ALASKA
Department of Transportation and Public Facilities

Southcoast Region Design & Engineering Services- Materials

FINAL GEOLOGY DATA REPORT

Adak Airport Runway, Taxiway, and Apron Pavement Rehabilitation

Project No. SFAPT00194

November 2, 2020

"Keep Alaska Moving through service and infrastructure"

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ADAK AIRPORT RUNWAY, TAXIWAY, AND APRON PAVEMENT REHABILIATION

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"Keep Alaska Moving through service and infrastructure"

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INTRODUCTION

The Alaska Department of Transportation and Public Facilities – Southcoast Region (AKDOT&PF) is proposing improvements for Runway 5/23, Taxiway A, and the airport apron in Adak, Alaska. At the request of design project manager, Charles Tripp, P.E., AKDOT&PF Northern Region Materials Section (NRMS) conducted, a geotechnical subsurface investigation on November 30-December 18, 2019. The investigation included a total of thirty-five (35) borings and twenty-two (22) Dynamic Cone Penetrometers (DCP). Boring depths were 2-20 feet below ground surface (bgs). This report serves as the Geology Data Report (GDR) and is intended to be included in the construction contract documents. It contains only factual information.

Runway 5/23 (Appendix A):

- 15 Test Holes
- 1 Wells (Appendix G)
- 1 Thermistor (Appendix H)

Taxiway A (Appendix B):

- 10 Test Holes
- 2 Wells (Appendix G)

Airport Material Site #1 (Appendix C):

- Geologic Mapping
- Rock Sampling

Airport Material Site #2 (Appendix C):

- 2 Test Holes

Upper Pit/Navy Quarry (Appendix C):

- 3 Test Holes
- Rock Sampling

Lower Pit/Tango Quarry (Appendix C):

- Rock Sampling

Road Pit/Tiny Smith Quarry (Appendix C):

- Rock Sampling

PROJECT SETTING

Site Description

Adak, formerly Adak Station, is a city located on Kuluk Bay on Adak Island, which lies within the Andreanof Islands group in the Aleutian Islands. The project area encompasses the active runway and taxiway at the airport and various material sites surrounding the city. The airport supports >300 aircraft operations a year, with an average of 28 per month: 62.4% scheduled commercial, 29.4% general aviation, and 8.2% military (12-month period ending January 2, 2011). The airport is one of the largest and most sophisticated airports in the Aleutian Islands and is the farthest western airfield with scheduled passenger air service in the entire United States. The purpose of the project is to understand the subsurface conditions in anticipation of a pavement rehabilitation for Runway 5/23, Taxiway A, and aprons at Adak Airport.

Figure 1: Vicinity map

Topography

Adak Airport resides at an elevation of 18 feet above mean sea level, with only minor changes in elevation along Runway 5/23 and Taxiway A. The city of Adak is located on Kuluk Bay and is bounded by irregular to rolling topography with low depressions and benches associated with glacial activity and erosion. Poor drainage conditions exist throughout the project area with ponding in ditches adjacent to the runway and taxiway.

Adak Island is characterized by four types of topography: rugged mountain areas, broad rolling lowland areas, modified volcanic cones, and narrow, irregular beaches backed by sea cliffs. The project area consists of rounded bedrock hills with isolated glacial steps, kettles, and exposures of bedrock -the more competent rock tends to be exposed on ridge tops, whereas glacial till, alluvial, and fluvial deposits cover zones of weaker rock in the valleys.

Tectonic Setting

The Aleutian Arc separates the North American plate and Bering Sea from the Pacific plate and Pacific Ocean. The tectonics in the area are controlled by the subduction of the Pacific plate under the North American plate. The central and western Aleutian Arc is structurally segmented into at least five separate blocks that have been rotated clockwise and undergone arc-parallel extension. Active and dormant volcanoes sit atop the narrow crest of the Aleutian Ridge that extends westward ~2200 km from the tip of the Alaska Peninsula to the Kamchatka Peninsula. Crustal dimensions in the central Aleutians (200 km wide, 30 km thick) likely represent an average across the entire arc, although arc width decreases westward to as narrow as 80 km.

The Aleutian megathrust has been responsible for some of the world's largest earthquakes, including a M8.2 earthquake southwest of Kodiak Island in 1938, a M8.6 in the Andreanof Islands followed in 1957, a M8.7 near the Rat Islands in 1965, and a M7.9 in 1996.

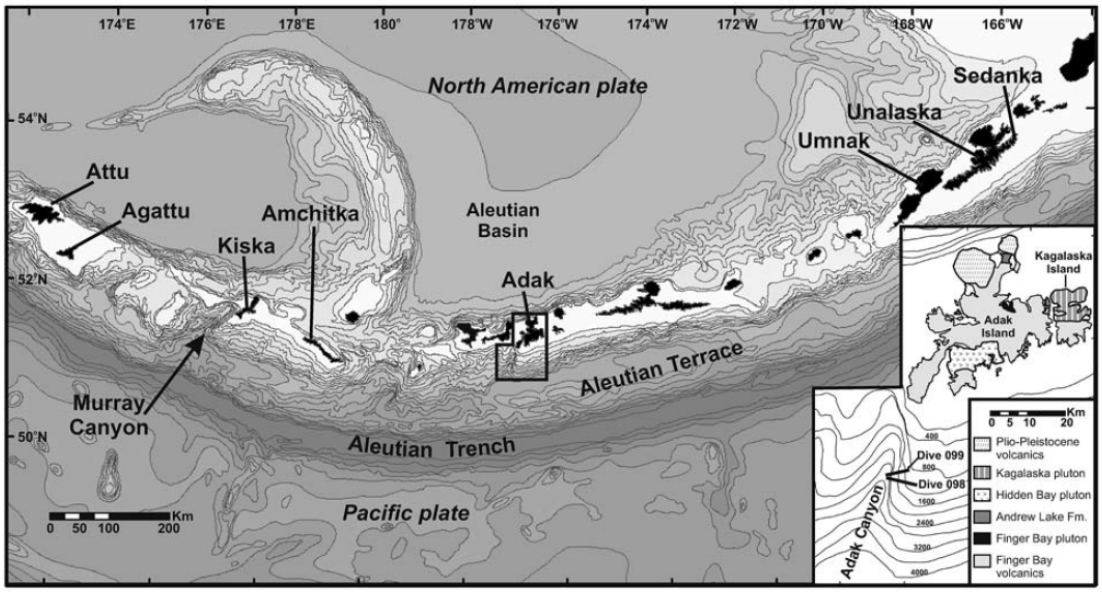


Figure 2: Bathymetric map of the Aleutian Islands. Inset shows enlarged view of the geology of Adak and Kagalaska Islands (Jicha et al., 2014).

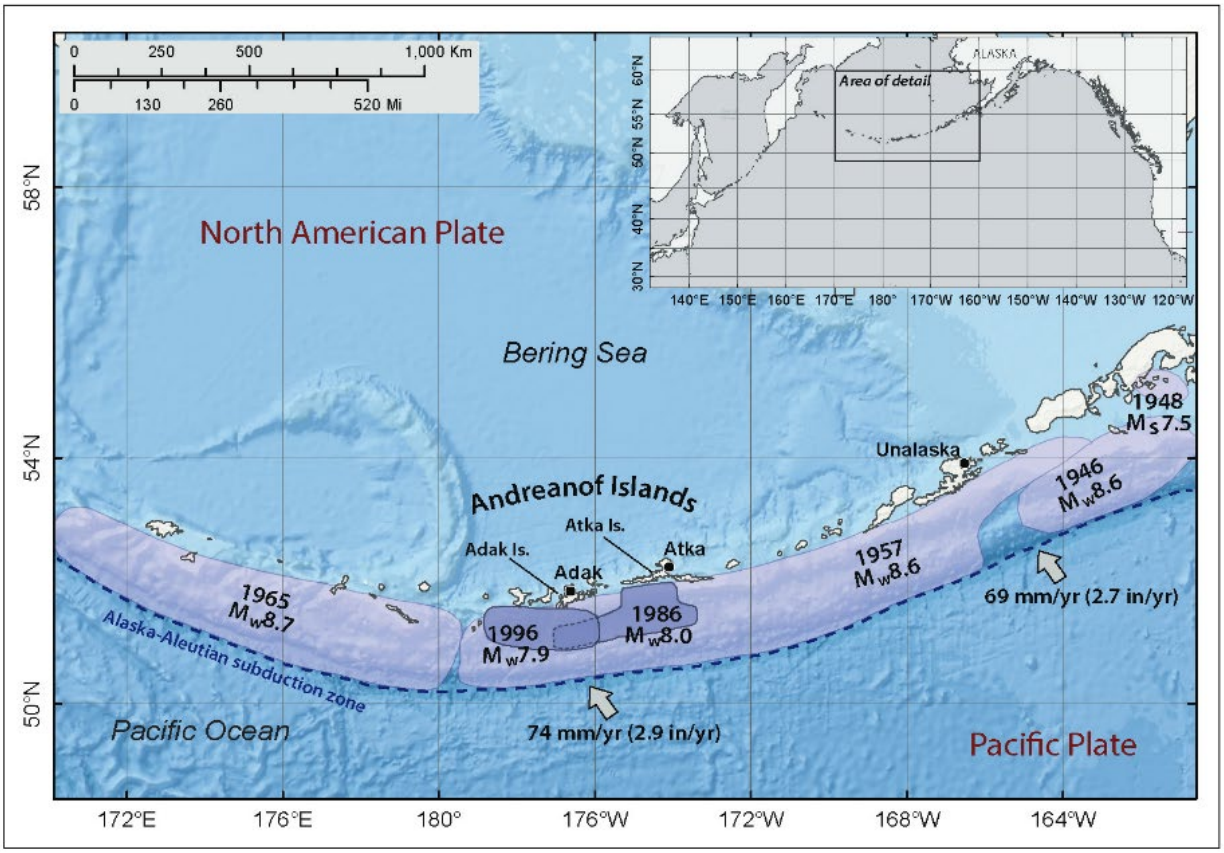


Figure 3: Map of the central Aleutian Islands and Andreanof Islands Group. Rupture areas of the latest sequence of large earthquakes are shown by shaded polygons (Suleimani et al., 2019).

Geology

The bedrock on Adak Island consists of the Finger Bay Volcanics, a complex assemblage of pre-Quaternary altered volcanic rocks ranging from incompetent tuffs and flow breccias to dense, hard andesite and basalt. All have been subject to subsequent faulting and alteration. Quaternary volcanic rocks from three eruptive centers (Mount Moffett, Mount Adagdak, and "Andrew Bay volcano") range from basaltic to andesitic in composition. A variety of unconsolidated Pleistocene and Holocene deposits are also present, including till, lahar and debris-flow deposits, volcanic ash, eolian deposits, and minor alluvial, lagoonal, and beach deposits. Numerous faults that offset Holocene deposits are common on Adak Island, showing the faults have been active in the past 11,700 years.

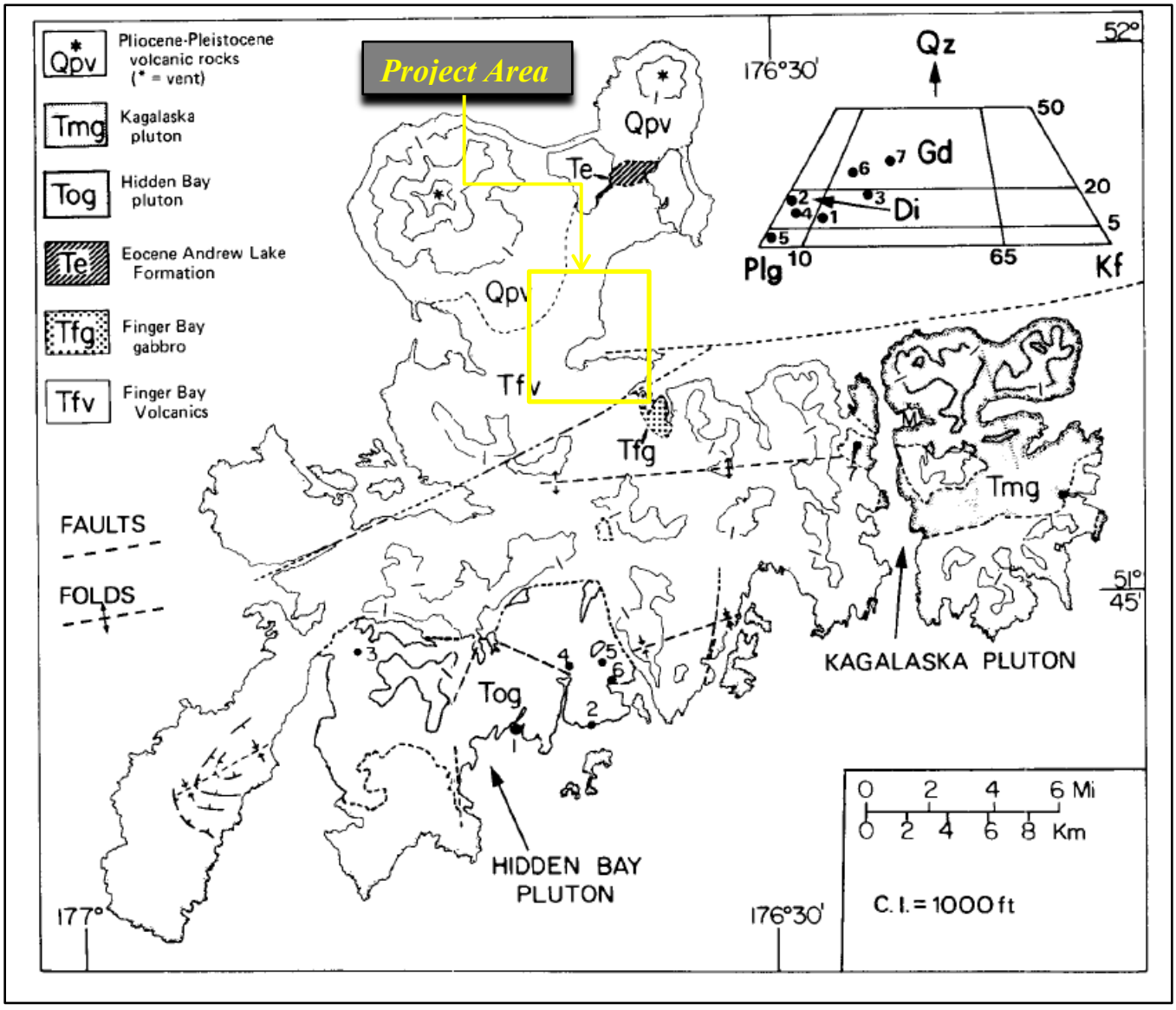


Figure 4: Geologic map. Generalized geologic map of Adak Island. The bedrock associated with the project area consists of the Finger Bay Volcanics (Tfv) and overlying Quaternary deposits (Citron et al., 1980).

Climate

Adak is included in the subpolar oceanic climate zone, characterized by persistently overcast skies, moderated temperatures, high winds, significant precipitation, and frequent cyclonic storms. Average temperatures vary between lows of 20°F in January and highs of 60°F in July and August. Rainfall averages 64 inches annually and is heaviest during the fall and winter. Snowfall typically begins in December and ends in April. Average annual snowfall is nearly 100 inches, however tends to melt soon after falling. Winter squalls produce wind gusts in excess of 120 mph.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg Max. Temp (F)	37.2	37.0	38.6	41.3	45.1	49.1	54	55.8	52.3	46.9	41.4	38	44.7
Avg Min. Temp (F)	28.9	28.5	30.1	32.9	36.6	40.8	44.7	46.6	43.6	38.2	33.0	29.9	36.2
Avg Total Precip. (in.)	6.27	4.57	5.43	4.19	3.86	3.09	2.82	4.22	5.78	6.56	7.43	7.28	61.50
Avg Total Snow Fall (in)	18.1	18.4	20.1	10.0	1.5	0.0	0.0	0.0	0.1	1.5	10.4	19.3	99.4
Avg Snow Depth (in.)	2	3	2	0	0	0	0	0	0	0	0	1	1

Period of Record Monthly Climate Summary / Period of Record: 9/1/1949 to 12/31/2005

SUMMARY TABLES AND GRAPHS

Summary of Borings and Dynamic Cone Penetrometers (DCP)

Boring locations were spaced to provide even coverage of the project alignment in accordance with the Procedures Manual. Borings advanced to depths of four feet or less were intended to provide data only in the structural section of the runway. Asphalt thickness measurements are accurate to within 0.5". Piezometers were installed alongside Runway 5/23 and Taxiway A to monitor groundwater fluctuations (Appendix G). A thermistor was installed on the western edge of Runway 18/36 to monitor seasonal frost depths (Appendix H).

The DCPs, located adjacent to the Standard Penetration Tests (SPTs) after coring a 8" diameter hole through the asphalt (Appendix D, Sheets 1 and 2), were completed to provide information about the thickness and penetration resistance of the base and subbase material in Runway 5/23 and Taxiway A. DCPs were driven to total depth of the DCP or refusal (>50 blows/cm, noted by *).

Table 1: Summary of Borings and DCPs

Station ID and offset from CL	Number (TH19-)	Elevation (feet)	Depth (feet)	Asphalt (in)	Base Coarse (in)	Subbase (in)	Water Surface (ft bgs)	Target	DCP (Y/N)	DCP Depth or Refusal* (in)
14+93 6' RT	2105	9.37	5.6	7	12	42	NA	Taxiway A	Y	14.4
16+09 63' RT	2122	8.88	15	NA	NA	NA	4.9	Taxiway A Well	N	NA
20+38 13' LT	2104	11.78	6.5	8	14	40.8	~6	Taxiway A	Y	11.4
25+73 14' RT	2134	12.2	2.6	7	Concrete below asphalt	NA	NA	Taxiway A	N	NA
30+41 19' RT	2103	11.3	10	6.5	Concrete below asphalt	36	~7.5	Taxiway A	N	NA
35+06 8' LT	2133	9.37	0.5	6.5	Concrete below asphalt	NA	NA	Taxiway A	N	NA
39+12 68' RT	2124	8.74	15	NA	NA	NA	6.6	Taxiway A Well	N	NA
40+53 21' LT	2102	10.05	10.8	15	13	27.6	~7.5	Taxiway A	Y	5.5
45+90 6' RT	2132	9.12	3.1	13	12	>12	NA	Taxiway A	Y	11.4
50+07 17' RT	2101	8.31	8.7	14	12	13.2	~6	Taxiway A	Y	10.2
55+30 19' LT	2131	9.05	3.1	13.5	7	>16.8	NA	Taxiway A	Y	10.7
59+68 17' LT	2100	9.6	8.7	14	9	51.6	~7	Taxiway A	Y	10.2
02+34 61' LT	2121	18.71	2.2	>26	NA	NA	NA	Runway 5/23	N	NA

02+46 454' RT	2126	17.9	12	NA	NA	NA	NA	Airport Material Site #2	N	NA
05+49 583' RT	2125	9	12	NA	NA	NA	NA	Airport Material Site #2	N	NA
06+88 25' RT	2120	17.13	2	20.5	13.5	>10.9	NA	Runway 5/23	Y	7.9
12+29 51' LT	2119	14.3	3.3	16	14	>10	NA	Runway 5/23	Y	9.8
16+80 40' RT	2118	12.28	3.7	20.5	11	>13.3	NA	Runway 5/23	Y	7.9
20+70 626' RT	2130	6.77	10	13.5	NA	NA	NA	Runway 18/36 Thermistor	N	NA
21+97 51' LT	2117	11.15	3.6	19	8	>15.4	NA	Runway 5/23	Y	8.6
22+23 233' LT	2123	8.02	15	NA	NA	NA	4.5	Runway 5/23 Well	N	NA
26+98 42' RT	2116	10.43	3.3	15	13	>11.4	NA	Runway 5/23	Y	9.8
31+85 55' LT	2115	10.91	3.4	17	8.5	>15.8	NA	Runway 5/23	Y	8.6
36+99 50' RT	2114	10.22	3.3	15	9	>15	NA	Runway 5/23	Y	9.8
43+58 57' LT	2113	10.86	3.4	16.5	10.5	>14.4	NA	Runway 5/23	Y	9.8
48+87 50' RT	2112	9.98	3.2	15	6	>17.4	NA	Runway 5/23	Y	10.2
54+23 45' LT	2111	11.03	3.4	16.5	6	>17.8	NA	Runway 5/23	Y	9.5
58+60 33' RT	2110	11.07	3.7	20.5	8	>15.7	NA	Runway 5/23	Y	7.1
63+67 39' LT	2109	13.18	3.1	13.5	10	>13.6	NA	Runway 5/23	Y	11.0
68+17 33' RT	2108	13.59	3.2	14	9	>16.4	NA	Runway 5/23	Y	9.8
73+33 40' LT	2107	15.69	3.3	15	8	>16.2	NA	Runway 5/23	Y	4.7
78+34 59' RT	2106	15.78	3.4	16.75	12	>12	NA	Runway 5/23	Y	7.1
NA	2127	81.2	NA	NA	NA	NA	NA	Upper Pit/Navy Quarry	N	NA
NA	2128	85.5	NA	NA	NA	NA	NA	Upper Pit/Navy Quarry	N	NA
NA	2129	90.2	NA	NA	NA	NA	NA	Upper Pit/Navy Quarry	N	NA

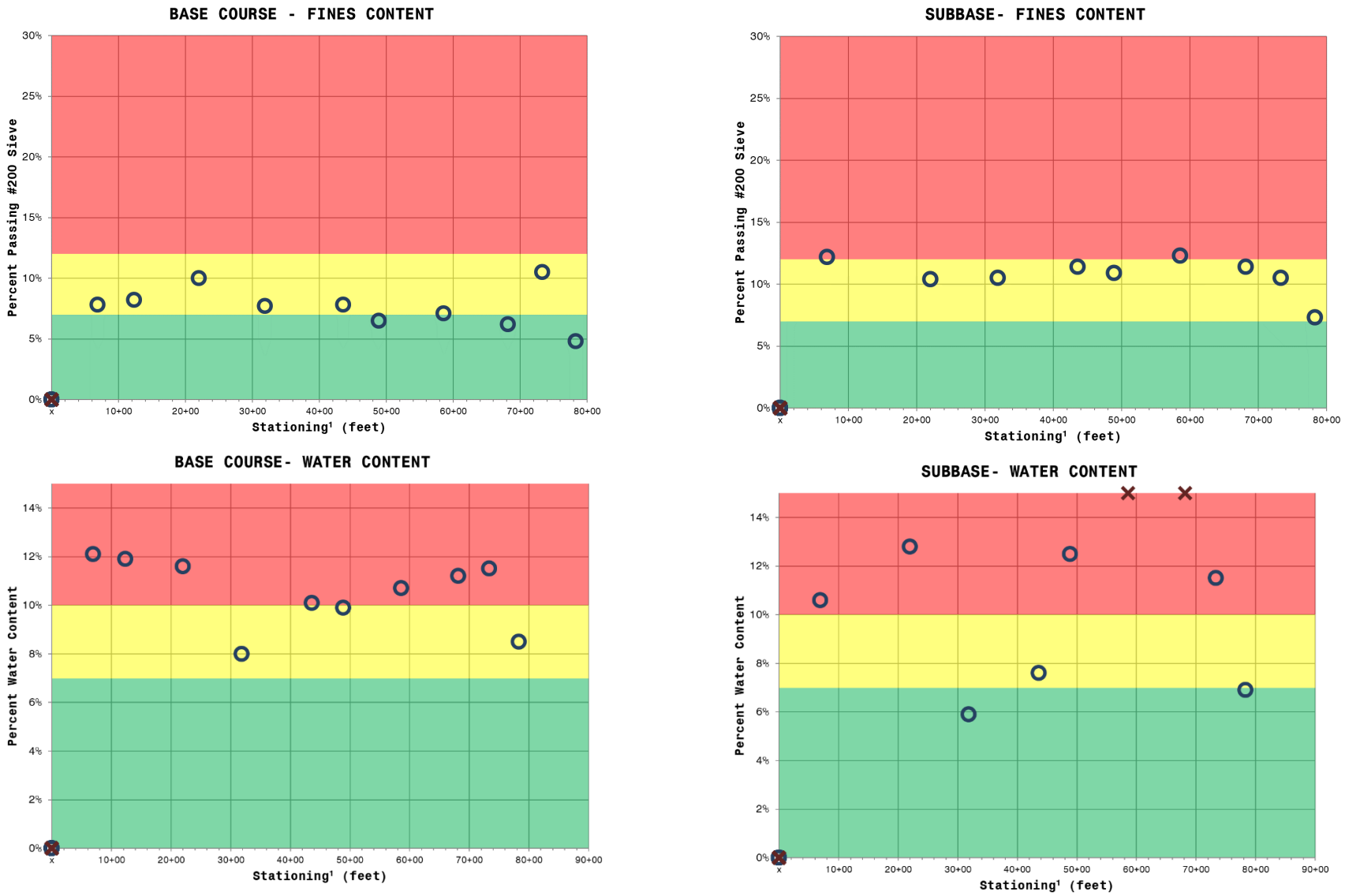


Figure 4: Runway 5/23 Data Graphs. Graphs for base course and subbase lab results plotting fines content and water content versus stationing along Runway 5/23.

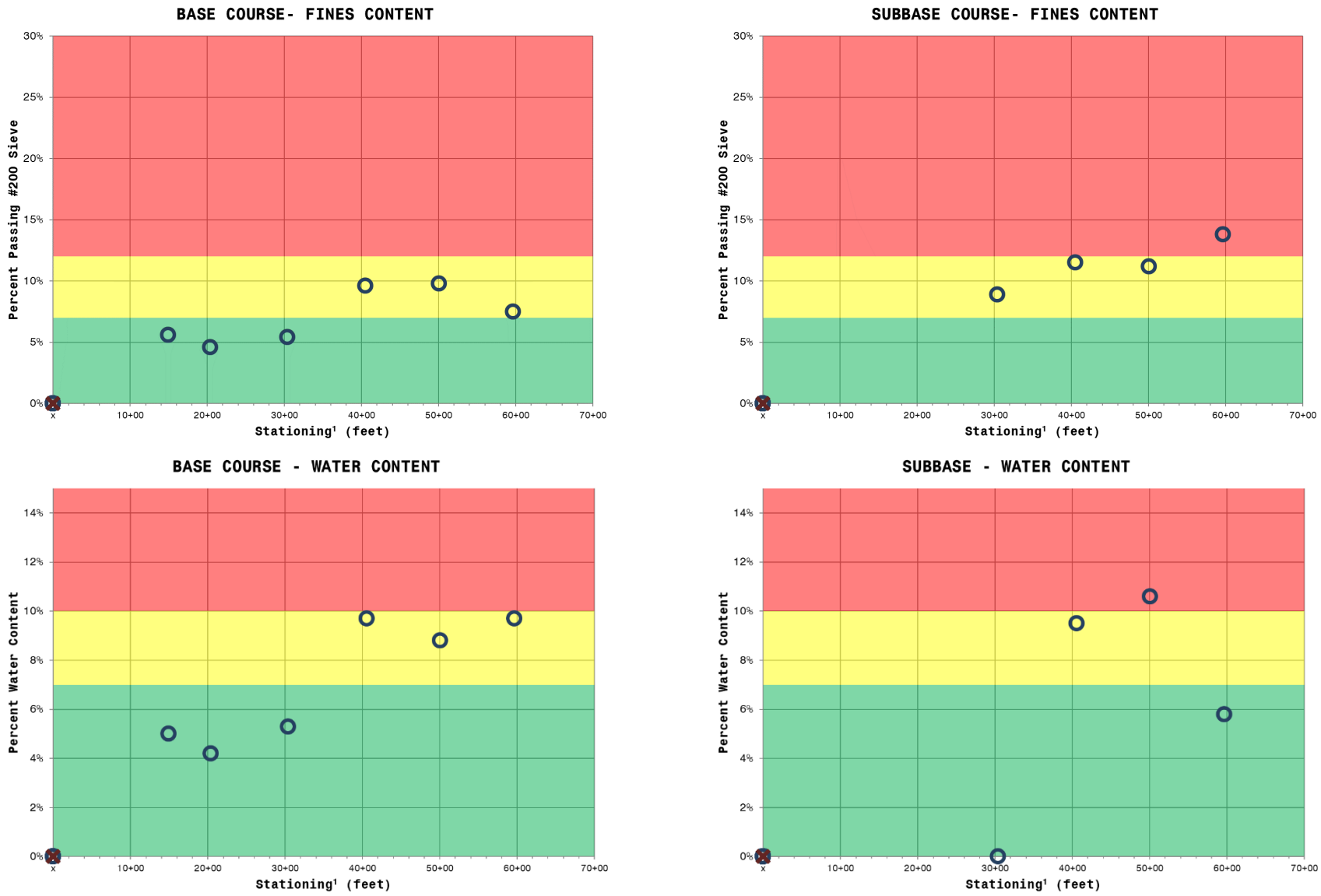


Figure 5: Taxiway A Data Graphs. Graphs for base course and subbase lab results plotting fines content and water content versus stationing along Taxiway A.

Table 2: Summary of Pavement Thickness.

Number (TH19-)	Total Asphalt (in)	Layer 1 (in)	Layer 2 (in)	Layer 3 (in)	Layer 4 (in)	Layer 5 (in)	Layer 6 (in)
2105	7	3.5	3.5	-	-	-	-
2104	8	3.5	4.5	-	-	-	-
2134	7	4	3	-	-	-	-
2103	6.5	3	3.5	-	-	-	-
2133	6.5	3	3.5	-	-	-	-
2102	15	3	8	4	-	-	-
2132	13	2	4	7	-	-	-
2101	14	1.5	6	6.5	-	-	-
2131	13.5	2	5	6.5	-	-	-
2100	14	1.5	5.5	7	-	-	-
2121	>26	4	3.5	5.5	2	9	-
2120	20.5	3.5	3	6	2	6	-
2119	16	3.5	2.5	6.5	3.5	-	-
2118	20.5	3	2.5	2.5	7	2	3.5
2117	19	4	3	4.5	4	3.5	-
2116	15	4.5	2.5	3	5	-	-
2115	17	4	3	4	3	3	
2114	15	3.5	3	2.5	6	-	-
2113	16.5	2	2.5	4	2	2.5	3.5
2112	15	2	2.5	5.5	2.5	2.5	-
2111	16.5	4	2.5	2.5	7.5	-	-
2110	20.5	4	3	1.5	5	2	5
2109	13.5	4	5	2.5	2	-	-
2108	14	3.5	5	5.5	-	-	-
2107	15	3.5	2	6	2	1.5	-
2106	16.75	3	4	5	4.75	-	-

Photo 1: Taxiway A Asphalt Cores

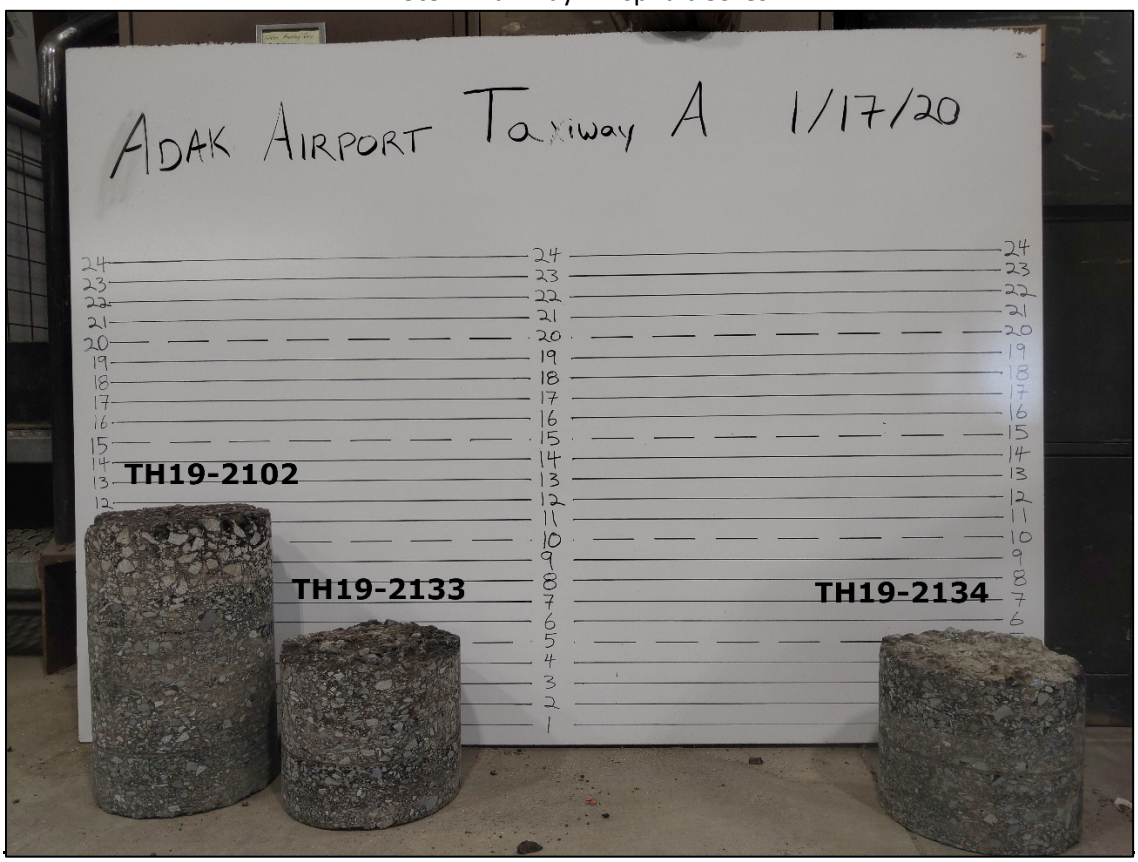


Photo 2: Taxiway A Asphalt Cores

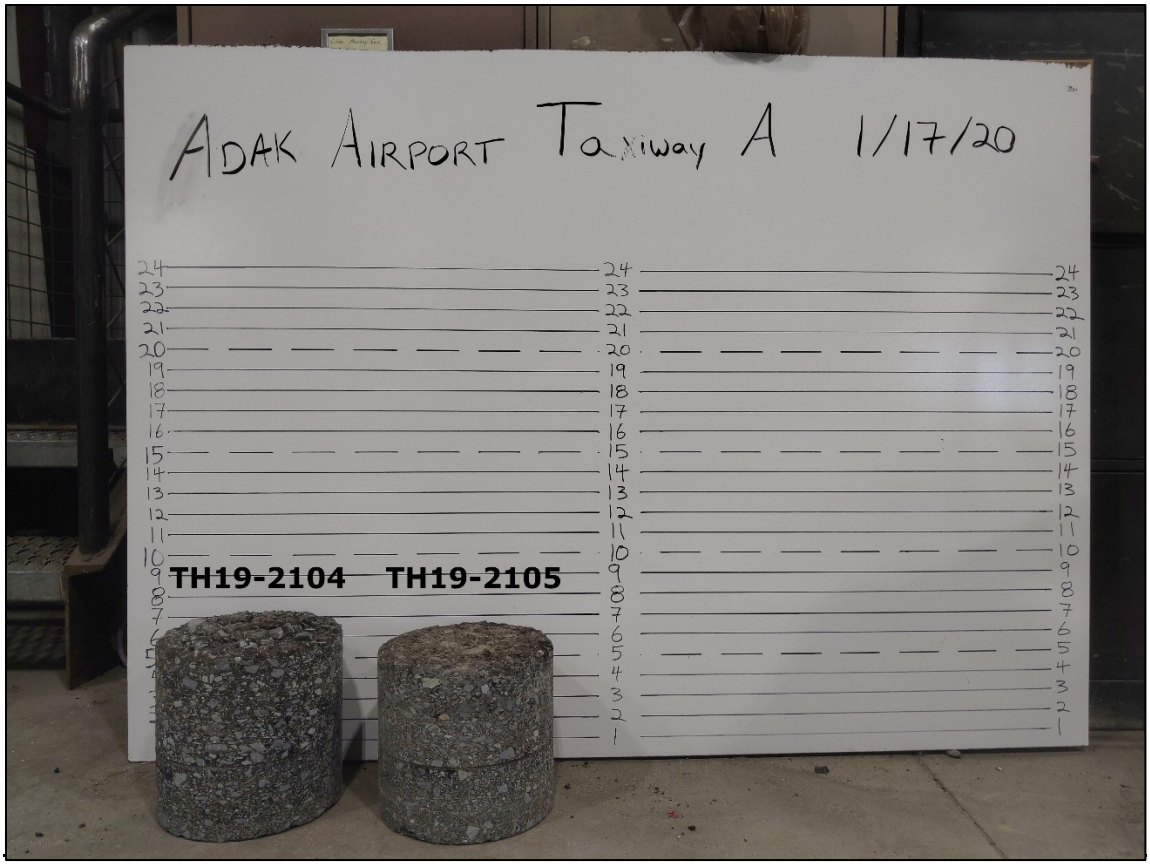


Photo 3: Taxiway A Asphalt Cores

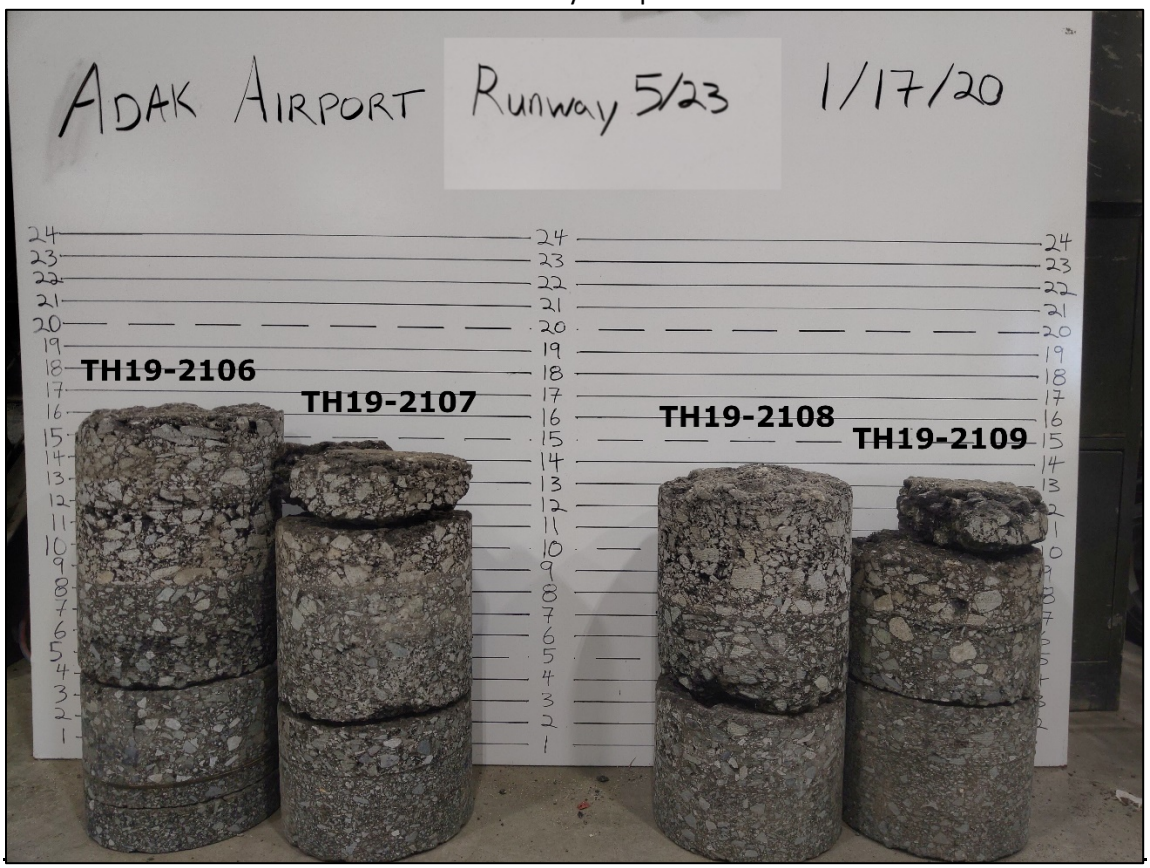


Photo 4: Runway 5/23 Asphalt Cores

Photo 5: Runway 5/23 Asphalt Cores

Photo 6: Runway 5/23 Asphalt Cores

Photo 7: Runway 5/23 Asphalt Cores

Photo 8: TH19-2104 after coring 8" of asphalt and driving the first SPT 8-32" through the base. Base consists of poorly-graded sub-angular gravels (GP).

Photo 9: Sample 19-9023 from test hole TH19-2107 depths 15-39" (below asphalt) showing the subbase, silty sand (SM). Base course consists of silty sand with gravel.

PROCEDURES AND METHODS

Exploration Plan

The exploration plan was developed using guidance from the Alaska Geotechnical Procedures Manual and modified to suit the project site. See Table 1 - Summary of Borings for a complete listing of borings and their locations. Final locations and depths were adjusted by the on-site geologist to address buried utilities and to collect additional information where beneficial (Appendix D- Boring Location Maps).

Equipment and Drilling Methods

AKDOT&PF NRMS mobilized a Raid Trac Carrier with a Mobile B-24-Surveyor drill from Fairbanks and a four-man crew to perform the investigation. Based on anticipated subsurface conditions, core drilling and hollow-stem auger method were selected. The test holes were backfilled with cuttings and pavement was repaired with cold mix asphalt.

Dynamic Cone Penetrometer (DCP)

The DCP is a manual test device used to determine the thickness and penetration resistance of the base, subbase, and subgrade soils in a roadway. In accordance with ASTM D6951 the device consists of an 8kg sliding hammer, anvil, 1m long 16mm diameter drive rod, vertical scale rod, and a replaceable 20mm diameter cone tip. The penetration rate can be related to the California Bearing Ratio (CBR) using equations derived from the Army Corps of Engineers as presented in ASTM 6951.

Sampling

The B-24 utilizes a 140 lb cathead hammer to provide percussion for advancing sampling devices. Each sample was photographed, described in accordance with the procedures outlined in the AK DOT&PF Alaska Field Guide for Soil Classification and transported to the Northern Region Materials Lab for additional testing. Standard Penetration Test (SPT) samples were obtained by driving a 2” diameter standard split spoon using a cathead hammer. This method provides information on the relative density of the soil and a very good continuous 2’ sample.

Laboratory Testing

Samples were delivered to the Southcoast Region Materials Laboratory for testing. Individual samples will be subjected to one or more of the following tests:

- Sieve Analysis of Soils (AASHTO T 27/T11)
- Moisture Content of Soils (AASHTO T 255 / T 265)
- Unified Soil Classification (ASTM D 2487)

Sample test results will be included with the Final Geology Data Report in Appendix F-Laboratory Test Results.

Logs of Borings and DCPs

On-site geologist recorded all observations, drilling notes, and sample descriptions on field boring logs. Field logs were reviewed, compared to the results of the laboratory test data, and compiled into detailed draft logs. These detailed draft logs are included in Appendix A of this report.

At DCP locations, the on-site geologist recorded blows per 10 mm intervals on a field log. These detailed logs are included in Appendix B.

GEOPHYSICS INVESTIGATION

Ground-penetrating radar (GPR) is a high resolution electromagnetic technique that is used to investigate the subsurface using radar pulses. High frequency radio waves (10 megahertz [MHz] to 4 gigahertz [GHz]) are radiated from a transmitting antenna and are reflected, transmitted, or refracted by materials in the subsurface based on their electromagnetic properties and incident angle of the incoming signal particles. A receiving antenna can then record the variations in the return signal. The velocity of the radar waves are altered due to the differing permittivity when the wave propagates from one material to another. Subsurface structures with high permittivity between materials produce prominent reflectors, whereas structures with low permittivity produce more subtle or attenuated reflectors. The phase state of water significantly impacts wave propagation (e.g. ice has a lower permittivity and water has a high permittivity). Water absorbs radio waves very well and areas with attenuated radar signal in radargrams often correlate with wet zones. In addition, thick (>1 foot thick) silt or clay deposits absorb radar energy, especially when the material is wet or saturated.

Figures 7-10 (presented below) show interpreted radargrams of the GPR data. Each radargram is presented here with a scale (in feet) on the x-axis that shows the distance along the respective runway from the starting point (located at 0’). The red lines plotted on Figure 6 show the location of the surveys and the distances that correlate to the x-axis on the radargrams. Each radargram is interpreted with the bottom of asphalt/top of base course (green), top of subgrade (pink), and concrete (orange).

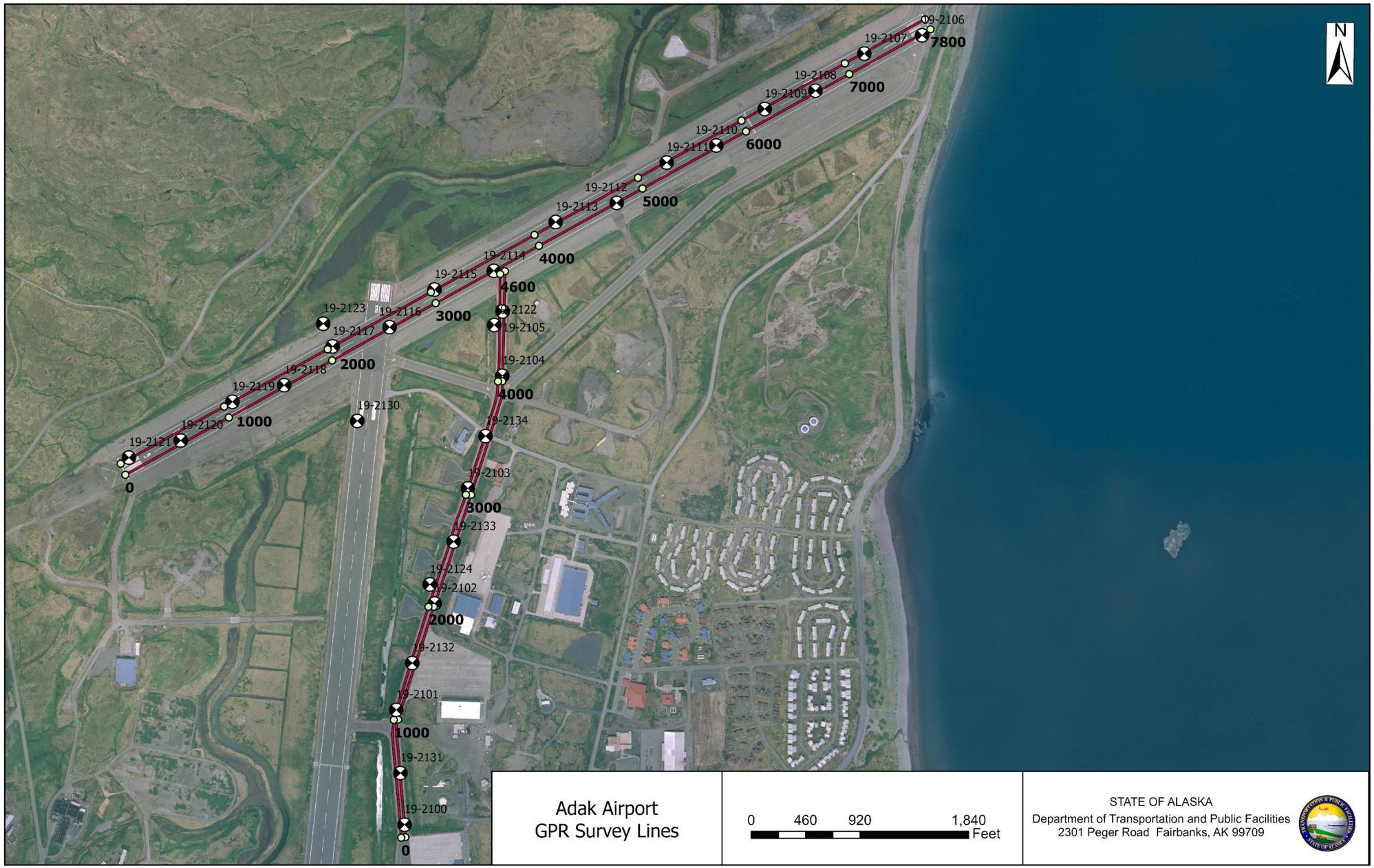


Figure 6: GPR survey lines (red) for Runway 5/23 and Taxiway A. Markers correlate to distance in feet along the x-axis of the radargrams in Figures 7-10.

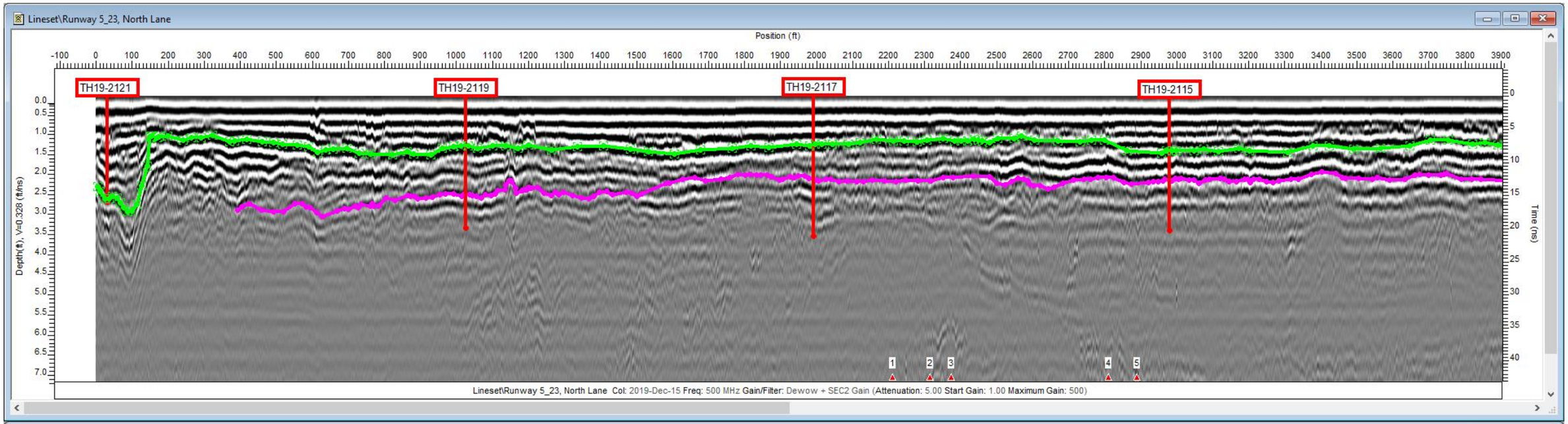


Figure 7: Runway 5/23 LT (top, north) and RT (bottom, south) lane radargrams 0-3900' with bottom of asphalt/top of base course (green), top of subgrade (pink), and concrete (orange) delineated.

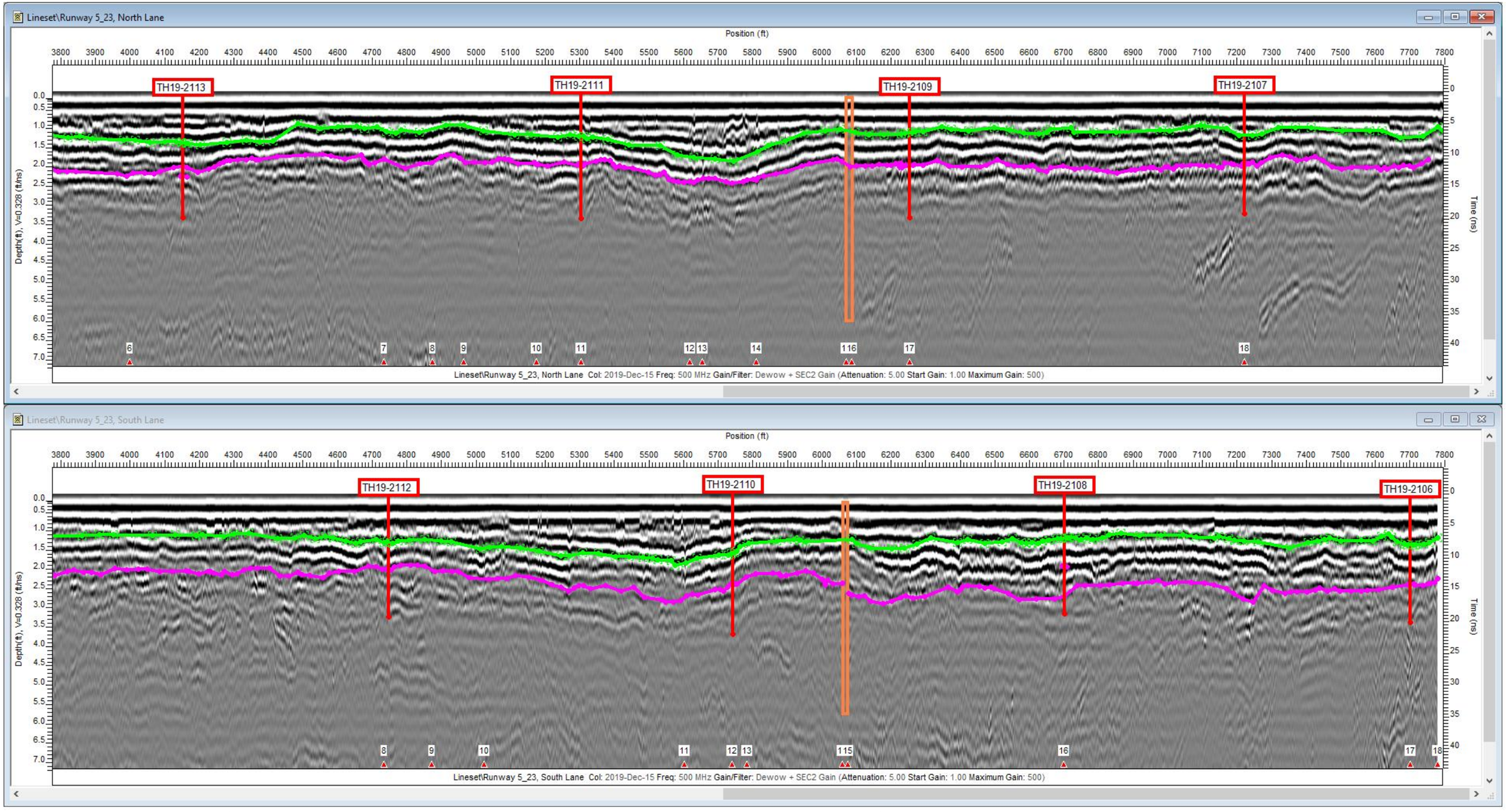


Figure 8: Runway 5/23 Radargram LT (top, north) and RT (bottom, south) lane radargrams 3900-7800' with bottom of asphalt/top of base course (green), top of subgrade (pink), and concrete (orange) delineated.

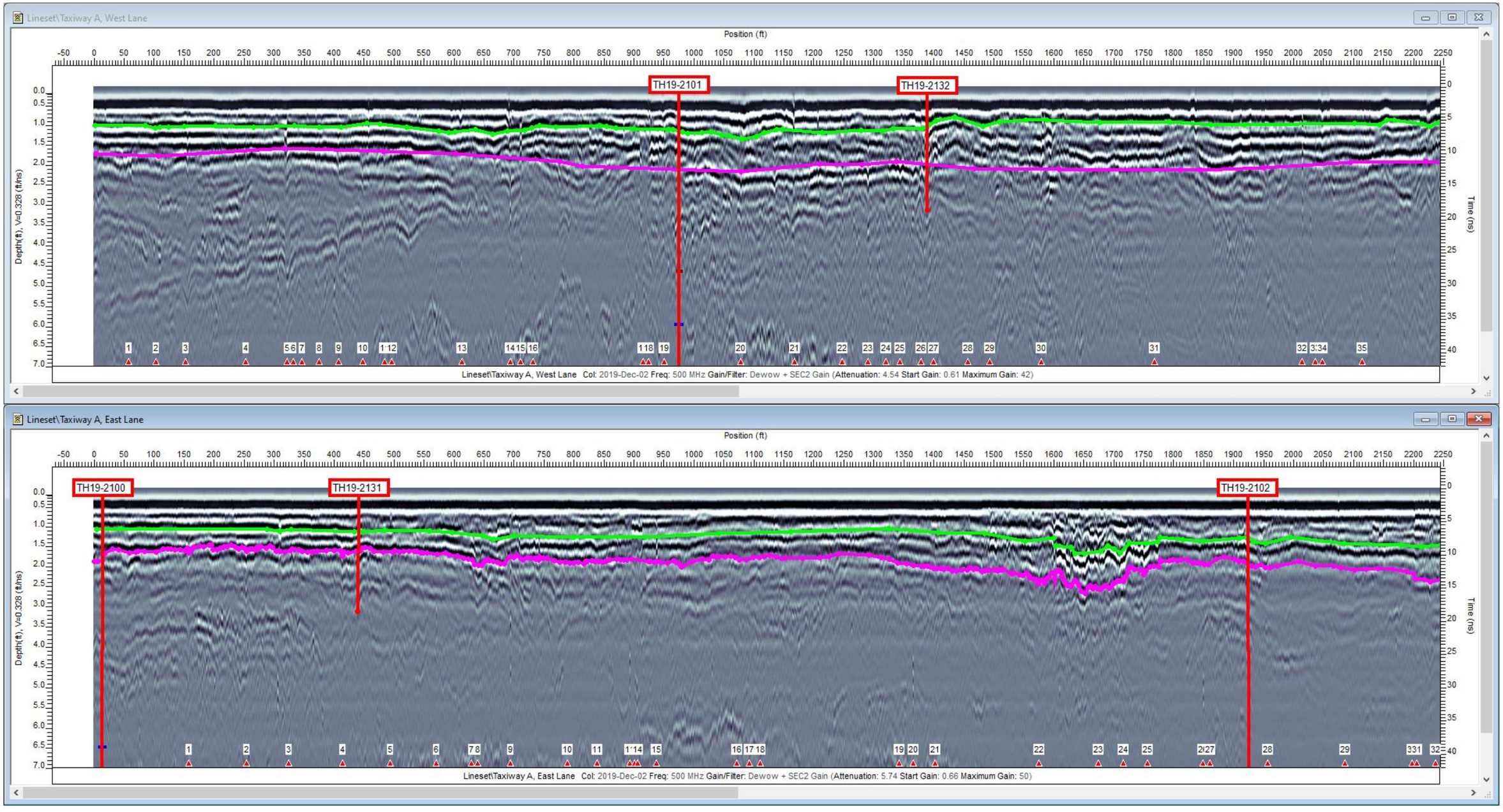


Figure 9: Taxiway A LT (bottom, east) and RT (top, west) lane radargrams 0-2250' with bottom of asphalt/top of base course (green), top of subgrade (pink), and concrete (orange) delineated.

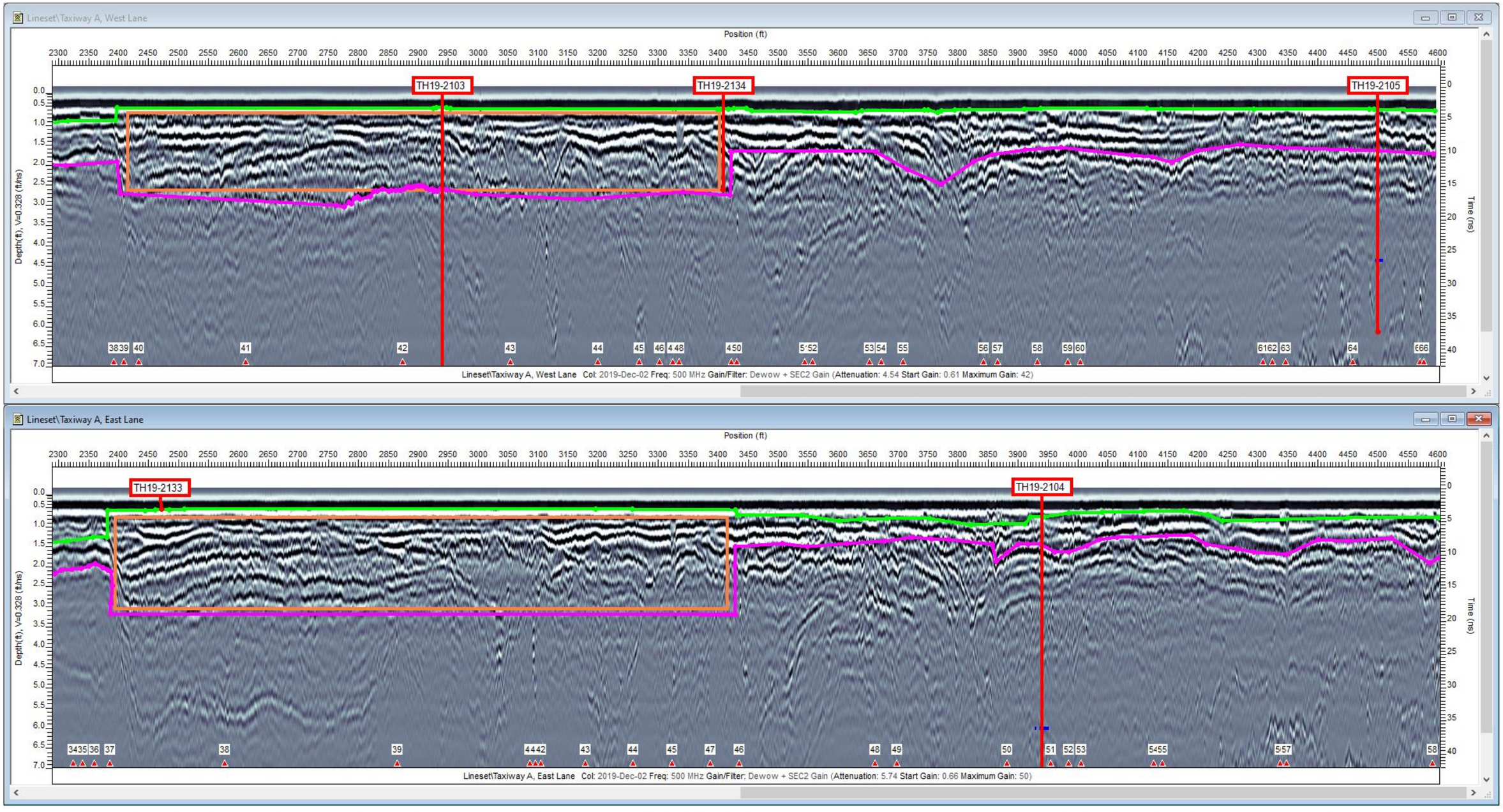


Figure 10: Taxiway A LT (bottom, east lane) and RT (top, west lane) lane radargrams 2250-4600' with bottom of asphalt/top of base course (green), top of subgrade (pink), and concrete (orange) delineated.

MATERIAL SITE INVESTIGATION

Five materials sources were investigated for this project. Two potential material sources are located on the airport property and three are quarry pits located on Aleut Native Corporation land south of the town. All of the established quarry pits are hosted in the Finger Bay Volcanics Formation consisting of altered andesite and basalt. Of the three quarries investigated, the two existing pits at the Upper Pit/Navy Quarry and Lower Pit/Tango Quarry would be best suited for continued use. There is a large reserve of in-situ material that can be developed by drilling and blasting at both sites, as well as existing stockpiled material. 50-pound bulk samples from the material sites were collected and results will be included in a final memo.

Maps of off-site material sources in Appendix C show existing stockpiled material (blue), zones within the pits that could be expanded by blasting (yellow), and zones to extend outside existing pits that would require stripping overburden and blasting (red).

Upper Pit/Navy Quarry (Appendix C)

Location and Access

This site lies approximately 2.8 miles south of the Adak Airport at the crest of Finger Bay Road.

Land Status

The surface and subsurface in this area is owned by the Aleut Native Corporation

Clearing and Stripping

The site is a developed pit that would require additional mining along the western quarry face.

Water Table

No water table was encountered.

Frozen Ground

No frozen soil was encountered.

Preliminary Conclusions

Greenish black altered andesite is exposed along the majority of the pit face, with a small band of rhyodacite along the western pit face. The rock quality may vary due to portions being highly fractured and clay-rich fracture zones crossing the pit face. Three test holes were drilled along northern and western pit edges. TH19-2128 and TH19-2129 encountered propylitically altered andesite (R3-R4, C=2 slightly weathered, fracture spacing 8-24", JRC=2-7); TH19-2128 encountered a fault at 20' bgs that plugged the drill bit with clay gouge. TH19-2127 cored 14' through boulders (2-5' diameter) in the "waste dump" on the northern edge of the quarry down to original ground surface. This quarry would require a pit expansion along the western pit face that could produce 30,000+ cubic yards of material. Drilling, blasting, and crushing would be needed to further develop this site.

Lower Pit/Tango Quarry (Appendix C)

Location and Access

This site lies approximately 2.3 miles south of the Adak Airport along the Finger Bay Road.

Land Status

The surface and subsurface in this area is owned by the Aleut Native Corporation

Clearing and Stripping

The site is a developed pit that would require pit expansion through additional mining along the western quarry face.

Water Table

No water table was encountered.

Frozen Ground

No frozen soil was encountered.

Preliminary Conclusions

Grayish black altered basalt and andesite is exposed along the 200 foot pit face. The rock quality may vary due to portions being highly fractured and clay-rich fracture zones crossing the pit face. Up to 40,000+ cubic yards of 1-5 foot diameter plus material has been stockpiled at this pit. This quarry would require a pit expansion along the western pit face that could produce 30,000+ cubic yards of material. Drilling, blasting, and crushing would be needed to further develop this site. This site was not drilled due to access issues with steep slopes

Road Pit/Tiny Smith Quarry (Appendix C)

Location and Access

This site lies approximately 2.1 miles south of the Adak Airport along the Finger Bay Road.

Land Status

The surface and subsurface in this area is owned by the Aleut Native Corporation.

Clearing and Stripping

The site is a developed pit that would require a pit expansion through additional mining along the southern quarry face.

Water Table

No water table was encountered.

Frozen Ground

No frozen soil was encountered.

Preliminary Conclusions

Grayish black basalt and andesite is exposed along the 60 to 80-foot face. The rock quality may vary due to clay-rich fracture zones crossing the southwest face. There is no stockpiled material at the pit. This site does not have much room to due to a utility running along the western crest of the pit.

Airport Material Site #1 (Appendix C)

Location and Access

This site lies east of Taxiway A and north of the DOT M&O shop.

Land Status

The surface and subsurface in this area is located on airport property.

Clearing and Stripping

The site would require the overburden to be stripped in order to be developed

Water Table

No water table was encountered.

Frozen Ground

No frozen soil was encountered.

Preliminary Conclusions

This site is a large topographic knob composed of light gray, fine-grained microcrystalline, silicified andesite. There are zones with a spherical/orbicular weathering pattern with increased iron oxide. The bedrock has close to wide fracture spacing with joint roughness profiles of 3-5 and Joint Roughness Coefficient (JRC) of IV and VII. Spatial orientations of fracture planes observed in the field are presented below in Table 3.

Table 3. Fracture attitudes measured in the field

Strike	Dip	Surface	Spacing	Lithology
250	15	Joint	1-3'	Andesite
124	68	Joint	1-3'	Andesite
148	62	Joint	1-3'	Andesite
143	54	Joint	1-3'	Andesite
277	19	Joint	1'	Andesite
265	17	Joint	2'	Andesite
280	30	Joint	3'	Andesite
154	45	Joint	2'	Andesite
179	81	Joint	3'	Andesite
310	20	Joint	2'	Andesite
156	77	Joint	1'	Andesite
169	68	Joint	1'	Andesite
154	76	Joint	1'	Andesite
164	76	Joint	2'	Andesite
149	77	Joint	1-3'	Andesite
264	66	Joint	5'	Andesite
269	85	Joint	2'	Andesite

The dimensions of the outcrop are approximately 50 yards long by 25 yards wide and 10 yards tall and could produce up to 12,000 cubic yards of material. Overburden ranged in thickness from 1-2 feet thick and was composed of colluvial material with organics. The overburden is covered with a thick grass cover. A circular concrete foundation for a water tank is located on top of the knob and would need to be removed. Drilling, blasting, and crushing would be needed to further develop this site.

Airport Material Site #2 (Appendix C)

Location and Access

This site lies west of Runway 18/36 & south of Runway 5/23.

Land Status

The surface and subsurface in this area is located on airport property.

Clearing and Stripping

The site would require the overburden to be stripped in order to be developed.

Water Table

No water table was encountered.

Frozen Ground

No frozen soil was encountered.

Preliminary Conclusions

Two test holes (TH19-2125 & TH19-2126) were drilled to depths of 12’ bgs with a solid-stem auger. This site looked like it had been previously used as a landfill, as there were several open pits up to 15’ deep along this site. No bedrock was encountered while drilling this material site.

Test holes encountered the following generalized soil profile:

- ~1’ of peat/organic mat
- ~6-9’ of wet silt with organics
- 3-6’ of moist sand and gravel

SELECTED REFERENCES

- *Alaska Department of Transportation and Public Facilities, 2007, Alaska Geotechnical Procedures Manual*

- *Citron et al., 1980, Tectonic Significance of Early Oligocene Plutonism on Adak Island, central Aleutian Islands, Alaska, Geological Society of America, Geology, v. 8, p. 375-379*

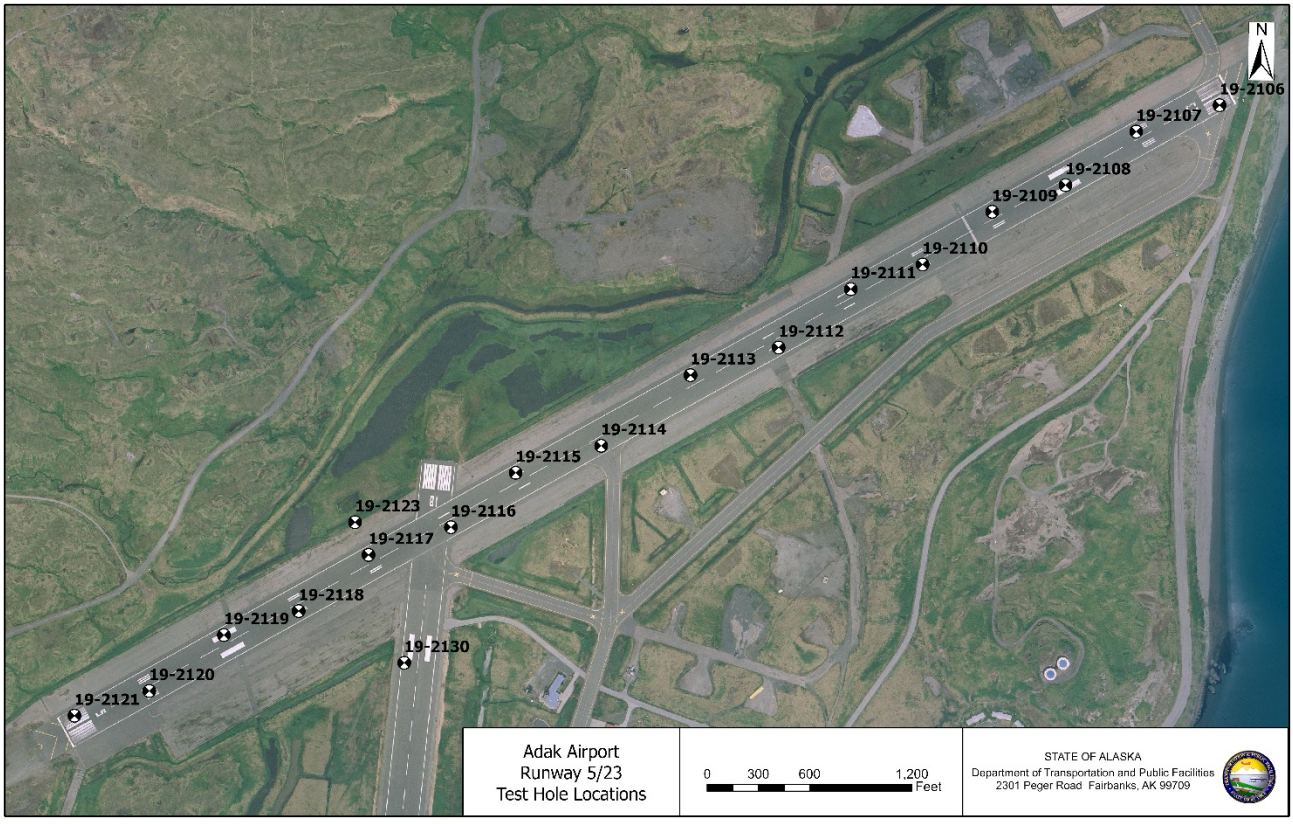
- *Jicha et al., 2014, Revised Age of Aleutian Island Arc Formation Implies High Rate of Magma Production, Geological Society of America, Geology, v. 34, no. 8, p. 661-664, doi: 10.1130/G22433.1*

- *Suleimani, E.N., Salisbury, J.B., Nicolsky, D.J., and West, M.E., 2019, Tsunami inundation maps for Adak and Atka, Alaska: Alaska Division of Geological & Geophysical Surveys Report of Investigation 2019-1, 63 p., 6 sheets. http://doi.org/10.14509/30186*

Appendix A- Runway 5/23 Final Detailed Boring Logs
(Arranged in Station Order)

Runway 5/23

TH19-2121
TH19-2120
TH19-2119
TH19-2118
TH19-2130 – Thermistor
TH19-2117
TH19-2123 – Well
TH19-2116
TH19-2115
TH19-2114
TH19-2113
TH19-2112
TH19-2111
TH19-2110
TH19-2109
TH19-2108
TH19-2107
TH19-2106



FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2121
Project Number	FFAPT00194	Total Depth	2.17 feet
Field Geologist	S. HOOPER	Dates Drilled	12/7/2019 - 12/7/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	02+34, 61' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87862°, W176.65726°
Weather	30 F, sunny	Elevation	18.7
TH Finalized By	S. Hooper	Vegetation	

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Sample Data: Number	Sample Data: Blow Count (raw)	Sample Data: Sample Interval	Sample Data: Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT Drilled ~26", maxed out core barrel. Could not drill deeper due to thick asphalt.	0
	1											1
	2										BOH	2

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

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FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2120
Project Number	FFAPT00194	Total Depth	3.71 feet
Field Geologist	S. HOOPER	Dates Drilled	12/7/2019 - 12/7/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	06+88, 25' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87902°, W176.65533°
TH Finalized By	S. Hooper	Weather	30 F, partly cloudy
Vegetation		Elevation	17.1

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1											
	2		SPT	19-9038	34 35		68				Gy-Bn Silty SAND w/ Gravel (fill) moist, very dense	**19-9038 (1.7-2.8)** P200=7.8% NM=12.1%
	3		SPT	19-9039	33 27						Gy-Bn Silty SAND moist, very dense	**19-9039 (2.8-3.7)** P200=12.2% NM=10.6%
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

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FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2119
Project Number	FFAPT00194	Total Depth	3.33 feet
Field Geologist	S. HOOPER	Dates Drilled	12/7/2019 - 12/7/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	12+29, 51' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87993°, W176.65341°
TH Finalized By	S. Hooper	Weather	30 F, partly cloudy
		Vegetation	
		Elevation	14.3

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Sample Data: Number	Sample Data: Blow Count (raw)	Sample Data: Sample Interval	Sample Data: Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1											
			SPT	19-9037	28		105				Gy-Bn Silty SAND w/ Gravel (fill) dry to moist, very dense	**19-9037 (1.3-2.5)** P200=8.2% NM=11.9%
	2				55							
					50						Bn-Gy Poorly-graded SAND w/ Silt dry to moist, very dense	
	3				50/3"						BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

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FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2118
Project Number	FFAPT00194	Total Depth	3.71 feet
Field Geologist	S. HOOPER	Dates Drilled	12/7/2019 - 12/7/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	16+80, 40' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88033°, W176.65147°
TH Finalized By	S. Hooper	Weather	30 F, partly cloudy
		Vegetation	
		Elevation	12.3

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Depth in (Feet)	Drilling Method	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
0	Coring										Bk ASPHALT	
1												
2					34 47						Gy-Bn Poorly-graded GRAVEL w/ Silt & Sand (fill) dry, very dense	
3			SPT		41 36		88				Bn-Gy Poorly-graded SAND w/ Silt dry to moist, very dense	
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

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FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2130
Project Number	FFAPT00194	Total Depth	10 feet
Field Geologist	S. HOOPER	Dates Drilled	12/15/2019 - 12/15/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	20+70, 626' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87951°, W176.64873°
Weather	30 F, cloudy	Elevation	6.8
TH Finalized By	S. Hooper	Vegetation	

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 18/36

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Sample Data: Number	Sample Data: Blow Count (raw)	Sample Data: Sample Interval	Sample Data: Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT Layered	
	1										Bn-Gy Poorly-graded SAND w/ Silt wet, *sl Org*	
H-S Auger	2											
	3											
	4											
	5											
	6											
	7											
	8										← Cobble, 6"	
	9											
	10										BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☐ Cathead Rope Method

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FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2117
Project Number	FFAPT00194	Total Depth	3.6 feet
Field Geologist	S. HOOPER	Dates Drilled	12/6/2019 - 12/6/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	21+97, 51' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88123°, W176.64967°
TH Finalized By	S. Hooper	Weather	35 F, partly cloudy
		Vegetation	
		Elevation	11.2

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1											
	2		SPT	19-9035	22						Gy-Bn Silty SAND w/ Gravel (fill) wet, very dense	**19-9035 (1.6-2.3)** P200=10.0% NM=11.6%
					41						Bn-Gy Poorly-graded SAND w/ Silt moist, very dense, Hole filled with water after SPT	**19-9036 (2.3-3.6)** P200=10.4% NM=12.8%
	3		SPT	19-9036	34		75					
					31						BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

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FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2123
Project Number	FFAPT00194	Total Depth	15 feet
Field Geologist	S. HOOPER	Dates Drilled	12/8/2019 - 12/8/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	22+23, 233' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88176°, W176.65004°
Weather	30 F, sunny and snowy	Elevation	8.0
TH Finalized By	S. Hooper	Vegetation	Tundra vegetation (grasses, moss)

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)	4.5	
Time		
Date		
Symbol	▼	

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
H-S Auger	0–2										Gy Poorly-graded GRAVEL (fill) w/ Cobbles	
	2–15										Gy-Bn Poorly-graded SAND w/ Silt wet, *s/ Org*, Encountered heaving sands (>1') at bottom of hole when pulling pilot bit	
	15										BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop.

☐ CME Auto Hammer ☒ Cathead Rope Method

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FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2116
Project Number	FFAPT00194	Total Depth	3.25 feet
Field Geologist	S. HOOPER	Dates Drilled	12/6/2019 - 12/6/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	26+98, 42' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88169°, W176.64755°
TH Finalized By	S. Hooper	Weather	35 F, sleet & sun
Vegetation		Elevation	10.4

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1										Gy-Bn Poorly-graded GRAVEL w/ Silt & Sand (fill) dry, very dense	
	2		SPT		25 33		73				Bn Poorly-graded SAND w/ Silt dry to moist, very dense	
	3				40 41						BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

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FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2115
Project Number	FFAPT00194	Total Depth	3.42 feet
Field Geologist	S. HOOPER	Dates Drilled	12/6/2019 - 12/6/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	31+85, 55' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88257°, W176.64587°
TH Finalized By	S. Hooper	Weather	35 F, partly cloudy
Vegetation		Elevation	10.9

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1											
	2		SPT	19-9033	30						Gy-Bn Silty SAND w/ Gravel (fill) dry, very dense	**19-9033 (1.4-2.1)** P200=7.7% NM=8.0%
					30		53				Bn Poorly-graded SAND w/ Silt dry to moist, very dense	**19-9034 (2.1-3.4)** P200=10.5% NM=5.9%
	3		SPT	19-9034	23							
					23							
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

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FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2114
Project Number	FFAPT00194	Total Depth	3.25 feet
Field Geologist	S. HOOPER	Dates Drilled	12/6/2019 - 12/6/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	36+99, 50' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88302°, W176.64366°
TH Finalized By	S. Hooper	Weather	35 F, partly cloudy
		Vegetation	
		Elevation	10.2

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Sample Data: Number	Sample Data: Blow Count (raw)	Sample Data: Sample Interval	Sample Data: Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1				19						Gy Poorly-graded GRAVEL w/ Silt & Sand (fill) dry, very dense	
	2		SPT		27		55				Bn Poorly-graded SAND w/ Silt dry to moist, very dense	
	3				28							
					28						BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

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FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2113
Project Number	FFAPT00194	Total Depth	3.4 feet
Field Geologist	S. HOOPER	Dates Drilled	12/6/2019 - 12/6/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	43+58, 57' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88416°, W176.64136°
TH Finalized By	S. Hooper	Weather	32 F, snowy
Vegetation		Elevation	10.9

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Sample Data: Number	Sample Data: Blow Count (raw)	Sample Data: Sample Interval	Sample Data: Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1											
			SPT	19-9031 19-9031	20						Gy Silty SAND w/ Gravel (fill) dry to moist, very dense	**19-9031 (1.4-2.3)** P200=7.8% NM=10.1% **19-9031 (1.4-2.2)**
	2				35		72				Bn-Gy Poorly-graded SAND w/ Silt dry to moist, very dense	**19-9032 (2.2-3.4)** **19-9032 (2.3-3.4)** P200=11.4% NM=7.6%
				19-9032 19-9032	37							
	3				29						BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

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FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2112
Project Number	FFAPT00194	Total Depth	3.3 feet
Field Geologist	S. HOOPER	Dates Drilled	12/6/2019 - 12/6/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	48+87, 50' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88462°, W176.63908°
TH Finalized By	S. Hooper	Weather	30F, sleet
Vegetation		Elevation	10.0

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1										Gy Silty GRAVEL w/ Sand (fill) dry to moist, very dense	**19-9029 (1.3-1.8)** P200=6.5% NM=9.9%
			SPT	19-9029	26							
	2				30		64				Bn-Gy Poorly-graded SAND w/ Silt dry to moist, very dense	**19-9030 (1.8-3.3)** P200=10.9% NM=12.5%
			SPT	19-9030	34							
	3				33							
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2111
Project Number	FFAPT00194	Total Depth	3.38 feet
Field Geologist	S. HOOPER	Dates Drilled	12/6/2019 - 12/6/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	54+23, 45' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.8856°, W176.63722°
TH Finalized By	S. Hooper	Weather	40 F, windy, cloudy
		Vegetation	
		Elevation	11.0

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1										Gy-Bn Poorly-graded GRAVEL w/ Silt & Sand (fill) moist to wet, very dense	
					14							
	2		SPT		17		34				Bn Poorly-graded SAND w/ Silt dry to moist, very dense	
					17							
	3				16							
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2110
Project Number	FFAPT00194	Total Depth	3.7 feet
Field Geologist	S. HOOPER	Dates Drilled	12/5/2019 - 12/5/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	58+60, 33' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88597°, W176.63722°
TH Finalized By	S. Hooper	Weather	40 F, windy, cloudy
Vegetation		Elevation	11.1

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1											
	2		SPT	19-9027	30						Gy-Bn Poorly-graded GRAVEL w/ Silt & Sand (fill) dry to moist, very dense	**19-9027 (1.7-1.9)** P200=7.1% NM=10.7% **19-9028 (1.9-3.7)** P200=12.3% NM=15.2%
					46						Bn Poorly-graded SAND w/ Silt dry to moist, very dense	
	3		SPT	19-9028	33		79					
					48						BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2109
Project Number	FFAPT00194	Total Depth	3.13 feet
Field Geologist	S. HOOPER	Dates Drilled	12/5/2019 - 12/5/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	63+67, 39' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88683°, W176.63358°
TH Finalized By	S. Hooper	Weather	40 F, windy, cloudy
		Vegetation	
		Elevation	13.2

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Depth in (Feet)	Drilling Method	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
0	Coring										Bk ASPHALT	
1					20						Gy-Bn Silty GRAVEL w/ Sand (fill) dry to moist, very dense	
					42							
2			SPT				77				Bn Silty SAND dry to moist, very dense	
					35							
					35							
3											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2108
Project Number	FFAPT00194	Total Depth	3.2 feet
Field Geologist	S. HOOPER	Dates Drilled	12/5/2019 - 12/5/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	68+17, 33' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88726°, W176.63168°
TH Finalized By	S. Hooper	Weather	40 F, windy, cloudy
		Vegetation	
		Elevation	13.6

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1		SPT	19-9025	25						Gy-Bn Poorly-graded GRAVEL w/ Silt & Sand (fill) dry to moist, very dense	**19-9025 (1.2-1.9)** P200=6.2% NM=11.2%
	2		SPT	19-9026	36 35		71				Bn Poorly-graded SAND w/ Silt dry to moist, very dense	**19-9026 (1.9-3.2)** P200=11.4% NM=16.1%
	3				36						BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2107
Project Number	FFAPT00194	Total Depth	3.3 feet
Field Geologist	S. HOOPER	Dates Drilled	12/5/2019 - 12/5/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	73+33, 40' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88813°, W176.62985°
TH Finalized By	S. Hooper	Weather	40 F, windy, cloudy
Vegetation		Elevation	15.7

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
	0										Bk ASPHALT	
Coring	1											
			SPT	19-9023	25						Gy-Bn Silty SAND w/ Gravel (fill) moist, very dense	**19-9023 (1.3-1.9)** P200=10.5% NM=11.5%
	2				62		109				Bn Silty SAND dry to moist, very dense, Trace subrounded gravel	**19-9024 (1.9-3.3)** P200=13.9% NM=5.5%
			SPT	19-9024	47							
	3				57							
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2106
Project Number	FFAPT00194	Total Depth	3.4 feet
Field Geologist	S. HOOPER	Dates Drilled	12/5/2019 - 12/5/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	78+34, 59' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88857°, W176.6277°
Weather	40 F, cloudy	Elevation	15.8
TH Finalized By	S. Hooper	Vegetation	

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Runway 5/23

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1											
			SPT	19-9021	45						Gy-Bn Poorly-graded GRAVEL w/ Silt & Sand (fill) dry to moist, very dense	**19-9021 (1.4-2.4)** USCS=GP P200=4.8% NM=8.5%
	2				55		135					
					80						Bn Poorly-graded SAND w/ Silt dry to moist, very dense	**19-9022 (2.4-3.4)** P200=7.3% NM=6.9%
	3		SPT	19-9022	48							
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

Appendix B- Taxiway A Final Detailed Boring Logs

(Arranged in Station Order)

Taxiway A

TH19-2105
TH19-2122 –Well
TH19-2104
TH19-2134
TH19-2103
TH19-2133
TH19-2124 –Well
TH19-2102
TH19-2132
TH19-2101
TH19-2131
TH19-2100

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2105
Project Number	FFAPT00194	Total Depth	5.58 feet
Field Geologist	S. HOOPER	Dates Drilled	12/5/2019 - 12/5/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	14+93, 6' RT
Equipment Type	Mobile B-24	Latitude, Longitude	
Weather	40 F, rainy, foggy	Elevation	9.4
TH Finalized By	S. Hooper	Vegetation	

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)	4.2	
Time		
Date		
Symbol	▼	

GENERAL COMMENTS:
Taxiway A

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
H-S Auger	1		SPT	19-9019	24 27						Gy Well-graded GRAVEL w/ Silt & Sand (fill) dry to moist, very dense	**19-9019 (0.6-1.6)** P200=5.6% NM=5.0%
	2				24 24						Bn Poorly-graded SAND w/ Silt moist, medium dense	
	3				7							**19-9020 (3.1-5.1)** P200=6.5% NM=26.0%
▼	4		SPT	19-9020	12 15		27					
	5				22						Gy-Bn Poorly-graded GRAVEL w/ Silt & Sand w/ Cobbles wet	
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2122
Project Number	FFAPT00194	Total Depth	15 feet
Field Geologist	S. HOOPER	Dates Drilled	12/8/2019 - 12/8/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	16+09, 63' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88176°, W176.64363°
Weather	30 F, snowy	Elevation	8.9
TH Finalized By	S. Hooper	Vegetation	Tundra vegetation (grasses, moss)

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)	4.9	
Time		
Date		
Symbol	▼	

GENERAL COMMENTS:
Taxiway A

Depth in (Feet)	Drilling Method	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
0	H-S Auger										Bn ORG MAT	
1											Bn Poorly-graded SAND w/ Silt moist to wet, *sl Org*	
2												
3												
4												
5												
6												
7												
8											Bn PEAT	
9											Gy Poorly-graded SAND w/ Silt wet, Encountered heaving sands that locked pilot bit in the auger.	
10												
11												
12												
13												
14												
15											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2104
Project Number	FFAPT00194	Total Depth	7.7 feet
Field Geologist	S. HOOPER	Dates Drilled	12/4/2019 - 12/4/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	20+38, 13' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.88059°, W176.64331°
Weather	40 F, 50+ mph winds, rainy	Elevation	11.8
TH Finalized By	S. Hooper	Vegetation	

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)	6.0	
Time		
Date		
Symbol	▼	

GENERAL COMMENTS:
Taxiway A

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
H-S Auger	1		SPT	19-9017	28, 24		45				Gy Well-graded GRAVEL w/ Silt & Sand (fill) dry, very dense, Angular volcanic gravels	**19-9017 (0.7-2.0)** USCS=GW P200=4.6% NM=4.2%
	2				21, 17						Bn Poorly-graded SAND w/ Silt dry to moist, medium dense	
	3				6							**19-9018A (3.2-5.2)** P200=9.1% NM=12.7%
	4		SPT	19-9018A	11, 16		27					
	5				21, 31						Gy-Bn Well-graded SAND w/ Silt & Gravel w/ Cobbles moist to wet	
▼	6											**19-9018B (5.7-7.7)** P200=8.2% NM=15.7%
	7		SPT	19-9018B								
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2134
Project Number	FFAPT00194	Total Depth	2.6 feet
Field Geologist	S. HOOPER	Dates Drilled	12/16/2019 - 12/16/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	25+73, 14' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87919°, W176.64392°
TH Finalized By	S. Hooper	Weather	40 F, cloudy
Vegetation		Elevation	12.2

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Taxiway A

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
H-S Auger	1		SPT		21						Gy-Gn CONCRETE Rotten concrete	
					27							
					21		48					
	2				25							
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2103
Project Number	FFAPT00194	Total Depth	10.04 feet
Field Geologist	S. HOOPER	Dates Drilled	12/3/2019 - 12/3/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	30+41, 19' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87797°, W176.64456°
Weather	40 F, rainy	Elevation	11.3
TH Finalized By	S. Hooper	Vegetation	

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)	7.4	
Time		
Date		
Symbol	▼	

GENERAL COMMENTS:
Taxiway A

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1		SPT	19-9014	19 21 29 35		50				CONCRETE Rotten concrete, cement is crumbling	**19-9014 (0.5-2.5)** P200=5.4% NM=5.3%
	2											
	3										Bn Poorly-graded SAND w/ Silt dry to moist, dense, Trace gravel	**19-9015 (3.0-5.0)** P200=8.9%
H-S Auger	4		SPT	19-9015	12 22 22 19		44					
	5											
	6										Gy Poorly-graded GRAVEL w/ Silt & Sand w/ Cobbles dry to moist, Gravel layer based on drill reaction	
	7										Bn Poorly-graded SAND w/ Silt wet, medium dense, *sl Org*	
	8											**19-9016 (8.0-10.0)** P200=5.2% NM=28.0% ORG=1.0%
	9		SPT	19-9016	5 11 12 13		23					
	10										BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2133
Project Number	FFAPT00194	Total Depth	0.54 feet
Field Geologist	S. HOOPER	Dates Drilled	12/16/2019 - 12/16/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	35+06, 8' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87674°, W176.64508°
Weather	40 F, party cloudy	Elevation	10.5
TH Finalized By	S. Hooper	Vegetation	

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT Rotten concrete below, no spoon or DCP	0
											BOH	

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Taxiway A

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2124
Project Number	FFAPT00194	Total Depth	15 feet
Field Geologist	S. HOOPER	Dates Drilled	12/8/2019 - 12/8/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	39+12, 68' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87574°, W176.64595°
Weather	30 F, snowy	Elevation	8.7
TH Finalized By	S. Hooper	Vegetation	Tundra vegetation (grasses, moss)

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)	6.2	
Time		
Date		
Symbol	▼	

GENERAL COMMENTS:
Taxiway A

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
H-S Auger	0										Bn ORG MAT	
	1										Bn-Gy Poorly-graded SAND w/ Silt wet, *sl Org*	
	2											
	3											
	4											
	5											
▼	6											
	7											
	8											
	9											
	10											
	11											
	12											
	13											
	14											
	15										BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2102
Project Number	FFAPT00194	Total Depth	10.8 feet
Field Geologist	S. HOOPER	Dates Drilled	12/3/2019 - 12/3/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	40+53, 21' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.8753°, W176.64577°
TH Finalized By	S. Hooper	Weather	40 F, rainy
Vegetation		Elevation	10.1

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)	6.7	
Time		
Date		
Symbol	▼	

GENERAL COMMENTS:
Taxiway A

Depth in (Feet)	Drilling Method	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
0	Coring										Bk ASPHALT	
1												
2			SPT	19-9009	30 61						Gy Silty SAND w/ Gravel (fill) dry, very dense	**19-9009 (1.3-2.3)** P200=9.6% NM=9.7%
3			SPT	19-9010	45 37						Bn Poorly-graded SAND w/ Silt dry, dense	**19-9010 (2.3-3.3)** P200=11.5% NM=9.5%
4					12							**19-9011 (3.8-5.8)** P200=8.2% NM=18.6%
5	H-S Auger		SPT	19-9011	17 17 14		34				Gy Poorly-graded SAND w/ Silt dry, dense	
6											Bn Poorly-graded SAND w/ Silt wet, medium dense	**19-9012 (6.3-8.3)** USCS=SP P200=4.8% NM=32.5% ORG=1.7%
7			SPT	19-9012	2 5 5		10					
8					5							
9					3 8						Bn Poorly-graded SAND wet, medium dense	**19-9013 (8.8-10.8)** USCS=SP P200=3.9% NM=30.0% ORG=0.7%
10			SPT	19-9013	10 14		18					
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2132
Project Number	FFAPT00194	Total Depth	3.1 feet
Field Geologist	S. HOOPER	Dates Drilled	12/16/2019 - 12/16/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	45+90, 6' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87391°, W176.64559°
TH Finalized By	S. Hooper	Weather	40 F, windy, cloudy
		Vegetation	
		Elevation	9.1

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Taxiway A

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
H-S Auger	1		SPT		31		84				Gy-Bn Poorly-graded GRAVEL w/ Silt & Sand (fill) dry, very dense	
					47							
	2				37						Bn Poorly-graded SAND w/ Silt dry to moist, very dense, Trace subrounded gravel	
					26							
	3										BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2101
Project Number	FFAPT00194	Total Depth	8.67 feet
Field Geologist	S. HOOPER	Dates Drilled	12/3/2019 - 12/3/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	50+07, 17' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87282°, W176.64717°
Weather	40 F, cloudy	Elevation	8.3
TH Finalized By	S. Hooper	Vegetation	Tundra vegetation (grasses, moss)

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)	5.9	
Time		
Date		
Symbol	▼	

GENERAL COMMENTS:
Taxiway A

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1											
	1		SPT	19-9004	39						Gy Silty SAND w/ Gravel (fill) dry, very dense	**19-9004 (1.2-2.2)** P200=9.8% NM=8.9%
	2				46							
	2		SPT	19-9005	33						Bn Poorly-graded SAND w/ Silt dry to moist, very dense	**19-9005 (2.2-3.2)** P200=11.2% NM=10.6%
H-S Auger	3				30							
	3										Gy Sandy Silt dry to moist, medium dense	
	4		SPT	19-9006	7							**19-9006 (3.7-4.5)** USCS=ML P200=57.4% NM=112.5% ORG=16.3% LL=NV PI=NP PL=NV
	4				5							
	5		SPT	19-9007	4						Bn Poorly-graded SAND w/ Silt moist, loose, *hi Org*	**19-9007 (4.5-5.7)** P200=6.2% NM=18.1% ORG=1.7%
	5				4							
	6										Bn Poorly-graded SAND wet, medium dense, *sl Org*	
	6				5							**19-9008 (6.2-8.2)** USCS=SP P200=4.8% NM=28.8% ORG=0.7%
	7		SPT	19-9008	9		16					
	7				7							
	8				8							
											BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2131
Project Number	FFAPT00194	Total Depth	3.1 feet
Field Geologist	S. HOOPER	Dates Drilled	12/16/2019 - 12/16/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	55+30, 19' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87136°, W176.64699°
Weather	40 F, windy	Elevation	9.1
TH Finalized By	S. Hooper	Vegetation	

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Taxiway A

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
H-S Auger	1		SPT		12		52				Gy-Bn Poorly-graded GRAVEL w/ Silt & Sand (fill) dry, very dense	
	2				25						Bn Poorly-graded SAND w/ Silt dry to moist, very dense	
					27							
	3				35						BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2100
Project Number	FFAPT00194	Total Depth	8.7 feet
Field Geologist	S. HOOPER	Dates Drilled	12/2/2019 - 12/2/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	59+68, 17' LT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87017°, W176.64682°
Weather	35 F, windy	Elevation	9.6
TH Finalized By	S. Hooper	Vegetation	Tundra vegetation (grasses, moss)

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)	6.8	
Time		
Date		
Symbol	▼	

GENERAL COMMENTS:
Taxiway A

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Number	Blow Count (raw)	Sample Interval	Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Bk ASPHALT	
	1		SPT	19-9000	20						Bn Silty SAND w/ Gravel dry to moist, *sl Org*	**19-9000 (1.2-1.9)** P200=7.8% NM=9.7%
H-S Auger	2		SPT	19-9001	30 36		66				Bn Silty SAND dry to moist, dense, *sl Org*	**19-9001 (1.9-3.2)** P200=13.8% NM=5.8%
	3				47							
	4		SPT	19-9002	15 24		51					**19-9002 (3.7-5.7)** USCS=SP P200=3.1% NM=12.6%
	5				27 23							
	6										Bn Poorly-graded SAND w/ Silt dry, medium dense, *sl Org*	**19-9003 (6.2-8.2)** P200=7.2% NM=27.0%
	7		SPT	19-9003	8 8 8		16					
	8				14						BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

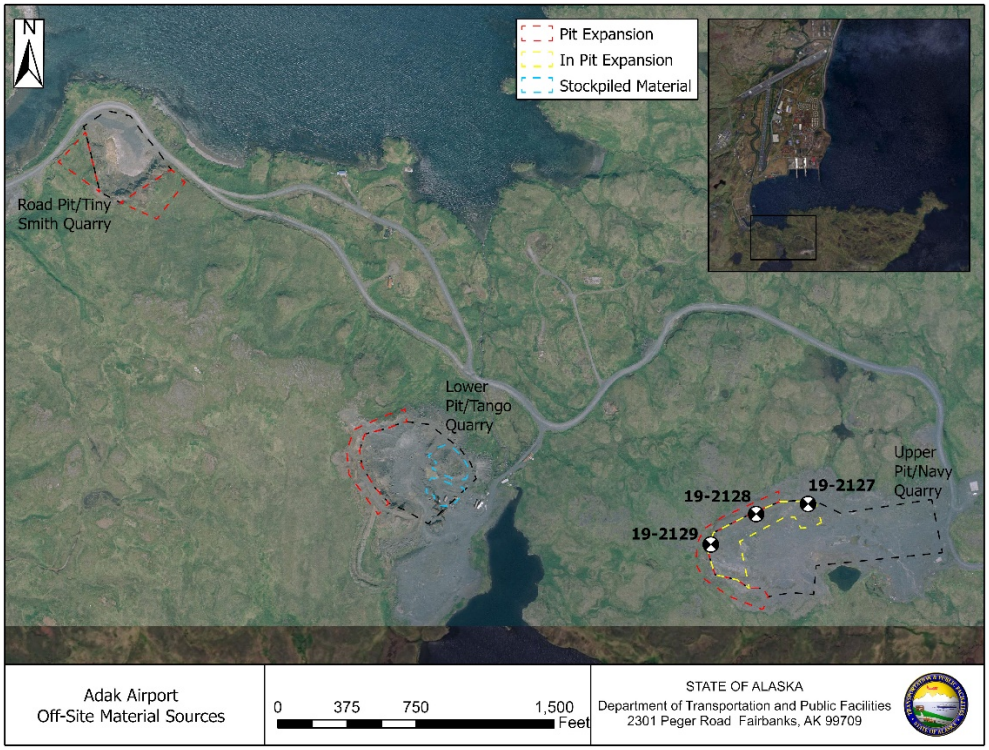
Appendix C- Material Sites Final Detailed Boring Logs

(Arranged in Station Order)

Upper Pit/Navy Quarry
TH19-2127
TH19-2128
TH19-2129

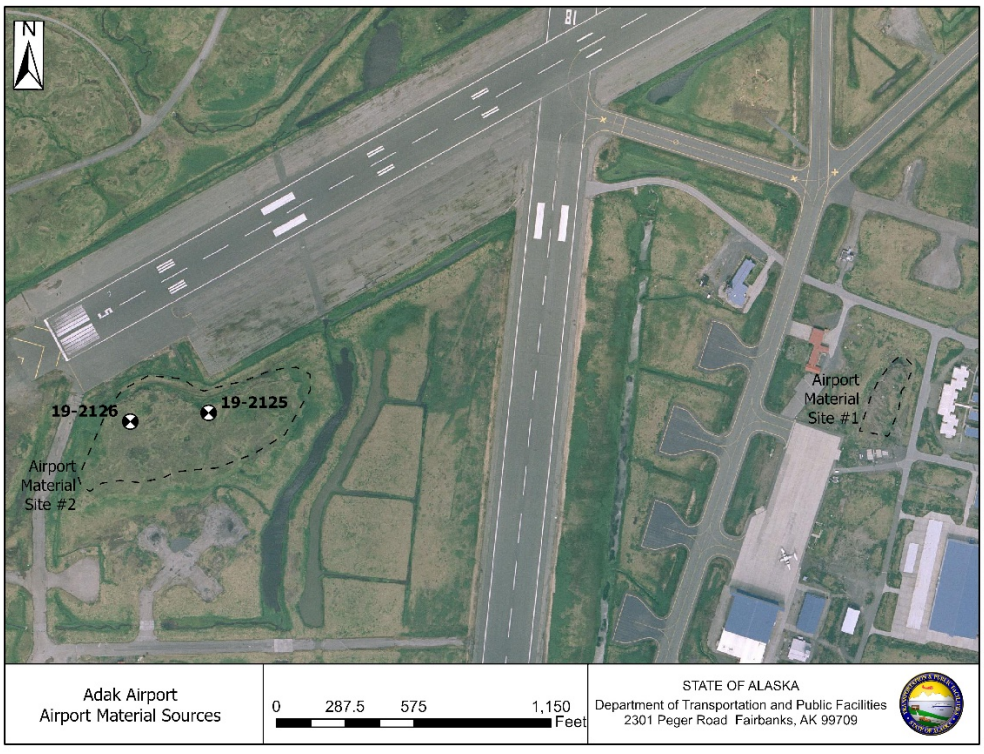
Lower Pit/Tango Quarry
Rock Sampling

Road Pit/Tiny Smith Quarry
Rock Sampling



Airport Material Site #1
Rock Sampling

Airport Material Site #2
TH19-2125
TH19-2126



FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2127
Project Number	FFAPT00194	Total Depth	13.83 feet
Field Geologist	S. HOOPER	Dates Drilled	12/11/2019 - 12/11/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	
Equipment Type	Mobile B-24	Latitude, Longitude	N51.84466°, W176.63478°
Weather	30 F, snowy and sunny	Elevation	81.2
TH Finalized By	S. Hooper	Vegetation	

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Upper Pit/Navy Quarry

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Sample Data: Number	Sample Data: Blow Count (raw)	Sample Data: Sample Interval	Sample Data: Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										BOULDERS AND COBBLES (fill) Cored through material site stockpile to determine dump thickness	
	1											
	2											
	3											
	4											
	5											
	6											
	7											
	8											
	9											
	10											
	11											
	12											
	13										Bn-Gy SILT w/ Sand dry to moist BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☐ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2128
Project Number	FFAPT00194	Total Depth	19.5 feet
Field Geologist	S. HOOPER	Dates Drilled	12/12/2019 - 12/12/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	
Equipment Type	Mobile B-24	Latitude, Longitude	N51.84451°, W176.63603°
Weather	30 F, sunny	Elevation	85.5
TH Finalized By	S. Hooper	Vegetation	

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Upper Pit/Navy Quarry

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Sample Data: Number	Sample Data: Blow Count (raw)	Sample Data: Sample Interval	Sample Data: Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Gy Hard BEDROCK, hard(Andesite) Finger Bay Volcanics - Porphyrtic texture, ~2-3 mm feldspar phenocrysts altered to epidote (weak propylitic alteration). Slightly weathered (11), JRC = 3-8, joint roughness of VII (planar, rough), close to moderate fracture spacing (<8 - 24 in), R3-R4	
	1											
	2											
	3											
	4											
	5											
	6											
	7											
	8											
	9											
	10											
	11											
	12											
	13											
	14											
	15											

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☐ Cathead Rope Method

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Test Hole Number TH19-2128

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Sample Data: Number	Sample Data: Blow Count (raw)	Sample Data: Sample Interval	Sample Data: Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	15											
	16											
	17											
	18											
	19										Gy Hard BEDROCK, hard(Andesite) Bit plugged at 19.5' due to fault oriented at ~75-80 degrees w/ 1-2 cm clay gouge. BOH	

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2129
Project Number	FFAPT00194	Total Depth	5 feet
Field Geologist	S. HOOPER	Dates Drilled	12/13/2019 - 12/13/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Equipment Type	Mobile B-24
		Station, Offset	
Weather	30 F, sun, snow, rain	Latitude, Longitude	
TH Finalized By	S. Hooper	Vegetation	
		Elevation	90.2

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Upper Pit/Navy Quarry

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Sample Data: Number	Sample Data: Blow Count (raw)	Sample Data: Sample Interval	Sample Data: Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
Coring	0										Gy-Gn Well-graded GRAVEL w/ Cobbles Andesite aggregate	
	1										Gy-Gn Hard BEDROCK, hard(Andesite) Finger Bay Volcanics - Porphyrtic texture, ~2-3 mm feldspar phenocrysts altered to epidote (weak propylitic alteration), Slightly weathered (11), JRC = 3-8, joint roughness of VII (planar, rough), close to moderate fracture spacing (<8 - 24 in), R3-R4	
	2											
	3											
	4											
	5										BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☐ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2125
Project Number	FFAPT00194	Total Depth	12 feet
Field Geologist	S. HOOPER	Dates Drilled	12/9/2019 - 12/9/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Equipment Type	Mobile B-24
		Station, Offset	05+49, 583' RT
Weather	32 F, partly cloudy	Latitude, Longitude	N51.87753°, W176.65465°
TH Finalized By	S. Hooper	Vegetation	
		Elevation	9.0

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Airport Material Site #2

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Sample Data: Number	Sample Data: Blow Count (raw)	Sample Data: Sample Interval	Sample Data: Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
H-S Auger	0										Bn ORG MAT	
	1										Bn Silt wet	
	2											
	3											
	4											
	5											
	6											
	7											
	8											
	9										Bn Poorly-graded SAND w/ Silt Poorly-graded sand w/ silt and gravel	**19-9046 (9.0-12.0)**
	10		AUGER	19-9046								
	11											
	12										BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

FINAL TEST HOLE LOG

STATE OF ALASKA DOT/PF
Northern Region Materials
Geology Section

Project	Adak Airport Rehabilitation	Test Hole Number	TH19-2126
Project Number	FFAPT00194	Total Depth	12 feet
Field Geologist	S. HOOPER	Dates Drilled	12/9/2019 - 12/9/2019
Field Crew	M. Sousa, G. Nelson, T. Hartford	Station, Offset	02+46, 454' RT
Equipment Type	Mobile B-24	Latitude, Longitude	N51.87743°, W176.6561°
Weather	Very snowy	Elevation	17.9
TH Finalized By	S. Hooper	Vegetation	

Ground Water Data	While Drilling	After Drilling
Depth in (ft.)		
Time		
Date		
Symbol		

GENERAL COMMENTS:
Airport Material Site #2

Drilling Method	Depth in (Feet)	Casing Blows / ft	Sample Data: Method	Sample Data: Number	Sample Data: Blow Count (raw)	Sample Data: Sample Interval	Sample Data: Uncorrected N-Value	Embankment Height	Frozen	Graphic Log	SUBSURFACE MATERIAL	TEST RESULTS
H-S Auger	0										Bn ORG MAT	
	1										Bn Silt moist to wet	
	2											
	3											
	4											
	5											
	6										Bn Poorly-graded GRAVEL w/ Silt & Sand dry to moist	**19-9047 (6.0-12.0)**
	7											
	8											
	9		AUGER	19-9047								
	10											
	11											
	12										BOH	

Note: Unless otherwise noted, all samples are taken with 1-3/8-in. ID Standard Penetration Sampler driven with 140 lb. hammer with 30-in. drop. ☐ CME Auto Hammer ☒ Cathead Rope Method

NR AKDOT TEST HOLE LOG - USCS ADAK.GPJ AK DOT - APRIL 2020.GDT 10/8/20

Appendix D- Runway 5/23 Final DCP Logs

(Arranged in Station Order)

Location: 19-2120 **Date:** 12/7/2019

Station: 6+88 **Pavement Thickness:** 20.50

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
4	4	10	0.39
7	11	20	0.79
9	20	30	1.18
14	34	40	1.57
14	48	50	1.97
10	58	60	2.36
17	75	70	2.76
12	87	80	3.15
8	95	90	3.54
8	103	100	3.94
14	117	110	4.33
9	126	120	4.72
24	150	130	5.12
14	164	140	5.51
9	173	150	5.91
10	183	160	6.30
15	198	170	6.69
10	208	180	7.09
10	218	190	7.48
9	227	200	7.87

Location: 19-2119 **Date:** 12/7/2019

Station: 12+29 **Pavement Thickness:** 16.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
1	1	10	0.39
3	4	20	0.79
1	5	30	1.18
1	6	40	1.57
1	7	50	1.97
6	13	60	2.36
8	21	70	2.76
8	29	80	3.15
13	42	90	3.54
18	60	100	3.94
21	81	110	4.33
19	100	120	4.72
28	128	130	5.12
14	142	140	5.51
19	161	150	5.91
17	178	160	6.30
19	197	170	6.69
17	214	180	7.09
22	236	190	7.48
25	261	200	7.87
18	279	210	8.27
34	313	220	8.66
13	326	230	9.06
21	347	240	9.45
31	378	250	9.84
49	427	260	10.24

Location: 19-2118 **Date:** 12/7/2019

Station: 16+80 **Pavement Thickness:** 20.50

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
4	4	10	0.39
6	10	20	0.79
8	18	30	1.18
11	29	40	1.57
20	49	50	1.97
17	66	60	2.36
9	75	70	2.76
8	83	80	3.15
10	93	90	3.54
11	104	100	3.94
14	118	110	4.33
10	128	120	4.72
13	141	130	5.12
17	158	140	5.51
20	178	150	5.91
11	189	160	6.30
12	201	170	6.69
20	221	180	7.09
14	235	190	7.48
14	249	200	7.87

Location: 19-2117 **Date:** 12/6/2019

Station: 21+97 **Pavement Thickness:** 19.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
2	2	10	0.39
7	9	20	0.79
7	16	30	1.18
10	26	40	1.57
10	36	50	1.97
10	46	60	2.36
14	60	70	2.76
12	72	80	3.15
12	84	90	3.54
13	97	100	3.94
8	105	110	4.33
8	113	120	4.72
9	122	130	5.12
14	136	140	5.51
7	143	150	5.91
9	152	160	6.30
13	165	170	6.69
8	173	180	7.09
8	181	190	7.48
10	191	200	7.87
9	200	210	8.27
8	208	220	8.66

Location: 19-2116 **Date:** 12/6/2019

Station: 26+98 **Pavement Thickness:** 15.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
3	3	10	0.39
8	11	20	0.79
10	21	30	1.18
18	39	40	1.57
17	56	50	1.97
15	71	60	2.36
15	86	70	2.76
23	109	80	3.15
38	147	90	3.54
22	169	100	3.94
15	184	110	4.33
17	201	120	4.72
16	217	130	5.12
16	233	140	5.51
15	248	150	5.91
17	265	160	6.30
14	279	170	6.69
10	289	180	7.09
14	303	190	7.48
10	313	200	7.87
18	331	210	8.27
10	341	220	8.66
10	351	230	9.06
17	368	240	9.45
18	386	250	9.84
14	400	260	10.24

Location: 19-2115 **Date:** 12/6/2019

Station: 31+85 **Pavement Thickness:** 17.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
5	5	10	0.39
4	9	20	0.79
7	16	30	1.18
6	22	40	1.57
11	33	50	1.97
19	52	60	2.36
20	72	70	2.76
16	88	80	3.15
16	104	90	3.54
13	117	100	3.94
16	133	110	4.33
14	147	120	4.72
12	159	130	5.12
10	169	140	5.51
12	181	150	5.91
10	191	160	6.30
10	201	170	6.69
10	211	180	7.09
12	223	190	7.48
13	236	200	7.87
9	245	210	8.27
10	255	220	8.66

Location: 19-2114 **Date:** 12/6/2019

Station: 36+99 **Pavement Thickness:** 15.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
3	3	10	0.39
4	7	20	0.79
7	14	30	1.18
9	23	40	1.57
10	33	50	1.97
13	46	60	2.36
8	54	70	2.76
9	63	80	3.15
14	77	90	3.54
11	88	100	3.94
15	103	110	4.33
8	111	120	4.72
10	121	130	5.12
8	129	140	5.51
11	140	150	5.91
12	152	160	6.30
14	166	170	6.69
17	183	180	7.09
11	194	190	7.48
5	199	200	7.87
5	204	210	8.27
12	216	220	8.66
9	225	230	9.06
9	234	240	9.45
7	241	250	9.84
10	251	260	10.24

Location: 19-2113 **Date:** 12/6/2019

Station: 43+58 **Pavement Thickness:** 16.50

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
1	1	10	0.39
3	4	20	0.79
5	9	30	1.18
4	13	40	1.57
7	20	50	1.97
6	26	60	2.36
12	38	70	2.76
16	54	80	3.15
16	70	90	3.54
16	86	100	3.94
14	100	110	4.33
18	118	120	4.72
13	131	130	5.12
14	145	140	5.51
20	165	150	5.91
18	183	160	6.30
15	198	170	6.69
17	215	180	7.09
26	241	190	7.48
26	267	200	7.87
19	286	210	8.27
10	296	220	8.66
20	316	230	9.06
6	322	240	9.45
8	330	250	9.84

Location: 19-2112 **Date:** 12/6/2019

Station: 48+87 **Pavement Thickness:** 15.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
2	2	10	0.39
3	5	20	0.79
4	9	30	1.18
5	14	40	1.57
7	21	50	1.97
9	30	60	2.36
9	39	70	2.76
10	49	80	3.15
11	60	90	3.54
17	77	100	3.94
12	89	110	4.33
10	99	120	4.72
10	109	130	5.12
6	115	140	5.51
7	122	150	5.91
11	133	160	6.30
10	143	170	6.69
10	153	180	7.09
12	165	190	7.48
10	175	200	7.87
9	184	210	8.27
9	193	220	8.66
10	203	230	9.06
11	214	240	9.45
9	223	250	9.84
9	232	260	10.24

Location: 19-2111 **Date:** 12/6/2019

Station: 54+23 **Pavement Thickness:** 16.50

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
5	5	10	0.39
5	10	20	0.79
7	17	30	1.18
5	22	40	1.57
4	26	50	1.97
4	30	60	2.36
6	36	70	2.76
7	43	80	3.15
7	50	90	3.54
7	57	100	3.94
6	63	110	4.33
6	69	120	4.72
3	72	130	5.12
3	75	140	5.51
4	79	150	5.91
4	83	160	6.30
4	87	170	6.69
5	92	180	7.09
5	97	190	7.48
5	102	200	7.87
6	108	210	8.27
5	113	220	8.66
5	118	230	9.06
4	122	240	9.45

Location: 19-2110 **Date:** 12/5/2019

Station: 58+60 **Pavement Thickness:** 20.50

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
5	5	10	0.39
8	13	20	0.79
9	22	30	1.18
11	33	40	1.57
13	46	50	1.97
13	59	60	2.36
13	72	70	2.76
19	91	80	3.15
12	103	90	3.54
10	113	100	3.94
16	129	110	4.33
16	145	120	4.72
20	165	130	5.12
7	172	140	5.51
14	186	150	5.91
12	198	160	6.30
14	212	170	6.69
17	229	180	7.09

Location: 19-2109 **Date:** 12/5/2019

Station: 63+67 **Pavement Thickness:** 13.50

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
3	3	10	0.39
5	8	20	0.79
6	14	30	1.18
10	24	40	1.57
11	35	50	1.97
11	46	60	2.36
10	56	70	2.76
9	65	80	3.15
8	73	90	3.54
13	86	100	3.94
16	102	110	4.33
12	114	120	4.72
14	128	130	5.12
11	139	140	5.51
11	150	150	5.91
12	162	160	6.30
13	175	170	6.69
14	189	180	7.09
14	203	190	7.48
10	213	200	7.87
12	225	210	8.27
14	239	220	8.66
11	250	230	9.06
12	262	240	9.45
10	272	250	9.84
9	281	260	10.24
7	288	270	10.63
9	297	280	11.02

Location: 19-2108 **Date:** 12/5/2019

Station: 68+17 **Pavement Thickness:** 14.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
7	7	10	0.39
7	14	20	0.79
9	23	30	1.18
11	34	40	1.57
12	46	50	1.97
14	60	60	2.36
12	72	70	2.76
18	90	80	3.15
14	104	90	3.54
10	114	100	3.94
8	122	110	4.33
9	131	120	4.72
12	143	130	5.12
10	153	140	5.51
11	164	150	5.91
8	172	160	6.30
8	180	170	6.69
16	196	180	7.09
9	205	190	7.48
11	216	200	7.87
10	226	210	8.27
8	234	220	8.66
9	243	230	9.06
9	252	240	9.45
10	262	250	9.84

Location: 19-2107 **Date:** 12/5/2019

Station: 73+33 **Pavement Thickness:** 15.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
8	8	10	0.39
10	18	20	0.79
12	30	30	1.18
15	45	40	1.57
15	60	50	1.97
11	71	60	2.36
21	92	70	2.76
35	127	80	3.15
50	177	90	3.54
39	216	100	3.94
35	251	110	4.33
50	301	120	4.72

Location: 19-2106 **Date:** 12/5/2019

Station: 78+34 **Pavement Thickness:** 16.75

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
6	6	10	0.39
7	13	20	0.79
7	20	30	1.18
6	26	40	1.57
6	32	50	1.97
5	37	60	2.36
6	43	70	2.76
8	51	80	3.15
8	59	90	3.54
9	68	100	3.94
16	84	110	4.33
15	99	120	4.72
16	115	130	5.12
18	133	140	5.51
21	154	150	5.91
35	189	160	6.30
33	222	170	6.69
50	272	180	7.09

Appendix E- Taxiway A Final DCP Logs

(Arranged in Station Order)

Location: 19-2105 **Date:** 12/5/2019

Station: 14+93 **Pavement Thickness:** 7.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	
5	5	10	0.39
6	11	20	0.79
10	21	30	1.18
17	38	40	1.57
17	55	50	1.97
12	67	60	2.36
10	77	70	2.76
10	87	80	3.15
11	98	90	3.54
8	106	100	3.94
10	116	110	4.33
9	125	120	4.72
8	133	130	5.12
10	143	140	5.51
8	151	150	5.91
10	161	160	6.30
10	171	170	6.69
9	180	180	7.09
8	188	190	7.48
11	199	200	7.87
9	208	210	8.27
7	215	220	8.66
7	222	230	9.06
7	229	240	9.45
6	235	250	9.84
7	242	260	10.24
5	247	270	10.63
6	253	280	11.02
6	259	290	11.42
6	265	300	11.81
6	271	310	12.20
3	274	320	12.60
5	279	330	12.99
4	283	340	13.39
4	287	350	13.78
4	291	360	14.17

Location: 19-2104 **Date:** 12/4/2019

Station: 20+38 **Pavement Thickness:** 8.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**1**	
10	10	10	0.39
8	18	20	0.79
6	24	30	1.18
8	32	40	1.57
9	41	50	1.97
7	48	60	2.36
8	56	70	2.76
7	63	80	3.15
12	75	90	3.54
10	85	100	3.94
11	96	110	4.33
10	106	120	4.72
11	117	130	5.12
10	127	140	5.51
12	139	150	5.91
12	151	160	6.30
9	160	170	6.69
10	170	180	7.09
11	181	190	7.48
10	191	200	7.87
12	203	210	8.27
12	215	220	8.66
12	227	230	9.06
5	232	240	9.45
7	239	250	9.84
7	246	260	10.24
7	253	270	10.63
8	261	280	11.02
7	268	290	11.42
5	273	300	11.81

Location: 19-2102 **Date:** 12/3/2019

Station: 40+53 **Pavement Thickness:** 15.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	
17	17	10	0.39
14	31	20	0.79
18	49	30	1.18
19	68	40	1.57
19	87	50	1.97
32	119	60	2.36
18	137	70	2.76
15	152	80	3.15
20	172	90	3.54
16	188	100	3.94
24	212	110	4.33
42	254	120	4.72
39	293	130	5.12
50	343	140	5.51

Location: 19-2132 **Date:** 12/16/2019

Station: 45+90 **Pavement Thickness:** 13.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
6	6	10	0.39
8	14	20	0.79
9	23	30	1.18
12	35	40	1.57
17	52	50	1.97
16	68	60	2.36
15	83	70	2.76
19	102	80	3.15
15	117	90	3.54
13	130	100	3.94
9	139	110	4.33
8	147	120	4.72
14	161	130	5.12
21	182	140	5.51
10	192	150	5.91
13	205	160	6.30
13	218	170	6.69
13	231	180	7.09
10	241	190	7.48
11	252	200	7.87
10	262	210	8.27
11	273	220	8.66
7	280	230	9.06
11	291	240	9.45
7	298	250	9.84
11	309	260	10.24
10	319	270	10.63
10	329	280	11.02
13	342	290	11.42

Location: 19-2101 **Date:** 12/3/2019

Station: 50+07 **Pavement Thickness:** 14.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	
9	9	10	0.39
10	19	20	0.79
11	30	30	1.18
14	44	40	1.57
14	58	50	1.97
15	73	60	2.36
25	98	70	2.76
27	125	80	3.15
21	146	90	3.54
13	159	100	3.94
8	167	110	4.33
13	180	120	4.72
14	194	130	5.12
19	213	140	5.51
22	235	150	5.91
13	248	160	6.30
12	260	170	6.69
16	276	180	7.09
15	291	190	7.48
12	303	200	7.87
14	317	210	8.27
13	330	220	8.66
12	342	230	9.06
11	353	240	9.45
10	363	250	9.84
12	375	260	10.24

Location: 19-2131 **Date:** 12/16/2019

Station: 55+30 **Pavement Thickness:** 13.50

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	0.00
3	3	10	0.39
6	9	20	0.79
5	14	30	1.18
4	18	40	1.57
4	22	50	1.97
4	26	60	2.36
6	32	70	2.76
5	37	80	3.15
6	43	90	3.54
5	48	100	3.94
5	53	110	4.33
4	57	120	4.72
5	62	130	5.12
5	67	140	5.51
6	73	150	5.91
7	80	160	6.30
6	86	170	6.69
7	93	180	7.09
7	100	190	7.48
8	108	200	7.87
8	116	210	8.27
5	121	220	8.66
6	127	230	9.06
9	136	240	9.45
8	144	250	9.84
6	150	260	10.24
7	157	270	10.63

Location: TH19-2100 **Date:** 12/2/2019

Station: 59+68 **Pavement Thickness:** 14.00

No. of Blows	Cumulative Blows	Accumulative Penetration (mm)	Inches below pv'mt
0	**0**	**0**	
3	3	10	0.39
5	8	20	0.79
7	15	30	1.18
6	21	40	1.57
7	28	50	1.97
6	34	60	2.36
11	45	70	2.76
10	55	80	3.15
7	62	90	3.54
9	71	100	3.94
10	81	110	4.33
13	94	120	4.72
15	109	130	5.12
12	121	140	5.51
8	129	150	5.91
10	139	160	6.30
10	149	170	6.69
10	159	180	7.09
14	173	190	7.48
15	188	200	7.87
18	206	210	8.27
25	231	220	8.66
18	249	230	9.06
12	261	240	9.45
17	278	250	9.84
17	295	260	10.24

Appendix F- Laboratory Test Results

(Arranged in Numerical Order)

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER *DEPTH (feet)* *LATITUDE* *LONGITUDE* *LAB NUMBER* *DATE SAMPLED*		RT	TH19-2100 1.2-1.9 59+68 17' **19-9000** 2-Dec-19		TH19-2100 1.9-3.2 59+68 17' **19-9001** 2-Dec-19		TH19-2100 3.7-5.7 59+68 17' **19-9002** 2-Dec-19	
% Passing	**3"**							
	2"							
	1.5"		LT		LT		LT	
Gravel	**1.0"**							
	0.75"		90					
	0.5"		79					
	0.375"		72				99	
	#4		58				98	
	#8							
	#10							
	#16		22		100		95	
	#30							
Sand	**#40**							
	#50							
	#60							
	#80							
	#100		10		27		14	
Silt/Clay	**#200**		7.8		13.8		3.1	
	0.02							
Hydro	**0.005**							
	0.002							
	0.001							
LIQUID LIMIT *PLASTIC LIMIT* *PLASTIC INDEX* *USCS CLASSIFICATION* *USCS SOIL DESCRIPTION*							SP	
NATURAL MOISTURE *ORGANICS* *SP. GR. (FINE)* *SP. GR. (COARSE)* *MAX. DRY DENSITY* *OPTIMUM MOISTURE* *L.A. ABRASION* *DEGRAD. VALUE* *SODIUM SULF. (CRSE)* *SODIUM SULF. (FINE)* *NORDIC ABRASION*			9.7		5.8		12.6	
REMARKS								

GENERAL COMMENTS

Gradation is based on material passing the 3" sieve, according to Alaska Test Method T-7.

[1] Organic content determination is based on the results of the ATM T-6 test method.

(Soil descriptions shown in parentheses are based on field determinations.)

USCS Soil Description Abbreviations: WG = Well-graded; PG = Poorly-graded; E = Elastic; L = Lean; F = Fat

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER		TH19-2100		TH19-2101		TH19-2101		TH19-2101
DEPTH (feet)		6.2-8.2		1.2-2.2		2.2-3.2		3.7-4.5
LATITUDE		59+68		50+07		50+07		50+07
LONGITUDE		17'		17'		17'		17'
LAB NUMBER		**19-9003**		**19-9004**		**19-9005**		**19-9006**
DATE SAMPLED		2-Dec-19		3-Dec-19		3-Dec-19		3-Dec-19
% Passing	**3"**							
	2"							
	1.5"	LT		RT		RT		
Gravel	**1.0"**							
	0.75"			95				
	0.5"			84				
	0.375"			80				
	#4	100		62				
	#8							
	#10							
	#16	99		25		99		100
	#30							
Sand	**#40**							
	#50							
	#60							
	#80							
	#100	14		13		19		72
Silt/Clay	**#200**	7.2		9.8		11.2		57.4
	0.02							
Hydro	**0.005**							
	0.002							
	0.001							
LIQUID LIMIT								NV
PLASTIC LIMIT								NV
PLASTIC INDEX								NP
USCS CLASSIFICATION								ML
USCS SOIL DESCRIPTION								
NATURAL MOISTURE		27.0		8.9		10.6		112.5
ORGANICS								16.3
SP. GR. (FINE)								
SP. GR. (COARSE)								
MAX. DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION								
DEGRAD. VALUE								
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								
NORDIC ABRASION								
REMARKS								hi Org[1]

GENERAL COMMENTS

Gradation is based on material passing the 3" sieve, according to Alaska Test Method T-7.

[1] Organic content determination is based on the results of the ATM T-6 test method.

(Soil descriptions shown in parentheses are based on field determinations.)

USCS Soil Description Abbreviations: WG = Well-graded; PG = Poorly-graded; E = Elastic; L = Lean; F = Fat

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER		RT	TH19-2101		TH19-2101		TH19-2102
DEPTH (feet)			4.5-5.7		6.2-8.2		1.3-2.3
LATITUDE			50+07		50+07		40+53
LONGITUDE			17'		17'		21'
LAB NUMBER			**19-9007**		**19-9008**		**19-9009**
DATE SAMPLED			3-Dec-19		3-Dec-19		3-Dec-19
% Passing	**3"**						
	2"						
	1.5"		RT		RT		LT
Gravel	**1.0"**						96
	0.75"						89
	0.5"				99		83
	0.375"		100		99		77
	#4		99		98		61
	#8						
	#10						
	#16		97		95		24
	#30						
Sand	**#40**						
	#50						
	#60						
	#80						
	#100		12		9		12
Silt/Clay	**#200**		6.2		4.8		9.6
	0.02						
Hydro	**0.005**						
	0.002						
	0.001						
LIQUID LIMIT							
PLASTIC LIMIT							
PLASTIC INDEX							
USCS CLASSIFICATION					SP		
USCS SOIL DESCRIPTION							
NATURAL MOISTURE			18.1		28.8		9.7
ORGANICS			1.7		0.7		
SP. GR. (FINE)							
SP. GR. (COARSE)							
MAX. DRY DENSITY							
OPTIMUM MOISTURE							
L.A. ABRASION							
DEGRAD. VALUE							
SODIUM SULF. (CRSE)							
SODIUM SULF. (FINE)							
NORDIC ABRASION							
REMARKS							

GENERAL COMMENTS

Gradation is based on material passing the 3" sieve, according to Alaska Test Method T-7.

[1] Organic content determination is based on the results of the ATM T-6 test method.

(Soil descriptions shown in parentheses are based on field determinations.)

USCS Soil Description Abbreviations: WG = Well-graded; PG = Poorly-graded; E = Elastic; L = Lean; F = Fat

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER		TH19-2102		TH19-2102		TH19-2102		TH19-2102
DEPTH (feet)		2.3-3.3		3.8-5.8		6.3-8.3		8.8-10.8
LATITUDE		40+53		40+53		40+53		40+53
LONGITUDE		21'		21'		21'		21'
LAB NUMBER		**19-9010**		**19-9011**		**19-9012**		**19-9013**
DATE SAMPLED		3-Dec-19		3-Dec-19		3-Dec-19		3-Dec-19
% Passing	**3"**							
	2"							
	1.5"	LT		LT		LT		
Gravel	**1.0"**							
	0.75"							98
	0.5"			99		98		98
	0.375"			99		96		98
	#4	100		99		95		98
	#8							
	#10							
	#16	98		97		88		94
	#30							
Sand	**#40**							
	#50							
	#60							
	#80							
	#100	21		15		9		9
Silt/Clay	**#200**	11.5		8.2		4.8		3.9
	0.02							
Hydro	**0.005**							
	0.002							
	0.001							
LIQUID LIMIT								
PLASTIC LIMIT								
PLASTIC INDEX								
USCS CLASSIFICATION						SP		SP
USCS SOIL DESCRIPTION								
NATURAL MOISTURE		9.5		18.6		32.5		30.0
ORGANICS						1.7		0.7
SP. GR. (FINE)								
SP. GR. (COARSE)								
MAX. DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION								
DEGRAD. VALUE								
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								
NORDIC ABRASION								
REMARKS								

GENERAL COMMENTS

Gradation is based on material passing the 3" sieve, according to Alaska Test Method T-7.

[1] Organic content determination is based on the results of the ATM T-6 test method.

(Soil descriptions shown in parentheses are based on field determinations.)

USCS Soil Description Abbreviations: WG = Well-graded; PG = Poorly-graded; E = Elastic; L = Lean; F = Fat

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER		LT	TH19-2103		TH19-2103		TH19-2103	
DEPTH (feet)			0.5-2.5		3.0-5.0		8.0-10.0	
LATITUDE			30+41		30+41		30+41	
LONGITUDE			19'		19'		19'	
LAB NUMBER			**19-9014**		**19-9015**		**19-9016**	
DATE SAMPLED			3-Dec-19		3-Dec-19		3-Dec-19	
% Passing	**3"**							
	2"							
	1.5"		RT		RT		RT	
Gravel	**1.0"**		87					
	0.75"		83					
	0.5"		70					
	0.375"		65		100			
	#4		50		98			
	#8							
	#10							
	#16		14		95		99	
	#30							
Sand	**#40**							
	#50							
	#60							
	#80							
	#100		7		16		11	
Silt/Clay	**#200**		5.4		8.9		5.2	
	0.02							
Hydro	**0.005**							
	0.002							
	0.001							
LIQUID LIMIT								
PLASTIC LIMIT								
PLASTIC INDEX								
USCS CLASSIFICATION								
USCS SOIL DESCRIPTION								
NATURAL MOISTURE			5.3				28.0	
ORGANICS							1.0	
SP. GR. (FINE)								
SP. GR. (COARSE)								
MAX. DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION								
DEGRAD. VALUE								
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								
NORDIC ABRASION								
REMARKS								

GENERAL COMMENTS

Gradation is based on material passing the 3" sieve, according to Alaska Test Method T-7.

[1] Organic content determination is based on the results of the ATM T-6 test method.

(Soil descriptions shown in parentheses are based on field determinations.)

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STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER		TH19-2104		TH19-2104		TH19-2104		TH19-2105
DEPTH (feet)		0.7-2.0		3.2-5.2		5.7-7.7		0.6-1.6
LATITUDE		20+38		20+38		20+38		14+93
LONGITUDE		13'		13'		13'		6'
LAB NUMBER		**19-9017**		**19-9018A**		**19-9018B**		**19-9019**
DATE SAMPLED		4-Dec-19		4-Dec-19		4-Dec-19		5-Dec-19
% Passing	**3"**							
	2"							
	1.5"	LT		LT		LT		
Gravel	**1.0"**	96				98		
	0.75"	90				96		94
	0.5"	74				88		82
	0.375"	66				85		74
	#4	49				78		55
	#8							
	#10							
	#16	13		93		53		16
	#30							
Sand	**#40**							
	#50							
	#60							
	#80							
	#100	6		18		12		7
Silt/Clay	**#200**	4.6		9.1		8.2		5.6
	0.02							
Hydro	**0.005**							
	0.002							
	0.001							
LIQUID LIMIT								
PLASTIC LIMIT								
PLASTIC INDEX								
USCS CLASSIFICATION		GW						
USCS SOIL DESCRIPTION								
NATURAL MOISTURE		4.2		12.7		15.7		5.0
ORGANICS								
SP. GR. (FINE)								
SP. GR. (COARSE)								
MAX. DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION								
DEGRAD. VALUE								
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								
NORDIC ABRASION								
REMARKS								

GENERAL COMMENTS

Gradation is based on material passing the 3" sieve, according to Alaska Test Method T-7.

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STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER		RT	TH19-2105		TH19-2106		TH19-2106	
DEPTH (feet)			3.1-5.1		1.4-2.4		2.4-3.4	
LATITUDE			14+93		78+34		78+34	
LONGITUDE			6'		59'		59'	
LAB NUMBER			**19-9020**		**19-9021**		**19-9022**	
DATE SAMPLED			5-Dec-19		5-Dec-19		5-Dec-19	
% Passing	**3"**							
	2"							
	1.5"		RT		RT		RT	
Gravel	**1.0"**							
	0.75"				89		97	
	0.5"				75		92	
	0.375"				66		89	
	#4		100		50		86	
	#8							
	#10							
	#16		99		14		72	
	#30							
Sand	**#40**							
	#50							
	#60							
	#80							
	#100		14		6		15	
Silt/Clay	**#200**		6.5		4.8		7.3	
	0.02							
Hydro	**0.005**							
	0.002							
	0.001							
LIQUID LIMIT								
PLASTIC LIMIT								
PLASTIC INDEX								
USCS CLASSIFICATION					GP			
USCS SOIL DESCRIPTION								
NATURAL MOISTURE			26.0		8.5		6.9	
ORGANICS								
SP. GR. (FINE)								
SP. GR. (COARSE)								
MAX. DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION								
DEGRAD. VALUE								
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								
NORDIC ABRASION								
REMARKS								

GENERAL COMMENTS

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STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER		TH19-2107		TH19-2107		TH19-2108		TH19-2108
DEPTH (feet)		1.3-1.9		1.9-3.3		1.2-1.9		1.9-3.2
LATITUDE		73+33		73+33		68+17		68+17
LONGITUDE		40'		40'		33'		33'
LAB NUMBER		**19-9023**		**19-9024**		**19-9025**		**19-9026**
DATE SAMPLED		5-Dec-19		5-Dec-19		5-Dec-19		5-Dec-19
% Passing	**3"**							
	2"							
	1.5"	LT		LT		RT		
Gravel	**1.0"**							
	0.75"	95				94		
	0.5"	90		98		81		
	0.375"	82		98		71		
	#4	64		97		54		100
	#8							
	#10							
	#16	27		91		17		99
	#30							
Sand	**#40**							
	#50							
	#60							
	#80							
	#100	13		23		8		19
Silt/Clay	**#200**	10.5		13.9		6.2		11.4
	0.02							
Hydro	**0.005**							
	0.002							
	0.001							
LIQUID LIMIT								
PLASTIC LIMIT								
PLASTIC INDEX								
USCS CLASSIFICATION								
USCS SOIL DESCRIPTION								
NATURAL MOISTURE		11.5		5.5		11.2		16.1
ORGANICS								
SP. GR. (FINE)								
SP. GR. (COARSE)								
MAX. DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION								
DEGRAD. VALUE								
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								
NORDIC ABRASION								
REMARKS								

GENERAL COMMENTS

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STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER		RT	TH19-2110		TH19-2110		TH19-2112	
DEPTH (feet)			1.7-1.9		1.9-3.7		1.3-1.8	
LATITUDE			58+60		58+60		48+87	
LONGITUDE			33'		33'		50'	
LAB NUMBER			**19-9027**		**19-9028**		**19-9029**	
DATE SAMPLED			5-Dec-19		5-Dec-19		6-Dec-19	
% Passing	**3"**							
	2"							
	1.5"		RT		RT		RT	
Gravel	**1.0"**		90					
	0.75"		86				84	
	0.5"		73		100		76	
	0.375"		66		98		69	
	#4		55		97		53	
	#8							
	#10							
	#16		19		92		18	
	#30							
Sand	**#40**							
	#50							
	#60							
	#80							
	#100		9		24		9	
Silt/Clay	**#200**		7.1		12.3		6.5	
	0.02							
Hydro	**0.005**							
	0.002							
	0.001							
LIQUID LIMIT								
PLASTIC LIMIT								
PLASTIC INDEX								
USCS CLASSIFICATION								
USCS SOIL DESCRIPTION								
NATURAL MOISTURE			10.7		15.2		9.9	
ORGANICS								
SP. GR. (FINE)								
SP. GR. (COARSE)								
MAX. DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION								
DEGRAD. VALUE								
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								
NORDIC ABRASION								
REMARKS								

GENERAL COMMENTS

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STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER		TH19-2112		TH19-2113			TH19-2115	
DEPTH (feet)		1.8-3.3		1.4-2.3		2.3-3.4	1.4-2.1	
LATITUDE		48+87		43+58		43+58	31+85	
LONGITUDE		50'		57'			55'	
LAB NUMBER		**19-9030**		**19-9031**		**19-9032**	**19-9033**	
DATE SAMPLED		6-Dec-19		6-Dec-19			6-Dec-19	
% Passing	**3"**							
	2"							
	1.5"	RT		LT			LT	
Gravel	**1.0"**						92	
	0.75"	97		96			84	
	0.5"	97		86		99	80	
	0.375"	97		78		98	72	
	#4	96		59		97	59	
	#8							
	#10							
	#16	92		22		93	22	
	#30							
Sand	**#40**							
	#50							
	#60							
	#80							
	#100	22		10		21	10	
Silt/Clay	**#200**	10.9		7.8		11.4	7.7	
	0.02							
Hydro	**0.005**							
	0.002							
	0.001							
LIQUID LIMIT								
PLASTIC LIMIT								
PLASTIC INDEX								
USCS CLASSIFICATION								
USCS SOIL DESCRIPTION								
NATURAL MOISTURE		12.5		10.1		7.6	8.0	
ORGANICS								
SP. GR. (FINE)								
SP. GR. (COARSE)								
MAX. DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION								
DEGRAD. VALUE								
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								
NORDIC ABRASION								
REMARKS								

GENERAL COMMENTS

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STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER		TH19-2115		TH19-2117		TH19-2117		TH19-2119
DEPTH (feet)		2.1-3.4		1.6-2.3		2.3-3.6		1.3-2.5
LATITUDE		31+85		21+97		21+97		12+29
LONGITUDE		55'		51'		51'		51'
LAB NUMBER		**19-9034**		**19-9035**		**19-9036**		**19-9037**
DATE SAMPLED		6-Dec-19		6-Dec-19		6-Dec-19		7-Dec-19
% Passing	**3"**							
	2"							
	1.5"	LT		LT		LT		
Gravel	**1.0"**							96
	0.75"			98				93
	0.5"			90				82
	0.375"			82				74
	#4			65				58
	#8							
	#10							
	#16			27		100		21
	#30							
Sand	**#40**							
	#50							
	#60							
	#80							
	#100	20		13		20		10
Silt/Clay	**#200**	10.5		10.0		10.4		8.2
	0.02							
Hydro	**0.005**							
	0.002							
	0.001							
LIQUID LIMIT								
PLASTIC LIMIT								
PLASTIC INDEX								
USCS CLASSIFICATION								
USCS SOIL DESCRIPTION								
NATURAL MOISTURE		5.9		11.6		12.8		11.9
ORGANICS								
SP. GR. (FINE)								
SP. GR. (COARSE)								
MAX. DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION								
DEGRAD. VALUE								
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								
NORDIC ABRASION								
REMARKS								

GENERAL COMMENTS

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STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER *DEPTH (feet)* *LATITUDE* *LONGITUDE* *LAB NUMBER* *DATE SAMPLED*	LT	TH19-2120 1.7-2.8 06+88 25' **19-9038** 7-Dec-19		TH19-2120 2.8-3.7 06+88 25' **19-9039** 7-Dec-19		TH19-2125 9.0-12.0 05+49 583' **19-9046** 9-Dec-19	
% Passing **3"**							
2"							
1.5"		RT		RT		RT	
Gravel **1.0"**		91					
0.75"		89					
0.5"		78					
0.375"		71		99			
#4		57		98			
#8							
#10							
#16		21		93			
#30							
Sand **#40**							
#50							
#60							
#80							
#100		10		23			
Silt/Clay **#200**		7.8		12.2			
0.02							
Hydro **0.005**							
0.002							
0.001							
LIQUID LIMIT *PLASTIC LIMIT* *PLASTIC INDEX* *USCS CLASSIFICATION* *USCS SOIL DESCRIPTION*							
NATURAL MOISTURE		12.1		10.6			
ORGANICS *SP. GR. (FINE)* *SP. GR. (COARSE)* *MAX. DRY DENSITY* *OPTIMUM MOISTURE* *L.A. ABRASION* *DEGRAD. VALUE* *SODIUM SULF. (CRSE)* *SODIUM SULF. (FINE)* *NORDIC ABRASION*							
REMARKS							

GENERAL COMMENTS

Gradation is based on material passing the 3" sieve, according to Alaska Test Method T-7.

[1] Organic content determination is based on the results of the ATM T-6 test method.

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STATE OF ALASKA DEPARTMENT OF TRANSPORTATION
NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: Adak Airport Rehabilitation
PROJECT NUMBER: FFAPT00194
AKSAS NUMBER:
SAMPLED BY: S. HOOPER
MATERIAL SOURCE: CENTERLINE

TEST HOLE NUMBER *DEPTH (feet)* *LATITUDE* *LONGITUDE* *LAB NUMBER* *DATE SAMPLED*		MS_Road 0.0-0.5 N51.84974° W176.65145° **19-9045** Pit		MS_Airport1 0.0-0.5 N51.87761° W176.6423° **GS**	MS_Lower 0.0-0.5 N51.84518° W176.64426° **GS** Pit		MS_Upper 0.0-0.5 N51.8443° W176.63551° **GS** Pit	
% Passing	**3"**							
	2"							
Gravel	**1.5"**							
	1.0"							
	0.75"							
	0.5"							
	0.375"							
	#4							
	#8							
	#10							
	#16							
	#30							
Sand	**#40**							
	#50							
	#60							
	#80							
	#100							
Silt/Clay	**#200**							
	0.02							
Hydro	**0.005**							
	0.002							
	0.001							
LIQUID LIMIT								
PLASTIC LIMIT								
PLASTIC INDEX								
USCS CLASSIFICATION								
USCS SOIL DESCRIPTION								
NATURAL MOISTURE								
ORGANICS								
SP. GR. (FINE)								
SP. GR. (COARSE)		2.85		2.70	2.89		2.88	
MAX. DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION		14		31	14		13	
DEGRAD. VALUE		74		44	71		61	
SODIUM SULF. (CRSE)		2		39	0		0	
SODIUM SULF. (FINE)		3		29	6		3	
NORDIC ABRASION								
REMARKS								

GENERAL COMMENTS

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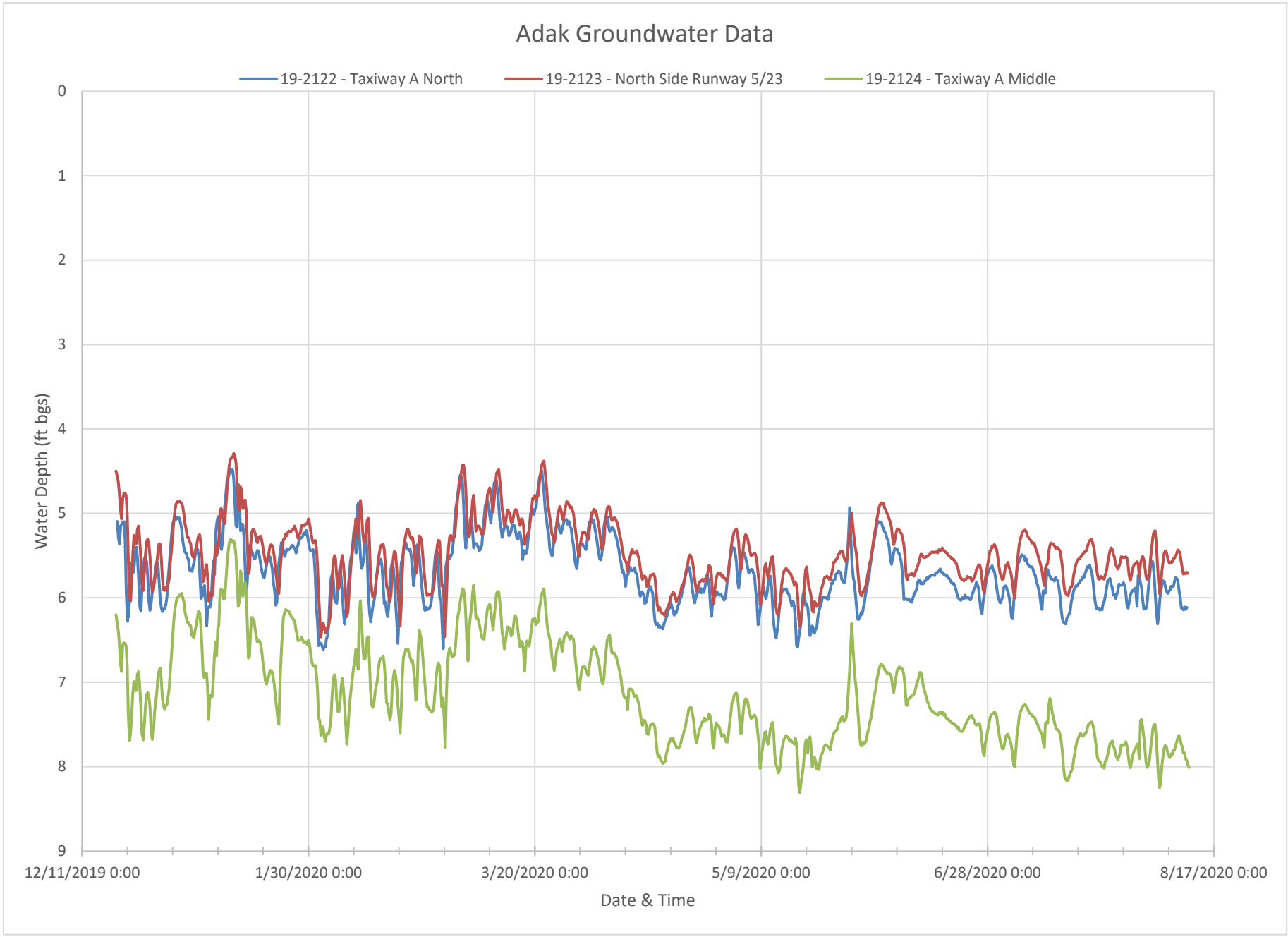
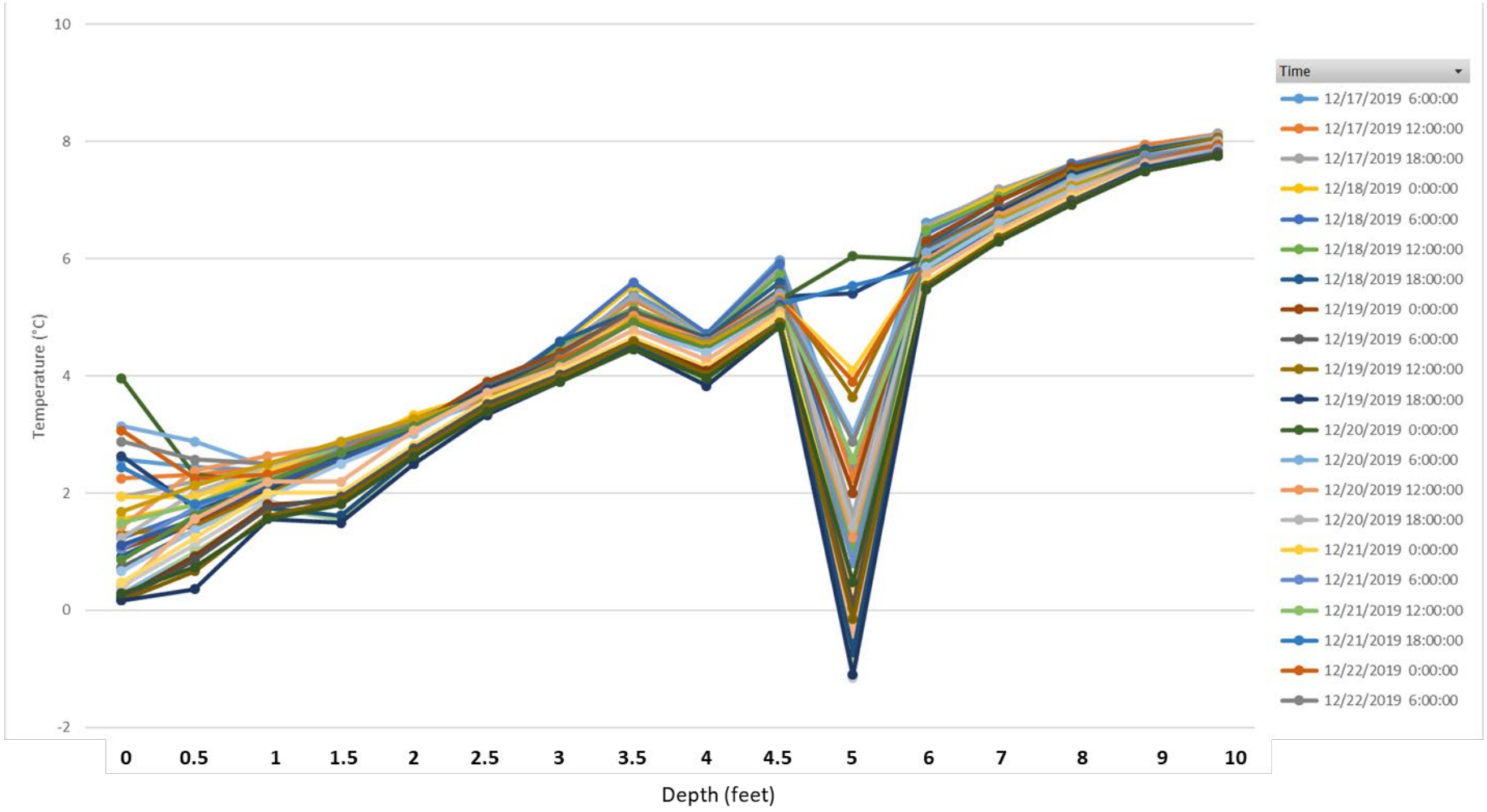
Appendix G- Well Data
(Arranged in Numerical Order)


Adak Groundwater Data
19-2122 - Taxiway A North
19-2123 - North Side Runway 5/23
19-2124 - Taxiway A Middle
Water Depth (ft bgs)
0
1
2
3
4
5
6
7
8
9
12/11/2019 0:00
1/30/2020 0:00
3/20/2020 0:00
5/9/2020 0:00
6/28/2020 0:00
8/17/2020 0:00
Date & Time

Appendix H- Thermistor Data
(Arranged in Numerical Order)


10
8
6
4
2
0
-2
Temperature (°C)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
6
7
8
9
10
Depth (feet)
Time
12/17/2019 6:00:00
12/17/2019 12:00:00
12/17/2019 18:00:00
12/18/2019 0:00:00
12/18/2019 6:00:00
12/18/2019 12:00:00
12/18/2019 18:00:00
12/19/2019 0:00:00
12/19/2019 6:00:00
12/19/2019 12:00:00
12/19/2019 18:00:00
12/20/2019 0:00:00
12/20/2019 6:00:00
12/20/2019 12:00:00
12/20/2019 18:00:00
12/21/2019 0:00:00
12/21/2019 6:00:00
12/21/2019 12:00:00
12/21/2019 18:00:00
12/22/2019 0:00:00
12/22/2019 6:00:00

	Depth (feet)															
	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	6	7	8	9	10
Time	Temperature (°C)															
12/17/2019 6:00:00	2.57	2.44	2.38	2.76	3.14	3.58	4.34	4.72	5.41	5.98	2.44	6.61	7.12	7.62	7.94	8.13
12/17/2019 12:00:00	2.25	2.32	2.44	2.82	3.2	3.58	4.46	4.65	5.29	5.85	2.25	6.49	7.12	7.62	7.94	8.13
12/17/2019 18:00:00	1.94	2.19	2.44	2.88	3.2	3.64	4.46	4.65	5.35	5.85	1.62	6.55	7.18	7.62	7.87	8.13
12/18/2019 0:00:00	1.56	1.81	2.38	2.69	3.33	3.71	4.53	4.72	5.54	5.92	0.8	6.49	7.12	7.62	7.87	8.06
12/18/2019 6:00:00	1.24	1.68	2.32	2.82	3.26	3.71	4.59	4.72	5.6	5.92	1.18	6.42	7.05	7.62	7.87	8.06
12/18/2019 12:00:00	1.05	1.56	2.25	2.82	3.26	3.64	4.53	4.65	5.16	5.73	0.99	6.49	7.05	7.56	7.87	8.06
12/18/2019 18:00:00	0.92	1.49	2.25	2.76	3.26	3.64	4.59	4.65	5.1	5.6	1.24	6.23	6.99	7.56	7.87	8.06
12/19/2019 0:00:00	1.05	1.49	2.06	2.63	3.14	3.9	4.4	4.59	5.1	5.47	2	6.3	6.99	7.56	7.81	8.06
12/19/2019 6:00:00	0.73	1.37	2	2.63	3.07	3.83	4.34	4.53	5.1	5.47	0.42	6.17	6.86	7.5	7.81	8.06
12/19/2019 12:00:00	1.3	1.43	2	2.57	3.07	3.77	4.28	4.53	5.03	5.41	3.64	6.11	6.8	7.5	7.81	8.06
12/19/2019 18:00:00	2.63	1.75	2.06	2.63	3.14	3.77	4.28	4.53	4.97	5.35	5.41	6.04	6.8	7.43	7.81	8
12/20/2019 0:00:00	3.96	2.32	2.19	2.57	3.14	3.71	4.28	4.53	4.91	5.29	6.04	5.98	6.74	7.37	7.81	8
12/20/2019 6:00:00	3.14	2.88	2.44	2.76	3.14	3.58	4.28	4.53	4.97	5.41	3.01	6.11	6.74	7.37	7.75	8
12/20/2019 12:00:00	1.43	2.38	2.63	2.82	3.2	3.58	4.28	4.59	5.03	5.35	1.24	5.98	6.74	7.31	7.75	8
12/20/2019 18:00:00	1.24	2	2.44	2.76	3.2	3.64	4.28	4.53	4.97	5.29	1.43	5.92	6.67	7.31	7.75	8
12/21/2019 0:00:00	1.94	1.94	2.38	2.76	3.26	3.64	4.28	4.53	4.97	5.29	4.09	5.92	6.61	7.24	7.75	7.94
12/21/2019 6:00:00	1.05	1.75	2.25	2.76	3.2	3.64	4.28	4.46	4.91	5.22	0.8	5.85	6.61	7.18	7.75	7.94
12/21/2019 12:00:00	1.49	1.81	2.25	2.82	3.26	3.64	4.28	4.46	4.91	5.22	2.57	5.79	6.55	7.18	7.68	7.94
12/21/2019 18:00:00	2.44	1.81	2.19	2.69	3.2	3.64	4.28	4.46	4.91	5.22	5.54	5.85	6.49	7.18	7.68	7.94
12/22/2019 0:00:00	3.07	2.25	2.32	2.69	3.26	3.64	4.28	4.46	4.91	5.29	3.9	5.92	6.61	7.18	7.68	7.94
12/22/2019 6:00:00	2.88	2.57	2.5	2.82	3.2	3.64	4.21	4.59	4.91	5.29	2.88	5.92	6.67	7.24	7.68	7.87
12/22/2019 12:00:00	1.68	2.13	2.5	2.88	3.26	3.64	4.15	4.53	4.97	5.22	0.42	5.85	6.67	7.24	7.62	7.87
12/22/2019 18:00:00	1.11	1.56	2.13	2.57	3.07	3.71	4.21	4.4	4.91	5.22	-0.47	5.92	6.61	7.12	7.62	7.87
12/23/2019 0:00:00	0.86	1.62	2.19	2.69	3.14	3.71	4.21	4.46	4.91	5.16	0.42	5.92	6.61	7.12	7.62	7.87
12/23/2019 6:00:00	0.67	1.37	1.94	2.5	3.01	3.71	4.15	4.4	4.78	5.1	-0.21	5.85	6.61	7.18	7.62	7.87
12/23/2019 12:00:00	0.36	1.56	2.19	2.19	3.07	3.71	4.15	4.27	4.78	5.1	-0.4	5.73	6.49	7.12	7.62	7.87
12/23/2019 18:00:00	0.42	1.11	1.87	1.56	2.63	3.52	4.02	3.96	4.59	4.97	-1.16	5.6	6.42	7.05	7.56	7.87

12/24/2019 0:00:00	0.48	1.24	2	2	2.82	3.58	4.09	4.15	4.65	5.03	0.42	5.6	6.42	7.05	7.56	7.81
12/24/2019 6:00:00	0.29	0.99	1.75	1.56	2.63	3.45	3.96	3.96	4.53	4.91	-0.85	5.54	6.36	6.99	7.56	7.87
12/24/2019 12:00:00	0.23	0.99	1.75	1.56	2.63	3.45	3.96	3.9	4.53	4.91	-0.85	5.54	6.36	6.99	7.56	7.81
12/24/2019 18:00:00	0.23	0.92	1.75	1.62	2.63	3.45	3.96	3.96	4.53	4.91	-0.72	5.54	6.3	6.99	7.56	7.81
12/25/2019 0:00:00	0.17	0.92	1.81	1.87	2.76	3.45	4.02	4.09	4.59	4.91	0.1	5.54	6.36	6.99	7.5	7.81
12/25/2019 6:00:00	0.17	0.86	1.75	1.94	2.76	3.52	4.02	4.02	4.59	4.91	0.04	5.54	6.36	6.99	7.5	7.81
12/25/2019 12:00:00	0.17	0.67	1.62	1.87	2.69	3.45	3.96	4.02	4.59	4.91	-0.15	5.54	6.36	6.93	7.5	7.75
12/25/2019 18:00:00	0.17	0.36	1.56	1.49	2.5	3.33	3.9	3.83	4.46	4.84	-1.1	5.48	6.3	6.93	7.5	7.75
12/26/2019 0:00:00	0.29	0.73	1.56	1.81	2.63	3.39	3.9	3.96	4.46	4.84	0.48	5.48	6.3	6.93	7.5	7.75