

APPENDIX 3B

Overburden Drilling Management (2016)



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Date Transmitted	ODM Lab Page No.	ODM Batch No.	Sample Numbers	No. of Samples	PDF File	Excel File	Preliminary	Final	Revised
November 16, 2016	1	7295	16SUV-013 to 030	18	X	X		X	
November 25, 2016	1	7327	1 6SUV-021, 023 and 029	3		X			X

Laboratory Data Report

Client Information

Geological Survey of Canada  
Rm 166, 3303-33 Street N.W.  
Calgary, AB  
T2L 2A7

[rod.smith@canada.ca](mailto:rod.smith@canada.ca)

Attention: Mr. Rod Smith

Data-File Information

Date: November 25, 2016  
Project name: 16SUV  
  
ODM batch number: 7295 and 7327  
Sample numbers: 16SUV-013 to 030  
Data file: 20167295 - GSC-NRCAN - Smith - KIMs-MMSIMs - October 2016

Number of samples in this report: 18  
Number of samples processed to date: 18  
Total number of samples in project: 18

Preliminary data:	
Final data:	X
Revised data:	x

Sample Processing Specifications: Kimberlite Indicator Minerals & Gold Grains.

- Submitted by client: Glacial till and alluvial sand and gravel samples.
- No archival split taken.
- All samples panned for gold, PGMs and fine-grained metallic indicator minerals.
- Heavy liquid separation specific gravity: 3.20.
- 0.25-2.0 mm nonferromagnetic heavy mineral fraction picked for KIMs and selected samples picked for MMSIMs.

Notes

Samples 16SUV-013, 017 to 020, 022 to 024 and 026 were also picked for MMSIMs.
0.18 to 0.25 mm fraction from sample 16SUV-023 processed and picked for additional KIMs.
Samples 16SUV-021 and 029 repicked for additional chromite grains.

Remy Huneault, P.Geo.  
President

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### Gold Grain Summary

Client: Geological Survey of Canada

File Name: 20167295 - GSC-NRCAN - Smith - KIMs-MMSIMs - October 2016

Total Number of Samples in this Report: 18

ODM Batch Number(s): 7295 and 7327

Sample Number	Number of Visible Gold Grains				Nonmag HMC Weight (g)*	Calculated PPB Visible Gold in HMC			
	Total	Reshaped	Modified	Pristine		Total	Reshaped	Modified	Pristine
16SUV-013	0	0	0	0	39.2	0	0	0	0
16SUV-014	1	1	0	0	76.0	178	178	0	0
16SUV-015	1	1	0	0	93.2	2	2	0	0
16SUV-016	0	0	0	0	79.2	0	0	0	0
16SUV-017	0	0	0	0	24.8	0	0	0	0
16SUV-018	0	0	0	0	44.0	0	0	0	0
16SUV-019	0	0	0	0	56.4	0	0	0	0
16SUV-020	0	0	0	0	62.8	0	0	0	0
16SUV-021	0	0	0	0	57.2	0	0	0	0
16SUV-022	0	0	0	0	92.4	0	0	0	0
16SUV-023	9	4	5	0	44.8	300	289	11	0
16SUV-024	0	0	0	0	91.6	0	0	0	0
16SUV-025	1	1	0	0	86.8	2	2	0	0
16SUV-026	0	0	0	0	64.0	0	0	0	0
16SUV-027	1	1	0	0	70.8	1	1	0	0
16SUV-028	0	0	0	0	110.0	0	0	0	0
16SUV-029	0	0	0	0	65.6	0	0	0	0
16SUV-030	0	0	0	0	63.2	0	0	0	0

\*calculated PPB Au based on assumed nonmagnetic HMC weight equivalent to 1/250th of the table feed

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Detailed Gold Grain Data

Client: Geological Survey of Canada  
File Name: 20167295 - GSC-NRCAN - Smith - KIMs-MMSIMs - October 2016  
Total Number of Samples in this Report: 18  
ODM Batch Number(s): 7295 and 7327

Sample Number	Dimensions (µm)			Number of Visible Gold Grains				Nonmag HMC Weight* (g)	Calculated V.G. Assay in HMC (ppb)	Metallic Minerals in Pan Concentrate
	Thickness	Width	Length	Reshaped	Modified	Pristine	Total			
16SUV-013	No Visible Gold									Tr (~2000 grains) pyrite (25-250µm). Tr (~500 grains) marcasite (25-50µm).
16SUV-014	40	C	200	225	1		<div><div>1</div><div>1</div></div>	<div><div>178</div><div>76.0</div></div>	<div><div>178</div><div>178</div></div>	Tr (~1000 grains) pyrite (25-250µm). Tr (~1000 grains) marcasite (25-100µm).
16SUV-015	10	C	25	75	1		<div><div>1</div><div>1</div></div>	<div><div>2</div><div>93.2</div></div>	<div><div>2</div><div>2</div></div>	Tr (~500 grains) pyrite (25-250µm). ~0.5% (~1,000,000 grains) marcasite (25-50µm).
16SUV-016	No Visible Gold									Tr (~2000 grains) pyrite (25-250µm). ~0.5% (~1,000,000 grains) marcasite (25-50µm).
16SUV-017	No Visible Gold									Tr (~200 grains) pyrite (25-75µm). Tr (~2000 grains) marcasite (25-50µm).
16SUV-018	No Visible Gold									Tr (~50 grains) pyrite (25-75µm). Tr (~300 grains) marcasite (25-50µm).
16SUV-019	No Visible Gold									~80% undifferentiated pyrite/marcasite grains (25-1000µm).
16SUV-020	No Visible Gold									~0.5% marcasite grains (25µm).
16SUV-021	No Visible Gold									No sulphides.
16SUV-022	No Visible Gold									Tr (~5000 grains) marcasite (25-200µm).
16SUV-023	3	C	15	15		1	1		<1	1 grain cinnabar (25µm).
	5	C	25	25	1	1	2		1	
	8	C	25	50	1	1	2		3	
	10	C	50	50		2	2		9	
	27	C	125	150	1		1		85	
	36	C	150	225	1		<div><div>1</div><div>9</div></div>	<div><div>203</div><div>44.8</div></div>	<div><div>300</div><div>300</div></div>	
16SUV-024	No Visible Gold									No sulphides.
16SUV-025	10	C	50	50	1		<div><div>1</div><div>1</div></div>	<div><div>2</div><div>86.8</div></div>	<div><div>2</div><div>2</div></div>	Tr (~200 grains) pyrite (25-75µm). ~0.5% marcasite (25µm).
16SUV-026	No Visible Gold									Tr (~2000 grains) pyrite (25-200µm). ~2% marcasite (25µm).
16SUV-027	8	C	25	50	1		<div><div>1</div><div>1</div></div>	<div><div>1</div><div>70.8</div></div>	<div><div>1</div><div>1</div></div>	Tr (~100 grains) pyrite (25-75µm).
16SUV-028	No Visible Gold									Tr (~200 grains) pyrite (25-75µm). Tr (~100 grains) marcasite (25µm).
16SUV-029	No Visible Gold									No sulphides.
16SUV-030	No Visible Gold									Tr (~300 grains) marcasite (15-50µm).

\*calculated PPB Au based on assumed nonmagnetic HMC weight equivalent to 1/250th of the table feed

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Primary Sample Processing Weights and Descriptions

Client: Geological Survey of Canada  
File Name: 20167295 - GSC-NRCAN - Smith - KIMs-MMSIMs - October 2016  
Total Number of Samples in this Report: 18  
ODM Batch Number(s): 7295 and 7327

Sample Number	Weight (kg wet)					Screening and Shaking Table Sample Descriptions													Class				
											Clasts (+2.0 mm)					Matrix (-2.0 mm)							
											Percentage					Distribution					Colour		
Bulk Rec'd	Archived Split	Table Split	+2.0 mm Clasts	Table Feed	Size	V/S	GR	LS	OT*	S/U	SD	ST	CY	ORG	SD	CY							
16SUV-013	22.9	0.0	22.9	13.1	9.8	P	20	0	80	0	S	MC	-	N	N	LOC	NA	SAND + GRAVEL					
16SUV-014	21.3	0.0	21.3	2.3	19.0	G	30	0	70	0	S	MC	-	N	N	LOC	NA	SAND + GRAVEL					
16SUV-015	25.1	0.0	25.1	1.8	23.3	P	10	0	90	0	S	MC	-	N	N	LOC	NA	SAND + GRAVEL					
16SUV-016	21.4	0.0	21.4	1.6	19.8	P	20	0	80	0	S	FM	-	N	N	LOC	NA	SAND + GRAVEL					
16SUV-017	26.6	0.0	26.6	20.4	6.2	P	80	0	Tr	20	S	MC	-	N	N	GB	NA	SAND + GRAVEL					
16SUV-018	23.3	0.0	23.3	12.3	11.0	P	80	0	Tr	20	S	MC	-	N	N	GB	NA	SAND + GRAVEL					
16SUV-019	15.1	0.0	15.1	1.0	14.1	P	30	Tr	40	30	S	-	+	Y	N	GB	GB	TILL					
16SUV-020	16.5	0.0	16.5	0.8	15.7	P	60	Tr	20	20	S	-	Y	+	N	GB	GB	TILL					
16SUV-021	16.6	0.0	16.6	2.3	14.3	P	0	50	20	20	S	Y	Y	-	N	OC	OC	TILL					
16SUV-022	23.2	0.0	23.2	0.1	23.1	P	100**	0	0	0	S	FM	-	N	N	GB	NA	SAND					
16SUV-023	26.2	0.0	26.2	15.0	11.2	P	40	0	10	50	S	FMC	-	N	N	OC	NA	SAND + GRAVEL					
16SUV-024	23.4	0.0	23.4	0.5	22.9	G	10	90	0	0	S	FM	-	N	N	GB	NA	SAND + GRAVEL					
16SUV-025	23.7	0.0	23.7	2.0	21.7	G	10	Tr	20	70	S	MC	-	N	N	OC	NA	SAND + GRAVEL					
16SUV-026	23.1	0.0	23.1	7.1	16.0	P	Tr	0	10	90	S	MC	-	N	N	OC	NA	SAND + GRAVEL					
16SUV-027	20.5	0.0	20.5	2.8	17.7	G	10	Tr	20	70	S	MC	-	N	N	OC	NA	SAND + GRAVEL					
16SUV-028	29.6	0.0	29.6	2.1	27.5	G	10	Tr	10	80	S	MC	-	N	N	OC	NA	SAND + GRAVEL					
16SUV-029	17.2	0.0	17.2	0.8	16.4	G	0	100	0	0	S	MC	-	N	N	OC	NA	SAND					
16SUV-030	18.3	0.0	18.3	2.5	15.8	G	20	Tr	Tr	80	S	MC	-	N	N	OC	NA	SAND + GRAVEL					

\*Clasts listed as "other" are red & buff Proterozoic sediments.

\*\*Limonite cemented silica sand.

## APPENDIX 3B

### Laboratory Processing Weights

Client: Geological Survey of Canada

File Name: 20167295 - GSC-NRCAN - Smith - KIMs-MMSIMs - October 2016

Total Number of Samples in this Report: 18

ODM Batch Number(s): 7295 and 7327

Sample Number	Weight of -2.0 mm Table Concentrate (g)*												
	0.25 to 2.0 mm Heavy Liquid Separation S.G. 3.20												
	HMC S.G.>3.2												
	Nonferromagnetic HMC												
	Processed Split												
	Total	-0.25 mm	Total	Lights S.G. <3.2	Total	-0.25 mm (wash)	Mag	Total	Total		0.25 to 0.5 mm	0.5 to 1.0 mm	1.0 to 2.0 mm
									%	Weight			
16SUV-013	1734.2	814.7	919.5	870.5	49.0	4.6	13.00	31.4	100.0	31.4	18.1	6.30	7.00
16SUV-014	1096.0	503.8	592.2	341.8	250.4	13.0	141.30	96.1	100.0	96.1	36.1	23.00	37.00
16SUV-015	1655.0	850.8	804.2	764.2	40.0	4.4	6.20	29.4	100.0	29.4	14.2	8.30	6.90
16SUV-016	1409.5	740.8	668.7	611.3	57.4	4.7	8.90	43.8	100.0	43.8	19.9	14.10	9.80
16SUV-017	1670.1	769.8	900.3	899.4	0.9	0.0	0.01	0.8	100.0	0.8	0.8	0.01	0.03
16SUV-018	1603.1	649.6	953.5	951.6	1.9	0.2	0.01	1.7	100.0	1.7	1.5	0.10	0.08
16SUV-019	1033.0	838.7	194.3	181.2	13.1	3.6	0.50	9.0	100.0	9.0	3.5	3.20	2.30
16SUV-020	781.1	611.8	169.3	151.9	17.4	5.1	0.40	11.9	100.0	11.9	4.7	4.10	3.10
16SUV-021	1114.9	813.1	301.8	216.6	85.2	9.3	8.10	67.8	100.0	67.8	49.1	14.30	4.40
16SUV-022	861.5	811.0	50.5	49.4	1.1	0.1	0.01	1.0	100.0	1.0	0.7	0.10	0.20
16SUV-023	1095.2	678.6	416.6	410.0	6.6	0.5	0.40	5.7	100.0	5.7	2.6	1.60	1.50
16SUV-024	1941.1	1035.5	905.6	895.0	10.6	1.2	0.01	9.4	100.0	9.4	6.5	2.40	0.50
16SUV-025	2080.6	794.8	1285.8	1121.5	164.3	18.5	14.20	131.6	100.0	131.6	69.9	45.40	16.30
16SUV-026	1715.4	824.7	890.7	849.2	41.5	8.3	1.20	32.0	100.0	32.0	23.6	6.20	2.20
16SUV-027	1872.5	446.2	1426.3	1268.1	158.2	13.1	44.90	100.2	100.0	100.2	45.9	29.70	24.60
16SUV-028	1373.4	504.9	868.5	714.5	154.0	8.3	48.50	97.2	100.0	97.2	45.3	30.70	21.20
16SUV-029	1539.8	881.8	658.0	504.2	153.8	38.3	22.60	92.9	100.0	92.9	78.6	13.70	0.60
16SUV-030	960.3	315.8	644.5	572.7	71.8	6.2	24.20	41.4	100.0	41.4	18.8	10.70	11.90

\* Values greater than 0.1 g were weighed only to one decimal place; the zero was added in the second decimal position to facilitate column alignment.

APPENDIX 3B

Kimberlite Indicator Mineral Counts

Client: Geological Survey of Canada  
File Name: 20167295 - GSC-NRCAN - Smith - KIMs-MMSIMs - October 2016  
Total Number of Samples in this Report: 18  
ODM Batch Number(s): 7295 and 7327

Sample Number	Number of Grains																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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	1.0 to 2.0 mm						0.5 to 1.0 mm				0.25 to 0.5 mm						1.0 to 2.0 mm										0.5 to 1.0 mm						0.25 to 0.5 mm						Total (KIMs)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	Low-Cr diopside		Cpy		Gh		Low-Cr diopside		Cpy		Gh		Low-Cr diopside		Cpy		Gh		GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR	FO	GP	GO	DC	IM	CR	FO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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16SUV-013	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# APPENDIX 3B

## Kimberlite Indicator Mineral Remarks

Client: Geological Survey of Canada  
File Name: 20167295 - GSC-NRCAN - Smith - KIMs-MMSIMs - October 2016  
Total Number of Samples in this Report: 18  
ODM Batch Number(s): 7295 and 7327

Sample Number	Remarks	Sample Number	INPUT ASSEMBLAGE	INPUT REMARKS
16SUV-013	SEM checks from 0.25-0.5 mm fraction: 2 CR candidates = 2 CR; and 2 FO versus vesuvianite candidates = 2 vesuvianite	16SUV-013		SEM checks from 0.25-0.5 mm fraction: 2 CR candidates = 2 CR; and 2 FO versus vesuvianite candidates = 2 vesuvianite.
16SUV-014	Augite-goethite-almandine/diopside-marcasite assemblage. SEM checks from 0.5-1.0 mm fraction: 2 IM versus crustal ilmenite candidates = 1 IM and 1 crustal ilmenite; 1 CR versus tourmaline candidate = 1 tourmaline; and 1 sphalerite versus titanite candidate = 1 sphalerite. SEM checks from 0.25-0.5 mm fraction: 10 IM versus crustal ilmenite candidates = 1 IM and 9 crustal ilmenite; 4 CR versus crustal ilmenite candidates = 2 CR and 2 crustal ilmenite; and 6 FO versus fayalite candidates = 1 FO and 5 fayalite	16SUV-014	Augite-goethite-almandine/diopside-marcasite	SEM checks from 0.5-1.0 mm fraction: 2 IM versus crustal ilmenite candidates = 1 IM and 1 crustal ilmenite; 1 CR versus tourmaline candidate = 1 tourmaline; and 1 sphalerite versus titanite candidate = 1 sphalerite. SEM checks from 0.25-0.5 mm fraction: 10 IM versus crustal ilmenite candidates = 1 IM and 9 crustal ilmenite; 4 CR versus crustal ilmenite candidates = 2 CR and 2 crustal ilmenite; and 6 FO versus fayalite candidates = 1 FO and 5 fayalite
16SUV-015	Almandine-goethite-augite/marcasite assemblage. SEM check from 0.25-0.5 mm fraction: 1 GP versus zircon candidate = 1 zircon; and 1 IM versus crustal ilmenite candidate = 1 IM.	16SUV-015	Almandine-goethite-augite/marcasite	SEM check from 0.25-0.5 mm fraction: 1 GP versus zircon candidate = 1 zircon; and 1 IM versus crustal ilmenite candidate = 1 IM.
16SUV-016	Augite-goethite/marcasite assemblage. SEM checks from 0.25-0.5 mm fraction: 7 FO versus fayalite candidates = 7 fayalite.	16SUV-016	Augite-goethite/marcasite	SEM checks from 0.25-0.5 mm fraction: 7 FO versus fayalite candidates = 7 fayalite.
16SUV-017	No KIM remarks.	16SUV-017		
16SUV-018	SEM checks from 0.25-0.5 mm fraction: 5 CR candidates = 3 CR and 2 hercynite.	16SUV-018		SEM checks from 0.25-0.5 mm fraction: 5 CR candidates = 3 CR and 2 hercynite.
16SUV-019	No KIM remarks.	16SUV-019		
16SUV-020	No KIM remarks.	16SUV-020		
16SUV-021	Hornblende-almandine/diopside-titanite-apatite assemblage. SEM checks from 0.5-1.0 mm fraction: 1 GP versus almandine candidate = 1 GP; 3 GO versus almandine candidates = 3 almandine; and 4 IM versus crustal ilmenite candidates = 4 crustal ilmenite. SEM checks from 0.25-0.5 mm fraction: 6 GO versus almandine candidates = 1 GO (pyrope almandine), 4 almandine and 1 grossular; 2 IM versus crustal ilmenite candidates = 2 crustal ilmenite; 2 CR candidates = 2 CR; and 6 FO versus diopside candidates = 5 FO and 1 diopside. Sole IM from 0.5-1.0 mm fraction has partial alteration mantle.	16SUV-021	Hornblende-almandine/diopside-titanite-apatite	SEM checks from 0.5-1.0 mm fraction: 1 GP versus almandine candidate = 1 GP; 3 GO versus almandine candidates = 3 almandine; and 4 IM versus crustal ilmenite candidates = 4 crustal ilmenite. SEM checks from 0.25-0.5 mm fraction: 6 GO versus almandine candidates = 1 GO (pyrope almandine), 4 almandine and 1 grossular; 2 IM versus crustal ilmenite candidates = 2 crustal ilmenite; 2 CR candidates = 2 CR; and 6 FO versus diopside candidates = 5 FO and 1 diopside. Sole IM from 0.5-1.0 mm fraction has partial alteration mantle.
16SUV-022	No KIM remarks.	16SUV-022		
16SUV-023	SEM checks from 0.25-0.5 mm fraction: 2 GO versus almandine candidates = 2 almandine; 5 GO versus staurolite candidates = 5 staurolite; 15 IM versus crustal ilmenite candidates = 9 IM, 2 crustal ilmenite and 4 tourmaline; and 12 CR versus tourmaline candidates = 7 CR, 1 tourmaline and 4 hercynite.	16SUV-023		SEM checks from 0.25-0.5 mm fraction: 2 GO versus almandine candidates = 2 almandine; 5 GO versus staurolite candidates = 5 staurolite; 15 IM versus crustal ilmenite candidates = 9 IM, 2 crustal ilmenite and 4 tourmaline; and 12 CR versus tourmaline candidates = 7 CR, 1 tourmaline and 4 hercynite.
16SUV-024	SEM checks from 1.0-2.0 mm fraction: 3 CR versus tourmaline candidates = 3 tourmaline. SEM checks from 0.25-0.5 mm fraction: 1 worn GP versus zircon candidate = 1 zircon; 1 CR versus tourmaline candidate = 1 CR.	16SUV-024		SEM checks from 1.0-2.0 mm fraction: 3 CR versus tourmaline candidates = 3 tourmaline. SEM checks from 0.25-0.5 mm fraction: 1 worn GP versus zircon candidate = 1 zircon; 1 CR versus tourmaline candidate = 1 CR.
16SUV-025	Goethite/marcasite-diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 3 GP versus zircon candidates = 1 GP, 1 zircon and 1 fluorite.	16SUV-025	Goethite/marcasite-diopside	SEM checks from 0.25-0.5 mm fraction: 3 GP versus zircon candidates = 1 GP, 1 zircon and 1 fluorite.
16SUV-026	No KIM remarks.	16SUV-026		
16SUV-027	Augite-almandine/diopside assemblage. SEM checks from 0.5-1.0 mm fraction: 1 IM versus crustal ilmenite candidate = 1 IM; 6 CR versus tourmaline candidates = 3 CR, 1 tourmaline, 1 hercynite and 1 andradite; and 1 sphalerite versus titanite candidate = 1 sphalerite. SEM checks from 0.25-0.5 mm fraction: 10 IM versus crustal ilmenite candidates = 1 IM and 9 crustal ilmenite; and 10 CR versus hercynite candidates = 8 CR, 1 hercynite and 1 andradite.	16SUV-027	Augite-almandine/diopside	SEM checks from 0.5-1.0 mm fraction: 1 IM versus crustal ilmenite candidate = 1 IM; 6 CR versus tourmaline candidates = 3 CR, 1 tourmaline, 1 hercynite and 1 andradite; and 1 sphalerite versus titanite candidate = 1 sphalerite. SEM checks from 0.25-0.5 mm fraction: 10 IM versus crustal ilmenite candidates = 1 IM and 9 crustal ilmenite; and 10 CR versus hercynite candidates = 8 CR, 1 hercynite and 1 andradite.
16SUV-028	Augite-almandine-goethite/diopside-marcasite assemblage. SEM checks from 0.5-1.0 mm fraction: 4 GO versus almandine candidates = 1 GO (Cr-poor pyrope) and 3 almandine; and 1 IM versus CR candidate = 1 CR. SEM checks from 0.25-0.5 mm fraction: 2 GP versus almandine candidates = 1 ruby corundum and 1 spinel; 2 GO versus almandine candidates = 1 GO (Cr-poor pyrope) and 1 almandine; 5 IM versus crustal ilmenite candidates = 4 crustal ilmenite and 1 perovskite; 6 CR candidates = 5 CR and 1 crustal ilmenite; and 3 FO versus diopside candidates = 1 FO, 1 diopside and 1 andradite.	16SUV-028	Augite-almandine-goethite/diopside-marcasite	SEM checks from 0.5-1.0 mm fraction: 4 GO versus almandine candidates = 1 GO (Cr-poor pyrope) and 3 almandine; and 1 IM versus CR candidate = 1 CR. SEM checks from 0.25-0.5 mm fraction: 2 GP versus almandine candidates = 1 ruby corundum and 1 spinel; 2 GO versus almandine candidates = 1 GO (Cr-poor pyrope) and 1 almandine; 5 IM versus crustal ilmenite candidates = 4 crustal ilmenite and 1 perovskite; 6 CR candidates = 5 CR and 1 crustal ilmenite; and 3 FO versus diopside candidates = 1 FO, 1 diopside and 1 andradite.
16SUV-029	Hornblende/titanite-zircon assemblage. SEM checks from 0.25-0.5 mm fraction: 1 CR candidate = 1 CR; and 3 FO versus diopside candidates = 3 FO.	16SUV-029	Hornblende/titanite-zircon	SEM checks from 0.25-0.5 mm fraction: 1 CR candidate = 1 CR; and 3 FO versus diopside candidates = 3 FO.
16SUV-030	Goethite-augite/diopside-marcasite assemblage. SEM checks from 1.0-2.0 mm fraction: 1 CR versus hercynite candidate = 1 hercynite. SEM check from 0.25-0.5 mm fraction: 1 CR versus hercynite candidate = 1 CR.	16SUV-030	Goethite-augite/diopside-marcasite	SEM checks from 1.0-2.0 mm fraction: 1 CR versus hercynite candidate = 1 hercynite. SEM check from 0.25-0.5 mm fraction: 1 CR versus hercynite candidate = 1 CR.

APPENDIX 3B

Metamorphosed/Magmatic Massive Sulphide Indicator Mineral (MMSIM) Counts

Client: Geological Survey of Canada  
File Name: 20167295 - GSC-NRCAN - Smith - KIMs-MMSIMs - October 2016  
Total Number of Samples in this Report: 18  
ODM Batch Number(s): 7295 and 7327

Sample Number	Sulphide/Arsenide + Related Minerals				0.25 to 0.5 mm Nonferromagnetic Heavy Mineral Fraction																	Remarks	Picked Grains	INPUT ASSEMBLAGE	INPUT REMARKS
					Mg/Mn/Al/Cr Minerals												Phosphates								
	>1.0 amp			<1.0 amp	>1.0 amp								<1.0 amp				>1.0 amp								
	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs*	% Red Rutile	% Ky	% Sil	% Tm	% St	% Sps	Olivine			% Opx	% Cr*	% Ap	% Mz						
													% Fo*	% Fay											
16SUV-013	Tr (7 gr)	0	0.5 (~200 gr)	30	1 blue green	0	Tr (8 gr)	0	Tr	1	Tr	Tr	0	0	0	0	0	Tr (2 gr)	0	0	Augite-goethite-almandine/diopside assemblage. SEM checks from 0.25-0.5 mm fraction: 1 sphalerite versus titanite candidate = 1 titanite; and 1 blue-green gahnite versus spinel candidate = 1 spinel.	0.25-0.5 mm fraction: 7 chalcopyrite 1 titanite resembling sphalerite 1 spinel 8 red rutile 2 chromite	Augite-goethite-almandine/diopside	SEM checks from 0.25-0.5 mm fraction: 1 sphalerite versus titanite candidate = 1 titanite; and 1 blue-green gahnite versus spinel candidate = 1 spinel.	
16SUV-017	0	0	0	0	0	Tr sapphire corundum (2 gr)	0	15	2	3	60	0	0	0	0	0	0	0	0	Almandine/staurolite-epidote-kyanite assemblage. SEM checks from 0.25-0.5 mm fraction: 5 white diopside versus epidote (major nonparamagnetic assemblage mineral) candidates = 5 epidote.	0.25-0.5 mm fraction: 2 sapphire corundum 5 representative epidote	Almandine/staurolite-epidote-kyanite	SEM checks from 0.25-0.5 mm fraction: 5 white diopside versus epidote (major nonparamagnetic assemblage mineral) candidates = 5 epidote.		
16SUV-018	0	0	3 (~200 gr)	0	2 black hercynite	Tr sapphire corundum (16 gr)	0	15	4	1	60	0	0	0	0	0	Tr (4 gr)	0	0	Almandine-siderite/staurolite-kyanite-epidote assemblage. "Pyrite" is mostly marcasite.	0.25-0.5 mm fraction: 2 hercynite (see KIM notes) 16 sapphire corundum 4 chromite	Almandine-siderite/staurolite-kyanite-epidote	"Pyrite" is mostly marcasite.		
16SUV-019	0	Tr sphalerite (1 gr) Tr barite (1 gr)	99 (~20,000 gr)	15	0	0	0	0	Tr	Tr	Tr	0	0	0	0	0	0	0	0	Siderite-almandine-hematite-goethite/marcasite assemblage. SEM checks from 0.25-0.5 mm fraction: 1 brown sphalerite versus rutile candidate = 1 sphalerite; and 3 barite candidates = 1 barite and 2 diopside.	0.25-0.5 mm fraction: 1 sphalerite 1 barite 2 diopside resembling barite	Siderite-almandine-hematite-goethite/marcasite	SEM checks from 0.25-0.5 mm fraction: 1 brown sphalerite versus rutile candidate = 1 sphalerite; and 3 barite candidates = 1 barite and 2 diopside.		
16SUV-020	0	Tr barite (3 gr)	99 (~40,000 gr)	10	0	0	0	0	0	Tr	Tr	0	0	0	0	0	0	Tr	0	Siderite/marcasite assemblage.	0.25-0.5 mm fraction: 3 barite	Siderite/marcasite			
16SUV-022	0	0	30 (~150 gr)	0	0	0	0	30	0	6	6	0	0	0	0	0	0	0	0	Almandine-ilmenite/marcasite-kyanite-leucoxene-rutile assemblage. SEM checks from 0.25-0.5 mm fraction: 5 tourmaline candidates = 5 tourmaline; and 5 black rutile (major nonparamagnetic assemblage mineral) candidates = 5 rutile.	0.25-0.5 mm fraction: 5 representative tourmaline 5 representative rutile	Almandine-ilmenite/marcasite-kyanite-leucoxene-rutile	SEM checks from 0.25-0.5 mm fraction: 5 tourmaline candidates = 5 tourmaline; and 5 black rutile (major nonparamagnetic assemblage mineral) candidates = 5 rutile.		
16SUV-023	0	0	Tr (3 gr)	50	4 black hercynite; 1 blue-green spinel	Tr sapphire corundum (4 gr) Tr corundum (1 gr)	Tr (5 gr)	15	1	1	2	0	0	0	0	0	Tr (10 gr)	0	0	Goethite-almandine/diopside-kyanite assemblage. SEM checks from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel; 1 sapphire corundum versus kyanite candidate = 1 sapphire corundum; and 1 corundum candidate = 1 corundum.	0.25-0.5 mm fraction: 4 hercynite (see KIM notes) 1 spinel 4 sapphire corundum 1 corundum 5 red rutile 5 tourmaline (see KIM notes) 10 chromite	Goethite-almandine/diopside-kyanite	SEM checks from 0.25-0.5 mm fraction: 1 blue-green gahnite versus spinel candidate = 1 spinel; 1 sapphire corundum versus kyanite candidate = 1 sapphire corundum; and 1 corundum candidate = 1 corundum.		
16SUV-024	0	0	0	0	5 blue-green gahnite	0	Tr (5 gr)	2	0	5	2	0	0	0	0	0	Tr (3 gr)	Tr	0	Almandine-ilmenite/zircon-rutile-leucoxene assemblage. SEM checks from 0.25-0.5 mm fraction: 5 blue-green gahnite versus spinel candidates = 5 gahnite.	0.25-0.5 mm fraction: 5 gahnite 5 red rutile 3 chromite	Almandine-ilmenite/zircon-rutile-leucoxene	SEM checks from 0.25-0.5 mm fraction: 5 blue-green gahnite versus spinel candidates = 5 gahnite.		
16SUV-026	Tr (9 gr)	Tr sphalerite (9 gr)	90 (~40,000 gr)	40	0	0	0	Tr	0	Tr	Tr	0	0	0	0	0	0	Tr	0	Siderite-goethite/marcasite assemblage. SEM check from 0.25-0.5 mm fraction: 1 sphalerite versus rutile candidate = 1 sphalerite. 2 chalcopyrite from 0.25-0.5 mm fraction lost in transfer to vial.	0.5-1.0 mm fraction: 1 chalcopyrite 0.25-0.5 mm fraction: 9 chalcopyrite 9 sphalerite	Siderite-goethite/marcasite	SEM check from 0.25-0.5 mm fraction: 1 sphalerite versus rutile candidate = 1 sphalerite. 2 chalcopyrite from 0.25-0.5 mm fraction lost in transfer to vial.		

\*Low-Cr diopside, forsterite olivine and chromite also referenced on KIM data



## APPENDIX 3B

### Paramagnetic/Non-Paramagnetic Fraction Weights

Client: Geological Survey of Canada

File Name: 20167295 - GSC-NRCAN - Smith - KIMs-MMSIMs - October 2016

Total Number of Samples in this Report: 18

ODM Batch Number(s): 7295 and 7327

Sample Number	Weight of 0.25-0.5 mm Nonferromagnetic Heavy Mineral Fractions (g)					
	Total	Paramagnetic			Nonparamagnetic	
		Strongly (<0.6 amp)	Moderately (0.6-0.8 amp)	Weakly (0.8-1.0 amp)	>1.0 amp	>1.0 amp Lights*
16SUV-013	18.12	2.37	7.19	4.92	3.13	0.51
16SUV-017	0.82	0.02	0.19	0.19	0.39	0.03
16SUV-018	1.45	0.14	0.37	0.30	0.60	0.04
16SUV-019	3.54	0.10	0.18	0.08	3.09	0.09
16SUV-020	4.74	0.15	0.19	0.06	4.26	0.08
16SUV-022	0.68	0.08	0.45	0.07	0.06	0.02
16SUV-023	2.57	0.10	0.56	1.30	0.57	0.04
16SUV-024	6.54	1.76	4.08	0.23	0.43	0.04
16SUV-026	23.61	13.66	2.40	1.74	5.74	0.07

\*SG <3.20 heavy liquid separation clean up of >1.0 amp fraction.

## APPENDIX 3B

### -0.25 mm HEAVY MINERAL PROCESSING

File Name: 20167295 - GSC-NRCAN - Smith - KIMs-MMSIMs - October 2016

Total Number of Samples in this Report: 18

ODM Batch Number(s): 7295 and 7327

Sample Number	Weight (g)					
	-0.25 mm Table Concentrate					
	Total	Heavy Liquid Separation S.G. 3.2				
		Lights	Total	-0.18 mm HMC	0.18 to 0.25 mm HMC	
					MAG	Non MAG
16SUV-023	678.6	668.9	9.7	7.7	0.1	1.9

## APPENDIX 3B

### KIMBERLITE INDICATOR MINERAL COUNTS (0.18 to 0.25 mm)

File Name: 20157051 - GSC - Smith - (15SUV) - October 2015

Total Number of Samples in this Report = 18

Sample Number	Number of Grains												Total (KIMs)							
	Selected MMSIMs				KIM Count															
	0.18 to 0.25 mm																			
	Low-Cr diopside		Cpy		Gh		GP		GO		DC		IM		CR		FO			
	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P	T	P		
16SUV-023	0	0	0	0	0	0	<b>25</b>	25	<b>2</b>	2	0	0	<b>21*</b>	21	<b>15*</b>	15	0	0	<b>63</b>	63

T = Total number of grains in sample. Total is estimated if number is greater than number of picked grains.

P = Number of picked grains in sample.

\*IM and CR not picked to completion.

APPENDIX 3B

Kimberlite Indicator Mineral Remarks

Client: Geological Survey of Canada  
File Name: 20167295 - GSC-NRCAN - Smith - KIMs-MMSIMs - October 2016  
Total Number of Samples in this Report: 18  
ODM Batch Number(s): 7295 and 7327

Sample Number	Remarks	INPUT ASSEMBLAGE	INPUT REMARKS
16SUV-023	SEM checks from 0.18-0.25 mm fraction: 4 GO candidates = 2 GO (Cr-poor pyrope), 1 almandine and 1 grossular; and 6 IM candidates = 6 IM. Also picked 18 sapphire corundum.		SEM checks from 0.18-0.25 mm fraction: 4 GO candidates = 2 GO (Cr-poor pyrope), 1 almandine and 1 grossular; and 6 IM candidates = 6 IM.

## APPENDIX 3B

### Abbreviations Table

#### Raw Sample Weights and Descriptions Log

##### **Largest Clast Size Present:**

G: Granules  
P: Pebbles  
C: Cobbles

##### **Clast Composition:**

V/S: Volcanics and/or sediments  
GR: Granitics  
LS: Limestone, carbonates  
OT: Other lithologies (refer to footnotes)  
TR: Only trace present  
NA: Not applicable  
OX: Very oxidized, undifferentiated

##### **Matrix Grain Size Distribution:**

S/U: Sorted or unsorted  
SD: Sand (F: Fine; M: Medium; C: Coarse)  
ST: Silt  
CY: Clay  
Y: Fraction present  
+: Fraction more abundant than normal  
-: Fraction less abundant than normal  
N: Fraction not present

##### **Matrix Organics:**

ORG: Y: Organics present in matrix  
N: Organics absent or negligible in matrix  
+: Matrix is mainly organic

##### **Matrix Colour:**

###### **Primary:**

BE: Beige	GG: Grey-green
BR: Brick Red	PP: Purple
GY: Grey	PK: Pink
GB: Grey-beige	PB: Pink-beige
GN: Green	MN: Maroon

###### **Secondary (soil):**

OC: Ochre  
BN: Brown  
BK: Black

###### **Secondary Colour Modifier:**

L: Light  
M: Medium  
D: Dark

#### Detailed Gold Grain Log

VG: Visible gold grains

##### **Thickness:**

M: Actual measured thickness of grain (µm)  
C: Thickness of grain (µm) calculated from measured width and length

#### Kimberlite Indicator Mineral (KIM) Log

GP: Purple to red peridotitic garnet (G9/10 Cr-pyropes)  
GO: Orange mantle garnet; includes both eclogitic pyrope-almandine (G3) and Cr-poor megacrystic pyrope (G1/G2) varieties; may include unchecked (by SEM) grains of common crustal garnet (G5) lacking diagnostic inclusions or crystal faces  
DC: Cr-diopside; distinctly emerald green (paler emerald green low-Cr diopside picked separately)  
IM: Mg-ilmenite; may include unchecked (by SEM) grains of common crustal ilmenite lacking diagnostic inclusions or crystal faces  
CR: Chromite  
FO: Forsterite

#### Metamorphosed/Magmatic Massive Sulphide Indicator Mineral (MMSIM) and Porphyry Cu Indicator Mineral (PCIM) Logs

Adr: Andradite	Cpx: Clinopyroxene	Gth: Goethite	PGM: Platinum group-bearing mineral	Spi: Spinel
Ap: Apatite	Cpy: Chalcopyrite	Ilm: Ilmenite	Py: Pyrite	Sps: Spessartine
Ase: Anatase	Cr: Chromite	Ky: Kyanite	REM: Rare earth-bearing mineral	St: Staurolite
Aspy: Arsenopyrite	Fay: Fayalite	Mz: Monazite	Sil: Sillimanite	Tm: Tourmaline
Ax: Axinite	Gh: Gahnite	Ol: Olivine		Ttn: Titanite
	Gr: Grossular	Opx: Orthopyroxene		Zir: Zircon

##### **Other**

HMC: Heavy mineral concentrate  
UV: Ultra-violet

EPD: Electric-pulse disaggregation  
PGE: Platinum group element