Honeywell

Prepared for

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GEOTECHNICAL INSTRUMENTATION INSTALLATION REPORT – 2010 AND 2011
ONONDAGA LAKE SEDIMENT CONSOLIDATION AREA
Camillus, New York

Prepared by

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Project Number GJ4706A

1 November 2011

Geosyntec consultants

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1. INTRODUCTION AND PROJECT BACKGROUND

This report summarizes the instrumentation installation and oversight activities performed by Geosyntec Consultants, Inc. (Geosyntec), and provides as-built documentation of the 2010 and 2011 Instrumentation Installation work performed at the Onondaga Lake Sediment Consolidation Area (SCA) site. Onondaga Lake is a 4.6-square mile (or approximately 3,000-acre) lake located in Central New York State immediately northwest of the City of Syracuse. A major component of the selected lake remedy includes the dredging and onsite consolidation of sediments removed from the lake in the SCA site, located on Wastebed 13 (WB-13) in Camillus, New York. The purpose of the SCA is to contain dredged sediments from the Onondaga Lake remedial action using geotextile tubes (geo-tubes). The SCA will have a maximum footprint of approximately 70 acres and will include a perimeter berm, a liner system, a gravel drainage system, stacked geotextile tubes filled with dredged sediments, and a final cap. The SCA design includes a phased construction approach to facilitate the dredging schedule, odor mitigation, underlying Solvay waste consolidation, and/or final closure.

Honeywell obtained approval from the New York State Department of Environmental Conservation (NYSDEC) to install the geotechnical instrumentation and monitoring system as part of the 2010 construction. The installation started in 2010 and continued in 2011, as the liner system construction for Phases I and II were taking place. The geotechnical instrumentation and monitoring system consists of the following components:

- Seven sets of nested vibrating wire (VW) piezometers within the footprint of the SCA. Each set of nested piezometers consists of three piezometers at depths of 15 ft, 30 ft, and 45 ft, respectively. The piezometers will be used to monitor porewater pressures before, during, and after the SCA construction. In addition, two single VW piezometers were installed on the side slope of the existing northern Wastebed 13 perimeter dike at depths of 50 ft below ground. These new piezometers, together with three nearby existing piezometers, will be used to monitor any change of porewater pressures in the existing Wastebed 13 dike due to the SCA construction. It is noted that all the piezometers were installed as part of the 2010 instrumentation installation work.

- Five settlement profilers were installed along five sections. It is noted that originally only three settlement profilers along three sections were included as part of the design. However, after discussion with NYSDEC, it was decided to add Profilers 4 and 5 to provide additional monitoring capability. Each section has a single profile pipe placed in an excavated trench near the Wastebed surface. The profilers were planned to be used to monitor the settlement of the foundation SOLW under the loading from the SCA.

- A total of thirty-eight VW settlement cells were proposed to be installed within the footprint of the SCA. The settlement cells will be used to monitor the settlement of the foundation SOLW under the loading from the SCA. It is noted that only twenty-nine VW settlement cells (i.e., SC-G1 through G29) were installed as part of the 2010 and 2011 instrumentation installation work, composing the Phase I and Phase II instrumentation system. The remaining settlement cells will be located in the future Phase III footprint and will be installed if Phase III is constructed.

- Five manual inclinometers and one ShapeAccelArray (SAA) inclinometer were installed. The inclinometers are used to evaluate the amount of lateral movement of the foundation SOLW due to the SCA construction. Two manual inclinometers (i.e., SI-G1 and SI-G2) are located inside the SCA footprint near the proposed boundaries of Phase I. The other three manual inclinometers (i.e., SI-G3, SI-G4, and SI-G5) are located outside the SCA footprint at the toe of the SCA perimeter berm. In addition, one SAA inclinometer (i.e., SI-G3-SAA) was installed near the SCA perimeter berm in the Western stormwater basin area to provide continuous automated measurements of any lateral strains in the SOLW foundation. It is noted that the casing for the SAA was installed as part of the 2010 instrumentation installation work and the SAA inclinometer instrument itself was installed as part of the 2011 instrumentation installation work.

- A datalogger system was installed in the instrumentation trailer. The system includes one Campbell Scientific CR1000 datalogger, two AVW200 VW spectrum analyzer, and three AM16/32B relay multiplexers. Settlement cells SC-G1 through SC-G29, piezometers PZ-G1 through PZ-G5, and the SAA are connected to the datalogger system and recorded automatically.

The work required to install these instruments consisted of: (i) borehole installation of piezometers and inclinometer casings; (ii) trenching; (iii) placement and junctioning of electrical cables; (iv) placement and junctioning of the hydraulic tubing for settlement cells; (v) placement of Advanced Drainage System (ADS) pipe for the profilers; and (vi) backfilling of completed trenches.

Instrumentation installation work services were self-performed by Parsons using union labor. Oversight, CQA and support services were provided by Geosyntec. Geosyntec personnel performed: (i) full-time field monitoring/observations during placement and junctioning of cables, tubing, pipes and backfilling; (ii) verification of installation procedures; and (iii) verification and acceptance tests of installed instruments. Piezometers and inclinometer casings were installed before the presence of Geosyntec personnel on the site. As-built surveying for the project were provided to Geosyntec by Parsons after completion of the instrumentation installation in 2011.

The remainder of this report is organized to present the following:

- a list of key personnel involved with this project;
- a description of the CQA activities performed during instrument installation;
- documentation related to the field work and instrumentation installation activities;
- a summary of work remaining to be performed in 2012; and
- as-built survey drawings.

2. KEY PROJECT PERSONNEL

Key personnel involved in this project are as follows:

Honeywell (Client)

- Mr. Larry Somer (Manager – Remediation Design and Construction)

NYSDEC

- Mr. Tim Larson (NYSDEC Project Manager)

- Mr. Bill Zepetelli (NYSDEC On-Site Representative)

Parsons Construction Services (Project Manager)

- Mr. Al Steinhoff (Construction Project Manager)
- Mr. Ken Sommerfield (Construction Manager)
- Mr. William Moon (Health and Safety Manager)

Parsons Design Services (Project Manager)

- Mr. Paul Blue (Project Manager)
- Mr. Dave Steele (Engineer)
- Mrs. Laura Brussel (Technical Manager)

Geosyntec Consultants (Instrumentation Consultant)

- Dr. Jay Beech (Design Engineer)
- Dr. Ramachandran (Kula) Kulasingam (Project Manager)
- Mr. Joseph Sura (Instrumentation Engineer - Onsite)
- Dr. Ali Ebrahimi (Instrumentation Engineer - Onsite)
- Dr. Bob Bachus (Instrumentation Expert)
- Dr. Ming Zhu (Instrumentation Engineer – Office Support)

3. 2010 AND 2011 INSTRUMENTATION INSTALLATION

The scope of the oversight activities performed by Geosyntec during the 2010 and 2011 instrumentation installation included:

- pre-installation instrumentation acceptance testing;
- field CQA operations;
- post-installation instrumentation acceptance testing; and
- preparation of 2010 and 2011 as-built report and drawings.

3.1 Field Instrumentation Installation Schedule

Geosyntec personnel were on site from 24 October 2010 to 7 December 2010, from 4 April 2011 to 29 September 2011, and from 24 October 2011 to 26 October 2011. Geosyntec's field schedule included full-time field monitoring and observations during instrumentation installation and post-installation acceptance testing. Due to a large snowfall on Saturday, 4 December 2010 and Sunday, 5 December 2010, the site was not active on Monday, 6 December 2010 and the site was formally shut down for winter on Tuesday, 7 December 2010. Instrumentation installation activities took place approximately from 7:30 am to 4:30 pm during weekdays. Instrumentation work was performed on Saturday, 13 November 2010 and a few weekends in August 2011.

3.2 Instrumentation Installation Kick-Off Meeting

An instrumentation installation kick-off meeting was held on 26 October 2010 at the site trailer. The meeting was attended by Mark Hoffmann (Parsons), Ken Sommerfield (Parsons), William Moon (Parsons), Alan Steinhoff (Parsons), and Joseph Sura (Geosyntec). The kickoff meeting involved a discussion of the drawings and the Geotechnical Instrumentation Installation Work Plan.

3.3 Instrument Purchases and Pre-Installation Acceptance Testing

The instruments used in SCA construction, including settlement cells, VW piezometers, VW handheld readout unit, portable digital inclinometer system, and the inclinometer casings, were directly purchased by Geosyntec from ITM Soil Instruments and shipped to the Geosyntec office in Kennesaw, GA on 9 September 2010. The instruments were shipped with calibration certificates provided by the manufacturer. Geosyntec used a

handheld VW readout box to verify that a single reading from the settlement cells and the piezometers, matched the calibration curve provided by the manufacturer. The calibration sheets and a summary of the pre-installation acceptance testing are included in Attachment A.

The data logger, multiplexers and other related instruments for automated monitoring were purchased from Campbell Scientific, Inc. and shipped to the Geosyntec office in Kennesaw, GA on 14 September 2010. The instruments were shipped with the associated cables and calibration certificates provided by the manufacturer. Geosyntec installed the software and tested the data logger programming to verify acceptability of the calibration. The calibration sheet for the data logger is included in Attachment A.

The SAA was purchased by Geosyntec from Measurand Inc. and was shipped directly to the SCA site on 4/21/2011 with calibration certificates provided by the manufacturer (See Attachment A).

The instrumentation cables were purchased by Geosyntec from Batt Cables after consultation with ITM and shipped directly to the SCA on 27 September 2010. The initially proposed polyvinyl chloride (PVC) water tubing was purchased from Vellano Brothers and shipped directly to the SCA during the week of 18 October 2010. The cross-linked polyethylene (PEX) water tubing was delivered directly to the SCA during the week of 22 November 2010. The t-junctions and connectors necessary for settlement cell connections with PEX tubing arrived on site during the week of 29 November 2010.

3.4 Piezometer and Inclinometer Casing Installation

A driller contracted to Parsons drilled the boreholes and installed the piezometers, the 2.75" inclinometer casings, and the 1" PVC casing for the SAA under the supervision of Parsons in October 2010. Geosyntec was not on the site during the boring and the installation of the piezometers and casings. Locations of the piezometers and inclinometers were established using a Trimble GPS surveying system prior to boring. The boring logs are prepared by Parsons and presented in Attachment B. The Measurand SAA inclinometer casing (i.e., SI-G3-SAA) was installed at a location approximately 20 ft from the manual inclinometer SI-G3.

3.5 Trenching

The alignment of the trenches was staked out by a surveyor employed by Parsons based on the AutoCAD drawings. The trenching was performed using a mini excavator. It is

noted that a portion of the trenching was completed prior to Geosyntec's arrival on site. It is noted that based on visual observation of the trenches, many of the trenches were observed to be deeper than the required minimum values shown in the Instrumentation Installation Drawings. This is considered acceptable.

3.6 Settlement Cell Installation

The settlement cells use hydraulic tubing lines to measure the head difference between a known static point (i.e., the reservoir) and the cell. The hydraulic lines were originally intended to be installed using 0.5" PVC water pipe in 20-ft long sections. Each section would be combined with a coupler. The PVC was placed during the week of 1 November 2010 in long straight lines without making any cell connections. NYSDEC had concerns with the number of connections and possible failure of the proposed PVC pipe due to the large number of couplers required. After discussion, NYSDEC, Parsons and Geosyntec agreed upon the use of 0.5" PEX tubing in 1000-ft rolls, instead of the PVC pipes. All installed PVC pipes were removed from the trenches.

After the new PEX tubing arrived on site, the PEX tubing was deployed by unrolling it from the 1000-ft spool in each lateral. No cell connections or PEX connectors were made. It was agreed that the PEX tubing would be bedded, snaked and then backfilled, per agreement with NYSDEC. The snaking was performed by using nylon cable ties to hold the PEX tubing to the already snaked electrical cable. Additionally, a laborer would hold the tubing to the side using stakes or a shovel during the backfilling to maintain adequate snaking. The stakes were removed after backfilling.

The settlement cells were placed inside holes that were approximately 1 ft wide, 1 ft long, and 2 ft deep and covered with sand. The settlement cells were connected with the hydraulic lines and electrical cables. There are four major hydraulic lines (also called legs) in Phase I and Phase II. Each settlement cell is connected to one of the four legs. The hydraulic lines were filled with non-toxic potable glycol to keep the lines from freezing during the winter time. The lines were flushed to get the air bubbles out of the tubings. The hydraulic lines and the connections were pressure tested. The pressure test records are included in Attachment C.

The four settlement cell legs were initially connected to one reservoir in the instrumentation trailer. Four reservoirs were built in October 2011 and each leg was connected to one individual reservoir. In addition, the far sides of each of the four legs were initially terminated inside the SCA footprint. Later in August 2011, they were extended and terminated outside the SCA footprint in order for future calibration or maintenance of settlement cell system, if needed. The two legs in Phase 1 (i.e., Leg 1

and Leg 2) were terminated to the south of Western Basin near the corner of the basin and the SCA berm. The two legs in Phase 2 (i.e., Leg 3 and Leg 4) were terminated outside of the southern SCA berm. Photos of the settlement cell reservoirs and terminations are presented in Attachment D.

3.7 Electrical Cable Installation and Junctioning

Electrical cables were installed by a certified instrumentation electrician provided by Parsons. In planning the instrumentation, Geosyntec proposed the use of multi-core cable to carry electrical signals. Therefore, each instrument (settlement cell or piezometer) would have two individual wires (referred to as "cores") within a larger multi-core cable. The types of cables ranged from 2-core (i.e., handles one single instrument only), 5-core (two instruments), 10-core (5 instruments), 20-core (10 instruments) and 47-core (23 instruments). It is noted that the cable manufacturer shipped 27-core cables instead of 20-core and 48-core instead of 47-core. However, because the planning was completed based on 20-core and 47-core, it was decided to follow the plan for 20-core and 47-core and merely leave unused cores as necessary. It is noted that each settlement cell included approximately 20 ft of cable and each piezometer included sufficient cable to reach the ground surface with an additional 20 ft outside the ground. These factory-provided lengths were used to allow for simple junctioning at the ground surface into the larger multi-core cable.

The junctioning procedure for 2-core and 5-core cables used the cable splice kits provided by ITM. The splice kits consisted of a plastic cylinder, a grounding sheath, a mechanical connection and epoxy. The wires were individually stripped, tinned, and junctioned together using a mechanical connection inside the plastic cylinder. The armoring from the cable was then connected using the grounding sheath to provide a single consistent ground. The cylinder was closed and then filled with epoxy to form a permanent water-tight seal.

The junctioning procedure for 10-core and larger cables did not use the cable splice kits due to the large cable size. Instead, the cables were junctioned inside of PVC junction boxes using butt splices to connect the cores. The grounding cable was kept continuous using a ground nut inside each junction box to hold the armoring from the various cables together. Liquid tapes were used to seal the splices and the silicon sealant was used to seal the junction boxes.

Immediately after installation, the cables were tested for electrical continuity by the electrician by measuring the flow of electricity through the junction (referred to as a "continuity check") and then by checking the individual cell with the VW readout box

(referred to as a "VW readout check"). The strength of the connections was also tested with a "jiggle test". The jiggle test was performed by connecting the handheld VW readout box to the end of the line for each cell and then shaking the electrical connections. If the connection is tight, the VW readout box should not show a change due to the shaking. The Phase I jiggle test performed on 23 November 2010 found one connection (cell SC-G9) that had a butt splice that was not fully tight and the connection for this cell was repaired. The jiggle test on 23 November 2010 also found that the cell used for SC-G11 was not operating properly. A test with the VW readout box determined that the issue is internal to the cell itself and not a fault of the electrical connection. Therefore, this cell was removed from the field and brought back for further testing and a new cell was placed as SC-G11. The new SC-G11 passed the jiggle test properly. The Phase II jiggle test performed on 30 November 2010 did not find any cells not operating correctly.

3.8 Settlement Profiler Installation

The settlement profiler was installed in a trench with a minimum depth of 16 in and a width of approximately 18 in. The installation procedure began with a bedding layer of 4 in of sand, followed by placement of the Advanced Drainage System (ADS) pipe in the trench. A 3/8 in polyethylene rope was placed in the pipe through use of a "push rod", a 120 ft long section of 0.5 in PVC pipe used to push the rope through the ADS pipe sections. An external coupling was then attached to hold the ADS pipe sections together. The external couplings have teeth to lock the ADS pipe into place to prevent the sections from coming apart. Nylon cable ties with 24-in length were also used to provide additional joint stability.

The settlement profiler monitoring equipment was designed and assembled by Geosyntec. It includes a pressure transducer torpedo connected by approximately 1300-ft long hydraulic line and electrical cable, a CR10X datalogger, and a laptop. The hydraulic line is connected to a movable tank. Both the tank and hydraulic lines are filled with glycol. The reading was recorded by the datalogger at every 10 ft as the transducer torpedo was pulled through the buried ADS pipes. The probe was calibrated before shipping to the site and was re-calibrated in the field by the so-called "ladder test". In the test, a reservoir was set up at the top of a ladder. The probe was first moved up and then down the ladder at 1-ft increments. Reading were taken from the probe at each increment and converted to the change in elevation. The field calibrate test results are included in Attachment A. The cables attached to the profiler probe were checked for the proper connectivity using an ohmmeter. The hydraulic line connected to the probe was visually checked for leak or presence of air bubbles.

3.9 SAA Installation

The SAA was installed into the PVC casing in April 2011. The SAA was connected to the data logger in the instrumentation trailer with approximately 2000-ft long cable. An external rechargeable battery was placed inside an 18-in diameter HDPE vault near the SAA to provide power supply to the SAA.

Geosyntec conducted a diagnostic test on the SAA in the field with a computer and the software SAARecorder provided by the manufacturer. The diagnostic test is to check if there is any damage or miscommunication of the sensors or errors in the readings. The diagnostic test performed by Geosyntec indicated that the SAA functioned properly.

3.10 Datalogger System Installation

The datalogger system, including the programming, was installed by Geosyntec in May 2011. Data from the settlement cells and piezometers in Phase I and Phase II and the SAA are automatically collected by the datalogger. Currently, the data is manually downloaded from the datalogger to a computer on a weekly basis and sent to Geosyntec for evaluation.

3.11 Post-Installation Acceptance Testing

The purpose of the post-installation acceptance testing is to verify that the installed instrumentation system is operating properly.

Settlement cell "lifting tests" were performed for the settlement cells in the field. Selected settlement cells were lifted by a known vertical displacement and waited until the readings by the datalogger in the instrumentation trailer became stable. The readings before and after the lifting were recorded. The difference in the readings was converted to the change in elevations and compared to the actual change. The test results were found to be reasonably accurate, indicating that the settlement cells are functioning properly as intended. The lifting test results of the selected settlement cells are included in Attachment C.

Initial readings were collected from the piezometers, SAA, and manual inclinometers and presented in Attachment C too. The readings are considered to be reasonable and indicate that these instruments are functioning properly as intended. The profiler pipes were tested with "dummy" profilers. All profiler pipes passed the "dummy" tests at some point of time during the testing that lasted several months. The issues encountered during the testing are further discussed in Section 3.12.

3.12 Issues during Installation and Monitoring

The following issues were encountered during the installation and post-installation monitoring:

1. As discussed in the report, a total of five settlement profiler pipes were installed in Phases I and II. These pipes were tested successfully on multiple occasions commencing in the Fall of 2010 using a "dummy" profiler probe (i.e., PVC pipe exhibiting a diameter larger than the prototype profiler) after installation of the pipes to verify that the pipes remained open. Testing during and following clay placement indicated that all of the settlement profile pipes have experienced blockages that prevent pulling of either the dummy or real profiler through the entire lengths of the pipes. Geosyntec and Parsons' field crews performed repairs to the sections of pipe that have prevented the advancement of the profiler/dummy. The blockages ranged from pipes being significantly out-of-round to near-complete collapse. Only a portion of Profiler P2 is still being monitored at the time when this report is prepared. The other four profilers have been abandoned as it is not feasible to successfully profile them. An alternate design for assessing the liner settlement using settlement monuments above the liner system has been selected.

2. Initial settlement cell readings appeared to be unstable. Several steps were taken by Geosyntec to improve the data quality. First, a barometer was set up in the instrumentation trailer to record the barometric pressure. The settlement cell data were corrected by the measured barometric pressures. Second, the hydraulic lines for the settlement cells were flushed several times to minimize the impact of air bubbles on the accuracy of the data. Third, the settlement cells were recalibrated. The settlement cell data recorded after these steps show that the readings became stable. In addition, the settlement cell "lift test" results (included in Attachment C) indicate that the accuracy of the settlement cells is within 0.2 foot.

3. On 27 October 2011, a leak was reported in Leg 4 in Phase II. The leak was estimated to be about 0.5 gallon per day. Geosyntec's instrumentation engineer went to the site and found the hydraulic line connection to one of the settlement cells was damaged. The leak was fixed and Leg 4 was re-flushed by Geosyntec. The settlement cell data collected by the datalogger for Leg 4 showed that the data went back to normal after the leak was fixed.

4. DOCUMENTATION OF FIELD WORK

A summary table showing the dates that instrumentation installation, testing and backfilling occurred is included in Attachment E. Photographic documentation of the instrumentation installation work is presented in Attachment D.

5. AS-BUILT DRAWINGS

The as-built survey for the instrumentation installation was performed by the surveyor in 2011 after completion of the instrumentation installation. Attachment F presents the as-built instrumentation drawings prepared by Geosyntec based on the surveying data provided by Parsons.

6. REMAINING INSTRUMENTATION INSTALLATION

Items remaining to be completed are summarized below.

- Inclinometer Casing: Manual inclinometer SI-G2 on the boundary between Phase I and Phase II was damaged by construction equipment and need to be fixed or replaced.
- Settlement Cells: Settlement cells in Phase III will be installed pending upon the construction of Phase III.
- Settlement Monuments: Settlement monuments will be constructed above the liner system.
- Datalogger: A second datalogger will be installed near the northeast corner of the SCA to automatically monitor piezometers PZ-G6 through G9 in early 2012.
- Remote Monitoring: A remote monitoring system will be installed before the SCA operations start to remotely monitor the instruments in real-time once the internet connection is available on the site.

7. LIMITATIONS

On most occasions during the field work, different crews worked simultaneously on different parts of the instrumentation to meet the project schedule. For example while trenching was taking place at one location, junctioning of electrical cables may have been taking place at another location. The on-site instrumentation engineer made a judgment as to which particular activity needs to be observed closely at any given time. The quality of work at other locations was checked by observing and verifying the procedure used by the installation crew, inspecting the finished product, and by performing acceptance tests.

ATTACHMENT A
Calibration Sheets and Pre-Installation Acceptance Testing

ITM Calibration Certificates of VW Settlement Cells

Calculation of Engineering units from frequency-based units.

The mathematical relationship between the frequency of vibration of a tensioned wire and the force applying the tension, is an approximate straight line relationship between the square of the measured frequency and the applied force.

Engineering units of measurement maybe derived from the frequency-based units measured by vibrating wire readouts, in 3 traditional ways:-
From 'Period' units (t x 10^7) and from 'Linear'(f^2/1000) units using two methods: a simple Linear equation or a Polynomial equation.

Calculation using 'Period' units.

The following formula is used for readings in 'Period' units.

E = K (10^7/P0^2 – 10^7/P1^2)

Where,
E is the Pressure in resultant Engineering units,
K is the Period Gauge Factor for units of calibration (from the calibration sheet)
P0 is the installation Period 'base' or 'zero' reading
P1 is the current Period reading.

This method of calculation is used by the Soil Instruments Vibrating Wire loggers' (models RO-1-VW-1 or 2 and with serial numbers starting VL or TVL) internal processors', for calculating and displaying directly on the loggers' LCD screen, the required Engineering based units.
The loggers' require 'Period' base or zero reading units for entering into their channel tables, to calculate and display correctly the required engineering units.

If an Engineering-based unit is required other than the units of calibration, then the correct K factor will have to be calculated using the standard relationship between Engineering units.
For example, if the units of calculation required were in mH2O and the calibration units were kPa, we can find out that 1kPa is equal to 0.1022mH2O, so we would derive the K factor for mH2O by multiplying the K factor for kPa by 0.1022.
Please see conversion factors in the user manual or www.soil.co.uk

Calculation using Linear units.

The following formula is used for readings in 'Linear' units.

E = G (R0 – R1)

Where,
E is the resultant Engineering unit,
G the linear Gauge factor for the units of calibration (from the calibration sheet)
R0 is the installation Linear 'base' or 'zero' reading
R1 is the current Linear reading.

Again the Linear gauge factor for units other than the units of calibration would need to be calculated using the same principles as stated in the last paragraph of the 'Period unit' section.

PTO

Linear unit calculation using a Polynomial equation.

Linear units maybe applied to the following polynomial equation, for calculation of Engineering units to a higher order of accuracy.

$E = AR1^2 + BR1 + C$

Where,
E is the resultant Engineering unit
A, B and C the Polynomial Gauge factors A, B and C, from the instrument's calibration sheet
R1 is the current Linear reading.

The value C is an offset value and relates to the zero value experienced by the transducer at the time of calibration. This value should be re-calculated at the installation time as follows:

$C = - (AR0^2 + BR0)$

Where,
A and B are as above
R0 is the installation Linear 'base' or 'zero' reading.

Please note that the sign of the re-calculated value of C, should be the same as the original value of C, so if the original is negative then the recalculated value should also be negative.

Conversion to engineering units other than the units of calibration, would best be done after conversion, using a factor calculated using the same principles as stated in the last paragraph of the 'Period unit' section.

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BS EN ISO 9001 2008
FM 553710

VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036728

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 27/01/2010

Gauge Factors in kPa
Ambient Temperature : 20°C

Period Gauge Factor (K): 954.9698000
Barometric Pressure : 1034 mbar

Linear Gauge Factor (G): (kPa/digit)0.0954970
Calibration Technician : Wayne Diprose

Polynomial Gauge Factor A: 0.000000243700000
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.0981381700
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 599.516100
Regression Zero : 6203.5

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	4014.8	6204.0	-0.043	-0.03	0.0	0.047	0.03
15.00	4066.6	6047.0	14.950	-0.03	-157.0	14.986	-0.01
30.00	4120.4	5890.0	29.943	-0.04	-157.0	29.937	-0.04
45.00	4176.8	5732.0	45.031	0.02	-158.0	44.995	0.00
60.00	4235.2	5575.0	60.024	0.02	-157.0	59.970	-0.02
75.00	4296.6	5417.0	75.113	0.08	-158.0	75.053	0.04
90.00	4360.2	5260.0	90.106	0.07	-157.0	90.052	0.03
105.00	4426.3	5104.0	105.003	0.00	-156.0	104.968	-0.02
120.00	4496.0	4947.0	119.996	0.00	-157.0	119.991	-0.01
135.00	4569.1	4790.0	134.990	-0.01	-157.0	135.026	0.02
150.00	4645.4	4634.0	149.887	-0.08	-156.0	149.977	-0.02

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.23900 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

Certified: . . . . . Line MANAGER

Soil Instruments Ltd
International Geotechnical Instrumentation Specialists

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Bell Lane Uckfield East Sussex TN22 1QL
Telephone
+44 (0) 1825 765044
Facsimile +44 (0) 1825 761740
Email sales@soil.co.uk www.soil.co.uk

BS EN ISO 9001:2008
FM 553710

VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036729

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 27/01/2010

Gauge Factors in kPa
Ambient Temperature : 20°C

Period Gauge Factor (K): 1120.5400000
Barometric Pressure : 1034 mbar

Linear Gauge Factor (G): (kPa/digit)0.1120540
Calibration Technician : Wayne Diprose

Polynomial Gauge Factor A: 0.000000444142500
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1171879000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 737.285600
Regression Zero : 6448.0

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3937.8	6449.0	-0.107	-0.07	0.0	0.013	0.01
15.00	3979.4	6315.0	14.909	-0.06	-134.0	14.956	-0.03
30.00	4022.6	6180.0	30.036	0.02	-135.0	30.027	0.02
45.00	4066.9	6046.0	45.051	0.03	-134.0	45.003	0.00
60.00	4112.8	5912.0	60.066	0.04	-134.0	59.994	0.00
75.00	4160.2	5778.0	75.082	0.05	-134.0	75.002	0.00
90.00	4209.3	5644.0	90.097	0.06	-134.0	90.025	0.02
105.00	4260.1	5510.0	105.112	0.07	-134.0	105.065	0.04
120.00	4312.1	5378.0	119.903	-0.06	-132.0	119.895	-0.07
135.00	4366.9	5244.0	134.918	-0.05	-134.0	134.966	-0.02
150.00	4423.7	5110.0	149.934	-0.04	-134.0	150.053	0.04

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.34770 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036730

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 27/01/2010

Gauge Factors in kPa
Ambient Temperature : 20°C

Period Gauge Factor (K): 1067.6120000
Barometric Pressure : 1034 mbar

Linear Gauge Factor (G): (kPa/digit)0.1067612
Calibration Technician : Wayne Diprose

Polynomial Gauge Factor A: 0.000000472753700
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1122389000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 709.173600
Regression Zero : 6494.9

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3923.5	6496.0	-0.121	-0.08	0.0	0.019	0.01
15.00	3966.8	6355.0	14.932	-0.05	-141.0	14.988	-0.01
30.00	4011.6	6214.0	29.986	-0.01	-141.0	29.976	-0.02
45.00	4057.9	6073.0	45.039	0.03	-141.0	44.983	-0.01
60.00	4105.8	5932.0	60.092	0.06	-141.0	60.008	0.01
75.00	4155.5	5791.0	75.146	0.10	-141.0	75.052	0.03
90.00	4206.7	5651.0	90.092	0.06	-140.0	90.008	0.01
105.00	4259.8	5511.0	105.039	0.03	-140.0	104.983	-0.01
120.00	4314.9	5371.0	119.985	-0.01	-140.0	119.976	-0.02
135.00	4372.3	5231.0	134.932	-0.05	-140.0	134.988	-0.01
150.00	4432.0	5091.0	149.878	-0.08	-140.0	150.018	0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.27230 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036750

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1022.5570000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1022600
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000155214800
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1040741000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 679.231700
Regression Zero : 6590.7

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3895.2	6591.0	-0.028	-0.02	0.0	0.022	0.01
15.00	3939.0	6445.0	14.902	-0.07	-146.0	14.922	-0.05
30.00	3985.0	6297.0	30.035	0.02	-148.0	30.032	0.02
45.00	4032.4	6150.0	45.067	0.04	-147.0	45.047	0.03
60.00	4081.1	6004.0	59.996	0.00	-146.0	59.966	-0.02
75.00	4132.4	5856.0	75.130	0.09	-148.0	75.097	0.06
90.00	4184.5	5711.0	89.957	-0.03	-145.0	89.927	-0.05
105.00	4239.4	5564.0	104.989	-0.01	-147.0	104.969	-0.02
120.00	4296.6	5417.0	120.020	0.01	-147.0	120.017	0.01
135.00	4355.7	5271.0	134.950	-0.03	-146.0	134.970	-0.02
150.00	4417.7	5124.0	149.981	-0.01	-147.0	150.031	0.02

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.01020 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036751

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1031.7710000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1031800
Calibration Technician : Gary Pickles

Polynomial Gauge Factor A: 0.000000126593100
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1046701000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 687.772100
Regression Zero : 6623.5

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3885.4	6624.0	-0.048	-0.03	0.0	-0.008	-0.01
15.00	3928.8	6478.6	14.954	-0.03	-145.4	14.970	-0.02
30.00	3973.8	6332.7	30.007	0.00	-145.9	30.005	0.00
45.00	4020.4	6186.6	45.082	0.05	-146.1	45.065	0.04
60.00	4068.4	6041.7	60.032	0.02	-144.9	60.008	0.01
75.00	4118.3	5896.0	75.065	0.04	-145.7	75.038	0.03
90.00	4169.6	5752.0	89.922	-0.05	-144.0	89.898	-0.07
105.00	4223.8	5605.2	105.069	0.05	-146.8	105.053	0.04
120.00	4279.1	5461.3	119.916	-0.06	-143.9	119.913	-0.06
135.00	4337.7	5314.8	135.031	0.02	-146.5	135.047	0.03
150.00	4398.0	5170.0	149.971	-0.02	-144.8	150.011	0.01

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.02580 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036752

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1000.0600000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1000100
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: -0.000000108945200
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.0987824400
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 633.177300
Regression Zero : 6365.5

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3963.7	6365.0	0.050	0.03	0.0	0.013	0.01
15.00	4011.2	6215.0	15.051	0.03	-150.0	15.036	0.02
30.00	4060.2	6066.0	29.952	-0.03	-149.0	29.954	-0.03
45.00	4111.4	5916.0	44.953	-0.03	-150.0	44.967	-0.02
60.00	4164.5	5766.0	59.954	-0.03	-150.0	59.976	-0.02
75.00	4219.7	5616.0	74.955	-0.03	-150.0	74.979	-0.01
90.00	4277.6	5465.0	90.055	0.04	-151.0	90.078	0.05
105.00	4337.6	5315.0	105.056	0.04	-150.0	105.071	0.05
120.00	4399.7	5166.0	119.957	-0.03	-149.0	119.960	-0.03
135.00	4465.0	5016.0	134.958	-0.03	-150.0	134.944	-0.04
150.00	4533.8	4865.0	150.059	0.04	-151.0	150.022	0.01

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.02000 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036753

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1030.0900000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1030100
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000067894920
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1038162000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 689.670200
Regression Zero : 6672.1

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3871.4	6672.0	0.009	0.01	0.0	0.031	0.02
15.00	3914.2	6527.0	14.946	-0.04	-145.0	14.954	-0.03
30.00	3958.7	6381.0	29.985	-0.01	-146.0	29.984	-0.01
45.00	4004.8	6235.0	45.024	0.02	-146.0	45.016	0.01
60.00	4052.5	6089.0	60.064	0.04	-146.0	60.051	0.03
75.00	4101.7	5944.0	75.000	0.00	-145.0	74.986	-0.01
90.00	4152.6	5799.0	89.936	-0.04	-145.0	89.923	-0.05
105.00	4206.3	5652.0	105.079	0.05	-147.0	105.070	0.05
120.00	4261.3	5507.0	120.015	0.01	-145.0	120.014	0.01
135.00	4318.5	5362.0	134.951	-0.03	-145.0	134.960	-0.03
150.00	4378.6	5216.0	149.991	-0.01	-146.0	150.012	0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.10300 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

*** The zero reading should be established on site by the user on installation.**
**** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$**

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036754

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1072.5420000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1072542
Calibration Technician : Gary Pickles

Polynomial Gauge Factor A: -0.000000102436900
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1060590000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 697.283700
Regression Zero : 6533.5

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3912.4	6533.0	0.059	0.04	0.0	0.029	0.02
15.00	3954.7	6394.0	14.967	-0.02	-139.0	14.955	-0.03
30.00	3998.7	6254.0	29.982	-0.01	-140.0	29.984	-0.01
45.00	4044.2	6114.0	44.998	0.00	-140.0	45.010	0.01
60.00	4091.4	5974.0	60.014	0.01	-140.0	60.032	0.02
75.00	4140.2	5834.0	75.029	0.02	-140.0	75.049	0.03
90.00	4190.4	5695.0	89.938	-0.04	-139.0	89.956	-0.03
105.00	4242.9	5555.0	104.953	-0.03	-140.0	104.965	-0.02
120.00	4297.4	5415.0	119.969	-0.02	-140.0	119.971	-0.02
135.00	4354.4	5274.0	135.092	0.06	-141.0	135.080	0.05
150.00	4413.0	5135.0	150.000	0.00	-139.0	149.970	-0.02

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.00010 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036755

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1011.3980000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1011400
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000343144100
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1051006000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 669.976600
Regression Zero : 6512.0

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3918.4	6513.0	-0.101	-0.07	0.0	0.012	0.01
15.00	3964.0	6364.0	14.969	-0.02	-149.0	15.014	0.01
30.00	4011.2	6215.0	30.039	0.03	-149.0	30.031	0.02
45.00	4059.5	6068.0	44.906	-0.06	-147.0	44.861	-0.09
60.00	4110.7	5918.0	60.077	0.05	-150.0	60.009	0.01
75.00	4163.4	5769.0	75.147	0.10	-149.0	75.072	0.05
90.00	4217.9	5621.0	90.116	0.08	-148.0	90.048	0.03
105.00	4274.1	5474.0	104.983	-0.01	-147.0	104.938	-0.04
120.00	4333.5	5325.0	120.053	0.04	-149.0	120.046	0.03
135.00	4394.6	5178.0	134.921	-0.05	-147.0	134.966	-0.02
150.00	4458.8	5030.0	149.889	-0.07	-148.0	150.003	0.00

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** -0.00510 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036756

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 998.2570000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.0998300
Calibration Technician : Gary Pickles

Polynomial Gauge Factor A: 0.000000122694200
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1012378000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C: 653.470800**
Regression Zero : 6505.7

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3920.4	6506.4	-0.071	-0.05	0.0	-0.029	-0.02
15.00	3966.7	6355.4	15.003	0.00	-151.0	15.020	0.01
30.00	4014.6	6204.7	30.047	0.03	-150.7	30.044	0.03
45.00	4064.0	6054.7	45.021	0.01	-150.0	45.004	0.00
60.00	4115.3	5904.8	59.984	-0.01	-149.9	59.960	-0.03
75.00	4168.7	5754.4	74.998	0.00	-150.4	74.971	-0.02
90.00	4224.5	5603.4	90.072	0.05	-151.0	90.047	0.03
105.00	4282.0	5453.9	104.996	0.00	-149.5	104.979	-0.01
120.00	4342.2	5303.7	119.990	-0.01	-150.2	119.987	-0.01
135.00	4405.2	5153.2	135.013	0.01	-150.5	135.030	0.02
150.00	4470.5	5003.6	149.947	-0.04	-149.6	149.989	-0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.02990 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036757

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1060.8870000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1060900
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000278361600
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1092179000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 679.976600
Regression Zero : 6327.1

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3975.3	6328.0	-0.092	-0.06	0.0	-0.008	-0.01
15.00	4020.6	6186.0	14.973	-0.02	-142.0	15.006	0.00
30.00	4067.6	6044.0	30.038	0.03	-142.0	30.032	0.02
45.00	4115.9	5903.0	44.996	0.00	-141.0	44.963	-0.02
60.00	4166.3	5761.0	60.061	0.04	-142.0	60.011	0.01
75.00	4218.2	5620.0	75.019	0.01	-141.0	74.964	-0.02
90.00	4272.6	5478.0	90.084	0.06	-142.0	90.034	0.02
105.00	4328.6	5337.0	105.042	0.03	-141.0	105.009	0.01
120.00	4387.0	5196.0	120.001	0.00	-141.0	119.996	0.00
135.00	4447.7	5055.0	134.959	-0.03	-141.0	134.993	0.00
150.00	4511.1	4914.0	149.918	-0.05	-141.0	150.001	0.00

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.04250 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036758

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1014.6340000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1014600
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000075441020
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1023303000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 660.399600
Regression Zero : 6484.4

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3927.2	6484.0	0.037	0.02	0.0	0.062	0.04
15.00	3972.4	6337.0	14.952	-0.03	-147.0	14.962	-0.03
30.00	4019.7	6189.0	29.969	-0.02	-148.0	29.967	-0.02
45.00	4068.6	6041.0	44.985	-0.01	-148.0	44.975	-0.02
60.00	4119.4	5893.0	60.002	0.00	-148.0	59.987	-0.01
75.00	4172.1	5745.0	75.019	0.01	-148.0	75.002	0.00
90.00	4226.9	5597.0	90.035	0.02	-148.0	90.020	0.01
105.00	4283.9	5449.0	105.052	0.03	-148.0	105.042	0.03
120.00	4342.9	5302.0	119.967	-0.02	-147.0	119.965	-0.02
135.00	4405.2	5153.0	135.085	0.06	-149.0	135.095	0.06
150.00	4469.0	5007.0	149.899	-0.07	-146.0	149.923	-0.05

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.06590 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036759

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1091.9390000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1091900
Calibration Technician : Gary Pickles

Polynomial Gauge Factor A: 0.000000338060900
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1130708000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 712.106800
Regression Zero : 6420.3

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3946.5	6420.7	-0.046	-0.03	0.0	0.050	0.03
15.00	3989.3	6283.5	14.935	-0.04	-137.2	14.974	-0.02
30.00	4033.6	6146.3	29.917	-0.06	-137.2	29.911	-0.06
45.00	4079.8	6007.8	45.040	0.03	-138.5	45.002	0.00
60.00	4127.5	5869.7	60.120	0.08	-138.1	60.062	0.04
75.00	4176.5	5732.8	75.069	0.05	-136.9	75.005	0.00
90.00	4227.6	5595.1	90.105	0.07	-137.7	90.047	0.03
105.00	4280.3	5458.3	105.042	0.03	-136.8	105.004	0.00
120.00	4334.7	5322.0	119.925	-0.05	-136.3	119.919	-0.05
135.00	4392.0	5184.2	134.972	-0.02	-137.8	135.011	0.01
150.00	4451.1	5047.3	149.921	-0.05	-136.9	150.017	0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.04370 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036760

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1023.5900000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1023600
Calibration Technician : Gary Pickles

Polynomial Gauge Factor A: 0.000000246942100
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1052683000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 686.399800
Regression Zero : 6622.6

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3885.6	6623.5	-0.091	-0.06	0.0	-0.011	-0.01
15.00	3929.4	6476.5	14.956	-0.03	-147.0	14.988	-0.01
30.00	3974.9	6329.2	30.034	0.02	-147.3	30.028	0.02
45.00	4021.9	6182.2	45.080	0.05	-147.0	45.048	0.03
60.00	4070.1	6036.5	59.994	0.00	-145.7	59.946	-0.04
75.00	4120.6	5889.5	75.041	0.03	-147.0	74.988	-0.01
90.00	4172.9	5742.8	90.057	0.04	-146.7	90.009	0.01
105.00	4227.0	5596.8	105.001	0.00	-146.0	104.970	-0.02
120.00	4283.8	5449.4	120.089	0.06	-147.4	120.084	0.06
135.00	4341.8	5304.8	134.890	-0.07	-144.6	134.922	-0.05
150.00	4403.2	5157.7	149.947	-0.04	-147.1	150.027	0.02

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** -0.00510 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036761

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1010.0370000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1010000
Calibration Technician : Gary Pickles

Polynomial Gauge Factor A: 0.000000266750600
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1040488000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 660.063300
Regression Zero : 6449.6

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3937.4	6450.4	-0.083	-0.06	0.0	0.006	0.00
15.00	3983.6	6301.5	14.957	-0.03	-148.9	14.992	-0.01
30.00	4031.7	6152.1	30.047	0.03	-149.4	30.041	0.03
45.00	4081.1	6004.1	44.996	0.00	-148.0	44.960	-0.03
60.00	4132.7	5855.2	60.035	0.02	-148.9	59.982	-0.01
75.00	4186.0	5706.9	75.014	0.01	-148.3	74.955	-0.03
90.00	4242.0	5557.2	90.134	0.09	-149.7	90.081	0.05
105.00	4299.3	5410.0	105.002	0.00	-147.2	104.967	-0.02
120.00	4359.8	5260.9	120.061	0.04	-149.1	120.056	0.04
135.00	4422.1	5113.7	134.929	-0.05	-147.2	134.965	-0.02
150.00	4487.7	4965.4	149.908	-0.06	-148.3	149.996	0.00

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.02020 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036762

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1056.8570000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1056900
Calibration Technician : Gary Pickles

Polynomial Gauge Factor A: 0.000000103009500
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1068430000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 671.902800
Regression Zero : 6327.0

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3975.3	6327.8	-0.085	-0.06	0.0	-0.054	-0.04
15.00	4020.9	6185.1	14.997	0.00	-142.7	15.009	0.01
30.00	4068.1	6042.6	30.057	0.04	-142.5	30.055	0.04
45.00	4116.7	5900.8	45.043	0.03	-141.8	45.031	0.02
60.00	4167.3	5758.2	60.114	0.08	-142.6	60.095	0.06
75.00	4219.0	5618.0	74.931	-0.05	-140.2	74.910	-0.06
90.00	4273.4	5475.8	89.959	-0.03	-142.2	89.941	-0.04
105.00	4329.7	5334.4	104.903	-0.06	-141.4	104.891	-0.07
120.00	4389.3	5190.6	120.101	0.07	-143.8	120.099	0.07
135.00	4450.3	5049.2	135.045	0.03	-141.4	135.057	0.04
150.00	4513.7	4908.3	149.936	-0.04	-140.9	149.967	-0.02

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** -0.01590 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036763

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1076.7400000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1076700
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: -0.000000091083380
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1066488000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 678.102600
Regression Zero : 6324.4

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3976.5	6324.0	0.039	0.03	0.0	0.013	0.01
15.00	4021.0	6185.0	15.006	0.00	-139.0	14.995	0.00
30.00	4067.3	6045.0	30.080	0.05	-140.0	30.082	0.05
45.00	4114.5	5907.0	44.939	-0.04	-138.0	44.950	-0.03
60.00	4163.8	5768.0	59.906	-0.06	-139.0	59.922	-0.05
75.00	4214.9	5629.0	74.873	-0.08	-139.0	74.890	-0.07
90.00	4268.7	5488.0	90.055	0.04	-141.0	90.071	0.05
105.00	4323.8	5349.0	105.022	0.01	-139.0	105.032	0.02
120.00	4381.5	5209.0	120.096	0.06	-140.0	120.098	0.07
135.00	4441.2	5070.0	135.063	0.04	-139.0	135.052	0.03
150.00	4502.9	4932.0	149.922	-0.05	-138.0	149.895	-0.07

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.03230 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036764

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1037.0640000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1037100
Calibration Technician : Gary Pickles

Polynomial Gauge Factor A: 0.000000022438550
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1039600000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 661.909600
Regression Zero : 6375.7

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3960.3	6375.8	-0.014	-0.01	0.0	-0.007	0.00
15.00	4006.1	6230.9	15.013	0.01	-144.9	15.016	0.01
30.00	4053.3	6086.8	29.958	-0.03	-144.1	29.957	-0.03
45.00	4102.5	5941.6	45.016	0.01	-145.2	45.013	0.01
60.00	4153.4	5796.8	60.032	0.02	-144.8	60.028	0.02
75.00	4206.3	5651.9	75.059	0.04	-144.9	75.055	0.04
90.00	4260.9	5508.0	89.983	-0.01	-143.9	89.979	-0.01
105.00	4317.8	5363.9	104.927	-0.05	-144.1	104.924	-0.05
120.00	4377.6	5218.2	120.037	0.02	-145.7	120.036	0.02
135.00	4439.3	5074.2	134.971	-0.02	-144.0	134.973	-0.02
150.00	4504.2	4929.1	150.018	0.01	-145.1	150.025	0.02

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.04670 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036765

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1017.6880000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1017700
Calibration Technician : Gary Pickles

Polynomial Gauge Factor A: 0.000000123526600
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1032085000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 672.175800
Regression Zero : 6564.0

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3902.9	6564.8	-0.084	-0.06	0.0	-0.044	-0.03
15.00	3947.9	6416.1	15.049	0.03	-148.7	15.065	0.04
30.00	3993.8	6269.4	29.978	-0.01	-146.7	29.976	-0.02
45.00	4041.9	6121.1	45.071	0.05	-148.3	45.055	0.04
60.00	4091.2	5974.5	59.990	-0.01	-146.6	59.966	-0.02
75.00	4142.5	5827.3	74.970	-0.02	-147.2	74.944	-0.04
90.00	4196.3	5679.0	90.063	0.04	-148.3	90.039	0.03
105.00	4251.6	5532.1	105.013	0.01	-146.9	104.997	0.00
120.00	4309.5	5384.5	120.034	0.02	-147.6	120.031	0.02
135.00	4369.3	5238.1	134.933	-0.04	-146.4	134.949	-0.03
150.00	4432.3	5090.2	149.984	-0.01	-147.9	150.025	0.02

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.02040 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036766

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1175.2950000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1175300
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000428814600
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1225996000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 784.644500
Regression Zero : 6549.2

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3907.3	6550.0	-0.091	-0.06	0.0	0.014	0.01
15.00	3946.1	6422.0	14.953	-0.03	-128.0	14.995	0.00
30.00	3986.0	6294.0	29.997	0.00	-128.0	29.990	-0.01
45.00	4027.2	6166.0	45.041	0.03	-128.0	44.999	0.00
60.00	4069.6	6038.0	60.084	0.06	-128.0	60.021	0.01
75.00	4113.1	5911.0	75.011	0.01	-127.0	74.941	-0.04
90.00	4158.4	5783.0	90.055	0.04	-128.0	89.992	-0.01
105.00	4205.2	5655.0	105.098	0.07	-128.0	105.057	0.04
120.00	4253.2	5528.0	120.025	0.02	-127.0	120.018	0.01
135.00	4302.9	5401.0	134.951	-0.03	-127.0	134.993	0.00
150.00	4354.4	5274.0	149.877	-0.08	-127.0	149.982	-0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.06470 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036767

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1007.4470000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1007400
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000158973700
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1025220000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 643.039900
Regression Zero : 6333.9

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3973.4	6334.0	-0.009	-0.01	0.0	0.044	0.03
15.00	4021.0	6185.0	15.002	0.00	-149.0	15.023	0.02
30.00	4070.0	6037.0	29.912	-0.06	-148.0	29.909	-0.06
45.00	4121.5	5887.0	45.024	0.02	-150.0	45.003	0.00
60.00	4174.3	5739.0	59.934	-0.04	-148.0	59.902	-0.07
75.00	4230.3	5588.0	75.147	0.10	-151.0	75.111	0.07
90.00	4287.5	5440.0	90.057	0.04	-148.0	90.025	0.02
105.00	4347.0	5292.0	104.967	-0.02	-148.0	104.946	-0.04
120.00	4410.0	5142.0	120.079	0.05	-150.0	120.075	0.05
135.00	4474.8	4994.0	134.989	-0.01	-148.0	135.010	0.01
150.00	4542.6	4846.0	149.899	-0.07	-148.0	149.952	-0.03

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.04030 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036768

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1066.9230000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1066900
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000346339200
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1106714000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 699.181800
Regression Zero : 6446.8

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3938.4	6447.0	-0.024	-0.02	0.0	0.078	0.05
15.00	3981.9	6307.0	14.913	-0.06	-140.0	14.954	-0.03
30.00	4027.2	6166.0	29.957	-0.03	-141.0	29.950	-0.03
45.00	4074.0	6025.0	45.000	0.00	-141.0	44.959	-0.03
60.00	4122.5	5884.0	60.044	0.03	-141.0	59.982	-0.01
75.00	4172.8	5743.0	75.087	0.06	-141.0	75.019	0.01
90.00	4225.0	5602.0	90.131	0.09	-141.0	90.070	0.05
105.00	4278.8	5462.0	105.068	0.05	-140.0	105.027	0.02
120.00	4334.7	5322.0	120.005	0.00	-140.0	119.998	0.00
135.00	4392.9	5182.0	134.942	-0.04	-140.0	134.983	-0.01
150.00	4453.5	5042.0	149.879	-0.08	-140.0	149.981	-0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.01070 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036769

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1026.4160000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1026400
Calibration Technician : Gary Pickles

Polynomial Gauge Factor A: 0.000000360919700
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1067431000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 669.691700
Regression Zero : 6411.8

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3948.9	6412.8	-0.104	-0.07	0.0	0.012	0.01
15.00	3994.8	6266.2	14.943	-0.04	-146.6	14.990	-0.01
30.00	4042.4	6119.5	30.001	0.00	-146.7	29.993	0.00
45.00	4091.7	5973.1	45.028	0.02	-146.4	44.981	-0.01
60.00	4142.9	5826.3	60.096	0.06	-146.8	60.026	0.02
75.00	4195.7	5680.5	75.061	0.04	-145.8	74.984	-0.01
90.00	4250.8	5534.2	90.077	0.05	-146.3	90.008	0.01
105.00	4308.3	5387.5	105.135	0.09	-146.7	105.089	0.06
120.00	4367.0	5243.6	119.905	-0.06	-143.9	119.897	-0.07
135.00	4429.4	5097.0	134.952	-0.03	-146.6	134.999	0.00
150.00	4494.1	4951.3	149.907	-0.06	-145.7	150.023	0.02

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.04110 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036770

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1071.0780000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.1071100
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: -0.000000057952920
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1064484000

Polynomial Gauge Factor C:** 682.491500
Regression Zero : 6389.4

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3956.2	6389.0	0.044	0.03	0.0	0.027	0.02
15.00	4000.0	6250.0	14.932	-0.05	-139.0	14.925	-0.05
30.00	4045.9	6109.0	30.034	0.02	-141.0	30.035	0.02
45.00	4093.1	5969.0	45.029	0.02	-140.0	45.036	0.02
60.00	4141.6	5830.0	59.917	-0.06	-139.0	59.928	-0.05
75.00	4192.6	5689.0	75.020	0.01	-141.0	75.031	0.02
90.00	4245.5	5548.0	90.122	0.08	-141.0	90.132	0.09
105.00	4299.3	5410.0	104.903	-0.07	-138.0	104.909	-0.06
120.00	4356.5	5269.0	120.005	0.00	-141.0	120.006	0.00
135.00	4415.1	5130.0	134.893	-0.07	-139.0	134.886	-0.08
150.00	4477.5	4988.0	150.102	0.07	-142.0	150.085	0.06

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.04290 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036771

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 23/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 990.2174000
Barometric Pressure : 998 mbar

Linear Gauge Factor (G): (kPa/digit)0.0990217
Calibration Technician : Gary Pickles

Polynomial Gauge Factor A: 0.000000025163100
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.0993133600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 649.616100
Regression Zero : 6551.9

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3906.7	6552.0	-0.013	-0.01	0.0	-0.005	0.00
15.00	3952.8	6400.0	15.038	0.03	-152.0	15.041	0.03
30.00	4000.3	6249.0	29.990	-0.01	-151.0	29.990	-0.01
45.00	4049.5	6098.0	44.942	-0.04	-151.0	44.939	-0.04
60.00	4101.0	5946.0	59.994	0.00	-152.0	59.989	-0.01
75.00	4154.4	5794.0	75.045	0.03	-152.0	75.039	0.03
90.00	4209.6	5643.0	89.997	0.00	-151.0	89.992	-0.01
105.00	4267.5	5491.0	105.049	0.03	-152.0	105.045	0.03
120.00	4327.4	5340.0	120.001	0.00	-151.0	120.000	0.00
135.00	4389.9	5189.0	134.953	-0.03	-151.0	134.957	-0.03
150.00	4455.7	5037.0	150.005	0.00	-152.0	150.013	0.01

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.00050 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036772

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1099.3390000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1099339
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: 0.000000158206300
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1118523000

Polynomial Gauge Factor C:** 747.275300
Regression Zero : 6744.9

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3850.4	6745.0	-0.015	-0.01	0.0	0.029	0.02
15.00	3889.8	6609.0	14.936	-0.04	-136.0	14.954	-0.03
30.00	3930.8	6472.0	29.997	0.00	-137.0	29.994	0.00
45.00	3973.1	6335.0	45.058	0.04	-137.0	45.040	0.03
60.00	4016.4	6199.0	60.009	0.01	-136.0	59.982	-0.01
75.00	4061.6	6062.0	75.070	0.05	-137.0	75.041	0.03
90.00	4107.5	5927.0	89.911	-0.06	-135.0	89.885	-0.08
105.00	4156.2	5789.0	105.082	0.05	-138.0	105.064	0.04
120.00	4205.9	5653.0	120.033	0.02	-136.0	120.030	0.02
135.00	4257.4	5517.0	134.984	-0.01	-136.0	135.002	0.00
150.00	4310.9	5381.0	149.935	-0.04	-136.0	149.979	-0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.59350 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036773

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1075.1280000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1075128
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: -0.000000109597200
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1062339000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 698.607800
Regression Zero : 6532.4

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3912.7	6532.0	0.044	0.03	0.0	0.012	0.01
15.00	3955.0	6393.0	14.988	-0.01	-139.0	14.975	-0.02
30.00	3999.0	6253.0	30.040	0.03	-140.0	30.042	0.03
45.00	4044.2	6114.0	44.984	-0.01	-139.0	44.997	0.00
60.00	4091.0	5975.0	59.929	-0.05	-139.0	59.948	-0.03
75.00	4139.8	5835.0	74.980	-0.01	-140.0	75.002	0.00
90.00	4190.0	5696.0	89.925	-0.05	-139.0	89.944	-0.04
105.00	4242.9	5555.0	105.084	0.06	-141.0	105.097	0.06
120.00	4297.0	5416.0	120.028	0.02	-139.0	120.030	0.02
135.00	4353.2	5277.0	134.973	-0.02	-139.0	134.960	-0.03
150.00	4412.1	5137.0	150.024	0.02	-140.0	149.992	-0.01

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** -0.02150 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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BS EN ISO 9001:2008
FM 553710

VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036774

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1172.7060000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1172706
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: 0.000000083600400
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1182631000

Polynomial Gauge Factor C:** 774.029100
Regression Zero : 6575.4

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3899.9	6575.0	0.043	0.03	0.0	0.063	0.04
15.00	3938.1	6448.0	14.936	-0.04	-127.0	14.944	-0.04
30.00	3977.8	6320.0	29.947	-0.04	-128.0	29.945	-0.04
45.00	4018.7	6192.0	44.957	-0.03	-128.0	44.949	-0.03
60.00	4061.2	6063.0	60.085	0.06	-129.0	60.073	0.05
75.00	4104.8	5935.0	75.096	0.06	-128.0	75.082	0.05
90.00	4149.4	5808.0	89.989	-0.01	-127.0	89.977	-0.02
105.00	4195.9	5680.0	105.000	0.00	-128.0	104.992	-0.01
120.00	4244.0	5552.0	120.011	0.01	-128.0	120.009	0.01
135.00	4293.4	5425.0	134.904	-0.06	-127.0	134.912	-0.06
150.00	4345.4	5296.0	150.032	0.02	-129.0	150.052	0.03

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.00590 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036775

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1089.8280000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1089827
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: 0.000000000000000
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1089827000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 752.763700
Regression Zero : 6907.2

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3805.0	6907.0	0.020	0.01	0.0	0.020	0.01
15.00	3843.3	6770.0	14.951	-0.03	-137.0	14.951	-0.03
30.00	3883.1	6632.0	29.990	-0.01	-138.0	29.990	-0.01
45.00	3924.1	6494.0	45.030	0.02	-138.0	45.030	0.02
60.00	3966.5	6356.0	60.069	0.05	-138.0	60.069	0.05
75.00	4010.0	6219.0	75.000	0.00	-137.0	75.000	0.00
90.00	4054.9	6082.0	89.931	-0.05	-137.0	89.931	-0.05
105.00	4101.7	5944.0	104.970	-0.02	-138.0	104.970	-0.02
120.00	4150.1	5806.0	120.010	0.01	-138.0	120.010	0.01
135.00	4200.3	5668.0	135.050	0.03	-138.0	135.050	0.03
150.00	4252.0	5531.0	149.980	-0.01	-137.0	149.980	-0.01

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.31060 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036776

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1030.5400000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1030540
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: -0.000000074081630
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1021731000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 685.100200
Regression Zero : 6673.2

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3871.1	6673.0	0.024	0.02	0.0	0.000	0.00
15.00	3913.9	6528.0	14.966	-0.02	-145.0	14.957	-0.03
30.00	3958.4	6382.0	30.012	0.01	-146.0	30.014	0.01
45.00	4004.5	6236.0	45.058	0.04	-146.0	45.068	0.05
60.00	4051.9	6091.0	60.001	0.00	-145.0	60.015	0.01
75.00	4101.0	5946.0	74.944	-0.04	-145.0	74.959	-0.03
90.00	4152.3	5800.0	89.990	-0.01	-146.0	90.004	0.00
105.00	4205.2	5655.0	104.933	-0.04	-145.0	104.942	-0.04
120.00	4260.9	5508.0	120.082	0.05	-147.0	120.083	0.06
135.00	4317.7	5364.0	134.921	-0.05	-144.0	134.912	-0.06
150.00	4378.1	5217.0	150.070	0.05	-147.0	150.047	0.03

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** -0.00520 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036777

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1052.2270000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1052227
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: 0.000000235047100
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1079168000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 685.665500
Regression Zero : 6443.4

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3939.3	6444.0	-0.062	-0.04	0.0	0.010	0.01
15.00	3983.8	6301.0	14.985	-0.01	-143.0	15.013	0.01
30.00	4029.4	6159.0	29.926	-0.05	-142.0	29.922	-0.05
45.00	4077.4	6015.0	45.079	0.05	-144.0	45.050	0.03
60.00	4126.4	5873.0	60.020	0.01	-142.0	59.977	-0.02
75.00	4177.6	5730.0	75.067	0.04	-143.0	75.019	0.01
90.00	4230.7	5587.0	90.114	0.08	-143.0	90.071	0.05
105.00	4285.5	5445.0	105.055	0.04	-142.0	105.027	0.02
120.00	4342.1	5304.0	119.892	-0.07	-141.0	119.887	-0.08
135.00	4401.8	5161.0	134.939	-0.04	-143.0	134.967	-0.02
150.00	4464.1	5018.0	149.986	-0.01	-143.0	150.057	0.04

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.01580 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036778

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1084.4530000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1084454
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: 0.000000376449900
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1128371000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 720.219400
Regression Zero : 6523.9

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3914.8	6525.0	-0.123	-0.08	0.0	-0.015	-0.01
15.00	3957.2	6386.0	14.951	-0.03	-139.0	14.994	0.00
30.00	4001.0	6247.0	30.025	0.02	-139.0	30.017	0.01
45.00	4046.2	6108.0	45.099	0.07	-139.0	45.055	0.04
60.00	4092.7	5970.0	60.064	0.04	-138.0	59.999	0.00
75.00	4140.9	5832.0	75.030	0.02	-138.0	74.958	-0.03
90.00	4190.7	5694.0	89.995	0.00	-138.0	89.930	-0.05
105.00	4242.9	5555.0	105.069	0.05	-139.0	105.026	0.02
120.00	4296.6	5417.0	120.034	0.02	-138.0	120.028	0.02
135.00	4352.4	5279.0	135.000	0.00	-138.0	135.043	0.03
150.00	4410.0	5142.0	149.857	-0.10	-137.0	149.965	-0.02

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** -0.01080 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036779

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1151.1860000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1151186
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: 0.000000434622500
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1203443000

Polynomial Gauge Factor C:** 782.611800
Regression Zero : 6662.5

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3874.0	6663.0	-0.057	-0.04	0.0	0.053	0.04
15.00	3912.4	6533.0	14.908	-0.06	-130.0	14.952	-0.03
30.00	3952.2	6402.0	29.989	-0.01	-131.0	29.981	-0.01
45.00	3993.0	6272.0	44.954	-0.03	-130.0	44.910	-0.06
60.00	4035.7	6140.0	60.150	0.10	-132.0	60.083	0.06
75.00	4079.1	6010.0	75.115	0.08	-130.0	75.041	0.03
90.00	4123.9	5880.0	90.081	0.05	-130.0	90.014	0.01
105.00	4170.3	5750.0	105.046	0.03	-130.0	105.002	0.00
120.00	4218.2	5620.0	120.011	0.01	-130.0	120.004	0.00
135.00	4267.5	5491.0	134.862	-0.09	-129.0	134.906	-0.06
150.00	4319.3	5360.0	149.942	-0.04	-131.0	150.053	0.04

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent 0.00580 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036780

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1282.0420000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1282042
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: 0.000000873237900
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1385698000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 866.416900
Regression Zero : 6519.1

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3916.3	6520.0	-0.116	-0.08	0.0	0.063	0.04
15.00	3951.9	6403.0	14.884	-0.08	-117.0	14.955	-0.03
30.00	3988.5	6286.0	29.884	-0.08	-117.0	29.872	-0.09
45.00	4026.8	6167.0	45.140	0.09	-119.0	45.067	0.04
60.00	4065.6	6050.0	60.140	0.09	-117.0	60.032	0.02
75.00	4105.5	5933.0	75.140	0.09	-117.0	75.020	0.01
90.00	4146.6	5816.0	90.140	0.09	-117.0	90.033	0.02
105.00	4188.9	5699.0	105.140	0.09	-117.0	105.069	0.05
120.00	4231.8	5584.0	119.883	-0.08	-115.0	119.871	-0.09
135.00	4276.9	5467.0	134.883	-0.08	-117.0	134.955	-0.03
150.00	4323.4	5350.0	149.883	-0.08	-117.0	150.062	0.04

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.03200 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036781

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1080.1250000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1080125
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: -0.000000039257550
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1075627000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 692.513000
Regression Zero : 6423.3

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3945.8	6423.0	0.029	0.02	0.0	0.018	0.01
15.00	3989.2	6284.0	15.043	0.03	-139.0	15.039	0.03
30.00	4033.7	6146.0	29.949	-0.03	-138.0	29.950	-0.03
45.00	4080.1	6007.0	44.963	-0.02	-139.0	44.967	-0.02
60.00	4128.1	5868.0	59.976	-0.02	-139.0	59.983	-0.01
75.00	4177.9	5729.0	74.990	-0.01	-139.0	74.998	0.00
90.00	4229.5	5590.0	90.004	0.00	-139.0	90.011	0.01
105.00	4283.1	5451.0	105.018	0.01	-139.0	105.022	0.01
120.00	4338.8	5312.0	120.031	0.02	-139.0	120.032	0.02
135.00	4396.7	5173.0	135.045	0.03	-139.0	135.041	0.03
150.00	4456.6	5035.0	149.951	-0.03	-138.0	149.940	-0.04

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.04860 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036782

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1028.8050000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1028805
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: -0.000000034006070
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1024805000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 678.964800
Regression Zero : 6610.9

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3889.3	6611.0	-0.009	-0.01	0.0	-0.020	-0.01
15.00	3932.9	6465.0	15.011	0.01	-146.0	15.007	0.00
30.00	3978.1	6319.0	30.032	0.02	-146.0	30.033	0.02
45.00	4024.5	6174.0	44.950	-0.03	-145.0	44.954	-0.03
60.00	4073.3	6027.0	60.073	0.05	-147.0	60.079	0.05
75.00	4123.2	5882.0	74.991	-0.01	-145.0	74.998	0.00
90.00	4175.0	5737.0	89.908	-0.06	-145.0	89.915	-0.06
105.00	4229.5	5590.0	105.032	0.02	-147.0	105.036	0.02
120.00	4285.5	5445.0	119.949	-0.03	-145.0	119.950	-0.03
135.00	4344.5	5298.0	135.073	0.05	-147.0	135.069	0.05
150.00	4405.2	5153.0	149.991	-0.01	-145.0	149.980	-0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.01030 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

Certified: . . . . . Line MANAGER

Soil Instruments Ltd
International Geotechnical Instrumentation Specialists

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Facsimile +44 (0) 1825 761740
Email sales@soil.co.uk www.soil.co.uk

VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036783

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1027.6520000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1027652
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: 0.000000202396300
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1050773000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 668.480200
Regression Zero : 6441.1

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3939.9	6442.0	-0.093	-0.06	0.0	-0.029	-0.02
15.00	3985.7	6295.0	15.013	0.01	-147.0	15.039	0.03
30.00	4032.7	6149.0	30.017	0.01	-146.0	30.012	0.01
45.00	4081.5	6003.0	45.021	0.01	-146.0	44.995	0.00
60.00	4132.0	5857.0	60.024	0.02	-146.0	59.985	-0.01
75.00	4184.5	5711.0	75.028	0.02	-146.0	74.985	-0.01
90.00	4239.0	5565.0	90.032	0.02	-146.0	89.993	0.00
105.00	4295.8	5419.0	105.036	0.02	-146.0	105.010	0.01
120.00	4354.8	5273.0	120.039	0.03	-146.0	120.035	0.02
135.00	4416.0	5128.0	134.940	-0.04	-145.0	134.966	-0.02
150.00	4480.2	4982.0	149.944	-0.04	-146.0	150.009	0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.02050 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : Vibrating Wire Settlement Cell
Serial No. : 036784

Instrument Range : 0.00 to 150.0 kPa
Calibration Date : 24/08/2010

Gauge Factors in kPa
Ambient Temperature : 22°C

Period Gauge Factor (K): 1066.2350000
Barometric Pressure : 1007 mbar

Linear Gauge Factor (G): (kPa/digit)0.1066235
Calibration Technician : Goran Vasilkovski

Polynomial Gauge Factor A: -0.000000006044995
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1065507000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 716.984900
Regression Zero : 6726.5

Applied (kPa)	Reading (Period)	Reading $F^2/1000$	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3855.9	6726.0	0.053	0.04	0.0	0.052	0.03
15.00	3896.6	6586.0	14.981	-0.01	-140.0	14.980	-0.01
30.00	3938.7	6446.0	29.908	-0.06	-140.0	29.908	-0.06
45.00	3982.8	6304.0	45.048	0.03	-142.0	45.049	0.03
60.00	4027.8	6164.0	59.976	-0.02	-140.0	59.977	-0.02
75.00	4074.7	6023.0	75.010	0.01	-141.0	75.011	0.01
90.00	4123.2	5882.0	90.044	0.03	-141.0	90.045	0.03
105.00	4173.2	5742.0	104.971	-0.02	-140.0	104.972	-0.02
120.00	4225.4	5601.0	120.005	0.00	-141.0	120.005	0.00
135.00	4279.6	5460.0	135.039	0.03	-141.0	135.038	0.03
150.00	4335.6	5320.0	149.966	-0.02	-140.0	149.964	-0.02

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** -0.03730 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

Certified: ..... Line MANAGER

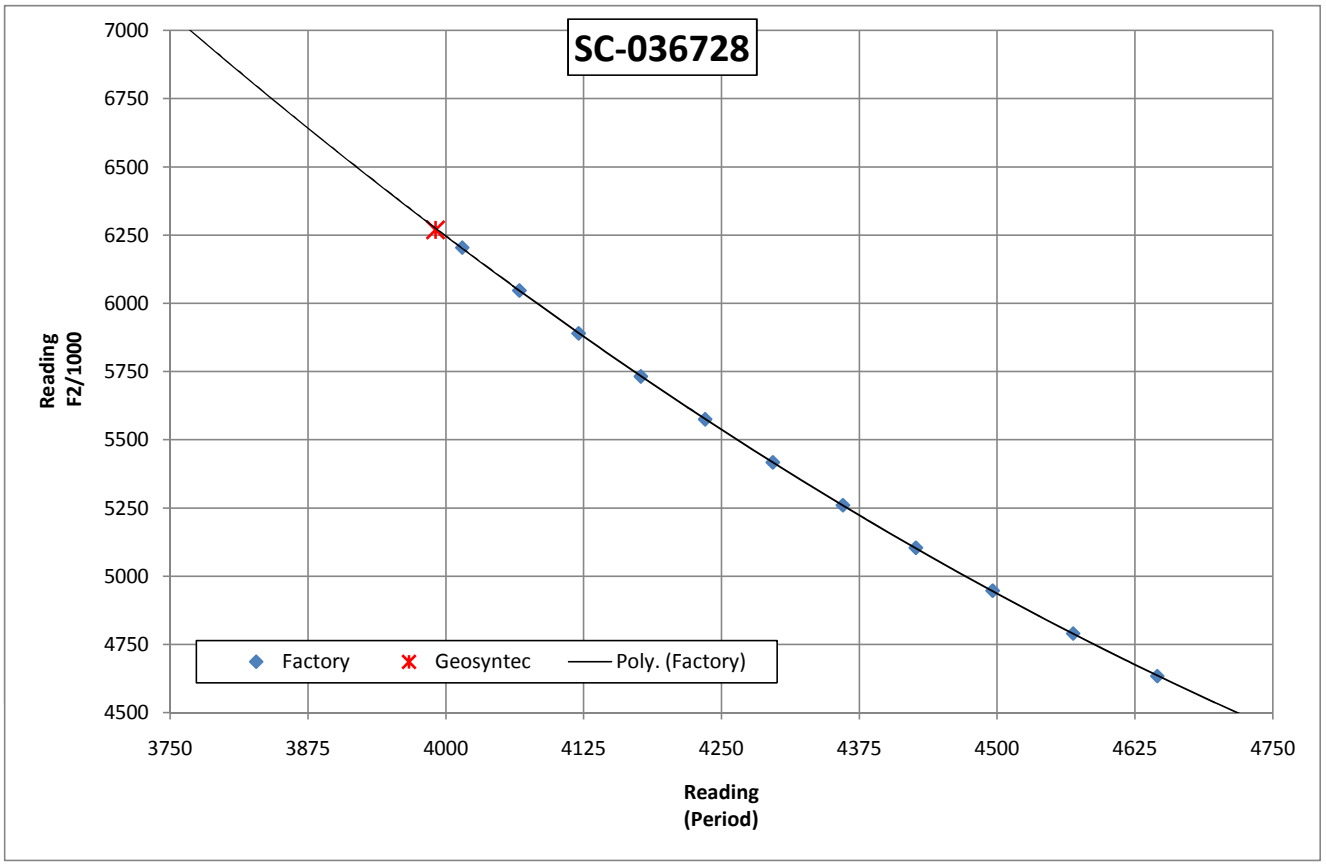
Geosyntec Pre-Acceptance Testing of VW Settlement Cells

Notes: The green-highlighted cell in the acceptance spreadsheet indicates the point measured by Geosyntec during pre-acceptance testing. It is noted that for each settlement cell, the point measured by Geosyntec aligns properly on the calibration curve provided by the manufacturer (ITM).

Serial No. (short) 28
Full Serial No. SC-036728

Regression Zero: 6203.5
Ambient Temp (Factory): 20.0
Measured Temp. (Geosyntec): 25.8

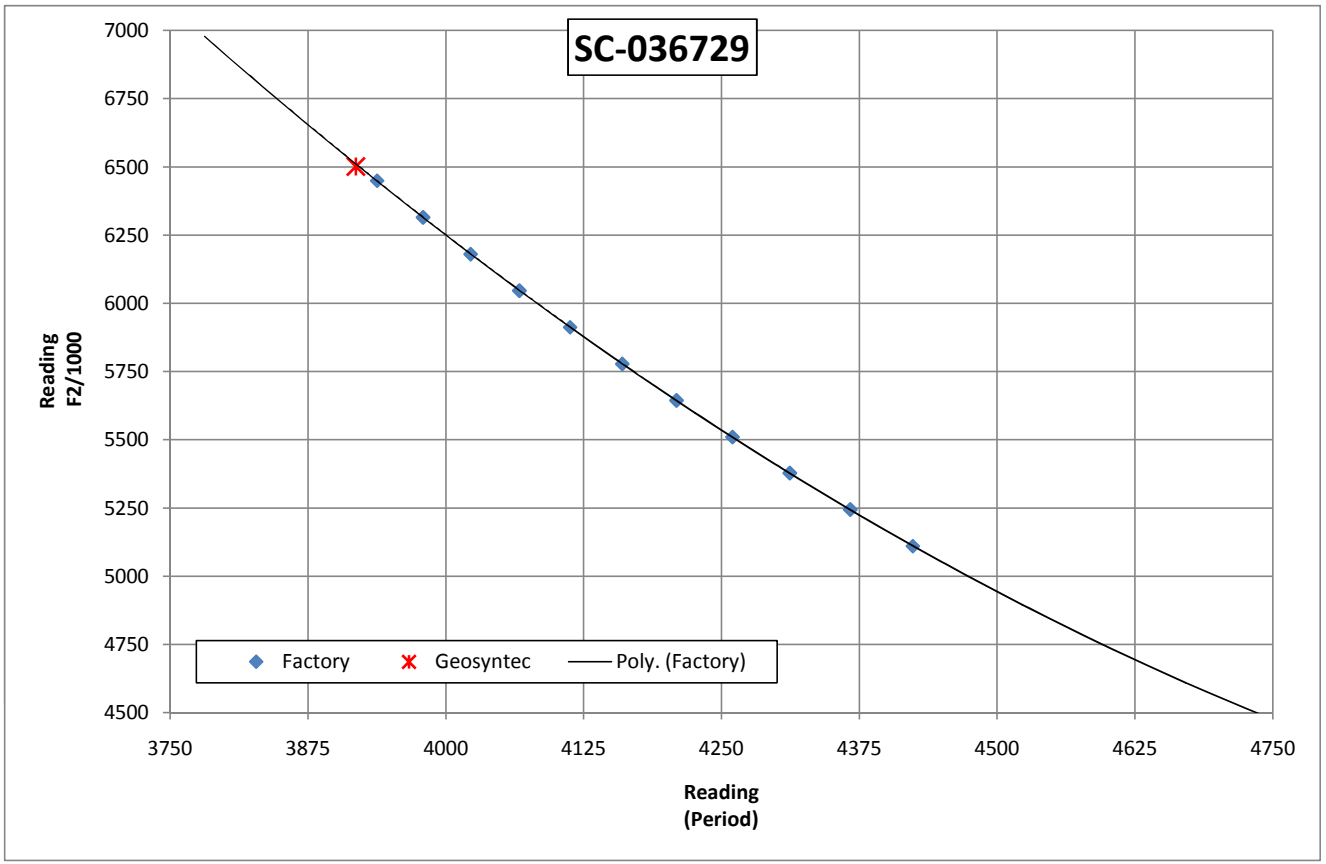
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	4014.8	6204.0
15	4066.6	6047.0
30	4120.4	5890.0
45	4176.8	5732.0
60	4235.2	5575.0
75	4296.6	5417.0
90	4360.2	5260.0
105	4426.3	5104.0
120	4496.0	4947.0
135	4569.1	4790.0
150	4645.4	4634.0
Geosyntec	3990.8	6269.0



Serial No. (short) 29
Full Serial No. SC-036729

Regression Zero:	6448.0
Ambient Temp (Factory):	20.0
Measured Temp. (Geosyntec):	25.0

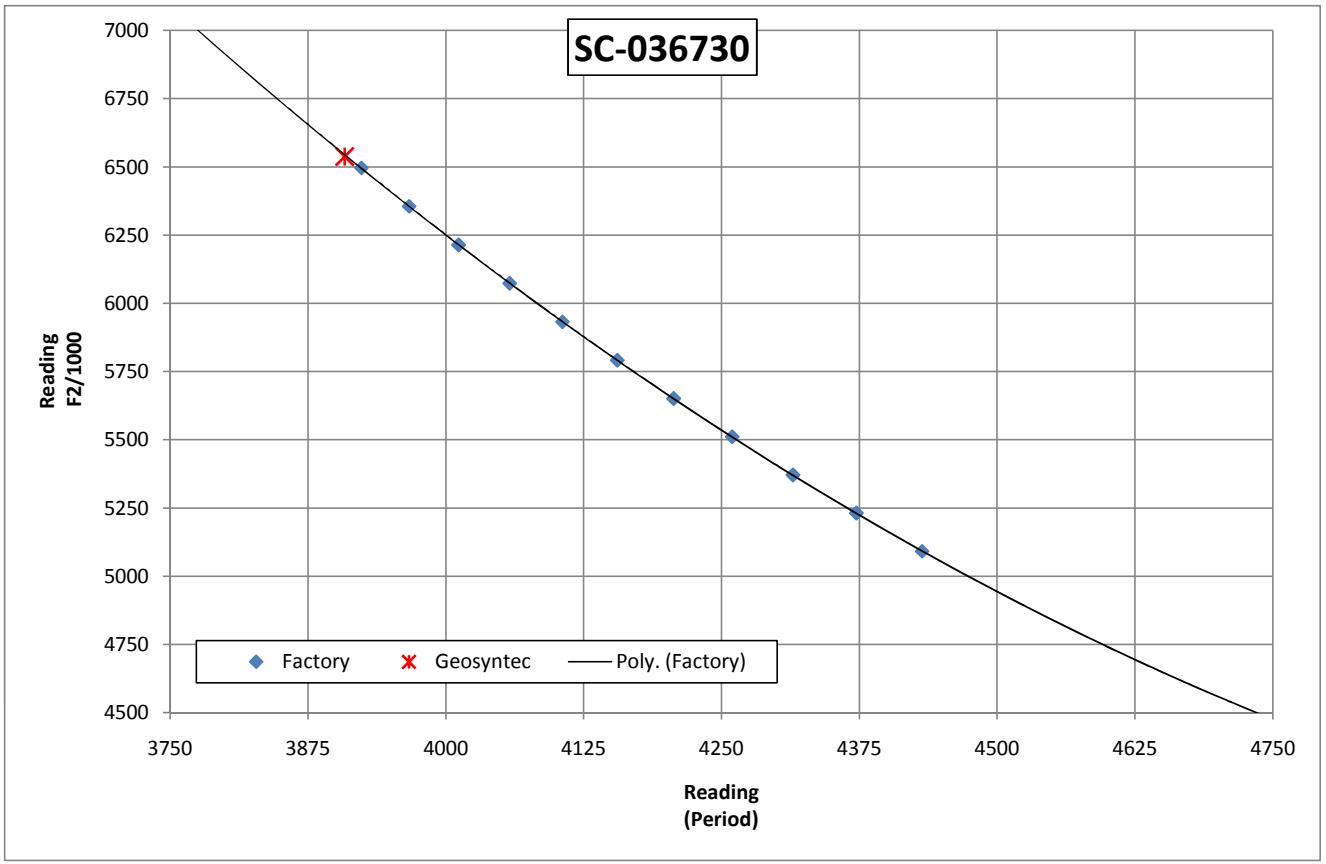
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3937.8	6449.0
15	3979.4	6315.0
30	4022.6	6180.0
45	4066.9	6046.0
60	4112.8	5912.0
75	4160.2	5778.0
90	4209.3	5644.0
105	4260.1	5510.0
120	4312.1	5378.0
135	4366.9	5244.0
150	4423.7	5110.0
Geosyntec	3918.5	6501.9



Serial No. (short) 30
Full Serial No. SC-036730

Regression Zero:	6494.9
Ambient Temp (Factory):	20.0
Measured Temp. (Geosyntec):	25.6

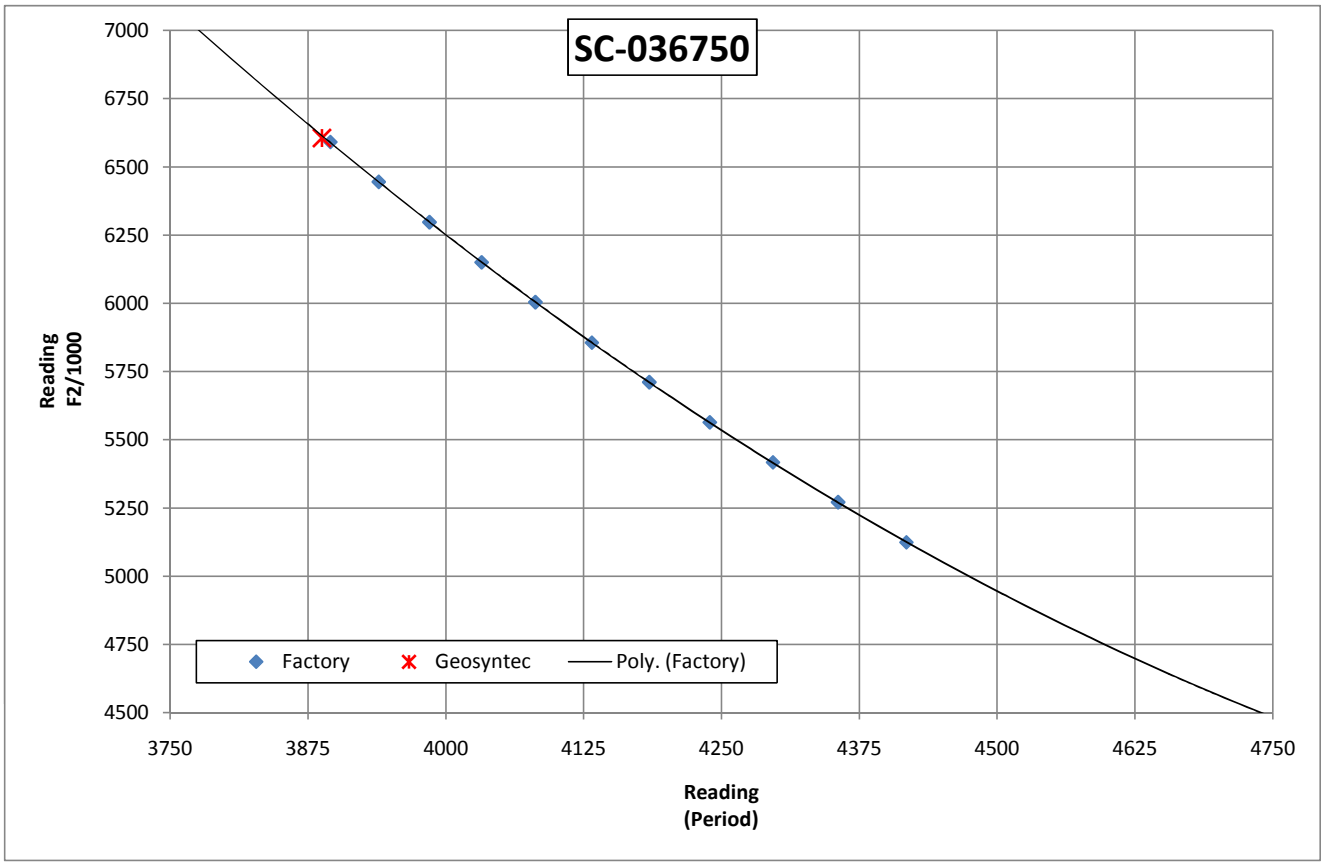
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3923.5	6496.0
15	3966.8	6355.0
30	4011.6	6214.0
45	4057.9	6073.0
60	4105.8	5932.0
75	4155.5	5791.0
90	4206.7	5651.0
105	4259.8	5511.0
120	4314.9	5371.0
135	4372.3	5231.0
150	4432.0	5091.0
Geosyntec	3908.2	6537.2



Serial No. (short) 50
Full Serial No. SC-036750

Regression Zero:	6590.7
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	28.1

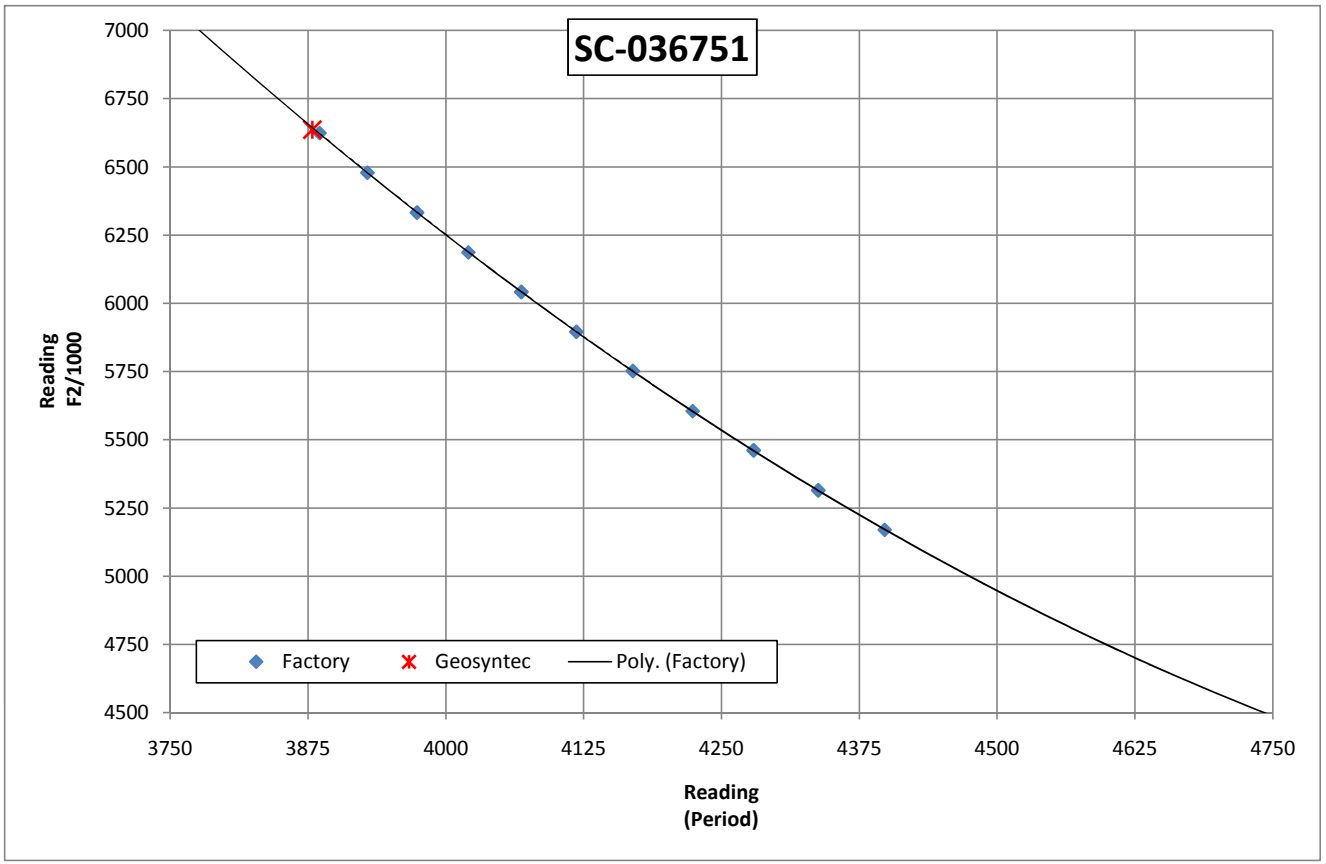
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3895.2	6591.0
15	3939.0	6445.0
30	3985.0	6297.0
45	4032.4	6150.0
60	4081.1	6004.0
75	4132.4	5856.0
90	4184.5	5711.0
105	4239.4	5564.0
120	4296.6	5417.0
135	4355.7	5271.0
150	4417.7	5124.0
Geosyntec	3887.6	6605.9



Serial No. (short) 51
Full Serial No. SC-036751

Regression Zero:	6623.5
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	24.8

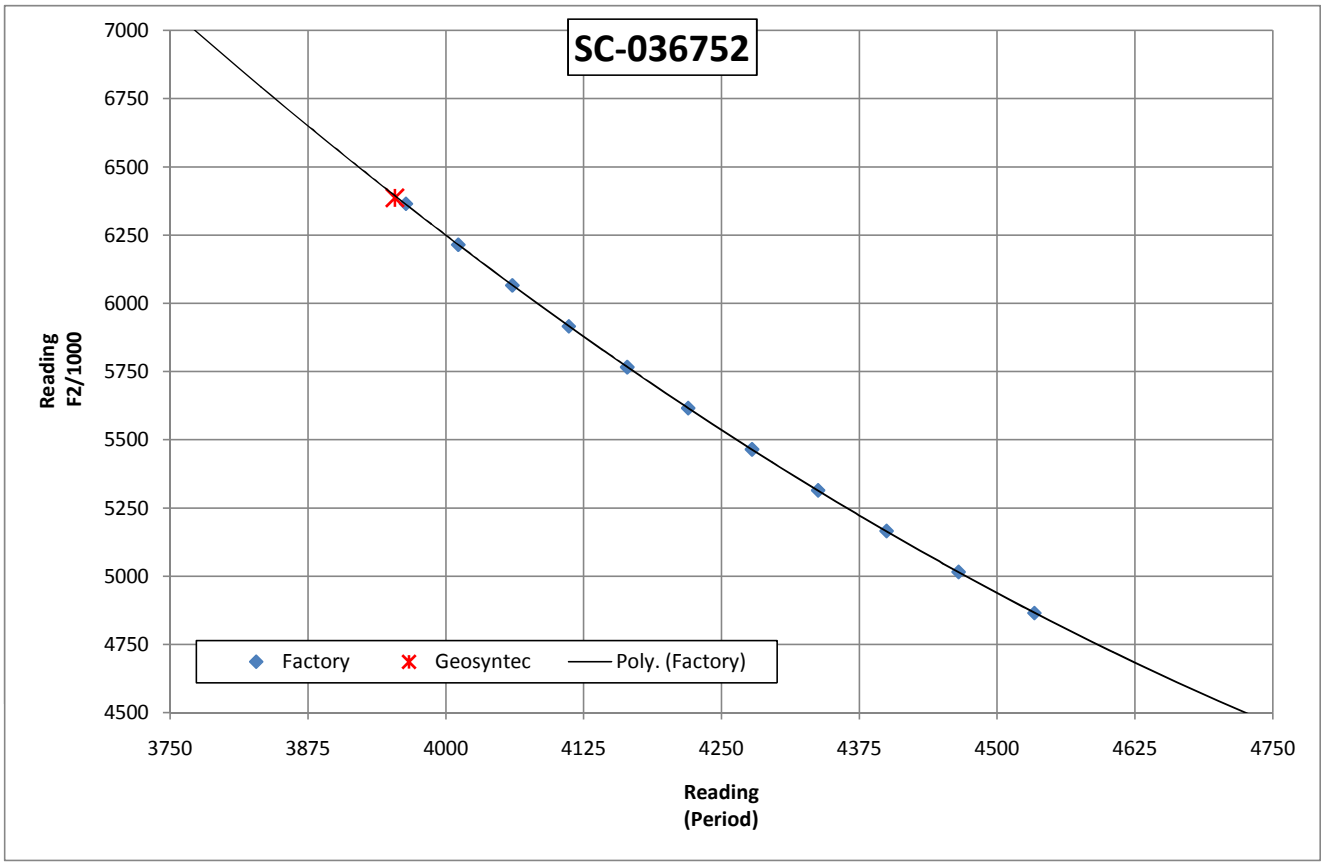
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3885.4	6624.0
15	3928.8	6478.6
30	3973.8	6332.7
45	4020.4	6186.6
60	4068.4	6041.7
75	4118.3	5896.0
90	4169.6	5752.0
105	4223.8	5605.2
120	4279.1	5461.3
135	4337.7	5314.8
150	4398.0	5170.0
Geosyntec	3878.9	6636.2



Serial No. (short) 52
Full Serial No. SC-036752

Regression Zero:	6365.5
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.9

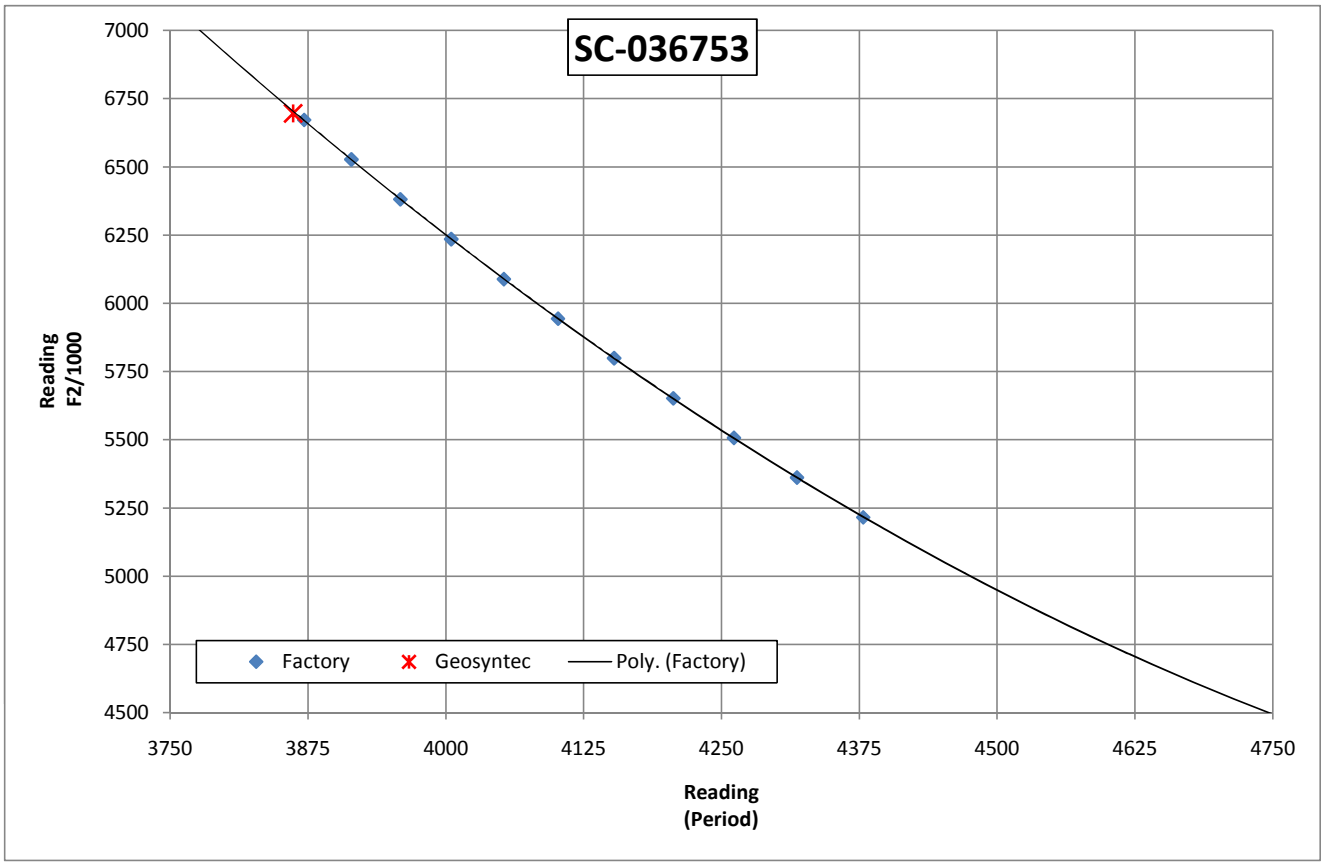
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3963.7	6365.0
15	4011.2	6215.0
30	4060.2	6066.0
45	4111.4	5916.0
60	4164.5	5766.0
75	4219.7	5616.0
90	4277.6	5465.0
105	4337.6	5315.0
120	4399.7	5166.0
135	4465.0	5016.0
150	4533.8	4865.0
Geosyntec	3953.7	6386.7



Serial No. (short) 53
Full Serial No. SC-036753

Regression Zero:	6672.1
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	24.9

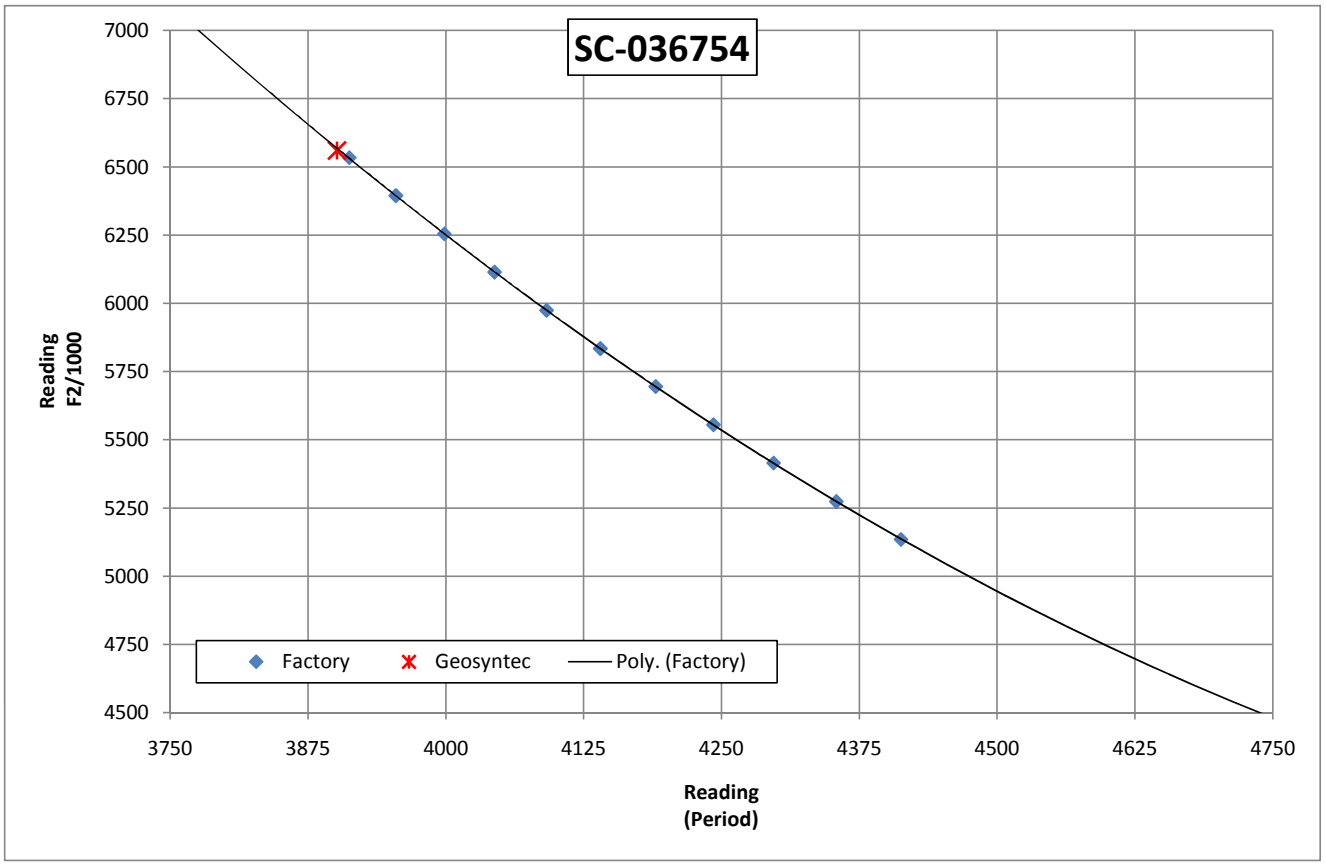
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3871.4	6672.0
15	3914.2	6527.0
30	3958.7	6381.0
45	4004.8	6235.0
60	4052.5	6089.0
75	4101.7	5944.0
90	4152.6	5799.0
105	4206.3	5652.0
120	4261.3	5507.0
135	4318.5	5362.0
150	4378.6	5216.0
Geosyntec	3861.6	6695.6



Serial No. (short) 54
Full Serial No. SC-036754

Regression Zero:	6533.5
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.8

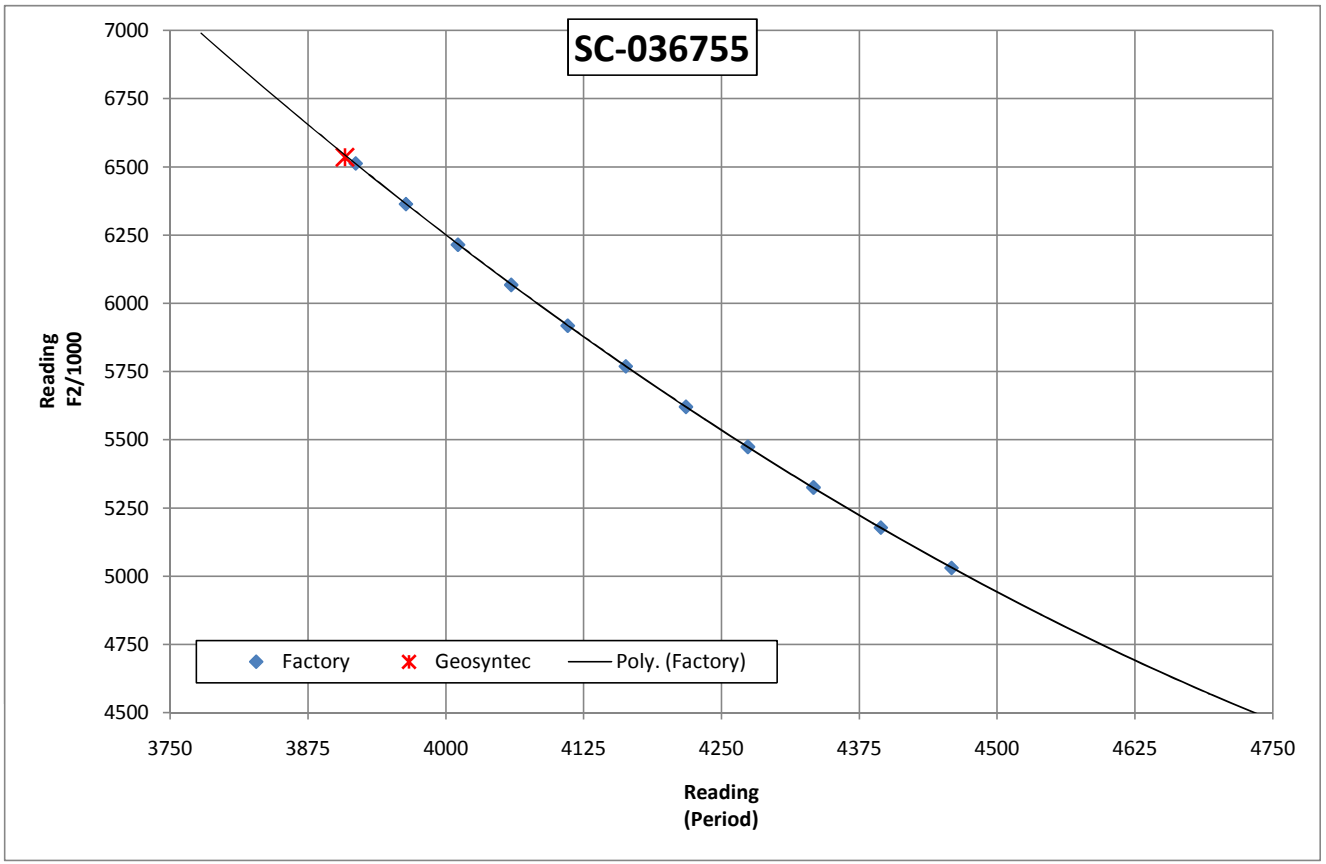
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3912.4	6533.0
15	3954.7	6394.0
30	3998.7	6254.0
45	4044.2	6114.0
60	4091.4	5974.0
75	4140.2	5834.0
90	4190.4	5695.0
105	4242.9	5555.0
120	4297.4	5415.0
135	4354.4	5274.0
150	4413.0	5135.0
Geosyntec	3901.2	6559.7



Serial No. (short) 55
Full Serial No. SC-036755

Regression Zero:	6512.0
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	24.9

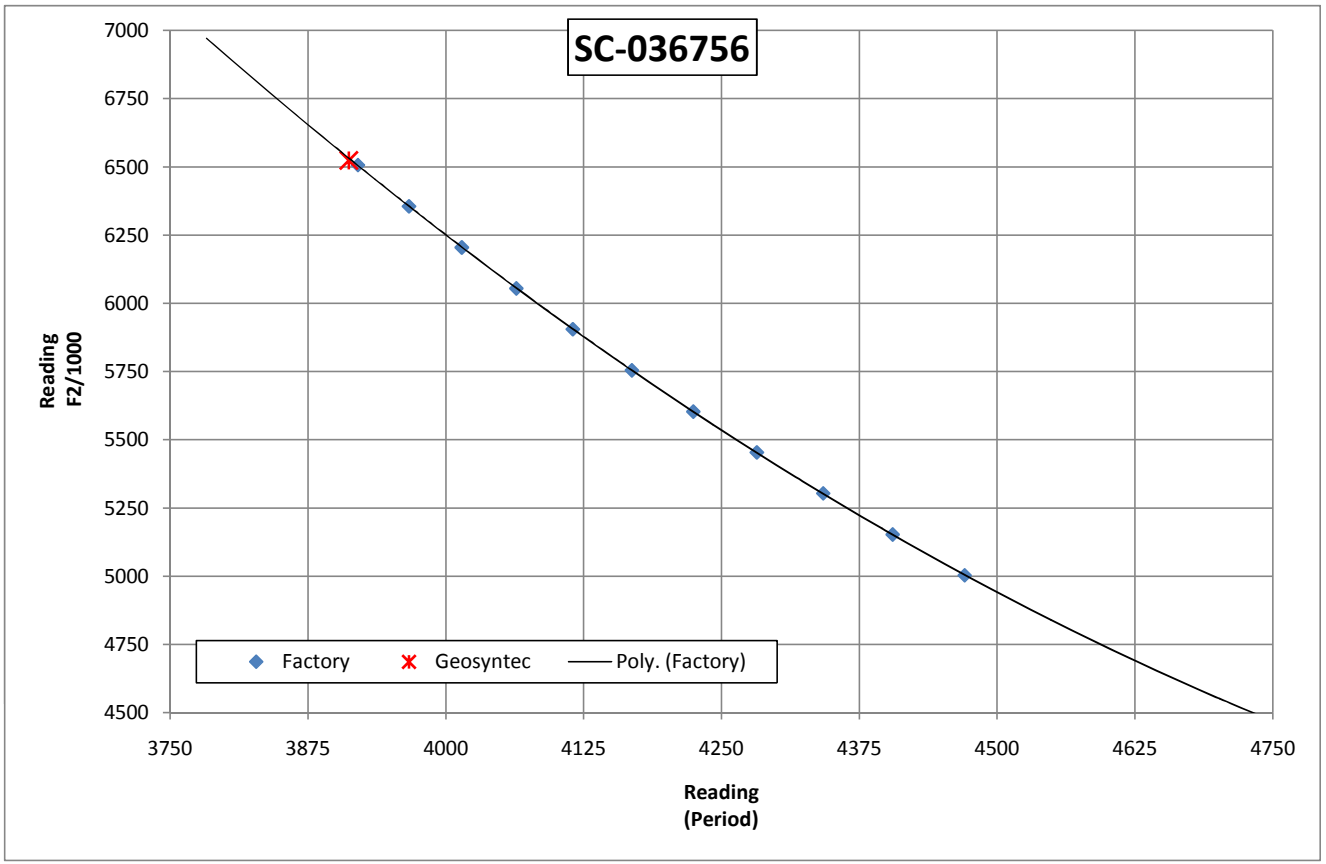
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3918.4	6513.0
15	3964.0	6364.0
30	4011.2	6215.0
45	4059.5	6068.0
60	4110.7	5918.0
75	4163.4	5769.0
90	4217.9	5621.0
105	4274.1	5474.0
120	4333.5	5325.0
135	4394.6	5178.0
150	4458.8	5030.0
Geosyntec	3908.6	6535.1



Serial No. (short) 56
Full Serial No. SC-036756

Regression Zero: 6505.7
Ambient Temp (Factory): 22.0
Measured Temp. (Geosyntec): 24.8

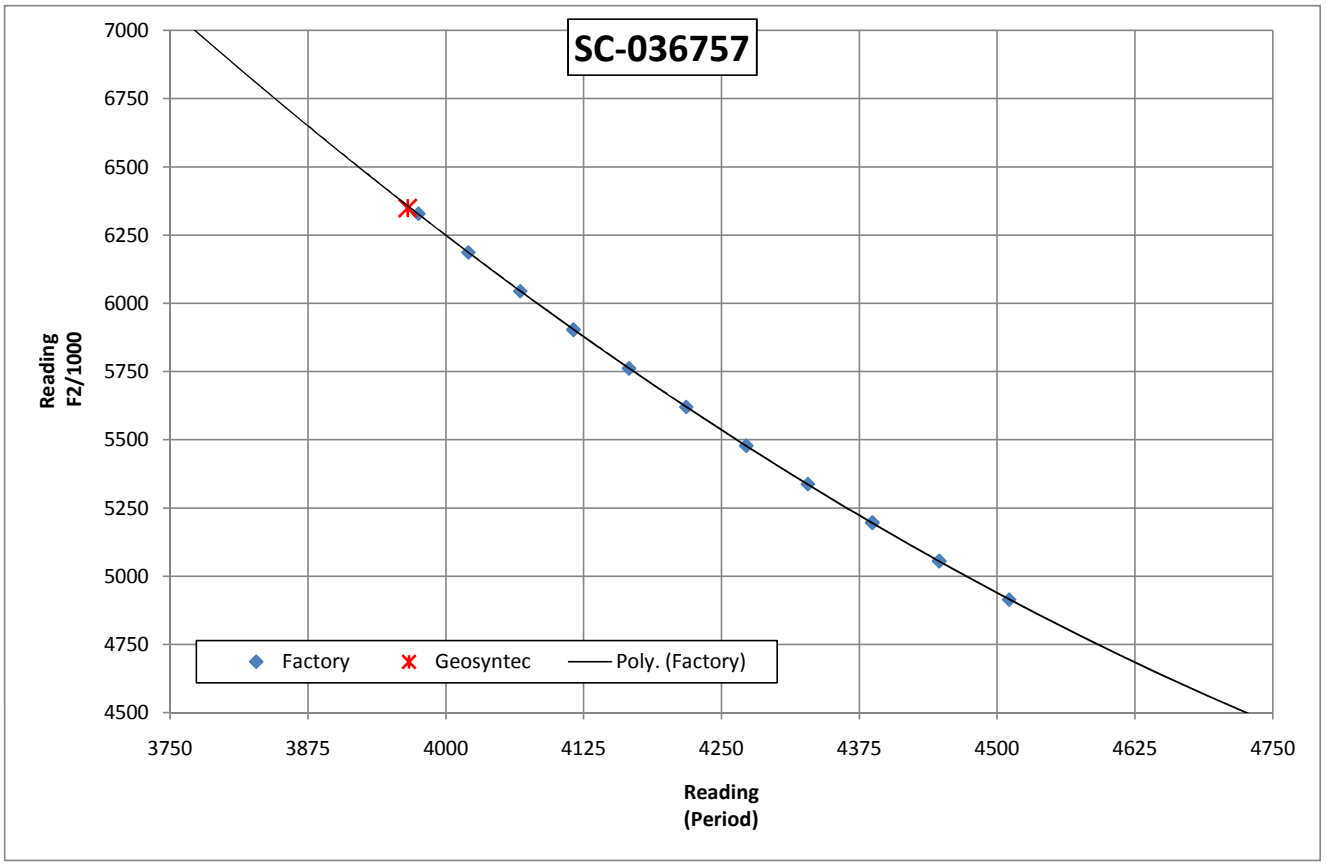
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3920.4	6506.4
15	3966.7	6355.4
30	4014.6	6204.7
45	4064.0	6054.7
60	4115.3	5904.8
75	4168.7	5754.4
90	4224.5	5603.4
105	4282.0	5453.9
120	4342.2	5303.7
135	4405.2	5153.2
150	4470.5	5003.6
Geosyntec	3912.0	6523.4



Serial No. (short) 57
Full Serial No. SC-036757

Regression Zero:	6327.1
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.7

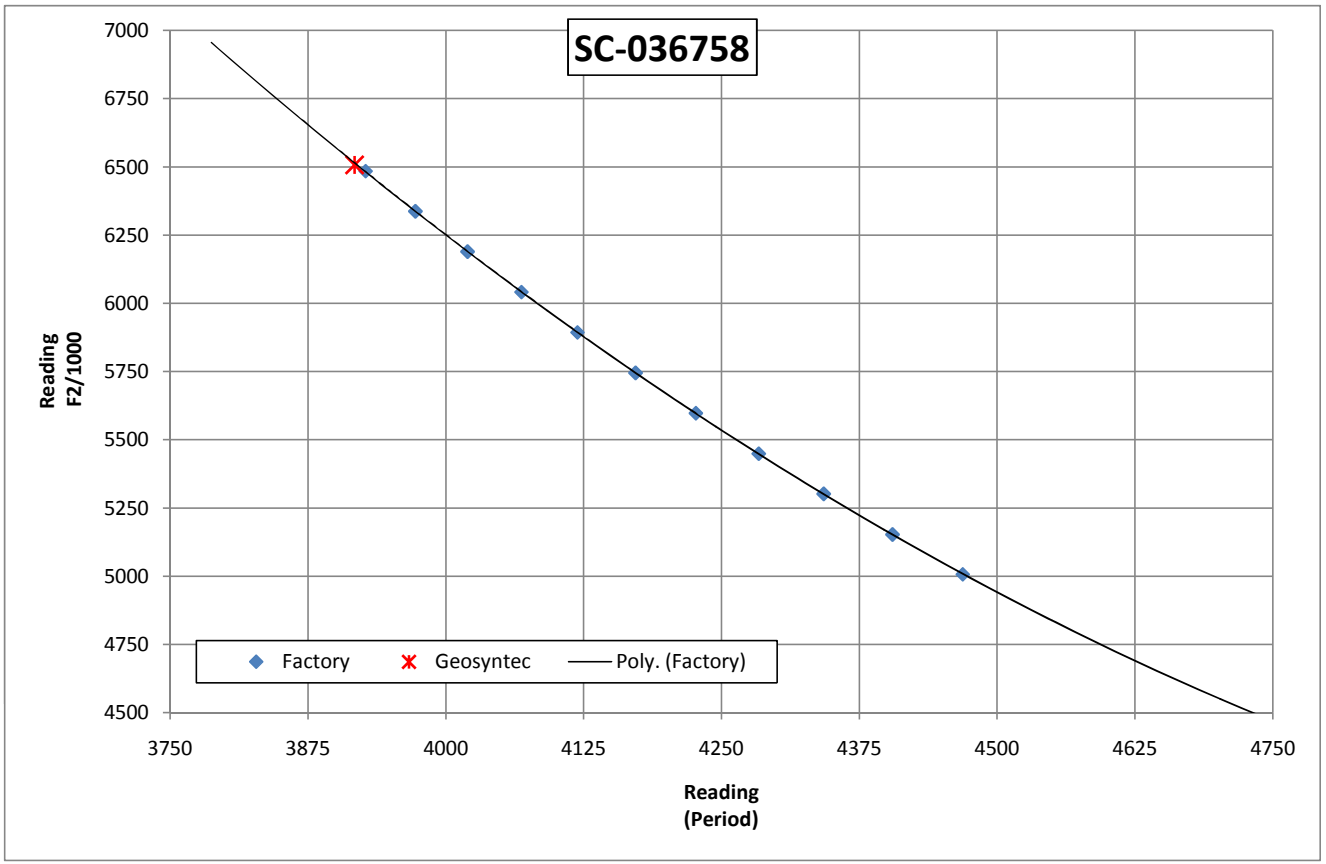
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3975.3	6328.0
15	4020.6	6186.0
30	4067.6	6044.0
45	4115.9	5903.0
60	4166.3	5761.0
75	4218.2	5620.0
90	4272.6	5478.0
105	4328.6	5337.0
120	4387.0	5196.0
135	4447.7	5055.0
150	4511.1	4914.0
Geosyntec	3965.5	6349.3



Serial No. (short) 58
Full Serial No. SC-036758

Regression Zero:	6484.4
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	26.4

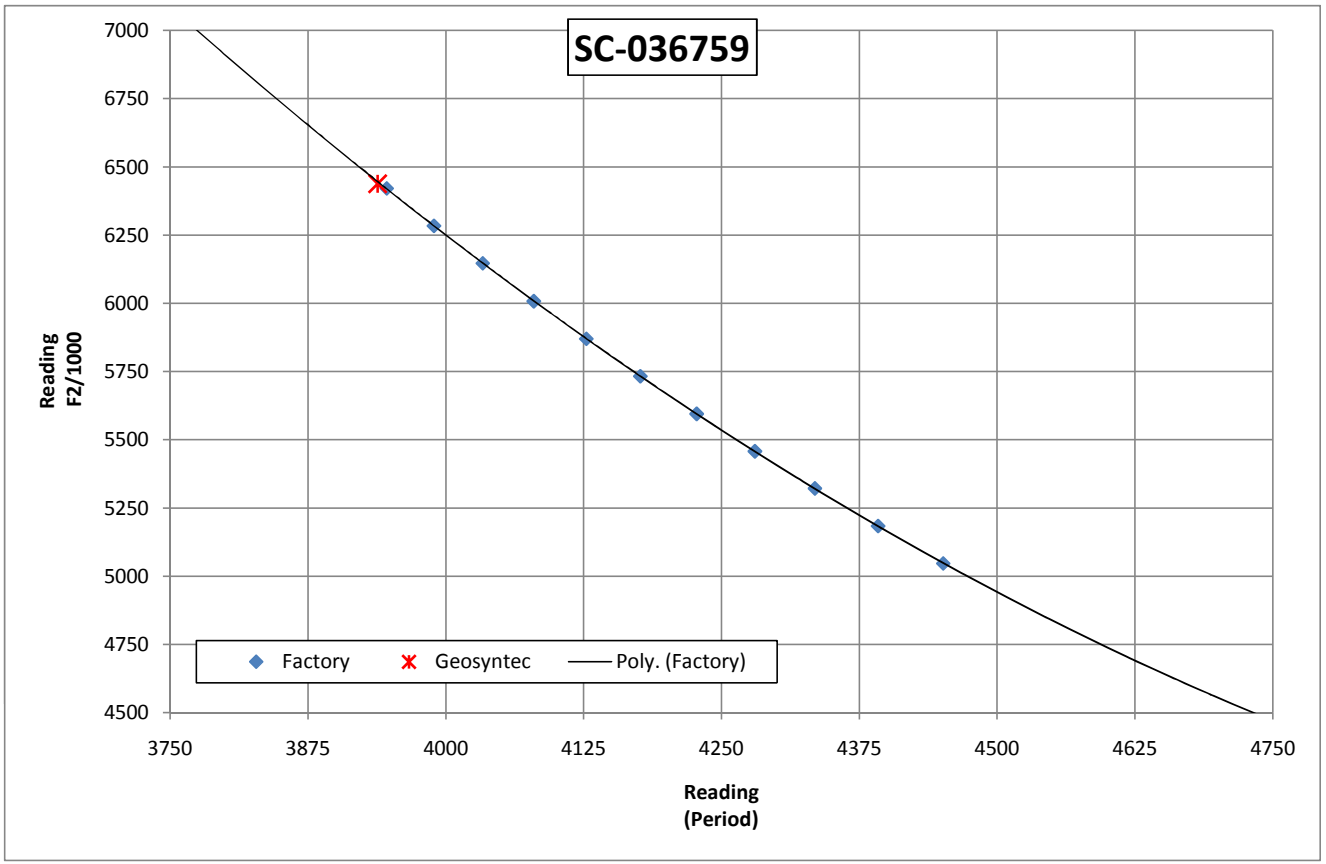
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3927.2	6484.0
15	3972.4	6337.0
30	4019.7	6189.0
45	4068.6	6041.0
60	4119.4	5893.0
75	4172.1	5745.0
90	4226.9	5597.0
105	4283.9	5449.0
120	4342.9	5302.0
135	4405.2	5153.0
150	4469.0	5007.0
Geosyntec	3917.2	6507.0



Serial No. (short) 59
Full Serial No. SC-036759

Regression Zero:	6420.3
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.8

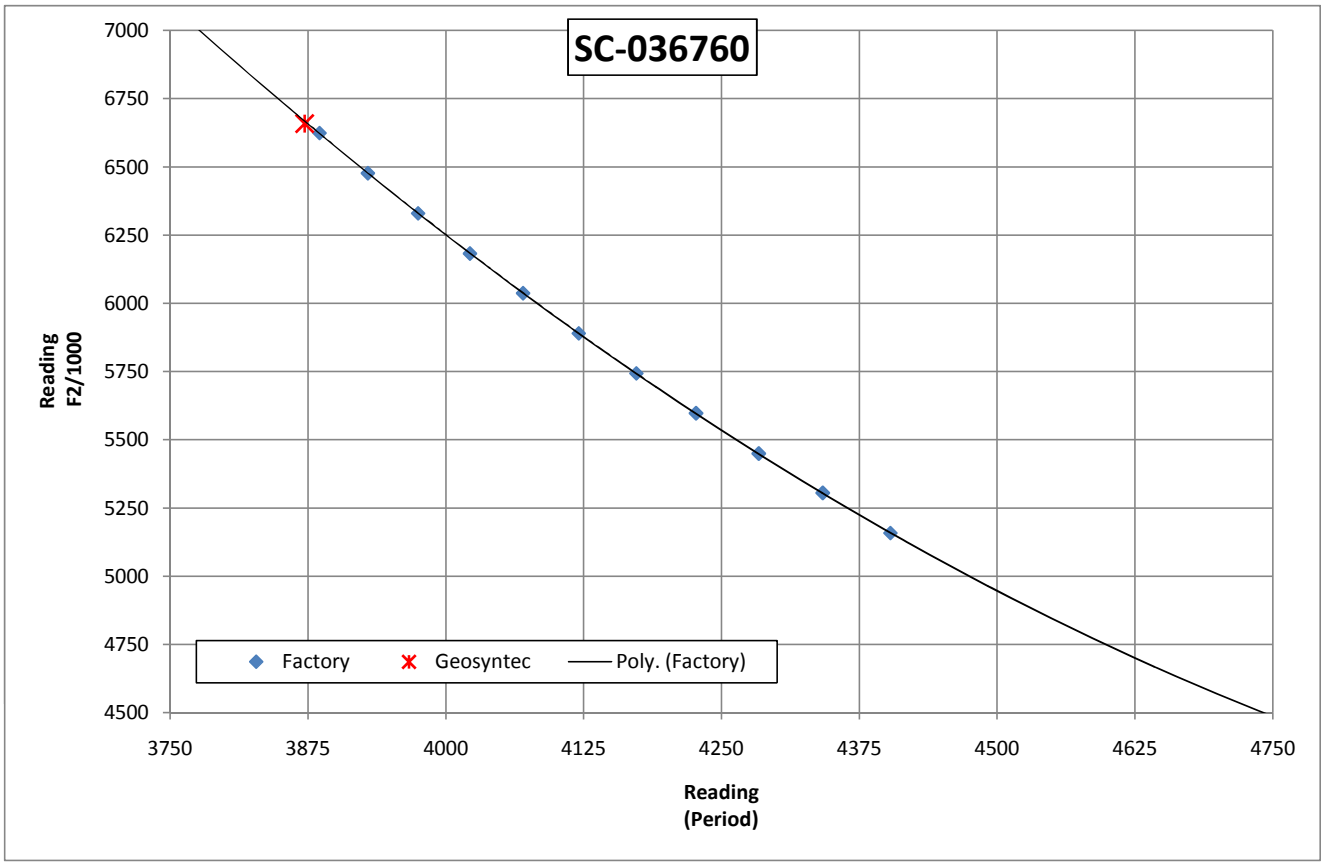
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3946.5	6420.7
15	3989.3	6283.5
30	4033.6	6146.3
45	4079.8	6007.8
60	4127.5	5869.7
75	4176.5	5732.8
90	4227.6	5595.1
105	4280.3	5458.3
120	4334.7	5322.0
135	4392.0	5184.2
150	4451.1	5047.3
Geosyntec	3938.1	6437.8



Serial No. (short) 60
Full Serial No. SC-036760

Regression Zero:	6622.6
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.8

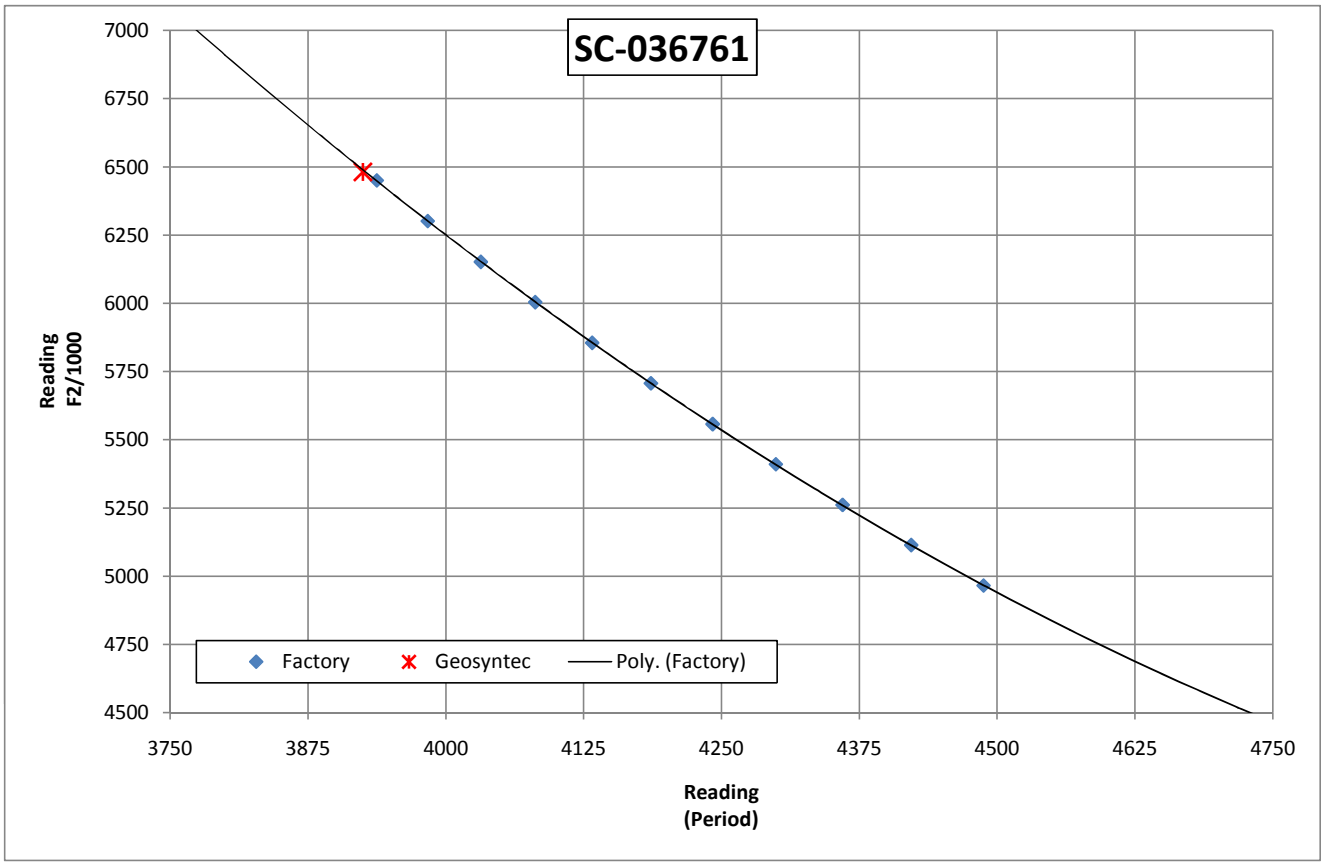
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3885.6	6623.5
15	3929.4	6476.5
30	3974.9	6329.2
45	4021.9	6182.2
60	4070.1	6036.5
75	4120.6	5889.5
90	4172.9	5742.8
105	4227.0	5596.8
120	4283.8	5449.4
135	4341.8	5304.8
150	4403.2	5157.7
Geosyntec	3872.1	6658.4



Serial No. (short) 61
Full Serial No. SC-036761

Regression Zero:	6449.6
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	26.0

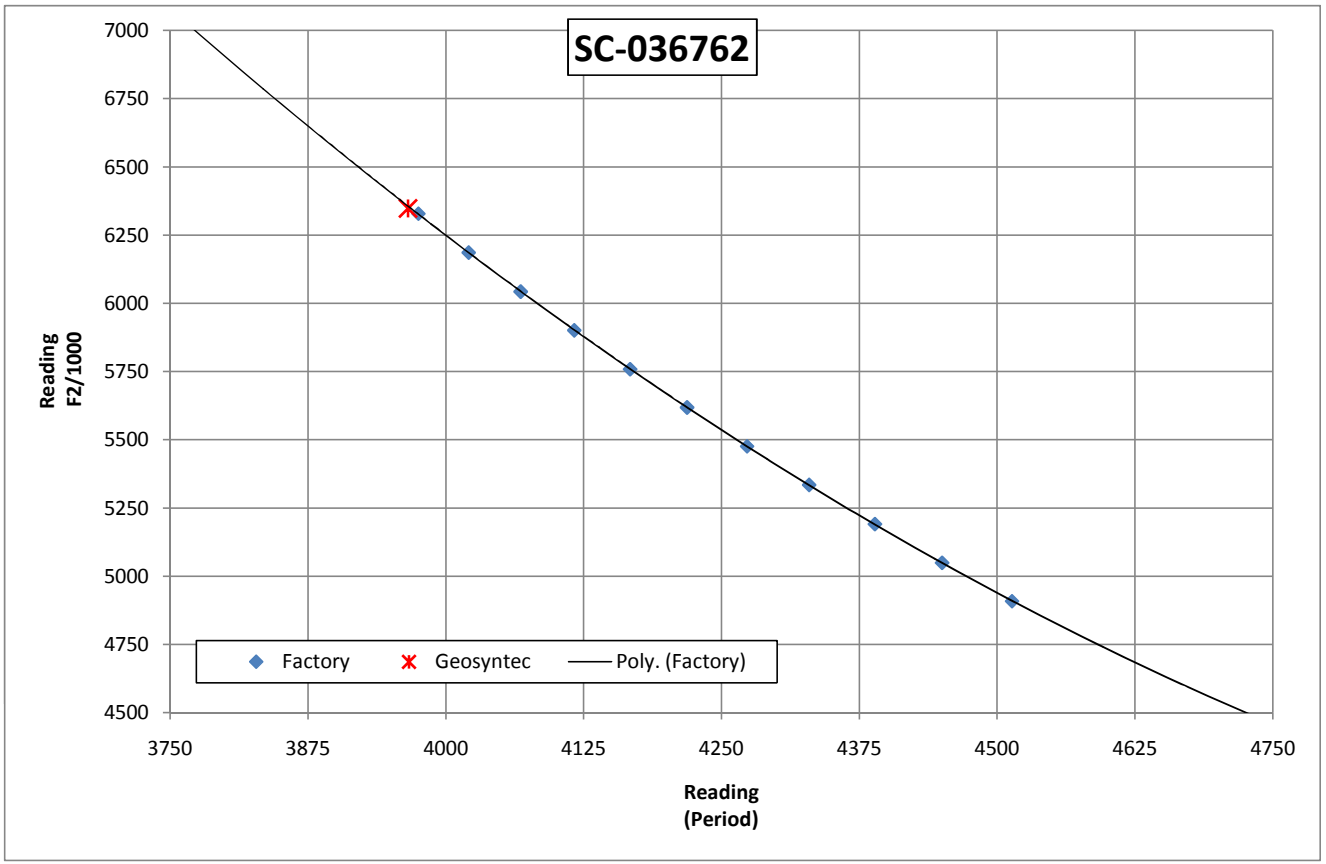
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3937.4	6450.4
15	3983.6	6301.5
30	4031.7	6152.1
45	4081.1	6004.1
60	4132.7	5855.2
75	4186.0	5706.9
90	4242.0	5557.2
105	4299.3	5410.0
120	4359.8	5260.9
135	4422.1	5113.7
150	4487.7	4965.4
Geosyntec	3924.8	6481.6



Serial No. (short) 62
Full Serial No. SC-036762

Regression Zero:	6327.0
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	24.8

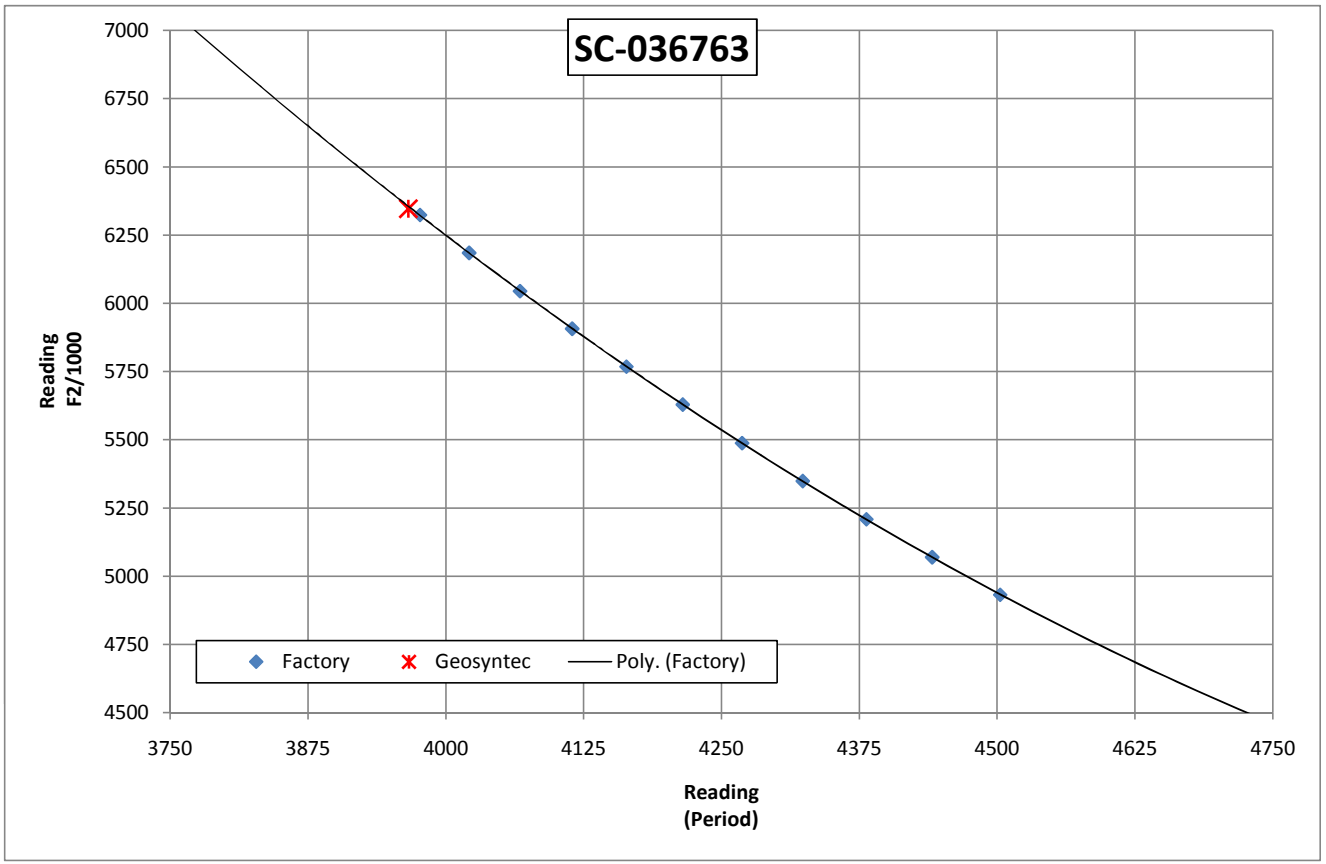
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3975.3	6327.8
15	4020.9	6185.1
30	4068.1	6042.6
45	4116.7	5900.8
60	4167.3	5758.2
75	4219.0	5618.0
90	4273.4	5475.8
105	4329.7	5334.4
120	4389.3	5190.6
135	4450.3	5049.2
150	4513.7	4908.3
Geosyntec	3965.8	6347.8



Serial No. (short) 63
Full Serial No. SC-036763

Regression Zero:	6324.4
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	26.6

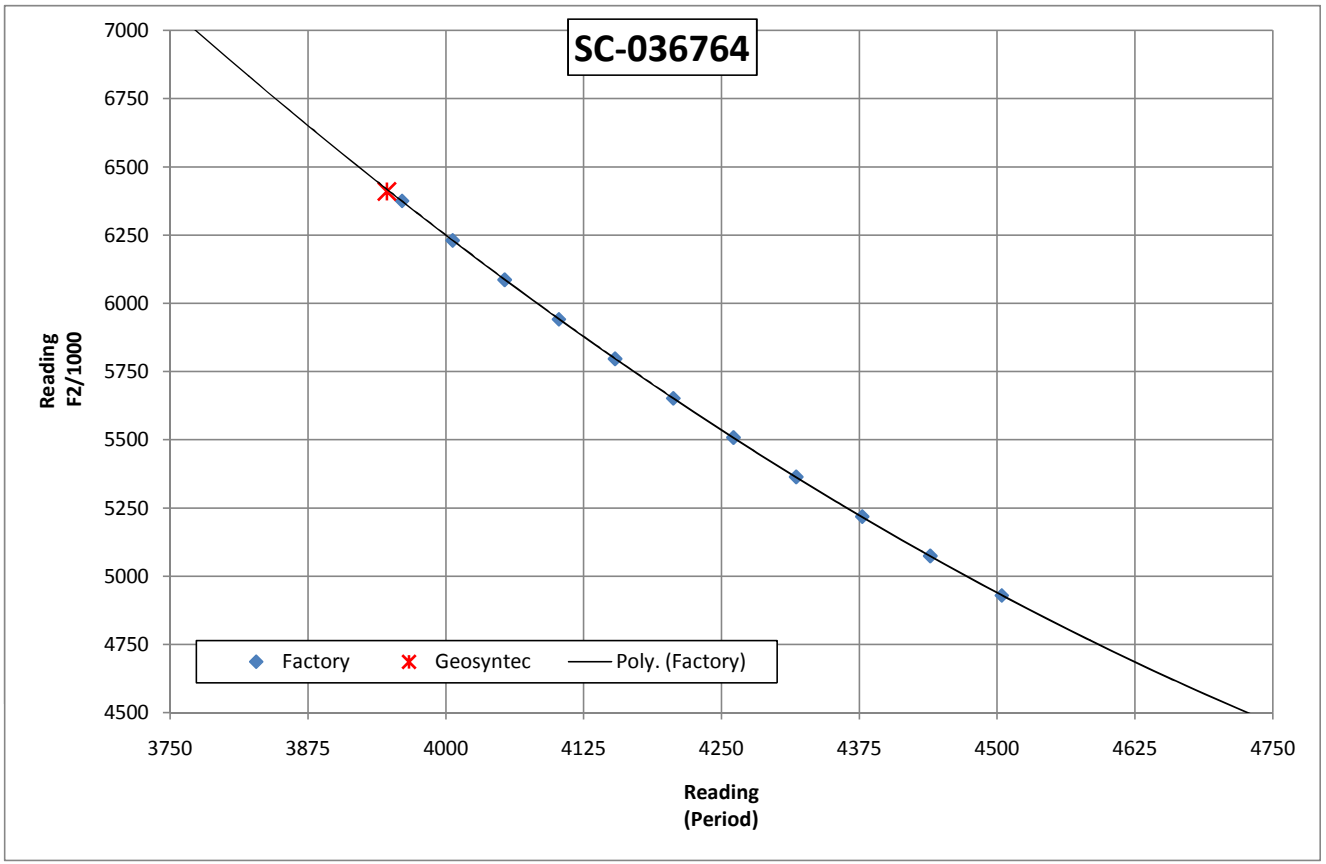
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3976.5	6324.0
15	4021.0	6185.0
30	4067.3	6045.0
45	4114.5	5907.0
60	4163.8	5768.0
75	4214.9	5629.0
90	4268.7	5488.0
105	4323.8	5349.0
120	4381.5	5209.0
135	4441.2	5070.0
150	4502.9	4932.0
Geosyntec	3966.1	6346.8



Serial No. (short) 64
Full Serial No. SC-036764

Regression Zero:	6375.7
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.6

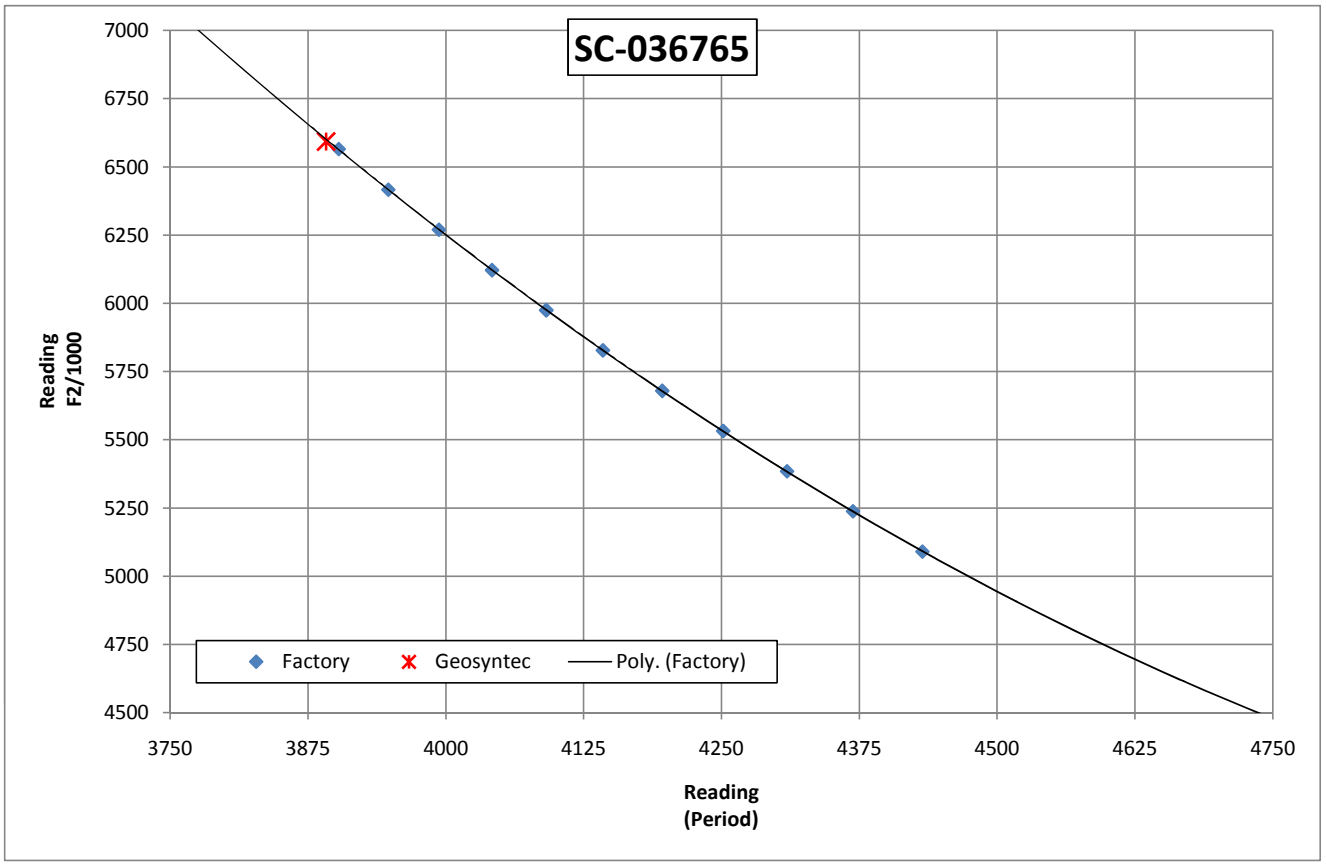
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3960.3	6375.8
15	4006.1	6230.9
30	4053.3	6086.8
45	4102.5	5941.6
60	4153.4	5796.8
75	4206.3	5651.9
90	4260.9	5508.0
105	4317.8	5363.9
120	4377.6	5218.2
135	4439.3	5074.2
150	4504.2	4929.1
Geosyntec	3946.5	6410.0



Serial No. (short) 65
Full Serial No. SC-036765

Regression Zero:	6564.0
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.9

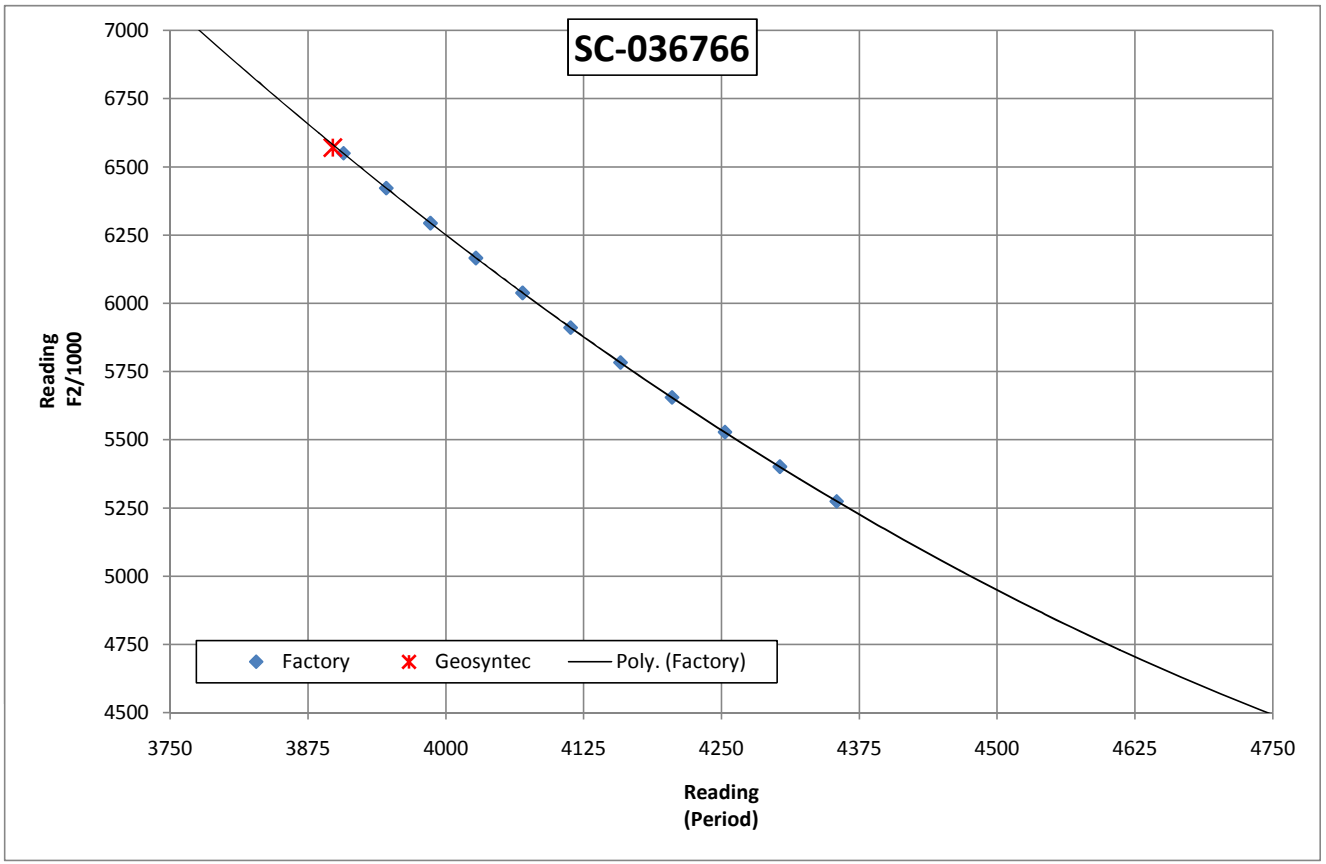
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3902.9	6564.8
15	3947.9	6416.1
30	3993.8	6269.4
45	4041.9	6121.1
60	4091.2	5974.5
75	4142.5	5827.3
90	4196.3	5679.0
105	4251.6	5532.1
120	4309.5	5384.5
135	4369.3	5238.1
150	4432.3	5090.2
Geosyntec	3891.5	6593.0



Serial No. (short) 66
Full Serial No. SC-036766

Regression Zero:	6549.2
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.0

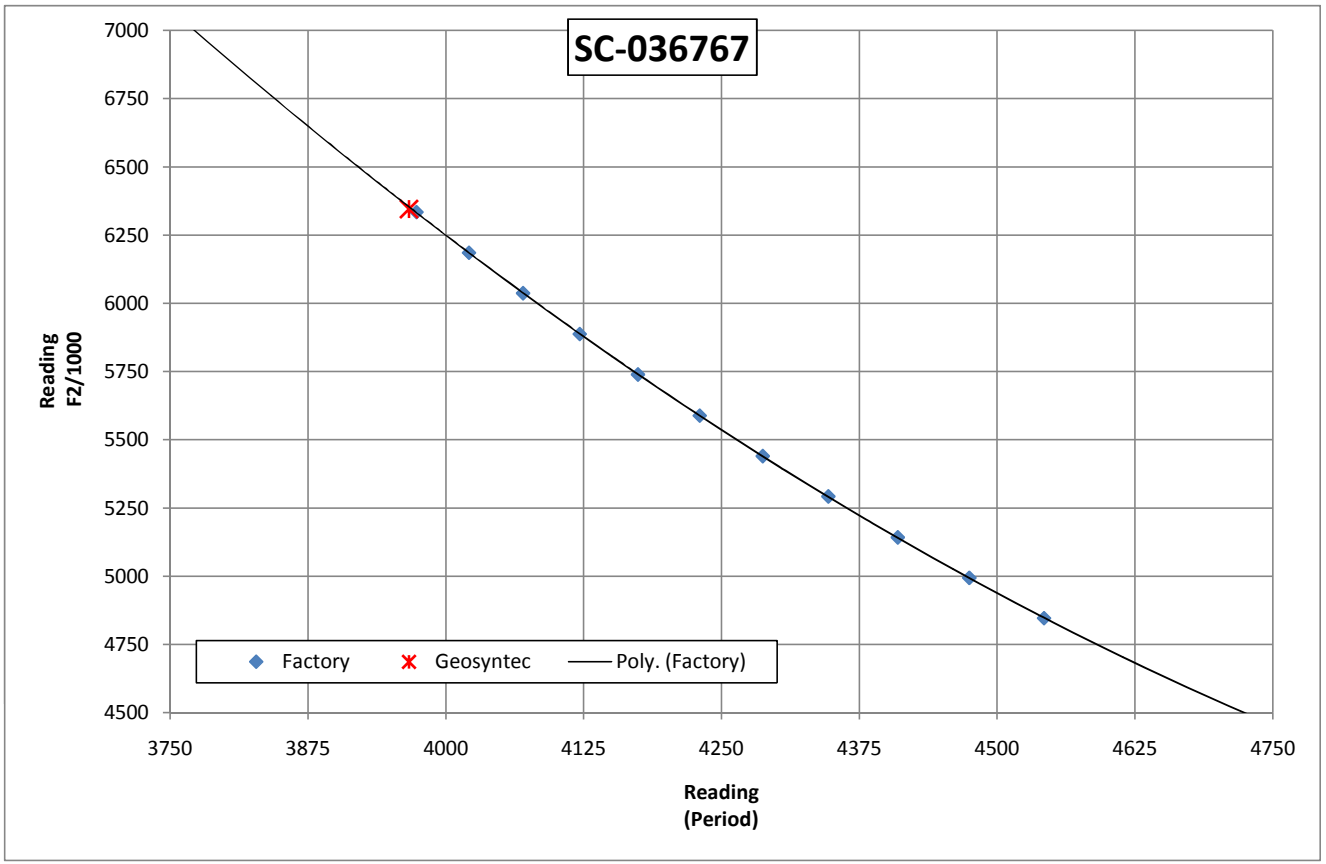
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3907.3	6550.0
15	3946.1	6422.0
30	3986.0	6294.0
45	4027.2	6166.0
60	4069.6	6038.0
75	4113.1	5911.0
90	4158.4	5783.0
105	4205.2	5655.0
120	4253.2	5528.0
135	4302.9	5401.0
150	4354.4	5274.0
Geosyntec	3897.6	6571.0



Serial No. (short) 67
Full Serial No. SC-036767

Regression Zero:	6333.9
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.0

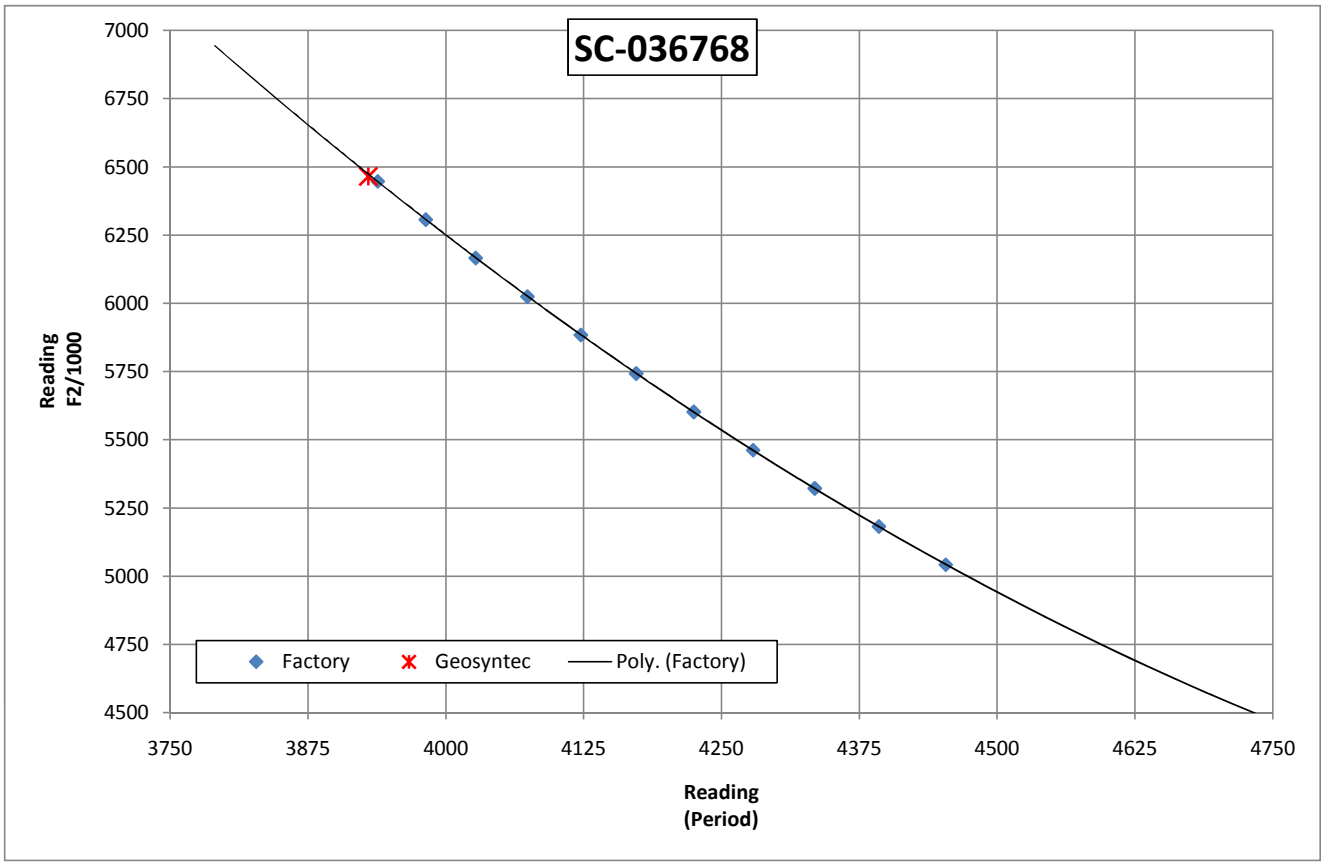
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3973.4	6334.0
15	4021.0	6185.0
30	4070.0	6037.0
45	4121.5	5887.0
60	4174.3	5739.0
75	4230.3	5588.0
90	4287.5	5440.0
105	4347.0	5292.0
120	4410.0	5142.0
135	4474.8	4994.0
150	4542.6	4846.0
Geosyntec	3966.6	6344.8



Serial No. (short) 68
Full Serial No. SC-036768

Regression Zero:	6446.8
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.7

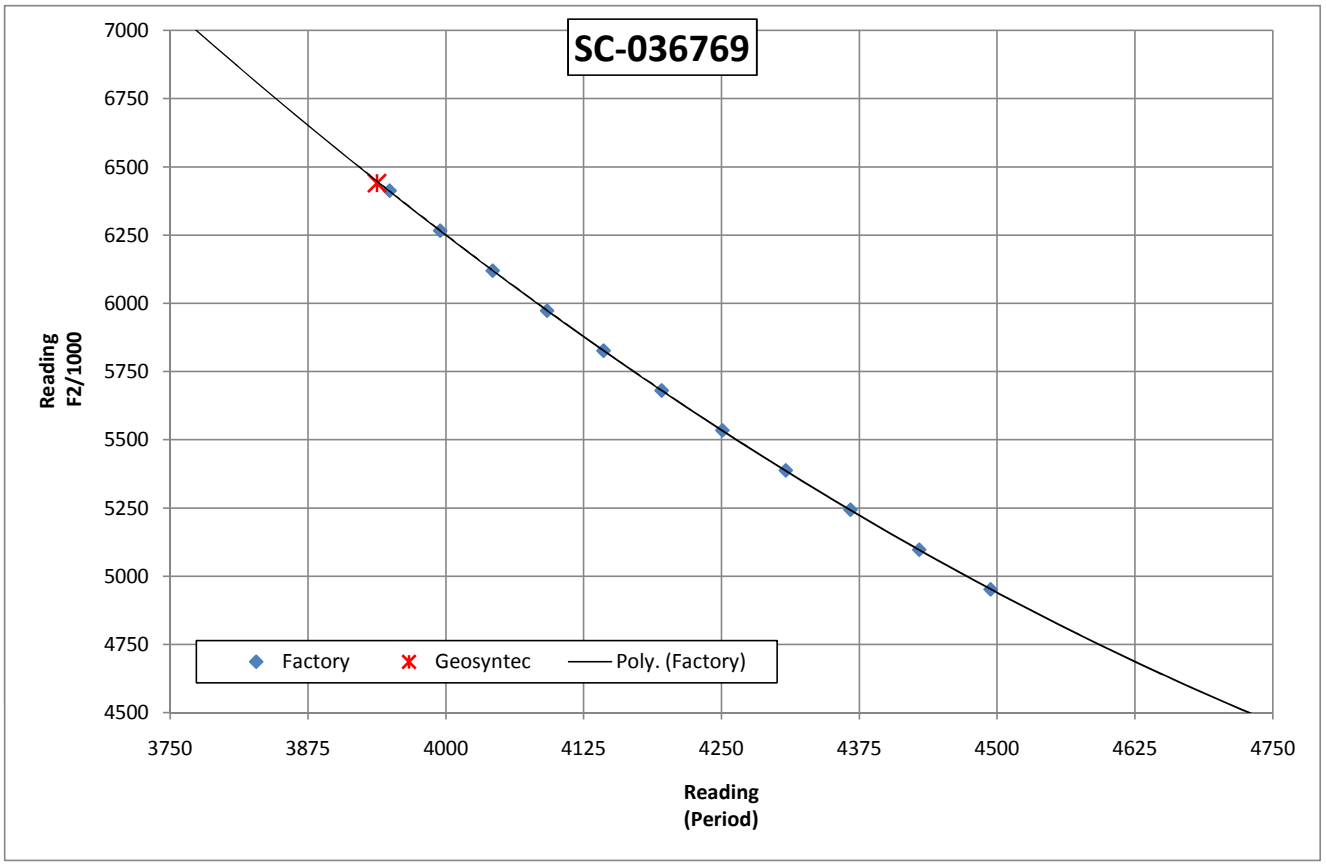
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3938.4	6447.0
15	3981.9	6307.0
30	4027.2	6166.0
45	4074.0	6025.0
60	4122.5	5884.0
75	4172.8	5743.0
90	4225.0	5602.0
105	4278.8	5462.0
120	4334.7	5322.0
135	4392.9	5182.0
150	4453.5	5042.0
Geosyntec	3929.8	6465.3



Serial No. (short) 69
Full Serial No. SC-036769

Regression Zero:	6411.8
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	24.9

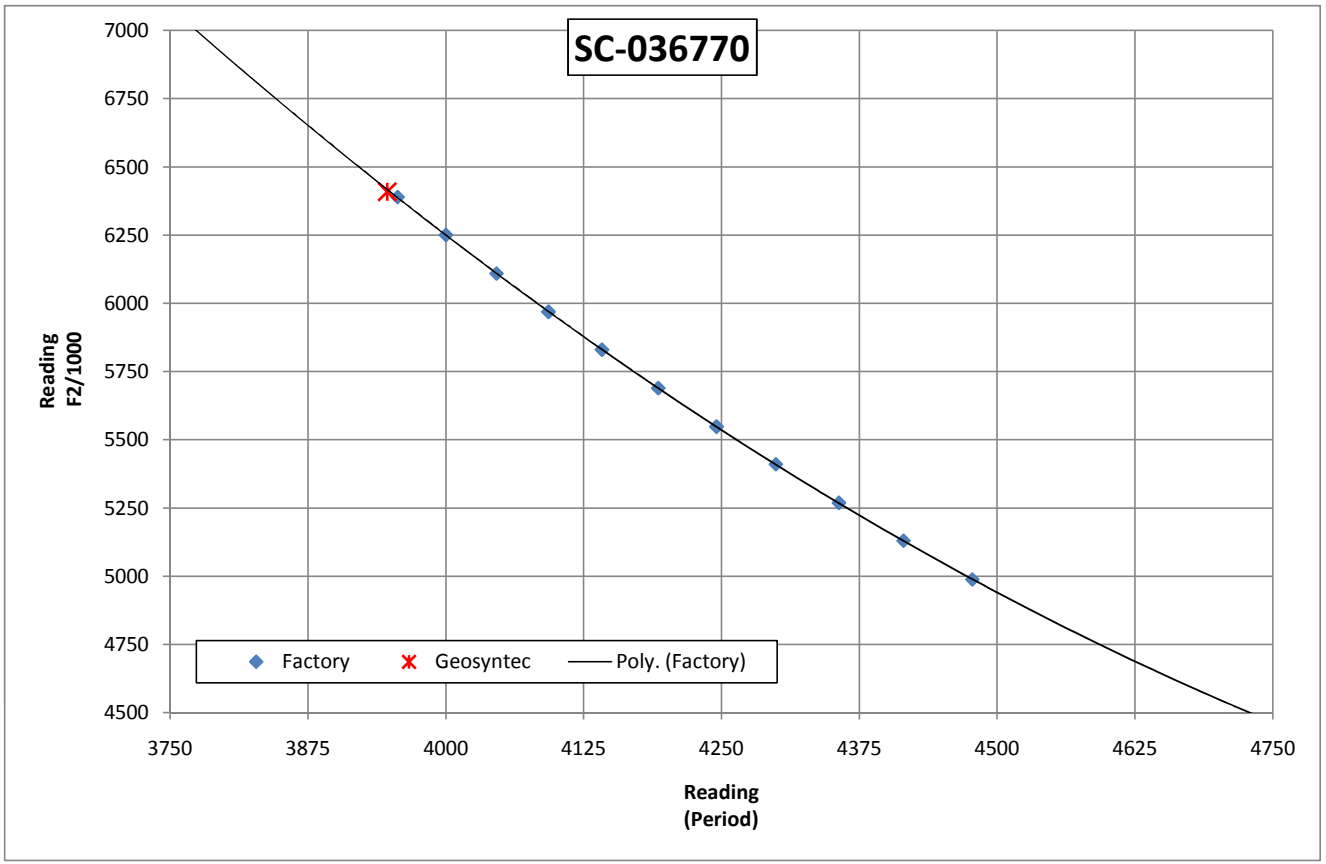
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3948.9	6412.8
15	3994.8	6266.2
30	4042.4	6119.5
45	4091.7	5973.1
60	4142.9	5826.3
75	4195.7	5680.5
90	4250.8	5534.2
105	4308.3	5387.5
120	4367.0	5243.6
135	4429.4	5097.0
150	4494.1	4951.3
Geosyntec	3937.5	6439.9



Serial No. (short) 70
Full Serial No. SC-036770

Regression Zero:	6389.4
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.6

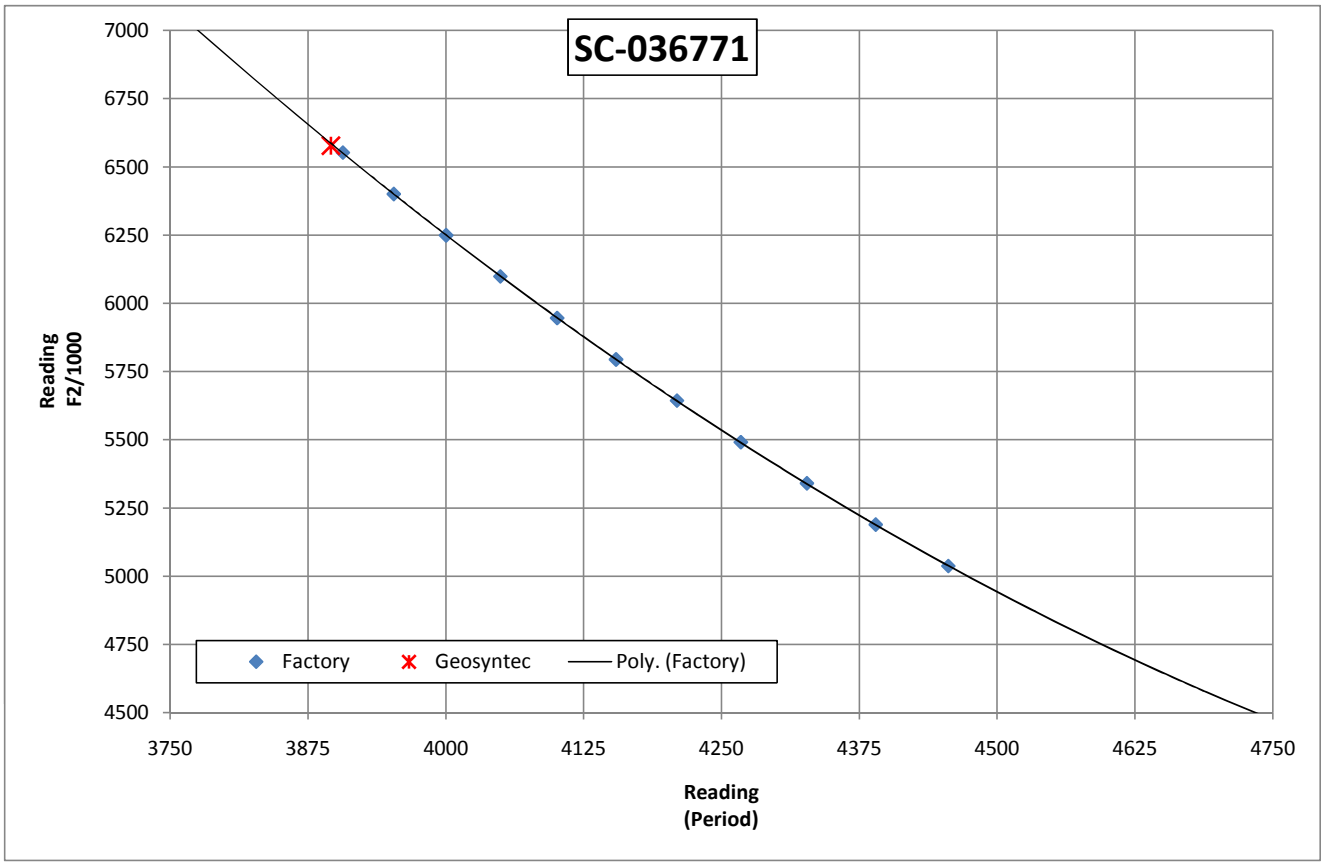
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3956.2	6389.0
15	4000.0	6250.0
30	4045.9	6109.0
45	4093.1	5969.0
60	4141.6	5830.0
75	4192.6	5689.0
90	4245.5	5548.0
105	4299.3	5410.0
120	4356.5	5269.0
135	4415.1	5130.0
150	4477.5	4988.0
Geosyntec	3947.0	6408.9



Serial No. (short) 71
Full Serial No. SC-036771

Regression Zero:	6551.9
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.0

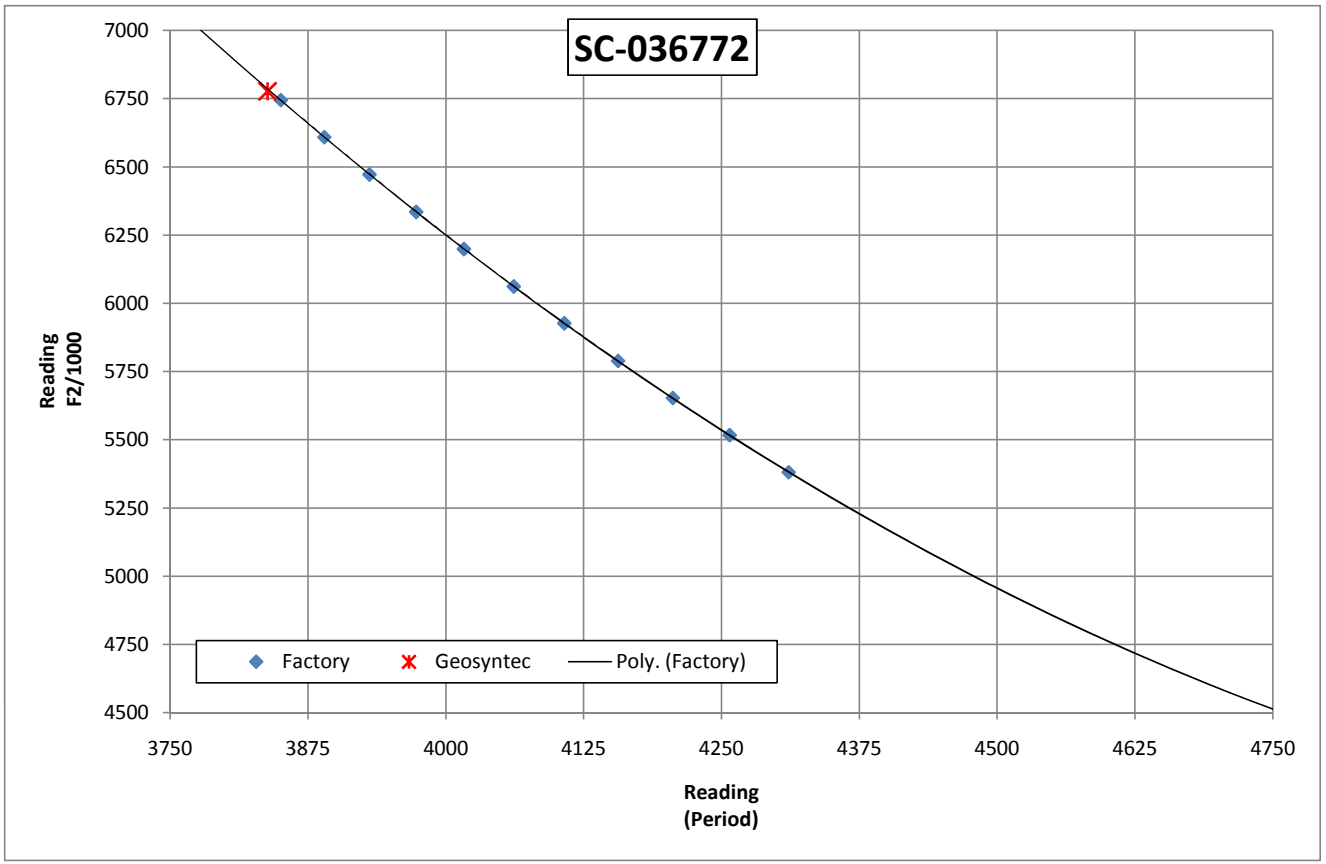
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3906.7	6552.0
15	3952.8	6400.0
30	4000.3	6249.0
45	4049.5	6098.0
60	4101.0	5946.0
75	4154.4	5794.0
90	4209.6	5643.0
105	4267.5	5491.0
120	4327.4	5340.0
135	4389.9	5189.0
150	4455.7	5037.0
Geosyntec	3895.8	6578.1



Serial No. (short) 72
Full Serial No. SC-036772

Regression Zero:	6744.9
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	26.2

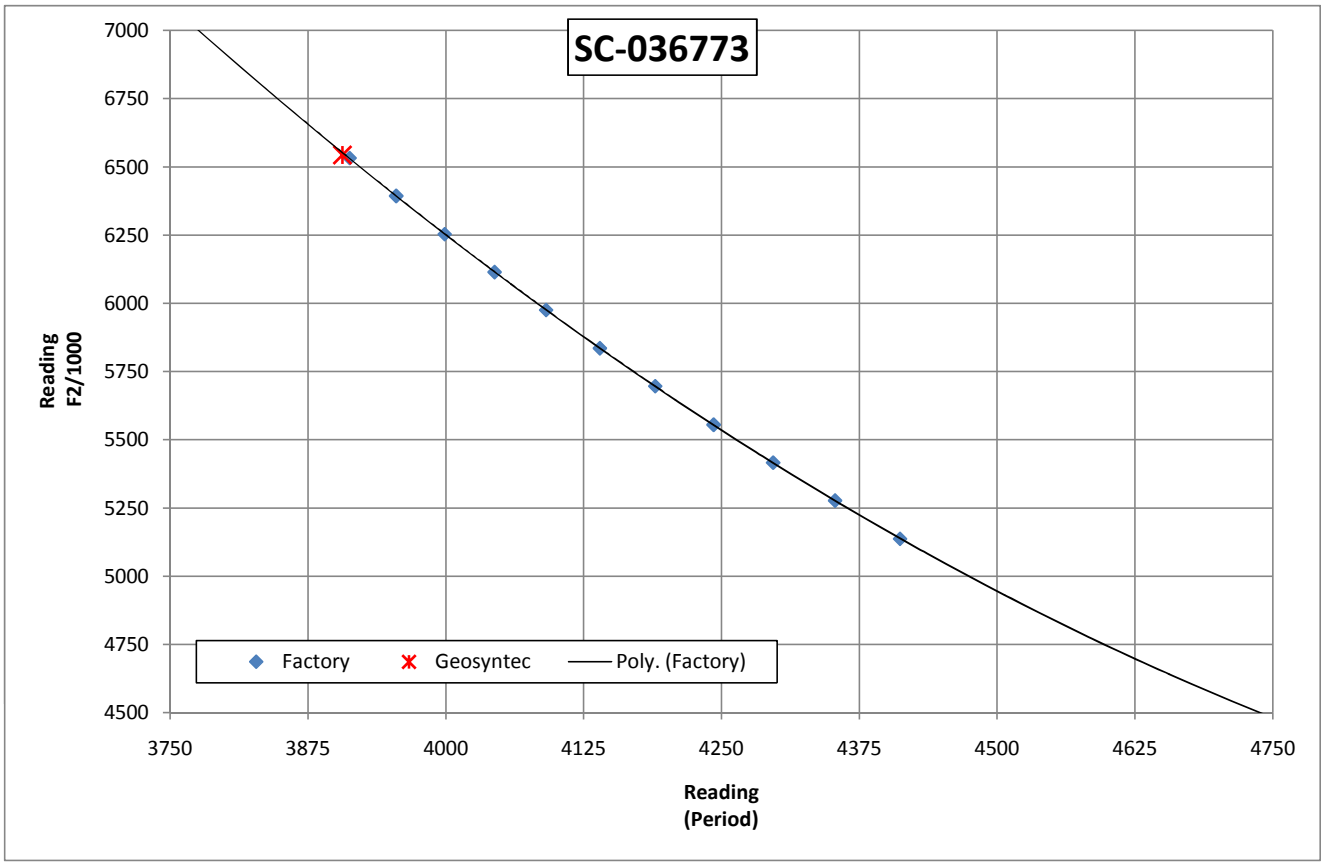
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3850.4	6745.0
15	3889.8	6609.0
30	3930.8	6472.0
45	3973.1	6335.0
60	4016.4	6199.0
75	4061.6	6062.0
90	4107.5	5927.0
105	4156.2	5789.0
120	4205.9	5653.0
135	4257.4	5517.0
150	4310.9	5381.0
Geosyntec	3838.3	6777.1



Serial No. (short) 73
Full Serial No. SC-036773

Regression Zero:	6532.4
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.6

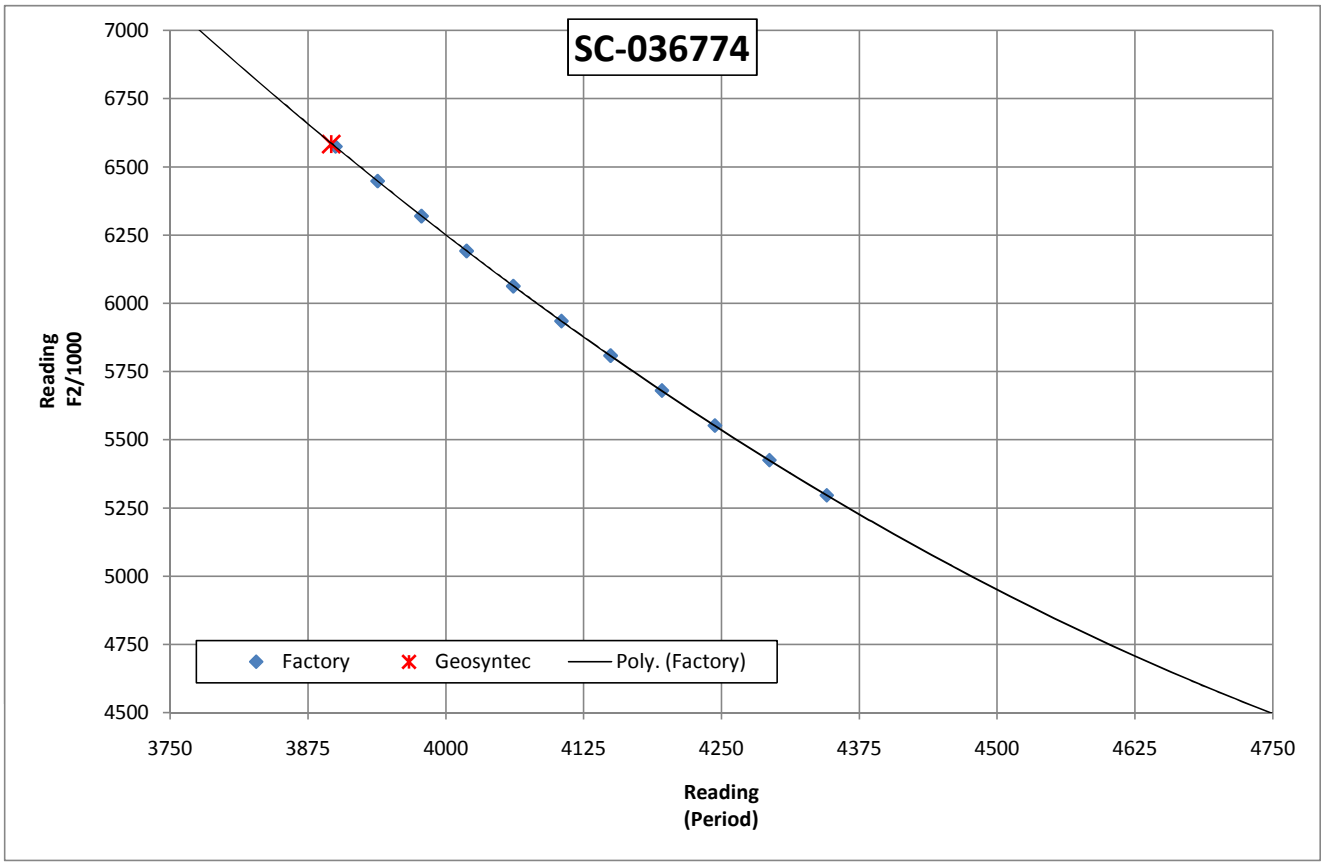
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3912.7	6532.0
15	3955.0	6393.0
30	3999.0	6253.0
45	4044.2	6114.0
60	4091.0	5975.0
75	4139.8	5835.0
90	4190.0	5696.0
105	4242.9	5555.0
120	4297.0	5416.0
135	4353.2	5277.0
150	4412.1	5137.0
Geosyntec	3906.1	6543.3



Serial No. (short) 74
Full Serial No. SC-036774

Regression Zero:	6575.4
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.6

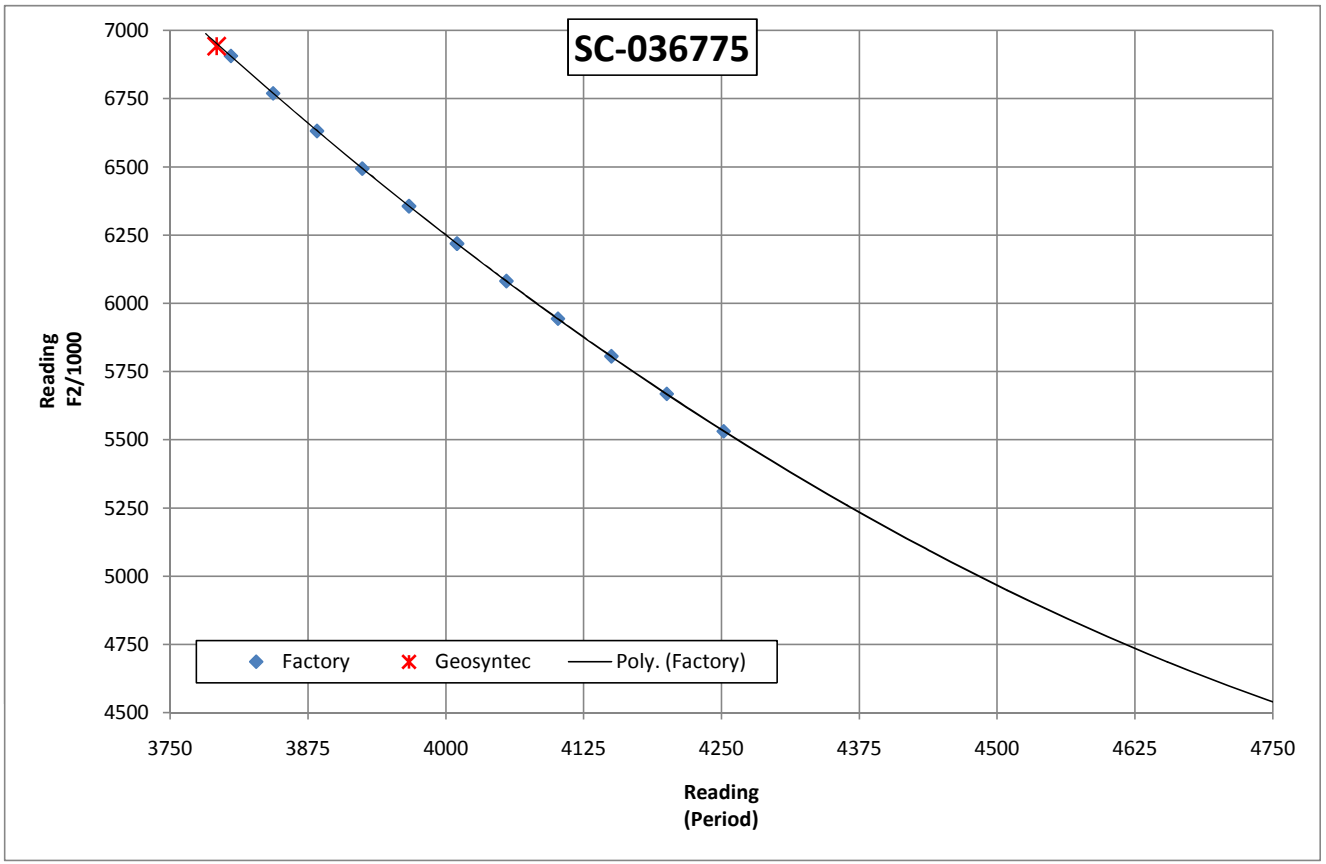
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3899.9	6575.0
15	3938.1	6448.0
30	3977.8	6320.0
45	4018.7	6192.0
60	4061.2	6063.0
75	4104.8	5935.0
90	4149.4	5808.0
105	4195.9	5680.0
120	4244.0	5552.0
135	4293.4	5425.0
150	4345.4	5296.0
Geosyntec	3896.0	6583.3



Serial No. (short) 75
Full Serial No. SC-036775

Regression Zero:	6907.2
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.0

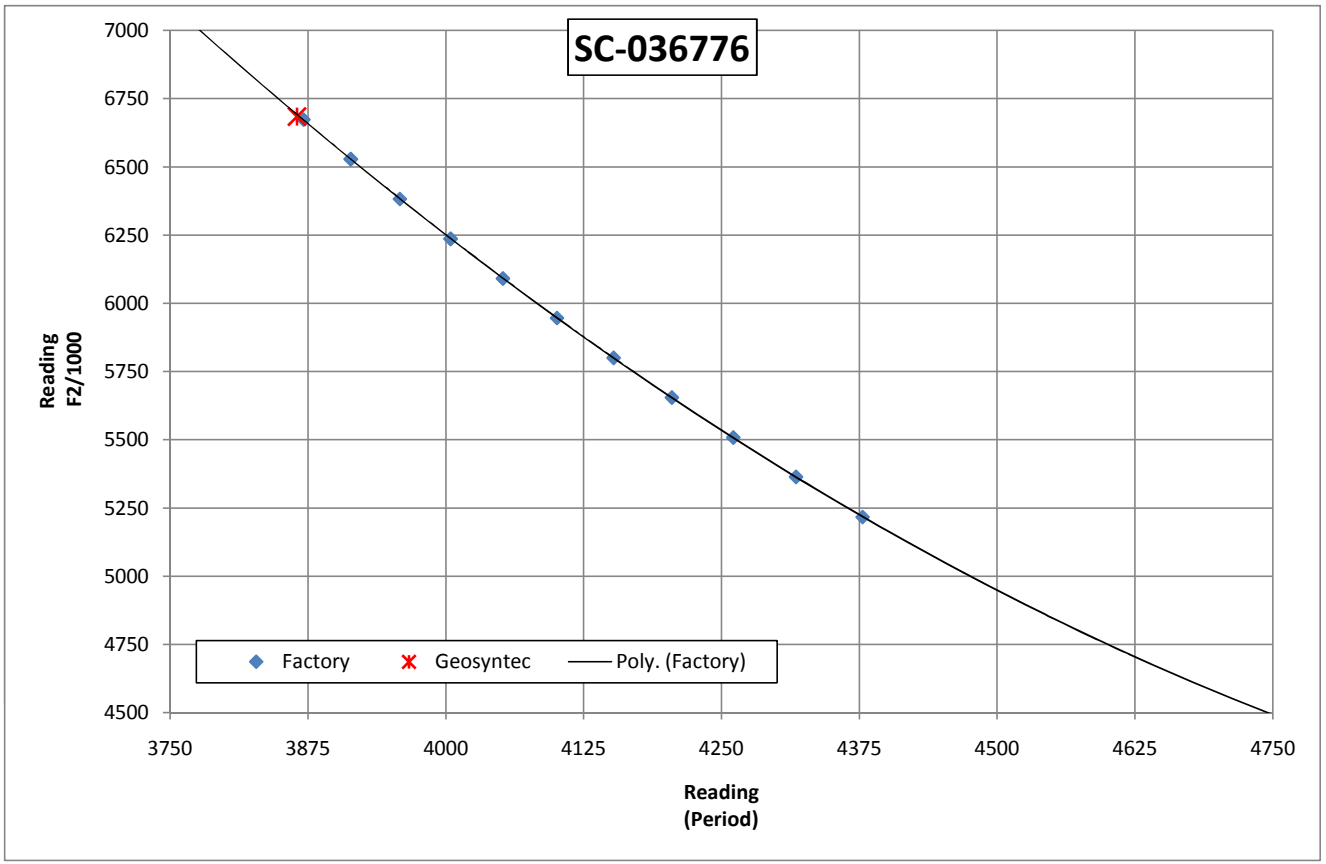
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3805.0	6907.0
15	3843.3	6770.0
30	3883.1	6632.0
45	3924.1	6494.0
60	3966.5	6356.0
75	4010.0	6219.0
90	4054.9	6082.0
105	4101.7	5944.0
120	4150.1	5806.0
135	4200.3	5668.0
150	4252.0	5531.0
Geosyntec	3792.2	6942.6



Serial No. (short) 76
Full Serial No. SC-036776

Regression Zero:	6673.2
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	24.9

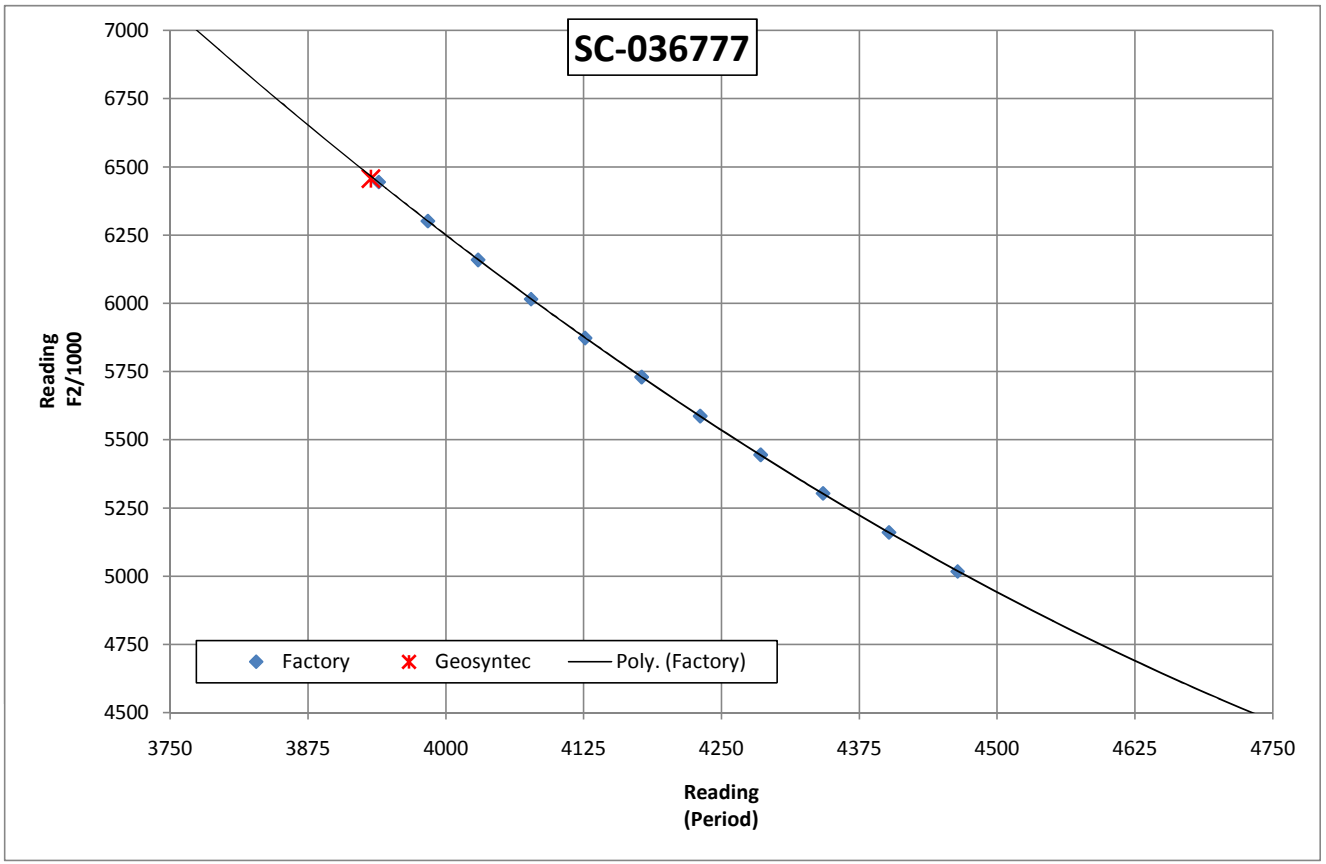
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3871.1	6673.0
15	3913.9	6528.0
30	3958.4	6382.0
45	4004.5	6236.0
60	4051.9	6091.0
75	4101.0	5946.0
90	4152.3	5800.0
105	4205.2	5655.0
120	4260.9	5508.0
135	4317.7	5364.0
150	4378.1	5217.0
Geosyntec	3864.9	6684.2



Serial No. (short) 77
Full Serial No. SC-036777

Regression Zero:	6443.4
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.9

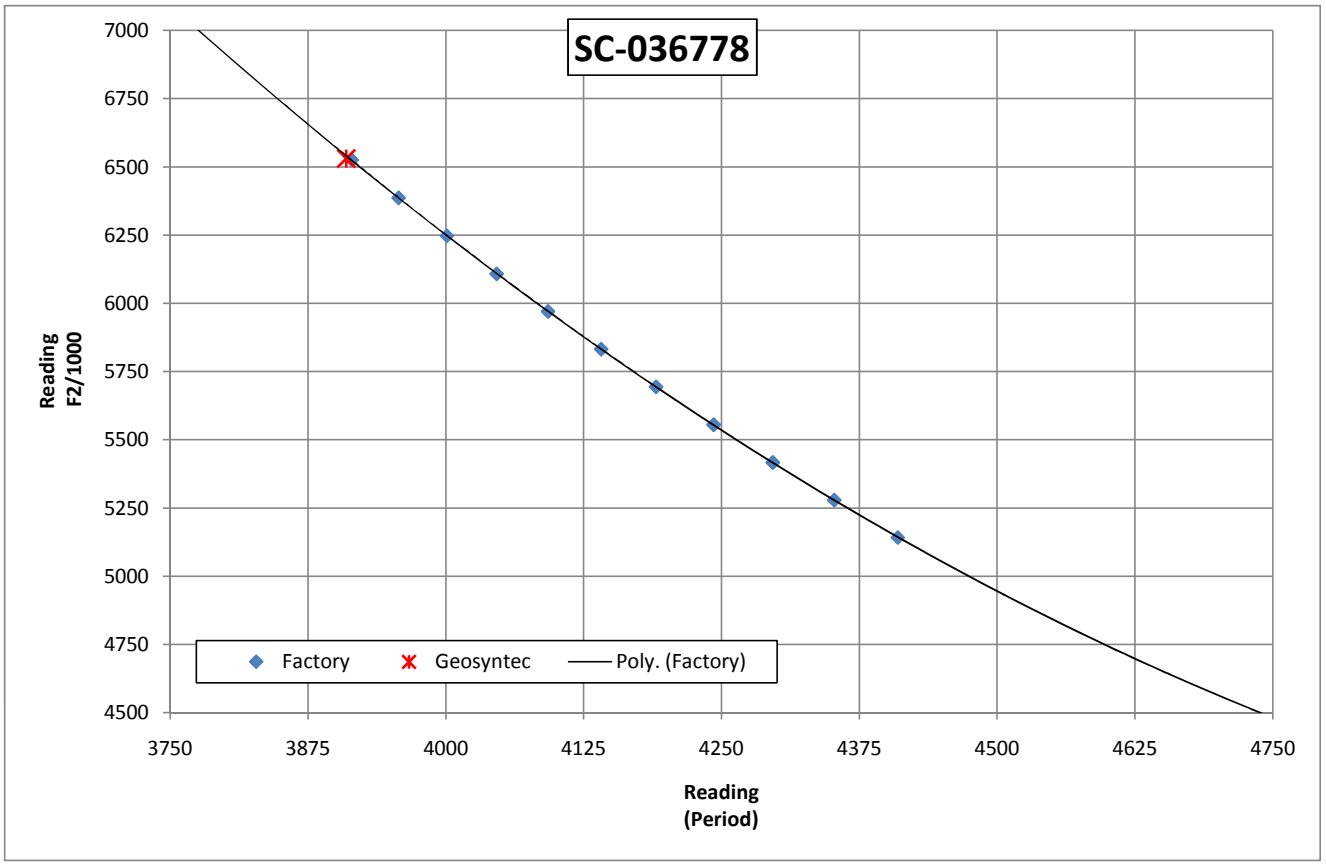
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3939.3	6444.0
15	3983.8	6301.0
30	4029.4	6159.0
45	4077.4	6015.0
60	4126.4	5873.0
75	4177.6	5730.0
90	4230.7	5587.0
105	4285.5	5445.0
120	4342.1	5304.0
135	4401.8	5161.0
150	4464.1	5018.0
Geosyntec	3932.1	6457.1



Serial No. (short) 78
Full Serial No. SC-036778

Regression Zero:	6523.9
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.6

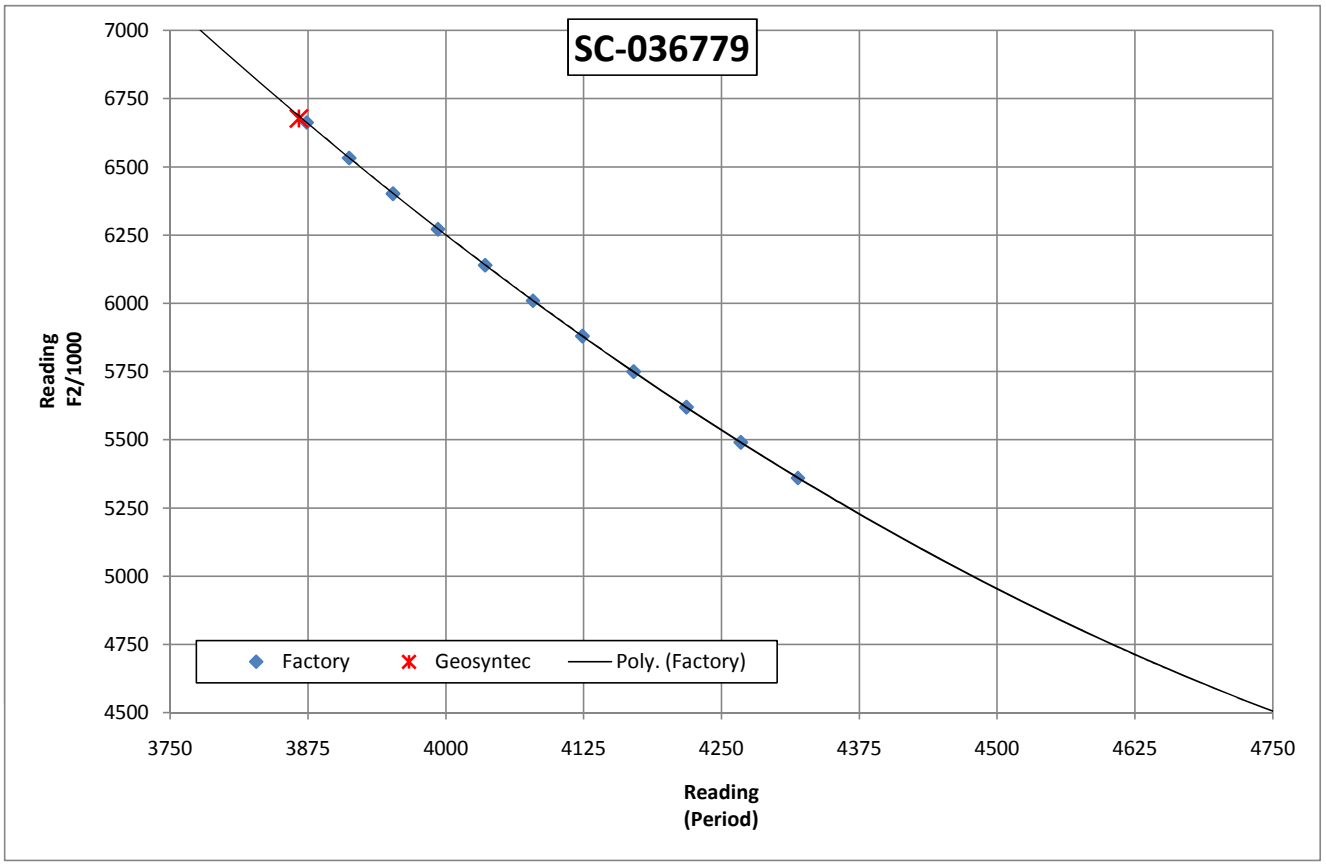
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3914.8	6525.0
15	3957.2	6386.0
30	4001.0	6247.0
45	4046.2	6108.0
60	4092.7	5970.0
75	4140.9	5832.0
90	4190.7	5694.0
105	4242.9	5555.0
120	4296.6	5417.0
135	4352.4	5279.0
150	4410.0	5142.0
Geosyntec	3909.7	6531.0



Serial No. (short) 79
Full Serial No. SC-036779

Regression Zero:	6662.5
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	26.1

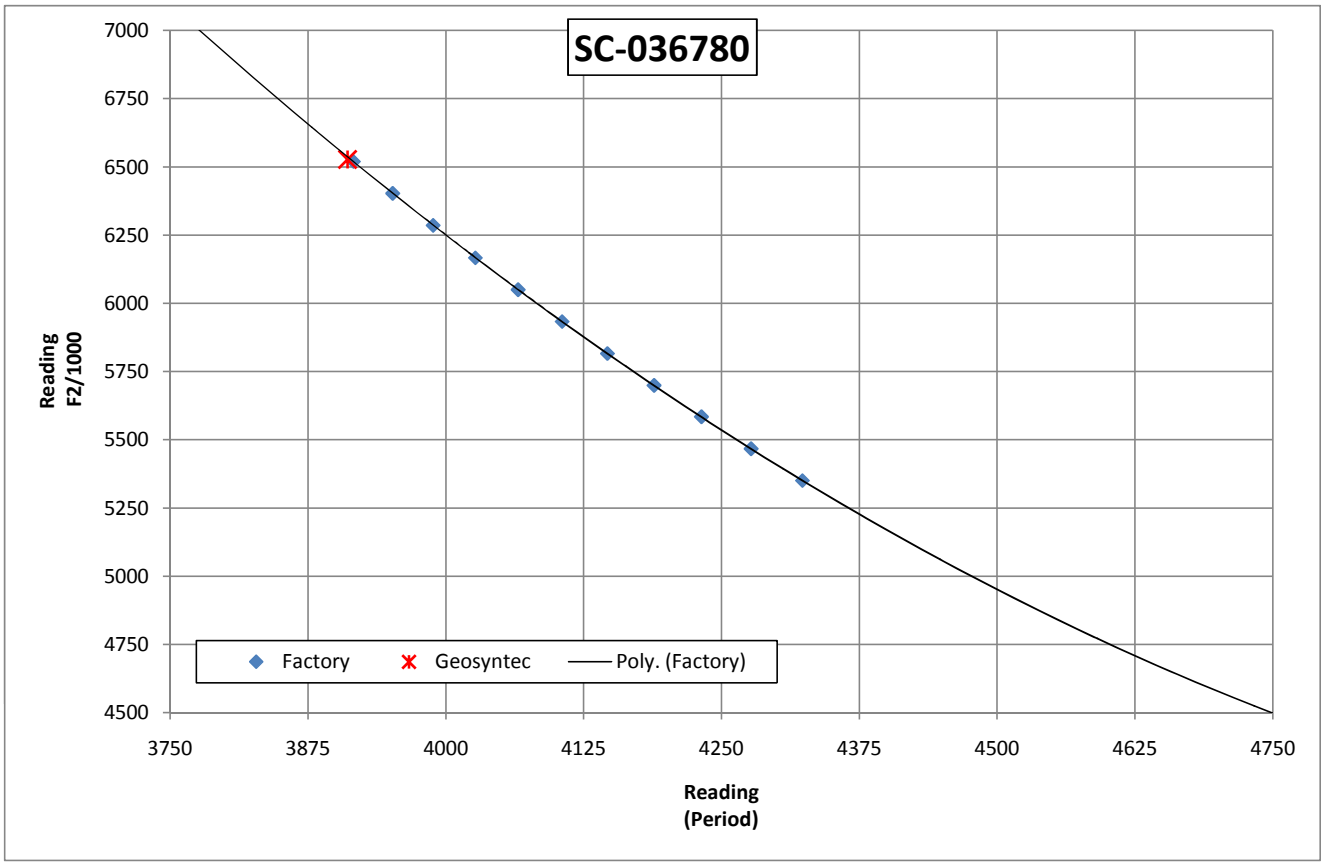
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3874.0	6663.0
15	3912.4	6533.0
30	3952.2	6402.0
45	3993.0	6272.0
60	4035.7	6140.0
75	4079.1	6010.0
90	4123.9	5880.0
105	4170.3	5750.0
120	4218.2	5620.0
135	4267.5	5491.0
150	4319.3	5360.0
Geosyntec	3866.8	6677.0



Serial No. (short) 80
Full Serial No. SC-036780

Regression Zero:	6519.1
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	24.8

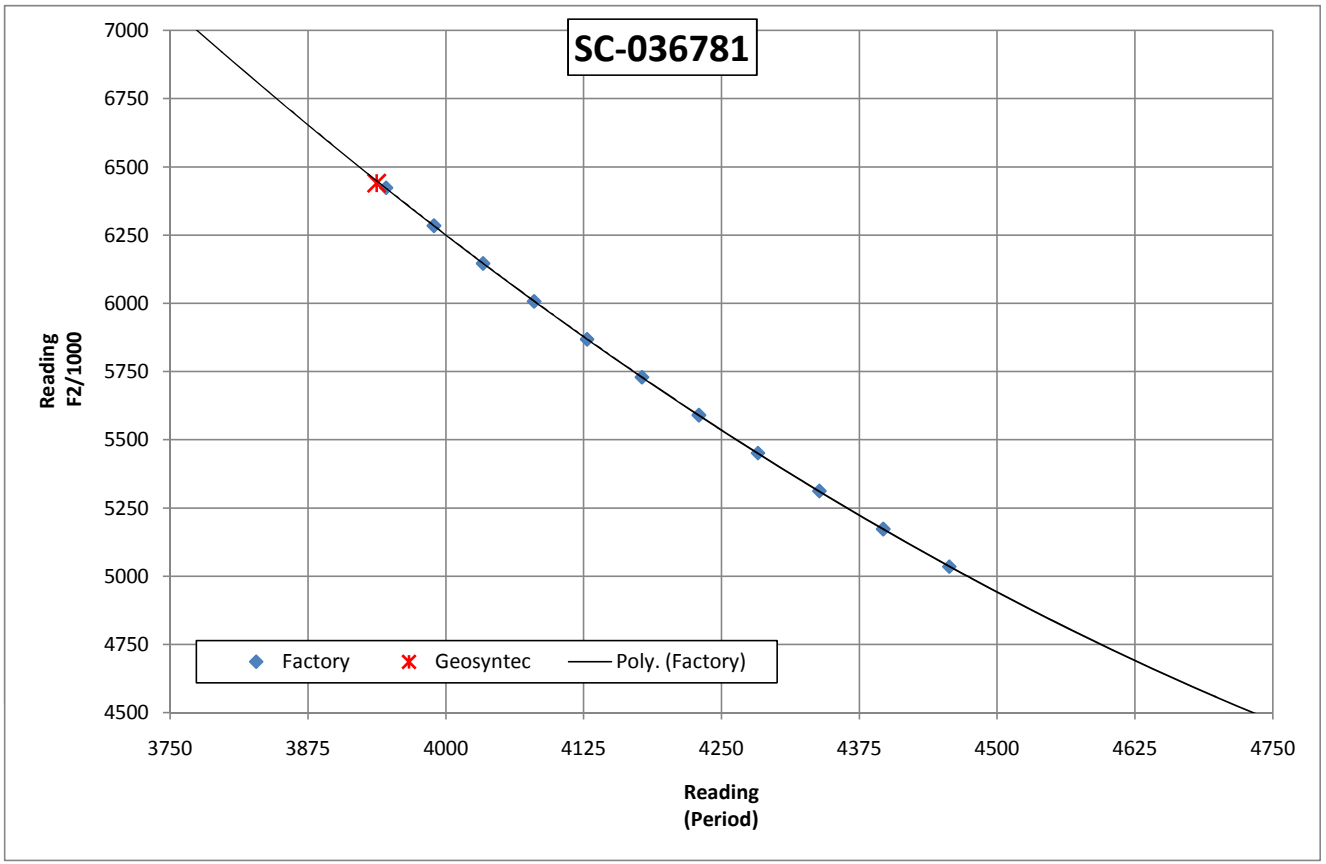
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3916.3	6520.0
15	3951.9	6403.0
30	3988.5	6286.0
45	4026.8	6167.0
60	4065.6	6050.0
75	4105.5	5933.0
90	4146.6	5816.0
105	4188.9	5699.0
120	4231.8	5584.0
135	4276.9	5467.0
150	4323.4	5350.0
Geosyntec	3910.9	6527.5



Serial No. (short) 81
Full Serial No. SC-036781

Regression Zero:	6423.3
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.9

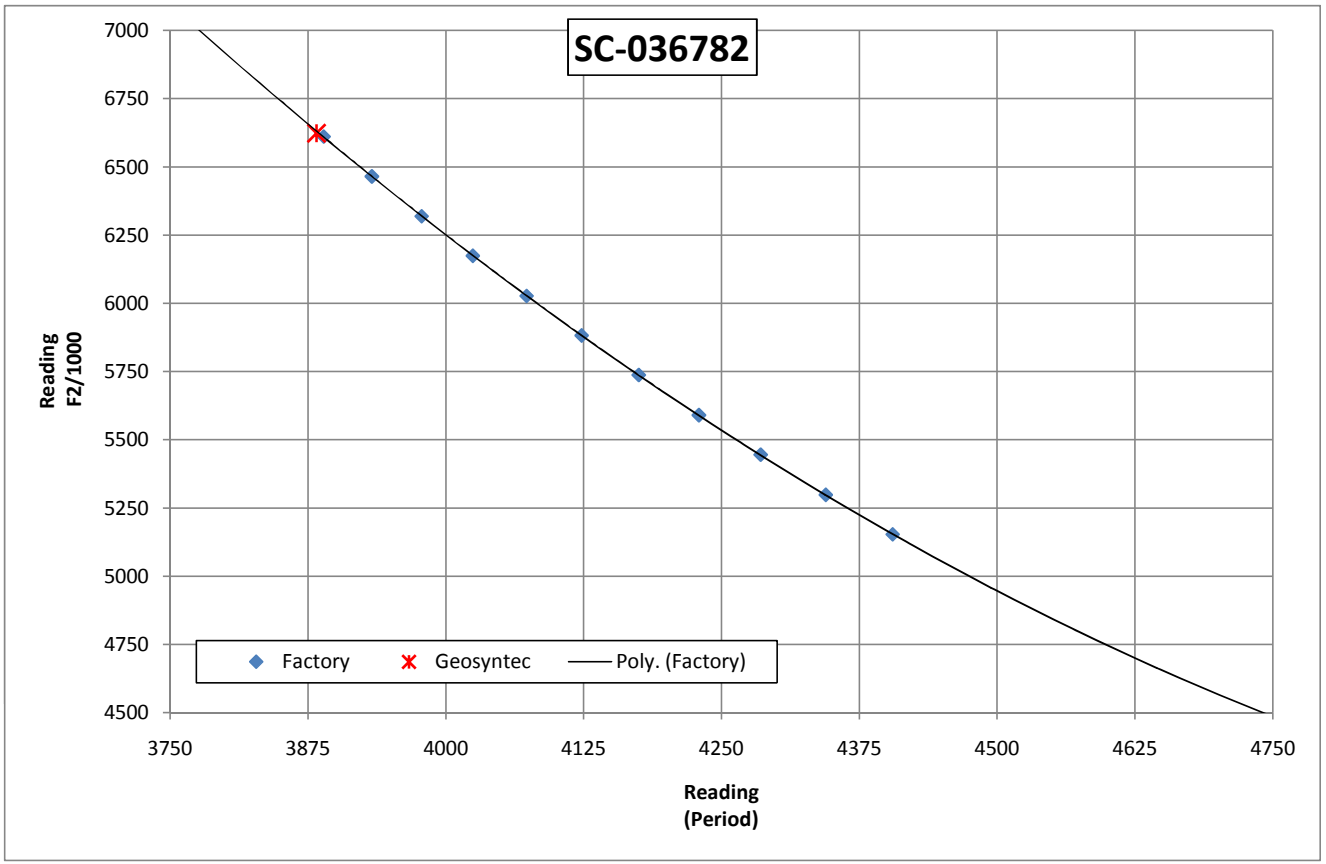
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3945.8	6423.0
15	3989.2	6284.0
30	4033.7	6146.0
45	4080.1	6007.0
60	4128.1	5868.0
75	4177.9	5729.0
90	4229.5	5590.0
105	4283.1	5451.0
120	4338.8	5312.0
135	4396.7	5173.0
150	4456.6	5035.0
Geosyntec	3937.2	6439.9



Serial No. (short) 82
Full Serial No. SC-036782

Regression Zero:	6610.9
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	24.8

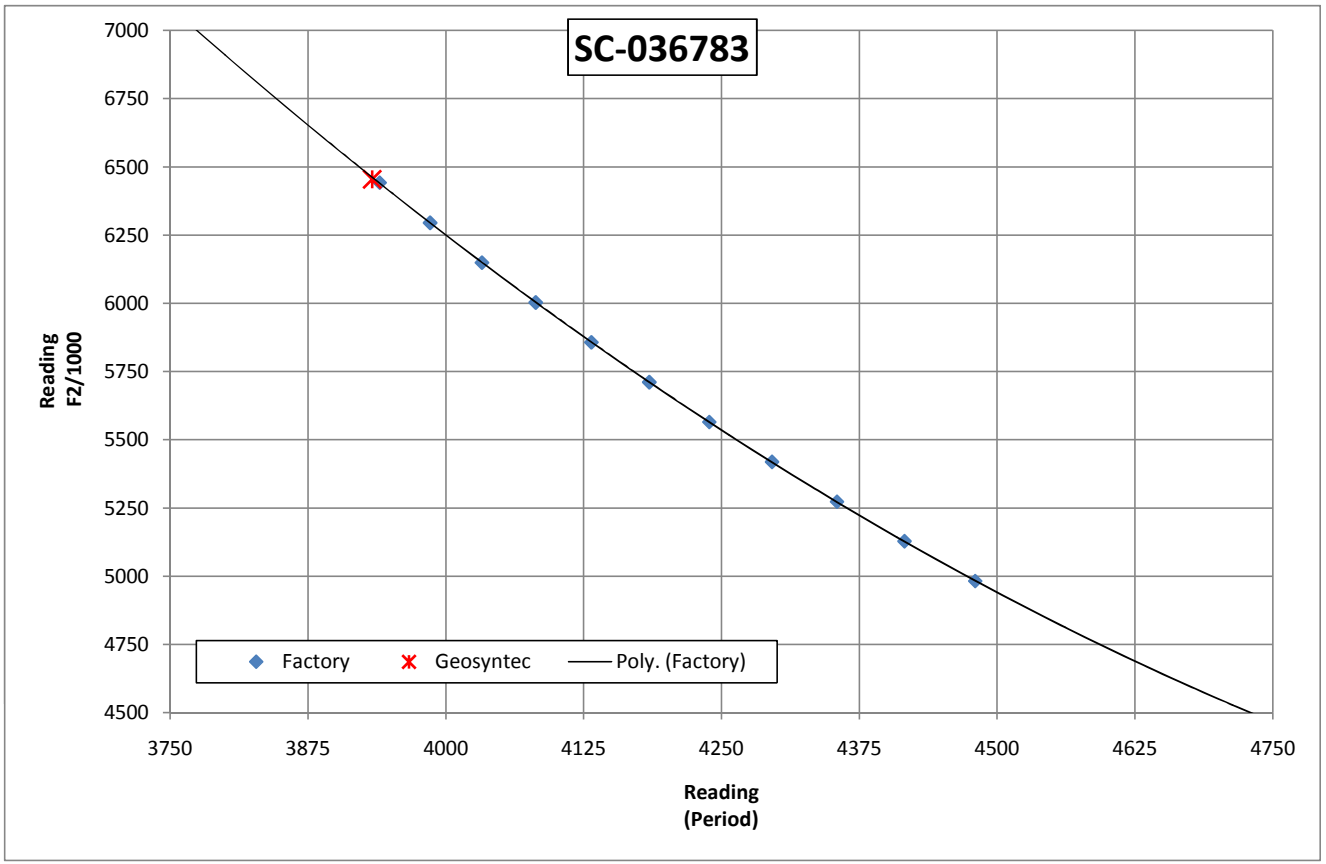
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3889.3	6611.0
15	3932.9	6465.0
30	3978.1	6319.0
45	4024.5	6174.0
60	4073.3	6027.0
75	4123.2	5882.0
90	4175.0	5737.0
105	4229.5	5590.0
120	4285.5	5445.0
135	4344.5	5298.0
150	4405.2	5153.0
Geosyntec	3882.8	6622.9



Serial No. (short) 83
Full Serial No. SC-036783

Regression Zero:	6441.1
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.6

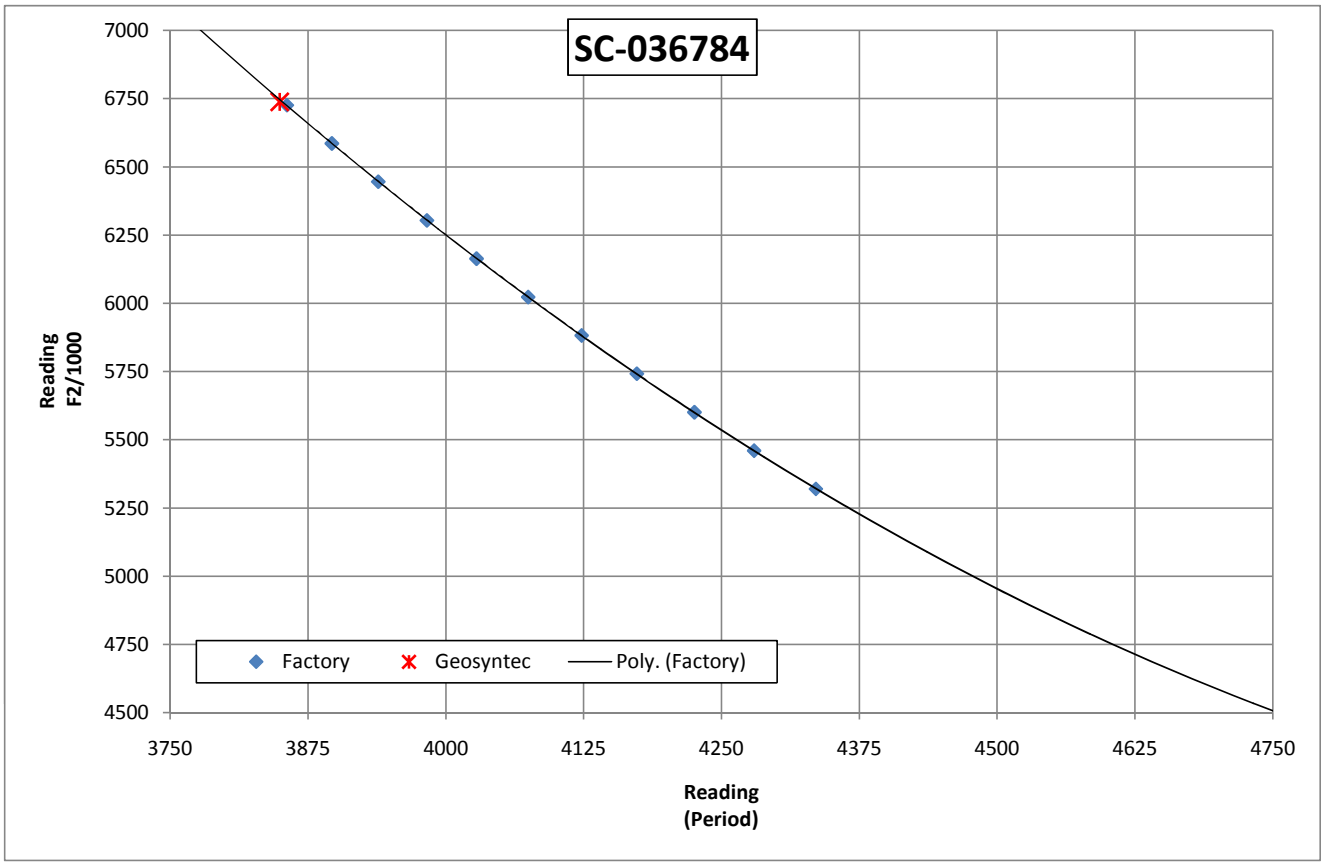
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3939.9	6442.0
15	3985.7	6295.0
30	4032.7	6149.0
45	4081.5	6003.0
60	4132.0	5857.0
75	4184.5	5711.0
90	4239.0	5565.0
105	4295.8	5419.0
120	4354.8	5273.0
135	4416.0	5128.0
150	4480.2	4982.0
Geosyntec	3933.1	6454.6



Serial No. (short) 84
Full Serial No. SC-036784

Regression Zero:	6726.5
Ambient Temp (Factory):	22.0
Measured Temp. (Geosyntec):	25.6

Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3855.9	6726.0
15	3896.6	6586.0
30	3938.7	6446.0
45	3982.8	6304.0
60	4027.8	6164.0
75	4074.7	6023.0
90	4123.2	5882.0
105	4173.2	5742.0
120	4225.4	5601.0
135	4279.6	5460.0
150	4335.6	5320.0
Geosyntec	3849.3	6738.1



ITM Calibration Certificates of VW Piezometers

Calculation of Engineering units from frequency-based units.

The mathematical relationship between the frequency of vibration of a tensioned wire and the force applying the tension, is an approximate straight line relationship between the square of the measured frequency and the applied force.

Engineering units of measurement maybe derived from the frequency-based units measured by vibrating wire readouts, in 3 traditional ways:-
From 'Period' units ($t \times 10^7$) and from 'Linear'(f^2/1000) units using two methods: a simple Linear equation or a Polynomial equation.

Calculation using 'Period' units.

The following formula is used for readings in 'Period' units.

$E = K (10^7/P0^2 - 10^7/P1^2)$

Where,
E is the Pressure in resultant Engineering units,
K is the Period Gauge Factor for units of calibration (from the calibration sheet)
P0 is the installation Period 'base' or 'zero' reading
P1 is the current Period reading.

This method of calculation is used by the Soil Instruments Vibrating Wire loggers' (models RO-1-VW-1 or 2 and with serial numbers starting VL or TVL) internal processors', for calculating and displaying directly on the loggers' LCD screen, the required Engineering based units.
The loggers' require 'Period' base or zero reading units for entering into their channel tables, to calculate and display correctly the required engineering units.

If an Engineering-based unit is required other than the units of calibration, then the correct K factor will have to be calculated using the standard relationship between Engineering units.
For example, if the units of calculation required were in mH2O and the calibration units were kPa, we can find out that 1kPa is equal to 0.1022mH2O, so we would derive the K factor for mH2O by multiplying the K factor for kPa by 0.1022.
Please see conversion factors in the user manual or www.soil.co.uk

Calculation using Linear units.

The following formula is used for readings in 'Linear' units.

$E = G (R0 - R1)$

Where,
E is the resultant Engineering unit,
G the linear Gauge factor for the units of calibration (from the calibration sheet)
R0 is the installation Linear 'base' or 'zero' reading
R1 is the current Linear reading.

Again the Linear gauge factor for units other than the units of calibration would need to be calculated using the same principles as stated in the last paragraph of the 'Period unit' section.

PTO

Calculation of Engineering units from frequency-based units.

The mathematical relationship between the frequency of vibration of a tensioned wire and the force applying the tension, is an approximate straight line relationship between the square of the measured frequency and the applied force.

Engineering units of measurement maybe derived from the frequency-based units measured by vibrating wire readouts, in 3 traditional ways:-
From 'Period' units ($t \times 10^7$) and from 'Linear'(f^2/1000) units using two methods: a simple Linear equation or a Polynomial equation.

Calculation using 'Period' units.

The following formula is used for readings in 'Period' units.

$E = K (10^7/P0^2 - 10^7/P1^2)$

Where,
E is the Pressure in resultant Engineering units,
K is the Period Gauge Factor for units of calibration (from the calibration sheet)
P0 is the installation Period 'base' or 'zero' reading
P1 is the current Period reading.

This method of calculation is used by the Soil Instruments Vibrating Wire loggers' (models RO-1-VW-1 or 2 and with serial numbers starting VL or TVL) internal processors', for calculating and displaying directly on the loggers' LCD screen, the required Engineering based units.
The loggers' require 'Period' base or zero reading units for entering into their channel tables, to calculate and display correctly the required engineering units.

If an Engineering-based unit is required other than the units of calibration, then the correct K factor will have to be calculated using the standard relationship between Engineering units.
For example, if the units of calculation required were in mH2O and the calibration units were kPa, we can find out that 1kPa is equal to 0.1022mH2O, so we would derive the K factor for mH2O by multiplying the K factor for kPa by 0.1022.
Please see conversion factors in the user manual or www.soil.co.uk

Calculation using Linear units.

The following formula is used for readings in 'Linear' units.

$E = G (R0 - R1)$

Where,
E is the resultant Engineering unit,
G the linear Gauge factor for the units of calibration (from the calibration sheet)
R0 is the installation Linear 'base' or 'zero' reading
R1 is the current Linear reading.

Again the Linear gauge factor for units other than the units of calibration would need to be calculated using the same principles as stated in the last paragraph of the 'Period unit' section.

PTO

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BS EN ISO 9001:2008
FM 553710

VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036659

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1318.7970000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1318800
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000112854200
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1331425000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 891.289800
Regression Zero : 6732.0

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3854.0	6732.6	-0.078	-0.03	0.0	0.010	0.00
30.00	3920.8	6504.9	29.951	-0.02	-227.7	29.986	0.00
60.00	3991.4	6276.9	60.020	0.01	-228.0	60.014	0.00
90.00	4065.8	6049.3	90.036	0.01	-227.6	90.000	0.00
120.00	4144.6	5821.6	120.065	0.02	-227.7	120.012	0.00
150.00	4227.8	5594.5	150.014	0.00	-227.1	149.956	-0.01
180.00	4316.5	5367.1	180.004	0.00	-227.4	179.951	-0.02
210.00	4411.3	5138.9	210.099	0.03	-228.2	210.064	0.02
240.00	4512.1	4911.9	240.036	0.01	-227.0	240.030	0.01
270.00	4620.1	4684.9	269.972	-0.01	-227.0	270.007	0.00
300.00	4736.1	4458.1	299.882	-0.04	-226.8	299.970	-0.01

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.03960 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036660

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1293.2050000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1293200
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000055435770
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1299088000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 837.738500
Regression Zero : 6466.2

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3932.5	6466.3	-0.018	-0.01	0.0	0.027	0.01
30.00	4005.0	6234.4	29.972	-0.01	-231.9	29.990	0.00
60.00	4081.6	6002.6	59.948	-0.02	-231.8	59.945	-0.02
90.00	4163.0	5770.1	90.015	0.01	-232.5	89.997	0.00
120.00	4249.4	5537.8	120.056	0.02	-232.3	120.030	0.01
150.00	4341.3	5305.9	150.046	0.02	-231.9	150.016	0.01
180.00	4439.4	5073.9	180.048	0.02	-232.0	180.021	0.01
210.00	4544.5	4842.1	210.025	0.01	-231.8	210.007	0.00
240.00	4657.3	4610.4	239.988	0.00	-231.7	239.985	0.00
270.00	4778.8	4378.9	269.926	-0.02	-231.5	269.944	-0.02
300.00	4910.9	4146.4	299.993	0.00	-232.5	300.038	0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.00650 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036661

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1352.0710000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1352100
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000121650300
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1365524000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 901.234400
Regression Zero : 6638.5

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3881.0	6639.1	-0.079	-0.03	0.0	0.011	0.00
30.00	3947.6	6417.0	29.951	-0.02	-222.1	29.987	0.00
60.00	4017.9	6194.5	60.034	0.01	-222.5	60.028	0.01
90.00	4091.8	5972.8	90.010	0.00	-221.7	89.974	-0.01
120.00	4170.0	5750.8	120.026	0.01	-222.0	119.972	-0.01
150.00	4253.0	5528.6	150.069	0.02	-222.2	150.009	0.00
180.00	4340.9	5306.8	180.058	0.02	-221.8	180.004	0.00
210.00	4434.6	5085.0	210.047	0.02	-221.8	210.011	0.00
240.00	4534.5	4863.4	240.009	0.00	-221.6	240.003	0.00
270.00	4641.6	4641.6	269.998	0.00	-221.8	270.034	0.01
300.00	4756.2	4420.6	299.878	-0.04	-221.0	299.968	-0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.08110 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036662

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1282.5580000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1282600
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000223982600
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1306543000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 842.882300
Regression Zero : 6522.8

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3915.0	6524.3	-0.196	-0.07	0.0	-0.012	0.00
30.00	3987.5	6289.4	29.932	-0.02	-234.9	30.005	0.00
60.00	4063.9	6054.9	60.008	0.00	-234.5	59.995	0.00
90.00	4145.1	5820.2	90.109	0.04	-234.7	90.035	0.01
120.00	4231.0	5586.2	120.121	0.04	-234.0	120.011	0.00
150.00	4322.2	5352.8	150.056	0.02	-233.4	149.933	-0.02
180.00	4420.2	5118.3	180.132	0.04	-234.5	180.022	0.01
210.00	4524.7	4884.5	210.118	0.04	-233.8	210.045	0.02
240.00	4636.6	4651.5	240.002	0.00	-233.0	239.990	0.00
270.00	4757.2	4418.7	269.860	-0.05	-232.8	269.933	-0.02
300.00	4888.4	4184.8	299.859	-0.05	-233.9	300.043	0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.06410 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036663

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1387.1020000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1387100
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000141012900
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1403319000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 952.166500
Regression Zero : 6831.3

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3825.9	6831.9	-0.084	-0.03	0.0	0.015	0.00
30.00	3887.9	6615.7	29.905	-0.03	-216.2	29.944	-0.02
60.00	3953.2	6398.8	59.991	0.00	-216.9	59.984	-0.01
90.00	4022.0	6181.7	90.105	0.04	-217.1	90.065	0.02
120.00	4094.3	5965.5	120.094	0.03	-216.2	120.035	0.01
150.00	4170.7	5748.9	150.139	0.05	-216.6	150.073	0.02
180.00	4250.8	5534.2	179.920	-0.03	-214.7	179.860	-0.05
210.00	4336.8	5317.0	210.048	0.02	-217.2	210.008	0.00
240.00	4427.6	5101.1	239.995	0.00	-215.9	239.989	0.00
270.00	4524.5	4885.0	269.970	-0.01	-216.1	270.010	0.00
300.00	4627.9	4669.1	299.918	-0.03	-215.9	300.017	0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.02770 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036664

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1298.8070000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1298800
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000212494900
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1322750000

Polynomial Gauge Factor C:** 888.208800
Regression Zero : 6787.6

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3838.0	6788.8	-0.156	-0.05	0.0	0.014	0.00
30.00	3905.2	6557.1	29.937	-0.02	-231.7	30.005	0.00
60.00	3976.0	6325.6	60.005	0.00	-231.5	59.993	0.00
90.00	4050.8	6094.3	90.046	0.02	-231.3	89.978	-0.01
120.00	4129.9	5863.1	120.074	0.02	-231.2	119.972	-0.01
150.00	4213.8	5631.9	150.103	0.03	-231.2	149.989	0.00
180.00	4303.1	5400.6	180.144	0.05	-231.3	180.042	0.01
210.00	4398.1	5169.8	210.121	0.04	-230.8	210.053	0.02
240.00	4499.3	4939.8	239.993	0.00	-230.0	239.982	-0.01
270.00	4608.0	4709.6	269.892	-0.04	-230.2	269.960	-0.01
300.00	4725.1	4479.0	299.842	-0.05	-230.6	300.012	0.00

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.06490 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036665

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1331.2450000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1331200
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000213842300
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1354914000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 893.062400
Regression Zero : 6660.1

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3874.5	6661.3	-0.161	-0.05	0.0	0.002	0.00
30.00	3942.1	6435.1	29.952	-0.02	-226.2	30.017	0.01
60.00	4013.1	6209.4	59.998	0.00	-225.7	59.987	0.00
90.00	4088.1	5983.6	90.058	0.02	-225.8	89.992	0.00
120.00	4167.4	5758.1	120.077	0.03	-225.5	119.979	-0.01
150.00	4251.4	5532.6	150.097	0.03	-225.5	149.988	0.00
180.00	4340.9	5307.0	180.130	0.04	-225.6	180.032	0.01
210.00	4435.9	5082.0	210.083	0.03	-225.0	210.018	0.01
240.00	4537.4	4857.2	240.009	0.00	-224.8	239.999	0.00
270.00	4646.1	4632.5	269.922	-0.03	-224.7	269.988	0.00
300.00	4763.1	4407.8	299.835	-0.05	-224.7	299.998	0.00

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.00670 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036666

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1309.3800000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1309400
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000331785000
Calibration Equipment:
Mensor APC 600

Polynomial Gauge Factor B: -0.1348080000
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor C:** 924.551900
Regression Zero : 6976.1

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3785.7	6977.5	-0.179	-0.06	0.0	0.082	0.03
30.00	3849.4	6748.5	29.806	-0.06	-229.0	29.911	-0.03
60.00	3917.0	6517.8	60.014	0.00	-230.7	59.995	0.00
90.00	3987.7	6288.6	90.025	0.01	-229.2	89.919	-0.03
120.00	4062.9	6057.9	120.232	0.08	-230.7	120.075	0.02
150.00	4141.8	5829.5	150.138	0.05	-228.4	149.964	-0.01
180.00	4226.0	5599.5	180.254	0.08	-230.0	180.098	0.03
210.00	4314.7	5371.5	210.108	0.04	-228.0	210.004	0.00
240.00	4409.4	5143.2	240.001	0.00	-228.3	239.984	-0.01
270.00	4510.5	4915.3	269.842	-0.05	-227.9	269.946	-0.02
300.00	4619.1	4686.8	299.761	-0.08	-228.5	300.022	0.01

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.03270 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036667

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1340.5370000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1340500
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000067358330
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1348028000

Polynomial Gauge Factor C:** 897.499900
Regression Zero : 6679.8

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3869.0	6680.4	-0.082	-0.03	0.0	-0.031	-0.01
30.00	3935.7	6456.0	30.000	0.00	-224.4	30.020	0.01
60.00	4005.8	6231.9	60.042	0.01	-224.1	60.038	0.01
90.00	4079.7	6008.1	90.043	0.01	-223.8	90.022	0.01
120.00	4157.8	5784.7	119.990	0.00	-223.4	119.960	-0.01
150.00	4240.8	5560.5	150.045	0.02	-224.2	150.011	0.00
180.00	4328.4	5337.5	179.939	-0.02	-223.0	179.909	-0.03
210.00	4422.5	5112.8	210.061	0.02	-224.7	210.041	0.01
240.00	4522.6	4889.1	240.049	0.02	-223.7	240.045	0.02
270.00	4629.5	4665.8	269.983	-0.01	-223.3	270.003	0.00
300.00	4744.5	4442.4	299.931	-0.02	-223.4	299.981	-0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.03350 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036668

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1402.3930000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1402400
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000109928700
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1415153000

Polynomial Gauge Factor C:** 967.533800
Regression Zero : 6873.1

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3814.2	6873.8	-0.096	-0.03	0.0	-0.020	-0.01
30.00	3875.2	6659.2	30.000	0.00	-214.6	30.030	0.01
60.00	3939.0	6445.2	60.011	0.00	-214.0	60.006	0.00
90.00	4006.0	6231.2	90.022	0.01	-214.0	89.992	0.00
120.00	4076.5	6017.7	119.963	-0.01	-213.5	119.918	-0.03
150.00	4151.3	5802.6	150.129	0.04	-215.1	150.079	0.03
180.00	4230.1	5588.6	180.140	0.05	-214.0	180.095	0.03
210.00	4312.9	5376.0	209.955	-0.02	-212.6	209.925	-0.03
240.00	4401.3	5162.2	239.938	-0.02	-213.8	239.933	-0.02
270.00	4495.6	4947.9	269.991	0.00	-214.3	270.022	0.01
300.00	4595.9	4734.3	299.946	-0.02	-213.6	300.022	0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.00700 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

*** The zero reading should be established on site by the user on installation.**
**** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$**

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036669

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1357.2950000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1357300
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000358813900
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1399107000

Polynomial Gauge Factor C:** 952.612200
Regression Zero : 6930.0

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3798.2	6931.7	-0.229	-0.08	0.0	0.034	0.01
30.00	3860.5	6709.9	29.876	-0.04	-221.8	29.981	-0.01
60.00	3925.9	6488.0	59.994	0.00	-221.9	59.976	-0.01
90.00	3994.8	6266.4	90.072	0.02	-221.6	89.966	-0.01
120.00	4067.4	6044.6	120.177	0.06	-221.8	120.018	0.01
150.00	4143.9	5823.5	150.186	0.06	-221.1	150.011	0.00
180.00	4224.8	5602.5	180.183	0.06	-221.0	180.025	0.01
210.00	4310.5	5381.9	210.125	0.04	-220.6	210.020	0.01
240.00	4401.4	5161.9	239.985	-0.01	-220.0	239.968	-0.01
270.00	4498.5	4941.5	269.900	-0.03	-220.4	270.005	0.00
300.00	4602.0	4721.7	299.733	-0.09	-219.8	299.996	0.00

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.18320 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036670

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1481.4670000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1481500
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000179319700
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1504337000

Polynomial Gauge Factor C:** 1101.856000
Regression Zero : 7388.9

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3678.6	7389.9	-0.152	-0.05	0.0	-0.042	-0.01
30.00	3730.3	7186.3	30.011	0.00	-203.6	30.055	0.02
60.00	3784.0	6983.9	59.996	0.00	-202.4	59.988	0.00
90.00	3840.2	6781.0	90.054	0.02	-202.9	90.010	0.00
120.00	3898.9	6578.4	120.069	0.02	-202.6	120.003	0.00
150.00	3960.3	6375.8	150.084	0.03	-202.6	150.010	0.00
180.00	4024.6	6173.7	180.024	0.01	-202.1	179.958	-0.01
210.00	4092.5	5970.6	210.113	0.04	-203.1	210.069	0.02
240.00	4163.3	5769.2	239.949	-0.02	-201.4	239.942	-0.02
270.00	4238.3	5566.9	269.919	-0.03	-202.3	269.964	-0.01
300.00	4317.6	5364.3	299.934	-0.02	-202.6	300.044	0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.05930 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036671

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1398.1820000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1398200
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000402147700
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1444752000

Polynomial Gauge Factor C:** 972.665600
Regression Zero : 6861.5

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3817.1	6863.2	-0.232	-0.08	0.0	0.046	0.02
30.00	3878.6	6647.4	29.941	-0.02	-215.8	30.051	0.02
60.00	3942.6	6433.3	59.876	-0.04	-214.1	59.857	-0.05
90.00	4010.6	6217.1	90.104	0.03	-216.2	89.993	0.00
120.00	4081.7	6002.4	120.123	0.04	-214.7	119.956	-0.01
150.00	4157.0	5786.9	150.254	0.08	-215.5	150.069	0.02
180.00	4236.0	5573.1	180.147	0.05	-213.8	179.981	-0.01
210.00	4320.1	5358.0	210.222	0.07	-215.1	210.112	0.04
240.00	4408.8	5144.8	240.032	0.01	-213.2	240.014	0.00
270.00	4502.9	4931.9	269.799	-0.07	-212.9	269.910	-0.03
300.00	4603.9	4717.8	299.734	-0.09	-214.1	300.011	0.00

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.03500 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036672

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1385.5650000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1385600
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: -0.000000017259990
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1383602000

Polynomial Gauge Factor C:** 937.104900
Regression Zero : 6767.3

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3844.2	6766.9	0.057	0.02	0.0	0.045	0.01
30.00	3907.1	6550.9	29.985	-0.01	-216.0	29.980	-0.01
60.00	3973.3	6334.4	59.982	-0.01	-216.5	59.983	-0.01
90.00	4042.9	6118.2	89.938	-0.02	-216.2	89.943	-0.02
120.00	4116.4	5901.4	119.977	-0.01	-216.8	119.985	-0.01
150.00	4194.2	5684.6	150.016	0.01	-216.8	150.025	0.01
180.00	4276.6	5467.7	180.069	0.02	-216.9	180.077	0.03
210.00	4363.5	5252.1	209.942	-0.02	-215.6	209.947	-0.02
240.00	4456.7	5034.7	240.064	0.02	-217.4	240.065	0.02
270.00	4555.4	4818.9	269.965	-0.01	-215.8	269.960	-0.01
300.00	4661.5	4602.1	300.004	0.00	-216.8	299.992	0.00

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.03460 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036673

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1316.9480000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1316900
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000164662700
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1334736000

Polynomial Gauge Factor C:** 865.936300
Regression Zero : 6539.5

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3910.2	6540.5	-0.132	-0.04	0.0	-0.004	0.00
30.00	3980.4	6311.6	30.013	0.00	-228.9	30.064	0.02
60.00	4054.1	6084.2	59.960	-0.01	-227.4	59.952	-0.02
90.00	4132.7	5855.2	90.118	0.04	-229.0	90.067	0.02
120.00	4215.0	5628.7	119.947	-0.02	-226.5	119.870	-0.04
150.00	4303.2	5400.3	150.026	0.01	-228.4	149.941	-0.02
180.00	4397.2	5171.9	180.106	0.04	-228.4	180.029	0.01
210.00	4497.3	4944.2	210.092	0.03	-227.7	210.041	0.01
240.00	4604.6	4716.5	240.079	0.03	-227.7	240.071	0.02
270.00	4719.8	4489.1	270.027	0.01	-227.4	270.078	0.03
300.00	4843.1	4263.3	299.763	-0.08	-225.8	299.891	-0.04

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.13830 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer

Serial No. : 036674

Instrument Range : 0.00 to 300.0 kPa

Calibration Date : 02/08/2010

Gauge Factors in kPa

Ambient Temperature : 23°C

Period Gauge Factor (K): 1333.0740000

Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1333100

Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000185937900

Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1354087000

Polynomial Gauge Factor C:** 909.005200

Regression Zero : 6775.0

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3841.5	6776.4	-0.182	-0.06	0.0	-0.040	-0.01
30.00	3907.3	6550.1	29.986	0.00	-226.3	30.042	0.01
60.00	3976.3	6324.6	60.047	0.02	-225.5	60.037	0.01
90.00	4048.9	6099.8	90.014	0.00	-224.8	89.958	-0.01
120.00	4126.0	5874.1	120.102	0.03	-225.7	120.017	0.01
150.00	4207.4	5649.0	150.109	0.04	-225.1	150.015	0.01
180.00	4293.7	5424.3	180.063	0.02	-224.7	179.979	-0.01
210.00	4385.4	5199.7	210.004	0.00	-224.6	209.948	-0.02
240.00	4483.7	4974.3	240.052	0.02	-225.4	240.043	0.01
270.00	4588.3	4750.0	269.952	-0.02	-224.3	270.009	0.00
300.00	4700.6	4525.7	299.853	-0.05	-224.3	299.994	0.00

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.05330 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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BS EN ISO 9001:2008
FM 553710

VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036675

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1396.5250000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1396500
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000393855500
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1438021000

Polynomial Gauge Factor C:** 896.215300
Regression Zero : 6340.5

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3971.1	6341.4	-0.125	-0.04	0.0	0.147	0.05
30.00	4039.9	6127.3	29.775	-0.08	-214.1	29.884	-0.04
60.00	4112.9	5911.5	59.911	-0.03	-215.8	59.893	-0.04
90.00	4190.2	5695.6	90.062	0.02	-215.9	89.953	-0.02
120.00	4271.9	5479.8	120.199	0.07	-215.8	120.035	0.01
150.00	4358.2	5264.8	150.225	0.07	-215.0	150.043	0.01
180.00	4450.0	5049.9	180.236	0.08	-214.9	180.073	0.02
210.00	4547.6	4835.5	210.178	0.06	-214.4	210.069	0.02
240.00	4651.4	4622.0	239.993	0.00	-213.5	239.976	-0.01
270.00	4762.6	4408.7	269.781	-0.07	-213.3	269.890	-0.04
300.00	4883.0	4194.0	299.765	-0.08	-214.7	300.037	0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.06280 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036676

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1309.6670000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1309700
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000261864900
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1339049000

Polynomial Gauge Factor C: 892.689600**
Regression Zero : 6754.3

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3847.5	6755.3	-0.134	-0.04	0.0	0.072	0.02
30.00	3914.4	6526.4	29.844	-0.05	-228.9	29.926	-0.02
60.00	3985.3	6296.1	60.006	0.00	-230.3	59.991	0.00
90.00	4060.0	6066.6	90.063	0.02	-229.5	89.980	-0.01
120.00	4139.0	5837.2	120.106	0.04	-229.4	119.982	-0.01
150.00	4222.8	5607.8	150.150	0.05	-229.4	150.013	0.00
180.00	4311.8	5378.8	180.141	0.05	-229.0	180.018	0.01
210.00	4406.6	5149.9	210.120	0.04	-228.9	210.038	0.01
240.00	4507.6	4921.6	240.019	0.01	-228.3	240.006	0.00
270.00	4615.9	4693.3	269.919	-0.03	-228.3	270.002	0.00
300.00	4732.3	4465.4	299.766	-0.08	-227.9	299.972	-0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.15720 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036677

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1416.6960000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1416700
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000266597400
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1446982000

Polynomial Gauge Factor C:** 963.033800
Regression Zero : 6737.9

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3852.1	6739.1	-0.174	-0.06	0.0	0.006	0.00
30.00	3914.4	6526.4	29.960	-0.01	-212.7	30.031	0.01
60.00	3979.5	6314.5	59.979	-0.01	-211.9	59.967	-0.01
90.00	4048.1	6102.3	90.042	0.01	-212.2	89.970	-0.01
120.00	4120.4	5890.1	120.104	0.03	-212.2	119.996	0.00
150.00	4196.5	5678.3	150.110	0.04	-211.8	149.990	0.00
180.00	4277.3	5466.0	180.186	0.06	-212.3	180.079	0.03
210.00	4362.2	5255.3	210.036	0.01	-210.7	209.964	-0.01
240.00	4452.7	5043.8	239.999	0.00	-211.5	239.987	0.00
270.00	4549.1	4832.3	269.962	-0.01	-211.5	270.034	0.01
300.00	4651.6	4621.7	299.798	-0.07	-210.6	299.977	-0.01

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.10630 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036678

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1339.2680000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1339300
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000117236000
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1351418000

Polynomial Gauge Factor C:** 846.996800
Regression Zero : 6301.3

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3983.5	6302.0	-0.099	-0.03	0.0	-0.011	0.00
30.00	4056.5	6077.2	30.008	0.00	-224.8	30.043	0.01
60.00	4133.4	5853.2	60.007	0.00	-224.0	60.001	0.00
90.00	4214.6	5629.6	89.953	-0.02	-223.6	89.918	-0.03
120.00	4301.6	5404.4	120.114	0.04	-225.2	120.061	0.02
150.00	4393.2	5181.4	149.979	-0.01	-223.0	149.921	-0.03
180.00	4491.8	4956.3	180.126	0.04	-225.1	180.073	0.02
210.00	4596.8	4732.5	210.099	0.03	-223.8	210.064	0.02
240.00	4708.8	4510.0	239.898	-0.03	-222.5	239.892	-0.04
270.00	4830.8	4285.1	270.018	0.01	-224.9	270.053	0.02
300.00	4961.7	4062.0	299.897	-0.03	-223.1	299.985	0.00

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent 0.18750 kPa/°C**

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036679

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1408.8410000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1408800
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000486090800
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1460780000

Polynomial Gauge Factor C:** 916.070900
Regression Zero : 6405.4

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3950.6	6407.4	-0.284	-0.09	0.0	0.047	0.02
30.00	4018.0	6194.1	29.767	-0.08	-213.3	29.899	-0.03
60.00	4089.8	5978.6	60.128	0.04	-215.5	60.104	0.03
90.00	4164.4	5766.4	90.023	0.01	-212.2	89.890	-0.04
120.00	4244.0	5552.0	120.229	0.08	-214.4	120.030	0.01
150.00	4327.8	5339.0	150.237	0.08	-213.0	150.017	0.01
180.00	4416.8	5126.0	180.245	0.08	-213.0	180.048	0.02
210.00	4511.2	4913.7	210.155	0.05	-212.3	210.024	0.01
240.00	4611.7	4702.0	239.980	-0.01	-211.7	239.959	-0.01
270.00	4719.1	4490.3	269.805	-0.06	-211.7	269.938	-0.02
300.00	4834.8	4278.0	299.715	-0.10	-212.3	300.045	0.02

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.17610 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer

Serial No. : 036680

Instrument Range : 0.00 to 300.0 kPa

Calibration Date : 02/08/2010

Gauge Factors in kPa

Ambient Temperature : 23°C

Period Gauge Factor (K): 1308.1330000

Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1308100

Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000014509700

Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1309629000

Polynomial Gauge Factor C:** 824.898900

Regression Zero : 6303.0

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3983.2	6302.8	0.031	0.01	0.0	0.042	0.01
30.00	4057.6	6073.9	29.974	-0.01	-228.9	29.979	-0.01
60.00	4136.3	5844.8	59.943	-0.02	-229.1	59.943	-0.02
90.00	4220.1	5615.1	89.991	0.00	-229.7	89.987	0.00
120.00	4309.2	5385.3	120.052	0.02	-229.8	120.045	0.02
150.00	4403.7	5156.5	149.982	-0.01	-228.8	149.975	-0.01
180.00	4505.4	4926.5	180.069	0.02	-230.0	180.062	0.02
210.00	4613.8	4697.7	209.999	0.00	-228.8	209.995	0.00
240.00	4730.6	4468.6	239.969	-0.01	-229.1	239.968	-0.01
270.00	4857.0	4239.0	270.003	0.00	-229.6	270.008	0.00
300.00	4993.9	4009.8	299.986	0.00	-229.2	299.997	0.00

Formulae: Linear* $E = G(R0 - R1)$ **Temperature Coefficent** 0.17010 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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VIBRATING WIRE INSTRUMENTS CALIBRATION CERTIFICATE

Instrument Type : W4 Vibrating Wire Piezometer
Serial No. : 036681

Instrument Range : 0.00 to 300.0 kPa
Calibration Date : 02/08/2010

Gauge Factors in kPa
Ambient Temperature : 23°C

Period Gauge Factor (K): 1360.2220000
Barometric Pressure : 1013 mbar

Linear Gauge Factor (G): (kPa/digit)0.1360200
Calibration Technician : John Kingshott

Polynomial Gauge Factor A: 0.000000286951300
Calibration Equipment:
Mensor APC 600
Vibrating Wire Data Recorder DR103

Polynomial Gauge Factor B: -0.1390897000

Polynomial Gauge Factor C:** 884.955000
Regression Zero : 6446.7

Applied (kPa)	Reading (Period)	Reading F²/1000	Calculated (Linear)	Error %FS (Linear)	Linear Increment	Calculated (Polynomial)	Error %FS (Polynomial)
0.00	3938.2	6447.8	-0.147	-0.05	0.0	0.062	0.02
30.00	4007.3	6227.1	29.873	-0.04	-220.7	29.956	-0.01
60.00	4080.6	6005.5	60.015	0.01	-221.6	60.001	0.00
90.00	4157.7	5784.8	90.035	0.01	-220.7	89.951	-0.02
120.00	4239.3	5564.2	120.042	0.01	-220.6	119.916	-0.03
150.00	4326.4	5342.5	150.198	0.07	-221.7	150.058	0.02
180.00	4418.6	5122.0	180.191	0.06	-220.5	180.065	0.02
210.00	4516.8	4901.7	210.156	0.05	-220.3	210.073	0.02
240.00	4620.9	4683.2	239.877	-0.04	-218.5	239.863	-0.05
270.00	4734.3	4461.5	270.033	0.01	-221.7	270.118	0.04
300.00	4854.6	4243.2	299.727	-0.09	-218.3	299.936	-0.02

Formulae: **Linear*** $E = G(R0 - R1)$ **Temperature Coefficent** 0.23800 kPa/°C

Polynomial** $E = AR1^2 + BR1 + C$

* The zero reading should be established on site by the user on installation.
** The site value of C must be calculated using the formula $C = -(AR0^2 + BR0)$

The instrument detailed hereon has, as applicable, been inspected, tested and calibrated in accordance with ISO 9001:2008 approved procedures and, unless otherwise indicated, performs within ± 0.10% (Polynomial) as specified. Thus, the instrument conforms in all respects to our relevant specifications and drawings.

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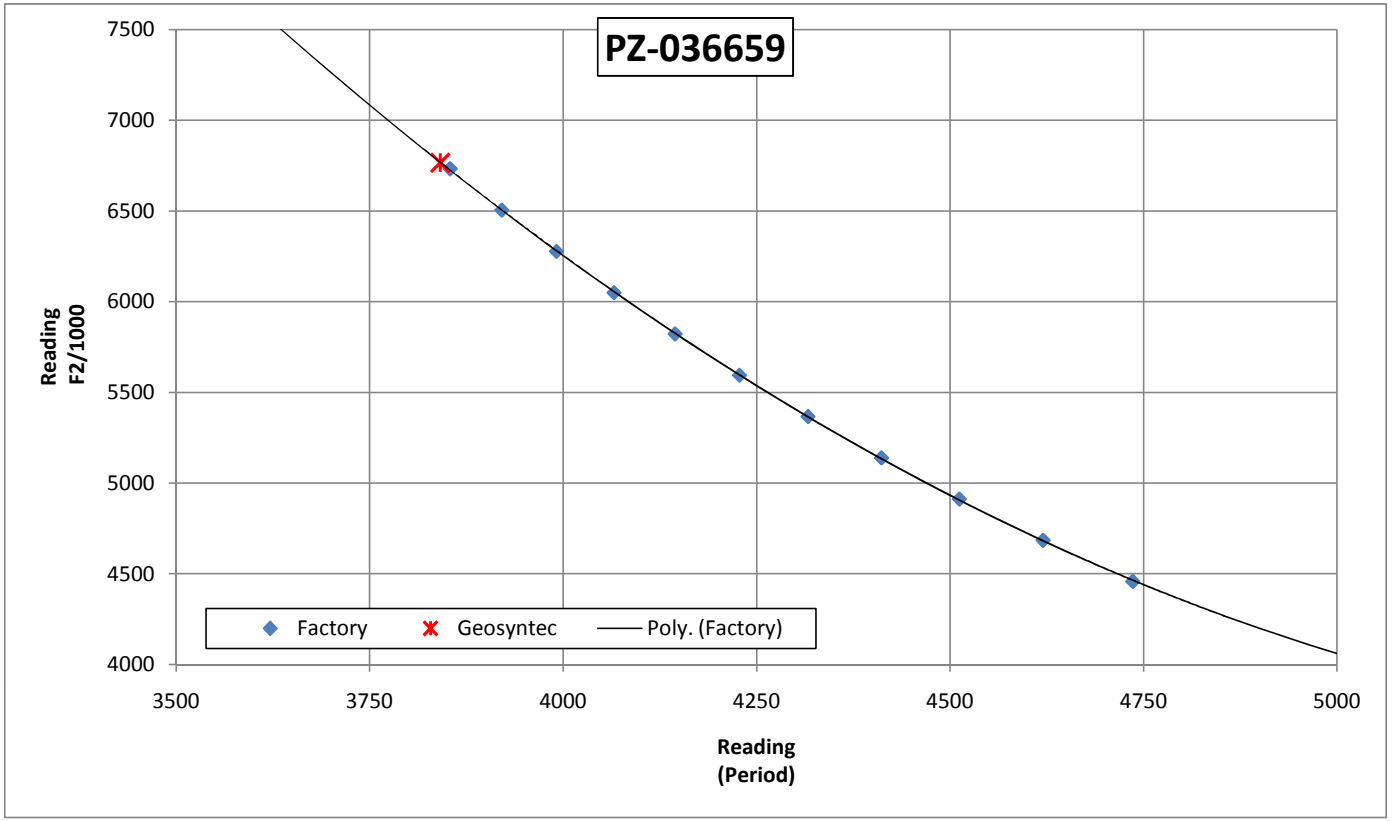
Geosyntec Pre-Acceptance Testing of VW Piezometers

Notes: The green-highlighted cell in the acceptance spreadsheet indicates the point measured by Geosyntec during pre-acceptance testing. It is noted that for each piezometer, the point measured by Geosyntec aligns properly on the calibration curve provided by the manufacturer (ITM)

Serial No. (short) 59
Full Serial No. PZ-036659

Regression Zero:	6732.0
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.4

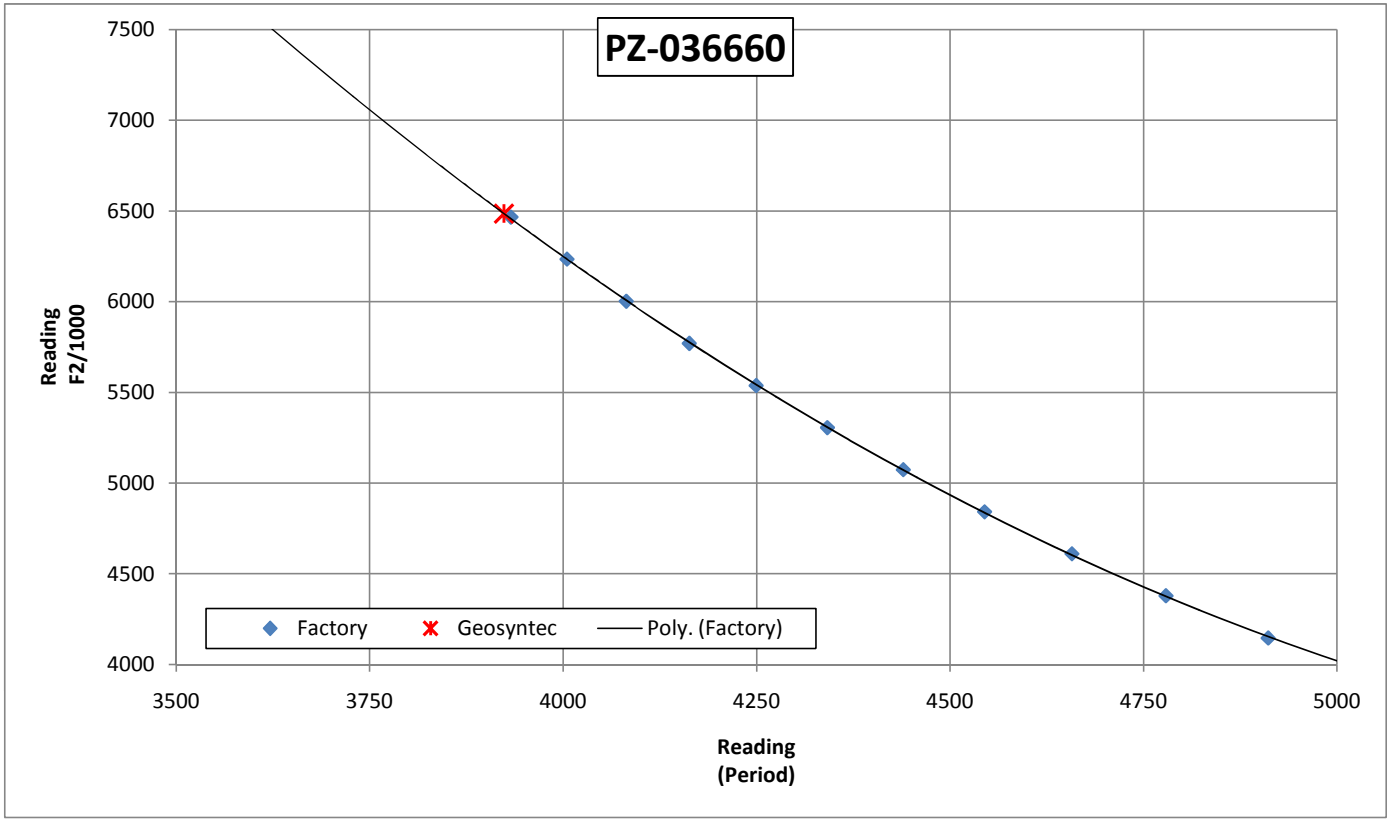
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3854	6732.6
30	3920.8	6504.9
60	3991.4	6276.9
90	4065.8	6049.3
120	4144.6	5821.6
150	4227.8	5594.5
180	4316.5	5367.1
210	4411.3	5138.9
240	4512.1	4911.9
270	4620.1	4684.9
300	4736.1	4458.1
Geosyntec	3841.4	6766.2



Serial No. (short) 60
Full Serial No. PZ-036660

Regression Zero:	6466.2
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.4

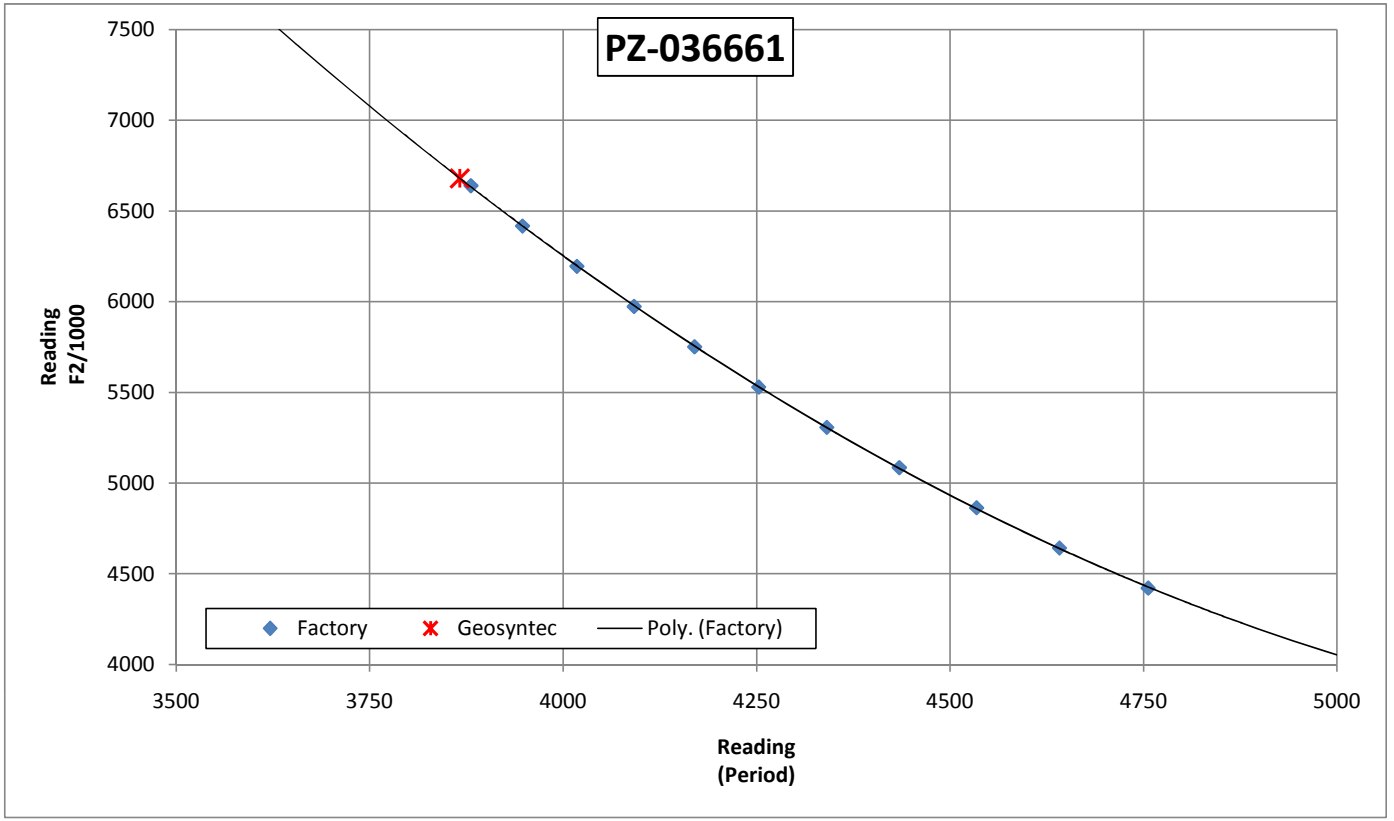
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3932.5	6466.3
30	4005	6234.4
60	4081.6	6002.6
90	4163	5770.1
120	4249.4	5537.8
150	4341.3	5305.9
180	4439.4	5073.9
210	4544.5	4842.1
240	4657.3	4610.4
270	4778.8	4378.9
300	4910.9	4146.4
Geosyntec	3923.6	6485.6



Serial No. (short) 61
Full Serial No. PZ-036661

Regression Zero:	6638.5
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.3

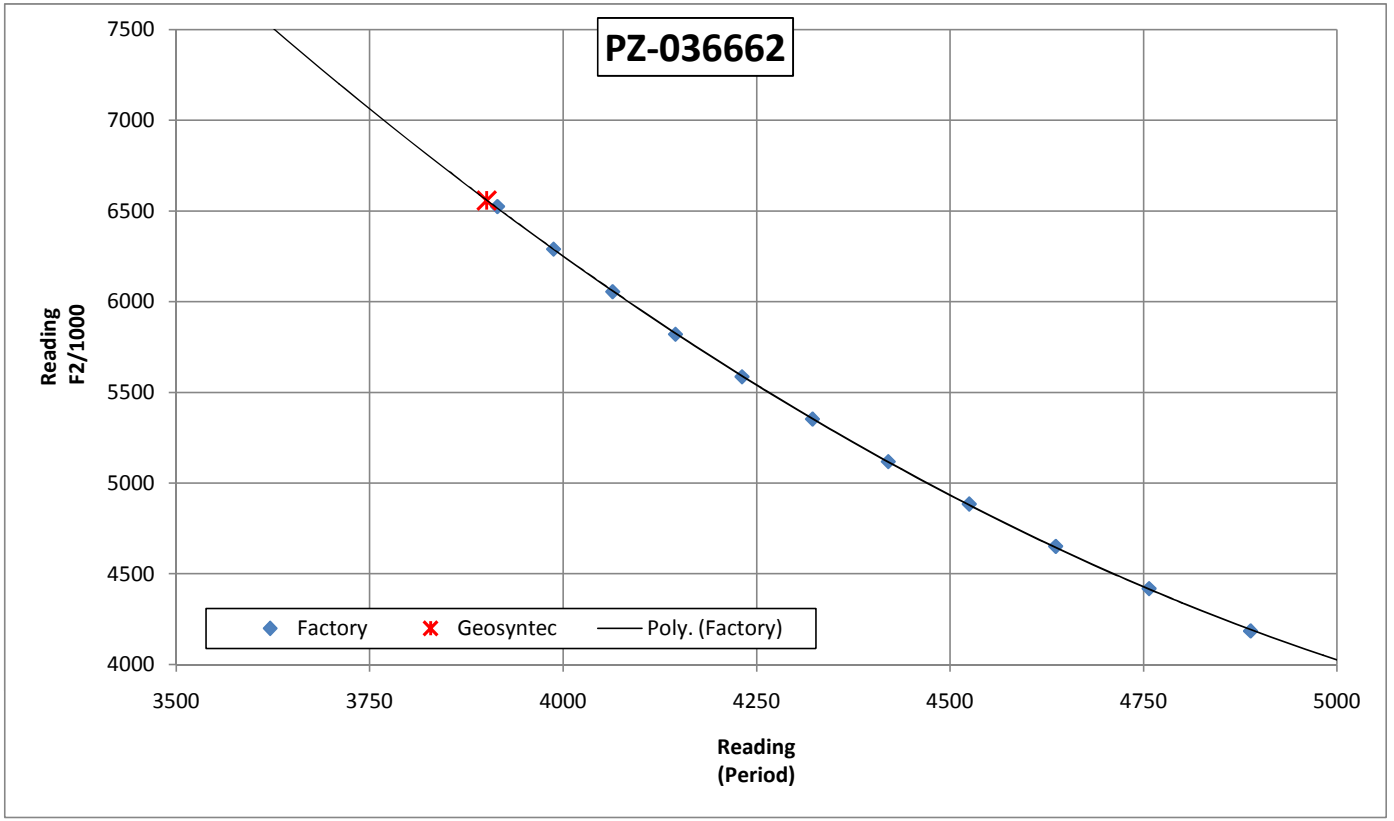
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3881	6639.1
30	3947.6	6417
60	4017.9	6194.5
90	4091.8	5972.8
120	4170	5750.8
150	4253	5528.6
180	4340.9	5306.8
210	4434.6	5085
240	4534.5	4863.4
270	4641.6	4641.6
300	4756.2	4420.6
Geosyntec	3866.3	6679.1



Serial No. (short) 62
Full Serial No. PZ-036662

Regression Zero:	6522.8
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.3

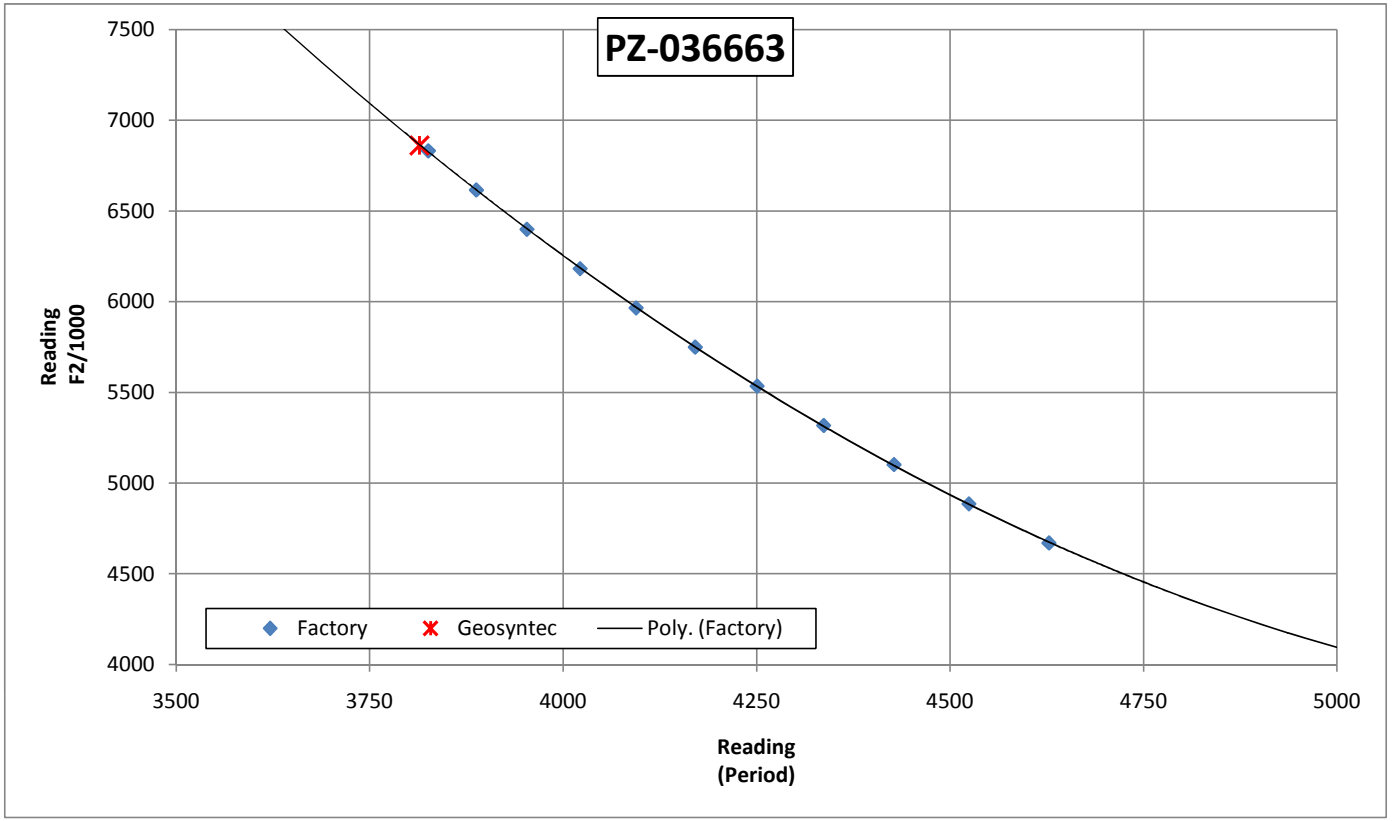
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3915	6524.3
30	3987.5	6289.4
60	4063.9	6054.9
90	4145.1	5820.2
120	4231	5586.2
150	4322.2	5352.8
180	4420.2	5118.3
210	4524.7	4884.5
240	4636.6	4651.5
270	4757.2	4418.7
300	4888.4	4184.8
Geosyntec	3901.4	6558.2



Serial No. (short) 63
Full Serial No. PZ-036663

Regression Zero:	6831.3
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.4

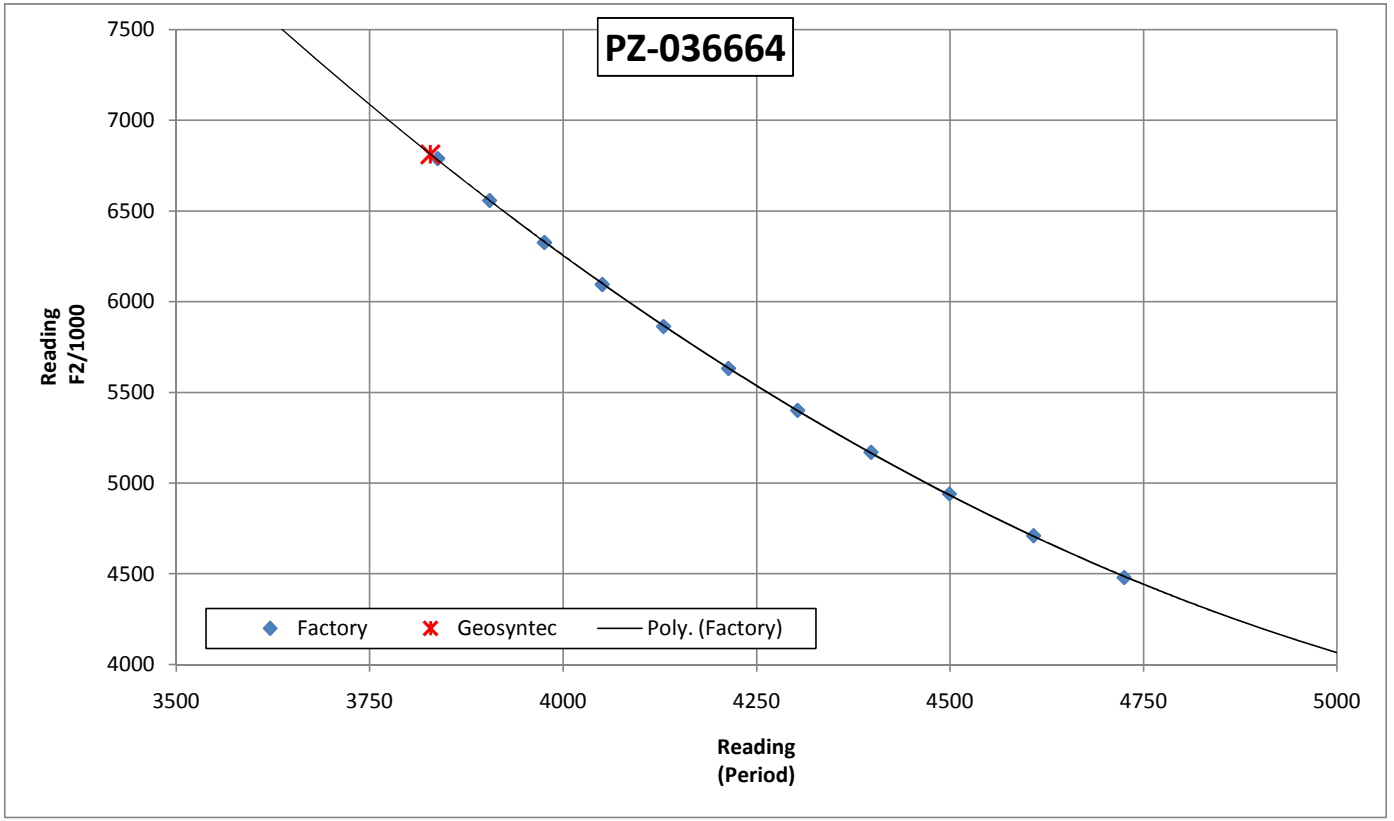
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3825.9	6831.9
30	3887.9	6615.7
60	3953.2	6398.8
90	4022	6181.7
120	4094.3	5965.5
150	4170.7	5748.9
180	4250.8	5534.2
210	4336.8	5317
240	4427.6	5101.1
270	4524.5	4885
300	4627.9	4669.1
Geosyntec	3814.5	6861.7



Serial No. (short) 64
Full Serial No. PZ-036664

Regression Zero:	6787.6
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.3

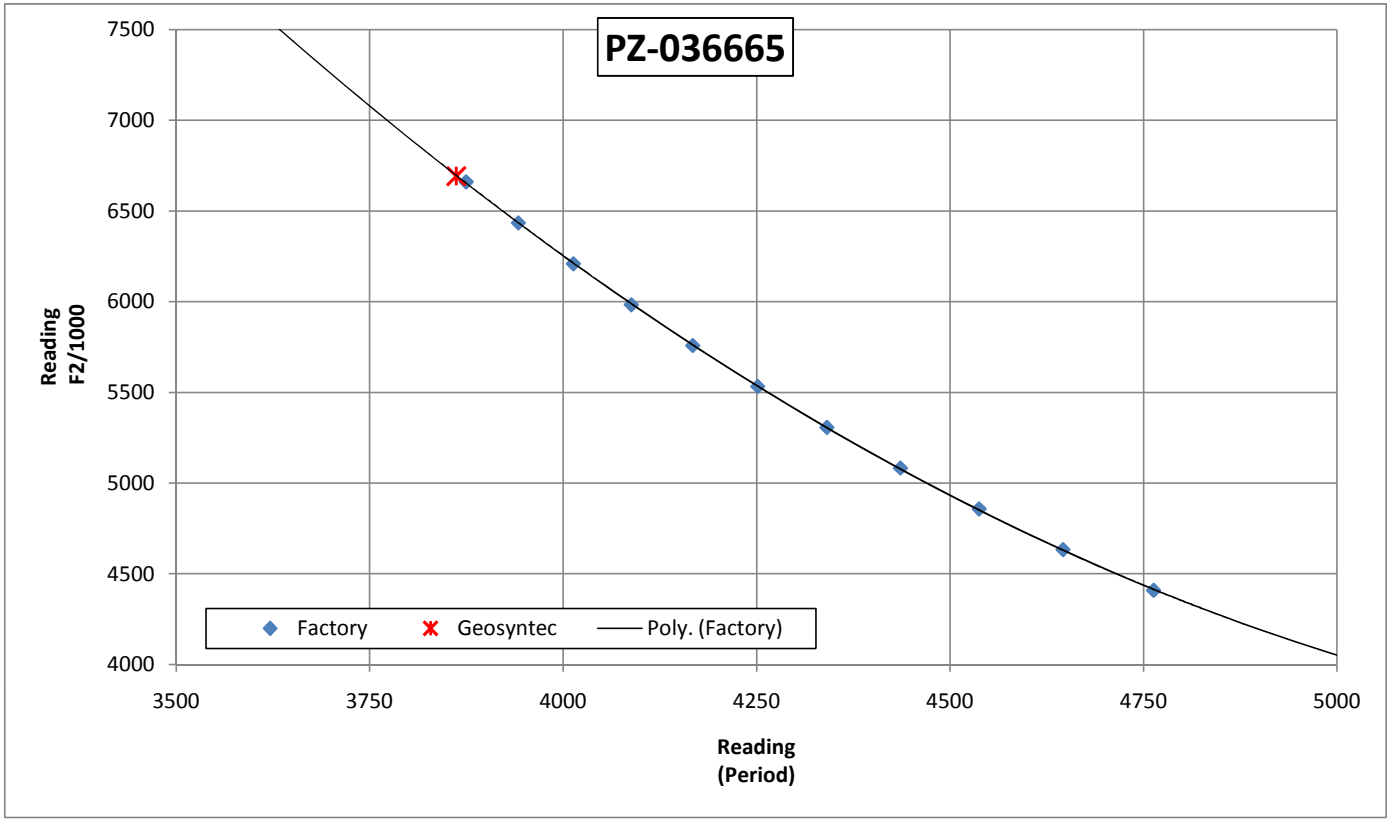
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3838	6788.8
30	3905.2	6557.1
60	3976	6325.6
90	4050.8	6094.3
120	4129.9	5863.1
150	4213.8	5631.9
180	4303.1	5400.6
210	4398.1	5169.8
240	4499.3	4939.8
270	4608	4709.6
300	4725.1	4479
Geosyntec	3828.4	6812.6



Serial No. (short) 65
Full Serial No. PZ-036665

Regression Zero:	6660.1
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.8

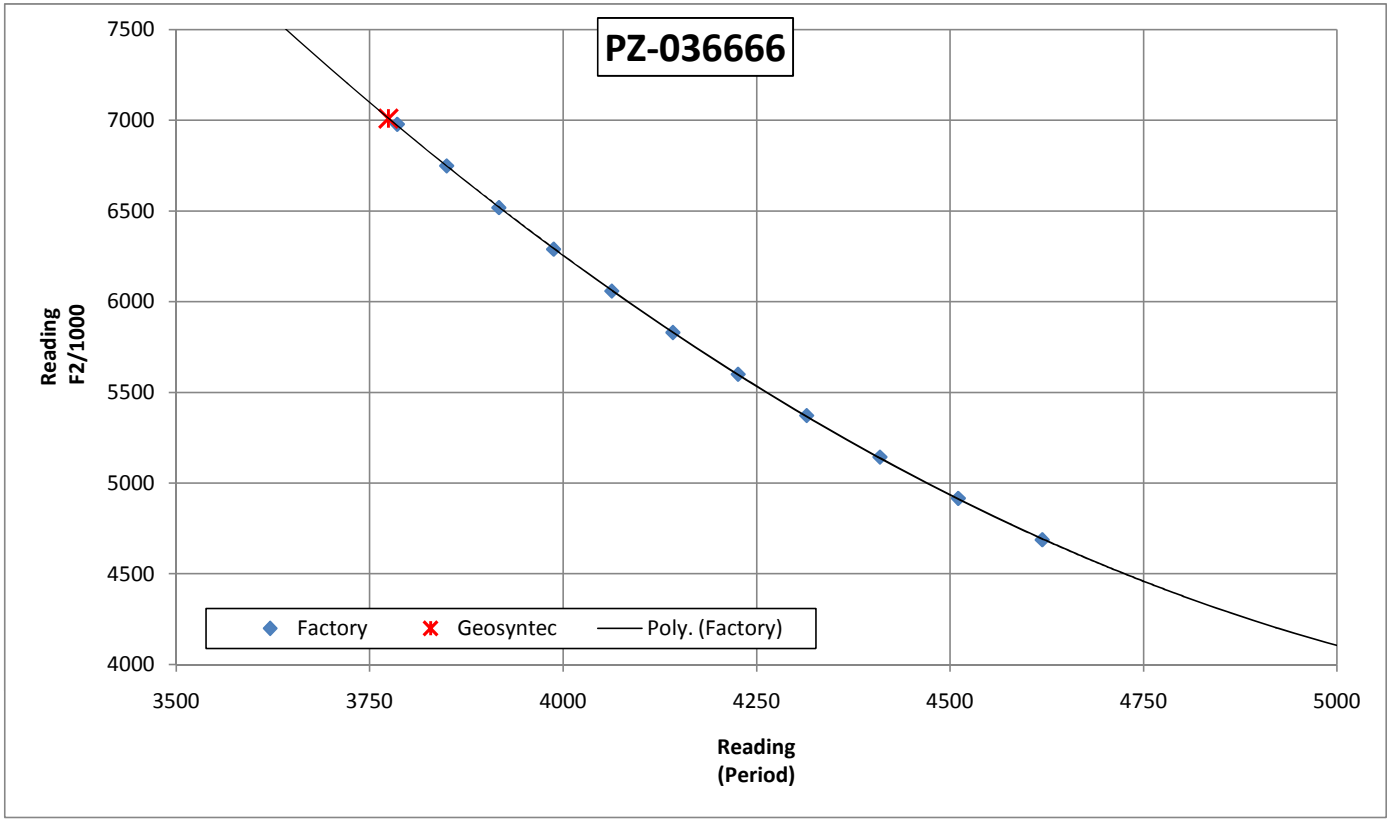
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3874.5	6661.3
30	3942.1	6435.1
60	4013.1	6209.4
90	4088.1	5983.6
120	4167.4	5758.1
150	4251.4	5532.6
180	4340.9	5307
210	4435.9	5082
240	4537.4	4857.2
270	4646.1	4632.5
300	4763.1	4407.8
Geosyntec	3862	6692.5



Serial No. (short) 66
Full Serial No. PZ-036666

Regression Zero:	6976.1
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.2

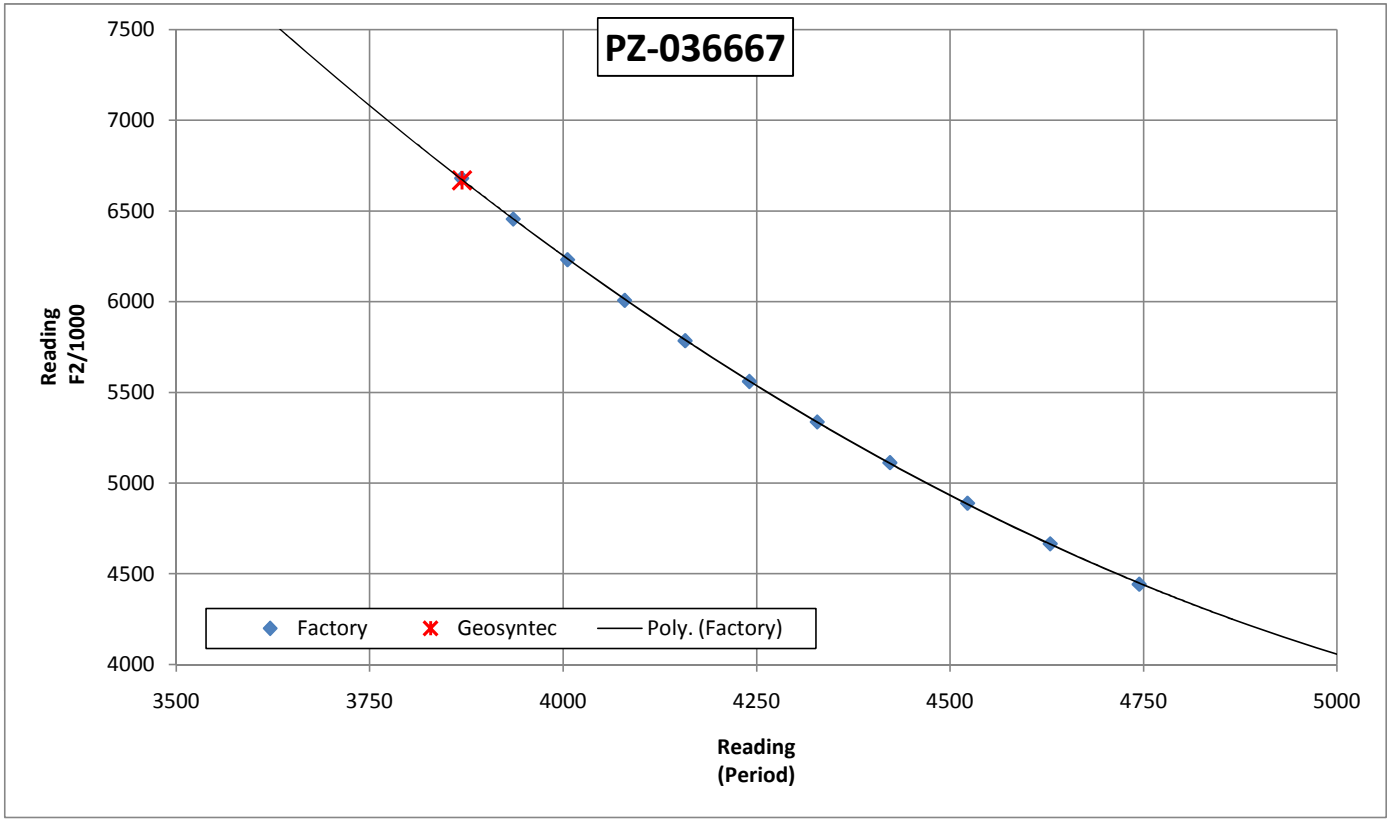
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3785.7	6977.5
30	3849.4	6748.5
60	3917	6517.8
90	3987.7	6288.6
120	4062.9	6057.9
150	4141.8	5829.5
180	4226	5599.5
210	4314.7	5371.5
240	4409.4	5143.2
270	4510.5	4915.3
300	4619.1	4686.8
Geosyntec	3774.3	7008.7



Serial No. (short) 67
Full Serial No. PZ-036667

Regression Zero:	6679.8
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.1

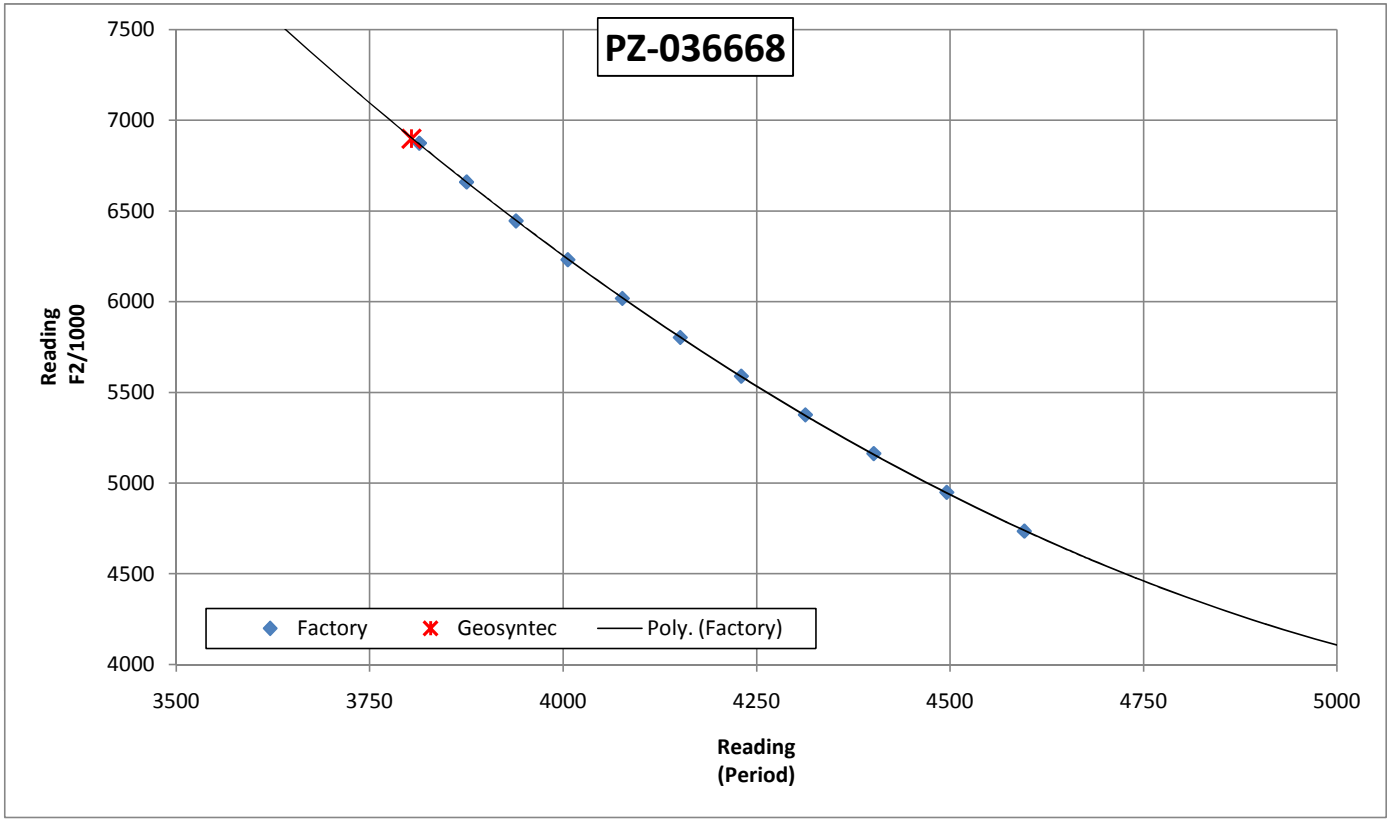
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3869	6680.4
30	3935.7	6456
60	4005.8	6231.9
90	4079.7	6008.1
120	4157.8	5784.7
150	4240.8	5560.5
180	4328.4	5337.5
210	4422.5	5112.8
240	4522.6	4889.1
270	4629.5	4665.8
300	4744.5	4442.4
Geosyntec	3869.5	6668.2



Serial No. (short) 68
Full Serial No. PZ-036668

Regression Zero: 6873.1
Ambient Temp (Factory): 23.0
Measured Temp. (Geosyntec): 25.6

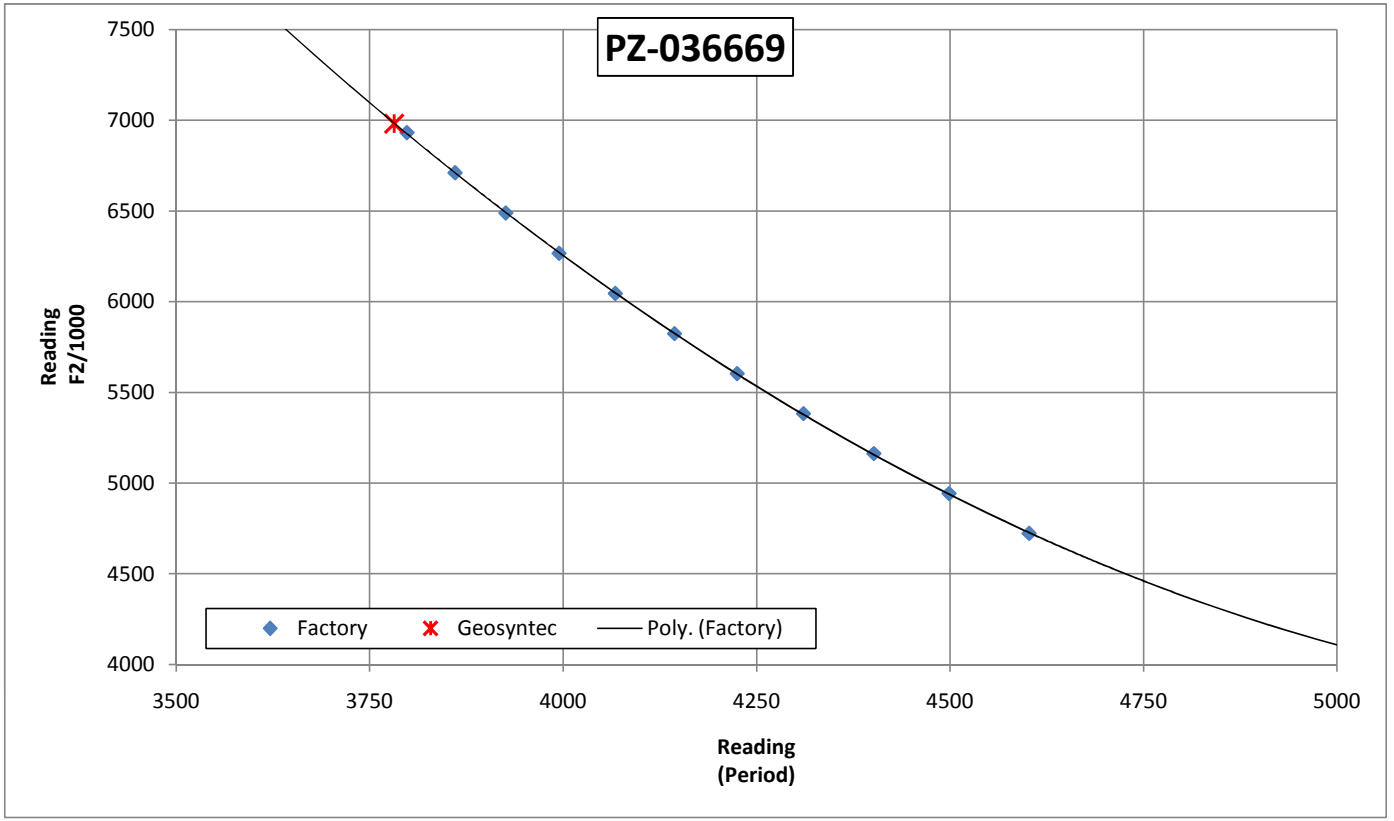
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3814.2	6873.8
30	3875.2	6659.2
60	3939	6445.2
90	4006	6231.2
120	4076.5	6017.7
150	4151.3	5802.6
180	4230.1	5588.6
210	4312.9	5376
240	4401.3	5162.2
270	4495.6	4947.9
300	4595.9	4734.3
Geosyntec	3804.2	6899



Serial No. (short) 69
Full Serial No. PZ-036669

Regression Zero:	6930.0
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.6

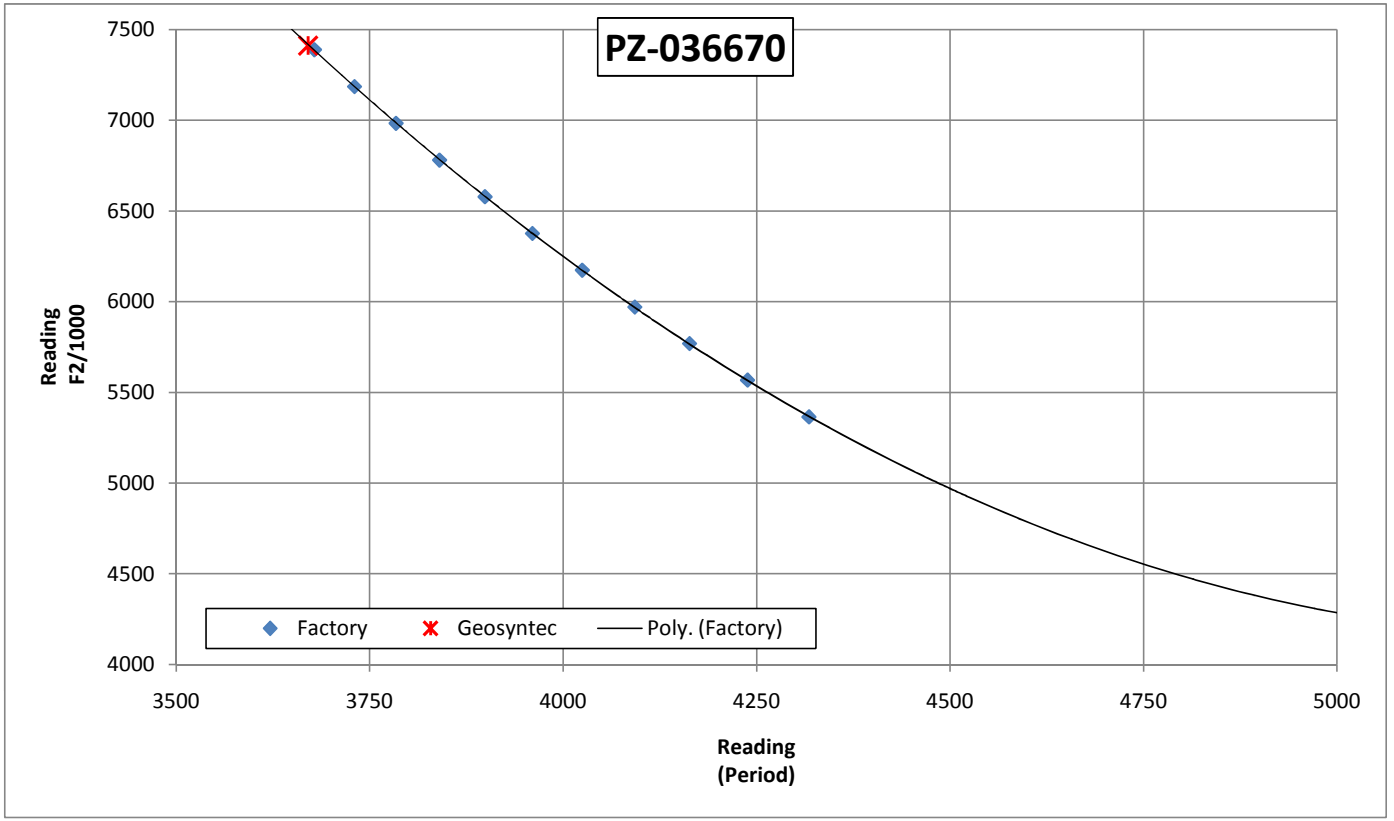
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3798.2	6931.7
30	3860.5	6709.9
60	3925.9	6488
90	3994.8	6266.4
120	4067.4	6044.6
150	4143.9	5823.5
180	4224.8	5602.5
210	4310.5	5381.9
240	4401.4	5161.9
270	4498.5	4941.5
300	4602	4721.7
Geosyntec	3781.9	6980.6



Serial No. (short) 70
Full Serial No. PZ-036670

Regression Zero: 7388.9
Ambient Temp (Factory): 23.0
Measured Temp. (Geosyntec): 25.4

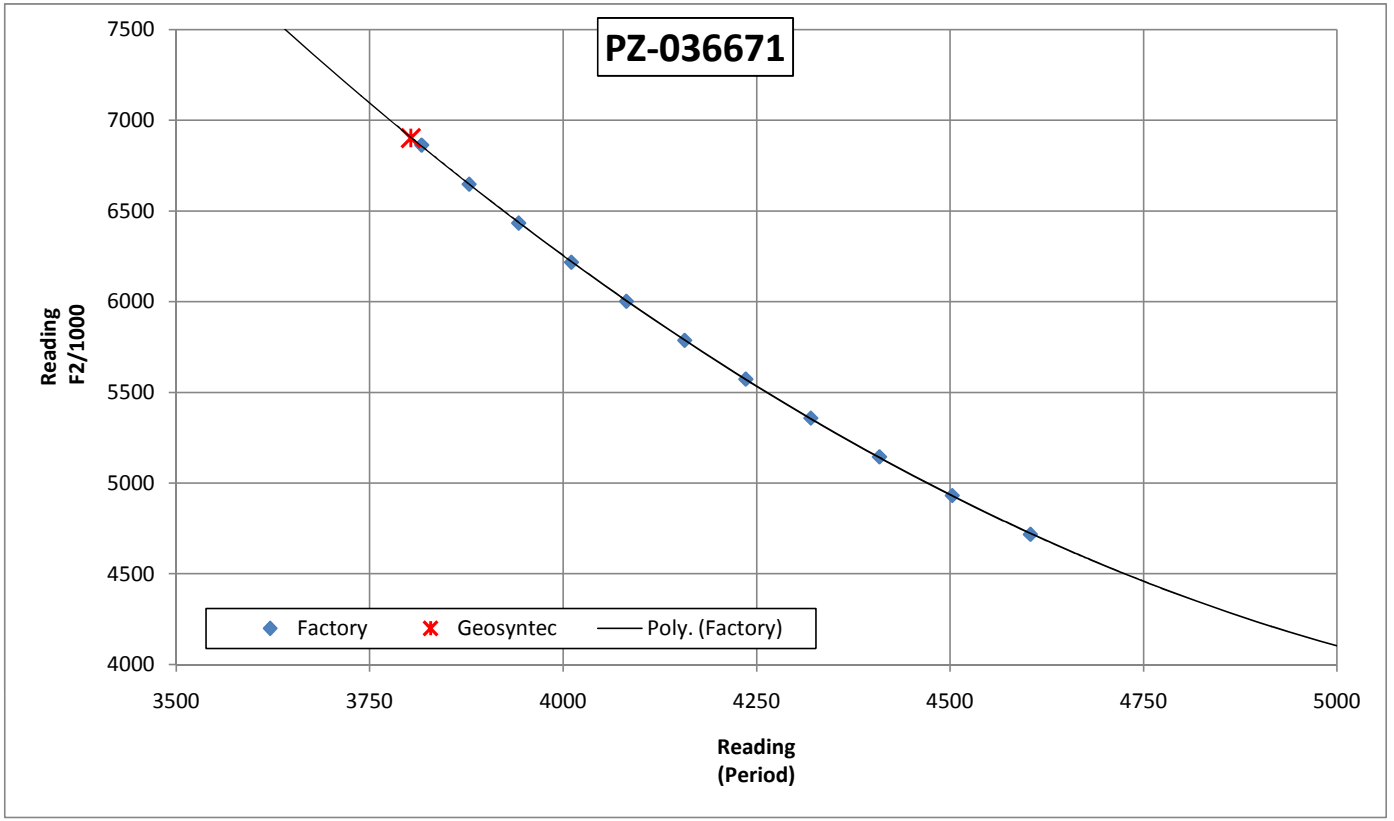
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3678.6	7389.9
30	3730.3	7186.3
60	3784	6983.9
90	3840.2	6781
120	3898.9	6578.4
150	3960.3	6375.8
180	4024.6	6173.7
210	4092.5	5970.6
240	4163.3	5769.2
270	4238.3	5566.9
300	4317.6	5364.3
Geosyntec	3670.5	7410.9



Serial No. (short) 71
Full Serial No. PZ-036671

Regression Zero:	6861.5
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.2

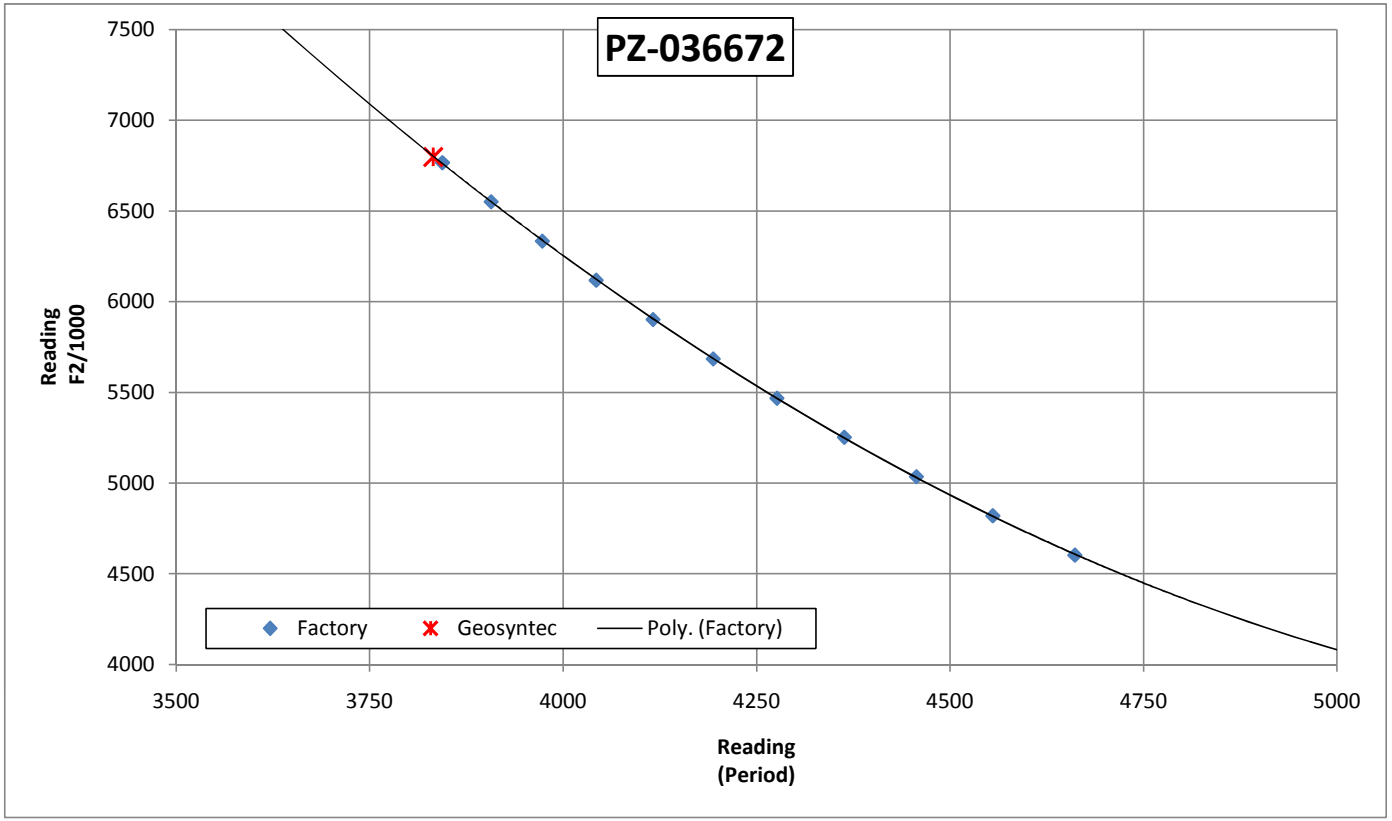
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3817.1	6863.2
30	3878.6	6647.4
60	3942.6	6433.3
90	4010.6	6217.1
120	4081.7	6002.4
150	4157	5786.9
180	4236	5573.1
210	4320.1	5358
240	4408.8	5144.8
270	4502.9	4931.9
300	4603.9	4717.8
Geosyntec	3803.2	6902.7



Serial No. (short) 72
Full Serial No. PZ-036672

Regression Zero:	6767.3
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.5

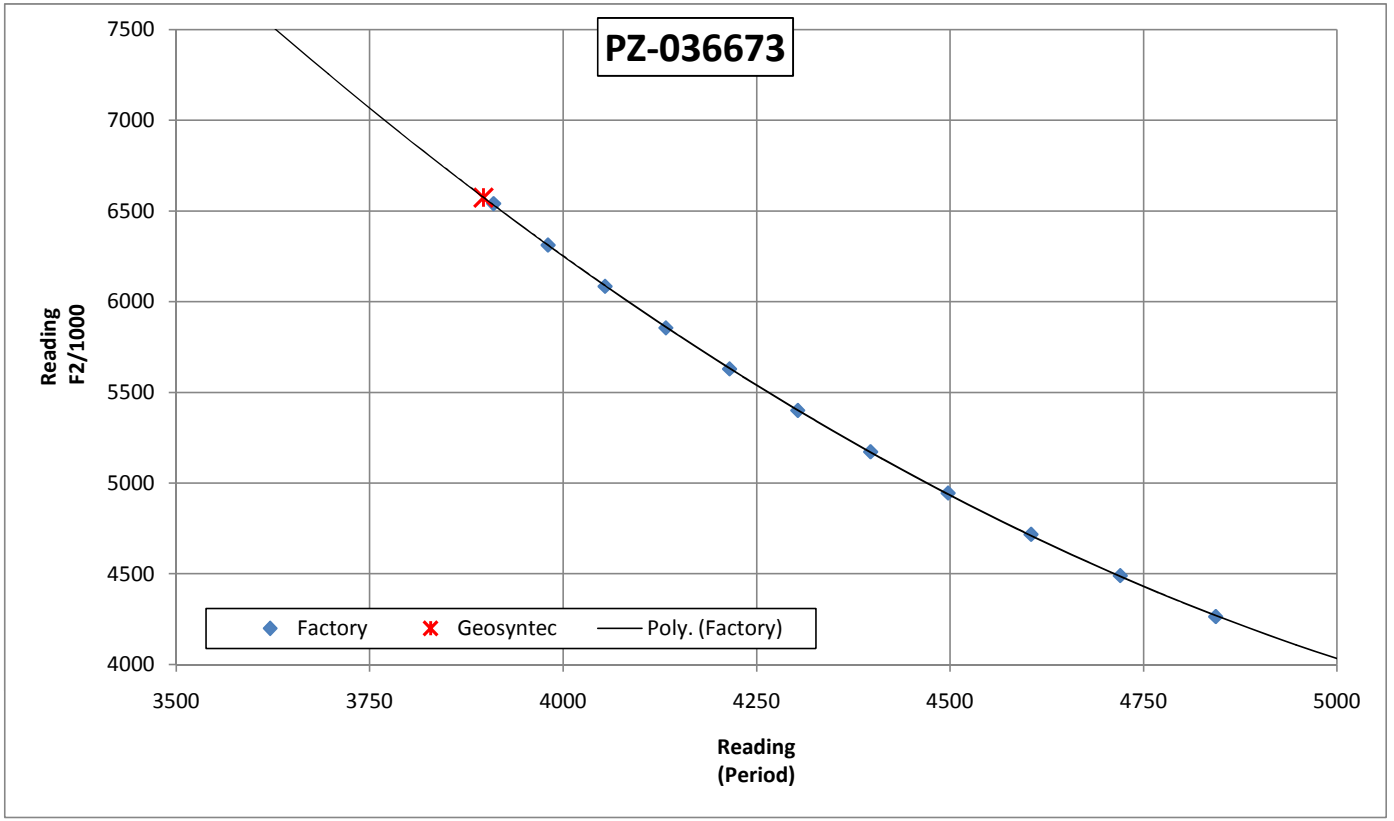
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3844.2	6766.9
30	3907.1	6550.9
60	3973.3	6334.4
90	4042.9	6118.2
120	4116.4	5901.4
150	4194.2	5684.6
180	4276.6	5467.7
210	4363.5	5252.1
240	4456.7	5034.7
270	4555.4	4818.9
300	4661.5	4602.1
Geosyntec	3832.1	6798.5



Serial No. (short) 73
Full Serial No. PZ-036673

Regression Zero:	6539.5
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.5

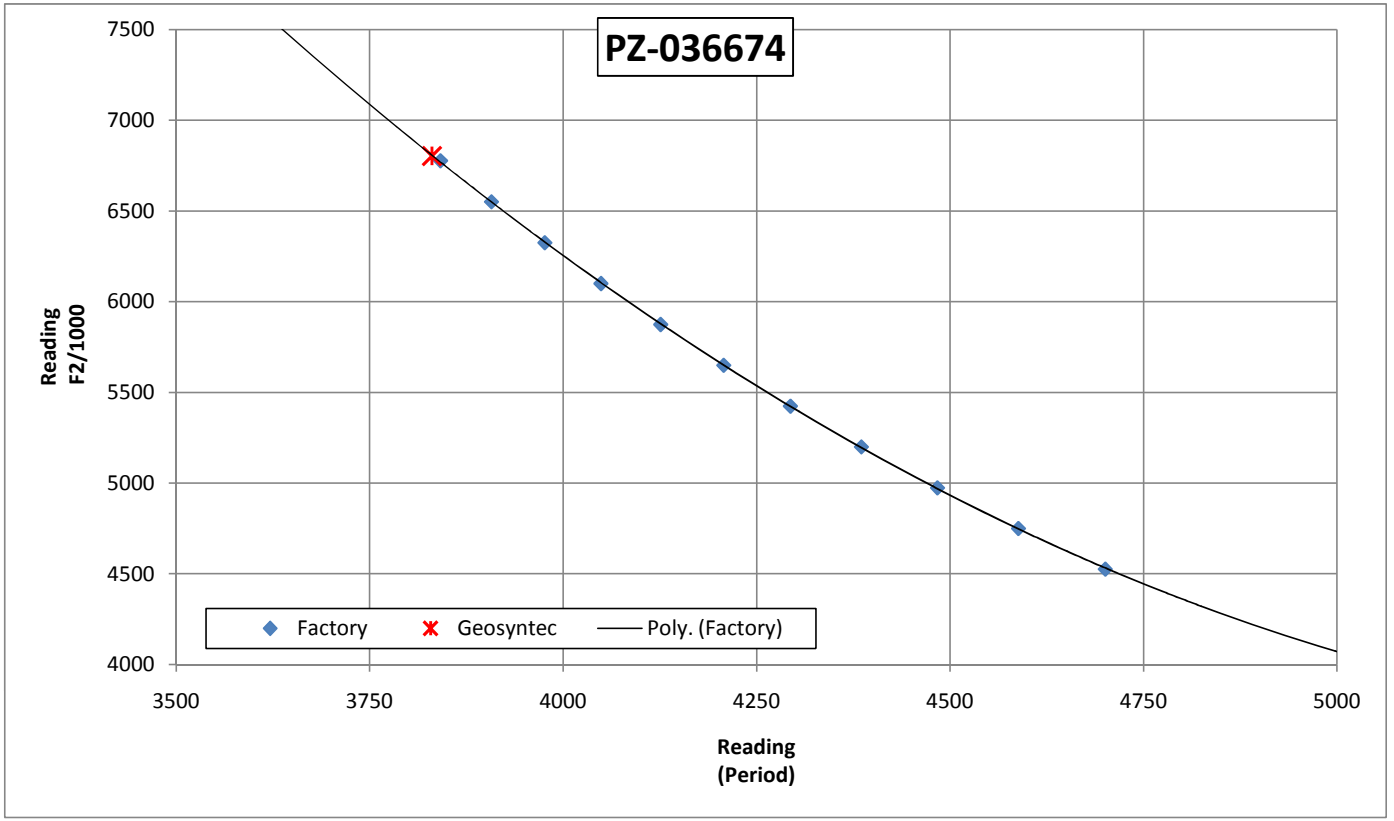
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3910.2	6540.5
30	3980.4	6311.6
60	4054.1	6084.2
90	4132.7	5855.2
120	4215	5628.7
150	4303.2	5400.3
180	4397.2	5171.9
210	4497.3	4944.2
240	4604.6	4716.5
270	4719.8	4489.1
300	4843.1	4263.3
Geosyntec	3897.2	6574



Serial No. (short) 74
Full Serial No. PZ-036674

Regression Zero:	6775.0
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.1

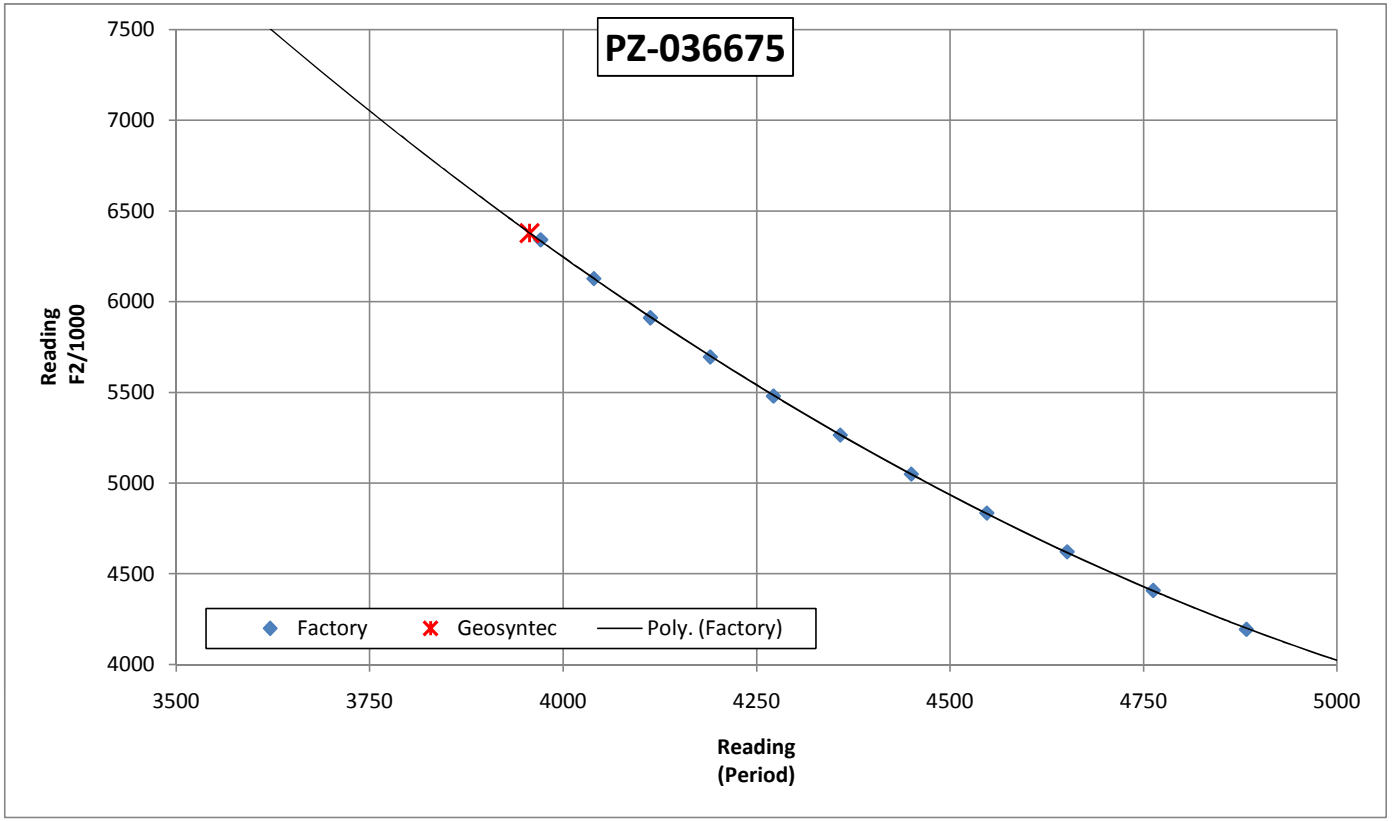
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3841.5	6776.4
30	3907.3	6550.1
60	3976.3	6324.6
90	4048.9	6099.8
120	4126	5874.1
150	4207.4	5649
180	4293.7	5424.3
210	4385.4	5199.7
240	4483.7	4974.3
270	4588.3	4750
300	4700.6	4525.7
Geosyntec	3830.4	6803.2



Serial No. (short) 75
Full Serial No. PZ-036675

Regression Zero:	6340.5
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.2

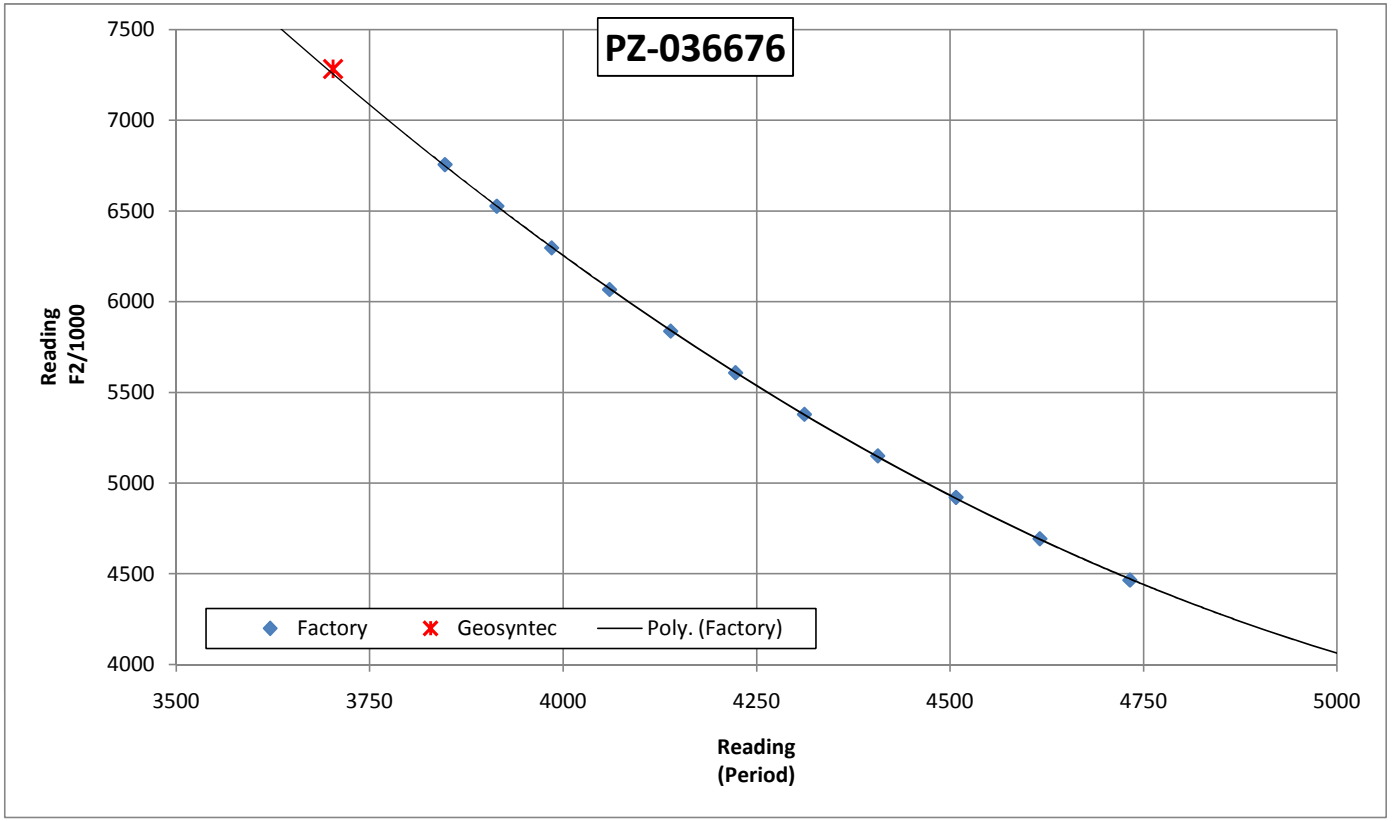
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3971.1	6341.4
30	4039.9	6127.3
60	4112.9	5911.5
90	4190.2	5695.6
120	4271.9	5479.8
150	4358.2	5264.8
180	4450	5049.9
210	4547.6	4835.5
240	4651.4	4622
270	4762.6	4408.7
300	4883	4194
Geosyntec	3956.5	6377.1



Serial No. (short) 76
Full Serial No. PZ-036676

Regression Zero:	6754.3
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	26.1

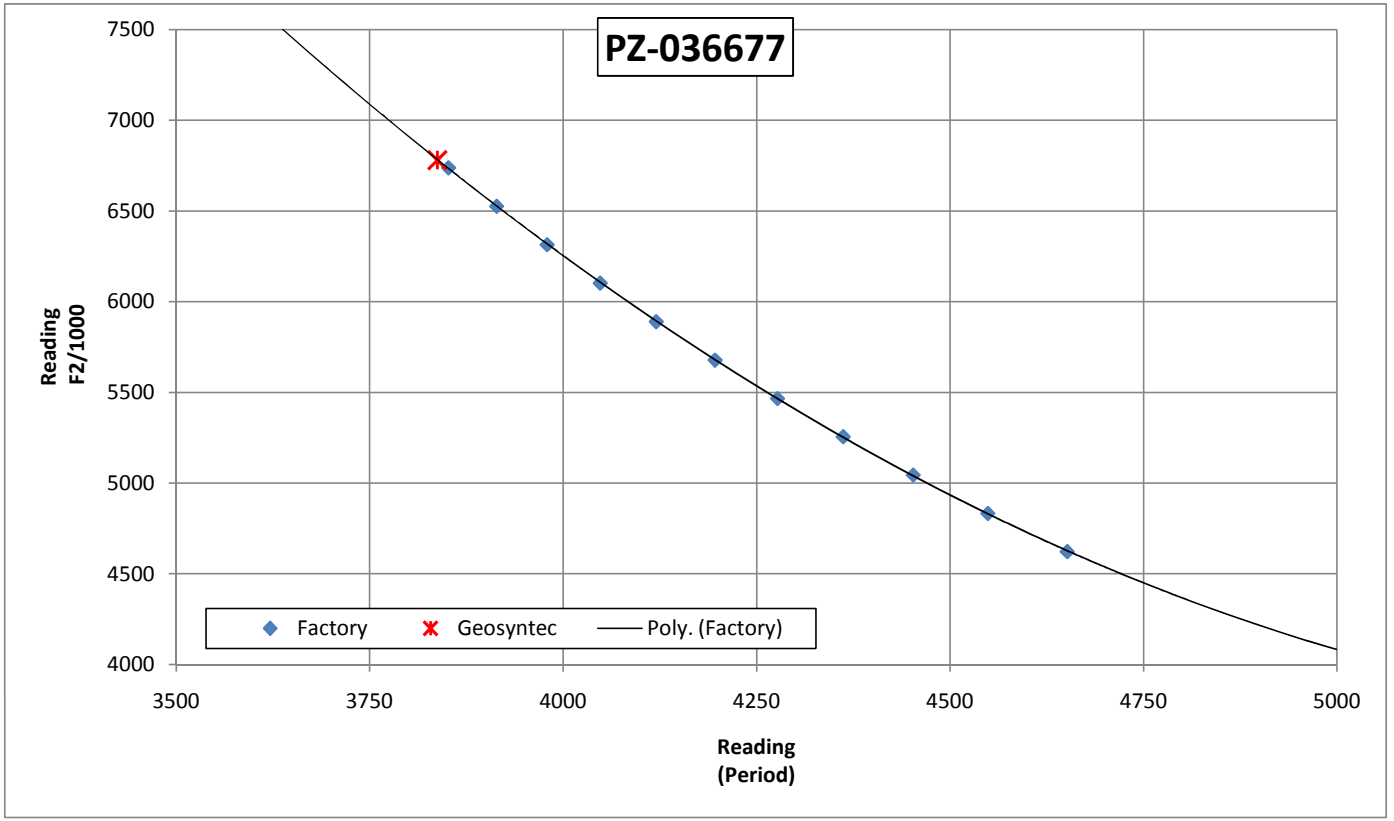
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3847.5	6755.3
30	3914.4	6526.4
60	3985.3	6296.1
90	4060	6066.6
120	4139	5837.2
150	4222.8	5607.8
180	4311.8	5378.8
210	4406.6	5149.9
240	4507.6	4921.6
270	4615.9	4693.3
300	4732.3	4465.4
Geosyntec	3702.7	7282.4



Serial No. (short) 77
Full Serial No. PZ-036677

Regression Zero: 6737.9
Ambient Temp (Factory): 23.0
Measured Temp. (Geosyntec): 25.3

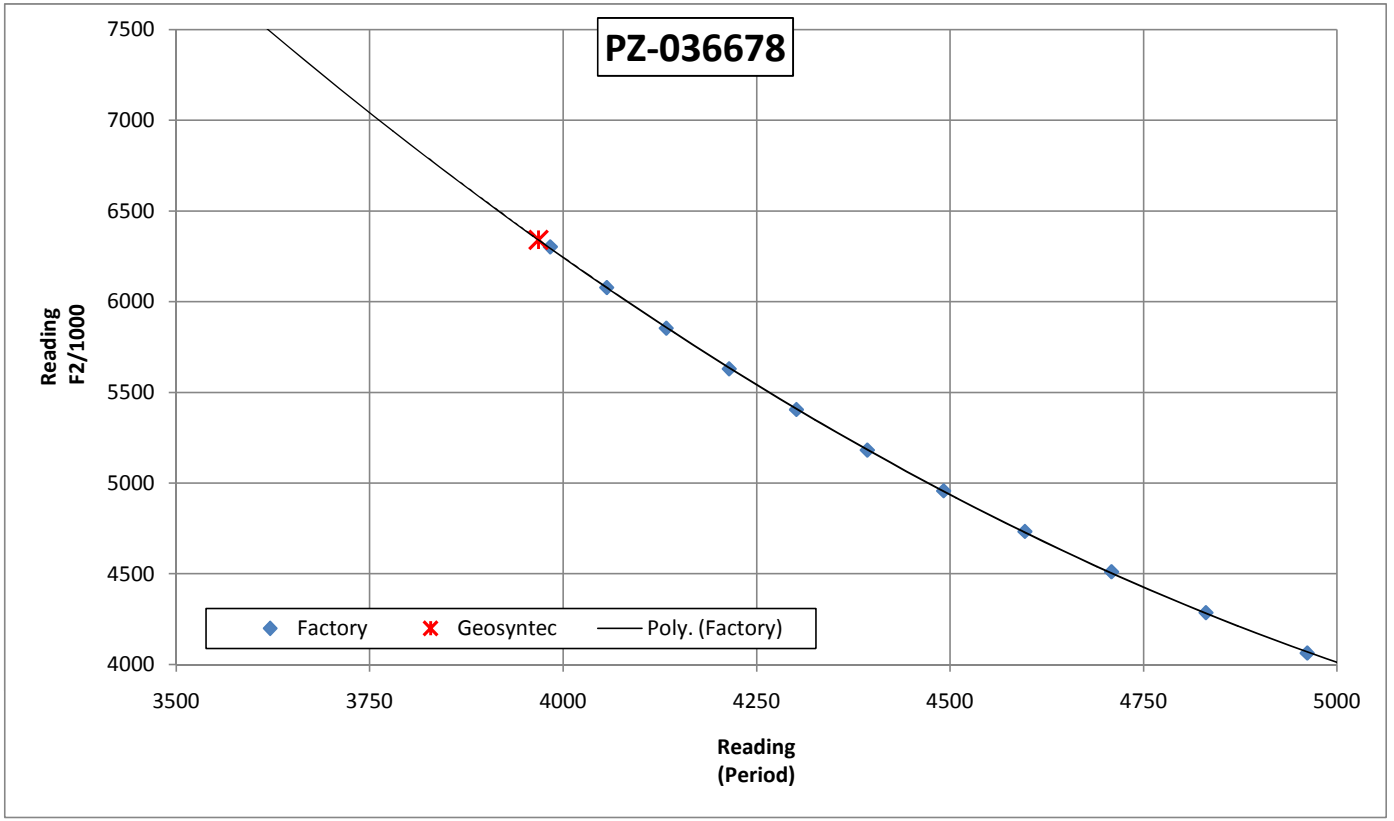
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3852.1	6739.1
30	3914.4	6526.4
60	3979.5	6314.5
90	4048.1	6102.3
120	4120.4	5890.1
150	4196.5	5678.3
180	4277.3	5466
210	4362.2	5255.3
240	4452.7	5043.8
270	4549.1	4832.3
300	4651.6	4621.7
Geosyntec	3837.4	6780.2



Serial No. (short) 78
Full Serial No. PZ-036678

Regression Zero:	6301.3
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	24.9

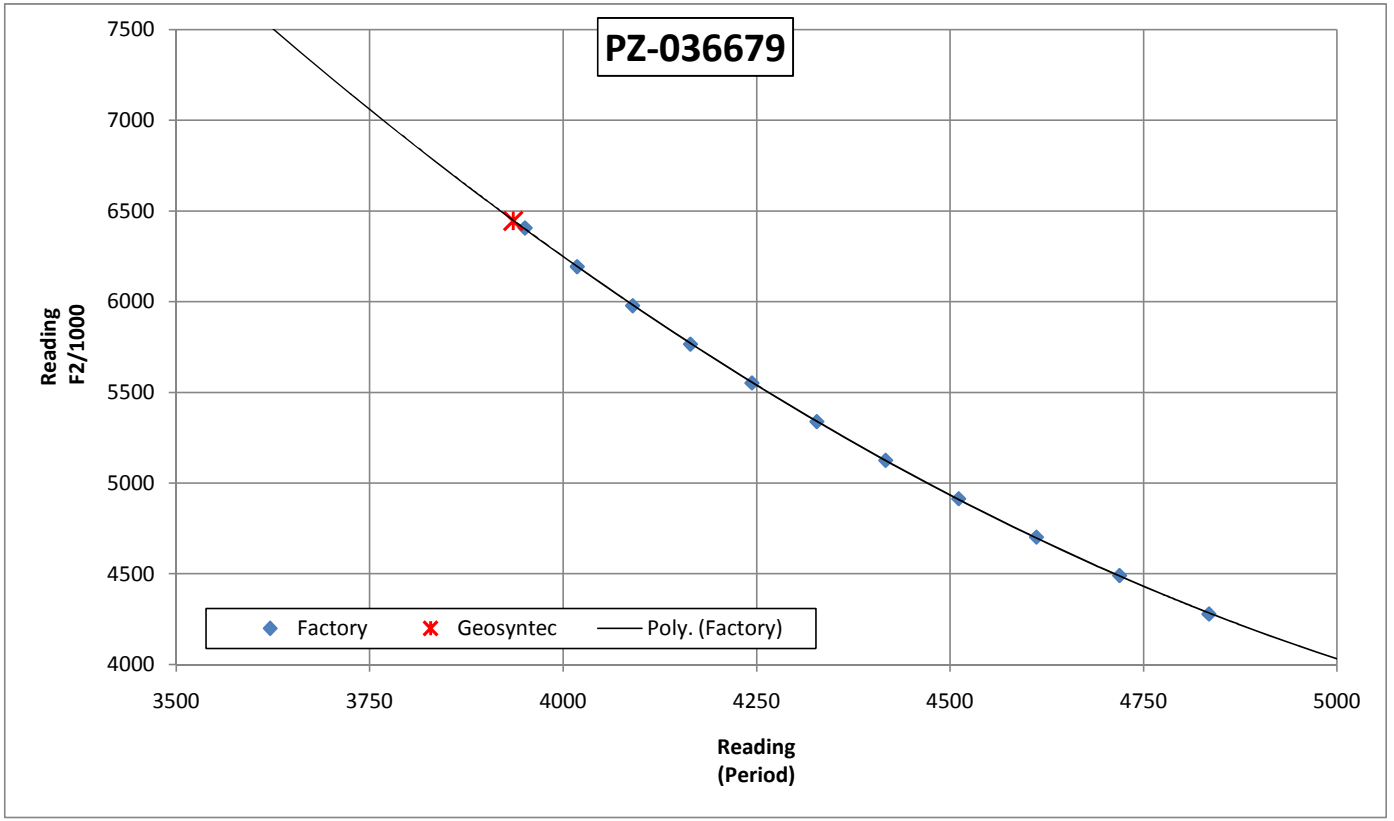
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3983.5	6302
30	4056.5	6077.2
60	4133.4	5853.2
90	4214.6	5629.6
120	4301.6	5404.4
150	4393.2	5181.4
180	4491.8	4956.3
210	4596.8	4732.5
240	4708.8	4510
270	4830.8	4285.1
300	4961.7	4062
Geosyntec	3968.1	6340.8



Serial No. (short) 79
Full Serial No. PZ-036679

Regression Zero: 6405.4
Ambient Temp (Factory): 23.0
Measured Temp. (Geosyntec): 26.1

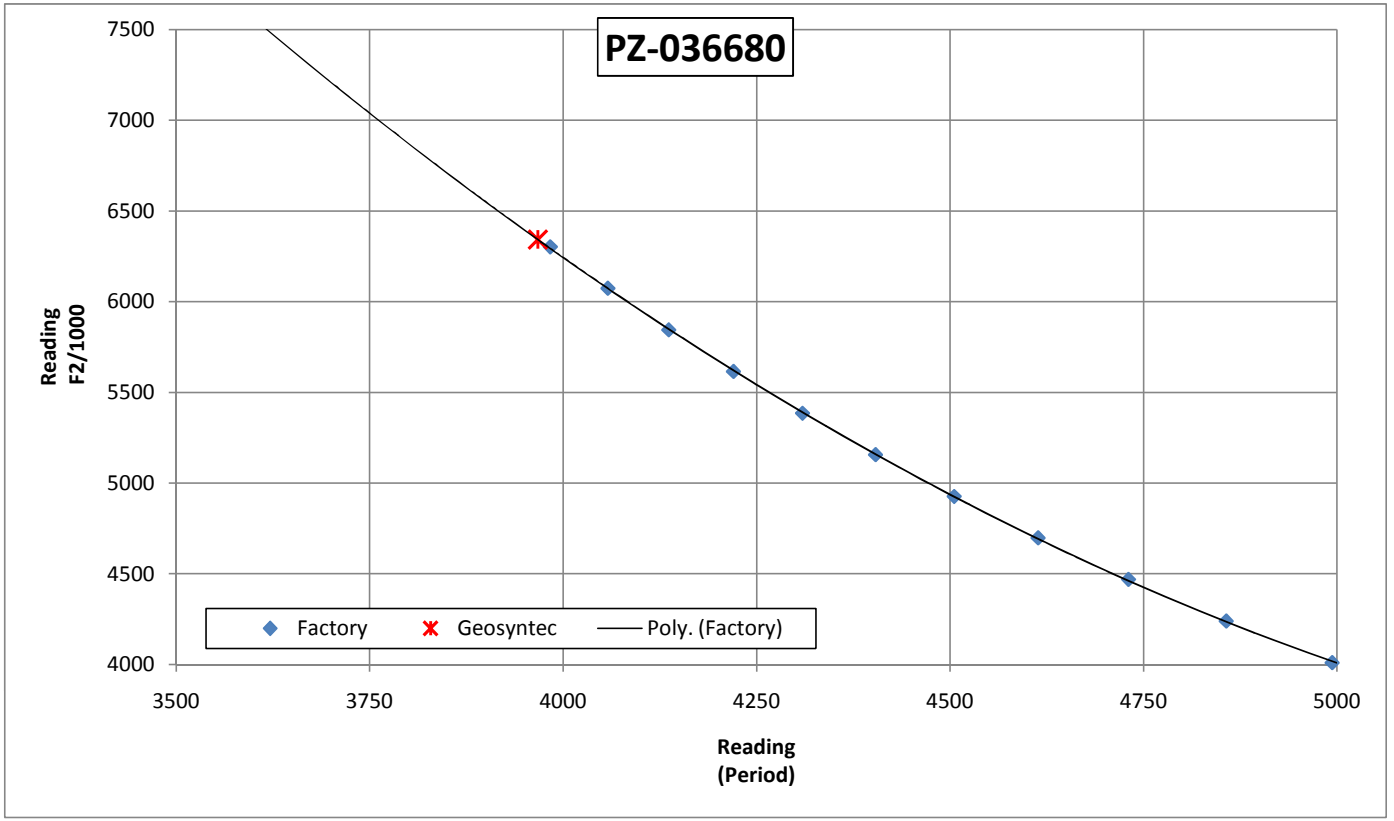
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3950.6	6407.4
30	4018	6194.1
60	4089.8	5978.6
90	4164.4	5766.4
120	4244	5552
150	4327.8	5339
180	4416.8	5126
210	4511.2	4913.7
240	4611.7	4702
270	4719.1	4490.3
300	4834.8	4278
Geosyntec	3935.7	6444.9



Serial No. (short) 80
Full Serial No. PZ-036680

Regression Zero:	6303.0
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.3

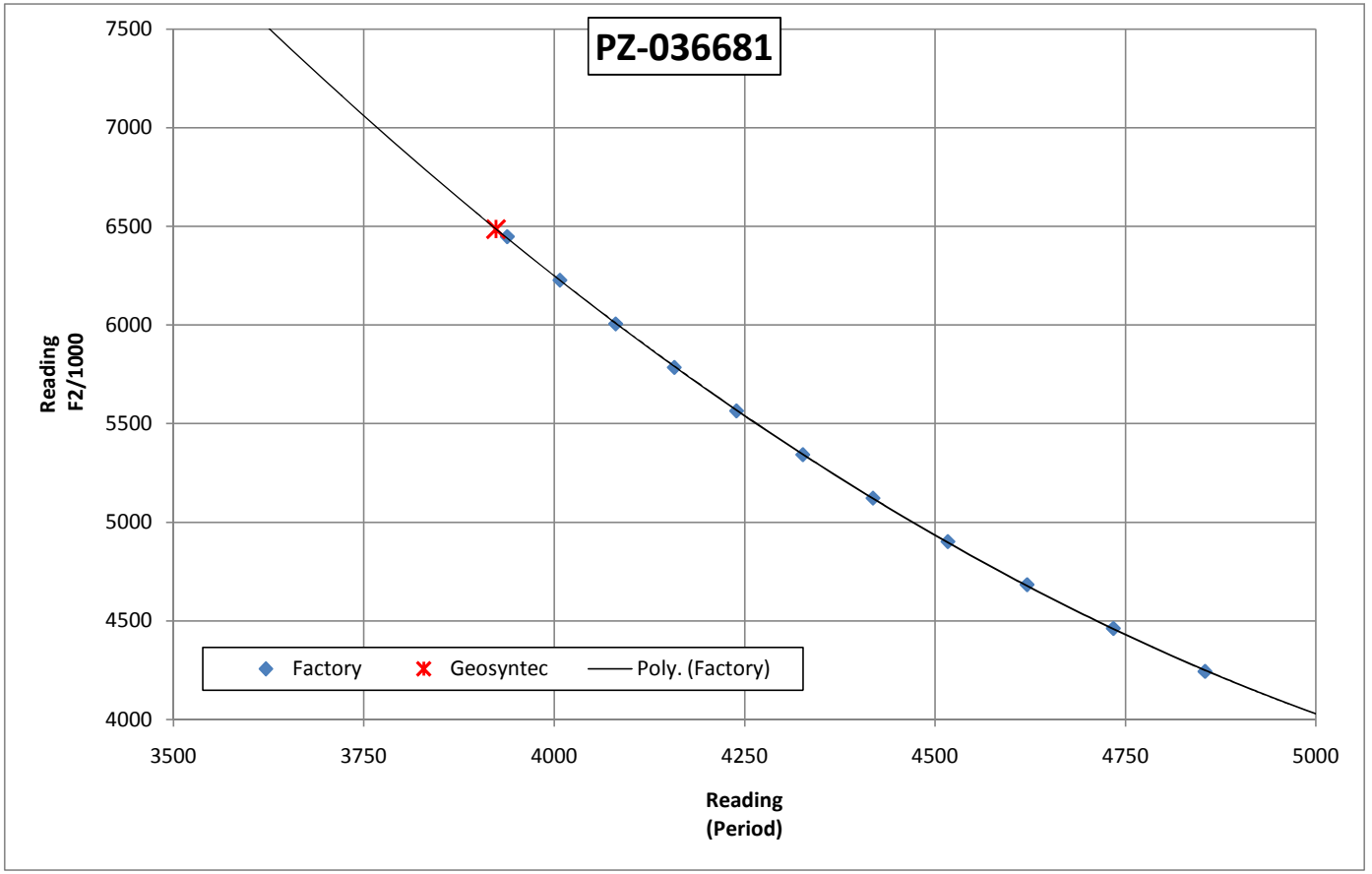
Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3983.2	6302.8
30	4057.6	6073.9
60	4136.3	5844.8
90	4220.1	5615.1
120	4309.2	5385.3
150	4403.7	5156.5
180	4505.4	4926.5
210	4613.8	4697.7
240	4730.6	4468.6
270	4857	4239
300	4993.9	4009.8
Geosyntec	3967.5	6342.8



Serial No. (short) 81
Full Serial No. PZ-036681

Regression Zero:	6446.7
Ambient Temp (Factory):	23.0
Measured Temp. (Geosyntec):	25.4

Applied (kPa)	Reading (Period)	Reading $F^2/1000$
0	3938.2	6447.8
30	4007.3	6227.1
60	4080.6	6005.5
90	4157.7	5784.8
120	4239.3	5564.2
150	4326.4	5342.5
180	4418.6	5122
210	4516.8	4901.7
240	4620.9	4683.2
270	4734.3	4461.5
300	4854.6	4243.2
Geosyntec	3923.5	6485.6



Calibration Sheet for Barometer

GEOKON 48 Spencer St. Lebanon, N.H. 03766 USA

Vibrating Wire Pressure Transducer Calibration Report

Type: D

Serial Number: 1029378

Pressure Range: 17 kPa

Date of Calibration: October 8, 2010

Temperature: 24.4 °C

†Barometric Pressure: 986.9 mbar

Calibration Instruction: VW Pressure Transducers

Technician: Elice

Applied Pressure (kPa)	Gage Reading 1st Cycle	Gage Reading 2nd Cycle	Average Gage Reading	Calculated Pressure (Linear)	Error Linear (%FS)	Calculated Pressure (Polynomial)	Error Polynomial (%FS)
0.0	4757	4754	4756	-0.026	-0.15	0.001	0.01
3.4	5278	5277	5278	3.417	0.10	3.416	0.10
6.8	5794	5793	5794	6.819	0.11	6.809	0.05
10.2	6306	6307	6307	10.20	0.01	10.19	-0.09
13.6	6821	6822	6822	13.60	-0.01	13.59	-0.05
17.0	7334	7337	7336	16.99	-0.07	17.00	-0.03

(kPa) Linear Gage Factor (G): -0.006595 **(kPa/ digit)** **Regression Zero:** 4759

Polynomial Gage Factors: **A:** 1.951E-08 **B:** 0.006359 **C:** -30.688

Thermal Factor (K): -0.02493 **(kPa/ °C)**

(psi) Linear Gage Factor (G): -0.0009565 **(psi/ digit)**

Polynomial Gage Factors: **A:** 2.82953E-09 **B:** 0.0009223 **C:** -4.4510

Thermal Factor (K): -0.003616 **(psi/ °C)**

Calculated Pressures: **Linear, $P = G(R_0 - R_1)+K(T_1 - T_0)-(S_1 - S_0)$****

Polynomial, $P = AR_1^2 + BR_1 + C +K(T_1 - T_0)-(S_1 - S_0)$**

†Barometric pressures are absolute. Barometric compensation is not required with vented and differential pressure transducers.

Factory Zero Reading:

GK-401 Pos. B or F(R_0): 4791 Temp(T_0): 21.4 °C †Baro(S_0): 990.3 mbar Date: December 20, 2010

*Initial zero readings must be established in the field following the procedures described in the Instruction Manual. If the Polynomial equation is used the field value of C must be calculated by plugging the initial zero reading into the polynomial equation with the value of P set to zero.

The above instrument was found to be in tolerance in all operating ranges.
The above named instrument has been calibrated by comparison with standards traceable to the NIST, in compliance with ANSI Z540-1.

Campbell Scientific Calibration Certificates of CR-1000 Data Logger

CAMPBELL SCIENTIFIC, INC.

815 W. 1800 N. Logan, Utah 84321-1784 (435)753-2342 Fax (435)750-9540 www.campbellsci.com

Certificate of Calibration

Customer Information:

Geosyntec Consultants
1255 Roberts Blvd Ste 200
Kennesaw, GA 30144

Contract/PO #: 9909898
RMA #: N/A

Model: CR1000 Serial Number: 35231

Temperature Option: Extended Temperature Tested
Test Panel Location: 7
CSI Calibration Number: 100722652
Calibration Procedures: TST12215A R12 TST12215C R15 PRC33A R16

Instrument Calibration Condition

Received Disposition: N/A
Returned Disposition: In Tolerance

Recommended Calibration Schedule

If the customer has not requested a calibration interval , a non-mandatory recommended interval is provided. Based on past experience and assumed normal usage, it is recommended that this instrument be calibrated by the due date stated below to insure sustained accuracy and reliable performance.

Calibration Date: 02-Sep-10 **Calibration Due Date:** 02-Sep-12

Report of Calibration Standards Used

Make/Model	Serial Number	Cal. Due Date	Trace Number
Krohn Hite 523	CH50193	29-Dec-10	CH50193
CSI Oscillator	05/27 05	12-Apr-11	05/27 05

CSI certifies the above instrument meets or exceeds published specifications and has been calibrated using standards and instruments whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant or a ratio calibration technique. The collective measurement uncertainty of the calibration process exceeds a 4:1 accuracy ratio. Policies and procedures at this facility comply with ISO-9001.

Instrument Data Report

Analog Inputs

S/N: 35231

Datalogger Option: Extended Temperature Tested

			Single-Ended (Full Scale)		Differential		
Range	**Input (mV)**	***Tolerance (mV)**	**Before (mV)**	**After (mV)**	**Before (mV)**	**After (mV)**	**Temp. (°C)**
6	5000	±3	N/A	5000.622	N/A	4999.496	26.2
6	-5000	±3	N/A	-5001.396	N/A	-5001.01	26.2
5	2500	±1.5	N/A	N/A	N/A	2499.916	26.2
4	250	±0.15	N/A	N/A	N/A	250.0455	26.2
3	25	±0.015	N/A	N/A	N/A	25.00556	26.2
2	7.5	±0.0045	N/A	N/A	N/A	7.501618	26.2
1	2.5	±0.0015	N/A	N/A	N/A	2.500684	26.2
1	-2.5	±0.0015	N/A	N/A	N/A	-2.501015	26.2
6	5000	±6	N/A	4999.919	N/A	4999.321	-25
6	5000	±6	N/A	4999.625	N/A	5000.335	50
6	5000	±9	N/A	4997.681	N/A	4999.317	-55
6	5000	±9	N/A	5000.285	N/A	5001.001	85

*Tolerance values are specified accuracy not including offset. Offset voltages are not included because an offset removal procedure is used to account for calibrator offset. Refer to CSI Process Control Document PRC7A.

Quiescent System Power

Tolerance Approx. (mA)	**As Received (mA)**	**As Returned (mA)**	**Temp. (°C)**
~0.75	N/A	0.64	26.2

Real-Time Clock

Tolerance (min/year)	**As Returned(min/year)**	**Temp. (°C)**
± 3 minutes	Within Tolerance	-55 to +85

Laboratory temperature and relative humidity at the time of calibration

Temperature (°C): 26.2 **Relative Humidity (%):** 30.2

Functions tested per test document (see page 1)

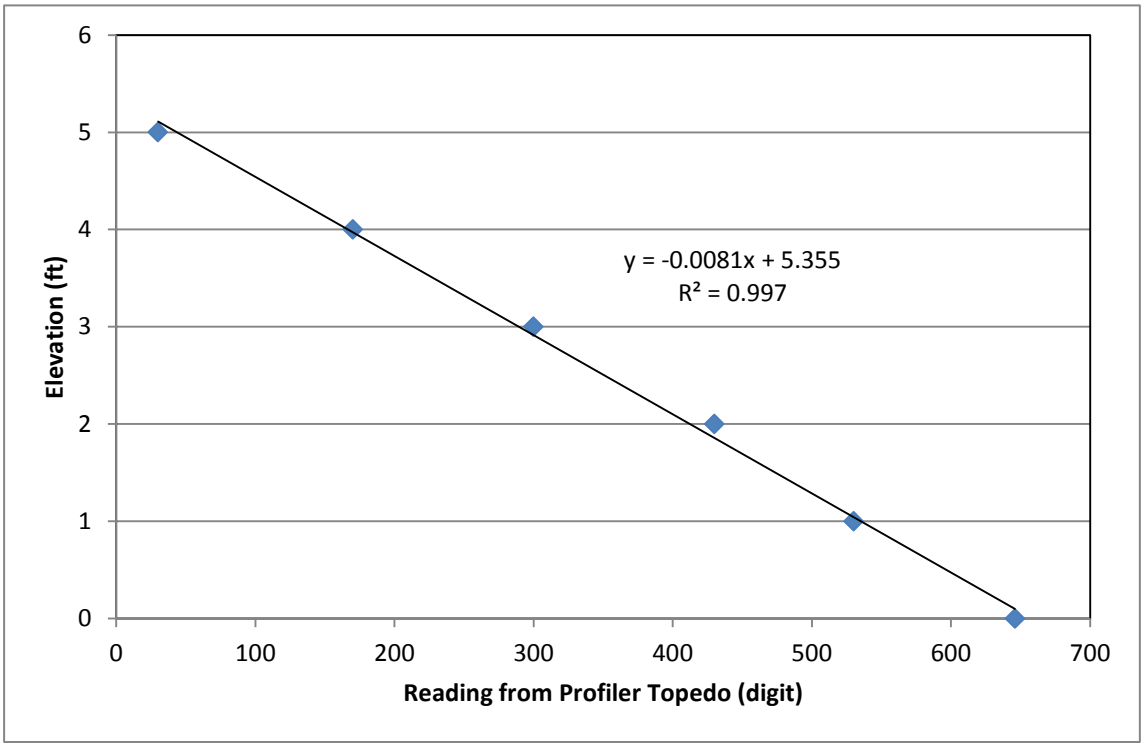
Excitation Channels
Analog Input Ranges
System Power
Pulse Counters
Period Averaging
Control Ports

Calibration Technician

Calibration of Profiler Pressure Transducer

Calibration of Settlement Profiler Sensor

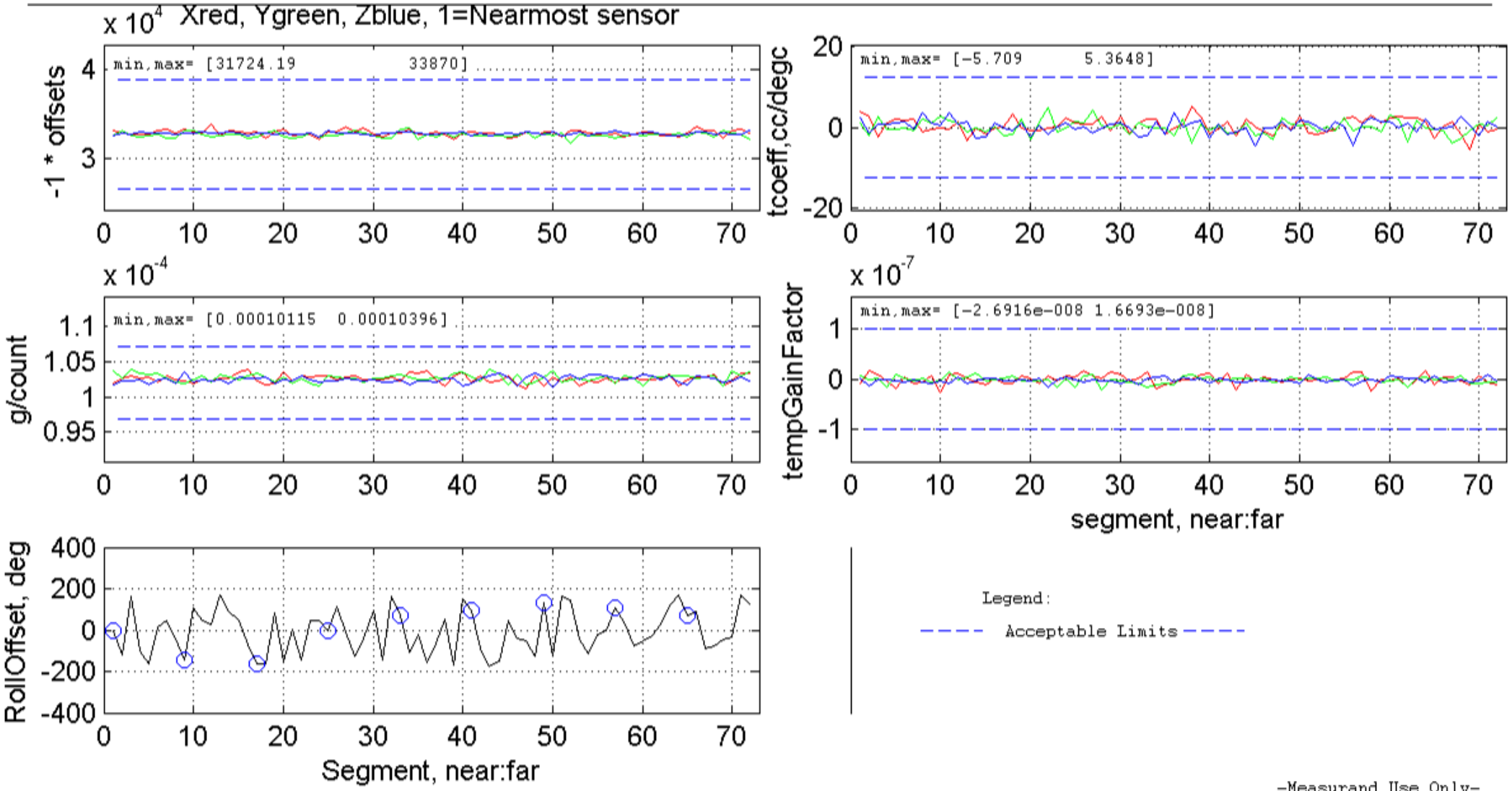
Elevation (ft)	Reading (digit)
0	646
1	530
2	430
3	300
4	170
5	30



SAA Calibration Sheet

SAA_view_fields, ver. 2.4; Array: SAAF_50037_72.cal; Field: All; Subarrays: All

[9 Sernums: 50037, 50041, 51077, 50586, 50587, 51255, 51353, 51354, 51093]; [Seglength_mm: 304.8]



Calibration Certificate:
All Calibration values are within acceptable limits.

Signed _____
Measurand Inc.
Date. 21-Apr-2011 13.39.23.

-Measurand Use Only-
TopCheck:
2011-04-21,13:31:11
degc: 21.625000
volt: 11.631200
curr: 178.344000
Chan: 0
Sernum0

ATTACHMENT B
Instrumentation Boring Logs

BORING LOG

Page 1 of 3

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G1
Start/End Date: 10/04/2010

Northing: NA
Easting: NA
Ground Elevation: NA

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0						SOLW	Hand Clear. 0 to 3 inches -topsoil, grass, roots. 3 inches to 5 feet -wet, very soft, light gray, silt-like grains, mothball odor.	HandAuger	
5			1-WH-WH-1	0		SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
			1-WH-1-WH	1		SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
10			WH-WH-WH-WH	0		SOLW	Wet, very soft, gray grading to white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	Solvay Waste
			WH-WH-WH-WH	0		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			WH-WH-WH-WH	0		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
15			WH-WH-WH-WH	0		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	
			WH-WH-WH-1	0		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	
20			WH-WH-WH-WH	0		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G1
Start/End Date: 10/04/2010

Northing: NA
Easting: NA
Ground Elevation: NA

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			WH-WH-WH-WH	0		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	
			WH-WH-WH-WH	0		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	
			WH-WH-WH-1	0		SOLW	Wet, very soft, light to dark gray-white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
25			WH-WH-WH-WH	0		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	
			WH-WH-1-WH	1		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	
30			WH-WH-1-WH	1		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	Solvay Waste
			WH-WH-1-WH	1		SOLW	Wet, very soft, white-light gray, silt-like grains, little sand-like grains in last 2 inches, mothball odor	2SS-140H	
			WH-WH-WH-WH	0		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	
35			WH-WH-WH-WH	0		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	
			WH-WH-WH-WH	0		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	
40			WH-WH-WH-WH	0		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G1
Start/End Date: 10/04/2010

Northing: NA
Easting: NA
Ground Elevation: NA

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			WH-WH-WH-WH	0		SOLW	Wet, very soft, white-light gray, silt-like grains, mothball odor	2SS-140H	
			WH-WH-1-WH	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand like grains, mothball odor	2SS-140H	Solvay Waste
			WH-WH-WH-WH	0		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand like grains, mothball odor	2SS-140H	
45.0									

Note: Null fields indicate PID reading not taken

BORING LOG

Page 1 of 3

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G2
Start/End Date: 09/28/2010 - 09/29/2010

Northing: 1120618.167
Easting: 907249.472
Ground Elevation: 437.349

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0						SOLW	Hand Clear. 0 to 3 inches - topsoil, grass, roots. 3 inches to 5 feet - wet, very soft, light gray, silt-like grains, mothball odor	HandAuger	
5			WR-WR-WR-WR	0	0.0	SOLW	Wet, very soft, tan-gray grading to white, silt-like grains, mothball odor	2SS-140H	
			WH-WH-1-WH	1	0.0	SOLW	Wet, very soft, light tan-light gray, silt-like grains, mothball odor	2SS-140H	
10			1-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, trace cementations, mothball odor	2SS-140H	Solvay Waste
			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
			WR-WR-WR-WR	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
15			WR-WR-1-WR	1	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
			1-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
20			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G2
Start/End Date: 09/28/2010 - 09/29/2010

Northing: 1120618.167
Easting: 907249.472
Ground Elevation: 437.349

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
			WH-WH-WH-1	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
25			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
30			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	Solvay Waste
			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
35			WH-1-10-8	11	0.0	SOLW	0 to 12 inches: Wet, very soft, gray-white, silt-like grains, mothball odor 12 to 24 inches: wet, dense, dark gray, sand-like grains, little silt-like grains, mothball odor	2SS-140H	
			1-1-1-2	2	0.0	SOLW	Wet, soft, dark gray, silt-like grains and sand-like grains, mothball odor	2SS-140H	
			1-WH-1-1	1	0.0	SOLW	Wet, very soft, dark gray, silt-like grains and sand-like grains, mothball odor	2SS-140H	
40									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G2
Start/End Date: 09/28/2010 - 09/29/2010

Northing: 1120618.167
Easting: 907249.472
Ground Elevation: 437.349

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			1-WH-1-1	1	0.0	SOLW	Wet, very soft, dark gray, silt-like grains and sand-like grains, mothball odor	2SS-140H	
			WH-6-1-2	7	0.0	SOLW	Wet, medium stiff, light gray-white, silt-like grains and coarse sand-like grains, mothball odor	2SS-140H	Solvay Waste
			WH-WH-WH-WH	0		SOLW	Wet, very soft, light gray-white, silt-like grains and coarse sand-like grains, mothball odor	2SS-140H	
45.0									

Note: Null fields indicate PID reading was not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G3
Start/End Date: 10/06/2010

Northing: 1120086.031
Easting: 906780.743
Ground Elevation: 431.323

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges
Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0						SOLW	Hand Clear. 0 to 3 inches -topsoil, grass, roots. 3 inches to 5 feet -wet, very soft, light gray, silt-like grains, mothball odor	HandAuger	
5			WH-WH-WH-WH	0			No Recovery	2SS-140H	
			WH-WH-WH-WH	0		SOLW	Wet, very soft, white, silt-like grains, mothball odor	2SS-140H	
10			WH-1-1-1	2		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	Solvay Waste
			WH-1-1-1	2		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			WH-1-WH-1	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
15			WH-WH-WH-WH	0		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			WH-1-WH-WH	1		SOLW	Wet, very soft, light to dark gray-tan, silt-like grains, some sand-like grains, trace cementations, mothball odor	2SS-140H	
20			1-WH-WH-WH	0		SOLW	Wet, very soft, light to dark gray-tan, silt-like grains, some sand-like grains, trace cementations, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G3
Start/End Date: 10/06/2010

Northing: 1120086.031
Easting: 906780.743
Ground Elevation: 431.323

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			1-WH-WH-WH	0		SOLW	Wet, very soft, light to dark gray-tan, silt-like grains, some sand-like grains, trace cementations, mothball odor	2SS-140H	
			1-WH-WH-WH	0		SOLW	Wet, very soft, gray-tan, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			WH-WH-WH-WH	0		SOLW	Wet, very soft, gray-tan, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
25			WH-WH-WH-WH	0		SOLW	Wet, very soft, gray-tan, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			WH-WH-WH-1	0		SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
30			WH-1-WH-1	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, little sand-like grains, trace cementations.	2SS-140H	Solvay Waste
			1-1-WH-1	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, little sand-like grains, trace cementations.	2SS-140H	
			1-WH-WH-1	0		SOLW	Wet, very soft, light to dark gray, silt-like grains, little sand-like grains, trace cementations.	2SS-140H	
35			1-1-2-1	3		SOLW	Wet, soft, light to dark gray, silt-like grains, little sand-like grains, trace cementations.	2SS-140H	
			1-WH-WH-WH	0		SOLW	Wet, very soft, dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
40			WH-WH-WH-WH	0		SOLW	Wet, very soft, dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G3
Start/End Date: 10/06/2010
Weather:

Northing: 1120086.031
Easting: 906780.743
Ground Elevation: 431.323

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			WH-WH-WH-WH	0		SOLW	Wet, very soft, dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			WH-1-WH-WH	1		SOLW	Wet, very soft, light gray, silt-like grains, mothball odor	2SS-140H	Solvay Waste
			1-WH-WH-WH	0		SOLW	Wet, very soft, light gray, silt-like grains, mothball odor	2SS-140H	
45.0									

Note: Null fields indicate PID reading not taken

BORING LOG

Page 1 of 3

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G4
Start/End Date: 09/30/2010 - 10/01/2010

Northing: 1119546.742
Easting: 906312.648
Ground Elevation: 429.367

Drilling Company: Atlantic Testing
Driller: M. Childs
Logging Company: PARSONS
Geologist: A. Menges
Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0						SOLW	Hand Clear. 0 to 3 inches -topsoil, grass, roots. 3 inches to 5 feet -wet, very soft, light gray, silt-like grains, mothball odor	HandAuger	Solvay Waste
5			1-WH-WH-WH	0		ML/SOLW	0 to 2 inches: Wet, soft, brown, SILT, trace organics. 2 to 4 inches: wet, very soft, white, silt-like grains, mothball odor	2SS-140H	Silt
			WH-1-WH-WH	1		SOLW	Wet, very soft, white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
10			WH-WH-1-WH	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, little sand-like grains, mothball odor	2SS-140H	
			1-WH-WH-WH	0		SOLW	Wet, very soft, light to dark gray, silt-like grains, little sand-like grains, mothball odor	2SS-140H	Solvay Waste
			WH-WH-WH-WH	0		SOLW	Wet, very soft, white, silt-like grains, mothball odor	2SS-140H	
15			WH-WH-WH-1	0		SOLW	Wet, very soft, light to dark gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	
			1-WH-WH-WH	0		SOLW	Wet, very soft, light to dark gray, silt-like grains, some sand-like grains, trace cementations in last 4 inches, mothball odor	2SS-140H	
20			WH-WH-WH-WH	0		SOLW	Wet, very soft, gray-tan, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G4
Start/End Date: 09/30/2010 - 10/01/2010

Northing: 1119546.742
Easting: 906312.648
Ground Elevation: 429.367

Drilling Company: Atlantic Testing
Driller: M. Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			WH-WH-WH-WH	0		SOLW	Wet, very soft, gray-tan, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			WH-1-WH-WH	1		SOLW	Wet, very soft, gray-tan, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			WH-1-1-1	2		SOLW	Wet, very soft, light to dark gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	
25			WH-1-1-1	2		SOLW	Wet, very soft, light to dark gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	
			1-1-1-WH	2		SOLW	Wet, very soft, light to dark gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	
30			1-2-4-1	6		SOLW	Wet, medium stiff, light to dark gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	Solvay Waste
			3-3-4-8	7		SOLW	Wet, loose, dark gray, sand-like grains, some silt-like grains, some cementations in bottom 4 inches, mothball odor	2SS-140H	
			2-5-6-3	11		SOLW	Wet, stiff, light to dark gray, silt-like grains, some sand-like grains, cemented crust in bottom 2 inches, mothball odor	2SS-140H	
35			2-2-2-2	4		SOLW	Wet, soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			1-1-1-2	2		SOLW	Wet, soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
40			1-1-3-4	4		SOLW	Wet, soft, light to dark gray, silt-like grains, some cementations throughout, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G4
Start/End Date: 09/30/2010 - 10/01/2010

Northing: 1119546.742
Easting: 906312.648
Ground Elevation: 429.367

Drilling Company: Atlantic Testing
Driller: M. Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			1-1-3-4	4		SOLW	Wet, soft, light to dark gray, silt-like grains, some cementations throughout, mothball odor	2SS-140H	
			3-3-1-2	4		SOLW	Wet, soft, light to dark gray, silt-like grains, some cementations throughout, mothball odor	2SS-140H	Solvay Waste
			1-WH-1-1	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
45.0									

Note: Null fields indicate PID reading not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G5
Start/End Date: 09/27/2010 - 09/28/2010

Northing: 1119899.611
Easting: 907477.79
Ground Elevation: 438.588

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0						SOLW	Hand Clear. o to 3 inches -topsoil, grass, roots. 3 inches to 5 feet -wet, very soft, light gray, silt-like grains, mothball odor	HandAuger	
5			1-WH-WH-WH	0		SOLW	Wet, very soft, gray-white, silt-like grains, trace cementations, mothball odor	2SS-140H	
			1-WH-WH-WH	0		SOLW	Wet, very soft, light brown grading to gray-white, silt-like grains, some sand-like grains, trace cementations, mothball odor	2SS-140H	
10			1-1-WH-WH	1		SOLW	Wet, very soft, light to dark gray-white, silt-like grains, trace sand-like grains, trace cementations, mothball odor	2SS-140H	Solvay Waste
			1-WH-WH-WH	0		SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
			WH-WH-WH-WH	0		SOLW	Wet, very soft, light to dark gray, silt-like grains, some sand-like grains, trace cementations, mothball odor	2SS-140H	
15			WH-WH-1-W1	1		SOLW	Wet, very soft, light to dark gray-white, silt-like grains, some cemented chunks, mothball odor	2SS-140H	
			2-1-1-2	2		SOLW	Wet, very soft, light to dark gray, silt and sand-like grains, some cementations, mothball odor	2SS-140H	
20			WH-1-WH-WH	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G5
Start/End Date: 09/27/2010 - 09/28/2010

Northing: 1119899.611
Easting: 907477.79
Ground Elevation: 438.588

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			WH-1-WH-WH	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			1-1-WH-WH	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			WH-1-WH-1	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, some sand-like grains, trace cemented chunks, mothball odor	2SS-140H	
25			WH-WH-1-1	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, some sand-like grains, trace cemented chunks, mothball odor	2SS-140H	
			1-1-2-1	3		SOLW	Wet, very soft, light to dark gray, silt-like grains, some sand-like grains, trace cemented chunks, mothball odor	2SS-140H	
30			1-1-1-2	2		SOLW	Wet, very soft, light to dark gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	Solvay Waste
			2-3-3-3	6		SOLW	Wet, very soft, light-dark gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	
			1-WH-1-2	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
35			5-4-5-2	9		SOLW	Wet, stiff, light to dark gray, silt-like grains and sand-like grains, some cemented chunks, mothball odor	2SS-140H	
			3-5-7-4	13		SOLW	Wet, stiff, light to dark gray, silt-like grains and sand-like grains, some cemented chunks, mothball odor	2SS-140H	
			4-19-6-6	25		SOLW	Wet, very stiff, gray, silt-like grains, some cementations and crust, mothball odor	2SS-140H	
40									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G5
Start/End Date: 09/27/2010 - 09/28/2010

Northing: 1119899.611
Easting: 907477.79
Ground Elevation: 438.588

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			4-19-6-6	25		SOLW	Wet, very stiff, gray, silt-like grains, some cementations and crust, mothball odor	2SS-140H	
			6-12-3-3	15		SOLW	Wet, stiff, light to dark gray, silt-like grains, trace cementations, mothball odor	2SS-140H	Solvay Waste
			3-2-1-1	3		SOLW	Wet, soft, light to dark gray, silt-like grains, trace cementations, mothball odor	2SS-140H	
45.0									

Note: Null fields indicate PID reading not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G6
Start/End Date: 10/05/2010

Northing: 1120825.273
Easting: 905916.934
Ground Elevation: 430.675

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges
Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0						SOLW	Hand Clear. 0 to 3 inches -topsoil, grass, roots. 3 inches to 5 feet -wet, very soft, light gray, silt-like grains, mothball odor	HandAuger	
5			WH-1-WH-WH	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, little sand-like grains, mothball odor	2SS-140H	
			WH-1-1-WH	2		SOLW	Wet, very soft, light to dark gray, silt-like grains, little sand-like grains, mothball odor	2SS-140H	
10			1-WH-WH-1	0		SOLW	Wet, very soft, light gray-white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	Solvay Waste
			1-WH-WH-WH	0		SOLW	Wet, very soft, light gray-white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			1-WH-1-WH	1		SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
15			1-WH-WH-1	0		SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
			1-1-1-1	2		SOLW	Wet, very soft, light gray-white, silt-like grains and sand-like grains, mothball odor	2SS-140H	
20			1-WH-WH-WH	0		SOLW	Wet, very soft, white, silt-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G6
Start/End Date: 10/05/2010

Northing: 1120825.273
Easting: 905916.934
Ground Elevation: 430.675

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			1-WH-WH-WH	0		SOLW	Wet, very soft, white, silt-like grains, mothball odor	2SS-140H	
			WH-2-6-10	8		SOLW	Wet, stiff, tan-white, silt-like grains and coarse sand-like grains, mothball odor	2SS-140H	
			10-6-1-1	7		SOLW	Wet, stiff, tan-white, coarse sand-like grains, mothball odor	2SS-140H	
25			1-1-1-WH	2		SOLW	Wet, very soft, white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			2-5-8-3	13		SOLW	Wet, medium dense, white-tan, sand-like grains, some silt-like grains, mothball odor	2SS-140H	
30			2-2-5-4	7		SOLW	Wet, loose, white-tan, sand-like grains and silt-like grains, some cementations, mothball odor	2SS-140H	Solvay Waste
			2-1-WH-1	1		SOLW	Wet, very soft, white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			1-2-1-2	3		SOLW	Wet, soft, white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
35			2-1-2-3	3		SOLW	Wet, very loose, dark gray, coarse sand-like grains, some silt-like grains, mothball odor	2SS-140H	
			2-2-2-2	4		SOLW	Wet, soft, dark gray-white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
40			1-2-2-3	4		SOLW	Wet, soft, dark gray-white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G6
Start/End Date: 10/05/2010

Northing: 1120825.273
Easting: 905916.934
Ground Elevation: 430.675

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges
Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			1-2-2-3	4		SOLW	Wet, soft, dark gray-white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			1-WH-WH-WH	0		SOLW	Wet, very soft, dark gray-white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	Solvay Waste
			1-1-WH-1	1		SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
45.0									

Note: Null fields indicate PID reading not taken

BORING LOG

Page 1 of 3

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G7
Start/End Date: 09/29/2010

Northing: 1121174.627
Easting: 907076.114
Ground Elevation: 429.39

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges
Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0						SOLW	Hand Clear. 0 to 3 inches -topsoil, grass, roots. 3 inches to 5 feet -wet, very soft, light gray, silt-like grains, mothball odor	HandAuger	
5			1-WH-WH-WH	0	0.0	SOLW	Wet, very soft, gray-white, silt-like grains, mothball odor	2SS-140H	
			1-WH-1-1	1	0.0	SOLW	Wet, very soft, gray-white, silt-like grains, some sand-like grains in bottom 1 inch, mothball odor	2SS-140H	
10			WH-WH-3-1	3	0.0	SOLW	Wet, soft, white-light gray, silt-like grains, trace sand-like grains, trace cementations. mothball odor	2SS-140H	Solvay Waste
			WH-WH-1-1	1	0.0	SOLW	Wet, very soft, white-light gray, silt-like grains, trace sand-like grains, trace cementations, mothball odor	2SS-140H	
			1-WH-WH-1	0	0.0	SOLW	Wet, very soft, white-light gray, silt-like grains, trace sand-like grains, trace cementations, mothball odor	2SS-140H	
15			WH-1-WH-1	1		SOLW	Wet, very soft, gray-white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			1-1-1-1	2	0.0	SOLW	Wet, very soft, white-light gray, silt-like grains, little sand-like grains, mothball odor	2SS-140H	
20			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, white, silt-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G7
Start/End Date: 09/29/2010

Northing: 1121174.627
Easting: 907076.114
Ground Elevation: 429.39

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, white, silt-like grains, mothball odor	2SS-140H	
			1-1-WH-WH	1	0.0	SOLW	Wet, very soft, white, silt-like grains, mothball odor	2SS-140H	
			1-WH-1-1	1	0.0	SOLW	Wet, very soft, white, silt-like grains, some sand-like grains, trace cementations	2SS-140H	
25			WH-1-1-1	2	0.0	SOLW	Wet, very soft, white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			2-3-2-1	5	0.0	SOLW	Wet, medium stiff, white-gray, silt-like grains and coarse sand-like grains, mothball odor	2SS-140H	
30			2-1-6-3	7	0.0	SOLW	Wet, medium stiff, white-dark gray, silt-like grains, sand-like grains, some cementations, mothball odor	2SS-140H	Solvay Waste
			3-2-3-1	5	0.0	SOLW	Wet, medium stiff, white-gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			WH-WH-WH-1	0	0.0	SOLW	Wet, soft, white-gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
35			WH-WH-1-WH	1	0.0	SOLW	Wet, soft, white-gray, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			WH-WH-3-1	3	0.0	SOLW	Wet, soft, white-gray grading to tan, silt-like grains, some sand-like grains, trace cementations, mothball odor	2SS-140H	
40			1-2-10-13	12	0.0	SOLW	Wet, stiff, light to dark gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G7
Start/End Date: 09/29/2010

Northing: 1121174.627
Easting: 907076.114
Ground Elevation: 429.39

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges
Rig Type: CME 850

Total Depth: 45.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			1-2-10-13	12	0.0	SOLW	Wet, stiff, light to dark gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	
			13-26-23-19	49	0.0	SOLW	Wet, very stiff, light to dark gray, silt-like grains and sand-like grains, some hard cementations in last 4 inches	2SS-140H	Solvay Waste
			WH-WH-5-3	5		SOLW	Wet, soft, dark gray, silt-like grains, some coarse sand-like grains, mothball odor	2SS-140H	
45.0									

Note: Null fields indicate PID readings not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G8
Start/End Date: 11/02/2010 - 11/03/2010

Northing: 1121394.827
Easting: 906312.052
Ground Elevation: 414.05

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges
Rig Type: CME 850

Total Depth: 50.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0			4-4-4-4	8	0.0	ML	Moist, stiff, red-brown, SILT, trace clay, trace fine gravel, trace organics	2SS-140H	
			3-7-4-5	11	0.0	ML	Moist, stiff, red-brown, SILT, trace clay, trace fine to coarse gravel	2SS-140H	
5			5-7-15-14	22	0.0	ML	Moist, very stiff, red-brown, SILT, trace clay, trace fine to coarse gravel	2SS-140H	
			9-12-11-11	23	--		No Recovery	2SS-140H	
			10-14-11-12	25	0.0	ML	Moist, very stiff, red-brown, SILT, trace clay, trace fine to coarse gravel	2SS-140H	
10			16-16-21-20	37	0.0	ML	Moist, hard, red-brown, SILT, trace clay, trace fine to coarse gravel	2SS-140H	Fill
			12-14-16-14	30	0.0	ML	0 to 16 inches: Moist, very stiff, red-brown, SILT, trace fine to coarse gravel. 16 to 22 inches: moist, stiff, brown, SILT, little fine to coarse sand	2SS-140H	
15			21-20-27-23	47	0.0	ML	Moist, hard red-brown, SILT, trace fine to coarse gravel	2SS-140H	
			9-12-15-18	27	0.0	ML	Moist, very stiff, brown, SILT, trace fine gravel, trace fine sand	2SS-140H	
			23-17-10-7	27	0.0	ML	Moist, very stiff, brown, SILT, trace fine gravel, trace fine sand	2SS-140H	
20									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G8
Start/End Date: 11/02/2010 - 11/03/2010

Northing: 1121394.827
Easting: 906312.052
Ground Elevation: 414.05

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 50.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			6-9-12-14	21	0.0	ML	Moist, very stiff, brown, SILT, trace fine gravel, trace fine sand	2SS-140H	Fill
			4-6-7-7	13	0.0	ML/SM	Moist, stiff, brown, SILT and fine Sand, trace fine gravel in top 3 inches.	2SS-140H	Silt&Sand
25			7-7-7-9	14	0.0	ML/SM	Moist, stiff, brown, SILT and fine Sand	2SS-140H	
			4-4-5-6	9		ML/SM	Moist, stiff, brown, SILT and fine Sand	2SS-140H	
			58-30-21-16	51	0.0	ML/SM-GW	0 to 4 inches: Moist, hard, brown, SILT and fine Sand. 4 to 12 inches: moist, dense, gray, coarse GRAVEL	2SS-140H	
30			19-18-17-14	35	0.0	GW	Moist, dense, gray, coarse GRAVEL	2SS-140H	Fill
			2-6-6-7	12	0.0	ML	Moist, stiff, red-brown, SILT, little fine to coarse sand, trace fine to coarse gravel	2SS-140H	
35			9-7-7-6	14	0.0	ML	Moist, stiff, red-brown, SILT, little fine to coarse sand, trace fine to coarse gravel	2SS-140H	
			10-6-7-8	13	0.0	ML	Moist, stiff, red-brown, SILT, little fine to coarse sand, trace fine to coarse gravel	2SS-140H	
			10-7-7-6	14	0.0	ML	Moist, stiff, red-brown, SILT, little fine to coarse sand, trace fine to coarse gravel	2SS-140H	
40									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G8
Start/End Date: 11/02/2010 - 11/03/2010

Northing: 1121394.827
Easting: 906312.052
Ground Elevation: 414.05

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges
Rig Type: CME 850

Total Depth: 50.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			7-8-7-5	15	0.0	ML	Wet, stiff, red-brown, SILT, little fine to coarse sand, trace fine to coarse gravel	2SS-140H	Fill
			4-6-6-10	12	0.0	ML	Wet, stiff, red-brown, SILT, little fine to coarse sand, trace fine to coarse gravel	2SS-140H	
45			14-23-29-26	52	0.0	ML	Wet, hard, red-brown, SILT, little fine to coarse sand, trace fine to coarse gravel	2SS-140H	
			5-10-13-16	23	0.0	ML	Wet, very stiff, red-brown, SILT, little fine to coarse sand, trace fine to coarse gravel	2SS-140H	
			13-26-25-20	51	0.0	ML	Wet, hard, red-brown, SILT, little fine to coarse sand, trace fine to coarse gravel	2SS-140H	
50.0									

Note: Null fields indicate PID reading not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G9
Start/End Date: 11/04/2010 - 11/05/2010

Northing: 1121108.306
Easting: 905641.589
Ground Elevation: 415.715

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges
Rig Type: CME 850

Total Depth: 50.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0			2-3-3-5	6		ML	Moist, medium stiff, red-brown, SILT, some clay, trace fine to coarse gravel	2SS-140H	
			4-4-5-10	9		ML	Moist, stiff, red-brown, SILT, some clay, trace fine to coarse gravel	2SS-140H	
5			6-6-7-10	13		ML	Moist, stiff, red-brown, SILT, some clay, trace fine to coarse gravel	2SS-140H	
			10-13-8-6	21		ML	Moist, very stiff, red-brown, SILT, some clay, trace fine to coarse gravel	2SS-140H	
			6-10-6-6	16		ML	Moist, stiff, red-brown, SILT, some clay, trace fine to coarse gravel	2SS-140H	
10			16-8-7-8	15		ML	Moist, stiff, red-brown, SILT, some clay, trace fine to coarse gravel	2SS-140H	Fill
			7-7-9-11	16		ML	Moist, very stiff, red-brown, SILT, some clay, trace fine to coarse gravel	2SS-140H	
15			10-11-11-12	22		ML	Moist, very stiff, red-brown, SILT, some clay, trace fine to coarse gravel	2SS-140H	
			10-13-15-17	25		ML	Moist, very stiff, red-brown, SILT, some clay, trace fine to coarse gravel	2SS-140H	
20			10-35-21-11	56		ML	Moist, hard, red-brown, SILT, some clay, trace fine to coarse gravel	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G9
Start/End Date: 11/04/2010 - 11/05/2010

Northing: 1121108.306
Easting: 905641.589
Ground Elevation: 415.715

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 50.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			26-12-10-10	22		ML	0 to 15 inches: Moist, very stiff, red-brown, SILT, trace clay, trace fine to coarse gravel. 15 to 20 inches: moist, stiff, brown, SILT and fine Sand	2SS-140H	Fill
			10-7-8-7	15		ML/SM	Wet, stiff, brown, SILT and fine Sand	2SS-140H	
25			4-8-8-7	16		ML/SM	Wet, stiff, brown, SILT and fine Sand	2SS-140H	Silt&Sand
			2-4-5-4	9		ML/SM	Wet, stiff, brown, SILT and fine Sand	2SS-140H	
			2-5-6-13	11		ML/SM	Wet, stiff, brown, SILT and fine Sand	2SS-140H	
30			13-15-28-20	43		ML	Moist, dense, gray, coarse GRAVEL, some silt	2SS-140H	
			16-15-15-61	30		ML	Moist, very stiff, gray-brown, SILT and fine to coarse Gravel	2SS-140H	
35			41-27-27-18	54		ML	Moist, hard, gray-brown, SILT and fine to coarse Gravel	2SS-140H	Fill
			8-7-8-8	15		ML	Moist, very stiff, gray-brown, SILT and fine to coarse Gravel	2SS-140H	
			14-9-10-16	19		ML	Moist, very stiff, gray-brown, SILT and fine to coarse Gravel	2SS-140H	
40									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: PZ-G9
Start/End Date: 11/04/2010 - 11/05/2010

Northing: 1121108.306
Easting: 905641.589
Ground Elevation: 415.715

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges
Rig Type: CME 850

Total Depth: 50.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			16-14-14-12	28			No Recovery	2SS-140H	Fill
			3-6-6-8	12		ML	Wet, stiff, gray-brown, SILT and fine to coarse Gravel	2SS-140H	
45			4-5-5-10	10		ML	Wet, stiff, gray-brown, SILT and fine to coarse Gravel	2SS-140H	
			4-4-5-5	9		ML	Wet, stiff, gray-brown, SILT and fine to coarse Gravel	2SS-140H	
50.0			5-5-5-5	10		ML	Wet, stiff, gray-brown, SILT and fine to coarse Gravel	2SS-140H	

Note: Null fields indicate PID reading not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G1
Start/End Date: 10/07/2010 - 10/11/2010

Northing: 1120002.032
Easting: 906806.194
Ground Elevation: 432.11

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 67.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0						SOLW	Hand Clear. 0 to 3 inches -topsoil, grass, roots. 3 inches to 5 feet -wet, very soft, light gray, silt-like grains, mothball odor	HandAuger	
5			1-WH-WH-WH	0	0.0	SOLW	Wet, very soft, white, silt-like grains, mothball odor	2SS-140H	
			WH-WH-1-WH	1	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
10			1-1-WH-1	1	0.0	SOLW	Wet, very soft, light to dark gray-tan, silt-like grains, little sand-like grains, mothball odor	2SS-140H	Solvay Waste
			1-WH-1-WH	1	0.0	SOLW	Wet, very soft, light to dark gray-tan, silt-like grains, trace coarse sand-like grains in bottom 2 inches, mothball odor	2SS-140H	
			2-2-1-1	3	0.0	SOLW	Wet, very loose, light gray, coarse, sand-like grains, mothball odor	2SS-140H	
15			1-WH-1-WH	1	0.0	SOLW	Wet, very soft, light to dark gray-tan, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			1-WH-1-WH	1	0.0	SOLW	Wet, very soft, light to dark gray-tan, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
20			1-1-1-1	2	0.0	SOLW	Wet, very soft, light to dark gray-tan, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G1
Start/End Date: 10/07/2010 - 10/11/2010

Northing: 1120002.032
Easting: 906806.194
Ground Elevation: 432.11

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 67.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			1-1-1-1	2	0.0	SOLW	Wet, very soft, light to dark gray-tan, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			1-WH-WH-1	0	0.0	SOLW	Wet, very soft, light to dark gray-tan, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
			1-WH-WH-1	0	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
25			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
			WH-1-1-1	2	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, little sand-like grains, mothball odor	2SS-140H	
30			WH-2-4-2	6	0.0	SOLW	Wet, medium stiff, light to dark gray, silt-like grains, some coarse sand-like grains in bottom 4 inches, mothball odor	2SS-140H	Solvay Waste
			5-14-10-11	24	0.0	SOLW	Wet, very stiff, light to dark gray, silt-like grains, little sand-like grains, mothball odor	2SS-140H	
			2-1-1-2	2	0.0	SOLW	Wet, soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
35			1-WH-1-1	1	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
			1-WH-1-1	1	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
40			1-WH-WH-1	0	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G1
Start/End Date: 10/07/2010 - 10/11/2010

Northing: 1120002.032
Easting: 906806.194
Ground Elevation: 432.11

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 67.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			1-WH-WH-1	0	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
			WH-WH-1-WH	1	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
			WH-WH-WH-1	0	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
45			1-WH-1-1	1	0.0	SOLW	Wet, very soft, dark gray, silt-like grains, mothball odor	2SS-140H	
			WH-1-1-WH	2	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, some coarse sand-like grains in bottom 4 inches, mothball odor	2SS-140H	
50			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, dark gray, silt-like grains, mothball odor	2SS-140H	Solvay Waste
			WR-1-WH-1	1	0.0	SOLW	Wet, very soft, dark gray, silt-like grains, mothball odor	2SS-140H	
			13-15-13-8	28	0.0	SOLW	Wet, medium dense, dark gray, coarse sand-like grains, some cementations throughout, mothball odor	2SS-140H	
55			2-1-WH-3	1	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
			1-1-WH-1	1	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
60			WH-WH-WH-1	0	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G1
Start/End Date: 10/07/2010 - 10/11/2010

Northing: 1120002.032
Easting: 906806.194
Ground Elevation: 432.11

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 67.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
60			WH-WH-WH-1	0	0.0	SOLW	Wet, very soft, light to dark gray, silt-like grains, mothball odor	2SS-140H	
			1-4-10-14	14	0.0	SOLW/ML	0 to 18 inches -Wet, stiff, light to dark gray, silt-like grains, mothball odor. 18 to 24 inches -wet, stiff, brown, SILT, trace sand, trace gravel in last 2 inches, mothball odor	2SS-140H	Solvay Waste
			11-13-14-8	27	0.0	GM	Wet, medium dense, brown, fine to coarse GRAVEL and fine to coarse Sand, some silt, slight mothball odor	2SS-140H	
65			3-4-9-8	13	0.0	GM	Wet, very stiff, brown, fine to coarse GRAVEL and fine to coarse Sand, some silt, slight mothball odor	2SS-140H	Gravel&Sand
67.0									

Note: Null fields indicate PID readings not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G2
Start/End Date: 10/14/2010

Northing: 1120652.906
Easting: 906602.281
Ground Elevation: 426.999

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 67.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0						SOLW	Hand Clear. 0 to 3 inches -topsoil, grass, roots. 3 inches to 5 feet -wet, very soft, light gray, silt-like grains, mothball odor	HandAuger	
5			WH-WH-WH-W	0	0.0	SOLW	Moist, very soft, white-light gray, silt-like grains, trace organic material	2SS-140H	
10			WH-WH-WH-WH	0	0.0	SOLW	Moist, very soft, white-light gray, silt-like grains	2SS-140H	Solvay Waste
15			WH-WH-WH-WH	0	0.0	SOLW	Moist, very soft, white-light gray, silt-like grains	2SS-140H	
20									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G2
Start/End Date: 10/14/2010

Northing: 1120652.906
Easting: 906602.281
Ground Elevation: 426.999

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 67.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			WH-WH-WH-WH	0	0.0	SOLW	Moist, very soft, white-light gray, silt-like grains	2SS-140H	
25			WH-WH-1-1	1	0.0	SOLW	Moist, very soft, white-light gray, silt-like grains	2SS-140H	
30			WH-WH-1-1	1	0.0	SOLW	Moist, very soft, white-light gray, silt-like grains	2SS-140H	Solvay Waste
35			WH-WH-1-2	1	0.0	SOLW	Wet, very soft, light gray, silt-like grains	2SS-140H	
40									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G2
Start/End Date: 10/14/2010

Northing: 1120652.906
Easting: 906602.281
Ground Elevation: 426.999

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 67.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			WH-1-WH-WH	1		SOLW	Wet, very soft, light gray, silt-like grains	2SS-140H	
45			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray, silt-like grains	2SS-140H	
50			2-1-2-1	3		SOLW	Wet, soft, light to dark gray, silt-like grains, trace sand-like grains, trace cementations, mothball odor	2SS-140H	Solvay Waste
55			WR-WR-1-3	1		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, trace cementations, mothball odor	2SS-140H	
60									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G2
Start/End Date: 10/14/2010

Northing: 1120652.906
Easting: 906602.281
Ground Elevation: 426.999

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 67.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
60			WH-WH-WH-3	0		SOLW	Wet, very soft, light to dark gray, silt-like grains, trace sand-like grains, trace cementations, mothball odor	2SS-140H	Solvay Waste
			10-30-48-65	78		ML	Wet, hard, red-brown, SILT, some clay, some fine to coarse gravel	2SS-140H	Silt&Clay
65			38-39-44-53	83		ML/SM	0 to 14 inches -Wet, hard, red-brown, SILT and Clay, some fine gravel, trace fine to coarse sand. 14 to 18 inches -wet, very dense, red-brown, fine to coarse SAND, trace silt	2SS-140H	
67.0									Sand

Note: Null fields indicate PID reading not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G3
Start/End Date: 10/12/2010

Northing: 1120057.621
Easting: 905846.698
Ground Elevation: 424.641

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges
Rig Type: CME 850

Total Depth: 46.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0						SOLW	Hand Clear. 0 to 3 inches -topsoil, grass, roots. 3 inches ot 5 feet -wet, very soft, light gray, silt-like grains, mothball odor	HandAuger	
5			WR-WH-1-WH	1	0.0	SOLW	Wet, very soft, light gray, silt-like grains, mothball odor	2SS-140H	
10			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	Solvay Waste
15			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
20									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G3
Start/End Date: 10/12/2010

Northing: 1120057.621
Easting: 905846.698
Ground Elevation: 424.641

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 46.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			WH-WH-WH-WH	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
25			WR-WR-WR-WR	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	
30			WR-WR-WR-WR	0	0.0	SOLW	Wet, very soft, light gray-white, silt-like grains, mothball odor	2SS-140H	Solvay Waste
35			2-3-1-2	4	0.0	SOLW	Wet, soft, light to dark gray, silt-like grains, trace sand-like grains, trace cementations, mothball odor	2SS-140H	
40									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G3
Start/End Date: 10/12/2010

Northing: 1120057.621
Easting: 905846.698
Ground Elevation: 424.641

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 46.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			1-WH-7-19	7	0.0	SOLW/SW	0 to 12 inches -Wet, very soft, light gray, silt-like grains, mothball odor. 12 to 24 inches -wet, brown, medium dense, fine to coarse SAND, little fine gravel, trace silt, mothball odor	2SS-140H	Solvay Waste
			39-56-50-50	106		SW	Wet, brown, very dense, fine to coarse SAND, little fine gravel, trace silt, mothball odor	2SS-140H	Sand&Gravel
45			43-61-100/0.4	161	0.0	SW	Wet, brown, very dense, fine to coarse SAND, little fine gravel, trace silt, mothball odor	2SS-140H	
46.0									

Note: Null fields indicate PID readings not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G4
Start/End Date: 10/18/2010

Northing: 1121141.303
Easting: 906450.117
Ground Elevation: 431.613

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 57.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0						SOLW	Hand Clear. 0 to 3 inches -topsoil, grass, roots. 3 inches to 5 feet -wet, very soft, light gray, mothball odor	HandAuger	
5			1-1-1-5	2	0.0	SOLW	0 to 8 inches -Moist, soft, tan-white, silt-like grains, trace sand-like grains 8 to 12 inches: moist, medium dense, tan-white, coarse, sand-like grains and crust, mothball odor	2SS-140H	
10			WH-1-WH-WH	1	0.0	SOLW	Wet, very soft, tan-white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	Solvay Waste
15			2-1-2-2	3		SOLW	Wet, soft, tan-white, silt-like grains, little sand-like grains, trace crust in nose of spoon, mothball odor	2SS-140H	
20									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G4
Start/End Date: 10/18/2010

Northing: 1121141.303
Easting: 906450.117
Ground Elevation: 431.613

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 57.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			1-WH-WH-1	0		SOLW	Wet, very soft, light gray-white, silt-like grains, trace sand-like grains, mothball odor	2SS-140H	
25			WH-1-1-4	2		SOLW	Wet, soft, light gray, silt-like grains and sand-like grains, trace crust in nose of spoon, mothball odor	2SS-140H	
30			5-1-2-3	3		SOLW	Wet, soft, light gray, silt-like grains and sand-like grains, some cementations throughout, mothball odor	2SS-140H	Solvay Waste
35			WH-WH-WH-1	0		SOLW	Wet, very soft, light gray, silt-like grains, mothball odor	2SS-140H	
40									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G4
Start/End Date: 10/18/2010

Northing: 1121141.303
Easting: 906450.117
Ground Elevation: 431.613

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 57.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			WH-WH-1-10	1		SOLW	Wet, very soft, light gray, silt-like grains, trace fine gravel in nose of spoon, mothball odor	2SS-140H	Solvay Waste
									Gravel&Sand
45			21-24-22-39	46		GW	Wet, dense, light gray, fine to coarse GRAVEL, some fine to coarse sand, trace silt	2SS-140H	
50			18-26-48-40	74		GW	Wet, dense, light gray, fine to coarse GRAVEL, some fine to coarse sand, trace silt	2SS-140H	
55			19-36-35-25	71		GW	Wet, hard, light gray, fine to coarse GRAVEL, some fine to coarse sand	2SS-140H	
57.0									

Note: Null fields indicate PID readings not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G5
Start/End Date: 10/20/2010

Northing: 1119875.065
Easting: 907760.467
Ground Elevation: 439.178

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 50.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
0							Hand Clear. 0 to 3 inches -topsoil, grass, roots. 3 inches to 5 feet -wet, very soft, light gray, mothball odor	HandAuger	
5			1-WH-WH-1	0	0.0	SOLW	Moist, very soft, light gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	
10			1-1-WH-1	1	0.0	SOLW	Moist, very soft, light gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	
									Solvay Waste
15			1-2-WH-1	2	0.0	SOLW	Wet, very soft, light gray-tan, silt-like grains, trace sand-like grains, trace cementations throughout, mothball odor	2SS-140H	
20									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G5
Start/End Date: 10/20/2010

Northing: 1119875.065
Easting: 907760.467
Ground Elevation: 439.178

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 50.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
20			1-WH-3-4	3	0.0	SOLW	Wet, soft, light gray-tan, silt-like grains and sand-like grains, trace cementations throughout, mothball odor	2SS-140H	
25			4-5-5-4	10	0.0	SOLW	Wet, loose, light to dark gray, sand-like grains and silt-like grains, some cementations throughout, mothball odor	2SS-140H	
30			6-2-2-1	4	0.0	SOLW	Wet, soft, light to dark gray, silt-like grains, some sand-like grains, mothball odor	2SS-140H	Solvay Waste
35			9-7-3-2	10	0.0	SOLW	0 to 18 inches: Wet, stiff, light to dark gray, silt-like grains and sand-like grains, trace cementations, mothball odor. 18 to 24 inches: wet, soft, light-dark gray, silt-like grains, mothball odor	2SS-140H	
40					0.0				

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: SI-G5
Start/End Date: 10/20/2010

Northing: 1119875.065
Easting: 907760.467
Ground Elevation: 439.178

Drilling Company: Atlantic Testing
Driller: Mark Childs
Logging Company: PARSONS
Geologist: A. Menges Rig Type: CME 850

Total Depth: 50.0 Ft
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID ppm	USCS Code	Soil Description	Sample Method	Stratum
40			5-2-1-1	3	0.0	SOLW-ML	0 to 18 inches: Wet, soft, light to dark gray, silt-like grains, trace sand-like grains, mothball odor. 18 to 24 inches: wet, soft, brown, SILT, trace fine sand, mothball odor	2SS-140H	Solvay Waste
									Silt
45			1-2-2-4	4	0.0	ML-SM	0 to 12 inches: Wet, very soft, brown, SILT, some fine sand, slight mothball odor. 12 to 22 inches: wet, very loose, fine SAND, some coarse sand, some silt, slight mothball odor	2SS-140H	Sand&Silt
			24-37-38-36	75	0.0	ML/GM	Wet, very stiff, SILT and Gravel, some fine to coarse sand, rock fragments in last 6 inches.	2SS-140H	Silt&Gravel
50.0									

Note: Null fields indicate PID readings not taken

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig:

Job No.: CD3151
Boring No.: PZ-6-1
Sheet: 2 of 4
Rig Unit No.: CME-550

Sampler Hammer
(Auto) Safety
Weight: 140
Fall: 30
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
10	23.0	25.0	WOH	→			24		similar soils (wet to saturated)	
11	25.0	27.0	WOH	→			24		similar soils (saturated)	
12	27.0	29.0	WOH	WOH	1	WOH	24		similar soils (saturated)	
13	29.0	31.0	WOH	WOH	1	WOH	24		similar soils (saturated)	
14	31.0	33.0	WOH	WOH	1	WOH	24		similar soils (saturated)	
15	33.0	35.0	WOH	→			24		white sand with Grey layers (saturated)	
16	35.0	37.0	WOH	→			24		similar soils	
17	37.0	39.0	WOH	→			22		similar soils	
18	39.0	41.0	WOH	→			24		similar soils (saturated)	

Boring Terminated At: 47.0 Caved At: Grouted Finish Date: 10-4-10 Time:
Driller: Mark Childs Inspector's Signature:
Helper: Cory Farmer

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig: CME-850

Job No.: CD3151
Boring No.: PZ-6A
Sheet: 3 of 4
Rig Unit No.: CD-GU-570

Sampler Hammer
(Auto) Safety
Weight: 140 lbs
Fall: 30"
Casing Hammer
Weight: ____
Fall: ____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
19	41.0	43.0	WOH	→			24		Similar Soils (saturated)	
20	43.0	45.0	WOH	WOH	1	WOH	24		Similar Soils (saturated)	
									2 Bags of Grout	
									1 Bag Bentonite Powder	

Boring Terminated At: 47.0 Caved At: Ground Finish Date: 10-4-10 Time: —

Driller: Mark Childs
Helper: Cory Farmer

Inspector's Signature: ____

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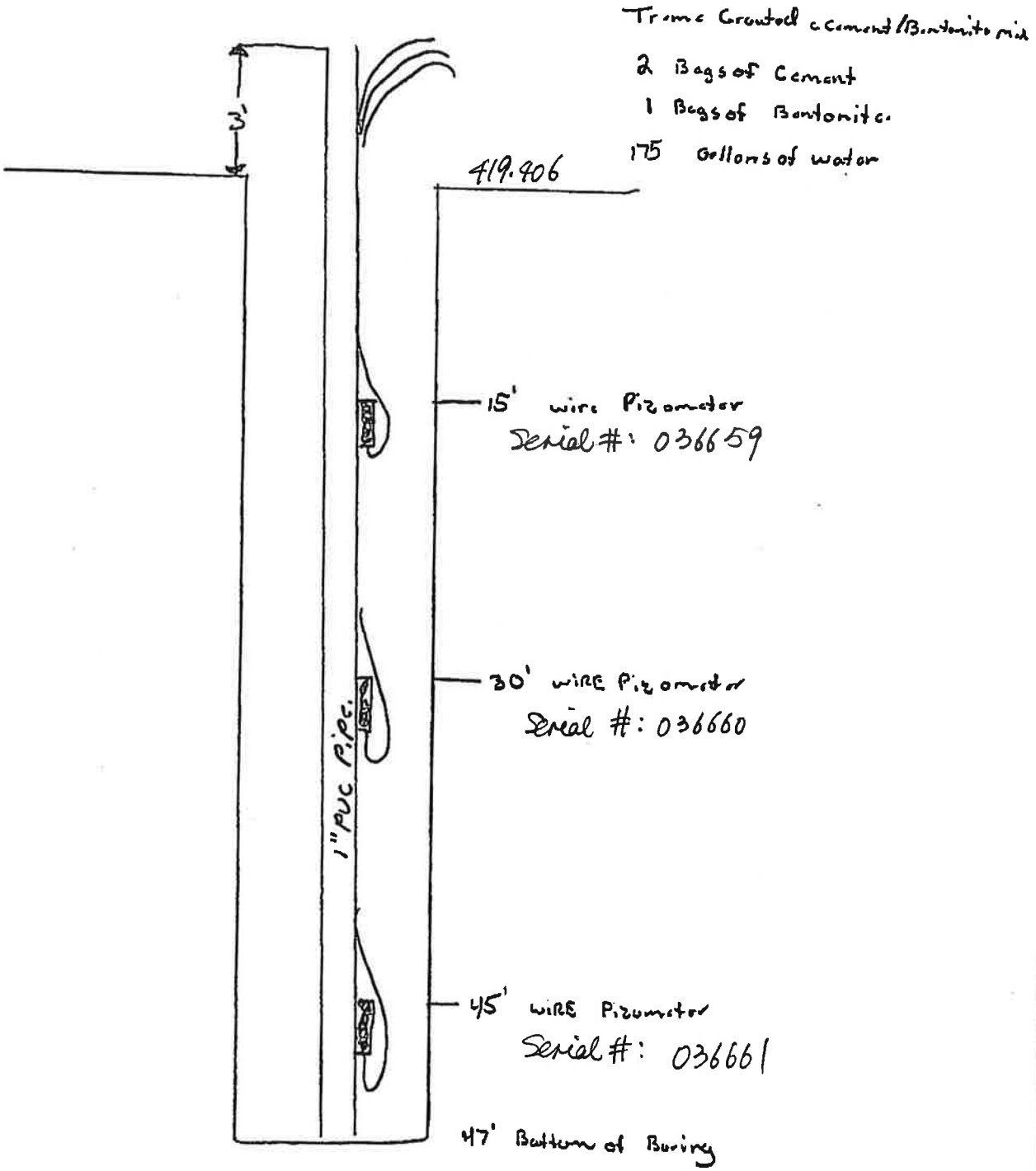
PZ-G1


Trimie Grouted cement/Bentonite mix
2 Bags of Cement
1 Bags of Bentonite
175 Gallons of water
3'
419.406
15' wire Piezometer
Serial #: 036659
30' wire Piezometer
Serial #: 036660
1" PVC Pipe
45' wire Piezometer
Serial #: 036661
47' Bottom of Boring

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig:

Job No.: CD3151
Boring No.: PZ-G2
Sheet: 1 of 4
Rig Unit No.: CD-GV-570

Sampler Hammer
(Auto) Safety
Weight: 140lbs
Fall: 30"
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
9-28	-	29.0	29.0	19.2'

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core
9-28	0.0	5.0'	hand	Cleared		
9-28	5.0	29.0				
9-29	29.0	47.0				

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
									hand Cleared down to 5.0'	
1	5.0	7.0	WOR	→	→	→	21		white Solvay waste with Grey and tan layering (wet)	
2	7.0	9.0	WOH	→	1	WOH	14		similar soils (moist to wet)	
3	9.0	11.0	WOH	WOH	1	WOH	24		white Solvay waste, little Grey layering	
4	11.0	13.0	No Recovery						No Recovery	
5	13.0	15.0	WOH	→	→	→	20		similar soils (wet)	
6	15.0	17.0	WOH	→	→	→	24		similar soils (wet)	
7	17.0	19.0	WOH	WOH	1	WOH	23		similar soils (wet)	
8	19.0	21.0	"	WOH	→	→	20		similar soils (wet)	
9	21.0	23.0	WOH	→	→	→	21		similar soils (wet to saturated)	

Boring Terminated At: _____ Caved At: Ground Finish Date: 9-29-10 Time: _____
Driller: Mark Childs
Helper: Cory Farmer
Inspector's Signature: _____

Resistivity test.

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons

Project: Onondaga Lake Superfund Project

Boring: Syracuse, New York

Drill Rig: _____

Job No.: CD3151

Boring No.: PZ-G2

Sheet: 2 of 4

Rig Unit No.: 42-GV-570

Sampler Hammer
Auto Safety
Weight: _____
Fall: _____
Casing Hammer
Weight: _____
Fall: _____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
10	23.0	25.0	WOH				24		Similar soils (saturated)	
11	25.0	27.0	WOH			1	24		Similar soils (saturated)	
12	27.0	29.0	WOH				24		Similar soils (saturated)	
13	29.0	31.0	WOH				18		white and Grey Solvay layers (saturated)	
14	31.0	33.0	WOH				16		Similar soils (saturated)	
15	33.0	35	WOH				3		similar soils (saturated)	
16	35.0	37.0	WOH				24		similar soils (saturated	
17	37.0	39.0	WOH	1	10	8	20		white and Grey layers of solvay with sand/silt like material (wet)	
18	39.0	41.0	1	1	1	2	21		light Grey Solvay waste (wet to saturated)	

Boring Terminated At: 47.0 Caved At: Ground Finish Date: 9-29-10 Time: _____

Driller: Mark Childs

Helper: Cory Furman

Inspector's Signature: _____

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Rev. 9-15

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons

Project: Onondaga Lake Superfund Project

Boring: Syracuse, New York

Drill Rig: _____

Job No.: CD3151

Boring No.: PZ-62

Sheet: 3 of 4

Rig Unit No.: CD-GW-570

Sampler Hammer
(Auto) Safety
Weight: 140 lbs
Fall: 30"
Casing Hammer
Weight: _____
Fall: _____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
19	41.0	43.0	1	WOH	1	1	24		light Gogo with layers of, light Green saloey	
									... (saturated)	
20	43.0	45.0	WOH	6	1	2	24		white saloey waste (saturated)	
									Augered down to 47.0'	
									15	
									30	
									45	
									1½ Bag Bentonite	
									3 Bags Cement	
								45		
								47		

Boring Terminated At: 47.0 Caved At: Caved Finish Date: 9-29-10 Time: _____

Driller: Mark Childs

Helper: Cory Farmer

Inspector's Signature: _____

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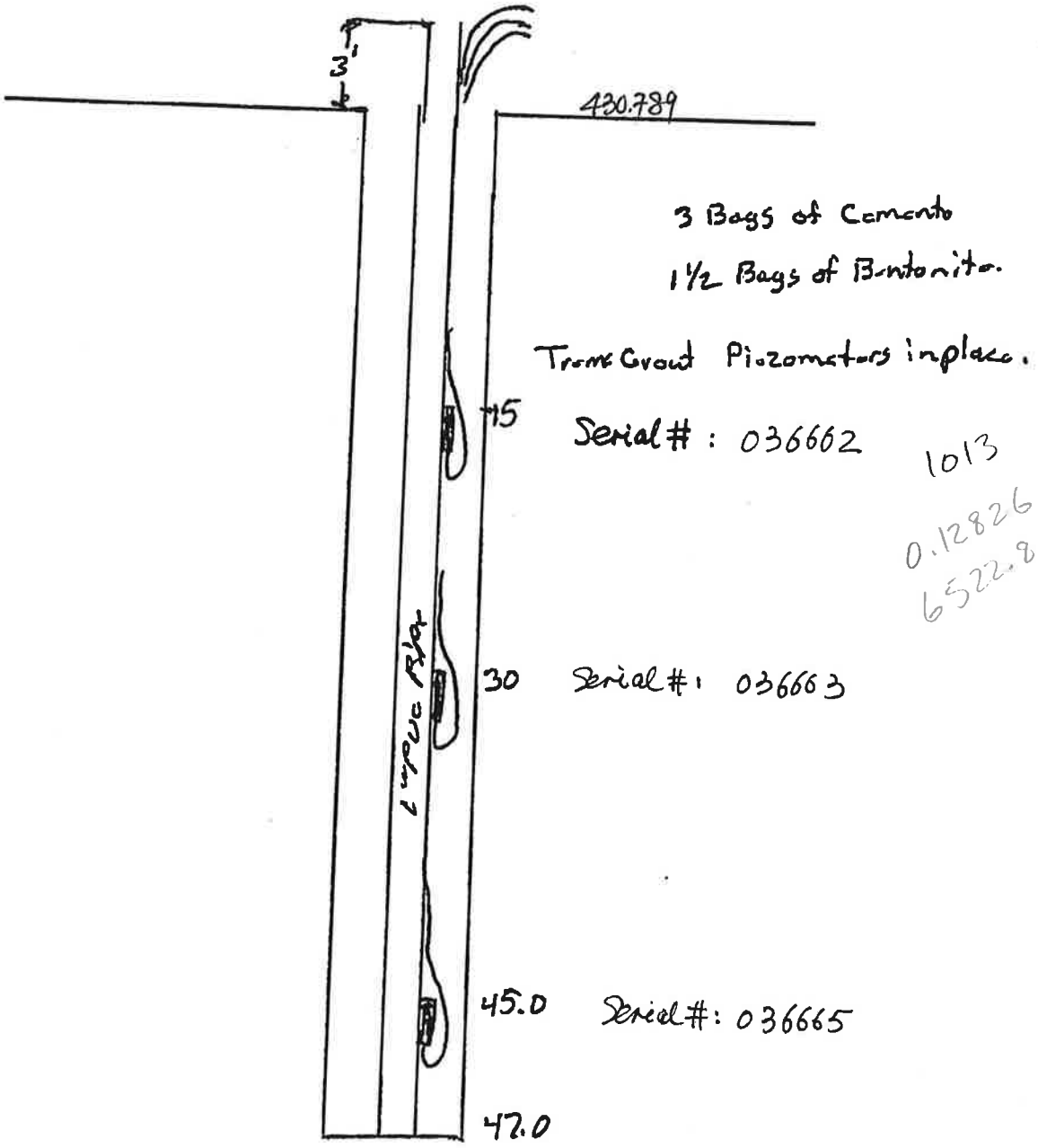
Rev 9-05

P2-G-2


3'
430.789
3 Bags of Cemento
1½ Bags of Bentonita.
Trem Grout Piezometers inplace.
15
Serial # : 036662
1013
0.12826
6522.8
Fiber Optic
30
Serial #: 036663
45.0
Serial #: 036665
47.0

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig: CME-850X

Job No.: CD3151
Boring No.: PZ-G3
Sheet: 1 of 4
Rig Unit No.: D-GV-570

Sampler Hammer
(Auto) Safety
Weight: 140
Fall: 30
Casing Hammer
Weight: _____
Fall: _____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
10-6-10	-	47.0	47.0	Caved

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core
10-6-10	0.0	5.0	Hand	Cleared		
10-6-10	12.0	47.0	4¼			

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
									Hand cleared to 5.0'	
1	5.0	7.0	WOH				0		No Recovered	
2	7.0	9.0	WOH				24		white Solvay waste with Brown Fine Sand (saturated)	
3	9.0	11.0	WOH	1	1	1	20		Fine Solvay waste with Fine Grey layering (saturated)	
4	11.0	13.0	WOH	1	1	1	22		Fine Solvay waste with Fine Grey layering (saturated) Sandy silt like material	
5	13.0	15.0	WOH	1	WOH	1	10		Similar Soils (wet to saturated)	
6	15.0	17.0	WOH				24		Fine Solvay with Dark Grey layers of Solvay (Saturated)	
7	17.0	19.0	WOH	1	WOH	WOH	24		Similar Soils (saturated)	
8	19.0	21.0	WOH	WOH			24		Similar Soils (saturated)	
9	21.0	23.0	1	WOH			24		Similar Soils (Saturated)	

Boring Terminated At: 47.0 Caved At: Grouted Finish Date: 10-6-10 Time: _____
Driller: Mark Childs
Helper: Cory Farmer
Inspector's Signature: _____

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Rev 9-15

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig: CME-850X

Job No.: CD3151
Boring No.: P2-G3
Sheet: 2 of 4
Rig Unit No.: CO-CV-570

Sampler Hammer
(Auto) Safety
Weight: 140
Fall: 30
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
10	23.0	25.0	WOH			P	23		similar soils (saturated)	
11	25.0	27.0	WOH			P	22		similar soils (saturated)	
12	27.0	29.0	WOH		P	1	23		similar soils (saturated)	
13	29.0	31.0	WOH	1	WOH	1	24		Grey and Tan layers of Solvay waste. (saturated)	
14	31.0	33.0	1	1	WOH	1	22		Sandy, silt like soils (traces of Cocoa layers)	
15	33.0	35.0	1	WOH	WOH	1	24		similar soils (saturated) layers of Cocoa, Naple. Present.	
16	35.0	37.0	1	1	2	1	24		similar soils (saturated)	
17	37.0	39.0	1	WOH	WOH	WOH	24		Right Grey Solvay with specks of white (saturated)	
18	39.0	41.0	WOH	P	P	P	24		light Grey Solvay with layers of white/tan Solvay (wet)	

Boring Terminated At: 41.0 Caved At: Encountered Finish Date: 10-6-10 Time: —
Driller: Mark Childs
Helper: Cory Farmer
Inspector's Signature:

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons

Project: Onondaga Lake Superfund Project

Boring: Syracuse, New York

Drill Rig: CME-850X

Job No.: CD3151

Boring No.: PZ-6-3

Sheet: 3 of 4

Rig Unit No.: US-6V-570

Sampler Hammer
(Auto) Safety
Weight: 140
Fall: 30"
Casing Hammer
Weight: ____
Fall: ____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
19	41.0	43.0	WOH	1	WOH		24		Similar Soils (saturated)	
20	43.0	45.0	1	WOH			24		Similar Soils (saturated)	
									Augered down to 48.0'	

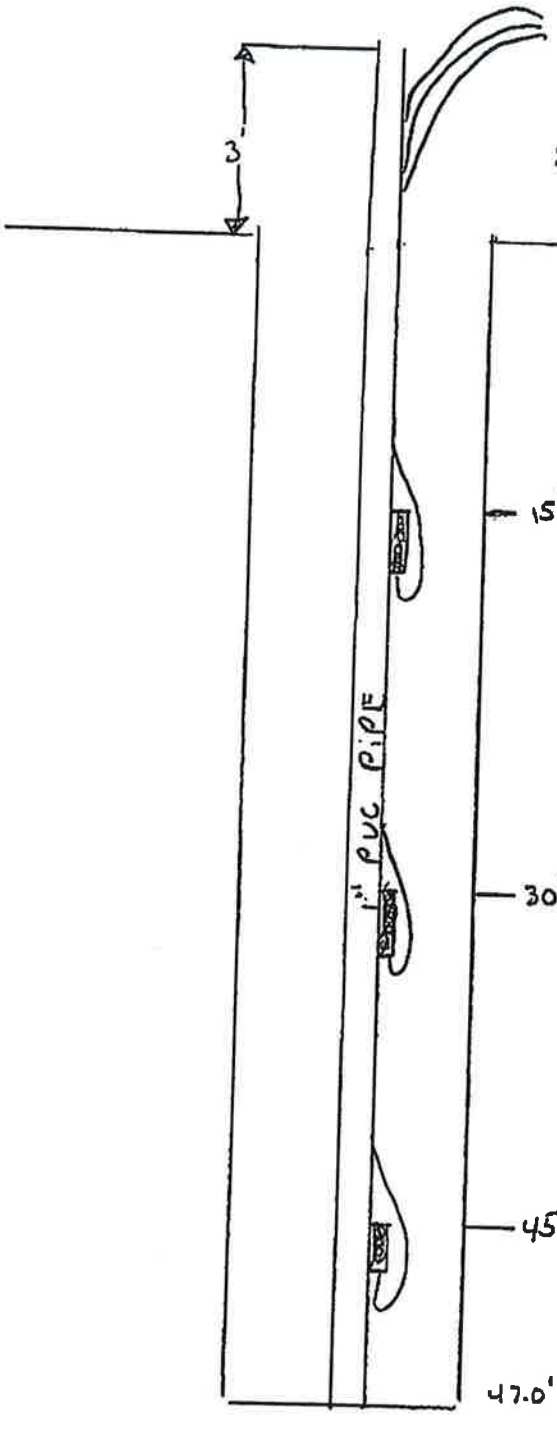
Boring Terminated At: 47.0' Caved At: Ground Finish Date: 10-6-10 Time: ____

Driller: Mark Childs

Helper: Cory Farmer

Inspector's Signature: ____

PZ-G3



Tremie grouted cement/Bentonite

2.0 Bags of Cement
1.5 Bags of Bentonite
180 Gallons of water

15' wire Pizometer
Serial #: ~~036676~~ 036670

30' wire Pizometer
Serial #: ~~036672~~ 036666

45' wire Pizometer
Serial #: ~~036670~~ 036669

47.0' Bottom of Boring

updated by Xiaodong (AE)

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig:

Job No.: CD3151
Boring No.: PZ-G-4
Sheet: 1 of 4
Rig Unit No.: CME-550

Sampler Hammer
(Auto) Safety
Weight: 140
Fall: 30"
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
10-1-10	-	25.0	25.0	20.8'

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core
	0.0	5.0				

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
									Hand Cleared From 0.0 to 5.0'	
1	5.0	7.0	1	WOH	→	→	4"		white Solvay waste. (wsw)	
2	7.0	9.0	WOH	1	WOH	WOH	2"		[illegible]	
3	9.0	11.0	WOH	WOH	1	WOH	21		white Solvay waste 1.1'. layering of Grey Solvay waste (...) similar soils	
4	11.0	13.0	1	WOH	→	→	24			
5	13.0	15.0	WOH	→	→	→	23		white Solvay waste (wsw) [illegible]	
6	15.0	17.0	WOH	→	→	→	12		[illegible] (wsw)	
7	17.0	19.0	1	WOH	→	→	24		[illegible] Solvay waste, [illegible] (wsw) [illegible] Saturated]	
8	19.0	21.0	WOH	→	→	→	24		[illegible] (wsw)	
9	21.0	23.0	[illegible]	1	[illegible]	[illegible]	21		[illegible] Soils (wsw)	

Boring Terminated At: 47.0 Caved At: Grouted Finish Date: 10-1-10 Time:
Driller: Mark Child
Helper: Cory Farmer
Inspector's Signature:

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Rev 9/06

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig:

Job No.: CD3151
Boring No.: PZ-04
Sheet: 2 of 4
Rig Unit No.: CD-GV-570

Sampler Hammer
(Auto) Safety
Weight:
Fall:
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
10	23	25'	WOH	1	1	1	22		Similar Soils (wet)	
11	25.0	27.0	WOH	1	1	1	24		Similar Soils (wet)	
12	27.0	29.0	1	1	1	WOH	24		Similar Soils (wet)	
13	29.0	31.0	1	2	4	1	21		Grey Solvay waste, some layers of white	
14	31.0	33.0	3	3	4	8			Similar Soils some cinder layers (wet)	
15	33.0	35.0	2	5	6	3	19		Grey Solvay waste (wet)	
16	35.0	37.0	2	2	2	2	14		Similar Soils (wet)	
17	37.0	39.0	1	1	1	2	20		Similar Soils (wet)	
18	39.0	41.0	1	1	3	4	20		Similar Soils (wet)	
19	41.0	43.0	3	3	1	2	24		Grey Solvay waste layered white Solvay waste mixed (wet)	

Boring Terminated At: 47.0 Caved At: Caved Finish Date: 10-4-10 Time:
Driller: Mark Childs
Helper: Cory Farmer
Inspector's Signature:

D-11
Rev 9/14

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig:

Job No.: CD3151
Boring No.: P2-64
Sheet: 3 of 4
Rig Unit No.: CD-GV-5N

Sampler Hammer
(Auto) Safety
Weight:
Fall:
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

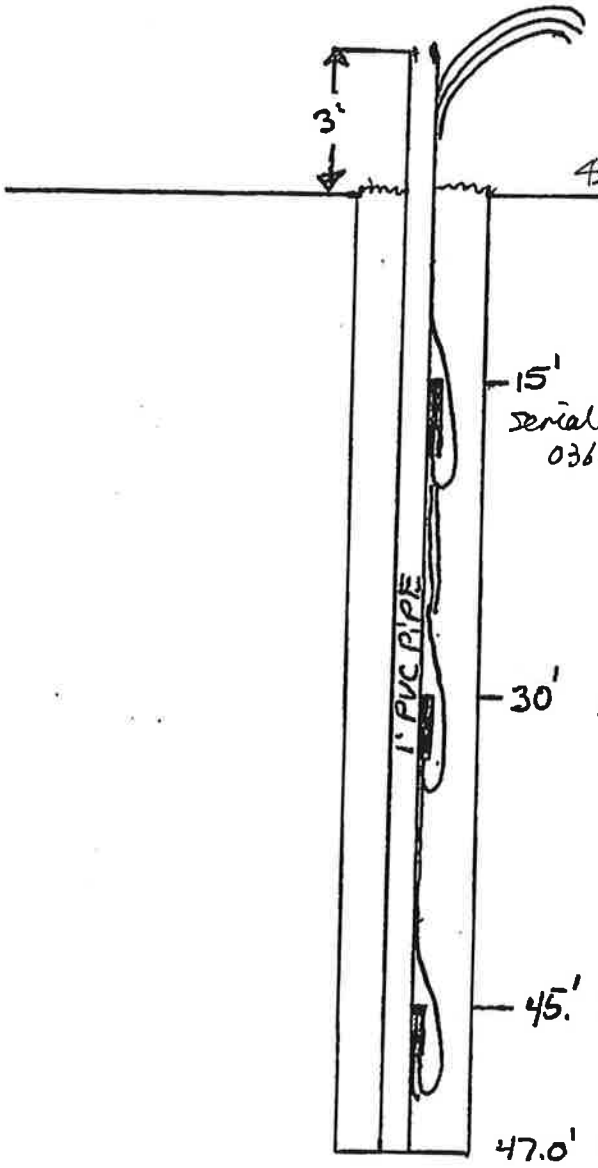
Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
20	430	450	1	WOH	1	1	24		Similar soils (wet)	
									Installed with Piezometers	
									one at 15'	
									30'	
									45'	
									Grout	
									2½ Bags Portland Cement	
									1 Bag Bentonite.	

Boring Terminated At: _____ Caved At: _____ Finish Date: _____ Time: _____
Driller: Mark Clark
Helper: Cary Farmer
Inspector's Signature: _____

D-11
Rev. 9-95

PZ-G-4

PZ-G4



2.5 Bags of Portland Cement
1 Bag of Bentonite.

Installed 3 wire Piezometers and tremie Grouted in Place.

Serial #: 036667

Serial #: 036671

Bottom of Boring

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig:

Job No.: CD3151
Boring No.: P2-G5
Sheet: 1 of 4
Rig Unit No.: CD-GV-570

Sampler Hammer
(Auto) Safety
Weight: 140 lbs
Fall: 30"
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
9-27-10		35.0	39.0	dry
9-28-10	7:15	35.0	39.0	25.5

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core
9-27-10	0.0	39.0	4¼			
9-27	35.0	39.0	2" spoon sampler			
9-28	39.0	46.5'	4¼			

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
									hand clear down to 5.0'	
1	5.0	7.0	1	WOH	→	→	18		white solvay waste (moist to wet)	
2	7.0	9.0	1	WOH	→	→	18		white solvay waste with layer of Coal moist to wet	
3	9.0	11.0	1	1	WOH	→	20		white solvay waste with trace of brick layers of staining (wet)	
4	11.0	13.0	1	WOH	WOH	WOH	23		similar soils (wet)	
5	13.0	15.0	1	WOH	1	WOH	22		similar soils (wet)	
6	15.0	17.0	WOH	WOH	1	1	24		similar soils (wet to moist)	
7	17.0	19.0	2	1	1	2	22		white solvay waste, some layers of Coal (moist)	
8	19.0	21.0	WOH	1	WOH	WOH	23		similar soils (moist-wet)	
9	21.0	23.0	WOH	1	1	WOH	23		similar soils (moist-wet)	

Boring Terminated At: 46.5' Caved At: Grouted Finish Date: 9-28-10 Time:
Driller: Mark Childs
Helper: Cory Farmer
Inspector's Signature:

D-11
Rev 9-05

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig:

Job No.: CD3151
Boring No.: PZ-65
Sheet: 2 of 4
Rig Unit No.: CD-GV-570

Sampler Hammer
(Auto) Safety
Weight: 140 lbs
Fall: 30"
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
10	29.0	25.0	WOH	1	WOH	1	22		similar soils	
11	25.0	27.0	WOH	WOH	1	1	20		similar soils (moist-wet)	
12	27.0	29.0	1	1	2	1	19		Similar soils (moist-wet)	
13	29.0	31.0	1	1	1	2	20		similar soils (moist-wet)	
14	31.0	33.0	2	3	3	3	24		Similar soils (moist-wet)	
15	33.0	35.0	1	WOH	1	2	23		Gray Solvay waste with layers of white (moist-wet)	
16	35.0	37.0	5	4	5	2	20"		Gray Solvay waste, layers of white, Fine layers of sand (moist-wet)	
17	37.0	39.0	3	5	7	4	22		Gray Solvay with mixed sand and fine material (moist-wet)	

Boring Terminated At: 46.5' Caved At: Grouted Finish Date: 9-28-10 Time:
Driller: Mark Childs
Helper: Cory Farmer
Inspector's Signature:

Rev 9

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig:

Job No.: CD3151
Boring No.: PZ-65
Sheet: 3 of 4
Rig Unit No.: CME-550

Sampler Hammer
(Auto) Safety
Weight: 140
Fall: 30
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
				29'6"

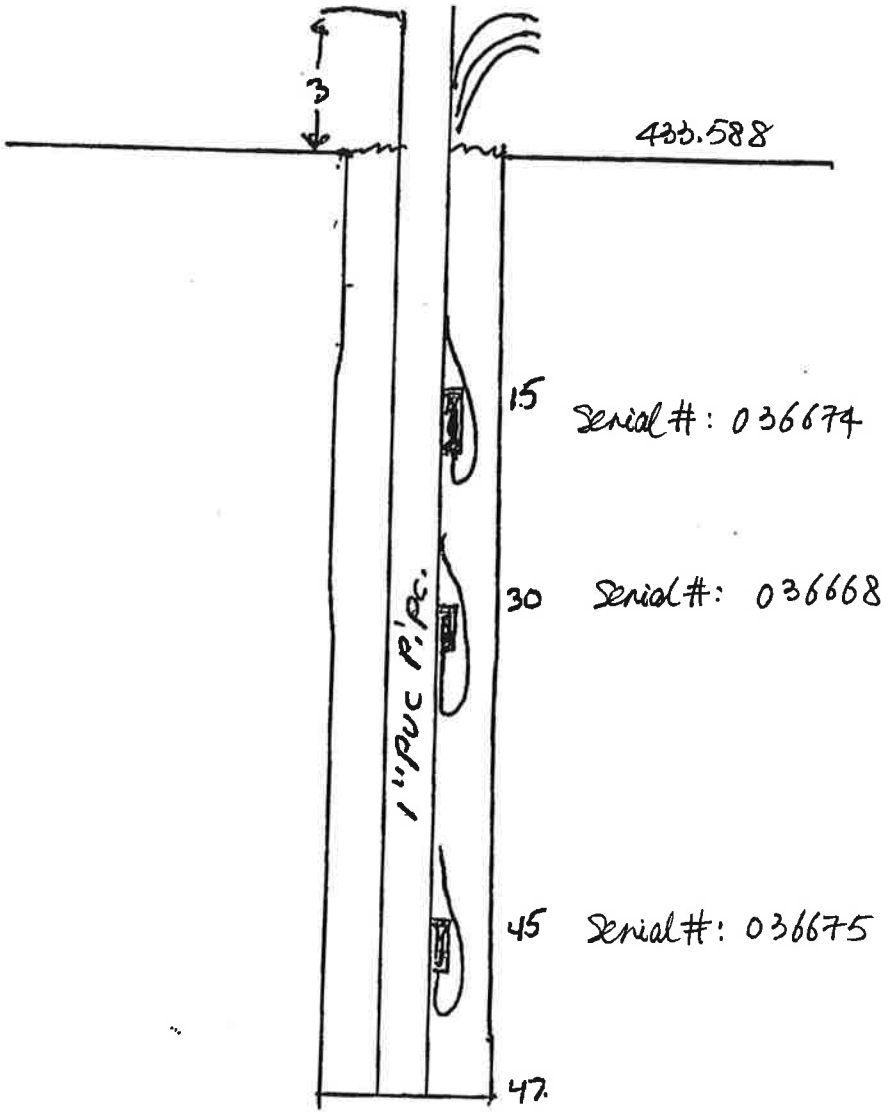
Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
19	39.0	41.0	4	19	6	6	17		Corey Si.H, little MF sand, trace gravel, little Solvay waste. (wet)	
20	41.0	43.0	6	12	3	3	13"		Corey with white fine layers of solvay waste. (wet)	
21										
	43.0	45.0	3	2	1	1	24		Corey solvay waste, (saturated) with layers of white solvay ~~sand~~ trace silt	
									Auger refusal to 46.5'	
									hole open to 46.0'	
									Installed Piezometer at 45'	
									30'	
									15'	
									used 3 Bags of Portland	
									1.5 Bags of Bentonite.	

Boring Terminated At: 46.5 Caved At: Grouted Finish Date: 8-28-10 Time:
Driller: Mark Childs
Helper: Cory Farmer.
Inspector's Signature:

D-11
Rev

PZ-65


3
433.588
15
Serial #: 036674
30
Serial #: 036668
1" PVC PIPE
45
Serial #: 036675
47

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig: CME-850X

Job No.: CD3151
Boring No.: PZ-66
Sheet: 1 of 4
Rig Unit No.: D-6V-570

Sampler Hammer
Auto Safety
Weight: 140 lbs
Fall: 30"
Casing Hammer
Weight: _____
Fall: _____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
10-5-10	-	47.0	47.0	37'2"

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core
10-5-10	0.0	5.0	Hand	cleared		
10-5-10	5.0	47.0	4¼			

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
1									Hand Cleared down to 5.0'	
1	5.0	7.0	WOH	1	WOH	→	1/0		white Solvay waste (wet)	
2	7.0	9.0	WOH	1	1	WOH	24		(sandy silt with medium, stiff like clay)	
									similar soils (wet)	
3	9.0	11.0	1	WOH	WOH	1	22		white Solvay waste with layers of Grey Silt/Clay	
4	11.0	13.0	1	WOH	—	— P	24		similar soils (wet)	
5	13.0	15.0	1	WOH	1	WOH	24		Similar Soils (wet to saturated)	
6	15.0	17.0	1	WOH	WOH	1	24		Similar Soils (saturated)	
7	17.0	19.0	1	1	1	1	24		Similar Soils (saturated)	
8	19.0	21.0	1	WOH	—	— P	24		Similar Soils (saturated)	
9	21.0	23.0	WOH	2	6	10	23		Similar Soils (moist to saturated)	

Boring Terminated At: 47.0 Caved At: Grouted Finish Date: 10-5-10 Time: _____

Driller: Mark Childs

Helper: Cory Farmer

Inspector's Signature: _____

D-11
Rev 9/14

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig: CME-850X

Job No.: CD3151
Boring No.: PZ-66
Sheet: 2 of 4
Rig Unit No.: CME-570

Sampler Hammer
(Auto) Safety
Weight: 140
Fall: 30"
Casing Hammer
Weight: _____
Fall: _____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
10	23.0	25.0	10	6	1	1	18		Similar soils (wet)	
11	25.0	27.0	1	1	1	WOH	24		Similar Soils (wet to Saturated)	
12	27.0	29.0	2	5	8	3	16		Similar soils trace of Gravel (wet)	
13	29.0	31.0	2	2	5	4	22		Similar Soils (wet)	
14	31.0	33.0	2	1	WOH	1	24		white Solvay (wet)	
15	33.0	35.0	1	2	1	2	24		Similar Soils (wet)	
16	35.0	37.0	2	1	2	3	20		similar Soils Change to a Grey Color wt	
17	37.0	39.0	2	2	2	2	21		36.0' Solvay waste Sandy Silt like material, wet 37' Similar Soils (wet)	
18	39.0	41.0	1	2	2	3	24		Similar Soils (wet)	

Boring Terminated At: 47.0 Caved At: Grouted Finish Date: 10-5-10 Time: _____

Driller: Mark Childs

Helper: Cory Farmer

Inspector's Signature: _____

D-11
Rev 9-15

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig: CME-850X

Job No.: CD3151
Boring No.: P2-G6
Sheet: 3 of 4
Rig Unit No.: CD-GV-570

Sampler Hammer
(Auto) Safety
Weight: 140
Fall: 30"
Casing Hammer
Weight: ____
Fall: ____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

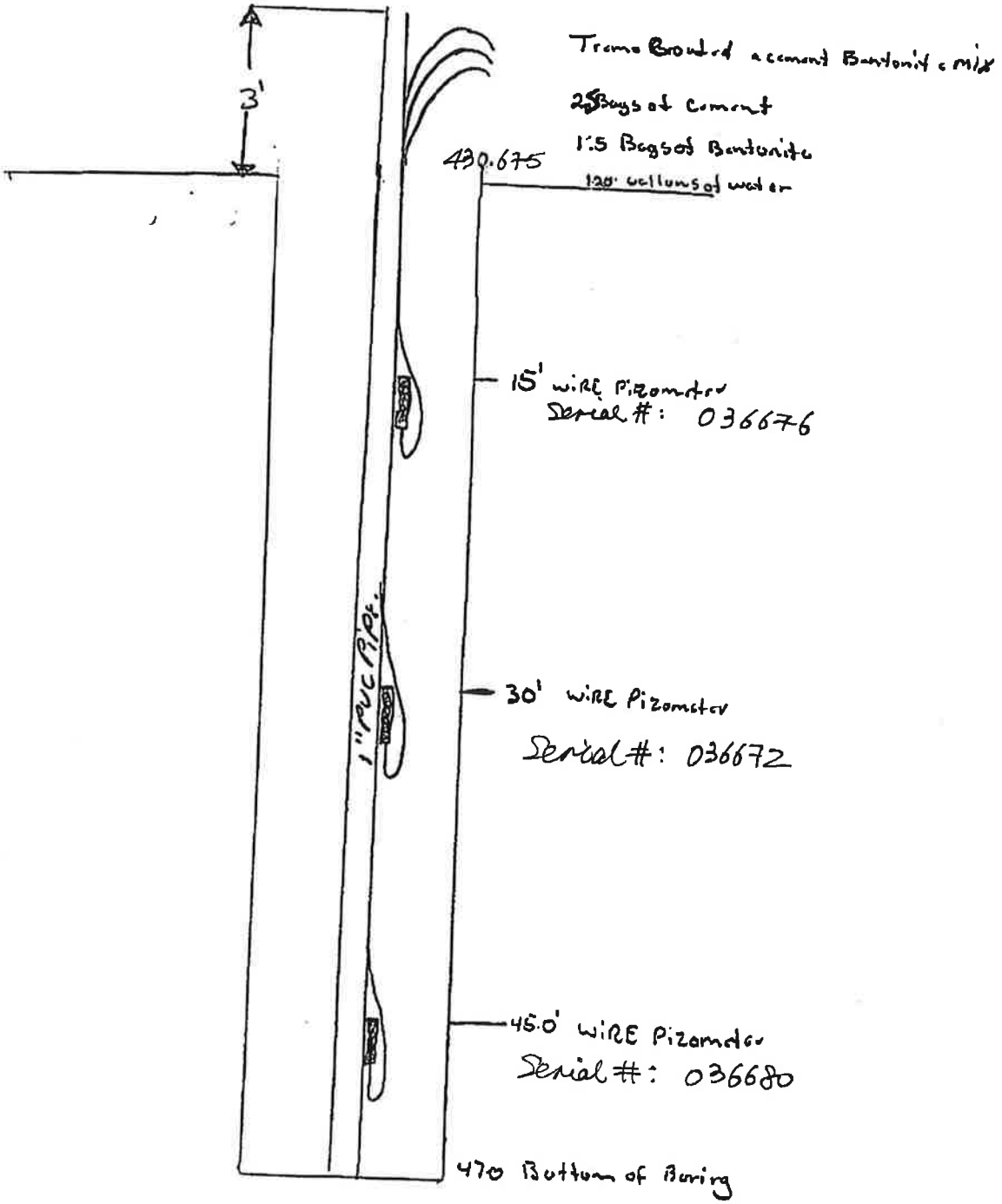
Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
19	41.0	43	1	WOH	WOH	WOH	24		similar soils (saturated)	
20	43.0	45	1	1	WOH	1	24		similar soils (saturated)	

Boring Terminated At: 47.0 Caved At: Grouted Finish Date: 10-5-10 Time: —
Driller: Mark Childs
Helper: Cory Farmer
Inspector's Signature: ____

D-11
Rev 9-1-6

PZ-G6


3'
Trans Grout a cement Bentonite mix
25 Bags of Cement
1.5 Bags of Bentonite
120 Gallons of water
430.675
15' WIRE Pizometer
Serial #: 036676
1" PVC PIPE
30' WIRE Pizometer
Serial #: 036672
45.0' WIRE Pizometer
Serial #: 036680
470 Bottom of Boring

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig:

Job No.: CD3151
Boring No.: P2-67
Sheet: 1 of 4
Rig Unit No.: CD-GV-570

Sampler Hammer
(Auto) Safety
Weight: 140 lbs
Fall: 30"
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
9-29-10	-	47.0	47.0	Dry

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core
9-29-10	0.0	5.0	hand	Augered		
	5.0	47.0'	4¼			

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
1									Hand Cleared From 0.0 to 5.0'	
	5.0	7.0	WOH	1	WOH	→	3		Solvay waste (moist)	
2	7.0	9.0	1	WOH	1	1	16		Solvay waste (moist)	
3	9.0	11.0	WOH	WOH	3	1	24		white Solvay waste (moist to wet)	
4	11.0	13.0	WOH	WOH	1	1	15		similar soils (moist to wet)	
5	13.0	15.0	1	WOH	WOH	1	12		similar soils (moist to wet)	
6	15.0	17.0	WOH	1	WOH	1	16		similar soils (moist to wet)	
7	17.0	19.0	1	1	1	1	22		similar soils (moist to wet)	
8	19.0	21.0	WOH	→			24		white Solvay waste (wet)	
9	21.0	23.0	1	1	WOH	WOH	24		similar soils (wet)	

Boring Terminated At: 47.0 Caved At: Grouted Finish Date: 9-28-10 Time:
Driller: Mark Childs
Helper: Cory Farmer
Inspector's Signature:

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons

Project: Onondaga Lake Superfund Project — Job No.: CD3151

Boring: Syracuse, New York — Boring No.: PZ-67

Drill Rig: CME-850 — Sheet: 2 of 4

Sampler Hammer — Rig Unit No.: CD-GR-570

(Auto) Safety

Weight: 140 lbs

Fall: 30"

Casing Hammer

Weight: _____

Fall: _____

☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
10	23.0	25.0	1	1	WOH	1	7		similar soils	
11	25.0	27.0	WOH	1	1	1	24		similar soils (wet)	
12	27.0	29.0	2	4	5	1	20		similar soils (wet)	
13	29.0	31.0	2	1	6	3	24		similar soils (wet) some Gray solvay waste	
14	31.0	33.0	3	2	3	1	24		light Gray solvay waste (wet)	
15	33.0	35.0	WOH	→	→	1	24		white and Gray solvay waste (wet)	
16	35.0	37.0	WOH	WOH	1	WOH	24		similar soils (wet)	
17	37.0	39.0	WOH	WOH	3	1	24		Similar soils (wet)	

Boring Terminated At: _____ Caved At: _____ Finish Date: _____ Time: _____

Driller: Mark Childs

Helper: Cory Forman

Inspector's Signature: _____

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig: CME-850

Job No.: CD3151
Boring No.: PZ-67
Sheet: 3 of 4
Rig Unit No.: CD-GU-570

Sampler Hammer
(Auto) Safety
Weight: 140 lbs
Fall: 30"
Casing Hammer
Weight: _____
Fall: _____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
18	39.0	41.0	1	4	10	13	24		similar soils some sand like material. (wet)	
19	41.0	43.0	13	26	23	19	23		Similar Soils (wet)	
20	43.0	45.0	WOH	WOH	5	3	21		Similar Soils (wet)	
									We Drilled down to 47.0'	

Boring Terminated At: _____ Caved At: _____ Finish Date: _____ Time: _____
Driller: Mark Childs
Helper: Cory Farmer
Inspector's Signature: _____

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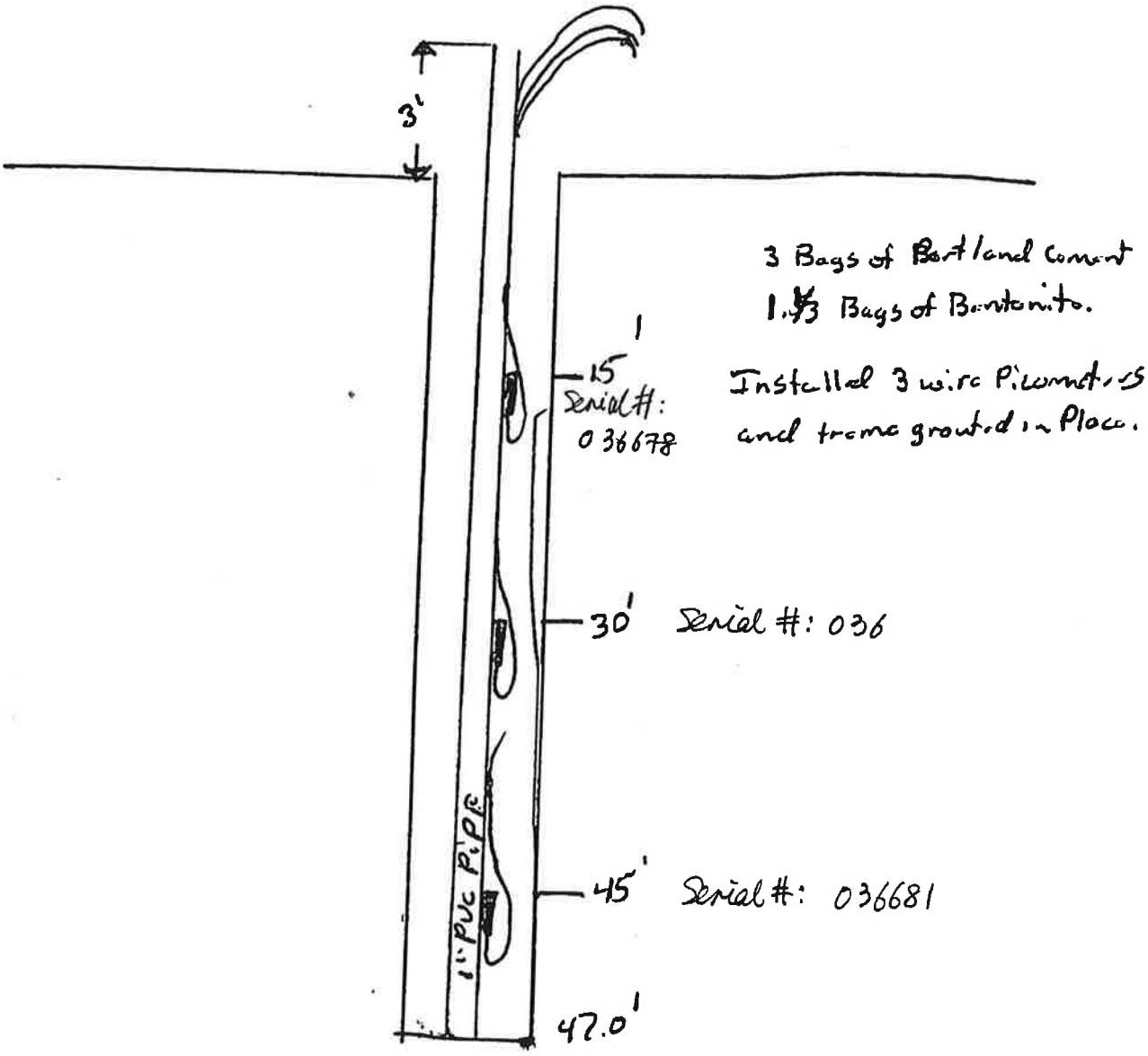
Rev 9-14

P2-G7



3 Bags of Portland Cement
1.5/3 Bags of Bentonite.

Installed 3 wire Piezometers and tremie grouted in Place.

Serial #: 036

Serial #: 036681

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig: CME-850X

Job No.: CD3151
Boring No.: PZ-61
Sheet: 1 of 4
Rig Unit No.: CD CU-580

Sampler Hammer
(Auto) Safety
Weight: 140
Fall: 30
Casing Hammer
Weight: —
Fall: —
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
10-4-10	1400	47.0'	47.0'	32.0'
			Grouted	

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core
10-4-10	0.0	5.0	Hand Cleared			
10-4-10	050	47.0	4¼			

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
									Hand Cleared down to 5.0'	
1	5.0	7.0	1	WOH	WOH	1	20"		white Solvay waste	
2	7.0	9.0	1	WOH	1	WOH			white Solvay waste	
3	9.0	11.0	WOH	→	→	→	18		Similar Soils (wet)	
4	11.0	13.0	WOH	→	→	→	24		Similar Soils (wet)	
5	13.0	15.0	WOH	→	→	→	24		Similar Soils (wet)	
6	15.0	17.0	WOH	→	→	→	22		Similar Soils (wet)	
7	17.0	19.0	WOH	→	→	1	24		Similar Soils ~~trace~~ layers of Grey Solvay waste (wet)	
8	19.0	21.0	WOH	WOH	→	→	24		white Solvay waste (wet to saturated)	
9	21.0	23.0	WOH	→	→	1	24		Similar Soils	

Boring Terminated At: 47.0 Caved At: Grouted Finish Date: 10-4-10 Time: —

Driller: Mark Childs Inspector's Signature:

Helper: Cory Farmer

D-11
Rev 9-4-4

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation Field Log

Client: Parsons — Job No.: ED-3151

Project: — Boring No.: P2-G8

Boring Location: — Sheet: 1 of 4

Sampler Hammer
Auto Weight: 140
Fall: 30
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
11-2-10		32	32	D/F
11-3-10		51	51	43'

Date	Drilled From	Drilled To	HSA 3 ¼"	HSA 4 ¼"	Casing	Air / Wet Rotary	Rock Core
11-2-10	0.0	32.0		✓			
11-3-10	32.0	51.0		✓			

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing
									Topsoil; Asphalt; Concrete; Other (note)	
1	0.0	2.0	4	4	4	4	7"		Brown mF Sand and silt, some clay little organics little mF gravel (moist)	
2	2.0	4.0	3	7	4	5	10"		Red Brown mF Sand Silt some clay mF gravel (moist)	
3	4.0	6.0	5	7	15	14	2"		Similar soils (moist)	
4	6.0	8.0	9	12	11	10	½		Cobble stuck in the shoe.	
5	8.0	10.0	10	14	11	12	14		Red Brown Till like soils, Clay, some mF gravel little silt and Sand (moist)	
6	10.0	12.0	11	11	21	20	18		Similar Soils (moist) Fill	
7	12.0	14.0	12	14	16	14	22		Similar Soils Changed at 13.5' too Brown silty Sand (moist)	
8	14.0	16.0	24	20	27	23	24		Similar Soils (moist)	
9	16.0	18.0	9	12	15	18	22		Brownish-Orange silt and mF Sand, some mF gravel little clay (moist) (Fill)	
10	18.0	20.0	23	17	16	7	2"		Similar Soils (moist)	
11	20.0	22.0	6	9	12	14	5"		Similar Soils (moist) trace cobble.	

Boring Terminated At: 51.0 Caved At: Grouted Finish Date: 11-3-10 Time:

Driller's Signature: Mark Childs Inspector's Signature:

Helper: Cory Farmer

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ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation Field Log

Client: _____

Project: _____ Job No.: _____

Boring Location: _____ Boring No.: _____

Sheet: _____ of _____

Sampler Hammer Weight: _____
Fall: _____
Casing Hammer Weight: _____
Fall: _____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
	8:00	32.0	32.0	Dry

Date	Drilled From	Drilled To	HSA 3 ¼"	HSA 4 ¼"	Casing	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing
									Topsoil; Asphalt; Concrete; Other (note)	
12	22.0	24.0	4	6	7	7	20		Brown, Fine to MF Sand, (moist) little silt	
13	24.0	26.0	7	7	7	9	24		Similers soils (moist)	
14	26.0	28.0	4	4	5	6	17		Similar Soils (wet to Saturated)	
15	28.0	30.0	58	30	21	16	10"		Similar Soils Drove through a Boulder. (moist)	
16	30.0	32.0	19	18	17	14	19		Brown/Grey MF Sand, some silt little MF gravel (moist)	
17	32.0	34.0	2	6	6	7	16		Similar Soils (moist)	
18	34.0	36.0	9	7	7	8	18		Similar Soils (moist)	
19	36.0	38.0	10	6	7	8	22		Similar Soils (moist)	
20.0	38.0	40.0	10	7	7	6	19		Similar Soils (moist)	
21	40.0	42.0	7	8	7	5	15		Similar Soils (saturated)	
22	42.0	44.0	4	6	6	10	14		Similar Soils (saturated)	
23	44.0	46.0	13	23	29	26			Similar Soils (saturated)	

Boring Terminated At: _____ Caved At: _____ Finish Date: _____ Time: _____

Driller's Signature: Mark Childs Inspector's Signature: _____

Helper: Cory Farmer

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Rev. 2/01
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ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation Field Log

Client: _____

Project: _____ Job No.: _____

Boring Location: _____ Sheet: _____ of _____

Sampler Hammer Weight: _____
Fall: _____
Casing Hammer Weight: _____
Fall: _____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA 3 ¼"	HSA 4 ¼"	Casing	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing
24	46.0	48.0	5	10	13	16	12		Topsoil; Asphalt; Concrete; Other (note)	
									Corey (Brown silt and sand, some stone	
25	48.0	50.0	13	21	25	20	8		fragments) (continued)	
									similar soils (continued)	

Boring Terminated At: _____ Caved At: _____ Finish Date: _____ Time: _____

Driller's Signature: Mark Childs Inspector's Signature: _____

Helper: Corey Farmer

Rev. 2
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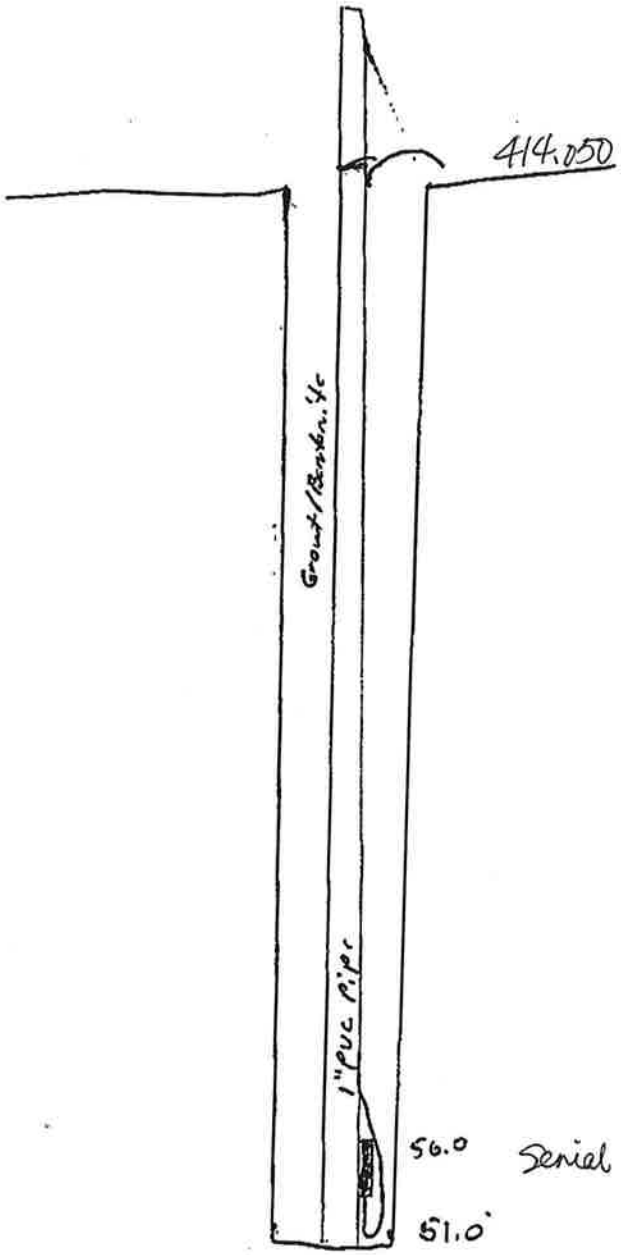
Mark Childs
Cory Farmer

PZ-68



3 Bags of Cement
1½ Bags of Bentonnite

Serial #: 036664

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation Field Log

Client: Parsons

Project:

Job No.: CD-3151

Boring Location:

Boring No.: PZ-09

Sheet: 1 of 3

Sampler Hammer
Auto Weight: 140 lbs
Fall: 30
Casing Hammer
Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
11-4-10		36.0	36.0	Dry
11-5-10		36.0	36.0	Dry

Date	Drilled From	Drilled To	HSA 3 ¼"	HSA 4 ¼"	Casing	Air / Wet Rotary	Rock Core
11-4-10	0.0	36.0		✓			
11-5-10	36.0	51.0		✓			

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing
									Topsoil; Asphalt; Concrete; Other (note)	
1	0.0	2.0	2	3	3	5	15		Red/Brown Silt and Clay, some fine sand,	
2	2.0	4.0	4	4	5	10	6		little sand (moist)	
3	4.0	6.0	6	6	7	10	16		Similar Soils	
4	6.0	8.0	10	13	8	6	14		Similar Soils (moist)	
5	8.0	10.0	6	10	6	6	18		Similar Soils (moist)	
6	10.0	12.0	16	9	7	4	20		Similar Soils (moist)	
7	12.0	14.0	7	7	9	11	20		Similar Soils (moist)	
8	14.0	16.0	10	11	11	12	16		Similar Soils (moist)	
9	16.0	18.0	11	13	15	17	23		Similar Soils (moist) Cobble	
10	18.0	20.0	2	35	21	11	4		Similar Soils	
11	20.0	22.0	24	12	12	14	12		Similar Soils (moist)	
12	22.0	24.0	7	7	8	7	12		Light Brown Sand (moist)	

Boring Terminated At: 51.0 Caved At: Grout Finish Date: 11-5-10 Time:

Driller's Signature: Mark Childs

Helper: Cory Farmer

Inspector's Signature:

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation Field Log

Client: Parsons

Project:

Boring Location:

Job No.: 10-3151

Boring No.: P2-C9

Sheet: 2 of 3

Sampler Hammer Weight: _____

Fall: _____

Casing Hammer Weight: _____

Fall: _____

☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
11/5/10				
5:00	8:00	36	36	Dry

Date	Drilled From	Drilled To	HSA 3 ¼"	HSA 4 ¼"	Casing	Air / Wet Rotary	Rock Core
	0	36					

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing
									Topsoil; Asphalt; Concrete; Other (note)	
13	24.0		2	5	7	9	12		Brown mf SAND some silt, little mf gravel (moist)	
14	26.0	28.0	2	4	5	4	12		Similar Soils (moist)	
15	28.0	30.0	2	3	6	7	10		Similar Soils (moist)	
16	30.0	32.0	15	14	20	20	10		Grey Brown mf SAND some silt, little mf gravel (moist)	
17	32.0	34.0	15	14	16	20	12		Similar Soils (moist)	
18	34.0	36.0	4	27	27	18	8		Similar Soils (moist)	
19	36.0	38.0	8	7	8	8	12		Brown mf SAND some silt, little mf gravel (moist)	
20	38.0	40.0	14	9	10	16	12		Similar Soils (moist)	
21	40.0	42.0	16	14	14	12	0		No Recovery	
22	42.0	44.0	3	6	6	8	4		Brown silt little clay, little mf gravel (wet to saturated)	
23	44.0	46.0	4	5	5	14	12		Similar Soils saturated	
24	46.0	48.0	4	4	5	5	4		Similar Soils	
25	48.0	50.0	5	5	5	5	16		Similar Soils saturated	

Boring Terminated At: 50.0 Caved At: Grouted Finish Date: 11-5-10 Time: _____

Driller's Signature: Mark Childs Inspector's Signature: _____

Helper: Cory Farmer

Rev. 3/01

A:\SG\My Documents\Forms\SI Field Log

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig: CME-850X

Job No.: CD3151
Boring No.: SI-GI
Sheet: 1 of 4
Rig Unit No.: CD-GV-570

Sampler Hammer
(Auto) Safety
Weight: 140 lbs
Fall: 30"
Casing Hammer
Weight: _____
Fall: _____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
10-7-10		55.0	55.0	Dry
10-11-10		55.0	55.0	42.0
10-11-10		67.0	67.0	42.8
10-12-10		67.0	67.0	56.0

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core
10-7-10	0.0	5.0	11"	Sampled		
10-7-10	5.0	55.0	4¼			
10-11-10	55.0	67.0	4¼			
10-12-10			Installed Inconomite Casing			

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
									0.0-5.0 Hand Cleared	
1	5.0	7.0	1	WOH			24		white Solvay waste, Sandy silt like material (wet to Saturated)	
2	7.0	9.0	WOH	WOH	1	WOH	24		Similar Soils (wet)	
3	9.0	11.0	1	4	WOH	1	24		Similar Soils (wet)	
4	11.0	13.0	1	WOH	1	WOH	24		Grey and white layers of Solvay waste (wet to Saturated)	
5	13.0	15.0	3	3	1	1	4		Similar Soils (wet)	
6	15.0	17.0	1	WOH	1	WOH	24		Similar Soils (wet)	
7	17.0	19.0	1	WOH	1	WOH	24		Similar Soils (wet)	
8	19.0	21.0	1	1	1	1	24		Similar Soils (wet)	
9	21.0	23.0	1	WOH	WOH	1	24		Similar Soils (wet)	

Boring Terminated At: 67.0 Caved At: Ground Finish Date: 10-12-10 Time: _____
Driller: Mark Childs
Helper: Cory Farmer
Inspector's Signature: _____

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Rev 9-14

ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig: CME-850

Job No.: CD3151
Boring No.: CD-3151
Sheet: 2 of 4
Rig Unit No.: CD-CU-570

Sampler Hammer
~~Auto~~ Safety
Weight: 140
Fall: 30"
Casing Hammer
Weight: _____
Fall: _____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
10	23.0	25.0	1	WOH	WOH	1	24		similar soils (wet)	
11	25.0	27.0	WOH →				14		Gray with white/tan layers (saturated)	
12	27.0	29.0	WOH	1	1	1	20		similar soils (wet to saturated)	
13	29.0	31.0	WOH	2	4	2	24		similar soils (wet)	
14	31.0	33.0	5	14	10	11	20		similar soils (wet) some crust layers in the silver	
15	33.0	35.0	2	1	1	2	21		similar soils (wet)	
16	35.0	37.0	1	WOH	1	1	24		similar soils (wet)	
17	37.0	39.0	1	WOH	1	WOH	24		similar soils (wet)	
18	39.0	41.0	WOH	WOH	1	WOH	24		similar soils (wet)	
19	41.0	43.0	WOH →		1	WOH	24		similar soils (wet to saturated)	

Boring Terminated At: 67.0 Caved At: Encountered Finish Date: 10-12-10 Time: _____

Driller: Mark Childs
Helper: Cory Farmer

Inspector's Signature: _____

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Rev 9/05

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation Field Log

Client: _____

Project: _____ Job No.: CD-B157

Boring Location: _____ Boring No.: SI-01

Sheet: 3 of 4

Sampler Hammer Weight: 140 Fall: 30"

Casing Hammer Weight: _____ Fall: _____

☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA 3 ¼"	HSA 4 ¼"	Casing	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing
									Topsoil; Asphalt; Concrete; Other (note)	
20	43.0	45.0	WOH	→		1	24		Similar soils (saturated)	
21	45.0	47.0	1	WOH	1	1	20		Similar soils (saturated)	
22	47.0	49.0	WOH	1	1	WOH	24		Similar soils (saturated)	
23	49.0	51.0	WOH	→		P	21		Similar soils (saturated)	
			* We switched to NWRods							
24	51.0	53.0	WOR	1	WOH	1	24		Similar soils (saturated)	
25	53.0	55.0	13	15	13	8	24		Similar soils (saturated)	
26	55.0	57.0	2	1	WOH	3	24		Gray with white layers of solvay waste (wet to saturated)	
27	57.0	59.0	1	1	WOH	1	24		Similar soils (wet)	
28	59.0	61.0	WOH	→		1	24		Solvay waste (wet)	
29	61.0	63.0	1	4	10	14	24		Solvay waste (wet) changed at 61'5" to a Brown mf sand, little mf gravel (moist)	
30	63.0	65.0	11	13	14	8	11		Brown mf sand some cmf gravel some silt (saturated)	
31	65.0	67.0	3	4	9	8	15		Similar Soils Encountered * Installed Casing down to 66.5	

Boring Terminated At: 67.0 Caved At: Ground Finish Date: 10-12-10 Time: _____

Driller's Signature: Mark Childs

Helper: Cory Farmer

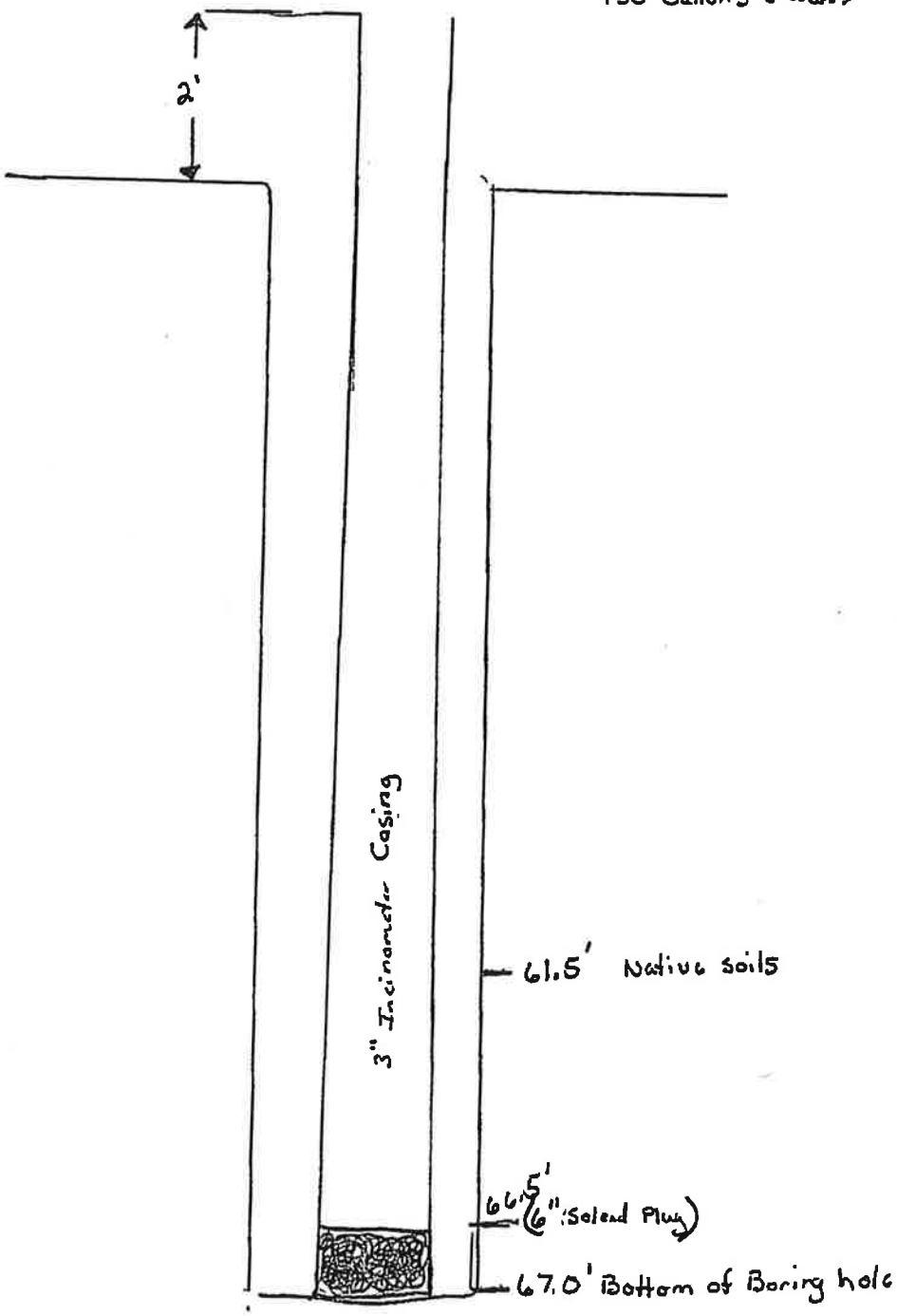
Inspector's Signature: _____

SI-G1

1 Bag of Bentonite

1 Bag of Cement

150 Gallons of water



ATLANTIC TESTING LABORATORIES

Subsurface Investigation Field Log

Client: Parsons
Project: Onondaga Lake Superfund Project
Boring: Syracuse, New York
Drill Rig: CME 850X

Job No.: CD3151
Boring No.: SI-62
Sheet: 1 of 3
Rig Unit No.: CD-GV-570

Sampler Hammer
(Auto) Safety
Weight: 140 lbs
Fall: 30"
Casing Hammer
Weight: _____
Fall: _____
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
10-14-10	5:30	67.0	67.0	61'5"

Date	Drilled From	Drilled To	HSA Size	Casing Size	Air / Wet Rotary	Rock Core
10-14-10	0.0	5.0	Hand cleared			
10-14-10	0.0	67.0'	4¼			

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
									Hand cleared to 5.0'	
1	5.0	7.0	WOH	→			12		White Solvay waste silt like material (moist)	
2	10.0	12.0	WOH	→			19		White Solvay waste with Grey layers of staining, similar soils (wet)	
3	15.0	17.0	WOH	→			24		similar soils (wet)	
4	20.0	22.0	WOH	→			4		white Solvay waste layers of Grey staining (wet)	
5	25.0	27.0	WOH	→			24		Similar soils (wet)	
6	30.0	32.0	WOR	→	1	WOH	24		Similar soils (wet)	
7	35.0	37.0	1	WOH	2	1	24		Grey Solvay waste, layers of white/tan (wet) (silt like materials)	
8	395	415	4	2	1	1	24		Similar soils (wet) hard layers of Solvay waste	
9	45.0	47	WOR	→			24		Similar soils (wet)	

Boring Terminated At: 67.0 Caved At: Caved Finish Date: 10-15-10 Time: _____
Driller: Mark Childs
Helper: Cory Farmer
Inspector's Signature: _____

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ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation Field Log

Client: Parsons

Project: Onondaga Lake Superfund Project

Boring Location: Syracuse NY

Job No.: 10-3151

Boring No.: SI-62

Sheet: 2 of 3

Sampler Hammer Weight: 140 lbs

Fall: 30"

Casing Hammer Weight: _____

Fall: _____

☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth

Date	Drilled From	Drilled To	HSA 3 ¼"	HSA 4 ¼"	Casing	Air / Wet Rotary	Rock Core

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing
									Topsoil; Asphalt; Concrete; Other (note)	
10	50.0	52.0	2	1	2	1	24		Grey Solvay waste, with layers of dark/white Solvay (wet)	
11	55.0	57.0	WOR	WOR	1	3	24		similar Soils (wet)	
12	60.0	62.0	WOH			3	24		Similar Soils	
13	63.0	65.0	10	30	48	65	20		Reddish-brown silt, clay some fine gravel some fine sand and silt (wet)	
14	65.0	67.0	38	39	4/4	53	13		similar Soils (wet)	
									Installed a Inconomder Casing. And Grouted	

Boring Terminated At: 67.0' Caved At: Grout'd Finish Date: 10-15-10 Time: _____

Driller's Signature: Mark Childs Inspector's Signature: _____

Helper: Cory Farmer

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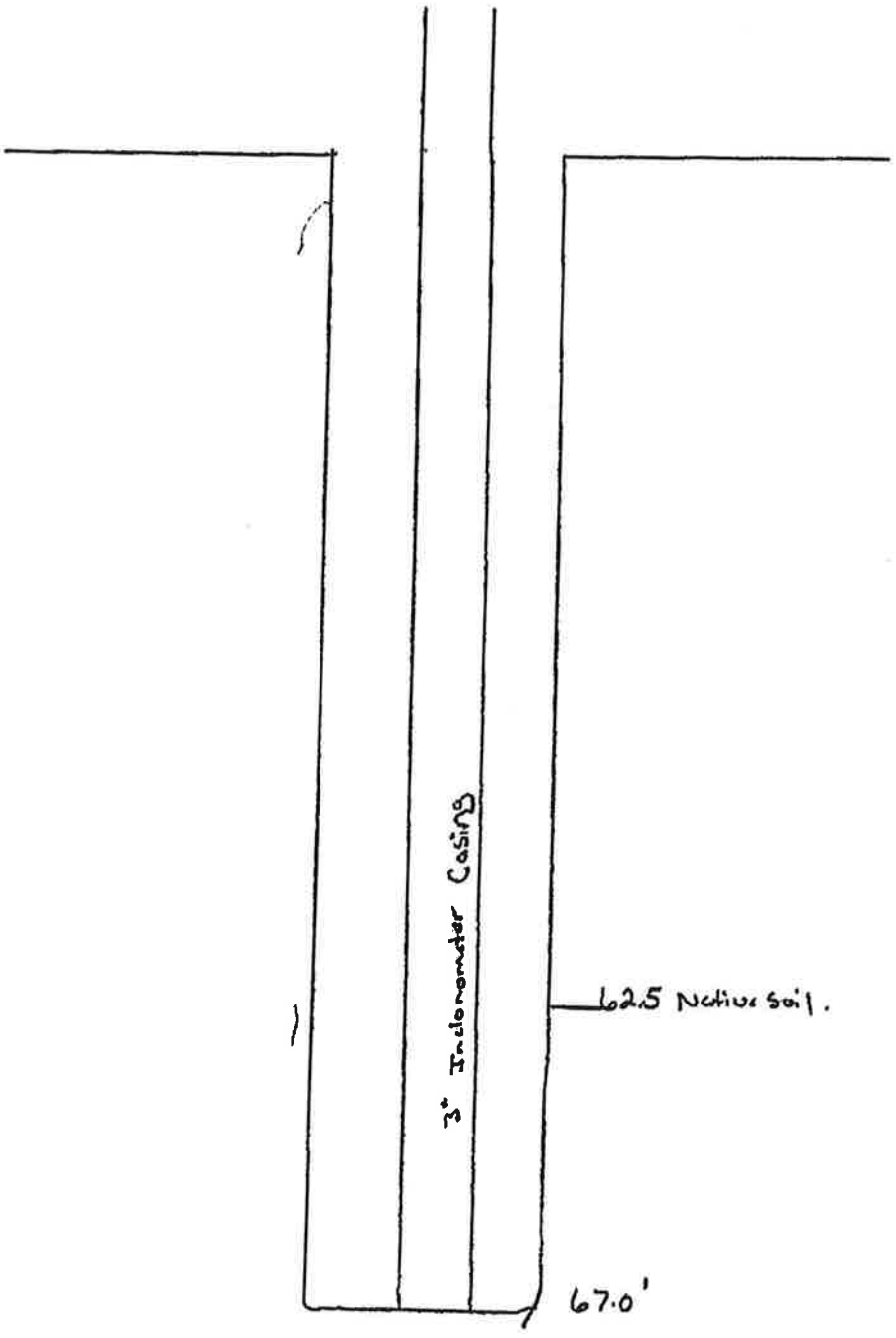
SI G-2
Sheet 3 of 3



ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation Field Log

Client: Parsons

Project: Onondaga Lake Superfund Project

Job No.: CD-3151

Boring Location: Syracuse New York

Boring No.: SI-63

Sheet: 1 of 2

CME-850X

Sampler Hammer Weight: 140 lbs

Fall: 30"

Casing Hammer Weight: _____

Fall: _____

☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
10-12-10	5:00	45.0	46.0	wet
10-12-10	7:44	45.0	46.0	48.3"

Date	Drilled From	Drilled To	HSA 3 ¼"	HSA 4 ¼"	Casing	Air / Wet Rotary	Rock Core
10-12-10	0.0	5.0	Hand Cleared				
10-12-10	0.0	45.0					

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing
	Sampled with NWRods								Topsoil; Asphalt; Concrete; Other (note)	
									Hand Cleared down to 5.0'	
1	5.0	7.0	WOR	WOH	1	WOH	24"	→	white with Grey layers of Solvay waste. (moist)	
2	10.0	12.0	WOH	→	→	→	18"		Similar Soils (moist)	
3	15.0	17.0	WOR	WOH	→	→	24		Similar Soils (moist)	
4	20.0	22.0	WOH	→	→	1	24		white Solvay waste little Grey layering (moist)	
5	25.0	27.0	WOR	→	→	→	24		Similar Soils (moist-wet)	
6	30.0	32.0	WOR	→	→	→	24		Similar Soils (wet)	
7	35.0	37.0	2	3	1	2	22		Grey Solvay waste little layers of white waste. (moist)	
8	40.0	42.0	1	WOH	7	19	20		Similar Soils change to Brown, mF sand some silt trace gravel (wet)	
9	42.0	43.6	39	56	100	—	18"		Brown mF Sand, some silt, trace gravel (wet)	
10	44.0	46.0	43	61	100/4	—	18"		Similar Soils (wet)	
									Set Inclonometer at 44.5'	

Boring Terminated At: _____ Caved At: _____ Finish Date: _____ Time: _____

Driller's Signature: Mark Childs

Inspector's Signature: _____

Helper: Cory Farmer

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Rev. 2/01
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ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation Field Log

Client: Parsons
Project:
Boring Location:

Job No.: CD-3151
Boring No.: SI G4
Sheet: 1 of 2

Sampler Hammer Weight: WD
Fall: 30"
Casing Hammer Weight:
Fall:
☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
10-18-10	3:45	57.0	57.0	Dry
10-19-10	8:00	57.0	4'	45'5"

Date	Drilled From	Drilled To	HSA 3 ¼"	HSA 4 ¼"	Casing	Air / Wet Rotary	Rock Core
10-18-10	0.0	57.0		4¼			
10-14-10	Installed A	Inclinometer					

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing
									Topsoil; Asphalt; Concrete; Other (note)	
									Hand Cleared down to 5.0'	
1	5.0	7.0	1	1	1	5	10		Tan to white Solvay waste, moist trace organics	
2	10.0	12.0	WOR	1	WOR	→	24		Tan to white Solvay waste, little Grey layers of Solvay (silt like soils) (moist to wet)	
3	15.0	17.0	2	1	2	2	12		Similar Soils (moist to wet)	
4	20.0	22.0	1	WOH	WOH	1	24		Similar Soils (wet)	
5	25.0	27.0	WOR	1	1	4	20		Tan Solvay waste (wet)	
6	30.0	32.0	5	1	2	3	14		Similar Soils layers of hard crust. (moist)	
7	35.0	37.0	WOH	→		1	24		Similar Soils layers of tan and Grey Solvay waste (moist)	
8	40.0	42.0	WOH	→	1	10	24		Grey Solvay waste trace MF gravel ... silt (moist to wet)	
9	45.0	47.0	21	24	22	39	16		Brownish-Grey Fill (Possible old Road)	
10	50.0	52.0	18	26	48	40	19		cmf Gravel, Some mf Sand trace of Brick. (moist)	
11	55.0	57.0	15	36	35	25	18		Brownish-Grey Fill (Possible old Burn)	
									Similar Soils (moist)	
									Fill Similar Soils (Possible old Burn	

Boring Terminated At: 57.0 Caved At: Ground Finish Date: 10-19-10 Time: 1:00

Driller's Signature: Mark Childs Inspector's Signature:

Helper: John Foster

57 × 12 = 114, 57 + 684 = 741

10 × 68 = 680, 3 × 68 = 204, 680 + 204 = 884, 884 − 648 = 360

D-11
Rev. 2/01
AJS\C:\My Documents\Forms\SI Field Log

ATLANTIC TESTING LABORATORIES, Limited

Subsurface Investigation Field Log

Client: Parsons

Project:

Boring Location:

Job No.: ep-3151

Boring No.: SI-66 (maybe)

Sheet: 1 of

Sampler Hammer Weight: 140 lbs

Fall: 30

Casing Hammer Weight:

Fall:

☐ Spun ☐ Driven

Date	Time	Casing Depth	Hole Depth	Water Depth
10-21-10		65.0	65.0	58' 7"
				46.00'

Date	Drilled From	Drilled To	HSA 3 ¼"	HSA 4 ¼"	Casing	Air / Wet Rotary	Rock Core
10-21-10	0.0	65.0'		✓			

Sample Number	Sampled From	Sampled To	Split Spoon Blows 0/6	6/12	12/18	18/24	Recovery	Depth of Change	Soil Type and Drilling Notes (field tests performed, loss or gain of water, well installation, drilling difficulties, cobbles, boulders)	Casing Blows
									Topsoil; Asphalt; Concrete; Other (note)	
									*Auger down to 40.0' then started sampling	
1	40.0	42.0	WOH	→	2		24		Tan Solvay waste with layers of Coal	
2	45.0	47.0	WOH	→			24		Similar Soils (moist to wet)	
3	50.0	52	1	WOH	WOH	WOH	16		Tan Solvay waste layers of Coal (wet)	
4	52.5	54.5	32	34	24	20	20		Blackish cmf gravel little sand, little silt (wet to saturated)	
5	55.0	57.0	25	24	25	23	☐		Blackish Brown cmf sand, some mf gravel little silt (saturated)	
									Washbore Augered down to 65.0'	
									We installed a 1" Pipe.	

Boring Terminated At: 65.0 Caved At: Grouted Finish Date: 10-22-10 Time:

Driller's Signature: mark childs Inspector's Signature:

Helper: John Foster

D-11
Rev. 2/01
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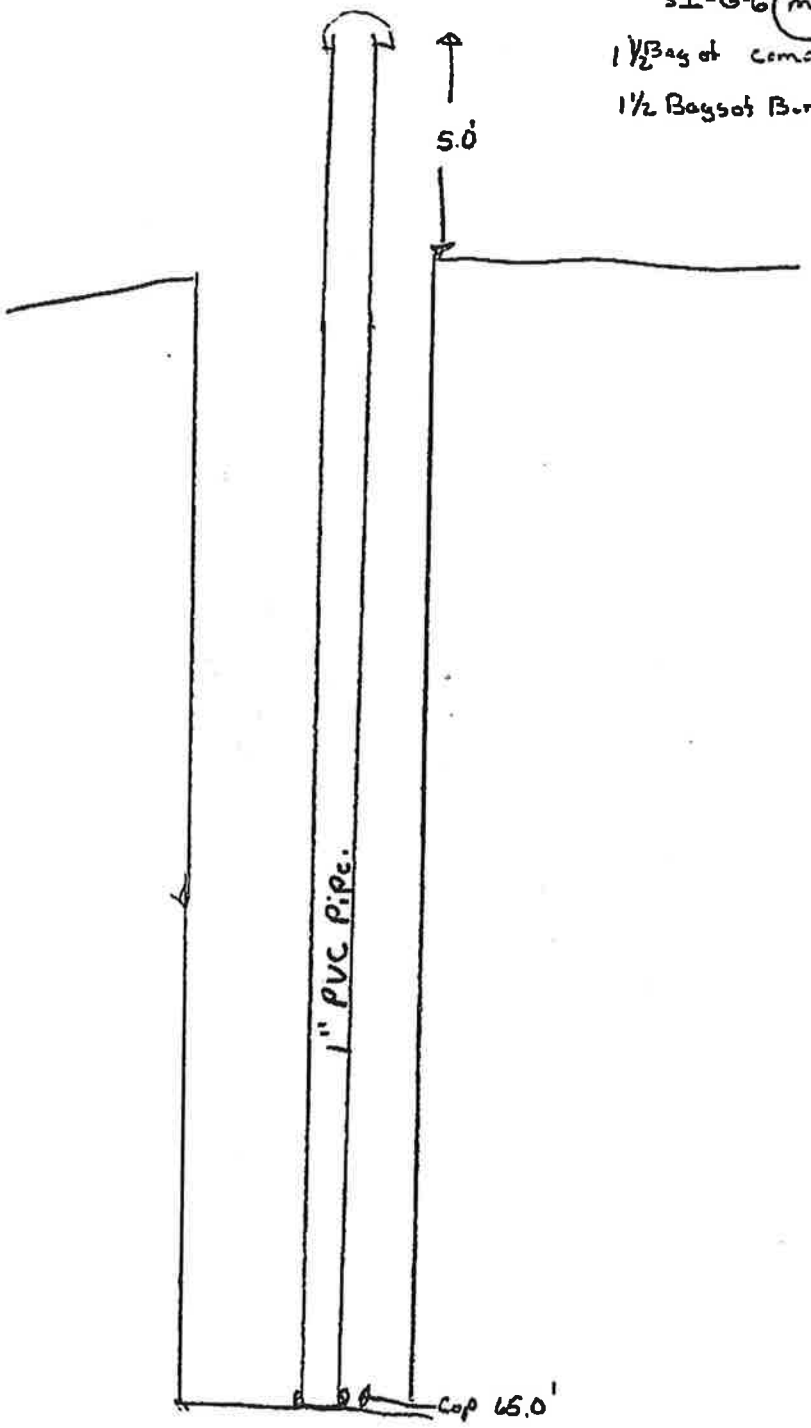
Merrill Childs

SI-G-6 (may be)

1 ½ Bag of cement

1½ Bags of Bentonite



ATTACHMENT C
Post-Installation Acceptance Testing

Settlement Cells and Piezometers Wires ID

PHASE I GROUPED CABLES

44 pair cable in Phase I

Wire	Device	SN	Multiplexer Channel
1	SC-G01	036780	Ch 1
2	SC-G01	036780	
3	SC-G02	036770	Ch 2
4	SC-G02	036770	
5	SC-G03	036759	Ch 3
6	SC-G03	036759	
7	SC-G04	036761	Ch 4
8	SC-G04	036761	
9	PZ-G1A	036660	Ch 5
10	PZ-G1A	036660	
11	PZ-G1B	036661	Ch 6
12	PZ-G1B	036661	
13	PZ-G1C	036659	Ch 7
14	PZ-G1C	036659	
15	SC-G05	036728	Ch 8
16	SC-G05	036728	
17	SC-G06	036751	Ch 9
18	SC-G06	036751	
19	SC-G07	036767	Ch 10
20	SC-G07	036767	
21	SC-G09	036776	Ch 11
22	SC-G09	036776	
23	PZ-G3A	036666	Ch 12
24	PZ-G3A	036666	
25	PZ-G3B	036670	Ch 13
26	PZ-G3B	036670	
27	PZ-G3C	036669	Ch 14
28	PZ-G3C	036669	
29	SC-G08	036779	Ch 15
30	SC-G08	036779	
31	SC-G10	036775	Ch 16
32	SC-G10	036775	
33	SC-G11	36755	Ch 17
34	SC-G11	036755	
35	SC-G12	036757	Ch 18
36	SC-G12	036757	
37	SC-G13	036766	Ch 19
38	SC-G13	036766	
39	SC-G14	036762	Ch 20
40	SC-G14	036762	
41	SC-G15	036752	Ch 21
42	SC-G15	036752	
43	SC-G16	036764	Ch 22
44	SC-G16	036764	

10 pair cable

Wire	Device	SN	Multiplexer Channel
1	PZ-G2A	036662	Ch 23
2	PZ-G2A	036662	
3	PZ-G2B	036663	Ch 24
4	PZ-G2B	036663	
5	PZ-G2C	036665	Ch 25
6	PZ-G2C	036665	

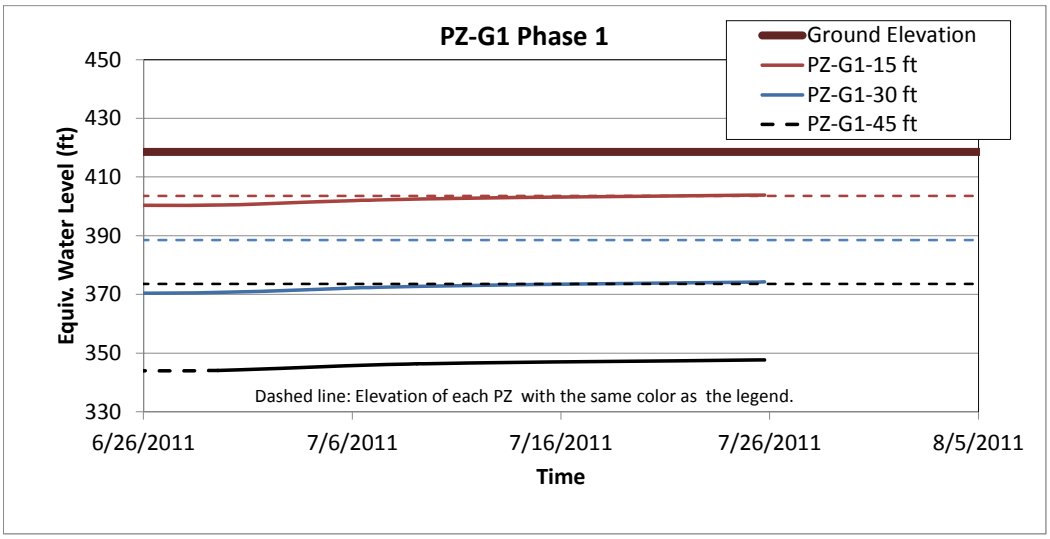
PHASE II GROUPED CABLES

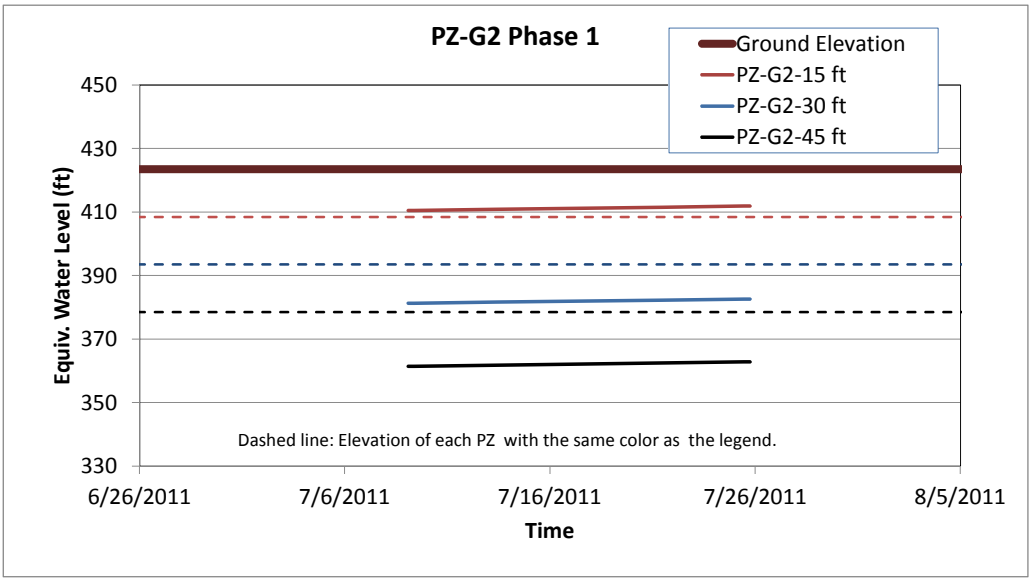
44 pair cable in Phase II

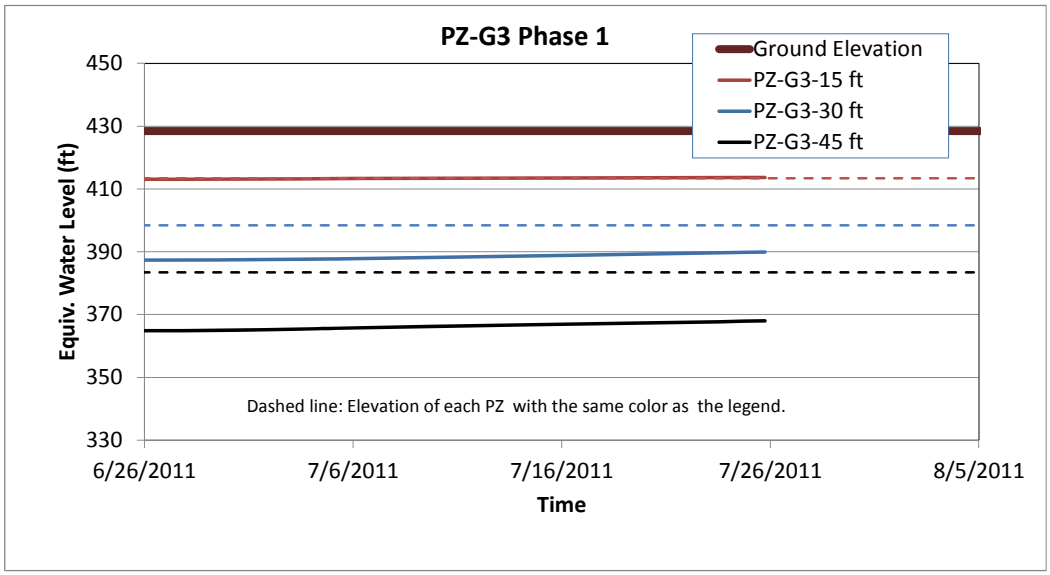
Wire	Device	SN	Multiplexer Channel
1	SC-G17	036763	Ch 1
2	SC-G17	036763	
3	SC-G18	036771	Ch 2
4	SC-G18	036771	
5	SC-G19	036750	Ch 3
6	SC-G19	036750	
7	PZ-G4A	036667	Ch 4
8	PZ-G4A	036667	
9	PZ-G4B	036673	Ch 5
10	PZ-G4B	036673	
11	PZ-G4C	036671	Ch 6
12	PZ-G4C	036671	
13	SC-G20	036730	Ch 7
14	SC-G20	036730	
15	SC-G21	036758	Ch 8
16	SC-G21	036758	
17	SC-G22	036756	Ch 9
18	SC-G22	036756	
19	SC-G23	036768	Ch 10
20	SC-G23	036768	
21	SC-G24	036783	Ch 11
22	SC-G24	036783	
23	SC-G25	036784	Ch 12
24	SC-G25	036784	
25	SC-G26	036760	Ch 13
26	SC-G26	036760	
27	SC-G27	036772	Ch 14
28	SC-G27	036772	
29	SC-G28	036781	Ch 15
30	SC-G28	036781	
31	PZ-G5A	036674	Ch 16
32	PZ-G5A	036674	
33	PZ-G5B	036668	Ch 17
34	PZ-G5B	036668	
35	PZ-G5C	036675	Ch 18
36	PZ-G5C	036675	
37	SC-G29	036729	Ch 19
38	SC-G29	036729	

Post-Installation Piezometers Readings

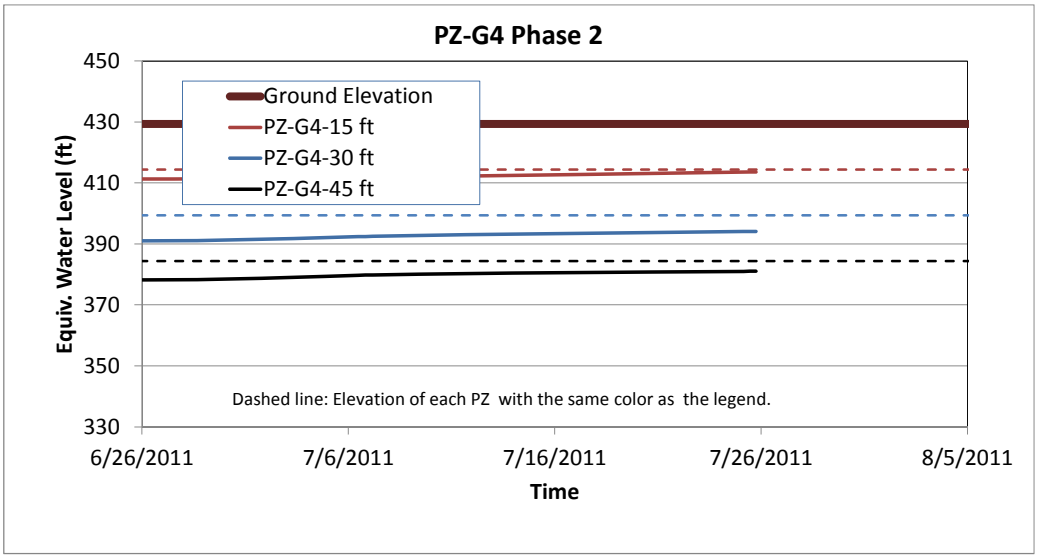
Cell ID	PZ-G1A	PZ-G1B	PZ-G1C	PZ-G2A	PZ-G2B	PZ-G2C	PZ-G3A	PZ-G3B	PZ-G3C
Serial No.	PZ-036660	PZ-036661	PZ-036659	PZ-03662	PZ-03663	PZ-03665	PZ-036666	PZ-036670	PZ-036669
Reg. Zero	6466.2	6638.5	6732	6522.8	6831.3	6660.1	6976.1	7388.9	6930
Linear Factor (G)	0.1	0.1	0.1	0.1	0.1	0.1	0.13094	0.14815	0.13573
Ref. Bar Pressure	1013.0	1013.0	1013.0	1013.0	1013.0	1013.0	1013	1013	1013
Ground Elevation	418.6	418.6	418.6	423.5	423.5	423.5	428.5	428.5	428.5
	418.6	418.6	418.6	423.5	423.5	423.5	428.5	428.5	428.5
Depth of PZ	30.0	45.0	15.0	15.0	30.0	45.0	30	15	45
EL of PZ	388.6	373.6	403.6	408.5	393.5	378.5	398.5	413.5	383.5
	388.6	373.6	403.6	408.5	393.5	378.5	398.5	413.5	383.5
Legend	PZ-G1-30 ft	PZ-G1-45 ft	PZ-G1-15 ft	PZ-G2-15 ft	PZ-G2-30 ft	PZ-G2-45 ft	PZ-G3-30 ft	PZ-G3-15 ft	PZ-G3-45 ft
6/23/2011 5:05	370.651	344.146	400.490				387.434	413.162	365.002
6/29/2011 13:16	370.65	344.15	400.49				387.43	413.16	365.00
7/9/11 2:10	372.78	346.37	402.54	410.51	381.32	361.45	388.12	413.43	366.16
7/25/2011 17:50	374.28	347.70	403.92	411.91	382.62	362.87	389.94	413.70	368.03

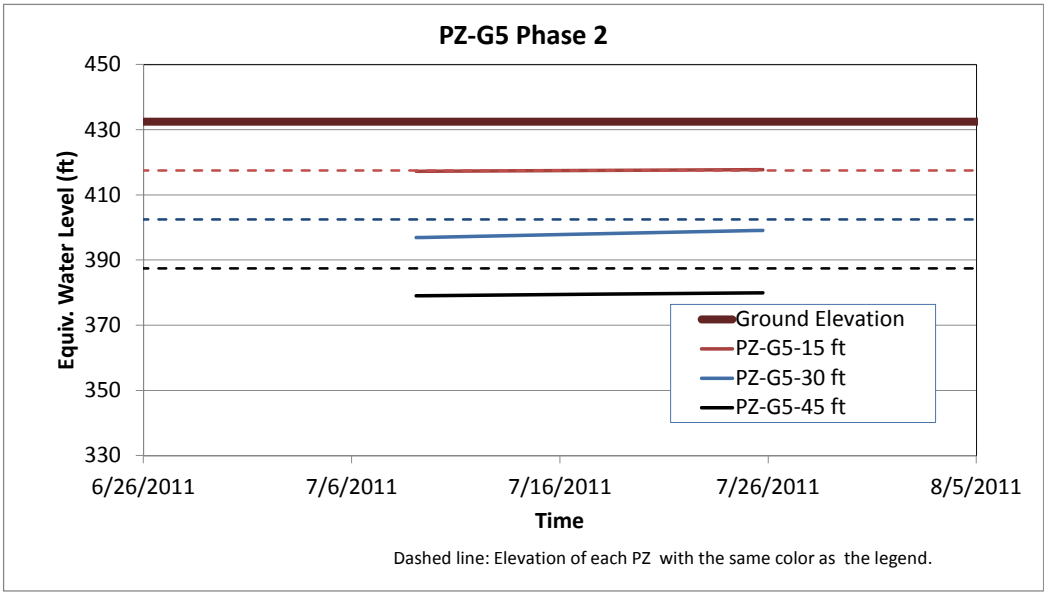



PZ-G2 Phase 1
Ground Elevation
PZ-G2-15 ft
PZ-G2-30 ft
PZ-G2-45 ft
Equiv. Water Level (ft)
450
430
410
390
370
350
330
Dashed line: Elevation of each PZ with the same color as the legend.
6/26/2011
7/6/2011
7/16/2011
7/26/2011
8/5/2011
Time


PZ-G3 Phase 1
Ground Elevation
PZ-G3-15 ft
PZ-G3-30 ft
PZ-G3-45 ft
Equiv. Water Level (ft)
450
430
410
390
370
350
330
Dashed line: Elevation of each PZ with the same color as the legend.
6/26/2011
7/6/2011
7/16/2011
7/26/2011
8/5/2011
Time

Cell ID	PZ-G4A	PZ-G4B	PZ-G4C	PZ-G5A	PZ-G5B	PZ-G5C
Serial No.	PZ-036667	PZ-036673	PZ-036671	PZ-0366674	PZ-036668	PZ-036675
Reg. Zero	6679.8	6539.5	6861.5	6775.0	6873.1	6340.5
Linear Factor (G)	0.1340500	0.1316900	0.1398200	0.1333100	0.1402400	0.1396500
Ref. Bar Pressure	1013.0	1013.0	1013.0	1013	1013	1013
Ground Elevation	429.4	429.4	429.4	432.5	432.5	432.5
	429.4	429.4	429.4	432.5	432.5	432.5
Depth of PZ	30.0	15.0	45.0	15	30	45
EL of PZ	399.4	414.4	384.4	417.5	402.5	387.5
	399.4	414.4	384.4	417.5	402.5	387.5
Legend	PZ-G4-30 ft	PZ-G4-15 ft	PZ-G4-45 ft	PZ-G5-15 ft	PZ-G5-30 ft	PZ-G5-45 ft
	391.18	411.39	378.40			
	391.18	411.39	378.40			
	392.79	412.06	380.10	417.29	396.95	379.08
	394.16	413.64	381.08	417.76	399.15	380.01




PZ-G5 Phase 2
450
430
410
390
370
350
330
Equiv. Water Level (ft)
6/26/2011
7/6/2011
7/16/2011
7/26/2011
8/5/2011
Time
Ground Elevation
PZ-G5-15 ft
PZ-G5-30 ft
PZ-G5-45 ft
Dashed line: Elevation of each PZ with the same color as the legend.

Post-Installation SAA Readings

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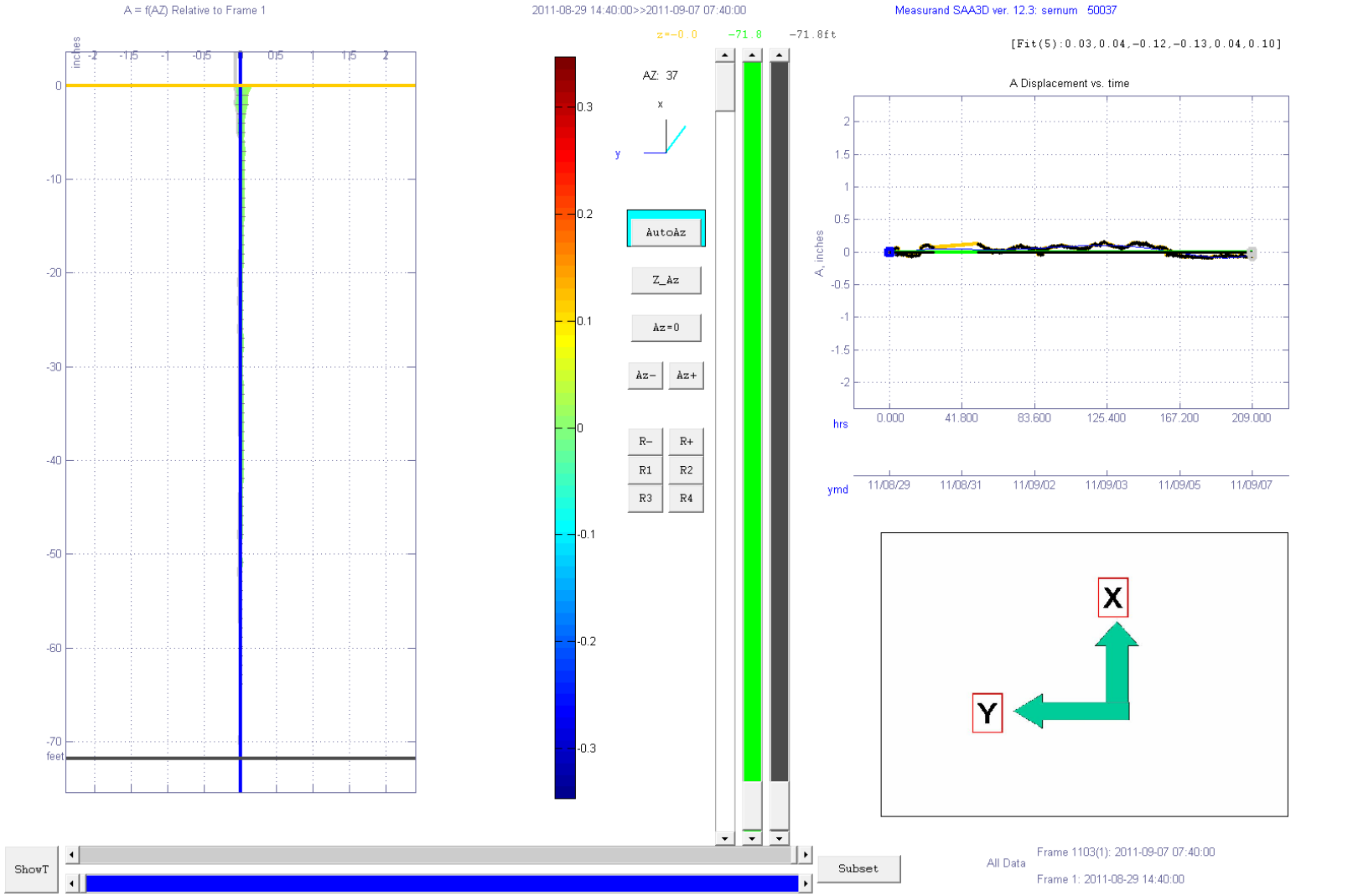
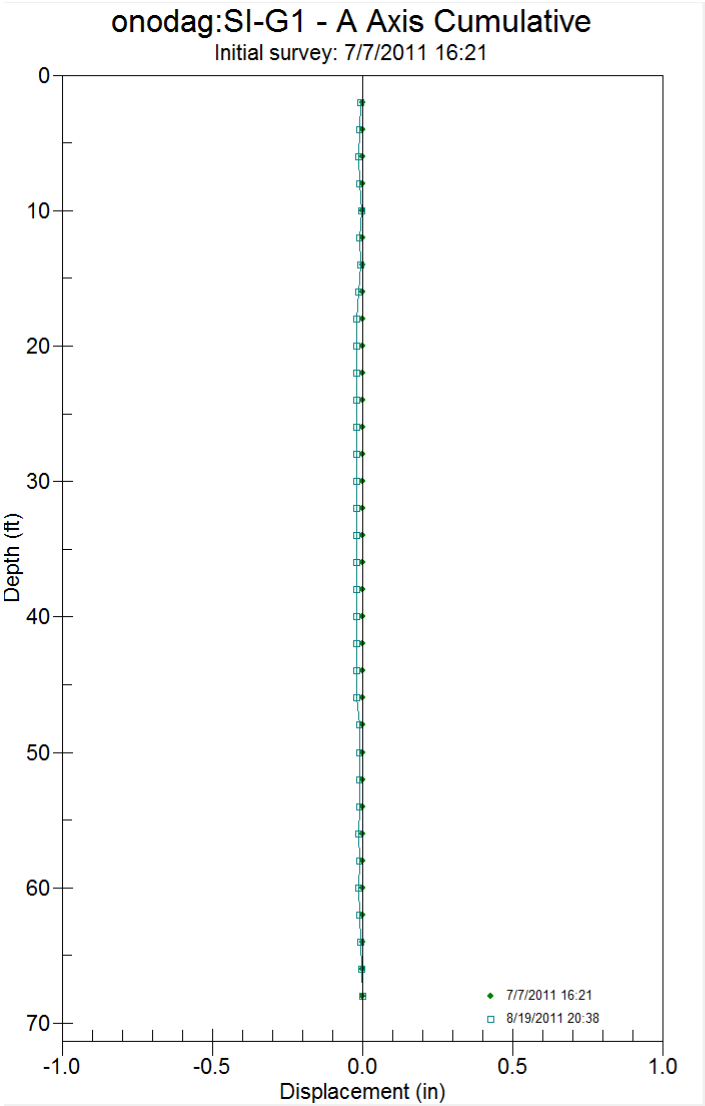
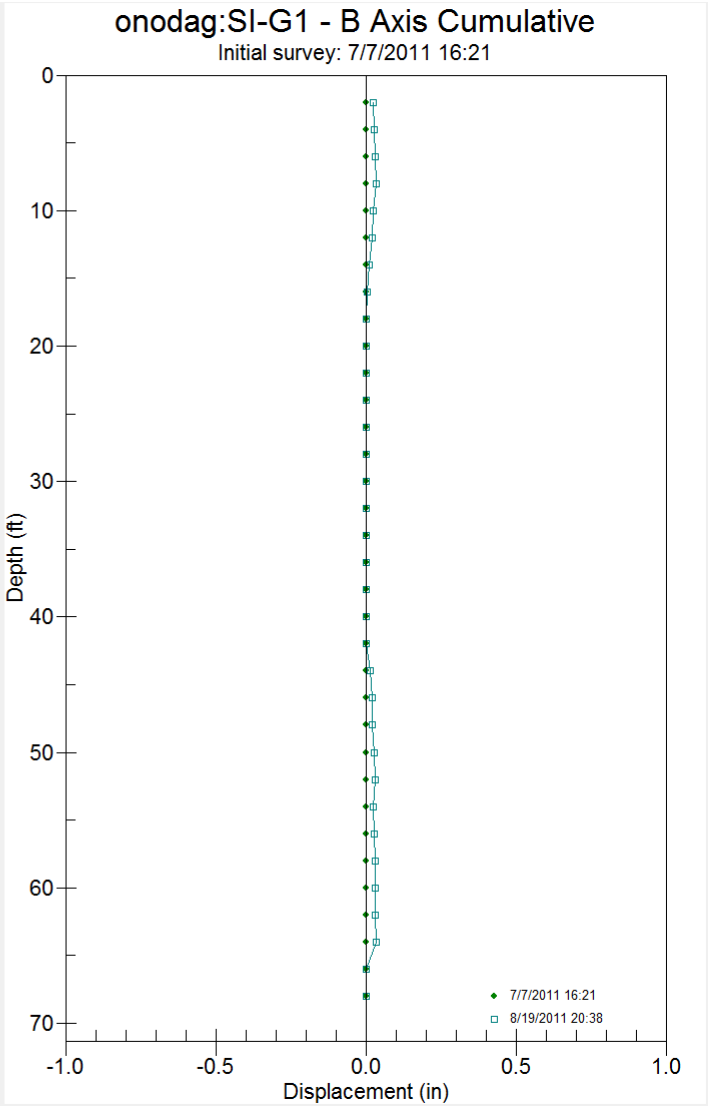
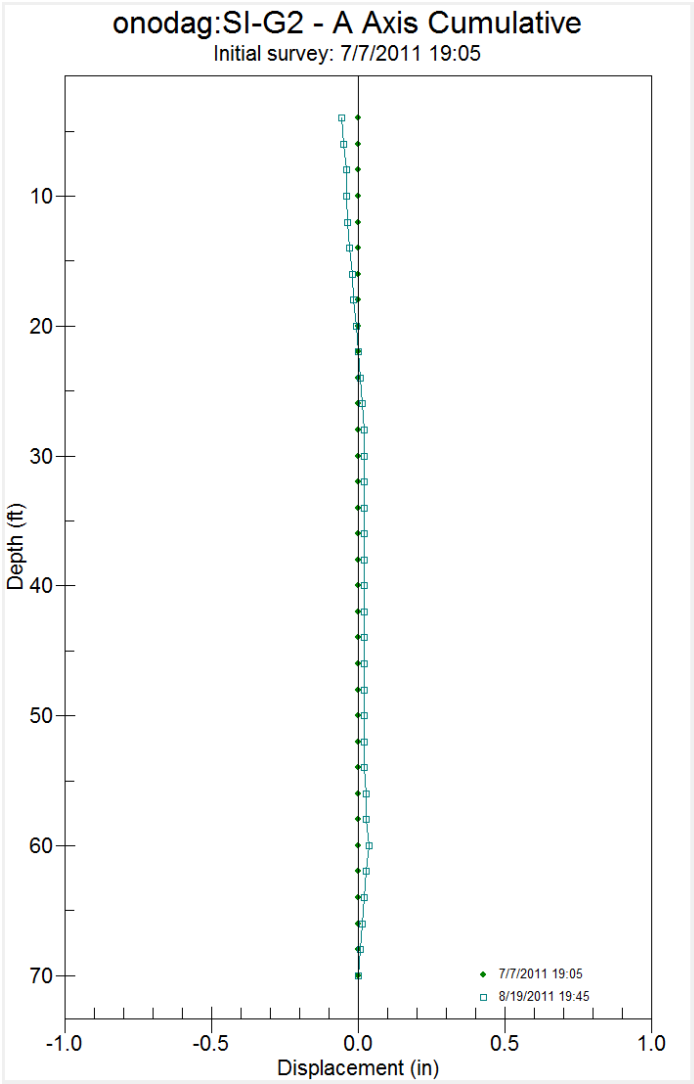
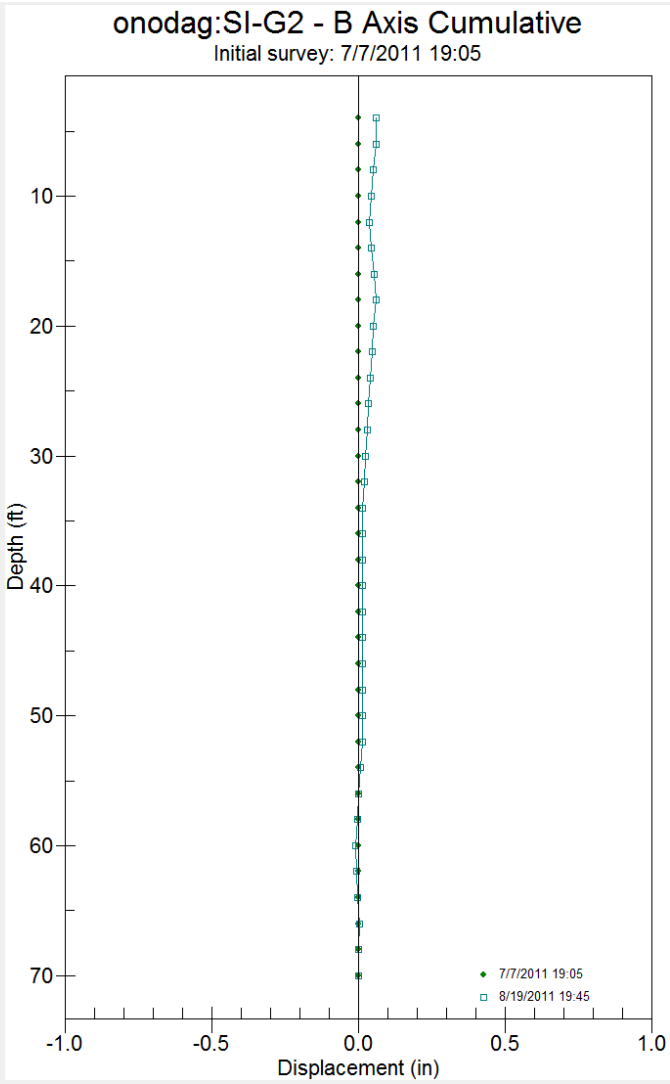


Post-Installation Manual Inclinometers Readings


onodag:SI-G1 - A Axis Cumulative
Initial survey: 7/7/2011 16:21
Depth (ft)
0
10
20
30
40
50
60
70
-1.0
-0.5
0.0
0.5
1.0
Displacement (in)
7/7/2011 16:21
8/19/2011 20:38


onodag:SI-G1 - B Axis Cumulative
Initial survey: 7/7/2011 16:21
Depth (ft)
0
10
20
30
40
50
60
70
-1.0
-0.5
0.0
0.5
1.0
Displacement (in)
7/7/2011 16:21
8/19/2011 20:38


onodag:SI-G2 - A Axis Cumulative
Initial survey: 7/7/2011 19:05
Depth (ft)
10
20
30
40
50
60
70
-1.0
-0.5
0.0
0.5
1.0
Displacement (in)
7/7/2011 19:05
8/19/2011 19:45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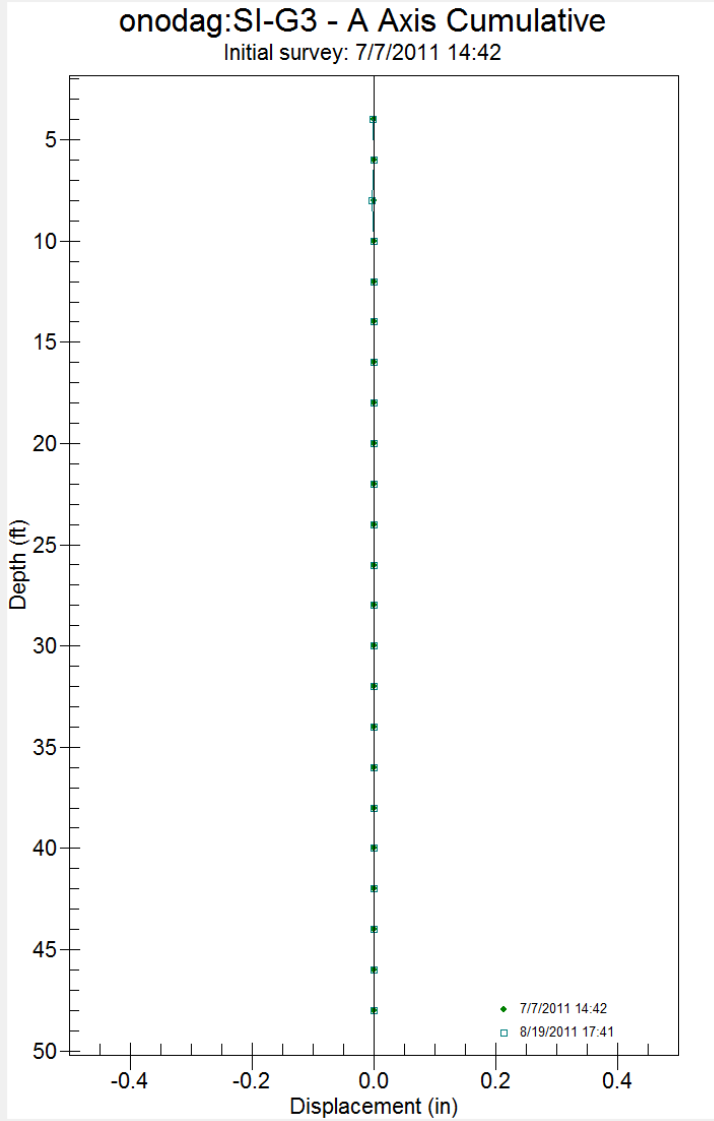
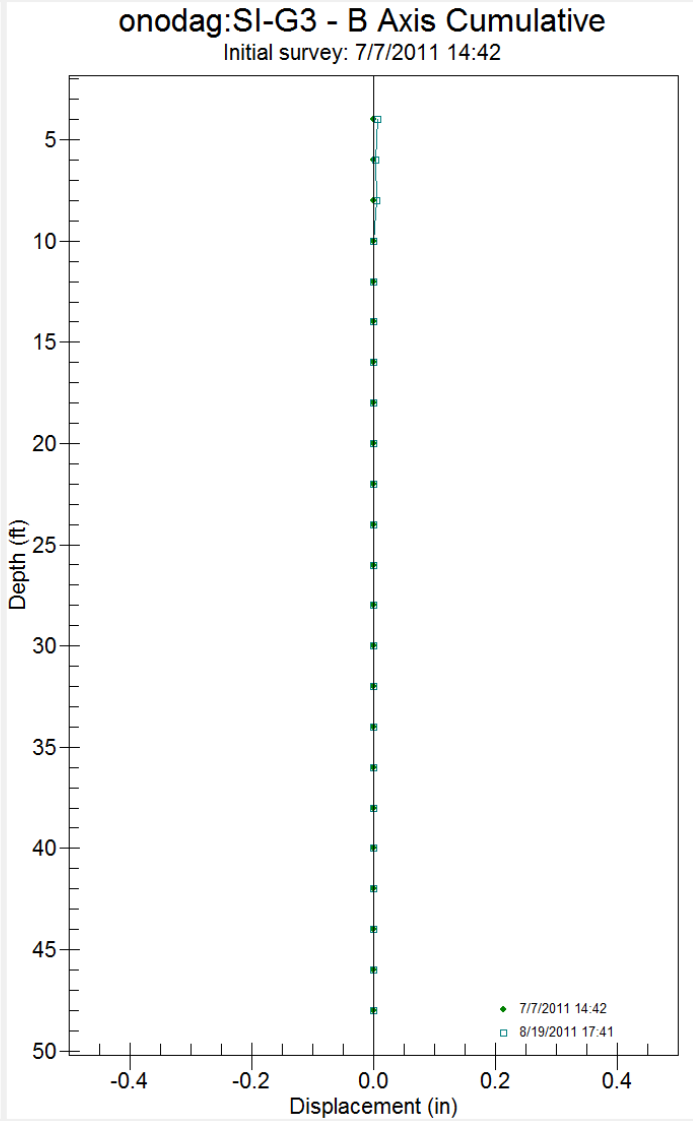
Initial survey: 7/7/2011 19:05
Depth (ft)
10
20
30
40
50
60
70
-1.0
-0.5
0.0
0.5
1.0
Displacement (in)
7/7/2011 19:05
8/19/2011 19:45


onodag:SI-G3 - A Axis Cumulative
Initial survey: 7/7/2011 14:42
Depth (ft)
5
10
15
20
25
30
35
40
45
50
-0.4
-0.2
0.0
0.2
0.4
Displacement (in)
7/7/2011 14:42
8/19/2011 17:41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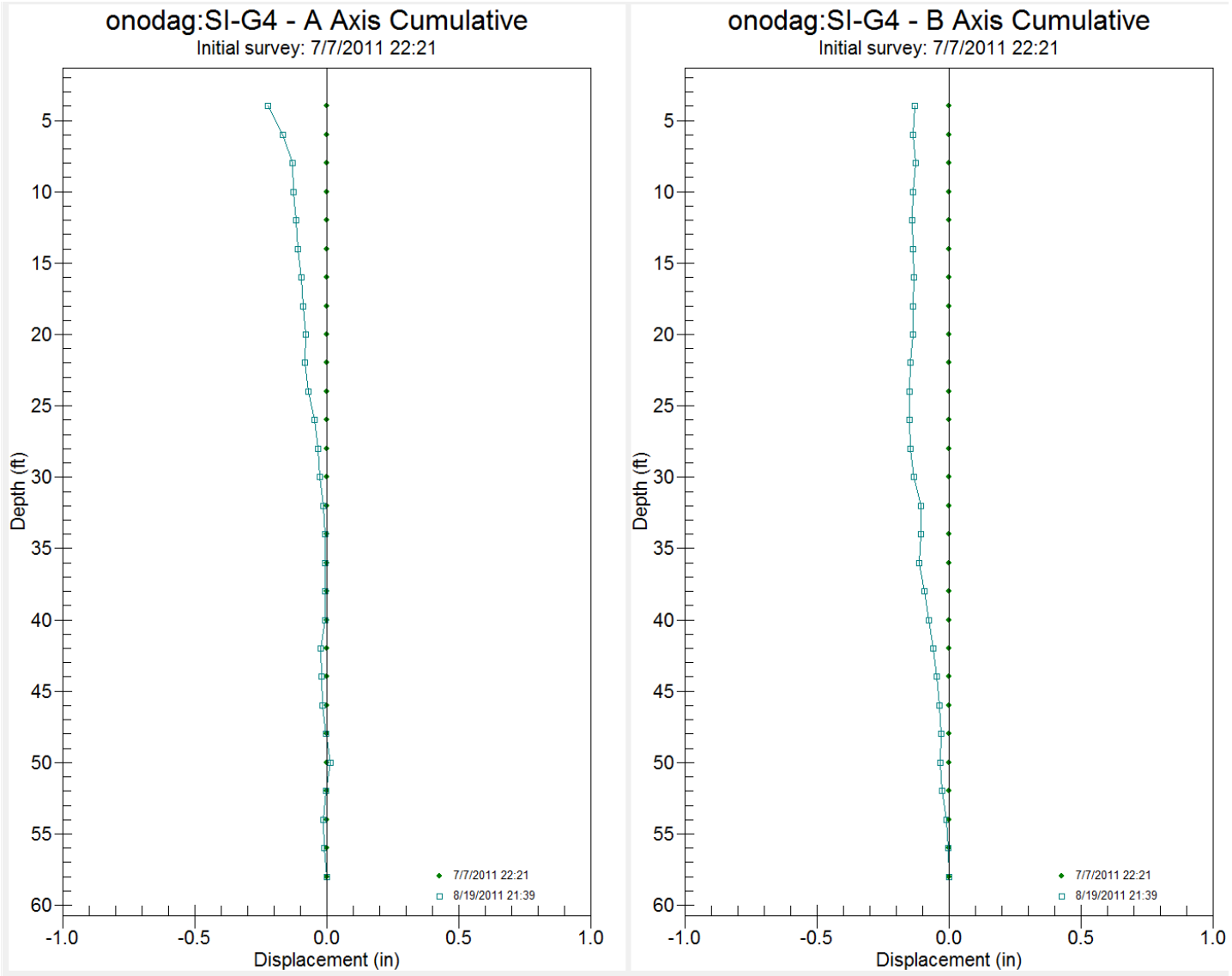
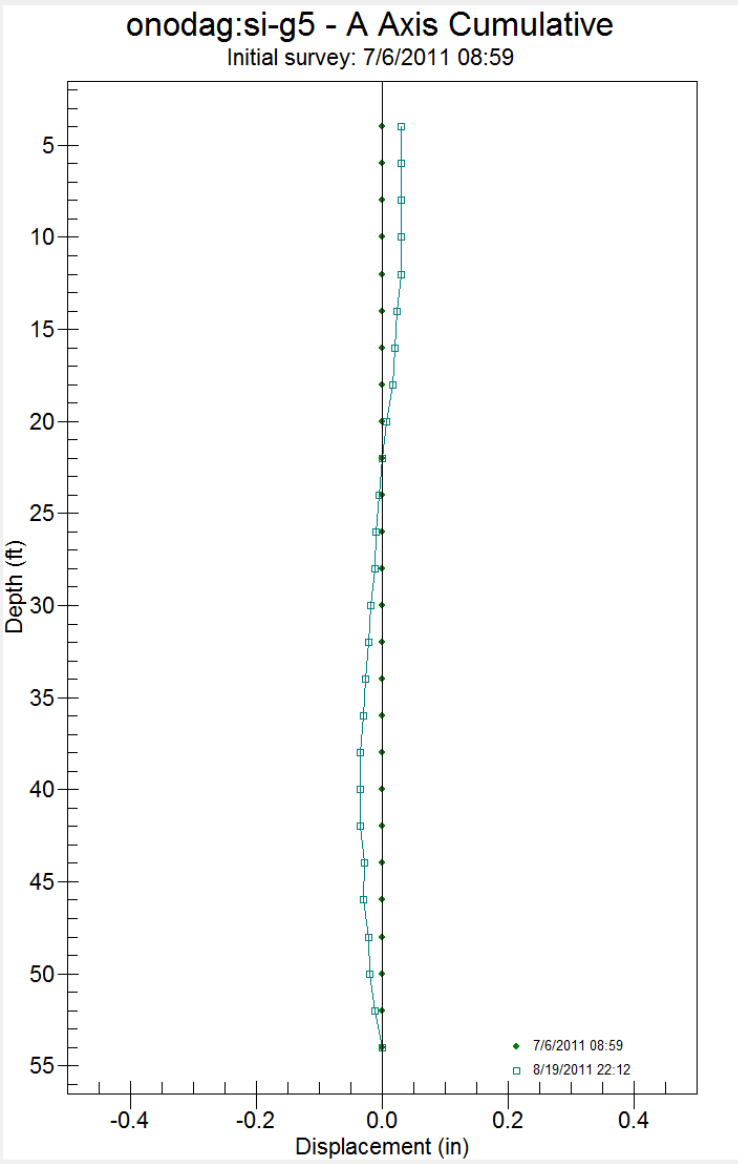
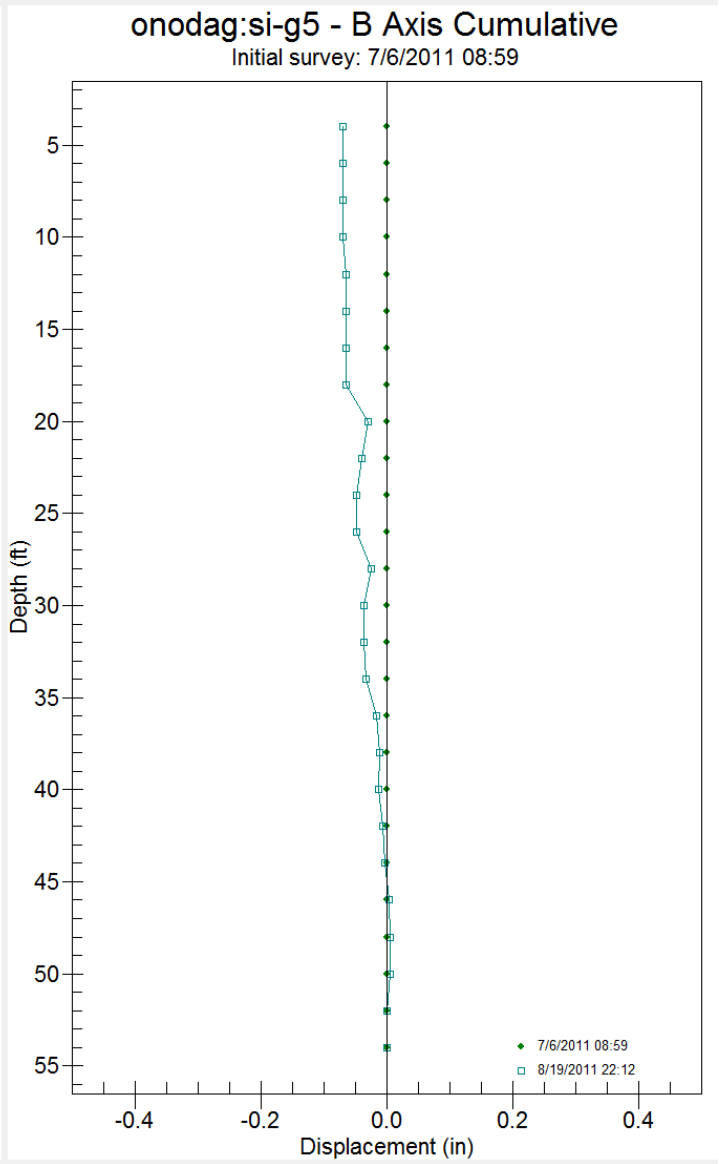
Initial survey: 7/7/2011 14:42
Depth (ft)
5
10
15
20
25
30
35
40
45
50
-0.4
-0.2
0.0
0.2
0.4
Displacement (in)
7/7/2011 14:42
8/19/2011 17:41


onodag:SI-G4 - A Axis Cumulative
Initial survey: 7/7/2011 22:21
Depth (ft)
5
10
15
20
25
30
35
40
45
50
55
60
-1.0
-0.5
0.0
0.5
1.0
Displacement (in)
7/7/2011 22:21
8/19/2011 21:39
onodag:SI-G4 - B Axis Cumulative
Initial survey: 7/7/2011 22:21
Depth (ft)
5
10
15
20
25
30
35
40
45
50
55
60
-1.0
-0.5
0.0
0.5
1.0
Displacement (in)
7/7/2011 22:21
8/19/2011 21:39


onodag:si-g5 - A Axis Cumulative
Initial survey: 7/6/2011 08:59
Depth (ft)
5
10
15
20
25
30
35
40
45
50
55
-0.4
-0.2
0.0
0.2
0.4
Displacement (in)
7/6/2011 08:59
8/19/2011 22:12


onodag:si-g5 - B Axis Cumulative
Initial survey: 7/6/2011 08:59
Depth (ft)
5
10
15
20
25
30
35
40
45
50
55
-0.4
-0.2
0.0
0.2
0.4
Displacement (in)
7/6/2011 08:59
8/19/2011 22:12

Post-Installation “Lift Test” for Settlement Cells

Leg	LEG 1						
Plate Elevation	420.1	421.9	420.5	424.3	424.552	424.488	422.214
Cell ID	SC-G3	SC-G4	SC-G6	SC-G7	SC-G10	SC-G13	SC-G14
Serial No.	SC-036759	SC-036761	SC-036751	SC-036767	SC-036775	SC-36766	SC-036762
Reg. Zero	6420.3	6449.6	6623.5	6333.9	6907.2	6549.2	6327
Linear Factor (G)	0.10919	0.101	0.10318	0.10074	0.1089827	0.11753	0.10569
Initial manufac hz	2533.83	2539.61	2573.62	2516.72	2628.16	2559.14	2515.35
Ref B Pres	998	998	998	998	1007	998	998
Readings (Frequency)							
Local EL of SC = 0		2308.43				2372.37	2284.92
Local EL of SC = 1		2301.48				2366.85	2278.39
Calculated Elevation Change (ft)		-0.92				-0.87	-0.89

Leg	LEG 2								
Plate Elevation	422.3	417.1	420.1	425.545	426.657	422.689	426.82	424.274	428.512
Cell ID	SC-G1	SC-G2	SC-G5	SC-G9	SC-G8	SC-G11	SC-G12	SC-G15	SC-G16
Serial No.	SC-036780	SC-036770	SC-036728	SC-036776	SC-036779	SC-036755	SC-036757	SC-036752	SC-036764
Reg. Zero	6519.1	6389.4	6203.5	6673.2	6662.5	6512	6327.1	6365.5	6375.7
Linear Factor (G)	0.1282042	0.10711	0.095497	0.103054	0.1151186	0.10114	0.10609	0.10001	0.10371
Initial manufac hz	2553.25	2527.73	2490.68	2583.25	2581.18	2551.86	2515.37	2522.99	2525.01
Ref B Pres	1007	998	1034	1007	1007	998	998	998	998
Readings (Frequency)									
Local EL of SC = 0	2367.55			2382.51					2337.16
Local EL of SC = 1	2361.99			2375.67					2330.57
Calculated Elevation Change (ft)	-0.95			-0.95					-0.90

Leg	LEG 3					
Plate Elevation	428.7	429.4	430.7	428.6	430.3	432.0
Cell ID	SC-G19	SC-G21	SC-G22	SC-G24	SC-G28	SC-G29
Serial No.	SC-036750	SC-036758	SC-036756	SC-036783	SC-036781	SC-036729
Reg. Zero	6590.7	6484.0	6505.7	6441.1	6423.3	6448.0
Linear Factor (G)	0.10226	0.1023	0.09983	0.1027652	0.1080125	0.1120540
Initial manufac hz	2567.24	2546.37	2550.63	2537.93	2534.42	2539.29
Ref B Pres	998	998	998	1007	1007	1034
Readings (Frequency)						
Local EL of SC = 0		2359.35	2363.39		2362.58	2392.56
Local EL of SC = 1		2352.81	2356.71		2356.44	2386.61
Calculated Elevation Change (ft)		-0.89	-0.89		-0.89	-0.90

Leg	LEG 4						
Plate Elevation	426.3	426.9	426.8	430.3	431.1	431.6	429.2
Cell ID	SC-G17	SC-G18	SC-G20	SC-G23	SC-G25	SC-G26	SC-G27
Serial No.	SC-036763	SC-036771	SC-036730	SC-03768	SC-03784	SC-036760	SC-036772
Reg. Zero	6324.4	6551.9	6494.0	6446.8	6726.5	6622.6	6744.9
Linear Factor (G)	0.10767	0.0990217	0.1122	0.10669	0.1066235	0.1023600	0.1099339
Initial manufac hz	2514.84	2559.67	2548.33	2539.05	2593.55	2573.44	2597.09
Ref B Pres	998	998	1034	998	1007	998	1007
Readings (Frequency)							
Local EL of SC = 0	2311.19	2350.40	2358.94		2425.54	2406.00	
Local EL of SC = 1	2305.35	2344.07	2353.06		2419.80	2399.99	
Calculated Elevation Change (ft)	-0.82	-0.83	-0.88		-0.84	-0.84	

Note: Calculated Elevation Change is for lifting each settlement cell for approximately 1 ft.

Note: While a settlement cell was lifted for approximately 1ft, the reading for other cells stayed constant.

Post-Installation Pressure Test of Hydraulic Lines

Hydraulic Testing Record

Date of Test:	May 10,2011
Project:	Onondaga Lake SCA
Test Performed By:	Aaron Reeder (Geosyntec) and Dan (parsons Labor
Phase Tested:	1A South side cells
Connections Tested:	SC-G15,SC-G16,SC-G12,SC-G11,SC-G8,SC-G9
Location of Pressurizer:	On main line Slightly west of SC-G9 lateral
Location of Downstream Gauge:	Diagonal trench out of SCA near eastern sump
Application of Pressure:	1:30pm
Removal of Pressure:	4:20pm
Time of Test:	2Hr. 50Min
Pressure at Start:	20.0Psi
Pressure at Removal:	20,0 Psi
Result:	**Test passed**

Additional Comments:

- Replaced connections at cells SC-G15 and SC-G11.

Hydraulic Testing Record

Date of Test:	5/25/2011
Project:	Onondaga Lake SCA
Test Performed By:	Aaron Reeder (Geosyntec) Dan (Parsons Labor)
Phase Tested:	Horizontal trench from SC-G14 to back of east berm in woods 1-A North line
Connections Tested:	One splice at toe of slope
Location of Pressurizer:	At SC-G14
Location of Downstream Gauge:	Woods east of berm
Application of Pressure:	3:00pm
Removal of Pressure:	7:30am.
Time of Test:	16hrs 30min
Pressure at Start:	50.0 PSI
Pressure at Removal:	50.0PSI
Result:	**Passed**

Hydraulic Testing Record

Date of Test:	May 10, 2011
Project:	Onondaga Lake SCA
Test Performed By:	Aaron Reeder (Geosyntec)
Phase Tested:	Phase 1A – Southern Leg
Connections Tested:	SC-G15, SC-G16,SC-G12, SC-G11, SC-G8, SC-G9
Location of Pressurizer:	On main line slightly west of SC-G9 lateral
Location of Downstream Gauge:	Diagonal trench out of SCA near eastern sump.
Application of Pressure:	8:30am
Removal of Pressure:	9:45am
Time of Test:	1Hr, 15 Min
Pressure at Start:	50.0 Psi
Pressure at Removal:	50.0 Psi
Result:	**Test passed**

Hydraulic Testing Record

Date of Test:	May 17, 2011
Project:	Onondaga Lake SCA
Test Performed By:	Aaron Reeder (Geosyntec)
Phase Tested:	Phase 1A – Southern Leg
Connections Tested:	SC-G15, SC-G16,SC-G12, SC-G11, SC-G8, SC-G9
Location of Pressurizer:	On main line slightly west of SC-G9 lateral
Location of Downstream Gauge:	Diagonal trench out of SCA near eastern sump.
Application of Pressure:	9:57 am
Removal of Pressure:	11:15 am
Time of Test:	1Hr, 18 Min
Pressure at Start:	20.0 Psi
Pressure at Removal:	20.0 Psi
Result:	**Test passed**

Hydraulic Testing Record

Date of Test:	May 3, 2011
Project:	Onondaga Lake SCA
Test Performed By:	Joseph Sura (Geosyntec)
Phase Tested:	Phase IA
Connections Tested:	SC-G9, SC-G8, SC-G11, SC-G12, SC-G15, SC-G16
Location of Pressurizer:	On main line slightly west of SC-G9 lateral
Location of Downstream Gauge:	Diagonal trench out of SCA near Eastern Sump
Application of Pressure:	11:20 AM
Removal of Pressure:	2:15 PM
Time of Test:	2 hr, 55 min
Pressure at Start:	30.5 psi
Pressure at Removal:	29.5 psi
Result:	**Test passed**

Hydraulic Testing Record

Date of Test:	May 9, 2011
Project:	Onondaga Lake SCA
Test Performed By:	Joseph Sura (Geosyntec) and Aaron Reeder (Geosyntec)
Phase Tested:	Phase IA
Connections Tested:	SC-G10, SC-G14, SC-G13
Location of Pressurizer:	On main line slightly west of SC-G9 lateral
Location of Downstream Gauge:	Diagonal trench out of SCA near Eastern Sump
Application of Pressure:	8:57 AM
Removal of Pressure:	12:08 PM
Time of Test:	3 hr, 11 min
Pressure at Start:	50.0 psi
Pressure at Removal:	47.0 psi
Result:	**Test passed**

Hydraulic Testing Record

Date of Test:	May 10,2011
Project:	Onondaga Lake SCA
Test Performed By:	Aaron Reeder (Geosyntec) and Dan (parsons Labor
Phase Tested:	1 South side cells
Connections Tested:	SC-G15,SC-G16,SC-G12,SC-G11,SC-G8,SC-G9
Location of Pressurizer:	On main line Slightly west of SC-G9 lateral
Location of Downstream Gauge:	Diagonal trench out of SCA near eastern sump
Application of Pressure:	1:30pm
Removal of Pressure:	4:20pm
Time of Test:	2Hr. 50Min
Pressure at Start:	20.0Psi
Pressure at Removal:	20,0 Psi
Result:	**Test passed**

Hydraulic Testing Record

Date of Test:	August 12,2011
Project:	Onondaga Lake SCA
Test Performed By:	Aaron Reeder (Geosyntec) and Dan (parsons Labor)
Phase Tested:	2 (Leg 4)
Connections Tested:	SC-G18,SC-G17,SC-G20,SC-G23,SC-G25,SC-G26 and 27
Location of Pressurizer:	On the far west side of cells- SC-G18 lateral
Location of Downstream Gauge:	near SC-G27
Application of Pressure:	1:30pm
Removal of Pressure:	4:20pm
Time of Test:	2Hr. 50Min
Pressure at Start:	20.0Psi
Pressure at Removal:	20,0 Psi
Result:	**Test passed**

Hydraulic Testing Record

Date of Test:	August 10,2011
Project:	Onondaga Lake SCA
Test Performed By:	Aaron Reeder (Geosyntec) and Dan (parsons Labor)
Phase Tested:	2 (Leg 3)
Connections Tested:	SC-G19,SC-G22,SC-G21,SC-G24,SC-G28,SC-G29
Location of Pressurizer:	On the far west side of cells- SC-G19 lateral
Location of Downstream Gauge:	near SC-G29
Application of Pressure:	2:30pm
Removal of Pressure:	5:20pm
Time of Test:	2Hr. 50Min
Pressure at Start:	20.0Psi
Pressure at Removal:	20,0 Psi
Result:	**Test passed**

Hydraulic Testing Record

Date of Test:	5/25/2011
Project:	Onondaga Lake SCA
Test Performed By:	Aaron Reeder (Geosyntec) Dan (parsons labor)
Phase Tested:	Horizontal line from SC-G14 to back of east brem in woods. 1-A south line
Connections Tested:	No connections
Location of Pressurizer:	SC-G14
Location of Downstream Gauge:	East of berm in woods
Application of Pressure:	8:00am
Removal of Pressure:	9:30am
Time of Test:	1hr 30 min
Pressure at Start:	50.0psi
Pressure at Removal:	50.0 Psi
Result:	**Passed**

Hydraulic Testing Record

Date of Test:	May 10, 2011
Project:	Onondaga Lake SCA
Test Performed By:	Aaron Reeder (Geosyntec} And Dan (Parsons labor)
Phase Tested:	Phase 1A south side.
Connections Tested:	SC-G15, SC-G16,SC-G12, SC-G11, SC-G8, SC-G9
Location of Pressurizer:	On main line slightly west of SC-G9 lateral
Location of Downstream Gauge:	Diagonal trench out of SCA near eastern sump.
Application of Pressure:	8:30am
Removal of Pressure:	9:45am
Time of Test:	1Hr 15 Min.
Pressure at Start:	50.0 Psi
Pressure at Removal:	50.0 Psi
Result:	**Test passed**

Additional Comments:

- Test followed by connection of settlement cells (also on May 10, 2011) and tested at 20psi for 2Hrs. **Test Passed**.

Hydraulic Testing Record

Date of Test:	May 27, 2011
Project:	Onondaga Lake SCA
Test Performed By:	Aaron Reeder (Geosyntec) Dan (Parsons Labor)
Phase Tested:	Horizontal trench from cell G14 to office trailer.
Connections Tested:	Two splices at 18” culvert under road at trailer. One on the east side of north south berm (haul Road) and one at toe of slope inside cell.
Location of Pressurizer:	On main line at C14
Location of Downstream Gauge:	Office Trailer
Application of Pressure:	9:45pm
Removal of Pressure:	1:30pm
Time of Test:	4hrs
Pressure at Start:	50PSI
Pressure at Removal:	49PSI
Result:	**Test Passed**

.

ATTACHMENT D
Photographic Documentation of Instrumentation Installation Activity

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 1 Comments: Inclinometer SI-G3 SAA gray PVC casing (left); Termination of the SI-G3-SAA and the HDPE vault containing the external battery (right).	
Photograph 2 Comments: The HDPE vault contains the external battery. The electrical circuits are grounded outside of the HDPE vault.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 3 Comments: Inclinometer SI-G3 casing (left); Termination of the SI-G3 (right).	
Photograph 4 Comments: Piezometer PZ-G1; An additional metal rod is placed nearby and painted orange to serve as a visual warning to equipment.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 5 Comments: Settlement cell SC-G1 placed in field and ready for electrical cable connection.	
Photograph 6 Comments: Electrical connection using ITM splice kit for SC-G1	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 7 Comments: Completed splice for SC-G1 with electrical tape over connectors; a green grounding rod was used.	
Photograph 8 Comments: Filling completed splice with resin to seal the connection from water.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 9 Comments: Junction box used for connection of multiple cables.	
Photograph 10 Comments: Trench excavation using the mini-excavator.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 11

Comments: PEX tubing being snaked in trench. Note the use of a shovel to maintain snaking during backfilling.

Photograph 12

Comments: Use of nylon cable ties to hold PEX pipe to snaked electrical cable.

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 13 Comments: Backfilling of PEX tubing. Note that a shovel is being used (as shown in Photograph 10) further down the line to maintain snaking.	
Photograph 14 Comments: Backfilled trench after placement of PEX tubing and electrical cables.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 15 Comments: Intersection of instrument trench and Profiler trench. Note that the PEX and instrument cables have been unrolled but are not yet bedded in the instrument trench.	
Photograph 16 Comments: ADS profiler pipe after placement with polyethylene rope inside.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 17 Comments: Pulling dummy profiler to check ADS pipe.	
Photograph 18 Comments: Placement of sand around the springline of the ADS profiler pipe.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 19 Comments: Placement of sand backfill on top of springlined ADS profiler pipe.	
Photograph 20 Comments: Cemented and coupled the 6” PVC sleeve for Profiler 3 crossing over western berm.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 21 Comments: Placement of sand backfill on top of PVC sleeve for Profiler 3 crossing through western berm.	
Photograph 22 Comments: ADS profiler pipe exiting completed Profiler 3 crossing through western berm.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 23 Comments: Crossing of Profiler 1 and Profiler 3 before backfilling of the trench.	
Photograph 24 Comments: Settlement cell SC-G21 (SC-036778) was damaged by a heavy equipment in the field and replaced with SC-036758	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

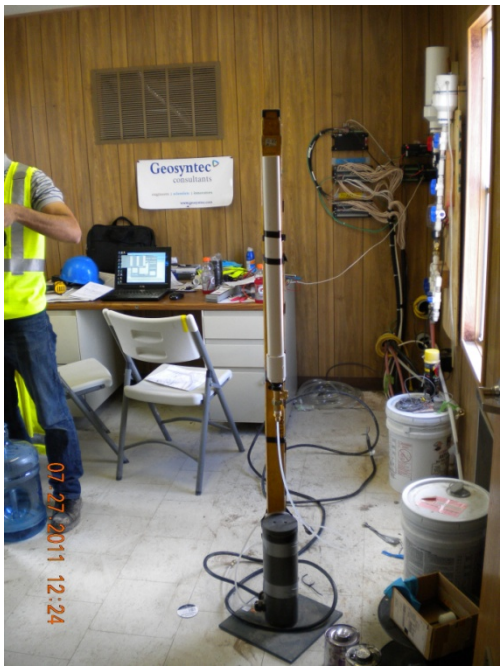
Photograph 25 Comments: Liquid tape was used to seal the splices in the junction box. The inlets were sealed with the silicon tape.	
Photograph 26 Comments: Flushing the hydraulic lines to remove the air bubbles from the hydraulic lines.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 27 Comments: Portable reservoir with a connected settlement cell to check the instrument cables in Phase 1 and Phase 2.	
Photograph 28 Comments: Placement of an ADS pipe in a trench for the settlement profiler.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 29 Comments: Damage to the profiler pipe and blockage for profiler torpedo monitoring.	
Photograph 30 Comments: Damage to the profiler pipe and blockage for profiler torpedo monitoring.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 31 Comments: Tilted SI-G2 during clay compaction around the inclinometer casing (at present). Currently, readings are not able to be taken from this inclinometer.	
Photograph 32 Comments: Monitoring the profiler by pulling the probe out of the profiler pipe and taking readings every 10 ft.	

Geosyntec consultants

Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

Photograph 33 Comments: Data logger system	
Photograph 34 Comments: Initial set-up of the reservoir in trailer with one main reservoir and all four legs being connected to the main reservoir (bottom). (see Photograph 35 for the revised set-up with four separate reservoirs.)	

Geosyntec consultants

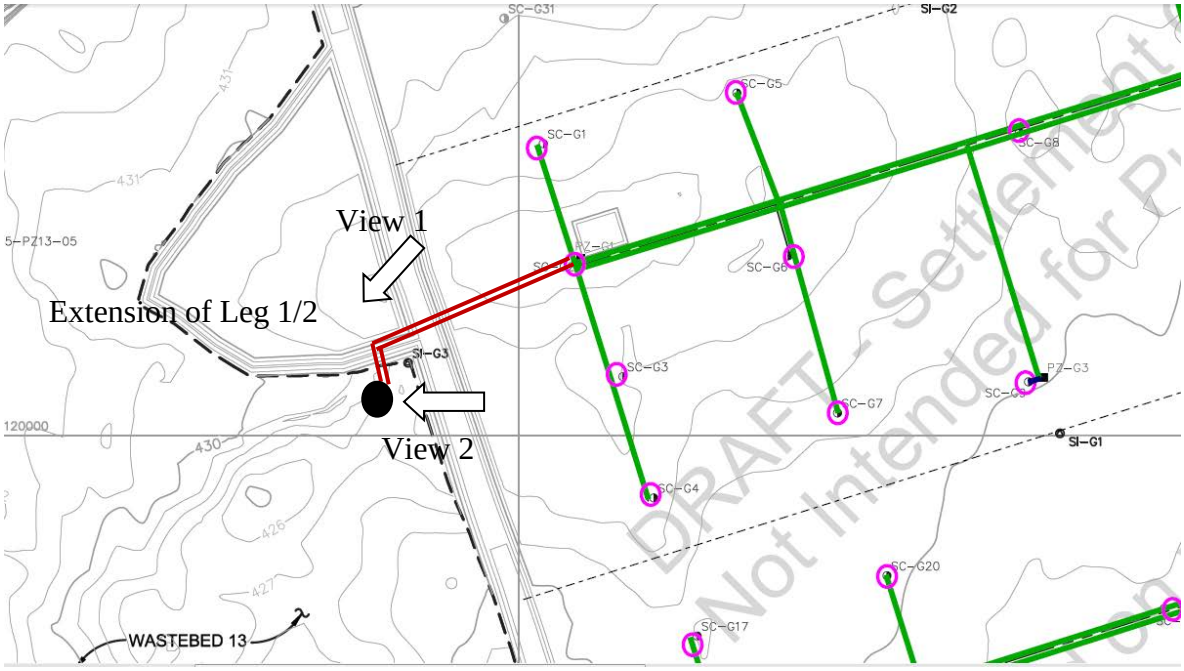
Photographic Record

Client:	Honeywell	Project Number:	GJ4706A

Onondaga Lake SCA 2010 and 2011 Instrumentation Installation

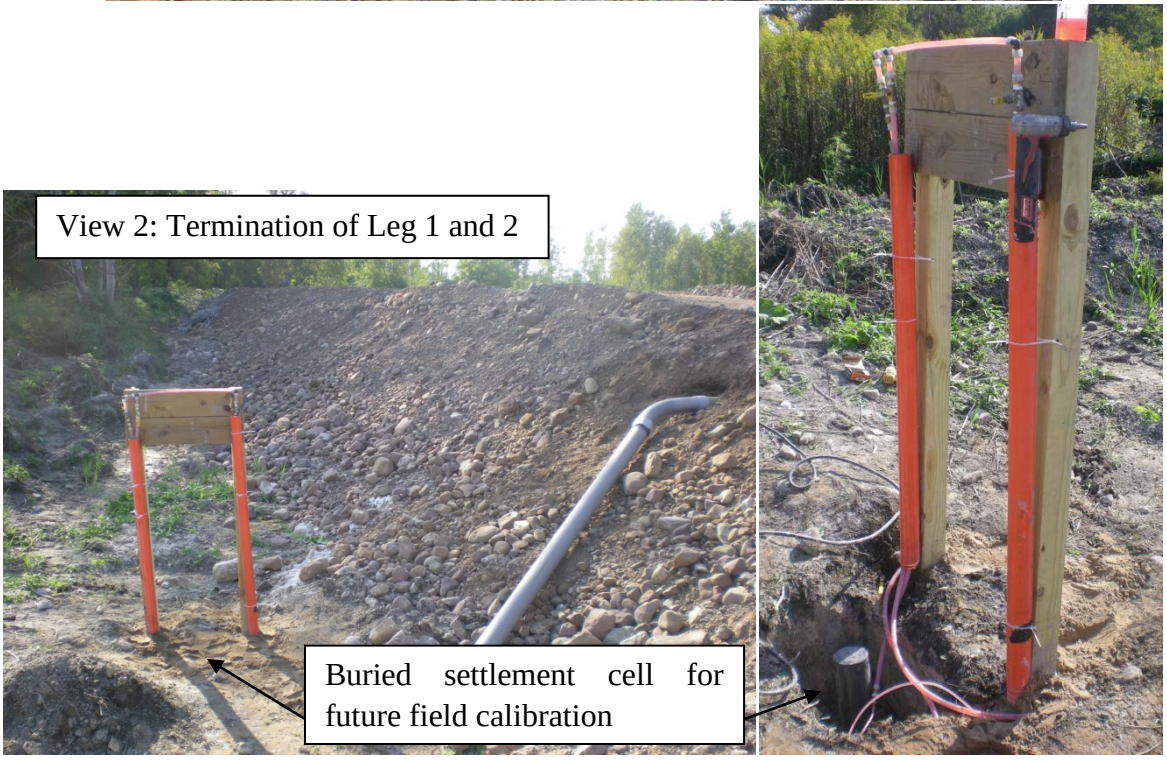
Photograph 35 Comments: Set-up of the four reservoirs in trailer: each settlement cell leg is connected to one reservoir.	
Photograph 36 Comments: Pressure test on settlement cells hydraulic lines.	

Extension of Hydraulic lines for Settlement Cells

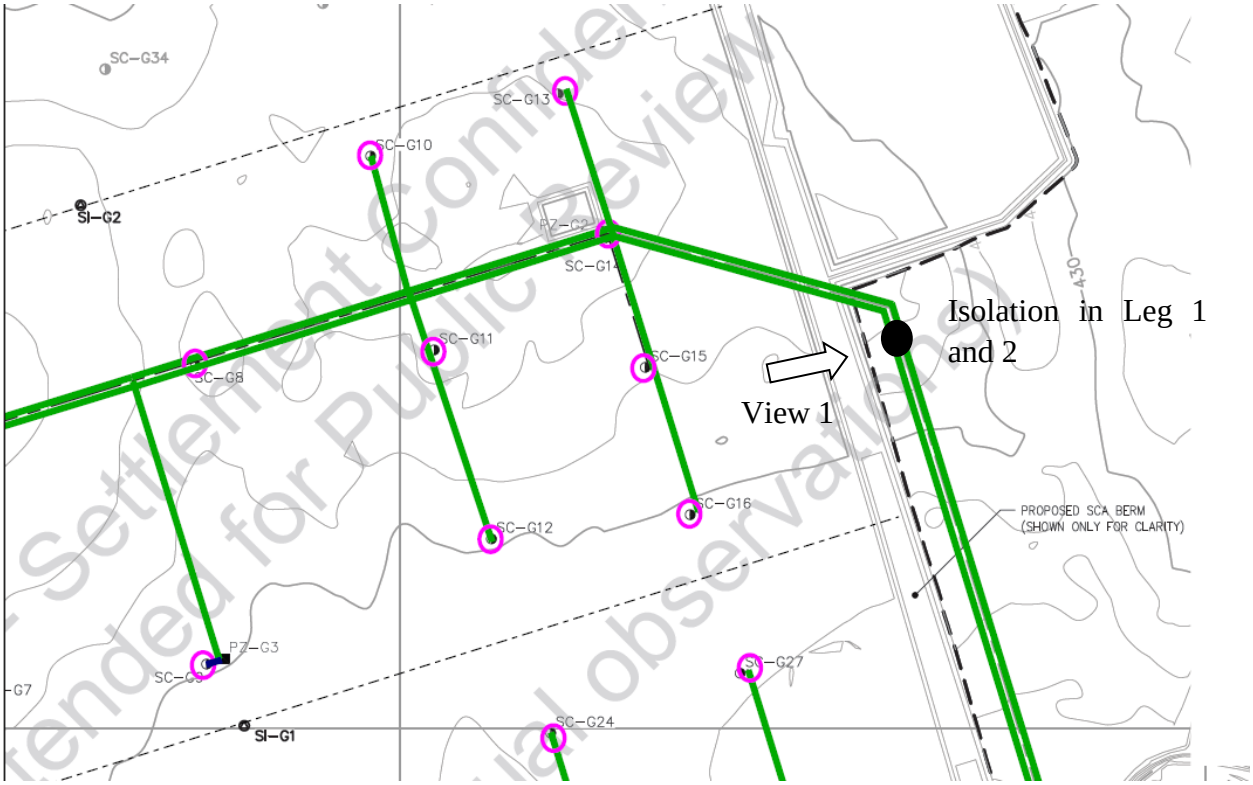


Schematic of the hydraulic lines termination (Phase 1) outside of West Basin

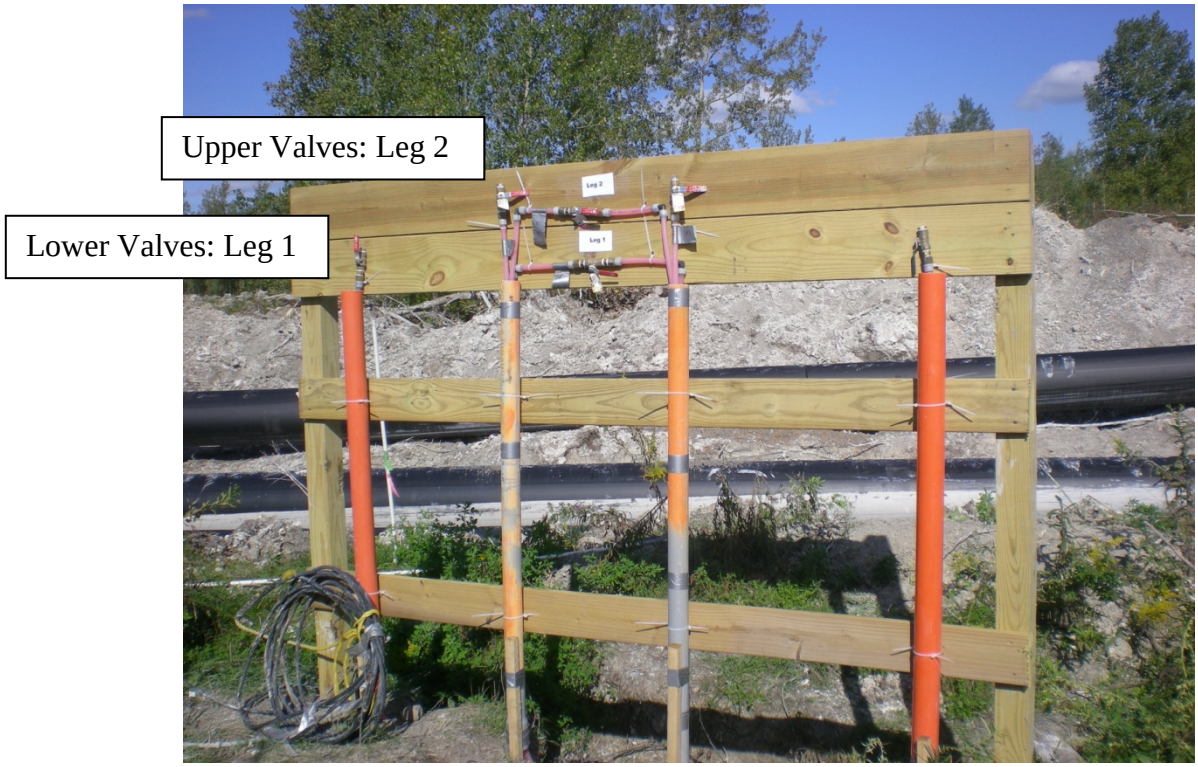
View 1: Extension of Leg 1 and 2 through the West Basin



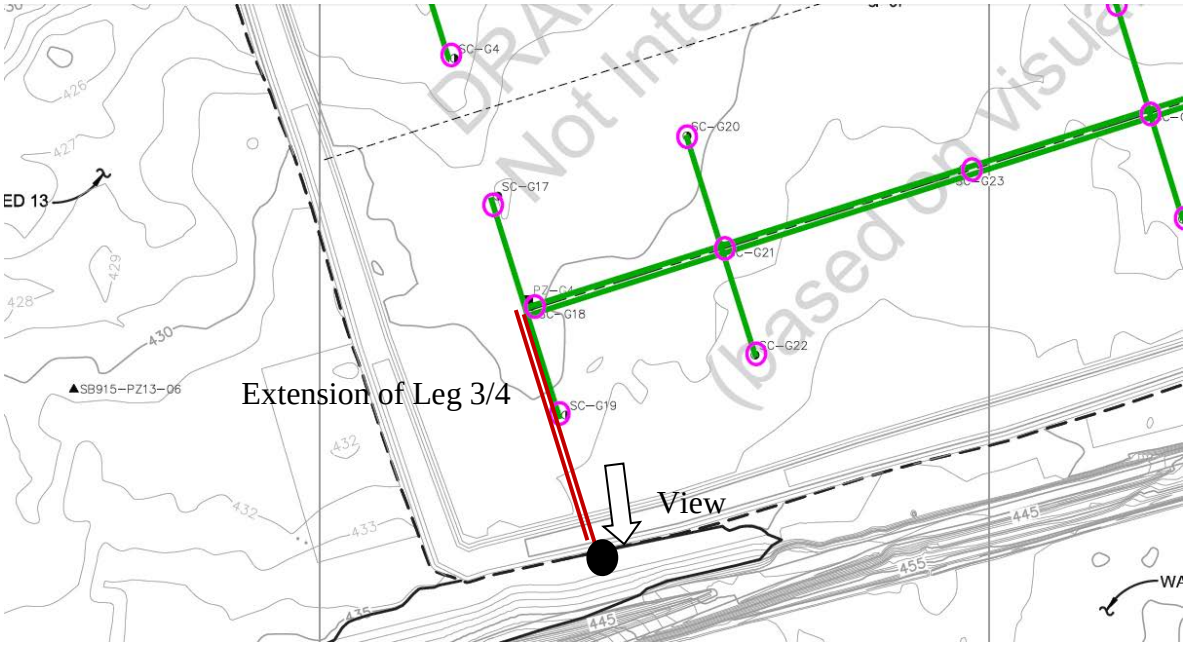
Termination of Leg 1 and 2 (Phase 1)



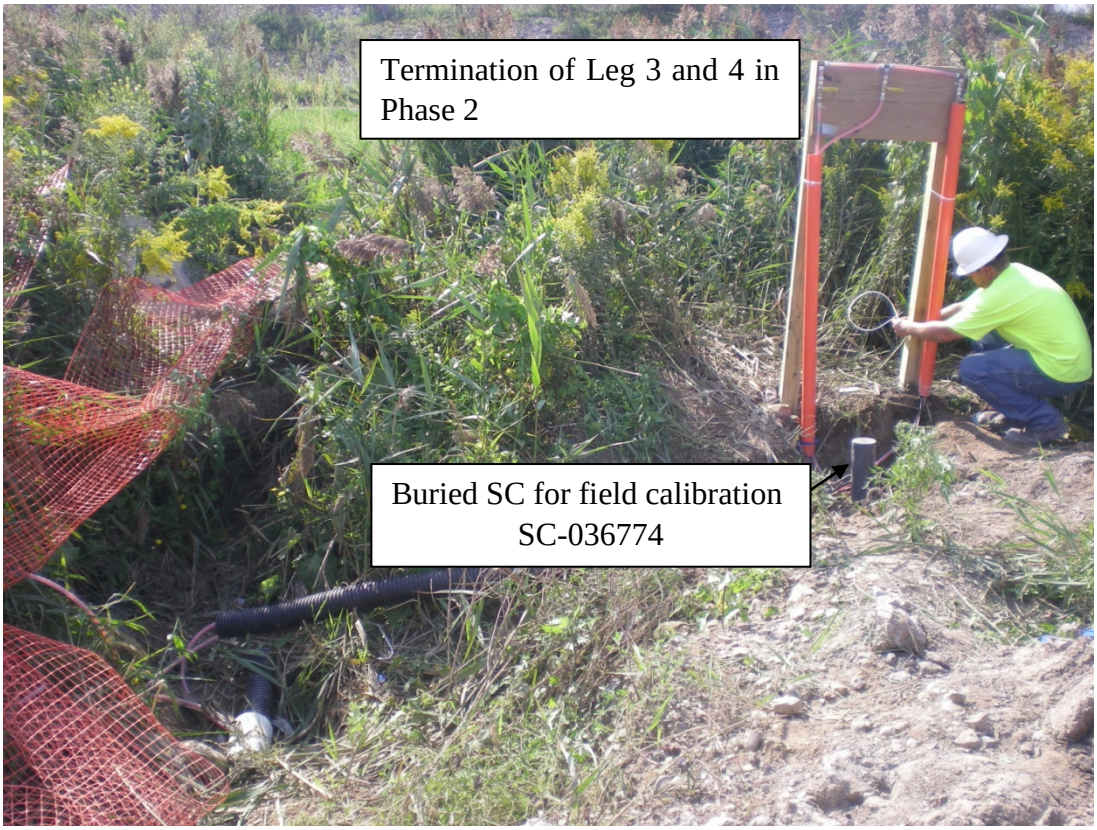
Isolation of Leg 1 and 2 between trailer and settlement cells in phase 1



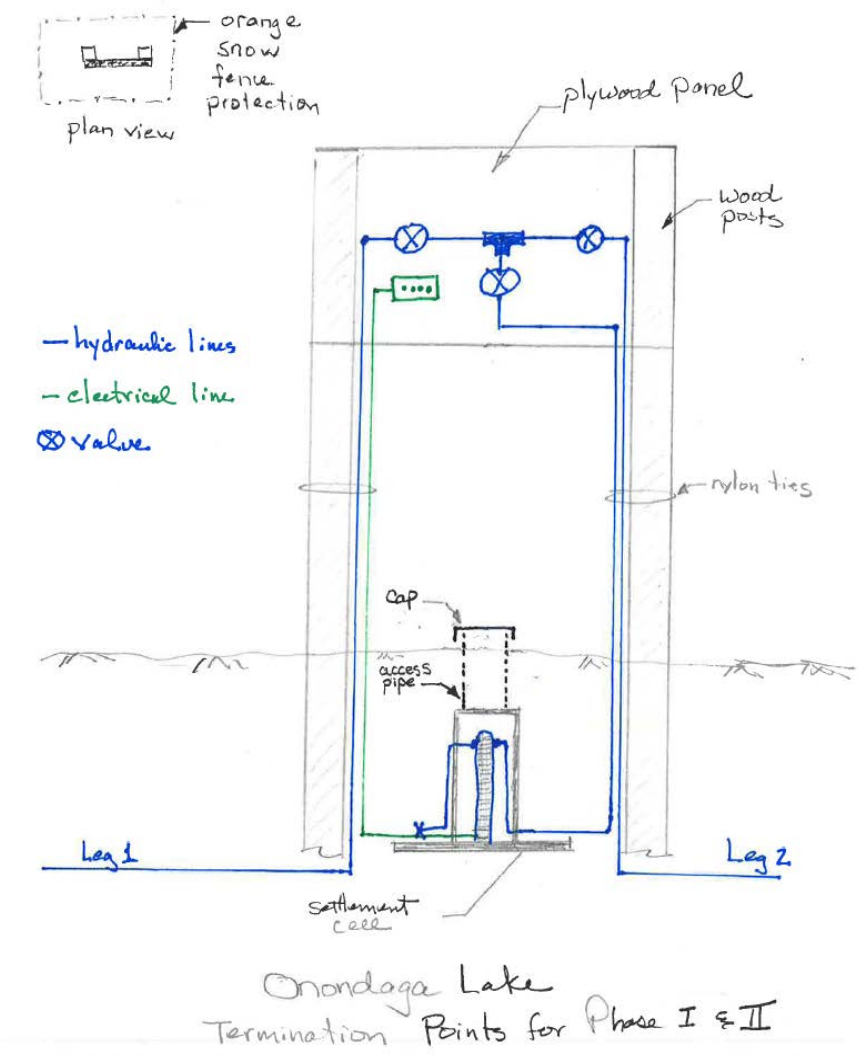
Note: Photo taken from the east berm facing the isolation location for Leg 1 and 2



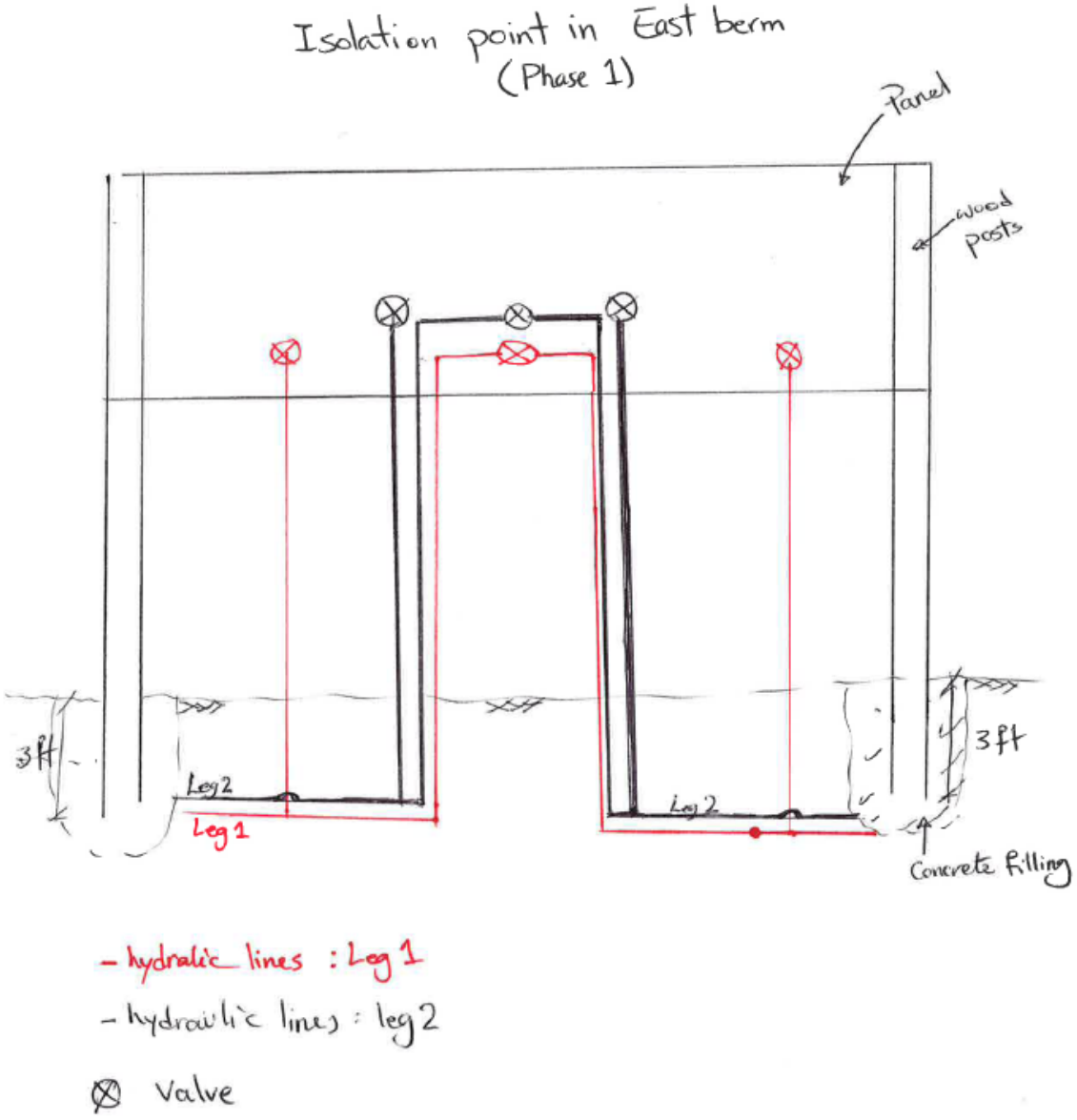
Schematic of hydraulic lines termination for Phase 2 outside the south berm



Note: Photo taken from the south berm facing the termination of Leg 3 and 4



Sketch of the termination details in Phase 1 and 2 (near the west and south berms)



Sketch of the isolation details in Phase 1 (near the east berm)

ATTACHMENT E
Summary of Installation Activities

Profiler	Profiler Section Location	Install	Backfill	Dummy
P1	North of Phase I/II Haul Road	Nov-10	Nov-10	Nov-10
P1	South of Phase I/II Haul Road	Nov-10	Nov-10	Nov-10
P1	Road Crossing of Phase I/II Haul Road	Nov-10	Nov-10	Nov-10
P1	Road Crossing of South Berm	May-11	May-11	May-11
P1	Road Crossing of Phase I/III Haul Road	Dec-10	Dec-10	May-11
P2	North of Phase I/II Haul Road	Nov-10	Nov-10	Nov-10
P2	South of Phase I/II Haul Road	Nov-10	Nov-10	May-11
P2	Road Crossing of Phase I/II Haul Road	Nov-10	Nov-10	May-11
P2	Road Crossing of South Berm	Nov-10	Nov-10	May-11
P2	Road Crossing of Phase I/III Haul Road	Nov-10	Nov-10	May-11
P3	Inside SCA West Stormwater Basin	May-11	May-11	May-11
P3	Road Crossing of West SCA Berm	Nov-10	Nov-10	May-11
P3	Section between P1 and West SCA Berm	May-11	May-11	May-11
P3	Section between P1 and P2	Nov-10	Nov-10	May-11
P3	Section between P1 and East SCA Berm	Nov-10	Nov-10	May-11
P3	Road Crossing of East SCA Berm	Nov-10	Nov-10	May-11
P3	Inside SCA East Stormwater Basin	Nov-10	Nov-10	May-11
P4	North of Phase I/II Haul Road	Dec-10	Dec-10	Dec-10
P4	South of Phase I/II Haul Road	Nov-10	Nov-10	May-11
P4	Road Crossing of Phase I/II Haul Road	Nov-10	Nov-10	Dec-10
P4	Road Crossing of South Berm	Nov-10	Nov-10	May-11
P4	Road Crossing of Phase I/III Haul Road	Nov-10	Nov-10	Dec-10
P5	North of Phase I/II Haul Road	May-11	May-11	May-11
P5	South of Phase I/II Haul Road	Dec-10	Dec-10	May-11
P5	Road Crossing of Phase I/II Haul Road	Nov-10	Nov-10	May-11
P5	Road Crossing of South Berm	Nov-10	Nov-10	May-11
P5	Road Crossing of Phase I/III Haul Road	Nov-10	Nov-10	May-11

Phase	Tubing Location Description	PEX Tubing Installation Date	PEX Tubing Snaking Date	Trench Backfill Date
I	SC-G2 to SC-G1	Nov-10	Nov-10	Nov-10
I	SC-G2 to SC-G3	Nov-10	Nov-10	Nov-10
I	SC-G3 to SC-G4	Nov-10	Nov-10	Nov-10
I	SC-G2 to J10	Nov-10	May-11	May-11
I	SC-G2 to J10	Nov-10	May-11	May-11
I	SC-G5 to J10	Nov-10	Dec-10	Dec-10
I	SC-G8 to J10	Nov-10	Dec-10	Dec-10
I	SC-G7 to SC-G8	Nov-10	Dec-10	Dec-10
I	J10 to J13	Nov-10	May-11	May-11
I	J10 to J13	Nov-10	May-11	May-11
I	SC-G9 to J13	Nov-10	May-11	May-11
I	J13 to SC-G8	Nov-10	May-11	May-11
I	J13 to SC-G8	Nov-10	May-11	May-11
I	SC-G8 to J17	Nov-10	May-11	May-11
I	SC-G8 to J17	Nov-10	May-11	May-11
I	SC-G10 to J17	Nov-10	May-11	May-11
I	SC-G11 to J17	Nov-10	May-11	May-11
I	SC-G12 to SC-G11	Nov-10	May-11	May-11
I	J17 to SC-G14	Nov-10	May-11	May-11
I	J17 to SC-G14	Nov-10	May-11	May-11
I	SC-G13 to SC-G14	Nov-10	May-11	May-11
I	SC-G15 to SC-G14	Nov-10	May-11	May-11
I	SC-G16 to SC-G15	Nov-10	May-11	May-11
I	SC-G14 to Trailer	May-11	May-11	May-11
I	SC-G14 to Trailer	May-11	May-11	May-11
II	SC-G17 to SC-G18	Nov-10	May-11	May-11
II	SC-G19 to SC-G18	Nov-10	May-11	May-11
II	SC-G18 to SC-G21	Nov-10	Dec-10	Dec-10
II	SC-G18 to SC-G21	Nov-10	Dec-10	Dec-10
II	SC-G20 to SC-G21	Nov-10	May-11	May-11
II	SC-G22 to SC-G21	Nov-10	May-11	May-11
II	SC-G21 to SC-G23	Nov-10	Dec-10	Dec-10
II	SC-G21 to SC-G23	Nov-10	Dec-10	Dec-10
II	SC-G23 to SC-G25	Nov-10	Dec-10	Dec-10
II	SC-G23 to SC-G25	Nov-10	Dec-10	Dec-10
II	SC-G24 to SC-G25	Nov-10	May-11	Aug-11
II	SC-G26 to SC-G25	Nov-10	May-11	Aug-11
II	SC-G25 to SC-G28	Nov-10	May-11	Aug-11
II	SC-G25 to SC-G28	Nov-10	May-11	Aug-11
II	SC-G27 to SC-G28	Nov-10	May-11	Aug-11
II	SC-G28 to SC-G29	Nov-10	May-11	Aug-11
II	SC-G28 to SC-G29	Dec-10	May-11	Aug-11
II	SC-G29 to Trailer	May-11	May-11	Aug-11
II	SC-G29 to Trailer	May-11	May-11	Aug-11

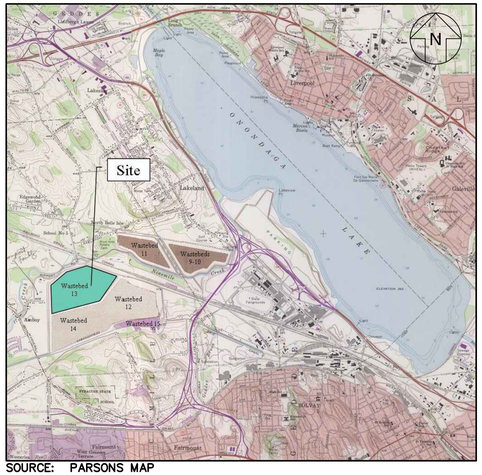
ID	Electrical Cable Junction Date	Cable Junction Method	Continuity Check	VW Readout Check	Jiggle Test
SC-G01	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G03	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G04	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G05	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G06	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G07	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G08	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
SC-G09	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
SC-G10	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G11	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G12	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G13	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G14	Nov-10	Junction Box	Nov-10	Nov-10	May-11
SC-G15	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G16	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G17	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G18	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
SC-G19	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G20	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G21	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
SC-G22	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G23	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
SC-G24	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G25	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
SC-G26	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G27	Nov-10	Splice Kit	Nov-10	Nov-10	Nov-10
SC-G28	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
SC-G29	Nov-10	Junction Box	Nov-10	Nov-10	May-11
PZ-G1A	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G1B	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G1C	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G2A	May-11	Junction Box	May-11	May-11	May-11
PZ-G2B	May-11	Junction Box	May-11	May-11	May-11
PZ-G2C	May-11	Junction Box	May-11	May-11	May-11
PZ-G3A	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G3B	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G3C	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G4A	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G4B	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G4C	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G5A	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G5B	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G5C	Nov-10	Junction Box	Nov-10	Nov-10	Nov-10
PZ-G8	May-11	Junction Box	May-11	May-11	May-11
PZ-G9	May-11	Junction Box	May-11	May-11	May-11

ATTACHMENT F
As-Built Drawings

SEDIMENT CONSOLIDATION AREA
2011 AS-BUILT INSTRUMENTATION INSTALLATION
CAMILLUS, NEW YORK
GJ4706A.02
NOVEMBER 2011

LIST OF DRAWINGS

DRAWING NO.	DRAWING TITLE
444853-103-C-001	COVER SHEET
444853-103-C-002	SITE CONDITIONS BEFORE INSTRUMENTATION INSTALLATION
444853-103-C-003	AS-BUILT INSTRUMENTATION AND MONITORING PLAN
444853-103-C-004	AS-BUILT TRENCHING PLAN
444853-103-C-005	AS-BUILT CABLING PLAN
444853-103-C-006	AS-BUILT SETTLEMENT CELL TUBING PLAN
444853-103-C-007	AS-BUILT INSTRUMENTATION DETAILS

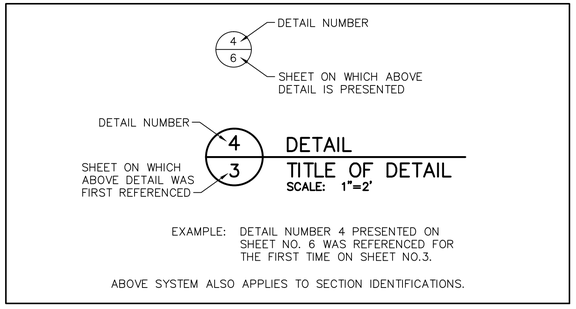


SOURCE: PARSONS MAP

VICINITY MAP
NOT TO SCALE

SOURCE: GOOGLE MAP 2009

LOCATION MAP
NOT TO SCALE



DETAIL IDENTIFICATION LEGEND

PREPARED FOR:

Honeywell

301 PLAINFIELD ROAD, SUITE 330
SYRACUSE , NEW YORK 13212

PREPARED BY:

Geosyntec consultants

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NO.	DESCRIPTION	DATE	DRAWN	CHK'D	APPV'D
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DRAWN BY	JHS	DATE	NOV 2011
CHECKED BY	JMS/AE	DATE	NOV 2011
APPROVED BY	JFB	DATE	NOV 2011
PROJECT MGR.	JFB	DATE	NOV 2011

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JOB 444853
WBS

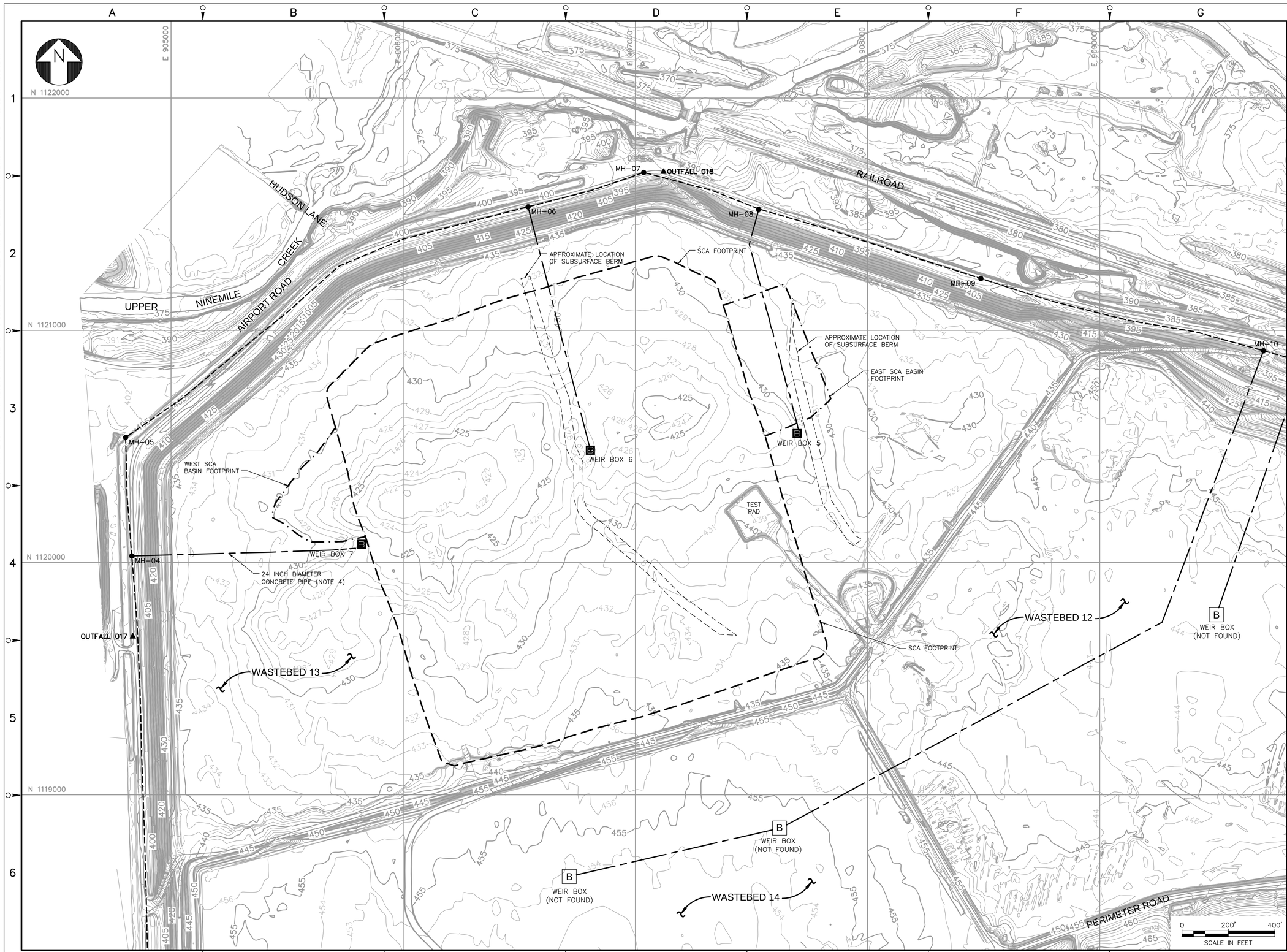
PROJECT TITLE
Honeywell
SEDIMENT CONSOLIDATION AREA
ONONDAGA LAKE BOTTOM
SUBSITE REMEDIAL DESIGN

DRAWING TITLE
COVER SHEET

SCALE
SCALE: NOT TO SCALE

DRAWING NO. 444853-103-C-001
REV. 0

FILE NAME: L:\CADD\O\ONONDAGA LAKE\PERMIT\SCA GEOTUBES\ISSUED FOR CONSTRUCTION REV-0\REDUCED SET (INSTRUMENTATION)\AS-BUILT OCTOBER 2011\REV-1\4299-001.DWG
PLOT DATE: 11/2/2011 11:26 AM PLOTTED BY: JIM RYAN



NOTES:

1. THE TOPOGRAPHIC CONTOURS SHOWN ON THIS DRAWING WERE OBTAINED FROM A TOPOGRAPHIC MAP COMPILED BY TVGA CONSULTANTS USING PHOTOGRAMMETRIC METHODS BASED ON AERIAL PHOTOGRAPHY PERFORMED ON 6 APRIL 2008. THE MAP WAS COMPILED IN ACCORDANCE WITH NATIONAL MAP ACCURACY STANDARDS FOR 1 INCH EQUAL TO 50 FEET SCALE. THE TOPOGRAPHIC MAP WAS PROVIDED TO GEOSYNTEC BY PARSONS.
2. COORDINATES SHOWN HEREIN ARE EXPRESSED IN U.S. SURVEY FEET AND REFERENCED TO THE NORTH AMERICAN DATUM OF 1983/1996 (NAD 83/96) – NEW YORK STATE PLANE GRID, ZONE CENTRAL. ELEVATIONS SHOWN HEREIN ARE EXPRESSED IN FEET AND REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
3. THE EXISTING LEACHATE CONTROL SYSTEM AND SPDES DISCHARGE POINT LOCATIONS WERE OBTAINED FROM A DRAWING PREPARED BY O'BRIEN AND GERE AND PROVIDED TO GEOSYNTEC BY PARSONS.
4. THE INTERIOR LEACHATE COLLECTION PIPES APPEAR TO BE APPROXIMATELY ABOUT 30 FEET BELOW THE EXISTING GROUND BASED ON DRAWING NO. SD 5913-3 TITLED "WASTE DISPOSAL – PREPARE #13 BED FOR OPERATION UNDERDRAINS" BY ALLIED CHEMICAL CORPORATION AND WEIR BOX DEPTH MEASUREMENTS CONDUCTED BY O'BRIEN AND GERE.

LEGEND

- 430 — EXISTING GROUND ELEVATION (FEET) (NOTE 1)
- EXISTING ROAD
- B WEIR BOX 5 — EXISTING WEIR BOX
- PERIMETER LEACHATE COLLECTION PIPE
- INTERIOR LEACHATE COLLECTION PIPE (NOTE 4)

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NO.	DESCRIPTION	DATE	DRAWN	CHK'D	APPV'D
0	2011 AS-BUILT DRAWINGS	NOV 2011	JHS	AE	JFB

DRAWN BY	JHS	DATE NOV 2011
CHECKED BY	JMS/AE	DATE NOV 2011
APPROVED BY	JFB	DATE NOV 2011
PROJECT MGR.	JFB	DATE NOV 2011

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WBS

PROJECT TITLE
Honeywell
SEDIMENT CONSOLIDATION AREA
ONONDAGA LAKE BOTTOM
SUBSITE REMEDIAL DESIGN

DRAWING TITLE
SITE CONDITIONS
BEFORE INSTRUMENTATION
INSTALLATION

SCALE: 1" = 200'
(IF PRINTED ON 22x34 SHEET)

DRAWING NO. 444853-103-C-002
REV. 0

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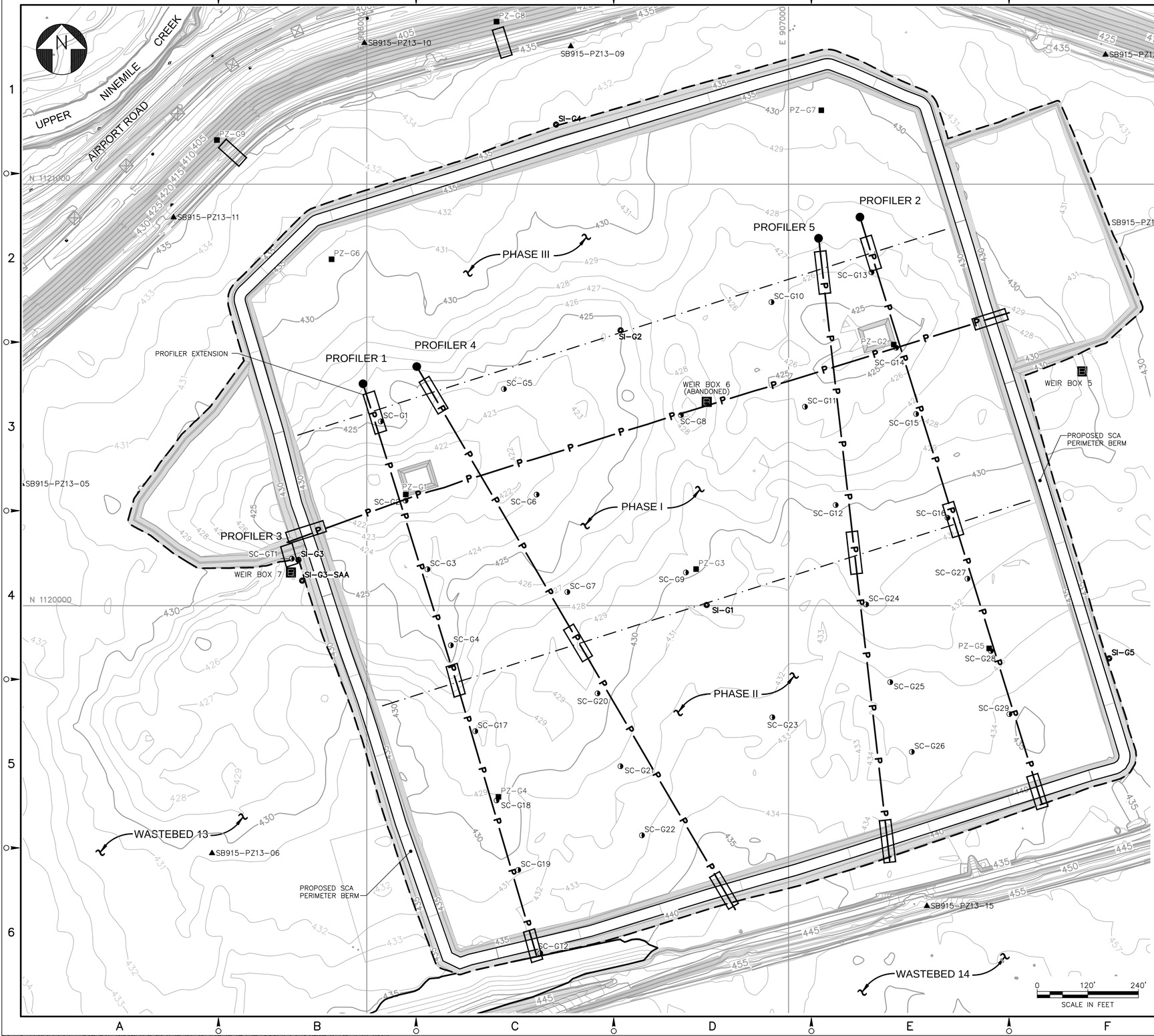

LEGEND

- 430 — GROUND ELEVATION FROM 2008 SURVEY
- 440 — PROPOSED SCA PERIMETER BERM
- EXISTING ROAD
- B WEIR BOX 5 — EXISTING WEIR BOX
- ▲SB915-PZ13-06 — EXISTING PIEZOMETER
- ■PZ-G4 — PIEZOMETERS (AS-BUILT)
- ◑ SC-G7 — SETTLEMENT CELL (AS-BUILT)
- PHASE BOUNDARY
- P — AS-BUILT SETTLEMENT PROFILER ALIGNMENT
- ⊗SI-G2 — INCLINOMETERS (AS-BUILT)
- P — ROAD CROSSING WITH PVC SLEEVE

NOTES:

1. BEFORE CONSTRUCTION OF THE SCA, AN APPROXIMATELY 1.5 FT WIDE BY 1.3 FT DEEP TRENCH WAS EXCAVATED ALONG THE LENGTH OF EACH SETTLEMENT PROFILER LINE. AFTER EXCAVATION OF THE TRENCH, A SAND BEDDING LAYER WAS PLACED IN THE TRENCH. ONE 4-INCH NOMINAL DIAMETER SINGLE-WALL CORRUGATED PIPE WAS PLACED ON THE SAND BEDDING LAYER AND THE TRENCH WAS BACKFILLED WITH SAND.
2. BEFORE CONSTRUCTION OF THE SCA, VIBRATING WIRE PIEZOMETERS WERE INSTALLED. AT LOCATIONS OF PZ-G1 THROUGH PZ-G7 WITHIN THE SCA FOOTPRINT, THREE PIEZOMETERS WERE INSTALLED AT DEPTHS OF 15 FT, 30 FT, AND 45 FT. THE ABOVE PIEZOMETERS WERE INSTALLED USING THE GROUT-IN METHOD WITHOUT ANY PERMANENT CASINGS. AT LOCATIONS OF PZ-G8 AND PZ-G9 ON THE SIDESLOPE OF THE WASTEBED 13 PERIMETER DIKE, ONE PIEZOMETER WAS INSTALLED AT A DEPTH OF 50 FT. THE INSTALLATION PROCEDURE WAS IN ACCORDANCE WITH THE SPECIFIC MANUFACTURER'S INSTRUCTIONS.
3. SETTLEMENT CELLS WERE INSTALLED IN THE GROUND BEFORE CONSTRUCTION OF THE SCA IN PHASES I AND II.
4. SETTLEMENT CELLS IN PHASE III (SC-G30 THROUGH SC-G38) WILL ONLY BE INSTALLED IF CONSTRUCTION OF PHASE III IS REQUIRED.
5. INCLINOMETERS SI-G1 AND SI-G2 WILL BE ABANDONED USING APPROPRIATE METHODS, SUCH AS OVERDRILLING, AND BACKFILLED DURING THE CONSTRUCTION OF PHASES II AND III LINER SYSTEMS AS DIRECTED BY THE ENGINEER.
6. PROFILERS 1,3,4, AND 5 WERE ABANDONED DUE TO DIFFICULTIES ENCOUNTERED DURING MONITORING. THE TERMINATION OF THESE FOUR PROFILERS LOCATED OUTSIDE OF THE SCA FOOTPRINT WERE BACKFILLED WITH ON-SITE FILL MATERIALS.

AS-BUILT PIEZOMETER LOCATIONS

POINT ID	Northing	Easting
PZ-G1	1120263.8	906092.5
PZ-G2	1120619.4	907249.8
PZ-G3	1120086.8	906781.0
PZ-G4	1119546.5	906312.4
PZ-G5	1119898.6	907475.8
PZ-G6	1120822.0	905916.5
PZ-G7	1121175.2	907077.7
PZ-G8	1121385.6	906307.7
PZ-G9	1121104.7	905644.6

AS-BUILT INCLINOMETER LOCATIONS

POINT ID	Northing	Easting
SI-G1	1120001.6	906805.9
SI-G2	1120653.1	906601.8
SI-G3	1120108.5	905837.8
SI-G3-SAA	1120059.3	905846.7
SI-G4	1121141.3	906448.7
SI-G5	1119874.9	907760.4

AS-BUILT SETTLEMENT CELL LOCATIONS

POINT ID	Northing	Easting	Elevation (ft)
SC-G1	1120437.1	906033.2	422.3
SC-G2	1120249.2	906092.0	417.1
SC-G3	1120086.4	906144.0	420.1
SC-G4	1119906.0	906199.4	421.9
SC-G5	1120513.9	906325.1	420.1
SC-G6	1120263.5	906402.8	420.5
SC-G7	1120032.3	906475.5	424.3
SC-G8	1120452.1	906744.9	426.7
SC-G9	1120078.8	906757.0	427.5
SC-G10	1120720.1	906959.7	425.0
SC-G11	1120471.9	907039.1	423.7
SC-G12	1120238.8	907111.8	428.0
SC-G13	1120790.9	907196.8	425.0
SC-G14	1120611.9	907255.3	422.7
SC-G15	1120454.8	907302.6	425.2
SC-G16	1120208.5	907377.0	429.2
SC-G17	1119702.1	906257.2	426.3
SC-G18	1119538.1	906307.7	426.9
SC-G19	1119373.0	906359.2	428.7
SC-G20	1119791.9	906547.1	426.8
SC-G21	1119619.0	906601.5	429.4
SC-G22	1119455.3	906652.5	430.7
SC-G23	1119735.1	906961.7	430.3
SC-G24	1120003.0	907184.0	428.6
SC-G25	1119818.6	907241.2	431.1
SC-G26	1119653.1	907292.5	431.6
SC-G27	1120063.9	907424.4	429.2
SC-G28	1119892.6	907479.9	430.3
SC-G29	1119742.8	907523.8	432.0
SC-GT1	1120111.3	905822.2	430.8
SC-GT2	1119175.7	906411.1	432.1

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DRAWN BY	JHS	DATE	NOV 2011
CHECKED BY	JMS/AE	DATE	NOV 2011
APPROVED BY	JFB	DATE	NOV 2011
PROJECT MGR.	JFB	DATE	NOV 2011

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JOB 444853
WBS

PROJECT TITLE
Honeywell
SEDIMENT CONSOLIDATION AREA
ONONDAGA LAKE BOTTOM
SUBSITE REMEDIAL DESIGN

DRAWING TITLE
AS-BUILT INSTRUMENTATION AND MONITORING PLAN

SCALE: SCALE: 1" = 120'
(IF PRINTED ON 22x34 SHEET)

DRAWING NO. 444853-103-C-003
REV. 0

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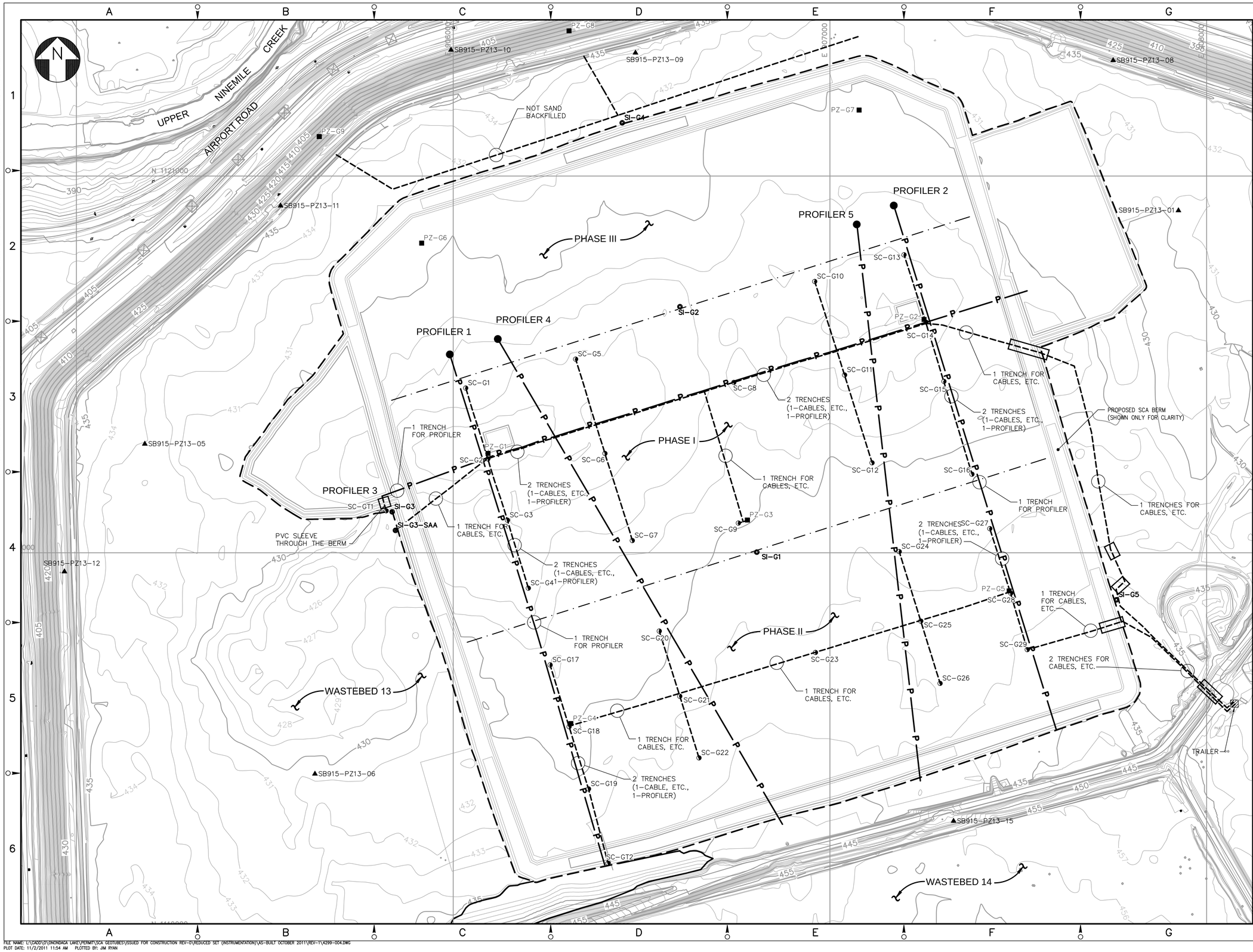

NOTES:

1. ALL TRENCHES WERE BACKFILLED WITH SAND EXCEPT THE ONES FOR PZ–G8 AND PZ–G9 OUTSIDE THE SCA FOOTPRINT.
2. THE DEPTH OF TRENCHES VARIES BETWEEN 1 TO 2 FEET MEASURED FROM THE GROUND SURFACE BEFORE CONSTRUCTION.

LEGEND

- 430 — GROUND ELEVATION FROM 2008 SURVEY
- EXISTING ROAD
- ▲SB915–PZ13–06 EXISTING PIEZOMETER
- ■PZ–G4 PIEZOMETER (AS–BUILT)
- ◑SC–G7 SETTLEMENT CELL (AS–BUILT)
- ⊗SI–G2 INCLINOMETERS (AS–BUILT)
- SCA AND BASIN BOUNDARY
- TRENCH EXCAVATION (FOR CABLES, ETC.)
- P — PROFILER TRENCH EXCAVATION
- PHASE BOUNDARY
- ROAD CROSSING WITH PVC SLEEVE

0 120' 240'
SCALE IN FEET

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NO.	DESCRIPTION	DATE	DRAWN	CHK'D	APPV'D
0	2011 AS–BUILT DRAWINGS	NOV 2011	JHS	AE	JFB

DRAWN BY: JHS	DATE: NOV 2011	SEAL
CHECKED BY: JMS/AE	DATE: NOV 2011	
APPROVED BY: JFB	DATE: NOV 2011	
PROJECT MGR.: JFB	DATE: NOV 2011	

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JOB: 444853
WBS:

PROJECT TITLE
Honeywell
SEDIMENT CONSOLIDATION AREA
ONONDAGA LAKE BOTTOM
SUBSITE REMEDIAL DESIGN

DRAWING TITLE
AS–BUILT TRENCHING PLAN

SCALE: SCALE: 1" = 120'
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REV.: 0

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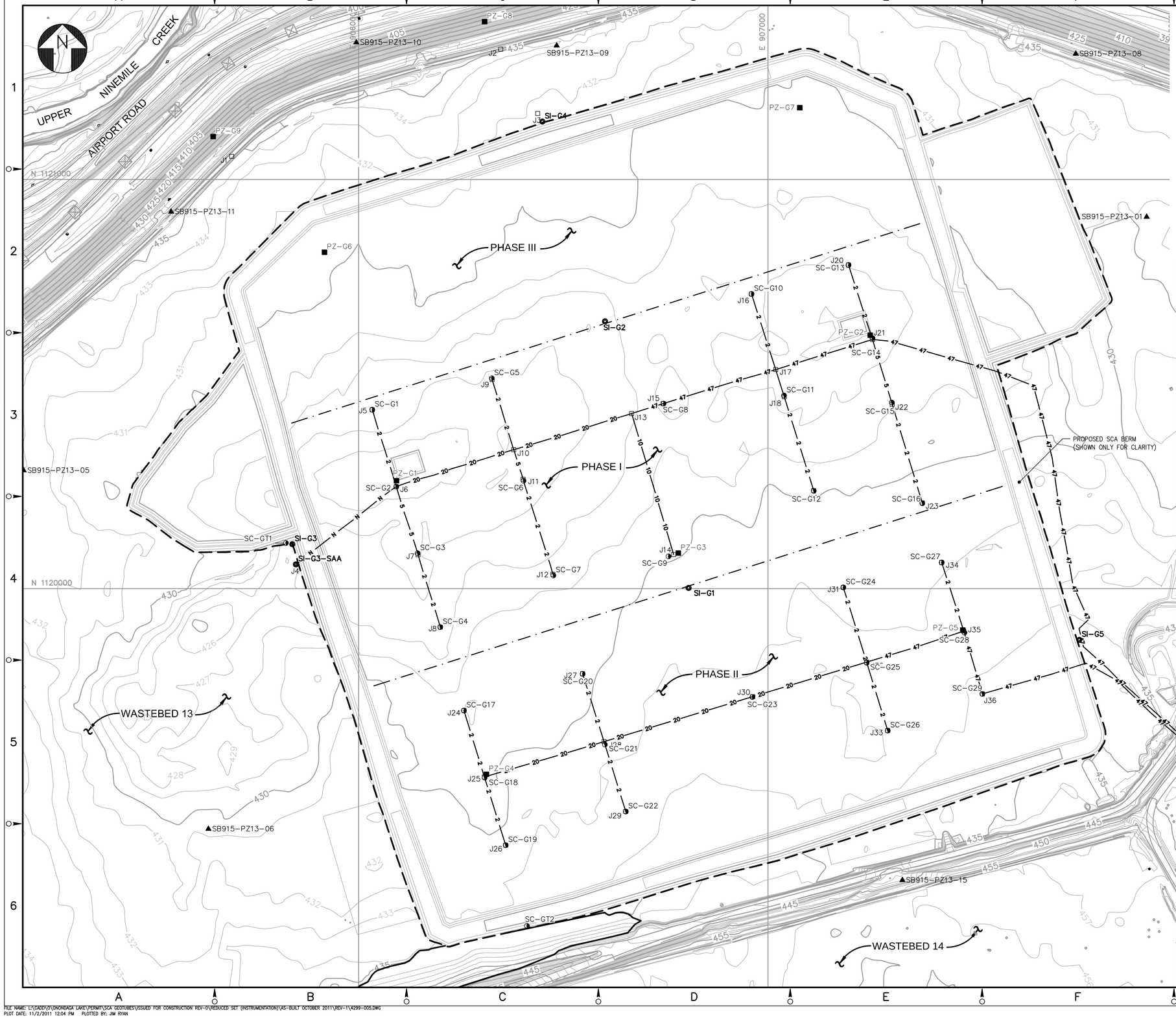

LEGEND

- 430 — GROUND ELEVATION FROM 2008 SURVEY
- EXISTING ROAD
- ▲SB915–PZ13–06 EXISTING PIEZOMETER
- ■PZ–G4 PIEZOMETER (AS–BUILT)
- ◑SC–G7 SETTLEMENT CELL (AS–BUILT)
- ⊗SI–G2 INCLINOMETERS (AS–BUILT)
- SCA AND BASIN BOUNDARY
- 2 — 2 — 2–CORE CABLE
- 5 — 5 — 5–CORE CABLE
- 10 — 10 — 10–CORE CABLE
- 20 — 20 — 20–CORE CABLE
- 47 — 47 — 47–CORE CABLE
- N — N — SSA CABLE
- □J18 JUNCTION BOX
- PHASE BOUNDARY

NOTES:

1. THE CABLE FOR THE MEASURAND SHAPE ACCELARRAY (SAA) WAS NOT JUNCTIONED WITH THE PIEZOMETER AND SETTLEMENT CELL CABLES. THE SAA CABLE RAN ALONG THE SAME TRENCH AS THE 20–CORE AND 47–CORE CABLES IN PHASE I.
2. CABLES WERE 'SNAKED' TO THE EXTENT POSSIBLE DURING INSTALLATION TO ALLOW FOR SETTLEMENT.

0 120' 240'
SCALE IN FEET

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NO.	DESCRIPTION	DATE	DRAWN	CHK'D	APPV'D
0	2011 AS–BUILT DRAWINGS	NOV 2011	JHS	AE	JFB

DRAWN BY	JHS	DATE NOV 2011
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PROJECT MGR.	JFB	DATE NOV 2011

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Honeywell
SEDIMENT CONSOLIDATION AREA
ONONDAGA LAKE BOTTOM
SUBSITE REMEDIAL DESIGN

DRAWING TITLE
AS–BUILT CABLING PLAN

SCALE: SCALE: 1" = 120'
(IF PRINTED ON 22x34 SHEET)

DRAWING NO. 444853–103–C–005
REV. 0

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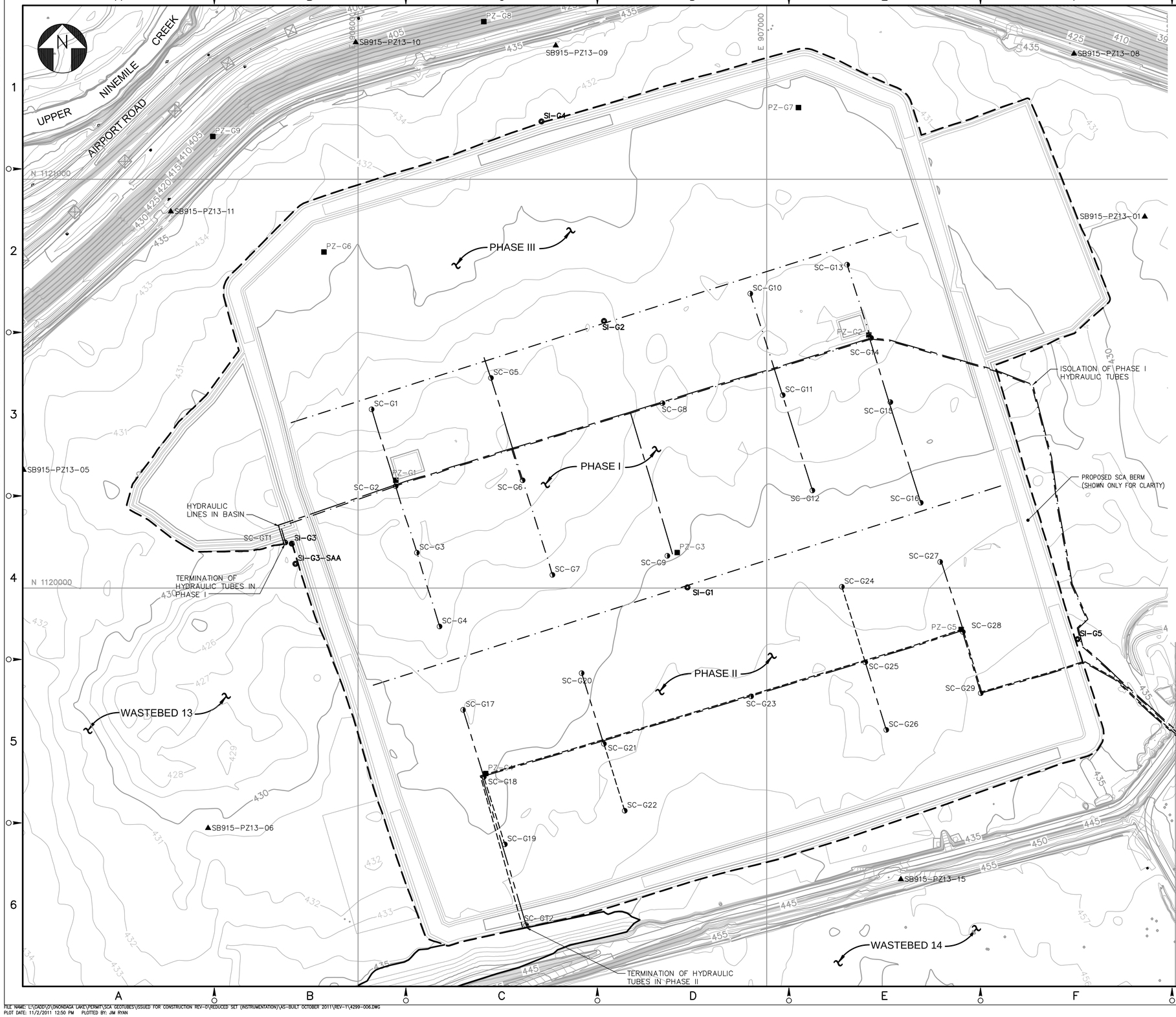


LEGEND

- GROUND ELEVATION FROM 2008 SURVEY
- EXISTING ROAD
- ▲SB915–PZ13–06 EXISTING PIEZOMETER
- ■PZ–G4 PIEZOMETER (AS–BUILT)
- ◑SC–G7 SETTLEMENT CELL (AS–BUILT)
- ⊗SI–G2 INCLINOMETERS (AS–BUILT)
- SCA AND BASIN BOUNDARY
- LEG 1
- LEG 2
- LEG 3
- LEG 4
- PHASE BOUNDARY

SETTLEMENT CELL	SETTLEMENT CELL LEG NUMBER
SC-G1	2
SC-G2	2
SC-G3	1
SC-G4	1
SC-G5	2
SC-G6	1
SC-G7	1
SC-G8	2
SC-G9	2
SC-G10	1
SC-G11	2
SC-G12	2
SC-G13	1
SC-G14	1
SC-G15	2
SC-G16	2
SC-G17	4
SC-G18	4
SC-G19	3
SC-G20	4
SC-G21	3
SC-G22	3
SC-G23	4
SC-G24	3
SC-G25	4
SC-G26	4
SC-G27	4
SC-G28	3
SC-G29	3

NOTES:

1. SETTLEMENT CELL TUBES WERE 'SNAKED' TO THE EXTENT POSSIBLE DURING INSTALLATION TO ALLOW FOR SETTLEMENT.
2. SETTLEMENT CELL TUBING WAS INSTALLED IN THE SAME TRENCH AS ELECTRICAL CABLES.

0 120' 240'
SCALE IN FEET

Geosyntec consultants
1255 ROBERTS BOULEVARD, N.W., SUITE 200
KENNESAW, GEORGIA 30144 USA
PHONE: 678.202.9500

NO.	DESCRIPTION	DATE	DRAWN	CHK'D	APPV'D
0	2011 AS–BUILT DRAWINGS	NOV 2011	JHS	AE	JFB

DRAWN BY: JHS	DATE: NOV 2011	SEAL
CHECKED BY: JMS/AE	DATE: NOV 2011	
APPROVED BY: JFB	DATE: NOV 2011	
PROJECT MGR.: JFB	DATE: NOV 2011	

PARSONS
COMMERCIAL TECHNOLOGY GROUP

OFFICE: 301 PLAINFIELD ROAD, SYRACUSE, NY 13212, (315) 451–9560
JOB: 444853
WBS:

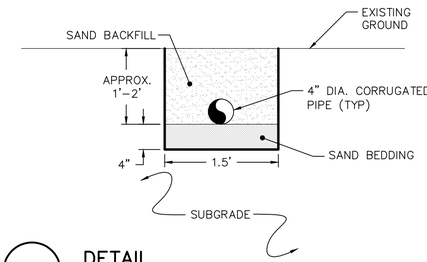
PROJECT TITLE
Honeywell
SEDIMENT CONSOLIDATION AREA
ONONDAGA LAKE BOTTOM
SUBSITE REMEDIAL DESIGN

DRAWING TITLE
AS–BUILT SETTLEMENT CELL TUBING PLAN

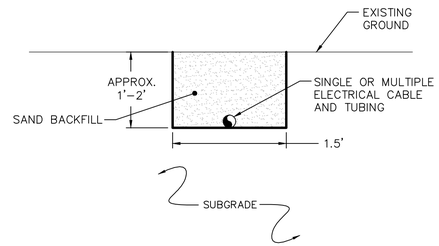
SCALE: SCALE: 1" = 120' (IF PRINTED ON 22x34 SHEET)

DRAWING NO.: 444853–103–C–006
REV.: 0

FILE NAME: I:\CADD\O\ONONDAGA LAKE\PERMIT\SCA GEOTUBES\ISSUED FOR CONSTRUCTION REV-0\REDUCED SET (INSTRUMENTATION)\AS-BUILT OCTOBER 2011\REV-1\4299-006.DWG
PLOT DATE: 11/2/2011 12:50 PM PLOTTED BY: JIM RYAN



DETAIL
PROFILER TRENCH EXCAVATION
SCALE: 1"=1'
XREF: 4299XD10.DWG



DETAIL
TRENCH EXCAVATION FOR CABLES AND TUBING
SCALE: 1"=1'
XREF: 4299XD10.DWG

NO.	DESCRIPTION	DATE	DRAWN	CHK'D	APPV'D
0	2011 AS-BUILT DRAWINGS	NOV 2011	JHS	AE	JFB

DRAWN BY: JHS	DATE: NOV 2011	SEAL	
CHECKED BY: JMS/AE	DATE: NOV 2011		
APPROVED BY: JFB	DATE: NOV 2011		
PROJECT MGR.: JFB	DATE: NOV 2011		

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PROJECT TITLE
Honeywell
SEDIMENT CONSOLIDATION AREA
ONONDAGA LAKE BOTTOM
SUBSITE REMEDIAL DESIGN

DRAWING TITLE
AS-BUILT
INSTRUMENTATION DETAILS

SCALE: SCALE: AS SHOWN (IF PRINTED ON 22x34 SHEET)

DRAWING NO.: 444853-103-C-007
REV.: 0

FILE NAME: L:\CADD\O\ONONDAGA LAKE\PERMIT\SCA GEOTUBES\ISSUED FOR CONSTRUCTION REV-0\REDUCED SET (INSTRUMENTATION)\AS-BUILT OCTOBER 2011\REV-1\4299-007.DWG
PLOT DATE: 11/2/2011 12:24 PM PLOTTED BY: JIM RYAN