

# Technical Summary

December 2010

**Pit Name:** Cottonwood River Pit

**Provincial Pit Number:** 5701

**Location:** 700m north of the Highway 97 crossing of the Cottonwood River, centered at UTM 9 6554430N, 453030E.

**Legal Land Description:** All that unsurveyed Crown land in the vicinity of Bass Creek, Cassiar District, containing 8.8 hectares, more or less.

**2010 Investigation:** In the summer of 2010, the Geotechnical and Materials Engineering section of the BCMoT conducted a review of current information for the Cottonwood River Pit. This review included a review of past geotechnical studies, the mapping of the current workings using differentially corrected GPS data, the interpretation of aerial photographs of the pit and vicinity, an assessment of the current Land Act interests for the site, and an assessment of the current archaeological information for the pit.

Past Studies: File geotechnical information was determined to be current and comprehensive to conclude that no further field assessment was required. The most recent geotechnical information is dated March 30, 1998. Most of the aggregate reserves identified in this study remain unexploited. As a result, this update includes preparing a pit plan (with the current workings and test pits spatially located – Figures 1 and 2), and preparing a development plan (Figure 3).

Crown Land Rights: A review of Crown rights information found that the current Land Act Section 16 is correct with the exception of the omission of a sliver parcel along the edge of the highway. The addition of this parcel to the current Reserve will increase the area to 9.9Ha.

Site Geomorphology: Aerial photographic analysis found the majority of the deposit to be associated with a high fluvial terrace located at the confluence of the Bass Creek and Cottonwood Rivers (approximately 6.2Ha.). A small portion of the Reserve extends onto a lower terrace south of the current workings. All previous mining and exploration work has occurred on the higher terrace. Aggregate from Bass Creek and its tributaries likely have the dominant influence on the aggregate properties within the Reserve. The higher terrace is bound in the north and west by the Bass Creek, in the east by Highway 97, and in the south by the terrace escarpment. A high water table is likely to be an impediment to developing the lower terrace.

**Archaeology:** No archaeological information was found on file and as a result an Archaeological Overview Assessment was commissioned. Following findings of high archaeological potential, an Archaeological Impact Assessment was conducted. The Archaeological Impact Assessment found no protected sites.

**Material Gradation:** See attach report

**Material Durability:** See attach report

**Material Suitability:** See attach report

**Volume Estimate:** Table 1 shows the volume estimates that can be expected for overburden (includes topsoil) and aggregate from Area A and Area B. Besides the volume indicated for Area A, a crush stockpile on site contains an estimated 3050m<sup>3</sup>.

**Table 1. Volume Estimates**

	Area A (2.2Ha.)		Area B (4.0Ha.)	
	Overburden	Aggregate	Overburden	Aggregate
<b>Layer Thickness (m)</b>	<b>0.3</b>	<b>5.2</b>	<b>0.2</b>	<b>5.7</b>
<b>Volume (m<sup>3</sup>)</b>	<b>6,600</b>	<b>114,000</b>	<b>8,000</b>	<b>228,000</b>

**Note:** The actual volume is likely higher than reported here as all test pits bottomed out in aggregate (10 in gravel and 2 in sand).

**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, Mines and Petroleum Resources, 2008 (or later edition)), as well as the Standard Specifications for Highway Construction (BC Ministry of Transportation and Infrastructure, 2009 (or later edition)).
- The water table was not encountered in any of the test pits excavated and is not expected to be a concern for future pit development.
- Starting at the location shown in Figure 3, pit development should proceed in a south-westerly direction along the edge of the southern escarpment to the rim of the escarpment above the western edge of the Reserve boundary (aggregate Area A). Overburden and topsoil can be stockpiled along the northern edge of Area A. A second lift should then be excavated beginning at the north-eastern edge of Area A and proceed in a south-westerly direction. Additional lifts may also be warranted.

At test pit 96-2, a 1m thick silty sand layer at a depth of 1.3m was found. As this test pit is at the bottom of the pit, the possibility exists that the silty-sand layer extends over a larger area. This material may have to be separated from the

aggregate above and below and stockpiled or mixed depending on the desired product.

Once Area A is fully exhausted, topsoil and overburden from the undeveloped areas (Area B) and from stockpiles can be distributed within the depleted Area A pit. Area B Pit development can then proceed northward to the edge of the Reserve. A 10m treed buffer must be maintained between any workings and the highway.

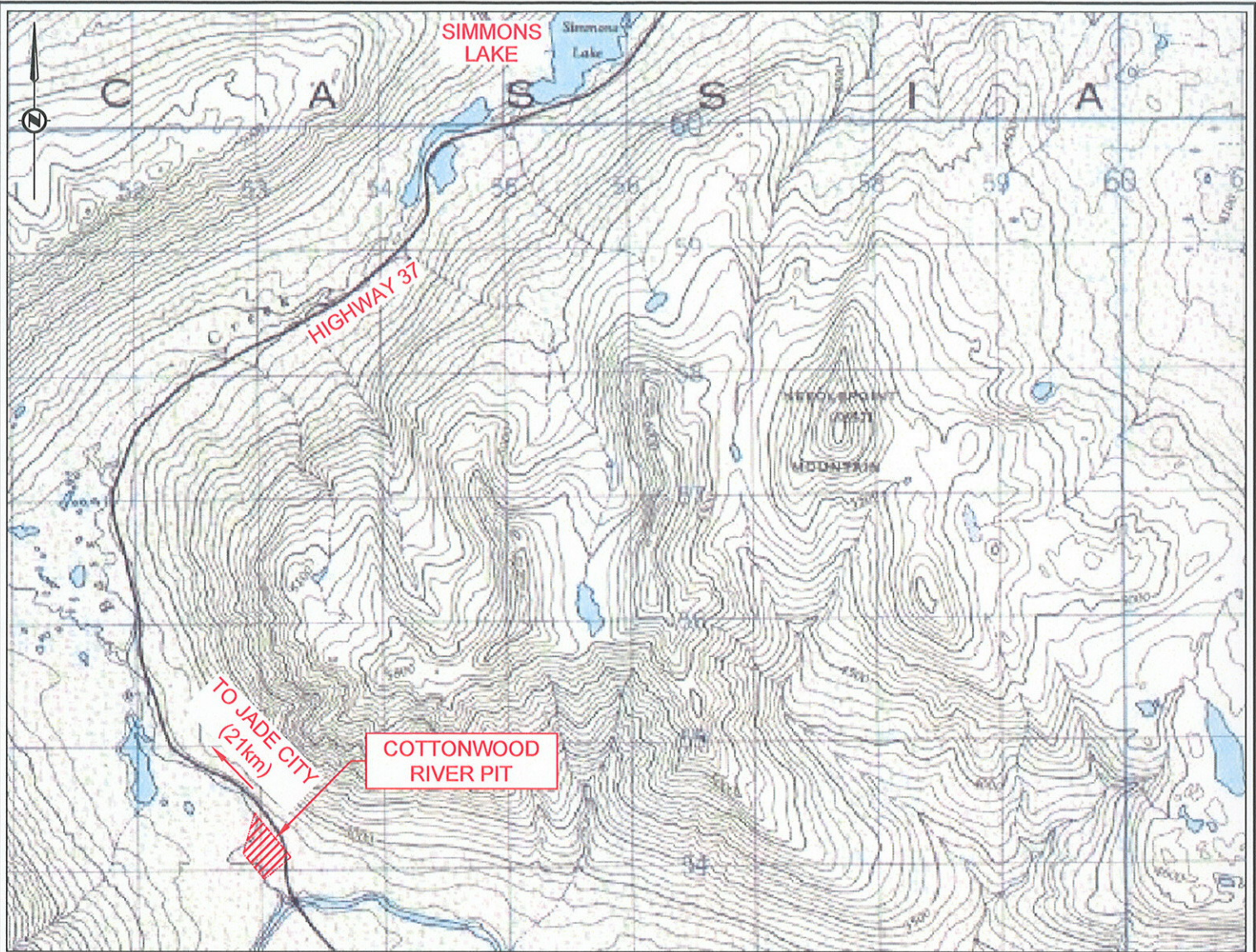
- 1979 aerial photographs show all of Area A to have been recently cleared. However, as several years of forest regeneration has occurred since the original clearing, additional clearing will be required. The timber within Area A appears to be non-merchantable, but this should be confirmed. The merchantability of the timber in Area B should also be assessed. All disturbed wood should be salvaged, or chipped or burned on site.
- No additional road building is required to access the current pit.
- No dumping of debris or petroleum products will be permitted and the site must be left in a clean and safe condition.
- 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 top soil, and seeding.
- Should any of the above Pit Development Notes conflict with the Health, Safety and Reclamation Code for Mines in BC (2008, or later edition), then the Code will prevail.

### **Closure**

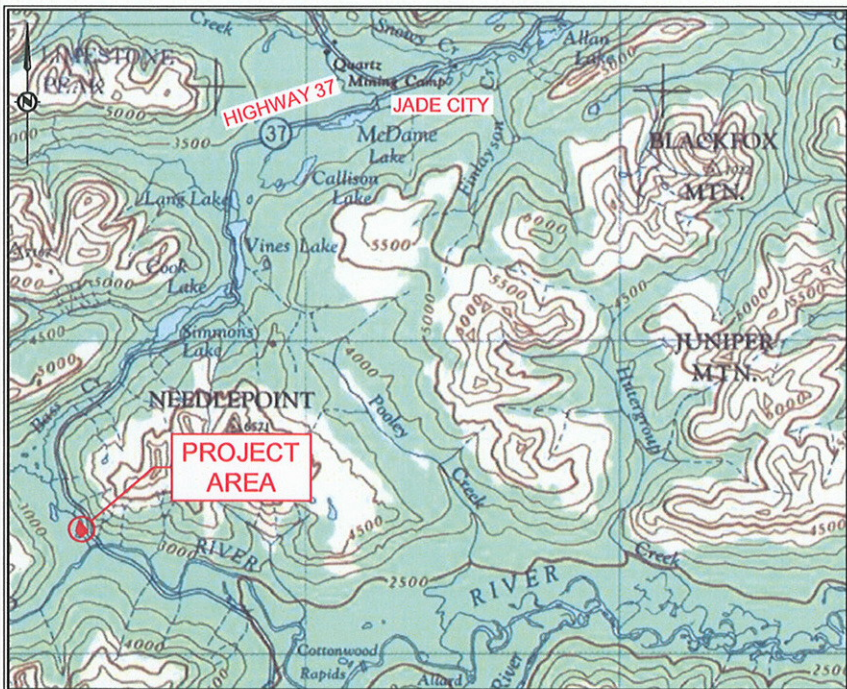
The findings of this report are inferred from the extrapolation of limited surface and subsurface data collected during the previous site investigation. It should be noted that different and possibly poorer soil conditions may exist between the test pit locations and volume estimates may vary from those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

Prepared By:  
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Northern Region

Prepared For / Reviewed By:  
Satish Prasad, P.Geo.  
Regional Aggregate Resource Manager  
Northern Region



0 1 2km  
SCALE: 1:50000



NTS BCGS MAP:  
104P.011,104P.012,  
104P.021,104P.022

0 1 5 10km  
SCALE: 1:250000

NTS BCGS MAP:  
104P.011,104P.012



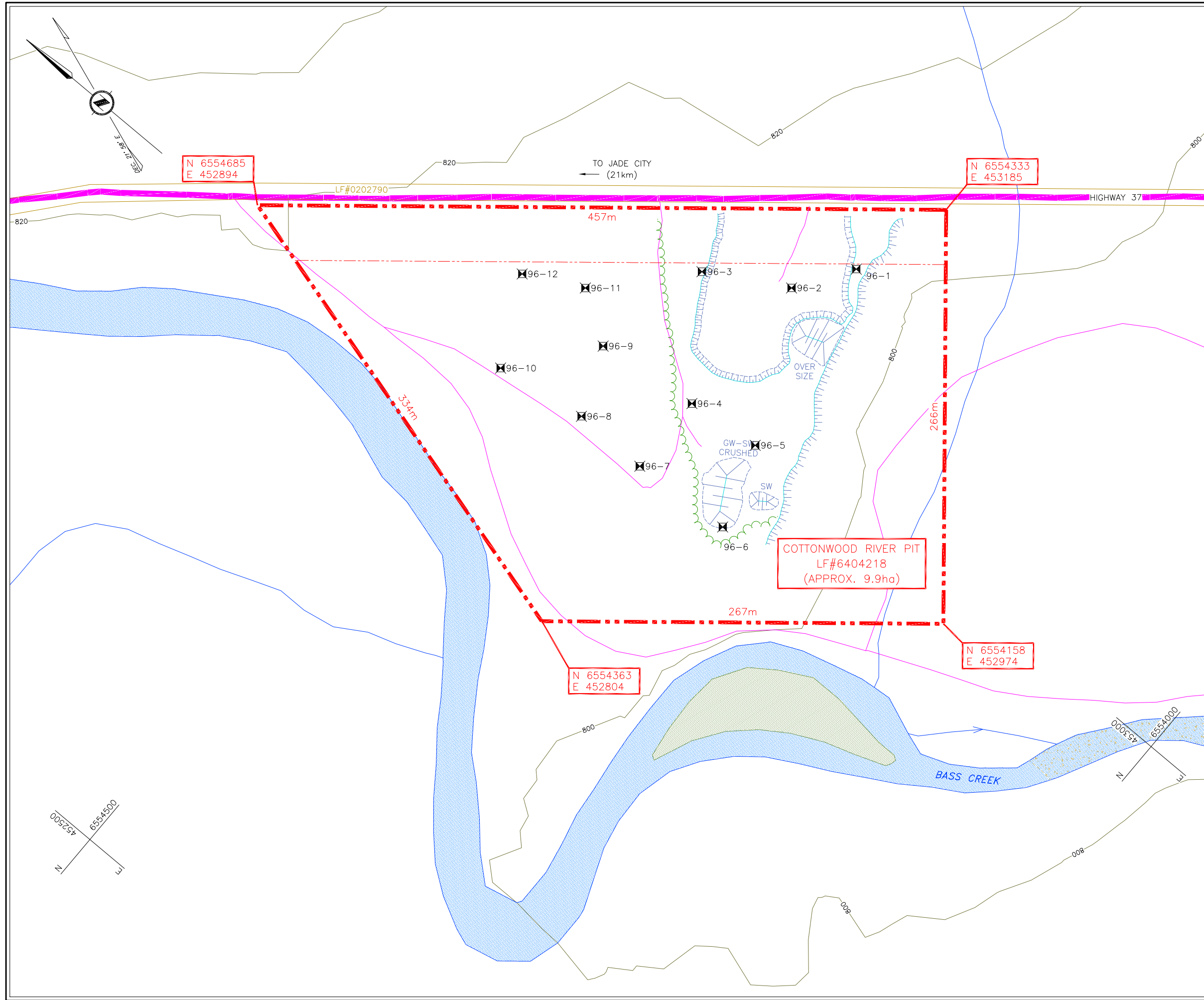
MINISTRY OF TRANSPORTATION  
AND INFRASTRUCTURE  
GEOTECHNICAL DEPARTMENT  
NORTHERN REGION



DWB Consulting Services Ltd.  
1A, 1750 Quinn Street  
Prince George, B.C.  
V2N 1X3  
Phone: (250) 562-5541 Fax: (250) 562-5561

FIGURE 1  
BULKLEY-STIKINE DISTRICT  
COTTONWOOD RIVER PIT  
LOCATION PLAN (2010)

FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER	REV
		NR	1019-198-F1	B



### PIT LEGEND

<ul style="list-style-type: none"> <li><span style="color: red; font-weight: bold;">- - - -</span> RESERVE BOUNDARY</li> <li><span style="color: magenta; font-weight: bold;">———</span> HIGHWAY</li> <li><span style="color: magenta; font-weight: bold;">———</span> ACCESS ROAD</li> <li><span style="color: blue; font-weight: bold;">———</span> CREEK OR STREAM</li> <li><span style="border: 1px solid blue; padding: 2px;"> </span> PIT FACE</li> <li><span style="border: 1px solid blue; padding: 2px;"> </span> NATURAL EMBANKMENT TOP</li> <li><span style="color: brown; font-weight: bold;">———</span> 800 CONTOUR LINE (100m INTERVAL)</li> <li><span style="color: brown; font-weight: bold;">———</span> 780 CONTOUR LINE (20m INTERVAL)</li> <li><span style="color: yellow; font-weight: bold;">———</span> CROWN LAND RESERVE BOUNDARY</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: blue; font-weight: bold;">———</span> RIVER</li> <li><span style="background-color: yellow; border: 1px solid black; border-radius: 50%; display: inline-block; width: 15px; height: 10px;"></span> SANDBAR</li> <li><span style="background-color: green; border: 1px solid black; border-radius: 50%; display: inline-block; width: 15px; height: 10px;"></span> ISLAND</li> <li><span style="color: black; font-weight: bold;">⊗</span> TEST PIT</li> <li><span style="color: green; font-weight: bold;">———</span> TREELINE</li> </ul>
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**T.R.I.M. NOTE:**

1. 20m CONTOUR INTERVAL.
2. BASE MAP DERIVED FROM T.R.I.M. DIGITAL MAP DATA:  
 -MAP NO.: 104P.011, 104P.012  
 -DATUM: NAD83, UTM ZONE 9

**MINISTRY OF TRANSPORTATION  
AND INFRASTRUCTURE**

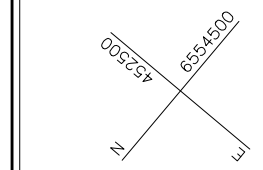
BRANCH  
REGION\_NAME

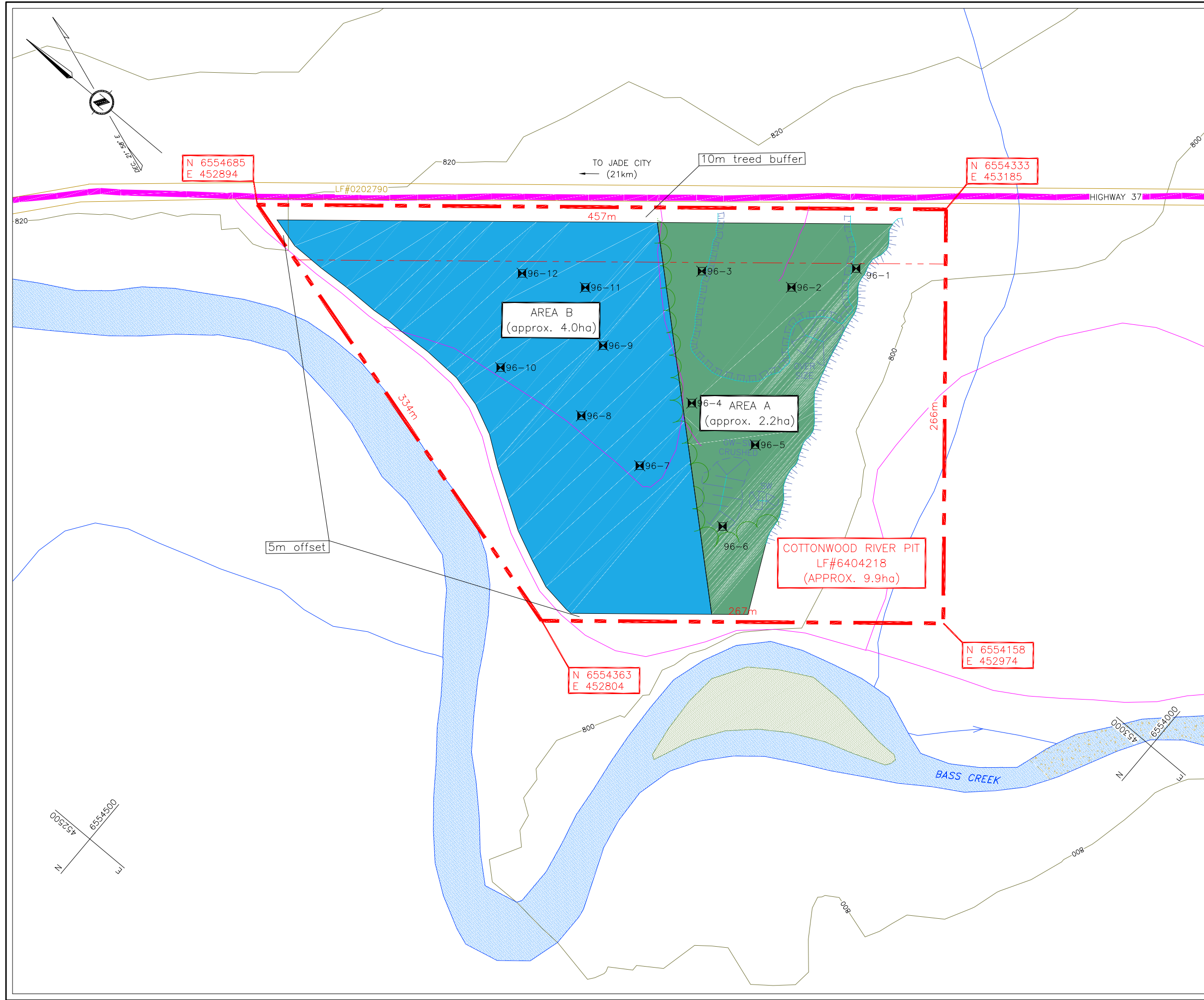
**FIGURE 2**  
 BULKLEY-STIKINE DISTRICT  
 COTTONWOOD RIVER PIT  
 PIT PLAN (2010)



REV	DATE	REVISIONS	SIGNATURE
A	AUG 2010	ISSUED FOR REVIEW	B. Miller

SENIOR DESIGNER DATE: YYYY-MM-DD	DESIGNED BY: _____ DATE: YYYY-MM-DD QC BY: _____ DATE: YYYY-MM-DD QA BY: _____ DATE: YYYY-MM-DD DRAWN BY: _____ DATE: YYYY-MM-DD	REG: R	DRAWING NUMBER: _____	REV: A
FILE NUMBER	PROJECT NUMBER	REG	DWG NUMBER	REV





### PIT LEGEND

- - - - - RESERVE BOUNDARY
- - - - - HIGHWAY
- - - - - ACCESS ROAD
- - - - - CREEK OR STREAM
- PIT FACE
- NATURAL EMBANKMENT TOP
- - - - - CONTOUR LINE (100m INTERVAL)
- - - - - CONTOUR LINE (20m INTERVAL)
- CROWN LAND RESERVE BOUNDARY
- - - - - RIVER
- SANDBAR
- ISLAND
- X TEST PIT
- - - - - TREELINE

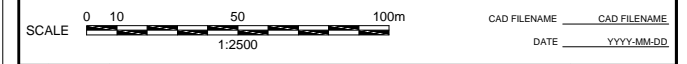
**T.R.I.M. NOTE:**

1. 20m CONTOUR INTERVAL.
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 -DATUM: NAD83, UTM ZONE 9

**MINISTRY OF TRANSPORTATION  
AND INFRASTRUCTURE**

BRANCH  
REGION\_NAME

**FIGURE 3**  
 BULKLEY-STIKINE DISTRICT  
 COTTONWOOD RIVER PIT  
 DEVELOPMENT PLAN (2010)



REV	DATE	REVISIONS	SIGNATURE
A	AUG 2010	ISSUED FOR REVIEW	B. Miller

DESIGNED BY: _____ DATE: YYYY-MM-DD		DESIGNED BY: _____ DATE: YYYY-MM-DD	
QUALITY CONTROL: _____ DATE: YYYY-MM-DD		QUALITY CONTROL: _____ DATE: YYYY-MM-DD	
QUALITY ASSURANCE: _____ DATE: YYYY-MM-DD		QUALITY ASSURANCE: _____ DATE: YYYY-MM-DD	
DRAWN BY: _____ DATE: YYYY-MM-DD		DRAWN BY: _____ DATE: YYYY-MM-DD	
FILE NUMBER	PROJECT NUMBER	REG	DRAWING NUMBER
		R	A

## **Appendix 1**

### **Photographs July 2010**



Plate 1. Looking south onto the Cottonwood River Pit.



Plate 2. Looking southwest onto the Cottonwood River Pit.





Plate 3. Looking west onto the Cottonwood River Pit.



Plate 4. Aggregate exposed at the south west edge of the pit. The GPS unit is 22cm.



Plate 5. Crushed stockpile containing an estimated 3050m<sup>3</sup>.



Plate 6. Close up of rain washed aggregate at the base of the crushed stockpile shown in Plate 5. The GPS unit is 22cm.

**Geotechnical Investigation**  
**March 30, 1998**



File: M53-644-5328G-06.11

Date: March 30, 1998

To: District Highways Manager, Stikine

Re: Cottonwood River Pit (5328G/5601)

Please find attached the pit report and development plan for Cottonwood Pit. This evaluation was carried out to update the inventory of bulk construction materials for the Stikine District north.

A quantity of 175,000 cubic metres of gravel suitable for Base Course, Paving, and Surface Treatment aggregates and Select Granular Sub-base was found.

It is recommended that this site, formerly known as Cottonwood River South Pit (#2) be kept as a Ministry reserve and be known henceforth as Cottonwood River Pit.

Jim Place, P. Geo.  
Gravel Management and Terrain Analysis Geoscientist

## PIT TESTING REPORT: COTTONWOOD RIVER PIT (5328G/5601-)

**Project:** Cottonwood River Pit was test pitted and surveyed by Geotech and Materials staff using a hired excavator in August of 1996. A total of twelve test pits were dug to an average depth of 6.0 metres. All samples were tested at the Geotechnical and Materials Laboratory in Terrace.

**Location:** The pit is located .7 kilometres north of the Cottonwood River Bridge on the west side of Highway 37.

**Laboratory Testing Results:** All testing was carried out by Ministry staff according to the Manual of Test Procedures: Soils and Mineral Aggregates. Specifications indicated are from the Standard Specifications for Highway Construction, 1996.

Average Overall Gradation: Corrected for Oversize

4.75 to 75mm (gravel) = 43%	75 to 150mm = 10%
.075 to 4.75mm (sand) = 28%	150 to 225mm = 10%
< .075mm (fines) = 2%	>225mm = 7%

Plastic Fines: Sand Equivalent Test

Average: 86  
Range: 83 - 89

The minimum allowable values are:

- i) 40 for 25 and 50mm Base Course and fine asphalt aggregates;
- ii) 30 for 75mm Base Course Aggregates; and
- iii) 20 for Sub-Base and Surfacing Aggregate.

Durability:

Degradation Test      Average: 73  
   Range: 46 - 85

The minimum allowable values are:

- i) 40 for Surface Treatment Aggregates
- ii) 35 for Base Course and Paving Aggregates

Durability Index Test      Average (Coarse/Fine): 82/79

Although not found in the Standard Specifications the accepted minimum allowable for Base Course and Paving Aggregates is a coarse value of 65.

Soundness:

Magnesium Sulphate Soundness Test

Coarse: 4.5 %Loss  
Fine: 13.0 %Loss

The minimum allowable Values are:

- i) 20% Coarse and 25% Fine for Base Course and Sub-Base
- ii) 15% Coarse and 18% Fine for Class 1 Asphalt Aggregate
- iii) 20% Coarse and 23% Fine for Class 2 Asphalt Aggregate
- iv) 12% Coarse for Surface Treatment Aggregates

**Suitability of Material:**

Based on laboratory testing and Standard Specifications the material at Cottonwood River Pit is suitable for the following:

Base Course Aggregates (all sizes)  
Paving Aggregates  
Surface Treatment Aggregates  
Select Granular Sub Base

**Quantity of Material:**

Based on a useable depth of 5.3 m there is an estimated minimum volume of 175,000 cubic metres of material within the tested area.

**Pit Characteristics and Constraints:**

Topography and Landform: Glacial outwash

Vegetation: Where present is typical northern bush consisting mostly of spruce and pine

Overburden: Where present consisted of thin organic topsoil and silty sand between .2 and .3 metres thick

Watertable: Was not encountered

Access: Well established off Hwy 37

Tenure: Part of an existing Section 12 Crown Lands Reserve that is being amended to better take in the actual extent of the pit. The amendment was applied for in December, 1996.

Other Potential Constraints: None

**Recommendations:**

It is recommended that this site be considered as a source of all types of highway construction and maintenance aggregates for the area north of the Cottonwood River Bridge.

Previous construction jobs in the vicinity, particularly the Cottonwood River Bridge and realignment (1983) have left various stockpiles of unknown aggregates and overs. It is recommended that these piles be incorporated into any future aggregate production in the pit. Unknown piles should be tested to see if they are suitable for use as maintenance materials.

MINISTRY OF TRANSPORTATION HIGHWAYS  
 GEOTECHNICAL MATERIALS ENGINEERING  
 AGGREGATE TESTHOLE SUMMARY SHEET

PROJECT COTTON WOOD PIT  
 REGION 5 DISTRICT STIKINE

FILE No. \_\_\_\_\_  
 DATE SEPT 22 / 97  
 CALCULATIONS BY SP  
 SHEET 1 OF 3

TESTHOLE #	DEPTH OF OVERBURDEN	DEPTH OF SOIL BOUNDARIES	SOIL CLASSIFICATION	GRADATION OF MATERIALS							SOUNDNESS / DURABILITY				MATERIAL AT BOTTOM OF HOLE	WATER TABLE DEPTH	COMMENTS		
				OVERSIZE			GRAVEL (4.75/75)	SAND (.075/4.75)	FINES (< .075)	MAXIMUM SIZE (mm)	PLASTIC FINES	DEGRADATION	MAGNESIUM SULPHATE SOUNDNESS					DURABILITY INDEX	
				75/150 mm	150/225 mm	>225 mm							FINE AGG	COARSE AGG				FINE AGG	COARSE AGG
96-1	0.3		TS																
		0.3	SP	10	10	15	49	50	1	1500	89	82						SOME CL COATING	
		4.5	SP	1			25	70	5	75								SP	
		6.0																	
96-2		0.0	GP	10	10	15	70	30	0	500									
		1.3	SPSM					92	8										
		2.3	SP	2	3		42	53	5	200				78	80			Silty - SAND SEAMS PRESENT	
		4.0	GP	5	3		58	41	1	250	89	85						GP	
		6.0																	
96-3	0.3		TS																
		0.3	GP	10	10	7	64	34	2	1000	87	60							
		3.5	GW	10	10	5	71	27	2	1000				78	85			GW	
		6.5																	
96-4	1.0		TS																
		1.0	GP	10	10	7	63	35	2	1000				77	80			GP	
		4.5																TS/ORGANICS/CRUSH REFUSAL-LARGE Boulders	

MINISTRY OF TRANSPORTATION HIGHWAYS  
GEOTECHNICAL MATERIALS ENGINEERING  
AGGREGATE TESTHOLE SUMMARY SHEET

PROJECT COTTONWOOD PIT  
REGION 5 DISTRICT STIKINE

FILE No. \_\_\_\_\_  
DATE SEPT 22/97  
CALCULATIONS BY JP  
SHEET 2 OF 3

TESTHOLE #	DEPTH OF OVERBURDEN	DEPTH OF SOIL BOUNDARIES	SOIL CLASSIFICATION	GRADATION OF MATERIALS							SOUNDNESS / DURABILITY				MATERIAL AT BOTTOM OF HOLE	WATERTABLE DEPTH	COMMENTS		
				OVERSIZE			GRAVEL (4.75/75)	SAND (.075/4.75)	FINES (< .075)	MAXIMUM SIZE (mm)	PLASTIC FINES	DEGRADATION	MAGNESIUM SULPHATE SOUNDNESS					DURABILITY INDEX	
				75/150 mm	150/225 mm	> 225 mm					SAND EQUIVALENT		FINE AGG	COARSE AGG				FINE AGG	COARSE AGG
96-5	0.2		TS																
		0.2 5.0	GP	10	10	5	58	40	2	500	85	70					GP		
96-6		0.0 3.0	SP	2	2		37	59	4	225	83	74						SELY-SAND SEAMS PRESENT	
		3.0 6.0	GP	10	10	5	63	35	2	500	83	81					GP		
96-7		0.0 1.5	SP																
		1.5 4.5	GP	10	8	4	54	44	2	400				80	80				
		4.5 5.5	GP	10	10	2	59	39	2	275				80	85	GP			
96-8		0.0 4.5	SP	10	10	10	44	55	1	1500	89	46							
		4.5 6.0	SP	6	4	3	48	50	2	300				80	82	SP			
96-9	0.3		TS																
		0.3 3.5	GW	10	10	10	68	30	2	1500	88	72							
		3.5 6.0	GP	10	10	10	67	32	1	1000	85	79					GP		

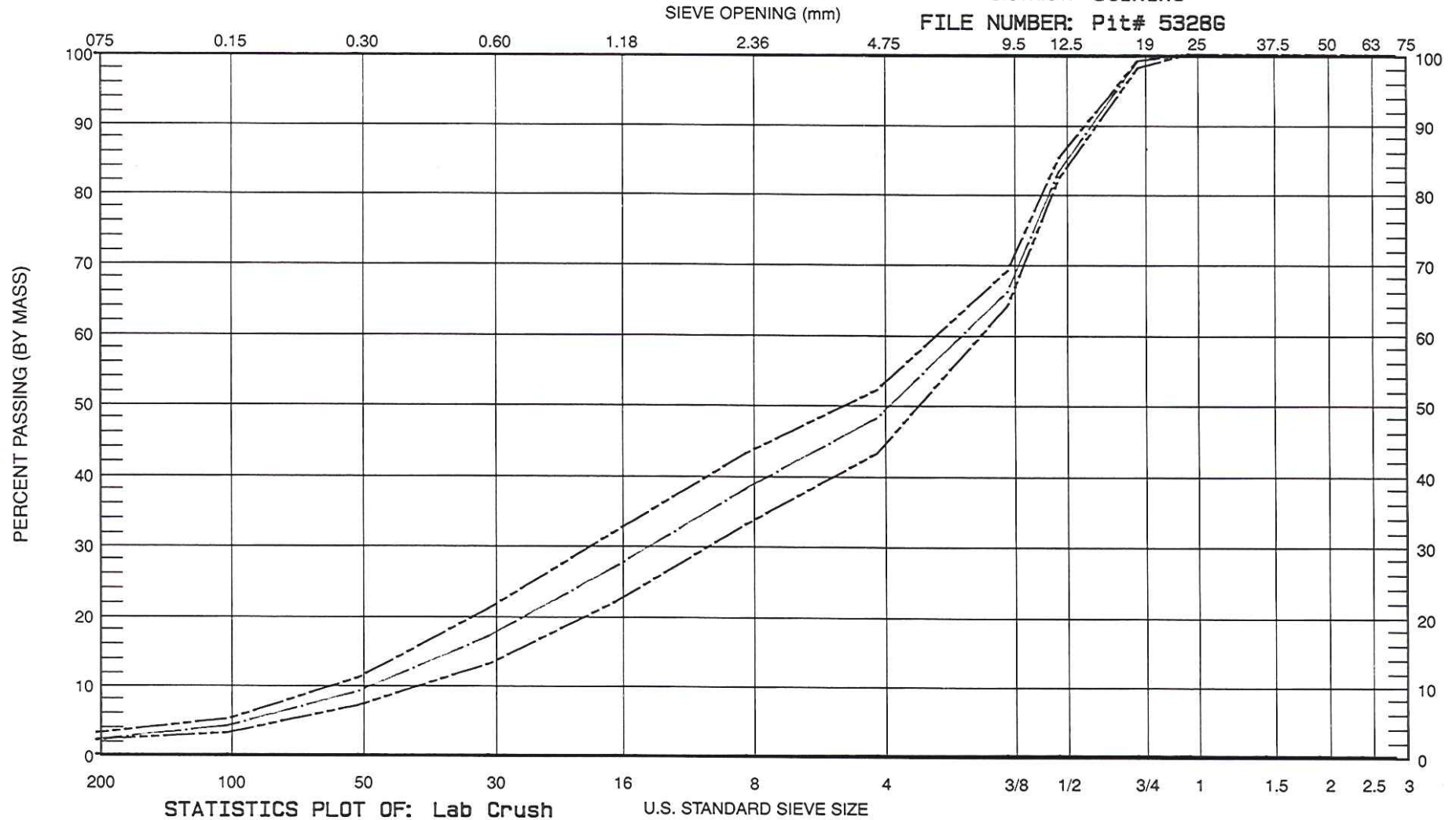




# AGGREGATE GRADATION CHART

REGION: North West  
 PROJECT: Cottonwood Pit  
 DISTRICT: Stikine

FILE NUMBER: Pit# 53286



STATISTICS PLOT OF: Lab Crush

BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
MEAN									

UPPER CONFIDENCE LEVEL (98%)

LOWER CONFIDENCE LEVEL (98%)

# AGGREGATE GRADATION CHART

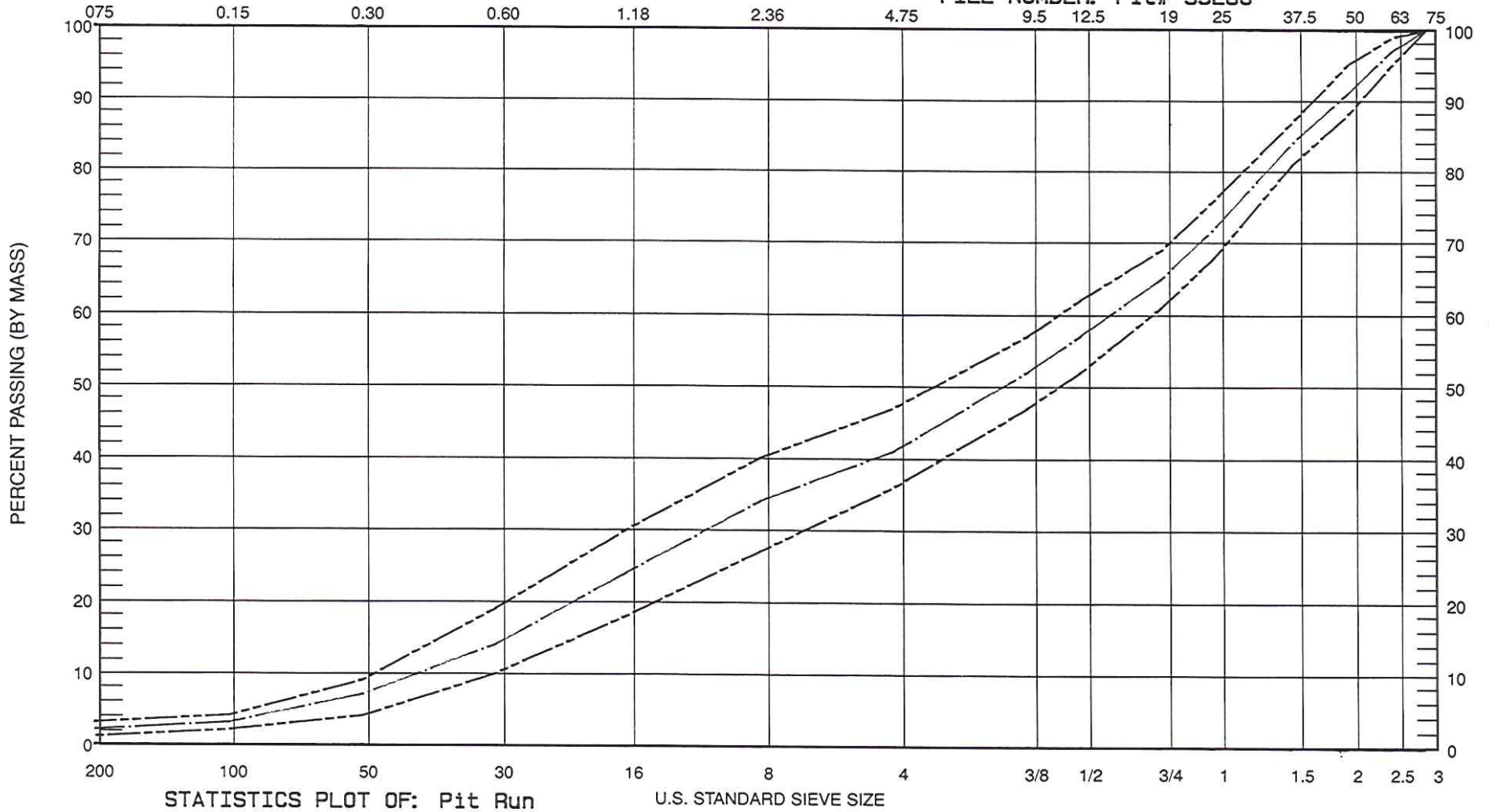
SIEVE OPENING (mm)

REGION: North West

PROJECT: Cottonwood Pit

DISTRICT: Stikine

FILE NUMBER: Pit# 53286



BAG #	SAMPLE #	TESTHOLE/PIT	DEPTH	SAMPLE OF	SAMPLED BY	METHOD	DATE	TESTED BY	DATE
MEAN									

UPPER CONFIDENCE LEVEL (98%)

LOWER CONFIDENCE LEVEL (98%)

GRADATION SUMMARY

GROUP P R

PIT: Cottonwood Pit  
 NOT CORRECTED FOR OVERSIZE

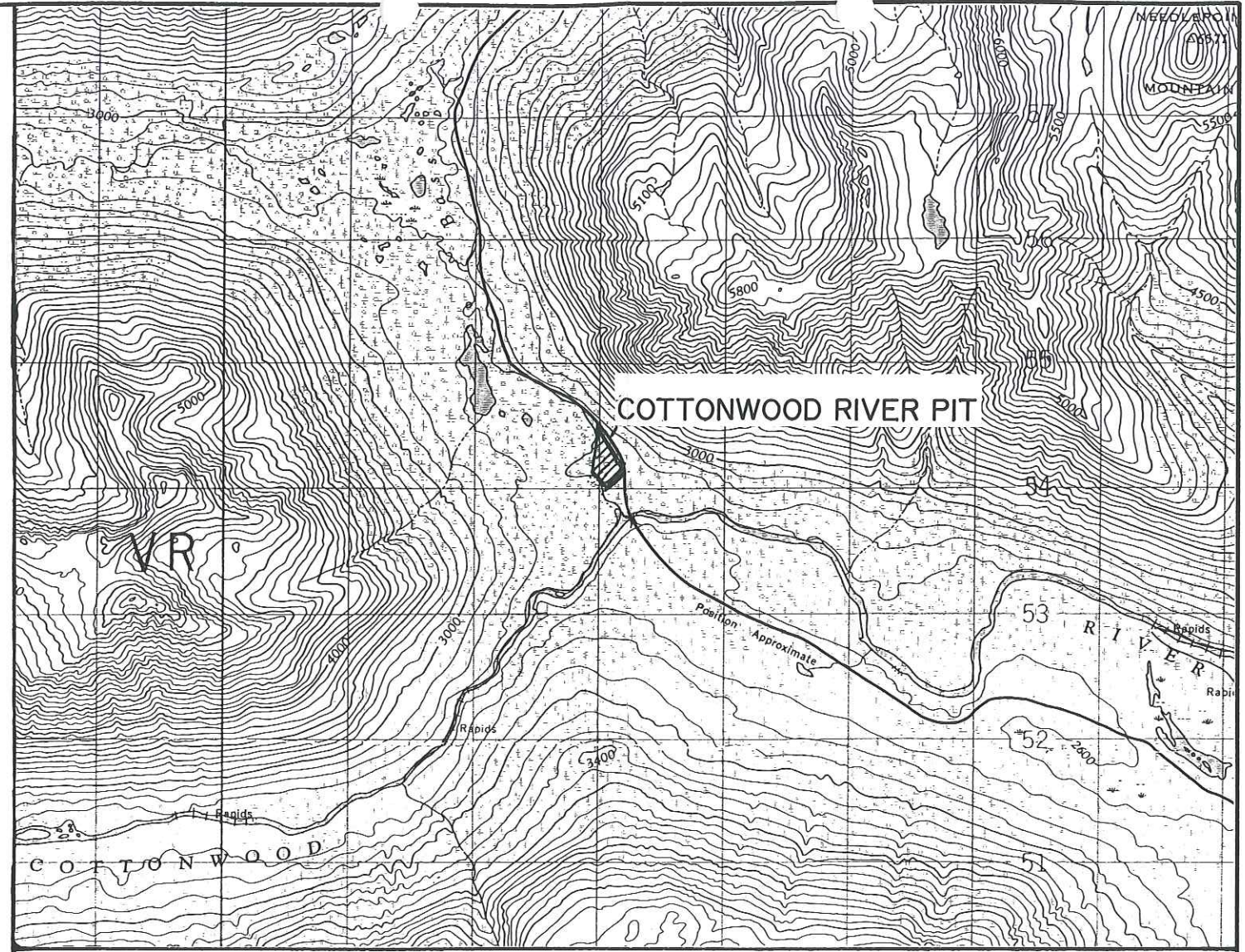
TH	SA	CLASS	FACT	+225	+150	+75	GRAV	SAND	FINE	75.0	63.0	50.0	37.5	25.0	19.0	12.5	9.50	4.75	2.36	1.18	.600	.300	.150	.075
96-01	1	SP	1.000				49	50	1	100	91	80	76	72	67	62	59	51	43	33	19	5	2	1.0
96-02	1	SP	1.000				42	53	5	100	100	95	85	79	73	69	65	58	53	46	34	16	7	4.8
96-02	2	GP	1.000				58	41	1	100	94	82	71	61	57	52	48	41	36	27	14	4	1	0.6
96-03	1	GP	1.000				64	34	2	100	100	95	87	75	63	54	48	35	26	17	10	5	3	1.5
96-03	2	GW	1.000				71	27	2	100	100	95	86	65	55	45	39	29	23	16	10	5	3	1.5
96-04	1	GP	1.000				63	35	2	100	93	88	82	69	61	53	47	37	30	22	14	8	4	2.2
96-05	1	GP	1.000				58	40	2	100	100	91	85	72	64	57	52	42	31	20	12	7	4	2.0
96-06	1	SP	1.000				37	59	4	100	100	97	94	85	80	74	70	64	59	50	36	20	9	4.2
96-06	2	GP	1.000				63	35	2	100	93	85	79	65	57	50	45	38	30	20	11	6	3	2.2
96-07	1	GP	1.000				54	44	2	100	96	90	80	74	68	62	57	46	38	27	15	7	3	1.8
96-07	2	GP	1.000				59	39	2	100	94	86	80	71	64	56	51	41	35	26	15	6	3	1.6
96-08	1	SP	1.000				44	55	1	100	96	92	90	80	76	70	65	56	47	35	20	6	2	1.4
96-08	2	SP	1.000				48	50	2	100	93	90	86	79	74	68	62	51	40	27	12	4	2	1.7
96-09	1	GW	1.000				68	30	2	100	100	91	86	65	58	49	44	32	24	16	9	5	3	1.7
96-09	2	GP	1.000				67	32	1	100	100	97	80	65	58	48	44	34	28	23	15	6	2	1.4
96-10	1	GP	1.000				58	40	2	100	100	96	88	73	65	58	52	42	33	26	17	8	3	1.6
96-10	2	GW	1.000				68	30	2	100	100	97	89	73	66	55	47	33	24	18	12	7	4	2.5
96-11	1	GP	1.000				62	36	2	100	100	95	87	73	67	57	51	37	29	17	9	4	3	1.7
96-11	2	GW	1.000				69	30	1	100	100	96	82	71	61	50	44	32	24	14	7	3	2	1.4
96-12	1	GP	1.000				64	34	2	100	93	84	78	69	62	54	47	36	25	15	8	5	3	1.9
96-12	2	GW	1.000				64	34	2	100	100	97	91	76	69	59	51	36	25	15	8	5	3	1.9

GRADATION SUMMARY




GROUP L C

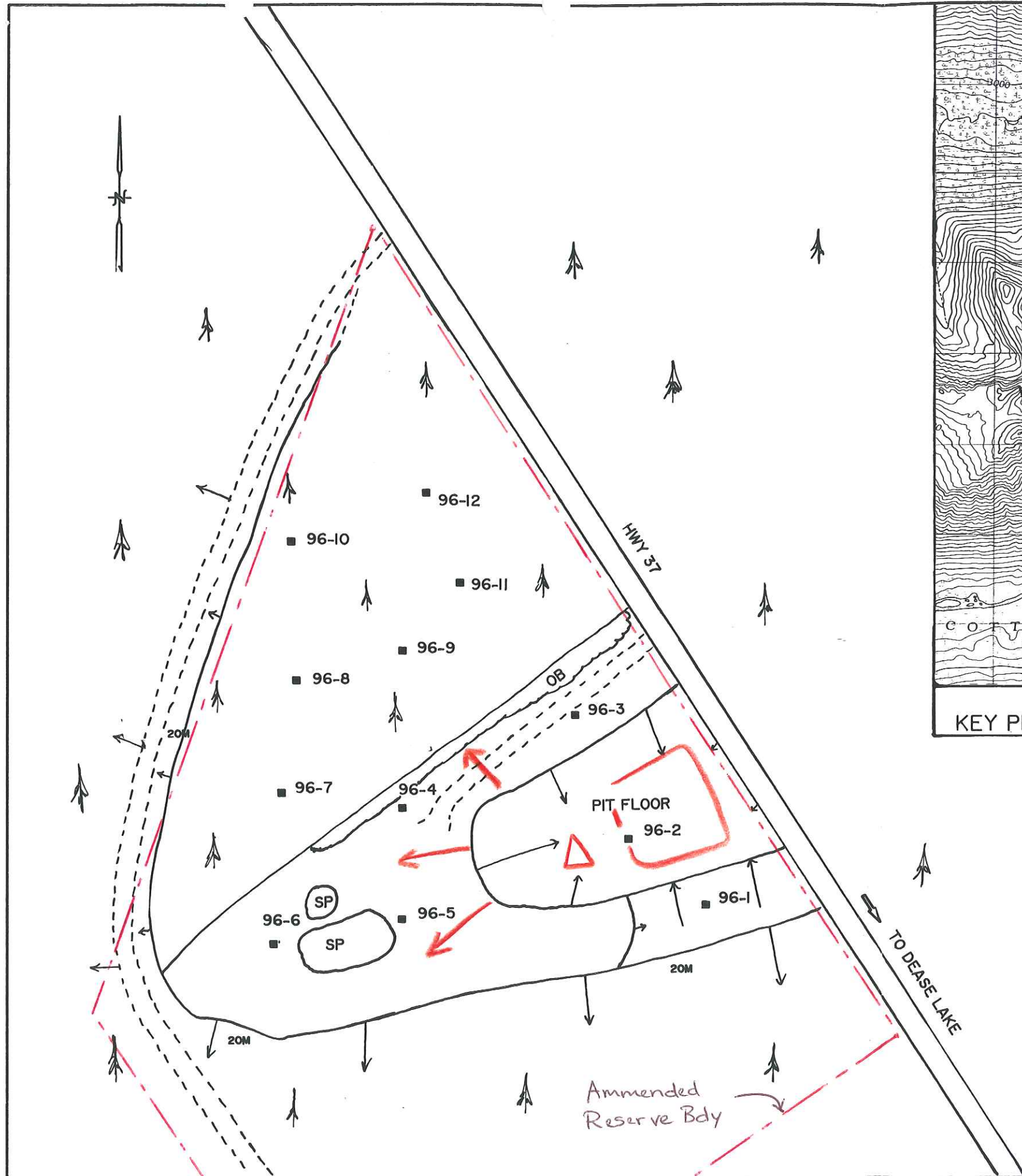
PIT: Cottonwood Pit  
 NOT CORRECTED FOR OVERSIZE


TH	SA	CLASS	FACT	+225	+150	+75	GRAV	SAND	FINE	75.0	63.0	50.0	37.5	25.0	19.0	12.5	9.50	4.75	2.36	1.18	.600	.300	.150	.075
96-01	1	SP	1.000				42	56	2	100	100	100	100	100	99	87	72	57	49	38	21	6	3	1.6
96-02	1	SP	1.000				46	50	4	100	100	100	100	100	98	84	69	55	48	40	29	15	7	4.3
96-02	2	SP	1.000				43	56	1	100	100	100	100	100	98	86	71	58	50	40	24	9	3	1.3
96-03	1	GW	1.000				58	40	2	100	100	100	100	100	99	82	65	43	32	22	13	8	4	2.1
96-03	2	GW	1.000				56	41	3	100	100	100	100	100	98	82	64	43	34	25	16	9	5	2.6
96-04	1	GP	1.000				51	46	3	100	100	100	100	100	99	85	67	49	40	31	21	12	6	2.8
96-05	1	GP	1.000				52	45	3	100	100	100	100	100	98	81	65	48	35	23	13	7	4	2.6
96-06	1	SP	1.000				35	61	4	100	100	100	100	100	99	89	77	65	58	47	32	18	8	4.1
96-06	2	GP	1.000				53	44	3	100	100	100	100	100	98	82	66	47	38	27	15	8	5	2.7
96-07	1	GP	1.000				52	46	2	100	100	100	100	100	99	84	67	49	38	26	15	8	4	2.2
96-07	2	GW	1.000				55	43	2	100	100	100	100	100	98	80	63	45	32	21	12	6	3	2.1
96-08	1	SP	1.000				43	55	2	100	100	100	100	100	100	87	72	57	46	35	20	6	3	1.8
96-08	2	SP	1.000				46	52	2	100	100	100	100	100	98	86	73	54	42	28	13	5	3	1.8
96-09	1	GW	1.000				57	40	3	100	100	100	100	100	99	83	65	43	33	23	15	9	5	2.5
96-09	2	GW	1.000				60	38	2	100	100	100	100	100	99	80	59	40	31	24	16	8	4	2.2
96-10	1	GW	1.000				54	44	2	100	100	100	100	100	99	84	67	46	35	27	18	10	4	2.2
96-10	2	GW	1.000				59	38	3	100	100	100	100	100	98	83	64	41	30	21	15	9	5	2.9
96-11	1	GP	1.000				59	40	1	100	100	100	100	100	99	79	61	41	32	20	10	5	2	1.3
96-11	2	GW	1.000				60	38	2	100	100	100	100	100	98	80	62	40	28	18	10	6	4	2.2
96-12	1	GW	1.000				58	40	2	100	100	100	100	100	99	81	63	43	31	19	11	7	4	2.5
96-12	2	GW	1.000				58	40	2	100	100	100	100	100	98	83	63	42	29	17	10	7	4	2.4



KEY PLAN SCALE 1 50000 NTS 104 P/4

-  - Direction of Development
-  - Crusher Set-up
-  - Stockpile Area



 PROVINCE OF BRITISH COLUMBIA MINISTRY OF TRANSPORTATION AND HIGHWAYS GEOTECHNICAL AND MATERIALS ENGINEERING PROFESSIONAL SERVICES NORTH WEST		
<b>COTTONWOOD RIVER PIT 5328G</b> <b>STIKINE DISTRICT</b> <b>AGGREGATE INVESTIGATION 1996</b>		
DRAWN RBB	DATE FEB/97	SCALE
FILE No.		1 2000