Quintillion Subsea Project – Supplemental Application Information

Block 18 & 19 – Project Description, Purpose, and Need

Quintillion Subsea Operations, LLC (Quintillion), is proposing to install a subsea fiber optic network (the Project) along the northern and western coasts of Alaska to provide high speed internet connectivity to six rural Alaskan communities (Oliktok Point, Barrow, Wainwright, Point Hope, Kotzebue, and Nome). The subsea fiber optic network will link with an existing North Slope terrestrial-based fiber optic line.

Fiber optic cable technology has the power to bring a wealth of opportunities to even the most remote of regions. Most villages in Alaska, including Point Hope, Wainwright, and Barrow, are dependent on high-cost satellite connectivity which has limited data transmission capabilities and is unreliable during bad weather events. Terrestrial-based broadband connectivity is available in Nome and Kotzebue, but limited bandwidth is available. Economic and resource development in these communities is constrained by the lack of true high-speed, reliable and affordable connectivity.

With the installation of this fiber optic cable rural Alaskans will experience increased access to education, health care, and delivery of government services; enhanced public safety and emergency response capabilities; and improved communication to businesses and residents, all of which are currently impeded by lack of broadband capacity. Fiber optic technology will provide tremendous amounts of bandwidth for a fraction of the cost of satellite services.

Upon its completion, the Quintillion Subsea Project will meet the needs identified by the Alaska Broadband Task Force (ABTF) as well as providing a tool for the communities to use for further economic growth. The 2015 ABTF final grant report recognized that in accordance with Federal Communications Commission (FCC) performance standards for upload and download speeds throughout the country, Alaska ranks near the bottom of all US states in some important broadband categories. The 2015 ABTF report recommends that rapid development of broadband access be prioritized. This project represents one of five principles chosen by the ABTF to guide further action (ABTF 2015).

Installation of fiber optic cable requires skills and qualification specific to this industry. While it is difficult to use local labor for this specialized work, Quintillion places a priority on local hire for work that is available. Quintillion encourages its contractors to use local labor at every opportunity.

The Quintillion Subsea Project will consist of a trunk line submerged along a 766-mile (1,233 km) route, with branch lines to onshore facilities in Nome, Kotzebue, Point Hope, Wainwright, Barrow, and Oliktok Point, Alaska (Appendix A - Figure M1). Branch lines will be 15 to 145 miles (25-233 km) long depending on the distance of each village to the trunk line (Appendix A - Figures M2-M4). Branch lines will connect to the trunk line at a Branching Unit (BU) where the cable is split. A repeater will be attached to the cable every 37 miles (60 km) or so to amplify the signal and prevent signal degradation. The fiber optic cable trunk and branch line system will be fabricated with six BUs, 25 repeaters, and splice boxes bundled with the fiber optic cable, and the submarine cable will be protected from damage by single or double armoring, depending on location. The fiber optic cable bundle will be less than 1.5 inches (37.5 mm) in diameter with the line widening to a maximum of 11.6 inches (296 mm) in diameter at each BU for a distance of 6.5 feet (1977 mm). To ensure power source redundancy, the fiber optic cable will be powered

by Power Feed Equipment at Nome, Kotzebue, and Oliktok Point. (See Appendix A for more information on cable, repeaters, and BUs).

When laying the cable on the seafloor the objective is to install the cable as close as possible to the planned route with the correct amount of cable slack to enable the cable to conform to the contours of the seabed without loops or suspensions. A slack plan will be developed that uses direct bathymetric data and a catenary modeling system to control the ship and cable pay out speeds to ensure the cable is accurately placed in its planned physical position. Where the burial assessment survey has determined that cable burial is possible, the cable will be buried. See Appendix B for vessel information).

Burial of the fiber optic cable will occur in marine waters where physical conditions or maritime use requires additional protection. A submarine plow, deployed from an installation vessel, will bury the cable into the seabed as the vessel progresses along the cable route. The plow will cut through the seabed, lift a triangular wedge of sediment and depress the cable into the cut trench. As the plow progresses forwards, this wedge of sediment is placed back into the trench to cover the cable. At no time is seabed sediment removed from the water during the cable installation activities. See Appendix B for plow information.

Because it is not feasible to bury the BUs, a maximum of four 19.6 x 9.8 foot (6 x 3 meter) concrete mattresses will be placed at each BU to protect them against potential ice scour impacts. Additionally one mattress will be placed at either end of the trunk line where a stubbed-off cable will extend from the Nome and Oliktok Point BUs. The total footprint for all 26 mattresses is 4,609.92 ft^2 (428 m^2). Mattress information can be found in the Appendix A.

When the cable gets close to the shore (1,000-5,000 feet (305-1,524 m), depending on location), the cable for the branch lines will be floated from the cable ship and pulled through an existing conduit which has been Horizontally Directionally Drilled (HDD). This type of cable landing helps to safeguard against beach erosion. [The HDD conduit was previously permitted under POA-2015-397 and is not a part of this permit application.] .

The cable will be pulled to a 12.6 x 6.6 x 8-foot (3.8 x 2 x 2.4 m) buried concrete vault called the Beach Manhole (BMH) where the cable will be anchored and transitioned to a terrestrial cable. Ongoing coordination by the design teams will consider additional alternatives to reduce the BMH size requirements. In Barrow and Nome, a gravel pad no larger than 150 by 150-feet (45 x 45m) will be required to be constructed in order to provide a foundation and access for the BMH. In Nome, an access road from Nome Council Road to the landing lease area will be constructed to allow access for installation and maintenance of the BMH. These two sites require gravel pad construction because they were unable to be sited on exiting gravel pads. See Appendix A for BMH Details.

A terrestrial conduit will be installed to connect the HDD pipe to the BMH. From the BMH, the terrestrial fiber optic cable will be routed underground in established right-of-ways to a local communications provider. See Figures T1-T9 for Terrestrial Routes. Conduits will be installed using directional boring where necessary or by trenching 36” deep along the terrestrial route (see Figure C-1.0 for Burial Details.). Trenching will be accomplished using either a backhoe, chain trencher, or an excavator. The unit will be either wheeled or track mounted, depending on the requirements of the terrain. After the trench is dug, the conduit is placed, and then the trench is backfilled in lifts with sidecast material. At major road crossings, utility crossings, and at select stream or river crossings, directional boring will be utilized for

placement of the conduit. Directional boring allows for a minimally intrusive method of conduit installation where traffic flow cannot be disrupted, or to prevent damage to stream beds or utilities (See Appendix A for a Stream and Drainage Cross Section).

HDD conduits for the cable landing will be in place prior to installation of the fiber optic cable. During marine installation, the end of the HDD conduit will be located using a magnetometer, and the fiber optic cable from the installation vessel will be threaded through the end of the conduit. Once the conduit is located, jetting of the sediment by a diver or using a Remotely Operated Vehicle (ROV) will occur to unearth the end of the HDD conduit. Approximately 3-6 feet of sediment (0.9-1.8 m) is anticipated to be covering the 6 inch (152 mm) diameter conduit. The total area to be jetted is anticipated to be no larger than 7' deep by 1' wide.

An ocean grounding will be required for the power feed to the submerged fiber optic cable. A grouping of buried electrodes, known collectively as System Earth, connect to both the marine and terrestrial ends of the cable in order to provide the ocean ground. The System Earth will be inside of a large steel Sea Earth Plate (SEP) which will be laid near the marine HDD exit point at Oliktok Point, Kotzebue, and Nome (Figure M1). The SEP is approximately 6.6 feet (2 m) in diameter, and weighs approximately one ton. The circular shape of the plate ensures good stability in the seabed. To install, sediment will be jetted to create a working area and the SEP will be laid on the seabed. The density of the SEP will cause it to self-bury. The total area to be jetted is anticipated to be no larger than 5' deep by 10' wide. Approximately 60% of the sediment will be jetted back into the working area. The seabed is expected to return to its original state after one or two tidal fluctuations.

The Fiber optic cable will be pulled through the conduit using 7 x 4.6 x 5-foot (2 x 1.4 x 1.5 m) buried concrete pull boxes and 12.6 x 6.6 x 8-foot (3.8 x 2 x 2.4 m) concrete vault manholes spaced approximately every 800 feet (244 m) and at every corner. The number of pull boxes and manholes required vary at each village.

At Kotzebue and Nome, existing communications provider buildings will be utilized to minimize construction impacts within the community and utilize the current infrastructure. Branch lines to Point Hope, Wainwright, and Barrow will require installation of a modular communications building and a separate backup generator structure with a double-walled fuel storage tank. The communication buildings will be 14 x 24 feet with a 9-foot ceiling (4.2 x 7.3 x 2.7 m) and the generator building will be 10 x 16-feet with an 8-foot ceiling (3 x 4.8 x 2.4 m). Point Hope, Wainwright, and Barrow communications buildings will make use of existing gravel pads. Pads will be excavated, foundations installed per design drawings, and backfilled. The Communication Equipment building and backup Generator structure will be placed on these foundations that will be constructed using pre-cast 12 inch (305mm) concrete beams atop steel grillage buried 12-18 inches (305-457mm) in depth. Electricity will be routed to the buildings using the existing electrical grid. Water and sewer will not be required.

Placement of the cable and construction of associated onshore infrastructure is planned for 2016 and will start upon approval of this permit. Quintillion anticipates that the cable will be live in the first quarter of 2017 or earlier if possible.

Civil work to be completed as part of this project includes the following:

Marine Work

- Placement and burial of fiber optic cable trunk and branch lines.
- Placement of a maximum of four concrete mattresses at each BU and one concrete mattress each at the Nome and Oliktok stubs.
- Post-lay application of split, articulated pipe will be used to protect the cable between the sea end of the HDD pipe and the beginning of plowing. The length of articulated pipe will vary by site and will be determined by where plowing can begin at that site.
- Pulling of the fiber optic cable to the BMH and anchor clamping.
- Install a 6.6-foot diameter System Earth (grounding for the cable system) at Oliktok, Kotzebue, and Nome.

See Appendix A for more details.

Terrestrial Work

At each village:

- Installation of the BMH
- HDD or trenching of terrestrial route and installation of conduit, concrete pull boxes and concrete vaults.
- Pulling of terrestrial fiber optic cable through the conduit to the communications building

Nome:

- Construct a 150 x 150-foot (45.7 x 45.7 m) gravel pad and 95 x 70-foot (28.9 x 21.3 m) gravel driveway for siting of the BMH

Kotzebue:

- Install fiber optic cable into an existing communications building
- Install 10 x 16-foot (3 x 4.8 m) backup generator building with doubled wall fuel tank and install power cable from it to the existing communications building.

Point Hope:

- Excavate and backfill existing gravel pad to grade beam as foundation for the communications building and back-up generator building
- Install modular structure for 14 x 24 (4.2 x 7.3 m) communications building
- Install modular structure for 10 x 16 (3 x 4.8 m) backup generator building
- Install doubled-walled fuel tank

Wainwright:

- Excavate and backfill existing gravel pad to place foundation and modular structures for the communications building and the back-up generator building.
- Install modular 14 x 24 ft (4.2 x 7.3 m) communications building
- Install modular 10 x 16 ft (3 x 4.8 m) backup generator building

- Install doubled-walled fuel tank

Barrow:

- Construct 150 x 150-foot (46 x 46m) gravel pad for siting of the BMH.
- Excavate and backfill existing gravel pad to place foundation and modular structures for the communications building and the back-up generator building.
- Install modular 14 x 24 ft (4.2 x 7.3 m) communications building
- Install modular 10 x 16 ft (3 x 4.8 m) backup generator building
- Install double-walled fuel tank

Oliktok Point:

- Install a new communication equipment building. Currently, the final size of the building has not been determined. An area 25 X 100 feet on the existing gravel pad has been leased from Conoco Philips for this building, the BMH, and System Earth.
- Connect the new fiber optic cable from the new communications equipment building into the existing communication room located in the Saltwater Treatment Plant

Block 21 – Types of Materials Being Discharged and the Amount of Each Type in Cubic Yards

This project will involve the sidecasting and replacement of approximately 467,749 cubic yards of seafloor within approximately 29.47 acres and 7,002 cubic yards of terrestrial native soils within approximately 6.02 acres of wetlands to allow cable installation. Unavoidable loss of approximately 1.19 acres of wetlands will occur as a result of permanent fill for this project. The quantities of materials being sidecast and backfilled and permanently filled is thoroughly described in Tables 1 through 35 for each project site.

TABLE 1: Sidecast/Fill Quantities Overview

Material Type	Sidecast/Fill Quantity (cubic yards)	Surface Area (acres)†
Undersea (Sidecast/backfill)	467,749.90	29.47
Undersea (Matresses/System Earth)	18.51	0.10
Terrestrial Wetlands (Sidecast/backfill)	7,002.67	6.02
Terrestrial Wetlands (Fill)	5738.89	1.19
TOTAL	**480,509.97**	**36.78**

†acreage rounded to next hundredth acre

MARINE BRANCH LINES

The quantity of undersea disturbance is based on HD3 plough specification for fiber cable spurs from the backbone fiber to individual communities. We assumed the use of the largest plow blade available (0.66 feet (7.87 inches)) to determine the width and depth of the ocean trench. Buried cable placement is on average 9.84 feet (118.08 inches).

OLIKTOK SPUR – LENGTH 47.26 MILES (249,532.8 FT)

TABLE 2: ESTIMATED QUANTITY OCEAN BED

Spur Length	Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
249,533.8 feet	Native Soils	60,020.96	3.78
TOTAL		**60,020.96**	**3.78**

†acreage rounded to next hundredth acre

BARROW SPUR – LENGTH 16.86 MILES (89,020.8 FT)

TABLE 3: ESTIMATED QUANTITY OCEAN BED

Spur Length	Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
89,020.80 feet	Native Soils	21,412.47	1.35
TOTAL		**21,412.47**	**1.35**

†wetland acreage rounded to next hundredth acre

WAINWRIGHT SPUR – LENGTH 19.34 MILES (102,115.2 FT)

TABLE 4: ESTIMATED QUANTITY OCEAN BED

Spur Length	Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
102,115.20 feet	Native Soils	24,562.11	1.55
TOTAL		**24,562.11**	**1.55**

†acreage rounded to next hundredth acre

POINT HOPE SPUR – LENGTH 16.78 MILES (88,598.4 FT)

TABLE 5: ESTIMATED QUANTITY OCEAN BED

Spur Length	Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
88,598.40 feet	Native Soils	21,310.87	1.34
TOTAL		**21,310.87**	**1.34**

†acreage rounded to next hundredth acre

KOTZEBUE SPUR – LENGTH 145.83 MILES (769,982.4 FT)

TABLE 6: ESTIMATED QUANTITY OCEAN BED

Spur Length	Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
769,982.40	Native Soils	185,206.43	11.67
TOTAL		**185,206.43**	**11.67**

†acreage rounded to next hundredth acre

NOME SPUR – LENGTH 122.23 MILES (645,374.4 FT)

TABLE 7: ESTIMATED QUANTITY OCEAN BED

Spur Length	Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
645,374.40	Native Soils	155,234.06	9.78
TOTAL		**155,234.06**	**9.78**

†acreage rounded to next hundredth acre

MARINE MATTRESSES/SYSTEM EARTH

A maximum of four concrete mattresses will be placed at each BU and one at each end of the stubbed-off (tail) end of the trunkline for a total of 26 mattresses. Additionally, three (3) ocean grounding plates (System Earth) will be required offshore at Oliktok Point, Kotzebue, and Nome.

TABLE 8: ESTIMATED QUANITIY OF OCEAN BED

Dimensions		Description	Quantity (square yards)	Surface Area (acres)†
Length	Width			
19.6’	9.8’	26 Concrete Mattresses	512.21	0.10
N/A	6.6’ diameter	3 System Earth Plates	102.63	0.00
TOTAL			**512.21**	**0.10**

†wetland acreage rounded to next hundredth acre

TERRESTRIAL COMPONENTS

OLIKTOK

TABLE 9: ESTIMATED QUANTITIES IN UPLANDS

Upland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
0+00	1+00	Native Soils	33.33	0.03
TOTAL			**33.33**	**0.03**

†acreage rounded to next hundredth acre

BARROW

TABLE 10: ESTIMATED QUANTITIES IN ESTUARINE AND MARINE WETLANDS

Wetland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
0+00	73+00	Native Soils	2,433.33	2.51
TOTAL			**2,433.33**	**2.51**

†wetland acreage rounded to next hundredth acre

TABLE 11: ESTIMATED MANHOLES QUANTITIES IN WETLANDS

Conversion *by Project Station		Description	Quantity (cubic yards)	Surface Area (acres)†
Start	End			
0+00	-	Manhole	57.00	0.00*
8+00	-	Manhole	57.00	0.01
16+00	-	Manhole	57.00	0.01
24+00	-	Manhole	57.00	0.01
32+00	-	Manhole	57.00	0.01
40+00	-	Manhole	57.00	0.01
48+00	-	Manhole	57.00	0.01
56+00	-	Manhole	57.00	0.01
64+00	-	Manhole	57.00	0.01
72+00	-	Manhole	57.00	0.01
TOTAL			**513.00**	**0.09**

†wetland acreage rounded to next hundredth acre
*Beach Manhole will be constructed on Gravel Pad (Table 4) and have no impact to wetlands.

TABLE 12: ESTIMATED QUANTITIES OF WETLANDS CONVERTED TO UPLANDS

Dimensions		Description	Quantity (square yards)	Surface Area (acres)†
Length	Width			
150’	150’	BMH Gravel Pad	2,500	0.52
TOTAL			**2,500**	**0.52**

†wetland acreage rounded to next hundredth acre

WAINWRIGHT

TABLE 13: ESTIMATED QUANTITIES IN UPLANDS

Upland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
0+00	11+75	Native Soils	391.67	0.40
TOTAL			**391.67**	**0.40**

†acreage rounded to next hundredth acre

TABLE 14: ESTIMATED MANHOLES QUANTITIES IN UPLANDS

Manhole *by Project Station		Description	Quantity (cubic yards)	Surface Area (acres)†
Start	End			
0+00	-	Manhole	613.00	0.10
4+00	-	Manhole	57.00	0.01
8+50	-	Manhole	57.00	0.01
TOTAL			**727.00**	**0.12**

†acreage rounded to next hundredth acre

TABLE 15: ESTIMATED QUANTITIES IN FRESHWATER EMERGENT WETLANDS

Wetland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
11+75	24+00	Native Soils	408.33	0.42
TOTAL			**408.33**	**0.42**

†wetland acreage rounded to next hundredth acre

TABLE 16: ESTIMATED MANHOLES QUANTITIES IN WETLANDS

Conversion *by Project Station		Description	Quantity (cubic yards)	Surface Area (acres)†
Start	End			
12+50	-	Manhole	57.00	0.01
21+50	-	Manhole	57.00	0.01
23+50	-	Manhole	57.00	0.01
TOTAL			**171.00**	**0.03**

†wetland acreage rounded to next hundredth acre

POINT HOPE

TABLE 17: ESTIMATED QUANTITIES IN UPLANDS

Upland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
0+00	25+00	Native Soils	833.33	0.86
TOTAL			**833.33**	**0.86**

†acreage rounded to next hundredth acre

TABLE 18: ESTIMATED MANHOLES QUANTITIES IN UPLANDS

Manhole *by Project Station		Description	Quantity (cubic yards)	Surface Area (acres)†
Start	End			
0+00	-	Manhole	613.00	0.10
8+00	-	Manhole	57.00	0.01
14+00	-	Manhole	57.00	0.01
21+00	-	Manhole	57.00	0.01
25+00	-	Manhole	57.00	0.01
TOTAL			**841.00**	**0.14**

KOTZEBUE

TABLE 19: ESTIMATED QUANTITIES IN UPLANDS

Upland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
0+00	7+00	Native Soils	233.33	0.24
TOTAL			**233.33**	**0.24**

†acreage rounded to next hundredth acre

TABLE 20: ESTIMATED MANHOLES QUANTITIES IN UPLANDS

Manhole *by Project Station		Description	Quantity (cubic yards)	Surface Area (acres)†
Start	End			
0+00	-	Manhole	613.00	0.10
TOTAL			**613.00**	**0.10**

†acreage rounded to next hundredth acre

NOME

TABLE 21: ESTIMATED QUANTITIES IN UPLANDS

Upland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
8+50	9+00	Native Soils	16.67	0.02
19+75	20+00	Native Soils	8.33	0.01
21+75	22+50	Native Soils	25.00	0.03
27+50	27+90	Native Soils	13.33	0.01
34+50	38+50	Native Soils	133.33	0.14
TOTAL			**196.66**	**0.21**

†acreage rounded to next hundredth acre

TABLE 22: ESTIMATED MANHOLES QUANTITIES IN UPLANDS

Manhole *by Project Station		Description	Quantity (cubic yards)	Surface Area (acres)†
Start	End			
101+50	-	Manhole	57.00	0.01
109+00	-	Manhole	57.00	0.01
112+00	-	Manhole	57.00	0.01
120+00	-	Manhole	57.00	0.01
128+00	-	Manhole	57.00	0.01
134+50	-	Manhole	57.00	0.01
138+50	-	Manhole	57.00	0.01
146+00	-	Manhole	57.00	0.01
153+00	-	Manhole	57.00	0.01
156+50	-	Manhole	57.00	0.01
TOTAL			**570.00**	**0.10**

†acreage rounded to next hundredth acre

TABLE 23: ESTIMATED QUANTITIES IN SEASONALLY FLOODED EMERGENT / DECIDUOUS SHRUB MEADOW WETLANDS

Wetland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
0+00	4+25	Native Soils	141.67	0.15
15+50	19+75	Native Soils	141.67	0.15
20+00	21+75	Native Soils	25.00	0.03
22+50	27+50	Native Soils	166.67	0.17
50+00	55+80	Native Soils	193.33	0.20
TOTAL			**668.34**	**0.70**

†wetland acreage rounded to next hundredth acre

TABLE 24: ESTIMATED MANHOLES QUANTITIES IN SEASONALLY FLOODED EMERGENT / DECIDUOUS SHRUB MEADOW WETLANDS

Conversion *by Project Station		Description	Quantity (cubic yards)	Surface Area (acres)†
Start	End			
0+00	-	Manhole	57.00	0.01
16+00	-	Manhole	57.00	0.01
24+00	-	Manhole	57.00	0.01
TOTAL			**171.00**	**0.03**

†wetland acreage rounded to next hundredth acre

TABLE 25: ESTIMATED QUANTITIES IN SEASONALLY FLOODED EMERGENT MEADOW WETLANDS

Wetland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
4+25	8+50	Native Soils	141.67	0.15
9+00	15+50	Native Soils	216.67	0.22
31+60	34+50	Native Soils	96.67	0.10
38+50	47+00	Native Soils	283.33	0.29
83+50	90+00	Native Soils	216.67	0.22
TOTAL			**955.01**	**0.98**

†wetland acreage rounded to next hundredth acre

TABLE 26: ESTIMATED MANHOLES QUANTITIES IN SEASONALLY FLOODED EMERGENT MEADOW WETLANDS

Conversion *by Project Station		Description	Quantity (cubic yards)	Surface Area (acres)†
Start	End			
8+00	-	Manhole	57.00	0.01
32+00	-	Manhole	57.00	0.01
40+00	-	Manhole	57.00	0.01
88+00	-	Manhole	57.00	0.01
TOTAL			**228.00**	**0.04**

†wetland acreage rounded to next hundredth acre

TABLE 27: ESTIMATED QUANTITIES IN SEMIPERMANENTLY FLOODED EMERGENT MEADOW WETLANDS

Wetland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
27+90	28+50	Native Soils	20.00	0.02
28+60	31+60	Native Soils	100.00	0.10
70+40	82+80	Native Soils	413.33	0.43
TOTAL			**533.33**	**0.55**

†wetland acreage rounded to next hundredth acre

TABLE 28: ESTIMATED MANHOLES QUANTITIES IN SEMIPERMANENTLY FLOODED EMERGENT MEADOW WETLANDS

Conversion *by Project Station		Description	Quantity (cubic yards)	Surface Area (acres)†
Start	End			
80+00	-	Manhole	57.00	0.01
TOTAL			**57.00**	**0.01**

†wetland acreage rounded to next hundredth acre

TABLE 29: ESTIMATED QUANTITIES IN SATURATED DECIDUOUS SHRUB / EMERGENT SHRUB WETLANDS

Wetland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
47+00	50+00	Native Soils	100.00	0.10
55+80	68+00	Native Soils	406.67	0.42
TOTAL			**506.67**	**0.52**

†wetland acreage rounded to next hundredth acre

TABLE 30: ESTIMATED MANHOLES QUANTITIES IN SATURATED DECIDUOUS SHRUB / EMERGENT SHRUB WETLANDS

Conversion *by Project Station		Description	Quantity (cubic yards)	Surface Area (acres)†
Start	End			
48+00	-	Manhole	57.00	0.01
56+00	-	Manhole	57.00	0.01
64+00	-	Manhole	57.00	0.01
TOTAL			**171.00**	**0.03**

†wetland acreage rounded to next hundredth acre

TABLE 31: ESTIMATED QUANTITIES IN EXCAVATED SEASONALLY FLOODED-SATURATED DECIDUOUS SHRUB / EMERGENT SCRUB WETLANDS

Wetland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
68+80	70+40	Native Soils	53.33	0.06
TOTAL			**53.33**	**0.06**

†wetland acreage rounded to next hundredth acre

TABLE 32: ESTIMATED QUANTITIES IN EXCAVATED SATURATED DECIDUOUS SHRUB / SCRUB WETLANDS

Wetland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
82+80	83+50	Native Soils	23.33	0.02
TOTAL			**23.33**	**0.02**

†wetland acreage rounded to next hundredth acre

TABLE 33: ESTIMATED QUANTITIES IN EXCAVATED PERMANENTLY FLOODED POND WETLANDS

Wetland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
68+00	68+80	Native Soils	26.67	0.03
TOTAL			**26.67**	**0.03**

†wetland acreage rounded to next hundredth acre

TABLE 34: ESTIMATED QUANTITIES IN LOWER PERENNIAL STREAM WETLANDS

Wetland *by Project Station		Material Type	Sidecast Quantity (cubic yards)	Surface Area (acres)†
Start	End			
28+50	28+60	Native Soils	3.33	0.00
TOTAL			**3.33**	**0.00**

†wetland acreage rounded to next hundredth acre

TABLE 35: ESTIMATED QUANTITIES OF WETLANDS CONVERTED TO UPLANDS

Dimensions		Material Type	Quantity (square yards)	Surface Area (acres)†
Length	Width			
150’	150’	BMH Gravel Pad	2,500	0.52
95’	70’	Access Driveway	738.89	0.15
TOTAL			**3238.89**	**0.67**

†wetland acreage rounded to next hundredth acre

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

The surface area involving wetlands proposed for sidecasting and manhole installation activity is provided by community in Tables 1 through Table 35. None of the wetland acreage for installation of the fiber cable conduit will include the placement of fill. The 15 foot area is the work zone area that allows equipment and manpower to install the fiber optic cable. All trench excavation and fill activities will be temporary sidecast and no new fill will be placed into waters of the U.S. Manholes have an overall footprint of 190.5 sq. feet, with a "void" area in the middle of 152.4 cubic feet, which would add up to 57 cubic yards of gravel fill. The total estimated permanent disturbance of wetlands attributable to manholes is 10,018.84 square feet (0.23 acres).

There will be unavoidable loss of 1.19 acres of wetlands for the construction of the beach manhole pads in Nome and Barrow (see Tables 12 and 35) and unavoidable loss of 0.23 acres of wetlands due to installation of pull box vaults across all locations. The beach manhole sites in Nome and Barrow require gravel pads due to location constraints discussed further in the Applicant Proposed Mitigation Statement. The total permanent impacts to wetlands from marine and terrestrial construction are projected to be 36.78 acres (see Table 1).

ABR, Inc was contracted by the project to conduct a wetland delineation and functional assessment for the project. Due to weather constraints Nome was the only location where ground verification was feasible. See Appendix D for Nome Wetland Delineation Mapping.

Block 25 – Addresses of Adjoining Property Owners, Lesseees, Etc. Whose Property Adjoins the Waterbody

Point Hope and Wainwright are planned to have mailings to every PO Box. Please see Appendix E for the list of adjoining property owners for the remaining four villages.

Block 26 – List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

Below is a list of permits/authorizations that have been identified to date and is subject to change pending agency reviews.

Agency	Type Approval	ID Number	Date Applied	Date Approved	Date Denied
APDES	Discharge Permit	-	Pending Submittal	N/A	N/A
City of Kotzebue	Building Permit	-	Pending Submittal	N/A	N/A
City of Nome	Building Permit	-	Pending Submittal	N/A	N/A
DOT	Nome Driveway Permit	-	Pending Submittal	N/A	N/A
FCC	Cable Landing License	-	Pending Submittal	N/A	N/A
IHLC	Clearance for Point Hope, Wainwright, Barrow, and Oliktok Point	-	Pending Submittal	N/A	N/A
NOAA	Incidental Harassment Authorization – Marine Mammals	-	Submittal Target October 1st	N/A	N/A
Northwest Arctic Borough	Title 9 Permit	-	Pending Submittal	N/A	N/A
NSB	LMR Permit Oliktok Point	-	Pending Submittal	N/A	N/A
NSB	Village Permit Barrow	-	Pending Submittal	N/A	N/A

NSB	Village Permit Point Hope	-	Pending Submittal	N/A	N/A
NSB	Village Permit Wainwright	-	Pending Submittal	N/A	N/A
SHPO	Clearance	-	Pending Submittal	N/A	N/A
Sitnasuak Inc.	Land Use Permit	-	Pending Submittal	N/A	N/A
USFWS	Incidental Harassment Authorization – Polar Bear/Walrus	-	Submittal Target October 15th	N/A	N/A