STATEWIDE MATERIAL SITE INVENTORY

MATERIAL SITE INSPECTION REPORT

Federal Project No. STP-000S(530)
AKSAS Project No. 76174

DALTON HIGHWAY

MS 65-3-018-2
39 Mile Quarry

November 25, 2009

CONTENTS PAGE

COVER SHEET.....1

LOCATION MAP 2

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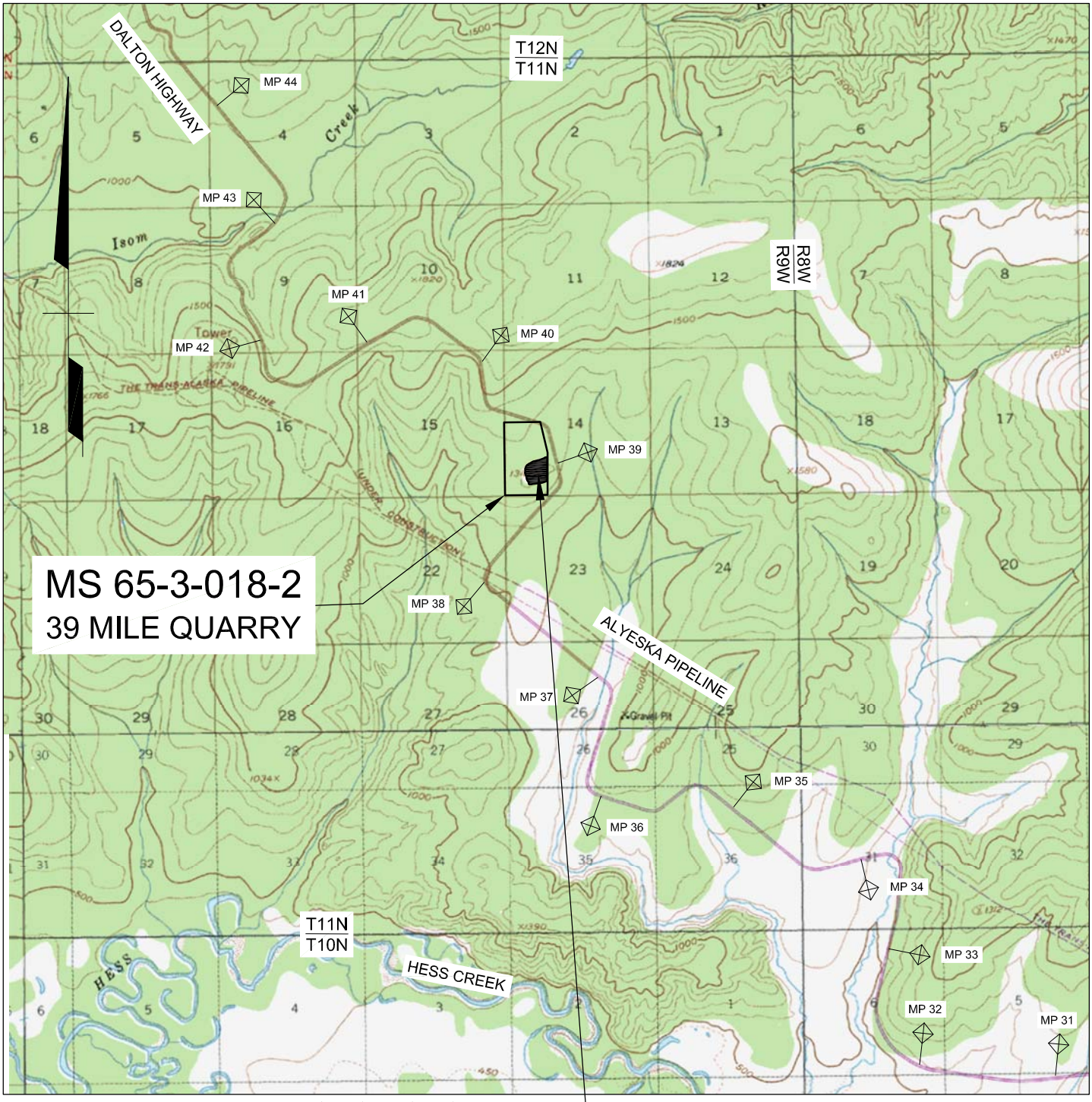
CATEGORY:

ACTIVE – OPEN

According to information found in the DOT&PF EDMS system in January 2009 and DNR case file abstracts, this site lies on State of Alaska lands managed by DNR. The site was originally developed for construction of the Dalton Highway Road in the 1970's. DOT&PF is operating under a material sale contract (ADL 413805) which currently expires August 31, 2014. A new material sale application (ADL 418456) by DOT&PF on June 24, 2008 was referenced in the DNR case file abstracts. An existing access road connects the site to the Dalton Highway. The access road right-of-way is referenced in the material site contract. The site appeared to contain significant quantities of rock and should be retained by DOT&PF for future use.

LOCATION MAP



U.S.G.S. QUADRANGLE: LIVENGOOD (C–5) & (D–5)

GPS COORDINATES FROM GOOGLE EARTH

UTM (WGS84–METERS)
ZONE 6: N7,296,911 E391,122
AK STATE PLANE (NAD83–US SURVEY FT)
ZONE 4: N4,304,001 E1,733,812

ACTIVE - OPEN

0 0.5 1 2 3

GRAPHIC SCALE IN MILES

BASE MAP CREATED WITH TERRAIN NAVIGATOR PRO

Prepared By:
R&M CONSULTANTS, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

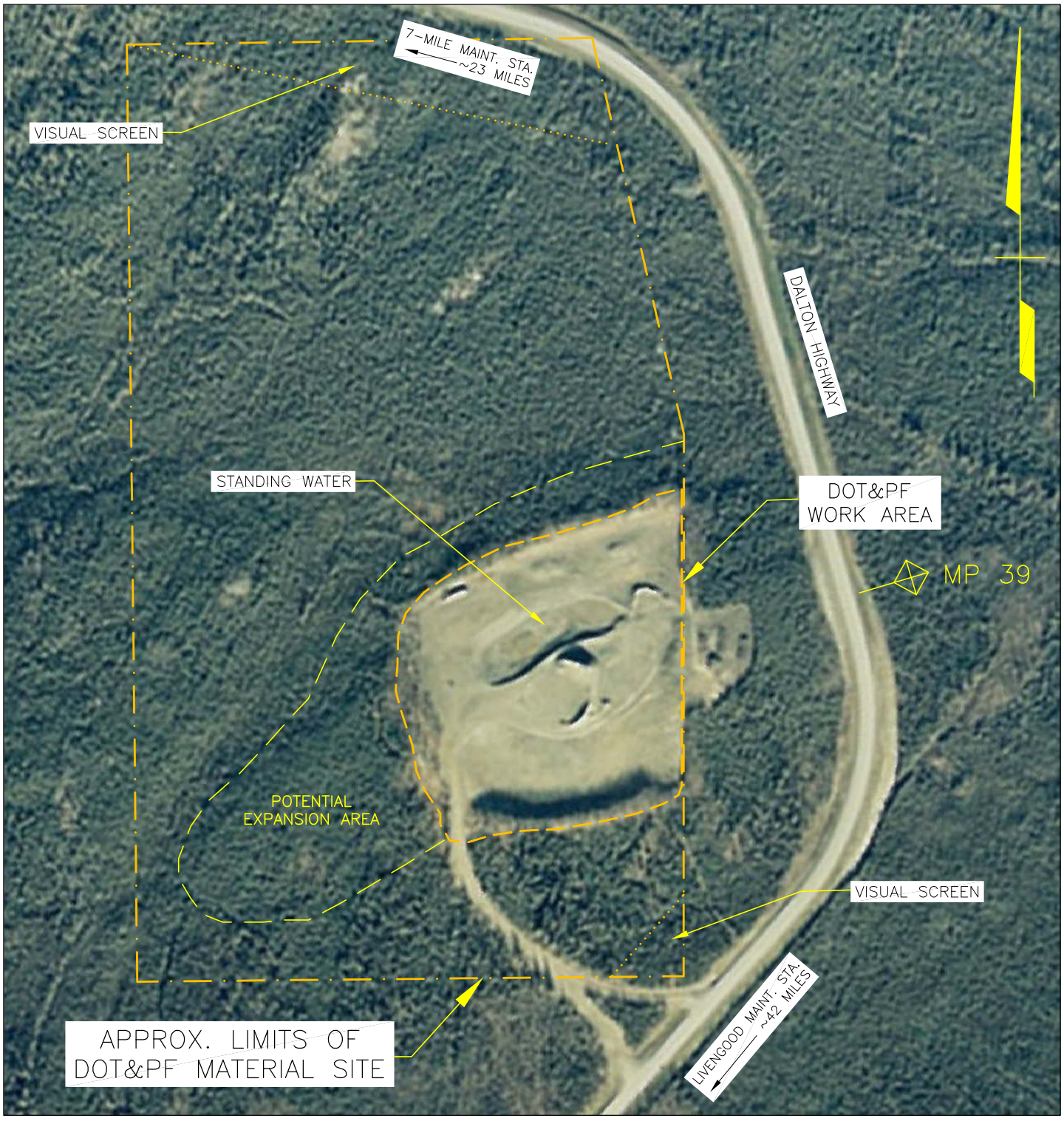
STATEWIDE MATERIAL SITE INVENTORY

MS 65–3–018–2

SCALE	DESIGNED	DRAWN	PAGE
AS SHOWN	P.K.H.	A.T.B.	2
	CHECKED C.H.R.	DATE MAY 2009	

Plotted 1/22/2010 4:56 PM by Aaron Banks
Z:\project\1443.03\65_Dalton_Highway\MS 65-3-018-2\acad\geo\acad\MS_Topo_Map 65-3-018-2.dwg

SITE MAP



BASE MAP IS 2008 AERIAL PHOTOGRAPHY.
THIS IS A PLANNING DOCUMENT ONLY. THE MATERIAL SITE BOUNDARIES SHOWN ON THIS DRAWING ARE APPROXIMATE. OWNERSHIP OF THE LANDS ADJACENT TO THIS SITE ARE UNKNOWN. THE ACCESS ROW SHOULD BE VERIFIED.

ACTIVE - OPEN

0 200 400 800 1200

GRAPHIC SCALE IN FEET

BASE MAP FROM AERIAL PHOTOS DATED 9/23/08

Prepared By:
R&M CONSULTANTS, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

STATEWIDE MATERIAL SITE
INVENTORY

MS 65-3-018-2

SCALE	DESIGNED	DRAWN		
AS SHOWN	P.K.H.	P.K.H.		
	CHECKED	DATE	PAGE	
	C.H.R.	JUNE 2009	3	

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

THIS REPORT IS BASED ON A REVIEW OF EXISTING DATA AND BRIEF FIELD INSPECTIONS. THUS THE DATA CONTAINED HEREIN SHOULD BE CONSIDERED PRELIMINARY AND USED FOR PLANNING PURPOSES ONLY. USERS OF THIS DATA SHOULD VERIFY THE INFORMATION PRIOR TO USING IT FOR DESIGN OR CONSTRUCTION PURPOSES.

IF OTHER IS SELECTED FOR A SECTION, EXPLAIN IT IN SECTION 44. NOTES.
IF AN ANSWER IS UNKNOWN SELECT "UNKNOWN" OR LEAVE BLANK

1. **MS_ID** **65-3-018-2**
   Enter the full material site number e.g.. 65-9-045-2
2. **DATE_INSPECT** 8/10/2009
   Date of field inspection
3. **FLD INSPEC_ORG** AARON BANKS / R&M CONSULTANTS
   Name of inspector / Organization or Company
4. **REGION** NORTHERN
5. **LOCATION** DALTON HIGHWAY
   Name of Highway
   Enter Name of Facility or Secondary Route Name (i.e.Kotzebue Airport, Nash Road, etc.)
6. **MILEPOST** 39
   List the closest main highway milepost
7. **NAME** 39 MILE QUARRY
   Enter commonly used name (s), e.g. Hess pit, Gobblers Knob, Midway. List all that apply separated by commas.
8. **MAINT_DIST/STAT** District INTERIOR/DALTON Station SEVEN MILE
   Highway Maintenance District and Station, for locations not on highways select other.
9. **QUAD** LIVENGOOD D-5
   U.S.G.S. Quad. Map
10. **TOWNSHIP /RANGE** T#S R#E T11N R9W Meridian FM
    Section 14
11. **COOR_UTM**
    ZONE 6
    NORTHING 7,296,911
    EASTING 391,122
    UTM WGS84 - Meters
12. **COOR_STATE_PLANE**
    ZONE 4
    NORTHING 4,304,001
    EASTING 1,733,812
    Alaska State Plane NAD83 - Survey Feet
13. **BOROUGH** UNORGANIZED **TAX ID NO.**
14. **DNR_LAND_USE_PLAN** DALTON HIGHWAY MASTER PLAN
15. **CATEGORY** (To be filled in the office)
15a. **CLASSIFICATION** ACTIVE
15b. **STATUS** OPEN

16. **POTENTIAL_STATUS** SIGNIFICANT

Estimated quantity of material in the site at the time of inspection.

NONE	There appeared to be no useable material in the site.
LIMITED	There appeared to be less than 25,000 c.y. available within the developed site.
SIGNIFICANT	There appeared to be greater than 25,000 c.y. available within the developed site.
EXPANDABLE	There was limited material within the developed site, but there appeared to be significant material outside existing site limits.
UNDEVELOPED	The pit has not been mined (used only for new sites).
CLOSED	There may be useable material left in the pit but it is not available.
UNKNOWN	
OTHER	The site does not fit any of the categories above. Explain in Section 44, Notes.

17. **PRESENT_USERS**

17a. **PRESENT_USER_1** DOT&PF MAINTENANCE

17b. **PRESENT_USER_2** DOT&PF CONSTRUCTION

17c. **PRESENT_USER_3**

18. **PERMITTED _ACREAGE** 87

Area within site permit or R.O.W. boundaries, from permit application or property plat.

19. **DEVELOPED_ACREAGE** 14

Area within an existing pit, excluding spoil berms lying outside the pit, access roads etc. Explain below.

Includes existing pit both within and outside site limits.

20. **ACREAGE_COMP_METHOD** FROM MAP/PHOTO

Method used to determine developed acreage.

21. **EST_QUAN_AVAIL** 375,000 ROUGH ESTIMATE

Estimated quantity available (b.c.y.), may be based on acreage computed above plus expansion area. Explain computation assumptions and calculations below.

Assuming the existing pit can be deepened an additional 10 feet without encountering water problems, there was approx. 142,000 c.y. (14.2 acres x 10 feet x 1,000 c.y. per acre-foot) of material available. Spoil berms may have to be moved to obtain this quantity. Assuming an average 3 feet of overburden and a 23-foot working depth there was approx. 226,000 c.y. (11.3 acres x 20 feet x 1,000 c.y. per acre-foot) of material available in a potential expansion area on the ridge to the southwest of the site. There is no geotechnical information for the remainder of the area within the site limits and it is not known if there are additional available materials. There appears to be potential material between the existing pit and the highway to the east, outside the site limits.

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

22. **ACCESS_TYPE** EXISTING ROAD / OPEN

NONE	No access road has been built.
EXISTING ROAD / OPEN	Drivable. May have gate.
EXISTING ROAD / REVEG	Can be reopened with little effort.
EXISTING ROAD / CLOSED W/BERMS	Can be reopened with little effort.
EXISTING ACCESS / REMOVED	Can be reopened with much effort.
SNOW ROAD	Can only be accessed during winter.
ICE ROAD	Requires crossing river or lake ice in the winter.
BARGE	Material can only be moved by barge.
OTHER	The site does not fit any of the categories above. Describe in Section 44, Notes.

23. **ACCESS_LENGTH** 950
Approx. length from edge of pit to highway/secondary route (ft.)

24. **VEGETATION**

Vegetation outside of the developed pit consisted of intermixed and moderately dense spruce and birch forest with a maximum size of 30 ft. high by 10 in. diameter.

25. **TYPE_1** BORROW PIT 26. **TYPE_2**

Dominant type Subordinate type
General Types of Materials Available Enter data in Type_2 only if two types of material site available

QUARRY	Bedrock sources requiring blasting
BORROW PIT	Soils or soft bedrock (rippable), above water table
BAILING	Requires production below the water table
RIVER BAR	Sand/gravel bars in active channels

27. **OB_CLASS_1** <3 FT. 28. **OB_CLASS_2** 3 TO 6 FT.
New Site or expansion Area Existing Pit (Spoil)
A site may have both. Data should be based on actual subsurface exploration, otherwise unknown.
Estimated average depth over the area.

NONE	3 TO 6 FT.	UNKNOWN
<3 FT.	>6 FT.	OTHER

29. **OB_TYPE_1** SILT 30. **OB_TYPE_2** SPOIL
New Site or expansion Area Existing Pit (Spoil)
A site may have both.

SILT	PEAT	SOLID WASTE	OTHER
COLLUVIUM	SPOIL	UNKNOWN	

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

31. **MAT_TYPE_1** WEATHER. BEDROCK — Dominant type

32. **MAT_TYPE_2** — Subordinate type

BEDROCK	Bedrock sources requiring blasting
WEATHER. BEDROCK	Bedrock sources requiring ripping
FLUVIAL	Water deposited sand and gravel, includes glaciofluvial
GLACIAL	Glacial till
COLLUVIAL	Talus slopes, etc.
EOLIAN	Sand Dunes, etc.
SILT	Silt deposits, loess, fluvial, etc.

33. **PERMAFROST_1** UNKNOWN
New Site or Expansion Area

34. **PERMAFROST_2** DETECTED IN NO TEST HOLES OR PITS
Existing Site

DETECTED IN MOST TEST HOLES
DETECTED IN SOME TEST HOLES
DETECTED IN IMMEDIATE VICINITY
DETECTED IN NO TEST HOLES
DATA OUTDATED
UNKNOWN
OTHER

35. **GROUNDWATER**

Groundwater was noted in two of seven boreholes drilled in the existing pit floor (to max. ~26 feet in depth) during June 2001, at depths of approx. 10 and 20 feet. Ponding to a depth of approximately 2 ft. was observed within the existing pit in August 2009.

36. **LITHOLOGY_1** BASALT — Dominant type

37. **LITHOLOGY_2** _____ — Subordinate type

IGNEOUS ROCK	Undifferentiated Igneous Rocks
GRANITIC	Granite/Monzonite/Granodiorite
DIORITE/GABBRO	Diorite/Gabbro
BASALT	Dark colored fine-grained Igneous Rocks
GREENSTONE	Altered Volcanic Rocks w/green tint
METAMORPHIC ROCK	Undifferentiated Metamorphic Rocks
SCHIST/PHYLLITE	Includes rocks ranging from slate to schist
GNEISS	Includes hard schistose rocks
MARBLE	
CATACLASTIC	Incl. Valdez Formation Rocks, Kenai Penn.
MÉLANGE	Incl. McHugh Formation Rocks, Kenai Penn.
SEDIMENTARY ROCK	Undifferentiated Sedimentary Rocks
CONGLOMERATE	
SANDSTONE	Includes greywacke, etc.
SHALE/MUDSTONE	
LIMESTONE	
FLUVIAL	River and stream deposits (floodplain), includes outwash.
ALLUVIAL	Alluvial / Debris Fan deposits
GLACIOFLUVIAL	Eskers, kames, etc.
GLACIAL	Till
COLLUVIAL	Talus, etc.
EOLIAN	Sand Dunes, etc.
SILT	Loess, fluvial silts, etc.
OTHER	Explain in Section 44.

38. **MATERIAL_CLASSIFICATION**

ASTM Classification, generally they should range from coarse to fine.

38a.	_____	38c.	_____	38e.	_____	38g.	_____
38b.	_____	38d.	_____	38f.	_____	38h.	_____

39. COBBLES_AND_BOULDERS

Test Boring Callout / ASTM Classification, either a. or b. and c. (Can use ranges i.e. 0 to 20)

39a.	CONTAINS		
39b.	Est. % by VOL.		(Est. From Visual Observations)
39c.	MAX. SIZE (in.)		(Observed Size)

40. AGG_TEST_RESULTS

Year of test or report- Test result / Year of test or report- Test Results

40a. SG APP COARSE	
40b. SG APP FINE	
40c. ABSORPTION CRSE	
40d. ABSORPTION FINE	
40e. NORDIC ABRASION	
40f. L.A. ABRASION	1995- 13, 13, 14, 13, 15 / 2001- 16
40g. DEGRADATION (T-13)	1995-41, 12, 28, 34, 14 / 2001- 41
40h. NASO4 LOSS COARSE	
40i. NASO4 LOSS FINE	

41. POTENTIAL_USABILITY

TYPES A AND B MATERIAL AVAILABLE

Best known potential use of the material, based on records, exploration and laboratory data.

CONCRETE AGGREGATE PRODUCED	The site has produced concrete aggregate
PAVING AGGREGATE PRODUCED	The site has produced paving aggregate
CRUSHED PRODUCTS PRODUCED	Base, Surface Coarse, Subbase, etc. has been produced.
TYPE A AND B MATERIAL AVAILABLE	0 to 10 percent passing 200
TYPE C AVAILABLE	Compactable material
TYPE C NOT AVAILABLE	Uncompactable material (Lower Kuskokwim and Yukon River, etc.)
UNKNOWN	
OTHER	Explain in Section 44.

42. SPECIAL_PROBLEMS

Special problems encountered or anticipated with use of the material, based on records, exploration and laboratory data.

ORGANIC CONTENT	The material is very difficult to compact.
HIGHLY WEATHERED GRAVEL	The gravel is highly weathered and may break down when handled.
BREAKS DOWN UNDER USE	Material breaks down on grade.
SENSITIVE TO WATER CONTENT	Material is sensitive to water content, i.e.. some glacial tills, soft bedrock.
VARIABLE MATERIAL	Deposit contains mixture of suitable and unsuitable material.
POSSIBLE CONTAMINATION	Site may be contaminated by petroleum products or hazardous materials.
CONTAINS ASBESTOS	Site contains naturally occurring asbestos.
POTENTIAL ASBESTOS	Site in area where naturally occurring asbestos is mapped.
ACID ROCK DRAINAGE	Site contains rock susceptible to producing acid rock drainage.
OTHER	Explain in Section 44, Notes.

43. **RIPRAP** NOT POSSIBLE

Class II or larger. Does not include production for erosion control riprap for ditches or culverts.

PREVIOUS PRODUCTION	There is a record of production.
POSSIBLE FURTHER INVESTIGATION NEEDED	The site is a bedrock quarry containing hard rock
NOT POSSIBLE	The site has soft rock or soil.
UNKNOWN	
OTHER	Explain in Section 44, Notes.

44. **NOTES**

Note number of item being discussed.

39. Pieces of slightly weathered bedrock to 6 ft. in diameter were observed within the existing pit.

State of Alaska Dept. of Transportation Northern Region Materials Lab.

SOIL AND AGGREGATE REPORT

Lab Number: 06-498

Project: Dalton Highway MP 37-49
Aksas: 66321
Ledger: 30842142
Submitted by: S.K.S.
Date Sampled: 8/1/2006
Test Hole:
Station: STOCKPILE
Offset:
Grade Ref:

AAHSTO R18

* ATM tests are not accredited by the AAP.

Field Number: BXB-Q-4
Material Site: PIT 018
Other Source: 65-3-01R 2
Item #: 203 (6B)
Sample of: BORROW B
Date Rec: 8/4/2006
Sample Type: QUALITY

ASTM	AASHTO	Tests	Reg Lab	Field Lab	Specs
D-4318	T-89	Liquid Limit			
	T-90	Plastic Index			
C-127	Coarse Agg SpG	APP			
	T-85	SSD			
		BULK			
		Absorption			
C-128/D-854	Fine Agg SpG	APP			
	T-84/T-100	SSD			
		BULK			
		Absorption			
C-88	Sodium Sulfate Soundness	Coarse	22.6		
	T-104	Fine	33.1		
C-131	T-96	LA Abrasion	18		
	ATM 313	Degradation	30		
	ATM 312	Nordic Abrasion			
D-2974	T-267	Organic by Ignition			
C-40	T-21	ORGANIC PPM			
C-566	T-255/T-265	Moisture Content			
D-2419		SAND EQUIVALENT			
D-4791		FLAT OR ELONGATED			
	FRACTURE	Single Face			
	AASHTO TP-61	Double Face			
		FINENESS MODULUS			
		% Deleterious			

AASHTO T-27/11			ASTM C-136/117	
mm	inches	% Passing	Field	Specs
75	3"	90		
50	2"	66		
37.5	1 1/2"	54		
25.0	1"	40		
19.0	3/4"	33		
12.5	1/2"	22		
9.5	3/8"	18		
4.75	#4	10		
2.36	#8	7		
2.00	#10	6		
1.18	#16	5		
0.850	#20			
0.600	#30	3		
0.425	#40	3		
0.300	#50	2		
0.250	#60	2		
0.180	#80	2		
0.150	#100	2		
0.075	#200	1.3		
Hydro.	0.02 mm			
AASHTO	0.005 mm			
T-88	0.002 mm			
	0.001 mm			

REMARKS:

AASHTO Class: ()

DOT&PF Soil Desc:

UNIFIED Class: GW - WELL-GRADED GRAVEL

Acceptance/Assurance Comparison

Acceptable	Unacceptable

Signature: _____
Materials Engineer / Designee
Date: _____

QA Review

Signature: _____
Date: _____
Comments:

Signature: _____
Tonya Knopke
Regional Lab Supervisor
Date: 9/1/06

State of Alaska Dept. of Transportation Northern Region Materials Lab.

SOIL AND AGGREGATE REPORT

Lab Number: 06-383

Project: Dalton Highway MP 37-49
Aksas: 66321
Ledger: 30842142
Submitted by:
Date Sampled: 7/11/2006
Test Hole:
Station:
Offset:
Grade Ref:

AASHTO R18
* ATM tests are not accredited by the AAP.

Field Number: A-BXB-(SD)-51
Material Site: PIT 018
Other Source: 653 - 018 - 17
Item #: 203 (6B)
Sample of: BORROW 'B', MODIFIED
Date Rec: 7/17/2006
Sample Type: ASSURANCE

ASTM	AASHTO	Tests	Reg Lab	Field Lab	Specs
D-4318	T-89	Liquid Limit	NV	36	
	T-90	Plastic Index	NP	2	
C-127	Coarse Agg SpG	APP	2.916	2.917	
	T-85	SSD	2.794	2.791	
		BULK	2.731	2.725	
		Absorption	2.3	2	
C-128/D-854	Fine Agg SpG	APP	2.695		
	T-84/T-100	SSD			
		BULK			
		Absorption			
C-88	Sodium Sulfate Soundness	Coarse	34.1		
	T-104	Fine	53.4		
C-131	T-96	LA Abrasion	20		
	ATM 313	Degradation	12		
	ATM 312	Nordic Abrasion			
D-2974	T-267	Organic by Ignition			
C-40	T-21	ORGANIC PPM			
C-566	T-255/T-265	Moisture Content			
D-2419		SAND EQUIVALENT			
D-4791		FLAT OR ELONGATED			
	FRACTURE	Single Face			
	AASHTO TP-61	Double Face			
		FINENESS MODULUS			
		% Deleterious			

AASHTO T-27/11			ASTM C-136/117	
mm	inches	% Passing	Field	Specs
75	3"	99	100	
50	2"	92	97	
37.5	1 1/2"	84	88	
25.0	1"	71	77	
19.0	3/4"	58	65	
12.5	1/2"	38	47	
9.5	3/8"	28	38	
4.75	#4	12	22	
2.36	#8	7	16	
2.00	#10	7	14	
1.18	#16	5	11	
0.850	#20			
0.600	#30	4	9	
0.425	#40	3	8	
0.300	#50	3	7	
0.250	#60	3		
0.180	#80	3		
0.150	#100	2	6	
0.075	#200	1.8*	4.1	0-20*
Hydro.	0.02 mm			
AASHTO	0.005 mm			
T-88	0.002 mm			
	0.001 mm			

REMARKS: * - % passing #200 based on a -3" sieve analysis.

AASHTO Class: A-1-a(0)

DOT&PF Soil Desc:

UNIFIED Class: GW - WELL-GRADED GRAVEL

Acceptance/Assurance Comparison

Acceptable	Unacceptable
	✓

Signature: _____
Materials Engineer / Designee
Date: 8/16/06

QA Review
Signature: _____
Date: _____
Comments:

Signature: _____
Tonya Knopke
Regional Lab Supervisor
Date: 8/16/06

State of Alaska Dept. of Transportation Northern Region Materials Lab.

COMPACTION REPORT

Lab Number: **06-383**

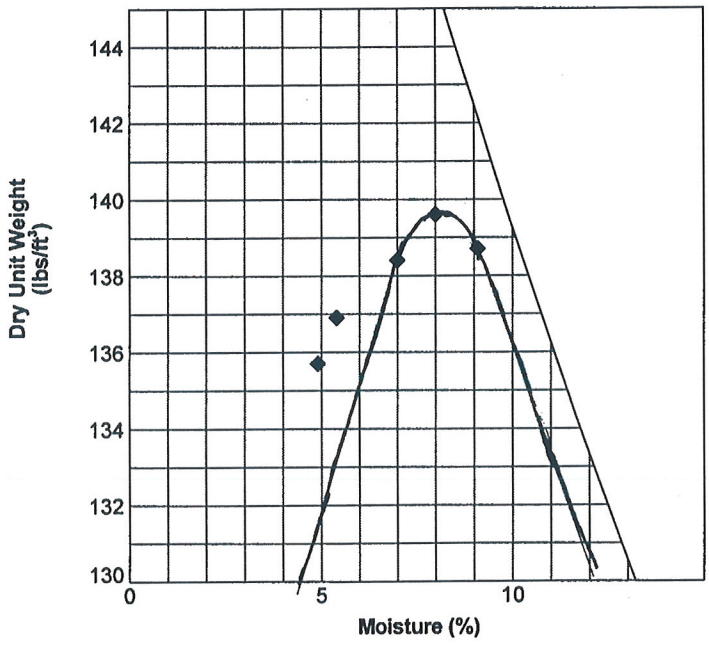
Project: Dalton Highway MP 37-49

Field Number: A-BXB-(SD)-51

Source:

65-3-018-2?
PAGE 2

MOISTURE / DENSITY RELATIONSHIP



NOTE: The upper right portion of the graph may be clipped at the ZAV.

Dry Unit Wt	1	2	3	4	5	6
lbs/ft³	135.7	136.9	138.4	139.6	138.7	
kg/m³	2174	2193	2217	2236	2222	
% Moisture	4.9	5.4	7.0	8.0	9.1	

REMARKS:

ASTM D-1557 AASHTO T-180D	Regional Lab.		Field
	lbs/ft³	kg/m³	
Max. Density	140.0		143.5
Opt. Moisture	8.0		6.6

Acceptance/Assurance Comparison

Acceptable	Unacceptable
✓	

Signature: _____
Materials Engineer / Designee
Date: 8/16/06

Signature: _____
Tonya Knopke
Regional Lab Supervisor
Date: 8/16/06

State of Alaska Dept. of Transportation Northern Region Materials Lab.

SOIL AND AGGREGATE REPORT

Lab Number: 06-511

Project: Dalton Highway MP 37-49
Aksas: 66321
Ledger: 30842142
Submitted by: S.K.S.
Date Sampled: 8/3/2006
Test Hole:
Station: STOCKPILE
Offset:
Grade Ref:

AASHTO R18
* ATM tests are not accredited by the AAP.

Field Number: A-BXB-G-61
Material Site: PIT 018
Other Source: 65-3-018-2
Item #: 203 (6B)
Sample of: BORROW 'B'
Date Rec: 8/4/2006
Sample Type: ASSURANCE

ASTM	AASHTO	Tests	Reg Lab	Field Lab	Specs
D-4318	T-89	Liquid Limit	NV		
	T-90	Plastic Index	NP		0-6
C-127	Coarse Agg SpG	APP			
	T-85	SSD			
		BULK			
		Absorption			
C-128/D-854	Fine Agg SpG	APP			
	T-84/T-100	SSD			
		BULK			
		Absorption			
C-88	Sodium Sulfate Soundness	Coarse			
	T-104	Fine			
C-131	T-96	LA Abrasion			
	ATM 313	Degradation			
	ATM 312	Nordic Abrasion			
D-2974	T-267	Organic by Ignition			
C-40	T-21	ORGANIC PPM			
C-566	T-255/T-265	Moisture Content		2.1	0-15
D-2419		SAND EQUIVALENT			
D-4791		FLAT OR ELONGATED			
	FRACTURE	Single Face			
	AASHTO TP-61	Double Face			
		FINENESS MODULUS			
		% Deleterious	< 5		0-5

AASHTO T-27/11		ASTM C-136/117		
mm	inches	% Passing	Field	Specs
75	3"	100	100	
50	2"	92	96	
37.5	1 1/2"	89		
25.0	1"	71	75	
19.0	3/4"	59	61	
12.5	1/2"	41		
9.5	3/8"	32	34	
4.75	#4	14	16	
2.36	#8	7	9	
2.00	#10	7	8	
1.18	#16	4	6	
0.850	#20			
0.600	#30	3	4	
0.425	#40	3	3	
0.300	#50	2	3	
0.250	#60	2		
0.180	#80	2	2	
0.150	#100	2	2	
0.075	#200	1.2	1.4	0-20
Hydro.	0.02 mm			
AASHTO	0.005 mm			
T-88	0.002 mm			
	0.001 mm			

REMARKS:

AASHTO Class: A-1-a(0)

DOT&PF Soil Desc:

UNIFIED Class: GW - WELL-GRADED GRAVEL

Acceptance/Assurance Comparison

Acceptable	Unacceptable
✓	

Signature: _____
Materials Engineer / Designee
Date: 8/28/06

QA Review

Signature: _____

Comments:

Date: _____

Signature: _____
Tonya Knopke
Regional Lab Supervisor
Date: 8/28/06

State of Alaska Dept. of Transportation Northern Region Materials Lab.

SOIL AND AGGREGATE REPORT

Lab Number: 06-510

Project: Dalton Highway MP 37-49
Aksas: 66321
Ledger: 30842142
Submitted by:
Date Sampled: 8/2/2006
Test Hole:
Station: STOCKPILE
Offset:
Grade Ref:

AASHTO R18

* ATM tests are not accredited by the AAP.

Field Number: A-BXB-G-41a
Material Site: PIT 018
Other Source: 65-3-018-2
Item #: 203 (6B)
Sample of: BORROW 'B'
Date Rec: 8/4/2006
Sample Type: ASSURANCE

ASTM	AASHTO	Tests	Reg Lab	Field Lab	Specs
D-4318	T-89	Liquid Limit	NV		
	T-90	Plastic Index	NP		0-6
C-127	Coarse Agg SpG	APP	2.926		
	T-85	SSD	2.868		
		BULK	2.838		
		Absorption	1.1		
C-128/D-854	Fine Agg SpG	APP	2.842		
	T-84/T-100	SSD			
		BULK			
		Absorption			
C-88	Sodium Sulfate Soundness	Coarse			
	T-104	Fine			
C-131	T-96	LA Abrasion			
	ATM 313	Degradation			
	ATM 312	Nordic Abrasion			
D-2974	T-267	Organic by Ignition			
C-40	T-21	ORGANIC PPM			
C-566	T-255/T-265	Moisture Content		1.7	
D-2419		SAND EQUIVALENT			
D-4791		FLAT OR ELONGATED			
	FRACTURE	Single Face			
	AASHTO TP-61	Double Face			
		FINENESS MODULUS			
		% Deleterious			

AASHTO T-27/11			ASTM C-136/117	
mm	inches	% Passing	Field	Specs
75	3"	98	93	
50	2"	96	85	
37.5	1 1/2"	87		
25.0	1"	74	67	
19.0	3/4"	62	56	
12.5	1/2"	45		
9.5	3/8"	35	32	
4.75	#4	18	16	
2.36	#8	9	10	
2.00	#10	8	9	
1.18	#16	6	7	
0.850	#20			
0.600	#30	4	5	
0.425	#40	3	4	
0.300	#50	3	3	
0.250	#60	3		
0.180	#80	2	3	
0.150	#100	2	3	
0.075	#200	1.6*	1.9*	0-10*
Hydro.	0.02 mm			
AASHTO	0.005 mm			
T-88	0.002 mm			
	0.001 mm			

REMARKS: * - % passing #200 based on -3" sieve anaylsis. No moisture test performed, sample not in a sealed container.

AASHTO Class: A-1-a(0)

DOT&PF Soil Desc:

UNIFIED Class: GW - WELL-GRADED GRAVEL with SAND

Acceptance/Assurance Comparison

Acceptable	Unacceptable
✓	

Signature: TFL
Materials Engineer / Designee
Date: 9/23/06

QA Review
Signature: _____
Date: _____
Comments:

Signature: TK
Tonya Knopke
Regional Lab Supervisor
Date: 9/23/06

State of Alaska Dept. of Transportation Northern Region Materials Lab.

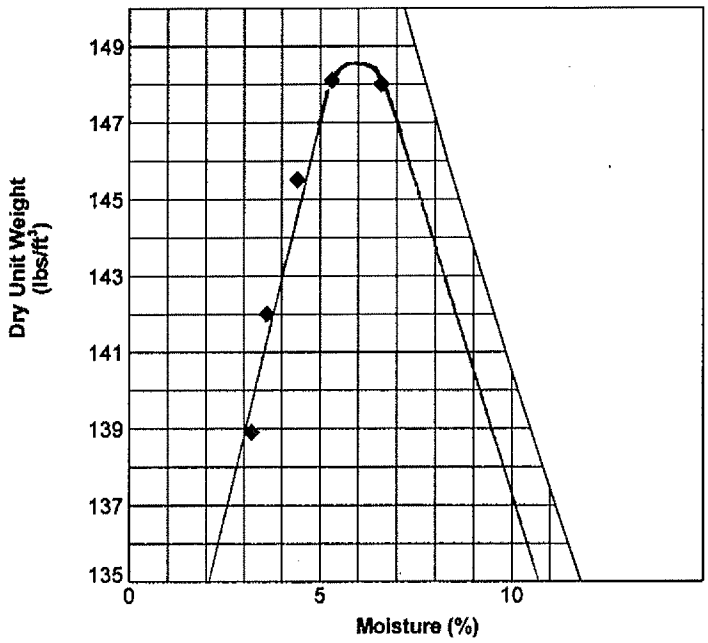
COMPACTION REPORT

Lab Number: **06-510**

Project: Dalton Highway MP 37-49 *Field Number:* A-BXB-G-41a

Source:

MOISTURE / DENSITY RELATIONSHIP



NOTE: The upper right portion of the graph may be clipped at the ZAV.

Dry Unit Wt	1	2	3	4	5	6
lbs/ft³	138.9	142.0	145.5	148.1	148.0	
kg/m³	2225	2275	2331	2372	2371	
% Moisture	3.2	3.6	4.4	5.3	6.6	

Bleed

REMARKS:

ASTM D-1557 AASHTO T-180D	*Regional Lab.*		*Field*
	lbs/ft³	*kg/m³*	
Max. Density	148.5		
Opt. Moisture	7.0		

Acceptance/Assurance Comparison

Acceptable	Unacceptable

Signature: _____

Materials Engineer / Designee

Date: _____

Signature: _____

Tonya Knopke

Regional Lab Supervisor

Date: 9/28/06

MS 65-3-018-2

Location and Access

This site is located west of the Dalton Highway. An existing road, approximately 300 meters long, connects the work area with the Dalton Highway at mile 38.8. The material site is screened from the highway.

Description

The site, a source of bedrock material, was originally permitted by BLM in 1969. It was established for the construction of the Dalton Highway. The area is approximately 35 ha in size, about 6 ha has been cleared. The last recorded use of this site was 1987. There are no stockpiles. Excavation was accomplished using a dozer. Material in the site is generally highly fractured altered basalt.

Clearing and Stripping

The entire work area has been cleared, stripped, and rehabilitated. Vegetation generally consists of grasses and scattered bushes up to 2 m tall. The overburden has been spread over the sides of the hill and is generally less than 0.2 m thick.

Ground Water

In June 2001, two test holes penetrated the water table. Test hole 01-31 encountered the water table at 6.4-m bgs. Test hole 01-32 pierced the water table at 3.2-m bgs. Water was not encountered in any of the other drill holes. There is low relief in the western portion of the site, which has generally poor drainage.

Frozen Ground

Frozen ground was not found in the site in June 2001. However, frozen ground should be expected to be present at a shallow depth in all areas of the site.

Land Status

The ADOT&PF has a Negotiated Material Sale Contract with ADNR (ADL 413805) for removing 191130 m^3 of material from this site. The permitted quantity should be checked prior to use of this site. The contract expires in August 2014.

Quality of Materials

Eight grab samples were collected with hand tools and sent to Northern Region Laboratory for quality testing. The western side of the pit is generally more weathered and softer than the rest of the pit. This is evident by data results.
Six representative samples from the site were probed:

- Two samples (95-4194,95-4197) tested the altered basalt in the western portion of the pit. The DEG values tested [12,14] and the L.A. values tested [13,15].
- Four samples (01-4266,95-4193,95-4195,95-4196) tested altered basalt within the eastern portion of the working area. Test DEG values [41,41,28,34] and L.A. values [16,13,14,13] respectively.

The surface material (01-4262,4268) tested 9.1% and 6.7% passing the 0.075-mm sieve respectively.

Mining Plan Guidelines

1. Mining activity should be confined to the existing work area. The knob in the central portion of the work area should continue to be mined until it is at the level of the surrounding terrain.
2. Hard basalt rock that requires drilling and blasting as a method of extraction should be anticipated for within the material site.
3. The Contractor should submit a detailed, mining plan for the specific area to be mined.
4. The TAPS is located near the material site; Mining plans and scheduled blasting should be coordinated with APSC accordingly.
5. Any unusable excavation (topsoil) will be stockpiled for future reclamation purposes.

Rehabilitation Plan Guidelines

Final reclamation of the site will include smoothing slopes and contouring where possible to blend with the surrounding terrain. The floor of the pit will be graded to drain. The existing waste areas have begun to revegetate and we recommend that process continue.

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION - NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: DALTON HWY MP 37-49
PROJECT NUMBER: STP-065-2(6)
AKSAS NUMBER: 66321
SOURCE: M.S. 65-3-018-2
SAMPLED BY: M. GRAHEK (1995), J.REINIKAINEN (2001)

TEST HOLE NO.		01-31	01-31	01-31	01-31	GRAB	01-33	01-33
DEPTH (meters)		0.6-1.5	2.1-2.4	0.3-0.6	4.0-4.3	SURFACE	4.9-5.2	0.0-0.3
STATION (LOCATION)								
OFFSET (meters)								
LAB NO.		**01-4262**	**01-4263**	**01-4264**	**01-4265**	**01-4266**	**01-4267**	**01-4268**
DATE SAMPLED		6/13/2001	6/13/2001	6/13/2001	6/13/2001	6/13/2001	6/13/2001	6/13/2001
% Passing	**75 mm**				100			100
	50	100			94			93
	25.0	96			76			86
Gravel	**19.0**	94			66			81
	12.5	84			50			72
	9.5	73			42			65
	4.75	45			25			47
	2.00	25			15			30
Sand	**0.425**	14			7			14
	0.300	13			6			12
	0.150	11			5			9
Silt/Clay	**0.075**	9.1			3.7			6.7
	0.02							
Hydro	**0.005**							
	0.002							
LIQUID LIMIT		NV			NV			NV
PLASTIC INDEX		NP			NP			NP
CLASSIFICATION		A-1-a			A-1-a			A-1-a
SOIL DESCRIPTION		sl.SiGr			Gr			sl.SiSaGr
NATURAL MOISTURE			1.7	5.1			2.1	
ORGANICS								
SP.GR. (FINE)								
SP.GR. (COARSE)								
MAX DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION						16		
NORDIC ABRASION								
DEGRADATION FACTOR						41		
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								

REMARKS:

Gradation is based on material passing the 75 mm sieve, according to Alaska Test Method T-7.

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION - NORTHERN REGION
LABORATORY TESTING REPORT

PROJECT NAME: DALTON HWY MP 37-49
PROJECT NUMBER: STP-065-2(6)
AKSAS NUMBER: 66321
SOURCE: M.S. 65-3-018-2
SAMPLED BY: M. GRAHEK (1995), J.REINIKAINEN (2001)

TEST HOLE NO.		GRAB	GRAB	GRAB	GRAB	GRAB		
DEPTH (meters)		SURFACE	SURFACE	SURFACE	SURFACE	SURFACE		
STATION (LOCATION)								
OFFSET (meters)								
LAB NO.		**95-4193**	**95-4194**	**95-4195**	**95-4196**	**95-4197**		
DATE SAMPLED		7/27/1995	7/27/1995	7/27/1995	7/27/1995	27-Jul-95		
% Passing	**75 mm**							
	50							
	25.0							
Gravel	**19.0**							
	12.5							
	9.5							
	4.75							
	2.00							
Sand	**0.425**							
	0.300							
	0.150							
Silt/Clay	**0.075**							
	0.02							
Hydro	**0.005**							
	0.002							
LIQUID LIMIT								
PLASTIC INDEX								
CLASSIFICATION								
SOIL DESCRIPTION								
NATURAL MOISTURE								
ORGANICS								
SP.GR. (FINE)								
SP.GR. (COARSE)								
MAX DRY DENSITY								
OPTIMUM MOISTURE								
L.A. ABRASION		13	13	14	13	15		
NORDIC ABRASION								
DEGRADATION FACTOR		41	12	28	34	14		
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								

REMARKS:

Gradation is based on material passing the 75 mm sieve, according to Alaska Test Method T-7.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Central Yukon Field Office
222 University Avenue
Fairbanks, Alaska 99709-3816
www.blm.gov/alaska

IN REPLY REFER TO:
FF093001 (362113)
FF093010 (362113)
FF093025 (362113)
LLAKF03000

FEB 21 2020

CERTIFIED MAIL – RETURN RECEIPT REQUESTED
7017 0530 0000 3239 7845

Henry Cole
Alaska Department of Transportation and Public Facilities
2301 Peger Road
Fairbanks, AK 99709

Dear Mr. Cole,

The signed Free Use Permits and Standard Stipulations for Mineral Material Sites for the renewals of three mineral material pits MS 65-9-037-2 (Dalton Highway mile post 125), MS 65-9-048-2 (mile post 154), and MS 65-9-008-2 (mile post 253) are attached.

As a reminder, ADOT&PF is responsible for ensuring that their employees and contractors are familiar with and follow the stipulations associated with the Free Use Permits (see enclosure 4).

If you have any questions, please contact John Barefoot (907.474.2250; jbarefoot@blm.gov) or Tara Hutchison (907.474.2241; thutchison@blm.gov).

Respectfully,

Timothy J. La Marr
Field Manager
Central Yukon Field Office

Enclosures:
1. Signed Free Use Permit for MS 65-9-037-2 (FF093001)
2. Signed Free Use Permit for MS 65-9-048-2 (FF093010)
3. Signed Free Use Permit for MS 65-9-008-2 (FF093025)
4. Standard Stipulations for Mineral Material Sites

Form 3604-1b
(February 2017)

UNITED STATES
DEPARTMENT OF THE INTERIOR
MINERAL MATERIAL
FREE USE PERMIT

FORM APPROVED OMB
NO. 1004-0001 Expires
December 31, 2019

BUREAU OF LAND MANAGEMENT

Permit (Case) Serial Number AK FF093001 | Expiration Date 12/31/2030

Permittee Name and Address:
Alaska Department of Transportation and Public Facilities, 2301 Peger Road, Fairbanks, AK 97709

Legal land description of authorized permit area:
approximately mile marker 125 of the Dalton Highway

Meridian	Township	Range	Section	Subdivision	Acres
Fairbanks	21 N	14 W	5, 7 & 8	SW1/4 (5) & NW1/4 (8)	46.3

This permit is issued under the Act of July 31, 1947, as amended, and 43 U.S.C. 2 and 1201. Free use permits are issued subject to the requirements of 43 CFR Part 3600 now or hereafter in force.

This permit is hereby issued for the materials applied for but may be canceled if it appears that this permit was issued erroneously or the terms or conditions contained herein are not observed.

The permit is subject to the following standard stipulations:

Any use of the surface of the lands involved in this permit must not interfere with any mining claim subject to the provisions of Section 4 of the Act of July 23, 1955 (30 U.S.C. 612);

The permittee must allow BLM access for inspections as required by 43 CFR 3601.51

The permittee must clean up all work areas and must remove or dispose of all refuse resulting from the permittee's operations, and equipment, personal property, and improvements must be removed within ninety (90) days after the permit expiration date as required by 43 CFR 3601.52

An annual report indicating the amount (cubic yards or tons) of material removed must be filed with the BLM District Office on the anniversary date of the permit, and within thirty (30) days after permit expiration.

The permit is also subject to the following SPECIAL CONDITIONS: See Attached Stipulations

Authorized purpose:
Maintenance of the Dalton Highway

Authorized term: 10 years 10 months _____ days

Authorized quantity, *in-place*: 25,000 per year cubic yards or _____ tons

Check all that apply:

- ☐ Permittee Mining and Reclamation plan is required per 43 CFR 3601.40-44
- ☐ Permittee is responsible for reclamation of permit area
- ☐ Financial Guarantee is required per 43 CFR 3602.14
- ☐ Removal area is within Community Pit – Common Use Area - Serial No.
- ☐ Permittee will perform reclamation in Community Pit – Common Use Area in lieu of reclamation fee
- ☐ Permittee must follow/comply with BLM mining and reclamation plan
- ☐ Permittee will pay a reclamation fee for Community Pit – Common Use Area as identified below:

Type of Material	Quantity (select applicable *in-place* units)		Reclamation Fee (select applicable *in-place* units)		TOTAL Reclamation Fee ($)
	☐ cu. yds.	☐ tons	$ per cu. yds.	$ per ton	

☑ **BLM will check this box if there are additional stipulations attached to this permit.**

(Continued on page 2)

I HEREBY AGREE TO COMPLY WITH the regulations at 43 CFR Part 3600 and the stipulations and special conditions as set forth in this permit. I CERTIFY that the: (a) materials to be removed will be used for the authorized purpose noted above; (b) none of the materials removed will be sold or bartered; (c) removal of materials will begin only upon receipt of an approved copy of this permit and will cease upon the expiration date or removal of the authorized quantity, whichever comes first; and, (d) the Bureau of Land Management (BLM) will be notified upon completion of removal.

Barry Hooper (Signature of Applicant) — Barry Hooper (Printed Name)

NR ROW Chief (Title) — 2/6/2020 (Date)

THE UNITED STATES OF AMERICA

By TJ LaMarr (Signature) — Tim LaMarr (Printed Name)

Field Manager (Title) — 2/20/2020 (Date)

Central Yukon Field Office (BLM office)

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM collects this information to evaluate the amount and condition of mineral materials on public lands and it will be used to maintain depletion records.
The BLM is collecting this information to process your application and effect a binding permit.
The BLM will use this information to identify and communicate with applicants.
Response to this request is required to obtain a benefit.
The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: The combined public reporting burden for Forms 3604-1a and 3604-1b is estimated to average 45 minutes to complete both forms, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0001), Bureau Information Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 2134LM, Washington, D.C. 20240.

Standard Stipulations for Mineral Material Disposal

Revised January 2020

Administrative Stipulations

1. The permittee shall provide a detailed mining and reclamation plan to BLM for approval at least 90 days prior to beginning any mining operations.
   a. The mining and reclamation plan shall address all applicable items in the attached *Mineral Materials Mining and Reclamation Plan Proposal.*

2. The permittee shall provide copies of the following documentation to BLM **prior to** beginning any mining operations:
   a. Written certification, signed by the permittee's authorized representative, that all persons working at the site, including employees of the permittee, its contractors, or subcontractors, have received a copy of these stipulations and a copy of the enclosed ADEC Spill Response Placard, and have been briefed on their responsibility to comply with them.
   b. A certified site-specific Spill Prevention Control and Countermeasures Plan (SPCCP) or BLM-approved Spill Contingency Plan (SCP), as applicable. See stipulations 22 and 23 for more information.
   c. A copy of the relevant approved Storm Water Pollution Prevention Plan (SWPPP), if applicable, or a written statement of the reasons a SWPPP is not applicable.
   d. A copy of the relevant Clean Water Act Section 404 permit, if applicable, or a written statement of the reasons a 404 permit is not applicable.
   e. A copy of the relevant Alaska Department of Fish and Game Fish Habitat permit, if applicable, or a written statement of the reasons it is not applicable.
   f. A copy of any other applicable permit required by State or Federal law or regulation.

3. The permittee will ensure that their employees, their contractors, and subcontractors follow all applicable federal, state, and local laws and regulations related to environmental protection and protection of cultural resources. If another agency issues a citation or notice of violation, BLM will also issue a notice of noncompliance for failure to comply with this stipulation.

4. The permittee will ensure that copies of the material sale contract or free use permit, as applicable, including the stipulations, and all other applicable permits from other

State or Federal agencies, are on site and available for reference by the operators and review by the BLM at any time when personnel are working on site.

5. The permittee will ensure that copies of all relevant monitoring plan records are available on-site for review by the BLM at any time when personnel are working on site.

6. The permittee will notify BLM at the beginning and the end of active mining operations.

7. The permittee shall provide a report to BLM of the volume and type(s) of material produced from the site no later than December 31 of each calendar year.

Working Footprint

8. The permittee will ensure that work does not expand outside of the permitted material site boundary.

9. The permittee will ensure that a 50-foot undisturbed buffer is maintained along boundaries with other land owners when applicable.

10. The permittee will ensure that the site is developed sequentially in cells (See attached example phasing diagram).
    a. A disturbed cell will be reclaimed prior to opening a new area.
    b. Exceptions to allow for thawing of permafrost may be granted at the discretion of the authorized officer

11. The permittee shall ensure that buffer zones are not disturbed, except by designated crossings.
    a. Operation of equipment, placement of overburden or mined material, or storage/placement of any equipment and supplies will not be allowed in any buffer zones identified in the mining and reclamation plan, specified in the Decision Record for this authorization, or required in these stipulations
    b. See stipulations 9 and 46 for mandatory buffer zones.

Technology and Practices

12. The permittee will ensure that the site is not used for storage of materials or supplies not related to the production of mineral materials from this site.
    a. Storage of materials or supplies not related to the production of mineral materials, including culverts, bridge railings, calcium chloride, or other road maintenance supplies, is outside the scope of this authorization.

b. The permittee may request separate authorization to store such materials on public lands, if needed.

13. The permittee will ensure that the site is not used for secondary or value-added production processes not related to the production of mineral materials from this site.
    a. Operation of hot-batch plants, asphalt production, cement production, fabrication of components for off-site use, and similar activities not related to the production of mineral materials is outside the scope of this authorization.
    b. The permittee may request separate authorization to conduct such activities on public lands, if needed.

14. The permittee will ensure that no minerals originating outside the permit area are imported to the permit area.

15. The permittee will ensure that all activities under this authorization are conducted using equipment, devices, and practices that are able to achieve compliance with these stipulations and all relevant State or Federal laws and regulations. Use of inadequate, insufficient, or inappropriate equipment, devices, or practices will not constitute justification for failure to comply with these stipulations or relevant State or Federal law and regulations.

16. The permittee will ensure that overburden, topsoil, and vegetation are stockpiled separately in a manner that prevents loss through erosion, preserves them for use in reclamation, and does not impede access to usable mineral materials.

17. The permittee will ensure that work pit sides are sloped to prevent erosion and provide for the safety of humans and animals. Slopes along pit sides and inactive faces shall be no greater than 3:1.

18. The permittee shall ensure that site stabilization measures and measures to control erosion, sedimentation, and storm water are maintained in proper working order throughout the term of the authorization, including during periods of temporary closure or inactivity.

19. The permittee will ensure that areas of operation are kept in a safe, neat, and sanitary condition at all times.

20. The permittee will ensure that access to public lands is not restricted during periods of inactivity, unless BLM directs that a gate to the site be closed and locked.

21. The permittee will ensure that best management practices for dust abatement (i.e. graveling, watering) are utilized when deemed necessary by the permittee, their contractor, or subcontractor, or when directed by a BLM representative.

Management of Hazardous Materials, including Petroleum, Oils, and Lubricants (POLs)

22. Prior to beginning operations, the permittee shall provide to BLM a certified, site-specific Spill Prevention Control and Countermeasures Plan (SPCCP) in accordance with 40 CFR 112. If no SPCCP is required under 40 CFR 112, the permittee shall submit a Spill Contingency Plan (SCP) for BLM approval, describing measures that will be taken to prevent and respond to hazardous materials spills, including POL spills.

23. The permittee will ensure that all operations conducted pursuant to this authorization are in compliance with the certified SPCCP or BLM-approved SCP, as applicable.

24. The permittee will ensure that transportation, storage, and transfer of any hazardous materials, including POLs, is handled in a manner that prevents release to the environment.

25. The permittee will ensure that all hazardous materials containers, including POL containers, are stored within secondary containment.
    a. Double-walled tanks meet secondary containment requirements.
    b. When containment other than double-walled tanks is used, the containment area shall be lined with an impermeable liner composed of material compatible with the substance(s) to be contained. The liner shall be free of cracks or gaps and sufficiently impervious to contain leaks or spills.
    c. If the containment is completely under cover of a roof, then the containment volume must be large enough to contain the capacity of the largest container stored within.
    d. If the containment is not completely under cover of a roof, then the containment volume must be large enough to contain the capacity of the largest container stored, plus water from a 5-year, 24-hour storm event. The amount of precipitation from a 5-year, 24-hour storm event for a given location can be found at https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_ak.html.

26. The permittee will ensure that spill containment measures are utilized during all transfer of hazardous materials, including POLs, from one container to another, including equipment refueling. At a minimum, a "duck pond" or similar catchment will be placed under the point of delivery to catch spills, splashes, or overfills.

27. The permittee will ensure that drip basins are placed under all parked equipment that are known to leak fluids, and all parked equipment that will be unattended for more than 8 hours.

28. The permittee will ensure that all spill containment devices, including "duck ponds," liners, and vehicle drip pans, are maintained in good working condition at all times. Spill containment devices that are punctured, torn, or worn beyond serviceability will be replaced immediately upon discovery of the unserviceable condition.

29. The permittee will ensure that no fuel storage or refueling of equipment occurs within the flood plain of a stream or lake.

30. The permittee will ensure that all hazardous materials storage containers, including POL containers, are labeled with the following information: Permittee's/contractor's name, contents of the container (name of the product that you put in the container, if not in the original container from the manufacturer), date the product was purchased/put in the container. (e.g. Northern Guides, Diesel Fuel, 17 May 2009)

31. Equipment repair on site is allowed on the basis of the necessity to operate equipment on the site. The permittee will ensure that equipment repair with the potential to release fluids is completed over an impermeable liner sufficient to prevent fluid migration to the environment.

32. The permittee will ensure that all hazardous material spills, including POL spills, are contained and cleaned up as soon as the release is identified.

33. The permittee will ensure that all hazardous material spills, including POL spills, are reported to the Alaska Department of Environmental Conservation (ADEC) in accordance with State of Alaska laws and regulations. (See ADEC Spill Response Placard)

34. The permittee will notify the BLM authorized officer within 48 hours of any hazardous material spill, including POL spills in excess of 10 gallons, on public lands and will provide the ADEC spill report number to the BLM.

Waste Management

35. The permittee will ensure that no garbage or solid waste is buried on public lands.

36. The permittee will ensure that only solid waste combustibles that originate from on-site are incinerated, and that they are incinerated in a contained and controlled manner.
    a. Solid waste combustibles are materials that can be reasonably expected to reduce to ash when burned.
    b. Rubber, tires, plastic, styrofoam, metal, aerosol cans, or any other materials that, when burned, emit volatile chemicals, leave unburned solids, or are likely to explode, are not considered solid waste combustibles and may not be incinerated on public lands.
    c. No waste from offsite will be brought on site for incineration.

37. The permittee will ensure that incineration of garbage is conducted in compliance with Alaska Division of Forestry Burn Barrel Specifications. These specifications can be found at https://dnr.alaska.gov/burn/specifications

38. The permittee will ensure that all solid waste and garbage, including incinerated ash, is removed from public lands and disposed of in an ADEC approved waste disposal facility. No solid waste is to remain on site for more than 90 days.

39. The permittee will ensure that portable toilets are used for human waste disposal, and that they are regularly maintained. The disposal of human waste is not authorized on public land, unless a pit privy is explicitly authorized in the Decision Record for this authorization.

40. The permittee will ensure that all human waste and gray water management is in compliance with relevant State of Alaska regulations.

Reclamation

41. The permittee will consult with BLM to develop the fertilizer and seed mixture to be used when reclaiming any area within the permitted material site boundary.

42. The permittee will meet with BLM staff at the end of the life cycle of the mine, prior to final reclamation, to define final configuration of the mine.

43. The permittee will ensure that reclamation is conducted in accordance with the approved reclamation plan. Deviations or modifications to the approved reclamation plan must be approved in writing by the BLM authorized officer prior to execution.

Soil, Water, and Air Resources Protection

44. The permittee will ensure that surface water flow is diverted around the excavated pit to protect the water quality of the area.

45. The permittee will ensure that appropriate erosion, sediment, and storm water control measures are utilized to achieve compliance with all relevant State and Federal laws and regulations, including State of Alaska water quality standards.

46. The permittee will ensure that a 100-foot undisturbed buffer is maintained along any lakes or creeks that flow through upland pits.
    a. Any approved access roads that bisect the buffer area will be rehabilitated at the close of mining by revegetating the crossing with plant species and densities similar to those in the undisturbed buffer for at least 100 feet from the bank-full elevation.
    b. Access roads in buffers originally void of vegetation will be scarified to a minimum depth of 8 inches during final reclamation.

47. Instream and floodplain gravel scraping is prohibited unless explicitly authorized in the Decision Record for this authorization.

Cultural Resources Protection

48. The permittee will ensure that activities are conducted in such a manner as to not cause damage or disturbance to any historical or archaeological sites and artifacts.
    a. The Antiquities Act (1906), Archaeological Resources Protection Act (1979), Federal Land Policy and Management Act (1976), and general United States property laws and regulations, all prohibit the appropriation, excavation, damage, or destruction of any historic or prehistoric ruin or monument, or any other object of antiquity situated on lands owned or controlled by the United States (16 USC 470; 16 USC 432; 43 U.S. 1733(a); 18 U.S.C. 1361; 18 U.S.C. 641; 43 CFR 8365.1).
    b. Such items include both prehistoric stone tools and sites, as well as historic log cabins, remnants of such structures, refuse dumps, and other such features. Should any such site be discovered during the permitted activity, the permittee will avoid impacting such materials, and immediately notify the authorized officer.

49. The permittee shall pay all the costs associated with the evaluation and mitigation of any disturbed or damaged paleontological and cultural resources, as determined necessary by the BLM archaeologist.

Wildlife Resources Protection

50. The permittee will ensure that all associated operations are conducted in such a manner as to avoid or minimize impacts to migratory birds.
    a. The primary mechanism to avoid and minimize impacts is to conduct work that may impact migratory birds outside of the nesting season (May1-July 15 south of Atigun Pass; June 1 – July 31 North of Atigun Pass). U.S. Fish and Wildlife Service (USFWS) guidance on dates to avoid vegetation clearing can be found at: http://www.dot.state.ak.us/sereg/projects/sitka_katlianbayroad/assets/1-vegetation_clearing.pdf

51. The permittee will ensure that no vertical or near-vertical faces that may encourage bank swallow nesting are left on any slope, including on stockpiles.
    a. If bank swallows establish nests, the permittee will ensure that the face is not disturbed until after young are fledged or the nests are naturally vacated.

52. The permittee will ensure that no blasting is conducted within 1 mile of an active eagle nest until a qualified biologist has determined that the nest has been naturally vacated.

53. The permittee will ensure that garbage, groceries, or other wildlife attractants are kept secured while awaiting their use, removal, or incineration.
    a. Use of bear-proof containers or elevated caches is strongly recommended as a means to comply with this stipulation.

54. The permittee will ensure that their employees, contractors, and subcontractors do not harass or feed wildlife. The threshold for harassment is causing an animal to alter its behavior.

55. In addition to State reporting requirements, the permittee will notify the BLM authorized officer within 30 days if a state-managed game animal is killed in defense of life or property in accordance with Article 9-5 AAC 92.410 of the State of Alaska Game Regulations.

Vegetative Resources Protection

56. The permittee will ensure that no surface-disturbing activities are conducted in areas where the BLM has identified the occurrence of federally listed sensitive plants.

57. The permittee will have a qualified biologist or botanist inspect each material site and all related disturbances such as access roads for the presence of invasive plant species at least once each growing season for the duration of the authorization. At the time of

inspection, any invasive species detected shall be clearly marked on the ground so that workers can easily avoid them. By December 31 of each year, the permittee will provide a written report to BLM documenting the inspector's name, inspection date, and inspection results. If the results include detection of invasive species, the report will include photographs and GPS locations for each infestation detected.

58. Any proposed treatment for invasive species must be pre-approved by the BLM authorized officer. Some treatment methods may require additional analysis under NEPA prior to implementation.

59. The permittee will not travel, park, or stage equipment, supplies, or materials in areas infested with invasive plant species (as identified in 57 above). Activities will commence from known un-infested areas and progress toward known infested areas.

Visual Resources Protection

60. The permittee will ensure that equipment used in association with this authorization is kept hidden from view from the Dalton Highway to the extent feasible.

61. The permittee will ensure that fixed structures and facilities that are visible from any point on the Dalton Highway, including fuel storage tanks and office facilities, are painted covert green, shadow gray, or a similar color, unless another color is specified in the project-specific stipulations.

Fire Management

62. The federal government is not responsible for protection of the permittee's, contractor's, or subcontractor's structures, equipment, or personal property from wildfire.

63. The permittee, their contractors and/or subcontractors will be held financially responsible for any action or activity that results in a wildfire. Costs associated with wildfire include, but are not limited to, damage to natural resources and costs associated with suppression action taken on the fire.

Project-Specific Stipulations

64. Prior to July 31, the permittee will repair the diversion berms upstream of the Atigun River 1 material site to divert Who Creek away from the proposed work area.

65. The permittee will avoid blasting during the nesting season to minimize impacts to BLM Special Status Species of birds. The nesting season is recognized to be May1-July 15 south of Atigun Pass and June 1 – July 31 North of Atigun Pass.

Mineral Materials Mining and Reclamation Plan Proposal

While there is no requirement to use this form to apply for a mineral material mining authorization, all of the relevant information identified here is required for a mining plan to be determined complete.

NOTE 1: Applicants should contact BLM to request separate authorization for the following activities, which are outside the scope of activities authorized under a mineral material mining plan:

- Establishment and operation of camps on public lands for commercial purposes.
- Storage of materials or supplies not related to the production of mineral materials, including culverts, bridge railings, calcium chloride, or other road maintenance supplies.
- Secondary or value-added production processes, including operation of hot-batch plants, asphalt production, cement production, fabrication of components for off-site use, and similar activities not related to the production of mineral materials.

NOTE 2: Applicants will be required to provide a copy of the following documentation prior to beginning operations.

- The relevant approved Storm Water Pollution Prevention Plan (SWPPP)
- A certified Spill Prevention, Control, and Countermeasure Plan (SPCCP) if required by 40 CFR 112, or a Spill Contingency Plan (SPC) subject to BLM approval.

Providing those, even in draft form, as part of this mining plan will help expedite the analysis and approval.

Applicants will also be required to provide a copy of any other permits required by applicable State or Federal regulation (e.g., a Clean Water Act Section 404 permit, an Alaska Department of Fish and Game Fish Habitat Permit, etc.) **prior to** beginning operations. Thus, they are encouraged to pursue those with the relevant agency concurrently with this application.

MINING PLAN

- ☐ Project Name
- ☐ Prepared By
- ☐ Date

Operator Information

- ☐ Operator Name
- ☐ Mailing Address
- ☐ Phone Numbers (Office, Cell, and FAX)
- ☐ Point of contact

Permittee Information (if different than operator information)

- ☐ Permittee(s) Name
- ☐ Mailing Address
- ☐ Phone Numbers (Office, Cell, and FAX)
- ☐ Point of contact

General Plan Information

- ☐ Mineral Material type(s) to be mined
- ☐ Quantity per Year to be mined (cubic yards)
- ☐ Total quantity to be mined

General schedule of operations from start through closure:

- ☐ Proposed date for mobilization to site
- ☐ Proposed date for start of mining
- ☐ Estimated date for end of mining
- ☐ Estimated date for beginning of reclamation
- ☐ Estimated date for completion of reclamation
- ☐ Estimated date(s) for period(s) of temporary or seasonal closure
- ☐ Other relevant milestone date estimates (e.g., planned change of mining method, etc.)

DESCRIPTION OF OPERATIONS:

Location

- ☐ Legal Description: (Township, Range, section(s), quarter section(s))
- ☐ Highway milepost
- ☐ Site name (if known)
- ☐ Are non-native invasive plant species present at the site? (if known).

Equipment and Devices:

- ☐ Provide a list or description of all equipment and devices that will be used in the operations and the purpose/use for each.

Operating Practices

- ☐ Type of action/operation proposed (open pit, quarry, etc.)
- ☐ Mining methods or techniques proposed (dozer scraping, excavator, drag line, blasting, etc.)
- ☐ Estimated dimensions of excavation/workings (length, width, depth)
- ☐ Description of processing/washing/crushing/sorting to be conducted on site
- ☐ If water-based processes are proposed (washing), a detailed description of the water management plan, including water source, flow control, settling, and discharge rates and locations.
- ☐ Estimated average daily production (cubic yards)
- ☐ Estimated depth of overburden above usable materials
- ☐ Estimated maximum volume of material stockpiles
- ☐ Estimated volume of material stockpiles at completion of mining
- ☐ Estimated total surface disturbance (acres); include mining area, access, berms, stockpiles, fuel yards, sanitation facilities, etc.
- ☐ Description of overburden stockpiling (location, methods to prevent loss from erosion)
- ☐ Description of dust control practices
- ☐ Proposed daily hours of operation

Reclamation Plan

- ☐ Description of proposed reclamation practices and methods
    - o Regrading and reshaping to conform with adjacent landforms
    - o Placement of growth medium and establishment of self-sustaining revegetation
    - o Measures to control erosion, landslides, and water runoff
- ☐ General reclamation schedule, from start to finish
- ☐ Description of final pit configuration (reference diagrams)
- ☐ Reclamation practices for roads/access features
- ☐ Post-reclamation disposition of access features (reclaimed, left for future access to the pit, etc.)

Monitoring Plan

A monitoring plan must be designed to demonstrate compliance with the approved plan of operations and other Federal and State environmental laws and regulations, provide early detection of potential problems, and supply information that will assist in directing corrective actions should they become necessary. Examples of monitoring programs which may be relevant to a given operation include water quality, air quality (dust control), slope stability, revegetation progress (during reclamation), noise levels (if near visitor services facilities), and wildlife mortality. Monitoring plans may incorporate existing State and/or other Federal monitoring requirements to avoid duplication. However, the submitted monitoring plan needs to include copies of and clearly reference these other plans.

Where applicable, the monitoring plan must include details on:

- ☐ type and location of monitoring devices
- ☐ sampling parameters and frequency
- ☐ analytical methods
- ☐ reporting procedures
- ☐ procedures to respond to adverse monitoring results.

Interim Management Plan

The interim management plan describes management of the project area during periods of temporary and seasonal closures to prevent unnecessary or undue degradation.

The interim management plan must include, where applicable, the following:

- ☐ measures to stabilize excavations and workings
- ☐ measures to isolate or control toxic or deleterious materials (e.g., if hazardous materials, including POLs, are left on site).
- ☐ provisions for the secure storage or removal of equipment, supplies and structures;
- ☐ measures to maintain the project area in a safe and clean condition;
- ☐ plans for monitoring site conditions during periods of non-operation;
- ☐ a schedule of anticipated periods of temporary closure during which you would implement the interim management plan

Description of Support Facilities:

- ☐ Office and administrative facilities
  - o Description of structures and locations (reference project maps)
- ☐ Sanitation needs
  - o human waste management methods (port-a-john, etc.)
  - o cleaning and maintenance schedule
- ☐ Public Safety Considerations
  - o Proposed fencing, barriers, or barricades and the need/purpose for each
  - o Proposed signage and the need/purpose for each
  - o Description of any other proposed public safety features or devices
- ☐ Trash and Solid Waste Management
  - o Methods for interim secure storage of garbage generated on site
  - o Schedule for incineration of solid waste combustibles
  - o Schedule for backhaul of non-combustible waste
  - o Description of burning/incineration facilities
- ☐ SWPPP or other water management plans:
  - o Proposed means of storm water diversion around workings
  - o Diversion ditches and discharge locations in case water is produced during mining operations
  - o Sediment and erosion control methods and devices

- Schedule for inspection and maintenance of sediment and erosion control devices
- Location of any planned water discharge
- Water needs and uses
- Water sources, including and methods and rates of water extraction or transfer

☐ Access
- Location(s) of each proposed road (reference project maps)
- Road type for each proposed road (haul, light vehicle, access, etc.)
- Road maintenance methods and schedules
- Proposed upgrades to existing roads
- The location of reasonable public passage or access routes through or around the area to adjacent public lands

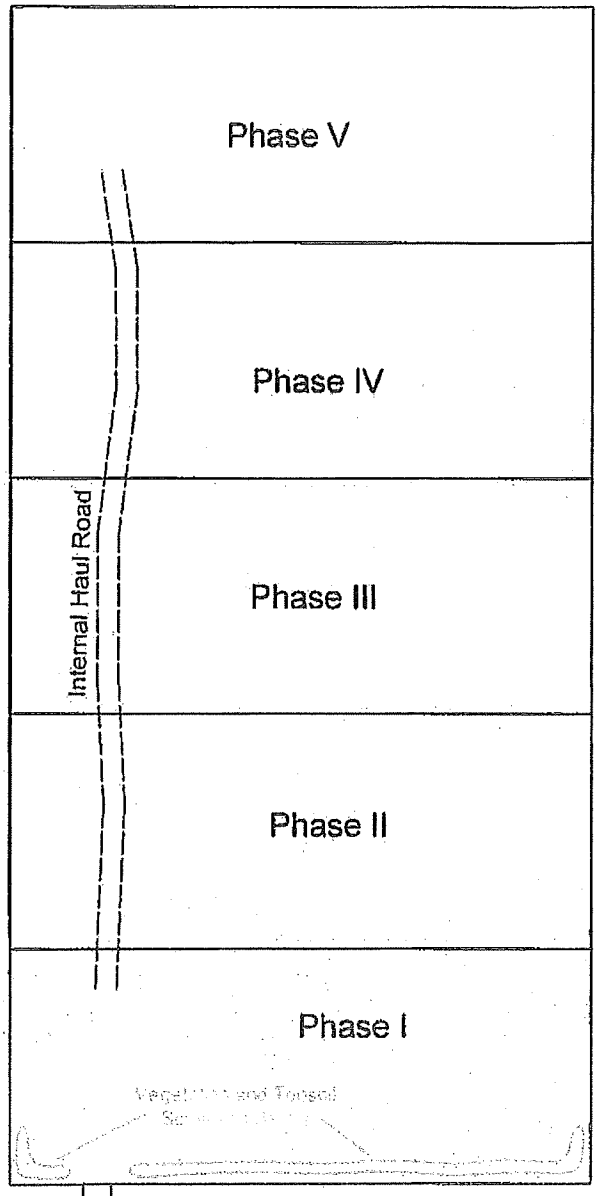
☐ Hazardous materials, including, but not limited to, POLs and explosives
- SPCCP or SCP, as applicable
- Location of all Hazardous Materials storage (reference project maps)
- Location of refueling areas
- Blasting plan, if applicable

Project Maps and Diagrams

☐ Maps must be at an appropriate scale and of sufficient detail for BLM to discern the locations of:
- Excavation boundaries
- Types and location of material stockpiles
- Phasing Plan (see attached example)
- Processing facilities
- Overburden areas
- Administrative facilities (office structures, etc.)
- Equipment storage areas
- Maintenance facilities and/or location
- Refueling areas
- Fuel storage
- All water bodies within the intended disturbance area
- Access features
- Public safety devices, including proposed fences, barricades, and signage.

☐ Diagrams
- pre-mining cross sections
- post mining cross sections
- post-reclamation cross sections

The BLM may require additional, site-specific information when resource status or conditions warrant.

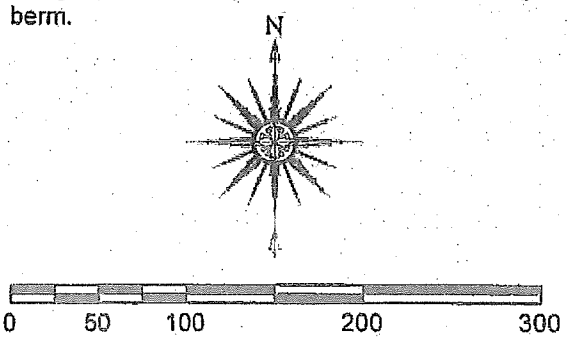


Phase I contains the laydown yard, sand and gravel stockpiles, and Phase I overburden stockpiles. Access Road and Phase I topsoil and vegetation will be formed into screening berms along the south side of the site and seeded. Most of Phase I will remain open until final reclamation.

Phase II will be cleared concurrently as unused portions of Phase I are reclaimed. Vegetation and topsoil will be stockpiled in Phase I near the haul road. Overburden will remain in Phase II and will be replaced as areas are depleted of gravel. After extraction of gravel is complete, all of Phase II will be reclaimed, except the internal haul road, using overburden stockpiled in Phase II, and topsoil and vegetation stockpiled in Phase I. Areas along the road near the north end of Phase II will be used for vegetation and topsoil stockpiles for Phase III as it is opened..

This process will be repeated for Phases III, IV, and V.

After all gravel is extracted from Phase V, this area will be fully reclaimed and the haul road will be reclaimed back to Phase I. Afterwards, Phase I and the access road will be reclaimed, using topsoil and vegetation from the screening berm.



Rock Hoppers, Inc. Somewhere, AK Black Lake Pit	Map 3 Phasing Plan 22 AUG 2018

IT'S THE LAW!

AS 46.03.755, 18 AAC 75.300, 75.325 and 18 AAC 78.200

REPORT OIL AND HAZARDOUS SUBSTANCE SPILLS

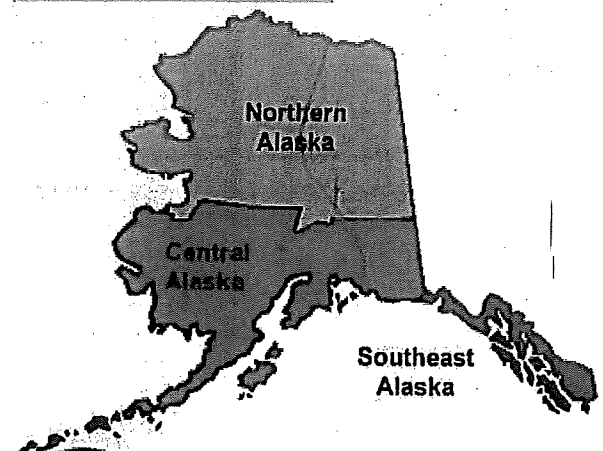
During Normal Business Hours

call the nearest response team office:

Central Alaska: Anchorage	**(907) 269-3063** Fax: (907) 269-7648
Northern Alaska: Fairbanks	**(907) 451-2121** Fax: (907) 451-2362
Southeast Alaska: Juneau	**(907) 465-5340** Fax: (907) 465-5245
Alaska Pipeline: Fairbanks	**(907) 451-2121** Fax: (907) 451-2362

Outside Normal Business Hours

Toll Free	**1-800-478-9300**
International	**1-907-269-0667**



Alaska Department of Environmental Conservation
Division of Spill Prevention and Response
www.dec.alaska.gov/spar/ppr/spill-information/reporting

Hazardous Substance

Any hazardous substance spill, other than oil, must be reported immediately.

Oil – Petroleum Products

To Water

- Any amount spilled to water must be reported immediately.

To Land

- Spills in ***excess of 55 gallons*** must be reported immediately.
- Spills in ***excess of 10 gallons, but 55 gallons or less,*** must be reported within 48 hours after the person has knowledge of the spill.
- Spills of ***1 to 10 gallons*** must be recorded in a spill reporting log submitted to ADEC each month.

To Impermeable Secondary Containment Areas

- Any spills in ***excess of 55 gallons*** must be reported within 48 hours.

Additional Requirements for Underground Storage Tank Spill Reporting

Regulated Underground Storage Tank (UST) systems are defined at 18 AAC 78.005. Releases at heating oil tanks must be reported.

- You must report a *suspected* belowground release from a UST system, in any amount, within 24 hours *(18 AAC 78.220(c))*.
- You must report if your release detection system indicates two consecutive months of invalid or inconclusive results.
- If you observe unusual operating conditions, sudden loss, erratic dispensing (slow flow/no flow) or discharge to soil or water, **report it to the UST Unit:**

907-269-3055 or 269-7679

rev. July/2018

STATEWIDE MATERIAL SITE INVENTORY

MATERIAL SITE INSPECTION REPORT

Federal Project No. STP-000S(530)
AKSAS Project No. 76174

DALTON HIGHWAY

MS 65-9-037-2
Bonanza Creek Site

November 20, 2009

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LOCATION MAP 2

SITE MAP .....3A thru 3C

INSPECTION FORM AREA "A".....4 thru 10

INSPECTION FORM AREA "B".....11 thru 17

INSPECTION FORM EXPANSION AREA .....18 thru 24

CATEGORY:

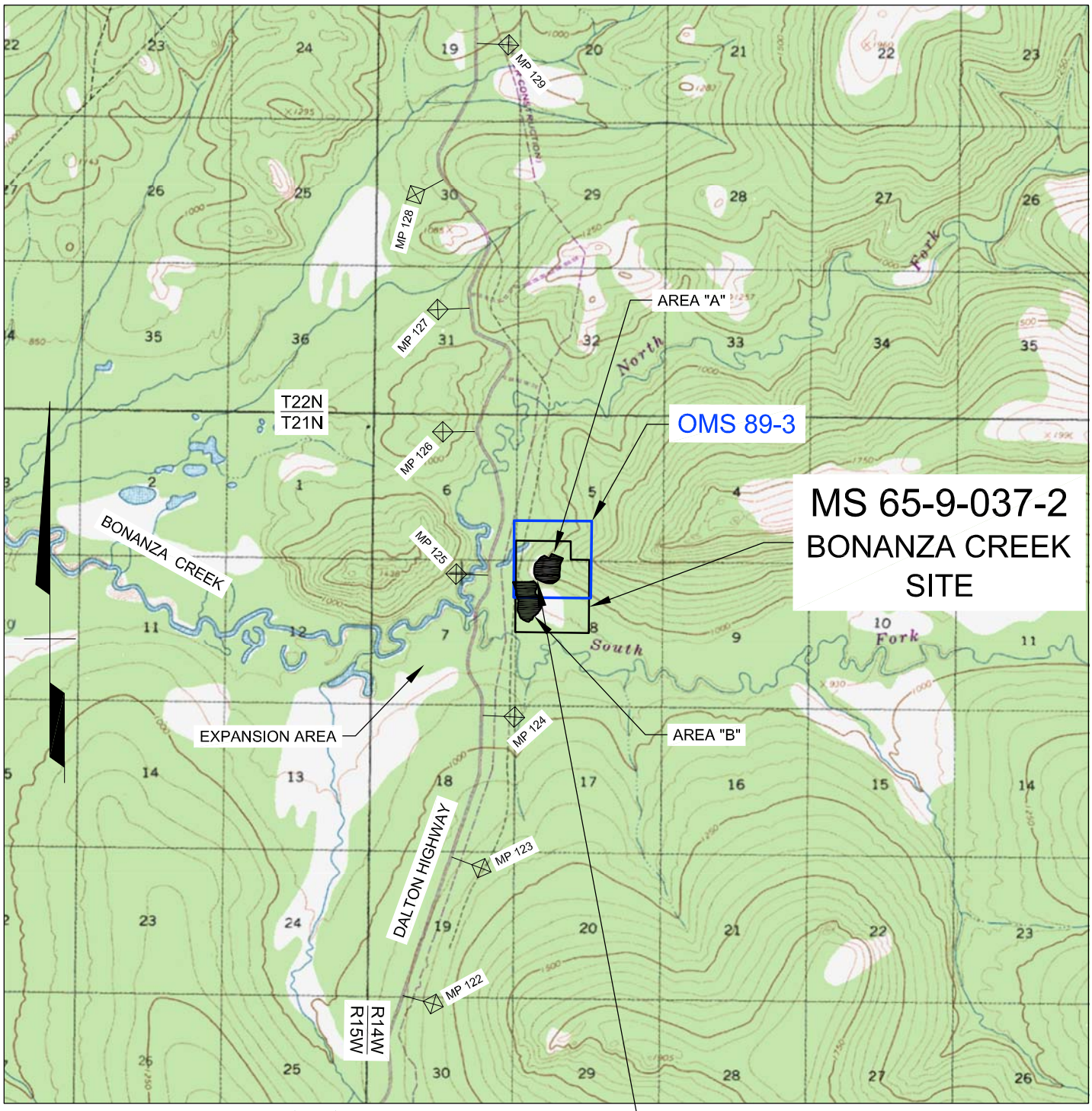
ACTIVE – OPEN

According to information found in the DOT&PF EDMS system in January 2009 and data in the BLM case file abstracts, this site lies on Federal lands managed by BLM. The site has been divided into three parts; a bedrock quarry labeled Area "A"; an existing pit in the floodplain labeled Area "B"; and a proposed expansion west of the highway. Area "A" (MS 89-3) was originally developed for construction of the Dalton Highway and Alyeska Pipeline in the 1970's. It is presently a joint-use site, used for Alyeska operations and maintenance (OMS 89-3) and for DOT&PF Dalton Highway maintenance and reconstruction (MS 65-9-037-2). Generally, Area "A" is operated under a mining plan prepared by Alyeska dated 2002 that shows separate working areas for both Alyeska and DOT&PF. The Alyeska permit (F-094458) presently expires on August 09, 2010.

DOT&PF is operating under a FUP (F-093001) which currently expires December 31, 2010.

DOT&PF has developed Area “B” in the floodplain of Bonanza Creek which is covered under the same DOT&PF permit. Golder drilled a proposed expansion to Area “B” on the east side of the highway in 2003. A large expansion area downstream to the west was drilled at the same time. Additional areas for expansion are available on the west side of the highway. Alyeska Access Road 89-APL/AMS-4 connects Area “A” to the Dalton Highway. DOT&PF access right-of-way is included in the permit. The site appeared to contain significant quantities of sand and gravel and should be retained by DOT&PF for future use. It is also a potentially significant source of aggregates in an area with limited material suitable for producing aggregates.

LOCATION MAP



U.S.G.S. QUADRANGLE: BETTLES (C-2)

GPS COORDINATES FROM GOOGLE EARTH

UTM (WGS84-METERS)
ZONE 5: N7,396,048 E603,751
AK STATE PLANE (NAD83-US SURVEY FT)
ZONE 4: N4,629,744 E1,545,800

ACTIVE - OPEN

0 0.5 1 2 3

GRAPHIC SCALE IN MILES

BASE MAP CREATED WITH TERRAIN NAVIGATOR PRO

Prepared By:
R&M CONSULTANTS, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

STATEWIDE MATERIAL SITE INVENTORY

MS 65-9-037-2

SCALE	DESIGNED	DRAWN	PAGE
AS SHOWN	P.K.H.	A.T.B.	2
	CHECKED C.H.R.	DATE MAY 2009	

Plotted 1/25/2010 3:24 PM by Aaron Banks
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SITE MAP

BASE MAP IS 2008 AERIAL PHOTOGRAPHY.
THIS IS A PLANNING DOCUMENT ONLY. THE MATERIAL SITE BOUNDARIES SHOWN ON THIS DRAWING ARE APPROXIMATE. OWNERSHIP OF THE LANDS ADJACENT TO THIS SITE ARE UNKNOWN. THE ACCESS ROW SHOULD BE VERIFIED.

ACTIVE - OPEN

0 800 1600 3200 4800

GRAPHIC SCALE IN FEET

BASE MAP FROM AERIAL PHOTOS DATED 9/16/08

Prepared By:
R&M CONSULTANTS, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

STATEWIDE MATERIAL SITE INVENTORY

MS 65-9-037-2

SCALE	DESIGNED	DRAWN	PAGE
AS SHOWN	P.K.H.	P.K.H.	3A
	CHECKED C.H.R.	DATE JUNE 2009	

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Plotted 1/25/2010 3:25 PM by Aaron Banks

SITE MAP
EAST BONANZA CREEK

BASE MAP IS 2008 AERIAL PHOTOGRAPHY.
THIS IS A PLANNING DOCUMENT ONLY. THE MATERIAL SITE BOUNDARIES SHOWN ON THIS DRAWING ARE APPROXIMATE. OWNERSHIP OF THE LANDS ADJACENT TO THIS SITE ARE UNKNOWN. THE ACCESS ROW SHOULD BE VERIFIED.

ACTIVE - OPEN

0 250 500 1000 1500

GRAPHIC SCALE IN FEET

BASE MAP FROM AERIAL PHOTOS DATED 9/16/08

Prepared By:
R&M CONSULTANTS, INC.

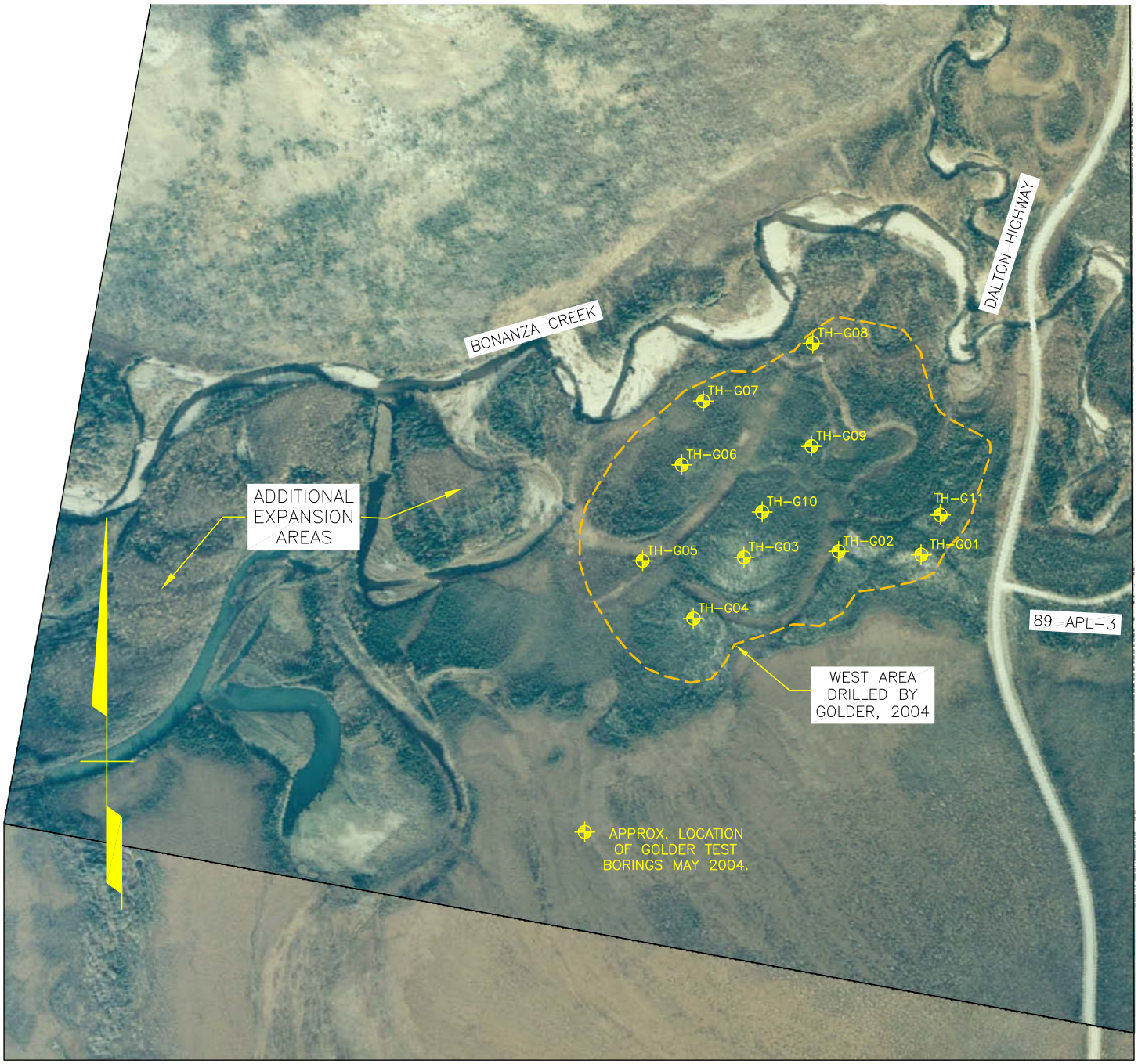
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

STATEWIDE MATERIAL SITE INVENTORY

MS 65-9-037-2

SCALE	DESIGNED	DRAWN		
AS SHOWN	P.K.H.	P.K.H.		
	CHECKED C.H.R.	DATE JUNE 2009	PAGE	3B

SITE MAP
WEST BONANZA CREEK



BASE MAP IS 2008 AERIAL PHOTOGRAPHY.
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ACTIVE - OPEN

0 400 800 1600 2400

GRAPHIC SCALE IN FEET

BASE MAP FROM AERIAL PHOTOS DATED 9/16/08

Prepared By:
R&M CONSULTANTS, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

STATEWIDE MATERIAL SITE INVENTORY

MS 65-9-037-2

SCALE	DESIGNED	DRAWN		
AS SHOWN	P.K.H.	P.K.H.		
	CHECKED C.H.R.	DATE JUNE 2009	PAGE	3C

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STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

THIS REPORT IS BASED ON A REVIEW OF EXISTING DATA AND BRIEF FIELD INSPECTIONS. THUS THE DATA CONTAINED HEREIN SHOULD BE CONSIDERED PRELIMINARY AND USED FOR PLANNING PURPOSES ONLY. USERS OF THIS DATA SHOULD VERIFY THE INFORMATION PRIOR TO USING IT FOR DESIGN OR CONSTRUCTION PURPOSES.

IF OTHER IS SELECTED FOR A SECTION, EXPLAIN IT IN SECTION 44. NOTES.
IF AN ANSWER IS UNKNOWN SELECT "UNKNOWN" OR LEAVE BLANK

1. **MS_ID** **65-9-037-2 AREA "A"**
   Enter the full material site number e.g.. 65-9-045-2
2. **DATE_INSPECT** 8/6/2009
   Date of field inspection
3. **FLD INSPEC_ORG** AARON BANKS / R&M CONSULTANTS
   Name of inspector / Organization or Company
4. **REGION** NORTHERN
5. **LOCATION** DALTON HIGHWAY
   Name of Highway
   Enter Name of Facility or Secondary Route Name (i.e.Kotzebue Airport, Nash Road, etc.)
6. **MILEPOST** 125
   List the closest main highway milepost
7. **NAME** BONANZA CREEK SITE, MS 89-3, OMS 89-3
   Enter commonly used name (s), e.g. Hess pit, Gobblers Knob, Midway. List all that apply separated by commas.
8. **MAINT_DIST/STAT** District INTERIOR/DALTON Station JIM RIVER
   Highway Maintenance District and Station, for locations not on highways select other.
9. **QUAD** BETTLES C-2
   U.S.G.S. Quad. Map
10. **TOWNSHIP /RANGE** T#S R#E T21N R14W Meridian FM
    Section 5 & 8
11. **COOR_UTM**
    ZONE 5
    NORTHING 7,396,048
    EASTING 603,751
    UTM WGS84 - Meters
12. **COOR_STATE_PLANE**
    ZONE 4
    NORTHING 4,629,744
    EASTING 1,545,800
    Alaska State Plane NAD83 - Survey Feet
13. **BOROUGH** UNORGANIZED **TAX ID NO.**
14. **DNR_LAND_USE_PLAN** DALTON HIGHWAY MASTER PLAN
15. **CATEGORY** (To be filled in the office)
15a. **CLASSIFICATION** ACTIVE
15b. **STATUS** OPEN

16. **POTENTIAL_STATUS** SIGNIFICANT

Estimated quantity of material in the site at the time of inspection.

NONE	There appeared to be no useable material in the site.
LIMITED	There appeared to be less than 25,000 c.y. available within the developed site.
SIGNIFICANT	There appeared to be greater than 25,000 c.y. available within the developed site.
EXPANDABLE	There was limited material within the developed site, but there appeared to be significant material outside existing site limits.
UNDEVELOPED	The pit has not been mined (used only for new sites).
CLOSED	There may be useable material left in the pit but it is not available.
UNKNOWN	
OTHER	The site does not fit any of the categories above. Explain in Section 44, Notes.

17. **PRESENT_USERS**

17a. **PRESENT_USER_1** DOT&PF MAINTENANCE

17b. **PRESENT_USER_2** ALYESKA

17c. **PRESENT_USER_3**

18. **PERMITTED _ACREAGE** 190

Area within site permit or R.O.W. boundaries, from permit application or property plat.

19. **DEVELOPED_ACREAGE** 18

Area within an existing pit, excluding spoil berms lying outside the pit, access roads etc. Explain below.

Includes both DOT&PF and Alyeska areas of existing pit.

20. **ACREAGE_COMP_METHOD** FROM MAP/PHOTO

Method used to determine developed acreage.

21. **EST_QUAN_AVAIL** 600,000 ROUGH ESTIMATE

Estimated quantity available (b.c.y.), may be based on acreage computed above plus expansion area. Explain computation assumptions and calculations below.

Assuming that the existing pit can be deepened an average of 20 feet there was approx. 214,000 c.y. (10.7 acres x 20 feet x 1,000 c.y. per acre-foot) of material available. Assuming an average 4 feet of overburden and a 40 foot mining depth there was approx. 371,000 c.y. (10.3 acres x 36 feet x 1,000 c.y. per acre-foot) of material available. The reclaimed area reportedly contained a construction waste site and was excluded from the available area.

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

22. **ACCESS_TYPE** EXISTING ROAD / OPEN

NONE	No access road has been built.
EXISTING ROAD / OPEN	Drivable. May have gate.
EXISTING ROAD / REVEG	Can be reopened with little effort.
EXISTING ROAD / CLOSED W/BERMS	Can be reopened with little effort.
EXISTING ACCESS / REMOVED	Can be reopened with much effort.
SNOW ROAD	Can only be accessed during winter.
ICE ROAD	Requires crossing river or lake ice in the winter.
BARGE	Material can only be moved by barge.
OTHER	The site does not fit any of the categories above. Describe in Section 44, Notes.

23. **ACCESS_LENGTH** 1,500
Approx. length from edge of pit to highway/secondary route (ft.)

24. **VEGETATION**

Vegetation within undisturbed portions of Area "A" consisted of birch and spruce trees to 25 ft. high by 8 in. in diameter. Vegetation within the reclaimed portion of the existing pit consisted of birch, spruce, and willow brush to 20 ft. high.

25. **TYPE_1** QUARRY 26. **TYPE_2** BORROW PIT

Dominant type Subordinate type
General Types of Materials Available Enter data in Type_2 only if two types of material site available

QUARRY	Bedrock sources requiring blasting
BORROW PIT	Soils or soft bedrock (rippable), above water table
BAILING	Requires production below the water table
RIVER BAR	Sand/gravel bars in active channels

27. **OB_CLASS_1** 3 TO 6 FT. 28. **OB_CLASS_2** <3 FT.
New Site or expansion Area Existing Pit (Spoil)
A site may have both. Data should be based on actual subsurface exploration, otherwise unknown.
Estimated average depth over the area.

NONE	3 TO 6 FT.	UNKNOWN
<3 FT.	>6 FT.	OTHER

29. **OB_TYPE_1** SILT 30. **OB_TYPE_2** SPOIL
New Site or expansion Area Existing Pit (Spoil)
A site may have both.

SILT	PEAT	SOLID WASTE	OTHER
COLLUVIUM	SPOIL	UNKNOWN	

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

31. **MAT_TYPE_1** BEDROCK — Dominant type

32. **MAT_TYPE_2** WEATHER. BEDROCK — Subordinate type

BEDROCK	Bedrock sources requiring blasting
WEATHER. BEDROCK	Bedrock sources requiring ripping
FLUVIAL	Water deposited sand and gravel, includes glaciofluvial
GLACIAL	Glacial till
COLLUVIAL	Talus slopes, etc.
EOLIAN	Sand Dunes, etc.
SILT	Silt deposits, loess, fluvial, etc.

33. **PERMAFROST_1** DETECTED IN SOME TEST HOLES OR PITS
New Site or Expansion Area

34. **PERMAFROST_2** DATA OUTDATED
Existing Site

DETECTED IN MOST TEST HOLES
DETECTED IN SOME TEST HOLES
DETECTED IN IMMEDIATE VICINITY
DETECTED IN NO TEST HOLES
DATA OUTDATED
UNKNOWN
OTHER

35. **GROUNDWATER**

Depth to groundwater in Area "A" is unknown.

36. **LITHOLOGY_1** GRANITIC — Dominant type

37. **LITHOLOGY_2** SCHIST/PHYLLITE — Subordinate type

IGNEOUS ROCK	Undifferentiated Igneous Rocks
GRANITIC	Granite/Monzonite/Granodiorite
DIORITE/GABBRO	Diorite/Gabbro
BASALT	Dark colored fine-grained Igneous Rocks
GREENSTONE	Altered Volcanic Rocks w/green tint
METAMORPHIC ROCK	Undifferentiated Metamorphic Rocks
SCHIST/PHYLLITE	Includes rocks ranging from slate to schist
GNEISS	Includes hard schistose rocks
MARBLE	
CATACLASTIC	Incl. Valdez Formation Rocks, Kenai Penn.
MÉLANGE	Incl. McHugh Formation Rocks, Kenai Penn.
SEDIMENTARY ROCK	Undifferentiated Sedimentary Rocks
CONGLOMERATE	
SANDSTONE	Includes greywacke, etc.
SHALE/MUDSTONE	
LIMESTONE	
FLUVIAL	River and stream deposits (floodplain), includes outwash.
ALLUVIAL	Alluvial / Debris Fan deposits
GLACIOFLUVIAL	Eskers, kames, etc.
GLACIAL	Till
COLLUVIAL	Talus, etc.
EOLIAN	Sand Dunes, etc.
SILT	Loess, fluvial silts, etc.
OTHER	Explain in Section 44.

38. **MATERIAL_CLASSIFICATION**

ASTM Classification, generally they should range from coarse to fine.

38a.		38c.		38e.		38g.	
38b.		38d.		38f.		38h.	

39. COBBLES_AND_BOULDERS

Test Boring Callout / ASTM Classification, either a. or b. and c. (Can use ranges i.e. 0 to 20)

39a.	CONTAINS		
39b.	Est. % by VOL.		(Est. From Visual Observations)
39c.	MAX. SIZE (in.)		(Observed Size)

40. AGG_TEST_RESULTS

Year of test or report- Test result / Year of test or report- Test Results

40a. SG APP COARSE	1999- 2.82
40b. SG APP FINE	1999- 2.70, 2.73, 2.77
40c. ABSORPTION CRSE	
40d. ABSORPTION FINE	
40e. NORDIC ABRASION	
40f. L.A. ABRASION	1981- 49 / 1999- 54, 17, 27, 49, 30
40g. DEGRADATION (T-13)	1981- 41 / 1999- 37, 35, 36, 41, 42
40h. NASO4 LOSS COARSE	1999- 2.3, 9.9, 1.4, 0.7, 3.1
40i. NASO4 LOSS FINE	

41. POTENTIAL_USABILITY — TYPES A AND B MATERIAL AVAILABLE

Best known potential use of the material, based on records, exploration and laboratory data.

CONCRETE AGGREGATE PRODUCED	The site has produced concrete aggregate
PAVING AGGREGATE PRODUCED	The site has produced paving aggregate
CRUSHED PRODUCTS PRODUCED	Base, Surface Coarse, Subbase, etc. has been produced.
TYPE A AND B MATERIAL AVAILABLE	0 to 10 percent passing 200
TYPE C AVAILABLE	Compactable material
TYPE C NOT AVAILABLE	Uncompactable material (Lower Kuskokwim and Yukon River, etc.)
UNKNOWN	
OTHER	Explain in Section 44.

42. SPECIAL_PROBLEMS

Special problems encountered or anticipated with use of the material, based on records, exploration and laboratory data.

ORGANIC CONTENT	The material is very difficult to compact.
HIGHLY WEATHERED GRAVEL	The gravel is highly weathered and may break down when handled.
BREAKS DOWN UNDER USE	Material breaks down on grade.
SENSITIVE TO WATER CONTENT	Material is sensitive to water content, i.e.. some glacial tills, soft bedrock.
VARIABLE MATERIAL	Deposit contains mixture of suitable and unsuitable material.
POSSIBLE CONTAMINATION	Site may be contaminated by petroleum products or hazardous materials.
CONTAINS ASBESTOS	Site contains naturally occurring asbestos.
POTENTIAL ASBESTOS	Site in area where naturally occurring asbestos is mapped.
ACID ROCK DRAINAGE	Site contains rock susceptible to producing acid rock drainage.
OTHER	Explain in Section 44, Notes.

43. **RIPRAP** POSSIBLE-FURTHER INVESTIGATION NEEDED

Class II or larger. Does not include production for erosion control riprap for ditches or culverts.

PREVIOUS PRODUCTION	There is a record of production.
POSSIBLE FURTHER INVESTIGATION NEEDED	The site is a bedrock quarry containing hard rock
NOT POSSIBLE	The site has soft rock or soil.
UNKNOWN	
OTHER	Explain in Section 44, Notes.

44. **NOTES**

Note number of item being discussed.

28. Limited spoil/overburden berms were observed during the 2009 site inspection along the western perimeter of the existing pit.

43. A small amount of oversize reject (>3 feet dia.) material was piled along the access road.

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

THIS REPORT IS BASED ON A REVIEW OF EXISTING DATA AND BRIEF FIELD INSPECTIONS. THUS THE DATA CONTAINED HEREIN SHOULD BE CONSIDERED PRELIMINARY AND USED FOR PLANNING PURPOSES ONLY. USERS OF THIS DATA SHOULD VERIFY THE INFORMATION PRIOR TO USING IT FOR DESIGN OR CONSTRUCTION PURPOSES.

IF OTHER IS SELECTED FOR A SECTION, EXPLAIN IT IN SECTION 44. NOTES.
IF AN ANSWER IS UNKNOWN SELECT "UNKNOWN" OR LEAVE BLANK

1. **MS_ID** **65-9-037-2 AREA "B"**
   Enter the full material site number e.g.. 65-9-045-2
2. **DATE_INSPECT** 8/6/2009
   Date of field inspection
3. **FLD INSPEC_ORG** AARON BANKS / R&M CONSULTANTS
   Name of inspector / Organization or Company
4. **REGION** NORTHERN
5. **LOCATION** DALTON HIGHWAY
   Name of Highway
   Enter Name of Facility or Secondary Route Name (i.e.Kotzebue Airport, Nash Road, etc.)
6. **MILEPOST** 125
   List the closest main highway milepost
7. **NAME** BONANZA CREEK SITE, BONANZA CREEK EAST
   Enter commonly used name (s), e.g. Hess pit, Gobblers Knob, Midway. List all that apply separated by commas.
8. **MAINT_DIST/STAT** District INTERIOR/DALTON Station JIM RIVER
   Highway Maintenance District and Station, for locations not on highways select other.
9. **QUAD** BETTLES C-2
   U.S.G.S. Quad. Map
10. **TOWNSHIP /RANGE** T#S R#E T21N R14W Meridian FM
    Section 5 & 8
11. **COOR_UTM**
    ZONE 5
    NORTHING 7,396,048
    EASTING 603,751
    UTM WGS84 - Meters
12. **COOR_STATE_PLANE**
    ZONE 4
    NORTHING 4,629,744
    EASTING 1,545,800
    Alaska State Plane NAD83 - Survey Feet
13. **BOROUGH** UNORGANIZED **TAX ID NO.**
14. **DNR_LAND_USE_PLAN** DALTON HIGHWAY MASTER PLAN
15. **CATEGORY** (To be filled in the office)
15a. **CLASSIFICATION** ACTIVE
15b. **STATUS** OPEN

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

16. **POTENTIAL_STATUS** SIGNIFICANT

Estimated quantity of material in the site at the time of inspection.

NONE	There appeared to be no useable material in the site.
LIMITED	There appeared to be less than 25,000 c.y. available within the developed site.
SIGNIFICANT	There appeared to be greater than 25,000 c.y. available within the developed site.
EXPANDABLE	There was limited material within the developed site, but there appeared to be significant material outside existing site limits.
UNDEVELOPED	The pit has not been mined (used only for new sites).
CLOSED	There may be useable material left in the pit but it is not available.
UNKNOWN	
OTHER	The site does not fit any of the categories above. Explain in Section 44, Notes.

17. **PRESENT_USERS**

17a. **PRESENT_USER_1** DOT&PF MAINTENANCE

17b. **PRESENT_USER_2** DOT&PF CONSTRUCTION

17c. **PRESENT_USER_3**

18. **PERMITTED _ACREAGE** 190

Area within site permit or R.O.W. boundaries, from permit application or property plat.

19. **DEVELOPED_ACREAGE** 23

Area within an existing pit, excluding spoil berms lying outside the pit, access roads etc. Explain below.

Includes pond and work areas surrounding the site.

20. **ACREAGE_COMP_METHOD** FROM MAP/PHOTO

Method used to determine developed acreage.

21. **EST_QUAN_AVAIL** 320,000 ROUGH ESTIMATE

Estimated quantity available (b.c.y.), may be based on acreage computed above plus expansion area. Explain computation assumptions and calculations below.

There appeared to be little minable material remaining in the existing pit in Area B. Assuming the east Golder expansion area had an average 4 feet of overburden and a 30-foot working depth there was approx. 315,000 c.y. (12.1 acres x 26 feet x 1,000 c.y. per acre-foot) of material available. The Golder test holes terminated at 30 feet but the gravel may extend deeper.

22. **ACCESS_TYPE** EXISTING ROAD / OPEN

NONE	No access road has been built.
EXISTING ROAD / OPEN	Drivable. May have gate.
EXISTING ROAD / REVEG	Can be reopened with little effort.
EXISTING ROAD / CLOSED W/BERMS	Can be reopened with little effort.
EXISTING ACCESS / REMOVED	Can be reopened with much effort.
SNOW ROAD	Can only be accessed during winter.
ICE ROAD	Requires crossing river or lake ice in the winter.
BARGE	Material can only be moved by barge.
OTHER	The site does not fit any of the categories above. Describe in Section 44, Notes.

23. **ACCESS_LENGTH** 800
Approx. length from edge of pit to highway/secondary route (ft.)

24. **VEGETATION**

Vegetation within the undisturbed portion of the site was dominated by black spruce with scattered birch. The eastern boundary of the site was bounded by an expansive tussock field.

25. **TYPE_1** BORROW PIT 26. **TYPE_2** BAILING

Dominant type Subordinate type
General Types of Materials Available Enter data in Type_2 only if two types of material site available

QUARRY	Bedrock sources requiring blasting
BORROW PIT	Soils or soft bedrock (rippable), above water table
BAILING	Requires production below the water table
RIVER BAR	Sand/gravel bars in active channels

27. **OB_CLASS_1** 3 TO 6 FT. 28. **OB_CLASS_2** 3 TO 6 FT.
New Site or expansion Area Existing Pit (Spoil)
A site may have both. Data should be based on actual subsurface exploration, otherwise unknown.
Estimated average depth over the area.

NONE	3 TO 6 FT.	UNKNOWN
<3 FT.	>6 FT.	OTHER

29. **OB_TYPE_1** SILT 30. **OB_TYPE_2** SPOIL
New Site or expansion Area Existing Pit (Spoil)
A site may have both.

SILT	PEAT	SOLID WASTE	OTHER
COLLUVIUM	SPOIL	UNKNOWN	

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

31. **MAT_TYPE_1** FLUVIAL — Dominant type

32. **MAT_TYPE_2** — Subordinate type

BEDROCK	Bedrock sources requiring blasting
WEATHER. BEDROCK	Bedrock sources requiring ripping
FLUVIAL	Water deposited sand and gravel, includes glaciofluvial
GLACIAL	Glacial till
COLLUVIAL	Talus slopes, etc.
EOLIAN	Sand Dunes, etc.
SILT	Silt deposits, loess, fluvial, etc.

33. **PERMAFROST_1** DETECTED IN SOME TEST HOLES OR PITS
New Site or Expansion Area

34. **PERMAFROST_2** DATA OUTDATED
Existing Site

DETECTED IN MOST TEST HOLES
DETECTED IN SOME TEST HOLES
DETECTED IN IMMEDIATE VICINITY
DETECTED IN NO TEST HOLES
DATA OUTDATED
UNKNOWN
OTHER

35. **GROUNDWATER**

The existing pit was flooded during the 2009 site inspection. Groundwater was observed at between 5 and 9 feet in the expansion area drilled by Golder in 2004.

36. **LITHOLOGY_1** FLUVIAL — Dominant type

37. **LITHOLOGY_2** _____ — Subordinate type

IGNEOUS ROCK	Undifferentiated Igneous Rocks
GRANITIC	Granite/Monzonite/Granodiorite
DIORITE/GABBRO	Diorite/Gabbro
BASALT	Dark colored fine-grained Igneous Rocks
GREENSTONE	Altered Volcanic Rocks w/green tint
METAMORPHIC ROCK	Undifferentiated Metamorphic Rocks
SCHIST/PHYLLITE	Includes rocks ranging from slate to schist
GNEISS	Includes hard schistose rocks
MARBLE	
CATACLASTIC	Incl. Valdez Formation Rocks, Kenai Penn.
MÉLANGE	Incl. McHugh Formation Rocks, Kenai Penn.
SEDIMENTARY ROCK	Undifferentiated Sedimentary Rocks
CONGLOMERATE	
SANDSTONE	Includes greywacke, etc.
SHALE/MUDSTONE	
LIMESTONE	
FLUVIAL	River and stream deposits (floodplain), includes outwash.
ALLUVIAL	Alluvial / Debris Fan deposits
GLACIOFLUVIAL	Eskers, kames, etc.
GLACIAL	Till
COLLUVIAL	Talus, etc.
EOLIAN	Sand Dunes, etc.
SILT	Loess, fluvial silts, etc.
OTHER	Explain in Section 44.

38. **MATERIAL_CLASSIFICATION**

ASTM Classification, generally they should range from coarse to fine.

38a.	GW-GM	38c.	GW	38e.		38g.	
38b.	GP-GM	38d.	GP	38f.		38h.	

39. COBBLES_AND_BOULDERS

Test Boring Callout / ASTM Classification, either a. or b. and c. (Can use ranges i.e. 0 to 20)

39a.	CONTAINS		
39b.	Est. % by VOL.	5	(Est. From Visual Observations)
39c.	MAX. SIZE (in.)	5	(Observed Size)

40. AGG_TEST_RESULTS

Year of test or report- Test result / Year of test or report- Test Results

40a. SG APP COARSE	1999- 2.70, 2.71, 2.71, 2.71 / 2004- 2.70, 2.69
40b. SG APP FINE	1999- 2.67, 2.69, 2.68, 2.68, 2.70, 2.70 / 2004- 2.69, 2.71
40c. ABSORPTION CRSE	
40d. ABSORPTION FINE	
40e. NORDIC ABRASION	
40f. L.A. ABRASION	1999- 31, 32 / 2004-30, 34
40g. DEGRADATION (T-13)	1999- 37, 59 / 2004-66, 77
40h. NASO4 LOSS COARSE	1999- 0.5, 0.4 / 2004- 0.9, 0.7
40i. NASO4 LOSS FINE	1999-2.8, 2.0 / 2004-2.5, 1.6

41. POTENTIAL_USABILITY

TYPES A AND B MATERIAL AVAILABLE

Best known potential use of the material, based on records, exploration and laboratory data.

CONCRETE AGGREGATE PRODUCED	The site has produced concrete aggregate
PAVING AGGREGATE PRODUCED	The site has produced paving aggregate
CRUSHED PRODUCTS PRODUCED	Base, Surface Coarse, Subbase, etc. has been produced.
TYPE A AND B MATERIAL AVAILABLE	0 to 10 percent passing 200
TYPE C AVAILABLE	Compactable material
TYPE C NOT AVAILABLE	Uncompactable material (Lower Kuskokwim and Yukon River, etc.)
UNKNOWN	
OTHER	Explain in Section 44.

42. SPECIAL_PROBLEMS

Special problems encountered or anticipated with use of the material, based on records, exploration and laboratory data.

ORGANIC CONTENT	The material is very difficult to compact.
HIGHLY WEATHERED GRAVEL	The gravel is highly weathered and may break down when handled.
BREAKS DOWN UNDER USE	Material breaks down on grade.
SENSITIVE TO WATER CONTENT	Material is sensitive to water content, i.e.. some glacial tills, soft bedrock.
VARIABLE MATERIAL	Deposit contains mixture of suitable and unsuitable material.
POSSIBLE CONTAMINATION	Site may be contaminated by petroleum products or hazardous materials.
CONTAINS ASBESTOS	Site contains naturally occurring asbestos.
POTENTIAL ASBESTOS	Site in area where naturally occurring asbestos is mapped.
ACID ROCK DRAINAGE	Site contains rock susceptible to producing acid rock drainage.
UNKNOWN	
OTHER	Explain in Section 44, Notes.

43. **RIPRAP** NOT POSSIBLE

Class II or larger. Does not include production for erosion control riprap for ditches or culverts.

PREVIOUS PRODUCTION	There is a record of production.
POSSIBLE FURTHER INVESTIGATION NEEDED	The site is a bedrock quarry containing hard rock
NOT POSSIBLE	The site has soft rock or soil.
UNKNOWN	
OTHER	Explain in Section 44, Notes.

44. **NOTES**

Note number of item being discussed.

28/30. Significant spoil/overburden berms were noted during the 2009 site inspection along the south and east perimeter of the existing pit.

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

THIS REPORT IS BASED ON A REVIEW OF EXISTING DATA AND BRIEF FIELD INSPECTIONS. THUS THE DATA CONTAINED HEREIN SHOULD BE CONSIDERED PRELIMINARY AND USED FOR PLANNING PURPOSES ONLY. USERS OF THIS DATA SHOULD VERIFY THE INFORMATION PRIOR TO USING IT FOR DESIGN OR CONSTRUCTION PURPOSES.

IF OTHER IS SELECTED FOR A SECTION, EXPLAIN IT IN SECTION 44. NOTES.
IF AN ANSWER IS UNKNOWN SELECT "UNKNOWN" OR LEAVE BLANK

1. **MS_ID** **65-9-037-2 EXPANSION AREA**
   Enter the full material site number e.g.. 65-9-045-2
2. **DATE_INSPECT** 8/6/2009
   Date of field inspection
3. **FLD INSPEC_ORG** AARON BANKS / R&M CONSULTANTS
   Name of inspector / Organization or Company
4. **REGION** NORTHERN
5. **LOCATION** DALTON HIGHWAY
   Name of Highway
   Enter Name of Facility or Secondary Route Name (i.e.Kotzebue Airport, Nash Road, etc.)
6. **MILEPOST** 125
   List the closest main highway milepost
7. **NAME** BONANZA CREEK WEST
   Enter commonly used name (s), e.g. Hess pit, Gobblers Knob, Midway. List all that apply separated by commas.
8. **MAINT_DIST/STAT** District INTERIOR/DALTON Station JIM RIVER
   Highway Maintenance District and Station, for locations not on highways select other.
9. **QUAD** BETTLES C-2
   U.S.G.S. Quad. Map
10. **TOWNSHIP /RANGE** T#S R#E T21N R14W Meridian FM
    Section 5 & 8
11. **COOR_UTM**
    ZONE 5
    NORTHING 7,396,048
    EASTING 603,751
    UTM WGS84 - Meters
12. **COOR_STATE_PLANE**
    ZONE 4
    NORTHING 4,629,744
    EASTING 1,545,800
    Alaska State Plane NAD83 - Survey Feet
13. **BOROUGH** UNORGANIZED **TAX ID NO.**
14. **DNR_LAND_USE_PLAN** DALTON HIGHWAY MASTER PLAN
15. **CATEGORY** (To be filled in the office)
15a. **CLASSIFICATION** ACTIVE
15b. **STATUS** UNDEVELOPED

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

16. **POTENTIAL_STATUS** SIGNIFICANT

Estimated quantity of material in the site at the time of inspection.

NONE	There appeared to be no useable material in the site.
LIMITED	There appeared to be less than 25,000 c.y. available within the developed site.
SIGNIFICANT	There appeared to be greater than 25,000 c.y. available within the developed site.
EXPANDABLE	There was limited material within the developed site, but there appeared to be significant material outside existing site limits.
UNDEVELOPED	The pit has not been mined (used only for new sites).
CLOSED	There may be useable material left in the pit but it is not available.
UNKNOWN	
OTHER	The site does not fit any of the categories above. Explain in Section 44, Notes.

17. **PRESENT_USERS**

17a. **PRESENT_USER_1** NONE

17b. **PRESENT_USER_2**

17c. **PRESENT_USER_3**

18. **PERMITTED _ACREAGE** 0

Area within site permit or R.O.W. boundaries, from permit application or property plat.

19. **DEVELOPED_ACREAGE** 0

Area within an existing pit, excluding spoil berms lying outside the pit, access roads etc. Explain below.

20. **ACREAGE_COMP_METHOD** FROM MAP/PHOTO

Method used to determine developed acreage.

21. **EST_QUAN_AVAIL** 1,700,000 ROUGH ESTIMATE

Estimated quantity available (b.c.y.), may be based on acreage computed above plus expansion area. Explain computation assumptions and calculations below.

Assuming the west Golder expansion area had an average of 2 feet of overburden and a 28-foot working depth there was approx.1,772,000 c.y. (61.5 acres x 28 feet x 1,000 c.y. per acre-foot) of material available. The Golder test holes terminated at 30 feet but the gravel may extend deeper. There are additional potential expansion areas downstream to the west.

22. **ACCESS_TYPE** NONE

NONE	No access road has been built.
EXISTING ROAD / OPEN	Drivable. May have gate.
EXISTING ROAD / REVEG	Can be reopened with little effort.
EXISTING ROAD / CLOSED W/BERMS	Can be reopened with little effort.
EXISTING ACCESS / REMOVED	Can be reopened with much effort.
SNOW ROAD	Can only be accessed during winter.
ICE ROAD	Requires crossing river or lake ice in the winter.
BARGE	Material can only be moved by barge.
OTHER	The site does not fit any of the categories above. Describe in Section 44, Notes.

23. **ACCESS_LENGTH** _____
Approx. length from edge of pit to highway/secondary route (ft.)

24. **VEGETATION**

The expansion areas supported a forest of predominantly black spruce interspersed with a few birch trees to a maximum height of approximately 30 ft.

25. **TYPE_1** BORROW PIT 26. **TYPE_2** BAILING

Dominant type Subordinate type
General Types of Materials Available Enter data in Type_2 only if two types of material site available

QUARRY	Bedrock sources requiring blasting
BORROW PIT	Soils or soft bedrock (rippable), above water table
BAILING	Requires production below the water table
RIVER BAR	Sand/gravel bars in active channels

27. **OB_CLASS_1** <3 FT. 28. **OB_CLASS_2** _____
New Site or expansion Area Existing Pit (Spoil)
A site may have both. Data should be based on actual subsurface exploration, otherwise unknown.
Estimated average depth over the area.

NONE	3 TO 6 FT.	UNKNOWN
<3 FT.	>6 FT.	OTHER

29. **OB_TYPE_1** SILT 30. **OB_TYPE_2** _____
New Site or expansion Area Existing Pit (Spoil)
A site may have both.

SILT	PEAT	SOLID WASTE	OTHER
COLLUVIUM	SPOIL	UNKNOWN	

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

31. **MAT_TYPE_1** FLUVIAL — Dominant type

32. **MAT_TYPE_2** _____ — Subordinate type

BEDROCK	Bedrock sources requiring blasting
WEATHER. BEDROCK	Bedrock sources requiring ripping
FLUVIAL	Water deposited sand and gravel, includes glaciofluvial
GLACIAL	Glacial till
COLLUVIAL	Talus slopes, etc.
EOLIAN	Sand Dunes, etc.
SILT	Silt deposits, loess, fluvial, etc.

33. **PERMAFROST_1** DETECTED IN SOME TEST HOLES OR PITS
New Site or Expansion Area

34. **PERMAFROST_2** _____
Existing Site

DETECTED IN MOST TEST HOLES
DETECTED IN SOME TEST HOLES
DETECTED IN IMMEDIATE VICINITY
DETECTED IN NO TEST HOLES
DATA OUTDATED
UNKNOWN
OTHER

35. **GROUNDWATER**

Groundwater was reported in test borings ranging from 6 to 13 ft. below the ground surface.

36. **LITHOLOGY_1** FLUVIAL — Dominant type

37. **LITHOLOGY_2** _____ — Subordinate type

IGNEOUS ROCK	Undifferentiated Igneous Rocks
GRANITIC	Granite/Monzonite/Granodiorite
DIORITE/GABBRO	Diorite/Gabbro
BASALT	Dark colored fine-grained Igneous Rocks
GREENSTONE	Altered Volcanic Rocks w/green tint
METAMORPHIC ROCK	Undifferentiated Metamorphic Rocks
SCHIST/PHYLLITE	Includes rocks ranging from slate to schist
GNEISS	Includes hard schistose rocks
MARBLE	
CATACLASTIC	Incl. Valdez Formation Rocks, Kenai Penn.
MÉLANGE	Incl. McHugh Formation Rocks, Kenai Penn.
SEDIMENTARY ROCK	Undifferentiated Sedimentary Rocks
CONGLOMERATE	
SANDSTONE	Includes greywacke, etc.
SHALE/MUDSTONE	
LIMESTONE	
FLUVIAL	River and stream deposits (floodplain), includes outwash.
ALLUVIAL	Alluvial / Debris Fan deposits
GLACIOFLUVIAL	Eskers, kames, etc.
GLACIAL	Till
COLLUVIAL	Talus, etc.
EOLIAN	Sand Dunes, etc.
SILT	Loess, fluvial silts, etc.
OTHER	Explain in Section 44.

38. **MATERIAL_CLASSIFICATION**

ASTM Classification, generally they should range from coarse to fine.

38a.	GW-GM	38c.	GW	38e.		38g.	
38b.	GP-GM	38d.	GP	38f.		38h.	

39. COBBLES_AND_BOULDERS

Test Boring Callout / ASTM Classification, either a. or b. and c. (Can use ranges i.e. 0 to 20)

39a.	CONTAINS	UNKNOWN	
39b.	Est. % by VOL.		(Est. From Visual Observations)
39c.	MAX. SIZE (in.)		(Observed Size)

40. AGG_TEST_RESULTS

Year of test or report- Test result / Year of test or report- Test Results

40a. SG APP COARSE	2004- 2.71, 2.72
40b. SG APP FINE	2004- 2.71, 2.61
40c. ABSORPTION CRSE	
40d. ABSORPTION FINE	
40e. NORDIC ABRASION	
40f. L.A. ABRASION	2004- 35, 35, 34
40g. DEGRADATION (T-13)	2004- 77, 77, 77
40h. NASO4 LOSS COARSE	2004- 0.5, 0.6
40i. NASO4 LOSS FINE	2004- 4.1, 2.5

41. POTENTIAL_USABILITY TYPES A AND B MATERIAL AVAILABLE

Best known potential use of the material, based on records, exploration and laboratory data.

CONCRETE AGGREGATE PRODUCED	The site has produced concrete aggregate
PAVING AGGREGATE PRODUCED	The site has produced paving aggregate
CRUSHED PRODUCTS PRODUCED	Base, Surface Coarse, Subbase, etc. has been produced.
TYPE A AND B MATERIAL AVAILABLE	0 to 10 percent passing 200
TYPE C AVAILABLE	Compactable material
TYPE C NOT AVAILABLE	Uncompactable material (Lower Kuskokwim and Yukon River, etc.)
UNKNOWN	
OTHER	Explain in Section 44.

42. SPECIAL_PROBLEMS

Special problems encountered or anticipated with use of the material, based on records, exploration and laboratory data.

ORGANIC CONTENT	The material is very difficult to compact.
HIGHLY WEATHERED GRAVEL	The gravel is highly weathered and may break down when handled.
BREAKS DOWN UNDER USE	Material breaks down on grade.
SENSITIVE TO WATER CONTENT	Material is sensitive to water content, i.e.. some glacial tills, soft bedrock.
VARIABLE MATERIAL	Deposit contains mixture of suitable and unsuitable material.
POSSIBLE CONTAMINATION	Site may be contaminated by petroleum products or hazardous materials.
CONTAINS ASBESTOS	Site contains naturally occurring asbestos.
POTENTIAL ASBESTOS	Site in area where naturally occurring asbestos is mapped.
ACID ROCK DRAINAGE	Site contains rock susceptible to producing acid rock drainage.
UNKNOWN	
OTHER	Explain in Section 44, Notes.

43. **RIPRAP** NOT POSSIBLE

Class II or larger. Does not include production for erosion control riprap for ditches or culverts.

PREVIOUS PRODUCTION	There is a record of production.
POSSIBLE FURTHER INVESTIGATION NEEDED	The site is a bedrock quarry containing hard rock
NOT POSSIBLE	The site has soft rock or soil.
UNKNOWN	
OTHER	Explain in Section 44, Notes.

44. **NOTES**

Note number of item being discussed.

39a. No cobbles or boulders were reported in test borings advanced at the site in 2004.

STATEWIDE MATERIAL SITE INVENTORY

MATERIAL SITE INSPECTION REPORT

Federal Project No. STP-000S(530)
AKSAS Project No. 76174

DALTON HIGHWAY

MS 65-9-045-2
Jim River Pit #3

November 19, 2009

CONTENTS PAGE

COVER SHEET.....1

LOCATION MAP 2

SITE MAP .....3A & 3B

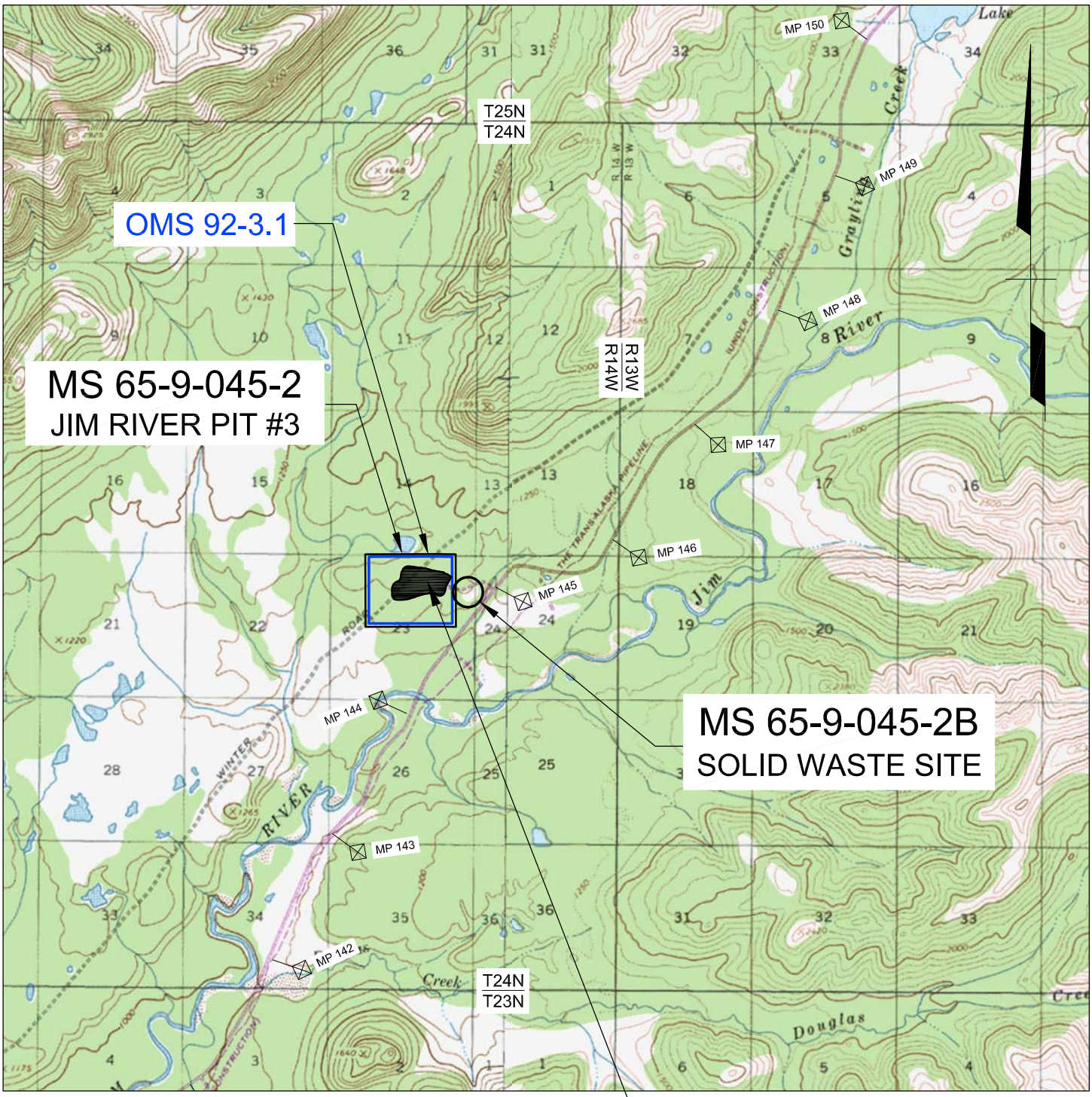
INSPECTION FORM.....4 thru 10

CATEGORY:

ACTIVE – OPEN

According to information found in the DOT&PF EDMS system in January 2009 and BLM case file abstracts, this site lies on Federal lands managed by BLM. The site (MS 92-3.1) was originally developed for construction of the Dalton Highway and Alyeska Pipeline in the 1970's. It is presently a joint-use site, used for Alyeska operations and maintenance (OMS-92-3.1) and for DOT&PF Dalton Highway maintenance and reconstruction (MS 65-9-045-2). Generally, the site is operated under a mining plan prepared by Alyeska dated 2002 that shows separate working areas for Alyeska and DOT&PF. The Alyeska permit (F-095107) presently expires on June 04, 2012. DOT&PF is currently operating under a FUP (F-093007) which expires December 31, 2010. Access Road 92-AMS-6A connects the site to the Dalton Highway. Access road right-of-way is included in the permit. The Jim River Solid Waste Disposal Site (FF-078201) lies along the access road in what used to be Material Site MS 65-9-045-2B. The permit for the disposal site expired in 2007. The present material site lies in an area that used to be MS 65-9-045-2A. The site appeared to contain significant quantities of sand and gravel and should be retained by DOT&PF for future use.

LOCATION MAP



U.S.G.S. QUADRANGLE: BETTLES (D-1) & (D-2)

GPS COORDINATES FROM GOOGLE EARTH

UTM (WGS84-METERS)
ZONE 5: N7,421,959 E608,409
AK STATE PLANE (NAD83-US SURVEY FT)
ZONE 4: N4,713,932 E1,565,158

ACTIVE - OPEN

0 0.5 1 2 3

GRAPHIC SCALE IN MILES

BASE MAP CREATED WITH TERRAIN NAVIGATOR PRO

Prepared By:
R&M CONSULTANTS, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

STATEWIDE MATERIAL SITE INVENTORY

MS 65-9-045-2

SCALE	DESIGNED	DRAWN	PAGE
AS SHOWN	P.K.H.	A.T.B.	2
	CHECKED C.H.R.	DATE MAY 2009	

Plotted 1/25/2010 4:13 PM by Aaron Banks
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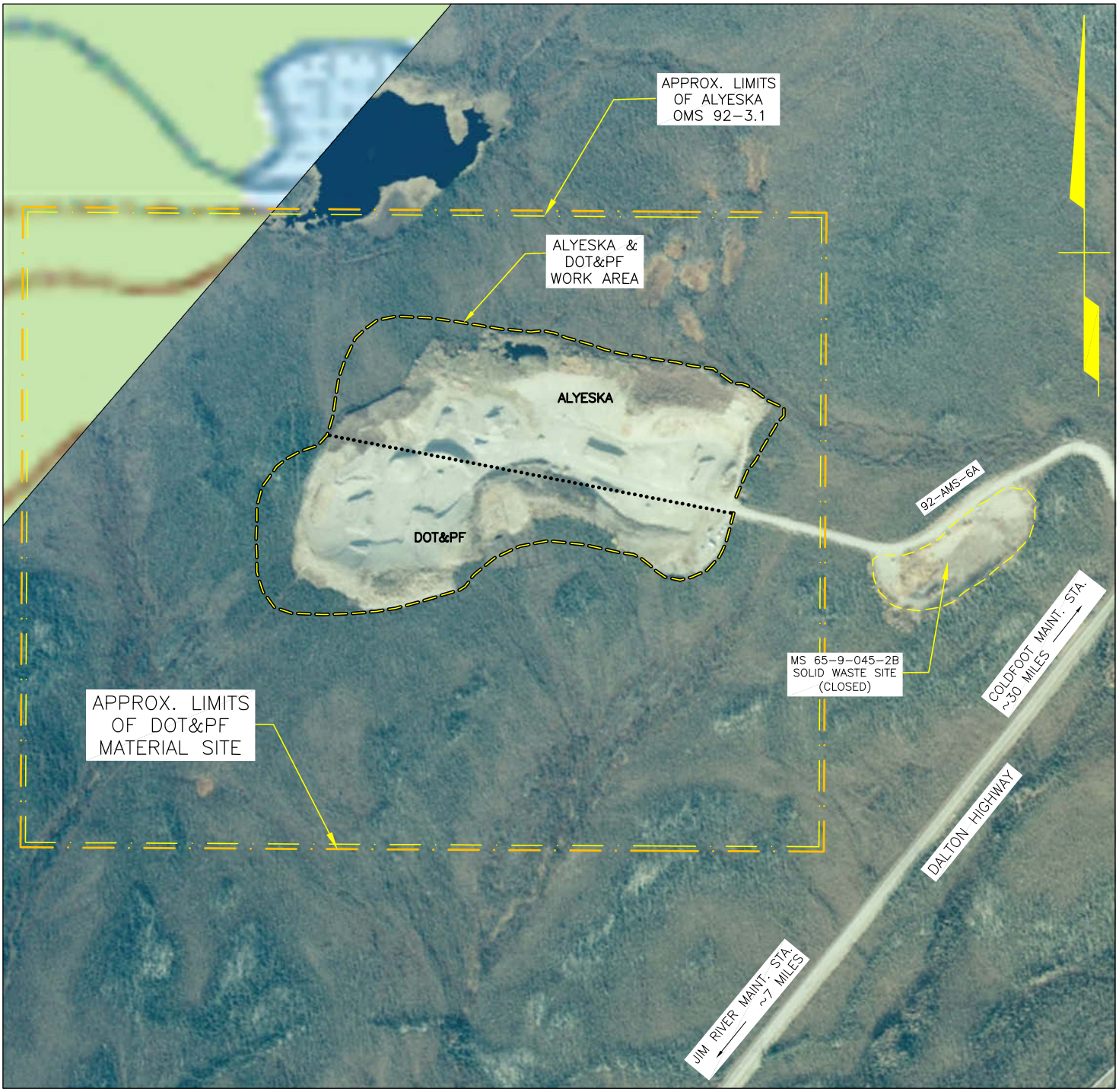
SITE MAP



BASE MAP IS 2008 AERIAL PHOTOGRAPHY.
THIS IS A PLANNING DOCUMENT ONLY. THE MATERIAL SITE BOUNDARIES SHOWN ON THIS DRAWING ARE APPROXIMATE. OWNERSHIP OF THE LANDS ADJACENT TO THIS SITE ARE UNKNOWN. THE ACCESS ROW SHOULD BE VERIFIED.

ACTIVE - OPEN

0 300 600 1200 1800

GRAPHIC SCALE IN FEET

BASE MAP FROM AERIAL PHOTOS DATED 9/16/08

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

STATEWIDE MATERIAL SITE INVENTORY

MS 65-9-045-2

SCALE	DESIGNED	DRAWN	PAGE
AS SHOWN	P.K.H.	P.K.H.	3A
	CHECKED C.H.R.	DATE JUNE 2009	

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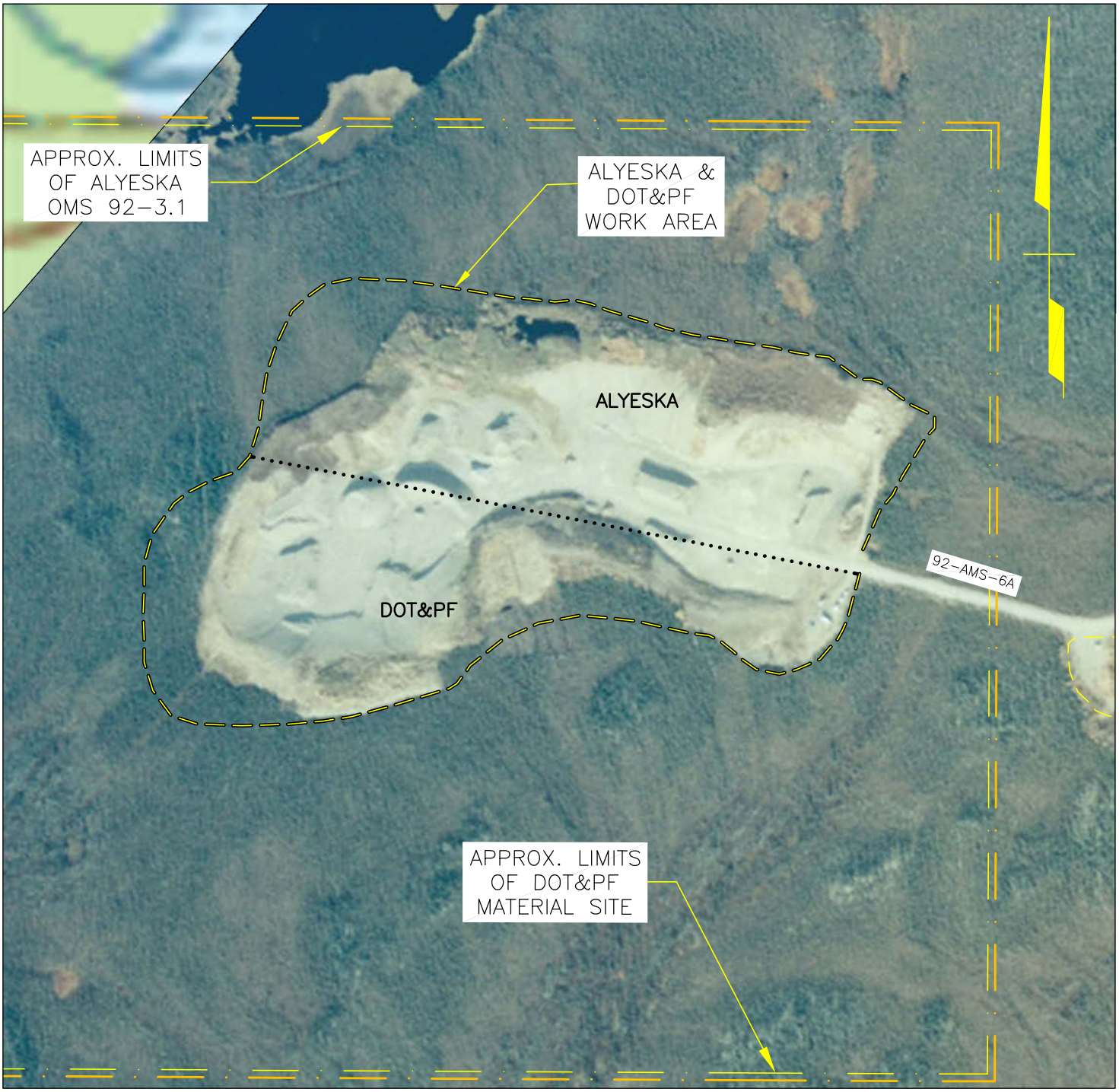
Plotted 1/25/2010 4:17 PM by Aaron Banks

SITE MAP



BASE MAP IS 2008 AERIAL PHOTOGRAPHY.
THIS IS A PLANNING DOCUMENT ONLY. THE MATERIAL SITE BOUNDARIES SHOWN ON THIS DRAWING ARE APPROXIMATE. OWNERSHIP OF THE LANDS ADJACENT TO THIS SITE ARE UNKNOWN. THE ACCESS ROW SHOULD BE VERIFIED.

ACTIVE - OPEN

0 200 400 800 1200

GRAPHIC SCALE IN FEET

BASE MAP FROM AERIAL PHOTOS DATED 9/16/08

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

STATEWIDE MATERIAL SITE INVENTORY

MS 65-9-045-2

SCALE	DESIGNED	DRAWN		PAGE
AS SHOWN	P.K.H.	P.K.H.		3B
	CHECKED C.H.R.	DATE JUNE 2009		

Plotted 1/25/2010 4:19 PM by Aaron Banks
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STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

THIS REPORT IS BASED ON A REVIEW OF EXISTING DATA AND BRIEF FIELD INSPECTIONS. THUS THE DATA CONTAINED HEREIN SHOULD BE CONSIDERED PRELIMINARY AND USED FOR PLANNING PURPOSES ONLY. USERS OF THIS DATA SHOULD VERIFY THE INFORMATION PRIOR TO USING IT FOR DESIGN OR CONSTRUCTION PURPOSES.

IF OTHER IS SELECTED FOR A SECTION, EXPLAIN IT IN SECTION 44. NOTES.
IF AN ANSWER IS UNKNOWN SELECT "UNKNOWN" OR LEAVE BLANK

1. **MS_ID** **65-9-045-2**
   Enter the full material site number e.g.. 65-9-045-2
2. **DATE_INSPECT** 8/3/2009
   Date of field inspection
3. **FLD INSPEC_ORG** AARON BANKS / R&M CONSULTANTS
   Name of inspector / Organization or Company
4. **REGION** NORTHERN
5. **LOCATION** DALTON HIGHWAY
   Name of Highway
   Enter Name of Facility or Secondary Route Name (i.e.Kotzebue Airport, Nash Road, etc.)
6. **MILEPOST** 145
   List the closest main highway milepost
7. **NAME** JIM RIVER PIT #3, MS 92-3.1, OMS 92-3.1
   Enter commonly used name (s), e.g. Hess pit, Gobblers Knob, Midway. List all that apply separated by commas.
8. **MAINT_DIST/STAT** District INTERIOR/DALTON Station JIM RIVER
   Highway Maintenance District and Station, for locations not on highways select other.
9. **QUAD** BETTLES D-2
   U.S.G.S. Quad. Map
10. **TOWNSHIP /RANGE** T#S R#E T24N R14W Meridian FM
    Section 23
11. **COOR_UTM**
    ZONE 5
    NORTHING 7,421,959
    EASTING 608,409
    UTM WGS84 - Meters
12. **COOR_STATE_PLANE**
    ZONE 4
    NORTHING 4,713,932
    EASTING 1,565,158
    Alaska State Plane NAD83 - Survey Feet
13. **BOROUGH** UNORGANIZED **TAX ID NO.**
14. **DNR_LAND_USE_PLAN** DALTON HIGHWAY MASTER PLAN
15. **CATEGORY** (To be filled in the office)
15a. **CLASSIFICATION** ACTIVE
15b. **STATUS** OPEN

16. **POTENTIAL_STATUS** SIGNIFICANT

Estimated quantity of material in the site at the time of inspection.

NONE	There appeared to be no useable material in the site.
LIMITED	There appeared to be less than 25,000 c.y. available within the developed site.
SIGNIFICANT	There appeared to be greater than 25,000 c.y. available within the developed site.
EXPANDABLE	There was limited material within the developed site, but there appeared to be significant material outside existing site limits.
UNDEVELOPED	The pit has not been mined (used only for new sites).
CLOSED	There may be useable material left in the pit but it is not available.
UNKNOWN	
OTHER	The site does not fit any of the categories above. Explain in Section 44, Notes.

17. **PRESENT_USERS**

17a. **PRESENT_USER_1** DOT&PF MAINTENANCE

17b. **PRESENT_USER_2** DOT&PF CONSTRUCTION

17c. **PRESENT_USER_3** ALYESKA

18. **PERMITTED _ACREAGE** 200

Area within site permit or R.O.W. boundaries, from permit application or property plat.

19. **DEVELOPED_ACREAGE** 33

Area within an existing pit, excluding spoil berms lying outside the pit, access roads etc. Explain below.

Includes the existing pit, enlarged since photo on site map was taken. Excludes the solid waste site near the road.

20. **ACREAGE_COMP_METHOD** FROM MAP/PHOTO

Method used to determine developed acreage.

21. **EST_QUAN_AVAIL** 600,000 ROUGH ESTIMATE

Estimated quantity available (b.c.y.), may be based on acreage computed above plus expansion area. Explain computation assumptions and calculations below.

For estimating purposes the site was divided up into 3 sections. The southern edge of the pit was estimated to have an average of 25 feet of material under about 5 feet of overburden plus existing spoil berms. There was approx. 238,000 c.y. of material available (9.5 acres x 25 feet x 1,000 c.y per acre-foot). The northern edge of the pit also had an estimated average 25 feet of material under about 5 feet of overburden plus existing spoil berms. There was approx. 320,000 c.y. of material available (12.8 acres x 25 feet x 1,000 c.y per acre-foot). Deepening the pit floor between these two sections was estimated to make approx. 58,000 c.y. of additional material available (5.8 acres x 10 feet x 1,000 c.y per acre-foot).

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

22. **ACCESS_TYPE** EXISTING ROAD / OPEN

NONE	No access road has been built.
EXISTING ROAD / OPEN	Drivable. May have gate.
EXISTING ROAD / REVEG	Can be reopened with little effort.
EXISTING ROAD / CLOSED W/BERMS	Can be reopened with little effort.
EXISTING ACCESS / REMOVED	Can be reopened with much effort.
SNOW ROAD	Can only be accessed during winter.
ICE ROAD	Requires crossing river or lake ice in the winter.
BARGE	Material can only be moved by barge.
OTHER	The site does not fit any of the categories above. Describe in Section 44, Notes.

23. **ACCESS_LENGTH** 2,100
Approx. length from edge of pit to highway/secondary route (ft.)

24. **VEGETATION**

The undisturbed portion of the site was vegetated with spruce trees to 20 ft. high by 4 in. in diameter, spaced about 3 feet apart. Along the margins of the active pit, grasses had begun to revegetate the spoil berms.

25. **TYPE_1** BORROW PIT 26. **TYPE_2**

Dominant type Subordinate type
General Types of Materials Available Enter data in Type_2 only if two types of material site available

QUARRY	Bedrock sources requiring blasting
BORROW PIT	Soils or soft bedrock (rippable), above water table
BAILING	Requires production below the water table
RIVER BAR	Sand/gravel bars in active channels

27. **OB_CLASS_1** 3 TO 6 FT. 28. **OB_CLASS_2** 3 TO 6 FT.
New Site or expansion Area Existing Pit (Spoil)
A site may have both. Data should be based on actual subsurface exploration, otherwise unknown.
Estimated average depth over the area.

NONE	3 TO 6 FT.	UNKNOWN
<3 FT.	>6 FT.	OTHER

29. **OB_TYPE_1** SILT 30. **OB_TYPE_2** SPOIL
New Site or expansion Area Existing Pit (Spoil)
A site may have both.

SILT	PEAT	SOLID WASTE	OTHER
COLLUVIUM	SPOIL	UNKNOWN	

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

31. **MAT_TYPE_1** FLUVIAL — Dominant type

32. **MAT_TYPE_2** — Subordinate type

BEDROCK	Bedrock sources requiring blasting
WEATHER. BEDROCK	Bedrock sources requiring ripping
FLUVIAL	Water deposited sand and gravel, includes glaciofluvial
GLACIAL	Glacial till
COLLUVIAL	Talus slopes, etc.
EOLIAN	Sand Dunes, etc.
SILT	Silt deposits, loess, fluvial, etc.

33. **PERMAFROST_1** DETECTED IN SOME TEST HOLES OR PITS
New Site or Expansion Area

34. **PERMAFROST_2** DETECTED IN NO TEST HOLES OR PITS
Existing Site

DETECTED IN MOST TEST HOLES
DETECTED IN SOME TEST HOLES
DETECTED IN IMMEDIATE VICINITY
DETECTED IN NO TEST HOLES
DATA OUTDATED
UNKNOWN
OTHER

35. **GROUNDWATER**

Groundwater was encountered at 16 to 21 feet below the existing pit floor (~ 15 feet bgs) in 2004.

36. **LITHOLOGY_1** FLUVIAL — Dominant type

37. **LITHOLOGY_2** _____ — Subordinate type

IGNEOUS ROCK	Undifferentiated Igneous Rocks
GRANITIC	Granite/Monzonite/Granodiorite
DIORITE/GABBRO	Diorite/Gabbro
BASALT	Dark colored fine-grained Igneous Rocks
GREENSTONE	Altered Volcanic Rocks w/green tint
METAMORPHIC ROCK	Undifferentiated Metamorphic Rocks
SCHIST/PHYLLITE	Includes rocks ranging from slate to schist
GNEISS	Includes hard schistose rocks
MARBLE	
CATACLASTIC	Incl. Valdez Formation Rocks, Kenai Penn.
MÉLANGE	Incl. McHugh Formation Rocks, Kenai Penn.
SEDIMENTARY ROCK	Undifferentiated Sedimentary Rocks
CONGLOMERATE	
SANDSTONE	Includes greywacke, etc.
SHALE/MUDSTONE	
LIMESTONE	
FLUVIAL	River and stream deposits (floodplain), includes outwash.
ALLUVIAL	Alluvial / Debris Fan deposits
GLACIOFLUVIAL	Eskers, kames, etc.
GLACIAL	Till
COLLUVIAL	Talus, etc.
EOLIAN	Sand Dunes, etc.
SILT	Loess, fluvial silts, etc.
OTHER	Explain in Section 44.

38. **MATERIAL_CLASSIFICATION**

ASTM Classification, generally they should range from coarse to fine.

38a.	GW	38c.	GW-GM	38e.	GM	38g.	
38b.	GP	38d.	GP-GM	38f.		38h.	

39. COBBLES_AND_BOULDERS

Test Boring Callout / ASTM Classification, either a. or b. and c. (Can use ranges i.e. 0 to 20)

39a.	CONTAINS		
39b.	Est. % by VOL.	15 to 20	(Est. From Visual Observations)
39c.	MAX. SIZE (in.)	24	(Observed Size)

40. AGG_TEST_RESULTS

Year of test or report- Test result / Year of test or report- Test Results

40a. SG APP COARSE	1982- 2.78 / 1996-2.75 / 2004-2.76, 2.73
40b. SG APP FINE	1981- 2.71 / 1982- 2.68, 2.72 / 1996- 2.73 / 2004- 2.71, 2.68
40c. ABSORPTION CRSE	1982- 0.94
40d. ABSORPTION FINE	
40e. NORDIC ABRASION	
40f. L.A. ABRASION	1981- 34 / 1982- 27 / 1996- 28, 27 / 2004- 26, 27
40g. DEGRADATION (T-13)	1981- 58 / 1982- 44 / 1996- 48, 14 / 2004- 62, 65
40h. NASO4 LOSS COARSE	1996- 9.0, 2.8 / 2004- 2.4, 2.4
40i. NASO4 LOSS FINE	1996- 7.3, 2.9 / 2004- 3.7, 1.3

41. POTENTIAL_USABILITY

CRUSHED PRODUCTS PRODUCED

Best known potential use of the material, based on records, exploration and laboratory data.

CONCRETE AGGREGATE PRODUCED	The site has produced concrete aggregate
PAVING AGGREGATE PRODUCED	The site has produced paving aggregate
CRUSHED PRODUCTS PRODUCED	Base, Surface Coarse, Subbase, etc. has been produced.
TYPE A AND B MATERIAL AVAILABLE	0 to 10 percent passing 200
TYPE C AVAILABLE	Compactable material
TYPE C NOT AVAILABLE	Uncompactable material (Lower Kuskokwim and Yukon River, etc.)
UNKNOWN	
OTHER	Explain in Section 44.

42. SPECIAL_PROBLEMS

Special problems encountered or anticipated with use of the material, based on records, exploration and laboratory data.

ORGANIC CONTENT	The material is very difficult to compact.
HIGHLY WEATHERED GRAVEL	The gravel is highly weathered and may break down when handled.
BREAKS DOWN UNDER USE	Material breaks down on grade.
SENSITIVE TO WATER CONTENT	Material is sensitive to water content, i.e.. some glacial tills, soft bedrock.
VARIABLE MATERIAL	Deposit contains mixture of suitable and unsuitable material.
POSSIBLE CONTAMINATION	Site may be contaminated by petroleum products or hazardous materials.
CONTAINS ASBESTOS	Site contains naturally occurring asbestos.
POTENTIAL ASBESTOS	Site in area where naturally occurring asbestos is mapped.
ACID ROCK DRAINAGE	Site contains rock susceptible to producing acid rock drainage.
UNKNOWN	
OTHER	Explain in Section 44, Notes.

43. **RIPRAP** NOT POSSIBLE

Class II or larger. Does not include production for erosion control riprap for ditches or culverts.

PREVIOUS PRODUCTION	There is a record of production.
POSSIBLE FURTHER INVESTIGATION NEEDED	The site is a bedrock quarry containing hard rock
NOT POSSIBLE	The site has soft rock or soil.
UNKNOWN	
OTHER	Explain in Section 44, Notes.

44. **NOTES**

Note number of item being discussed.

28. Spoil/overburden berms to a maximum of 30 ft. in height were observed along the perimeter of the pit during the 2009 site inspection.

STATEWIDE MATERIAL SITE INVENTORY

MATERIAL SITE INSPECTION REPORT

Federal Project No. STP-000S(530)
AKSAS Project No. 76174

DALTON HIGHWAY

MS 65-9-099-2

November 4, 2009

CONTENTS PAGE

COVER SHEET.....1

LOCATION MAP 2

SITE MAP .....3A & 3B

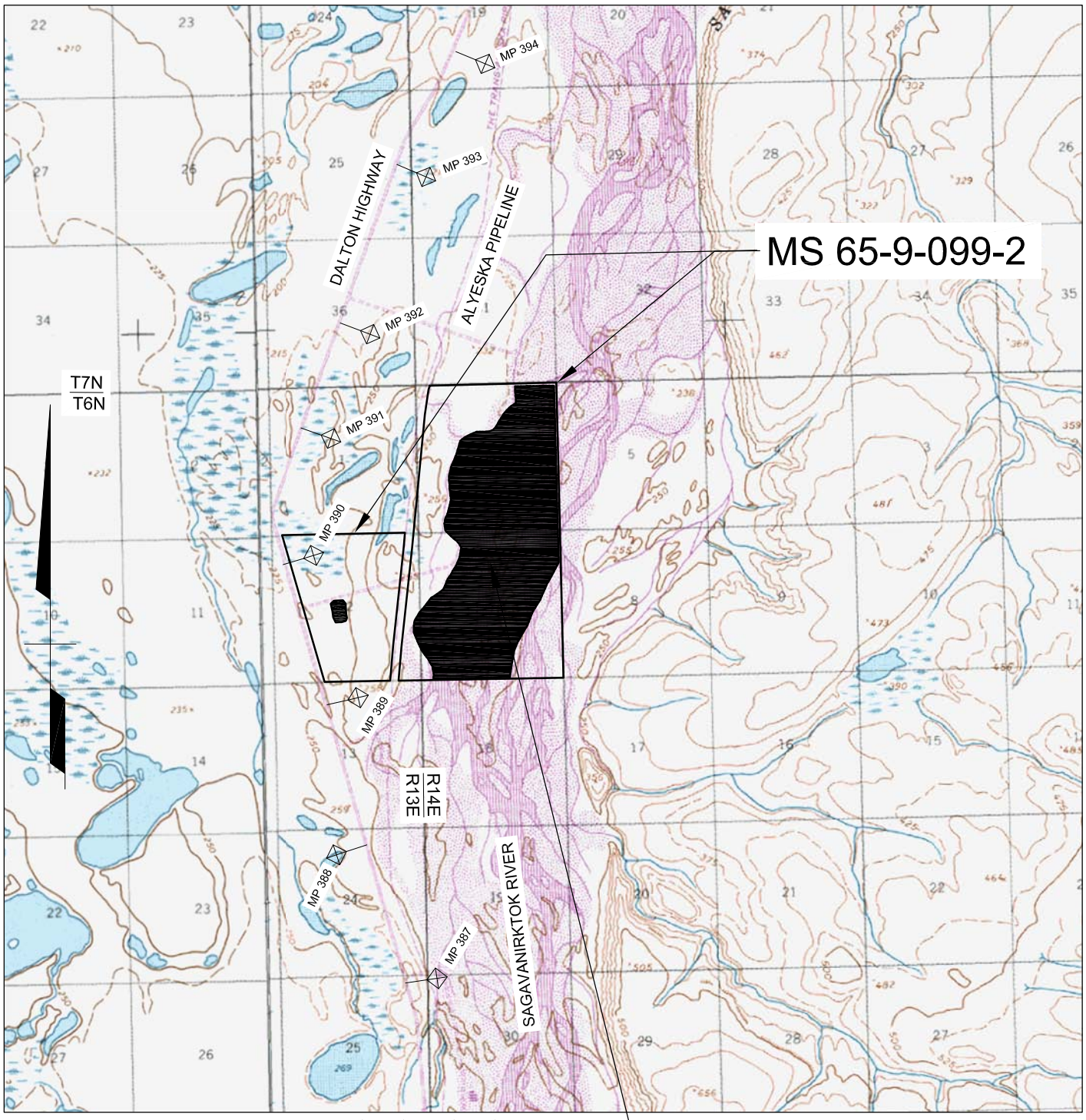
INSPECTION FORM.....4 thru 10

CATEGORY:

ACTIVE – STATUS UNKNOWN

According to information found in the DOT&PF EDMS system in January 2009 and data in the DNR case file abstracts, this site lies on State of Alaska lands managed by DNR. The site (MS-133-2) originally lay within the active floodplain of the Sagavanirktok River and was developed for construction of the Dalton Highway and Alyeska Pipeline in the 1970's. An upland site (OMS 133-2A) was developed by Alyeska in the 1990's (ADL 415608) which was closed in 2000. DOT&PF has an application for a new contract (ADL 416892) pending. The rehabilitation plan states "A waterfowl pond will be created on the upland site" and "the river site will become an overwintering pond for fish." The University of Alaska Toolik Field Station has a climate station (LAS 22830) and a snow fence (LAS 27219) within the site. The permit for the station expires on April 4, 2013 and the permit for the snow fence was pending. An existing access road (131-APL-3) connects the site to the Dalton Highway. The access road right-of-way is included in the contract application. The site appears to contain significant quantities of sand and gravel and should be retained by DOT&PF for future use.

LOCATION MAP



U.S.G.S. QUADRANGLE: SAGAVANIRKTOK (D-3) & (D-4)

GPS COORDINATES FROM GOOGLE EARTH

UTM (WGS84-METERS)
ZONE 6: N7,754,531 E431,649
AK STATE PLANE (NAD83-US SURVEY FT)
ZONE 4: N5,810,388 E1,793,871

ACTIVE - STATUS UNKNOWN

0 0.5 1 2 3

GRAPHIC SCALE IN MILES

BASE MAP CREATED WITH TERRAIN NAVIGATOR PRO

Prepared By:
R&M CONSULTANTS, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

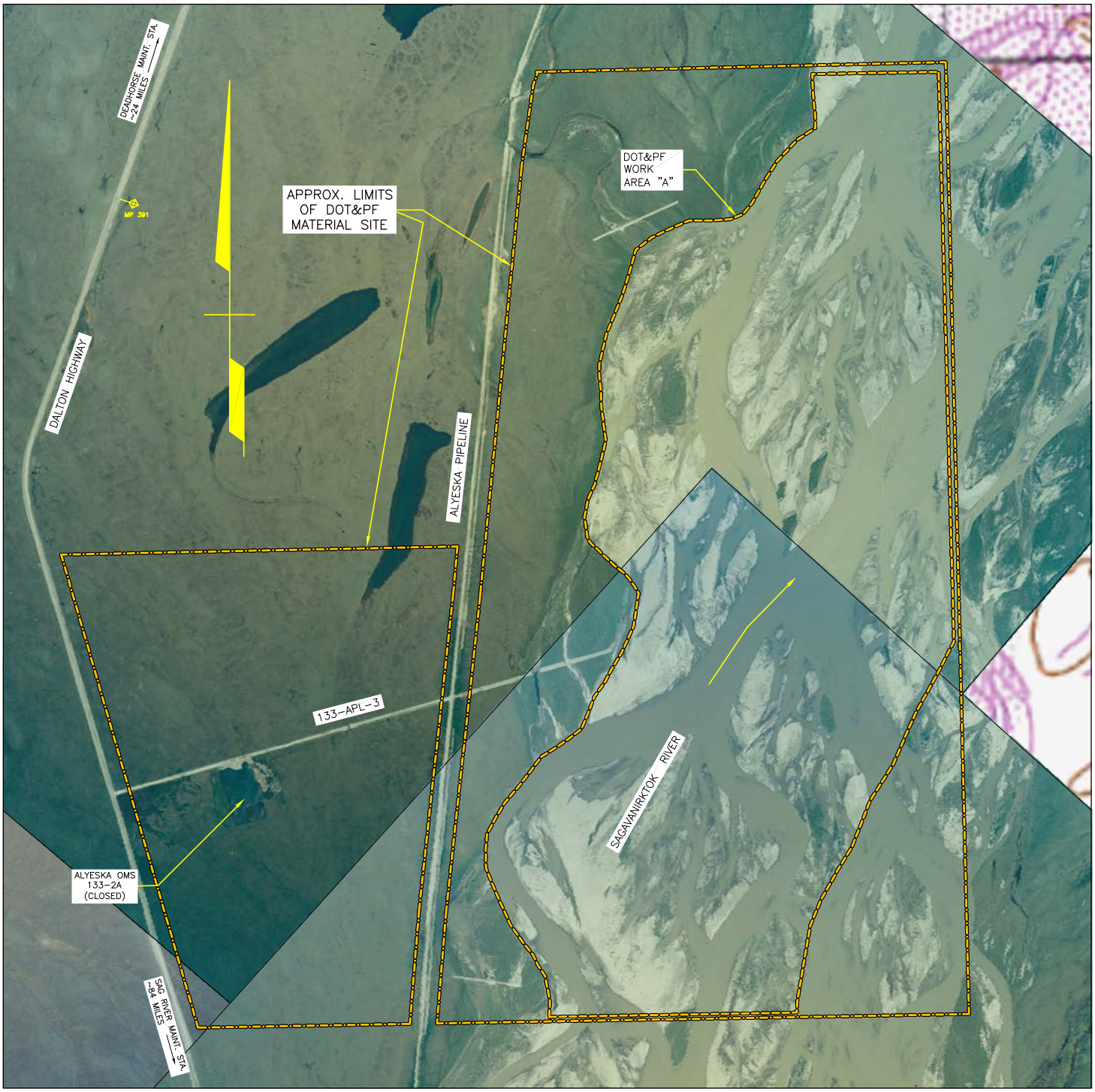
STATEWIDE MATERIAL SITE INVENTORY

MS 65-9-099-2

SCALE	DESIGNED	DRAWN	PAGE
AS SHOWN	P.K.H.	A.T.B.	2
	CHECKED C.H.R.	DATE MAY 2009	

Plotted 1/26/2010 2:56 PM by Aaron Banks Z:\project\1443.03\65_Dalton_Highway\MS 65-9-099-2\acad\geo\acad\MS_Topo_Map_65-9-099-2.dwg

SITE MAP



BASE MAP IS 2006 AERIAL PHOTOGRAPHY.
THIS IS A PLANNING DOCUMENT ONLY. THE MATERIAL SITE BOUNDARIES SHOWN ON THIS DRAWING ARE APPROXIMATE. OWNERSHIP OF THE LANDS ADJACENT TO THIS SITE ARE UNKNOWN. THE ACCESS ROW SHOULD BE VERIFIED.

ACTIVE - STATUS UNKNOWN

0 800 1600 3200 4800

GRAPHIC SCALE IN FEET

BASE MAP FROM AERIAL PHOTOS DATED 7/25/06

Prepared By:
R&M CONSULTANTS, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

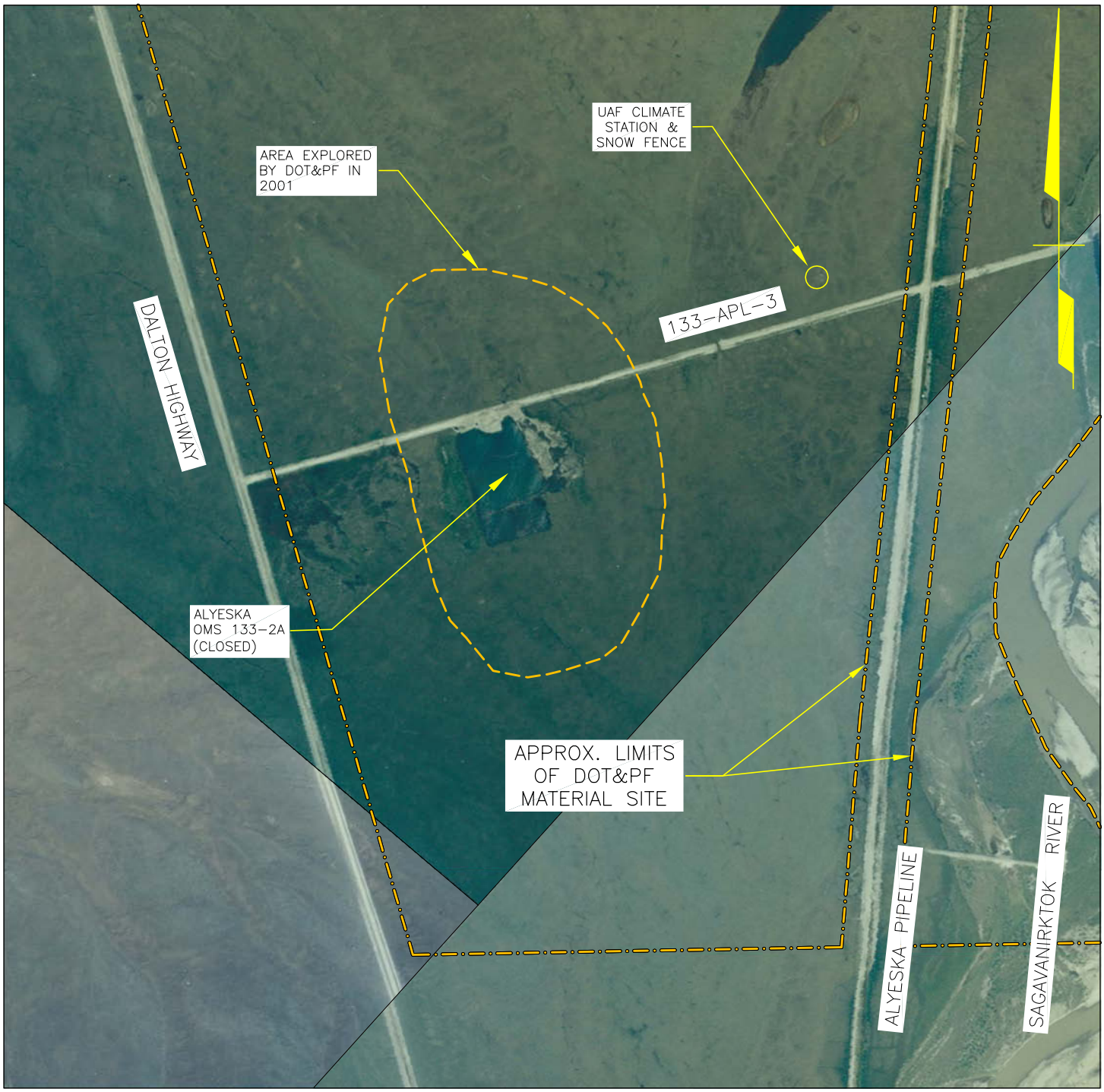
STATEWIDE MATERIAL SITE INVENTORY

MS 65-9-099-2

SCALE	DESIGNED	DRAWN	PAGE
AS SHOWN	P.K.H.	P.K.H.	3A
	CHECKED C.H.R.	DATE JUNE 2009	

Plotted 1/26/2010 2:59 PM by Aaron Banks
Z:\project\1443.03\65_Dalton_Highway\MS 65-9-099-2\acad\geo\acad\MS_Site_Map_65-9-099-2.dwg

SITE MAP



BASE MAP IS 2006 AERIAL PHOTOGRAPHY.
THIS IS A PLANNING DOCUMENT ONLY. THE MATERIAL SITE BOUNDARIES SHOWN ON THIS DRAWING ARE APPROXIMATE. OWNERSHIP OF THE LANDS ADJACENT TO THIS SITE ARE UNKNOWN. THE ACCESS ROW SHOULD BE VERIFIED.

ACTIVE - STATUS UNKNOWN

0 400 800 1600 2400

GRAPHIC SCALE IN FEET

BASE MAP FROM AERIAL PHOTOS DATED 7/25/06

Prepared By:
R&M CONSULTANTS, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

STATEWIDE MATERIAL SITE INVENTORY

MS 65-9-099-2

SCALE	DESIGNED	DRAWN	PAGE
AS SHOWN	P.K.H.	P.K.H.	3B
	CHECKED C.H.R.	DATE JUNE 2009	

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Plotted 1/26/2010 3:03 PM by Aaron Banks

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

THIS REPORT IS BASED ON A REVIEW OF EXISTING DATA AND BRIEF FIELD INSPECTIONS. THUS THE DATA CONTAINED HEREIN SHOULD BE CONSIDERED PRELIMINARY AND USED FOR PLANNING PURPOSES ONLY. USERS OF THIS DATA SHOULD VERIFY THE INFORMATION PRIOR TO USING IT FOR DESIGN OR CONSTRUCTION PURPOSES.

IF OTHER IS SELECTED FOR A SECTION, EXPLAIN IT IN SECTION 44. NOTES.
IF AN ANSWER IS UNKNOWN SELECT "UNKNOWN" OR LEAVE BLANK

1. **MS_ID** **65-9-099-9**
   Enter the full material site number e.g.. 65-9-045-2
2. **DATE_INSPECT** 7/11/2009
   Date of field inspection
3. **FLD INSPEC_ORG** AARON BANKS / R&M CONSULTANTS
   Name of inspector / Organization or Company
4. **REGION** NORTHERN
5. **LOCATION** DALTON HIGHWAY
   Name of Highway
   Enter Name of Facility or Secondary Route Name (i.e.Kotzebue Airport, Nash Road, etc.)
6. **MILEPOST** 390
   List the closest main highway milepost
7. **NAME**
   Enter commonly used name (s), e.g. Hess pit, Gobblers Knob, Midway. List all that apply separated by commas.
8. **MAINT_DIST/STAT** District INTERIOR/DALTON Station DEADHORSE
   Highway Maintenance District and Station, for locations not on highways select other.
9. **QUAD** SAGAVANIRKTOK D-3
   U.S.G.S. Quad. Map
10. **TOWNSHIP /RANGE** T#S R#E T6N R13N Meridian UM
    Section 1 & 6 & T6N R14E Section 7 & 12
11. **COOR_UTM**
    ZONE 6
    NORTHING 7,754,531
    EASTING 431,649
    UTM WGS84 - Meters
12. **COOR_STATE_PLANE**
    ZONE 4
    NORTHING 5,810,388
    EASTING 1,793,871
    Alaska State Plane NAD83 - Survey Feet
13. **BOROUGH** NORTH SLOPE BOROUGH **TAX ID NO.**
14. **DNR_LAND_USE_PLAN** DALTON HIGHWAY MASTER PLAN
15. **CATEGORY** (To be filled in the office)
15a. **CLASSIFICATION** ACTIVE
15b. **STATUS** UNKNOWN

16. **POTENTIAL_STATUS** SIGNIFICANT

Estimated quantity of material in the site at the time of inspection.

NONE	There appeared to be no useable material in the site.
LIMITED	There appeared to be less than 25,000 c.y. available within the developed site.
SIGNIFICANT	There appeared to be greater than 25,000 c.y. available within the developed site.
EXPANDABLE	There was limited material within the developed site, but there appeared to be significant material outside existing site limits.
UNDEVELOPED	The pit has not been mined (used only for new sites).
CLOSED	There may be useable material left in the pit but it is not available.
UNKNOWN	
OTHER	The site does not fit any of the categories above. Explain in Section 44, Notes.

17. **PRESENT_USERS**

17a. **PRESENT_USER_1** DOT&PF CONSTRUCTION

17b. **PRESENT_USER_2**

17c. **PRESENT_USER_3**

18. **PERMITTED _ACREAGE** 1700

Area within site permit or R.O.W. boundaries, from permit application or property plat.

19. **DEVELOPED_ACREAGE** 800

Area within an existing pit, excluding spoil berms lying outside the pit, access roads etc. Explain below.

Includes Alyeska OMS 133-2A and DOT&PF working area.

20. **ACREAGE_COMP_METHOD** FROM MAP/PHOTO

Method used to determine developed acreage.

21. **EST_QUAN_AVAIL** 11,000,000 ROUGH ESTIMATE

Estimated quantity available (b.c.y.), may be based on acreage computed above plus expansion area. Explain computation assumptions and calculations below.

The site can be divided into two parts. The first is the upland portion on either side of the Alyeska Pipeline. Given prior use, other uses and rehabilitation constraints, about one-half of the area west of the pipeline may be minable. Assuming an average 5 feet of overburden and a 30-foot working depth approximately 5,000,000 c.y. (200 acres x 25 feet x 1,000 c.y. per acre-foot) of material are minable. Much of the upland area east of the pipeline would not be minable due to river bank erosion and fishery concerns and only limited amounts of material would be available. A mining operation on the active floodplain north of the location where the access road ends would produce approx. 6,000,000 c.y. (200 acres x 30 feet x 1,000 c.y. per acre-foot). There was little to no available material in the active floodplain if mining is restricted to above MLW.

22. **ACCESS_TYPE** EXISTING ROAD / OPEN

NONE	No access road has been built.
EXISTING ROAD / OPEN	Drivable. May have gate.
EXISTING ROAD / REVEG	Can be reopened with little effort.
EXISTING ROAD / CLOSED W/BERMS	Can be reopened with little effort.
EXISTING ACCESS / REMOVED	Can be reopened with much effort.
SNOW ROAD	Can only be accessed during winter.
ICE ROAD	Requires crossing river or lake ice in the winter.
BARGE	Material can only be moved by barge.
OTHER	The site does not fit any of the categories above. Describe in Section 44, Notes.

23. **ACCESS_LENGTH** 100
Approx. length from edge of pit to highway/secondary route (ft.)

24. **VEGETATION**

Wet upland polygonal tundra with brush and grasses. Vegetation within the floodplain of the Sag River consists of sparse willow brush to 6 feet high.

25. **TYPE_1** BORROW PIT 26. **TYPE_2** RIVER BAR

Dominant type Subordinate type
General Types of Materials Available Enter data in Type_2 only if two types of material site available

QUARRY	Bedrock sources requiring blasting
BORROW PIT	Soils or soft bedrock (rippable), above water table
BAILING	Requires production below the water table
RIVER BAR	Sand/gravel bars in active channels

27. **OB_CLASS_1** >6 FT. 28. **OB_CLASS_2** NONE
New Site or expansion Area Existing Pit (Spoil)
A site may have both. Data should be based on actual subsurface exploration, otherwise unknown.
Estimated average depth over the area.

NONE	3 TO 6 FT.	UNKNOWN
<3 FT.	>6 FT.	OTHER

29. **OB_TYPE_1** SILT 30. **OB_TYPE_2**
New Site or expansion Area Existing Pit (Spoil)
A site may have both.

SILT	PEAT	SOLID WASTE	OTHER
COLLUVIUM	SPOIL	UNKNOWN	

STATEWIDE MATERIAL SITE INVENTORY
MATERIAL SITE INSPECTION FORM

31. **MAT_TYPE_1** FLUVIAL — Dominant type

32. **MAT_TYPE_2** — Subordinate type

BEDROCK	Bedrock sources requiring blasting
WEATHER. BEDROCK	Bedrock sources requiring ripping
FLUVIAL	Water deposited sand and gravel, includes glaciofluvial
GLACIAL	Glacial till
COLLUVIAL	Talus slopes, etc.
EOLIAN	Sand Dunes, etc.
SILT	Silt deposits, loess, fluvial, etc.

33. **PERMAFROST_1** DETECTED IN MOST TEST HOLES OR PITS
New Site or Expansion Area

34. **PERMAFROST_2** DATA OUTDATED
Existing Site

DETECTED IN MOST TEST HOLES
DETECTED IN SOME TEST HOLES
DETECTED IN IMMEDIATE VICINITY
DETECTED IN NO TEST HOLES
DATA OUTDATED
UNKNOWN
OTHER

35. **GROUNDWATER**

Perched groundwater has been observed between 0 and 2 feet in test borings drilled in the upland areas during September 2001. The water table in the Sag River floodplain will vary with river levels.

36. **LITHOLOGY_1** FLUVIAL — Dominant type

37. **LITHOLOGY_2** _____ — Subordinate type

IGNEOUS ROCK	Undifferentiated Igneous Rocks
GRANITIC	Granite/Monzonite/Granodiorite
DIORITE/GABBRO	Diorite/Gabbro
BASALT	Dark colored fine-grained Igneous Rocks
GREENSTONE	Altered Volcanic Rocks w/green tint
METAMORPHIC ROCK	Undifferentiated Metamorphic Rocks
SCHIST/PHYLLITE	Includes rocks ranging from slate to schist
GNEISS	Includes hard schistose rocks
MARBLE	
CATACLASTIC	Incl. Valdez Formation Rocks, Kenai Penn.
MÉLANGE	Incl. McHugh Formation Rocks, Kenai Penn.
SEDIMENTARY ROCK	Undifferentiated Sedimentary Rocks
CONGLOMERATE	
SANDSTONE	Includes greywacke, etc.
SHALE/MUDSTONE	
LIMESTONE	
FLUVIAL	River and stream deposits (floodplain), includes outwash.
ALLUVIAL	Alluvial / Debris Fan deposits
GLACIOFLUVIAL	Eskers, kames, etc.
GLACIAL	Till
COLLUVIAL	Talus, etc.
EOLIAN	Sand Dunes, etc.
SILT	Loess, fluvial silts, etc.
OTHER	Explain in Section 44.

38. **MATERIAL_CLASSIFICATION**

ASTM Classification, generally they should range from coarse to fine.

38a.	GW-GM	38c.	GM	38e.		38g.	
38b.	GP-GM	38d.		38f.		38h.	

39. COBBLES_AND_BOULDERS

Test Boring Callout / ASTM Classification, either a. or b. and c. (Can use ranges i.e. 0 to 20)

39a.	CONTAINS		
39b.	Est. % by VOL.	15	(Est. From Visual Observations)
39c.	MAX. SIZE (in.)	12	(Observed Size)

40. AGG_TEST_RESULTS

Year of test or report- Test result / Year of test or report- Test Results

40a. SG APP COARSE	2001- 2.79, 2.68, 2.66
40b. SG APP FINE	
40c. ABSORPTION CRSE	
40d. ABSORPTION FINE	
40e. NORDIC ABRASION	
40f. L.A. ABRASION	2001- 20
40g. DEGRADATION (T-13)	2001- 61, 79
40h. NASO4 LOSS COARSE	2001- 0.4
40i. NASO4 LOSS FINE	2001- 2.2

41. POTENTIAL_USABILITY — TYPES A AND B MATERIAL AVAILABLE

Best known potential use of the material, based on records, exploration and laboratory data.

CONCRETE AGGREGATE PRODUCED	The site has produced concrete aggregate
PAVING AGGREGATE PRODUCED	The site has produced paving aggregate
CRUSHED PRODUCTS PRODUCED	Base, Surface Coarse, Subbase, etc. has been produced.
TYPE A AND B MATERIAL AVAILABLE	0 to 10 percent passing 200
TYPE C AVAILABLE	Compactable material
TYPE C NOT AVAILABLE	Uncompactable material (Lower Kuskokwim and Yukon River, etc.)
UNKNOWN	
OTHER	Explain in Section 44.

42. SPECIAL_PROBLEMS

Special problems encountered or anticipated with use of the material, based on records, exploration and laboratory data.

ORGANIC CONTENT	The material is very difficult to compact.
HIGHLY WEATHERED GRAVEL	The gravel is highly weathered and may break down when handled.
BREAKS DOWN UNDER USE	Material breaks down on grade.
SENSITIVE TO WATER CONTENT	Material is sensitive to water content, i.e.. some glacial tills, soft bedrock.
VARIABLE MATERIAL	Deposit contains mixture of suitable and unsuitable material.
POSSIBLE CONTAMINATION	Site may be contaminated by petroleum products or hazardous materials.
CONTAINS ASBESTOS	Site contains naturally occurring asbestos.
POTENTIAL ASBESTOS	Site in area where naturally occurring asbestos is mapped.
ACID ROCK DRAINAGE	Site contains rock susceptible to producing acid rock drainage.
UNKNOWN	
OTHER	Explain in Section 44, Notes.

43. **RIPRAP** NOT POSSIBLE

Class II or larger. Does not include production for erosion control riprap for ditches or culverts.

PREVIOUS PRODUCTION	There is a record of production.
POSSIBLE FURTHER INVESTIGATION NEEDED	The site is a bedrock quarry containing hard rock
NOT POSSIBLE	The site has soft rock or soil.
UNKNOWN	
OTHER	Explain in Section 44, Notes.

44. **NOTES**

Note number of item being discussed.

22. The eastern portion of the site can only be accessed by crossing the pipeline corridor. The access road (133-APL-3) has 5 low water crossing east of the TAPS, with the easternmost 2 crossings being unfordable by a highway vehicle.

27. Test borings completed in 2001 indicated that silty overburden ranged from 5 to 9 ft. in thickness.

MS 65-9-099-2

ACCESS 133-APL/AMS-3
Dalton MP 390

Location and access

The proposed site is situated just east of the Dalton Highway and 800 feet west of the Trans-Alaska pipeline, south, and north of the access. The existing access (133-APL-2) to this site crosses the buried Trans-Alaska pipeline approximately 3500 feet east of the highway, and terminates at the bank of the Sag River.

The 8-inch fuel gas line is located west of the Dalton Highway within the R.O.W.

Description

NRMS drilled both south and north of the access road. The wet upland polygonal tundra is generally flat, approximately 10 feet above the Sag River flood plain.

Development

Shallow scrapes were worked in the Sag River in this area during the construction of the "Haul Road" in 1974. Alyeska applied for and received permits, and materials site contract for gravel extraction south of the access road. Alyeska used site OMS 133-2A as a material source for pipeline pad work, creating a pond at this location. Alyeska apparently relinquished the permits for their material site OMS 133-2A. Permitted quantities and environmental permit restrictions will need to be modified before using material from this site. Crossing the pipeline corridor would need to be coordinated with APSC. Check with Northern Region DOT&PF Right of Way section regarding the current status and detailed stipulations of permits prior to any anticipated development. Additionally, ADFG should be consulted if any extraction is needed from the Sag River channel.

Land and permit status

This site is on land managed by DNR. This site is currently not permitted. Check with Northern Region DOT&PF Right of Way and Environmental sections regarding the current status and detailed stipulations of future permits prior to any anticipated development.

Geotechnical investigation

In 2001 NRMS drilled five test holes along the access road, five test holes south of the access road, and three test holes north of the access road.

The test holes drilled east of the pond had 5 feet of silt underlain by gravel to a depth of 29.5 feet the maximum depth drilled. Drill reaction indicates oversize present in gravel.

The test holes drilled north of the access road had 5 to 8 feet of silt underlain by gravel to a depth of 29.5 feet, the maximum depth drilled. Drill reaction indicates cobbles may present in the

gravel. In September the ground was frozen, drill reaction indicated about 4 inch oversize is present.

We have been advised by ADFG that excavations in the active flood plain of the Sag River are not desired at this location.

Clearing and stripping

Ground cover is wet tundra underlain by silt forming 5 to 9 feet thick overburden.

Overburden generally consists of various combinations of silt, sand, and organic material. It is typically ice-rich; some areas are expected to be pure ice.

Water table

We found 0.5 feet of water perched upon the frozen ground in the summer.

Frozen ground

We found frozen ground in all the upland test holes at 2 to 4 feet below the surface when drilled in September 2001.

Quality of materials

The fines content of the tested samples of sandy silty gravel ranges from 2.5 to 21.6 % P200. Results of quality tests were Degradation values of 61, 65, 67, 79, L. A. Abrasion loss of 17 to 20, and Sodium Sulfate Soundness of 0.4 percent (coarse) and 2.2 percent (fine).

The silt overburden sample had a fines content of 70.4 % P200.

Recommendation

The natural moisture of the gravel range from 8.3 to well over optimum moisture. The water table ranged from 0 to 1.5 feet. Proctors indicate that the optimum moisture for the gravel material range from 5.3 to 5.4 percent. Gravels will need to be thawed and drained.

DEADH E
~39.5 ...

PROPOSED BOUNDARY

~4620

35 36 / 2 1 — 36 31 / 1 6 — 31 32 / 6 5

ROW
ROW
50
50
HWY
DALTON
391
PIPELINE
~10645
ALYESKA
RIVER

PROPOSED BOUNDARY

~4425

2 1 / 11 12 — 1 6 / 12 7 — 6 5 / 7 8

01-138
01-139
01-137
ACCESS
ROAD
01-83
01-84
390
01-81
01-82
01-108
01-80
01-109
01-111
01-110
01-112
~5300
150
150
~5465
SAGAVANIRKTOK
10560

11 12 / 14 13 — 12 7 / 13 18 — 7 8 / 18 17

~2460

~5945

PUMP STATION
No. 2 ~39.5 mi.

MS 65-9-099-2

0 feet 1000

PROTRACTED SEC. 12
T 6 N, R 13 E, U.M.

PROTRACTED SEC. 6, 7
T 6 N, R 14 E, U.M.

Nov 06, 2002 - 8:56am - Tab: MatSite

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
ENGINEERING GEOLOGY UNIT

DATA: TB	DALTON HIGHWAY: M.P. 362-414 MS 65-9-099-2
DRAWN: SLC	
APPROVED: DNS	PROJECT NO. DP-065-7(3))\61366
DATE: Nov 2002	U:\Geo\61366\61366s06

DEADHORSE
~24 mi.

35 36 | 36 31 | 31 32
2 1 | 1 6 | 6 5

ROW
ROW
50
50
HWY
DALTON
391
PIPELINE
ALYESKA
RIVER
ROAD
ACCESS
SAGAVANIRKTOK
390

01-138
01-139
01-137
01-145
01-83
01-84
01-81
01-82
01-108
01-80
01-109
01-111
01-110
01-112

2 1 | 1 6 | 6 5
11 12 | 12 7 | 7 8
14 13 | 13 18 | 18 17

PUMP STATION
No. 2 ~56.8 mi.

MS 65-9-099-2

0 feet 1000

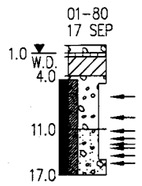
PROTRACTED SEC. 12
T 6 N, R 13 E, U.M.

PROTRACTED SEC. 6, 7
T 6 N, R 14 E, U.M.

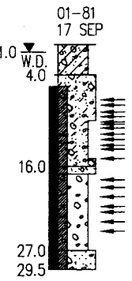
Feb 18, 2004 - 3:31pm - Tab: MatSite

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
ENGINEERING GEOLOGY UNIT

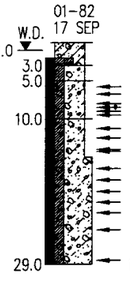
DATA: TB	DALTON HIGHWAY: M.P. 362-414 MS 65-9-099-2
DRAWN: SLC	
APPROVED: DNS	PROJECT NO. DP-065-7(3)\61366
DATE: Feb 2004	U:\Geo\61366\61366s06



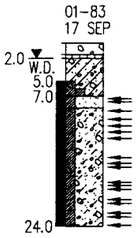
0.0– 1.0 GRAVEL (fill)
1.0– 1.5 ORG MAT
1.5– 4.0 Gy Org SILT
4.0–11.0 Gy sl Si GRAVEL, wet
SAMPLE 01-6169
(5.0–11.0)
A–1–a, 10.2% –200
11.0–17.0 Bn sl Si Sa GRAVEL
w/cobbles
SAMPLE 01-6170
(11.0–15.0)
A–1–a, 11.8% –200



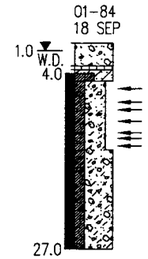
0.0– 4.0 Gy Org Sa Gr SILT, wet
SAMPLE 01-6171
(0.0–4.0)
A–4(0), 40.1% –200
NM 24.7%, Org 8.2%
4.0–16.0 Gy Si Sa GRAVEL
w/ cobbles and
thin sand lenses
SAMPLE 01-6172
(10.0–15.0)
A–1–a, 14.1% –200
DEG 61
16.0–17.0 Gy Gr SAND
17.0–27.0 Gy GRAVEL
SAMPLE 01-6173
(17.0–29.0)
A–1–a, 6.3%–200
27.0–29.5 Sa GRAVEL



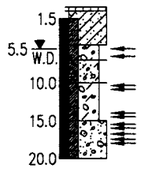
0.0– 3.0 Gr Sa SILT, wet
SAMPLE 01-6174
(0.0–3.0)
A–4(0), 70.4% –200
NM 35.5%
3.0– 5.0 Bn Sa GRAVEL
SAMPLE 01-6175
(3.0–5.0)
A–1–a, 6.3% –200
5.0–10.0 Bn Si Sa GRAVEL
SAMPLE 01-6176
(5.0–10.0)
A–1–a, 13.0% –200
10.0–29.0 Bn Si Sa GRAVEL
w/ cobbles
SAMPLE 01-6177
(10.0–15.0)
A–1–b, 16.6% –200



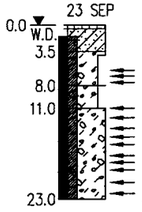
0.0– 1.5 GRAVEL (fill)
1.5– 2.0 ORG MAT
2.0– 7.0 Gy Gr Sa SILT
wet hole
7.0– 8.0 Gy Si Sa GRAVEL
w/ cobbles
8.0– 8.5 SAND
8.5–24.0 Gy Si Sa GRAVEL



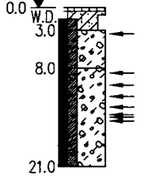
0.0– 3.0 Bn Sa GRAVEL (fill)
3.0– 3.5 PEAT
3.5– 5.0 Gy Sa SILT
5.0–27.0 Gy Si Sa GRAVEL
w/ cobbles
SAMPLE 01-6178
(5.0–14.0)
A–1–b, 16.2% –200
@ 14.0 wet, no return



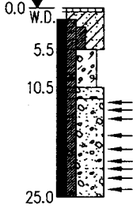
0.0– 0.5 Bk ORG MAT
0.5– 5.0 Gy Sa SILT
5.0– 7.0 Bn Si GRAVEL
SAMPLE 01-6221
(5.0–7.0)
A–1–b, 17.2% –200
7.0–10.0 Bn sl Si Sa GRAVEL
SAMPLE 01-6222
(7.0–10.0)
A–1–a, 7.0% –200
10.0–15.0 Bn Si GRAVEL
99% –1"
SAMPLE 01-6223
(10.0–15.0)
A–1–a, 12.5% –200
15.0–20.0 Bn Sa GRAVEL
w/ cobbles
@ 15' wet



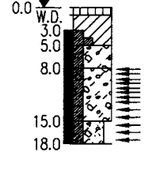
0.0– 0.5 ORG MAT
0.5– 3.5 Gy Sa SILT
3.5– 8.0 Bn sl Si GRAVEL
w/ cobbles
SAMPLE 01-6224
(4.0–8.0)
A–1–a, 11.7% –200
8.0–11.0 Bn sl Si GRAVEL
SAMPLE 01-6225
(8.0–11.0)
A–1–a, 7.6% –200
11.0–23.0 Bn sl Si GRAVEL
w/ cobbles
wet hole



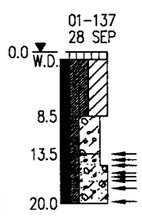
0.0– 0.5 ORG MAT
0.5– 3.0 Gy Sa SILT
SAMPLE 01-6226
(1.0–3.0)
A–4(0), 67% –200
NM 79.8%
3.0– 8.0 Bn sl Si GRAVEL
wet when thawed
8.0–21.0 Bn sl Si GRAVEL
w/ cobbles
visible ice



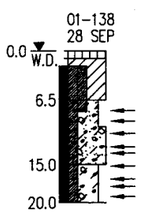
0.0– 0.5 ORG MAT
0.5– 5.5 Gy Sa SILT
5.5–10.5 Bn sl Sa Si GRAVEL
SAMPLE 01-6227
(5.5–10.5)
A–1–a, 11.3% –200
DEG 79
10.5–12.0 Bn Sa GRAVEL
12.0–25.0 Bn Sa GRAVEL
w/ cobbles



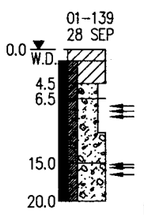
0.0– 1.0 Bn ORGANICS (peat)
1.0– 5.0 Gy SILT
visible ice
~50% moisture
5.0– 8.0 Bn sl Si GRAVEL
8.0–15.0 Bn sl Si GRAVEL
w/ cobbles and boulders
15.0–18.0 Si Sa GRAVEL
SAMPLE 01-6228
(15.0–18.0)
A–1–b, 19.8% –200
NM 8.3%



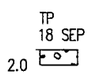
0.0– 1.0 PEAT
1.0– 8.5 Gy SILT
visible ice
8.5–13.5 Gy Si GRAVEL
SAMPLE 01-6277
(8.5–15.0)
A–1–a, 12.5% –200
LA 17, DEG 65
13.5–20.0 Gy Sa Si GRAVEL
w/ cobbles
hard drilling



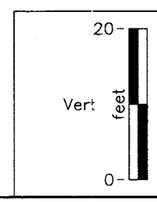
0.0– 1.0 PEAT
1.0– 6.5 Gy SILT
6.5–15.0 Gy Sa Si GRAVEL
w/ cobbles
97% –1"
SAMPLE 01-6278
(6.5–10.0)
A–1–b, 21.6% –200
15.0–20.0 Gy Si GRAVEL
w/ cobbles
SAMPLE 01-6279
(15.0–20.0)
A–1–b, 17.5% –200



0.0– 1.5 Org SILT
1.5– 4.5 Gy SILT
4.5– 6.5 Gy Si Gr SAND
SAMPLE 01-6280
(4.5–6.5)
A–2–4, 17.8% –200
6.5–15.0 Bn Si Sa GRAVEL
SAMPLE 01-6281
(6.5–11.0)
A–1–a, 13.3% –200
15.0–20.0 Bn sl Si Sa GRAVEL



18 SEP
TP 01-145
(0.0–2.0)
GRAVEL
Hand dug test pit
SAMPLE 01-6179
(0.0–2.0)
LA 20, DEG 67
SSc 0.4, SSf 2.2



STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
ENGINEERING GEOLOGY UNIT

DATA: TB	DALTON HWY MP 362–414 Rehab MS 65-9-099-2
DRAWN: SLC	
APPROVED: DNS	PROJECT NO. 61366
DATE: Sep 2003	U:\Geo\61366\61366s06-MS06Z01

Sep 29, 2003 - 2:38pm

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION

NORTHERN REGION

LABORATORY TESTING REPORT

PROJECT NAME:		Dalton Highway 362-414						
PROJECT NUMBER:		DP 065-7(3)						
AKSAS NUMBER:		61336						
MATERIAL SOURCE:		MS 65-9-099-2, Mile 390						
SAMPLED BY:		T. Bergstrom						
TESTHOLE		01-80	01-80	01-81	01-81	01-81	01-82	01-82
DEPTH (feet)		5.0-11.0	11.0-15.0	0.0-4.0	10.0-15.0	17.0-29.0	0.0-3.0	3.0-5.0
STATION								
OFFSET								
LAB NO.		01-6169	01-6170	01-6171	01-6172	01-6173	01-6174	01-6175
DATE SAMPLED		17-Sep-01	17-Sep-01	17-Sep-01	17-Sep-01	17-Sep-01	17-Sep-01	17-Sep-01
% Passing	3"	100	100			100		
	2"	98	99		100	97		100
	1.0"	80	84	93	86	81		95
	0.75"	71	74	91	81	72		90
	0.5"	55	60	85	70	55		79
	0.375"	47	52	80	62	42		69
	#4	35	39	64	47	23	100	47
	#10	28	32	61	37	17		33
	#40	21	24	56	26	11	96	16
	#50	19	22	54	23	10	93	12
	#100	14	16	48	18	8	72	8
	#200	10.2	11.8	40.1	14.1	6.3	70.4	6.3
	0.02							
Hydro	0.005							
	0.002							
LIQUID LIMIT		NV	NV	NV	NV	NV	NV	NV
PLASTIC INDEX		NP	NP	NP	NP	NP	NP	NP
AASHTO CLASS.		A-1-a	A-1-a	A-4 (0)	A-1-a	A-1-a	A-4 (0)	A-1-a
SOIL DESCRIPTION		sl.SiGr	sl.SiSaGr	OrgSaGrSi	SiSaGr	Gr	SaSi	SaGr
NATURAL MOISTURE				24.7			35.5	
ORGANIC				8.2				
SP.GR. (FINE)								
SP.GR. (COARSE)								2.79
MAX DRY DENSITY								137.7
OPTIMUM MOISTURE								5.3
L.A. ABRASION								
DEGRAD. FACTOR					61			
SODIUM SULF. (CRSE)								
SODIUM SULF. (FINE)								
REMARKS:		Site 6, Access Rd.	Site 6, Access Rd.	Site 6, Access Rd.	Site 6, Access Rd.	Site 6, Access Rd.	Site 6, Access Rd.	Site 6, Access Rd.

Gradation is percent of material passing the 3 in. sieve, Alaska Test Method T-7.