2. PROJECT DESCRIPTION REVISIONS

2.1 PROJECT OVERVIEW

The Alaska Stand Alone Pipeline (ASAP) project comprises a Gas Conditioning Facility (GCF) near Prudhoe Bay capable of producing an annual average of 500 million standard cubic feet per day (MMSCFD) of utility-grade natural gas; a buried, 36-inch, 727-mile-long, 1,480-pound per square inch gauge (psig) subsurface natural gas pipeline connecting the GCF to the existing ENSTAR Natural Gas Company (ENSTAR) pipeline system in the Matanuska-Susitna Borough (MSB); and a buried, 12-inch, 29-mile-long, 1,480-psig, subsurface lateral line connecting the mainline to Fairbanks (AGDC, 2014a, b). The pipeline system will be designed to transport utility-grade natural gas, making access to gas possible for communities, government entities, and natural resource development projects. A summary of project components and revisions, including Right-of-Way (ROW) features, is provided in the ASAP Plan of Development (POD) (AGDC, 2014b) and in this section of the EED.

The proposed pipeline will typically be buried with a minimum cover of 30 inches and a bottom-of-ditch depth of 6 feet, except at fault crossings, elevated bridge stream crossings, pigging facilities, and Mainline Block Valve (MLBV) locations. The ASAP route will generally parallel the Trans-Alaska Pipeline System (TAPS) and Dalton Highway corridor to near Livengood, northwest of Fairbanks. At Livengood, the route will continue south, to the west of Fairbanks and Nenana. The pipeline will bypass Denali National Park and Preserve (DNP&P) to the east and will then generally parallel the Parks Highway corridor to Willow, continuing south to its connection with ENSTAR's distribution system at Mile Post (MP) 39 of the Beluga Pipeline southwest of Big Lake (Figure 2-1). The Fairbanks Lateral tie-in will be located approximately 2 miles south of the Chatanika River, tying in at MP 439 of the mainline. From the mainline tie-in, the Fairbanks Lateral pipeline will traverse east over Murphy Dome, following the Murphy Dome and Old Murphy Dome Roads, and then extend southeast into Fairbanks (Figure 2-2).

Since the publication of the Final Environmental Impact Statement (FEIS) (USACE, 2012b), the ASAP Project has undergone two major conceptual design changes. The first is a change in the treatment or conditioning of the North Slope gas that removes heavier hydrocarbons and Natural Gas Liquids (NGL). This change in the chemical composition of the gas transported through the line will make it utility-ready, and, therefore, more accessible to communities along the line. The second is a change in the way that West Dock at Prudhoe Bay will be used during the construction process, including winter dredging of a navigational channel, disposal of dredge spoils on bottom-fast ice, an increase in the number of barges delivering the GCF modules into port, West Dock causeway and port modifications, and use of a temporary barge bridge that will enable module transporters to bypass the weight-limited causeway bridge and deliver modules to their specified location. In addition to these two changes in conceptual design, Alaska Gasline Development Corporation (AGDC) proposes several design refinements, some of which result from the change in conceptual design.

Figure 2-1 Alaska Stand Alone Pipeline Route

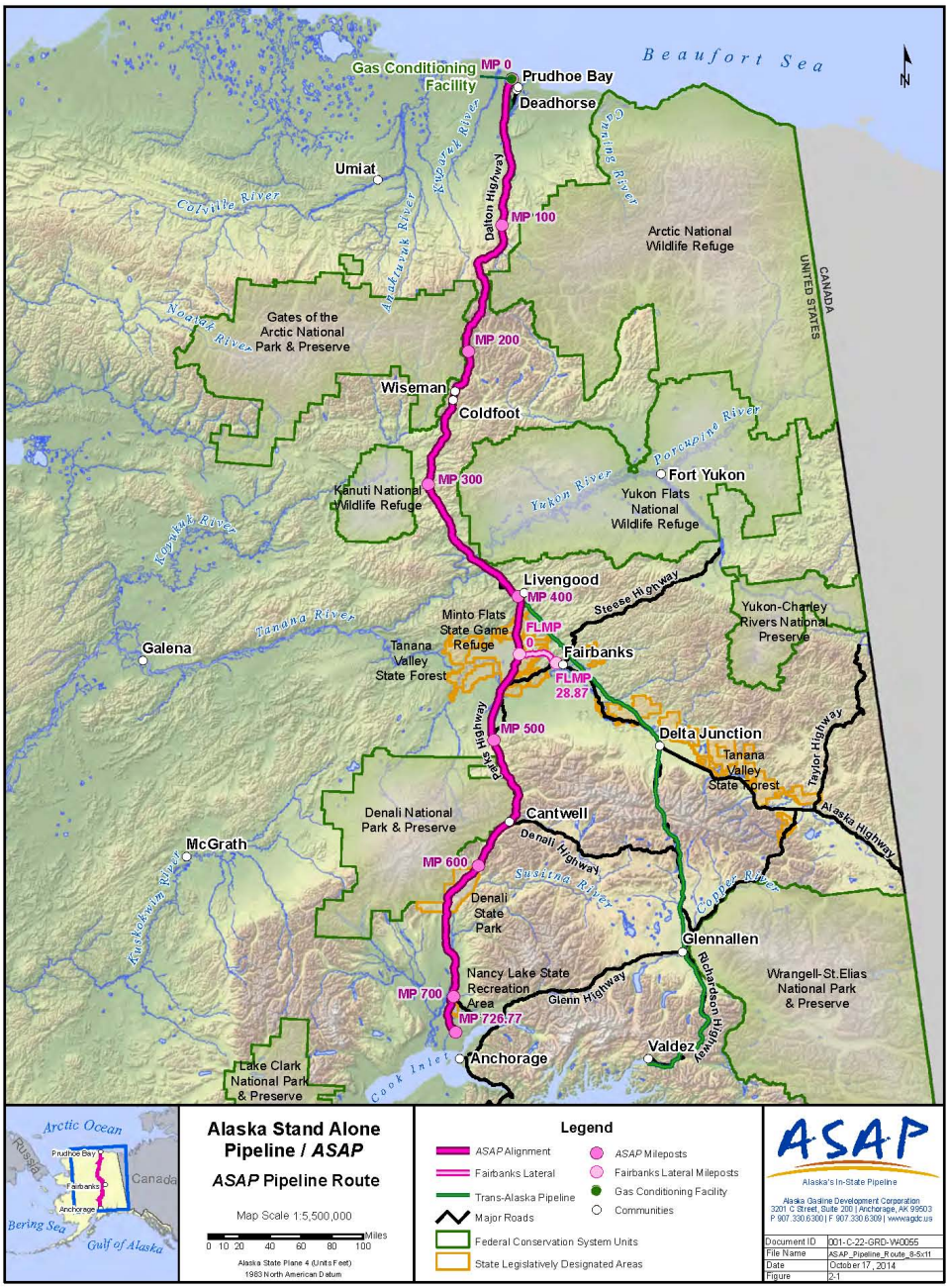
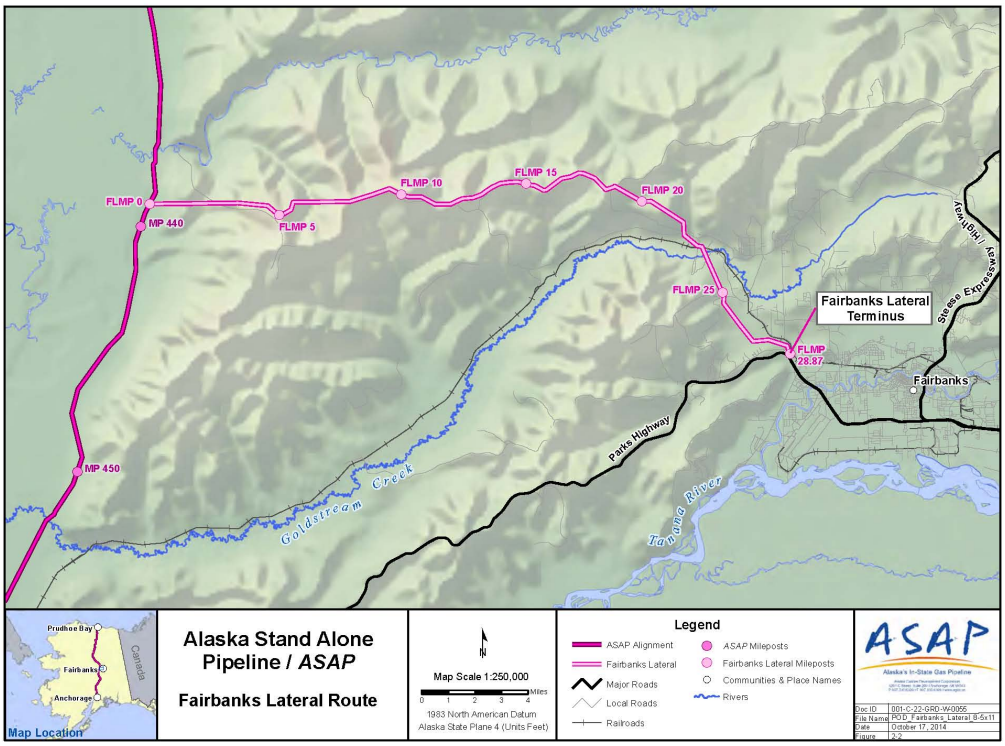


Figure 2-2 Fairbanks Lateral Route



2.2 PROJECT CONCEPTUAL DESIGN CHANGES

The conceptual design changes that occurred between the publication of the FEIS (USACE, 2012b) and the Joint Application for Permit (AGDC, 2014a) are described in Table 2-1, along with additional project design refinements.

Table 2-1 Summary of Alaska Stand Alone Pipeline Conceptual Design Changes and Design Refinements

ITEM	FEIS (USACE, 2012b)	JOINT APPLICATION FOR PERMIT (AGDC, 2014a)
Conceptual Design Changes		
Gas Composition	Enriched Gas • Contains NGLs • Requires higher-pressure, dense-phase gas pipeline • Requires multiple compressor stations • Requires NGL extraction facility to make gas accessible to communities	Lean (Utility-grade) Gas • 89 mole % methane; no NGLs • Transport of preconditioned gas for general use • Utility-grade gas does not require additional facilities to make gas accessible to communities
West Dock at Prudhoe Bay	No Modification Required • 9-barge sealift importing GCF components and materials • Stick-build facility from smaller modular components onsite	Modification Required • 23-barge sealift importing prefabricated modules • Winter dredging of a navigation channel and turn basin at West Dock • Nearshore disposal of dredge material on bottomfast sea ice • Modification to DH3 berths and widening of the causeway road • Temporary bridge composed of two ballasted barges to facilitate offload and transport of large modules (bypass of weight-limited causeway bridge)
Design Refinements		
GCF-CGF Connection	• Two feeder lines (natural gas and NGL) and two return lines (undefined diameter) • Connecting lines were described as a Connected Action • Four lines supported on 17 VSMs spaced 60 feet apart; approximately 1,000 feet of line required	• One natural gas feeder line, one 8-inch CO_2 return line, one 3-inch liquid return line, and an interface module • Design has advanced to allow connecting lines to be assimilated into the Project Description • Three lines supported on 169 VSMs, spaced 25 feet apart; approximately 4,200 feet of line required

Mainline Characteristics	• 737 miles
	• 24-inch diameter
	• 2,500 psig
	• ROW corridor, as follows:
	  ○ Construction: A 100-foot-wide ROW for the full length of the pipeline (9,508 acres; includes operational footprint)
	  ○ Operations: 52-foot-wide ROW on federal lands, and 30-foot-wide ROW elsewhere for the full length of the pipeline (3,315 acres)
	• Coating and double-jointing in Fairbanks
	• First 7 miles aboveground; remainder belowground
	• 29 mainline MLBVs
	• Topsoil layer stripped and replaced when possible
	• Pipeline generally within existing transportation corridor ROWs
		• 727 miles
		• 36-inch diameter
		• 1,480 psig
		• ROW corridor, as follows:
		  ○ Construction: A 120-foot-wide ROW for full length of the pipeline except where there is a collocated permanent facility (10,515 acres; includes operational footprint)
		  ○ Operations: A 53-foot-wide ROW for full length of the pipeline except where there is a collocated permanent facility (4,664 acres)
		• Coating and double-jointing prior to arrival in Alaska
		• Buried along entire route, except at elevated bridge crossings, fault crossings, pigging facilities, and valves
		• 39 mainline MLBVs (location changes)
		• Topsoil layer stripped and replaced on agricultural lands

ITEM	FEIS (USACE, 2012b)	JOINT APPLICATION FOR PERMIT (AGDC, 2014a)
		• Pipeline largely outside of existing ROWs; alignment shifts include North Slope, Anderson/Clear, and Nancy Lake State Recreation Area
Fairbanks Lateral Characteristics	• 34 miles • Routed through Goldstream Valley along the ARR route • 2 Fairbanks Lateral MLBVs; ROW corridor as follows: ○ Construction: A 100-foot-wide ROW for the full length of the pipeline (417 acres; includes operational footprint) ○ Operations: A 52-foot-wide ROW on federal lands, and 30-foot-wide elsewhere for the full length of the pipeline (125 acres)	• 29 miles • Routed along Murphy Dome and Old Murphy Dome Roads • 1 Fairbanks Lateral MLBV; ROW corridor, as follows: ○ Construction: A 120-foot-wide ROW for full length of the pipeline except where there is a collocated permanent facility (415 acres; includes operational footprint) ○ Operations: A 53-foot-wide ROW for full length of the pipeline except where there is a collocated permanent facility (185 acres)
Support Facilities	• GCF (69 acres for GCF pad; additional GCF facilities undefined in acreage) • Multiple compressor stations • Straddle Plant at Fairbanks Lateral • NGL extraction facility at Pt. Mackenzie	• GCF shifted to the west; pad increased in size, with additional GCF facilities defined and quantified (total of 117 acres) • Compression incorporated into GCF
Stream Crossings[a.]	Note: Stream crossing modes are preliminary and do not include access road crossings • Total waterbody crossings: 515 • Total anadromous waterbodies: 75 • Preferred Alternative for Yukon River Crossing: New Suspension Bridge • Crossing methods: ○ HDD: 41 ○ Open Cut/Isolated Open Cut: 470 ○ Bridge: 4	Note: Stream crossing modes are preliminary and remain under review by AGDC; access road crossings not included • Total waterbody crossings: 359 (Note: This number increased to 393 following recent field and GIS assessments; however, these numbers do not reflect this update) • Total anadromous waterbodies: 61 • Preferred Alternative for Yukon River Crossing: HDD • Crossing methods: ○ HDD: 10 ○ Isolated Open Cut: 190 ○ Open Cut: 155 ○ Bridge: 4
Material Sites and Volume[b.]	• 546 existing potential sites • 13.1 MCY required for preliminary features and facilities that were defined; expectation that this number will increase as features became defined / quantified	• 162 potential sites, including: ○ 71 new sites ○ 91 existing sites • 33.2 MCY (trending downward as material needs become better defined and quantified)
PSY	• 26 PSY locations	• 29 PSY locations
Construction Camps and Workforce [b.]	• 15 camp locations (camp capacity in parentheses, if available), including: ○ Prudhoe Bay ○ Franklin Bluffs (500) ○ Happy Valley (500) ○ Galbraith Lake (500) ○ Atigun (250) ○ Chandler (500) ○ Coldfoot (500) ○ Old Man (500) ○ Seven Mile (500)	• 13 camp locations (camp capacity in parentheses): ○ GCF/Prudhoe Bay (800) ○ Franklin Bluffs (600) ○ Happy Valley (1,000) ○ Galbraith Lake (1,000) ○ Dietrich (1,000) ○ Prospect (600) ○ Five Mile (1,000) ○ Livengood (1,000) ○ Dunbar (600)

ITEM	FEIS (USACE, 2012b)	JOINT APPLICATION FOR PERMIT (AGDC, 2014a)
	○ Livengood (500) ○ Nenana (500) ○ Healy (500) ○ Cantwell (500) ○ Chulitna Butte (500) ○ Sunshine (500) • Total camp capacity: 6,750 + Prudhoe Bay (undetermined) • Mainline Construction: 5,500 employees • GCF Construction: 900 employees • Operations: 50-75 employees	○ Healy (1,000) ○ Cantwell (600) ○ Swan Lake (1,000) ○ Rustic Wilderness (1,000) • Total camp capacity: 11,200 • Mainline Construction: 6,000 employees • GCF Construction: 500+ employees • Operations: 240 employees
Access Roads [b.]	• 133 access roads; additional roads not yet defined or quantified in acreage • 91 new roads; additional roads not yet defined or quantified in acreage • 42 existing roads; additional roads not yet defined or quantified in acreage	• 513 access roads ○ 341 new roads ○ 172 existing roads
Transportation and Equipment [b.]	• 3,800 rail cars of pipe • 9,000 truckloads of pipe • Standard pipeline construction equipment list	• 6,000 rail cars of pipe • 17,700 truckloads of pipe • Revised equipment list
Project Footprint [b.]	• Total Project Footprint: Undefined ○ Permanent Impact for Facilities Defined and Quantified: 4,149 acres ○ Additional Temporary Impact for Facilities Defined and Quantified: 10,852 acres[c.] ▪ GCF Pad: 68.7 acres ○ Material Site Investigation Areas not yet defined	• Total Project Footprint (less material sites): 16,393 acres ○ Permanent Impact: 9,838 acres ▪ GCF Facility Pad: 96.6 acres (does not include 20.1 acres for associated GCF facilities) ○ Additional Temporary Impact: 6,555 acres ○ Material Site Investigation Area acreage: 30,339 acres ▪ Total Material Site acreage expected is 10-20% of total Investigation Area

Notes:

a. New data from the 2014 field season and recent GIS analyses have recently allowed AGDC to revise the total number of stream crossings to 393 (387 on the mainline and 6 on the Fairbanks Lateral). All stream crossing modes reported in the FEIS (USACE, 2012b) and the Joint Application for Permit (AGDC, 2014a) were preliminary. Modes of crossing are currently under review and progressing towards a finalized list.

b. The FEIS (USACE, 2012b) acknowledged that 2012 information related to these categories was preliminary; 2014 data estimates are more accurate due to project refinement. Area calculations were summarized from geospatial data from the FEIS Geodatabase (CardnoEntrix, 2012).

c. The temporary impact defined in the FEIS (USACE, 2012b) includes some operational footprint acreage; therefore, some of the FEIS operational impact was also tallied as temporary impact.

ARR - Alaska Railroad
CGF - Central Gas Facility
CO_2 - Carbon Dioxide
DH - Dock Head
GIS - Geographic Information System
HDD - Horizontal Directionally Drilled
MCY - million cubic yards
psi - pounds per square inch
PSY - Pipe Storage Yard
VSM - Vertical Support Member

2.2.1 Gas Composition

The revised project will deliver utility-grade natural gas to Fairbanks and the Southcentral Region (Southcentral). Previously, ASAP proposed to transport gas enriched with NGL rather than utility-grade gas. The rich gas in the previous design would have contained propanes and butanes that could be collected at NGL offtake locations and sold; however, this would have required a higher compression line to maintain a single dense phase of gas that could not be used by standard utilities, requiring very expensive Natural Gas Liquid Extraction Plants (NGLEPs). The revised leaner gas scenario makes the gas more accessible to Alaskans along the pipeline route. Communities, as well as government entities and natural resource development projects, will have the potential to tap directly into ASAP. Communities that are not directly on the gas pipeline, but within reasonable proximity to it, could also conceivably benefit, should they opt to develop a spur line connecting an offtake location to a local distribution system.

The proposed project does not include producer facilities to transport, condition, compress, or cool the gas to pipeline specifications prior to delivery at the inlet to the GCF. Table 2-2 provides the chemical composition of natural gas to be transported under the revised ASAP Project design.

Table 2-2 Chemical Composition of Gas to be Transported

GAS COMPOSITION	CGF RESIDUE (MOLE %)	PIPELINE GAS AFTER CONDITIONING (MOLE %)
CO_2	12.00	2.75
Nitrogen	0.60	0.67
Methane	80.13	88.78
Ethane	5.35	5.85
Propane	1.65	1.69
I-butane	0.08	0.08
N-butane	0.13	0.12
Pentanes +	0.06	0.06
Total	100.00	100.00

2.2.2 West Dock at Prudhoe Bay

In the prior project design, West Dock at Prudhoe Bay was planned for routine use and was expected to receive nine barges containing the materials and small modular components required for the GCF to be stick-built onsite. Under the revised design configuration, the GCF will be constructed from prefabricated modules, which will require a change in the way that West Dock is used during the construction period. Twenty-three barges will be used to deliver the 53 modules that will comprise the GCF. Barges will have a maximum draft of 9 feet, a maximum capacity of 5,500 short tons (s/t), and will range in their length and width. Barges will be transported into Alaska waters by deep-draft marine tugs and will arrive at West Dock in two groups, beginning

late July of the year that GCF construction will begin. Shallow-draft tugs will then be used to move barges into place at DH3 of West Dock.

Self-propelled Modular Transporters (SPMTs) will be used to offload modules from the first two barges at DH3. These module loads will be staged directly adjacent to DH3 and will not cross the causeway bridge, which is weight-limited. These first two barges will be moved in place to form a temporary bridge that will be ballasted to the seafloor and attached to causeway infrastructure. The SPMTs carrying heavy loads will roll onto the temporary barge bridge and exit the causeway. The SPMTs will then transport modules to the proposed onshore staging location, and ultimately the designated GCF location approximately 6 miles to the southwest of West Dock, adjacent to the existing CGF. All barges will then rotationally move from their staging area offshore of West Dock to one of the three berths at DH3 and offload their modules before demobilizing individually. After the final SPMT crosses the temporary causeway bridge, barges will be disconnected, re-ballasted, and demobilized.

The SPMTs will be used to transport the modules from West Dock DH3 to a GCF staging area over new and existing gravel roads. Road upgrades will facilitate access and egress to and from the GCF site during both the construction and operational phases. Bridges and pipeline crossings may re-quire upgrades to accommodate transport of the modules.

The transport and offload of modules described herein will require modifications to DH3 and the West Dock causeway. Sheet pile and gravel abutments, and gravel ramps will be constructed to connect the barge bridge to the West Dock causeway on each side of the causeway breach to provide a mooring structure for access to the temporary bridge. Portions of the causeway road will be widened to a width of 60 feet to accommodate module transport. Breasting dolphins will be inserted the winter before transport to help in stabilizing the barge bridge. It will also require winter dredging of a navigational channel and turn basin to a 10 foot depth, winter channel screeding, and subsequent nearshore dispersal of dredge material over bottomfast ice, approximately 7.5 miles to the southeast of West Dock. These activities are described in detail in the ASAP Dredge and Disposal Plan (Attachment 3; AGDC 2014a). West Dock modifications will be left in place at the conclusion of module offload during the construction period, resulting in less disturbance to the surrounding environment. The breasting dolphin beams will be cut below the sediment surface and removed, and then covered with surrounding sediment.

2.3 DESIGN REFINEMENTS

In addition to the changes in the ASAP Project conceptual design, there were several less substantial design refinements since publication of the FEIS (USACE, 2012b), which are described in the following sections.

2.4 GAS CONDITIONING FACILITY

The GCF and camps (Construction Camp and Permanent Operations Camp) will be collocated with and constructed on gravel pads. The GCF will require a standalone construction camp, since lodging facilities in the area cannot accommodate the increased labor force expected for GCF construction. The temporary construction camp will be dismantled and removed following completion of GCF construction, commissioning, and startup. The GCF Permanent Operations Camp will be constructed during GCF construction, will remain permanently on site following the completion of construction, and will house onsite workers for the operational life of the GCF.

Each module will have a structural steel base and will be mounted on piles driven through the gravel pad. Modules containing process and utility equipment will generally be enclosed and heated to facilitate equipment Operations and Maintenance (O&M). Plant modules will be connected by utilidor modules that provide an enclosed, heated walkway for personnel and small utility trailers, as well as freeze and weather protection for interconnecting utilities and piping. Site preparation for the GCF is expected to be completed using gravel from existing gravel pit PUT-23, located approximately 3 miles from the GCF.

The GCF pad surface area proposed in the Joint Application for Permit (AGDC, 2014a) increased from 68.7 acres in the FEIS (USACE, 2012b) to 96.6 acres in the current proposal, with additional pad requirements of 20.1 acres for associated GCF facilities (116.7 acres total). The Prudhoe Bay Unit (PBU) will construct a skid-mounted module at the CGF to interface the piping from the GCF.

The FEIS (USACE, 2012b) discussed the construction and operation of aboveground pipelines connecting the GCF and the module at the CGF, which included a natural gas supply line, an NGL supply line, and two return lines. In the current design, the NGL line is eliminated. The remaining connecting lines, which were previously listed as a Connected Action in the FEIS, along with an interface module, have now been assimilated into the Project Description and are part of the ASAP proposal rather than a Connected Action.

The properties of the three remaining interconnect lines have been more fully defined since publication of the FEIS (USACE, 2012b). The GCF will receive natural gas from a 36-inch aboveground feed line from the existing CGF, which receives gas from the Central Compression Plant (CCP) and its point of origin in Prudhoe Bay fields. The two return lines are defined as an 8-inch CO_2 return line and a 3-inch liquid return line.

Previously, the diameter of the connecting lines were not defined, and it was assumed that one set of VSMs would support the lines. These VSMs were proposed as being 12 inches in diameter and 60 feet apart, yielding a total need of 17 VSMs over a 1,000 foot distance. The northwestern shift in the proposed GCF location, along with the smallest return line defined as having only a 3-inch diameter, has required a refinement to the VSM configuration. In the current configuration, all three lines will be installed on one set of VSMs placed 25 feet apart, spanning approximately 4,250 feet between the two facilities. This will result in an estimated 171 VSMs and a total surface area ground disturbance of 839 square feet (SF), an increase of 769 SF from the prior design. Similar to the

previous design, minimum vertical clearance of the VSMs will be 7 feet to allow for wildlife passage.

2.5 PIPE CHARACTERISTICS

2.5.1 Pipe Diameter, Pressure, and Operating Capacity

Instead of the 24-inch diameter pipe described in the FEIS, the revised ASAP Project will use a conventional pipe diameter of 36 inches for the mainline. The Fairbanks Lateral will remain a 12-inch-diameter pipe, as was described in the FEIS. These changes are largely driven by the change to gas composition. Since there is no need to maintain a single dense phase with both methane gas and NGL transported simultaneously, the gas can be transported in a larger pipe diameter with a lower pressure without intermediate compression.

The ASAP Maximum Allowable Operating Pressure (MAOP) will be 1,480 psig for both the mainline and Fairbanks Lateral. The mainline is expected to operate near MAOP and will transport approximately 500 MMSCFD, up to the Fairbanks Lateral tie-in. The Fairbanks Lateral is expected to transport a maximum of 60 MMSCFD. Differing weather conditions, maintenance needs, and other factors could cause day-to-day fluctuations in the gas flow rate. The Fairbanks Lateral could fluctuate more than the mainline, as needs for Fairbanks may be more weather—or season—dependent.

2.5.2 Pipe Wall Thickness

Table 2-3 identifies the pipeline location classes, Wall Thickness (WT), and MAOP for the mainline pipe, which is 36-inch outer diameter, gradeline pipe. The AGDC plans to use American Petroleum Institute X70 for the mainline pipe and X52 for the Fairbanks Lateral. AGDC will meet applicable U.S. Department of Transportation (USDOT) integrity management (49 Code of Federal Regulations [CFR] 192, Subpart O) and corrosion control requirements (49 CFR 192, Subpart I).

Table 2-3 Mainline Containment Pressure

LOCATION CLASS[a]	WT (INCHES)	MAXIMUM ALLOWABLE OPERATING PRESSURE FOR THE MAINLINE 36-INCH PIPE (psig)
Location Class 1 (Division 2)	0.527	1,480
Location Class 2	0.632	1,480
Location Class 3	0.758	1,480
Location Class 4	0.957	1,480

Notes:

(MBJ, 2014b)
[a]Location Class 1, Division 1 not used.

2.5.3 Pipe Burial

The pipeline will be aboveground only at specified locations, such as MLBVs, pigging facilities, and fault and bridge crossings. The ASAP buried line will vary in depth between 4 and 6 feet deep, meeting conditions of 49 CFR 192.327(a), "Cover." The bottom of the pipe ditch will often be about 6 feet deep, allowing for bedding, pipe installation, and overburden backfill.

In the FEIS (USACE, 2012b), the first 7 miles of pipe was buried, while the remaining 730 miles of mainline and 34 miles of Fairbanks Lateral belowground, except at the specified locations already mentioned. The current proposal is a refined design in which the first 7 miles are buried. The north-to-south configuration of the pipeline means that pipe buried under wetlands on the North Slope will run parallel to the direction of sheet water flow that is directed by the downward elevation gradient from the Brooks Range foothills north towards the Beaufort Sea. The north-south alignment of a buried pipe through wetlands will minimize impediments to the general direction of North Slope sheet water flow, and additional constructed mitigation measures, such as ditch plugs will be used to avoid a French drain effect, minimize impacts to wetlands, and promote slow regrowth of vegetation over time (that is, no permanent impact).

2.5.4 Anticipated Pipe Operating Temperature

The pipeline will remain an ambient temperature pipe, as noted in the FEIS. The gas will be no warmer than 30 degrees Fahrenheit (°F) when it enters the pipeline from the GCF on the North Slope. As part of the treating process to make utility-grade natural gas, the hot gas exiting the initial compression process step must be cooled to less than -12°F to facilitate proper treatment to remove CO_2 and H_2S within the GCF. As the gas goes through this treatment process, its temperature will rise to between 10°F. With this temperature range, the gas will be ready to enter the pipeline and be compatible with the ground temperatures expected in the northern sections of the route. The anticipated operating temperature changes along the route, seasonally and as a function of throughput. The pipeline operating temperature will be governed by the combined influence of Joule-Thompson cooling associated with gas pressure drop and pipe-wall heat transfer between the gas pipeline and surrounding soil. The pipeline will operate at below-freezing temperatures in predominantly permafrost terrains to protect the thermal stability of the surrounding ground. Similarly, the pipeline will be operate at above-freezing ambient temperatures in predominantly thawed settings so as not to create frost bulbs around the pipe that could lead to frost-heave displacement of the pipeline or adverse hydraulic impacts on drainages crossed by the pipeline. In areas of discontinuous permafrost, pipeline design will mitigate potential freezing of thawed ground or thawing of frozen ground

Maintaining the existing thermal regime is an important factor in limiting impacts to water resources and water-dependent resources. As described in the ASAP POD (found online at www.asapeis.com), the temperature of the proposed mainline and Fairbanks Lateral pipelines will change seasonally, with temperatures closely approaching seasonal temperatures of the predominant terrain.

2.5.5 Route Refinements

2.5.5.1 A Shorter, Straighter Route

The revised ASAP alignment is shown in Figure 1. Through optimization, the ASAP mainline decreased in length from miles to 727 miles (-10 miles). The Fairbanks Lateral decreased in length from 34 to 29 miles (-5 miles). The result of this route refinement is a shorter, straighter pipeline that is 15 miles shorter in overall length (756 miles in the Joint Application for Permit [AGDC, 2014a], as opposed to 771 miles in the FEIS [USACE, 2012b]).

2.5.5.2 Minimal Collocation with Existing Rights-of-Way

The ASAP Pipeline route will continue to generally parallel the TAPS and Dalton Highway corridor to near Livengood, northwest of Fairbanks. At Livengood, the mainline route will continue south, to the west of Fairbanks and Nenana. The pipeline will bypass DNP&P to the east and will then generally parallel the Parks Highway corridor to Willow, continuing south to its connection into ENSTAR's distribution system at MP 39 of the Beluga Pipeline southwest of Big Lake (Figure 2-1).

The Fairbanks Lateral tie-in will be located approximately 2 miles south of the Chatanika River at MP 439 of the mainline. From the mainline tie-in point, the Fairbanks Lateral pipeline will traverse east over Murphy Dome, following the Murphy Dome and Old Murphy Dome Roads, and then extend southeast into Fairbanks (Figure 2-2).

ASAP will meet the standards of 49 CFR 192, Transportation of Natural Gas and Other Gas by Pipeline: Minimum Federal Safety Standards. Construction outside of the highway ROW corridors accommodates a pipeline that is durable, safe, and economical and that meets USDOT and PHMSA regulations.

2.5.5.3 North Slope Western Shift

The GCF will be located approximately 5,500 feet northwest of the previously proposed location (Umiat Meridian, Township 11 N; Range 14 East; Sections 11 and 14 [U011N014E11 and U011N014E14]). The northernmost section of the mainline was also shifted several miles west of the previous alignment described in the FEIS. At MP 5 of the revised alignment, the previous and revised alignments begin to deviate. The deviation continues until MP 28 (revised alignment MP) where the two alignments rejoin. The maximum deviation west is 4.1 miles at MP 16.8 of the revised alignment, with an average shift of approximately 2 miles. From MP 31 to MP 44, the routes deviate again, though this is more minor at a maximum distance of 1.5 miles at MP 40. Between MP 56 and MP 63, there is another minor deviation with a maximum distance of 1.3 miles at MP 62.5. The North Slope shift is from MP 95.5 to MP 109.9. The maximum distance between revisions along this shift is 1.5 miles at Revision 6 MP 97.5.

2.5.5.4 Western Side of the Nenana River

The ASAP route was shifted to the western side of the Nenana River near the town of Anderson and Clear Air Force Base. At MP 469.5 of the revised route, the alignment forks west, diverting from the previous alignment and traveling for 26 miles down the western side of the Nenana River. There, it rejoins the previous alignment path at MP 495 (revised alignment MP). The previous route had traveled down the eastern side of the Nenana River. The maximum shift of the alignment was 5.1 miles at approximately MP 480.5 (revised alignment MP). Both alignments are nearly constantly equidistant from the Nenana River.

2.5.5.5 Nancy Lake State Recreation Area Western Bypass

Overall, the alignment proposed in the Joint Application for Permit more closely follows the boundary of Nancy Lake State Recreation Area than the route described in the FEIS. The route has moved closer to the boundary in two places: at MP 705.5, the alignment is now 40 feet from the boundary; and at MP 709.3, it is 115 feet from the boundary (AGDC, 2014a). Previously, the closest distance between Revision 5 and NLRA was 1,270 feet (USACE, 2012b).

2.5.5.6 Fairbanks Lateral

Previously, the Fairbanks Lateral was a 34-mile route tying into the mainline at Dunbar and traversing westward through Goldstream Valley. The previous route crossed 20 streams and followed the existing ARR transportation corridor. The revised Fairbanks Lateral alignment is shown in Figure 2-2. It is a 29-mile route following Murphy Dome and Old Murphy Dome Roads, crossing only 6 streams and terminating 1 mile west of the University of Alaska Fairbanks Campus.

2.6 SUPPORT FACILITIES

The change in gas composition has resulted in design refinements that will eliminate needs for compressor stations, a straddle and offtake facility at the Fairbanks Lateral tie-in, and the NGLEP at Cook Inlet. These facilities are no longer included in the Project Description.

2.7 STREAM CROSSINGS

The total number of centerline stream crossings in the FEIS was 515 (495 on the mainline, and 20 on the Fairbanks Lateral) (USACE, 2012b). The Joint Application for Permit proposes 359 stream crossings (353 on the mainline and 6 on the Fairbanks Lateral) (AGDC, 2014a), a number that was updated after 2013 field and GIS-based studies in summer 2013. Studies completed in the summer of 2014 refined this number further to 393 stream crossings (387 on the mainline and 6 on the Fairbanks Lateral). Ongoing studies are determining whether any of the off-ROW features will impact streams, as well as quantifying and characterizing access road stream crossings.

While modes of crossing have not yet been determined, USACE provided some preliminary crossing information in the Joint Application for Permit (AGDC, 2014a). A final list of stream crossing modes will be provided by AGDC in late 2014 or early 2015.

2.8 MATERIAL SITES AND VOLUME

The number of potential material sites under investigation in the FEIS was 546, and all were expected to be existing sites (USACE, 2012b). This number was refined to 162 potential sites (AGDC 2014a), although some of these were new material sites added to meet gravel needs in appropriate locations (71 new sites and 91 existing sites) (Table 2-1). AGDC expects to propose 70 to 85 material sites to meet construction needs.

Previously, the ASAP Project targeted 13.1 MCY of material for construction, but this number was expected to increase dramatically because it was based only on needs that were defined and quantified at that time. Since the FEIS (USACE, 2012b), the need for construction material has been calculated as 33.2 MCY. However, this amount is expected to decrease as the project design is refined. Material sources are continually being investigated.

2.9 CAMPS AND PIPE STORAGE YARDS

AGDC proposes to establish 29 pipe storage yards (PSYs) and 13 stationary worker camps to support construction. Ten of the stationary construction camp locations will be collocated with a PSY. The PSYs and stationary construction camps will primarily be located in previously disturbed areas that were used for construction of the TAPS, Alaska Railroad Corporation (ARRC) facilities, or for public events. Attachment 5 of the POD provides the attributes and locations for each of the PSYs and stationary construction camps.

Mobile construction camps (8.5 to 10 acres; short duration during the construction preparation phase) and stationary construction camps will be constructed in locations along the proposed mainline pipeline. Where possible, mobile construction camps will be located within previously cleared and disturbed areas. The use of mobile camps will be primarily limited to the construction preparation phase prior to the establishment of stationary construction camps.

Stationary construction camps will house proposed project personnel, including construction workers, management, agency staff, and support service personnel. Further, stationary construction camps will be used for fuel and equipment storage yards. The AGDC has proposed the use of 13 stationary construction camps that will each house between approximately 600 and 1,000 workers. These camps will range in size from 24 to 32 acres. Further, approximately 800 workers will be housed in the GCF construction camp in Prudhoe Bay.

2.10 ACCESS ROADS

Roads are necessary for transporting equipment, materials, and personnel to access the pipeline ROW MLBVs, camps, pipe storage yards, material sites, and water sources from existing roads. Access roads will consist of both newly constructed gravel roads, improved existing roads, ice roads, and snow roads. The number and location of access roads has become better understood and quantified in the Joint Application for Permit. The Project currently defines 533 access roads (133

defined previously in the FEIS). The total number of access roads described in the Joint Application for Permit (533) comprises 341 new roads and 172 existing roads (AGDC, 2014a).

Public roads will be used to transport equipment, materials, and personnel to the greatest extent possible where marine and rail transport are not available. The Elliot and Dalton Highways will be used north of Fairbanks, whereas the Parks Highway will be used between Fairbanks and the southern terminus of the pipeline. Other public access roads will be used to the greatest extent practicable to reduce the construction of temporary access roads.

The GCF module offload and construction will require road improvements between West Dock and the GCF pad, as well as new road construction from K-Pad at Prudhoe Bay to the GCF. Access roads will also be constructed from the GCF pad to material sites and from the GCF pad to the CGF.

Vehicles using the access roads during construction include semi-trailer trucks with lowboy flatbed trailers hauling tracked equipment, pipe trucks, dump trucks, crew buses, and heavy-duty passenger vehicles, such as pickup trucks or sport-utility vehicles.

Typical standard drawings for gravel access roads and culverts can be found in the POD at Attachment 1, Figure A1-8. All access roads are considered permanent project features.

2.11 PROJECT FOOTPRINT

The project footprint was not fully defined in the FEIS, although several components were quantified (Table 2-1; see GIS files in USACE, 2012b). The project was proposed to have 4,149 acres of permanent impact for known facilities, including a 68.7 acre GCF facility pad, and 10,852 acres of temporary impact, among other impacts not yet quantified. Material Site Investigation acreages were not determined at that time.

The revised project footprint proposed in the Joint Application for Permit was 16,393 acres of permanent and temporary impact, less material sites (Table 2-1; see GIS files in AGDC, 2014a). The permanent impact for the revised project was 9,838 acres, and the temporary impact was 6,555 acres. The permanent impact includes a 96.6 acre GCF pad and an additional 20.1 acres of associated GCF facilities. Material Site Investigation Areas totaled 30,339 acres, of which 10 to 20 percent could potentially meet projected material needs of 33.2 MCY.

2.12 REFERENCES

Alaska Gasline Development Corporation (AGDC). 2014a. *Alaska Stand Alone Gas Pipeline/ASAP – Joint Application for Permit.* Revised July 2014. http://asapeis.com/docs/Joint%20Application%20for%20Permit.pdf. Accessed October 9, 2014.

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