



STATE PROJECTS ENVIRONMENTAL FORM

Project Name: Road to Tanana

Project Number: 61759

Date: 09/26/2013

List of Attachments: a) Project Figures 1-6 b) ADF&G Title 16 Application c) USACE 404 Permit Application and signed Permit d) Project wildlife B habitat studies e) SHPO Sec. 106 Concurrence

I. Project Description and Purpose

The Road to Tanana consists of:

- Upgrade of the last two miles of the existing Tofty Road, as well as an additional 14.5 miles of existing roads and trails that extend past the current terminus of Tofty Road (beginning at approximately mile post 15)
- Installation of a new bridge at Boulder Creek (#2297)
- Construction of 19.34 miles of new road beginning at mile post 29
- Create five new material sites
- Expand two existing material sites
- Install 3 new fish passage culverts
- Drainage improvements
- Vegetation clearing
- Construction of a public parking area near the road terminus at the Yukon River
- Construction of a barge landing approach to OHW limits of the Yukon River
- Acquisition of approximately 620 acres for road right-of-way

The purpose of the project is to extend the existing highway system that currently terminates in Manley Hot Spring to the Yukon River near Tanana. The project would improve approximately 16.5 miles of existing road and unimproved trails, and construct 19.34 miles of new road across undeveloped terrain to provide an all-season link to the south bank of the Yukon River.

II. Preferred Alternative

Southern alternative route as detailed below and depicted on attached Figures 1-6.

Upgrades to the existing Tofty Road, and other existing roads and trails

Upgrades to existing roads and trails will begin at milepost (mp) 15.05 of Tofty Road. Construction will be accomplished by placing approximately 45,000 CY of fill material in uplands and 13.5 combined acres of wetlands or waters of the United States. This component of the project will improve road embankments and drainage over existing road and trail, improve water crossings, clear a 30-ft vegetation buffer, and to establish new turnouts. Fill volume as indicated also includes placement of materials to facilitate water crossings at Sullivan Creek (mp 15.59), Tofty Gulch (mp 16.09), and American Creek (mp 25.29).

Installation of a new bridge at Boulder Creek (Alaska Bridge No. 2297)

The existing bridge at Boulder Creek (mp 29.67) will be replaced to improve transportation safety and efficiency. Associated with this bridge replacement are approximately 2,045 CY of various fill materials that will be placed in uplands, wetlands, or waters of the United States.

Construction of 19.34 miles of new road

New road construction will commence at approximately milepost 30.11, and continue westward approximately 19.34 miles to its planned terminus near the Yukon River. This component of the project will be accomplished by placing approximately 52,500 CY of various fill materials in uplands, and 21.7 combined acres of wetlands or waters of the United States. This project component will construct road

embankments and turnouts, clear a 30-ft vegetation buffer, and construct a combined parking area/barge landing approach at the project terminus (mp 49.42). Fill volume as indicated also includes the placement of materials to facilitate water crossings at Bailey Creek* (mp 33.3), Bailey Creek Tributary (mp 33.65), East Long Lake Tributary (mp 34.65), Middle Long Lake Tributary (mp 36.56), West Long Lake Tributary* (mp 39.03), Unnamed Creek #1 (mp 47.36), Unnamed Creek #2 (mp 47.82), and Twelve-Mile Lake Creek* (mp 48.70). *(fish passage culvert installations.) See attached ADF&G Habitat Permit Application form.

Material site development associated with the project components

Material excavations required to construct the project will total approximately 1,718,864 CY from seven (7) sites (two existing and five new), impacting approximately 13.3 acres of combined waters of the United States and wetlands. Suitable material from these excavations will be used to construct the proposed action components.

III. Other Alternatives Considered

A more northern alternative routing was considered and rejected owing to its relative infeasibility due its excessively steep terrain grades, greater required acreage of impacted wetlands, and its more complex final road geometry being less safe and efficient for transportation purposes.

A more southerly variant of the final, preferred alternative was also considered and rejected due to concerns raised by local community residents about potential conflicts with, and impacts to, subsistence hunting and fishing areas and activities

IV. Environmental Consequences

N/A YES NO

A. Corps of Engineers Jurisdiction

- | | | | |
|--|--------------------------|-------------------------------------|-------------------------------------|
| 1. Project affects Waters of the U.S., as defined by the USACE. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Project affects navigable Waters of the U.S., as defined by the USACE. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Project involves wetlands as defined by the USACE. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Wetlands delineation is attached. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Estimated acreage of fill in waters of the U.S. and/or wetlands: <u>48.5</u> | | | |
| 6. Estimated fill quantities: <u>99,895</u> cubic yards | | | |
| 7. Estimated dredge quantities: <u>N/A*</u> cubic yards | | | |
| 8. Corps authorization anticipated: <input type="checkbox"/> None <input type="checkbox"/> NWP <input checked="" type="checkbox"/> Individual <input type="checkbox"/> GP <input type="checkbox"/> Other | | | |
| 9. Describe wetlands impact in terms of functions and value. | | | |

See attached USACE Sec. 404 application, cover letter and signed permit.

B. Fish & Wildlife

N/A YES NO

- | | | | |
|---|--------------------------|-------------------------------------|--------------------------|
| 1. Anadromous or Resident Fish Present: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| a. Project affects spawning habitat. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Project affects rearing habitat. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

B. Fish & Wildlife

- | | <u>N/A</u> | <u>YES</u> | <u>NO</u> |
|--|--------------------------|-------------------------------------|-------------------------------------|
| c. Project affects migration corridors. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. Project affects subsistence species. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Wildlife Resources (game/subsistence species): | | | |
| a. Project is in area of high wildlife/vehicle accidents. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. Project would adversely affect migration corridors. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Bald Eagle and Golden Eagle Protection Act: | | | |
| a. Project slope limits are within 330 feet of an eagle nesting tree. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. Project would adversely affect eagles or their nests. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Describe adverse fish and wildlife effects. | | | |
| See attached: | | | |
| a. ADF&G Habitat Permit application | | | |
| b. Wildlife and habitat survey reports (extensive appendices available) by Three Parameters Plus | | | |

Additionally, forest habitat fragmentation due to project actions will be insignificant as established roads, trails and other surface features (mines, existing material sites, camps) have been extant in the project area for approximately a century. Forested habitats on the western portion of the project area are extensive and have regularly been diversified by natural disturbances (fire, ice storm, erosion), and additional clearing due to construction will effect negligible change on landscape level habitat diversity, type distribution, and functional values. Additionally, ROW clearing and regular maintenance clearing will promote early successional vegetative components that are currently less prevalent in the western half of the project area.

C. Right-of-Way:

- | | <u>N/A</u> | <u>YES</u> | <u>NO</u> |
|---|--------------------------|-------------------------------------|-------------------------------------|
| 1. Additional right-of-way is required. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Business or residential relocations are required. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Number of relocations: _____ | | | |
| 4. Type and numbers of relocations: Residential _____ Business _____ | | | |
| 5. Minorities or disadvantaged groups would be disproportionately affected. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Summarize the impact. | | | |

Acquisition of necessary ROW from Doyon and Tozitna Corporations will allow construction of the project which will have a beneficial economic effect on Tanana, a predominantly Alaska Native community (See Section E; Economic; below).

D. Social:

- | | <u>N/A</u> | <u>YES</u> | <u>NO</u> |
|--|--------------------------|-------------------------------------|--------------------------|
| 1. The project will disproportionately affect the elderly, handicapped, non-drivers, transit-dependent, minority and ethnic groups, or the economically disadvantaged. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

D. Social:

2. The social impacts resulting from the project could be significant (i.e. affects on neighborhoods, community cohesion, or disadvantaged social groups).
3. Describe the impacts, if any.

N/A YES NO

Construction of the project will provide a much more efficient and safer transit to the community of Tanana for elderly, handicapped, and other listed groups.

E. Economic

1. The project will have economic impacts on the regional and/or local economy, such as effects on development, tax revenues and public expenditures, employment opportunities, accessibility, and retail sales.
2. The project will affect established businesses or business districts.
3. Describe impacts, if any.

N/A YES NO

The project will increase efficiency between Tanana and larger communities serving its needs for fuel, commodities and transportation. Both Tanana and other Yukon River communities may benefit significantly by the lowered cost of moving freight and fuel along the Yukon River corridor. Similarly, other communities currently utilizing barge services originating downriver may accrue significant savings by virtue of Tanana-based barge services lowering their transportation costs. See attached Northern Economic report executive summary.

F. Local Land Use and Transportation Plans:

1. The project is consistent with the local land use plan.
2. The project is consistent with the local transportation plan.
3. The project would induce adverse indirect or cumulative effects.
4. Describe any adverse effect to the local transportation and land use plans, including indirect and cumulative effects.

N/A YES NO

G. Threatened and Endangered Species (T&E):

1. Listed threatened or endangered species present in project area.
2. Threatened or endangered species migrate through the project area.
3. Proposed species present in the project area.
4. Candidate species present in the project area.
5. Project is likely to adversely affect a listed species or critical habitat.
6. Biological Assessment attached.
7. Describe adverse effects on a T&E species.

N/A YES NO

H. Alaska Coastal Management Program (ACMP):

1. Project is within the Alaska Coastal Management Program boundary.
2. Project is within a local coastal management district.
3. Project has been coordinated with local coastal district (if applicable) and state permitting agencies.
4. Discuss coordination.

N/A YES NO

- | I. <u>Floodplains:</u> | <u>N/A</u> | <u>YES</u> | <u>NO</u> |
|---|-------------------------------------|--------------------------|-------------------------------------|
| 1. Project involves a regulatory floodway. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Project encroaches onto the 100-year floodplain. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Project would increase the backwater elevation of the 100-year floodplain by one foot or greater. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Project is located within an area protected by local flood hazard ordinance(s). | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. A flood hazard permit is required from local government. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. The proposed project conforms to applicable federal, state, and local floodplain protection standards. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Project would be consistent with E.O. 11988 (i.e. Floodplain Protection). | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Describe impacts. | | | |

- | J. <u>Water Quality:</u> | <u>N/A</u> | <u>YES</u> | <u>NO</u> |
|---|--------------------------|--------------------------|-------------------------------------|
| 1. Project would involve a public or private drinking source. If "yes," explain in no. 6. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Project would result in a discharge of storm water into Waters of the U.S. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Project would affect an ADEC designated impaired water body.
List name(s) and location(s) of the impaired water body: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. How many acres of ground-disturbing activities will result from the project?
_____ acres | | | |
| 5. Is there a municipal separate storm sewer system (MS4) NPDES permit or will runoff be mixed with discharges from an NPDES permitted industrial facility?
If yes, NPDES permit # _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. Discuss any yes marked in 1-5. | | | |

- | K. <u>Cultural Resources:</u> | <u>N/A</u> | <u>YES</u> | <u>NO</u> |
|--|--------------------------|-------------------------------------|-------------------------------------|
| 1. The project would have no potential to affect historic properties. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. There is a National Register-listed or eligible cultural resource within or adjacent to the project. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. The State Historic Preservation Officer (SHPO) requires a cultural resource survey of the project. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. SHPO consultation has been completed. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Project could have an adverse effect on a cultural resource. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. Describe cultural resource impacts.
See attached SHPO concurrence of finding of no adverse effect on cultural resources. | | | |

- | L. <u>Air Quality:</u> | <u>N/A</u> | <u>YES</u> | <u>NO</u> |
|---|--------------------------|--------------------------|-------------------------------------|
| <i>If the project is located in Juneau (Mendenhall Valley), Anchorage, Eagle River, Fairbanks, or North Pole, complete this air quality section. For all other projects, go to M.</i> | | | |
| 1. The project is located in an air quality nonattainment area (i.e. CO or PM-10).
If yes, indicate CO <input type="checkbox"/> or PM-10 <input type="checkbox"/> and continue. If no, go to M. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. The project is regionally significant and requires a project level conformity analysis (if yes, go to 3). | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. A CO analysis was completed and found the CO concentrations were below the one-hour National Ambient Air Quality Standard (NAAQS) of 35 ppm and 8-hour NAAQS of 9.0 ppm that are necessary to protect public health. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

L. Air Quality:

N/A YES NO

If the project is located in Juneau (Mendenhall Valley), Anchorage, Eagle River, Fairbanks, or North Pole, complete this air quality section. For all other projects, go to M.

- 4. The project will not cause or contribute to any new localized PM-10 violations or increase the frequency or severity of any PM-10 violations.

M. Construction Impacts:

N/A YES NO

- 1. There will be temporary degradation of water quality.
- 2. There will be temporary stream diversion.
- 3. There will be temporary degradation of air quality.
- 4. There will be temporary delays and detours of traffic.
- 5. There will be temporary effects on businesses.
- 6. There will be other construction impacts, including noise.
- 7. Describe construction impacts.

N. Permits and Authorizations:

N/A YES NO

- 1. USACE, Section 404/10
- 2. Alaska Department of Fish & Game (F&G), Title 16 (AS 16.05.841, 871)
- 3. F&G, Special Use Permit
- 4. Coast Guard, Section 9
- 5. Alaska Department of Environmental Conservation (ADEC) 401
- 6. ADEC Non-Domestic Storm Water Disposal Plan Approval
- 7. Alaska Coastal Management Program (ACMP) consistency review

N. Permits and Authorizations:

N/A YES NO

- 8. Other. If yes, list.

V. Section 6(f):

N/A YES NO

- 1. The proposed action affects Section 6(f) properties.
- 2. Funds from the Land and Water Conservation Fund Act (LWCFA) were used for improvement to the 6(f) property.
- 3. Use of 6(f) property is a conversion of use for Section 6(f) of the LWCFA.
- 4. Describe the conversion of use.

VI. Comments and Coordination:

N/A YES NO

- 1. There is public/agency involvement.
 - a. Public Meeting(s)
 - b. Newspaper ad(s)
 - c. Newspaper name(s): _____

VI. Comments and Coordination:

- c. Agency Scoping letters sent
 - d. Agency Scoping meeting held
 - e. Local planning authority approval required
2. Discuss pertinent issues raised during scoping or public meetings, and comments received from the public and government agencies. Attach applicable correspondence.


<u>N/A</u>	<u>YES</u>	<u>NO</u>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

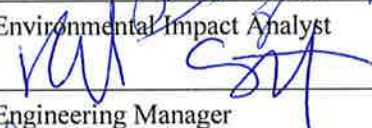
VII. Environmental Commitments / Mitigation Measures:


1. Environmental commitments or mitigative measures have been included in the project.
2. List environmental commitments or mitigative measures.
See attached Section 10/404 Permit Application; Block 23: Mitigation Plan (Rev 1.0) 3PPI, Feb 2013

<u>N/A</u>	<u>YES</u>	<u>NO</u>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

VIII. Signatures

Prepared by: 
Environmental Impact Analyst

Reviewed by: 
Engineering Manager

Approved by: 
Regional Environmental Manager

Date: 09/26/2013

Date: 9/28/13

Date: 9/27/13

I. Project Description and Purpose:

- Describe the project in as much detail as possible. (e.g. What is the project, where is the project located, and when will the project be constructed?)
- Describe the purpose of the project in as much detail as possible. (e.g. What is the problem that we are addressing and why?) This is important in determining if avoidance and minimization alternatives are practicable.
- Projects that affect a resource protected by a law, Executive Order, or regulation need to be described in greater detail. This will enable alternatives that minimize or avoid the impact but do not satisfy the need to be dismissed [e.g. E.O. 11990, E.O. 11988, or Section 404(b)(1)].

II. Preferred Alternative:

- If the project involves multiple corridors or multiple solutions in a corridor the design manager will recommend a preferred alternative to the regional preconstruction engineer and regional director for approval. Upon receiving approval, the design manager should advise the regional environmental manager (REM) and other functional group managers.
- Describe the preferred alternative in as much detail as possible, in particular, pertinent design features that could affect resources or require additional right-of-way, such as typical section, general horizontal and vertical alignment, location, size, and type of structures.
- Give special attention to right-of-way requirement, river and stream crossings, wetland fills, drainage control structures, or other resources.

III. Other Alternatives Considered (including avoidance and minimization):

- Complete this section if the project would affect a resource protected by a law, Executive Order, or regulation [e.g. E.O. 11990, E.O. 11988, or Clean Water Act Section 404]. This includes avoidance and minimization alternatives.
- You must provide sufficient information to support that the alternatives evaluated to avoid or minimize impacts on resources are not practicable.
- You should consider design exceptions or reduced scope if it would avoid the impact. Attach the engineering documentation for the alternatives analysis as appropriate to the form.

IV. Environmental Consequences:

The Department's environmental staff or designee must independently evaluate this section.

- Each impact category marked "yes" requires a brief discussion of the impact.
- Append supporting documentation to the form.
- Coordinate with resource and regulatory agencies, local government, federally recognized tribes, and the public as necessary to identify and assess potential impacts.

A. Corps of Engineers Jurisdiction:

- Determine if wetlands as defined by the U.S. Army Corps of Engineers (USACE) are affected by the proposed action.
- If wetlands are affected, coordinate with state and federal resource agencies (including local coastal districts, if applicable).
- Evaluate alternatives that avoid and minimize wetlands involvement.
- Document agency coordination and any mitigative measures.

B. Fish & Wildlife:

There are three categories under this section: Anadromous or Resident Fish Present, Wildlife Resources,

and Bald and Golden Eagle Protection Act. You can accomplish the initial assessment of whether the project will affect fish or wildlife resources by contacting the appropriate resource agency or reviewing available fish and wildlife resource information. Some agencies have resource inventories cataloged on GIS that you can use for the initial analysis.

1. Anadromous or Resident Fish Present:

- Review the F&G Anadromous Fish Stream Atlas to determine if the proposed action affects a cataloged anadromous fish stream. This catalog will provide a reference number, species present, and type of use (i.e. spawning and rearing).
- If an anadromous fish stream is affected, coordinate with state (F&G) and federal (USFWS and NMFS) resource agencies. Remember that a fish stream is a “Water of the U.S.” subject to protection under Section 404 of the Clean Water Act.
- Document the type of stream habitat affected by the project. This is essential in determining the magnitude of the impact, the appropriate structure, and any necessary mitigation.
- An on-site meeting with agencies is a good practice, but not required.
- If you do not hold an on-site meeting, it is helpful to provide video or photographs of the site to agencies.
- Non-cataloged streams may require “trapping” to determine if fish species are present. If present, the primary concern is fish passage through in-stream structures.

2. Wildlife Resources:

- You should evaluate the project area to identify any wildlife resources of particular concern, especially any species identified by ADF&G, such as the Queen Charlotte grouse hawk in Southeast Alaska.
- You should analyze the impact categories of habitat fragmentation, bisecting migration corridors, and areas of high wildlife/vehicle accidents.

3. Bald Eagle and Golden Eagle Protection Act:

- In coastal areas and river and stream corridors, check with USF&WS to determine if any eagle nesting trees are located within the project area. If so, determine if the project slope limits are within 330 feet of the nesting tree. Review the *USF&WS National Bald Eagle Guidelines*.
- Document the results of any coordination and any proposed mitigation measures.

C. Right-of-Way:

- Determine whether additional right-of-way is required, including temporary or permanent easements, interagency or intraagency land transfers, or relocations.
- You must notify the public and provide for public consultation for any project that affects a predominately low-income area or minority community, or is located in a community with a federally recognized tribal government.
- Determine whether there is a disproportionate effect on minorities or disadvantaged people. Describe the results of any adverse effects, and document the consultation process in Section VI, Comments and Coordination.
- Evaluate any potential right-of-way for the presence of hazardous materials, such as asbestos and leaking fuel tanks.
- Assess the right-of-way requirements of proposed or relocated utilities.

D. Social:

- Coordinate as necessary with the local government, community council, or community organizations to determine if the project will have an adverse social effect. Describe adverse affects in this section and document coordination in Section VI, Comments and Coordination.
- Describe effect on traffic patterns and accessibility.

- Coordinate as appropriate with local officials to determine if the project may affect school districts, recreational areas, churches, businesses, or police and fire protection. Describe adverse effects in this section and document coordination in Section VI, Comments and Coordination.

E. Economic:

- Coordinate as appropriate with the local government, borough, or state agency to assess the economic effects of the proposed action, locally and regionally. Describe adverse effects in this section and document coordination in Section VI, Comments and Coordination.
- Address the effects on established businesses or business districts. Will the action adversely affect ingress and egress to businesses? Minor changes in access could substantially impair a “convenience” business. The Department’s right-of-way agent may initiate contact with the business owner. Describe adverse effects in this section and document coordination in Section VI, Comments and Coordination.

F. Local Land Use and Transportation Plan:

- Review applicable local land use and transportation plans.
- Coordinate with the local planning authority.
- Ensure that the proposed action is consistent with the local plans.
- Consider whether the project would cause adverse secondary and cumulative effects.
- Describe adverse impacts and any mitigative measures.

G. Threatened and Endangered Species (T&E):

- Check USFWS and NMFS websites to determine if the project would affect a T&E species.

H. Alaska Coastal Management Program (ACMP):

- Determine if the project is located within the ACMP boundaries.
- If the project is located within the state ACMP, determine if the project is within an approved local coastal district.
- Review the ABC List (classification of state agency approvals) to determine if a project is “categorically” approved without conditions (A List), listed as general concurrence (B List), or requires individual consistency (C List).
- Review the local district management plan and evaluate preliminary consistency.

I. Floodplains:

- A project encroaching on a designated or proposed regulatory floodway must be consistent with the regulatory floodway.
- The Department must perform an adequate engineering and environmental analysis to determine the level of encroachment and allow for a consistency evaluation.
- Coordinate with the Federal Emergency Management Agency (FEMA) and appropriate state and local government agencies for floodway encroachments.
- If a floodway revision is necessary, document coordination from FEMA and local or state agencies indicating the revision would be acceptable.
- Describe consistency with Executive Order 11988 in a floodplains finding. Include:
 - The reasons the proposed action must be located in the floodplain
 - The alternatives considered and why they were not practicable
 - A statement indicating whether the action conforms to applicable state or local floodplain protection standards

J. Water Quality:

- Projects must meet state and federal water quality standards.

- Evaluate the project for potential effects on public or private potable drinking water sources, particularly projects that involve blasting in the vicinity of a potable drinking water well.
- Identify any designated impaired water body and take appropriate measures to mitigate any impact on these waters.
- Estimate the amount of ground-disturbing activities proposed and identify sensitive receiving waters.
- Discuss the potential impacts on water quality and mitigative measures.
- Determine if the project is located within or would affect a Municipal Storm Sewer System (MS4) NPDES permit, or if runoff from the project will be mixed with discharges from an NPDES permitted industrial facility.

K. Cultural Resources:

- All projects must consider the potential effects on cultural resources (i.e. archaeological and historic).
- Check the AHRS list of historic properties.
- Determine if there are any listed properties within the APE.
- Any project off the existing embankment must be reviewed for cultural resources. Determine if there will be a “finding of effect”.

L. Air Quality Conformity:

- Determine if the project is in a nonattainment area for CO or PM-10. If the project is not located in a designated nonattainment area continue to M.
- In nonattainment areas, state funded projects that are a “regionally significant project” must comply with the conformity requirements of 18AAC 700. These regulations adopt federal transportation conformity regulations found in 40 CFR 93 by reference.
- Consult with ADEC to determine if a project level conformity analysis is required for the project.

M. Construction:

- Identify impacts anticipated during construction (the primary ones are listed).
- Describe adverse construction impacts. Generally, these are temporary; however, some can result in substantial impacts, such as on businesses.

N. Permits and Authorizations:

- Identify permits and authorizations necessary for construction of the project. Coordinate as necessary with state and federal resource agencies to confirm the applicability of permits.

V. **Section 6(f):**

- List Section 6(f) resources.
- If you answer “yes” to number 3, evaluate avoidance alternatives.
- Coordinate with the property manager and the DNR 6(f) grant coordinator to determine if land and water conservation funds have been used.
- Coordinate with the DNR grant coordinator to determine if the “use” of the property is considered a conversion of use.

VI. **Comments and Coordination:**

- Coordinate with the public and agencies for any projects that affect a protected resource or require additional ROW.
- Also coordinate projects that affect predominately low-income areas or a predominately minority community, or are located in a community with a federally recognized tribal government, or projects that

require approval from a local planning authority. A legal notice is one option, but the engineering manager and environmental manager should determine the most cost-effective way to solicit comments.

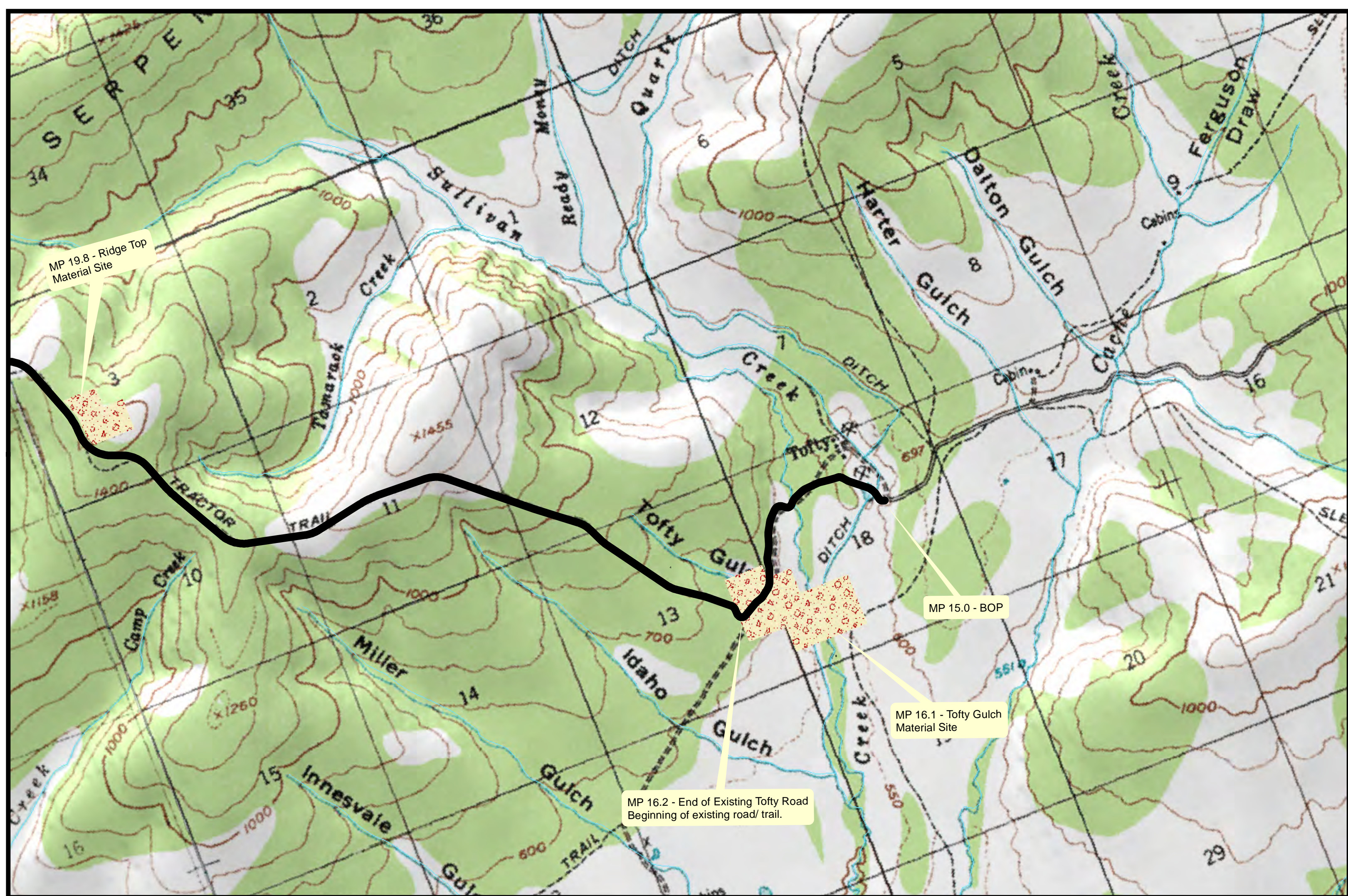
- Determine if there is a disproportionate effect on minorities or disadvantaged groups.
- Describe any issues raised as a result of coordination with state and federal resource agencies, local governments, tribal governments, Native corporations, or the public.

VII. Environmental Commitments/Mitigation Measures:

- List any environmental commitments or mitigative measures.

XIII. Signatures:

- Signature of individual preparing the checklist
- Signature of individual responsible for the project (e.g. project manager)
- Signature of the REM.



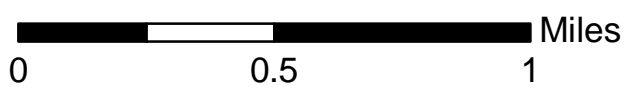
Alaska Department of Transportation
& Public Facilities

ROAD TO TANANA



Proposed Actions
February 2012

FIGURE 1

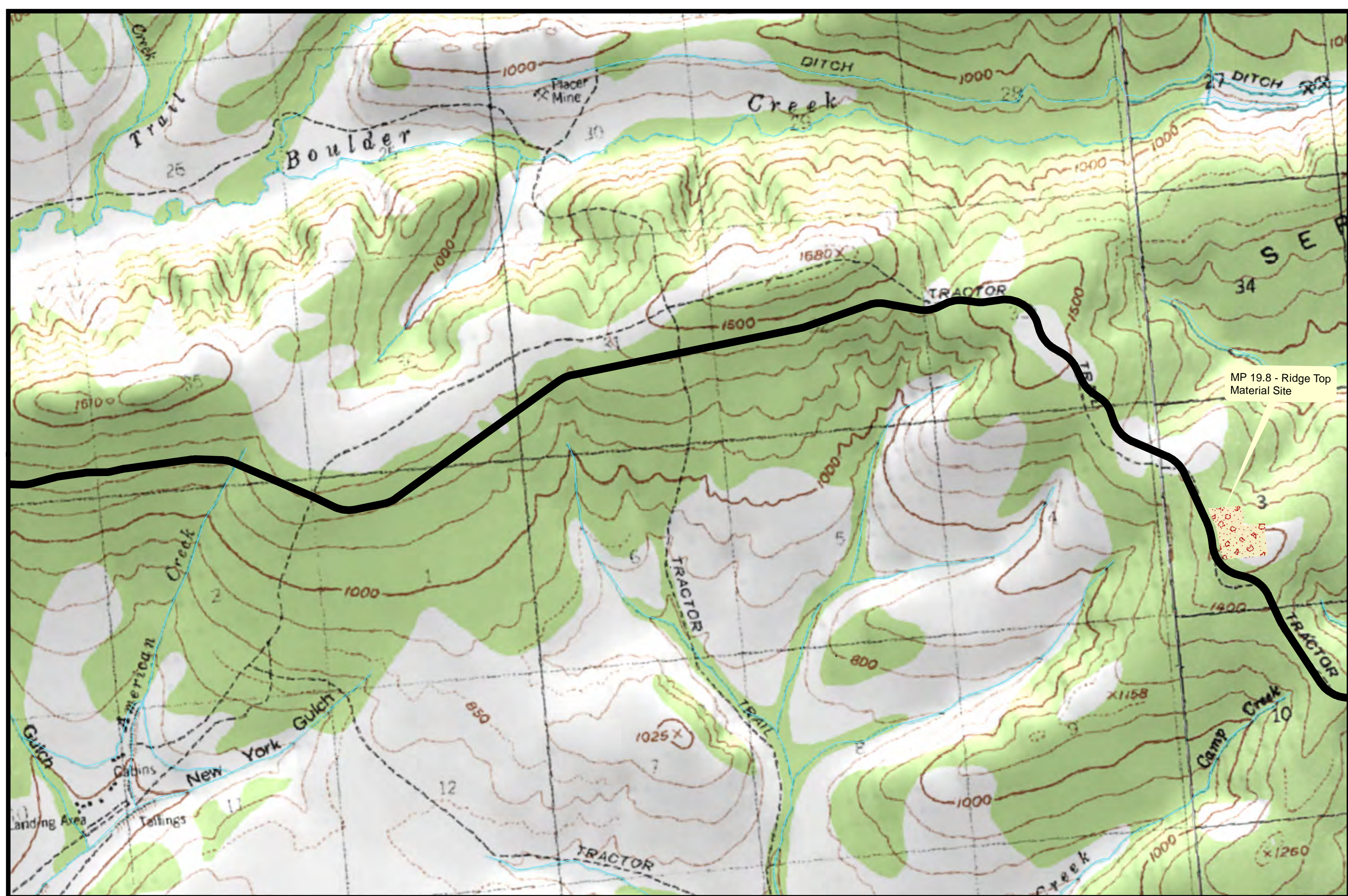
*MP locations begin at the intersection of Tofty Road and the Elliott Hwy, and are approximate.



Legend

-  Proposed Centerline
-  Proposed Material Sites



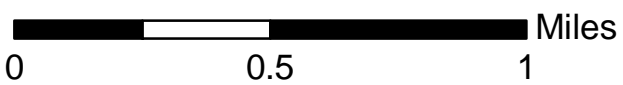


MP 19.8 - Ridge Top Material Site



Alaska Department of Transportation
 & Public Facilities
 ROAD TO TANANA
 Proposed Actions
 February 2012

FIGURE 2

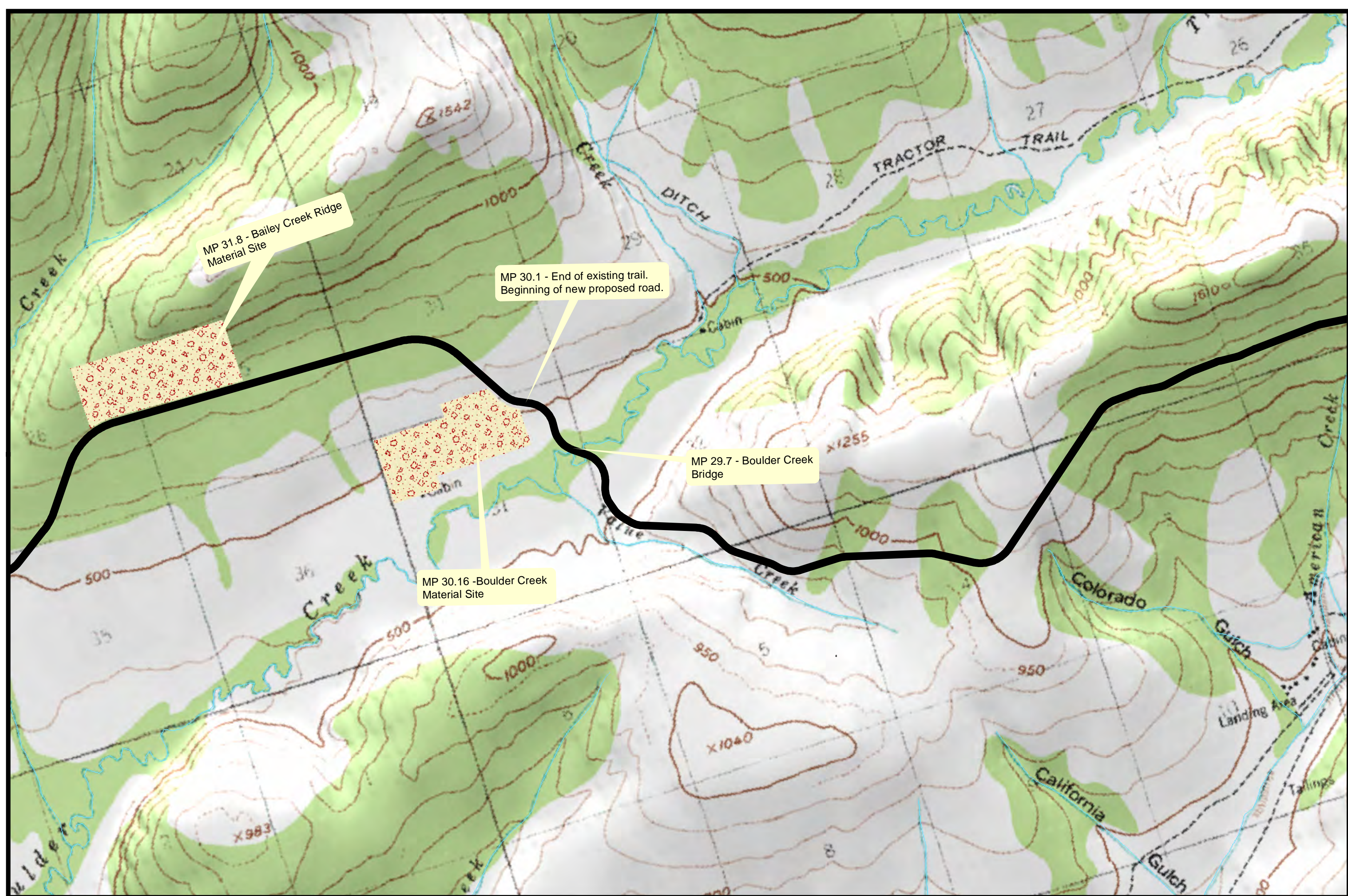
*MP locations begin at the intersection of Tofty Road and the Elliott Hwy, and are approximate.



Legend

-  Proposed Centerline
-  Proposed Material Sites





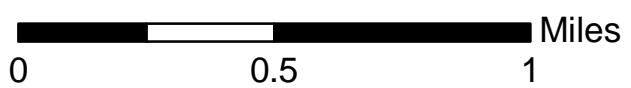
Alaska Department of Transportation
& Public Facilities

ROAD TO TANANA



Proposed Actions
February 2012

FIGURE 3

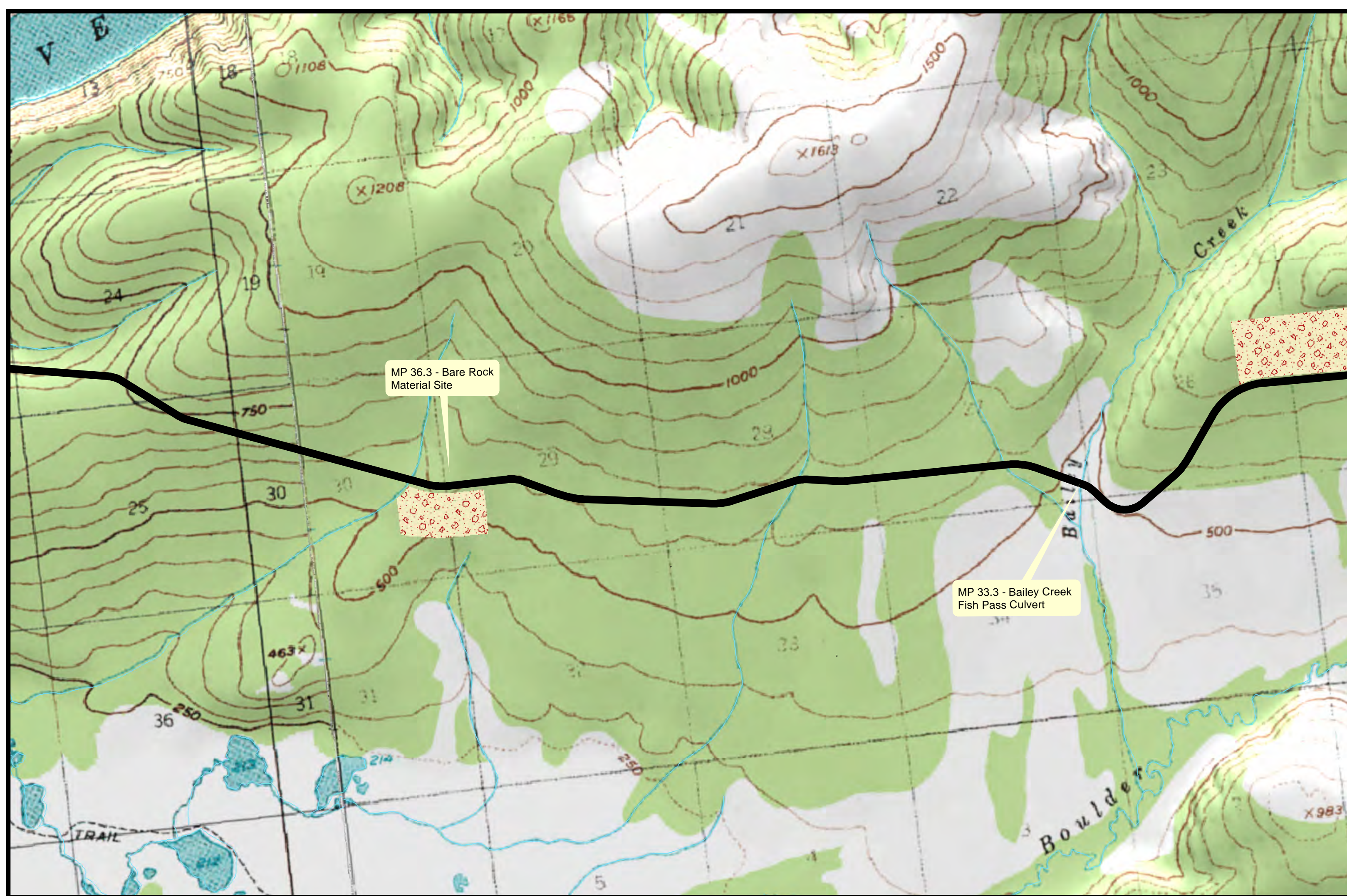
*MP locations begin at the intersection of Tofty Road and the Elliott Hwy, and are approximate.



Legend

-  Proposed Centerline
-  Proposed Material Sites





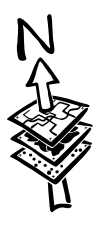
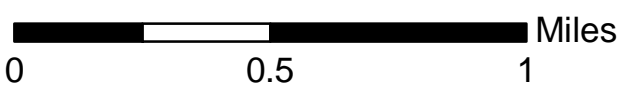
Alaska Department of Transportation
& Public Facilities

ROAD TO TANANA

Proposed Actions
February 2012

FIGURE 4

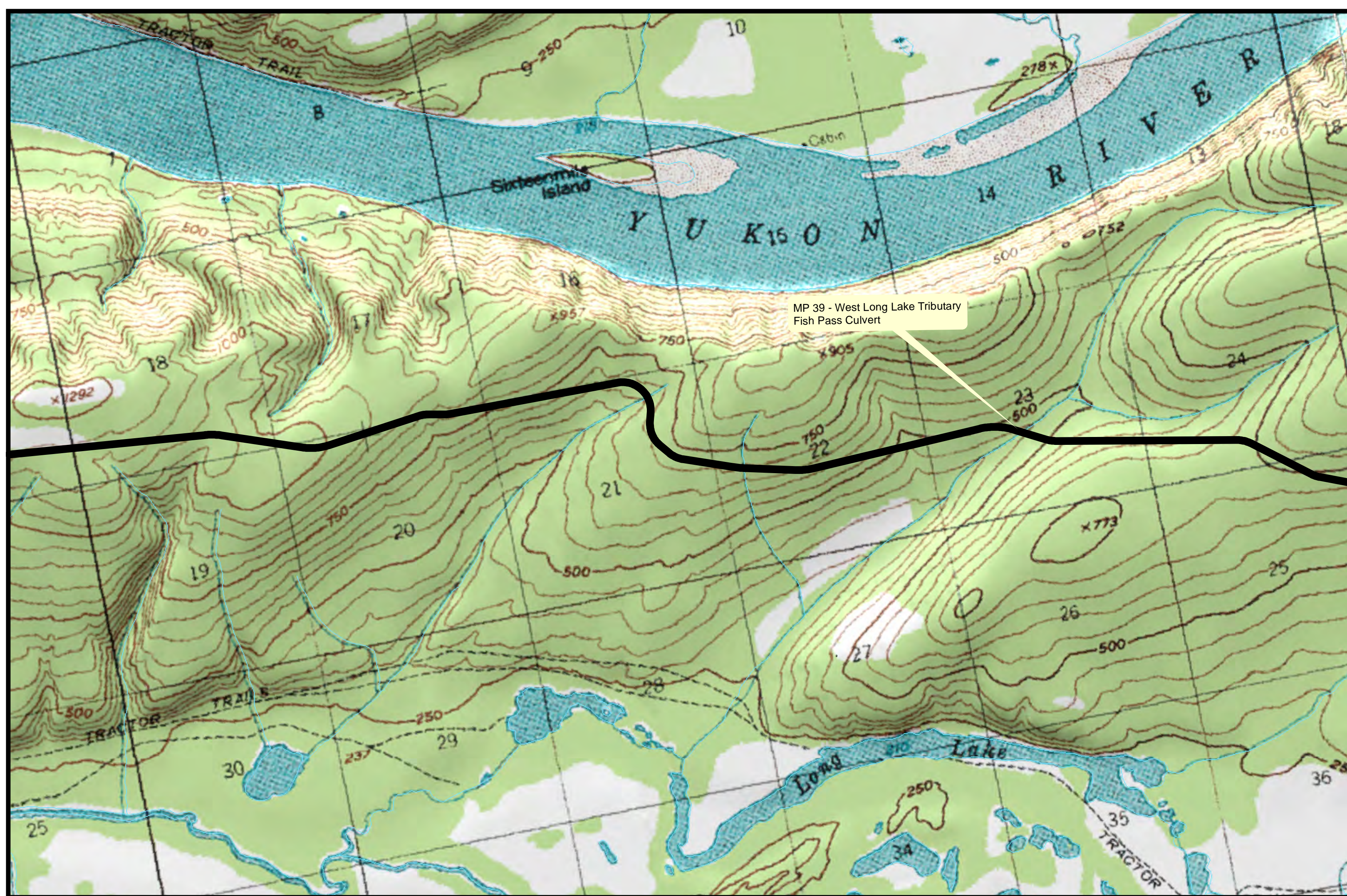
*MP locations begin at the intersection of Tofty Road and the Elliott Hwy, and are approximate.



Legend

- Proposed Centerline
- Proposed Material Sites





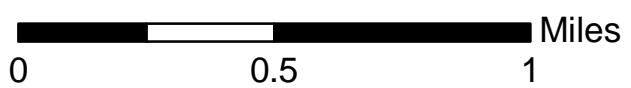
Alaska Department of Transportation
& Public Facilities

ROAD TO TANANA



Proposed Actions
February 2012

FIGURE 5

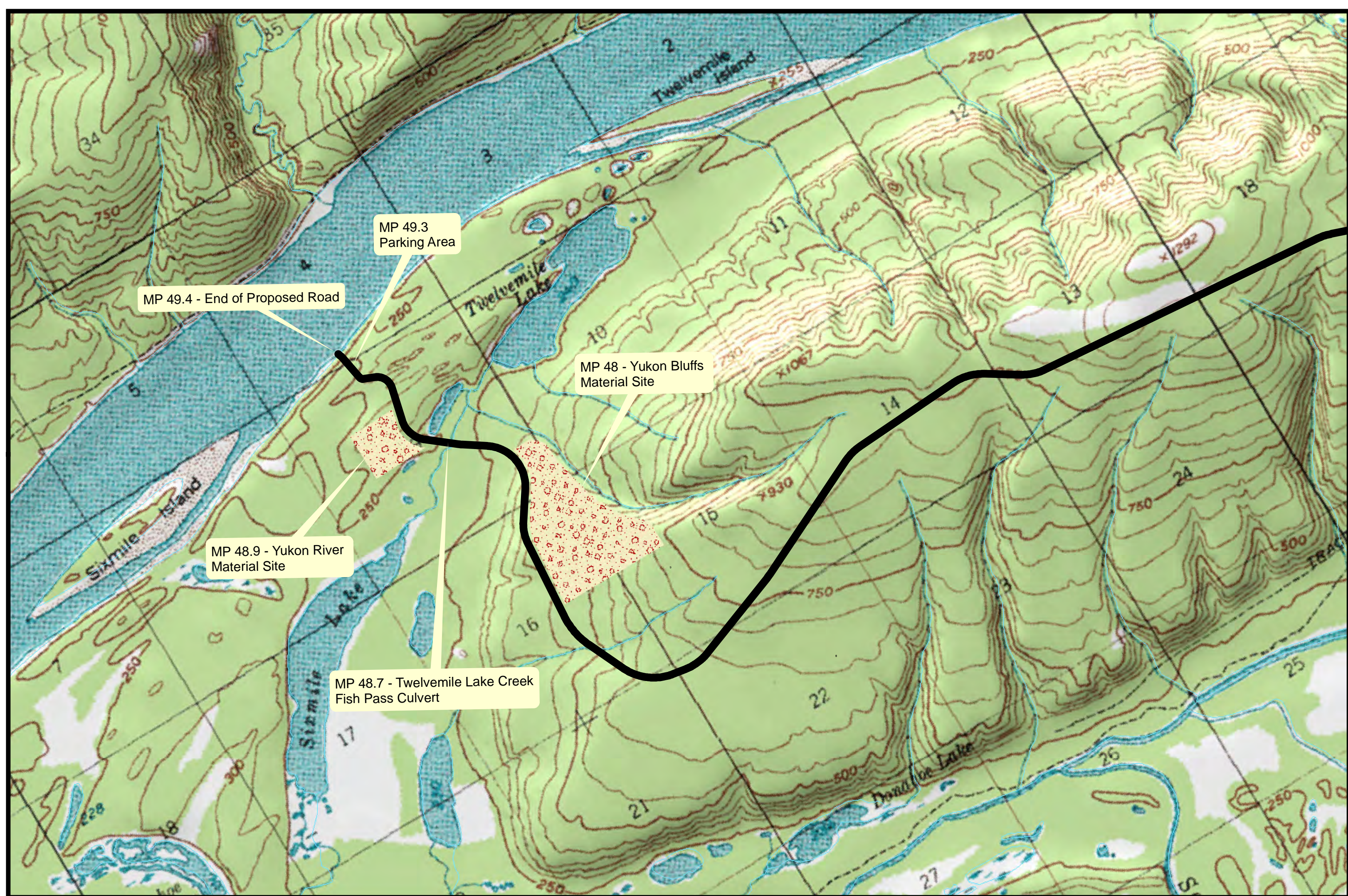
*MP locations begin at the intersection of Tofty Road and the Elliott Hwy, and are approximate.



Legend

-  Proposed Centerline
-  Proposed Material Sites





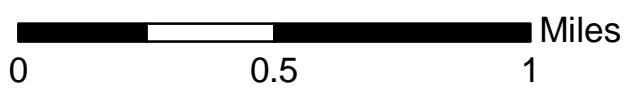
Alaska Department of Transportation
& Public Facilities

ROAD TO TANANA



Proposed Actions
February 2012

FIGURE 6

*MP locations begin at the intersection of Tofty Road and the Elliott Hwy, and are approximate.



Legend

-  Proposed Centerline
-  Proposed Material Sites





FH# _____
(Office Use Only)

GENERAL WATERWAY/WATERBODY APPLICATION
ALASKA DEPARTMENT OF FISH AND GAME
Division of Habitat
[Office Locations](#)

A. APPLICANT

1. Name: Alaska Department of Transportation and Public Facilities
2. Address (Mailing): 2301 Peger Road, Fairbanks, AK 99709
 Email Address: robert.effinger@alaska.gov
 Telephone: (907) 451-5129 Fax: (907) 451-5126
3. Project Coordinator/Contractor:
 Name: Bob Effinger
 Address: 2301 Peger Road, Fairbanks, AK 99709
 Email Address: robert.effinger@alaska.gov
 Telephone: (907) 451-5129 Fax: (907) 451-5126

B. TYPE AND PURPOSE OF PROJECT: _____

The Road to Tanana Project will provide spot and drainage improvements to approximately one mile of the existing Tofty Road, upgrades to the subsequent 14.5 miles of existing trail, and construction of 19.5 miles of new road, totaling 35 miles from BOP to the south bank of the Yukon River near Tanana.

C. LOCATION OF PROJECT SITE - [Please see attached Supplemental Information Document.](#)

1. Name of River, Stream, or Lake: _____
 or Anadromous Stream No: _____
2. Legal Description: Township _____ Range _____
 Meridian _____ Section _____ USGS Quad Map _____
3. Plans, Specifications, and Aerial Photograph. [See specific instructions](#)

D. **TIME FRAME FOR PROJECT:** 05/01/12 TO 09/30/14 (mm/dd/yy)

E. **CONSTRUCTION METHODS:**

1. Will the stream be diverted? Yes No
How will the stream be diverted? Please see attached Supplemental Information Document.
How long? Please see attached Supplemental Information Document.
2. Will stream channelization occur? Yes No
3. Will the banks of the stream be altered or modified? Yes No
Describe: Banks will only be altered between culvert inlets and downstream bank protection measures.
4. List all tracked or wheeled equipment (type and size) that will be used in the stream (in the water, on ice, or in the floodplain): Please see attached Supplemental Information Document.
How long will equipment be in the stream? Please see attached Supplemental Information Document.
5. a. Will material be removed from the floodplain, bed, stream, or lake? Yes No
Type: Please see attached Supplemental Information Document.
Amount: Please see attached Supplemental Information Document.
b. Will material be removed from below the water table? Yes No
If so, to what depth? Please see attached.
Is a pumping operation planned? Yes No
6. Will material (including spoils, debris, or overburden) be deposited in the floodplain, stream, or lake? Yes No
If so, what type? Please see attached Supplemental Information Document.
Amount: Please see attached Supplemental Information Document.
Disposal site location(s): Please see attached Supplemental Information Document.
7. Will blasting be performed? Yes No
Weight of charges: N/A
Type of substrate: N/A
8. Will temporary fills in the stream or lake be required during construction (e.g., for construction traffic around construction site)? Yes No
9. Will ice bridges be required? Yes No

F. **SITE REHABILITATION/RESTORATION PLAN:** On a separate sheet present a site rehabilitation/restoration plan. Please see attached Supplemental Information Document.

G. **WATERBODY CHARACTERISTICS:** Please see attached Supplemental Information Document.

Width of stream: _____ Depth of stream or lake: _____

Type of stream or lake bottom (e.g., sand, gravel, mud): _____

Stream gradient: _____

H. **HYDRAULIC EVALUATION:**

1. Will a structure (e.g., culvert, bridge support, dike) be placed below ordinary high water of the stream? Yes No

If yes, attach engineering drawings or a field sketch, as described in Step B.
Please see attached Supplemental Information Document.

For culverts, attach stream discharge data for a mean annual flood ($Q=2.3$), if available.

If applicable, describe potential for channel changes and/or increased bank erosion:
Please see attached Supplemental Information Document.

2. Will more than 25,000 cubic yards of material be removed? Yes No

Note: No single stream will have 25,000 CY or more of excavation.

If yes, attach a written hydraulic evaluation including, at a minimum, the following:
potential for channel changes, assessment of increased aufeis (glaciering) potential,
assessment of potential for increased bank erosion.

I HEREBY CERTIFY THAT ALL INFORMATION PROVIDED ON OR IN CONNECTION WITH THIS APPLICATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Brett O Nelson

Signature of Applicant

1-18-13

Date



THE STATE
of **ALASKA**
GOVERNOR SEAN PARNELL

Department of Transportation and
Public Facilities

NORTHERN REGION
Design & Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5399
Main: 907-451-5129
TDD: 907-451-2363
Fax: 907-451-5126

January 17, 2013

Fairbanks Field Office
U.S. Army Corps of Engineers
2175 University Avenue, Suite 201E
Attention: Mr. Benjamin Soiseth
Fairbanks, AK 99709-4927

Re: Road to Tanana
State of Alaska Project Number: 61759
404 Permit Application

Dear Mr. Soiseth:

The Alaska Department of Transportation & Public Facilities (DOT&PF) is seeking a 404 Wetlands Permit for filling and dredging of wetlands for proposed Road to Tanana project. This letter is to provide you with the necessary information for your review of the enclosed application.

The purpose of the project is to extend the existing highway system that currently terminates near Manley Hot Springs to the Yukon River near Tanana. The project would improve approximately 16.5 miles of existing road and unimproved trails, and construct 19.34 miles of new road across undeveloped terrain, to provide an all-season link to the south bank of the Yukon River.

The proposed project will consist of the following components:

- Upgrade the last two miles of the existing Tofty Road, as well as an additional 14.5 miles of existing roads and trails that extend past the current terminus of Tofty Road (beginning at approximately mile post 15)
- Install a new bridge at Boulder Creek (Alaska Bridge #2297)
- Construct 19.34 miles of new road beginning at mile post 29.5
- Expand two existing material sites
- Create five new material sites
- Install 3 new fish passage culverts
- Drainage improvements as required
- Vegetation clearing
- Construct a public parking area near the road terminus at the Yukon River

- Construct a barge landing approach to OHW limits of the Yukon River
- Acquire approximately 620 acres for road right-of-way

Upgrades to the existing Tofty Road, and other existing roads and trails

Upgrades to existing roads and trails will begin at approximately milepost (mp) 15.05 of Tofty Road. Construction will be accomplished by placing approximately 45,000 CY of fill material in 13.5 acres of combined waters of the United States and wetlands. This component of the project will improve road embankments and drainage over existing road and trail, improve water crossings, clear a 30-ft vegetation buffer, and to establish new turnouts. Fill volume as indicated also includes placement of materials to facilitate water crossings at Sullivan Creek (mp 15.59), Tofty Gulch (mp 16.09), and American Creek (mp 25.29).

Installation of a new bridge at Boulder Creek (Alaska Bridge No. 2297)

The existing bridge at Boulder Creek (mp 29.67) will be replaced to improve transportation safety and efficiency. Associated with this bridge replacement are approximately 2,045 CY of various fill materials that will be placed in waters of the United States or wetlands.

Construction of 19.34 miles of new road

New road construction will commence at approximately milepost 30.11, and continue westward approximately 19.34 miles to its planned terminus near the Yukon River. This component of the project will be accomplished by placing approximately 52,500 CY of various fill materials in 21.7 acres of combined waters of the United States or wetlands to establish road embankments and turnouts, clear a 30-ft vegetation buffer, and construct a combined parking area/barge landing approach at the project terminus (mp 49.42). Fill volume as indicated also includes the placement of materials to facilitate water crossings at Bailey Creek* (mp 33.3), Bailey Creek Tributary (mp 33.65), East Long Lake Tributary (mp 34.65), Middle Long Lake Tributary (mp 36.56), West Long Lake Tributary* (mp 39.03), Unnamed Creek #1 (mp 47.36), Unnamed Creek #2 (mp 47.82), and Twelve-Mile Lake Creek* (mp 48.70). *(fish passage culvert installations. See attached ADF&G Habitat Permit Application)

Material site development associated with the project components

Material excavations required to construct the project will total approximately 1,718,864 CY from seven (7) sites (two existing and five new), impacting approximately 13.3 acres of combined waters of the United States and wetlands. Suitable material from these excavations will be used to construct the proposed action components.

Avoidance, Minimization and Mitigation

The DOT&PF has made significant efforts to avoid and minimize impacts to important wetland functions, wildlife habitats, areas of important cultural significance, and subsistence areas through the design presented in this application (see attached Alaska Department of Fish & Game (ADF&G) Fish Sampling Report, State of Alaska Office of History and Archaeology (OHA) Survey, and 3PPI Wildlife and Habitat reports). Additionally, the proposed design has reduced potential impacts to wetlands and waters of the United States to the minimum acreage necessary to construct the project while maintaining the project purpose and meeting public safety requirements. A progressive series of draft alternatives, variously considered and dismissed during project development, included design elements that would have effected greater wetland impacts. Examples of these dismissed elements include a) a more northerly corridor alternative containing greater wetland acreage; b) more direct routing of the proposed alternative though, versus around, wetland acreage; and c) establishment of material site boundaries with wetland acreages within them. These design

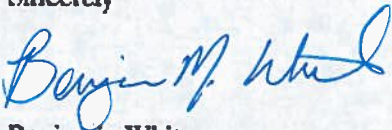
components were rejected based on information made available by engineering and environmental field study data, as well from input by agencies and the public during project development and scoping.

The proposed project alternative a) constructs the road over a more southern corridor containing fewer wetlands overall; b) incorporates numerous, minor alignment changes that avoid small wetland acreages; and, c) has delineated material site boundaries that minimize wetland involvement to the extent practicable. Anticipated project effects on the aquatic environment, including waters of the United States and wetlands, are fully documented in this application.

Regarding mitigation, DOT&PF will develop and provide to you a mitigation plan, including proposed acreage and ratios, in anticipation of participation in an in-lieu fee program. We also have considered several culvert installations, and reclamation of select material sites to improved wetlands/fish habitat, as possible mitigation credits to be further discussed with the Alaska Department of Fish and Game and the Corps. However, we also understand that the Corps cannot render any final decision on mitigation ratios until you have solicited, received and incorporated public and agency comments into your decision making process.

If you have any questions or if you need additional information, please do not hesitate to call me or Paul Karczmarczyk with Northern Region DOT&PF. You may contact me by phone at (907) 465-6961 or by email at ben.white@alaska.gov. Paul Karczmarczyk's phone number is (907) 451-2288, and his email address is paul.karczmarczyk@alaska.gov.

Sincerely



Benjamin White
Statewide Environmental Manager

Attachments: Section 404 Permit Application
Supplemental Information
Appendix A: USACE Engineering Form 4345
Permit Application Sheets 1 – 110 (112 pages incl. Sheets 2a & 2b)
Preliminary Jurisdictional Determination
Appendix A: Enhanced National Wetlands Inventory (141 maps)
Appendix B: B.1: Road to Tanana Plant List
B.2: Ecoregions
B.3: STATSGO Soil Surveys
Appendix C: Field Data Forms
ADF&G Tofty Road Fish Sampling Final Report
ADF&G Division of Habitat Fish Habitat Permit Application
ADNR OHA Cultural Resources Survey Report
Three Parameters Plus (3PPI) Wildlife and Habitat reports



**This notice of authorization must be
conspicuously displayed at the site of work.**

**United States Army Corps of Engineers
YUKON RIVER**

A permit to: DISCHARGE 99,895 CUBIC YARDS OF FILL INTO 34.6 ACRES OF WATERS OF THE UNITED STATES, INCLUDING WETLANDS, TO UPGRADE THE LAST TWO MILES OF THE EXISTING TOFTY ROAD AND 14.5 MILES OF THE EXISTING ROADS AND TRAILS THAT EXTEND PAST THE CURRENT TERMINUS OF TOFTY ROAD, (BEGINNING AT APPROXIMATELY MILE POST 15). THE WORK WOULD INCLUDE THE INSTALLATION OF A NEW BRIDGE AT BOULDER CREEK (#2297), THE CONSTRUCTION OF 19.34 MILES OF NEW ROAD BEGINNING AT MILE POST 29.5, THE EXPANSION OF TWO MATERIAL SITES, AND THE CREATION OF FIVE NEW MATERAIL SITES.

at: BEGIN AT LONGITUDE 150.825793° W.; AND END NEAR TANANA, ALASKA, AT LATITUDE 65.195665° N., LONGITUDE 151.838842 W.

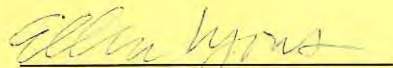
has been issued to: ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

on: SEPTEMBER 25, 2013 and expires on: SEPTEMBER 30, 2018

Address of Permittee: 2301 PEGER ROAD, FAIRBANKS, ALASKA 99709

Permit Number:

POA-2013-50


**FOR: District Commander
Ellen Lyons
Project Manager
REGULATORY DIVISION**



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
WESTSIDE BUSINESS PARK
2175 UNIVERSITY AVENUE, SUITE 201E
FAIRBANKS, ALASKA 99709-4927

September 25, 2013

Regulatory Division
POA-2013-50

Mr. Brett Nelson
2301 Peger Road
Fairbanks, Alaska 99709

Dear Mr. Nelson,

Enclosed is the signed Department of the Army permit, file number POA-2013-50, Yukon River, which authorizes the discharge of 99,895 cubic yards of fill into 34.6 acres of waters of the United States (U.S.), including wetlands, to upgrade the last two miles of the existing Tofty Road and 14.5 miles of the existing roads and trails that extend past the current terminus of Tofty Road, (beginning at approximately mile post 15). The project is located within multiple Township, Range and Sections, Fairbanks Meridian; USGS Quad Map Tanana A-2, A-3 and A-4; the project starts near Manley Hot Springs, Alaska at Latitude 65.089142° N., Longitude 150.825793° W.; and ends near Tanana, Alaska, at Latitude 65.195665° N., Longitude 151.838842 W. Also enclosed is a Notice of Authorization which should be posted in a prominent location near the authorized work.

If changes to the plans or location of the work are necessary for any reason, plans must be submitted to us immediately. Federal law requires approval of any changes before construction begins.

Nothing in this letter excuses you from compliance with other Federal, State, or local statutes, ordinances, or regulations.

Please contact me via email at Ellen.H.Lyons@usace.army.mil, by mail at the address above, or by phone at (907) 474-2166, if you have questions.

Sincerely,

A handwritten signature in cursive script that reads "Ellen Lyons".

Ellen Lyons
Project Manager

Enclosures

DEPARTMENT OF THE ARMY PERMIT

Permittee: Alaska Department of Transportation and Public Facilities

Permit No.: POA-2013-50

Issuing Office: U.S. Army Engineer District, Alaska

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: This permit authorizes the discharge of 99,895 cubic yards of fill into 34.6 acres of waters of the United States (U.S.), including wetlands, to upgrade the last two miles of the existing Tofty Road and 14.5 miles of the existing roads and trails that extend past the current terminus of Tofty Road, (beginning at approximately Mile Post 15). The work would include the installation of a new bridge at Boulder Creek (#2297), and the construction of 19.34 miles of new road beginning at Mile Post 29.5.

The proposed project also includes the expansion of two existing material sites; (Boulder Creek Material Site and Tofty Material Site), the creation of five new material sites, (Ridge Top, Bailey Creek Ridge, Bare Rock, Yukon Bluffs and Yukon River Material Sites), (Boulder Creek, Tofty, Ridge Top, Bare Rock, and Yukon Bluffs Material Sites contain waters of the U.S. that would be impacted by the proposed project; see Table 21.2, Discharge by Material Site on pages 8 and 9 of Supplemental Information), the installation of 3 new fish passage pipes, improvements to drainage, and vegetation clearing. The project terminus is near the Yukon River, above its ordinary high water level, approximately 6 miles upriver from the community of Tanana. No work would be done in the Yukon River.

All work would be performed in accordance with the enclosed plan, (122 sheets), dated either December 21, 2013 or February 2013; and the Supplemental Information, Pages 1 – 22.

Project Location: The proposed project is located within multiple Township, Range and Sections (see Sheet 5 of 22 in the Supplemental Information), Fairbanks Meridian; USGS Quad Map Tanana A-2, A-3 and A-4; the project starts near Manley Hot Springs, Alaska at Latitude 65.089142° N., Longitude 150.825793° W.; and ends near Tanana, Alaska, at Latitude 65.195665° N., Longitude 151.838842 W.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on September 30, 2018.

If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. Vegetation clearing in wetlands (where no fill is authorized) shall be accomplished by hand, using low ground-pressure, wheeled ATVs for access to minimize temporary impacts.
2. All stream crossing shall be constructed with 2:1 or steeper embankment slopes as shown on sheets 71 (Type A&B Pipe Plan and Oblique View, Section B-B') and 95 (Fish Pass Pipe Plan and Oblique View, Section R-R') of 122 of the attached plans.
3. Road embankment slopes shall be constructed at 2:1 slope in all waters of the U.S. unless it is not practicable. If construction deviates from the 2:1 slopes because they are not practicable, this information shall be provided to the Corps of Engineers along with updated plans showing extent of impacts to waters of the U.S.

4. Updated plans showing 2:1 slopes in waters of the U.S. shall be submitted to the Corps of Engineers prior to any clearing or construction. Plans shall show mile-markers and project survey stationing. Advertised plans shall show areas within waters of the U.S. that will be constructed at 2:1 slopes. Advertised plans shall be submitted to the Corps of Engineers as soon as they become available.
5. Stream crossing structures will be constructed during periods of low flow. Water crossing construction will be accomplished during annual periods historically coinciding with low-water flows (and/or frozen water/soils) in planned stream crossing locations. Drainage structures will be installed during periods of low flow unless it is not practicable.
6. All disturbed, stockpile and fill areas shall be stabilized to prevent erosion. Increased water turbidity and accumulation of sediment in drainages, sloughs, and other wetlands shall be evidence of insufficient stabilization. Embankments shall also be tracked and stabilized in accordance with appropriate measures to further prevent embankment erosion and sediment runoff. No temporary fills are permitted, if temporary fills are required outside of the permanent fill area, a permit modification must be applied for and mitigation requirements shall apply (as stated in Special Condition 7).
7. For unavoidable impacts to waters of the U.S., the applicant shall pay an ILF at a ratio of 2:1 for the permanent loss of 3.6 acres of medium and high value wetlands, and at a ratio of 1.5:1 for the permanent loss of 31 acres of low value wetlands, for a total of 53.7 acres, to The Conservation Fund, Alaska Branch, 2727 Hiland Road, Eagle River, Alaska 99577. This fee must be paid prior to the start of any work. Proof of payment must be submitted to the Corps of Engineers prior to the start of any work.
8. Existing ponds, wetlands, and water bodies shall be avoided to the maximum extent practicable. When individual historically placer mined water bodies are re-entered, or if groundwater is intercepted, the resulting ponds and water body shoreline will be stabilized as part of the reclamation plan. A reclamation plan for mined areas shall be submitted to the Corps of Engineers for review and approval prior to initiating mining.
9. The fish-bearing stream crossings at Bailey Creek and West Long Lake tributary shall include stream simulation features, and shall be at least as wide as a bank full width of their undisturbed waterways.
10. Fish bearing streams on public lands shall have at least an 82' primary buffer and a 50' secondary buffer of undisturbed existing vegetation between the ordinary high water mark and any mining related ground disturbance. These buffers shall be staked on the ground prior to development of the material site.
11. On non-fish bearing Sullivan Creek eastward of the OHW mark, a 50' buffer shall be maintained (33 foot primary and 17 foot secondary buffer). On all other non-fish bearing streams on public lands, at least a 33' primary, and a

33' secondary buffer of undisturbed existing vegetation between the ordinary high water mark and any mining related ground disturbance shall be maintained. These buffers shall be staked on the ground prior to development of the material site.

12. Best management practices for preventing the introduction of invasive weeds shall be implemented, such as thoroughly washing equipment before deployment onsite.
13. Material site reclamation shall be accomplished within 2 years on any portion of a mine that has been inactive (abandoned) for 2 years, or where the material source is no longer practical or economically feasible to extract, with the exception of portions reserved for maintenance activities. Reclamation shall be conducted concurrently with mining as practicable. The area to be reserved for maintenance activities shall be as small as practicable depending on the gravel need. A final reclamation plan for each material site including a map showing the area to be reserved for maintenance activities shall be provided to the Corps of Engineers once the area has been selected and before reclamation of the site begins.
14. Un-vegetated or heavily rutted sections of roads and trails located in wetlands and no longer needed after the all season road is constructed, shall be reclaimed by returning the land surface to the original land-surface profile and re-vegetating with native plant species; as long as the reclamation of that portion of the road does not eliminate trail access to active mining or subsistence use areas.
15. No fill, equipment or construction materials shall be stockpiled or stored on wetlands that do not have Department of the Army authorization for those activities.
16. Natural drainage patterns shall be maintained to the extent practicable by the installation of culverts in sufficient number and size under access roads and trails to prevent ponding, diversion, or concentrated runoff that would result in adverse impacts to adjacent wetlands and other fish and wildlife habitats.

Special Information:

Any condition incorporated by reference into this permit by General Condition 5, remains a condition of this permit unless expressly modified or deleted, in writing, by the District Engineer or his authorized representative.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

() Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(XX) Section 404 of the Clean Water Act (33 U.S.C. 1344).

() Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorization required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.



THE STATE
of **ALASKA**

GOVERNOR SEAN PARNELL

**Department of Environmental
Conservation**

DIVISION OF WATER
Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
fax: 907.334.2415
www.dec.alaska.gov/water/wwdp

Certified Mail: 7009-2820-0001-7169-4855

July 3, 2013

ADOT&PF – Northern Region
Attn: Mr Paul Karcamarczyk
2301 Peger Road
Fairbanks, AK 99709-5399

Re: Yukon River ADOT&PF Road to Tanana
Reference No. POA-2013-50

Dear Mr. Karcamarczyk:

In accordance with Section 401 of the Federal Clean Water Act of 1977 and provisions of the Alaska Water Quality Standards, the Department of Environmental Conservation (DEC) is issuing the enclosed Certificate of Reasonable Assurance for placement of fill material in waters of the U.S. in association with the development of road improvements associated with POA-2013-50 Road to Tanana Project.

DEC regulations provide that any person who disagrees with this decision may request an informal review by the Division Director in accordance with 18 AAC 15.185 or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. An informal review request must be delivered to the Director, Division of Water, 555 Cordova Street, Anchorage, AK 99501, within 15 days of the permit decision. Visit <http://www.dec.state.ak.us/commish/ReviewGuidance.htm> for information on Administrative Appeals of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, PO Box 111800, Juneau, AK 99811-1800, within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived.

By copy of this letter we are advising the U.S. Army Corps of Engineers of our actions and enclosing a copy of the certification for their use.

Sincerely,

Handwritten signature of James Rypkema in black ink.

James Rypkema
Section Manager, Storm Water and Wetlands

Enclosure: 401 Certificate of Reasonable Assurance

cc: (with enclosure via email.)
Ellen Lyons, USACE, Fairbanks

Michael Daigneault, ADF&G
USFWS Field Office Anchorage
Matthew LaCroix, EPA Operations, Anchorage

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CERTIFICATE OF REASONABLE ASSURANCE

A Certificate of Reasonable Assurance, in accordance with Section 401 of the Federal Clean Water Act and the Alaska Water Quality Standards is issued to Alaska Department of Transportation and Public Facilities, Northern Region, 2301 Peger Road, Fairbanks, Alaska 99709-5399 for placement of fill material in waters of the U.S. in association with the development of the road to Tanana project. The applicant's stated purpose is to extend the existing highway system that currently terminates near Manley Hot Springs, to the Yukon River near Tanana. The project would improve approximately 16.5 miles of existing road and unimproved trail and construct 19.34 miles of new road across undeveloped terrain to provide an all season link to the south bank of the Yukon River near Tanana, Alaska.

The project consists of upgrading the last two miles of the existing Tofty Road, as well as an additional 14.5 miles of existing roads and trails that extend past the current terminus of Tofty Road (beginning at approximately mile post 15; the installation of a new bridge at Boulder Creek (#2297), and the construction of 19.34 miles of new road beginning at mile post 29.5. The proposed project also includes the expansion of two existing material sites, the creation of five new material sites, the installation of 3 new fish passage pipes, improvements to drainage, and vegetation clearing. The project terminus is near the Yukon River, above its ordinary high water level, approximately 6 miles upriver from the community of Tanana. No work would be done in the Yukon River.

A State Water Quality Certification is required under Section 401 because the proposed activity will be authorized by a U.S. Army Corps of Engineers permit, reference number POA-2013-50, and a discharge of pollutants to waters of the U.S. located in the State of Alaska may result from the proposed activity. Public notice of the application for this certification was given as required by 18 AAC 15.180 in the Corps Public Notice POA-2013-50 posted from March 21, 2013 to April 19, 2013.

The proposed project is located within multiple Township, Range and Sections, Fairbanks Meridian; the project starts near Manley Hot Springs, Alaska at Latitude 65.089142° N., Longitude 150.825793° W.; and ends near Tanana, Alaska, at Latitude 65.195665° N., Longitude 151.838842 W.

The Department of Environmental Conservation (DEC) reviewed the application and certifies that there is reasonable assurance that the proposed activity, as well as any discharge which may result, will comply with applicable provisions of Section 401 of the Clean Water Act and the Alaska Water Quality Standards, 18 AAC 70, provided that the following alternative measures are adhered to.

1. Reasonable precautions and controls must be used to prevent incidental and accidental discharge of petroleum products or other hazardous substances. Fuel storage and handling activities for equipment must be sited and conducted so there is no petroleum contamination of the ground, surface runoff or water bodies.
2. During construction, spill response equipment and supplies such as sorbent pads shall be available and used immediately to contain and cleanup oil, fuel, hydraulic fluid, antifreeze, or other pollutant spills. Any spill amount must be reported in accordance with Discharge Notification and Reporting Requirements (AS 46.03.755 and 18 AAC 75 Article 3). The applicant must contact by telephone the DEC Area Response Team for Northern Alaska at (907) 451-2121,

during work hours or 1-800-478-9300 after hours. Also, the applicant must contact by telephone the National Response Center at 1-800-424-8802.

3. Runoff discharged to surface water (including wetlands) from a construction site disturbing one or more acres must be covered under Alaska's General Permit for Storm Water Discharges from Large and Small Construction Activities in Alaska (AKR100000). This permit requires a Storm Water Pollution Prevention Plan (SWPPP). For projects that disturb more than five acres, this SWPPP must also be submitted to DEC (William Ashton, 907-269-6283) prior to construction.
4. During the work on the culverts and bridges, construction equipment shall not be operated below the ordinary high water mark if equipment is leaking fuel, oil, hydraulic fluid, or any other hazardous material. Equipment shall be inspected on a daily basis for leaks. If leaks are found the equipment shall not be used and pulled from service until the leak is repaired.
5. All work areas, material access routes, and surrounding wetlands involved in the construction project shall be clearly delineated and marked in such a way that equipment operators do not operate outside of the marked areas.
6. Natural drainage patterns shall be maintained, to the extent practicable, without introducing ponding or drying.
7. Fill material must be clean sand, gravel or rock, free from petroleum products and toxic contaminants in toxic amounts.

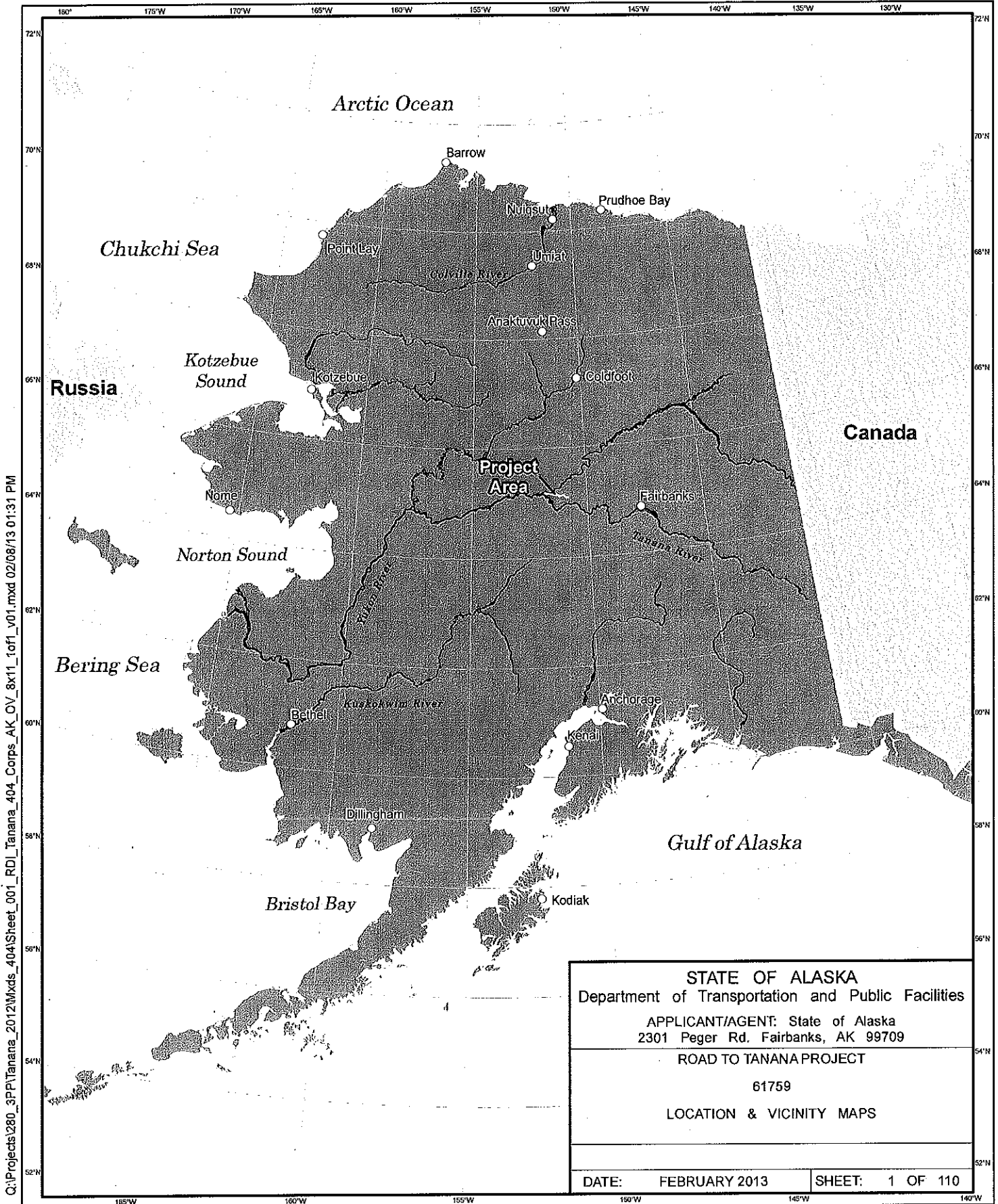
This certification expires five (5) years after the date the certification is signed. If your project is not completed by then and work under U.S Army Corps of Engineers Permit will continue, you must submit an application for renewal of this certification no later than 30 days before the expiration date (18 AAC 15.100).

Date: July 3, 2013



James Rypkema, Section Manager
Storm Water and Wetlands

POA-2013-50, Yukon River

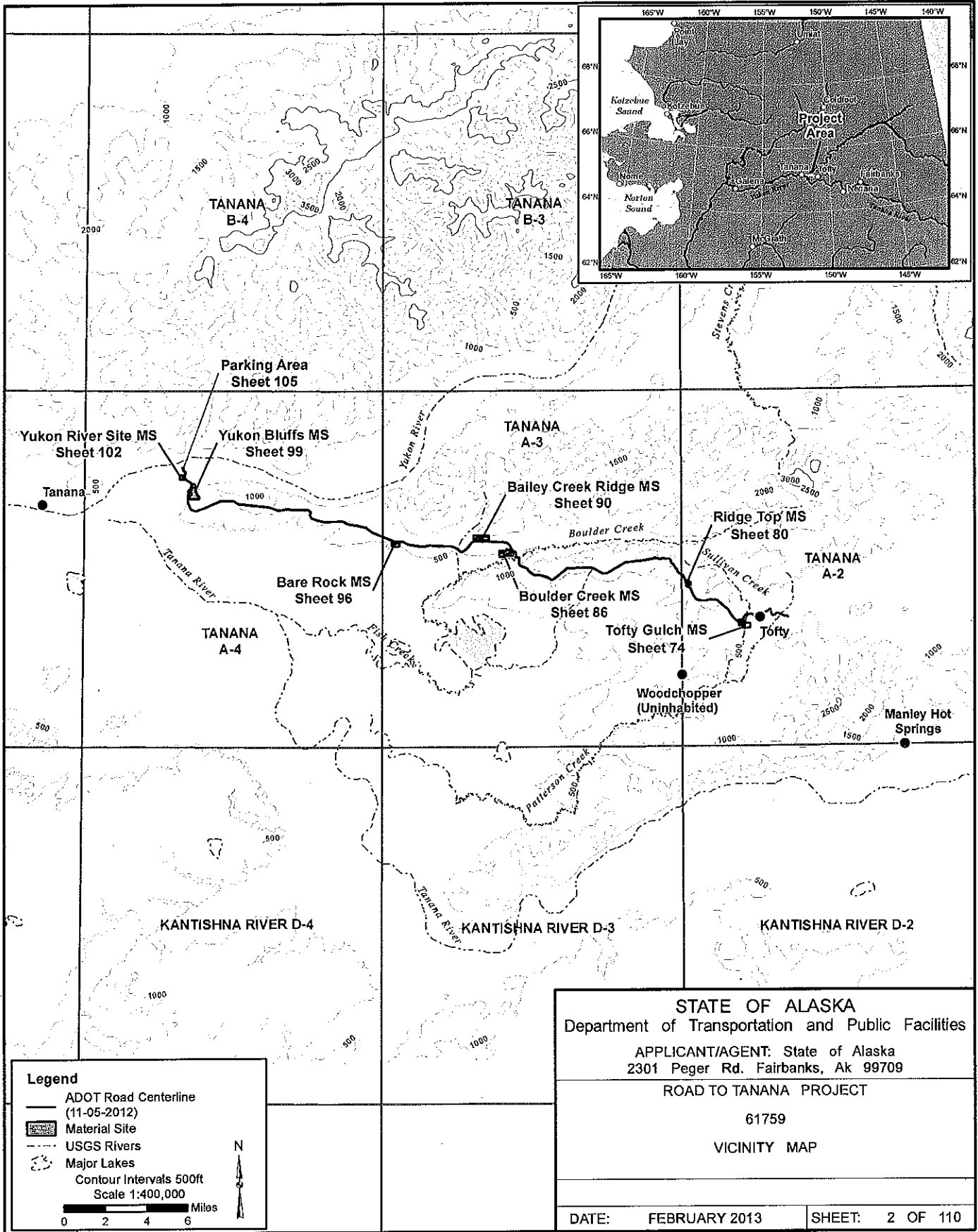


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<p>STATE OF ALASKA Department of Transportation and Public Facilities</p>	
<p>APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709</p>	
<p>ROAD TO TANANA PROJECT</p>	
<p>61759</p>	
<p>LOCATION & VICINITY MAPS</p>	
<p>DATE: FEBRUARY 2013</p>	<p>SHEET: 1 OF 110</p>

POA-2013-50, Yukon River

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Legend

- ADOT Road Centerline (11-05-2012)
- Material Site
- - - USGS Rivers
- Major Lakes

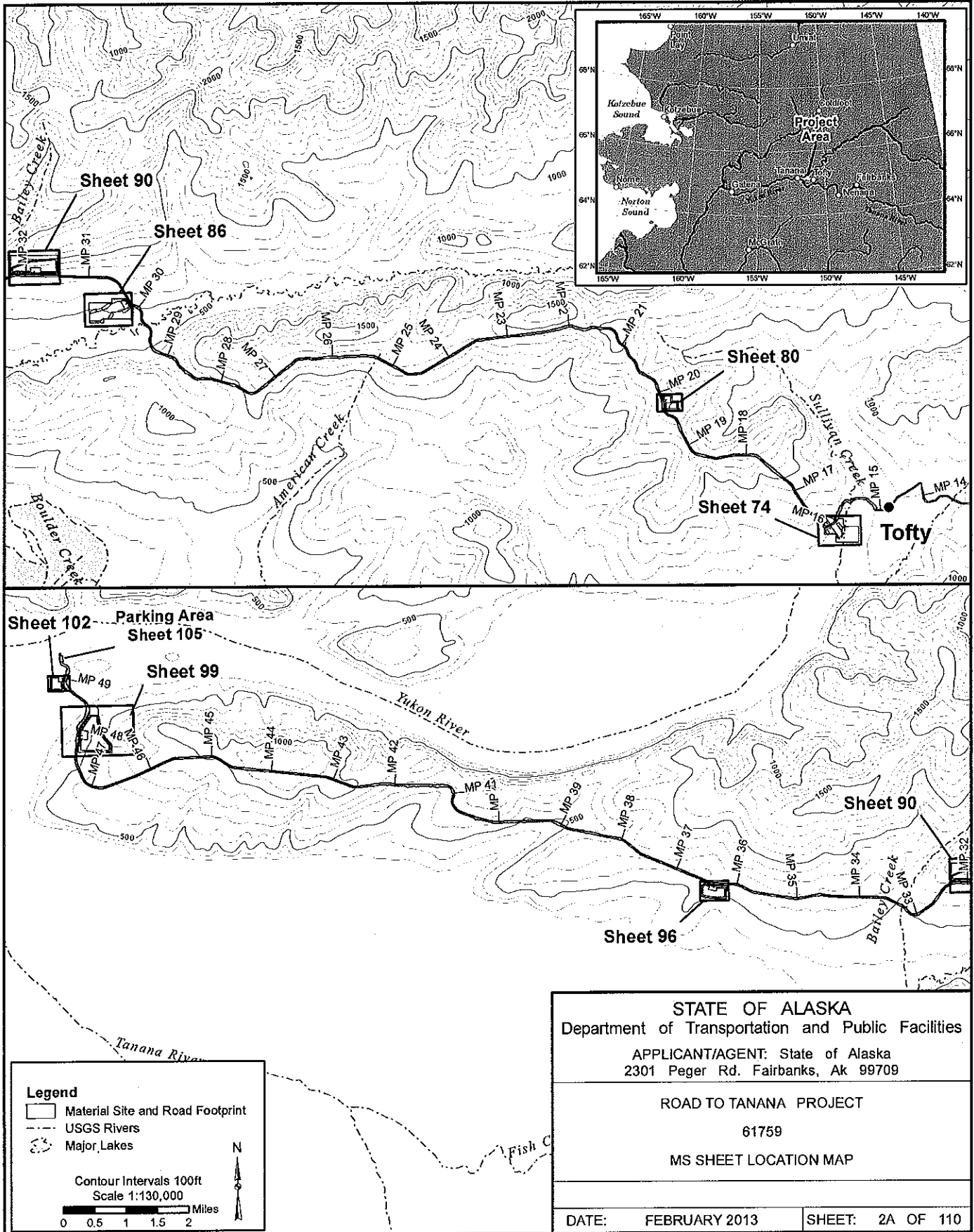
Contour Intervals 500ft
Scale 1:400,000

0 2 4 6 Miles

N

<p>STATE OF ALASKA Department of Transportation and Public Facilities</p> <p>APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709</p>	
<p>ROAD TO TANANA PROJECT</p> <p>61759</p> <p>VICINITY MAP</p>	
DATE: FEBRUARY 2013	SHEET: 2 OF 110

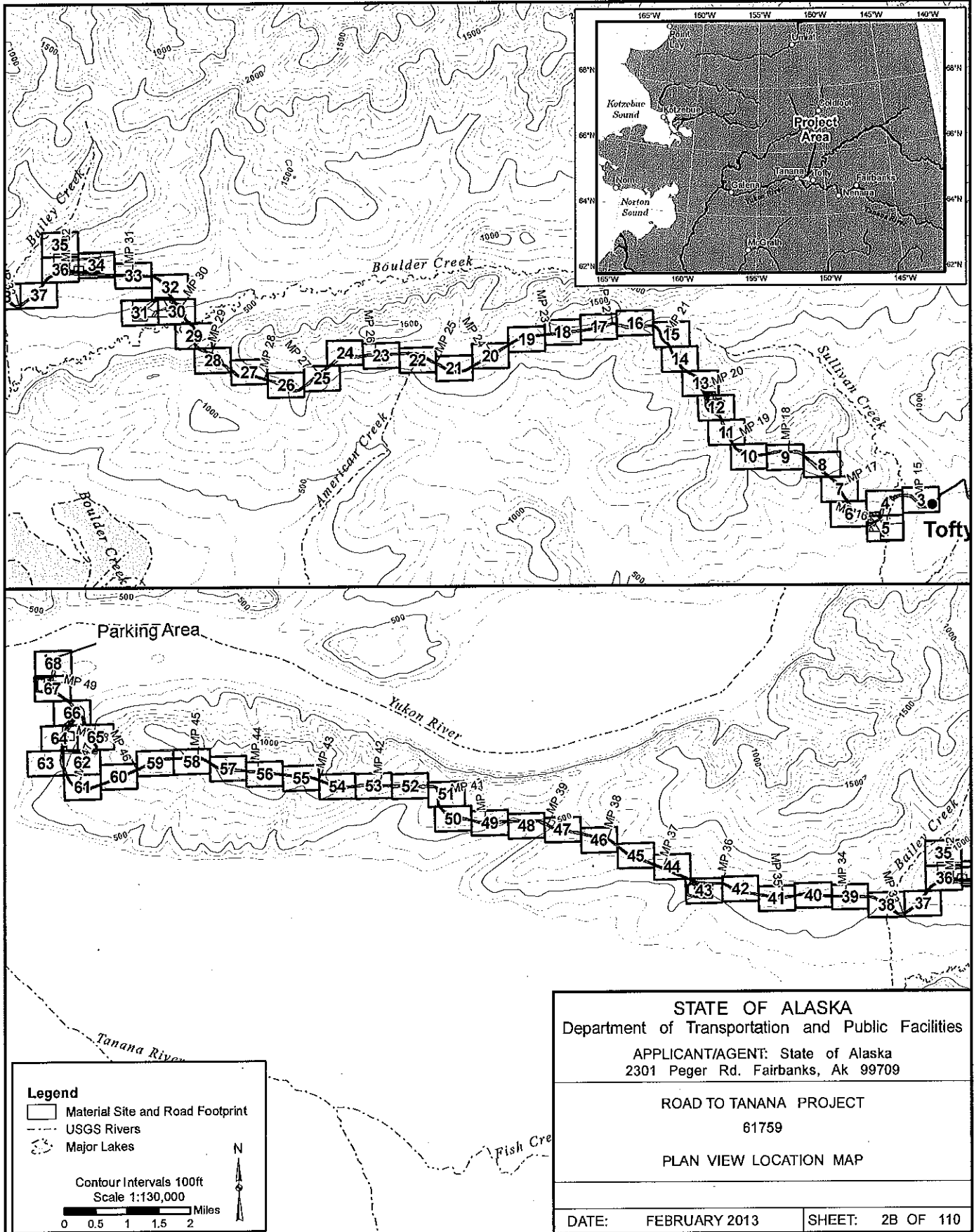
POA-2013-50, Yukon River



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<p>STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709</p>	
<p>ROAD TO TANANA PROJECT 61759 MS SHEET LOCATION MAP</p>	
DATE:	FEBRUARY 2013
SHEET:	2A OF 110

POA-2013-50, Yukon River



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Legend

- Material Site and Road Footprint
- USGS Rivers
- Major Lakes

Contour Intervals 100ft
Scale 1:130,000

0 0.5 1 1.5 2 Miles

N

STATE OF ALASKA
Department of Transportation and Public Facilities

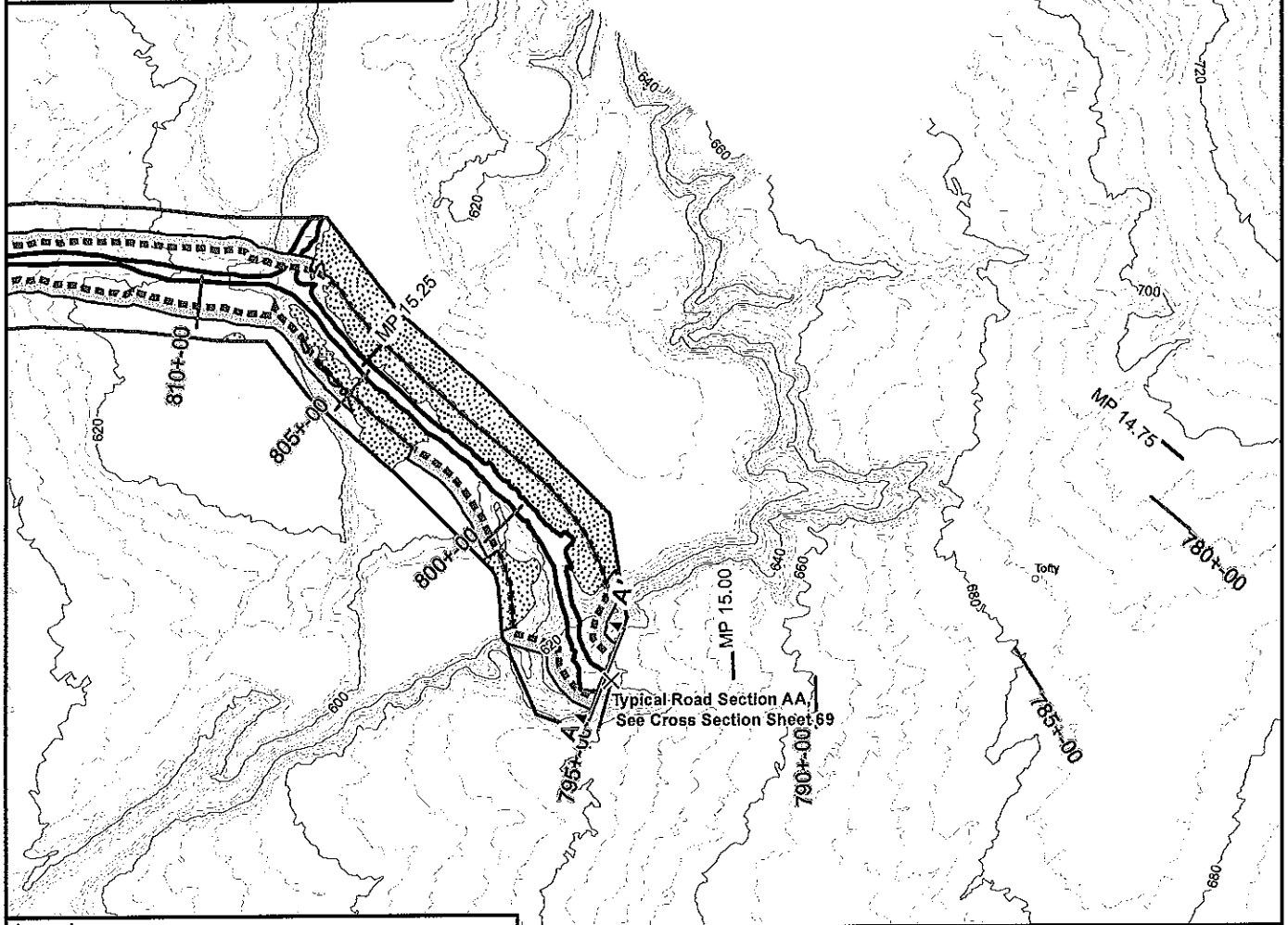
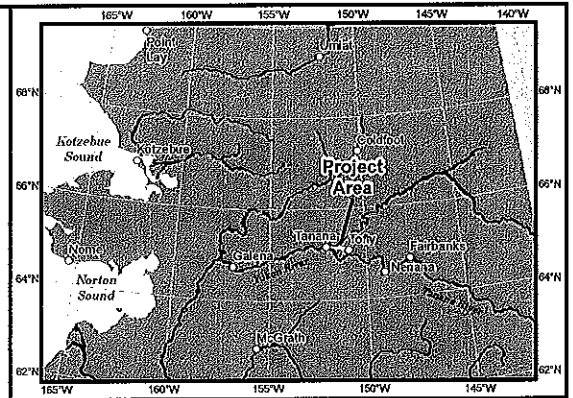
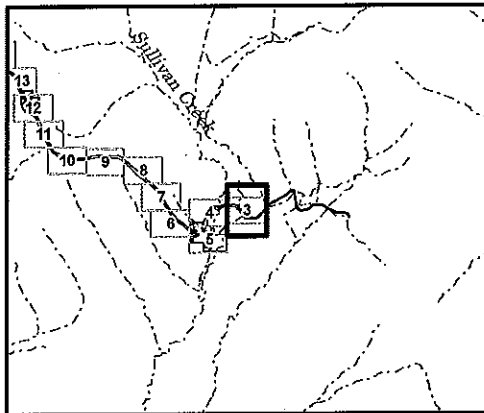
APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, Ak 99709

ROAD TO TANANA PROJECT
61759

PLAN VIEW LOCATION MAP

DATE: FEBRUARY 2013 SHEET: 2B OF 110

POA-2013-50, Yukon River



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Legend

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

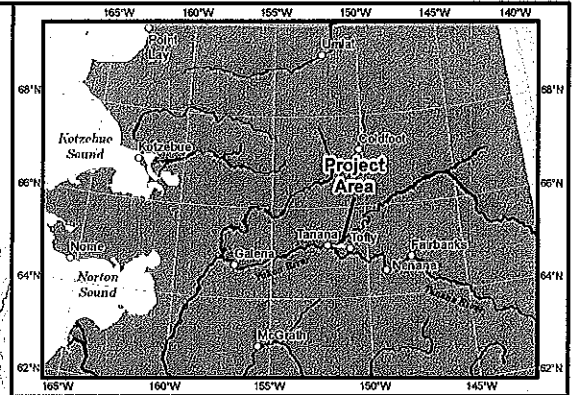
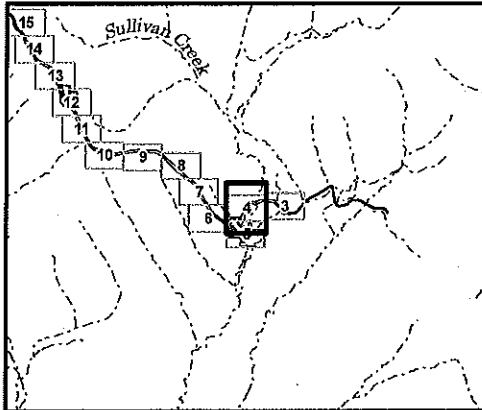
61759

Plan View, MP: 14.69 to 15.43

Patterson Creek Basin

DATE: FEBRUARY 2013	SHEET: 3 of 110
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POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000 Feet

0 150 300 450

STATE OF ALASKA
 Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

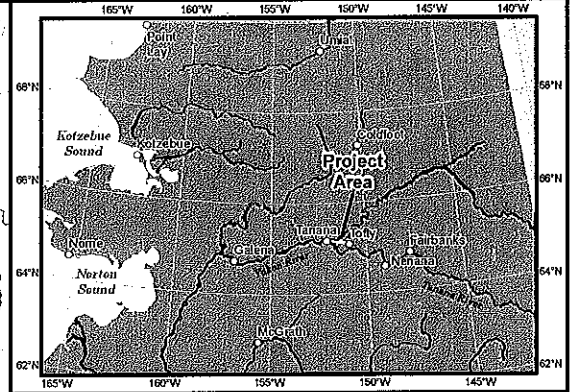
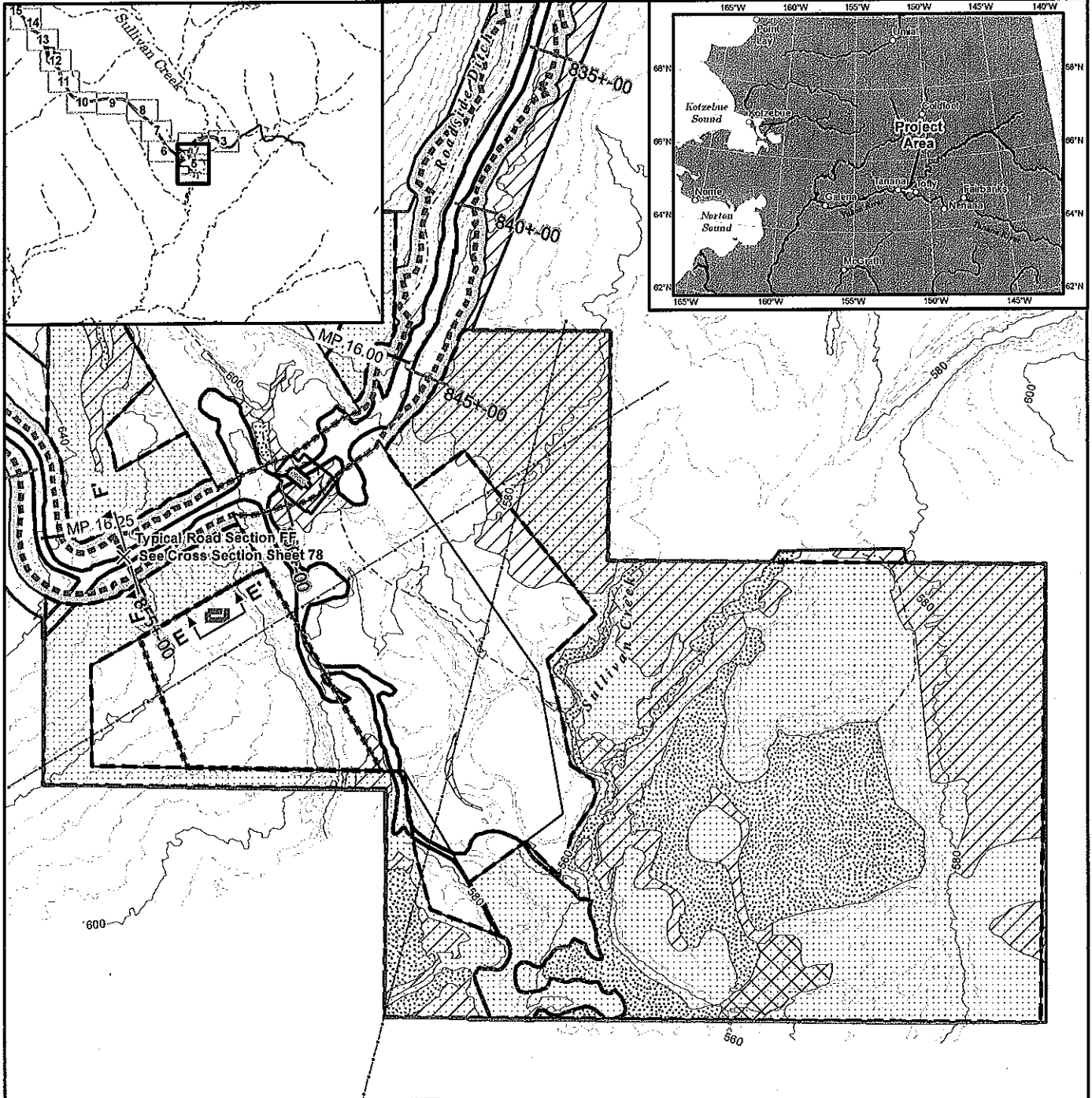
61759

Plan View, MP: 15.43 to 15.98

Patterson Creek Basin

DATE: FEBRUARY 2013 SHEET: 4 of 110

POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

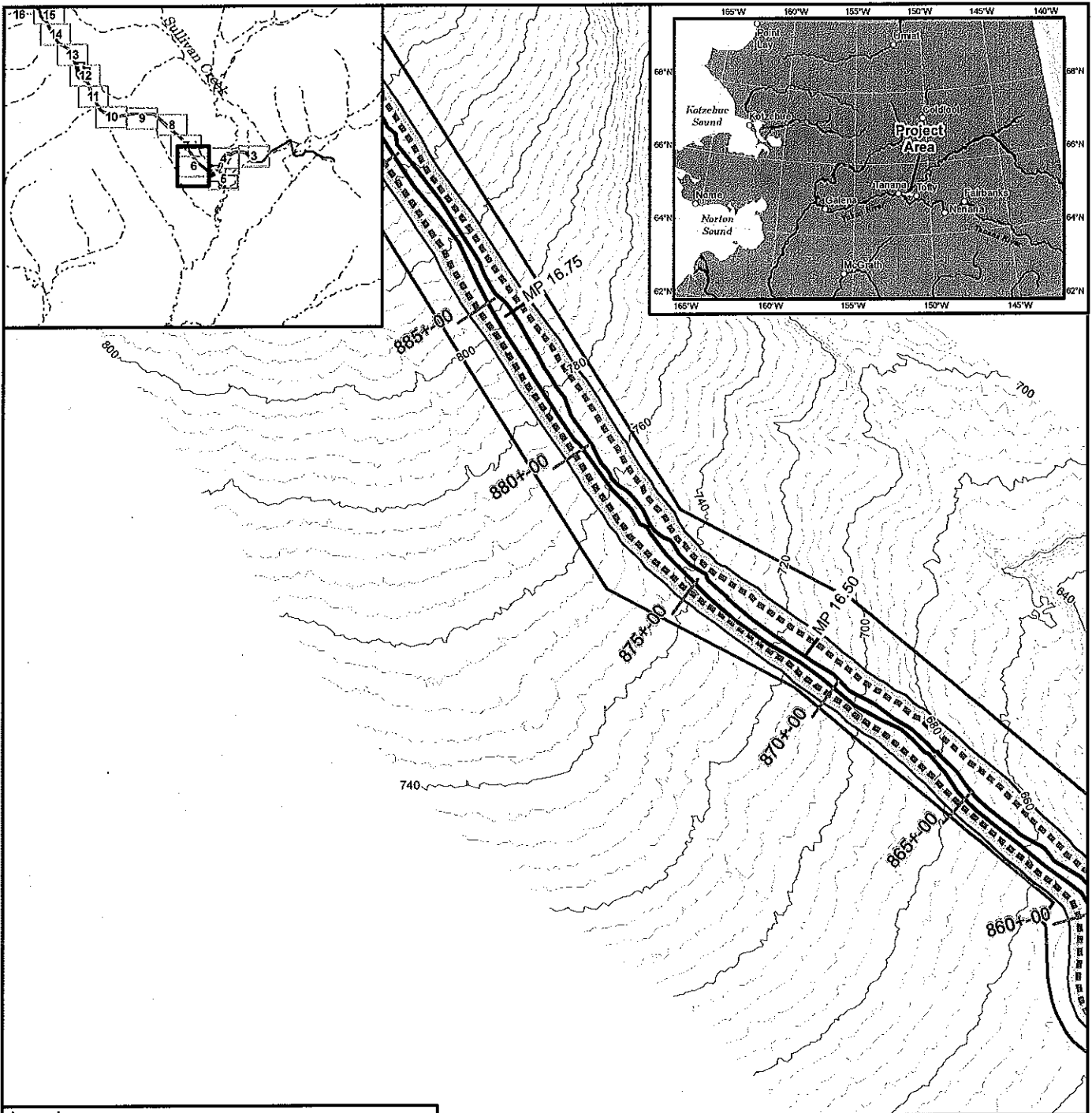
61759

Plan View, MP: 15.98 to 16.31

Patterson Creek Basin

DATE: FEBRUARY 2013	SHEET: 5 of 110
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POA-2013-50, Yukon River



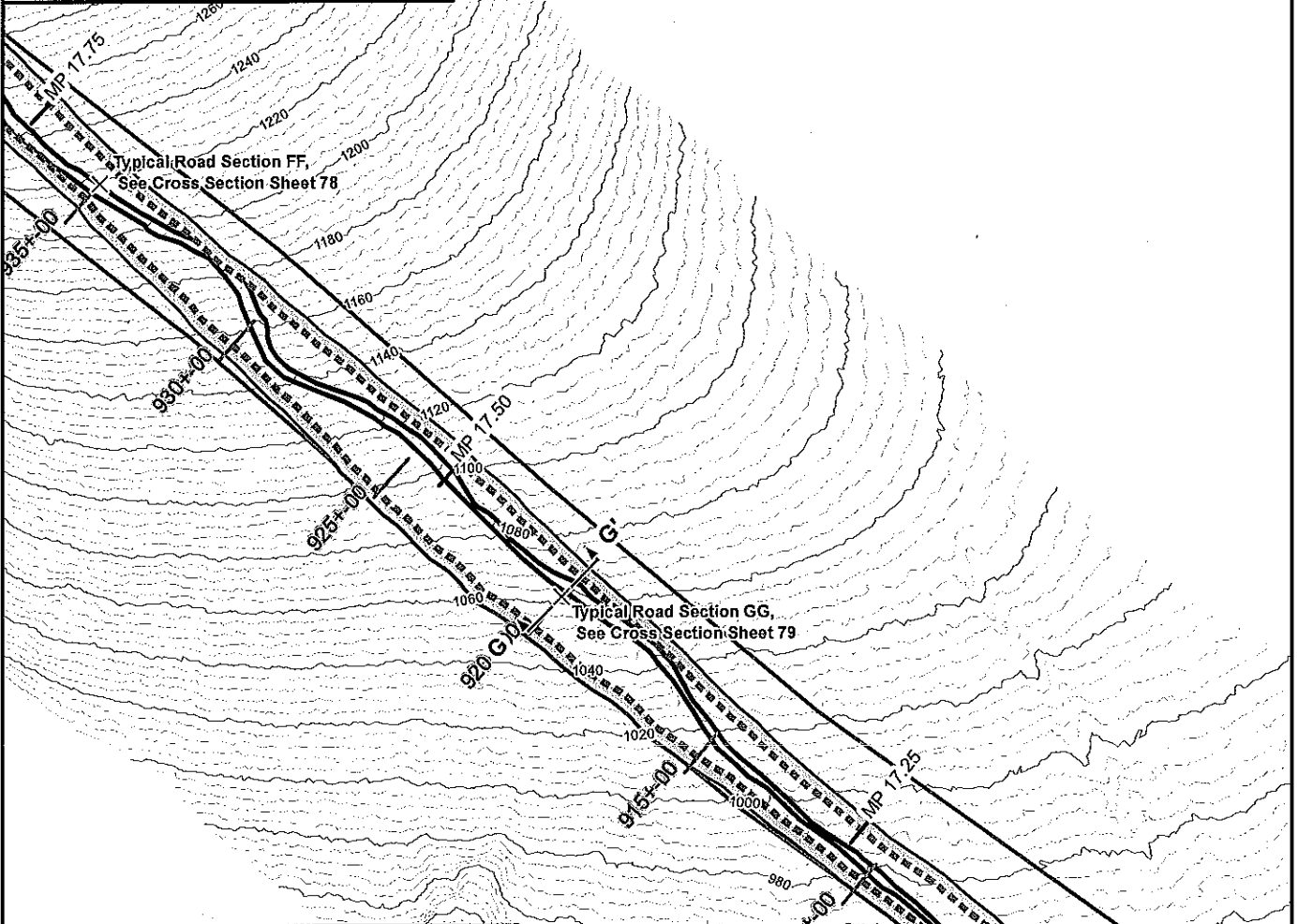
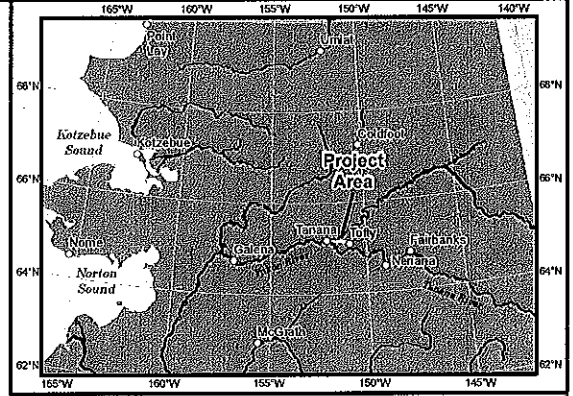
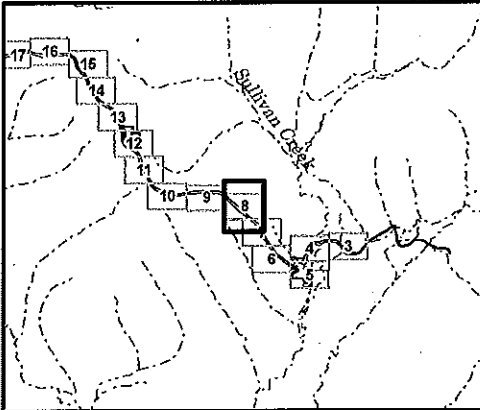
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Legend	
	Cuv/Fill Boundary
	Vegetation Clearing
	Vegetative Screen/Buffer
	3PPI Study Area Boundary (12/05/2012)
	Wetland
	Upland
	Wetland/Upland Mosaic
	Navigable Waters
	Other Waters
	Previously Disturbed
	Material Site
	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	MS Section Cut Lines
	20ft Interval Contour
	4ft Interval Contour
	3PPI Arcs (12/5/2012)
	(All drainages are unnamed unless labeled on sheet)

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA PROJECT 61759 Plan View, MP: 16.31 to 16.74	
Patterson Creek Basin	
DATE: FEBRUARY 2013	SHEET: 6 of 110

POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
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	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

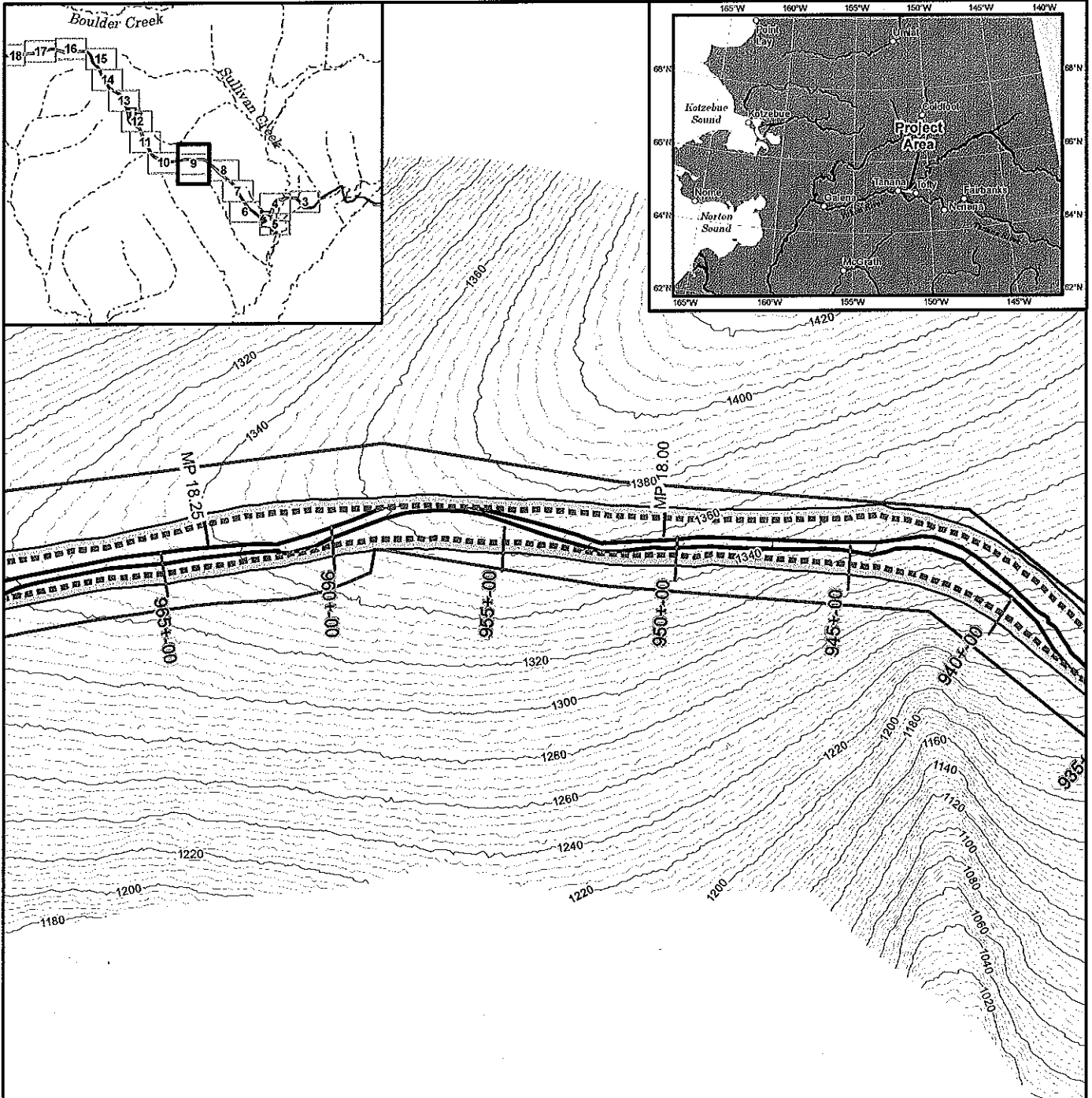
61759

Plan View, MP: 17.23 to 17.76

Patterson Creek Basin

DATE: FEBRUARY 2013	SHEET: 8 of 110
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POA-2013-50, Yukon River



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Legend

Scale 1:5,000
0 150 300 450 Feet

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STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

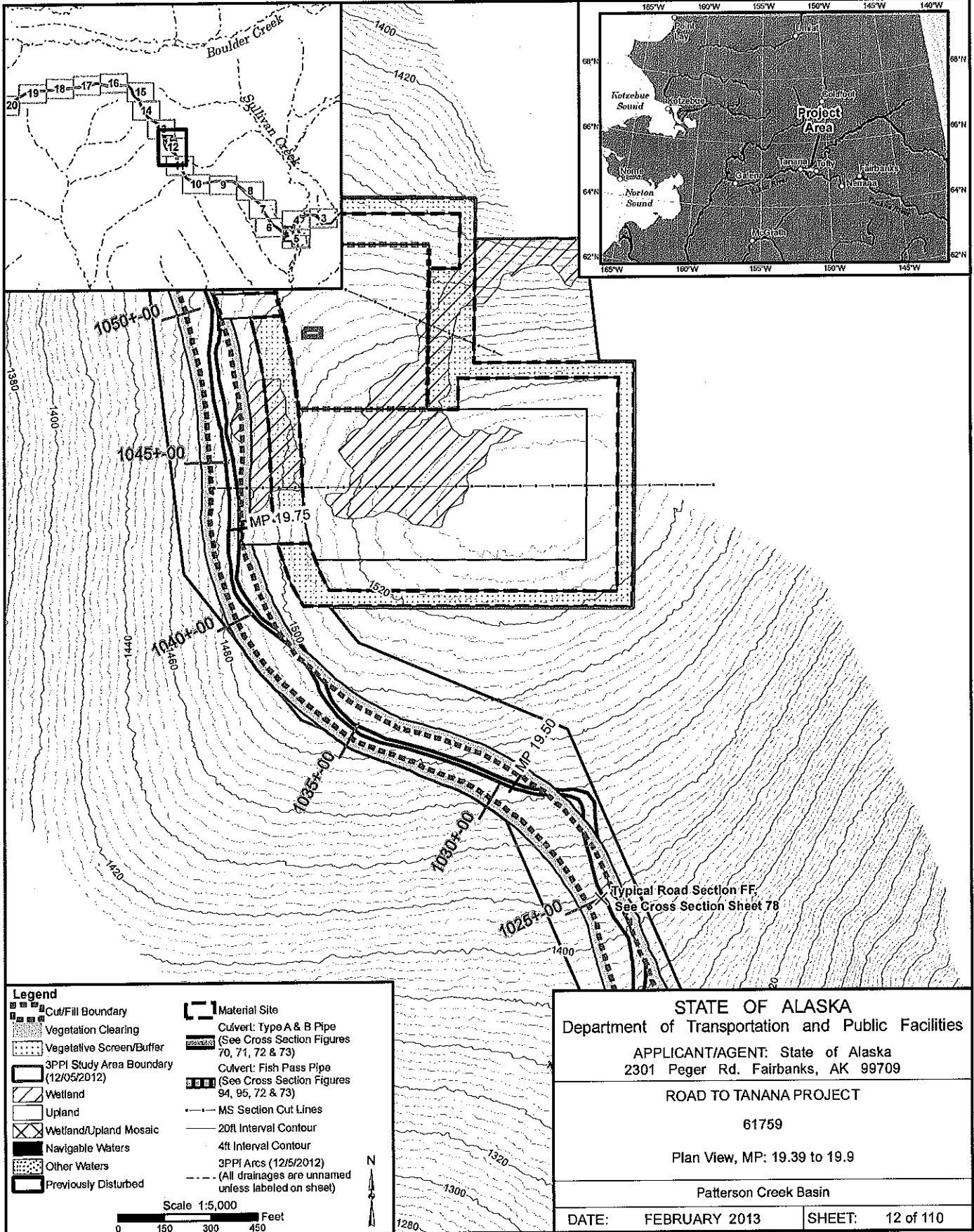
61759

Plan View, MP: 17.76 to 18.36

Patterson Creek Basin

DATE: FEBRUARY 2013	SHEET: 9 of 110
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POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
 Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

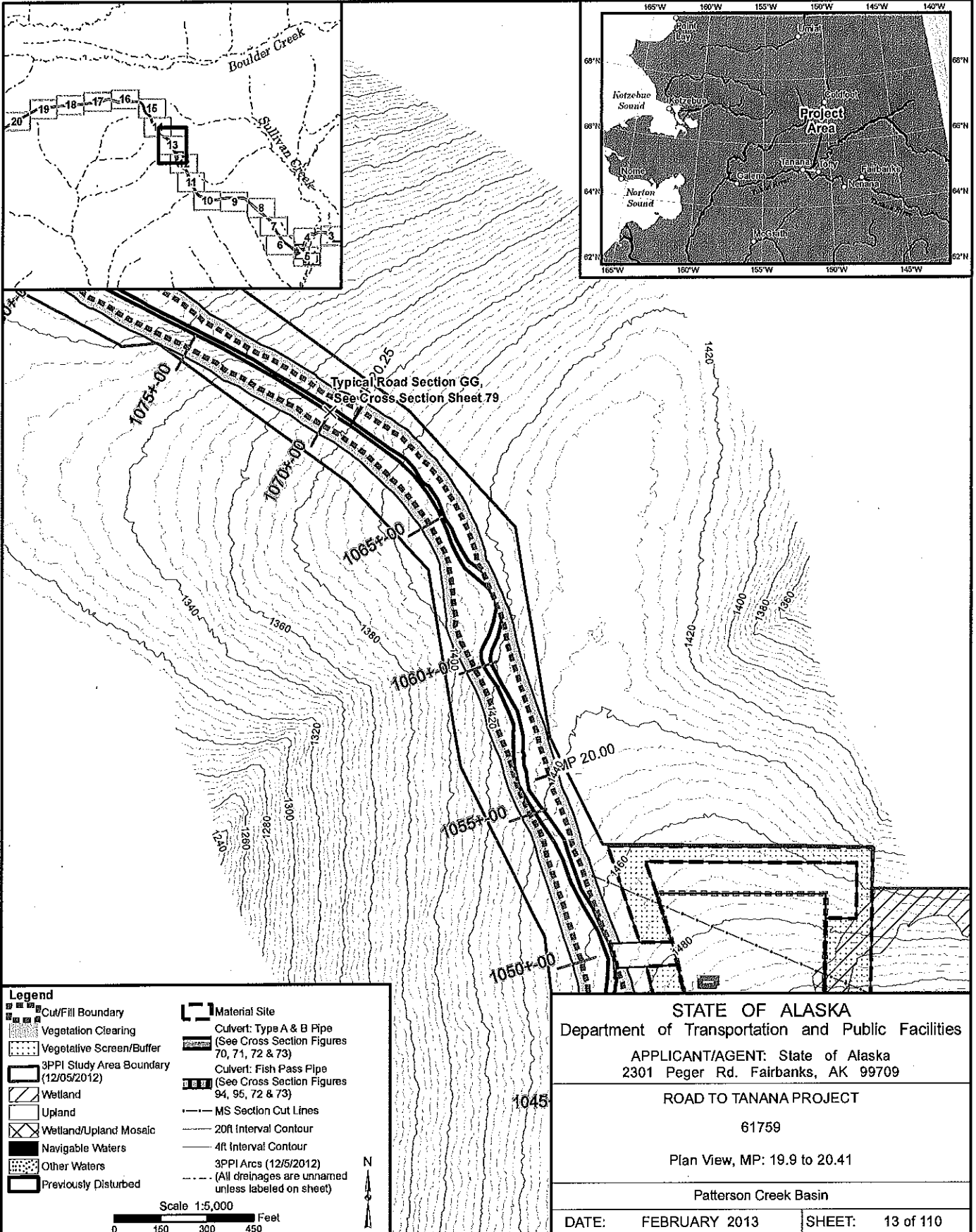
61759

Plan View, MP: 19.39 to 19.9

Patterson Creek Basin

DATE: FEBRUARY 2013	SHEET: 12 of 110
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POA-2013-50, Yukon River



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Legend

	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	(All drainages are unnamed unless labeled on sheet)

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
 Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

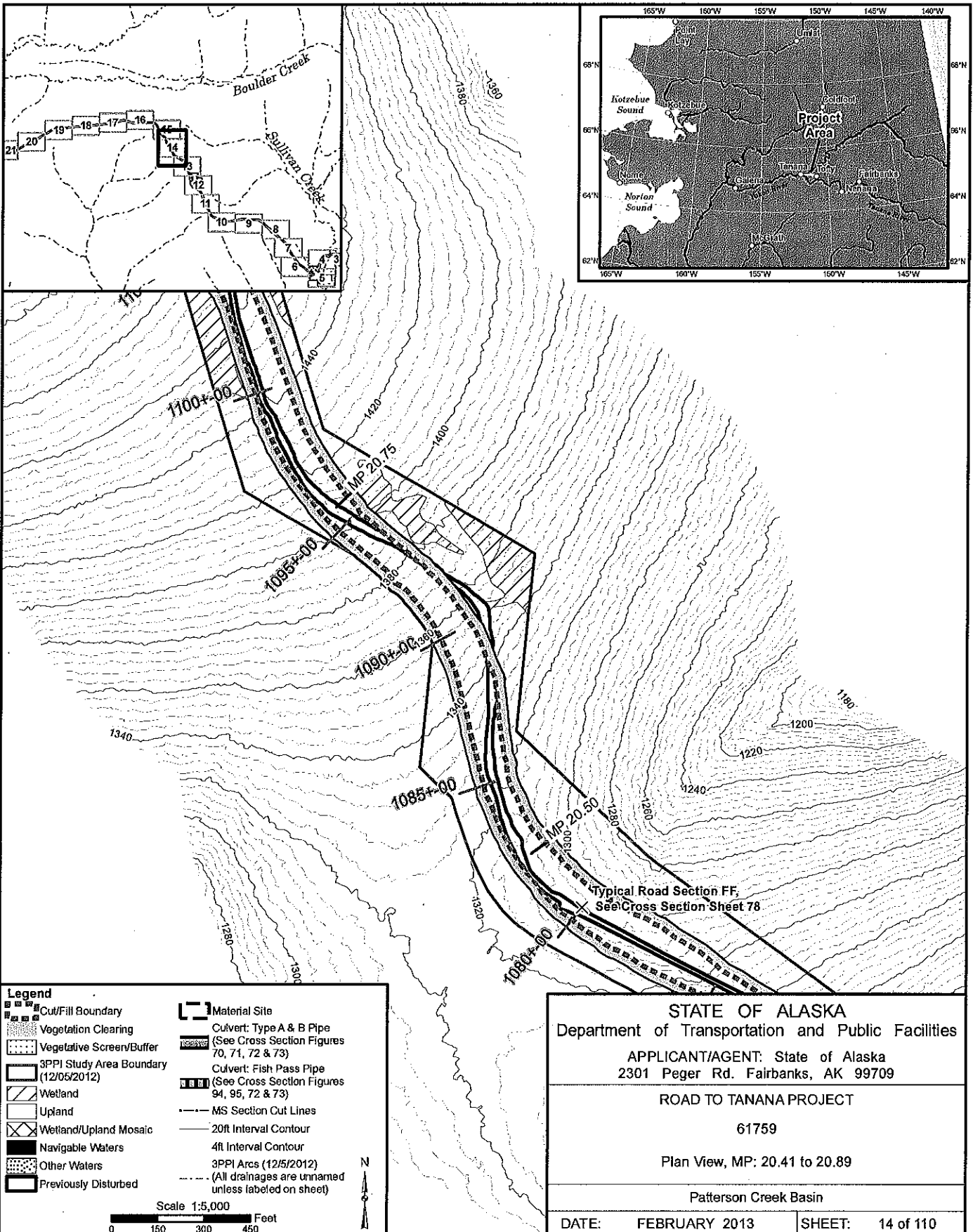
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Plan View, MP: 19.9 to 20.41

Patterson Creek Basin

DATE: FEBRUARY 2013	SHEET: 13 of 110
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POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
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	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		N
	Other Waters		Scale 1:5,000 0 150 300 450 Feet
	Previously Disturbed		

STATE OF ALASKA
 Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

61759

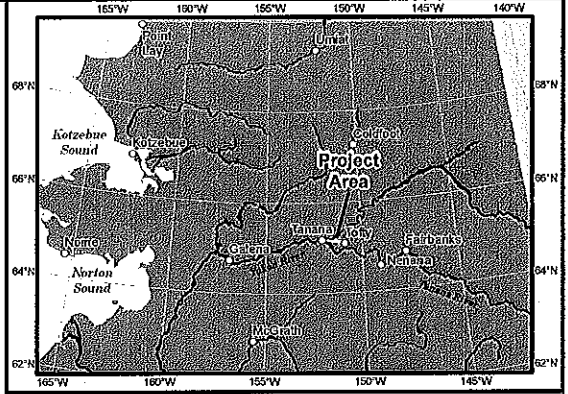
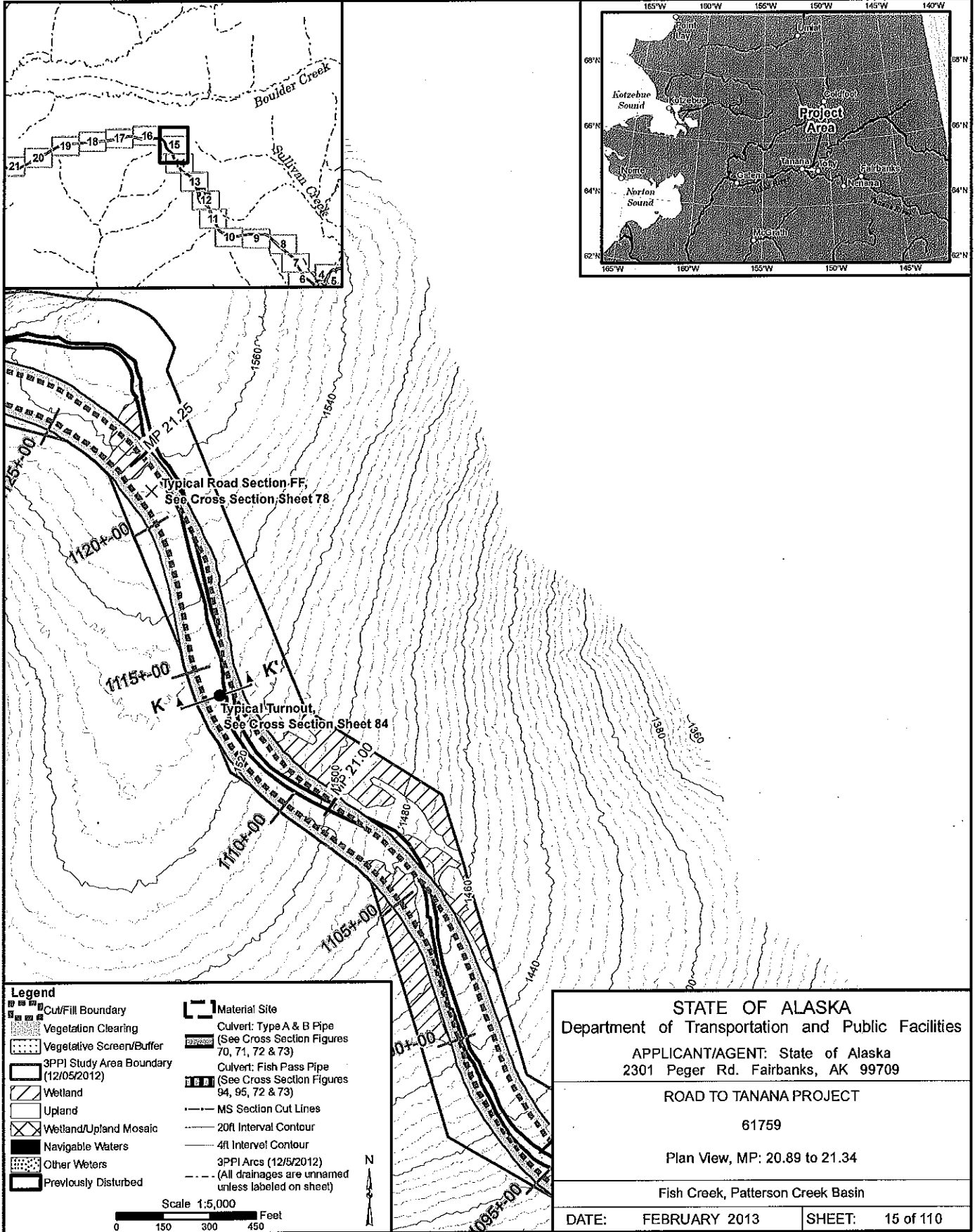
Plan View, MP: 20.41 to 20.89

Patterson Creek Basin

DATE: FEBRUARY 2013	SHEET: 14 of 110
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POA-2013-50, Yukon River

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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Wetters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

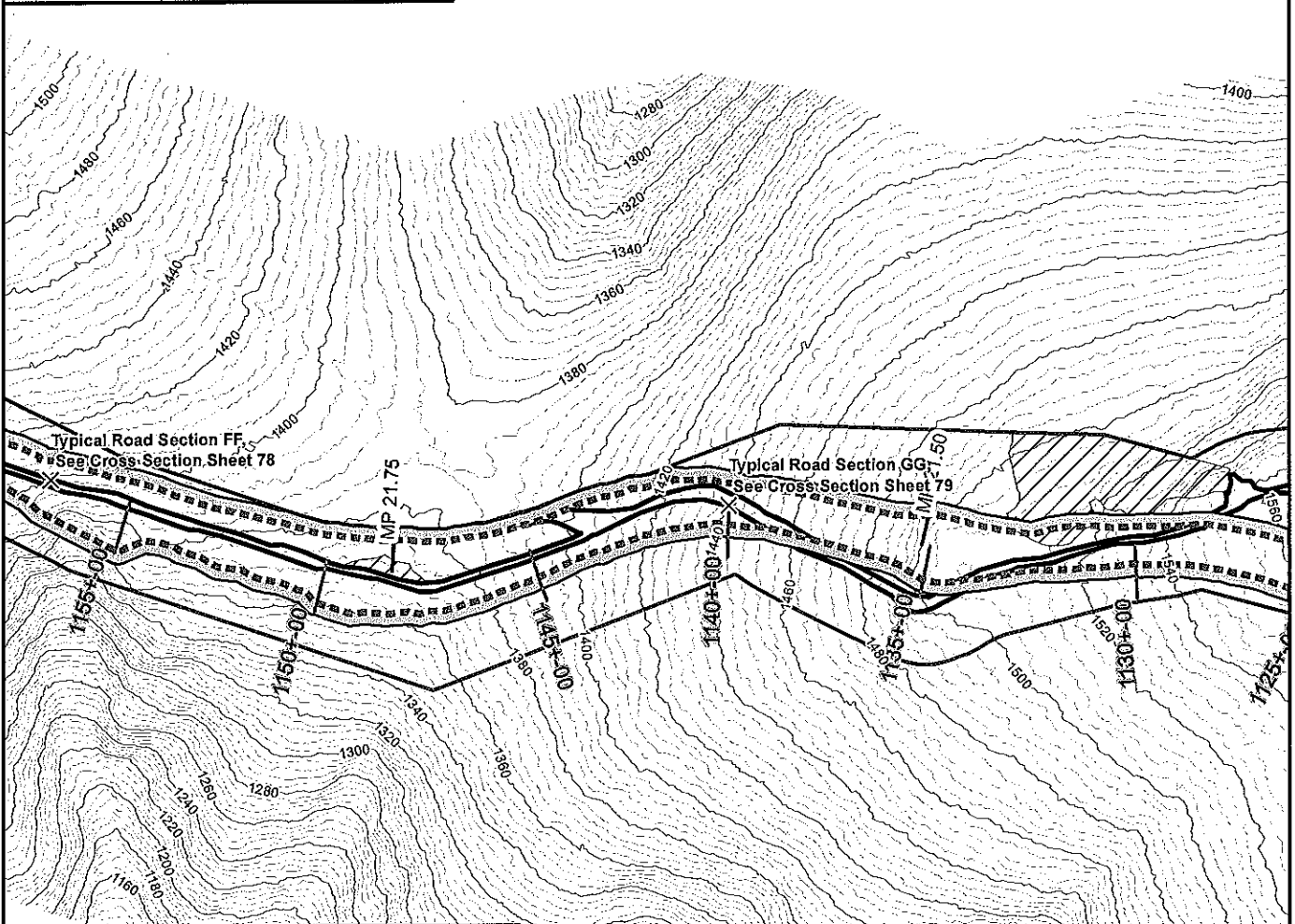
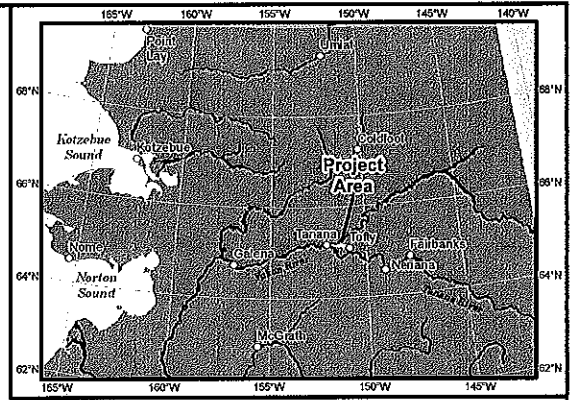
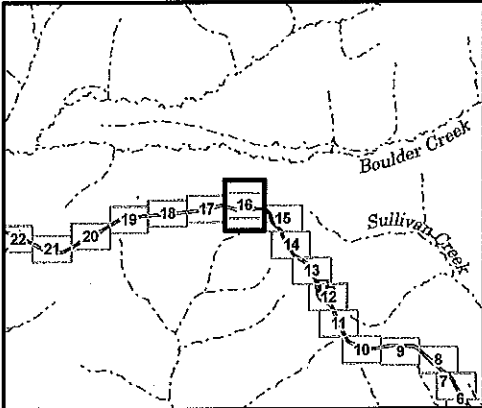
61759

Plan View, MP: 20.89 to 21.34

Fish Creek, Patterson Creek Basin

DATE: FEBRUARY 2013	SHEET: 15 of 110
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POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012)
	Navigable Waters		(All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

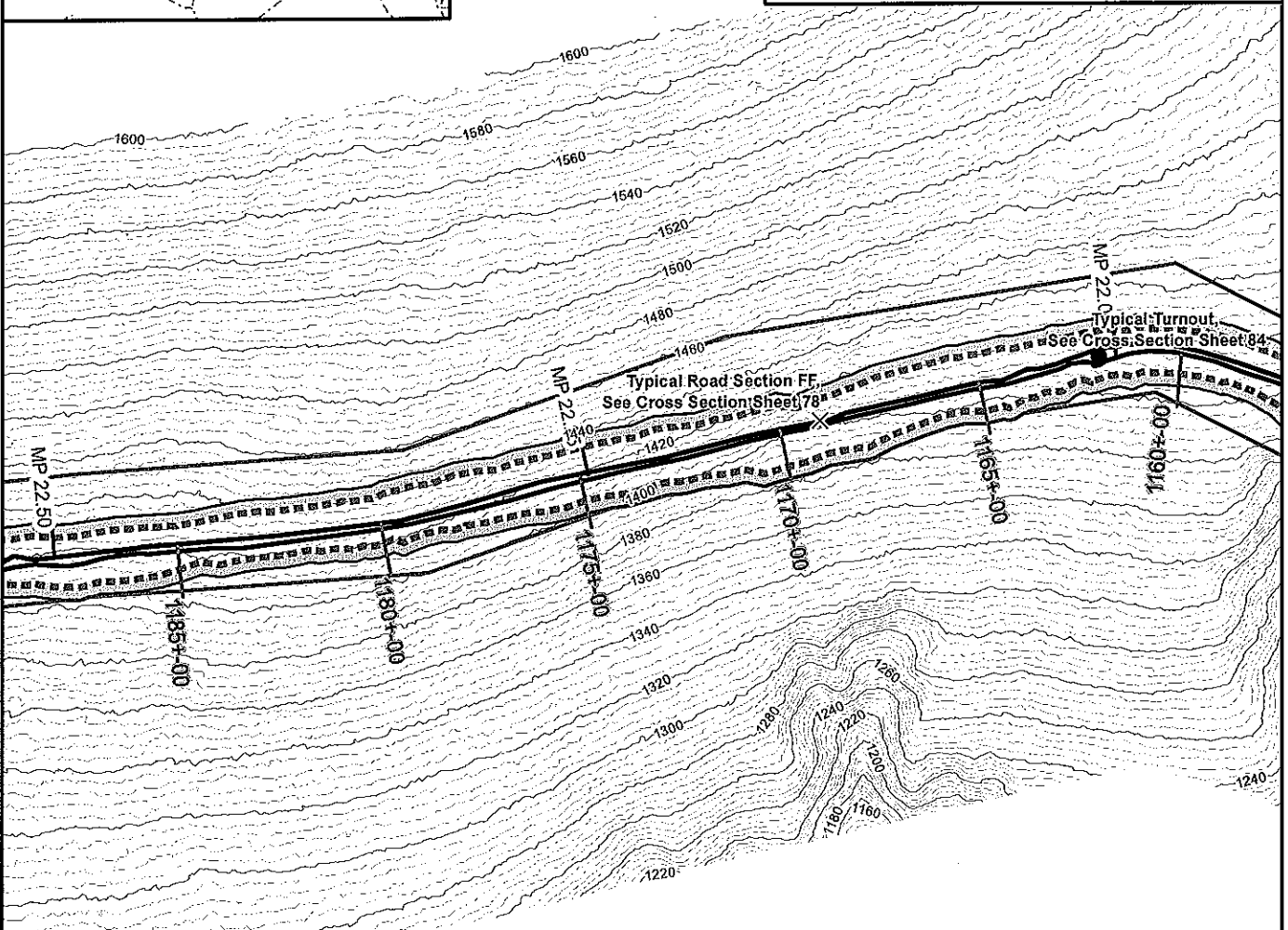
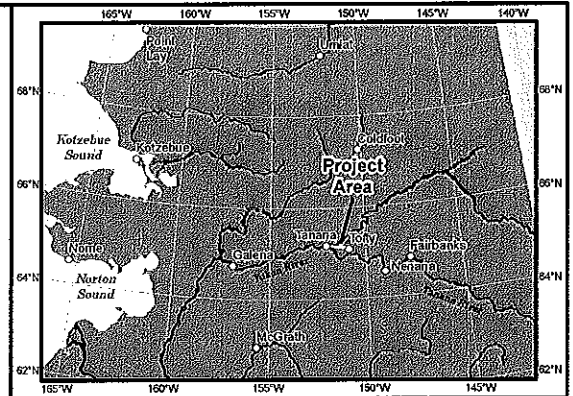
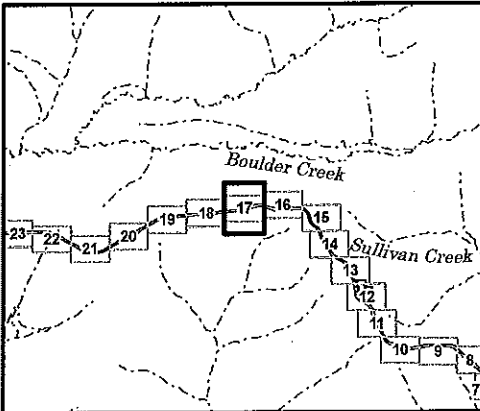
61759

Plan View, MP: 21.34 to 21.93

Fish Creek, Patterson Creek Basin

DATE: FEBRUARY 2013	SHEET: 16 of 110
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POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000 Feet

0 150 300 450

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

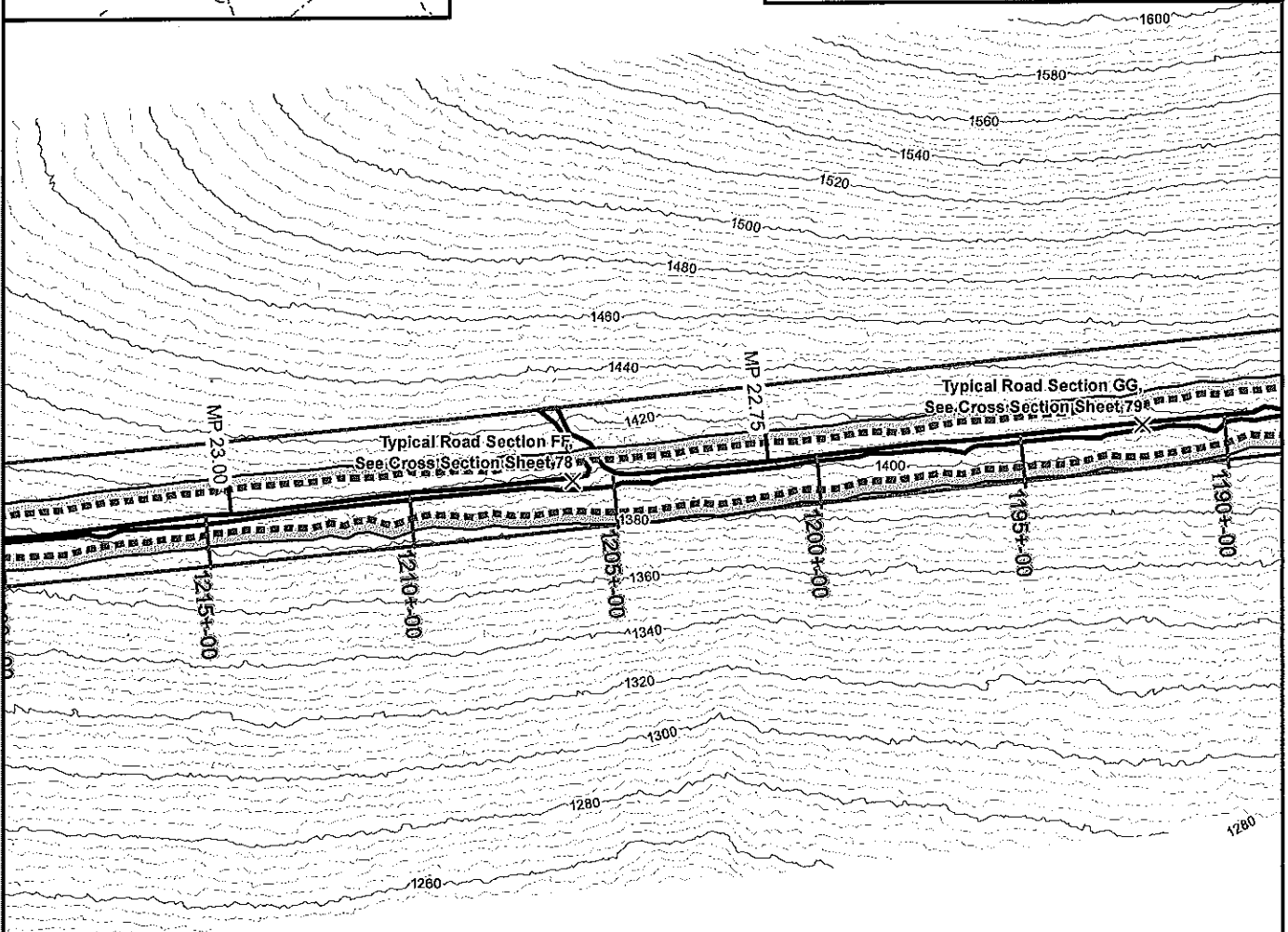
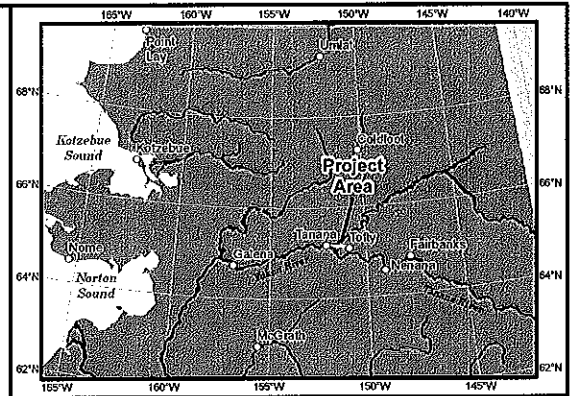
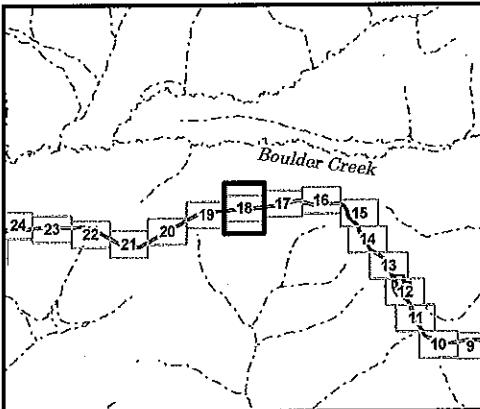
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Plan View, MP: 21.93 to 22.52

Fish Creek, Patterson Creek Basin

DATE: FEBRUARY 2013	SHEET: 17 of 110
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POA-2013-50, Yukon River



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Legend	
	Cut/Fill Boundary
	Vegetation Clearing
	Vegetative Screen/Buffer
	3PPI Study Area Boundary (12/05/2012)
	Wetland
	Upland
	Wetland/Upland Mosaic
	Navigable Waters
	Other Waters
	Previously Disturbed
	Material Site
	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	MS Section Cut Lines
	20ft Interval Contour
	4ft Interval Contour
	3PPI Arcs (12/5/2012)
	(All drainages are unnamed unless labeled on sheet)

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

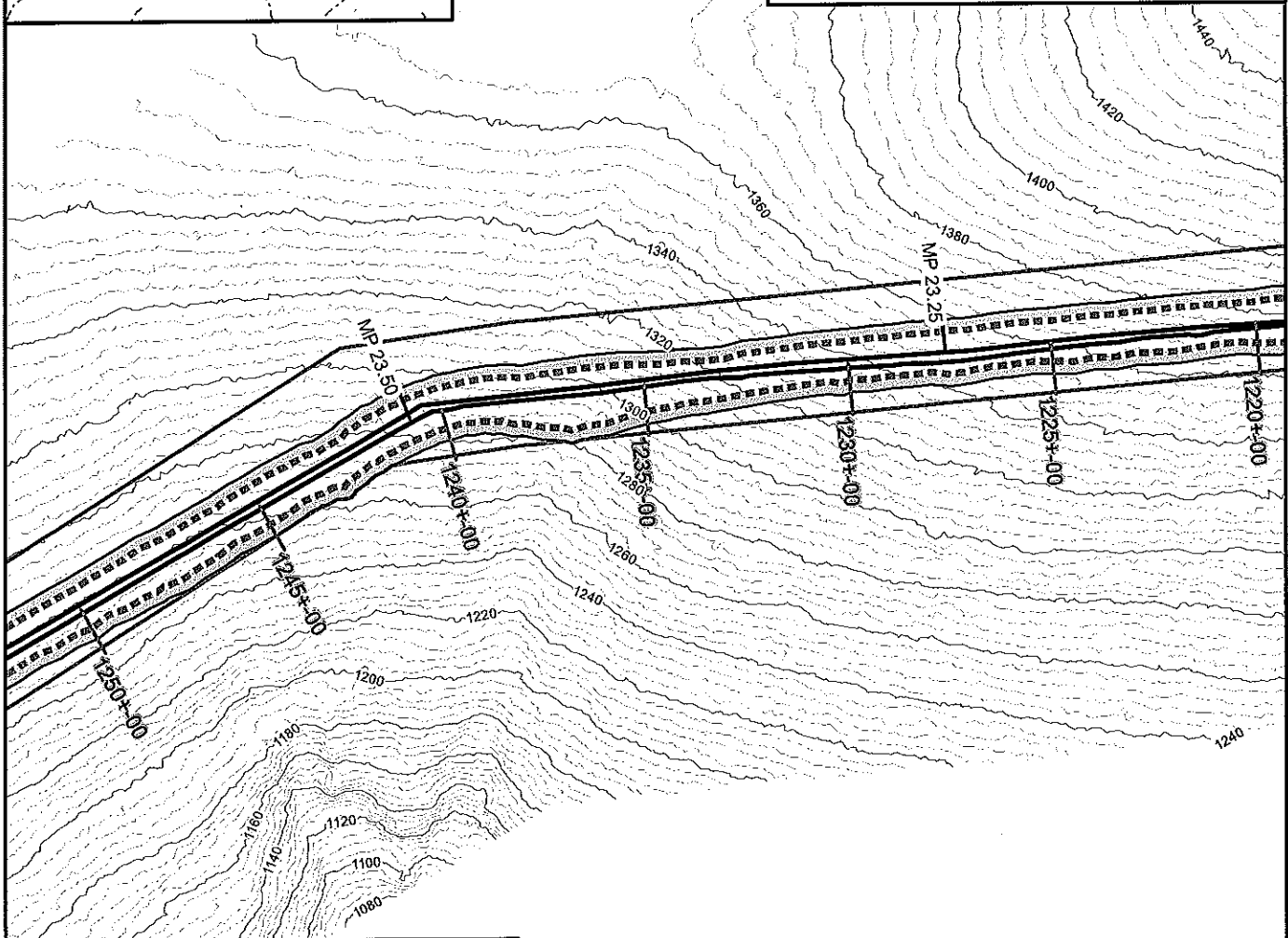
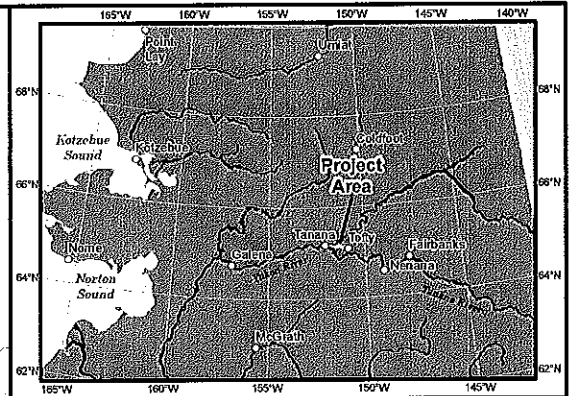
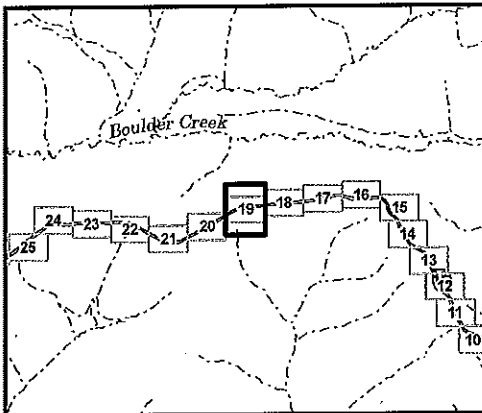
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Plan View, MP: 22.52 to 23.1

Fish Creek, Patterson Creek Basin

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POA-2013-50, Yukon River



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Legend

Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Upland	4ft Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012)
Navigable Waters	(All drainages are unnamed unless labeled on sheet)
Other Waters	
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

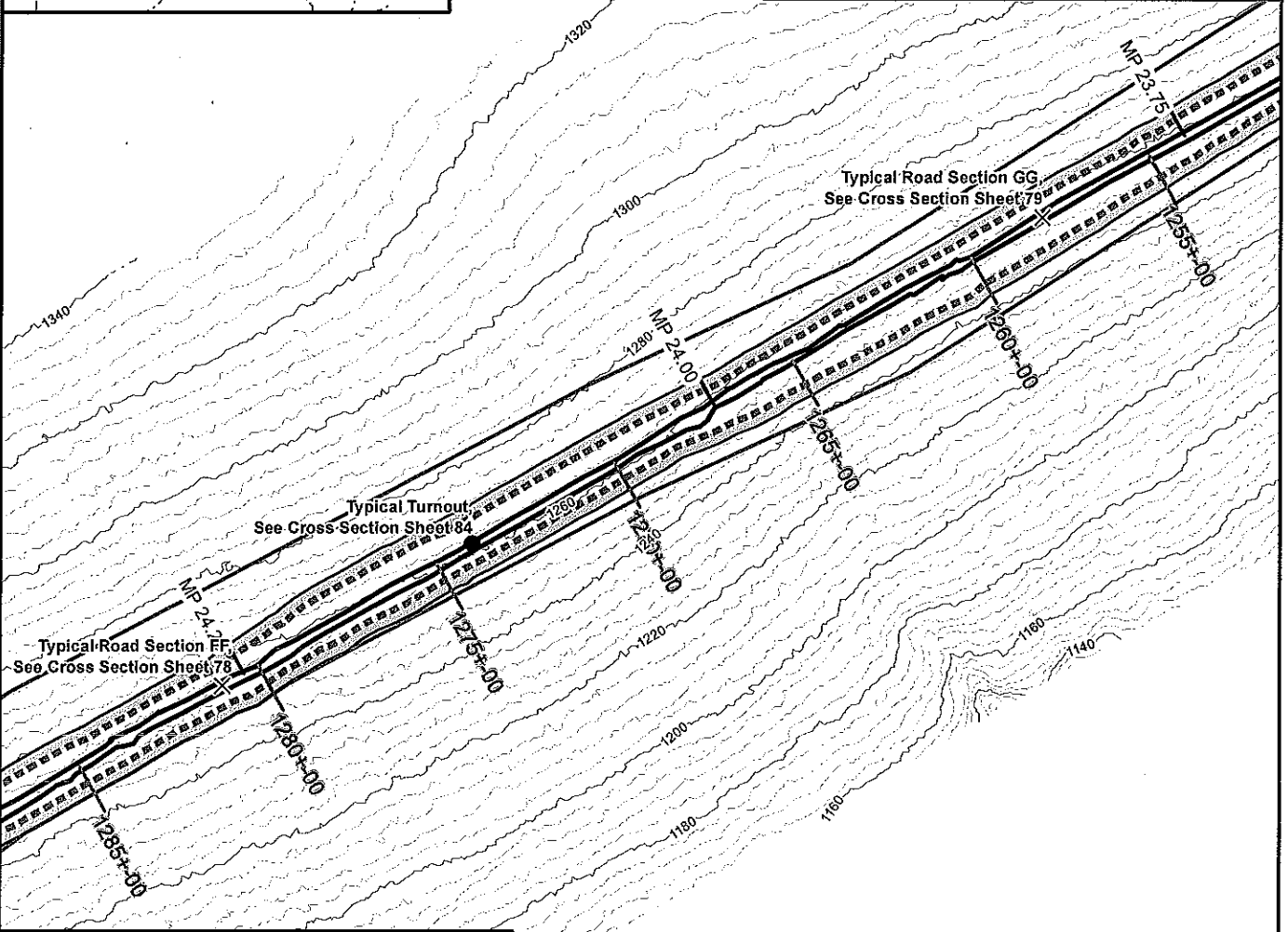
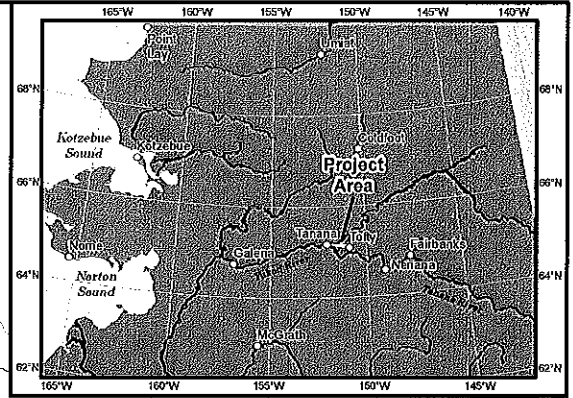
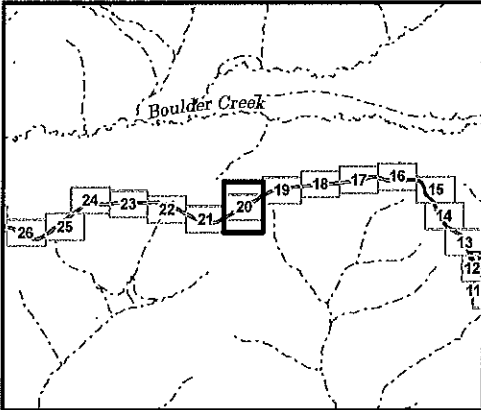
61759

Plan View, MP: 23.1 to 23.71

Fish Creek, Patterson Creek Basin

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POA-2013-50, Yukon River



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Legend

	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	(All drainages are unnamed unless labeled on sheet)

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
 Department of Transportation and Public Facilities
 APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

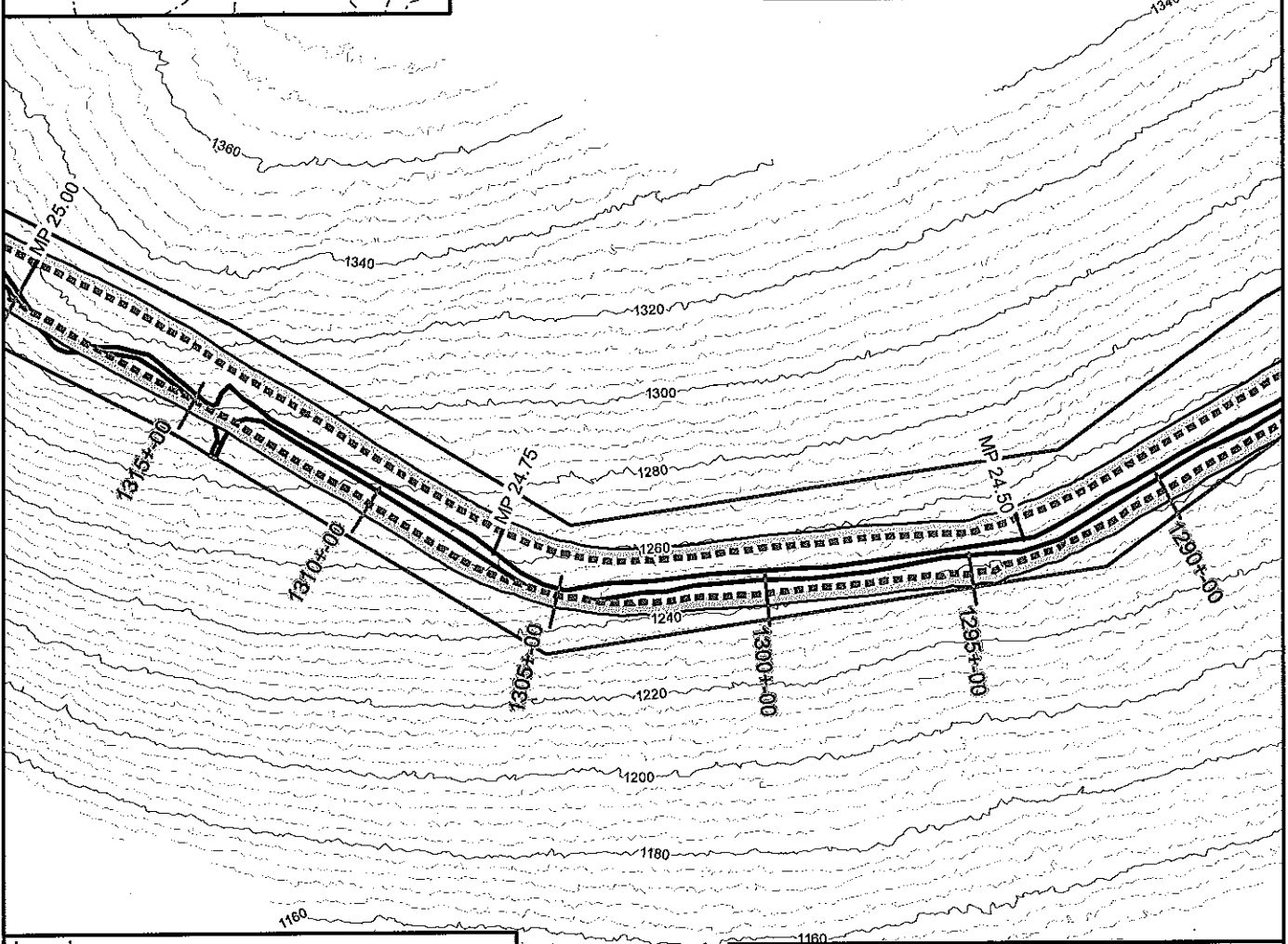
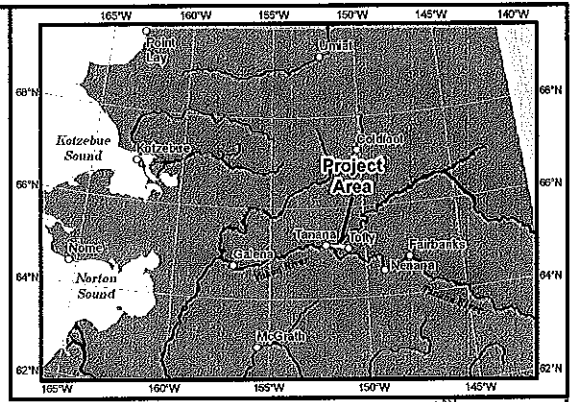
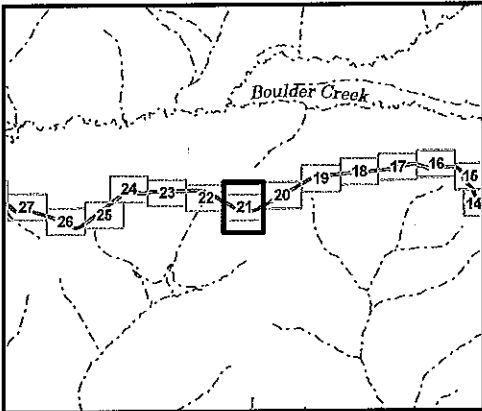
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Plan View, MP: 23.71 to 24.37

Fish Creek, Patterson Creek Basin

DATE: FEBRUARY 2013	SHEET: 20 of 110
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POA-2013-50, Yukon River



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Legend

Cul/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Wetland/Upland Mosaic	4ft Interval Contour
Navigable Waters	3PPI Arcs (12/5/2012)
Other Waters	(All drainages are unnamed unless labeled on sheet)
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

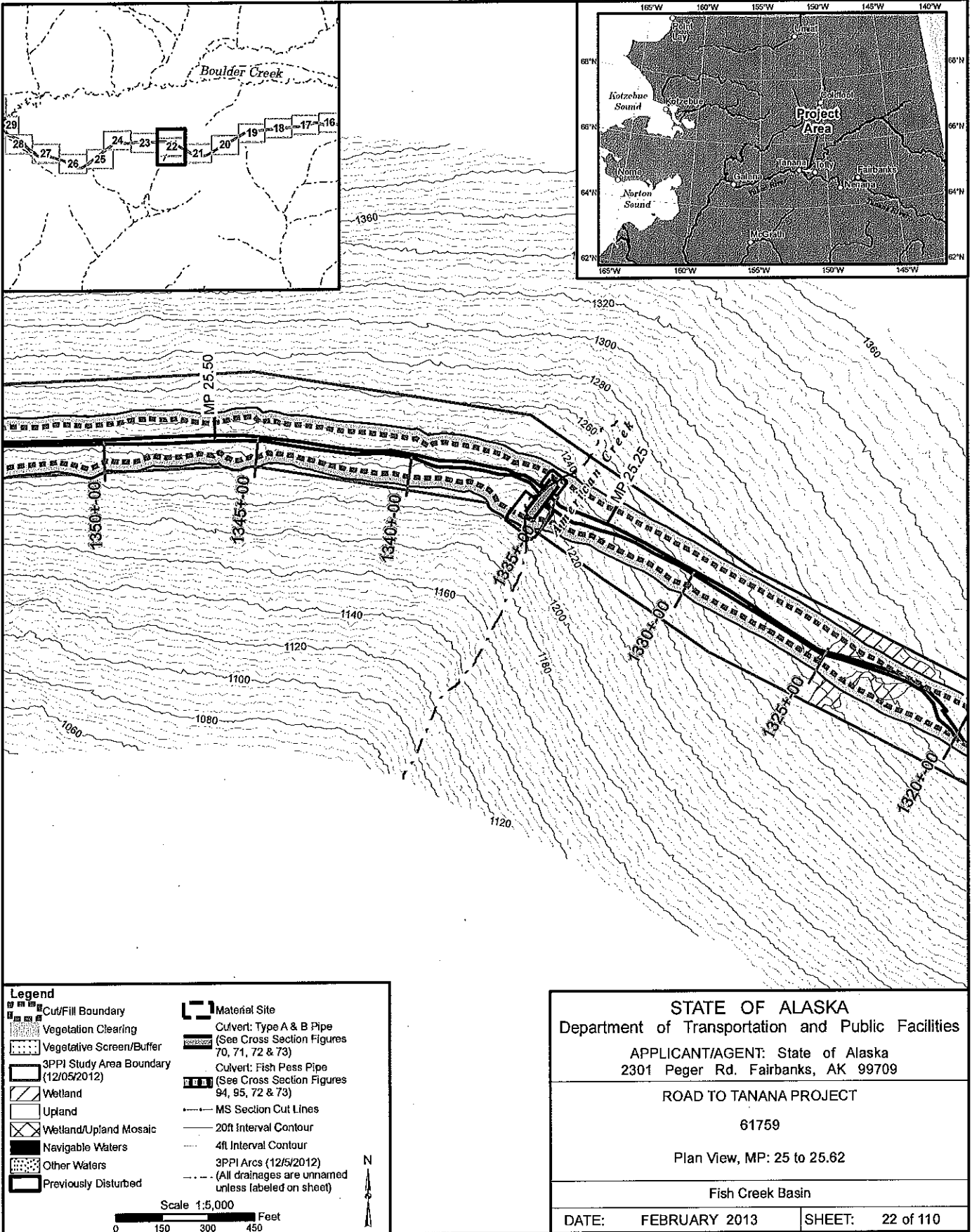
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Plan View, MP: 24.37 to 25

Fish Creek, Patterson Creek Basin

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POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Wetland/Upland Mosaic		4ft Interval Contour
	Navigable Waters		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
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APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

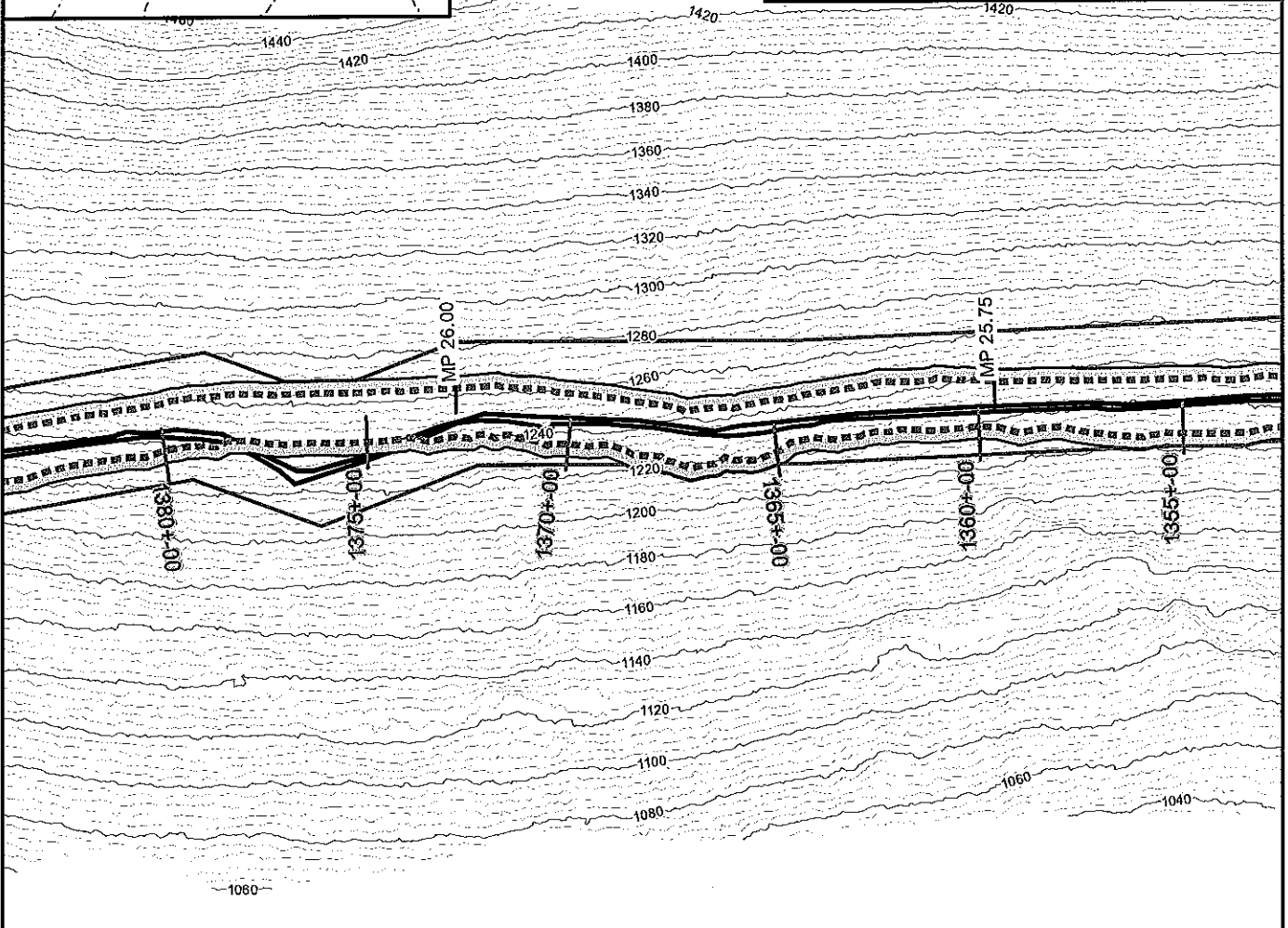
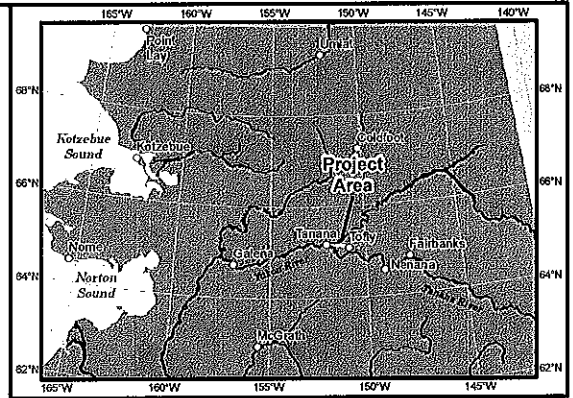
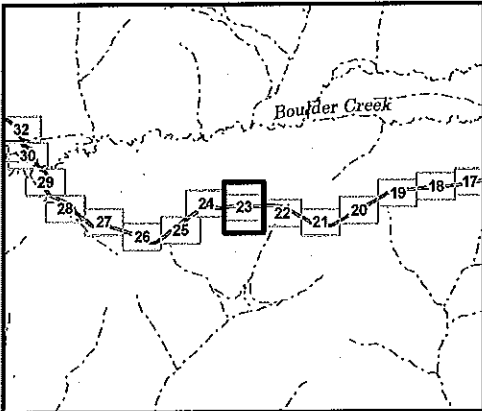
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Plan View, MP: 25 to 25.62

Fish Creek Basin

DATE: FEBRUARY 2013	SHEET: 22 of 110
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POA-2013-50, Yukon River



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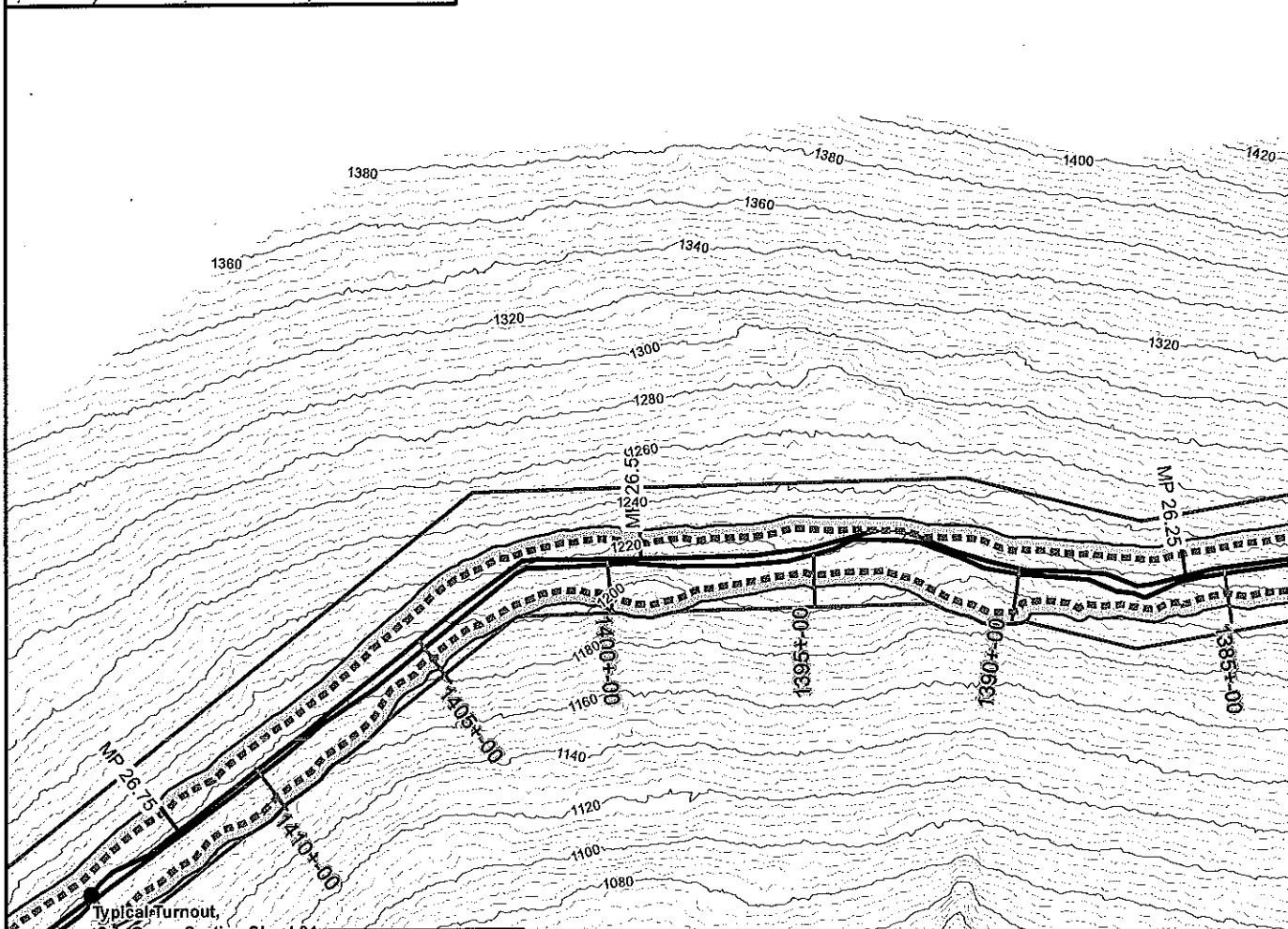
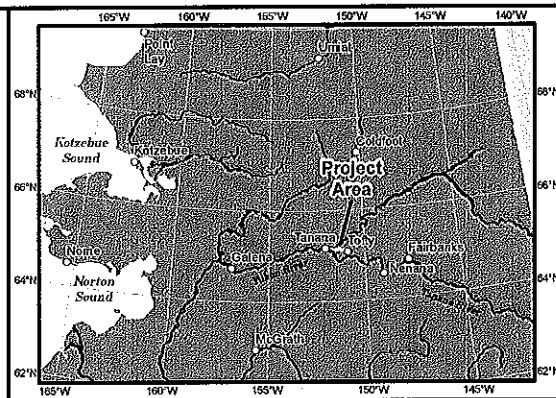
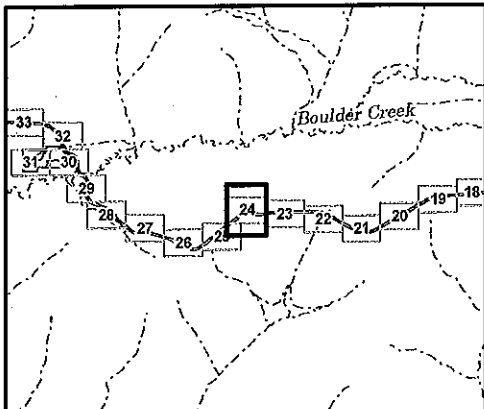
Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Upland	4ft Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
Navigable Waters	
Other Waters	
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

N
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STATE OF ALASKA Department of Transportation and Public Facilities	
APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA PROJECT 61759	
Plan View, MP: 25.62 to 26.2 Fish Creek Basin	
DATE: FEBRUARY 2013	SHEET: 23 of 110

POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000 Feet
0 150 300 450

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

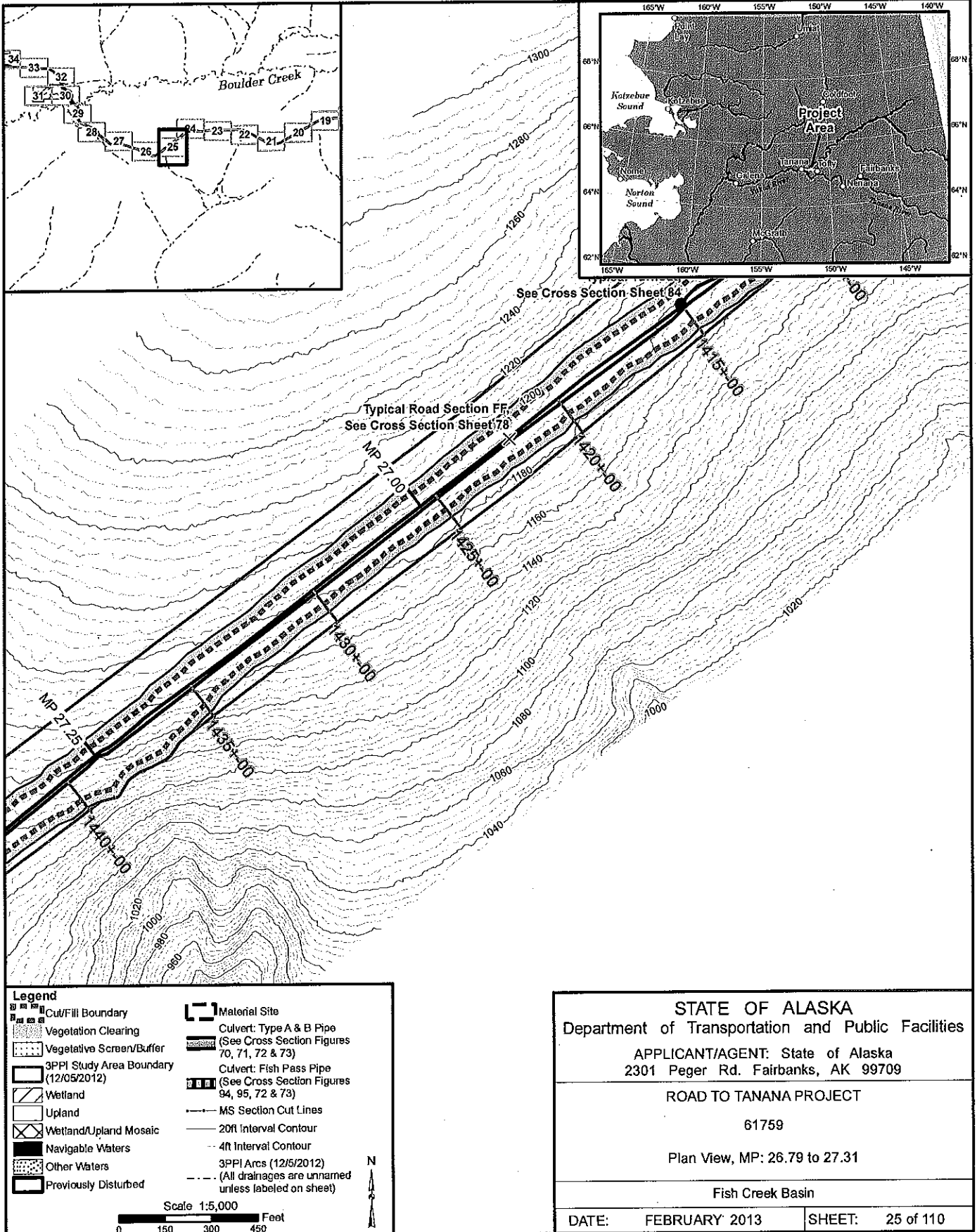
ROAD TO TANANA PROJECT

61759

Plan View, MP: 26.2 to 26.79

Fish Creek Basin

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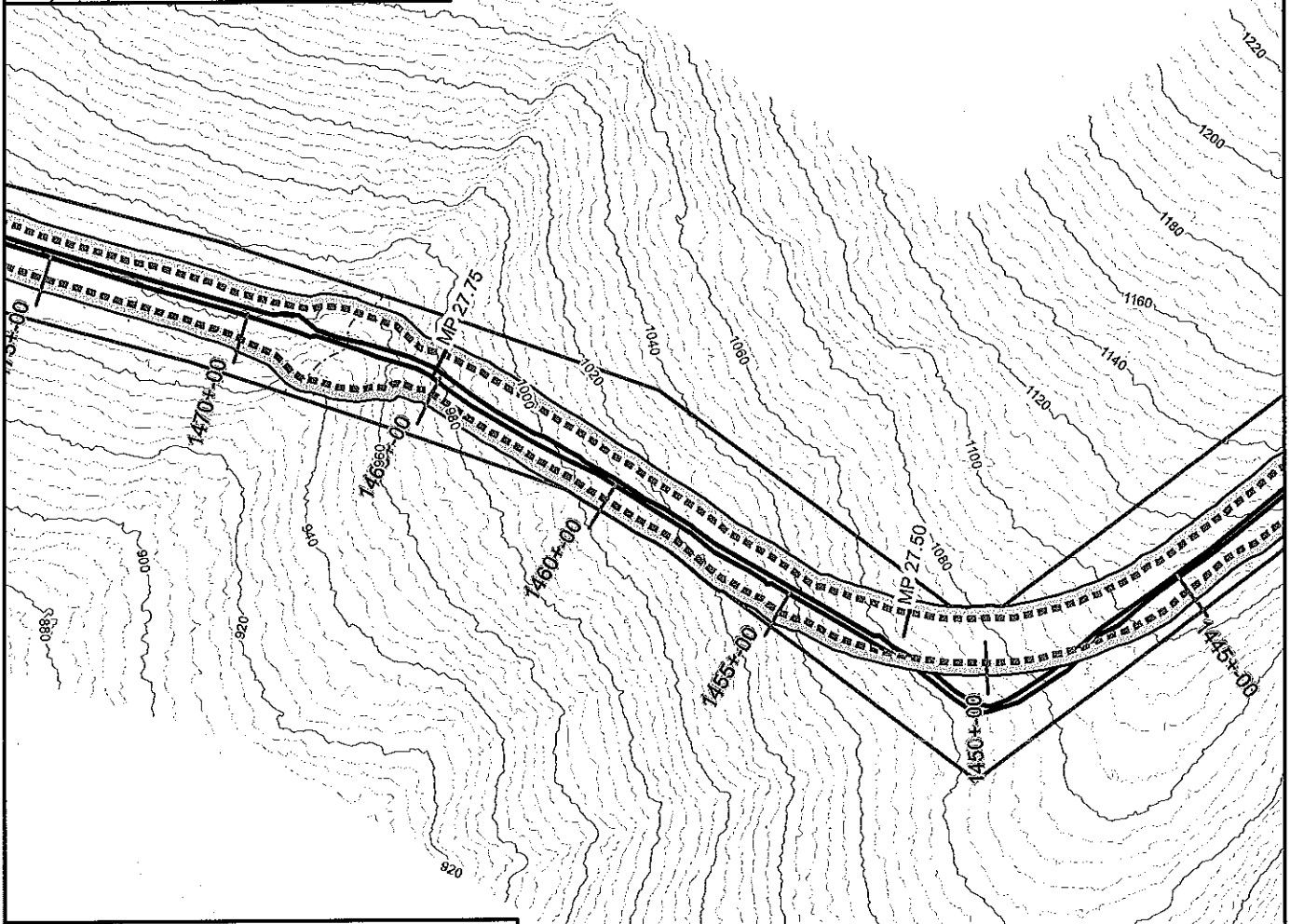
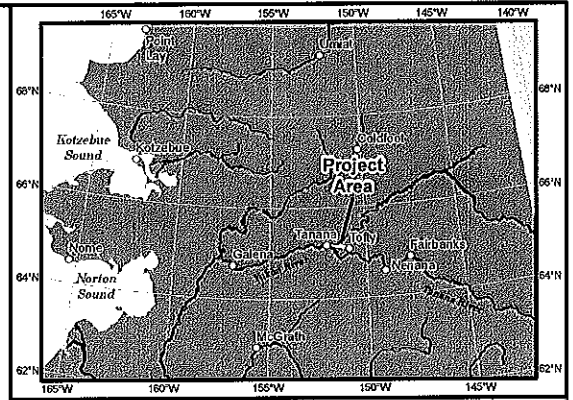
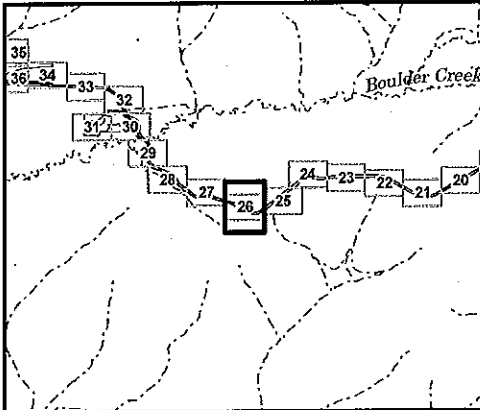
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	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012)
	Navigable Waters		(All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

N

<p>STATE OF ALASKA Department of Transportation and Public Facilities</p> <p>APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709</p>	
<p>ROAD TO TANANA PROJECT</p> <p>61759</p> <p>Plan View, MP: 26.79 to 27.31</p>	
<p>Fish Creek Basin</p>	
DATE: FEBRUARY 2013	SHEET: 25 of 110



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Wetland/Upland Mosaic		4ft Interval Contour
	Navigable Waters		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

Scale 1:5,000

0 150 300 450 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

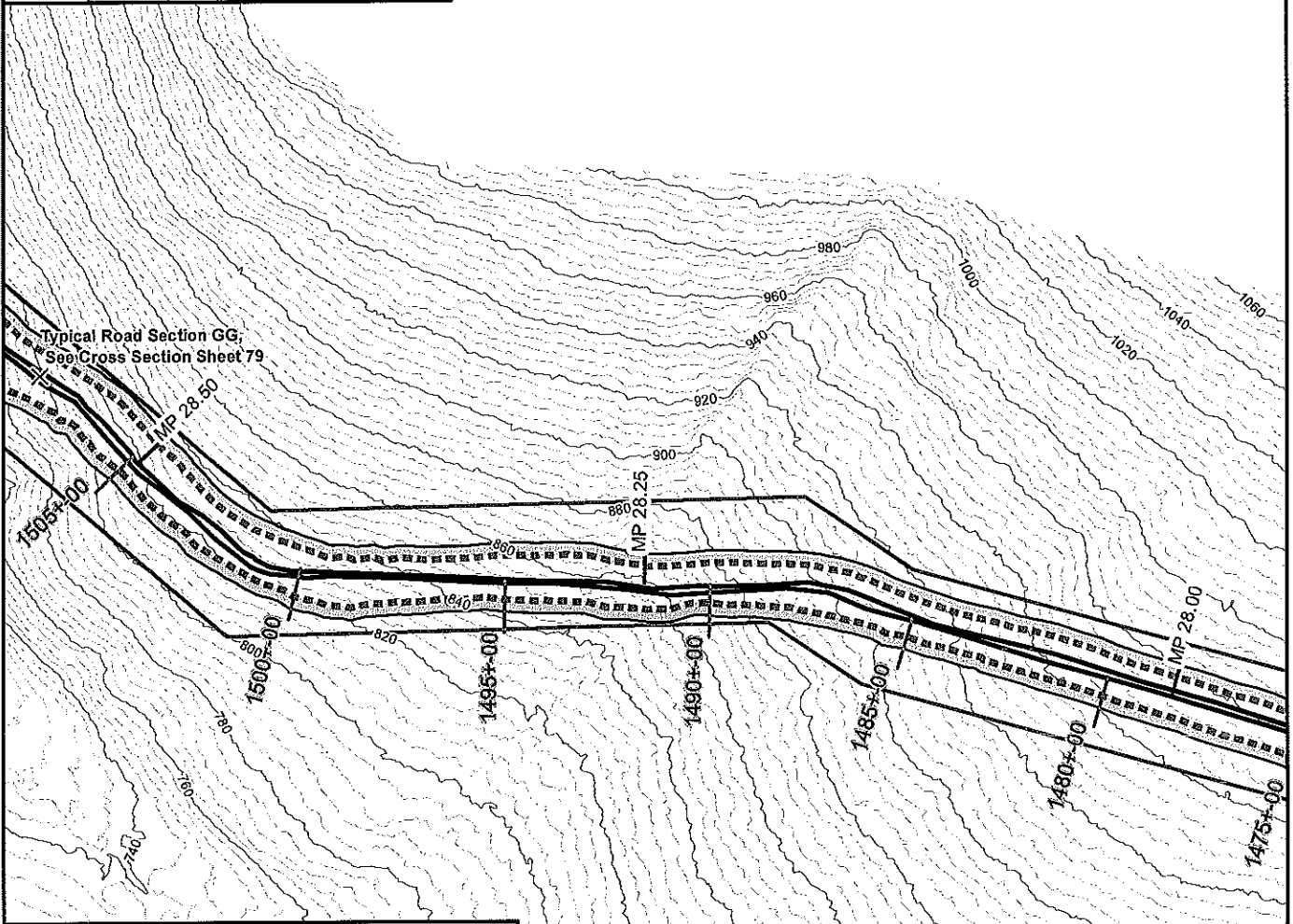
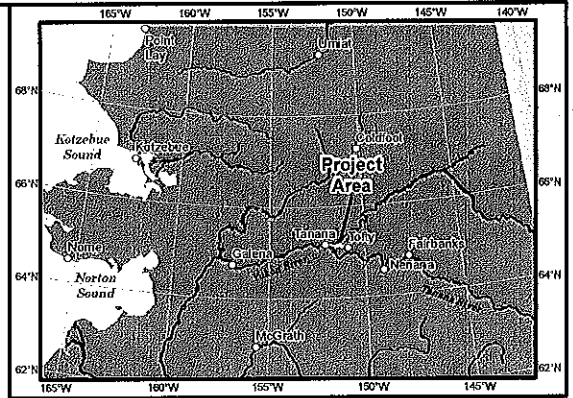
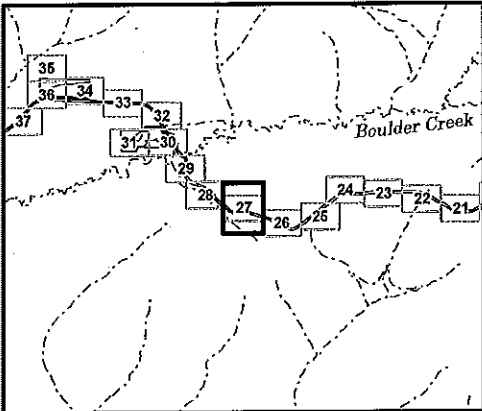
ROAD TO TANANA PROJECT

61759

Plan View, MP: 27.31 to 27.95

Fish Creek Basin

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Legend

Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Upland	4ft Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012)
Navigable Waters	(All drainages are unnamed unless labeled on sheet)
Other Waters	
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

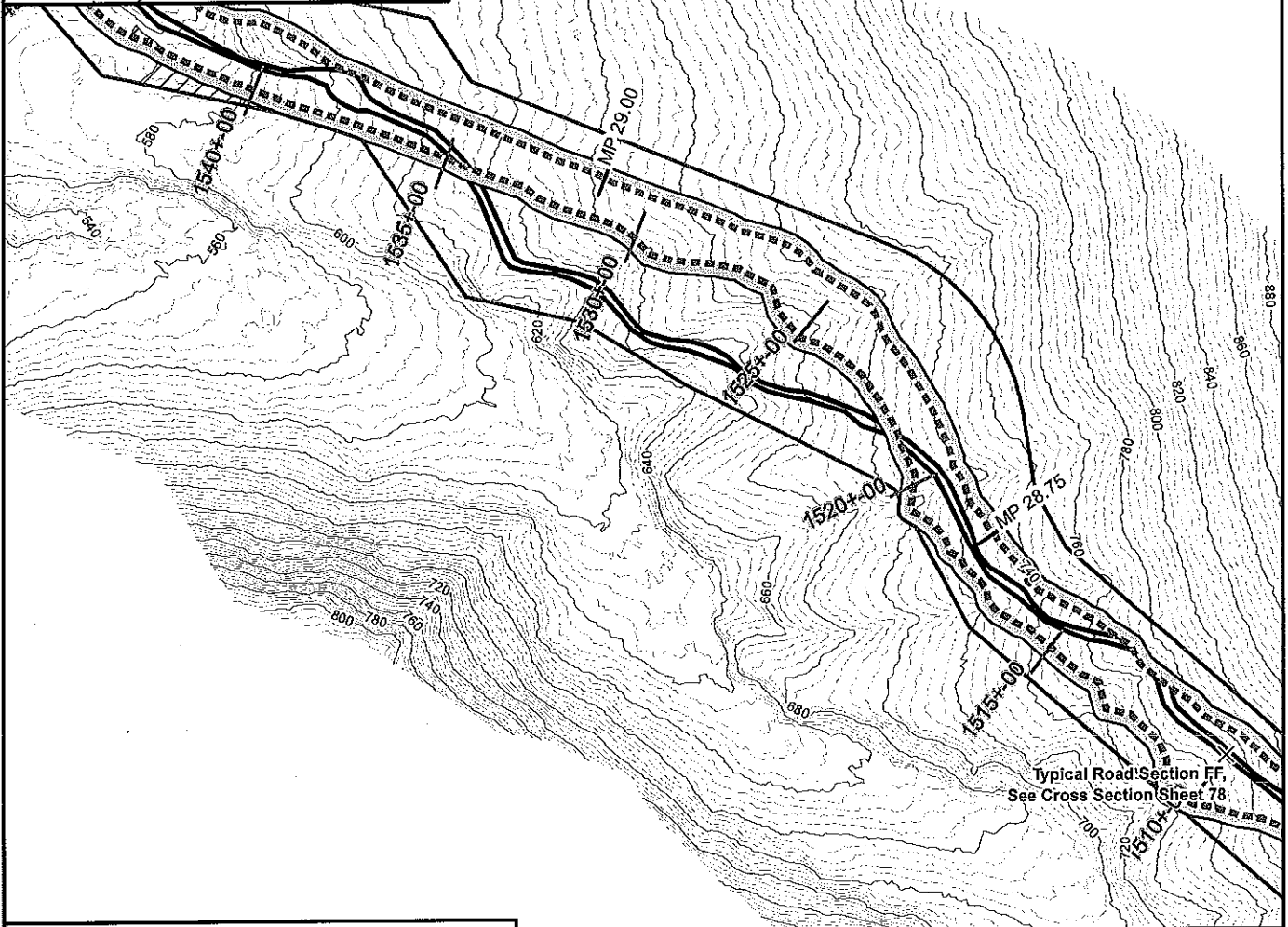
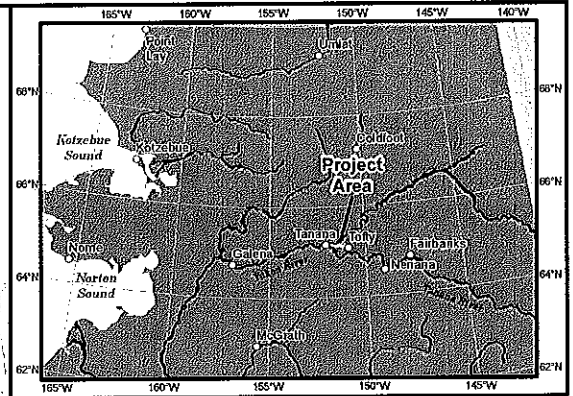
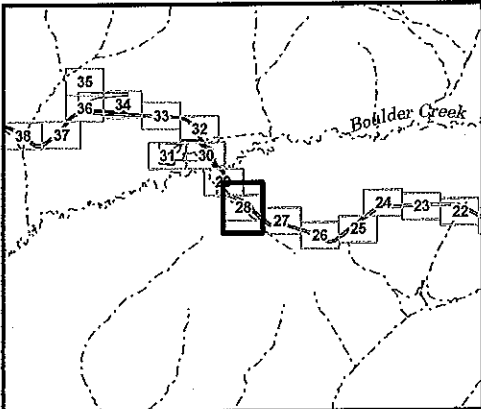
ROAD TO TANANA PROJECT

61759

Plan View, MP: 27.95 to 28.57

Fish Creek Basin

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Legend

Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Upland	4ft Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012)
Navigable Waters	(All drainages are unnamed unless labeled on sheet)
Other Waters	
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

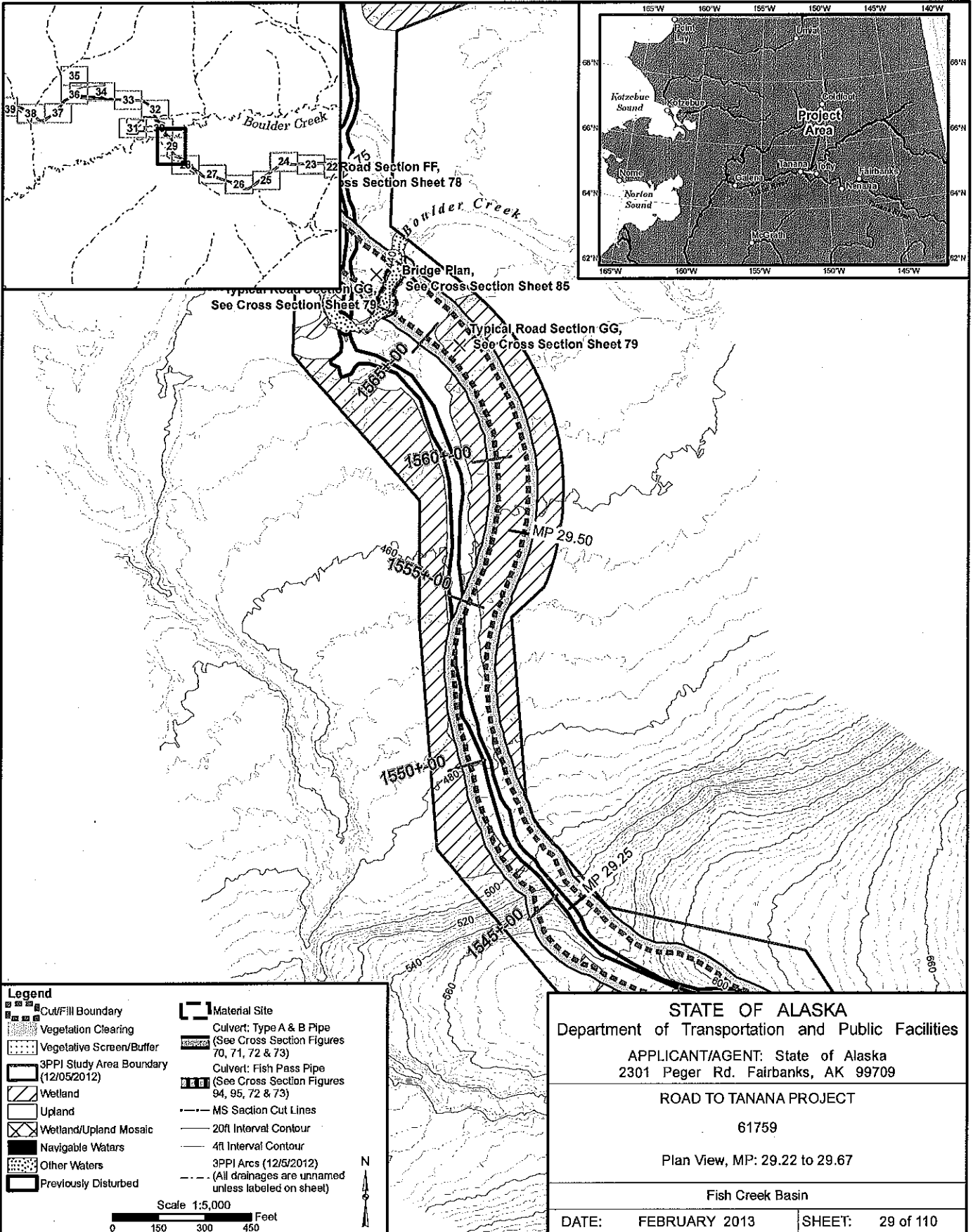
ROAD TO TANANA PROJECT

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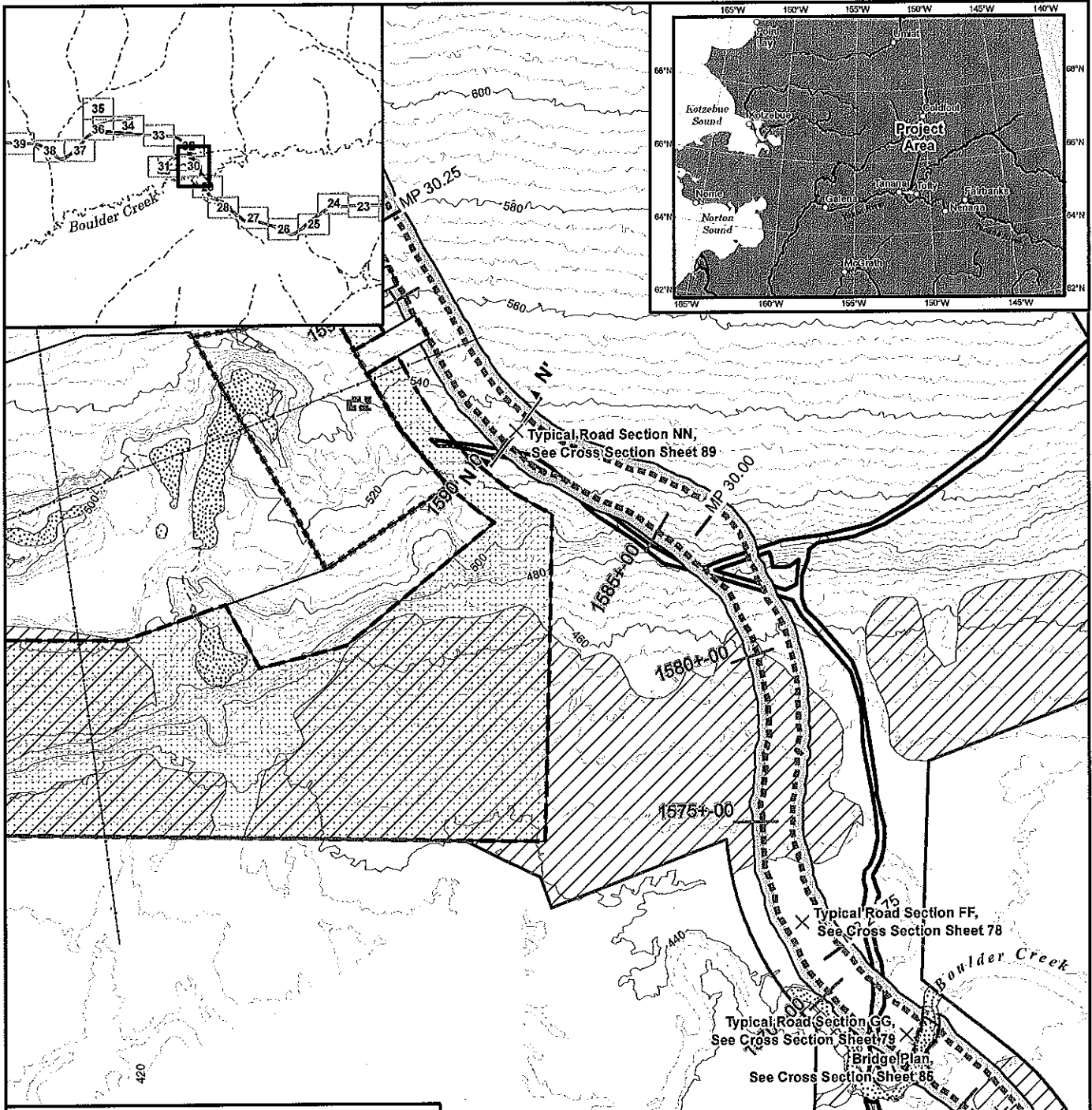
Plan View, MP: 28.57 to 29.22

Fish Creek Basin

DATE: FEBRUARY 2013	SHEET: 28 of 110
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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000

0 150 300 450 Feet

N

STATE OF ALASKA
 Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

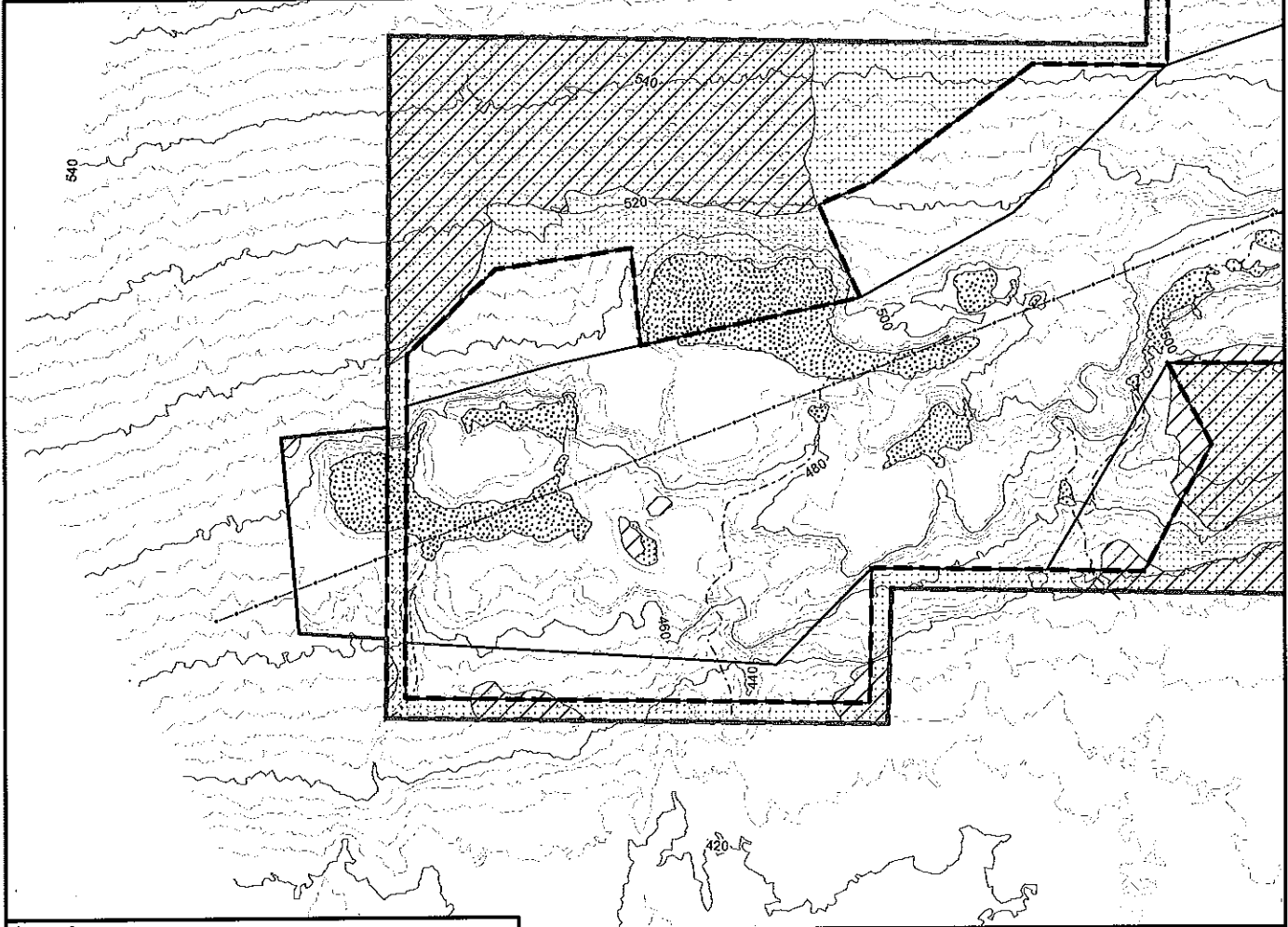
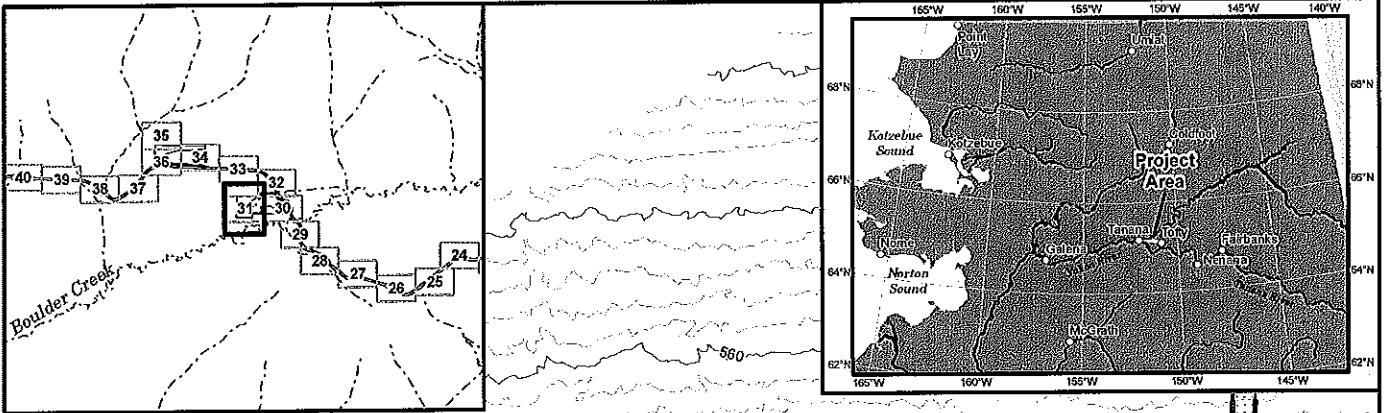
ROAD TO TANANA PROJECT

61759

Plan View, MP: 29.67 to 30.18

Fish Creek Basin

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Legend

Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Upland	4ft Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
Navigable Waters	
Other Waters	
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

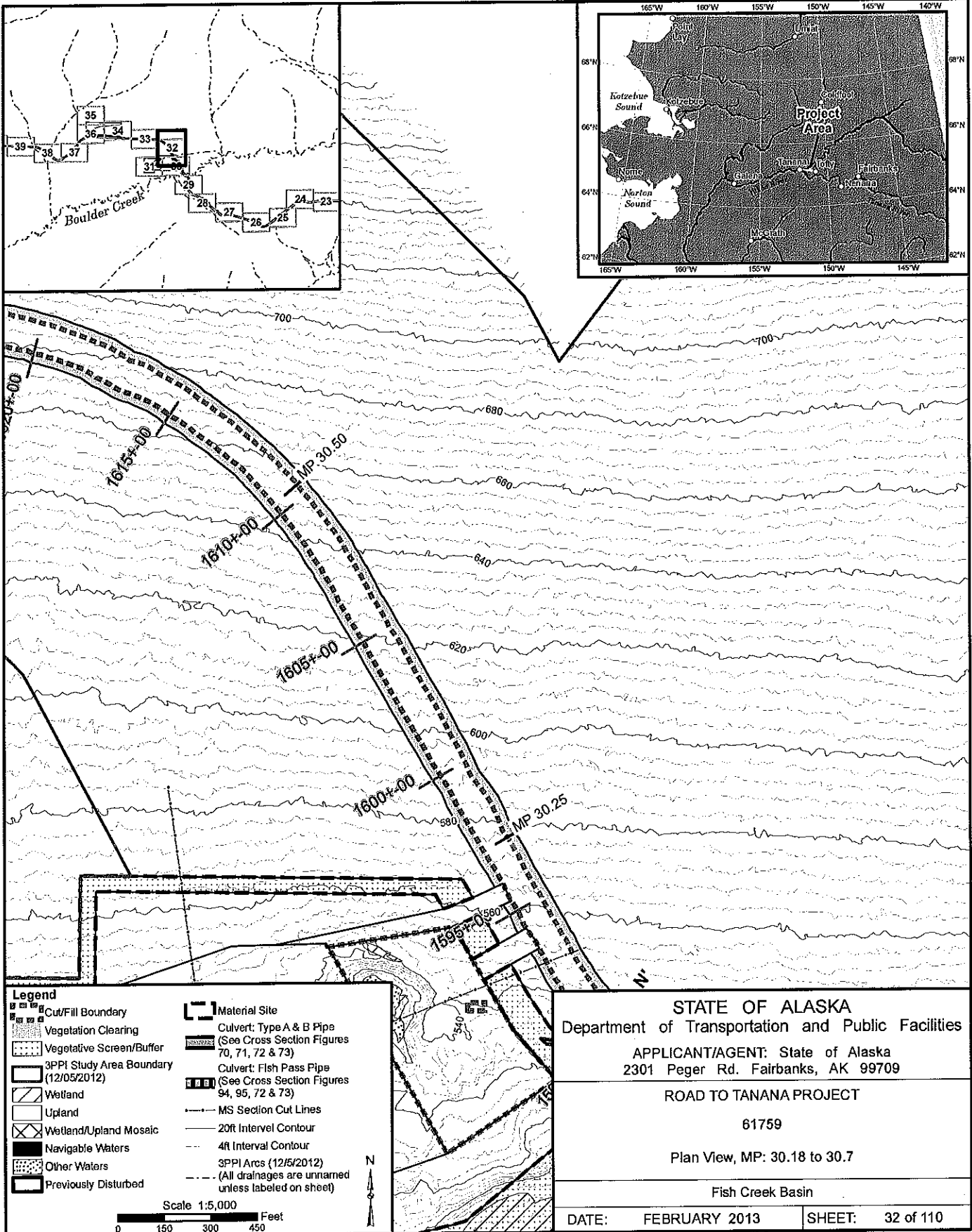
61759

Plan View, MP: n/a

Fish Creek Basin

DATE: FEBRUARY 2013	SHEET: 31 of 110
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STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

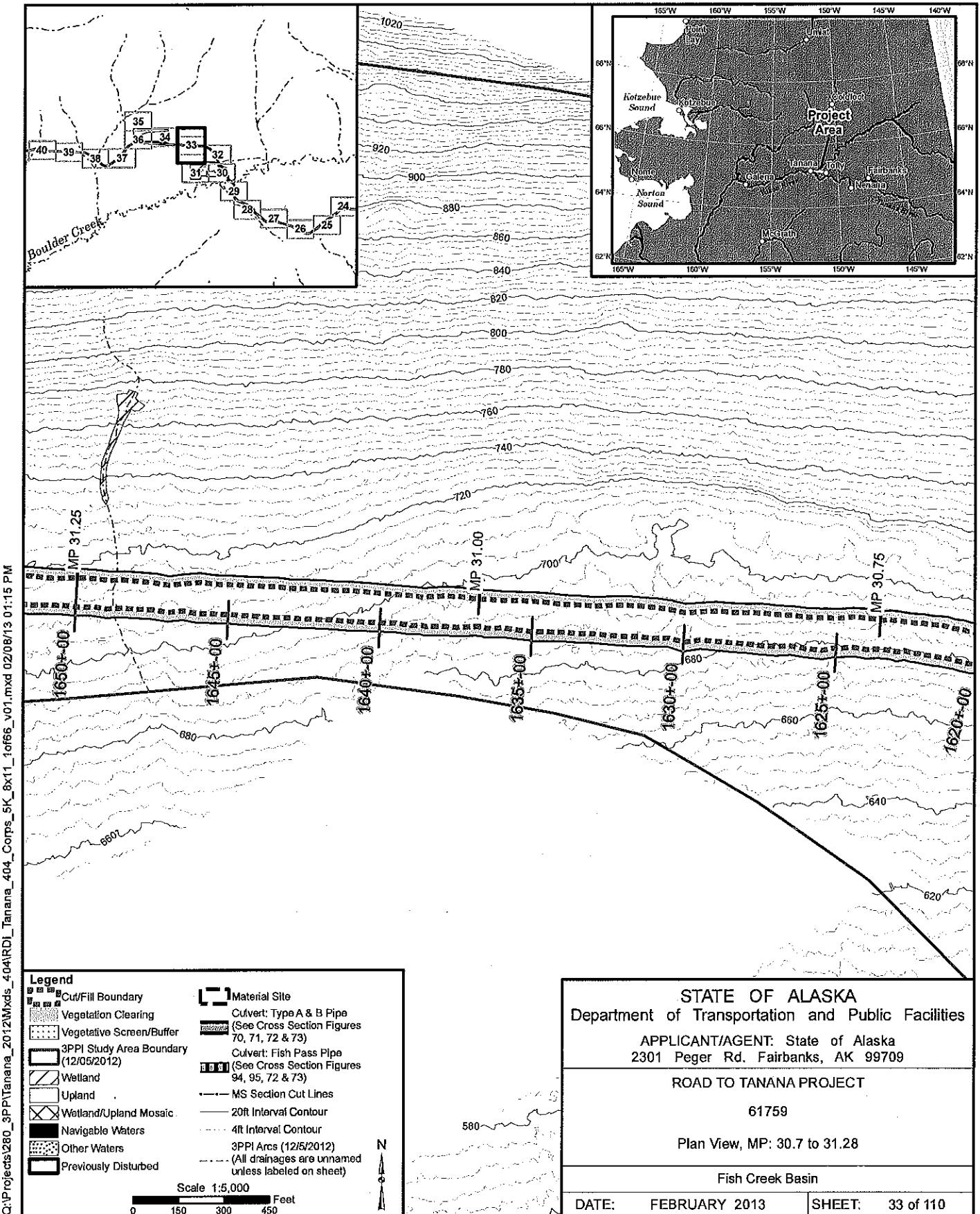
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Plan View, MP: 30.18 to 30.7

Fish Creek Basin

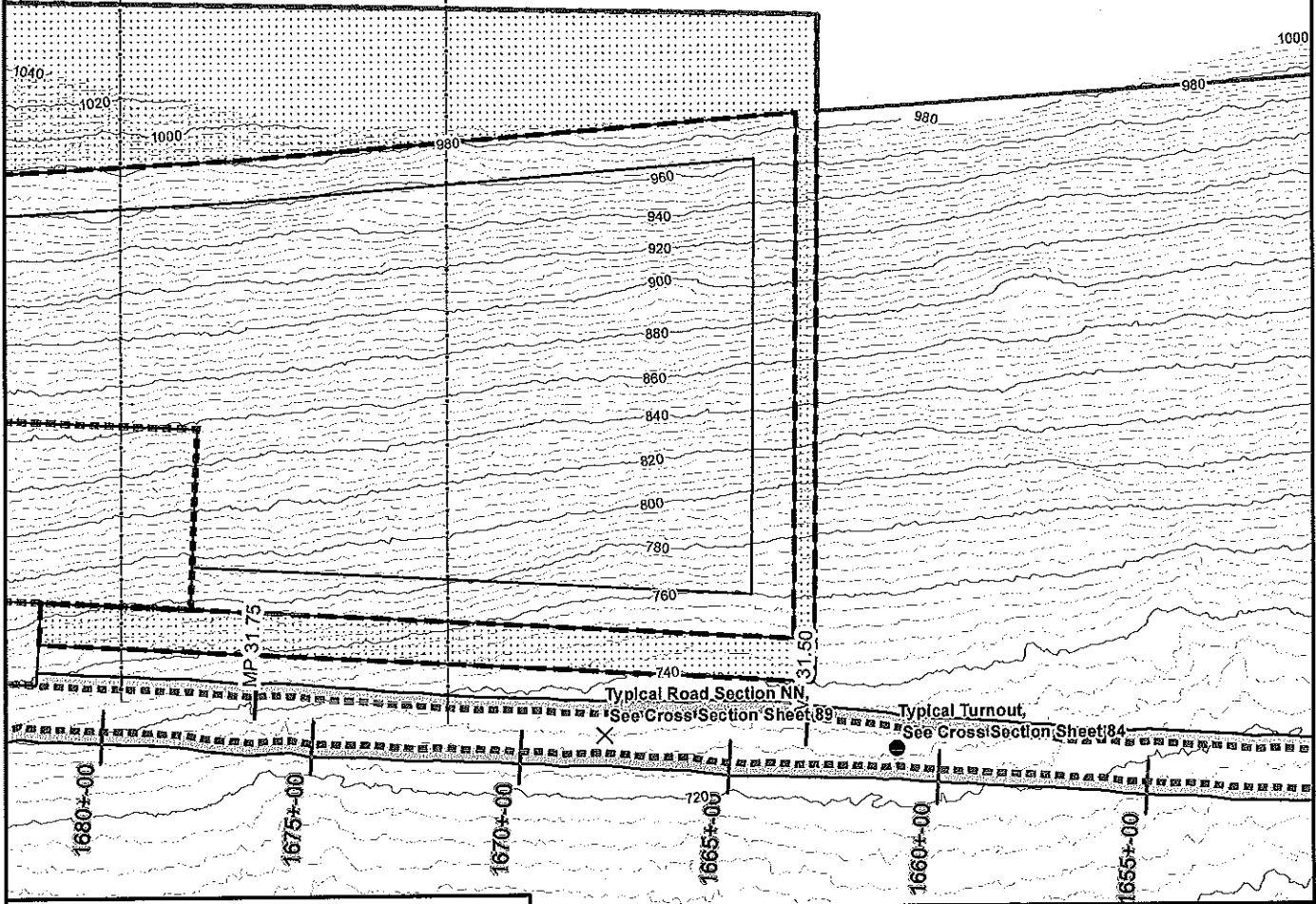
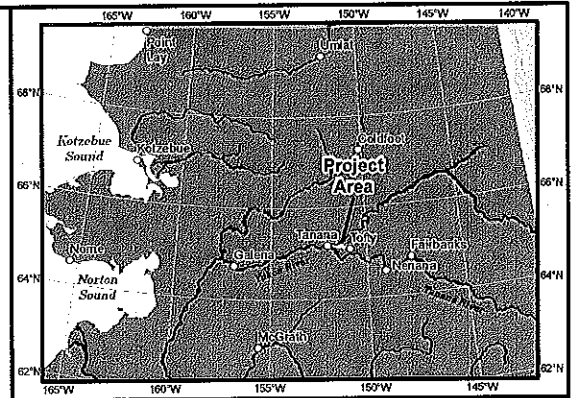
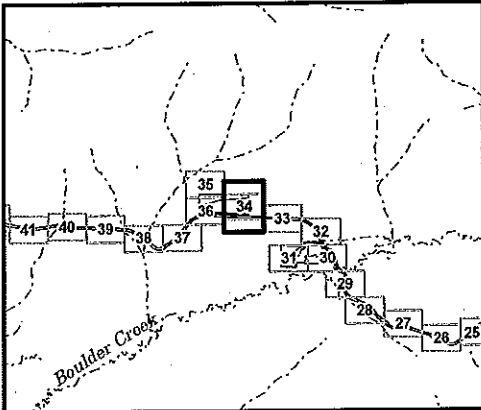
DATE: FEBRUARY 2013	SHEET: 32 of 110
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POA-2013-50, Yukon River

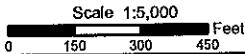


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POA-2013-50, Yukon River



- | | | | |
|--|---|--|---|
| | Cul/Fill Boundary | | Material Site |
| | Vegetation Clearing | | Culvert: Type A & B Pipe
(See Cross Section Figures 70, 71, 72 & 73) |
| | Vegetative Screen/Buffer | | Culvert: Fish Pass Pipe
(See Cross Section Figures 94, 95, 72 & 73) |
| | 3PPI Study Area Boundary
(12/05/2012) | | MS Section Cut Lines |
| | Wetland | | 20ft Interval Contour |
| | Upland | | 4ft Interval Contour |
| | Wetland/Upland Mosaic | | 3PPI Arcs (12/5/2012)
(All drainages are unnamed unless labeled on sheet) |
| | Navigable Waters | | |
| | Other Waters | | |
| | Previously Disturbed | | |



STATE OF ALASKA
 Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

61759

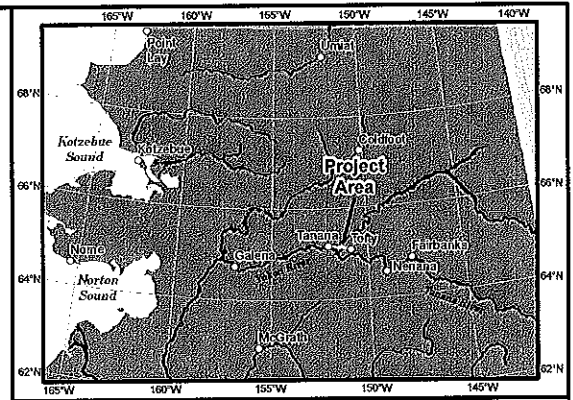
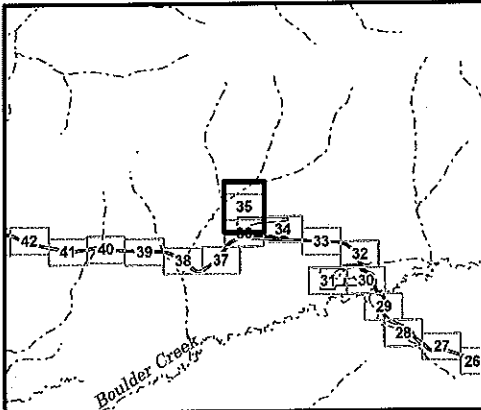
Plan View, MP: 31.28 to 31.86

Fish Creek Basin

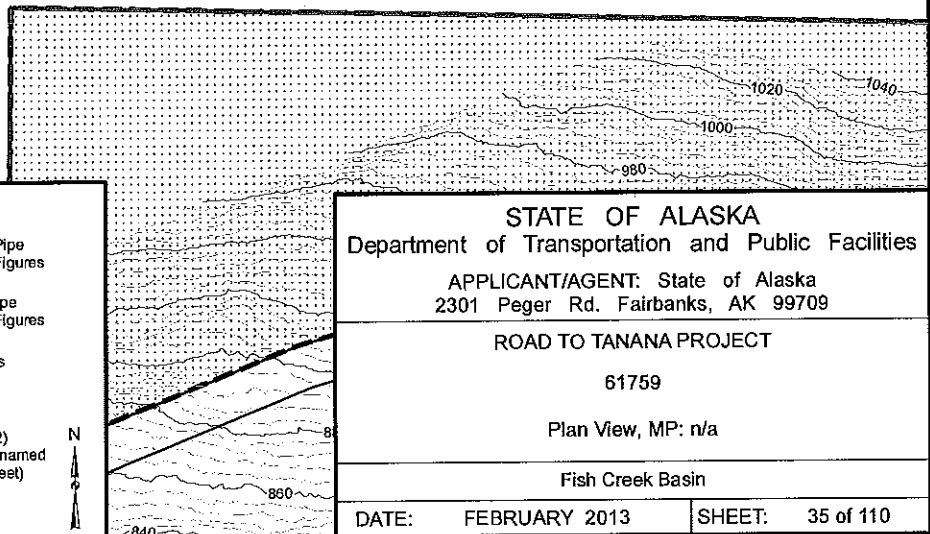
DATE: FEBRUARY 2013	SHEET: 34 of 110
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POA-2013-50, Yukon River



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Legend

	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	MS Section Cut Lines
	20ft Interval Contour
	4ft Interval Contour
	3PPI Arcs (12/5/2012)
	--- (All drainages are unnamed unless labeled on sheet)

Scale 1:5,000 Feet
0 150 300 450

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

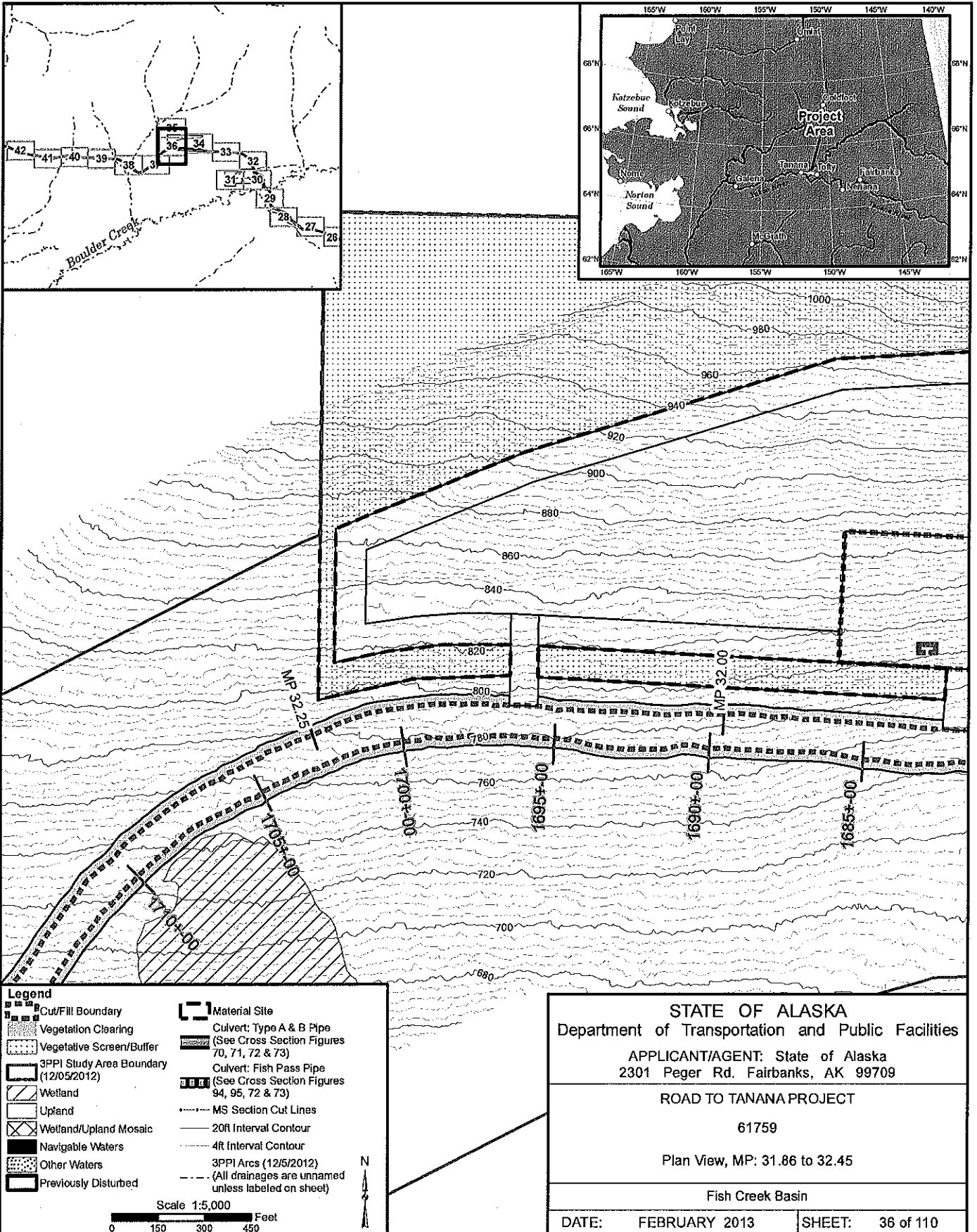
ROAD TO TANANA PROJECT

61759

Plan View, MP: n/a

Fish Creek Basin

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Legend

	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	MS Section Cut Lines
	20ft Interval Contour
	4ft Interval Contour
	3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Cut/Fill Boundary
	Vegetation Clearing
	Vegetative Screen/Buffer
	3PPI Study Area Boundary (12/05/2012)
	Wetland
	Upland
	Wetland/Upland Mosaic
	Navigable Waters
	Other Waters
	Previously Disturbed

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

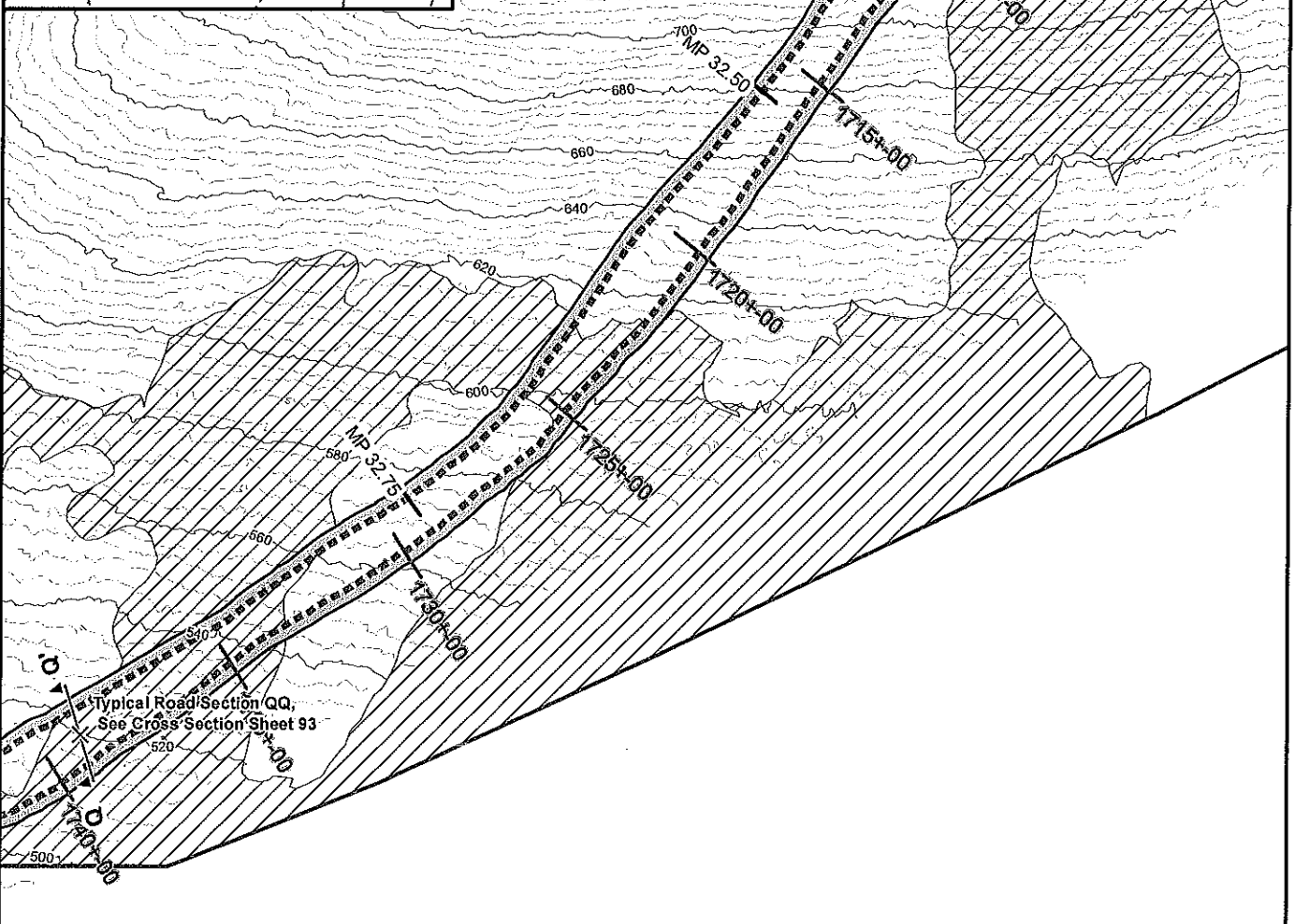
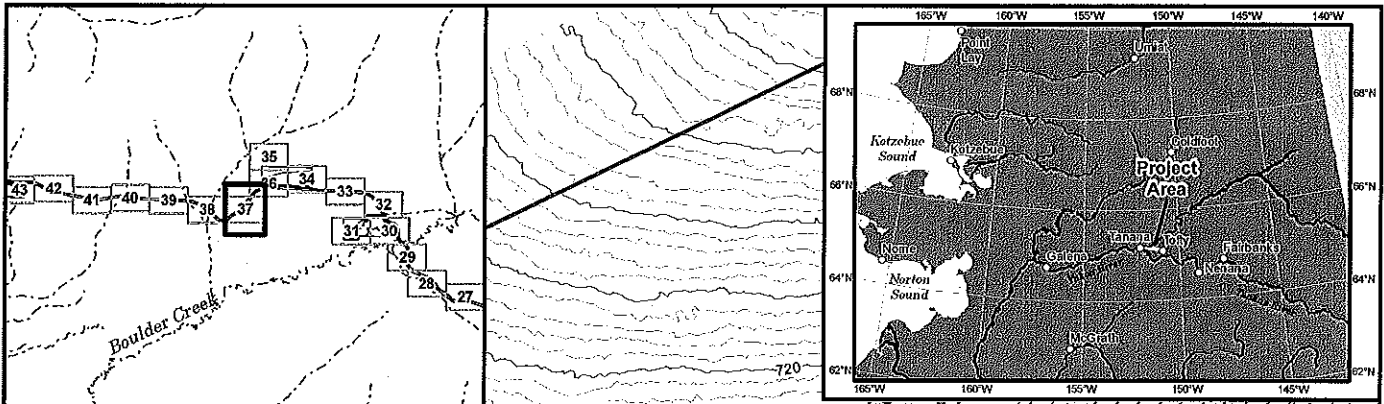
ROAD TO TANANA PROJECT

61759

Plan View, MP: 31.86 to 32.45

Fish Creek Basin

DATE: FEBRUARY 2013	SHEET: 36 of 110
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Legend

Cul/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Upland	4ft Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
Navigable Waters	
Other Waters	
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

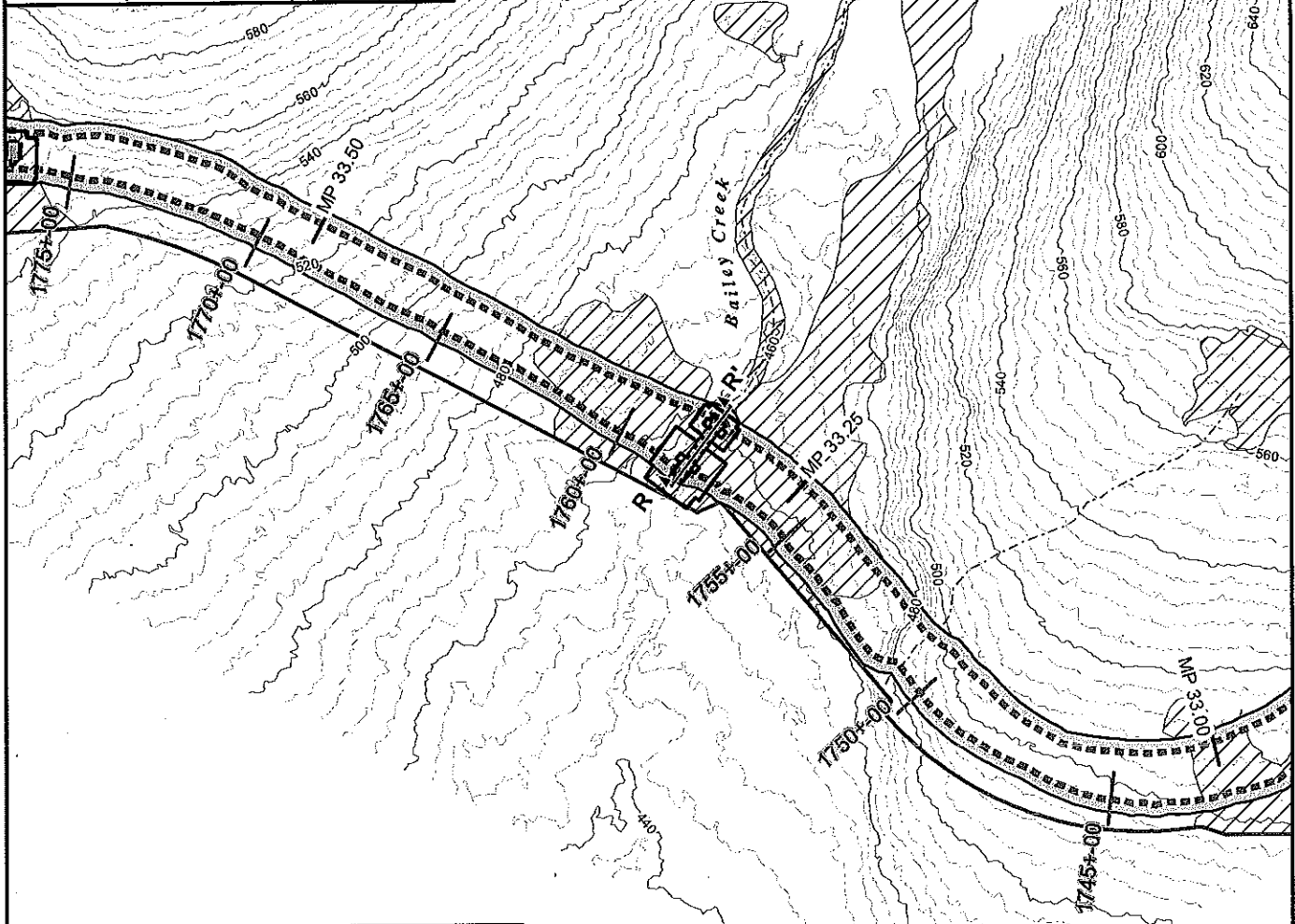
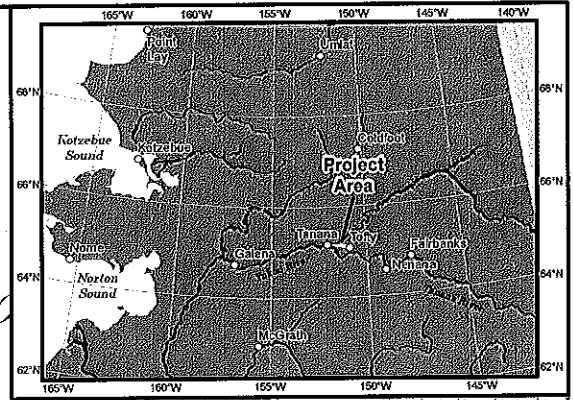
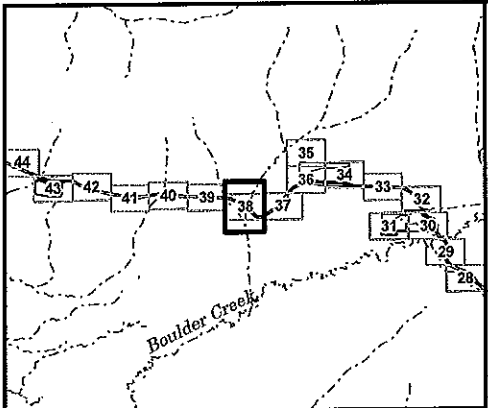
ROAD TO TANANA PROJECT

61759

Plan View, MP: 32.45 to 32.97

Fish Creek Basin

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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4R Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

61759

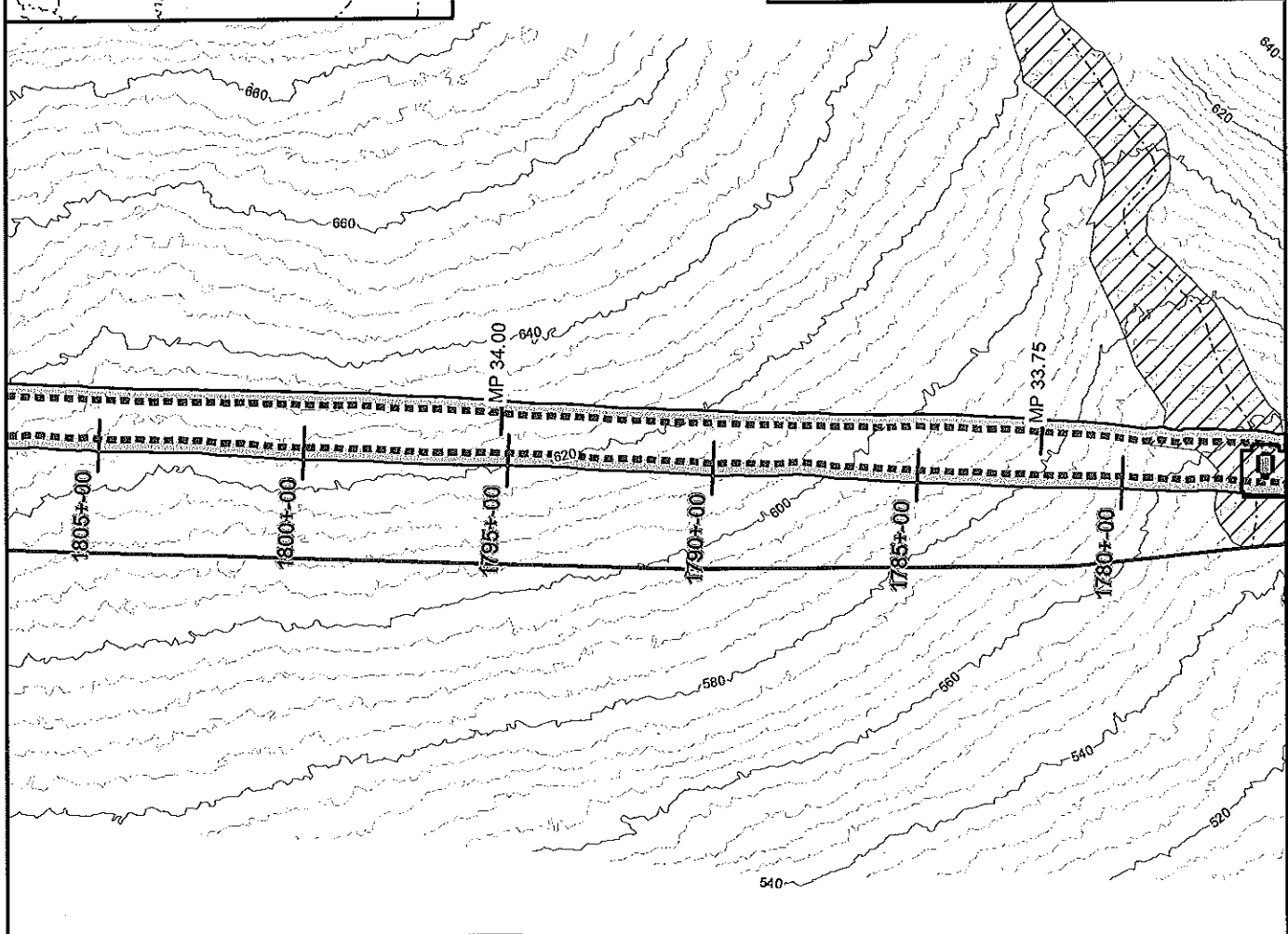
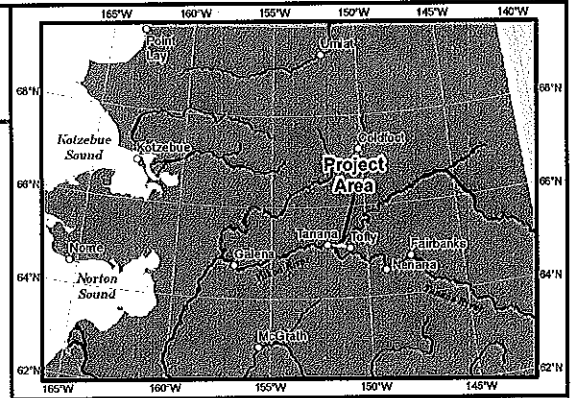
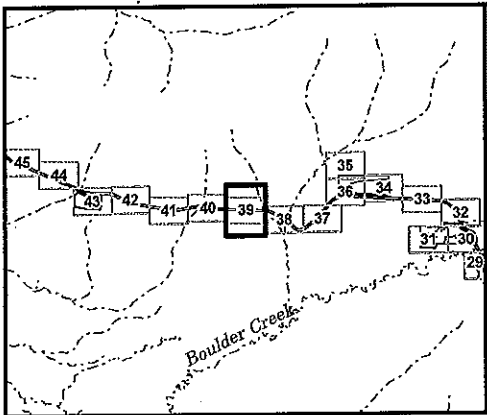
Plan View, MP: 32.97 to 33.64

Fish Creek Basin

DATE: FEBRUARY 2013	SHEET: 38 of 110
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POA-2013-50, Yukon River



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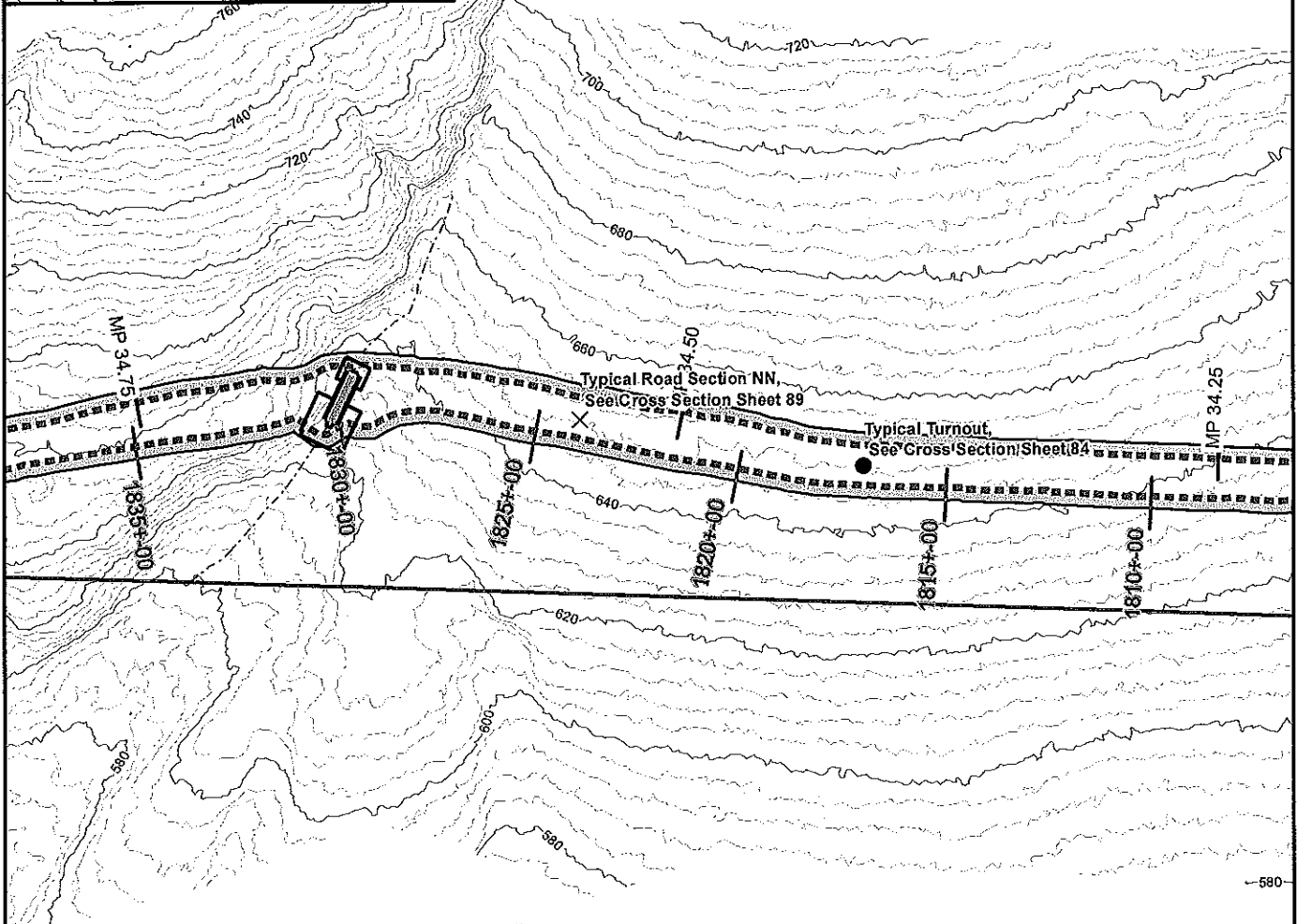
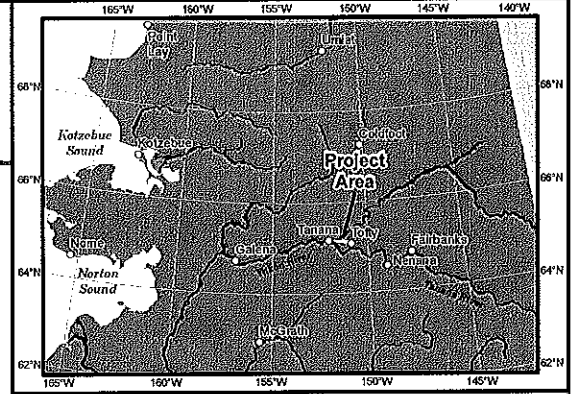
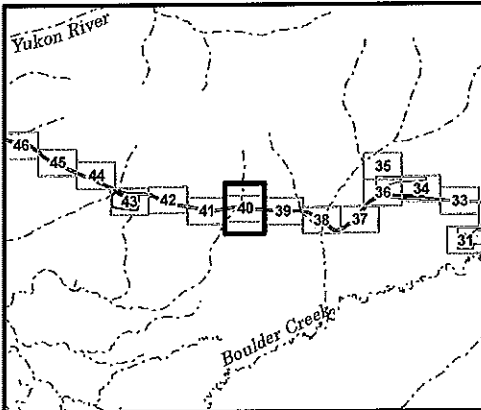
	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Wetland/Upland Mosaic		4ft Interval Contour
	Navigable Waters		3PPI Arcs (12/5/2012)
	Other Waters		(All drainages are unnamed unless labeled on sheet)
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA PROJECT 61759 Plan View, MP: 33.64 to 34.22	
Tanana River Basin	
DATE: FEBRUARY 2013	SHEET: 39 of 110

POA-2013-50, Yukon River



Legend

	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	(All drainages are unnamed unless labeled on sheet)

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

61759

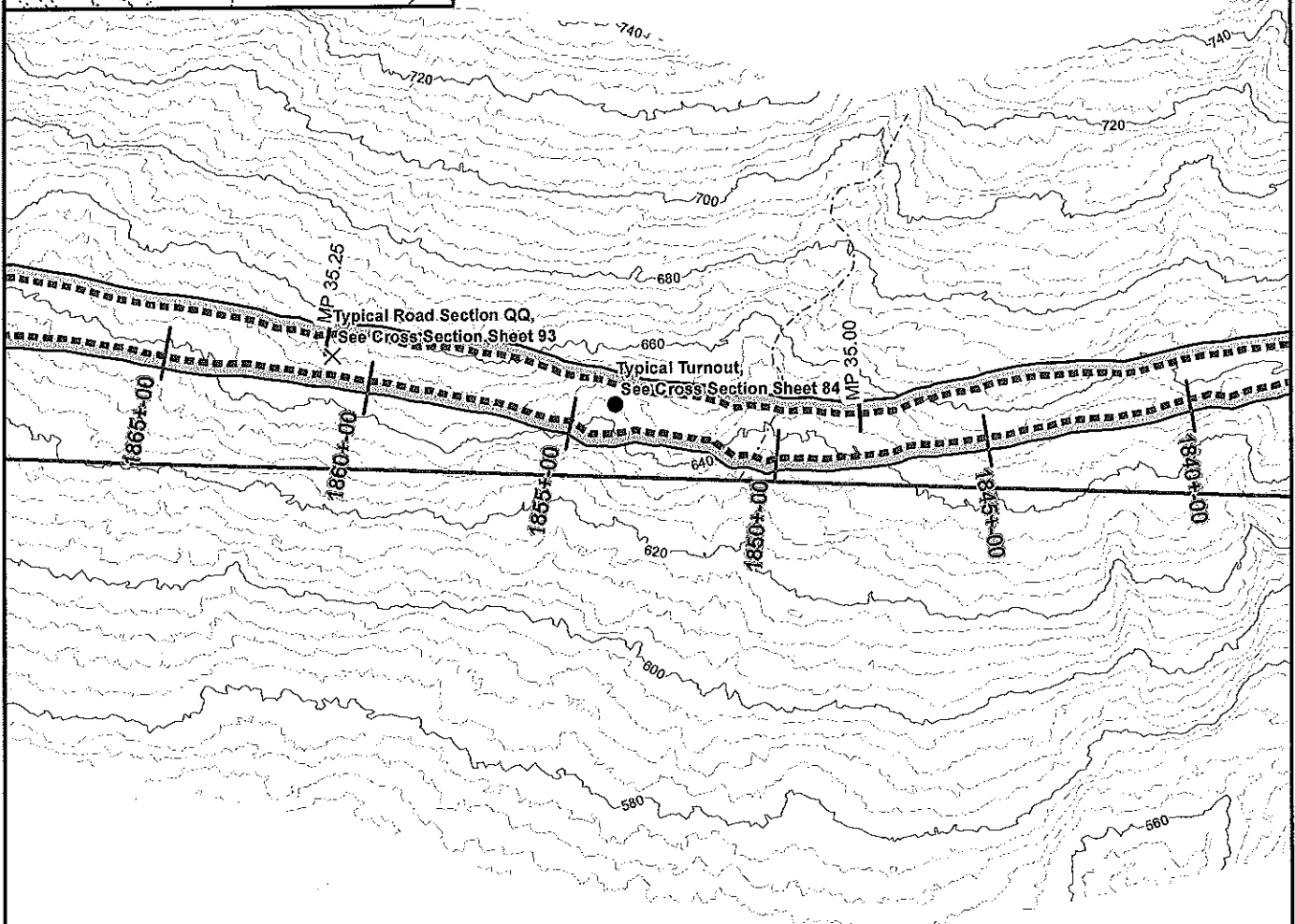
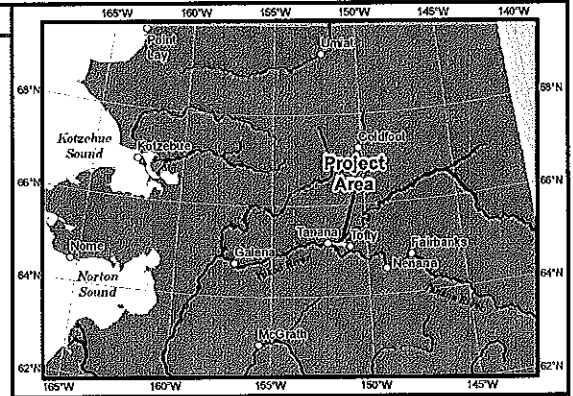
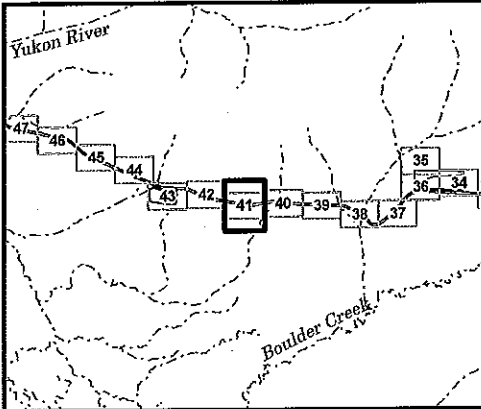
Plan View, MP: 34.22 to 34.81

Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 40 of 110
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POA-2013-50, Yukon River



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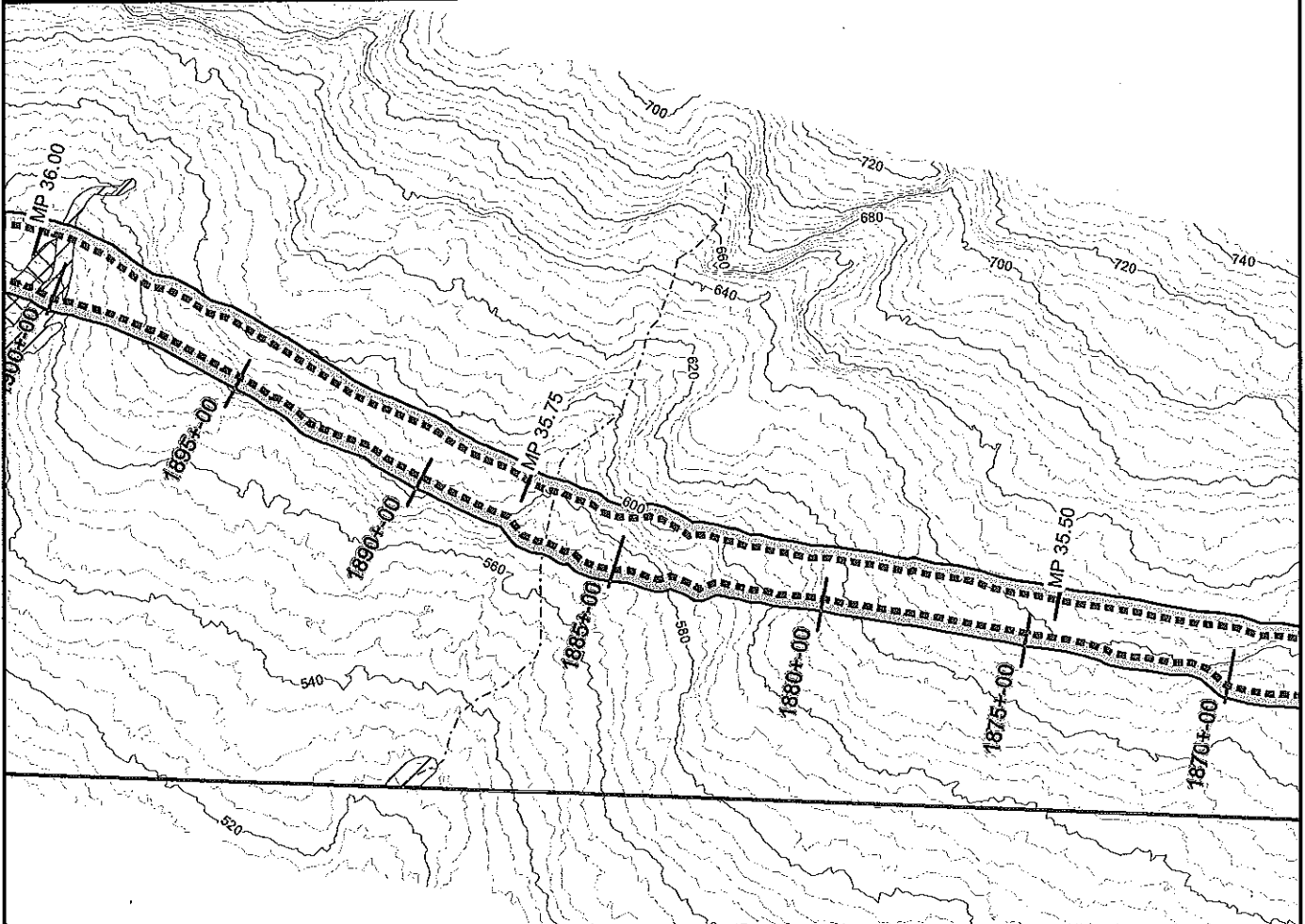
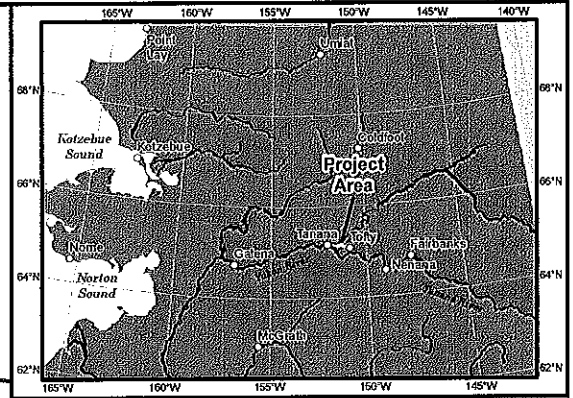
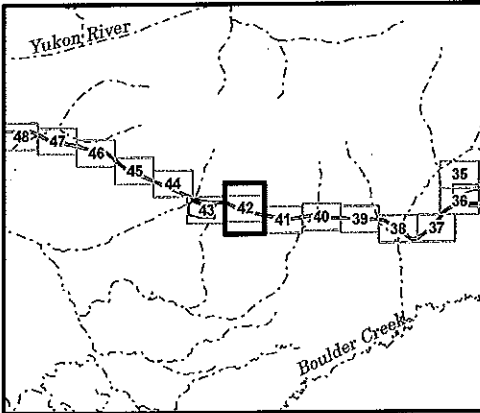
Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Upland	4ft Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
Navigable Waters	
Other Waters	
Previously Disturbed	

Scale 1:5,000

0 150 300 450 Feet

N

<p>STATE OF ALASKA Department of Transportation and Public Facilities</p> <p>APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709</p> <p>ROAD TO TANANA PROJECT</p> <p>61759</p> <p>Plan View, MP: 34.81 to 35.39</p> <p>Tanana River Basin</p>	
DATE: FEBRUARY 2013	SHEET: 41 of 110



Legend

Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Wetland/Upland Mosaic	4ft Interval Contour
Navigable Waters	3PPI Arcs (12/5/2012)
Other Waters	(All drainages are unnamed unless labeled on sheet)
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

61759

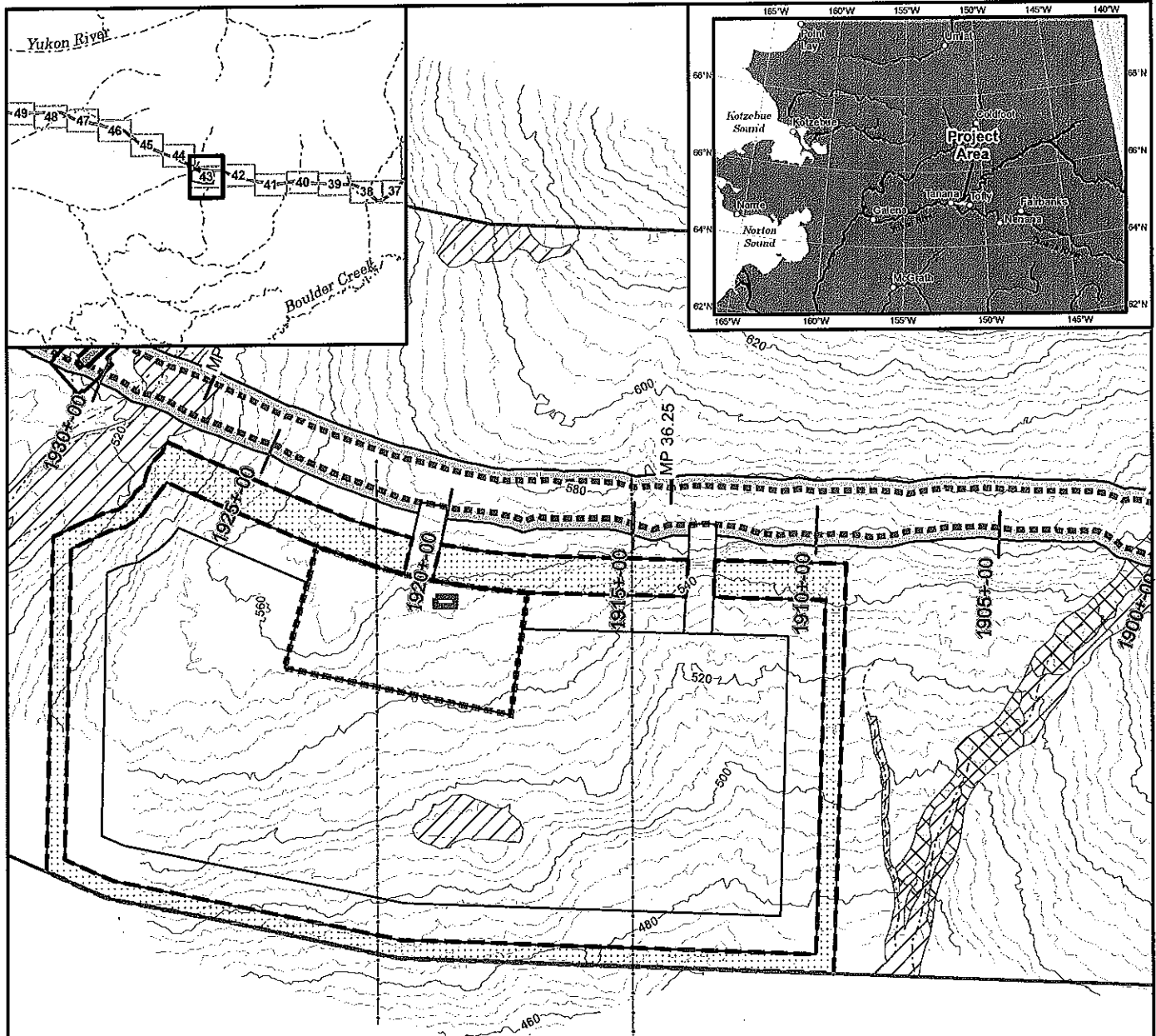
Plan View, MP: 35.39 to 36.01

Tanana River Basin

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POA-2013-50, Yukon River



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Legend

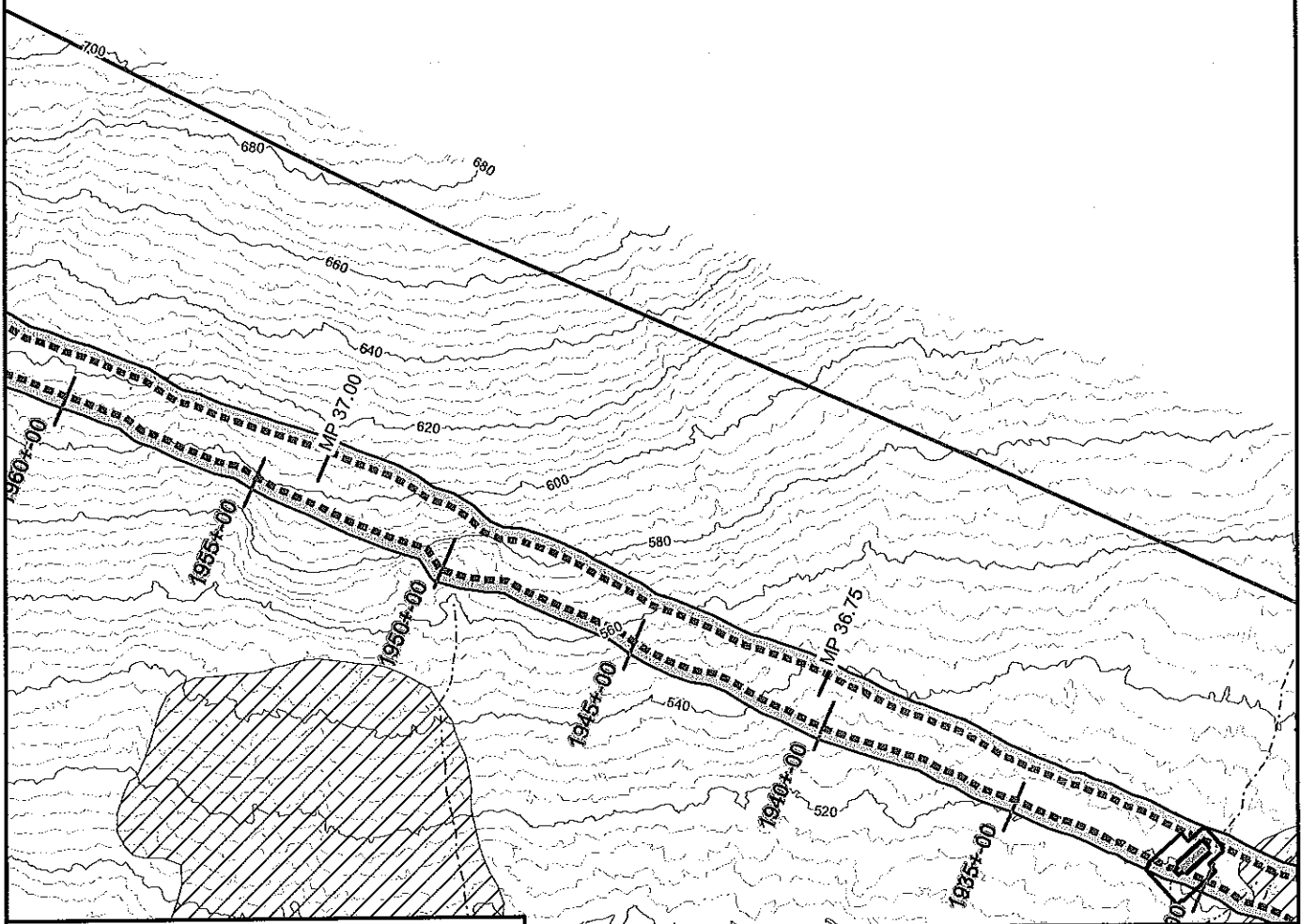
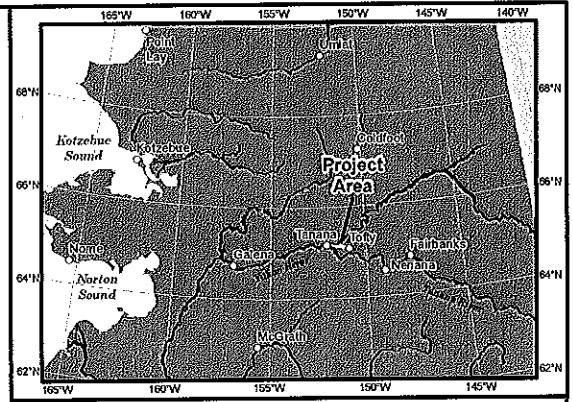
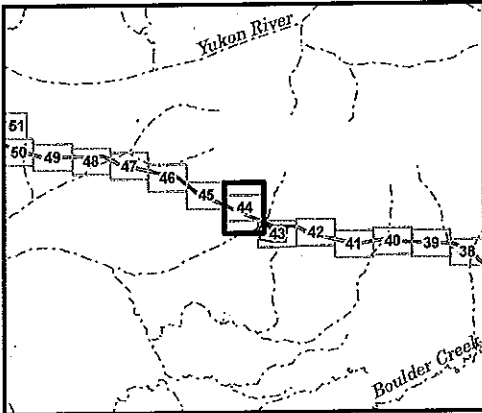
	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4R Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

N

<p>STATE OF ALASKA Department of Transportation and Public Facilities</p> <p>APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709</p>	
<p>ROAD TO TANANA PROJECT</p> <p>61759</p> <p>Plan View, MP: 36.01 to 36.56</p>	
<p>Tanana River Basin</p>	
DATE: FEBRUARY 2013	SHEET: 43 of 110

POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Wetland/Upland Mosaic		4ft Interval Contour
	Navigable Waters		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

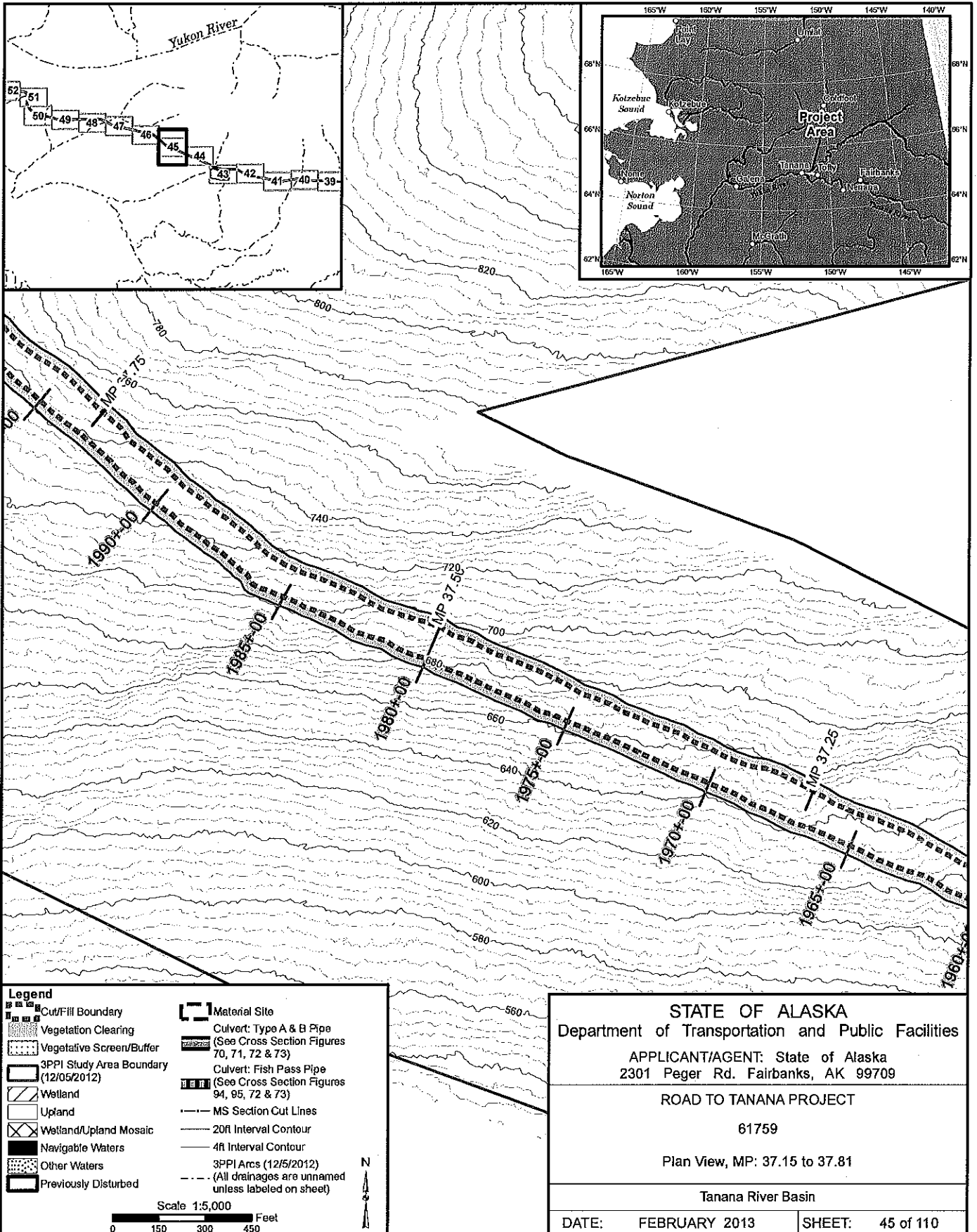
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Plan View, MP: 36.56 to 37.15

Tanana River Basin

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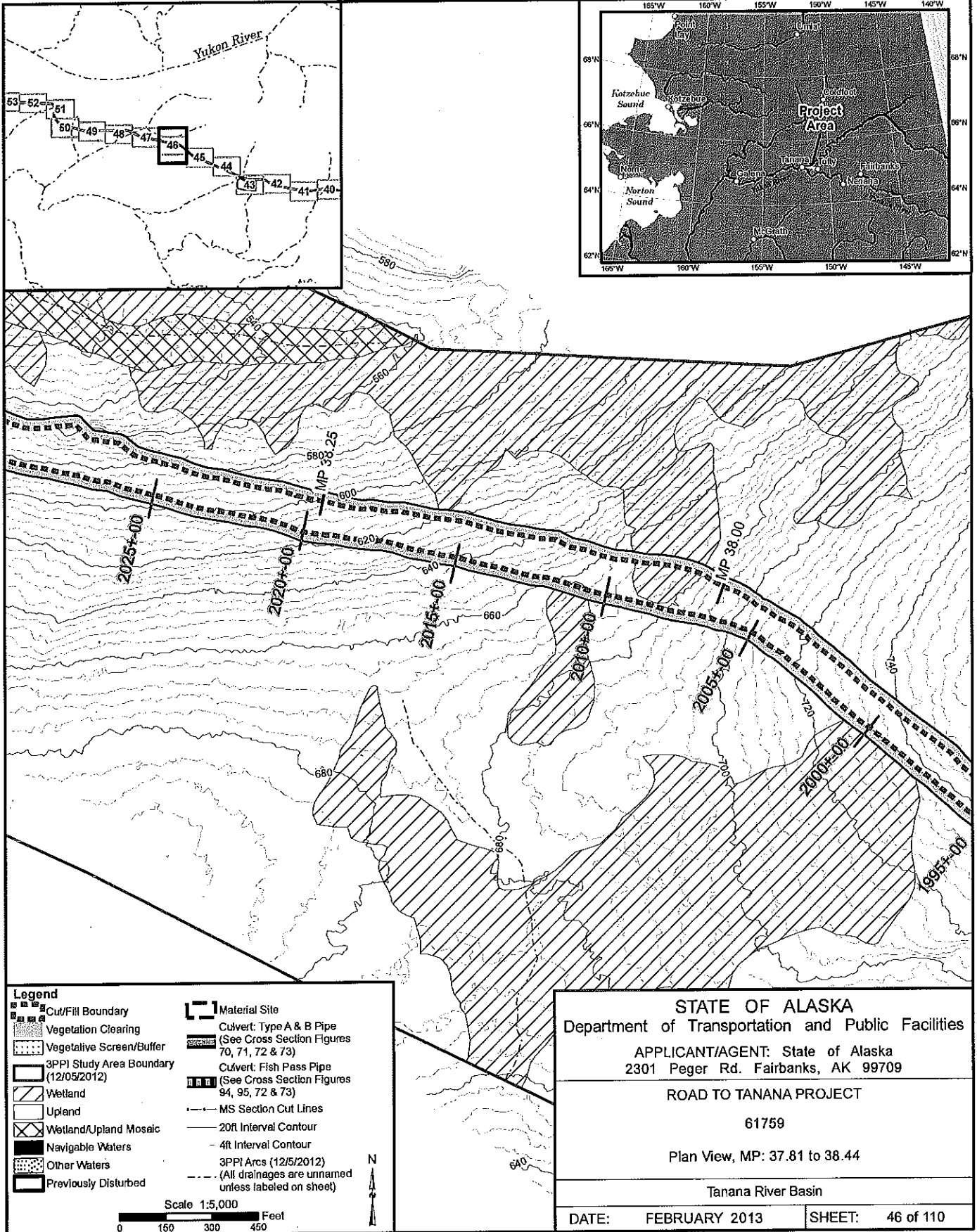
POA-2013-50, Yukon River



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STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA PROJECT 61759 Plan View, MP: 37.15 to 37.81 Tanana River Basin	
DATE: FEBRUARY 2013	SHEET: 45 of 110

POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012)
	Navigable Waters		(All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

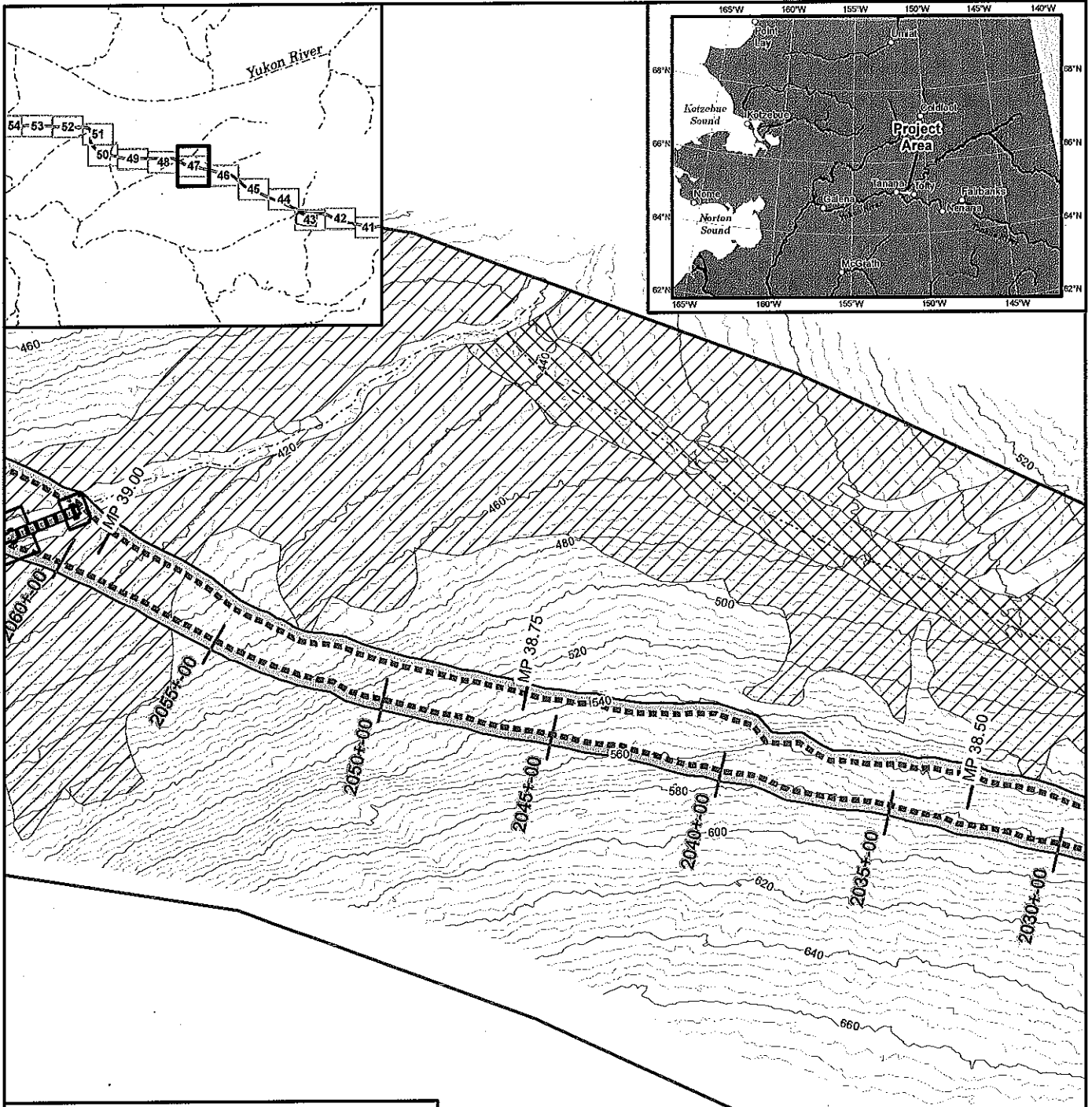
61759

Plan View, MP: 37.81 to 38.44

Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 46 of 110
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POA-2013-50, Yukon River



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	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012)
	Navigable Waters		(All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

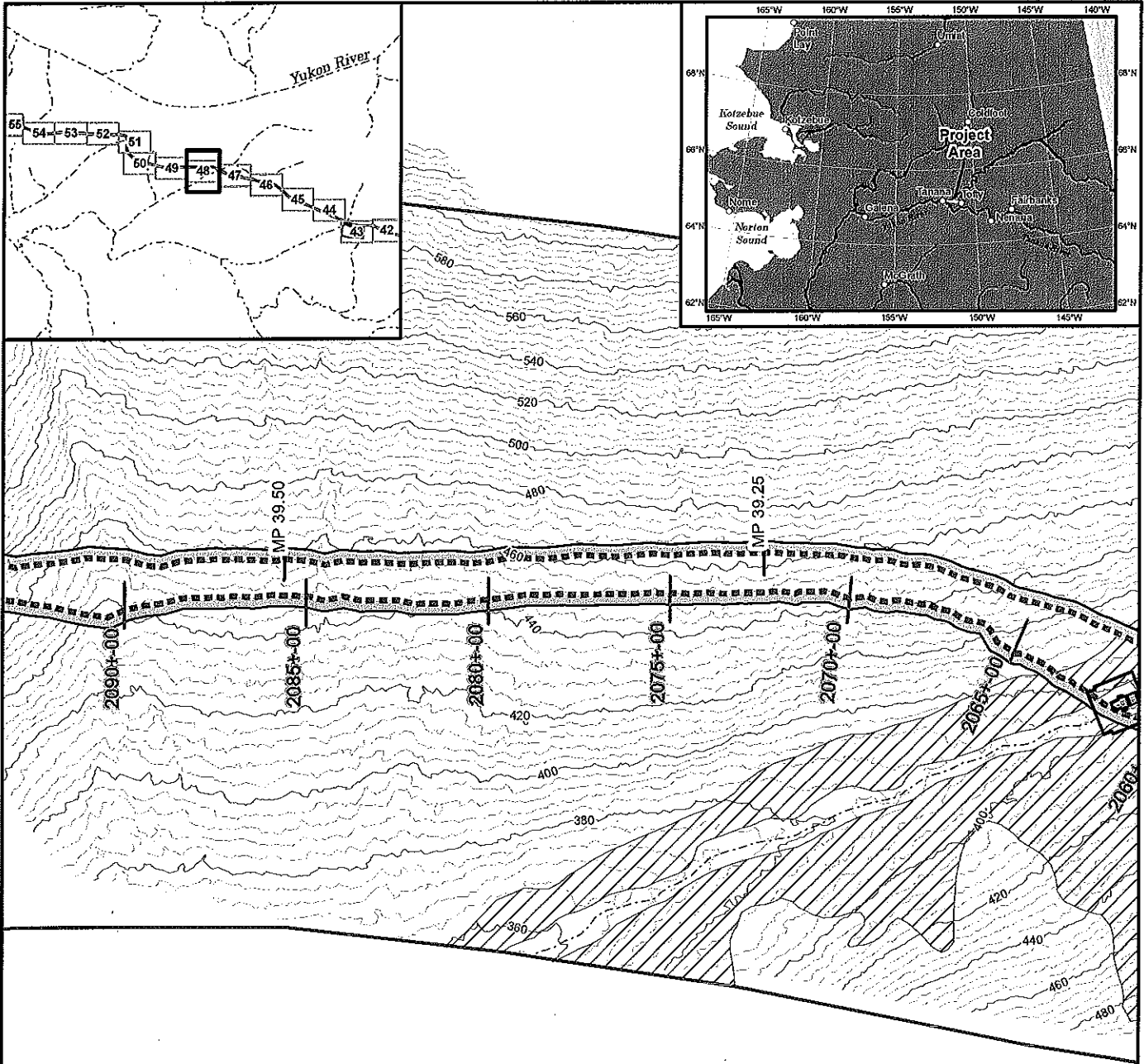
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0 150 300 450 Feet

N

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA PROJECT 61759 Plan View, MP: 38.44 to 39.05	
Tanana River Basin	
DATE: FEBRUARY 2013	SHEET: 47 of 110

POA-2013-50, Yukon River



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Legend

Scale 1:5,000
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STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

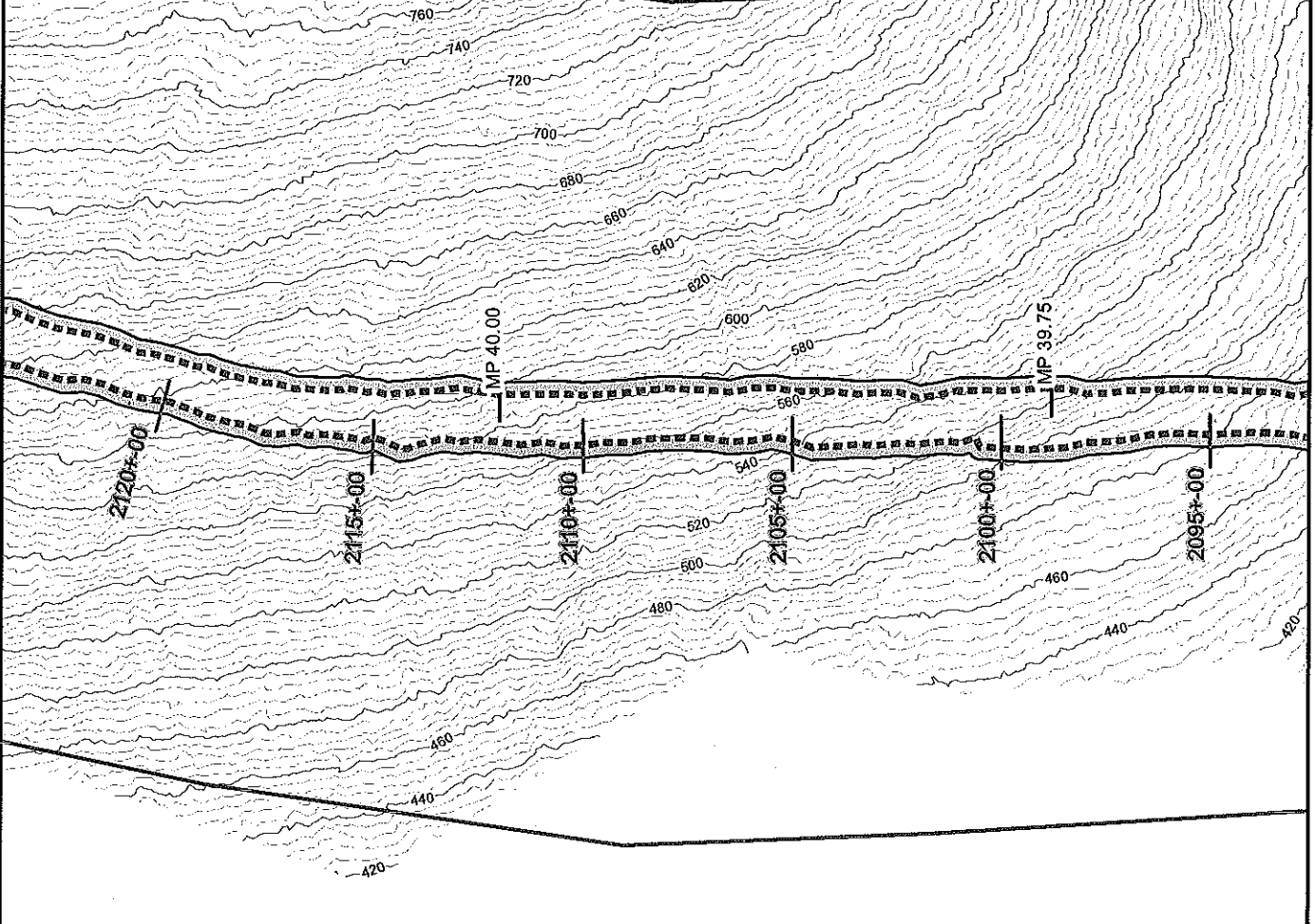
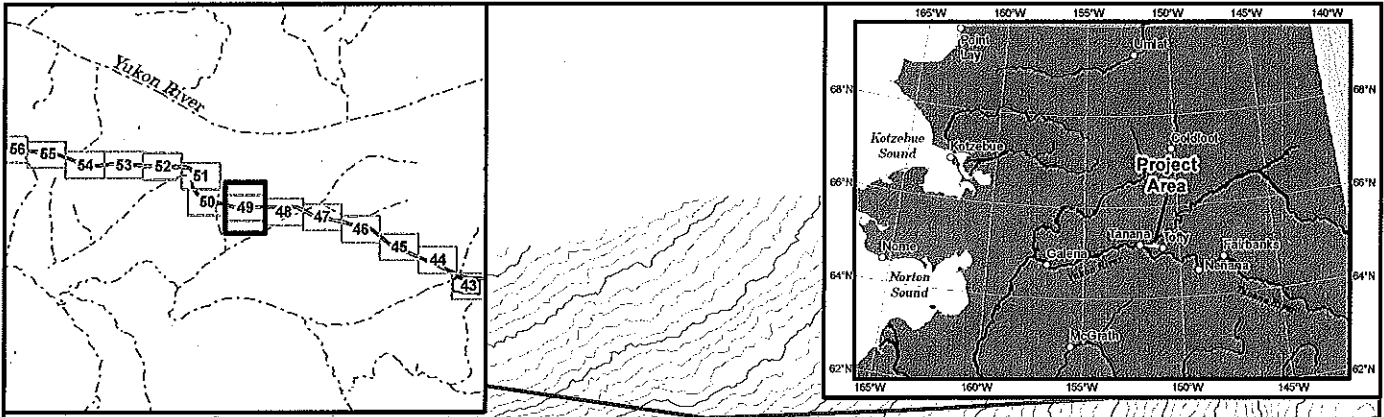
61759

Plan View, MP: 39.05 to 39.64

Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 48 of 110
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POA-2013-50, Yukon River



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Legend

Cul/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Upland	4ft Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012)
Navigable Waters	(All drainages are unnamed unless labeled on sheet)
Other Waters	
Previously Disturbed	

Scale 1:5,000
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N
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STATE OF ALASKA
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APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

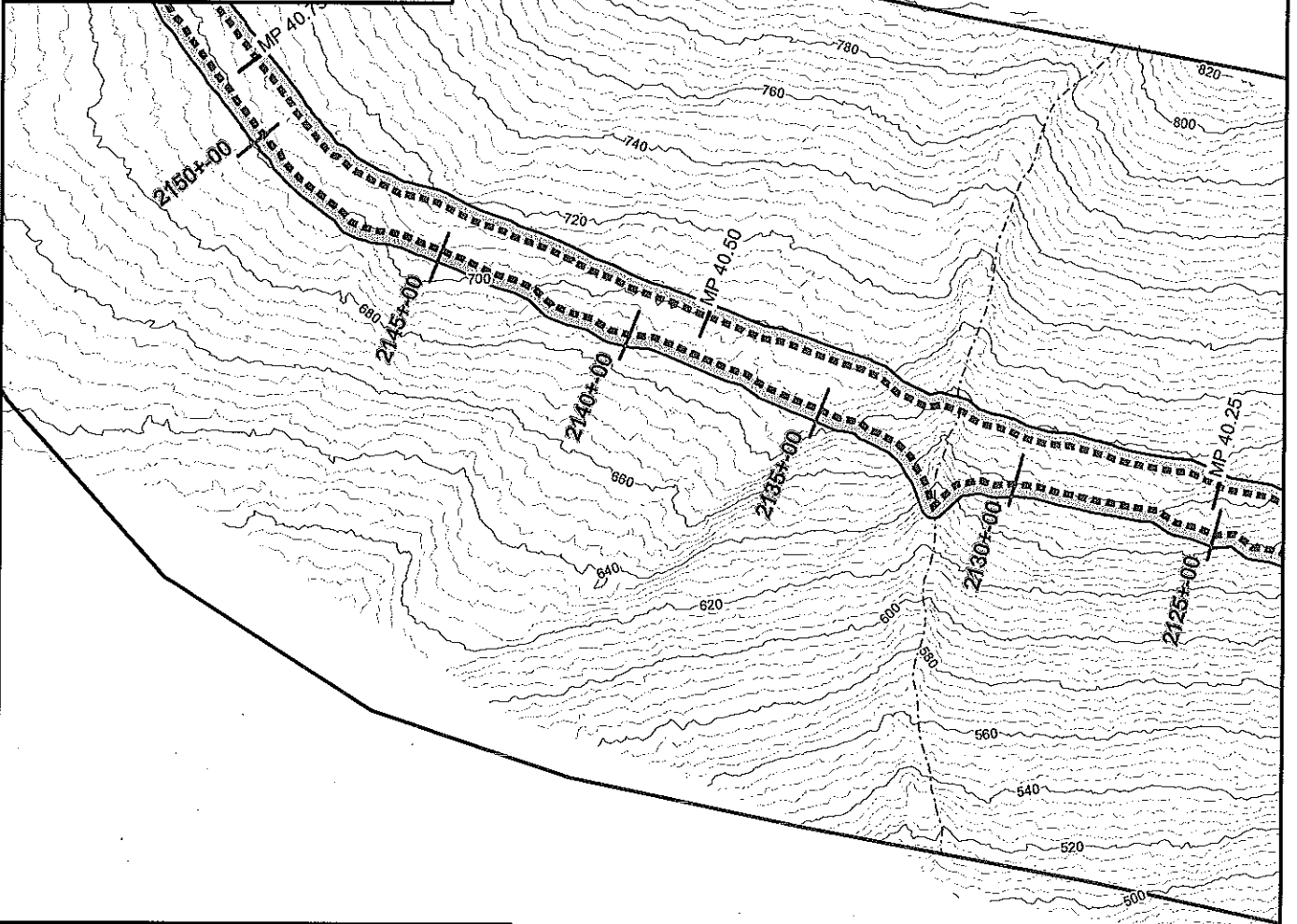
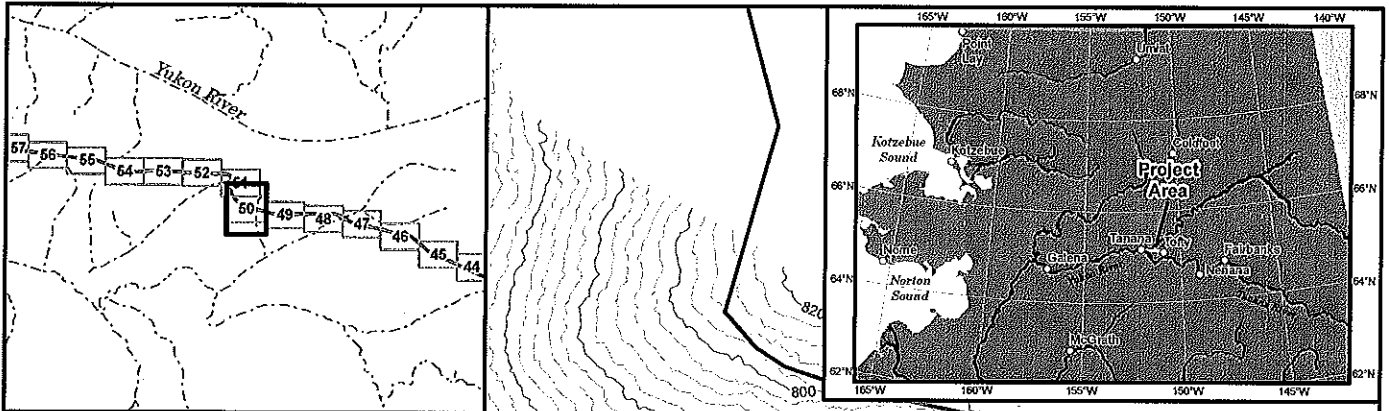
ROAD TO TANANA PROJECT

61759

Plan View, MP: 39.64 to 40.22

Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 49 of 110
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Legend

Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Upland	4ft Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012)
Navigable Waters	(All drainages are unnamed unless labeled on sheet)
Other Waters	
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
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APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

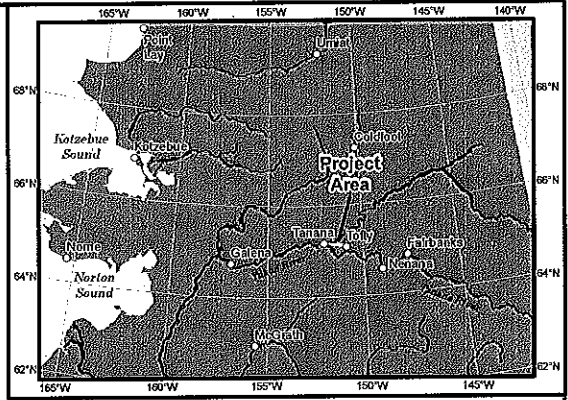
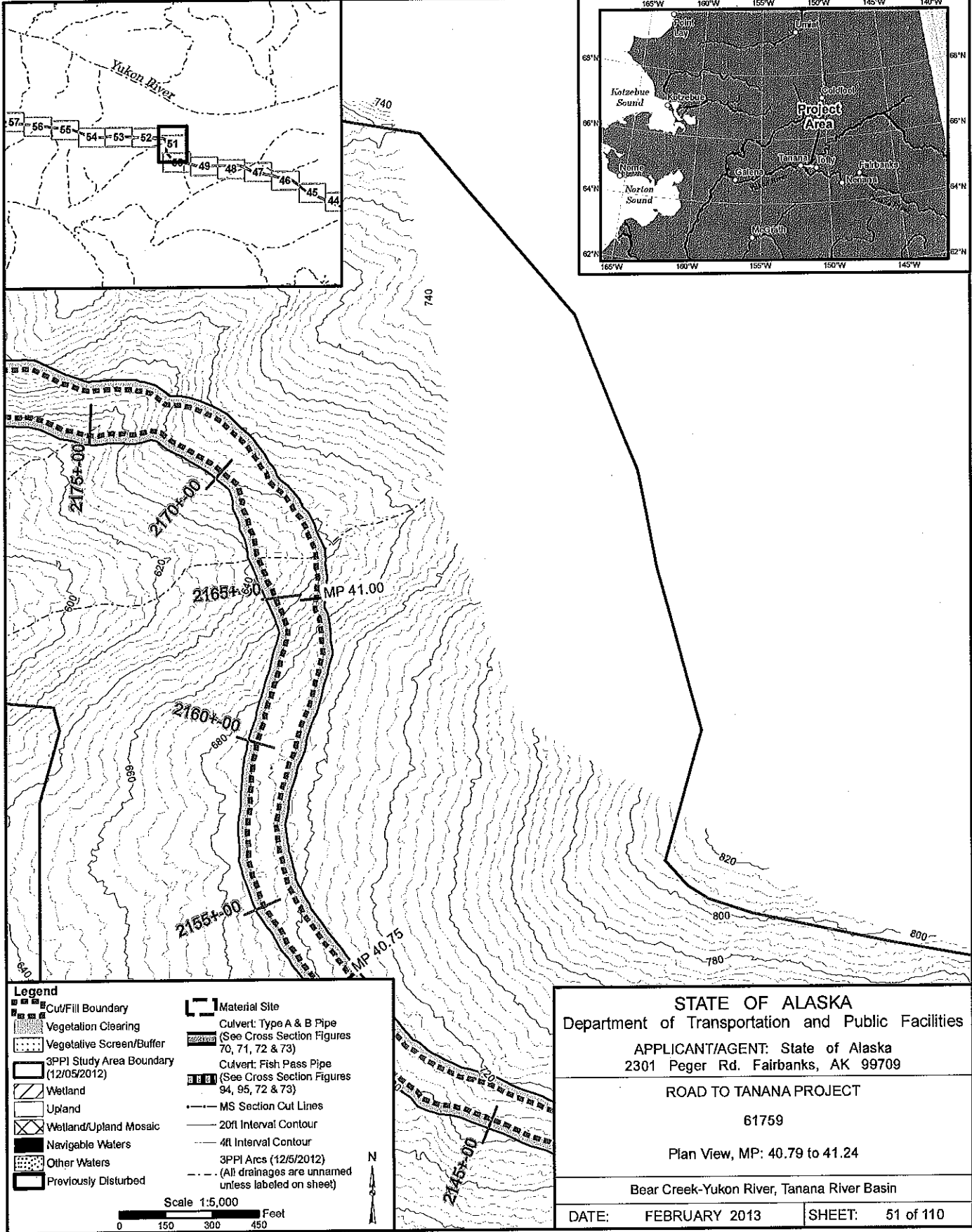
61759

Plan View, MP: 40.22 to 40.79

Tanana River Basin

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Legend

Scale 1:5,000
0 150 300 450 Feet

N

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 APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

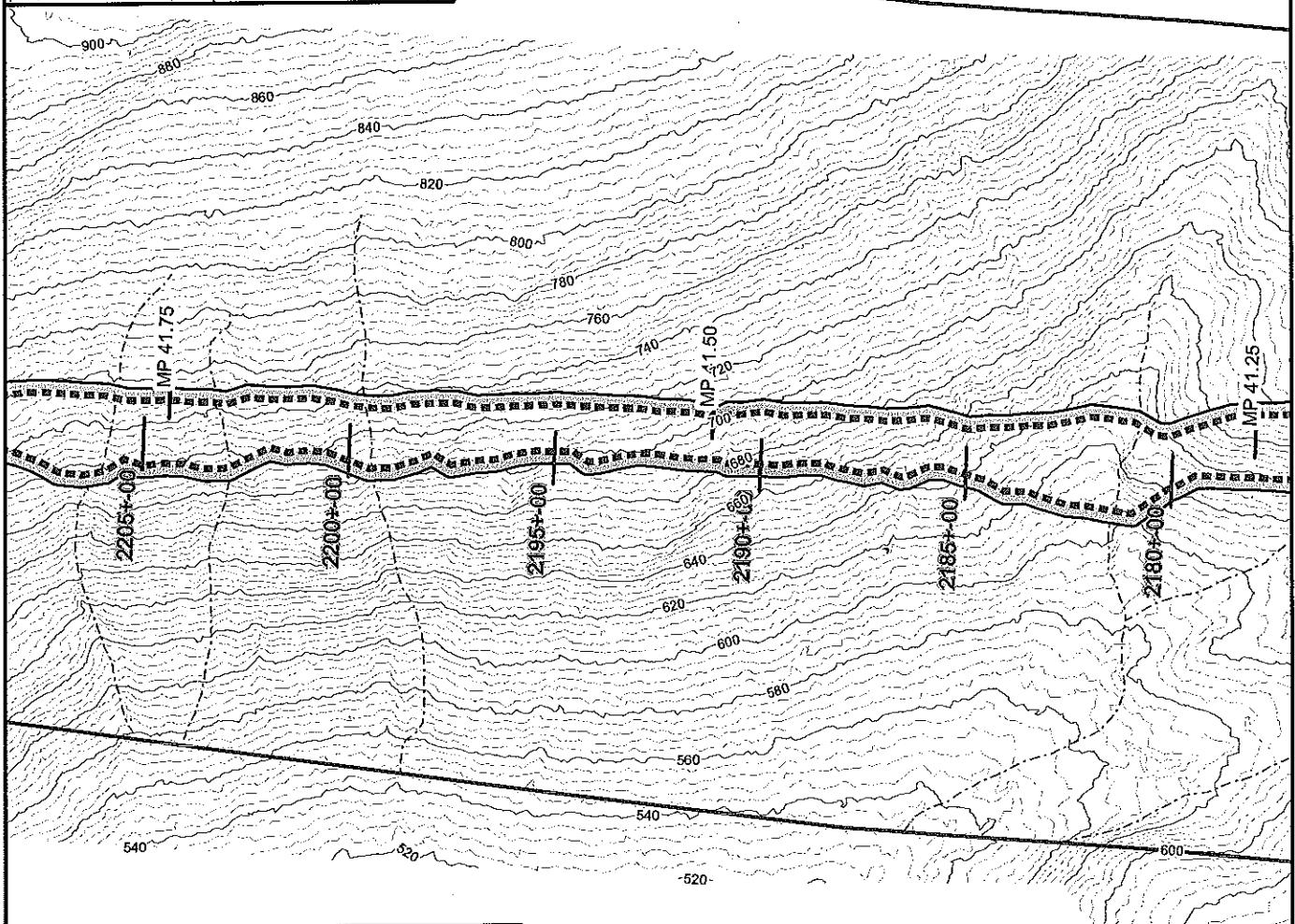
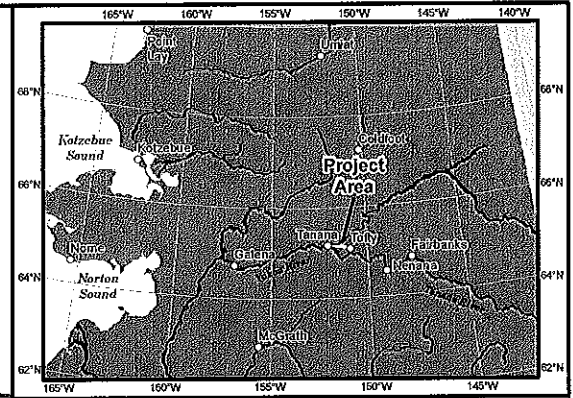
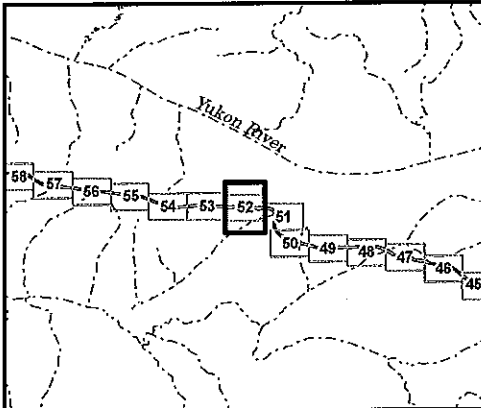
61759

Plan View, MP: 40.79 to 41.24

Bear Creek-Yukon River, Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 51 of 110
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POA-2013-50, Yukon River



Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4R Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

N

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Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

61759

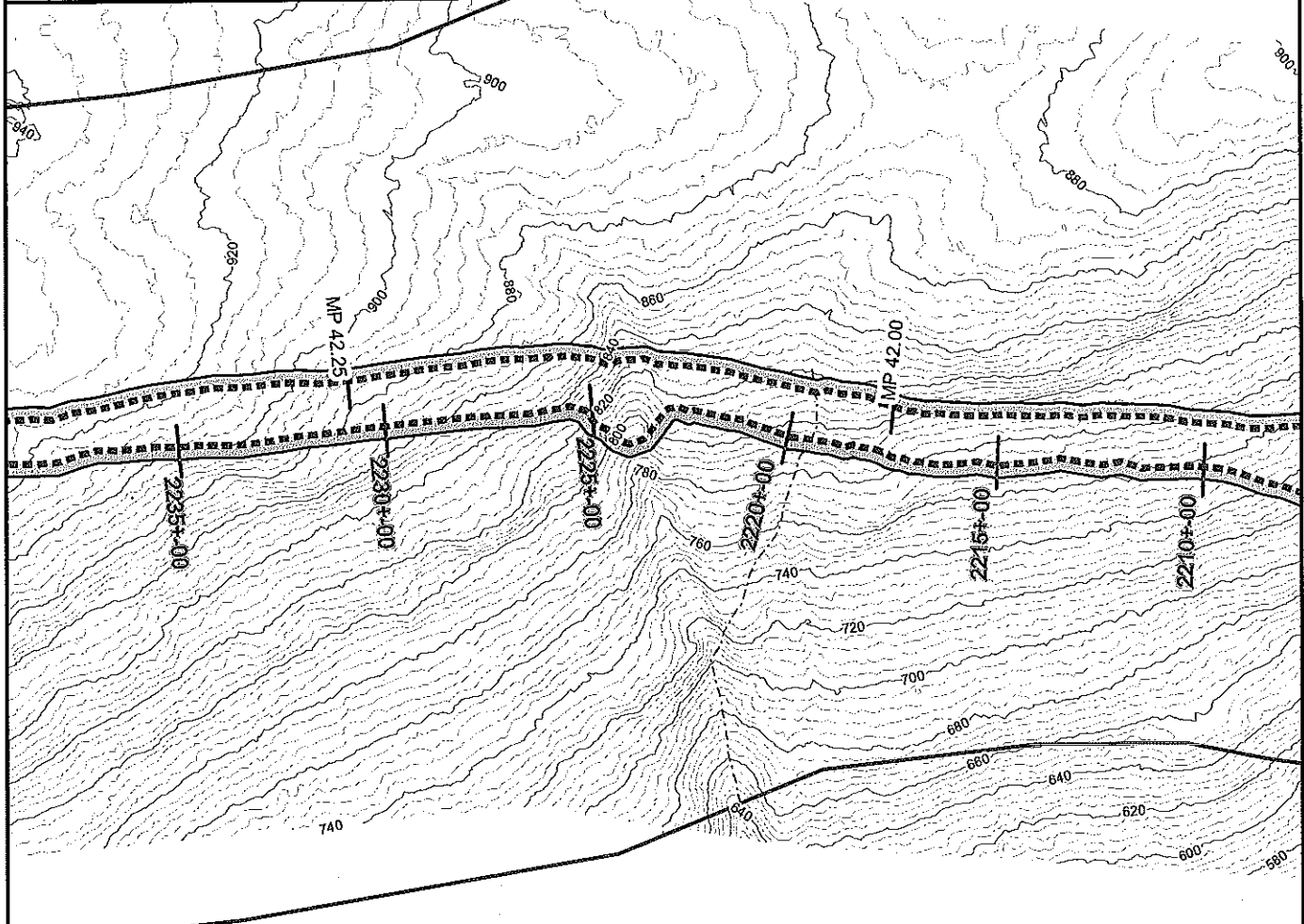
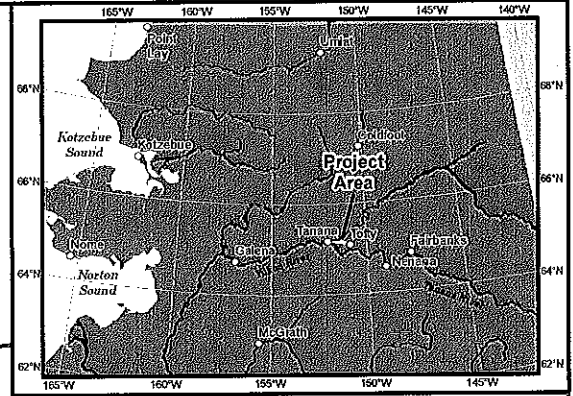
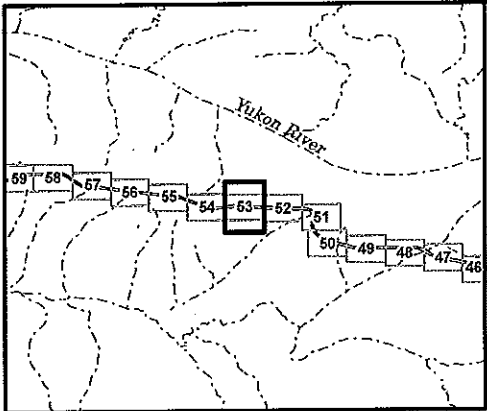
Plan View, MP: 41.24 to 41.82

Bear Creek-Yukon River, Tanana River Basin

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POA-2013-50, Yukon River



Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012)
	Navigable Waters		(All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
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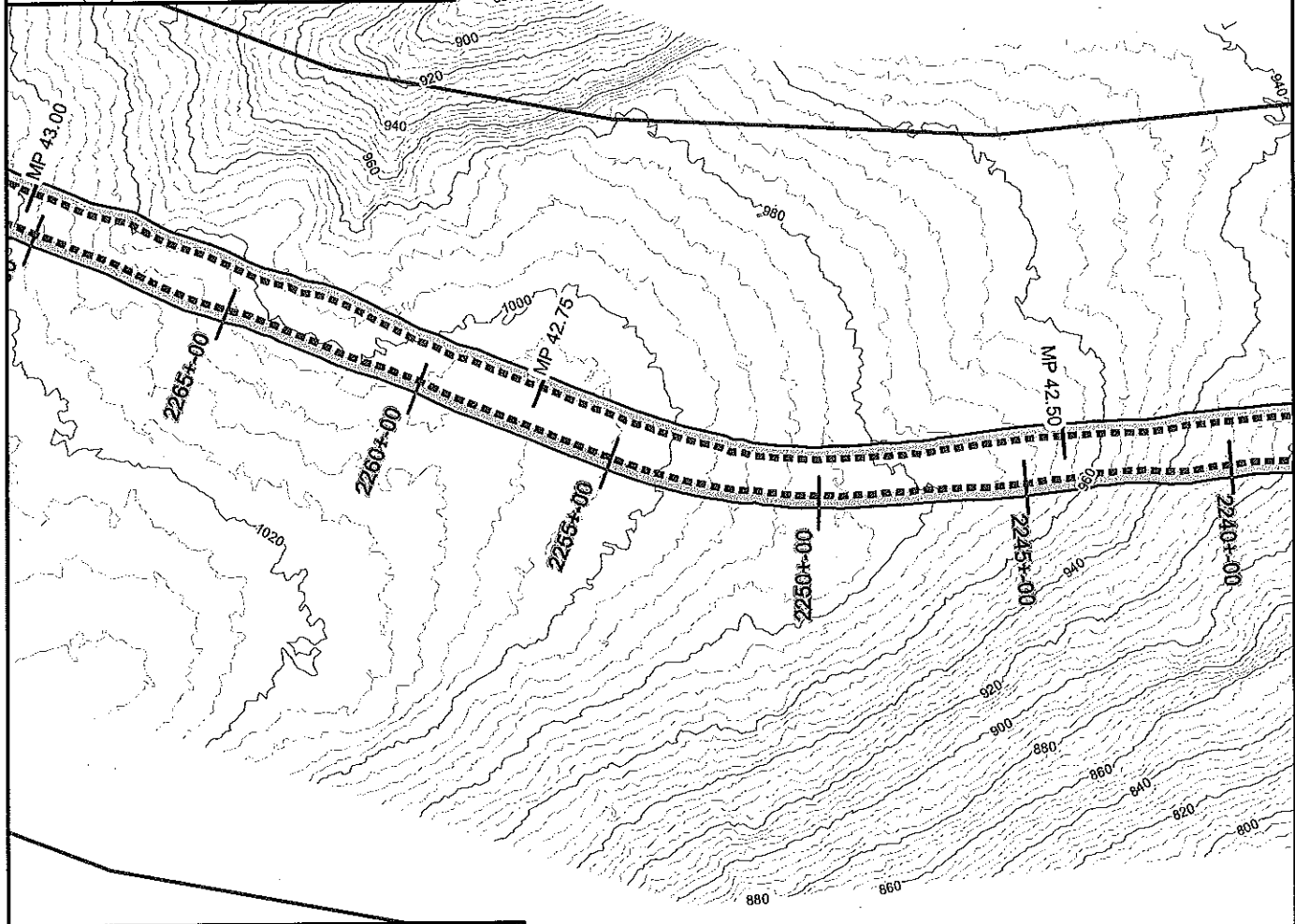
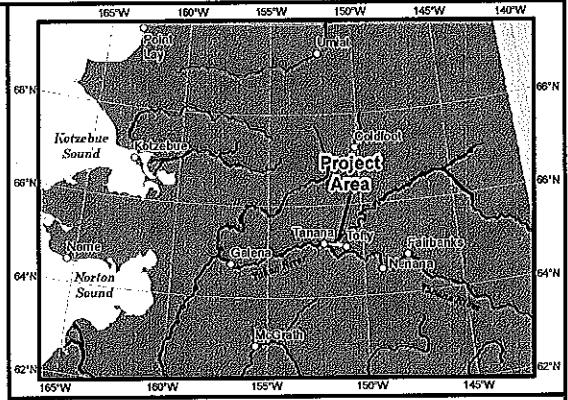
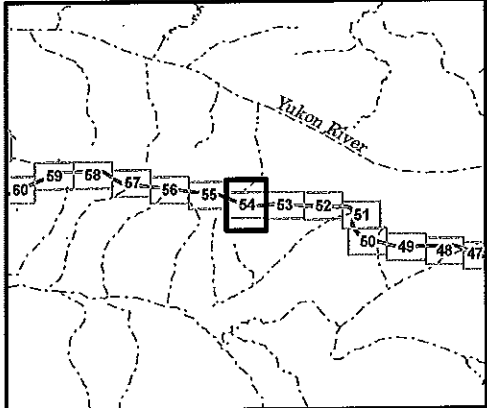
APPLICANT/AGENT: State of Alaska
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ROAD TO TANANA PROJECT
61759
Plan View, MP: 41.82 to 42.4

Bear Creek-Yukon River, Tanana River Basin

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Legend

Scale 1:5,000
0 150 300 450 Feet

N

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APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

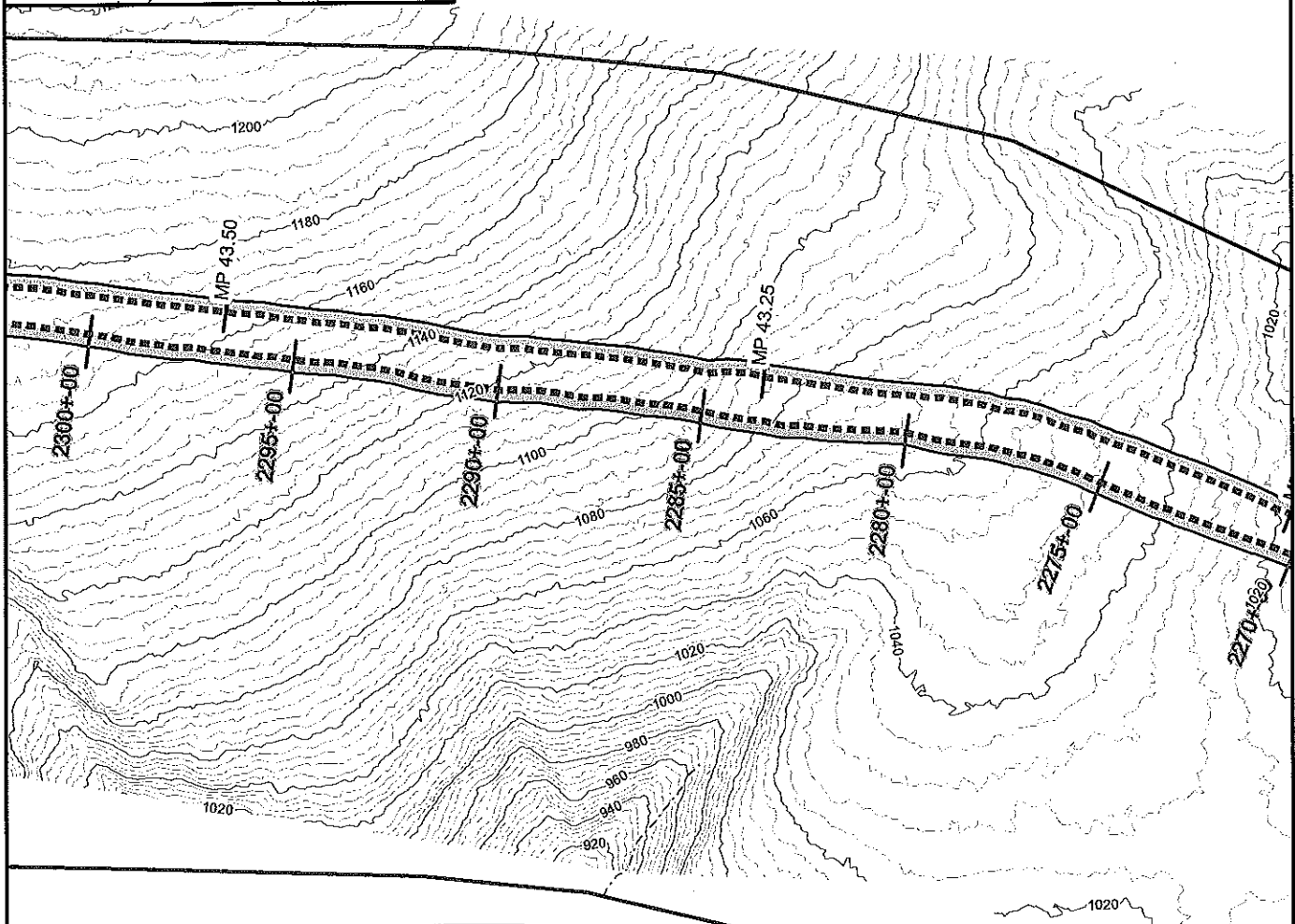
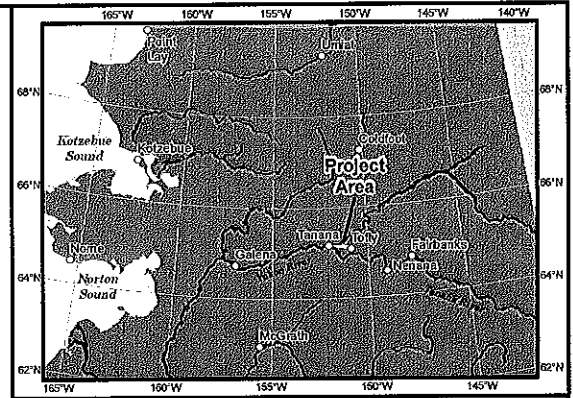
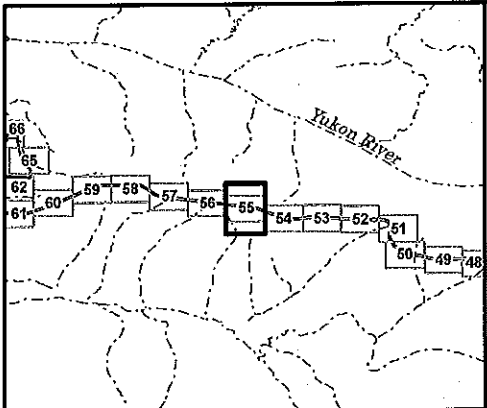
61759

Plan View, MP: 42.4 to 43

Bear Creek-Yukon River, Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 54 of 110
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POA-2013-50, Yukon River



Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012)
	Navigable Waters		(All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

61759

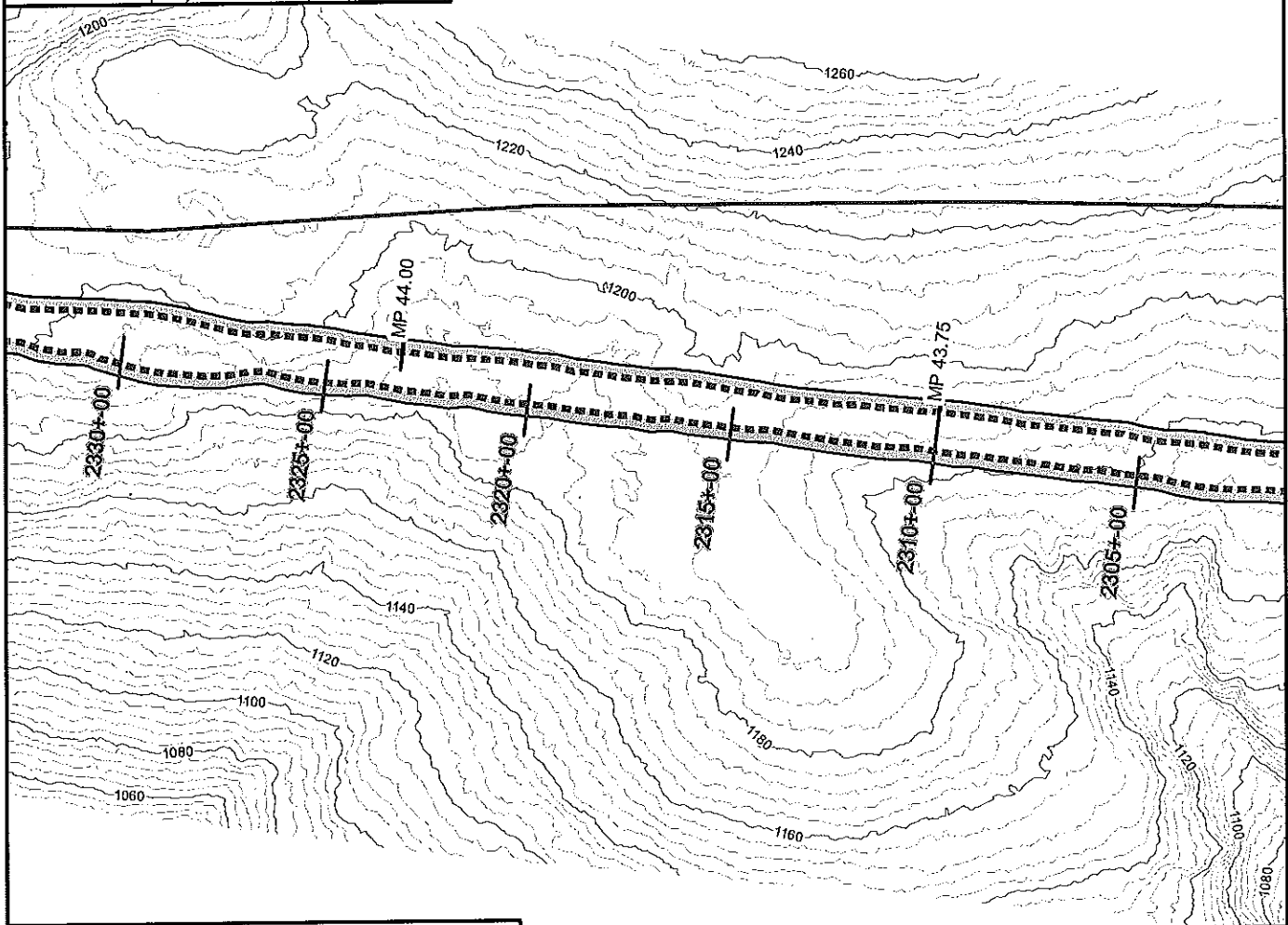
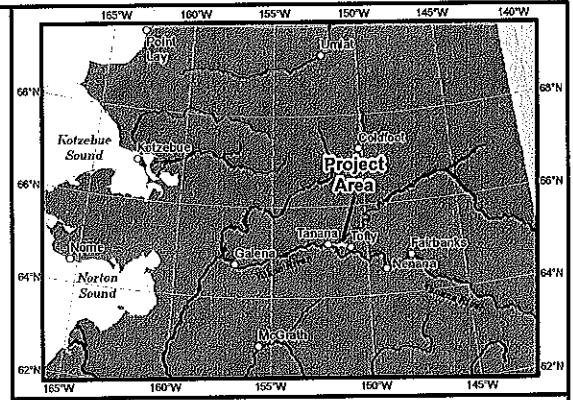
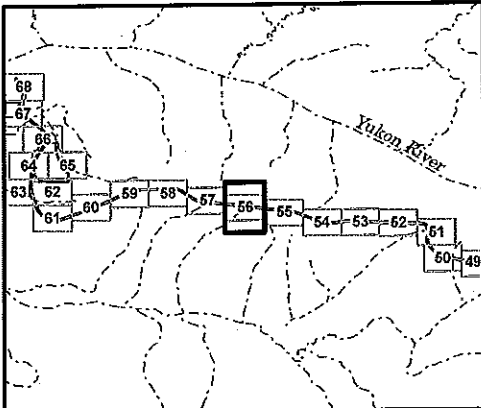
Plan View, MP: 43 to 43.59

Bear Creek-Yukon River, Tanana River Basin

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POA-2013-50, Yukon River



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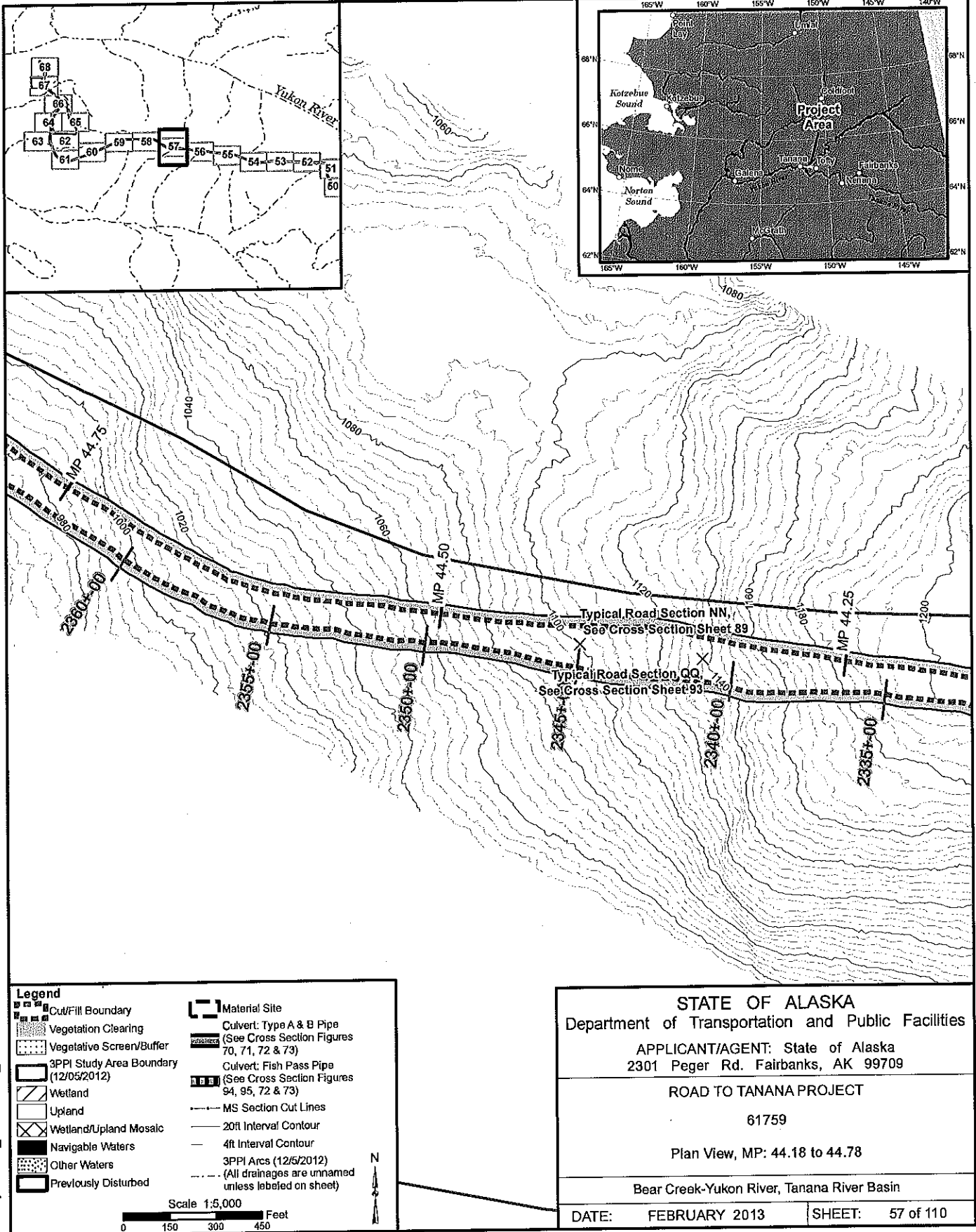
Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA PROJECT 61759 Plan View, MP: 43.59 to 44.18	
Bear Creek-Yukon River, Tanana River Basin	
DATE: FEBRUARY 2013	SHEET: 56 of 110



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Legend

	Culvert Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/6/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

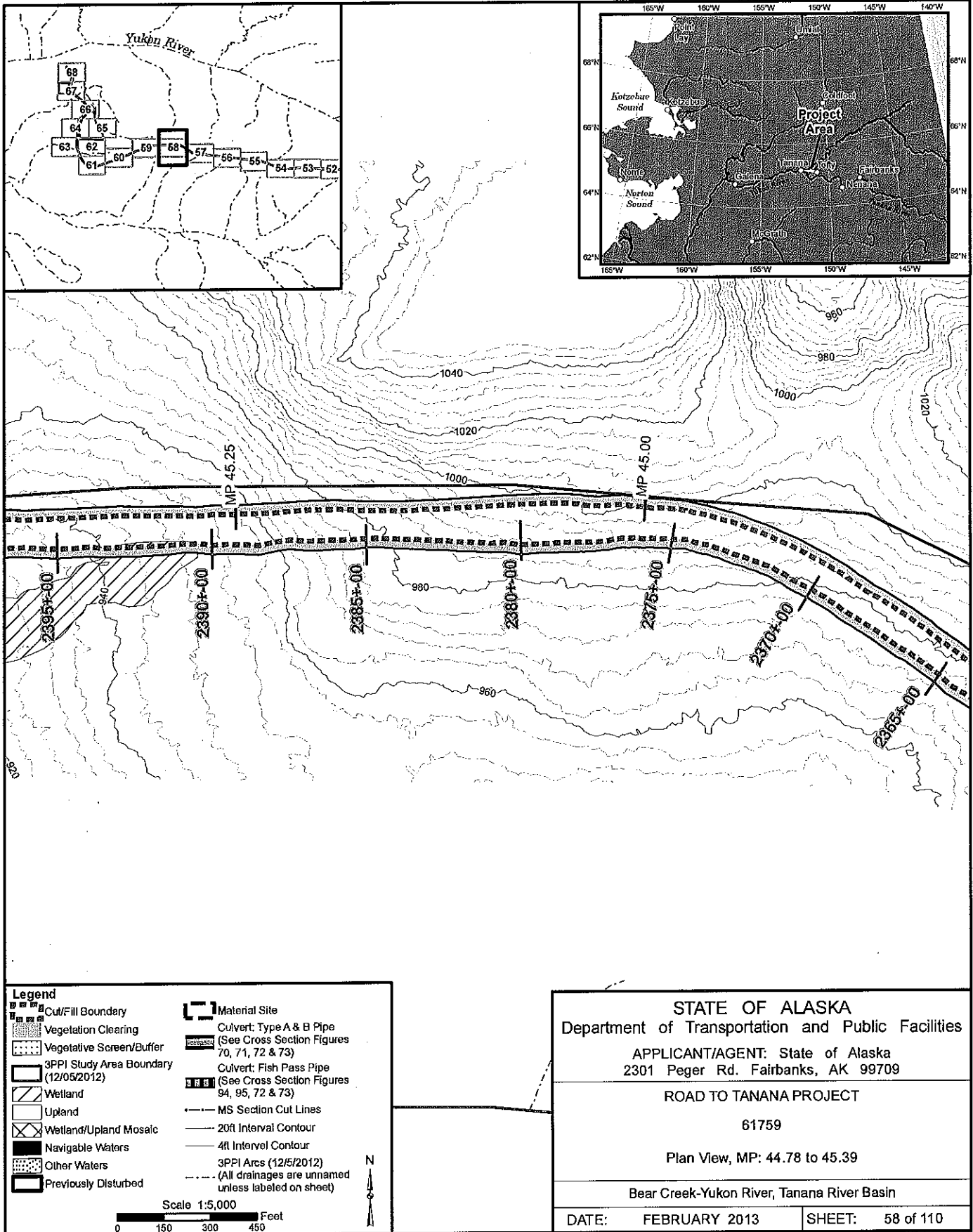
ROAD TO TANANA PROJECT

61759

Plan View, MP: 44.18 to 44.78

Bear Creek-Yukon River, Tanana River Basin

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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4R Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

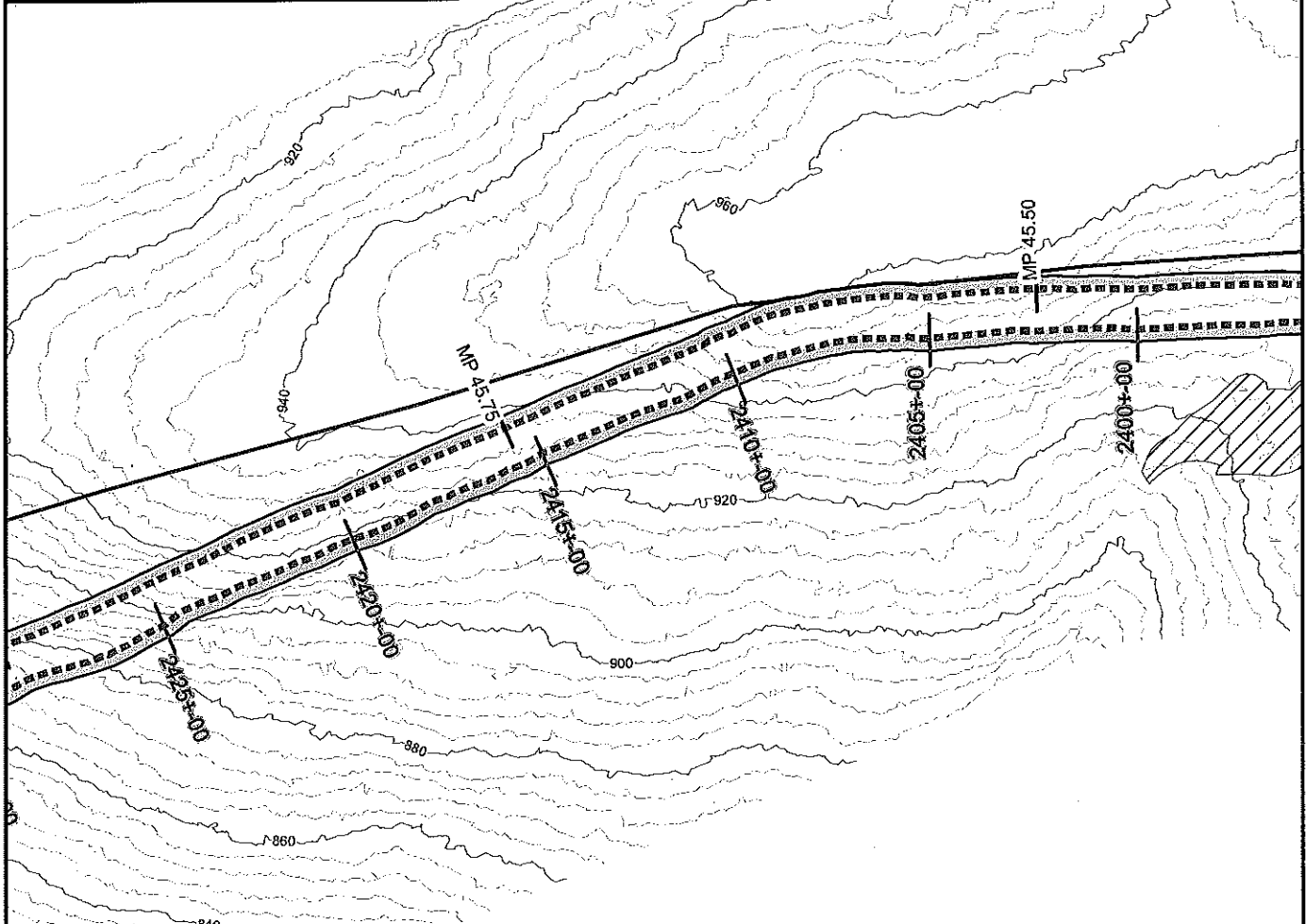
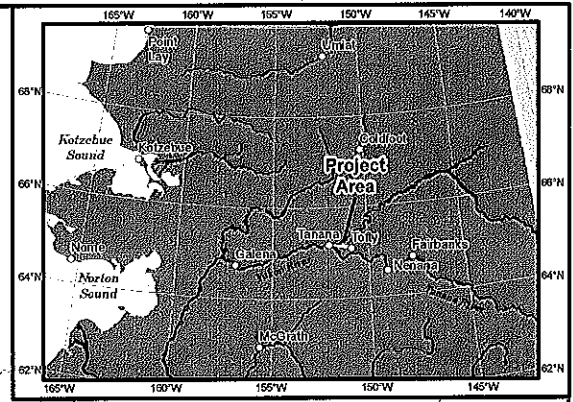
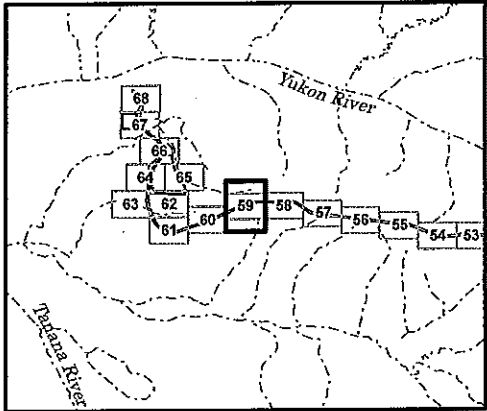
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Plan View, MP: 44.78 to 45.39

Bear Creek-Yukon River, Tanana River Basin

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POA-2013-50, Yukon River



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Legend

Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Upland	4ft Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012)
Navigable Waters	(All drainages are unnamed unless labeled on sheet)
Other Waters	
Previously Disturbed	

Scale 1:5,000

0 150 300 450 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

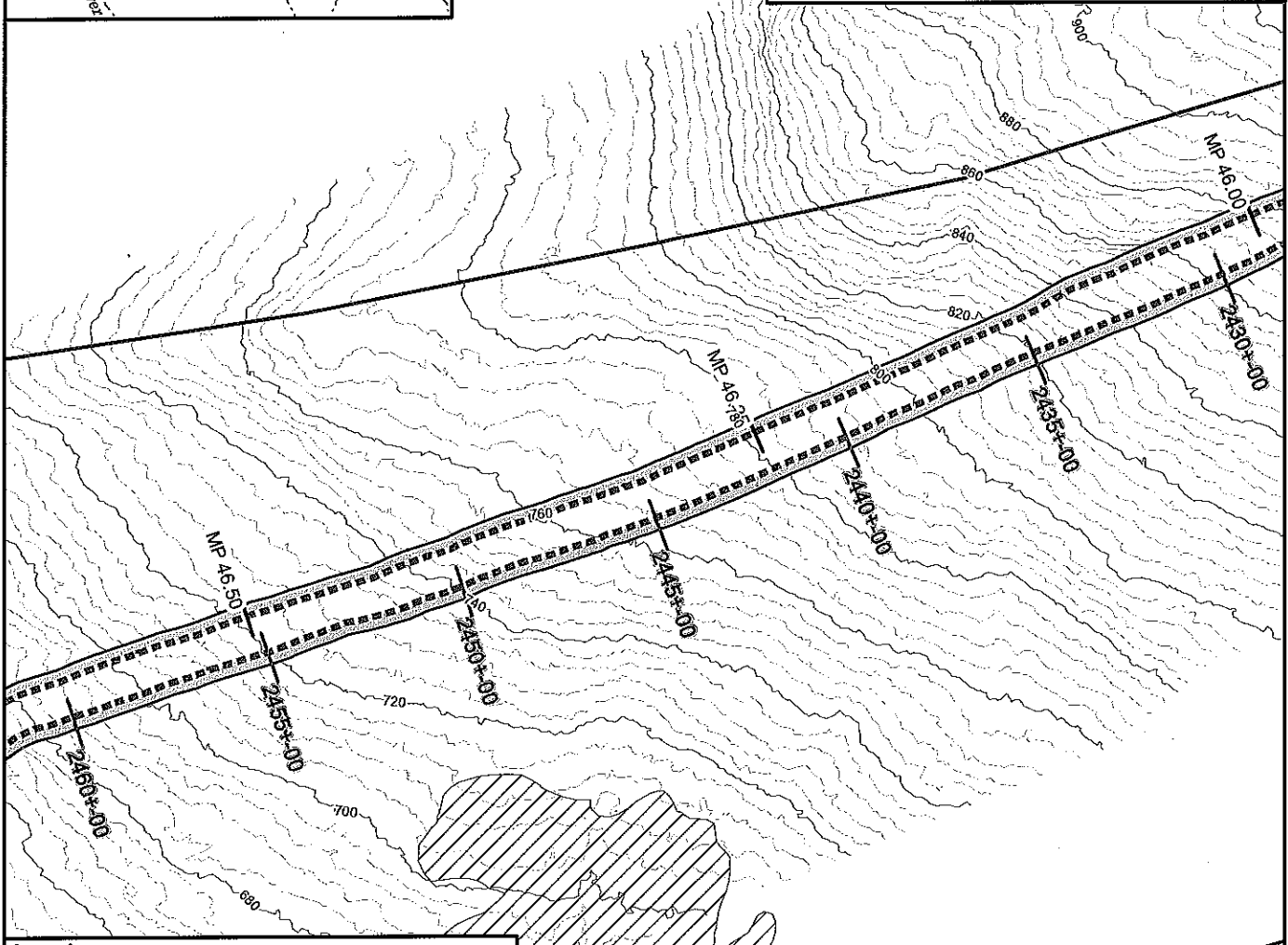
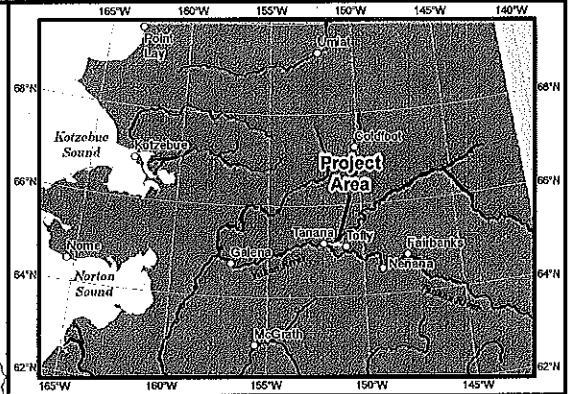
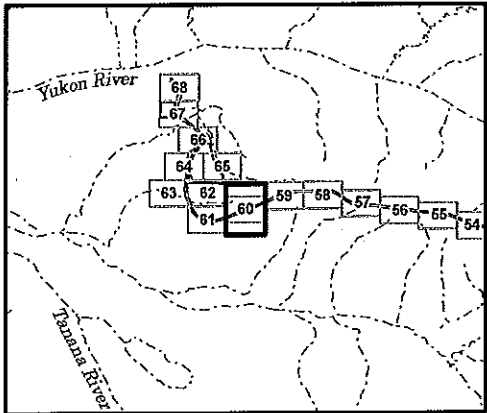
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Plan View, MP: 45.39 to 45.99

Tanana River Basin

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POA-2013-50, Yukon River



Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012)
	Navigable Waters		(All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

Scale 1:5,000 Feet
0 150 300 450

N

STATE OF ALASKA
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APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

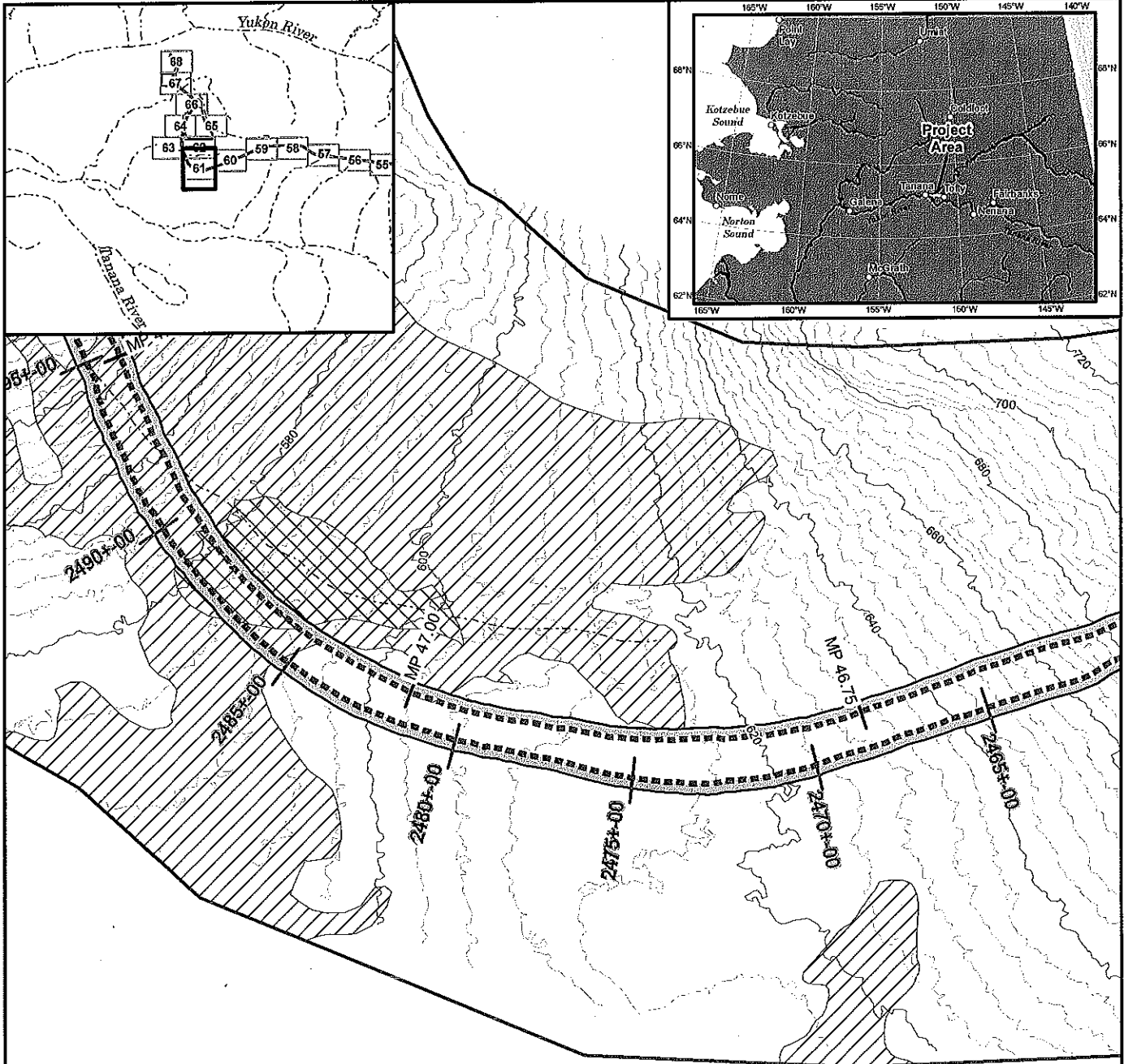
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Plan View, MP: 45.99 to 46.61

Tanana River Basin

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Legend

Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20R Interval Contour
Upland	4R Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
Navigable Waters	
Other Waters	
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

N

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APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

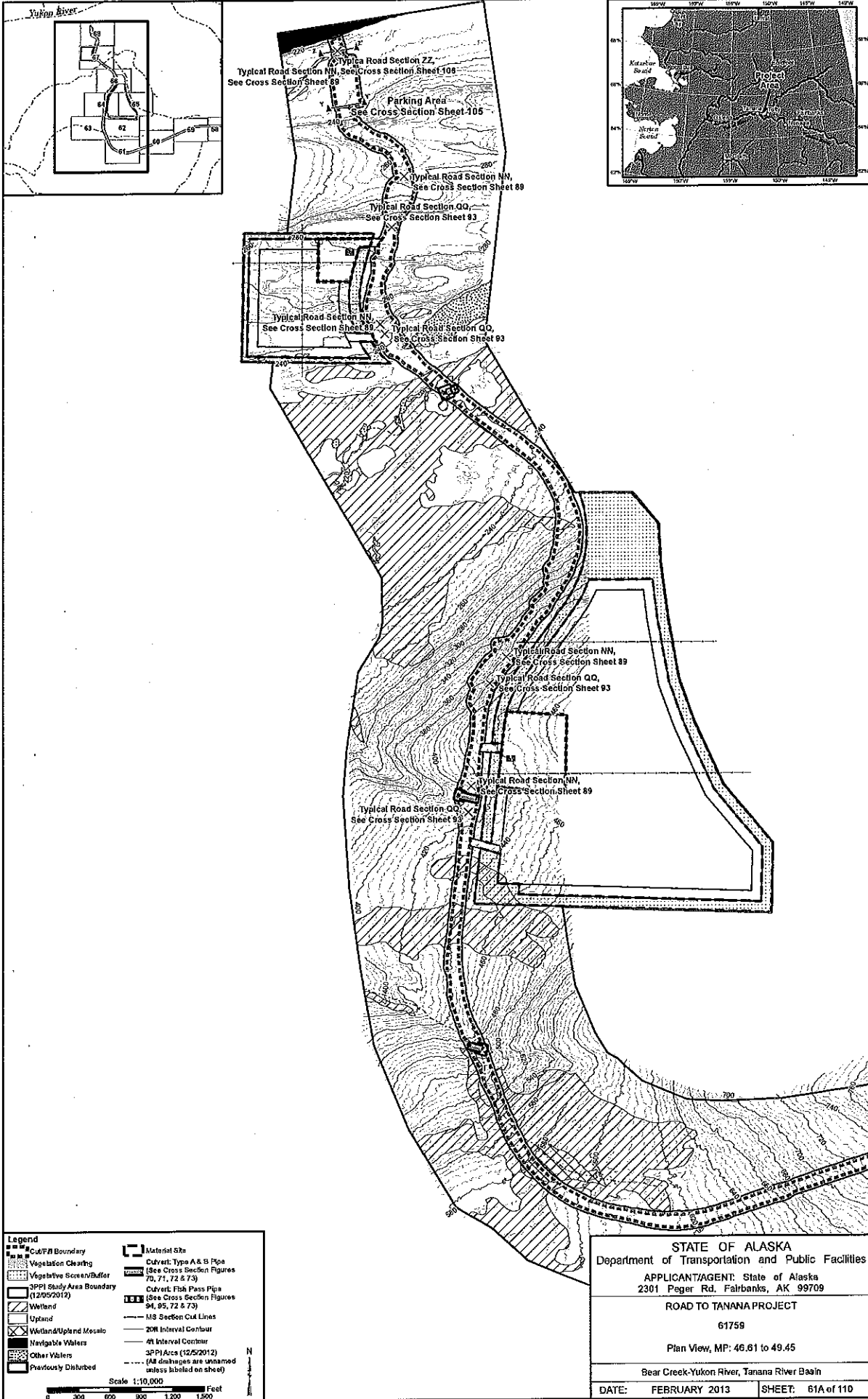
ROAD TO TANANA PROJECT

61759

Plan View, MP: 46.61 to 47.26

Tanana River Basin

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Legend

C&FB Boundary	Material SRs
Vegetation Clearing	Cutvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Cutvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20R Interval Contour
Upland	4R Interval Contour
Wetland/Upland Mesalo	3PPI Arcs (12/5/2012) (All dm shapes are unnamed unless labeled on sheet)
Navigable Waters	
Other Waters	
Previously Disturbed	

Scale 1:10,000

0 300 600 900 1,200 1,500 Feet

STATE OF ALASKA
 Department of Transportation and Public Facilities
 APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

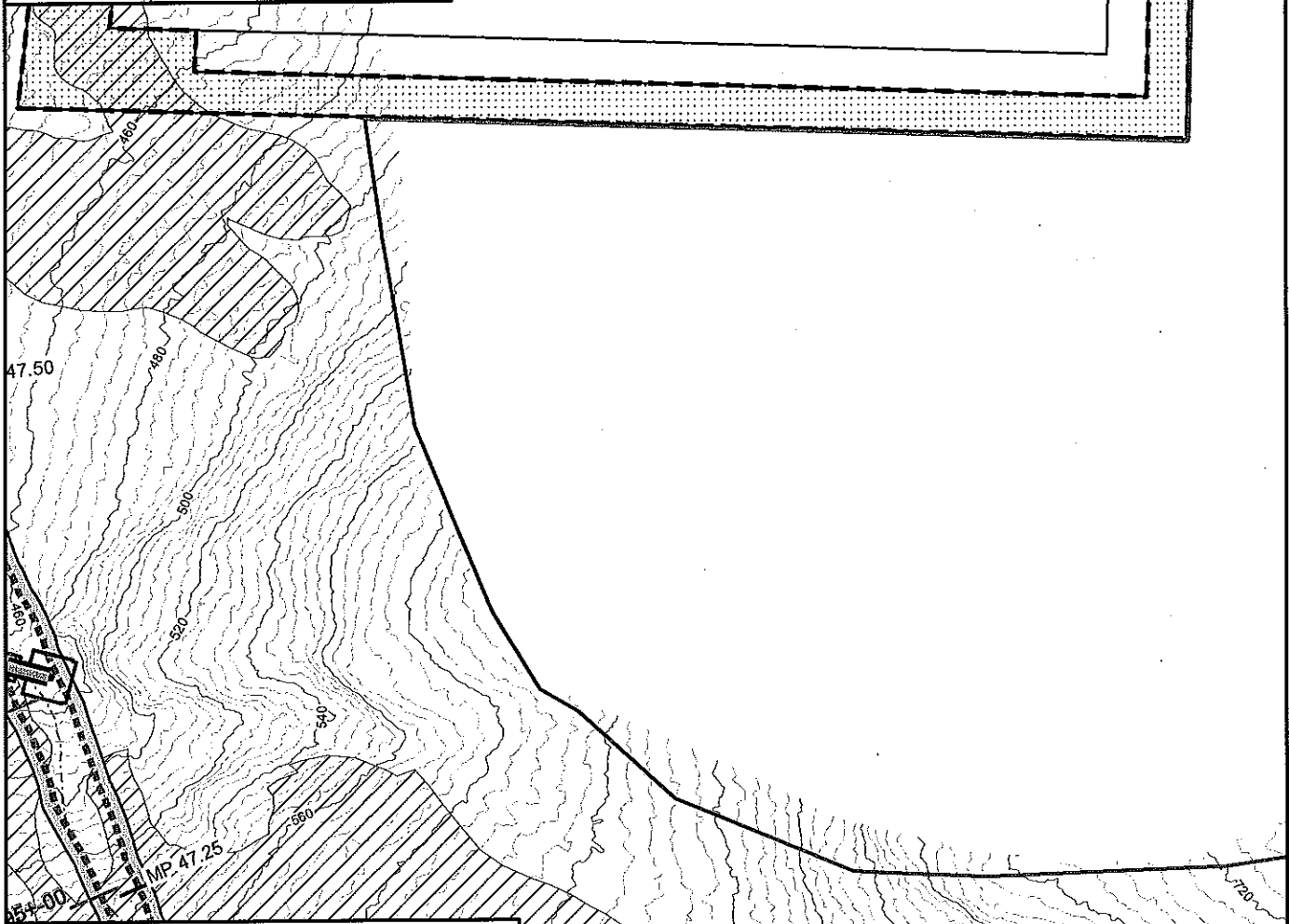
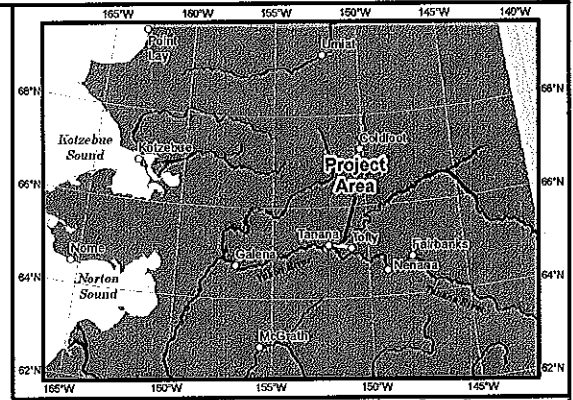
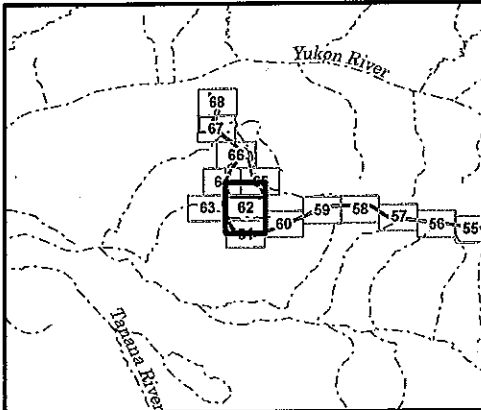
ROAD TO TANANA PROJECT

61759

Plan View, MP: 46.61 to 49.45

Bear Creek-Yukon River, Tanana River Basin

DATE: FEBRUARY 2013 SHEET: 61A of 110



Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

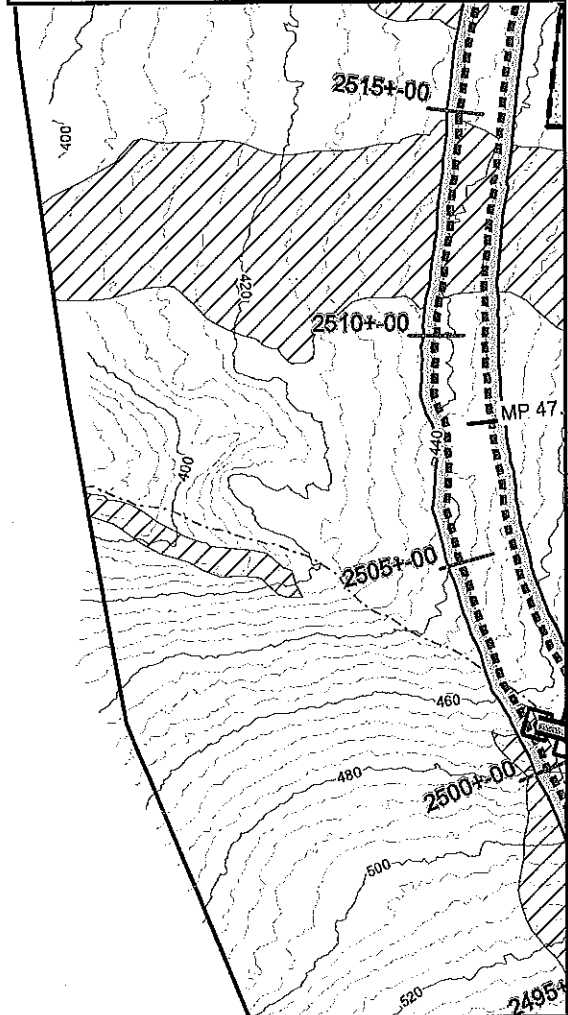
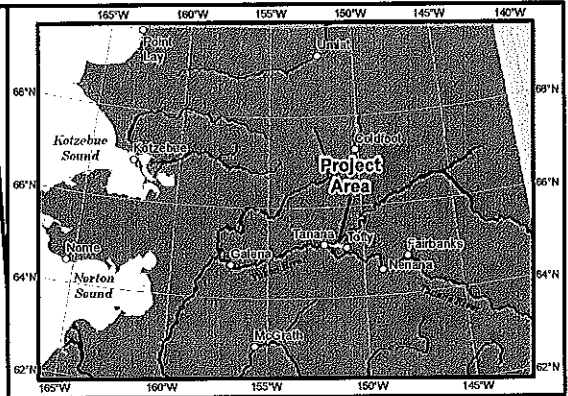
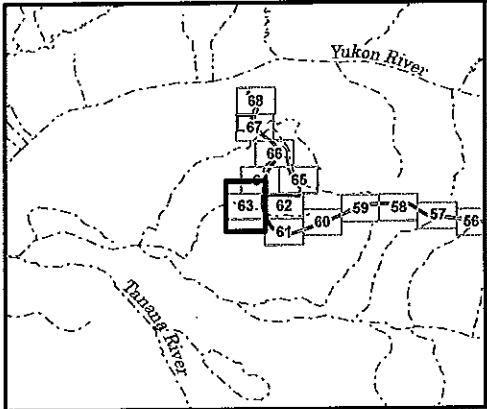
61759

Plan View, MP: 47.26 to 47.37

Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 62 of 110
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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Wetland/Upland Mosaic		4ft Interval Contour
	Navigable Waters		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

Scale 1:5,000

0 150 300 450 Feet

N

STATE OF ALASKA
 Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

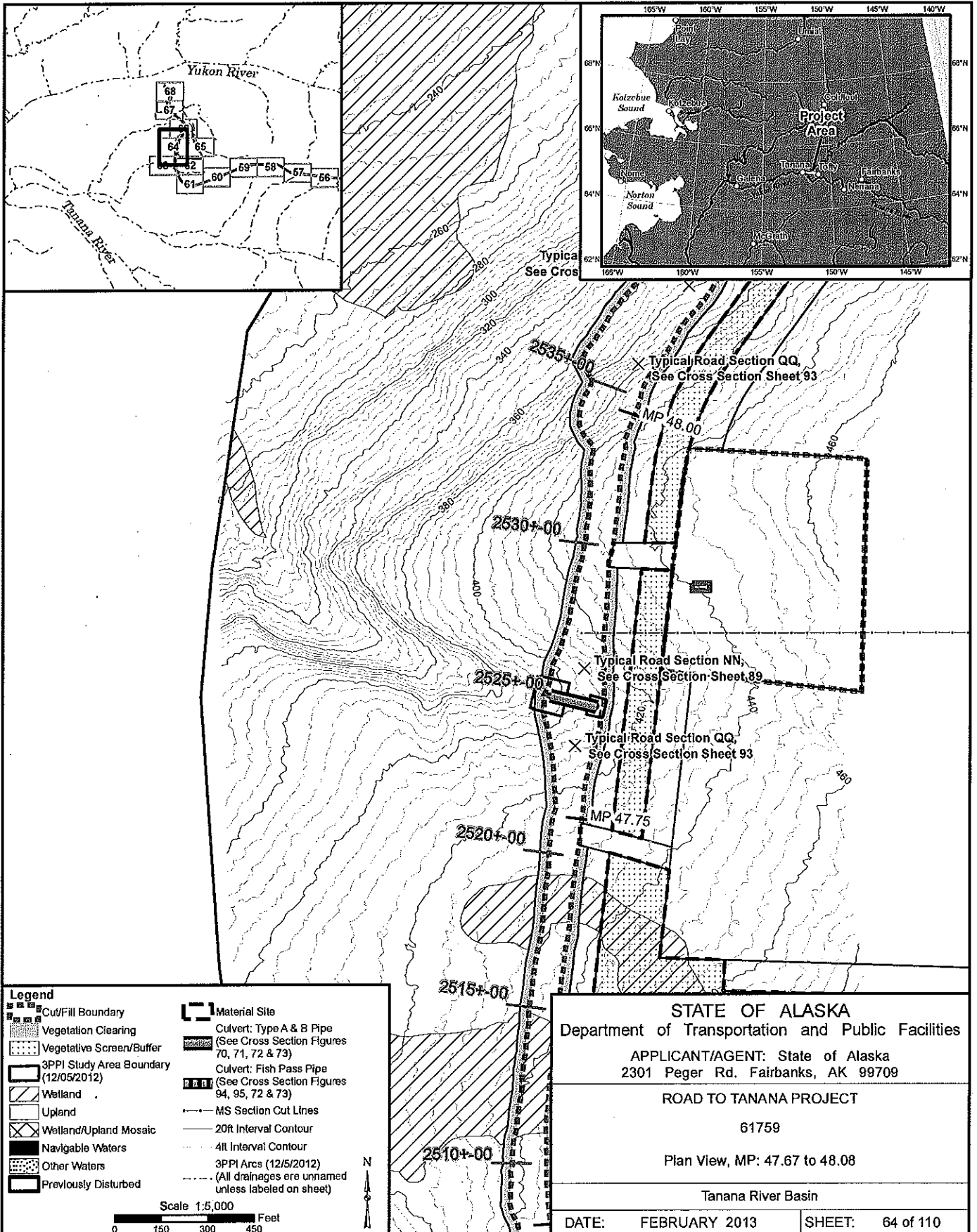
61759

Plan View, MP: 47.37 to 47.67

Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 63 of 110
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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
 Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

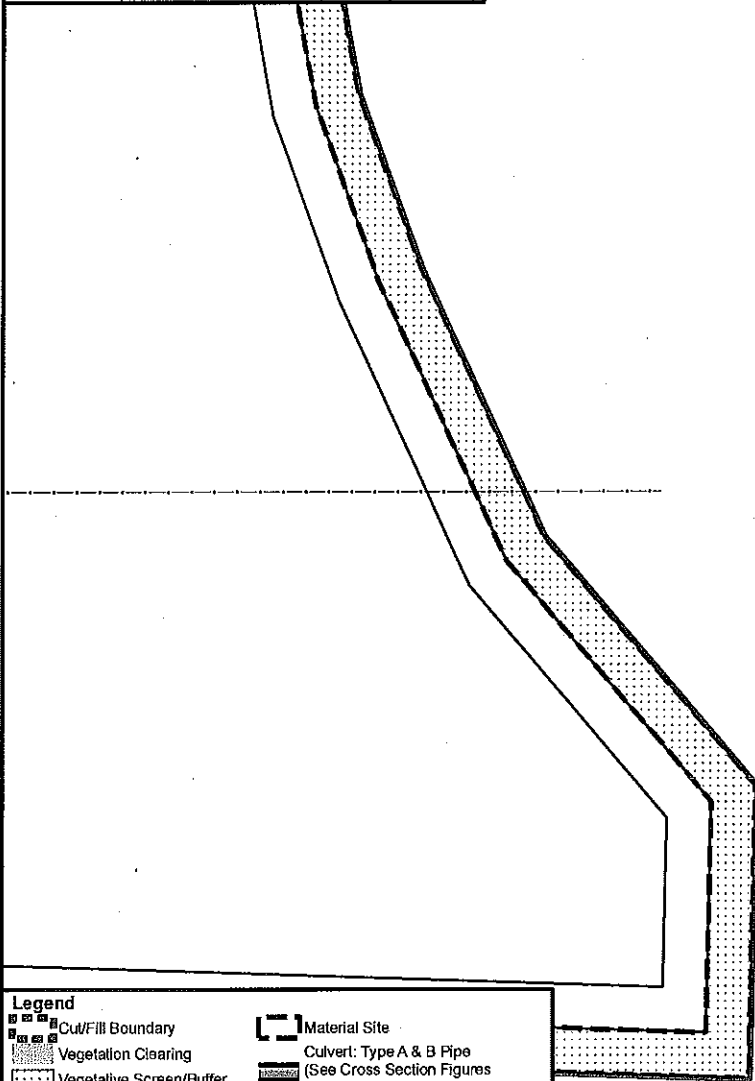
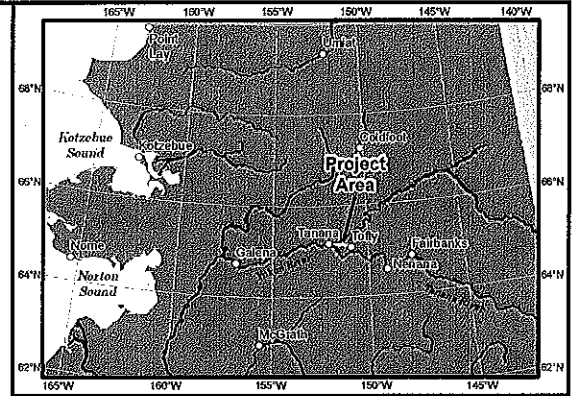
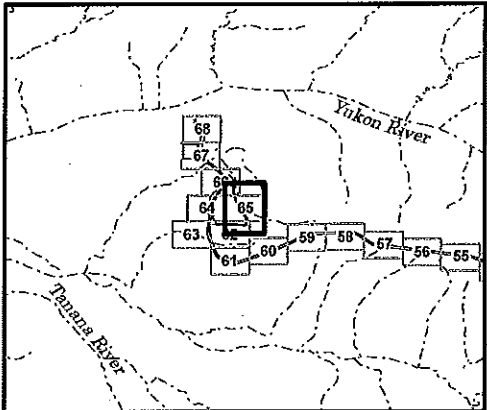
61759

Plan View, MP: 47.67 to 48.08

Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 64 of 110
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POA-2013-50, Yukon River



Legend

Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20R Interval Contour
Upland	4R Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012)
Navigable Waters	(All drainages are unnamed unless labeled on sheet)
Other Waters	
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

61759

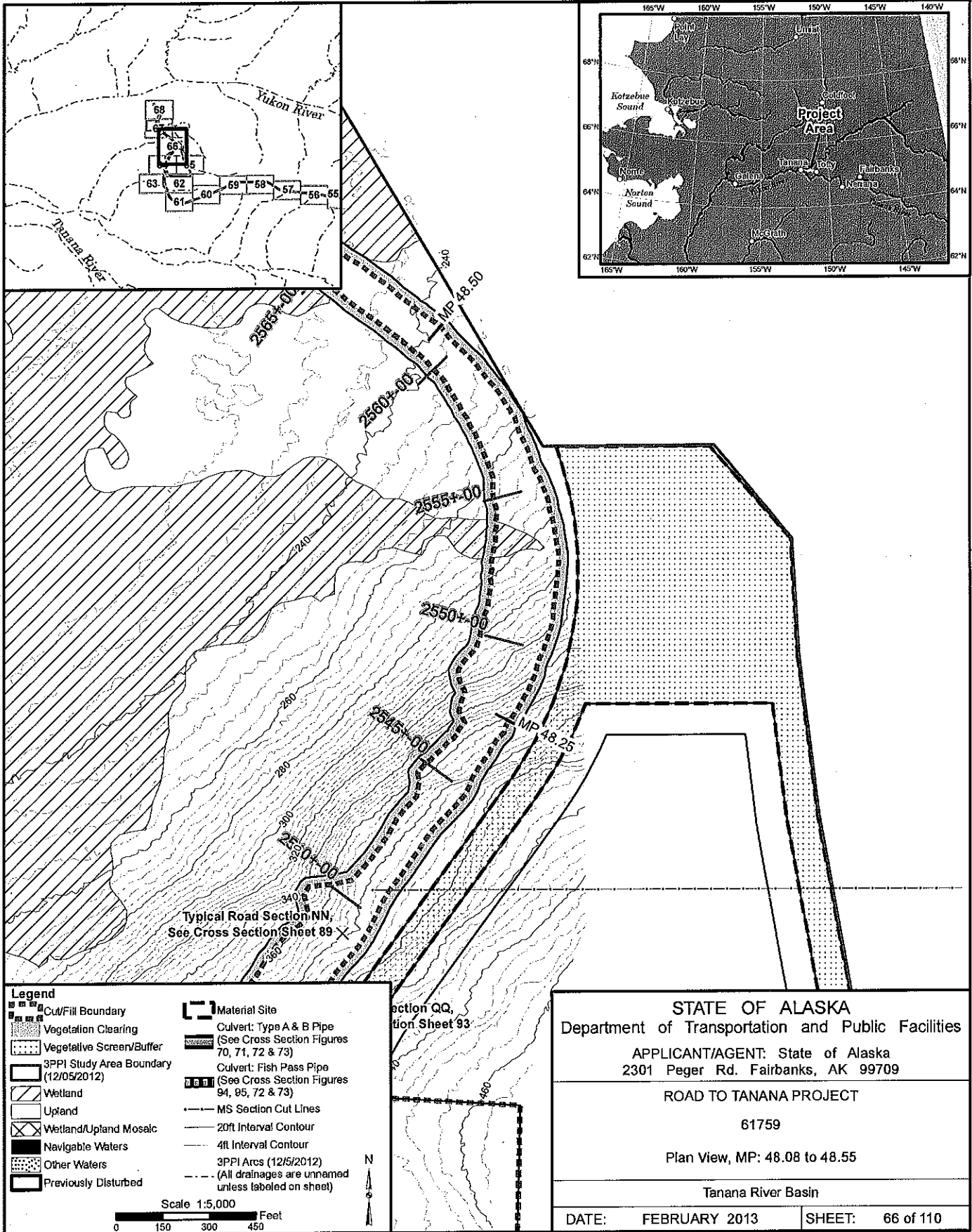
Plan View, MP: n/a

Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 65 of 110
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POA-2013-50, Yukon River



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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20ft Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012)
	Navigable Waters		(All drainages are unnamed unless labeled on sheet)
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

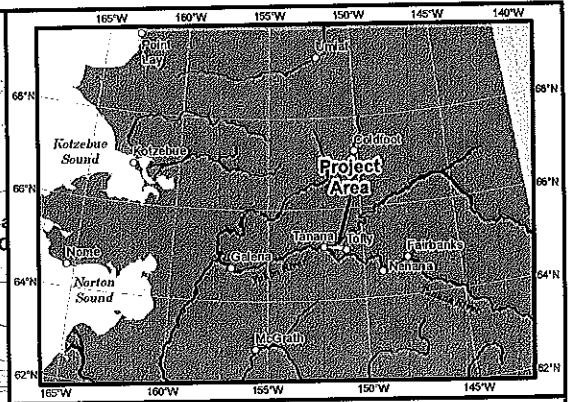
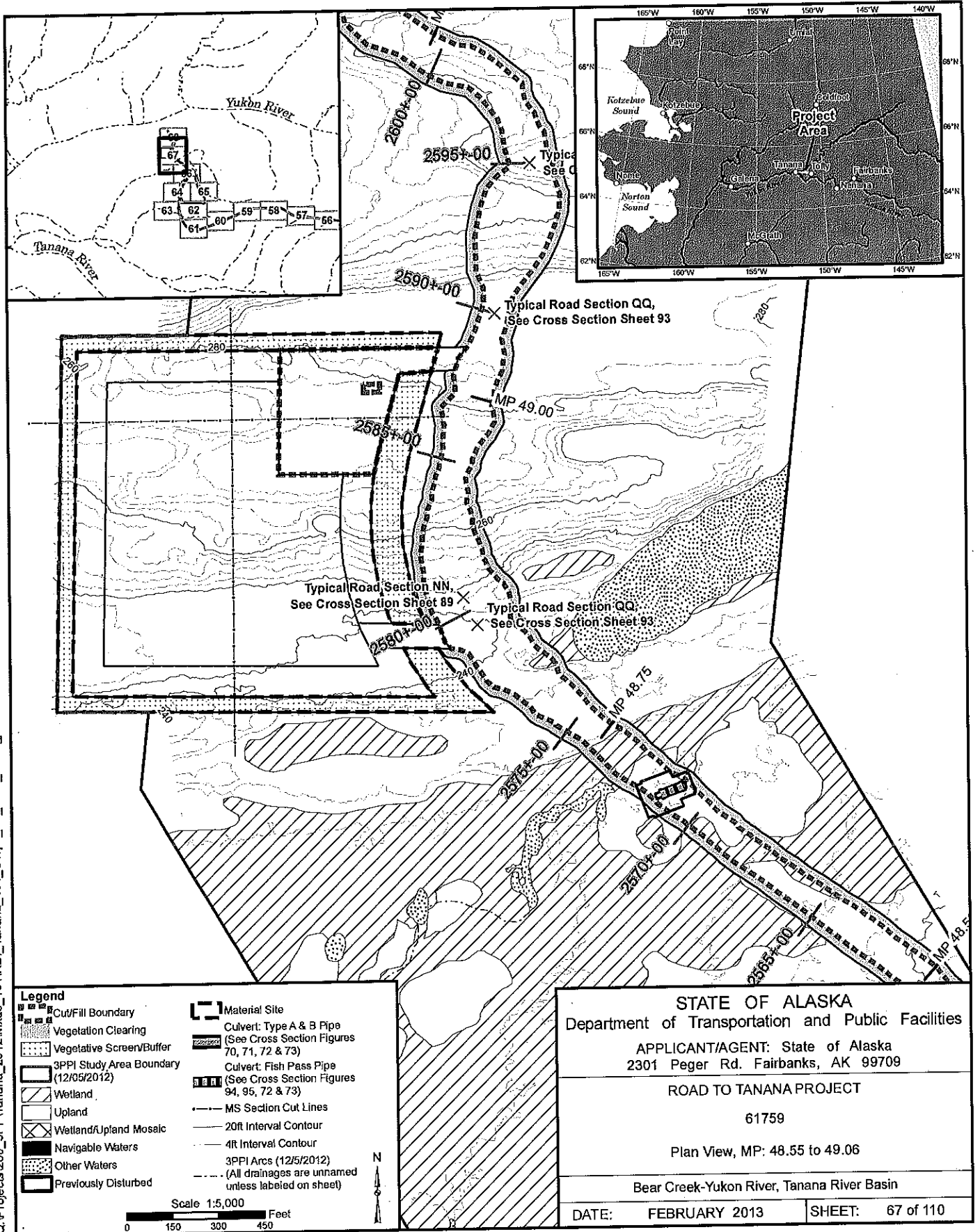
ROAD TO TANANA PROJECT

61759

Plan View, MP: 48.08 to 48.55

Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 66 of 110
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Legend

Cut/Fill Boundary	Material Site
Vegetation Clearing	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetative Screen/Buffer	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
3PPI Study Area Boundary (12/05/2012)	MS Section Cut Lines
Wetland	20ft Interval Contour
Upland	4ft Interval Contour
Wetland/Upland Mosaic	3PPI Arcs (12/5/2012)
Navigable Waters	(All drainages are unnamed unless labeled on sheet)
Other Waters	
Previously Disturbed	

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

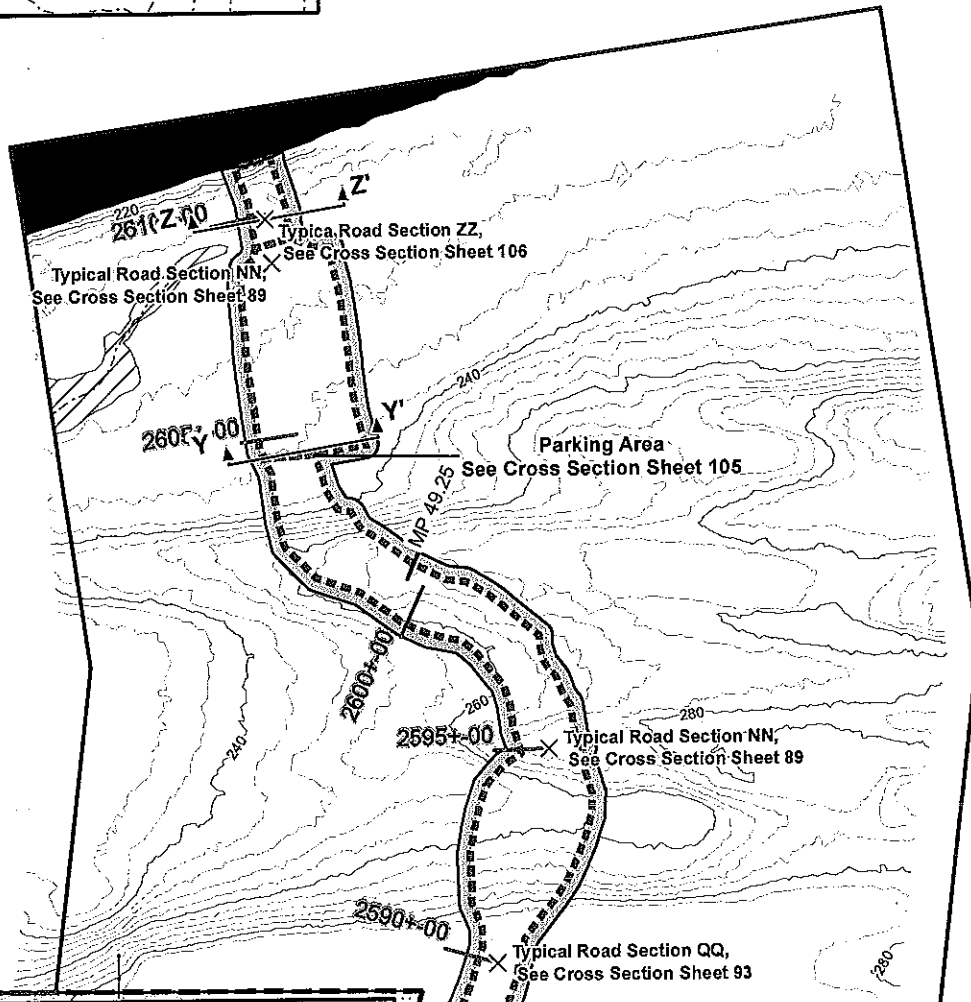
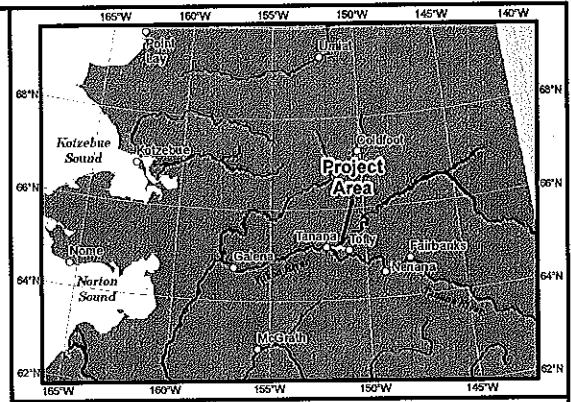
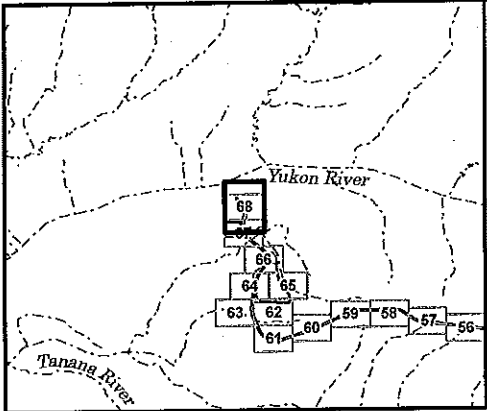
61759

Plan View, MP: 48.55 to 49.06

Bear Creek-Yukon River, Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 67 of 110
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Legend

	Cut/Fill Boundary		Material Site
	Vegetation Clearing		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetative Screen/Buffer		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	3PPI Study Area Boundary (12/05/2012)		MS Section Cut Lines
	Wetland		20R Interval Contour
	Upland		4ft Interval Contour
	Wetland/Upland Mosaic		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:5,000
0 150 300 450 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

ROAD TO TANANA PROJECT

61759

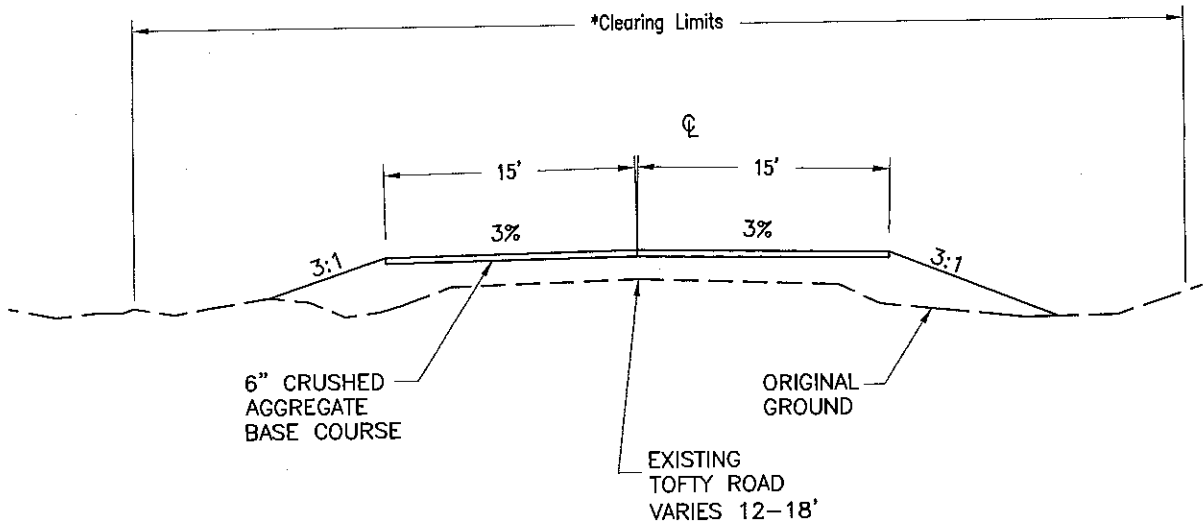
Plan View, MP: 49.06 to 49.45

Bear Creek-Yukon River, Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 68 of 110
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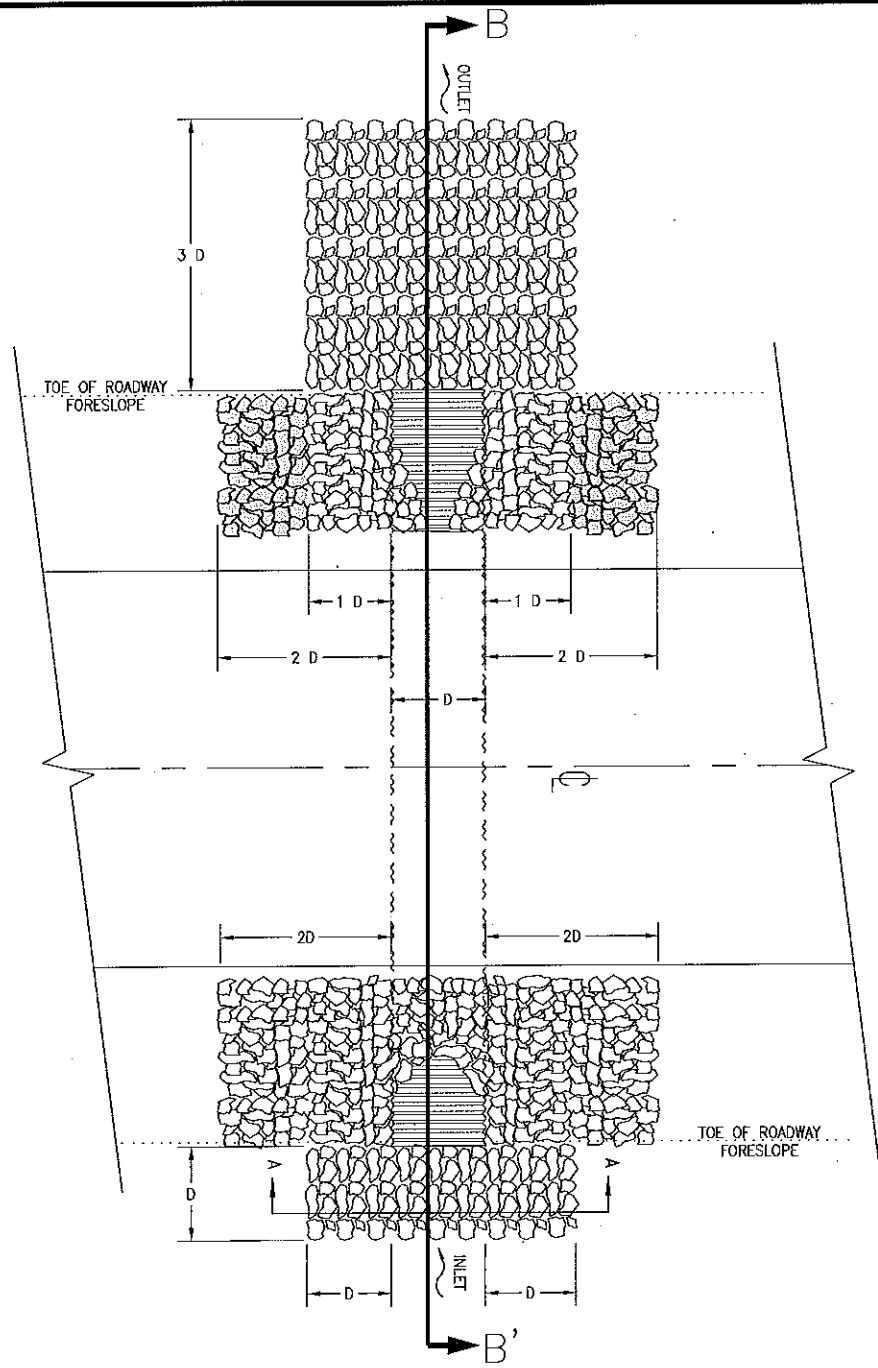
TYPICAL ROAD SECTION
SECTION A-A'
NTS



- Notes:
* Clearing limits extend 10' beyond the tow

C:\Industrial Roads Project Files\Tanana Road\04_P&E\DELIVERABLES TO 3PP\Deliverables\Typical-existing road Wed, 19/Dec/12 10:07am

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 TYPICAL ROAD SECTION, SECTION A-A'	
DATE: 12/21/2012	SHEET: 69 OF 110



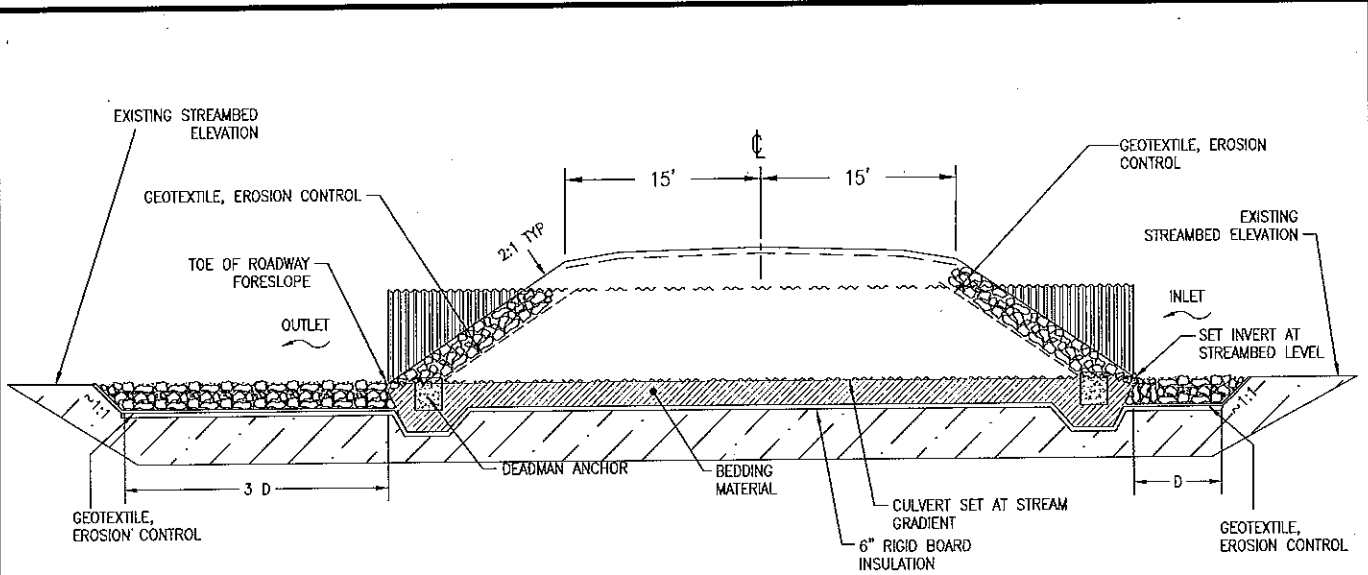
TYPE A & B PIPE PLAN VIEW
NOT TO SCALE

PRELIMINARY

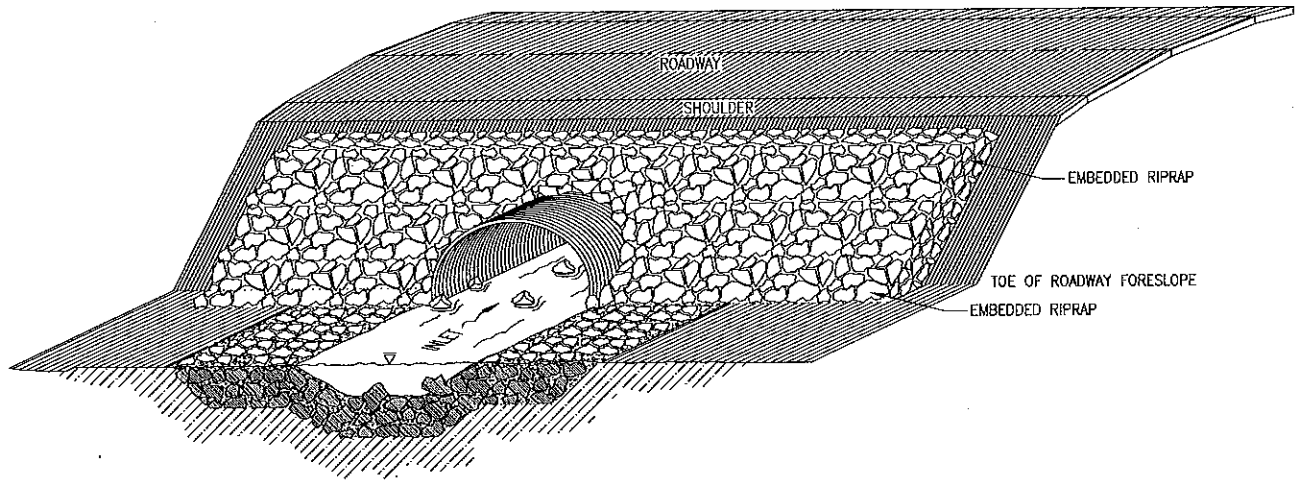
STATE OF ALASKA
Department of Transportation and Public Facilities
APPLICANT/AGENT: State of Alaska
2301 Peffer Rd. Fairbanks, AK 99709

ROAD TO TANANA
61759

TYPE A&B PIPE PLAN VIEW, SECTION B-B'



TYPE A & B PIPE TYPICAL SECTION
SECTION B-B'
NOT TO SCALE



TYPE A & B PIPE OBLIQUE VIEW
NOT TO SCALE

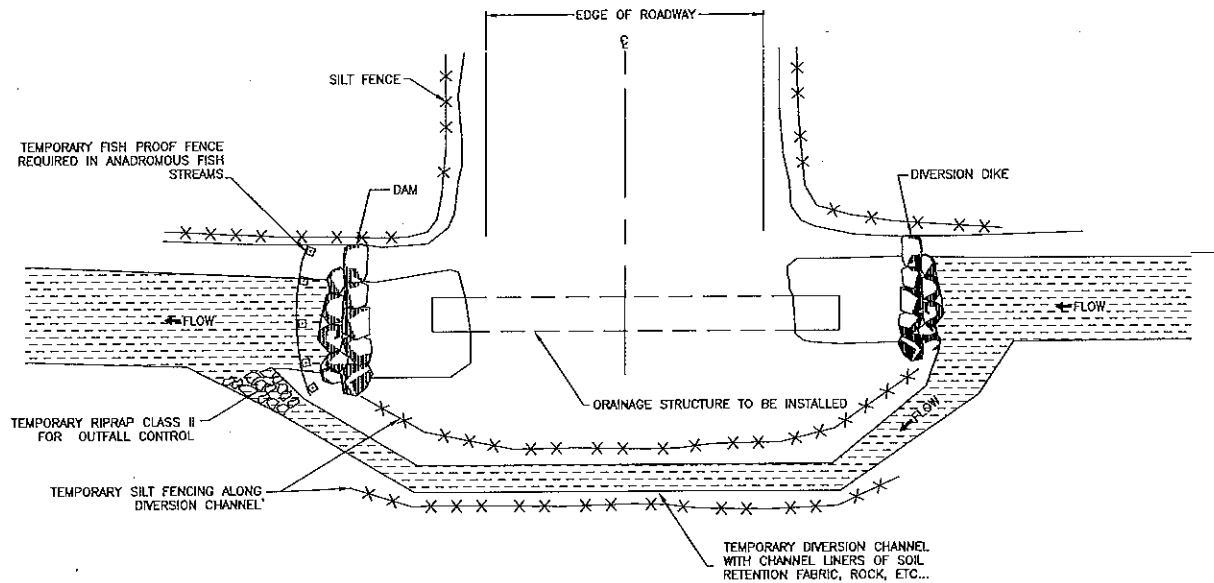
NOTE:

1. EROSION CONTROL STRUCTURES ARE APPROXIMATE AND MAY BE FIELD ADJUSTED BY THE ENGINEER TO TAKE ADVANTAGE OF EXISTING CHANNEL FEATURES. SHAPE INLET AND OUTLET APRONS TO MATCH EXISTING CHANNEL CROSS SECTION.
2. FOR 48" OR SMALLER CULVERT INSTALLATIONS REFER TO ALASKA DOT STANDARD DRAWINGS D-01.02, D-04.21, D-06.10, D-07.00, AND D-09.00.

PRELIMINARY

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759	
TYPE A&B PIPE PLAN & OBLIQUE VIEW, SECTION B-B'	
DATE: 12/21/2012	SHEET: 71 OF 110

T:\Industrial Roads Project Files\tanana Road\04 PS&C\DELIVERABLES TO 3PP\Deliverables\Culverts\CULVERT TYPICALS-NORTH TIE, 18 Dec 12 04:12pm

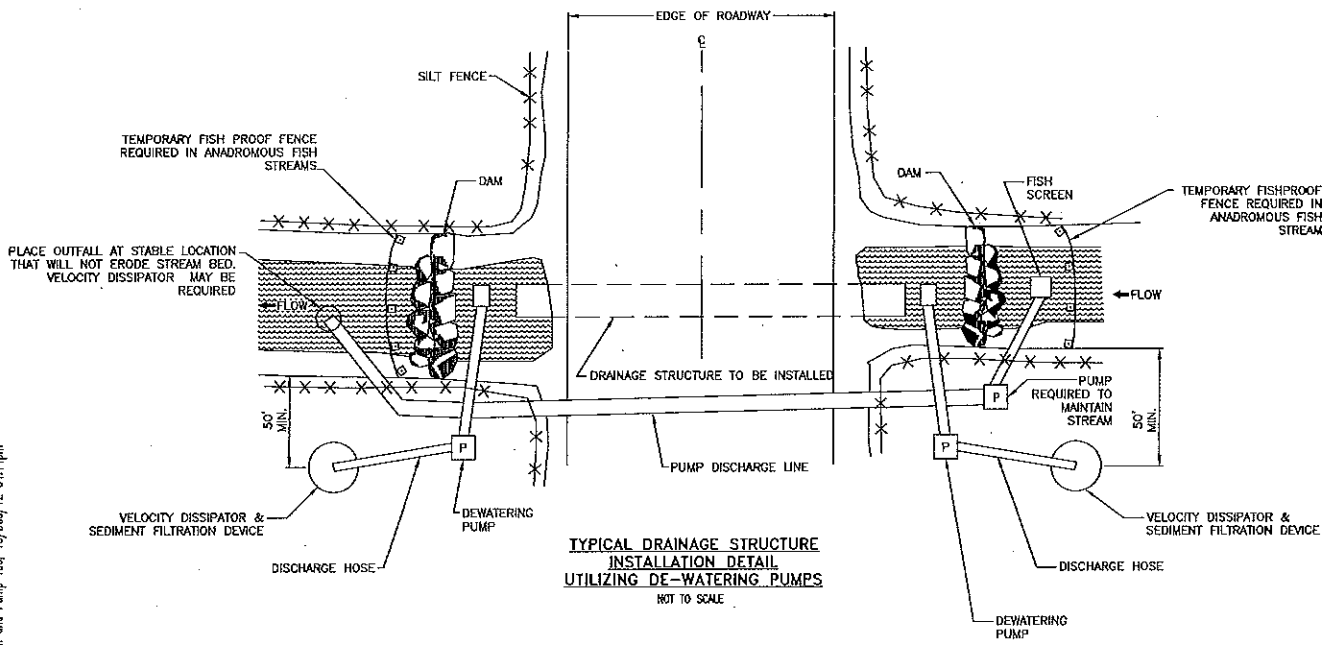


TYPICAL DRAINAGE STRUCTURE
INSTALLATION DETAIL UTILIZING
DIVERSION CHANNEL
NOT TO SCALE

I:\Industrial Roads Project Files\Tanana Road\4 PS&E\DELIVERABLES TO 3PP\Deliverables\Culverts\CULVERT TYPICALS-Diversion Channel Title 12/Dec/12 04:14pm

PRELIMINARY

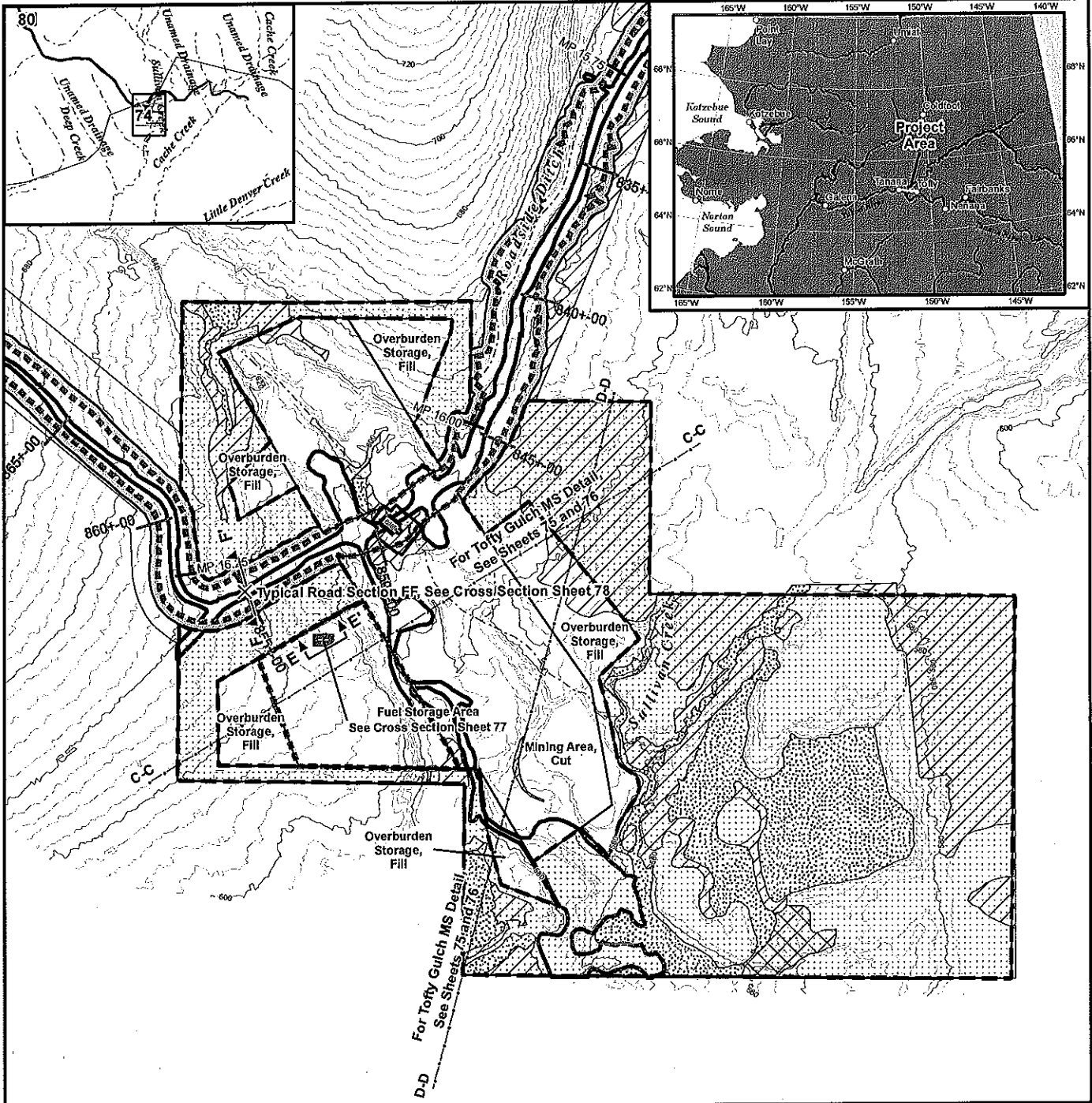
STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759	
TYPICAL DRAINAGE STRUCTURE INSTALLATION DETAIL UTILIZING DIVERSION CHANNEL	
DATE: 12/21/2012	SHEET: 72 OF 110



T:\Industrial Roads\Project Files\Tanana Road\04_P&S\DELIVERABLES TO SPR\Deliverables\Culverts\Culverts-Dam and Pump Tie_18/Dec/12_04.rvt

PRELIMINARY

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759 TYPICAL DRAINAGE STRUCTURE INSTALLATION DETAIL UTILIZING DEWATERING PUMPS	
DATE: 12/21/2012	SHEET: 73 OF 110



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Legend

	Cut/Fill Boundary		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetation Clearing		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	Vegetative Screen/Buffer		Typical Road Section Change
	3PPI Study Area Boundary (12/17/2012)		MS Section Cut Lines
	Material Site		20ft Interval Contour
	Wetland		4ft Interval Contour
	Upland		3PPI Arcs (12/5/2012) (All drainages are unnamed unless labeled on sheet)
	Wetland/Upland Mosaic		
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:6,000

0 350 700 1,050 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

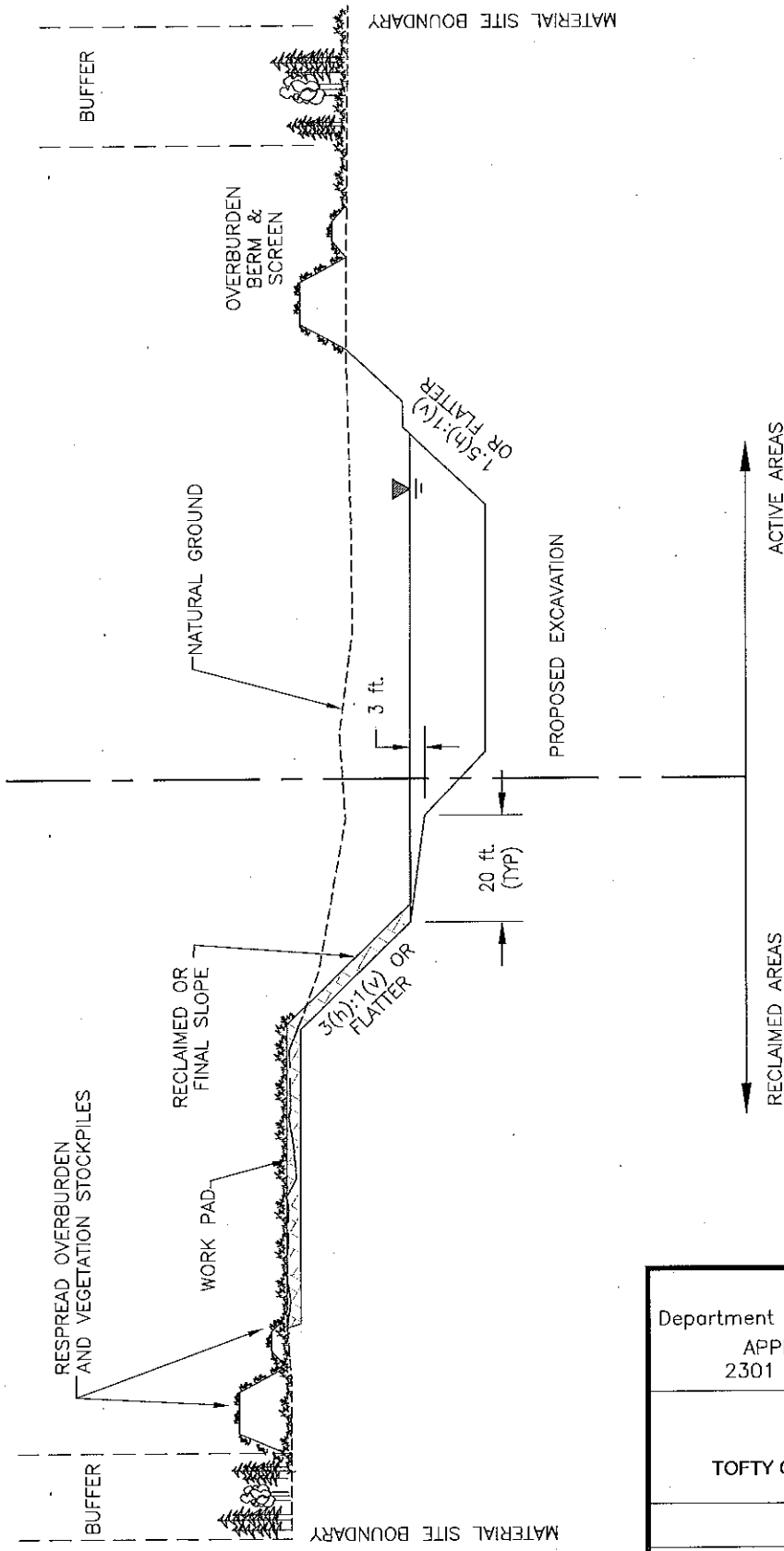
TANANA ROAD PROJECT
61759

Material Site Plan View, MP 15.88 to 16.42
Tofy Gulch Material Site

Patterson Creek Basin

DATE: FEBRUARY 2013 SHEET: 74 of 110

PRELIMINARY

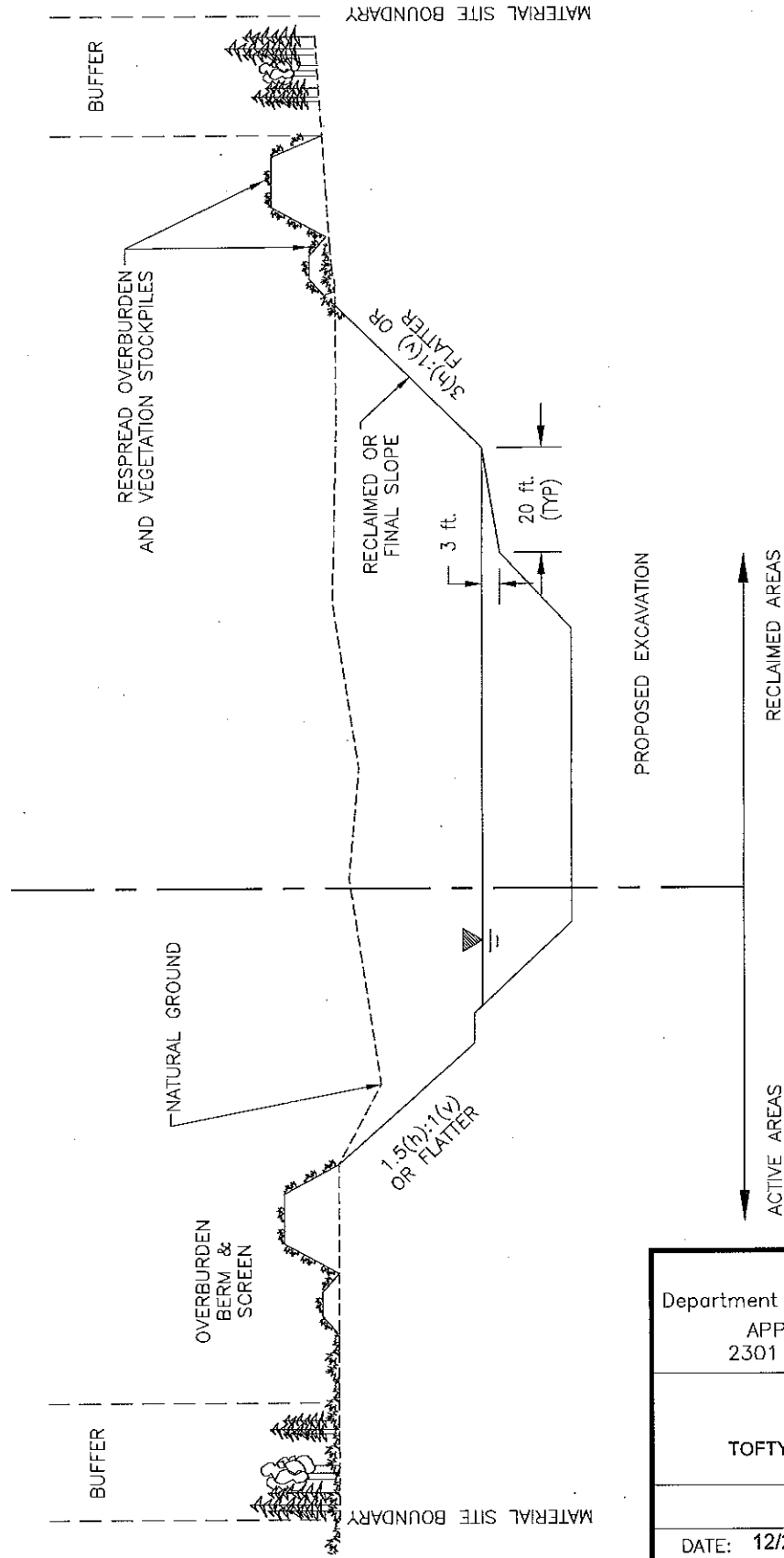


TOFTY GULCH MATERIAL SITE
SECTION C-C'
NOT TO SCALE

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759 TOFTY GULCH MATERIAL SITE SECTION C-C'	
DATE: 12/21/21012	SHEET: 75 OF 110

I:\Industrial Roads Project Files\Tanana Road\04-PS&E\DELIVERABLES TO 3PP\Deliverables\Material Site Permit Drawing-Tofty Section Tue, 19/Dec/12 04:43pm

PRELIMINARY

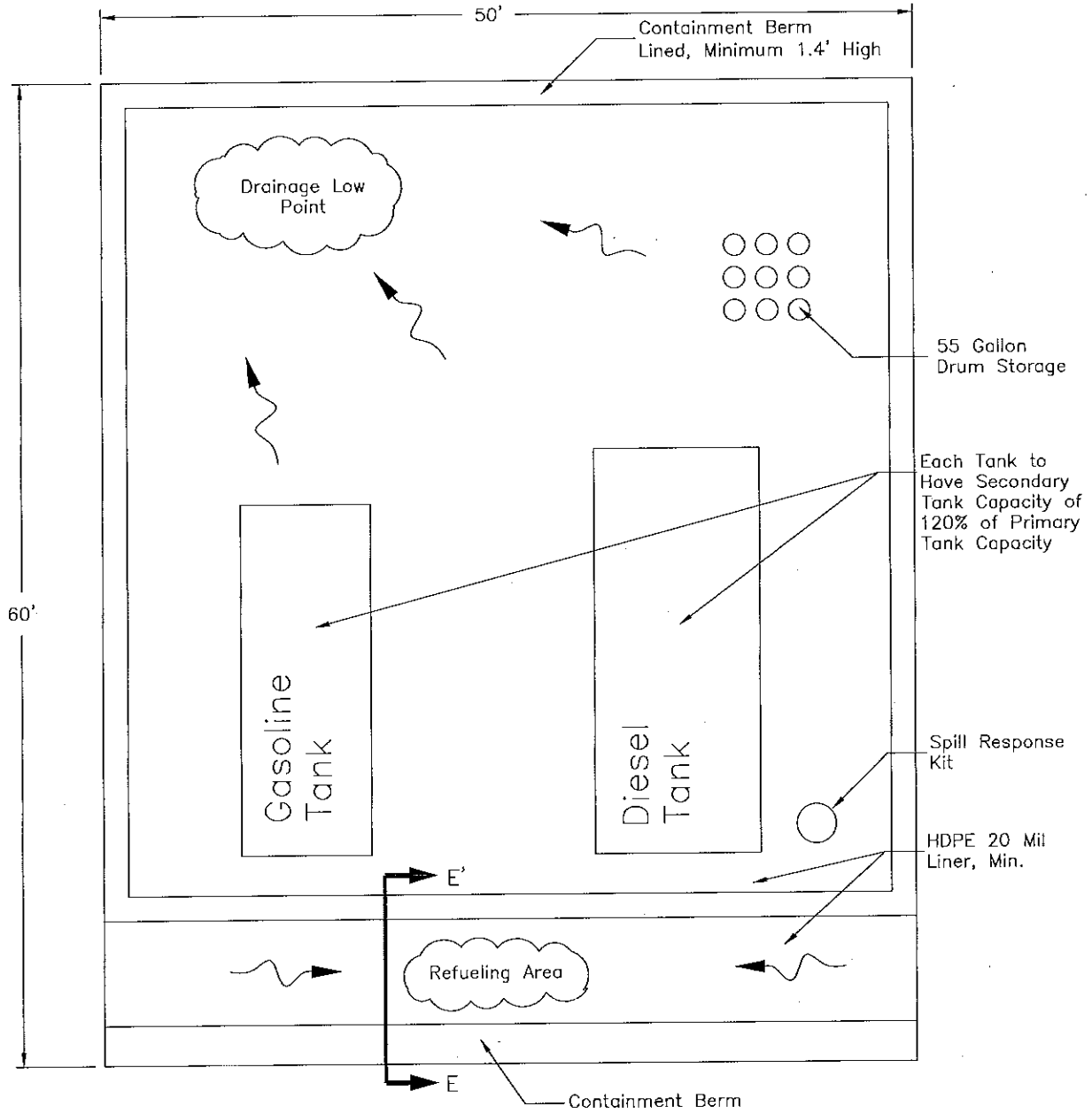


TOFTY GULCH MATERIAL SITE
SECTION D-D
NOT TO SCALE

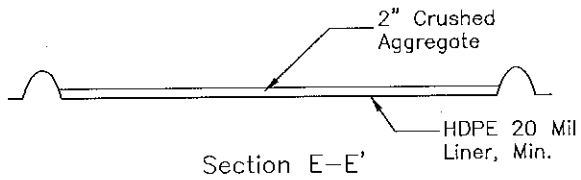
T:\Industrial Roads Project Files\Tanana Road\04_P&E\DELIVERABLES TO APP\Deliverables\Material Site Permit Drawing\Tofty Section (2). Tue, 18/Dec/12 04:53pm

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759 TOFTY GULCH MATERIAL SITE SECTION D-D	
DATE: 12/21/2012	SHEET: 76 OF 110

PRELIMINARY



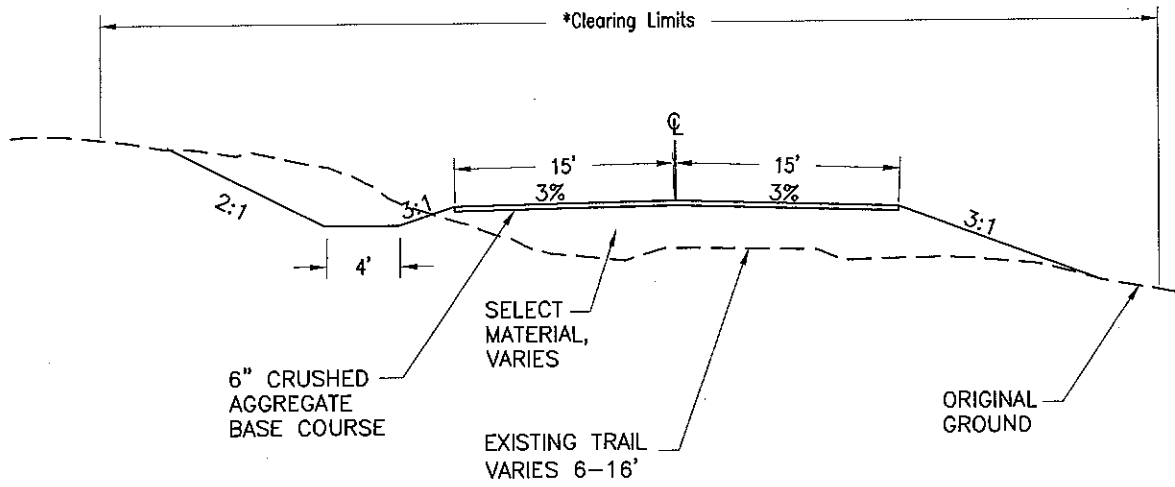
NOTE:
 Fuel storage area to be placed on staging area gravel pad.



STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759	
TYPICAL FUEL STORAGE CONTAINMENT, SECTION E-E'	
DATE: 12/21/2012	SHEET: 77 OF 110

T:\Industrial Roads Project Files\Tanana Road\04_PSSA\DELIVERABLES TO 3PR\Fuel Storage Typical-CORPS FUEL CONTAINMENT AREA, Tue, 18/Dec/12, 04:37pm

TYPICAL ROAD SECTION
SECTION F-F'
NTS

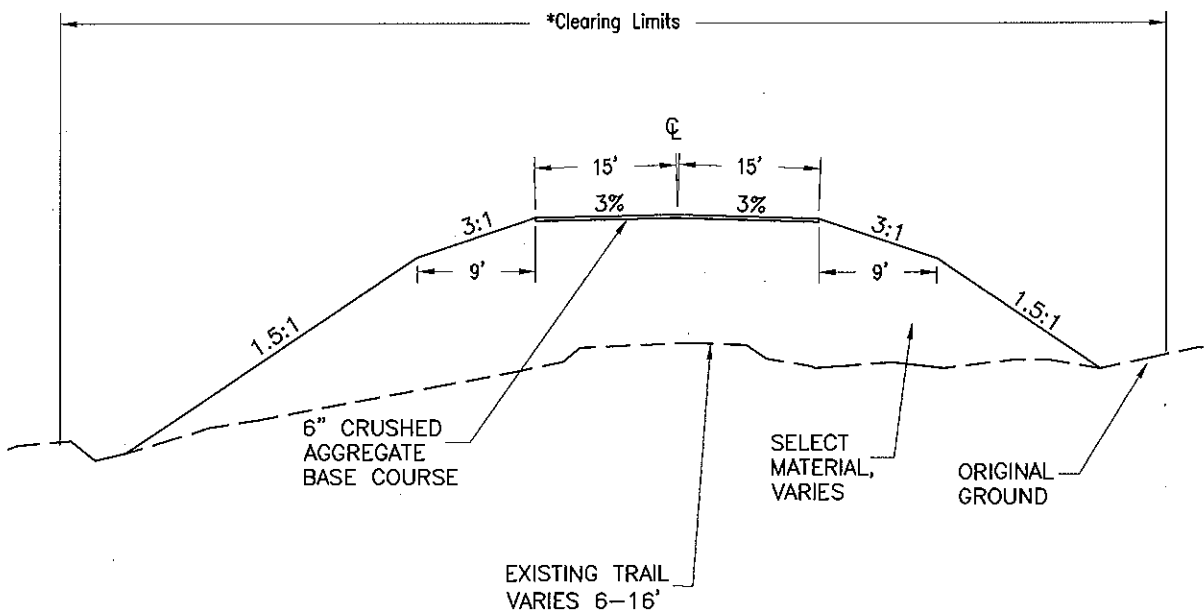


Notes:
* Clearing limits extend 10' beyond the tow

E:\Industrial Roads Project Files\Tanana Road\04_P&E\DELIVERABLES TO 3P\Deliverables\Typical-existing trail Mod. 19/Dec/12 10:08am

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 TYPICAL ROAD SECTION, SECTION F-F'	
DATE: 12/21/2012	SHEET: 78 OF 110

TYPICAL ROAD SECTION
SECTION G-G'
NTS

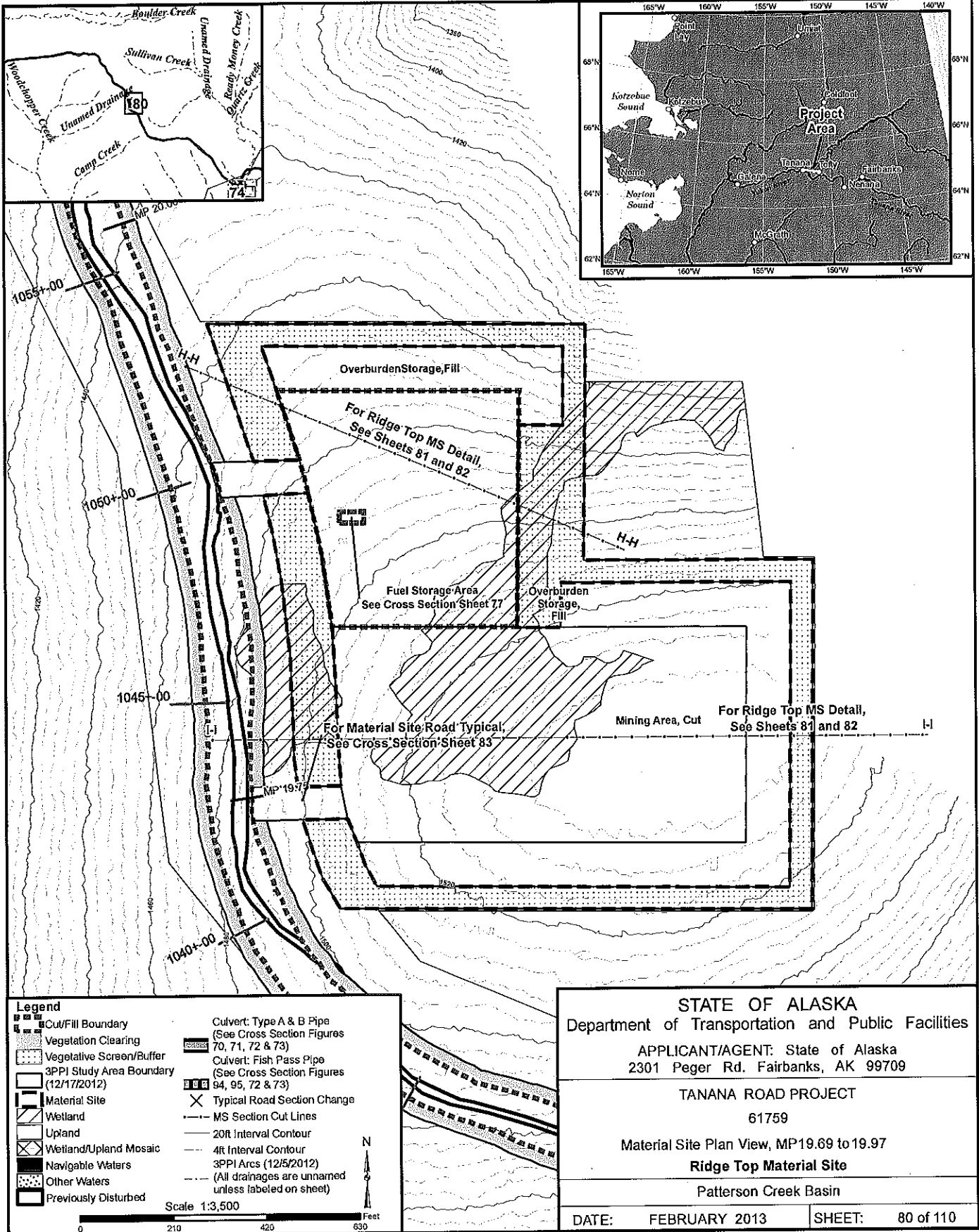


Notes:

- * Clearing limits extend 10' beyond the tow
- Typical Section G-G is typical for fill sections exceeding 10'

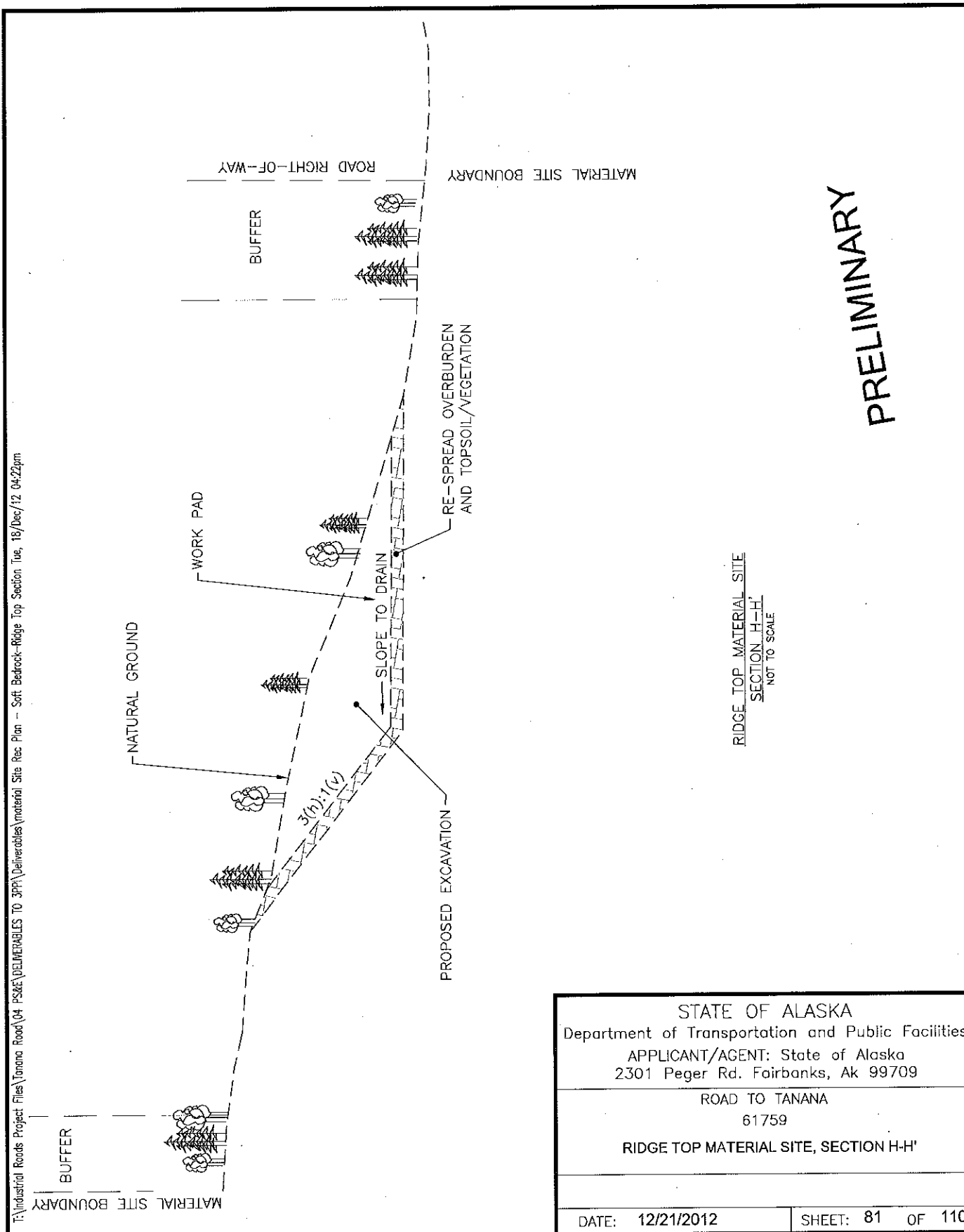
STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 TYPICAL ROAD SECTION, SECTION G-G'	
DATE: 12/21/2012	SHEET: 79 OF 110

I:\Industrial Roads Project Files\Tanana Road\04_P&E\02\REVISED TO 3PP\Drawings\road-casting\road large.dwg, 19/Dec/12 10:09am



C:\Projects\280_3PP\Tanana_404\RD1_Tanana_404_Corps_MS_8x11_1of7_v01.mxd 02/08/13 01:14 PM

STATE OF ALASKA Department of Transportation and Public Facilities	
APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
TANANA ROAD PROJECT 61759 Material Site Plan View, MP19.69 to 19.97 Ridge Top Material Site Patterson Creek Basin	
DATE:	FEBRUARY 2013
SHEET:	80 of 110



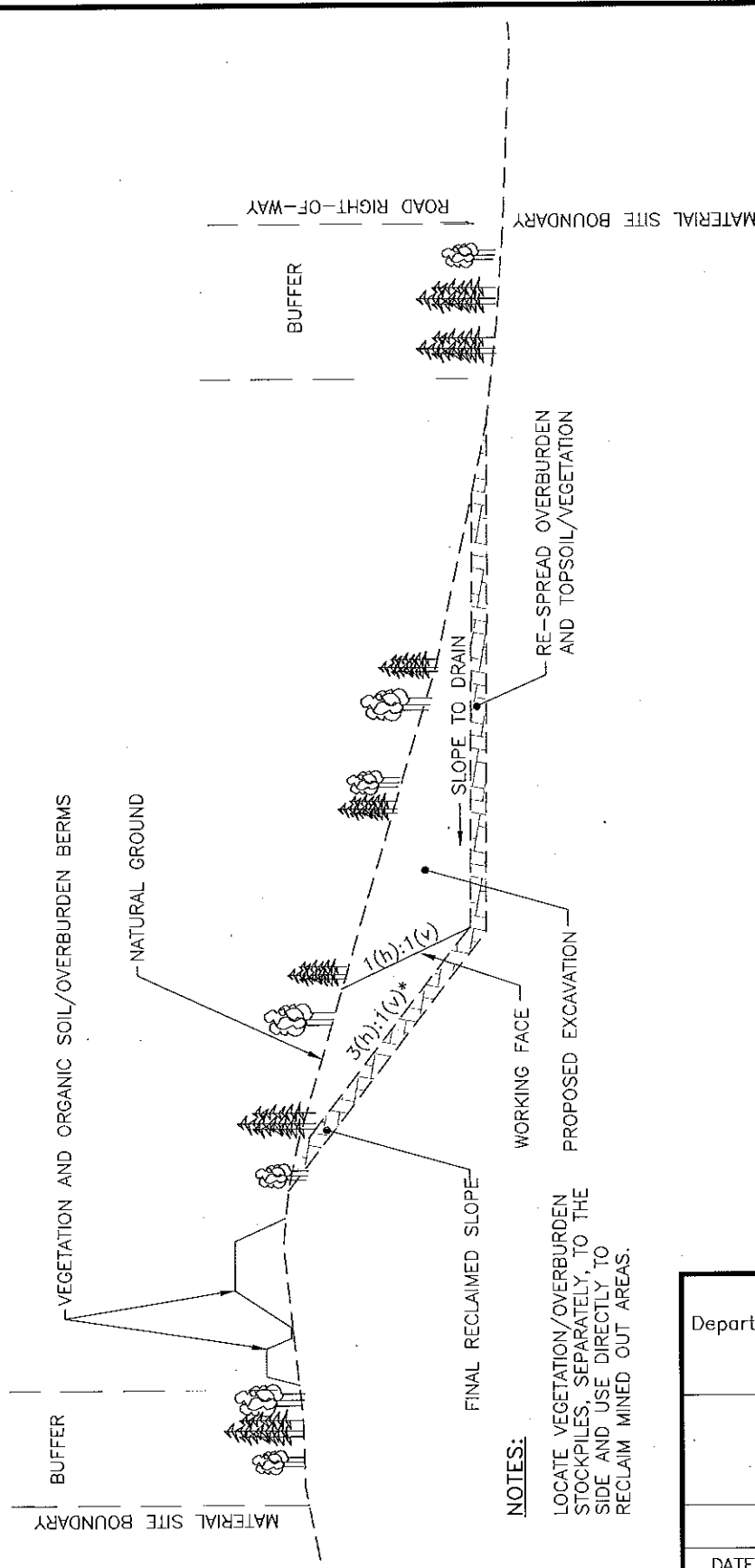
T:\Industrial Roads Project Files\Tanana Road\04 PS&E\DELIVERABLES TO 3PP\Deliverables\material Site Rec Plan - Sort Bedrock-Ridge Top Section Tue, 18/Dec/12 04:22pm

RIDGE TOP MATERIAL SITE
 SECTION H-H'
 NOT TO SCALE

PRELIMINARY

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 RIDGE TOP MATERIAL SITE, SECTION H-H'	
DATE: 12/21/2012	SHEET: 81 OF 110

T:\Industrial Roads Project Files\Tanana Road\04 PS&E\DELIVERABLES TO 3PP\Deliverables\material Site Rec Plan - Soft Backrock-Ridge Top Section (2). Tue, 18/Dec/12 04:22pm



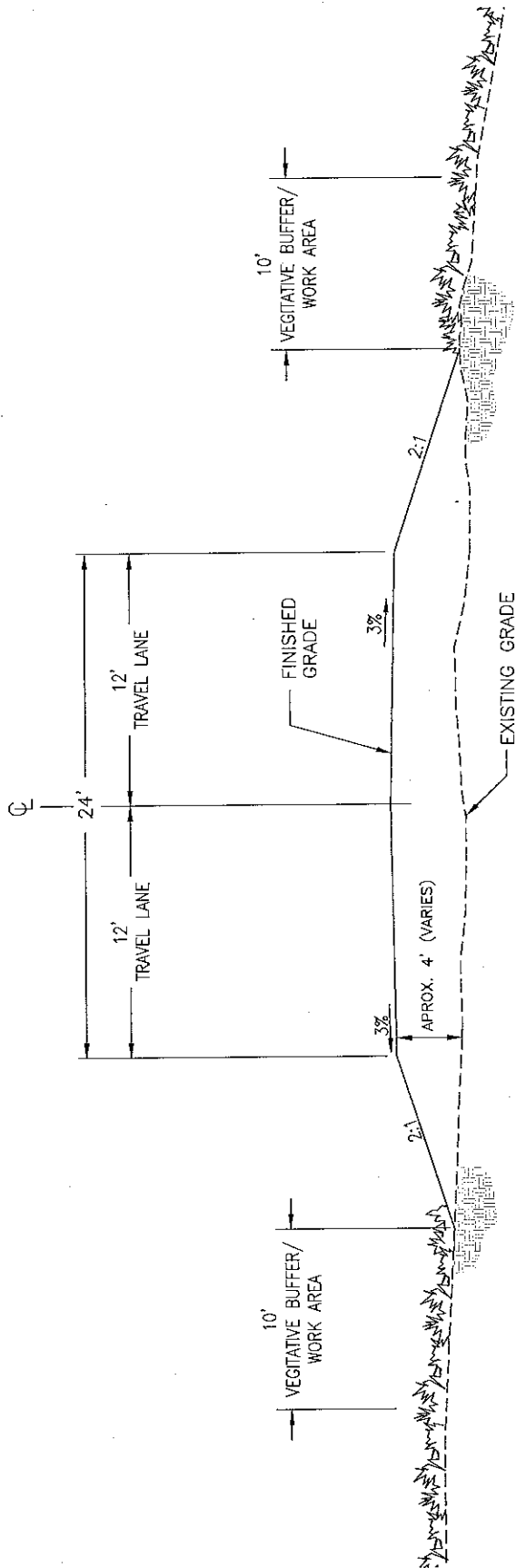
NOTES:

LOCATE VEGETATION/OVERBURDEN STOCKPILES, SEPARATELY, TO THE SIDE AND USE DIRECTLY TO RECLAIM MINED OUT AREAS.

RIDGE TOP MATERIAL SITE
SECTION I-I'
NOT TO SCALE

PRELIMINARY

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 RIDGE TOP MATERIAL SITE, SECTION I-I'	
DATE:	12/21/2012
SHEET:	82 OF 110



TYPICAL SECTION
SECTION J-J'
NOT TO SCALE

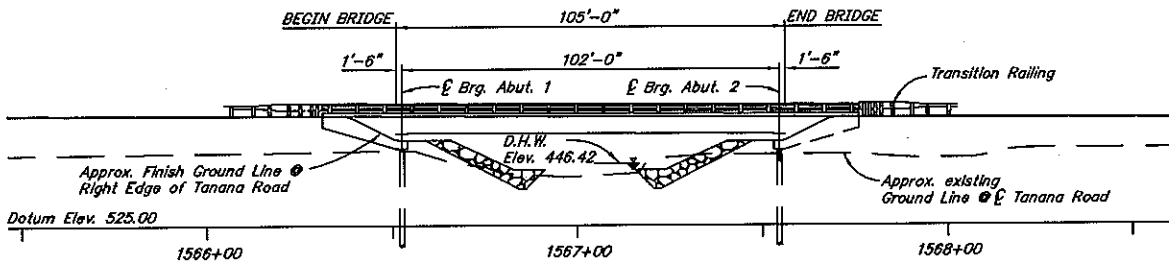
PRELIMINARY

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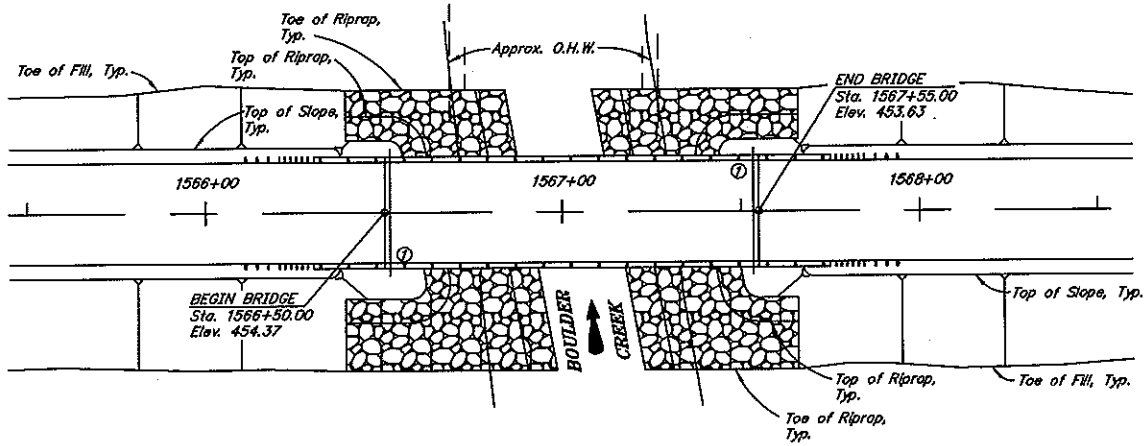
STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759	
MATERIAL SITE ROAD TYPICAL, SECTION J-J'	
DATE: 12/21/2012	SHEET: 83 OF 110

PRELIMINARY

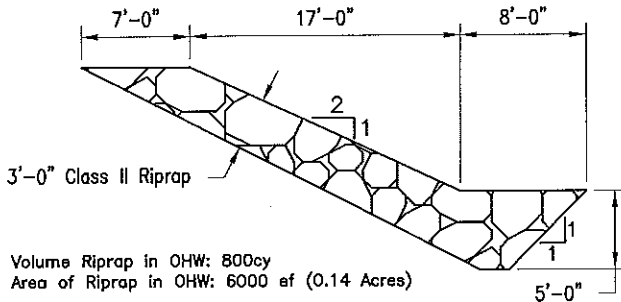
BOULDER CREEK BRIDGE PROFILE VIEW
NTS



BOULDER CREEK BRIDGE PLAN VIEW
NTS

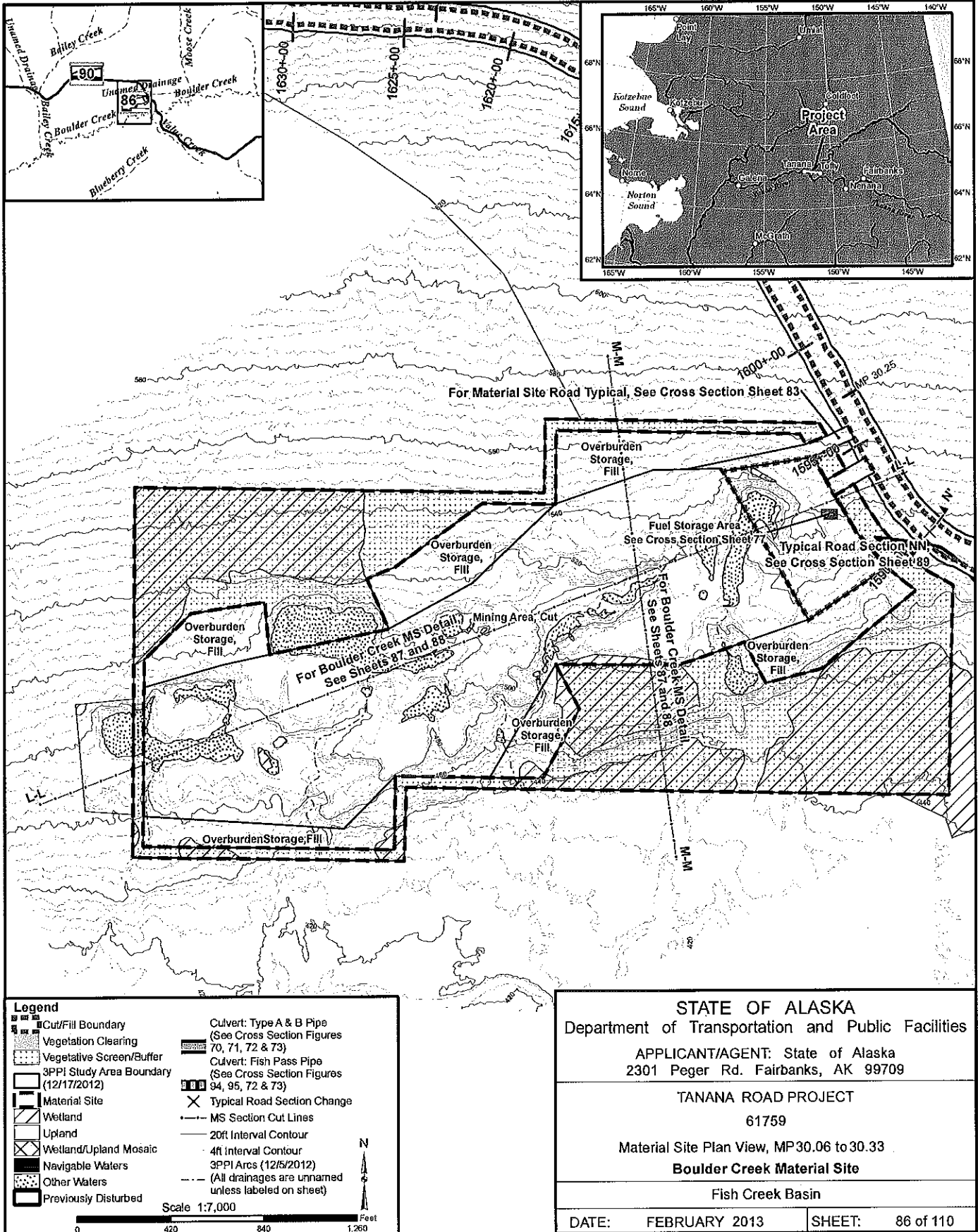


RIPRAP SECTION DETAIL
NTS



STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 BOULDER CREEK BRIDGE PLAN AND PROFILE	
DATE: 12/21/2012	SHEET: 85 OF 110

T:\Industrial Roads Project Files\Tanana Road\04_P&SE\DELIVERABLES TO 3P\Deliverables\Bridge\Bridge Permit Drawings-TYPICALS.dwg, 10/Dec/12, 04:33pm



Q:\Projects\280_3PPI\Tanana_2012\Xmxd_404\RD\Tanana_404_Corps_MS_8x11_107_v01.mxd 02/08/13 01:14 PM

STATE OF ALASKA
 Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, AK 99709

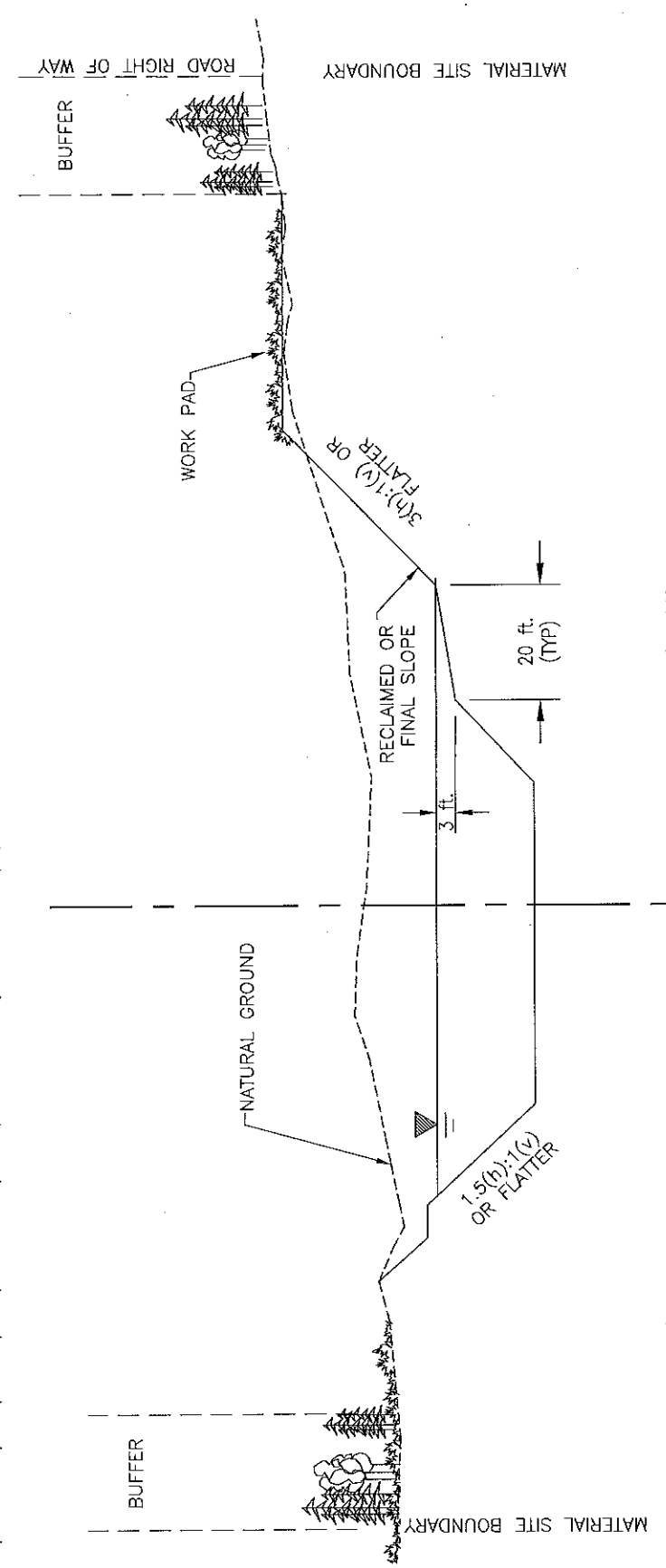
TANANA ROAD PROJECT
 61759

Material Site Plan View, MP30.06 to 30.33
Boulder Creek Material Site

Fish Creek Basin

DATE: FEBRUARY 2013	SHEET: 86 of 110
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PRELIMINARY

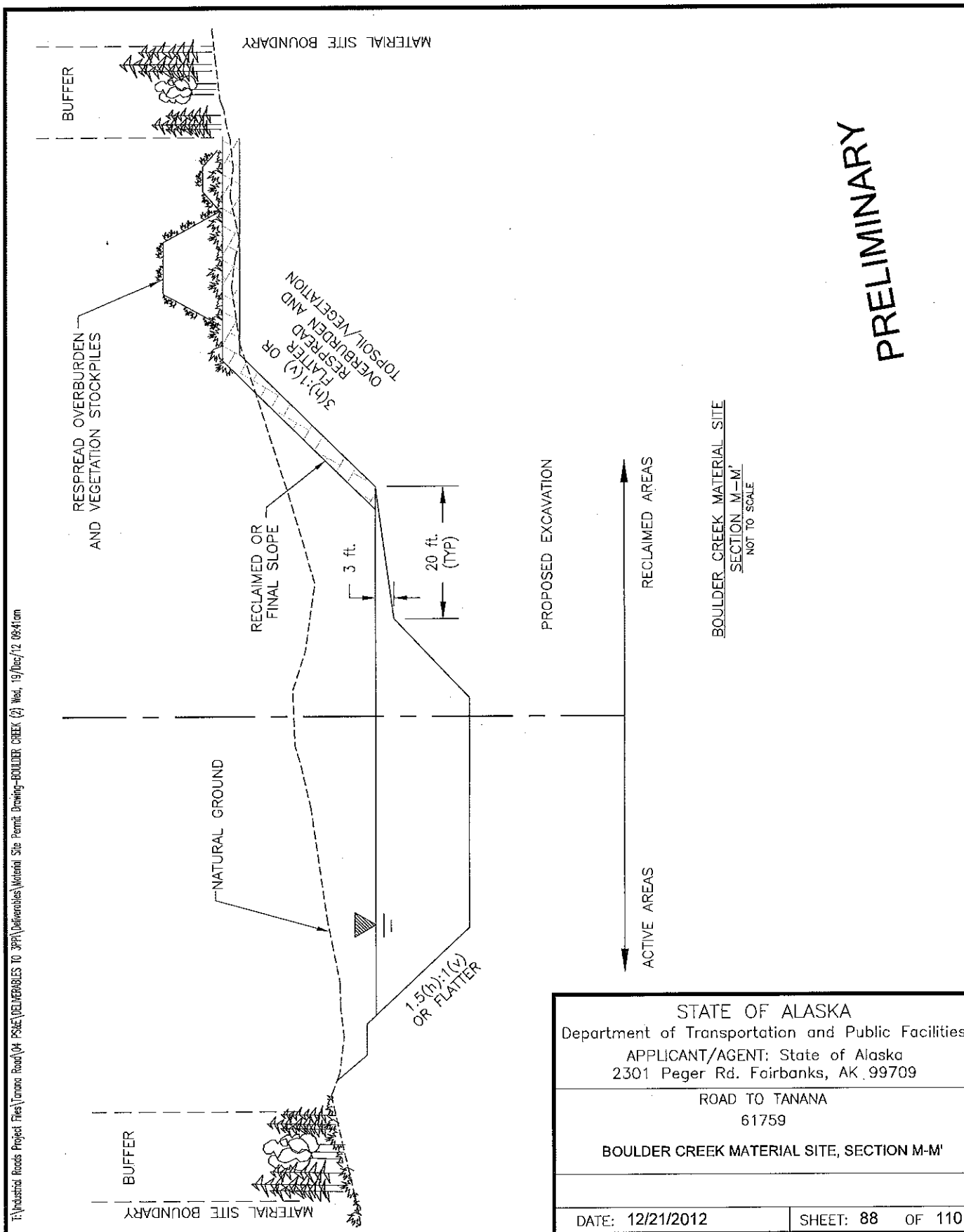


BOULDER CREEK MATERIAL SITE
SECTION L-L'
NOT TO SCALE

T:\Industrial Roads Project Files\Tanana Road\04 PS&E\DELIVERABLES TO 3PP\Deliverables\Material Site Permit Drawing-BOULDER CREEK Med, 19/Dec/12 08:41am

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759 BOULDER CREEK MATERIAL SITE, SECTION L-L'	
DATE: 12/21/2012	SHEET: 87 OF 110

PRELIMINARY

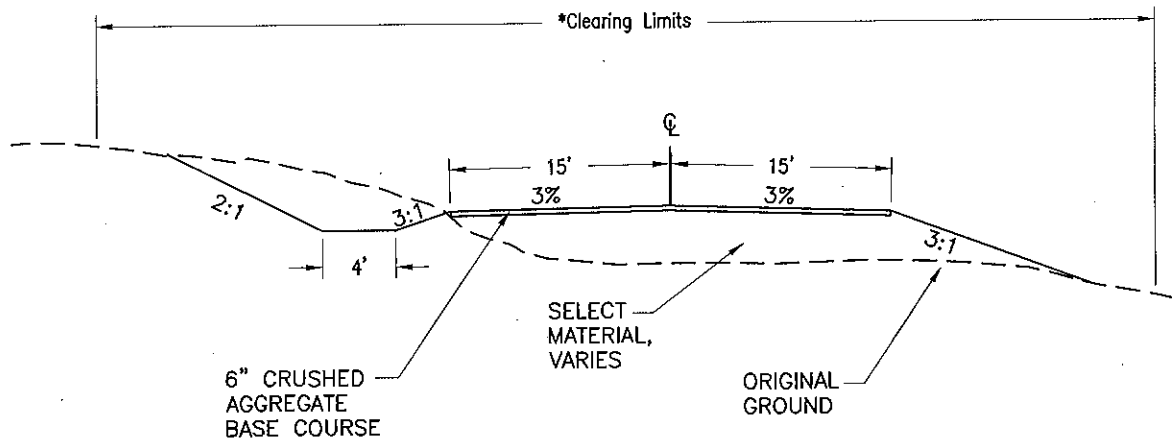


T:\Industrial Roads Project Files\Tanana Road\04 PS&E\DELIVERABLES TO 3PFI\Deliverables\Material Site Permits\Drawing-Boulder Creek (2) West_19/Dec/12 08:41.cim

BOULDER CREEK MATERIAL SITE
SECTION M-M'
NOT TO SCALE

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759 BOULDER CREEK MATERIAL SITE, SECTION M-M'	
DATE: 12/21/2012	SHEET: 88 OF 110

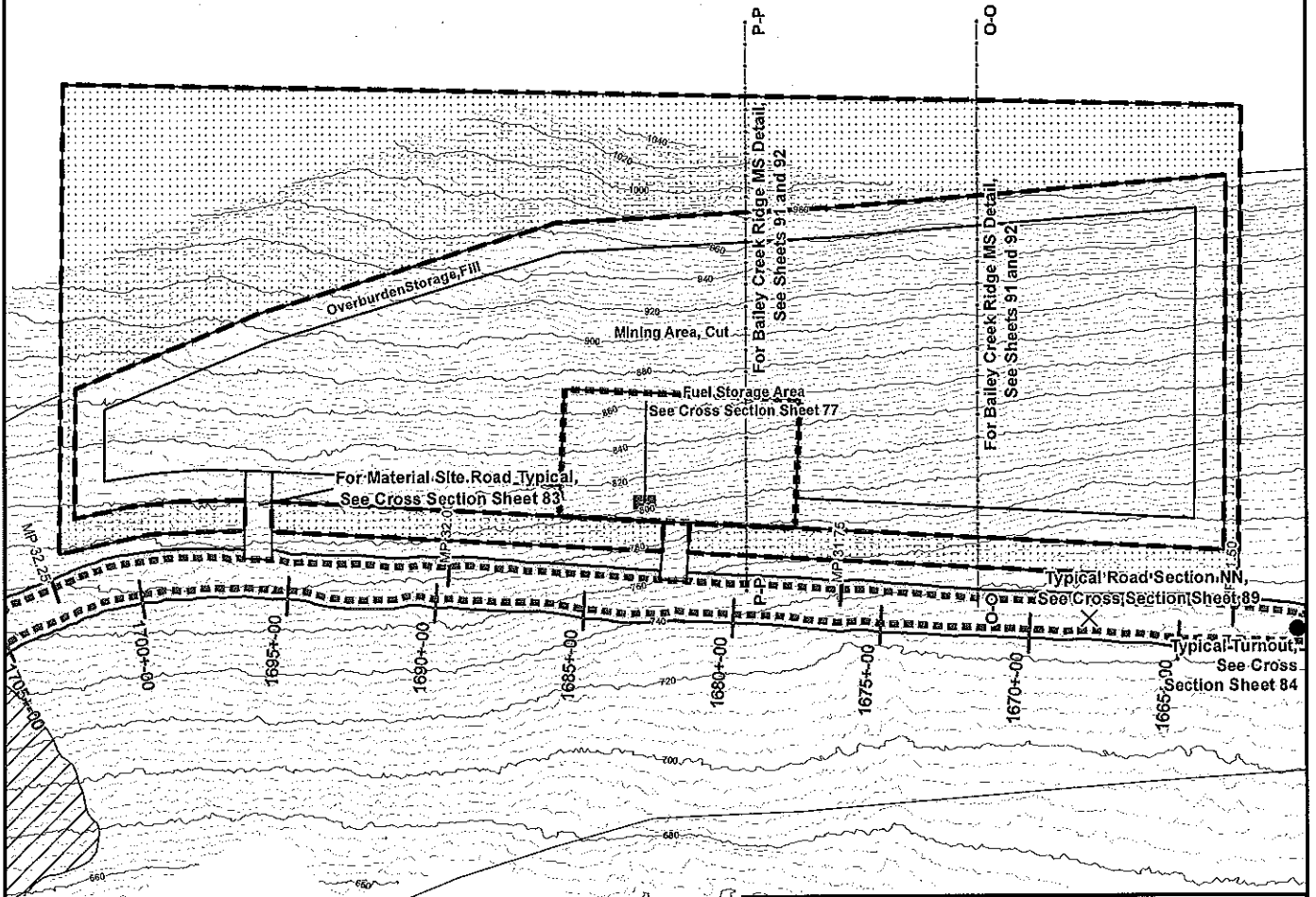
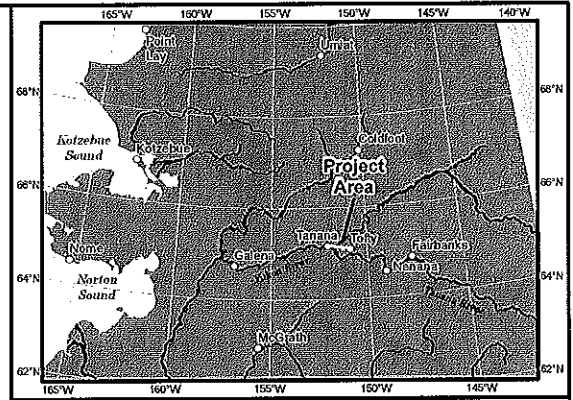
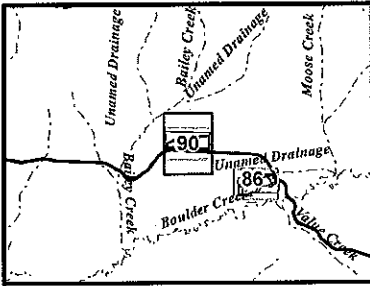
TYPICAL ROAD SECTION
SECTION N-N'
NTS



Notes:
* Clearing limits extend 10' beyond the tow

I:\Industrial Roads Project Files\Tanana Road\04_P&S\DELIVERABLES TO 3P\Deliverables\1prod-new road Mod_19/dec/12 10:10am

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 TYPICAL ROAD SECTION, SECTION N-N'	
DATE: 12/21/2012	SHEET: 89 OF 110



Legend

	Cut/Fill Boundary		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetation Clearing		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	Vegetative Screen/Buffer		Typical Road Section Change
	3PPI Study Area Boundary (12/17/2012)		MS Section Cut Lines
	Material Site		20R Interval Contour
	Wetland		4ft Interval Contour
	Upland		3PPI Arcs (12/5/2012)
	Wetland/Upland Mosaic		(All drainages are unnamed unless labeled on sheet)
	Navigable Waters		N
	Other Waters		Scale 1:7,000
	Previously Disturbed		0 425 850 1,275 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

TANANA ROAD PROJECT
61759

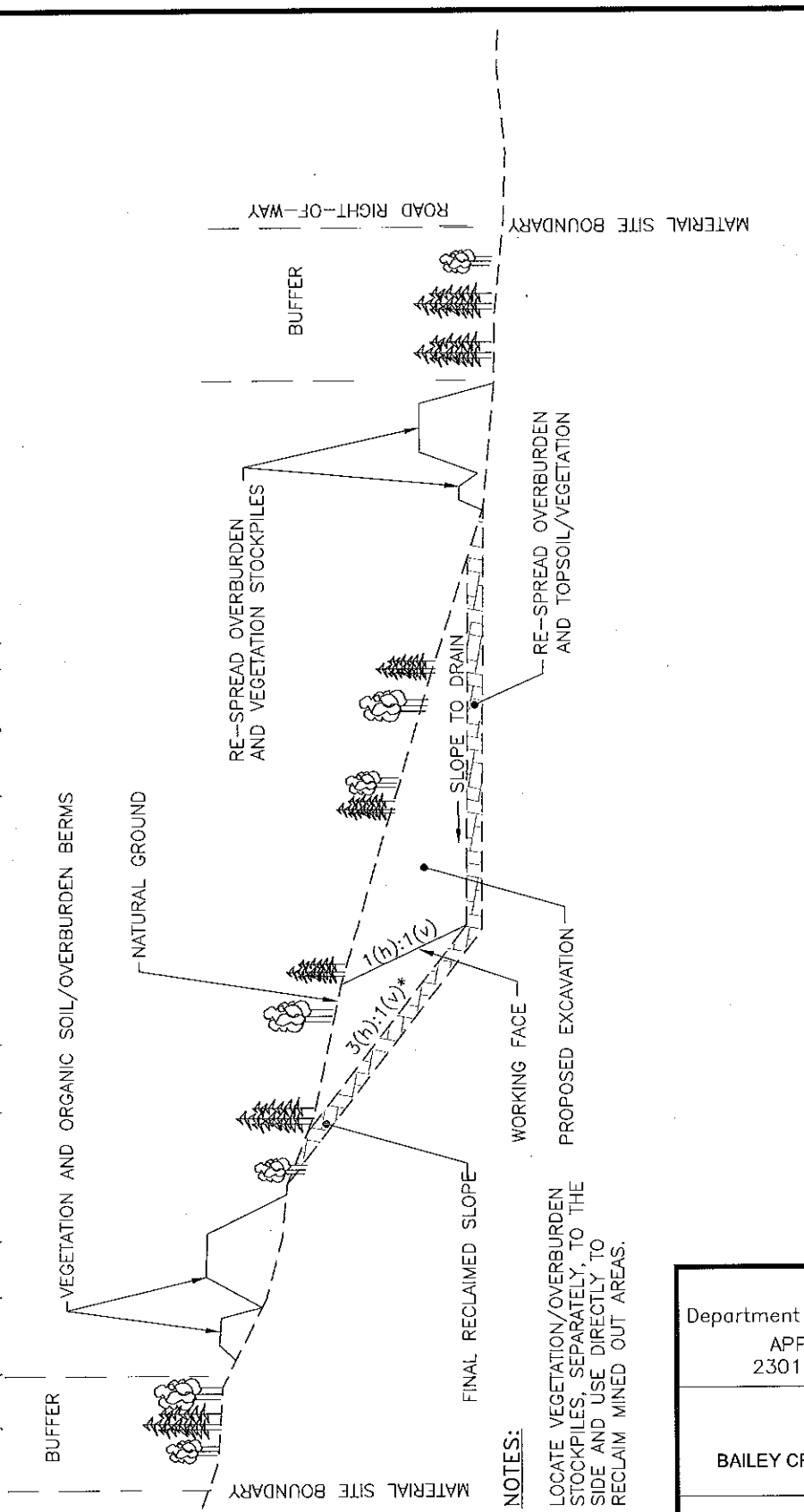
Material Site Plan View, MP31.46 to 32.27
Bailey Creek Ridge Material Site

Fish Creek Basin

DATE: FEBRUARY 2013	SHEET: 90 of 110
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C:\Projects\280_3PPI\Tanana_2012\Mxds_404\RD\Tanana_404_Corps_MS_8x11_1c77_v01.mxd 02/08/13 01:14 PM

T:\Industrial Roads Project Files\Tanana Road\04 PS&E\DELIVERABLES TO 3PP\Deliverables\Material Site Rec Plan - Soft Bedrock-Bailey Creek Ridge West, 19/Dec/12 09:42am



NOTES:
 LOCATE VEGETATION/OVERBURDEN STOCKPILES, SEPARATELY, TO THE SIDE AND USE DIRECTLY TO RECLAIM MINED OUT AREAS.

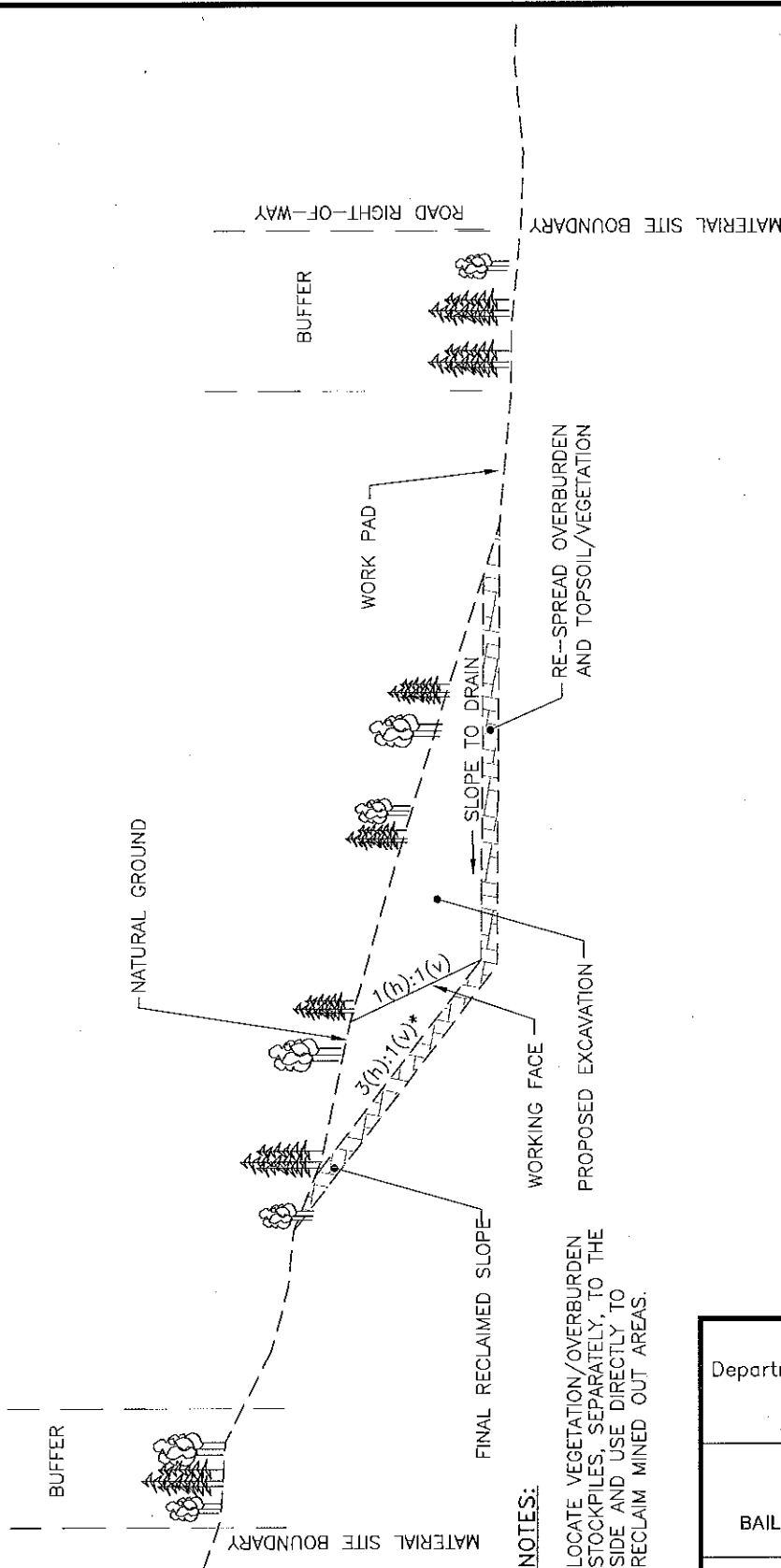
BAILEY CREEK RIDGE MATERIAL SITE
 SECTION O-O'
 NOT TO SCALE

PRELIMINARY

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 BAILEY CREEK RIDGE MATERIAL SITE, SECTION O-O'	
DATE: 12/21/2012	SHEET: 91 OF 110

PRELIMINARY

F:\Industrial Roads Project Files\Tanana Road\04 PS&E\DELIVERABLES TO 3PP\Deliverables\material Site Rec Plan - Soft Berook-Bailey Creek Ridge (2) Wed, 19/Dec/12 09:42am



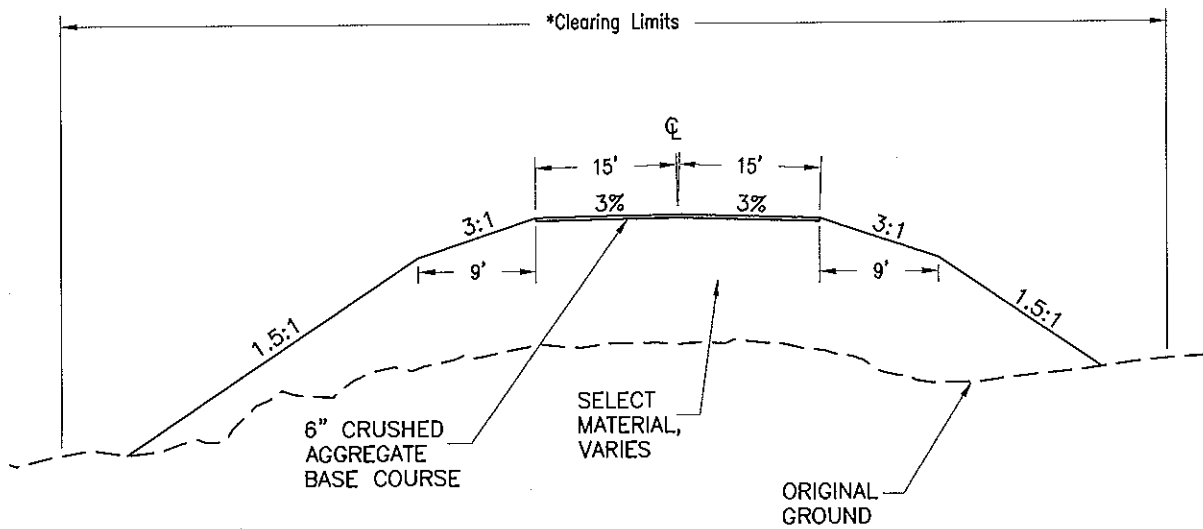
NOTES:

LOCATE VEGETATION/OVERBURDEN STOCKPILES, SEPARATELY, TO THE SIDE AND USE DIRECTLY TO RECLAIM MINED OUT AREAS.

BAILY CREEK RIDGE MATERIAL SITE
SECTION P-P
NOT TO SCALE

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 BAILY CREEK RIDGE MATERIAL SITE, SECTION P-P	
DATE: 12/21/2012	SHEET: 92 OF 110

TYPICAL ROAD SECTION
SECTION Q-Q'
NTS

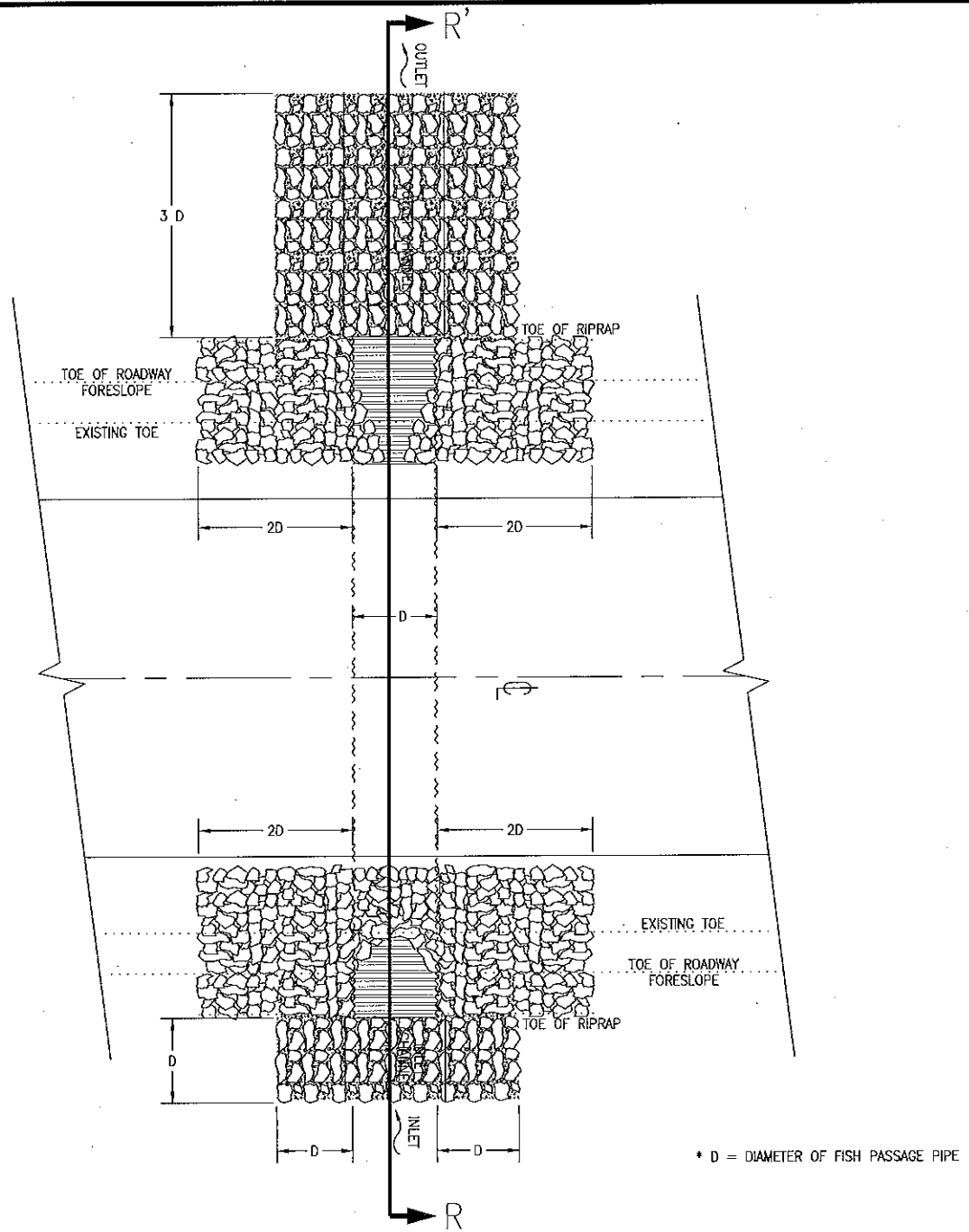


Notes:

- * Clearing limits extend 10' beyond the tow
- Typical Section 'Q-Q' is typical for fill sections exceeding 10'

T:\Industrial Roads Project Files\Tanana Road\04_P&E\DELIVERABLES TO SPA\Deliverables\Typical-new road large fill West_19/Dec/12_10:16am

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 TYPICAL ROAD SECTION, SECTION Q-Q'	
DATE: 12/21/2012	SHEET: 93 OF 110

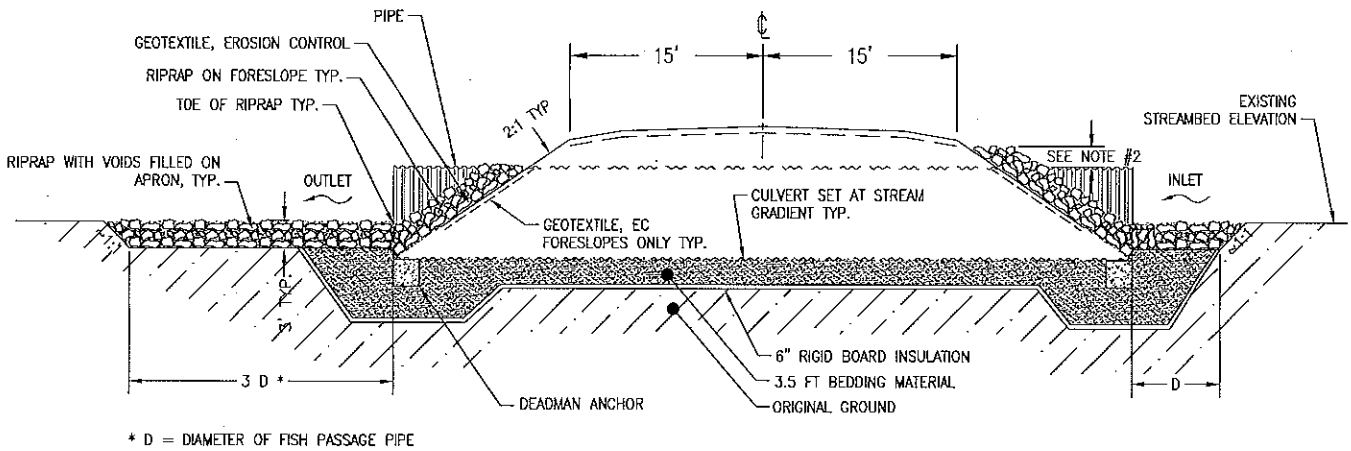


FISH PASSAGE PIPE PLAN VIEW
NOT TO SCALE

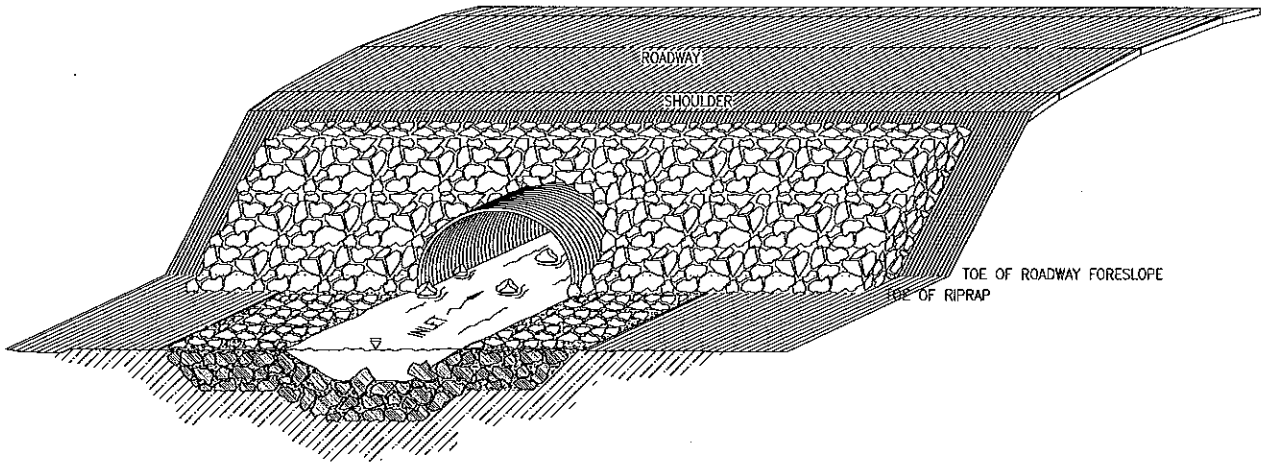
PRELIMINARY

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759	
FISH PASS PIPE PLAN VIEW, SECTION R-R'	
DATE: 12/21/2012	SHEET: 94 OF 110

T:\Industrial Roads Project Files\tanana Road\04_P3&E\DELIVERABLES TO 3PFI\Deliverables\Chairs\COLVERT_TYPICALS-Fairb-197.dwg/12 05:44am



FISH PASSAGE PIPE TYPICAL
SECTION R-R'
NOT TO SCALE



FISH PASSAGE PIPE OBLIQUE VIEW
NOT TO SCALE

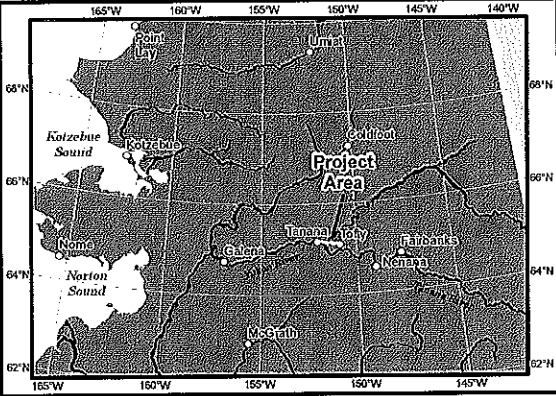
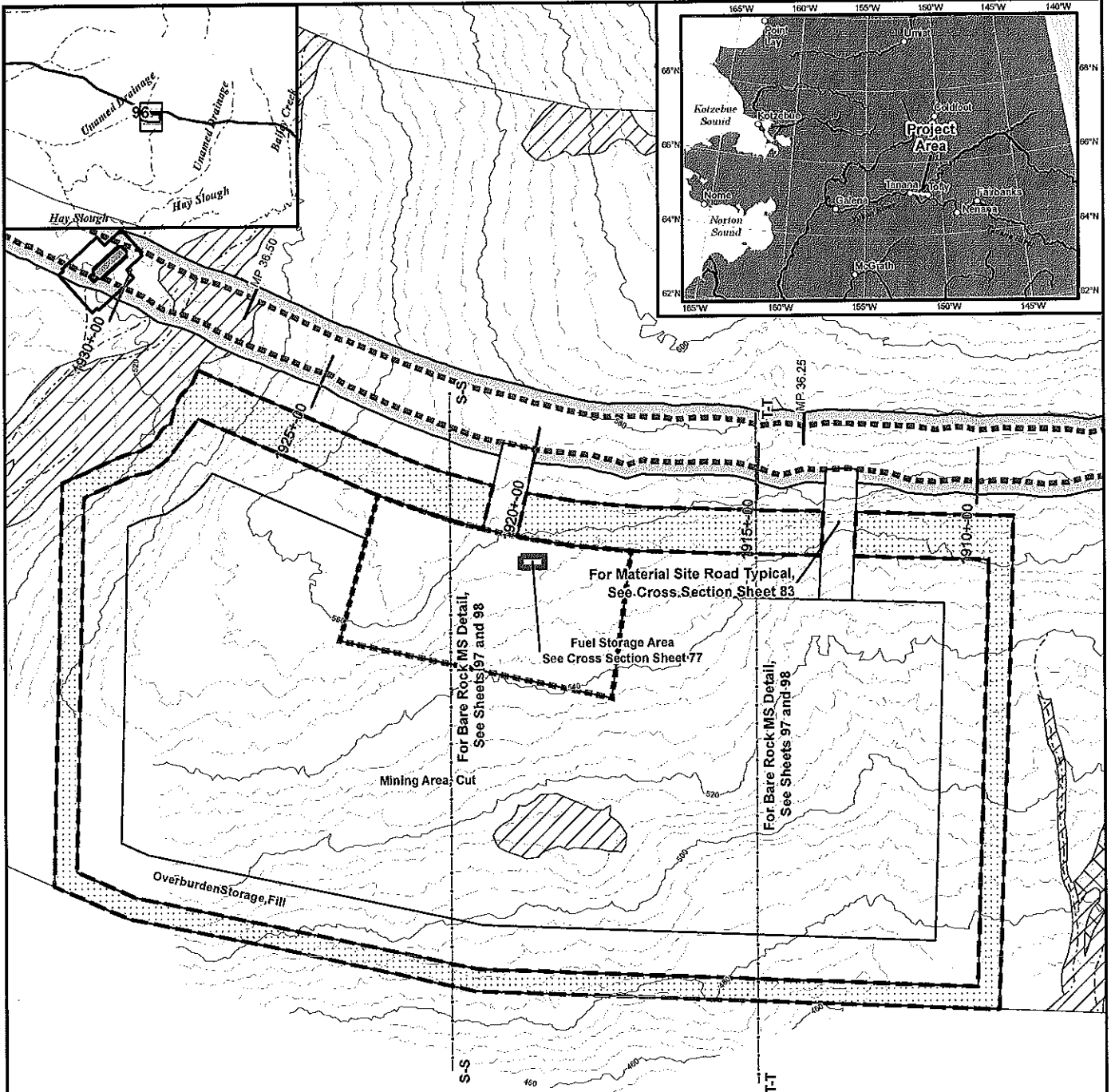
NOTES:

1. EROSION CONTROL STRUCTURES ARE APPROXIMATE AND MAY BE FIELD ADJUSTED BY THE ENGINEER TO TAKE ADVANTAGE OF EXISTING CHANNEL FEATURES.
2. EXTEND RIPRAP 3 FEET ABOVE THE PIPE ON THE INLET SIDE OR TO EDGE OF SHOULDER, WHICHEVER IS LESS. ON THE OUTLET SIDE, THE RIPRAP SHALL EXTEND TO THE TOP OF THE PIPE.
3. GEOTEXTILE IS NEEDED ON ROADWAY FORESLOPE ONLY.
4. FILL VOIDS IN THE INLET AND OUTLET CHANNEL BOTTOM RIPRAP APRONS WITH GRAVEL.

PRELIMINARY

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759	
FISH PASS PIPE PLAN AND OBLIQUE VIEW, SECTION R-R'	
DATE: 12/21/2012	SHEET: 95 OF 110

I:\Industrial Roads Project Files\Tanana Road\04-PS&E\DELIVERABLES TO JPR\Deliverables\Culvert\CULVERT TYPICALS-Fish1.dwg, 19/Dec/12 09:44am



C:\Projects\280_3PP\Tanana_2012\12\Xds_404\RD\Tanana_404_Corps_MS_8x11_1of7_v01.mxd 02/08/13 01:14 PM

Legend

Cut/Fill Boundary	Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
Vegetation Clearing	Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
Vegetative Screen/Buffer	Typical Road Section Change
3PPI Study Area Boundary (12/17/2012)	MS Section Cut Lines
Material Site	20ft Interval Contour
Wetland	4ft Interval Contour
Upland	3PPI Arcs (12/5/2012)
Wetland/Upland Mosaic	(All drainages are unnamed unless labeled on sheet)
Navigable Waters	
Other Waters	
Previously Disturbed	

Scale 1:4,000

0 250 500 750 Feet

N

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

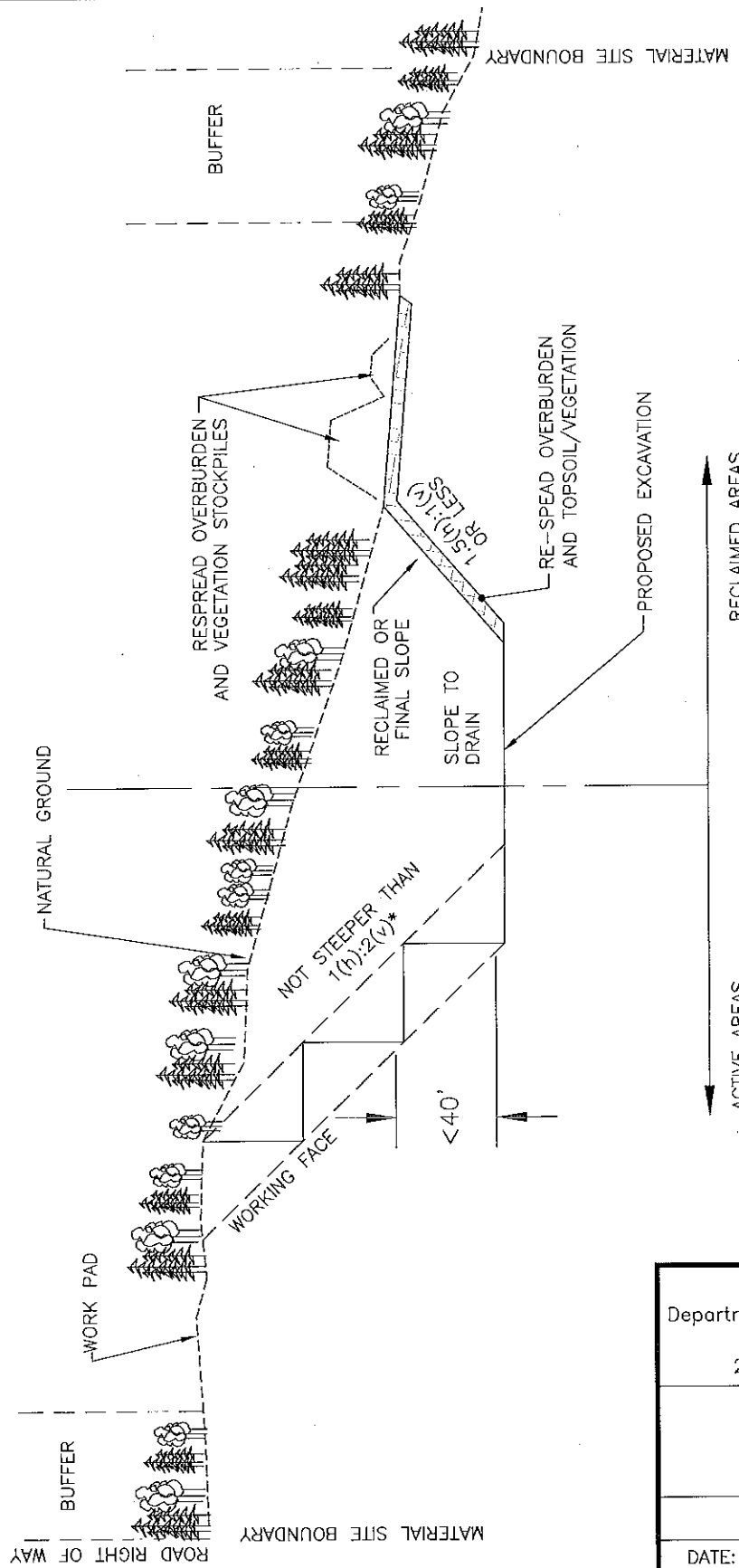
TANANA ROAD PROJECT
61759

Material Site Plan View, MP36.13 to 36.56
Bare Rock Material Site

Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 96 of 110
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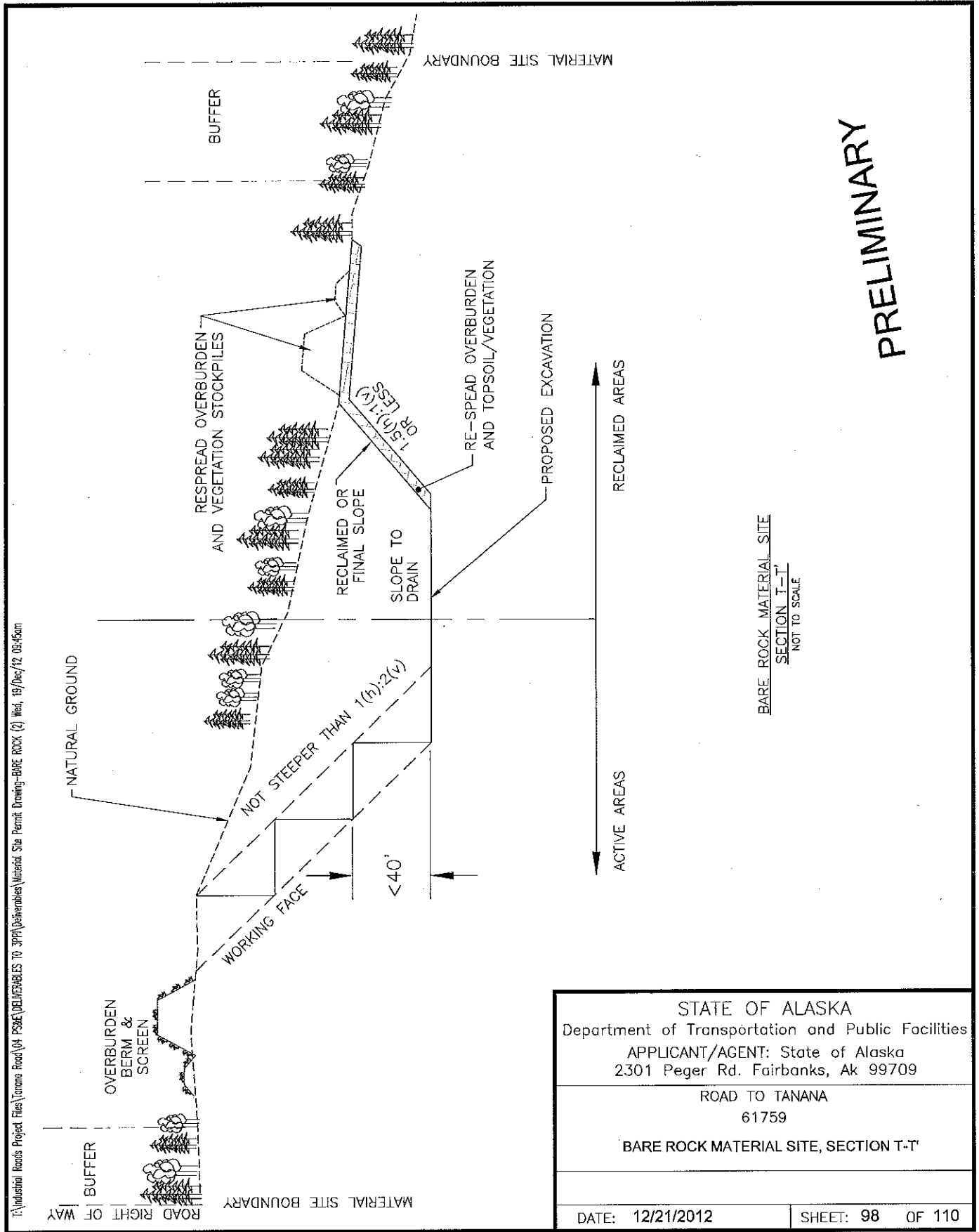
PRELIMINARY



BARE ROCK MATERIAL SITE
SECTION S-S'
NOT TO SCALE

T:\Industrial Roads Project Files\Tanana Road\04_FS&E\DELIVERABLES TO 3PTA\Deliverables\Material Site Permit_Drawing-BARE ROCK West_19/Dec/12 09:56am

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 BARE ROCK MATERIAL SITE, SECTION S-S'	
DATE: 12/21/2012	SHEET: 97 OF 110

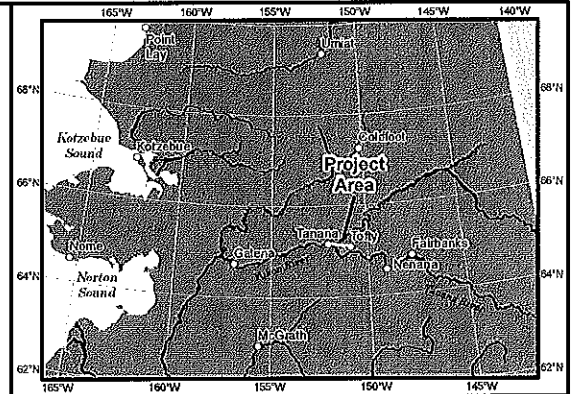
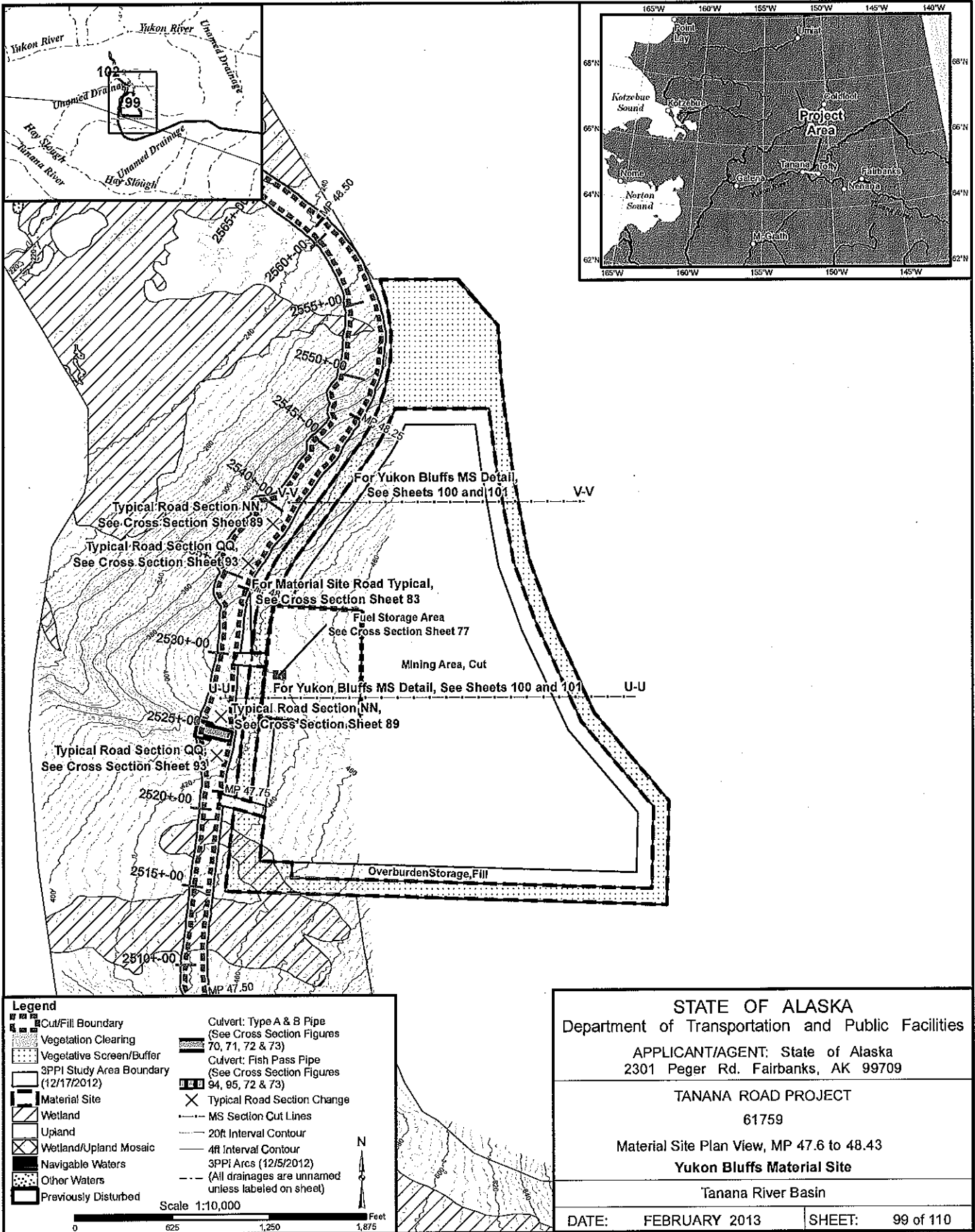


PRELIMINARY

BARE ROCK MATERIAL SITE
SECTION T-T
NOT TO SCALE

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 'BARE ROCK MATERIAL SITE, SECTION T-T'	
DATE: 12/21/2012	SHEET: 98 OF 110

T:\Industrial Roads Project Files\tanana Road\VA FS&E\DELIVERABLES TO 3PP\Deliverables\Material Site Permit Drawing-BARE ROCK (2) West, 19/Dec/12 09:45am



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Legend

	Cut/Fill Boundary		Culvert: Type A & B Pipe (See Cross Section Figures 70, 71, 72 & 73)
	Vegetation Clearing		Culvert: Fish Pass Pipe (See Cross Section Figures 94, 95, 72 & 73)
	Vegetative Screen/Buffer		Typical Road Section Change
	3PPI Study Area Boundary (12/17/2012)		MS Section Cut Lines
	Material Site		20ft Interval Contour
	Wetland		4ft Interval Contour
	Upland		3PPI Arcs (12/5/2012)
	Wetland/Upland Mosaic		(All drainages are unnamed unless labeled on sheet)
	Navigable Waters		
	Other Waters		
	Previously Disturbed		

Scale 1:10,000

0 625 1,250 1,875 Feet

STATE OF ALASKA
Department of Transportation and Public Facilities

APPLICANT/AGENT: State of Alaska
2301 Peger Rd. Fairbanks, AK 99709

TANANA ROAD PROJECT
61759

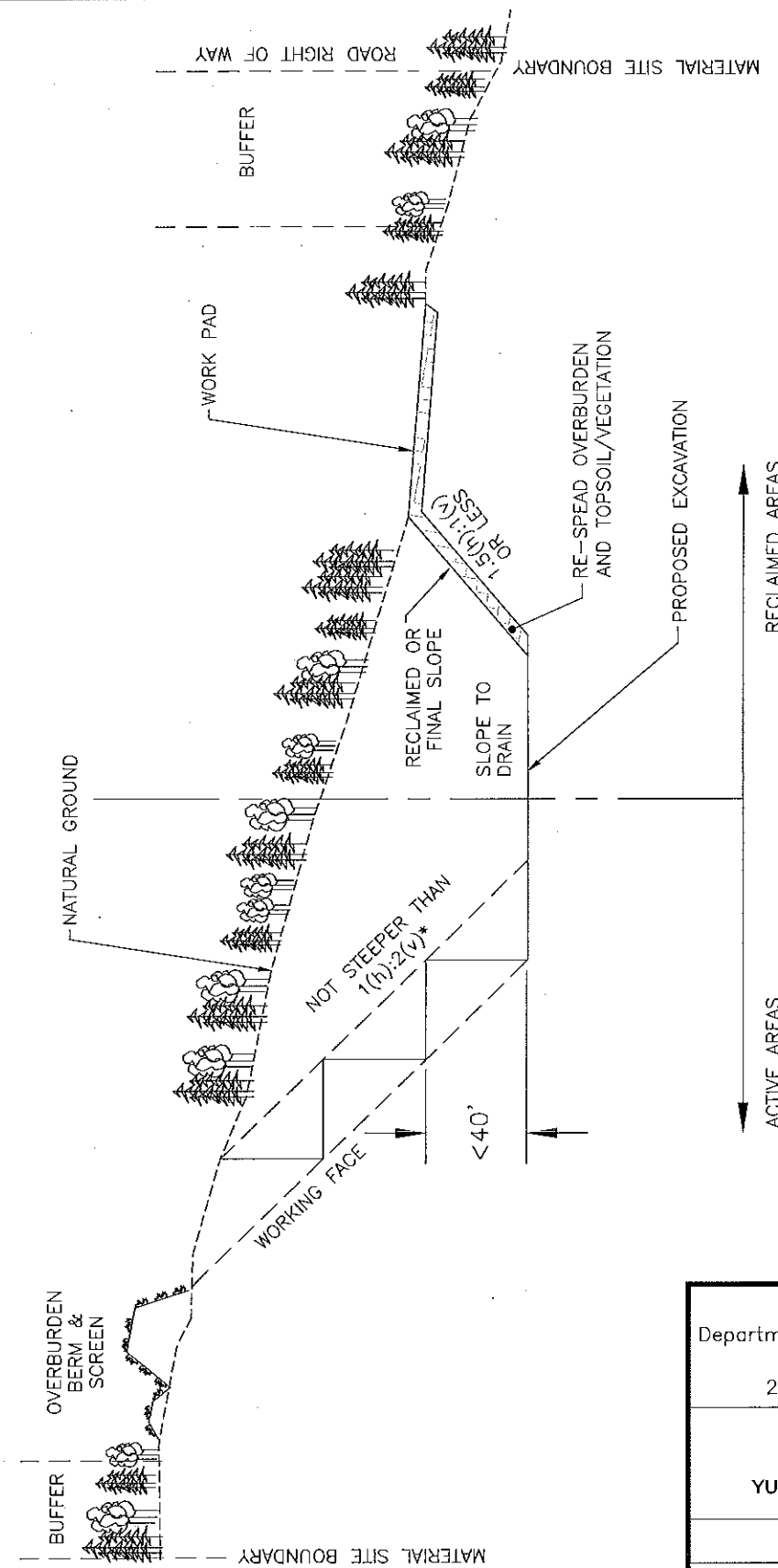
Material Site Plan View, MP 47.6 to 48.43
Yukon Bluffs Material Site

Tanana River Basin

DATE: FEBRUARY 2013	SHEET: 99 of 110
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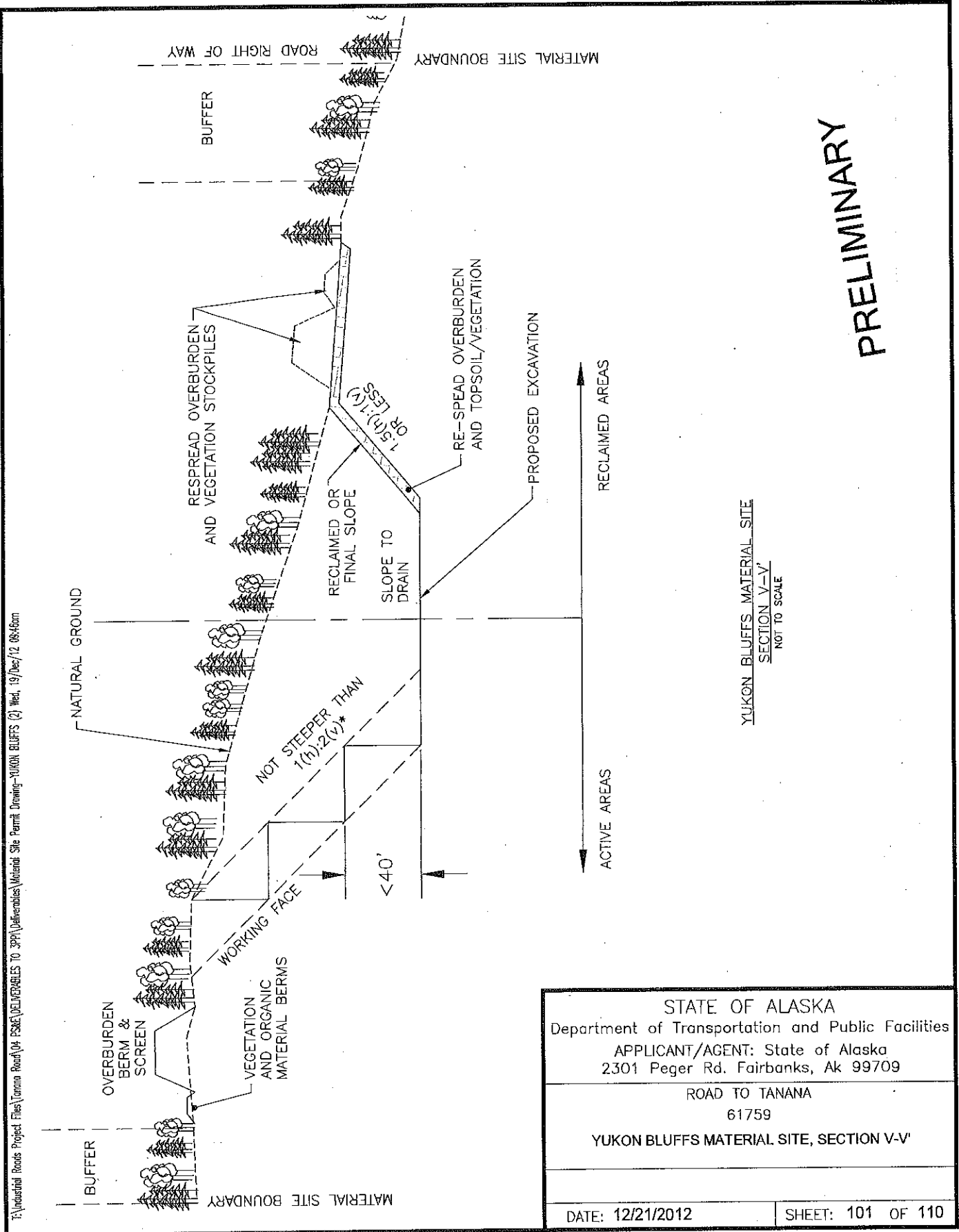
PRELIMINARY

YUKON BLUFFS MATERIAL SITE
SECTION U-U'
NOT TO SCALE



T:\Industrial Roads Project Files\Tanana Road\04 PS&E\DELIVERABLES TO 3PP\Deliverables\Material Site Permit Drawing-YUKON BLUFFS West, 19/Dec/12 08:46am

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 YUKON BLUFFS MATERIAL SITE, SECTION U-U'	
DATE: 12/21/2012	SHEET: 100 OF 110



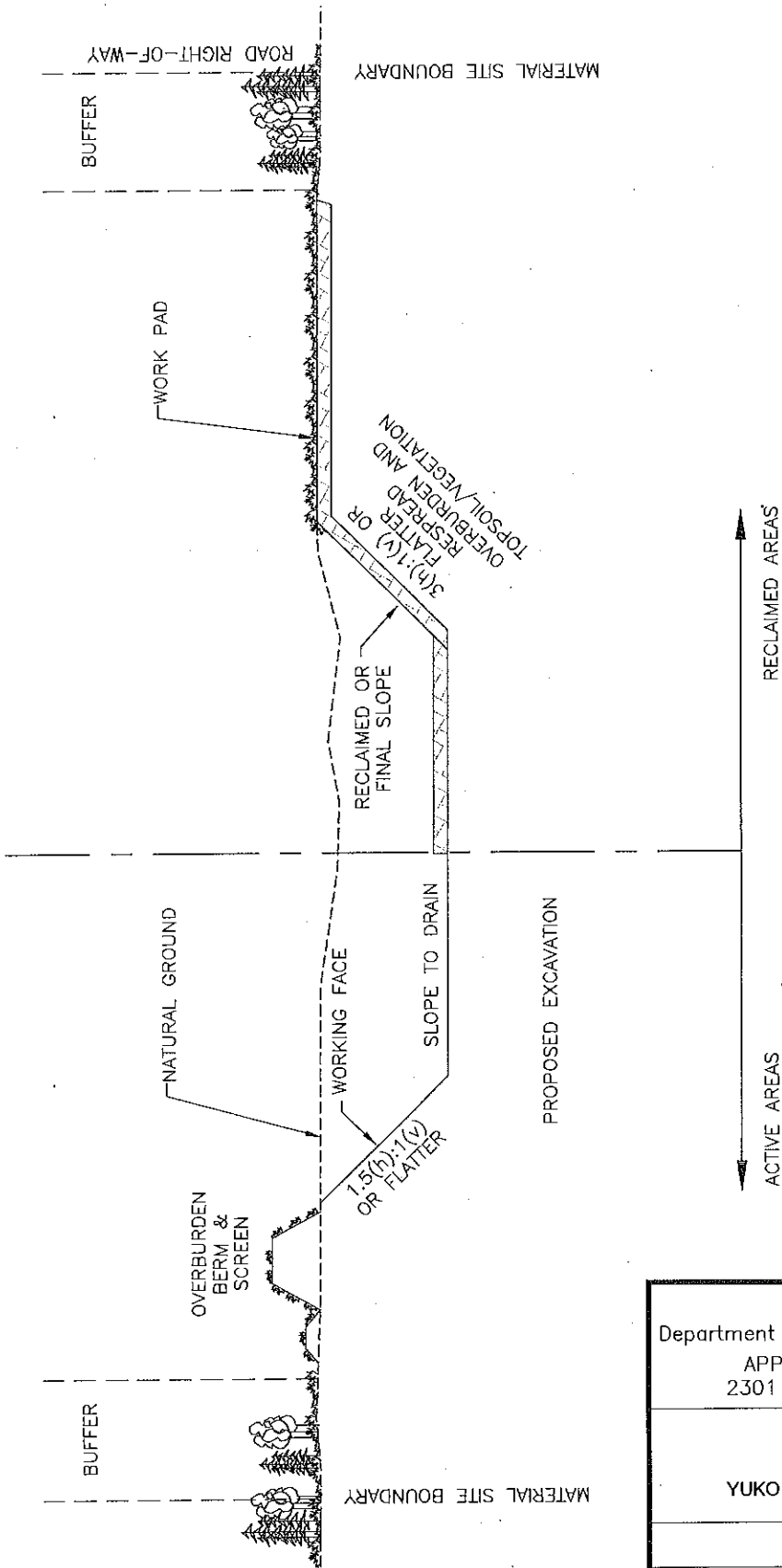
PRELIMINARY

YUKON BLUFFS MATERIAL SITE
SECTION V-V'
NOT TO SCALE

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 YUKON BLUFFS MATERIAL SITE, SECTION V-V'	
DATE: 12/21/2012	SHEET: 101 OF 110

T:\Industrial Roads Project Files\tanana Road\04-ES&E\DELIVERABLES TO 3PP\Deliverables\Material Site Permit Drawing-YUKON BLUFFS (2) Wet, 19 Dec/12 08:46am

I:\Industrial Roads Project Files\Tanana Road\04_PSAE\04DRAFT\040615 TO SPA\Deliverables\Material Site Permit Drawing-YUKON RIVER SITE (2) Web_19/Dec/12 08:47am



RECLAIMED AREAS

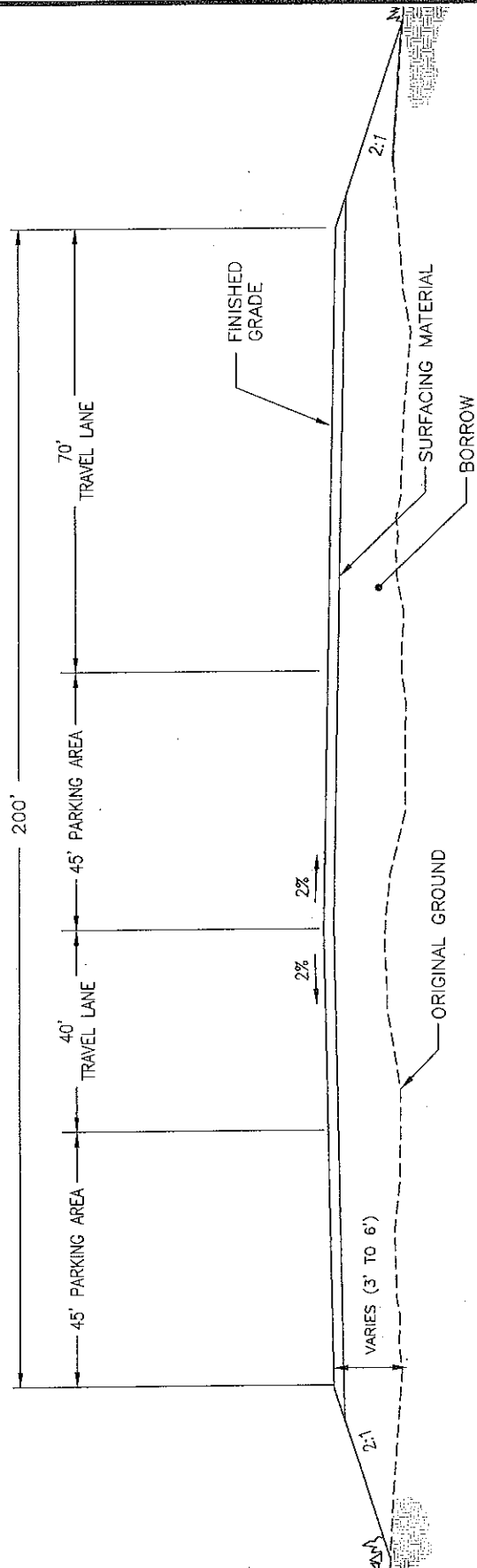
ACTIVE AREAS

YUKON RIVER MATERIAL SITE
SECTION X-X'
NOT TO SCALE

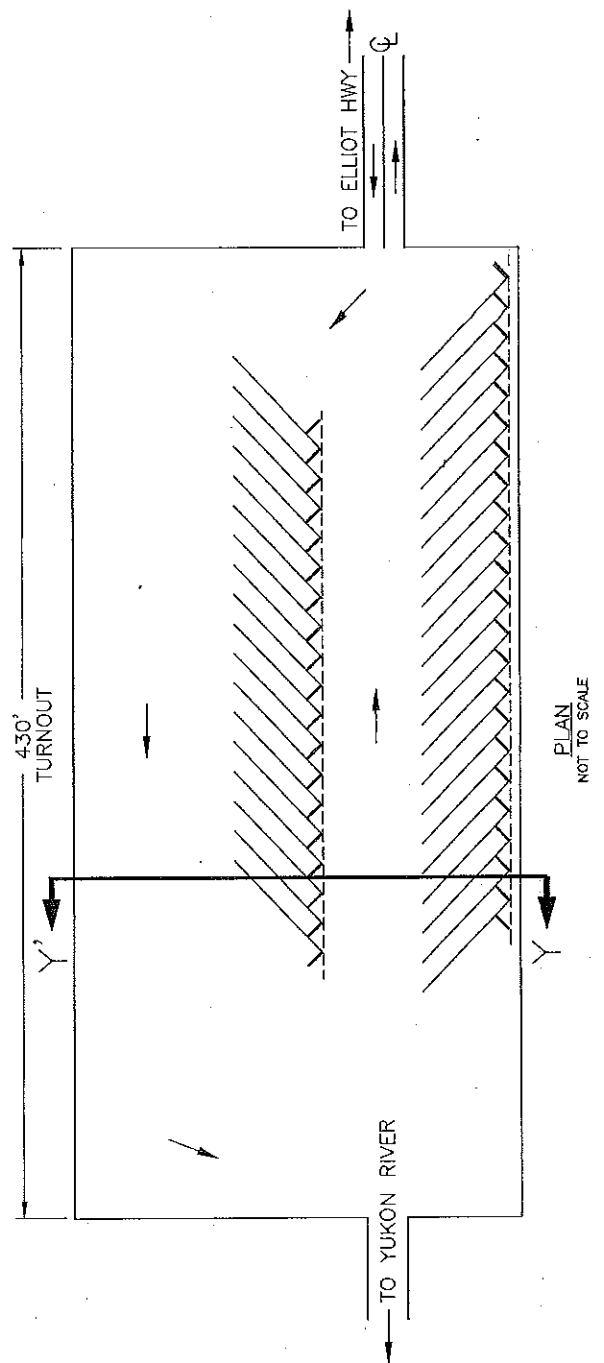
PRELIMINARY

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 YUKON RIVER MATERIAL SITE, SECTION X-X'	
DATE: 12/21/2012	SHEET: 104 OF 110

T:\Industrial Roads Project Files\Tanana Road\04_PSAE\DELIVERABLES TO 3PP\Deliverables\Terminus\sect-Turnout West, 19/Dec/12 09:46am

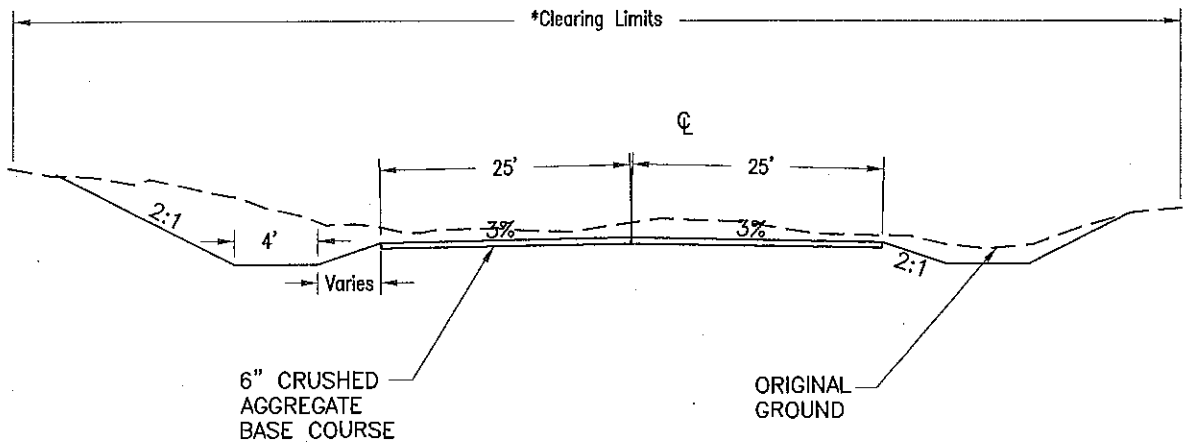


TYPICAL SECTION
SECTION Y-Y'
NOT TO SCALE



STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759	
YUKON RIVER MATERIAL SITE, SECTION Y-Y'	
DATE: 12/21/2012	SHEET: 105 OF 110

TYPICAL ROAD SECTION
SECTION Z-Z'
NTS

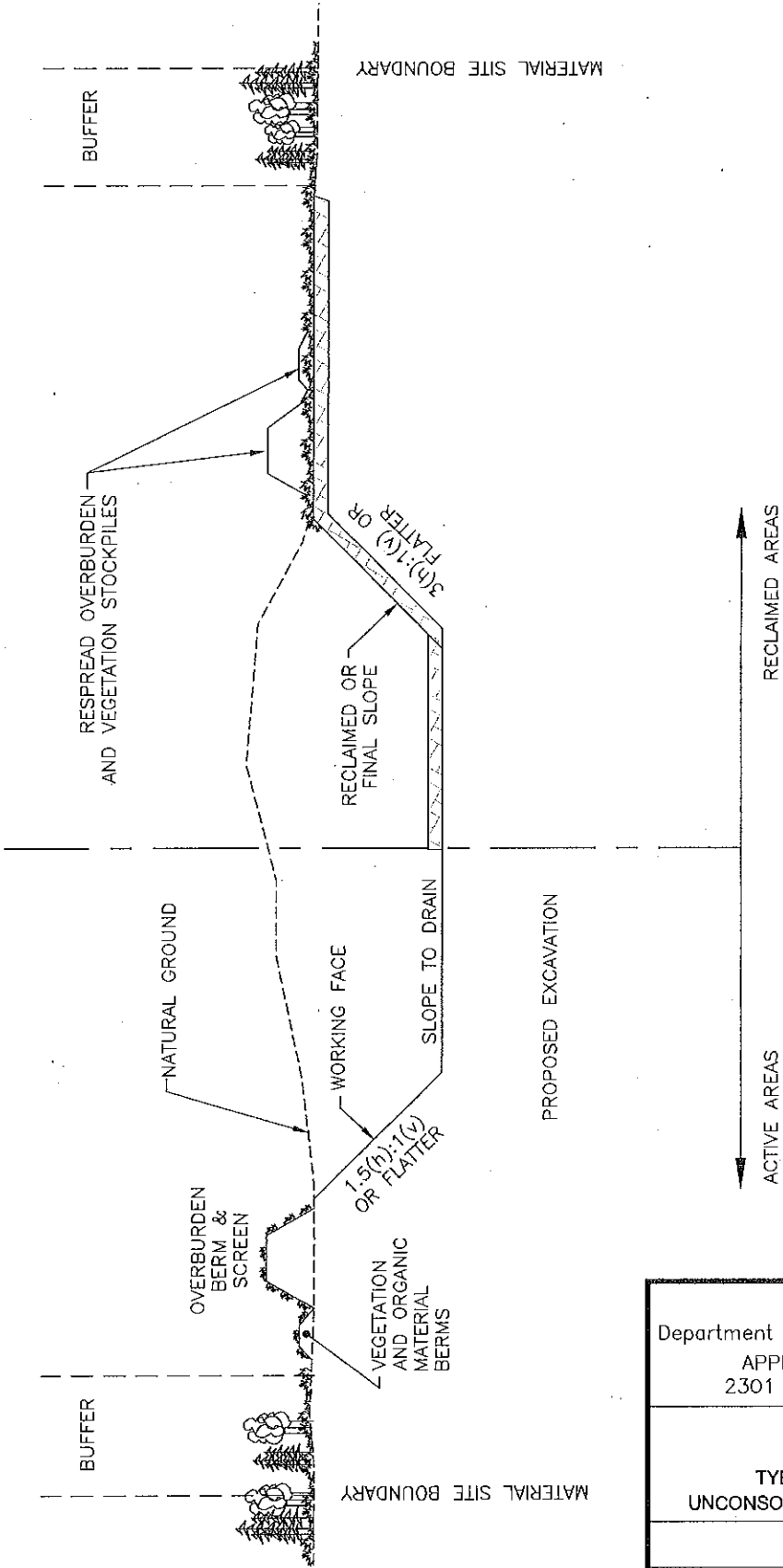


Notes:
* Clearing limits extend 10' beyond the tow

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STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 TYPICAL ROAD SECTION, SECTION Z-Z'	
DATE: 12/21/2012	SHEET: 106 OF 110

T:\Industrial Roads Project Files\Tanana Road\04_P336A\DELIVERABLES TO 3PP\Deliverables\Material Site Permit Drawing-BRY Tue, 18/Dec/12 04:49pm



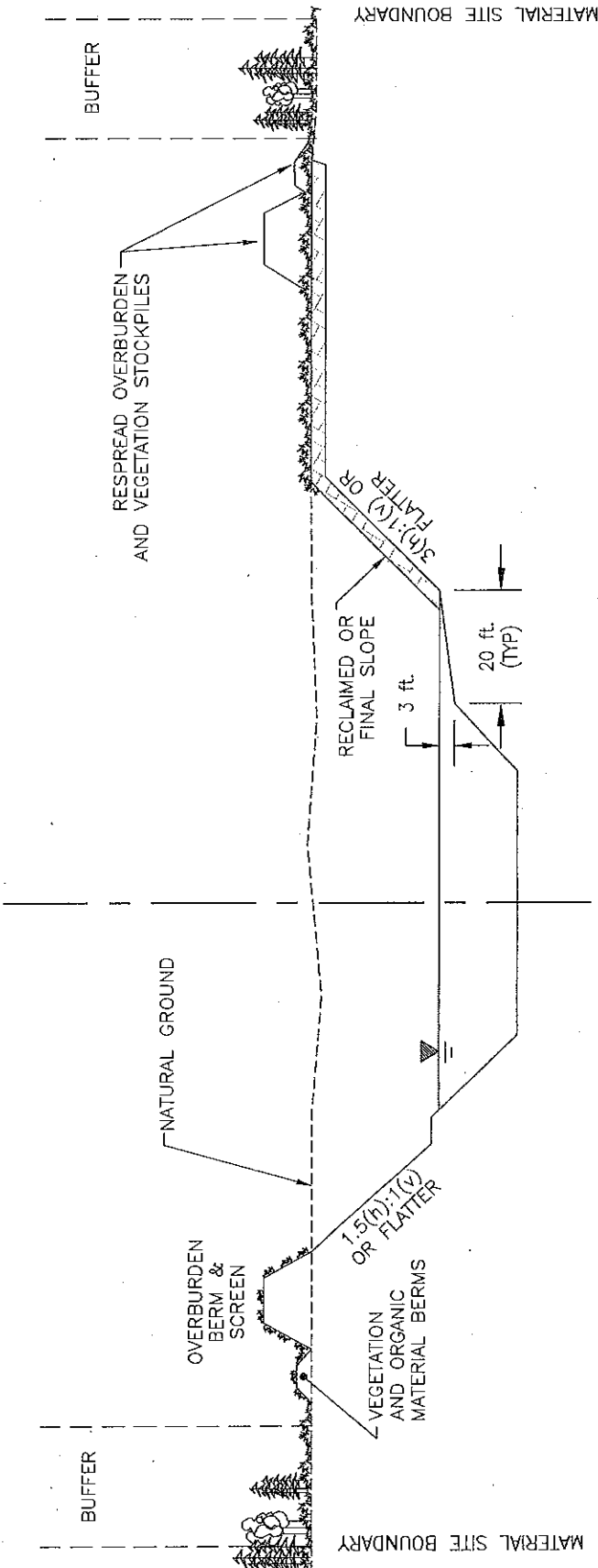
TYPICAL CROSS SECTION IN UNCONSOLIDATED MATERIAL ABOVE WATER TABLE
NOT TO SCALE

PRELIMINARY

NOTE: MATERIAL SITE DIMENSIONS VARY BY SITE. SEE TABLE FOR ACREAGE BY SITE.

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 TYPICAL MINING RECLAMATION PLAN: UNCONSOLIDATED MATERIAL ABOVE WATER TABLE	
DATE: 12/21/2012	SHEET: 107 OF 110

F:\Industrial Roads Project Files\Tanana Road\04_PSAE\DELIVERABLES TO SPA\DELIVERABLES Material Site Permit Drawing-MET Title 18/Dec/12 04:39pm



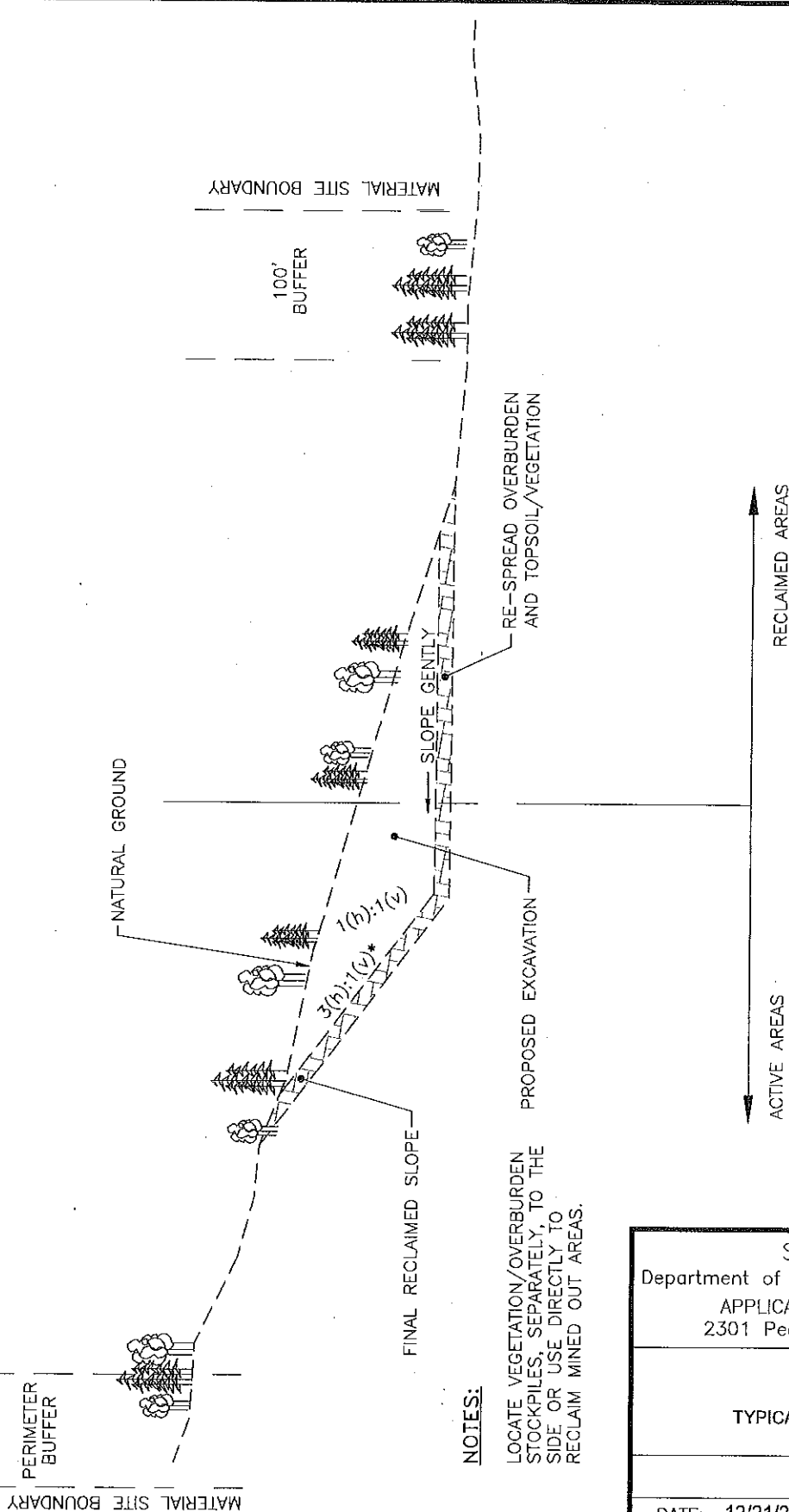
TYPICAL CROSS SECTION IN UNCONSOLIDATED MATERIAL BELOW WATER TABLE
NOT TO SCALE

NOTE: MATERIAL SITE DIMENSIONS VARY BY SITE. SEE TABLE FOR ACREAGE BY SITE.

PRELIMINARY

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, AK 99709	
ROAD TO TANANA 61759 TYPICAL MINING RECLAMATION PLAN: UNCONSOLIDATED MATERIAL BELOW WATER TABLE	
DATE: 12/21/2012	SHEET: 108 OF 110

T:\Industrial Roads\Project Files\Tanana Road\04 PS&E\DELIVERABLES TO 3PP\Deliverables\Material Site Rec Plan - Soft Bedrock-1 Tue, 18/Dec/12 04:41pm



NOTES:

LOCATE VEGETATION/OVERBURDEN STOCKPILES, SEPARATELY, TO THE SIDE OR USE DIRECTLY TO RECLAIM MINED OUT AREAS.

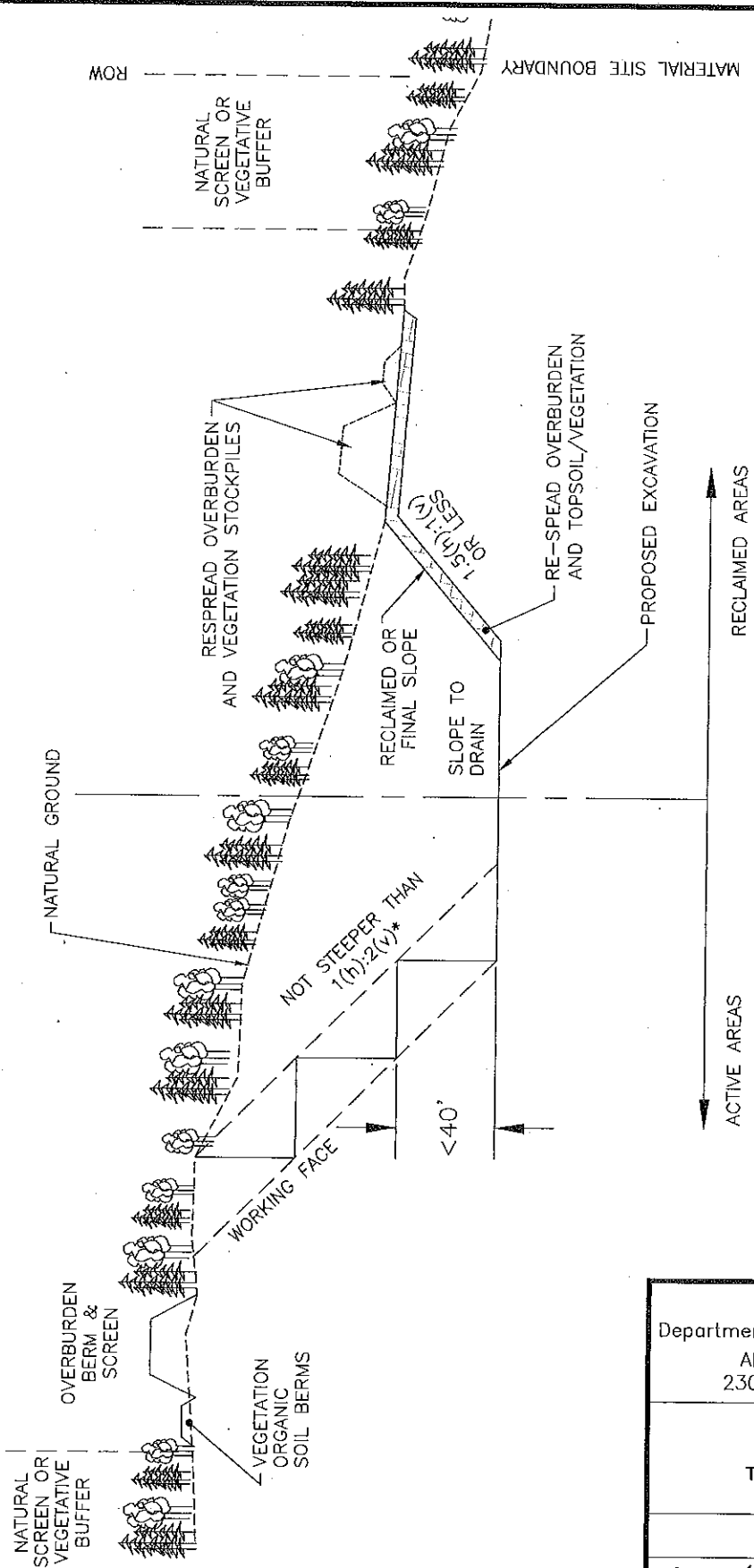
TYPICAL CROSS SECTION FOR EXCAVATION IN SOFT BEDROCK ON HILLSIDE
NOT TO SCALE

NOTE: MATERIAL SITE DIMENSIONS VARY BY SITE. SEE TABLE FOR ACREAGE BY SITE.

PRELIMINARY

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 TYPICAL MINING RECLAMATION PLAN: SOFT BEDROCK	
DATE: 12/21/2012	SHEET: 109 OF 110

T:\Industrial Roads Project Files\tanana Road\04_PSAE\DELIVERABLES TO 3PT\Deliverables\Material Site Permit Drawing-QUARRY.Tue, 18/Dec/12, 04:40pm



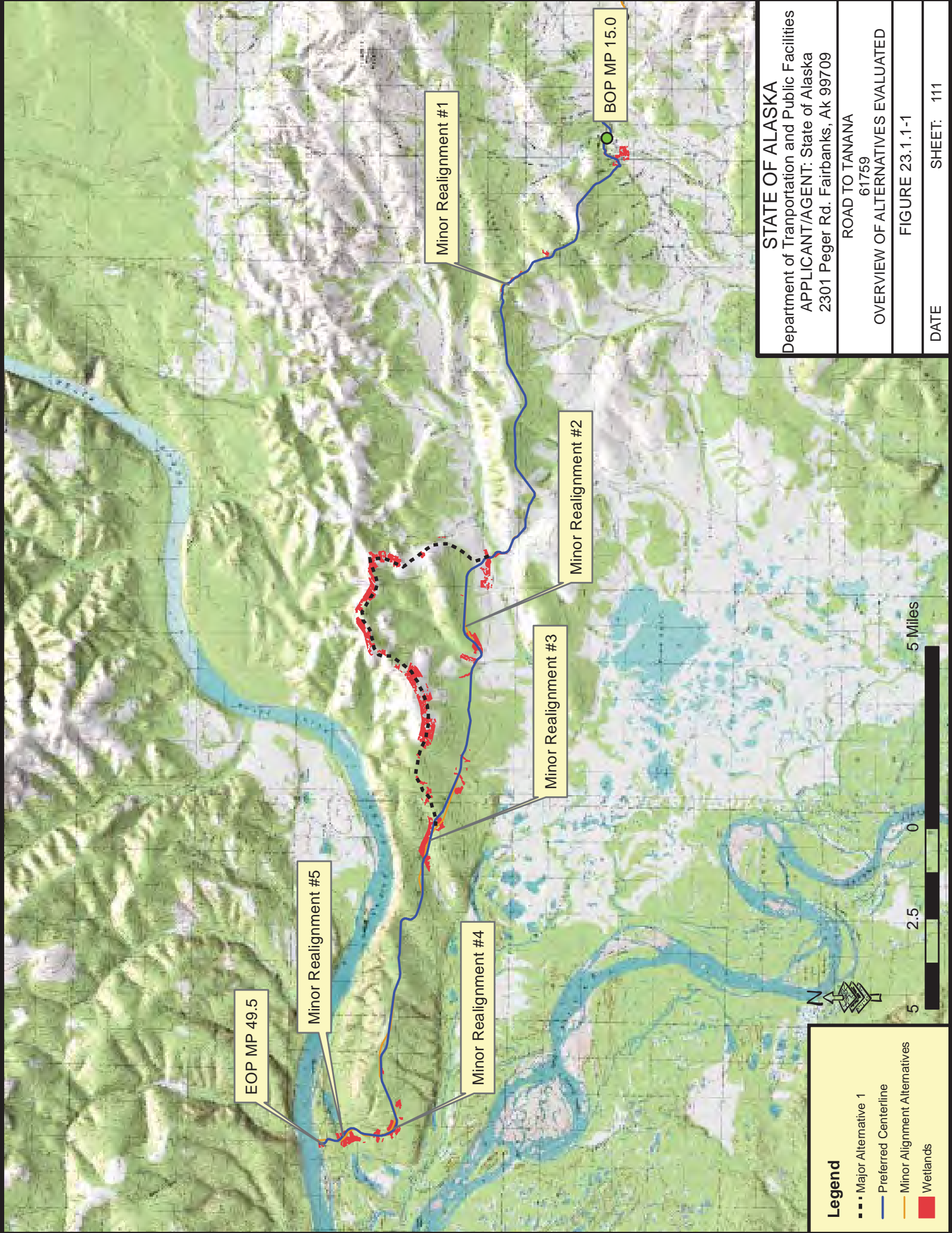
* MAXIMUM SLOPE ANGLE DEPENDS ON SITE-SPECIFIC PARAMETERS AND SHOULD BE DETERMINED FOR INDIVIDUAL SITES.

TYPICAL CROSS SECTION FOR QUARRY SITE
NOT TO SCALE

NOTE: MATERIAL SITE DIMENSIONS VARY BY SITE. SEE TABLE FOR ACREAGE BY SITE.

PRELIMINARY

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709	
ROAD TO TANANA 61759 TYPICAL MINING RECLAMATION PLAN: QUARRY SITES	
DATE: 12/21/2012	SHEET: 110 OF 110



Legend

- Major Alternative 1
- Preferred Centerline
- Minor Alignment Alternatives
- Wetlands

STATE OF ALASKA
 Department of Transportation and Public Facilities
 APPLICANT/AGENT: State of Alaska
 2301 Peger Rd. Fairbanks, Ak 99709

ROAD TO TANANA
 61759

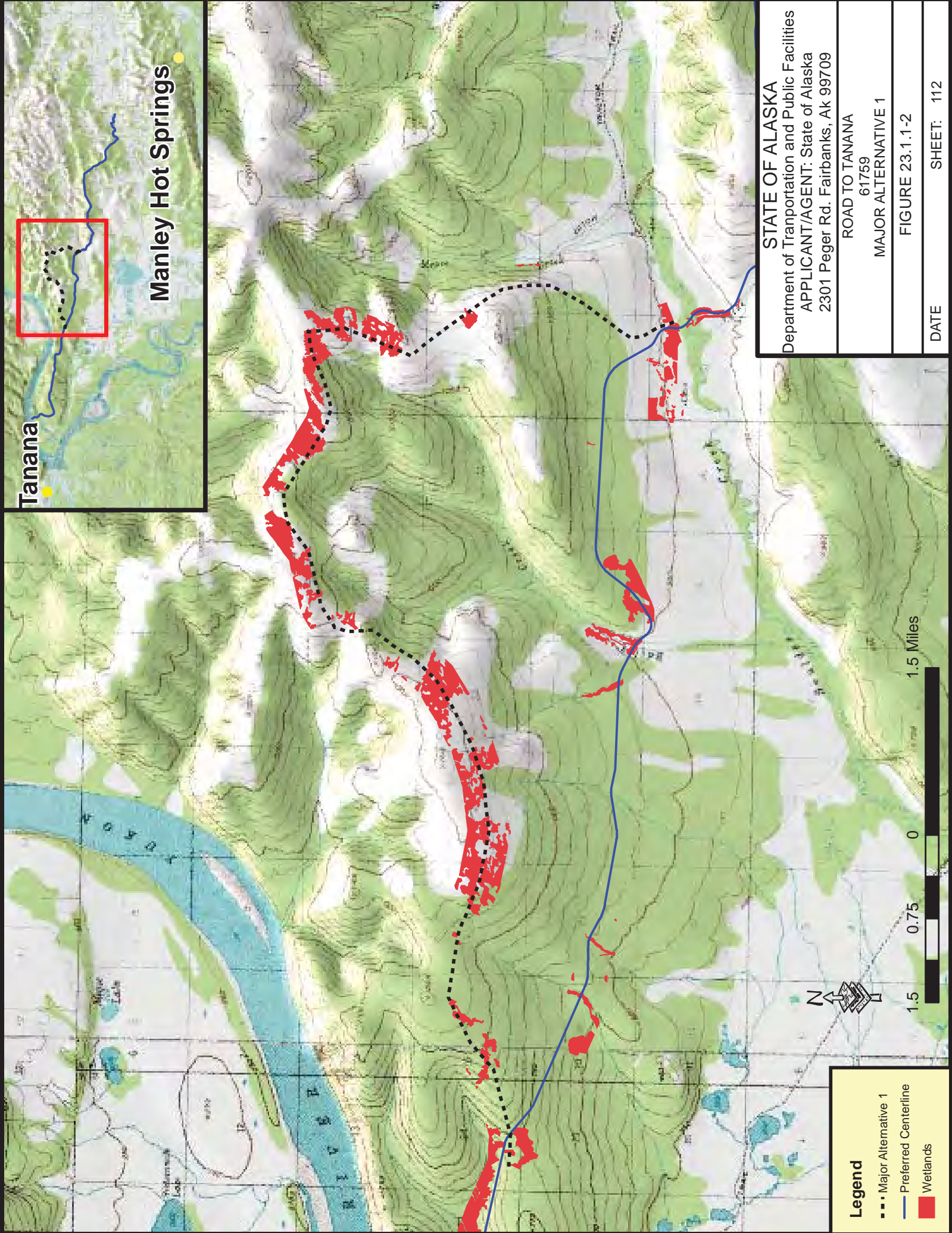
OVERVIEW OF ALTERNATIVES EVALUATED

FIGURE 23.1.1-1

DATE SHEET: 111

Tanana

Manley Hot Springs



Legend

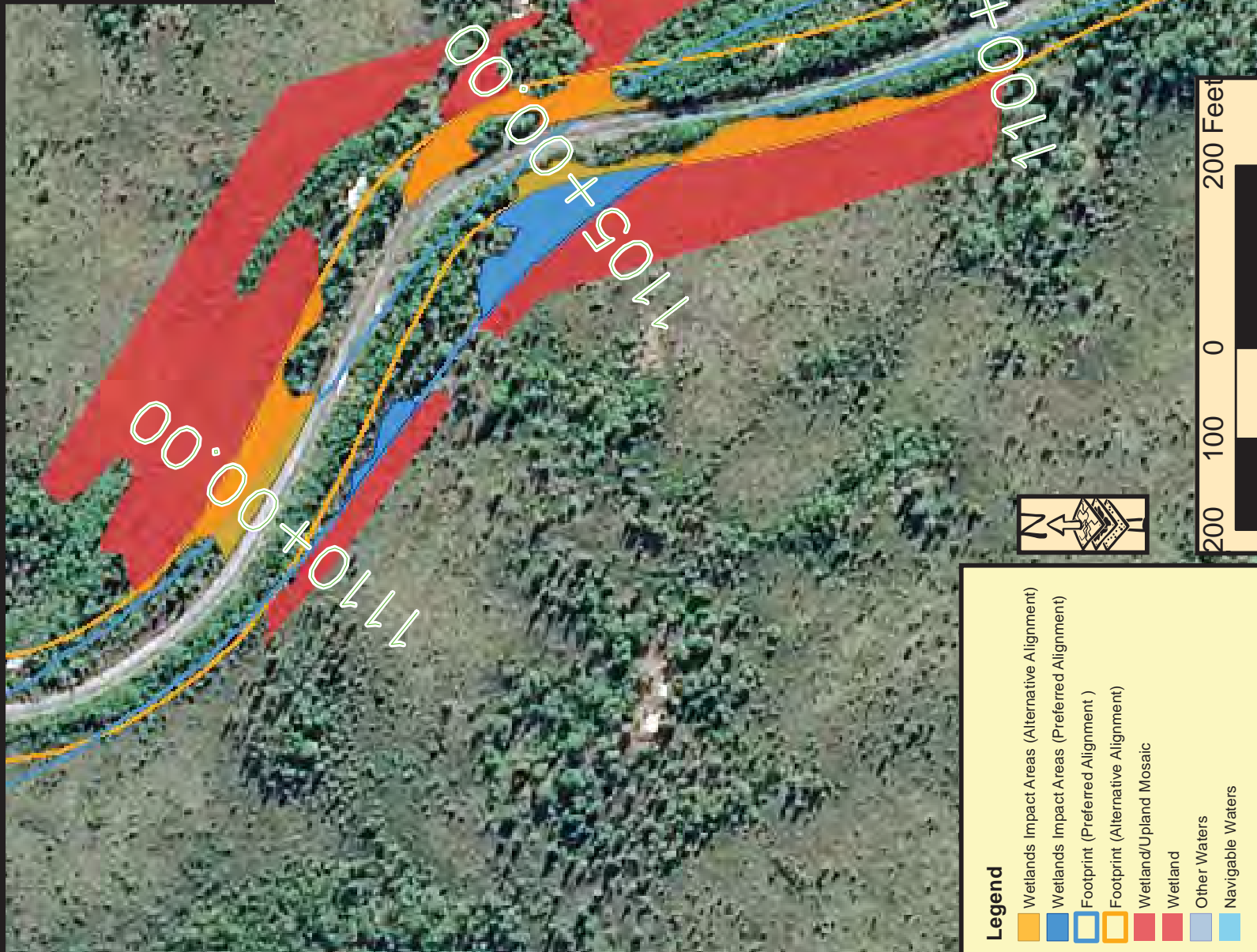
- Major Alternative 1
- Preferred Centerline
- Wetlands

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ROAD TO TANANA
 61759
 MAJOR ALTERNATIVE 1

FIGURE 23.1.1-2

DATE SHEET: 112



Legend

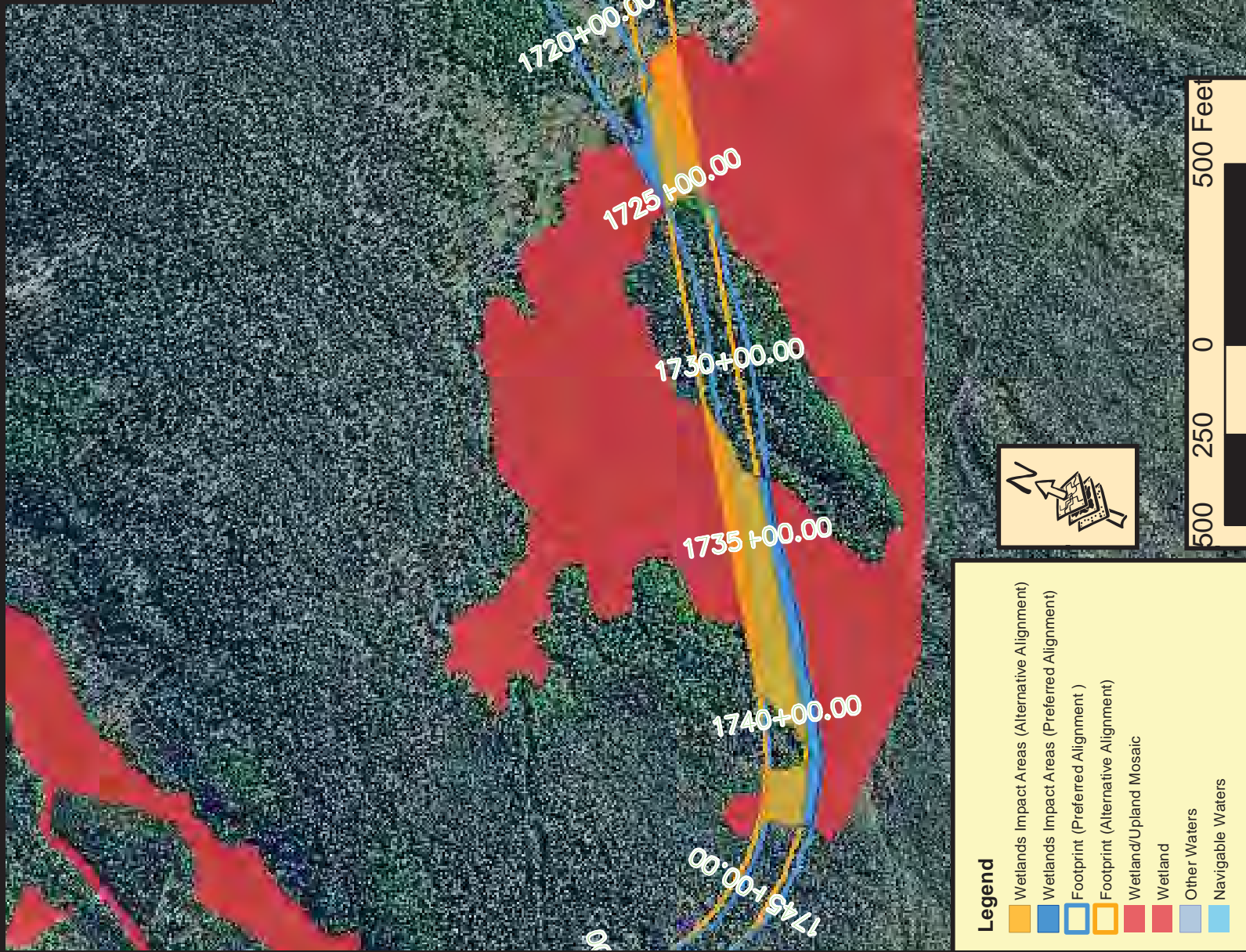
	Wetlands Impact Areas (Alternative Alignment)
	Wetlands Impact Areas (Preferred Alignment)
	Footprint (Preferred Alignment)
	Footprint (Alternative Alignment)
	Wetland/Upland Mosaic
	Wetland
	Other Waters
	Navigable Waters

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ROAD TO TANANA 61759 MINOR ALTERNATIVE 1
FIGURE 23.1.1-3
DATE SHEET: 113



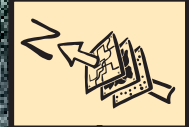
Tanana

Manley Hot Springs



Legend

- Wetlands Impact Areas (Alternative Alignment)
- Wetlands Impact Areas (Preferred Alignment)
- Footprint (Preferred Alignment)
- Footprint (Alternative Alignment)
- Wetland/Upland Mosaic
- Wetland
- Other Waters
- Navigable Waters

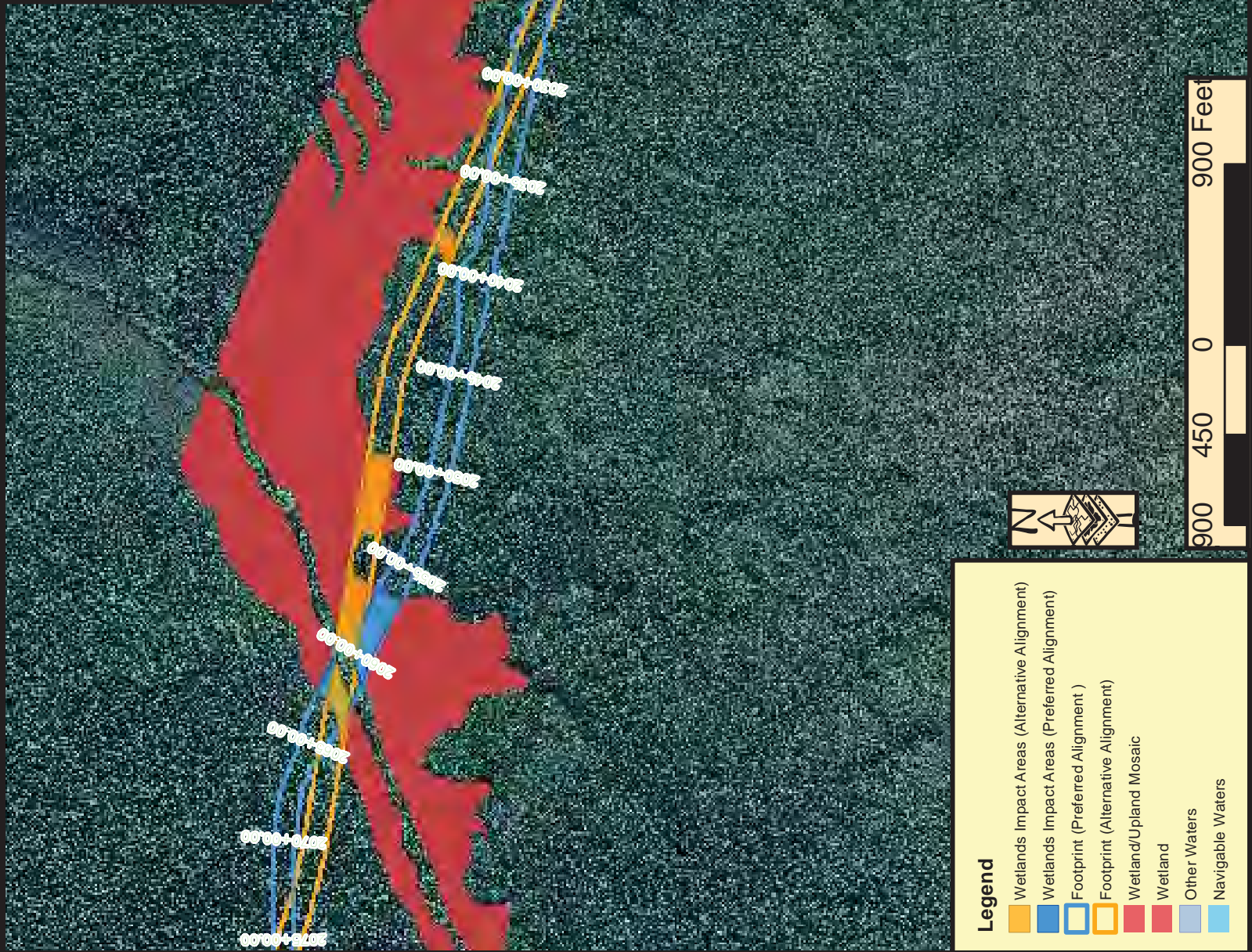


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ROAD TO TANANA 61759 MINOR ALTERNATIVE 2
FIGURE 23.1.1-4
DATE SHEET: 114



Tanana

Manley Hot Springs

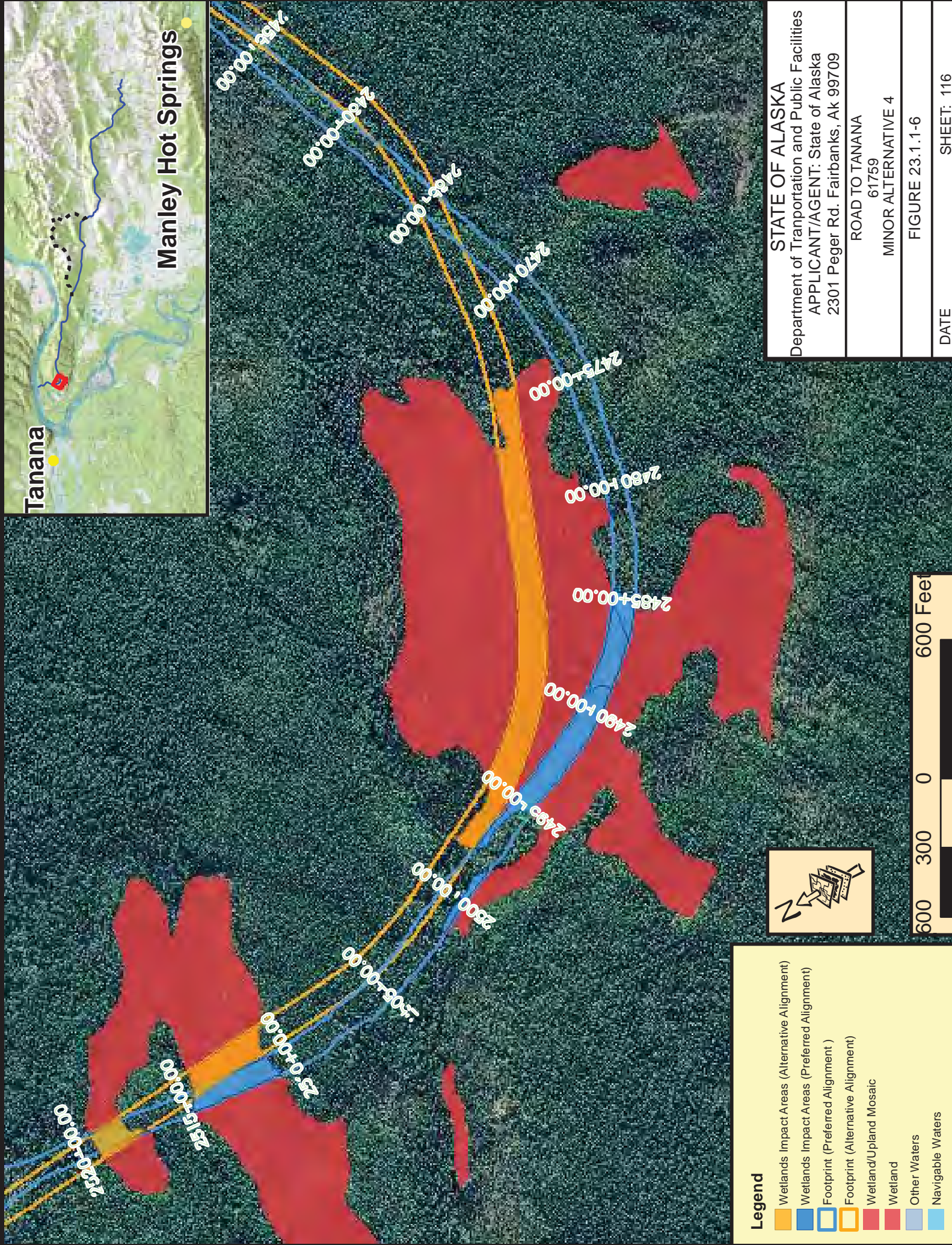


Legend

- Wetlands Impact Areas (Alternative Alignment)
- Wetlands Impact Areas (Preferred Alignment)
- Footprint (Preferred Alignment)
- Footprint (Alternative Alignment)
- Wetland/Upland Mosaic
- Wetland
- Other Waters
- Navigable Waters

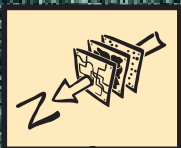


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ROAD TO TANANA 61759 MINOR ALTERNATIVE 3
FIGURE 23.1.1-5
DATE SHEET: 115



Legend

- Wetlands Impact Areas (Alternative Alignment)
- Wetlands Impact Areas (Preferred Alignment)
- Footprint (Preferred Alignment)
- Footprint (Alternative Alignment)
- Wetland/Upland Mosaic
- Wetland
- Other Waters
- Navigable Waters



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ROAD TO TANANA
 61759
 MINOR ALTERNATIVE 4

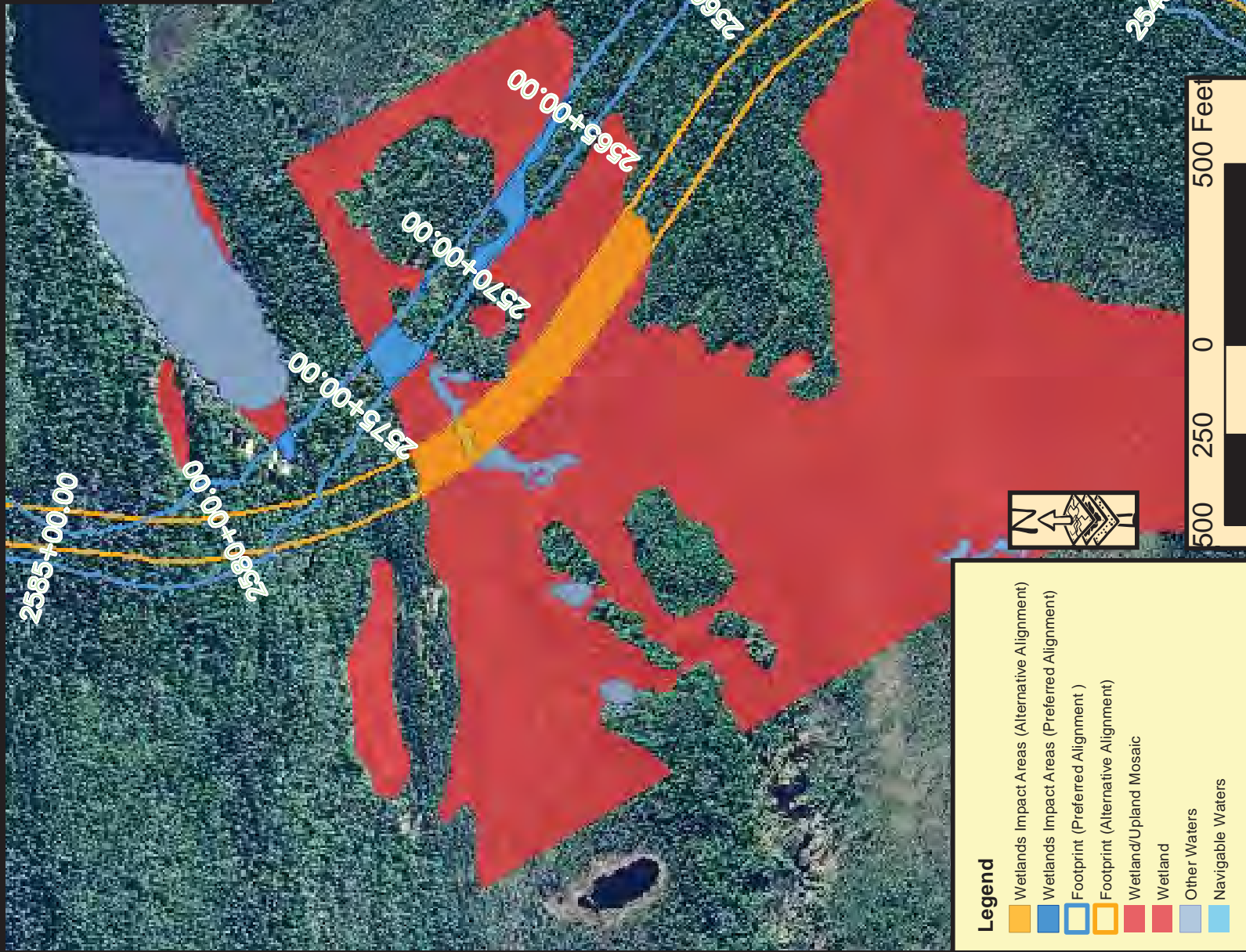
FIGURE 23.1.1-6

DATE SHEET: 116



Tanana

Manley Hot Springs

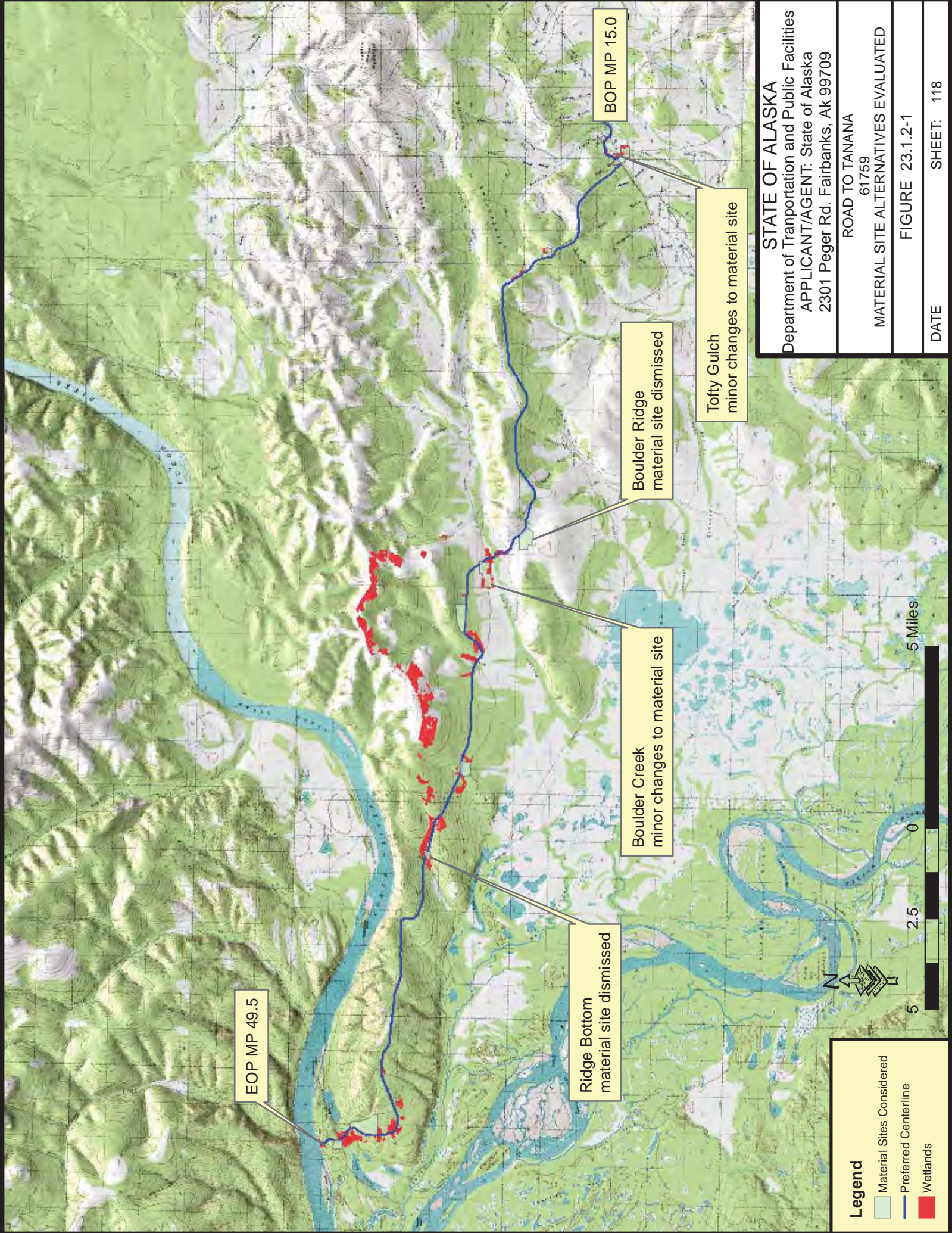


Legend

- Wetlands Impact Areas (Alternative Alignment)
- Wetlands Impact Areas (Preferred Alignment)
- Footprint (Preferred Alignment)
- Footprint (Alternative Alignment)
- Wetland/Upland Mosaic
- Wetland
- Other Waters
- Navigable Waters



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ROAD TO TANANA 61759 MINOR ALTERNATIVE 5
FIGURE 23.1.1-7
DATE SHEET: 117



EOP MP 49.5

Ridge Bottom
material site dismissed

Boulder Creek
minor changes to material site

Boulder Ridge
material site dismissed

Tofty Gulch
minor changes to material site

BOP MP 15.0

Legend

- Material Sites Considered
- Preferred Centerline
- Wetlands



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MATERIAL SITE ALTERNATIVES EVALUATED

FIGURE 23.1.2-1

DATE SHEET: 118



Legend

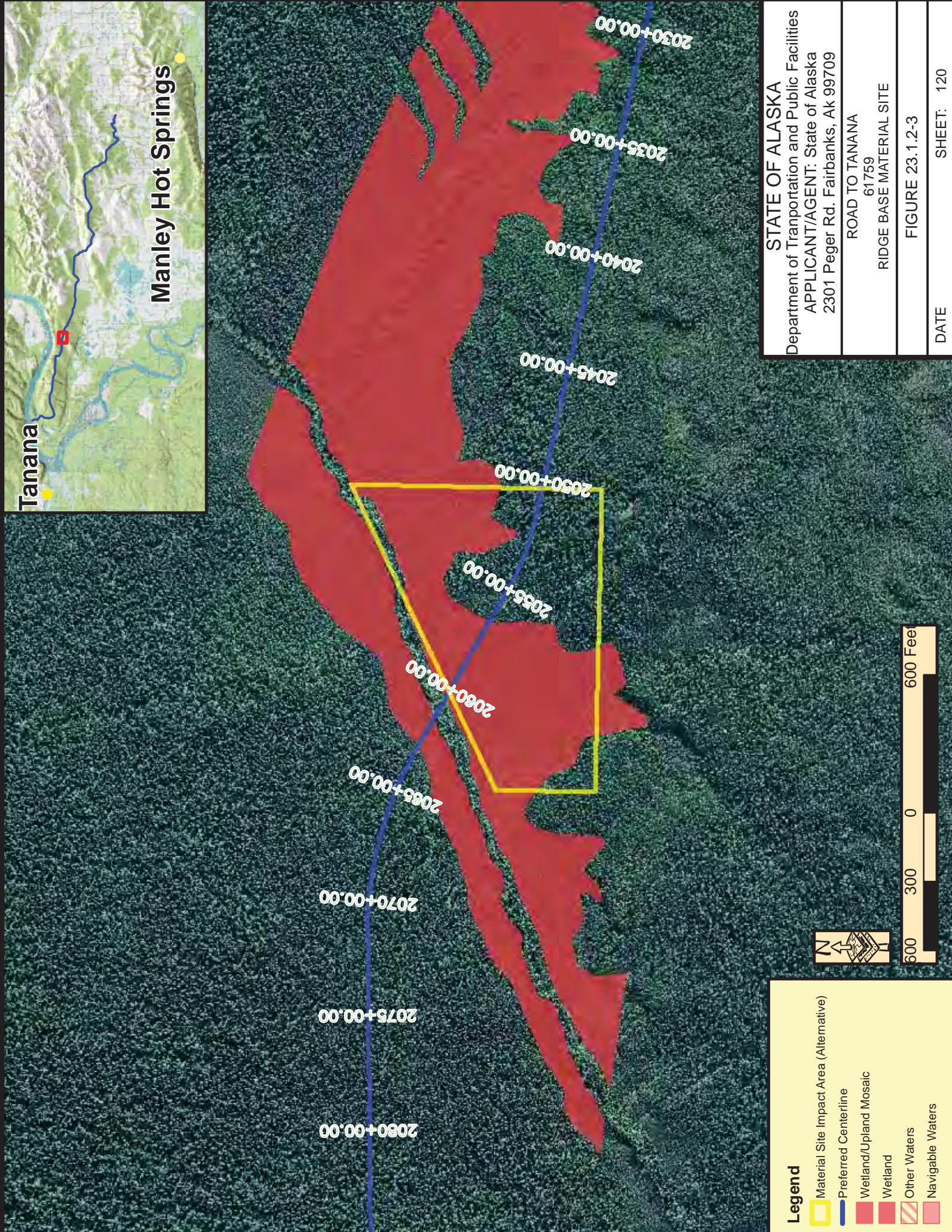
	Material Site Impact Area (Alternative)
	Preferred Centerline
	Wetland/Upland Mosaic
	Wetland
	Other Waters
	Navigable Waters

STATE OF ALASKA Department of Transportation and Public Facilities APPLICANT/AGENT: State of Alaska 2301 Peger Rd. Fairbanks, Ak 99709
ROAD TO TANANA 61759
BOULDER RIDGE MATERIAL SITE
FIGURE 23.1.2-2
DATE SHEET: 119



Manley Hot Springs

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ROAD TO TANANA
 61759
 RIDGE BASE MATERIAL SITE

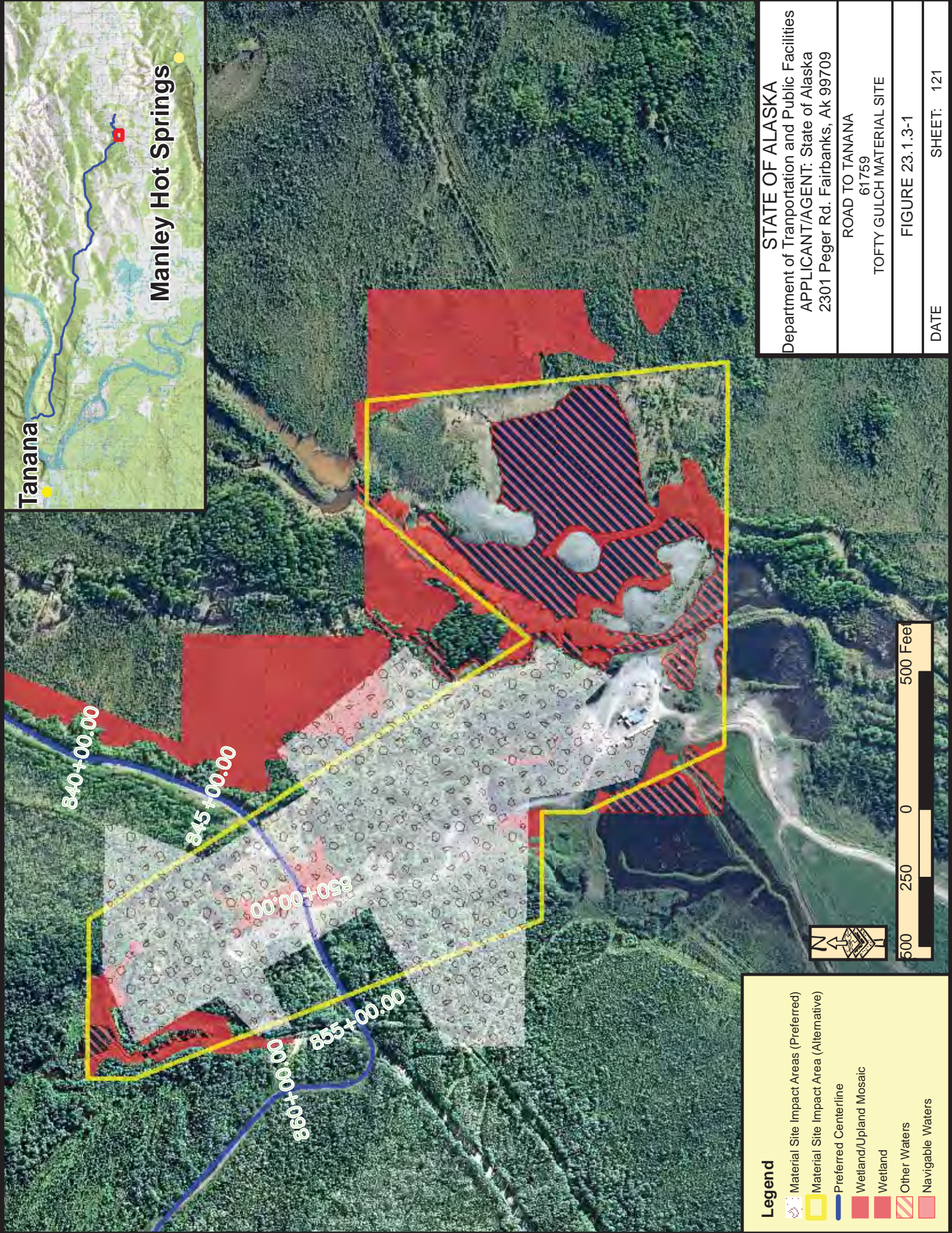
FIGURE 23.1.2-3

DATE SHEET: 120



Legend

- Material Site Impact Area (Alternative)
- Preferred Centerline
- Wetland/Upland Mosaic
- Wetland
- Other Waters
- Navigable Waters










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ROAD TO TANANA
 61759
 TOFTY GULCH MATERIAL SITE

FIGURE 23.1.3-1

DATE: SHEET: 121

Legend

-  Material Site Impact Areas (Preferred)
-  Material Site Impact Area (Alternative)
-  Preferred Centerline
-  Wetland/Upland Mosaic
-  Wetland
-  Other Waters
-  Navigable Waters

Tanana

Manley Hot Springs

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ROAD TO TANANA
 61759

BOULDER CREEK MATERIAL SITE

FIGURE 23.1.3-2

DATE SHEET: 122



Legend

- Material Site Impact Areas (Preferred)
- Material Site Impact Area (Alternative)
- Preferred Centerline
- Wetland/Upland Mosaic
- Wetland
- Other Waters
- Navigable Waters



Introduction

This supplemental information document is provided to augment information found in the attached Engineering Form 4335, a permit application by the Alaska Department of Transportation and Public Facilities (ADOT&PF) to upgrade and extend a northwest-southeast access corridor from the existing Tofty Road, from northwest of Manley Hot Springs to the Yukon River, Alaska.

Information presented below is organized by the numbered block on the permit application for those blocks where insufficient room was available to answer the question. Sheets 1-110, which follow, are also an integral part of the application.

Application Block 15: Location of Project

Latitude and longitude in North American Datum 1983 (NAD83) for major facilities associated with the Road to Tanana Project (hereafter, Project) is presented in Table 15.1. Sheet 1 shows the general vicinity of the Project. Sheet 2 shows the Project Layout including the proposed alignment of the roads, material pads, turnouts, bridges, and parking facilities that will be constructed.

To facilitate review of the road and facilities, the plan view maps move sequentially along the alignment. Sheets 2A and 2B show the plan view sheet numbers that correspond to specific sections of the alignment and related facilities. To access a particular sheet along the alignment, the sheet labels on Sheet 2A and 2B are also hyperlinked to their respective plan view maps.

TABLE 15.1 Project Features by Latitude and Longitude, Decimal Degrees (DD)

Mile Post	Facility Type	Drawing Type(s)	Stream Type	Station Feet (Begin/End)	Latitude	Longitude	Sheet number
15.05	Begin – Existing Road Drainage Improvements	Road Typical A-A		79500 to 85500	65.089142	-150.825793	3,4,5
15.59	Sullivan Creek Crossing	Culvert Typical B-B	Non-Fish	82318.0	65.090761	-150.893828	4
16.09	Tofty Gulch Crossing	Culvert Typical B-B	Non-Fish	84950.0	65.085757	-150.902994	5
16.10	Tofty Gulch Material Site	Cross Sections C-C, D-D, E-E (Typical Fuel)		84997.1	65.085716	-150.903310	5
16.19	Construct New Road Over Existing Trail	Road Typical F-F		85500 to 92000	65.085126	-150.906235	5,6,7,8
17.42	Construct New Road Over Existing Trail	Road Typical G-G		92000 to 93500	65.097726	-150.933808	8
17.71	Construct New Road Over Existing Trail	Road Typical F-F		93500 to 98000	65.100407	-150.941169	8,9,10
18.56	Construct New Road Over Existing Trail	Road Typical G-G		98000 to 99300	65.101275	-150.969199	10
18.81	Construct New Road Over Existing Trail	Road Typical F-F		99300 to 101600	65.102120	-150.977387	10,11

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Mile Post	Facility Type	Drawing Type(s)	Stream Type	Station Feet (Begin/End)	Latitude	Longitude	Sheet numbers
19.24	Construct New Road Over Existing Trail	Road Typical G-G		101600 to 102500	65.107288	-150.985420	11, 12
19.41	Construct New Road Over Existing Trail	Road Typical F-F		102500 to 107000	65.109592	-150.987461	12, 13
19.83	Ridge Top Material Site	Cross Sections H-H, I-I, J-J (Typical Access) & E-E (Typical Fuel)		104712.5	65.113981	-150.995626	12
20.27	Construct New Road Over Existing Trail	Road Typical G-G		107000 to 108000	65.119492	-151.001796	13, 14
20.45	Construct New Road Over Existing Trail	Road Typical F-F		108000 to 111400	65.120820	-151.007466	14, 15, 16
21.10	Turnout #1	Typical K-K		111400 to 112100	65.128278	-151.019663	15
21.23	Construct New Road Over Existing Trail	Road Typical F-F		112100 to 114000	65.130066	-151.021181	15, 16
21.59	Construct New Road Over Existing Trail	Road Typical G-G		114000 to 115700	65.131251	-151.032705	16
21.91	Construct New Road Over Existing Trail	Road Typical F-F		115700 to 116200	65.131366	-151.043408	16, 17
22.01	Turnout #2	Typical K-K		116200 to 116900	65.131533	-151.046598	17
22.14	Construct New Road Over Existing Trail	Road Typical F-F		116900 to 119200	65.131087	-151.051018	17, 18
22.58	Construct New Road Over Existing Trail	Road Typical G-G		119200 to 120600	65.129996	-151.065694	18
22.84	Construct New Road Over Existing Trail	Road Typical F-F		120600 to 125800	65.129574	-151.074729	18, 19, 20
23.83	Construct New Road Over Existing Trail	Road Typical G-G		125800 to 127400	65.126058	-151.106778	20
24.13	Turnout #3	Typical K-K		127400 to 128100	65.123831	-151.115718	20
24.26	Construct New Road Over Existing Trail	Road Typical F-F		128100 to 141500	65.122857	-151.119629	20-25
25.29	American Creek Crossing	Culvert Typical B-B	Non-Fish	133540.0	65.124708	-151.151560	22
26.80	Turnout #4	Typical K-K		141500 to 142200	65.122359	-151.201136	25
26.93	Construct New Road Over Existing Trail	Road Typical F-F		142200 to 150800	65.121168	-151.204692	25-27
28.56	Construct New Road Over Existing Trail	Road Typical G-G		150800 to 151000	65.121514	-151.254398	27, 28
28.60	Construct New Road	Road Typical F-F		151000 to	65.121835	-151.255449	28, 29

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Mile Post	Facility Type	Drawing Type(s)	Stream Type	Station Feet (Begin/End)	Latitude	Longitude	Sheet numbers
	Over Existing Trail			156400			28,29
29.62	Construct New Road Over Existing Trail	Road Typical G-G		156400 to 156650	65.131899	-151.275843	29
29.67	Boulder Creek Bridge	Bridge Sheet 85	Fish	156650 to 156755	65.132333	-151.277093	29
29.69	Construct New Road Over Existing Trail	Road Typical G-G		156755 to 157200	65.132506	-151.277637	29,30
29.77	Construct New Road Over Existing Trail	Road Typical F-F		157200 to 159000	65.133371	-151.279624	30
30.11	New Road Bed	New Road Typical N-N		159000 to 166800	65.133371	-151.279624	30-34
30.16	Boulder Creek Material Site	Cross Sections L-L, M-M, J-J (Typical Access) & E-E (Typical Fuel)		159230.1	65.137655	-151.286127	30
31.46	Turnout #5	Typical K-K		166100 to 166800	65.143679	-151.324176	34
31.59	New Road Bed	New Road Typical Q-Q		166800 to 173900	65.143744	-151.328720	34, -37
31.85	Bailey Creek Ridge Material Site	Cross Sections O-O, P-P, J-J (Typical Access) & E-E (Typical Fuel)		168162.4	65.143870	-151.337566	34
32.94	New Road Bed	New Road Typical Q-Q		173900 to 174300	65.137124	-151.368277	37,38
33.30	Bailey Creek Crossing	Culvert Typical R-R	Fish Passage	175810.0	65.138752	-151.378494	38
33.65	Bailey Creek Tributary Crossing	Culvert Typical B-B	Non-Fish	177660.0	65.140639	-151.389454	39
34.41	Turnout #6	Typical K-K		181700 to 182400	65.140889	-151.415756	40
34.55	New Road Bed	New Road Typical N-N		182400 to 185400	65.141167	-151.420248	40,41
34.65	East Long Lake Tributary Crossing	Culvert Typical B-B	Non-Fish	182976.0	65.141283	-151.424002	40
35.11	Turnout #7	Typical K-K		185400 to 186100	65.140587	-151.439480	41
35.25	New Road Bed	New Road Typical Q-Q		186100 to 187000	65.140885	-151.443971	41,42
36.34	Bare Rock Material Site	Cross Sections S-S, T-T, J-J (Typical Access) & E-E (Typical Fuel)		191869.0	65.143853	-151.480279	43

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Mile Post	Facility Type	Drawing Type(s)	Stream Type	Station Feet (Begin/End)	Latitude	Longitude	Sheet numbers
36.56	Middle Long Lake Tributary Crossing	Culvert Typical B-B	Non-Fish	193055.0	65.144876	-151.487536	44
39.03	West Long Lake Tributary Crossing	Culvert Typical R-R	Fish Passage	206095.0	65.157476	-151.565764	48
44.34	New Road Bed	New Road Typical Q-Q		234100 to 234500	65.169968	-151.734680	57
44.41	New Road Bed	New Road Typical N-N		234500 to 252300	65.170076	-151.737268	57-64
47.36	Unnamed Creek Crossing #1	Culvert Typical B-B	Non-Fish	250080.0	65.170020	-151.828486	63
47.79	New Road Bed	New Road Typical Q-Q		252350 to 252600	65.176129	-151.829388	64
47.82	Unnamed Creek Crossing #2	Culvert Typical B-B	Non-Fish	252485.0	65.176517	-151.829448	64
47.84	New Road Bed	New Road Typical N-N		252600 to 253600	65.176810	-151.829251	64
48.03	New Road Bed	New Road Typical Q-Q		253600 to 253900	65.179499	-151.828293	64
48.05	Yukon Bluffs Material Site	Cross Sections U-U, V-V, J-J (Typical Access) & E-E (Typical Fuel)		253721.5	65.179793	-151.827925	64,66
48.09	New Road Bed	New Road Typical N-N		253900 to 257900	65.180198	-151.827279	66,67
48.70	Twelve-mile Lake Creek Crossing	Culvert Typical R-R	Fish Passage	257110.0	65.187082	-151.831245	67
48.85	New Road Bed	New Road Typical Q-Q		257950 to 258050	65.188597	-151.835310	67
48.87	New Road Bed	New Road Typical N-N		258050 to 259000	65.188836	-151.835627	67
48.92	Yukon River Material Site	Cross Sections W-W, X-X, J-J (Typical Access) & E-E (Typical Fuel)		258294.3	65.189406	-151.836137	67
49.05	New Road Bed	New Road Typical Q-Q		259000 to 259500	65.191363	-151.835173	67
49.15	New Road Bed	New Road Typical N-N		259500 to 260460	65.192698	-151.834541	67,68
49.32	Parking Area	Typical Y-Y		260460 to 260890	65.195665	-151.838842	68
49.41	New Road Bed	New Road Typical N-N		260890 to 260990	65.195665	-151.838842	68

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Mile Post	Facility Type	Drawing Type(s)	Stream Type	Station Feet (Begin/End)	Latitude	Longitude	Sheet number
49.42	End of Project to Yukon River Access	New Road Typical Z-Z		260990 to 261121	65.195665	-151.838842	68

Application Block 16: Other Location Descriptions, if Known

The project area is located on the U.S. Geological Survey (USGS) quadrangle maps:

- Tanana 1:250,000
- Tanana 1:63,360 A-2, A-3, A-4

Starting at the junction of the Elliott Highway, the road is located within Section 16, 9, 4, and 3, Township 2 North, Range 15 West; it then crosses into Sections 34, 33, 28, 21, 20, 18, and 19, Township 3 North, Range 15 West; it then crosses into Sections 13, 14, 15, 16, 17, 8, and 18, Township 3 North, Range 16 West; it then crosses into sections 13, 12, 11, 10, 3, and 4, Township 3 North, Range 17 West; it then crosses into section 33, 32, and 31, Township 4 North, Range 17 West; it then crosses into Section 36, Township 4 North, Range 18 West; it then crosses into Sections 1 and 2, Township 3 North, Range 18 West; it then crosses into Sections 35 and 34, Township 4 North, Range 18 West; it then crosses into Sections 3, 4, and 5, Township 3 North, Range 18 West; it then crosses into Sections 32, 31, and 30, Township 4 North, Range 18 West; it then crosses into Sections 25, 26, 35, 27, 28, 29, and 30 Township 4 North, Range 19 West; it then crosses into Sections 25, 24, 23, 22, 21, 20, 17, and 18, Township 4 North, Range 20 West; it then crosses into Sections 13, 14, 15, 22, 21, 16, 9, and 4. Township 4 North, Range 21 West.

**TABLE 16.1 Road to Tanana Project Major Facility Locations
(Fairbanks Meridian – Township, Range, and Sections)**

Facility	Township	Range	Sections
Existing and New Road Construction	2N	15W	3, 4, 9, 16
	3N	15W	18, 19, 20, 21, 28, 33, 34
	3N	16W	8, 13, 14, 15, 16, 17, 18
	3N	17W	3, 4, 10, 11, 12, 13
	4N	17W	31, 32, 33
	4N	18W	36
	3N	18W	1, 2
	4N	18W	34, 35
	3N	18W	3, 4, 5
	4N	18W	30, 31, 32
	4N	19W	25, 26, 27, 28, 29, 30, 35
	4N	20W	16, 17, 18, 20, 21, 22, 23, 24, 25
Tofty Gulch Material Site	4N	21W	4, 9, 13, 14, 15, 16, 21, 22
	3N	17W	13
	3N	16W	18

Facility	Township	Range	Sections
Ridge Top Material Site	3N	17W	3
Boulder Creek Material Site	4N	18W	30, 31
Boulder Creek Bridge	4N	18W	31
Bailey Creek Ridge Material Site	4N	19W	25, 26
Bare Rock Material Site	4N	19W	29, 30
Yukon Bluffs Material Site	4N	21W	9, 10, 15, 16
Yukon River Material Site	4N	21W	9

Application Block 18: Nature of Activity (Description of project, includes all features)

The project consists of:

- Upgrade the last two miles of the existing Tofty Road, as well as an additional 14.5 miles of existing roads and trails that extend past the current terminus of Tofty Road (beginning at approximately mile post 15)
- Install a new bridge at Boulder Creek (#2297)
- Construct 19.34 miles of new road beginning at mile post 29.5
- Expand two existing material sites
- Create five new material sites
- Install 3 new fish passage pipes
- Drainage improvements
- Vegetation clearing
- Construct a public parking area near the road terminus at the Yukon River
- Construct a barge landing approach to OHW limits of the Yukon River.
- Acquire approximately 620 acres for road right-of-way.

Application Block 19: Project Purpose

The *purpose* of the Road to Tanana Project is to extend the existing highway system to the Yukon River near Tanana. The project would improve approximately 16.5 miles of existing road and unimproved trails, and construct 19.34 miles of new road across undeveloped terrain to provide an all-season link to the south bank of the Yukon River.

The following project *needs* have been identified:

Extending the highway to the Yukon River would provide the opportunity for residents of Tanana to enjoy more affordable and efficient year-round transportation for passengers, commodities and public safety support. Nearby road access would lower the cost of living in Tanana as well as support economic growth through increased business and employment opportunity for its residents. As Tanana is an historic hub for Yukon and Tanana River barge transportation and commerce, other Yukon River communities may also benefit economically by a reduction of fuel and freight costs to and from Tanana.

Application Block 20: Reason for Discharge

As noted in Application Block 19, there are several purposes and needs an all-season road in this area will support or fulfill. To build an all-season road in this region of Alaska, the deposition of dredged or fill material into waters of the US to construct sections of roadway embankment, turnouts, material sites, equipment staging and maintenance areas and appurtenant crossing structures is unavoidable. Fill material will be placed to construct the roadway embankment, turnouts, and appurtenant structures along the last two miles of the existing Tofty Road to the south bank of the Yukon River, near the village of Tanana (located on the north bank).

Several waterways along the proposed road are tributaries of navigable waters. One, Boulder Creek, will be crossed by a new bridge. Others crossings will use appropriately designed structures to maintain flows. No fill is anticipated in navigable waters of the U.S.

Application Block 21: Types of Material Being Discharged & the Amount of Each Type in Cubic Yards

Sheets 1-110 include site maps, plan views, and cross-sections for all gravel structures, including the roads, turnouts, material sites, and the structural components (bridges and culvert crossings). Estimates of cubic yards of fill are shown in Table 21.1 below. All fill will be native rock (clean) from local sources.

TABLE 21.1 Discharge Amounts by Major Facility

Facility Name	Total Footprint (acres)	Total Footprint in Waters of the US or Wetlands (acres)	Total Cubic Yards of Fill (cyds)	Cubic Yards of Fill in Water of the US or Wetlands (cyds)	Sheet number
Existing Road – Drainage Improvements: <i>Includes:</i> <i>Sullivan Creek Crossing</i> <i>Tofty Gulch Crossing</i>	18.4	3.0	41,000 397 75	6,500 88 17	4,5
Existing Road – Drainage Improvements ROW Vegetation Clearing (30' Buffer)	7.2	1.5	Incidental Fallback Only	N/A	N/A
Existing Road – New Road Bed Over Existing Roads/Trails: <i>Includes:</i> <i>American Creek Crossing</i>	188.4	4.8	705,000 48	38,500 11	20-25
Existing Road – New Road Over Existing Roads/Trails ROW Vegetation Clearing (30' Buffer)	101.4	4.2	Incidental Fallback Only	N/A	N/A
New Road Bed/Parking Area:	258.2	13.5	954,000	52,500	30-68

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Facility Name	Total Footprint (acres)	Total Footprint in Waters of the US or Wetlands (acres)	Total Cubic Yards of Fill (cyds)	Cubic Yards of Fill in Water of the US or Wetlands (cyds)	Sheet numbers
<u>Includes:</u> Bailey Creek Crossing Bailey Creek Tributary East Long Lake Tributary Middle Long Lake Trib. West Long Lake Tributary Unnamed Creek #1 Unnamed Creek #2 Twelve-Mile Lake Creek			397 48 48 75 192 27 25 108	121 11 11 17 50 6 5 24	38 39 40 44 48 63 64 67
New Road Bed/Parking Area Vegetation Clearing (30' Buffer)	141.4	8.2	Incidental Fallback Only	N/A	N/A
Material Sites Combined: <u>Includes:</u> Access Roads Fuel Storage Areas Mining Areas Overburden Storage Work Pad	414.5 5.3 0.2 273.8 92.1 43.1	13.3 0.0 0.0 10.6 1.6 1.1	See Table 21.2	See Table 21.2	5, 12, 30, 34, 43, 64, 66, 67
TOTALS	1,131.1	48.5	1,718,864	99,895	
Bridge Over Waters of the U.S. (Abutments included in road bed estimates above)	0.2	0.2	See Table 21.2	See Table 21.2	N/A
Retained Vegetative Screens/Buffers within Planned Right-of-Way	231.5	67.7 (Retained, not filled/cleared)	N/A	N/A	N/A
PROJECT TOTAL	1,131.1	48.5	1,718,864	99,895	

TABLE 21.2 Discharge by Material Site

Facility Name	Total Footprint (acres)	Total Footprint in Waters of the US or Wetlands (acres)	Total Cubic Yards of Fill (cyds)	Cubic Yards of Fill in Water of the US or Wetlands (cyds)	Sheet numbers
Tofty Gulch Material Site (No Dedicated Access Roads)	34.3	1.8	N/A - Cut	N/A - Cut	5
Ridge Top Material Site North Access Road South Access Road	22.8	3.9	N/A - Cut 593 1,244	N/A - Cut 0 0	12
Boulder Creek Material Site	78.2	6.8	N/A - Cut	N/A - Cut	30

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Facility Name	Total Footprint (acres)	Total Footprint in Waters of the US or Wetlands (acres)	Total Cubic Yards of Fill (cyds)	Cubic Yards of Fill in Water of the US or Wetlands (cyds)	Sheet numbers
North Access Road South Access Road			3,562 620	0 0	30
Boulder Creek Bridge Excavated from Floodplain Fill in Floodplain Cut Below OHWM Fill Below OHWM Rip Rap Below OHWM	0.02	0.0 (Elevated Above)	639 84 511 11 800	639 84 511 11 800	29
Bailey Creek Ridge Material Site East Access Road West Access Road	83.5	0.0	N/A - Cut 587 1,719	N/A - Cut 0 0	34
Bare Rock Material Site East Access Road West Access Road	47.4	0.7	N/A - Cut 1,813 695	N/A - Cut 0 0	43
Yukon Bluffs Material Site North Access Road South Access Road	121.5	0.2	N/A - Cut 616 1,785	N/A - Cut 0 0	64,66
Yukon River Material Site North Access Road South Access Road	27.0	0.0	N/A - Cut 527 1,618	N/A - Cut 0 0	67

Application Block 22: Surface Area in Acres of Wetlands or Other Waters Filled

The Preliminary Jurisdictional Determination, Road to Tanana Project (Three Parameters Plus, Inc. 2012) contains additional maps, data, and descriptions of the wetland and non-wetland natural resources in the project area. Of the area evaluated, approximately 13% were mapped as wetlands or other potentially regulated Waters of the U.S. As shown in Table 21.1, the project footprint in wetlands and other waters of the U.S. is just over 5% of the total project footprint. Sheets 1-109 show the locations and types of fills and structures needed to build the proposed all-season road.

Impacts from the existing road improvements and new road bed are shown in Table 21.1 above with additional detail on material sites and the Boulder Creek Bridge shown in Table 21.2. USACE reviews of material sites require additional information, which is shown in Table 22.1 below. This table shows ADOT&PF's current expectations for site specific impacts at each of the material sites designated on the attached sheets.

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TABLE 22.1 Expected Material Site Impacts By Type of Impact

Material Site Name	Miles to/from Manley Hot Springs (Straight Line to Center-point)	Approx. Mile Post Tofty Road	Material Type (Dry is above water table; wet is below water table)	Total Impact Area (acres) ^a	Wetland or Waters of the US Impact Area (acres) ^a	Plan View & Cross Section Sheet Numbers	Reclamation Plan Typical Sheet Number(s)
Tofty Gulch Material Site	9.7	15.91	Dry/Wet; gravel tailings for surfacing	34.3	1.8	Sheet 74 Sheet 75 Sheet 76	Sheet 107 Sheet 108
Ridge Top Material Site	13.1	19.7	Dry; Quarry, Soft Bedrock; embankment material	22.8	3.9	Sheet 80 Sheet 81 Sheet 82 Sheet 83	Sheet 107 Sheet 109 Sheet 110
Boulder Creek Material Site	21.5	29.92	Dry/Wet; gravel tailings for surfacing	78.2	6.8	Sheet 83 Sheet 86 Sheet 87 Sheet 88	Sheet 107 Sheet 108
Bailey Creek Ridge Material Site	22.9	31.82	Dry; Soft Bedrock; embankment material	83.5	0.0	Sheet 83 Sheet 90 Sheet 91 Sheet 92	Sheet 108 Sheet 109
Bare Rock Material Site	26.7	36.17	Dry/Wet; Quarry; embankment material & crushed aggregate for surfacing	47.4	0.7	Sheet 83 Sheet 96 Sheet 97 Sheet 98	Sheet 107 Sheet 108 Sheet 110
Yukon Bluffs Material Site	36.8	47.73	Dry/Wet; embankment material	121.5	0.2	Sheet 83 Sheet 99 Sheet 100 Sheet 101	Sheet 107 Sheet 108
Yukon River Material Site	37.6	48.67	Dry/Wet; Silty Sand and Sandy Silt	27.0	0.0	Sheet 83 Sheet 102 Sheet 103 Sheet 104	Sheet 107 Sheet 108 Sheet 109
TOTALS	N/A	N/A	N/A	414.5	13.3	N/A	N/A

Notes: a. Rounding errors may result in subtotal/total discrepancies.

Two of the material sites that will involve wetland/waters impacts have been historically influenced by prior placer mining and related activity. Figure 22.1 shows the general perimeter of the Boulder Creek Material Site in yellow over aerial photography, with the proposed mining/disturbance area highlighted in green. Figure 22.2 shows the Tofty Material Site, which has also been historically disturbed.

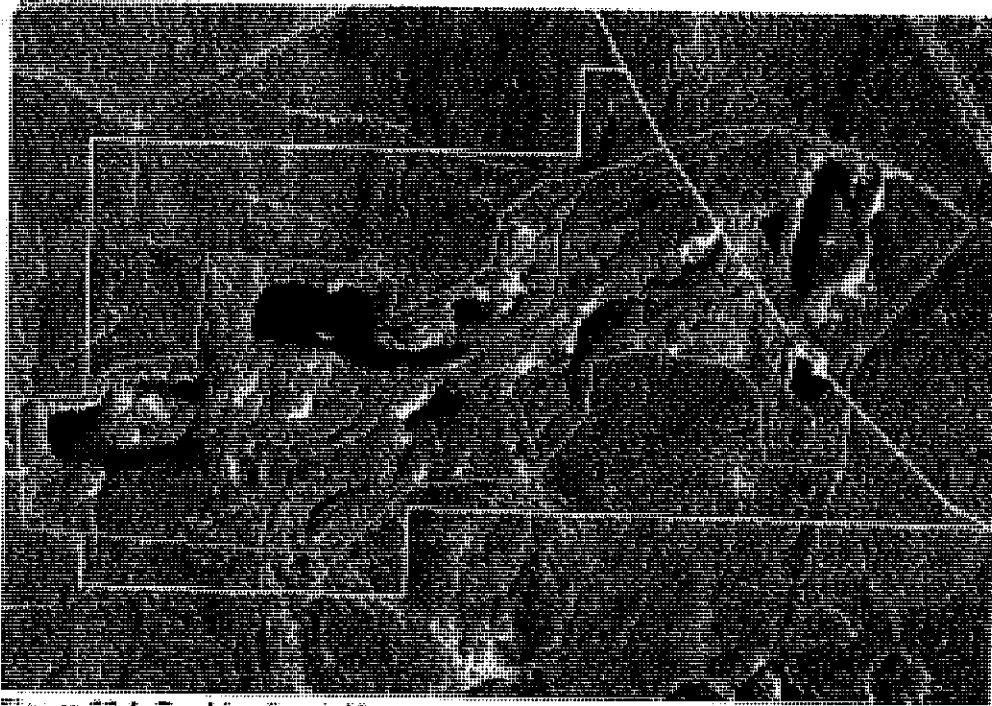


Figure 22.1 Boulder Creek Material Site

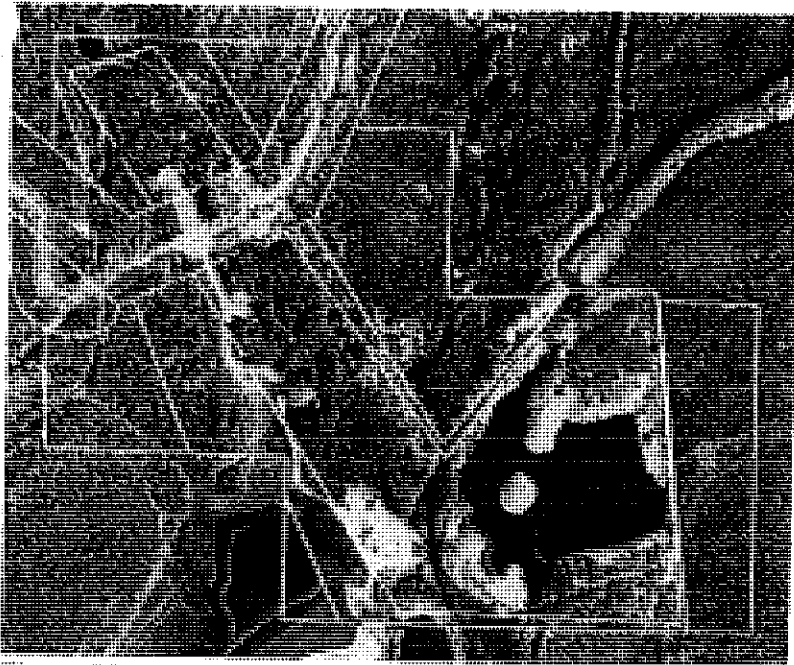


Figure 22.2 Tofty Material Site

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Wetland and waterbody impacts anticipated from the project have been evaluated by wetland scientists using two classification systems. The first, used by the US Fish and Wildlife Service (USFWS) as the classification system of National Wetlands Inventory (NWI) program, is referred to as the Cowardin Classification. Table 22.2 below reflects the maximum anticipated impacts to each of these types by the project as currently proposed.

TABLE 22.2 Maximum Impacts to Wetland and Waters by Cowardin Classification (NWI)

	NWI (Cowardin) Classification	Maximum Wetland Impacts (acres) ^a
Existing Road – Drainage Improvements (Cut/Fill)	PEM1C	-
	PFO1/4A	-
	PF01/SS1A	-
	PFO1/SS1B	-
	PFO1B	-
	PFO4/1B	-
	PFO4/SS1B	-
	PFO4/SS4B	-
	PFO4B	-
	PSS1/4B	-
	PSS1/EM1C	0.0 ^b
	PSS1/EM1F	-
	PSS1A	0.3
	PSS1B	0.1
	PSS1C	0.2
	PSS4/1B	0.2
	PSS4/FO4B	-
	PSS4B	0.1
	PUBH	0.0
	PUBHx	1.9
R2UBH	0.1	
R3UBS	-	
U ^c	-	
Existing Road – Drainage Improvements (Vegetation Clearing)	PEM1C	-
	PFO1/4A	-
	PF01/SS1A	-
	PFO1/SS1B	-
	PFO1B	-
	PFO4/1B	-
	PFO4/SS1B	-
	PFO4/SS4B	-
	PFO4B	-
	PSS1/4B	0.2
	PSS1/EM1C	-
	PSS1/EM1F	-
PSS1A	0.1	

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	NWI (Cowardin) Classification	Maximum Wetland Impacts (acres) ^a
	PSS1B	0.0
	PSS1C	-
	PSS4/1B	0.9
	PSS4/FO4B	-
	PSS4B	0.3
	PUBH	-
	PUBHx	-
	R2UBH	-
	R3UBS	-
	U ^c	-
<i>Subtotal Existing Road – Drainage Improvements</i>		<i>4.4</i>
Existing Road – New Road Bed Over Existing Roads/Trails (Cut/Fill)	PEM1C	-
	PFO1/4A	-
	PFO1/SS1A	0.3
	PFO1/SS1B	-
	PFO1B	-
	PFO4/1B	-
	PFO4/SS1B	1.2
	PFO4/SS4B	-
	PFO4B	-
	PSS1/4B	0.7
	PSS1/EM1C	-
	PSS1/EM1F	-
	PSS1A	-
	PSS1B	0.2
	PSS1C	-
	PSS4/1B	0.2
	PSS4/FO4B	-
	PSS4B	2.2
	PUBH	-
	PUBHx	-
R2UBH	-	
R3UBS	-	
U ^c	-	
Existing Road – New Road Bed Over Existing Roads/Trails (Vegetation Clearing)	PEM1C	-
	PFO1/4A	-
	PFO1/SS1A	0.2
	PFO1/SS1B	0.8
	PFO1B	-
	PFO4/1B	-
	PFO4/SS1B	-
	PFO4/SS4B	-

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	NWI (Cowardin) Classification	Maximum Wetland Impacts (acres) ^a
	PFO4B	-
	PSS1/4B	0.7
	PSS1/EM1C	0.0
	PSS1/EM1F	-
	PSS1A	-
	PSS1B	0.4
	PSS1C	-
	PSS4/1B	0.5
	PSS4B	1.6
	PUBHx	-
	R2UBH	-
	R3UBH	-
	U ^c	-
Subtotal – New Road Bed Over Existing Roads/Trails		9.0
New Road Bed/Parking Area (Cut/Fill)	PEM1C	0.0
	PFO1/4A	0.9
	PF01/SS1A	0.3
	PFO1/SS1B	-
	PFO1B	0.5
	PFO4/1B	0.7
	PFO4/SS1B	0.2
	PFO4/SS4B	1.1
	PFO4B	1.1
	PSS1/4B	0.1
	PSS1/EM1C	-
	PSS1/EM1F	0.1
	PSS1A	-
	PSS1B	0.4
	PSS1C	0.3
	PSS4/1B	2.3
	PSS4/FO4B	0.1
	PSS4B	5.4
	PUBH	-
	PUBHx	-
R2UBH	-	
R3UBS	-	
	U ^c	0.1
New Road Bed/Parking Area (Vegetation Clearing)	PEM1C	0.0
	PFO1/4A	0.4
	PF01/SS1A	0.1
	PFO1/SS1B	-
	PFO1B	0.3

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	NWI (Cowardin) Classification	Maximum Wetland Impacts (acres) ^a
	PFO4/1B	0.5
	PFO4/SS1B	0.2
	PFO4/SS4B	1.1
	PFO4B	0.7
	PSS1/4B	0.2
	PSS1/EM1C	-
	PSS1/EM1F	0.0
	PSS1A	-
	PSS1B	0.2
	PSS1C	0.2
	PSS4/1B	1.3
	PSS4/FO4B	0.1
	PSS4B	2.7
	PUBHx	-
	R2UBH	-
	R3UBH	-
	U ^e	0.0
Subtotal New Road Bed		21.6
Material Sites (Cut/Fill – No Vegetation Clearing)	PEM1C	0.3
	PEM1H	-
	PFO1A	0.1
	PFO1C	-
	PFO4B	-
	PFO4/SS1B	1.1
	PSS1/4B	1.8
	PSS1/EM1C	0.0
	PSS4/FO4B	-
	PSS1A	0.3
	PSS1B	1.1
	PSS1C	0.2
	PSS4/1B	1.0
	PSS4B	1.8
	PUBH	0.1
	PUBHb	0.0
	PUBHx	5.4
	PUSCb	-
	PUSC _x	0.1
	R3UBH	-
R3UBHb	-	
Subtotal Material Sites		13.3
TOTAL		48.5
Notes: a. Rounding errors may result in subtotal/total discrepancies.		

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	NWI (Cowardin) Classification	Maximum Wetland Impacts (acres) ^a
b. A value of 0.0 in the table infers impacts less than .01 acres are expected.		
c. Expected to include wetland inclusions.		

The second classification system used by wetland scientists to better understand potential impacts to wetlands and waters on a function by function basis is referred to as the Hydrogeomorphic (HGM) Classification method. This method classifies wetlands according to their primary water (hydrologic) source. Table 22.3 below reflects the anticipated impacts to each HGM class by the project as currently proposed.

TABLE 22.3 : Maximum Impacts to Wetlands and Waters By HGM Type

	HGM Classification	Maximum Impact (Acres)
Existing Road – Drainage Improvements (Cut/Fill)	DEPRESSIONAL	1.9
	FLAT	0.4
	RIVERINE	0.6
	RIVERINE CHANNEL	0.1
	SLOPE	0.0
<i>Subtotal Impacts from Cut/Fills</i>		3.0
Existing Road – Drainage Improvements (Vegetation Clearing – 30' Buffer)	FLAT	1.4
	RIVERINE	0.1
<i>Subtotal Impacts from Vegetation Clearing</i>		1.5
Subtotal Existing Road Drainage Improvements		4.5
Existing Road – Construct New Road Bed Over Existing Road/Trails (Cut/Fill)	DEPRESSIONAL	0.1
	FLAT	4.4
	SLOPE	0.3
<i>Subtotal Impacts from Cut/Fills</i>		4.8
Existing Road – Construct New Road Bed Over Existing Road/Trails (Vegetation Clearing – 30' Buffer)	FLAT	3.9
	SLOPE	0.3
<i>Subtotal Impacts from Vegetation Clearing</i>		4.2
Subtotal Existing Road – Construct New Road Over Existing Road/Trails		9.0
New Road Bed & Parking Area Construction (Cut/Fill)	DEPRESSIONAL	0.1
	FLAT	5.0
	RIVERINE	2.3
	SLOPE	6.0
<i>Subtotal Impacts from Cut/Fills</i>		13.5
New Road Bed Construction (Vegetation Clearing – 30' Buffer)	DEPRESSIONAL	0.0
	FLAT	3.7
	RIVERINE	1.3

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	HGM Classification	Maximum Impact (Acres)
		SLOPE
<i>Subtotal Impacts from Vegetation Clearing</i>		8.2
Subtotal New Road Bed Construction		21.7
Material Sites/Access Roads (Cuts, Fills, Cut/Fills – No Vegetation Clearing Impacts)	DEPRESSIONAL	6.1
	FLAT	6.6
	RIVERINE	0.6
Subtotal Material Sites/Access Roads		13.3
PROJECT TOTAL		48.5
Notes: a. Rounding errors may result in subtotal/total discrepancies. b. A value of 0.0 in the table infers impacts less than .01 acres are expected.		

Wetland impacts by the predominant land cover types are shown in Table 22.4 while more detailed vegetation types are shown in Table 22.5.

TABLE 22.4 Predominant Land Cover Type Impacts (EROS)

Landcover Type	Land Cover Classification	Total (acres)	Waters of the U.S./Wetlands (acres)
Forest Types	Deciduous Forest	350.8	5.9
	Evergreen Forest	294.5	23.8
	Mixed Forest	116.1	3.4
Miscellaneous Types	Barren Land (Rock/Sand/Clay)	1.7	0.2
	Developed, Low Intensity	1.6	0.0
	Open Water	6.2	1.3
Shrub Types	Dwarf Shrub	5.7	0.0
	Shrub/Scrub	322.6	9.9
Wetland Types	Woody Wetlands	32.0	4.0
Grand Total		1,131.1	48.5

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TABLE 22.5 Predominant Vegetation Type Impacts

	Vegetation Type Classification	Total Impacts (acres)	Wetland Impacts (acres)
Existing Road – Drainage Improvements (Cut/Fill)	Bare Ground	4.8	-
	Bluejoint Tall Grass	0.8	-
	Closed Alder Shrub	0.2	0.2
	Closed Alder Willow Shrub	0.5	0.0
	Closed Black Spruce Forest	-	-
	Closed Deciduous Forest	5.5	-
	Closed Mixed Forest	0.1	-
	Closed White Spruce Forest	-	-
	Closed Willow Shrub	0.4	0.2
	Low Shrub Bog	-	-
	Mesic Herbaceous (Inv)	0.1	-
	Open Alder Shrub	-	-
	Open Alder Willow Shrub	0.9	0.1
	Open Black Spruce Forest	0.4	0.4
	Open Deciduous Forest	0.2	-
	Open Deciduous Forest -Shrub	-	-
	Open Mixed Forest	0.7	-
	Open Mixed Forest - Shrub	-	-
	Open Water	2.0	2.0
	Open Willow Shrub	2.0	0.2
	Open White Spruce Forest	-	-
Partially Vegetated	-	-	
Spruce Woodland	-	-	
Woodland Deciduous Forest	-	-	
Woodland Mixed Forest	-	-	
Subtotal		18.4	3.0
Existing Road – Drainage Improvements (Vegetation Clearing)	Bare Ground	0.0	-
	Bluejoint Tall Grass	0.2	-
	Closed Alder Shrub	-	-
	Closed Alder Willow Shrub	0.0	-
	Closed Black Spruce Forest	-	-
	Closed Deciduous Forest	3.4	-
	Closed Mixed Forest	0.1	-
	Closed White Spruce Forest	-	-
	Closed Willow Shrub	0.2	0.1
	Low Shrub Bog	-	-

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	Vegetation Type Classification	Total Impacts (acres)	Wetland Impacts (acres)
	Mesic Herbaceous (Inv)	-	-
	Open Alder Shrub	-	-
	Open Alder Willow Shrub	0.1	-
	Open Black Spruce Forest	1.2	1.2
	Open Deciduous Forest	0.2	-
	Open Deciduous Forest -Shrub	-	-
	Open Mixed Forest	1.1	-
	Open Mixed Forest - Shrub	0.1	-
	Open Water	-	-
	Open Willow Shrub	0.3	0.0
	Open White Spruce Forest	-	-
	Partially Vegetated	-	-
	Spruce Woodland	0.2	0.2
	Woodland Deciduous Forest	-	-
	Woodland Mixed Forest	0.1	-
	Subtotal	7.2	1.5
Existing Road – New Road Over Existing Roads/Trails (Cut/Fill)	Bare Ground	30.6	-
	Bluejoint Tall Grass	0.1	-
	Closed Alder Shrub	2.8	0.1
	Closed Alder Willow Shrub	1.2	-
	Closed Black Spruce Forest	2.7	2.2
	Closed Deciduous Forest	47.8	-
	Closed Mixed Forest	30.9	-
	Closed White Spruce Forest	0.2	-
	Closed Willow Shrub	-	-
	Low Shrub Bog	-	-
	Mesic Herbaceous (Inv)	1.2	-
	Open Alder Shrub	0.7	-
	Open Alder Willow Shrub	1.1	-
	Open Black Spruce Forest	13.1	1.3
	Open Deciduous Forest	14.7	0.3
	Open Deciduous Forest -Shrub	-	-
	Open Mixed Forest	36.5	-
	Open Mixed Forest - Shrub	0.1	-
	Open Water	-	-
	Open Willow Shrub	0.3	-
	Open White Spruce Forest	0.3	-
	Partially Vegetated	0.3	-

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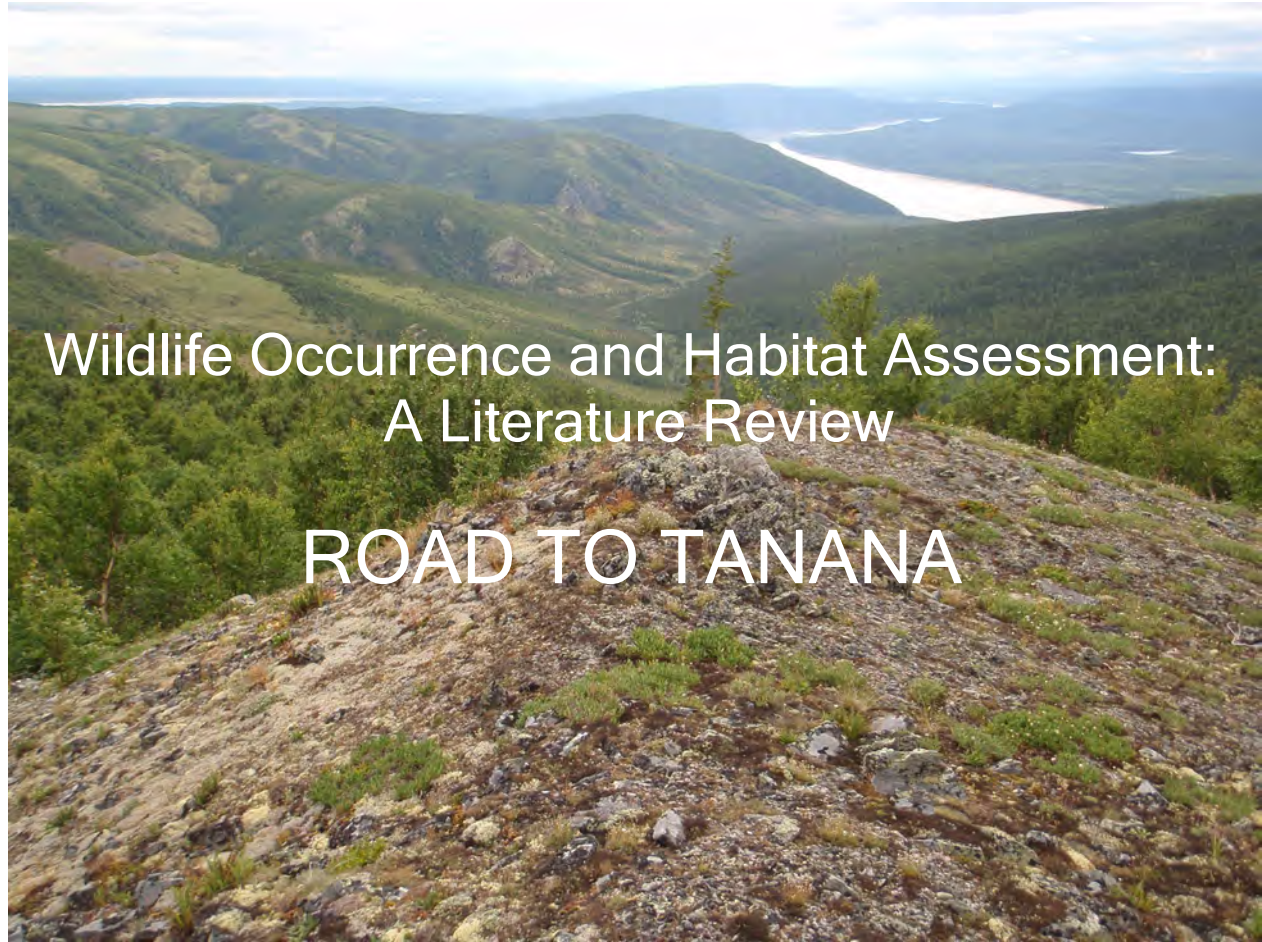
	Vegetation Type Classification	Total Impacts (acres)	Wetland Impacts (acres)
	Spruce Woodland	0.3	0.1
	Woodland Deciduous Forest	0.2	0.1
	Woodland Mixed Forest	3.5	0.7
Subtotal		188.4	4.8
Existing Road – New Road Over Existing Roads/Trails (Vegetation Clearing)	Bare Ground	1.7	-
	Bluejoint Tall Grass	0.1	-
	Closed Alder Shrub	1.0	-
	Closed Alder Willow Shrub	0.6	-
	Closed Black Spruce Forest	2.1	1.6
	Closed Deciduous Forest	27.8	-
	Closed Mixed Forest	20.4	-
	Closed White Spruce Forest	0.2	-
	Closed Willow Shrub	-	-
	Low Shrub Bog	-	-
	Mesic Herbaceous (Inv)	0.1	-
	Open Alder Shrub	0.0	-
	Open Alder Willow Shrub	0.2	-
	Open Black Spruce Forest	10.0	1.3
	Open Deciduous Forest	10.1	0.2
	Open Deciduous Forest -Shrub	-	-
	Open Mixed Forest	21.7	-
	Open Mixed Forest - Shrub	-	-
	Open Water	-	-
	Open Willow Shrub	0.1	0.0
	Open White Spruce Forest	0.6	-
Partially Vegetated	0.2	-	
Spruce Woodland	0.3	-	
Woodland Deciduous Forest	0.4	0.4	
Woodland Mixed Forest	4.0	0.7	
Subtotal		101.4	4.2
New Road Bed (Cut/Fill)	Bare Ground	0.0	0.0
	Bluejoint Tall Grass	-	-
	Closed Alder Shrub	-	-
	Closed Alder Willow Shrub	0.4	0.4
	Closed Black Spruce Forest	11.4	5.3
	Closed Deciduous Forest	85.7	-
	Closed Mixed Forest	57.9	-
	Closed White Spruce Forest	4.3	-

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	Vegetation Type Classification	Total Impacts (acres)	Wetland Impacts (acres)
	Closed Willow Shrub	-	-
	Low Shrub Bog	0.3	0.3
	Mesic Herbaceous (Inv)	-	-
	Open Alder Shrub	-	-
	Open Alder Willow Shrub	-	-
	Open Black Spruce Forest	14.3	3.9
	Open Deciduous Forest	8.1	0.8
	Open Deciduous Forest -Shrub	1.5	-
	Open Mixed Forest	54.2	2.8
	Open Mixed Forest - Shrub	1.1	-
	Open Water	-	-
	Open Willow Shrub	-	-
	Open White Spruce Forest	11.7	-
	Partially Vegetated	-	-
	Spruce Woodland	1.8	0.1
	Woodland Deciduous Forest	3.4	-
	Woodland Mixed Forest	3.3	-
Subtotal		259.4	13.5
New Road Bed/Parking Area (Vegetation Clearing)	Bare Ground	-	-
	Bluejoint Tall Grass	0.0	0.0
	Closed Alder Shrub	-	-
	Closed Alder Willow Shrub	0.2	0.2
	Closed Black Spruce Forest	6.1	2.8
	Closed Deciduous Forest	48.5	-
	Closed Mixed Forest	29.3	-
	Closed White Spruce Forest	2.3	-
	Closed Willow Shrub	-	-
	Low Shrub Bog	0.2	0.2
	Low Shrub Tundra	0.0	-
	Mesic Herbaceous (Inv)	-	-
	Open Alder Shrub	-	-
	Open Alder Willow Shrub	-	-
	Open Black Spruce Forest	9.2	2.7
	Open Deciduous Forest	4.6	0.5
	Open Deciduous Forest -Shrub	1.2	-
	Open Mixed Forest	28.5	1.6
	Open Mixed Forest - Shrub	0.7	0.0
	Open Water	-	-

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	Vegetation Type Classification	Total Impacts (acres)	Wetland Impacts (acres)
	Open Willow Shrub	-	-
	Open White Spruce Forest	6.3	-
	Partially Vegetated	0.0	-
	Spruce Woodland	1.3	0.2
	Woodland Deciduous Forest	1.9	-
	Woodland Mixed Forest	1.3	0.0
Subtotal		141.5	8.2
Material Sites (Cut/Fill – No Vegetation Clearing Impacts)	Bare Ground	2.8	-
	Bluejoint Tall Grass	-	-
	Closed Alder Shrub	26.7	0.2
	Closed Alder Willow Shrub	0.8	0.0
	Closed Black Spruce Forest	0.5	-
	Closed Deciduous Forest	116.4	0.1
	Closed Mixed Forest	64.5	-
	Closed White Spruce Forest	4.7	-
	Closed Willow Shrub	0.6	-
	Dwarf Birch Low Shrub	1.6	-
	Low Shrub Bog	0.2	0.2
	Low Shrub Tundra	-	-
	Mesic Herb Invasives	1.1	-
	Open Alder Shrub	1.6	-
	Open Alder Willow Shrub	2.5	0.2
	Open Black Spruce Forest	25.4	3.9
	Open Deciduous Forest	49.3	-
	Open Deciduous Forest - Shrub	4.0	-
	Open Mixed Forest	73.9	-
	Open Mixed Forest - Shrub	0.3	-
	Open Water	5.6	5.6
	Open Willow Shrub	0.2	0.2
	Partially Vegetated	1.0	-
Spruce Woodland	10.2	1.8	
Wet Herbaceous	0.3	0.3	
Woodland Deciduous Forest	13.4	0.7	
Woodland Mixed Forest	7.0	-	
Subtotal		414.6	13.2
TOTAL		1,131.1	48.5
Notes: a. Rounding errors may result in subtotal/total discrepancies. b. A value of 0.0 in the table infers impacts less than .01 acres are expected.			



Wildlife Occurrence and Habitat Assessment:
A Literature Review

ROAD TO TANANA

Alaska Department of Transportation and Public Facilities
Northern Region



November 2012



**WILDLIFE OCCURRENCE AND HABITAT ASSESSMENT:
A LITERATURE REVIEW**

2012

ROAD TO TANANA

INTERIOR, ALASKA

November 2012

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Appendix A

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Limitations

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with our client. This document is solely for the use and information of the Alaska Department of Transportation and Public Facilities. Any reliance on this report by other parties is at such party's sole risk.

Opinions and recommendations contained in this document apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. Three Parameters Plus, Inc. is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. Three Parameters Plus, Inc. does not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Acronyms

Term	Definition
3PPI	Three Parameters Plus, Inc.
ADFG	Alaska Department of Fish and Game
BBS	Bird Breeding Survey
BLM	Bureau of Land Management
CWCS	Comprehensive Wildlife Conservation Survey
Db	decibels
DOT&PF	Alaska Department of Transportation and Public Facilities
GMU	Game Management Unit
GPS	Global Positioning System
MLRA	Major Land and Resource Area
MP	milepost
NRCS	Natural Resource Conservation Service
NWR	National Wildlife Refuge
PJD	Preliminary Jurisdictional Determination
U.S.	United States
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

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1.0 Introduction

Three Parameters Plus, Inc. (3PPI) was selected by the Alaska Department of Transportation and Public Facilities (DOT&PF) to conduct baseline wildlife surveys along two alternative road corridors from the Tofty mining area west to the Yukon River (Mason and Reynolds 2012) (Appendix A, Figure 1 Study Area). The combined length of the corridors is 46.6 miles (75 kilometers). In addition, 3PPI conducted a literature search for information on the status of prominent game and wildlife species of conservation concern within and adjacent to the Road to Tanana study area (study area). This report presents the results of the literature review.

1.1 Project Area Description

The Road to Tanana study area is located approximately 90 miles (145 kilometers) due west of Fairbanks, Alaska (Appendix A, Figure 1 Study Area). The area is accessed from Fairbanks; 156 road miles (251 kilometers) north and west on the Elliot Highway to Manley Hot Springs, and then north on the Tofty Road an additional 10 miles (16 kilometers). The west end of the study area is seven miles (11 kilometers) east of the city of Tanana and is located on the south side of the Yukon River.

The study area falls within the Interior Alaska Highlands Major Land Resource Area (MLRA), within a zone of discontinuous permafrost, where permafrost is usually absent from floodplains and south-facing slopes according to the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) (2004). It is drained by the Yukon and Tanana Rivers, and less than two percent of the area is lakes. Most of this MLRA was unglaciated during the Pleistocene epoch, and moraines and glacial drift are limited to high mountains. The MLRA supports a variety of birds, big game species, furbearers, and small mammals. Area wetlands provide good habitat for waterfowl, cranes, and other birds (USDA 2004). Additional information on the major vegetation types, plants, wetlands, soils, climate and precipitation, and watersheds is found in the Preliminary Jurisdictional Determination report (3PPI 2012).

The study area is within the Alaska Department of Fish and Game (ADFG) Game Management Unit (GMU) 20F, and is located between the community of Manley Hot Springs to the east, the city of Tanana to the west, the Yukon River to the north and the Tanana River to the south. The study area includes habitats similar to those found in the Nowitna National Wildlife Refuge (Nowitna NWR), located along the Yukon River approximately 35 miles (56 kilometers) to the west. Similar information was sought for adjacent areas as well, in order to show wildlife use of areas in similar habitats close to the study area.

The study area is generally dominated by black spruce (*Picea mariana*) forest, with black spruce bogs occurring in lowlands near the Tanana and Yukon Rivers. Stands of white spruce (*Picea glauca*), quaking aspen (*Populus tremuloides*), and paper birch (*Betula papyrifera*) occur on well-drained soils and south-facing slopes (3PPI 2012). Habitat maps have been included only for species of concern likely to occur in or near the study area and that have relatively large amounts of preferred nesting habitat available in the study area.

2.0 Birds

Little information was found regarding breeding bird research and surveys conducted specifically within the study area. Information available for the Nowitna NWR is applicable to the study area and the refuge provides a bird species list which includes breeding birds, migrants, and rare species (<http://nowitna.fws.gov/birdlist.htm>). This list was cross-checked with lists of

Alaska-specific sensitive species, or species of concern, from local land management agencies including the ADFG, U.S. Bureau of Land Management – Alaska Region (BLM-AK), and the U.S. Fish and Wildlife Service (USFWS). BLM-AK maintains two lists. Their “Sensitive” list includes federal candidate and proposed species, species that have recently been delisted and others that meet specific BLM criteria. Their “Watch List” includes species with valid conservation concerns but for which sufficient information is lacking to meet sensitive list criteria (BLM-AK 2010). The information presented on birds in this report focuses primarily on species of concern as identified by these agencies and found to be breeding within the Nowitna NWR or documented in the study area. The Comprehensive Wildlife Conservation Strategy (CWCS) from the ADFG (ADFG 2006a, 2006b, and 2006c) was a primary source of information. All of the waterfowl, loons, shorebirds, raptors and passerines discussed in this report are managed in accordance with the National Migratory Bird Treaty Act of 1918.

2.1 Waterfowl

The Nowitna NWR supports large populations of waterfowl. Canada geese (*Branta canadensis*), white-fronted geese (*Anser albifrons*), and trumpeter swans (*Cygnus buccinator*), breed on the refuge. Conservation of trumpeter swans was a primary reason the Nowitna NWR was established. The most common duck species that breed on the Nowitna NWR are: American wigeon (*Anas americana*), northern pintail (*Anas acuta*), mallard (*Anas platyrhynchos*), green-winged teal (*Anas crecca*), northern shoveler (*Anas clypeata*), surf scoter (*Melanitta perspicillata*), white-winged scoter (*Melanitta fusca*), common goldeneye (*Bucephala clangula*), Barrow’s goldeneye (*Bucephala islandica*), bufflehead (*Bucephala albeola*), and lesser scaup (*Aythya affinis*) (USFWS 2012b). Other waterfowl that are less common breeders at the Nowitna NWR include black scoter (*Melanitta nigra*) and long-tailed duck (*Clangula hyemalis*), both of which are considered sensitive by BLM-AK.

The USFWS conducts annual waterfowl breeding population surveys at a broad scale throughout Alaska. In 2001 and 2002, USFWS conducted expanded population surveys in interior Alaska that focused more intensely in the lower Tanana River. Waterbird distribution across the survey area was patchy, coinciding with patchy wetland distribution. Most species were sparsely distributed across the area and average duck density was relatively low compared to other survey areas in Alaska. Higher concentrations of waterfowl were found in some areas, including the Fish Lake area immediately southeast of Tanana and south of the study area. Many of these areas of high concentrations also contained a high diversity of waterbirds, with as many as 23 species present. Northern pintails were the most abundant duck, comprising 18 percent of the duck population. Green-winged teal, scaup, American wigeon, and mallard were the next four most numerous duck species respectively. The survey area also contained relatively large populations of goldeneyes, buffleheads, and canvasbacks (*Aythya valisineria*) compared to other areas of interior Alaska (Platte 2003).

The Fish Lake area is in the Tanana River lowlands. The Fish Lake area contains numerous ponds and abandoned river sloughs and is reported to support relatively high densities of waterfowl (Platte 2003). 3PPI biologists did not conduct waterfowl-specific surveys. Comments from Tanana and Manley Hot Springs residents to DOT&PF prior to the field work indicated the communities did not want low elevation helicopter disturbance south of the study area near Fish Lake. This was due to concerns that aerial surveys by helicopter would disturb waterfowl breeding and/or impact local subsistence activities.

Because of the relative importance of the wetlands south of the study area and near Fish Lake to breeding waterfowl and subsistence, 3PPI believes it is prudent to describe the species with heightened conservation status that occur in the study area vicinity.

Trumpeter Swan: The trumpeter swan is designated as a sensitive species by BLM-AK. Trumpeter swans breed on the Nowitna NWR and throughout the Tanana valley. Across the state, trumpeter swan populations are expanding. Surveys conducted throughout trumpeter swan breeding range in Alaska between 1968 and 2000 showed an increase from over 1,900 adult swans to almost 14,000 (Conant et al. 2002). Trumpeter swans were seen by 3PPI crews traveling to the western end of the study area, or to the city of Tanana. One pair of trumpeter swans with three cygnets was observed during an aerial survey conducted for raptors by 3PPI near Donahoe Lake and Hay Slough on July 10, 2012. Local Manley Hot Springs residents report trumpeter swans to be common on sloughs and lakes in the Tanana lowlands nearby Manley Hot Springs.

Black Scoter: Black scoters are a sea duck with a poorly understood life history. They breed in the Nowitna NWR and are designated as a sensitive species by the BLM-AK. They generally breed in shallow tundra lakes. Aerial surveys were conducted by the USFWS in 2004 and 2005 to monitor black scoter breeding populations in western Alaska tundra wetlands. The estimated breeding population for black scoters in that region was 108,100. Compared with similar surveys flown 12 years prior, this estimate indicates a 32 percent decline for black scoters (Stehn et al. 2006). Earlier, less confident estimates put the decline at 50 percent since the 1950s (Sea Duck Joint Venture 2003a). The cause of declines in Alaska breeding populations is poorly understood but could include overharvest and contaminant related toxicity (Bordage and Savard 1995).

Surf Scoter: Surf scoters are a species of sea duck that breed on the Nowitna NWR and are designated as a sensitive species by the BLM-AK. Surf scoters, along with the black scoter, have a poorly understood life history. They breed in boreal forest wetlands and are one of the least studied ducks in North America. A rough estimate of their population according to the Sea Duck Joint Venture is between 600,000 and 1 million ducks (Sea Duck Joint Venture 2004). Aerial surveys in Alaska from 1957-1992 show long term breeding population declines (Henny et al. 1995). Cause of the decline is unknown but contaminant related die-offs have been documented in birds wintering along the north gulf coast of Alaska. Overall breeding ecology, population estimates and trends for Alaska surf scoters are poorly documented and not well understood; more in-depth research is warranted (Savard et al. 1998).

Long-tailed Duck: Long-tailed ducks (formerly Oldsquaw) are a species of sea duck known to breed at the Nowitna NWR and are designated as a sensitive species by the BLM-AK. According to the 2011 Alaska-Yukon Waterfowl Breeding Population Survey, long-tailed duck numbers had declined by 11 percent from their previous 10-year average and by 40 percent from the long-term average (Mallek and Groves 2011). Long-tailed ducks spend most of the year in coastal marine waters but transition into shallow freshwater wetlands during the breeding season. The long-tailed duck is the most abundant Arctic sea duck, and its population appears to have stabilized since the 1990s (Sea Duck Joint Venture 2003b).

2.2 Loons

Three species of loons occur in the study area, including the common loon (*Gavia immer*), Pacific loon (*Gavia pacifica*) and red-throated loon (*Gavia stellata*). All three species breed at Nowitna NWR. Only the red-throated loon is considered sensitive by the BLM-AK. Emergent

and open water wetlands that could support loons are rare in the study area but suitable habitat occurs within the Yukon and Tanana River lowlands.

Red-throated Loon: The red-throated loon breeds on the Nowitna NWR and is considered a sensitive species by the BLM-AK. Red-throated loons breed throughout Alaska, both in boreal forest and tundra regions, but are most common in the tundra of northern and western Alaska. Populations appear stable on the North Slope tundra and in the boreal forest region, but declined in western Alaska tundra in the 20th century (Earnst 2000). The 2011 Alaska-Yukon Waterfowl Breeding Population Survey estimate for the red-throated loon population was 13,200. This was 8 percent above the previous 10-year average and represents red-throated loons throughout all of Alaska (excluding the North Slope) as well as Old Crow Flats in Yukon Territory, Canada (Mallek and Groves 2011).

2.3 Shorebirds

Alaska is home to a large and diverse population of shorebirds. Forty-six of the world's seventy-three species have been documented breeding in the state. Many groups of shorebirds have been found to be declining in recent years. Much research is needed to gather more complete baseline data, natural history, and population trend information on shorebirds. The Comprehensive Wildlife Conservation Strategy selected seven species of particular interest in Alaska. Of these seven species, two breed at Nowitna NWR; lesser yellowlegs (*Tringa flavipes*), and solitary sandpipers (*Tringa solitaria*) (ADFG 2006d). A third species, Hudsonian godwit (*Limosa haemastica*), is on the BLM-AK watch list.

Lesser Yellowlegs: Lesser yellowlegs breed at Nowitna NWR and are considered a species of moderate concern. Data taken from the North American Breeding Bird Survey (BBS) indicate that populations of this species in Canada have declined at a rate of 9 percent per year between 1980 and 2002, and 4 percent per year for the same time period in Alaska. Lesser yellowlegs were not observed during field surveys conducted by 3PPI.

Habitat: The lesser yellowlegs breeds primarily in boreal forest and forest/tundra transition zones. Nesting areas are usually in open or semi-open forest interspersed with bogs, ponds, marshes or other wet areas (Tibbitts and Moskoff 1999). Breeding habitat occurs on the western end of the study area in the Yukon and Tanana River lowlands and in ponds created by mining activity near mile post MP1 and MP18.

Solitary Sandpiper: The solitary sandpiper breeds at Nowitna NWR. The Alaska breeding population of this species is considered "highly imperiled" by the Alaska Shorebird Group (2008) and is a bird of conservation concern on the national list compiled by the USFWS (USFWS 2008). Speculative population estimates for this species in Alaska are very low, about 25,000 birds. BBS data from Alaska for 1980-2002 show a population decline of 4.1 percent per year. Solitary sandpipers were not observed in the study area during field surveys conducted by 3PPI; however, one was noted outside the study area in Manley Hot Springs.

Habitat: Breeding habitat for this species consists of wooded wetlands in muskeg bogs, spruce forests, deciduous riparian areas, and occasionally tall shrub thickets (ADFG 2006d). Breeding habitat in the study area occurs near the western end of the study area in the ponds, lakes and sloughs in the Yukon and Tanana River lowlands.

Hudsonian Godwit: Hudsonian godwits are on the BLM-AK watch list and have been documented breeding at Nowitna NWR. There is concern for the species because of its

relatively small population size (approximately 70,000 individuals of which greater than 25 percent breed in Alaska) and because of potential threats on wintering grounds in South America. Relatively little is known about Hudsonian godwit breeding ecology and habitat requirements in Alaska. It breeds in low densities at widely scattered and remote locations throughout Alaska, making research and population monitoring expensive and logistically challenging (Alaska Shorebird Group 2008). Hudsonian godwits were not observed during field surveys conducted by 3PPI.

Habitat: Preferred habitat and extent of breeding range in interior Alaska is poorly understood. Known breeding sites are disjunct, occurring near treeline and along major river systems (Gibson 2011). Documented breeding habitat in Alaska includes open dwarf shrub and emergent wetlands intermixed with spruce and dwarf spruce woodlands (Williamson and Smith 1964, McCaffery and Harwood 2000). Possible breeding habitat occurs near the western end of the study area in wetlands in the Yukon and Tanana River lowlands.

2.4 Raptors

Raptor surveys were conducted by 3PPI for DOT&PF in and near the study area. The surveys targeted three species: peregrine falcon (*Falco peregrinus*), northern goshawk (*Accipiter gentilis*), and bald eagle (*Haliaeetus leucocephalus*) (Mason and Reynolds 2012). The only other raptor species of concern that has been documented on Nowitna NWR, and which could occur in the study area, is the short-eared owl (*Asio flammeus*).

Short-eared Owl: The short-eared owl is considered a sensitive species in AK by BLM-AK and is known to breed at Nowitna NWR. Short-eared owls are diurnal migrant raptors and leave Alaska during winter and are susceptible to threats either during migration or on wintering grounds (ADFG 2006a). North American populations are declining and the species is considered a high conservation priority by Partners in Flight (Rich et al. 2004). Short-eared owls are nomadic and are known to breed in areas of high rodent abundance. They can be common when prey populations are high and completely absent when prey is scarce (Wiggins et al. 2006).

Habitat: Preferred nesting habitat includes tundra and open shrub communities (Wiggins et al. 2006). Nesting habitat occurs on the Yukon and Tanana River floodplains outside the study area.

2.5 Passerines

This group consists of small landbirds for which there is some concern regarding population trends or vulnerability. The Comprehensive Wildlife Conservation Strategy for Alaska identifies several species and groups of species which are of special concern for Alaska. Landbirds with long-term declines in population across their range are of particular concern. Species that are included in this category are the olive-sided flycatcher (*Contopus cooperi*), gray-cheeked thrush (*Catharus minimus*), Townsend's warbler (*Dendroica townsendi*), blackpoll warbler (*Dendroica striata*), and rusty blackbird (*Euphagus carolinus*) (ADFG 2006b). All of these species breed on Nowitna NWR.

Surveys specifically targeting passerine birds were not conducted in the study area. Birds observed incidentally to other surveys were recorded and are listed in a wildlife report by 3PPI (Mason and Reynolds, 2012, Appendix B, Table 2). Field surveys in the study area were conducted in mid-July, 2012 and at a time of year when detection probabilities for landbirds are

very low. In general, surveys for landbirds in interior Alaska are conducted in June at the peak of the breeding cycle when singing rates are at their peak and detection rates are high. By July singing rates and thus detection probabilities drop off dramatically. Many landbird species that are likely common on the study area based on available habitat were not detected including Swainson's thrush (*Catharus ustulatus*) and yellow-rumped warbler (*Dendroica coronata*).

Olive-sided Flycatcher: The olive-sided flycatcher is found across many areas of Alaska. It occurs in low densities throughout the coniferous boreal forest and is considered uncommon or rare (ADFG 2006b). Data collected from the North American Breeding Bird Survey indicates that olive-sided flycatchers have experienced a population decline of 3.5 percent per year across their range from 1966 to 2006. In Alaska they declined at a rate one percent per year from 1980 to 2006 (Sauer et al. 2007). Analysis of the 1966 to 2002 data suggested that the global population of olive-sided flycatchers had been reduced by over 70 percent since 1966 (Sauer et al. 2003). Reasons for this decline are unknown, although habitat loss on wintering grounds in the Andes Mountains of South America is suspected. Olive-sided flycatchers were not noted during 3PPI field surveys.

Habitat: In interior Alaska the olive-sided flycatcher is most often found in stands of open canopy spruce. They are often found close to water, they regularly use standing dead trees, and they select a mosaic of habitat with openings, such as burns, meadows, and muskegs (Wright 1997). Preferred breeding habitat is limited but does occur on the study area and could support breeding olive-sided flycatchers. Figure 2 (Appendix A) depicts available habitat for olive-sided flycatcher. At the level of habitat analysis available for this project, Open White Spruce Forest, Open Black Spruce Forest and Spruce Woodland were selected as primary olive-sided flycatcher nesting habitat. Woodland Mixed Forest was selected as secondary olive-sided flycatcher nesting habitat. Preferred olive-sided flycatcher nesting habitat is difficult to display because they prefer a habitat mosaic with abundant edge and snags. Preferred sites are often associated with water and shrub habitats. Burn mosaics are often preferred. The most recent burn on the study area is the 1969 Big Denver fire but revegetation since then may have grown too mature to be preferred habitat.

Gray-cheeked Thrush: The gray-cheeked thrush breeds at Nowitna NWR (USFWS 2012b), and is considered sensitive by BLM-AK. No population trend was detected in analysis of BBS data. The fall mist netting capture data from Creamer's Field Migration Station in Fairbanks showed a decline in the number of gray-cheeked thrushes from 1992-2011 (Alaska Bird Observatory, unpublished data). The origin of these migrants is unknown. It is thought that the majority of the breeding range for this species is north of, or at higher elevation than, most BBS routes. Thus the species is poorly documented and its ecology not well understood in Alaska (Alaska Natural Heritage Program 2012). Grey cheeked thrushes were not detected during 3PPI surveys of the study area.

Habitat: In Alaska the gray-cheeked thrush breeds mainly in willow and alder thickets often near water, and is also found in coniferous forests and tall shrub communities. Most documented breeding in Alaska has been where these habitats occur in tundra or near treeline (Kessel 1979, Gibson 2011). These habitats in Alaska remain largely intact. Only limited breeding habitat occurs for gray-cheeked thrush on the study area; primarily in tall shrub communities at higher elevations in the northern section of the study area. Figure 3 (Appendix A) depicts available habitat for gray-cheeked thrush. At the level of habitat analysis available for this project Closed Alder Shrub, Closed Alder Willow Shrub, Closed Willow Shrub, Open Alder Shrub, Open Alder Willow Shrub, and Open Willow Shrub were selected as primary gray-

cheeked thrush habitat. Open-Mixed Forest-Shrub was selected as secondary gray-cheeked thrush nesting habitat.

Townsend's Warbler: Townsend's warblers breed throughout the forested regions of Alaska and migrate to the tropics in winter. This species is considered sensitive by BLM-AK due to concerns of habitat loss due to fire, logging, and the potential impacts of climate change. A slight positive population trend was determined in analysis of Alaska BBS data (Sauer et al. 2007). Townsend's warblers were not noted during 3PPI field surveys.

Habitat: Preferred nesting habitat for Townsend's warbler consists of mature, tall white spruce forest as well as birch and white spruce mixed forest (ADFG 2006b, Matsuoka et al. 1997). Stands of good nesting habitat generally occur in riparian sites and well drained hillsides. The best breeding habitat for Townsend's warblers occurs primarily on the western half of the study area. Figure 4 (Appendix A) depicts available habitat for Townsend's warbler. At the level of habitat analysis available for this project, Closed Mixed Forest and Closed White Spruce Forest were selected as primary Townsend's warbler habitat. Open Mixed Forest and Open White Spruce Forest was selected as secondary Townsend's warbler nesting habitat.

Blackpoll Warbler: The blackpoll warbler has suffered the steepest long-term population decline of any Neotropical-Nearctic landbird (ADFG 2006b). From 1980 to 2006 the population declined at a rate of 9.6 percent per year across its range, and 3 percent per year in Alaska (Sauer et al. 2007). The blackpoll warbler population has been reduced by over 50 percent across its breeding range in Alaska, and by 90 percent across its breeding range in Canada from 1966-2003 (Sauer et al. 2004). The causes for this trend are not well understood. Habitat loss is a major concern across both breeding and non-breeding range. Within Alaska the majority of their habitat has not been affected by anthropogenic change thus declines within the state are likely related to causes elsewhere. Logging of the Canadian boreal forest and acid rain in the northeastern U.S. and southeastern Canada has reduced blackpoll warbler breeding habitat. Tropical deforestation in winter habitat likely has a large negative effect on this species also (ADFG 2006b). Blackpoll warblers were not noted during 3PPI field surveys.

Habitat: Breeding habitat for blackpoll warblers in interior Alaska is broadleaf forests and tall shrub thickets of willow and alder. Use of open spruce and open mixed forests has also been documented (Kessel 1998, Cotter and Andres 2000). Preferred breeding habitat occurs on the study area and could support blackpoll warblers. Figure 5 (Appendix A) depicts available habitat for blackpoll warbler in the study area. At the level of habitat analysis available for this project, Closed Alder Willow Shrub, Closed Deciduous Forest, Closed Willow Shrub, and Open Deciduous Forest were selected as primary blackpoll warbler habitat. Closed Alder Shrub, Open Alder Shrub, Open Alder Willow Shrub, Open Deciduous Forest – Shrub, Open Willow Shrub, Spruce Woodland, and Woodland Mixed Forest were selected as secondary blackpoll warbler habitat.

Rusty Blackbird: Rusty blackbirds are found across Alaska, south of the Brooks Range. According to BBS data the rusty blackbird declined at an average of 14.4 percent per year across its range and 1.9 percent per year in Alaska from 1980-2006 (Sauer et al. 2007). Several studies have shown that their decline is accelerating and populations may have declined by as much as 90 percent. Causes for this population decline are unknown, but winter habitat loss is suspected. Rusty blackbirds winter in wooded wetlands of the southeastern U.S. Eighty percent of this habitat has been lost due to agriculture development. However, habitat loss has slowed in recent years, while population decline has continued to accelerate. Breeding habitat in Alaska is generally intact and not largely disturbed by development. Climate change could also affect

this species if wet permafrost areas begin to thaw and dry out (ADFG 2006b). Rusty blackbirds were not detected during 3PPI field surveys.

Habitat: Rusty Blackbirds breed in wet coniferous and mixed forests associated with bogs, muskeg, swampy shores of lakes and ponds and tall riparian shrub such as alder or willow (ADFG 2006b). Little potential breeding habitat for rusty blackbirds occurs in the study area and was not mapped. Wetlands in the Yukon and Tanana River lowlands outside the study area likely support rusty blackbirds.

2.6 Upland Game Birds

Seven species of grouse and ptarmigan inhabit Alaska and all are popular game birds. Six species occur in interior Alaska. Ruffed grouse (*Bonasa umbellus*), spruce grouse (*Falci pennis canadensis*), willow ptarmigan (*Lagopus lagopus*), and rock ptarmigan (*Lagopus mutus*) all breed on Nowitna NWR. Sharp-tailed grouse (*Tympanuchus phasianellus*) are uncommon and are not known to breed on the refuge (USFWS 2012b). All three grouse species have been documented on the study area. Weather conditions in the Interior for the spring and early summer of 2012 were mostly favorable for brood production and survival for these species (ADFG 2012).

Ruffed Grouse: Ruffed grouse are a species with cyclic population variation and were at a low point in their cycle in 2010 throughout the Interior. They began to rebound in 2011, and are expected to be found in moderate densities in 2012 in areas of good aspen-dominated habitat (Merizon 2012).

Habitat: Ruffed grouse occur throughout the forested portions of interior Alaska; predominantly wherever early successional mosaics of birch and aspen occur. They generally prefer mid successional habitats of deciduous or mixed forests with dense understories of shrubs. These habitats often occur in regenerating burns or in riparian areas along major rivers and streams (Rusch et al. 2000). Good ruffed grouse habitat occurs in the study area.

Spruce Grouse: Spruce grouse occur throughout the boreal forest including all forested areas of Alaska. Spruce grouse are also a cyclic species, were at a high point in their population cycle in 2005, and have been declining since. Numbers in the Interior are currently low, but should be on an increasing trend (Merizon 2012).

Habitat: Spruce grouse are found throughout most spruce-dominated forests in Alaska, and are found in higher numbers along drainages where white spruce is a major species (Boag and Schroeder 1992). Good spruce grouse habitat occurs in the study area.

Sharp-tailed Grouse: Sharp-tailed grouse are monitored annually in the Delta Junction area and populations are currently low (Merizon 2012). Following the Big Denver fire (1969), Manley Hot Springs residents reported that sharp-tailed grouse were common along the Tofty Road. However, as plant community succession has progressed open shrub habitats have been replaced by more mature forest and these open country birds are now less common in the area (personal communication with local Manley residents)

Habitat: Sharp-tailed grouse occur throughout the eastern and central Interior in sub-alpine shrub communities, regenerating burns, muskegs and other open, early successional habitats (Paragi et al. 2012).

Willow Ptarmigan: As another species exhibiting cyclic population trends, willow ptarmigan should be approaching a population peak in 2013 or 2014. Spring breeding counts for 2012 indicated modest increases in numbers across the Alaska Range and the Interior. However, densities along the western Denali Highway remain very low (Merizon 2012).

Habitat: Willow ptarmigan are found in tundra and subalpine shrub habitats in summer throughout interior Alaska. In winter they inhabit willow patches and willow lined drainages where they feed on willow buds exposed above the snow (Hannon et al. 1998). Limited habitat for willow ptarmigan occurs in the study area. They are likely found on the study area in winter when willow ptarmigan migrate over broad areas of interior Alaska and can be found in willow thickets often far from tundra breeding areas.

Rock Ptarmigan: This species occurs throughout mountainous regions in Alaska. Rock ptarmigan numbers have remained low throughout the central Alaska Range since 1999. Counts conducted in the spring of 2012 found that numbers were still low to very low (Merizon 2012).

Habitat: Rock ptarmigan occur in alpine habitats that are drier and more sparsely vegetated than those utilized by willow ptarmigan. Rock ptarmigan breeding habitat does not occur on the study area but does occur to the east at higher elevations. Birds could be present on the study area in winter when they tend to disperse from higher elevation breeding areas (Montgomerie and Holder 2008).

3.0 Big Game

The Road to Tanana study area is in Game Management Unit 20F. Several species of big game occur in the study area including moose (*Alces alces*), black bear (*Ursus americanus*) and brown bear (*Ursus arctos*). Unit 20F is a popular subsistence and sport hunting area for local residents as well as providing hunting opportunities for non-local residents. Access to the area is limited and hunting is concentrated along roads, trails and rivers as well as float plane accessible lakes.

Moose: Density of moose in GMU 20F has been low for many years, reportedly as a result of predation by wolves (*Canis lupus*) and bears (Hollis 2010a). Although no studies of predator-prey relationships, or moose production and survival, have been conducted in the area, wolf and bear populations receive relatively little harvest pressure. Moose density within Unit 20F has been estimated at between 0.25 and 0.5 moose per square mile, for an estimated population of 1,000-2,000 moose. Between the years 2000 and 2009 the reported moose harvest in Unit 20F was between 20 and 54 moose. The ADFG estimate of total moose harvest, including unreported harvest, in Unit 20F for those same years is between 25 and 63 moose annually. Unit 20F harvest regulations have allowed the taking of one bull moose per year, open to Alaska residents only since 1993. The majority of hunters access the area by boat or ATV and fewer by light aircraft. From 2000-2009 hunter success ranged from 15-33 percent, with 112-169 reported hunters within the area. Accidental death of moose by vehicle collisions has not been a factor in the area.

Population composition in Unit 20F was estimated from the percentage of large bulls (over 50 inches) reported in the harvest (Hollis 2010a). From 1995 to 2008 the percentage of large bulls in the reported harvest ranged from 24-55 percent. These numbers suggest that currently, overharvest of bulls in the unit is likely not a concern, because if the harvest rate of bulls was too high to be sustainable, the percentage of large bulls harvested would be much lower. ADFG

has set a goal of 20 percent or more large bulls in the harvest; this goal is being met, so no regulatory changes have been recommended.

Habitat: The highest density moose populations in Alaska occur in areas with high quality forage. Forage for moose consists primarily of graminoids and forbs as well as twigs and leaves of hardwood trees and shrubs especially aspen, balsam poplar (*Populus balsamifera*), birch and willow. Moose densities are highest wherever these species occur and are physically available to moose. Recent burns provide abundant forage for moose as do subalpine shrub communities and early successional habitats in active river floodplains. Two large wild fires within the study area have burned during the last 70 years, one in 1950 (Fish Lake fire - 25,000 acres (10,117 hectares)) and another in 1969 (Big Denver fire - 384,000 acres (155,399 hectares)). Regeneration in both these burns has grown beyond the reach of moose and thus they are becoming less valuable as moose habitat. Mature black spruce in the area provide poor quality moose habitat. However, it appears that riparian areas, subalpine hills, and burns throughout Unit 20F are capable of supporting more moose than are present. Based on this finding, Hollis (2010a) concluded that predation, rather than forage, is the limiting factor to the Unit 20F moose population.

Caribou (*Rangifer tarandus*): There were no reports indicating the recent occurrence of caribou within the study area. Residents of Tanana occasionally harvested caribou in the vicinity of the city up until the mid-1970s (Pat Moore, pers. comm., 2012). The Ray Mountains herd is closest to the study area, but occurs north of the Yukon River and consists of about 1,850 animals (Hollis 2009). A radio telemetry study of the herd from 1994 to 1997 found that the primary calving grounds were on south-sloping plateaus between Mt. Tozi and the Tozitna River (Jandt 1998). This is 10-15 miles (16-24 kilometers) north of the Yukon River, and 25-30 miles (40-48 kilometers) from the study area. Hunting pressure on the Ray Mountains herd is light due to limited access. Predation by brown bears is reportedly high (Hollis 2009), but no studies have been conducted to confirm this.

Brown Bear: Little information exists on brown bear population and density within Unit 20F. The Road to Tanana study area falls within an area of Unit 20F that is classified as having low density of brown bears due to relatively poor habitat. The Ray Mountains area north of the Yukon River is classified as medium density, as it probably contains relatively good brown bear habitat (Young 2009a).

ADFG established a harvest goal of a three-year average of human-caused mortality of brown bears to be a) less than or equal to seven bears per year for Unit 20F, and b) at least 55 percent male throughout Unit 20. Both of these goals were met for 2005-2007 within Unit 20F, with a 3-year average harvest of 2.3 bears, composing of 67 percent males. The hunting season is from 1 September through 31 May. Most bears are harvested in September, probably because moose and caribou hunters kill bears incidentally to other species (Young 2009a).

3PPI conducted bear denning surveys in the study area in 2012 (Mason and Reynolds 2012) and did not find any dens using aerial survey methodology.

Habitat: Brown bears are opportunistic omnivores and habitat generalists and occur wherever high quality forage is concentrated seasonally within their territories. In interior Alaska brown bears are generally more common near treeline and in tundra. Common foods include forbs and graminoids, berries, meat and carrion.

Black Bear: Interest in hunting black bears is high within Unit 20, especially around the Fairbanks area during the spring (Hollis 2011). Black bear hunting is an important source of meat, hides, and recreation to many people around interior Alaska. It is estimated 400-700 black bears occur within unit 20F, and it is likely that the population is near the upper end of this range.

Black bear hunting season is open year-round in Unit 20 with an annual bag limit of three bears. Many bears are taken at baiting stations. Regulations have changed several times in the last 20 years regarding black bear baiting, but baiting has only been allowed during the spring season since 1988. The number of hunters using bait stations has decreased over the last 20 years; however, the success rate of hunting over bait increased from 32 percent in 1989 to 43 percent in 2006 (Hollis 2011). The average annual harvest of black bears in Unit 20F from 2007 to 2009 was 40 bears, with a range of 29-49 bears of which 73 percent were males. Success rate was 51 percent for hunters who reported hunting black bears in Unit 20F in 2009, which was significantly higher than other subunits within Unit 20. A total of 63 hunters reported hunting black bear in unit 20F in 2009, with 32 bears reported harvested. Forty-nine bears were sealed from that unit for 2009, which indicates under-reporting of harvest reports. From 2007 to 2009, 84 percent of the harvest in Unit 20 occurred during May and June (Hollis 2011).

ADFG has established a maximum annual harvest goal of 12 percent of the estimated population. Harvest in Unit 20F has met this criterion, with 6-10 percent reported per year. In comparison, average annual harvest rate for the estimated population in Unit 20B was 11-20 percent from 2007 to 2009, and has been higher than 12 percent for 16 of 21 years since 1989. Based on age and skull size measurements of bears taken from this area, the ADFG population assessment for Unit 20F indicates that bears were reaching maturity and that overharvest has not been a problem (Hollis 2011).

Habitat: Black bears are opportunistic omnivores and habitat generalists and occur wherever high quality forage is concentrated seasonally within their territories. In interior Alaska black bears are generally more common in forested terrain below treeline rather than in tundra. Common foods include forbs and graminoids, berries, meat and carrion.

4.0 Furbearers

Furbearers are an important resource in interior Alaska. Trapping can be a significant source of income, food, clothing, and winter recreation for many people. Little information is available specifically for the study area or Unit 20F, but a brief summary of Unit 20 is applicable (Hollis 2010b).

Wolf: In Alaska the wolf is viewed as a predator, furbearer, wilderness symbol, and a fundamental component of the ecosystem. Wolves range throughout Alaska in habitats that support their principal prey which in the interior includes moose and caribou. ADFG and the Alaska Legislature recognize the wolf in interior Alaska as a renewable resource, whose populations may be managed to allow for higher populations of moose or caribou for human use. ADFG has conducted wolf depredation control programs for several areas within Unit 20, including in adjacent Unit 20B in the early 1980s (ADFG 1986), however none have been conducted in Unit 20F. Wolf populations are primarily managed through hunting and trapping, but there is some concern that due to a dog louse infestation in some Unit 20 wolves, trappers may be less likely to target wolves because of their poor quality pelts. As of 2007 no lice infested wolves had been documented in Unit 20F (Gardner and Beckmen 2007).

Wolf populations for Unit 20F were estimated by extrapolation of densities from Units 20C and 20B, based on data from 1989 and 1990, respectively (Young 2009b). More intensive studies have been conducted in Unit 20A, especially the Tanana Flats area, and in Denali National Park in Unit 20C. Population size for the entirety of Unit 20 has remained relatively stable for at least the last 10 years (Young 2009b). During 2005-2007, within all of Units 20A, 20B, 20C, 20F and 25C, an estimated 600-900 wolves, including 90-130 packs were present (Young 2009b). These estimates are similar to those reported for 1999 indicating a relatively stable population within that period. Population estimates for Unit 20F were 75-125 wolves and 10-20 packs from 2003 to 2007. However, in the more closely studied packs of units 20A and 20C, wolf populations have fluctuated from steep declines to increases since the mid 1990's. Harvest of wolves has also varied widely across the years, and is influenced by many factors other than wolf population size, including weather and trapping pressure. For example, in Unit 20A the percentage of the estimated fall wolf population that was harvested by hunters or trappers was 33 percent in 1995 and 1996, but fell to 20 percent in 1997, despite an apparent increase in wolf numbers during that time. Wolf harvest in Unit 20F is much lower than other units in the area, likely because of its remoteness. From 2003-2008 annual wolf harvest in Unit 20F ranged from 12 in 2003-2004 to six in 2007-2008. This followed the trend for all of Unit 20, where the mean annual harvest declined from 228 wolves during 1999-2001 to 187 during 2002-2004 and 150 wolves for 2005-2007. ADFG estimates wolf density in Unit 20 to be 15-23 wolves per 1,000 square miles. This met their objective of maintaining 11 or more wolves per 1,000 square miles, and no changes to seasons or bag limits were recommended at that time. Most wolves in 20F were harvested in the winter months, and most hunter and trapper access was by snow machine (Young 2009b).

Lynx (*Lynx canadensis*): Lynx occur throughout interior Alaska in habitats that support ample prey. Populations fluctuate widely, following the 10-year cycle of snowshoe hares, their primary prey (Boutin et al. 1995). Lynx reached the low of their population cycle in 2000. Populations began increasing in 2004 and continued to increase through 2008. Population numbers were expected to peak in 2009-2010. Reported take of lynx in 2008-2009 in Unit 20F was 298. This was a large increase from previous years: 143 lynx in 2007-2008, 127 lynx in 2006-2007, and 18 lynx in 2001-2002 (Hollis 2010b). Trappers in Manley Hot Springs reported that few lynx were taken in the 2011-2012 season (Frank Gurtler, pers. comm., 2012).

River Otter (*Lutra canadensis*): River otters occur throughout interior Alaska in all major rivers and fish bearing streams. River otters would not be expected in the study area except along the Yukon River. Small numbers of river otters are reported taken in Unit 20F, ranging from 0 to 3 otters per year during 1998-2009 (Hollis 2010b).

Wolverine (*Gulo gulo*): Wolverines are a widely ranging species of tundra and forests and occur throughout Alaska. Densities are generally low due to their solitary nature and large home ranges, but tundra habitats usually support more wolverines than lowland forested areas. They would be expected to be uncommon in the study area. Annual wolverine harvest varied from one to 10 in Unit 20F from 1998-2009. During the 2008-2009 season, four wolverines were reported taken (Hollis 2010b).

Other species of furbearers known or expected in the study area include coyote (*Canis latrans*), red fox (*Vulpes vulpes*), American marten (*Martes americana*), mink (*Neovision vison*), ermine (*Mustela erminea*), beaver (*Castor canadensis*) and muskrat (*Ondatra zibethicus*).

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RAPTOR AND BEAR DENNING SURVEYS

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Limitations

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with our client. This document is solely for the use and information of the Alaska Department of Transportation and Public Facilities (DOT&PF). Any reliance on this report by other parties is at such party's sole risk.

Opinions and recommendations contained in this document apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. Three Parameters Plus, Inc. (3PPI) is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. Three Parameters Plus, Inc. does not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Acronyms

Term	Definition
3PPI	Three Parameters Plus, Inc.
BLM	Bureau of Land Management
Db	decibels
DOT&PF	Alaska Department of Transportation and Public Facilities
ESA	Endangered Species Act
GPS	Global Positioning System
MP	milepost
PJD	Preliminary Jurisdictional Determination
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

1. Introduction

The Alaska Department of Transportation and Public Facilities (DOT&PF) is proposing to build a road from Tofty (near Manley Hot Springs), Alaska to the Yukon River at a point approximately 7 miles (11 kilometers) upstream from the village of Tanana (Appendix A, Figure 1 Study Area). Three Parameters Plus, Inc. (3PPI), under contract to DOT&PF, conducted wildlife surveys in and near the proposed Road to Tanana study area (study area) to determine the occurrence of species that would potentially be impacted by construction, use or maintenance of the proposed road.

Field investigations targeted raptors as well as evidence of bear denning activity. Raptors with heightened conservation status known or thought to occur in the study area include northern goshawk (*Accipiter gentilis*), peregrine falcon (*Falco peregrinus*), and bald eagle (*Haliaeetus leucocephalus*). These species were targeted during field surveys. Field investigations were conducted from July 10-13, 2012 by Jeff D. Mason and Harry Reynolds. A literature search (Mason and Cooper 2012) was also conducted to determine the presence of any game and nongame species known or suspected to inhabit the study area. Local residents were contacted for their knowledge of wildlife use and abundance in the area.

2. Methods

Digital imagery of the study area was reviewed prior to initiating field work to determine the presence and extent of mature, closed canopy hardwood forests, the preferred nesting habitat of northern goshawks in interior Alaska (McGowan 1975, Craig and Spindler 2011) (Photo 1).



Photo 1. Mature closed canopy hardwood forest is preferred nesting habitat of northern goshawks in Interior Alaska. July 2012.

Digital imagery was also reviewed to determine the presence and extent of bald eagle and peregrine falcon nesting habitat and alpine areas suitable for grizzly bear (*Ursus arctos*) denning. Aerial surveys of the area for evidence of peregrine falcon nests, bald eagle nests, and bear dens were conducted using a Bell 206 Long Ranger helicopter. Aerial survey data included species, number, age, coordinates, presence of a nest, and relevant notes. The helicopter was also used to refine estimates of the extent of preferred northern goshawk habitat and to help in determining the location of potential ground survey points.

Ground surveys for northern goshawks were conducted within the study area and supported by helicopter or highway vehicle. Helicopter supported surveys used natural and constructed landing zones for drop-off and pick-up points. Observers began ground surveys in high quality habitat nearest to a landing zone. Surveys began no sooner than 15 minutes after drop-off to minimize any potential disturbance from helicopter operations. Goshawk survey protocol followed slightly modified U.S. Forest Service (USFS) guidelines (Woodbridge and Hargis 2006). Survey points were greater than or equal to 327 yards (300 meters) apart. Points were chosen subjectively in non-contiguous habitat. In areas of contiguous, high quality habitat observers navigated 327 yards (300 meters) between sample points using a global positioning system (GPS) (Garmin GPS model "Oregon 550T").



Photo 2. Observer using broadcast caller to locate northern goshawks. July 2012.

Goshawk surveys were conducted by broadcasting adult goshawk alarm calls from a Foxpro digital game caller (Foxpro model "Firestorm"). Decibel level (Db) at the speaker was 106 as reported by Foxpro. A minimum of 100Db is recommended in the USFS protocol. Additionally, USFS protocol recommends that broadcast calls be audible by humans to greater than or equal to 218 yards (200 meters) in forested settings. Tests of the Firestorm model determined it was audible to greater than 327 yards (300 meters) in the habitat encountered in the study area. As a result points separated by this metric were selected for surveys.

Two observers conducted the surveys. At each point the alarm call was played for 10 seconds in a fixed direction (Photo 2). The volume was then shut off and the observers remained alert for goshawk response (audio or visual) for 30 seconds. This same technique was repeated at 90 degree increments. At the end of the last calling sequence the observers remained alert for an additional two minutes before continuing to the next sample point. Thus a minimum of

3.5 minutes were spent surveying from each sample point. At each point the observers stood back to back to increase opportunities for detections. Notes on habitat type were recorded as well as waypoint number, date, and time of observation (Appendix B, Table 1).

3. Results

Aerial survey: Three observers conducted an aerial survey of the study area and vicinity for two hours and 45 minutes on July 10, 2012 (Appendix A, Figure 2 Wildlife Survey Flight Path). The entire study area was surveyed. Outside the study area the survey followed the south bank of the Yukon River from the western terminus of the project upstream to a point near Mile Post (MP) 24 and then back downstream to the confluence with the Tanana River. The survey then continued upstream along the north bank of the Tanana River to the confluence of Eightmile Slough. At this point the survey proceeded north and generally followed the north bank of Hay Slough to the east across Donahoe Lake to a point 1.5 miles (2.4 kilometers) south of MP29 where the survey returned to the study area.

Peregrine falcon surveys: Evidence of one active peregrine falcon nest located in the Yukon River drainage was observed. Two adults were seen defending a site on a cliff face 600 feet (180 meters) above the Yukon River at 850 feet (260 meters) elevation, near the top of a ridge. Although the nest was not seen, both 3PPI observers had previous experience locating peregrine falcon nests and concluded a nest was on the cliff face. Due to concerns of harassment the search was aborted after two passes. The nest site was approximately 1,600 feet (490 meters) from the center of the road alignment and northwest of MP26 (Appendix A, Figure 3 Peregrine Falcon Nest Site). Several other marginally suitable nesting sites were observed during the aerial survey but no other peregrines were seen.

Northern goshawk surveys: Ground surveys for nesting goshawks were conducted on July 11-13. A total of 7.64 miles (12.3 kilometers) linear distance was surveyed. The area surveyed included approximately 835 acres (338 hectares), based on an effective 327 yard (300 meters) broadcast distance. Eight points were surveyed by highway vehicle along the Tofty Road near the east end of the study area on 11 July 2012. Sixteen points were surveyed along the western end of the study area on 12 July, and on 13 July, twelve points were surveyed along the middle section of the study area, both with helicopter support. Goshawks were not detected on any of these surveys. Table 1 (Appendix B) contains coordinates for the sample points and Figure 4 (A-H) (Appendix A) depicts northern goshawk survey point locations throughout the study area.

Other wildlife: No bald eagles were observed during the aerial survey and no grizzly bear dens were located. One bear den was found by a wetlands crew during field mapping activities in closed mixed forest between MP23 and MP24. One pair of trumpeter swans (*Cygnus buccinator*) with three cygnets was seen during the aerial survey on Donahoe Lake. Trumpeter swans were also seen by the wetlands crews in July and August in the lowlands south of the study area. Black bear (*Ursus americanus*) and grizzly bear sign was noted occasionally during ground surveys and several black bears were seen by wetlands field crews from the helicopter. A list of all bird species identified during the wildlife survey is presented in Table 2 (Appendix B). No passerine bird species-of-concern were noted. Several moose (*Alces alces*) were seen from the survey helicopter and from the road near MP1. Other mammals noted included one lynx (*Lynx canadensis*) on the Tofty Road and several red squirrels (*Tamiascurus hudsonicus*). A few beaver (*Castor canadensis*) dams and lodges were also noted from the air and during wetlands work along small streams and excavated ponds. Mammal observations are listed in Table 3 (Appendix B).

4. Discussion

Peregrine Falcon: Peregrine falcons are considered a sensitive species by the Bureau of Land Management (BLM). They are also a species of interest for conservation in Alaska's Comprehensive Wildlife Conservation Strategy (Alaska Department of Fish and Game 2006). The peregrine falcon suffered major population declines during the 1960s and 1970s as a result of pesticide contamination and, in 1973, was listed as endangered under the U.S. Endangered Species Act (ESA). Under federal protection the species recovered and was removed from the ESA list in 1999. Peregrines are still protected under the Migratory Bird Treaty Act. Populations are continuing to recover and are being monitored to determine if federal recovery goals are being met (White et. al. 2002).

The American peregrine falcon subspecies (*F.p. anatum*) nests in boreal and temperate forest regions including interior Alaska. In interior Alaska, nesting habitat for peregrines includes cliffs and rocky outcrops in mountains and along river drainages with commanding views and access to open terrain for hunting. As peregrine populations have continued to grow in Alaska most high quality nest sites have become reoccupied. However, successful nesting pairs have been found occupying marginal habitat. It is possible that some of the marginal sites identified on the aerial survey could be used for nesting in the future. Marginal peregrine nest sites were found 1.25 miles (2 kilometers) south of the Study Area near MP30.

Northern Goshawk: The USFWS considers the northern goshawk to be a sensitive species in Alaska. Although it is not considered endangered, land management agencies encourage surveys for this species (Steve Lewis, USFWS, pers. comm., 2012). Northern goshawks are circumboreal in distribution and global population trends are thought to be stable. In interior Alaska, goshawk populations are considered stable overall but are known to be cyclic, and population size and occupancy of nesting territories are correlated to prey abundance (McGowan 1975, Doyle and Smith 1994). The primary prey of goshawks in the boreal forest, including interior Alaska are snowshoe hares (*Lepus americanus*) and grouse, all of which display cyclic population fluctuations; goshawk numbers also fluctuate in response. Data on snowshoe hare abundance in interior Alaska indicates hares are at a current low in their cycle (Merizon 2012). Similarly, local residents and trappers from Manley Hot Springs familiar with the area reported low numbers of snowshoe hares during 2011-2012 (Frank Gurtler, personal communication, July 12, 2012). Although good habitat is available in the study area for ruffed grouse (*Bonasa umbelus*) and spruce grouse (*Falcapennis canadensis*) only two observations of spruce grouse were noted. Statewide grouse survey data show ruffed grouse at the bottom of a low in their cycle (Merizon 2012). Accordingly, it is likely that goshawks are currently at a population low in response to apparent low prey abundance. When prey is scarce, goshawk numbers can remain low and suitable habitat can often remain unoccupied for years. Goshawks are also mobile animals and capable of dispersing long distances in search of prey. They do so at roughly 10 year intervals when "irruptions" of goshawks appear outside their normal winter range (Hoffman et al. 2002). Goshawk irruptions are apparently in response to regional hare and grouse population declines in the boreal forest (Mueller et al. 1977, Doyle and Smith 1994). As prey populations cycle upward goshawks will likely become more common in the study area.

No goshawks were detected during the surveys. The habitat most likely to be occupied by goshawks is in the western end of the study area between MP30 and MP34, and between MP19 and MP23 in the middle of the study area. Both these areas were surveyed.

Most of the habitat along the Tofty Road (MP 1-18) is regenerating following a wildfire in 1969 and is likely not mature enough to support nesting goshawks. Figure 4 (A-H) Northern Goshawk

Habitat and Survey Points (Appendix A) depicts available habitat for northern goshawks in the study area. The northern goshawk habitat preference map was created using project vegetation classifications in the preliminary jurisdictional determination (PJD) report (3PPI 2012 [in preparation]). At the level of analysis available for the project Closed Deciduous Forest was selected as the primary goshawk nesting habitat. Closed Mixed Forest was selected as secondary goshawk nesting habitat.

Bald Eagle: Bald eagles are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. A 660 foot (200 meter) disturbance-free, protective buffer is required around bald or golden eagle nests to reduce the chances of human-caused nest failure. Bald eagle nest densities are lower in interior Alaska than in coastal Alaska. In the Tanana River valley bald eagle nests are typically found in large, mature trees within 300 feet (91 meters) of fish bearing rivers and lakes (Ritchie and Ambrose 1996).

Bald eagles were not detected on the aerial survey nor were any seen from the ground. Local residents of Tanana reported they rarely see bald eagles along this stretch of the Yukon or Tanana Rivers. Availability of suitable nest trees does not appear to be a factor that would limit presence of bald eagles in the area.

Bears: No bear dens were seen during the aerial survey; however, a bear den was located near MP23 in Closed Mixed Forest by wetlands crews on July 13, 2012. Photos of the den were not sufficient to determine which species of bear had used it. Neither grizzly nor black bear species are limited by den sites in interior Alaska. Grizzly bears tend to den in alpine areas and black bears use lower elevation forested sites. Availability of alpine grizzly bear denning habitat is limited in the study area. Dens of both species are usually used for one winter and often collapse the following summer.

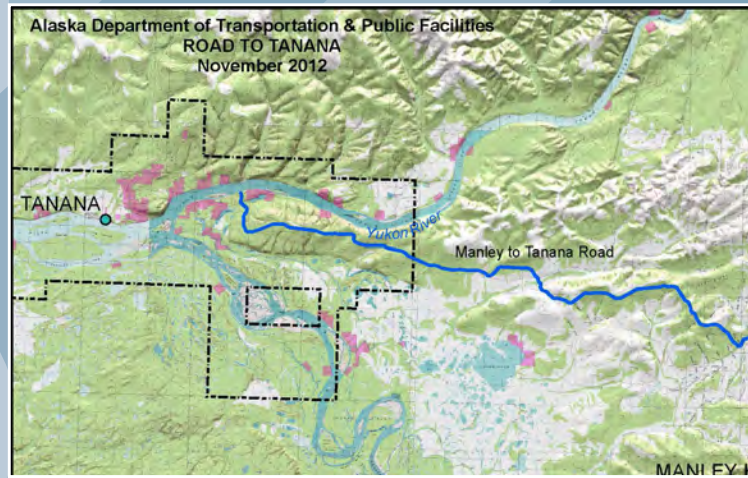
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Manley Hot Springs to Tanana Road Economic Effects

Prepared for the
Alaska Department of Transportation
and Public Facilities

Final Report
January 2013



**Northern
Economics**

Wisdom • Trust • Relevance • Innovation

Economic Effects of Proposed Road: Manley Hot Springs to Tanana

Final Report

Prepared for

Alaska Department of Transportation & Public Facilities

January 2013

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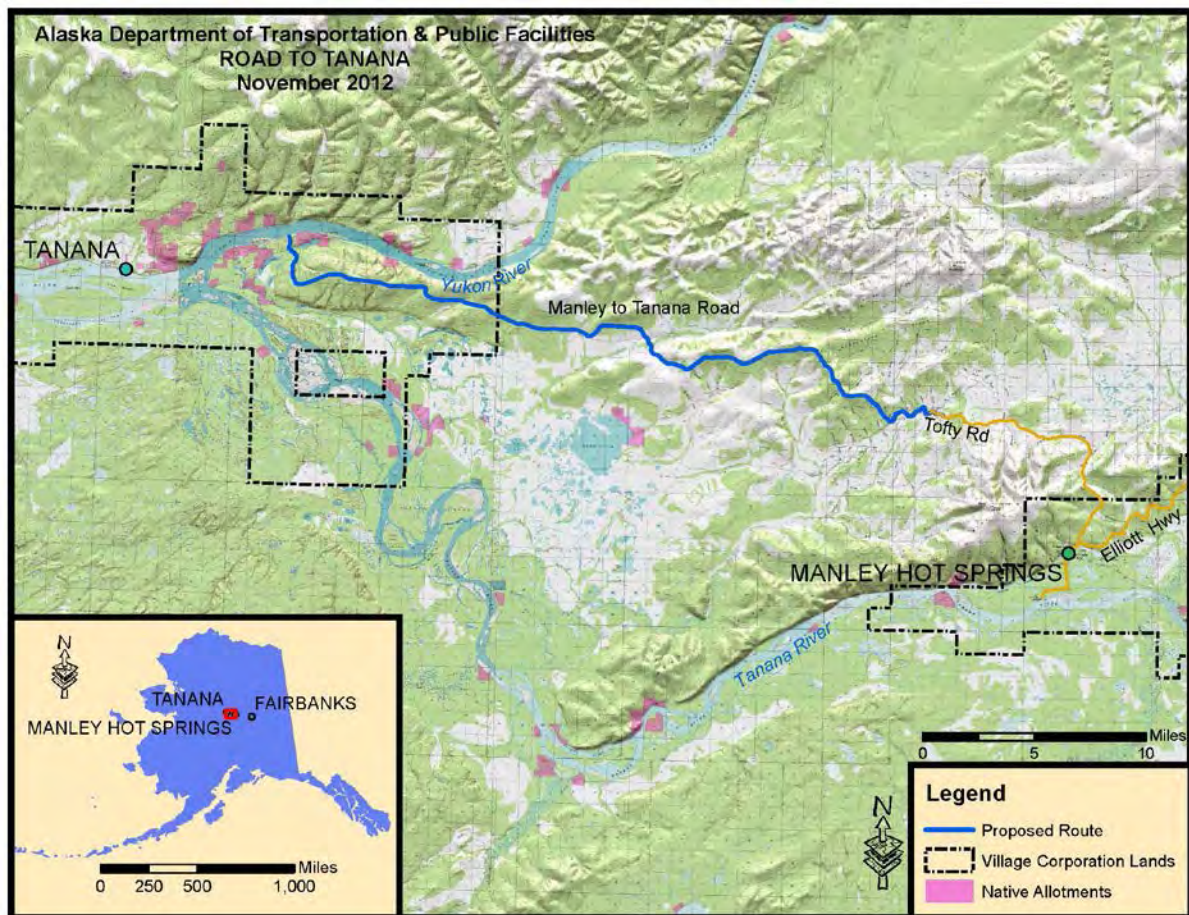
Abbreviations

ADF&G	Alaska Department of Fish and Game
DOLWD	Alaska Department of Labor and Workforce Development
ADOT&PF	Alaska Department of Transportation and Public Facilities
BTS	Bureau of Transportation Statistics
DCCED	Alaska Department of Commerce, Community, and Economic Development
TVC	Tanana Valley Campus
WAAPS	Western Alaska Access Planning Study
UAF	University of Alaska Fairbanks
USPS	United States Postal Service

Executive Summary

This analysis estimates the potential economic benefits of extending Alaska's road system from the current endpoint of the Elliott Highway at Manley Hot Springs to Tanana. Figure ES-1 illustrates the proposed road corridor. The corridor and study area for this report are located in the Yukon-Koyukuk Census Area. The boundaries of the project extend from the end of the Elliott Highway at Manley Hot Springs to a terminus on the south shore of the Yukon River. The study assumes that a ferry and ice bridge will initially be used to cross the Yukon to reach Tanana, which is located on the north shore.

Figure ES-1. Map of the Yukon River Corridor and the Study Area



Source: State of Alaska, DOT&PF, 2012

The various transportation modes likely affected by a new access route, include:

- Passenger air travel
- Barged fuel and freight shipments
- Bypass mail
- Air cargo

All of the freight, fuel, and mail moved into Tanana arrives by either barge or air. This analysis estimates cost savings for the new road by keeping current commodity volumes constant under the

“with road” scenario, while assuming the cost of transportation changes. Under the “with road” scenario, the study team anticipates that a significant percentage of the current commodity volumes will shift from a more expensive mode of transportation (i.e. air or barge) to less expensive truck transport.

In order to capture current transportation costs, the study team relied on publically available data from the 2010 Bureau of Transportation Statistics, the Internal Revenue Service, and published airfares. In several instances, the study team conducted interviews with vendors, shippers and other key stakeholders to obtain current commodity volumes or shipping costs. The study concludes that there is potential to achieve substantial annual transportation cost savings from the proposed Manley to Tanana road. The results suggest savings of nearly \$600,000 annually associated with the community of Tanana and a potential annual savings of up to \$2.4 million in shipping costs to other Yukon River communities (see Table ES-1).

Table ES-1. Estimated Transportation Related Savings

Community	Freight and Fuel (\$)	Mail (\$)	Passengers (\$)	Total (\$)
Tanana	295,000	141,000	140,000	576,000
Rampart	5,000	N/A	N/A	5,000
Ruby	26,000	N/A	N/A	26,000
Galena	184,000	N/A	N/A	184,000
Koyukuk	15,000	N/A	N/A	15,000
Nulato	66,000	N/A	N/A	66,000
Kaltag	68,000	N/A	N/A	68,000
Grayling	89,000	N/A	N/A	89,000
Anvik	48,000	N/A	N/A	48,000
Holy Cross	108,000	N/A	N/A	108,000
Russian Mission	218,000	N/A	N/A	218,000
Marshall	273,000	N/A	N/A	273,000
Pilot Station	387,000	N/A	N/A	387,000
St. Mary's	384,000	N/A	N/A	384,000
Mt. Village	549,000	N/A	N/A	549,000
Total	2,715,000	141,000	140,000	2,996,000

Note: Estimates are rounded

Source: Estimates by Northern Economics, Inc. based on Bureau of Transportation Statistics, 2010; Ruby Marine, 2012; Sweeny, 2012; Sweetsir, 2012.

With a new road that provides access from Tanana to Fairbanks, much of the passenger and air cargo volumes will likely shift to ground transportation. The most significant cost savings will likely be from shifting cargo and mail from air delivery to truck delivery. The study notes that in order for trucks and passenger vehicles to become the primary modes of transportation, the road terminus must be in a location that is well suited to creating a ferry landing and barge tie-up. If the terminus is placed in an inconvenient location, then many of the benefits noted in this report will not begin to accrue until the Alaska Department of Transportation and Public Facilities reconfigures the terminus to accept infrastructure necessary to move people and goods across the Yukon. In addition, the savings are dependent on transportation companies moving some or all of their loading operations to the road terminus. While the barge companies interviewed in this report did not commit to moving, during

interviews, at least some participants indicated that they might consider moving their operations under the right conditions. Others indicated a preference of staying in Nenana given existing investments there. Thus, the savings estimates in this report are upper bound estimates based on current volumes should loading occur on the Yukon near Tanana.

It is clear that the road would create an opportunity for potential new investments by barge companies and/or utilities at the proposed new landing near Tanana on the Yukon River if the road alignment takes the need of barge/utility companies into consideration. The study team anticipates that the logistics of delivering the current fuel and freight volumes will change substantially. For example, rather than seasonal barge shipments from Nenana, the study team anticipates that fuel will ship directly via truck from the refineries located in North Pole to the road terminus on the eastern banks of the Yukon River. The fuel would then be moved across the Yukon via an ice road, ferry, or barge for the short trip to Tanana. Note that there would be periods of time during freeze-up and breakup when movement across the Yukon River would not be possible until a permanent bridge is constructed.

Additionally, the study notes that the savings associated with transportation cost reductions will accrue to different user groups. For example, residents will likely experience direct savings from passenger travel. Fairbanks is a common destination of Tanana residents, or a transfer point for further travel. The study suggests that based on proximity and a lower cost of using passenger vehicles, many Tanana residents will choose to drive to Fairbanks rather than fly. There is quite a bit of variation in this result, however, as the savings will depend on volume of vehicle ownership, road conditions, and personal preferences for travel. Therefore, it is important to note that many of the estimated savings may represent general savings to society, rather than direct savings to the nearby communities. That is, while residents are likely to experience significant benefits from reduced freight and cargo costs, it is difficult to anticipate how much of the cost savings will transfer directly to them. How the savings will be distributed between the carriers and consumers depends on how the cost of conducting business shifts, or does not shift, in the study area.



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Department of Natural Resources

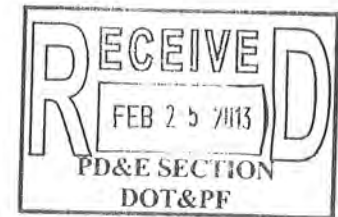
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February 21, 2013

File No.: 3130-2R DOT&PF
3330-6 TAN-009

Brett Nelson
Regional Environmental Manager
Department of Transportation & Public Facilities
2301 Peger Road
Fairbanks, AK 99709-5316



Subject: Road to Tanana

Dear Mr. Nelson:

The Alaska State Historic Preservation Office (AK SHPO) received your correspondence (dated February 7, 2013) on February 11, 2013. Following our review of the documentation provided, we concur with your recommendation to assume TAN-009 **eligible** for the purposes of this project.

We agree that appropriate protective measures in combination with monitoring during construction can adequately minimize the potential for adverse effects to TAN-009. We recommend that construction fencing be put in place with the assistance of a qualified cultural resource professional and that monitoring be conducted during construction by a qualified professional. Assuming these management measures are implemented, we concur that a finding of **no adverse effect** is appropriate for the proposed undertaking.

Please note that additional information provided by the local government, Tribes or other consulting parties may cause our office to re-evaluate our comments and recommendations.

Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the National Register of Historic Places eligibility criteria (36 CFR 60.4) or Alaska Landmarks Register in consultation with our office.

Thank you for the opportunity to comment. Please contact Shina duVall at 269-8720 or shina.duvall@alaska.gov if you have any questions or if we can be of further assistance.

Sincerely,

A handwritten signature in blue ink that reads "Judith E. Bittner".

Judith E. Bittner
State Historic Preservation Officer

JEB:sad

Road to Tanana Project



Section 10/404 Permit Application Application Block 23: Mitigation (Revision 1.0)

Prepared for

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February 2013

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Acronyms and Abbreviations

Term	Definition
3PPI	Three Parameters Plus, Inc.
DOT&PF	Alaska Department of Transportation and Public Facilities
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
BMP	Best Management Practice
CGP	Construction General Permit
DOF	ADNR Division of Forestry
EPA	U.S. Environmental Protection Agency
ESCP	Erosion and Sediment Control Plan
HGM	Hydrogeomorphic
LEDPA	Least Environmentally Damaging Practicable Alternative
MP	Milepost
PJD	Preliminary Jurisdictional Determination
ROW	Right-of-way
RGL	Regulatory Guidance Letter
SWPPP	Strom Water Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

List of Sheets (Addendum)

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Sheet 112	Sheet 118
Sheet 113	Sheet 119
Sheet 114	Sheet 120
Sheet 115	Sheet 121
Sheet 116	Sheet 122

Application Block 23: Description of Avoidance, Minimization and Compensation Activities, both Undertaken & Proposed (Revision 1.0)

23.1 AVOIDANCE & MINIMIZATION DURING DESIGN

During the preliminary and final design process, the Applicant evaluated major and minor alignment changes, and additional, potential material site locations, to identify the least environmentally damaging practicable alternative (LEDPA). During this process, the Applicant made significant efforts to reduce and avoid impacts to important wetland functions, wildlife habitats, areas of important cultural significance, and the most frequently used subsistence areas in the study area. One potential material site was dismissed for its likelihood to yield materials containing naturally-occurring asbestos, a potential human health hazard. These avoidance and minimization measures were incorporated into the Applicant's preferred alternative presented in this application. Alternatives considered, but dismissed in favor of the less damaging alternative submitted, are addressed in detail below.

Figures included in the text below are also available as full-size drawings as Sheets 111-122. The figures show mapped wetlands, and areas including both wetlands and uplands are shaded in magenta, while areas where no wetlands were identified remain unshaded. The Applicant's proposed road centerline is always shown in blue. Where alternative routes were evaluated, the impacted wetlands from the alternative are shown in orange, whereas the wetlands that would be impacted from the Applicant's proposal are also shown in blue.

23.1.1 Road Alignment Alternatives Considered

Overview of Alternatives Considered

The purpose of the Road to Tanana project is to extend the existing highway system that currently terminates near Manley Hot Springs to the Yukon River near Tanana. The logical beginning point of the proposed project is from the furthest west point of the Tofty Road, an existing, developed road with an established public Right of Way. When evaluating the logical western terminus of the proposed road, design criteria included avoiding wetlands; avoiding unfavorable geotechnical conditions; avoiding the crossing of Native Allotments; siting the staging area proximate to a Yukon River location suitable for accommodating barges during ice free conditions; and likewise siting the staging area in terrain suitable for a wintertime ice road approach. The output of these analyses was siting a project terminus on the Yukon River, above its ordinary high water level, approximately 6 miles upriver from the community of Tanana.

In evaluating the range of project alternatives considered within the identified project termini, the following engineering design criteria were utilized: Development of a roadway minimizing construction and maintenance costs; constructing a transportation facility that is safe for public use; geometrically designing the facility to AASHTO's "Guidelines for Geometric Design of Very Low Volume Local Roads"; utilizing previously developed mining roads and trails to the extent possible; minimizing drainage crossings; and locating necessary crossings at hydrologically

prudent locations. In addition, material sites were located to be as close to the proposed project as possible to minimize road construction cost and associated impacts of material site access roads. Based on these engineering and material site criteria, a general project area was initially defined with an additional major alternative corridor identified and developed based on information provided by the public at meetings and during various community discussions. The following overviews of alternatives, and avoidance and minimization measures, are based on refinement of the initial, general project area and the additional, alternative corridor.

After defining an initial project area, the Department considered one additional major alternative, and five minor alternative variants, as part of the wetland avoidance and minimization measures undertaken for the Road to Tanana. These are shown in Figure 23.1.1-1 and described in more detail below. See also Sheet 111 for a larger format version of this figure.

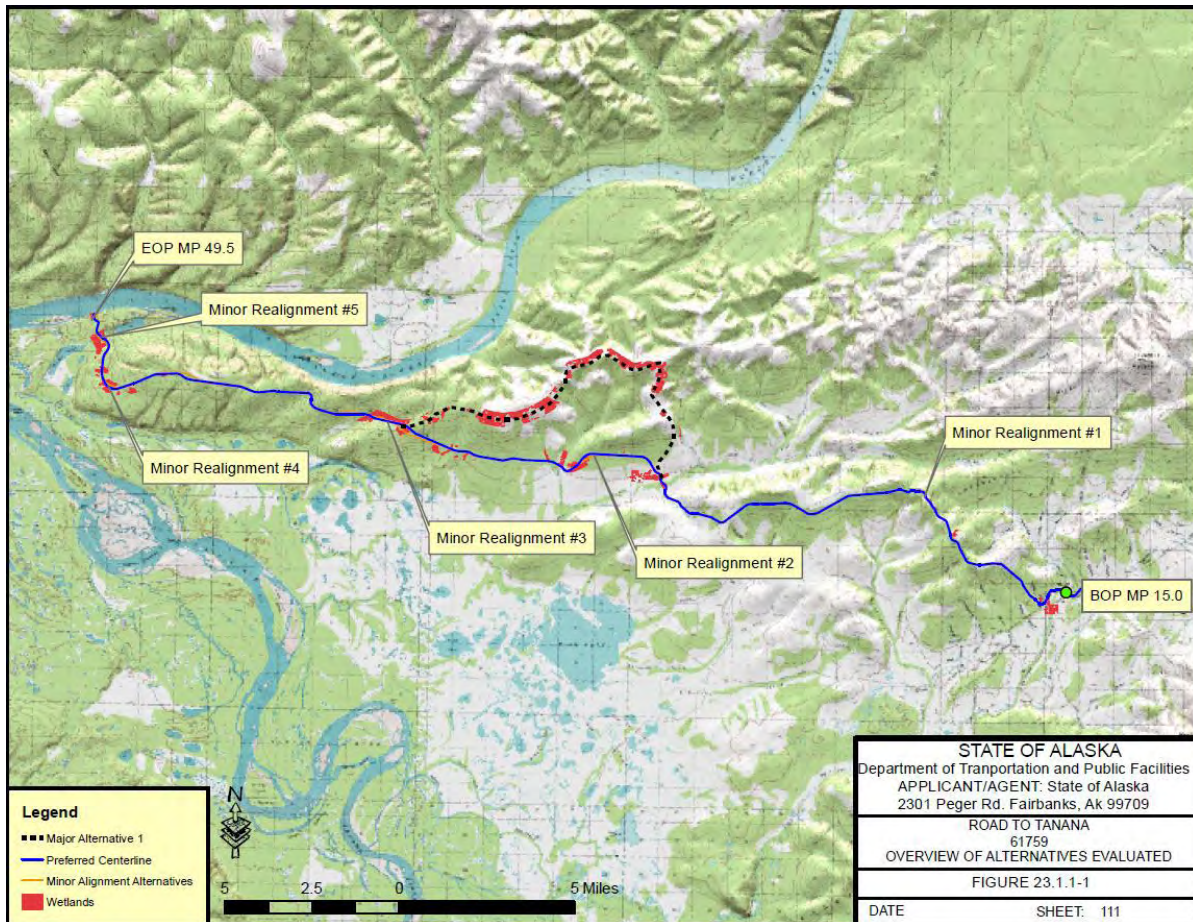


Figure 23.1.1-1: Overview of Alternatives Considered

Major Alternative 1: Figure 23.1.1-2 shows the alignment and wetland mapping in this region in more detail (see Sheet 112 for a larger format version of this figure). This alternative was proposed in the preliminary stage of the project, prior to detailed knowledge of wetlands, wildlife habitat, and topography being acquired. Beginning at MP 30.3, Major Alternative 1 (again shown by the black dashed line) diverges from the preferred centerline and bears due north, climbing to the top of the ridgeline nearly paralleling Moose Creek to the east. The proposed route then follows the ridgeline south-westerly, while gradually descending the ridge before tying back into the preferred centerline at MP 37.87.

Major Alternative 1 was originally thought to be an attractive alternative because it would avoid a number of drainage crossings and potentially minimize wetlands impacts by doing so. The decision to not pursue this route became obvious subsequent to receiving the draft wetlands mapping, which indicated a significant wetlands presence in the area. Also, detailed contour data revealed a highly variable topography, posing engineering and cost concerns associated with steep, dangerous grades and large cut/fill sections; and likewise generated high levels of concern about road geometry- and elevational/weather-related challenges to public travel safety from residents in Tanana and Manley.

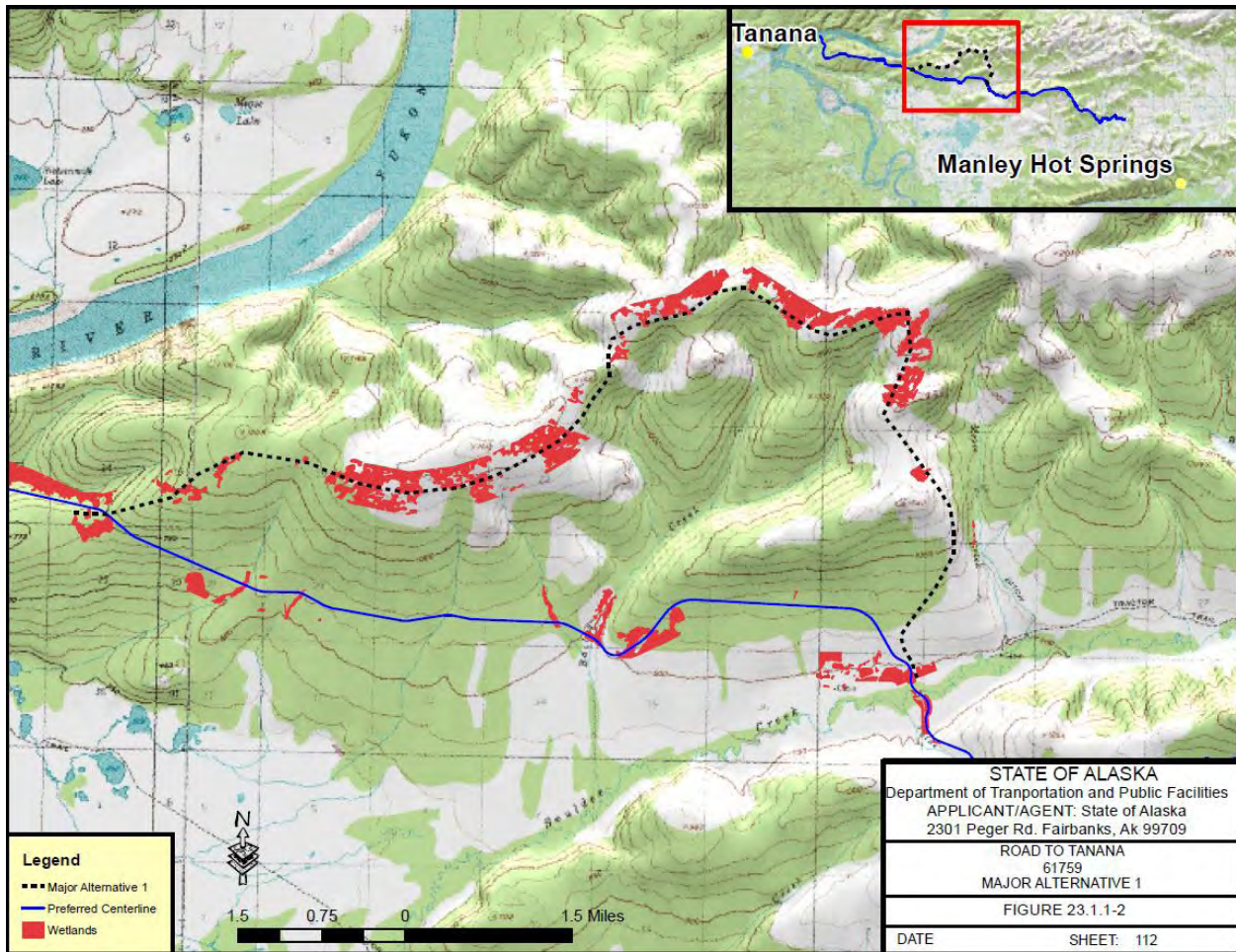


Figure 23.1.1-2: Major Alternative 1 (North Route)

A safe road design following the Major Alternative 1 alignment would require a significantly wider footprint and larger quantities of fill within wetlands than the preferred alignment. A number of cut sections within wetlands would also be required to achieve safe grades. Cut sections in wetlands are generally avoided by engineers due to high likelihood of intercepting permafrost and compromising the roadbed's structural integrity (resulting in problems such as thawing and slumping).

Without doing a complete design on this alternative, it is difficult to know the exact acres of wetlands avoided. However, by applying the same rough design parameters to both routes it was possible to obtain the relative difference. The centerlines of both routes were buffered to 75" wide to create an approximate road bed, and 25" buffers were added to each side of the 75" road bed to account for potential vegetation clearing impacts. The same parameters were applied to both road routes from beginning to end. Table 23.1-1 shows the results of this evaluation:

Table 23.1-1: Relative Comparison, Wetlands Impacts North vs. South Routes

Alternative	Impacts from Cut/Fill (acres)	Impacts from Vegetation Clearing (acres)	Total Relative Impacts to Wetlands (acres)
North Route (Alternative Dismissed By Applicant)	30.5	22.8	53.2
South Route (Applicant-Preferred Alternative)	13.2	11.0	24.2

Based on the above, we can conclude the wetland acres avoided from a similar width corridor would be 29 acres or approximately 54.5 percent.

Minor Alternative 1: Minor Alternative 1 (Figure 23.1.1-3) spans from station 1100+00 to 1115+00 (MP 20.8 to 21.1), following an existing trail that ranges from 6-12" in width (see Sheet 113 for a larger format version of this figure). The original design intent was to follow the existing trail as closely as possible in order to impact previously disturbed ground and minimize impacts to undisturbed ground and wetlands. However, the draft wetlands report and mapping revealed the presence of wetlands adjacent to both sides of the trail. The original design footprint through this section was anticipated to impact (0.66 acres) of wetlands. In order to reduce impacts to wetlands, the centerline was moved. The revised alignment adopted as part of the Applicant's proposal is anticipated to impact (0.33 acres) of wetlands, for a reduction of 0.33 acres.

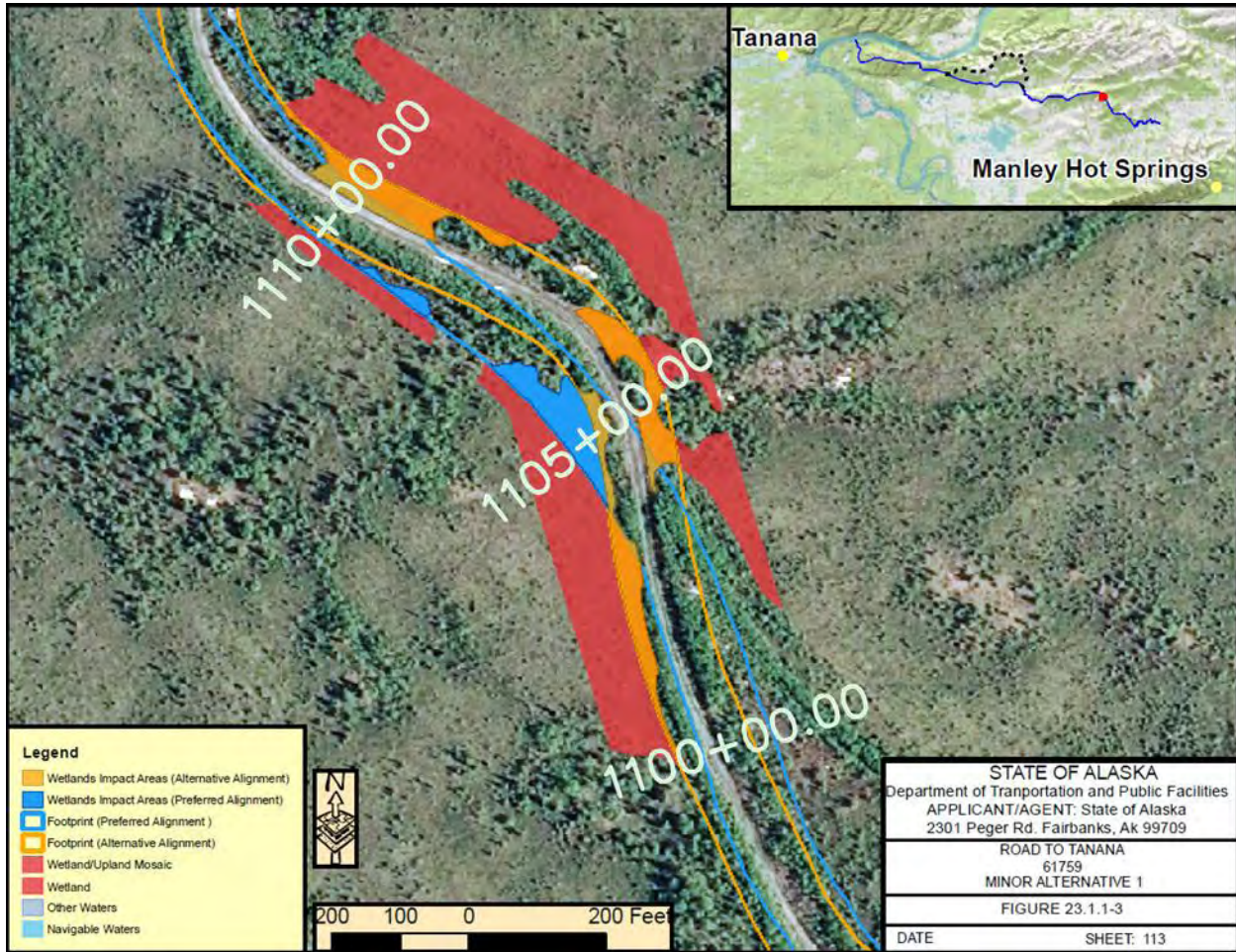


Figure 23.1.1-3: Minor Alternative 1

Minor Alternative 2: Minor Alternative 2 (Figure 23.1.1-4) spans from station 1680+00 to 1745+00 (MP 31.8 to 33.3). The wetlands mapping identified wetlands between stations 1705+00 to 1743+00 (MP 32.2 to 33.0). Minor Alternative 2 (see Sheet 114 for a larger format version of this figure) was anticipated to impact (5.15 acres) of wetlands. Due to the steep topography of the area, complete avoidance of wetlands was not feasible without compromising road design safety. The design centerline was altered where possible to reduce wetlands impacts. The preferred alignment proposed by the Applicant is anticipated to impact (3.07 acres) of wetlands, for a reduction of 2.08 acres.

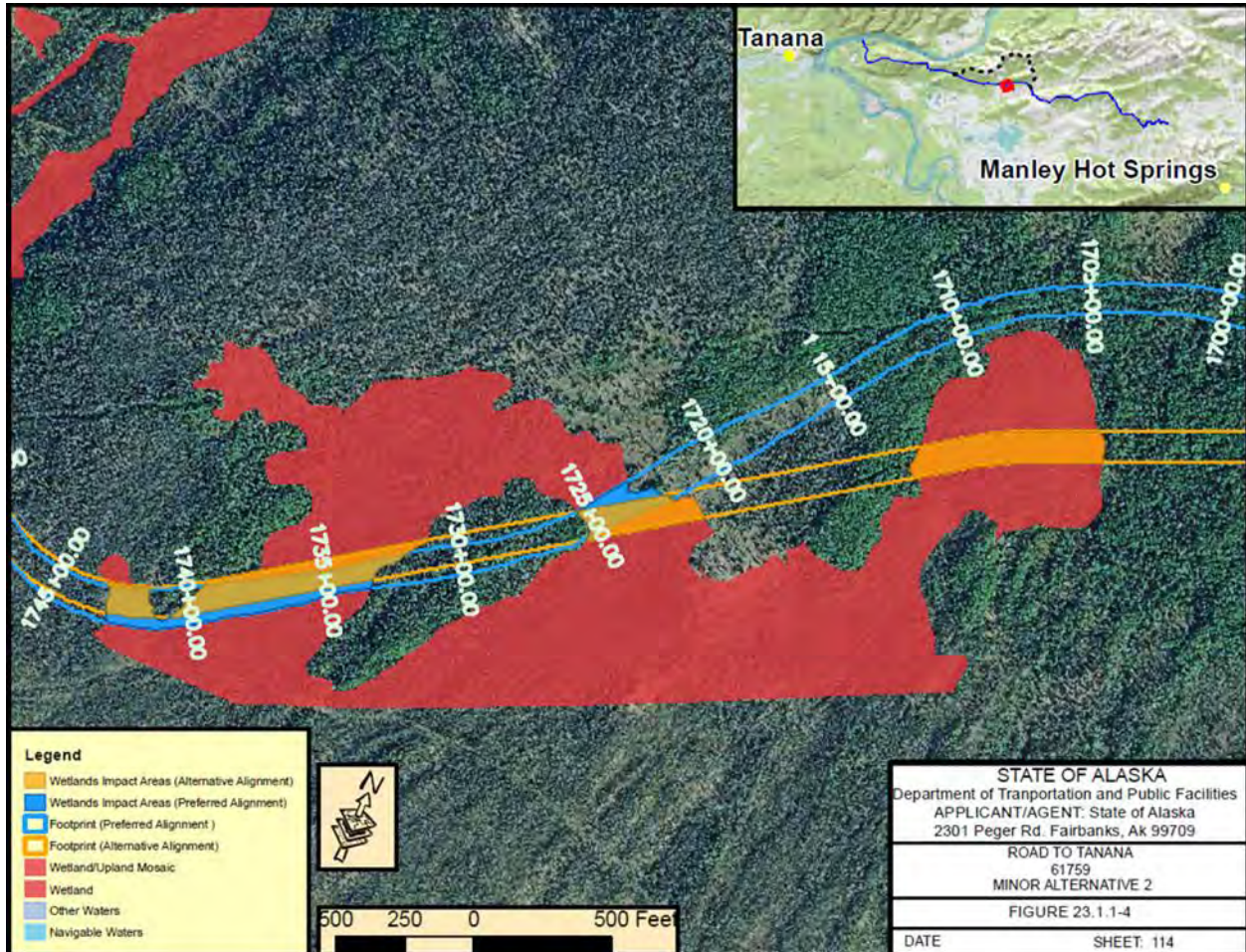


Figure 23.1.1-4: Minor Alternative 2

Minor Alternative 3: Minor Alternative 3 (Figure 23.1.1-5) spans from station 1930+00 to 2080+00 (MP 36.6 to 39.4). The wetlands report revealed the presence of wetlands between stations 1995+00 to 2065+00 (MP 37.8 to 39.1). Minor Alternative 3 (see Sheet 115 for a larger format version of this figure) was anticipated to impact (4.67 acres) of wetlands. The design centerline was shifted through this section to avoid wetlands. The preferred alignment is anticipated to impact (2.25 acres) of wetlands for a reduction of 2.42 acres.

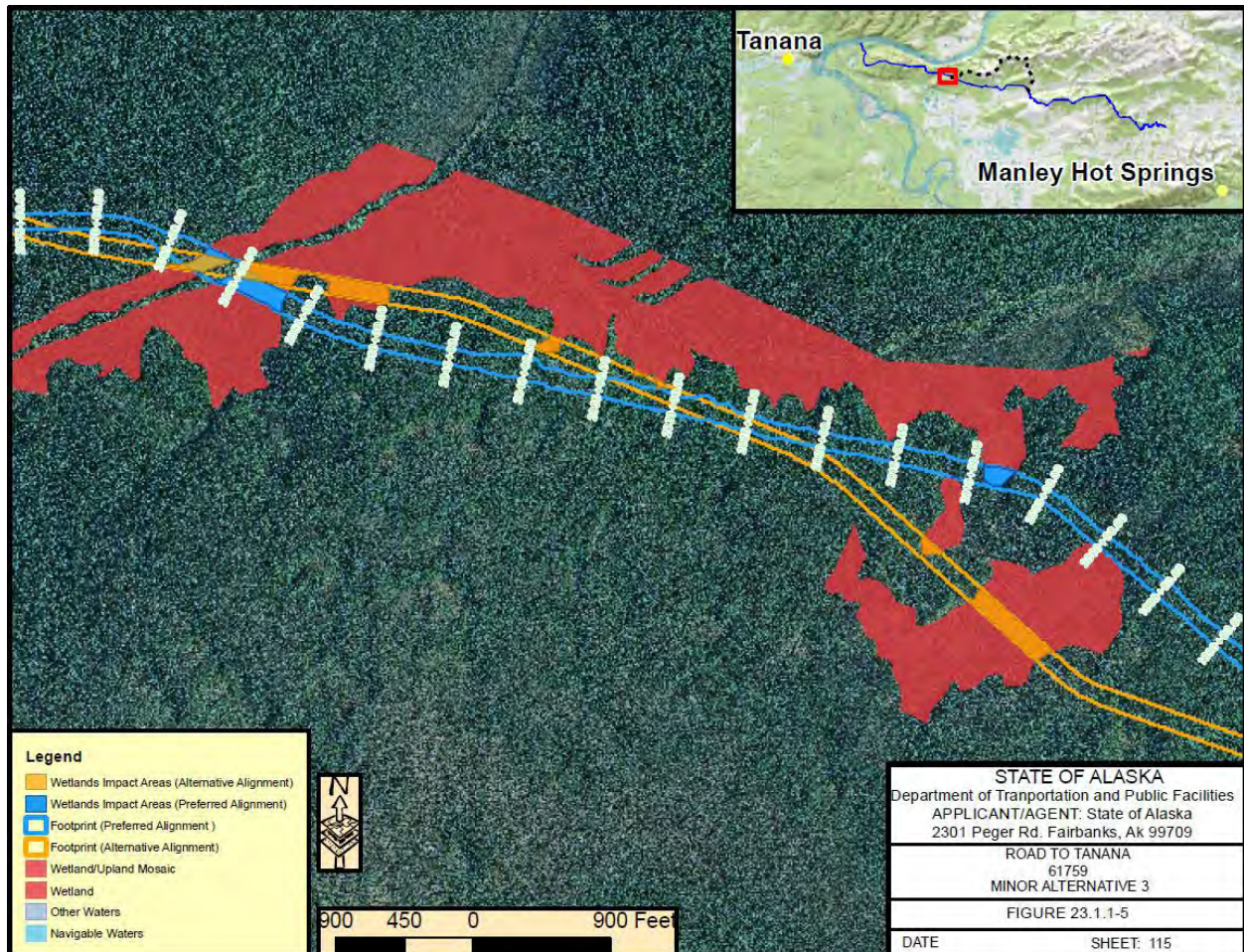


Figure 23.1.1-5: Minor Alternative 3

Minor Alternative 4: Minor Alternative 4 (Figure 23.1.1-6) spans from station 2455+00 to 2525+00 (MP 46.5 to 47.8). The wetlands report revealed the presence of wetlands between stations 2473+00 to 2520+00 (MP 46.8 to 47.7). Minor Alternative 4 (see Sheet 116 for a larger format version of this figure) was anticipated to impact 6.22 acres of wetlands. In an effort to reduce impacts to wetlands, the alignment was shifted south where possible and the footprint of the preferred alignment was narrowed by reducing the grade elevation by one to two feet. The preferred alignment is anticipated to impact 3.16 acres of wetlands in this area for a reduction of 3.06 acres.

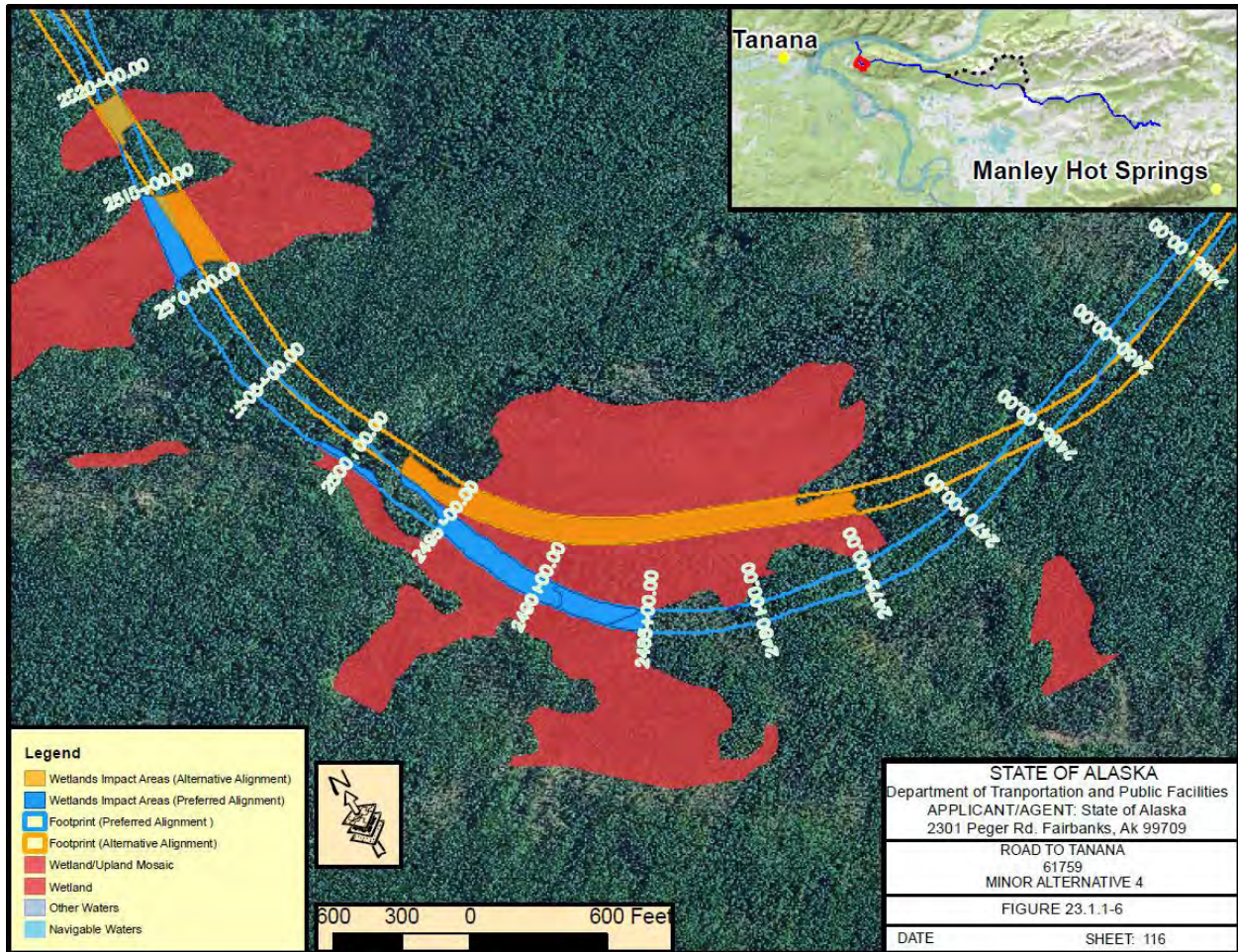


Figure 23.1.1-6: Minor Alternative 4

Minor Alternative 5: Minor Alternative 5 (Figure 23.1.1-7) spans from station 2540+00 to 2590+00 (MP 48.1 to 49.05). The wetlands report located wetlands between stations 2553+00 to 2580+00 (MP 48.35 to 48.86). Minor Alternative 5 (see Sheet 117 for a larger format version of this figure) was anticipated to impact (2.72 acres) of wetlands. In an effort to reduce impacts to wetlands, the alignment was shifted north where possible. Realigning the centerline to completely avoid wetlands was not possible due to the high concentration of wetlands in the vicinity, as well as steep topography limiting safe realignment options. The preferred alignment is anticipated to impact (1.16 acres) of wetlands for a reduction of 1.56 acres.

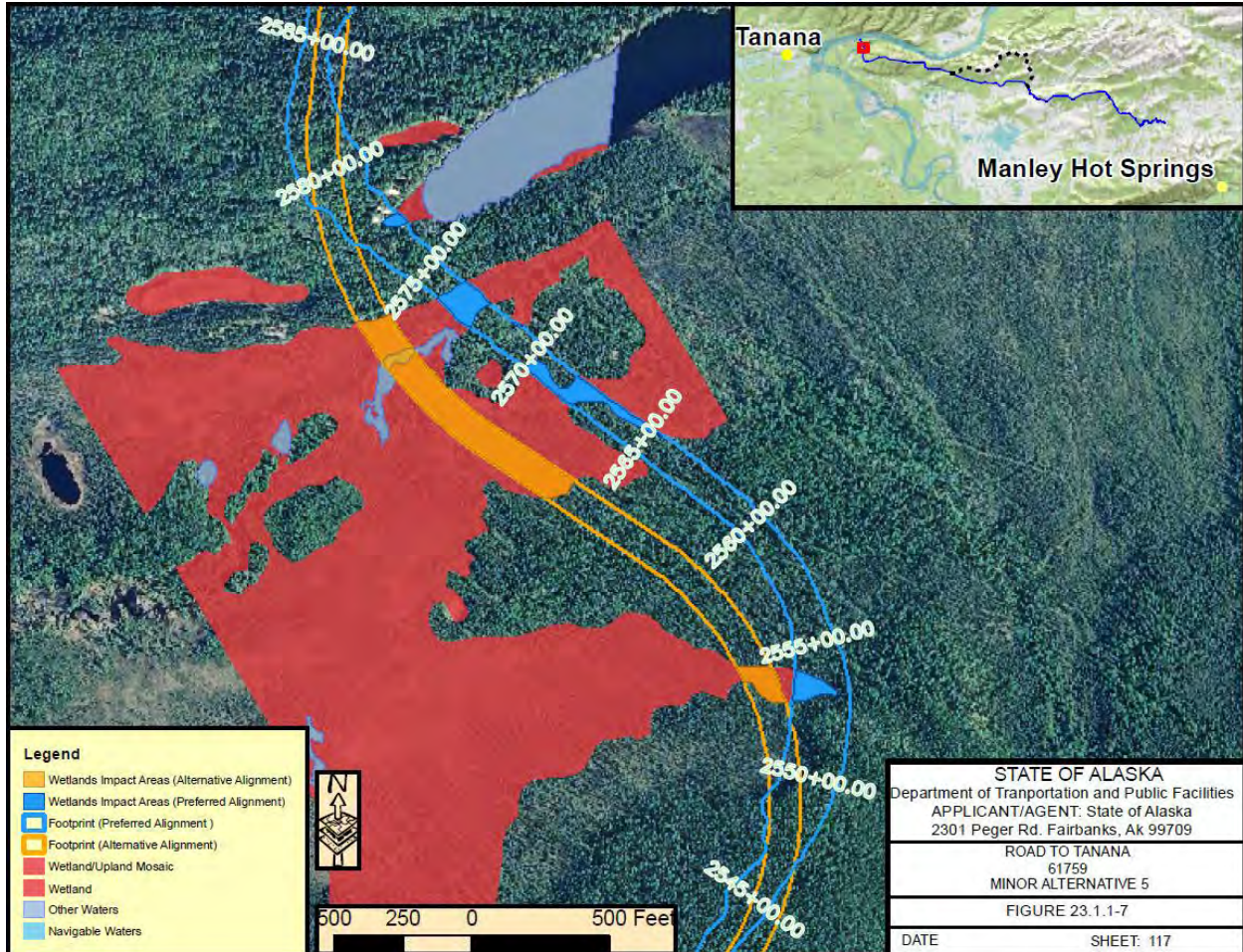


Figure 23.1.1-7: Minor Alternative 5

23.1.2 Material Site Avoidance Measures

Figure 23.1.2-1 provides an overview of all material sites evaluated for the project. See also Sheet 118 for a larger format version of this figure.

Two additional material sites were evaluated to support the project as proposed. Both were abandoned to reduce the project's overall impact to the biological and human environment.

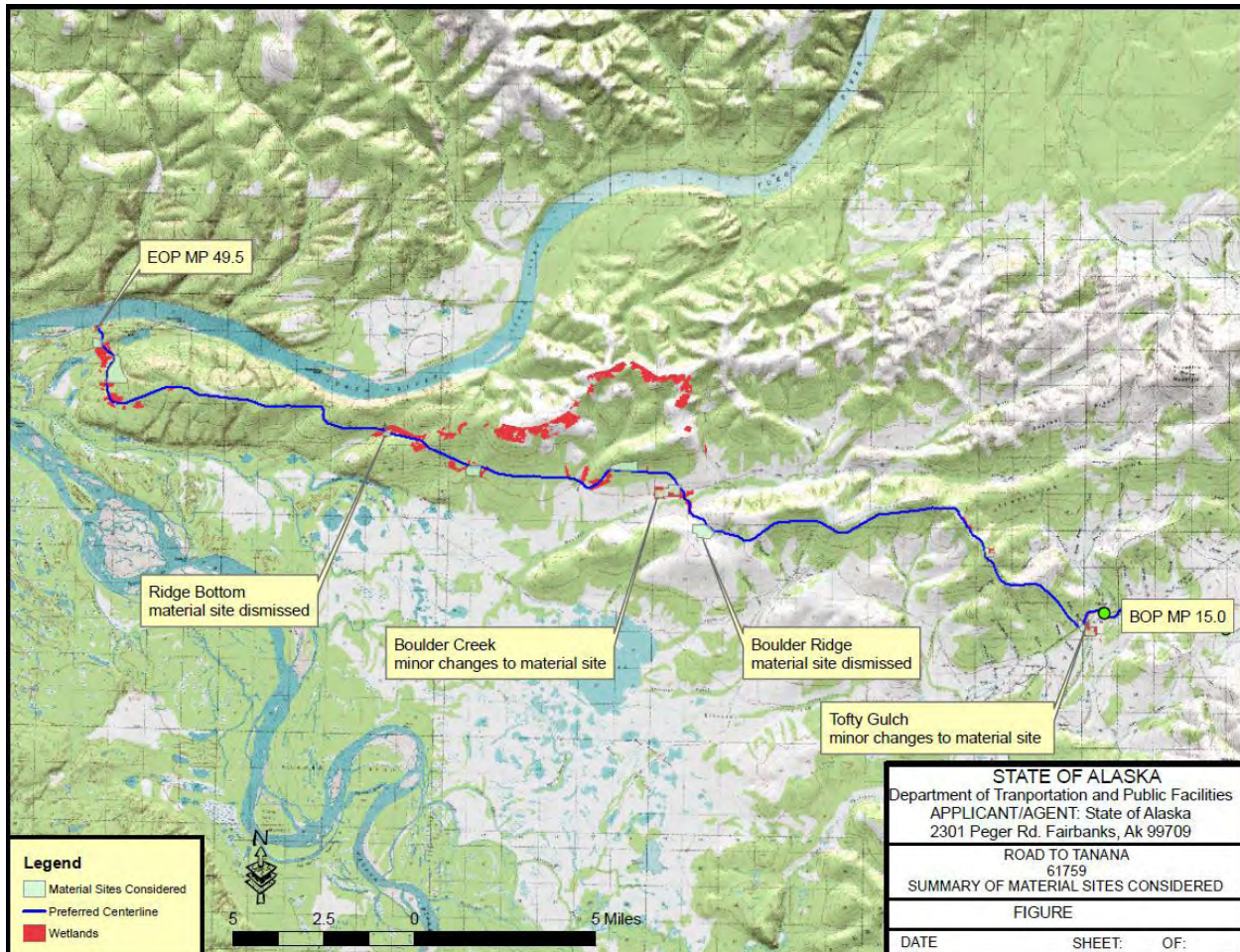


Figure 23.1.2-1: Material Sites Alternatives Evaluated for the Road to Tanana

Boulder Ridge Material Site: Boulder Ridge Material Site (Figure 23.1.2-2) spans approximately from station 1500+00 to 1515+50 (MP 28.41 to 28.70), and is situated south of the preferred road centerline (see Sheet 119 for a larger format version of this figure). Geotechnical field investigations initially revealed the proposed Boulder Ridge material site as a source of high quality material including riprap and crushable surfacing material. Further, no wetlands were located in this area during the preliminary mapping efforts.

However, analyses of material samples taken from the site showed a high percentage of naturally occurring asbestos. The decision to not develop Boulder Ridge material site was based on the presence of naturally occurring asbestos-containing material. Typically, material high in naturally occurring asbestos poses less detrimental effects on potential human receptors if the material is „capped“ by covering it with non-asbestos-containing material, thus reducing the likelihood of inhalation, ingestion, or direct contact with asbestos fibers in the material. It is not recommended that material containing high levels of naturally occurring asbestos be used for surfacing or as exposed construction material. Because the primary purpose of this material site would have been for surfacing, plans to develop the site for the project were abandoned. Material needs were met by expanding other sites along this alternative route.

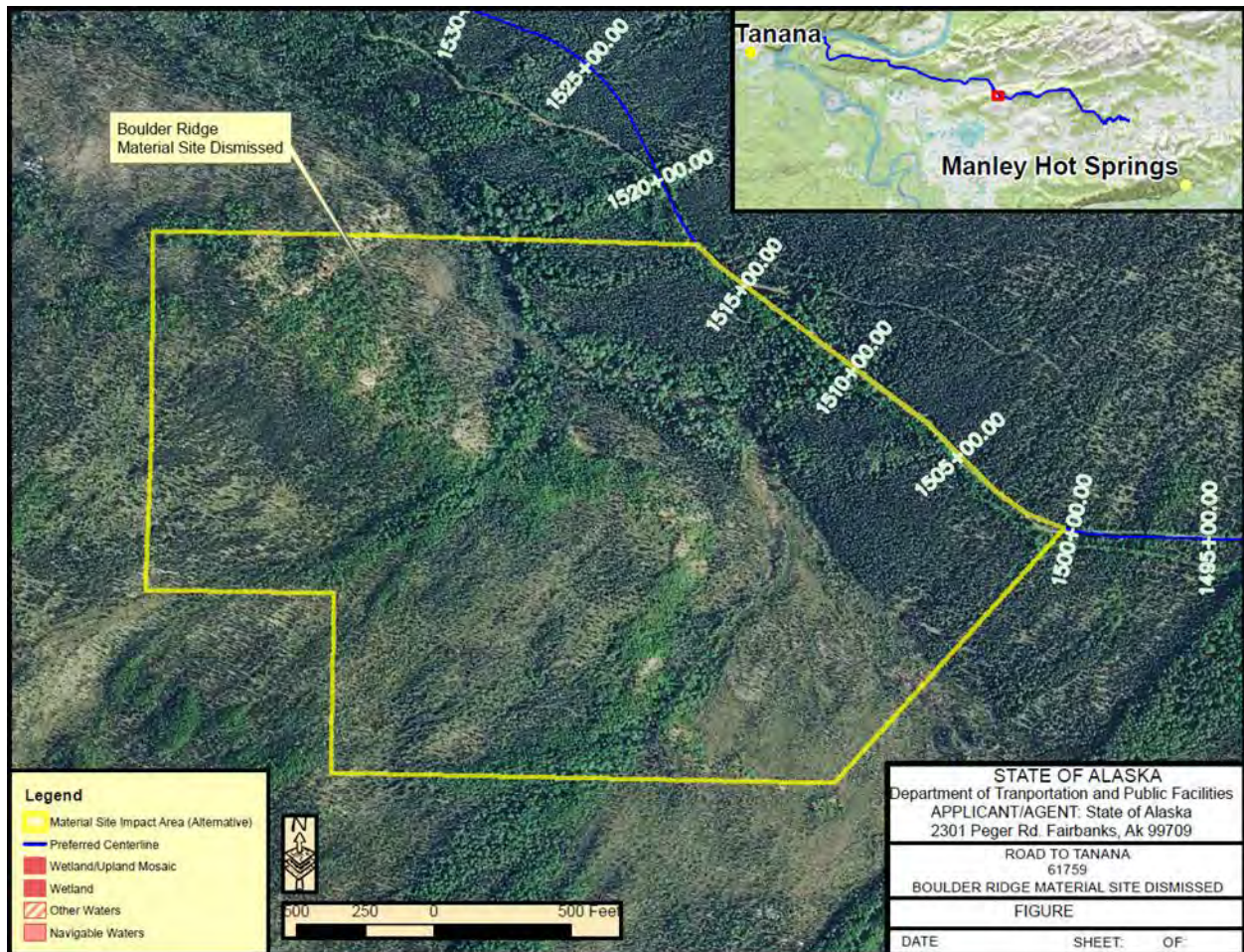


Figure 23.1.2-2: Boulder Ridge Material Site

Ridge Base Material Site: Ridge Base Material Site (see Figure 23.1.2-3) spans approximately from station 2050+00 to 2060+50 (MP 38.83 to 39.02) and is centered over the preferred road alternative centerline (see Sheet 120 for a larger format version of this figure). Prior to geotechnical field investigations, Ridge Base Material Site was believed to hold a potential to produce crushable surfacing material. This belief was based on an aerial survey and satellite imagery indicating the presence of quartzite boulders. Subsequent field investigations revealed the material site would produce material suitable only for embankment, rather than crushable surfacing material as expected. Further, wetland investigations revealed significant wetlands presence within the proposed material site boundary and also throughout surrounding area.

The decision to not develop Ridge Base material site was reached subsequent to receiving the wetlands report, which suggested site development would impact wetlands approximately 14.31 acres in extent. In addition, successful reclamation of the site after completion of material extraction would be difficult considering the steep topography of the area. The material quantity demands for the preferred project alternative can be adequately met without developing Ridge Base material site, thereby avoiding potential wetland impacts by 14.31 acres.

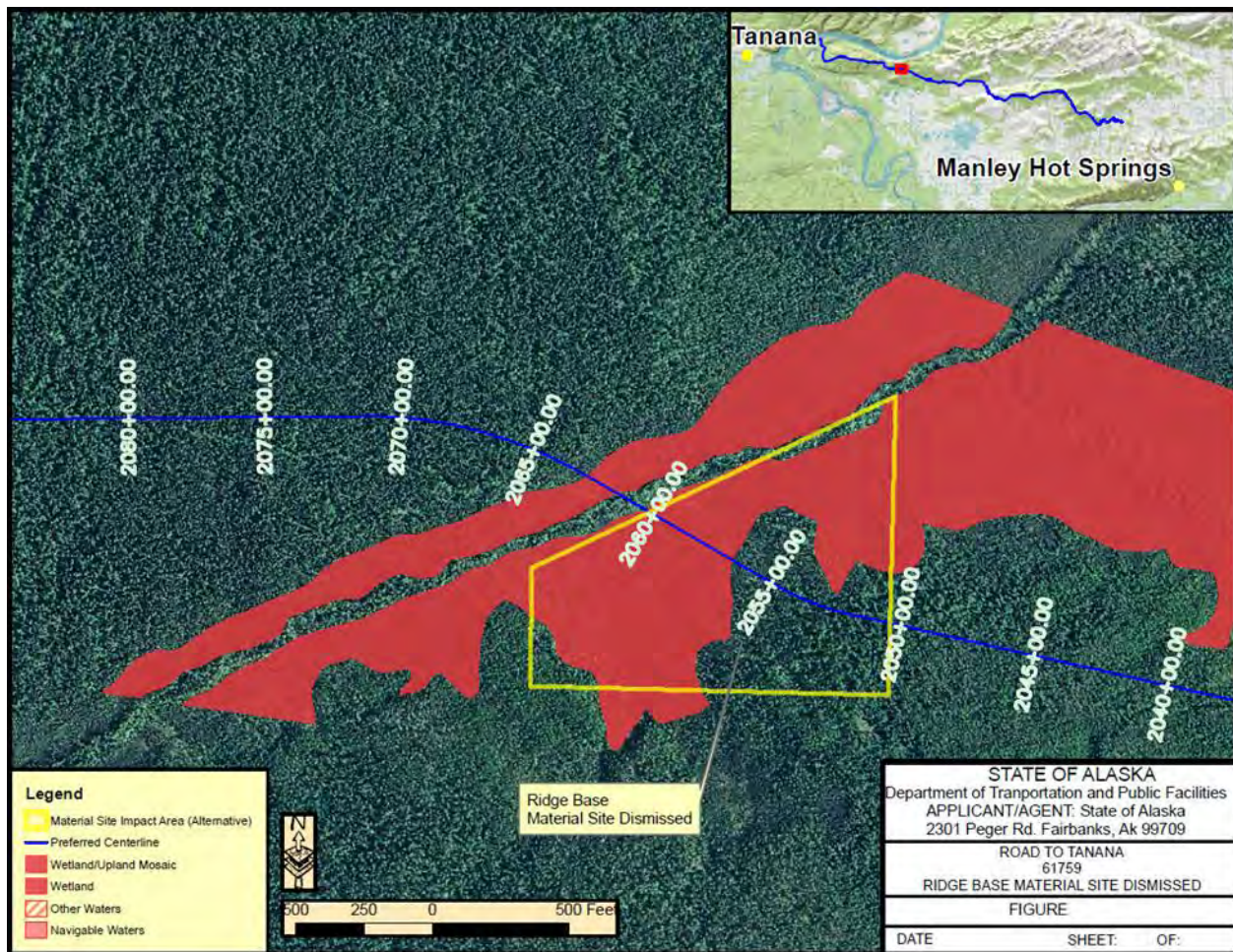


Figure 23.1.2-3: Ridge Base Material Site

23.1.3 Material Site Minimization Measures

Tofty Gulch Material Site: Tofty Gulch material site (Figure 23.1.3-1 below) spans from station 845+00 to 855+00 (MP 16 to 16.2) and is situated on either side of the preferred road alternative centerline (see Sheet 121 for a larger format version of this figure). Geotechnical field investigations confirmed the presence of large quantities of gravel tailings, produced from prior gold placer mining activity, that are suitable as surfacing material. The wetlands report indicated the original material site boundary (shown in yellow on Figure 23.1.3-1) would impact 16.62 acres of wetlands and other waters of the U.S. In an effort to minimize impacts to these areas, the material site boundary was adjusted and decreased in size, reducing the anticipated wetlands impacts to 2.13 acres and yielding a 14.5 acre avoidance. Tofty Gulch material site will also be reclaimed upon completion of mining activity.

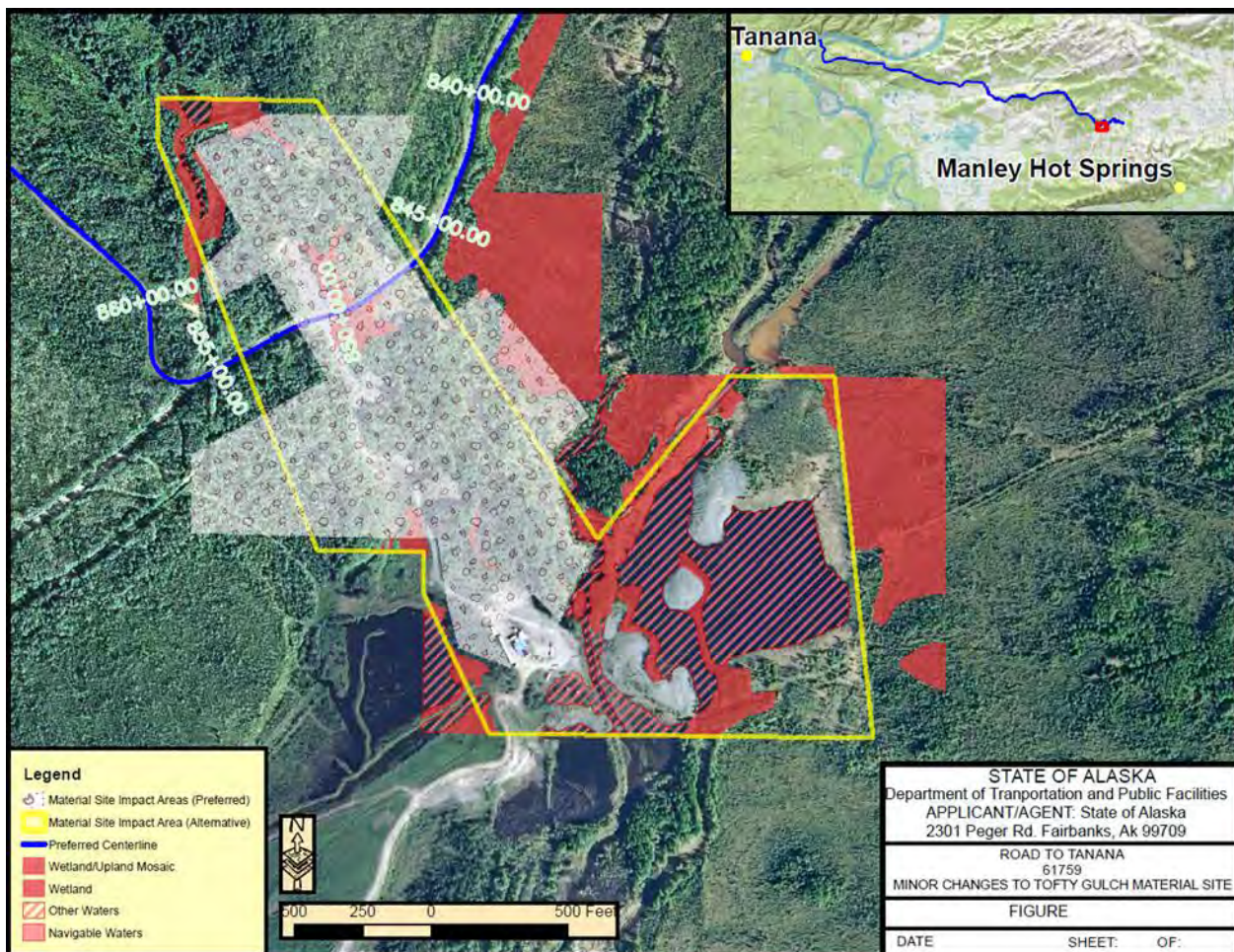


Figure 23.1.3-1: Tofty Gulch Material Site Redesign Minimization Measures

Boulder Creek Material Site: Boulder Creek material site (Figure 23.1.3-2) spans approximately from station 1580+00 to 1595+30 (MP 29.9 to 30.2), and is situated west of the preferred alternative alignment and just north of Boulder Creek (see Sheet 122 for a larger format version of this figure). Boulder Creek material site contains large quantities of gravel tailings from prior gold placer mining activity, and is expected to serve as the primary crushed aggregate source for this project. Satellite imagery, as well as the wetlands report, revealed the existence of numerous pockets of wetlands and ponds previously created or altered by past placer mining activities.

A large percentage of the site's useable material is contained within these wetland areas. The initial delineation of the material site boundary (as shown in yellow on Figure 23.1.3-2) was estimated to have impacted 20.17 acres of wetlands. As shown by the grey shade pattern, the material site boundary was subsequently altered and reduced in size in order to avoid impacts to wetlands, particularly those intact wetland acres not previously affected by placer mining activity. Material extraction within the revised material site boundary proposed in this application is anticipated to impact only 7.46 acres of wetlands, thereby avoiding 12.72 acres of wetland impact. Boulder Creek Material Site will also be reclaimed upon completion of mining activity.

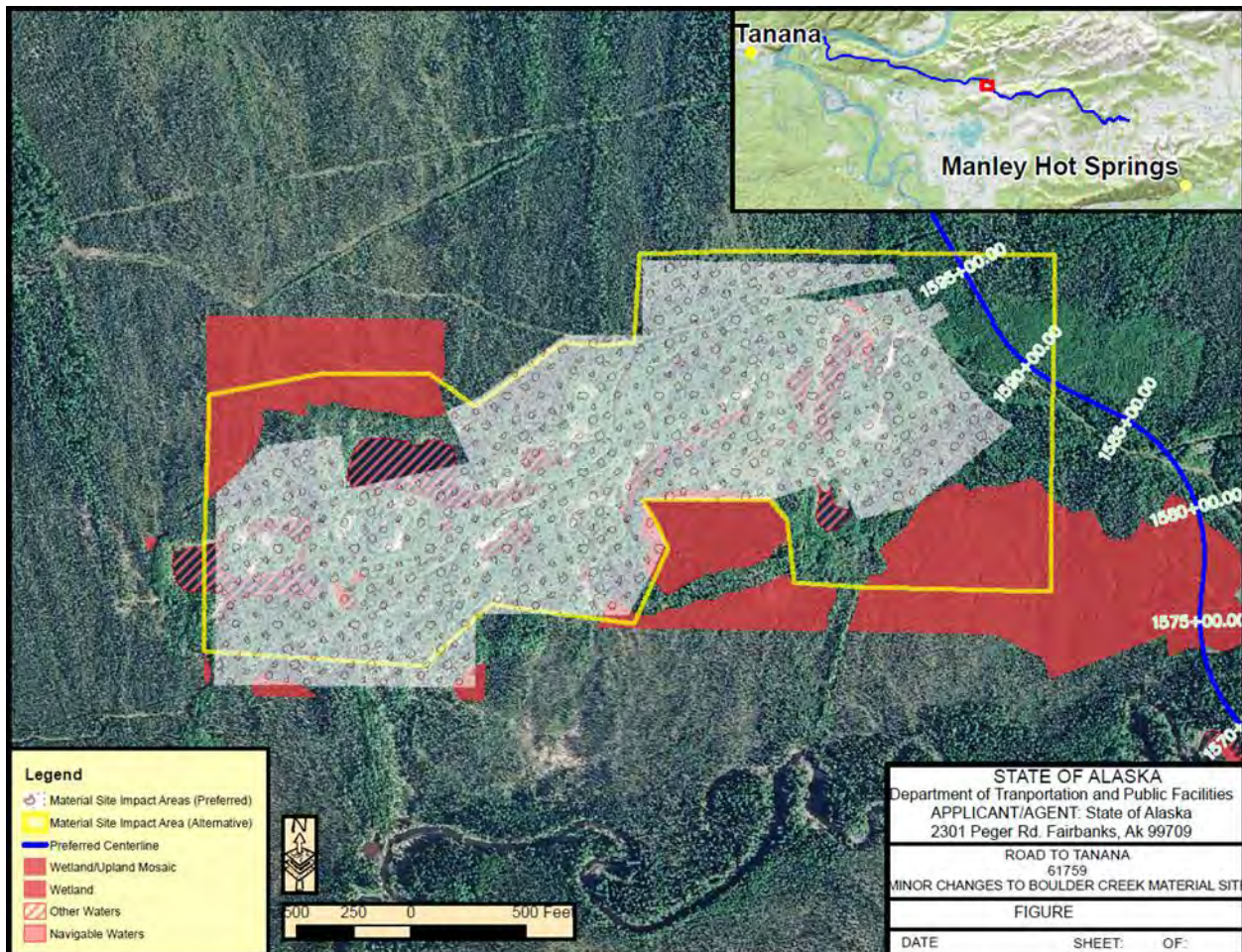


Figure 23.1.3-2: Boulder Creek Material Site Minimization Measures

In conclusion, the Applicant has avoided and minimized their potential footprint in wetlands through a number of actions. These are summarized in Table 23.1-2 below.

Table 23.1-2: Summary of Avoidance Measures through the Design Process

Facility or Alternative	Estimate of Wetland or Water Acres Avoided or Minimized Through Design Measures
Major Alternative 1	29.00
Minor Alternative 1	0.33
Minor Alternative 2	2.08
Minor Alternative 3	2.42
Minor Alternative 4	3.06
Minor Alternative 5	1.56
Boulder Ridge Material Site	0.00
Ridge Base Material Site	14.31
Tofty Gulch Material Site	14.50
Boulder Creek Material Site	12.72
TOTAL WETLAND IMPACTS AVOIDED	79.98

23.2 MINIMIZATION ACTIVITIES PROPOSED DURING CONSTRUCTION

After the preliminary and final design avoidance processes, the Applicant evaluated a suite of best management practices (BMPs) to further minimize anticipated impacts from the proposed project. The BMPs listed below will be included in all construction contract documents, in an effort to further minimize impacts to the aquatic environment.

23.2.1 Road Construction Minimization Measures

Vegetation Clearing Activities

Vegetation clearing of the proposed ROW will be coordinated with the Alaska Department of Natural Resources, Division of Forestry (DOF) to minimize potential for post-harvest engraver beetle and other deleterious insect infestation of cleared areas.

Areas where spruce and mixed spruce-hardwood cover types predominate will require clearing no earlier than July and no later than March. Removal of slash and or other BMPs to reduce potential for infestation will be conducted as per ADNR-DOF recommendations.

Vegetation clearing in wetlands not proposed to be filled or excavated will be accomplished by hand, using low ground-pressure, wheeled ATVs for access to minimize temporary impacts.

Construction Timing and Sequencing

Concurrent to these BMPs vegetation clearing will follow Migratory Bird Treaty Act-based recommendations by USFWS regarding migratory bird nesting and rearing windows, with the net outcome of conducting clearing activities during pre-nesting or post-fledge periods for avian protection.

Construction timing will follow recommendations of the USFWS and ADF&G regarding establishment of seasonal windows or other BMPs or stipulations (i.e., pre-construction nesting bird reconnaissance; site clearing prior to bird migration; temporary bypass for fish) to minimize construction impacts to fish and wildlife resources.

Final clearing windows will be developed cooperatively with these agencies and implemented as a construction stipulation in project bid documents. Clearing will be conducted in a manner that prevents soil or vegetation disturbance outside the vegetative clearing limits.

Water crossing construction will be accomplished during annual periods historically coinciding with low-water flows (and/or frozen water/soils) in planned stream crossing locations.

Invasive Species Control Measures

Construction activities requiring reseeded of vegetative cover will utilize certified seed materials meeting requirements of the State of Alaska Seed Regulations (11 AAC 34 Articles 1 & 4) regarding purity, germination and weed content.

Erosion Control Measures

In general, erosion control and construction methods will be described in the Contractor-prepared SWPPP, and will be required to comply with the requirements of the U.S Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES), Construction General Permit AKR# 100000. The Contractor will also be required to obtain a letter of non-objection from the ADEC prior to commencement of construction activities.

BMPs for embankment stabilization, including contouring and seeding will be required project-wide to reduce embankment erosion and potential sediment runoff into wetland areas.

Project wide, any stockpiling of material, equipment staging, and mobilization and temporary construction access will avoid wetlands to the fullest extent practicable. When filling in wetlands, temporary straw wattles, silt fencing, a permitted vegetative buffer, or other BMPs will be employed to reduce sediment runoff into temporary impact areas. Embankments will also be tracked and stabilized in accordance with BMPs to further prevent embankment erosion and sediment runoff.

23.2.2 Drainage Construction Minimization Measures

To minimize potential sediment suspension and transport, stream crossing structures will be constructed during periods of low flow regimes in respective streams. Erosion Sediment Control Plans (ESCPs) and Stormwater Pollution Prevention Plans (SWPPPs) will be developed and

implemented by the Contractor to prevent introduction of sediments and consequent turbidity into flowing and other waters during construction.

BMPs will be utilized project wide, to maintain in-stream water quality and stream bank stability. Riprap will be installed at bridge abutments and culvert inlet and outlet aprons. Drainage structures will be installed during periods of low flow when practical. Temporary diversion channels and or a dam/de-watering pump system will be employed as needed by the Contractor, and will be detailed in the Contractor provided SWPPP. Depending on the drainage structure installation method used, riprap or other BMPs for velocity dissipation will be utilized at the outfall of the diverted stream water to minimize erosion of the existing streambed. Velocity dissipaters and sediment filtration devices will also be used with de-watering pump systems.

Fish passage structures will be installed at all crossing locations where fish have been identified as resident, and additionally in several locations where fish have not been found but where habitat criteria suggest fish may likely be present. Structures will allow continued free movement of fish beneath the proposed roadway. In existing disturbed areas, these improvements may provide more consistent and beneficial conditions to fish movement. Further, drainage improvements, including cross-drainage, will potentially improve wetland functions adjacent to the existing road and trail, as flows are restored at locations where current crossings are accomplished via hardened fords or aging, compromised drainage structures.

23.2.3 Material Site Construction & Operation Minimization Measures

In addition to deploying the same BMPs applied to other facility types above, material sites have been further designed to support the following environmental and safety considerations:

Access Roads, Work Pads and Facilities

Access to each material site will be directly from the Tofty Road ROW. To improve public safety, material site access roads will be located to provide sight distances on approach roadways that are equal or greater than minimum stopping sight distances calculated from signed traffic speeds and local road grades.

Access to the material site and work pad will be retained at the end of an individual project to be used for material crushing, screening, and stockpiling. When possible, the work pad will be at least 5 acres in size. Once the entire material site is depleted, the work pad and access road will be reclaimed and the pit closed out.

Blasting Permits

Where required due to waterbody proximity, an ADF&G Fish Habitat permit will be obtained by the operator prior to blasting. These permits are required for blasting that will occur either in or near a fish-bearing waterbody.

Buffers

Buffers are provided within material site boundaries to provide a barrier between mining activity and adjacent land use. Buffer widths vary but are typically 30 feet or more in this application. Other than disturbance required to create access to the mining area, the buffers are managed to eliminate any disturbance (i.e. soil, vegetation) within these areas. Mining and overburden

storage areas, work pads, stockpile locations or other developments will not be located within buffers.

Project Mining and Reclamation Plans

Prior to use of these sites, the construction contractor or operator shall submit a detailed Project Mining and Reclamation Plan, in accordance with AS.27.19,11 AAC 97 and the project contract documents, for approval by both the land owner agency and the Applicant.

The Project Mining and Reclamation Plan, by sketch map and narrative, shall describe the proposed method of operation and must comply with the conditions outlined above. After approval of this plan, it will be followed by the contractor or user and if applicable, the Project Engineer. Revisions to the plan require approval of DOT&PF and, if applicable, the regulatory agencies having jurisdiction.

In general, all data should be shown graphically unless it can be better described in the accompanying narrative. Section and profile drawings should be used as appropriate. Where applicable (i.e., material sites with mapped wetlands or waterbodies), Project Mining and Reclamation Plans for Material Sites will include the following:

- Existing ponds, wetlands, and waterbodies will be avoided to the maximum extent possible. When historically placer mined waterbodies are re-entered, the reclamation plan will include measures to stabilize the shorelines of the expanded ponds as noted above. Similarly, if groundwater is intercepted as part of mining operations in non-placer mined areas, the resulting ponds and waterbody shorelines will be stabilized as part of the reclamation plan.

As noted on Sheets 107-110 of the original submittal, different reclamation plans are needed depending on the type of material being mined. The following material specific guidelines will also be mandated:

Sites with Unconsolidated Deposits (i.e. Silt, Sand, and/or Gravels)

Standard excavation techniques are generally adequate for development and mining of these sites. Depending on contractor or user preference and project timing; blasting, excavation equipment, or natural thawing may be employed to loosen frozen material. If a contractor or user elects to use natural thawing, multiple cells may be stripped and excavated concurrently.

Mining will take place in these areas following these guidelines for each cell:

1. Survey and mark material site and buffer boundaries in the area to be mined prior to breaking ground.
2. Windrow or stockpile surface vegetation and organic soils for future use in reclamation adjacent to buffers.
3. Windrow or stockpile overburden adjacent to the vegetation and organic soils, or preferably use directly for reclamation of previously mined areas.
4. Minimize stockpiling overburden where it will need to be moved for future stripping/mining.
5. Conserve material for future mining by not placing overburden stockpiles on top of material that could be mined in the future.

6. Conduct mining activities to put materials to their highest and best use.
7. The side slopes of the active pit should not be steeper than 1:1 so stockpiled berms do not fall or slough in to the active pit.
8. All mining activities will be in accordance with the Construction General Permit (CGP) and an approved Storm Water Pollution Prevention Plan (SWPPP).

Reclamation has several general objectives:

1. Not to disturb previously reclaimed or undisturbed areas whenever possible.
2. To merge with previous reclamation and surrounding topography.
3. To prevent erosion and sediment transport to surrounding undisturbed areas.
4. To allow reestablishment of native vegetation, and encourage development of wildlife habitat.
5. To leave the site in safe condition that does not endanger people or wildlife.
6. Not to preclude or unduly hinder future development of un-mined areas.
7. All reclamation activities will be in accordance with applicable CGP and SWPPP.

Reclaim cells as soon as possible after depletion. Perform concurrent reclamation of disturbed areas to the maximum extent possible as part of the active project.

Reclamation activities will include the following activities and follow these general guidelines:

1. Reclaim slopes along the material site boundaries (not including buffers), or where future development is not anticipated.
2. Grade slopes above the water table to 3(H):1(V), or flatter.
3. Grade slopes within 30 feet of the shore in areas that are either underwater or expected to be underwater, to provide shallow water habitat, with water depth less than three feet.
4. Spread available organic soils over re-graded slopes. Spread available vegetative material over the organic soils to aid reestablishment of native species.
5. Contact agencies to determine site-specific seeding and fertilization requirements.
6. Grade the pit floor or pad to a flat or gently sloping shape, and remove all equipment and non-native debris and waste. Grade slopes above the water table and adjacent to areas of future production to 1(H):1(V) or flatter. Overburden or organic material need not be re-spread on these slopes.
7. Reclaim the active work area and remove or reclaim access roads once the site is depleted.
8. Where not covered by the above items, or typical sections, final contouring and grading pond margins will occur in accordance with the appropriate sections of the State of Alaska Department of Fish and Game Technical Report 93-9, North Slope Gravel Pit Performance Guidelines.

See also Sheets 107-109 of the original submittal for Unconsolidated Site Typical Reclamation Plan drawings.

Bedrock Sites and Sites with Consolidated Deposits

Bedrock sites and those with consolidated deposits contain hard materials that typically require drilling and blasting for production. Sheet 110 shows the typical restoration plan for these areas.

These sites may be mined as described for unconsolidated deposits, if material is soft enough to allow excavation without blasting. Where blasting is necessary, or selected as the mining method, mining shall occur in benches, nominally 20-feet high. Contractors or users may have specific plans or equipment constraints that make flexibility in bench size, height and location necessary. However, maximum bench height is 40 feet. Developing pits with benches is intended to:

- Provide multiple working faces.
- Limit safety hazards to operators, the public, and wildlife due to falling rock.
- Provide safer slopes for continued development.

Mining will take place in these areas following these guidelines:

1. Survey and mark material site and buffer boundaries in the area to be mined prior to breaking ground.
2. Windrow or stockpile surface vegetation and organic soils for future use in reclamation.
3. Windrow or stockpile overburden separate from the vegetation and organic soils, or incorporated directly into areas being reclaimed.
4. Do not stockpile overburden where it will need to be moved for future stripping/mining.
5. Conserve material for future mining by not placing overburden stockpiles on top of material that could be mined in the future.
6. Use appropriate offsets between overburden berms and the active pit so berms do not fall into the active pit.
7. Mining will proceed in a benched manner. Individual benches will be no more than 40-feet apart vertically, and will be no narrower than 20-feet wide. Multiple benches can be in production at one time.
8. Individual bench faces may be vertical, but overall slope angles within the active pit will be no steeper than 0.5(H):1(V), flatter slopes are acceptable.
9. All mining activities will be in accordance with the Construction General Permit (CGP) and an approved Storm Water Pollution Prevention Plan (SWPPP).
10. Conduct mining activities to put materials to their highest and best use.
11. During riprap production, sort all mined material not directly used on the project and stockpile by riprap class for future use.
12. Maintain access to all benches during and at the end of production.
13. Grade the pit floor or pad to a flat or gently sloping shape, and remove all equipment and non-native debris and waste.
14. Located stockpiles within the work area for future use. Leave stockpiles in a neat and orderly fashion, and appropriately signed.

Reclamation has several general objectives:

1. Not to disturb previously reclaimed or undisturbed areas whenever possible.
2. To merge with previous reclamation and surrounding topography.
3. To prevent erosion and sediment transport to surrounding undisturbed areas.
4. To allow reestablishment of native vegetation, and encourage development of wildlife habitat.
5. To leave the site in safe condition that does not endanger people or wildlife.

6. Not to preclude or unduly hinder future development of un-mined areas.
7. All reclamation activities will be in accordance with applicable CGP and SWPPP.

Reclamation activities will follow these general guidelines:

1. Grade overburden or unusable material piles after each use to slopes of 3(H):1(V), or flatter.
2. Reclaim pit or quarry walls where future development is not anticipated at the end of each project, as long as access to the working faces or benches is not impacted. Grade pit or quarry walls to 2(H):1(V) or flatter. Stockpiled overburden or unusable material can be used for grading.
3. Spread available organic soils over re-graded slopes. Spread available vegetative material over the organic soils to aid reestablishment of native species.
4. Contact agencies to determine site-specific seeding and fertilization requirements.
5. At the end of each use, un-reclaimed faces shall be scaled of loose and dangerous rock so that the faces are left in a condition such that they will not collapse or allow loose rock that presents a safety hazard to fall from them.
6. A pit or quarry wall is exempt from the requirements of 2-4 of this section if the steepness of the wall makes them impracticable or impossible to accomplish.
7. After each use, the pit floor or pad will be graded to a flat or gently sloping shape, and the contractor or user will remove all equipment and on-native debris and waste.
8. Reclaim the active work area and remove or reclaim access roads once the site is depleted.

23.3 COMPENSATORY MITIGATION

The Applicant has reviewed the project's anticipated impacts, after making substantial efforts to avoid and minimize impacts to wetlands and other waters of the U.S. during both the design and proposed construction phases of the project. These efforts have or will cost the Applicant substantial amounts of time and money. In light of these mitigation expenses already incurred (or agreed to as construction minimization practices), the Applicant proposes that no additional compensatory mitigation be required for the temporary construction impacts from the 13.9 acres of vegetation clearing activities.

The Applicant accepts that the permanent loss of 34.6 wetland acres should be further compensated per the 2008 Mitigation Rule, and using functional assessment data collected for this purpose has rated the wetlands per the requirements of the Alaska District's Mitigation Regulatory Guidance Letter (RGL) number 09-01.

The Applicant's consultants have applied *A Rapid Procedure for Assessing Wetland Functional Capacity Based on Hydrogeomorphic Classification* (Magee 1998) to 50 representative wetlands in the study area (see PJD). This methodology rates a wetlands capacity to perform a suite of eight functions wetlands typically perform. While a separate rating is obtained for each function, the average for the plots evaluated is used in the following general discussion. To learn more about the specific wetlands in the project area, readers should refer to the PJD. Table 23.3-1 displays the results from a very basic analysis of wetland functions in the project area.

Table 23.3-1: Wetland Ratings by HGM Class, Per the Magee Method

HGM Type	Acres Impacted	FCI Range; Average FCI	Magee Overall Rating
Cut/Fill (i.e. Permanent Impacts)			
Depressional	8.2	0.0 to 0.89; 0.48	Low to Moderate
Flat	16.5	0.0 to 0.94; 0.51	Moderate
Riverine	3.5	No Plots Available	Assumed Moderate to High
Riverine Channel	0.1	No Plots Available	Assumed High
Slope	6.3	0.0 to 0.93; 0.53	Moderate
Subtotal	34.6		
Vegetation Clearing Only (i.e. Temporary Impacts)			
Flat	9.1	0.0 to 1.0; 0.54	Moderate
Riverine	1.4	No Plots Available	Assumed High
Slope	3.4	No Plots Available	Assumed Moderate
Subtotal	13.9		

Results shown in Table 23.3-1 were collected within the proposed impact areas. Where no plots were completed within the actual boundaries of the final design footprint, other data collected in the project area were used to create the “assumed” ratings. If no data were collected in a particular type in the study area, assumed ratings are based on other findings in interior Alaska.

Consistent with the rule, the Applicant has considered a variety of mitigation options before proposing the compensation options outlined below.

First, no mitigation banks are currently operating within the impact service areas of the project. Therefore, use of an approved mitigation bank is not a viable option.

Consistent with the rule (when no mitigation banks are present), the Applicant is proposing to buy in-lieu fee program credits from *The Conservation Fund*. While other programs would be considered if available, *The Conservation Fund* is currently the only approved in-lieu program approved for operations within this project area.

In addition to data contained in the permit application document, the Applicant has submitted a preliminary jurisdictional determination document which provides the information required by Section 4 of the RGL for all proposed impact areas.

Section 5 of the RGL also requires that the Applicant determine their mitigation ratios and debits per the guidance provided. Suggested ratios are as follows for Preservation (i.e. in-lieu fee programs like *The Conservation Fund*).

- Lower Value Wetlands: 1.5 to 1
- Moderate Value Wetlands 2.0 to 1
- Higher Value Wetlands 3.0 to 1

However, in light of the costly and thorough avoidance and minimization measures taken to date, and the demonstrated public need for the project as evidenced by local support among the affected communities; the Applicant proposes a 1:1 Mitigation Ratio and cost/acre rate consistent with other remote road and airport projects recently permitted in the Northern Region for all low to moderate rated acres (see Table 23.3-2), or a 1.5:1 ratio for all permanently affected acres (see Table 23.3-3) except those expected to support higher functional values, proposed at 2:1 ratios.

Recent examples of other projects meeting a demonstrated public need in the northern region include a 2011 project at the Manley Airport which impacted 44.4 acres of wetlands. This project was mitigated through *The Conservation Fund* at a rate of \$500/acre.

More recently, in October of 2012, a remote airport project near Kotzebue impacted 128 acres of submerged lands at a 1.5 to 1 ratio, again with the cost/acre rate set at \$500/acre.

As land costs near Manley, Alaska are the closest indicators of values for this region, 3PPI applied a net present value analysis to the \$500/acre 2011 in-lieu fee mitigation costs to determine the equivalent rate in 2013. Values ranged between \$545.89 to \$586.89/acre depending on the discount rate used. The average of the four rates evaluated was \$566.72, which has been used in the two mitigation option tables below. These options are provided for reference only. The Applicant understands that only the USACE can establish the mitigation ratios, while debit costs per acre will be determined by the in-lieu fee provider in consultation with the USACE.

Option 1:

Table 23.3-2: Mitigation Proposed at 1:1 Ratio for Low to Moderate Rated Wetlands and 2:1 for Higher Rated Wetlands @ \$566.72/Acre, All Impacted Wetlands

HGM Type	Acres Impacted	Ratio	Total Fee
Cut/Fill – (i.e. Permanent Impacts)			
Depressional	8.2	1:1	\$4,647
Flat	16.5	1:1	\$9,351
Riverine	3.5	2:1	\$3,967
Riverine Channel	0.1	2:1	\$113
Slope	6.3	1:1	\$3,570
Subtotal	34.6		\$21,649
Vegetation Clearing Only – (i.e. Temporary Impacts)			
Flat	9.1	1:1	\$5,157
Riverine	1.4	2:1	\$1,587
Slope	3.4	1:1	\$1,927
Subtotal	13.9		\$8,671
TOTAL	48.5		\$30,320

Option 2:

Table 23.3-3: Mitigation Proposed at 1.5:1 Ratio for Low to Moderate Rated Wetlands and 2:1 for Higher Rated Wetlands at \$566.72/Acre, Only Permanently Affected Wetlands

HGM Type	Acres Impacted	Ratio	Total Fee
Cut/Fill – (i.e. Permanent Impacts)			
Depressional	8.2	1.5:1	\$6,971
Flat	16.5	1.5:1	\$14,026
Riverine	3.5	2:1	\$3,967
Riverine Channel	0.1	2:1	\$113
Slope	6.3	1.5:1	\$5,356
TOTAL	34.6		\$30,433