / 1200
Fill in Wetlands and Waters above HTL (acreage/cyds)	0
Total # 24" Piles ^a	52
# 24" Piles Below MHW	36
# 24" Piles Below HTL, Above MHW	2
# 24" Piles in Wetlands and Waters above HTL	0

^a Number of temporary piles is estimated based upon anticipated conditions, actual number of piles will be based upon conditions at the time of construction.



APPLICANT: Alaska Department of Transportation and Public Facilities
 PROJECT: Seward Highway MP 75-90
 FILE NO: POA-2013-448

WATERWAY: Glacier Creek
 LOCATION: Section: 19; Township: T10N;
 Range: R2E
 SHEET: TBR-8 of 8
 DATE: May 2017