

HAZEN RESEARCH, INC.



003698

4601 INDIANA STREET
GOLDEN, COLORADO • 80401
TELEPHONE 303/279-4547

April 15, 1970

Mr. E. H. Lindsey
2015 Center Street
Berkeley, California 94704

Re: HRI Project 580

Dear Mr. Lindsey:

Attached are the results of semi-quantitative X-ray fluorescence analyses of 42 Malloy Creek Samples as requested by your letter dated March 5, 1970.

Since there are some differences in the sample designation, I am also including a listing of the samples giving the designations as received, the dates received, plus the designations indicated in your letter dated March 5, 1970. This way it should be possible to detect any errors which were possibly made in the sample selection.

You will see from the assays that some of the samples look a little better than the ones analyzed previously. For example, one interval in the "K" series shows concentrations of up to 0.1% U and 0.13% Cb. Whether this uranium is amenable to extraction would of course have to be determined by laboratory testing, however concentrations of 0.06-0.08% U_3O_8 can be considered as ore if occurring in an easily leachable form like in the sandstone type deposits.

Please contact me if there are any questions.

Sincerely,

Roland Schmidt
Mineralogist

RS:brt

Attachments

cc: Dr. J. Black, w/att.
R.W. Jenkins, wo/att.

X-ray Fluorescence Analysis of Samples from Malloy Creek

% Element	11 E1 0-4'	11 E1 4-8'	15 F2 8-12'	19 G2 4-8'	19 G2 8-12'
Copper	0.009	0.006	0.008	0.005	0.008
Zinc	0.011	0.003	0.007	0.006	0.009
Lead	0.013	0.020	0.013	-----	-----
Iron	3.7	2.7	5.0	3.0	3.5
Cobalt	-----	-----	-----	-----	0.002
Nickel	0.011	0.008	0.011	0.003	0.004
Rubidium	0.019	0.023	0.029	0.026	0.023
Barium	0.092	0.095	0.053	0.12	0.084
Strontium	0.050	0.055	0.051	0.049	0.048
Titanium	0.21	0.16	0.23	0.18	0.18
Zirconium	0.092	0.081	0.088	0.059	0.16
Thorium	0.025	0.023	0.049	0.028	0.057
Columbium	0.032	0.032	0.056	0.035	0.058
Chromium	0.049	0.026	0.012	0.008	0.017
Uranium	0.022	0.020	0.017	0.018	0.020
Manganese	0.038	0.029	0.050	0.041	0.041
Lanthanum	0.016	0.014	0.027	0.038	0.014
Cerium	0.040	0.036	0.070	0.096	0.051
Yttrium	0.011	0.012	0.018	0.017	0.013

X-ray Fluorescence Analysis of Samples from Malloy Creek

% Element	¹⁸ G2 12-16'	¹⁹ G2 20-24'	²¹ H1 28-32'	²² H2 28-32'	²⁶ J2 16-20'
Copper	0.011	0.003	0.008	0.005	0.006
Zinc	0.006	0.001	0.010	0.011	0.005
Tin	-----	-----	0.006	-----	-----
Lead	-----	0.017	0.012	0.046	0.012
Iron	2.9	1.9	4.0	6.8	2.0
Nickel	-----	0.004	0.007	0.004	0.007
Rubidium	0.026	0.029	0.019	0.026	0.029
Barium	0.10	0.081	0.077	0.053	0.12
Strontium	0.041	0.051	0.050	0.048	0.056
Titanium	0.18	0.13	0.22	0.23	0.11
Zirconium	0.11	0.11	0.065	0.12	0.032
Thorium	0.028	0.028	0.030	0.080	0.021
Columbium	0.042	0.036	0.046	0.068	0.019
Chromium	0.027	0.005	-----	-----	-----
Uranium	0.018	0.018	0.015	0.031	0.005
Manganese	0.038	0.036	0.043	0.048	0.029
Lanthanum	0.012	0.012	0.015	0.028	0.014
Cerium	0.028	0.030	0.057	0.072	0.036
Yttrium	0.019	0.018	0.018	0.026	0.014

X-ray Fluorescence Analysis of Samples from Malloy Creek

% Element	²⁵ J3 52-56'	²⁴ J4 72-76'	²⁴ J4 76-80'	²³ J5 4-8'	²³ J5 8-12'
Copper	0.004	0.005	0.006	0.006	0.010
Zinc	0.005	0.005	0.010	0.013	0.010
Lead	-----	-----	0.017	0.079	0.014
Arsenic	-----	-----	-----	-----	0.007
Iron	3.0	1.4	1.6	5.6	3.4
Nickel	0.007	0.006	0.006	0.006	0.004
Rubidium	0.016	0.024	0.031	0.024	0.019
Barium	0.081	0.086	0.12	0.055	0.075
Strontium	0.053	0.054	0.070	0.044	0.046
Titanium	0.20	0.066	0.067	0.34	0.27
Zirconium	0.11	0.026	0.034	0.25	0.24
Thorium	0.042	-----	-----	0.090	0.049
Columbium	0.054	0.013	0.005	0.088	0.088
Chromium	0.018	0.019	0.018	0.009	0.027
Uranium	0.015	0.013	0.009	0.022	0.011
Manganese	0.038	0.025	0.022	0.065	0.053
Lanthanum	0.048	-----	-----	0.047	0.066
Cerium	0.11	-----	-----	0.060	0.14
Yttrium	0.016	0.011	0.012	0.032	0.026

X-ray Fluorescence Analysis of Samples from Malloy Creek

% Element	²³ J5 20-24'	²³ J5 28-32'	²³ J5 44-48'	²⁷ K4 44-48'	²⁷ K4 48-52'
Copper	0.002	0.002	0.002	0.008	0.010
Zinc	0.018	0.014	0.025	0.006	0.011
Tin	0.007	-----	-----	-----	-----
Lead	0.023	-----	-----	-----	0.044
Iron	5.0	5.0	5.8	11.	16.
Nickel	0.009	0.007	-----	0.005	0.011
Rubidium	0.034	0.024	0.024	0.024	0.042
Barium	0.12	0.081	0.068	0.093	0.060
Strontium	0.044	0.051	0.054	0.049	0.074
Titanium	0.23	0.34	0.30	0.37	0.30
Zirconium	0.044	0.13	0.23	0.28	0.40
Thorium	0.080	0.080	0.044	0.12	0.20
Vanadium	-----	-----	-----	-----	0.035
Columbium	0.072	0.081	0.070	0.090	0.14
Chromium	0.012	0.036	0.034	0.029	0.041
Uranium	0.026	0.017	0.033	0.056	0.085
Manganese	0.029	0.055	0.048	0.063	0.078
Lanthanum	0.045	0.15	0.036	0.040	0.052
Cerium	0.13	0.25	0.096	0.051	0.14
Neodymium	-----	0.13	-----	-----	-----
Yttrium	0.021	0.029	0.029	0.033	0.038

X-ray Fluorescence Analysis of Samples from Malloy Creek

% Element	²⁷ K4 52-56'	²⁸ K5 36-40'	²⁸ K5 40-44'	²⁸ K5 44-48'	²⁹ L5 4-8'
Copper	0.006	0.011	0.007	0.005	0.013
Zinc	0.015	0.016	0.012	0.006	0.007
Lead	0.032	0.022	-----	0.029	0.033
Iron	13.	11.	9.1	6.3	9.2
Nickel	0.013	0.008	0.006	0.004	0.008
Rubidium	0.038	0.031	0.033	0.024	0.036
Barium	0.12	0.10	0.095	0.091	0.11
Strontium	0.062	0.058	0.061	0.076	0.051
Titanium	0.47	0.37	0.44	0.30	0.42
Zirconium	0.34	0.13	0.27	0.18	0.20
Thorium	0.19	0.068	0.14	0.11	0.12
Vanadium	0.035	-----	-----	-----	0.060
Columbium	0.13	0.10	0.12	0.086	0.11
Chromium	0.059	0.034	0.018	0.013	0.032
Uranium	0.10	0.060	0.040	0.035	0.072
Manganese	0.085	0.075	0.073	0.053	0.094
Lanthanum	0.077	0.075	0.070	0.085	0.10
Cerium	0.25	0.23	0.21	0.44	0.30
Yttrium	0.038	0.032	0.042	0.035	0.032

X-ray Fluorescence Analysis of Samples from Malloy Creek

% Element	³⁰ L6 4-8'	³⁰ L6 32-36'	³¹ M4 16-20'	³¹ M4 20-24'	³¹ M4 28-32'
Copper	0.007	0.006	0.004	0.002	0.005
Zinc	0.009	0.013	0.011	0.011	0.008
Lead	0.046	0.055	0.016	0.009	-----
Iron	5.7	9.2	6.4	6.8	8.9
Nickel	0.011	0.015	0.007	0.003	0.013
Ribidium	0.030	0.022	0.024	0.020	0.017
Barium	0.072	0.064	0.084	0.10	0.068
Strontium	0.044	0.049	0.039	0.038	0.049
Titanium	0.27	0.37	0.39	0.27	0.40
Zirconium	0.24	0.17	0.080	0.11	0.096
Thorium	0.080	0.072	0.060	0.045	0.081
Columbium	0.086	0.097	0.072	0.097	0.092
Chromium	0.018	0.048	-----	0.005	0.044
Uranium	0.031	0.028	0.029	0.031	0.048
Manganese	0.051	0.067	0.062	0.058	0.060
Lanthanum	0.064	0.021	0.064	0.050	0.053
Cerium	0.15	0.056	0.17	0.21	0.14
Yttrium	0.031	0.030	0.026	0.022	0.032

X-ray Fluorescence Analysis of Samples from Malloy Creek

% Element	⁵¹ M4 40-44'	³¹ M4 60-64'	³² M5 72-76'	³³ M6 8-12'	³⁴ N1 0-4'	³⁴ N1 12-16'
Copper	0.008	0.005	0.007	0.008	0.004	0.008
Zinc	0.013	0.013	0.011	0.010	0.009	0.018
Tin	-----	-----	0.009	-----	-----	-----
Lead	0.019	0.018	0.038	0.036	0.033	0.040
Iron	8.3	7.7	7.8	4.8	7.7	13.
Nickel	-----	0.013	0.008	0.010	0.004	0.013
Rubidium	0.028	0.024	0.030	0.029	0.026	0.021
Barium	0.10	0.088	0.087	0.10	0.081	0.031
Strontium	0.059	0.041	0.022	0.051	0.044	0.059
Titanium	0.27	0.30	0.37	0.23	0.25	0.42
Zirconium	0.091	0.15	0.12	0.17	0.11	0.22
Thorium	0.11	0.088	0.12	0.041	0.040	0.11
Vanadium	0.025	-----	-----	-----	-----	-----
Columbium	0.11	0.10	0.11	0.058	0.076	0.13
Chromium	0.039	0.013	0.023	0.007	0.015	0.048
Uranium	0.049	0.033	0.064	0.022	0.033	0.060
Manganese	0.072	0.062	0.070	0.050	0.068	0.083
Lanthanum	0.050	0.050	0.075	0.051	0.075	0.12
Cerium	0.15	0.13	0.18	0.13	0.13	0.22
Neodymium	0.037	-----	-----	-----	-----	-----
Yttrium	0.026	0.035	0.032	0.023	0.023	0.043

X-ray Fluorescence Analysis of Samples from Malloy Creek

% Element	³⁵ N2 36-40'	³⁵ N2 44-48'	³⁶ N3 28-32'	³⁶ N3 44-48'	³⁷ N4 16-20'	O2 0-4'
Copper	0.007	0.013	0.002	0.007	0.009	0.008
Zinc	0.009	0.006	0.011	0.008	0.010	0.017
Lead	0.035	0.029	0.025	0.035	0.079	0.079
Iron	5.5	7.2	5.8	7.6	14.	6.6
Nickel	0.008	0.005	0.008	0.008	0.013	0.007
Rubidium	0.030	0.032	0.034	0.033	0.029	0.037
Barium	0.096	0.13	0.088	0.065	0.11	0.098
Strontium	0.043	0.047	0.060	0.052	0.050	0.043
Titanium	0.32	0.23	0.25	0.26	0.30	0.27
Zirconium	0.095	0.13	0.090	0.079	0.24	0.19
Thorium	0.070	0.035	0.036	0.055	0.075	0.055
Vanadium	-----	-----	-----	-----	0.027	-----
Columbium	0.070	0.070	0.058	0.076	0.11	0.076
Chromium	0.007	0.020	-----	0.034	0.032	0.002
Uranium	0.022	0.013	0.023	0.012	0.060	0.024
Manganese	0.055	0.038	0.053	0.050	0.075	0.060
Lanthanum	0.064	0.050	0.034	0.034	0.046	0.018
Cerium	0.17	0.12	0.066	0.066	0.16	0.048
Neodymium	0.037	-----	-----	-----	-----	-----
Yttrium	0.023	0.022	0.026	0.022	0.042	0.018

Attachment
to ltr dtd
4/15/70

Sample Designations for 42 Samples from Malloy Creek

HRI No.	Sample Designation		Your Letter dated 3/5/70			Date Received
	Marked on Bags					
2485-14	ME-H1	0-4'	11	E1	0-4'	9/26/69
2485-15	ME-H1	4-8'	11	E1	4-8'	"
2485-58	MF-H2	8-12'	15	F2	8-12'	"
2453-43	MG-2	4-8'	19	G2	4-8'	9/12/69
2453-44	MG-2	8-12'	19	G2	8-12'	"
2453-45	MG-2	12-16'	19	G2	12-16'	"
2453-47	MG-2	20-24'	19	G2	20-24'	"
2526-11	MH-H1	28-32'	21	H1	28-32'	10/15/69
2526-22	MH-H2	28-32'	22	H2	28-32'	"
2526-86	MJ-H5	4-8'	23	J5	4-8'	"
2526-87	MJ-H5	8-12'	23	J5	8-12'	"
2526-90	MJ-H5	20-24'	23	J5	20-24'	"
2526-92	MJ-H5	28-32'	23	J5	28-32'	"
2526-94	MJ-H5	44-48'	23	J5	44-48'	"
2526-80	MJ-H4	72-76'	24	J4	72-76'	"
2526-81	MJ-H4	76-80'	24	J4	76-80'	"
2526-51	MJ-H3	52-56'	25	J3	52-56'	"
2485-129	MJ-H2	16-20'	26	J2	16-20'	9/26/69
2485-160	MK-H4	44-48'	27	K4	44-48'	"
2485-161	MK-H4	48-52'	27	K4	48-52'	"
2485-162	MK-H4	52-56'	27	K4	52-56'	"
2485-176	MK-H5	36-40'	28	K5	36-40'	"
2485-177	MK-H5	40-44'	28	K5	40-44'	"
2485-178	MK-H5	44-48'	28	K5	44-48'	"
2485-184	ML-H5	4-8'	29	L5	4-8'	"
2526-107	ML-H6	4-8'	30	L6	4-8'	10/15/69
2526-114	ML-H6	32-36'	30	L6	32-36'	"
2526-122	MM-H4	16-20'	31	M4	16-20'	"
2526-123	MM-H4	20-24'	31	M4	20-24'	"
2526-125	MM-H4	28-32'	31	M4	28-32'	"
2526-128	MM-H4	40-44'	31	M4	40-44'	"
2526-133	MM-H4	60-64'	31	M4	60-64'	"
2485-215	MM-H5	72-76'	32	M5	72-76'	9/26/69
2485-219	MM-H6	8-12'	33	M6	8-12'	"
2526-142	MN-H1	0-4'	34	N1	0-4'	10/15/69
2526-145	MN-H1	12-16'	34	N1	12-16'	"
2485-241	MN-H2	36-40'	35	N2	36-40'	9/26/69
2485-243	MN-H2	44-48'	35	N2	44-48'	"
2485-259	MN-H3	28-32'	36	N3	28-32'	"
2485-263	MN-H3	44-48'	36	N3	44-48'	"
2485-271	MN-H4	16-20'	37	N4	16-20'	"
2526-160	MO-H4	0-4'	O2	O2	0-4'	10/15/69

HAZEN RESEARCH, INC.



4601 INDIANA STREET
GOLDEN, COLORADO • 80401
TELEPHONE 303/279-4547

February 3, 1970

10035

Mr. E. H. Lindsey
2015 Century Street
Berkeley, California 94704

Re: HRI Project 580 - Examination of Placer Samples from British
Columbia, Canada

Dear Mr. Lindsey:

49 not necessary
Jenkins

Attached are the results of semi-quantitative X-ray fluorescence analyses of 45 intervals selected from the last shipment of "V" samples which we received on January 6. According to your instructions during your recent visit, only the large samples were analyzed. For this purpose, the duplicate samples (identical hole number and footage) were composited.

Sincerely,

Roland Schmidt

Roland Schmidt
Mineralogist

RS:brt

attachment

cc: Dr. J. Black, w/attach.
R. W. Jenkins, wo/attach.

<i>Samples present for following:</i>			
			<i>Raw No.</i>
<i>p. 8</i>	VF H3	36-40	<i>60</i>
<i>p. 4</i>	VF H2	36-40	<i>59</i>
<i>p. 5</i>	"	44-48	
<i>p. 5</i>	"	48-52	
<i>p. 5</i>	"	52-56	

B.W. 12 Feb 70

Attachment
 Mr. E. H. Linds
 February 3, 1970
 (1 of 9 pages)

Semi-Quantitative X-ray Fluorescence Analysis

Percent of Element	Hole VD-H1 (H48)	Hole VE-H2 (H53)			
	24'-28'	0'-4'	4'-8'	8'-12'	12'-16'
Copper	0.005	0.003	0.004	0.017	0.004
Zinc	0.008	0.018	0.003	0.019	0.015
Lead	0.017	0.014	0.016	0.012	0.017
Iron	3.1	1.7	1.7	3.3	3.4
Nickel	0.003	0.003	0.004	0.007	0.006
Rubidium	0.021	0.030	0.024	0.032	0.026
Barium	0.10	0.090	0.098	0.11	0.099
Strontium	0.078	0.042	0.046	0.046	0.040
Titanium	0.22	0.043	0.15	0.26	0.27
Zirconium	0.056	0.031	0.043	0.090	0.053
Thorium	0.021	-----	0.011	0.030	-----
Columbium	0.035	0.029	0.036	0.081	0.063
Chromium	0.005	-----	0.004	0.013	-----
Uranium	-----	0.012	0.013	0.020	0.018
Manganese	0.036	0.028	0.035	0.047	0.053
Lanthanum	0.013	-----	0.011	0.013	-----
Cerium	0.048	-----	0.042	0.051	-----
Yttrium	0.013	0.008	0.010	0.019	0.017

0.012
 0.013

Semi-Quantitative X-ray Fluorescence Analysis

(H53)

Percent of Element	Hole VE-H2 (continued)				
	16'-20'	20'-24'	24'-28'	32'-36'	36'-40'
Copper	0.003	0.004	0.008	0.006	0.006
Zinc	0.018	0.013	0.016	0.039	0.011
Lead	0.010	0.012	0.011	0.006	0.017
Antimony	-----	-----	0.007	-----	-----
Iron	2.5	3.9	2.9	3.5	1.9
Nickel	0.003	0.003	0.003	0.002	0.006
Rubidium	0.024	0.029	0.034	0.026	0.032
Barium	0.074	0.11	0.093	0.10	0.074
Strontium	0.039	0.048	0.044	0.044	0.044
Titanium	0.33	0.53	0.22	0.27	0.31
Zirconium	0.042	0.051	0.051	0.054	0.053
Thorium	0.012	0.013	0.014	0.028	0.014
Columbium	0.055	0.082	0.051	0.083	0.063
Uranium	0.009	0.018	0.018	0.014	0.015
Manganese	0.055	0.055	0.035	0.050	0.055
Lanthanum	-----	0.013	0.013	0.012	0.013
Cerium	-----	0.048	0.032	0.047	0.032
Yttrium	0.011	0.017	0.017	0.015	0.016

58-22

.064

.030

58

0.015

Semi-Quantitative X-ray Fluorescence Analysis

Percent of Element	Hole VF-H2 (H59)					
	0'-4'	4'-8'	5'-8'	8'-12'	12'-16'	16'-20'
Copper	0.004	0.003		0.005	0.005	0.009
Zinc	0.012	0.003		0.008	0.011	0.007
Lead	0.009	0.005		0.005	0.019	0.049
Arsenic	-----	0.002		-----	-----	-----
Iron	2.0	1.9		1.8	3.1	4.2
Nickel	0.006	-----		0.006	0.003	-----
Rubidium	0.041	0.031		0.035	0.030	0.035
Barium	0.10	0.10		0.094	0.10	0.099
Strontium	0.038	0.047		0.046	0.044	0.040
Titanium	0.15	0.24		0.13	0.33	0.46
Zirconium	0.030	0.038		0.040	0.067	0.068
Thorium	-----	-----		0.011	0.014	0.033
Columbium	0.023	0.034		0.027	0.077	0.11
Chromium	0.005	0.012		0.004	-----	0.007
Uranium	0.004	0.009		0.018	0.015	0.016
Manganese	0.029	0.020		0.021	0.046	0.065
Lanthanum	-----	-----		-----	0.011	0.015
Cerium	-----	-----		-----	0.051	0.057
Yttrium	0.007	0.013		0.010	0.013	0.023

Continuation of...

Semi-Quantitative X-ray Fluorescence Analysis

(1459)

Percent of Element	Hole VF-H2 (continued)				
	20'-24'	24'-28'	28'-32'	32'-36'	36'-40'
Copper	0.002	0.003	0.005	0.003	0.004
Zinc	0.011	0.008	0.008	0.004	0.012
Lead	0.025	0.005	0.022	0.018	0.017
Iron	3.8	2.3	2.3	2.0	2.9
Nickel	0.007	-----	-----	0.003	0.003
Rubidium	0.036	0.026	0.036	0.027	0.029
Barium	0.13	0.094	0.085	0.058	0.077
Strontium	0.046	0.041	0.043	0.043	0.036
Titanium	0.56	0.40	0.24	0.24	0.31
Zirconium	0.090	0.062	0.072	0.059	0.085
Thorium	0.038	0.013	0.018	0.011	0.028
Chromium	0.010 0.090	0.012 0.069	----- 0.056	----- 0.043	----- 0.090
Uranium	0.026	0.018	0.014	0.012	0.009
Manganese	0.064	0.046	0.053	0.046	0.053
Lanthanum	0.014	0.012	0.011	0.010	0.012
Cerium	0.072	0.042	0.027	0.024	0.030
Yttrium	0.022	0.014	0.013	0.016	0.017

Sample present
B.W.

Semi-Quantitative X-ray Fluorescence Analysis

606

5-6 Samples Present B.W.
(H59)

Hole VF-H2 (continued)

Percent of Element	40'-44'	44'-48'	48'-52'	52'-56'	56'-60'
Copper	0.024	0.004	-----	-----	0.008
Zinc	0.005	0.010	0.011	0.008	0.009
Cadmium	0.005	-----	-----	-----	-----
Lead	0.009	0.007	0.013	0.029	0.018
Iron	2.9	4.3	3.5	2.7	2.1
Cobalt	0.003	-----	-----	-----	-----
Nickel	0.11	0.005	0.003	0.005	0.004
Rubidium	0.017	0.029	0.023	0.031	0.023
Barium	0.072	0.066	0.10	0.097	0.080
Strontium	0.029	0.044	0.032	0.042	0.037
Titanium	0.26	0.36	0.40	0.31	0.18
Zirconium	0.049	0.025	0.070	0.053	0.032
Thorium	0.011	0.030	0.028	0.026	0.017
Columbium	0.050	0.10	0.090	0.068	0.046
Chromium	0.62	0.009	0.021	-----	0.001
Uranium	0.015	0.027	0.018	0.018	-----
Manganese	0.062	0.070	0.062	0.053	0.035
Lanthanum	0.012	0.015	0.027	0.012	-----
Cerium	0.045	0.037	0.068	0.030	-----
Yttrium	0.018	0.023	0.015	0.009	0.014

Semi-Quantitative X-ray Fluorescence Analysis

Percent of Element	Hole VF-H2 (continued)			Hole VF-H3	
	60'-64'	64'-68'	68'-72'	0'-4'	8'-12'
Copper	0.008	0.004	0.005	0.003	0.002
Zinc	0.011	0.011	0.012	0.008	0.010
Tin	-----	-----	-----	-----	0.003
Lead	0.006	0.020	0.016	0.015	0.012
Iron	3.4	4.0	2.4	1.9	3.5
Nickel	0.006	0.004	0.009	0.003	0.005
Rubidium	0.018	0.032	0.031	0.029	0.026
Barium	0.12	0.081	0.068	0.098	0.12
Strontium	0.034	0.038	0.048	0.040	0.046
Titanium	0.33	0.45	0.31	0.15	0.27
Zirconium	0.070	0.074	0.038	0.027	0.075
Thorium	0.015	0.025	0.019	-----	0.007
Columbium	0.078	0.077	0.022	0.011	0.075
Chromium	0.017	0.010	-----	0.008	-----
Uranium	0.009	0.016	0.009	0.004	0.019
Manganese	0.055	0.058	0.032	0.025	0.058
Lanthanum	0.013	0.015	0.007	-----	0.027
Cerium	0.051	0.054	0.018	-----	0.10
Yttrium	0.018	0.018	0.011	0.009	0.015

Semi-Quantitative X-ray Fluorescence Analysis

#60

Percent of Element	Hole VF-H3 (continued)				
	12'-16'	16'-20'	20'-24'	24'-28'	28'-32'
Copper	0.004	0.004	0.005	0.004	0.006
Silver	-----	-----	-----	0.004	-----
Zinc	0.009	0.010	0.005	0.008	0.009
Lead	0.012	0.016	0.019	0.012	0.012
Arsenic	-----	-----	-----	-----	0.002
Iodine	0.014	-----	-----	-----	-----
Iron	3.2	2.3	1.9	2.7	3.1
Nickel	-----	0.005	0.003	-----	0.004
Rubidium	0.031	0.036	0.039	0.026	0.030
Barium	0.12	0.078	0.094	0.069	0.11
Strontium	0.048	0.053	0.053	0.044	0.046
Titanium	0.38	0.26	0.33	0.33	0.38
Zirconium	0.058	0.059	0.051	0.063	0.067
Thorium	0.021	0.019	-----	0.016	0.023
Columbium	0.065	0.047	0.062	0.075	0.080*
Chromium	0.005	-----	-----	-----	0.012
Uranium	0.018	0.023*	0.018	0.004	0.015
Manganese	0.046	0.038	0.041	0.046	0.050
Lanthanum	0.012	-----	0.012	0.013	0.007
Cerium	0.060	-----	0.028	-----	0.018
Yttrium	0.016	0.013	0.017	0.016	0.015

Semi-Quantitative X-ray Fluorescence Analysis

#60

Percent of Element	Hole VF-H3 (continued)				
	VF-H3 Sample Present Bin 36'-40'	40'-44'	48'-52' ^(c)	52'-56'	56'-60'
Copper	0.004	0.004	0.003	0.006	0.005
Zinc	0.015	0.011	0.006	0.012	0.012
Lead	0.019	0.013	0.016	0.012	0.021
Iron	4.1	4.3	2.3	3.3	2.1
Nickel	-----	-----	0.003	0.006	0.005
Rubidium	0.024	0.029	0.029	0.035	0.024
Barium	0.12	0.084	0.12	0.11	0.079
Strontium	0.042	0.040	0.042	0.044	0.036
Titanium	0.35	0.38	0.29	0.32	0.25
Zirconium	0.061	0.063	0.043	0.056	0.045
Thorium	0.023	0.034	0.013	0.015	0.019
Columbium	0.095	0.11	0.054	0.083	0.046
Chromium	0.005	0.004	0.004	-----	0.004
Uranium	0.010	0.015	0.009	0.020 ^x	0.009
Manganese	0.062	0.065	0.041	0.053	0.046
Lanthanum	0.013	0.014	0.013	0.015	-----
Cerium	0.032	0.035	0.045	0.037	-----
Yttrium	0.020	0.023	0.017	0.022	0.013

Semi-Quantitative X-ray Fluorescence Analysis

Percent of Element	Hole VF-H3 (60)	Hole VF-H4 (H61)			
	68'-72'	4'-8'	12'-16'	16'-20'	20'-24'
Copper	0.002	0.006	0.005	0.005	0.007
Zinc	0.009	0.012	0.009	0.011	0.011
Lead	0.019	0.019	0.010	0.005	0.005
Iron	2.4	2.6	1.7	1.7	1.5
Nickel	-----	0.006	0.005	-----	-----
Rubidium	0.026	0.035	0.042	0.036	0.031
Barium	0.084	0.046	0.088	0.084	0.11
Strontium	0.040	0.040	0.049	0.049	0.046
Titanium	0.29	0.38	0.089	0.20	0.13
Zirconium	0.060	0.049	0.045	0.064	0.054
Thorium	0.013	0.015	0.013	0.019	0.012
Columbium	0.075	0.038	0.034	0.042	0.027
Chromium	0.004	-----	-----	0.014	-----
Uranium	0.014	0.015	0.018	0.014	0.013
Manganese	0.036	0.046	0.032	0.046	0.029
Lanthanum	0.007	-----	0.006	0.013	0.006
Cerium	0.018	-----	0.016	0.034	0.016
Yttrium	0.011	0.013	0.020	0.015	0.011

WC 10
JL 4

20

20

November 25, 1969

Mr. E. H. Lindsey
2015 Century St.
Berkeley, California 94704

Re: HRI Project 580
Examination of Placer Samples from British Columbia, Canada

Dear Mr. Lindsey:

Attached are the results of semi-quantitative X-ray fluorescence analyses of 29 intervals selected from the second shipment of "V" samples which consisted of a total of 123 individual samples. This second shipment was received on November 5, 1969.

Sincerely,

R.S.

Roland Schmidt
Mineralogist

RS:brt

attachment

cc: J. Black, w/att.
R. W. Jenkins, wo/att.

Element	Hole	Hole		Hole	Hole			Hole		
	VEH-3	VFH-1		VGH-4	VGH-4			VHH-1		
	8'-12'	16'-20'	32'-36'	0'-4'	24'-28'	48'-52'	76'-80'	0'-4'	24'-28'	48'-52'
Copper	0.005	0.006	0.004	0.007	0.006	0.005	0.004	0.011	0.002	0.003
Zinc	0.006	0.005	0.013	0.008	0.002	0.004	0.004	0.017	0.005	0.005
Lead	0.005	0.015	0.014	0.005	0.014	0.008	0.005	0.022	0.008	0.016
Arsenic	-----	0.003	-----	-----	-----	-----	-----	0.005	-----	-----
Iron	1.7	4.2	2.8	1.4	0.66	1.1	0.68	2.1	0.93	0.71
Nickel	0.006	0.008	0.011	0.007	0.008	0.005	0.007	0.005	0.002	0.006
Rubidium	0.022	0.031	0.020	0.023	0.022	0.024	0.027	0.021	0.021	0.023
Barium	0.077	0.080	0.067	0.057	0.077	0.073	0.069	0.056	0.057	0.067
Strontium	0.031	0.040	0.023	0.030	0.031	0.036	0.034	0.031	0.028	0.029
Titanium	0.19	0.35	0.32	0.17	0.064	0.15	0.086	0.17	0.17	0.11
Zirconium	0.029	0.050	0.029	0.024	0.035	0.023	0.018	0.048	0.035	0.022
Thorium	0.011	0.018	-----	-----	-----	-----	-----	-----	-----	-----
Columbium	0.027	0.097	0.013	0.010	0.018	0.019	0.011	0.028	0.016	0.011
Chromium	0.014	0.021	0.019	0.009	0.006	0.025	0.009	0.007	0.007	-----
Uranium	0.019	0.031	0.007	-----	0.005	0.012	0.008	0.009	0.009	0.005
Manganese	0.035	0.066	0.046	0.035	0.033	0.015	0.022	0.051	0.035	0.023
Lanthanum	0.016	0.011	-----	-----	-----	-----	-----	-----	-----	0.007
Cerium	0.036	0.052	-----	-----	-----	-----	-----	-----	-----	0.016
Yttrium	0.007	0.014	0.003	0.008	0.009	0.008	0.008	0.011	0.009	0.007

Element	Hole	Hole			Hole			Hole	
	VHH-1	VLI			VLK			VLL	
	76'-80'	4'-8'	40'-44'	72'-76'	0'-4'	24'-28'	40'-44'	24'-24'	36'-40'
Copper	0.002	0.008	0.007	0.007	0.008	0.004	0.006	0.006	0.005
Silver	-----	-----	-----	-----	0.010	-----	-----	-----	-----
Zinc	0.004	0.007	0.010	0.012	0.065	0.007	0.011	0.011	0.007
Tin	-----	0.009	-----	-----	-----	-----	-----	0.008	-----
Lead	0.008	0.026	0.012	0.022	0.015	0.015	0.014	0.088	0.019
Arsenic	-----	0.005	-----	0.002	0.005	-----	0.003	0.007	0.007
Iodine	-----	-----	-----	-----	-----	-----	0.010	-----	-----
Iron	1.5	2.3	2.1	3.4	7.6	3.3	3.0	4.5	1.7
Nickel	0.007	0.009	0.005	0.013	0.011	0.009	0.006	0.013	0.006
Rubidium	0.026	0.020	0.022	0.014	0.020	0.023	0.025	0.021	0.019
Barium	0.057	0.049	0.068	0.060	0.055	0.079	0.065	0.044	0.074
Strontium	0.034	0.027	0.035	0.014	0.034	0.035	0.031	0.032	0.028
Titanium	0.19	0.35	0.26	0.37	0.46	0.43	0.32	0.39	0.26
Zirconium	0.073	0.055	0.13	0.036	0.20	0.074	0.085	0.18	0.085
Thorium	0.011	0.017	0.031	-----	0.063	0.050	0.014	0.033	0.011
Columbium	0.038	0.055	0.078	0.003	0.12	0.085	0.064	0.099	0.046
Chromium	0.012	0.015	-----	0.007	0.043	-----	0.015	0.12	0.003
Uranium	0.012	0.010	0.027	0.014	0.043	0.032	0.014	0.016	-----
Manganese	0.032	0.069	0.064	0.064	0.11	0.073	0.066	0.088	0.048
Lanthanum	0.016	0.010	0.026	-----	0.13	0.030	0.018	0.012	0.016
Cerium	0.038	0.036	0.10	-----	0.22	0.060	0.055	0.030	0.048
Yttrium	0.013	0.016	0.022	0.008	0.034	0.015	0.015	0.020	0.010

Element	Hole VCH		Hole VBH-1	Hole VBH-2	Hole VBH-3	Hole VDH-1		Hole VDH-3	Hole VEH-1	
	12'-16'	28'-32'	4'-10'	8'-12'	4'-8'	12'-16'	32'-36'	12'-16'	12'-16'	24'-28'
Copper	0.014	0.008	0.005	0.003	0.008	0.008	0.004	0.015	0.010	0.007
Zinc	0.015	0.009	0.005	0.019	0.004	0.011	0.011	0.015	0.007	0.010
Lead	0.012	0.015	0.006	0.010	0.008	0.018	0.021	0.004	0.017	0.012
Iron	1.9	2.4	1.4	1.6	3.8	4.6	2.5	2.4	1.1	1.8
Nickel	0.008	0.008	0.008	0.005	0.084	0.015	0.008	0.010	0.009	0.005
Rubidium	0.024	0.022	0.024	0.024	0.027	0.029	0.030	0.022	0.024	0.019
Barium	0.086	0.046	0.081	0.068	0.072	0.090	0.077	0.073	0.072	0.064
Strontium	0.039	0.031	0.036	0.032	0.038	0.035	0.036	0.028	0.037	0.025
Titanium	0.17	0.26	0.17	0.17	0.33	0.37	0.26	0.24	0.24	0.26
Zirconium	0.033	0.041	0.032	0.023	0.073	0.052	0.039	0.050	0.068	0.029
Thorium	-----	0.018	0.004	0.015	0.010	0.028	0.018	0.018	0.011	-----
Columbium	0.034	0.053	0.030	0.027	0.065	0.078	0.047	0.041	0.064	0.012
Chromium	0.019	0.011	0.011	0.019	0.027	0.038	0.015	0.003	0.015	0.030
Uranium	0.013	0.013	0.006	0.006	0.024	0.016	0.018	0.014	0.012	0.006
Manganese	0.040	0.064	0.026	0.029	0.048	0.076	0.055	0.048	0.046	0.042
Lanthanum	0.008	-----	-----	0.008	-----	0.021	0.014	0.009	0.008	-----
Cerium	0.038	-----	-----	0.019	-----	0.052	0.043	0.015	0.027	-----
Yttrium	0.012	0.013	0.007	0.012	0.017	0.018	0.013	0.015	0.012	0.011

HAZEN RESEARCH, INC.



4601 INDIANA STREET
GOLDEN, COLORADO • 80401
TELEPHONE 303/279-4547

November 7, 1969

Mr. E. H. Lindsey
2015 Century Street
Berkeley, California 94704

Re: HRI Project No. 580
Examination of Placer Samples from British Columbia, Canada

Dear Mr. Lindsey:

Attached are the latest results of semi-quantitative X-ray fluorescence analysis of the first shipment of "V" samples which we received on October 31, 1969.

Sincerely,

Roland Schmidt

Roland Schmidt
Mineralogist

RS:brt

cc: J. Black, w/att.
R. W. Jenkins, wo/att.

205
P

510

✓ 165

175

Element	Hole 54	Hole 58		Hole 70	Hole			Hole		
	VEH-3	VFH-1		VGH-4	VGH-4			VHH-1		
	8'-12'	16'-20'	32'-36'	0'-4'	24'-28'	48'-52'	76'-80'	0'-4'	24'-28'	48'-52'
Copper	0.005	0.006	0.004	0.007	0.006	0.005	0.004	0.011	0.002	0.003
Zinc	0.006	0.005	0.013	0.008	0.002	0.004	0.004	0.017	0.005	0.005
Lead	0.005	0.015	0.014	0.005	0.014	0.008	0.005	0.022	0.008	0.016
Arsenic	-----	0.003	-----	-----	-----	-----	-----	0.005	-----	-----
Iron	1.7	4.2	2.8	1.4	0.66	1.1	0.68	2.1	0.93	0.71
Nickel	0.006	0.008	0.011	0.007	0.008	0.005	0.007	0.005	0.002	0.006
Rubidium	0.022	0.031	0.020	0.023	0.022	0.024	0.027	0.021	0.021	0.023
Barium	0.077	0.080	0.067	0.057	0.077	0.073	0.069	0.056	0.057	0.067
Strontium	0.031	0.040	0.023	0.030	0.031	0.036	0.034	0.031	0.028	0.029
Titanium	0.19	0.35	0.32	0.17	0.064	0.15	0.086	0.17	0.17	0.11
Zirconium	0.029	0.050	0.029	0.024	0.035	0.023	0.018	0.048	0.035	0.022
Thorium	0.011	0.018	-----	-----	-----	-----	-----	-----	-----	-----
Columbium	0.027	0.097	0.013	0.010	0.018	0.019	0.011	0.028	0.016	0.011
Chromium	0.014	0.021	0.019	0.009	0.006	0.025	0.009	0.007	0.007	-----
Uranium	0.019	0.031	0.007	-----	0.005	0.012	0.008	0.009	0.009	0.005
Manganese	0.035	0.066	0.046	0.035	0.033	0.015	0.022	0.051	0.035	0.023
Lanthanum	0.016	0.011	-----	-----	-----	-----	-----	-----	-----	0.007
Cerium	0.036	0.052	-----	-----	-----	-----	-----	-----	-----	0.016
Yttrium	0.007	0.014	0.003	0.008	0.009	0.008	0.008	0.011	0.009	0.007

207
209
213

0.01
0.01
0.01
0.01
0.01

HAZEN RESEARCH, INC.

0.019
0.031
0.007
0.003

0.005
0.012
0.008
0.009
0.005

7) .085
77
0.012
0.007
0.005

27 3.5
78 11
16 7
31.49 3.5
7 9 220
39 4
33 3.5
377.335

335 2710
2680
600

8 1.005

28 35
10 4
59 4
52 2.5
12 2
0.001
0.0012
0.0029
0.005

0.029
1.95
120
96
29

Element	✓ Hole VHH-1 (H72)		✓ Hole VLI (H74)		3 ⁵	✓ Hole VLK' (H76)		✓ Hole VLL' (H77)	
	76'-80'	4'-8'	40'-44'	72'-76'		0'-4'	24'-28'	40'-44'	24'-24'
Copper	0.002	0.008	0.007	0.007	0.008	0.004	0.006	0.006	0.005
Silver	-----	-----	-----	-----	0.010	-----	-----	-----	-----
Zinc	0.004	0.007	0.010	0.012	0.065	0.007	0.011	0.011	0.007
Tin	-----	0.009	-----	-----	-----	-----	-----	0.008	-----
Lead	0.008	0.026	0.012	0.022	0.015	0.015	0.014	0.088	0.019
Arsenic	-----	0.005	-----	0.002	0.005	-----	0.003	0.007	0.007
Iodine	-----	-----	-----	-----	-----	-----	0.010	-----	-----
Iron	1.5	2.3	2.1	3.4	7.6	3.3	3.0	4.5	1.7
Nickel	0.007	0.009	0.005	0.013	0.011	0.009	0.006	0.013	0.006
Rubidium	0.026	0.020	0.022	0.014	0.020	0.023	0.025	0.021	0.019
Barium	0.057	0.049	0.068	0.060	0.055	0.079	0.065	0.044	0.074
Strontium	0.034	0.027	0.035	0.014	0.034	0.035	0.031	0.032	0.028
Titanium	0.19	0.35	0.26	0.37	0.46	0.43	0.32	0.39	0.26
Zirconium	0.073	0.055	0.13	0.036	0.20	0.074	0.085	0.18	0.085
Thorium	0.011	0.017	0.031	-----	0.063	0.050	0.014	0.033	0.011
Columbium	0.038	0.055	0.078	0.003	0.12	0.085	0.064	0.099	0.046
Chromium	0.012	0.015	-----	0.007	0.043	-----	0.015	0.12	0.003
Uranium	0.012	0.010	0.027	0.014	0.043	0.032	0.014	0.016	-----
Manganese	0.032	0.069	0.064	0.064	0.11	0.073	0.066	0.088	0.048
Lanthanum	0.016	0.010	0.026	-----	0.13	0.030	0.018	0.012	0.016
Cerium	0.038	0.036	0.10	-----	0.22	0.060	0.055	0.030	0.048
Yttrium	0.013	0.016	0.022	0.008	0.034	0.015	0.015	0.020	0.010

56-3
 57-
 58-
 59-1
 60-2
 60-0.1
 10 0.2
 35 0.2
 40 0.2
 19-1
 30
 100-1
 100-1
 100-1

HAZEN RESEARCH, INC.



4601 INDIANA STREET
GOLDEN, COLORADO • 80401
TELEPHONE 279-4549

October 31, 1969

Mr. E. H. Lindsey
2015 Century Street
Berkeley, California 94704

Re: HRI Project No. 580
Examination of Placer Samples from British Columbia, Canada

Dear Mr. Lindsey:

Enclosed is the balance of ten analysis performed on the second group of samples. This will complete the 41 analysis discussed in my letter report to you dated October 24, 1969.

Attached are also the results of the fluorimetric uranium analysis of those intervals in which uranium was detected by previous X-ray fluorescence analysis. These results show that the uranium is indeed low and that the X-ray fluorescence scan provides a sufficiently reliable method for obtaining approximate uranium values, which is useful for evaluation purposes.

Sincerely,

Roland Schmidt
Mineralogist

RS:brt

cc: J. Black, w/enclosures
R. W. Jenkins, wo/enclosures

Phalloy

Line 6

Hole 5

or

28

Hole MK H-5
16 intervals total (0'-72')

<u>Element</u>	<u>32'-36'</u>	<u>56'-60'</u>
Copper	0.007	0.007
Zinc	0.005	0.010
Tin	-----	0.009
Lead	0.016	0.018
Iron	5.4	10.
Nickel	0.005	0.013
Rubidium	0.021	0.022
Barium	0.062	0.091
Strontium	0.044	0.036
Titanium	0.35	0.47
Zirconium	0.090	0.39
Thorium	0.038	0.090
Columbium	0.077	0.12
Chromium	0.030	0.022
Uranium	0.018	0.024
Manganese	0.055	0.12
Lanthanum	0.042	0.099
Cerium	0.14	0.26
Yttrium	0.021	0.031

very high

Malloy Line L Hole 5

29

Hole ML H-5
14 intervals total (0'-56')

<u>Element</u>	<u>28'-32'</u>	<u>52'-56'</u>
Copper	0.004	0.004
Silver	0.003	-----
Zinc	0.006	0.004
Lead	0.008	0.012
Iron	1.1	2.0
Nickel	0.006	0.004
Rubidium	0.014	0.012
Barium	0.053	0.074
Strontium	0.040	0.036
Titanium	0.22	0.28
Zirconium	0.036	0.086
Thorium	0.021	0.030
Columbium	0.036	0.064
Chromium	0.011	-----
Uranium	0.012	0.012
Manganese	0.051	0.055
Lanthanum	0.015	0.041
Cerium	0.027	0.11
Yttrium	0.010	0.018

Phalley Line M. Hole 5

32

^M
Hole MN H-5
20 intervals total (0'-80')

<u>Element</u>	<u>0'-4'</u>	<u>28'-32'</u>	<u>52'-56'</u>	<u>72'-76'</u>
Copper	0.004	0.009	0.007	0.009
Zinc	0.005	0.004	0.013	0.008
Lead	0.010	0.010	-----	0.009
Tin	-----	-----	0.009	-----
Iron	0.90	5.3	13.	5.0
Nickel	0.006	0.010	0.009	0.005
Rubidium	0.017	0.014	0.020	0.024
Barium	0.069	0.070	0.088	0.098
Strontium	0.034	0.041	0.059	0.038
Titanium	0.15	0.35	0.52	0.37
Zirconium	0.024	0.074	0.14	0.084
Thorium	-----	0.024	0.066	0.051
Vanadium	-----	-----	0.042	-----
Columbium	0.007	0.064	0.12	0.074
Chromium	-----	0.015	0.036	0.001
Uranium	-----	0.018	0.040	-----
Manganese	0.019	0.064	0.11	0.058
Lanthanum	-----	0.096	0.064	0.044
Cerium	-----	0.18	0.15	0.16
Yttrium	0.006	0.021	0.036	0.023

Malloy line 142 H.C. 6

or

33

Hole MN H-6
15 intervals total (0'-64')

<u>Element</u>	<u>4'-8'</u>	<u>28'-32'</u>
Copper	0.005	0.005
Silver	0.006	-----
Zinc	0.005	0.004
Lead	0.010	0.016
Iron	2.0	3.8
Nickel	0.006	0.007
Rubidium	0.019	0.018
Barium	0.068	0.087
Strontium	0.038	0.034
Titanium	0.22	0.24
Zirconium	0.088	0.057
Thorium	0.012	0.015
Columbium	0.038	0.041
Chromium	0.003	-----
Uranium	0.010	0.015
Manganese	0.042	0.055
Lanthanum	0.033	0.029
Cerium	0.081	0.089
Yttrium	0.013	0.016

Nov 1
Oct 31

Results of Fluorimetric Uranium Analysis

Hole	Footage	% U ₃ O ₈	<i>x 10⁴</i>
<i>D</i> MC H-1	20-24	0.002	<i>2.002</i>
ME H-1	32-35	0.008	<i>0.013</i>
ME H-2	8-12	0.003	<i>0.003</i>
MF H-1	56-60	0.004	<i>0.003</i>
MF H-2	32-36	0.002	<i>0.006</i>
MF H-2	64-66	0.002	<i>0.003</i>
MF H-3	0-4	0.004	<i>0.005</i>
MF H-3	28-32	0.006	<i>0.019</i>
MF H-3	52-56	0.007	<i>0.012</i>
MF H-4	16-20	0.004	<i>0.006</i>
MF H-4	36-40	0.004	<i>0.011</i>
MF H-3	28-32	0.003	<i>0.009</i>
MJ H-2	28-32	0.008	<i>0.013</i>
MJ H-2	60-64	0.009	<i>0.017</i>
MJ H-2	92-96	0.005	<i>0.011</i>
MK H-4	4-8	0.019	<i>0.025</i>
MK H-4	36-40	0.018	<i>0.017</i>
MK H-4	68-72	0.010	<i>0.015</i>
MK H-5	32-36	0.016	<i>0.017</i>
MK H-5	56-60	0.035	<i>0.027</i>
ML H-5	28-32	0.011	<i>0.012</i>
ML H-5	52-56	0.023	<i>0.013</i>
MN H-5	28-32	0.021	<i>0.017</i>
MN H-5	52-56	0.030	<i>0.017</i>
MN H-6	4-8	0.010	<i>0.011</i>
MN H-6	28-32	0.014	<i>0.014</i>

many footings

0.0114
0.011

0.0136
0.014
0.012

0.0114 = 100
0.00113) *0.0114*

0.0114
0.011

0.0114
0.011
0.0114

HAZEN RESEARCH, INC.



4601 INDIANA STREET
GOLDEN, COLORADO • 80401
TELEPHONE 303/279-4547

October 24, 1969

Mr. E. H. Lindsey
2015 Century St.
Berkeley, California 94704

Re: HRI Project No. 580
Examination of Placer Samples from British Columbia, Canada

Dear Mr. Lindsey:

Enclosed are the results of semi-quantitative X-ray fluorescence analysis of 31 intervals selected from the second group of samples which we received on September 26, 1969. A total of 41 samples have been analyzed. The balance of 10 samples will be reported to you next week.

Furthermore, the intervals showing the presence of uranium are presently being analyzed fluorimetrically to obtain more accurate values for uranium. These will be completed by next week.

The second shipment consisted of 278 individual intervals from which 51 samples were selected for analysis in a manner described in the previous letter report dated October 10, 1969.

As a result of our recent telephone conversation, only 41 intervals (as indicated above) were analyzed.

On October 15, we received the third shipment of samples consisting of 163 individual intervals of the "M" series. These samples have been logged and will not be analyzed until advised. Preference will be given to the "V" samples as soon as they arrive.

Sincerely,

Roland Schmidt
Mineralogist

RS:brt

cc: Dr. J. Black, w/encl.
Mr. R. W. Jenkins

Malloy Line C Hole 6 or (#9)

Hole MC H-6
4 intervals total (0'-20')

130

<u>Element</u>	<u>16'-20'</u>
Copper	0.011
Zinc	0.009
Lead	0.015
Iron	3.7
Nickel	0.018
Rubidium	0.023
Barium	0.052
Strontium	0.017
Titanium	0.28
Zirconium	0.029 <i>100</i>
Columbium	0.013 <i>100</i>
Chromium	0.007
Manganese	0.068
Yttrium	0.007

Mulley Line D. Hole 1 or 10 #

Hole MD H-1
9 intervals total (0'-40')

<u>Element</u>	<u>20'-24'</u>	<u>36'-40'</u>
Copper	0.007	0.007
Zinc	0.004	0.008
Lead	0.005	0.008
Iron	0.81	1.2
Nickel	0.003	0.006
Rubidium	0.017	0.017
Barium	0.077	0.081
Strontium	0.036	0.033
Titanium	0.085	0.13
Zirconium	0.018	0.023
Columbi um	0.006	0.009 <i>loc</i>
Uranium	0.008	-----
Manganese	0.025	0.062
Yttrium	0.005	0.009

Malloy Line E Hole 1 02 # 11

Hole ME H-1
9 intervals total (0'-35')

<u>Element</u>	<u>16'-20'</u>	<u>32'-35'</u>
Copper	0.002	0.004
Zinc	0.005	0.005
Lead	0.008	0.006
Iron	0.95	2.2
Nickel	0.005	0.005
Rubidium	0.017	0.018
Barium	0.070	0.072
Strontium	0.039	0.037
Zirconium	0.024	0.044
Titanium	0.13	0.26
Thorium	0.018	0.020
Columbium	0.013	0.039
Chromium	0.007	-----
Uranium	-----	0.013
Manganese	0.038	0.044
Lanthanum	0.015	0.047
Cerium	0.042	0.081
Yttrium	0.009	0.012

Phalloy

Line F Hole 2

or #12

Hole ME H-2
6 intervals total (0'-23')

<u>Element</u>	¹⁷⁰ <u>8'-12'</u>	¹⁷⁰ <u>20'-23'</u>
Copper	0.005	0.006
Zinc	0.007	0.006
Lead	0.011	0.012
Iron	1.5	2.9
Nickel	0.007	0.006
Rubidium	0.020	0.026
Barium	0.062	0.097
Strontium	0.035	0.017
Titanium	0.17	0.30
Zirconium	0.026	0.033
Columbium	0.015	0.006
Chromium	-----	0.015
Uranium	0.003	-----
Manganese	0.033	0.046
Lanthanum	0.007	-----
Cerium	0.024	-----
Yttrium	0.011	0.008

Malloy Line E Hole 3 13

Hole ME H-3
11 intervals total (0'-43')

<u>Element</u>	<u>20'-24'</u>	<u>40'-43'</u>
Copper	0.006	0.004
Zinc	0.004	0.009
Lead	0.007	0.006
Iron	0.97	2.5
Nickel	0.004	0.007
Rubidium	0.014	0.014
Barium	0.060	0.040
Strontium	0.039	0.021
Titanium	0.11	0.26
Zirconium	0.020	0.036
Columbium	0.009	0.003
Manganese	0.033	0.048
Yttrium	0.009	0.006

Malloy Line F Hole 1 r. # 19

Hole MF H-1
16 intervals total (0'-65')

<u>Element</u>	<u>32'-36'</u>	<u>56'-60'</u>
Copper	0.002	0.004
Zinc	0.001	0.005
Lead	0.010	0.008
Iron	0.90	1.1
Nickel	0.006	0.006
Rubidium	0.017	0.021
Barium	0.070	0.065
Strontium	0.040	0.036
Titanium	0.13	0.17
Zirconium	0.022	0.039
Thorium	-----	0.006
Columbium	0.009	0.016
Manganese	0.023	0.040
Lanthanum	-----	0.015
Cerium	-----	0.032
Yttrium	0.014	0.009

Malloy Line F Hole #2.

or. # 15

Hole MF H-2
17 intervals total (0'-66')

<u>Element</u>	<u>32'-36'</u>	<u>64'-66'</u>
Copper	0.002	0.004
Zinc	0.002	0.003
Lead	0.008	0.002
Iron	0.65	0.74
Nickel	0.005	0.006
Rubidium	0.021	0.018
Barium	0.078	0.095
Strontium	0.042	0.040
Titanium	0.11	0.11
Zirconium	0.018	0.022
Columbium	0.008	0.005
Chromium	0.003	-----
Uranium	0.006	-----
Manganese	0.022	0.029
Lanthanum	-----	0.007
Cerium	-----	0.025
Yttrium	0.007	0.009

Malloy line F Hole 3

or #16

Hole MF H-3
13 intervals total (0'-56')

<u>Element</u>	<u>0'-4'</u>	<u>28'-32'</u>	<u>52'-56'</u>
Copper	0.003	0.007	0.010
Zinc	0.004	0.003	0.004
Lead	0.005	0.008	0.012
Iron	0.79	1.1	1.7
Nickel	0.007	0.005	0.006
Rubidium	0.021	0.020	0.018
Barium	0.063	0.068	0.074
Strontium	0.034	0.043	0.039
Titanium	0.085	0.15	0.15
Zirconium	0.035	0.054	0.071
Thorium	-----	0.014	0.012
Columbium	0.015	0.026	0.022
Chromium	-----	0.012	-----
Molybdenum	0.002	-----	-----
Uranium	0.005	0.009	0.012
Manganese	0.021	0.033	0.033
Lanthanum	-----	0.015	0.008
Cerium	-----	0.036	0.030
Yttrium	0.005	0.012	0.011

Mulloy Line F Hole 7

#17

Hole MF H-4
10 intervals total (0'-40')

<u>Element</u>	<u>16'-20'</u>	<u>36'-40'</u>
Copper	0.005	0.010
Zinc	0.003	0.002
Lead	0.005	0.010
Arsenic	0.002	0.002
Iron	0.78	0.94
Nickel	0.007	0.006
Rubidium	0.024	0.016
Barium	0.086	0.059
Strontium	0.039	0.037
Titanium	0.19	0.17
Zirconium	0.053	0.037
Thorium	0.010	0.010
Columbium	0.022	0.015
Chromium	0.018	-----
Uranium	0.006	0.011
Manganese	0.032	0.035
Lanthanum	0.016	0.007
Cerium	0.034	0.016
Yttrium	0.010	0.006

Malley Line G Hole 1

#18

below 9'

Hole MG H-1
22 intervals total (0'-88')

outside screen

<u>Element</u>	<u>0'-4'</u>	<u>28'-32'</u>	<u>56'-60'</u>	<u>84'-88'</u>
Copper	0.004	0.004	0.006	0.004
Silver	-----	-----	0.008	-----
Zinc	0.009	0.002	0.005	0.003
Lead	0.010	0.010	0.011	0.008
Iron	1.3	0.67	2.4	0.77
Nickel	0.005	0.004	0.010	0.005
Rubidium	0.020	0.020	0.008	0.021
Barium	0.082	0.072	0.057	0.083
Strontium	0.037	0.037	0.017	0.041
Titanium	0.15	0.13	0.32	0.13
Zirconium	0.016	0.027	0.039	0.015
Thorium	-----	0.007	-----	-----
Columbium	0.006	0.013	0.007	0.006
Chromium	0.006	0.005	0.003	0.005
Molybdenum	-----	-----	0.003	-----
Uranium	-----	0.005	-----	-----
Manganese	0.032	0.013	0.053	0.033
Lanthanum	0.007	0.007	0.017	-----
Cerium	0.024	0.016	0.040	-----
Yttrium	0.006	0.007	0.004	0.008

Malloy Line G Hole 2

#19

Hole MG H-2
7 intervals total (68'-95')

<u>Element</u>	<u>80'-84'</u>	<u>92'-95'</u>
Copper	0.005	0.006
Zinc	0.010	0.002
Lead	0.010	0.006
Iron	1.2	1.5
Nickel	0.007	0.005
Rubidium	0.017	0.020
Barium	0.082	0.060
Strontium	0.037	0.041
Titanium	0.11	0.24
Zirconium	0.039	0.080
Thorium	0.007	-----
Columbium	0.016	0.020
Manganese	0.029	0.035
Lanthanum	0.014	0.015
Cerium	0.040	0.034
Yttrium	0.006	0.009

M-61107 line ✓ hole 2

#26

Hole MJ H-2
24 intervals total (0'-96')

<u>Element</u>	<u>0'-4'</u>	<u>28'-32'</u>	<u>60'-64'</u>	<u>92'-96'</u>
Copper	0.006	0.008	0.008	0.006
Zinc	0.005	0.002	0.008	0.005
Lead	0.008	0.009	0.010	0.006
Iron	1.0	1.9	2.2	1.3
Nickel	0.005	0.005	0.009	0.007
Rubidium	0.017	0.020	0.025	0.021
Barium	0.064	0.063	0.042	0.044
Strontium	0.030	0.038	0.041	0.040
Titanium	0.22	0.11	0.22	0.13
Zirconium	0.016	0.032	0.049	0.032
Thorium	-----	0.027	0.013	0.019
Columbium	0.013	0.038	0.035	0.023
Chromium	-----	0.003	0.011	0.007
Uranium	-----	0.013	0.007	0.009
Manganese	0.033	0.033	0.034	0.027
Lanthanum	0.014	0.016	0.017	0.008
Cerium	0.040	0.038	0.040	0.018
Yttrium	0.003	0.012	0.015	0.008

Malloy Inc K Hole #

01.

#27

37

Hole MK H-4
18 intervals total (0'-72')

373
820
2/10

<u>Element</u>	<u>4'-8'</u>	<u>36'-40'</u>	<u>68'-72'</u>
Copper	0.006	0.003	0.008
Zinc	0.004	0.004	0.006
Tin	-----	-----	0.007
Lead	0.078	0.013	0.016
Iron	4.1	3.3	3.1
Nickel	0.005	0.008	0.007
Rubidium	0.013	0.014	0.020
Barium	0.10	0.072	0.072
Strontium	0.043	0.035	0.050
Titanium	0.33	0.35	0.24
Zirconium	0.30	0.18	0.11
Thorium	0.050	0.044	0.033
Vanadium	0.039	-----	-----
Columbium	0.085	0.066	0.046
Chromium	0.007	0.001	0.023
Molybdenum	-----	-----	0.005
Uranium	0.025	0.019	0.018
Manganese	0.062	0.055	0.055
Lanthanum	0.13	0.12	0.020
Cerium	0.20	0.19	0.048
Yttrium	0.022	0.026	0.013

very high

Malloy Creek Placer 82K/15W
82K/NE-8

HAZEN RESEARCH, INC.



4601 INDIANA STREET
GOLDEN, COLORADO • 80401
TELEPHONE 303/279-4547

October 10, 1969

Mr. E. H. Lindsey
2015 Century Street
Berkeley, California

Re: HRI Project No. 580
Examination of placer samples from British Columbia, Canada

Dear Mr. Lindsey:

Enclosed are the results of semi-quantitative X-ray fluorescence analysis of thirty intervals selected from the first group of samples which we received on September 12, 1969.

In general, the intervals were selected in a manner to obtain a sample from the top, the middle, and the bottom of any given hole. When a particular interval was too small for a good analysis, the interval directly above or below was analyzed instead. Since none of the samples showed appreciable quantities of the elements of interest, no mineralogical examinations or mineral separations were made.

None of the intervals from Hole MA-2 were analyzed due to the small amount of sample.

Sincerely,

Roland Schmidt
Mineralogist

RS:br
Enclosures

cc: Dr. J. Black w/encl ✓
Mr. R. W. Jenkins
Mr. E. H. Lindsey, Dillingham Corporation Canada, Ltd, Vancouver

Enclosure - Page 1
Ltr. to Mr. E. H. Lindsey
10/10/69

Malloy Line A. Hole 3

Hole M(L)A-H3

9 intervals total (0'-38')

Element	4'-8'	16'-20'	32'-38'
Copper	0.007	0.009	0.007
Zinc	0.010	0.008	0.008
Lead	0.005	0.011	0.015
Iron	2.4	2.9	2.3
Nickel	0.010	0.005	0.004
Rubidium	0.017	0.009	0.016
Barium	0.070	0.063	0.053
Strontium	0.020	0.013	0.018
Titanium	0.26	0.26	0.28
Zirconium	0.021	0.045	0.027
Thorium			0.011
Columbium	0.006	0.014	0.009
Chromium	0.006	0.005	0.010
Uranium			0.003
Manganese	0.046	0.046	0.042
Lanthanum			0.007
Cerium			0.016
Yttrium	0.004	0.007	0.008

Enclosure - Page 2
 Ltr. to Mr. E. H. Lindsey
 10/10/69

Murray Line G Hole 2.

Hole MG-2
 17 intervals total (0'-68')

*scintillation
 reading*

Element	0'-4'	16'-20'	32'-36'	48'-52'	60'-64'
Copper	0.007	0.008	0.003	0.006	0.007
Zinc	0.005	0.005	0.002	0.005	0.003
Lead	0.003	0.016	0.005	0.010	0.007
Iron	1.8	1.5	1.1	0.97	0.76
Cobalt	0.001				
Nickel	0.006	0.005	0.007	0.005	0.006
Rubidium	0.021	0.026	0.018	0.021	0.021
Barium	0.072	0.042	0.074	0.16	0.065
Strontium	0.035	0.042	0.035	0.048	0.037
Titanium	0.19	0.19	0.22	0.17	0.13
Zirconium	0.034	0.050	0.040	0.020	0.021
Thorium		0.014	0.013	0.006	
Columbium	0.022	0.021	0.020	0.014	0.014
Chromium		0.005		0.007	
Tungsten			0.036	0.050	
Uranium	0.006	0.006		0.008	
Manganese	0.026	0.037	0.033	0.021	0.021
Lanthanum	0.016	0.008	0.015	0.007	
Cerium	0.045	0.018	0.034	0.016	
Yttrium	0.011	0.008	0.011	0.008	0.009

Enclosure - Page 3
Ltr. to Mr. E. H. Lindsey
10/10/69

Walling Line B Hole 6

Hole MB-H6
11 intervals total (0'-44')

Element	4'-8'	20'-24'	40'-44'
Copper	0.006	0.008	0.009
Zinc	0.008	0.007	0.008
Lead	0.003	0.012	0.006
Arsenic		0.004	0.002
Iron	2.2	3.6	2.6
Cobalt	0.004	0.007	
Nickel	0.007	0.012	0.007
Rubidium	0.016	0.011	0.017
Barium	0.029	0.047	0.057
Strontium	0.016	0.022	0.029
Titanium	0.17	0.24	0.15
Zirconium	0.029	0.055	0.040
Columbium	0.007	0.007	0.011
Chromium	0.011		
Molybdenum			0.004
Manganese	0.048	0.11	0.066
Yttrium	0.007	0.004	0.007

Enclosure - Page 4
Ltr. to Mr. E. H. Lindsey
10/10/69

Malloy Line B Hole 4

Hole MB-H4
8 intervals (0'-32')

Element	0'-4'	16'-20'	28'-32'
Copper	0.016	0.010	0.001
Zinc	0.013	0.010	0.005
Lead	0.014	0.005	0.005
Iron	2.0	2.0	1.9
Nickel	0.006	0.008	0.006
Rubidium	0.016	0.011	0.015
Barium	0.047	0.040	0.037
Strontium	0.019	0.012	0.017
Titanium	0.21	0.32	0.19
Zirconium	0.029	0.035	0.024
Vanadium		0.038	
Columbium	0.005	0.080	0.008
Chromium	0.002	0.013	
Uranium		0.006	0.006
Manganese	0.066	0.053	0.048
Yttrium	0.007	0.006	0.006

Enclosure - Page 5
Ltr. to Mr. E. H. Lindsey
10/10/69

Malley Line A Hole 6

Hole MA-H6
9 intervals (0'-36')

Element	0'-4'	16'-20'	32'-36'
Copper	0.006	0.017	0.004
Zinc	0.004	0.008	0.003
Lead	0.017	0.006	0.006
Arsenic	0.002	0.006	
Iron	1.9	2.1	2.6
Cobalt	0.002		
Nickel	0.008	0.007	0.008
Rubidium	0.010	0.008	0.012
Barium	0.057	0.043	
Strontium	0.014	0.016	0.022
Titanium	0.26	0.24	0.26
Zirconium	0.032	0.035	0.073
Thorium			0.008
Columbium	0.010	0.014	0.010
Chromium	0.029	0.018	0.007
Uranium		0.006	0.007
Manganese	0.055	0.055	0.059
Lanthanum	0.008		0.008
Cerium	0.017		0.019
Yttrium	0.007	0.004*	0.009

Enclosure - Page 6
Ltr. to Mr. E. H. Lindsey
10/10/69

Malloy Linc B Hole 5

Hole MB-H5
14 intervals (0'-54')

Element	0'-4'	20'-24'	36'-40'	48'-52'
Copper	0.007	0.005	0.006	0.006
Silver		0.005		
Zinc	0.014	0.006	0.007	0.007
Lead	0.007	0.011	0.003	0.014
Arsenic	0.003			
Iron	3.4	1.9	2.0	1.9
Nickel	0.006	0.006	0.004	0.007
Rubidium	0.016	0.011	0.010	0.008
Barium	0.054	0.042	0.061	0.048
Strontium	0.018	0.013	0.016	0.016
Titanium	0.35	0.24	0.17	0.19
Zirconium	0.045	0.031	0.022	0.021
Thorium	0.013			
Vanadium				0.015
Columbium	0.033	0.009	0.009	0.006
Chromium		0.026	0.052	0.022
Uranium	0.011		0.003	
Manganese	0.064	0.023	0.033	0.029
Lanthanum	0.017			
Cerium	0.040			
Yttrium	0.013	0.008	0.006	0.004

Enclosure - Page 7
Ltr. to Mr. E. H. Lindsey
10/10/69

Malloy line B Hole 9

Hole MA-H4B
7 intervals (0'-28')

Element	0'-4'	24'-28'
Copper	0.005	0.013
Zinc	0.010	0.008
Lead	0.011	
Iron	1.9	2.5
Nickel	0.006	0.008
Rubidium	0.016	0.014
Barium	0.037	0.040
Strontium	0.018	0.013
Titanium	0.19	0.22
Zirconium	0.023	0.033
Columbium	0.006	0.006
Chromium		0.015
Manganese	0.042	0.035
Yttrium	0.006	0.008

Enclosure - Page 8
Ltr. to Mr. E. H. Lindsey
10/10/69

Shalloy Line A Hole 5

Hole MA-H5
9 intervals (0'-35')

Element	0'-4'	16'-20'	32'-35'
Copper	0.006	0.004	0.002
Zinc	0.007	0.008	0.006
Tin	0.002		
Lead	0.010	0.013	0.006
Arsenic	0.002		
Iron	2.7	2.4	2.0
Nickel	0.011	0.007	0.008
Rubidium	0.012	0.011	0.014
Barium	0.040	0.049	0.040
Strontium	0.014	0.014	0.016
Titanium	0.35	0.26	0.26
Zirconium	0.055	0.045	0.026
Columbium	0.017	0.019	0.008
Chromium	0.030	0.030	0.026
Uranium			0.006
Manganese	0.053	0.053	0.040
Yttrium	0.007	0.008	0.006

min 1.015

0.015

0.015

Enclosure - Page 9
Ltr. to Mr. E. H. Lindsey
10/10/69

Malloy line G Hole 3.

20

Hole MG-3
14 intervals (0'-56')

Element	0'-4'	16'-20'	32'-36'	52'-56'
Copper	0.007	0.003	0.020	0.008
Gold		0.004		
Zinc	0.006	0.004	0.017	0.015
Tin	0.005	0.004		
Lead	0.007	0.011	0.006	0.012
Iron	2.6	0.92	3.9	3.0
Nickel	0.005	0.006	0.012	0.011
Rubidium	0.014	0.021	0.009	0.018
Barium	0.068	0.055	0.066	0.051
Strontium	0.038	0.038	0.013	0.018
Titanium	0.24	0.22	0.30	0.30
Zirconium	0.050	0.045	0.043	0.033
Thorium	0.008			
Vanadium			0.038	
Columbium	0.028	0.022	0.005	0.006
Chromium	0.003	0.022	0.030	0.026
Uranium	0.010	0.022	0.012	0.014
Manganese	0.044	0.030	0.057	0.034
Lanthanum	0.026			
Cerium	0.077			
Neodymium	0.018			
Yttrium	0.012	0.010	0.010	0.009

36
30
21
16-79