

Technical Summary

August 2023

Pit Name: Chilko Ranch Pit

Provincial Pit Number: 1905

Location: Chilko Ranch Pit is located approximately 90km west of Williams Lake via Highway 20 and then 9km south on Hanceville Cut Off Rd. and Big Creek Rd. The pit is off Big Creek Road on the south side (Figure 1).

Legal Land Description: The site is currently a Section 16 Map Reserve (LF# 0320779) held by the British Columbia Ministry of Transportation and Infrastructure (BC MoTI). The legal description of the Map Reserve is “that Parcel or Tract of Land in the Vicinity of District Lot 2030, Lillooet District, Containing 16.19 Hectares, More or Less” (Figure 2). UTM Coordinates of 10U, 495145.80m E, 5748269.06m N. The layout of the Map Reserve boundary is shown in the pit development plan (Figure 3).

Subsurface Investigation: Subsurface investigations at Chilko Ranch Pit were carried out in 2001 by Ministry of Transportation & Infrastructure.

In 2001 twelve (12) test pits were excavated to depths ranging from 3.0 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 six (6) of these samples to assess the gradation and durability characteristics. The tests completed were wet sieve analysis, degradation, and sand equivalent.

Based on the results of the 2001 investigation, one (1) granular area was 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.

Table 1: Pit Run Gradation

Test Pit	Depth (m)	Fines (%)* <0.075mm	Sand (%)* 0.075- 4.75mm	Gravel (%)* 4.75-75mm	USC
01-1	0.0-5.0	13.7	52.9	33.4	SM1
01-2	0.2-3.8	5.5	54.2	40.3	SW-SM
01-3	2.5-6.0	5.2	53.5	41.3	SP-SM
01-4	0.2-5.8	6.0	54.7	39.3	SP-SM
01-5	0.0-4.0	54.6	32.8	12.5	FINE
01-5	4.0-6.0	5.2	43.6	51.2	GW-GM
Average		15	48.6	36.4	-

Material Durability: Table 2 shows the results of the durability tests as well as the specifications as required in the Standard Specifications for Highway Construction.

Table 2: Durability Test Results

TP	Degradation (%)	Sand Equivalent (%)
01-02	74	67.5
01-03	75.3	69.2
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	
Degradation	>35 for subbase; >40 graded aggregate seals	

Material Suitability: Based on the 2001 investigation results, the material in the suitability area is judged to be suitable for the following purposes:

Table 3: Suitability

	Pit Run	Crush
Suitability Areas	Bridge End Fill SGSB	HFSA 25mm WGB

The samples tested meet the gradation, sand equivalent, and degradation specifications for (sub)base course, bridge end fill and surfacing aggregate. Additional quality testing is recommended to determine suitability for other aggregate products.

Volume Estimates: Table 4 shows the volume estimates that can be expected for topsoil, overburden and gravel from the 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 4: Volume Estimates

Suitability Area ~2,500m²	Topsoil	Overburden	Granular Material
Volume (m³)	0	0	12,500

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 (2017, 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.
- The existing overburden stockpile at the top of the pit face to the south will require relocation to facilitate new mining and resloping. The material is to

be moved to the existing overburden stockpile areas, or as directed by the Ministry Representative.

- The crusher is recommended to be located as identified on the Pit Development Plan, with mining proceeding in a southern direction.
- Processed aggregate may be stockpiled on the pit floor, or where space permits as directed by the Ministry Representative. Site preparation may be required to create a clear and level stockpile area.
- Due to the high relief of the deposit, it will be necessary to utilize a bulldozer to push material to the production area to avoid an excessively high vertical pit face.
- 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.

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