

APPENDIX E

Material Reconnaissance Trip Report

FIELD TRIP REPORT

State of Alaska

Department of Transportation & Public Facilities
Statewide Design & Engineering Services Division

TO: Jim Amundsen, P.E.
Project Manager
Aviation Design

DATE: October 24, 2005

FILE NO: 51759

Thru: *Newton Bingham*
Newt Bingham, P.E.
Regional Materials Engineer
Central Region Materials

TELEPHONE NO: 269-6200
FAX NO: 269-6901

FROM: Craig T Boeckman, C.P.G. *CB*
Regional Geologist
Central Region Materials

SUBJECT: Tuluksak Airport
Improvements –
Material Site(s)
Reconnaissance

Scope of Work

On September 6 and 7, 2005 Central Region Materials personnel visited the site with Aviation Design to evaluate potential material sites for the proposed realignment of the Tuluksak Airport Runway (Figure 1). The evaluation included aerial reconnaissance using a helicopter to review the terrain, advancing soil probes along the proposed runway alignment to determine the soil types and presence/absence of frozen soil, and collect soil samples from proposed material sites. This work was conducted in support of the EA that is currently being prepared for this project to identify potential material sites.

The soil sampling activities included the following:

1. Advancing 4 hand-auger probes at a sand bar along the Kuskokwim River at the center of Section 33, T12N, R66W, S.M. (Figure 2). Soil samples were collected from select probe locations.
2. Advancing 12 hand-auger probes along the proposed new runway alignment in the northern parts of Sections 35 and 36, T12N, R66W, S.M. (Figure 3). Soil samples were also collected from select probe locations.
3. Advancing 3 hand-auger probes at a proposed material site at NE corner of Section 30, T12N, R65W, S.M. (Figure 4).
4. Collecting one soil sample from a soil stockpile at the approximate 10-acre clearing for the new proposed sewage treatment farm in the NE part of Section 34, T12N, R66W, S.M. (see Figure 2). This sample was collected because it is in similar terrain as the proposed new runway and the material excavated at the proposed new runway will probably be similar to the material excavated in this area.

Geology and Topography

The proposed Tuluksak Airport runway alignment is located on alluvial deposits from the Kuskokwim and Tuluksak Rivers, and the Mishevik Slough. The deposits generally consist of about 2 to 8 ft of organic soil, silt, and silty sand. Below the organic and silts are layers of silty

about 2 to 8 ft of organic soil, silt, and silty sand. Below the organic and silts are layers of silty sand and sand. Discontinuous permafrost is also present along with wetland swamps and small lakes (remnant river meanders).

General Field Conditions

The following discussion gives general soil conditions for the proposed runway alignment and material sites. Laboratory Reports of the samples are attached.

Proposed Runway Realignment

Discontinuous permafrost is present along the northern end of the runway and near the proposed apron(s). Wetland and swamp areas with surface water and soft underlying soils are present along the central and south end of the runway.

Potential Material Sites

1. Sand Bar in the middle of Section 33, T12N, R66W, S.M. (Figure 2) - Contains sand with a relatively small amount of fines. Some organic material is contained in the sand bar deposit. The table below summarizes the sample results from the sand bar.

Site Location	Soil Probe Number	Percent Gravel	Percent Sand	Percent Fines (P200)	Percent Organic	Comments
Sand Bar Sxn 33	SP05-1, SP05-2, and SP05-3	0	92	8	NA	Combined soil samples from these three probes. Probes were advanced to about 5 ft below ground surface.
Sand Bar Sxn 33	GS05-4	0	95	5	1.2	Collected sample from bank of the sand bar. The higher topographic points on the sand bar were about 10 ft above water at the time of our visit.

2. Wooded terrain in the area of the proposed runway in the northern parts of Sections 35 and 36, T12N, R66W, S.M. (Figure 3) - Contains a mixture of silt, organic, and sand. The wooded terrain rises about 10 to 12 ft above the surrounding wetlands. The table below summarizes the samples collected from soil probes in this area.

Site Location	Soil Probe Number	Percent Gravel	Percent Sand	Percent Fines (P200)	Percent Organic	Comments
Section 35 and 36	SP05-8, SP05-10, And SP05-19	0	35	65	3.1	Moisture Content = 32.6 LL = 25 Combined soil samples from these three probes. Probes were advanced to 6 ft below ground surface.

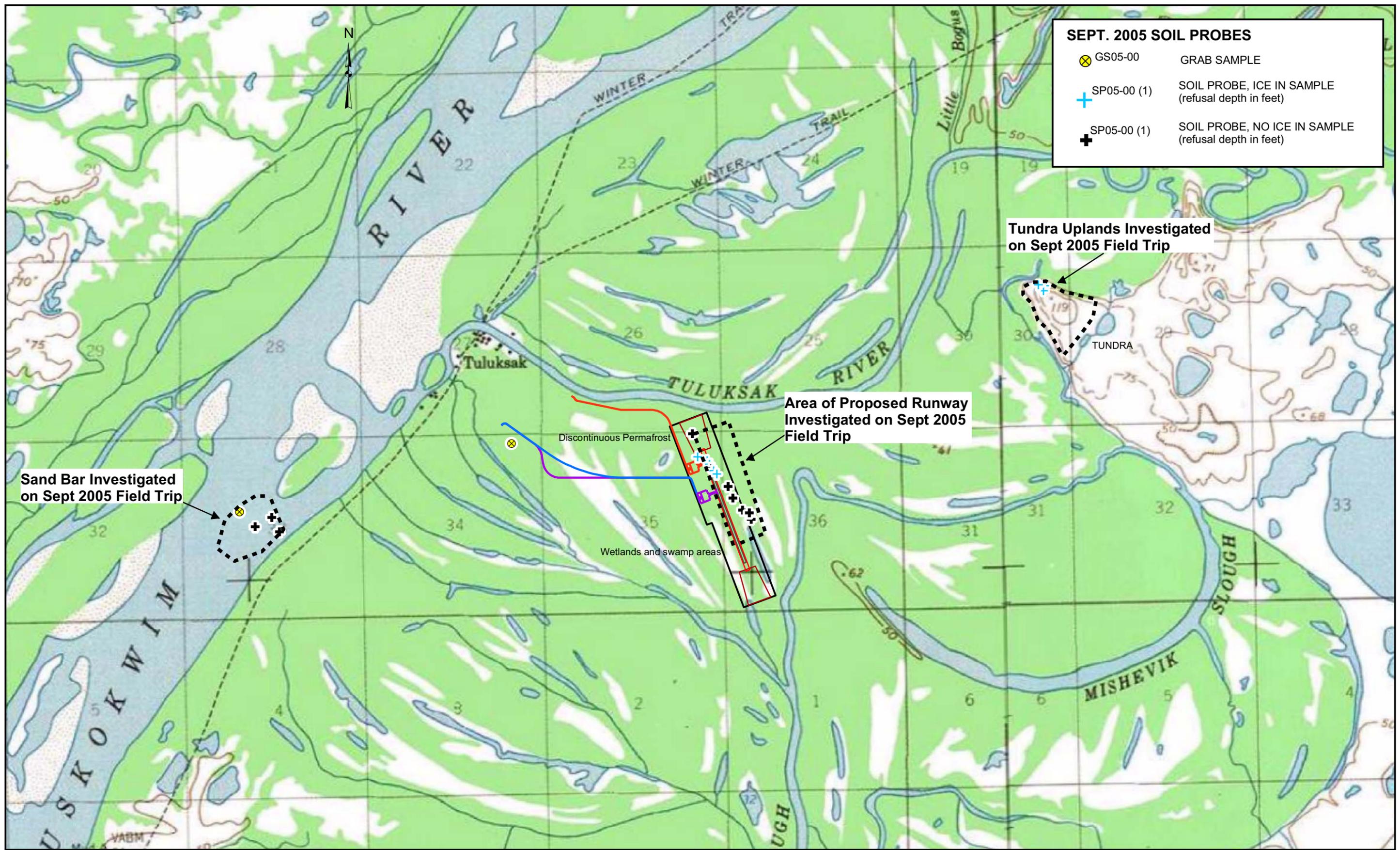
For comparison a soil sample was collected from a stockpile that was built as result of clearing operations for the proposed sewage lagoon in the NE part of Section 34, T12N, R66W, S.M. (Figure 2). The terrain appeared to be similar as that around the proposed new runway. The sample contained the following.

Site Location	Soil Probe Number	Percent Gravel	Percent Sand	Percent Fines (P200)	Percent Organic	Comments
Section 34	Grab Sample from Stockpile	0	60	40	3.0	Stockpile resulting from clearing operations for sewage treatment lagoon.

3. The tundra upland at the NE part of Section 30, T12N, R65W, S.M. (Figure 4) contains frozen organic silt of unknown depth. The table below summarizes the samples collected from soil probes in this area.

Site Location	Soil Probe Number	Percent Gravel	Percent Sand	Percent Fines (P200)	Percent Organic	Comments
Section 30	SP05-5 and SP05-6	0	24	76	6.2	Combined soil samples from these two probes. Probes were advanced to 1 and 1.5 ft below ground surface.

Map Document: (H:\Pj\CR\Reg\ARPT\Tuluksak_51759\GIS\TULUKSAK_GFS.mxd) 9/26/2005 -- 1:21:07 PM



SEPT. 2005 SOIL PROBES	
⊗ GS05-00	GRAB SAMPLE
+ SP05-00 (1)	SOIL PROBE, ICE IN SAMPLE (refusal depth in feet)
+ SP05-00 (1)	SOIL PROBE, NO ICE IN SAMPLE (refusal depth in feet)

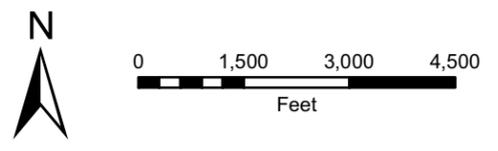
Sand Bar Investigated on Sept 2005 Field Trip

Area of Proposed Runway Investigated on Sept 2005 Field Trip

Tundra Uplands Investigated on Sept 2005 Field Trip

Discontinuous Permafrost

Wetlands and swamp areas



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STATE OF ALASKA
 DEPARTMENT OF TRANSPORTATION
 AND PUBLIC FACILITIES
 CENTRAL REGION
 MATERIALS

TULUKSAK AIRPORT RELOCATION
 PROJECT No. 51795
 AREAS INVESTIGATED DURING THE
 SEPTEMBER 2006 FIELD RECONNAISSANCE TRIP

FIGURE 1

SEPT. 2005 SOIL PROBES

-  GS05-00 GRAB SAMPLE
-  SP05-00 (1) SOIL PROBE, ICE IN SAMPLE (refusal depth in feet)
-  SP05-00 (1) SOIL PROBE, NO ICE IN SAMPLE (refusal depth in feet)

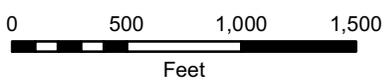
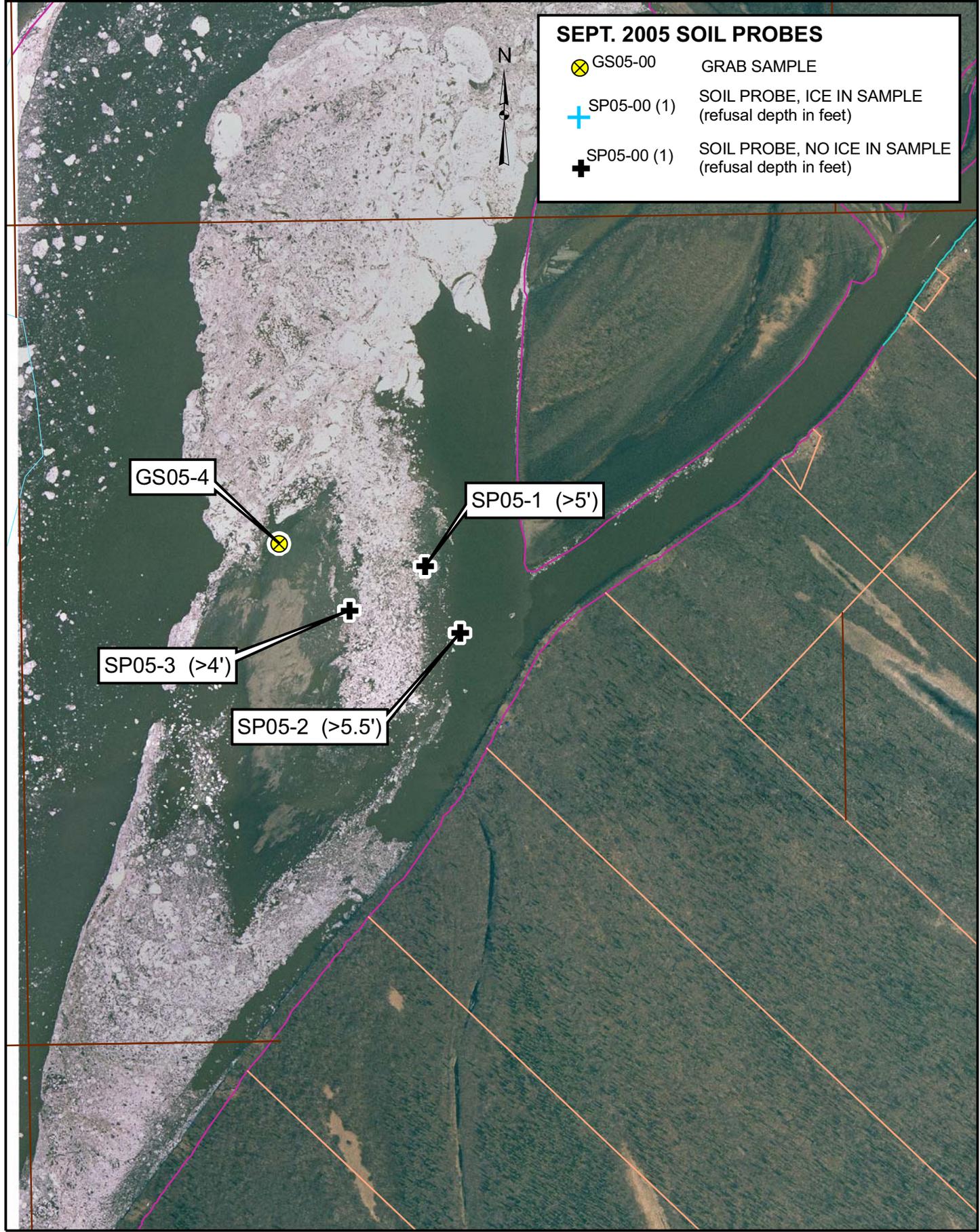


Image by AeroMap US
 Date of Photography: May 3, 2003
 PLAN DRAWING BY R&M CONSULTANTS



STATE OF ALASKA
 DEPARTMENT OF TRANSPORTATION
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CENTRAL REGION
 MATERIALS

TULUKSAK AIRPORT RELOCATION
 PROJECT No. 51795

SEPT. 2005 SOIL PROBE LOCATION
 RIVER SANDBAR SITE

FIGURE 2

SEPT. 2005 SOIL PROBES



-  GS05-00 GRAB SAMPLE
-  SP05-00 (1) SOIL PROBE, ICE IN SAMPLE (refusal depth in feet)
-  SP05-00 (1) SOIL PROBE, NO ICE IN SAMPLE (refusal depth in feet)

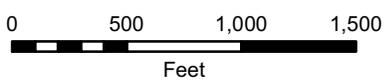
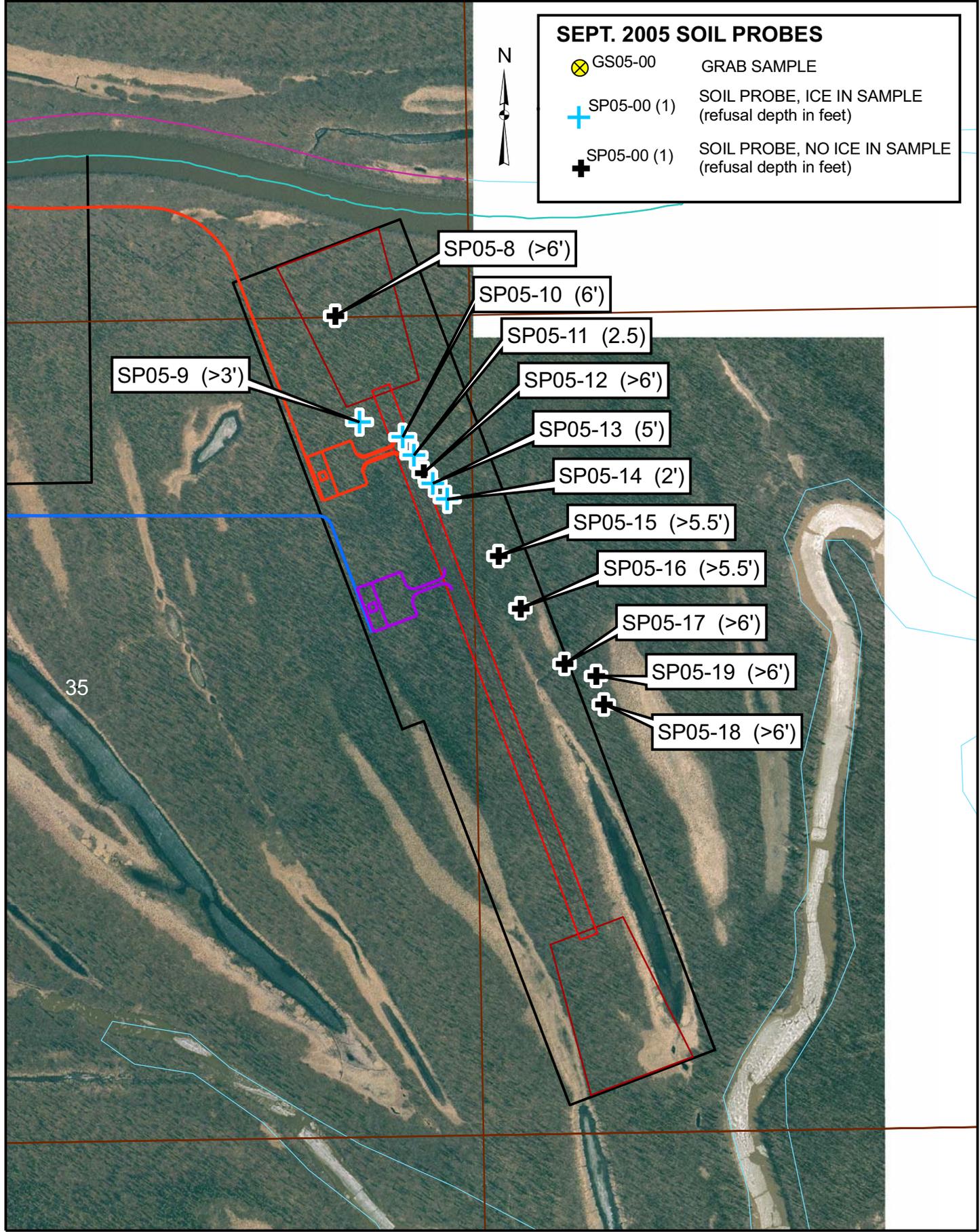


Image by AeroMap US
 Date of Photography: May 3, 2003
 PLAN DRAWING BY R&M CONSULTANTS



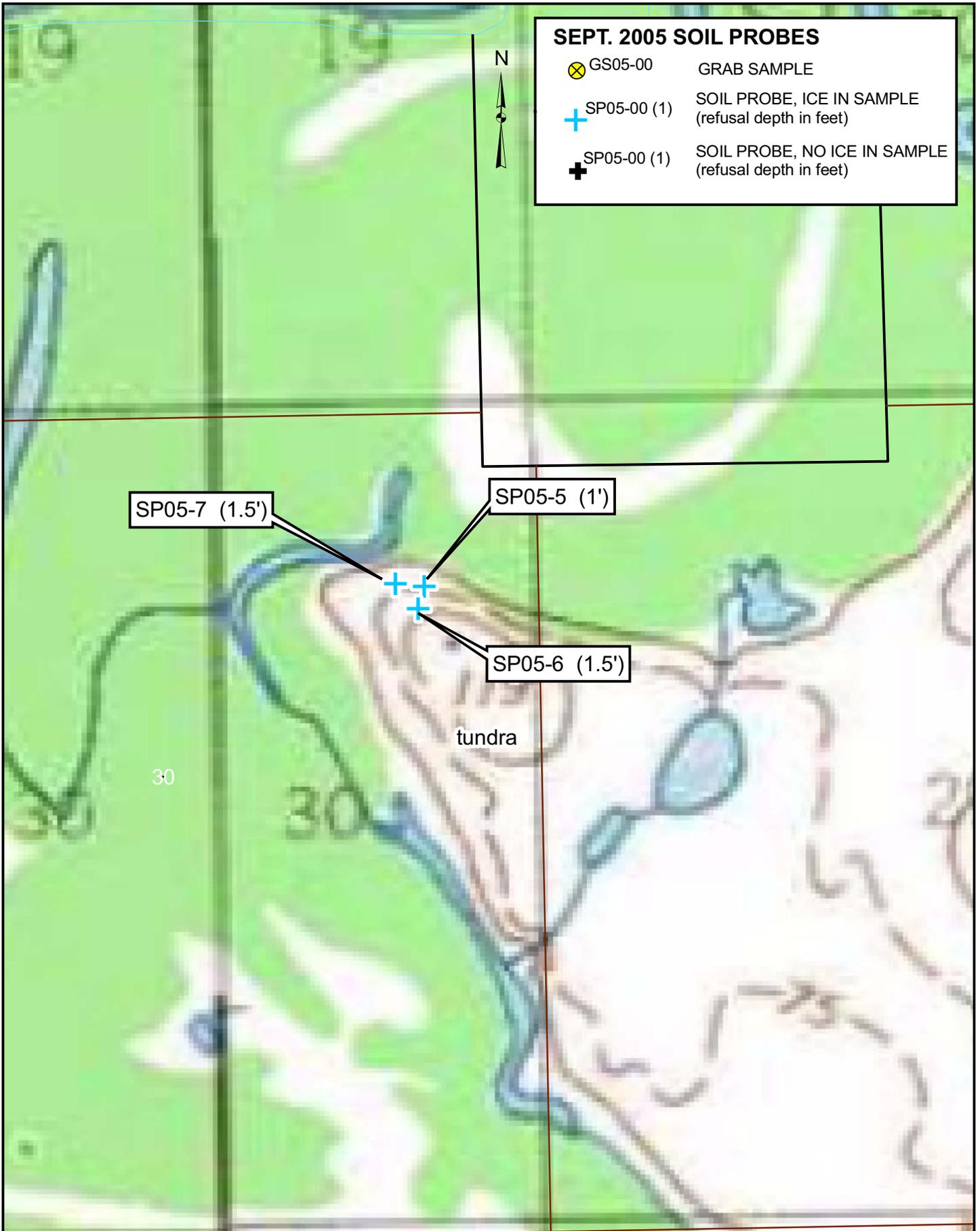
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 DEPARTMENT OF TRANSPORTATION
 AND PUBLIC FACILITIES

CENTRAL REGION
 MATERIALS

TULUKSAK AIRPORT RELOCATION
 PROJECT No. 51795

SEPT. 2005 SOIL PROBE LOCATION
 PROPOSED AIRPORT RUNWAY SITE

FIGURE 3



Map Document: (H:\PI\CR\eg\ARPT\Tuluksak, 51759)\Data\GIS\TULUKSAK_GPS.mxd 10/21/2005 -- 1:21:07 PM

0 500 1,000 1,500
 Feet

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TULUKSAK AIRPORT RELOCATION
 PROJECT No. 51795

SEPT. 2005 SOIL PROBE LOCATION
 TUNDRA UPLANDS UPSITE
 FIGURE 4

STATE OF ALASKA

Department of Transportation & Public Facilities

Central Materials Lab

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Tuluksak Airport Improvements PROJECT NO. STP-0544 (15) / 51795

SAMPLE OF: _____	ITEM/SPECIFICATION NO.: _____	LABORATORY NO. <u>05A-2032</u>
SAMPLED FROM: <u>SP-05-01, SP-05-02, SP-05-03 , Depth 0'-6'</u>		FIELD NO.: <u>01, 02, 03</u>
SOURCE/SUPPLIER: _____	QUANTITY REPRESENTED _____	DATE SAMPLED: <u>09/06/2005</u>
LOCATION/ADDRESS: <u>Centerline / Tuluksak Airport</u>	SUBMITTED BY: <u>C. Roso</u>	DATE RECEIVED: <u>09/10/2005</u>
EXAMINED FOR: <u>Classification, Moisture</u>		DATE COMPLETED: <u>09/16/2005</u>
		DATE REPORTED: <u>09/20/2005</u>

Sieve Analysis ASTM C 136 & C 117

SIZE	Lab	Specs.
4"		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
1/4"		
#4	100	
#8	100	
#10	100	
#16	100	
#30	100	
#40	99	
#50	82	
#80		
#100	20	
#200	7.9	
.02mm		
.002mm		
Fineness Modulus		
Sand Equivalent		

SAMPLE PREPARATION BY: ASTM D421 & C 702

	Dry Prep	Wet Prep	Specs
LL ASTM D4318	NV		
PL	NV		
PI	NP		
% Fracture			
Single Face			
Double Face			
Flat Elongated 1:3			
1:5			
% Organic			
pH			
% Nat. Moisture	9.8		
% Sticks & Roots			
Dry Unit Wt., pcf			
% +3"			
% Gravel	0		
% Sand	92		
% Silt	8		
% Clay			
FSV			
AASHTO Class	A-3(0)		
Unified Class	SP-SM		
		Poorly graded sand with silt	

ASTM C 566

ASTM D 2487

	Coarse	Specs	Fine	Specs
Friable Particles				
Sulfate Soundness, % Loss				
L.A. Abrasion, Total % Loss				
% Loss @ 100 revs				
Degradation				
Nordic Abrasion, % Loss				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

The Material as Submitted Conforms to Specifications
Yes [] No [] NA [X]

Signature Newton Bingham
Newton J. Bingham, PE
Regional Materials Engineer

THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Materials Lab

5750 EAST TUDOR RD, ANCHORAGE AK 99507
 Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Tuluksak Airport Improvements

PROJECT NO. STP-0544(15) / 51795

LABORATORY NO. 05A-2033

SAMPLE OF: _____ ITEM/SPECIFICATION NO.: _____

FIELD NO.: 04A, 04B

SAMPLED FROM: GS-05-04 , Depth 0'-6'

DATE SAMPLED: 09/06/2005

SOURCE/SUPPLIER: _____ QUANTITY REPRESENTED _____

DATE RECEIVED: 09/10/2005

LOCATION/ADDRESS: Centerline / Tuluksak Airport SUBMITTED BY: C. Roso

DATE COMPLETED: 09/20/2005

EXAMINED FOR: Classification, Moisture, Organic

DATE REPORTED: 09/20/2005

Sieve Analysis ASTM C 136 & C 117

SIZE	Lab	Specs.
4"		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
1/4"		
#4		
#8		
#10		
#16	100	
#30	99	
#40	98	
#50	94	
#80		
#100	20	
#200	5.0	
.02mm		
.002mm		

ASTM D 2974

ASTM C 566

ASTM D 2487

SAMPLE PREPARATION BY: ASTM D421 & C 702

	Dry Prep	Wet Prep	Specs
LL - ASTM D 4318	NV		
PL	NV		
PI	NP		
% Fracture			
Single Face			
Double Face			
Flat Elongated, 1:3			
1:5			
% Organic	1.2		
pH			
% Nat. Moisture	11.2		
% Sticks & Roots			
Dry Unit Wt., pcf			
% #3"			
% Gravel			
% Sand	95		
% Silt	5		
% Clay			
FSV			
AASHTO Class	A-3(0)		
Unified Class	SP-SM		

Poorly graded sand with silt.

Fineness Modulus
 Sand Equivalent

Coarse	Specs	Fine	Specs
--------	-------	------	-------

Friable Particles
 Sulfate Soundness, % Loss
 L.A. Abrasion, Total % Loss
 % Loss @ 100 revs
 Degradation
 Nordic Abrasion, % Loss

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

The Material as Submitted Conforms to Specifications
 Yes [] No [] NA [X]

Signature Newton Bringham
 Newton J. Bringham, PE

Regional Materials Engineer

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Department of Transportation & Public Facilities

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Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Tuluksak Airport Improvements PROJECT NO. SIP-0544 (15) / 51795 LABORATORY NO. 05A-2034
 SAMPLE OF: _____ ITEM/SPECIFICATION NO.: _____ FIELD NO.: 05, 06
 SAMPLED FROM: SP-05-05, SP-05-06 , Depth 0.5-1.5' DATE SAMPLED: 09/06/2005
 SOURCE/SUPPLIER: _____ QUANTITY REPRESENTED _____ DATE RECEIVED: 09/10/2005
 LOCATION/ADDRESS: Centerline / Tuluksak Airport SUBMITTED BY: C. Roso DATE COMPLETED: 09/16/2005
 EXAMINED FOR: Gradation, Moisture, Organic DATE REPORTED: 09/20/2005

Sieve Analysis		ASTM C 136 & C 117
SIZE	Lab	Specs.
4"		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
1/4"		
#4		ASTM D 2974
#8		ASTM C 566
#10		
#16	100	
#30	99	
#40	98	
#50	96	
#80		
#100	86	
#200	75.7	
.02mm		
.002mm		
Fineness Modulus		
Sand Equivalent		

SAMPLE PREPARATION BY: AASHTO T 87 & T 248			
	Dry	Wet	Specs
	Prep	Prep	
LL - ASTM D-4318			
PL			
PI			
% Fracture			
Single Face			
Double Face			
Flat Elongated, 1:3			
1:5			
% Organic	6.2		
pH			
% Nat. Moisture	34.9		
% Sticks & Roots			
Dry Unit Wt., pcf			
% +3"			
% Gravel			
% Sand	24		
% Silt	76		
% Clay			
FSV			
AASHTO Class			
Unified Class			

	Coarse	Specs	Fine	Specs
Friable Particles				
Sulfate Soundness, % Loss				
L.A. Abrasion, Total % Loss				
% Loss @ 100 revs				
Degradation				
Nordic Abrasion, % Loss				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

The Material as Submitted Conforms to Specifications
 Yes [] No [] N/A [X]

Signature Newton Bingham
 Newton J. Bingham, PE
 Regional Materials Engineer

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Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Tuluksak Airport Improvements PROJECT NO. STP-0544 (15) / 51795

SAMPLE OF: _____ ITEM/SPECIFICATION NO.: _____ LABORATORY NO. 05A-2036
 SAMPLED FROM: SP-05-08, SP-05-10, SP-19 , Depth 0.5'-6.0' FIELD NO.: 08, 09, 10
 SOURCE/SUPPLIER: _____ QUANTITY REPRESENTED: _____ DATE SAMPLED: 09/07/2005
 LOCATION/ADDRESS: Centerline / Tuluksak Airport SUBMITTED BY: C. Roso DATE RECEIVED: 09/10/2005
 EXAMINED FOR: Classification, Organic, Moisture DATE COMPLETED: 09/16/2005
 DATE REPORTED: 09/20/2005

Sieve Analysis		ASTM C 136 & C 117	
SIZE	Lab		Specs.
4"			
3"			
2"			
1 1/2"			
1"			
3/4"			
1/2"			
3/8"			
1/4"	100		ASTM D 2974
#4	100		
#8			ASTM C 566
#10	100		
#16			
#30			
#40	96		
#50			
#80			
#100	81		
#200	64.8		
.02mm			
.002mm			ASTM D 2487
Fineness Modulus			
Sand Equivalent			

SAMPLE PREPARATION BY: ASTM D421 & C 702

	Dry Prep	Wet Prep	Specs
LL ASTM D4318	25		
PL	NV		
PI	NP		
% Fracture			
Single Face			
Double Face			
Flat Elongated 1:3			
1:5			
% Organic	3.1		
pH			
% Nat. Moisture	32.6		
% Sticks & Roots			
Dry Unit Wt. pcf			
# +3"			
% Gravel	0		
% Sand	35		
% Silt	65		
% Clay			
FSV			
AASHTO Class	A-4(0)		
Unified Class	ML		
		Sandy silt.	

	Coarse	Specs	Fine	Specs
Friable Particles				
Sulfate Soundness, % Loss				
L.A. Abrasion, Total % Loss				
% Loss @ 100 revs				
Degradation				
Nordic Abrasion, % Loss				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

The Material as Submitted Conforms to Specifications
 Yes [] No [] NA [X]

Signature Newton Brigham
 Newton J. Bingham, PE

Regional Materials Engineer

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STATE OF ALASKA

Department of Transportation & Public Facilities

Central Materials Lab

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Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Tuluksak Airport Improvements PROJECT NO. STP-0544(15) / 51795

SAMPLE OF: _____ ITEM/SPECIFICATION NO.: _____ LABORATORY NO. 05A-2035
 SAMPLED FROM: Stockpile FIELD NO.: 07
 SOURCE/SUPPLIER: _____ QUANTITY REPRESENTED: _____ DATE SAMPLED: 09/06/2005
 LOCATION/ADDRESS: Centerline / Tuluksak Airport SUBMITTED BY: C. Roso DATE RECEIVED: 09/10/2005
 EXAMINED FOR: Classification, Organic DATE COMPLETED: 09/16/2005
 DATE REPORTED: 09/20/2005

Sieve Analysis ASTM C 136 & C 117

SIZE	Lab	Specs.
4"		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
1/4"		
#4		
#8	100	
#10	100	
#16		
#30		
#40	99	
#50		
#80		
#100	53	
#200	39.8	
0.2mm		
.002mm		
Fineness Modulus		
Sand Equivalent		

SAMPLE PREPARATION BY: ASTM D421 & C 702

	Dry Prep	Wet Prep	Specs
LL ASTM D 4518	NV		
PL	NV		
PI	NP		
% Fracture			
Single Face			
Double Face			
Flat Elongated, 1:3			
1:5			
ASTM D 2974 % Organic	3.0		
pH			
% Nat. Moisture			
% Sticks & Roots			
Dry Unit Wt., pcf			
% +3"			
% Gravel			
% Sand	60		
% Silt	40		
% Clay			
FSV			
AASHTO Class	A-4 (0)		
ASTM D 2487 Unified Class	SM		
		Silty sand	

Coarse	Specs	Fine	Specs
--------	-------	------	-------

Friable Particles			
Sulfate Soundness, % Loss			
L.A. Abrasion, Total % Loss			
% Loss @ 100 revs			
Degradation			
Nordic Abrasion, % Loss			

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

The Material as Submitted Conforms to Specifications
 Yes [] No [] NA [X]

Signature Newton Bingham
Newton J. Bingham, PE
 Regional Materials Engineer

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