MAR 20150003: STEEN RIVER


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REPORT ON A SOIL pH (HYDROGEN ION CONCENTRATION) AND SOIL CONDUCTIVITY SURVEY
CONDUCTED ON METALLIC AND INDUSTRIAL MINERALS PERMITS IN
NORTHWESTERN ALBERTA (NTS 84 N 3) DURING JULY 2014

Work was done in connection with the following Metallic and Industrial Minerals Permits:
9312050710, 9312050711, 9312050713 and 9312050714

The Permits are held by Anglo Celtic Exploration Ltd.
1056-409 Granville Street, Vancouver BC, V6C 1T2

The Permits are located on the the Hay River between
the settlements of Meander River and Steen River

Dave Nickerson MSc.

August 5, 2014
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REPORT ON A SOIL pH (HYDROGEN ION CONCENTRATION) AND SOIL CONDUCTIVITY SURVEY
CONDUCTED ON METALLIC AND INDUSTRIAL MINERALS PERMITS IN
NORTHWESTERN ALBERTA (NTS 84 N 3) DURING JULY 2014

1 SUMMARY

Working out of the settlement of Meander River AB. between July 19 and July 21 some 21 soil samples were taken from the "Hydroxide Creek" area of Metallic and Industrial Minerals Permits 9312050710, 9312050711, 9312050713 and 9312050714. The work was done by Dave Nickerson and Isaiah Modeste, both of Yellowknife NT., with some local assistance from Willie Chambaud of Meander River. Measurements of pH, converted into hydrogen ion concentration, and conductivity were conducted off site. Difficulty and delays were caused by the many forest fires in the southern NT that resulted in highways being closed for many days at a time.

The Mineral Permits contain 2,034 hectares and are located some 25 kilometres northeast of the settlement of Meander River. They are shown in detail on Drawing 1.

The use and effectiveness of soil pH as an exploration technique that can be used even where heavier metallic ions have not migrated to the surface is described in Smee, B. W. 2003 (see references)

During the field work a second area of iron staining some 250m southwest of "Hydroxide Creek" was observed.

The survey was successful in that it expanded the area of interest and confirmed its geochemically anomalous nature. Recommendations are given in this report for further exploration work.

2 PREVIOUS WORK

As a result of a stream water and stream sediment geochemical survey undertaken in the summer of 2011 along the Hay River between the settlements of Indian Cabins and Meander River (Nickerson, D. 2012) a sizeable tract of exploration ground was acquired. In July 2012 a till, shale, spruce bark, stream water and stream sediment survey was conducted on the prospect (Nickerson, D. 2013). This identified an area of interest centred on iron stained "Hydroxide Creek". The purpose of the 2014 exploration program was to further evaluate this location.
3 METHODOLOGY

Sample Site Grid Layout

Access to the sample sites was by boat along the Hay River from the boat launch in Meander River and thence by foot.

Twenty one samples were collected from an area 500m by 500m centred on the iron stained lower reaches of Hydroxide Creek. Sample locations were preplanned and are shown as numbered dots on the accompanying drawings. The grid was planned to minimize the number of samples required but to demarcate the extent of suspected mineralization and to determine its strike direction. Nearly all samples were collected from their initially planned locations except that, because of lack of remaining daylight, only two were collected from the west side of the Hay River.

Sample Collection and Measurement

Soil samples of about 50 g were collected with a 50 mm diameter soil auger from just below the organic layer and placed in a Kraft paper soil sample bag. A record was made of the soil type and colour. Each collection site was marked by a blazed tree or, where there were no trees, by flagging tape.

In a make shift laboratory back in Yellowknife one teaspoon (about 2.5 g) of the “soil” was agitated by hand for two minutes with 50 ml of distilled water to make a slurry. The pH was measured with a Milwaukee MW 102 pH/temperature meter with automatic temperature compensation. Conductivity and temperature were measured with an Omega PHH 7200 instrument.

In order to emphasize contrasts pH readings were converted into hydrogen ion Concentrations \([H^+]\) using the relationship:

\[ [H^+] = 10^{-\text{pH}} \]

Instead of using absolute values as determined above hydrogen ion concentration was expressed more conveniently as nanoequivalents per litre (nEq/L) by multiplying the absolute value by \(10^9\).

Quality Assurance and Quality Control

As a QA/QC check two samples, (numbers 03 and 17) were re-measured. Both pH and conductivity values were the same or almost the same between the first and duplicate samples as can be seen from Table 1.

Presentation of Results

To assist the reader Drawing 2 reproduces data from the 2012 geochemical surveys. Water and sediment samples from “Hydroxide Creek” will be seen to be anomalously high in a number of elements.

Drawings 3 and 4 present the pH (hydrogen ion concentration) and conductivity data in the form of contour maps and as a cross section in Drawing 5. Drawing 6 is a composite map showing all the results in a concise but simplified form.
Photograph 1  Isaiah Modeste collecting soil sample

Photograph 2  Soil pH and conductivity measuring equipment
4 DISCUSSION OF RESULTS AND RECOMMENDATIONS

1. The discovery of a second iron stained creek associated with coincident pH and conductivity anomalies some 250m southwest of Hydroxide Creek is significant.

2. There is a well-developed pH anomaly immediately to the northeast of Hydroxide Creek together with a smaller conductivity anomaly offset about 50m to the northwest. The pH anomaly is strong over a strike length of 200m and is traceable for a total length of some 300m.

3. The pH anomalies trend, somewhat discontinuously, over a total strike length of about 650m sub-parallel to the southeastern bank of the Hay River.

4. In view of the information assembled about the Hydroxide Creek location in years 2011, 2012, and the current year 2014, further serious exploration work is justified.

5. It would be desirable to drill a -45° diamond drill hole some 200m in length, collared near sample site 08. This should be drilled in a northwesterly direction to intersect maximum pH and conductivity values. Deep overburden can be expected.

6. Alternatively further geophysics could be done before drilling. A grid could be established with a base line about a kilometre in length in a northeast – southwest direction roughly parallel to the bank of the Hay River. The most appropriate types of surveys have yet to be determined.

7. Access from Highway 35 for geophysics and drilling would be easier in winter when the ground and river are frozen.

5 REFERENCES


Dave Nickerson M.Sc.

Aug 5, 2014

Photograph 3 "Hydroxide Creek" near the confluence of the Roe and Hay Rivers (2012)
**TABLE 1. HYDROXIDE CREEK SOIL pH, (HYDROGEN ION CONCENTRATION) AND CONDUCTIVITY SURVEY.**

STEEN RIVER PROJECT 2014

Sample collection July 20, 2014
Sample testing July 22 and 23, 2014

UTM uses NAD 27 (Canada) to correspond to published 50,000 scale maps of locality
Zone 11V, Full Easting 04XXXX, Full Northing 65XXXX

**July 22, 2014**

<table>
<thead>
<tr>
<th>Sample No</th>
<th>GPS WP</th>
<th>Easting</th>
<th>Northing</th>
<th>Cond µS/cm</th>
<th>pH</th>
<th>$[\text{H}^+]$ nEq/L</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>201</td>
<td>76,090</td>
<td>65,050</td>
<td>183</td>
<td>7.04</td>
<td>91</td>
<td>Grey Mud</td>
<td>East shore of Hay River</td>
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<tr>
<td>02</td>
<td>202</td>
<td>76,120</td>
<td>65,095</td>
<td>647</td>
<td>6.90</td>
<td>126</td>
<td>Grey Mud</td>
<td>East shore of Hay River</td>
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<tr>
<td>Average 03</td>
<td>203</td>
<td>76,150</td>
<td>65,055</td>
<td>120</td>
<td>4.30</td>
<td>50119</td>
<td>Brown Clay</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td></td>
<td></td>
<td></td>
<td>115</td>
<td>4.30</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Repeat 03</td>
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<td></td>
<td></td>
<td>125</td>
<td>4.30</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>04</td>
<td>204</td>
<td>76,200</td>
<td>65,095</td>
<td>92</td>
<td>5.60</td>
<td>2512</td>
<td>Brown Clay</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>205</td>
<td>76,255</td>
<td>65,150</td>
<td>143</td>
<td>6.32</td>
<td>479</td>
<td>Brown Clay</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>206</td>
<td>76,345</td>
<td>65,250</td>
<td>82</td>
<td>6.78</td>
<td>166</td>
<td>Brown/Black Clay</td>
<td>Small creek, clear water 2L/s. 5m SE of sample site</td>
</tr>
<tr>
<td>07</td>
<td>207</td>
<td>76,350</td>
<td>65,000</td>
<td>285</td>
<td>7.56</td>
<td>28</td>
<td>Brown Silt</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>208</td>
<td>76,205</td>
<td>65,005</td>
<td>247</td>
<td>7.53</td>
<td>30</td>
<td>Brown Clay</td>
<td>Iron stained creek 1/2 way between sites 8 and 9</td>
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<tr>
<td>09</td>
<td>209</td>
<td>76,150</td>
<td>65,005</td>
<td>68</td>
<td>7.52</td>
<td>30</td>
<td>Brown Clay</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>210</td>
<td>76,155</td>
<td>64,950</td>
<td>83</td>
<td>7.29</td>
<td>51</td>
<td>Brown Sand</td>
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<tr>
<td>11</td>
<td>211</td>
<td>76,100</td>
<td>64,900</td>
<td>67</td>
<td>7.44</td>
<td>36</td>
<td>Brown Silt</td>
<td></td>
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<tr>
<td>12</td>
<td>212</td>
<td>76,200</td>
<td>64,895</td>
<td>42</td>
<td>7.72</td>
<td>19</td>
<td>Brown Clay</td>
<td>On creek, clear water</td>
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<tr>
<td>13</td>
<td>213</td>
<td>76,255</td>
<td>64,845</td>
<td>99</td>
<td>7.63</td>
<td>23</td>
<td>Brown Clay</td>
<td>Between sites 13 and 14 an old NS cut line</td>
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<tr>
<td>14</td>
<td>214</td>
<td>76,350</td>
<td>64,750</td>
<td>157</td>
<td>7.32</td>
<td>48</td>
<td>Black Organic</td>
<td>No &quot;real soil &quot; found at this site</td>
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<tr>
<td>15</td>
<td>215</td>
<td>76,100</td>
<td>64,750</td>
<td>280</td>
<td>6.97</td>
<td>112</td>
<td>Brown Silt</td>
<td>Small creek, clear water between sites 14 and 15</td>
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<tr>
<td>16</td>
<td>216</td>
<td>75,850</td>
<td>64,755</td>
<td>214</td>
<td>7.04</td>
<td>91</td>
<td>Grey Mud</td>
<td>East shore of Hay River</td>
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</table>

**July 23, 2014**

<table>
<thead>
<tr>
<th>Sample No</th>
<th>GPS WP</th>
<th>Easting</th>
<th>Northing</th>
<th>Cond µS/cm</th>
<th>pH</th>
<th>$[\text{H}^+]$ nEq/L</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>217</td>
<td>75,945</td>
<td>64,855</td>
<td>1362</td>
<td>6.37</td>
<td>427</td>
<td>Grey Mud</td>
<td>On small rusty creek near river. Expands interest area</td>
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<td>Average 18</td>
<td>218</td>
<td>76,005</td>
<td>64,905</td>
<td>347</td>
<td>7.52</td>
<td>30</td>
<td>Grey Clay</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td>394</td>
<td>7.42</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Repeat 18</td>
<td></td>
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<td>300</td>
<td>7.62</td>
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<td></td>
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<tr>
<td>19</td>
<td>219</td>
<td>76,055</td>
<td>64,955</td>
<td>372</td>
<td>7.45</td>
<td>35</td>
<td>Grey Clay</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>220</td>
<td>76,060</td>
<td>65,215</td>
<td>205</td>
<td>7.85</td>
<td>14</td>
<td>Grey Silt</td>
<td>West shore of Hay River</td>
</tr>
<tr>
<td>21</td>
<td>221</td>
<td>75,915</td>
<td>65,010</td>
<td>297</td>
<td>7.60</td>
<td>25</td>
<td>Grey Mud</td>
<td>West shore of Hay River, River bank mud</td>
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Metallic and Industrial Minerals Permits

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<th>Permit Number</th>
<th>Contained Land</th>
<th>Hectares</th>
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<tr>
<td>9312050710</td>
<td>5-20-117: S11;32W</td>
<td>384</td>
</tr>
<tr>
<td>9312050711</td>
<td>5-21-117: 35E;36</td>
<td>384</td>
</tr>
<tr>
<td>9312050713</td>
<td>5-20-118: 5W;6;7;8W</td>
<td>768</td>
</tr>
<tr>
<td>9312050714</td>
<td>5-21-118: 1;2E;11E;12</td>
<td>768</td>
</tr>
</tbody>
</table>

METALLIC AND INDUSTRIAL MINERALS PERMITS
LOCATION AND ACCESS

Drawing 1  Metallic and Industrial Permits
Location and access
Sample 38 (2011) Water
Cond µS/cm Be ppm Co ppm Fe ppm Ni ppm Mn ppm Ni ppm Rb ppm Sr ppm Zn ppm
1473 0.7 33.8 8190 111 846 85.1 3.5 317 143

Sample 38 (2011) Sediment
Th ppm 7

Sample 16 (2012) Sediment
Mn ppm Cu ppm Sr ppm Na %
8 31 87 0.07

Sample 16 (2012) Water
Cond µS/cm Co ppm U ppm Ni ppm Sr ppm Zn ppm
1295 16.9 73.1 29.4 389 74

Sample 17 (2012) Water
Cond µS/cm Sr ppm U ppm
1150 579 6.2

Sample 17 (2012) Sediment
Ca % Mg %
1.98 1.09

LEGEND
>AVG+3*STD DEV
>AVG+2*STD DEV

STEEVEN RIVER PROJECT
HYDROXIDE CREEK - STREAM WATER AND STREAM SEDIMENT ANOMALIES
ON 10TH JANUARY 2015
Drawing 3  Soil hydrogen ion concentration survey.  2014 Hydroxide Creek
STEEN RIVER PROJECT 2014

SOIL CONDUCTIVITY SURVEY
HYDROXIDE CREEK 2014

Contours at 200, 300, 500 and 1000 μS/cm

NAD 27 (CANADA)
ZONE 11V.

UTM COORDINATES SHOWN.
"HYDROXIDE CREEK"
ALBERTA

Jane Nicholas 27th July 2014

• Soil sample site 2014
X Water, sediment sample sites of previous years
A Site 16 2012 Site 38 2011
B Site 17 2012

Drawing 4 Soil conductivity survey. 2014 Hydroxide Creek
Soil Survey July 2014

Section XX

Sample No. Location projected to section line.

STEEN RIVER PROJECT 2014

"HYDROXIDE CREEK"
ALBERTA

Dave Nickerson July 26, 2014

Soil Hydrogen Ion Concentration and Conductivity Survey 2014 Composite Map

Steen River Project 2014

NAD 27 (Canada)
Zone 11Y.

UTM Coordinates Shown.

"Hydroxide Creek"
Alberta

Dave Nicholas 27 July 2014

Drawing 6  Soil hydrogen ion and conductivity survey 2014. Composite map