

# Puntzi Pit No. 1881 Technical Summary

June 2025

**Pit Name:** Puntzi Pit

**Provincial Pit Number:** 1881

**Location:** Puntzi Pit is located approximately 63km west of Alexis Creek on Highway 20. Access to the pit is approximately 200m west of the intersection of Puntzi Street and Highway 20.

Geographic location: 52.107434, -124.069299;

UTM 10N: 426515m E, 5773366m N. (Figure 1).

**Legal Land Description:** Puntzi Pit is managed by the Ministry of Transportation & Transit; Pit No. 1881, Crown Lands File No. 0225498. The reserve is approximately 43.15 hectares of unsurveyed Crown Land. The legal description is THAT PARCEL OR TRACT OF LAND SITUATED ADJACENT TO DL 1844, RANGE 3, COAST DISTRICT, CONTAINING 42.0525 HECTARES, MORE OR LESS. (Figure 2).

**Subsurface Investigation:** Subsurface investigations at Puntzi Pit were carried out in 1988 by the Ministry of Transportation.

In 1988 thirty three (33) test pits were excavated to depths ranging from 3.1 to 6.2 m. 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 eighteen (18) of these samples 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 1988 investigation and historical mining in the pit, one (1) granular area - Area A, 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 Development 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 Area A.

**Table 1: Pit Run Gradation**

Test Pit	Depth (m)	Fines (%)* <0.075mm	Sand (%)* 0.075-4.75mm	Gravel (%)* 4.75-75mm	USC
<b>Area A</b>					
88-17	3.1	2	20	78	GP
88-20	3.0	2	13	85	GP
88-22	5.6	2	17	71	GP
88-23	5.4	2	39	58	GP
88-25	6.0	2	25	72	GP
88-27	3.8	3	20	77	GP
<b>Average – Area A</b>		2.16	22.33	73.5	

\* Values are rounded to the nearest whole number so may not add exactly to 100%

Table 2 shows the estimated percent small and large boulders for the material from the 1988 testing program.

**Table 2: Oversize Estimates**

Oversize Field Estimates		
Classification	Average (%)	Range (%)
Boulders (>375mm)	2	0 - 3
Cobbles (150-375mm)	6	1 - 12
Cobbles (75-150mm)	2	0 - 6

**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	Micro-Deval (%) (C/F)	Sand Equivalent (%)	Bulk Relative Density (C/F)	Absorption (%) (C/F)
88-17	-	-	2.70 / 2.67	0.81 / 1.38
88-20	-	63	-	-
88-22	-	68	-	-
88-28	4.8 / 10.1	-	2.72 / 2.67	0.66 / 1.38
88-30	-	64	-	-
88-31	-	66	-	-
<b>Average</b>	<b>4.8 / 10.1</b>	<b>65.25</b>	<b>2.71 / 2.67</b>	<b>0.74 / 1.38</b>

<b>BC MoTI Specifications</b>	
Sand Equivalent	$\geq 40$ for base coarse and fine asphalt mix aggregate $\geq 20$ for surfacing, sub-base and bridge end fill aggregates
Micro Deval	$\leq 30\%$ for sub-base and bridge end fill aggregates $\leq 25\%$ for surfacing & base course aggregates $\leq 18\%$ for Class 1 Pavement asphalt mix aggregates $\leq 20\%$ for Class 2 Pavement asphalt mix aggregates
Absorption	$< 2.0\%$ for coarse paving aggregates $\leq 1.0\%$ for coarse and $\leq 1.5\%$ for fine graded aggregate seals
Relative Density	$\sim 2.65$ for all aggregate products

**Material Suitability:** Based on the 1988 investigation results, the material in Area A is judged to be suitable for the following purposes:

**Table 4: Suitability**

	<b>Pit Run</b>	<b>Crush</b>
<b>Area A</b>	Bridge End Fill SGSB	25mm WGB Graded Seal Asphalt Mix Aggregates

The samples tested meet the gradation, sand equivalent, and micro-deval specifications for base course, bridge end fill, graded seal, and asphalt mix aggregate. The material is not expected to be suitable for high fines surfacing aggregate without the addition of fines from another source.

**Volume Estimates:** Table 5 shows the volume estimates that can be expected for topsoil, overburden and gravel from Area A. 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 5: Volume Estimates**

<b>Area A ~3.8ha.</b>	<b>Topsoil</b>	<b>Overburden</b>	<b>Granular Material</b>
<b>Average Layer Thickness (m)</b>	0	0	4.48
<b>Volume (m<sup>3</sup>)</b>	0	0	170,000

## 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 (2024, or later edition), the Standard Specifications for Highway Construction, BC Ministry of Transportation and Transit (2025, or later edition) and the Aggregate Operators Best Management Practices Handbook for BC.
- The mining area has been previously developed by the Ministry of Transportation & Transit. Any additional development will be the responsibility of the contractor and shall be completed as per the pit development plan or as directed by the Ministry Representative.
- Due to a high percentage of oversize rock contained within the deposit the use of a primary crusher is required.
- The crusher is recommended to be located at the base of the slope (to the east of TP88-24), as identified on the pit development plan, with mining proceeding in a southwestern direction.
- Processed aggregate may be stockpiled on the pit floor, southeast of the crusher, as indicated on the pit development plan, or where space permits as directed by the Ministry Representative. Site preparation may be required to create a clear and level stockpile area.
- 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.
- 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:

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Reviewed by:

Samantha Kinniburgh  
Senior Aggregate Resource Specialist

## **Enclosures**

Figures:

Figure 1 - Location Plan

Figure 2 - Pit Plan

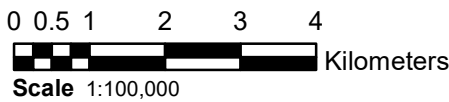
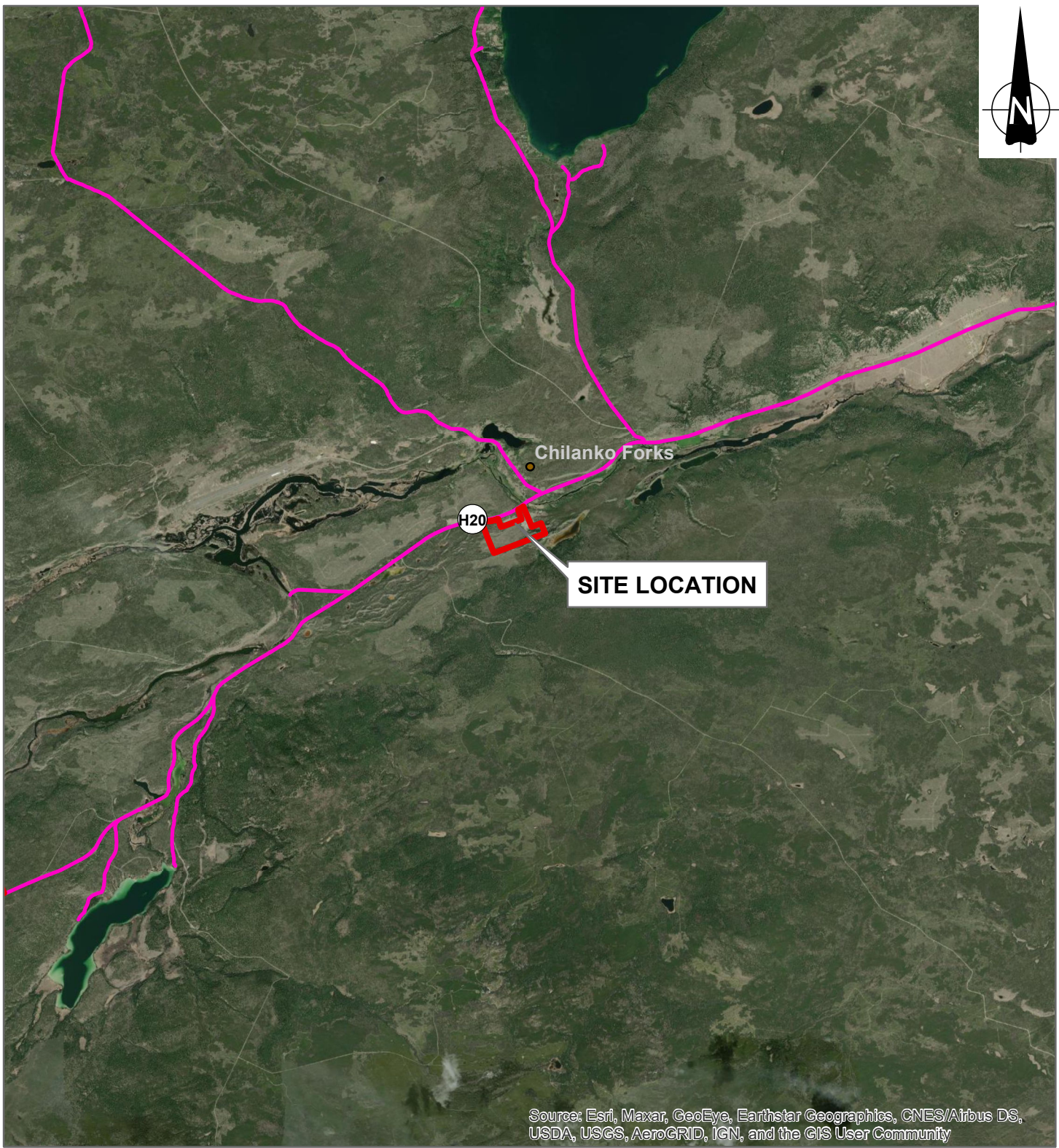
Figure 3 - Development Plan



Test Pit Summary

USC Legend

Photos

## Figures

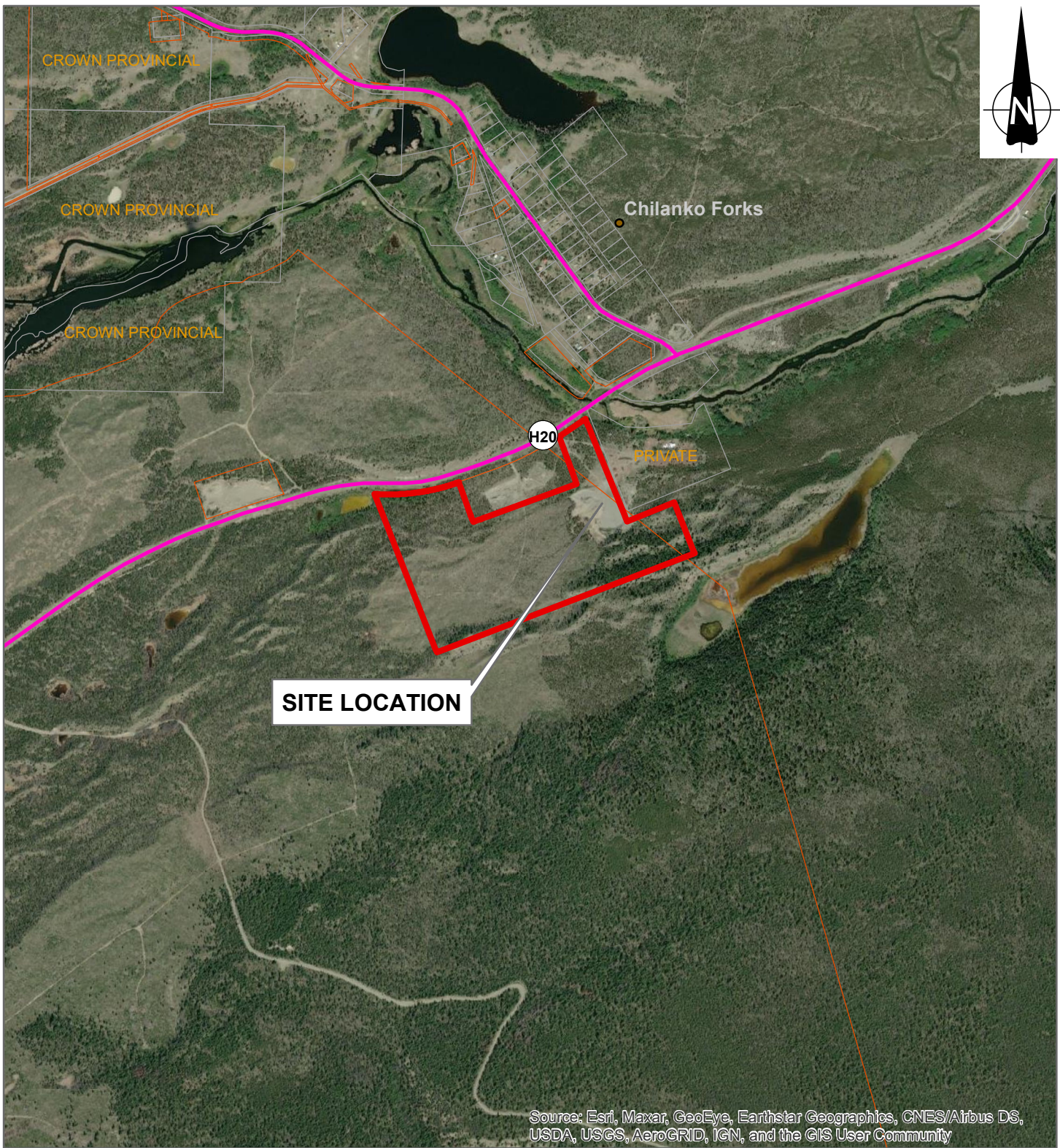



 Ministry of Transportation and Infrastructure  
 Geotechnical and Materials Branch
 

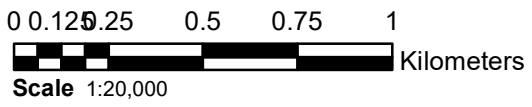
**LOCATION PLAN (2021)**  
**Puntzi Pit #1881**  
**SA 17 - CARIBOO DISTRICT**



DRAWN BY: lacourte	PROJECTION: NAD 1983 UTM Zone 10N	SCALE: As Shown
CHECKED BY: A.Mitchell	DATUM: NAD 1983 UTM Zone 10N	DATE: 2021-06-15
FileName: GISTemplate_Gravel_R2_2021-04-16_SISV8	Geotech Project No: SISV8	Reg: 2
		Drawing No: <b>FIGURE 1</b>

This drawing was originally produced in colour.



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

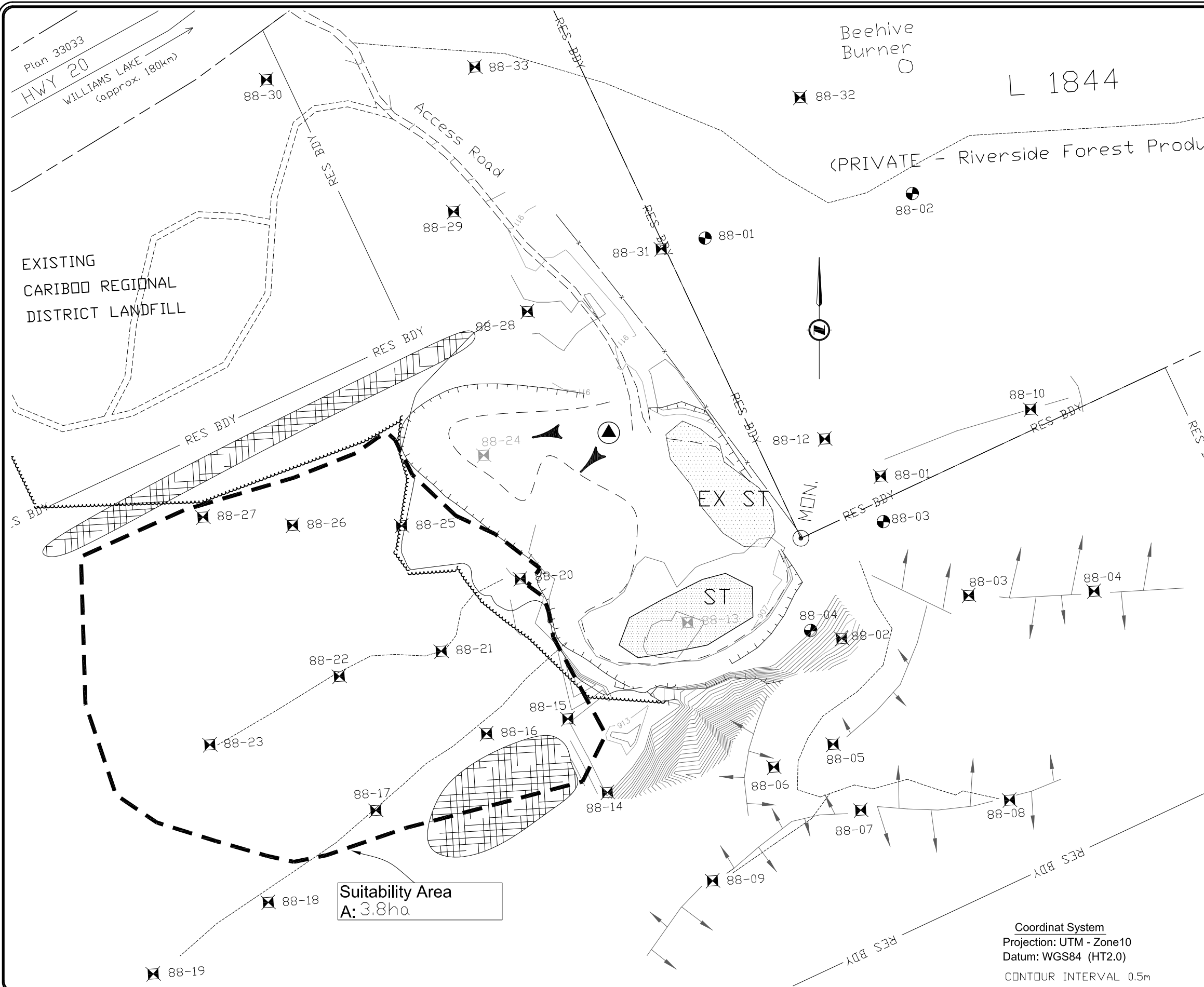



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**LEGAL PLAN (2021)**  
**Puntzi Pit #1881**  
**SA 17 - CARIBOO DISTRICT**

DRAWN BY: lacourte	PROJECTION: NAD 1983 UTM Zone 10N	SCALE: As Shown
CHECKED BY: A.Mitchell	DATUM: NAD 1983 UTM Zone 10N	DATE: 2021-06-15
FileName: GISTemplate_Gravel_R2_2021-04-16_SISV8	Geotech Project No: SISV8	Reg: 2
		Drawing No: <b>FIGURE 2</b>

This drawing was originally produced in colour.



**PIT DEVELOPMENT LEGEND**

	NATURAL EMBANKMENT		TREELINE
	PIT FACE		EDGE OF DEVELOPMENT
	TEST PIT		800m CONTOURS
	TEST PIT (DEPLETED)		OVERBURDEN (EXISTING AND PROPOSED)
	PAVED ROAD		DEVELOPMENT BOUNDARY
	GRAVEL ROAD		DEVELOPMENT ARROW
	TRAIL		CRUSHER
	DISTRICT LOT LINE		ST-PROPOSED STOCKPILE
	GRAVEL RESERVE BOUNDARY		EX ST-EXISTING STOCKPILE
	SUITABILITY BOUNDARY		

**BASE NOTE:**

- 1) Contour Interval 0.5 metres
- 2) Base Map derived from TRIM Sheet 93C.020

**LEGAL NOTE:**

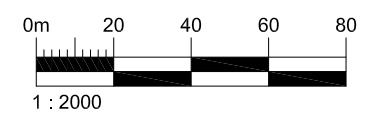
- 1) District Lot Lines are derived from digital Crown Cadastral reference mapping supplied by CROWN LAND REGISTRY, Victoria

**DRAWING NOTE:**

- 1) Some testpits and/or testholes may not be representative of current conditions due to development and excavation done after testing was conducted.

**PIT DEVELOPMENT NOTES:**

1. Pit development is required and must be carried out in accordance with the Health, Safety, and Reclamation Code for Mines in BC, the current Standard Specifications for Highway Construction, and the Aggregate Operators Best Management Practices Handbook for BC.
2. The contractor must ensure that all materials passing through 375mm x 450mm slotted openings shall be used in the production of the crushed aggregates.
3. Pit excavation must not take place to within a minimum distance of 2m from the edge of cleared & stripped areas.
4. When the contractor discontinues operations in the pit, all working pit faces and stockpiles must be trimmed to 1.5H to 1V slope. Working pit faces must be reshaped with native granular materials. All other permanent slopes must be re-sloped to no steeper than 2H to 1V.
5. No dumping of debris or petroleum products is permitted. The pit must be left in a clean and safe condition.
6. Topsoil and overburden are to be stockpiled and sloped 2:1 and seeded with an appropriate seed mixture.
7. Slash piles to be placed away from treeline and burned when conditions allow it.



"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."

Coordinat System  
 Projection: UTM - Zone10  
 Datum: WGS84 (HT2.0)  
 CONTOUR INTERVAL 0.5m



Date	REVISIONS Description	Initial
JUNE 2021	Updated Crusher Location	
DEC 2021	Updated edge of dev't and pit face	
JUNE 2023	Updated Suitability Area	

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

SURVEY: TAH  
 DRAWN: JAG  
 DATE: DEC 13  
 AutoCAD: F3P1881

## **Test Pit Summaries**

AGGREGATE LOG

PROJECT:	Puntzi Pit	SAMPLED BY:	Northern Region
PIT #:	1881	METHOD:	Excavator
DISTRICT:	Cariboo	DATE:	01-06-1988

TH / TP	DEPTH		SAMPLE BAG No.	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK 75mm			SAND TYPE F M C	REMARKS
	FROM	TO			G	S	F	MAX SIZE	75mm -	150mm -		
88-01	0.0	0.1		TS			100					
	0.1	4.7		GP	80	18	2		5	5	0	
88-02	0.0	0.3		TS			100					
	0.3	1.1		GP	55	41	4		3	1	0	
	1.1	4.1		SP	10	86	4					
				SP	27	70	3					LAB TESTED
88-03	0.0	0.1		TS			100					
	0.1	0.7		SM3	10	55	35					
	0.7	4.0		SP/SM	32	60	8					LAB TESTED
88-04	0.0	0.1		TS			100					
	0.1	0.8		SM3	10	51	39					
	0.8	4.3		GP	55	42	3		5	6	1	LAB TESTED
88-05	0.0	0.2		TS			100					
	0.2	4.0		GP	89	9	2		5	7	1	LAB TESTED
88-06	0.0	0.1					100					
	0.1	2.2		GP/GM	85	9	6		5	9	2	
	2.2	3.9		GP/GM	70	20	10		5	6	1	
88-07	0.0	0.1		TS			100					
	0.1	3.8		GP/GM	80	14	6		6	10	2	
88-08	0.0	0.2		TS			100					
	0.2	2.0		GM2	60	19	21		5	5	1	
	2.0	3.0		SM3	20	49	31		1	0	0	
	3.0	4.8		GM3	50	17	33		5	4	0	
88-09	0.0	0.1		TS								
	0.1	3.9		GP	71	26	2		6	6	1	LAB TESTED
88-10	0.0	0.1		TS			100					
	0.1	4.5		GP	81	17	2		5	4	0	LAB TESTED
88-11	0.0	5.1		GP	79	19	2		5	6	0	LAB TESTED

AGGREGATE LOG

PROJECT:	Puntzi Pit	SAMPLED BY:	Northern Region
PIT #:	1881	METHOD:	Excavator
DISTRICT:	Cariboo	DATE:	01-06-1988

TH / TP	DEPTH		SAMPLE BAG No.	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK 75mm			SAND TYPE F M C	REMARKS
	FROM	TO			G	S	F	MAX SIZE	75mm -	150mm -		
88-12	0.0	0.8		GP	68	28	4		1	0	0	
	0.8	3.1		SP	37	60	3		1	0	0	
	3.1	5.6		GP	60	37	3		1	0	0	
88-13	0.0	4.7		GP	74	23	2		6	10	3	
88-14	0.0	0.1		TS			100					
	0.1	1.2		ML	0	40	60					
	1.2	4.7		SP/SM	0	93	7					LAB TESTED
88-15	0.0	0.1		TS			100					
	0.1	0.9		ML	0	40	60					
	0.9	5.1		SP	0	96	4					
88-16	0.0	0.1		TS			100					
	0.1	0.6		ML	0	25	75					
	0.6	5.2		SP	0	96	4					
					73.0	22.3	2.3					
88-17	0.0	0.1		TS			100					
	0.1	0.8		ML	10	30	60	2	1	0		LAB TESTED
	0.8	3.9		GP	78	20	2	4	4	1		
88-18	0.0	0.1		TS			100					
	0.1	5.3		GP	66	30	4	5	10	2		
88-19	0.0	0.1		TS			100					
	0.1	5.1		GP	85	13	2	6	12	3		LAB TESTED
88-20	0.0	0.1		TS			100					
	0.1	3.1		GP	58	39	3	5	10	3		LAB TESTED
88-21	0.0	0.1		TS			100					
	0.1	3.0		GP	56	40	4	6	7	1		
	3.0	3.5		SP	11	85	4					
88-22	0.0	0.1										
	0.1	5.7		GP	71	17	2	6	9	1		LAB TESTED

**AGGREGATE LOG**

PROJECT:		Puntzi Pit		SAMPLED BY:		Northern Region						
PIT #:		1881		METHOD:		Excavator						
DISTRICT:		Cariboo		DATE:		01-06-1988						
TH / TP	DEPTH		SAMPLE BAG No.	SOILS CLASS	ESTIMATED GRADATION			ESTIMATED ROCK			SAND TYPE F M C	REMARKS
	FROM	TO			G	S	F	MAX SIZE	75mm -	150mm -		
88-23	0.0	0.1		TS			100					
	0.1	5.5		GP	58	39	2		5	6	0	LAB TESTED
88-24	0.0	0.1		TS			100					
	0.1	6.0		GP	59	37	4		3	3	1	
88-25	0.0	0.1		TS			100					
	0.1	4.2		GP	72	25	2		5	7	2	LAB TESTED
	4.2	6.1		GP	55	41	4		5	6	0	
88-26	0.0	0.1		TS			100					
	0.1	6.0		GP/GM	64	30	6		4	7	2	
88-27	0.0	0.1		TS			100					
	0.1	3.9		GP	77	20	3					LAB TESTED
88-28	0.0	0.1		TS			100		6	7	1	
	0.1	6.1		GP	84	13	2					LAB TESTED
88-29	0.0	0.1		TS			100					
	0.1	6.2		GP/GM	54	38	8		5	7	1	
88-30	0.0	0.1		TS			100					
	0.1	5.9		GP	82	14	4		5	7	2	LAB TESTED
88-31	0.0	6.1		GP	75	22	3		3	1	0	LAB TESTED
88-32	0.0	5.6		GP	55	41	4		4	6	1	
88-33	0.0	4.3		GP/GM	80	13	7		5	6	2	

## **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						
		<table style="border: none;"> <tr> <td>*GM1; GC1; SM1; SC1; 12 - 20%</td> <td rowspan="4" style="font-size: 3em; vertical-align: middle;">}</td> <td rowspan="4" style="vertical-align: middle;">PASSING .075mm SIEVE</td> </tr> <tr> <td>GM2; GC2; SM2; SC2; 20 - 30%</td> </tr> <tr> <td>GM3; GC3; SM3; SC3; 30 - 40%</td> </tr> <tr> <td>GM4; GC4; SM4; SC4; 40 - 50%</td> </tr> </table>	*GM1; GC1; SM1; SC1; 12 - 20%	}	PASSING .075mm SIEVE	GM2; GC2; SM2; SC2; 20 - 30%	GM3; GC3; SM3; SC3; 30 - 40%	GM4; GC4; SM4; SC4; 40 - 50%
*GM1; GC1; SM1; SC1; 12 - 20%	}	PASSING .075mm SIEVE						
GM2; GC2; SM2; SC2; 20 - 30%								
GM3; GC3; SM3; SC3; 30 - 40%								
GM4; GC4; SM4; SC4; 40 - 50%								

REV. 90-04-26

PROVINCE of BRITISH COLUMBIA MINISTRY OF TRANSPORTATION & HIGHWAYS Geotechnical & Materials Engineering
<b>UNIFIED SOIL CLASSIFICATION LEGEND</b>
Drawn: LU    Date: JULY'97    Scale: _____ File No.: _____    ACAD File: ACAD0709 <span style="float: right;">(200709-000-000)</span>

## Photos



Stockpile area to southeast (June 2024).



Main pit floor area and mining face to southwest (June 2024).



Nob of finer material between two previous photo locations (June 2024).



Main mining face (June 2024).



View of Area A from atop main face (June 2024).



Area A, different angle (June 2024).



Drone photo of pit, Area A in top-right of photo (June 2024).