CHAPTER 2: PROPOSED PROJECT AND ALTERNATIVES

The GMT2 Project is the second project proposed to be developed in the GMTU, in the Northeast NPR-A on Alaska's North Slope near the Beaufort Sea. The first project is GMT1, where production is expected to begin in the fourth quarter, 2018. The GMT2 Project was originally described in detail as CD7, and GMT1 was originally described as CD6 in BLM ASDP EIS (2004a, §§ 2.3 and 2.4).

2.1 GMT2 Project Changes Over Time

The GMT2 Project has undergone various changes since it was originally proposed in 2004 (BLM 2004a). These changes are described below.

2.1.1 Project Adopted in 2004 ASDP Record of Decision

The Preferred Alternative for the ASDP, analyzed in BLM (2004a) and adopted in BLM (2004b), is summarized below.

The ASDP EIS Preferred Alternative (Alternative F), as more fully described in BLM (2004a), specified that a 9.1-acre drill pad would be constructed on federally-managed lands (now Native-selected lands). Produced fluids would be transported by pipeline to the junction with the GMT1 spur road. An approximately 6.3-mile gravel access road would parallel the pipeline from GMT2 to the GMT1 junction. Gravel would be extracted from the Clover potential gravel source. Upon completion of construction and drilling activities, crews based at CD1/ACF would service and maintain the GMT2 pad.

The BLM decision adopting the Preferred Alternative relocated a substantial portion of the road and pipeline between GMT2 and GMT1 to reduce permanent oilfield infrastructure in the Fish Creek Setback (BLM 2004b, p. 17).

The ASDP EIS Preferred Alternative was adopted by BLM (2004b) with the following modifications: the road and pipeline bridge across the Tiŋmiaqsiġvik (Ublutuoch River) would extend from bank to bank define as the active flow-way and the frequently active floodplain between topographical rises and would be approximately 350-feet long; the adoption of mitigation measures described in the ROD (BLM 2004b); and adoption of a conservation recommendation included by the USFWS in the ESA Biological Opinion. The project adopted by the BLM (2004b) serves as the basis of the Applicant's proposed action in the GMT2 MNAD.

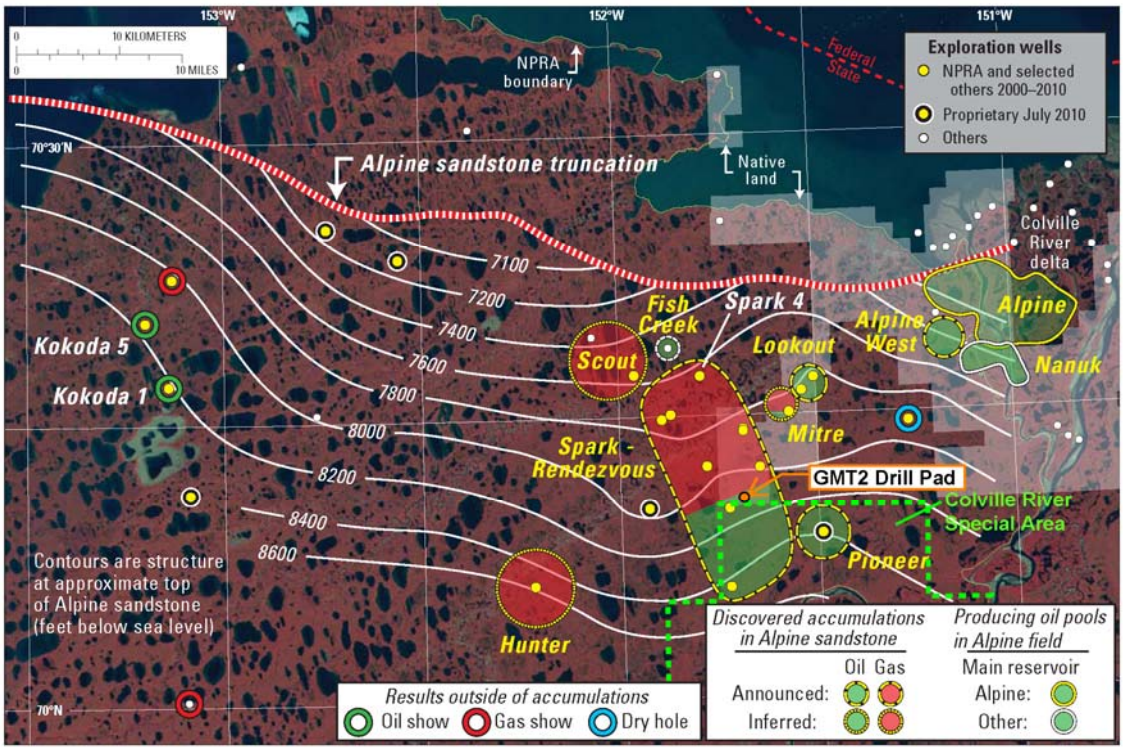
2.1.2 Project Evaluated by BLM in 2012 and 2014

Following the issuance of the ASDP EIS and ROD (BLM 2004a and 2004b), the proposed location of the GMT2 pad was revised. In both BLM (2012) and BLM (2014), the location of the GMT2 drill pad (BLM 2014, Map 4.6.2; Section 5 U009N002E) is south of the location adopted in 2004 (Figure 1.1.1-2; Section 20 U010N002E) within the CRSA. Previously evaluated drill pad locations are presented in Map 2.1-2. The 2012/2014 GMT2 drill pad (BLM 2012 and 2014) was located for optimum access to the reservoir, as described below.

After data collection during drilling/testing a series of Spark and Rendezvous exploration wells, extent of the subsurface petroleum resource has been under continuing study. In both the most recent NPR-A IAP/EIS (BLM 2012) and the GMT1 SEIS (BLM 2014), the proposed location of GMT2 is south of the 2004 location to optimize production potential.

The Spark-Rendezvous accumulation, which will be accessed by GMT2, is a reservoir system that includes gas plus condensate at shallower depths in the north and oil at greater depths in the south as shown in Figure 2.1-1 (Houseknecht et al. 2010).

Of the five oil discoveries in the Alpine sandstone in Northeast NPR-A, the Spark-Rendezvous accumulation is the largest reservoir system. Alpine West, Lookout, and Pioneer are oil accumulations with little or no free gas. A fourth discovery, Mitre, appears to be predominantly a gas accumulation with an oil leg in the south (Figure 2.1-1). The USGS estimates that 120 to 200 million barrels of oil (including oil and condensate) and 1.9 to 3.0 trillion cubic feet of gas may be technically recoverable from these accumulations (Houseknecht et al. 2010).



Source: Houseknecht et al. 2010
Note: The location of the Colville River Special Area and the proposed GMT2 Drill Pad have been added onto Figure 2.1-1.

Figure 2.1-1. Oil and Gas Accumulations in or Near Northeast NPR-A

Based on this updated information, the GMT2 pad location was moved approximately 3.2 miles south to better access the oil. This revised GMT2 pad location was described and evaluated in the NPR-A IAP/EIS (BLM 2012, p. 51) and the GMT1 SEIS (BLM 2014, p 498). While better for production than the original locations, there are environmental considerations for this site. This relocated GMT2 drill pad location was in the CRSA.

The CRSA was designated in 1977 (BLM 2008d – Colville River Special Area Management Plan). In making this designation, the Secretary of the Interior stated that the *"central Colville River and some of its tributaries provide critical nesting habitat for the arctic peregrine falcon, an endangered species. The bluffs and cliffs along the Colville River provide nesting sites with the adjacent areas being utilized as food hunting areas."* (BLM 2004b, p 27) The CRSA is approximately 2.44 million acres and includes lands around the Colville River. The CRSA is discussed in greater detail in Section 3.4.4 (*Land Use*).

2.1.3 2015 GMT2 Proposed Project

In developing the proposed project, CPAI again moved the location of the GMT2 pad, this time moving the location outside the CRSA to minimize the potential for impacts to peregrine falcons. This location is acceptable with respect to oil production, and mitigates the potential for impacts on peregrine falcons. The proposed location is 0.9 mile north of the 2012/2014 location and 0.11 mile north of the CRSA boundary. The three proposed locations of the GMT2 drill pad (i.e., adopted in the 2004 ROD, evaluated in BLM 2012 and BLM 2014, and proposed in the 2015 GMT2 MNAD) are shown on Map 2.1-2.

2.1.4 Summary of Changes in the GMT2 Project over Time

The currently proposed GMT2 Project (which will be considered as MNAD Alternative A) is similar to the project approved for permitting in BLM (2004b) and that evaluated in BLM (2012) and BLM (2014). Some changes in the GMT2 Project are based on changes in the GMT1 Project approved for federal permitting (BLM 2015a, Corps 2015), which is approximately 1.9 miles southeast of the location originally adopted by the BLM (2004b). Notable changes, including the reason for the change, are provided in Table 2.1-1.

Table 2.1-1. Summary of Changes in the GMT2 Project Over Time

Component	2004 ASDP Approved Alternative [a]	2012/2014 Project [b]	2015 Proposed GMT2 Project (Alternative A) [c]	Change in Impacts
Drill Pad	9.1 acres	13.0 acres The drill pad footprint increased by 3.9 acres to expand the drilling potential (from 20 wells to ~33 wells) and to accommodate current drilling, operational, and safety practices.	14.0 acres The drill pad footprint increased by approximately 1 acre to expand the drilling potential (up to 48 wells).	Increased impacts due to larger pad size mitigated by doubling of the number of wells
Number of Wells	20	Approximately 33	Up to 48	Increased production due to doubling of number of wells
Access Road	6.3 miles	8.7 miles Road lengthened 3.9 miles as a result of the relocation of the Nigliq Channel bridge to the south (CD5 project) and route changes to the road caused by the changed drill pad location.	8.1 miles Road shorted 0.6 mile due to change in drill pad location. 3 1.2-acre subsistence pullouts were added to the access road to allow better access and use of area to be developed for subsistence hunters.	Increased impacts from the 2004 project due to increase in road length. Decrease from 2012/2014 project due to shorter road.

Table 2.1-1. Summary of Changes in the GMT2 Project Over Time (Continued)

Component	2004 ASDP Approved Alternative [a]	2012/2014 Project [b]	2015 Proposed GMT2 Project (Alternative A) [c]	Change in Impacts
Pipeline System	6.4 miles	9.1 miles Pipeline length increased due to change in pad location.	8.6 miles Pipeline length decreased due to change in pad location.	Increased impacts from the 2004 project due to increase in pipeline length. Decrease from 2012/2014 project due to shorter pipeline length.
Bridge(s)	None	None (No change)	None (No change)	No change
Facilities in Setbacks or Special Areas	Facilities in Fish Creek Setback [d] Most of the road and pipeline between GMT1 (CD6) and GMT2 (CD7) would be within the 3-mile Fish Creek Setback	Drill Pad in CRSA Drill pad was relocated south of the original location into the CRSA because newer subsurface data refined the reservoir target locations.	No Facilities in Sensitive Areas The drill pad was moved north out of the CRSA and avoids the Fish Creek Setback area that was of concern in 2004 (~2.3 miles south of the 2004 drill site location). See Map 2.1-1.	Decrease in impacts due to no facilities being located in sensitive areas.
Total Gravel Footprint [d]	50.6 acres	86.6 acres Increase in gravel footprint (36 acres) is a result of the increased drill pad size and re-routing of road due to change in the location of the drill pad.	78.0 acres Decrease in gravel footprint (8.6 acres) is a result of the re-routing of road due to change in the location of the drill pad.	Increased impacts from the 2004 project due to increase in pad size and road length. Decrease from 2012/2014 project due to shorter road.
Total Gravel Requirement	339,000 cubic yards	625,500 cubic yards [e] Increase in required gravel (286,500 cubic yards) is a result of the increased size of drill pad and re-routing of road due to change in the location of the drill pad.	671,300 cubic yards [e]	Increased impacts from the 2004 project due to increase in pad size and road length.
Gravel Source	New (proposed Clover mine site)	Existing (ASRC mine site) Existing mine source sufficient to provide resources; not necessary to develop an additional gravel site.	Existing (ASRC mine site)	Decrease in impacts due to use of existing mine site instead of development of a new mine site.

[a] Project components for the 2004 GMT2 Project were described in the ASDP ROD (BLM 2004b).

[b] Project components for the 2012/2014 GMT2 Project were described in the 2014 GMT1 SEIS (BLM 2014). All miles, acres, and cubic yards of fill were estimates from those documents developed for comparison purposes only.

[c] Project components for the current GMT2 Development Project were obtained from detailed permit drawings included as Appendix A of this MNAD.

[d] The 2004 drill site was interim conveyed to Kuukpik Corporation in 2010 (BLM 2015f).

[e] Differences between total gravel requirements included in BLM (2014) and the current GMT2 Development Project gravel requirement are due to more detailed engineering and design information. The differences do not reflect additional gravel requirements.

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2.5 Alternative A: CPAI's Proposed Project

CPAI's proposed GMT2 Project (Alternative A) includes a drill pad, a gravel access road (GMT1-GMT2 Access Road), and pipelines, as described below. Alternative A is depicted in Map 2.5-1. More detailed design drawings for the GMT2 Project are included in Appendix A.

Construction is expected to take two years as described in Section 2.4.1. Drilling is expected to begin in May of Year 2, with first oil expected at the end of Year 2. To complete all 48 wells, drilling would continue year-round for approximately 7.1 years. Operations would continue as needed to achieve economic and production goals, which is currently estimated to be 30 years, post construction.

2.5.1 Project Components

Table 2.5-1 summarizes the major infrastructure components of Alternative A, the Proposed Action.

Table 2.5-1. Infrastructure for Alternative A, Proposed Action

Component	Alternative A Proposed Action
Gravel Drill Pad	14.0 acres
Wells	up to 48
GMT1-GMT2 Access Road	8.1 miles, 62.8 acres
Subsistence Tundra Access Road Pullouts	3 pullouts, 1.2 acres (0.4 acre each)
Elevated Pipelines on VSMs	8.6 miles from GMT2 to GMT1; 0.1 acres 9.8 miles, crude oil pipeline from CD5 to CD1/ACF (on existing VSMs) 3.3 miles, MI pipeline from CD4/CD5 intersection to CD1/ACF (on existing VSMs)
Bridges	None
Gravel Supply	ASRC mine site
Total Gravel Footprint [a]	78.0 acres
Total Gravel Requirement	671,300 cubic yards
Ice Roads	52.6 miles (Year 1) 43.9 miles (Year 2)

[a] Total Gravel Footprint acreage does not include 0.1 acre from the installation of new pipeline VSMs between GMT2 and GMT1.

2.5.2 Location

The proposed Alternative A GMT2 pad location and pipeline route are described in Section 2.4.2. The road corridor for Alternative A crosses through Section 31, T11N, R3E UM; Section 6, T10N, R3E UM; and Sections 1, 11, 12, 14, 22, 23, 27, 32, 33, and 34, T10N, R2E UM.

In siting the GMT2 pad, the gravel GMT1-GMT2 Access Road, and the pipeline, eight criteria were considered: keeping infrastructure out of the CRSA, wetland habitat, archaeological resources, hydrology and drainage, topography, minimizing gravel footprint, load weight requirements (road), and local community interests.

2.5.3 Drill Pad and Support Facilities

The proposed Alternative A GMT2 drill pad and facilities are described in Section 2.4.3.

Total operational power required for the proposed Alternative A, including emergency shutdown module, fuel gas module, test separator module, remote electrical and instrumentation module, pig launching and receiving module, chemical injection module, production heater skid, pad lighting, heat trace and other drill site power requirements (shown in Appendix A on Sheet 21 of 33) is expected to be between 1.0 – 2.0 megawatts electrical (MWe), depending on season (summer versus winter). Additional power for rig during drilling is approximately 2.0 megawatts (MW).

2.5.4 Access

Alternative A includes access via gravel road from GMT1 (GMT1-GMT2 Access Road) and seasonal ice roads to support construction, drilling, and operations. Alternative A does not include an airstrip or associated facilities and pads, although helicopters can directly access the site. Planned use of fixed-wing aircraft associated with Alternative A is for transport of personnel, equipment, and supplies to the existing airstrip at the Alpine CD1/ACF.

2.5.4.1 Roads

GMT1-GMT2 Access Road

An 8.1-mile long gravel road (GMT1-GMT2 Access Road) will connect GMT2 to GMT1, and the existing Alpine field road system. The road will include three subsistence tundra access road pullouts to allow local residents to access the area for subsistence use. The GMT1-GMT2 Access Road would be a minimum of 5 feet high with side slopes of 2:1 (Appendix A, Sheet 31 of 33) and designed to maintain the existing thermal regime. The road would be 32 feet wide (crown width), which is wide enough to allow drill rig travel.

Where possible, the road would be constructed at least 500 feet from pipelines to minimize caribou disturbance (Lawhead et al. 2006), as recommended by Cronin et al. (1994) to support greater crossing success. This also prevents excessive snow accumulation from snow drifts. Four stretches of the GMT1-GMT1 Access Road would not meet this requirement: a 0.7-mile long portion located west of lake M9925; a 0.7-mile long portion northeast of lake M9922; a 0.9-mile long portion east of lake Z06006; and a 0.4-mile long portion north of lake R0062 (Map 2.5-2). Pipelines are typically constructed within 1,000 feet of roads to allow for visual inspection for leak detection from the road; the GMT2 to GMT1 pipeline segment is within 1,000 feet of the road or pad for its entire length. With more sophisticated leak detection methods now available, such as monitoring from aircraft equipped with thermal imaging equipment, some newer pipelines have been constructed without using this 1,000-foot constraint.

The Alternative A pipeline and road routing between GMT2 and GMT1 would require deviations from two BLM requirements, as described in Section 2.2: Lease stipulation E-2, which requires a 500-foot setback from waterbodies and BMP E-7(c) which requires a minimum separation distance of 500 feet between pipelines and roads.

The location of the GMT1-GMT2 Access Road as proposed west and northwest (downgradient) of the pipeline route would allow the road to act as a barrier to protect waters in Fish Creek drainage in the event of a potential pipeline spill.

Bridges and Culverts

No new major stream or river crossings are proposed for the GMT2 Project, therefore no bridges will be required. The route includes a culvert crossing over the small unnamed beaded stream pool outlet draining from Lake M9925.

Culverts would be placed in the road to maintain natural surface drainage patterns. The typical design of culverts is shown in Appendix A, Sheets 33 of 33. Preliminary culvert locations for cross-flow will be selected based on aerial photography. CPAI (or its contractor) will then walk the road alignment to optimize final culvert locations, noting low areas where culverts are needed, and review the data with the ADF&G (regulatory agency for potential effects on fish) for concurrence. Thus, the final design for the size, number, and location of the culverts will be complete after the field survey is completed. The estimated spacing of culverts is every 1,000 feet, however some culverts may be closer than the 1,000 feet spacing as is common on roads associated with oil and gas development on the North Slope. The culverts would be installed per the final design prior to breakup of the first construction season, but additional culverts may be placed after breakup as site-specific needs are further assessed with the ADF&G.

Ice Roads and Pads

Ice roads would be constructed to access the gravel source and construction areas (e.g., road, drill pad, and pipelines). Proposed ice road routes for Alternative A (proposed project) are depicted on Map 2.5-3. Due to heavy equipment size and frequency of construction traffic, safety considerations dictate use of separate ice roads for pipeline construction, gravel placement, lake access, and general traffic.

During Year 1 of construction, ice pads would be built at the gravel source and along the gravel haul route. During Year 2 of construction, ice pads would be built at both ends of the pipeline route, plus an additional pad for construction laydown. All action alternatives would include a 10-acre ice pad for each year of drilling. A summary of ice roads and pads that would be constructed under Alternative A are presented in Table 2.5-2.

Table 2.5-2. Summary of Ice Roads and Pads for Alternative A, Proposed Action

Project Phase	Alternative A
Ice Roads (miles)	
Year 1	52.6
Year 2	43.9
Post-construction	--
Ice Pads (acres) [a]	
Year 1	175
Year 2	135
Post-construction (Years 3-9)	10

2.5.4.2 Vehicle Traffic

Under Alternative A, personnel, equipment, and materials would be transported overland on snow trails, ice roads, and on the gravel GMT1-GMT2 Access Road, once it is constructed. Table 2.5-3 provides a summary of estimated vehicle traffic trips that would be required for Alternative A. More detail on vehicle traffic is provided in Appendix C.

In 2018, traffic would be primarily associated with pre-construction activities from mid-November through December. Activities would consist of pre-packing snow and constructing ice roads in preparation for the following construction season in 2019.

Alternative A vehicle traffic levels would be the highest during the first construction season in 2019. Construction of the ice roads would be completed in January and construction of the gravel road, gravel drill pad, and installation of a portion of the pipeline scope would occur February through April. Gravel conditioning work would occur in August and September. Ice road pre-packing and construction for the second construction season in 2020 would occur mid-November through December of 2019.

In 2020, traffic would occur on the ice roads and the gravel GMT1-GMT2 Access Road. Vehicles would support pipeline and facilities construction and the beginning of drilling. Completion of the pipeline installation would occur February through April via ice road. Facility construction will occur February through December. After April, all vehicle traffic would be on the GMT1-GMT2 Access Road. Drilling would begin in May.

In 2021, drilling would be ongoing and vehicle traffic would be at levels greatly reduced from previous years and would be along the GMT1-GMT2 Access Road. Vehicle traffic associated with routine operations would begin after first oil in December 2020 and would continue for the life of the drill site to support the facility.

Table 2.5-3. Summary of Vehicle Trips for Alternative A, Proposed Action

	Alternative A [a, b, c]
Number of Trips	
Construction Year 1	93,600
Construction Year 2	72,500
Drilling Year 1	6,100
Annual Ice Road	--
Annual Infill Drilling	9,000
Infill Drilling Years	6.33
Routine Operations	700
Total Trips [d]	**229,200**
Miles Traveled	
Construction Year 1	931,400
Construction Year 2	408,300
Drilling Year 1	153,100
Annual Ice Road	--
Annual Infill Drilling	223,800
Infill Drilling Years	6.33
Routine Operations	12,500
Total Miles [d,e]	**2,909,500**

Notes:

Trips are one-way.

Construction Year 1 is from November 2018 – October 2019.

Construction Year 2 is from November 2019 – December 2020.

[a] The first year of drilling for Alternative A is from May 1 to December 31, 2020 with first oil in December 2020.

[b] Year-round continuous infill drilling (Alternatives A and D1) is from January 1, 2021 to April 30, 2027.

[c] Routine Operations assumes that the Alternative A wellwork crew will travel from CD1/ACF as-needed along the GMT1-GMT2 Access Road and an annual ice road will not be required. Routine operations will begin after first oil.

[d] Total trips and total miles do not include routine operations.

[e] Total trips and total miles include 6.33 years of annual infill drilling.

2.5.4.3 Air Transport

Aircraft traffic would support transportation of work crews, materials, and equipment from Fairbanks, Anchorage, or Deadhorse. Under Alternative A, aircraft would typically utilize the existing CD1/ACF airstrip. Flights would primarily support personnel and equipment transport required for construction and the start of drilling. Estimated air traffic associated with Alternative A is described below.

2.5.4.4 Aircraft Traffic

Under Alternative A, personnel, equipment, and materials would be transported overland on snow trails, ice roads, and on the gravel GMT1-GMT2 Access Road, once it is constructed. All fixed wing flights listed will land in CD1/ACF and helicopters will base out of CD1/ACF. Aircraft would maintain altitude of 1,000 feet or more except during takeoff and landing (within 3.6 miles of the airstrip). Flight paths would depend on prevailing winds, but would generally align with the airstrip orientation. Table 2.5-4 provides a summary of estimated aircraft trips that would be required for Alternative A. More detail on vehicle traffic is provided in Appendix C.

During construction, Year 1 (2018-2019) and Year 2 (2019-2020) aircraft trips are limited to between 5 and 15 flights per month for crew changes. Helicopter landings to support environmental studies and ice road cleanup will occur from May through September.

Once construction of the GMT2 pad and GMT1-GMT2 Access Road are complete there will be no need for routine additional fixed wing flights as post-construction drilling needs will be handled by flights into CD1/ACF that are already part of the ongoing operations. Operation and maintenance will be handled by staff at the CD1/ACF who will travel by the GMT1-GMT2 Access Road. Helicopter landings to support environmental studies will occur from May through September until the end of operations.

Table 2.5-4. Summary of Aircraft Flights for Alternative A, Proposed Action

		Construction Year 1 (Nov 2018 – Oct 2019)	Construction Year 2 (Nov 2019 – Dec 2020)	Drilling (Jan 2021 – April 2027)	Annual Operation (May 2027 and Beyond)
Construction Crew Support Construction Cargo Special Studies/Ice Road Cleanup	Otter/Casa DC-6 Helicopter	125 -- 538	145 -- 494	-- -- 90	-- -- 90
Annual Total [a]		**663**	**639**	**90**	**90**
Total Flights [b]					**1,842**

Notes:

-- indicates that no flights are proposed

A single "flight" is defined as a landing and subsequent takeoff.

Helicopter numbers refer to landings within the NPR-A.

Helicopter landings for ice road cleanup are estimated at five landings per mile of ice road. Ice road cleanup will only occur from May – September 2019 and 2020.

Helicopter visits to spill response equipment pre-staged as part of the GMT2 project are included helicopter landing numbers.

[a] Total cumulative flights for drilling activities are 540. No drilling flights are anticipated in 2027 since the helicopter does not come on site until May.

[b] Total flights do not include annual operation flights.

2.5.5 Gravel Requirements

Under Alternative A, a total of approximately 671,300 cubic yards of material required for this project would be used to fill approximately 78.1 acres. Table 2.5-5 lists the amount of material that would be used for project components.

Table 2.5-5. Gravel Use for Alternative A

Facility	Footprint (Acres)	Fill Quantity (Cubic Yards)	Notes/dimensions
GMT2 Pad [a]	14.0	152,000	See Appendix A, Sheet 21 of 33 for description of dimensions
GMT1-GMT2 Access Road [a]	62.8	510,000	8.1 miles long; 32 feet crown width and minimum 5 feet thickness
Subsistence Tundra Access Road Pullouts [a]	1.2	9,300	3 pullouts 0.4 acre each
Total Gravel Requirement for GMT2 [b]	**78.0**	**671,300**	

Notes:

Values are approximate and may change during final design.

[a] Appendix A, Sheet 5 of 33

[b] Total Gravel Footprint acreage does not include 0.1 acre from the installation of new pipeline VSMs between GMT2 and GMT1. Approximately 800 VSMs with 55-foot average spacing will be required.

ND not determined

2.5.6 Camps

The following camps are proposed to support construction and operation of the proposed GMT2 Project:

- Alpine Camp – 150 beds would be reserved for construction use at the -man camp located at CD1/ACF on the gravel pad which is connected to the existing CD1/ACF electric grid.
- Nuiqsut Hotel – existing commercial hotel located in Nuiqsut and connected to the existing community electric grid. A total of 90 beds would be required and would be required for 120 days to support winter construction work.
- Kuukpik Camp – a camp may be located on the existing Kuukpik 10-acre pad at the junction of the CD5 road and the Nuiqsut Spur Road. This camp would be powered by diesel-fired generators. It would supply 65 beds for 120-days to support winter construction work (Year 1 and Year 2), and 70 beds for 245 days to support summer activities in Year 2 (May through December 2020).
- GMT2 Camp – a 75-man rig camp located at the GMT2 drill pad and connected to the existing Alpine electric grid via power cable from CD1/ACF once a connection is established. Prior to electric power being available, the camp will be powered via diesel generators.

During construction (Years 1 and 2), offsite camp facilities including Alpine Camp, Nuiqsut Hotel, and Kuukpik Camp will be used. Drilling would be supported by a crew (workers to support drilling and well tie-in) based in a 75-man rig camp on the drill pad. This camp would be placed on the GMT2 Drill Pad as early as May 2020. After drilling, operations and maintenance personnel would typically commute from CD1/ACF or Kuparuk and no additional camp facilities would be required.

2.5.7 Water Use

Fresh water would be required for domestic use at remote construction camps and for construction and maintenance of ice roads and ice pads. Potable water requirements are based on a demand of 100 gpd per person. Freshwater may be used for hydrostatic testing. Approximately 1.0 MG of water per mile are used for 35-foot wide ice road construction; ice roads for pipeline construction are wider than typical ice roads and may require two to four times that volume depending on the width. Ice roads would typically be available for use approximately 80 days each winter season, depending on local conditions.

A summary of estimated water use for Alternative A is provided in Table 2.5-6. More detailed water use data are provided in Appendix C. Water for construction and maintenance of ice roads and pads would be withdrawn from lakes in the vicinity of the GMT2 Project as approved by State of Alaska temporary water use authorizations and fish habitat permits where necessary.

Table 2.5-6. Summary of Water Use for Alternative A, Proposed Action

Alternative A Totals (MG)	
Construction (Years 1-2)	239
Drilling (Years 3-9)	141
Operations (Years 3-33)	15
Total Water Use (MG)	**395**

Notes:
Totals rounded to nearest whole number
MG million gallons

2.5.8 Spill Prevention and Response

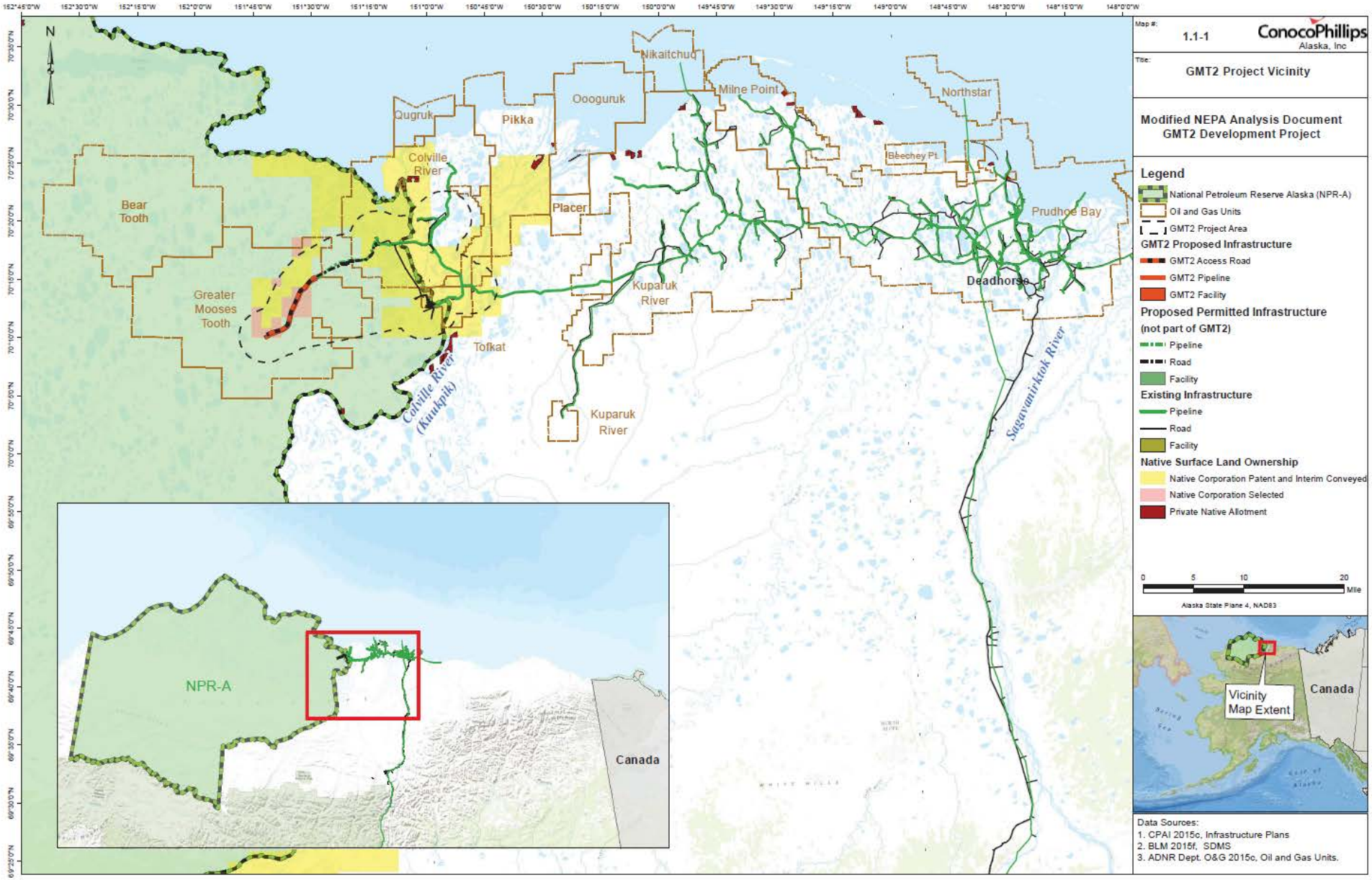
CPAI's proposed GMT2 development includes the GMT1-GMT2 Access Road, a gravel road connecting the drill site to GMT1 and further, to the CD5 road, which provides year-round vehicle access to CD1/ACF. ACF is a centralized facility that provides support to satellite drill sites in a variety of ways, including the equipment, personnel, and other support that are necessary to be able to respond to potential emergencies. The road connection to the resources at ACF is an important part of the project design. In addition, CPAI would conduct regular ground-based visual inspections of facilities and pipelines from gravel roads under this Alternative.

The spill response strategy for GMT2 under Alternative A involves two approaches: (1) a design component, and (2) equipment pre-staging, as described below:

(1) Placement of the pipeline south of the road allows the road to act as a barrier to prevent oil from migrating into valuable streams and wetlands where the road is downgradient of the pipeline (eastern half of the GMT1-GMT2 Access Road; see Section 4.2.2). Additionally, there are several culverts planned for the GMT2 road stream crossings and wetlands protection. The culvert crossings would be used as the primary control points to contain potential spilled oil from reaching streams and wetlands in the project area. The road could be used for access and staging for spill response.

(2) Spill response equipment would be placed at the drill site for an initial response. This strategy would facilitate the rapid deployment of equipment by personnel. The effective response time would be considerably reduced by this pre-staging concept and this would expedite equipment deployment to contain and recover spilled oil and to minimize the affected area. During summer, pre-staged containment boom placed at strategic locations near selected river channels would facilitate a rapid response. Pre-deployed boom may also be placed within selected river channels to mitigate a spill.

CPAI would conduct regular ground-based visual inspections of facilities and pipelines, including the pipeline from GMT1 to GMT2 from gravel roads under Alternative A.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National Petroleum Reserve Alaska (NPR-A)
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GMT2 Access Road
GMT2 Pipeline
GMT2 Facility
Proposed Permitted Infrastructure
(not part of GMT2)
Pipeline
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Facility
Native Surface Land Ownership
Native Corporation Patent and Interim Conveyed
Native Corporation Selected
Private Native Allotment
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Alaska State Plane 4, NAD83
Data Sources:
1. CPAI 2015c, Infrastructure Plans
2. BLM 2015f, SDMS
3. ADNR Dept. O&G 2015c, Oil and Gas Units.
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Milne Point
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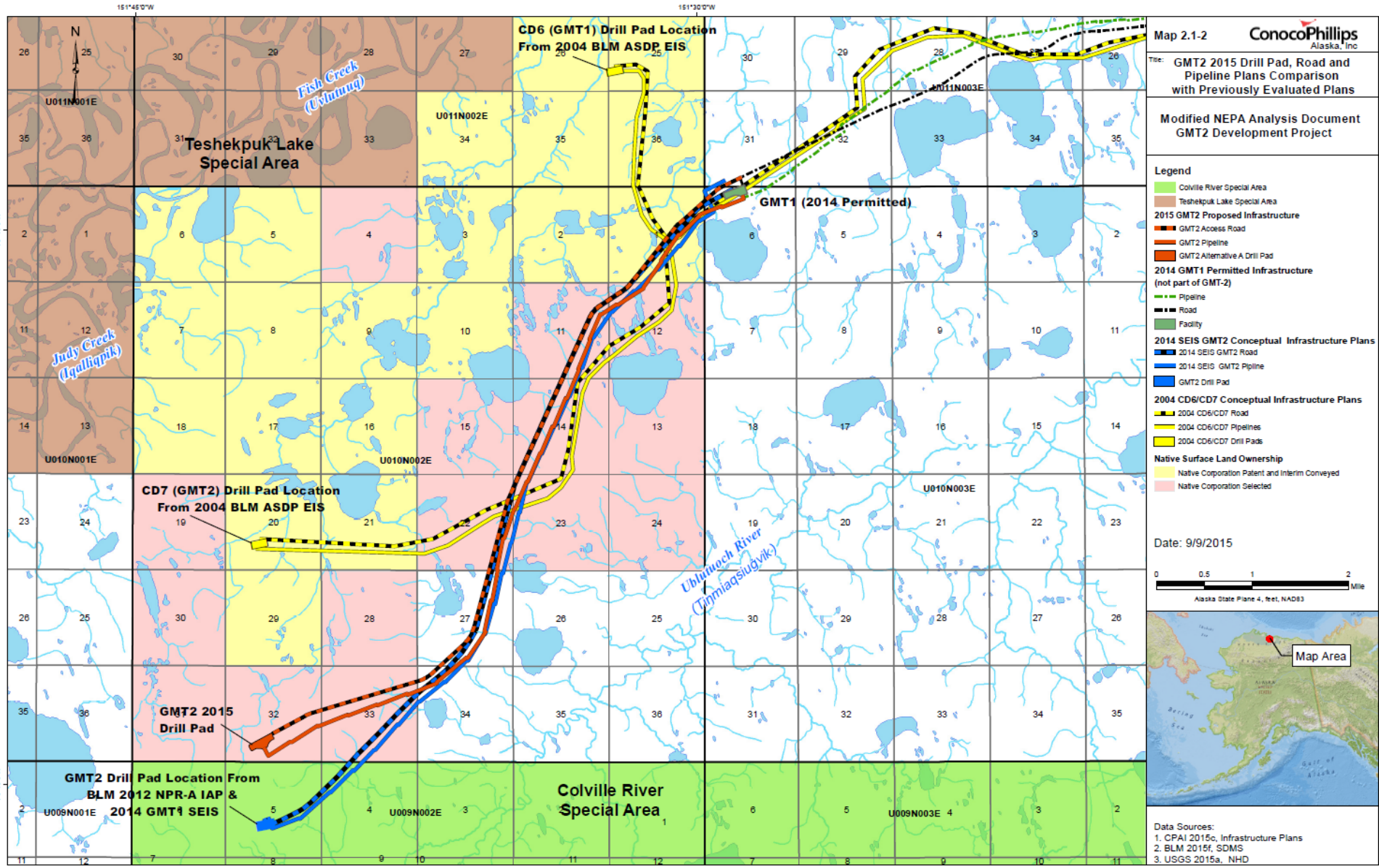
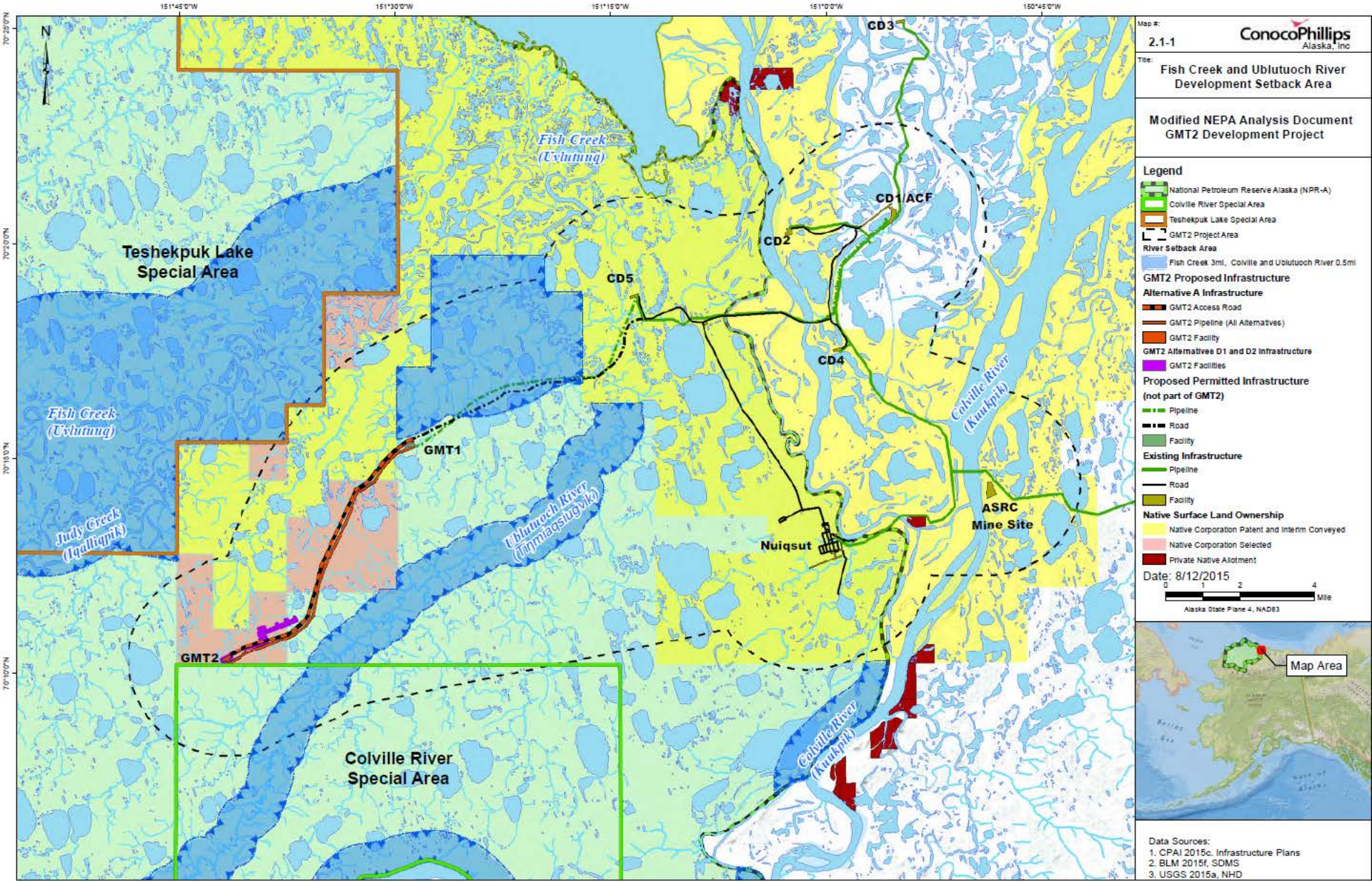
Qugruk
Pikka
Colville River
Bear Tooth
Placer
Bleechey Pt
Prudhoe Bay
Deadhorse
Greater Mooses Tooth
Kuparuk River
Tofkat
Colville River (Kuukpik)
Kuparuk River
Sagavanirktok River
NPR-A
Canada
Vicinity Map Extent
Canada


Map 2.1-2
ConocoPhillips Alaska, Inc
Title: GMT2 2015 Drill Pad, Road and Pipeline Plans Comparison with Previously Evaluated Plans
Modified NEPA Analysis Document
GMT2 Development Project
Legend
Colville River Special Area
Teshekpuk Lake Special Area
2015 GMT2 Proposed Infrastructure
GMT2 Access Road
GMT2 Pipeline
GMT2 Alternative A Drill Pad
2014 GMT1 Permitted Infrastructure (not part of GMT-2)
Pipeline
Road
Facility
2014 SEIS GMT2 Conceptual Infrastructure Plans
2014 SEIS GMT2 Road
2014 SEIS GMT2 Pipline
GMT2 Drill Pad
2004 CD6/CD7 Conceptual Infrastructure Plans
2004 CD6/CD7 Road
2004 CD6/CD7 Pipelines
2004 CD6/CD7 Drill Pads
Native Surface Land Ownership
Native Corporation Patent and Interim Conveyed
Native Corporation Selected
Date: 9/9/2015
0 0.5 1 2 Mile
Alaska State Plane 4, feet, NAD83
Map Area
Data Sources:
1. CPAI 2015c, Infrastructure Plans
2. BLM 2015f, SDMS
3. USGS 2015a, NHD
151°45'0"W
151°30'0"W
70°15'0"N
70°10'0"N
N
CD6 (GMT1) Drill Pad Location From 2004 BLM ASDP EIS
Fish Creek (Uvlutuuq)
Teshekpuk Lake Special Area
U011N001E
U011N002E
U011N003E
GMT1 (2014 Permitted)
Judy Creek (Iqaliqpik)
U010N001E
U010N002E
U010N003E
CD7 (GMT2) Drill Pad Location From 2004 BLM ASDP EIS
Ublutuoch River (Tinmiaqsiugvik)
GMT2 2015 Drill Pad
GMT2 Drill Pad Location From BLM 2012 NPR-A IAP & 2014 GMT1 SEIS
U009N001E
U009N002E
U009N003E
Colville River Special Area


151°45'0"W
151°30'0"W
151°15'0"W
151°0'0"W
150°45'0"W
70°25'0"N
70°20'0"N
70°15'0"N
70°10'0"N
N
Map #:
2.1-1
ConocoPhillips
Alaska, Inc
Title:
Fish Creek and Ublutuoch River Development Setback Area
Modified NEPA Analysis Document
GMT2 Development Project
Legend
National Petroleum Reserve Alaska (NPR-A)
Colville River Special Area
Teshekpuk Lake Special Area
GMT2 Project Area
River Setback Area
Fish Creek 3mi, Colville and Ublutuoch River 0.5mi
GMT2 Proposed Infrastructure
Alternative A Infrastructure
GMT2 Access Road
GMT2 Pipeline (All Alternatives)
GMT2 Facility
GMT2 Alternatives D1 and D2 Infrastructure
GMT2 Facilities
Proposed Permitted Infrastructure
(not part of GMT2)
Pipeline
Road
Facility
Existing Infrastructure
Pipeline
Road
Facility
Native Surface Land Ownership
Native Corporation Patent and Interim Conveyed
Native Corporation Selected
Private Native Allotment
Date: 8/12/2015
0 1 2 4
Mile
Alaska State Plane 4, NAD83
Map Area
Data Sources:
1. CPAI 2015c. Infrastructure Plans
2. BLM 2015f, SDMS
3. USGS 2015a, NHD
Teshekpuk Lake
Special Area
Fish Creek
(Uvlutuuq)
Fish Creek
(Uvlutuuq)
Judy Creek
(Iqaliqpik)
Ublutuoch River
(Tigmiaqsiugvik)
Colville River
Special Area
Colville River
(Kuukpik)
Colville River
(Kuukpik)
GMT1
GMT2
CD1/ACF
CD2
CD3
CD4
CD5
Nuiqsut
ASRC
Mine Site

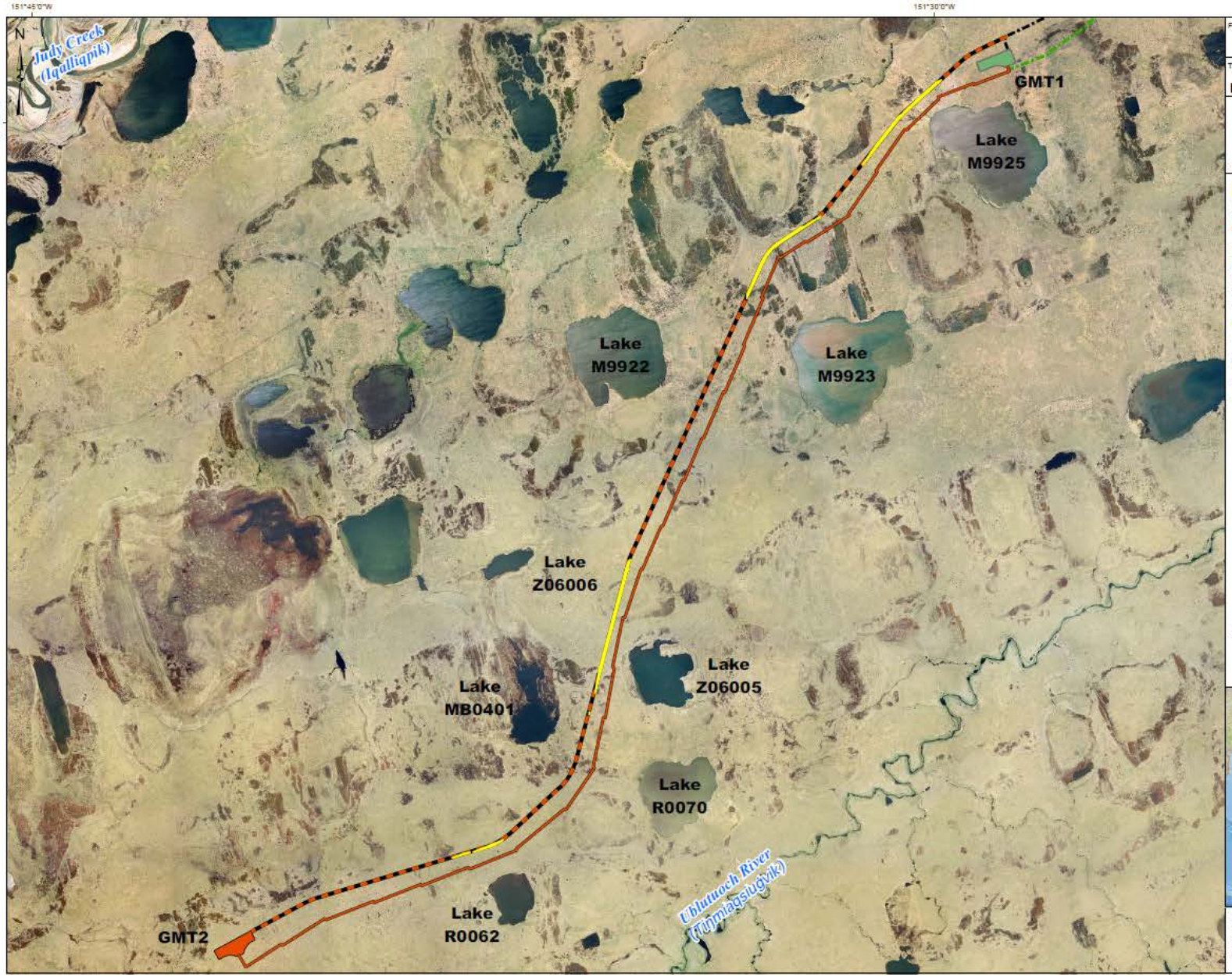


Figure #:
2.5-2

ConocoPhillips
Alaska, Inc

Title:
Alternative A: Proposed Projects Road Segments within 500 ft of Pipeline

Modified NEPA Analysis Document
GMT2 Development Project

Legend

- Road Segments within 500ft of Pipeline

Alternative A Infrastructure

- GMT2 Access Road
- GMT2 Pipeline
- GMT2 Alternative A Drillpad Facility

Proposed Permitted Infrastructure
(not part of GMT2)

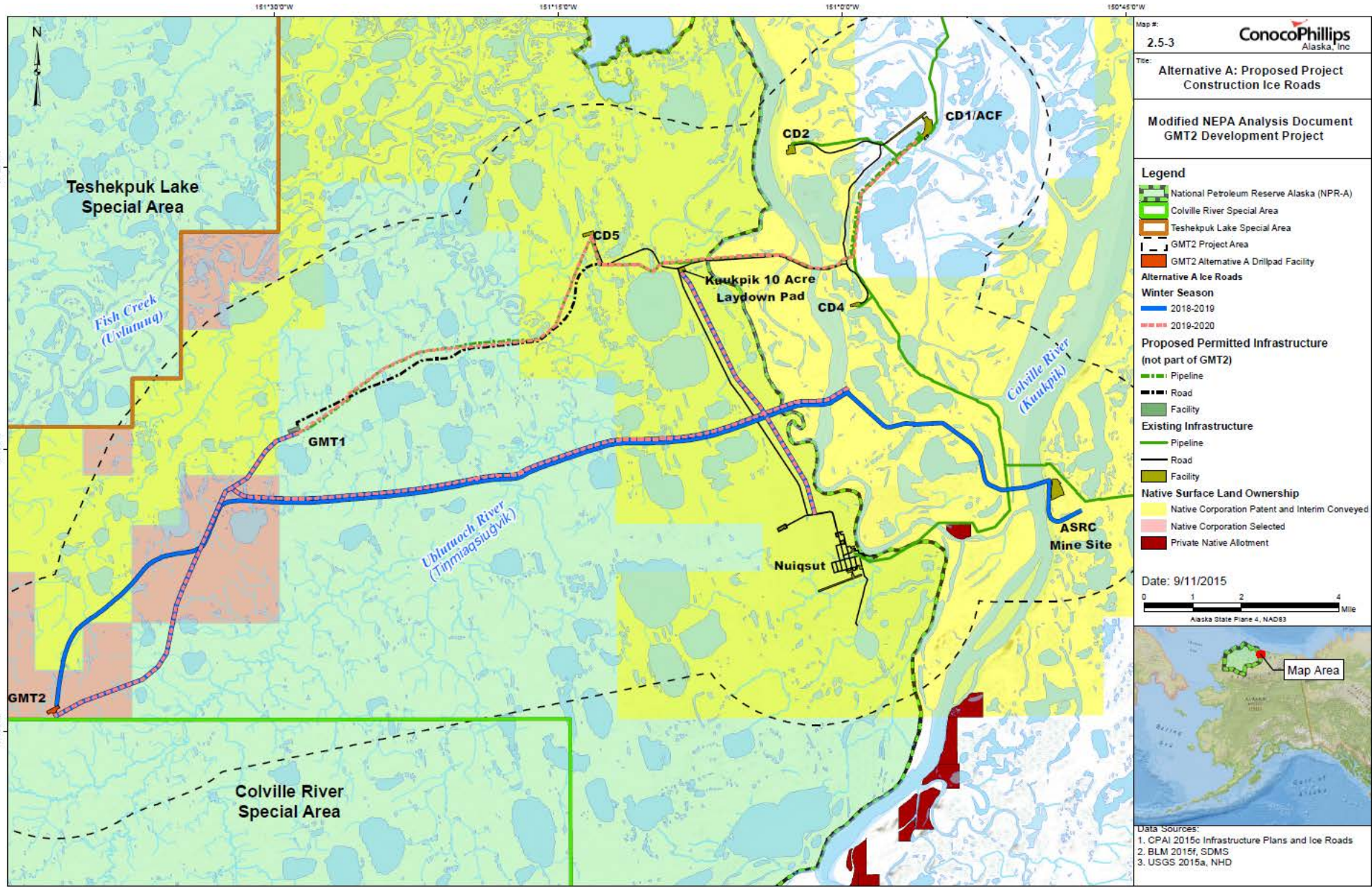
- Pipeline
- Road
- Facility
- GMT2_In_A483 Pipeline
- GMT2_In_A483 selection

Date: 9/11/2015

0 0.25 0.5 1 Mile

Alaska State Plane 4, feet, NAD83

Data Sources:
1. CPAI 2015c, Infrastructure Plans
2. MJM Research. 1999-2013, Lake Studies
4. USGS 2015a. NHD


Map #:
2.5-3
ConocoPhillips Alaska, Inc
Title:
Alternative A: Proposed Project Construction Ice Roads
Modified NEPA Analysis Document
GMT2 Development Project
Legend
National Petroleum Reserve Alaska (NPR-A)
Colville River Special Area
Teshekpuk Lake Special Area
GMT2 Project Area
GMT2 Alternative A Drillpad Facility
Alternative A Ice Roads
Winter Season
2018-2019
2019-2020
Proposed Permitted Infrastructure
(not part of GMT2)
Pipeline
Road
Facility
Existing Infrastructure
Pipeline
Road
Facility
Native Surface Land Ownership
Native Corporation Patent and Interim Conveyed
Native Corporation Selected
Private Native Allotment
Date: 9/11/2015
0 1 2 4 Mile
Alaska State Plane 4, NAD83
Map Area
Data Sources:
1. CPAI 2015c Infrastructure Plans and Ice Roads
2. BLM 2015f, SDMS
3. USGS 2015a, NHD
N
151°30'0"W
151°15'0"W
151°0'0"W
150°45'0"W
70°20'0"N
70°15'0"N
70°10'0"N
Teshekpuk Lake Special Area
Fish Creek (Uvlutuuq)
CD2
CD1/ACF
CD5
Kuukpik 10 Acre Laydown Pad
CD4
Colville River (Kuukpik)
GMT1
Ublutuoch River (Tinmiaqsiugvik)
Nuiqsut
ASRC Mine Site
GMT2
Colville River Special Area