Technical Summary

September 2023

Pit Name: Agate Bay Road

Provincial Pit Number: 2866

Location: The pit is located approximately 3.6 km south of Barriere, BC via Highway 5 and Hanson Road. (Figure 1)

Legal Land Description: The pit is owned by the Ministry of Transportation and Infrastructure and is legally described as Lot 8, District Lot 1319, Kamloops Division Yale District, Plan EPP13936. The geographical coordinates at the center of the pit are Universal Transverse Mercator Grid Zone 10, 701668m Easting, 5669742m Northing. (Figure 2).

Subsurface Investigation: Subsurface investigations at Agate Bay Road Pit were carried out in October 2018 and 2005 by the Ministry of Transportation & Infrastructure.

In 2018 eighteen (18) test pits were excavated to depths ranging from 4m to 6m and in 2005, twenty five (25) test pits were excavated to depths ranging from 4m to 7m. During the test pitting, subsurface soil and groundwater conditions were logged and representative samples of the granular materials were collected for laboratory testing and future reference. Laboratory testing was carried out on seventeen (17) of these samples at Wood PLC laboratories to assess the gradation and durability characteristics. The tests completed were wet sieve analysis, micro-deval, sand equivalent, relative density, and absorption.

Based on the results of the 2018 and 2005 investigations, a suitable granular area for mining has been defined (Figure 3). The detailed results of the subsurface testing are provided in the Test Pit Summaries and test pit locations are shown on the Pit Plan (Figure 3).

Material Gradation: Table 1 shows the gradation as a percentage by weight of the fines (silts and clays), sand and gravel components as well as the Unified Soil Classification (USC [included after test pit summary]) for the samples tested from 2018 and 2005.

Table 1: Pit Run Gradation

Test Pit	Depth (m)	Fines (%)* <0.075mm	Sand (%)* 0.075-4.75mm	Gravel (%)* 4.75-75mm	USC
2018					
18-01	2.1-5.0	2.4	61.4	36.2	SP
18-02	0.7-3.1	3.3	71.2	25.5	SP
18-03	0.0-5.0	3.7	40.8	55.5	GP
18-04	0.0-3.1	0.7	57.5	41.8	SP
18-05	0.0-5.0	1.2	49.0	49.8	GP
18-06	0.0-4.8	1.9	44.0	54.1	GP
18-07	0.0-5.0	1.7	44.7	53.5	GP
18-08	0.0-5.0	1.4	64.1	34.5	SP
18-09	0.1-4.0	1.1	61.8	37.2	SP
18-10	0.0-4.5	1.1	53.9	45.0	SP
18-11	0.0-3.5	1.8	54.9	43.3	SP
18-11	3.5-5.0	2.1	73.9	24.0	SP
18-12	0.0-2.5	3.1	74.2	22.6	SP
18-13	0.0-3.2	1.5	69.4	29.1	SP
18-14	0.0-3.0	1.1	65.8	33.2	SP
18-15	0.0-4.5	1.1	63.1	35.7	SP
18-16	0.1-5.0	0.8	73.0	26.2	SP
Average		1.8	60.2	38.1	SP
2005					
TP05-02	3.0-7.0	2.1	51	47	SP
TP05-04	3.5-7.0	1.7	67	31.0	SP
TP05-06	0-6.5.0	1.8	45	53	GP
TP05-12	3.5-5.0	1.3	58	41	SP
TP05-14	0.0-6.5	5.5	56	39	SP
TP05-18	0-7.0	3.0	36	61	GP
TP05-20	0-7.0	1.6	46.9	52	GP
TP05-22	0.0-6.5	2.6	39	58	GP
TP05-24	0-7.0	1.9	50	48	SP
Average		2.4	49.9	47.8	SP

Oversize Field Estimates: Table 2 shows the estimated percent of oversize rock as noted in the field during exploration.

Table 2: Oversize Field Estimates

2018

Classification:	Average (%)	Range (%)
Boulders (>375mm)	0	0-1
Cobbles (150-375mm)	0.2	0-1
Cobbles (75-150mm)	0.9	0-5

Maximum rock size observed was 200mm.

2005

Classification:	Average (%)	Range (%)
Boulders (>375mm)	0.1	0-1
Cobbles (150-375mm)	1.0	0-4
Cobbles (75-150mm)	3	0-6

Maximum rock size observed was 375mm.

Material Durability: Table 3 shows the results of the durability tests as well as the specifications as required in the Standard Specifications for Highway Construction.

Table 3: Durability Test Results

Test Pit	Sand Equivalent (%)	Micro Deval (% loss) C/F	Absorption		Relative Density	
			Coarse	Fine	Coarse	Fine
2018						
TP18-03	72.0	10.5/17.9				
TP18-06	72.0	10.2/16.9				
TP18-07			1.08	1.02	2.648	2.626

TP18-11S1	81.0	9.5/14.4				
TP18-11 S2	81.0					
BC MoTI Specifications						
Sand Equivalent	≥40 for base coarse and fine asphalt mix aggregate ≥20 for surfacing, sub-base and bridge end fill aggregates					
Micro Deval	≤30% for sub-base and bridge end fill aggregates ≤25% for surfacing & base course aggregates ≤18% for Class 1 Pavement asphalt mix aggregates ≤20% for Class 2 Pavement asphalt mix aggregates					
Absorption	<2.0% for coarse paving aggregates ≤1.0% for coarse and ≤1.5% for fine graded aggregate seals					
Relative Density	~2.65 for all aggregate products					

Material Suitability: Based on the 2018 investigation results, the material in the proposed suitability area is judged to be suitable for the following purposes:

Table 4: Suitability

	Pit Run	Crush
Agate Bay Road Suitability area	Bridge End Fill SGSB Winter Abrasive	25mm WGB Medium Asphalt Mix Aggregates GAS

The samples tested meet the gradation, sand equivalent, and micro-deval specifications for base course, bridge end fill and coarse asphalt mix aggregate. Based on the absorption results the samples meet the specification for fine graded aggregate seals; however, did not meet the specifications for coarse graded aggregates. With additional processing, such as crushing the oversize rocks (>75 mm diameter) with the gravel, absorption values may improve. Should the quality improve, the material may then be suitable for other aggregate products.

Sulphate and Chloride Testing

No sulphate and chloride testing has been done in the pit area.

Volume Estimates

Table 6 shows the volume estimates that can be expected for gravel from the proposed suitability area. This is based on the measured depths encountered during the subsurface investigation. The potential volumes of granular material were calculated by averaging the total thickness of granular material encountered in test pits and multiplying by the estimated surface area.

Table 6: Volume Estimates

Suitability Area ~ha.	Topsoil	Overburden	Granular Material
Average Layer Thickness (m)	0.0	0.0	3.7
Volume (m^3)	0	0	140,000

Pit Development Notes

- All development must be carried out in accordance with the Health, Safety, and Reclamation Code for Mines in British Columbia, BC Ministry of Energy and Mines (2022, or later edition), the Standard Specifications for Highway Construction, BC Ministry of Transportation and Infrastructure (2020, or later edition) and the Aggregate Operators Best Management Practices Handbook for BC.

- There are several stockpiles of processed aggregates in the immediate area that the contractor may **not** incorporate into their end products. It will be the responsibility of the contractor to move these stockpiles to an area agreed to by the Aggregate Resource Manager.

- All trees, vegetation, and overburden are to be removed within 2m of the top of the pit faces. Topsoil, overburden, and aggregate cannot be removed within five meters of the reserve boundary.

- The processing area is recommended to be located on the middle bench as identified on the Pit Development Plan (near TPs 18-17 and 18-18), with mining proceeding in a northern and/or northeastern direction as indicated.

- Processed aggregate may be stockpiled to the northeast of the production site, where space permits as indicated on the Pit Development Plan. There is limited stockpile space on the pit floor.

- No dumping of debris or petroleum products will be permitted, and the site must be left in a clean and safe condition.
- At the completion of the pit development operations, but prior to the depletion of the pit, the sides of the pit faces, waste piles, and overburden stockpiles must be trimmed to a 1.5H:1V slope. Active pit faces must be reshaped with native granular materials.

- Upon depletion of the pit, all disturbed areas are to be reclaimed. The minimum reclamation procedure should include re-sloping of the pit faces and waste piles to a 2H:1V slope, contouring the area for appropriate drainage, spreading of overburden followed by topsoil, and seeding.

- Should any of the above conditions conflict with the Health, Safety, and Reclamation Code for Mines in British Columbia, then the Code will prevail.

Closure

The findings of this report and the soil conditions noted above are inferred from the extrapolation of limited surface and subsurface data collected during the site investigation. It should be noted that different and possibly poorer soil conditions may exist between the test pit locations and volume estimates may vary from those reported in this report.

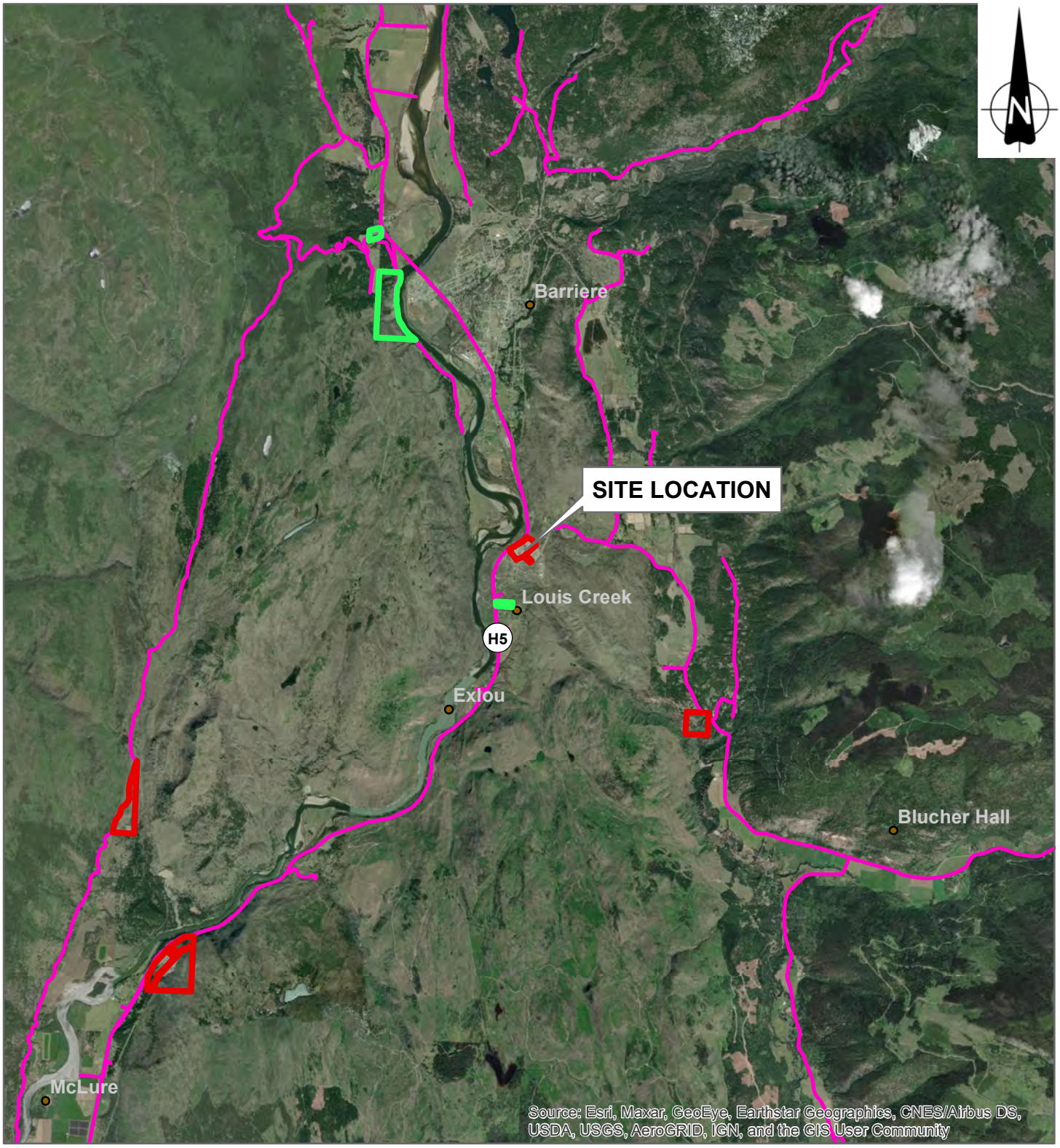
Prepared by:	Reviewed by:
Al Mitchell	Samantha Kinniburgh
Aggregate Resource Manager	Sr Aggregate Resource Specialist

Enclosures

Figures:
- Figure 1 - Location Plan
- Figure 2 - Legal Plan
- Figure 3 - Development Plan

Test Pit Logs (2018)
Wet Sieve Analysis Charts (2018 and 2005)
Aggregate Gradation Charts (2018 and 2005)
USC Legend
Photos

Figures



0 0.5 1 2 3 4 Kilometers

Scale 1:100,000

Ministry of Transportation and Infrastructure
Geotechnical and Materials Branch

LOCATION PLAN (2021)

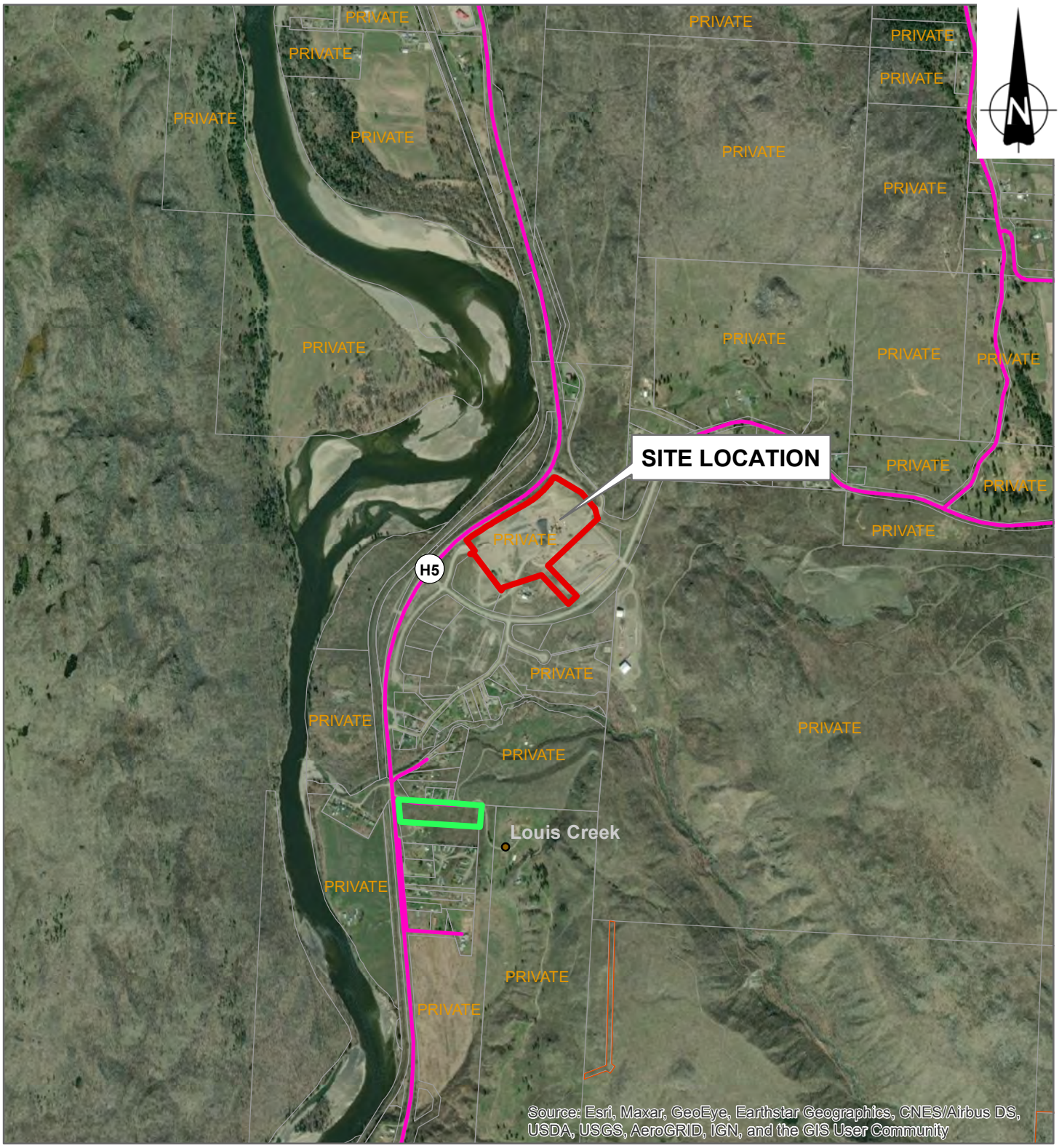
Agate Bay Road Pit #2866

SA 15 - THOMPSON NICOLA DISTRICT

DRAWN BY: lacourte	PROJECTION: NAD 1983 UTM Zone 10N		SCALE: As Shown
CHECKED BY: A.Mitchell	DATUM: NAD 1983 UTM Zone 10N		DATE: 2021-06-07
FileName: GISTemplate_Gravel_R2_2021-04-16_GISV8	Geotech Project No:	Reg: 2	Drawing No: **FIGURE 1**

Document Path: Q:\S.RUIZ_DESIGN\Reference\Gravel\GISTemplate_Gravel_R2_2021-04-16_GISV8.mxd

This drawing was originally produced in colour.



Ministry of Transportation and Infrastructure
Geotechnical and Materials Branch

LEGAL PLAN (2021)

Agate Bay Road Pit #2866

SA 15 - THOMPSON NICOLA DISTRICT

DRAWN BY: lacourte	PROJECTION: NAD 1983 UTM Zone 10N		SCALE: As Shown
CHECKED BY: A.Mitchell	DATUM: NAD 1983 UTM Zone 10N		DATE: 2021-06-07
FileName: GISTemplate_Gravel_R2_2021-04-16_GISV8	Geotech Project No:	Reg: 2	Drawing No: **FIGURE 2**

0 0.125 0.25 0.5 0.75 1 Kilometers

Scale 1:20,000

This drawing was originally produced in colour.

Document Path: Q:\S.RUIZ_DESIGN\Reference\Gravel\GISTemplate_Gravel_R2_2021-04-16_GISV8.mxd

LEGEND

- HYPSOGRAPHIC CONTOURS WITH ELEVATION INDEX TICKS INDICATE DEPRESSION
- TP18–02 — TEST PIT (YEAR 2018, No. 02)
- GP / OIP — MONUMENT, WOODEN POST, STANDARD IRON PIN
- LS / UP — AERIAL UTILITY POLE, LAMP STANDARD, UTILITY POLE
- DEVELOPMENT DIRECTION, POTENTIAL FUTURE EXTENSION
- DITCH/CREEK CENTRE
- GRAVEL ROAD
- PAVED ROAD, HIGHWAY
- DISTRICT LOT BOUNDARY
- PARCEL BOUNDARY
- RESERVE BOUNDARY
- GRANULAR BOUNDARY
- SURVEY BOUNDARY
- ROAD SHOULDER
- FENCE
- CSA — CRUSHER SETUP AREA
- SCREENING PLANT — CRUSHER SETUP AREA
- WASTE — WASTE DUMP AREA
- A — A' — CROSS-SECTION LINE

STOCKPILES

PROPOSED AREA	EXISTING
SA–TYPE–	STPL–TYPE–

TYPE

A: AGGREGATE
OB: OVERBURDEN
TS: TOPSOIL
RJ (MATERIAL): REJECT
DEB: DEBRIS
OVERS: OVERSIZE

WELLS WITHIN 300 m OF LOT BOUNDARY

- Source: BC Water Resources Atlas on 2017-01-18
- Well #84252, LOCATION: 701688E/5669992N
- Well #57348, LOCATION: 702199E/5669737N
- Well #59660, LOCATION: 701934E/5669569N
- Well #59659, LOCATION: 701907E/5669498N
- Well #39283, LOCATION: 701729E/5669354N

GENERAL NOTES

- Coordinates are UTM Zone 10 NAD 83.
- Lot boundaries are approximate.
- Survey date: 2018-11-10 (Approx.).

VOLUMES

- Area A Estimated Granular Volume: 62,450 m^3
- Area B Estimated Granular Volume: 143,750 m^3

MINING NOTES

- Development areas are based on sampling completed to a 5 metre depth. Once these thicknesses have been extracted re-evaluation of material quality will be required.
- A minimum 2 metre cleared, grubbed and stripped zone is to be maintained above all active pit faces.
- All pit development slopes will be 1.5 H to 1.0 V.
- All final reclamation slopes will be 2.0 H to 1.0 V.
- The pit is to be developed in accordance with: Health, Safety and Reclamation Code for Mines in B.C., Reclamation and Environmental Protection Handbook for Sand, Gravel and Quarry Operations in B.C., Aggregate Operators Best Management Practices Handbook for B.C.
- For material extractions in excess of 1000 m^3, a Sand and Gravel/Quarry Operations Notice of Work form (H1258) must be sent to the Ministry of Energy and Mines 14 days prior to commencement of operations.
- The dumping of off-site soils, overburden or road building debris is not permitted.
- An H1263 Gravel/Aggregate Usage Report must be completed and submitted to the Aggregate Resource Manager for all pit run and crushed materials used or produced.

APPROVED USAGE

AREA	PIT RUN	SGSB	WGB (mm)			PAVING			BEF	WAB	HFSA
			25	50	75	MAM	CAM	SUPER			
A		✓	✓			✓			✓		
B		✓									

5670000 N 701400 E — 701500 E — 701600 E — 701700 E — 701800 E — 701900 E — 5669900 N 702000 E

KAMLOOPS DIVISION YALE LAND DISTRICT

PLAN B–4702

CNR

YELLOWHEAD SOUTH HIGHWAY No. 5

TO BARRIER

TO KAMLOOPS

AGATE BAY ROAD

BC HYDRO RIGHT OF WAY

OLD ROAD – PAVED

FRONTAGE ROAD

FILL AREA

SALT SHED

CSA

SCREENING PLANT

WASTE

AREA A

AREA B

LOT 8
DL 1310
(103.24 ha)

LOT 13
DL 1319

LOT A
PLAN
33616

LOT 7
DL
1319

DL
1320

TP18–01 TP18–02 TP18–03 TP18–04 TP18–05 TP18–06 TP18–07 TP18–08 TP18–09 TP18–10 TP18–11 TP18–12 TP18–13 TP18–14 TP18–15 TP18–16 TP18–17 TP18–18

PROPOSED NEW UPPER PIT ACCESS ROAD (APPROX. LOCATION)

MINE VERTICAL TO THE MoTI/SIMPCW COMMON PROPERTY BOUNDARY AS PER THE MoTI/SRG RESOURCE SHARE AGREEMENT

5669900 N — 5669800 N — 5669700 N — 5669600 N — 5669500 N — 702000 E

701300 E — 701400 E — 701500 E — 701600 E — 5665900 N — 701700 E — 701800 E — 701900 E

DRAFTING BY: Information Wranglers

SCALE: 0 1:2000 50

REV.	DATE	REVISIONS	INITIALS

BRITISH COLUMBIA — Ministry of Transportation and Infrastructure — Geotechnical and Materials Engineering

CAD FILE: PDP2866.DWG
PDF: PDP2866.PDF
NEGATIVE: -

DESIGNED: BJ DATE: 2019-02-23
DRAWN: IWTS DATE: 2019-02-23
CHECKED: BJ DATE: 2019-02-23

SOUTHERN INTERIOR REGION

AGATE BAY ROAD PIT No. 2866

PIT DEVELOPMENT PLAN

FILE No.	PROJECT No.	REG	DRAWING No.
15-50-2866	-		-

CANCEL PRINTS BEARING PREVIOUS LETTER

Test Pit Summaries

2018

PROJECT: Agate Bay Road Pit
PIT #: 2866
DISTRICT: Thompson Nicola

SAMPLED BY: Bryan James
METHOD: Excavator
DATE: October 14, 2018

TP	DEPTH		SAMPLE BAG No.	ESTIMATED MATERIAL DESCRIPTION	ESTIMATED GRADUATION			ESTIMATED ROCK 75mm				SAND TYPE	Laboratory Gradations
	FROM	TO			G	S	F	MAX SIZE	75mm-150mm	150mm-375mm	>375mm	F M C	
18-01	0.0	2.1		GM1	50	35	15	500	1	0	<1	FM	Fill
	2.1	5.0	252	GP	20	78	2	50	0	0	0	FM	SP (38.2%G, 61.4%S, 2.4%F
18-02	0.0	0.7		GP	50	48	2	150	5	0	0	M	
	0.7	3.1	288	GP	10	88	2	50	0	0	0	FM	SP (26.6%G, 71.2%S, 3.3%F
	3.1	4.0		GM3	10	60	30	25	0	0	0	F	
	4.0	5.0		GP	10	88	2	50	0	0	0	FM	
18-03	0.0	5.0	116	GP	55	43	2	150	2	0	0	FM	GP (55.6%G, 40.8%S, 3.7%F)
18-04	0.0	3.1	463	GP	30	68	2	150	<1	0	0	FM	SP (41.8%G, 57.6%S, 0.7%F)
	3.1	5.0		GM3	0	70	30	5	0	0	0	FM	Some intermixed pieces had high moisture content
18-05	0.0	5.0	38	GP	50	48	2	200	5	<1	0	FM	GP/SP (48.8%G, 48.0%S, 1.2%F)
18-06	0.0	4.8	508	GP	50	48	2	200	2	<1	0	FM	GP (54.1%G, 44.0%S, 1.9%F)
18-07	0.0	5.0	17A	GP	50	48	2	200	2	<1	0	FM	GP (53.6%G, 44.8%S, 1.7%F)
18-08	0.0	5.0	256	GP	25	73	2	75	0	0	0	FM	SP (34.6%G, 64.1%S, 1.4%F) Sand seams throughout
18-09	0.0	0.1		RAP									
	0.1	4.0	2	GP	25	73	2	150	<1	0	0	FM	SP (37.2%G, 61.7% S, 1.1%F)
	4.0	5.0		GP	5	93	2	50	0	0	0	FM	
18-10	0.0	4.5	253	GP	30	68	2	150	<1	0	0	FM	SP (46.0%G, 53.9%S, 1.1%F) Test Pit sluffing in
18-11	0.0	3.5	21	GP	30	68	2	200	2	<1	0	FM	SP (43.3%G, 54.9%S, 1.8%F) Minor fill at top of Test Pit
	3.5	5.0	79	GP	5	93	2	50	0	0	0	FM	SP (37.9%G, 58.6%S, 2.6%F)
18-12	0.0	2.5	11	GP	10	88	2	25	0	0	0	FM	SP (22.6%G, 74.3%S, 3.1%F) fine sand seams
	2.5	4.5		GP	2	96	2	12	0	0	0	FM	
18-13	0.0	3.2	218	GP	15	83	2	150	<1	0	0	FM	SP (28.1%G, 69.4%S, 1.6%F) Some sand seams
	3.2	5.0		GP	2	96	2	50	0	0	0	FM	
18-14	0.0	3.0	35	GP	15	83	2	250	<1	<1	0	FM	SP (33.2%G, 65.7%S, 1.1%F)
	3.0	4.5		GP	2	96	2	50	0	0	0	FM	
18-15	0.0	4.5	345	GP	15	83	2	75	0	0	0	FM	SP (35.7%G, 63.2%S, 1.1%F)
18-16	0.0	0.1		Asphalt									
	0.1	5.0	61	GP	15	83	2	75	0	0	0	FM	SP(26.2%G, 73.0%S, 0.8%F)
18-17	0.0	1.0		Fill									
	1.0	3.0		GP	45	53	2	150	<1	0	0	FM	Excavated into side of bank
18-18	0.0	4.0		GPGM	0	90	10		0	0	0	F	

2005

1 OF 2

AGGREGATE LOG

PROJECT: Tolko **SAMPLED BY:** AJ Mitchell

PIT #: **METHOD:** Hyundai 210 LC3

DISTRICT: Thompson **DATE:** 06-Jul-05

TH / TP	DEPTH		SAMPLE	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK 75mm				SAND TYPE	REMARKS
	FROM	TO	BAG No.		G	S	F	MAX SIZE	75mm 150mm	150mm 375mm	375mm	F M C	(PHOTOS)
05-1	0.0	3.0		GP	57	42	1	300	5	2	0	F M	
	3.0	6.0		SP	46	53	1	75	1	0	0	F M	
05-2	0.0	3.0		GP	57	42	1	300	5	2	0	F M	
	3.0	7.0	**52643**	**SP**	**46.8**	**51.1**	**2.1**	75	1	0	0	F M	Lab Sieve
05-3	0.0	3.5		GP	57	42	1	300	5	2	0	F M	
	3.5	7.0		SP	46	53	1	75	1	0	0	F M	
05-4	0.0	1.0		GP	63	36.0	1	300	5	1	0		Road bed material
	1.0	3.5		GP	57	42	1	300	5	2	0	F M	
	3.5	7.0	**52534**	**SP**	**31.0**	**67.3**	**1.7**	75	1	0	0	F M	Lab Sieve
05-5	0.0	6.5		GP	57	42	1	300	5	2	0	F M	
05-6	0.0	6.5	**52536**	**GP**	**53.1**	**45.1**	**1.8**	300	5	2	0	F M	Lab Sieve
05-7	0.0	7.0		GP	64	35	1	300	6	4	0	F M	
05-8	0.0	7.0		GP	61	38	1	300	5	2	0	F M	
05-9	0.0	7.0		SP	11	87	2	37.5	0	0	0	F M	
05-10	0.0	4.0		SP	9	89	2	37.5	0	0	0	F M	
													07-Jul-05
05-11	0.0	3.0		SP	7	90	3	37.5	0	0	0	F	
	3.0	6.0		ML	3	14	83		0	0	0	F	

2 OF 2

AGGREGATE LOG

PROJECT: Tolko **SAMPLED BY:** AJ Mitchell

PIT #: **METHOD:** Hyunai 210 LC3

DISTRICT: Thompson **DATE:** 07-Jul-05

TH / TP	DEPTH		SAMPLE	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK 75mm				SAND TYPE	REMARKS
	FROM	TO	BAG No.		G	S	F	MAX SIZE	75mm 150mm	150mm 375mm	375mm	F M C	(PHOTOS)
05-12	0.0	3.5		GP	58	41	1	300	6	2	0	M C	
	3.5	5.0	**52537**	**SP**	**40.9**	**57.8**	**1.3**	300	6	2	0	M	Lab Sieve
	5.0	7.0		SP	11	88	1	75	1	0	0	F M	
05-13	0	6.0		GP	58	41	1	300	6	2	0	M	Hole Sluffing badly
05-14	0.0	6.5	**52569**	**SP/SM**	**38.9**	**55.6**	**5.5**	75	0	0	0	F M	Lab Sieve
05-15	0.0	3.5		GP	62	37	1	300	4	1	0	M C	
	3.5	6.5		SP	11	87	2	75	0	0	0	F M	
05-16	0.0	2.0		GP	58	41	1	150	4	0	0	M	
	2.0	7.0		SP	10	88	2	75	0	0	0	F M	
05-17	0.0	2.0		GP	54	45	1	150	3	0	0	M	
	2.0	6.5		SP	10	88	2	75	0	0	0	F M	
05-18	0.0	7.0	**52600**	**GP**	**60.7**	**36.3**	**3.0**	375	5	3	1	M	Lab Sieve
05-19	0.0	3.5		GP	62	37	1	300	4	1	0	M	
	35.0	6.0		SP	11	87	2	75	0	0	0	F M	
05-20	0.0	7.0	**52330**	**GP**	**51.5**	**46.9**	**1.6**	375	6	3	1	M	Lab Sieve
05-21	0.0	2.0											Wood debris
	2.0	6.5		GP	63	36	1	300	4	2	0	M	
05-22	0.0	6.5	**51263**	**GP**	**58.2**	**39.2**	**2.6**	300	3	1	0	M	Lab Sieve
05-23	0.0	1.0											Wood debris
	1.0	2.0		GP	56	43	1	300	3	1	0	F M	
	2.0	6.5		ML	3	13	84		0	0	0	F	
05-24	0.0	7.0	**50809**	**GP/SP**	**48.4**	**49.7**	**1.9**	300	2	1	0	M	Lab Sieve
05-25	0.0	6.0		GP	64	35	1	375	6	2	1	M	

Wet Sieve Analysis

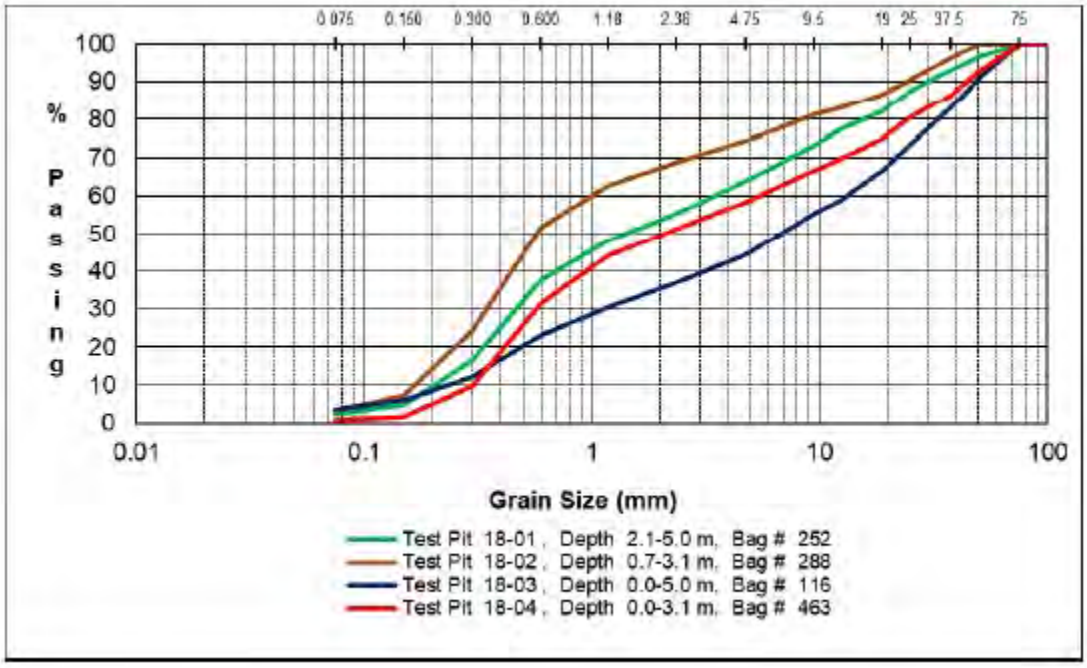
2018

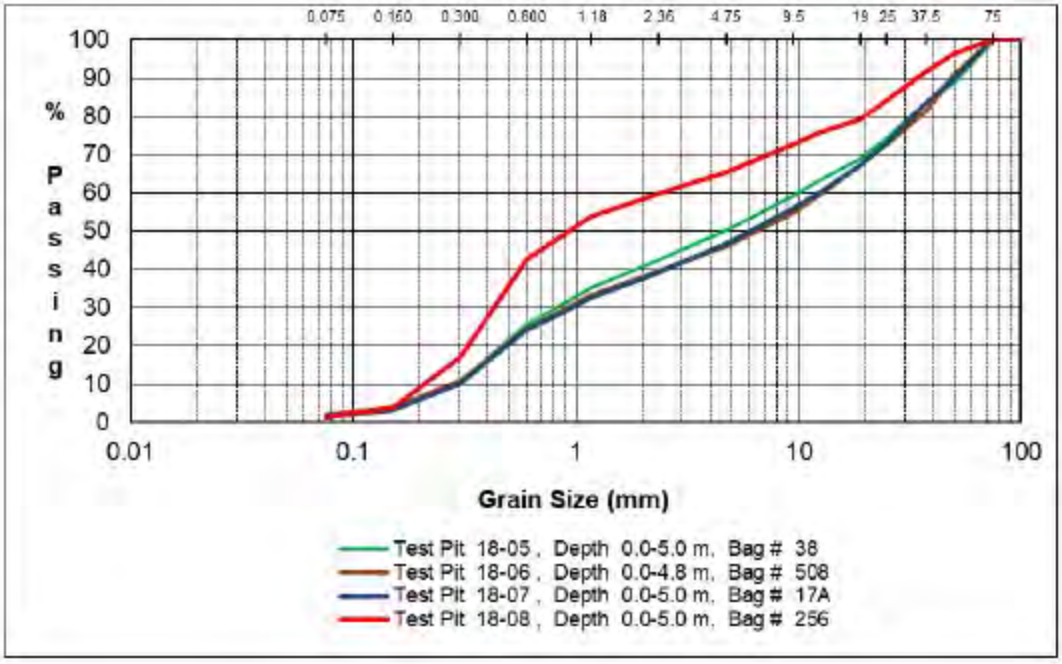
Sample Information			Percent Passing													
Test Pit	Depth (m)	Bag #	Pit Run Sieve Sizes (mm)													
			100	75	50	37.5	25	19	12.5	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.075
18-03	0.0-5.0	116	100.0	100.0	90.9	83.1	73.4	66.6	58.8	55.2	44.5	36.9	30.4	23.1	12.4	6.2	3.7
18-05	0.0-5.0	38	100.0	100.0	88.7	83.8	74.4	68.9	63.5	59.3	50.2	42.4	35.2	25.5	10.2	2.9	1.2
18-06	0.0-4.8	508	100.0	100.0	90.6	81.4	72.7	67.3	59.5	54.8	45.9	39.3	33.2	24.5	10.6	3.8	1.9
18-07	0.0-5.0	17A	100.0	100.0	89.8	83.6	72.8	67.3	60.2	55.9	46.5	39.1	32.7	24.0	10.0	3.3	1.7
	MAX		100.0	100.0	90.9	83.8	74.4	68.9	63.5	59.3	50.2	42.4	35.2	25.5	12.4	6.2	3.7
	MIN		100.0	100.0	88.7	81.4	72.7	66.6	58.8	54.8	44.5	36.9	30.4	23.1	10.0	2.9	1.2
AVERAGE			100.0	100.0	90.0	83.0	73.3	67.5	60.5	56.3	46.8	39.4	32.9	24.3	10.8	4.1	2.1

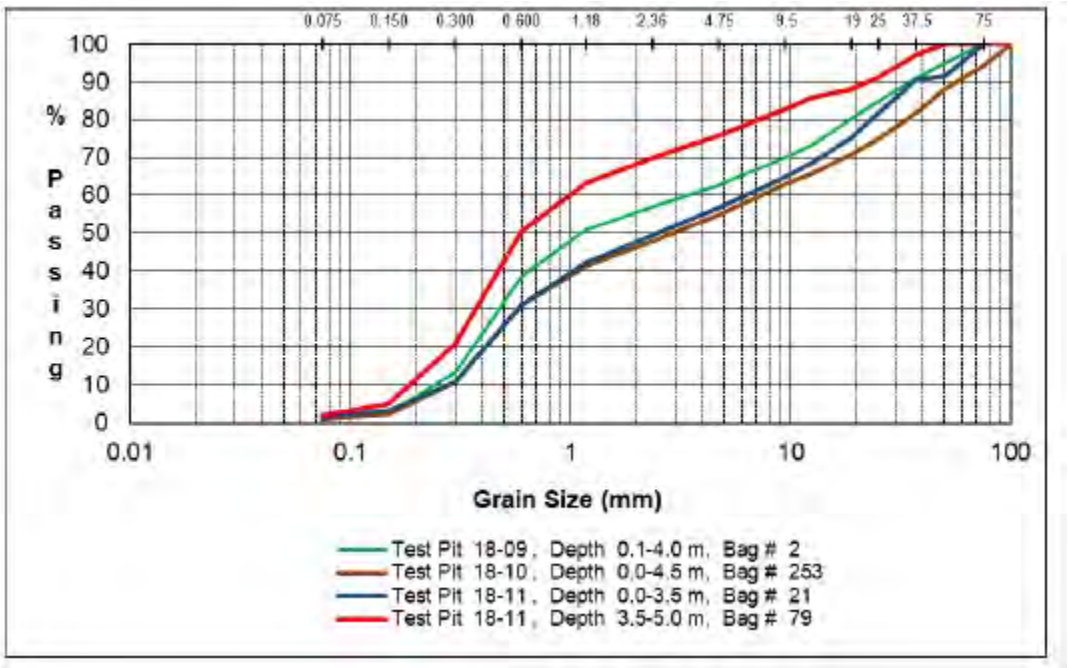
Sample Information			Percent Passing													
Test Pit	Depth (m)	Bag #	Pit Run Sieve Sizes (mm)													
			100	75	50	37.5	25	19	12.5	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.075
18-04	0.0-3.1	463	100.0	100.0	92.5	86.6	80.5	75.1	69.7	66.6	58.2	51.3	44.0	31.5	9.8	1.7	0.7
18-08	0.0-5.0	256	100.0	100.0	96.2	91.6	84.2	79.1	75.8	72.5	65.5	59.8	53.9	42.5	16.9	3.8	1.4
18-09	0.1-4.0	2	100.0	100.0	94.9	91.1	84.8	80.5	73.2	70.2	62.8	57.0	50.9	38.8	13.6	2.6	1.1
18-10	0.0-4.5	253	100.0	94.4	87.9	81.7	75.0	70.9	65.9	63.0	55.0	48.1	41.6	31.0	10.8	2.3	1.1
18-11	0.0-3.5	21	100.0	100.0	91.6	90.5	81.7	75.1	68.5	64.9	56.7	49.5	42.4	31.0	10.9	3.2	1.8
18-12	0.0-2.5	11	100.0	100.0	100.0	99.3	92.6	89.2	86.5	83.9	77.4	72.0	66.1	53.5	23.8	7.2	3.1
18-13	0.0-3.2	218	100.0	100.0	94.0	92.1	86.6	84.0	79.5	77.1	70.9	64.6	57.8	45.2	16.9	3.6	1.5
18-14	0.0-3.0	35	100.0	100.0	91.4	89.2	83.0	79.6	75.8	72.4	66.8	61.7	56.1	44.9	17.1	3.0	1.1
18-15	0.0-4.5	345	100.0	100.0	91.6	87.6	83.5	80.4	75.6	72.0	64.3	58.8	53.2	42.0	16.5	3.6	1.1
18-16	0.1-5.0	61	100.0	100.0	95.7	94.7	90.2	86.7	84.0	80.5	73.8	66.7	59.5	45.7	15.6	2.4	0.8
	MAX		100.0	100.0	100.0	99.3	92.6	89.2	86.5	83.9	77.4	72.0	66.1	53.5	23.8	7.2	3.1
	MIN		100.0	94.4	87.9	81.7	75.0	70.9	65.9	63.0	55.0	48.1	41.6	31.0	9.8	1.7	0.7
AVERAGE			100.0	99.4	93.6	90.4	84.2	80.1	75.5	72.3	65.1	59.0	52.6	40.6	15.2	3.3	1.4

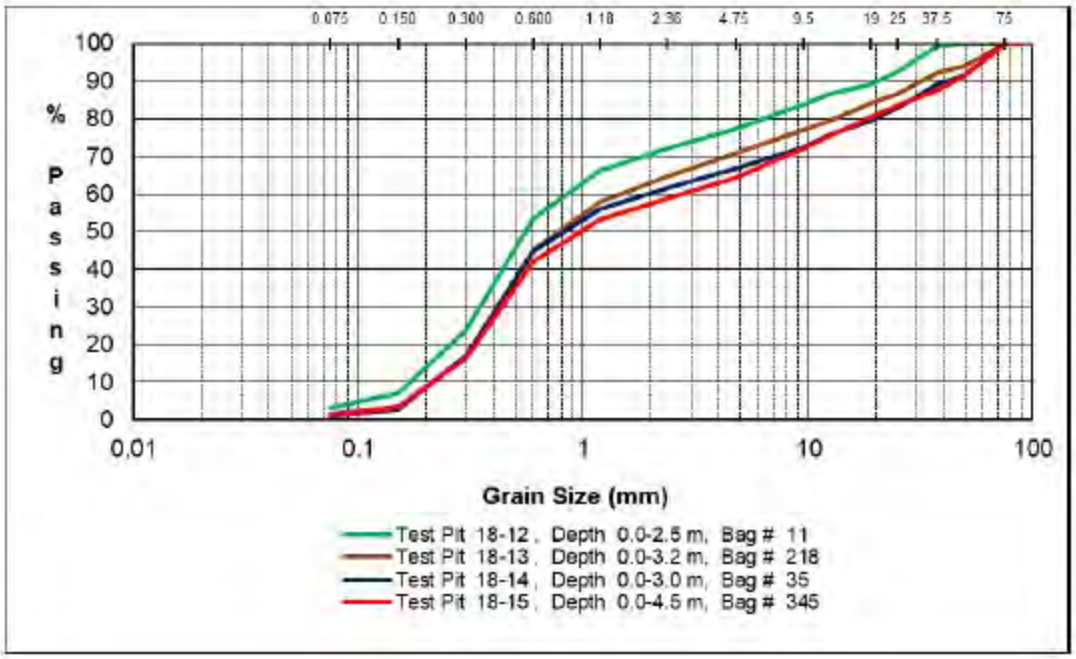
Aggregate Gradation Charts

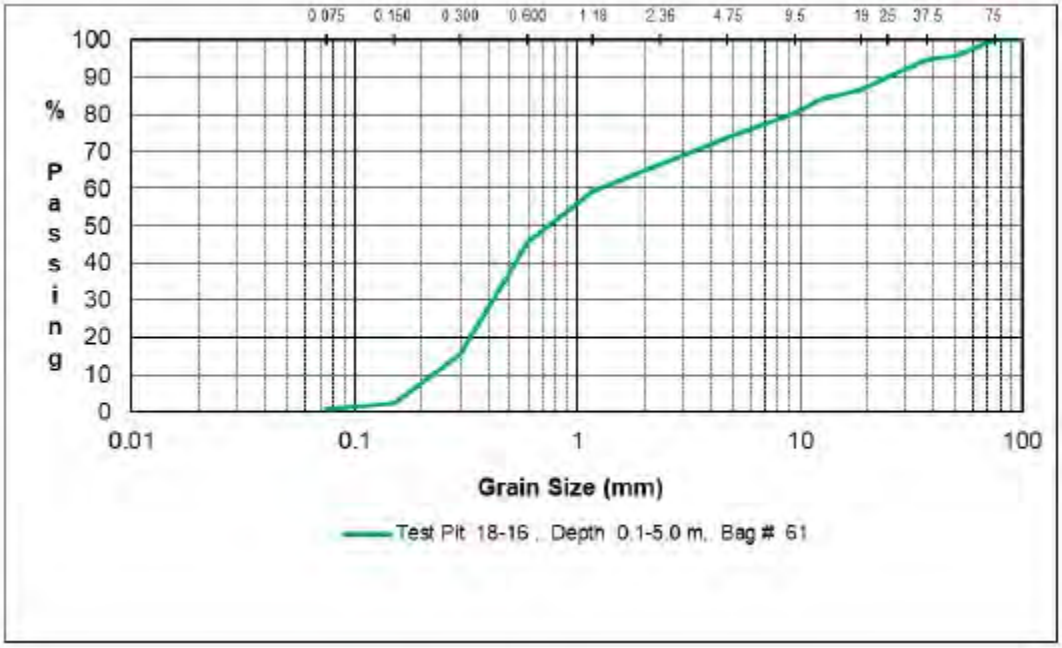
2018




0.075 0.150 0.300 0.600 1.18 2.36 4.75 9.5 19 25 37.5 75
100
90
80
70
60
50
40
30
20
10
0
% Passing
0.01 0.1 1 10 100
Grain Size (mm)
Test Pit 18-05, Depth 0.0-5.0 m, Bag # 38
Test Pit 18-06, Depth 0.0-4.8 m, Bag # 508
Test Pit 18-07, Depth 0.0-5.0 m, Bag # 17A
Test Pit 18-08, Depth 0.0-5.0 m, Bag # 256


0.075 0.150 0.300 0.600 1.18 2.36 4.75 9.5 19 25 37.5 75
100
90
80
70
60
50
40
30
20
10
0
% Passing
0.01 0.1 1 10 100
Grain Size (mm)
Test Pit 18-09, Depth 0.1-4.0 m, Bag # 2
Test Pit 18-10, Depth 0.0-4.5 m, Bag # 253
Test Pit 18-11, Depth 0.0-3.5 m, Bag # 21
Test Pit 18-11, Depth 3.5-5.0 m, Bag # 79


0.075 0.150 0.300 0.600 1.18 2.36 4.75 9.5 19 25 37.5 75
100 90 80 70 60 50 40 30 20 10 0
% Passing
0.01 0.1 1 10 100
Grain Size (mm)
Test Pit 18-12, Depth 0.0-2.5 m, Bag # 11
Test Pit 18-13, Depth 0.0-3.2 m, Bag # 218
Test Pit 18-14, Depth 0.0-3.0 m, Bag # 35
Test Pit 18-15, Depth 0.0-4.5 m, Bag # 345


0.075 0.150 0.300 0.600 1.18 2.36 4.75 9.5 19 25 37.5 75
100 90 80 70 60 50 40 30 20 10 0
% Passing
0.01 0.1 1 10 100
Grain Size (mm)
Test Pit 18-16, Depth 0.1-5.0 m, Bag # 61

2005

SIEVE ANALYSIS REPORT

Ministry of Transportation
441 Columbia Street
Kamloops, BC
V2C 2TC

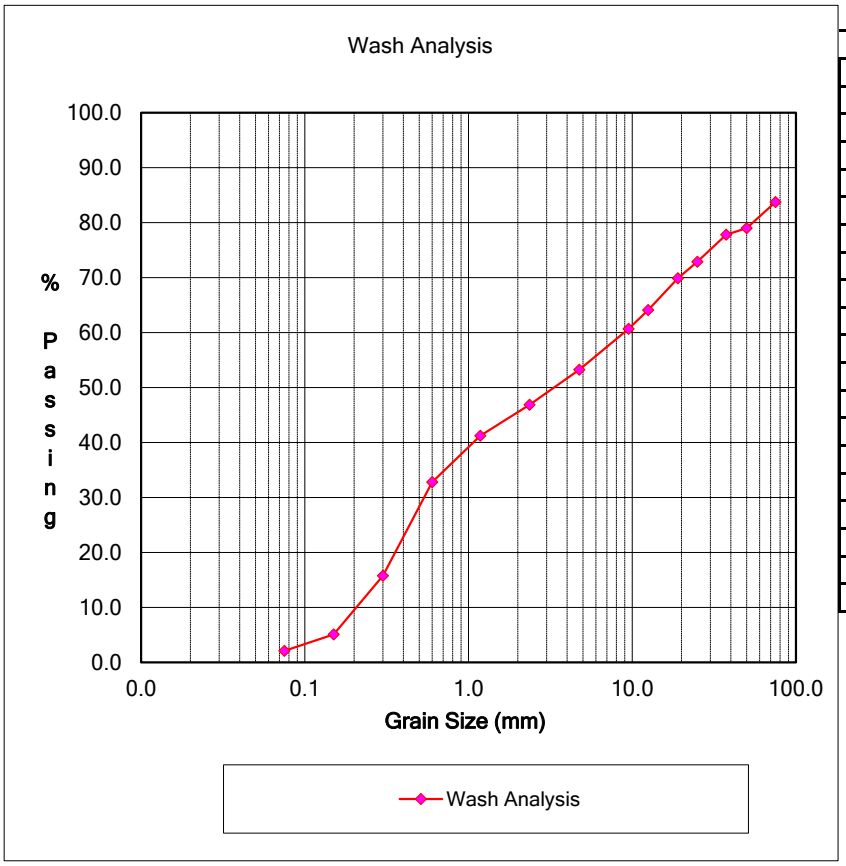
Project No: KX12957-200
Date: July 19, 2005
Client P.O.:
CC:

Attn : Mr. Bryan James

Project Name:

Test No.: 05-104-09 Source: Tolko Pit TP05-2 @ 3-7m Sample Type: Pit Run

Date Sampled: July 7, 2005 By: Client Date Tested: July 12, 2005



Aggregate Wash Sieve Analysis

Wash Analysis

Sieve Size	Percent Ret.	Percent Pass	Limits Upper	Limits Lower
75.0	16.3	83.7		
50.0	4.8	79.0		
37.5	1.2	77.8		
25.0	4.9	72.9		
19.0	3.0	69.9		
12.5	5.8	64.1		
9.5	3.4	60.7		
4.75	7.4	53.2		
2.36	6.4	46.9		
1.18	5.6	41.2		
0.600	8.4	32.8		
0.300	17.0	15.8		
0.150	10.7	5.1		
0.075	3.0	2.1		
PAN	2.1			

Sieve Mass (g): 7554.8

MoT Bag : 52643 = 15.2 Kg

AMEC Earth & Environmental

Per: B.Jackman, C.Tech

SIEVE ANALYSIS REPORT

Ministry of Transportation
441 Columbia Street
Kamloops, BC
V2C 2TC

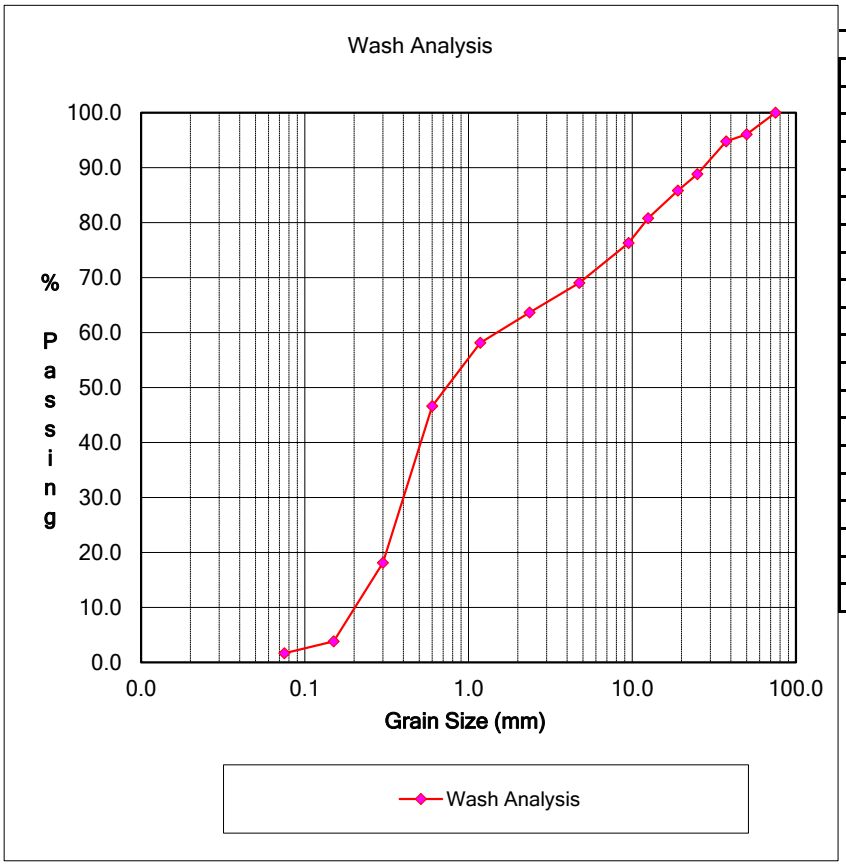
Project No: KX12957-200
Date: July 12, 2005
Client P.O.:
CC:

Attn : Mr. Bryan James

Project Name:

Test No.: 05-104-03 Source: Tolko Pit TP05-4 @ 3.5-7m Sample Type: Pit Run

Date Sampled: July 6, 2005 By: Client Date Tested: July 11, 2005



Aggregate Wash Sieve Analysis

Wash Analysis

Sieve Size	Percent Ret.	Percent Pass	Limits Upper	Limits Lower
75.0	0.0	100.0		
50.0	3.9	96.1		
37.5	1.3	94.8		
25.0	6.0	88.8		
19.0	3.0	85.8		
12.5	5.0	80.8		
9.5	4.5	76.3		
4.75	7.3	69.0		
2.36	5.4	63.6		
1.18	5.5	58.1		
0.600	11.5	46.6		
0.300	28.5	18.1		
0.150	14.3	3.8		
0.075	2.2	1.7		
PAN	1.7			

Sieve Mass (g): 19108.5

MoT Bag : 52334 = 19.6 Kg

AMEC Earth & Environmental

Per: B.Jackman, C.Tech

SIEVE ANALYSIS REPORT

Ministry of Transportation
441 Columbia Street
Kamloops, BC
V2C 2TC

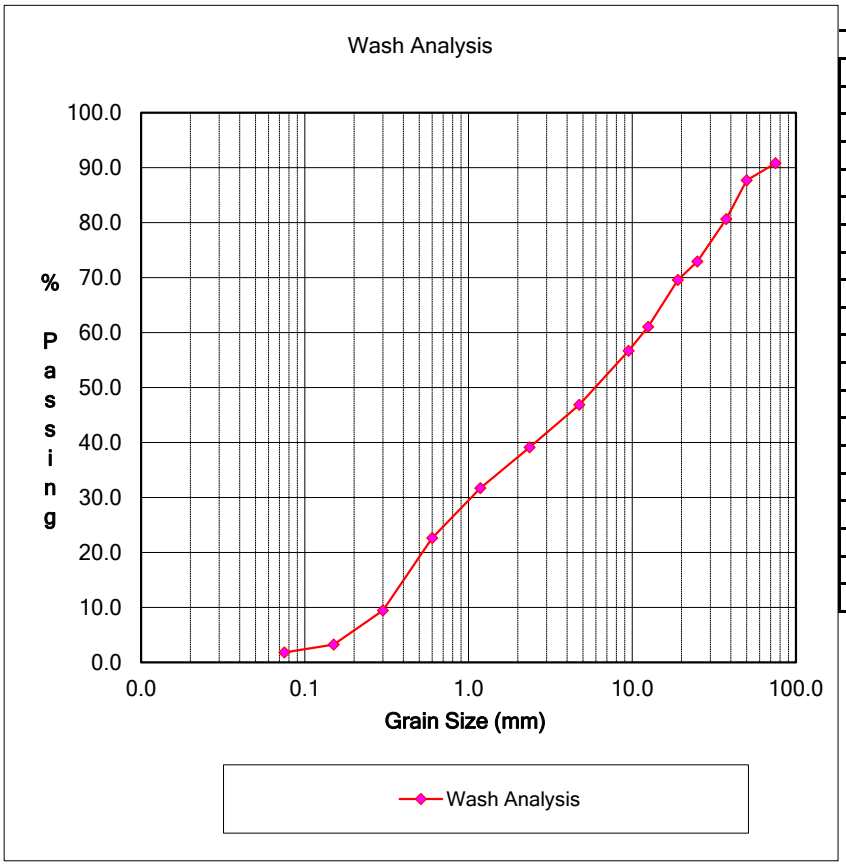
Project No: KX12957-200
Date: July 12, 2005
Client P.O.:
CC:

Attn : Mr. Bryan James

Project Name:

Test No.: 05-104-02 Source: Tolko Pit TP05-6 @ 0-6.5m Sample Type: Pit Run

Date Sampled: July 6, 2005 By: Client Date Tested: July 12, 2005



Aggregate Wash Sieve Analysis

Wash Analysis

Sieve Size	Percent Ret.	Percent Pass	Limits Upper	Limits Lower
75.0	9.2	90.8		
50.0	3.1	87.7		
37.5	7.1	80.6		
25.0	7.7	72.9		
19.0	3.4	69.6		
12.5	8.5	61.0		
9.5	4.4	56.7		
4.75	9.8	46.9		
2.36	7.7	39.1		
1.18	7.4	31.7		
0.600	9.1	22.6		
0.300	13.2	9.5		
0.150	6.2	3.2		
0.075	1.4	1.8		
PAN	1.8			

Sieve Mass (g): 18653.6

MoT Bag : 52536 = 19.2 Kg

AMEC Earth & Environmental

Per: B.Jackman, C.Tech

SIEVE ANALYSIS REPORT

Ministry of Transportation
441 Columbia Street
Kamloops, BC
V2C 2TC

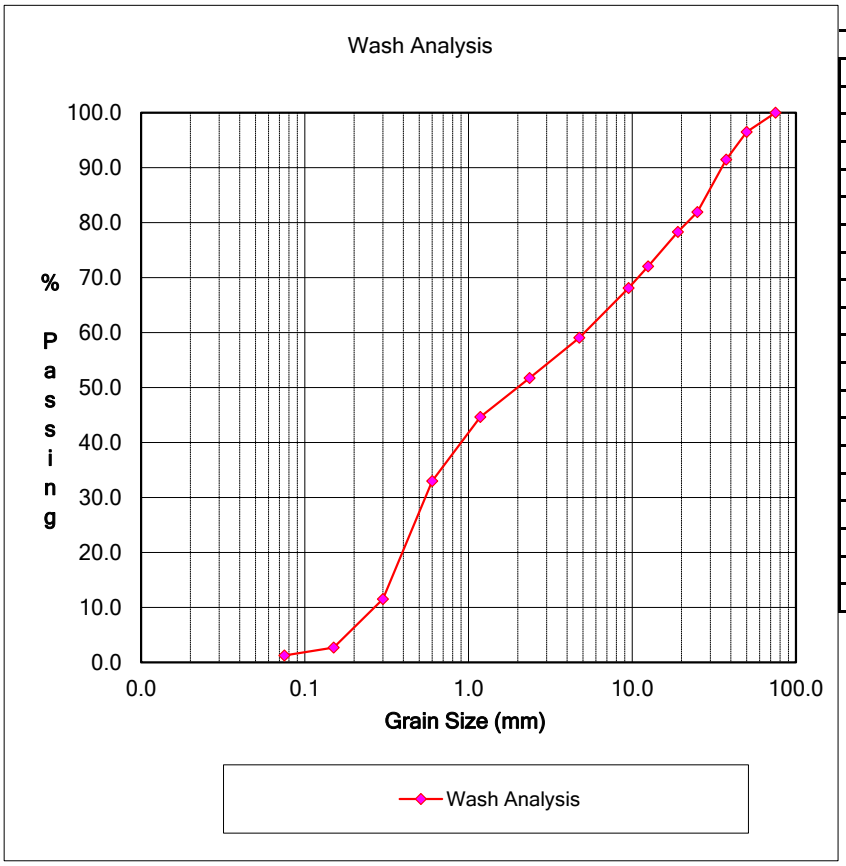
Project No: KX12957-200
Date: July 19, 2005
Client P.O.:
CC:

Attn : Mr. Bryan James

Project Name:

Test No.: 05-104-05 Source: Tolko Pit TP05-12 @ 3.5-5m Sample Type: Pit Run

Date Sampled: July 7, 2005 By: Client Date Tested: July 11, 2005



Aggregate Wash Sieve Analysis

Wash Analysis

Sieve Size	Percent Ret.	Percent Pass	Limits Upper	Limits Lower
75.0	0.0	100.0		
50.0	3.5	96.5		
37.5	5.0	91.5		
25.0	9.5	81.9		
19.0	3.6	78.3		
12.5	6.3	72.1		
9.5	4.0	68.1		
4.75	9.0	59.1		
2.36	7.3	51.7		
1.18	7.1	44.6		
0.600	11.7	33.0		
0.300	21.5	11.5		
0.150	8.8	2.7		
0.075	1.4	1.3		
PAN	1.3			

Sieve Mass (g): 17229.9

MoT Bag : 52537 = 17.8 Kg

AMEC Earth & Environmental

Per: B.Jackman, C.Tech

SIEVE ANALYSIS REPORT

Ministry of Transportation
441 Columbia Street
Kamloops, BC
V2C 2TC

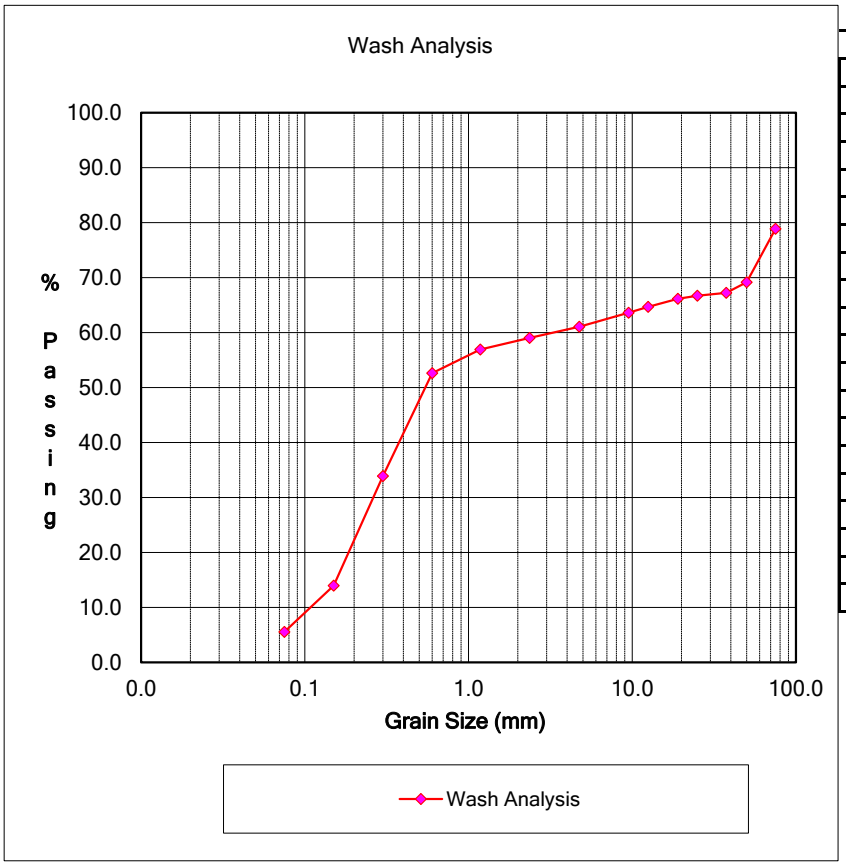
Project No: KX12957-200
Date: July 19, 2005
Client P.O.:
CC:

Attn : Mr. Bryan James

Project Name:

Test No.: 05-104-08 Source: Tolko Pit TP05-14 @ 0-6.5m Sample Type: Pit Run

Date Sampled: July 7, 2005 By: Client Date Tested: July 12, 2005



Aggregate Wash Sieve Analysis

Wash Analysis

Sieve Size	Percent Ret.	Percent Pass	Limits Upper	Limits Lower
75.0	21.1	78.9		
50.0	9.7	69.2		
37.5	1.9	67.2		
25.0	0.5	66.7		
19.0	0.6	66.1		
12.5	1.5	64.7		
9.5	1.1	63.6		
4.75	2.5	61.1		
2.36	2.0	59.0		
1.18	2.1	56.9		
0.600	4.3	52.6		
0.300	18.7	33.9		
0.150	19.9	14.0		
0.075	8.4	5.5		
PAN	5.5			

Sieve Mass (g): 8319.0

MoT Bag : 52569 = 14.6 Kg

AMEC Earth & Environmental

Per: B.Jackman, C.Tech

SIEVE ANALYSIS REPORT

Ministry of Transportation
441 Columbia Street
Kamloops, BC
V2C 2TC

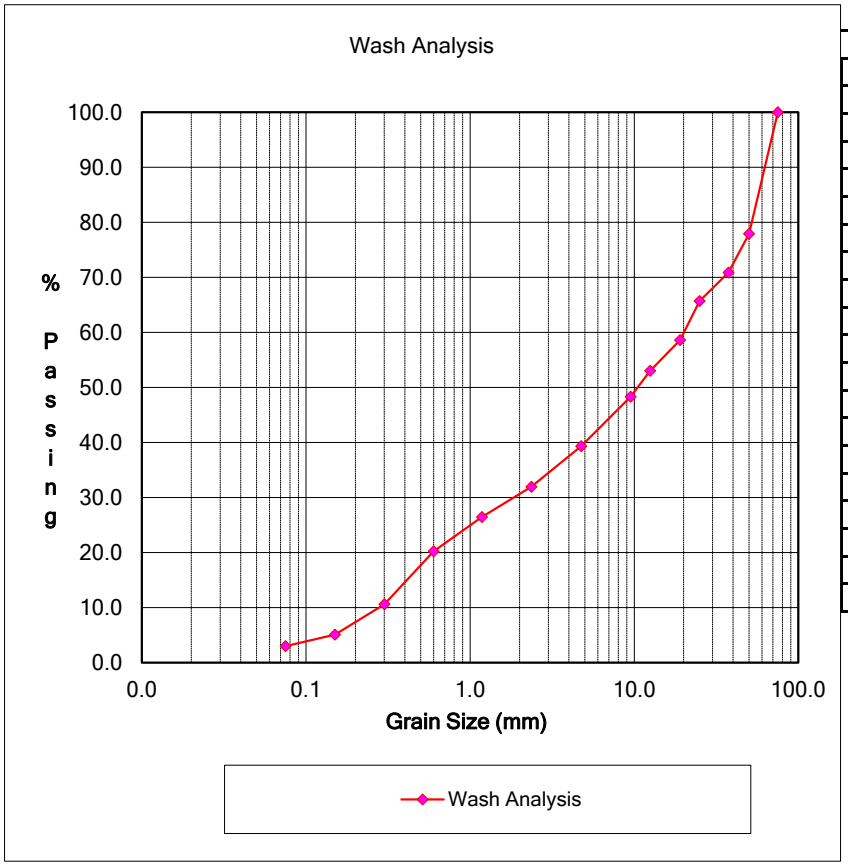
Project No: KX12957-200
Date: July 12, 2005
Client P.O.:
CC:

Attn : Mr. Bryan James

Project Name:

Test No.: 05-104-01 Source: Tolko Pit - TP05-18 @ 0-7m Sample Type: Pit Run

Date Sampled: July 7, 2005 By: Client Date Tested: July 12, 2005



Aggregate Wash Sieve Analysis

Wash Analysis

Sieve Size	Percent Ret.	Percent Pass	Limits Upper	Limits Lower
75.0	0.0	100.0		
50.0	22.1	77.9		
37.5	7.1	70.9		
25.0	5.2	65.7		
19.0	7.1	58.6		
12.5	5.6	53.0		
9.5	4.7	48.3		
4.75	9.0	39.3		
2.36	7.4	32.0		
1.18	5.5	26.5		
0.600	6.2	20.2		
0.300	9.6	10.6		
0.150	5.5	5.1		
0.075	2.1	3.0		
PAN	3.0			

Sieve Mass (g): 18510.2

MoT Bag : 52600 = 19.0 Kg

AMEC Earth & Environmental

Per: B.Jackman, C.Tech

SIEVE ANALYSIS REPORT

Ministry of Transportation
441 Columbia Street
Kamloops, BC
V2C 2TC

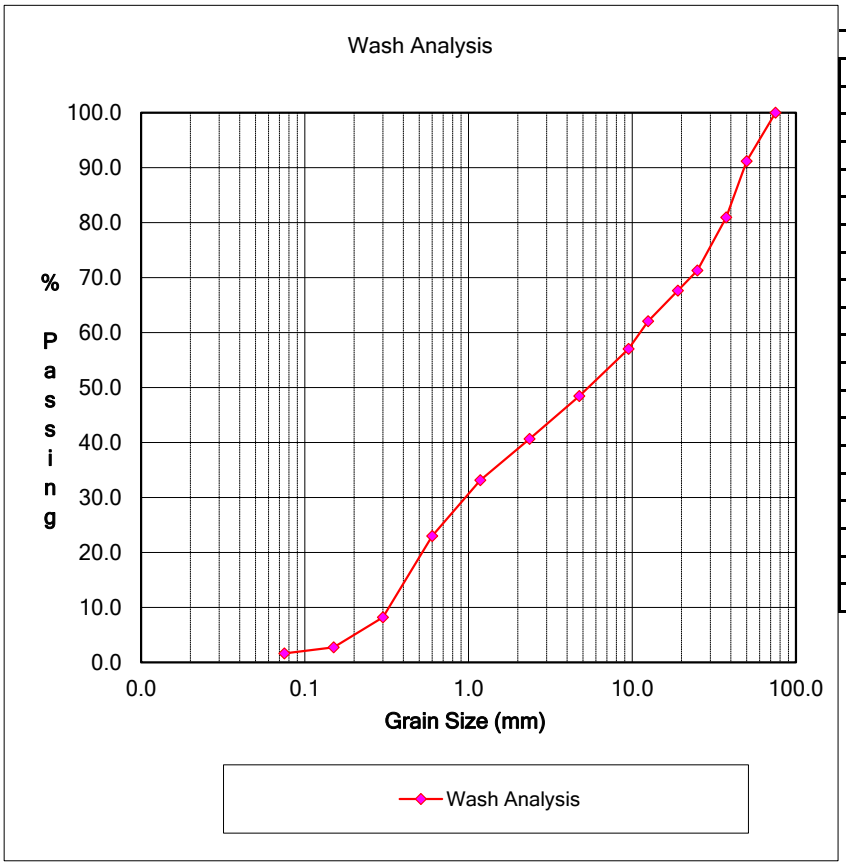
Project No: KX12957-200
Date: July 19, 2005
Client P.O.:
CC:

Attn : Mr. Bryan James

Project Name:

Test No.: 05-104-07 Source: Tolko Pit TP05-20 @ 0-7m Sample Type: Pit Run

Date Sampled: July 7, 2005 By: Client Date Tested: July 11, 2005



Aggregate Wash Sieve Analysis

Wash Analysis

Sieve Size	Percent Ret.	Percent Pass	Limits Upper	Limits Lower
75.0	0.0	100.0		
50.0	8.8	91.2		
37.5	10.2	81.0		
25.0	9.7	71.3		
19.0	3.7	67.6		
12.5	5.6	62.1		
9.5	5.0	57.0		
4.75	8.6	48.5		
2.36	7.8	40.7		
1.18	7.5	33.1		
0.600	10.2	23.0		
0.300	14.8	8.2		
0.150	5.5	2.7		
0.075	1.1	1.6		
PAN	1.6			

Sieve Mass (g): 9067.1

MoT Bag : 52330 = 20.2 Kg

AMEC Earth & Environmental

Per: B.Jackman, C.Tech

SIEVE ANALYSIS REPORT

Ministry of Transportation
441 Columbia Street
Kamloops, BC
V2C 2TC

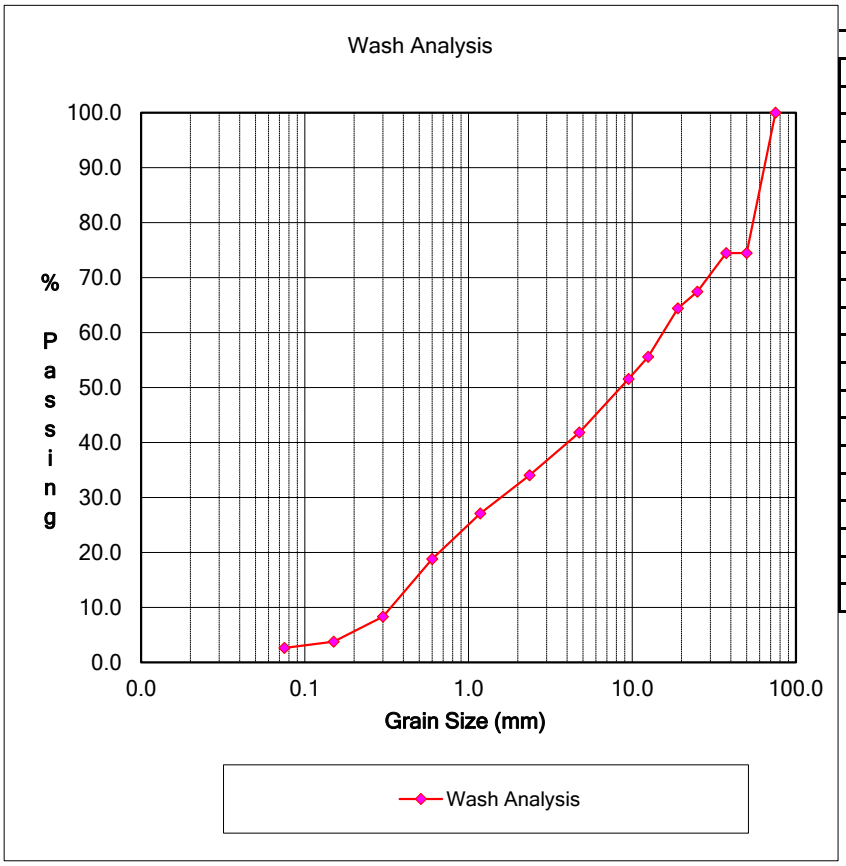
Project No: KX12957-200
Date: July 19, 2005
Client P.O.:
CC:

Attn : Mr. Bryan James

Project Name:

Test No.: 05-104-10 Source: Tolko Pit TP05-22 @ 0-6.5m Sample Type: Pit Run

Date Sampled: July 7, 2005 By: Client Date Tested: July 12, 2005



Aggregate Wash Sieve Analysis

Wash Analysis

Sieve Size	Percent Ret.	Percent Pass	Limits Upper	Limits Lower
75.0	0.0	100.0		
50.0	25.5	74.5		
37.5	0.0	74.5		
25.0	7.0	67.4		
19.0	3.0	64.4		
12.5	8.8	55.6		
9.5	4.0	51.6		
4.75	9.7	41.8		
2.36	7.8	34.0		
1.18	6.9	27.1		
0.600	8.3	18.8		
0.300	10.5	8.3		
0.150	4.5	3.8		
0.075	1.1	2.6		
PAN	2.6			

Sieve Mass (g): 8078.9

MoT Bag : 52636 = 16.8 Kg

AMEC Earth & Environmental

Per: B.Jackman, C.Tech

SIEVE ANALYSIS REPORT

Ministry of Transportation
441 Columbia Street
Kamloops, BC
V2C 2TC

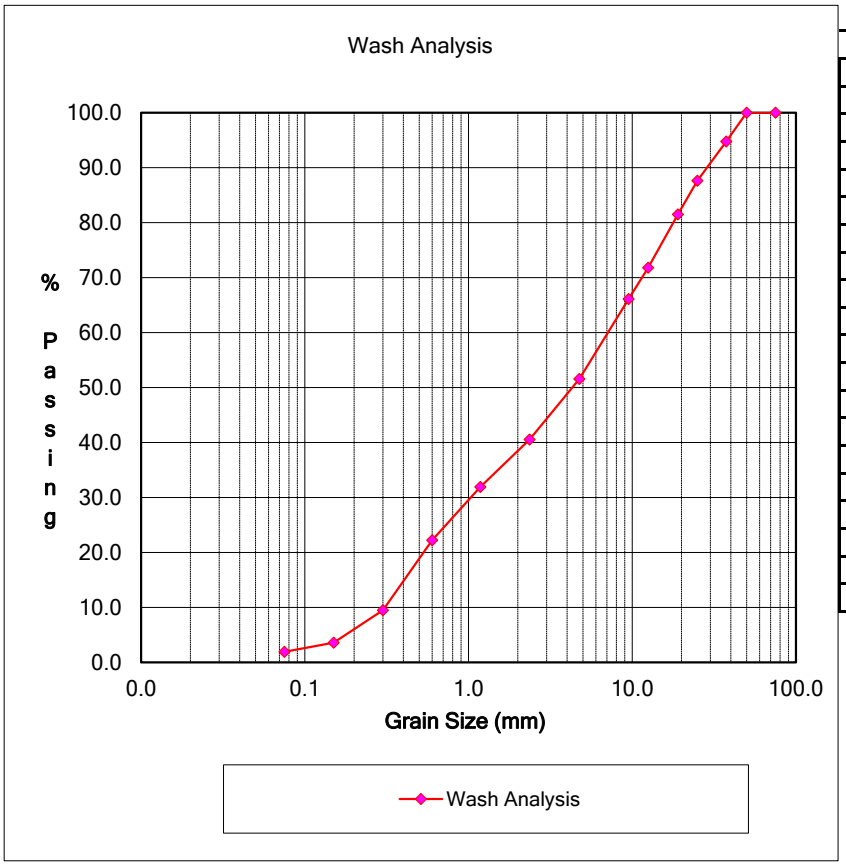
Project No: KX12957-200
Date: July 19, 2005
Client P.O.:
CC:

Attn : Mr. Bryan James

Project Name:

Test No.: 05-104-04 Source: Tolko Pit TP05-24 @ 0-7m Sample Type: Pit Run

Date Sampled: July 7, 2005 By: Client Date Tested: July 11, 2005



Aggregate Wash Sieve Analysis

Wash Analysis

Sieve Size	Percent Ret.	Percent Pass	Limits Upper	Limits Lower
75.0	0.0	100.0		
50.0	0.0	100.0		
37.5	5.2	94.8		
25.0	7.1	87.6		
19.0	6.1	81.5		
12.5	9.7	71.8		
9.5	5.7	66.1		
4.75	14.5	51.6		
2.36	11.0	40.5		
1.18	8.6	31.9		
0.600	9.7	22.2		
0.300	12.7	9.5		
0.150	5.9	3.6		
0.075	1.7	1.9		
PAN	1.9			

Sieve Mass (g): 12754.1

MoT Bag : 50809 = 14.6 Kg

AMEC Earth & Environmental

Per: B.Jackman, C.Tech

USC Legend

MATERIALS CLASSIFICATION LEGEND

MAJOR DIVISIONS		SYMBOL	SOIL TYPE
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	WELL GRADED GRAVELS OR GRAVEL–SAND MIXTURES, < 5% FINES
		GP	POORLY–GRADED GRAVELS OR GRAVEL–SAND MIXTURES, < 5% FINES
		GM*	SILTY GRAVELS, GRAVEL–SAND–SILT MIXTURES
		GC*	CLAYEY GRAVELS, GRAVEL–SAND–CLAY MIXTURES
	SAND AND SANDY SOILS	SW	WELL–GRADED SANDS OR GRAVELLY SANDS, < 5% FINES
		SP	POORLY–GRADED SANDS OR GRAVELLY SANDS, < 5% FINES
		SM*	SILTY SANDS SAND–SILT MIXTURES
		SC*	CLAYEY SANDS SAND–CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS w_L <50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		OL	ORGANIC SILTS AND ORGANIC SILT–CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS w_L >50	MH	INORGANIC SILTS, MICACEOUS OR DIATOM–ACEOUS FINE SANDY OR SILTY SOILS, PLASTIC SILTS
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
		OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
ORGANIC SOILS		Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS
TOPSOIL		TS	TOPSOIL WITH ROOTS, ETC.
COBBLES		SB	ROCK FRAGMENTS AND COBBLES, PARTICLE SIZE 75mm TO 300mm
LARGE BOULDERS		LB	BOULDERS, PARTICLE SIZE OVER 300mm
BEDROCK		BR	BEDROCK

FOR SOILS HAVING 5 – 12% PASSING .075 SIEVE, USE DUAL SYMBOL

*GM1; GC1; SM1; SC1; 12 – 20%
GM2; GC2; SM2; SC2; 20 – 30%
GM3; GC3; SM3; SC3; 30 – 40%
GM4; GC4; SM4; SC4; 40 – 50%

} PASSING .075mm SIEVE

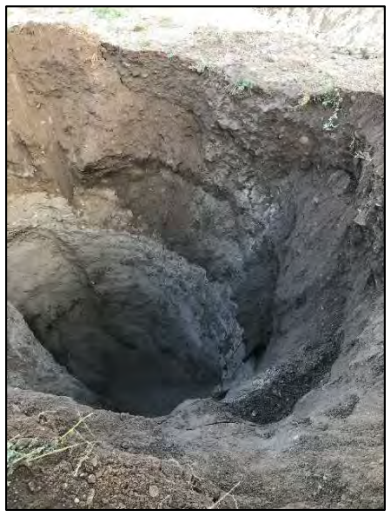
REV. 90–04–26

PROVINCE of BRITISH COLUMBIA
MINISTRY OF TRANSPORTATION & HIGHWAYS
Geotechnical & Materials Engineering

UNIFIED SOIL CLASSIFICATION LEGEND

Drawn: LU	Date: JULY'97	Scale:
File No.:		ACAD File: ACADSTDS C:\ACADSTDS\SOIL-APP

Photos



Test Pit 18-01 (fill overlying sand at 2.1metres)

Test Pit 18-01 Spoil (0.0 to 2.1 metres)

Test Pit 18-01 Spoil (2.1 to 5.0 metres)

Test Pit 18-02 (medium to fine sand to 5.0 metres)

Test Pit 18-02 Spoil (SM^3 between shovel and stake)

Test Pit 18-03 (coarse gravel to 5.0 metres)

Test Pit 18-03 Spoil (0.0 to 5.0 metres)


Test Pit 18-04 (sand underlain by SM^3 at 3.1 metres)

Test Pit 18-04 Spoil (0.0 to 3.1 metres)

Test Pit 18-05 (gravel to 5.0 metres)

Test Pit 18-05 Spoil

Test Pit 18-06 (gravel to 4.8 metres)

Test Pit 18-06 Spoil (0.0 to 4.8 metres)


Test Pit 18-07 (gravel to 5.0 metres)

Test Pit 18-07 Spoil (0.0 to 5.0 metres)

Test Pit 18-08 Spoil (0.0 to 5.0 metres)

Test Pit 18-09 Spoil (0.1 to 4.0 metres)


Test Pit 18-10 (sand to 4.5 metres)

Test Pit 18-10 Spoil (0.0 to 4.5 metres)


Test Pit 18-11 (sandy gravel underlain by sand at 3.5 metres, minor fill at top of photo)

Test Pit 18-11 Spoil (sandy gravel to 3.5 metres)

Test Pit 18-11 Spoil (sand from 3.5 to 5.0 metres)


Test Pit 18-12 (sand to 4.5 metres)

Test Pit 18-12 Spoil (0.0 to 2.5 metres)

Test Pit 18-13 (Sand underlain by fine sand at 3.2 metres)

Test Pit 18-13 Spoil (3.2 to 5.0 metres)

Test Pit 18-14 (sand underlain by fine sand at 3.0 metres)

Test Pit 18-14 Spoil (0.0 to 3.0 metres)


Test Pit 18-14 Spoil (3.0 to 5.0 metres)


Test Pit 18-15 (sand to 4.5 metres)

Test Pit 18-15 Spoil (0.0-4.5 metres)


TP 18-16 (sand 0.1 to 5.0 metres)

Test Pit 18-16 Spoil (0.1 to 5.0 metres)

Test Pit 18-17 (fill overlaying gravel at 1.0 metres)

Test Pit 18-18 Spoil (fine sands to 4.0 metres)

Test Pit 18-07 (Area A crusher location to the left of photo)

Area B (potential screening plant location)

Technical Summary

August 2023

Pit Name: Larsen Hill

Provincial Pit Number: 0284

Location: The pit is located approximately 5km north of McClure Ferry Road on the east side of Highway 5. (Figure 1).

Legal Land Description: The pit is legally described as District Lot 3900, KDYD except part of Plan A852. The pit is covered by a Crown Land Act Section 16 Map Reserve in the name of the Ministry of Transportation and Infrastructure. The Map Reserve is 56.788 hectares in size. The geographical coordinates are Universal Transverse Mercator Grid Zone 10, 695946 Easting, 5661598 Northing. The layout of the Map Reserve boundary is shown in the pit plan (Figure 2).

Subsurface Investigation: Subsurface investigations at Larsen Hill Pit were carried out in August 2015 and 1998 by the Ministry of Transportation & Infrastructure.

In 2015 twenty-seven (27) test pits were excavated to depths ranging from 1.6m to 4.8m and in 1998, eleven (11) test pits were excavated to depths ranging from 1.2 to 6.0m. During the test pitting, subsurface soil and groundwater conditions were logged and representative samples of the granular materials were collected for laboratory testing and future reference. Laboratory testing was carried out on eight (8) of these samples at Wood PLC laboratories to assess the gradation and durability characteristics. The tests completed were wet sieve analysis, micro-deval, sand equivalent, relative density, and absorption.

Based on the results of the 2015 and 1998 investigations, a suitable granular area for mining has been defined (Figure 3). The detailed results of the subsurface testing are provided in the Test Pit Summaries and test pit locations are shown on the Pit Plan (Figure 3).

Material Gradation: Table 1 shows the gradation as a percentage by weight of the fines (silts and clays), sand and gravel components as well as the Unified Soil Classification (USC [included after test pit summary]) for the samples tested from 2015 and 1998.

Table 1: Pit Run Gradation

Test Pit	Depth (m)	Fines (%)* <0.075mm	Sand (%)* 0.075-4.75mm	Gravel (%)* 4.75-75mm	USC
1998					
TP98-01	0.3-2	1.7	48.3	49.9	GP
TP98-02	0.3-6	6.9	7.8	85.3	GP-GM
TP98-03	0.2-6	n/a	n/a	n/a	n/a
TP98-04	0.3-5.5	2.4	11.3	86.4	GW
TP98-05	0.3-5.5	1.9	12.5	85.6	GW
TP98-06	0.3-5.5	2.5	43.9	53.6	GP
TP98-07	4.2-5.5	1.7	96.3	2.1	SP
TP98-08	0-4.5	0.6	32.1	67.3	GW
TP98-09	0.2-1.8	21.1	78.8	0.2	SM2
TP98-10	3-5.5	0.8	45.2	54	GP
TP98-11	2-5	1.7	49.9	48.5	SP
Average		4.1	42.6	53.3	GP
2015					
TP15-02	0.1-4	2.7	8.9	88.4	GW
TP15-05	0-2.8	0.7	62.8	36.5	SP
TP15-07	0-3	0.9	52.4	46.7	SP
TP15-10	0.3-4	0.9	52.6	46.5	SP
TP15-13	1.5-3.8	1.7	37	61.3	GP
TP15-15	1.5-3.2	0.7	77.8	21.5	SP
TP15-16	0.4-1.2	2.6	64.9	32.5	SP
TP15-19	0.8-3.8	1.7	26.8	71.5	GW
Average		0.7	54.7	44	SP

Oversize Field Estimates: Table 2 shows the estimated percent of oversize rock as noted in the field during exploration.

Table 2: Oversize Field Estimates

2015

Classification:	Average (%)	Range (%)
Boulders (>375mm)	1	0-2
Cobbles (150-375mm)	5.4	1-20
Cobbles (75-150mm)	1.2	1-15

Maximum rock size observed was 500mm.

1998

Classification:	Average (%)	Range (%)
Boulders (>375mm)	2.5	0-10
Cobbles (150-375mm)	8.2	1-15
Cobbles (75-150mm)	10.8	3 – 15

Maximum rock size observed was 800mm.

Material Durability: Table 3 shows the results of the durability tests as well as the specifications as required in the Standard Specifications for Highway Construction.

Table 3: Durability Test Results

Test Pit	Sand Equivalent	Micro Deval (% loss)	Absorption		Relative Density	
			Coarse	Fine	Coarse	Fine
2015						
TP15-02		7.0/17.3				
TP15-07			0.82	1.41	2.803	2.672
TP15-13		5.8/17.3				
TP15-16			1.11	1.48	2.748	2.649
BC MoTI Specifications						
Sand Equivalent	≥40 for base coarse and fine asphalt mix aggregate ≥20 for surfacing, sub-base and bridge end fill aggregates					
Micro Deval	≤30% for sub-base and bridge end fill aggregates ≤25% for surfacing & base course aggregates ≤18% for Class 1 Pavement asphalt mix aggregates ≤20% for Class 2 Pavement asphalt mix aggregates					
Absorption	<2.0% for coarse paving aggregates ≤1.0% for coarse and ≤1.5% for fine graded aggregate seals					
Relative Density	~2.65 for all aggregate products					

Material Suitability: Based on the 2015 investigation results, the material in the proposed suitability area is judged to be suitable for the following purposes:

Table 4: Suitability

	Pit Run	Crush
Larsen Hill Suitability area	Bridge End Fill SGSB Winter Abrasive	25-50mm WGB Asphalt Mix Aggregates

The samples tested meet the gradation, sand equivalent, and micro-deval specifications for base course, bridge end fill and asphalt mix aggregate.

Sulphate and Chloride Testing

No sulphate and chloride testing has been done in the pit area.

Volume Estimates: Table 6 shows the volume estimates that can be expected for topsoil, overburden and gravel from the proposed suitability area. This is based on the measured depths encountered during the subsurface investigation. The potential volumes of granular material were calculated by averaging the total thickness of granular material encountered in test pits and multiplying by the estimated surface area.

Table 6: Volume Estimates

Suitability Area ~ha.	Topsoil	Overburden	Granular Material
Average Layer Thickness (m)	0.0	0.2	3.0
Volume (m^3)	0	3,000	80,000

Pit Development Notes

- All development must be carried out in accordance with the Health, Safety, and Reclamation Code for Mines in British Columbia, BC Ministry of Energy and Mines (2022, or later edition), the Standard Specifications for Highway Construction, BC Ministry of Transportation and Infrastructure (2020, or later edition) and the Aggregate Operators Best Management Practices Handbook for BC.

- All trees, vegetation, and overburden are to be removed within 2m of the top of the pit faces. Topsoil, overburden, and aggregate cannot be removed within five meters of the reserve boundary.

- It may be necessary to bulldoze granular material to the production site from above the BC Hydro transmission line in order to mitigate excessively high pit faces. **The contractor is responsible for obtaining a 30M33 Permit before stripping the overburden and pushing material through the Right of Way.** Access to and along the transmission line Right of Way must be maintained at all times.

- The crusher is recommended to be located on the upper bench as identified on the Pit Development Plan (between TPs 15-06 and 15-02), with mining proceeding in an eastern and/or southern direction as indicated.

- Processed aggregate may be stockpiled to the southwest of the production site, where space permits as indicated on the Pit Development Plan. There is limited stockpile space on the pit floor.

- No dumping of debris or petroleum products will be permitted, and the site must be left in a clean and safe condition.

- At the completion of the pit development operations, but prior to the depletion of the pit, the sides of the pit faces, waste piles, and overburden stockpiles must be trimmed to a 1.5H:1V slope. Active pit faces must be reshaped with native granular materials.

- Upon depletion of the pit, all disturbed areas are to be reclaimed. The minimum reclamation procedure should include re-sloping of the pit faces and waste piles to a 2H:1V slope, contouring the area for appropriate drainage, spreading of overburden followed by topsoil, and seeding.

- Should any of the above conditions conflict with the Health, Safety, and Reclamation Code for Mines in British Columbia, then the Code will prevail.

Closure

The findings of this report and the soil conditions noted above are inferred from the extrapolation of limited surface and subsurface data collected during the site investigation. It should be noted that different and possibly poorer soil conditions may exist between the test pit locations and volume estimates may vary from those reported in this report.

Prepared by:

Samantha Kinniburgh
Senior Aggregate Resource Specialist

Reviewed by:

Al Mitchell
Aggregate Resource Manager

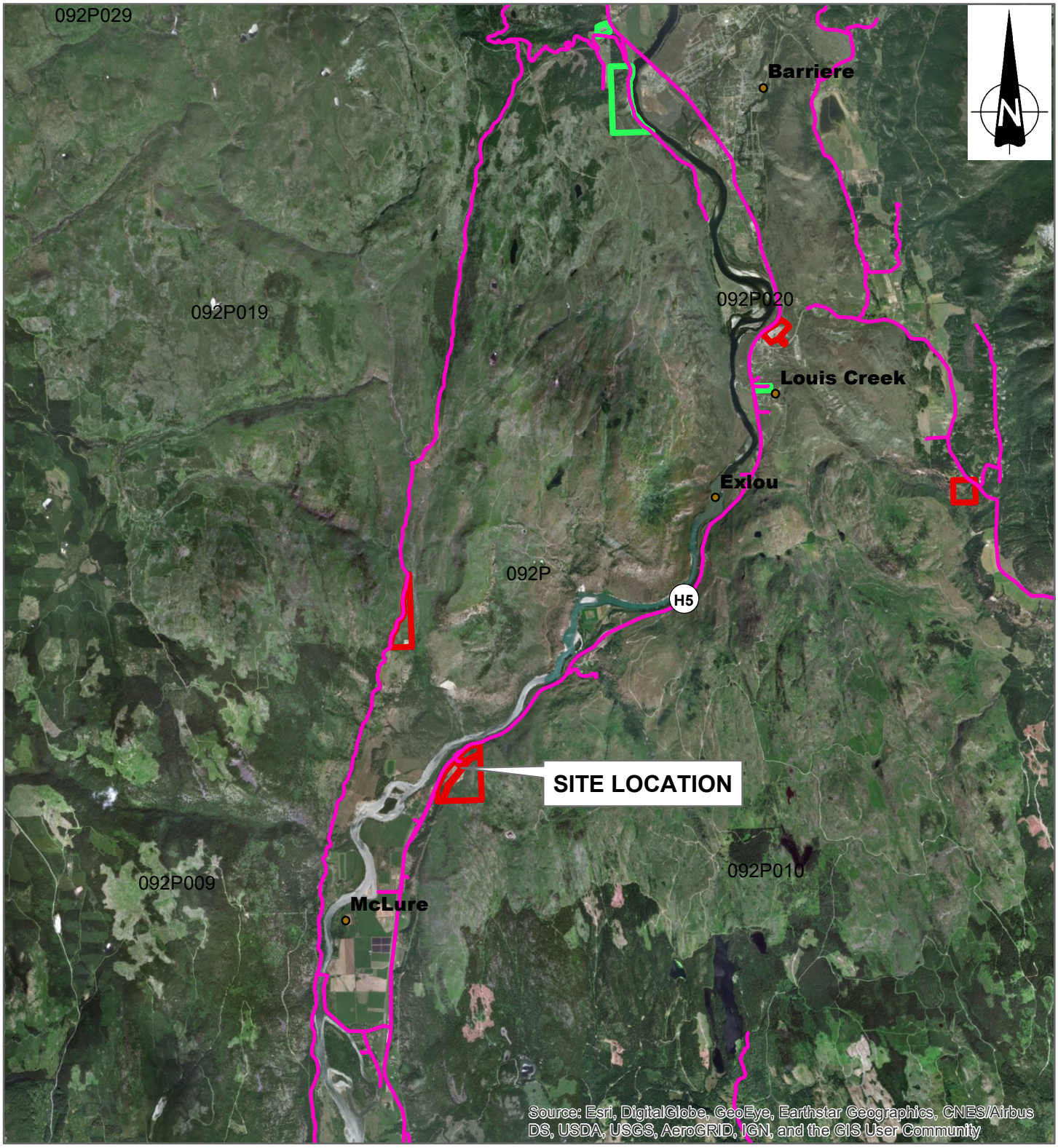
Enclosures

Figures:

- Figure 1 - Location Plan
- Figure 2 - Legal Plan
- Figure 3 - Development Plan

Test Pit Logs (2015)
Wet Sieve Analysis Chart (2015 and 1998)
Aggregate Gradation Charts (2015 and 1998)
USC Legend
Photos

Figures



0 0.5 1 2 3 4 Kilometers

Ministry of Transportation and Infrastructure
Geotechnical and Materials Branch

LOCATION PLAN (2019)

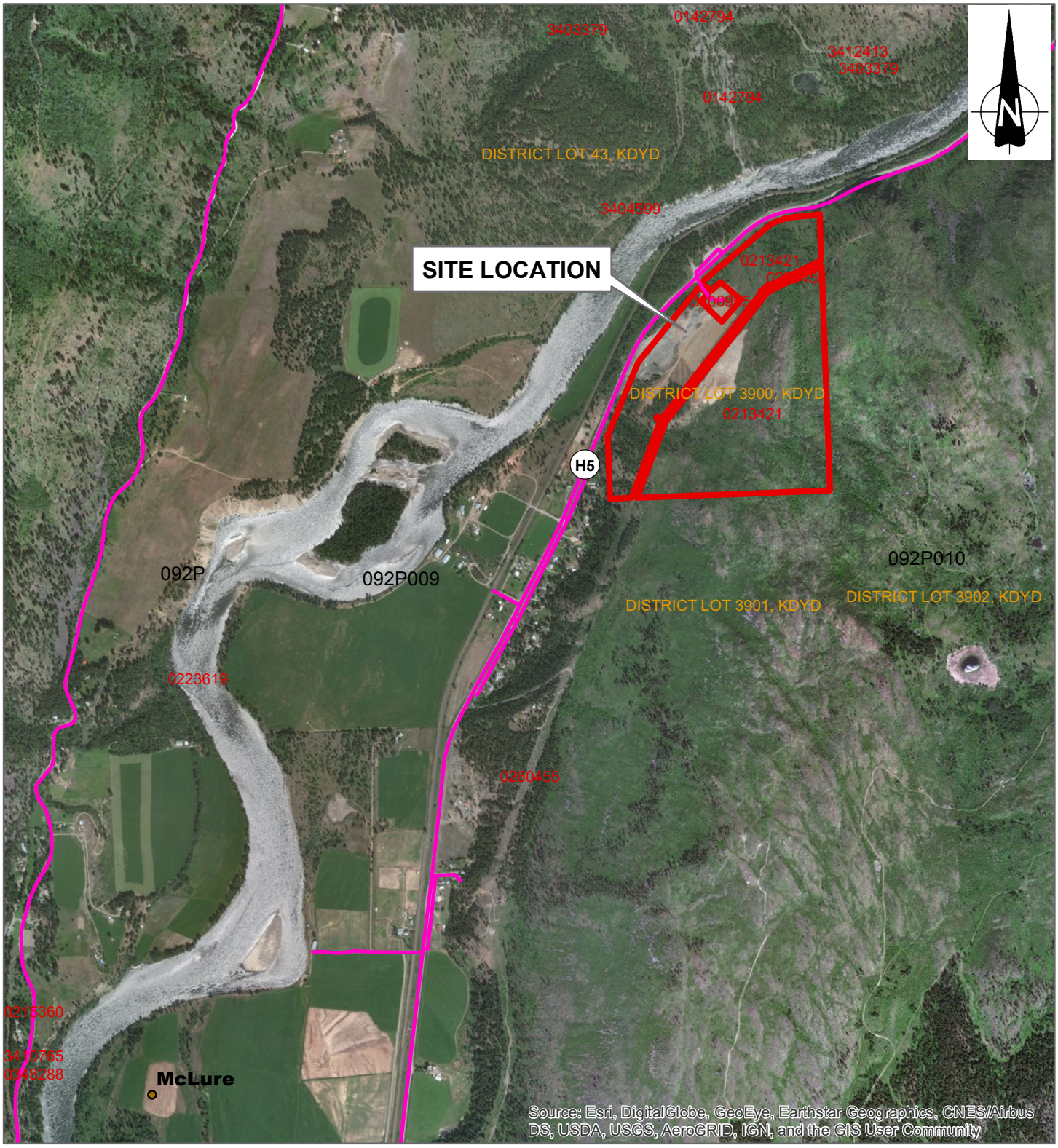
Larsen Hill Pit #0284

SA15 - Thompson Nicola District

DRAWN BY: lacourte	PROJECTION: UTM Zone 10		SCALE: As Shown
CHECKED BY: lacourte	DATUM: NAD 83		DATE: 2019/10/24
FileName: GISTemplate_Gravel_R2_2019-10-23	Geotech Project No: 50-15-0284	Reg: 2	Drawing No: **FIGURE 1**

Document Path: N:\GEOTECHNICAL\S.RUIZ_DESIGN\Reference\Gravel\GISTemplate_Gravel_R2_2019-10-23.mxd

This drawing was originally produced in colour.



0 0.10.2 0.4 0.6 0.8
Kilometers

Ministry of Transportation and Infrastructure
Geotechnical and Materials Branch

LEGAL PLAN (2019)

Larsen Hill Pit #0284

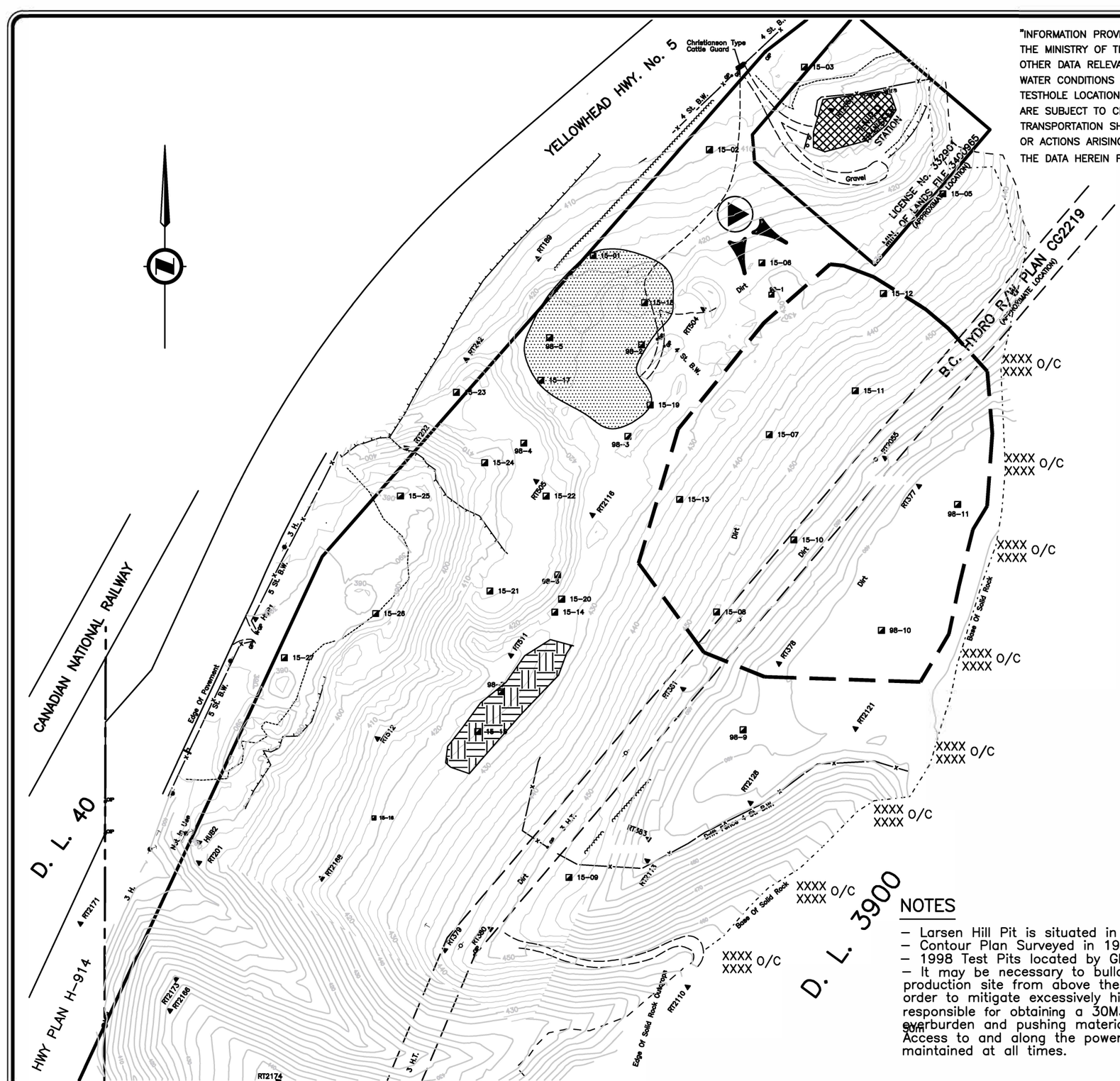
SA15 - Thompson Nicola District

DRAWN BY: lacourte	PROJECTION: UTM Zone 10		SCALE: As Shown
CHECKED BY: lacourte	DATUM: NAD 83		DATE: 2019/10/24
FileName: GISTemplate_Gravel_R2_2019-10-23	Geotech Project No: 50-15-0284	Reg: 2	Drawing No: **FIGURE 2**

Document Path: N:\GEOTECHNICAL\S.RUIZ_DESIGN\Reference\Gravel\GISTemplate_Gravel_R2_2019-10-23.mxd

This drawing was originally produced in colour.

"INFORMATION PROVIDED HEREIN IS INTENDED TO BE USED BY THE MINISTRY OF TRANSPORTATION IN CONJUNCTION WITH ALL OTHER DATA RELEVANT TO THE SITE. THE SOIL AND GROUND WATER CONDITIONS SHOWN ARE REPRESENTATIVE AT THE TESTHOLE LOCATIONS ON THE DATES INDICATED. CONDITIONS ARE SUBJECT TO CHANGE WITH TIME. THE MINISTRY OF TRANSPORTATION SHALL NOT BE HELD LIABLE FOR ANY CLAIMS OR ACTIONS ARISING FROM THE USE OR INTERPRETATION OF THE DATA HEREIN PROVIDED."



NOTES

- Larsen Hill Pit is situated in the Agricultural Land Reserve.
- Contour Plan Surveyed in 1997 by Regional Survey Crew.
- 1998 Test Pits located by GPS Survey in March, 1998.
- It may be necessary to bulldoze granular material to the production site from above the BC Hydro transmission line in order to mitigate excessively high pit faces. The contractor is responsible for obtaining a 30M33 Permit before stripping the overburden and pushing material through the Right of Way. Access to and along the power line Right of Way must be maintained at all times.

LEGEND

- PROCESSING PLANT LOCATION
- DEVELOPMENT DIRECTION
- SUITABILITY BOUNDARY
- 98–2 — TEST PIT 98–2, EXCAVATED IN 1998.
- GRAVEL RESERVE BOUNDARY
- ACCESS ROAD
- CAT TRACK
- IP — IRON PIN
- MON. — LEGAL SURVEY MONUMENT
- XXXX / XXXX O/C — BEDROCK OUTCROP
- PROCESSED AGGREGATE STOCKPILE AREA
- OVERBURDEN STOCKPILE SITE
- WASTE MATERIAL STOCKPILE SITE
- POWER POLE
- FENCE
- TREED AREA

MINING NOTES

- All vegetation, topsoil and overburden is to be stripped a minimum of 2 metres back from active pit faces.
- Topsoil and overburden is to be stockpiled and seeded with grass. Removal of this material is not permitted.
- At the completion of mining activities, all pit faces are to be sloped to a minimum of 1 1/2 to 1 with native granular material.
- For projects mining in excess of 1,000 cubic metres, the Ministry of Energy Mines (Mines Division) must be notified (approximately 14 days prior to the commencement of mining).
- All reject material, resulting from aggregate production, is to be placed in neat, easily accessible stockpiles free of deleterious material (i.e. wood waste).
- No dumping of Demolition, Land Clearing and Construction debris is permitted without prior written approval of the Ministry of Transportation.

1:2500

0 50 100m

1 METER CONTOUR INTERVAL

Province of British Columbia
Ministry of Transportation
GEOTECHNICAL and MATERIALS ENGINEERING

Date	REVISIONS Description	Initial
OCT 00	New Border	
JUN 19	Updated Notes	

REVIEWED BY:
A.T.A. Date
APPROVED BY:
G.R.M. Date

SCALE:	1:2500
DRAWN:	DGS
DATE:	FEB 00
AutoCAD:	F30284

LARSEN HILL PIT #0284

PIT DEVELOPMENT PLAN

FILE NO. 50–15–0284

FIGURE 3

Test Pit Summaries

2015

1 OF 3

AGGREGATE LOG

PROJECT: Vinsulla passing Lanes **SAMPLED BY:** Paul Imada

PIT #: Larson Hill **METHOD:** Excavator

DISTRICT: Thompson Nicola **DATE:** 2015-08-31 to 9-2

TH / TP	DEPTH		SAMPLE	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK 75mm				SAND TYPE	REMARKS
	FROM	TO	BAG No.		G	S	F	MAX SIZE	75mm 150mm	150mm 375mm	375mm	F M C	
15-01	0	0.1		TS									
	0.1	3.5		GP	92	6	2	550	15	5	2		sloughed
15-02	0	0.1		TS									
	0.1	4	TRAN 68	GP	90	7	3	375	10	2			sloughed
				GP	**88.4**	**8.9**	**2.7**						
15-03	0	0.1		TS									
	0.1	3.6		GP	92	6	2						
15-04	0	0.3		TS									dug into road cut
	0.3	1.6		SP	11	88	1	175	2	1			
15-05	0	2.8	TRAN 31	SP	6	93	1	75					At 15-4 on road
				SP	**36.5**	**62.7**	**0.8**						sloughed
15-06	0	1.5		GP	89	8	3	375	15	5	1		on road
	1.5	3.6		GP	83	16	1	150	5				sloughed
15-07	0	3	TRAN70	GP	60	38	2	150	5			C-F	on road - sloughed
				SW	**46.7**	**52.4**	**0.9**						
15-08	0	3.7		GP	62	35	3	200	1	1		C-F	on road - sloughed
15-09	0	0.1		TS									
	0.1	0.4		GP	91	5	4	200	5	1			
	0.4	4		GP	94	5	1	250	15	1			sloughed
15-10	0	0.1		TS									
	0.1	0.3		ML	10	40	50						
	0.3	4	TRAN 69	GP	52	47	1	200	1	1		C-F	sloughed
				SP	**46.5**	**52.6**	**0.9**						
15-11	0	0.2		TS									
	0.2	3		GP	61	37	2	150	2			C-F	sloughed - i/b SP/GP

2 3

AGGREGATE LOG

PROJECT: Vinsulla passing Lanes **SAMPLED BY:** Paul Imada

PIT #: Larson Hill **METHOD:** Excavator

DISTRICT: Thompson Nicola **DATE:** 2015-08-31 to 9-2

TH / TP	DEPTH		SAMPLE	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK 75mm				SAND TYPE	REMARKS
	FROM	TO	BAG No.		G	S	F	MAX SIZE	75mm 150mm	150mm 375mm	375mm	F M C	
15-12	0	0.1		TS									
	0.1	1.5		GP	63	35	2	150	5				
	1.5	3.6		SP	18	80	2						sloughed
15-13	0	0.1		TS									
	0.1	1.5		GP	61	37	2	150	1			C-F	
	1.5	2	TRAN 61	GP	81	17	2	150	7				
	2	3.8	TRAN 61	SP	23	75	2	75				C-F	sloughed
				GP	**61.3**	**37**	**1.7**						
15-14	0	0.1		TS									
	0.1	1		GP-GM	64	28	8	200	1	1			
	1	3.8		GP	76	22	2	200	10	1			
	3.8	4		SP	7	91	2						sloughed
15-15	0	0.1		TS									
	0.1	0.5		GM1	62	25	13	100	1				
	0.5	1.5		GP	67	31	2	100	1				
	1.5	3.2	TRAN 66	SP	9	89	2					M-C	
				SP	**21.5**	**77.8**	**0.7**						
	3.2	4.6		SP	3	96	1					M-C	
	4.6	4.7		GP	52	47	1						sloughed
15-16	0	0.1		TS									
	0.1	0.4		GP-GM	64	25	11	150	1				
	0.4	1.2	TRAN 65	GP	51	47	2	150	2				
	1.2	3		SP	9	89	2					M-C	sloughed
				SP	**32.6**	**64.8**	**2.6**						
15-17	0	3		FILL				200	1	1			sand to LB and AC
	3	4.8		SP	18	80	2						
15-18	0	0.8		FILL				400			1		GP
	0.8	1.9		FILL									SP
	1.9	4.6		GM1	83	4	13	300	20	2			

3 3

AGGREGATE LOG

PROJECT: Vinsulla passing Lanes **SAMPLED BY:** Paul Imada
PIT #: Larson Hill **METHOD:** Excavator
DISTRICT: Thompson Nicola **DATE:** 2015-08-31 to 9-2

TH / TP	DEPTH		SAMPLE	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK 75mm				SAND TYPE	REMARKS
	FROM	TO	BAG No.		G	S	F	MAX SIZE	75mm 150mm	150mm 375mm	375mm	F M C	
15-19	0	0.4		FILL									rock chips
	0.4	0.8		FILL	30	30	40						ML-CL
	0.8	3.8		GP	63	32	5	150	2				sloughed
				GP	**71.6**	**26.7**	**1.7**						
15-20	0	0.2		AC									
	0.2	1.3		FILL									
	1.3	3		GP	54	44	2	150	2				sloughed
15-21	0	0.4		GP	67	31	2						
	0.4	1		SP	13	85	2						
	1	2.3		GP	51	47	2	150	6				
	2.3	4		SP	10	88	2						
	4	4.8		SP	1	98	1					M	
15-22	0	3.5	GP	83	15	2	250	3	1				sloughed
15-23	0	3.5	GP	79	19	2	500	5	5	1			
15-24	0	0.5	GP										pushed by Cat
	0.5	1.6	SP	2	96	2							
	1.6	4	SP	15	83	2	300	10	15			M	
15-25	0	0.4		FILL	75	22	3	200	1	1			
	0.4	4.8		SP	0	98	2					F-M	
15-26	0	0.5		FILL	65	32	3	100	1				
	0.5	4.8		SP	0	98	2					F-M	
15-27	0	0.9		FILL	65	62	3						
	0.9	3.2		GP	85	13	2	300	1	1			
	3.2	3.5		SP	0	98	2					F-M	sloughed
TP 17, 18, 19, and 20 dug on upper level													
TP 21, 22, 23, and 24 dug on mid level													
TP 25, 26, and 27 dug on lower pit floor													

Wet Sieve Analysis

2015

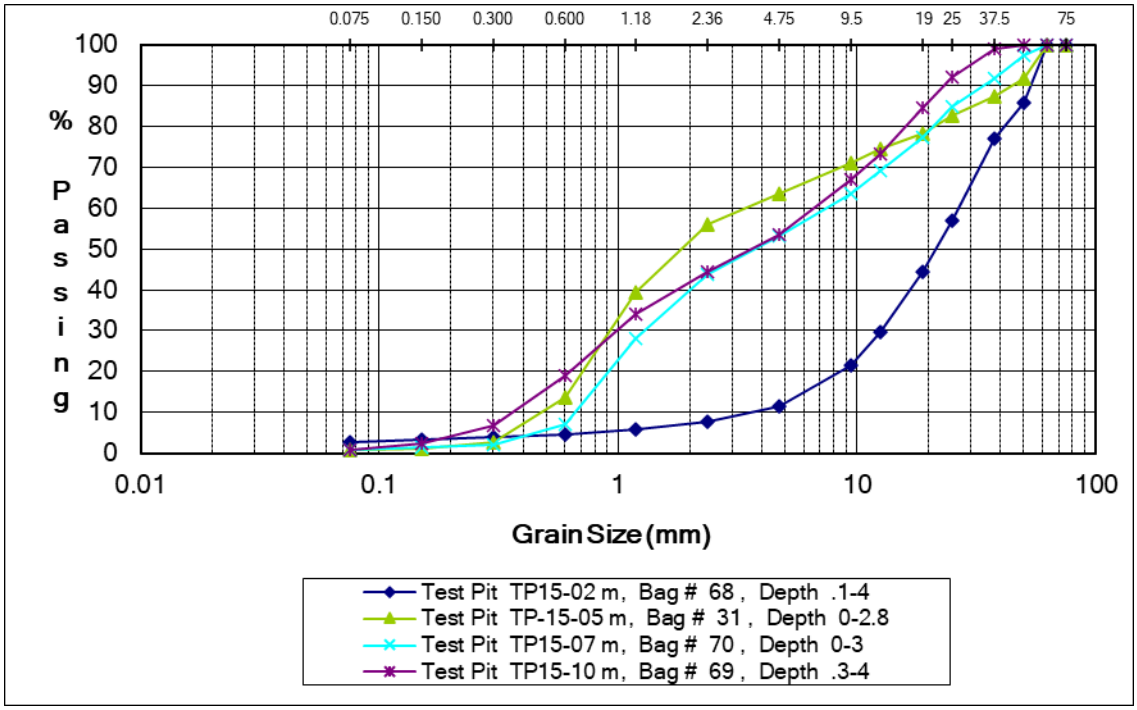
PROJECT REPORT OF SIEVE ANALYSIS SUMMARIES									PERCENT PASSING								
Project:		Larson Hill							Project No.:								
Sample Source:									Client:		MOT						
Material:		Pit Run							Date:		Dec. 1/15						
Sample Information			Percent Passing														
Test Pit	Bag #	Depth	Pit Run Sieve Sizes (mm)														
		(m)	75	63	50	37.5	25	19	12.5	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.075
TP 15-02	68	.1-4	100.0	100.0	85.7	77.0	56.9	44.3	29.5	21.4	11.6	7.8	5.9	4.6	3.8	3.3	2.7
TP15-05	31	0-2.8	100.0	100.0	91.8	87.5	82.7	78.2	74.6	71.1	63.5	56.0	39.4	13.7	2.7	1.2	0.7
TP15-07	70	0-3	100.0	100.0	97.4	91.9	84.9	77.3	69.2	63.5	53.3	43.8	28.2	7.1	2.0	1.3	0.9
TP15-10	69	.3-4	100.0	100.0	100.0	99.1	92.0	84.7	73.2	67.0	53.5	44.4	34.0	19.1	6.7	2.2	0.9
TP15-13	61	1.5-3.8	100.0	100.0	98.6	93.1	82.9	73.9	62.7	55.0	38.7	24.5	9.9	3.8	2.5	2.1	1.7
TP15-15	66	1.5-3.2	100.0	100.0	100.0	94.1	89.4	85.9	83.0	81.6	78.5	74.0	65.8	43.3	11.0	1.8	0.7
TP15-16	65	.4-1.2	100.0	100.0	94.5	91.3	88.5	84.2	82.0	78.8	67.5	49.9	30.4	13.9	5.4	3.5	2.6
TP15-19	64	.8-3.8	100.0	100.0	83.4	80.3	68.1	56.6	47.2	41.4	28.5	18.3	10.3	5.1	2.8	2.1	1.7

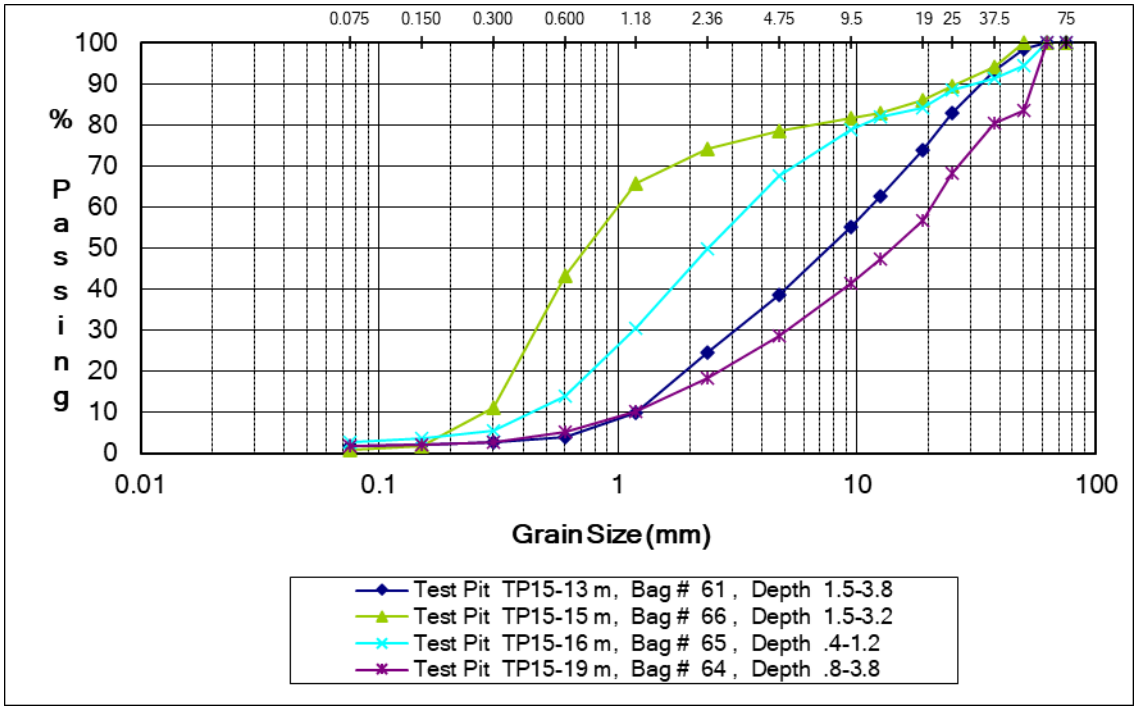
1998

PROJECT REPORT OF SIEVE ANALYSIS SUMMARIES						PERCENT PASSING								
Project:		Larson Hill				Project No.:		0						
Sample Source:		Larson Hill				Client:		0						
Material:		PIT RUN				Date:		########						
Sample Information			Percent Passing											
Test Pit	Depth	Bag #	Pit Run Sieve Sizes (mm)											
	(m)		75	37.5	19	9.5	4.75	2.36	1.18	0.6	0.3	0.075		
98-1	0.3-2.0		100.0	97.6	82.3	67.1	50.1	37.2	19.3	7.5	3.1	1.7		
98-2	0.3-6.0		100.0	77.6	45.8	20.8	14.7	12.6	10.8	9.5	8.7	6.9		
98-3	0.2-6.0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		
98-4	0.3-5.5		100.0	82.5	58.0	27.1	13.6	8.5	5.6	4.0	3.2	2.4		
98-5	0.3-5.5		100.0	87.0	60.4	28.8	14.4	8.3	5.1	3.5	2.9	1.9		
98-6	0.3-5.5		100.0	97.3	83.0	64.0	46.4	33.7	18.8	8.5	4.3	2.5		
98-7	4.2-5.5		100.0	100.0	99.6	98.6	97.9	96.9	94.1	83.1	54.0	1.7		
98-8	0.0-4.5		100.0	92.5	77.1	53.6	32.7	22.5	14.0	7.6	1.9	0.6		
98-9	0.2-1.8		100.0	100.0	100.0	100.0	99.8	99.5	98.3	95.9	80.4	21.1		
98-10	3.0-5.5		100.0	94.4	74.5	56.8	46.0	36.7	21.4	8.2	2.1	0.8		
98-11	2.0-5.0		100.0	92.4	76.6	59.9	51.5	46.8	34.1	18.6	5.5	1.7		

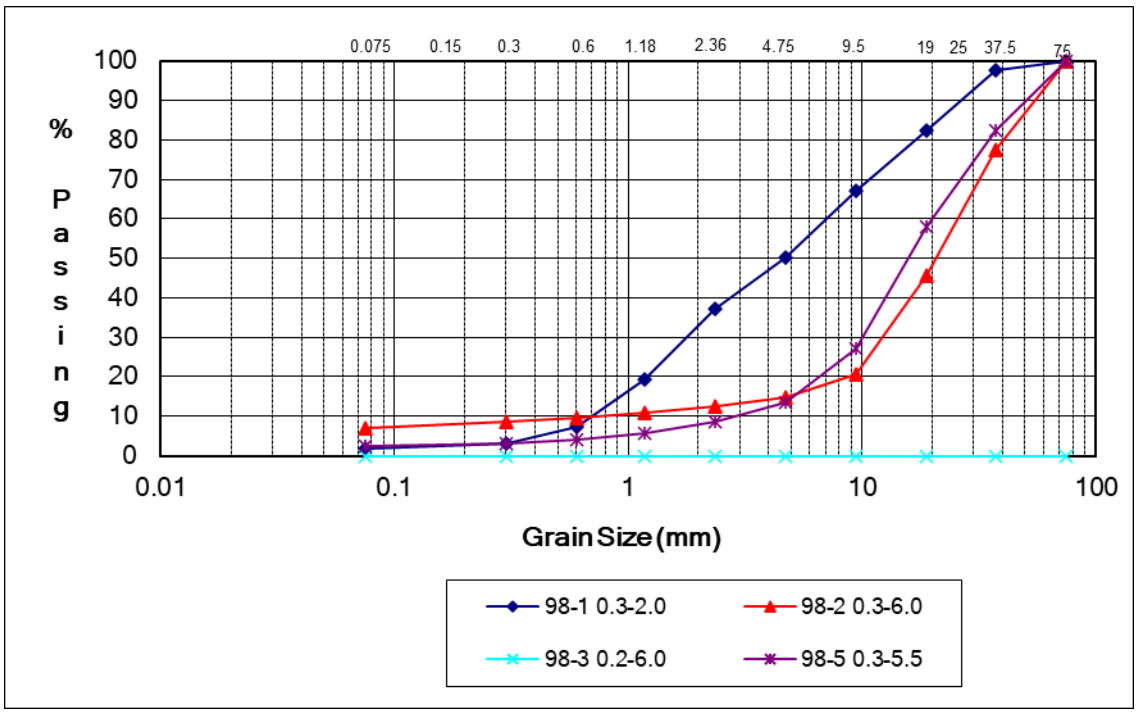
Aggregate Gradation Charts

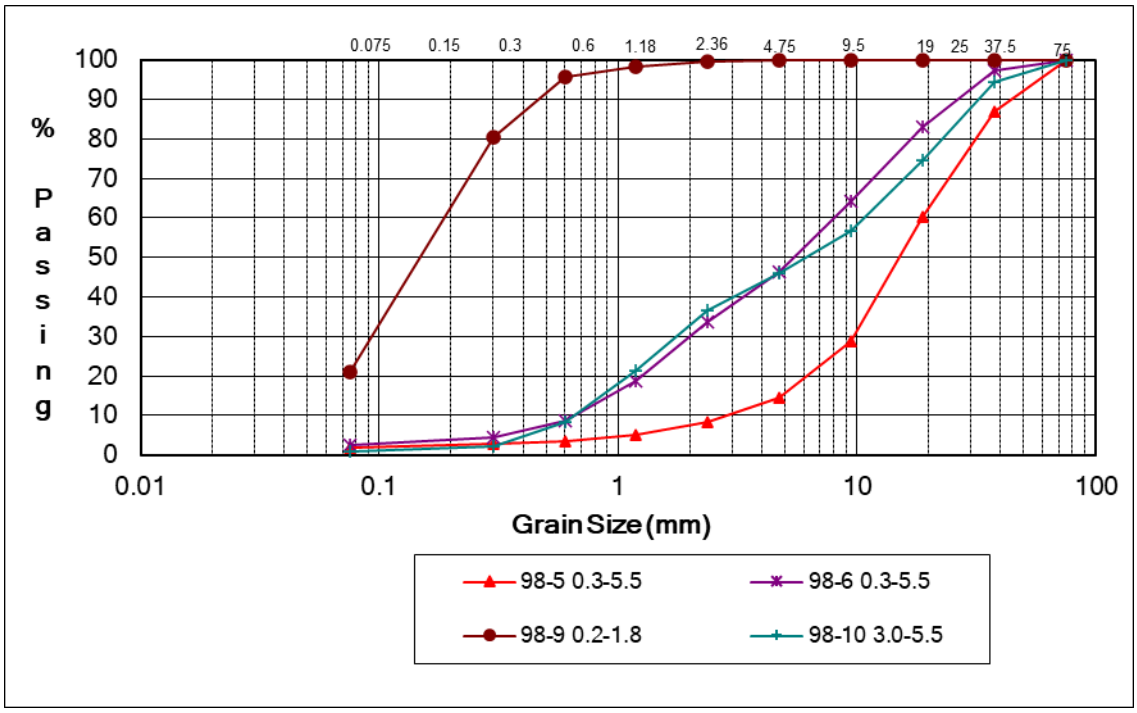
2015





1998


0.075
0.15
0.3
0.6
1.18
2.36
4.75
9.5
19
25
37.5
75
100
90
80
70
60
50
40
30
20
10
0
% Passing
0.01
0.1
1
10
100
Grain Size (mm)
98-1 0.3-2.0
98-2 0.3-6.0
98-3 0.2-6.0
98-5 0.3-5.5


0.075
0.15
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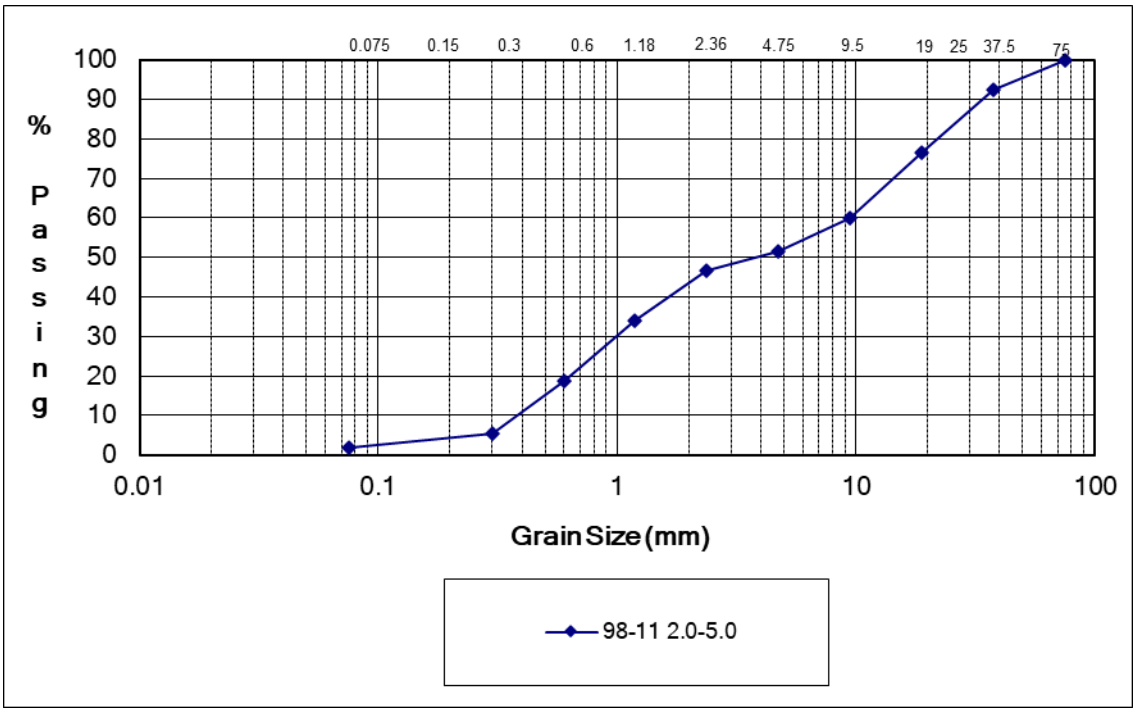
0.6
1.18
2.36
4.75
9.5
19
25
37.5
75
100
90
80
70
60
50
40
30
20
10
0
% Passing
0.01
0.1
1
10
100
Grain Size (mm)
98-5 0.3-5.5
98-6 0.3-5.5
98-9 0.2-1.8
98-10 3.0-5.5


0.075
0.15
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2.36
4.75
9.5
19
25
37.5
75
100
90
80
70
60
50
40
30
20
10
0
% Passing
0.01
0.1
1
10
100
Grain Size (mm)
98-11 2.0-5.0

USC Legend

MATERIALS CLASSIFICATION LEGEND

MAJOR DIVISIONS		SYMBOL	SOIL TYPE
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	WELL GRADED GRAVELS OR GRAVEL–SAND MIXTURES, < 5% FINES
		GP	POORLY–GRADED GRAVELS OR GRAVEL–SAND MIXTURES, < 5% FINES
		GM*	SILTY GRAVELS, GRAVEL–SAND–SILT MIXTURES
		GC*	CLAYEY GRAVELS, GRAVEL–SAND–CLAY MIXTURES
	SAND AND SANDY SOILS	SW	WELL–GRADED SANDS OR GRAVELLY SANDS, < 5% FINES
		SP	POORLY–GRADED SANDS OR GRAVELLY SANDS, < 5% FINES
		SM*	SILTY SANDS SAND–SILT MIXTURES
		SC*	CLAYEY SANDS SAND–CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS w_L <50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		OL	ORGANIC SILTS AND ORGANIC SILT–CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS w_L >50	MH	INORGANIC SILTS, MICACEOUS OR DIATOM–ACEOUS FINE SANDY OR SILTY SOILS, PLASTIC SILTS
		CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
		OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
ORGANIC SOILS		Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS
TOPSOIL		TS	TOPSOIL WITH ROOTS, ETC.
COBBLES		SB	ROCK FRAGMENTS AND COBBLES, PARTICLE SIZE 75mm TO 300mm
LARGE BOULDERS		LB	BOULDERS, PARTICLE SIZE OVER 300mm
BEDROCK		BR	BEDROCK

FOR SOILS HAVING 5 – 12% PASSING .075 SIEVE, USE DUAL SYMBOL

*GM1; GC1; SM1; SC1; 12 – 20%
GM2; GC2; SM2; SC2; 20 – 30%
GM3; GC3; SM3; SC3; 30 – 40%
GM4; GC4; SM4; SC4; 40 – 50%

} PASSING .075mm SIEVE

REV. 90–04–26

PROVINCE of BRITISH COLUMBIA
MINISTRY OF TRANSPORTATION & HIGHWAYS
Geotechnical & Materials Engineering

UNIFIED SOIL CLASSIFICATION LEGEND

Drawn: LU	Date: JULY'97	Scale:
File No.:		ACAD File: ACADSTDS C:\ACADSTDS\SOIL-APP

Photos

Looking down from suitability area onto proposed crusher set up site, facing southwest, August 2023.

Looking south at upper suitability area to east of the BC Hydro transmission line, August 2023.

Northwest view of lower suitability area and proposed crusher set up location, August 2023.

Looking southwest at lower floor of pit, with access to Hwy 5, August 2023.

TP 15-06, August 2015.

TP 15-08, August 2015.

Looking southeast onto potential mining area from lower floor, May 2023.

Crusher set up area, lower floor looking northwest, May 2023.