# Appendix 5.1.2.4A
# Blackwater Gold Project – 2012 Groundwater Quality Data Collection Summary

**February 8, 2013**

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Cont. No.:VA12-02061



*Mr. Timothy Bekhuys*
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*New Gold Inc.*
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Dear Tim,

**Re: Blackwater Gold Project – 2012 Groundwater Quality Data Collection Summary**

## 1 INTRODUCTION

Knight Piésold Ltd. (KPL) was retained by New Gold Inc. (New Gold) to complete a series of geotechnical and hydrogeological site investigation programs during 2012 to support the Blackwater Gold Project mine development concept. A site investigation report is being prepared to present the findings of these site investigation programs, and will be provided separately. The site investigations included the installation of a network of monitoring wells around the project site for the collection of baseline groundwater quality samples. This letter provides a summary of the groundwater monitoring well installations and the baseline groundwater quality data collection program completed for the project during 2012.

The collection of groundwater quality data and assessment of baseline water quality will be continued in 2013 by AMEC, and this letter provides the necessary information to facilitate that on-going data collection and interpretation.

### 1.1 PROJECT AREA

The Blackwater Gold Project (the Project) is a proposed gold-silver mine located approximately 110 km southwest of Vanderhoof in the Nechako Plateau, central British Columbia. The Nechako Plateau is an area characterized by gently undulating highlands dissected by meltwater channels. The area has been glaciated and the mountain tops are typically rounded. Mount Davidson, which is the highest peak in the Fawnie Range, is located at the south margin of the Project area.

The Local Study Area (LSA), shown on Figure 1.1, comprises the full extent of the catchments that are upslope from the mine site and extends to the northeast to include a buffer zone of approximately 1 km around the mine site area. The LSA is the area where residual effects from the project are anticipated. The LSA is the focus of the hydrogeological and groundwater quality field data collection for the baseline assessment. The Regional Study Area (RSA) extends further out in all directions and provides context to better understand the LSA. The elevation of the RSA ranges from approximately 1700 masl on the north facing slopes of Mount Davidson to 1000 masl in the valleys. The site area comprises hummocky and rounded topography with local hill-top plateaus.

The majority of the LSA lies within the Davidson Creek Watershed. Davidson Creek is incised locally and flows northeast from the site towards Chedakuz Creek downstream of Tatelkuz Lake. Tributaries of Creek 661 also originate in the Project area and flow northeast towards Tatelkuz Lake. Southwest flowing tributaries of Fawnie Creek occur in the southwest part of the LSA.

The LSA is predominantly located within the moist, very cold, Engleman Spruce – Subalpine Fir Biogeoclimatic Zone. The east part of the LSA, including the central portion of the footprint area of the proposed Site D main embankment, lies within the moist, cold Sub-Boreal Spruce Biogeoclimatic Zone. The summit area of Mount Davidson lies within the Boreal Altai Fescue Alpine Biogeoclimatic Zone.

### 1.2 SCOPE OF WORK

Work conducted by KPL included the following:

- Drilling and installation of monitoring wells: KPL chose locations and depths of monitoring wells and supervised installation of wells.
- Well development: KPL staff trained sub-consultants to carry out well development and oversaw the quality of their work.
- Response testing: KPL staff trained sub-consultants to carry out response testing and oversaw the quality of their work.
- Groundwater level monitoring: KPL staff trained sub-consultants to install groundwater level transducers and download four times a year during groundwater sampling events.
- Groundwater sampling: KPL trained sub-consultants to conduct the groundwater sampling and oversaw the quality of their work.

## 2 MONITORING WELL INSTALLATION

### 2.1 OVERVIEW

The monitoring well installations were carried out in two phases, with the second phase focused on locations that were outside of the initial Project permit area. The first phase of well installations occurred between March 21 and April 30, 2012 and the second phase extended from August 8 to 24, 2013. The key tasks carried out during the 2012 hydrogeological site investigation for collection of physical hydrogeological data included:

- Installation of 26 groundwater monitoring wells at 13 locations (one deep and one shallow installation at each location) – nine locations (18 wells) in phase one and four locations (8 wells) in the second phase.
- Development of 23 wells, response testing of 21 wells, and groundwater level transducer installation in 23 wells was completed from May 16 to November 2, 2012.

Avison Management Services Ltd. (Avison) provided sub-consultant services to KPL for well development, response testing, transducer installation, and groundwater sampling.

### 2.2 METHODOLOGY

#### 2.2.1 Selection of Monitoring Well Locations

Monitoring well sites were located up-gradient and down-gradient of proposed mine infrastructure to provide site wide spatial coverage (Figure 2.1). All monitoring well locations include a deep installation and a shallow installation to provide vertical representation of groundwater levels, hydraulic characteristics, and groundwater quality.

Locations were selected after considering impacts of road construction, requirement for bridge construction, and proximity to waterways. The selection process considered the need for safe access during both summer and winter, and targeted areas adjacent to pre-existing road networks. Additionally, site locations were chosen in

such a way to minimize disturbance within the caribou wintering range and within the one kilometer buffer area surrounding the caribou wintering range.

Monitoring well locations are listed in Table 2.1 and shown on Figure 2.1.

### 2.2.2 Drilling and Monitoring Well Installations

Westech Drilling Inc. (Westech) was contracted to complete the installation of the groundwater monitoring wells. A track mounted B-54 drill rig was used during the first phase of drilling and a track mounted Simco 2800 HD drill rig was used to complete the second phase of drilling.

The overburden was drilled using 15 cm outer diameter steel casing with an ODEX system. The casing was advanced to the bedrock surface and anchored. The drillhole was then advanced in an open hole with a down-hole hammer bit (12 cm outer diameter). Drill cuttings were collected at surface and logged. Observations were noted while drilling including input from the driller and observations of moisture and water return at the surface.

Monitoring wells were installed by Westech under KPL supervision upon completion of each drillhole. The general installation approach followed was:

- Approximately 1 m of filter sand placed on the bottom of the hole.
- 1.5 m, 3 m, or 6.1 m x 60 mm (2 inch diameter), machine slotted schedule 80 PVC screen (0.5 mm slot size, “20 slot”) installed on top of the filter sand.
- 3 m x 60 mm (2 inch diameter) sections of schedule 80 PVC installed to approximately 1 m above ground surface.
- Filter sand placed adjacent to and up to approximately 2 m above the screen to form the completion zone.
- Completion zone sealed with at least 1 m of slow release coated bentonite pellets.
- Backfilled with a grout mixture (115 kg grout to 375 L water) to ground surface.
- Casing was removed and a locking steel well monument installed with concrete surface protection directing surface flow away from the well.

### 2.2.3 Well Development

Wells are developed to remove drilling debris and fines from the well screen and filter zone surrounding the screen. A high-capacity Waterra inertial pumping system activated by a Waterra Power Pump-2 was used for development. HDPE Waterra tubing (outer diameter 2.54 cm (1 inch)) was fitted with a surge block and foot valve for development. Starting at the bottom of the screen, the foot valve and surge block were placed for pumping at successively shallower locations until the top of the screen was reached and the entire screened zone had been developed. During development, the volume of water and sediment extracted, pH, temperature, and electrical conductivity were recorded. Development continued at each interval until sediment free water was observed or until diminishing returns had been reached. The surge block was then removed (for less aggressive sediment removal) and the foot valve was placed at the top of the screen and pumping was resumed. Water volume, sediment quantity, pH, temperature and electrical conductivity were again recorded at regular intervals until sediment free, parameter stable water was observed or until diminishing returns had been reached. After sediment levels decreased and parameters had stabilized, the foot valve was lowered to the bottom of the well and operated manually to collect sediment that accumulated at the bottom of the well during development.

### 2.2.4 Response Testing

The wells were response tested after development using falling and rising head slug tests. A length of 2.54 cm outer diameter Waterra tubing with an end plug was used as a slug. A transducer (Schlumberger Mini-Diver,

50m) with direct read cable was used to measure and record the groundwater level response in the wells during testing. The transducer was positioned at a depth of about 5 m below the initial water level in the well.

The response test data was analyzed using the Cooper et al. (1967) and Van der Kamp (1976) methods. These methods are based on curve matching with a theoretical solution to estimate a hydraulic conductivity value.

### 2.2.5 Groundwater Levels

Water levels were taken manually following well installation. A transducer (Schlumberger Mini-Diver, 50m) was installed in each well after the initial groundwater quality sampling visit for long term hourly water level monitoring. The transducer data are currently downloaded during quarterly groundwater sampling.

The dates of well development, response testing, water level measurement and transducer installation are provided in Table 2.1.

## 2.3 RESULTS

### 2.3.1 Drilling and Monitoring Well Installations

The 2012 monitoring wells were installed across the Project site surrounding proposed mine infrastructure. A total of 26 monitoring wells, one shallow installation and one deep installation, were installed at 13 locations over two separate drilling phases.

A preliminary description of geology encountered during drilling at each site was developed based on drill cutting observations to assist with selecting the screened interval for the installation. Overburden was also sampled via standard penetration testing (SPT) to aid with geological characterization in monitoring wells MW12-01D/S to MW12-07D/S. Drillhole depths vary from 7 to 47 m and where bedrock was encountered, depth to bedrock ranged from 5 to 25 m. A number of drillholes did not encounter bedrock over 40 m-depth of drilling. The overburden depth varies greatly across the Project site and was observed to be deeper in the Davidson Creek area of the proposed Tailing Storage Facility and shallower at higher elevations, such as southwest of the deposit area (approximately 5 m based on monitoring well location MW12-10D/S). Bedrock in the Project area consists of both andesitic and felsic volcanic rocks of the Ootsa Lake and Entiako Formations. A description of the overburden and bedrock encountered at each monitoring well location is included in the monitoring well logs in Appendix A.

A total of 18 monitoring wells were installed in overburden, four monitoring wells were installed in bedrock, and three were installed near the overburden-bedrock contact. Screened intervals of the monitoring wells are 3 m with the exception of three holes. Monitoring well MW12-02S was installed with a 1.5 m screen to attempt to target a shallow and narrow hydrogeological unit bounded by fine grained aquitards. Monitoring well MW12-03S was installed with a 6.1 m screen in an attempt to provide a higher yielding monitoring well given the observed conditions. Monitoring well MW12-10S was installed with a 1.5 m screen due to the shallow depth of the targeted overburden-bedrock contact. The zone that was interpreted to have the highest permeability was selected as the screened interval. A well was installed at a depth that would properly characterize the *in situ* rock type if no permeable zones were defined. Installation completion logs are presented in Appendix A. Monitoring well installation details are summarized in Table 2.1.

### 2.3.2 Well Development

Well development was carried out from May 16 through October 16, 2012. Development was initiated after the first phase of drilling and continued into October due to conditions encountered and discussed below.

Two monitoring wells (MW12-03S and MW12-10S) were observed to be dry at the time of development and therefore have not been developed. Monitoring well MW12-01S could not be properly developed because the groundwater level was within the monitoring well screen zone. Monitoring well MW12-10D is extremely low yielding due to slow recharge in bedrock. Development was carried out on this well, but relatively low water volumes were removed. Monitoring well MW12-09S has a water level in the completion zone, although this well has had high enough yield to allow for adequate development.

Monitoring wells MW12-02D, MW12-03D, MW12-04D/S, MW12-06D, MW12-09D, MW12-12D, and MW12-13D provided challenging conditions for development. These monitoring wells exhibited high suspended sediment loads and turbidity during development. This is expected to be largely attributed to the geological conditions observed in the completion zones of these wells. Fine grained sediments are entrained within and possibly passing through the filter sand pack. Consideration was made to use a finer filter pack to help eliminate this, however, the risk of these finer sediments clogging a finer filter pack was considered too great. Over the course of extensive development and redevelopment at these locations, the sediment loads and turbidity did not entirely improve to ideal conditions. However, conditions improved enough to allow for sampling in all wells, excluding MW12-03D.

Specific conductance ranged from 27 to 315 uS/cm and pH ranged from 6.3 to 8.7 during well development. Measurements recorded during well development are summarized in Table 2.1.

### 2.3.3 Response Testing

Response testing was carried out between May 17 and October 16, 2012 to estimate the hydraulic conductivity of the screened interval. Response tests were conducted in all monitoring wells except five: water levels in MW12-01S and MW12-09S were within the completion zone at the time of testing; MW12-03S and MW12-10S were dry; and MW12-10D took many days for the water level to recover after development. Hydraulic conductivity estimates within wells completed in overburden material ranged from $<1 \times 10^{-8}$ m/s to $7 \times 10^{-4}$ m/s, and within bedrock material ranged from $<1 \times 10^{-8}$ m/s to $2 \times 10^{-5}$ m/s. Monitoring well MW12-11S was screened within the bedrock and overburden material and had a hydraulic conductivity value of $4 \times 10^{-5}$ m/s. Monitoring wells MW12-02D and MW12-03D were response tested and sampled after initial development in May, 2012; the analytical results from these wells were elevated in turbidity and TSS, and as a result the wells were re-developed in August 2012.

A summary of the results can be found in Table 2.1 and details of the analysis can be found in Appendix B.

### 2.3.4 Groundwater Levels

Water levels were measured after installation as shown on the completion logs (Appendix A) and in Table 2.1. These measurements provide only an indication of the expected water level since drilling effects may still be influencing the water level and/or the water level in the well may still be reaching an equilibrium state with the surrounding formation. These initial manual measurements of groundwater level varied greatly across the site and ranged from surface level to 36 m below ground surface (m bgs). The majority (20 of 26) of initial groundwater levels measured were shallower than 18 m bgs. Relatively deep groundwater levels measured at MW12-06D (36 m bgs) and MW12-10D (dry) were observed to equilibrate to shallower levels over many days

(Table 2.1). Hourly water level data from installed transducers will give a more accurate representation of seasonal water levels over time; however, this information will be summarized at a later date.

# 3 GROUNDWATER QUALITY

## 3.1 OVERVIEW

Avison provided sub-consultant services to KPL for groundwater quality sample collection during 2012 as part of the 2012 baseline data collection program.

## 3.2 METHODOLOGY AND OBSERVATIONS

### 3.2.1 Sample Collection

The well purging and sampling procedures were adapted from the following documents:

- British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-emission, Water, Wastewater, Soil, Sediment and Biological Samples. 2003 Edition. BC Ministry of Water, Land and Air Protection.
- Low-Flow (Minimum Drawdown) Ground-Water Sampling Procedures. 1996. United States Environmental Protection Agency. EPA/540/S-95/504.
- Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators. 2012. BC Ministry of Environment.

To collect representative groundwater samples, stagnant water present in the well is purged prior to sampling. The purging and sampling methods employed are dictated by the conditions of each individual well. Approaches fall into two categories; wells that recharge fast enough to allow for minimum drawdown to be maintained while purging, and wells with slow to very slow recharge where minimum drawdown cannot be maintained (despite very low pumping rates). One of the two methods was used to sample each of the wells in the Project area. A list of the wells sampled and the sampling method used is shown in Table 3.1.

Both methods required the use of a submersible pump, which was placed approximately 1 m above the top of the screen, and both required a low pumping rate during sampling and purging to minimize turbulence in the well. Target pumping rates ranged from 0.2 L/min to 0.5 L/min, though higher rates were achieved provided turbidity did not increase and water levels were maintained. The pump used during sample collection was a GeoControl Pro bladder pump.

The first approach is a low-flow minimum drawdown procedure and was used to purge and sample the wells for which hydraulic conductivity was high enough to do so. The primary objective of this sampling method is to match the pumping velocity with that of natural groundwater velocity across the screened interval. This is achieved by adjusting the pumping rate such that the water level in the well becomes stable and is relatively close to the water level prior to pumping. When the stable water level is attained it is safe to assume that the water entering the pump is from the screened interval below the pump intake and not from the stagnant overlying water column. Stagnant water is purged from the well at a constant water level until the purge volume is equal to or greater than the volume of water below the pump intake prior to sampling.

The second approach is used in cases of low hydraulic conductivity, when the groundwater recharge rate is slower than the lowest pump rate (i.e. less than 0.01 L/min). The stagnant water above the pump is purged and the well is allowed to recharge overnight, or longer, with the pump in place prior to sampling. As the well recharges, the water below the pump is displaced and fresh groundwater surrounds the pump.

*In situ* parameters are routinely monitored and recorded through the purging process and final values are recorded immediately prior to sampling. A regularly calibrated multi-parameter probe with a flow-through cell and water level meter are used for *in situ* monitoring. The *in situ* parameters are pH, temperature, dissolved oxygen, conductivity, specific conductance, turbidity, oxidation reduction potential (ORP), depth to water, well stick-up, and total well depth. The flow-through cell provides a system for measuring the *in situ* parameters without exposing them to atmospheric conditions (more representative).

Once the purging conditions have been met and the final *in situ* parameters have been recorded the sample line is disconnected from the flow-through cell and the samples are collected. Samples for dissolved parameters are field filtered using a 0.45 μm in-line filter. Any required preservatives are added immediately after sample collection. Groundwater is generally in a reducing environment and all efforts are made to preserve the samples in their original form. Using in-line filters reduces sample contact with ambient surface conditions and the immediate preservation also assists in this process.

### 3.2.2 Sampling Frequency

Groundwater samples have been collected quarterly, starting in May/June 2012. The targeted date ranges for sampling reflect the seasonal highest and lowest groundwater levels, as well as two sets of samples collected in between. In 2012, samples were collected in May/June to determine water quality corresponding to high water levels and in November/December to analyze water quality corresponding to low water levels. One set of samples was collected in between in September/October. A minimum of 60 days between sampling events at each well was typically implemented as a guideline. Sampling events have taken place at each well according to these guidelines, with three exceptions where there were less than 60 days between the second and third samples collected:

- MW12-09D: This well required extensive development into October, during the second sampling event. A sample was collected after development on October 17. This well was sampled again, earlier than the guideline of 60 days, on November 28 during the third sampling event.
- MW12-12 and MW12-13: Samples were collected on October 1 during the second round of sampling. Samples were collected again, earlier than the guideline of 60 days, in late November.

### 3.2.3 Laboratory Analysis

Water samples were submitted to ALS Analytics in Burnaby for the following analyses:

- Physical Tests – Hardness, pH, specific conductivity, total dissolved solids (TDS), total suspended solids (TSS), and turbidity
- Dissolved Anions – Alkalinity (bicarbonate, carbonate, and hydroxide), bromide, chloride, fluoride, and sulphate
- Nutrients – Ammonium nitrogen, nitrate, nitrite, dissolved orthophosphate, and total and dissolved phosphate
- Total and Dissolved Metals - analysed at low levels to meet the BCWQG and the CCME criteria values, and
- Cyanide - Free, total, and weak acid dissociable (WAD).

### 3.2.4 Data Management and Data Quality

*In situ* data and lab results have been stored in FULCRUM, along with copies of the field notes. Upon the receipt of lab results and field notes, all data is checked to ensure that field and analytical procedures were

followed correctly and that no data is missing. Data have been compared to the following relevant guidelines (Table C1 in Appendix C):

- British Columbia Ministry of Environment (BC MOE) Approved and Working Water Quality Guidelines for Fresh Water Aquatic Life – 30 Day Average
- British Columbia Ministry of Environment (BC MOE) Approved and Working Water Quality Guidelines for Fresh Water Aquatic Life – Maximum, and
- Canadian Environmental Quality Guideline (CEQG) Water Quality Guidelines for the Protection of Aquatic Life (Freshwater).

### 3.2.5 Quality Assurance / Quality Control

The objective of the QA/QC program is to verify that the data are obtained in a scientifically defensible, repeatable and well documented manner. The QA/QC program uses standard methods and protocols for the collection of groundwater quality samples. The following methods and protocols were carried out as per the QA/QC program:

- Regular calibration and maintenance of all field equipment.
- Collection and preparation of field blanks, travel blanks, and duplicate samples for approximately 10% of overall samples.
- Employment of a fully accredited analytical laboratory for the analysis of all the groundwater quality samples.
- Determination of analytical precision and accuracy through the interpretation of the analysis reports for blank samples and blind duplicates. Other quality assurance comparisons, including measured and calculated TDS as well as lab and field pH were not within the scope of the work to date, but may be useful for the future of this work.

## 3.3 RESULTS

A detailed assessment of groundwater quality has not been conducted as part of this deliverable. The scope of this letter was to provide an overview of the groundwater sampling program to date and outline the complications and issues that have arisen as a result of the local geology in the Project area (elevated TSS and turbidity). Analytical results are provided in Appendix C. Results for samples from each well are shown in Table C2 and a summary of the guidelines applied are provided in Table C1. All data will be provided electronically with this letter (field sheets, analytical files, and water quality summary tables).

In summary, elevated turbidity persisted through purging and sampling in some monitoring wells despite adjusting flow rates. These same monitoring wells exhibited high suspended sediment loads and turbidity during development (see section 2.3.2). Improvement in turbidity was observed after extensive development and redevelopment in all wells, excluding MW12-03D, which has not been sampled. In order to obtain lower turbidity samples from monitoring wells MW12-02D and MW12-12D, these wells were purged and left overnight to allow suspended sediments to settle out of the water column before samples were collected.

QA/QC samples include field blanks and travel blanks, results of which are shown in Table C3. Some sample results show higher concentrations of dissolved organic carbon than total organic carbon. In some of these cases, a subsample from another bottle within the sample set was analysed for total organic carbon to determine whether the dissolved and total sample bottles had been switched in the field. The results indicated that the subsamples also contained lower organic carbon levels than the filtered sample. An organic carbon blank (filtered and unfiltered) set of samples were submitted during the Q4 sampling program and the results are provided in Appendix C, Table C3. Dissolved organic carbon was found at 0.92 mg/L and the total organic carbon was below detection (<0.5 mg/L). These data are indicative of contaminated filters. If any filters from

this batch remain on site they should not be used and a new source should be purchased. It should be noted that duplicate samples were requested to be collected as part of the field program, but none have been collected to date, additional efforts will be required to ensure that these samples are collected during future sampling events.

We trust the above information meets your present needs. If you have any questions or comments please contact the undersigned.

Yours truly,
**KNIGHT PIESOLD LTD.**

Signed:
Catriona Jackson, E.I.T.
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Signed:
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References:

Cooper, H.H., J.D. Bredehoeft, and I.S. Papadopulos, 1967: Response of a finite-diameter well to an instantaneous charge of water, Water Resources Research, vol. 3, no. 1, pp. 263-269.

van der Kamp, G., 1976: Determining aquifer transmissivity by means of well response tests: The underdamped case, Water Resources Research, vol.12, no. 1, pp. 71–77.

Attachments:

| | |
|---|---|
| Table 2.1 Rev 0 | Monitoring Well Installation Details |
| Table 3.1 Rev 0 | Sample Summary |
| Figure 1.1 Rev 0 | Hydrogeology Local and Regional Study Areas |
| Figure 2.1 Rev 0 | Monitoring Well Locations |
| Appendix A | Monitoring Well Logs |
| Appendix B | Hydraulic Conductivity Calculations |
| Appendix C | Groundwater Quality Analytical Results |

Copy To: Ryan Todd, Paul Hosford, Keith Ferguson, Bruce Ott, Alvaro Paderes, Ward van Proosdij

/cj

Knight Piésold CONSULTING

# TABLE 2.1

## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

## 2012 GROUNDWATER QUALITY DATA COLLECTION SUMMARY
## MONITORING WELL INSTALLATION DETAILS

Print Feb/05/13 15:53:30

| Monitoring Well | Location | Coordinates[1,2] | | | Monitoring Well Installation | | | | | | | | | | Well Development Summary | | | | Hydraulic Conductivity (Rising/Falling Head) | Response Test Date | Transducer Install Date | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Northing | Easting | Ground Elevation | Hole Size | Total Depth | Well PVC Inner Diameter | Screened Zone | | Completion Zone | | PVC Stickup | Date of Water Level Measurement | Water Level After Installation | Date | Temperature | pH | Specific Conductance | | | | |
| | | | | | | | | From (m) | To (m) | From (m) | To (m) | | | | | | | | | | | |
| | | (m) | (m) | (m) | Nominal (mm) | (m below ground) | (mm) | | | | | (m) | (dd-mmm-yy) | (m below PVC) | (dd-mmm-yy) | ($^{o}$C) | | (uS/cm) | (m/s) | (dd-mmm-yy) | (dd-mmm-yy) | |
| MW12-01D | Northern abutment of TSF | 5899360 | 374655 | 1301.79 | 114.3 | 40.84 | 49.25 | 36.57 | 39.62 | 30.42 | 40.84 | 0.89 | 04/04/2012 | 13.11 | 06/06/2012 | 4.1 | 7.1 | 315 | <1E-08 | 18/07/2012 | 07/06/2012 | |
| MW12-01S | | 5899360 | 374658 | 1301.83 | 152.4 | 13.56 | 49.25 | 9.14 | 12.19 | 7.62 | 13.56 | 0.92 | 04/04/2012 | 10.37 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | Water level in screened zone at time of development. Not developed or response tested. |
| MW12-02D | Downslope of NAG Waste Dump and Open Pit | 5894670 | 374690 | 1406.49 | 152.4 | 41.51 | 49.25 | 35.96 | 39.01 | 34.75 | 39.01 | 0.79 | 14/04/2012 | 5.93 | 30/08/2012 | 3.7 | 7.7 | 187 | 6.E-06 | 22/05/2012 | 13/09/2012 | |
| MW12-02S | | 5894670 | 374704 | 1406.88 | 152.4 | 11.89 | 49.25 | 8.23 | 9.75 | 7.01 | 11.89 | 0.72 | 14/04/2012 | 1.55 | 18/05/2012 | 2.7 | 7.6 | 95 | 9.E-06 | 23/05/2012 | 08/07/2012 | Transducer removed for installation of margo plug on 2-Nov-2012. |
| MW12-03D | Downslope of Open Pit | 5893860 | 376013 | 1464.84 | 152.4 | 39.62 | 49.25 | 33.53 | 36.57 | 32.00 | 38.10 | 0.86 | 28/04/2012 | 25.99 | 29/08/2012 | 4.9 | 7.1 | 124 | 4.E-05 | 17/05/2012 | 29/10/2012 | |
| MW12-03S | | 5893860 | 376004 | 1464.97 | 152.4 | 24.38 | 49.25 | 15.85 | 21.95 | 14.32 | 23.47 | 0.85 | 28/04/2012 | dry | n/a | n/a | n/a | n/a | n/a | n/a | n/a | Dry at time of development. Not developed or response tested. |
| MW12-04D | Outside Open Pit Area and upslope of NAG Waste rock | 5892500 | 374110 | 1558 | 152.4 | 37.95 | 49.25 | 33.37 | 36.42 | 31.79 | 37.95 | 0.86 | 28/04/2012 | 3.39 | 04/09/2012 | 4.5 | 8.4 | 98 | 2.E-05 | 04/10/2012 | 19/09/2012 | |
| MW12-04S | | 5892500 | 374116 | 1558.32 | 152.4 | 14.78 | 49.25 | 10.52 | 13.56 | 8.99 | 14.78 | 0.91 | 28/04/2012 | 1.52 | 07/09/2012 | 3.8 | 6.7 | 109 | 5.E-07 | 04/10/2012 | 19/09/2012 | |
| MW12-05D | Southern Starter Dam | 5896210 | 371310 | 1373.49 | 114.3 | 27.74 | 49.25 | 23.16 | 26.21 | 21.64 | 27.74 | 0.81 | 30/04/2012 | 0.72 | 20/05/2012 | 3.3 | 7.9 | 115 | 4.E-06 | 22/05/2012 | 08/07/2012 | |
| MW12-05S | | 5896210 | 371309 | 1373.32 | 152.4 | 11.89 | 49.25 | 7.62 | 10.67 | 6.10 | 11.89 | 0.72 | 30/04/2012 | 1.59 | 20/05/2012 | 3.4 | 7.8 | 115 | <1E-08 | 31/07/2012 | 08/07/2012 | Transducer removed for installation of margo plug on 2-Nov-2012. |
| MW12-06D | Downstream of Southern Starter Dam | 5896470 | 374807 | 1278.36 | 152.4 | 39.93 | 49.25 | 35.36 | 38.40 | 33.83 | 39.93 | 0.75 | 30/04/2012 | 36.69 | 16/10/2012 | 4.9 | 7.1 | 292 | <1E-08 | 06/10/2012 | 02/11/2012 | Water level measured at 22 m on 16-Oct-12. |
| MW12-06S | | 5896470 | 374804 | 1278.45 | 152.4 | 22.55 | 49.25 | 18.29 | 21.33 | 16.76 | 22.55 | 0.89 | 30/04/2012 | 9.77 | 13/06/2012 | 5.1 | 7.2 | - | 8.E-06 | 31/07/2012 | 14/06/2012 | |
| MW12-07D | Downstream of TSF | 5899440 | 376395 | 1221.23 | 152.4 | 40.49 | 49.25 | 35.36 | 38.40 | 33.83 | 40.49 | 0.75 | 06/06/2012 | 18.23 | 06/06/2012 | 4.7 | 7 | 185 | 7.E-04 | 31/07/2012 | 07/06/2012 | |
| MW12-07S | | 5899440 | 376399 | 1221.19 | 152.4 | 24.08 | 49.25 | 19.81 | 22.86 | 18.29 | 24.08 | 0.75 | 05/06/2012 | 18.46 | 05/06/2012 | 4.4 | 7.3 | 95 | 4.E-04 | 31/07/2012 | 07/06/2012 | |
| MW12-08D | Downstream of TSF | 5899260 | 377911 | 1168 | 139.7 | 36.42 | 49.25 | 32.61 | 35.66 | 29.70 | 36.42 | 0.94 | 19/08/2012 | 10.65 | 23/08/2012 | 5.4 | 7.7 | 162 | 2.E-06 | 03/10/2012 | 01/10/2012 | |
| MW12-08S | | 5899260 | 377911 | 1168 | 139.7 | 20.12 | 49.25 | 16.23 | 19.28 | 14.17 | 20.12 | 0.84 | 19/08/2012 | 12.27 | 21/08/2012 | 6 | 7.3 | 150 | 9.E-05 | 03/10/2012 | 01/10/2012 | |
| MW12-09D | Downstream of TSF | 5899680 | 378321 | 1165 | 139.7 | 34.44 | 49.25 | 30.50 | 33.55 | 28.65 | 34.44 | 0.89 | 19/08/2012 | 11.36 | 02/10/2012 | 5.1 | 7.5 | 211 | 6.E-06 | 16/10/2012 | 17/10/2012 | |
| MW12-09S | | 5899680 | 378321 | 1165 | 139.7 | 15.85 | 49.25 | 11.91 | 14.96 | 10.36 | 15.85 | 0.89 | 19/08/2012 | 11.42 | 23/08/2012 | 5.4 | 7.7 | 135 | n/a | n/a | 41184 | Water level in completion zone at time of development. Not response tested. |
| MW12-10D | Upstream of Deposit, west | 5892260 | 375033 | 1665 | 114.3 | 42.06 | 49.25 | 36.27 | 39.35 | 33.22 | 42.06 | 0.83 | 20/08/2012 | 18.00 | 08/10/2012 | 6.7 | 7.1 | 189 | <1E-08[3] | n/a | 41211 | Water level measured at 18 m on 08-Oct-12. Not response tested. |
| MW12-10S | | 5892260 | 375033 | 1665 | 139.7 | 7.01 | 49.25 | 4.50 | 6.02 | 3.35 | 7.01 | 0.93 | 20/08/2012 | dry | 04/09/2012 | n/a | n/a | n/a | n/a | n/a | n/a | Dry at time of development. Not developed or response tested. |
| MW12-11D | Upstream of Deposit, east | 5892180 | 375769 | 1680 | 114.3 | 46.63 | 49.25 | 40.32 | 43.37 | 36.27 | 46.63 | 0.89 | 20/08/2012 | 8.50 | 06/09/2012 | 5.6 | 8.2 | 64 | 7.E-07 | 03/10/2012 | 21/09/2012 | |
| MW12-11S | | 5892180 | 375769 | 1680 | 114.3 | 19.81 | 49.25 | 15.88 | 18.93 | 14.02 | 19.81 | 0.84 | 21/08/2012 | 8.29 | 05/09/2012 | 3.7 | 8.7 | 27 | 4.E-05 | 03/10/2012 | 21/09/2012 | |
| MW12-12D | Downstream of TSF and Camp area | 5896257 | 378492 | 1245 | 139.7 | 35.20 | 49.25 | 31.16 | 34.21 | 29.26 | 35.20 | 0.87 | 23/08/2012 | 2.18 | 08/10/2012 | 3.7 | 7.4 | 205 | 1.E-07 | 16/10/2012 | 18/10/2012 | |
| MW12-12S | | 5896257 | 378492 | 1245 | 139.7 | 15.24 | 49.25 | 11.18 | 14.22 | 9.45 | 15.24 | 0.97 | 23/08/2012 | 2.00 | 07/09/2012 | 3.7 | 6.3 | 84 | 6.E-04 | 08/10/2012 | 01/10/2012 | |
| MW12-13D | West of TSF | 5893830 | 370808 | 1368 | 152.4 | 39.50 | 49.25 | 35.81 | 38.86 | 35.81 | 38.86 | 0.96 | 12/09/2012 | 8.73 | 04/10/2012 | 7.3 | 7.7 | 167 | 1.E-04 | 16/10/2012 | 02/11/2012 | |
| MW12-13S | | 5893830 | 370808 | 1368 | 152.4 | 13.41 | 49.25 | 10.05 | 13.11 | 9.14 | 13.41 | 0.95 | 12/09/2012 | 9.57 | 12/09/2012 | 8.5 | 6.4 | 71 | >1E-04 | 04/10/2012 | 01/10/2012 | |

M:\1\01\00457\04\A\Correspondence\VA12-02061 Groundwater Quality Data Collection Summary\Tables\[Table 2.1 - MW Details.xls]Summary Table

**NOTES:**

1. UTM WGS 84 COORDINATES.
2. COORDINATES ARE MEASURED USING GARMIN HAND HELD GPS UNIT AND ARE CONSIDERED APPROXIMATE.
3. HYDRAULIC CONDUCTIVITY VALUE IS ESTIMATED BASED ON SLOW RECOVERY OF WATER LEVEL FOLLOWING WELL DEVELOPMENT.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| 0 | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | DMW | JS | KJB |

Knight Piésold CONSULTING

## TABLE 3.1

## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

## 2012 GROUNDWATER QUALITY DATA COLLECTION SUMMARY
## SAMPLE SUMMARY

Print Feb/08/13 9:17:11

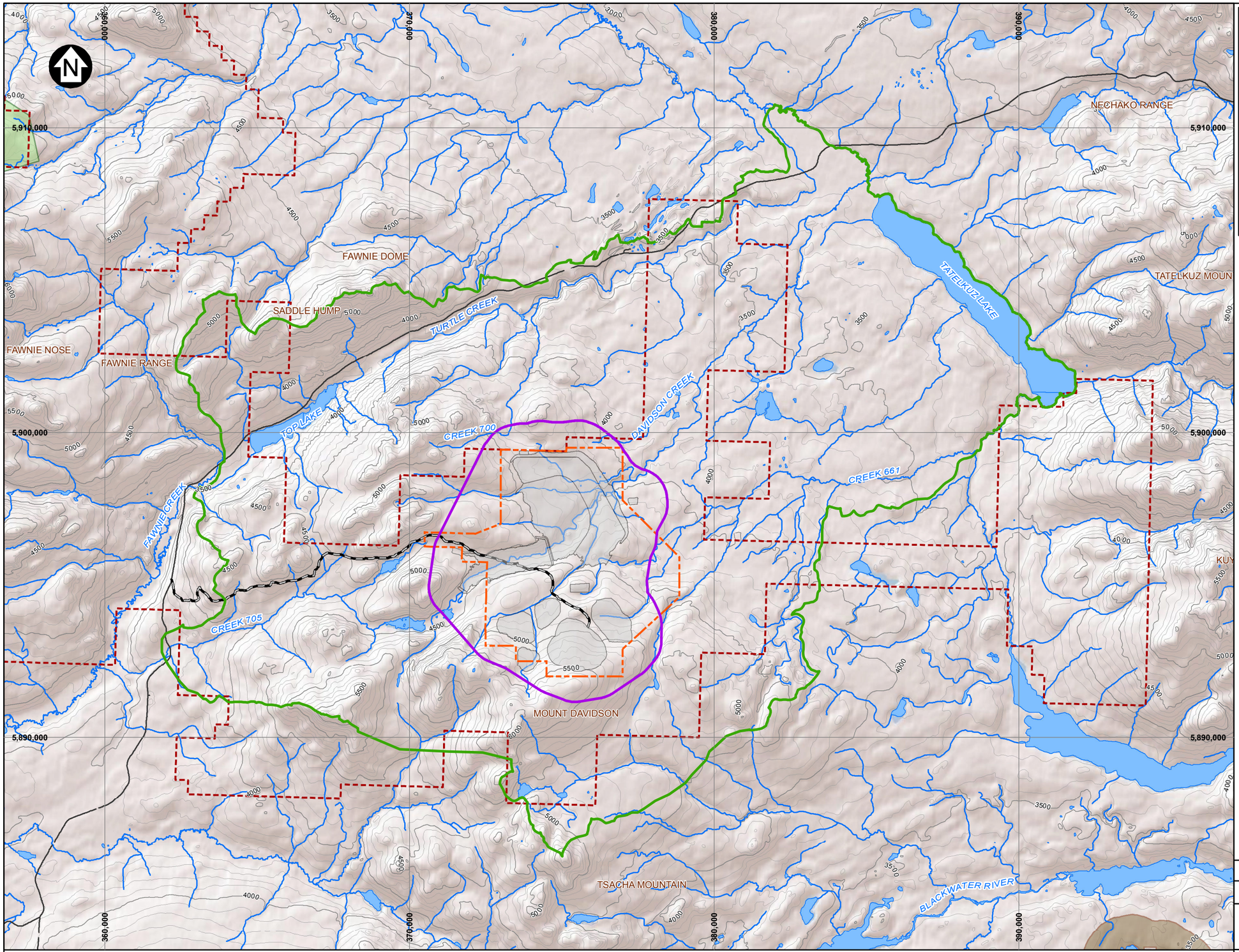
| Well ID | Number of Samples | Dates of Sample Collection | | | Notes and Sampling Method |
|---|---|---|---|---|---|
| | | Q2 | Q3 | Q4 | |
| MW12-01D | 2 | 07/06/2012 9:16 | 14/09/2012 11:36 | 12/12/2012 17:36 | Low Recharge Method |
| MW12-01S | 0 | | | | Insufficient water level for sampling |
| MW12-02D | 1 | | 13/09/2012 7:44 | 05/12/2012 14:19 | Minimum Drawdown Method |
| MW12-02S | 2 | 28/05/2012 14:44 | 20/09/2012 8:34 | 04/12/2012 22:33 | Minimum Drawdown Method |
| MW12-03D | 0 | | | | After extensive development turbidity too high for sampling |
| MW12-03S | 0 | | | | Dry |
| MW12-04D | 1 | | 19/09/2012 15:45 | 04/12/2012 14:10 | Minimum Drawdown Method |
| MW12-04S | 1 | | 19/09/2012 14:00 | | Minimum Drawdown Method; water level above ground surface - frozen during Q4 sampling |
| MW12-05D | 2 | 28/06/2012 16:48 | 26/09/2012 15:21 | | Minimum Drawdown Method; water level above ground surface - frozen during Q4 sampling |
| MW12-05S | 2 | 28/05/2012 10:55 | 26/09/2012 8:19 | 29/11/2012 9:07 | Low Recharge Method |
| MW12-06D | 0 | | | | Challenging development (Q3); Difficult access in winter conditions (Q4) |
| MW12-06S | 2 | 14/06/2012 10:55 | 26/09/2012 11:12 | 10/12/2012 9:26 | Minimum Drawdown Method |
| MW12-07D | 2 | 07/06/2012 13:25 | 21/09/2012 10:59 | 29/11/2012 15:13 | Minimum Drawdown Method |
| MW12-07S | 2 | 06/06/2012 10:33 | 14/09/2012 9:58 | 29/11/2012 16:54 | Minimum Drawdown Method |
| MW12-08D | 1 | n/a (1) | 27/09/2012 12:46 | 06/12/2012 12:01 | Minimum Drawdown Method |
| MW12-08S | 1 | n/a | 27/09/2012 15:06 | 06/12/2012 14:03 | Minimum Drawdown Method |
| MW12-09D | 1 | n/a | 17/10/2012 11:43 | 30/11/2012 11:08 | Minimum Drawdown Method |
| MW12-09S | 0 | n/a | | | Insufficient water level for sampling |
| MW12-10D | 0 | n/a | | | Insufficient recharge for sampling |
| MW12-10S | 0 | n/a | | | Dry |
| MW12-11D | 1 | n/a | 21/09/2012 7:30 | 05/12/2012 14:16 | Minimum Drawdown Method |
| MW12-11S | 1 | n/a | 20/09/2012 14:56 | 05/12/2012 10:41 | Minimum Drawdown Method |
| MW12-12D | 1 | n/a | 21/09/2012 7:30 | 12/12/2012 12:29 | Minimum Drawdown Method |
| MW12-12S | 1 | n/a | 21/09/2012 7:30 | 02/12/2012 15:23 | Minimum Drawdown Method |
| MW12-13D | 0 | n/a | | | Challenging development (Q3); Difficult access in winter conditions (Q4) |
| MW12-13S | 1 | n/a | 01/10/2012 12:12 | 29/11/2012 9:35 | Minimum Drawdown Method |

M:\1\01\00457\04\A\Correspondence\VA12-02061 Groundwater Quality Data Collection Summary\Tables\[Table 3.1 - Groundwater Quality Sample Summary.xlsx]TABLE 3.1

**NOTES:**

1. "n/a" INDICATES WELL INSTALLED DURING THE SECOND PHASE OF DRILLING - TOO LATE FOR Q2 SAMPLING.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| 0 | 04FEB'13 | ISSUED WITH LETTER VA12-02061 | CJ | JEM | KJB |





**LEGEND:**

**GENERAL**
- CITY/TOWN
- UNPAVED ROAD
- CONTOUR (100 ft)
- RIVER/CREEK
- LAKE
- BC PARK
- WILDLIFE HABITAT AREA

**STUDY AREA**
- LOCAL STUDY AREA
- REGIONAL STUDY AREA

**MINE SITE COMPONENTS**
- CURRENT ACCESS ROAD
- MINE FACILITIES
- MYAB BOUNDARY
- NEW GOLD PROPERTY BOUNDARY

**NOTES:**

1. BASE MAP: ESRI ARCGIS ONLINE MAPPING, BC GOVERNMENT DATA, NRCAN NTS 1:50,000 DATA.

2. COORDINATE GRID IS IN METRES.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N.

3. THIS FIGURE IS PRODUCED AT A NOMINAL SCALE OF 1:125,000 FOR 11x17 (TABLOID) PAPER. ACTUAL SCALE MAY DIFFER ACCORDING TO CHANGES IN PRINTER SETTINGS OR PRINTED PAPER SIZE.

4. CONTOUR INTERVAL IS 100 FEET. DATA SOURCE: CANVEC.

SCALE 1 0.5 0 1 2 3 4 5 km

NEW GOLD INC.

BLACKWATER GOLD PROJECT

**HYDROGEOLOGY LOCAL AND REGIONAL STUDY AREAS**

| REV | DATE | DESCRIPTION | DESIGNED | DRAWN | CHK'D | APP'D |
|---|---|---|---|---|---|---|
| 0 | 05FEB'13 | ISSUED WITH LETTER | CC | CC | MAS | KJB |

Knight Piésold CONSULTING

P/A NO. VA101-457/04 | REF NO. VA12-02061

FIGURE 1.1 | REV 0

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| WELL ID | EASTING | NORTHING |
|---|---|---|
| MW12-01D | 374,656 | 5,899,365 |
| MW12-01S | | |
| MW12-02D | 374,705 | 5,894,670 |
| MW12-02S | | |
| MW12-03D | 376,005 | 5,893,863 |
| MW12-03S | | |
| MW12-04D | 374,115 | 5,892,506 |
| MW12-04S | | |
| MW12-05D | 371,313 | 5,896,204 |
| MW12-05S | | |
| MW12-06D | 374,798 | 5,896,469 |
| MW12-06S | | |
| MW12-07D | 376,406 | 5,899,431 |
| MW12-07S | | |
| MW12-08D | 377,911 | 5,899,258 |
| MW12-08S | | |
| MW12-09D | 378,321 | 5,899,681 |
| MW12-09S | | |
| MW12-10D | 375,033 | 5,892,262 |
| MW12-10S | | |
| MW12-11D | 375,769 | 5,892,176 |
| MW12-11S | | |
| MW12-12D | 378,492 | 5,896,257 |
| MW12-12S | | |
| MW12-13D | 370,814 | 5,893,845 |
| MW12-13S | | |

370 000 E
375 000 E
380 000 E
5 900 000 N
5 895 000 N
N
FORESTRY ROADS (TYP.)
NEW GOLD PROPERTY BOUNDARY
EXISTING ACCESS ROAD
500 m
MW12-01S
MW12-01D
MW12-07S
MW12-07D
MW12-09S
MW12-09D
MW12-08S
MW12-08D
MW12-06S
MW12-06D
MW12-05S
MW12-05D
MW12-12S
MW12-12D
SITE D EMBANKMENT
SITE C EMBANKMENT
MYAB BOUNDARY
PLANT SITE EL. 1425
MW12-02S
MW12-02D
PEA LOW GRADE STOCKPILE
PEA WASTE ROCK STOCKPILE
WEST SADDLE EMBANKMENT
MW12-13S
MW12-13D
MW12-03S
MW12-03D
PEA WASTE ROCK STOCKPILE
MW12-04S
MW12-04D
PEA PIT OUTLINE
MW12-10S
MW12-10D
MW12-11S
MW12-11D

**LEGEND:**

- MW12-01 — MONITORING WELLS (26)
- EXISTING FORESTRY ROAD
- MYAB PERMIT BOUNDARY
- NEW GOLD PROPERTY BOUNDARY
- LOCAL STUDY AREA BOUNDARY

**NOTES:**

1. CONTOUR INTERVAL IS 25 METRES.
2. COORDINATES ARE MEASURED USING GARMIN HAND HELD GPS UNIT AND ARE CONSIDERED APPROXIMATE.
3. ALL MINE SITE FACILITIES ARE BASED ON THE PEA GENERAL ARRANGEMENT.

SCALE A: 400 200 0 400 800 1200 1600 2000 m

| REV | DATE | DESCRIPTION | DESIGNED | DRAWN | CHK'D | APP'D |
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| 0 | 5FEB'13 | ISSUED WITH LETTER | DDF | AN | JS | KJB |

NEW GOLD INC.

BLACKWATER GOLD PROJECT

**2012 HYDROGEOLOGICAL INVESTIGATIONS MONITORING WELL LOCATIONS**

Knight Piésold CONSULTING

P/A NO. VA101-457/4

REF NO. VA12-02061

**FIGURE 2.1**

REV 0

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# APPENDIX A

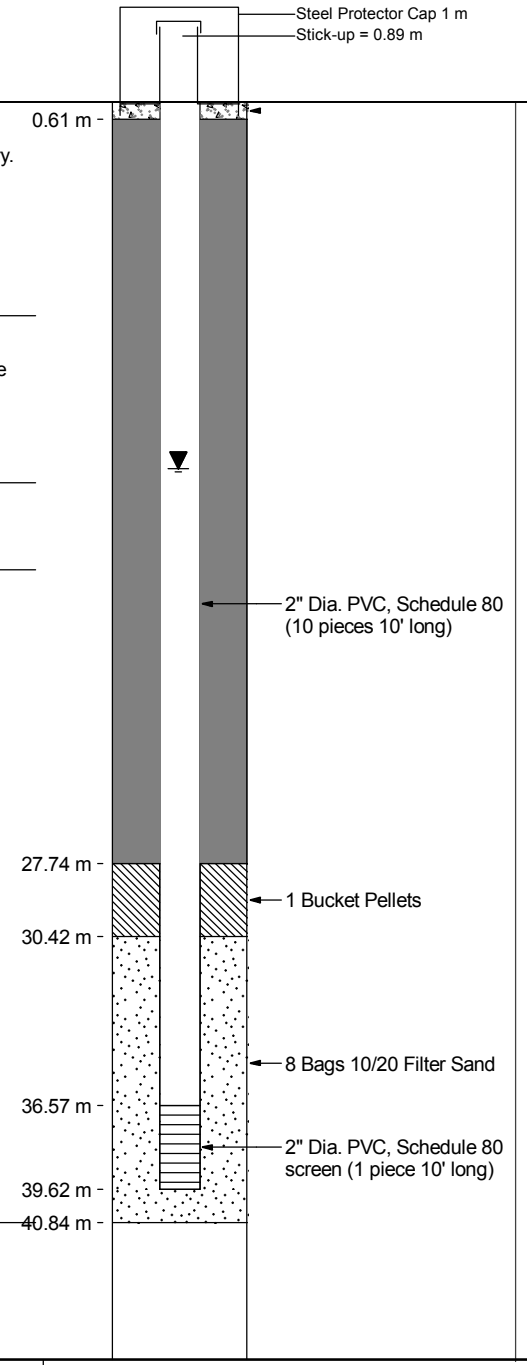
## MONITORING WELL INSTALLATION LOGS

(Pages A-1 to A-26)

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-01D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **21/03/2012** |
| Location: | **TSF Main Embankment** | Total Depth: | **40.84 m** | Date Installation: | **21/03/2012** |
| Coordinates: | **5,899,360 N , 374,655 E (UTM NAD 83)** | Elevation: | **1,302 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **114.3 (4.5")mm** | Reviewed by: | **BOC** |

**Water Level : 13.11 m depth measured on 04/04/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| | | | GRAVELLY SILT<br>Gravelly SILT, subangular, fine to coarse, well graded, low to medium plasticity, brown, very stiff to hard, massive, moist to dry. |
| 1297 | 5 | | |
| | | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, subangular, fine to coarse, well graded, non plastic to low plasticity, purple, very dense, massive moist to dry. |
| 1292 | 10 | | |
| | | | COMPLETELY WEATHERED BEDROCK<br>Sandy, Clayey SILT, some gravel, angular, fine to coarse, well graded, low to medium plasticity, purple brown and greenish grey, stiff to very stiff, massive, moist to wet. |
| 1287 | 15 | | MODERATELY WEATHERED ANDESITE<br>Fine-grained, porphyritic, dark grey to reddish brown, medium strong, moderately weathered |
| 1282 | 20 | | |
| 1277 | 25 | | |
| 1272 | 30 | | |
| 1267 | 35 | | |
| 1262 | 40 | | |
| 1257 | 45 | | |




**NOTES**

Bedrock

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-01D**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| **101-457/4** | **12-02061** |
| FIGURE. **Figure A.1** | REV. **0** |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

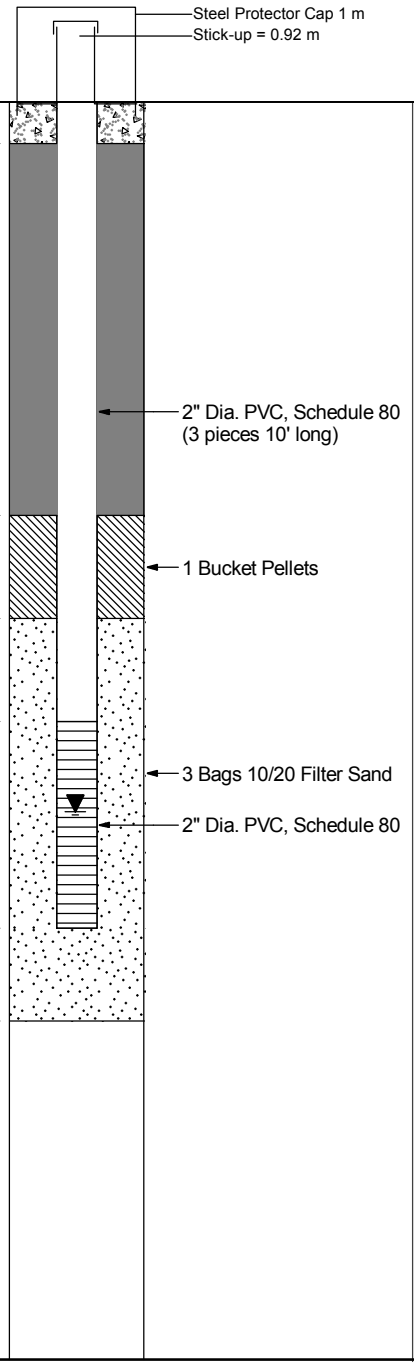


File:M:\101\00457\04\DATA\TASK 0400 - SITE INVESTIGATIONS\GINT\BLACKWATER TSF SI_2012 - REVC.GPJ
Library: M:\101\00457\04\DATA\TASK 0400 - SITE INVESTIGATIONS\GINTLIBRARY\BLACKWATER LIBRARY V2.GLB, WELL COMPLETION DETAILS REVISED, BLACKWATER.GDT, 8 Feb 13

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-01S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **22/03/2012** |
| Location: | **TSF Main Embankment** | Total Depth: | **13.56 m** | Date Installation: | **22/03/2012** |
| Coordinates: | **5,899,360 N , 374,658 E (UTM NAD 83)** | Elevation: | **1,302 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 10.37 m depth measured on 04/04/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | | NOTES |
|---|---|---|---|---|
| | | | GRAVELLY SILT<br>Gravelly SILT, subangular, fine to coarse, well graded, low to medium plasticity, brown, very stiff to hard, massive, moist to dry. | |
| 1297 | 5 | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, subangular, fine to coarse, well graded, non plastic to low plasticity, light grey/brown, very dense, massive, moist to dry | |
| 1292 | 10 | | COMPLETELY WEATHERED BEDROCK<br>Sandy SILT, some gravel, angular to subangular, fine to coarse, well graded, low to medium plasticity, dark greenish brown, very stiff to hard, moist to wet<br>MODERATELY WEATHERED ANDESITE<br>Fine-grained, porphyritic, dark grey to reddish brown, medium strong, moderately weathered. | |
| 1287 | 15 | | | |




**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-01S**

Knight Piésold CONSULTING

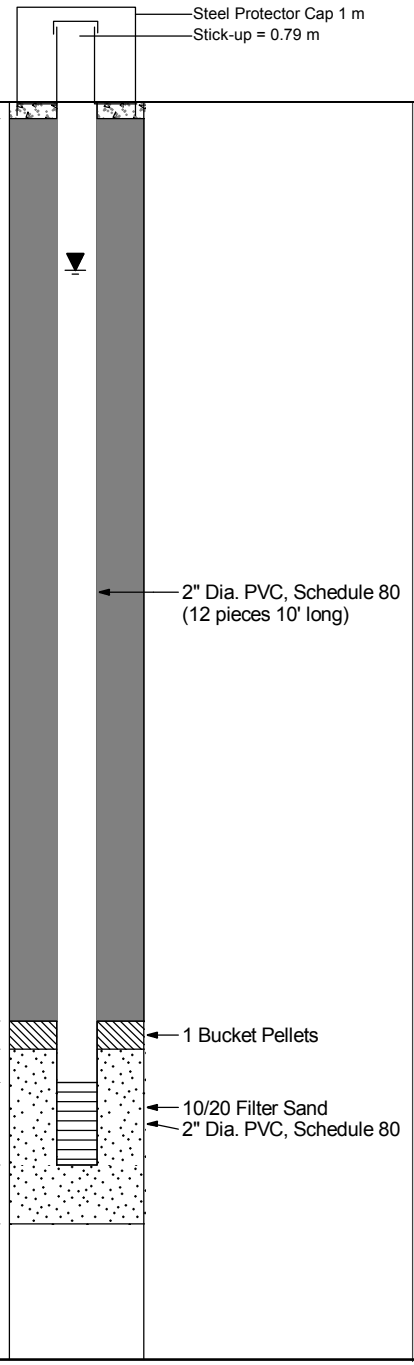
| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| 101-457/4 | 12-02061 |
| FIGURE. Figure A.2 | REV. 0 |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-02D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **04/04/2012** |
| Location: | **Downslope of NAG and Open Pit** | Total Depth: | **41.15 m** | Date Installation: | **04/05/2012** |
| Coordinates: | **5,894,670 N , 374,690 E (UTM NAD 83)** | Elevation: | **1,406 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 5.93 m depth measured on 14/04/2012**

| ELEVATION - (m) | DEPTH - (m) | Description |
|---|---|---|
| | | **SILTY SAND**<br>Silty SAND, some clay, trace gravel, subangular to subrounded, fine to coarse, well graded, non plastic, non cohesive, brown, dense to very dense, massive, dry (Lacustrine). |
| 1401 | 5 | |
| 1396 | 10 | |
| 1391 | 15 | |
| | | **SILT**<br>SILT, some to trace sand, fine to coarse, well graded, low to medium plasticity, brown, very stiff to hard, moist (Lacustrine). |
| 1386 | 20 | **SANDY GRAVEL AND SILT**<br>Sandy GRAVEL and SILT, subangular, fine to coarse, well graded, non plastic to low plasticity, very dense, brown, moist (Glacial-Fluvial). |
| | | **CLAYEY SILT**<br>Clayey SILT, some sand, fine to coarse, poorly graded, low to medium plasticity, brown, hard, varved, friable, wet (Lacustrine). |
| 1381 | 25 | |
| | | **GRAVELLY SILT**<br>Gravelly SILT, some sand, angular, fine to coarse, well graded, low plasticity, brown, very stiff to hard, fine fluvial sand lamination, moist (Glacial-Fluvial) |
| 1376 | 30 | |
| | | **SILTY SAND**<br>Silty SAND, fine to coarse, poorly graded, low to medium plasticity, brown, dense to very dense, massive, moist (Glacial-Fluvial) |
| 1371 | 35 | |
| 1366 | 40 | |
| 1361 | 45 | |




**NOTES**

- Start Drilling with Water
- Stop Drilling with Water
- Swelling Soil
- Start Drilling with Water
- Stop Drilling with Water
- Water return
- Water bearing layer (from 35.05m) - 1 gal/min

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-02D**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. **101-457/4** | REF. NO. **12-02061**
FIGURE. **Figure A.3** | REV. **0**

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-02S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **04/05/2012** |
| Location: | **Downslope of NAG and Open Pit** | Total Depth: | **11.89 m** | Date Installation: | **04/06/2012** |
| Coordinates: | **5,894,670 N , 374,704 E (UTM NAD 83)** | Elevation: | **1,407 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 1.55 m depth measured on 14/04/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | | NOTES |
|---|---|---|---|---|
| | | | Steel Protector Cap 1 m<br>Stick-up = 0.72 m | |
| | | | **SILTY SAND AND GRAVEL**<br>Silty SAND and GRAVEL, some cobbles, subangular to subrounded, fine to coarse, well graded, non plastic to low plasticity, brown, dense to very dense, massive, dry (Glacial-Fluvial). | |
| | | | 0.3 m | |
| | | | 2" Dia. PVC, Schedule 80 (3 pieces 10' long) | |
| 1402 | 5 | | **SANDY SILT**<br>Sandy SILT, trace gravel, subangular to subrounded, fine to coarse, well graded, low to medium plasticity, brown, very stiff to hard, varved with fine sand lamination, moist (Lacustrine). | |
| | | | 5.49 m | |
| | | | 1 Bucket Bentonite Pellets | |
| | | | 7.01 m | Start Drilling with Water |
| | | | **SILTY SAND**<br>Silty SAND, trace gravel, subrounded, fine to coarse, well graded, low plasticity, greyish brown, dense to very dense, moist (Glacial-Fluvial) | |
| | | | 8.23 m | |
| | | | 4 Bags 10/20 Filter Sand | Water return |
| | | | 2" Dia. PVC, Schedule 80 | |
| 1397 | 10 | | 9.75 m | |
| | | | 10.97 m | |
| | | | 11.89 m | Stop Drilling with Water |
| 1392 | 15 | | | |

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-02S**

Knight Piésold CONSULTING

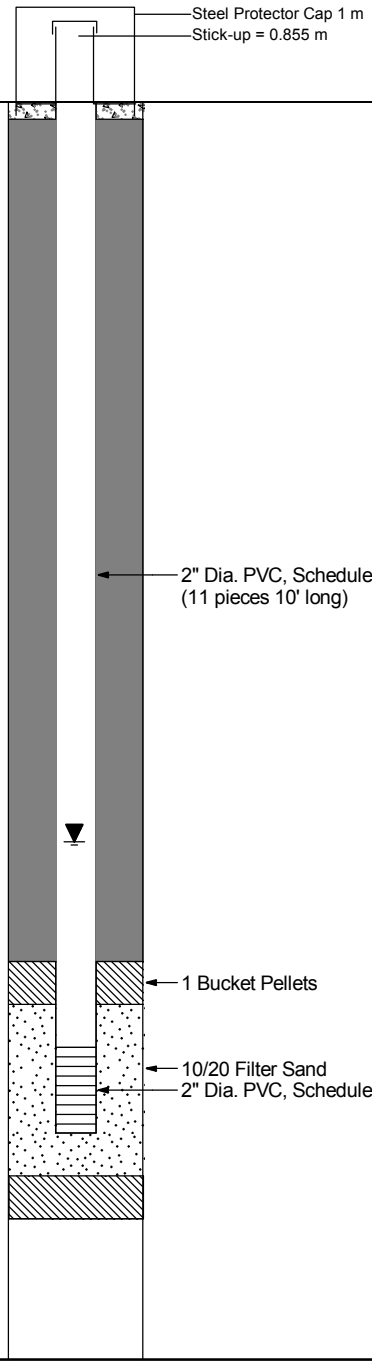
| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| 101-457/4 | 12-02061 |
| FIGURE. Figure A.4 | REV. 0 |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-03D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **04/10/2012** |
| Location: | **Downslope of Open Pit** | Total Depth: | **39.62 m** | Date Installation: | **04/12/2012** |
| Coordinates: | **5,893,860 N , 376,013 E (UTM NAD 83)** | Elevation: | **1,465 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 25.99 m depth measured on 28/04/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | | |
|---|---|---|---|---|
| | | | SILTY SAND<br>Silty SAND, trace gravel, subrounded and subangular, fine to coarse, well graded, low plasticity, brown/yellow, loose to very dense, massive, wet. | 0.61 m |
| 1460 | 5 | | SILTY SAND<br>Silty SAND, some gravel, subangular, fine to coarse, well graded, non plastic to low plasticity, brown, dense to very dense, massive, dry (Glacial Till). | |
| 1455 | 10 | | | |
| 1450 | 15 | | | |
| 1445 | 20 | | | |
| 1440 | 25 | | | |
| 1435 | 30 | | SANDY GRAVEL<br>Sandy GRAVEL, trace silt, angular to rounded, fine to coarse, brown grey yellow, dense to very dense, massive, moist. | 30.48 m<br>32 m |
| | | | SILTY SAND<br>Silty SAND, some gravel, subangular, fine to coarse, well graded, non plastic to low plasticity, brown, dense to very dense, massive, moist (Glacial Till). | 33.53 m |
| 1430 | 35 | | SAND<br>SAND, some gravel, trace cobbles, subrounded, fine to coarse, well graded, non plastic, brown, dense to very dense, massive, moist. | 36.57 m<br>38.1 m |
| 1425 | 40 | | SANDY SILT<br>Sandy SILT, some gravel, subangular, fine to coarse, well graded, low to medium plasticity, dark brown, very stiff to hard, massive, moist (Glacio-Fluvial). | 39.62 m |




**NOTES**

Hit Water

Dry

Start Drilling with Water

Stop Drilling with Water

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-03D**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. **101-457/4** | REF. NO. **12-02061**

FIGURE. **Figure A.5** | REV. **0**

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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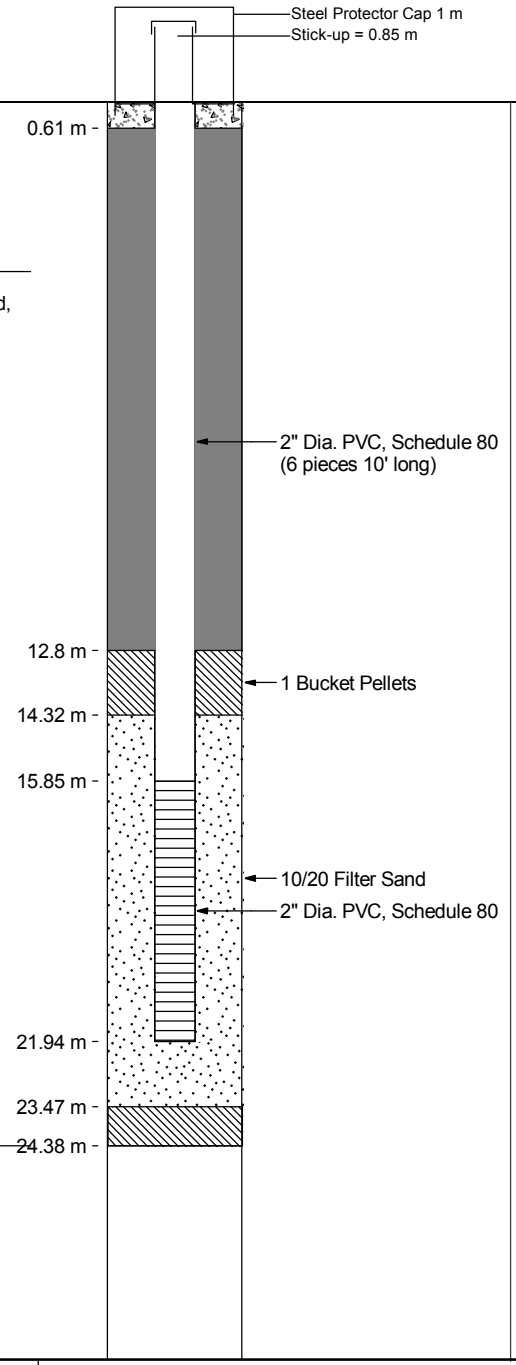
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-03S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **13/04/2012** |
| Location: | **Downslope of Open Pit** | Total Depth: | **24.38 m** | Date Installation: | **13/04/2012** |
| Coordinates: | **5,893,860 N , 376,004 E (UTM NAD 83)** | Elevation: | **1,465 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : m depth measured on 28/04/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| | | | SILTY SAND<br>Silty SAND, trace gravel, subrounded to subangular, fine to coarse, well graded, low plasticity, brown/yellow, compact, massive, moist. |
| 1460 | 5 | | SILTY SAND<br>Silty SAND, some gravel, subangular, fine to coarse, well graded, non plastic to low plasticity, brown, dense to very dense, massive, moist (Glacial Till). |
| 1455 | 10 | | |
| 1450 | 15 | | |
| 1445 | 20 | | |
| 1440 | 25 | | |




**NOTES**

**GENERAL REMARKS:**

Well dry, April 28, 2012

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-03S**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. **101-457/4** | REF. NO. **12-02061**

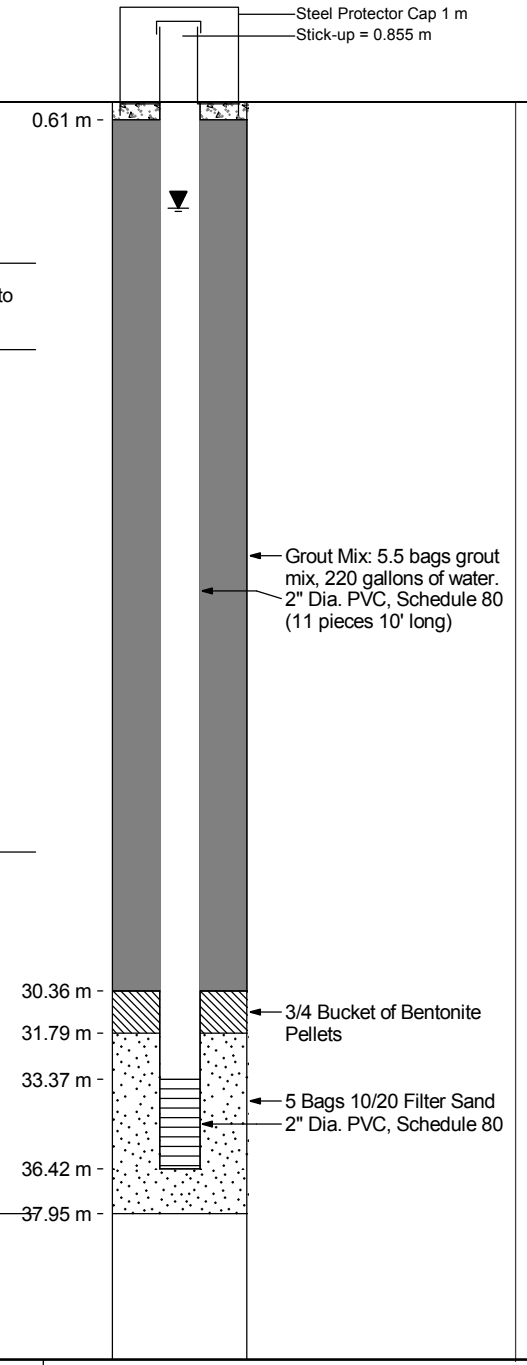
FIGURE. **Figure A.6** | REV. **0**

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-04D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **14/04/2012** |
| Location: | **Downslope of Open Pit** | Total Depth: | **37.95 m** | Date Installation: | **15/04/2012** |
| Coordinates: | **5,892,500 N , 374,110 E (UTM NAD 83)** | Elevation: | **1,558 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 3.39 m depth measured on 28/04/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| | | | FILL<br>Sandy SILT, some gravel, subangular, fine to coarse, well graded, low plasticity, brown, stiff to very stiff, massive, moist. |
| 1553 | 5 | | SAND AND GRAVEL<br>SAND and GRAVEL, trace silt, subangular to subrounded, fine to coarse, well graded, brown, dense to very dense, massive, dry (Glacio-Fluvial). |
| | | | SANDY SILT<br>Sandy SILT, some gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, brown, very stiff to hard, massive, moist (Glacial Till). |
| 1548 | 10 | | |
| 1543 | 15 | | |
| 1538 | 20 | | |
| 1533 | 25 | | MODERATELY WEATHERED ANDESITE<br>Fine-grained, porphyritic, dark grey to reddish brown, medium strong, moderately weathered. |
| 1528 | 30 | | |
| 1523 | 35 | | |
| 1518 | 40 | | |




**NOTES**

Water return

Start Drilling with Water

Bedrock

Stop Drilling with Water

**GENERAL REMARKS:**

Original ground surface 10' below pad surface. Depths shown here are below original ground.

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-04D**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| 101-457/4 | 12-02061 |
| FIGURE. Figure A.7 | REV. 0 |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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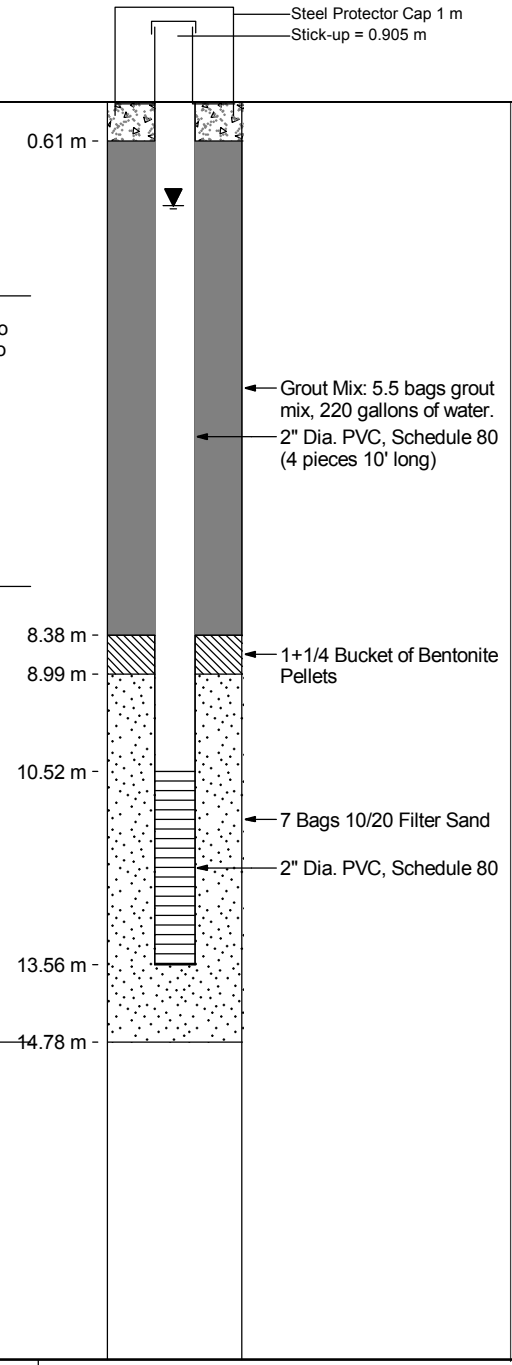
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-04S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **15/04/2012** |
| Location: | **Downslope of Open Pit** | Total Depth: | **14.78 m** | Date Installation: | **15/04/2012** |
| Coordinates: | **5,892,500 N , 374,116 E (UTM NAD 83)** | Elevation: | **1,558 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 1.52 m depth measured on 28/04/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| | | | FILL<br>Sandy SILT, some gravel, subangular, fine to coarse, well graded, low plasticity, brown, stiff to very stiff, massive, moist. |
| 1553 | 5 | | SAND AND GRAVEL<br>SAND and GRAVEL, trace silt, subangular to subrounded, fine to coarse, well graded, brown, dense to very dense, massive, dry to moist (Glacio-Fluvial). |
| | | | SANDY SILT<br>Sandy SILT, some gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, brown, very stiff to hard, massive, moist (Glacial Till). |
| 1548 | 10 | | |
| 1543 | 15 | | |




**NOTES**

**GENERAL REMARKS:**

Original ground surface 9.5' below pad surface. Depths shown here are below original ground.

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-04S**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| 101-457/4 | 12-02061 |
| FIGURE. Figure A.8 | REV. 0 |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-05D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **27/04/2012** |
| Location: | **Upstream of TSF Main Embankment** | Total Depth: | **27.74 m** | Date Installation: | **27/04/2012** |
| Coordinates: | **5,896,210 N , 371,310 E (UTM NAD 83)** | Elevation: | **1,373 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **114.3 (4.5")mm** | Reviewed by: | **BOC** |

**Water Level : 0.72 m depth measured on 30/04/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | | NOTES |
|---|---|---|---|---|
| | | | Steel Protector Cap 1 m<br>Stick-up = 0.81 m | |
| | | | SANDY SILT<br>Sandy SILT, trace gravel, angular to subangular, fine to coarse, well graded, low to medium plasticity, brown and orange, very stiff to hard, massive, moist (Glacio-Fluvial). | |
| 1368 | 5 | | | |
| 1363 | 10 | | Boulder | |
| | | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, angular to subangular, fine to coarse, well graded, non plastic to low plasticity, orange, dense to very dense, massive, moist to wet (Glacio-Fluvial). | |
| 1358 | 15 | | MODERATELY WEATHERED ANDESITE<br>Fine-grained, porphyritic, dark grey to reddish brown, medium strong, moderately weathered | |
| 1353 | 20 | | | |
| 1348 | 25 | | | |
| 1343 | 30 | | | |

0.61 m
2" Dia. PVC, Schedule 80 (8 pieces 10' long)
Bedrock
20.42 m
1/2 Bucket of Bentonite Pellets
21.64 m
23.16 m
3+1/4 Bags 10/20 Filter Sand
2" Dia. PVC, Schedule 80
Water return
26.21 m
27.74 m

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-05D**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| 101-457/4 | 12-02061 |
| FIGURE. Figure A.9 | REV. 0 |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-05S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **27/04/2012** |
| Location: | **Upstream of TSF Main Embankment** | Total Depth: | **11.89 m** | Date Installation: | **28/04/2012** |
| Coordinates: | **5,896,210 N , 371,309 E (UTM NAD 83)** | Elevation: | **1,373 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 1.59 m depth measured on 30/04/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | | NOTES |
|---|---|---|---|---|
| | | | Steel Protector Cap 1 m<br>Stick-up = 0.72 m | |
| | | | SANDY SILT<br>Sandy SILT, trace gravel, angular to subangular, fine to coarse, well graded, low to medium plasticity, brown and orange, very stiff to hard, massive, moist (Glacio-Fluvial). | |
| 1368 | 5 | | 0.61 m<br>2" Dia. PVC, Schedule 80 (3 pieces 10' long)<br>4.57 m<br>1 Bucket Pellets<br>6.1 m | |
| 1363 | 10 | | 7.62 m<br>10/20 Filter Sand<br>2" Dia. PVC, Schedule 80<br>10.67 m | |
| | | | COMPLETELY WEATHERED BEDROCK<br>Sandy, Clayey SILT, some gravel, angular to subangular, fine to coarse, well graded, low plasticity, purple brown and greeny grey, hard, massive, moist to wet.<br>11.89 m | Bedrock |
| 1358 | 15 | | | |

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-05S**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| 101-457/4 | 12-02061 |
| FIGURE. Figure A.10 | REV. 0 |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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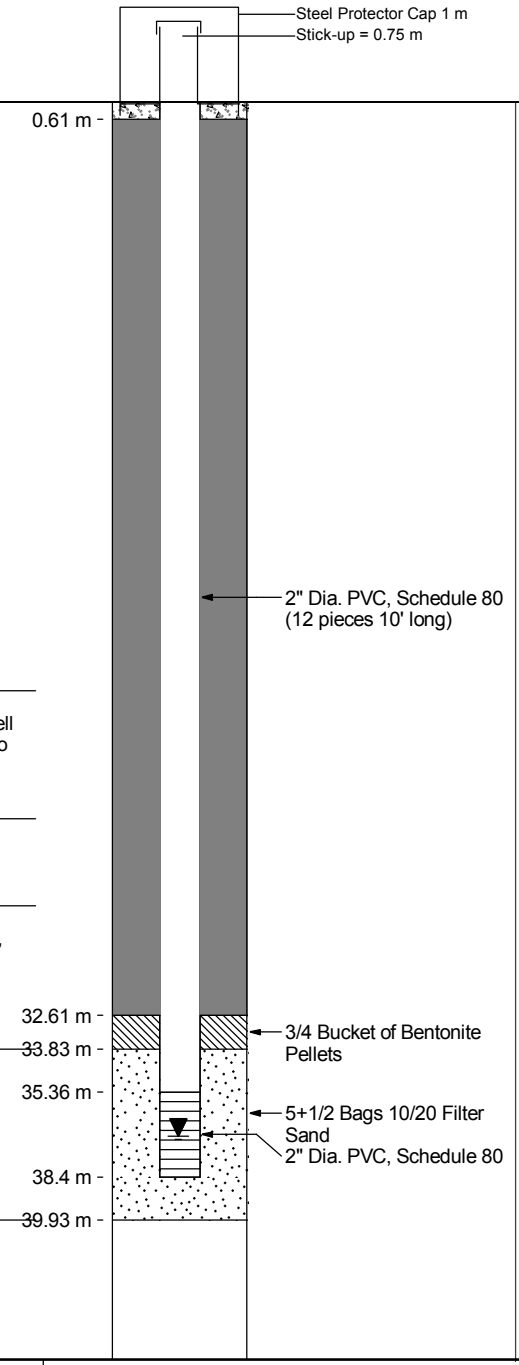
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-06D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **28/04/2012** |
| Location: | **Downstream of TSF Main Embankment** | Total Depth: | **39.93 m** | Date Installation: | **28/04/2012** |
| Coordinates: | **5,896,470 N , 374,807 E (UTM NAD 83)** | Elevation: | **1,278 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 36.69 m depth measured on 30/04/2012**

| ELEVATION - (m) | DEPTH - (m) | Description |
|---|---|---|
| 1273 | 5 | **SANDY SILT**<br>Sandy SILT, trace gravel, angular to subangular, fine to coarse, well graded, low plasticity, brown and orange, very stiff to hard, massive, moist (Lacustrine). |
| 1268 | 10 | |
| 1263 | 15 | |
| 1258 | 20 | |
| 1253 | 25 | **SILT**<br>SILT, trace sand, some cobbles, subrounded, fine to coarse, well graded, low plasticity, brown, very stiff to hard, massive, moist to wet (Glacio-Fluvial). |
| 1248 | 30 | **SAND**<br>SAND, some gravel, trace silt, angular to subangular, fine to coarse, well graded, non-plastic, brown, dense to very dense, massive, moist (Glacio-Fluvial).<br>**SILTY SAND AND GRAVEL**<br>Silty SAND and GRAVEL, angular to subangular, fine to coarse, well graded, non plastic to low plasticity, orange, dense to very dense, massive, moist (Glacio-Fluvial). |
| 1243 | 35 | **SILT**<br>SILT, some sand, fine to coarse, uniformly graded, low to medium plasticity, orange brown, very stiff to hard, massive, moist (Lacustrine). |
| 1238 | 40 | |




**NOTES**

Water return

Start Drilling with Water

Stop Drilling with Water

Water return

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-06D**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. **101-457/4** | REF. NO. **12-02061**

FIGURE. **Figure A.11** | REV. **0**

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-06S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **28/04/2012** |
| Location: | **Downstream of TSF Main Embankment** | Total Depth: | **22.55 m** | Date Installation: | **29/04/2012** |
| Coordinates: | **5,896,470 N , 374,804 E (UTM NAD 83)** | Elevation: | **1,278 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 9.77 m depth measured on 30/04/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | | | NOTES |
|---|---|---|---|---|---|
| | | | SANDY SILT<br>Sandy SILT, trace gravel, angular to subangular, fine to coarse, well graded, low plasticity, brown and orange, very stiff to hard, massive, moist (Lacustrine). | 0.61 m | |
| 1273 | 5 | | | | |
| 1268 | 10 | | | | |
| 1263 | 15 | | GRAVELLY SILT<br>Gravelly SILT, trace sand, subrounded, fine to coarse, well graded, low plasticity, dark brown, very stiff to hard, massive, moist to wet. | 15.24 m<br>16.76 m | Hit Water |
| 1258 | 20 | | SANDY SILT<br>Sandy SILT, trace gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, yellow to brown, very stiff to hard, massive, moist. | 18.29 m<br>21.33 m | Hit Water - approximately 0.5 gal/min |
| 1253 | 25 | | | 22.55 m | |

Steel Protector Cap 1 m
Stick-up = 0.885 m
2" Dia. PVC, Schedule 80 (7 pieces 10' long)
1 Bucket Pellets
10/20 Filter Sand
2" Dia. PVC, Schedule 80

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-06S**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. 101-457/4 | REF. NO. 12-02061
FIGURE. Figure A.12 | REV. 0

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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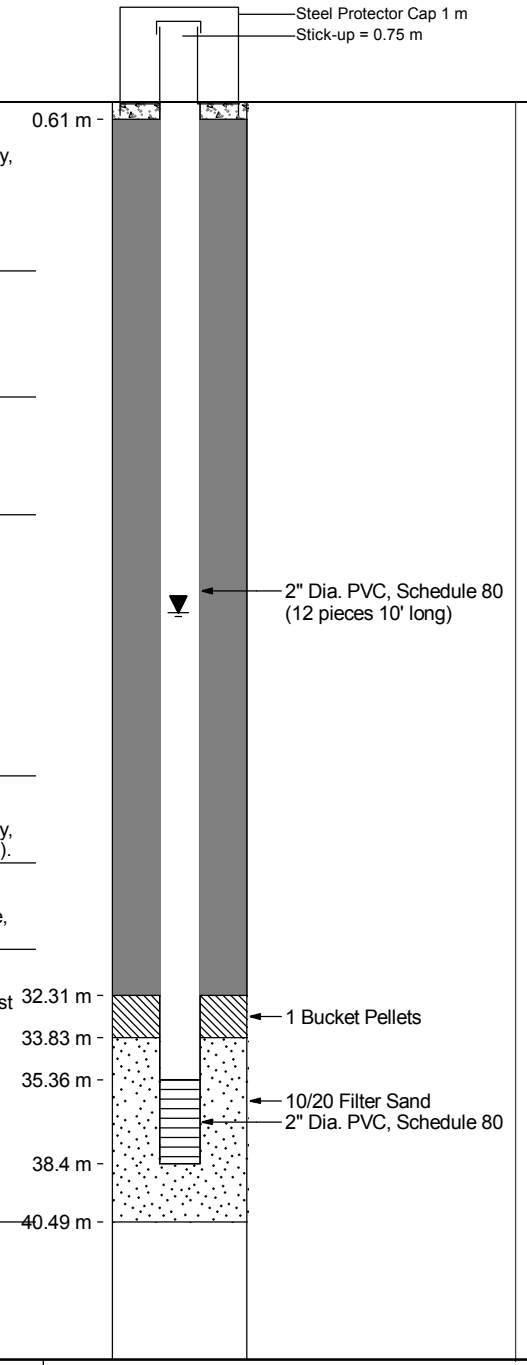
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-07D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **29/04/2012** |
| Location: | **Downstream of TSF Main Embankment** | Total Depth: | **40.49 m** | Date Installation: | **30/04/2012** |
| Coordinates: | **5,899,440 N , 376,395 E (UTM NAD 83)** | Elevation: | **1,221 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 18.23 m depth measured on 06/06/2012**

| ELEVATION - (m) | DEPTH - (m) | Description |
|---|---|---|
| | | **SAND AND SILT**<br>SAND and SILT, some gravel, angular and subrounded, fine to coarse, well graded, non plastic to low plasticity, brown and grey, stiff to very stiff, dense to very dense, massive, moist to dry (Lacustrine). |
| 1216 | 5 | |
| | | **SAND AND GRAVEL**<br>SAND and GRAVEL, subangular, fine to coarse, well graded, non plastic to low plasticity, brown, dense to very dense, massive, moist (Glacio-Fluvial). |
| 1211 | 10 | |
| | | **SAND**<br>SAND, trace silt and gravel, subangular to subrounded, fine to coarse sand, fine gravel, well graded, non plastic, cohesive, brown, dense to very dense, stratified, dry to moist (Glacio-Fluvial). |
| 1206 | 15 | |
| | | **SAND AND GRAVEL**<br>SAND and GRAVEL, trace silt, rounded to angular, fine to coarse, well graded, non plastic, brown, dense to very dense, massive, wet (Glacio-Fluvial). |
| 1201 | 20 | |
| 1196 | 25 | **SILT AND SAND**<br>SILT and SAND, some gravel, angular and subrounded, fine to coarse, well graded, non plastic to low plasticity, brown and grey, very stiff to hard, dense to very dense, massive, wet (Lacustrine). |
| | | **SILTY SAND AND GRAVEL**<br>Silty SAND and GRAVEL, subrounded, fine to coarse, well graded, non plastic to low plasticity, brown, dense to very dense, massive, cohesive, moist (Glacio-Fluvial). |
| 1191 | 30 | **SANDY SILT**<br>Sandy SILT, some gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, brown, very stiff to hard, moist (Glacial Till). |
| 1186 | 35 | |
| 1181 | 40 | |
| 1176 | 45 | |




**NOTES**

Water return

Start Drilling with Water
Stop Drilling with Water

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-07D**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. **101-457/4** | REF. NO. **12-02061**
FIGURE. **Figure A.13** | REV. **0**

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.



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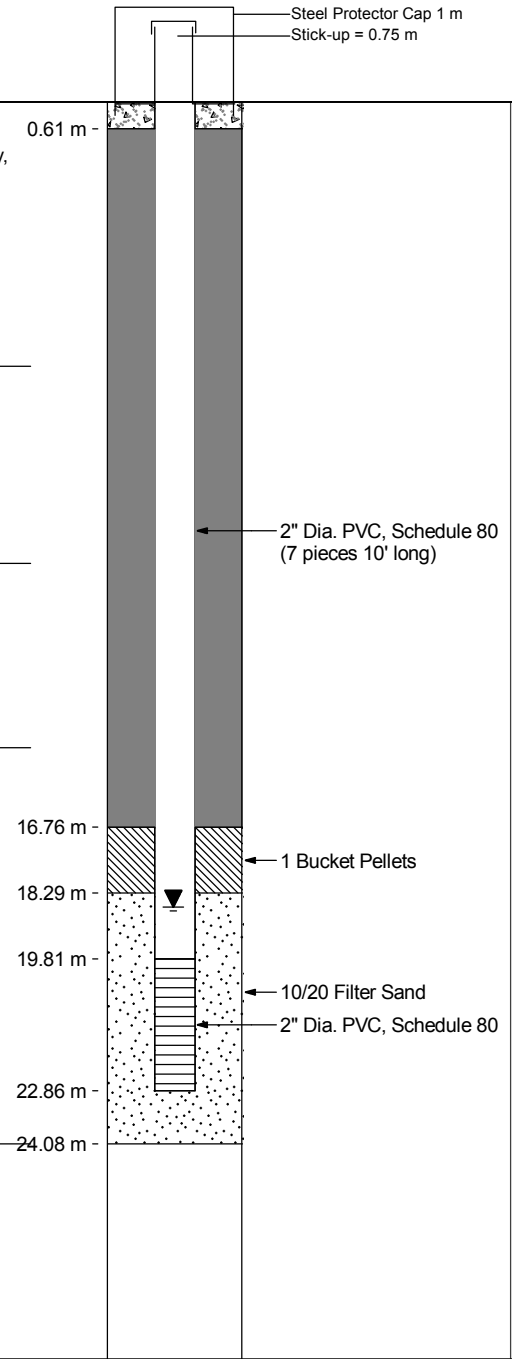
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-07S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **30/04/2012** |
| Location: | **Downstream of TSF Main Embankment** | Total Depth: | **24.08 m** | Date Installation: | **30/04/2012** |
| Coordinates: | **5,899,440 N , 376,399 E (UTM NAD 83)** | Elevation: | **1,221 m** | Supervised by: | **AL/HS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 18.46 m depth measured on 05/06/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| | | | **SAND AND SILT**<br>SAND and SILT, some gravel, angular and subrounded, fine to coarse, well graded, non plastic to low plasticity, brown and grey, firm to stiff, compact to dense, massive, moist to dry (Lacustrine). |
| 1216 | 5 | | **SAND AND GRAVEL**<br>SAND and GRAVEL, subangular, fine to coarse, well graded, non plastic to low plasticity, brown, dense to very dense, massive, moist (Glacio-Fluvial). |
| 1211 | 10 | | **SAND**<br>SAND, trace silt and gravel, subangular to subrounded, fine to coarse sand, fine gravel, well graded, non plastic, cohesive, brown, dense to very dense, stratified, dry to moist (Glacio-Fluvial). |
| 1206 | 15 | | **SAND AND GRAVEL**<br>SAND and GRAVEL, trace silt, rounded to angular, fine to coarse, well graded, non plastic, brown, dense to very dense, massive, wet (Glacio-Fluvial). |
| 1201 | 20 | | |
| 1196 | 25 | | |




**NOTES**

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-07S**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| **101-457/4** | **12-02061** |
| FIGURE. **Figure A.14** | REV. **0** |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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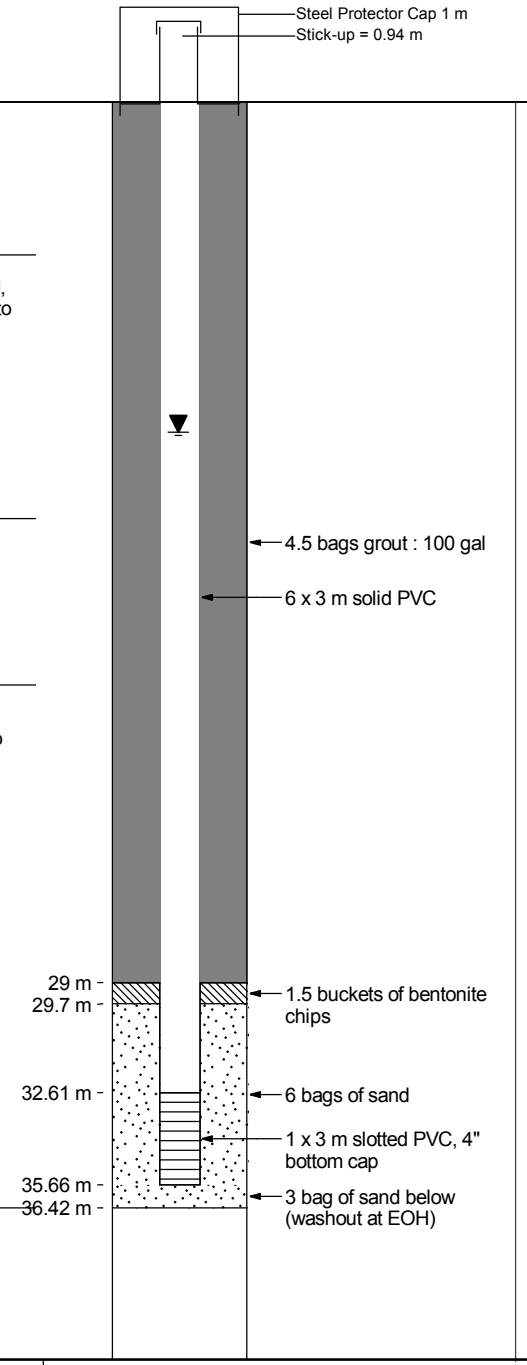
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-08D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **Cuttings** | Drilling Started: | **08/08/2012** |
| Location: | **Downstream of TSF** | Total Depth: | **36.42 m** | Date Installation: | **09/08/2012** |
| Coordinates: | **5,899,260 N , 377,911 E (UTM NAD 83)** | Elevation: | **1,168 m** | Supervised by: | **DMW** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **139.7 (5.5")mm** | Reviewed by: | **BOC** |

**Water Level : 10.65 m depth measured on 23/07/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| | | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, trace cobbles, subrounded, fine to coarse, well graded, brown, compact to dense, massive, dry (Glacial-Fluvial) |
| 1163 | 5 | | SANDY SILT<br>Sandy SILT, some clay, trace gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, dark brown, very stiff to hard, massive, moist (Lacustrine). |
| 1158 | 10 | | |
| 1153 | 15 | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, trace cobbles, subrounded, fine to coarse, well graded, brown, dense to very dense, massive, dry (Glacial-Fluvial). |
| 1148 | 20 | | SAND AND GRAVEL<br>SAND and GRAVEL, some silt and clay, subangular to subrounded, fine to coarse, well graded, brown yellow, dense to very dense, massive, moist (Glacial-Fluvial). |
| 1143 | 25 | | |
| 1138 | 30 | | |
| 1133 | 35 | | |
| 1128 | 40 | | |




**NOTES**

Water level: 12.27 mb PVC, 19-AUG-12

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-08D**

Knight Piésold CONSULTING

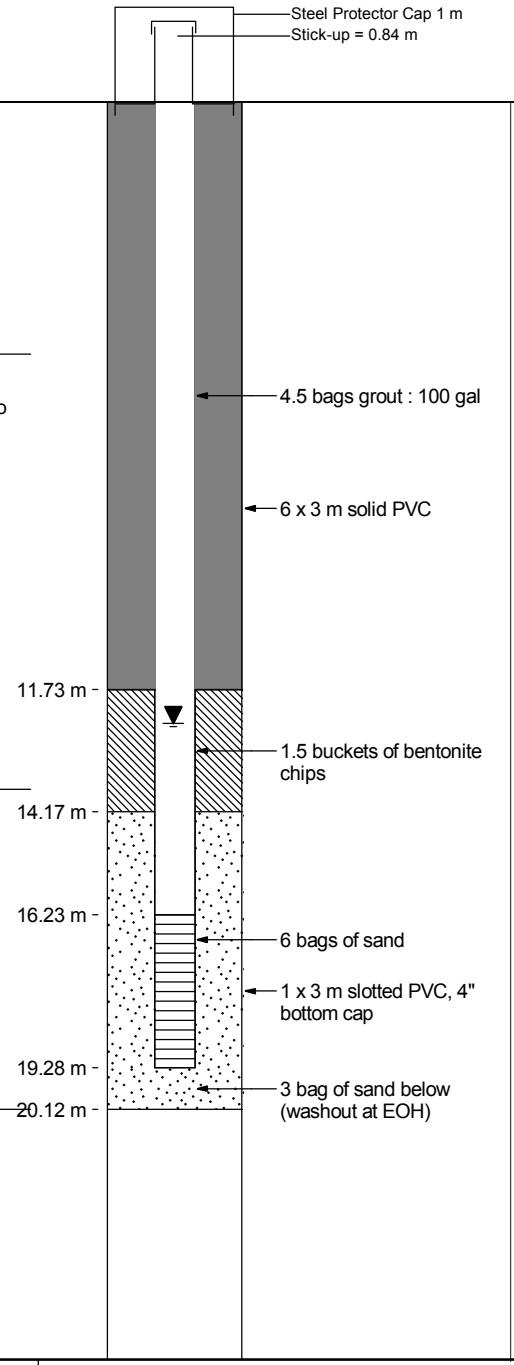
| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| **101-457/4** | **12-02061** |
| FIGURE. **Figure A.15** | REV. **0** |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-08S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **Cuttings** | Drilling Started: | **10/08/2012** |
| Location: | **Downstream of TSF** | Total Depth: | **20.12 m** | Date Installation: | **11/08/2012** |
| Coordinates: | **5,899,260 N , 377,911 E (UTM NAD 83)** | Elevation: | **1,168 m** | Supervised by: | **DMW** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **139.7 (5.5")mm** | Reviewed by: | **BOC** |

**Water Level : 12.27 m depth measured on 21/07/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| | | | **SILTY SAND AND GRAVEL**<br>Silty SAND and GRAVEL, trace cobbles, subrounded, fine to coarse, well graded, brown, compact to dense, massive, dry (Glacial-Fluvial) |
| 1163 | 5 | | **SANDY SILT**<br>Sandy SILT, some clay, trace gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, dark brown, very stiff to hard, massive, moist (Lacustrine). |
| 1158 | 10 | | |
| 1153 | 15 | | **SILTY SAND AND GRAVEL**<br>Silty SAND and GRAVEL, trace cobbles, subrounded, fine to coarse, well graded, brown, dense to very dense, massive, dry (Glacial-Fluvial). |
| 1148 | 20 | | |
| 1143 | | | |




**NOTES**

Moisture at and below 4.5 m

Water level: 12.27 m PVC, 19-AUG-12
Water return on startup at 8.8 m

Water return on startup at 10.4 m

Water return on startup at 14.3 m

~3-5 gal/min at 15.3 m

~20 gal/min at 16.5 m

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-08S**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. **101-457/4** | REF. NO. **12-02061**
FIGURE. **Figure A.16** | REV. **0**

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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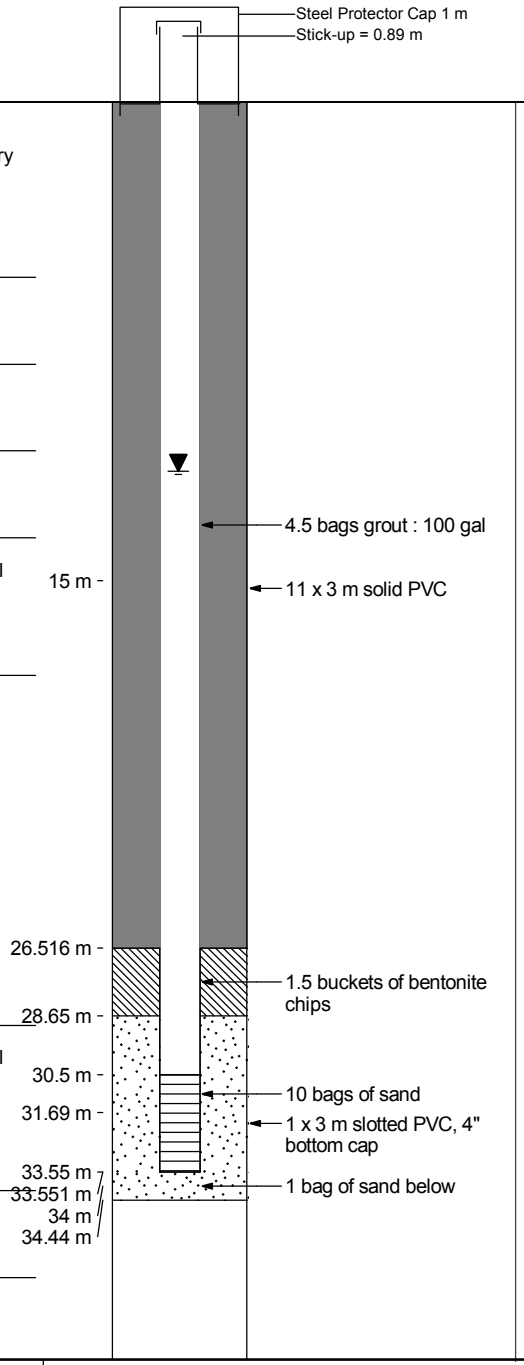
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-09D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **Cuttings** | Drilling Started: | **11/08/2012** |
| Location: | **Downstream of TSF** | Total Depth: | **34.44 m** | Date Installation: | **12/08/2012** |
| Coordinates: | **5,899,680 N , 378,321 E (UTM NAD 83)** | Elevation: | **1,165 m** | Supervised by: | **DMW** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **139.7 (5.5")mm** | Reviewed by: | **BOC** |

**Water Level : 11.36 m depth measured on 02/10/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| 1160 | 5 | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, trace cobbles, subrounded, fine to coarse, well graded, light brown, compact to dense, massive, dry (Glacial Till). |
| | | | SILT<br>SILT, some sand and gravel, subrounded, fine to coarse, well graded, low plasticity, grey, stiff to very stiff, massive, dry (Glacio-Fluvial). |
| 1155 | 10 | | SILT AND SAND<br>SILT and SAND, some gravel, trace clay, subrounded, fine to coarse, well graded, brown, very stiff, dense, massive, moist (Glacio-Fluvial). |
| | | | SILT<br>SILT, some clay, trace sand, fine to coarse, poorly graded, low plasticity, dark grey, very stiff to hard, massive, moist (Lacustrine). |
| 1150 | 15 | | SAND AND GRAVEL<br>SAND and GRAVEL, some silt, subrounded, fine to coarse, well graded, brown, dense to very dense, massive, moist (Glacio-Fluvial). |
| 1145 | 20 | | SILT AND SAND<br>SILT and SAND, some clay, trace gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, brown, very stiff, dense, <0.25 clay bands, moist (Lacustrine). |
| 1140 | 25 | | |
| 1135 | 30 | | SAND AND GRAVEL<br>SAND and GRAVEL, some silt, subrounded, fine to coarse, well graded, brown, dense to very dense, massive, moist (Glacio-Fluvial). |
| 1130 | 35 | | SILT AND SAND<br>SILT and SAND, some clay, trace gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, brown, very stiff, dense, massive, moist (Lacustrine). |




**NOTES**

~3 gal/min 13 m to 15 m
Water level: 11.36 m PVC, 19-AUG-12

No water on start up at 18 m

~0.5 gal/min on startup at 24.38m

~1-2 gal/min at 29 to 31.69 m

~ 3-5 gal/min at 32 to 34 m

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-09D**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. **101-457/4** | REF. NO. **12-02061**

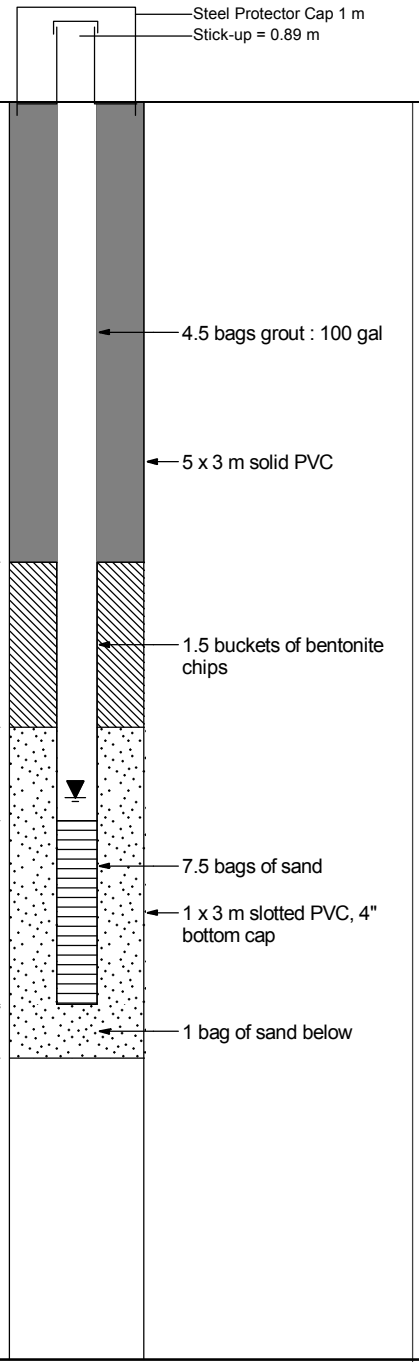
FIGURE. **Figure A.17** | REV. **0**

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-09S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **Cuttings** | Drilling Started: | **12/08/2012** |
| Location: | **Downstream of TSF** | Total Depth: | **15.85 m** | Date Installation: | **13/08/2012** |
| Coordinates: | **5,899,680 N , 378,321 E (UTM NAD 83)** | Elevation: | **1,165 m** | Supervised by: | **DMW** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **139.7 (5.5")mm** | Reviewed by: | **BOC** |

**Water Level : 11.42 m depth measured on 23/07/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| | | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, trace cobbles, subrounded, fine to coarse, well graded, light brown, compact to dense, massive, dry (Glacial Till). |
| 1160 | 5 | | SILT<br>SILT, some sand and gravel, subrounded, fine to coarse, well graded, low plasticity, grey, stiff to very stiff, massive, dry (Glacio-Fluvial). |
| | | | SILT AND SAND<br>SILT and SAND, some gravel, trace clay, subrounded, fine to coarse, well graded, brown, very stiff, dense, massive, moist (Glacio-Fluvial). |
| 1155 | 10 | | SILT<br>SILT, some clay, trace sand, fine to coarse, poorly graded, low plasticity, dark grey, very stiff to hard, massive, moist (Lacustrine). |
| | | | SAND AND GRAVEL<br>SAND and GRAVEL, some silt, subrounded, fine to coarse, well graded, brown, dense to very dense, massive, moist (Glacio-Fluvial). |
| 1150 | 15 | | |
| 1145 | 20 | | |




**NOTES**

Water level: 11.42 m PVC, 19-AUG-12

~3 gal/min 13 m to 15 m

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-09S**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| 101-457/4 | 12-02061 |
| FIGURE. Figure A.18 | REV. 0 |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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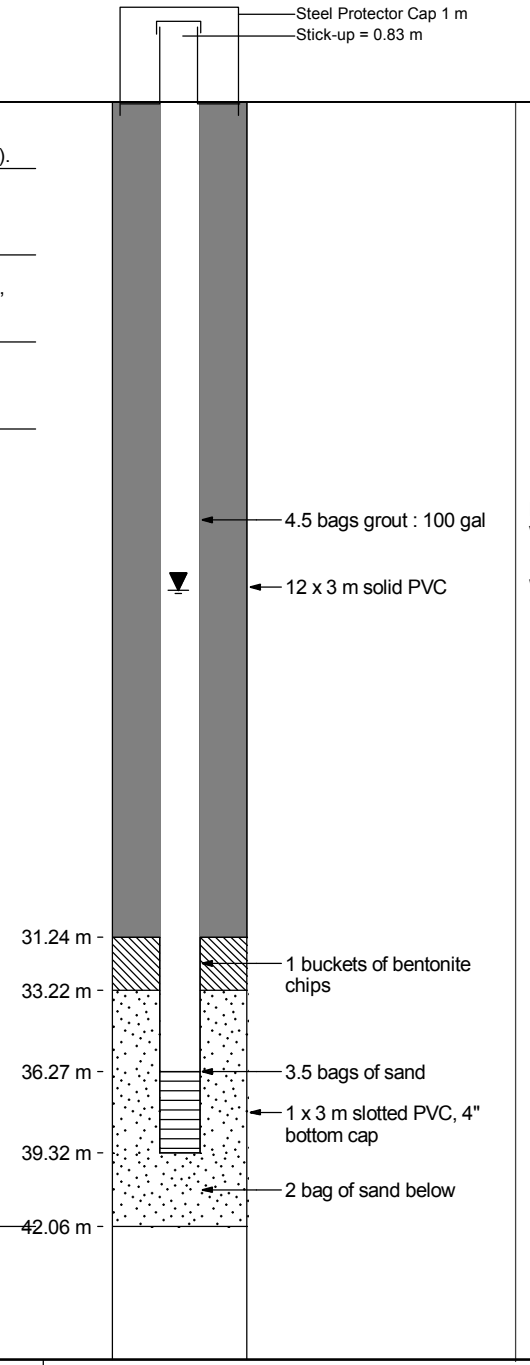
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-10D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **Cuttings** | Drilling Started: | **17/08/2012** |
| Location: | **Upstream of Deposit Area** | Total Depth: | **42.06 m** | Date Installation: | **17/08/2012** |
| Coordinates: | **5,892,260 N , 375,033 E (UTM NAD 83)** | Elevation: | **1,665 m** | Supervised by: | **DMW** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **114.3 (4.5")mm** | Reviewed by: | **BOC** |

**Water Level : 18.00 m depth measured on 08/10/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| 1660 | 5 | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, subangular, fine to coarse, well graded, brown, compact to dense, massive, dry (Glacio-Fluvial). |
| | | | SILT AND SAND<br>SILT and SAND, trace clay, subangular, fine to coarse, well graded, brown, stiff to very stiff, compact to dense, massive, moist to dry (Lacustrine). |
| | | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, trace clay, subangular, fine to coarse, well graded, brown, dense to very dense, massive, moist (Glacio-Fluvial). |
| 1655 | 10 | | COMPLETELY WEATHERED BEDROCK<br>Sandy, Clayey SILT, some gravel, angular, fine to coarse, well graded, low to medium plasticity, purple brown and greenish grey, stiff to very stiff, massive, moist to wet. |
| | | | MODERATELY WEATHERED ANDESITE<br>Fine-grained, porphyritic, dark grey to reddish brown, medium strong, moderately weathered. |
| 1650 | 15 | | |
| 1645 | 20 | | |
| 1640 | 25 | | |
| 1635 | 30 | | |
| 1630 | 35 | | |
| 1625 | 40 | | |
| 1620 | 45 | | |




**NOTES**

No observations of water return

Water level: Dry

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-10D**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| 101-457/4 | 12-02061 |
| FIGURE. Figure A.19 | REV. 0 |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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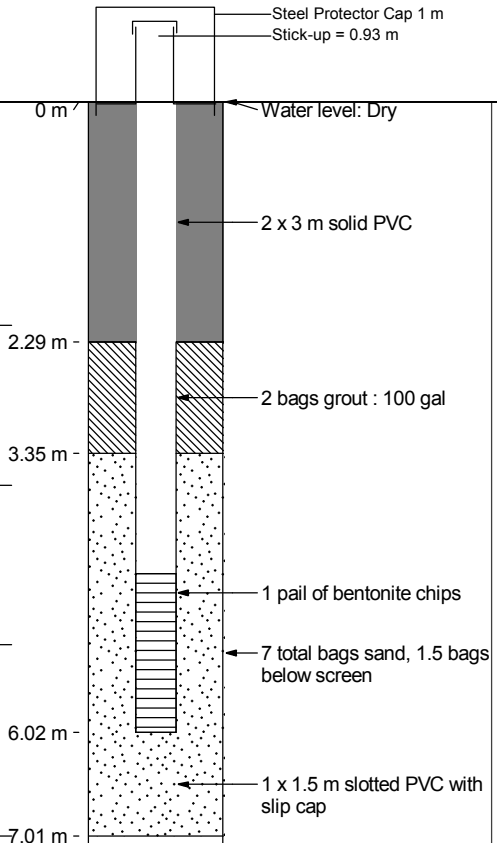
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-10S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **Cuttings** | Drilling Started: | **18/08/2012** |
| Location: | **Upstream of Deposit Area** | Total Depth: | **7.01 m** | Date Installation: | **18/08/2012** |
| Coordinates: | **5,892,260 N , 375,033 E (UTM NAD 83)** | Elevation: | **1,665 m** | Supervised by: | **DMW** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **139.7 (5.5")mm** | Reviewed by: | **BOC** |
| | | **Water Level : m depth measured on 08/10/2012** | | | |

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| | | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, subangular, fine to coarse, well graded, brown, compact to dense, massive, dry (Glacio-Fluvial). |
| | | | SILT AND SAND<br>SILT and SAND, trace clay, subangular, fine to coarse, well graded, brown, stiff to very stiff, compact to dense, massive, moist to dry (Lacustrine). |
| | | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, trace clay, subangular, fine to coarse, well graded, brown, dense to very dense, massive, moist (Glacio-Fluvial). |
| 1660 | 5 | | COMPLETELY WEATHERED BEDROCK<br>Sandy, Clayey SILT, some gravel, angular, fine to coarse, well graded, low to medium plasticity, purple brown and greenish grey, stiff to very stiff, massive, moist to wet. |
| 1655 | 10 | | |




**NOTES**

No observations of water return

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-10S**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| 101-457/4 | 12-02061 |
| FIGURE. Figure A.20 | REV. 0 |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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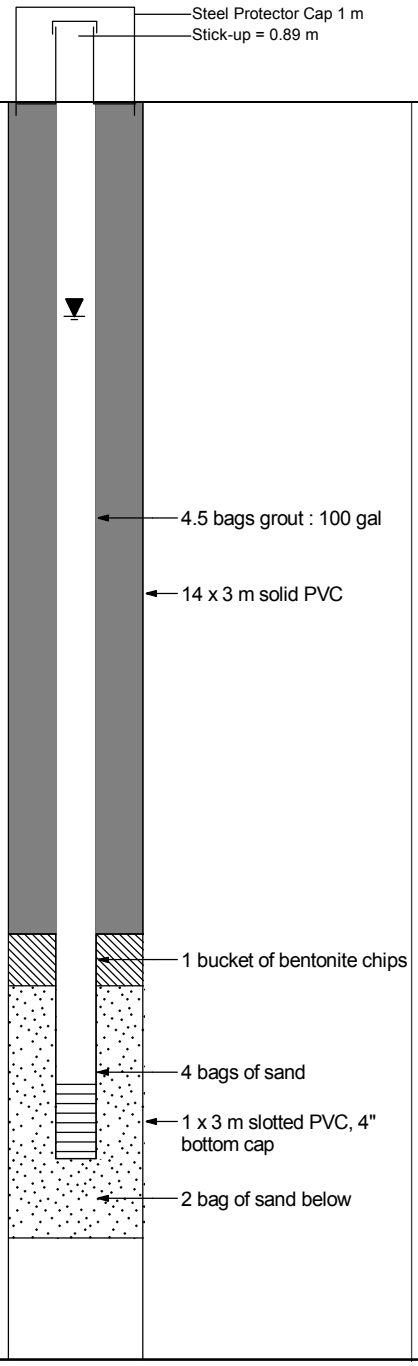
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-11D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **Cuttings** | Drilling Started: | **18/08/2012** |
| Location: | **Upstream of Deposit Area** | Total Depth: | **46.63 m** | Date Installation: | **19/08/2012** |
| Coordinates: | **5,892,180 N , 375,769 E (UTM NAD 83)** | Elevation: | **1,680 m** | Supervised by: | **DMW** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **114.3 (4.5")mm** | Reviewed by: | **BOC** |

**Water Level : 8.50 m depth measured on 06/09/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| 1675 | 5 | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, subangular, fine to coarse, well graded, brown, compact to dense, massive, moist (Glacio-Fluvial). |
| | | | SILT AND SAND<br>SILT and SAND, some clay, trace gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, brown, very stiff, dense, massive, moist (Glacio-Fluvial). |
| 1670 | 10 | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, subangular, fine to coarse, well graded, brown, compact to dense, massive, moist (Glacio-Fluvial). |
| 1665 | 15 | | COMPLETELY WEATHERED BEDROCK<br>Sandy, Clayey SILT, some gravel, angular, fine to coarse, well graded, low to medium plasticity, dark green grey, stiff to very stiff, massive, moist to wet. |
| 1660 | 20 | | MODERATELY WEATHERED ANDESITE<br>Fine-grained, porphyritic, dark grey to reddish brown, medium strong, moderately weathered. |
| 1655 | 25 | | |
| 1650 | 30 | | |
| 1645 | 35 | | |
| 1640 | 40 | | |
| 1635 | 45 | | |
| 1630 | 50 | | |




**NOTES**

~2 gal/min water return 15.3 m to 19.8 m
Water level: 8.50 m PVC, 20-AUG-12

~1 gal/min water return at 42.5 m

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-11D**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| 101-457/4 | 12-02061 |
| FIGURE. Figure A.21 | REV. 0 |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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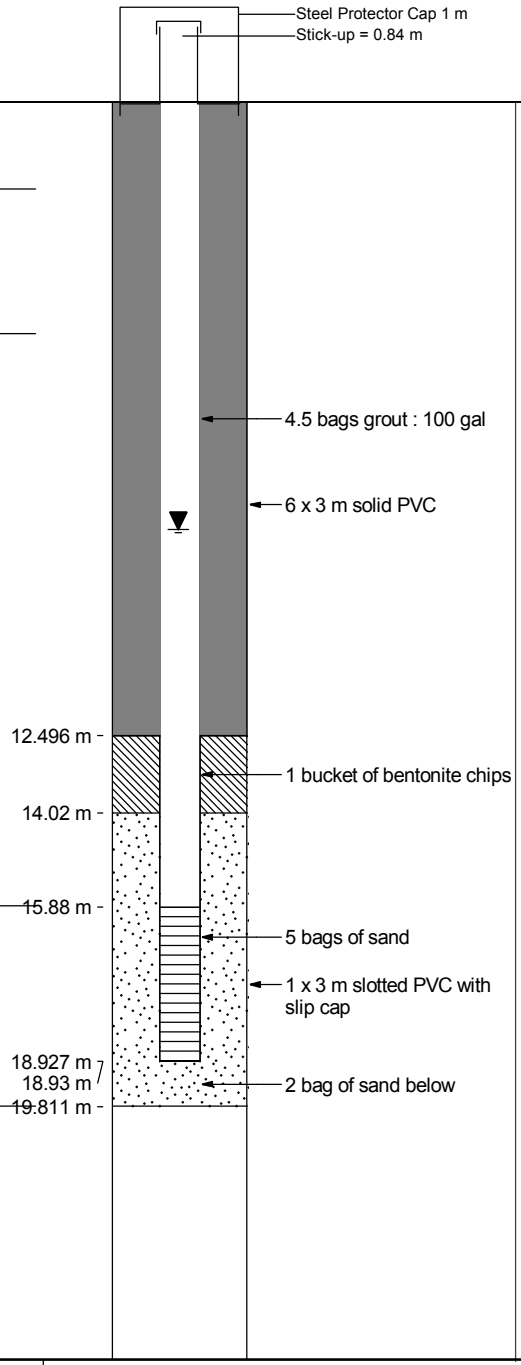
Library: M:\101\00457\04\A\DAT\ATASK 0400 - SITE INVESTIGATIONS\GINTLIBRARY\BLACKWATER LIBRARY V2.GLB, WELL COMPLETION DETAILS REVISED, BLACKWATER.GDT, 8 Feb 13

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-11S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **Cuttings** | Drilling Started: | **20/08/2012** |
| Location: | **Upstream of Deposit Area** | Total Depth: | **19.81 m** | Date Installation: | **20/08/2012** |
| Coordinates: | **5,892,180 N , 375,769 E (UTM NAD 83)** | Elevation: | **1,680 m** | Supervised by: | **DMW** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **114.3 (4.5")mm** | Reviewed by: | **BOC** |

**Water Level : 8.29 m depth measured on 05/09/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| | | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, subangular, fine to coarse, well graded, brown, compact to dense, massive, moist (Glacio-Fluvial). |
| | | | SILT AND SAND<br>SILT and SAND, some clay, trace gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, brown, very stiff, dense, massive, moist (Glacio-Fluvial). |
| 1675 | 5 | | SILTY SAND AND GRAVEL<br>Silty SAND and GRAVEL, subangular, fine to coarse, well graded, brown, dense to very dense, massive, moist (Glacio-Fluvial). |
| 1670 | 10 | | |
| 1665 | 15 | | COMPLETELY WEATHERED BEDROCK<br>Sandy, Clayey SILT, some gravel, angular, fine to coarse, well graded, low to medium plasticity, dark green grey, stiff to very stiff, massive, moist to wet. |
| 1660 | 20 | | |




**NOTES**

Water level: 8.29 m PVC, 21-AUG-12

~2 gal/min water return 15.3 m to EOH

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-11S**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. **101-457/4** | REF. NO. **12-02061**

FIGURE. **Figure A.22** | REV. **0**

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-12D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **Cuttings** | Drilling Started: | **21/08/2012** |
| Location: | **Downstream of TSF and Camp Area** | Total Depth: | **35.2 m** | Date Installation: | **22/08/2012** |
| Coordinates: | **5,896,250 N , 378,490 E (UTM NAD 83)** | Elevation: | **1,245 m** | Supervised by: | **DMW** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **139.7 (5.5")mm** | Reviewed by: | **BOC** |

**Water Level : 2.18 m depth measured on 08/10/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | | NOTES |
|---|---|---|---|---|
| | | | Steel Protector Cap 1 m<br>Stick-up = 0.87 m | |
| 1240 | 5 | | **SILTY SAND AND GRAVEL**<br>Silty SAND and GRAVEL, trace cobbles, subrounded, fine to coarse, well graded, brown, compact to dense, massive, moist (Glacial Till) | ~1 gal/min water return from 4 to 7 m |
| | | | 7 m | |
| | | | **SILT AND SAND**<br>SILT and SAND, some clay, trace gravel, subangular, fine to coarse, well graded, brown, very stiff and dense, massive, moist (Lacustrine). | |
| 1235 | 10 | | **SILTY SAND AND GRAVEL**<br>Silty SAND and GRAVEL, trace cobbles, subrounded, fine to coarse, well graded, brown, dense to very dense, massive, moist (Glacial Till). | ~2 gal/min water return from 9 to 15 m |
| | | | 6 bags grout : 180 gal | |
| 1230 | 15 | | 15 m<br>11 x 3 m solid PVC | Water level: 2.18 m, 23-Aug-12 |
| | | | **SILT AND SAND**<br>SILT and SAND, some clay, trace gravel, subangular, fine to coarse, well graded, brown, very stiff, dense, massive, moist (Lacustrine). | |
| 1225 | 20 | | | |
| 1220 | 25 | | **SILTY SAND AND GRAVEL**<br>Silty SAND and GRAVEL, trace clay and cobbles, subrounded, fine to coarse, well graded, brown, dense to very dense, massive, moist (Glacial Till). | |
| | | | 27.43 m<br>1 bucket of bentonite chips | |
| | | | 29.26 m | |
| 1215 | 30 | | 31.16 m<br>4.5 bags of sand<br>1 x 3 m slotted PVC with slip cap | ~2 gal/min water return from 33 m EOH |
| | | | 34.21 m<br>1 bag of sand below | |
| 1210 | 35 | | 35.2 m | |
| 1205 | | | | |

**GENERAL REMARKS:**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-12D**

**REV. 0 - Issued for Letter Report VA12-02061**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. **101-457/4** | REF. NO. **12-02061**

FIGURE. **Figure A.23** | REV. **0**

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-12S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **Cuttings** | Drilling Started: | **23/08/2012** |
| Location: | **Downstream of TSF and Camp Area** | Total Depth: | **15.24 m** | Date Installation: | **23/08/2012** |
| Coordinates: | **5,896,250 N , 378,490 E (UTM NAD 83)** | Elevation: | **1,245 m** | Supervised by: | **DMW** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **139.7 (5.5")mm** | Reviewed by: | **BOC** |

**Water Level : 2.00 m depth measured on 07/09/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | | NOTES |
|---|---|---|---|---|
| | | | Steel Protector Cap 1 m<br>Stick-up = 0.97 m | |
| | | | **SILTY SAND AND GRAVEL**<br>Silty SAND and GRAVEL, trace cobble, subrounded, fine to coarse, well graded, brown, compact to dense, massive, moist (Glacial Till) | |
| 1240 | 5 | | 5 bags grout : 180 gal<br>4 x 3 m solid PVC | ~1 gal/min water return from 4 to 7 m<br>Water level: 2.00 m, 23-Aug-12 |
| | | | 7 m<br>**SILT AND SAND**<br>SILT and SAND, some clay, trace gravel, subangular, fine to coarse, well graded, brown, very stiff, dense, massive, moist (Lacustrine). | |
| | | | 8.23 m<br>3 buckets of bentonite chips | |
| | | | 9.45 m<br>**SILTY SAND AND GRAVEL**<br>Silty SAND and GRAVEL, trace cobbles, subrounded, fine to coarse, well graded, brown, dense to very dense, massive, moist (Glacial Till). | |
| 1235 | 10 | | 11.18 m<br>7.5 bags of sand<br>1 x 3 m slotted PVC with slip cap | ~2 gal/min water return from 9 to EOH |
| | | | 14.22 m<br>1 bag of sand below | |
| 1230 | 15 | | 15.24 m | |
| 1225 | 20 | | | |

**GENERAL REMARKS:**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-12S**

**REV. 0 - Issued for Letter Report VA12-02061**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. **101-457/4** | REF. NO. **12-02061**

FIGURE. **Figure A.24** | REV. **0**

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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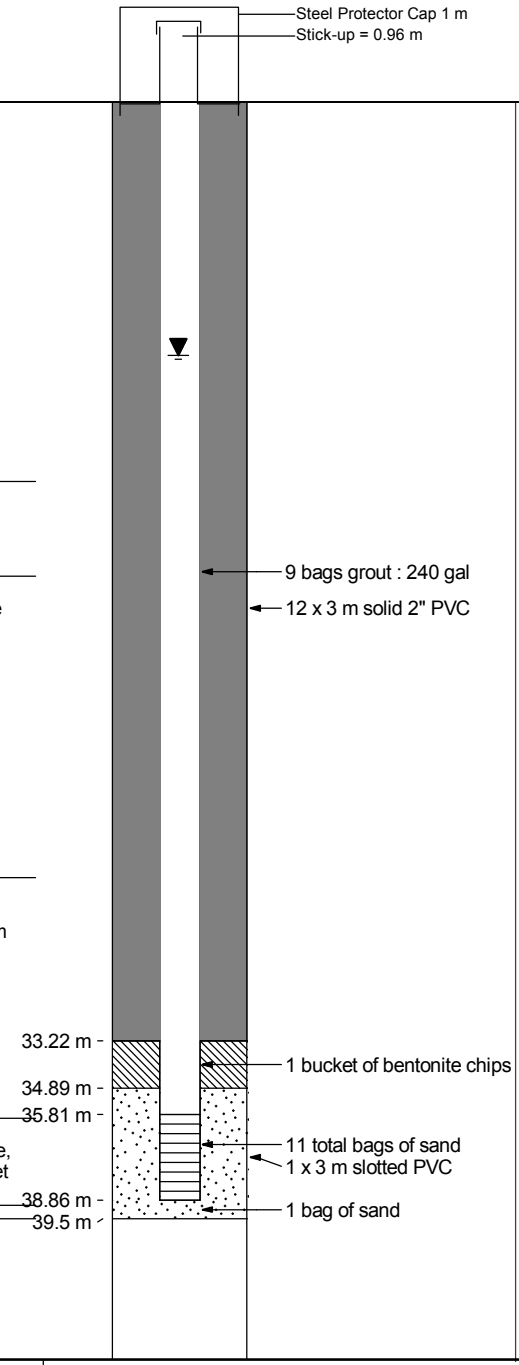
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-13D** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **24/08/2012** |
| Location: | **Downstream of TSF and Camp Area** | Total Depth: | **39.5 m** | Date Installation: | **24/08/2012** |
| Coordinates: | **5,893,830 N , 370,808 E (UTM NAD 83)** | Elevation: | **1,368 m** | Supervised by: | **JS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 8.73 m depth measured on 04/10/2012**

| ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG | |
|---|---|---|---|
| | | | **SAND AND GRAVEL**<br>SAND and GRAVEL, some silt, trace clay, subangular to subrounded, fine to coarse, well graded, brown, compact to dense, massive, dry becoming wet (Glacio-Fluvial). |
| 1363 | 5 | | |
| 1358 | 10 | | |
| 1353 | 15 | | **SILTY SAND**<br>Silty SAND, trace gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, grey, dense, massive, wet (Glacio-Fluvial). |
| | | | **SANDY GRAVELLY SILT**<br>Sandy Gravelly SILT, trace clay, subangular to subrounded, fine to coarse, well graded, low plasticity, grey, very stiff to hard, massive, moist (Glacial Till). |
| 1348 | 20 | | |
| 1343 | 25 | | |
| 1338 | 30 | | **SILT**<br>SILT, some clay, trace sand and gravel, subangular to subrounded, fine to coarse, well graded, low plasticity, grey, firm to very stiff, massive, moist (Lacustrine). |
| 1333 | 35 | | **GRAVELLY SILT**<br>Gravelly SILT, some sand, trace clay, subangular, fine to coarse, well graded, low plasticity, brown, very stiff to hard, massive, wet (Glacio-Fluvial). |
| 1328 | 40 | | |




**NOTES**

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-13D**

Knight Piésold CONSULTING

PROJECT/ASSIGNMENT NO. **101-457/4** | REF. NO. **12-02061**
FIGURE. **Figure A.25** | REV. **0**

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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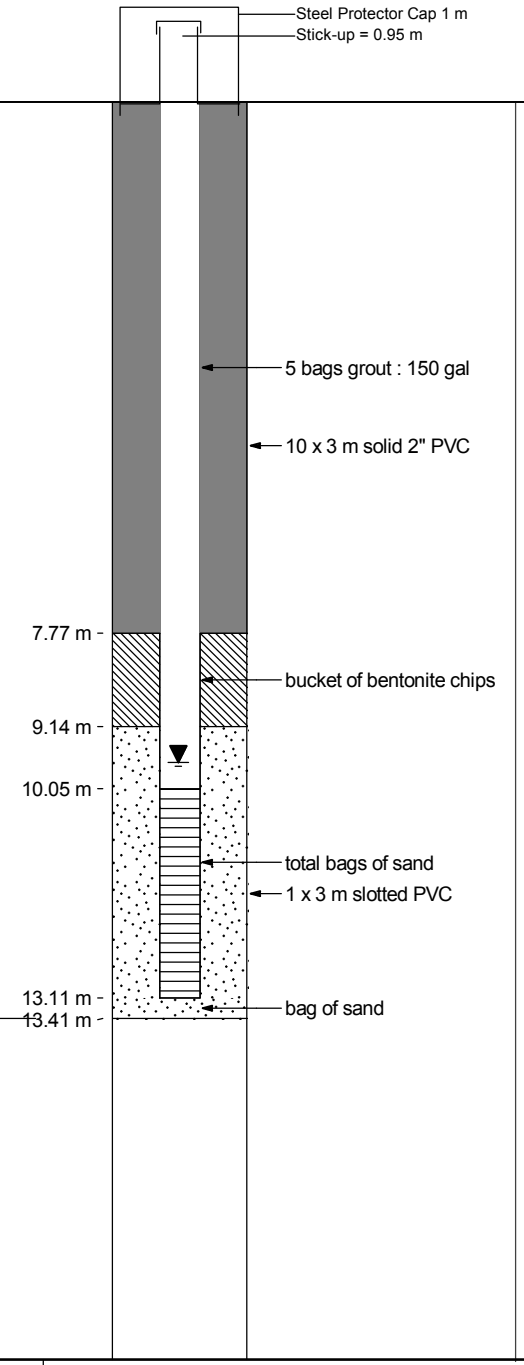
| | | | | | |
|---|---|---|---|---|---|
| **Project:** | **BLACKWATER GOLD PROJECT** | Drill Hole No. | **MW12-13S** | **PAGE** | 1 of 1 |
| Contractor: | **Westech Drilling Corp.** | Sample Type: | **SPT** | Drilling Started: | **24/08/2012** |
| Location: | **Downstream of TSF and Camp Area** | Total Depth: | **13.41 m** | Date Installation: | **24/08/2012** |
| Coordinates: | **5,893,830 N , 370,808 E (UTM NAD 83)** | Elevation: | **1,368 m** | Supervised by: | **JS** |
| Drilling Method: | **ODEX Drilling** | Hole Diameter: | **152.4 (6")mm** | Reviewed by: | **BOC** |

**Water Level : 9.57 m depth measured on 12/09/2012**

ELEVATION - (m) | DEPTH - (m) | GRAPHIC LOG

**NOTES**

SAND AND GRAVEL
SAND and GRAVEL, some silt, trace clay, subangular to subrounded, fine to coarse, well graded, brown, compact to dense, massive, dry becoming wet (Glacio-Fluvial).




1363 — 5
1358 — 10
1353 — 15

**GENERAL REMARKS:**

**REV. 0 - Issued for Letter Report VA12-02061**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**
**MONITORING WELL DETAILS FOR MW12-13S**

Knight Piésold CONSULTING

| PROJECT/ASSIGNMENT NO. | REF. NO. |
|---|---|
| **101-457/4** | **12-02061** |
| FIGURE. **Figure A.26** | REV. **0** |

Logging conducted according to the Canadian Foundation Engineering Manual, 4th Edition, 2006.

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# APPENDIX B

## HYDRAULIC CONDUCTIVITY CALCULATIONS

(Pages B-1 to B-21)

Knight Piésold CONSULTING

## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

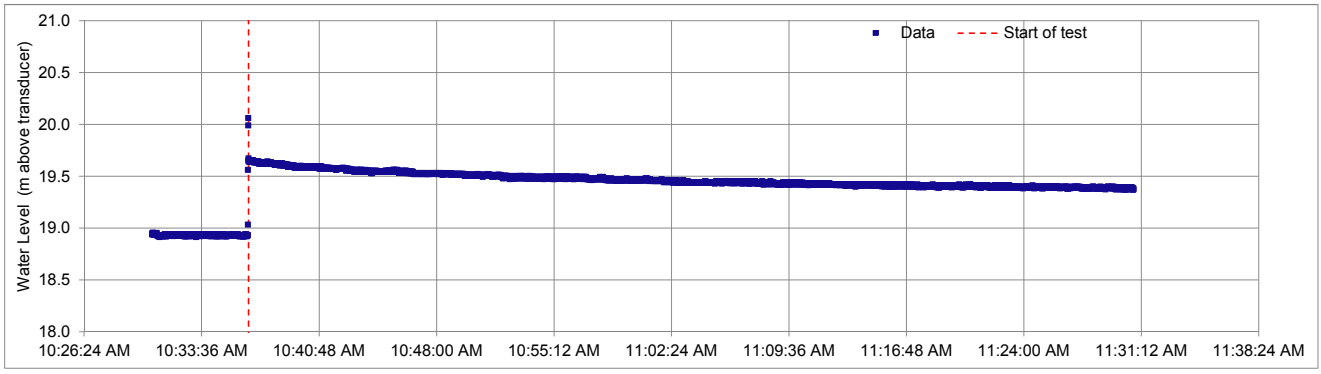
### HYDRAULIC CONDUCTIVITY CALCULATION
### USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

17/01/2013 15:14

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-01D** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 18-Jul-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | **m** | **Slug Injected, Time = 0** | 10:36:28 AM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | **m** | **Initial water level** | 18.92 | **m above transducer** |
| **Top of test zone** | 36.58 | **m** | **Water level after slug** | 19.65 | **m above transducer** |
| **Bottom of test zone** | 39.62 | **m** | **Change In Water Level, $H_o$** | 0.73 | **m** |
| **Test Length, L** | 3.04 | **m** | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | |
|---|---|---|---|---|
| **Transmissivity, T** | <3E-08 | **$m^2/s$** | | |
| **Hydraulic Conductivity, K** | < 1E-08 | **m/s** | **Storativity, S** | - |




**TEST COMMENTS:** The water level recovery was monitored for one hour. The hydraulic conductivity was estimated at < 1E-08 m/s.

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-01D.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN.13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

Knight Piésold CONSULTING

## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

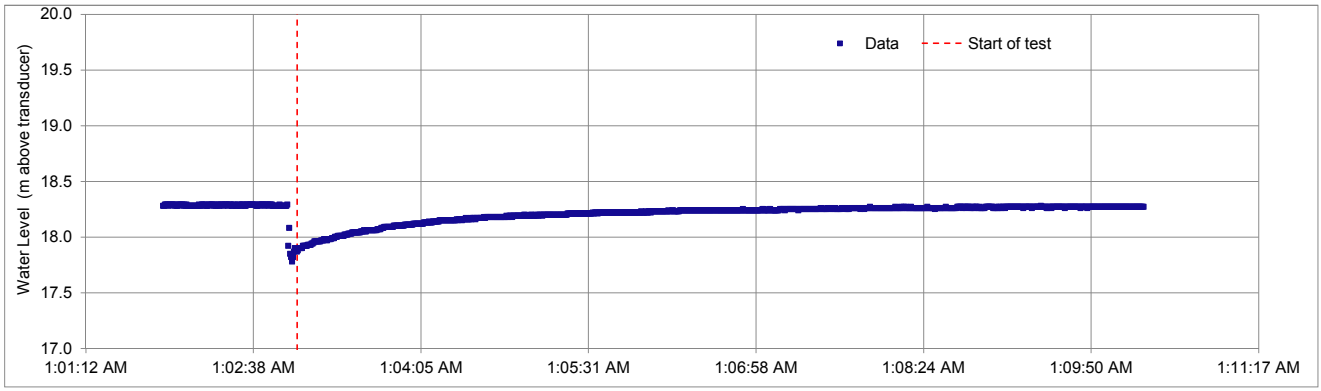
## HYDRAULIC CONDUCTIVITY CALCULATION
## USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

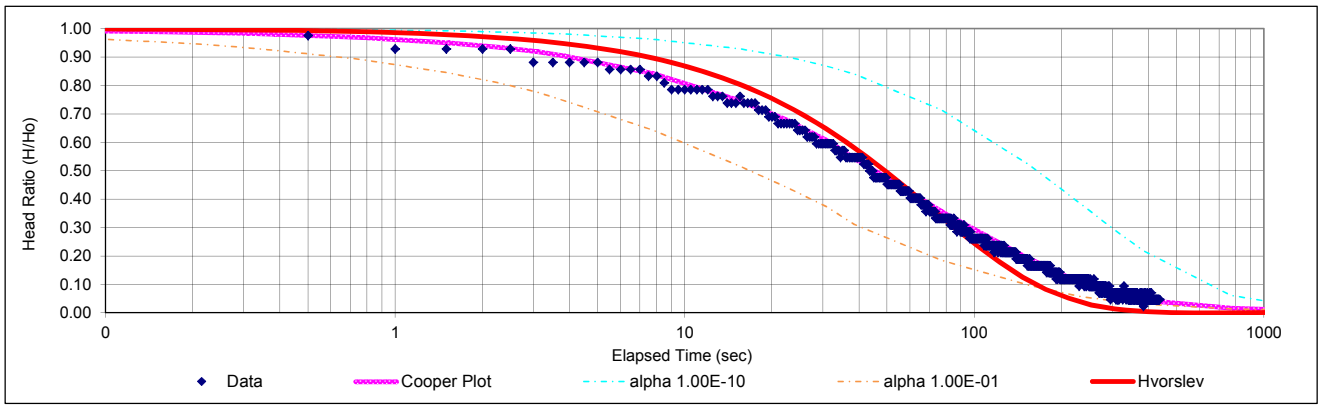
17/01/2013 15:32

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-02D** |
| **Field Technician** | BF | **Test** | 1 Slug Removal |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 22-May-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | m | **Slug Injected, Time = 0** | 1:03:01 AM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.053 | m | **Initial water level** | 18.29 | m above transducer |
| **Top of test zone** | 35.97 | m | **Water level after slug** | 17.87 | m above transducer |
| **Bottom of test zone** | 39.01 | m | **Change In Water Level, $H_o$** | -0.42 | m |
| **Test Length, L** | 3.04 | m | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 2E-05 | $m^2/s$ | | | |
| **Hydraulic Conductivity, K** | 6E-06 | m/s | **Storativity, S** | 4E-04 | **Alpha** 3.31E-03 |




**TEST COMMENTS:**

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| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
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| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

Knight Piésold CONSULTING

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**

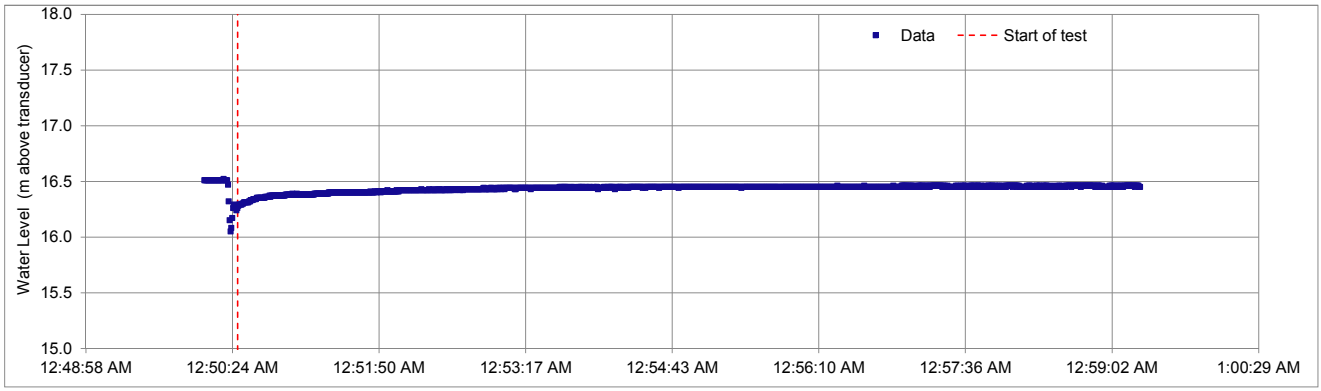
## HYDRAULIC CONDUCTIVITY CALCULATION
## USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

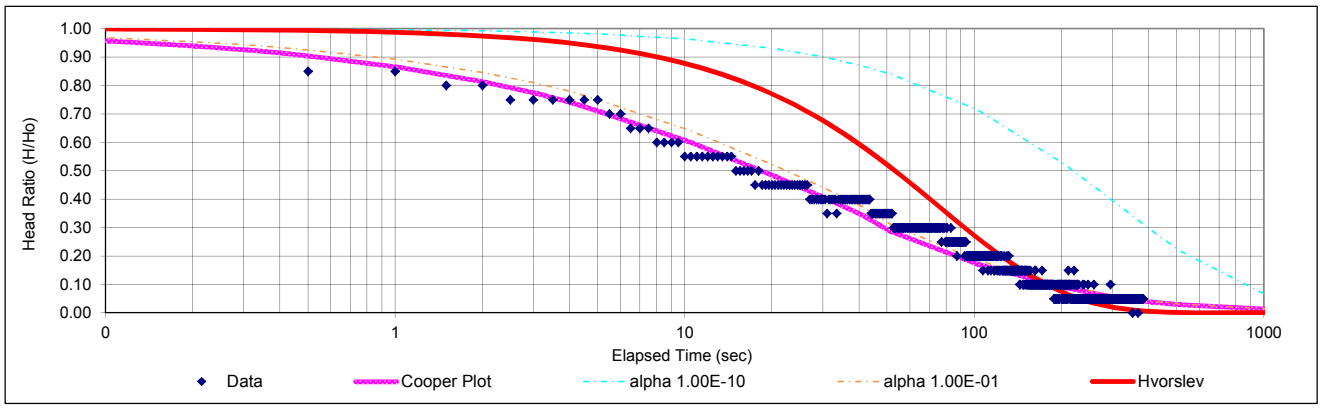
17/01/2013 15:34

| | | | |
|---|---|---|---|
| **Project No.** | V402-0009/8 | **Monitoring Well/Piezometer** | **MW12-02S** |
| **Field Technician** | BF | **Test** | 1 Slug Removal |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 1 m x 1" Waterra tubing | | |
| **Test Date** | 23-May-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | m | **Slug Injected, Time = 0** | 12:50:27 AM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.053 | m | **Initial water level** | 16.46 | m above transducer |
| **Top of test zone** | 8.23 | m | **Water level after slug** | 16.26 | m above transducer |
| **Bottom of test zone** | 9.75 | m | **Change In Water Level, $H_o$** | -0.20 | m |
| **Test Length, L** | 1.52 | m | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 1.E-05 | $m^2/s$ | | | |
| **Hydraulic Conductivity, K** | 9.E-06 | m/s | **Storativity, S** | 3.E-02 | **Alpha** 2.48E-01 |




**TEST COMMENTS:**

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| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
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| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

Knight Piésold CONSULTING

## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

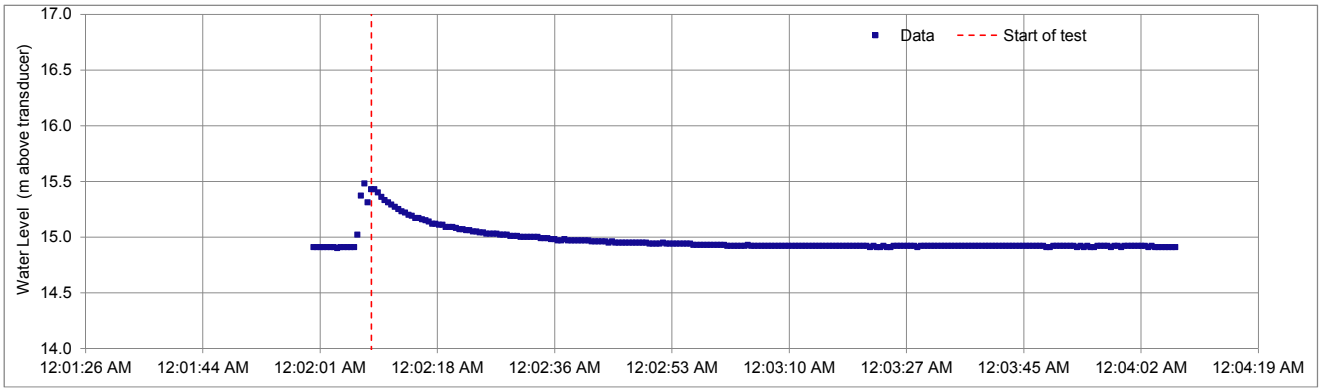
### HYDRAULIC CONDUCTIVITY CALCULATION
### USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

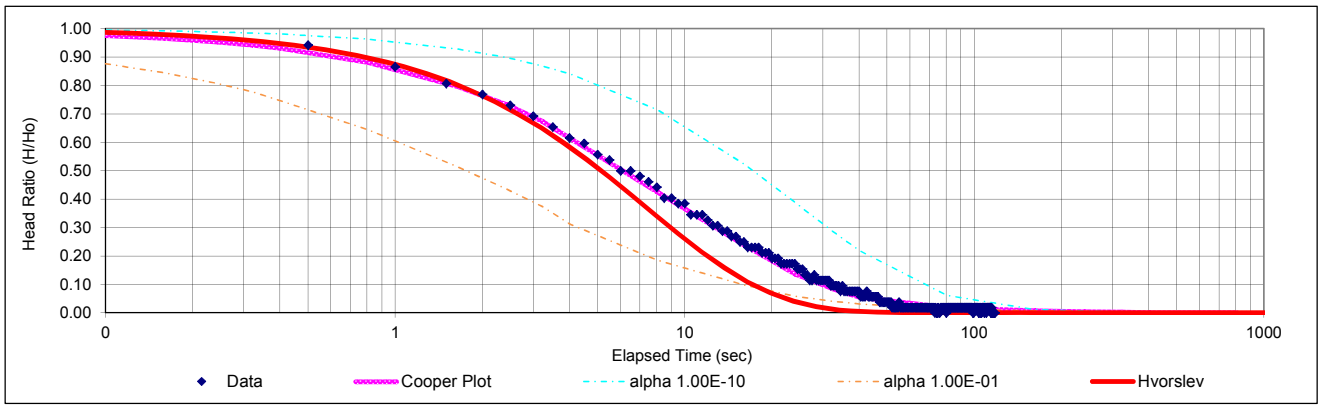
17/01/2013 15:36

| | | | |
|---|---|---|---|
| **Project No.** | V402-0009/8 | **Monitoring Well/Piezometer** | **MW12-03D** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 17-May-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | m | **Slug Injected, Time = 0** | 12:02:08 AM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | m | **Initial water level** | 14.91 | m above transducer |
| **Top of test zone** | 33.53 | m | **Water level after slug** | 15.43 | m above transducer |
| **Bottom of test zone** | 36.58 | m | **Change In Water Level, $H_o$** | 0.52 | m |
| **Test Length, L** | 3.05 | m | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 1.E-04 | $m^2/s$ | | | |
| **Hydraulic Conductivity, K** | 4.E-05 | m/s | **Storativity, S** | 5.E-05 | **Alpha** 5.37E-04 |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-03D.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

Knight Piésold CONSULTING

## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

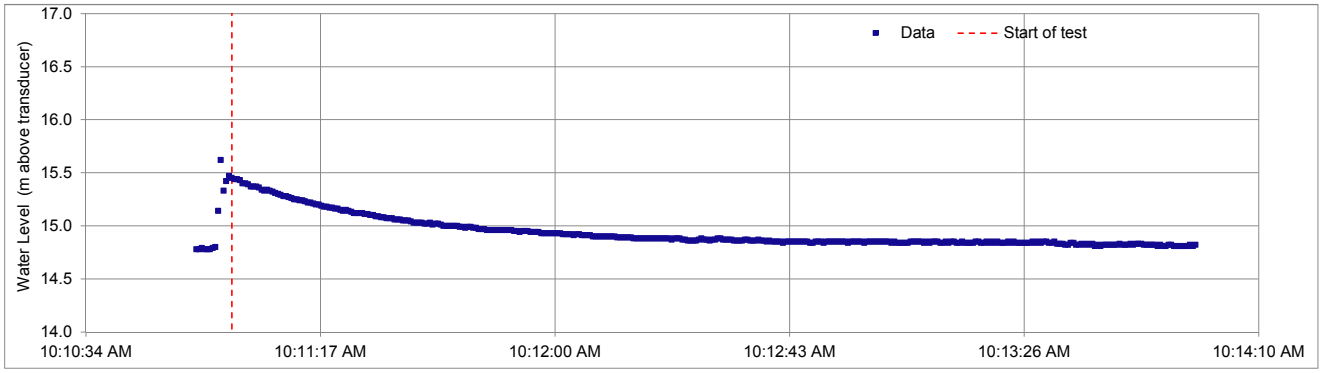
### HYDRAULIC CONDUCTIVITY CALCULATION
### USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

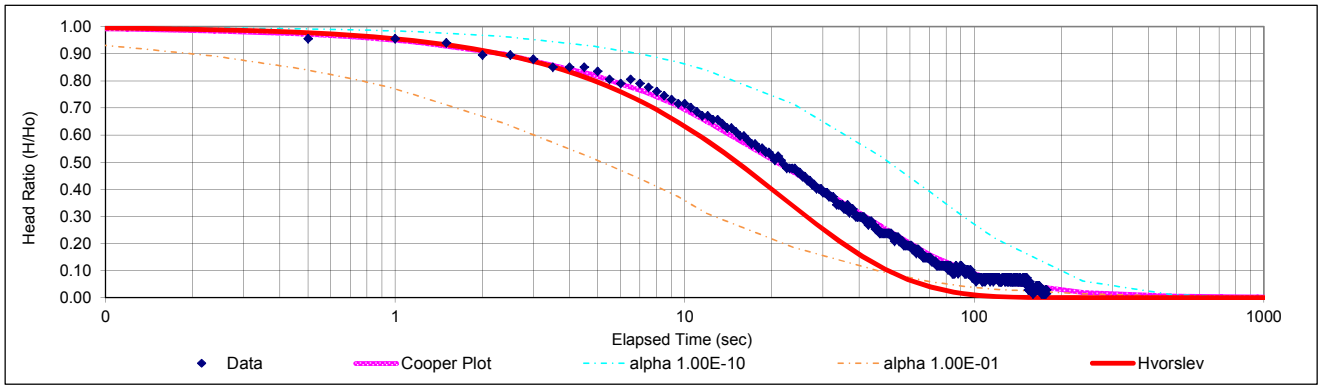
17/01/2013 15:37

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-04D** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 04-Oct-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | **m** | **Slug Injected, Time = 0** | 10:11:00 AM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | **m** | **Initial water level** | 14.80 | **m above transducer** |
| **Top of test zone** | 33.38 | **m** | **Water level after slug** | 15.47 | **m above transducer** |
| **Bottom of test zone** | 36.42 | **m** | **Change In Water Level, $H_o$** | 0.67 | **m** |
| **Test Length, L** | 3.04 | **m** | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 5.E-05 | **$m^2/s$** | | | |
| **Hydraulic Conductivity, K** | 2.E-05 | **m/s** | **Storativity, S** | 1.E-05 | **Alpha** 1.07E-04 |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-04D.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

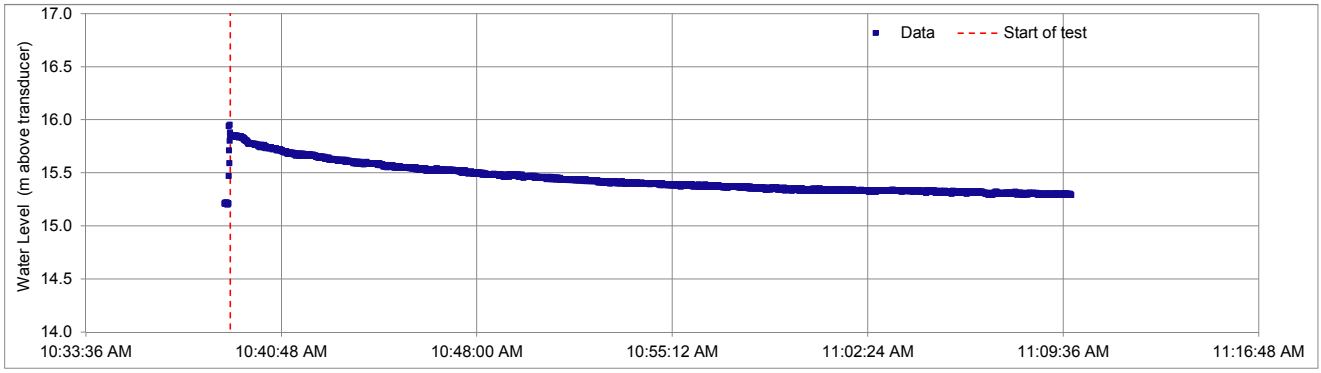
## HYDRAULIC CONDUCTIVITY CALCULATION
## USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

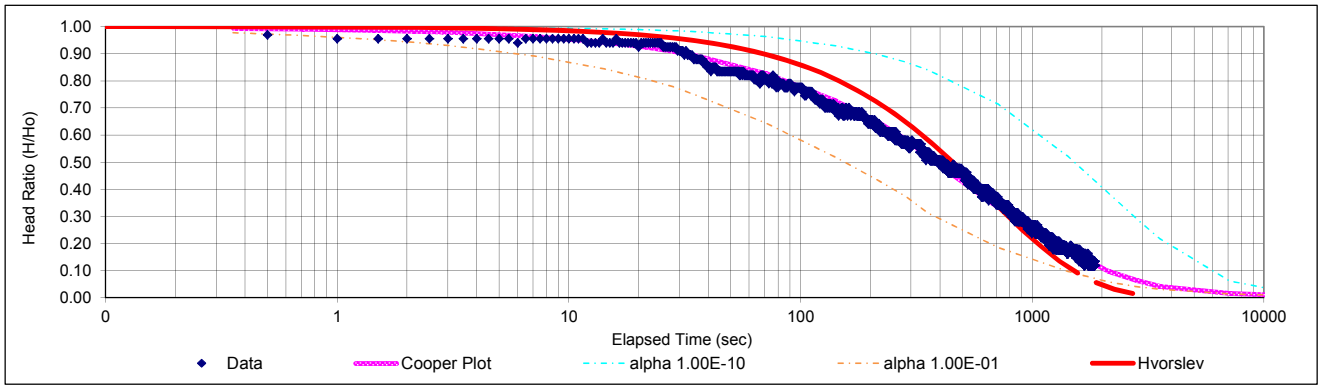
17/01/2013 15:38

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-04S** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 04-Oct-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | m | **Slug Injected, Time = 0** | 10:38:55 AM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | m | **Initial water level** | 15.21 | m above transducer |
| **Top of test zone** | 10.52 | m | **Water level after slug** | 15.88 | m above transducer |
| **Bottom of test zone** | 13.56 | m | **Change In Water Level, $H_o$** | 0.67 | m |
| **Test Length, L** | 3.04 | m | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 2.E-06 | $m^2/s$ | | | |
| **Hydraulic Conductivity, K** | 5.E-07 | m/s | **Storativity, S** | 5.E-04 | **Alpha** 5.37E-03 |




**TEST COMMENTS:** A static water level was present before the test. The water level data recorded by the transducer immediately before the test is noisy and has not been included on this plot.

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-04S.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

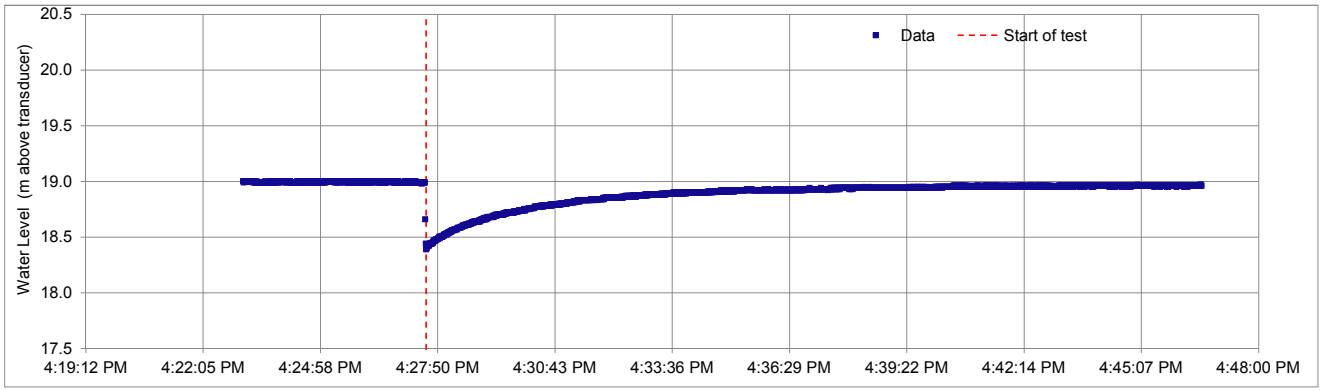
## HYDRAULIC CONDUCTIVITY CALCULATION
## USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

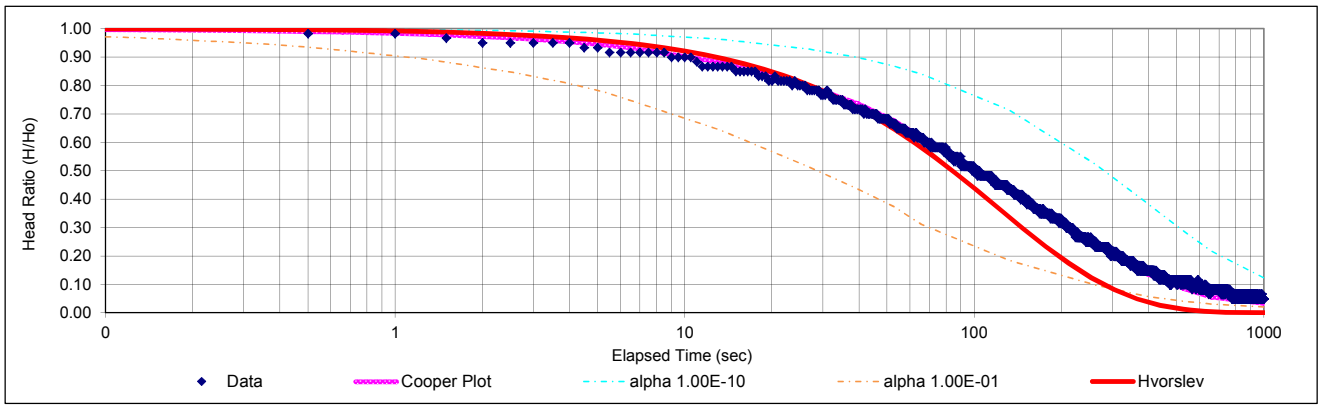
17/01/2013 15:39

| | | | |
|---|---|---|---|
| **Project No.** | V402-0009/8 | **Monitoring Well/Piezometer** | **MW12-05D** |
| **Field Technician** | BF | **Test** | 1 Slug Removal |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 22-May-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | **m** | **Slug Injected, Time = 0** | 4:27:33 PM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.053 | **m** | **Initial water level** | 18.99 | **m above transducer** |
| **Top of test zone** | 23.16 | **m** | **Water level after slug** | 18.39 | **m above transducer** |
| **Bottom of test zone** | 26.21 | **m** | **Change In Water Level, $H_o$** | -0.60 | **m** |
| **Test Length, L** | 3.05 | **m** | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 1.E-05 | **$m^2/s$** | | | |
| **Hydraulic Conductivity, K** | 4.E-06 | **m/s** | **Storativity, S** | 6.E-05 | **Alpha** 4.96E-04 |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-05D.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

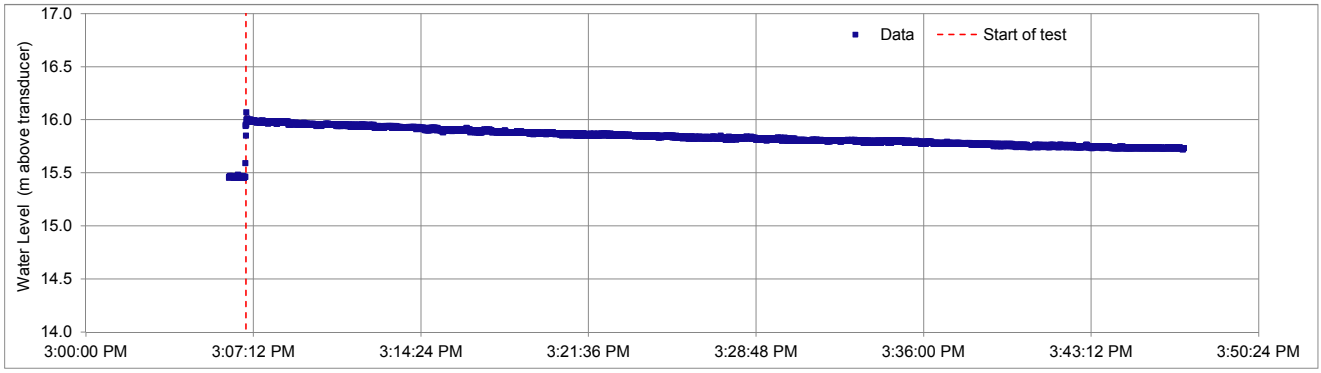
### HYDRAULIC CONDUCTIVITY CALCULATION
### USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

17/01/2013 15:40

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-05S** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 1.5 m x 1" Waterra tubing | | |
| **Test Date** | 31-Jul-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | **m** | **Slug Injected, Time = 0** | 3:06:53 PM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | **m** | **Initial water level** | 15.46 | **m above transducer** |
| **Top of test zone** | 7.62 | **m** | **Water level after slug** | 16.00 | **m above transducer** |
| **Bottom of test zone** | 10.67 | **m** | **Change In Water Level, $H_o$** | 0.54 | **m** |
| **Test Length, L** | 3.05 | **m** | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | |
|---|---|---|---|---|
| **Transmissivity, T** | <3E-08 | **$m^2/s$** | | |
| **Hydraulic Conductivity, K** | < 1E-08 | **m/s** | **Storativity, S** | - |




**TEST COMMENTS:** Water level recovery was monitored for 40 minutes. The charge in water level is considered sufficient for the analysis. Hydraulic conductivity is estimated to be < 1E-08 m/s.

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-05S.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

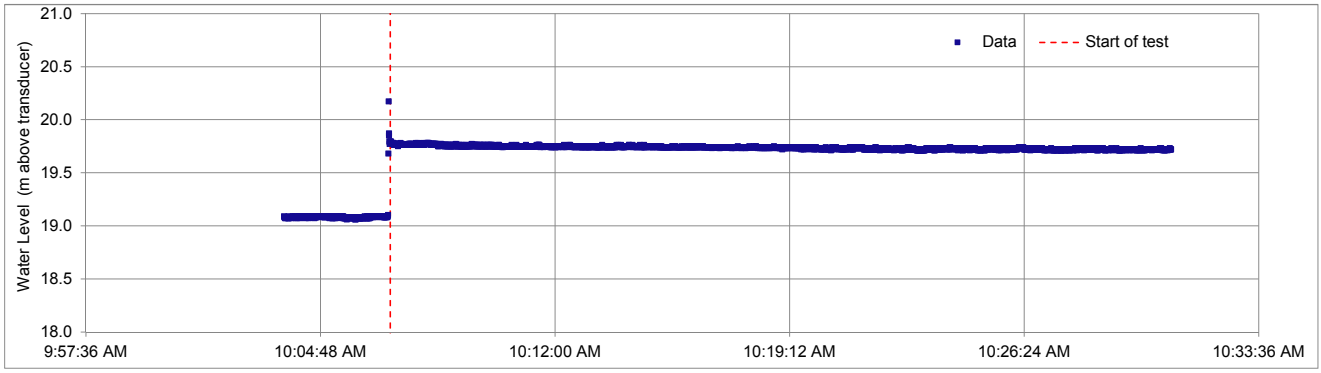
### HYDRAULIC CONDUCTIVITY CALCULATION
### USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

17/01/2013 15:42

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-06D** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 06-Oct-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | **m** | **Slug Injected, Time = 0** | 10:06:56 AM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | **m** | **Initial water level** | 19.09 | **m above transducer** |
| **Top of test zone** | 35.36 | **m** | **Water level after slug** | 19.79 | **m above transducer** |
| **Bottom of test zone** | 38.40 | **m** | **Change In Water Level, $H_o$** | 0.70 | **m** |
| **Test Length, L** | 3.04 | **m** | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | |
|---|---|---|---|---|
| **Transmissivity, T** | <3E-08 | **$m^2/s$** | | |
| **Hydraulic Conductivity, K** | < 1E-08 | **m/s** | **Storativity, S** | - |




**TEST COMMENTS:** Water level recovery after 25 minutes was only 5 cm. The hydraulic conductivity was estimated to be <1E-08 m/s.

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-06D.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

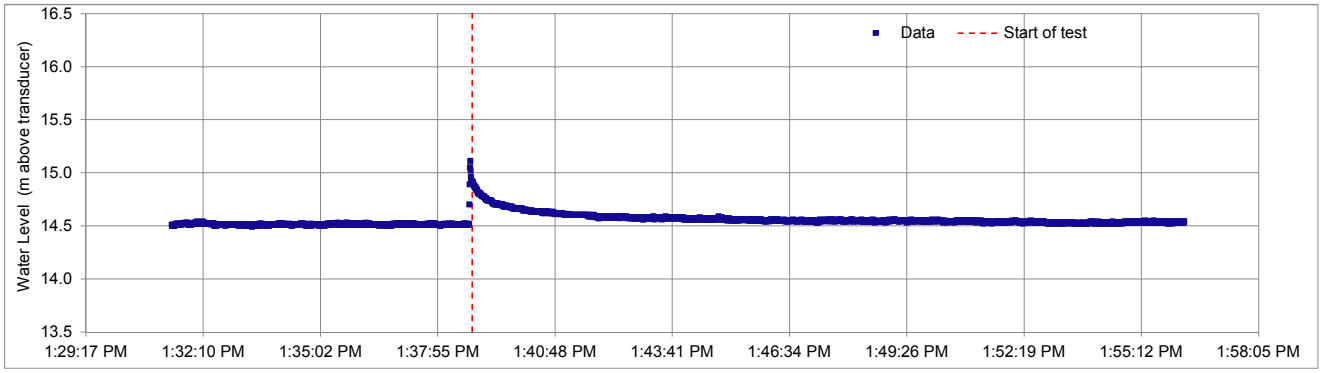
## HYDRAULIC CONDUCTIVITY CALCULATION
## USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

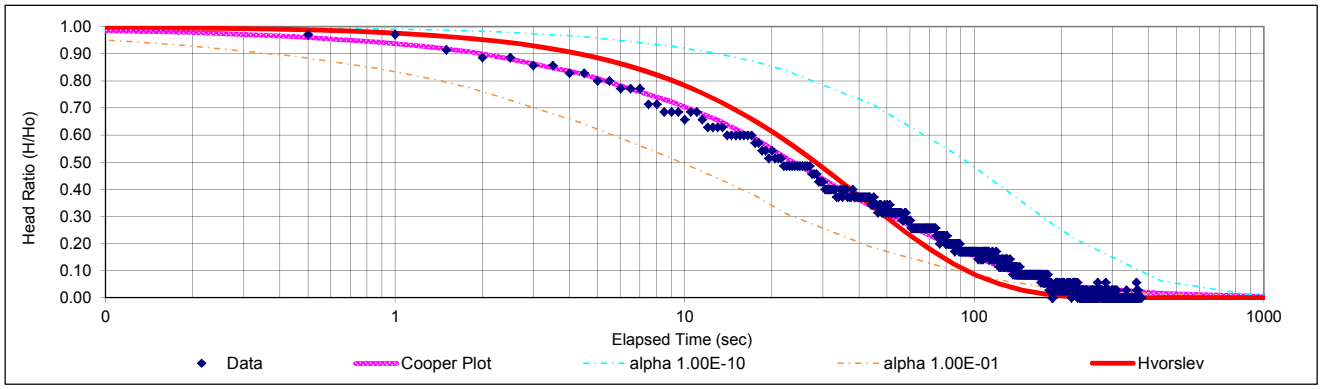
17/01/2013 15:43

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-06S** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 31-Jul-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | **m** | **Slug Injected, Time = 0** | 1:38:46 PM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | **m** | **Initial water level** | 14.57 | **m above transducer** |
| **Top of test zone** | 18.29 | **m** | **Water level after slug** | 14.92 | **m above transducer** |
| **Bottom of test zone** | 21.34 | **m** | **Change In Water Level, $H_o$** | 0.35 | **m** |
| **Test Length, L** | 3.05 | **m** | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 2.E-05 | **$m^2/s$** | | | |
| **Hydraulic Conductivity, K** | 8.E-06 | **m/s** | **Storativity, S** | 5.E-04 | **Alpha** 5.37E-03 |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-06S.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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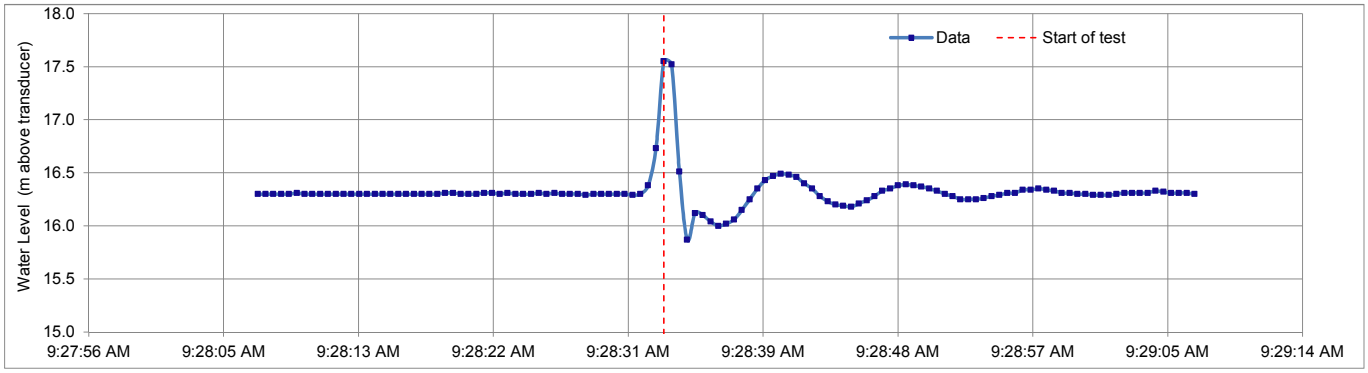
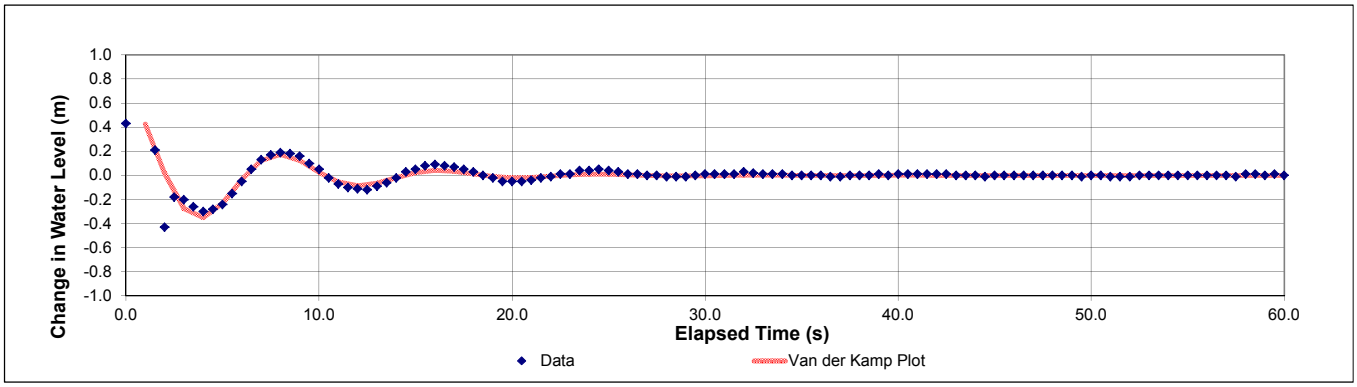
## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

### HYDRAULIC CONDUCTIVITY CALCULATION
### USING VAN DER KAMP (1976) METHOD

17/01/2013 15:44

| | | | | | |
|---|---|---|---|---|---|
| **Project No.** | VA101-457/4 | | **Monitoring Well/Piezometer** | **MW12-07D** | |
| **Field Technician** | BF | | **Test** | 1 Slug Insertion | |
| **Analyst** | EJH | | **Slug Injected, Time = 0** | 9:28:32 AM | |
| **Monitoring Instrument Type** | Transducer | | | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | | | |
| **Test Date** | 31-Jul-12 | | **Pre-test water level** | 16.3 | mbgs |
| | | | **Pre-test water level** | 17.6 | m above transducer |
| **Drill-hole diameter, D** | 0.152 | m | **Predicted length of water column, L** | 22.1 | m |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.053 | m | **Height of water predicted** | 16.0 | m |
| **Top of test zone** | 35.36 | m | | | |
| **Bottom of test zone** | 38.40 | m | **d** | 0.22 | |
| **Test Length, L** | 3.04 | m | **Angular frequency (per second), ω** | 0.76 | $s^{-1}$ |
| **PVC type** | Schedule 80 | | **Damping constant, ϒ** | 0.17 | $s^{-1}$ |
| **Slot size** | 20 Slot | | **Initial amplitude** | 0.70 | |
| **Hydraulic Conductivity, K** | 7.E-04 | m/s | **Transmissivity, T** | 2.E-03 | $m^2/s$ |
| **Storage, S** | 5.E-04 | | | | |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-07D.xlsx]Van Der Kamp

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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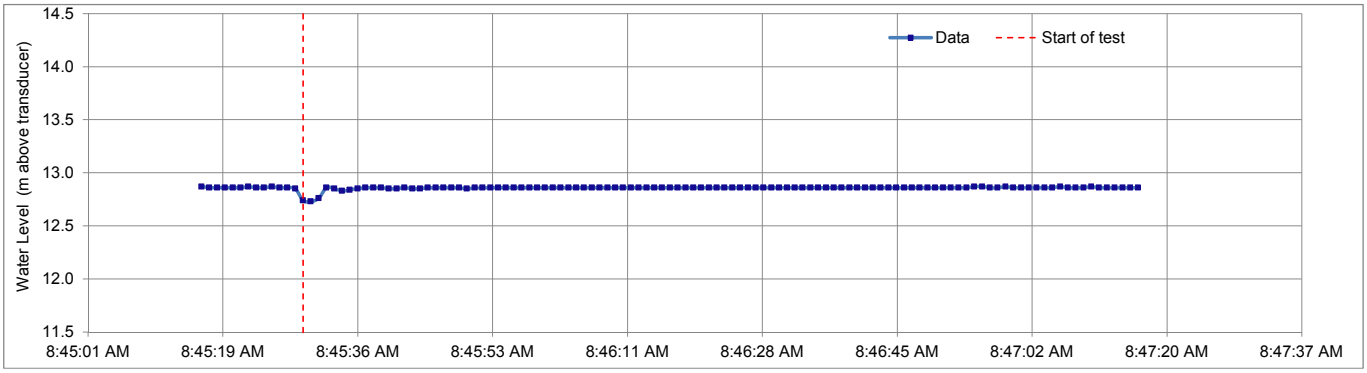
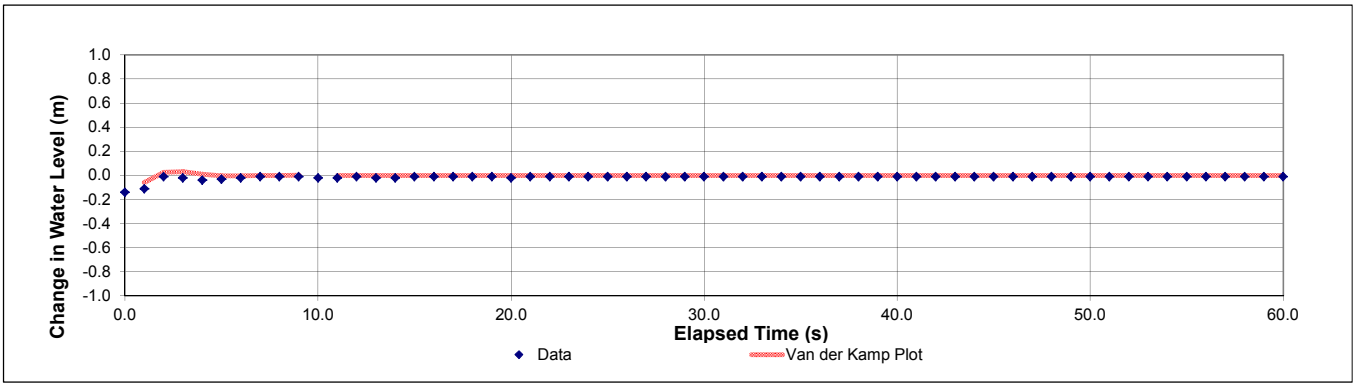
## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

## HYDRAULIC CONDUCTIVITY CALCULATION USING VAN DER KAMP (1976) METHOD

17/01/2013 15:44

| | | | | | |
|---|---|---|---|---|---|
| **Project No.** | VA101-457/4 | | **Monitoring Well/Piezometer** | **MW12-07S** | |
| **Field Technician** | BF | | **Test** | 1 Slug Removal | |
| **Analyst** | EJH | | **Slug Injected, Time = 0** | 8:45:30 AM | |
| **Monitoring Instrument Type** | Transducer | | | | |
| **Slug Dimensions and Type** | 3 m x 1" Waterra tubing | | | | |
| **Test Date** | 31-Jul-12 | | **Pre-test water level** | 12.87 | mbgs |
| | | | **Pre-test water level** | 12.73 | m above transducer |
| **Drill-hole diameter, D** | 0.152 | m | **Measured length of water column, L** | 10.0 | mbgs |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.053 | m | **Height of water predicted** | 7.0 | m |
| **Top of test zone** | 19.81 | m | | | |
| **Bottom of test zone** | 22.86 | m | **d** | 0.52 | |
| **Test Length, L** | 3.05 | m | **Angular frequency (per second), ω** | 1.01 | $s^{-1}$ |
| **PVC type** | Schedule 80 | | **Damping constant, ϒ** | 0.62 | $s^{-1}$ |
| **Slot size** | 20 Slot | | **Initial amplitude** | 0.20 | |
| **Hydraulic Conductivity, K** | 4.E-04 | m/s | **Transmissivity, T** | 1.E-03 | $m^2/s$ |
| **Storage, S** | 5.E-04 | | | | |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-07S.xlsx]Van Der Kamp

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

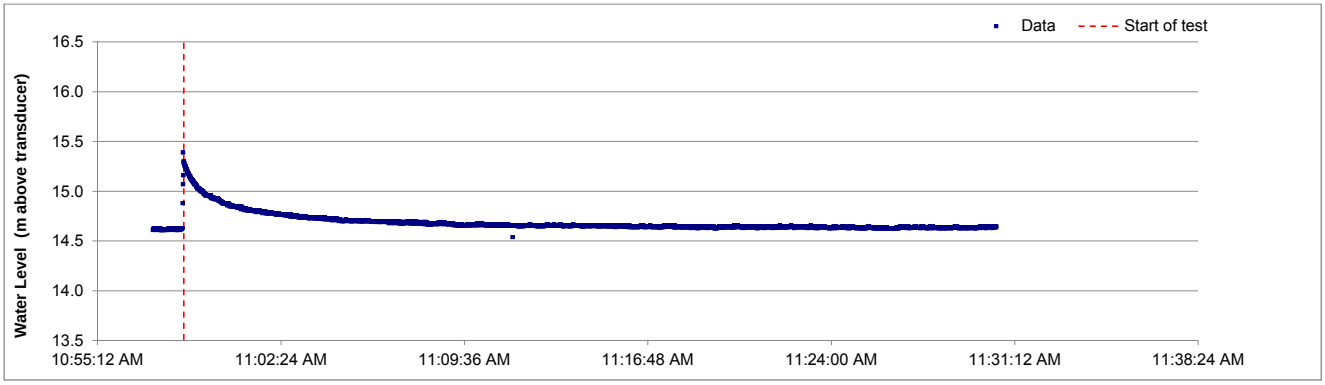
### HYDRAULIC CONDUCTIVITY CALCULATION
### USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

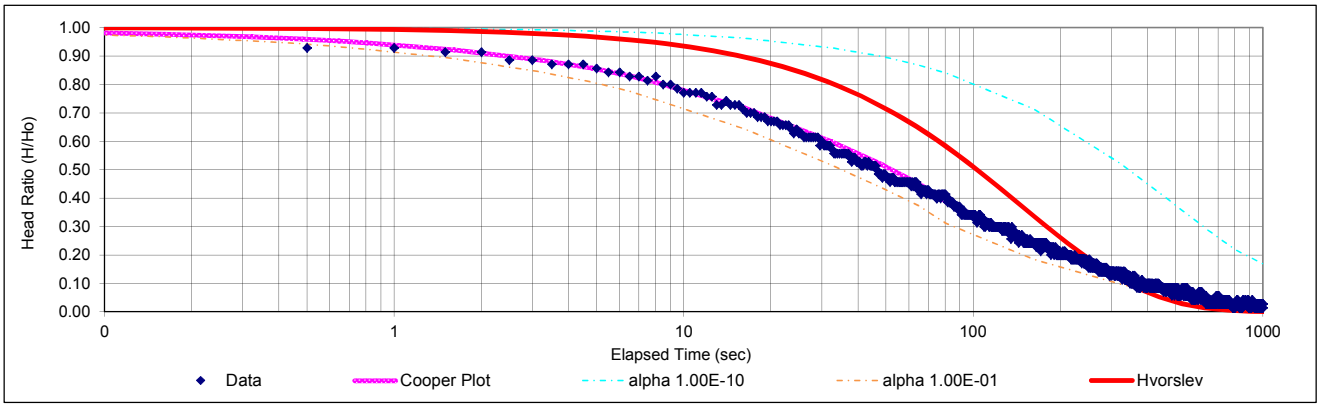
17/01/2013 15:45

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-08D** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 03-Oct-12 | | |

| | | | | |
|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | m | **Slug Injected, Time = 0** | 10:58:35 AM |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | m | **Initial water level** | 14.64 m above transducer |
| **Top of test zone** | 32.61 | m | **Water level after slug** | 15.34 m above transducer |
| **Bottom of test zone** | 35.66 | m | **Change In Water Level, $H_o$** | 0.70 m |
| **Test Length, L** | 3.05 | m | | |
| **PVC type** | Schedule 80 | | | |
| **Slot size** | 20 Slot | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 7.E-06 | $m^2/s$ | | | |
| **Hydraulic Conductivity, K** | 2.E-06 | m/s | **Storativity, S** | 5.E-03 | **Alpha** 5.37E-02 |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-08D.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

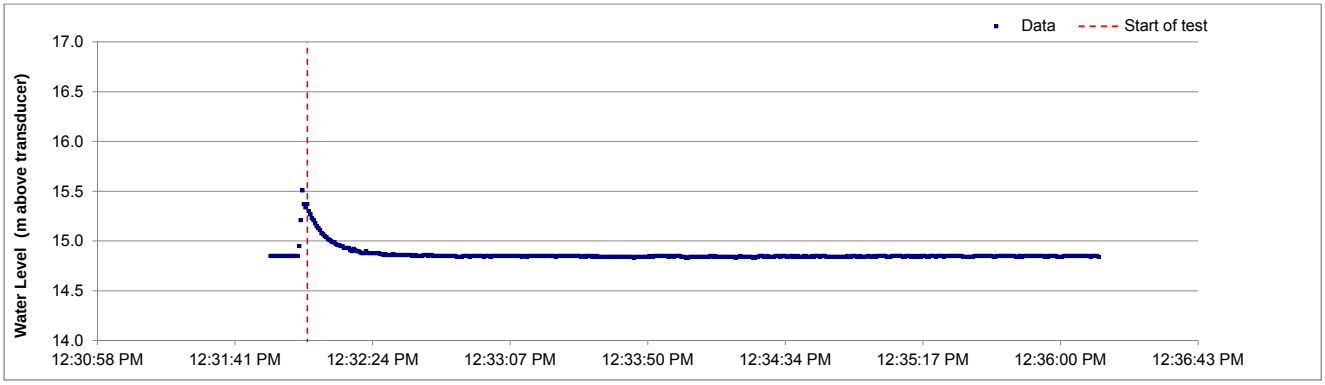
## HYDRAULIC CONDUCTIVITY CALCULATION
## USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

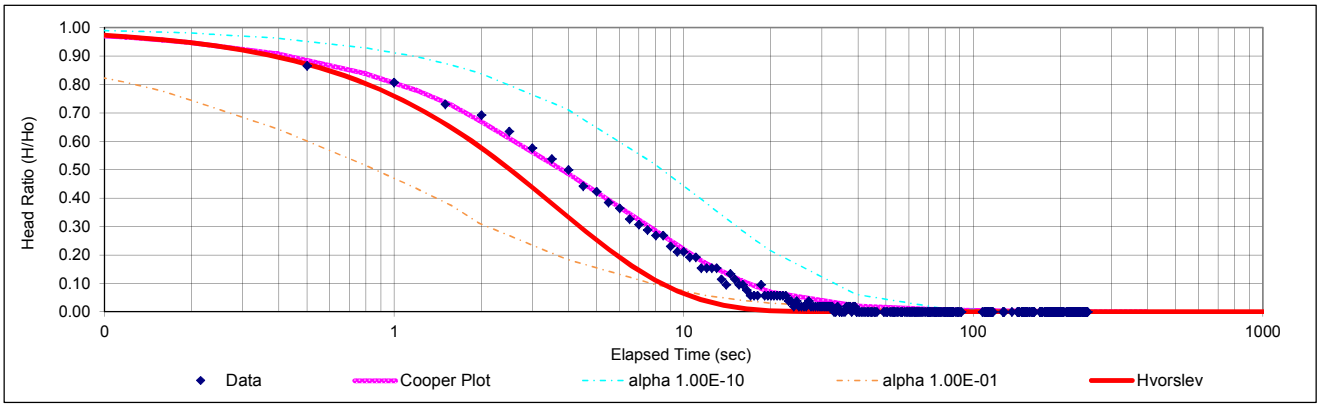
17/01/2013 15:47

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-08S** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 03-Oct-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | m | **Slug Injected, Time = 0** | 12:32:03 PM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | m | **Initial water level** | 14.85 | m above transducer |
| **Top of test zone** | 16.24 | m | **Water level after slug** | 15.37 | m above transducer |
| **Bottom of test zone** | 19.29 | m | **Change In Water Level, $H_o$** | 0.52 | m |
| **Test Length, L** | 3.05 | m | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 3.E-04 | $m^2/s$ | | | |
| **Hydraulic Conductivity, K** | 9.E-05 | m/s | **Storativity, S** | 6.E-06 | **Alpha** 6.44E-05 |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-08S.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## BLACKWATER GOLD PROJECT

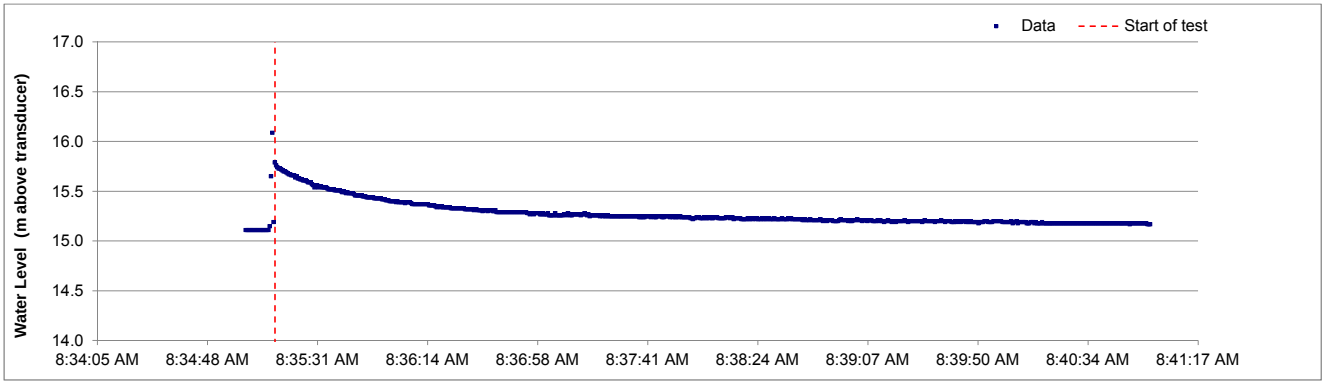
### HYDRAULIC CONDUCTIVITY CALCULATION
### USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

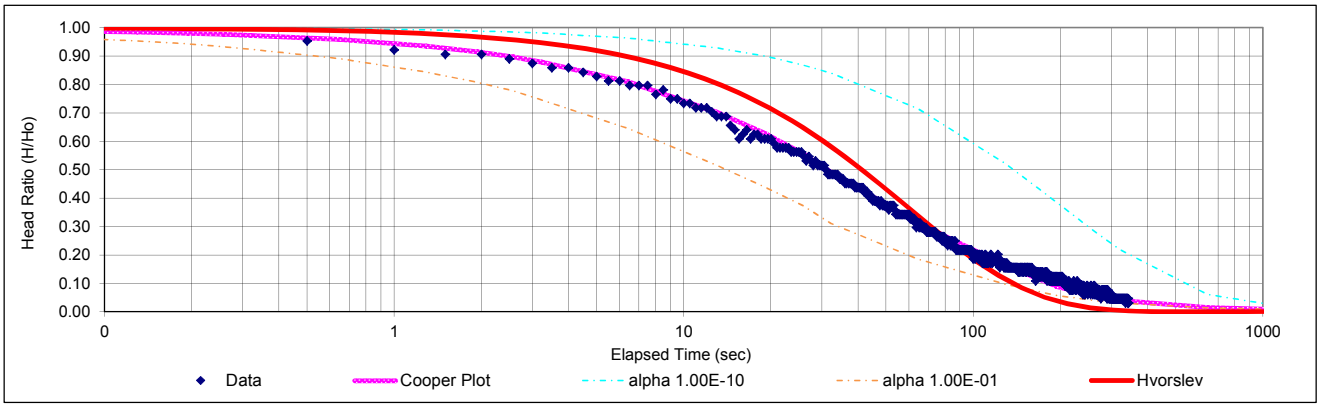
17/01/2013 15:48

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-09D** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 16-Oct-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | m | **Slug Injected, Time = 0** | 8:35:14 AM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | m | **Initial water level** | 15.15 | m above transducer |
| **Top of test zone** | 30.53 | m | **Water level after slug** | 15.79 | m above transducer |
| **Bottom of test zone** | 33.58 | m | **Change In Water Level, $H_o$** | 0.64 | m |
| **Test Length, L** | 3.05 | m | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 2.E-05 | $m^2/s$ | | | |
| **Hydraulic Conductivity, K** | 6.E-06 | m/s | **Storativity, S** | 7.E-04 | **Alpha** 7.51E-03 |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-09D.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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# NEW GOLD INC.
# BLACKWATER GOLD PROJECT

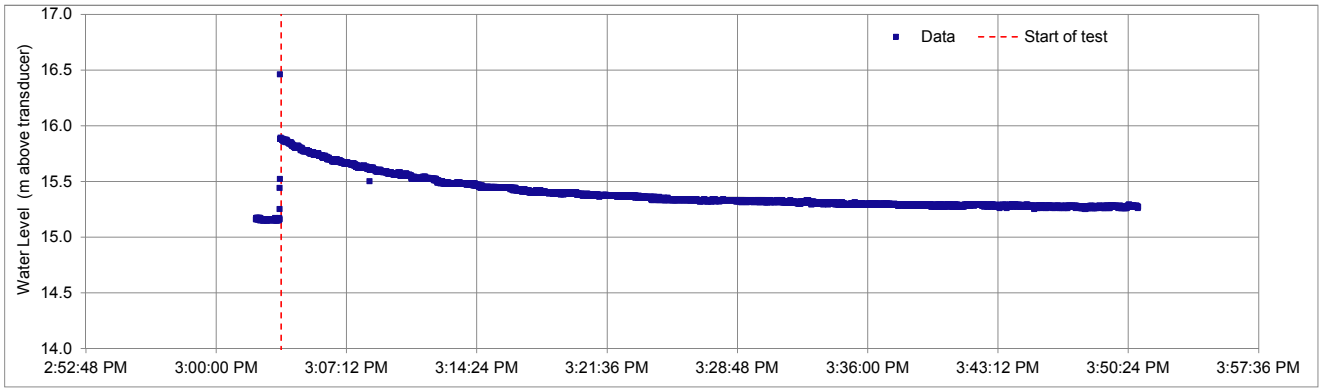
## HYDRAULIC CONDUCTIVITY CALCULATION
## USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

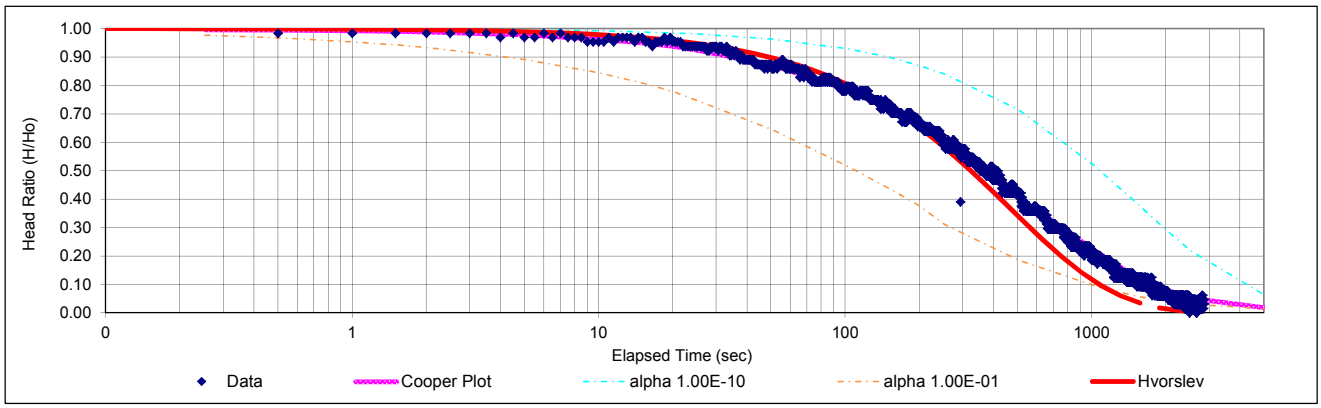
17/01/2013 15:49

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-11D** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 03-Oct-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | m | **Slug Injected, Time = 0** | 3:03:35 PM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | m | **Initial water level** | 15.25 | m above transducer |
| **Top of test zone** | 40.36 | m | **Water level after slug** | 15.89 | m above transducer |
| **Bottom of test zone** | 43.41 | m | **Change In Water Level, $H_o$** | 0.64 | m |
| **Test Length, L** | 3.05 | m | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 2.E-06 | $m^2/s$ | | | |
| **Hydraulic Conductivity, K** | 7.E-07 | m/s | **Storativity, S** | 7.E-05 | **Alpha** 7.51E-04 |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-11D.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

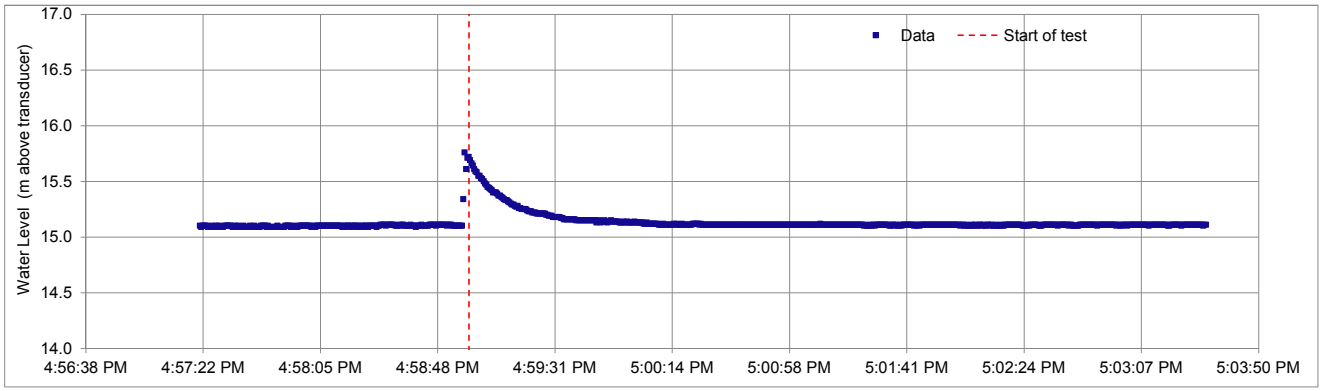
### HYDRAULIC CONDUCTIVITY CALCULATION
### USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

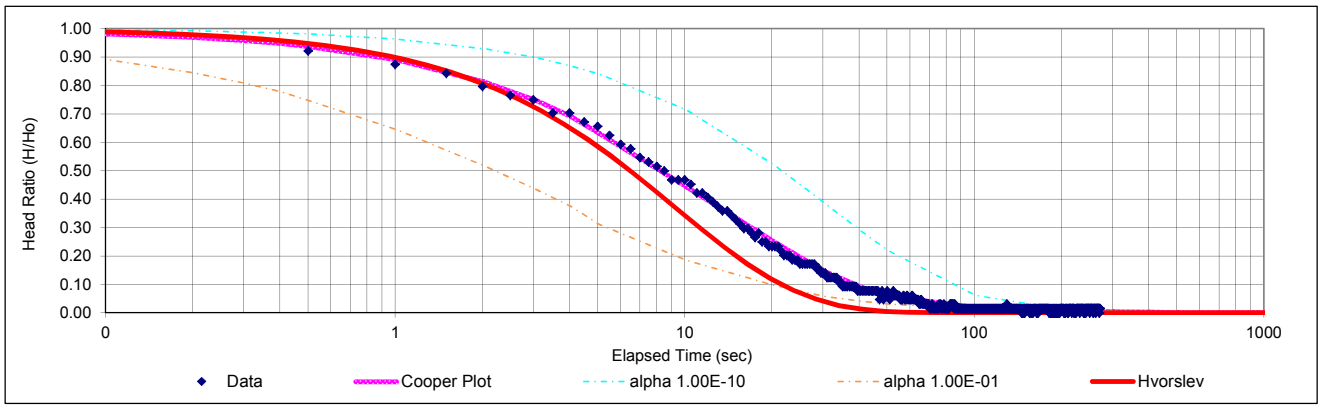
17/01/2013 15:50

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-11S** |
| **Field Technician** | BF | **Test** | 1 Slug Inserted |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 03-Oct-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | m | **Slug Injected, Time = 0** | 4:59:00 PM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | m | **Initial water level** | 15.10 | m above transducer |
| **Top of test zone** | 31.19 | m | **Water level after slug** | 15.74 | m above transducer |
| **Bottom of test zone** | 34.24 | m | **Change In Water Level, $H_o$** | 0.64 | m |
| **Test Length, L** | 3.05 | m | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 1.E-04 | $m^2/s$ | | | |
| **Hydraulic Conductivity, K** | 4.E-05 | m/s | **Storativity, S** | 3.E-05 | **Alpha** 3.22E-04 |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-11S.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

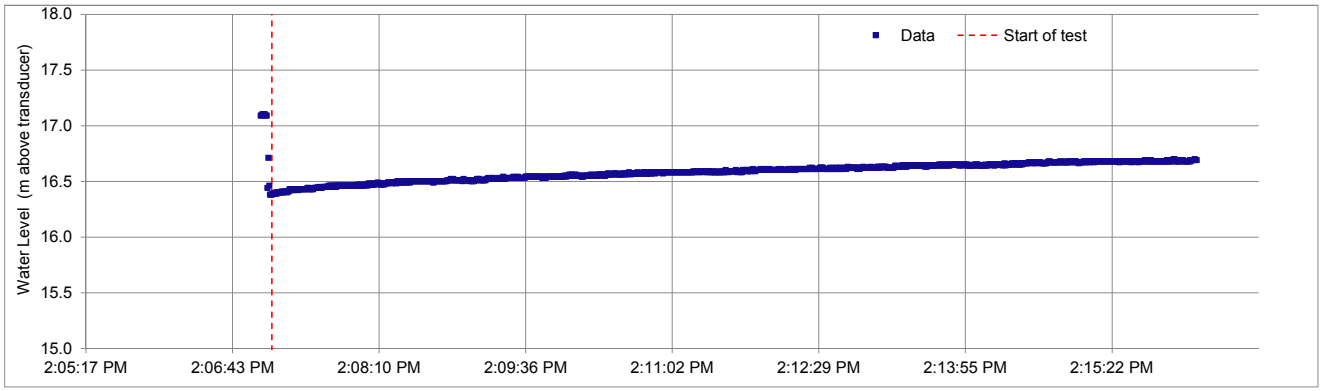
### HYDRAULIC CONDUCTIVITY CALCULATION
### USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

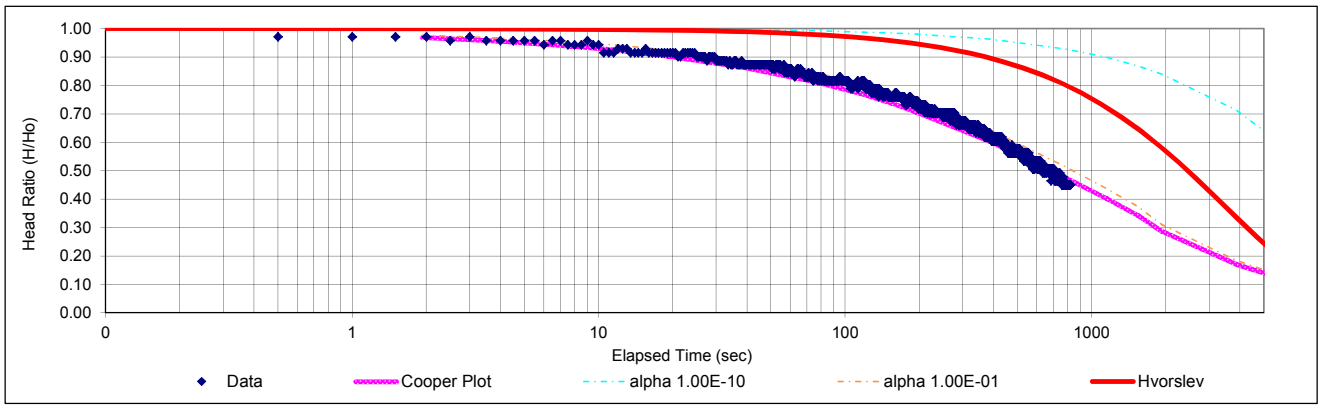
17/01/2013 15:51

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-12D** |
| **Field Technician** | BF | **Test** | 1 Slug Removal |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 16-Oct-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | m | **Slug Injected, Time = 0** | 2:07:07 PM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.053 | m | **Initial water level** | 17.08 | m above transducer |
| **Top of test zone** | 31.19 | m | **Water level after slug** | 16.37 | m above transducer |
| **Bottom of test zone** | 34.23 | m | **Change In Water Level, $H_o$** | -0.71 | m |
| **Test Length, L** | 3.04 | m | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 4.E-07 | $m^2/s$ | | | |
| **Hydraulic Conductivity, K** | 1.E-07 | m/s | **Storativity, S** | 3.E-02 | **Alpha** 2.48E-01 |




**TEST COMMENTS:** Initial water level was affected by previous test. Static water level estimated to be 17.08 m above transducer.

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-12D.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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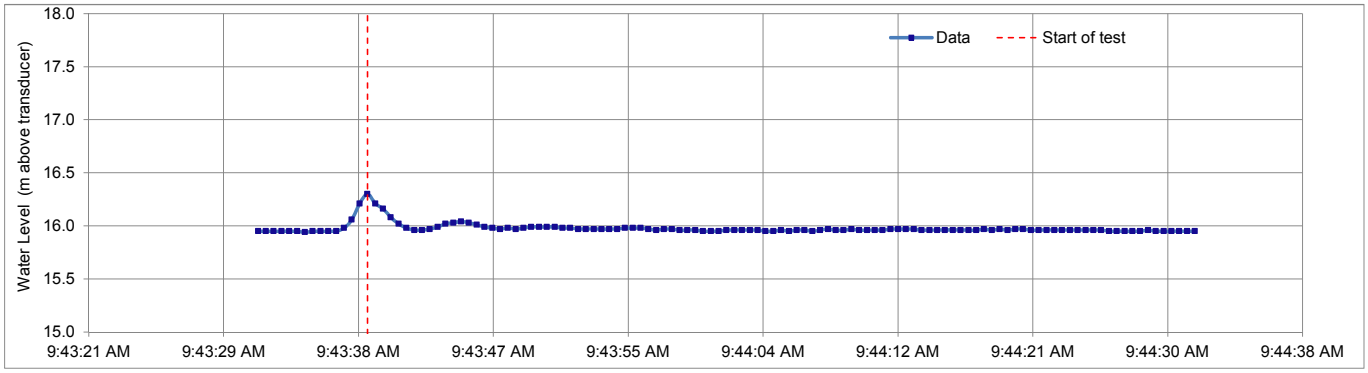
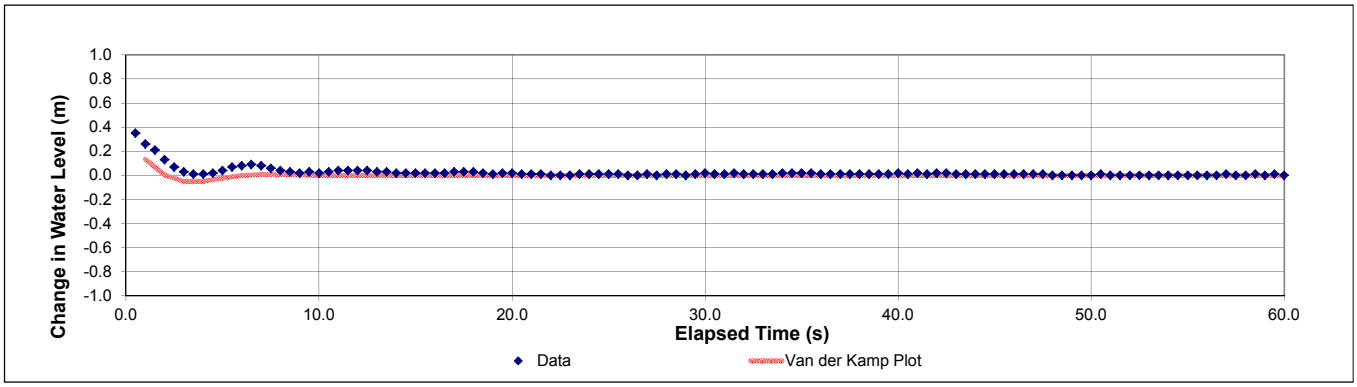
## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

### HYDRAULIC CONDUCTIVITY CALCULATION
### USING VAN DER KAMP (1976) METHOD

17/01/2013 15:51

| | | | | | |
|---|---|---|---|---|---|
| **Project No.** | VA101-457/4 | | **Monitoring Well/Piezometer** | **MW12-12S** | |
| **Field Technician** | BF | | **Test** | 1 Slug Insertion | |
| **Analyst** | EJH | | **Slug Injected, Time = 0** | 9:43:38 AM | |
| **Monitoring Instrument Type** | Transducer | | | | |
| **Slug Dimensions and Type** | 3 m x 1" Waterra tubing | | | | |
| **Test Date** | 31-Jul-12 | | **Pre-test water level** | 2.00 | mbgs |
| | | | **Pre-test water level** | 16.30 | m above transducer |
| **Drill-hole diameter, D** | 0.152 | m | **Effective length of water column, L** | 12.2 | mbgs |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.053 | m | **Height of water predicted** | 12.0 | m |
| **Top of test zone** | 11.18 | m | | | |
| **Bottom of test zone** | 14.23 | m | **d** | 0.52 | |
| **Test Length, L** | 3.05 | m | **Angular frequency (per second), ω** | 0.77 | $s^{-1}$ |
| **PVC type** | Schedule 80 | | **Damping constant, ϒ** | 0.47 | $s^{-1}$ |
| **Slot size** | 20 Slot | | **Initial amplitude** | 0.30 | |
| **Hydraulic Conductivity, K** | 7.E-04 | m/s | **Transmissivity, T** | 2.E-03 | $m^2/s$ |
| **Storage, S** | 1.E-06 | | | | |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-12S.xlsx]Van Der Kamp

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

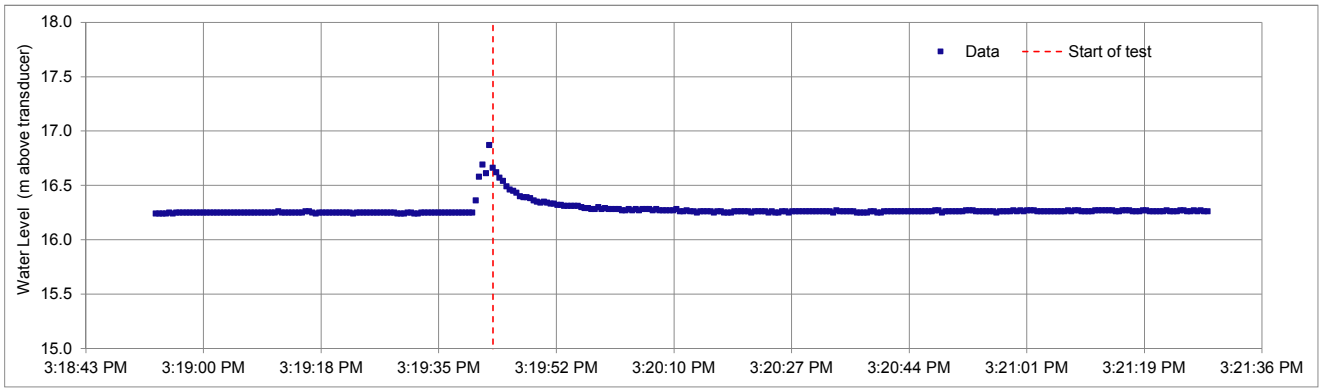
### HYDRAULIC CONDUCTIVITY CALCULATION
### USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

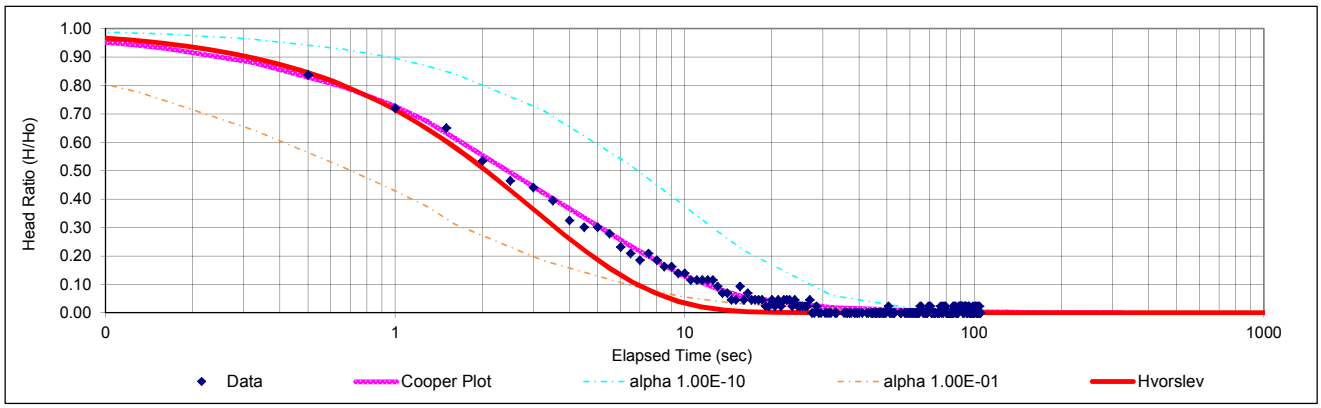
17/01/2013 15:52

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-13D** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 16-Oct-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | **m** | **Slug Injected, Time = 0** | 3:19:43 PM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | **m** | **Initial water level** | 16.26 | **m above transducer** |
| **Top of test zone** | 35.81 | **m** | **Water level after slug** | 16.69 | **m above transducer** |
| **Bottom of test zone** | 38.86 | **m** | **Change In Water Level, $H_o$** | 0.43 | **m** |
| **Test Length, L** | 3.05 | **m** | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Transmissivity, T** | 3.E-04 | **$m^2/s$** | | | |
| **Hydraulic Conductivity, K** | 1.E-04 | **m/s** | **Storativity, S** | 5.E-05 | **Alpha** 5.37E-04 |




**TEST COMMENTS:**

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-13D.xlsx]Cooper et al. (3)

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

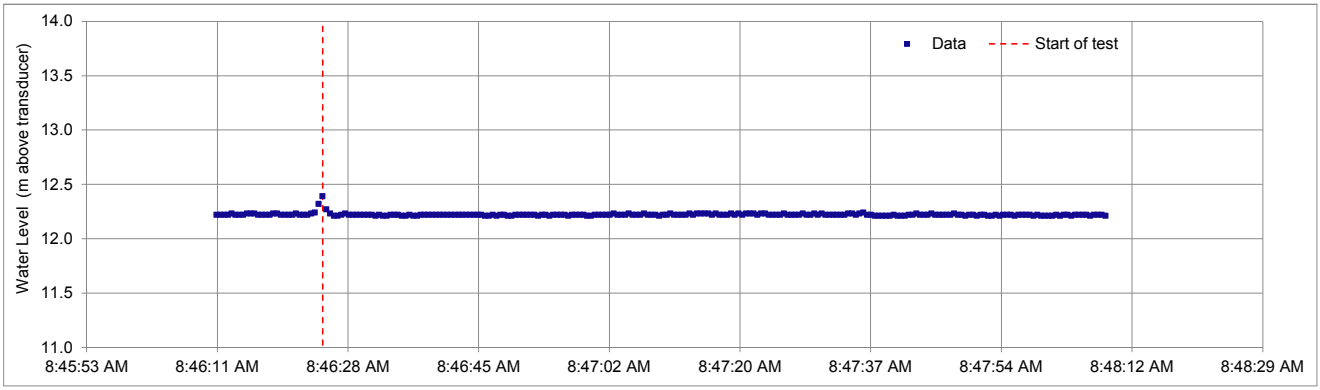
### HYDRAULIC CONDUCTIVITY CALCULATION
### USING COOPER, BREDEHOEFT AND PAPADOPULOS (1967)

17/01/2013 15:53

| | | | |
|---|---|---|---|
| **Project No.** | VA101-457/4 | **Monitoring Well/Piezometer** | **MW12-13S** |
| **Field Technician** | BF | **Test** | 1 Slug Insertion |
| **Analyst** | EJH | | |
| **Monitoring Instrument Type** | Transducer | | |
| **Slug Dimensions and Type** | 2 m x 1" Waterra tubing | | |
| **Test Date** | 04-Oct-12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Drill-hole diameter, D** | 0.152 | **m** | **Slug Injected, Time = 0** | 8:46:24 AM | |
| **Effective diameter of PVC riser pipe, $d_e$** | 0.047 | **m** | **Initial water level** | 12.22 | **m above transducer** |
| **Top of test zone** | 10.05 | **m** | **Water level after slug** | 12.39 | **m above transducer** |
| **Bottom of test zone** | 13.10 | **m** | **Change In Water Level, $H_o$** | 0.17 | **m** |
| **Test Length, L** | 3.05 | **m** | | | |
| **PVC type** | Schedule 80 | | | | |
| **Slot size** | 20 Slot | | | | |

| | | | | |
|---|---|---|---|---|
| **Transmissivity, T** | >3E-04 | **$m^2/s$** | | |
| **Hydraulic Conductivity, K** | >1E-04 | **m/s** | **Storativity, S** | - |




**TEST COMMENTS:** Water level recovery is too rapid to analyze. Hydraulic conductivity is estimated to be >1-04 m/s.

M:\1\01\00457\04\A\Data\Task 0800 - 2012 Baseline Data\Hydrogeology\Hydraulic Testing\Response tests\Analysis Completed\[MW12-13S.xlsx]Cooper et al.

| REV | DATE | DESCRIPTION | PREP'D | CHK'D | APP'D |
|---|---|---|---|---|---|
| A | 17JAN'13 | ISSUED WITH LETTER VA12-02061 | EJH | CAS | KJB |

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# APPENDIX C

## GROUNDWATER QUALITY ANALYTICAL RESULTS

(Pages C-1 to C-4)

**APPENDIX C - GROUNDWATER QUALITY ANALYTICAL RESULTS**

**NEW GOLD INC.**
**BLACKWATER GOLD PROJECT**

**TABLE C1**
**WATER QUALITY GUIDELINES FOR THE PROTECTION OF AQUATIC LIFE**

| | BCWQG-30 DAY AVERAGE[2] | BCWQG-MAXIMUM [3] | CEQG-PAL[4] |
|---|---|---|---|
| **Physical Tests** | | | |
| pH | | 6.5 to 9 | 6.5 to 9 |
| **Dissolved Anions** | | | |
| Chloride (Dissolved) | 150 | 600 | 640 |
| Fluoride (Dissolved) | | 0.4 to 0.01(-51.73+92.57(Log(H))) [12] | 0.12 |
| Sulphate (Dissolved) | | 100 | |
| **Nutrients** | | | |
| Ammonia (Total) | | 0.681 to 28.7 [13,14] | 0.017 to 192 [13,14] |
| Nitrate (as N) | 3 | 32.8 | 3 |
| Nitrite (as N) | | 0.06 to 0.6 [15] | 0.06 |
| **Cyanide** | | | |
| Cyanide (Free) | | | 0.005 |
| Cyanide (WAD) | | 0.01 | |
| **Metals** | | | |
| Aluminum | $e^{(1.6-3.327*[pH]+0.402*([pH]\ ^{[}\ (2)\ ]\ ))}$ to 0.05 [13,16] | $e^{(1.209-2.426*[pH]+0.286*[pH]\ ^{[}\ (2)\ ]\ )}$ to 0.1 [13,16] | 0.005 to 0.1 [13] |
| Antimony | | 0.02 | |
| Arsenic | | 0.005 | 0.005 |
| Barium | | 5 | |
| Beryllium | | 0.0053 | |
| Boron | | 1.2 | |
| Cadmium | | $10^{(0.86*(log(H)-3.2)}$ /1000 to 0.000063 [12] | $10^{(0.86*(log(H)-3.2)}$/1000 to 0.000055 [12] |
| Chromium | | 0.0089 | 0.0089 |
| Cobalt | 0.004 | 0.11 | |
| Copper | (0.04*H)/1000 to 0.010 [12] | (0.094*H+2)/1000 TO 0.010 [12] | $e^{(0.8545*ln(H)-1.465)}$ 0.2/1000 to 0.004 [12] |
| Iron | | 0.35 [16] / 1 [17] | 0.3 |
| Lead | $(3.31+e^{1.273*ln(H)-4.704})/1000$ [12] | 0.003 to $e^{(1.273*ln(H)-1.460)}/1000$ [12] | $e^{((1.273*ln(H)-4.705))}$ /1000 to 0.007 [12] |
| Manganese | 0.0044*H+0.605 [12] | (0.01102*H)+0.54 [12] | |
| Mercury | 0.00002 | | 0.000026 |
| Molybdenum | 1 | 2 | 0.073 |
| Nickel | | 0.025 to 0.150 [12] | $e^{((0.76*ln(H)+1.06))}$ /1000 to 0.15 [12] |
| Selenium | 0.002 | 0.002 | 0.001 |
| Silver | 0.00005 to 0.0015 [12] | 0.0001 to 0.003 [12] | 0.0001 |
| Thallium | | 0.0003 | 0.0008 |
| Uranium | | 0.3 | 0.015 |
| Vanadium | | 0.006 | |
| Zinc | (7.5+0.75*(H-90))/1000 to 0.0075 [12] | (33+0.75*(H-90))/1000 to 0.033 [12] | 0.03 |

M:\1\01\00457\04\A\Correspondence\VA12-02061 Groundwater Quality Data Collection Summary\Appendix\C WQ results\[Appendix C - CJ 20130117.xlsx]C1

**NOTES:**

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - 30 DAY AVERAGE LIMITS (BCWQG-30 DAY AVERAGE) - FRESHWATER AQUATIC LIFE.
3. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM LIMITS (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
4. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES - WATER QUALITY GUIDELINE FOR THE PROTECTION OF AQUATIC LIFE (CEQG-PAL) - FRESHWATER.
5. THIS SHADING INDICATES THAT THE VALUE EXCEEDS THE LIMITS OF THE BCWQG - 30 DAY AVERAGE GUIDELINES.
6. THIS SHADING INDICATES THAT THE VALUE EXCEEDS THE LIMITS OF THE BCWQG - MAXIMUM GUIDELINES.
7. THIS SHADING INDICATES THAT THE VALUED EXCEEDS THE LIMITS OF THE CEQG-PAL.
8. THIS SHADING INDICATES THAT THE VALUE EXCEEDS THE LIMITS OF THE BCWQG - 30 DAY AVERAGE AND THE BCWQG - MAXIMUM.
9. THIS SHADING INDICATES THAT THE VALUE EXCEEDS THE LIMITS OF THE BCWQG - 30 DAY AVERAGE AND THE CEQG-PAL.
10. THIS SHADING INDICATES THAT THE VALUE EXCEEDS THE LIMITS OF THE BCWQG-MAXIMUM AND THE CEQG-PAL.
11. THIS SHADING INDICATES THAT THE VALUE EXCEEDS ALL OF THE ABOVE LISTED GUIDELINES.
12. HARDNESS (H) DEPENDENT GUIDELINE LIMIT (DISSOLVED).
13. pH DEPENDENT GUIDELINE LIMIT (*IN SITU* VALUE PREFFERED).
14. TEMPERATURE DEPENDENT GUIDELINE LIMIT.
15. CHLORIDE (DISSOLVED) DEPENDENT GUIDELINE LIMIT.
16. APPLIES TO DISSOLVED CONCENTRATION ONLY.
17. APPLIES TO TOTAL CONCENTRATION ONLY.

## APPENDIX C - GROUNDWATER QUALITY ANALYTICAL RESULTS

## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

## TABLE C2
## GROUNDWATER QUALITY IN SITU AND ANALYTICAL RESULTS

| Site ID | Method Detection Limit | MW12-01D | MW12-01D | MW12-01D | MW12-02D | MW12-02D | MW12-02D | MW12-02S | MW12-02S | MW12-02S | MW12-04D | MW12-04D | MW12-04S | MW12-05D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date/Time Sampled** | | **7-Jun-12** | **14-Sep-12** | **12-Dec-12** | **25-May-12** | **13-Sep-12** | **5-Dec-12** | **28-May-12** | **20-Sep-12** | **4-Dec-12** | **19-Sep-12** | **4-Dec-12** | **19-Sep-12** | **28-Jun-12** |
| **In Situ Parameters** | | | | | | | | | | | | | | |
| Conductivity µS/cm | | 407 | 456 | 398 | 350 | 341 | 192 | 147 | 202 | 104 | 145 | 82 | 159 | 778 |
| Oxygen Dissolved % | | 62 | 26.2 | 14.3 | 89 | 108 | 171 | 30.6 | 14.2 | 15.3 | 17.1 | 45.5 | 73.1 | 32 |
| Oxygen Dissolved | | 6.33 | 2.93 | 14.4 | 9.8 | 14.6 | 19.3 | 3.22 | 1.83 | 1.88 | 1.94 | 5.85 | 8.37 | 3 |
| pH pH | | 8.04 | 7.71 | 7.36 | 7.8 | 7.76 | 7.82 | 7.52 | 7.81 | 7.72 | 7.92 | 8.07 | 7.8 | 7.96 |
| Redox Potential mV | | 270 | | 49.3 | | -80.4 | 170 | | -292 | | -271 | -87.2 | -386 | -0.1 |
| Salinity ppt | | 0.2 | | 0.19 | | -0.16 | 0.11 | | 0.1 | | 0.07 | 0.06 | 0.07 | 0.13 |
| Specific Conductivity µS/cm | | 267 | 328 | 244 | 288 | 196 | 269 | 9.2 | 123 | 166 | 102 | 135 | 106 | 200 |
| Temperature °C | | 6.06 | 6.61 | 4.74 | 2.9 | 2.69 | 10 | 5.32 | 4.1 | 5.63 | 8.24 | 4.26 | 7.27 | 9.95 |
| Total Dissolved Solids | | 203 | | 259 | | -221 | 151 | | 131 | | 94 | 880 | 103 | 139 |
| Turbidity NTU | | 3.9 | 8.03 | 8.52 | 781 | 14.6 | 160 | 21.7 | 10.6 | 30.8 | 23.3 | 19.1 | 31.5 | 22.4 |
| **Physical Tests** | | | | | | | | | | | | | | |
| Alkalinity (Total as CaCO3) | 1 - 2 | 194 | 201 | 195 | | 91 | 83.3 | 74.6 | 110 | 94.7 | 56.7 | 55.4 | 61 | 134 |
| Bicarbonate Alkalinity | 1 - 2 | 194 | 201 | 195 | | 91 | 83.3 | 74.6 | 110 | 94.7 | 56.7 | 55.4 | 61 | 134 |
| Carbonate Alkalinity | 1 - 2 | <2 | <1 | <1 | | <1 | <1 | <2 | <2 | <1 | <1 | <1 | <1 | <2 |
| Color TCU | 5 | <5 | <5 | <5 | | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Conductivity µS/cm | 2 | 410 | 399 | 400 | | 305 | 224 | 139 | 187 | 162 | 126 | 123 | 141 | 274 |
| Hardness as CaCO3 (Dissolved) | 0.5 | 142 | 167 | 167 | | 87 | 82.5 | 67.2 | 82.5 | 71.4 | 46.4 | 37.7 | 49.4 | 103 |
| Hydroxide Alkalinity | 1 - 2 | <2 | <1 | <1 | | <1 | <1 | <2 | <2 | <1 | <1 | <1 | <1 | <2 |
| pH pH | 0.1 | 8.07 | 8.22 | 8.53 | | 8.15 | 7.99 | 7.69 | 8.1 | 8.02 | | 7.85 | | 8 |
| Total Dissolved Solids | 10 | 259 | 245 | 216 | | 206 | 156 | 96 | 110 | 107 | 123 | 124 | 100 | 181 |
| Total Suspended Solids | 1 - 3 | 18.5 | 19.1 | 9.6 | | 66.8 | 436 | 44.7 | 6.1 | 184 | 37.3 | 8.7 | 20.7 | 25.3 |
| Turbidity NTU | 0.1 | 11.8 | 6.74 | 4.44 | | 37.2 | 231 | 19.1 | 2.02 | 128 | 30.9 | 15.6 | 13.4 | 32.1 |
| **Dissolved Anions** | | | | | | | | | | | | | | |
| Bromide (Dissolved) | 0.05 | <0.05 | 0.441 | 0.134 | | 0.131 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Chloride (Dissolved) | 0.5 | 1.81 | 1.53 | 1.25 | | <0.5 | 0.53 | <0.5 | 0.51 | <0.5 | 0.63 | 0.56 | 0.96 | <0.5 |
| Fluoride (Dissolved) | 0.02 | 0.158 | 0.119 | 0.115 | | 0.076 | 0.07 | 0.094 | 0.11 | 0.104 | 0.135 | 0.155 | 0.126 | 0.15 |
| Sulphate (Dissolved) | 0.5 | 45.1 | 30.3 | 24.9 | | 69.6 | 36.8 | 1.65 | 0.71 | <0.5 | 10.3 | 9.79 | 14.2 | 12.1 |
| Thiocyanate (Dissolved) | 0.2 - 2 | | <0.2 | <0.2 | | <0.2 | <0.2 | | <0.2 | <0.2 | | <0.2 | | |
| **Nutrients** | | | | | | | | | | | | | | |
| Ammonia (Total) | 0.005 | <0.005 | 0.0203 | 0.0938 | | <0.005 | <0.005 | <0.005 | <0.005 | 0.0059 | <0.005 | 0.0102 | 0.0056 | 0.0444 |
| Nitrate (as N) | 0.005 | <0.005 | <0.005 | 0.0067 | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 0.0211 | <0.005 |
| Nitrite (as N) | 0.001 | <0.001 | <0.001 | 0.0019 | | <0.001 | <0.001 | <0.001 | <0.001 | 0.0016 | <0.001 | <0.001 | 0.0066 | <0.001 |
| Nitrogen (Dissolved) | 0.05 - 0.1 | 2.83 | 0.97 | 0.268 | | 0.11 | 0.116 | 0.18 | 0.64 | 0.315 | 0.55 | 0.929 | 0.21 | <0.05 |
| Nitrogen (Total) | 0.0025 - 0.05 | 0.0779 | 0.293 | 0.379 | | 0.068 | 0.087 | 0.124 | 0.082 | 0.128 | 0.078 | 0.165 | 0.245 | 0.122 |
| Nitrogen Kjeldahl (Total) | 0.05 | 0.078 | 0.293 | 0.389 | | 0.068 | 0.087 | 0.124 | 0.082 | 0.126 | 0.078 | 0.165 | 0.217 | 0.122 |
| Phosphate (Total) | 0.02 | | | | | | | | | | 0.099 | | 0.223 | |
| Phosphorus Dissolved | 0.002 - 0.02 | 0.0214 | 0.035 | 0.0388 | | 0.109 | 0.1 | 0.105 | 0.117 | 0.178 | 0.0785 | 0.0867 | 0.175 | 0.0184 |
| Phosphorus Total | 0.002 - 0.02 | 0.0429 | 0.082 | 0.0831 | | 0.175 | 0.423 | 0.153 | 0.153 | 0.32 | | 0.102 | | 0.0597 |
| **Cyanide** | | | | | | | | | | | | | | |
| Cyanide (Free) | 0.005 | <0.005 | <0.005 | <0.005 | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Cyanide (Total) | 0.005 | <0.005 | <0.005 | <0.005 | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Cyanide (WAD) | 0.005 | <0.005 | <0.005 | <0.005 | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Thiocyante (SCN) | 0.5 | <0.5 | <0.5 | <0.5 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Dissolved Metals** | | | | | | | | | | | | | | |
| Aluminum (Dissolved) | 0.001 | 0.0079 | 0.0061 | 0.0052 | | 0.0015 | 0.0023 | 0.0054 | 0.0041 | 0.0069 | 0.472 | 0.0046 | 0.0082 | 0.0045 |
| Antimony (Dissolved) | 0.0001 | 0.00044 | 0.00016 | 0.00055 | | <0.0001 | <0.0001 | 0.00014 | 0.0002 | <0.0001 | 0.00018 | 0.00011 | 0.00015 | 0.00074 |
| Arsenic (Dissolved) | 0.0001 | 0.0007 | 0.00202 | 0.0058 | | 0.0025 | 0.00242 | 0.00283 | 0.00773 | 0.00821 | 0.0222 | 0.0203 | 0.00232 | 0.00438 |
| Barium (Dissolved) | 0.00005 | 0.047 | 0.0561 | 0.0563 | | 0.00739 | 0.00604 | 0.00834 | 0.0163 | 0.0138 | 0.0129 | 0.0158 | 0.0117 | 0.143 |
| Beryllium (Dissolved) | 0.0001 | <0.0001 | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Bismuth (Dissolved) | 0.0005 | <0.0005 | <0.0005 | <0.0005 | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Boron (Dissolved) | 0.01 | <0.01 | 0.017 | 0.011 | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.014 | <0.01 | 0.01 |
| Cadmium (Dissolved) | 0.00001 | 0.000083 | 0.000014 | 0.00009 | | 0.000054 | 0.000015 | 0.000091 | <0.00001 | <0.00001 | 0.000015 | <0.00001 | 0.000298 | 0.000038 |
| Calcium (Dissolved) | 0.05 | 29.1 | 33.5 | 33.7 | | 24.9 | 23.5 | 19.1 | 23.7 | 20.5 | 14.7 | 12.1 | 14.5 | 26.9 |
| Chromium (Dissolved) | 0.0001 | 0.00013 | 0.00019 | 0.00046 | | 0.00031 | 0.00046 | 0.00011 | <0.0001 | <0.0001 | 0.00012 | 0.00028 | 0.00011 | <0.0001 |
| Cobalt (Dissolved) | 0.0001 | 0.0003 | 0.00054 | 0.00061 | | <0.0001 | <0.0001 | 0.00026 | 0.00061 | 0.00042 | 0.00067 | 0.0006 | 0.00029 | 0.0003 |
| Copper (Dissolved) | 0.0002 | 0.00035 | 0.00028 | 0.00028 | | 0.00107 | 0.00072 | 0.0006 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | 0.00132 | <0.0002 |
| Iron (Dissolved) | 0.01 | <0.01 | 0.218 | 0.118 | | <0.01 | <0.01 | <0.01 | 0.212 | 0.293 | 0.132 | 0.117 | <0.01 | <0.01 |
| Lead (Dissolved) | 0.00005 | <0.00005 | <0.00005 | 0.000113 | | <0.00005 | <0.00005 | <0.00005 | <0.00005 | <0.00005 | 0.000098 | <0.00005 | 0.000054 | <0.00005 |
| Lithium (Dissolved) | 0.0005 | 0.0215 | 0.0187 | 0.0193 | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | 0.00068 | <0.0005 | <0.0005 | 0.0164 |
| Magnesium (Dissolved) | 0.1 | 16.9 | 20.2 | 20.1 | | 6.02 | 5.76 | 4.74 | 5.67 | 4.9 | 2.36 | 1.8 | 3.17 | 8.66 |
| Manganese (Dissolved) | 0.00005 | 0.227 | 0.59 | 0.543 | | 0.048 | 0.0128 | 0.441 | 1.89 | 1.9 | 0.255 | 0.266 | 0.331 | 0.103 |
| Mercury (Dissolved) | 0.00001 | <0.00001 | <0.00001 | <0.00001 | | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Molybdenum (Dissolved) | 0.00005 | 0.00718 | 0.00746 | 0.0072 | | 0.00541 | 0.00353 | 0.00161 | 0.00402 | 0.00348 | 0.0182 | 0.0169 | 0.0029 | 0.00722 |
| Nickel (Dissolved) | 0.0005 | 0.00087 | 0.00197 | 0.0068 | | 0.00065 | 0.0006 | 0.00072 | 0.00102 | 0.00087 | 0.00129 | 0.00324 | 0.00094 | 0.00053 |
| Phosphorus (Metal) Dissolved | 0.3 | <0.3 | <0.3 | <0.3 | | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 |
| Potassium (Dissolved) | 0.05 | 1.77 | 1.67 | 1.35 | | 1.06 | 0.976 | 0.686 | 0.709 | 0.616 | 1.12 | 1.12 | 0.695 | 0.925 |
| Selenium (Dissolved) | 0.0001 | 0.00018 | 0.0001 | 0.00013 | | 0.00012 | 0.00011 | 0.00035 | <0.0001 | 0.00014 | <0.0001 | <0.0001 | 0.00021 | 0.0001 |
| Silicon (Dissolved) | 0.05 | 5.61 | 6 | 5.99 | | 8.93 | 9.1 | 8.53 | 7.63 | 8.09 | 9.58 | 7.81 | 6.73 | 6.17 |
| Silver (Dissolved) | 0.00001 | <0.00001 | <0.00001 | <0.00001 | | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Sodium (Dissolved) | 0.05 | 37.5 | 29.6 | 25.6 | | 31.6 | 14.7 | 4.45 | 7.27 | 6.15 | 9.77 | 11 | 11.3 | 20.6 |
| Strontium (Dissolved) | 0.0002 | 3.05 | 3.91 | 4.02 | | 0.146 | 0.135 | 0.0958 | 0.125 | 0.122 | 0.12 | 0.106 | 0.11 | 0.819 |
| Thallium (Dissolved) | 0.00001 | <0.00001 | <0.00001 | <0.00001 | | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Tin (Dissolved) | 0.0001 | <0.0001 | 0.00014 | 0.00011 | | <0.0001 | <0.0001 | 0.00013 | <0.0001 | <0.0001 | 0.0002 | 0.00037 | <0.0001 | <0.0001 |
| Titanium (Dissolved) | 0.01 | <0.01 | <0.01 | <0.01 | | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.011 | <0.01 | <0.01 | <0.01 |
| Uranium (Dissolved) | 0.00001 | 0.0069 | 0.00449 | 0.00388 | | 0.00153 | 0.00151 | 0.000747 | 0.000954 | 0.000411 | 0.000721 | 0.000677 | 0.00104 | 0.000633 |
| Vanadium (Dissolved) | 0.001 | <0.001 | <0.001 | <0.001 | | 0.0023 | 0.0025 | 0.0015 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 |
| Zinc (Dissolved) | 0.001 | 0.0022 | 0.0011 | 0.0069 | | 0.0059 | 0.0037 | 0.0016 | <0.001 | 0.0011 | 0.0014 | <0.001 | 0.01 | 0.0075 |
| **Total Metals** | | | | | | | | | | | | | | |
| Aluminum (Total) | 0.003 | 0.741 | 0.257 | 0.137 | | 1.34 | 15.7 | 0.761 | 0.0681 | 2.9 | 3.79 | 1.5 | 1.38 | 1.01 |
| Antimony (Total) | 0.0001 | 0.00046 | 0.00023 | 0.00103 | | 0.00017 | 0.00074 | 0.00018 | 0.00022 | 0.00019 | 0.00021 | 0.00018 | 0.00028 | 0.001 |
| Arsenic (Total) | 0.0001 | 0.00077 | 0.00216 | 0.00703 | | 0.00331 | 0.0155 | 0.00313 | 0.00744 | 0.00918 | 0.0283 | 0.0215 | 0.00291 | 0.00437 |
| Barium (Total) | 0.00005 | 0.0519 | 0.0556 | 0.0596 | | 0.0162 | 0.112 | 0.0161 | 0.016 | 0.0444 | 0.024 | 0.0199 | 0.0225 | 0.168 |
| Beryllium (Total) | 0.0001 | <0.0001 | <0.0001 | <0.0001 | | <0.0001 | 0.00081 | <0.0001 | <0.0001 | 0.00013 | 0.00024 | 0.00011 | <0.0001 | <0.0001 |
| Bismuth (Total) | 0.0005 | <0.0005 | <0.0005 | <0.0005 | | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Boron (Total) | 0.01 | 0.012 | 0.02 | 0.012 | | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | 0.018 | <0.01 | 0.014 | |
| Cadmium (Total) | 0.00001 | 0.000124 | 0.000333 | 0.000393 | | 0.000074 | 0.000163 | 0.000125 | 0.000019 | 0.000084 | 0.000084 | 0.00014 | 0.000473 | 0.000167 |
| Calcium (Total) | 0.05 | 29.1 | 32.2 | 33.7 | | 24 | 26.6 | 19.1 | 23.3 | 21.1 | 16.1 | 13.2 | 15.5 | 30.9 |
| Chromium (Total) | 0.0001 | 0.0011 | 0.00091 | 0.00269 | | 0.0013 | 0.0113 | 0.00087 | 0.00043 | 0.00212 | 0.00144 | 0.00107 | 0.00172 | 0.0006 |
| Cobalt (Total) | 0.0001 | 0.00049 | 0.00066 | 0.00073 | | 0.00047 | 0.00498 | 0.0006 | 0.00061 | 0.00153 | 0.00159 | 0.00094 | 0.00067 | 0.00067 |
| Copper (Total) | 0.0005 - 0.003 | 0.00173 | 0.00542 | 0.00223 | | <0.003 | 0.0145 | 0.00231 | <0.0008 | 0.00494 | 0.0041 | 0.00125 | 0.00378 | 0.00455 |
| Iron (Total) | 0.01 | 0.36 | 0.503 | 0.422 | | 1.39 | 18.7 | 0.769 | 0.229 | 2.85 | 1.75 | 0.645 | 0.886 | 0.728 |
| Lead (Total) | 0.00005 | 0.000207 | 0.000423 | 0.00041 | | 0.00147 | 0.0191 | 0.000543 | 0.000097 | 0.00215 | 0.00125 | 0.000491 | 0.00122 | 0.00106 |
| Lithium (Total) | 0.0005 | 0.0215 | 0.0181 | 0.0183 | | <0.0005 | 0.00541 | 0.00057 | <0.0005 | 0.00142 | 0.00179 | 0.00087 | 0.00079 | 0.0154 |
| Magnesium (Total) | 0.1 | 17.2 | 19.5 | 20.4 | | 6.08 | 8.44 | 5.02 | 5.61 | 5.46 | 3.13 | 2.38 | 3.48 | 9.47 |
| Manganese (Total) | 0.00005 | 0.235 | 0.608 | 0.559 | | 0.0679 | 0.279 | 0.48 | 1.8 | 1.91 | 0.32 | 0.295 | 0.372 | 0.124 |
| Mercury (Total) | 0.00001 | <0.00001 | <0.00001 | <0.00001 | | <0.00001 | 0.000014 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Molybdenum (Total) | 0.00005 | 0.0074 | 0.00752 | 0.00747 | | 0.00527 | 0.00343 | 0.00173 | 0.00356 | 0.00324 | 0.0174 | 0.0175 | 0.00325 | 0.00824 |
| Nickel (Total) | 0.0005 | 0.00147 | 0.00223 | 0.00816 | | 0.00123 | 0.0102 | 0.00152 | 0.00147 | 0.00301 | 0.00276 | 0.00524 | 0.00211 | 0.00138 |
| Phosphorus (Metal) Total | 0.3 | <0.3 | <0.3 | <0.3 | | <0.3 | 0.64 | <0.3 | <0.3 | 0.36 | <0.3 | <0.3 | <0.3 | <0.3 |
| Potassium (Total) | 0.05 | 1.87 | 1.61 | 1.4 | | 1.26 | 3.78 | 0.853 | 0.698 | 1.28 | 1.41 | 1.25 | 0.913 | 1.29 |
| Selenium (Total) | 0.0001 | 0.00016 | 0.00012 | 0.00015 | | 0.00012 | 0.00014 | 0.00033 | <0.0001 | <0.0001 | 0.00015 | 0.00014 | 0.00023 | 0.00011 |
| Silicon (Total) | 0.05 | 7.1 | 6.24 | 6.34 | | 11.8 | 38.8 | 10.4 | 7.65 | 13.3 | 16.7 | 13.7 | 10.2 | 9.08 |
| Silver (Total) | 0.00001 | <0.00001 | <0.00001 | 0.00005 | | 0.000011 | 0.000098 | 0.000011 | <0.00001 | 0.000048 | 0.000014 | <0.00001 | 0.000018 | 0.000026 |
| Sodium (Total) | 0.05 | 36.6 | 28.9 | 26.1 | | 28.8 | 16.2 | 4.44 | 7.13 | 6.2 | 9.71 | 11.5 | 11.5 | 19.8 |
| Strontium (Total) | 0.0002 | 3.09 | 3.95 | 4.07 | | 0.141 | 0.179 | 0.101 | 0.115 | 0.131 | 0.136 | 0.123 | 0.118 | 0.898 |
| Thallium (Total) | 0.00001 | <0.00001 | <0.00001 | <0.00001 | | 0.000019 | 0.000213 | 0.000015 | <0.00001 | 0.000039 | 0.000045 | 0.000022 | 0.000017 | 0.000017 |
| Tin (Total) | 0.0001 | 0.00025 | 0.00043 | 0.00042 | | 0.00017 | 0.00047 | 0.00016 | <0.0001 | 0.00011 | 0.00145 | 0.00076 | 0.00027 | 0.00018 |
| Titanium (Total) | 0.01 | 0.036 | 0.016 | 0.014 | | 0.097 | 1.15 | 0.066 | <0.01 | 0.181 | 0.045 | 0.035 | 0.073 | 0.045 |
| Uranium (Total) | 0.00001 | 0.0068 | 0.00431 | 0.00393 | | 0.00159 | 0.00275 | 0.000803 | 0.000964 | 0.000554 | 0.00103 | 0.000924 | 0.00121 | 0.000963 |
| Vanadium (Total) | 0.001 | 0.0012 | <0.001 | <0.001 | | 0.005 | 0.0412 | 0.0032 | <0.001 | 0.0062 | 0.0036 | 0.0016 | 0.0029 | 0.0023 |
| Zinc (Total) | 0.003 | 0.0038 | 0.005 | 0.0122 | | 0.0092 | 0.0603 | 0.0069 | <0.003 | 0.0212 | 0.0103 | 0.0042 | 0.0225 | 0.0059 |
| **Organics** | | | | | | | | | | | | | | |
| Carbon Organic (Dissolved) | 0.5 - 2 | 3.94 | 9.57 | 3.04 | | 2.24 | 1.45 | 4.33 | 7.17 | 8.62 | 6.16 | 6.13 | 1.98 | 2.45 |
| Carbon Organic (Total) | 0.5 | 4.8 | 3.98 | 2.95 | | 2.11 | 1.28 | 1.24 | 1.75 | 1.86 | 2.34 | 4.88 | 2.08 | 2.6 |
| Nitrogen Organic (Dissolved) | 0.05 - 0.1 | 2.83 | 0.95 | 0.303 | | 0.11 | 0.113 | 0.18 | 0.636 | 0.307 | 0.546 | 0.919 | 0.177 | <0.05 |
| Nitrogen Organic (Total) | 0.05 - 0.06 | 0.078 | 0.272 | 0.277 | | 0.068 | 0.087 | 0.124 | 0.082 | 0.12 | 0.078 | 0.155 | 0.212 | 0.077 |

M:\1\01\00457\04\A\Correspondence\VA12-02061 Groundwater Quality Data Collection Summary\Appendix\C WQ results\[Appendix C - CJ 20130117.xlsx]C2

**NOTES:**

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE C1 FOR DETAILED FOOTNOTES ON CELL SHADING.

## APPENDIX C - GROUNDWATER QUALITY ANALYTICAL RESULTS

## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

## TABLE C2
## GROUNDWATER QUALITY IN SITU AND ANALYTICAL RESULTS

| Site ID | Method Detection Limit | MW12-05D | MW12-05S | MW12-05S | MW12-05S | MW12-06S | MW12-06S | MW12-06S | MW12-07D | MW12-07D | MW12-07D | MW12-07S | MW12-07S | MW12-07S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date/Time Sampled** | | **26-Sep-12** | **28-May-12** | **26-Sep-12** | **29-Nov-12** | **14-Jun-12** | **26-Sep-12** | **10-Dec-12** | **7-Jun-12** | **21-Sep-12** | **29-Nov-12** | **6-Jun-12** | **14-Sep-12** | **29-Nov-12** |
| **In Situ Parameters** | | | | | | | | | | | | | | |
| Conductivity µS/cm | | 285 | 288 | 355 | 235 | 68 | 81 | 51 | 243 | 289 | 1.55 | 171 | 172 | 96 |
| Oxygen Dissolved % | | 17.4 | 28.3 | 30.9 | 18.4 | 63.8 | 84.2 | 102 | 15.4 | 9.3 | 12.1 | 53.1 | 87.6 | 87 |
| Oxygen Dissolved | | 1.83 | 3.12 | 4.02 | 2.41 | 6.86 | 9.93 | 12.2 | 1.31 | 1.06 | 1.53 | 3.87 | 10.8 | 11.5 |
| pH pH | | 7.99 | 7.55 | 7.62 | 8.3 | 8.03 | 7.81 | 6.91 | 8.04 | 8.09 | 7.91 | 6.93 | 8.8 | 8.36 |
| Redox Potential mV | | -47.3 | | -235 | 203 | | -36.8 | 18.4 | 178 | -268 | -106 | 313 | -93.5 | 124 |
| Salinity ppt | | 0.14 | | 0.17 | 0.19 | | 0.04 | 0.04 | 0.11 | 0.14 | 0.12 | 0.08 | 0.08 | 0.08 |
| Specific Conductivity µS/cm | | 216 | 171 | 214 | 398 | 44 | 54 | 79 | 194 | 201 | 2.48 | 106 | 109 | 162 |
| Temperature °C | | 12.1 | 3.79 | 4.26 | 3.61 | 5.54 | 6.98 | 6.42 | 14.2 | 8.02 | 5.27 | 5.06 | 5.98 | 3.55 |
| Total Dissolved Solids | | 184 | | 231 | 258 | | 53 | 51 | 119 | 187 | 162 | 85 | 111 | 105 |
| Turbidity NTU | | 16.3 | 14.3 | 9.16 | 12.7 | 95.7 | 6.08 | 3.45 | 14.5 | 4.88 | 1.28 | 3.87 | 1.55 | 5.9 |
| **Physical Tests** | | | | | | | | | | | | | | |
| Alkalinity (Total as CaCO3) | 1 - 2 | 135 | 145 | 179 | 188 | 31.1 | 31.8 | 30.3 | 111 | 106 | 106 | 89.9 | 83.8 | 81.5 |
| Bicarbonate Alkalinity | 1 - 2 | 135 | 145 | 179 | 188 | 31.1 | 31.8 | 30.3 | 111 | 106 | 106 | 89.9 | 83.8 | 81.5 |
| Carbonate Alkalinity | 1 - 2 | <1 | <2 | <1 | <1 | <1 | <1 | <1 | <2 | <2 | <1 | <2 | <1 | <1 |
| Color TCU | 5 | 5.7 | <5 | 10.1 | 9.8 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Conductivity µS/cm | 2 | 244 | 258 | 302 | 320 | 66.3 | 69.9 | 74.6 | 245 | 261 | 240 | 161 | 158 | 153 |
| Hardness as CaCO3 (Dissolved) | 0.5 | 102 | 130 | 155 | 148 | 26.7 | 28.9 | 28.7 | 112 | 114 | 111 | 80.6 | 80.4 | 80.4 |
| Hydroxide Alkalinity | 1 - 2 | <1 | <2 | <1 | <1 | <1 | <1 | <1 | <2 | <2 | <1 | <2 | <1 | <1 |
| pH pH | 0.1 | 8.14 | 7.59 | 7.92 | 7.61 | | 7.81 | 7.56 | 7.74 | 8.14 | 8.07 | 8.1 | 8.13 | 8.06 |
| Total Dissolved Solids | 10 | 153 | 145 | 193 | 194 | 65 | 53 | 52 | 164 | 166 | 158 | 98 | 96 | 99 |
| Total Suspended Solids | 1 - 3 | 52.7 | 25.3 | 35.4 | 15.3 | 105 | 7.2 | <3 | 21.2 | 2.6 | <3 | <3 | <3 | <3 |
| Turbidity NTU | 0.1 | 11.4 | 12.1 | 16 | 28.7 | 62.7 | 4.08 | 2 | 26.6 | 2.12 | 1.33 | 1.67 | 0.84 | 0.4 |
| **Dissolved Anions** | | | | | | | | | | | | | | |
| Bromide (Dissolved) | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Chloride (Dissolved) | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Fluoride (Dissolved) | 0.02 | 0.139 | 0.2 | 0.198 | 0.208 | 0.093 | 0.089 | 0.094 | 0.141 | 0.17 | 0.169 | 0.074 | 0.072 | 0.074 |
| Sulphate (Dissolved) | 0.5 | 7.27 | 5.91 | 1.39 | 0.9 | 5.36 | 6.75 | 7.81 | 27.6 | 37.2 | 29.3 | 3.57 | 3.86 | 3.63 |
| Thiocyanate (Dissolved) | 0.2 - 2 | <0.2 | | <0.2 | <0.2 | | <0.2 | <0.2 | | <2 | <0.2 | | <0.2 | <0.2 |
| **Nutrients** | | | | | | | | | | | | | | |
| Ammonia (Total) | 0.005 | 0.0526 | 0.086 | 0.0995 | 0.121 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Nitrate (as N) | 0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | 0.0303 | 0.0712 | 0.0764 |
| Nitrite (as N) | 0.001 | 0.0013 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.0018 | <0.001 | <0.001 |
| Nitrogen (Dissolved) | 0.05 - 0.1 | 0.81 | 0.12 | 0.49 | 1.2 | <0.05 | 0.66 | 0.289 | 2.14 | 0.41 | 0.686 | 0.07 | 0.84 | 0.649 |
| Nitrogen (Total) | 0.0025 - 0.05 | 0.208 | 0.375 | 0.647 | 0.67 | <0.0025 | <0.05 | <0.05 | 0.09 | 0.12 | 0.11 | 0.0321 | 0.071 | 0.076 |
| Nitrogen Kjeldahl (Total) | 0.05 | 0.207 | 0.375 | 0.647 | 0.67 | <0.05 | <0.05 | <0.05 | 0.09 | 0.12 | 0.11 | <0.05 | <0.05 | <0.05 |
| Phosphate (Total) | 0.02 | | | | | | | | | | | | | |
| Phosphorus Dissolved | 0.002 - 0.02 | 0.0381 | 0.005 | <0.002 | <0.002 | 0.0881 | 0.0838 | 0.0797 | 0.0438 | 0.0645 | 0.0671 | 0.0168 | 0.0212 | 0.0204 |
| Phosphorus Total | 0.002 - 0.02 | 0.091 | 0.0427 | 0.0836 | 0.125 | 0.13 | 0.0957 | 0.0851 | 0.0759 | 0.0727 | 0.0831 | 0.0189 | 0.0221 | 0.0204 |
| **Cyanide** | | | | | | | | | | | | | | |
| Cyanide (Free) | 0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Cyanide (Total) | 0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Cyanide (WAD) | 0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Thiocyante (SCN) | 0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| **Dissolved Metals** | | | | | | | | | | | | | | |
| Aluminum (Dissolved) | 0.001 | 0.0063 | 0.0056 | 0.0066 | 0.0034 | 0.012 | 0.0043 | 0.0044 | 0.0058 | 0.0137 | 0.0064 | 0.0032 | 0.0018 | 0.0023 |
| Antimony (Dissolved) | 0.0001 | 0.00023 | 0.00034 | 0.00022 | 0.00021 | 0.00013 | <0.0001 | <0.0001 | 0.0002 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Arsenic (Dissolved) | 0.0001 | 0.00344 | 0.00079 | 0.00367 | 0.0053 | 0.00379 | 0.00393 | 0.00346 | 0.00087 | 0.00161 | 0.00176 | 0.00197 | 0.0022 | 0.00204 |
| Barium (Dissolved) | 0.00005 | 0.117 | 0.0629 | 0.0887 | 0.0966 | 0.00482 | 0.00553 | 0.00499 | 0.0341 | 0.0338 | 0.0305 | 0.00823 | 0.00752 | 0.00764 |
| Beryllium (Dissolved) | 0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Bismuth (Dissolved) | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Boron (Dissolved) | 0.01 | 0.016 | <0.01 | 0.018 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Cadmium (Dissolved) | 0.00001 | 0.000011 | 0.00055 | 0.000064 | <0.00001 | 0.000049 | 0.000032 | 0.000028 | 0.000069 | <0.00001 | <0.00001 | 0.00001 | <0.00001 | <0.00001 |
| Calcium (Dissolved) | 0.05 | 26.8 | 36.3 | 42.6 | 39.4 | 8.59 | 9.22 | 9.07 | 33.7 | 34.3 | 33 | 26.9 | 26.6 | 26.6 |
| Chromium (Dissolved) | 0.0001 | 0.00016 | <0.0001 | 0.0002 | <0.0001 | 0.00262 | 0.0027 | 0.00271 | 0.00078 | <0.0001 | <0.0001 | 0.00066 | 0.00067 | 0.0006 |
| Cobalt (Dissolved) | 0.0001 | 0.00046 | 0.00075 | 0.00396 | 0.00412 | <0.0001 | <0.0001 | <0.0001 | 0.00026 | 0.00036 | 0.00024 | <0.0001 | <0.0001 | <0.0001 |
| Copper (Dissolved) | 0.0002 | <0.0002 | 0.00173 | 0.00146 | <0.0002 | 0.00082 | 0.00021 | 0.00034 | 0.00218 | 0.00021 | <0.0002 | 0.00021 | 0.00031 | <0.0002 |
| Iron (Dissolved) | 0.01 | 0.088 | <0.01 | 1.36 | 3.19 | <0.01 | <0.01 | <0.01 | <0.01 | 0.042 | 0.012 | <0.01 | <0.01 | <0.01 |
| Lead (Dissolved) | 0.00005 | <0.00005 | 0.000069 | 0.000085 | <0.00005 | 0.000055 | <0.00005 | 0.000146 | <0.00005 | <0.00005 | <0.00005 | <0.00005 | <0.00005 | <0.00005 |
| Lithium (Dissolved) | 0.0005 | 0.0122 | 0.00257 | 0.0017 | 0.00122 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Magnesium (Dissolved) | 0.1 | 8.6 | 9.53 | 11.7 | 12.1 | 1.27 | 1.44 | 1.46 | 6.88 | 6.93 | 6.96 | 3.27 | 3.41 | 3.37 |
| Manganese (Dissolved) | 0.00005 | 0.239 | 0.509 | 3.27 | 5.14 | 0.00189 | 0.00543 | 0.0132 | 0.156 | 0.283 | 0.248 | 0.00139 | 0.00236 | 0.000467 |
| Mercury (Dissolved) | 0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Molybdenum (Dissolved) | 0.00005 | 0.0064 | 0.0189 | 0.0163 | 0.0168 | 0.00109 | 0.000643 | 0.000639 | 0.00581 | 0.0069 | 0.00658 | 0.000708 | 0.000755 | 0.000693 |
| Nickel (Dissolved) | 0.0005 | 0.00211 | 0.00245 | 0.0142 | 0.00376 | 0.00055 | <0.0005 | <0.0005 | 0.00098 | 0.001 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Phosphorus (Metal) Dissolved | 0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 |
| Potassium (Dissolved) | 0.05 | 0.907 | 1.69 | 1.68 | 1.7 | 0.567 | 0.389 | 0.388 | 1.16 | 1.11 | 1.07 | 0.679 | 0.66 | 0.681 |
| Selenium (Dissolved) | 0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.00332 | 0.00056 | 0.00039 | 0.00012 | 0.00014 | 0.00015 |
| Silicon (Dissolved) | 0.05 | 6.3 | 5.32 | 6.04 | 6.15 | 7.72 | 7.84 | 7.59 | 5.87 | 5.05 | 5.13 | 7.06 | 6.92 | 6.94 |
| Silver (Dissolved) | 0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Sodium (Dissolved) | 0.05 | 16.6 | 10.9 | 11.5 | 14.6 | 3.09 | 3.09 | 3.38 | 12.2 | 12.1 | 12.3 | 3.12 | 3.28 | 3.29 |
| Strontium (Dissolved) | 0.0002 | 0.796 | 0.373 | 0.44 | 0.533 | 0.0632 | 0.0614 | 0.0668 | 0.226 | 0.215 | 0.238 | 0.0893 | 0.111 | 0.0933 |
| Thallium (Dissolved) | 0.00001 | <0.00001 | 0.000018 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Tin (Dissolved) | 0.0001 | 0.0003 | 0.00021 | 0.00012 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.00022 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Titanium (Dissolved) | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Uranium (Dissolved) | 0.00001 | 0.000424 | 0.00263 | 0.00184 | 0.00108 | 0.00016 | 0.000088 | 0.000094 | 0.00174 | 0.00157 | 0.00135 | 0.000224 | 0.000243 | 0.00022 |
| Vanadium (Dissolved) | 0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.0036 | 0.0036 | 0.0036 | 0.0012 | <0.001 | <0.001 | 0.0013 | 0.0014 | 0.0014 |
| Zinc (Dissolved) | 0.001 | 0.0014 | 0.0164 | 0.0133 | 0.0101 | 0.0123 | <0.001 | 0.0024 | 0.0019 | <0.001 | <0.001 | 0.0028 | <0.001 | <0.001 |
| **Total Metals** | | | | | | | | | | | | | | |
| Aluminum (Total) | 0.003 | 0.75 | 0.395 | 1.3 | 0.125 | 4.86 | 0.256 | 0.0571 | 1.16 | 0.0639 | 0.0511 | 0.0262 | 0.0175 | 0.0132 |
| Antimony (Total) | 0.0001 | 0.00033 | 0.00028 | 0.00061 | 0.00044 | 0.00021 | <0.0001 | <0.0001 | 0.00021 | 0.00013 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Arsenic (Total) | 0.0001 | 0.0036 | 0.00111 | 0.00442 | 0.00612 | 0.00524 | 0.00371 | 0.00351 | 0.00131 | 0.00162 | 0.00184 | 0.00199 | 0.0022 | 0.00205 |
| Barium (Total) | 0.00005 | 0.124 | 0.0639 | 0.106 | 0.103 | 0.0327 | 0.00847 | 0.00542 | 0.0463 | 0.0351 | 0.0307 | 0.0085 | 0.00804 | 0.00792 |
| Beryllium (Total) | 0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.00025 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Bismuth (Total) | 0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Boron (Total) | 0.01 | 0.019 | 0.011 | 0.019 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Cadmium (Total) | 0.00001 | 0.000143 | 0.00084 | 0.000731 | 0.000166 | 0.000042 | 0.000057 | 0.000031 | 0.000082 | 0.00002 | 0.000015 | <0.00001 | 0.000012 | <0.00001 |
| Calcium (Total) | 0.05 | 25.9 | 34 | 40.5 | 40.4 | 9.66 | 9.07 | 8.83 | 36.5 | 33.6 | 33.2 | 27.5 | 24.9 | 26.9 |
| Chromium (Total) | 0.0001 | 0.00156 | 0.00102 | 0.00272 | 0.00078 | 0.00541 | 0.00295 | 0.00255 | 0.00188 | 0.00034 | 0.00021 | 0.00087 | 0.0009 | 0.00081 |
| Cobalt (Total) | 0.0001 | 0.00082 | 0.00093 | 0.00459 | 0.00451 | 0.00156 | 0.00014 | <0.0001 | 0.00067 | 0.00039 | 0.0003 | <0.0001 | <0.0001 | <0.0001 |
| Copper (Total) | 0.0005 - 0.003 | 0.00198 | 0.00461 | 0.00599 | 0.00233 | 0.00284 | 0.00079 | 0.00107 | 0.00452 | <0.00085 | 0.00074 | 0.00063 | <0.002 | <0.0005 |
| Iron (Total) | 0.01 | 0.763 | 0.406 | 2.86 | 4.23 | 3.44 | 0.233 | 0.049 | 0.874 | 0.08 | 0.048 | 0.019 | 0.013 | <0.01 |
| Lead (Total) | 0.00005 | 0.000813 | 0.000917 | 0.00239 | 0.000625 | 0.00166 | 0.000175 | 0.000052 | 0.000387 | 0.000096 | 0.00008 | <0.00005 | <0.00005 | <0.00005 |
| Lithium (Total) | 0.0005 | 0.012 | 0.00208 | 0.00229 | 0.00115 | 0.00132 | <0.0005 | <0.0005 | 0.00089 | <0.0005 | <0.0005 | 0.00065 | <0.0005 | <0.0005 |
| Magnesium (Total) | 0.1 | 8.52 | 9.06 | 11.5 | 12.5 | 1.96 | 1.43 | 1.43 | 7.64 | 6.8 | 7.08 | 3.44 | 3.25 | 3.41 |
| Manganese (Total) | 0.00005 | 0.256 | 0.502 | 3.26 | 5.14 | 0.0611 | 0.0118 | 0.0141 | 0.181 | 0.282 | 0.251 | 0.00216 | 0.00397 | 0.000767 |
| Mercury (Total) | 0.00001 | <0.00001 | <0.00001 | <0.00001 | 0.000023 | 0.000039 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Molybdenum (Total) | 0.00005 | 0.00633 | 0.0181 | 0.0157 | 0.0172 | 0.00115 | 0.000642 | 0.00061 | 0.00593 | 0.00733 | 0.00666 | 0.000803 | 0.000782 | 0.000802 |
| Nickel (Total) | 0.0005 | 0.00324 | 0.00284 | 0.0161 | 0.00469 | 0.00323 | 0.00062 | <0.0005 | 0.00185 | 0.00111 | 0.00061 | <0.0005 | <0.0005 | <0.0005 |
| Phosphorus (Metal) Total | 0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 |
| Potassium (Total) | 0.05 | 1.03 | 1.6 | 1.81 | 1.73 | 0.949 | 0.425 | 0.364 | 1.48 | 1.1 | 1.07 | 0.676 | 0.68 | 0.694 |
| Selenium (Total) | 0.0001 | <0.0001 | <0.0001 | 0.00013 | 0.00013 | 0.0001 | <0.0001 | <0.0001 | 0.00338 | 0.00075 | 0.00042 | 0.00013 | 0.00015 | 0.00013 |
| Silicon (Total) | 0.05 | 7.54 | 5.77 | 8.11 | 6.64 | 18.9 | 7.99 | 7.37 | 9.11 | 5.04 | 5.25 | 7.26 | 6.6 | 6.99 |
| Silver (Total) | 0.00001 | 0.000012 | 0.000024 | 0.000026 | <0.00001 | 0.000015 | <0.00001 | <0.00001 | 0.000018 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Sodium (Total) | 0.05 | 16.1 | 10.2 | 11.2 | 14.7 | 3.2 | 3.07 | 3.3 | 12.7 | 11.8 | 12.2 | 3.11 | 3.48 | 3.38 |
| Strontium (Total) | 0.0002 | 0.787 | 0.362 | 0.436 | 0.551 | 0.0778 | 0.0614 | 0.0645 | 0.235 | 0.231 | 0.24 | 0.0942 | 0.115 | 0.0958 |
| Thallium (Total) | 0.00001 | <0.00001 | 0.000025 | 0.000018 | <0.00001 | 0.000058 | <0.00001 | <0.00001 | 0.000019 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Tin (Total) | 0.0001 | 0.00052 | 0.00043 | 0.00069 | 0.00022 | 0.0005 | 0.0001 | <0.0001 | 0.00048 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Titanium (Total) | 0.01 | 0.047 | 0.019 | 0.076 | 0.011 | 0.173 | 0.012 | <0.01 | 0.052 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Uranium (Total) | 0.00001 | 0.000505 | 0.00254 | 0.00193 | 0.00115 | 0.000447 | 0.000104 | 0.0001 | 0.00184 | 0.0016 | 0.00138 | 0.000237 | 0.000243 | 0.00023 |
| Vanadium (Total) | 0.001 | 0.002 | 0.0012 | 0.003 | <0.001 | 0.0101 | 0.0042 | 0.0036 | 0.0033 | <0.001 | <0.001 | 0.0016 | 0.0016 | 0.0016 |
| Zinc (Total) | 0.003 | 0.006 | 0.008 | 0.0197 | 0.045 | 0.0119 | <0.003 | <0.003 | 0.0062 | 0.004 | <0.003 | <0.003 | <0.003 | <0.003 |
| **Organics** | | | | | | | | | | | | | | |
| Carbon Organic (Dissolved) | 0.5 - 2 | 6.25 | 2.64 | 7.45 | 19 | 4.71 | 4.54 | 3.45 | 21.3 | 4.48 | 1.83 | 1.75 | 7.23 | 6.6 |
| Carbon Organic (Total) | 0.5 | 3.26 | 3.52 | 7.3 | 12.4 | 0.93 | 1.34 | 0.76 | 2.02 | 1.59 | 1.68 | 0.89 | 0.79 | 0.88 |
| Nitrogen Organic (Dissolved) | 0.05 - 0.1 | 0.756 | <0.05 | 0.39 | 1.08 | <0.05 | 0.658 | 0.287 | 2.14 | 0.406 | 0.685 | <0.05 | 0.769 | 0.575 |
| Nitrogen Organic (Total) | 0.05 - 0.06 | 0.154 | 0.289 | 0.548 | 0.549 | <0.06 | <0.06 | <0.06 | 0.09 | 0.12 | 0.11 | <0.06 | <0.06 | <0.06 |

M:\1\01\00457\04\A\Correspondence\VA12-02061 Groundwater Qu

**NOTES:**

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE C1 FOR DETAILED FOOTNOTES ON CELL

## APPENDIX C - GROUNDWATER QUALITY ANALYTICAL RESULTS

## NEW GOLD INC.
## BLACKWATER GOLD PROJECT

## TABLE C3
## FIELD AND TRAVEL BLANK ANALYTICAL RESULTS

| Sample ID | FIELD BLANK | TRAVEL BLANK | TRAVEL BLANK | FIELD BLANK |
|---|---|---|---|---|
| Date Sampled | 27/May/2012 | 27/May/2012 | 19/Sep/2012 | 28/Sep/2012 |
| Lab ID | L1153413-1 | L1153413-3 | L1212753-3 | L1217111-3 |
| **Physical Tests** | | | | |
| Alkalinity (Total as CaCO3) | <2 | <2 | **1.3** | **1.4** |
| Bicarbonate Alkalinity | <2 | <2 | **1.3** | **1.4** |
| Carbonate Alkalinity | <2 | <2 | <1 | <1 |
| Color TCU | <5 | <5 | <5 | <5 |
| Conductivity µS/cm | <2 | <2 | <2 | <2 |
| Hardness as CaCO3 (Dissolved) | <0.5 | | | <0.5 |
| Hydroxide Alkalinity | <2 | <2 | <1 | <1 |
| pH pH | 5.86 | 6.04 | | 5.9 |
| Total Dissolved Solids | <10 | <10 | <10 | <10 |
| Total Suspended Solids | <3 | <3 | <3 | <3 |
| Turbidity NTU | <0.1 | <0.1 | <0.1 | <0.1 |
| **Dissolved Anions** | | | | |
| Bromide (Dissolved) | <0.05 | <0.05 | <0.05 | <0.05 |
| Chloride (Dissolved) | <0.5 | <0.5 | <0.5 | <0.5 |
| Fluoride (Dissolved) | <0.02 | <0.02 | <0.02 | <0.02 |
| Sulphate (Dissolved) | <0.5 | <0.5 | <0.5 | <0.5 |
| Thiocyanate (Dissolved) | | | | <0.2 |
| **Nutrients** | | | | |
| Ammonia (Total) | <0.005 | <0.005 | <0.005 | <0.005 |
| Nitrate (as N) | <0.005 | <0.005 | <0.005 | <0.005 |
| Nitrite (as N) | <0.001 | <0.001 | <0.001 | <0.001 |
| Nitrogen (Dissolved) | <0.05 | | | <0.05 |
| Nitrogen (Total) | <0.0025 | <0.0025 | <0.05 | <0.05 |
| Nitrogen Kjeldahl (Total) | <0.05 | <0.05 | <0.05 | <0.05 |
| Phosphate (Total) | | | <0.002 | |
| Phosphorus (Nutrient) Dissolved | <0.002 | <0.002 | <0.002 | <0.002 |
| Phosphorus (Nutrient) Total | <0.002 | <0.002 | | <0.002 |
| **Cyanide** | | | | |
| Cyanide (Free) | <0.005 | <0.005 | <0.005 | <0.005 |
| Cyanide (Total) | <0.005 | <0.005 | <0.005 | <0.005 |
| Cyanide (WAD) | <0.005 | <0.005 | <0.005 | <0.005 |
| Thiocyante (SCN) | <0.5 | | | <0.5 |
| **Dissolved Metals** | | | | |
| Aluminum (Dissolved) | <0.001 | | | <0.001 |
| Antimony (Dissolved) | <0.0001 | | | <0.0001 |
| Arsenic (Dissolved) | <0.0001 | | | <0.0001 |
| Barium (Dissolved) | <0.00005 | | | <0.00005 |
| Beryllium (Dissolved) | <0.0001 | | | <0.0001 |
| Bismuth (Dissolved) | <0.0005 | | | <0.0005 |
| Boron (Dissolved) | <0.01 | | | <0.01 |
| Cadmium (Dissolved) | <0.00001 | | | <0.00001 |
| Calcium (Dissolved) | <0.05 | | | <0.05 |
| Chromium (Dissolved) | <0.0001 | | | <0.0001 |
| Cobalt (Dissolved) | <0.0001 | | | <0.0001 |
| Copper (Dissolved) | <0.0002 | | | <0.0002 |
| Iron (Dissolved) | <0.01 | | | <0.01 |
| Lead (Dissolved) | <0.00005 | | | <0.00005 |
| Lithium (Dissolved) | <0.0005 | | | <0.0005 |
| Magnesium (Dissolved) | <0.1 | | | <0.1 |
| Manganese (Dissolved) | <0.00005 | | | <0.00005 |
| Mercury (Dissolved) | <0.00001 | | | <0.00001 |
| Molybdenum (Dissolved) | <0.00005 | | | <0.00005 |
| Nickel (Dissolved) | <0.0005 | | | <0.0005 |
| Phosphorus (Metal) Dissolved | <0.3 | | | <0.3 |
| Potassium (Dissolved) | <0.05 | | | <0.05 |
| Selenium (Dissolved) | <0.0001 | | | <0.0001 |
| Silicon (Dissolved) | <0.05 | | | <0.05 |
| Silver (Dissolved) | <0.00001 | | | <0.00001 |
| Sodium (Dissolved) | <0.05 | | | <0.05 |
| Strontium (Dissolved) | <0.0002 | | | <0.0002 |
| Thallium (Dissolved) | <0.00001 | | | <0.00001 |
| Tin (Dissolved) | <0.0001 | | | <0.0001 |
| Titanium (Dissolved) | <0.01 | | | <0.01 |
| Uranium (Dissolved) | <0.00001 | | | <0.00001 |
| Vanadium (Dissolved) | <0.001 | | | <0.001 |
| Zinc (Dissolved) | <0.001 | | | <0.001 |
| **Total Metals** | | | | |
| Aluminum (Total) | <0.003 | <0.003 | <0.003 | <0.003 |
| Antimony (Total) | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Arsenic (Total) | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Barium (Total) | <0.00005 | <0.00005 | <0.00005 | <0.00005 |
| Beryllium (Total) | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Bismuth (Total) | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Boron (Total) | <0.01 | <0.01 | <0.01 | <0.01 |
| Cadmium (Total) | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Calcium (Total) | <0.05 | <0.05 | <0.05 | <0.05 |
| Chromium (Total) | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Cobalt (Total) | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Copper (Total) | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Iron (Total) | <0.01 | <0.01 | <0.01 | <0.01 |
| Lead (Total) | <0.00005 | <0.00005 | <0.00005 | <0.00005 |
| Lithium (Total) | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Magnesium (Total) | <0.1 | <0.1 | <0.1 | <0.1 |
| Manganese (Total) | <0.00005 | <0.00005 | <0.00005 | <0.00005 |
| Mercury (Total) | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Molybdenum (Total) | <0.00005 | <0.00005 | <0.00005 | <0.00005 |
| Nickel (Total) | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Phosphorus (Metal) Total | <0.3 | <0.3 | <0.3 | <0.3 |
| Potassium (Total) | <0.05 | <0.05 | <0.05 | <0.05 |
| Selenium (Total) | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Silicon (Total) | <0.05 | <0.05 | <0.05 | <0.05 |
| Silver (Total) | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Sodium (Total) | <0.05 | <0.05 | <0.05 | <0.05 |
| Strontium (Total) | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Thallium (Total) | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Tin (Total) | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Titanium (Total) | <0.01 | <0.01 | <0.01 | <0.01 |
| Uranium (Total) | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Vanadium (Total) | <0.001 | <0.001 | <0.001 | <0.001 |
| Zinc (Total) | <0.003 | <0.003 | <0.003 | <0.003 |
| **Organics** | | | | |
| Carbon Organic (Dissolved) | <0.5 | | | <0.5 |
| Carbon Organic (Total) | <0.5 | <0.5 | <0.5 | <0.5 |
| Nitrogen Organic (Dissolved) | <0.05 | | | <0.05 |
| Nitrogen Organic (Total) | <0.06 | <0.06 | <0.06 | <0.06 |
| **Percent of sample > MDL** | **0.00%** | **0.00%** | **3.45%** | **2.06%** |

M:\1\01\00457\04\A\Correspondence\VA12-02061 Groundwater Quality Data Collection Summary\Appendix\C WQ results\[Appendix C

**NOTES:**

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATS THE RESULT EXCEEDS THE MDL FOR THAT ANALYTE.
3. MDL EXCEEDANCE CALCULATION DOES NOT INCLUDE pH.