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March 11, 2015

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Subject: Revised MIP Investigation Report and Workplan for High Resolution Site Characterization for the Former Tecumseh Products Company Site in Tecumseh, Michigan

Dear Mr. Kelly:

A membrane interface probe (MIP) investigation was completed in 2014 to provide high-density vertical distribution data in potential source areas identified at the former Tecumseh Products Company (TPC) Site in Tecumseh, Michigan. Preliminary findings of the MIP Investigation were provided in a presentation to the United States Environmental Protection Agency (USEPA) on October 23, 2014. At that time, USEPA requested that a workplan be prepared for the remaining high resolution site characterization (HRSC) work proposed in the March 27, 2014 Scope of Work. In response to the request, TRC submitted the *MIP Investigation Report and Workplan for High Resolution Site Characterization* in December 2014 to document the findings of the 2014 MIP investigation, to describe the proposed MIP confirmation sample program; and to outline the proposed downgradient vertical profile sampling program.

The attached Revised *MIP Investigation Report and Workplan for High Resolution Site Characterization* (Workplan) was prepared to address USEPA comments provided via email in January and February 2015. Those comments and a brief description of the revisions made to address each comment are summarized below.

Northern Source Area MIP Confirmation Sample Locations

1. ***<u>MIP-40</u> – Please analyze soil for VOCs from 18-19' instead of 3-4', and 20-21' instead of 19-20', and consider adding soil analysis for VOCs from the 25-26' interval that is in contact with groundwater. Sample and analyze all remaining intervals identified by Tecumseh for this location in the work plan.***

Table 3 has been revised to include soil samples from 18 to 19 feet below ground surface (ft bgs) and from 20 to 21 ft bgs in place of the previously proposed samples from 3 to 4 ft bgs and 19 to 20 ft bgs.

2. ***MIP-46 – benefit to targeting sampling intervals according to similar hydraulic conductivities in addition to the ECD readings. Please adjust the proposed intervals for 22.5-25.5', 25.5-28.5', 28.5-31.5', 43-46', and 46.5-49.5' in order to target groundwater samples for VOC analysis at revised intervals 23.9-26.9', 26.9-29.9', 29.9-32.9', 41.9-44.9', and 44.9-47.9', respectively. Sample and analyze all remaining intervals identified by Tecumseh for this location in the work plan.***

The proposed groundwater sampling depth intervals in Table 3 have been revised as requested. These changes result in significant overlap with two of the other groundwater sample intervals. Consequently, sample intervals between 32.9 ft bgs and 41.9 ft bgs which have low ECD response have also been adjusted.

3. ***MIP-10 – Please analyze groundwater for VOCs at 30-33' where the highest ECD reading was found at deeper interval than MW-33S.***

The requested sample location and sampling interval have been added to the Workplan.

4. ***MIP-39 – Please analyze groundwater for VOCs at 26-29'; data from NS-18 and proposed sampling at MIP-38 will provide equivalent data from the remaining intervals of high ECD readings in this area.***

The requested sample location and sampling interval have been added to the Workplan.

5. ***MIP-55 – To avoid possible dilution due to preferential flow from units with variable hydraulic conductivities, please adjust the proposed groundwater sampling intervals for 24.5-27.5', 27-30', and 29.5-32.5' to target groundwater samples for VOC analyses at revised intervals 25-28', 28-31', and 31-34', respectively. Sample and analyze all remaining intervals identified by Tecumseh for this location in the work plan.***

The proposed groundwater sampling depth intervals in Table 3 have been revised as requested.

6. ***MIP-57 – Please sample groundwater from 18-21', 21-24', and 24-27' and analyze for VOCs, as was proposed for HRSC sampling.***

The requested sample location and sampling intervals have been added to the Workplan.

7. ***MIP-58 – Please sample groundwater from 24-27', 27-30', 30-33', and 33-36' and analyze for VOCs in highly permeable sand, as was proposed for HRSC sampling.***

The requested sample location and sampling intervals have been added to the Workplan.

Southern Source Area MIP Confirmation Sample Locations

8. ***MIP-03 – Please analyze groundwater at 45.5-48.5', where the highest ECD reading was measured at the apparent contact with a competent (clay) unit. Install the well screen 2-feet into clay, as at MW-35D and other locations, to check for the possible accumulation of DNAPL. Analyze the sample for VOCs and consider finishing the well with a protective casing for future access.***

The Workplan has been revised to accommodate the additional sample requested. This location will be considered for permanent well installation after sample results have been received. Note that the tooling used for permanent well installation (e.g., hollow-stem auger) is different than that that will be used for confirmation sampling and groundwater profile sampling (e.g., direct push), therefore well installations will be completed in a separate mobilization.

9. ***MIP-05 – Sampling of soils at 1.5-2.5', 6-7, and 14-15' are sufficient for EPA's evaluation of vadose zone soil samples by analyses for VOCs. However, EPA does not agree with the interpretation of a basal clay at 50'. The intent of the sampling requested by EPA at MIP-05 is to evaluate conditions at the contact between the sand and the basal clay. To evaluate these conditions, EPA requires analysis of soils for VOCs from 48.5-50.5', 50.5'-52.5', 52.5-54.5', 54.5-56.5', and 56.5-58.5' and groundwater sampling for VOC analysis at the intervals at 48.5-51.5', 51.5-54.5', and 54.5-57.5' to confirm or deny the presence of DNAPL near this area downgradient from MIP-03. This work is consistent with the intent of the agreed locations for original HRSC samples near this property line. Shallow groundwater analyses are not needed at MIP-05.***

TRC agrees the confirmation sampling at MIP-05 will be used primarily to confirm or deny the presence of DNAPL in this area. At the majority of the originally proposed sampling locations, including MIP-05, USCS classification is specified at depth to confirm the actual depth of the underlying clay unit. The sample intervals listed in Table 3 are approximate. The actual depth is dependent on the observation of at least two feet of competent clay. Given the agreed objective, standard practice is to add additional groundwater samples, as appropriate, if the depth to the underlying clay unit is greater than anticipated based on the MIP log. Clarifying notes have been added to Subsection 4.4 to address how differences between the projected and actual depth to the underlying clay unit will be handled. Given

USEPA comments, soils will be logged to a minimum depth of 60 ft bgs at this location. The originally proposed 45.5 to 48.5 ft bgs groundwater sample will be collected. Other groundwater samples through the upper aquifer have been eliminated. Additional groundwater samples at depths greater than 48.5 ft bgs will be collected at intervals where permeable soil is observed to a minimum depth of 60 ft bgs including one sample screened at least 1-foot into the underlying competent clay unit. Two soil samples will be collected at from the underlying competent clay unit. If clay lenses are observed between 48.5 ft bgs and the top of the competent clay, additional soil samples will be collected at those locations as well.

10. ***MIP-60 – Please sample impacted soil above groundwater at 8.5-9.5′ and 13.5-14.5′, and analyze for VOCs.***

The Workplan has been revised to accommodate this request.

11. ***MIP-25 – Please add groundwater samples for VOC analyses from the 47-50′ and 50-53′ intervals (the EC data suggests the clay surface may be located at a depth of 54′, and sand was identified to a depth of at least 49′ in the nearby location SS-09/MW-34D, and to at least 45′ in adjacent GP-22).***

USCS classification is specified to a depth 55 feet at MIP-25 to confirm the actual depth of the underlying clay unit. As noted above, clarifying notes have been added to Subsection 4.4 to address how differences between the projected and actual depth to the underlying clay unit will be handled. Additional groundwater samples will be collected, as appropriate, to total depth, including one sample screened at least 1-foot into the underlying competent clay unit. If soils observed from 47.5 to 53.5 ft bgs are permeable, these samples will be replaced with groundwater samples. At a minimum one soil sample will be collected from the top of the underlying clay unit.

12. ***MIP-50 – To avoid possible dilution due to preferential flow from units with variable hydraulic conductivities, please adjust the proposed sampling intervals for groundwater at 13-16′, 16.5-19.5′, 20-23′, 26-29′, 29.5-32.5′, and 33-36′ to target groundwater samples for VOC analyses at revised intervals at 15-18′, 18-21′, 21-24′, 27.5-30.5′, 31.5-34.5′, and 34.5-37.5′. Sample and analyze all remaining intervals identified by Tecumseh for this location in the work plan.***

The groundwater sampling depth intervals in Table 3 have been revised as requested.

13. ***MIP-49 – Please analyze groundwater for VOCs at 18.5-21.5' and 21.5-24.5' for remedial evaluation.***

The requested sample location and sampling intervals have been added to the Workplan.

14. ***MIP-48 – Please analyze impacted soils above or at groundwater at 4-5', 5-6', 6-7', and 7-8' for VOCs, and groundwater from the interval at 15-18' for remedial evaluation.***

The requested sample location and sampling intervals have been added to the Workplan.

Central MIP Confirmation Sample Locations

15. ***MIP-14 – sample soil from 3-4' and 4-5', and groundwater from 26-29' due to a lack of data from the area and analyze for VOCs.***

The requested sample location and sampling intervals have been added to the Workplan.

16. ***MIP-54 – Please sample groundwater from 26-29' and analyze for VOCs due to a lack of data in the area.***

The requested sample location and sampling interval has been added to the Workplan.

Groundwater Profile Sampling

17. ***The transect along the southern portion of Maumee appears to be generally consistent with the agreed locations, but excludes on HRSC location south of MW-20S/D. Depending on the results from the southernmost location and due to soil gas at SG-22 and the presence of downgradient residents, an additional HRSC boring may be required.***

Figure 29 was revised to illustrate this likely sampling location.

18. ***We are not in agreement with the transect proposed along Kilbuck, rather than along the northern portion of Maumee. The scope provided by EPA was intended to determine the cross-sectional area of impacted groundwater moving towards the river near the depth of heaviest impact at B-35 (approximately 30 feet).***

The groundwater profile sampling program was revised and requested and illustrated on Figure 29.

19. ***We are not in agreement about the omission of samples west of the shared property line with the Home Center. The groundwater samples requested from depths between 50 and 60 feet at MIP-05 will satisfy one of the locations, but a second location is needed north of MIP-05 between MW-35D and MIP-03, with groundwater samples to be collected and analyzed for VOCs to assess the potential presence of DNAPL at the basal clay that has migrated from the southern source area.***

As illustrated on Figure 29, an additional groundwater profile sample location has been added along the transect between investigation location MIP-03 and monitoring well MW-35D.

Other Revisions

In addition to the revisions described above, which were made to accommodate USEPA requests for additional information, several additional modifications were made. Notable revisions are outlined below:

- As noted in TRC's email dated January 8, 2015, the subcontractor report used the rejected data from MIP-14 rather than the (correct) data from MIP-14a when processing the MIP data. That was also the processed (baseline adjusted) data from the subcontractor that TRC used in the EVS model. In the Revised Workplan, Appendix A (the subcontractor report) as wells as Figures 8 through 23 were revised to correct this error.
- As noted in TRC's email dated January 8, 2015, while drilling MIP-38, the computer software updated and went through an automatic update. As such the data were collected in two segments (MIP-38 and MIP-38 lower). These data were spliced together to create the MIP-38Final.mhp file. Subsequent review of the MIP-38 data file found that a 2-foot data gap was introduced when these data were spliced. Depths were reassigned such that the depth to groundwater is consistent with other investigation locations in the vicinity (MIP-10 and MIP-39). Revisions were made to Table 3, Figures 8 through 24, Appendix A, Appendix D and Appendix E to correct this error.
- A clarifying note regarding the invalidity of PID data collected at MIP-22 was added to Figure 22, Appendix A, and Appendix D.
- Minor errors identified by USEPA in Table 3 have been corrected (MIP-35 and MIP-38).
- As discussed during the call with USEPA on January 29, 2015 the number of soil samples from locations with limited response in the vadose zone was reduced to help off-set the cost to accommodate USEPA requests for additional sampling. Reductions were made at the following locations: MIP-41 (2), MIP-35 (3), MIP-46 (2), MIP-44 (2), and MIP-30 (4).
- The project schedule was adjusted to improve project efficiency. Subsections 4.6 and 5.5 were replaced with Section 6.

If you have any questions regarding the Revised Workplan, please contact me.

Sincerely,

TRC Environmental Corporation

Graham Crockford
Project Manager

Enclosure: Revised *MIP Investigation Report and Workplan for High Resolution Site Characterization*

cc: Susan Perdomo, USEPA
Jason Smith, Tecumseh Products Company
Douglas McClure, Conlin, McKenney and Philbrick, PC

MIP Investigation Report
and
Workplan for High Resolution Site Characterization

RCRA-05-2010-0012
Former Tecumseh Products Company Site
Tecumseh, Michigan

December 2014
Revised March 2015

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Tecumseh, Michigan

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Revised March 2015

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Table of Contents

1. Introduction 1-1
   - 1.1 Site Description 1-1
   - 1.2 Project Summary 1-1
   - 1.3 Purpose and Scope 1-2

2. Previous Investigation and Reporting Activities 2-1
   - 2.1 Summary of Investigation Activities by Others 2-1
   - 2.2 Remedial Investigation Activities and Reporting by TPC 2-1
   - 2.3 2014 Passive Soil Gas Survey 2-3
     - 2.3.1 Background 2-3
     - 2.3.2 Summary of 2014 PSG Survey Results 2-4

3. 2014 Membrane Interface Probe Investigation 3-1
   - 3.1 Background 3-1
   - 3.2 Summary of Field Activities 3-2
     - 3.2.1 MIP Investigation 3-2
     - 3.2.2 Limited Confirmation Sampling 3-4
   - 3.3 Data Interpretation and Evaluation 3-4
     - 3.3.1 Methods – Geologic Interpretation 3-5
     - 3.3.2 Methods – Distribution of Contaminants 3-7
     - 3.3.3 Data Overview 3-12
     - 3.3.4 3-D Visualization 3-13

4. MIP Confirmation Sampling Program 4-1
   - 4.1 Introduction 4-1
   - 4.2 Selection Criteria for Confirmation Sample Locations 4-1
   - 4.3 Proposed Confirmation Sample Locations 4-2
   - 4.4 Methodology for Confirmation Sampling 4-5
   - 4.5 Data Evaluation and Next Steps 4-7

5. Downgradient Groundwater Profile Sampling 5-1
   - 5.1 Background 5-1
   - 5.2 Proposed Sample Locations 5-1
   - 5.3 Methodology for Vertical Profile Sampling 5-2
   - 5.4 Data Evaluation and Next Steps 5-2

6. Work Completion Schedule 6-1

List of Tables

Table 1	Summary of Detected Volatile Organic Compounds in Soil at MIP Confirmation Sample Locations
Table 2	Summary of Detected Volatile Organic Compounds in Groundwater at MIP Confirmation Sample Locations
Table 3	Summary of Proposed MIP Confirmation Sample Locations

List of Figures

Figure 1	Site Layout and Sample Locations
Figure 2	Site Features and Demolition Areas
Figure 3	Passive Soil Gas Survey Locations
Figure 4	Results of Passive Soil Gas Survey – Distribution of TCE and Breakdown Products
Figure 5	Results of Passive Soil Gas Survey – Distribution of TCA
Figure 6	Proposed MIP Locations – May 2014
Figure 7	MIP Investigation Locations
Figure 8	MIP Investigation Results – Lateral Distribution of Maximum ECD Response
Figure 9	MIP Investigation Results – Distribution of Maximum ECD Response in Vadose Zone
Figure 10	MIP Investigation Results – Distribution of Maximum ECD Response in Saturated Zone
Figure 11	MIP Investigation Results – Distribution of Maximum ECD Response >12 Feet Above Water Table
Figure 12	MIP Investigation Results – Distribution of Maximum ECD Response 7 to 12 Feet Above Water Table
Figure 13	MIP Investigation Results – Distribution of Maximum ECD Response 2 to 7 Feet Above Water Table
Figure 14	MIP Investigation Results – Distribution of Maximum ECD Response at Water Table
Figure 15	MIP Investigation Results – Distribution of Maximum ECD Response 3 to 8 Feet Below Water Table
Figure 16	MIP Investigation Results – Distribution of Maximum ECD Response 8 to 13 Feet Below Water Table
Figure 17	MIP Investigation Results – Distribution of Maximum ECD Response 13 to 18 Feet Below Water Table
Figure 18	MIP Investigation Results – Distribution of Maximum ECD Response 18 to 23 Feet Below Water Table
Figure 19	MIP Investigation Results – Distribution of Maximum ECD Response 23 to 28 Feet Below Water Table

Figure 20 MIP Investigation Results – Distribution of ECD Response at Interface of Clay Confining Unit
Figure 21 MIP Investigation Results – Distribution of ECD Response in Clay Confining Unit
Figure 22 MIP Investigation Results – Lateral Distribution of Maximum PID Response
Figure 23 MIP Investigation Results – Lateral Distribution of Maximum FID Response
Figure 24 Elevation of the Top of Clay Confining Unit
Figure 25 Cross Section Location Map
Figure 26 Cross Sections A-A′ and B-B′
Figure 27 Cross Sections C-C′ and D-D′
Figure 28 Proposed Confirmation Sample Locations
Figure 29 Proposed Locations for Vertical Groundwater Profile Sampling

List of Appendices

Appendix A MIP Investigation Data and Subcontractor Report
Appendix B Soil Boring Logs
Appendix C Analytical Laboratory Reports
Appendix D Normalized MIP Investigation Data
Appendix E MIP Logs with Confirmation Sample Locations

Section 1
Introduction

1.1 Site Description

The former Tecumseh Products Company (TPC) Site is located at 100 East Patterson Street in Tecumseh, Michigan (Figure 1). The site is comprised of two parcels which occupy a total of approximately 50.5 acres. Parcel number 325-0250-00 is a 3.4-acre grass-covered area located outside of the southern site fence. Parcel number 325-0241-00 occupies 47.1 acres and is located along the northern portion of the site. This parcel includes an expanse of interconnected buildings/building additions that occupy approximately 750,000 square feet near the western perimeter of the site. Letter designations are used to distinguish the various buildings and building areas. The letter designations, e.g., Area K, P-Building, etc., for each building/building addition are shown on Figure 2.[1] East of the main building, the site is occupied by the former parking area in the north and a grassy area in the south (Figure 2).

1.2 Project Summary

In 2008, a Phase I Environmental Site Assessment (ESA) was conducted by Atwell-Hicks, LLC as part of the sale of the facility. The Phase I ESA report recommended that a Phase II Subsurface Investigation be conducted to address the recognized environmental conditions (RECs) identified in the Phase I ESA. A Phase II ESA was performed by ATC Environmental Consultants (ATC) on behalf of the buyer between December 2008 and February 2009. A copy of the Draft Limited Phase II ESA report was provided to TPC in February 2009. The Phase II ESA report was finalized on September 4, 2009.

Following receipt of the Draft Phase II ESA, TPC retained RMT, Inc. (RMT), now TRC Environmental Corporation (TRC)[2], to assist with environmental investigation and remediation activities at the former TPC site located at 100 East Patterson Street in Tecumseh, Michigan. A phased series of investigations ensued. These investigation activities are described further in Section 2.

[1] In 2013 a portion of the main building and several outbuildings were demolished; the building slab remains in place. The demolished portion of the facility is illustrated on Figure 2. A demolition contractor has been engaged to demolish the remaining structures with the exception of P-Building and S-Building. Ongoing building demolition has been delayed indefinitely by the site owner.
[2] In June 2012, TRC acquired the Environmental Business Unit of RMT. References to TRC through the remainder of this report are inclusive of RMT prior to that acquisition.

Soil and analytical data indicate that concentrations of chlorinated volatile organic compounds (CVOCs) are elevated throughout the site. Investigation activities included an assessment of potential CVOC sources and RECs. Operations in the vicinity of Solid Waste Management Unit (SWMU) 5, the Distillation Solvent Recovery System, may be a source area for 1,1,1-trichloroethane (TCA) and trichloroethene (TCE) in soil and groundwater. However, there is no evidence that other units (SWMUs, underground storage tanks, above-ground storage tanks, etc.) are a significant source of on-site CVOCs. Rather, the great majority of on-site CVOCs appear to be a result of long-term industrial operations at the site and incidental spillage associated with those operations. This subsurface CVOC contamination has been the focus of site-wide remedial investigation activities and corrective measures.

Industrial solvents composed largely of trichloroethene or 1,1,1-trichoroethane, such as those used for machining and degreasing operations, are dense non-aqueous phase liquids (DNAPLs). DNAPLs in pure form are heavier than water; and under certain conditions can migrate independent of groundwater flow. In addition to free-phase mobile liquids, DNAPL may also be present as residual liquids retained within the aquifer pore space by capillary forces. Residual DNAPL results when the original supply of new DNAPL is exhausted and small blobs (i.e., ganglia) become isolated from the once continuous DNAPL body. These ganglia remain **immobile** within the soil pore space, serving as a continuing source of contaminant dissolution to passing groundwater or soil gas. Data from source area borings completed to the clay surface are NOT indicative of a free-phase DNAPL pool at the surface of the confining clay unit. The United States Environmental Protection Agency (USEPA) requested high-resolution site characterization (HRSC) to refine and verify the conceptual site model.

1.3 Purpose and Scope

As noted above, USEPA requested further HRSC to refine and verify the conceptual site model for the site. As described in the March 27, 2014 Scope of Work and agreed during the May 12, 2014 meeting with USEPA, the passive soil gas (PSG) survey area was expanded to include several discrete areas which, in USEPA's opinion, had the potential to be discrete source areas. TPC agreed to expand the PSG study area to include these areas, specifically the former drum storage areas, tank areas, areas adjacent to former railroad spurs where loading/unloading of materials may have occurred, and the area east/southeast of the southern portion of the building where a number of outbuildings and two hazardous waste storage areas were located. This work was completed as described in the March 27, 2014 Scope of Work and the June 18, 2014 Technical Memorandum titled *Summary of 2014 Passive Soil Gas Survey Activities*; *Former Tecumseh Products Company Site in Tecumseh, Michigan (RCRA-05-2010-0012).* PSG survey results, including those from the 2014 Supplemental PSG Survey, were used to determine the reasonable lateral extent of source areas.

A membrane interface probe (MIP) investigation was proposed to provide high-density vertical distribution data in those source areas. The 21 originally proposed MIP investigation locations were selected with input from USEPA, which was provided during the May 2014 project meeting. The MIP investigation, as described in the March 27, 2014 Scope of Work, was completed between June 17 and July 24, 2014. Preliminary findings of the MIP Investigation were provided in a presentation to USEPA on October 23, 2014. At that time, USEPA requested that a workplan be prepared for the remaining HRSC work proposed in the March 27, 2014 Scope of Work including MIP confirmation sampling and off-site vertical profile sampling. This *MIP Investigation Report and Workplan for High Resolution Site Characterization* was prepared in response to that request. This report includes:

- A brief summary of previous investigation activities;
- Documentation of the 2014 MIP investigation including a description of field activities, an overview the methods used to understand and review the MIP data, and an evaluation of those data including a series of figures prepared using the three-dimensional visualization created for the project;
- A description of the proposed MIP confirmation sample program; and
- A description of the proposed downgradient vertical profile sampling.

Section 2
Previous Investigation and Reporting Activities

2.1 Summary of Investigation Activities by Others

In 2008, a Phase I Environmental Site Assessment (ESA) was conducted by Atwell-Hicks, LLC, as part of the potential sale of the Tecumseh Products Company (TPC) manufacturing site to Consolidated Biscuit Company (CBC). The Phase I ESA report recommended that a Phase II Subsurface Investigation be conducted to determine the nature and extent of the recognized environmental conditions (RECs).

A Phase II ESA was conducted by ATC Environmental Consultants (ATC) on behalf of CBC between December 2008 and February 2009. The Limited Phase II Investigation included the advancement of 30 on-site soil borings. Soil borings conducted by ATC are designated on the Figures in this report as GP-XX (installed with a Geoprobe®) or HB-XX (installed with a hand auger). The results of the Phase I ESA were used to identify sample locations and to select parameters for analysis. Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), metals, and/or cyanide. Sample locations are shown on Figure 1.

2.2 Remedial Investigation Activities and Reporting by TPC

In February 2009, TRC Environmental Corporation (TRC) reviewed the Draft Limited Phase II ESA report on behalf of TPC. Based on this review, TRC identified chlorinated VOCs (CVOCs) as the primary constituents of concern (COCs) for the site. Two likely source areas for these CVOCs were identified: the northern source area and the southern source area. The northern source area is in the vicinity of soil borings GP-14 and GP-15 (Figure 1) where the highest concentration of trichloroethene (TCE) was found in the soil, and up gradient of soil boring GP-02 where high concentrations of TCE were found in the groundwater. The southern source area is in the vicinity of soil borings GP-21 and GP-22. After review of the Draft Phase II ESA report, TRC concluded that there was a potential for off-site migration of CVOCs above the Michigan Department of Environmental Quality (MDEQ) Part 201 generic cleanup criteria (Part 201 criteria). Therefore remedial investigation activities, conducted by TRC on behalf of TPC, were initiated.

In March 2009, TPC initiated a phased series of investigations to support a risk-based evaluation of potential exposure pathways, including:

- On-site source area investigation activities to:
  - Determine the nature and extent of COCs in soil, including non-aqueous phase parent products;
  - Determine the nature and extent of COCs in groundwater, including non-aqueous phase parent products;
  - Evaluate the physical parameters of the source area aquifer that might affect contaminant fate and transport;
  - Evaluate the stability of COCs in source area groundwater;
  - Identify potential receptors, and evaluate risk to those receptors; and
  - Support the design and selection of final corrective measures.
- Source area, perimeter and off-site groundwater investigation activities to:
  - Determine the horizontal and vertical extent of COCs in groundwater;
  - Evaluate the stability of the groundwater plume;
  - Identify potential receptors, and evaluate risk to those receptors; and
  - Support the design and selection of final corrective measures.

The findings of investigation activities, completed through August 2012, are described in detail in the September 2012 *Remedial Investigation and Groundwater Environmental Indicator Report* (RI and Groundwater EI Report).

On October 29-30, 2012, TPC met with the United States Environmental Protection Agency (USEPA) at USEPA Region V Headquarters in Chicago, Illinois to discuss current site conditions and work to be undertaken pursuant to the Administrative Order on Consent (AOC). During that meeting, USEPA provided comments on ecological risk, the current human exposures environmental indicator determination, vapor intrusion, groundwater stability, and the nature and extent of contamination. These comments and discussions yielded a number of action items in order to provide USEPA with additional requested information, and to extend certain dates in the AOC accordingly. As agreed, TRC memorialized those action items in the December 2012 Technical Memorandum titled *Action Items from the October 2012 Project Meeting for Environmental Work Associated with the Former Tecumseh Products Company Site (RCRA-05-2010-0012)*.

In order to address those action items, and subsequent USEPA comments, the *Revised Supplemental Groundwater Investigation Workplan and Revisions to the Quarterly Groundwater Compliance Monitoring Program for the Former Tecumseh Products Company Site in Tecumseh, Michigan and Response to USEPA Comments* (2013 GW Investigation Workplan) was prepared and executed. The findings of those investigation activities were documented in the

July 15, 2013 Technical Memorandum titled *Summary of the Supplemental Groundwater Investigation Activities and First Quarter and Second Quarter 2013 Compliance Monitoring Events; Former Tecumseh Products Company Site in Tecumseh, Michigan.*

In September 2013, the *Supplement to the Current Human Exposures Under Control Environmental Indicator Report* was submitted. This document provided an up-to-date assessment of site COCs and an evaluation of those COCs in various media, including an evaluation of exposure pathways. USEPA provided a response to TPC's September 30, 2013 *Supplement to the Current Human Exposures Under Control Environmental Indicator Report* on January 31, 2014. This comment letter is 34 pages long including 21 pages of text. As outlined in the email sent by Jason Smith of TPC on February 12, 2014, TPC suggested that USEPA's requested workplan be deferred until after a project meeting to discuss USEPA's comments and come to consensus on how best to move forward. USEPA responded to that request on February 20, 2014, requesting the submittal of a scope of work prior to scheduling a meeting date. A Draft Scope of Work was provided to USEPA in response to that request on March 3, 2014. On March 11, 2014, USEPA provided comments via email on the March 3, 2014 Draft Scope of Work.

The final *Scope of Work to Accommodate the USEPA Comment Letter Dated January 31, 2014 Regarding the Human Exposure Environmental Indicator Report* (SOW) was submitted on March 27, 2014. Following this submittal, USEPA agreed to meet with TPC and TRC on May 12, 2014 to discuss the January 31, 2014 comment letter and the SOW. As outlined in the SOW, USEPA comments/requests can be broadly summarized as follows:

- Further **source area characterization** to verify the horizontal and vertical distribution of COCs, including installation of additional monitoring wells, as appropriate, in areas of highest contamination;
- Further **contaminant plume characterization** to verify the horizontal and vertical distribution of COCs in groundwater, including installation of additional monitoring wells, as appropriate, in areas of highest contamination; and
- Further evaluation of the potential vapor intrusion migration pathway.

Supplemental remedial investigation activities to address these comments were initiated in April 2014.

2.3 2014 Passive Soil Gas Survey

2.3.1 Background

As noted previously, early soil and groundwater investigation activities identified two general source areas: the northern source area and the southern source area. A passive soil gas (PSG) survey was completed through the northern source area in 2010 to help

locate potential discrete source areas within the larger northern source area. By comparison, the southern source area was better defined with a likely source identified; therefore, a PSG survey through the southern portion of the building was not completed at that time.

Since that time a soil vapor extraction (SVE) system has been installed in P-Building, located above the eastern portion of the northern PSG survey area. Extraction wells installed in areas which had an elevated response during the 2010 PSG survey have been very effective in removing COCs from the subsurface. Consequently, in 2013, a PSG survey was proposed to support the design of a similar system in the southern source area in order to optimize the number and location of proposed extraction wells. Results of the 2013 PSG investigation are documented in the April 10, 2014 Technical Memorandum titled, *Summary of 2013 Passive Soil Gas Survey Activities; Former Tecumseh Products Company Site in Tecumseh, Michigan (RCRA-05-2010-0012).*

On January 31, 2014, USEPA provided a response to TPC's September 30, 2013 *Supplement to the Current Human Exposures Under Control Environmental Indicator Report*. Among those comments, USEPA identified several areas which, in USEPA's opinion, had the potential to be discrete source areas. TPC agreed to expand the PSG study area to include these areas, specifically the former drum storage areas, tank areas, areas adjacent to former railroad spurs where loading/unloading of materials may have occurred, and the area east/southeast of the southern portion of the building where a number of outbuildings and two hazardous waste storage areas were located. This additional PSG survey work was completed in April 2014, as described in the March 27, 2014 SOW.

2.3.2 Summary of 2014 PSG Survey Results

The 2014 supplemental PSG survey was completed between April 21, 2014 and April 25, 2014. PSG sample locations are illustrated on Figure 3. Investigation activities, analytical results, and data analysis are provided in the June 18, 2014 Technical Memorandum titled *Summary of 2014 Passive Soil Gas Survey Activities*; *Former Tecumseh Products Company Site in Tecumseh, Michigan (RCRA-05-2010-0012).* In general, the 2014 PSG survey further defined the downgradient boundaries of the two southernmost areas of concern, but no new source areas of TCE were identified.

As documented in the June 18, 2014 Technical Memorandum, compound distribution maps which included data from all PSG sample locations (2010 through 2014) were prepared for select constituents. Figure 4 illustrates the relative response at PSG sample locations for TCE and its breakdown products (1,1-dichloroethene [1,1-DCE],

cis-1,2-dichloroethene [cis-DCE], trans-1,2- dichloroethene [trans-DCE], and vinyl chloride). Figure 5 illustrates the distribution of 1,1,1-trichoroethane (TCA).

These distribution maps provide an additional tool in further defining the lateral distribution of COCs at the former TPC site. Elevated PSG response may be indicative of one or more of the following:

- Near proximity to an original source of contamination,
- Near proximity to affected soils along the path of contaminant migration, and/or
- Locations overlying significant groundwater contamination at the water table (i.e., affected groundwater is in contact with soil gas allowing VOCs to volatilize and enter the overlying soil gas).

As described in the SOW, areas with elevated response for TCE and its breakdown products were targeted for a membrane interface probe (MIP) investigation to further define the vertical distribution of COCs within these areas of relatively high COC concentrations.

Section 3
2014 Membrane Interface Probe Investigation

3.1 Background

Prior to 2014 a phased series of source area investigation activities were completed at the former Tecumseh Products Company (TPC) site in Tecumseh, Michigan in order to:

- Determine the nature and extent of constituents of concern (COCs) in soil and groundwater, including non-aqueous phase parent products;
- Evaluate the physical parameters of the source area aquifer that might affect contaminant fate and transport;
- Evaluate the stability of COCs in source area groundwater; and
- Support the design and selection of final corrective measures.

The findings of those investigation activities are documented and summarized in the following reports:

- The September 2012 *Remedial Investigation and Groundwater Environmental Indicator Report* (RI and Groundwater EI Report);
- The July 15, 2013 Technical Memorandum titled *Summary of the Supplemental Groundwater Investigation Activities and First Quarter and Second Quarter 2013 Compliance Monitoring Events; Former Tecumseh Products Company Site in Tecumseh, Michigan*; and
- The April 10, 2014 Technical Memorandum titled *Summary of 2013 Passive Soil Gas Survey Activities; Former Tecumseh Products Company Site in Tecumseh, Michigan (RCRA-05-2010-0012)*.

Sources and potential sources of contamination are described in detail in the September 2012 RI and Groundwater EI Report. There is no single known source for chlorinated compounds, particularly trichloroethene (TCE) and 1,1,1-trichloroethane (TCA), at the site. TCE in particular has been identified in soil throughout the building footprint and vicinity. Two areas of relatively higher soil and groundwater concentrations have been identified.

The northern source area incorporates much of the northern building footprint extending from Building Area K in the west and north to Building Area E in the south (Figure 2). Relatively little TCA is found in this area. The distribution of TCE suggests incidental usage during the manufacturing processes (recognized environmental condition 2 [REC 2]) rather than a limited number of isolated point sources. Potential sources of TCE include use of TCE during machining and degreasing processes, a former railroad spur where various chemicals (including TCE) were off-loaded from rail cars, and an above-ground solvent distribution

system. Anecdotal stories by TPC employees suggest that each worker was assigned to a specific work station. Workers took pride in the appearance of their work stations and could, upon request, obtain a solvent-based cleaner from the former chemical stockroom and then transport that cleaner in an open container back to their work stations in order to maintain the appearance of those work stations. Machining operations were largely confined to this northern source area.

High concentrations of TCE and TCA are found in the vicinity of the southern source area. This area is less distributed. The southern source area is located in the vicinity of a former Distillation Solvent Recovery System (solid waste management unit 5 [SWMU 5]) located in Building Area M (Figure 2). Solvent use in this area also included degreasing operations associated with unit teardown, recovery and repairs.

In early 2014, the United States Environmental Protection Agency (USEPA) requested high-resolution site characterization (HRSC) to refine and verify the conceptual site model. In particular, USEPA requested further source characterization to verify the horizontal and vertical distribution of contamination. As described in the March 27, 2014 Scope of Work (SOW), Passive Soil Gas (PSG) survey results, including those from the 2014 Supplemental PSG Survey, were used to determine the reasonable lateral extent of source areas, and a membrane interface probe (MIP) investigation was proposed to provide high-density vertical distribution data in those source areas. The 21 originally proposed MIP investigation locations, which were selected with input from USEPA during the May 2014 project meeting, are illustrated on Figure 6. As illustrated on Figure 6, at least one MIP boring was proposed for each area with elevated PSG response for TCE and breakdown products.

3.2 Summary of Field Activities

3.2.1 MIP Investigation

Between June 17, 2014 and July 24, 2014 a total of 68 MIP investigation borings were completed (Figure 7). Investigation locations included the 21 originally proposed investigation locations (highlighted orange on Figure 7), 35 step-out locations (highlighted green on Figure 7), and 12 locations to replace groundwater profile sampling locations proposed in the SOW (highlighted blue on Figure 7).[3] Investigation methods are documented in detail in Appendix A, and summarized below:

[3] Groundwater profile sample locations were selected to help define the lateral extent and vertical distribution of COCs off-site. MIP data collected prior to the installation of borings at these locations indicated that the MIP detectors have sufficient sensitivity to determine the vertical distribution of contaminants along the perimeter of the site. As such, the MIP investigation was expanded to include these locations.

- The detector array for all sample locations included:
    - Depth;
    - Detectors to maintain and verify system performance (courier gas flow, line pressure, and probe temperature);
    - Electrical conductivity (used to infer geologic conditions, e.g., soil type and saturation);
    - Electron-capture detector (ECD) (responds primarily to compounds with high chlorination status, e.g., tetrachloroethene [PCE], TCE and TCA);
    - Flame-ionization detector (FID) (responds to a wide range of volatile compounds including chlorinated compounds); and
    - Photo-ionization detector (PID) with a 10.6 electron volt (eV) lamp (responds to a wide range of volatile compounds including chlorinated ethenes).
- At 34 sample locations (MIP-31 and MIP-36 through MIP-68) the MIP included a hydraulic profiling tool (MIHPT) to evaluate geologic conditions more precisely and verify the geologic interpretation using electrical conductivity and temperature only. In addition to the parameters listed above, the MIHPT detector array also collected the following information:
    - Flow transducer (used to measure the flow rate of clean water injected into the formation);
    - HPT line pressure (used to measure back pressure on HPT flow); and
    - In-line pressure transducer (used to determine the component of the back pressure that is due to overlying water column).
- The following procedures were used to ensure data quality:
    - **Detector Response Assessment:** Before and after each boring the MIP probe was used to measure the response in a 1,000 microgram per liter (µg/L) TCE standard [4].
    - **Trip Time Assessment:** The time required for the sample to travel from the probe through the MIP system trunk-line to the analytical instruments is the trip time. This trip time was measured before and after each boring to help ensure ECD, PID and FID data is assigned to the correct depth.
    - **Response Time Assessment:** The time required for the detectors to exhibit peak response as evaluated for each detector at each boring location to help ensure consistent and optimal response times.

[4] Tetrachloroethene (PCE) was used as the test standard for the first two borings (MIP-01 and MIP-02). After those borings PCE was replaced with TCE (the more common constituent of concern for the site) at the request of TRC.

3.2.2 Limited Confirmation Sampling

Between June 19, 2014 and June 24, 2014, confirmation sampling was conducted at two MIP investigation locations (MIP-01 and MIP-03) as described in the March 2014 Scope of Work. Investigation activities included:

- Advancement of soil borings at 2 locations to evaluate site geology, depth to groundwater, and depth to the clay confining unit. Soil boring logs are included in Appendix B.
- Visual classification of soils to at least 1 foot below the top of the clay confining unit.
- Field screening of unsaturated soils using a handheld PID.
- Collection of soil samples at depths corresponding to peaks observed during the MIP investigation for volatile organic compounds (VOC) analysis. Sample results are provided in Table 1. The laboratory report is included as Appendix C.
- At each location a temporary 1-inch PVC well with a 3-foot screened interval was installed at the clay surface.
- At an off-site location (within 5-feet of the original location), a second 1-inch temporary well with a 3-foot screened interval was installed to the middle of the aquifer.
- Each temporary well was purged and stabilized for turbidity prior to collection of a groundwater sample for VOCs analysis.
- Following sample collection, the temporary well was pulled up approximately 3 feet (ft) to sample the next depth interval[5]. Well stabilization and sampling was repeated until a sample had been collected from all depths through the aquifer. Groundwater sample results are provided in Table 2. The laboratory report is included as Appendix C.
- After the completion of groundwater sampling, the temporary wells were removed and the holes were plugged with bentonite.

3.3 Data Interpretation and Evaluation

Detector response as a function of depth is provided in two formats to facilitate data evaluation. Graphs provided by the subcontractor are scaled automatically based on boring depth, maximum response and minimum response (Appendix A). While useful for the evaluation of individual borings, the variable scales create a challenge when comparing response depth and magnitude between multiple borings. Consequently, TRC also prepared normalized graphs

[5] The aquifer is composed of loose flowable sands. Consequently, as wells are pulled from one depth interval to the next, native materials collapse into the borehole mitigating the potential for preferential vertical flow within the borehole.

which depict the data from each investigation location on the same vertical and horizontal scale. These normalized graphs are provided in Appendix D.

3.3.1 Methods – Geologic Interpretation

Probe temperature data, electrical conductivity data, and, where available, data from the MIHPT detector array may be used to interpret site geologic conditions. The following guidelines, developed using both published guidance and knowledge of site geology from adjacent locations, can be used to evaluate the MIP data:

- Groundwater has a stabilizing effect on probe temperature. Above the water table, the probe temperature varies sharply as the heater block cycles on and off between the established high and low set points. Below the water table, groundwater has a cooling effect on the MIP probe, resulting in lower maximum temperatures and a longer heating cycle, i.e., broader peaks.
- Electrical conductivity (EC) is relatively low in course-grained soils and relatively high in fine-grained soils.
- Electrolyte-rich water can cause a relative increase in EC between the unsaturated and saturated zones.
- Natural or manmade soils such as slag which contain metal ore may exhibit very high EC.
- The hydraulic profiling tool measures the flow rate of water into the formation, the backpressure on that flow and pressure due to the overlying water column. The MIP software uses these data to estimate the hydraulic conductivity of the formation. Typical hydraulic conductivities of various soils are listed below [6]:
    - Clean Gravel: 2,900 to 290,000 ft per day
    - Coarse Sand: 29 to 2,900 ft per day
    - Fine Sand: 2.9 to 29 ft per day
    - Silty Clay: 0.029 to 2.9 ft per day
    - Clay: <0.0029 ft per day

Using these guidelines, the geologic conditions for each boring were interpreted and used as input in the 3-D visualization of data prepared using Environmental Visualization System (EVS) Software, described in further detail in Subsection 3.3.4. Two representative examples are provided below:

[6] Das, Braja M. *Principals of Geotechnical Engineering*. Fifth Edition. 2002.

– **MIP-10:**

  - Temperature data exhibit characteristic lower and broader peaks beginning at approximately 20 ft below ground surface (bgs). The water table is 20 ft bgs.
  - No EC data from 0-1 ft bgs – Drilled through concrete slab prior to MIP data acquisition.
  - EC response is low (< 8 micro Siemens per meter [mS/m]) from 1 to 2 ft bgs and 5 to 20 ft bgs indicating areas of unsaturated coarse-grained material.
  - A peak in EC response (up to 75 mS/m) is observed from 2 to 5 ft bgs. This peak likely corresponds to the surficial silty/sandy clay commonly observed during previous investigation activities.
  - A sustained increase in EC (12-22 mS/m) is observed beginning at 20 ft bgs, indicating the presence of electrolyte-rich groundwater.
  - A second increase in EC response to approximately 40 mS/m indicates the presence of the underlying clay confining unit at 39 ft bgs.
  - No MIHPT data were collected.

– **MIP-49:**

  - Temperature data exhibit characteristic lower and broader peaks beginning at approximately 9 ft bgs. The water table is 9 ft bgs.
  - EC response is low (< 8 mS/m) from 0.5 to 2.5 ft bgs and 7 to 9 ft bgs indicating areas of unsaturated coarse-grained material.
  - A variable peak in EC response (up to 40 mS/m) is observed from 2.5 to 7 ft bgs. This peak likely corresponds to the surficial silty/sandy clay commonly observed during previous investigation activities.
  - A sustained increase in EC (10-22 mS/m) is observed beginning at 9 ft bgs, indicating the presence of electrolyte-rich groundwater.
  - A second gradual increase in EC response is observed beginning at approximately 37 ft bgs and peaking with an EC response of 30 mS/m at 38 ft bgs.
  - MIHPT data collected indicate that the hydraulic conductivity typically varies from 25 to 80 ft per day from 10 to 38.5 ft bgs. Narrow bands of higher hydraulic conductivity (92-150 ft per day) are observed at 26, 30.5, and 34 ft bgs. Inclusive of these bands, the hydraulic conductivity is characteristic of a medium-grained sand.
  - At approximately 38.5 ft bgs the estimated hydraulic conductivity drops to the baseline (<1 ft per day), confirming that the subtle EC peak observed corresponds with the underlying clay confining unit.

3.3.2 Methods – Distribution of Contaminants

The relative response for each of the detectors is compound specific. The following guidelines, developed using published response factor values, can be used to evaluate MIP data:

- The ECD responds primarily to compounds with high chlorination status, e.g., parent products like tetrachloroethene (PCE), TCE and TCA.
- The magnitude of response for parent compounds is highest with the ECD.
- Relative FID response is compound specific. FID response to aromatic hydrocarbons (e.g., benzene, ethyl benzene, toluene and xylenes) is expected to be approximately a factor of 2 higher than the response for a similar concentration of TCA and approximately 3 to 4 times higher than the response for chlorinated ethenes (i.e., similar FID response for PCE, TCE, cis-1,2-dichloroethene [cis-DCE] and vinyl chloride).
- Relative PID responses is compound specific. PID response to aromatic hydrocarbons (e.g., benzene, ethyl benzene, toluene and xylenes), TCE and PCE are expected to be similar. No response is expected for TCA using the 10.6 eV lamp. When compared to TCE, the response for a similar concentration of cis-DCE is expected to be approximately half that for TCE, and the response for a similar concentration of vinyl chloride is expected to be approximately one quarter of the response for TCE.

Using these guidelines, chemical specific inferences are made by comparing response between the detectors. Three representative examples are provided below:

- **MIP-02:**
    - Temperature and electrical conductivity data indicate a surficial fine grained soil from 3 to 6 ft bgs and the presence of groundwater beginning at 24 ft bgs.
    - ECD Response:
        - Peak 1: Depth 3 to 5 ft with maximum response of 1.9×10^6 microvolts (μV)
        - Peak 2: Depth 27-30.5 ft with maximum response of 9.4×10^5 μV
        - Peak 3: Depth 30.5-35 ft with maximum response of 1.0×10^6 μV
    - PID Response:
        - Peak 1: Depth 3 to 5 ft with maximum response of 4.8×10^5 μV
        - Peak 2: Depth 27-30.5 ft with maximum response of 1.7×10^5 μV
        - Peak 3: Depth 30.5-35 ft with maximum response of 1.8×10^5 μV

- FID Response:
  - Peak 1: Depth 3 to 5 ft with maximum response of 5.7×10^5 µV
  - Peak 2: Depth 27-30.5 ft with maximum response of 2.1×10^5 µV
  - Peak 3: Depth 30.5-35 ft with maximum response of 5.8×10^5 µV
- Peak 1: The shape of the response curve for Peak 1 is similar for all three detectors. The lowest response was observed with the PID. The FID response was approximately 20-percent higher, and the ECD response was approximately 4 times higher than the PID response.
- Peak 2: The shape of the response curve for Peak 2 is similar for the ECD and PID. The shape of the response curve for the FID is different. The lowest response was observed with the PID. The FID response was approximately 24-percent higher, and the ECD response was approximately 5.5 times higher than the PID response.
- Peak 3: The shape of the response curve for Peak 3 is similar for the ECD and PID. The shape of the response curve for the FID is different. The lowest response was observed with the PID. The FID response was more than 3 times higher than the PID response. The ECD response was 5.5 times higher than the PID response.

ECD response at all three peak locations indicates the presence of parent compounds. Given the corresponding PID response at these locations, TCE (and possibly PCE) is present. The shape and ratio of ECD response to PID response is consistent between Peaks 2 and 3, indicating that the vertical distribution of TCA (if present) is likely similar to that for TCE/PCE. The relative PID response for Peak 1 was higher when compared to Peaks 2 and 3. This could be due to the presence of a compound not visible with the ECD (other non-chlorinated VOCs), or, more likely given site knowledge and the corresponding FID response, a lower TCA to TCE/PCE ratio in Peak 1 when compared to Peaks 2 and 3. The shape of the FID response below the water table is notably different than the ECD and PID response. This difference indicates the likely presence of breakdown products (cis-DCE and vinyl chloride) with a vertical distribution that is different than the vertical distribution of the parent products. If the shape of the FID Peak 3 was due to the presence of other non-chlorinated VOCs, the shape of the PID response would correspond with the FID response rather than the PID response. These breakdown products are expected to have little to no response with the ECD and a comparably low response with the PID. By comparing the responses between the three detectors, we can determine that the highest concentrations of breakdown products likely occur at depths that correspond with Peak 3.

In summary, TCE is present in the low permeability surficial soil. TCE and, to a lesser degree, TCA, are present in groundwater. The highest concentrations of

parent products are found in the upper half of the aquifer. Concentrations at depths greater than 35 ft bgs are relatively low. The ratio of degradation products to parent products increases with depth in the zone of affected groundwater. The highest concentrations of degradation products are found between 30 and 35 ft bgs.

- **MIP-07:**
  - Temperature and electrical conductivity data indicate a surficial fine grained soil from 1.5 to 4 ft bgs and the presence of groundwater beginning at 24 ft bgs.
  - ECD Response:
    - Peak 1: Depth 24 to 26 ft with maximum response of 1.1×10^6 µV
    - Peak 2: Depth 26-30.5 ft with maximum response of 2.8×10^6 µV
    - Peak 3: Depth 30.5-37 ft with maximum response of 2.5×10^6 µV
    - Peak 4: Depth 42-45 ft with response at baseline (no peak)
  - PID Response:
    - Peak 1: Depth 24 to 26 ft with maximum response of 1.4×10^5 µV
    - Peak 2: Depth 26-30.5 ft with maximum response of 2.2×10^5 µV
    - Peak 3: Depth 30.5-37 ft with maximum response of 2.1×10^5 µV
    - Peak 4: Depth 42-45 ft with maximum response of 1.2×10^5 µV
  - FID Response:
    - Peak 1: Depth 24 to 26 ft with maximum response of 3.4×10^5 µV
    - Peak 2: Depth 26-30.5 ft with maximum response of 4.5×10^5 µV
    - Peak 3: Depth 30.5-37 ft with maximum response of 3.1×10^5 µV
    - Peak 4: Depth 42-45 ft with maximum response of 1.2×10^6 µV
  - Peak 1: The shape of the response curve for Peak 1 is similar for the ECD and PID. The shape of the response curve for the FID is different. The lowest response was observed with the PID. The FID response was approximately 2.4 times higher, and the ECD response was 7.9 times higher than the PID response.
  - Peak 2: The shape of the response curve for Peak 2 is similar for the ECD and PID. The shape of the response curve for the FID is different. The lowest response was observed with the PID. The FID response was approximately 2.0 times higher, and the ECD response was 13 times higher than the PID response.

- Peak 3: The shape of the response curve for Peak 3 is similar for the ECD and PID. The shape of the response curve for the FID is different. The lowest response was observed with the PID. The FID response was approximately 1.5 times higher, and the ECD response was 12 times higher than the PID response.
- Peak 4: There is no ECD peak at this depth, and the shape of the response curves for the PID and ECD are different. The peak FID response was 10 times higher than the peak PID response.

The ECD response observed at peaks 1, 2 and 3 indicates the presence of parent compounds. Given the corresponding PID response at these locations, TCE (and possibly PCE) is present. The shape and ratio of ECD response to PID response is consistent between Peaks 2 and 3, indicating that the vertical distribution of TCA (if present) is likely similar to that for TCE/PCE. The relative PID response for Peak 1 was lower when compared to Peaks 2 and 3, and the relative FID response for Peak 1 was higher, indicating the proportionately higher presence of a compound not visible with the ECD (non-chlorinated VOCs and/or degradation byproducts). The shape of the FID response in peaks 1, 2, and 3 is notably different than the ECD and PID response. This difference indicates the likely presence of breakdown products (cis-DCE and vinyl chloride) with a vertical distribution that is different than the vertical distribution of the parent products. The shape of the PID and FID peaks would likely be the same (or very similar) if those peaks were due to the presence of other non-chlorinated VOCs rather than chlorinated breakdown products. These breakdown products are expected to have little to no response with the ECD and a low PID response when compared with FID response.

Peak 4 is not observed with the ECD, indicating that parent compounds are not present at detectable concentrations. A comparison of the relative magnitude of peak 4 for the PID and FID indicates that vinyl chloride may be the most significant component of this peak.

In summary, a peak is not observed in the low permeability surficial soil. TCE is present in groundwater. The highest concentrations of parent products (TCE) are found in the upper aquifer. Degradation products of varied ratios are also present through this zone. Concentrations of parent products at depths greater than 37 ft bgs are relatively low. A peak in the concentration of degradation products, particularly vinyl chloride, is observed from 42 to 45 ft bgs, just above the top of the underlying clay confining unit (46 ft bgs). The highest MIP response, which may be indicative of degradation products, is found between 30 and 35 ft bgs.

– **MIP-09:**

  - Temperature and electrical conductivity data indicate a surficial fine grained soil from 3.5 to 6 ft bgs and the presence of groundwater beginning at 24 ft bgs.
  - ECD Response:
    – Peak 1: Depth 24 to 26 ft with maximum response of 4.6×10^6 µV
    – Peak 2: Depth 27-42 ft with maximum response of 2.1×10^6 µV
  - PID Response:
    – Peak 1: Depth 24 to 26 ft with maximum response of 2.5×10^5 µV
    – Peak 2: Depth 27-42 ft with maximum response of 3.2×10^6 µV
  - FID Response:
    – Peak 1: Depth 24 to 26 ft with maximum response of 3.6×10^5 µV
    – Peak 2: Depth 27-42 ft with maximum response of 1.0×10^7 µV
  - Peak 1: The shape of the response curve for Peak 1 is similar for all three detectors. The lowest response was observed with the PID. The FID response was approximately 1.4 times higher. The ECD response was 18 times higher.
  - Peak 2: The shape of the response curve for Peak 2 is similar for the PID and FID. The shape of the response for the ECD is narrower and different. The lowest response was observed with the ECD. The FID response was approximately 3.1 times higher than the PID response. The ECD response was approximately 65-percent of the PID response.

The ECD response observed at peak 1 indicates the presence of parent compounds. The ratio of PID and FID response to ECD response indicates relatively few degradation products or other VOCs are present above 27 ft bgs.

The ECD response at peak 2 indicates the presence of parent compounds. However, the magnitude of PID and FID response for peak 2 when compared to the ECD response indicates the presence of significant concentrations of compounds not visible with the ECD. The similar shape and magnitude of the observed response PID and FID response suggest that this peak is due, in large part, to a non-chlorinated carbon source.

In summary, a peak is not observed in the low permeability surficial soil. TCE is present in groundwater. An apparently significant carbon source is also present beginning at a depth of approximately 27 ft bgs. The highest concentrations of parent products (TCE) are likely to be found at the water table above the carbon

source and within the carbon source (31 to 38 ft bgs). The presence of degradation products, if present, are obfuscated by the carbon source.

3.3.3 Data Overview

MIP data were reviewed in real time to select step-out locations and to maximize the value of the MIP data for use in source characterization. In reviewing these MIP data, TRC noted a number of commonalities between boring locations.

- At several locations beneath the building slab, peaks in MIP response are observed in the surficial silty/sandy clay. These locations include MIP-01 through MIP-04, MIP-08, MIP-10 through MIP-12, MIP-14 through MIP-17, MIP-20, MIP-25, MIP-26, MIP-39 through MIP-44, and MIP-46.
- An elevated ECD response (at or above 5×10^5 µV) is observed in the sandy portion of the vadose zone at the following locations: MIP-03 through MIP-05, MIP-09 (bottom half of the vadose zone only), MIP-14, MIP-15, MIP-16 (response increases with depth), MIP-25, MIP-26, MIP-28, MIP-29, MIP-30, MIP-34 (bottom half only), MIP-35 (bottom half only), MIP-40, MIP-41, MIP-42 (bottom half only), MIP-43 (bottom half only), MIP-44 (bottom half only), MIP-48 (bottom half only), and MIP-60.
- With few exceptions, the highest ECD response in the saturated zone is typically observed in the upper half of the aquifer; most often these peaks are 2 to 12 feet below the water table.
    - MIP locations with the highest peaks at the water table include: MIP-09, MIP-15, MIP-16, MIP-17, MIP-26, MIP-40, MIP-41, MIP-42, and MIP-52.
    - MIP locations with the highest peaks in the lower half of the aquifer include: MIP-10, MIP-24, MIP-28, MIP-30, MIP-34, and MIP-44.
    - Locations with similar peak response in the upper and lower aquifer include: MIP-18, MIP-19, MIP-23, MIP-29, MIP-50, MIP-55, MIP-57, and MIP-58.
- At several locations, a peak in FID response is observed near the surface of the underlying clay unit, indicating the possible presence of degradation products.
    - At MIP-03, MIP-19, MIP-25, MIP-26, MIP-29, MIP-30, MIP-35, MIP-46, and MIP-59 a peak in ECD response is also observed, indicating the presence of parent products at the same depth.
    - At other locations, no corresponding peak in ECD response is observed, indicating that TCE, if present, is degrading as it is released into the aquifer. However, the low oxygen environment observed at depth is not conducive to vinyl chloride degradation, allowing it to accumulate. These locations include MIP-01, MIP-05, MIP-07, MIP-13, MIP-20, MIP-21,

MIP-22, MIP-24, MIP-45, MIP-48, MIP-49, MIP-62, MIP-65, MIP-66, MIP-67, and MIP-68.

– A limited number of locations exhibit a response indicative of an alternative carbon source.
    - MIP-43 is the only location with notable evidence of an alternative carbon source in the vadose zone.
    - Locations with evidence of an alternative carbon source in the saturated zone include MIP-09, MIP-10, MIP-16, MIP-34, MIP-35, MIP-40, MIP-43, and MIP-44.

MIP results may be evaluated and interpreted as described above. However, two notable challenges remain when understanding and interpreting these data:

– These data are semi-quantitative. The trends above do not consider the magnitude of the peaks observed. Larger peaks are indicative of higher concentrations. However analytical data are needed to correlate MIP response with actual concentrations. Limited confirmation sampling was performed as described above. Additional confirmation sampling is proposed as described in Section 5.

– These data must also be interpreted and evaluated as a unit in order to understand and refine the data in the context of the conceptual site model (CSM). Results from individual locations cannot and should not be used to describe contaminant migration pathways or the nature and extent of contamination. Rather, these data must be reviewed in context in order to develop a reasonable overarching CSM.

3.3.4 3-D Visualization

Environmental Visualization System (EVS) Software was used to create a three dimensional (3-D) visualization of the site and provide a framework for evaluating and viewing MIP data from all locations concurrently. EVS Software may be used to visualize data from multiple sources concurrently including site geology, laboratory data, and MIP data. The EVS visualization tool essentially provides a 3-D visual representation of the CSM. The 3-D visualization is created using a series of input files. New input files can be added and existing input files can be revised or replaced as new data become available. The EVS Software can be used to interpolate between data points (i.e., Krig data) [7]. To date, the following input files have been created to support creation of a 3-D visualization of the CSM for the TPC Site:

[7] Kriging or Gaussian process regression is a method of interpolation that, under suitable assumptions, can provide linear unbiased predictions of intermediate values between data points. As with all modeling software, data interpolation is affected by boundary conditions. Poorly defined conditions along the perimeter of the modeled area may cause anomalies in the interpolated data in those areas.

- **Aerial photo:** An aerial photo of the study area is used to provide tangible reference points for the modeled data.
- **Investigation locations and type:** An input file with x, y, and z coordinates for all investigation locations completed to date was created. In order to distinguish between various investigation location types (e.g., monitoring wells, soil borings, soil gas monitoring points), this file also included an investigation type designation.
- **Geology data:** For each boring where Unified Soil Classification System (USCS) soil logging was completed, an input file with soil type as a function of depth was created. At MIP locations EC data (and data from the Hydraulic Profiling Tool if available) were used to designate soil type as a function of depth. No data were entered at blind drill locations.
- **Groundwater elevation data:** An input file defining the groundwater contours, as illustrated on the Second Quarter 2014 Groundwater Contour Map, was created.
- **Screened intervals:** An input file with the screened intervals for all monitoring locations including monitoring wells, soil gas points, soil borings, etc., was created.
- **MIP data:** An input file with ECD, PID and FID response as a function of depth was created.

These input files were used to create a series of 3-D visualizations for the TPC site. Initial visualizations which showed all of these data were confused by the sheer volume of data. Investigation locations around the perimeter of the model obscured the view of source area locations. As such, a series of refinements were made to assist in the visualization and interpretation of MIP data. In order to create a geologic framework for viewing MIP data, the following modifications were made:

- Site geology data were Krigged to create a surfaces which define the interfaces between the various soil types (on-site major units from top to bottom are fill, surficial silty/sandy clay, sand, and clay). The interface between the sand unit and the underlying clay was critical to MIP data interpretation.
- Similar surfaces were created to illustrate the ground surface and the water table.
- The size of the model was reduced to show only the MIP investigation area and immediate vicinity.
- The number of non-MIP investigation locations shown was reduced. Monitoring well locations and soil gas monitoring points were shown to help provide locational context for MIP investigation locations. Other locations were hidden to minimize the potential for the obfuscation of data by the illustration of numerous additional data points.

Within this geologic framework, MIP data were Krigged to create a series of two-dimensional images to aid in the data interpretation. These images were overlain on an existing site map to create a number of figures which illustrate the horizontal and vertical distribution of MIP response. The MIP investigation was a source area investigation; as such, the primary constituents of interest are parent compounds, particularly TCE. Parent compounds respond most significantly to the ECD, and other non-chlorinated compounds are not expected to generate a significant ECD response. Therefore, the majority of these images were created to better understand the distribution of ECD response.[8]

Figure 8 illustrates the lateral distribution of the maximum ECD response observed at each investigation location regardless of depth. The areas of relatively high response are generally in areas of previously known contamination. In the north, the highest concentrations are found in the following areas:

- Through the central portion of the building near the chemical stockroom as well as north and south of that area;
- Along the western edge of P-building; and
- In the vicinity of monitoring wells MW-04s/i.

The only northern boring location with an elevated response in a location not previously identified as within the source area was MIP-64 located along Patterson Street. Additional up gradient borings (MIP-66, MIP-67 and MIP-68) were installed at locations up gradient to MIP-64 in order to investigate the potential for previously unidentified residual sources for this contamination. None were found.

In the south, the highest concentrations are found in the following areas:

- Within the building footprint in the vicinity of the former solvent recovery unit; and
- Downgradient of the building between monitoring well MW-35I and Section 1 of the PRB (along Maumee Street).

The only southern boring location with an elevated response in a location not previously identified as within the source area and downgradient plume was MIP-20 located along the up gradient site boundary. Four additional borings (MIP-51, MIP-52, MIP-53 and MIP-54) were installed in this area to investigate the lateral extent of the elevated ECD response. These borings indicate that boring MIP-20 is a localized hot spot.

[8] Figures 8 through 21 provide various images of ECD response. The color scale is consistent between these figures to facilitate comparison.

Figure 9 illustrates the lateral distribution of the maximum ECD response in the vadose zone.[9] The highest ECD response in the vadose zone is observed in the vicinity of the southern source area and to a lesser degree in the vicinity of boring MIP-14 (yellow to red on Figure 9). By comparison, elevated responses in the unsaturated soil in the vicinity of the northern source are typically 5 to 10 times lower (light blue to green).

Figure 10 illustrates the lateral distribution of the maximum ECD response in the saturated zone.[10] The maximum observed ECD response below the water table is consistent with groundwater chemistry data collected at existing monitoring wells. Both data sets indicate that the areas of highest groundwater contamination have shifted to be downgradient of the soil source areas. This phenomena indicates that the soil sources, particularly in the south, have diminished significantly over time. The flux of clean groundwater from the west has "washed" residuals from the saturated zone beneath the source area. Further downgradient, without the benefit of clean water flushing the system, concentrations have persisted at higher concentrations. This illustrates the natural degradation of the plume and does not contra-indicate the groundwater stability demonstration previously made pursuant to the requirements and definitions of the Agreed Order on Consent (AOC) and applicable USEPA guidance.

Figures 11 through 13 illustrate the vertical distribution of the maximum ECD response in the vadose zone, using the water table as the vertical reference point[11]. Figure 11 illustrates the maximum ECD response observed more than 12 feet above the water table. Near surface peaks in ECD response are found primarily in the vicinity of the former solvent recovery system, and, to a lesser extent, in Building Areas E and F located south of the chemical stockroom. These peaks typically occur in the surficial silty/sandy clay unit. Consequently, the contaminants contributing to these peaks are likely relatively immobile. Figure 12 illustrates the maximum ECD response through the intermediate vadose zone (from 7 to 12 feet above the water table) and Figure 13 illustrates the maximum ECD response through the deep vadose zone (from 2 to 7 feet above the water table). As illustrated on these figures, concentrations in the vicinity of the former solvent recovery area drop sharply below the surficial silty/sandy clay unit.

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[9] The vadose zone refers to the area from the ground surface to the approximate elevation of the highest observed water table (i.e., approximately 2 feet above the water table at the time of the investigation).

[10] The saturated zone includes depths from the approximate elevation of the highest observed water table (i.e., approximately 2 feet above the water table at the time of the investigation) to the underlying clay confining unit.

[11] The water table is approximately 22 feet below ground surface beneath the footprint of the main building. The depth to water increases to approximately 25 ft bgs along the western site perimeter and decreases to approximately 9 ft bgs along Maumee Street in the east.

The highest response (light blue on Figures 12 and 13) at these depths was observed in the vicinity of the former chemical stockroom (MIP-16 and MIP-40).

Figures 14 through 19 illustrate the vertical distribution of the maximum ECD response in the aquifer. Figure 14 illustrates the maximum ECD response at the water table (from 2 feet above the observed water table [i.e., the minimum observed depth to groundwater] to 3 feet below the water table). The area with the highest response (red on Figure 14) at the water table corresponds with the MIP locations (MIP-16 and MIP-40) having the highest response in the intermediate and deep vadose zone. Other areas with relatively high response at the water table (yellow to orange on Figure 14) are found encircling the former chemical stockroom and at somewhat isolated downgradient locations. With the exception of the relatively isolated area around investigation location MIP-20, ECD response at the water table is much lower in the vicinity of the southern source area and downgradient.

Figure 15 illustrates the maximum ECD response from 3 to 8 feet below the water table. As depth increases, the locations with relatively high response are found downgradient of the soil source areas. In the northern area, relatively high response (yellow to orange on Figure 15) is found from MIP locations MIP-46 and MIP-64 on the west side to MIP-36 and MIP-55 on the east side. In the south, elevated response is seen downgradient of MIP-20 at MIP-54 and downgradient of the former solvent recovery area at MIP-19 and MIP-48.

Figure 16 illustrates the maximum ECD response from 8 to 13 feet below the water table. As depth increases, the response at source area locations decreases further. In the area downgradient of the northern source area, response in this depth range begins to decline as well. In the area downgradient of the southern source, response in this depth range is relatively high (red on Figure 16) at MIP locations MIP-19, MIP-23, MIP-49, and MIP-50.

Figure 17 illustrates the maximum ECD response from 13 to 18 feet below the water table. As depth increases, the response downgradient of the northern source decreases further at all locations except MIP-55. In the area downgradient of the southern source area, response in this depth range remains relatively consistent when compared to response at depths 8 to 13 feet below the water table.

Figure 18 illustrates the maximum ECD response from 18 to 23 feet below the water table and Figure 19 illustrates the maximum ECD response from 23 to 28 feet below the water table. Downgradient of the northern source area, no areas of notable response are identified in these depth ranges. In the area downgradient of the southern source area,

relative response declines in these depth ranges. However, the area of elevated response expands up gradient to include MIP locations MIP-28, MIP-29 and MIP-30.

Both the upper (water table) and lower (interface with underlying clay confining unit) boundaries of the aquifer are important to the evaluation of migration pathways. In order to evaluate the potential presence of a residual source of parent products at the clay surface, the EVS Software was used to create two additional images. Figure 20 illustrates the peak MIP response at the interface of the clay confining unit.[12] This figure was prepared to provide a reasonable visualization of areas where residual parent products may persist at the clay surface. The only area with elevated ECD response (green) illustrated on this figure is in the vicinity of MIP locations MIP-19, MIP-23 and MIP-30 downgradient of the southern source area. Figure 21 illustrates the peak MIP response within the underlying clay confining unit. This figure was used to predict the area(s) where residual parent products may have been present historically (allowing for diffusive transport into the clay). The area with elevated ECD response in the underlying clay extends from the solvent recovery area (MIP-03 and MIP-26) in the west to the area of peak downgradient groundwater concentrations (MIP-19 and MIP-23) in the east. Based on this evaluation, several of these locations will be targeted for confirmation sampling as discussed in Section 4.

As noted previously, ECD response provides the best indicator for the presence of parent products. The PID and FID can be used to determine the presence of other non-chlorinated hydrocarbon sources and/or chlorinated degradation products. Figure 22 illustrates the lateral distribution of the maximum PID response observed at each investigation location regardless of depth. The area of highest response was found in the vicinity of the northern source area north of the chemical stockroom (MIP-09 and MIP-34). This area includes boring locations NS-12 and NS-19 where petroleum odors in the saturated zone were noted when logging soils.

Figure 23 illustrates the lateral distribution of the maximum FID response observed at each investigation location regardless of depth. The area of highest response was found downgradient of the chemical stockroom and the area of highest PID response. The FID and PID responses to petroleum hydrocarbons are expected to be similar (i.e., magnitude may vary but relative response as illustrated by the shape of the peaks should be the same), whereas the FID responded more strongly to degradation products, particularly vinyl chloride. The relatively high FID response in the vicinity of MIP-44 may be indicative of increased degradation products downgradient of the area that has

[12] The depth range used for this visualization included MIP response from 0.1 feet below the top of the clay confining unit to 0.3 feet above the interface.

both a significant source of chlorinated parent products and other organics to serve as a food source. Peak FID response occurs in the upper half of the aquifer, and ECD response at depths that correspond with these peaks are relatively lower, and the northern locations with the highest ECD peaks in the lower half of the aquifer (MIP-10, MIP-34 and MIP-44) correspond to this area.

Outputs from the 3-D visualization software were used to create additional figures to aid in the visualization of the MIP response data. As discussed above, MIP data were used to refine our understanding of site geology. Figure 24 illustrates the elevation of the top of the clay confining unit inclusive of MIP data. This figure was prepared to help determine potential pathways for gravity migration along the underlying clay surface. The presence of the relative high in the clay surface elevation, which extends from monitoring well MW-37s to the northeast, was confirmed. Two additional isolated areas with relative highs in the clay surface were identified. In the north, an offshoot to the northwest from the larger clay ridge was identified from investigation location MIP-17 in the northwest to investigation location MIP-43 along the previously identified high in the clay surface. Additionally, clay surface elevations at investigation locations MIP-22 and MIP-19 downgradient of the southern source area were 3 to 5 feet higher than at adjacent locations.

Using both Figure 24 and outputs from the EVS software (Figures 8 through 23), cross section locations to help illustrate MIP data were selected. Cross sections were prepared through each of the major source areas to help understand potential contaminant migration pathways. Specifically, cross section locations were selected to transect the areas of highest concentration in both the direction of groundwater flow and in the direction of potential gravity flow along the underlying clay. Figure 25 illustrates the locations of these cross sections. Figure 26 provides two cross sections through the northern area, and Figure 27 provides two cross sections through the southern area.

In the north, areas of highest ECD response in soil and groundwater is located in the vicinity of the former chemical stockroom (MIP-16 and MIP-40 and downgradient of those locations). The chemical stockroom area also corresponds to the area with elevated PID and FID response indicative of a hydrocarbon source. The chemical stockroom area corresponds to a relative high in the underlying clay confining unit. Cross Section A-A' on Figure 26 illustrates ECD response in a transect which follows the approximate direction of groundwater flow. The clay surface elevation at MIP-45, the up gradient investigation location in this transect, is relatively low. Although a peak in FID response is observed near the clay surface, no corresponding peak in ECD response is observed. At downgradient locations, ECD response is highest in the intermediate and deep portions of the aquifer. As noted previously, elevated FID response in the

shallow aquifer and these downgradient locations may be indicative of increased degradation of parent compounds due to the co-deposition of a hydrocarbon source at up gradient locations. Cross Section B-B′ on Figure 26 illustrates ECD response in a transect which bisects the most significant variations in the topography of the underlying clay confining unit. Although ECD response is elevated throughout the aquifer at some locations, no apparent migration along the clay surface is observed. Rather, the highest ECD response is typically observed through the upper and intermediate aquifer.

In the south, the area of highest soil concentration is observed in the vicinity of the former distillation solvent recovery system (MIP-03 and MIP-25). Cross Section C-C′ on Figure 27 illustrates the most significant ECD response in the direction of groundwater flow. Peaks in ECD response are observed in the vadose zone, particularly the surficial silty/sandy clay unit at up gradient locations. ECD response in the groundwater at these locations is relatively low when compared to down gradient locations. A peak in ECD response in the upper portion of the underlying clay confining unit at MIP investigation location MIP-03 may indicate that residual parent products reached the clay surface in the past in this area. However, concentrations observed in soil and groundwater (Tables 1 and 2) are not indicative of the presence of dense non-aqueous phase liquid (DNAPL) residuals at this location. Elevated ECD response is observed throughout the aquifer downgradient of this southern source area. The potential historic migration of residual parent products along the clay surface can be evaluated further using Cross Section D-D′ on Figure 27. As illustrated on Figure 24, the elevation of underlying clay confining unit decreases most significantly to the south. Cross Section D-D′ on Figure 27 bisects the southern source area in the direction with the most significant potential for gravity flow along the underlying clay surface (from MIP-03 to MIP-26). A peak which corresponds to the elevated ECD response observed near the top of the underlying clay confining unit at MIP investigation location MIP-03 is not observed at MIP investigation location MIP-26.

Section 4
MIP Confirmation Sampling Program

4.1 Introduction

The membrane interface probe (MIP) investigation completed at the former Tecumseh Products Company (TPC) site in Tecumseh, Michigan between June 17 and July 24, 2014, is described in detail in Section 3. A total of 68 MIP investigation borings were completed (Figure 7). Investigation locations include the 21 originally proposed investigation locations (highlighted orange on Figure 7), 35 step-out locations (highlighted green), and 12 locations (highlighted blue) to replace select groundwater profile sampling locations identified in the March 27, 2014 Scope of Work (SOW).

MIP results were evaluated and interpreted as described in Section 3. However, these data are semi-quantitative. Larger peaks are indicative of higher concentrations. However, analytical data are needed to correlate MIP response with actual concentrations. Limited confirmation sampling was performed as described in Subsection 3.2.2. However, these data are insufficient to develop a correlation between MIP response and concentrations or to assess potential limitations of the MIP data. The proposed confirmation sampling program is described below.

4.2 Selection Criteria for Confirmation Sample Locations

The primary purpose of the MIP confirmation sample program is to develop a correlation between MIP response and volatile organic compound (VOC) concentration. To that end, confirmation sample locations and depth intervals were selected to target a broad range of electron capture detector (ECD) peak heights. Locations with high ECD response offer the most insight into an improved understanding of potential dense non-aqueous phase liquid (DNAPL) residuals. Therefore, the sample selection was biased to include a greater percentage of those peak locations. MIP response may be distinctly different in different geological units. Therefore, confirmation sample locations were also selected to include a number of samples from each of three distinct areas of elevated response: 1) the vadose zone (soil samples), 2) the aquifer (groundwater samples), and 3) the underlying clay unit (soil samples). Consideration was also given to the lateral distribution of sample locations. Additionally, several confirmation sample locations were added between December 2014 and March 2015 to accommodate requests made by the United States Environmental Protection Agency (USEPA).

Where reasonable, confirmation sample locations were also selected to help answer outstanding questions or concerns. In particular:

- *At what depths are the highest concentrations observed?* Multiple depth intervals are sampled at each confirmation sample location to help answer this question.
- *How are concentrations affected by the presence of a hydrocarbon source?* Figures 22 and 23, which illustrate areas of elevated photoionization detector (PID) and flame-ionization detector (FID) response, were used to identify confirmation sample locations to help answer this question.
- *Are concentrations indicative of DNAPL residuals, particularly at the underlying clay surface?* Figures 20, 21, and 24 were used to help select confirmation sample locations to answer this question.
- *Has the potential for gravity migration along the underlying clay surface been evaluated?* Figure 24, which illustrates the elevation of the clay confining unit inclusive of MIP data, was prepared to help determine potential pathways from gravity migration along the underlying clay surface.
- FID peaks are observed near the underlying clay surface at several locations, particularly near the northwest corner of the site. *What chemical(s) are responsible for these peaks?*

4.3 Proposed Confirmation Sample Locations

Proposed confirmation sample locations and a brief explanation of the selection criteria used are provided below. Proposed confirmation sample locations are illustrated on Figure 28. Table 3 provides the proposed sample depth intervals for each location. ECD, PID and FID response, as well as site geology, were considered when selecting sample intervals. Sample intervals are highlighted on the MIP response logs included in Appendix E.

- Northern Source Area Locations
  - **MIP-40:** Located near the chemical stockroom, elevated ECD response is observed in both the soil and groundwater at this location. Elevated PID response and FID response are also observed below the area of highest ECD response.
  - **MIP-41:** Located south of the chemical stockroom, elevated ECD response is observed in both the soil and groundwater at this location. PID and FID peaks are observed, but relatively low.
  - **MIP-35:** Located north of the chemical stockroom, elevated ECD response in the soil is relatively low. ECD response in groundwater is highest in the upper aquifer. Modest PID and FID response is observed.
  - **MIP-46:** Located north of the chemical stockroom in Building Area K, a peak in ECD response is observed in the surficial silty/sandy clay. ECD through the remainder of the vadose zone is low. High ECD response is observed at the water table. A second smaller ECD peak and a larger FID peak is observed just above the underlying clay confining unit.

- **MIP-38:** Located downgradient of the chemical stockroom in P-Building, ECD response through the vadose zone is low. High ECD response is observed through the majority of the aquifer. PID and FID peaks which correspond to the highest ECD peaks are observed in the upper aquifer.
- **MIP-10:** Also located downgradient of the chemical stockroom in P-Building, a modest peak in ECD response is observed in the surficial silty/sandy clay unit. ECD response through the remainder of the vadose zone is low. High ECD response is observed from approximately 7 feet below the water table to the top of the underlying clay. A peak in FID response is observed in the upper aquifer where ECD response is relatively low. A single groundwater sample will be collected over the depth interval of highest ECD response to accommodate USEPA.
- **MIP-39:** Also located downgradient of the chemical stockroom in P-Building, ECD response through the vadose zone is low. High ECD response is observed through the majority of the aquifer, with concentrations decreasing at depth. PID and FID response is relatively low. A single groundwater sample will be collected over the depth interval of highest ECD response to accommodate USEPA.
- **MIP-44:** Located downgradient of the chemical stockroom, elevated ECD response is observed in both the soil and groundwater at this location. Elevated FID response is observed between the areas of highest ECD response.
- **MIP-55:** Located off-site, downgradient of the chemical stockroom, ECD response through the vadose zone is low. High ECD response is observed through the majority of the aquifer. PID and FID peaks which correspond to the highest ECD peaks are observed.
- **MIP-57:** Located off-site, downgradient of the chemical stockroom, ECD response through the vadose zone is low. High ECD response is observed through the intermediate the aquifer. Groundwater samples will be collected through the intermediate aquifer to accommodate USEPA.
- **MIP-58:** Located off-site, downgradient of the chemical stockroom, ECD response through the vadose zone is low. High ECD response is observed through the intermediate the aquifer. Groundwater samples will be collected through the intermediate aquifer to accommodate USEPA.
- **MIP-64:** Located off-site, north of the chemical stockroom, ECD response through the vadose zone is low. High ECD response is observed in the intermediate aquifer. PID and FID peaks, which correspond to the highest ECD peaks, are also observed.

- Southern Source Area Locations
  - **MIP-01** (complete): Located in the northern portion of the southern source area. A peak in ECD response is observed in the surficial silty/sandy clay. ECD through the remainder of the vadose zone is low. ECD, PID and FID response throughout the

aquifer is relatively low. A second smaller ECD peak and a larger FID peak are observed above the underlying clay confining unit.

- **MIP-03**: Located centrally in the southern source area. A peak in ECD response is observed in the surficial silty/sandy clay. ECD through the remainder of the vadose zone is elevated. A peak in ECD response is observed at the water table and in the upper portion of the underlying clay confining unit. Low PID and FID peaks correspond to the depths where peaks in ECD response are observed. The large majority of confirmation sampling has been completed at this location. One additional groundwater sample will be collected at the interface of the underlying clay confining unit as requested by USEPA.
- **MIP-05:** Located southeast of the southern source area near a relative low in the underlying clay confining unit. ECD response is above background through the vadose zone and upper half of the aquifer. A peak in FID response is observed at the underlying clay confining unit.
- **MIP-60:** Located in the southeast corner of the fenced area of the site, modest ECD response is observed in the vadose zone and upper aquifer. Soil samples will be collected from the vadose zone to accommodate USEPA.
- **MIP-25:** Located in the southern source area. Peaks in ECD response are observed in the surficial silty/sandy clay. ECD through the remainder of the vadose zone is elevated. A modest peak in ECD response is observed in the upper aquifer and in the upper portion of the underlying clay confining unit. PID and FID response is low throughout the aquifer.
- **MIP-30:** Located downgradient of the southern source area. ECD response is above background throughout the sandy portion of the vadose zone. ECD response is elevated throughout the aquifer with response slightly increasing with depth. ECD response remains elevated in the upper portion of the underlying clay confining unit. A modest peak in FID response is observed at the underlying clay confining unit.
- **MIP-23:** Located downgradient of the southern source area. ECD response is at or near background throughout the vadose zone. ECD response is elevated through the majority of the aquifer with the highest response in the upper intermediate aquifer and immediately above the underlying clay confining unit. ECD response remains elevated in the upper portion of the underlying clay confining unit. PID and FID response are low throughout the boring.
- **MIP-50:** Located downgradient of the southern source area. ECD response is at or near background throughout the vadose zone. ECD response in elevated through majority of the aquifer. ECD response is at or near background at the underlying clay confining unit. Low PID and FID peaks correspond with ECD peaks.

- **MIP-48:** Located downgradient of the southern source area along the southern perimeter fence. ECD response is elevated in the lower vadose zone and upper aquifer. Low PID and FID peaks correspond with ECD peaks. Soil and groundwater samples will be collected as requested by USEPA.
- **MIP-49:** Located downgradient of the southern source area. ECD response is at or near background throughout the vadose zone. ECD response increases below the water table and peaks from approximately 18.5 to 24.5 ft bgs. PID and FID peaks correspond with ECD peaks. Groundwater samples will be collected as requested by USEPA through the zone of peak response.

- Central Locations
  - **MIP-14**: Located south of the northern source area. A peak in ECD response is observed in the surficial silty/sandy clay. ECD through the remainder of the vadose zone is relatively low. A peak in ECD response is observed in the upper aquifer. Soil and groundwater samples will be collected as requested by USEPA at depth intervals corresponding with peak ECD response.
  - **MIP-54**: Located northwest of the southern source area. A peak in ECD response and corresponding peaks in PID and FID response are observed in the upper aquifer. A groundwater sample will be collected from the depth interval of peak ECD response as requested by USEPA.

4.4 Methodology for Confirmation Sampling

Confirmation sampling activities will be completed at each of the target locations as described below.

- A soil boring will be advanced to the maximum target sample depth using direct-push technology.
- Soil samples will be collected for visual classification as indicated on Table 3. These depths were selected to confirm soil composition through the variable near surface zone composed primarily of fill and silty/sandy clay and to verify the depth to the underlying clay unit (where applicable).[13]
- Soil samples will be collected for VOC analysis at the locations and depths indicated in Table 3. The selected soil samples incorporate a range of ECD peak responses with a bias toward locations with higher response. Typically, depth intervals immediately above and

[13] The depth to the underlying clay unit will be verified by the presence of a competent clay unit having a minimum thickness of two feet. Additionally, if a peak in ECD response was observed near the bottom of the MIP borehole, soils will be logged through those depths. The depths associated with the underlying clay unit may vary from those estimated using MIP data. Adjustments to the number and depth of the proposed soil and groundwater samples may be adjusted based on site geology as described below.

below the peak response will also be sampled to help evaluate the range of concentrations in the vicinity of the peak ECD response. [14]

- Groundwater samples will be collected for VOC analysis at the locations and depths indicated in Table 3. The selected groundwater samples incorporate a range of ECD peak responses with a bias toward locations with higher response. Typically, depth intervals immediately above and below the peak response will also be sampled to help evaluate the range of concentrations in the vicinity of the peak response. Groundwater samples will be collected as described below:
  - At each location, a temporary 1-inch PVC well with a 3-foot screened interval will be installed at the target depth of the deepest groundwater sample. [15]
  - If four or more groundwater samples are to be collected at a single investigation location, a second 1-inch temporary well with a 3-foot screened interval will be installed to a target depth in the intermediate aquifer at an off-site location (within 5 feet of the original location). [16]
  - Each temporary well will be purged and stabilized for turbidity using low-flow sampling techniques prior to collection of a groundwater sample for VOCs analysis.
  - Following sample collection, the temporary well will be pulled up to the next depth interval. [17] Well stabilization and sampling will be repeated until a sample has been collected from each target depth interval as listed in Table 3.
  - After the completion of soil and groundwater sampling, the temporary wells will be removed and the holes will be plugged with bentonite.
  - Samples will be shipped under chain-of-custody documentation to the analytical laboratory (Environmental Chemistry Consulting Services [ECCS] or TriMatrix Laboratories, depending on project pricing and anticipated turn-around time).

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[14] At several locations soil samples are designated at depths which correspond to the inferred underlying clay unit. If the proposed sample depth corresponds with the aquifer rather than the underlying clay unit proposed soil samples may be replaced with groundwater samples over the same depth interval.

[15] The depth of the deepest groundwater sample may be adjusted based on site geology. For example, if competent clay is encountered 1.5 feet or more deeper than predicted, an additional groundwater sample(s) will typically be collected. A sample(s) will typically be eliminated if the depth to clay is 1.5 feet or more shallower than predicted. Typically if the depth to clay is within 1.5 feet of the predicted depth the number of samples will remain the same. However the sample depth of the deepest sample(s) may be adjusted slightly. In particular adjustments will be made to ensure the interface between the aquifer and the competent clay is screened.

[16] The target depth of this second well is dependent on the number and depth of the target groundwater samples.

[17] The aquifer is composed of loose flowable sands. As wells are pulled from one depth interval to the next, native material will collapse into the borehole, mitigating the potential for preferential vertical flow within the borehole.

4.5 Data Evaluation and Next Steps

Following analysis, analytical data will be tabulated. Analytical data will then be compared to MIP data in order to develop a correlation between MIP response and VOC concentrations. This correlation will be used to estimate the concentrations at MIP locations/depths where confirmation sampling was not conducted. Analytical data (including analytical data from previous investigation locations) and estimated concentrations will be input into the EVS Software in order to develop a three-dimensional visualization of the on-site contaminant mass. These data and the associated three-dimensional visualization will be used for the following:

- To address outstanding questions or concerns and refine the conceptual site model;
- To identify areas for further investigation as appropriate; and
- To evaluate the existing on-site well network and select additional monitoring locations as appropriate.

Results of the MIP confirmation sample program and associated data evaluation will be documented and submitted to USEPA in a technical memorandum or similar document.

Section 5
Downgradient Groundwater Profile Sampling

5.1 Background

In September 2013, the *Supplement to the Current Human Exposures Under Control Environmental Indicator Report* was submitted for the former Tecumseh Products Company (TPC) site in Tecumseh, Michigan. This document provided an up-to-date assessment of site constituents of concern (COCs) and an evaluation of those COCs in various media, including an evaluation of exposure pathways. The United States Environmental Protection Agency (USEPA) provided a response to TPC's September 30, 2013 *Supplement to the Current Human Exposures Under Control Environmental Indicator Report* on January 31, 2014. A *Scope of Work to Accommodate the USEPA Comment Letter Dated January 31, 2014 Regarding the Human Exposure Environmental Indicator Report* (SOW) was submitted on March 27, 2014, and USEPA met with TPC and TRC on May 12, 2014 to discuss the January 31, 2014 comment letter and the SOW. As outlined in the SOW, USEPA comments/requests can be broadly summarized as follows:

- Further **source area characterization** to verify the horizontal and vertical distribution of COCs, including installation of additional monitoring wells, as appropriate, in areas of highest contamination; [18]
- Further **contaminant plume characterization** to verify the horizontal and vertical distribution of COCs in groundwater, including installation of additional monitoring wells, as appropriate, in areas of highest contamination; and
- Further evaluation of the potential vapor intrusion migration pathway.

This proposed downgradient groundwater profile sample program was designed to verify the horizontal and vertical extent of the contaminant plume and to help determine the aerial extent over which further evaluation of the potential vapor intrusion pathway may be appropriate.

5.2 Proposed Sample Locations

Proposed downgradient vertical profile sample locations are illustrated on Figure 29. These proposed locations create transects through the area known to have affected groundwater. The proposed sample locations represent the minimum number of investigation locations to be completed. Additional locations may be investigated along these transects if the concentrations at the perimeter locations along the transect exceed applicable groundwater criteria. Additionally, one or more transects may be added further downgradient of the investigation area to further define the downgradient extent of affected groundwater.

[18] This comment is discussed in Subsection 2.3, Section 3 and Section 4.

Samples will be shipped and analyzed as quickly as feasible following sample collection. When available, analytical data will be reviewed and compared to applicable groundwater criteria. If possible, additional sample locations will be added and completed in the same mobilization.

5.3 Methodology for Vertical Profile Sampling

- Soil borings will be advanced to the top of the clay confining unit by direct-push technology.
- Soil samples will be collected for visual classification to evaluate site geology, depth to groundwater, and depth to the clay confining unit. A minimum clay thickness of two feet will be confirmed at each location.
- Groundwater samples will be collected for volatile organic compound (VOC) analysis throughout the water column as described below:
  - At each location a temporary 1-inch PVC well with a 3-foot screened interval will be installed at the top of the clay confining unit.
  - At an off-site location (within 5 feet of the original location), a second 1-inch temporary well with a 3-foot screened interval will be installed to a target depth in the intermediate aquifer.
  - Each temporary well will be purged and stabilized for turbidity using low-flow sampling techniques prior to collection of a groundwater sample for VOC analysis.
  - Following sample collection, the temporary well will be pulled up approximately 3 feet to the next depth interval.[19] Well stabilization and sampling will be repeated until a sample has been collected from each depth interval throughout the aquifer.
  - After the completion of groundwater sampling, the temporary wells will be removed and the holes will be plugged with bentonite.
  - Samples will be shipped under chain-of-custody documentation to the analytical laboratory (either Environmental Chemistry Consulting Services [ECCS] or TriMatrix Laboratories, depending on project pricing and anticipated turn-around time).
  - If feasible, rapid (48-hour) turn-around time for sample analysis will be requested.

5.4 Data Evaluation and Next Steps

Following analysis, analytical data will be reviewed and compared to applicable groundwater criteria as soon as feasible so that additional sample locations may be completed in the same

[19] The aquifer is composed of loose flowable sands. As wells are pulled from one depth interval to the next, native material will collapse into the borehole, mitigating the potential for preferential vertical flow within the borehole.

mobilization if possible. Once groundwater profile sampling, including sampling at step-out locations, is complete, analytical data will be tabulated and compared to applicable criteria. These analytical data will be input into the EVS Software in order to develop a three-dimensional visualization of the off-site contaminant mass. These data and the associated three-dimensional visualization will be used for the following:

- To address outstanding questions or concerns and refine the conceptual site model;
- To identify areas for further investigation as appropriate (in particular, the area over which shallow groundwater concentrations exceed groundwater screening levels for vapor intrusion will be defined, and that area will be targeted for further evaluation of the vapor intrusion potential as necessary); and
- To evaluate the existing well network and select additional monitoring locations as appropriate.

Results of the downgradient groundwater sample program and associated data evaluation will be documented and submitted to USEPA in a technical memorandum or similar document.

Section 6
Work Completion Schedule

Weather permitting, confirmation sampling and groundwater profile sampling are expected to begin 3 to 6 weeks after the United States Environmental Protection Agency (USEPA) indicates substantial agreement with the proposed work. The planned work schedule is outlined below.

1. Work will begin with groundwater profile sampling at the locations illustrated on Figure 29. This work is expected to take 2 to 3 weeks to complete.
2. While awaiting laboratory data, confirmation sampling will begin as described in Section 4 and summarized on Table 3. In total confirmation sampling is expected to take an additional 2 to 3 weeks to complete.
3. Laboratory data will evaluated and used to select step-out locations for vertical profile sampling, if needed, as soon as feasible.
4. These additional, step-out, vertical profile sample locations will be completed as soon as reasonable given project logistics (e.g. USEPA concurrence, utility clearance, etc.). The expected completion rate is, on average, 1.5 to 2 locations per day.
5. Steps 2 through 4 will be repeated until confirmation sampling and selected step-out, vertical profile sample locations are complete.

This schedule was designed to maximize project efficiency and minimize the probability of a multiple mobilizations for groundwater profile sampling. Reflective of these objectives, adjustments to the schedule may be made. For example, confirmation sampling at interior locations may be conducted prior to the completion of Step 1, if thunderstorms (or other severe weather) would otherwise result in a delay of work.

Tables

Table 1
Summary of Detected Volatile Organic Compounds in Soil at MIP Confirmation Sample Locations
Former Tecumseh Products Company Site
Tecumseh, Michigan

Analyte		n-Butyl Benzene	sec-Butylbenzene	1,1-Dichloroethane	1,1-Dichloroethene[1]	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Isopropyl-benzene	4-Isopropyl-toluene	n-Propyl Benzene[1]	Tetra-chloroethene	1,1,1-Trichloroethane	Trichloroethene	1,2,4-Tri-methylbenzene[1]	1,3,5-Tri-methylbenzene[1]	Vinyl Chloride
Residential DWP Criteria		1.6	1.6	18	0.14	1.4	2.0	91	NC	1.6	0.10	4.0	0.10	2.1	1.8	0.040
GSIP Criteria		NC	NC	15	2.6	12	30[2]	3.2	NC	NC	1.2[2]	1.8	4.0[2]	0.57	1.1	0.26[2]
Residential DC Criteria		2,500	2,500	27,000	200	2,500	3,800	25,000	NC	2,500	200	500,000	110	32,000	32,000	3.8
Non-Residential DC Criteria		8,000	8,000	87,000	660	8,000	12,000	80,000	NC	8,000	930	1,000,000	660	100,000	100,000	34
Residential SVIAI Criteria		NC	NC	230	0.062	22	23	400	NC	NC	11	250	1.0	4,300	2,600	0.27
Non-Residential SVIAI Criteria		NC	NC	430	0.33	41	43	730	NC	NC	21	4,600	1.9	8,000	4,800	2.8
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MIP-SB-01 (1-2')	6/19/2014	<0.030	<0.030	<0.030	**0.034**	**2.8**	**0.18**	<0.030	<0.030	<0.030	<0.030	**0.33**	**92**	**0.032**	<0.030	<0.030
MIP-SB-01 (2.25-2.75')	6/23/2014	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	**0.11**	**0.63**	<0.025	<0.025	<0.075
MIP-SB-01 (3-4')	6/19/2014	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	**0.35**	**2.1**	<0.33	<0.33	<0.33
MIP-SB-01 (4-5')	6/19/2014	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	**0.30**	**2.4**	<0.032	<0.032	<0.032
DUP-01 [MIP-SB-01 (4-5')]	6/19/2014	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	**0.67**	**2.1**	<0.032	<0.032	<0.032
MIP-SB-01 (6-8')	6/19/2014	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	**0.12**	**0.67**	<0.031	<0.031	<0.031
MIP-SB-01 (8-9')	6/19/2014	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	**0.84**	**2.8**	<0.029	<0.029	<0.029
MIP-SB-01 (11-12')	6/19/2014	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	**0.39**	**1.2**	<0.031	<0.031	<0.031
MIP-SB-01 (12-13')	6/19/2014	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	**0.67**	**2.0**	<0.034	<0.034	<0.034
MIP-SB-01 (14-15')	6/19/2014	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	**0.71**	**2.1**	<0.029	<0.029	<0.029
MIP-SB-01 (16-18')	6/19/2014	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	<0.034	**0.45**	**1.5**	<0.034	<0.034	<0.034
MIP-SB-01 (18-20')	6/19/2014	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	**0.68**	**2.2**	<0.031	<0.031	<0.031
MIP-SB-01 (20-22')	6/19/2014	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	<0.031	**0.034**	**1.1**	**3.1**	<0.031	<0.031	<0.031
MIP-SB-01 (22-24')	6/19/2014	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	**2.4**	**4.1**	<0.071	<0.071	<0.071
MIP-SB-01 (47-48')	6/19/2014	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022
MIP-SB-01 (49-49.5')	6/19/2014	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026	<0.026
MIP-SB-03 (0-2')	6/20/2014	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	**0.047**	**0.36**	<0.033	<0.033	<0.033
MIP-SB-03 (2-3')	6/20/2014	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	**0.42**	**2.5**	<0.039	<0.039	<0.039
MIP-SB-03 (4-5')	6/20/2014	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	**0.44**	**1.6**	<0.032	<0.032	<0.032
DUP-02 [MIP-SB-03 (4-5')]	6/20/2014	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	**0.26**	**1.9**	<0.029	<0.029	<0.029
MIP-SB-03 (5-6')	6/20/2014	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	**0.84**	<0.30	<0.30	<0.30
MIP-SB-03 (7-8')	6/20/2014	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	**0.043**	**1.7**	**8.4**	<0.030	<0.030	<0.030
MIP-SB-03 (8-9')	6/20/2014	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	<0.029	**0.038**	**1.5**	**7.3**	<0.029	<0.029	<0.029
MIP-SB-03 (10-12')	6/20/2014	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	**0.047**	**2.0**	**9.4**	<0.033	<0.033	<0.033
MIP-SB-03 (12-13')	6/20/2014	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	**0.034**	**1.3**	**6.1**	<0.032	<0.032	<0.032
MIP-SB-03 (14-15')	6/20/2014	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	<0.032	**0.056**	**2.1**	**9.3**	<0.032	<0.032	<0.032
MIP-SB-03 (17-18')	6/20/2014	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	**0.59**	**2.9**	<0.044	<0.044	<0.044
MIP-SB-03 (19-20')	6/20/2014	<0.033	<0.033	<0.033	<0.033	**0.042**	<0.033	<0.033	<0.033	<0.033	**0.11**	**3.5**	**16**	<0.033	<0.033	<0.033
MIP-SB-03 (20-21')	6/20/2014	<0.035	<0.035	<0.035	<0.035	**0.046**	<0.035	<0.035	<0.035	<0.035	**0.15**	**4.4**	**20**	<0.035	<0.035	<0.035
MIP-SB-03 (24-28')	6/20/2014	**2.7**	**4.0**	<0.34	<0.34	<0.34	<0.34	**3.1**	**9.1**	**8.3**	<0.34	**1.2**	<0.34	**33**	**2.2**	<0.34
MIP-SB-03 (28-32')	6/20/2014	<0.032	<0.032	**0.050**	<0.032	**3.2**	**0.080**	<0.032	<0.032	<0.032	<0.032	<0.032	**0.61**	<0.032	<0.032	**0.086**
MIP-SB-03 (47-48')	6/20/2014	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	<2.6	**52**	<2.6	<2.6	<2.6

Notes:
Residential Drinking Water Protection (DWP) Criteria, Groundwater to Surface Water Interface Protection (GSIP) Criteria, Residential and Non-Residential Direct Contact (DC) Criteria and Residential and Non-Residential Soil Volatilization to Indoor Air Inhalation (SVIAI) Criteria from MDEQ RRD Part 201 Generic Cleanup Criteria/Part 213 Risk Based Cleanup Levels, December 30, 2013.
mg/kg = milligrams per kilogram
NC = No Criteria
Bold font denotes concentrations detected above laboratory reporting limits
Denotes concentrations above one or more criteria
1) Compound may exhibit characteristic ignitability as defined in 40 C.F.R. § 261.21
2) Criterion is not protective for surface water used as a drinking water source as described in footnote {X} of MDEQ Op Memo 1 Part 201, Attachment 1.

Table 2
Summary of Detected Volatile Organic Compounds in Groundwater at MIP Confirmation Sample Locations
Former Tecumseh Products Company Site
Tecumseh, Michigan

Analyte	1,1-Dichloroethane	1,2-Dichloroethane[1]	1,1-Dichloroethene[1]	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetra-chloroethene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	1,2,4-Tri-methylbenzene[1]	Vinyl Chloride
Health-Based Residential DW Criteria	880	5.0	7.0	70	100	5.0	200	5.0	5.0	1,000	2.0
Health-Based Non-Residential DW Criteria	2,500	5.0	7.0	70	100	5.0	200	5.0	5.0	2,900	2.0
GSI Criteria	740	360[2]	130	620	1,500[2]	60[2]	89	330[2]	200[2]	17	13[2]
Residential GWSL for Vapor Intrusion	4,300	41	370	83	360	94	17,000	96	10	1,700	2.8
Non-Residential GWSL for Vapor Intrusion	18,000	210	1,600	350	1,500	460	71,000	480	41	7,300	52
Groundwater Contact Criteria	2.4E+06	19,000	11,000	2.0E+05	2.2E+05	12,000	1.3E+06	21,000	13,000[4]	56,000	1,000
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L

Sample Location and Screened Interval	Sample Collection Date	Approx. Depth to Groundwater (ft) [3]										
MIP-SB-01 (22-25')	6/23/2014	22.0	**1.9**	<0.50	**3.0**	**0.67**	<0.50	<0.50	**430**	<0.50	**210**	<0.50	<0.50
MIP-SB-01 (25-28')	6/23/2014	22.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**240**	<5.0	**220**	<5.0	<5.0
MIP-SB-01 (28-31')	6/23/2014	22.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**3.2**	<0.50	**26**	<0.50	<0.50
MIP-SB-01 (31-34')	6/23/2014	22.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**2.3**	<0.50	<0.50
MIP-SB-01 (34-37')	6/23/2014	22.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.84**	<0.50	**1.5**	<0.50	<0.50
MIP-SB-01 (37.5-40.5')	6/23/2014	22.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.63**	<0.50	**1.0**	<0.50	<0.50
MIP-SB-01 (41-44')	6/23/2014	22.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.76**	<0.50	**1.6**	<0.50	<0.50
MIP-SB-01 (44-47')	6/23/2014	22.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**1.8**	<0.50	**3.9**	<0.50	<0.50
MIP-SB-03 (24-27')	6/24/2014	24.0	**5.0**	**0.67**	**2.8**	**24**	**1.2**	**3.4**	**740**	**3.0**	**1,000**	**0.82**	**5.1**
DUP-03 [MIP-SB-03 (24-27')]	6/24/2014	24.0	**4.9**	**0.63**	**2.9**	**24**	**1.2**	**3.4**	**780**	**3.0**	**1,000**	**0.80**	**5.1**
MIP-SB-03 (26.5-29.5')	6/23/2014	24.0	**43**	<10	<10	**72**	<10	<10	**620**	<10	**430**	**44**	**140**
MIP-SB-03 (29-32')	6/23/2014	24.0	**7.7**	<0.50	**1.8**	**120**	**4.2**	<0.50	**7.6**	<0.50	**5.4**	**2.6**	**74**
MIP-SB-03 (31.5-34.5')	6/23/2014	24.0	**6.5**	**0.80**	<0.50	**210**	**7.7**	<0.50	**0.54**	<0.50	**11**	<0.50	**27**
MIP-SB-03 (34.5-37.5')	6/24/2014	24.0	**2.7**	<0.50	<0.50	**150**	**3.8**	<0.50	<0.50	<0.50	**6.1**	<0.50	**26**
MIP-SB-03 (37.5-40.5')	6/24/2014	24.0	**4.2**	<0.50	<0.50	**110**	**3.8**	<0.50	**0.63**	<0.50	**24**	<0.50	**5.4**
MIP-SB-03 (40.5-43.5')	6/24/2014	24.0	<0.50	<0.50	<0.50	**79**	**4.4**	<0.50	<0.50	<0.50	**140**	<0.50	**7.4**
MIP-SB-03 (43.5-46.5')	6/23/2014	24.0	<5.0	<5.0	<5.0	**230**	**6.0**	<5.0	<5.0	<5.0	**260**	<5.0	**46**

Notes:
Health-Based Residential and Non-Residential Drinking Water (DW) Criteria, and Groundwater/Surface Water Interface (GSI) Criteria from MDEQ RRD Part 201 Generic Cleanup Criteria/Part 213 Risk Based Cleanup Levels, December 30, 2013. Groundwater Contact (GC) Criteria from MDEQ RRD Part 201 Generic Cleanup Criteria/Part 213 Risk Based Cleanup Levels, September 28, 2012. Groundwater Screening Levels (GWSLs) for Vapor Intrusion from the MDEQ Guidance Document for the Vapor Intrusion Pathway, May 2013.
ug/L = micrograms per liter
Bold font denotes concentrations detected above laboratory reporting limits
Denotes concentrations above one or more criteria
1) Compound may exhibit characteristic ignitability as defined in 40 C.F.R. § 261.21
2) Criterion is not protective for surface water used as a drinking water source as described in footnote {X} of MDEQ Op Memo 1 Part 201, Attachment 1.
3) The approximate depth to groundwater is taken from soil boring logs.
4) At the request of USEPA, a site-specific groundwater contact criteria for trichloroethene (TCE) was recalculated to reflect revised TCE toxicity data which was published by USEPA on September 28, 2011.

Table 3
Summary of Proposed MIP Confirmation Sample Locations
Former Tecumseh Products Company Site
Tecumseh, Michigan

MIP Boring Location	Sample Matrix	Analytical Method	Sample Depth Interval (ft)	Maximum ECD Response (µV) [(1)]	Comments
Northern Source Area Locations					
MIP-40	Soil	USCS	0-25	--	Soil classification through vadose zone
	Soil	EPA 8260	1-2	$<5 \times 10^5$	Above near surface ECD peak
	Soil	EPA 8260	2-3	2.1×10^6	ECD Peak within surficial silty/sandy clay
	Soil	EPA 8260	6-7	$<5 \times 10^5$	Low response through upper vadose zone, limited sample collection
	Soil	EPA 8260	9-10	6.2×10^5	Low response through upper vadose zone, limited sample collection
	Soil	EPA 8260	12-13	1.1×10^6	Increased ECD response with depth
	Soil	EPA 8260	15-16	2.9×10^6	Increased ECD response with depth
	Soil	EPA 8260	16.5-17.5	3.4×10^6	Increased ECD response with depth
	Soil	EPA 8260	18-19	4.7×10^6	Requested by USEPA
	Soil	EPA 8260	20-21	4.7×10^6	Requested by USEPA
	Soil	EPA 8260	21-22	5.6×10^6	Increased ECD response with depth
	Soil	EPA 8260	22-23	5.6×10^6	Increased ECD response with depth
	Soil	USCS	30-40	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	23.5-26.5	1.6×10^7	Water table sample, highest ECD response
	Groundwater	EPA 8260	26.5-29.5	2.2×10^6	Upper intermediate zone, modest ECD response, low PID and FID response
	Groundwater	EPA 8260	29.5-32.5	1.1×10^6	Lower intermediate zone, low ECD response, elevated PID and FID response
	Groundwater	EPA 8260	32.5-35.5	8.2×10^5	Sample at underlying clay, low ECD response, elevated PID and FID response
MIP-41	Soil	USCS	0-25	--	Soil classification through vadose zone
	Soil	EPA 8260	4.4-5.4	$<5 \times 10^5$	Above near surface ECD peak
	Soil	EPA 8260	5.4-6.6	4.9×10^6	ECD Peak within surficial silty/sandy clay
	Soil	EPA 8260	6.8-7.8	$<5 \times 10^5$	Below near surface ECD peak
	Soil	EPA 8260	12.5-13.5	7.7×10^5	Low response through upper vadose zone, limited sample collection
	Soil	EPA 8260	18.5-19.5	1.7×10^6	Increased ECD response with depth
	Soil	EPA 8260	20.5-21.5	1.5×10^6	Increased ECD response with depth
	Soil	EPA 8260	21.5-22.5	1.9×10^6	Increased ECD response with depth
	Soil	EPA 8260	22.5-23.5	1.3×10^6	Increased ECD response with depth
	Soil	USCS	40-50	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	24-27	5.6×10^6	Water table sample, highest ECD response, modest FID response
	Groundwater	EPA 8260	27.5-30.5	1.6×10^6	Upper intermediate zone, modest ECD response, low PID and FID response
	Groundwater	EPA 8260	31.75-34.75	4.1×10^6	Central intermediate zone, modest ECD response, low PID and FID response
	Groundwater	EPA 8260	35-38	2.0×10^6	Central intermediate zone, modest ECD response, low PID and FID response
	Groundwater	EPA 8260	38.5-41.5	2.7×10^6	Deep intermediate zone, modest ECD response, low PID and FID response
	Groundwater	EPA 8260	41.5-44.5	9.2×10^5	Sample at underlying clay, low ECD response, PID and FID response

Notes:

USCS = Unified Soil Classification System

PID - Photoionization Detector

FID = Flame Ionization Detector

1) Maximum Electron Capture Detector (ECD) response in microvolts (µV) detected during the 2014 Membrane Interface Probe (MIP) investigation.

Table 3
Summary of Proposed MIP Confirmation Sample Locations
Former Tecumseh Products Company Site
Tecumseh, Michigan

MIP Boring Location	Sample Matrix	Analytical Method	Sample Depth Interval (ft)	Maximum ECD Response (µV) [1]	Comments
Northern Source Area Locations					
MIP-35	Soil	USCS	0-25	--	Soil classification through vadose zone
	Soil	EPA 8260	1-2	$<5 \times 10^5$	Above near surface ECD peak
	Soil	EPA 8260	2-3	1.0×10^6	ECD Peak within surficial silty/sandy clay
	Soil	EPA 8260	3-4	$<5 \times 10^5$	Below near surface ECD peak
	Soil	EPA 8260	14-15	5.1×10^5	Low response through vadose zone, limited sample collection
	Soil	EPA 8260	20.5-21.5	8.5×10^5	Low response through vadose zone, limited sample collection
	Soil	USCS	40-50	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	23.5-26.5	3.5×10^6	Water table sample, modest ECD response
	Groundwater	EPA 8260	25.5-28.5	1.8×10^6	Upper intermediate zone, modest ECD response
	Groundwater	EPA 8260	28-31	1.2×10^7	Upper intermediate zone, peak ECD response, modest PID and FID response
	Groundwater	EPA 8260	30.5-33.5	1.1×10^7	Upper intermediate zone, peak ECD, PID and FID response
	Groundwater	EPA 8260	34-37	2.1×10^6	Central intermediate zone, decreasing ECD, PID and FID response
	Groundwater	EPA 8260	37.5-40.5	1.9×10^6	Central intermediate zone, modest ECD response, low PID and FID response
	Groundwater	EPA 8260	40.5-43.5	9.9×10^5	Deep intermediate zone, modest ECD response, peak FID response and low PID response
	Groundwater	EPA 8260	43.5-46.5	$<5 \times 10^5$	Sample at underlying clay, low ECD response, PID and FID response
MIP-46	Soil	USCS	0-25	--	Soil classification through vadose zone
	Soil	EPA 8260	0.5-1.5	$<5 \times 10^5$	Above near surface ECD peak
	Soil	EPA 8260	1.5-2.5	3.7×10^6	ECD Peak within surficial silty/sandy clay
	Soil	EPA 8260	2.5-3.5	$<5 \times 10^5$	Below near surface ECD peak
	Soil	EPA 8260	7-8	$<5 \times 10^5$	Low response through vadose zone, limited sample collection
	Soil	EPA 8260	21-22	$<5 \times 10^5$	Low response through vadose zone, limited sample collection
	Soil	USCS	45-55	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	23.9-26.9	1.6×10^7	Depth adjusted as requested by USEPA, peak ECD response, modest PID and FID response
	Groundwater	EPA 8260	26.9-29.9	1.6×10^7	Depth adjusted as requested by USEPA, peak ECD response, modest PID and FID response
	Groundwater	EPA 8260	29.9-32.9	6.4×10^6	Depth adjusted as requested by USEPA, decreasing ECD response, low PID and FID response
	Groundwater	EPA 8260	33-36	$<5 \times 10^5$	Central intermediate zone, decreasing ECD, low PID and FID response
	Groundwater	EPA 8260	37.5-40.5	$<5 \times 10^5$	Central intermediate zone, background ECD and PID, low FID response
	Groundwater	EPA 8260	41.9-44.9	6.0×10^5	Depth adjusted as requested by USEPA, low peak in ECD response, increasing FID response
	Groundwater	EPA 8260	44.9-47.9	$<5 \times 10^5$	Depth adjusted as requested by USEPA, decreasing ECD response, peak FID response

Notes:

USCS = Unified Soil Classification System

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1) Maximum Electron Capture Detector (ECD) response in microvolts (µV) detected during the 2014 Membrane Interface Probe (MIP) investigation.

Table 3
Summary of Proposed MIP Confirmation Sample Locations
Former Tecumseh Products Company Site
Tecumseh, Michigan

MIP Boring Location	Sample Matrix	Analytical Method	Sample Depth Interval (ft)	Maximum ECD Response (µV) [1]	Comments
Northern Source Area Locations					
MIP-38	Soil	USCS	0-20	--	Soil classification through vadose zone
	Soil	EPA 8260	1.5-2.5	$<5 \times 10^5$	Low response through vadose zone, limited sample collection
	Soil	USCS	35-45	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	20-23	1.1×10^7	Water table sample, high ECD response, modest FID and low PID response
	Groundwater	EPA 8260	23-26	1.6×10^7	Upper intermediate zone, peak ECD, PID and FID response
	Groundwater	EPA 8260	26.5-29.5	1.3×10^7	Upper intermediate zone, peak ECD response, decreasing PID and FID response
	Groundwater	EPA 8260	30.5-33.5	5.7×10^6	Central intermediate zone, declining ECD response, low PID and FID response
	Groundwater	EPA 8260	34-37	7.9×10^6	Central intermediate zone, declining ECD response, low PID and FID response
	Groundwater	EPA 8260	37-40	1.8×10^6	Deep intermediate zone, modest ECD response, low PID and FID response
	Groundwater	EPA 8260	39.5-42.5	1.0×10^6	Sample at underlying clay, low to modest ECD response, low PID and FID response
MIP-10	Groundwater	EPA 8260	30-33	8.4×10^6	Requested by USEPA, peak ECD response
MIP-39	Groundwater	EPA 8260	26-29	1.1×10^7	Requested by USEPA, peak ECD response
MIP-44	Soil	USCS	0-25	--	Soil classification through vadose zone
	Soil	EPA 8260	4.5-5.5	6.4×10^5	Above near surface ECD peak
	Soil	EPA 8260	5.5-6.5	3.4×10^6	ECD Peak within surficial silty/sandy clay
	Soil	EPA 8260	6.5-7.5	$<5 \times 10^5$	Below near surface ECD peak
	Soil	EPA 8260	18-19	8.3×10^5	Low response through vadose zone, limited sample collection
	Soil	EPA 8260	19.5-20.5	1.2×10^6	Low response through vadose zone, limited sample collection
	Soil	EPA 8260	21.5-22.5	1.6×10^6	Low to modest ECD response near water table
	Soil	USCS	35-45	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	23-26	2.1×10^6	Water table sample, modest ECD response, low FID response
	Groundwater	EPA 8260	26.5-29.5	$<5 \times 10^5$	Upper intermediate zone, background ECD, low PID and peak FID response
	Groundwater	EPA 8260	29-32	3.9×10^6	Central intermediate zone, modest ECD, low PID and decreasing FID response
	Groundwater	EPA 8260	31.5-34.5	3.9×10^6	Central intermediate zone, modest ECD, low PID and modest FID response
	Groundwater	EPA 8260	35.5-38.5	3.7×10^6	Deep intermediate zone, modest ECD, low PID and low to modest FID response
	Groundwater	EPA 8260	38.5-41.5	3.7×10^6	Sample at underlying clay, low to modest ECD, low PID and low FID response
MIP-55	Soil	USCS	0-20	--	Soil classification through vadose zone, background ECD response
	Soil	USCS	30-40	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	15.5-18.5	2.7×10^6	Water table sample, modest ECD and FID response
	Groundwater	EPA 8260	19-22	1.6×10^7	Upper intermediate zone, high ECD with corresponding PID and FID response throughout
	Groundwater	EPA 8260	22-25	1.6×10^7	Central intermediate zone, high ECD with corresponding PID and FID response throughout
	Groundwater	EPA 8260	25-28	1.1×10^7	Central intermediate zone, high ECD with corresponding PID and FID response throughout
	Groundwater	EPA 8260	28-31	1.6×10^7	Deep intermediate zone, high ECD with corresponding PID and FID response throughout
	Groundwater	EPA 8260	31-34	5.1×10^6	Deep intermediate zone, high ECD with corresponding PID and FID response throughout
	Groundwater	EPA 8260	32.5-35.5	2.6×10^6	Sample at underlying clay, decreasing ECD, low PID and low FID response

Notes:

USCS = Unified Soil Classification System

PID - Photoionization Detector

FID = Flame Ionization Detector

1) Maximum Electron Capture Detector (ECD) response in microvolts (µV) detected during the 2014 Membrane Interface Probe (MIP) investigation.

Table 3
Summary of Proposed MIP Confirmation Sample Locations
Former Tecumseh Products Company Site
Tecumseh, Michigan

MIP Boring Location	Sample Matrix	Analytical Method	Sample Depth Interval (ft)	Maximum ECD Response (µV) [1]	Comments
Northern Source Area Locations					
MIP-57	Groundwater	EPA 8260	18-21	4.6×10^6	Requested by USEPA, upper peak in ECD response
	Groundwater	EPA 8260	21-24	1.1×10^7	Requested by USEPA, increasing ECD response
	Groundwater	EPA 8260	24-27	1.1×10^7	Requested by USEPA, lower peak in ECD response
MIP-58	Groundwater	EPA 8260	24-27	2.6×10^6	Requested by USEPA, modest peak in ECD response
	Groundwater	EPA 8260	27-30	4.1×10^6	Requested by USEPA, increasing ECD response
	Groundwater	EPA 8260	30-33	1.2×10^7	Requested by USEPA, peak ECD response
	Groundwater	EPA 8260	33-36	6.4×10^6	Requested by USEPA, decreasing ECD response
MIP-64	Soil	USCS	0-25	--	Soil classification through vadose zone, background ECD response
	Soil	USCS	40-50	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	22.5-25.5	$<5 \times 10^5$	Water table sample, background response
	Groundwater	EPA 8260	26-29	1.1×10^6	Upper intermediate zone, increasing ECD, low PID and FID response
	Groundwater	EPA 8260	29.5-32.5	1.6×10^7	Central intermediate zone, peak ECD response, increasing PID and FID response
	Groundwater	EPA 8260	32.5-35.5	1.6×10^7	Central intermediate zone, peak ECD, PID and FID response
	Groundwater	EPA 8260	35.5-38.5	2.0×10^6	Deep intermediate zone, decreasing ECD, low PID and FID response
	Groundwater	EPA 8260	39-42	7.6×10^5	Deep intermediate zone, low ECD, PID and FID response
	Groundwater	EPA 8260	42-45	1.6×10^7	Sample at underlying clay, background response
Southern Source Area Locations					
MIP-03	Groundwater	EPA 8260	45.5-48.5	4.8×10^6	Requested by USEPA, additional groundwater sample at interface of underlying clay unit
MIP-05	Soil	USCS	0-20	--	Soil classification through vadose zone
	Soil	EPA 8260	1.5-2.5	1.0×10^6	Low/stable response through sandy vadose zone, limited sample collection
	Soil	EPA 8260	6-7	1.1×10^6	Low/stable response through sandy vadose zone, limited sample collection
	Soil	EPA 8260	14-15	8.9×10^5	Low/stable response through sandy vadose zone, limited sample collection
	Soil	USCS	45-60	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	45.5-48.5	$<5 \times 10^5$	Sample at anticipated surface of underlying clay, background ECD, PID and FID response
	Groundwater	EPA 8260	TBD	NM	Additional groundwater samples will be collected to the depth of the observed competent clay unit
	Groundwater	EPA 8260	TBD	NM	The deepest groundwater sample will be set at least 1 foot into the competent clay unit
	Soil	EPA 8260	TBD	NM	Soil samples will collected from clay lenses observed between 48.5 and competent clay
	Soil	EPA 8260	TBD	NM	A soil sample will be collected from 0-1 feet into the competent clay
	Soil	EPA 8260	TBD	NM	A soil sample will be collected from 1-2 feet into the competent clay
MIP-60	Soil	USCS	0-15	--	Soil classification to depth of deepest soil sample
	Soil	EPA 8260	8.5-9.5	6.5×10^5	Requested by USEPA, modest ECD response
	Soil	EPA 8260	13.5-14.5	1.3×10^6	Requested by USEPA, modest ECD response

Notes:
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PID - Photoionization Detector
FID = Flame Ionization Detector
1) Maximum Electron Capture Detector (ECD) response in microvolts (µV) detected during the 2014 Membrane Interface Probe (MIP) investigation.

Table 3
Summary of Proposed MIP Confirmation Sample Locations
Former Tecumseh Products Company Site
Tecumseh, Michigan

MIP Boring Location	Sample Matrix	Analytical Method	Sample Depth Interval (ft)	Maximum ECD Response (µV) [1]	Comments
Southern Source Area Locations					
MIP-25	Soil	USCS	0-25	--	Soil classification through vadose zone
	Soil	EPA 8260	2.5-3.5	1.0×10^6	Above first near surface ECD peak
	Soil	EPA 8260	3.5-4.5	1.6×10^7	ECD Peak within surficial silty/sandy clay
	Soil	EPA 8260	4.5-5.5	1.2×10^6	Below first near surface ECD peak
	Soil	EPA 8260	5.25-6.25	1.2×10^6	Above second near surface ECD peak
	Soil	EPA 8260	6.25-7.25	4.7×10^6	ECD Peak within surficial silty/sandy clay
	Soil	EPA 8260	7.25-8.25	1.2×10^6	Below second near surface ECD peak
	Soil	EPA 8260	11.5-12.5	1.1×10^6	Low/stable response through sandy vadose zone, limited sample collection
	Soil	EPA 8260	15.75-16.75	1.1×10^6	Low/stable response through sandy vadose zone, limited sample collection
	Soil	EPA 8260	19.5-20.5	1.9×10^6	Low/stable response through sandy vadose zone, limited sample collection
	Soil	EPA 8260	21.5-22.5	1.4×10^6	Low/stable response through sandy vadose zone, limited sample collection
	Soil	USCS	45-55	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	23-26	1.6×10^6	Water table sample, modest ECD response, background PID and FID response
	Groundwater	EPA 8260	25-28	1.7×10^6	Upper intermediate zone, increasing ECD, background PID and FID response
	Groundwater	EPA 8260	27.5-30.5	2.9×10^6	Upper intermediate zone, modest ECD, low PID and FID response
	Groundwater	EPA 8260	30.5-33.5	1.4×10^6	Central intermediate zone, decreasing ECD, background PID and FID response
	Groundwater	EPA 8260	33.5-36.5	8.8×10^5	Central intermediate zone, decreasing ECD, background PID and FID response
	Groundwater	EPA 8260	37-40	$<5 \times 10^5$	Deep intermediate zone, low ECD, background PID and FID response
	Groundwater	EPA 8260	40.5-43.5	$<5 \times 10^5$	Deep intermediate zone, low ECD, background PID and FID response
	Groundwater	EPA 8260	44-47	8.5×10^5	Sample at underlying clay, increase in ECD at clay, background PID and FID response
	Soil	EPA 8260	47.5-48.5	4.4×10^6	ECD and FID Peak within underlying clay unit
	Soil	EPA 8260	50-51	1.2×10^6	ECD and FID Peak within underlying clay unit
	Soil	EPA 8260	52.5-53.5	9.1×10^5	ECD and FID Peak within underlying clay unit

Notes:

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1) Maximum Electron Capture Detector (ECD) response in microvolts (µV) detected during the 2014 Membrane Interface Probe (MIP) investigation.

Table 3
Summary of Proposed MIP Confirmation Sample Locations
Former Tecumseh Products Company Site
Tecumseh, Michigan

MIP Boring Location	Sample Matrix	Analytical Method	Sample Depth Interval (ft)	Maximum ECD Response (µV) [1]	Comments
Southern Source Area Locations					
MIP-30	Soil	USCS	0-20	--	Soil classification through vadose zone
	Soil	EPA 8260	7-8	8.5×10^5	Low/stable response through sandy vadose zone, limited sample collection
	Soil	EPA 8260	11-12	6.0×10^5	Low/stable response through sandy vadose zone, limited sample collection
	Soil	USCS	40-50	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	13.5-16.5	8.1×10^5	Water table sample, low ECD response, background PID and FID response
	Groundwater	EPA 8260	17-20	1.0×10^6	Upper intermediate zone, low/modest ECD response, background PID and FID response
	Groundwater	EPA 8260	20.5-23.5	2.9×10^6	Upper intermediate zone, modest ECD response, background PID and FID response
	Groundwater	EPA 8260	24-27	2.7×10^6	Central intermediate zone, modest ECD response, background PID and FID response
	Groundwater	EPA 8260	27.5-30.5	2.7×10^6	Central intermediate zone, modest ECD response, background PID and FID response
	Groundwater	EPA 8260	31-34	5.2×10^6	Central intermediate zone, increasing ECD, background PID and FID response
	Groundwater	EPA 8260	34-37	3.1×10^6	Central intermediate zone, increasing ECD response, low PID and FID response
	Groundwater	EPA 8260	37-40	6.3×10^6	Deep intermediate zone, increasing ECD response, low PID and FID response
	Groundwater	EPA 8260	40-43	7.4×10^6	Deep intermediate zone, increasing ECD response, low PID and FID response
	Groundwater	EPA 8260	43-46	4.8×10^6	Sample at underlying clay, peak ECD response, low PID and FID response
	Soil	EPA 8260	44.5-45.5	4.5×10^6	Sustained ECD response and FID Peak within underlying clay unit
	Soil	EPA 8260	46-47	1.3×10^6	Decreasing ECD and low FID response within underlying clay unit
MIP-23	Soil	USCS	0-15	--	Soil classification through vadose zone, background ECD response
	Soil	USCS	35-45	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	13-16	$<5 \times 10^5$	Water table sample, low ECD response, background PID and FID response
	Groundwater	EPA 8260	16-19	4.3×10^6	Upper intermediate zone, increasing ECD response, background PID and FID response
	Groundwater	EPA 8260	19-22	1.3×10^7	Upper intermediate zone, increasing ECD response, background PID and FID response
	Groundwater	EPA 8260	21.5-24.5	1.6×10^7	Central intermediate zone, peak ECD response, low PID and FID response
	Groundwater	EPA 8260	24.5-27.5	1.6×10^7	Central intermediate zone, peak ECD response, low PID and FID response
	Groundwater	EPA 8260	27.5-30.5	1.3×10^7	Central intermediate zone, decreasing ECD response, background PID and FID response
	Groundwater	EPA 8260	30.5-33.5	2.1×10^6	Central intermediate zone, decreasing ECD response, background PID and FID response
	Groundwater	EPA 8260	33.5-36.5	4.9×10^6	Deep intermediate zone, modest ECD response, background PID and FID response
	Groundwater	EPA 8260	36.5-39.5	9.9×10^6	Deep intermediate zone, modest ECD response, background PID and FID response
	Groundwater	EPA 8260	39.5-42.5	7.7×10^6	Sample at underlying clay, peak in ECD response, background PID and FID response
	Soil	EPA 8260	41.5-42.5	7.7×10^6	Sustained ECD response within underlying clay unit
	Soil	EPA 8260	42.5-43.5	5.0×10^6	Sustained/decreasing ECD response within underlying clay unit
	Soil	EPA 8260	44-45	2.7×10^6	Sustained/decreasing ECD response within underlying clay unit
	Soil	EPA 8260	45-46	1.5×10^6	Sustained/decreasing ECD response within underlying clay unit

Notes:

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1) Maximum Electron Capture Detector (ECD) response in microvolts (µV) detected during the 2014 Membrane Interface Probe (MIP) investigation.

Table 3
Summary of Proposed MIP Confirmation Sample Locations
Former Tecumseh Products Company Site
Tecumseh, Michigan

MIP Boring Location	Sample Matrix	Analytical Method	Sample Depth Interval (ft)	Maximum ECD Response (µV) [1]	Comments
Southern Source Area Locations					
MIP-50	Soil	USCS	0-15	--	Soil classification through vadose zone, background ECD response
	Soil	USCS	35-45	--	Soil classification at bottom of aquifer and at least 2 feet into clay confining unit
	Groundwater	EPA 8260	9.5-12.5	$<5 \times 10^5$	Water table sample, low ECD, PID and FID response
	Groundwater	EPA 8260	15-18	3.4×10^6	Upper intermediate zone, increasing ECD, PID and FID response
	Groundwater	EPA 8260	18-21	1.1×10^7	Upper intermediate zone, increasing ECD, PID and FID response
	Groundwater	EPA 8260	21-24	1.6×10^7	Central intermediate zone, peak ECD, PID and FID response
	Groundwater	EPA 8260	22.5-25.5	1.6×10^7	Central intermediate zone, peak ECD, PID and FID response
	Groundwater	EPA 8260	27.5-30.5	8.7×10^6	Central intermediate zone, additional peak in ECD, PID and FID response
	Groundwater	EPA 8260	31.5-34.5	1.1×10^7	Deep intermediate zone, additional peak in ECD, PID and FID response
	Groundwater	EPA 8260	34.5-37.5	1.1×10^7	Deep intermediate zone, decreasing ECD, PID and FID response
	Groundwater	EPA 8260	36.5-39.5	1.0×10^6	Sample at underlying clay, ECD, PID and FID response decreasing to background
	Soil	EPA 8260	39-40	$<5 \times 10^5$	FID Peak within underlying clay unit
MIP-48	Soil	USCS	0-10	--	Soil classification through vadose zone
	Soil	EPA 8260	4-5	7.2×10^5	Requested by USEPA, increasing ECD response
	Soil	EPA 8260	5-6	1.7×10^6	Requested by USEPA, peak ECD response in vadose zone
	Soil	EPA 8260	6-7	3.2×10^6	Requested by USEPA, decreasing ECD response
	Soil	EPA 8260	7-8	2.0×10^6	Requested by USEPA, peak ECD response
	Groundwater	EPA 8260	15-18	9.4×10^6	Requested by USEPA, peak ECD response in groundwater
MIP-49	Groundwater	EPA 8260	18.5-21.5	1.6×10^7	Requested by USEPA, peak in ECD response in groundwater
	Groundwater	EPA 8260	21.5-24.5	1.6×10^7	Requested by USEPA, peak in ECD response in groundwater
Central Locations					
MIP-14	Soil	USCS	0-5	--	Soil classification to depth of deepest soil sample
	Soil	EPA 8260	3-4	1.2×10^7	Requested by USEPA, ECD Peak within surficial silty/sandy clay
	Soil	EPA 8260	4-5	1.8×10^6	Requested by USEPA, below near surface ECD peak
	Groundwater	EPA 8260	26-29	3.2×10^6	Requested by USEPA, peak ECD response in groundwater
MIP-54	Groundwater	EPA 8260	26-29	8.4×10^6	Requested by USEPA, peak ECD response in groundwater

Notes:

USCS = Unified Soil Classification System

PID - Photoionization Detector

FID = Flame Ionization Detector

1) Maximum Electron Capture Detector (ECD) response in microvolts (µV) detected during the 2014 Membrane Interface Probe (MIP) investigation.

Figures

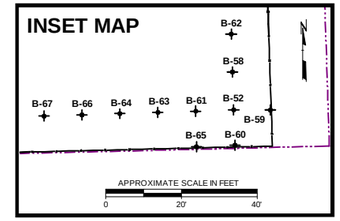
LEGEND

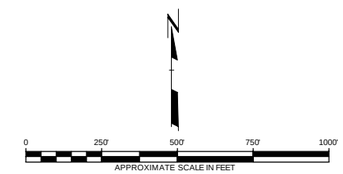
- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- 750 — APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- B-2 + PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S ▲ MONITORING WELL LOCATION AND NUMBER
- MW-9S ▲ DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 + SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 ⊠ SOIL GAS SAMPLE LOCATION AND NUMBER
- SG-15 ⊠ DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- STW-2 ◆ STORM WATER SEWER SAMPLE LOCATION AND NUMBER
- WL-01 ▼ APPROXIMATE SURFACE WATER SAMPLE LOCATION
- GP-2 ATC PHASE II ESA BORING LOCATION AND NUMBER
- MIP-63 MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE

NOTES:

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

INSET MAP





NO.	BY	DATE	REVISION	APP'D
3				
2				
1				

PROJ:

FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:

SITE LAYOUT AND SAMPLE LOCATIONS

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.01.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 1**
DATE:	DECEMBER 2014		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

PLOT DATA:
Drawing Name: J:\...\TRC\Tecumseh Products\Tecumseh\220003\0000_2014 Workplan Rev 1\220003.0000.01.dwg
Operator Name: STEWLE, SHANAH
Drawing Plot Scale: 0.500000
Attached Xref: bm1001 10 (Filled)
Attached Images: P4291 Site LOC & Boundary
Dwg Size: 2.01 kb
Plot Date: March 5, 2015
Plot Time: 8:27 AM

PATTERSON ST.

HIAWATHA ST.

MUSCODY ST.

SOUTH EVANS STREET

SOUTH MAUMEE ST

"Z" "S" "P" "B-1" "K" "H" "B" "B-2" "C" "D-2" "D" "J" "K" "E" "P-2" "W-1" "K-1" "N-2" "N-1" "TD" "F" "W-2" "L-1" "Y" "G" "G-2" "R" "Q" "L" "X-1" "V" "V-2" "M-1" "G" "G-1" "M" "V-1" "M-2" "M-1" "MD"

ENGINEERING

MANUFACTURING

SECURITY

SWMU-8
(SCRAP METAL BINS)

SWMU-12
(METAL FINES STORAGE AREA)

BLUE & GREEN LINE STORAGE

PALLET PACK STORAGE

C.R.S. #1 STORAGE

SHIPPING STORAGE

AREA OF FORMER USTs (#1 - #5)

FORMER UST (#6)

SWMU-1
(FORMER WASTEWATER)

SWMU-3
(FORMER WASTEWATER USTs #9, #10, #11)

SWMU-10
FORMER SPENT SOVENT TANK

SWMU-11
WASTE OIL STORAGE

SWMU-2
METAL STORAGE BIN

C.R.S. #2 & C.R.S. #3 & OUTDOOR UNIT STORAGE

C.R.S. #2 & C.R.S. #3 & OUTDOOR UNIT STORAGE

CARDBOARD, PLASTIC & BANDING PACK

SWMU-8
SCRAP METAL BINS

SWMU-6
HAZARDOUS WASTE DRUM STORAGE

AREA OF FORMER USTs (#15 - #21)

COOL PRODUCTS

SWMU-4
FINAL HOLDING TANK

NEW WASTEWATER BUILDING

OIL AND FLAMMABLE CHEMICAL STORAGE

VEHICLE MAINTENANCE

SWMU-9
(ACCUMULATION AREA)

SWMU-7
(CITRIC ACID & PHOSPHATE SOLUTION ACCUMULATION AREA)

CARDBOARD RECYCLING

SWMU-5
(DISTILLATION SOLVENT RECOVERY SYSTEM)

QUALITY

TEARDOWN

PARKING

PARKING

GRASS

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- TECUMSEH PRODUCTS BUILDING OUTLINE
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- APPROXIMATE LOCATION OF FORMER SOLID WASTE MANAGEMENT UNITS (SWMUs)
- FENCE LINE

Demolition Key

- PHASE I DEMOLITION AREA (DEMOLITION COMPLETE - 2013)
- PHASE II DEMOLITION AREA (DEMOLITION COMPLETE - 2013)
- PHASE III DEMOLITION AREA (PROPOSED)
- PHASE IV DEMOLITION AREA (PROPOSED)

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. SEE SECTION 2 OF THE SEPTEMBER 2012 REMEDIAL INVESTIGATION AND GROUNDWATER ENVIRONMENTAL INDICATOR REPORT FOR A DESCRIPTION OF SWMUs, UNDERGROUND STORAGE TANKS AND OTHER RELEVANT DATA.

N

0 160' 320' 480' 640'

APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APPD.
3				
2				
1				

PROJ:

FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:

SITE FEATURES AND DEMOLITION AREAS

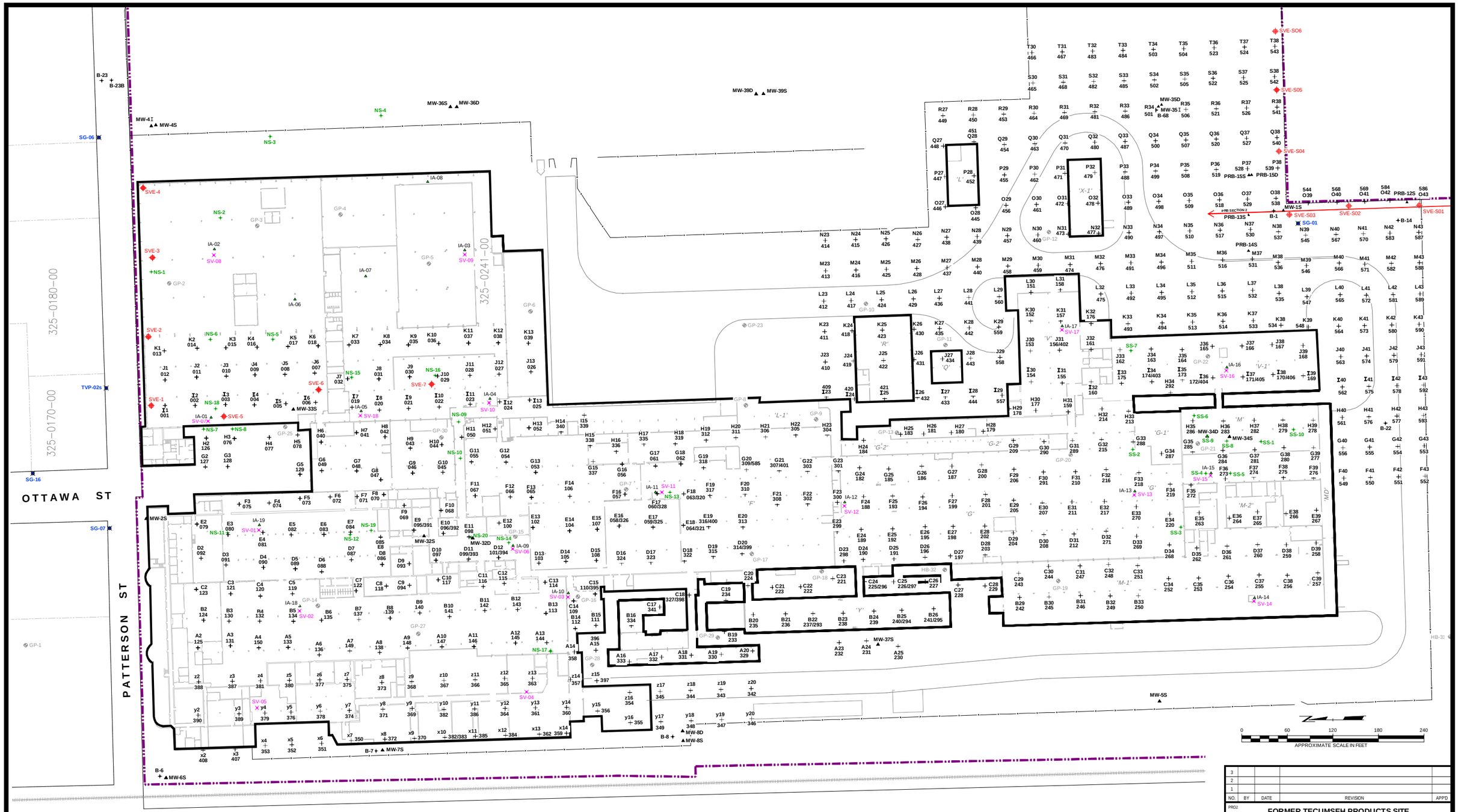
DRAWN BY:	DGS	SCALE:	PROJ. NO. 220003.0000
CHECKED BY:	SEM	AS INDICATED	FILE NO. 220003.0000.02.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 2**
DATE:	DECEMBER 2014		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

PLOT DATA:
Drawing Name: J:\L TRC\Tecumseh Products\Tecumseh MI\220003\0000_ 2014 Workplan\220003.0000.02.dwg
Operator Name: BTEWE, DWNH
Drawing Ref Name: 8.5x11

Dwg Size: 2.68 Mb
Plot Date: December 31, 2014
Plot Time: 12:17 PM

Attached Xref's: tec02x10
Attached Images: tec02 Site Features & Demo Areas
Layers: tec02



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- FENCE LINE
- PARCEL BOUNDARY
- PRB LOCATION
- B-8 — PERIMETER/OFF-SITE INVESTIGATION BORING LOCATION AND NUMBER
- MW-8D — MONITORING WELL LOCATION AND NUMBER
- NS/SS-10 — SOURCE AREA INVESTICATION BORING LOCATION AND NUMBER
- GP-23 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- SVE-7 — SOIL VAPOR EXTRACTION WELL LOCATION AND NUMBER
- SG-01 — SOIL GAS SAMPLE LOCATION AND NUMBER
- SV-08 — SUB-SLAB SOIL GAS SAMPLE LOCATION AND NUMBER
- IA-03 — INDOOR AIR SAMPLE LOCATION AND NUMBER
- J13 / 026 — PASSIVE SOIL GAS SURVEY SAMPLE LOCATION AND NUMBER
- G20 / 309/535 — DUPLICATE SAMPLE LOCATION TO ASSESS TEMPORAL VARIABILITY

NOTES

1. PASSIVE SOIL GAS SURVEY COMPLETED IN PHASES:
   - SAMPLE LOCATIONS 001 THROUGH 150 COMPLETED JUNE-JULY 2010.
   - SAMPLE LOCATIONS 151 THROUGH 292 COMPLETED JULY 2013.
   - SAMPLE LOCATIONS 293 THROUGH 341 COMPLETED SEPTEMBER 2013.
   - SAMPLE LOCATIONS 342 THROUGH 593 COMPLETED APRIL 2014.

NO.	BY	DATE	REVISION	APPD
3				
2				
1				

PROJ:

FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:

PASSIVE SOIL GAS SURVEY LOCATIONS

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.03.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 3**
DATE:	DECEMBER 2014		

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Phone: 734.971.7080
Fax: 734.971.9022

PLOT DATA
Drawing Name: J:_TRC\Tecumseh Products\Tecumseh MI\220003\220003_2014 Work\gis\220003.0000.03.dwg
Operator Name: STEHLE, DANIAH
Drawing Plot Scale: 1:1.0000
Attached Xref's: tan100118 (Filter)
Attached Image: FIG03 PSG Samples
Layout:
Dwg Size: 2.34 kb
Plot Date: October 31, 2014
Plot Time: 11:09 AM

PATTERSON STREET

S. EVANS STREET

S. MAUMEE STREET

MOHAWK STREET

SVE BLOWER 8' X 14' ENCLOSURE

SVE BLOWER 8' X 40' ENCLOSURE

PRB SECTION 1

PRB SECTION 2

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- B-54 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- SVE-S04 — EXTRACTION WELL LOCATION AND NUMBER
- 800 — APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP

COLOR SCALE FOR RELATIVE RESPONSE FROM PASSIVE SOIL GAS SURVEY - TCE AND BREAKDOWN PRODUCTS

450
400
350
300
250
200
150
100
50
0

Color Scale (micrograms)

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. TCE BREAKDOWN PRODUCTS INCLUDE cis-1,2-DICHLOROETHENE; trans-1,2-DICHLOROETHENE; 1,1-DICHLOROETHENE, AND VINYL CHLORIDE.

0 100 200 300 400
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1				

PROJ: FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE: RESULTS OF PASSIVE SOIL GAS SURVEY
DISTRIBUTION OF TCE AND BREAKDOWN PRODUCTS

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.04.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 4
DATE:	DECEMBER 2014		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

PLOT DATA
Drawing Name: JL_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Work\pro\220003.0000.04.dwg
Operator Name: BETHELE, DANAH
Drawing Plot Scale: 0.250000
Drawing Plot Date: December 31, 2014
Plot Time: 11:53 AM
Attached XrefsAttached Images: 2704.2 Beacon Color Scale - TCE+Breakdowns; 2704.2 Beacon Contour Image - TCE+Breakdowns; 2940 Beacon TCE+Breakdowns - Color Scale; 2940 Beacon TCE+Breakdowns - Contour Image; Layout: FIGURE Prop Stacks Area bln

PATTERSON STREET

S. EVANS STREET

S. MAUMEE STREET

MOHAWK STREET

SVE BLOWER 8' X 14' ENCLOSURE

SVE BLOWER 8' X 40' ENCLOSURE

PRB SECTION 1

PRB SECTION 2

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- B-54 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- SVE-S04 — EXTRACTION WELL LOCATION AND NUMBER
- 800 — APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP

COLOR SCALE FOR RELATIVE RESPONSE FROM PASSIVE SOIL GAS SURVEY - 1,1,1-TRICHLOROETHANE (TCA)

175
150
125
100
75
50
25
0
Color Scale (micrograms)

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

0 100 200 300 400
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1				

PROJ: FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE: RESULTS OF PASSIVE SOIL GAS SURVEY
DISTRIBUTION OF TCA

DRAWN BY:	DGS	SCALE:	PROJ. NO. 220003.0000
CHECKED BY:	SEM	AS INDICATED	FILE NO. 220003.0000.05.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 5
DATE:	DECEMBER 2014		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

PLOT DATA
Drawing Name: JL_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Work\pro\220003.0000.05.dwg
Operator Name: BTEHLE, DANAH
Drawing File Size: 6.28MB
Attached XrefsAttached Images: 2704-2 Beacon Color Scale - TCE-Brasilcomc, 2704-2 Beacon Contour Image - TCE-Brasilcomc, 2704-2 Beacon TCA - Color Scale, 2640 Beacon TCA - Contour Image
Layout: FIGURE 5 PRO TCA
Dwg Basis: Site Info
Plot Date: December 31, 2014
Plot Time: 11:58 AM

PATTERSON STREET

S. EVANS STREET

S. MAUMEE STREET

MOHAWK STREET

PRB SECTION 1

PRB SECTION 2

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-12 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

COLOR SCALE FOR RELATIVE RESPONSE FROM PASSIVE SOIL GAS SURVEY - TCE AND BREAKDOWN PRODUCTS

450 400 350 300 250 200 150 100 50 0

Color Scale (micrograms)

0 100' 200' 300' 400'

APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. TCE BREAKDOWN PRODUCTS INCLUDE cis-1,2-DICHLOROETHENE; trans-1,2-DICHLOROETHENE; 1,1-DICHLOROETHENE, AND VINYL CHLORIDE.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1				

PROJ:

FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

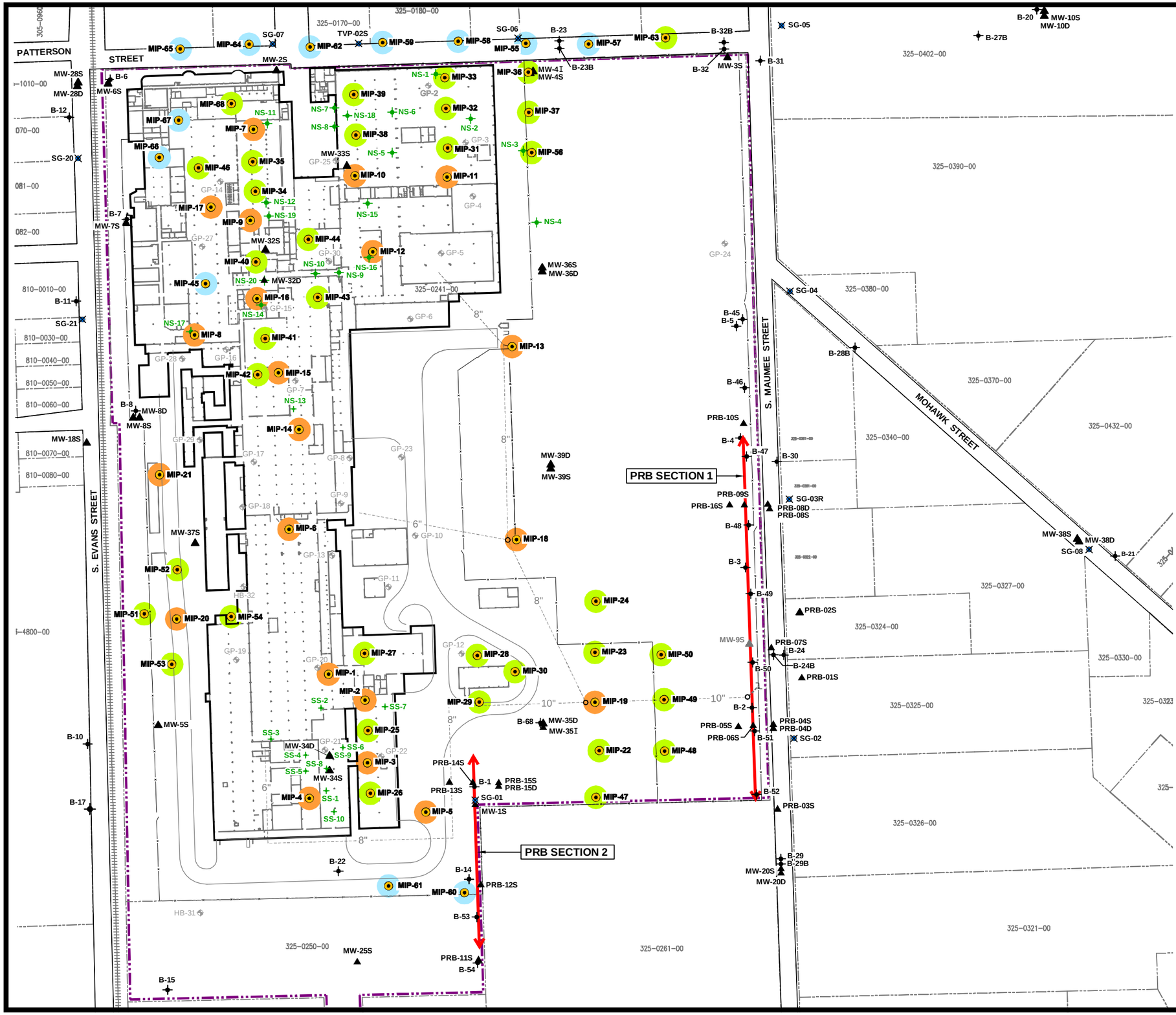
TITLE:

PROPOSED MIP LOCATIONS
MAY 2014

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.06.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 6
DATE:	DECEMBER 2014		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

PLOT DATA:
Drawing Name: J:\TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan\220003.0000.06.dwg
Operator Name: BTEWEJ, DWHH
Drawing Set Name: Default
Attached XrefN: bnd3293
Attached Images: 2640 Basso TCE-Residuums - Color Static, 2640 Basso TCE-Residuums - Color Range
Layout: Model Plot MP4
Dwg Size: 149 kb
Plot Date: December 31, 2014
Plot Time: 12:07 AM



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MIP KEY

- MIP LOCATION - PROPOSED MAY 2014
- MIP LOCATION - ORIGINALLY PROPOSED AS A HRSC GW PROFILE SAMPLE LOCATION
- ADDITIONAL MIP LOCATION STEP-OUT LOCATIONS

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1				

PROJ:
FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:
MIP INVESTIGATION LOCATIONS

DRAWN BY:	DGS	SCALE:	PROJ. NO. 220003.0000
CHECKED BY:	SEM	AS INDICATED	FILE NO. 220003.0000.07.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 7**
DATE:	DECEMBER 2014		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

PLOT DATA
Drawing Name: JL:\TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Work\pro\220003.0000.07.dwg
Operator Name: BTEHLE, SARAH
Drawing Plot Date: 12/30/2014
Dwg Size: 2.5'x 3in
Plot Date: December 31, 2014
Plot Time: 11:58 AM
Attached Xref's: bm255189
Attached Images: Layout: FIG07 MIP Investigation

PATTERSON STREET

S. EVANS STREET

S. MAUMEE STREET

MOHAWK STREET

PRB SECTION 1

PRB SECTION 2

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER
- OUTLINE OF PASSIVE SOIL GAS SURVEY AREAS WITH ELEVATED RESPONSE FOR TCE AND BREAKDOWN PRODUCTS

MAXIMUM ECD RESPONSE

- 16,000,000 uV
- 14,000,000 uV
- 12,000,000 uV
- 10,000,000 uV
- 8,000,000 uV
- 6,000,000 uV
- 4,000,000 uV
- 2,000,000 uV
- 0 uV

0 100' 200' 300' 400'

APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. TCE BREAKDOWN PRODUCTS INCLUDE cis-1,2-DICHLOROETHENE; trans-1,2-DICHLOROETHENE; 1,1-DICHLOROETHENE; AND VINYL CHLORIDE.
4. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ:

FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:

MIP INVESTIGATION RESULTS
LATERAL DISTRIBUTION OF MAXIMUM ECD RESPONSE

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.06.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 8
DATE:	FEBRUARY 2015		

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1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

Attached XrefsBackground: Ixn203.tifAttached Images: Figure 8cLayout: FIGURE 8 (MP for 8.5X3
Dwg Size: 2.64 kbPlot Date: February 17, 2015Plot Time: 2:04 PM
J:_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.06.dwg
BATCAVE
Drawing Name:Operator Name:Drawing Plot Mode:

PATTERSON STREET

S. EVANS STREET

S. MAUMEE STREET

MOHAWK STREET

PRB SECTION 1

PRB SECTION 2

N

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER
- OUTLINE OF PASSIVE SOIL GAS SURVEY AREAS WITH TCE AND BREAKDOWN ELEVATED RESPONSE FOR PRODUCTS

MAXIMUM ECD RESPONSE

- 15,898,923 uV
- 13,911,558 uV
- 11,924,192 uV
- 9,936,827 uV
- 7,949,462 uV
- 5,962,096 uV
- 3,974,931 uV
- 1,987,365 uV
- 0 uV

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. TCE BREAKDOWN PRODUCTS INCLUDE cis-1,2-DICHLOROETHENE; trans-1,2-DICHLOROETHENE; 1,1-DICHLOROETHENE; AND VINYL CHLORIDE.
4. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
5. VADOSE ZONE INCLUDES ALL DEPTHS FROM THE GROUND SURFACE TO THE MAXIMUM OBSERVED WATER TABLE (APPROXIMATELY 2 FEET ABOVE THE WATER TABLE AT THE TIME OF THE INVESTIGATION).

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ:

FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:

MIP INVESTIGATION RESULTS
DISTRIBUTION OF MAXIMUM ECD RESPONSE IN VADOSE ZONE

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.09.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 9
DATE:	FEBRUARY 2015		

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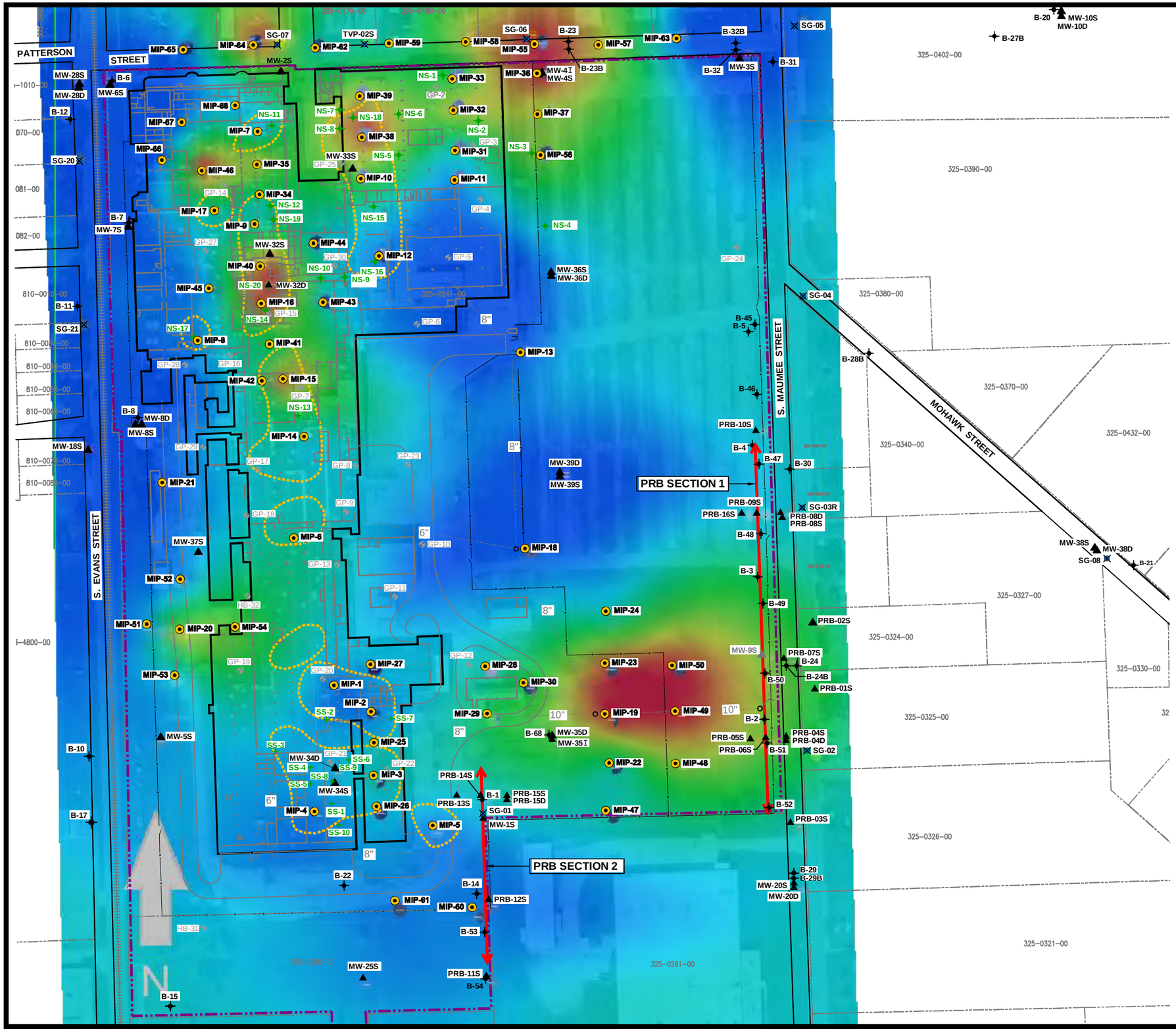
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

Attached Xref: bm203108
Attached Images: Figure 9c
Layout: FIG09 MIP Iso Volume
Dwg Size: 3.04 kb
Plot Date: February 17, 2015
Plot Time: 3:02 PM
J:_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.09.dwg
BUTZKE
Drawing Name:
Operator Name:
Drawing Ref Date:
0.000000



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER
- OUTLINE OF PASSIVE SOIL GAS SURVEY AREAS WITH ELEVATED RESPONSE FOR TCE AND BREAKDOWN PRODUCTS

MAXIMUM ECD RESPONSE

- 15,898,923 uV
- 13,911,558 uV
- 11,924,192 uV
- 9,936,827 uV
- 7,949,462 uV
- 5,962,096 uV
- 3,974,731 uV
- 1,987,365 uV
- 0 uV

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. TCE BREAKDOWN PRODUCTS INCLUDE cis-1,2-DICHLOROETHENE; trans-1,2-DICHLOROETHENE; 1,1-DICHLOROETHENE; AND VINYL CHLORIDE.
4. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
5. SATURATED ZONE INCLUDES ALL DEPTHS FROM THE MAXIMUM OBSERVED WATER TABLE (APPROXIMATELY 2 FEET ABOVE THE WATER TABLE AT THE TIME OF THE INVESTIGATION) TO THE SURFACE OF THE UNDERLYING CLAY CONFINING UNIT.

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ:

FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:

MIP INVESTIGATION RESULTS
DISTRIBUTION OF MAXIMUM ECD RESPONSE
IN SATURATED ZONE

DRAWN BY:	DGS	SCALE:	PROJ. NO. 220003.0000
CHECKED BY:	SEM	AS INDICATED	FILE NO. 220003.0000.10.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 10**
DATE:	FEBRUARY 2015		

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Ann Arbor, MI 48108
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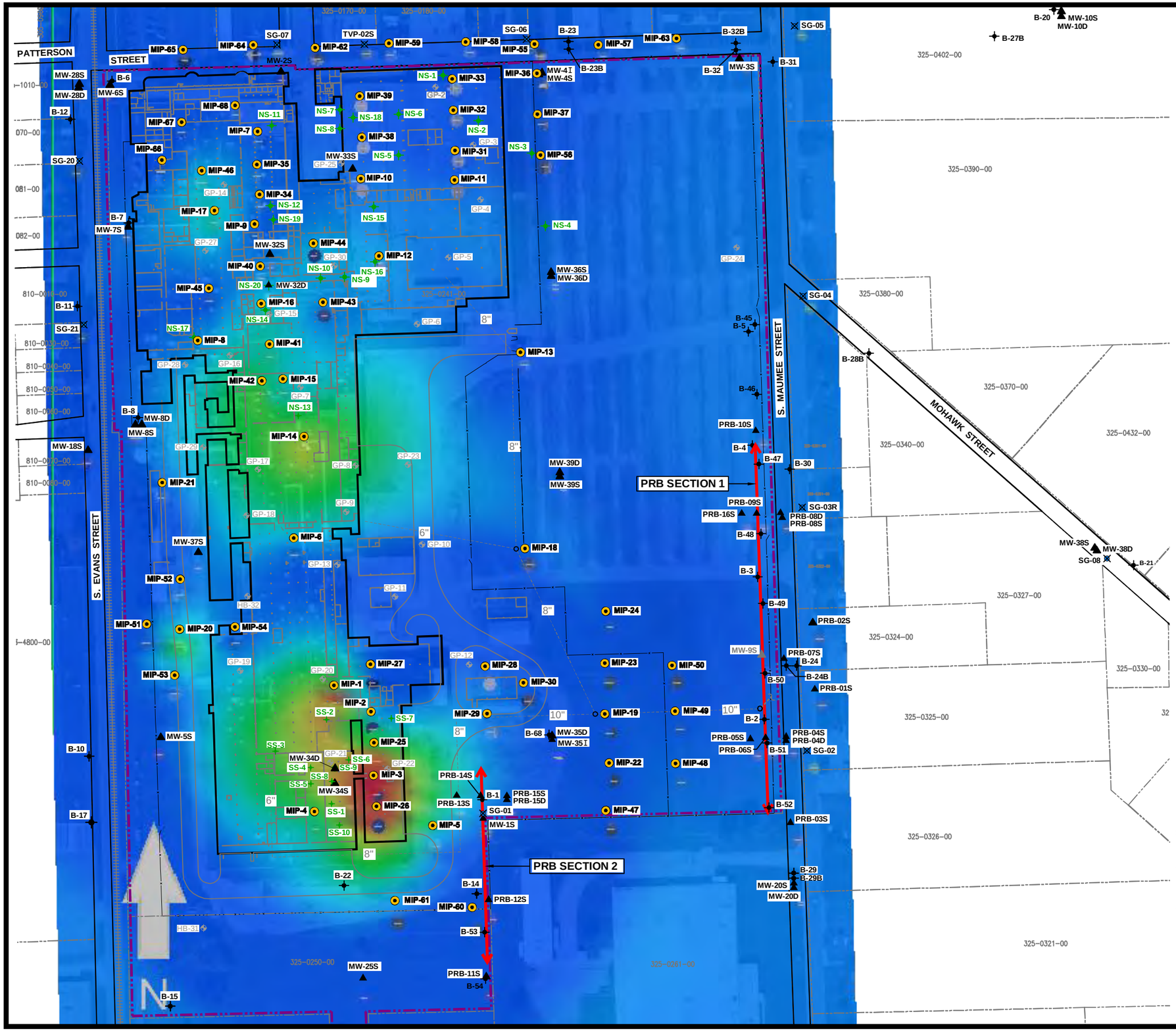
Fax: 734.971.9022

Attached Xref's: bm203108
Attached Images: Figure 10,
Layout: Fig10 MIP on Saturated
Dwg Size: 2.89 kb
Plot Date: February 17, 2015
Plot Time: 3:01 PM
J:_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.10.dwg
STEVE.GRAHAM
bm203108
AUTOCAD
Drawing Name:
Operator Name:
Drawing Plot Date:



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM ECD RESPONSE

- 15,898,923 uV
- 13,911,558 uV
- 11,924,192 uV
- 9,936,827 uV
- 7,949,462 uV
- 5,962,096 uV
- 3,974,731 uV
- 1,987,365 uV
- 0 uV

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
4. THE WATER TABLE USED FOR MAPPING PURPOSES IS THE WATER TABLE OBSERVED AT THE TIME OF THE INVESTIGATION. THIS WATER TABLE WAS APPROXIMATELY 2 FEET BELOW THE OBSERVED MINIMUM DEPTH TO GROUNDWATER.

NO.	BY	DATE	REVISION	APP'D
3				
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1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ: **FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN**

TITLE: **MIP INVESTIGATION RESULTS DISTRIBUTION OF MAXIMUM ECD RESPONSE >12 FEET ABOVE WATER TABLE**

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.11.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 11**
DATE:	FEBRUARY 2015		

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Ann Arbor, MI 48108
Phone: 734.971.7080
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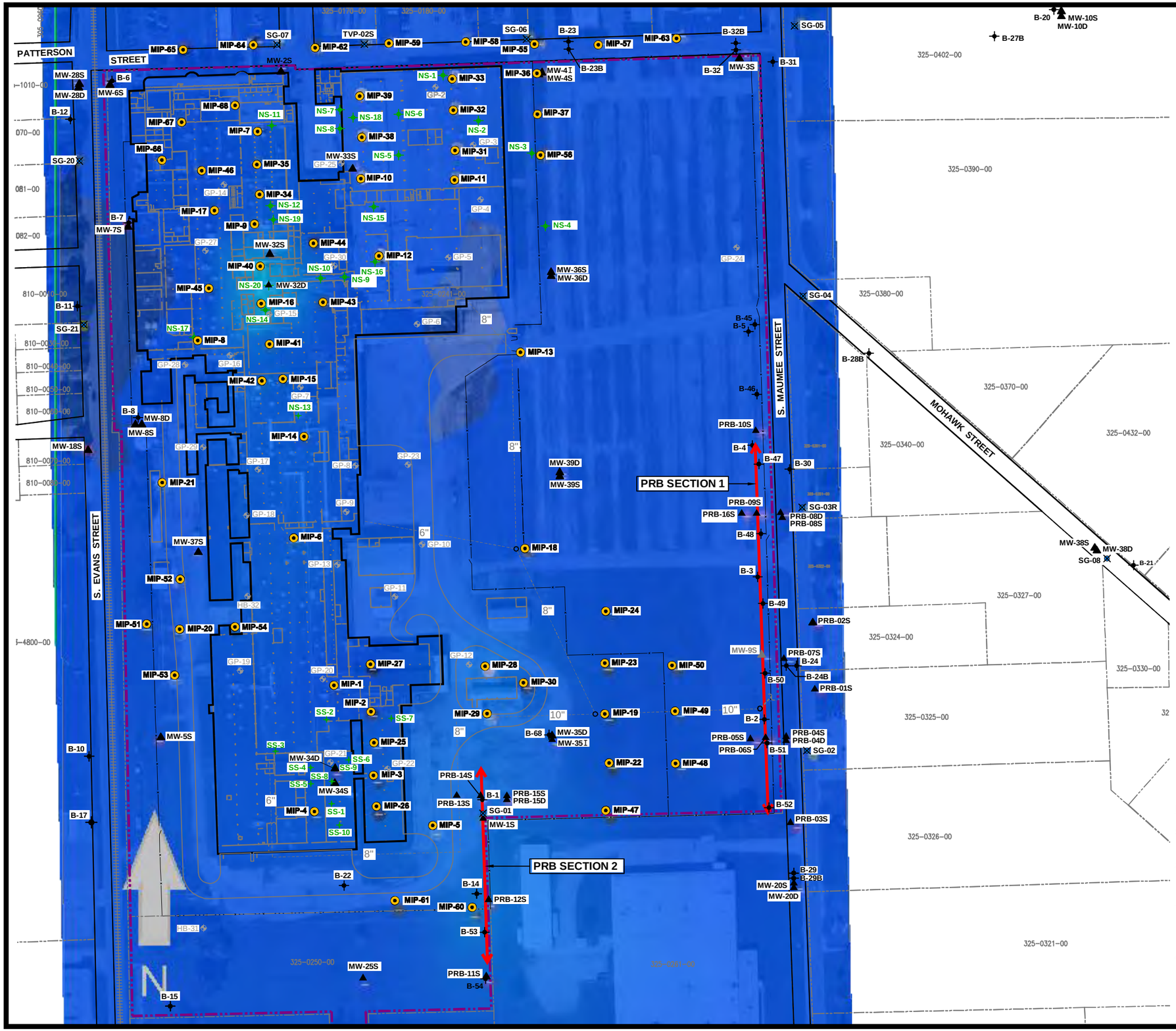
Attached Image: bm203108
Attached Image: Figure 11
Layout: FIG11 Tab=Fin 13= Above WT
Dwg Size: 2.33 kb
Plot Date: February 17, 2015
Plot Time: 3:01 PM
J:_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.11.dwg
BTEHLE, DANAH
Drawing Name:
Operator Name:
Drawing Plot Date:
PLOT DATA



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM ECD RESPONSE

- 3,063,896 uV
- 2,680,909 uV
- 2,297,922 uV
- 1,914,935 uV
- 1,531,948 uV
- 1,148,961 uV
- 765,974 uV
- 382,987 uV
- 0 uV

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
4. THE WATER TABLE USED FOR MAPPING PURPOSES IS THE WATER TABLE OBSERVED AT THE TIME OF THE INVESTIGATION. THIS WATER TABLE WAS APPROXIMATELY 2 FEET BELOW THE OBSERVED MINIMUM DEPTH TO GROUNDWATER.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ: **FORMER TECUMSEH PRODUCTS SITE**
TECUMSEH, MICHIGAN

TITLE: **MIP INVESTIGATION RESULTS**
DISTRIBUTION OF MAXIMUM ECD RESPONSE
7 TO 12 FEET ABOVE WATER TABLE

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.12.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 12
DATE:	FEBRUARY 2015		

TRC
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Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

Attached Image: bw203189
Attached Images: Figure 12; Figure 13_and 7-12 above wt; Layout: FIG12 MIP 7to12 Above WT
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Plot Date: February 09, 2015
Plot Time: 7:13 AM
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BRYDEN, DANIAH
Operator Name: 0.00000
Drawing Plot Scale:
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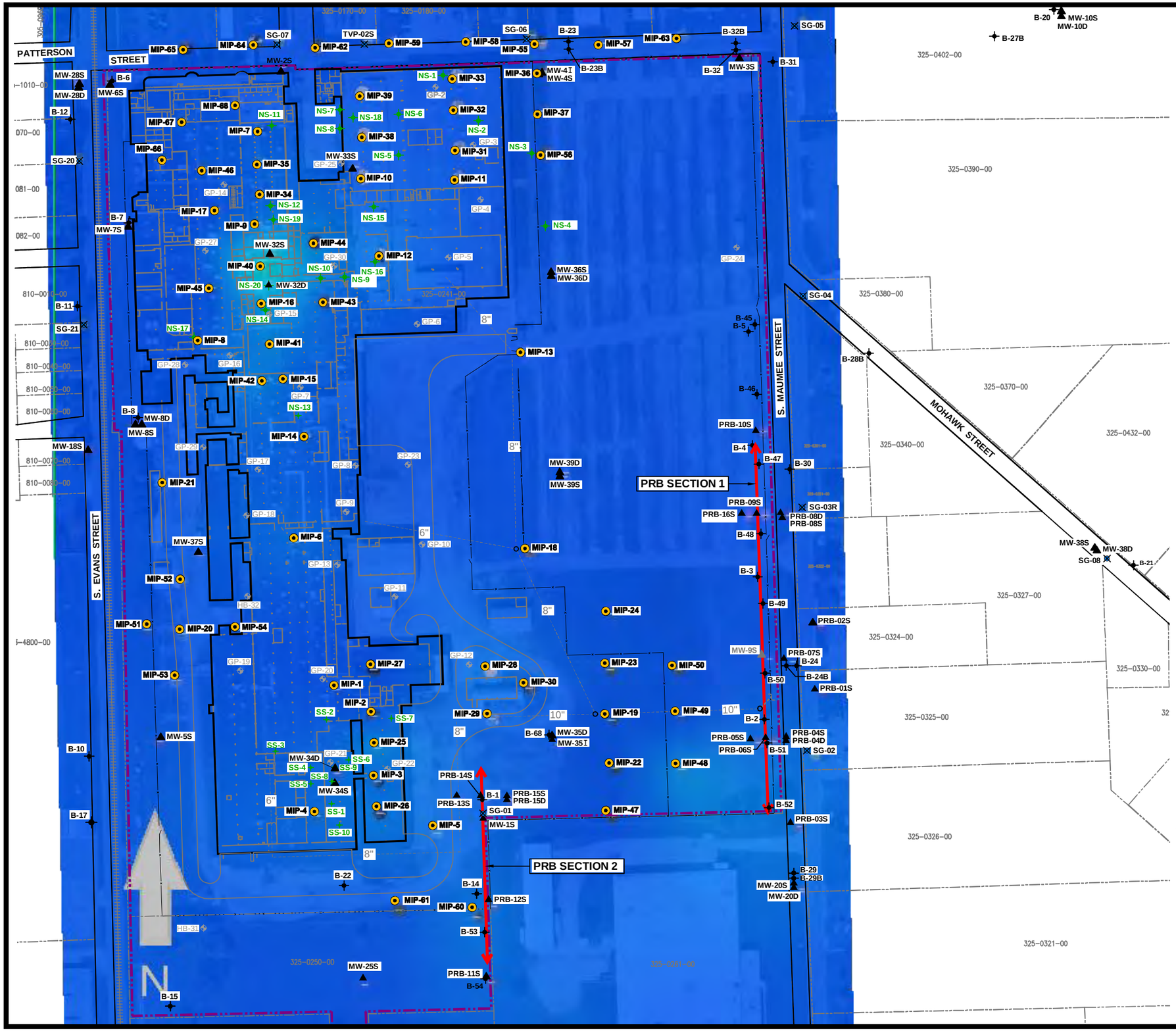
Drawing Name:



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM ECD RESPONSE

- 3,926,946 uV
- 3,436,078 uV
- 2,945,210 uV
- 2,454,341 uV
- 1,963,473 uV
- 1,472,605 uV
- 981,737 uV
- 490,868 uV
- 0 uV

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
4. THE WATER TABLE USED FOR MAPPING PURPOSES IS THE WATER TABLE OBSERVED AT THE TIME OF THE INVESTIGATION. THIS WATER TABLE WAS APPROXIMATELY 2 FEET BELOW THE OBSERVED MINIMUM DEPTH TO GROUNDWATER.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ:

FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:

MIP INVESTIGATION RESULTS
DISTRIBUTION OF MAXIMUM ECD RESPONSE
2 TO 7 FEET ABOVE WATER TABLE

DRAWN BY:	DGS	SCALE:	PROJ. NO. 220003.0000
CHECKED BY:	SEM	AS INDICATED	FILE NO. 220003.0000.13.dwg
APPROVED BY:	GC	DATE PRINTED:	
DATE:	FEBRUARY 2015		FIGURE 13

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Attached Image: Image3.tif
Attached Image: Figure 13, Layout: FIG13 MIP thru 2-7 Above WT
Dwg Size: 3.25 Mb
Plot Date: February 09, 2015
Plot Time: 7:23 AM
J:_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.13.dwg
BTEHLE, DANAH
Drawing Name: 220003.0000
Operator Name:
Drawing Plot Date:
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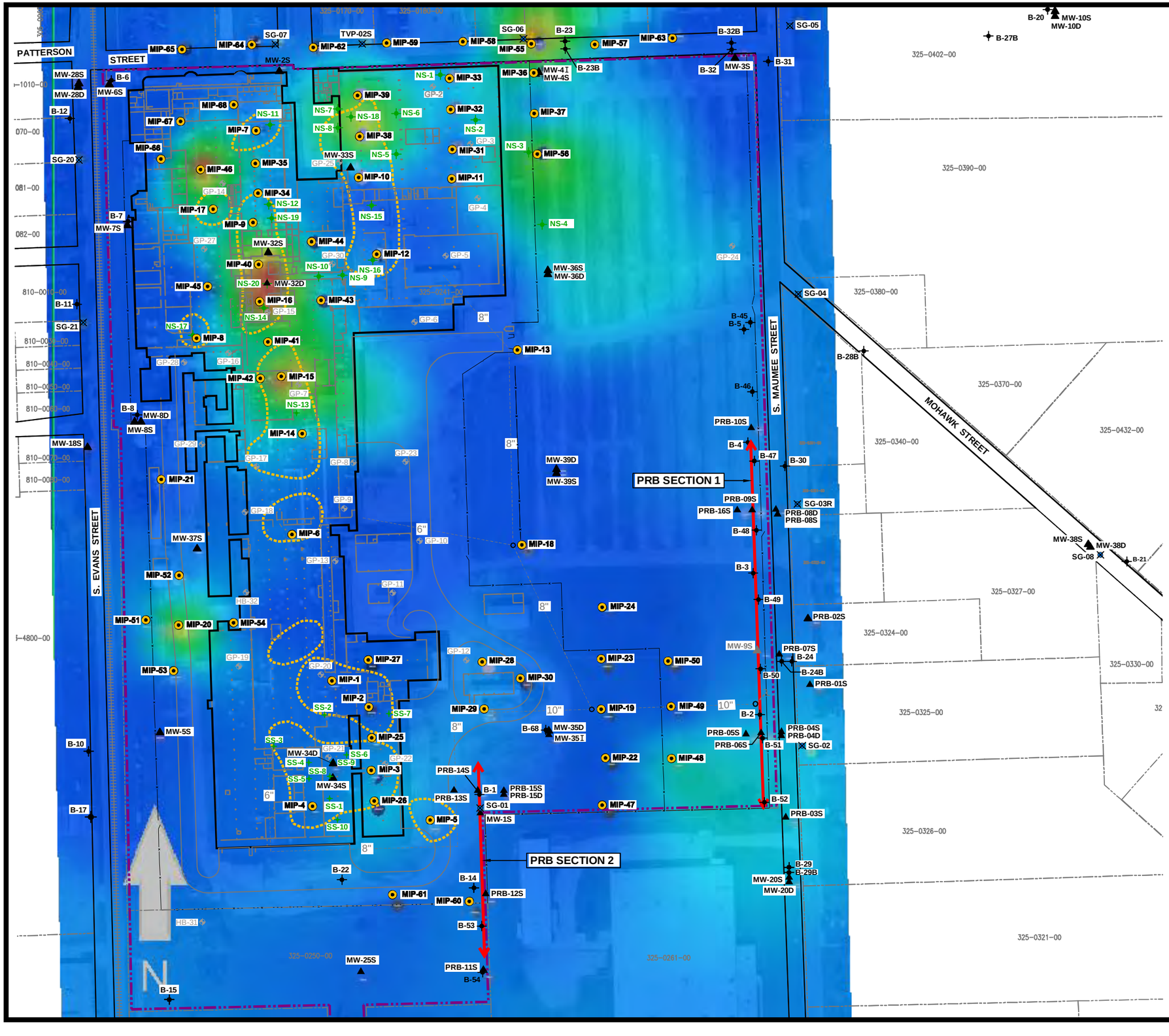

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER
- OUTLINE OF PASSIVE SOIL GAS SURVEY AREAS WITH ELEVATED RESPONSE FOR TCE AND BREAKDOWN PRODUCTS

MAXIMUM ECD RESPONSE

- 14,663,516 uV
- 12,830,577 uV
- 10,997,637 uV
- 9,164,698 uV
- 7,331,758 uV
- 5,498,819 uV
- 3,665,879 uV
- 1,832,940 uV
- 0 uV

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. TCE BREAKDOWN PRODUCTS INCLUDE cis-1,2-DICHLOROETHENE; trans-1,2-DICHLOROETHENE; 1,1-DICHLOROETHENE; AND VINYL CHLORIDE.
4. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
5. THE WATER TABLE WAS APPROXIMATELY 2 FEET BELOW THE OBSERVED MINIMUM DEPTH TO GROUNDWATER. ECD RESPONSE AT THE WATER TABLE INCLUDES DEPTHS FROM 2 FEET ABOVE THE WATER TABLE (MINIMUM OBSERVED DEPTH TO GROUNDWATER) TO 3 FEET BELOW THE WATER TABLE.

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ:
FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:
MIP INVESTIGATION RESULTS
DISTRIBUTION OF MAXIMUM ECD RESPONSE
AT WATER TABLE

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.14.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 14**
DATE:	FEBRUARY 2015		

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Ann Arbor, MI 48108
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Fax: 734.971.9022

Attached Xrefs: bm203199
Attached Images: Figure 14,
Layout: PRB14 Water Table
Dwg Size: 2.55 kb
Plot Date: February 19, 2015
Plot Time: 7:59 AM
PLOTDATA
Drawing Name: JL_TRC\Tecumseh Products\Tecumseh MI\220003\000_2014 Workplan Rev 1\220003.0000.14.dwg
Operator Name: STEVE DAHAH
Drawing Plot Date: 02/19/15

PATTERSON STREET

S. EVANS STREET

S. MAUMEE STREET

MOHAWK STREET

PRB SECTION 1

PRB SECTION 2

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM ECD RESPONSE

- 15,453,840 uV
- 13,522,110 uV
- 11,590,380 uV
- 9,658,650 uV
- 7,726,920 uV
- 5,795,190 uV
- 3,863,460 uV
- 1,931,730 uV
- 0 uV

N

0 100' 200' 300' 400'

APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
4. THE WATER TABLE USED FOR MAPPING PURPOSES IS THE WATER TABLE OBSERVED AT THE TIME OF THE INVESTIGATION. THIS WATER TABLE WAS APPROXIMATELY 2 FEET BELOW THE OBSERVED MINIMUM DEPTH TO GROUNDWATER.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ:

FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:

MIP INVESTIGATION RESULTS
DISTRIBUTION OF MAXIMUM ECD RESPONSE
3 TO 8 FEET BELOW WATER TABLE

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.15.dwg
APPROVED BY:	GC	DATE PRINTED:	
DATE:	FEBRUARY 2015		FIGURE 15

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Attached XrefsImages: Icn220108 Figure 15; Layout: FIG15 GW 3 to 8 ft Below WT
Dwg Size: 2.39 Mb Plot Date: February 09, 2015 Plot Time: 7:11 AM
J:_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.15.dwg
ELEVATION Drawing Name: Operator Name: Drawing Ref Date: 0.000000

PATTERSON STREET

S. EVANS STREET

S. MAUMEE STREET

MOHAWK STREET

PRB SECTION 1

PRB SECTION 2

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM ECD RESPONSE

- 16,000,000 uV
- 14,000,000 uV
- 12,000,000 uV
- 10,000,000 uV
- 8,000,000 uV
- 6,000,000 uV
- 4,000,000 uV
- 2,000,000 uV
- 0 uV

N

0 100' 200' 300' 400'

APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
4. THE WATER TABLE USED FOR MAPPING PURPOSES IS THE WATER TABLE OBSERVED AT THE TIME OF THE INVESTIGATION. THIS WATER TABLE WAS APPROXIMATELY 2 FEET BELOW THE OBSERVED MINIMUM DEPTH TO GROUNDWATER.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ:

FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:

MIP INVESTIGATION RESULTS
DISTRIBUTION OF MAXIMUM ECD RESPONSE
8 TO 13 FEET BELOW WATER TABLE

DRAWN BY:	DGS	SCALE:	PROJ. NO. 220003.0000
CHECKED BY:	SEM	AS INDICATED	FILE NO. 220003.0000.16.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 16**
DATE:	FEBRUARY 2015		

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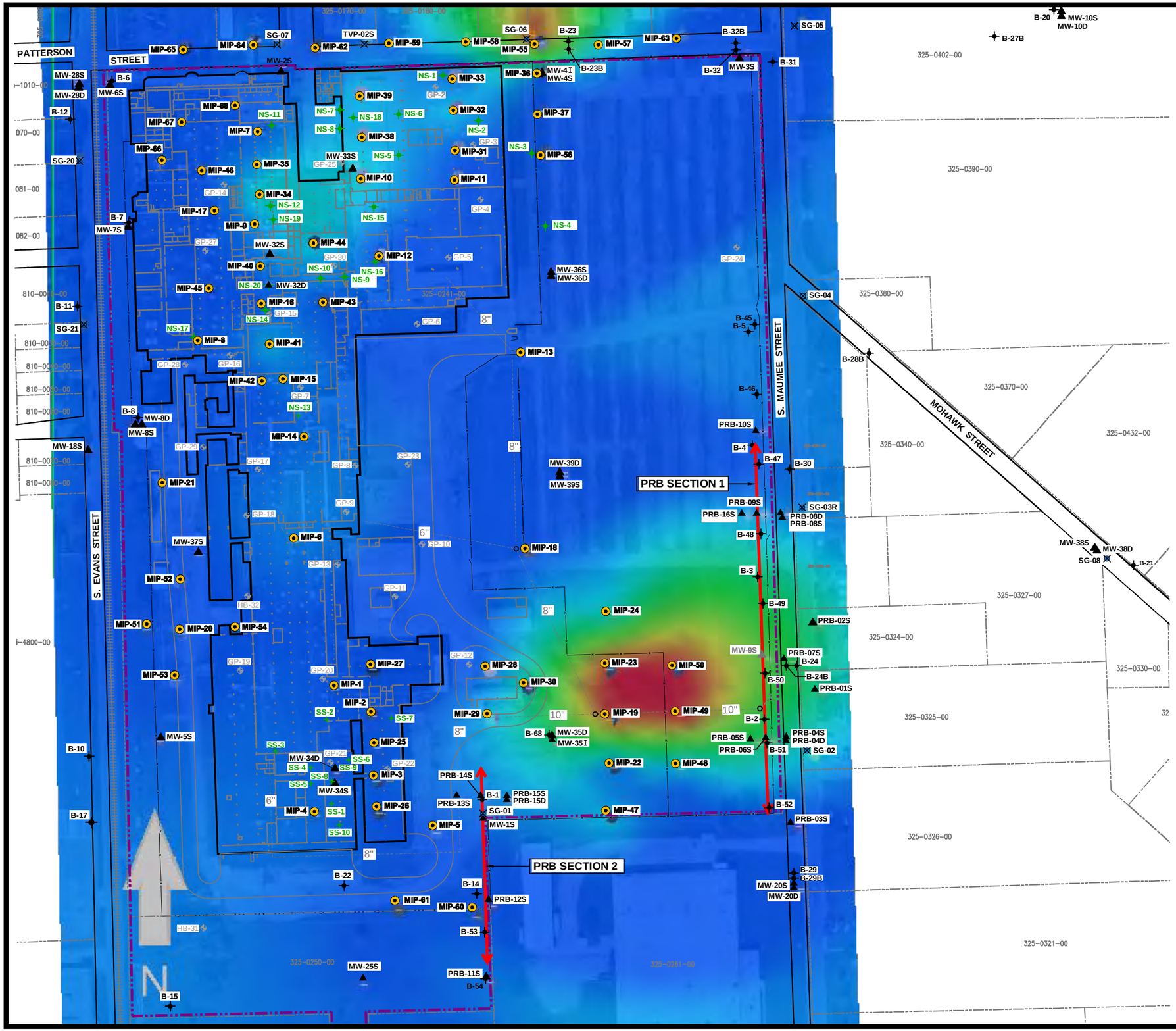
AUTOCAD
Drawing Name: J:_TRC\Tecumseh Products\Tecumseh MI\220003\0000_EHA Workplan Rev 1\220003.0000.16.dwg
Operator Name: BTEHLE, SAHAH
Drawing Plot Date: 0.000000

Attached Xref: bm220189
Attached Images: Figure 16,
Layout: PRB19 MIP Inv 8-13 Below WT

Dwg Size: 2.67 Mb
Plot Date: February 19, 2015
Plot Time: 7:52 AM



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM ECD RESPONSE

- 16,000,000 uV
- 14,000,000 uV
- 12,000,000 uV
- 10,000,000 uV
- 8,000,000 uV
- 6,000,000 uV
- 4,000,000 uV
- 2,000,000 uV
- 0 uV

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
4. THE WATER TABLE USED FOR MAPPING PURPOSES IS THE WATER TABLE OBSERVED AT THE TIME OF THE INVESTIGATION. THIS WATER TABLE WAS APPROXIMATELY 2 FEET BELOW THE OBSERVED MINIMUM DEPTH TO GROUNDWATER.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ:
FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:
MIP INVESTIGATION RESULTS
DISTRIBUTION OF MAXIMUM ECD RESPONSE
13 TO 18 FEET BELOW WATER TABLE

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.17.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 17**
DATE:	FEBRUARY 2015		

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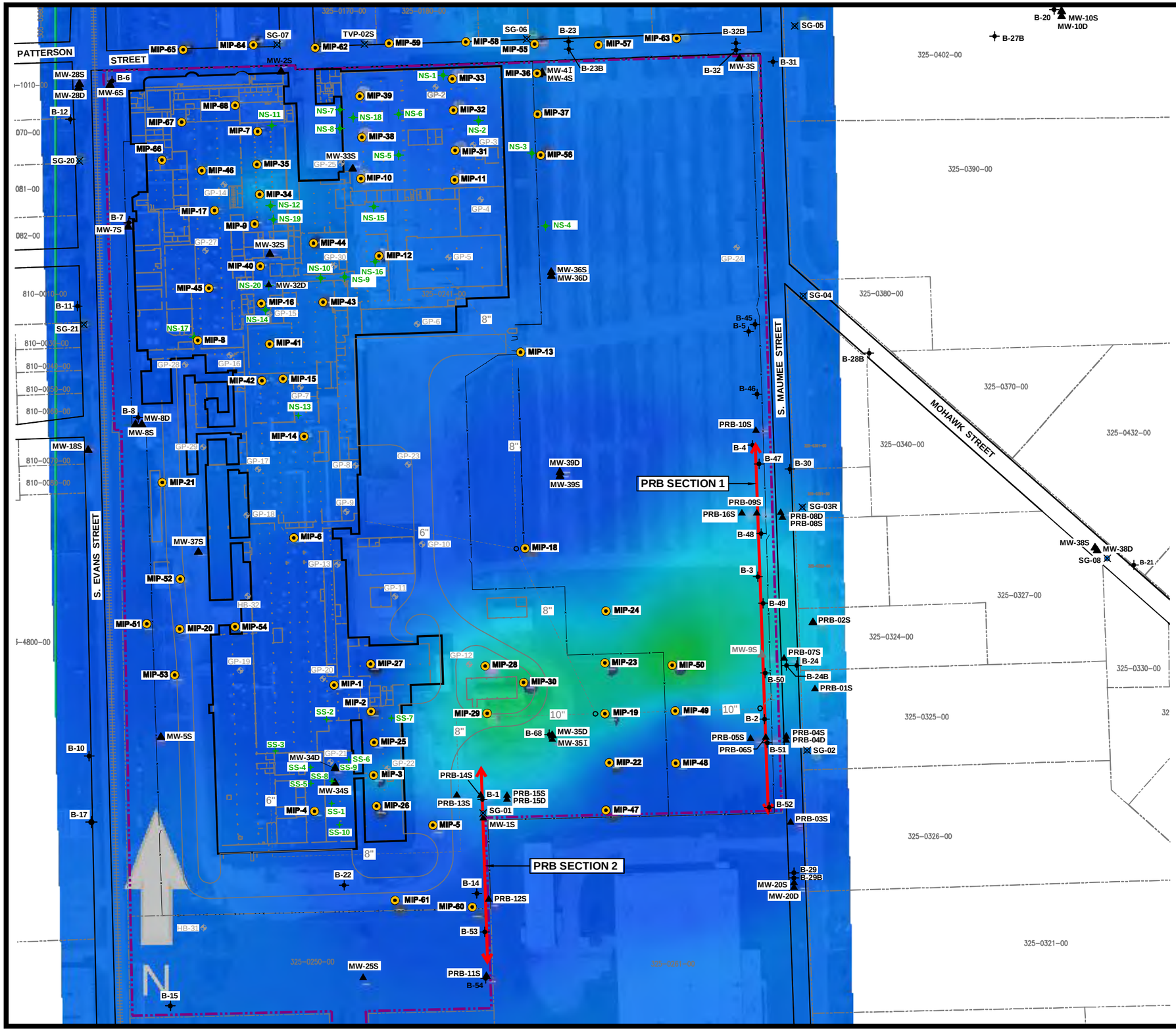
Fax: 734.971.9022

AUTOCAD
Drawing Name: JL_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.17.dwg
Operator Name: BTEHLE, GANAH
Drawing Pot Date: 2/18/2015
Attached Xref: bm203189
Attached Images: Figure 17: PSOT1 GIF rev at 13-18 Below WT
Layout: PSOT1 GIF rev at 13-18 Below WT
Dwg Size: 2.33 Mb
Plot Date: February 19, 2015
Plot Time: 8:08 AM



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM ECD RESPONSE

- 7,970,415 uV
- 6,974,113 uV
- 5,977,811 uV
- 4,981,509 uV
- 3,985,207 uV
- 2,988,905 uV
- 1,992,604 uV
- 996,302 uV
- 0 uV

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
4. THE WATER TABLE USED FOR MAPPING PURPOSES IS THE WATER TABLE OBSERVED AT THE TIME OF THE INVESTIGATION. THIS WATER TABLE WAS APPROXIMATELY 2 FEET BELOW THE OBSERVED MINIMUM DEPTH TO GROUNDWATER.
5. MIP RESPONSES AT OR BELOW THE UNDERLYING CLAY CONFINING UNIT ARE NOT INCLUDED IN THIS VISUALIZATION.

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ: **FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN**

TITLE: **MIP INVESTIGATION RESULTS DISTRIBUTION OF MAXIMUM ECD RESPONSE 18 TO 23 FEET BELOW WATER TABLE**

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.18.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 18**
DATE:	FEBRUARY 2015		

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Attached Image: Figure 18_ Attached Image: Layout: Fig18 MIP Inv at 18-23 Below WT
Dwg Size: 2.39 kb Plot Date: February 19, 2015 Plot Time: 8:25 AM
J:_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.18.dwg
PLOTTED: Drawing Name: Operator Name: Drawing Plot Mode:

PATTERSON STREET

S. EVANS STREET

S. MAUMEE STREET

MOHAWK STREET

PRB SECTION 1

PRB SECTION 2

MW-2S MW-28S MW-28D MW-6S MW-7S MW-5S MW-8S MW-8D MW-18S MW-37S MW-25S MW-32S MW-32D MW-33S MW-35D MW-35I MW-34D MW-36S MW-36D MW-39D MW-39S MW-4I MW-4S MW-3S MW-9S MW-10S MW-10D MW-38S MW-38D MW-20S MW-20D

B-6 B-12 B-20S B-7 B-11 B-21 B-8 B-10 B-17 B-15 B-22 B-14 B-53 B-54 B-23B B-32 B-32B B-31 B-27B B-45 B-5 B-28B B-46 B-4 B-47 B-30 B-48 B-3 B-49 B-50 B-2 B-24 B-24B B-51 B-52 B-29 B-29B B-68

SG-05 SG-07 SG-06 SG-04 SG-03R SG-08 SG-02 SG-01

TVP-02S

PRB-10S PRB-09S PRB-16S PRB-08D PRB-08S PRB-07S PRB-01S PRB-04S PRB-04D PRB-05S PRB-06S PRB-14S PRB-13S PRB-15S PRB-15D PRB-12S PRB-11S PRB-02S PRB-03S

MIP-65 MIP-64 MIP-62 MIP-59 MIP-58 MIP-55 MIP-57 MIP-63 MIP-36 MIP-33 MIP-39 MIP-32 MIP-37 MIP-38 MIP-31 MIP-56 MIP-68 MIP-67 MIP-7 MIP-66 MIP-46 MIP-35 MIP-34 MIP-17 MIP-9 MIP-44 MIP-12 MIP-40 MIP-45 MIP-16 MIP-43 MIP-8 MIP-41 MIP-42 MIP-15 MIP-14 MIP-21 MIP-6 MIP-18 MIP-52 MIP-51 MIP-20 MIP-54 MIP-53 MIP-27 MIP-1 MIP-2 MIP-25 MIP-3 MIP-26 MIP-4 MIP-5 MIP-61 MIP-60 MIP-10 MIP-11 MIP-28 MIP-30 MIP-29 MIP-19 MIP-49 MIP-22 MIP-48 MIP-23 MIP-50 MIP-24 MIP-47

NS-1 NS-2 NS-3 NS-4 NS-5 NS-6 NS-7 NS-8 NS-9 NS-10 NS-11 NS-12 NS-13 NS-14 NS-15 NS-16 NS-17 NS-18 NS-19 NS-20

SS-1 SS-2 SS-3 SS-4 SS-5 SS-6 SS-7 SS-8 SS-9 SS-10

GP-2 GP-3 GP-4 GP-5 GP-6 GP-7 GP-8 GP-9 GP-10 GP-11 GP-12 GP-13 GP-14 GP-15 GP-16 GP-17 GP-18 GP-19 GP-20 GP-21 GP-22 GP-23 GP-24 GP-25 GP-27 GP-28 GP-29 GP-30

HB-31 HB-32

325-0170-00 325-0180-00 325-0241-00 325-0402-00 325-0390-00 325-0380-00 325-0370-00 325-0340-00 325-0432-00 325-0327-00 325-0324-00 325-0330-00 325-0325-00 325-0326-00 325-0321-00 325-0250-00 325-0261-00

1010-00 070-00 081-00 082-00 810-0000-00 810-0010-00 810-0020-00 810-0030-00 810-0040-00 810-0050-00 810-0060-00 4800-00

8" 6" 10"

N

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM ECD RESPONSE

- 14,182,615 uV
- 12,409,788 uV
- 10,636,961 uV
- 8,864,134 uV
- 7,091,308 uV
- 5,318,481 uV
- 3,545,654 uV
- 1,772,827 uV
- 0 uV

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
4. THE WATER TABLE USED FOR MAPPING PURPOSES IS THE WATER TABLE OBSERVED AT THE TIME OF THE INVESTIGATION. THIS WATER TABLE WAS APPROXIMATELY 2 FEET BELOW THE OBSERVED MINIMUM DEPTH TO GROUNDWATER.
5. MIP RESPONSES AT OR BELOW THE UNDERLYING CLAY CONFINING UNIT ARE NOT INCLUDED IN THIS VISUALIZATION.

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ: FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE: MIP INVESTIGATION RESULTS
DISTRIBUTION OF MAXIMUM ECD RESPONSE
23 TO 28 FEET BELOW WATER TABLE

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.19.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 19
DATE:	FEBRUARY 2015		

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Phone: 734.971.7080
Fax: 734.971.9022

Attached Xrefs: tec025199
Attached Images: Figure 19_
Layout: PG19 GW Elev at 25-28 Below WT

Dwg Size: 2.33 Mb
Plot Date: February 19, 2015
Plot Time: 8:29 AM

PLOTDATA
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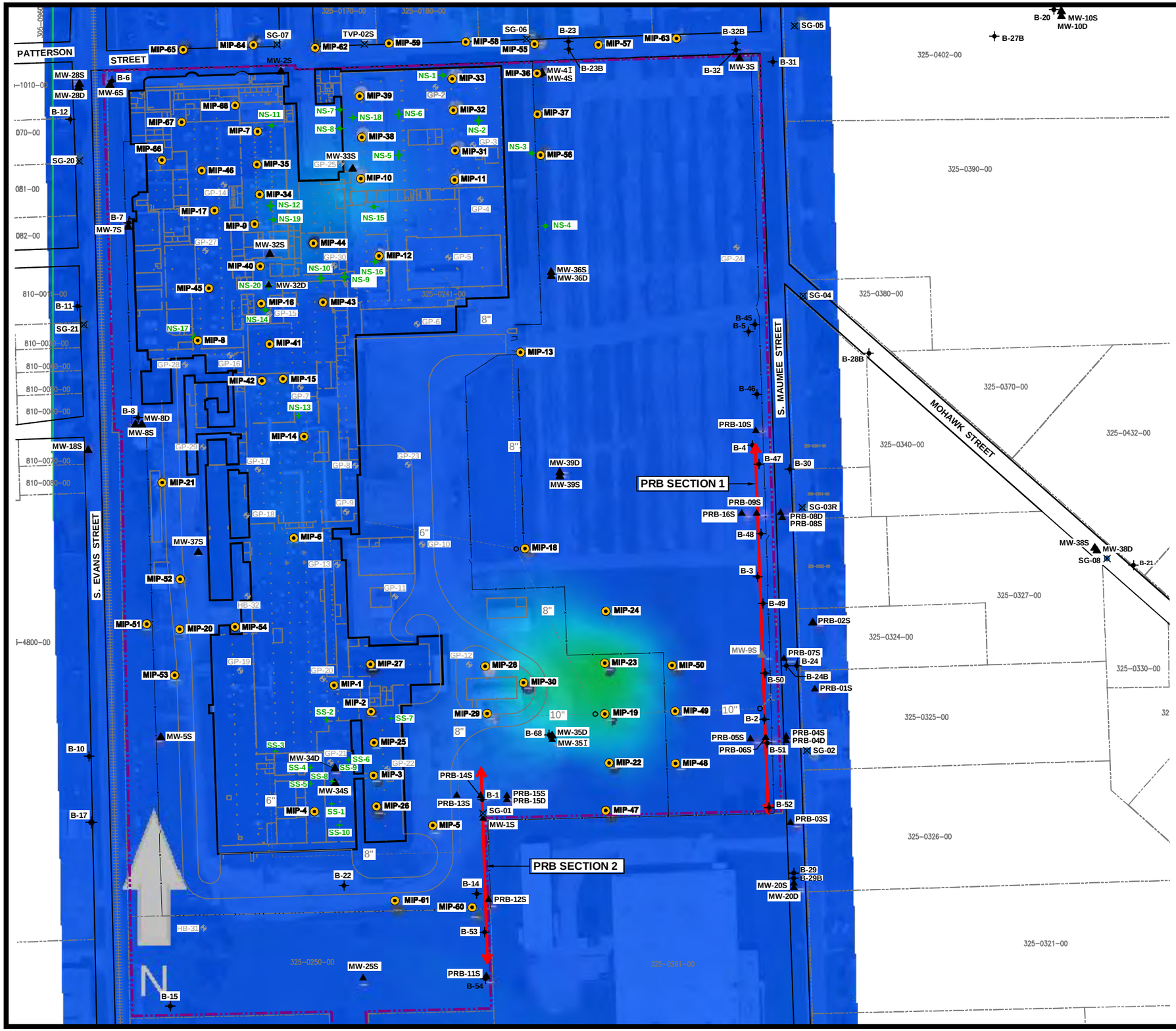
Operator Name: STEVE_DAHAH
Drawing Plot Date: 02/19/15



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM ECD RESPONSE

- 7,064,204 uV
- 6,181,178 uV
- 5,298,153 uV
- 4,415,127 uV
- 3,532,102 uV
- 2,649,076 uV
- 1,766,051 uV
- 883,025 uV
- 0 uV

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
4. MIP RESPONSES MAPPED INCLUDE DATA COLLECTED FROM 0.1 FEET BELOW TO 0.3 FEET ABOVE THE INTERFACE BETWEEN THE AQUIFER AND THE CLAY CONFINING UNIT.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ: FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE: MIP INVESTIGATION RESULTS
DISTRIBUTION OF ECD RESPONSE AT
INTERFACE OF CLAY CONFINING UNIT

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.20.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 20
DATE:	FEBRUARY 2015		

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Attached Image: bm203189
Attached Image: Figure 20_
Layout: FIG20 MIP Inv at Interface of CC Unit
Dwg Size: 2.69 kb
Plot Date: February 19, 2015
Plot Time: 8:43 AM
J:_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.20.dwg
STEVE.D.GAHAH
Date/Time
Drawing Name:
Operator Name:
Drawing Ref Date:

PATTERSON STREET

S. EVANS STREET

S. MAUMEE STREET

MOHAWK STREET

PRB SECTION 1

PRB SECTION 2

MIP-65 MIP-64 SG-07 MIP-62 TVP-02S MIP-59 MIP-58 SG-06 MIP-55 B-23 MIP-57 MIP-63 B-32B SG-05

MW-2S MW-28S MW-28D B-6 MW-6S B-12 MIP-68 MIP-67 MIP-7 MIP-66 SG-20 MIP-46 MIP-35 MIP-34 MIP-17 B-7 MW-7S MIP-9 MW-32S MIP-44 MIP-40 MIP-45 MW-32D MIP-16 B-11 SG-21 MIP-8 MIP-41 MIP-42 MIP-15 B-8 MW-8D MW-8S MW-18S MIP-14 MIP-21

NS-1 MIP-33 MIP-36 MW-4I MW-4S B-23B B-32 MW-3S B-31 MIP-39 GP-2 NS-7 NS-18 NS-6 MIP-32 NS-11 NS-8 NS-2 MIP-38 GP-3 NS-3 MIP-37 MIP-31 NS-5 MW-33S GP-25 MIP-56 MIP-10 MIP-11 GP-14 NS-12 NS-19 NS-15 GP-4 NS-4 GP-27 GP-30 GP-5 MIP-12 NS-10 NS-16 NS-9 MW-36S MW-36D NS-20 GP-15 NS-14 GP-6 8" B-45 B-5 NS-17 MIP-13 GP-28 GP-16 B-46 GP-7 NS-13 PRB-10S GP-29 GP-17 GP-8 GP-23 8" MW-39D MW-39S B-4 B-47 B-30 PRB-09S PRB-16S SG-03R PRB-08D PRB-08S B-48 MW-38S MW-38D SG-08 B-21 B-3 B-49 PRB-02S MW-9S PRB-07S B-24 B-24B B-50 PRB-01S B-2 PRB-05S PRB-04S PRB-04D PRB-06S B-51 SG-02 B-52 PRB-03S B-29 B-29B MW-20S MW-20D

MW-5S B-10 SS-3 MW-34D GP-21 SS-6 SS-4 SS-9 SS-8 MIP-3 SS-5 MW-34S 6" MIP-4 SS-1 SS-10 MIP-26 B-17 MIP-5 PRB-14S B-1 PRB-15S PRB-15D PRB-13S SG-01 MW-1S MIP-47 8" B-22 B-14 PRB-12S MIP-61 MIP-60 B-53 PRB-11S B-54 B-15 MW-25S HB-31 325-0250-00

MIP-52 MIP-51 MIP-20 MIP-54 MIP-53 MIP-27 MIP-28 MIP-30 MIP-1 MIP-2 SS-2 SS-7 MIP-29 10" MIP-19 MIP-49 MIP-50 MIP-23 MIP-24 MIP-25 MIP-22 MIP-48 MIP-6 MW-37S MIP-18 GP-9 GP-18 GP-10 GP-13 GP-11 HB-32 GP-19 GP-20 GP-12 8" 10" B-68 MW-35D MW-35I

325-0402-00 325-0390-00 325-0380-00 325-0370-00 325-0340-00 325-0432-00 325-0327-00 325-0324-00 325-0330-00 325-0325-00 325-0326-00 325-0321-00 325-0241-00 325-0170-00 325-0180-00

B-20 MW-10S MW-10D B-27B

LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM ECD RESPONSE

- 4,723,914 uV
- 4,133,424 uV
- 3,542,935 uV
- 2,952,446 uV
- 2,361,957uV
- 1,771,468 uV
- 1,180,978 uV
- 590,489 uV
- 0 uV

N

0 100' 200' 300' 400'

APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF ECD RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
4. MIP RESPONSES MAPPED INCLUDE ALL DATA COLLECTED BELOW THE INTERFACE BETWEEN THE AQUIFER AND THE CLAY CONFINING UNIT.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

PROJ: FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE: MIP INVESTIGATION RESULTS
DISTRIBUTION OF ECD RESPONSE
IN CLAY CONFINING UNIT

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.21.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 21
DATE:	FEBRUARY 2015		

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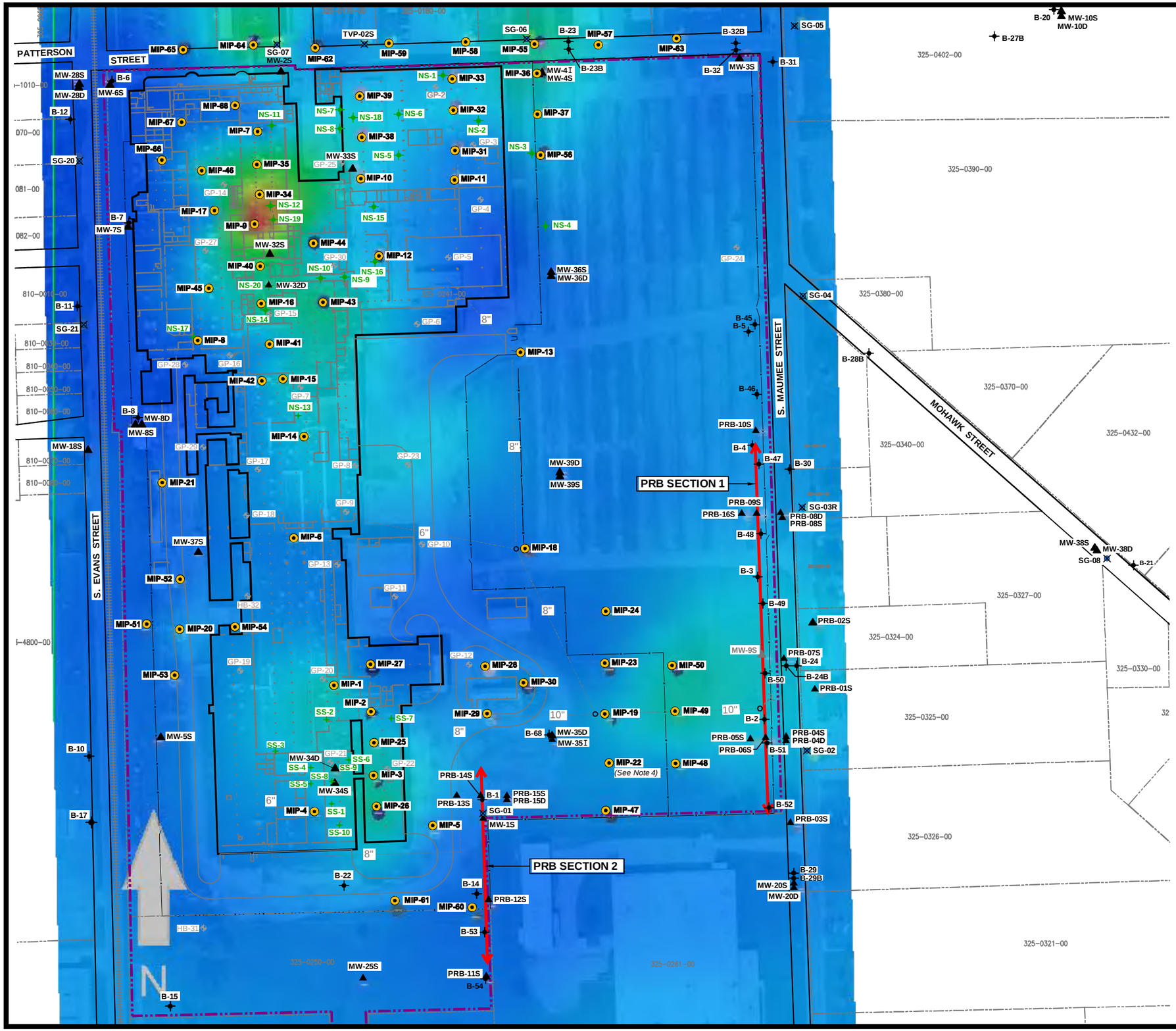
Fax: 734.971.9022

Attached XrefsImages: Layout: Drawing Name: Operator Name: Drawing Path Name: Drawing Size: Plot Date: Plot Time:



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM PID RESPONSE

- 3,098,207 uV
- 2,710,931 uV
- 2,323,655 uV
- 1,936,380 uV
- 1,549,104 uV
- 1,161,828 uV
- 774,552 uV
- 387,276 uV
- 0 uV

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF PID RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.
4. PID NOT WORKING PROPERLY AT THIS LOCATION. DATA NOT USED.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

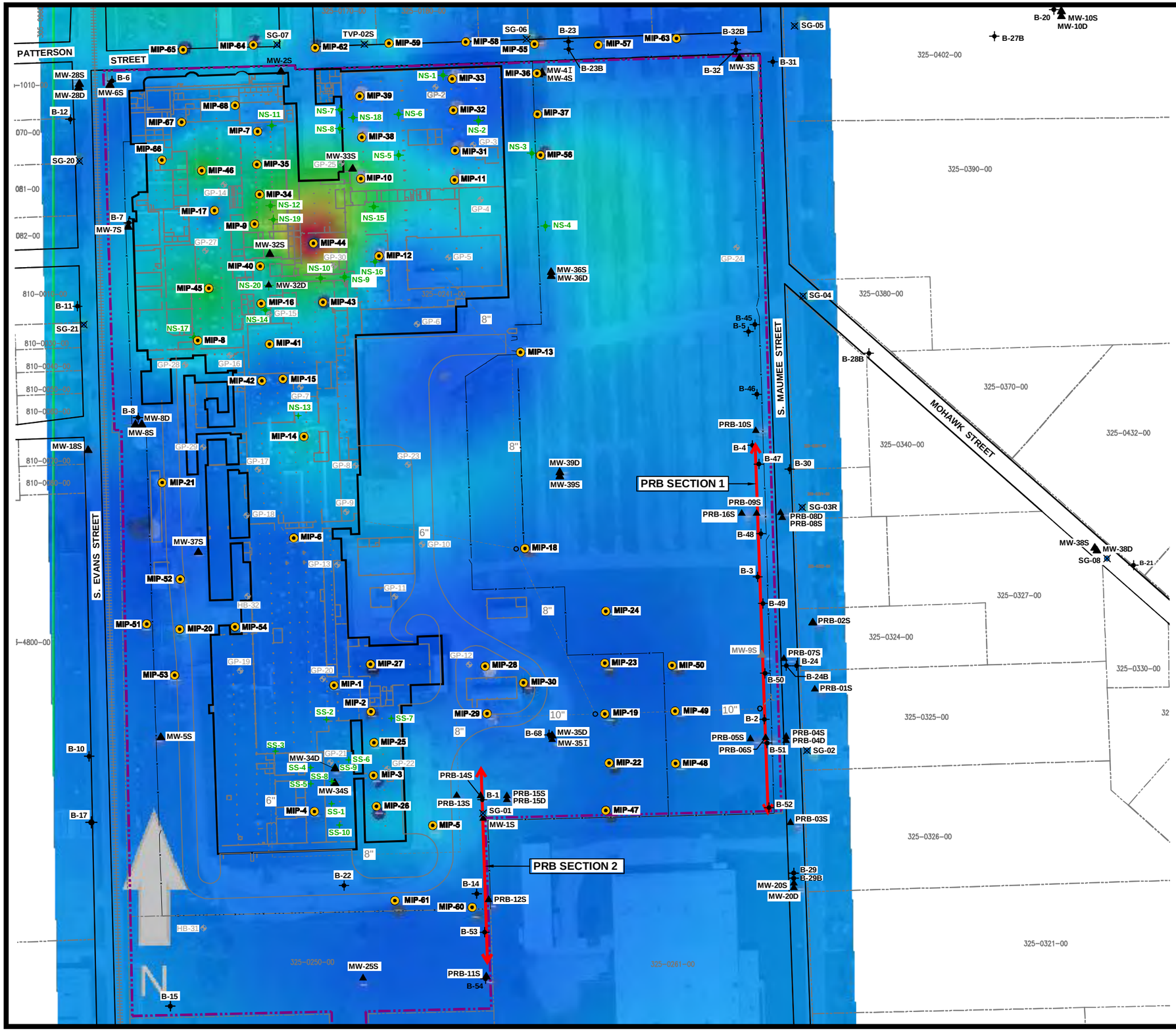
PROJ:
FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:
MIP INVESTIGATION RESULTS
LATERAL DISTRIBUTION OF MAXIMUM PID RESPONSE

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.22.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 22**
DATE:	FEBRUARY 2015		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

Attached Xref: bm203.tif
Attached Images: Figure 22; PID22 MIP PID
Layout: PID22 MIP PID
Dwg Size: 2.14 Mb
Plot Date: March 2, 2015
Plot Time: 2:49 PM
J:_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.22.dwg
BLUEBACK
Drawing Name:
Operator Name:
Drawing Ref Name:
0.00000



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MAXIMUM FID RESPONSE

21,243,934 uV
18,590,798 uV
15,937,662 uV
13,284,526 uV
10,631,390 uV
7,978,253 uV
5,325,117 uV
2,671,981 uV
18,845 uV

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. LATERAL DISTRIBUTION OF FID RESPONSE MAPPED USING ENVIRONMENTAL VISUALIZATION SYSTEM (EVS) SOFTWARE TO KRIG MIP DATA.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	UPDATE EVS MODEL OUTPUT	SEM

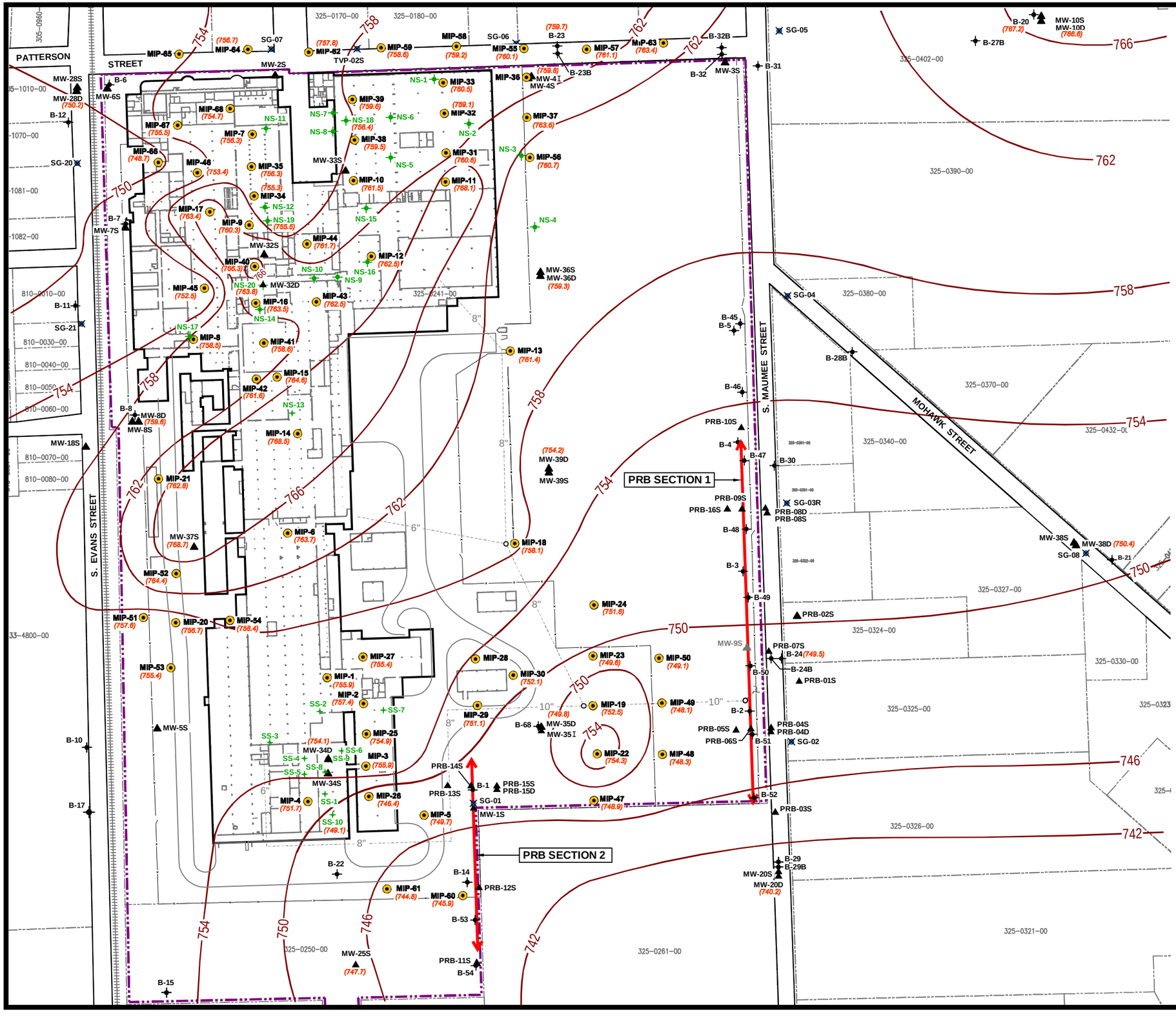
PROJ:
FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:
MIP INVESTIGATION RESULTS
LATERAL DISTRIBUTION OF MAXIMUM FID RESPONSE

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.23.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 23
DATE:	FEBRUARY 2015		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

AUTOCAD
Drawing Name: J:_TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.23.dwg
Operator Name: STEHLE, DANAH
Drawing Plot Date: 2/18/2015
Attached Xref's: tec2015.tif
Attached Images: Figure 23, PROJECT MAP.TIF
Layout: PROJECT MAP
Dwg Size: 2.69 Mb
Plot Date: February 18, 2015
Plot Time: 8:08 AM



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER
- 750 — 4-FOOT TOP OF CLAY CONFINING UNIT CONTOUR LINE
- (745.5) — CLAY SURFACE ELEVATION

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	02/17/15	REVISED MIP-38 CLAY SURFACE ELEVATION	SEM

PROJ: FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE: ELEVATION OF THE TOP OF CLAY CONFINING UNIT

DRAWN BY:	DGS	SCALE:	PROJ. NO. 220003.0000
CHECKED BY:	SEM	AS INDICATED	FILE NO. 220003.0000.24.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 24
DATE:	DECEMBER 2015		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

PLOT DATA
Drawing Name: J:\...\TRC\Tecumseh Products\Tecumseh WO\220003\220003_2014 Workplan Rev 1\220003.0000.24.dwg
Operator Name: STEHLE, SHAWN
Drawing Plot Scale: 0.250000
Attached Xref's: tec35189
Attached Images: TOC Contours 2014-12-16; Layout: PGBH TOC Elev
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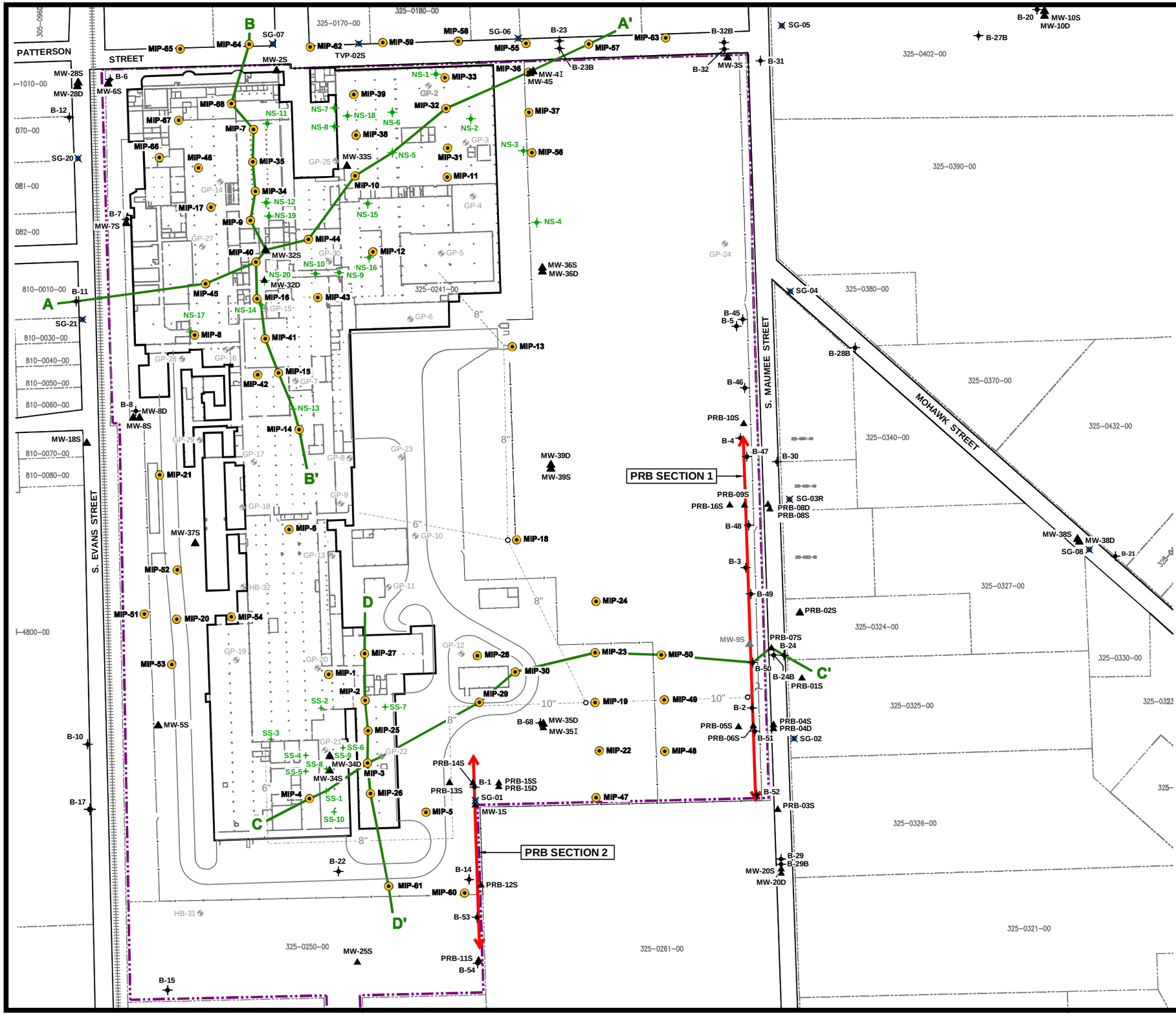
Plot Date: February 17, 2015
Plot Time: 7:54 AM



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- GP-2 — ATC PHASE II ESA BORING LOCATION AND NUMBER
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- A—A' — CROSS SECTION LOCATION LINE

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1				

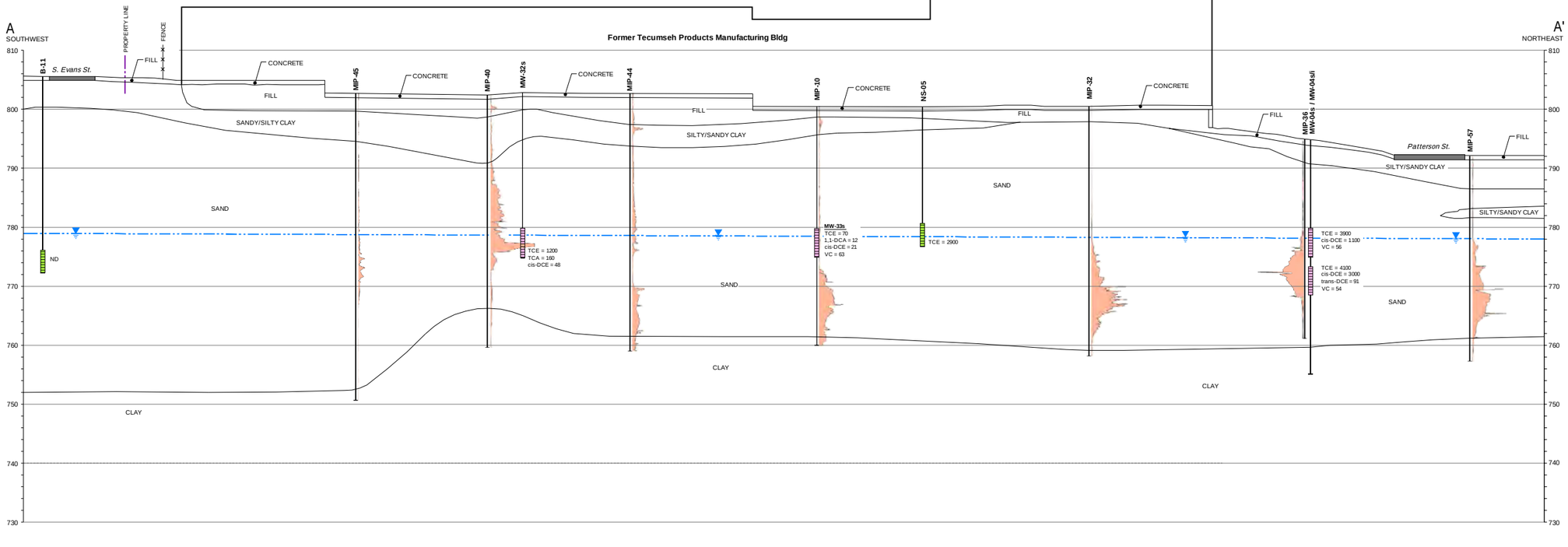
PROJ: FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

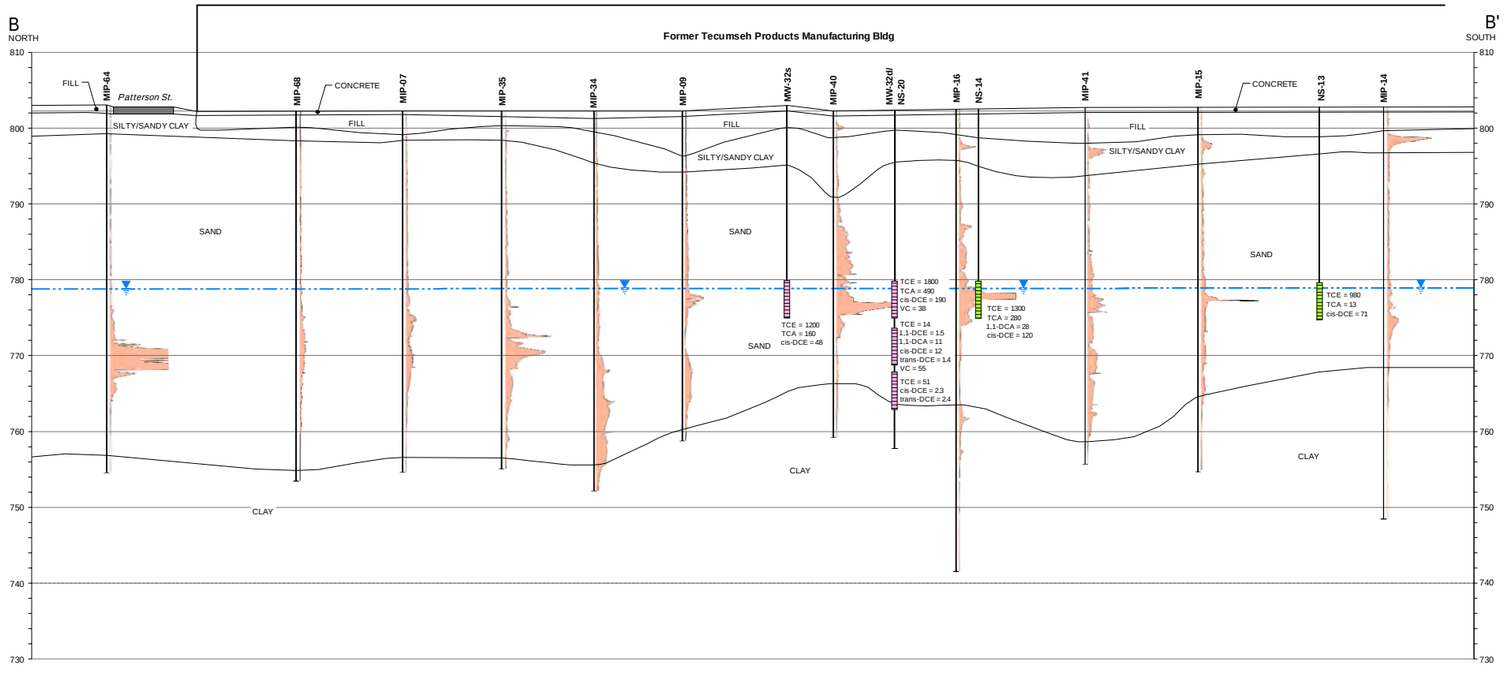
TITLE: CROSS SECTION LOCATION MAP

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.25.dwg
APPROVED BY:	GC	DATE PRINTED:	FIGURE 25
DATE:	DECEMBER 2014		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

PLOT DATA
Drawing Name: JL TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplace\220003.0000.25.dwg
Operator Name: BTEHLE, DANAH
Drawing Plot Date: 12/8/2014
Drug Size: 2.66 Mb
Plot Date: December 31, 2014
Plot Time: 12:24 PM
Attached XrefsTrc Im053918
Attached Images: Ngrid_W2635 83 London Map





LEGEND

- STRATIGRAPHIC BOUNDARY BASED ON NEAREST SOIL BORING OR MONITORING WELL (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER ELEVATION
- WELL SCREEN
- TEMPORARY WELL SCREEN

Constituent Key

PCE	=	TETRACHLOROETHENE
TCE	=	TRICHLOROETHENE
TCA	=	1,1,1-TRICHLOROETHANE
1,1-DCE	=	1,1-DICHLOROETHENE
1,1-DCA	=	1,1-DICHLOROETHANE
cis-DCE	=	1,2-cis-DICHLOROETHENE
trans-DCE	=	1,2-trans-DICHLOROETHENE
VC	=	VINYL CHLORIDE
ND	=	NOT DETECTED

MIP Log

ELECTRON CAPTURE DETECTOR (ECD) DOWNHOLE LOG

PINK COLORED PORTION REPRESENTS APPROXIMATE TOTAL PARENT COMPOUNDS (PCE, TCE, AND TCA)

NOTES

1. GROUND SURFACE AND STRATIGRAPHIC CONTACTS ARE APPROXIMATE AND EXTRAPOLATED FROM NEAREST SOIL BORING DATA.
2. SEE FIGURE 25 FOR LOCATION / ORIENTATION OF THIS GEOLOGIC CROSS SECTION.
3. GROUNDWATER ANALYTICAL DATA REFLECTS MOST RECENT SAMPLE EVENT AS OF OCTOBER 2014.
4. DETECTED GROUNDWATER CONCENTRATIONS FOR CONSTITUENTS OF HIGHEST CONCERN ARE PROVIDED IN MICROGRAMS PER LITER.
5. APPROXIMATE GROUNDWATER ELEVATIONS REFLECT ELEVATIONS ILLUSTRATED ON SECOND QUARTER 2014 GROUNDWATER CONTOUR MAP.

VERTICAL SCALE 0 10' 20'

APPROXIMATE HORIZONTAL SCALE 0 50' 100'

NO.	BY	DATE	REVISION	APP'D
3				
2				
1				

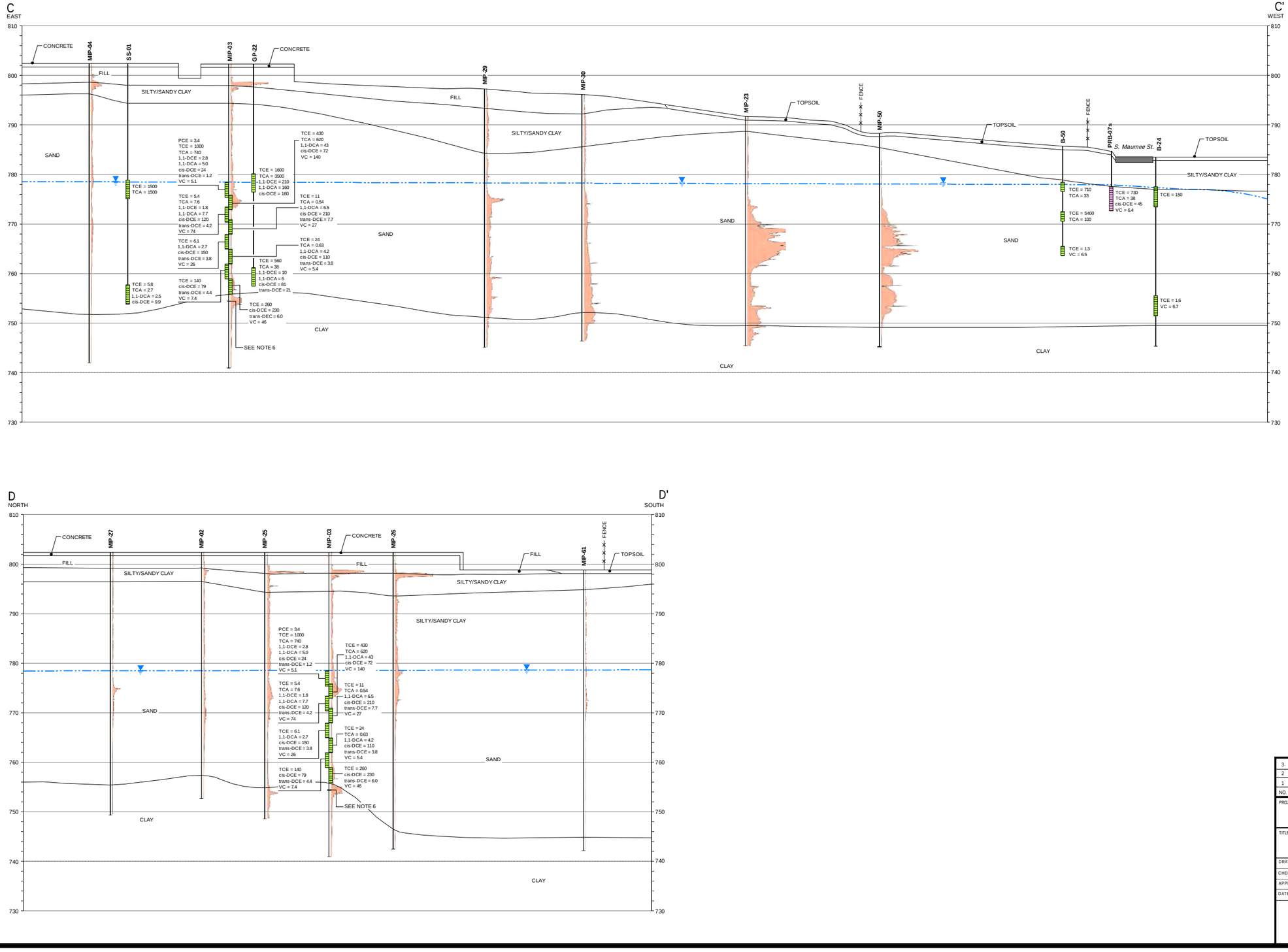
PROJECT:
FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:
CROSS SECTIONS A - A' AND B - B'

DRAWN BY:	DGS	SCALE:	PROJ. NO. 220003.0000
CHECKED BY:	SEM	AS INDICATED	FILE NO. 220003.0000.26-27.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 26**
DATE:	DECEMBER 2014		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

PLOT DATA
Drawing Name: J:\...\TRC\Tecumseh Products\Tecumseh MI\220003\220003.0000_2014 Workplan\220003.0000.26-27.dwg
Drawing Name: 8TSHEL DWAH
Drawing Size: E (34.00 X 22.00 Inches)
Drawing Plot Scale: 1:1
Attached Xrefs: MIP-62; MIP-63; MIP-64; MIP-65; MIP-66; MIP-67; MIP-68; MIP-69; MIP-70; MIP-71; MIP-72; MIP-73; MIP-74; MIP-75; MIP-76; MIP-77; MIP-78; MIP-79; MIP-80; MIP-81; MIP-82; MIP-83; MIP-84; MIP-85; MIP-86; MIP-87; MIP-88; MIP-89; MIP-90; MIP-91; MIP-92; MIP-93; MIP-94; MIP-95; MIP-96; MIP-97; MIP-98; MIP-99; MIP-100; MIP-101;



LEGEND

- STRATIGRAPHIC BOUNDARY BASED ON NEAREST SOIL BORING OR MONITORING WELL (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER ELEVATION
- WELL SCREEN
- TEMPORARY WELL SCREEN

Constituent Key

PCE	=	TETRACHLOROETHENE
TCE	=	TRICHLOROETHENE
TCA	=	1,1,1-TRICHLOROETHANE
1,1-DCE	=	1,1-DICHLOROETHENE
1,1-DCA	=	1,1-DICHLOROETHANE
cis-DCE	=	1,2-cis-DICHLOROETHENE
trans-DCE	=	1,2-trans-DICHLOROETHENE
VC	=	VINYL CHLORIDE
ND	=	NOT DETECTED

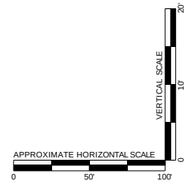
MIP Log

ELECTRON CAPTURE DETECTOR (ECD) DOWNHOLE LOG

PINK COLORED PORTION REPRESENTS APPROXIMATE TOTAL PARENT COMPOUNDS (PCE, TCE, AND TCA)

NOTES

1. GROUND SURFACE AND STRATIGRAPHIC CONTACTS ARE APPROXIMATE AND EXTRAPOLATED FROM NEAREST SOIL BORING DATA.
2. SEE FIGURE 25 FOR LOCATION / ORIENTATION OF THIS GEOLOGIC CROSS SECTION.
3. GROUNDWATER ANALYTICAL DATA REFLECTS MOST RECENT SAMPLE EVENT AS OF OCTOBER 2014.
4. DETECTED GROUNDWATER CONCENTRATIONS FOR CONSTITUENTS OF HIGHEST CONCERN ARE PROVIDED IN MICROGRAMS PER LITER.
5. APPROXIMATE GROUNDWATER ELEVATIONS REFLECT ELEVATIONS ILLUSTRATED ON SECOND QUARTER 2014 GROUNDWATER CONTOUR MAP.
6. THE TOTAL DEPTH OF THE CONFIRMATION SOIL BORING COMPLETED AT MIP-03 WAS 48 FEET. THE TOTAL DEPTH OF THE MIP BORING WAS 61.6 FEET.



NO.	BY	DATE	REVISION	APP'D
3				
2				
1				

PROJECT:

FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:

CROSS SECTIONS C - C' AND D - D'

DRAWN BY:	DGS	SCALE:	PROJ. NO. 220003.0000
CHECKED BY:	SEM	AS INDICATED	FILE NO. 220003.0000.26-27.dwg
APPROVED BY:	GC	DATE PRINTED:	**FIGURE 27**
DATE:	DECEMBER 2014		

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

PLOT DATA:
Drawing Name: J:_TRC\Tecumseh Products\Tecumseh MI\220003\220003_2014 Workplan\220003.0000.26-27.dwg
Drawing Path: ST5\ALL DWAH
Drawing Set: Ecosite
Attached Xrefs: MIP-02; MIP-03; MIP-04; MIP-05; MIP-06; MIP-08; MIP-09; MIP-10; MIP-11; MIP-12; MIP-13; MIP-14; MIP-15; MIP-16; MIP-17; MIP-18; MIP-19; MIP-20; MIP-21; MIP-22; MIP-23; MIP-24; MIP-25; MIP-26; MIP-27; MIP-28; MIP-29; MIP-30; MIP-31; MIP-32; MIP-33; MIP-34; MIP-35; MIP-36; MIP-37; MIP-38; MIP-39; MIP-40; MIP-41; MIP-42; MIP-43; MIP-44; MIP-45; MIP-46; MIP-47; MIP-48; MIP-49; MIP-50; MIP-51; MIP-52; MIP-53; MIP-54; MIP-55; MIP-56; MIP-57; MIP-58; MIP-59; MIP-60; MIP-61; MIP-62; MIP-63; MIP-64; MIP-65; MIP-66; MIP-67; MIP-68; MIP-69; MIP-70; MIP-71; MIP-72; MIP-73; MIP-74; MIP-75; MIP-76; MIP-77; MIP-78; MIP-79; MIP-80; MIP-81; MIP-82; MIP-83; MIP-84; MIP-85; MIP-86; MIP-87; MIP-88; MIP-89; MIP-90; MIP-91; MIP-92; MIP-93; MIP-94; MIP-95; MIP-96; MIP-97; MIP-98; MIP-99; MIP-100; MIP-101; MIP-102; MIP-103; MIP-104; MIP-105; MIP-106; MIP-107; MIP-108; MIP-109; MIP-110; MIP-111; MIP-112; MIP-113; MIP-114; MIP-115; MIP-116; MIP-117; MIP-118; MIP-119; MIP-120; MIP-121; MIP-122; MIP-123; MIP-124; MIP-125; MIP-126; MIP-127; MIP-128; MIP-129; MIP-130; MIP-131; MIP-132; MIP-133; MIP-134; MIP-135; MIP-136; MIP-137; MIP-138; MIP-139; MIP-140; MIP-141; MIP-142; MIP-143; MIP-144; MIP-145; MIP-146; MIP-147; MIP-148; MIP-149; MIP-150; MIP-151; MIP-152; MIP-153; MIP-154; MIP-155; MIP-156; MIP-157; MIP-158; MIP-159; MIP-160; MIP-161; MIP-162; MIP-163; MIP-164; MIP-165; MIP-166; MIP-167; MIP-168; MIP-169; MIP-170; MIP-171; MIP-172; MIP-173; MIP-174; MIP-175; MIP-176; MIP-177; MIP-178; MIP-179; MIP-180; MIP-181; MIP-182; MIP-183; MIP-184; MIP-185; MIP-186; MIP-187; MIP-188; MIP-189; MIP-190; MIP-191; MIP-192; MIP-193; MIP-194; MIP-195; MIP-196; MIP-197; MIP-198; MIP-199; MIP-200; MIP-201; MIP-202; MIP-203; MIP-204; MIP-205; MIP-206; MIP-207; MIP-208; MIP-209; MIP-210; MIP-211; MIP-212; MIP-213; MIP-214; MIP-215; MIP-216; MIP-217; MIP-218; MIP-219; MIP-220; MIP-221; MIP-222; MIP-223; MIP-224; MIP-225; MIP-226; MIP-227; MIP-228; MIP-229; MIP-230; MIP-231; MIP-232; MIP-233
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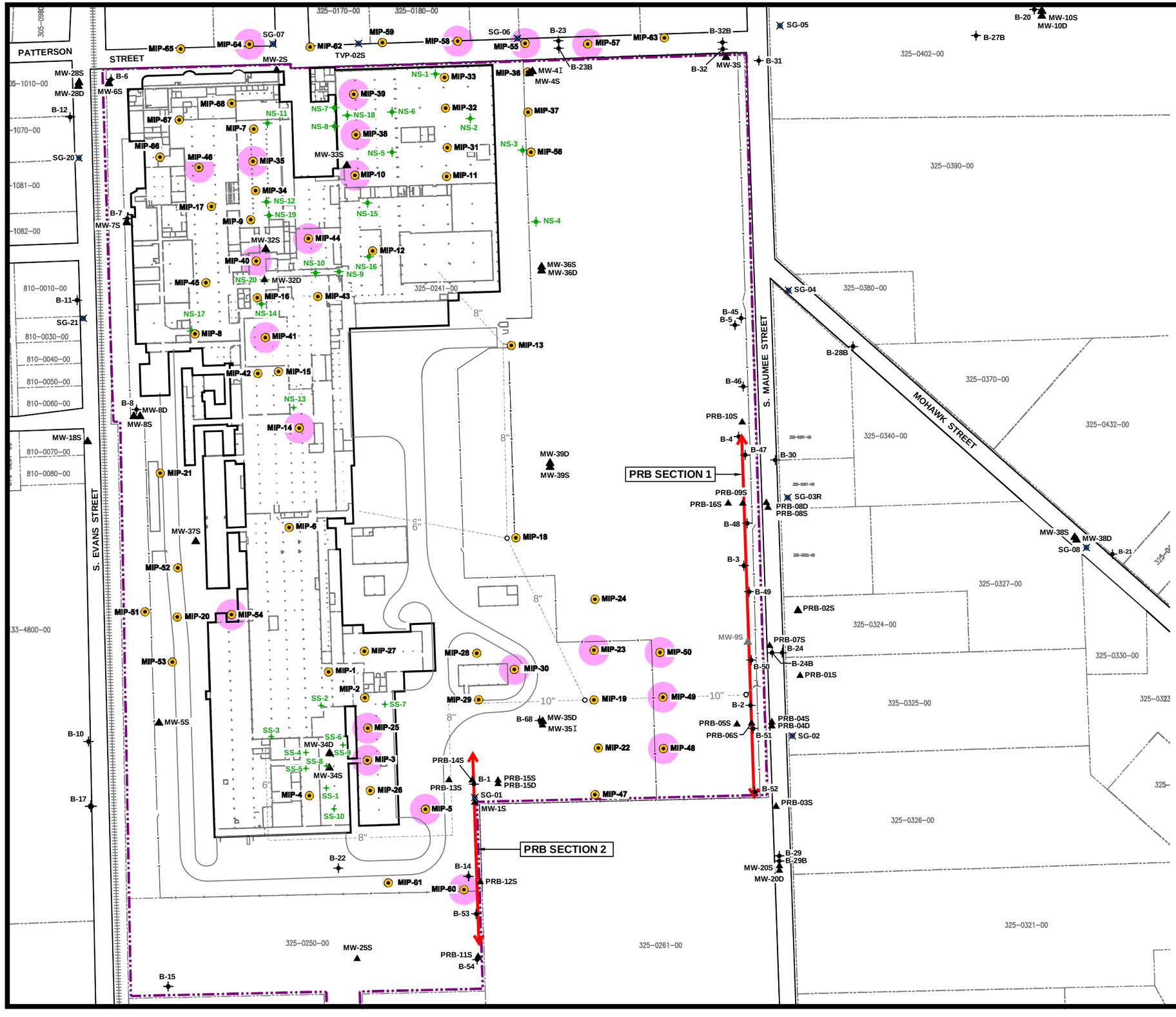
Plot Scale: 1:1
Plot Time: 13:21:14



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- B-2 — PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S — MONITORING WELL LOCATION AND NUMBER
- MW-9S — DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SS-2 — SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
- SG-02 — SOIL GAS SAMPLE LOCATION AND NUMBER
- 8" — PIPE DIAMETER AND APPROXIMATE LOCATION OF ON-SITE SANITARY SEWER
- PRB LOCATION
- FENCE LINE
- MIP-57 — MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER

MIP KEY

- PROPOSED CONFIRMATION SAMPLE LOCATION

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.

0 100' 200' 300' 400'
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	03/04/15	ADDITIONAL CONFIRMATION SAMPLE LOCATIONS ADDED	SEM

PROJ:
FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:
PROPOSED CONFIRMATION SAMPLE LOCATIONS

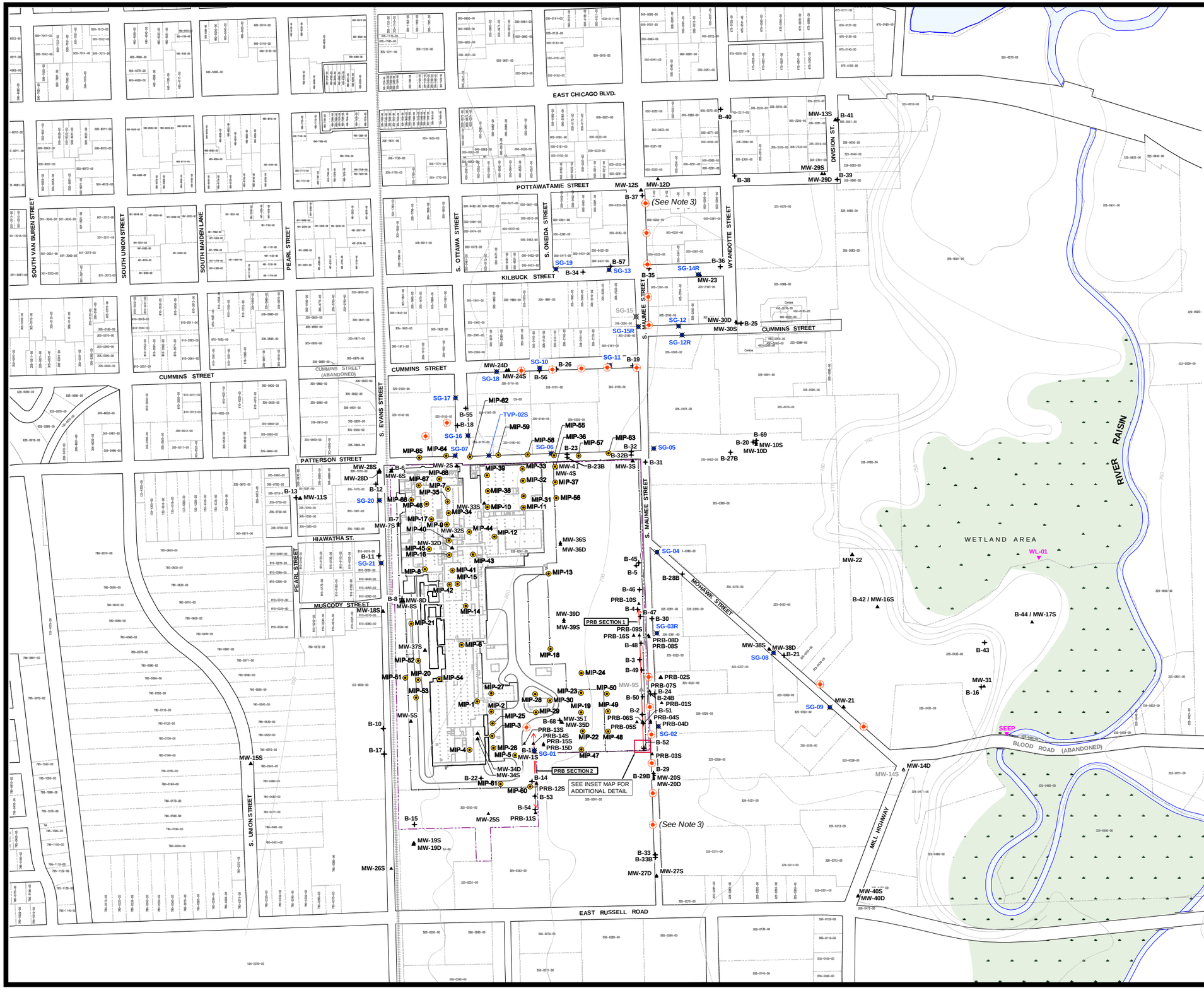
DRAWN BY:	DGS	SCALE:	AS INDICATED
CHECKED BY:	SEM		
APPROVED BY:	GC	DATE PRINTED:	
DATE:	MARCH 2015		

PROJ. NO. 220003.0000
FILE NO. 220003.0000.28.dwg

FIGURE 28

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

AUTOMATIC
Drawing Name:
Operator Name:
Drawing Path Name:
J:\...\TRC\Tecumseh Products\Tecumseh MI\220003\0000_2014 Workplan Rev 1\220003.0000.28.dwg
Attached Xref: bm255189
Attached Images: P4228 Prop Conf Samples
Layout:
Dwg Size: 2.19 Mb
Plot Date: March 5, 2015
Plot Time: 8:15 AM



LEGEND

- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
- PARCEL BOUNDARY
- RAILROAD TRACKS (APPROXIMATE LOCATION)
- 750 — APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
- B-2 + PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
- MW-4S ▲ MONITORING WELL LOCATION AND NUMBER
- MW-9S ▲ DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
- SG-02 SOIL GAS SAMPLE LOCATION AND NUMBER
- SG-15 DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
- WL-01 ▼ APPROXIMATE SURFACE WATER SAMPLE LOCATION
- MIP-63 MEMBRANE INTERFACE PROBE (MIP) LOCATION AND NUMBER
- FLOODPLAIN / WOODED WETLAND AREA
- PRB LOCATION
- FENCE LINE
- PROPOSED VERTICAL GROUNDWATER PROFILE SAMPLING LOCATION

NOTES

1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
3. IF GROUNDWATER SAMPLES COLLECTED AT ADJACENT SAMPLING LOCATIONS DEFINE THE HORIZONTAL EXTENT OF GROUNDWATER ABOVE APPLICABLE SCREENING LEVELS, THESE BORINGS MAY NOT BE COMPLETED.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1	DGS	03/04/15	REVISED PROPOSED INVESTIGATION LOCATIONS	SEM

PROJ:
FORMER TECUMSEH PRODUCTS SITE
TECUMSEH, MICHIGAN

TITLE:
PROPOSED LOCATIONS FOR VERTICAL GROUNDWATER PROFILE SAMPLING

DRAWN BY:	DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000
CHECKED BY:	SEM		FILE NO. 220003.0000.29.dwg
APPROVED BY:	GC	DATE PRINTED:	
DATE:	MARCH 2015		**FIGURE 29**

TRC
1540 Eisenhower Place
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PLOT DATA:
Drawing Name: J:\...\TRC\Tecumseh Products\Tecumseh\#220003\0000\0000_29\4 Workplan Rev 1\220003.0000.29.dwg
Operator Name: STEHLE, SHANAH
Drawing Plot Scale: 0.500000
Attached Xref: bm1001 16 (Filled)
Attached Images: Layout: P4GB Prop V (Shf Profile
Dwg Size: 1.76 Mb
Plot Date: March 5, 2015
Plot Time: 8:25 AM

Appendix A
MIP Investigation Data and Subcontractor Report

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Membrane Interface Probe (MIP)
and
Hydraulic Profiling Testing (HPT)
Investigation Report

Former Tecumseh Products Company Site
Tecumseh, Michigan

Date:
October 29, 2014
(*Revised on* **February 23, 2015**)

Prepared for
TRC Environmental Corporation
1540 Eisenhower Place
Ann Arbor, MI 48108

Report Certifications

I attest that all site investigation, filed activities, including data acquisition, presentation, and data review, that are the subject of this Report, were performed by me or under my direction, and this document and all attachments were prepared under my direction or reviewed by me, and, to the best of my knowledge and belief, the work described in the Report has been designed or completed in accordance with the generally accepted engineering practices, and the information presented, including data visualization and review, are accurate and complete.

Report Prepared By: Feb. 23, 15

Sammy H. Sirhan, CHMM, REM — **Date**
Senior Project Geologist & Engineer

Report Reviewed By: 2/23/15

Jerry Mohajeri, PE — **Date**
Senior Project Engineer

Report Reviewed By: 2/23/15

Scott R. Liggett — **Date**
Senior Project Manager

TABLE OF CONTENTS

SECTION	TITLE	PAGE
1.0	INTRODUCTION	4
2.0	DATA ACQUISITION and FIELD SETUP	4
2.1	*Performance Data Program.....	*4*
2.2	*Contaminant-specific Data Quality Program	*7*
3.0	MIP DATA QUALITY REVIEW and USABILITY	9
4.0	DATA ANALYSIS and LIMITED INTERPRETATION	10
5.0	DATA SIMULATION and PRESENTATION	14
6.0	CONCLUSIONS	16

ATTACHMENTS

ATTACHMENT A	Figures & Drawings
ATTACHMENT B	MIP Raw Data
ATTACHMENT C	Simulated MIP Data

1.0 Introduction

Superior Environmental Remediation[90], Inc. (SER[90]) was contracted by TRC Environmental Corporation (TRC) to install a number of membrane interface probe (MIP) and hydraulic profiling test (HPT and MIHPT) borings at the Former Tecumseh Products Company Site located in Tecumseh, Michigan (the "Project"). The project area is presented in the **Project Location Map, Attachment A, Figure 1.** The Project occupies approximately 50 acres and is bordered by Patterson Street to the north, Maumee Street to the east and Evans Street to the west. The southern boundary is occupied by the Tecumseh Fire Department and other industrial establishments. The Project consists of a number of industrial buildings with some partially demolished.

During the period of June 17 through July 24, 2014, SER[90] completed the installation of 68 MIP/MIHPT borings at selected locations throughout the Project property, of which, eight borings were installed off-site along Patterson and Evans. Data acquisition and methodology is described below. The detector array used for this project included photo-ionization, flame-ionization and electron-capture detectors (PID, FID and ECD, respectively). Hydraulic parameters documented during this activity included water flow, line pressure, and water column pressure as explained below.

SER[90] conducted the required MIP investigation in accordance with the ASTM Standard D7352-07, and our standard operating procedures. Quality review of all collected data indicated that the data is acceptable and usable for the project objectives of subsurface screening. SER[90] provided a limited data simulation and interpretation; however, further interpretation should be conducted by incorporating groundwater data such as flow direction, gradient and seepage. SER provided electronic outputs to TRC to facilitate further interpretation of data and refinement of the conceptual site model (CSM).

2.0 Data Acquisition and Field Setup

In order to conform to an acceptable quality and data collection requirements for this project, and to facilitate the usability of the data for the project objectives, a wide range of parameters were documented and adequate field setup were utilized. The data acquisition quality procedure is divided into two programs: Performance Data Program and Contaminant-specific Data Quality Program. The Performance Data includes all parameters and readings needed to ensure the proper operation of the MIP/MIHPT field equipment (hardware related), and the Contaminant-specific Data is related to the quality of the detectors' responses to specific chemical in the environment. The following is a detailed description of both programs observed for the Project.

2.1 Data Acquisition – Performance Data Program:

Performance Data represents the group of data parameters related to calibration, actions, and measurements used to ensure the proper operation of the MIP/MIHPT equipment as follows:

a. Courier Gas Selection

In order to eliminate any impurities from entering the MIHPT system, SER^{90} used laboratory-grade courier gas and FID fuel gases including hydrogen and ultra-high purity oxygen. The courier gas for the MIP operation was ultra-high purity (UHP), 4.8 grade nitrogen. The courier gas is injected at a certain pressure into the MIP line to create a sweeping effect behind the membrane to transport the liberated volatile organic compounds from the subsurface formation to the analytical instrumentation at the surface. Courier gas flow and line pressure are important parameters for quality data collection.

b. Courier Gas Flow

Courier gas flow and pressure are important parameters that directly impact the performance of the MIP operation. The gas pressure is measured in terms of a mass flow (measured in milliliter per minute (mL/min)) to maintain a constant sample volume return to the instrumentation. The gas pressure selection is project-specific, more specifically, contaminant-concentration dependent, and must be in the range of 20 to 60 mL/min. Low mass flow is selected during MIP operations at projects suspected with high concentrations of volatiles; correspondingly, high flow (60 mL/min) is selected for projects with low to non-detected levels of volatiles. For the Tecumseh project, SER^{90} selected flow values in the range of 35 to 48 mL/min to account for potential flow variations during long logging periods, and is suitable for all concentration ranges of volatile that could be encountered in the subsurface. The mass flow reading fluctuates during the logging operations to maintain a constant volume of sample flow and to compensate for drops in line pressure.

c. MIP and MIHPT Line Pressures

MIP line pressure, measured in pounds per square inch (psi), refers to the amount of force that the courier gas exerts inside the MIP flow line. The normal operating line pressure is in the range of 7 to 12 psi. This value may fluctuate, and the acceptable fluctuation is in the range of 0 – 1.5 psi. This normal fluctuation is compensated for by a corresponding change in mass flow to maintain a constant volume of sample return. Based on the ASTM D7352-07, our standard operating procedures, and on recommendations by Geoprobe®, line pressure fluctuations in the above-mentioned range are acceptable and the data is usable. However, SER^{90} maintained line pressure variations in the range of 0 to 1.2 psi throughout the logging operations for this project.

d. Probe Temperature and Heater-block Function

The principal method of detecting the volatile organic compounds using the MIP technology is based on the volatilization of these compounds from the adsorbed and dissolved phases in the open environment using a heater block near the MIP membrane. The heater bock is controlled by a digital thermostat. The minimum setting point is 119^{o}C, while the maximum setting point is 121^{o}C to ensure the attainment of proper probe temperature. However, regardless of these control setting, the probe temperature drops to a constant of 93 to 98^{o}C if abundant groundwater is encountered in the subsurface. Moreover, this new low (under water) is greater

than the boiling point of most volatile chemicals, specifically, the contaminants of concern at the Project. Failure of probe heater during MIP logging operation renders the data unusable. The probe heater functioned properly during all MIP data collection events at this project.

e. HPT-component Flow Transducer

The hydraulic properties of the subsurface are obtained or inferred by injecting a small amount (100 to 300 mL/min) of clean water into the subsurface formation, and measuring the back pressure in the HPT line. The back pressure created by the resisting formation is proportional to the hydraulic conductivity and the pressure of water column in the saturated zone (water table column). It is important to use an accurate flow meter (transducer) in order to yield acceptable flow data for further analysis and inference of acceptable hydraulic characteristics of the aquifer. The flow transducer is checked and calibrated before and after every boring log (Pre-logging Post-logging tests). All before and after flow tests for all MIP borings for this project were acceptable.

f. HPT-Line Pressure Transducer

Part of the back pressure induced by water injection into the aquifer is due to the weight of water column in the saturated zone (*saturated thickness*) of the subsurface, in addition to the pressure induced by the hydraulic conductivity of the aquifer. Therefore, accurate measurements of water column pressure are integral part of a successful HPT logging operation. The pressure is measured using an in-line digital pressure transducer. This transducer is checked and calibrated before and after every MIHPT logging event. Reading variations must be less than 0.21 psi[1] (or 3% of the full scale reading). Calibration data for this project indicated acceptable test values for all MIHPT borings.

g. MIP Internal Resistance Meter

The electrical conductivity of the subsurface formation is measured to reflect the grain size, thus yielding a *rough* idea about its hydraulic conductivity. The electrical conductivity of the subsurface is measured using its electrical resistivity by directly measuring its resistance. Therefore, a calibrated MIP potentiometer would yield accurate data. This is achieved by measuring the resistance of known resistors covering the entire range of measurements. This calibration is conducted before and after each logging event to ensure adequate functionality of the instrument. Formation with high electrical conductance *could be* characterized as fine grain, thus exhibiting a low hydraulic conductivity (clay, silt and clayey-silty formation). Therefore, sandy formation is expected to exhibit low to very low electrical conductance (in the range of 0 to 10 milli-Sim per meter (mS/m)), while clay, silt and clayey formation is expected to yield high to moderately high electrical conductance (10 to 300 mS/m). However, and in some cases, natural or man-made geologic features may affect electrical conductivity readings, requiring adjustment of the geologic interpretation using electrical conductivity data. For example, a sandy formation that contains pore fluids rich in electrolytes (natural or man-made such as

[1] *Equivalent to approximately 5.8 inches of water-column sensitivity.*

leachate flow near landfills) would yield high electrical conductivity, thus confusing the sand with clayey and silty formation. Additionally man-made soils containing conductive materials (e.g. salts or metals) such as spoils from mining operations or slag would also yield high electrical conductivity data, regardless of actual hydraulic conductivity. The indirect estimation of hydraulic conductivity using the electrical conductivity is best used as an initial estimate that may be refined by incorporating HPT data such as flow and back pressure of the injected water or geologic data collected from traditional soil borings completed at nearby locations. Used in conjunction with HPT and/or other geologic data, project specific trends may be observed which can be used to aid in the interpretation of electrical conductivity data at boring locations without HPT data.

SER^{90} performed before and after electrical resistance testing of the MIP instrumentation at all boring locations, and all test results were within acceptable range for all data points.

2.2 Data acquisition- Contaminant-specific Data Quality Program:

This data program entails the assessment of the detectors' responses to a known chemical with a known concentration. The Test Standard is prepared by mixing a chemical solute in 500 mL of clean water, then immersing the probe into the solution for 45 seconds. The results of this test are used in a number of ways to assess the quality of the data, interpretation, and its usability for the project objectives. The following is a detailed description of this program:

a. Chemical Standard

The choice of the chemical for the preparation of the Standard is project-specific, and it is recommended to be similar to the contaminant of concern at that project. Further, the concentration of the chemical in the Standard Test should cover the range of concentrations that could be encountered in the subsurface to assess the MIP instrumentation responses to different concentrations with emphases on low concentrations to eliminate the false negatives. SER^{90} uses pre-measured chemicals in one-time use ampules prepared by a professional laboratory to eliminate potential errors in measurement and mixing ratios by field staff. Further, the disposable ampules eliminate the potential for cross-contamination in the field.

For the Tecumseh project, SER^{90} used PCE[2] and TCE at 1.0 parts per million (ppm) concentration with an occasional use of benzene at 1.0 ppm to ensure proper response to petroleum hydrocarbon that could potentially exist in the subsurface and adequate function of the PID and FID detectors.

b. Detector Response Assessment

Detectors' responses to the different standards are dependent on the physical and chemical properties of the chemical used and the functionality of the detector itself. For example, when benzene is used as a standard, both FID and PID will yield a clear response, while ECD will show no response. On the other hand, if PCE is used as a standard, ECD would exhibit a clear

[2] *PCE was used only at the first two borings (MIP-01 and MIP-02). After those boring, PCE was replaced with TCE (the more common constituent of concern for the site) at the request of TRC.*

response and both FID and PID will show very little response. However, the chlorination status of TCE causes a clear response on the ECD and the FID, while the PID show little to no response. This variation in response (differential response) can be used to qualitatively interpret the data and to assess the degradation pathway of some chemicals in the subsurface (the co-presence of sister and daughter compounds in addition to the parent compound).

The rationale for the Standard Test is to ensure the proper detector response and the repeatability of such response during the actual MIP logging operation. Further, this response has to be identifiable (i.e., noticeable peak or reading), which necessitate a low base line of the system. For example, if 0.25 ppm benzene Standard exhibits a PID and FID reading in the range of 2.0 x 10^3 microvolt (µV), and the system base line is at or above 2.0 x 10^3 µV, the Standard Test will not be noticed. Further, potential contamination at this level in the subsurface will not be detected due to high (masking) base line. In order to achieve a low system base line, SER^{90} uses ultrahigh grade courier and fuel gases. Often, gross contamination in the open environment such as the presence of free-phase liquids (LNAPL and DNAPL) cross-contaminate the inner walls of the sampling tubes, thus creating a high base line that could mask, otherwise detectable, contamination during the logging operations.

Review of the detectors' responses for this project indicated the following:

1. ECD response for 1.0 ppm PCE Standard Test exhibited a response in the range of 2.25 x 10^5 µV, while both FID and PID exhibited low to no response to the Standard.
2. TCE Standard Test at 1.0 ppm yielded a clear ECD response in the range of 2.2 x 10^5 to 8.4 x 10^5 µV, and the FID exhibited responses in the range of 2.0 x 10^5 to 2.5 x 10^5 µV. PID responses were constant and in the range of 1.0 x 10^5 to 1.8 x 10^5 µV.
3. A low system base line was maintained throughout each logging event.
4. SER^{90} consistently conducted before and after Standard Tests for each MIP boring, and no deviation was documented for this project.

c. Trip Time Assessment

Trip time is defined as the time required for sample containing the liberated volatiles from the subsurface to travel through the MIP system trunk-line to the analytical instruments on the surface (first arrivals). The ideal value for Trip Time is in the range of 50 to 115 seconds (longer time for longer trunk-line). This reading or data bit is very important since it is used to pair the detectors' readings with the depth reading from the depth transducer (Stringpot®). Therefore, erroneous Trip Time would result in mapping contamination layers either shallower, or deeper than they actually are, thus defeating the purpose of the logging operation. Further, this travel time is NOT constant (daily drift) since it is dependent on the prevailing atmospheric pressure, the courier gas flow rate, MIP line pressure, and any small leakage in the system.

Trip times were measured before and after each boring to ensure than an accurate, boring specific, trip time was used at each location, and to verify that the trip time did not exhibit unacceptable drift during boring completion. Trip times for all MIP/MIHPT borings for this project were determined properly, and were within an acceptable range of variation for all probes used at the Project.

d. Response Time Assessment

Response time is defined as the time required for the detectors to exhibit the peak response (max reading) to a chemical or group of chemicals. The Response Time is dependent on the functionality of the detector, precision and other instrumentation factors. The ideal value of a Response Time is in the range of 30 to 45 seconds. However, the way Response Time impacts the MIP data quality is as follows:

1. Long Response Time (≥ 50 seconds) tends to artificially place contamination deeper than actually is (also known as *drag*). For example, in the case of long Response Time, if a peak response is encountered at depth d_1, and the MIP operator continues to push the tooling at the prescribed rate (one-foot per minute) to a new depth of d_2. Detector readings from both sampled intervals will not be representative.
2. Short Response Time (≤ 20 seconds) is likely an indication of sample leak at, or near the analytical instruments at the surface (plumbing leak in the gas chromatograph). The short response would yield inaccurate MIP data.

SER^{90} maintained an optimal Response Time of 40 to 43 seconds for all MIP/MIHPT borings installed at the Project.

e. Daily Electronic Drift of MIP Instrumentation

Daily electronic drift is defined as the change in setup or calibration values or response readings of MIP detectors due to overheating of the system electronics over the course of a working day. The impact of daily drift on the quality of MIP logging can be manifested as follows:

1. Increase in Response Time, which could extend longer than 50 seconds, thus rendering inaccurate MIP data.
2. Large variations in the detectors' responses to the same Standard Test, which renders the Test results unusable as a reference point for interpreting the actual MIP data.
3. Sudden and short-duration variations in courier gas mass flow, and MIP line pressure.

During disruptive daily drifts, data acquisition is not recommended. However, SER^{90} did not document any detectable electronic drift events during the data acquisition at the Project.

3.0 MIP Data Quality Review and Usability

SER^{90} conducted all recommended quality assurance checks and calibration as described above, and in accordance with ASTM D7353-07. The results for each boring-specific test are provided in the **MIP Raw Data, Attachment B** of this report. Review of the individual reports for each boring indicated the following:

a. The average Trip times for all borings were in the range of 50 to 112 seconds. All Trip Times were within the acceptable range for the given trunk-line length.

b. All Response Times for all borings were in the range of 40 to 45 seconds, thus within the acceptable range.
c. All probe tests such as electrical conductivity, heater cycling, probe temperature set points range and mass flow were acceptable.
d. All HPT component tests such as flow and line pressure were within the acceptable range.
e. Review of MIP trunk-line pressure for all borings indicated pressure variations less than 1.2 psi during data collection.
f. Responses of the respective detectors to known chemical concentrations were consistent throughout the acquisition operation.

Based on our review above, the MIHPT data for all borings is acceptable and usable for the project objective of subsurface screening for chlorinated solvents and straight-chain hydrocarbons.

4.0 Data Analysis and Limited Interpretation

During the period of June 17 through July 24, 2014, SER[90] installed 68 MIP/MIHPT borings at the Project. The location of these borings is depicted on the **MIP Location Map, Attachment A, Figure 2** of this submittal. Due to the vast number of data logs, SER[90] will attempt to interpret a selected number of borings. The same logic and methodology can be applied to the rest of logs to delineate the extent of chlorinated solvent impact in the subsurface. These selected logs are MIP-34, 39, 60 and 64. The following is possible interpretation of these logs as follows:

4.1 MIP-34 Analysis

This data log represents an MIP boring (no HPT), completed to a total depth of approximately 49.40 ft. below the concrete floor of a plant building located in the northern half of the Project property. Review of the quality assurance data for this boring indicated the following:

a. Results of the before and after electrical resistance tests at high and low values were acceptable.
b. Mass flow of courier gas was in the acceptable range. Mass flow value of the pre-logging test was 43.2 mL/min and 38.2 mL/min for the post-logging test.
c. Review of the MIP trunk-line pressure indicated variations within the acceptable range.
d. ECD Response for 1.0 ppm TCE Standard Test indicated pre-logging value of approximately 3.7 x 10^5 µV, and the post-logging response for the same concentration was approximately 3.1 x 10^5 µV.
e. Review of the probe temperature during the logging operation indicated values in the range of 96 to 130^{o}C. This range is acceptable.

Overall, the data from this log is acceptable and usable for the project objectives. The *possible* interpretation of the detectors' responses is as follows:

a. Review of the electrical conductivity data for the subsurface formation indicated values in the range 0 mS/m to a maximum of 78 mS/m. The fine grain layer, exhibiting higher electrical conductivity was from 2.2 to 6.0 feet below the floor level. Formations encountered from 6 feet to approximately 24 feet indicated low electrical conductivity in the range of 0 to 10 mS/m, thus

reflecting high sandy content. Below 24 feet the electrical conductivity increased (10 to 25 mS/m). Typically this increase would be interpreted as an increase in the clay and silt content in the formation. However two important lines of evidence demonstrate that the soils remain sandy throughout this zone:

- The water table, as indicated by probe temperature data, is observed at the same depth; and
- Known geologic conditions in the vicinity of MIP 34 as determined using multiple data sources (monitoring well data, previous soil boring USCS classification data, gamma logging data and MIHPT data from nearby borings).

Based on these lines of evidence we can confidently conclude that this increase in electrical conductivity is a result of electrolyte-rich groundwater. Using the same data from nearby known geologic conditions we can infer that the more subtle increase in electrical conductivity (25-35 mS/m) observed at approximately 46 feet below ground surface can be interpreted the depth at which a true increase in low permeability soils is observed.

b. Review of the temperature data indicated that the water table is expected at approximately 24 to 24.5 feet below floor level (as inferred from the heating and cooling cycle of the probe).
c. ECD, PID and FID responses indicated the presence of elevated chlorinated solvents from 26 to approximately 46 feet below the floor level. The varying responses of the ECD, PID and FID indicated in the log are possible indication of an on-going natural degradation (varying chlorination status detectable by all detectors). Higher PID and FID response at this location when compared to most other MIP investigation locations may also be indicative of the presence of hydrocarbon.
d. All detectors returned to their respective baseline readings at approximately 46 feet below floor level.

4.2 MIP-39 Analysis

This MIHPT boring was installed inside a building located in the northwestern quarter of the project property and was completed to a total depth of 46.10 feet below floor level. Review of the quality assurance data for this boring indicated the following:

a. Results of all electrical resistance tests were within the acceptable range for the pre and post logging tests.
b. Mass flow readings of the courier gas were within the acceptable range. Mass flow values documented during the pre and posts-logging test were constant at approximately 41.9 mL/min.
c. Review of the MIP trunk-line pressure indicated small variations within the acceptable range.
d. ECD response for 1.0 ppm TCE Standard Test indicated a pre-logging value of approximately 2.8 x 10^5 µV, while the post logging value was approximately 2.3 x 10^5 µV.
e. Review of the probe temperature readings during the logging operation was in the range of 99.6 to 130^{o}C, within the acceptable range.
f. HPT flow and pressure test values obtained during the pre and post logging tests were in the acceptable range.

Based on the quality review above, the MIP data for this boring is acceptable and usable for the project objectives. The following is a *possible* interpretation of such data:

a. Review of the electrical conductivity data of the subsurface formation indicated readings in the range 1.2 to 205 mS/m. The maximum reading was encountered at 1.0 to 1.5 feet below grade, which appears to be a placed layer (man-made). The apparently natural formations exhibited electrical conductivity values less than 70 mS/m. It was noticed that lower electrical conductivity in the range of 1.2 to 10 mS/m were documented above the expected water table, while higher readings started immediately below the water table to the end of the boring. A second increase in electrical conductivity from 15 to 25 mS/m to 30 to 40 mS/m corresponds with a sharp increase in HPT pressure at approximately 41 feet below grade, indicating the presence of a low permeability clayey soil at that depth.
b. Review of the temperature data indicated that the water table is expected at approximately 17.9 feet below grade. However, hydraulic profiling data indicated a possible water table at approximately 17.5 feet below grade.
c. ECD, PID and FID responses indicated the presence of elevated chlorinated solvents including degradation pathway compounds at 21 feet and continued to approximately 38.25 feet below grade. However, FID response in the range of 1.5×10^5 to 3.8×10^5 uV was detected immediately at and below the water table, which could be attributed to dissolved straight chain hydrocarbon constituents, or pockets of vinyl chloride (pathway compound).
d. All detectors returned to their respective base line at and below 38 feet below grade.

4.3 MIP-60 Analysis

MIP-60 was installed near the southern boundary of the Project property and was completed to a total depth of 58.25 feet below grade. Review of the quality assurance data for this log indicated the following:

a. Readings of electrical resistance for the pre and post logging tests were within the acceptable range.
b. Mass flow of courier gas for the pre-logging test was approximately 44.7 mL/min and the post-logging value was approximately 37.2 mL/min. Both readings were within the acceptable range.
c. Review of the MIP trunk-line pressure readings during the logging operation indicated small variations (less than 1.0 psi) during data collection.
d. ECD response to 1.0 ppm TCE Standard Test indicated a pre-logging value of approximately 6.5×10^5 µV, while a post-logging reading was approximately 3.2×10^5 µV. Both readings were within the acceptable range.
e. Review of the probe temperature readings were within the range of 100 to 129^{o}C.
f. Review of all HPT flow and pressure test readings were acceptable for the pre and post-logging events.

Quality assurance review for this boring indicated that the data is acceptable and usable for the project objectives. The following is a *possible* interpretation of the data:

a. Review of the electrical conductivity data indicated values in the range of 1.2 to 35 mS/m. However, low values in the range of 1.2 to 5.6 mS/m were encountered from 4 to 17 feet below

grade. An increase in electrical conductivity readings was observed at 17 feet (at or near the water table), and a second increase in electrical conductivity was observed at 50 feet below grade. This second increase corresponds to a sharp increase in HPT pressure, indicating the presence of a low permeability clayey soil at that depth.

b. Review of the temperature data indicated that the water table is at approximately 16.2 feet below grade. However, HPT data indicated that the water table is at approximately 17.0 feet below grade.
c. ECD, PID and FID responses indicated the presence of chlorinated solvents and some intermediate degradation compounds at 7.5 to 22.0 feet below grade.
d. All detectors returned to their respective base lines at 22.0 feet below grade.

4.4 MIP-50 Analysis

This MIHPT boring was installed in the southeast portion of the Property, east of the demolished portion of the former manufacturing building. MIP-50 was completed to a total depth of 42.40 feet below grade. Review of the quality assurance data for this boring indicated the following:

a. All electrical resistance test values were within the acceptable range for the pre and post-logging tests.
b. Mass flow of the courier gas for the pre-logging test indicated a value of 43.8 mL/min, and the post-logging test value was 42.6 mL/min. Both values were in the acceptable range.
c. Review of the MIP trunk-line pressure during logging operations indicated small (<1.0 psi) and acceptable variation.
d. ECD response to the 1.0 ppm TCE standard during the pre-logging test indicated approximately 3.3×10^5 µV, and the post-logging test value was 3.4×10^5 µV.
e. Review of the temperature readings during the logging operations indicated values in the range of 100 to 128°C.

Based on the quality data review above, MIP-50 is acceptable and usable for the project objectives. This following is a possible interpretation of the data:

a. Electrical conductivity readings indicated the presence of a clayey layer from 1.8 to 3.0 feet below grade exhibiting values up to 32 mS/m. The unsaturated sandy formation from 3 to approximately 10 feet below grade exhibited an electrical conductivity less than 7 mS/m. An increase in electrical conductivity is observed at approximately 10 feet below grade. This increase corresponds with the approximate water table. A second increase in electrical conductivity is observed at approximately 39 feet. This increase corresponds to an increase in HPT pressure, indicating the presence of low permeability soil at that depth.
b. Review of temperature readings and HPT data indicated that the water table is at approximately 11 feet below grade.
c. ECD, PID and FID responses indicated the likely presence of chlorinated compounds from 12 to 39 feet below grade. High ECD response relative to PID and FID response indicated that the majority of the chlorinated compounds are parent compounds with a limited quantity of breakdown products.
d. All detectors returned to their respective baselines at approximately 39 feet below grade.

5.0 Data Simulation and Presentation

The frequency of MIP data collection is approximately one reading from all detectors for every 0.05 feet of probe advancement. Therefore, in one foot increment, the number of MIP data points is 20 readings of all detectors (or one reading for every 0.6 inch of depth). This vast amount of data, if accurate and representative can be modeled to simulate the extent and migration pathways of a subsurface plume. SER[90] conducted limited simulation of the data collected from the Project using Rockware® software. The simulation software choice was based on the following criteria:

1. The software processes the data using a solid and scientifically-based gridding mechanism that accommodates data directionality, vertical and horizontal spatial distribution, and frequent re-sampling of raw data for accurate simulation.
2. The software is equipped with tools to create accurate 3-D solid surface models, and multi-isosurfaces models. The 2-D modeling capability of the software is represented by accurate surface maps, cross-sections and fence diagrams.
3. The software recognizes all geographical coordinate systems that allow for accurate horizontal spatiality of the data and the resulting models.

SER[90] prepared 13 varying simulations of the MIP data for the Project to estimate the extent of the plume in the subsurface as follows. Copies of all maps and sections are provided in the **Simulated MIP Data, Attachment C** of this submittal.

1. **Maximum ECD Response Distribution**: This is a 2D gridded distribution of the maximum readings obtained at each MIP boring. The map can be used to assess the center of plume(s), and to possibly infer the locational history of contaminant release to the environment. The distribution is depicted on the **ECD Max Response Map, Attachment C, C-1**. Review of the map indicated the presence of two possible areas of subsurface impact: one area is centered on the northern half of the Project property, the second area of possible impact is centered on the southeast quarter of the project property.

2. **Moving Average ECD Response Distribution**: This is a 2D distribution of the average ECD response (per MIP location). The map results can be used to verify the results of the distribution of the maximums mentioned above. The results are depicted on the **ECD Moving Average Map, Attachment C, C-2**. Review of the resulting map confirms the presence of two distinct areas of subsurface impact as detailed above.

3. **Cross Section Index Map**: This is a reference map to illustrate the estimated strike-line of the different cross-sections prepared for the Project. The map is presented in the **Cross-section Index Map, Attachment C, C-3**.

4. Cross-section[3] **A-A'**: This cross-section of ECD readings extends west-east from MIP-65 to MIP-63. The estimated water table is depicted on the cross-section as shown. The estimated impact

[3] *This is a limited interpretation of the resulting cross-sections, further examination and interpretation is recommended by incorporating groundwater flow, gradient and velocity data.*

as indicated by ECD readings is in the range of 1.0 x 10^6 to 5.0 x 10^6 µV that extends from approximately 760.0 to 780.0 ft.[4] above mean sea level (*amsl*). The cross-section is provided in **Attachment C** of this submittal.

5. Cross-section **B-B'**: This cross-section extends west-east from MIP-8 to MIP-57. Review of the cross-section indicted the presence of substantial ECD readings in the range of 5.0 x 10^5 to 5.0 x 10^6 µV from 760.0 to 790.0 ft. *amsl*. The majority of the impact is below the inferred water table in the area. A copy of the cross-section is provided in **Attachment C**. Note that the apparent extension of the plume to depths greater than 50 feet at MIP-10 is an artifact of the modeling software that is a result of the ECD detector not returning to baseline prior to termination of the boring.

6. Cross-section **C-C'** extends west-east from MIP-52 to MIP-18. Review of the resulting cross-section indicated ECD readings in the range of 5.0 x 10^5 to 2.0 x 10^6 µV, and the majority of the impact is below the water table in the area. A copy of the cross-section is provided in **Attachment C**. Note that these cross sections are taken from a 3D visualization, as such areas of contamination between the borings illustrated on the cross section are present due to the model's extrapolation of data from MIP borings adjacent to the cross section.

7. Cross-section **D-D'** extends west-east from MIP-4 to MIP-49. Review of the section indicated substantial ECD readings in the range of 5.0 x 10^5 to 8.0 x 10^6 µV that extends from the surface (near MIP-3 and MIP-4 area) to approximately 743.0 ft. *amsl*. Furthermore, the substantial ECD response was documented in the area of MIP-23 and MIP-50 extending from approximately 748.0 ft. to 780.0 ft. *amsl* below the water table. A copy of the section is provided in **Attachment C**.

8. Cross-section **E-E'** extends north-south from MIP 64 to MIP-14. Review of the resulting section indicated elevated ECD readings extending from 753.0 ft. *amsl* to approximately 794.0 ft. *amsl*. Substantial ECD response was documented at MIP-64 extending from approximately 756.0 ft. to 763.0 ft. *amsl*. The section indicated that ECD readings in the southern half of its extent (MIP-9 towards MIP-14) were detected above and below the water table in the area. A copy of the cross-section is provided in **Attachment C**.

9. Cross-section **F-F'** extends north-south from MIP-59 location to MIP-12. Review of the section indicated ECD readings in the range of 5.0 x 10^5 to 4.0 x 10^6 µV, with elevated response detected at and near MIP-38 and MIP-39 locations extending from approximately 760.0 ft. to 782.0 ft. *amsl*. A copy of the cross-section is provided in **Attachment C**. Note that the apparent extension of the plume to depths greater than 50 feet at MIP-10 is an artifact of the modeling software that is a result of the ECD detector not returning to baseline prior to termination of the boring.

10. Cross-section **G-G'** is a north-south section extending from MIP-55 to MIP-56. Review of the resulting section indicated ECD readings in the range of 5.0 x 10^5 to 5.0 x 10^6 µV. Higher

[4] *For surface elevation, refer to the Cross-section.*

readings were detected at and near MIP-55 and MIP-36. All readings were below the water table in the area. A copy of the cross-section is provided in **Attachment C**.

11. Cross-section **H-H'** extends north-south from MIP-6 to MIP-61. Review of the section indicated elevated ECD readings in the range 5.0 x 10^5 to 2.0 x 10^6 µV extending from the surface (at and near MIP-3, 25 and 26) to approximately 750 ft. *amsl*. A copy of the cross-section is provided in **Attachment C**.

12. Cross-section **I-I'** extends from MIP-18 (north) to MIP-60 (south). Review of the section indicated the presence of elevated ECD readings in the range 5.0 x 10^5 to 2.0 x 10^6 µV extending from the surface (at and near MIP-5) to approximately 745.0 ft. *amsl*. A copy of the cross-section is provided in **Attachment C**.

13. Cross-section **J-J'** is a north-south section near the eastern boundary of the Project property extending from MIP-24 to MIP-47. Review of this section indicated substantial ECD readings in the range 1.0 x 10^6 to 8.0 x 10^6 µV. The elevated ECD response was documented underneath the locations of MIP-19, 23 and 24 extending approximately from 750.0 ft. to 775.0 ft. *amsl*. A copy of the cross-section is provided in **Attachment C**.

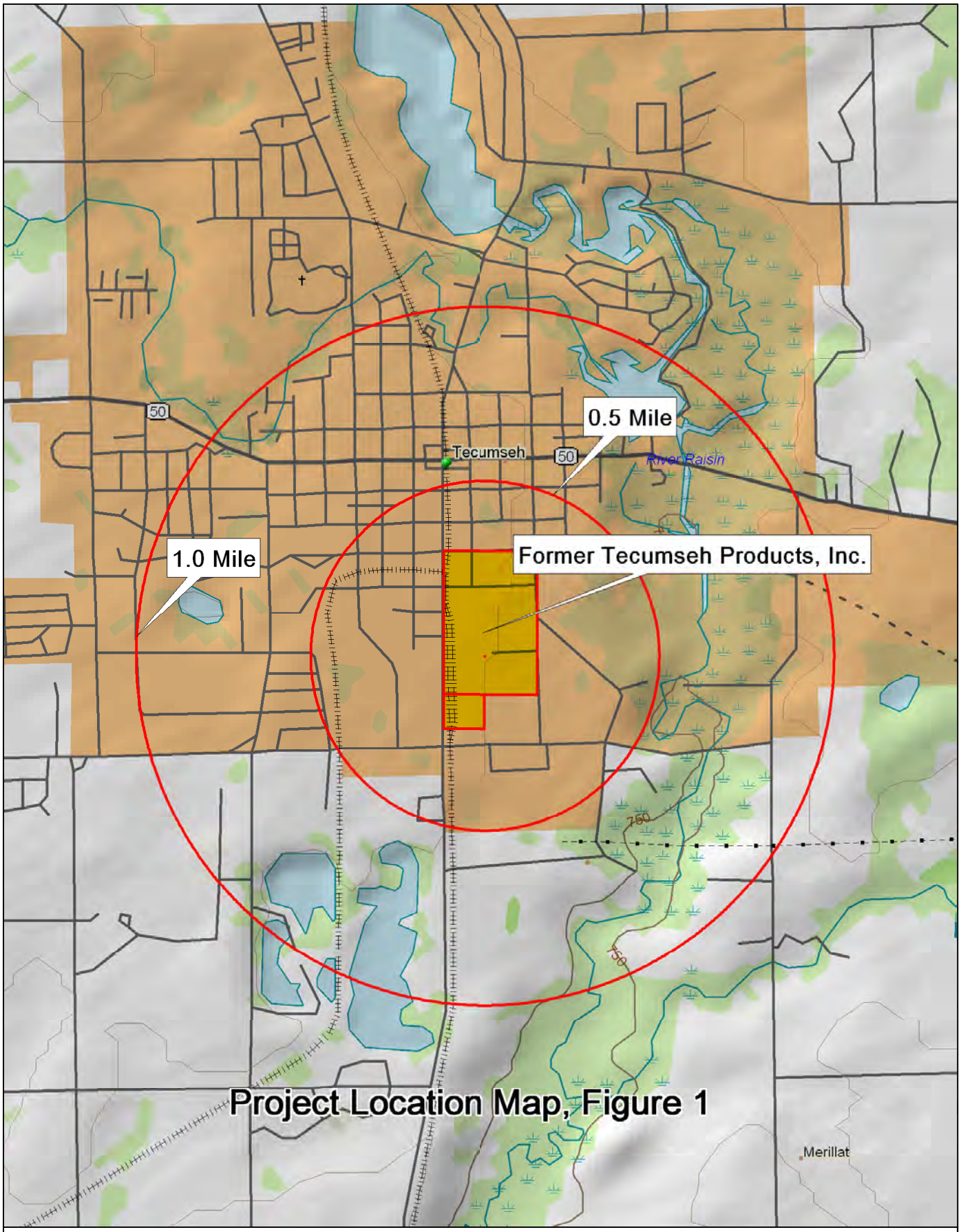
14. Cross-section **K-K'** is a short north-south section extending from MIP-50 to MIP-48 location. Review of the resulting section indicated the presence of substantial ECD readings in the range of 5.0 x 10^5 to 8.0 x 10^6 µV. A copy of the cross-section is provided in **Attachment C** of this submittal.

6.0 Conclusion

During the period of June 17 to July 24, 2014, SER^{90} installed 68 MIP and MIHPT borings at the Tecumseh Product, Inc., in Tecumseh, Michigan (the "Project"). Data quality review indicated the MIP and MIHPT data collected from the Project is in conformance with the ASTM D7352-07 and the acceptable standard operating procedure of SER^{90}. The data indicated the presence of electron-acceptor, flame and photo ionization detectors (ECD, FID and PID, respectively) readings, which are indicative of the presence of chlorinated solvents and their breakdown compounds in the subsurface formation and groundwater.

Attachment A

Figures & Drawings



Project Location Map, Figure 1

DELORME

© 2001 DeLorme. Topo USA® 3.0

Zoom Level: 12-5 Datum: WGS84

Scale 1 : 24,000

1" = 2,000.00 ft

0 ¼ ½ ¾ 1 mi

0 ¼ ½ ¾ 1 km

TN

MN

6.0°W

0.0 250.0 ft

MIP-10 MIP Boring Location. For Total Depth, Refer to Attachment B

PROJECT: **Former Tecumseh Products Company** Tecumseh, Michigan			PROJECT #: SER #: 1998-17-518
Title: **MIP Location Map**		Number: **Figure 2**	
Date: 10/21/2014	Drawn By: L. Doan	Reviewed By: S. Sirhan	File #: SE-075-0306

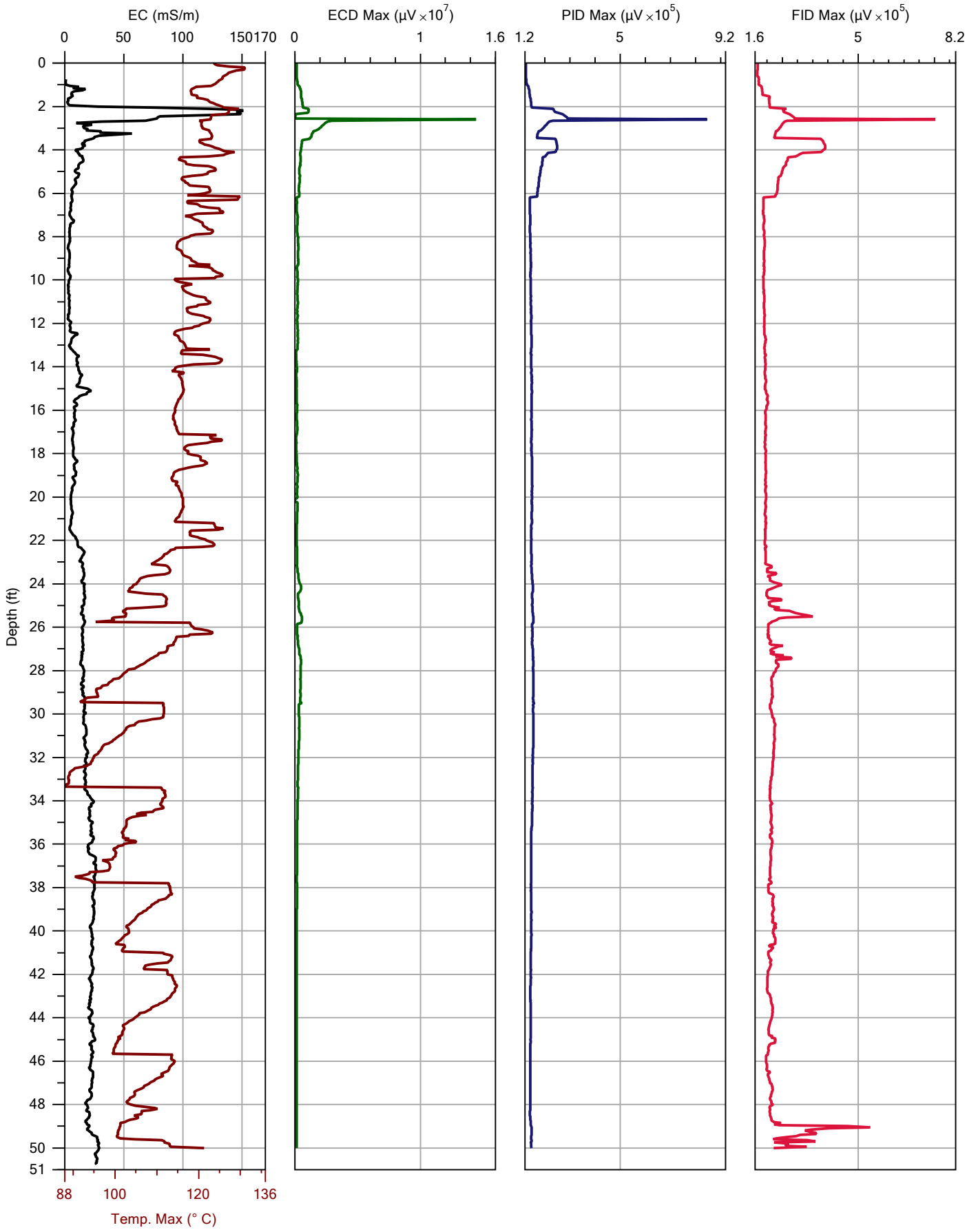
SER^{90}, Inc.
2101 Lincolnway East
Mishawaka, IN 46544

Revisions

No.	Date	By	
I			
II			
III			
IV			

Attachment B

MIP Raw Data



			File: MIP-01.MIP
Company: SER90		Operator: Sammy Sirhan	Date: 6/17/2014
Project ID: TPC-14-RI Investigation		Client: TRC	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.5	PASS
High	290.0	280.4	3.3	PASS

MIP-01.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy Sirhan
PROJECT ID: TPC-14-RI Investigation
CLIENT: TRC
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-01.pre.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 47 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 09:26:19

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 56 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jun 17 2014 09:32:38

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.60	0.792	128	1	1	1
3.50	1.067	128	1	1	1
20.05	6.111	1	1	1	1
20.60	6.279	1	1	1	1

LOG END DEPTH: 50.00 ft (15.240 m)
LOG END TIME: Tue Jun 17 2014 10:59:40

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

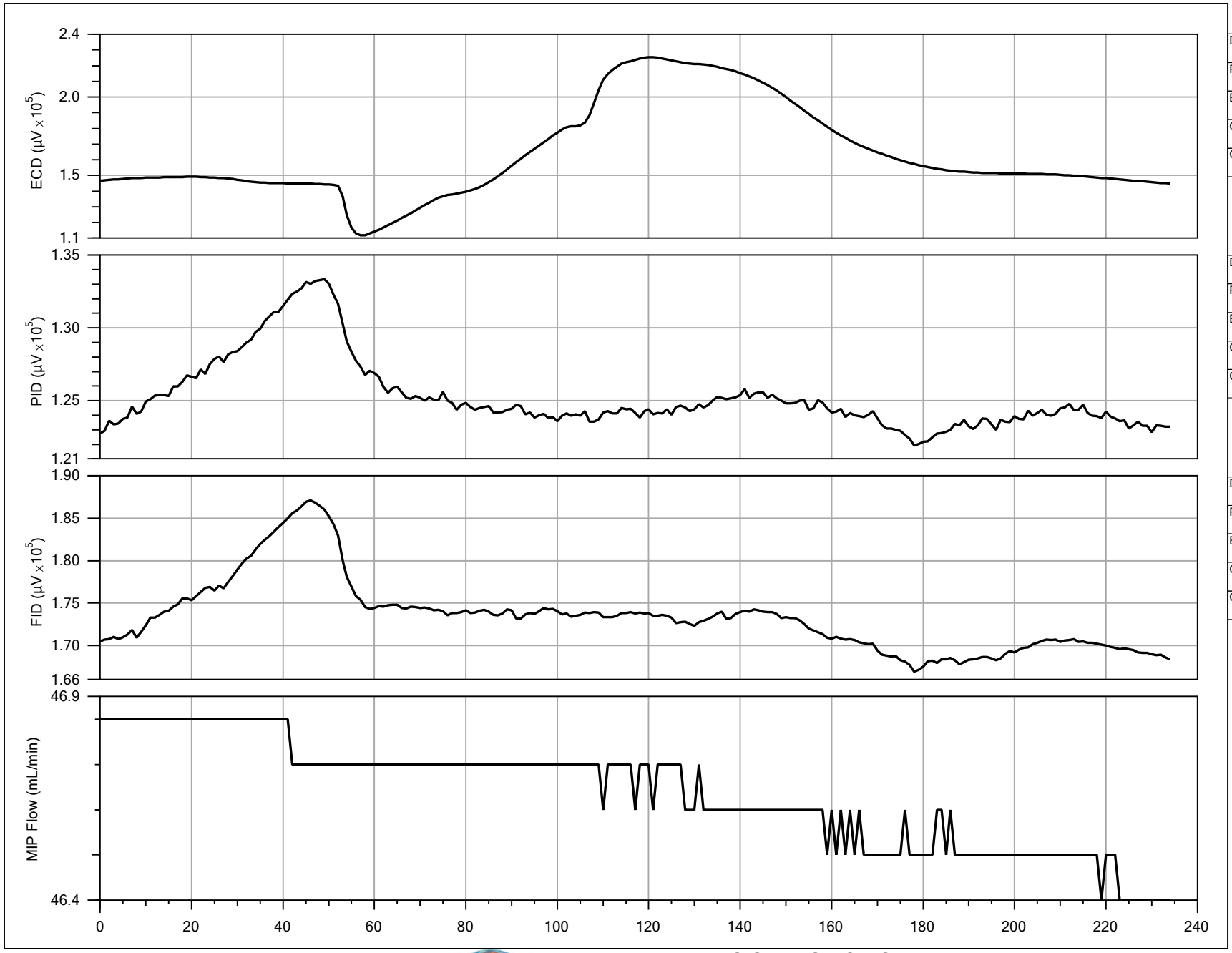
FILENAME: MIP-01.post.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 39.2 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 11:30:49

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.2	7.6	PASS
High	290.0	290.9	0.3	PASS



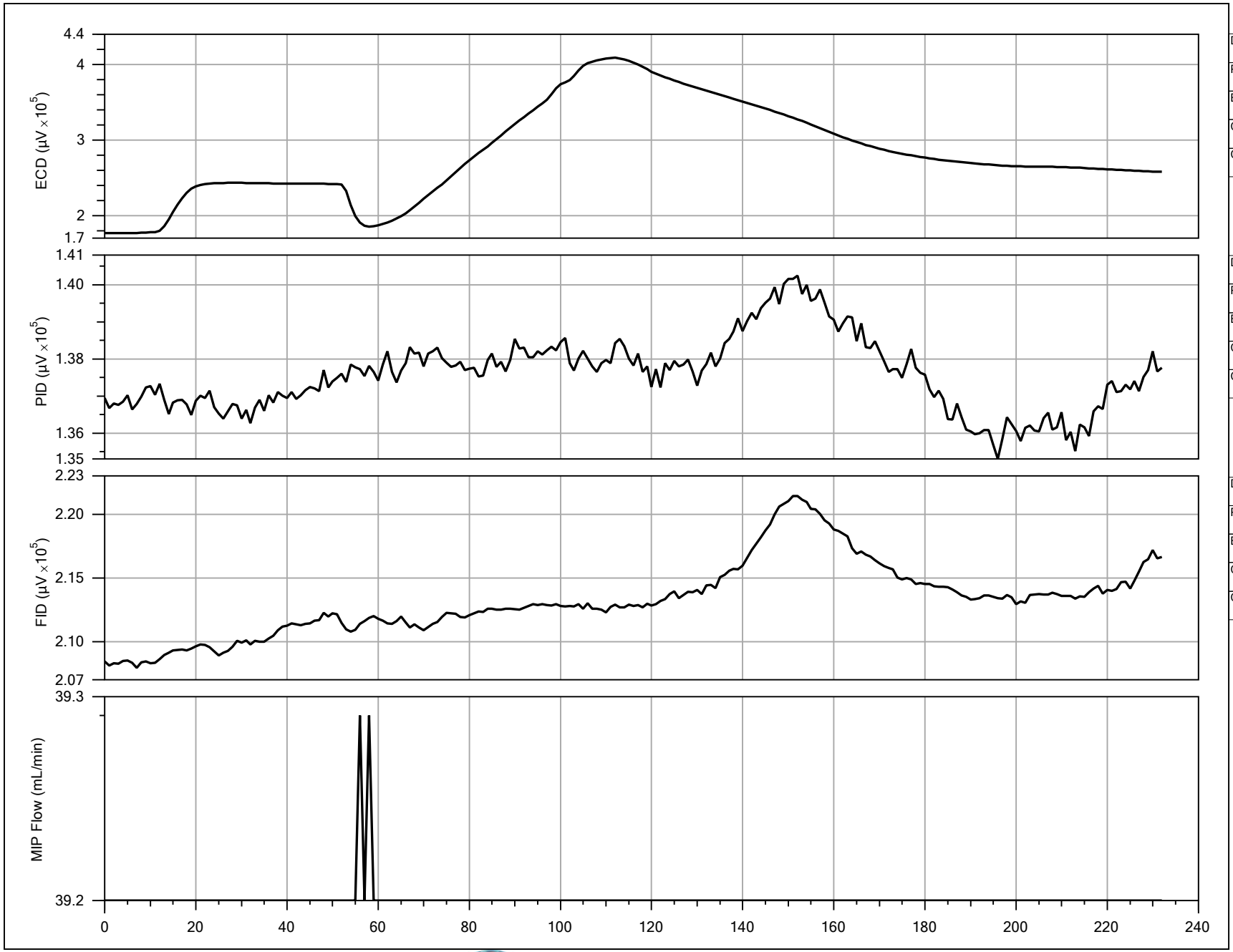
Detector:
ECD
Peak Response:
225471 μV
Baseline:
0 μV
Compound:
PCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
133328 μV
Baseline:
0 μV
Compound:
PCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
187086 μV
Baseline:
0 μV
Compound:
PCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy Sirhan	MIP-01.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI Investigation	TRC	6/17/2014



Detector:
ECD
Peak Response:
408910 µV
Baseline:
0 µV
Compound:
PCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
140240 µV
Baseline:
0 µV
Compound:
PCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
221427 µV
Baseline:
0 µV
Compound:
PCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy Sirhan	MIP-01.POST.TIM
Project ID:	Client:	Date:
TPC-14-RI Investigation	TRC	6/17/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-01.pre.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 47 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 09:26:19

RESPONSE TEST ATTENUATION CHANGES

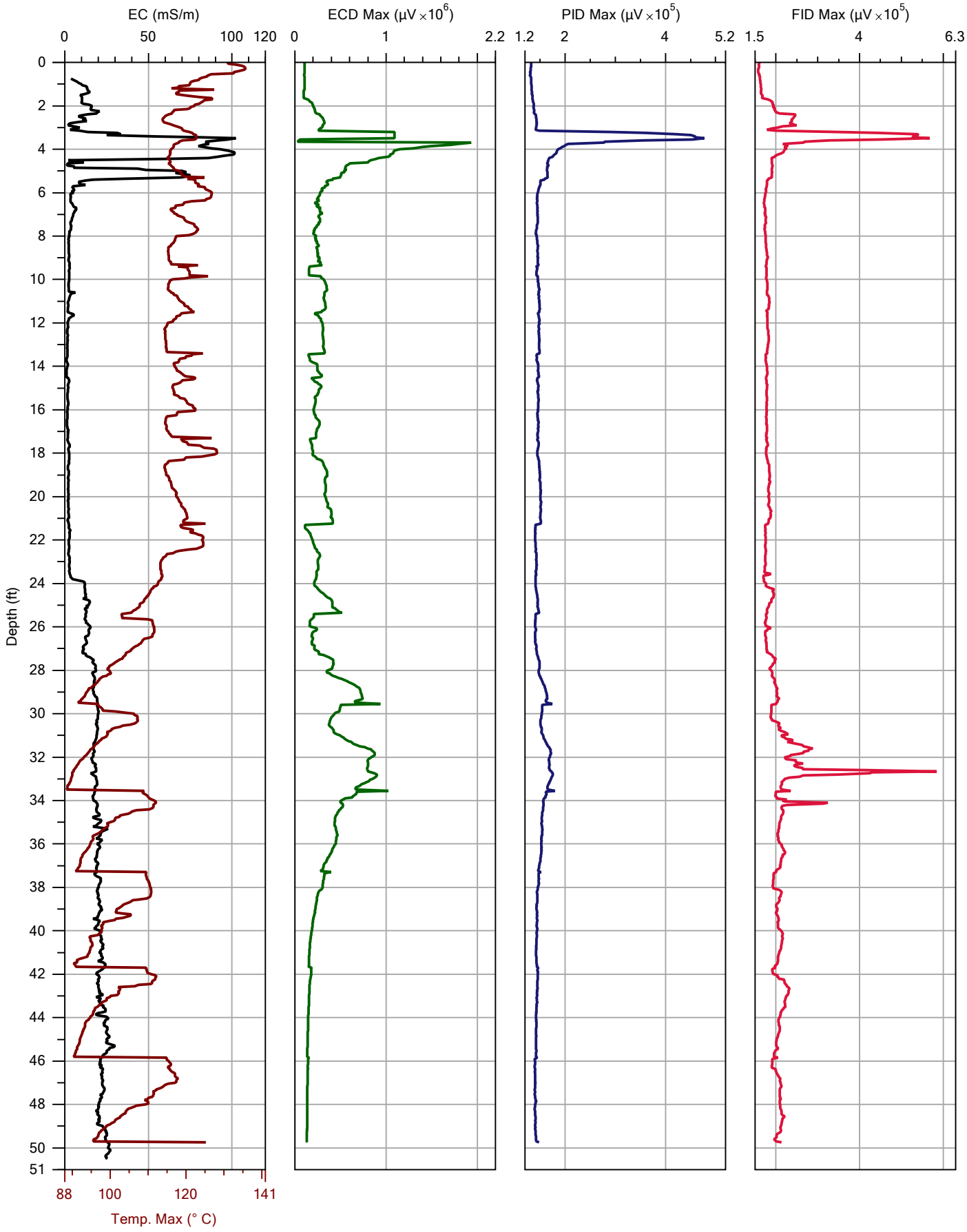
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-01.post.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 39.2 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 11:30:49

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-02.MIP
Company: SER90		Operator: Sammy Sirhan	Date: 6/17/2014
Project ID: TPC-14-RI Investigation		Client: TRC	Location: 41° 59′ 43″ N, 83° 56′ 35″ E

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	289.6	0.1	PASS

MIP-02.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy Sirhan
PROJECT ID: TPC-14-RI Investigation
CLIENT: TRC
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-02.pre.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 42.5 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 12:21:57

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 56 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jun 17 2014 12:27:15

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.70	1.128	128	1	1	1
9.35	2.850	1	1	1	1

LOG END DEPTH: 49.75 ft (15.164 m)
LOG END TIME: Tue Jun 17 2014 13:37:50

LATITUDE: 41.995280950
LONGITUDE: 83.942994564
ELEVATION: 221.224 METERS 725.80 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

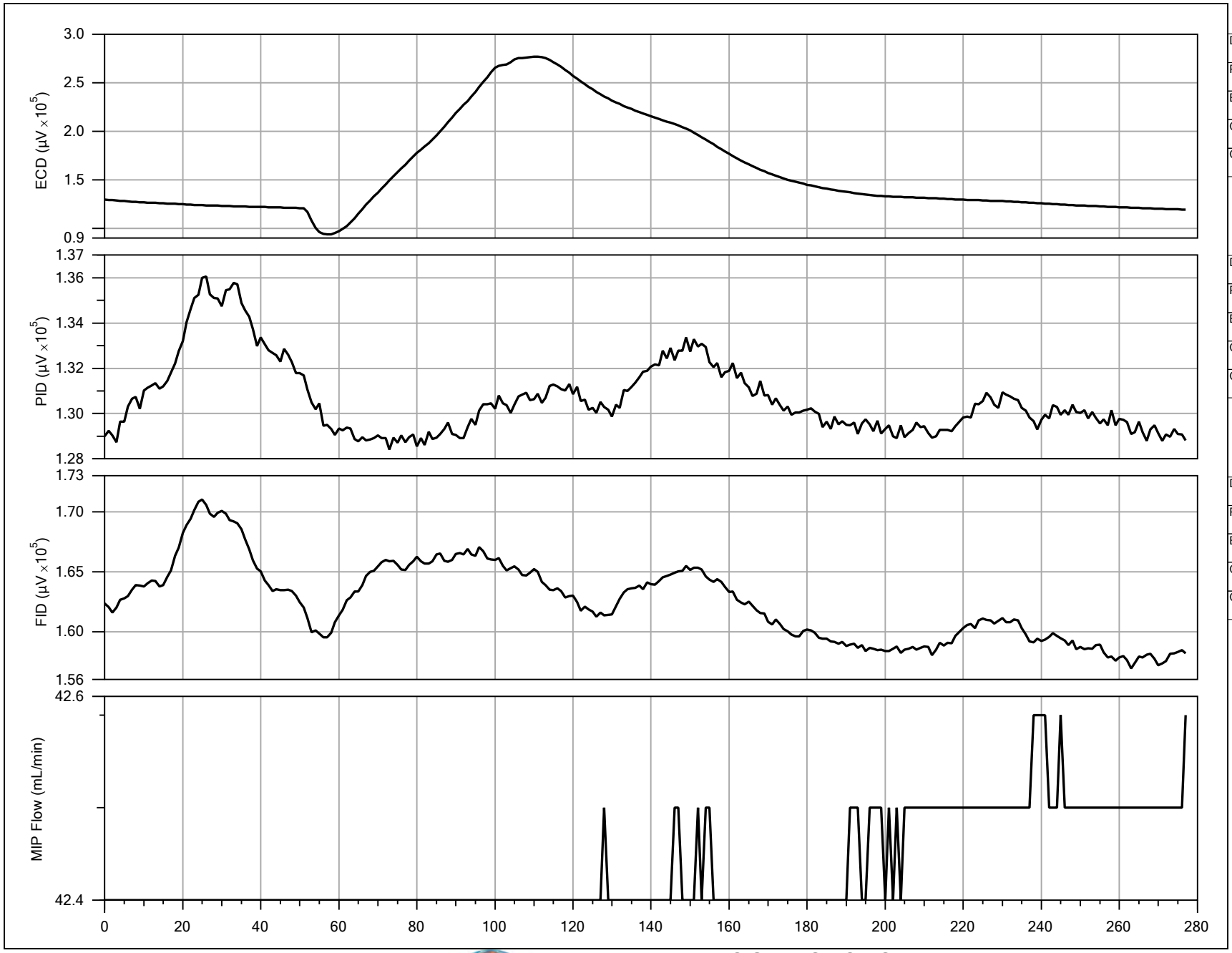
FILENAME: MIP-02.post.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 38.5 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 14:21:03

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
12	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	290.5	0.2	PASS



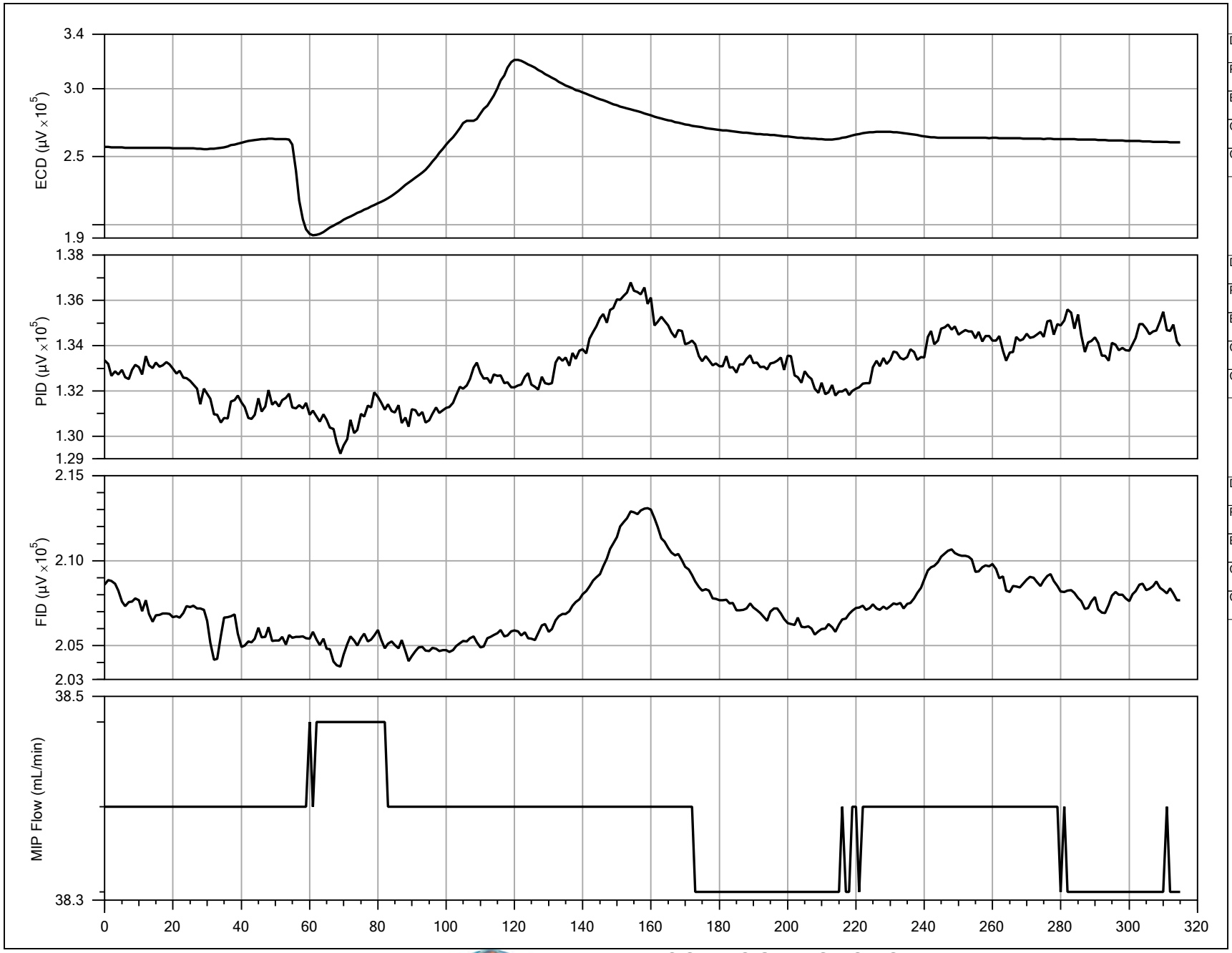
Detector:
ECD
Peak Response:
277024 µV
Baseline:
0 µV
Compound:
PCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
136059 µV
Baseline:
0 µV
Compound:
PCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
171018 µV
Baseline:
0 µV
Compound:
PCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy Sirhan	MIP-02.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI Investigation	TRC	6/17/2014



Detector:
ECD
Peak Response:
321253 μV
Baseline:
0 μV
Compound:
PCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
136799 μV
Baseline:
0 μV
Compound:
PCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
213103 μV
Baseline:
0 μV
Compound:
PCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy Sirhan	MIP-02.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI Investigation	TRC	6/17/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-02.pre.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 42.5 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 12:21:57

RESPONSE TEST ATTENUATION CHANGES

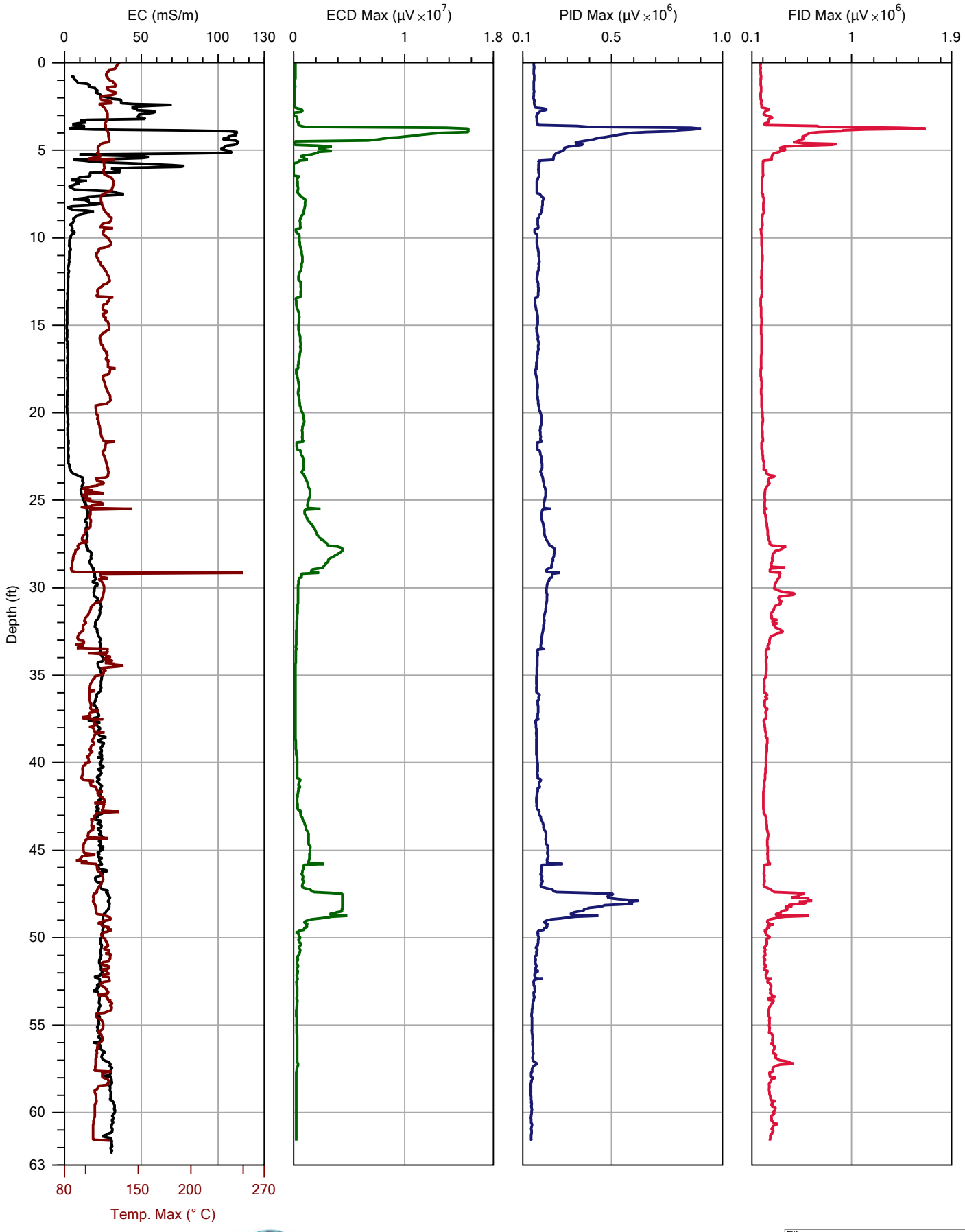
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-02.post.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 38.5 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 14:21:03

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
12	1	1	1	1



			File: MIP-03.MIP
Company: SER90		Operator: S. Sirhan	Date: 6/17/2014
Project ID: TPC-14-RI		Client: TRC Solutions	Location: 41° 59′ 42″ N, 83° 56′ 35″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.9	PASS
High	290.0	281.5	2.9	PASS

MIP-03.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-03.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 15:45:10

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 56 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jun 17 2014 15:49:02

Temperature out of range (199.9 deg C) at 29.15 ft (8.885 m)

Temperature out of range (61.1 deg C) at 33.20 ft (10.119 m)

Temperature out of range (78.0 deg C) at 45.80 ft (13.960 m)

MIP Pressure out of range (11.5 psi / 79 kPa) at 53.80 ft (16.398 m)

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.05	0.930	128	1	1	1
4.75	1.448	4096	1	1	1

5.55	1.692	128	1	1	1
5.70	1.737	4	1	1	1
6.55	1.996	4	1	1	1
41.40	12.619	4	1	1	1
48.40	14.752	128	1	1	1
48.65	14.829	512	1	1	1
50.25	15.316	16	1	1	1

LOG END DEPTH: 61.60 ft (18.776 m)
LOG END TIME: Tue Jun 17 2014 17:46:40

LATITUDE: 41.994934192
LONGITUDE: -83.942970531
ELEVATION: 210.291 METERS 689.93 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-03.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.4 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 18:26:16

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	16	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.5	PASS
High	290.0	291.4	0.5	PASS

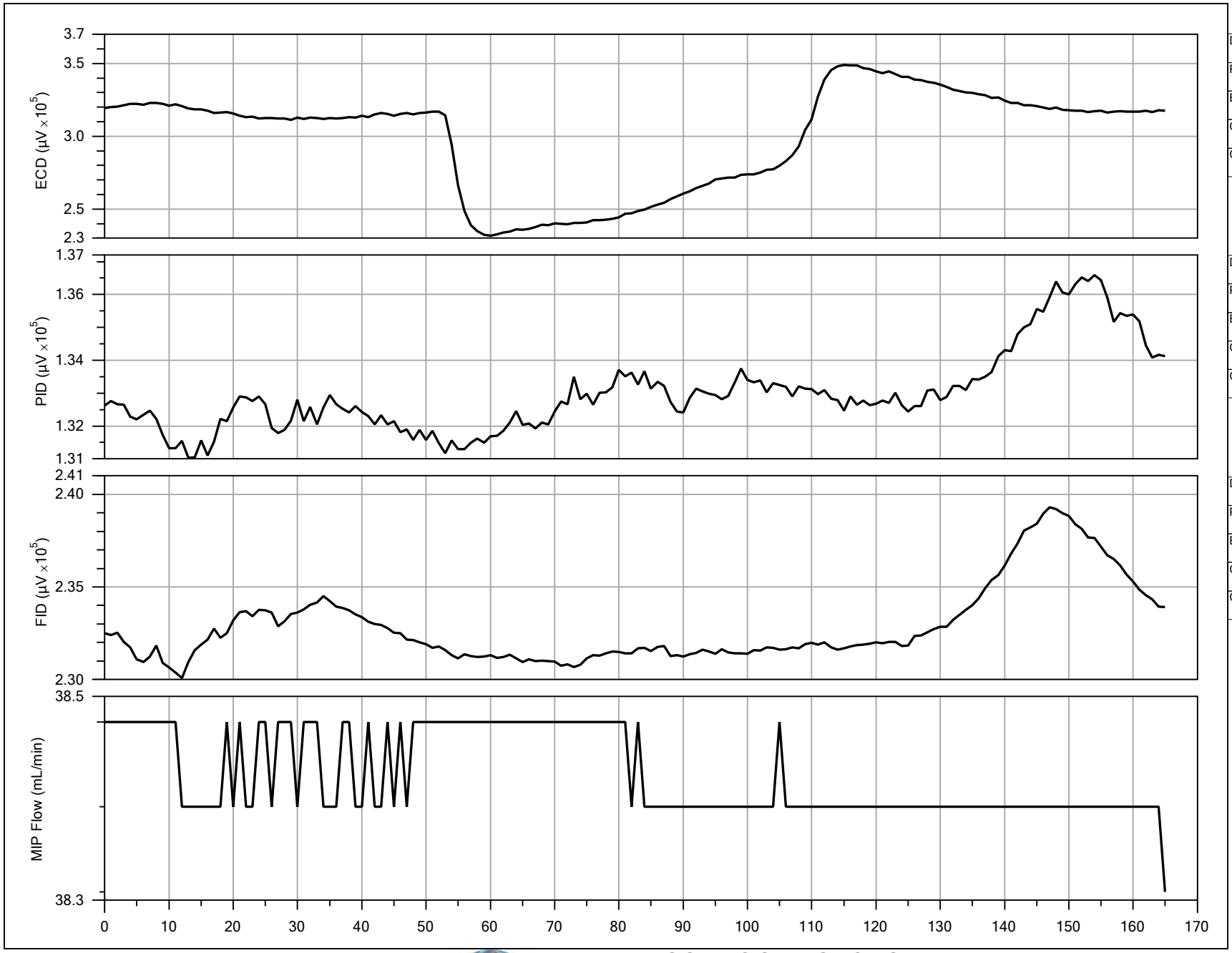
Detector:
ECD
Peak Response:
367084 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
148175 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
258019 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-03.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/17/2014



Detector:
ECD
Peak Response:
348888 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
136586 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
239296 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-03.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/17/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-03.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 15:45:10

RESPONSE TEST ATTENUATION CHANGES

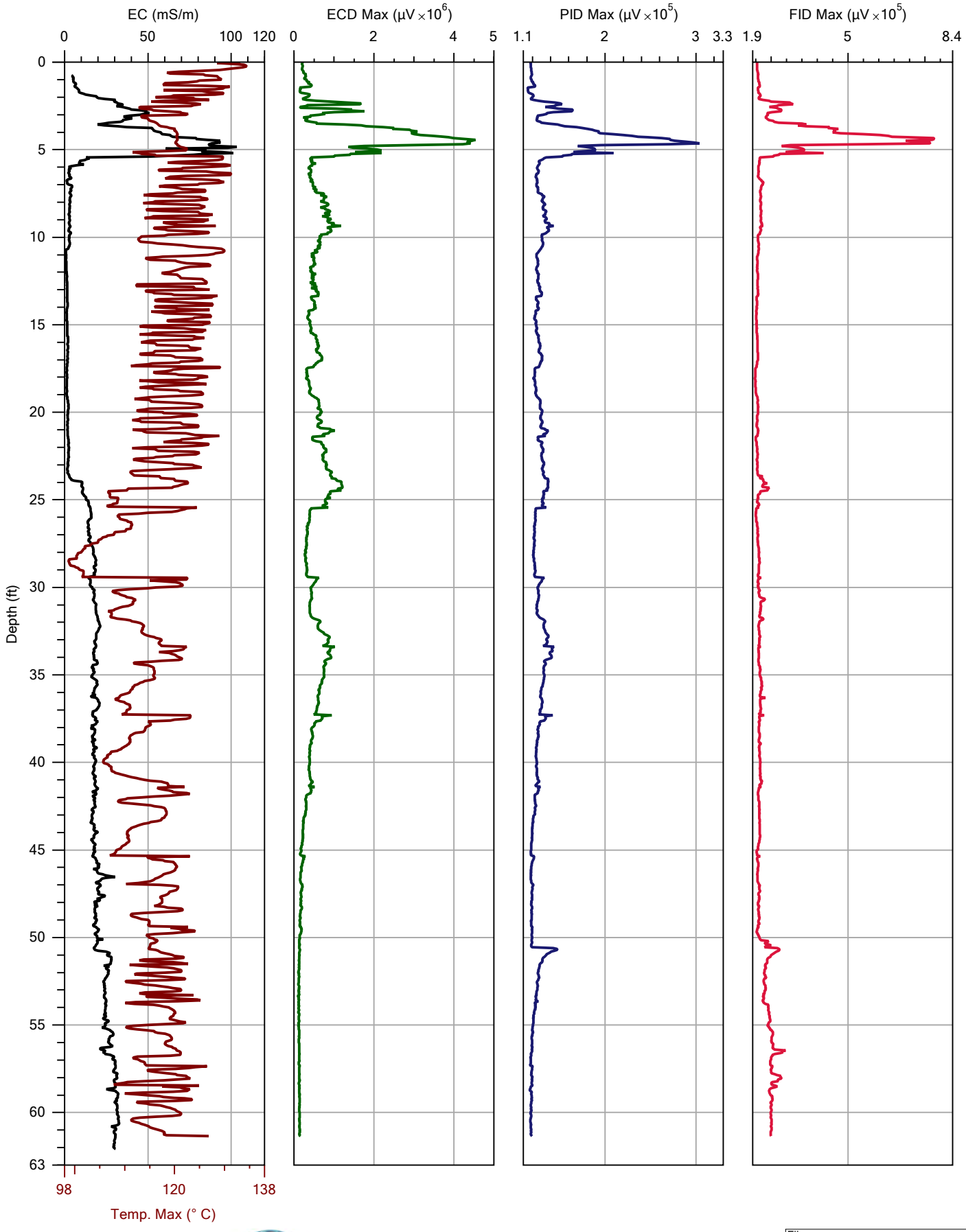
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-03.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.4 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 18:26:16

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	16	1	1	1



			File: MIP-04A.MIP
Company: SER90		Operator: S. Sirhan	Date: 6/18/2014
Project ID: TCP-14-RI		Client: TRC Solutions	Location: 41° 59′ 41″ N, 83° 56′ 36″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	292.2	0.8	PASS

MIP-04A.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TCP-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-04A.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.8 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 11:17:45

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
28	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jun 18 2014 11:21:17

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	128	1	1	1
2.65	0.808	512	1	1	1
13.35	4.069	128	1	1	1

LOG END DEPTH: 61.35 ft (18.699 m)
LOG END TIME: Wed Jun 18 2014 12:47:21

LATITUDE: 41.994729736
LONGITUDE: -83.943397897
ELEVATION: 210.320 METERS 690.03 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-04A.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.7 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 13:12:33

RESPONSE TEST ATTENUATION CHANGES

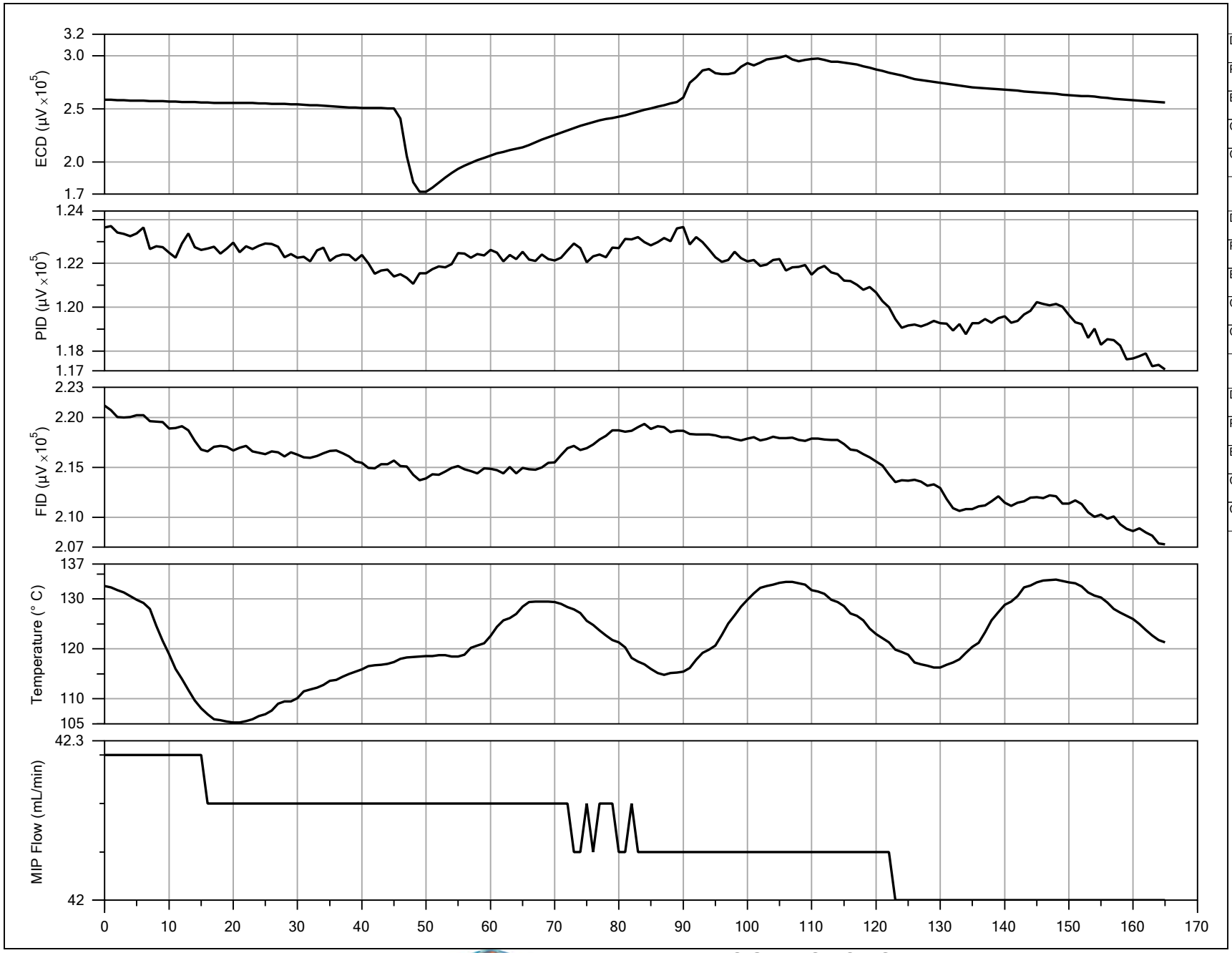
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	292.9	1.0	PASS

********** USER NOTES **********

This is a replacement of MIP-04. Original MIP-04 was terminated at 27.5 ft BGS due to erratic probe temperature. All data for MIP-04 is valid up to 27 ft BGS.



Detector:
ECD
Peak Response:
299715 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
123699 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
221168 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-04A.PRE.TIM
Project ID:	**Client:**	**Date:**
TCP-14-RI	TRC Solutions	6/18/2014

Detector:
ECD
Peak Response:
351176 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
112896 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
223945 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-04A.POST.TIM
Project ID:	Client:	Date:
TCP-14-RI	TRC Solutions	6/18/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-04A.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.8 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 11:17:45

RESPONSE TEST ATTENUATION CHANGES

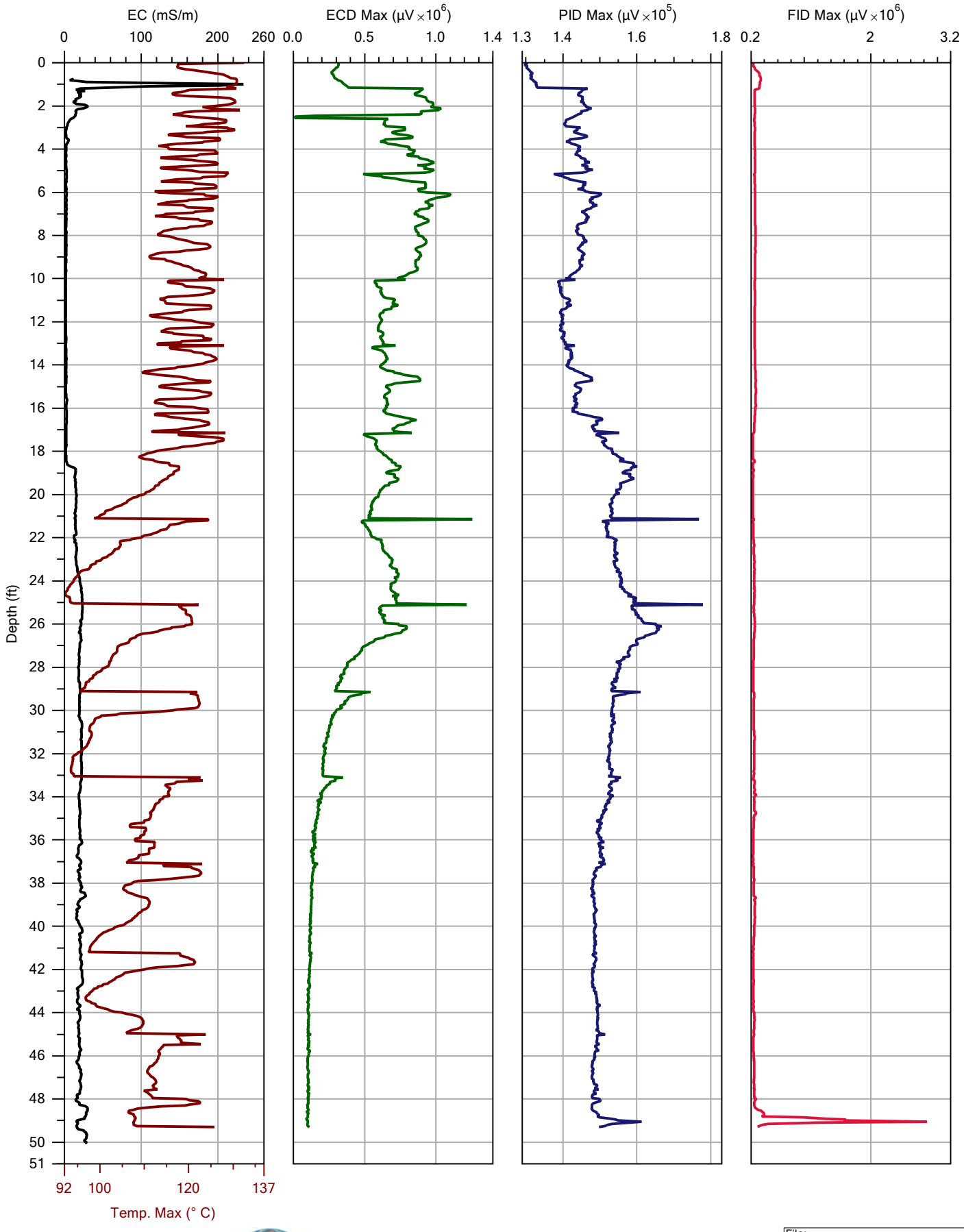
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
28	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-04A.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.7 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 13:12:33

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-05.MIP
Company: SER90		Operator: S. Sirhan	Date: 6/18/2014
Project ID: TCP-14-RI		Client: TRC Solutions	Location: 41° 59′ 41″ N, 83° 56′ 33″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.5	PASS
High	290.0	290.0	0.0	PASS

MIP-05.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TCP-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-05.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.2 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 13:46:48

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Wed Jun 18 2014 13:50:30

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.60	0.792	64	1	1	1
12.95	3.947	64	1	1	1
25.10	7.650	64	1	1	1

LOG END DEPTH: 49.30 ft (15.027 m)
LOG END TIME: Wed Jun 18 2014 15:09:00

LATITUDE: 41.994651028
LONGITUDE: -83.942535419
ELEVATION: 208.612 METERS 684.42 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-05.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.3 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 15:24:22

RESPONSE TEST ATTENUATION CHANGES

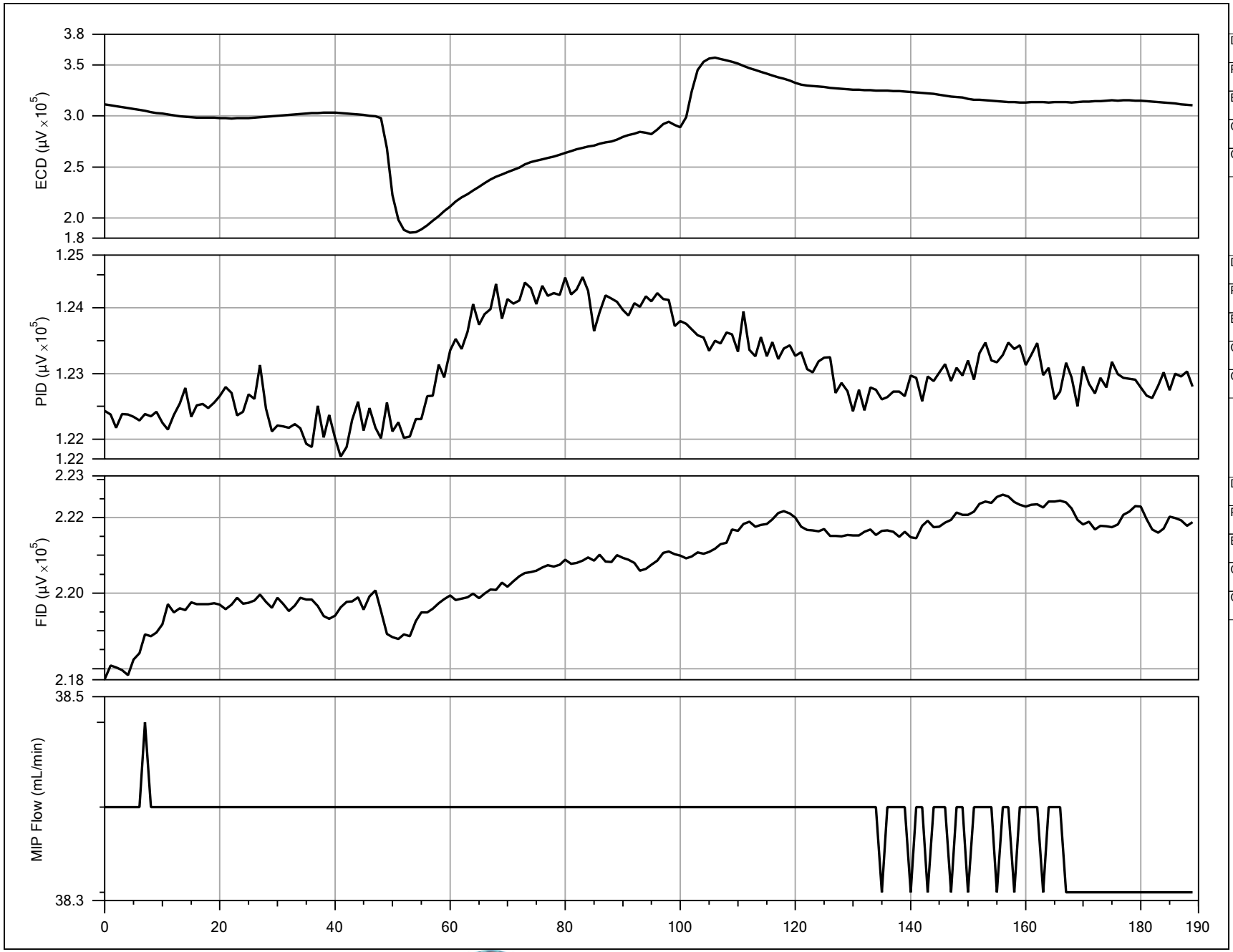
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.5	PASS
High	290.0	292.9	1.0	PASS

********** USER NOTES **********

Broing was terminated at 50 ft BGS due to storm with lightening. However, lower fine formation was captured.



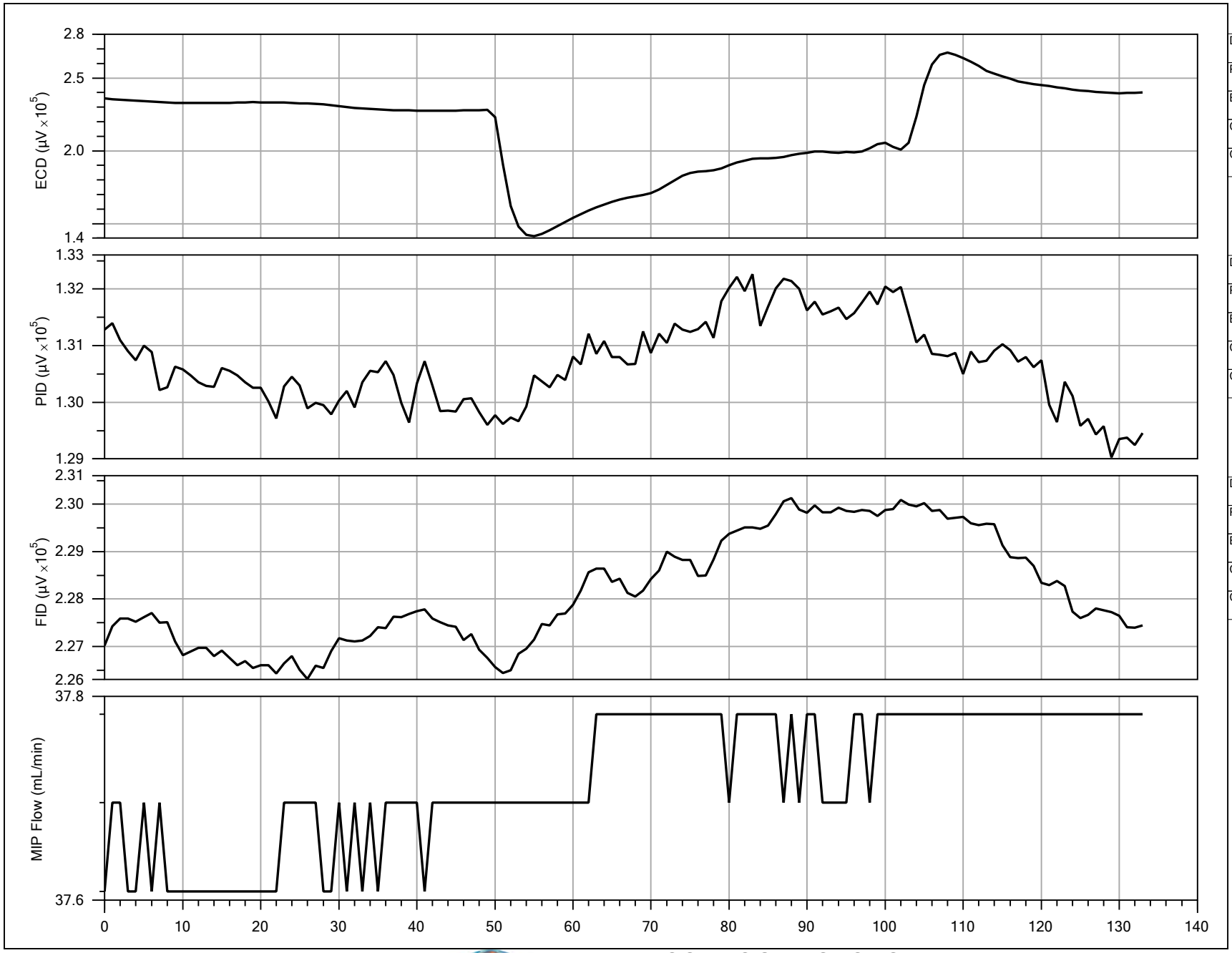
Detector:
ECD
Peak Response:
357044 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
124470 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
222610 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-05.PRE.TIM
Project ID:	**Client:**	**Date:**
TCP-14-RI	TRC Solutions	6/18/2014



Detector:
ECD
Peak Response:
267335 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
132260 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
230125 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-05.POST.TIM
Project ID:	Client:	Date:
TCP-14-RI	TRC Solutions	6/18/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-05.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.2 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 13:46:48

RESPONSE TEST ATTENUATION CHANGES

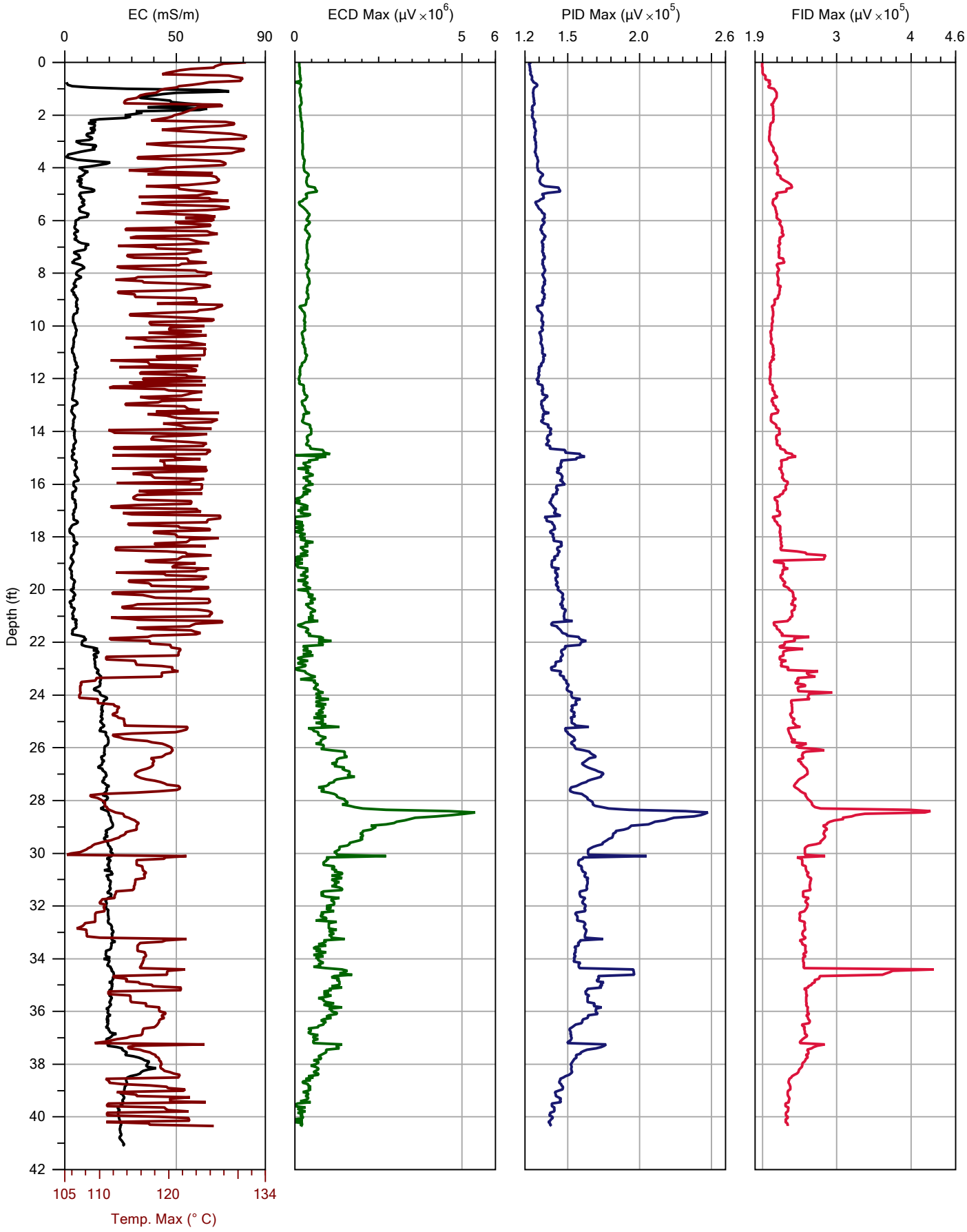
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-05.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.3 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 15:24:22

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-06.MIP
Company: SER90		Operator: Sammy	Date: 6/23/2014
Project ID: TPC-IR-14		Client: TRC Solution	Location: 41° 59′ 46″ N, 83° 56′ 37″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.4	PASS
High	290.0	289.1	0.3	PASS

MIP-06.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-IR-14
CLIENT: TRC Solution
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-06.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.2 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 11:54:21

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
21	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (79.9 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Mon Jun 23 2014 11:57:46

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.80	0.244	32	1	1	1
5.80	1.768	32	1	1	1
14.95	4.557	1024	1	1	1

LOG END DEPTH: 40.35 ft (12.299 m)
LOG END TIME: Mon Jun 23 2014 13:23:32

LATITUDE: 41.996245503
LONGITUDE: -83.943564278
ELEVATION: 211.044 METERS 692.40 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

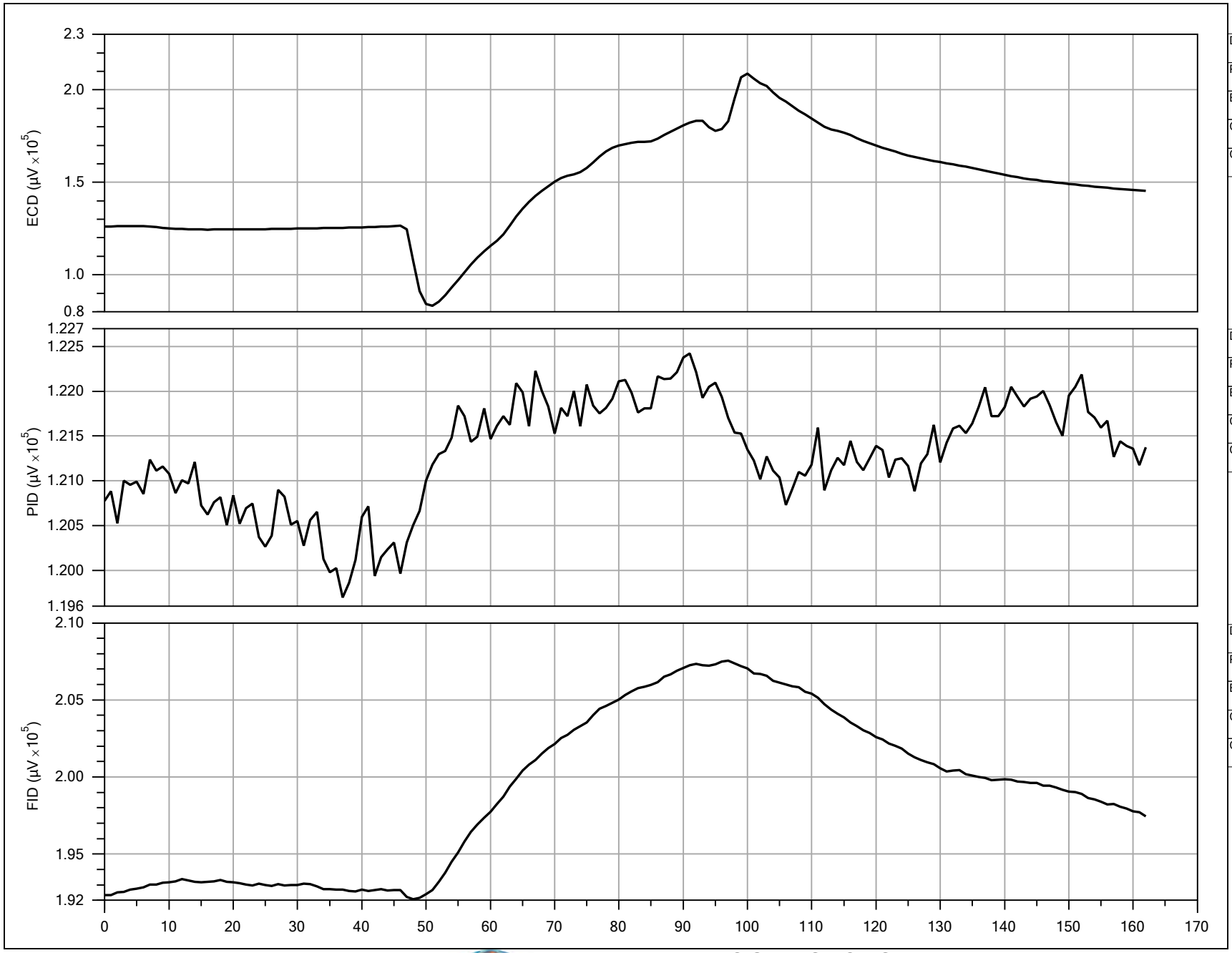
FILENAME: MIP-06.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.8 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 13:47:38

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
19	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.9	9.0	PASS
High	290.0	291.2	0.4	PASS



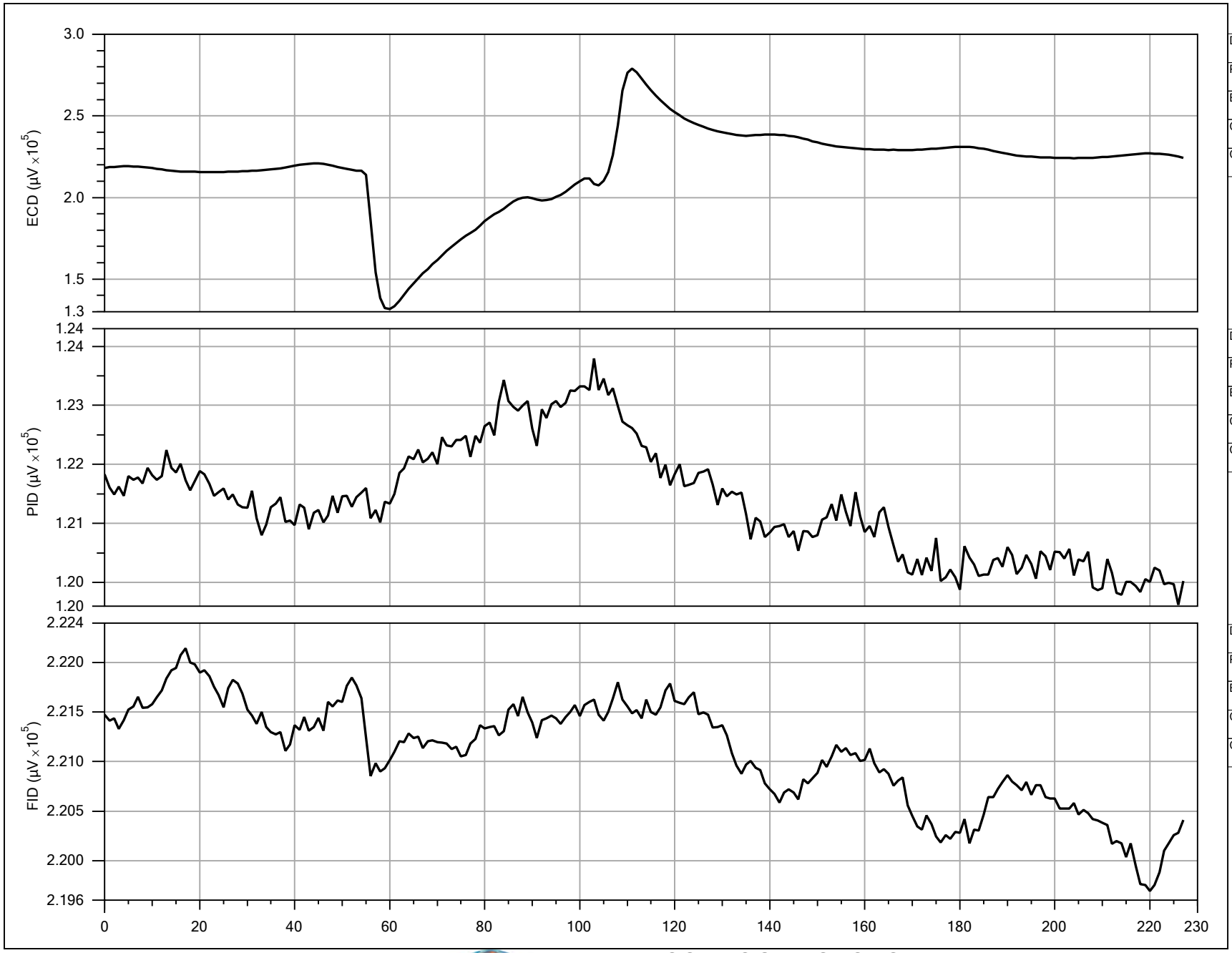
Detector:
ECD
Peak Response:
208846 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
122425 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
207564 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-06.PRE.TIM
Project ID:	Client:	Date:
TPC-IR-14	TRC Solution	6/23/2014



Detector:
ECD
Peak Response:
278893 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
123791 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
222144 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-06.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-IR-14	TRC Solution	6/23/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-06.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.2 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 11:54:21

RESPONSE TEST ATTENUATION CHANGES

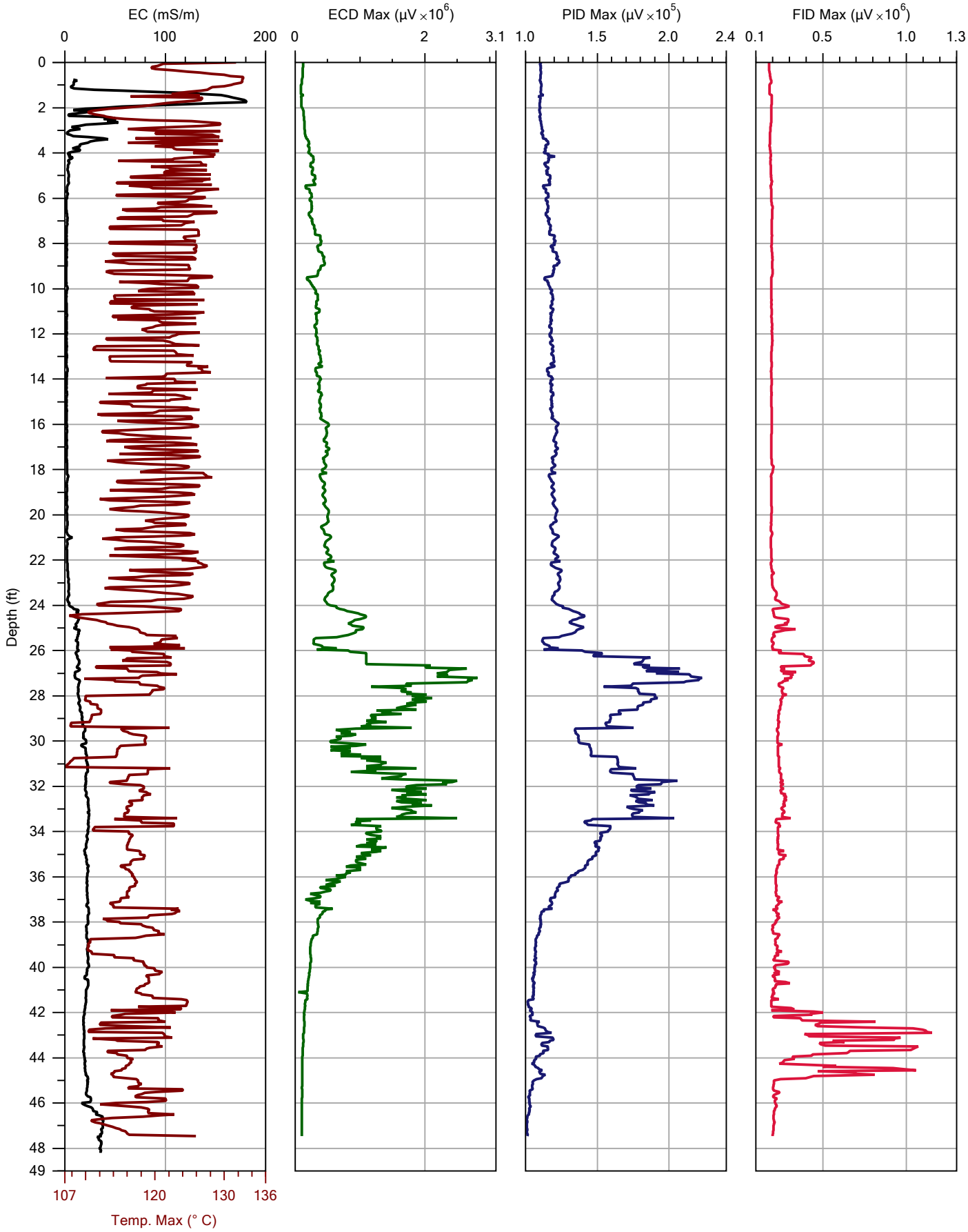
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
21	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-06.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.8 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 13:47:38

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
19	1	1	1	1



			File: MIP-07.MIP
Company: SER90		Operator: Sammy	Date: 6/23/2014
Project ID: TPC-IR-14		Client: TRC Solution	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.0	9.2	PASS
High	290.0	289.6	0.1	PASS

MIP-07.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-IR-14
CLIENT: TRC Solution
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-07.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.8 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 15:10:18

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Mon Jun 23 2014 15:13:33

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.90	1.189	1	1	1	1
26.65	8.123	16	1	1	1
26.95	8.214	1024	1	1	1
37.40	11.400	4	1	1	1
41.05	12.512	1	1	1	1

LOG END DEPTH: 47.45 ft (14.463 m)
LOG END TIME: Mon Jun 23 2014 16:49:15

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

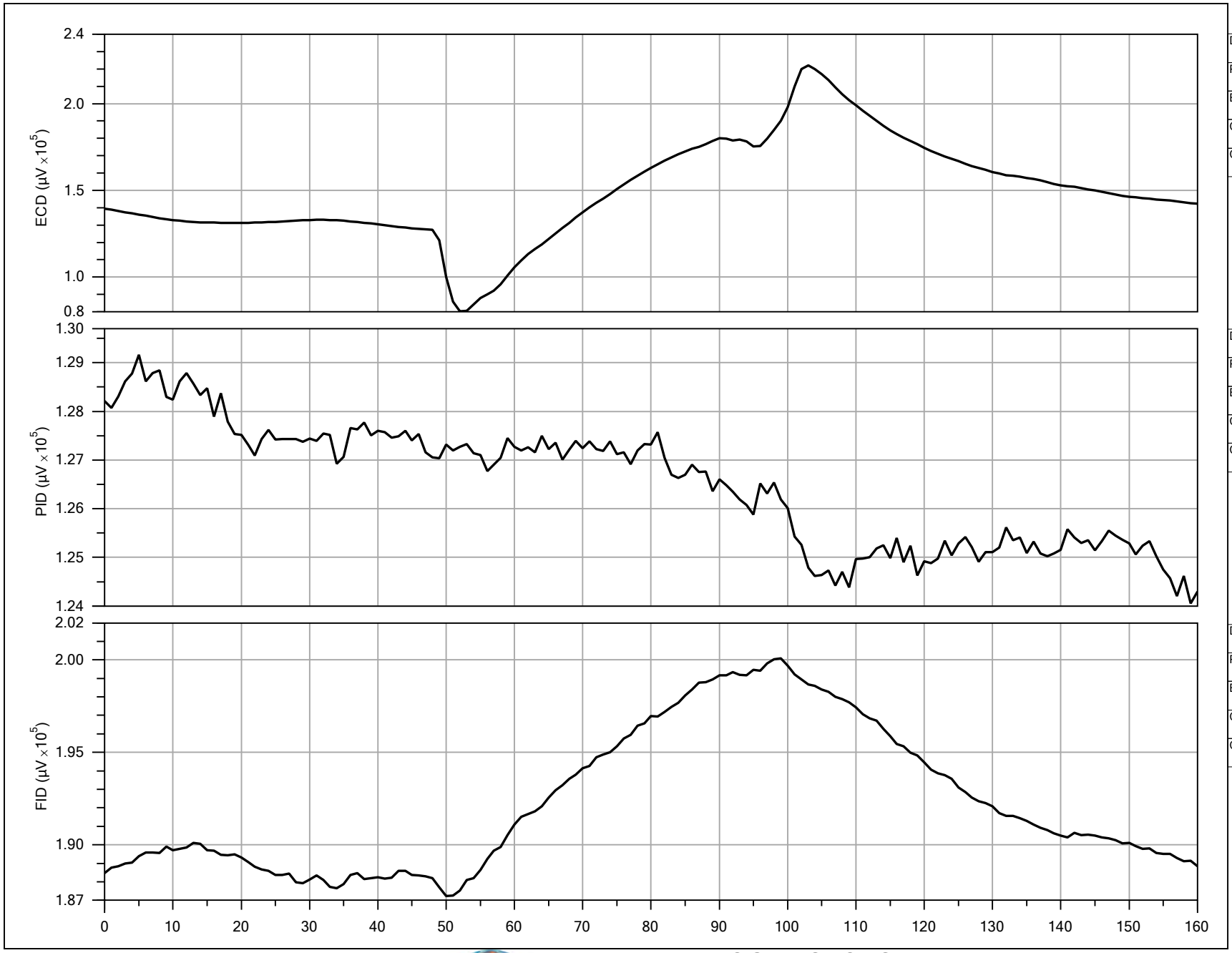
FILENAME: MIP-07.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.1 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 17:10:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
43	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.6	8.4	PASS
High	290.0	293.3	1.1	PASS



Detector:
ECD
Peak Response:
222205 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
129162 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
200072 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-07.PRE.TIM
Project ID:	Client:	Date:
TPC-IR-14	TRC Solution	6/23/2014

Detector:
ECD
Peak Response:
232002 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
94432 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
187429 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-07.POST.TIM
Project ID:	Client:	Date:
TPC-IR-14	TRC Solution	6/23/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-07.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.8 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 15:10:18

RESPONSE TEST ATTENUATION CHANGES

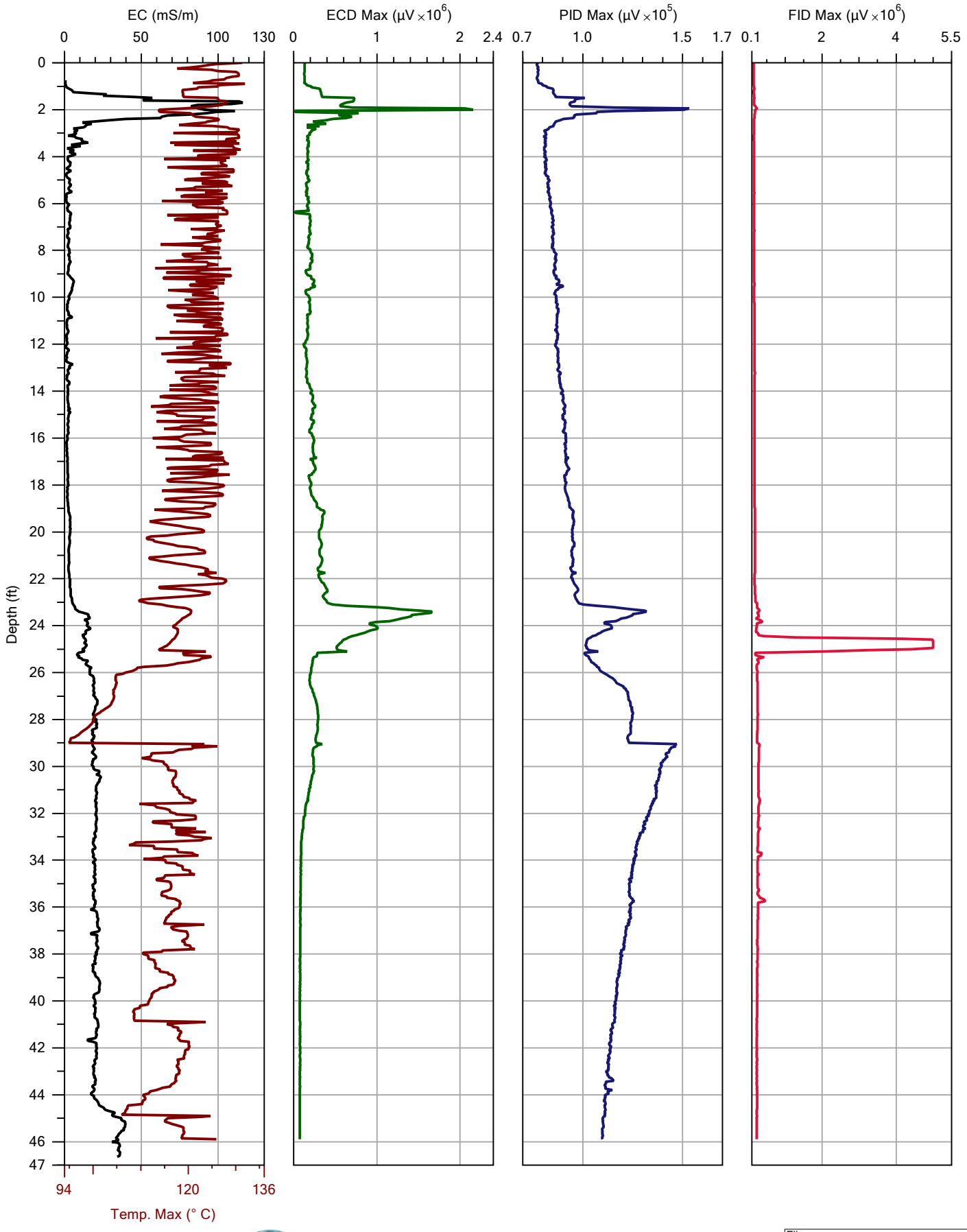
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-07.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.1 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 17:10:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
43	1	1	1	1



			File: MIP-08.MIP
Company: SER90		Operator: Sammy	Date: 6/24/2014
Project ID: TPC-14 RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	55.7	1.2	PASS
High	290.0	277.7	4.2	PASS

MIP-08.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-14 RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-08.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 49.9 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 09:29:10

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
34	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jun 24 2014 09:32:13

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.50	0.457	16	1	1	1
2.15	0.655	1024	1	1	1
2.75	0.838	64	1	1	1
6.30	1.920	8	1	1	1
9.80	2.987	8	1	1	1

LOG END DEPTH: 45.90 ft (13.990 m)
LOG END TIME: Tue Jun 24 2014 11:16:34

LATITUDE: 0.000000000
LONGITUDE: 0.000000000

ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-08.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 49.9 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 11:43:26

RESPONSE TEST ATTENUATION CHANGES

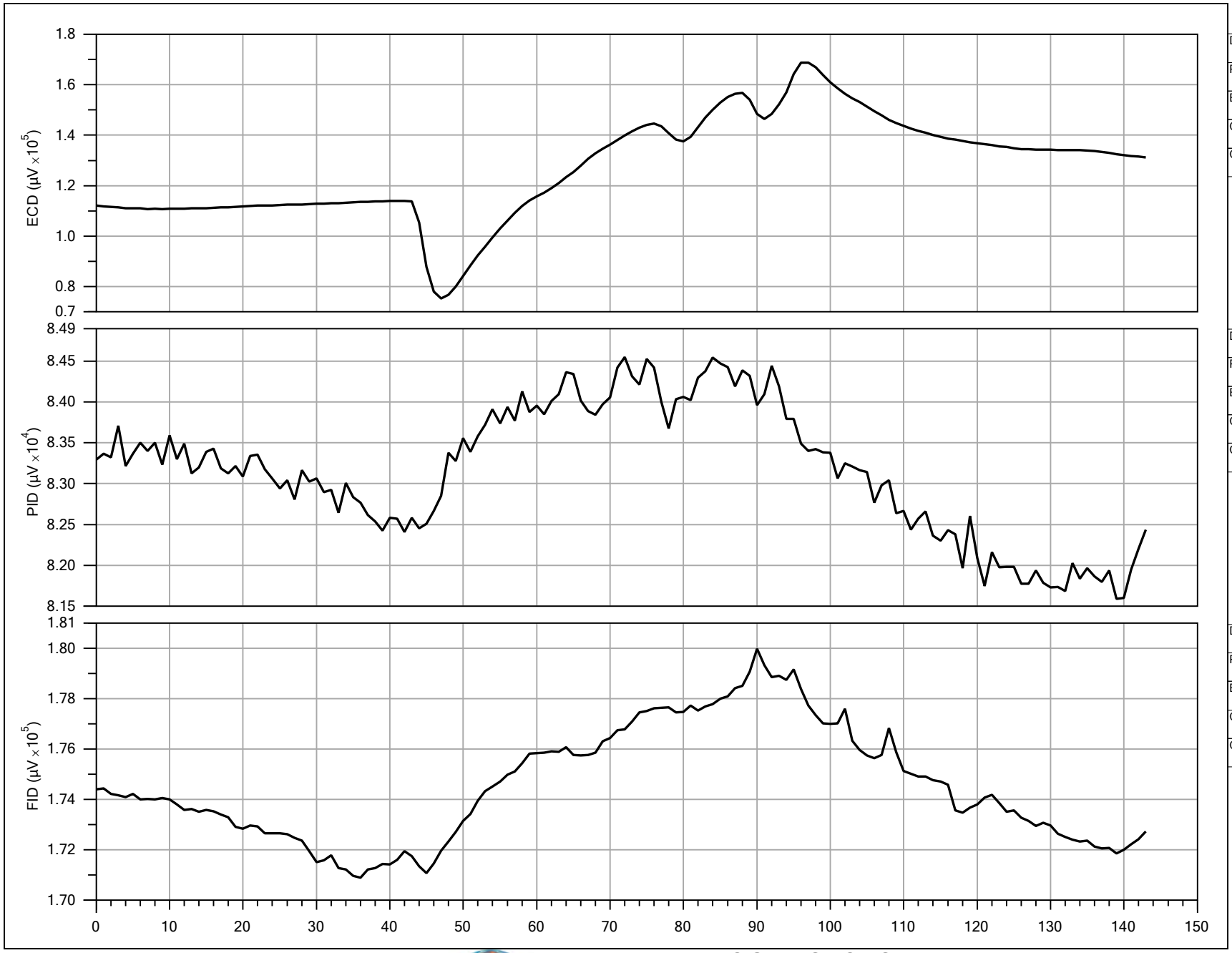
TIME	DET1	DET2	DET3	DET4
0	8	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.0	9.1	PASS
High	290.0	294.5	1.5	PASS

********** USER NOTES **********

The concrete is 20 to 24 inch. Logging started at floor surface for consistency.



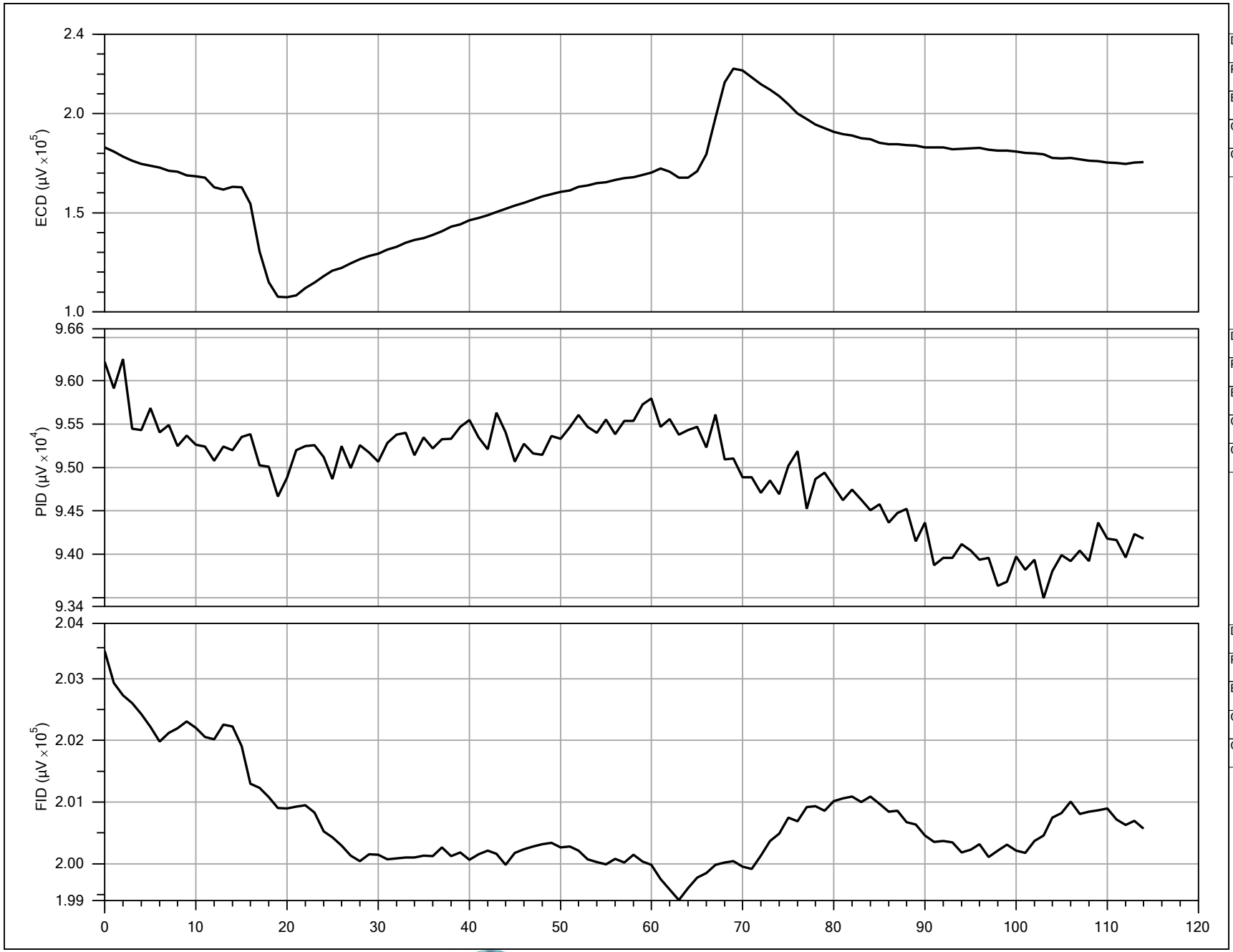
Detector:
ECD
Peak Response:
168851 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
84552 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
179983 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-08.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14 RI	TRC Solutions	6/24/2014



Detector:
ECD
Peak Response:
222724 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
96248 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
203452 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-08.POST.TIM
Project ID:	Client:	Date:
TPC-14 RI	TRC Solutions	6/24/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-08.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 49.9 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 09:29:10

RESPONSE TEST ATTENUATION CHANGES

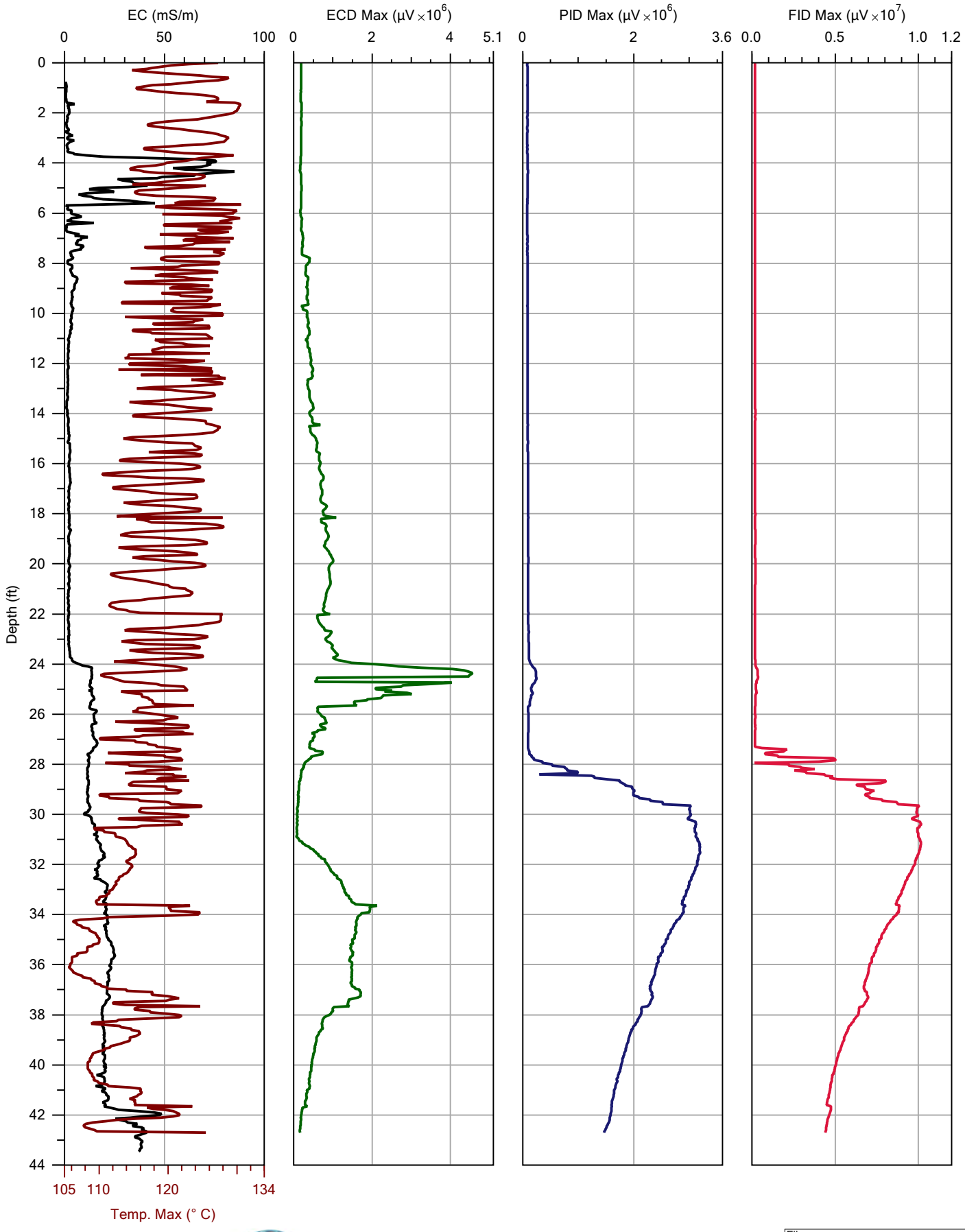
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
34	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-08.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 49.9 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 11:43:26

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	8	1	1	1



			File: MIP-09.MIP
Company: SER90		Operator: Sammy	Date: 6/24/2014
Project ID: TPC-14 RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.6	8.4	PASS
High	290.0	293.2	1.1	PASS

MIP-09.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-14 RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-09.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.7 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 11:48:57

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	8	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (62.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (35.3 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jun 24 2014 11:52:51

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	8	1	1	1
0.60	0.183	8	1	1	1
24.75	7.544	64	1	1	1
28.00	8.534	64	1	10	1
28.45	8.672	64	4	10	1
29.05	8.854	64	4	10	1

LOG END DEPTH: 42.70 ft (13.015 m)
LOG END TIME: Tue Jun 24 2014 13:42:13

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

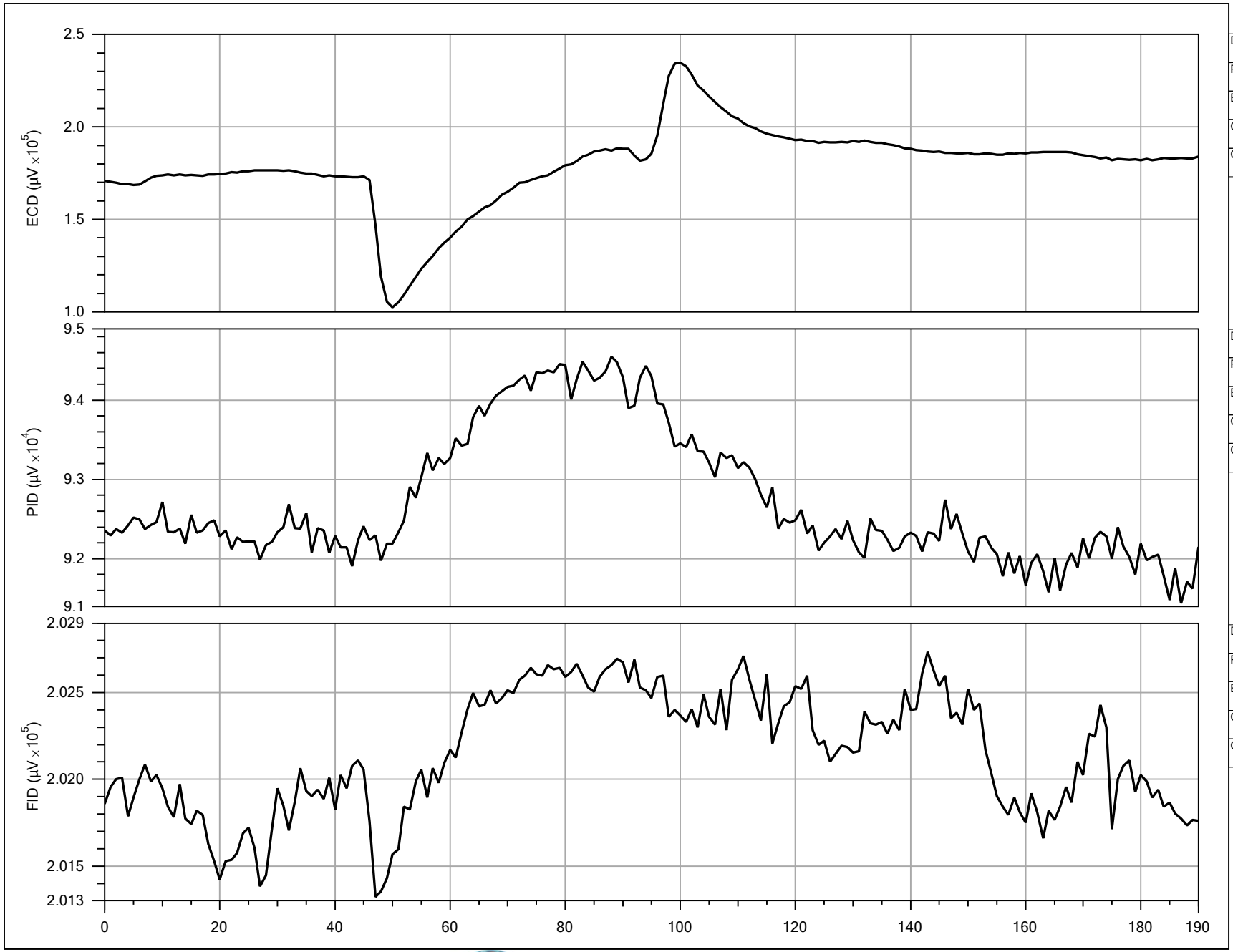
FILENAME: MIP-09.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.7 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 14:48:08

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.9	8.9	PASS
High	290.0	294.4	1.5	PASS



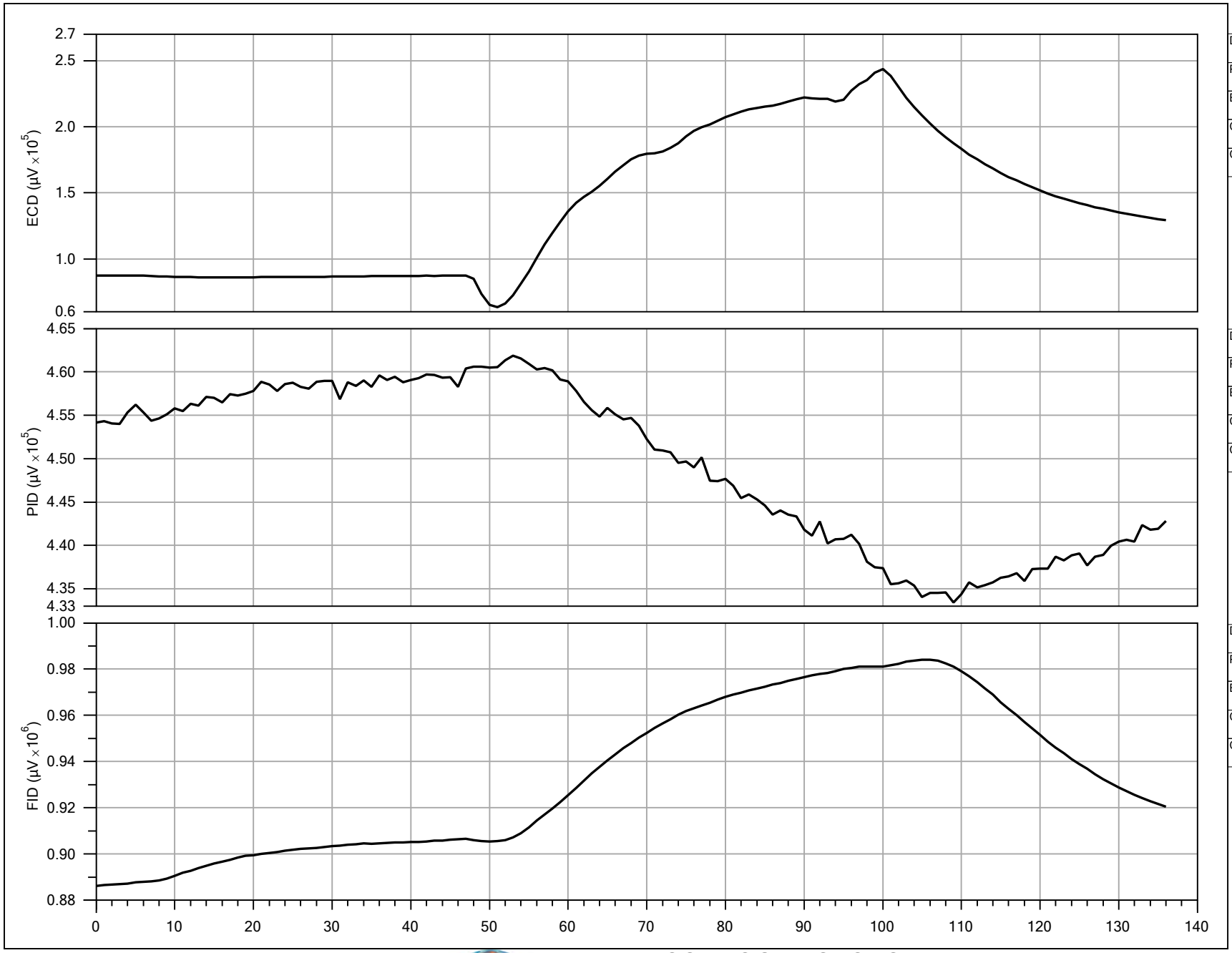
Detector:
ECD
Peak Response:
234626 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
94546 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
202734 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-09.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14 RI	TRC Solutions	6/24/2014



Detector:
ECD
Peak Response:
243843 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
461890 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
984146 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-09.POST.TIM
Project ID:	Client:	Date:
TPC-14 RI	TRC Solutions	6/24/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-09.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.7 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 11:48:57

RESPONSE TEST ATTENUATION CHANGES

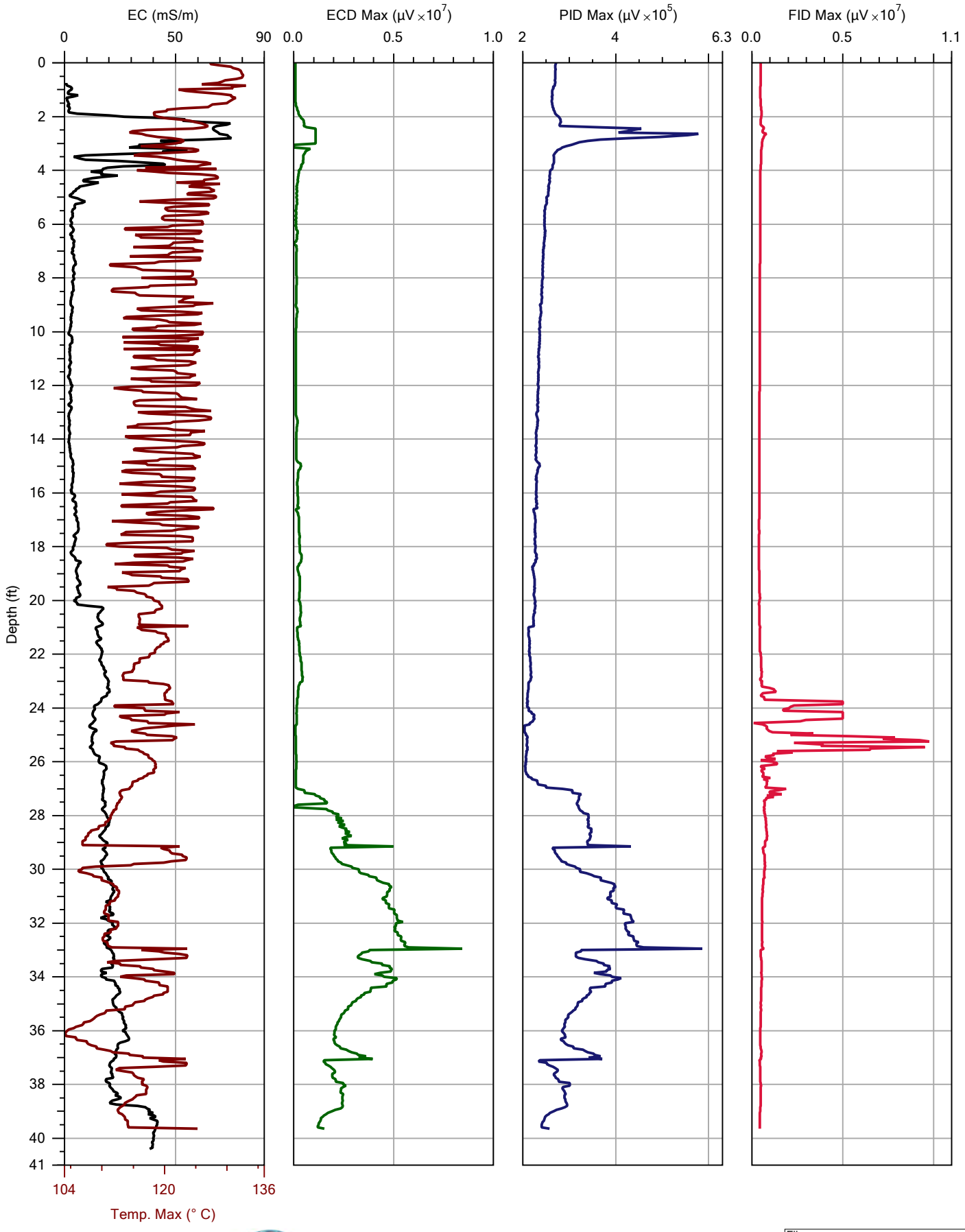
TIME	DET1	DET2	DET3	DET4
0	8	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-09.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.7 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 14:48:08

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-10.MIP
Company: SER90		Operator: Sammy	Date: 6/24/2014
Project ID: TPC-14 RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.0	9.1	PASS
High	290.0	294.2	1.4	PASS

MIP-10.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-14 RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-10.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.7 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 15:39:36

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
18	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jun 24 2014 15:42:47

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.20	0.975	128	1	1	1
6.65	2.027	8	1	1	1
24.60	7.498	8	1	10	1
27.00	8.230	8	1	10	1
27.75	8.458	1024	1	10	1
29.15	8.885	128	1	10	1
37.05	11.293	128	1	10	1

LOG END DEPTH: 39.65 ft (12.085 m)
LOG END TIME: Tue Jun 24 2014 16:48:30

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET

GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-10.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.5 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 17:14:04

RESPONSE TEST ATTENUATION CHANGES

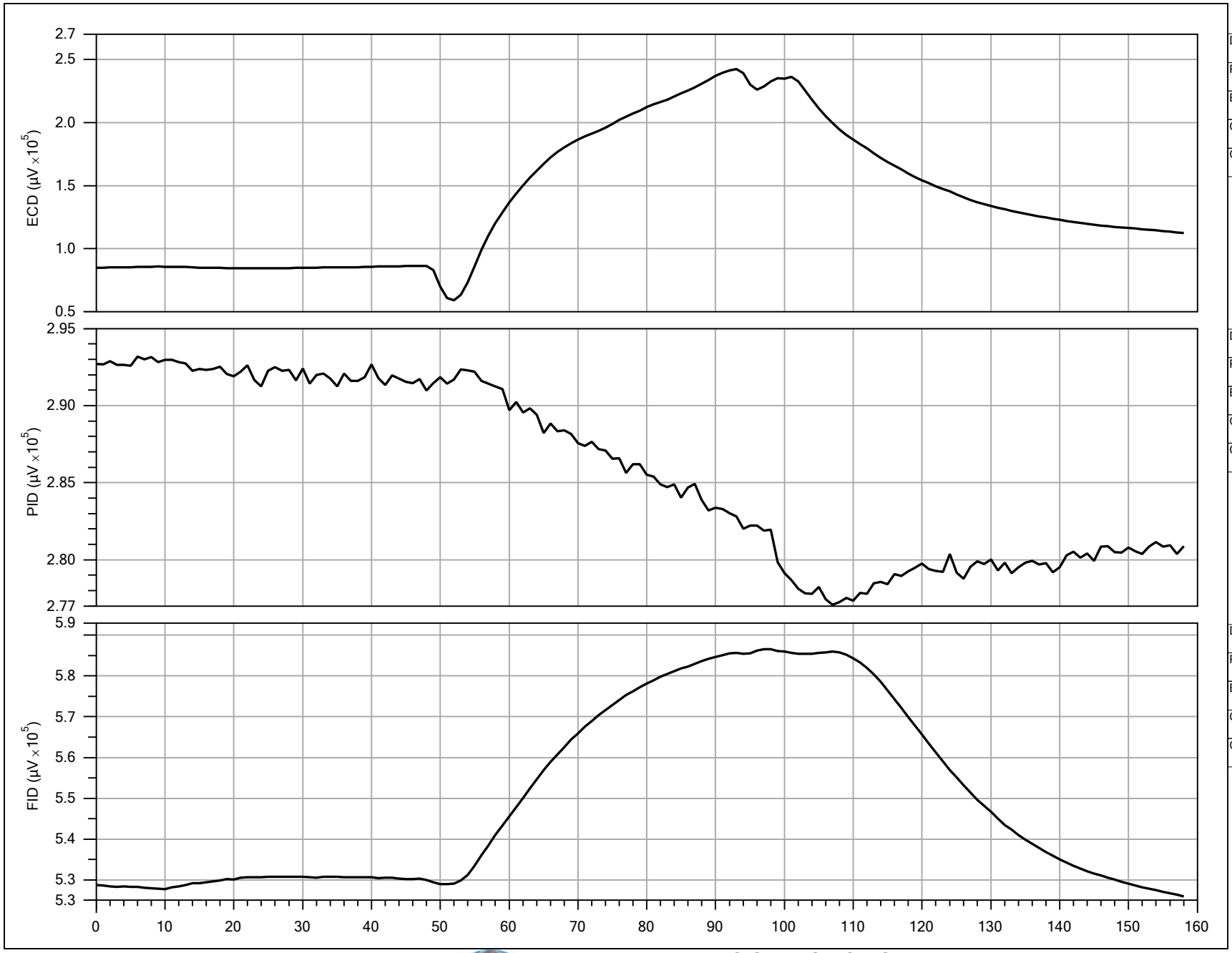
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.0	9.1	PASS
High	290.0	292.4	0.8	PASS

********** USER NOTES **********

Cocrete was 24 in very tough.



Detector:
ECD
Peak Response:
242576 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
293191 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
586558 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-10.PRE.TIM
Project ID:	Client:	Date:
TPC-14 RI	TRC Solutions	6/24/2014

Detector:
ECD
Peak Response:
260338 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
155942 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
324824 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-10.POST.TIM
Project ID:	Client:	Date:
TPC-14 RI	TRC Solutions	6/24/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-10.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.7 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 15:39:36

RESPONSE TEST ATTENUATION CHANGES

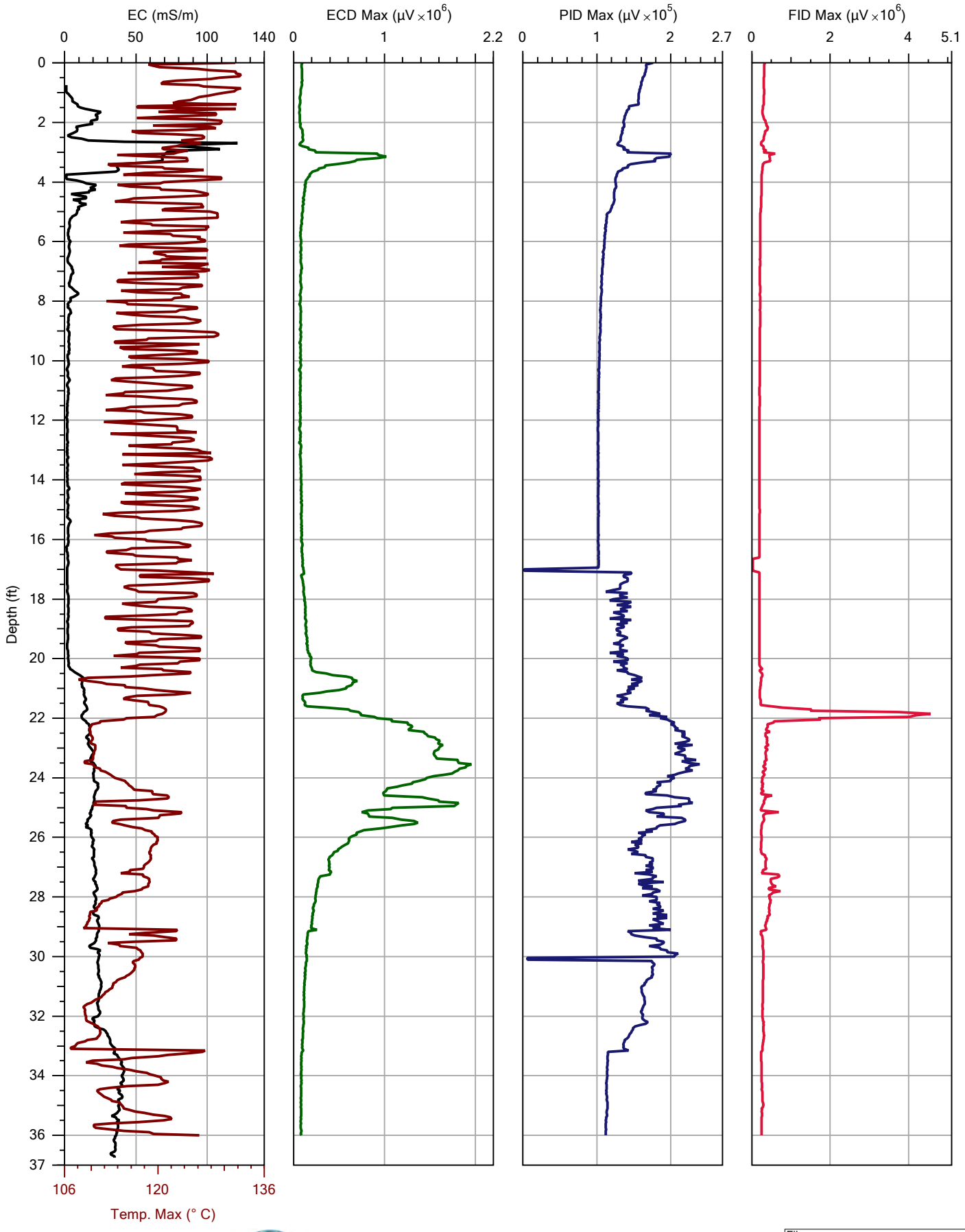
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
18	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-10.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.5 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 17:14:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-11.MIP
Company: SER90		Operator: S. Sirhan	Date: 6/25/2014
Project ID: TPC-14-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.1	9.2	PASS
High	290.0	293.4	1.2	PASS

MIP-11.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-11.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 50.1 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 08:46:43

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jun 25 2014 08:49:26

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	32	1	1	1
2.80	0.853	32	1	1	1
17.10	5.212	32	64	10	1
17.15	5.227	32	64	10	1
22.45	6.843	32	64	10	1
30.05	9.159	32	2	10	1

LOG END DEPTH: 36.00 ft (10.973 m)
LOG END TIME: Wed Jun 25 2014 09:49:39

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-11.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.1 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 10:07:19

RESPONSE TEST ATTENUATION CHANGES

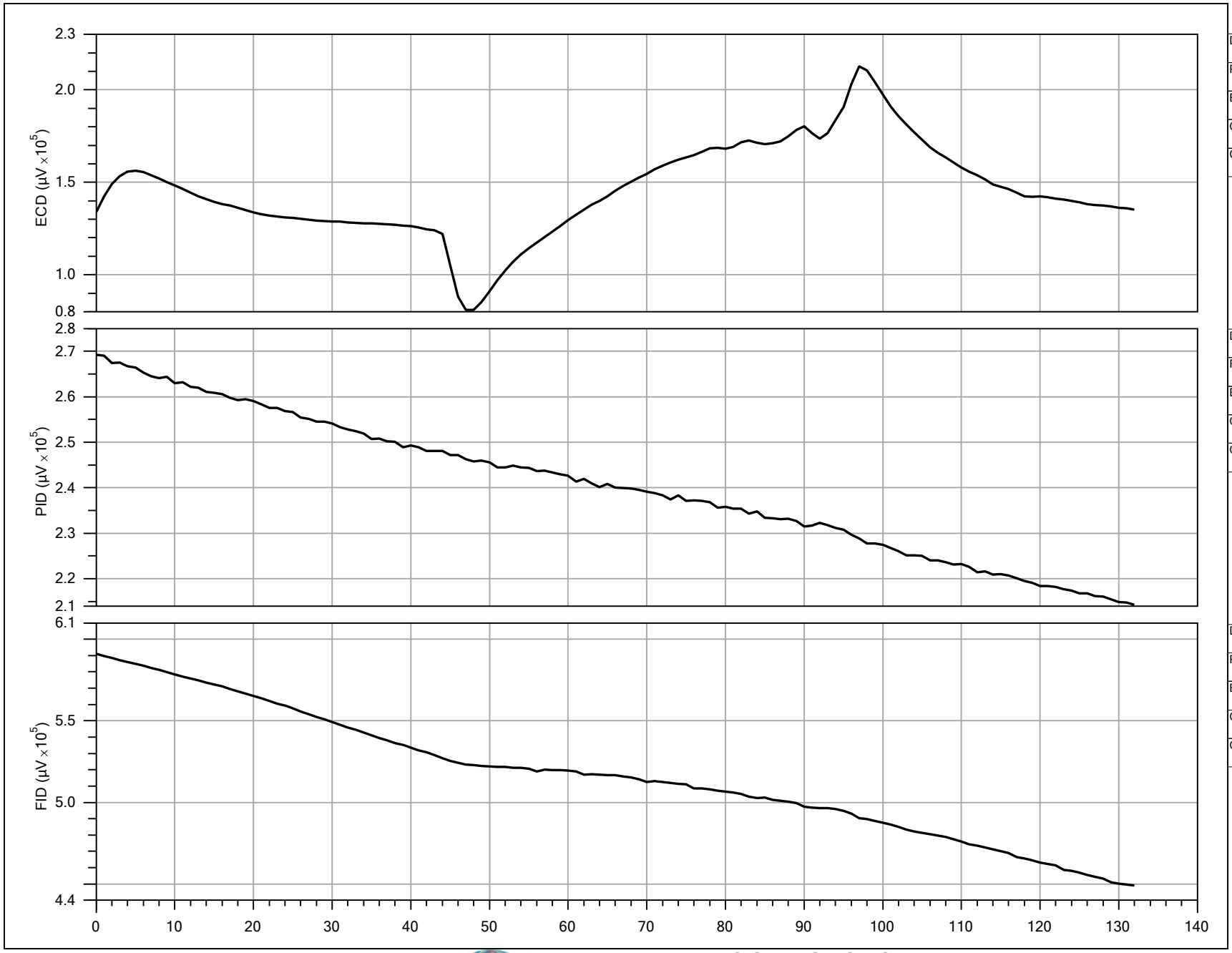
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.2	9.4	PASS
High	290.0	293.4	1.2	PASS

********** USER NOTES **********

24 in concrete



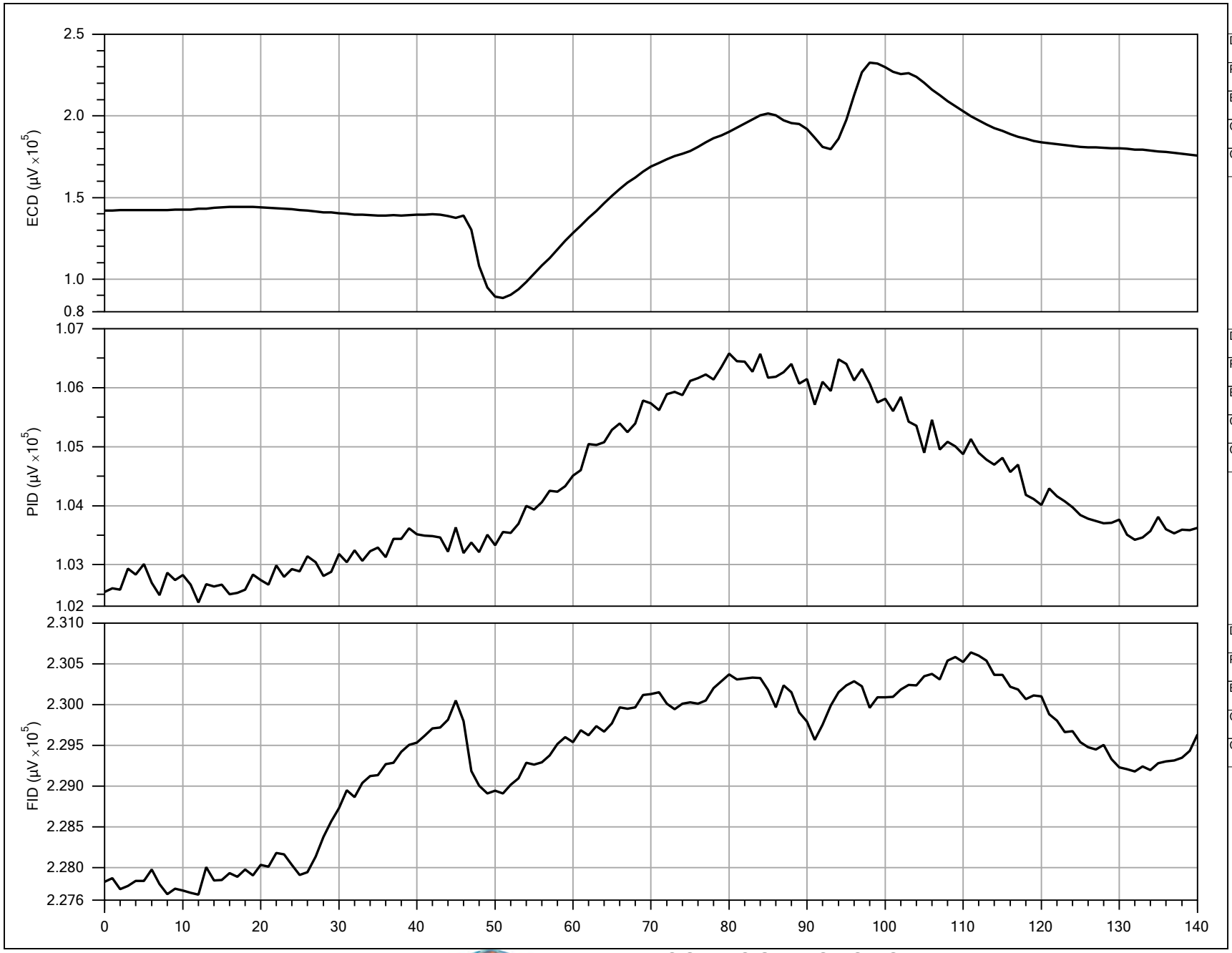
Detector:
ECD
Peak Response:
212683 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
269257 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
591052 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-11.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/25/2014



Detector:
ECD
Peak Response:
232536 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
106578 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
230636 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-11.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/25/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-11.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 50.1 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 08:46:43

RESPONSE TEST ATTENUATION CHANGES

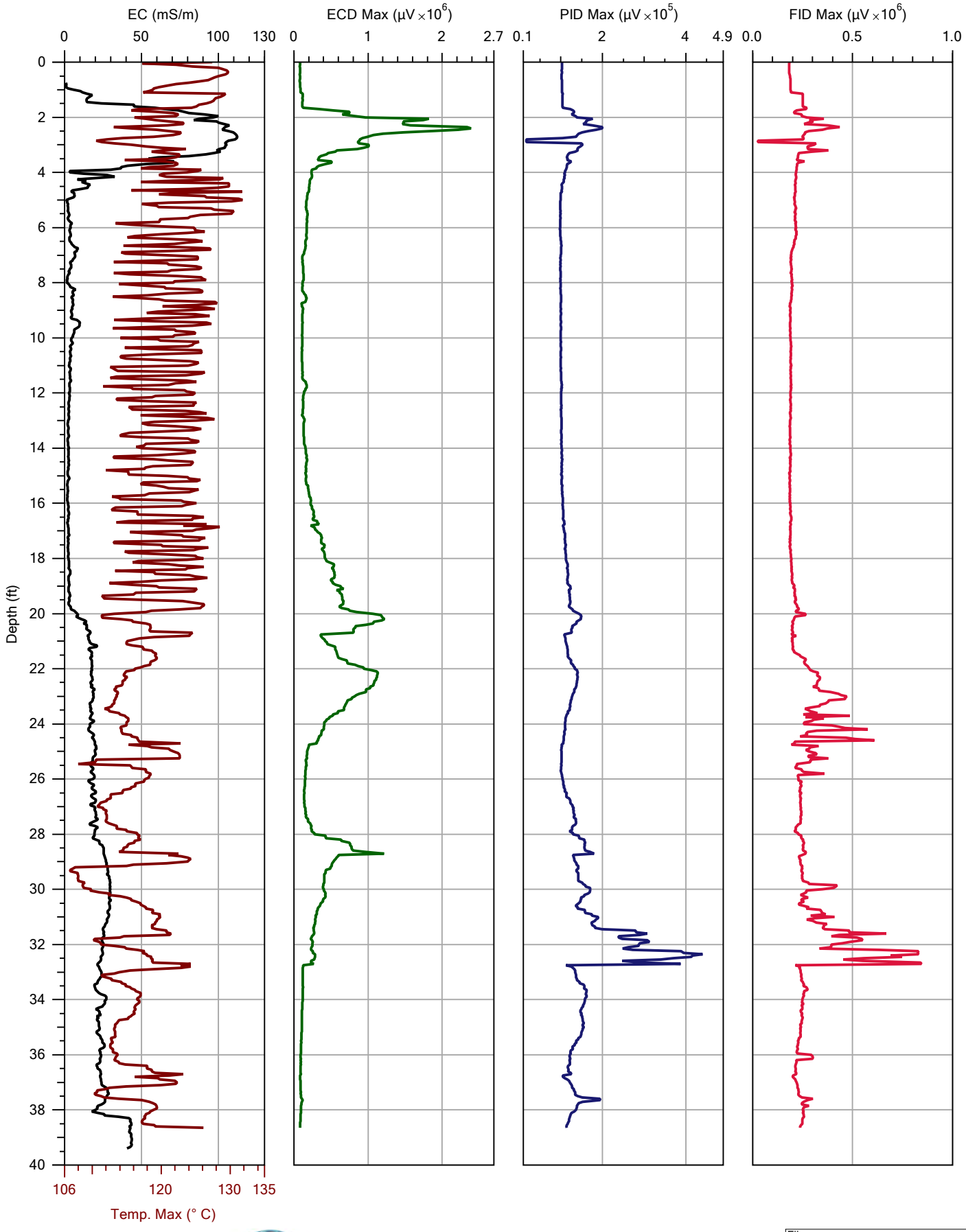
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-11.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.1 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 10:07:19

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-12.MIP
Company: SER90		Operator: S. Sirhan	Date: 6/25/2014
Project ID: TPC-14-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.1	9.3	PASS
High	290.0	294.1	1.4	PASS

MIP-12.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-12.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.9 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 10:11:32

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (60.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (31.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (30.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (29.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (28.2 deg C) at 0.00 ft (0.000 m)

Temperature out of range (27.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (24.6 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Wed Jun 25 2014 10:15:13

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.15	0.351	8	1	1	1
2.95	0.899	8	8	10	1
4.35	1.326	8	2	10	1
5.50	1.676	8	2	10	1
20.70	6.309	8	2	10	1
32.70	9.967	8	2	10	1

LOG END DEPTH: 38.65 ft (11.781 m)
LOG END TIME: Wed Jun 25 2014 12:34:12

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-12.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.9 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 12:50:45

RESPONSE TEST ATTENUATION CHANGES

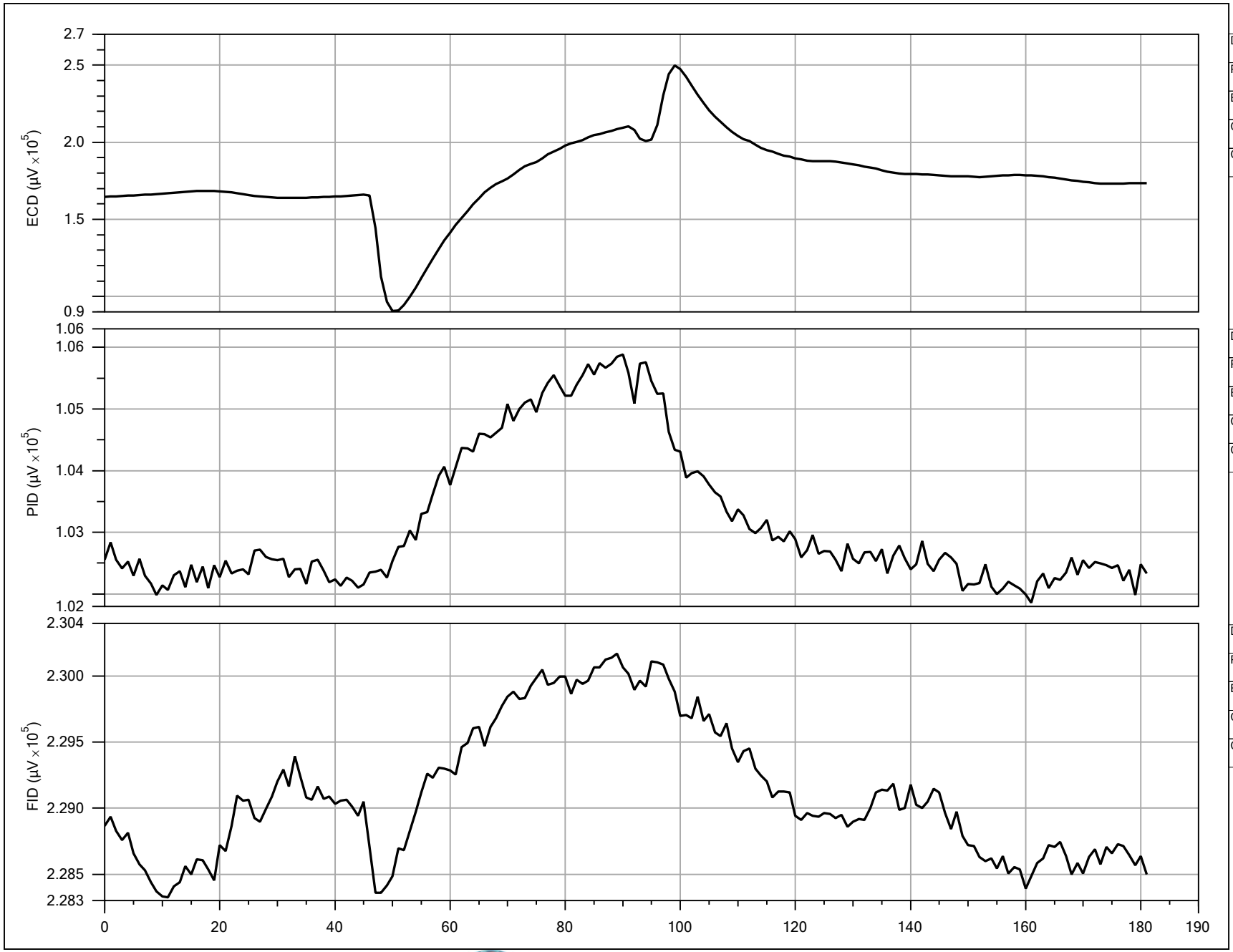
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.1	9.2	PASS
High	290.0	294.3	1.5	PASS

********** USER NOTES **********

Please note 30 in of fresh concrete



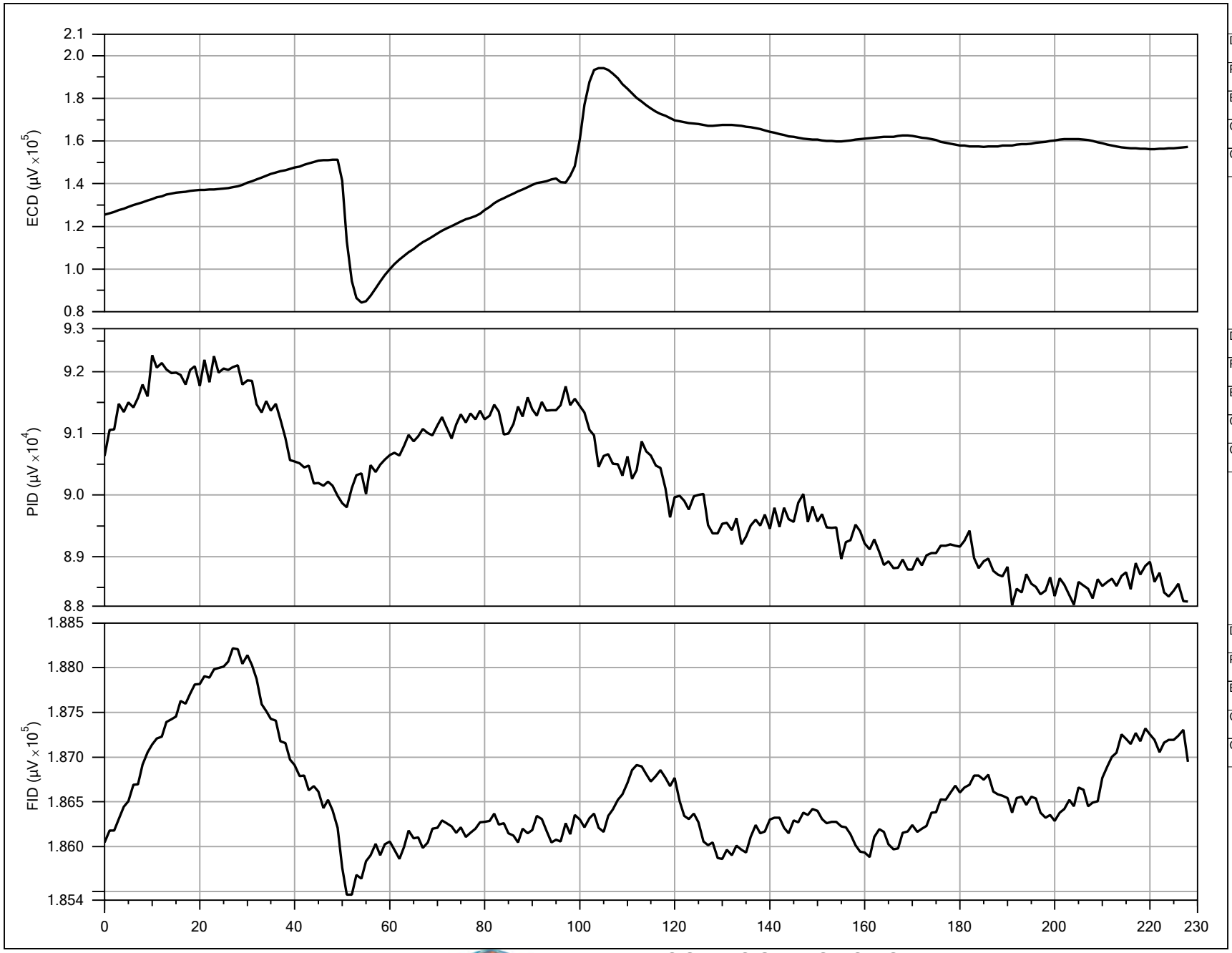
Detector:
ECD
Peak Response:
249832 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
105884 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
230171 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-12.PRE.TIM
Project ID:	Client:	Date:
TPC-14-RI	TRC Solutions	6/25/2014



Detector:
ECD
Peak Response:
194159 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
92265 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
188215 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-12.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/25/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-12.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.9 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 10:11:32

RESPONSE TEST ATTENUATION CHANGES

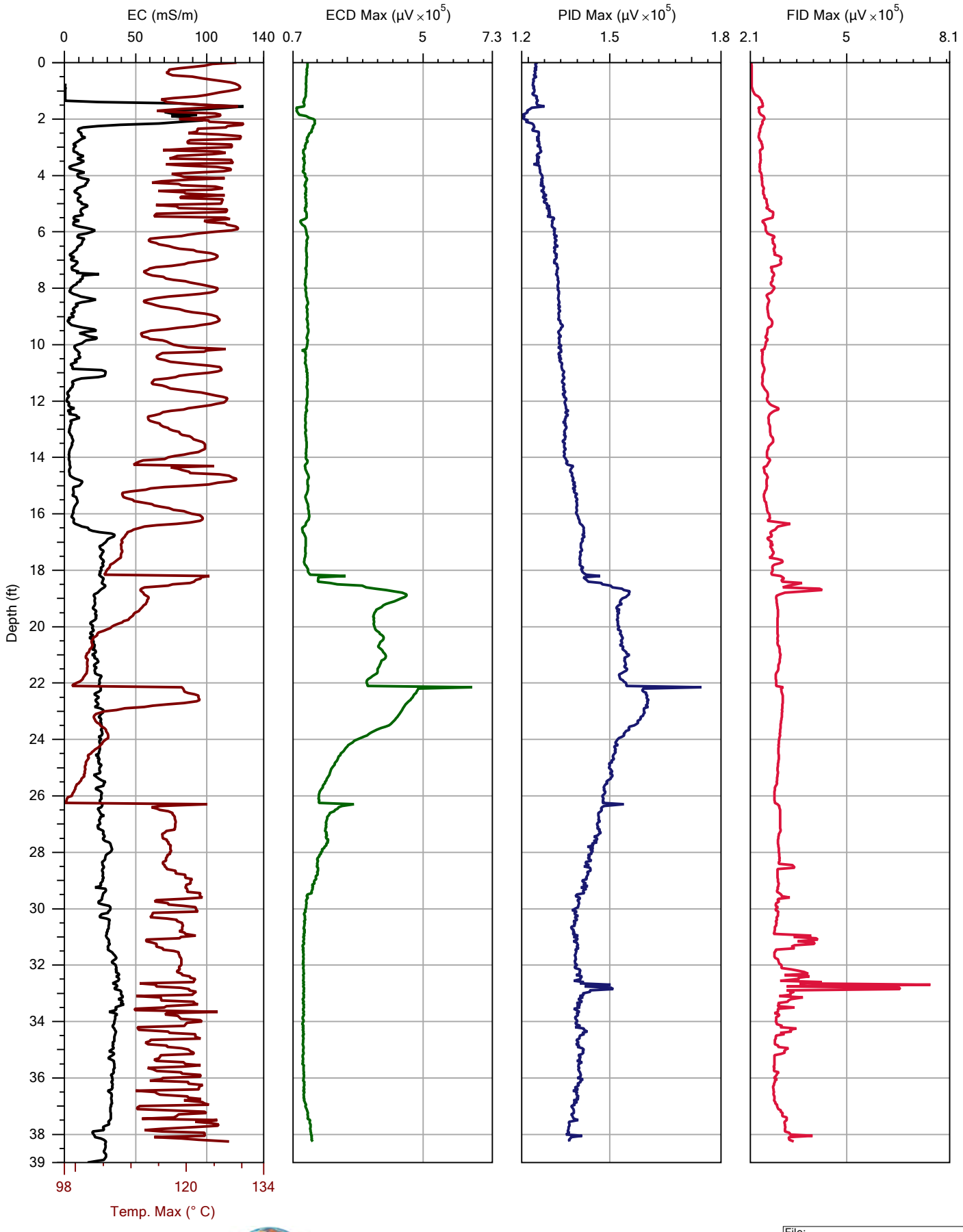
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-12.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.9 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 12:50:45

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-13.MIP
Company: SER90		Operator: S. Sirhan	Date: 6/25/2014
Project ID: TPC-14-RI		Client: TRC Solutions	Location: 41° 59′ 50″ N, 83° 56′ 31″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.1	2.0	PASS
High	290.0	294.1	1.4	PASS

MIP-13.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-13.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.9 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 12:57:37

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (30.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (29.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (29.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (29.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (32.1 deg C) at 0.00 ft (0.000 m)

Temperature out of range (32.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (33.3 deg C) at 0.00 ft (0.000 m)

Temperature out of range (33.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (33.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (34.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Wed Jun 25 2014 13:00:21

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	8	2	1	1

LOG END DEPTH: 38.25 ft (11.659 m)
LOG END TIME: Wed Jun 25 2014 16:03:51

LATITUDE: 41.997260861
LONGITUDE: -83.941868989
ELEVATION: 209.599 METERS 687.66 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-13.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.6 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 16:20:24

RESPONSE TEST ATTENUATION CHANGES

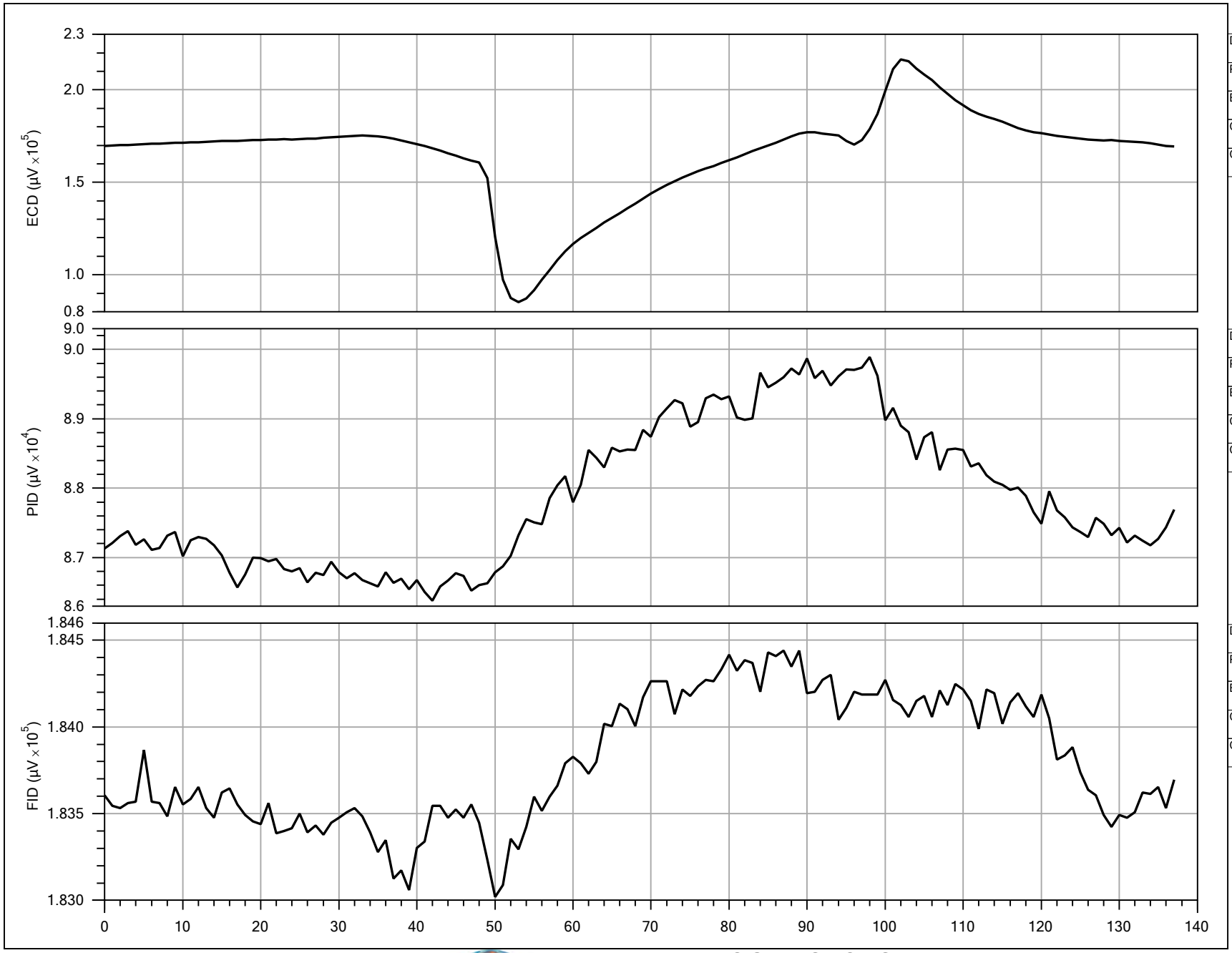
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.4	9.9	PASS
High	290.0	292.0	0.7	PASS

********** USER NOTES **********

Asphalt thickness is 6 in



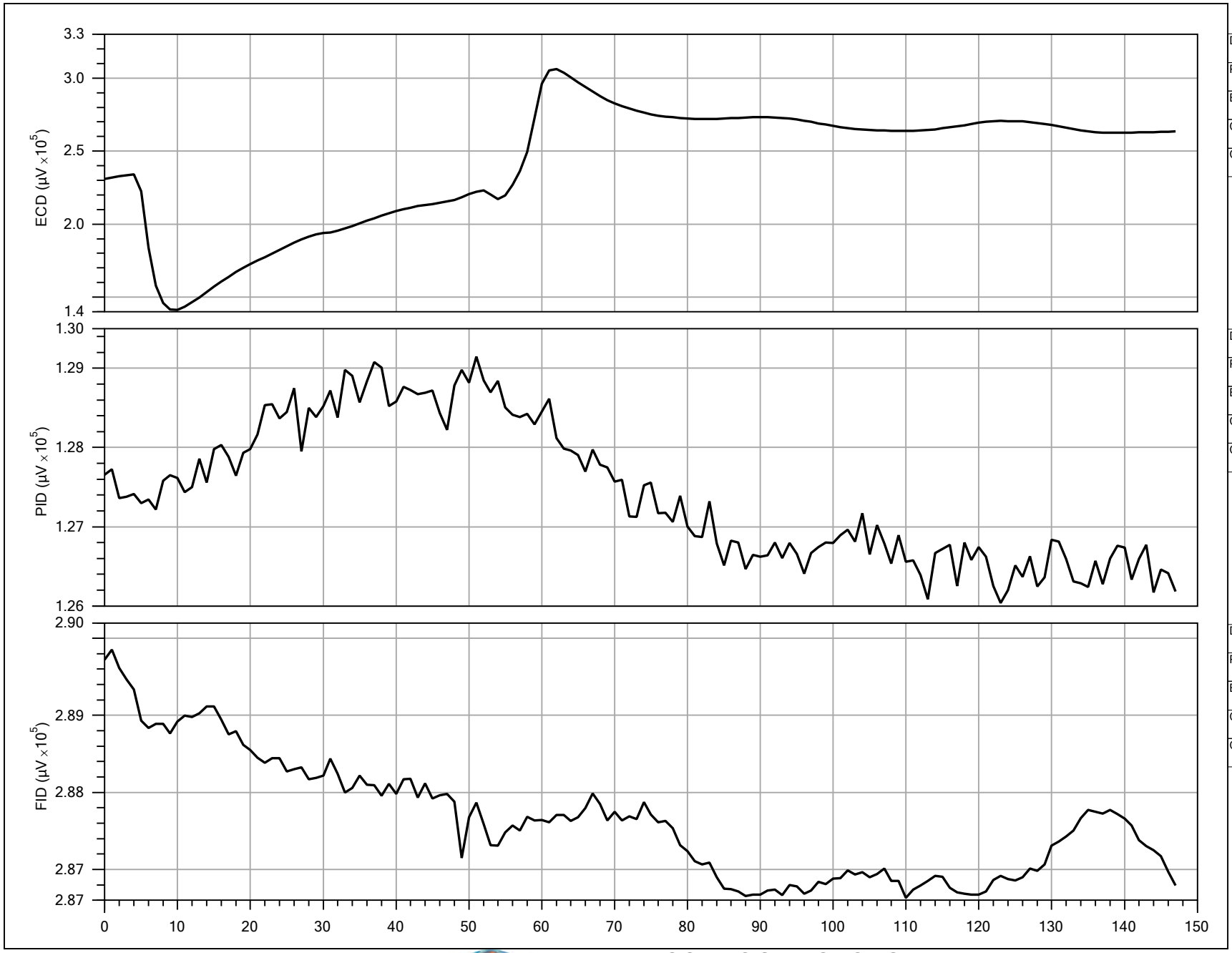
Detector:
ECD
Peak Response:
216308 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
89892 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
184439 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-13.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/25/2014



Detector:
ECD
Peak Response:
306070 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
129147 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
289850 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-13.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/25/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-13.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.9 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 12:57:37

RESPONSE TEST ATTENUATION CHANGES

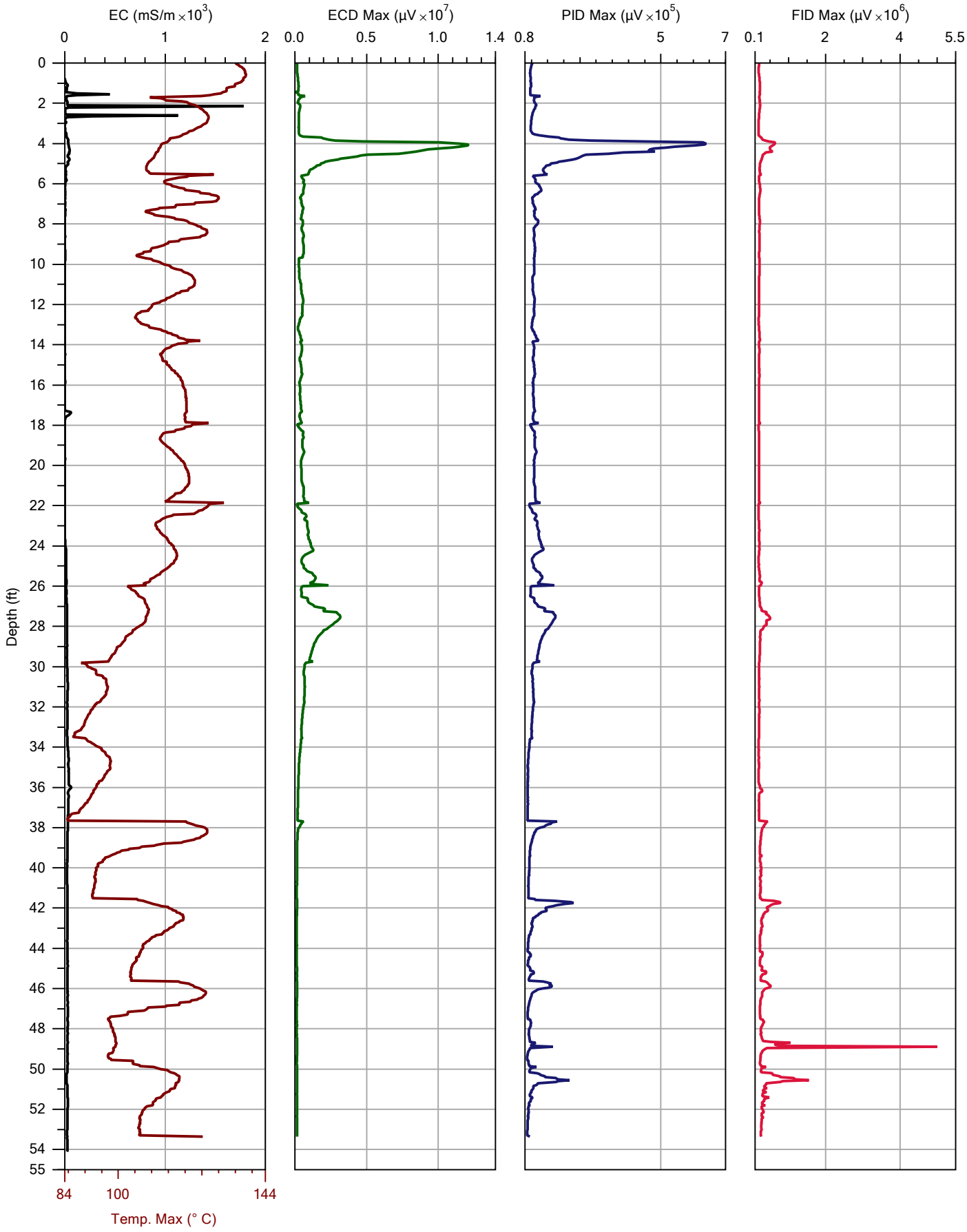
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-13.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.6 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 16:20:24

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-14A.MIP
Company: SER90		Operator: Sammy Sirhan	Date: 6/26/2014
Project ID: TPC-14RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.7	3.1	PASS
High	290.0	279.1	3.8	PASS

MIP-14A.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy Sirhan
PROJECT ID: TPC-14RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-14A.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.2 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 10:56:40

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
24	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jun 26 2014 10:59:55

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.50	0.457	16	1	1	1

LOG END DEPTH: 53.35 ft (16.261 m)
LOG END TIME: Thu Jun 26 2014 12:18:10

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-14A.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.2 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 12:44:38

RESPONSE TEST ATTENUATION CHANGES

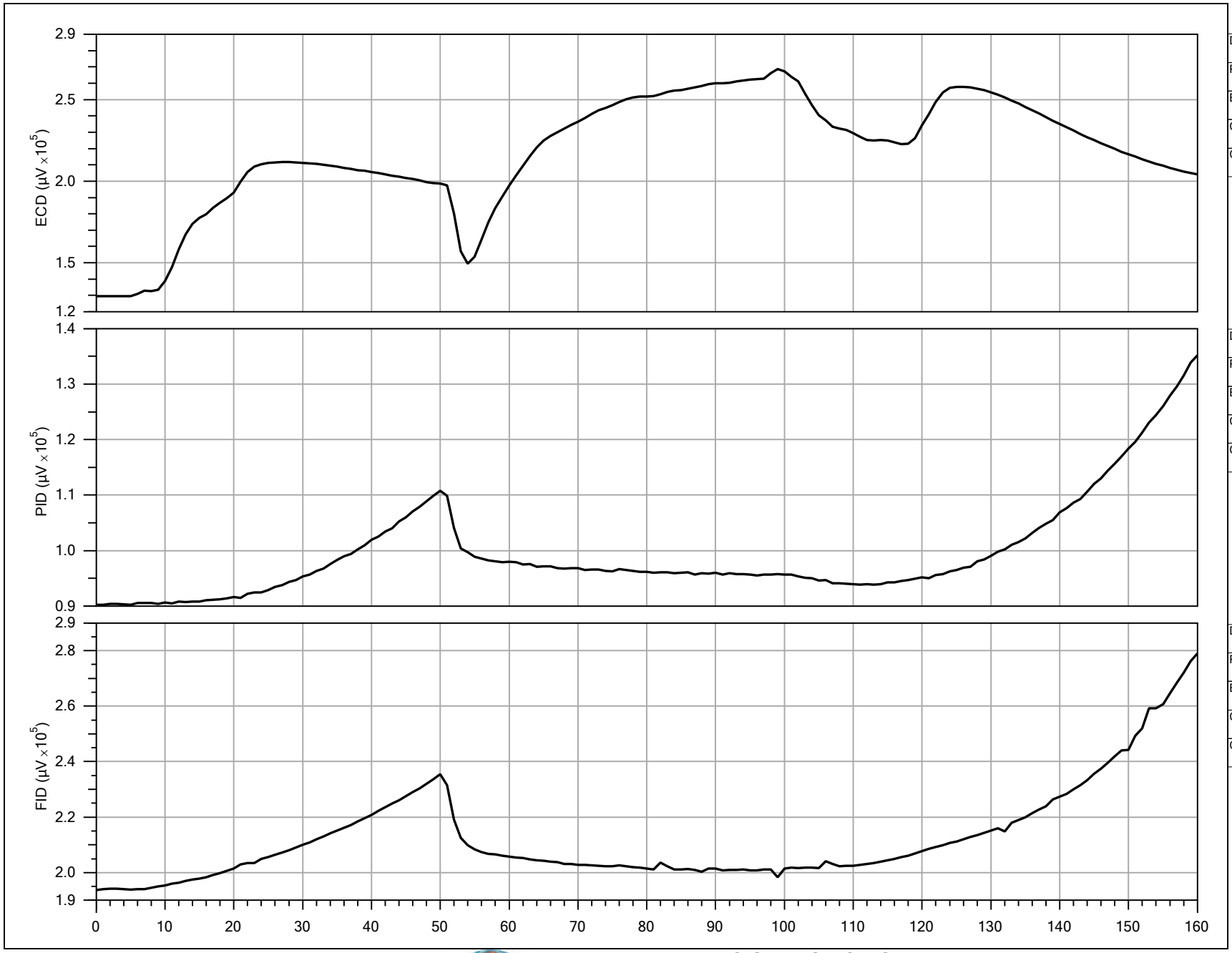
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.1	3.8	PASS
High	290.0	290.0	0.0	PASS

********** USER NOTES **********

Please note very conductive object 2.5 ft. BGS. Please note large gravel (EC = 0 - 1 mS/m) started at 8 ft. and continued to 24 ft. BGS with a thinn clay seam at ~17 (thickness ~4 inches)



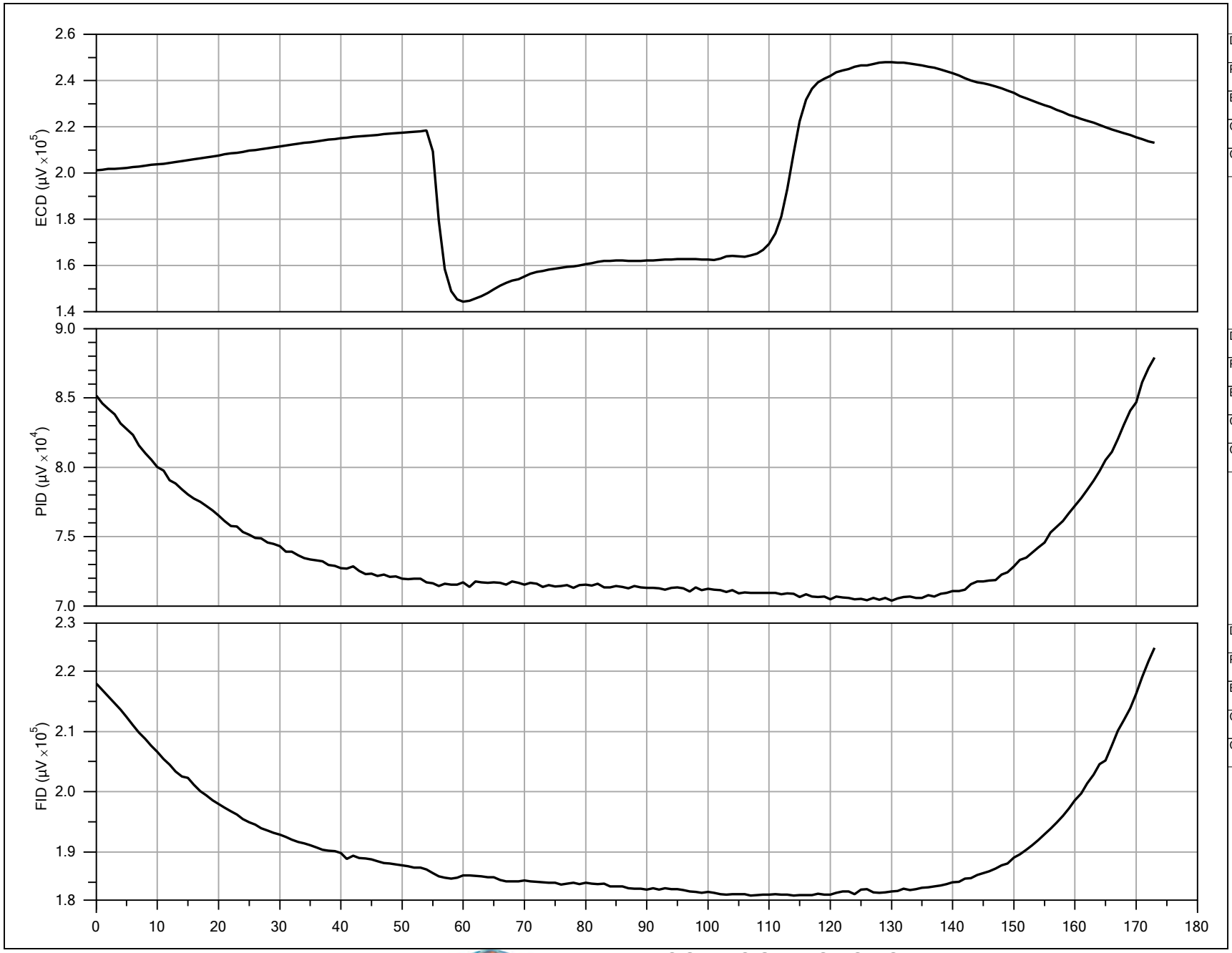
Detector:
ECD
Peak Response:
268662 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
135222 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
279092 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy Sirhan	MIP-14A.PRE.TIM
Project ID:	Client:	Date:
TPC-14RI	TRC Solutions	6/26/2014



Detector:
ECD
Peak Response:
247963 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
87919 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
223879 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy Sirhan	MIP-14A.POST.TIM
Project ID:	Client:	Date:
TPC-14RI	TRC Solutions	6/26/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-14A.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.2 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 10:56:40

RESPONSE TEST ATTENUATION CHANGES

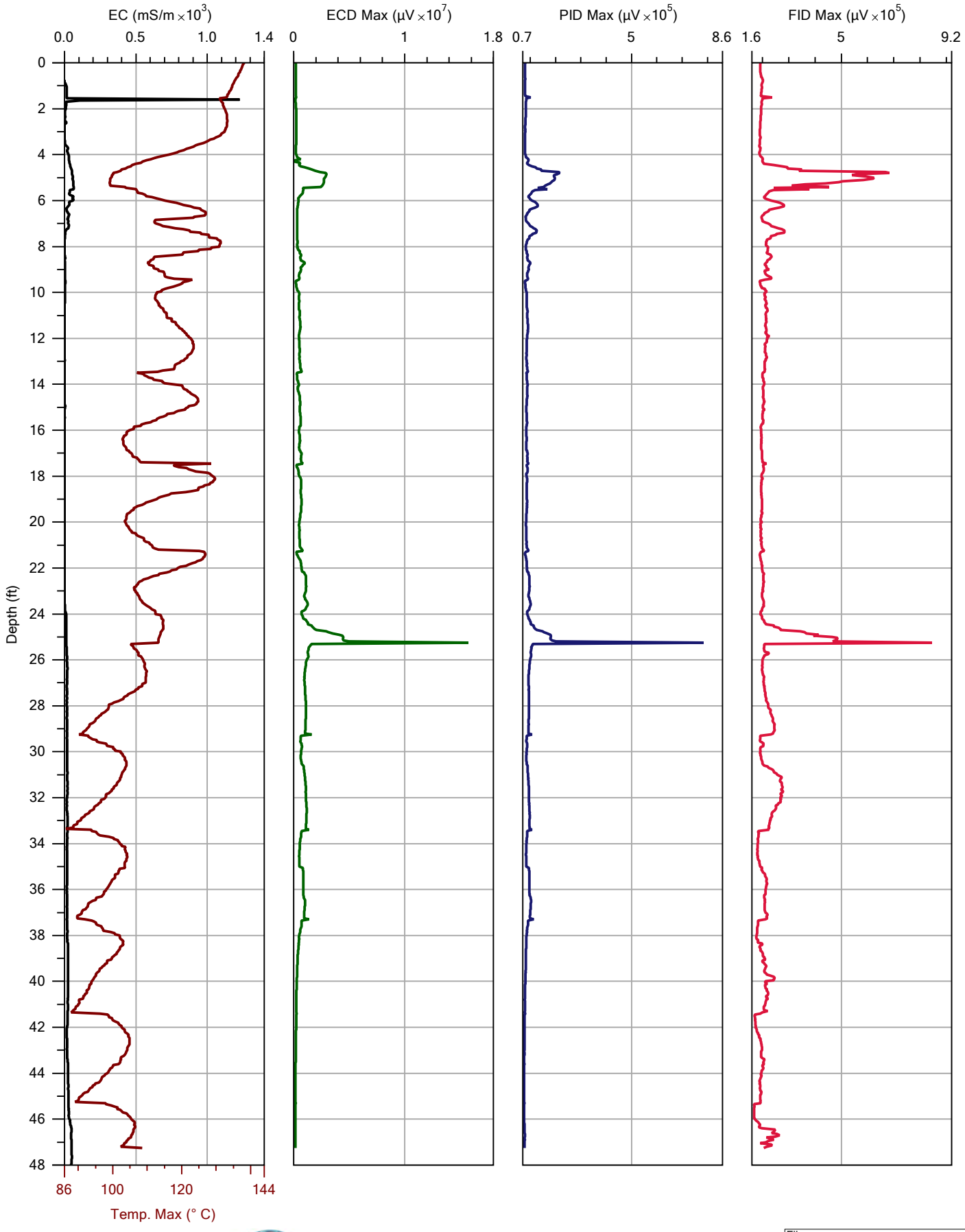
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
24	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-14A.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.2 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 12:44:38

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-15.MIP
Company: SER90	Operator: Sammy Sirhan		Date: 6/26/2014
Project ID: TPC-14RI	Client: TRC Solutions		Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	54.7	0.5	PASS
High	290.0	289.2	0.3	PASS

MIP-15.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy Sirhan
PROJECT ID: TPC-14RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-15.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.4 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 13:55:50

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
1:21	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jun 26 2014 13:59:32

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
4.35	1.326	16	1	1	1
8.20	2.499	16	1	1	1

LOG END DEPTH: 47.25 ft (14.402 m)
LOG END TIME: Thu Jun 26 2014 15:02:43

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-15.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.4 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 15:24:22

RESPONSE TEST ATTENUATION CHANGES

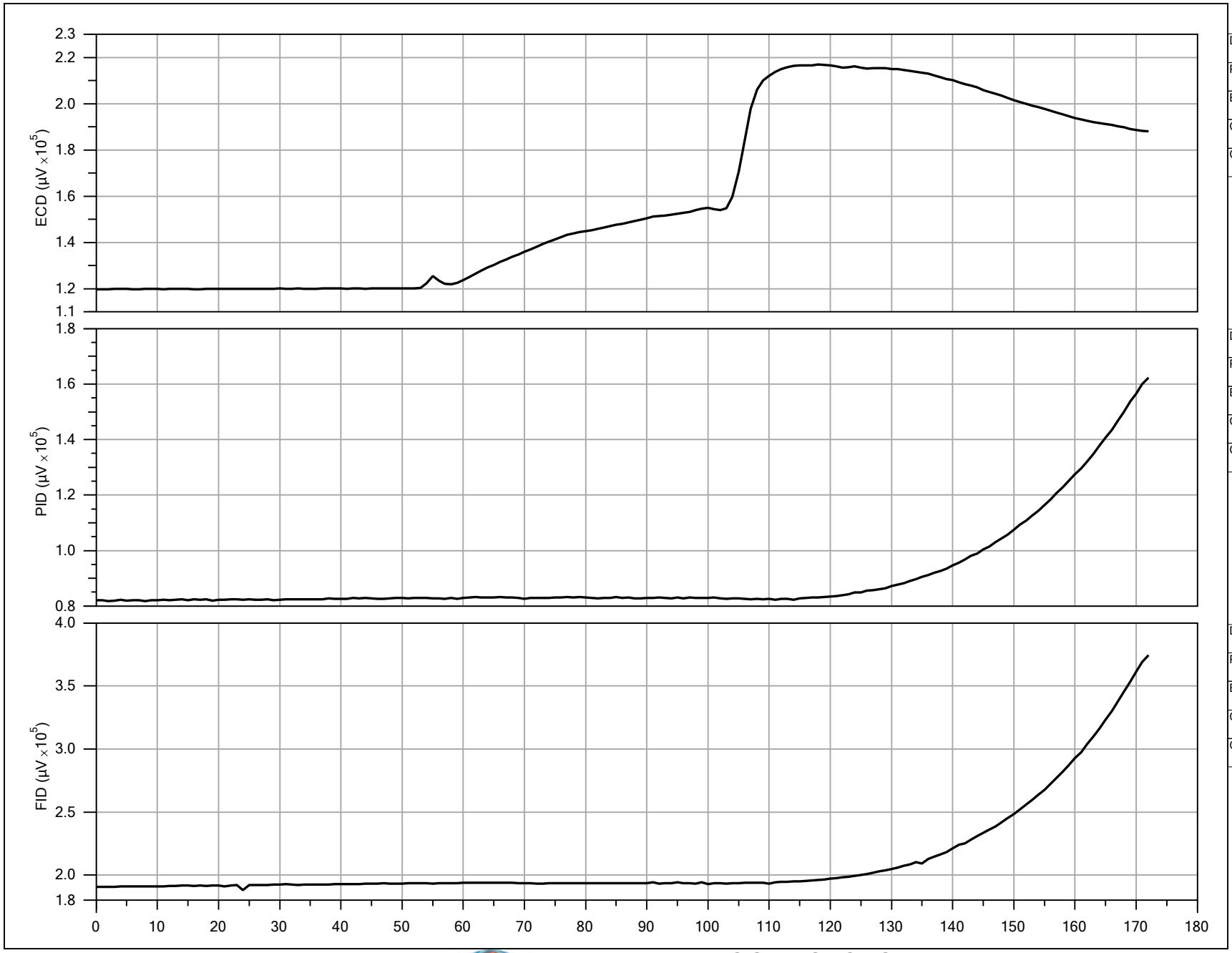
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.1	3.8	PASS
High	290.0	291.2	0.4	PASS

********** USER NOTES **********

Please refer to notes from MIP-14A in reference to gravel layer starting at 8 ft. BGS.
Same shallow conductive object was enountered in this boring.



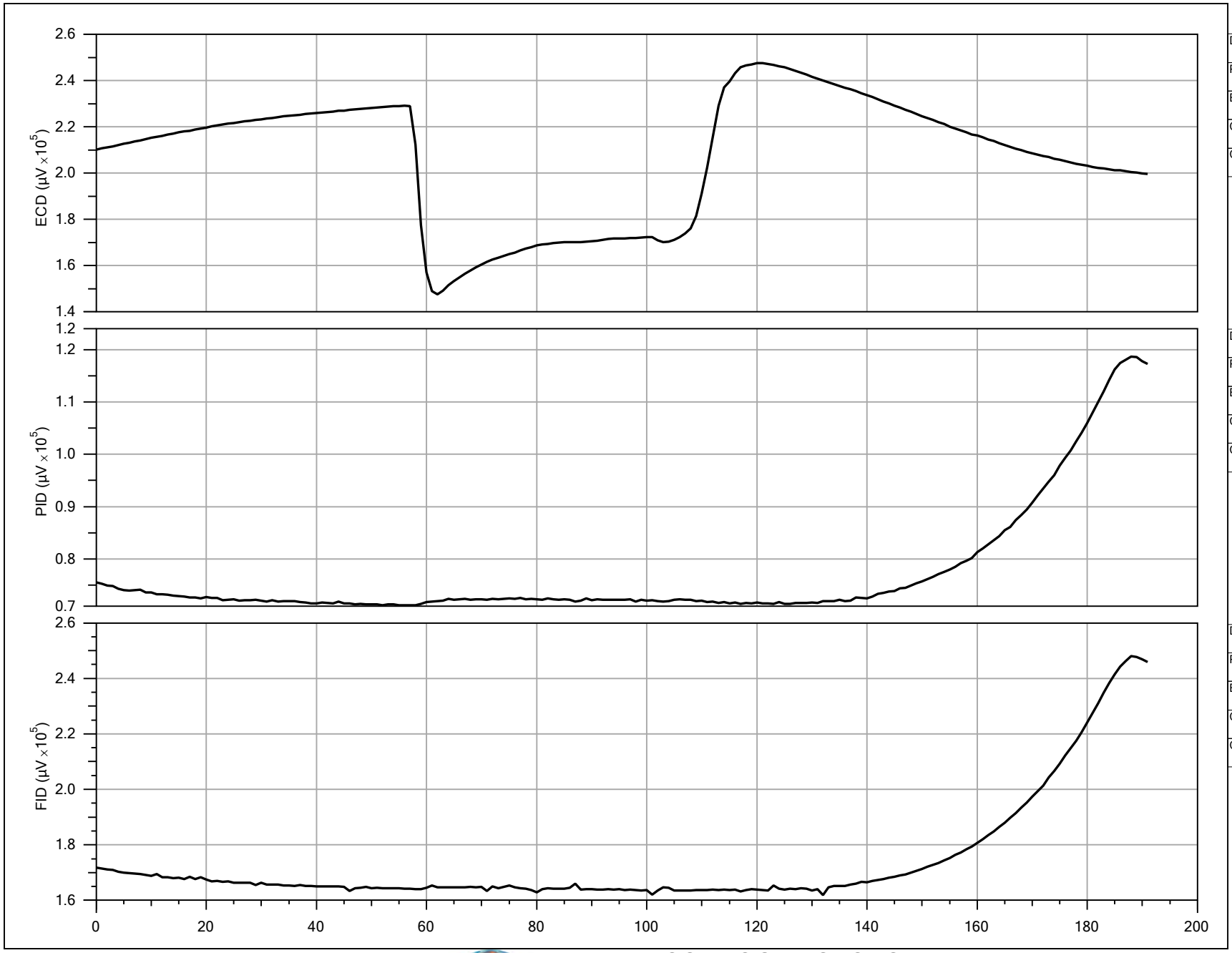
Detector:
ECD
Peak Response:
216910 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
162282 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
374233 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy Sirhan	MIP-15.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14RI	TRC Solutions	6/26/2014



Detector:
ECD
Peak Response:
247604 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
118648 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
248032 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy Sirhan	MIP-15.POST.TIM
Project ID:	Client:	Date:
TPC-14RI	TRC Solutions	6/26/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-15.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.4 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 13:55:50

RESPONSE TEST ATTENUATION CHANGES

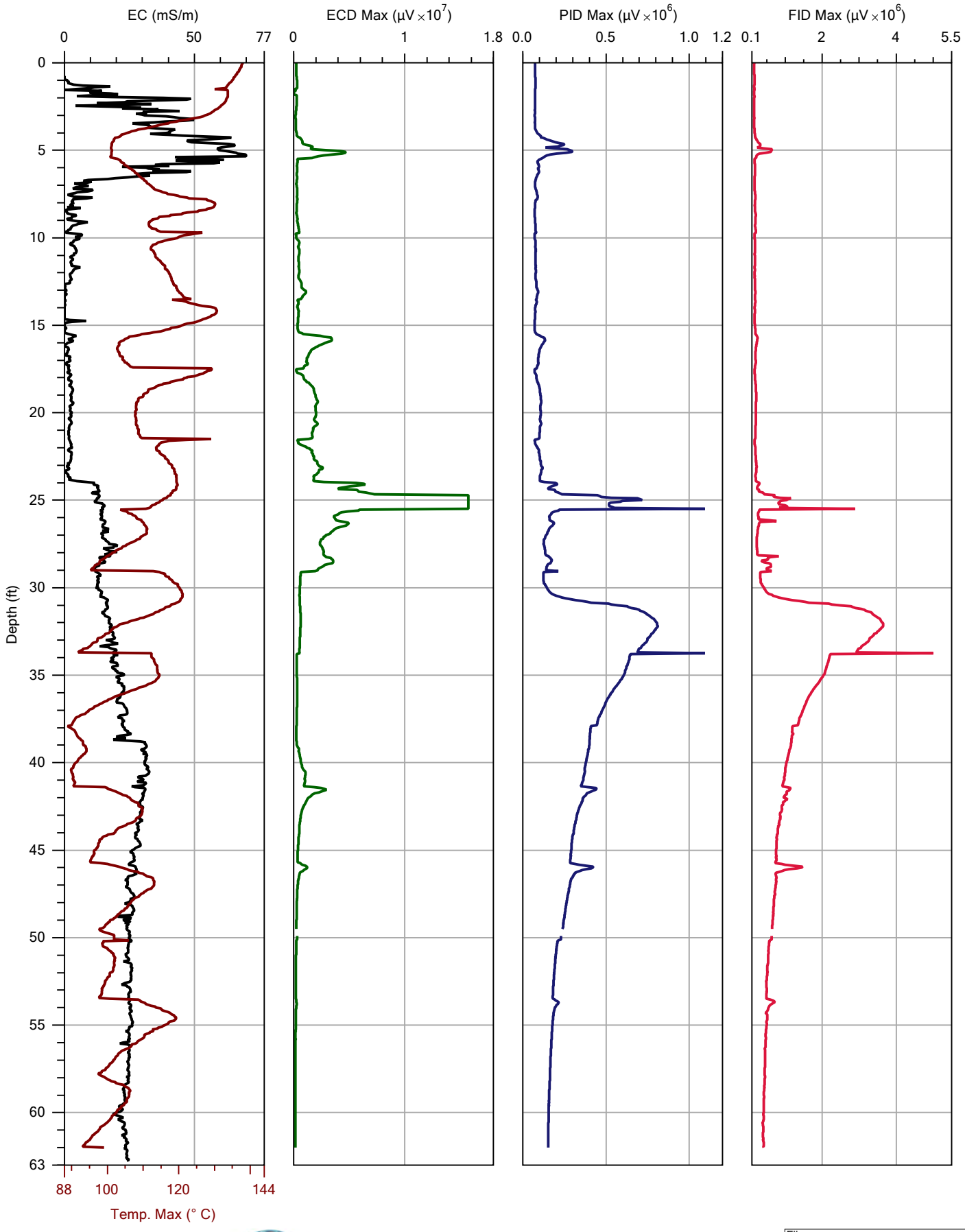
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
1:21	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-15.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.4 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 15:24:22

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-16.MIP
Company: SER90		Operator: Sammy Sirhan	Date: 6/26/2014
Project ID: TPC-14RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.7	3.1	PASS
High	290.0	289.7	0.1	PASS

MIP-16.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy Sirhan
PROJECT ID: TPC-14RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-16.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.4 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 16:07:09

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jun 26 2014 16:10:57

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.85	0.564	16	1	1	1
52.05	15.865	16	1	1	1

LOG END DEPTH: 62.00 ft (18.898 m)
LOG END TIME: Thu Jun 26 2014 17:29:17

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

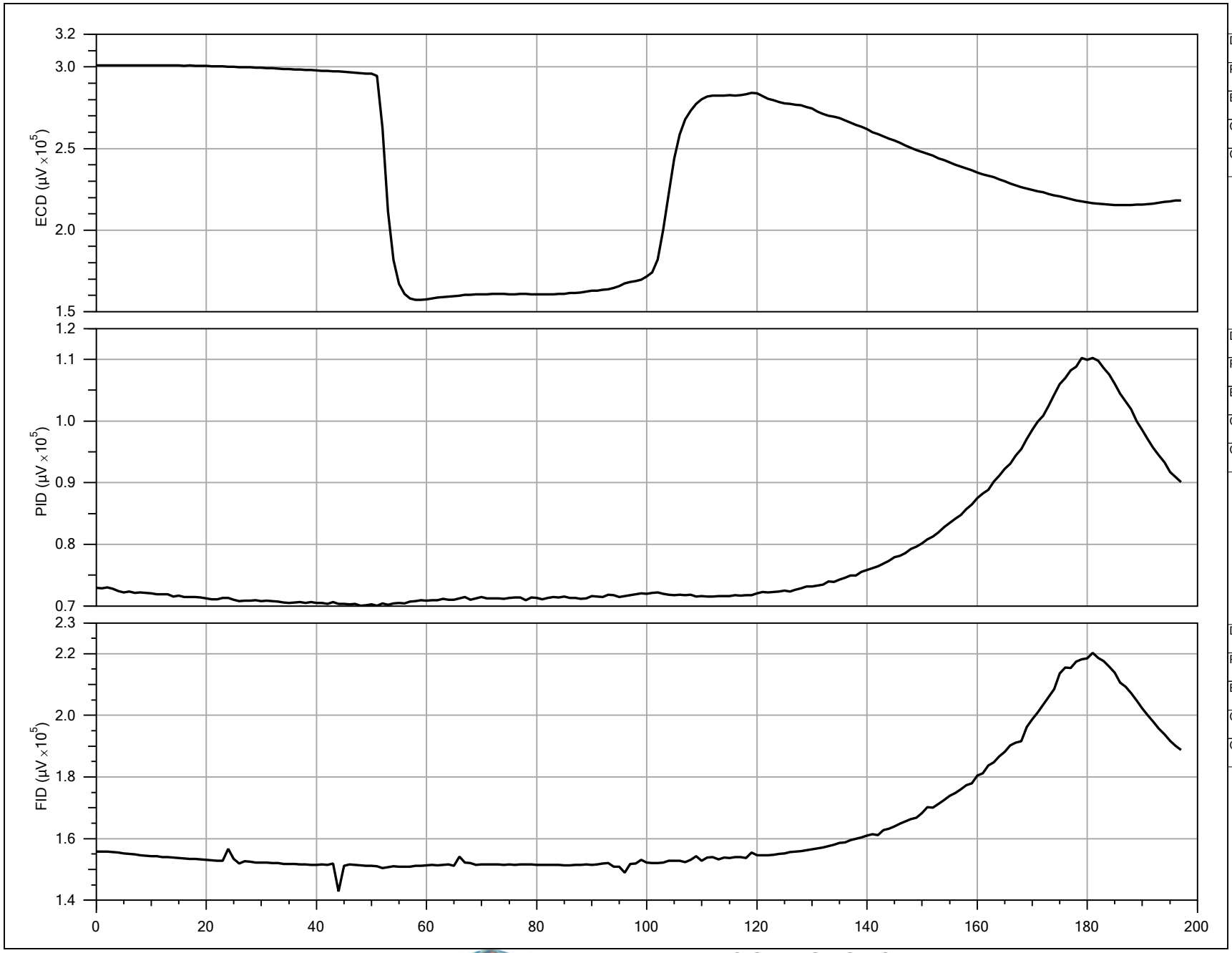
FILENAME: MIP-16.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 17:54:42

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.5	2.8	PASS
High	290.0	291.5	0.5	PASS



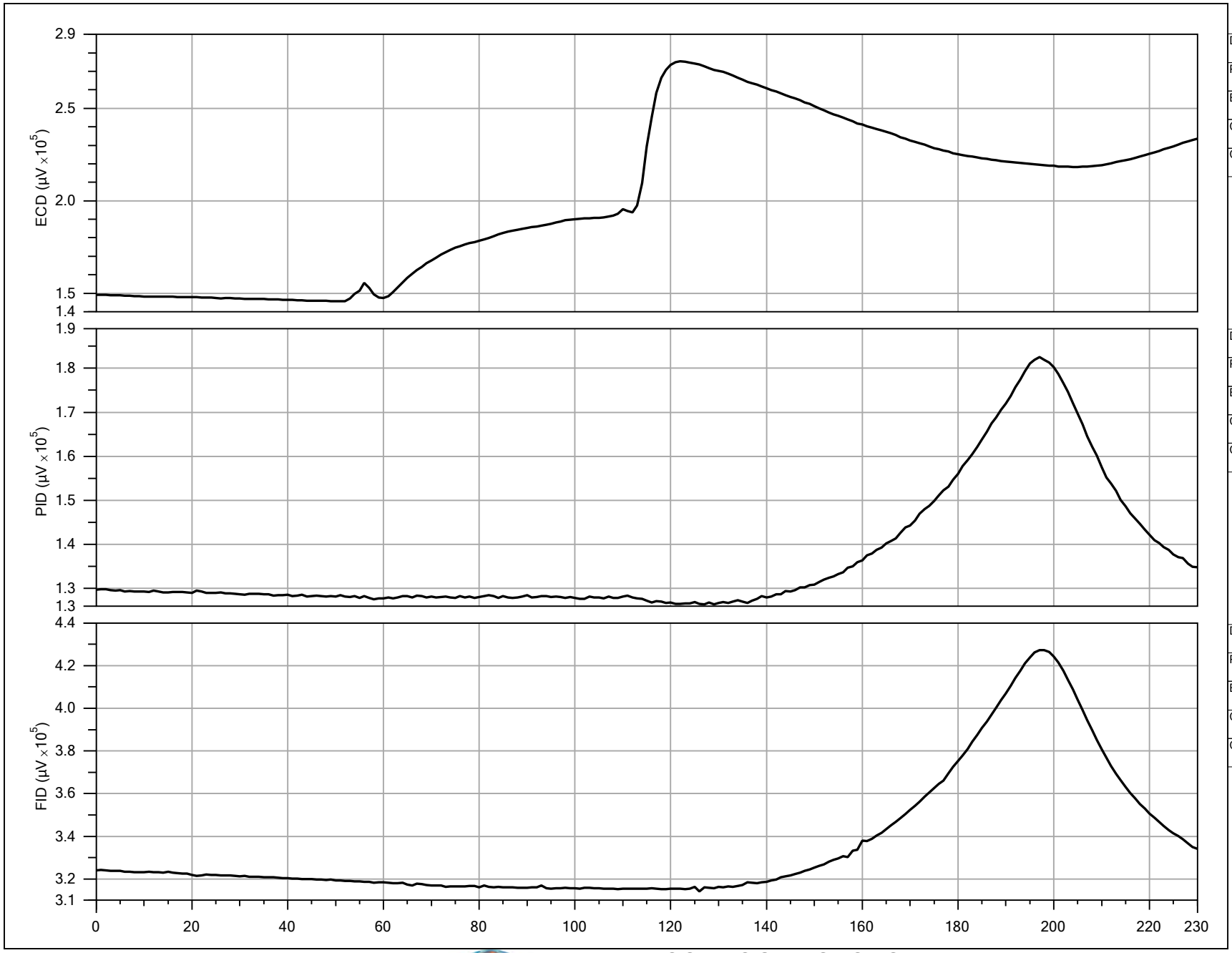
Detector:
ECD
Peak Response:
301080 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
110248 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
220206 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy Sirhan	MIP-16.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14RI	TRC Solutions	6/26/2014



Detector:
ECD
Peak Response:
275384 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
182508 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
427320 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy Sirhan	MIP-16.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-14RI	TRC Solutions	6/26/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-16.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.4 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 16:07:09

RESPONSE TEST ATTENUATION CHANGES

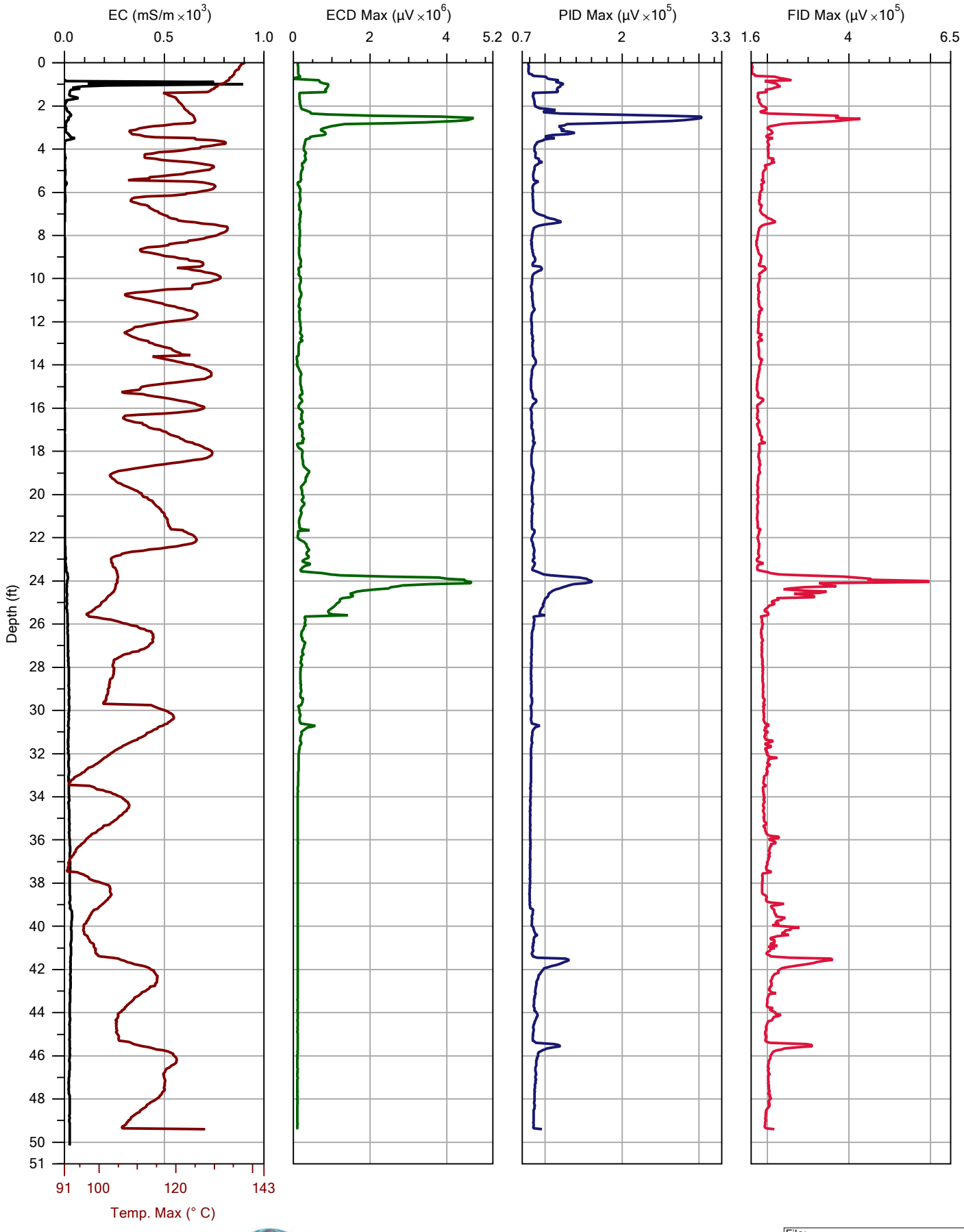
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-16.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 17:54:42

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-17.MIP
Company: SER90		Operator: S.Sirhan	Date: 6/27/2014
Project ID: TPC-14RI		Client: TRC Solution	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.0	3.6	PASS
High	290.0	291.4	0.5	PASS

MIP-17.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-14RI
CLIENT: TRC Solution
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-17.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Fri Jun 27 2014 11:12:00

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Fri Jun 27 2014 11:25:25

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.80	0.244	16	1	1	1

LOG END DEPTH: 49.40 ft (15.057 m)
LOG END TIME: Fri Jun 27 2014 13:03:01

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-17.post.tim

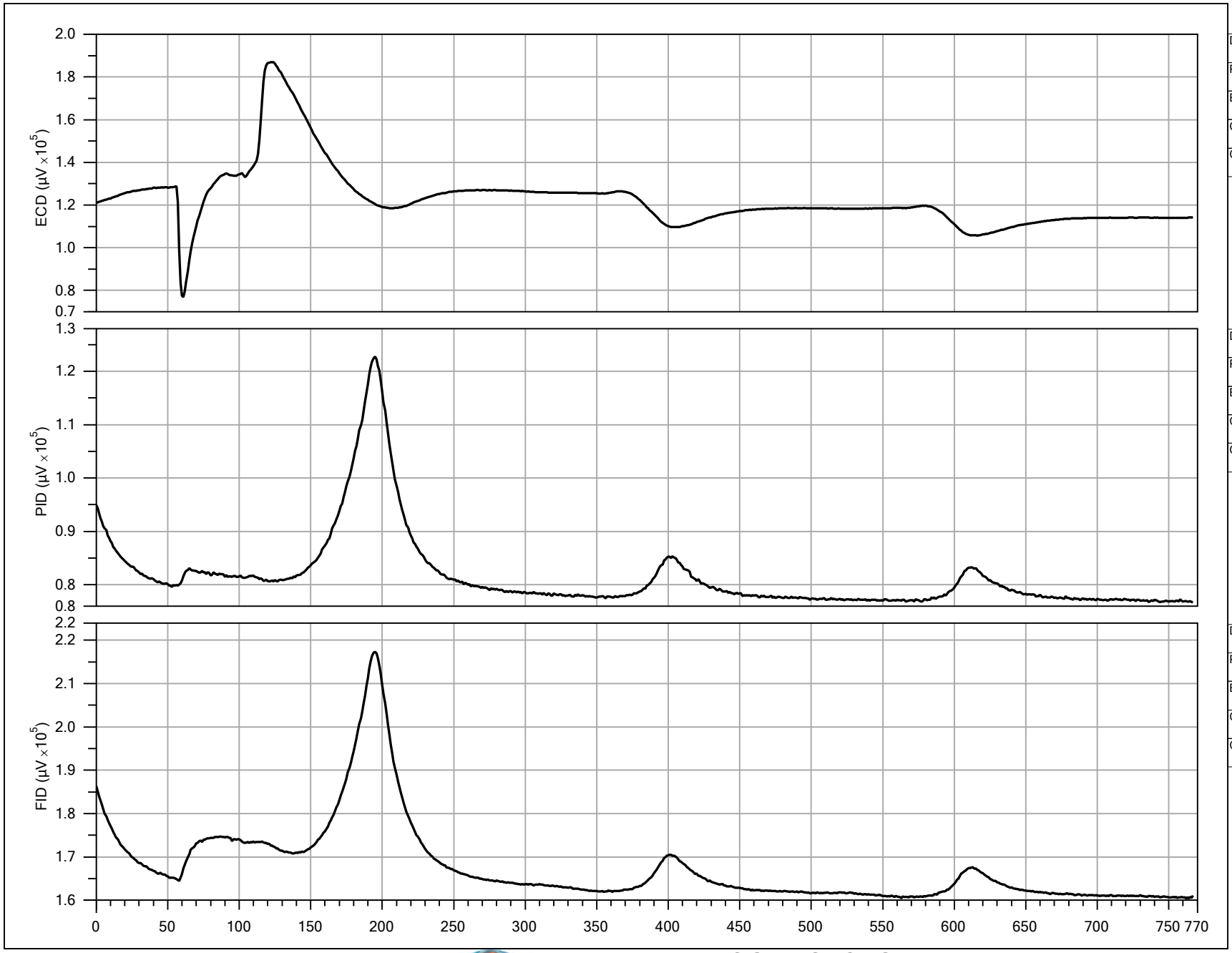
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Fri Jun 27 2014 13:39:05

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.4	4.5	PASS
High	290.0	288.3	0.6	PASS



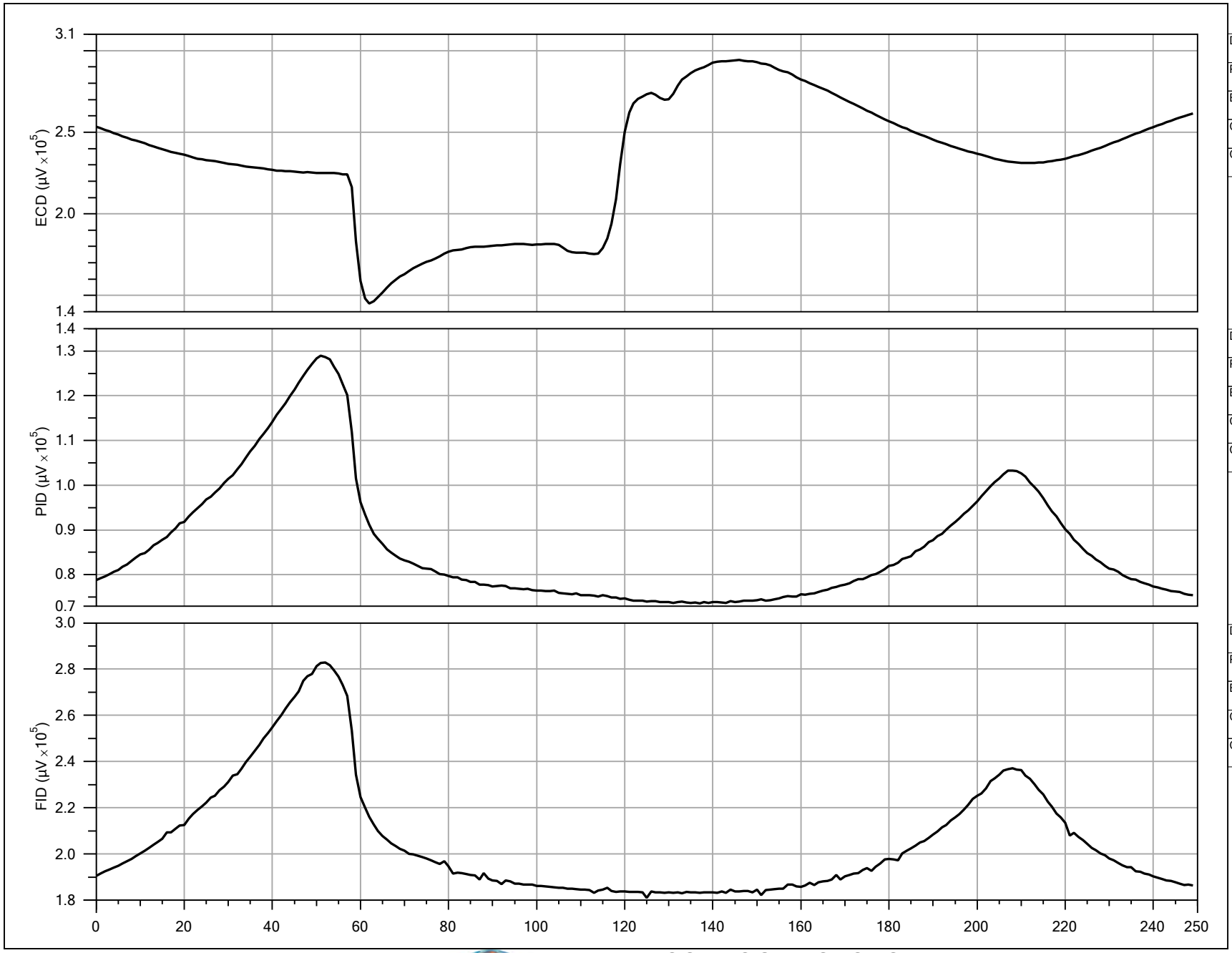
Detector:
ECD
Peak Response:
187010 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
122730 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
217345 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S.Sirhan	MIP-17.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14RI	TRC Solution	6/27/2014



Detector:
ECD
Peak Response:
294313 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
128948 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
282838 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S.Sirhan	MIP-17.POST.TIM
Project ID:	Client:	Date:
TPC-14RI	TRC Solution	6/27/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-17.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Fri Jun 27 2014 11:12:00

RESPONSE TEST ATTENUATION CHANGES

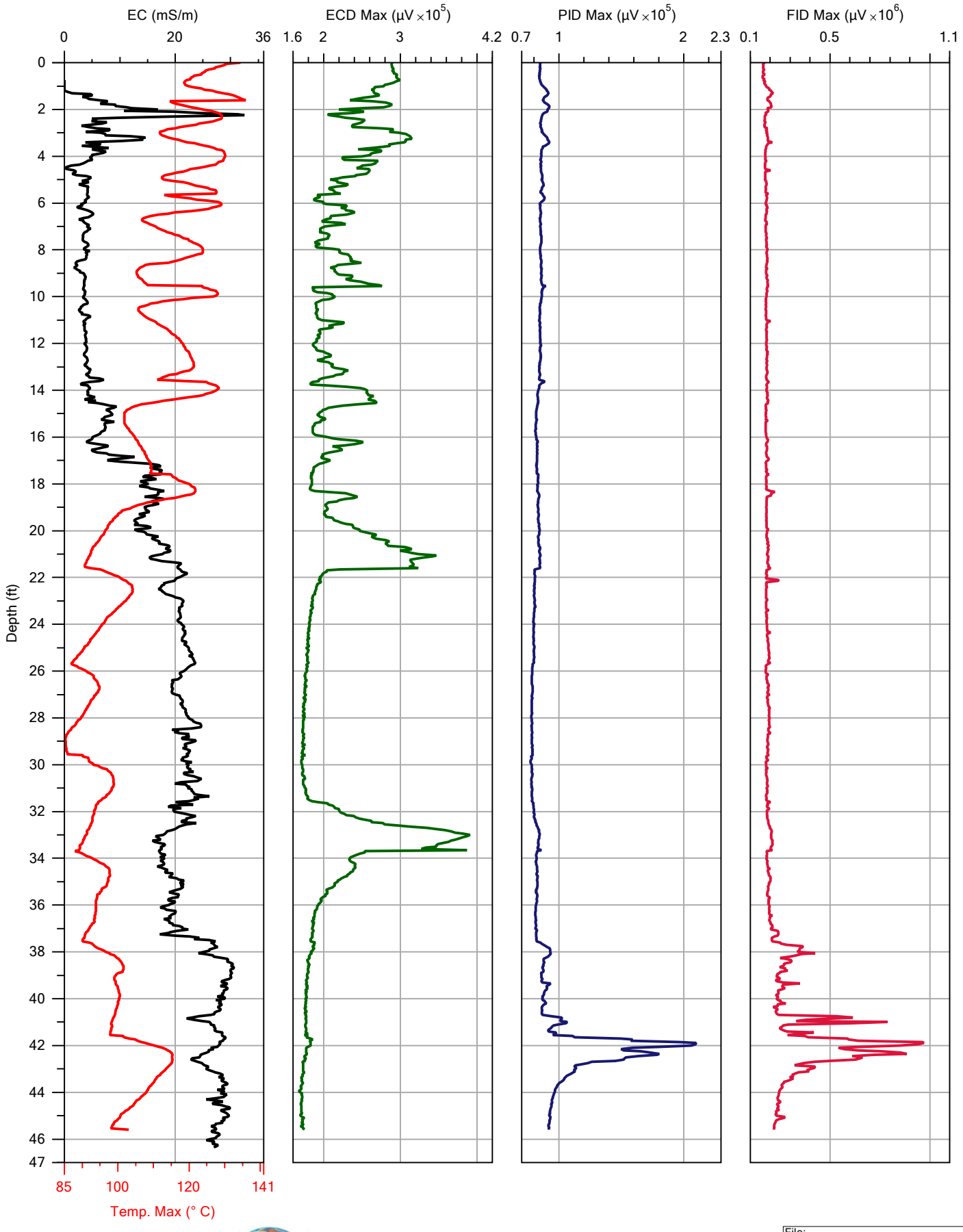
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-17.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Fri Jun 27 2014 13:39:05

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-18.MIP
Company: SER90		Operator: S. Sirhan	Date: 6/30/2014
Project ID: TPC-14-RI		Client: TRC Solutions	Location: 41° 59′ 46″ N, 83° 56′ 31″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	54.9	0.2	PASS
High	290.0	287.8	0.7	PASS

MIP-18.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-18.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.3 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 09:55:11

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Mon Jun 30 2014 09:59:37

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.30	0.091	16	1	1	1

LOG END DEPTH: 45.60 ft (13.899 m)
LOG END TIME: Mon Jun 30 2014 11:12:07

LATITUDE: 41.996183514
LONGITUDE: -83.941853806
ELEVATION: 209.354 METERS 686.86 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-18.post.tim

COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.0 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 11:31:35

RESPONSE TEST ATTENUATION CHANGES

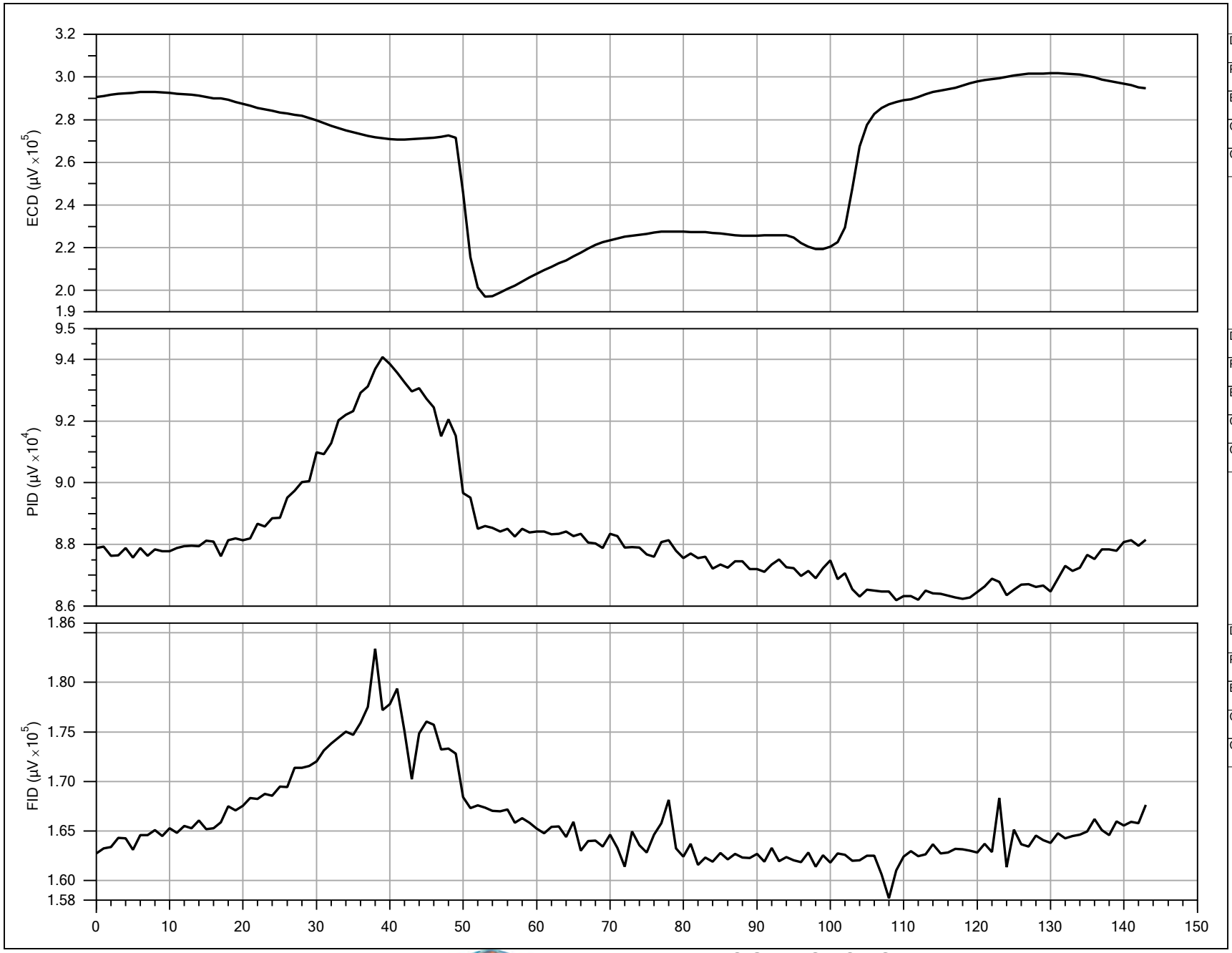
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.9	3.5	PASS
High	290.0	290.9	0.3	PASS

********** USER NOTES **********

Please see atatched pics for location



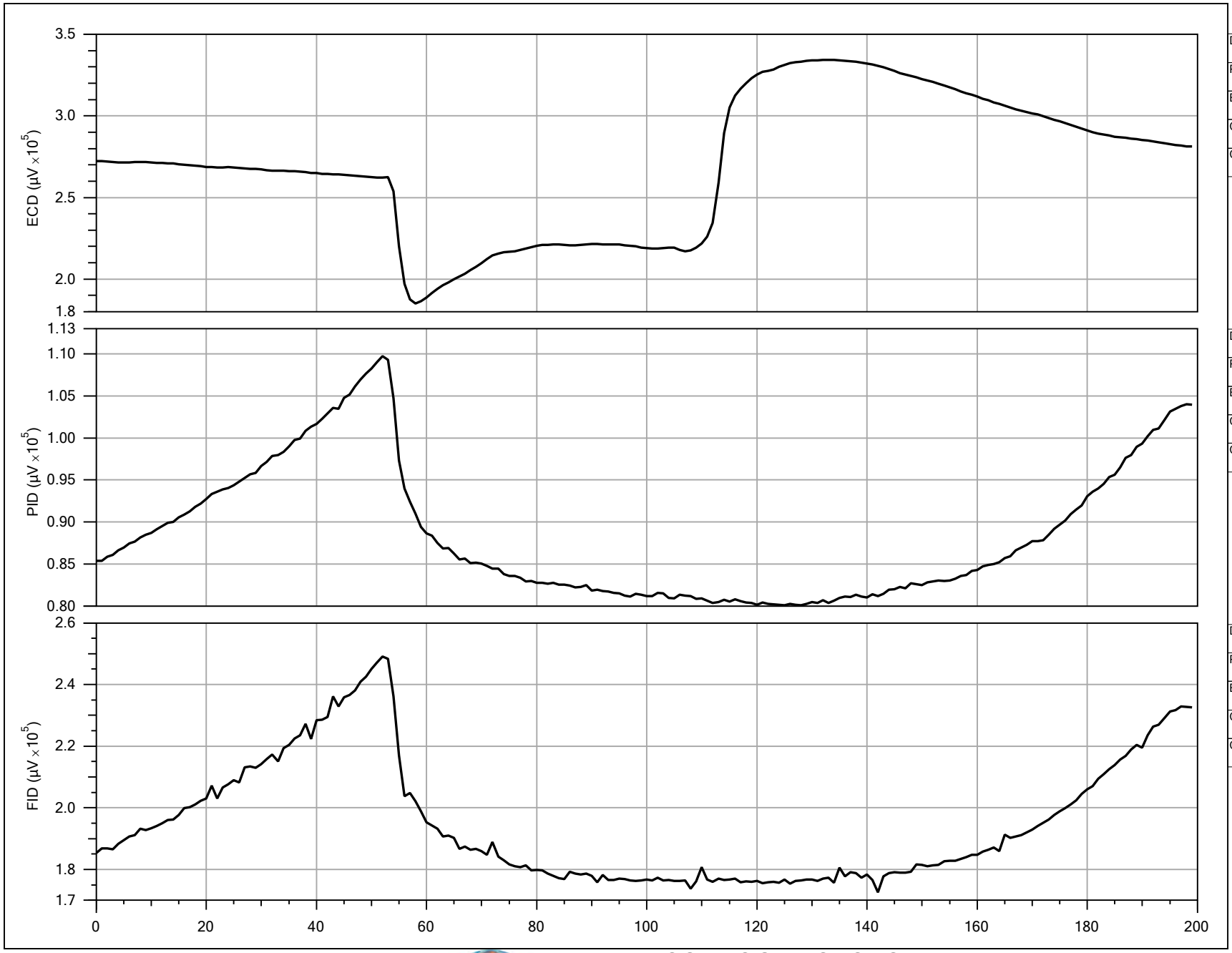
Detector:
ECD
Peak Response:
301775 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
94073 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
183386 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-18.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/30/2014



Detector:
ECD
Peak Response:
334376 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
109706 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
249107 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-18.POST.TIM
Project ID:	Client:	Date:
TPC-14-RI	TRC Solutions	6/30/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-18.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.3 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 09:55:11

RESPONSE TEST ATTENUATION CHANGES

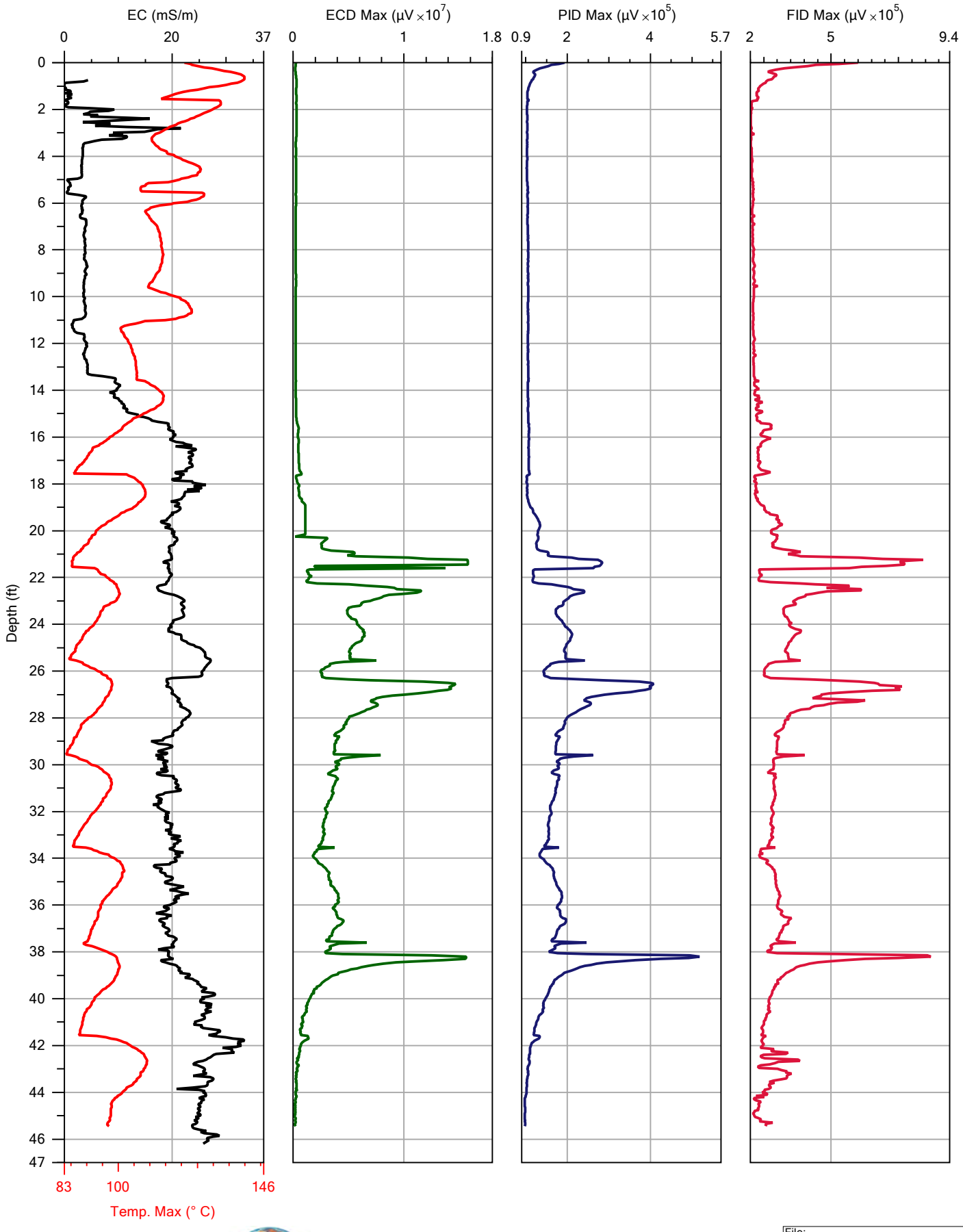
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-18.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.0 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 11:31:35

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP19.MIP
Company: SER90		Operator: S. Sirhan	Date: 6/30/2014
Project ID: TPC-14-RI		Client: TRC Solutions	Location: 41° 59′ 43″ N, 83° 56′ 29″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.8	3.3	PASS
High	290.0	289.9	0.0	PASS

MIP19.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP19.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.9 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 11:48:54

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (205.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (57.3 deg C) at 0.00 ft (0.000 m)

Temperature out of range (40.5 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Mon Jun 30 2014 11:52:48

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
20.30	6.187	16	1	1	1
21.05	6.416	128	1	1	1
21.60	6.584	1024	1	1	1

LOG END DEPTH: 45.45 ft (13.853 m)
LOG END TIME: Mon Jun 30 2014 14:03:56

LATITUDE: 41.995261747
LONGITUDE: -83.941266094
ELEVATION: 208.368 METERS 683.62 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

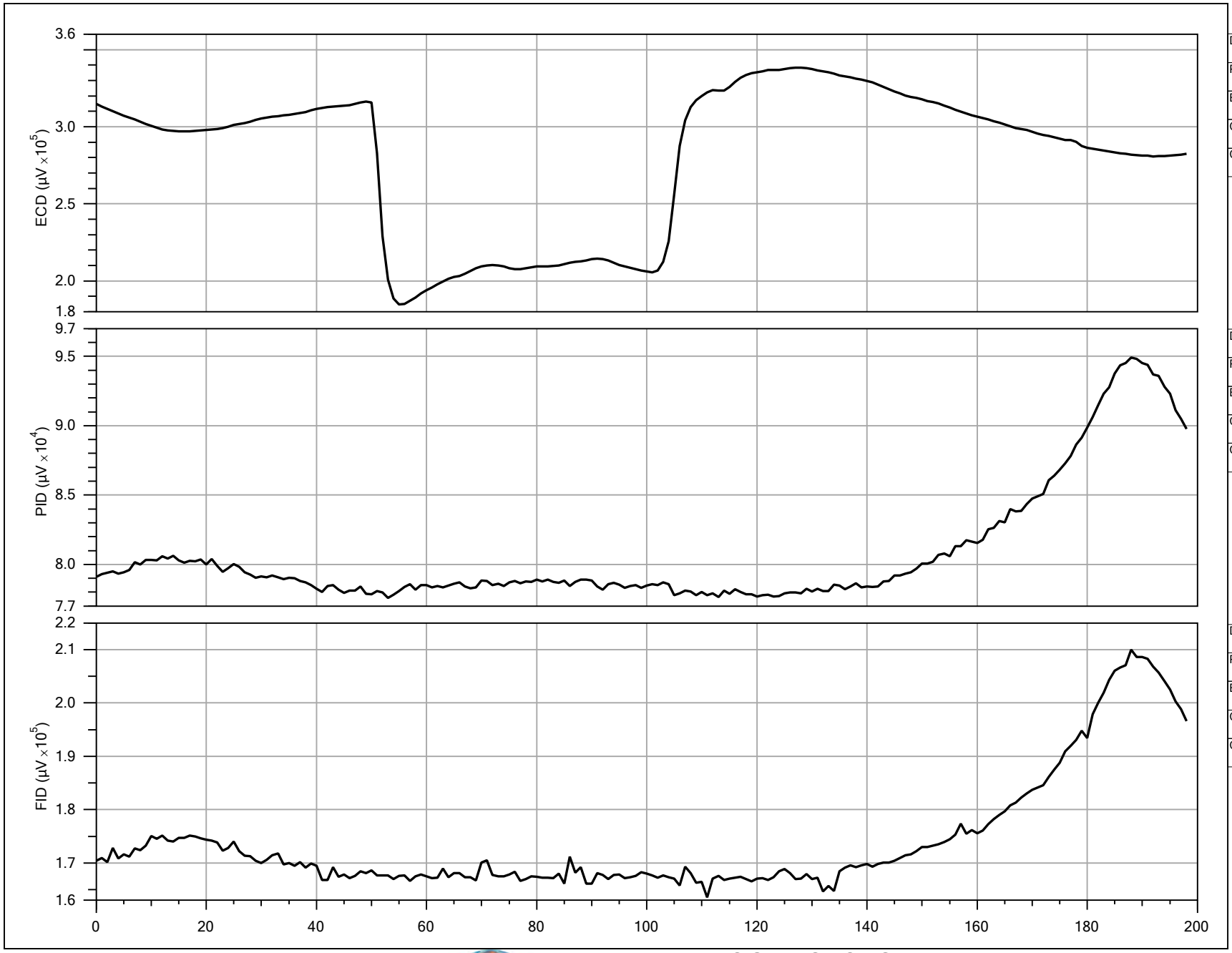
FILENAME: MIP19.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 14:23:58

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.2	4.0	PASS
High	290.0	289.4	0.2	PASS



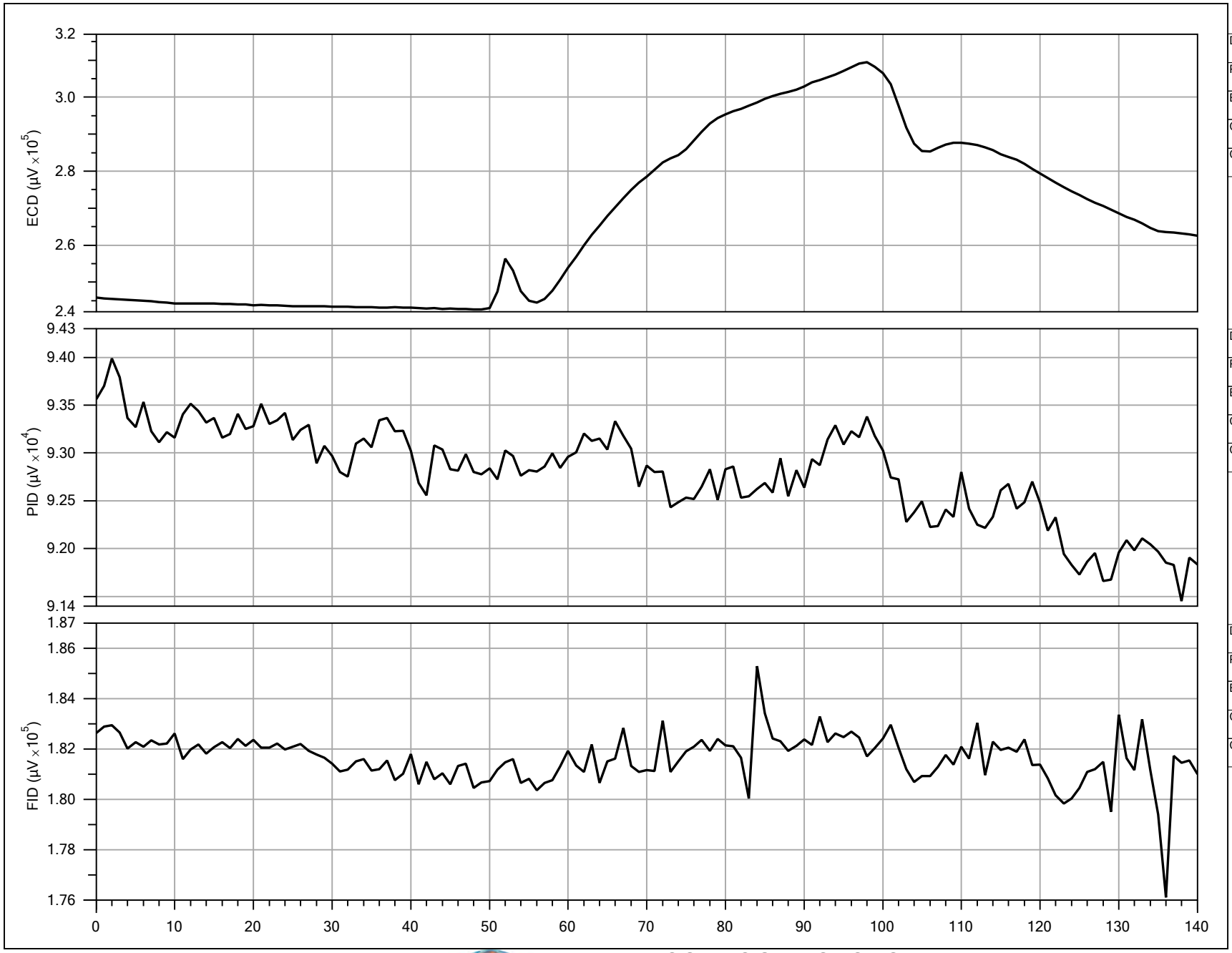
Detector:
ECD
Peak Response:
338389 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
94905 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
209998 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP19.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/30/2014



Detector:
ECD
Peak Response:
309473 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
93989 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
185293 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP19.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/30/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP19.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.9 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 11:48:54

RESPONSE TEST ATTENUATION CHANGES

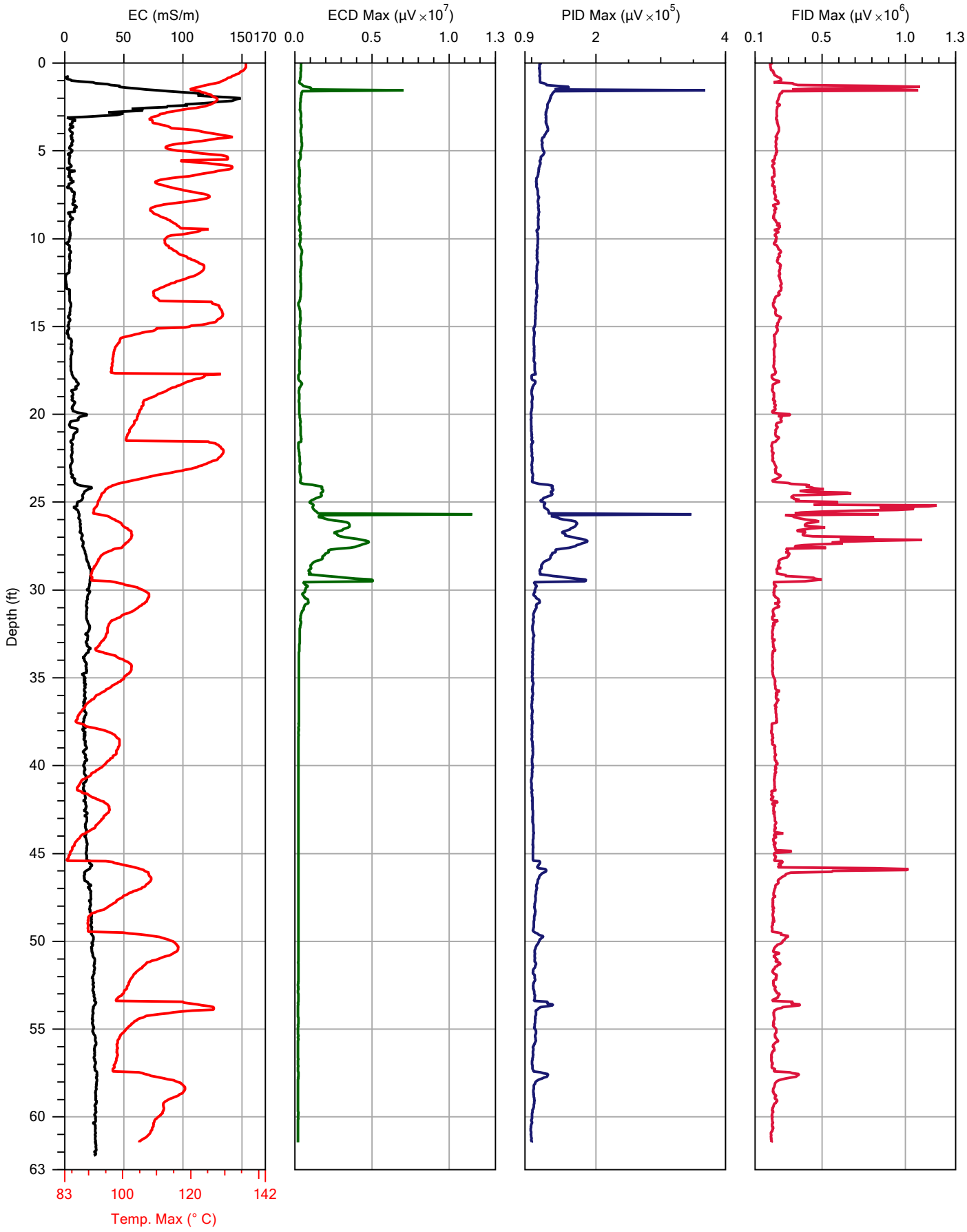
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP19.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 14:23:58

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-20.MIP
Company: SER90		Operator: S. Sirhan	Date: 6/30/2014
Project ID: TPC-14-RI		Client: TRC Solutions	Location: 41° 59′ 45″ N, 83° 56′ 40″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.7	3.0	PASS
High	290.0	289.6	0.2	PASS

MIP-20.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-20.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.6 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 14:34:43

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (181.3 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (72.2 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Mon Jun 30 2014 14:37:34

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 61.45 ft (18.730 m)
LOG END TIME: Mon Jun 30 2014 16:46:24

LATITUDE: 41.995741311
LONGITUDE: -83.944401158
ELEVATION: 211.315 METERS 693.29 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

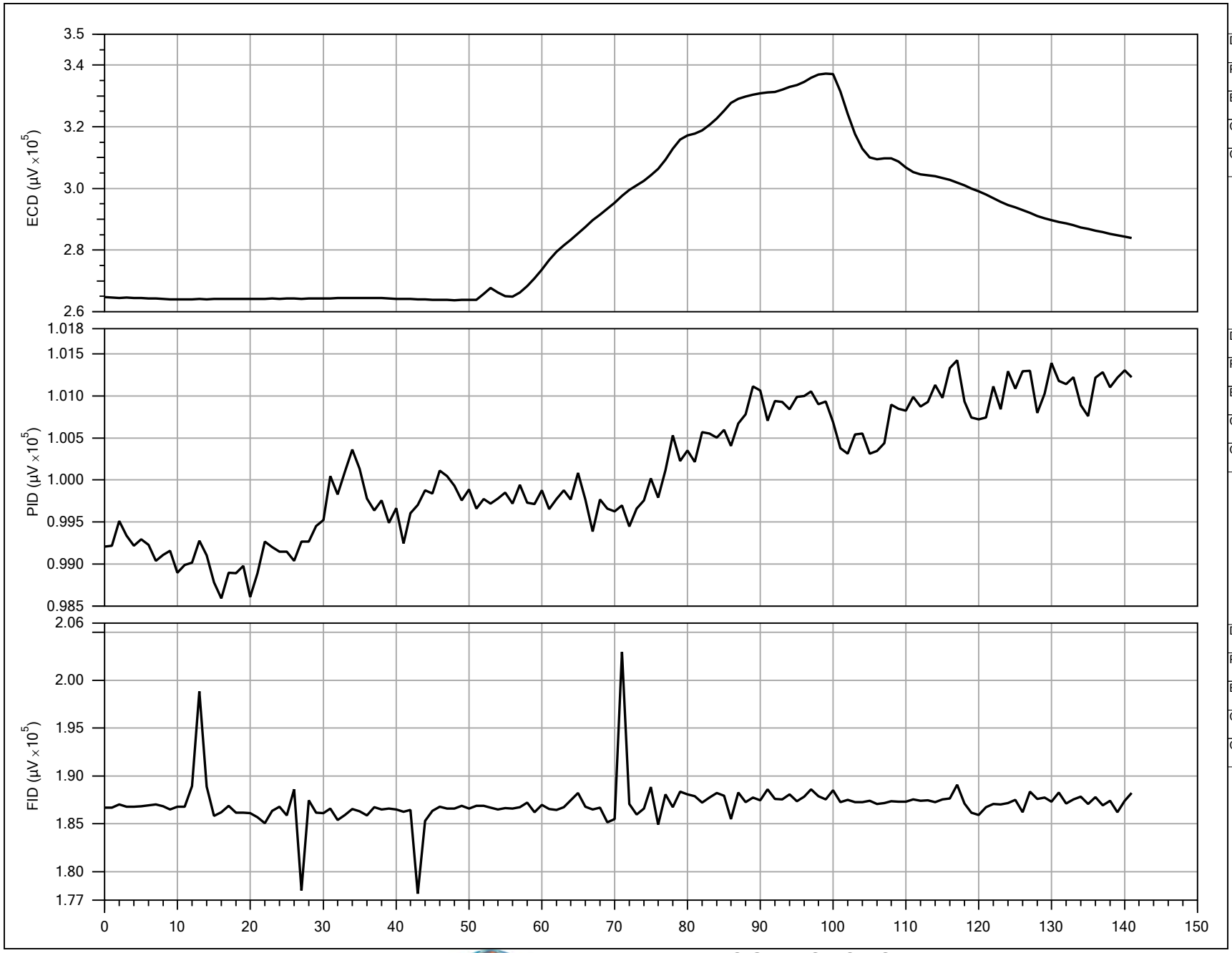
FILENAME: MIP-20.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.1 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 17:12:41

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.4	2.6	PASS
High	290.0	290.9	0.3	PASS



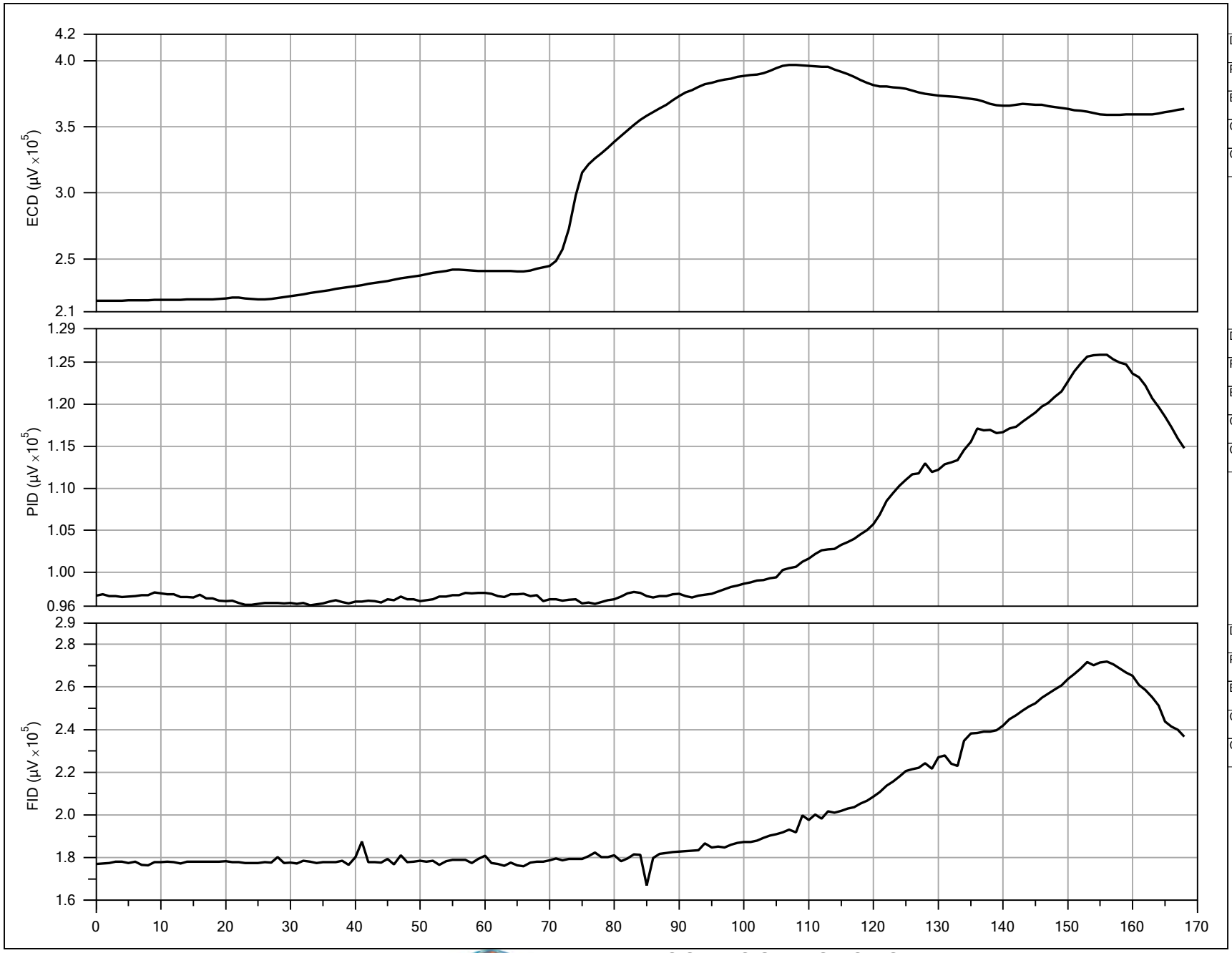
Detector:
ECD
Peak Response:
337291 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
101421 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
202979 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-20.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/30/2014



Detector:
ECD
Peak Response:
396741 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
125896 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
271859 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-20.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-14-RI	TRC Solutions	6/30/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-20.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.6 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 14:34:43

RESPONSE TEST ATTENUATION CHANGES

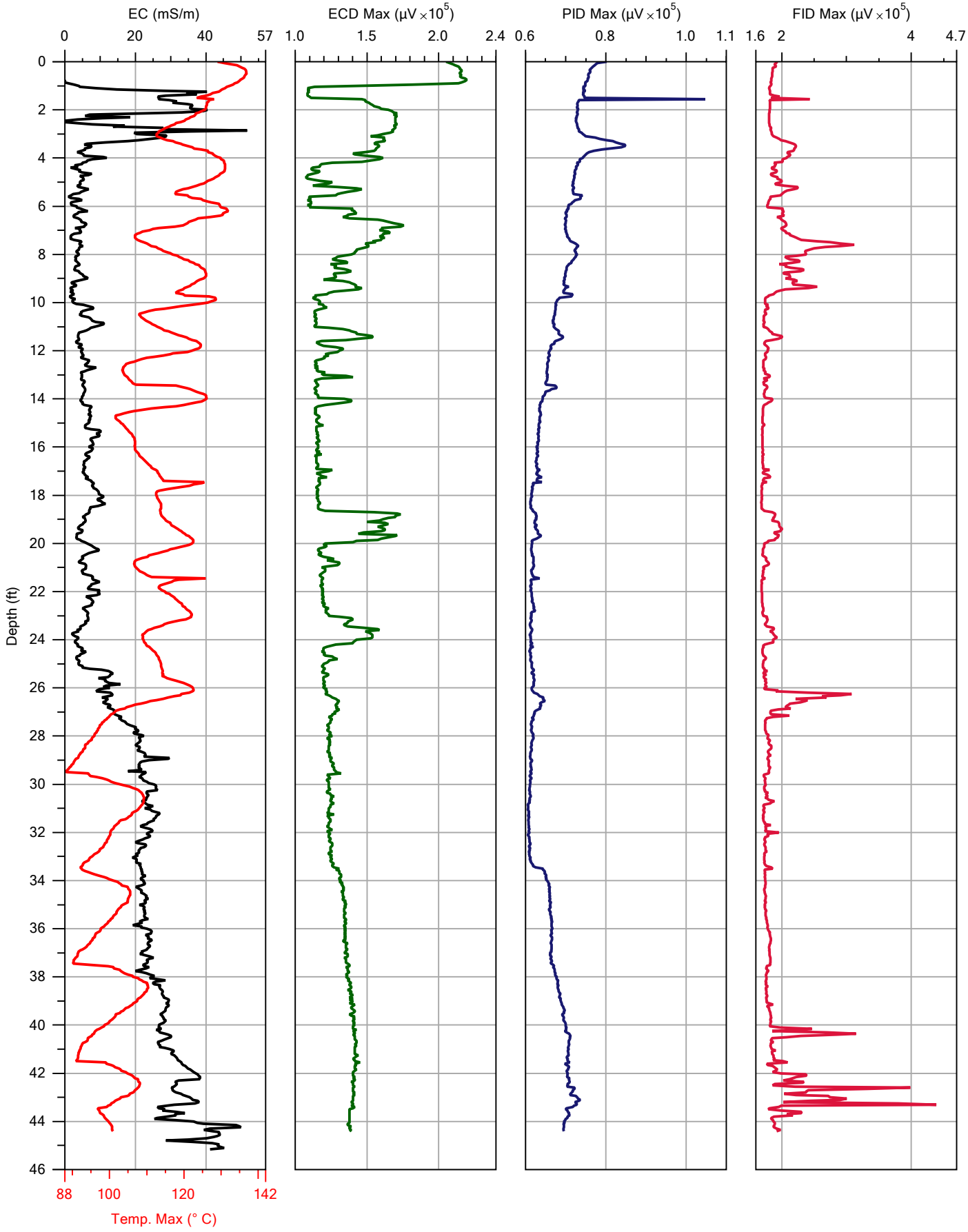
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-20.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.1 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 17:12:41

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-21.MIP
Company: SER90		Operator: S. Sirhan	Date: 7/1/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 48″ N, 83° 56′ 40″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.8	3.3	PASS
High	290.0	291.3	0.5	PASS

MIP-21.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-21.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.9 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 08:48:27

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jul 1 2014 08:51:52

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.05	0.015	16	1	1	1
0.15	0.046	16	1	1	1

LOG END DEPTH: 44.40 ft (13.533 m)
LOG END TIME: Tue Jul 1 2014 10:07:14

LATITUDE: 41.996553736
LONGITUDE: -83.944521625
ELEVATION: 216.297 METERS 709.64 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

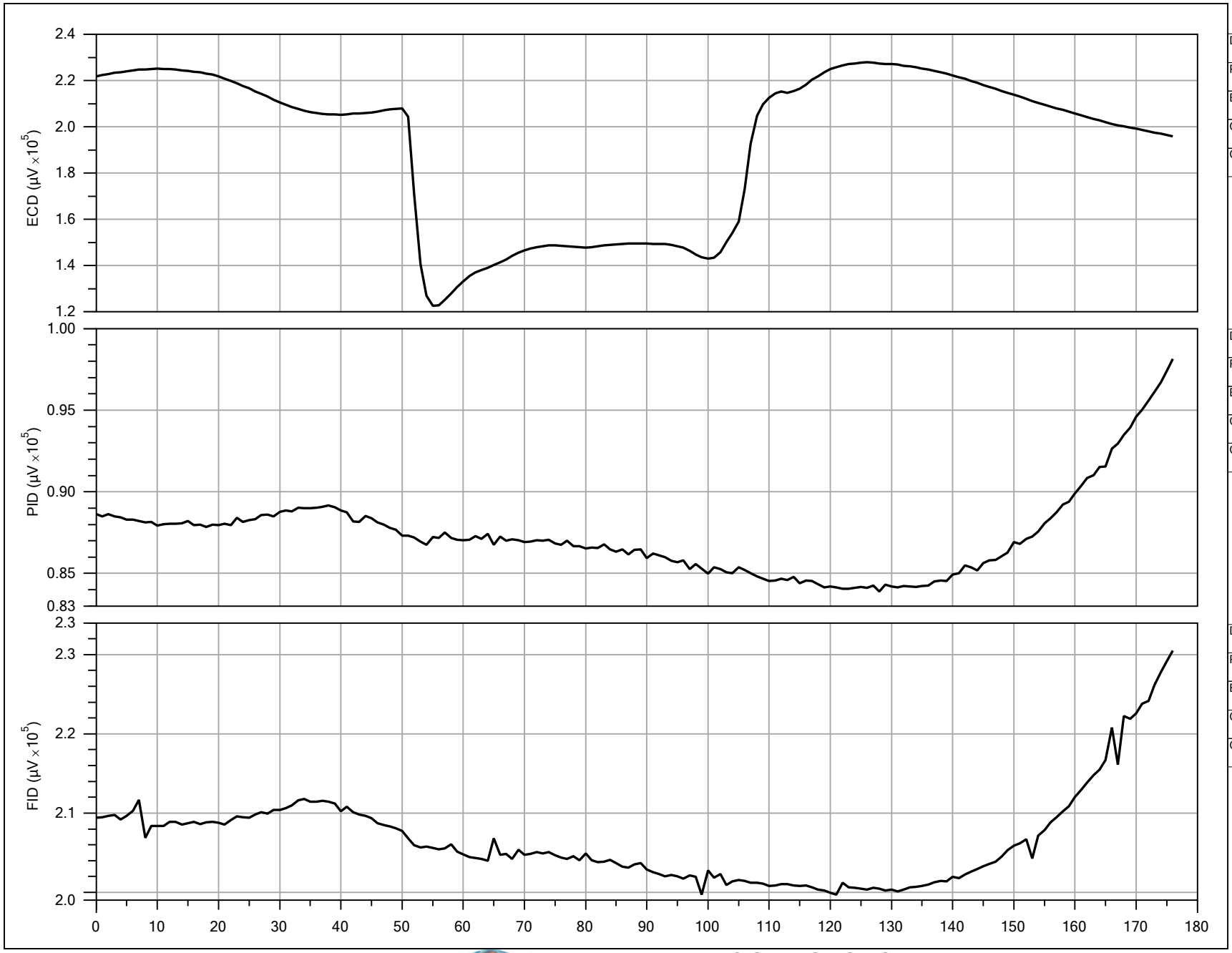
FILENAME: MIP-21.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.2 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 10:28:49

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.9	3.5	PASS
High	290.0	290.6	0.2	PASS



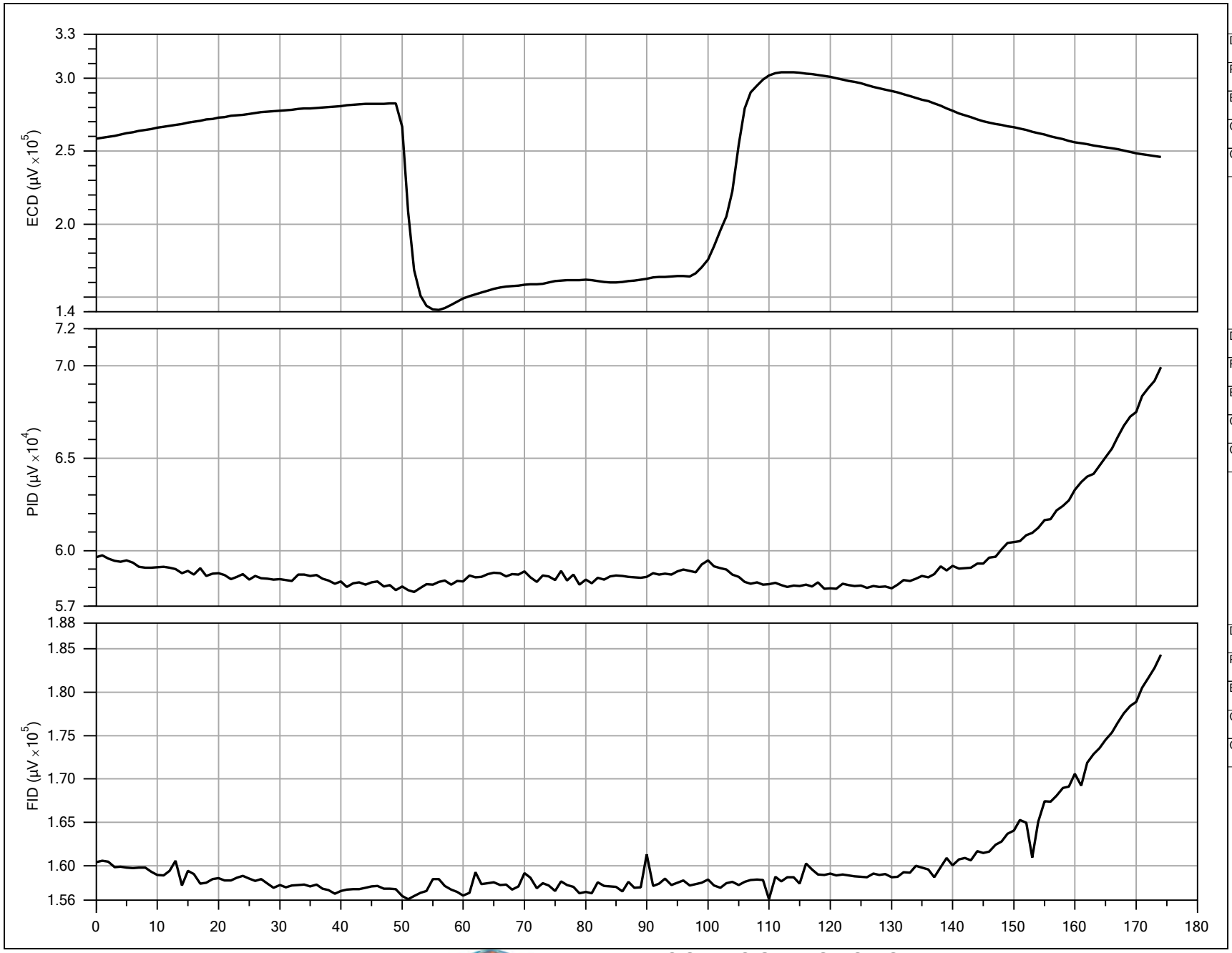
Detector:
ECD
Peak Response:
227882 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
98155 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
230482 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-21.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/1/2014



Detector:
ECD
Peak Response:
304018 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
69913 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
184340 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-21.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/1/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-21.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.9 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 08:48:27

RESPONSE TEST ATTENUATION CHANGES

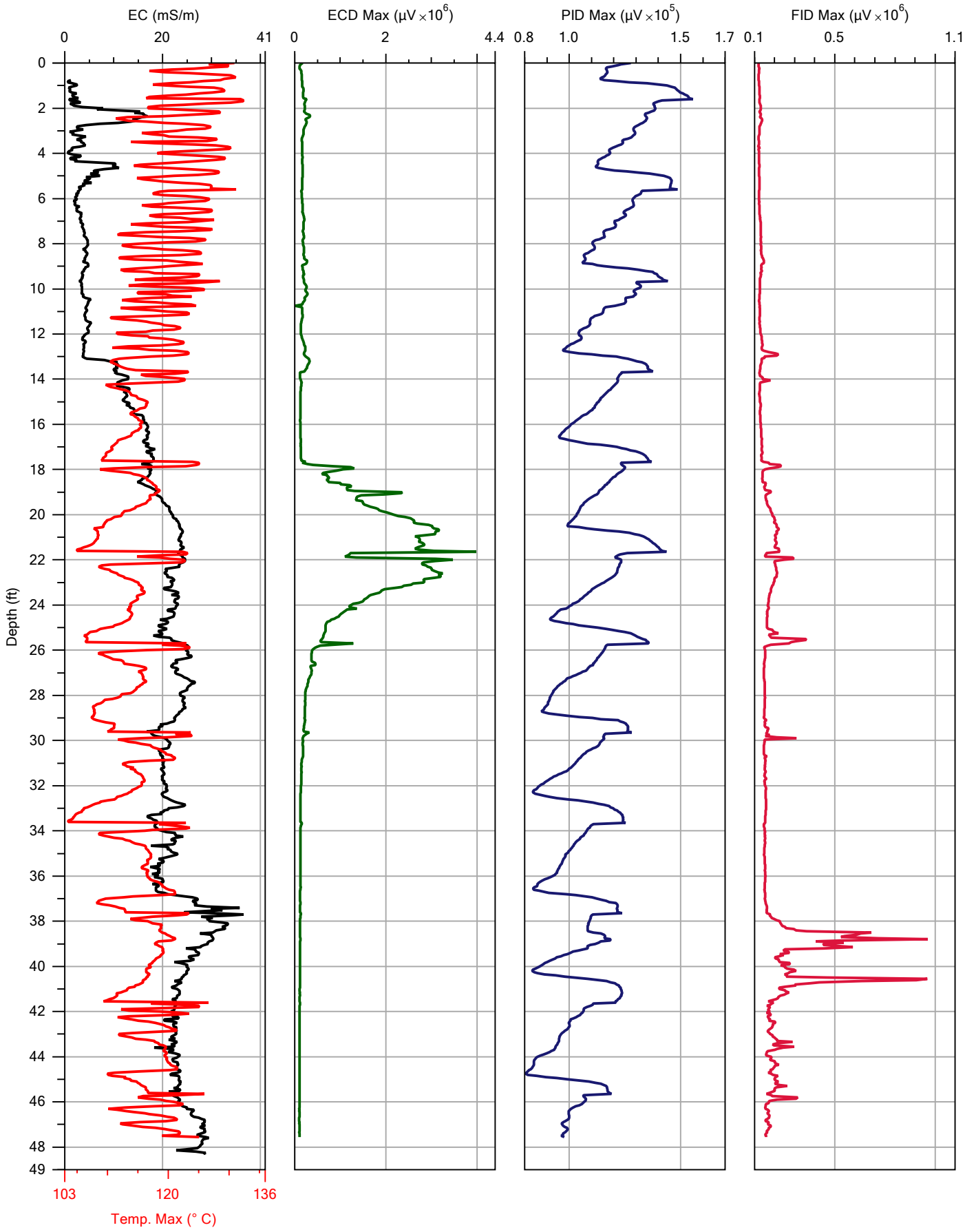
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-21.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.2 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 10:28:49

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



PID Readings are NOT Valid

		File: MIP-22.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/1/2014
Project ID: TPC-2014RI	Client: TRC Solutions	Location: 41° 59′ 42″ N, 83° 56′ 28″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	279.5	3.6	PASS

MIP-22.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-22.pre.tim
COMPOUND: TCE
CONCENTRATION: 1,0 ppm
FLOW: 45.5 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 12:59:45

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jul 1 2014 13:03:33

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
10.80	3.292	16	1	1	1

LOG END DEPTH: 47.55 ft (14.493 m)
LOG END TIME: Tue Jul 1 2014 14:15:01

LATITUDE: 41.994987000
LONGITUDE: -83.941227075
ELEVATION: 207.916 METERS 682.14 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-22.post.tim

PID Readings are NOT Valid

COMPOUND: TCE & Benzene
CONCENTRATION: 1,0 & 1.0 ppm
FLOW: 39.5 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 14:35:41

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

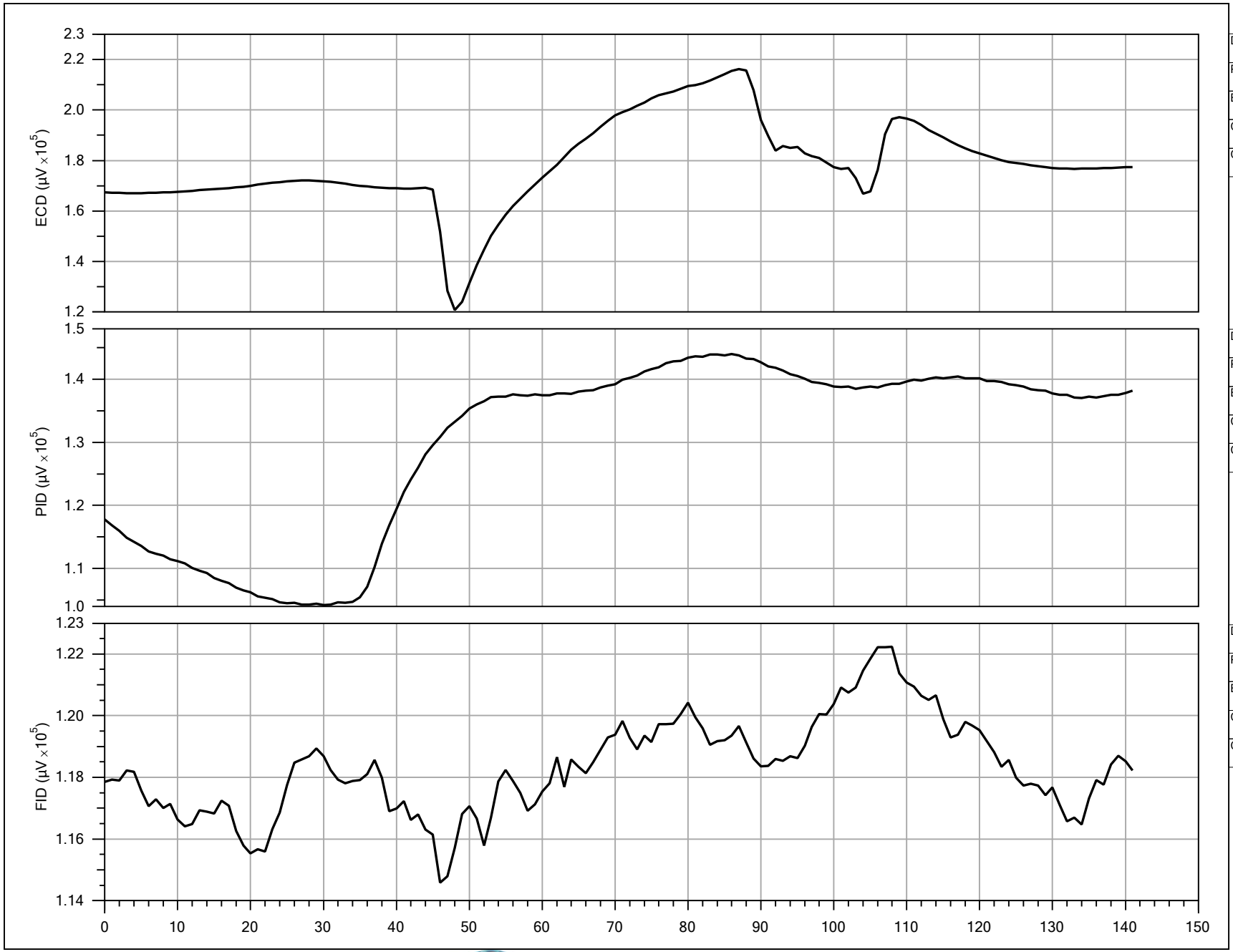
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	292.6	0.9	PASS

********** USER NOTES **********

PID lamp was erratic, discovered that Detector plug at GC was loose. Post Standard was conducted using TCE and Benzene both at 1.0 ppm to ensure proper lamp operation with benzene response.

PID Readings are NOT Valid



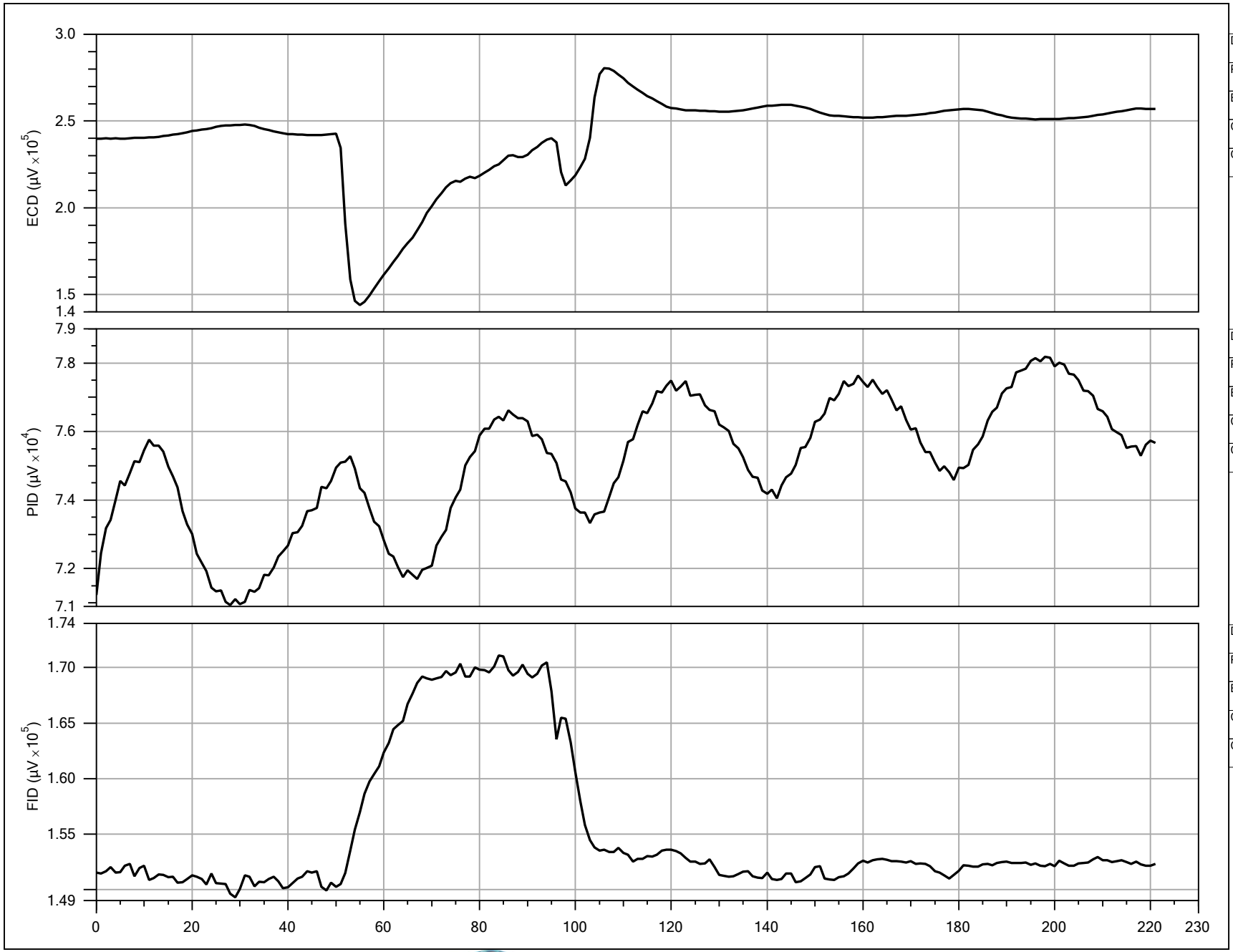
Detector:
ECD
Peak Response:
216315 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1,0 ppm

Detector:
PID
Peak Response:
144002 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1,0 ppm

Detector:
FID
Peak Response:
122234 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1,0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-22.PRE.TIM
Project ID:	Client:	Date:
TPC-2014RI	TRC Solutions	7/1/2014



Detector:
ECD
Peak Response:
280381 µV
Baseline:
0 µV
Compound:
TCE & Benzene
Concentration:
1,0 & 1.0 ppm

Detector:
PID
Peak Response:
78181 µV
Baseline:
0 µV
Compound:
TCE & Benzene
Concentration:
1,0 & 1.0 ppm

Detector:
FID
Peak Response:
171110 µV
Baseline:
0 µV
Compound:
TCE & Benzene
Concentration:
1,0 & 1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-22.POST.TIM
Project ID:	Client:	Date:
TPC-2014RI	TRC Solutions	7/1/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-22.pre.tim
COMPOUND: TCE
CONCENTRATION: 1,0 ppm
FLOW: 45.5 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 12:59:45

RESPONSE TEST ATTENUATION CHANGES

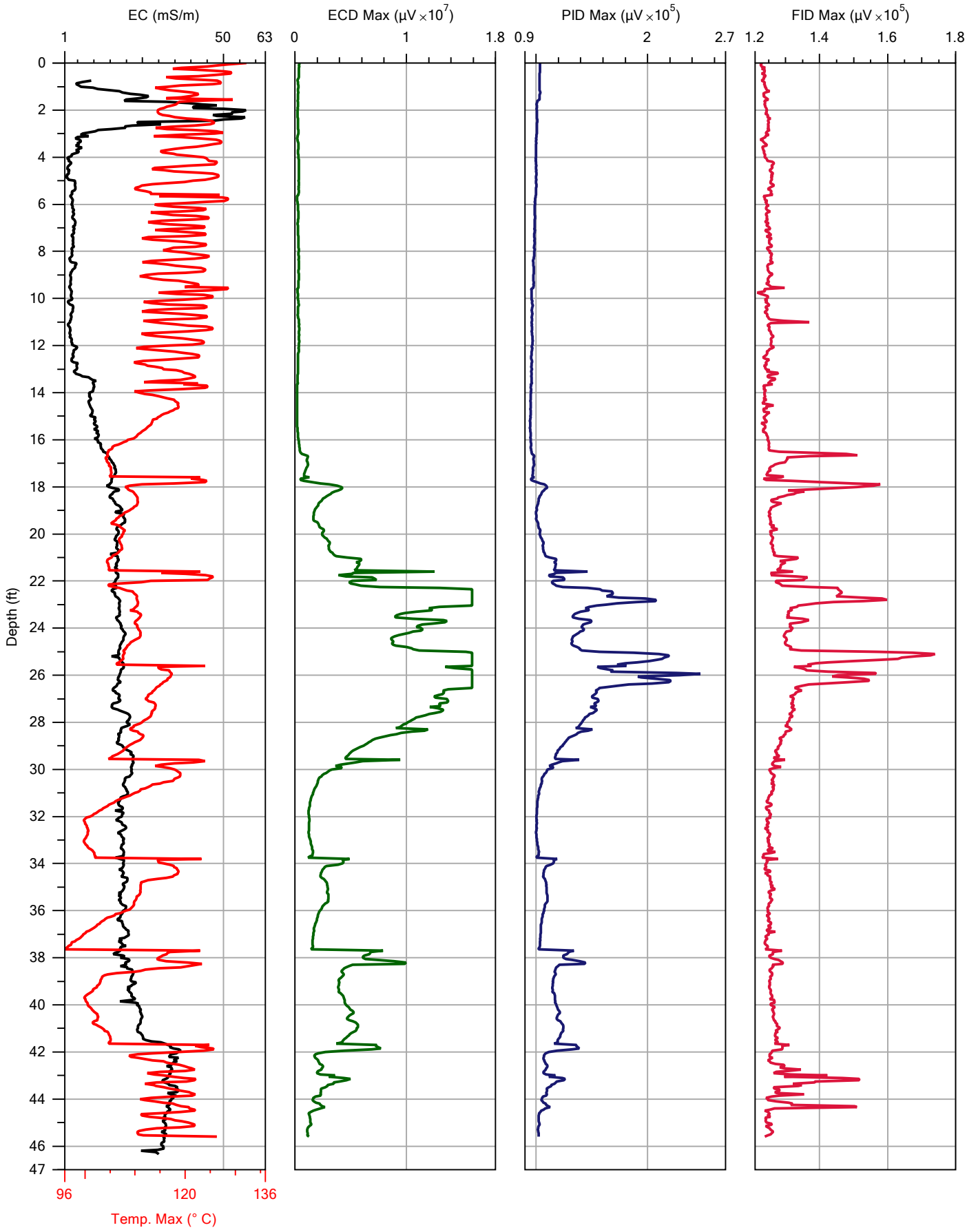
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-22.post.tim
COMPOUND: TCE & Benzene
CONCENTRATION: 1,0 & 1.0 ppm
FLOW: 39.5 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 14:35:41

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-23.MIP
Company: SER90		Operator: S. Sirhan	Date: 7/1/2014
Project ID: TPC-2014RI		Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 29″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.9	PASS
High	290.0	289.1	0.3	PASS

MIP-23.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-23.pre.tim
COMPOUND: TCE
CONCENTRATION: 1,0 ppm
FLOW: 36.5 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 16:35:14

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jul 1 2014 16:38:09

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	64	1	1	1

LOG END DEPTH: 45.60 ft (13.899 m)
LOG END TIME: Tue Jul 1 2014 17:37:01

LATITUDE: 41.995536514
LONGITUDE: -83.941271200
ELEVATION: 206.973 METERS 679.05 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-23.post.tim
COMPOUND: TCE & Benzene

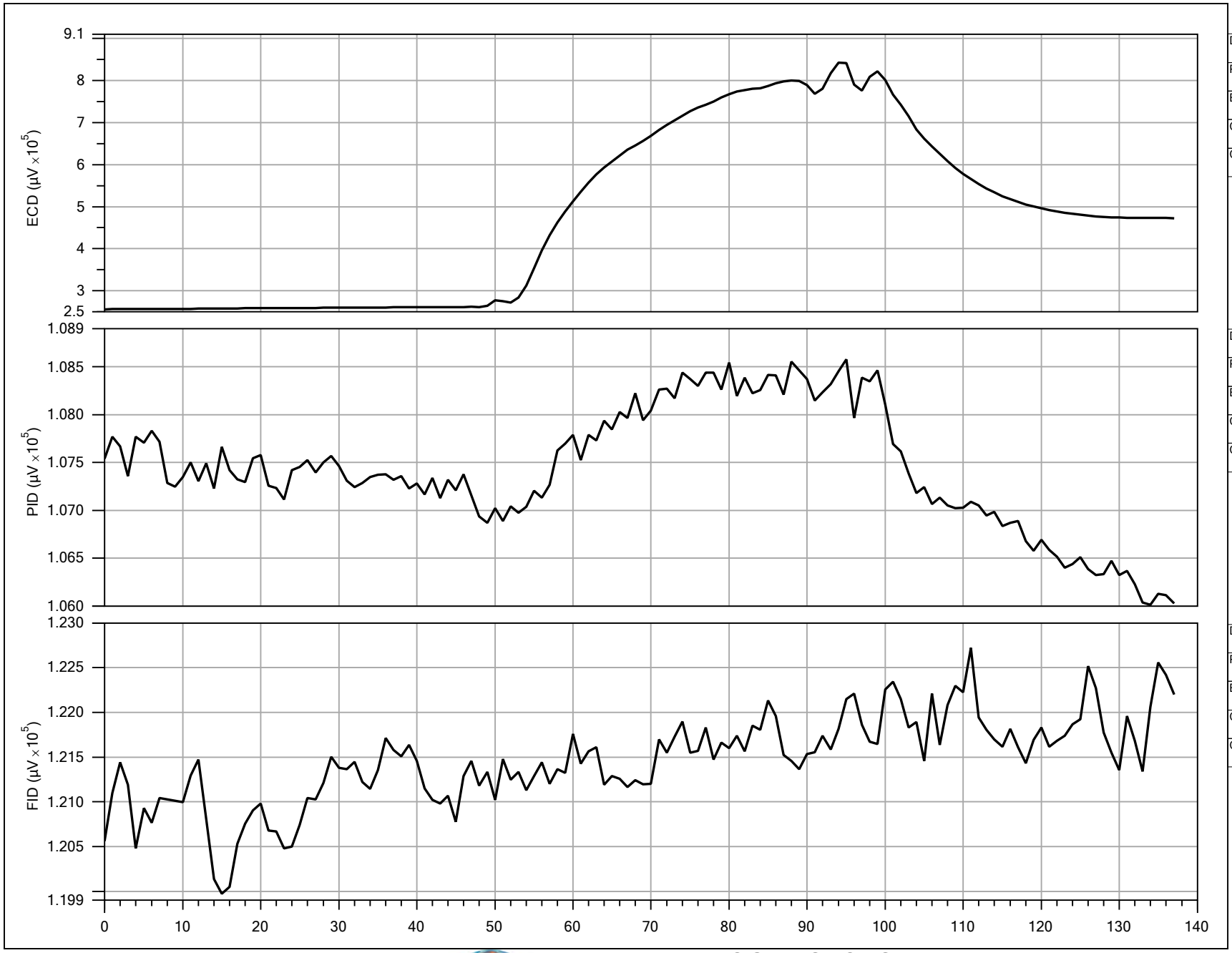
CONCENTRATION: 1,0 & 1.0 ppm
FLOW: 35.8 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 18:00:50

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.5	PASS
High	290.0	291.5	0.5	PASS



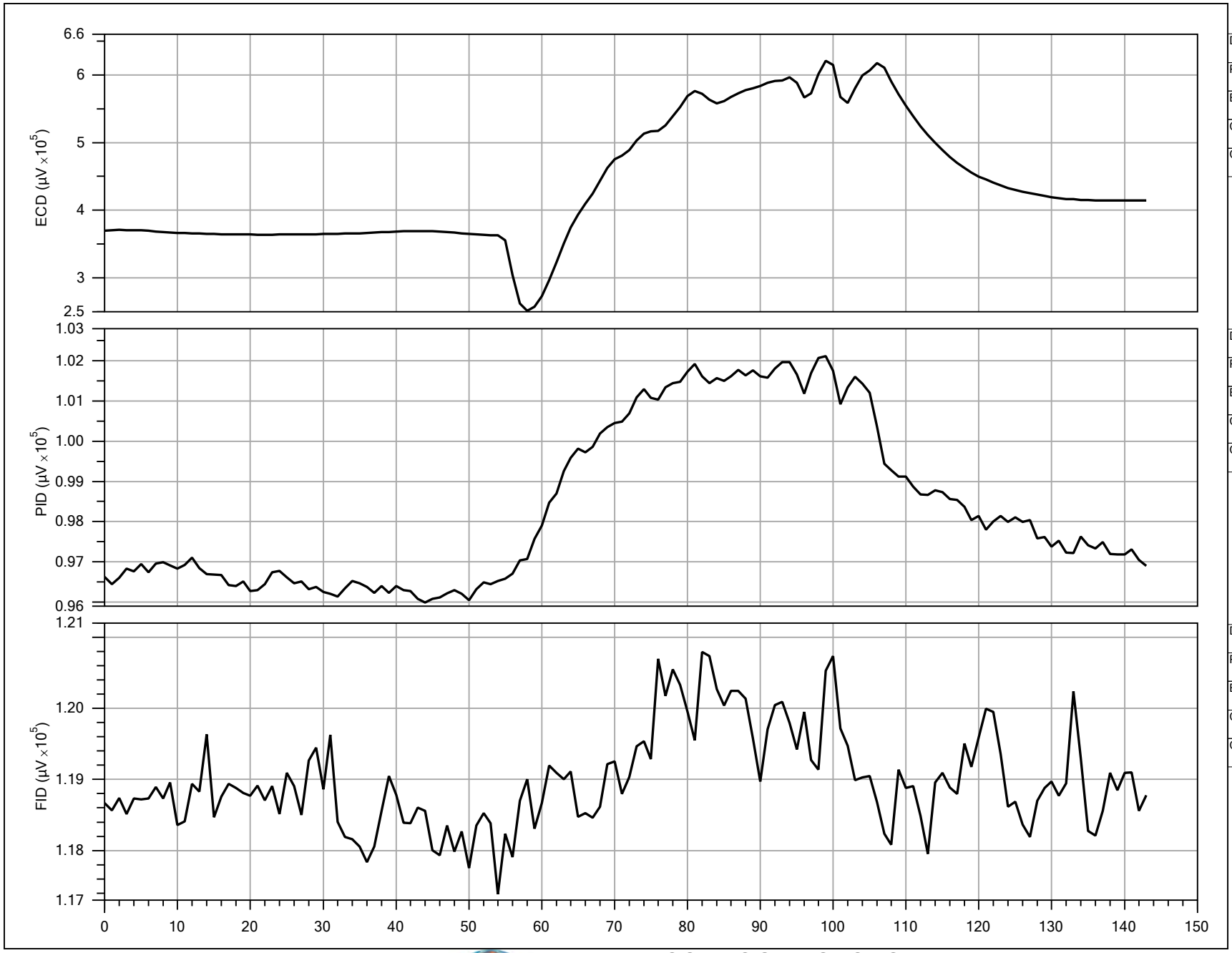
Detector:
ECD
Peak Response:
842814 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1,0 ppm

Detector:
PID
Peak Response:
108577 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1,0 ppm

Detector:
FID
Peak Response:
122723 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1,0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-23.PRE.TIM
Project ID:	Client:	Date:
TPC-2014RI	TRC Solutions	7/1/2014



Detector:
ECD
Peak Response:
621189 μV
Baseline:
0 μV
Compound:
TCE & Benzene
Concentration:
1,0 & 1.0 ppm

Detector:
PID
Peak Response:
102115 μV
Baseline:
0 μV
Compound:
TCE & Benzene
Concentration:
1,0 & 1.0 ppm

Detector:
FID
Peak Response:
120792 μV
Baseline:
0 μV
Compound:
TCE & Benzene
Concentration:
1,0 & 1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-23.POST.TIM
Project ID:	Client:	Date:
TPC-2014RI	TRC Solutions	7/1/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-23.pre.tim
COMPOUND: TCE
CONCENTRATION: 1,0 ppm
FLOW: 36.5 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 16:35:14

RESPONSE TEST ATTENUATION CHANGES

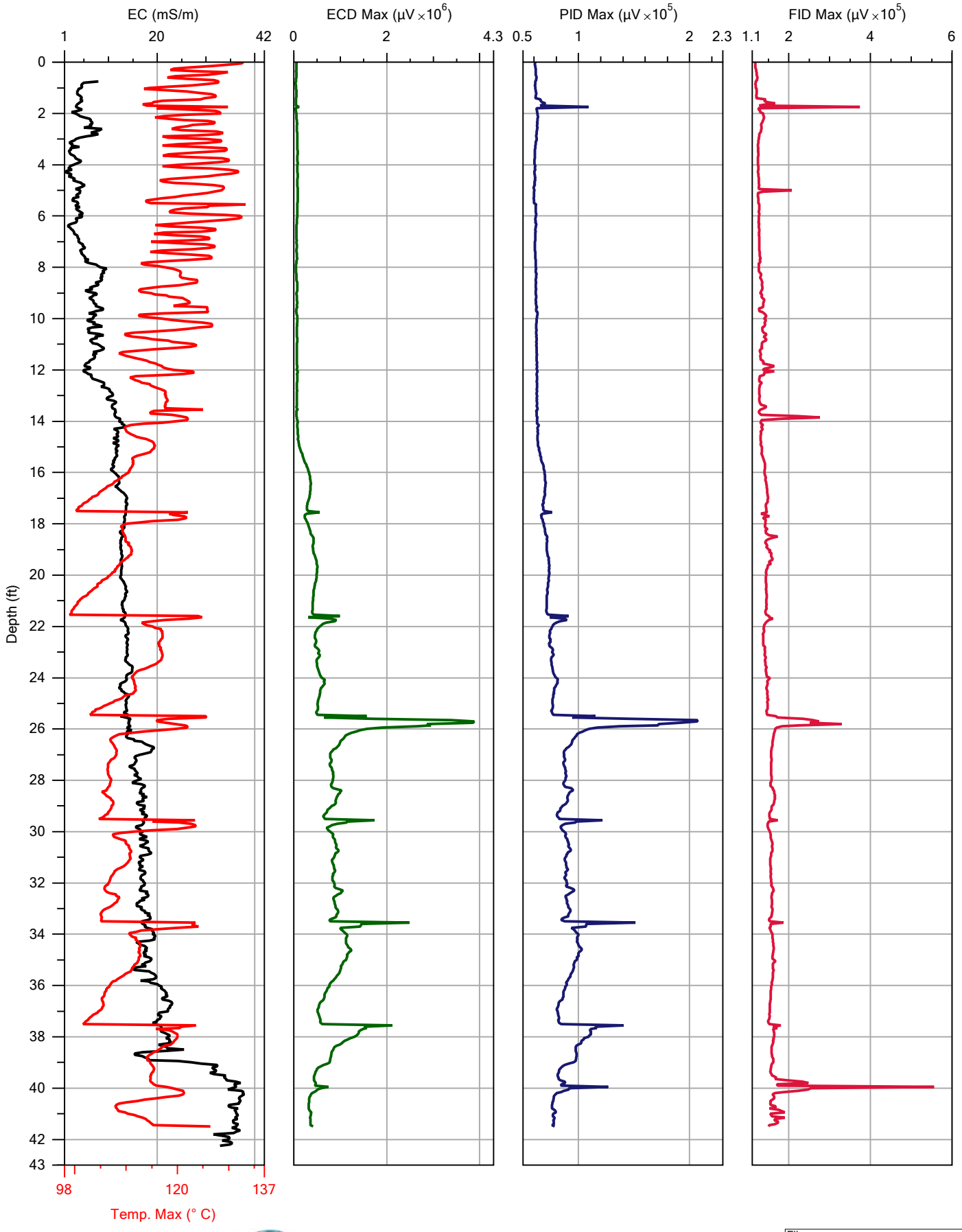
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-23.post.tim
COMPOUND: TCE & Benzene
CONCENTRATION: 1,0 & 1.0 ppm
FLOW: 35.8 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 18:00:50

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-24.MIP
Company: SER90		Operator: S. Sirhan	Date: 7/2/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 45″ N, 83° 56′ 29″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.7	PASS
High	290.0	293.2	1.1	PASS

MIP-24.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-24.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.2 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 08:25:36

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 2 2014 08:28:43

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.75	0.533	8	1	1	1

LOG END DEPTH: 41.50 ft (12.649 m)
LOG END TIME: Wed Jul 2 2014 09:36:17

LATITUDE: 41.995824114
LONGITUDE: -83.941260847
ELEVATION: 207.490 METERS 680.74 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-24.post.tim

COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 09:52:27

RESPONSE TEST ATTENUATION CHANGES

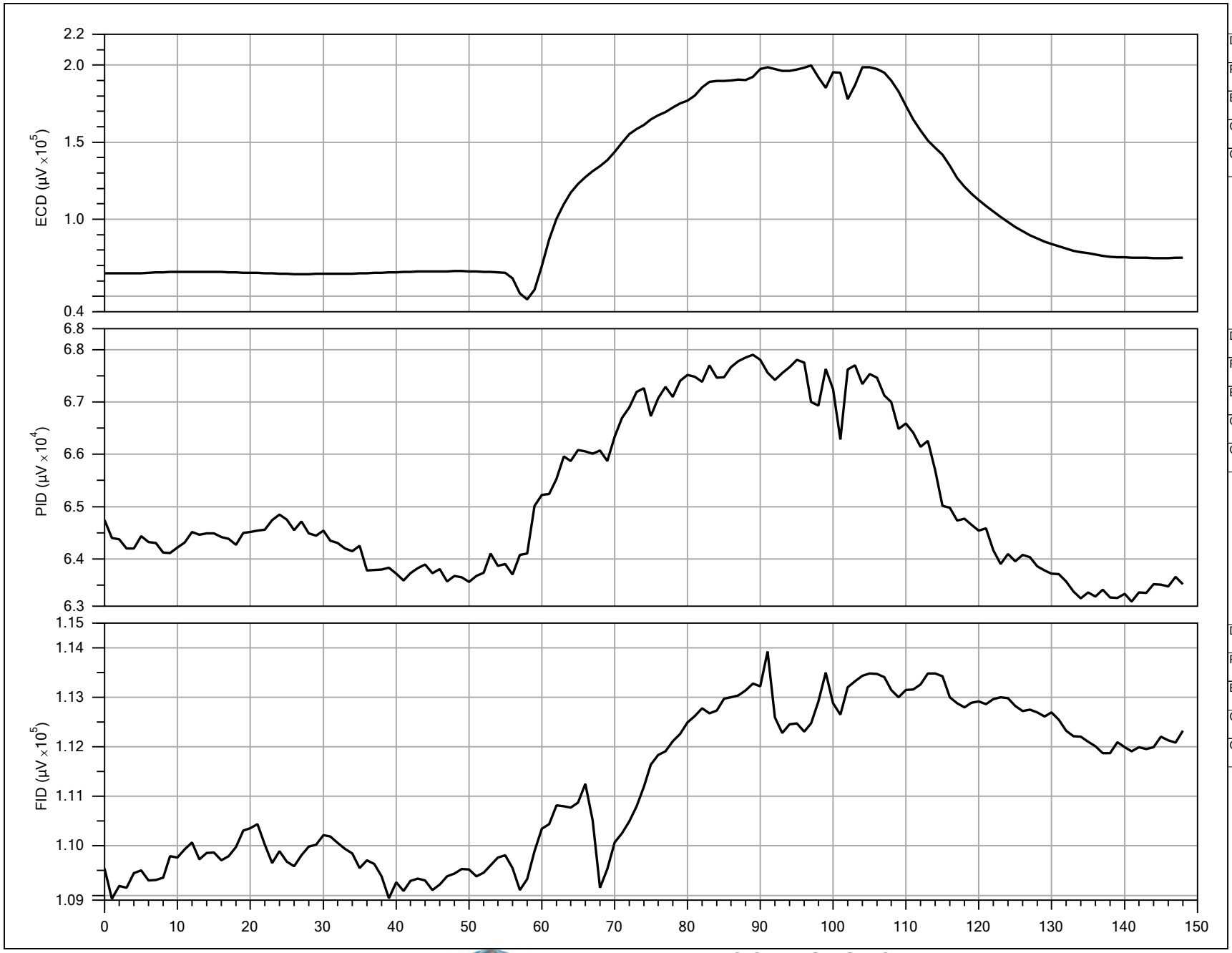
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.7	PASS
High	290.0	293.1	1.1	PASS

********** USER NOTES **********

All detectors are working properly with low baseline. N2 was ran through trunkline for the past 12 hours.



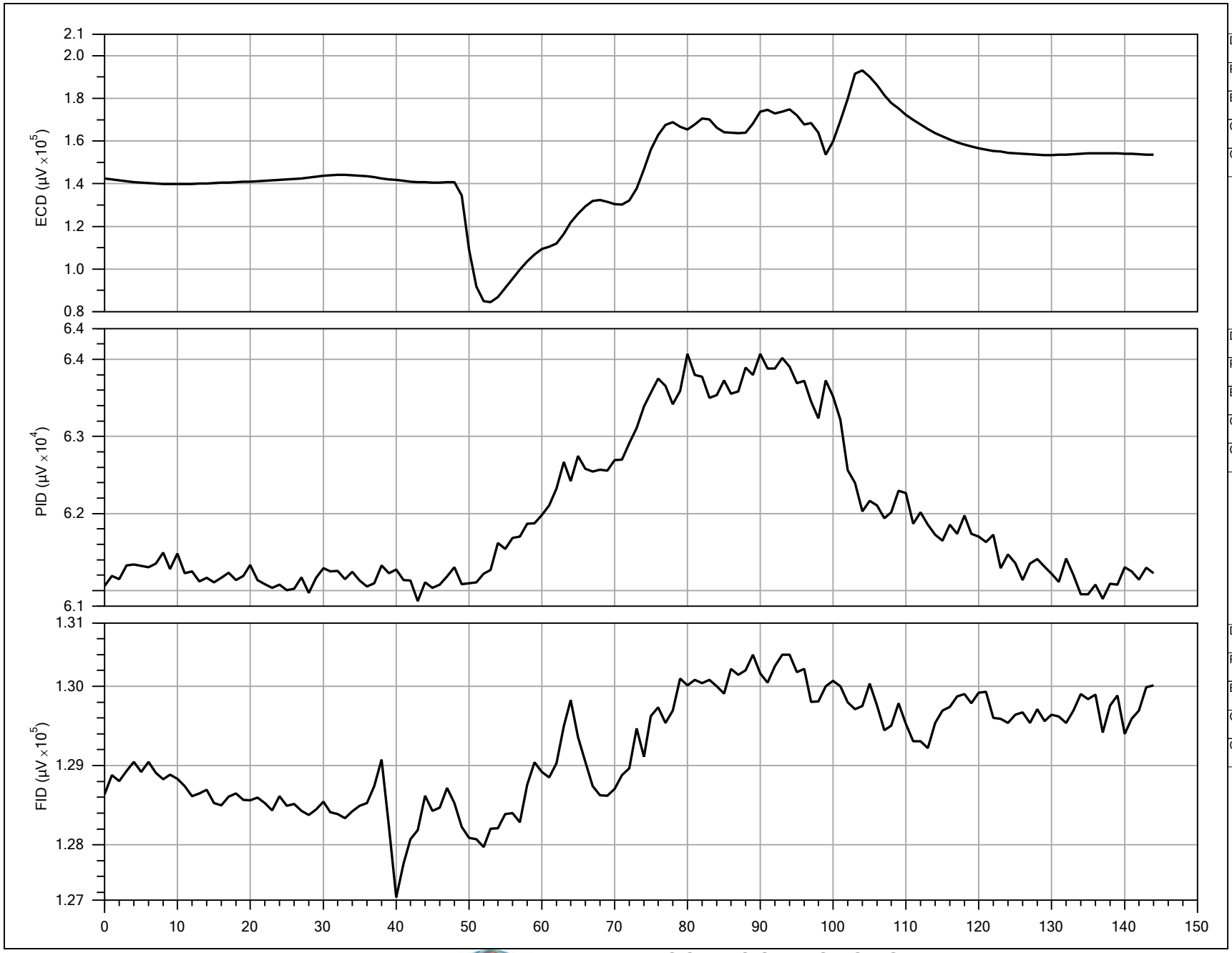
Detector:
ECD
Peak Response:
199828 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
67904 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
113918 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-24.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/2/2014



Detector:
ECD
Peak Response:
193136 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
64074 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
130398 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-24.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/2/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-24.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.2 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 08:25:36

RESPONSE TEST ATTENUATION CHANGES

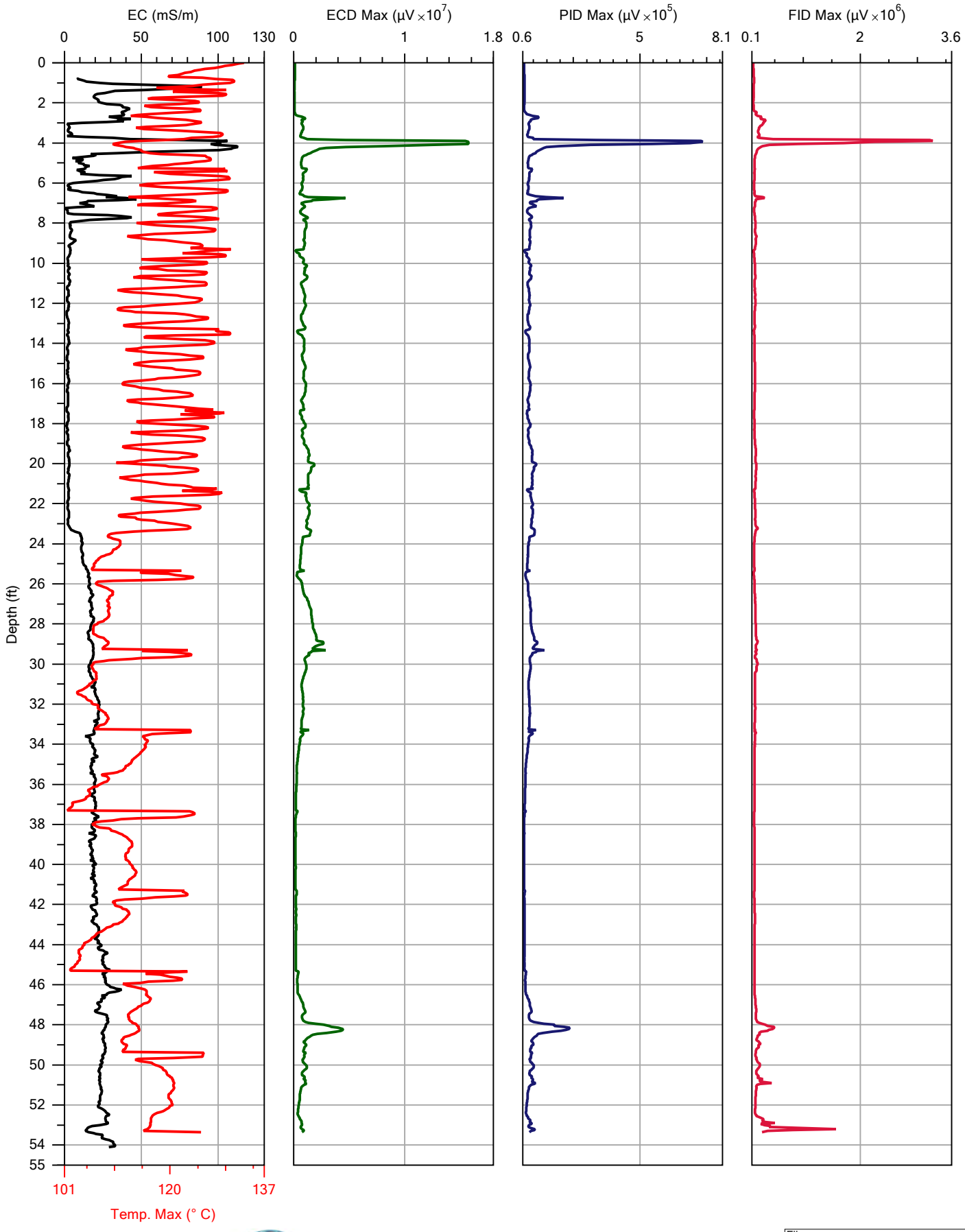
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-24.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 09:52:27

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-25.MIP
Company: SER90		Operator: S. Sirhan	Date: 7/2/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 42″ N, 83° 56′ 35″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.4	PASS
High	290.0	293.4	1.2	PASS

MIP-25.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-25.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 10:02:48

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 2 2014 10:05:35

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 53.35 ft (16.261 m)
LOG END TIME: Wed Jul 2 2014 12:03:48

LATITUDE: 41.995110875
LONGITUDE: -83.942966736
ELEVATION: 210.238 METERS 689.76 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-25.post.tim
COMPOUND: TCE

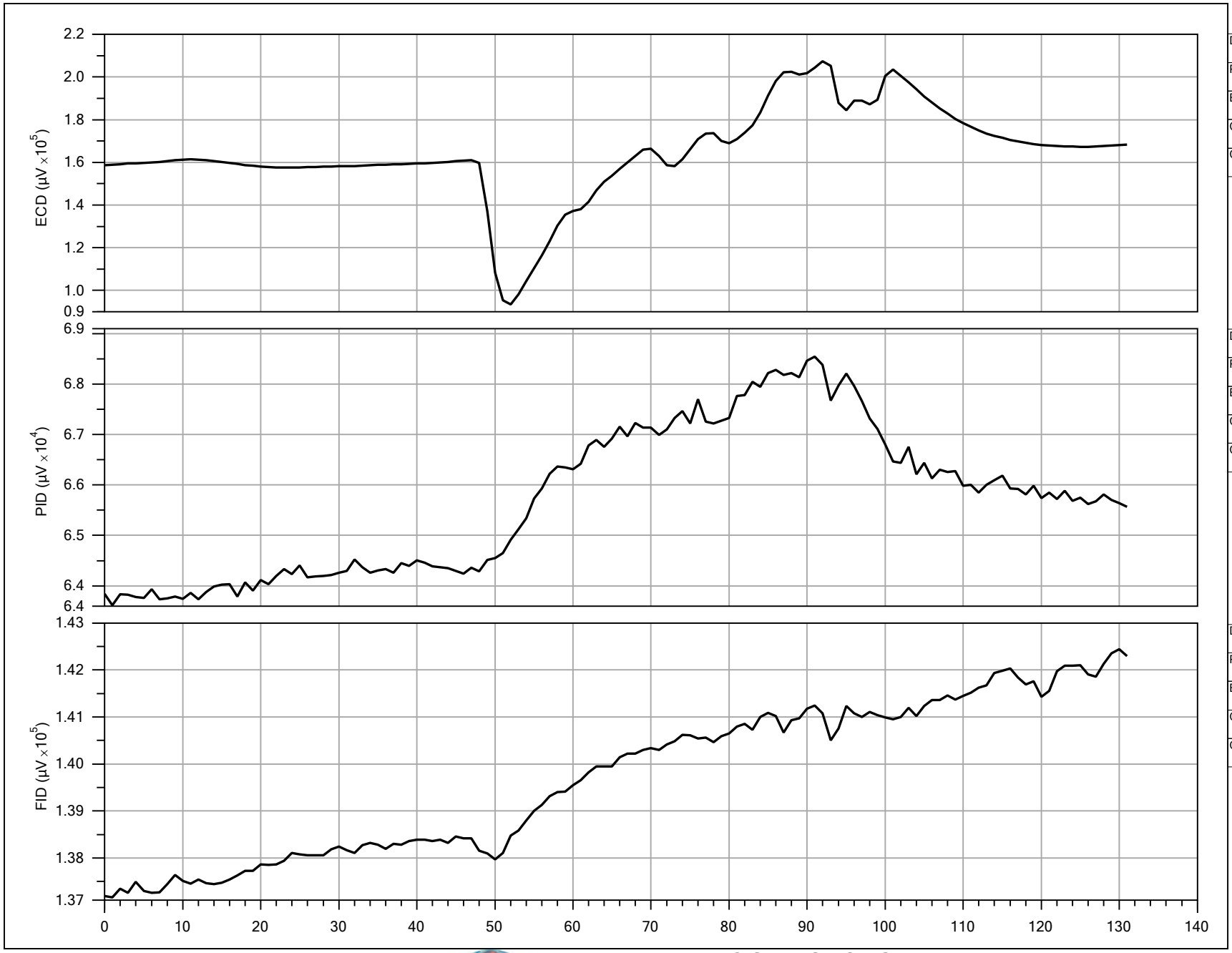
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 12:31:15

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.3	PASS
High	290.0	292.4	0.8	PASS



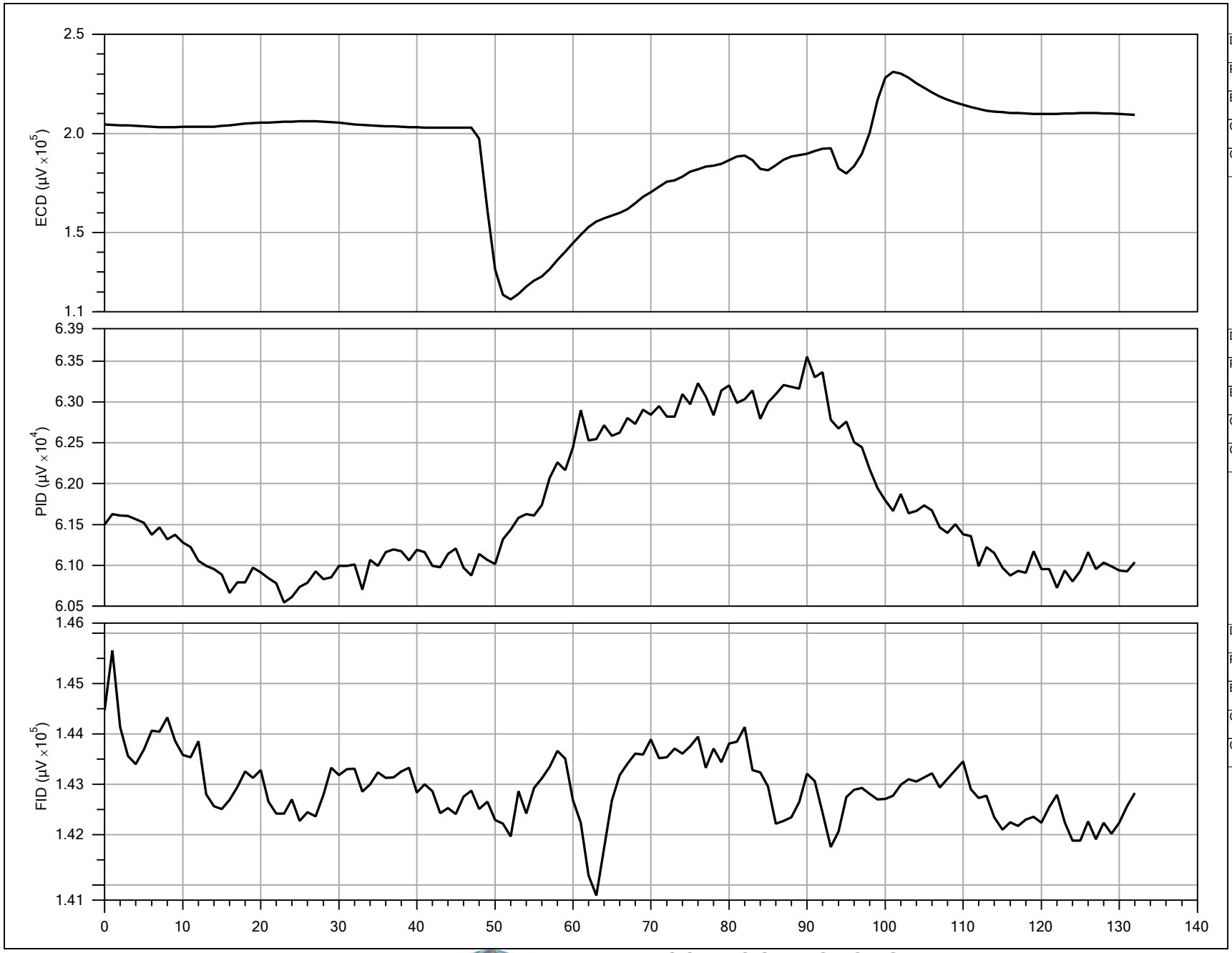
Detector:
ECD
Peak Response:
207266 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
68545 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
142438 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-25.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/2/2014



Detector:
ECD
Peak Response:
231071 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
63555 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
145650 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-25.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/2/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-25.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 10:02:48

RESPONSE TEST ATTENUATION CHANGES

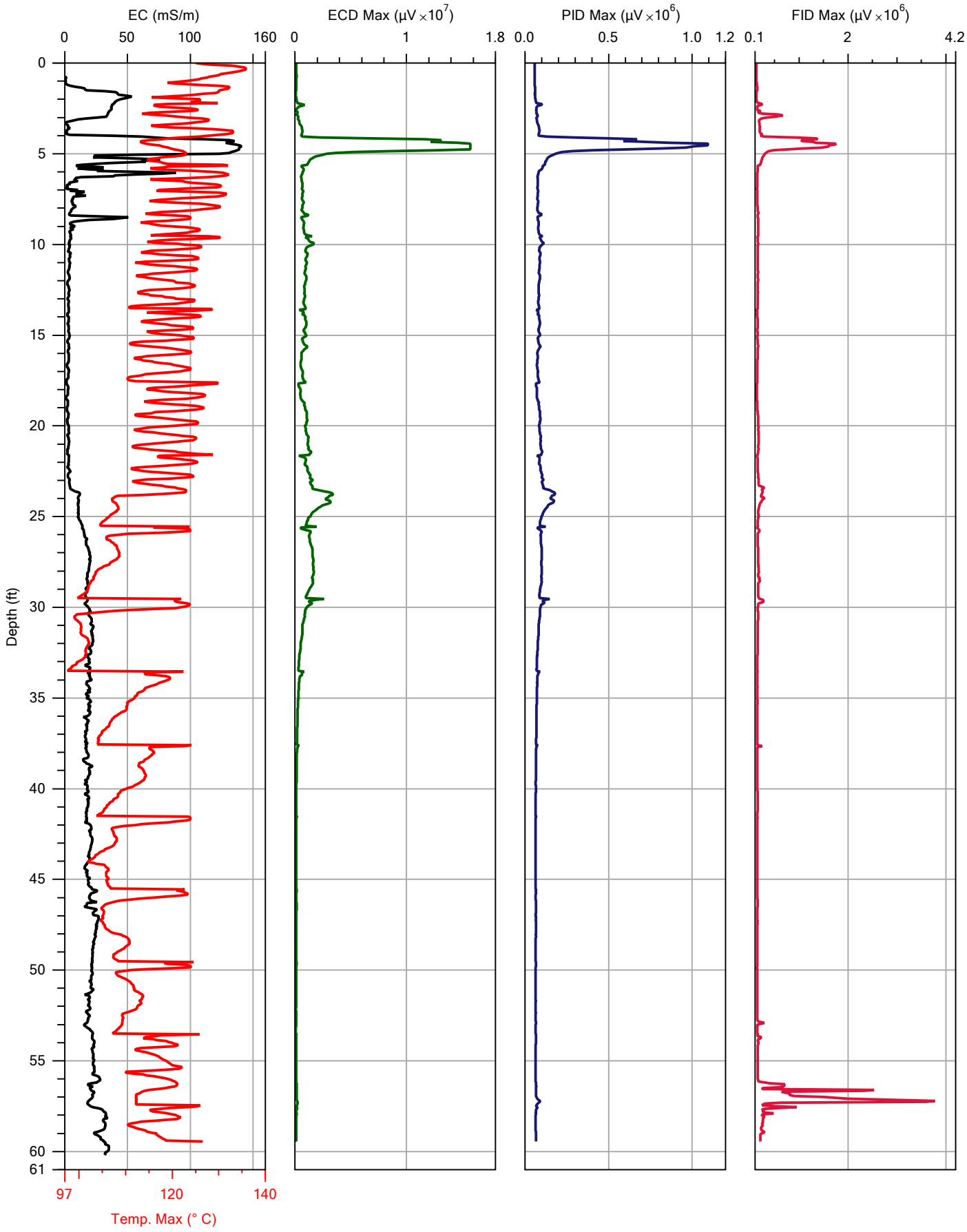
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-25.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 12:31:15

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-26.MIP
Company: SER90		Operator: S. Sirhan	Date: 7/2/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 41″ N, 83° 56′ 35″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.9	7.0	PASS
High	290.0	292.6	0.9	PASS

MIP-26.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-26.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.3 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 13:14:56

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 2 2014 13:19:42

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.50	0.457	16	1	1	1

LOG END DEPTH: 59.45 ft (18.120 m)
LOG END TIME: Wed Jul 2 2014 14:35:27

LATITUDE: 41.994758714
LONGITUDE: -83.942956097
ELEVATION: 210.052 METERS 689.15 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-26.post.tim

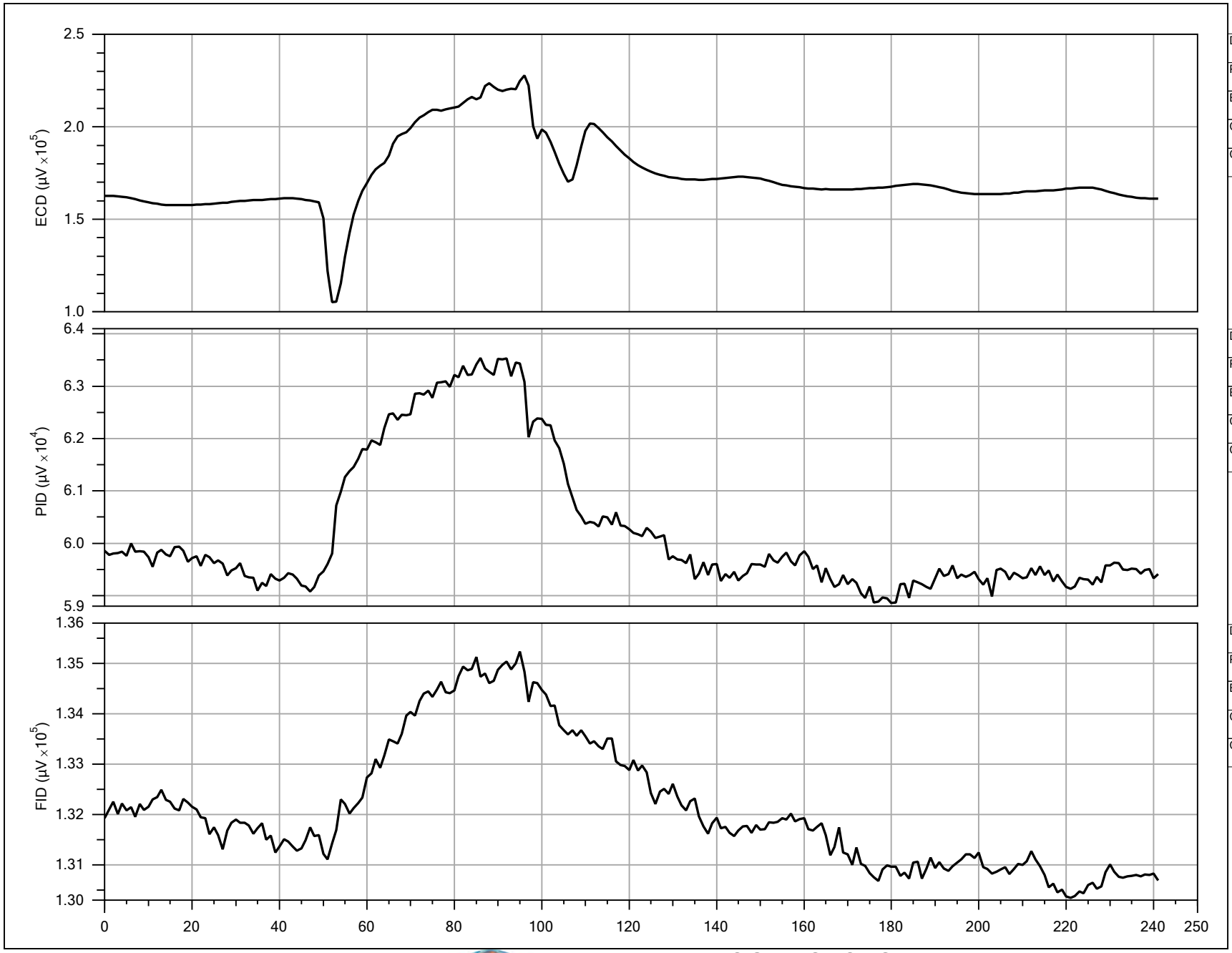
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.6 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 15:06:38

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.8	6.9	PASS
High	290.0	279.8	3.5	PASS



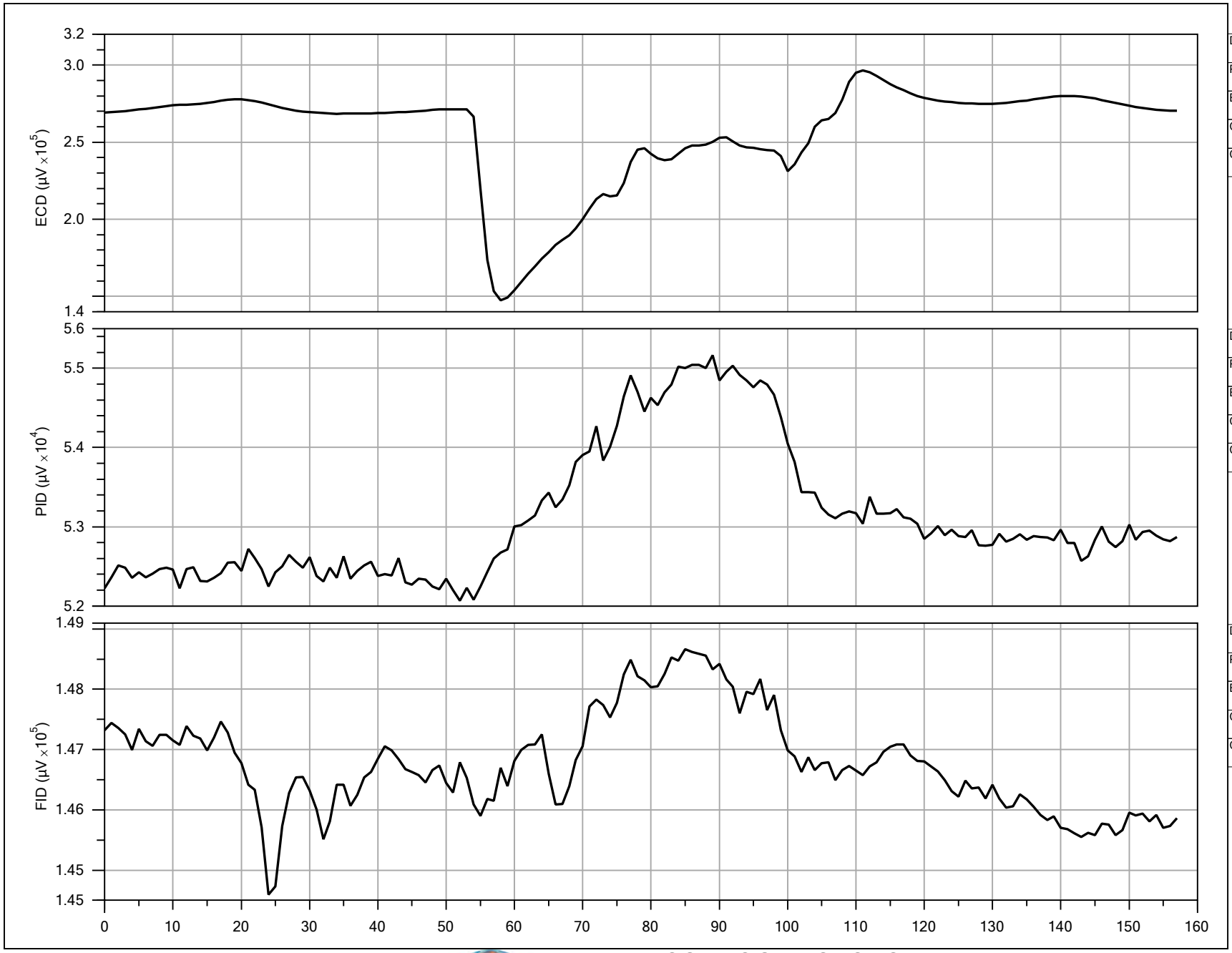
Detector:
ECD
Peak Response:
227866 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
63540 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
135235 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-26.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/2/2014



Detector:
ECD
Peak Response:
296693 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
55162 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
148663 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-26.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/2/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-26.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.3 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 13:14:56

RESPONSE TEST ATTENUATION CHANGES

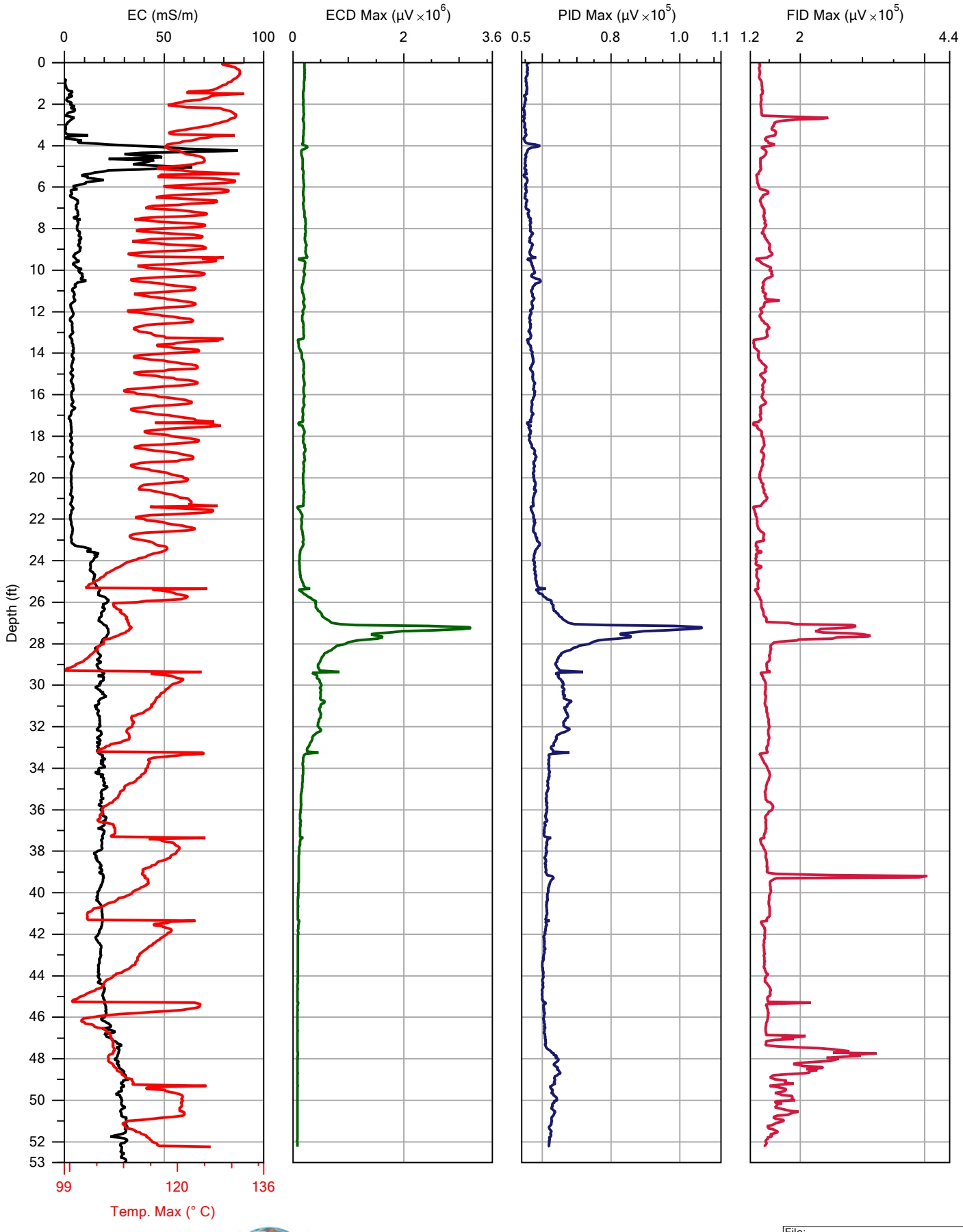
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-26.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.6 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 15:06:38

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-27.MIP
Company: SER90		Operator: S. Sirhan	Date: 7/2/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 35″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.8	PASS
High	290.0	289.6	0.1	PASS

MIP-27.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-27.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 15:18:53

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 2 2014 15:22:13

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
10.40	3.170	16	1	1	1

LOG END DEPTH: 52.25 ft (15.926 m)
LOG END TIME: Wed Jul 2 2014 16:43:42

LATITUDE: 41.995542639
LONGITUDE: -83.942991942
ELEVATION: 211.021 METERS 692.33 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-27.post.tim

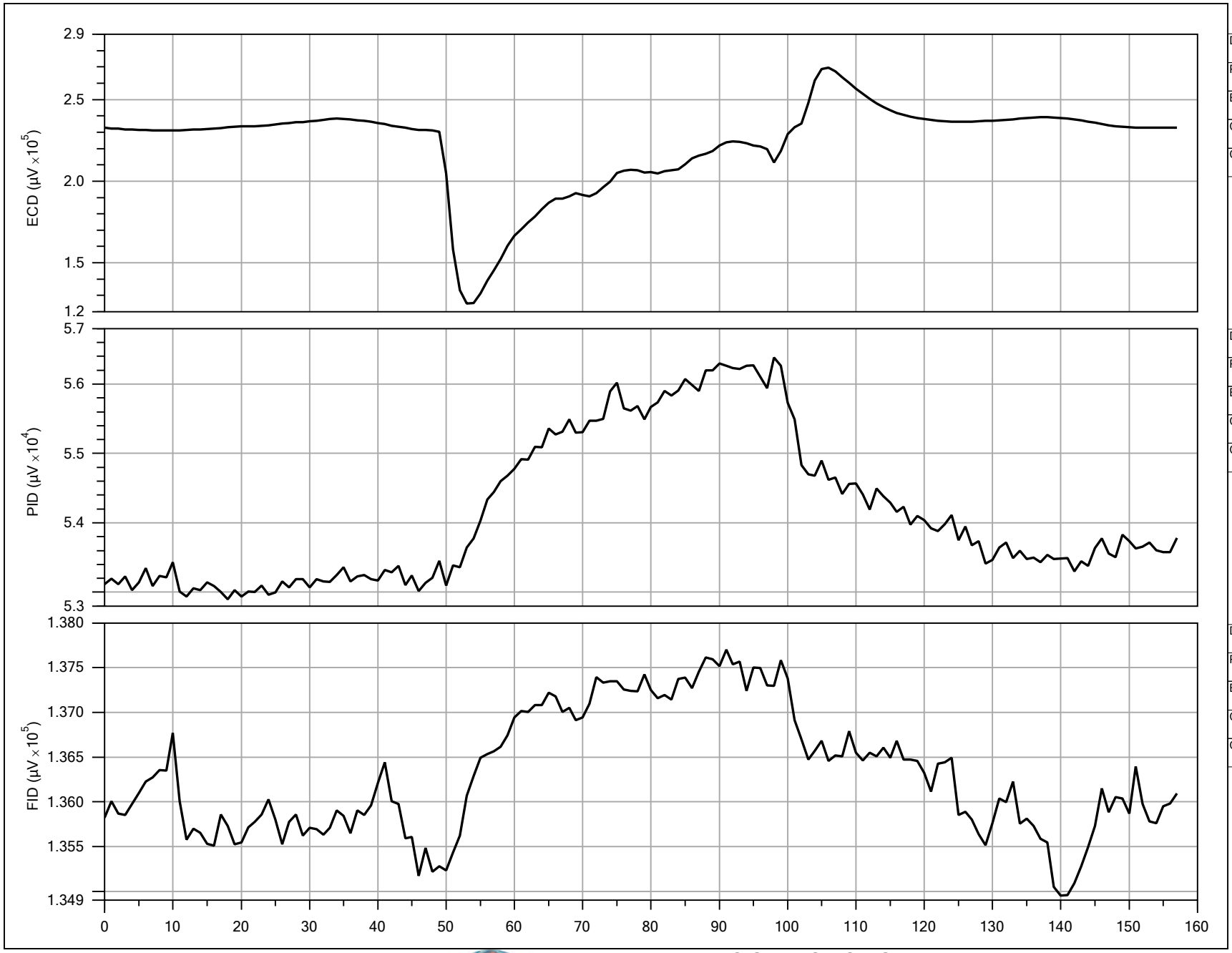
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.3 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 17:05:59

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.8	PASS
High	290.0	291.9	0.7	PASS



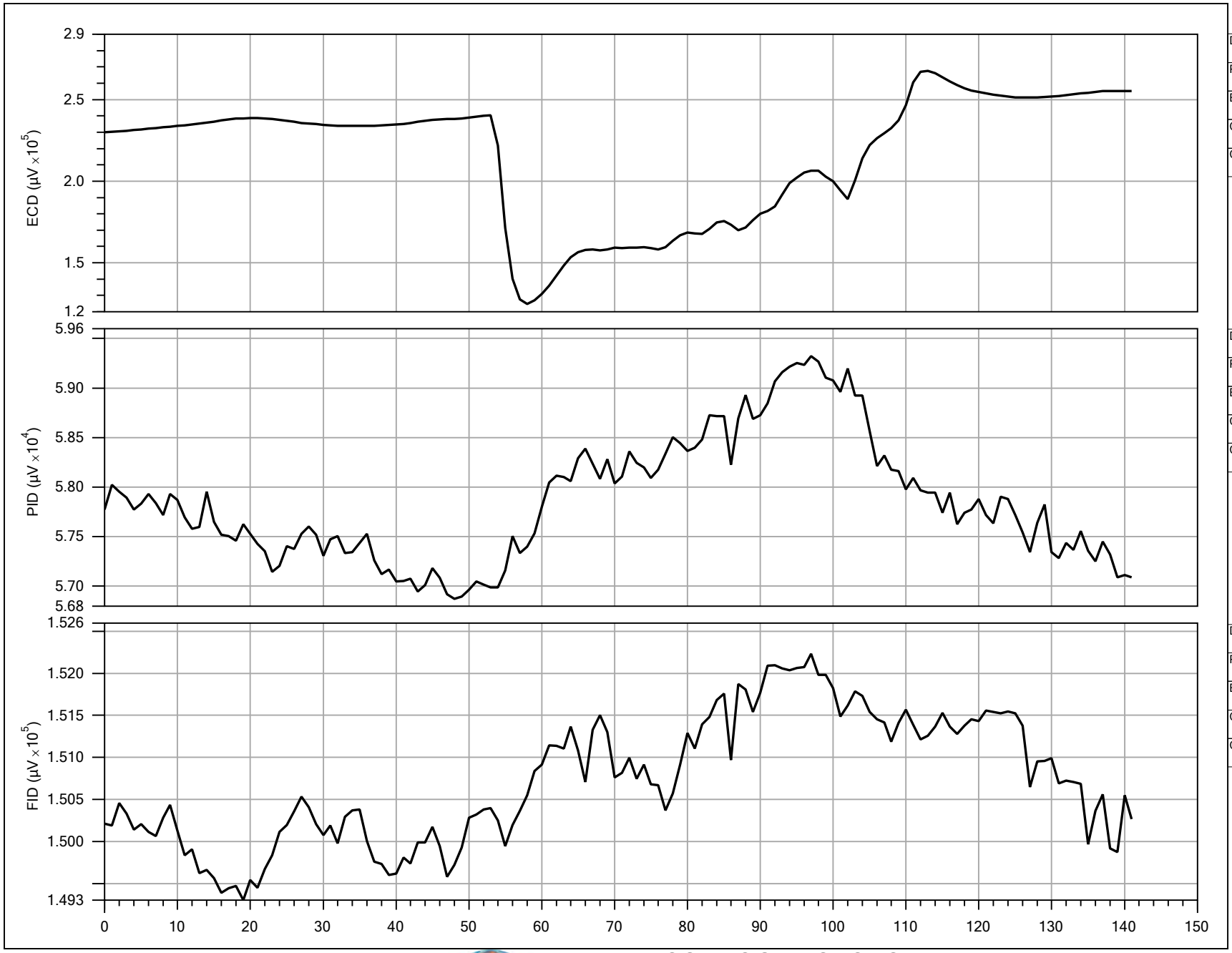
Detector:
ECD
Peak Response:
269433 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
56383 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
137700 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-27.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/2/2014



Detector:
ECD
Peak Response:
267670 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
59320 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
152234 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-27.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/2/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-27.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 15:18:53

RESPONSE TEST ATTENUATION CHANGES

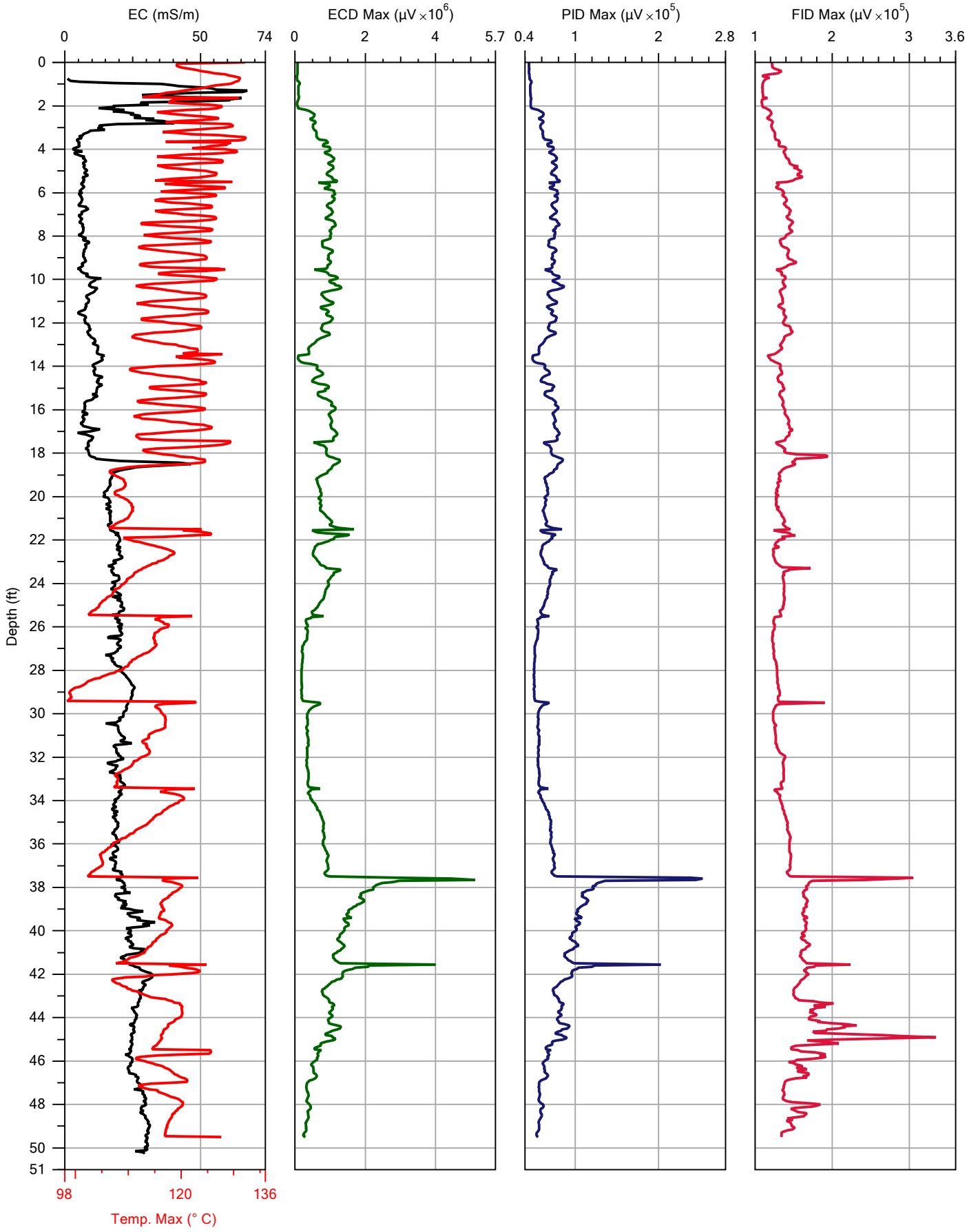
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-27.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.3 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 17:05:59

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-28.MIP
Company: SER90		Operator: S. Sirhan	Date: 7/3/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 32″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.5	PASS
High	290.0	292.8	1.0	PASS

MIP-28.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-28.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 49.9 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 08:20:39

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jul 3 2014 08:23:29

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.65	0.503	16	1	1	1

LOG END DEPTH: 49.50 ft (15.088 m)
LOG END TIME: Thu Jul 3 2014 09:29:43

LATITUDE: 41.995532928
LONGITUDE: -83.942146150
ELEVATION: 210.217 METERS 689.69 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-28.post.tim

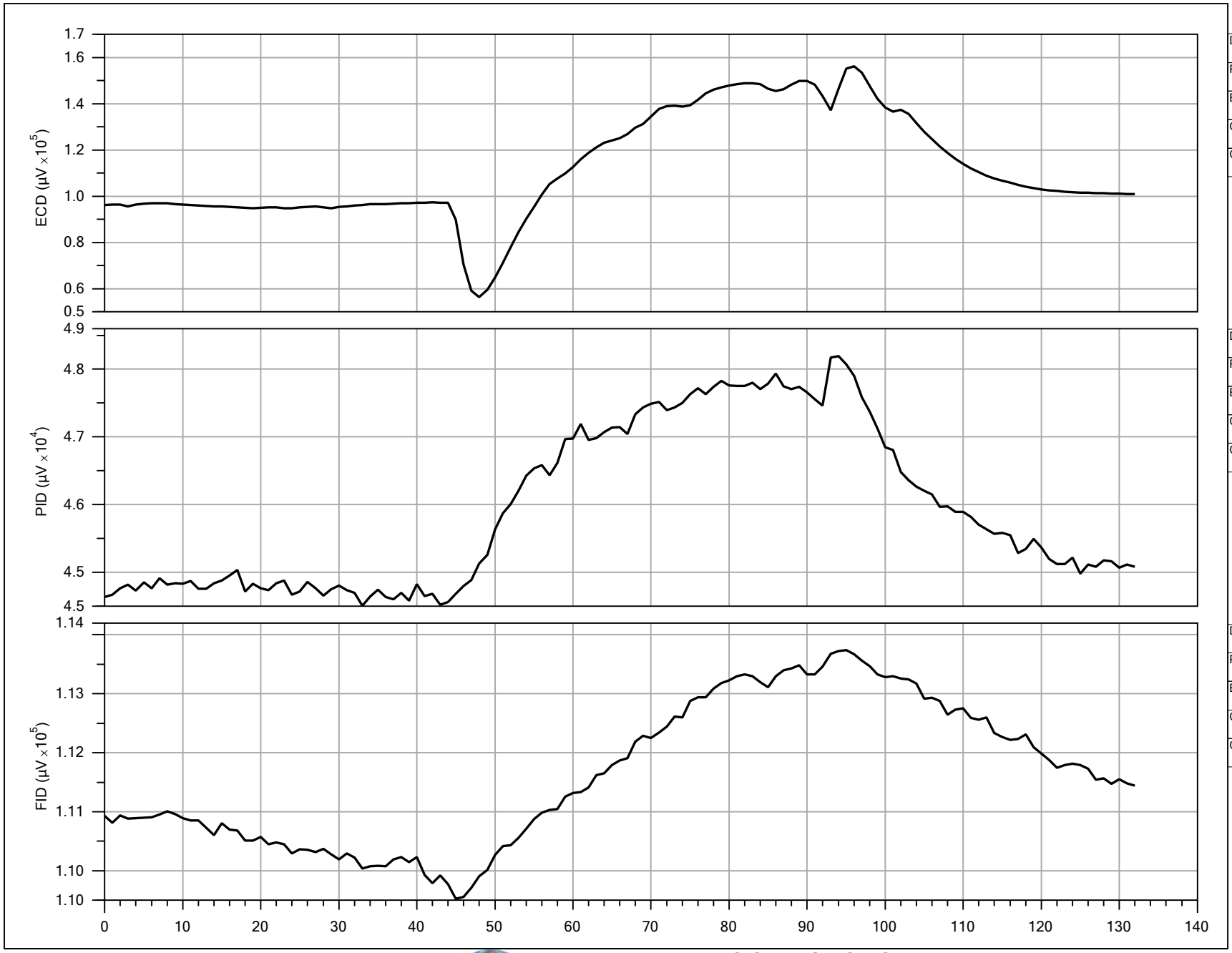
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.3 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 09:49:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.5	PASS
High	290.0	294.7	1.6	PASS



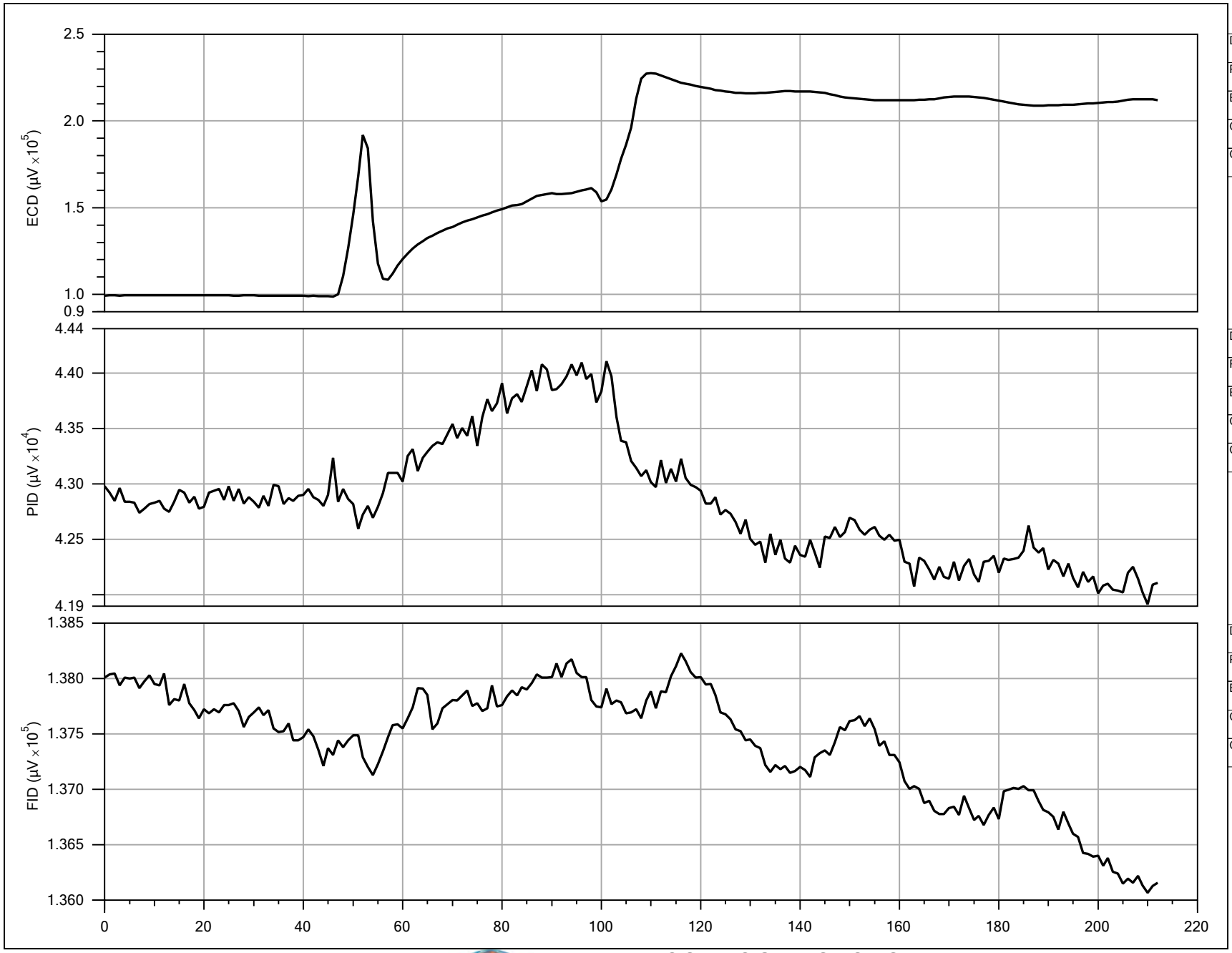
Detector:
ECD
Peak Response:
156247 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
48196 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
113742 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-28.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/3/2014



Detector:
ECD
Peak Response:
227653 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
44107 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
138226 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-28.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/3/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-28.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 49.9 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 08:20:39

RESPONSE TEST ATTENUATION CHANGES

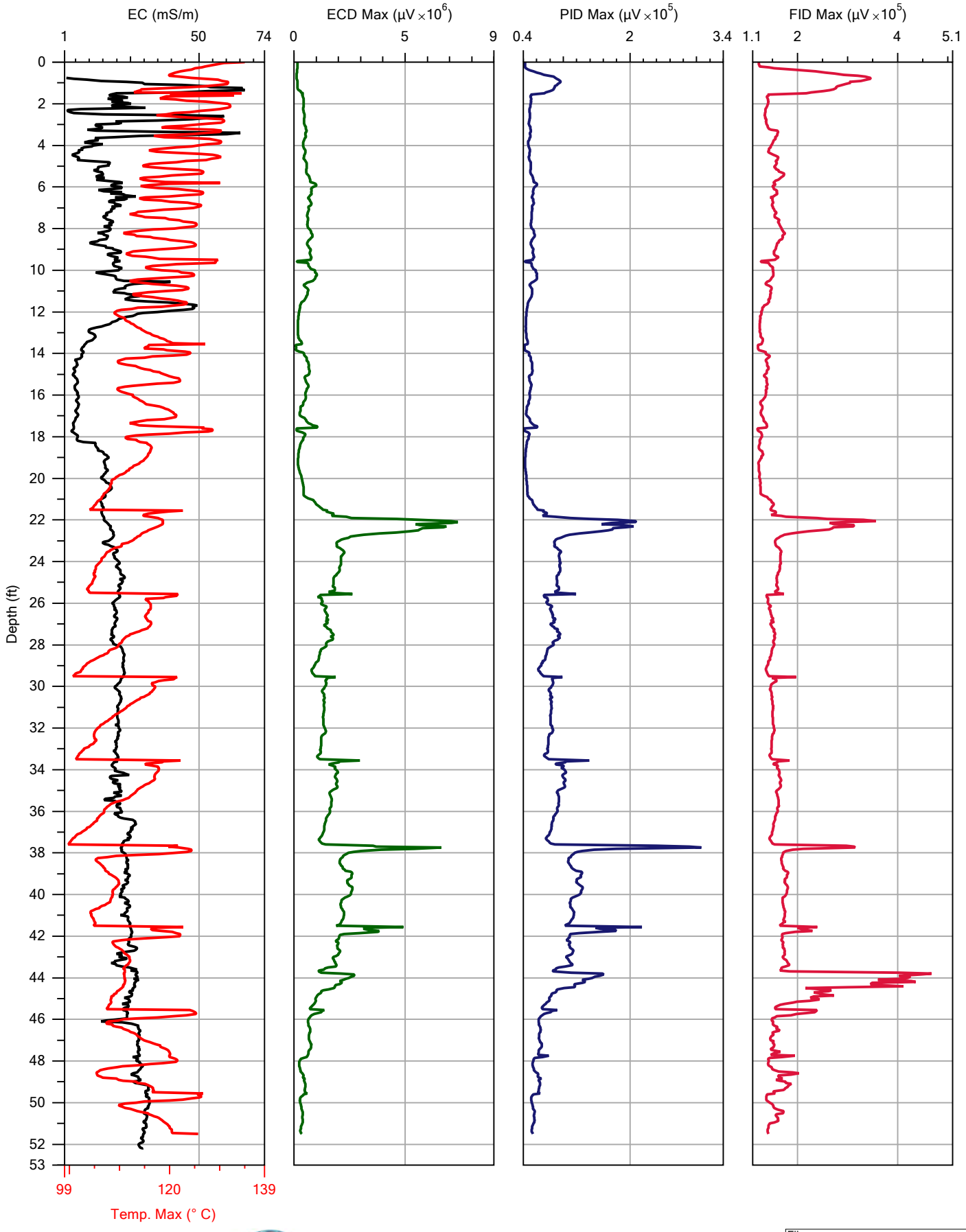
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-28.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.3 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 09:49:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-29.MIP
Company: SER90		Operator: S. Sirhan	Date: 7/3/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 43″ N, 83° 56′ 32″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.8	7.0	PASS
High	290.0	292.8	1.0	PASS

MIP-29.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-29.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.0 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 10:07:27

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jul 3 2014 10:10:50

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.50	0.457	16	1	1	1
6.05	1.844	16	1	1	1

LOG END DEPTH: 51.50 ft (15.697 m)
LOG END TIME: Thu Jul 3 2014 11:36:54

LATITUDE: 41.995266056
LONGITUDE: -83.942138097
ELEVATION: 208.487 METERS 684.01 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

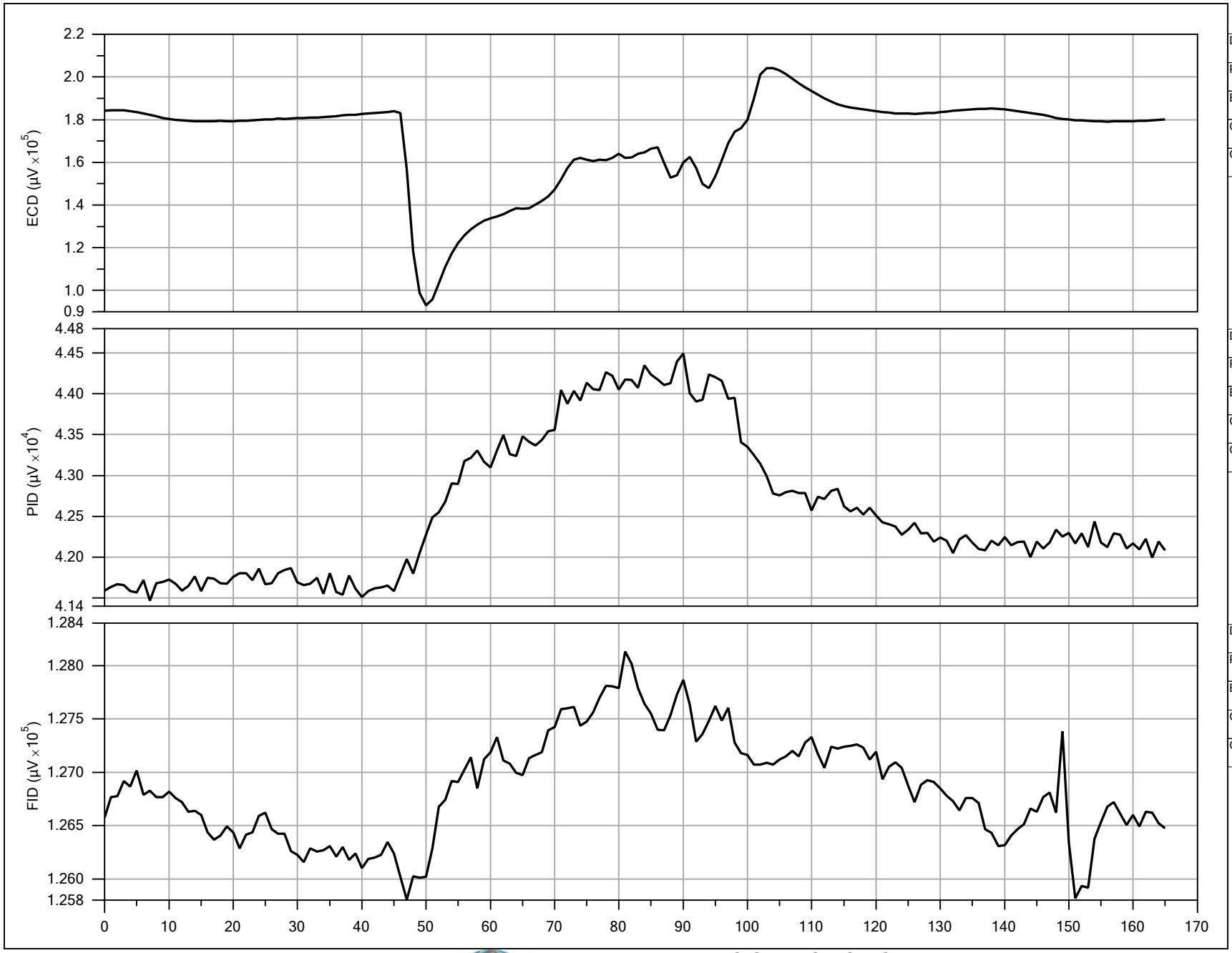
FILENAME: MIP-29.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.2 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 12:02:52

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.2	9.5	PASS
High	290.0	294.6	1.6	PASS



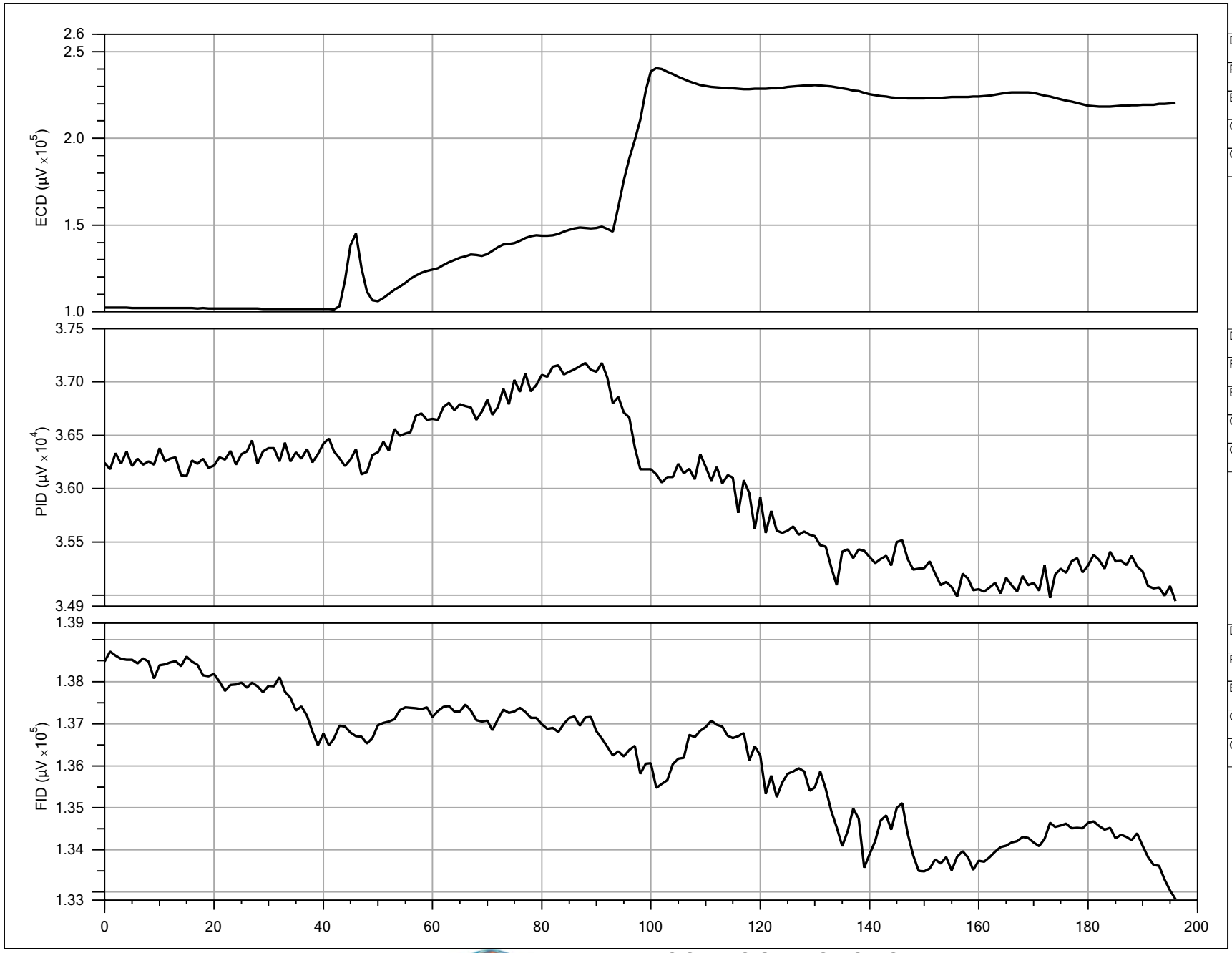
Detector:
ECD
Peak Response:
204169 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
44496 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
128132 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-29.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/3/2014



Detector:
ECD
Peak Response:
240577 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
37179 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
138722 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-29.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/3/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-29.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.0 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 10:07:27

RESPONSE TEST ATTENUATION CHANGES

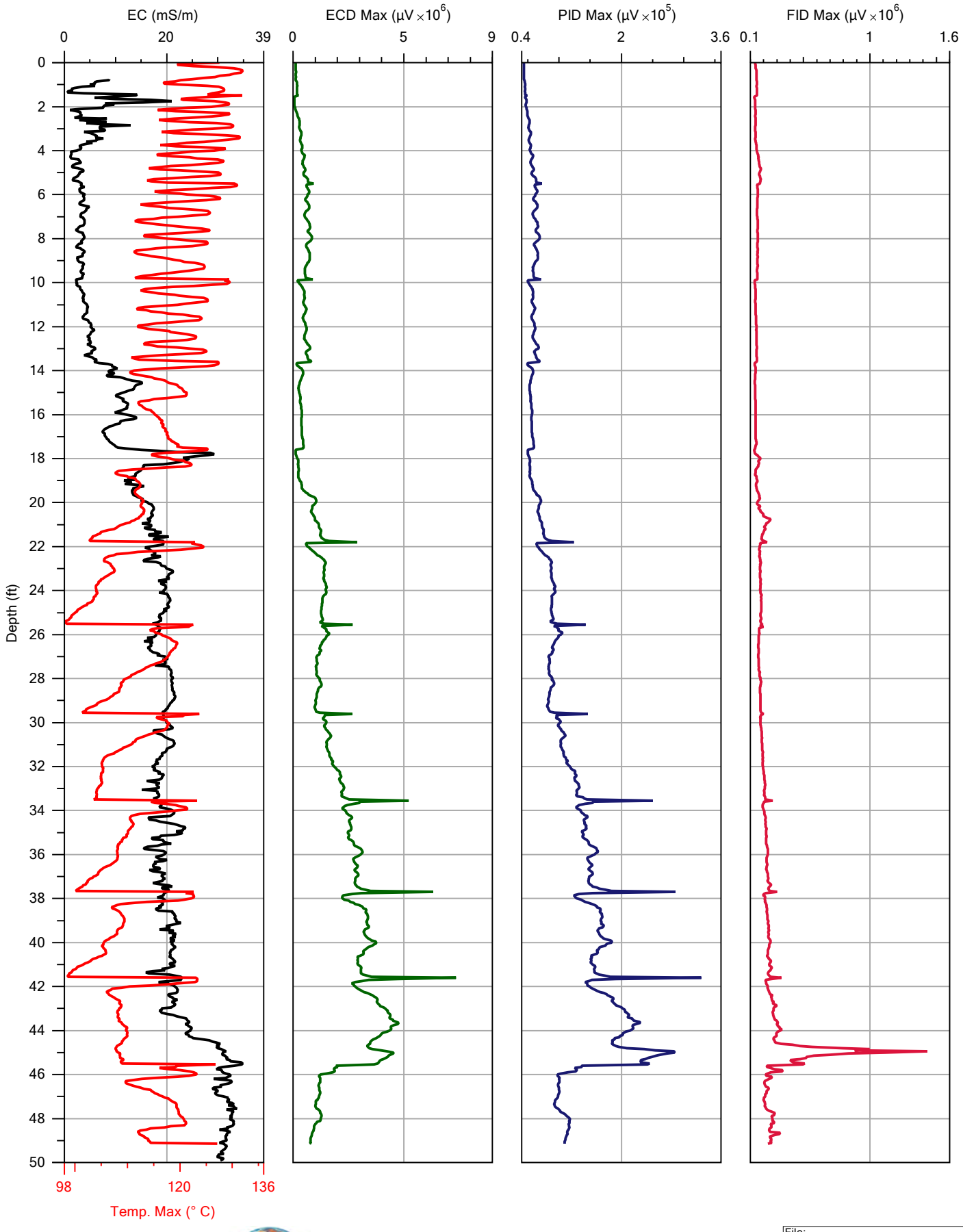
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-29.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.2 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 12:02:52

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-30.MIP
Company: SER90		Operator: S. Sirhan	Date: 7/3/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 31″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.5	PASS
High	290.0	293.7	1.3	PASS

MIP-30.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-30.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 47.3 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 12:33:36

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
2:39	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jul 3 2014 12:37:16

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
2.10	0.640	16	1	1	1

LOG END DEPTH: 49.15 ft (14.981 m)
LOG END TIME: Thu Jul 3 2014 14:04:28

LATITUDE: 41.995439047
LONGITUDE: -83.941864750
ELEVATION: 208.281 METERS 683.34 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-30.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 47.3 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 14:31:50

RESPONSE TEST ATTENUATION CHANGES

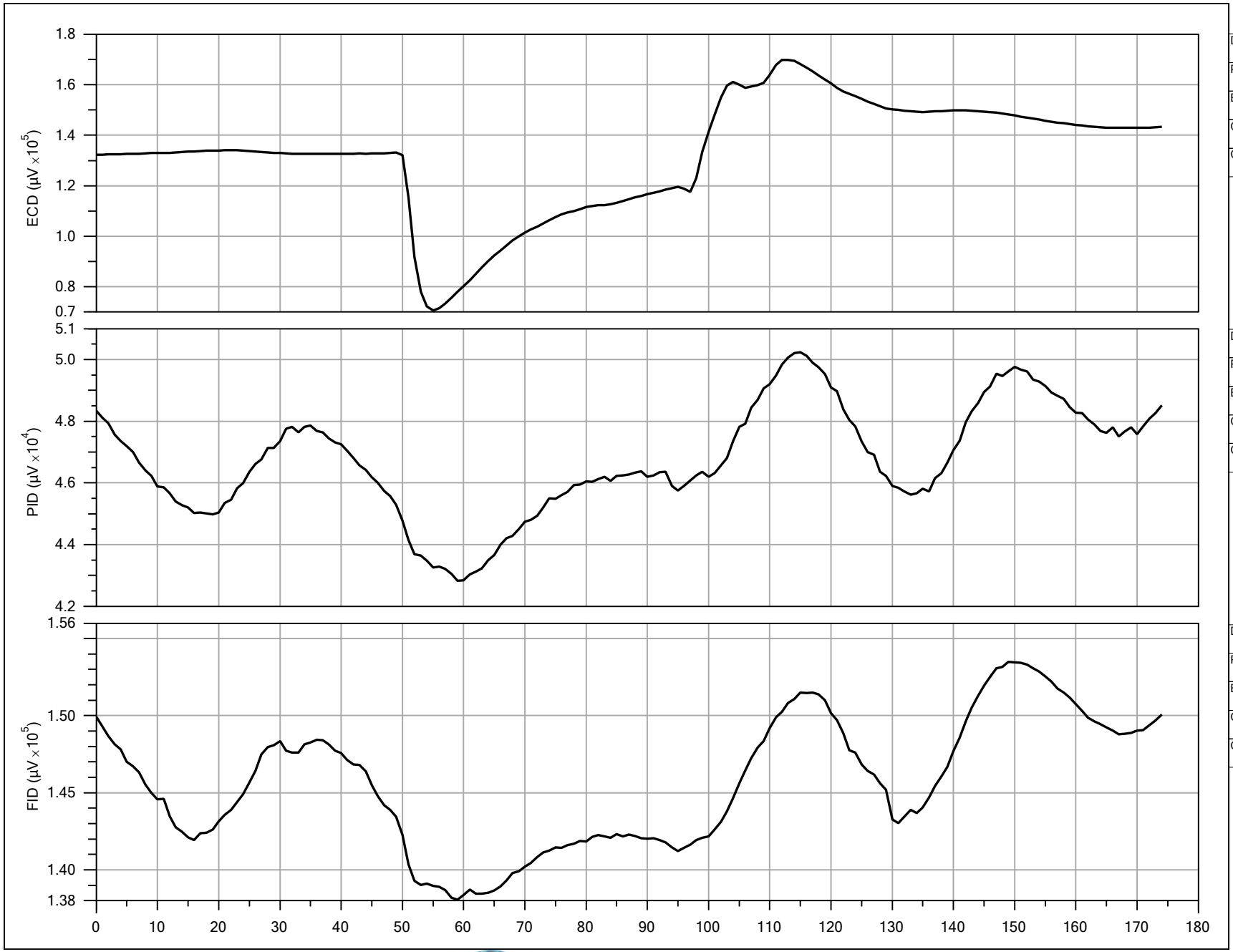
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.2	7.6	PASS
High	290.0	293.4	1.2	PASS

********** USER NOTES **********

Please note that the membrane was changed at this boring. Therefore, for data analysis please consider the Post Standard. The Pre-Standard is somewhat lower due to new membrane fabric.



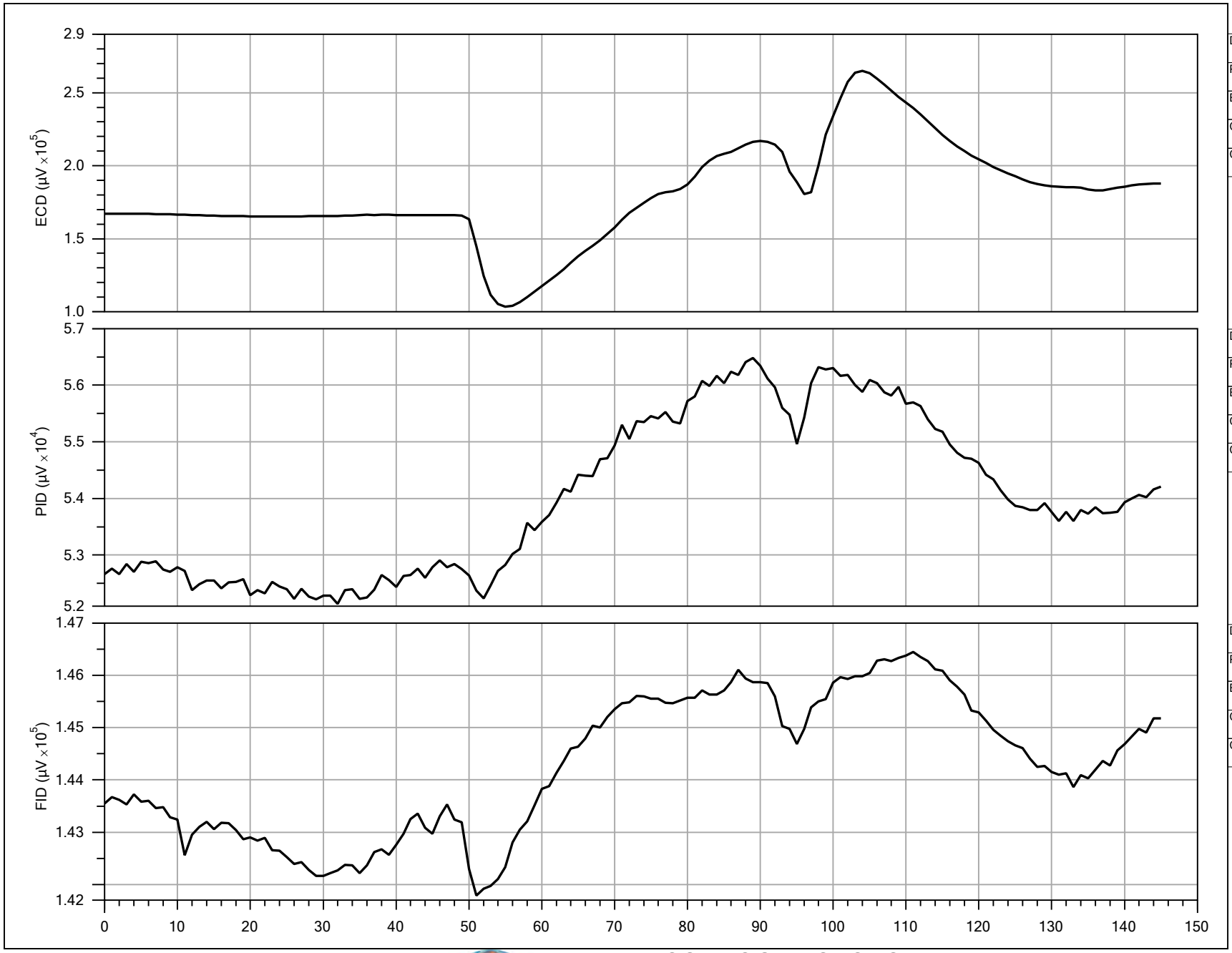
Detector:
ECD
Peak Response:
169942 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
50241 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
153478 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-30.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/3/2014



Detector:
ECD
Peak Response:
264962 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
56482 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
146443 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-30.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/3/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-30.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 47.3 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 12:33:36

RESPONSE TEST ATTENUATION CHANGES

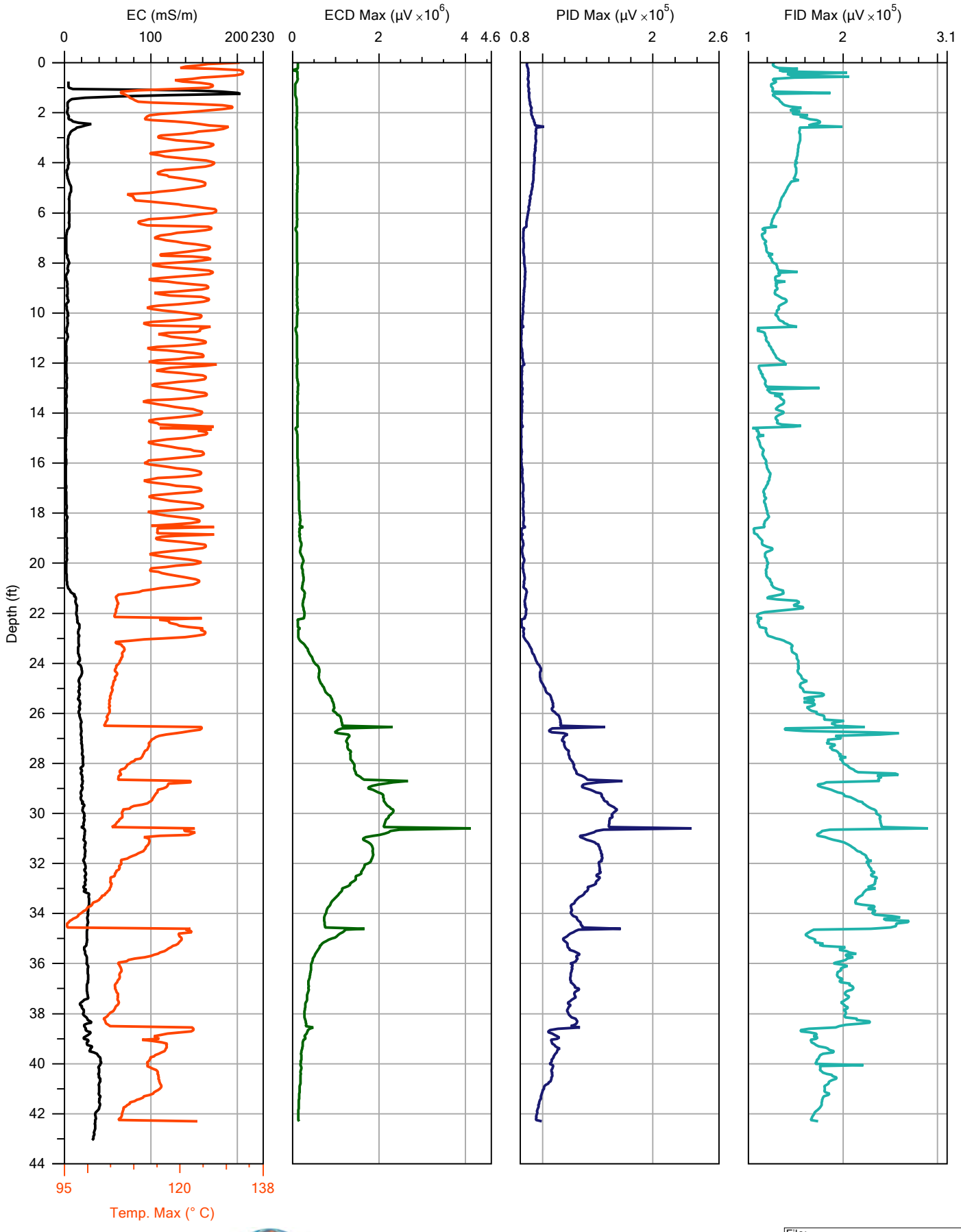
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
2:39	1	1	1	1

MIP POST-LOG RESPONSE TEST

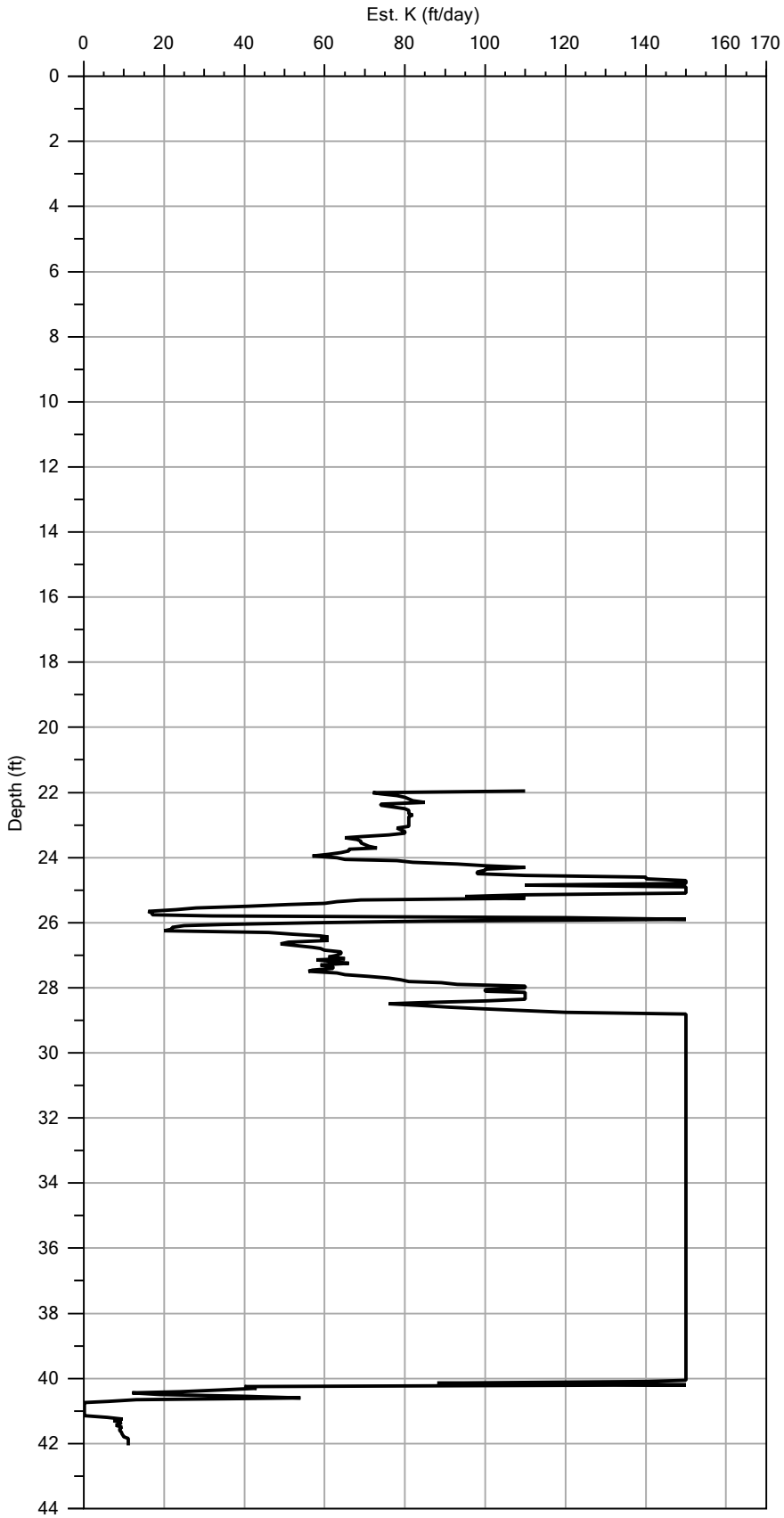
FILENAME: MIP-30.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 47.3 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 14:31:50

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIHPT-31.MHP
Company: SER90	Operator: S.sirhan		Date: 7/8/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location:



			File: MIHPT-31.MHP
Company: SER90		Operator: S.sirhan	Date: 7/8/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.2	PASS
High	290.0	297.0	2.4	PASS

MIHPT-31.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIHPT-31.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.8 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 09:23:22

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 8 2014 09:29:49

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.195	0.0	90.970
TOP with FLOW>0	13.915	302.4	95.940
BOTTOM with FLOW=0	12.958	0.0	89.340
BOTTOM with FLOW>0	13.735	302.6	94.700

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Tue Jul 8 2014 09:37:19

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.35	0.107	16	1	1	1

LOG END DEPTH: 42.30 ft (12.893 m)
LOG END TIME: Tue Jul 8 2014 10:49:37

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIHPT-31.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.5 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 11:16:48

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 8 2014 11:20:01

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.145	0.0	90.630
TOP with FLOW>0	13.788	309.2	95.060
BOTTOM with FLOW=0	12.920	0.0	89.080
BOTTOM with FLOW>0	13.599	306.0	93.760

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

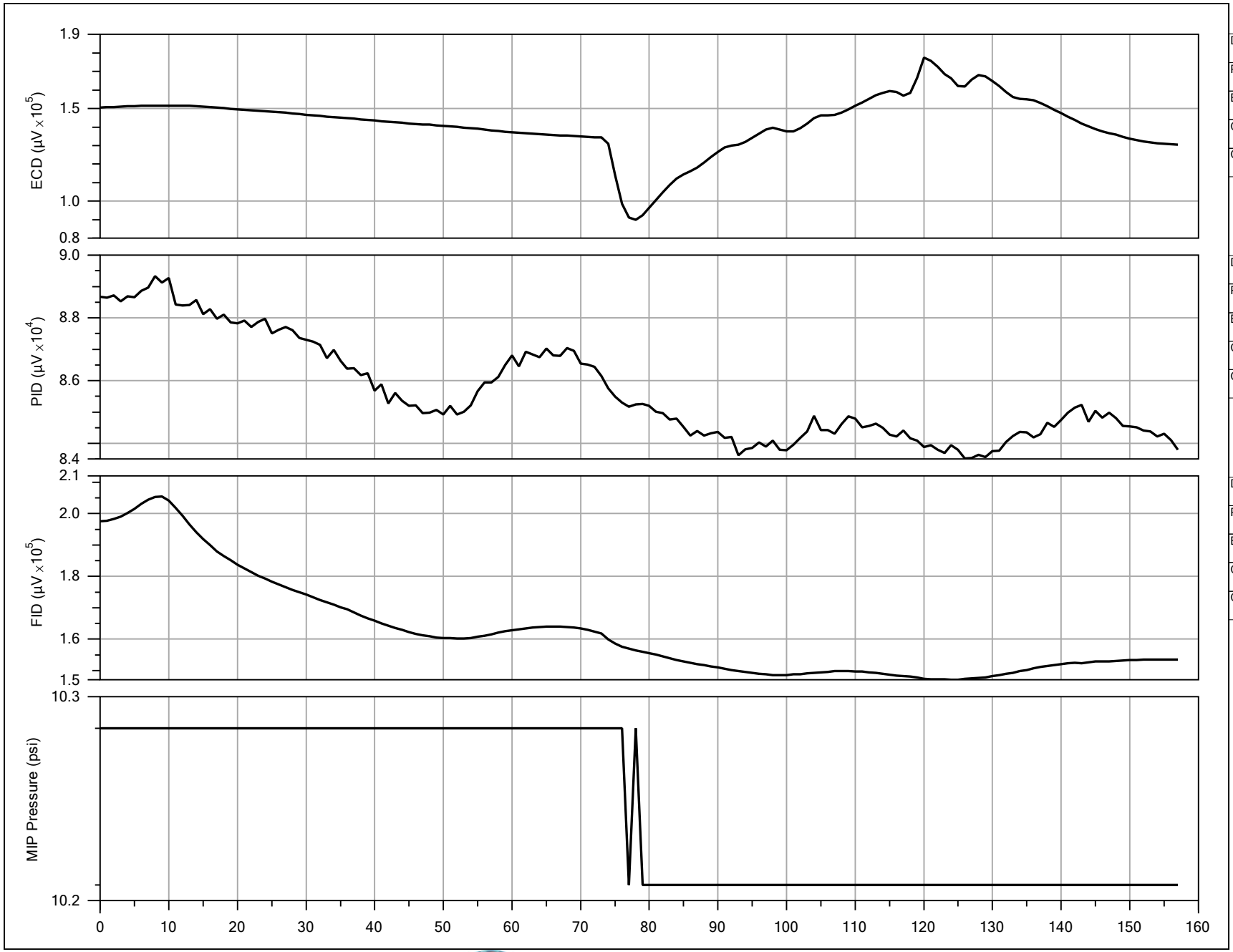
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.2	PASS
High	290.0	303.5	4.7	PASS

********** USER NOTES **********

Concrete is 18-inches.



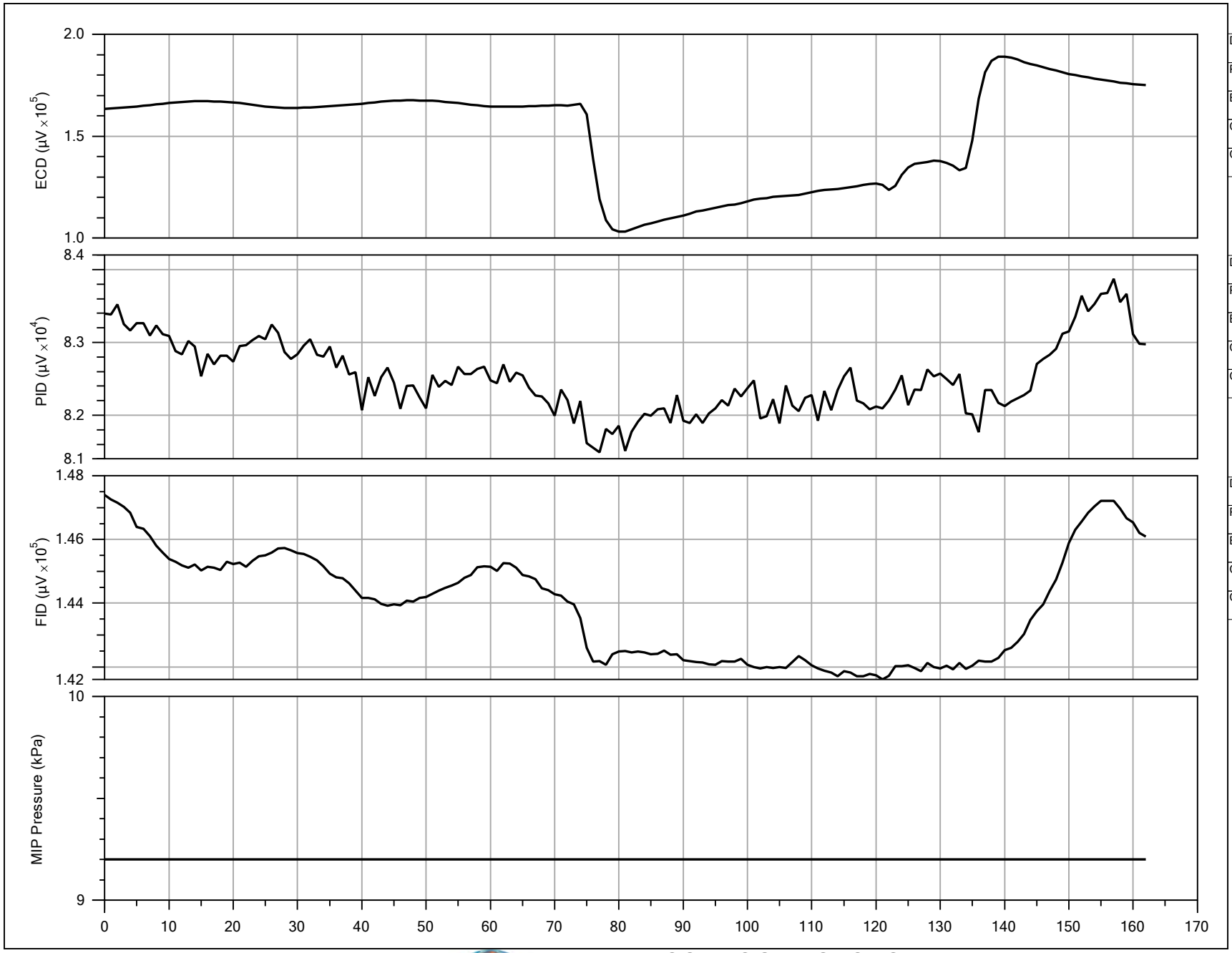
Detector:
ECD
Peak Response:
177480 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
89335 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
205390 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S.sirhan	MIHPT-31.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/8/2014



Detector:
ECD
Peak Response:
189055 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
83872 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
147404 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S.sirhan	MIHPT-31.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/8/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIHPT-31.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.8 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 09:23:22

RESPONSE TEST ATTENUATION CHANGES

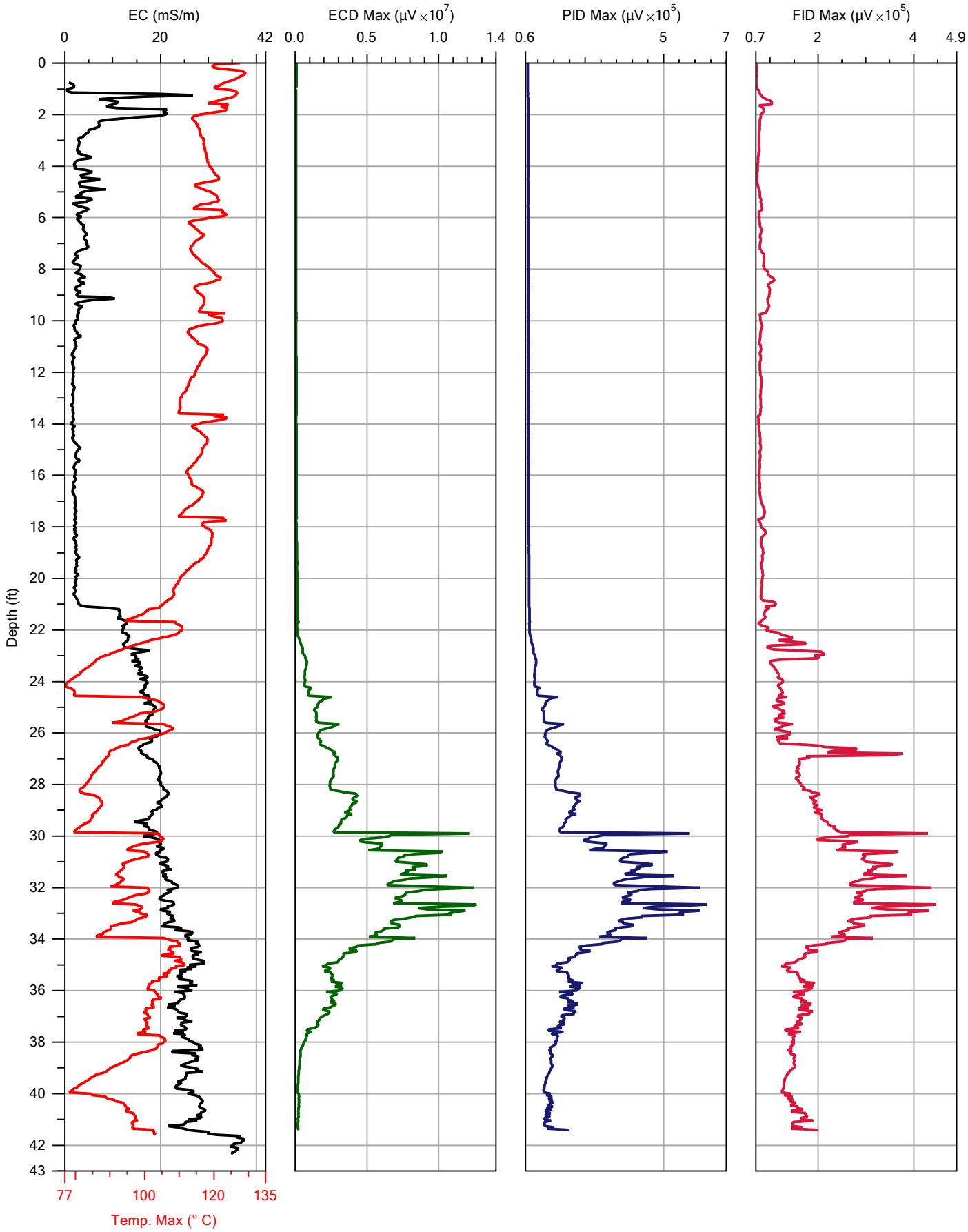
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIHPT-31.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.5 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 11:16:48

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-32.MIP
Company: SER90		Operator: S.Sirhan	Date: 7/8/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	293.8	1.3	PASS

MIP-32.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-32.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 16:07:30

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jul 8 2014 16:11:04

Temperature out of range (79.9 deg C) at 23.80 ft (7.254 m)

Temperature out of range (79.9 deg C) at 29.80 ft (9.083 m)

Temperature out of range (79.9 deg C) at 39.75 ft (12.116 m)

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.05	0.320	16	1	1	1

LOG END DEPTH: 41.60 ft (12.680 m)
LOG END TIME: Tue Jul 8 2014 18:00:36

LATITUDE: 0.000000000

LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-32.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.7 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 18:22:36

RESPONSE TEST ATTENUATION CHANGES

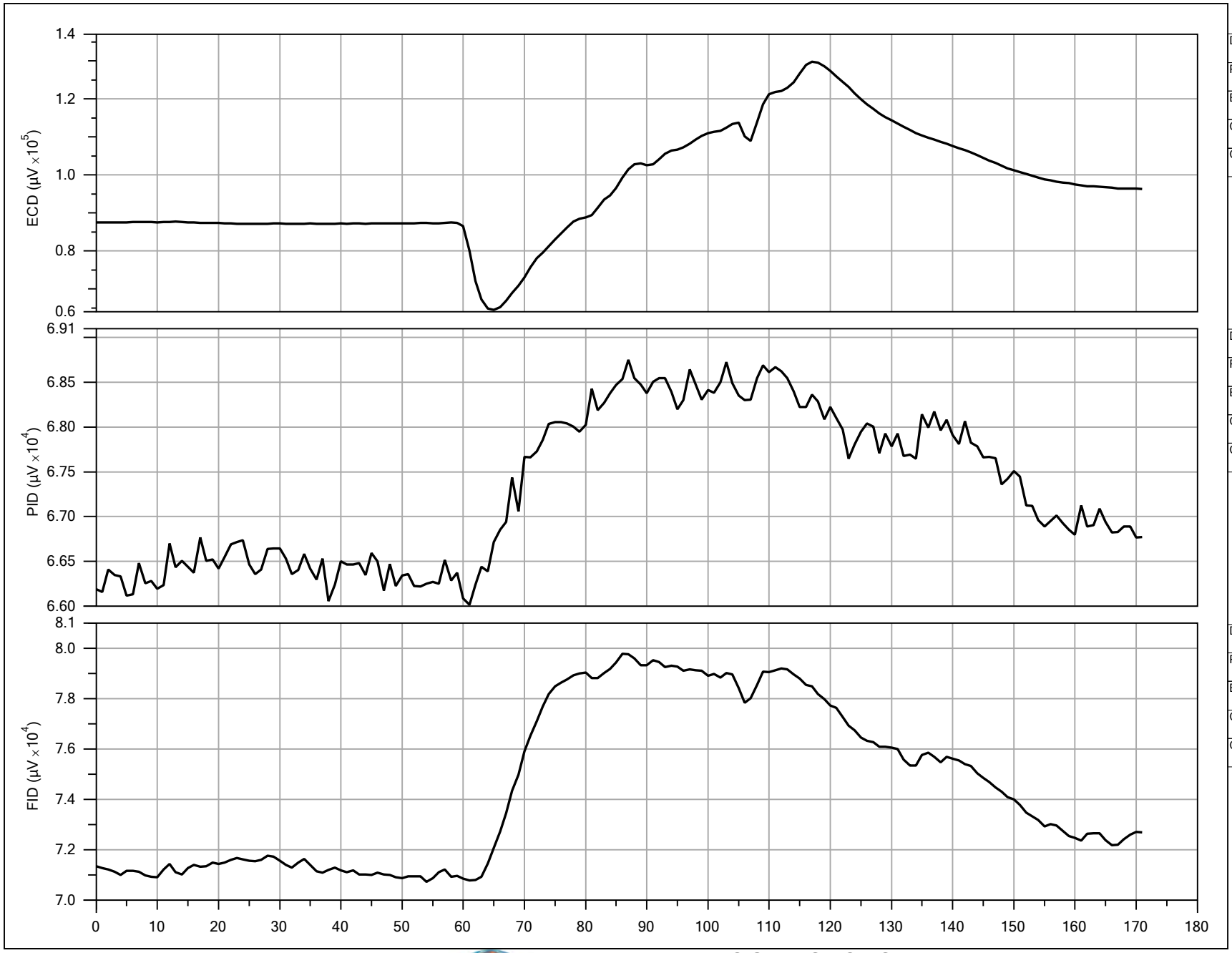
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.3	7.8	PASS
High	290.0	293.2	1.1	PASS

********** USER NOTES **********

This boring replaces MIHPT-32, and MIHPT-32A. Reffusal was encountered at 6 ft BGS, restarted boring ~ 3 ft East of original client's pick.



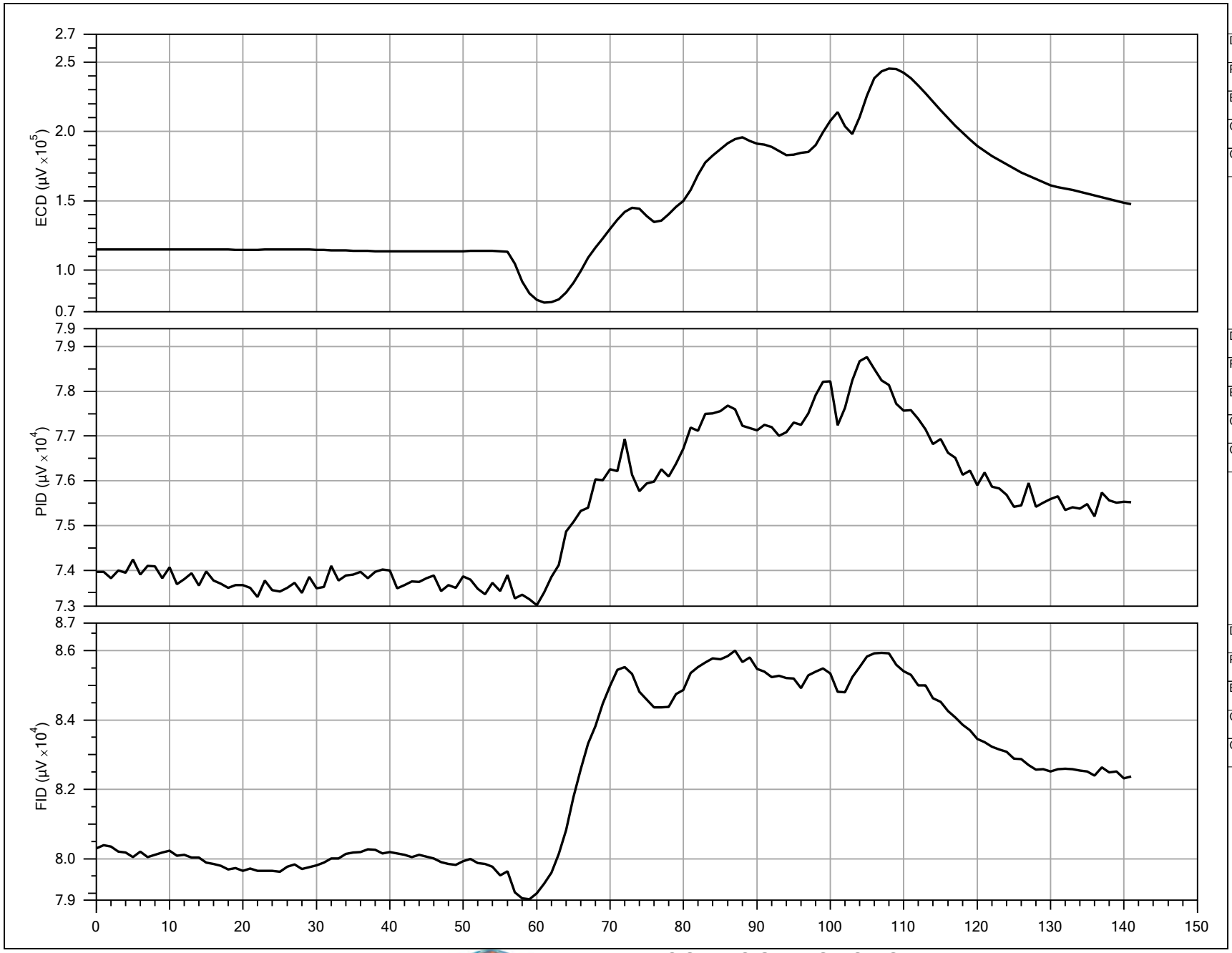
Detector:
ECD
Peak Response:
129765 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
68751 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
79783 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S.Sirhan	MIP-32.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/8/2014



Detector:
ECD
Peak Response:
245338 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
78761 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
86001 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S.Sirhan	MIP-32.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/8/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-32.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 16:07:30

RESPONSE TEST ATTENUATION CHANGES

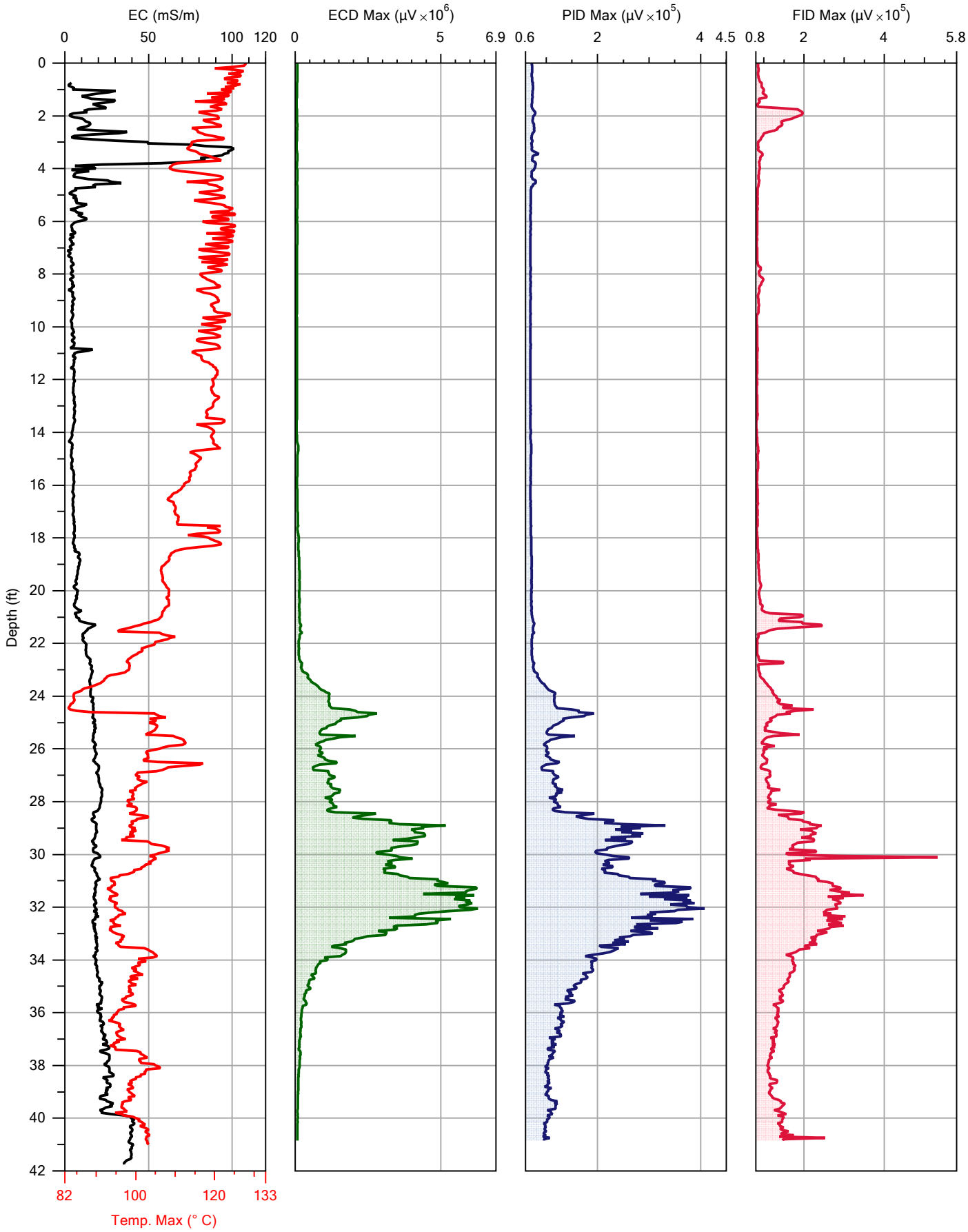
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-32.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.7 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 18:22:36

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-33.MIP
Company: SER90		Operator: S. Sirhan	Date: 7/9/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.3	PASS
High	290.0	293.7	1.3	PASS

MIP-33.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-33.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 45.8 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 09:37:47

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 9 2014 09:41:21

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.30	1.006	16	1	1	1

LOG END DEPTH: 41.00 ft (12.497 m)
LOG END TIME: Wed Jul 9 2014 12:09:40

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-33.post.tim

COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 45.8 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 12:26:42

RESPONSE TEST ATTENUATION CHANGES

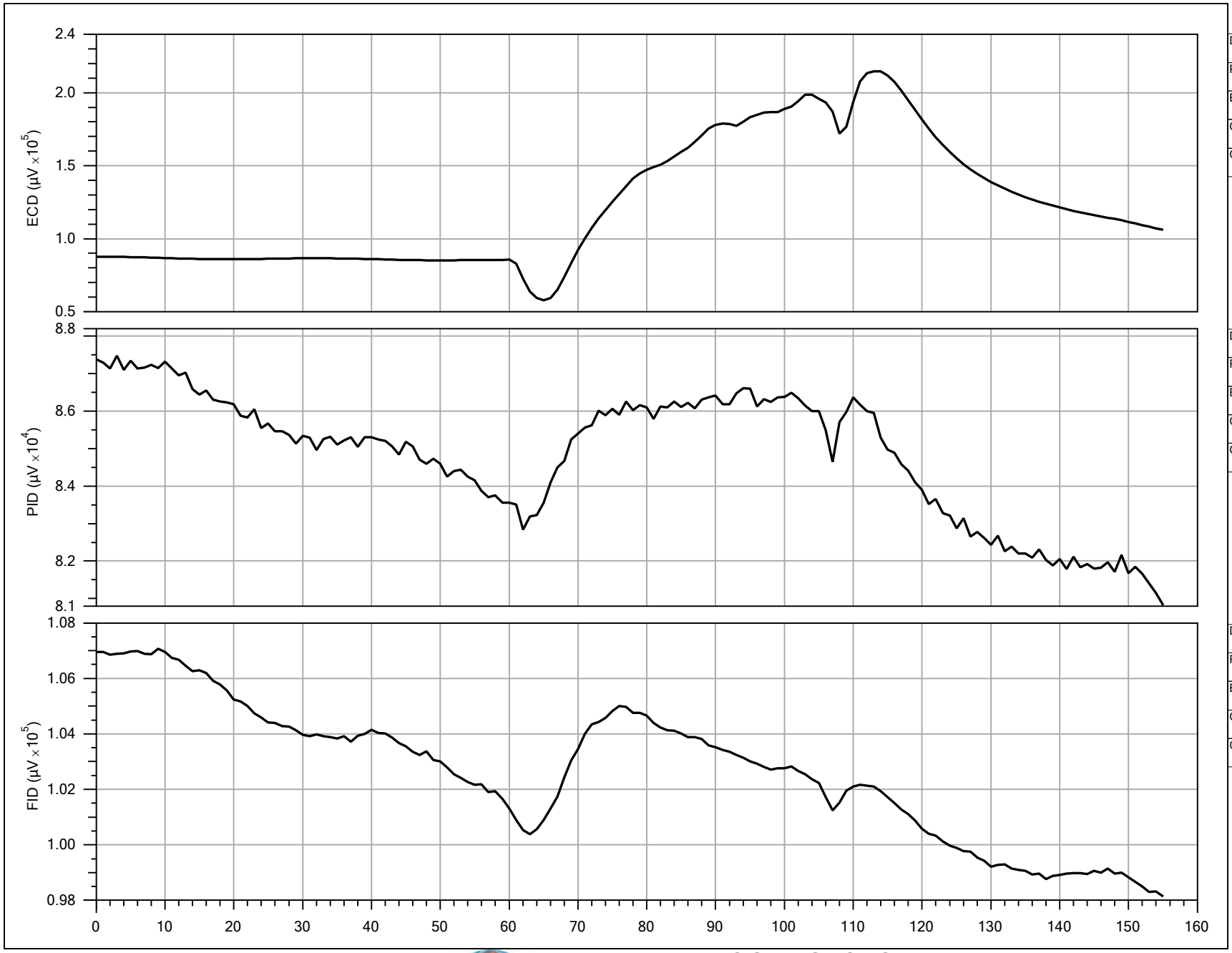
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.3	7.7	PASS
High	290.0	293.7	1.3	PASS

********** USER NOTES **********

Concrete 18 inch.



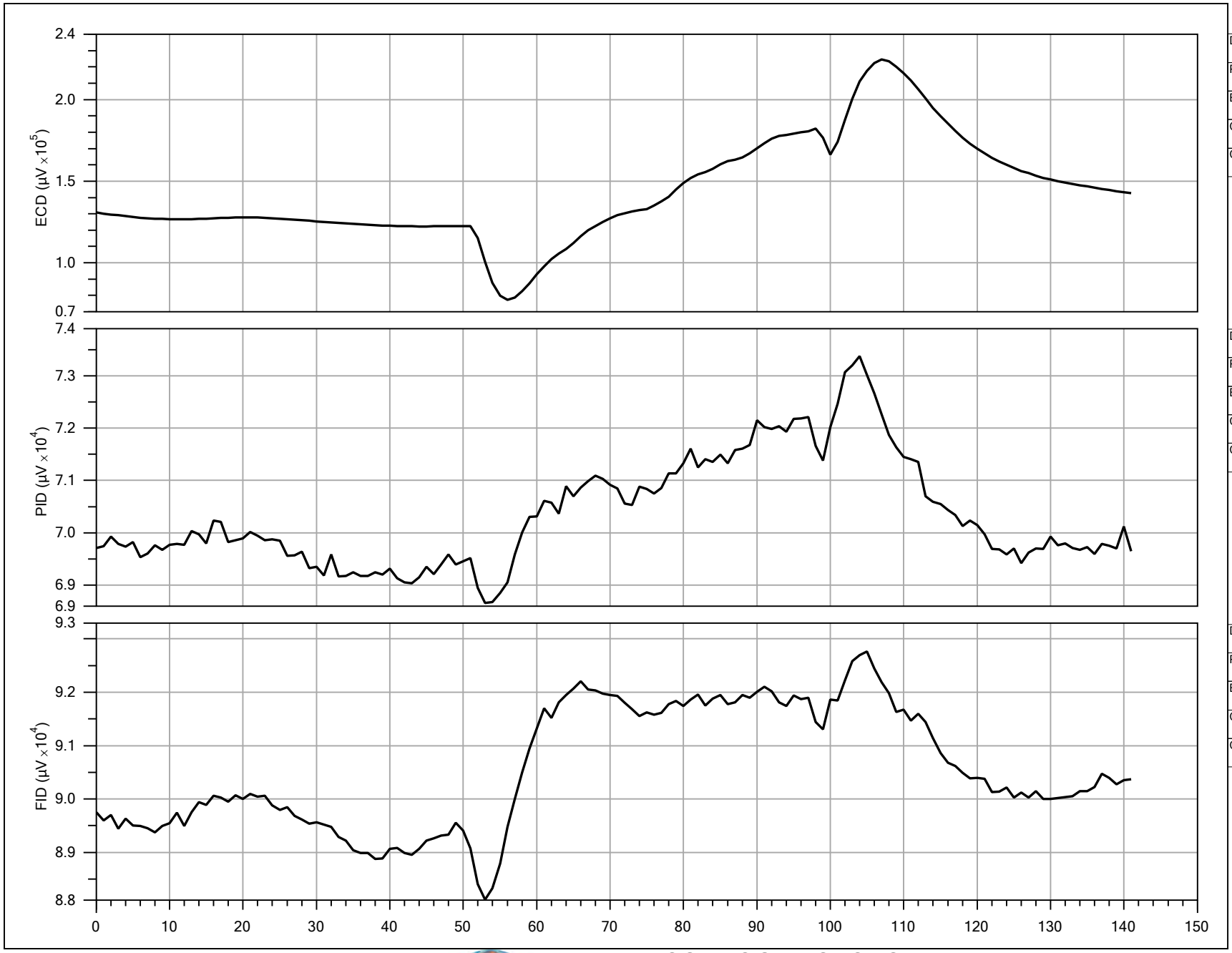
Detector:
ECD
Peak Response:
214766 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
87474 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
107067 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-33.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/9/2014



Detector:
ECD
Peak Response:
224563 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
73374 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
92761 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-33.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/9/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-33.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 45.8 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 09:37:47

RESPONSE TEST ATTENUATION CHANGES

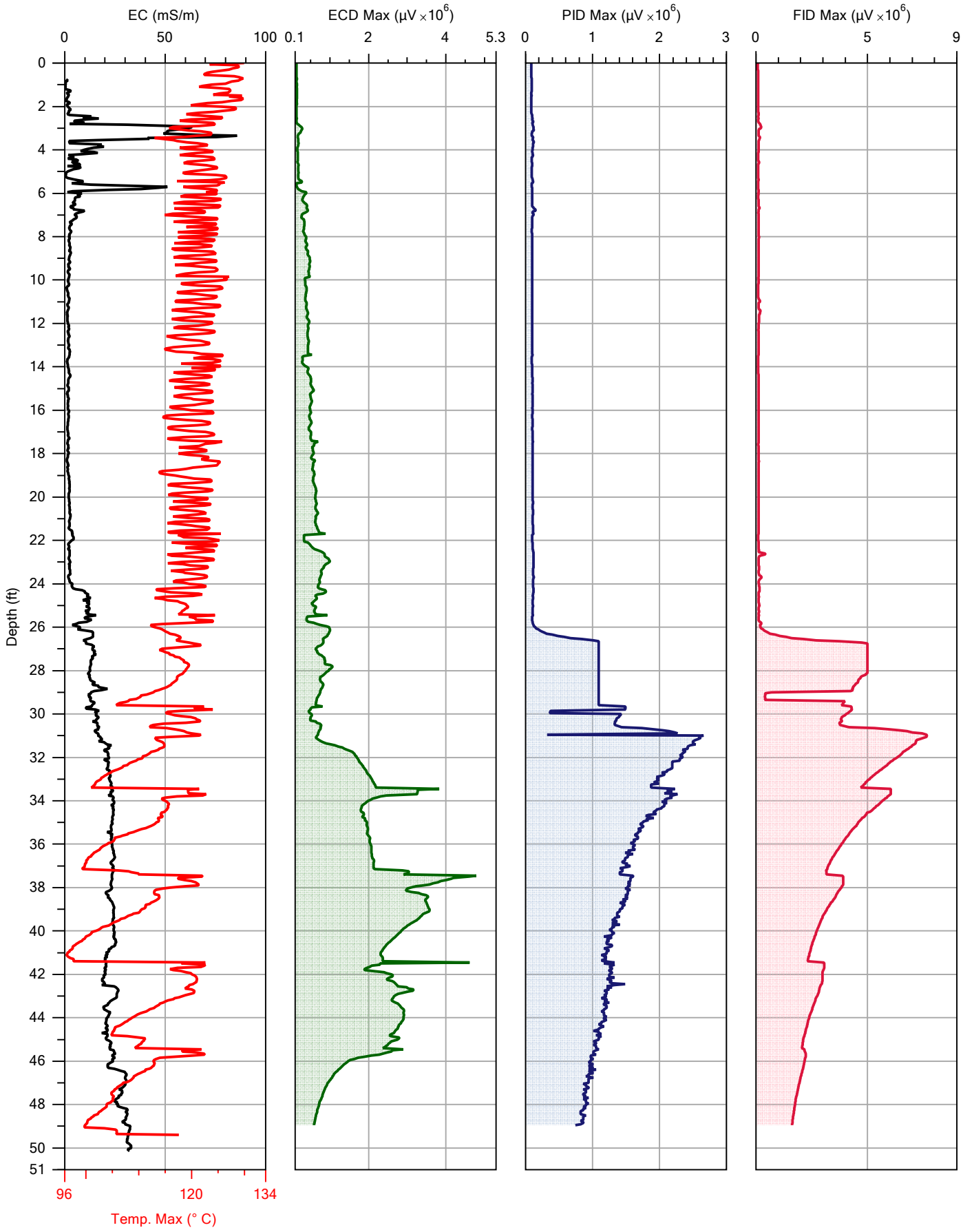
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-33.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 45.8 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 12:26:42

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-34.MIP
Company: SER90	Operator: S.Sirhan		Date: 7/9/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	291.5	0.5	PASS

MIP-34.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-34.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.2 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 13:50:06

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 9 2014 13:52:57

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
29.40	8.961	16	1	10	1
29.65	9.037	16	16	10	1
30.00	9.144	16	64	10	1
30.20	9.205	16	64	10	1
31.00	9.449	16	512	10	1
31.70	9.662	16	512	10	1

LOG END DEPTH: 49.40 ft (15.057 m)
LOG END TIME: Wed Jul 9 2014 15:23:24

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-34.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.2 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 15:44:24

RESPONSE TEST ATTENUATION CHANGES

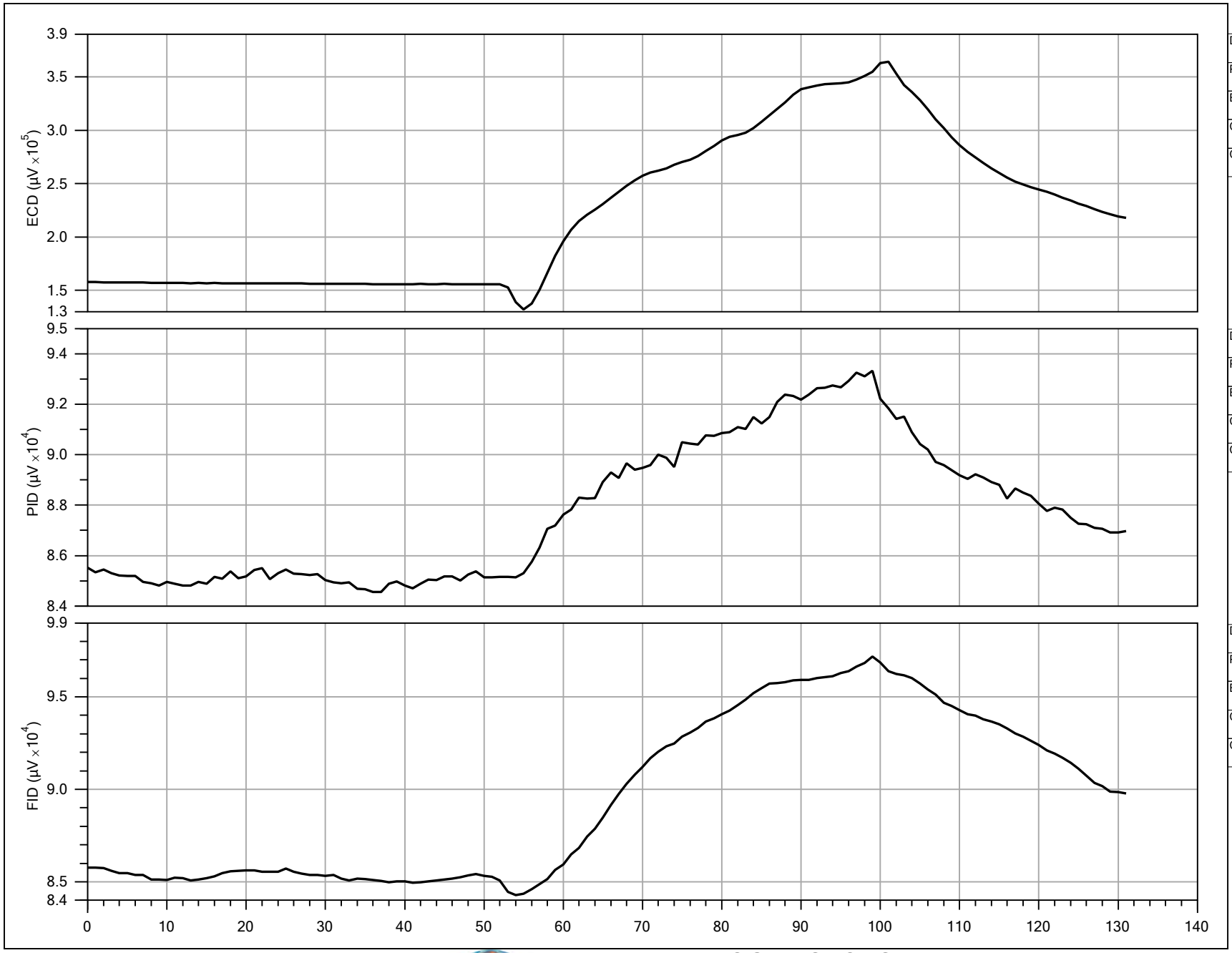
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.8	PASS
High	290.0	292.9	1.0	PASS

********** USER NOTES **********

18 inch concrete



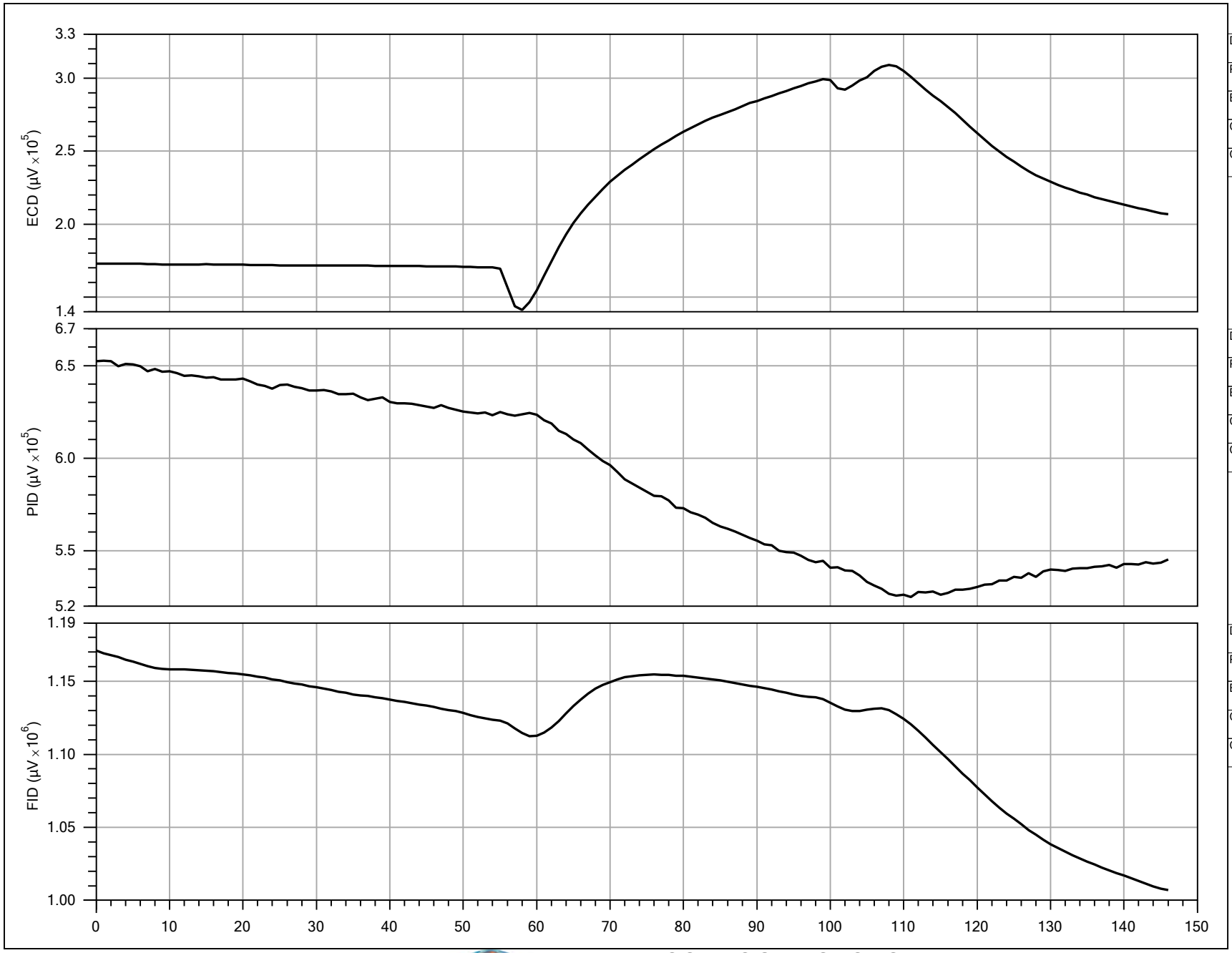
Detector:
ECD
Peak Response:
364383 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
93333 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
97186 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S.Sirhan	MIP-34.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/9/2014



Detector:
ECD
Peak Response:
308946 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
652539 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
1170942 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S.Sirhan	MIP-34.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/9/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-34.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.2 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 13:50:06

RESPONSE TEST ATTENUATION CHANGES

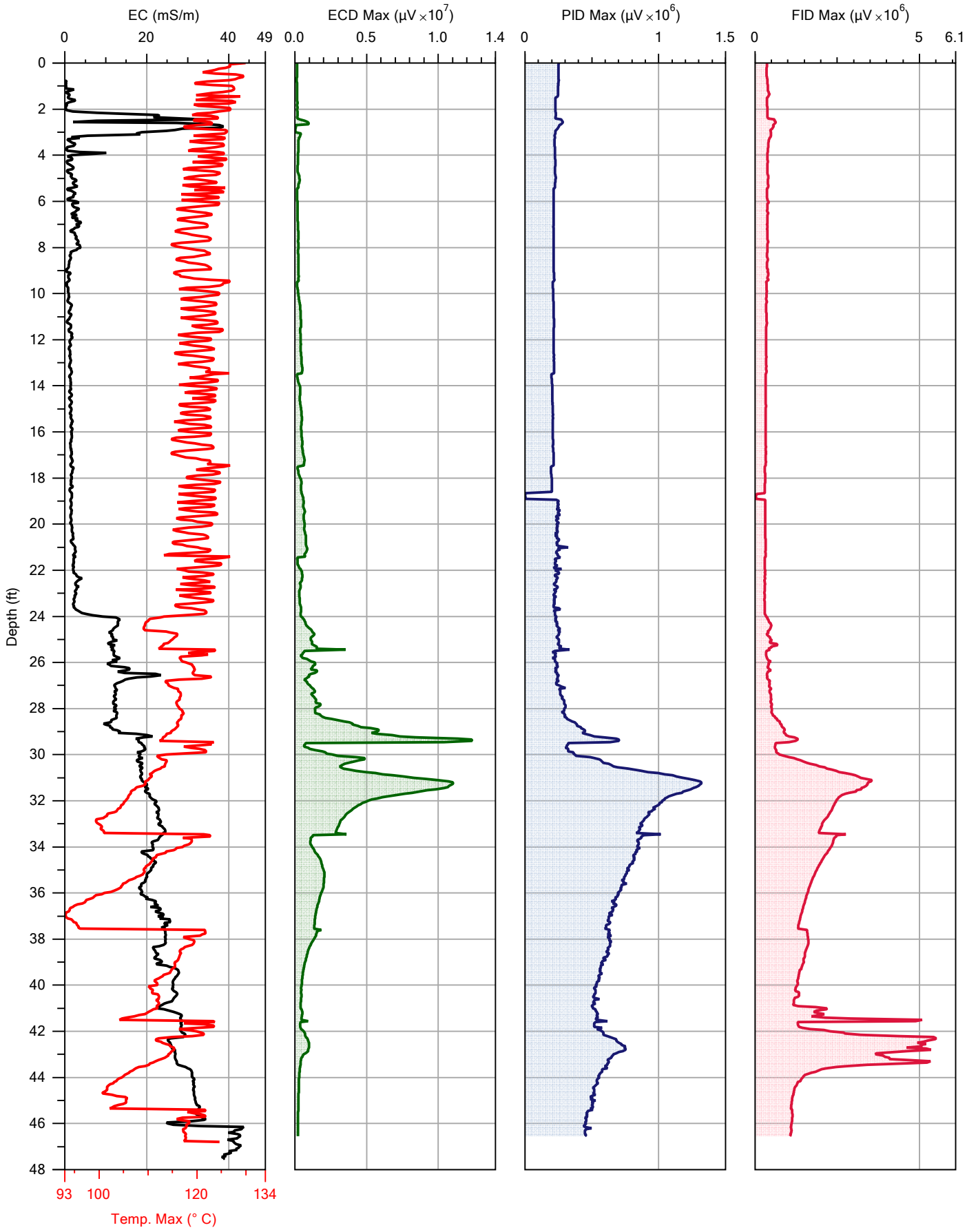
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-34.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.2 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 15:44:24

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-35.MIP
Company: SER90		Operator: S.Sirhan	Date: 7/9/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.4	PASS
High	290.0	269.5	7.1	PASS

MIP-35.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-35.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 15:53:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 9 2014 15:56:37

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.05	0.930	16	1	1	1
3.20	0.975	16	1	1	1
18.95	5.776	16	128	10	1
19.30	5.883	16	128	10	1
24.45	7.452	16	128	10	1

LOG END DEPTH: 46.80 ft (14.265 m)
LOG END TIME: Wed Jul 9 2014 17:37:10

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-35.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 18:00:29

RESPONSE TEST ATTENUATION CHANGES

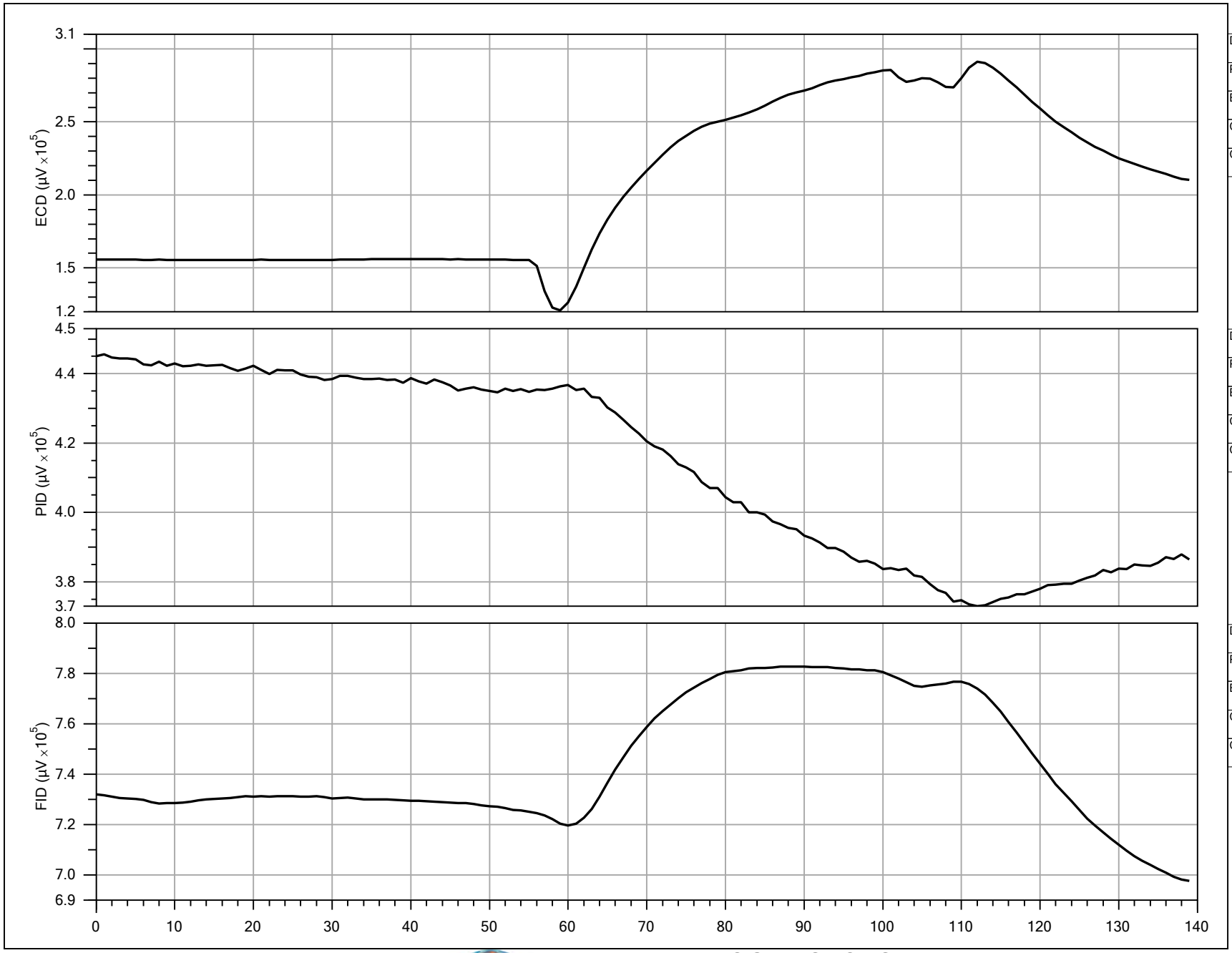
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.7	PASS
High	290.0	292.9	1.0	PASS

********** USER NOTES **********

18 in concrete



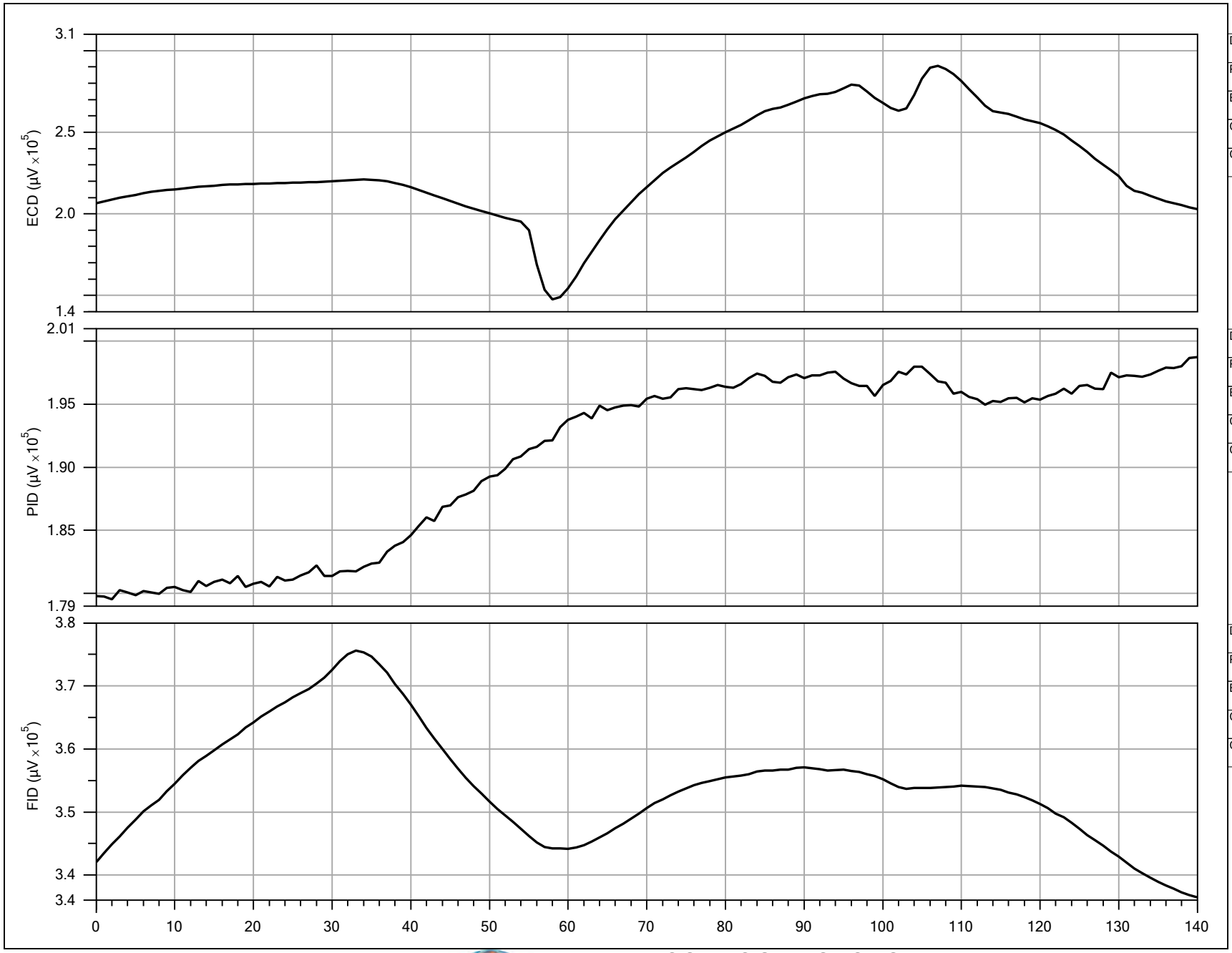
Detector:
ECD
Peak Response:
291093 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
445593 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
782739 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S.Sirhan	MIP-35.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/9/2014



Detector:
ECD
Peak Response:
290758 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
198735 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
375599 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S.Sirhan	MIP-35.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/9/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-35.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 15:53:46

RESPONSE TEST ATTENUATION CHANGES

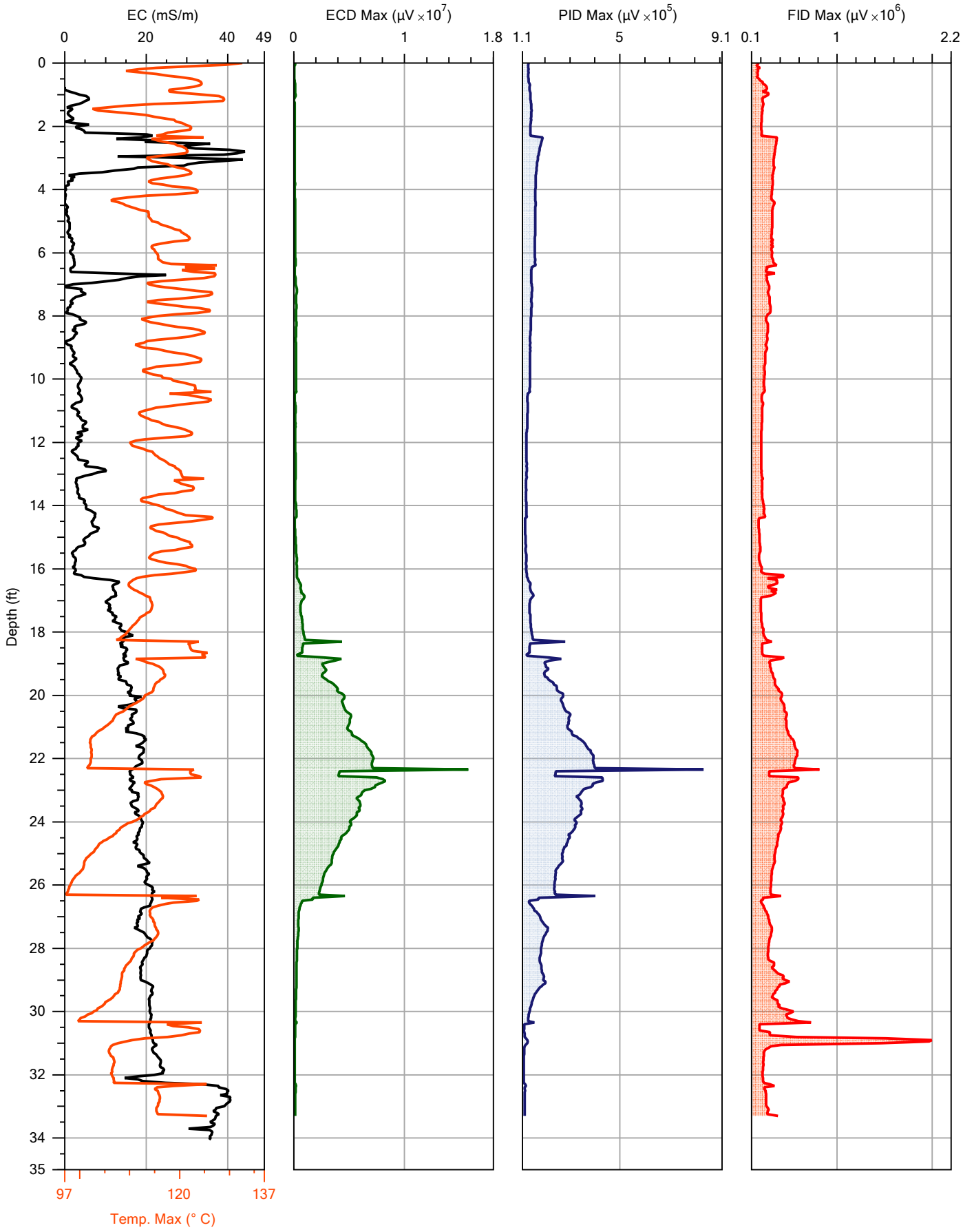
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

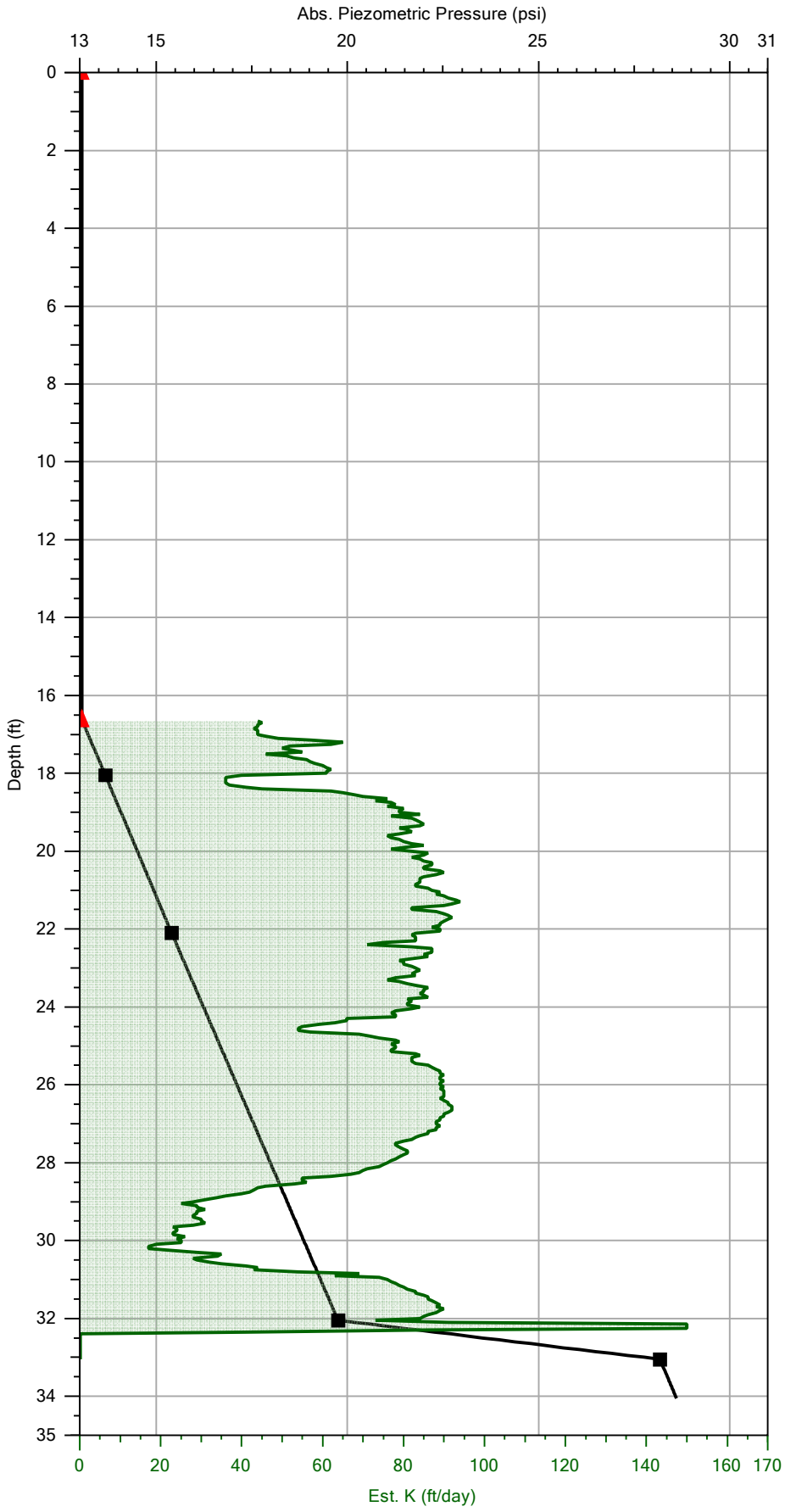
FILENAME: MIP-35.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 18:00:29

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-36.MHP
Company: SER90		Operator: S. Sirhan	Date: 7/10/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 30″ W



			File: MIP-36.MHP
Company: SER90		Operator: S. Sirhan	Date: 7/10/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 30″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.9	5.3	PASS
High	290.0	301.3	3.9	PASS

MIP-36.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-36.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.7 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 13:22:54

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 10 2014 13:24:57

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.462	0.0	92.810
TOP with FLOW>0	13.917	315.0	95.950
BOTTOM with FLOW=0	13.235	0.0	91.250
BOTTOM with FLOW>0	13.675	312.4	94.290

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Thu Jul 10 2014 13:30:00

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.25	0.381	16	1	1	1

LOG END DEPTH: 33.30 ft (10.150 m)
LOG END TIME: Thu Jul 10 2014 14:34:37

LATITUDE: 41.998787908
LONGITUDE: -83.941738825
ELEVATION: 210.309 METERS 689.99 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-36.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.1 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 14:55:03

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 10 2014 14:57:36

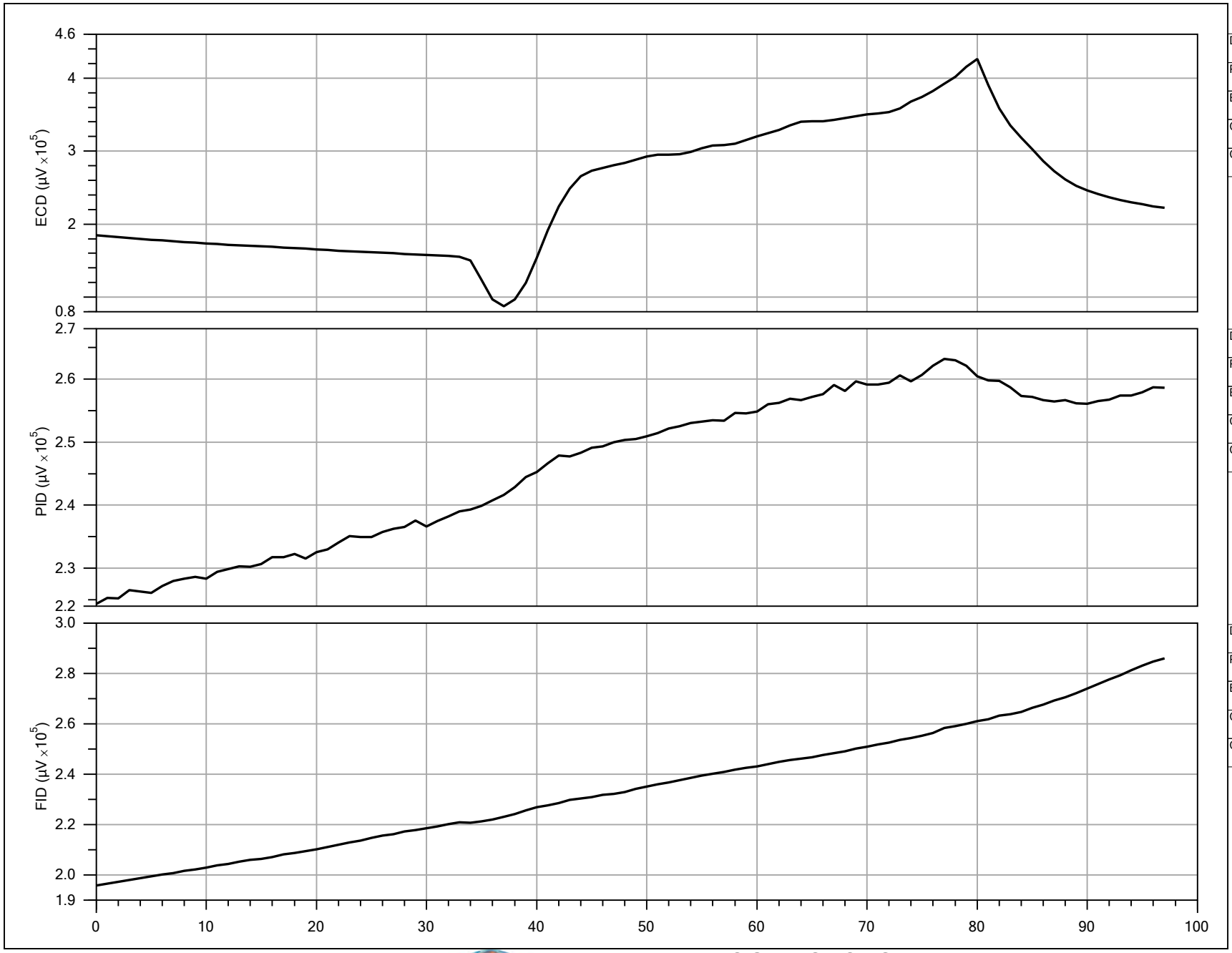
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.451	0.0	92.740
TOP with FLOW>0	13.805	310.6	95.180
BOTTOM with FLOW=0	13.215	0.0	91.120
BOTTOM with FLOW>0	13.639	314.7	94.040

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.7	PASS
High	290.0	302.3	4.2	PASS



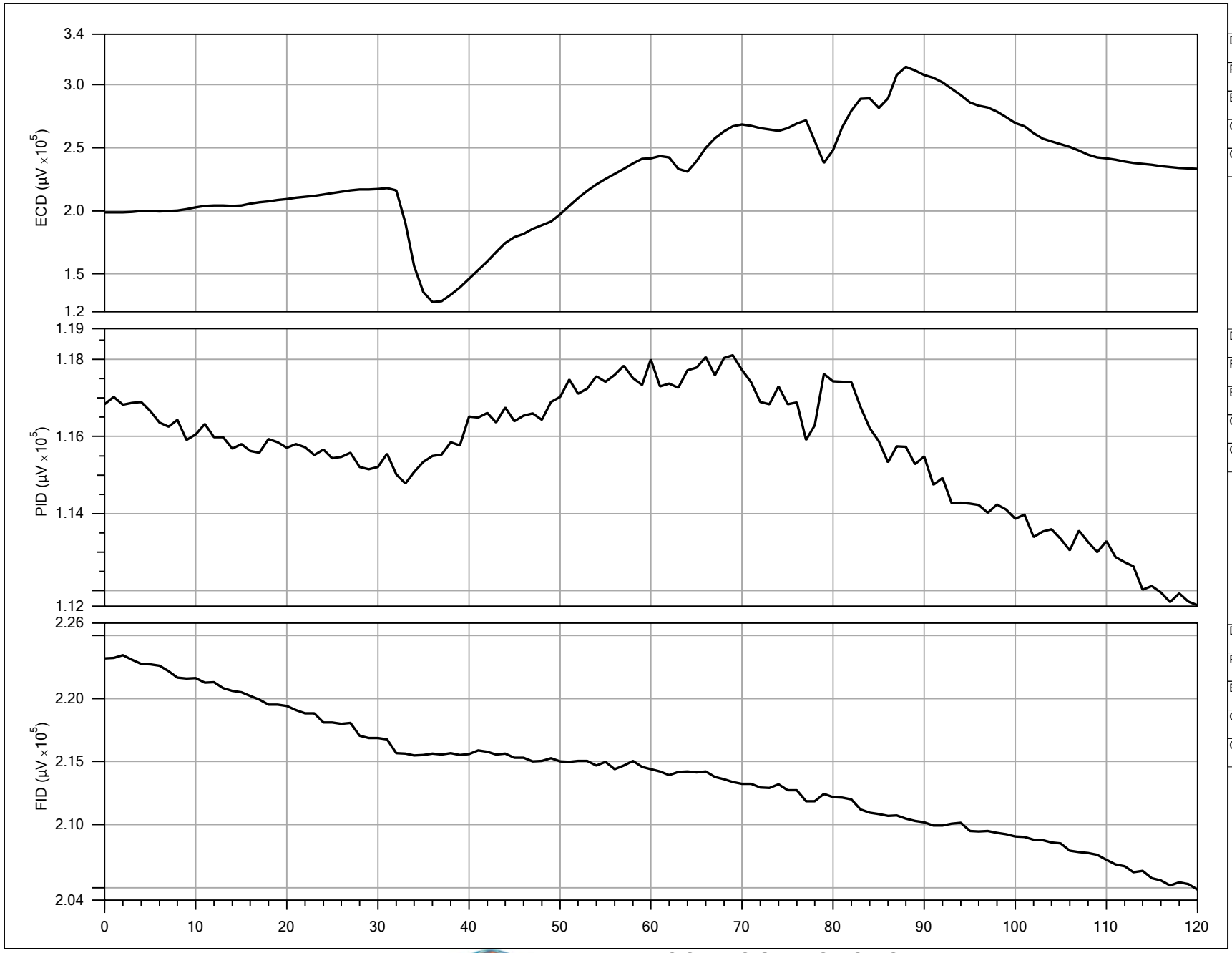
Detector:
ECD
Peak Response:
426054 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
263222 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
285852 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-36.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/10/2014



Detector:
ECD
Peak Response:
314104 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
118107 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
223441 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-36.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/10/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-36.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.7 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 13:22:54

RESPONSE TEST ATTENUATION CHANGES

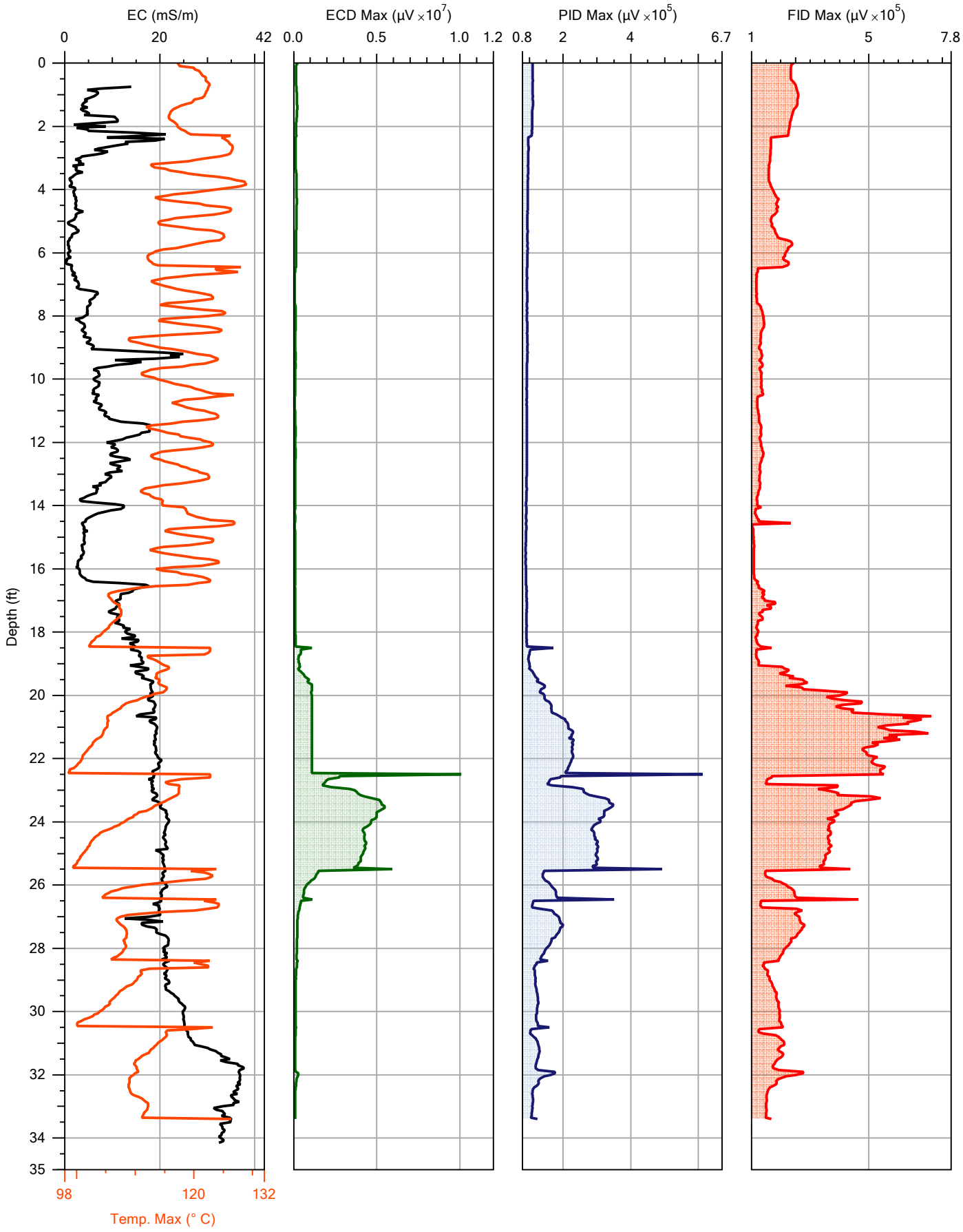
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

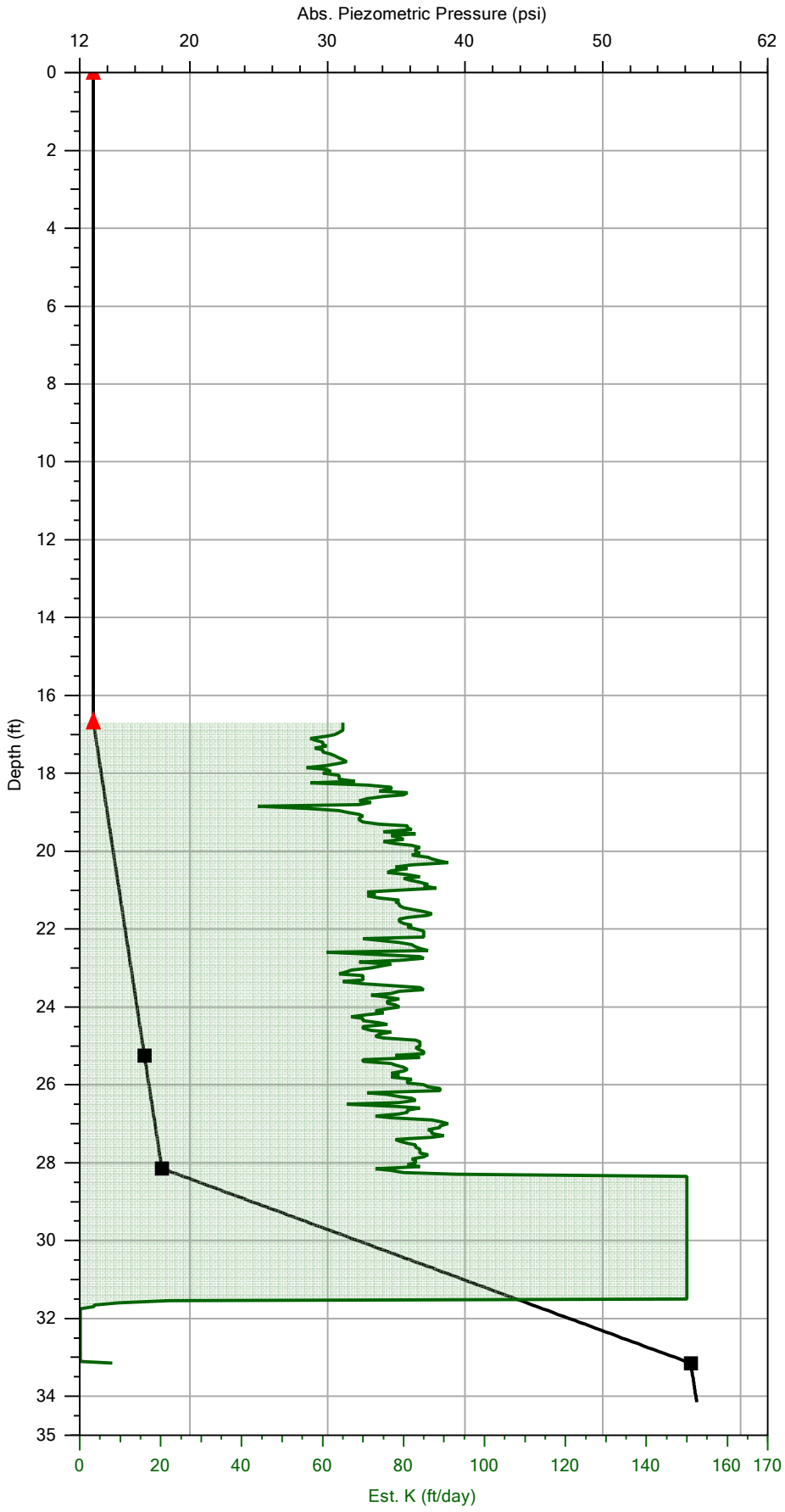
FILENAME: MIP-36.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.1 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 14:55:03

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-37.MHP
Company: SER90	Operator: S. Sirhan		Date: 7/10/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location: 41° 59′ 54″ N, 83° 56′ 30″ W



		File: MIP-37.MHP
Company: SER90	Operator: S. Sirhan	Date: 7/10/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 54″ N, 83° 56′ 30″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	62.0	12.7	FAIL
High	290.0	307.3	6.0	PASS

Pre-Log EC Troubleshooting Tests

Test	Value	P/F
Instrument Calibration Tests		
10 Ohms:	9.9 Ohms	PASS
100 Ohms:	99.2 Ohms	PASS
1000 Ohms:	949.1 Ohms	PASS

MIP-37.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-37.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.1 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 15:21:00

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 10 2014 15:27:48

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.364	0.0	92.140

TOP with FLOW>0	13.813	314.3	95.240
BOTTOM with FLOW=0	13.148	0.0	90.650
BOTTOM with FLOW>0	13.587	317.6	93.680

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Thu Jul 10 2014 15:29:27

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
6.60	2.012	1	1	1	1
22.50	6.858	16	1	1	1

LOG END DEPTH: 33.40 ft (10.180 m)
LOG END TIME: Thu Jul 10 2014 16:23:21

LATITUDE: 41.998403297
LONGITUDE: -83.941736381
ELEVATION: 210.254 METERS 689.81 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-37.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.5 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 16:39:44

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 10 2014 16:43:23

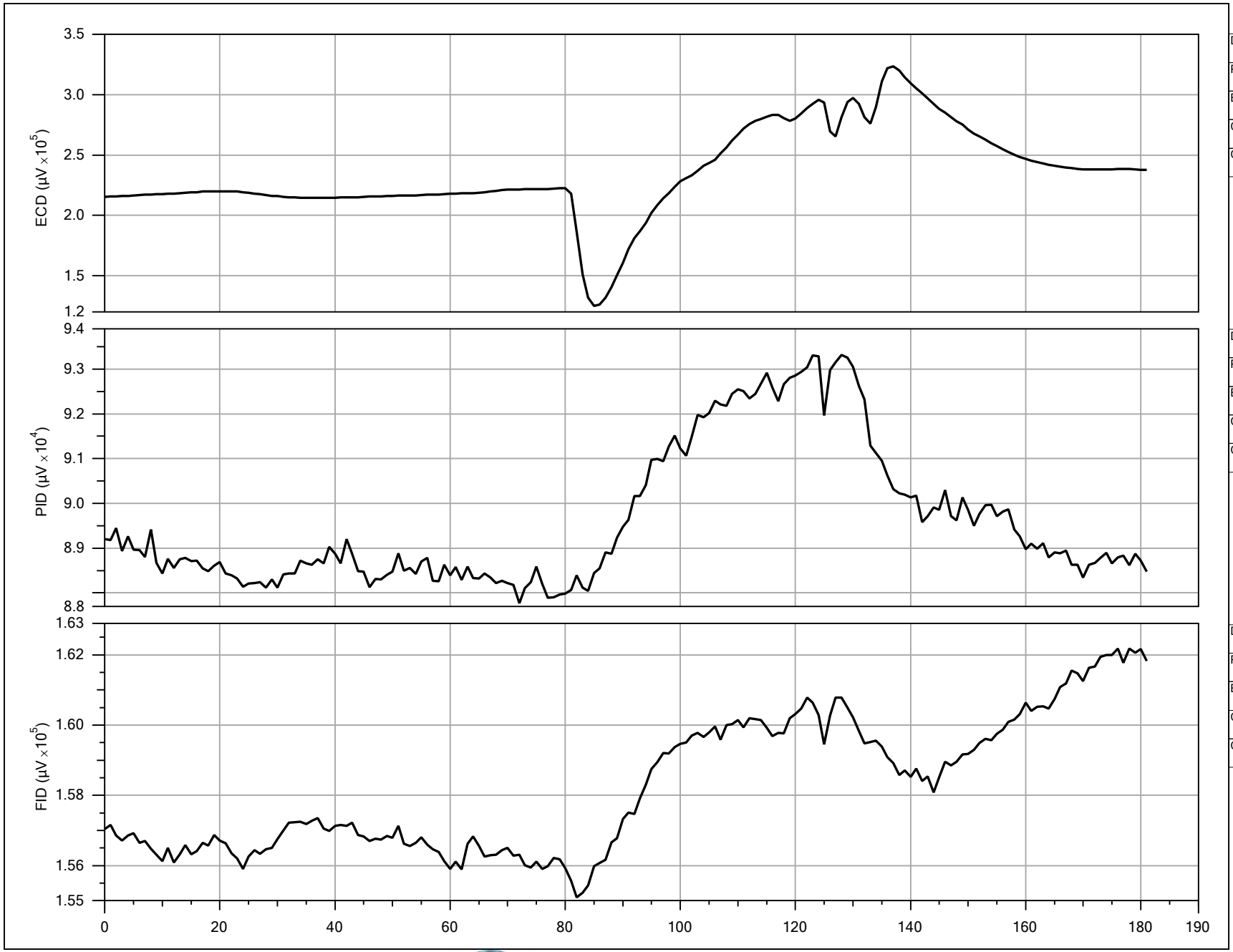
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.422	0.0	92.540
TOP with FLOW>0	13.805	323.5	95.180
BOTTOM with FLOW=0	13.224	0.0	91.180
BOTTOM with FLOW>0	13.598	323.1	93.750

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.3	PASS
High	290.0	304.8	5.1	PASS



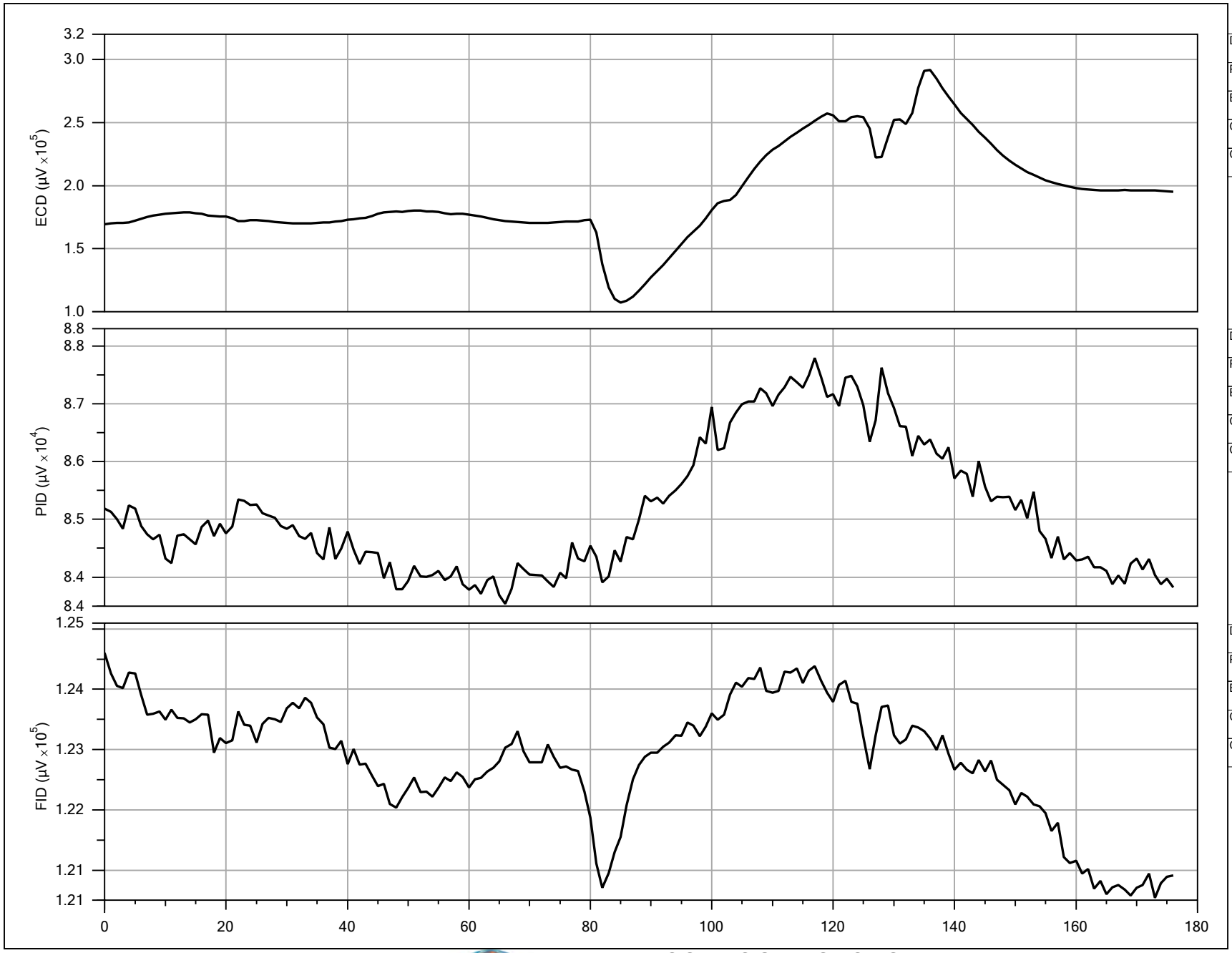
Detector:
ECD
Peak Response:
323481 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
93318 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
162175 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-37.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/10/2014



Detector:
ECD
Peak Response:
291620 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
87794 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
124599 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S. Sirhan	MIP-37.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/10/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-37.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.1 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 15:21:00

RESPONSE TEST ATTENUATION CHANGES

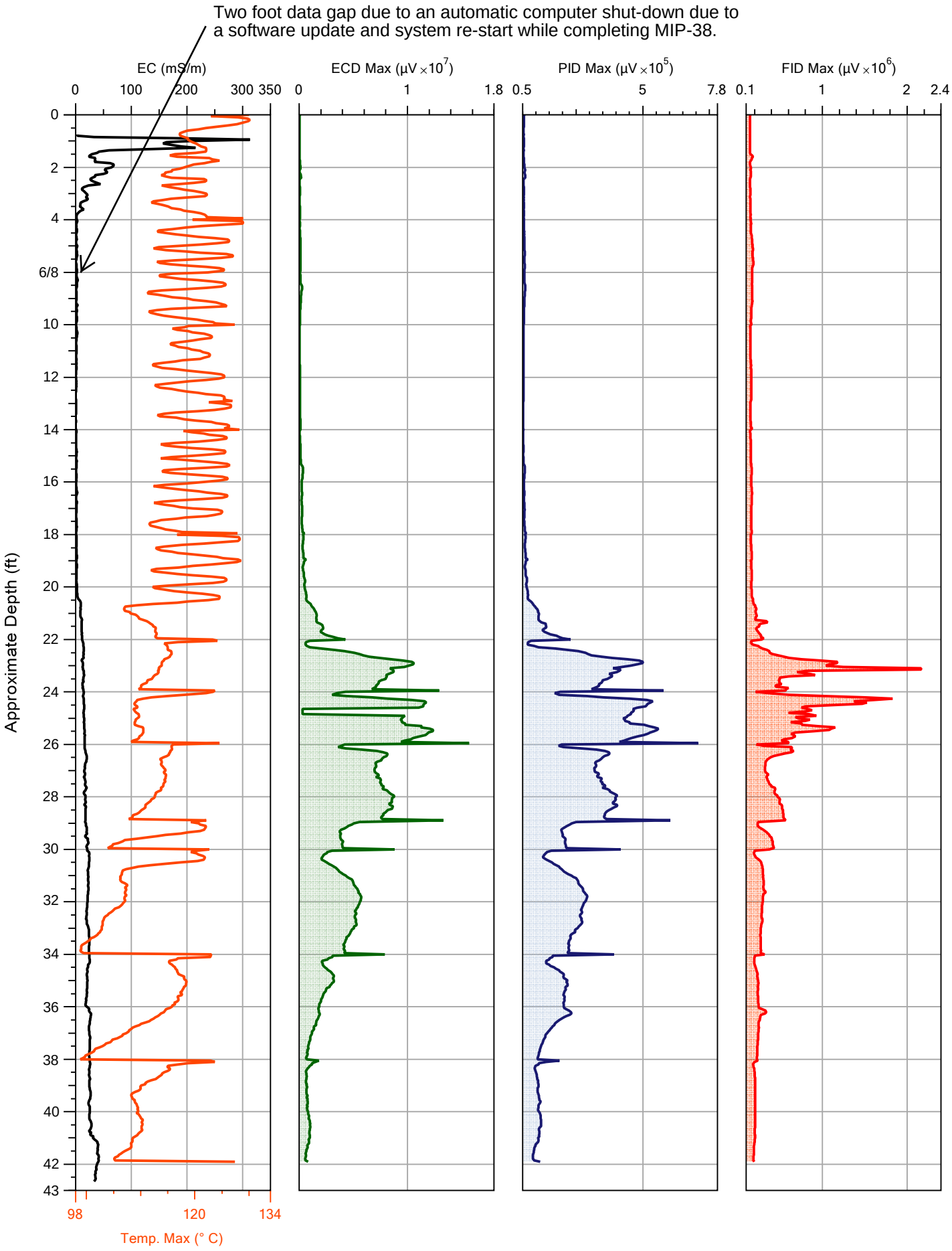
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

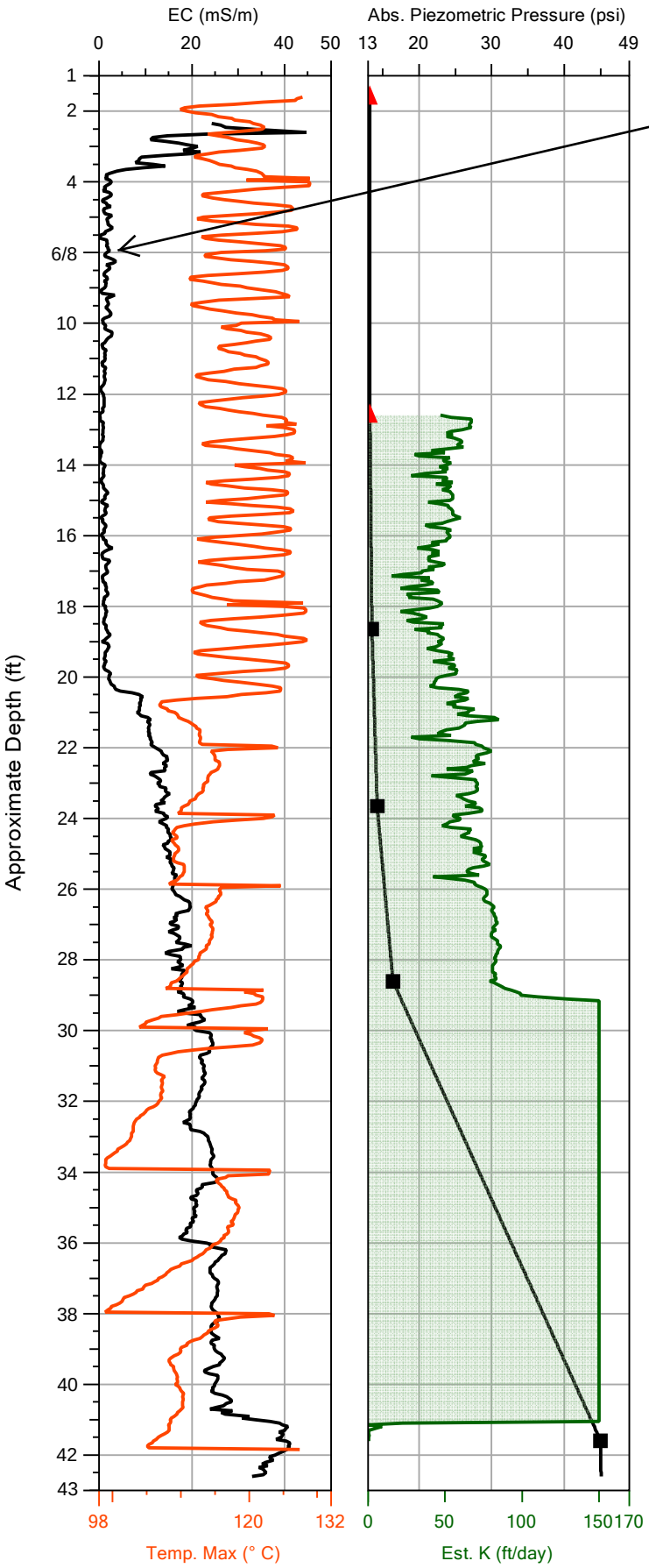
FILENAME: MIP-37.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.5 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 16:39:44

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-38FINAL.MHP
Company: SER90		Operator: S.Sirhan	Date: 7/11/2014
Project ID: TPC-2014-IR		Client: TRC Solutions	Location:



Two foot data gap due to an automatic computer shut-down due to a software update and system re-start while completing MIP-38.

		File: MIP-38-LOWER.MHP
Company: SER90	Operator: S.Sirhan	Date: 7/11/2014
Project ID: TPC-2014-IR	Client: TRC Solutions	Location:

MERGED LOG FILE -- MIP-38Final.nfo
File 1: MIP-38
File 2: MIP-38-lower

----------FIRST LOG----------

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	303.3	4.6	PASS

MIP-38.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S, Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-38.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.3 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 08:12:53

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 11 2014 08:15:57

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.552	0.0	93.440
TOP with FLOW>0	14.143	306.4	97.510
BOTTOM with FLOW=0	13.354	0.0	92.070
BOTTOM with FLOW>0	13.978	303.5	96.370

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%

ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 11 2014 08:19:33

----------SECOND LOG----------

EC PRE-LOG TESTS BYPASSED

MIP-38-lower.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-2014-IR
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST BYPASSED

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 11 2014 08:45:32

PRE-LOG HPT REFERENCE TESTS BYPASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 11 2014 08:45:39

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
21.25	6.477	512	1	1	1

LOG END DEPTH: 38.25 ft (11.659 m)
LOG END TIME: Fri Jul 11 2014 09:40:55

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-38-lower.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.9 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 10:03:39

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 11 2014 10:07:01

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.595	0.0	93.730
TOP with FLOW>0	13.887	239.2	95.740
BOTTOM with FLOW=0	13.369	0.0	92.180
BOTTOM with FLOW>0	13.699	242.2	94.450

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

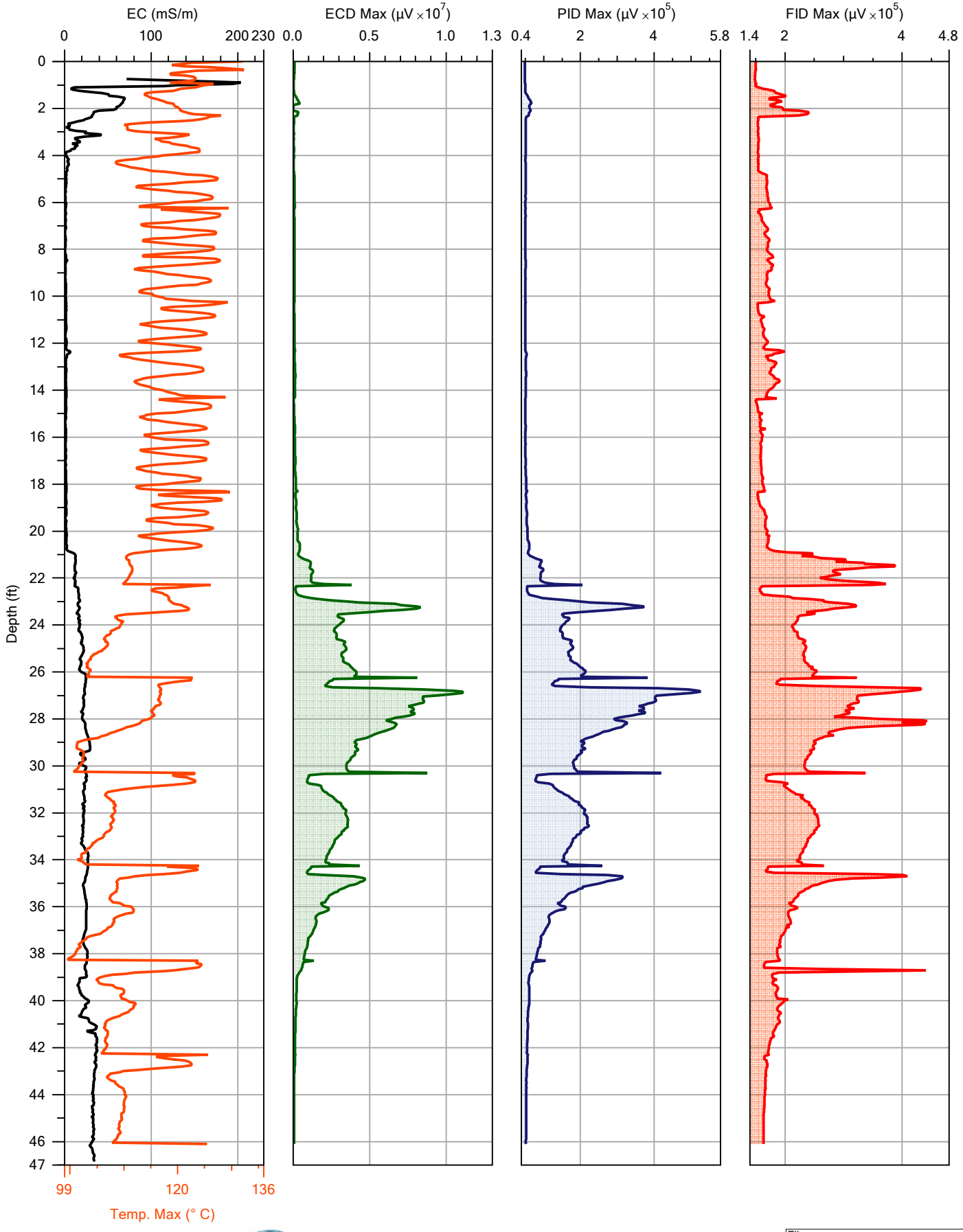
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.9	PASS
High	290.0	304.5	5.0	PASS

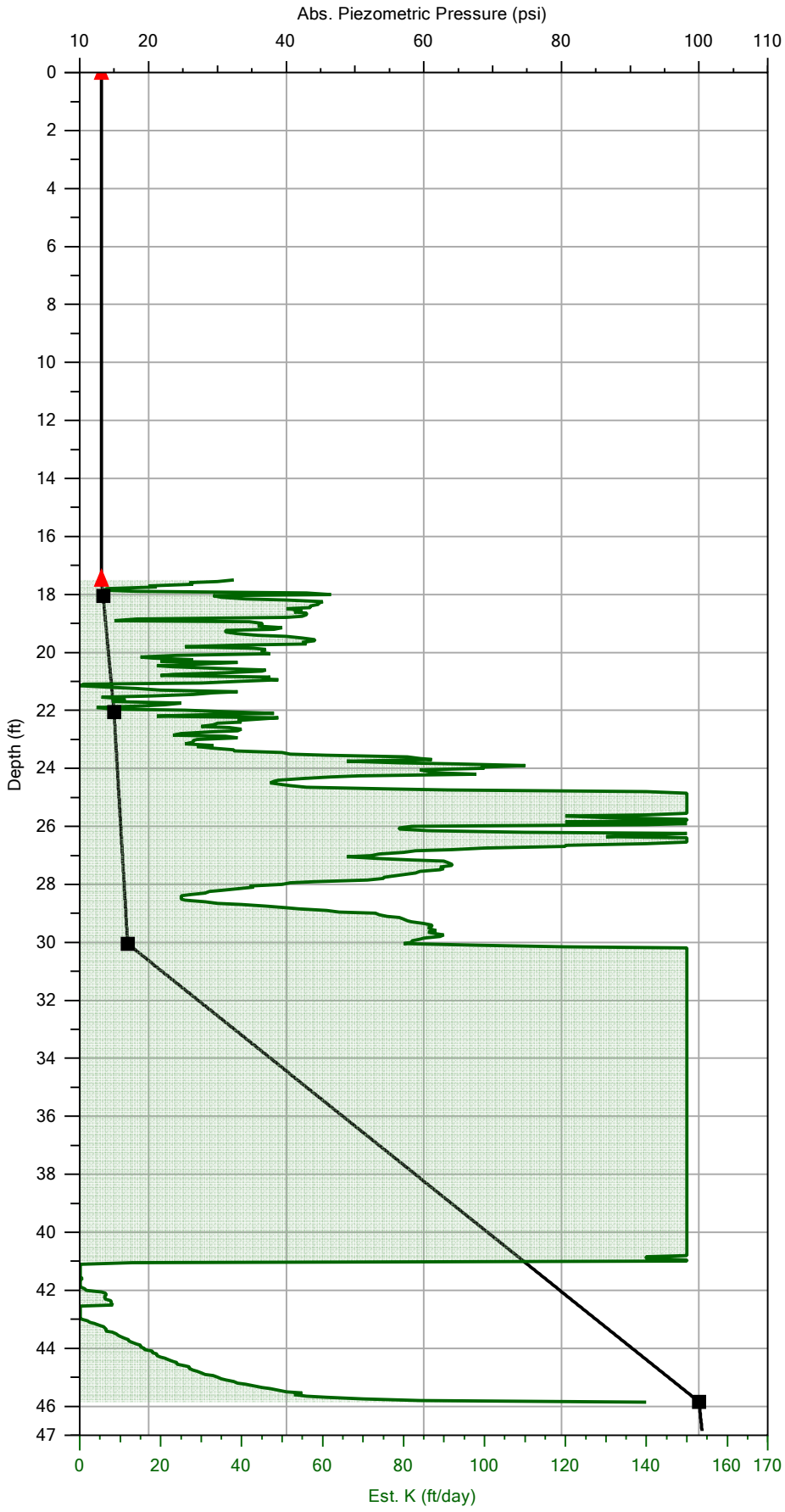
The computer shut-down due to a software update while completing MIP-38. Total depth prior to shut down was 6 feet.

SER90 created two logs - MIP-38 and MIP-38 Lower - that were spliced together into the MIP-38Final data file.

TRC verified the assigned depths on the final log by comparing the depth to groundwater (as indicated by temperature and EC data) at MIP-39 (20 ft bgs) and MIP-10 (21 ft bgs). These data indicate that there is a data gap between the two logs. Consequently the depths assigned to the spliced data were re-assigned manually. At depth greater than 6 ft bgs, the assigned depths should be considered approximate.



			File: MIP-39.MHP
Company: SER90		Operator: S.Sirhan	Date: 7/11/2014
Project ID: TPC-2014-IR		Client: TRC Solutions	Location:



			File: MIP-39.MHP
Company: SER90		Operator: S.Sirhan	Date: 7/11/2014
Project ID: TPC-2014-IR		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.9	PASS
High	290.0	303.7	4.7	PASS

MIP-39.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-2014-IR
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-39.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.9 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 10:10:22

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 11 2014 10:13:48

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.547	0.0	93.410
TOP with FLOW>0	13.904	243.5	95.870
BOTTOM with FLOW=0	13.335	0.0	91.940
BOTTOM with FLOW>0	13.689	242.4	94.380

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 11 2014 10:16:08

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.95	0.290	1	1	1	1
2.15	0.655	16	1	1	1

LOG END DEPTH: 46.10 ft (14.051 m)
LOG END TIME: Fri Jul 11 2014 11:55:35

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-39.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.9 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 12:18:52

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 11 2014 12:22:13

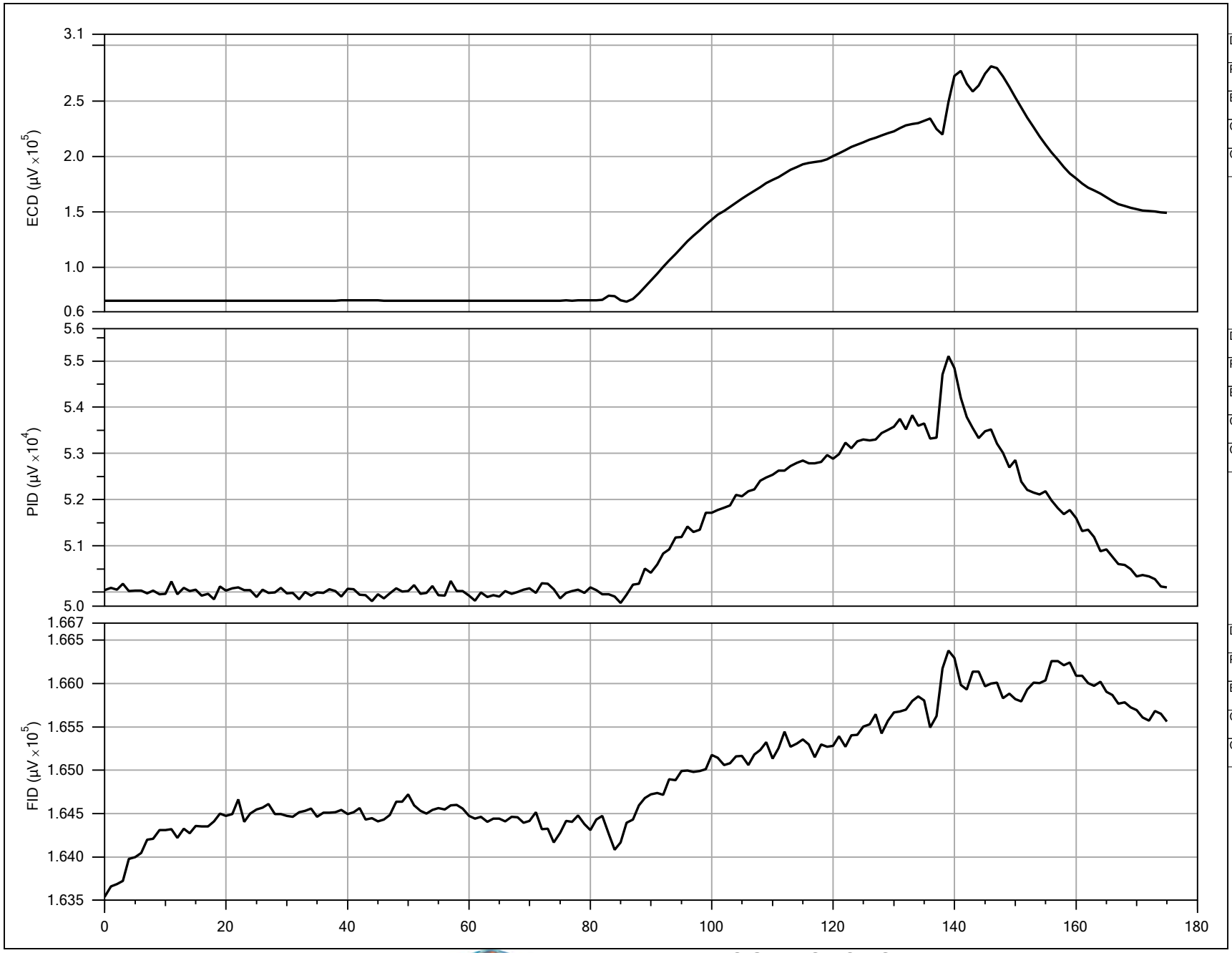
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.545	0.0	93.390
TOP with FLOW>0	14.018	281.2	96.650
BOTTOM with FLOW=0	13.342	0.0	91.990
BOTTOM with FLOW>0	13.766	270.7	94.910

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	305.9	5.5	PASS



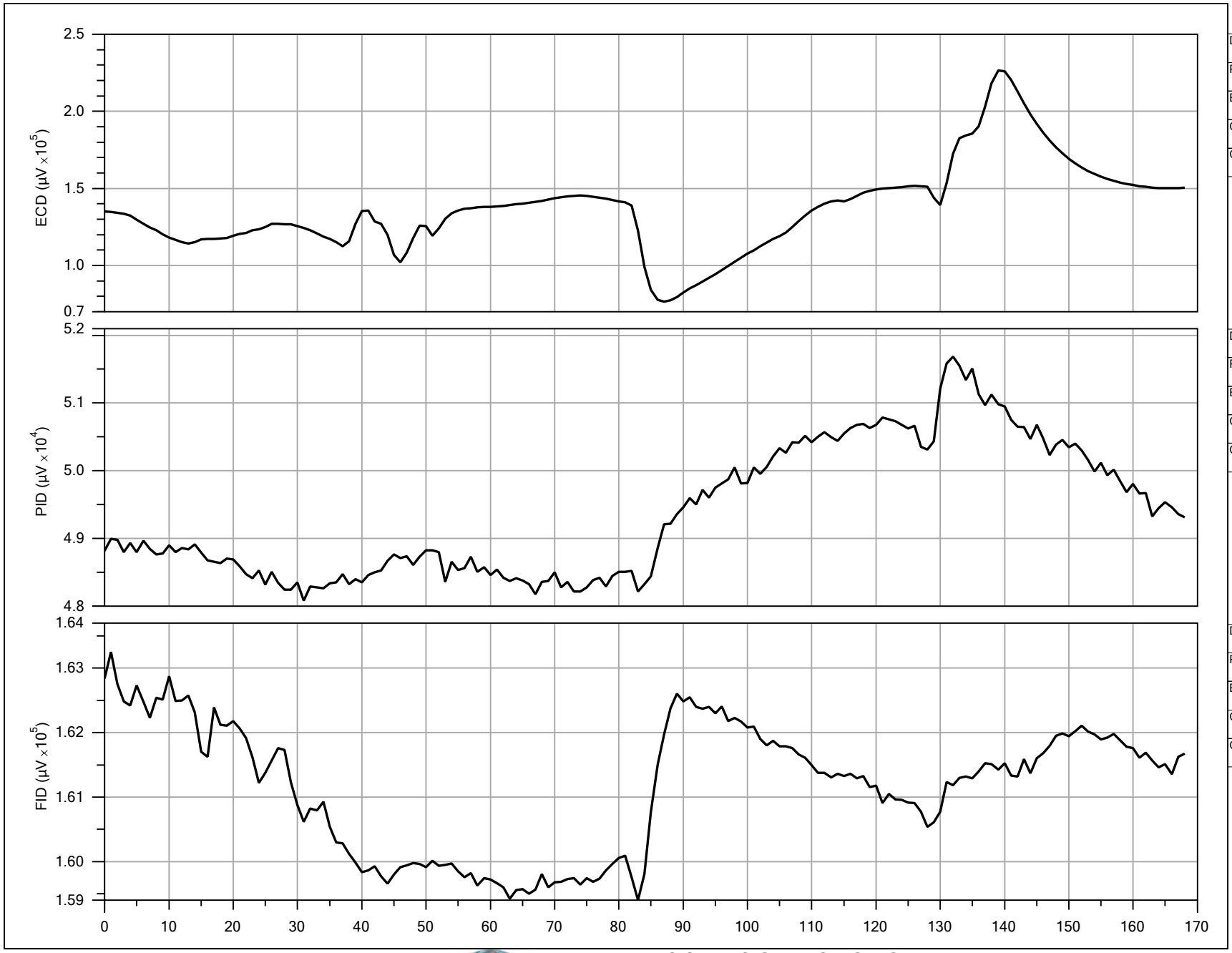
Detector:
ECD
Peak Response:
281152 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
55101 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
166379 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	S.Sirhan	MIP-39.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-IR	TRC Solutions	7/11/2014



Detector:
ECD
Peak Response:
226554 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
51683 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
163251 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	S.Sirhan	MIP-39.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-IR	TRC Solutions	7/11/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-39.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.9 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 10:10:22

RESPONSE TEST ATTENUATION CHANGES

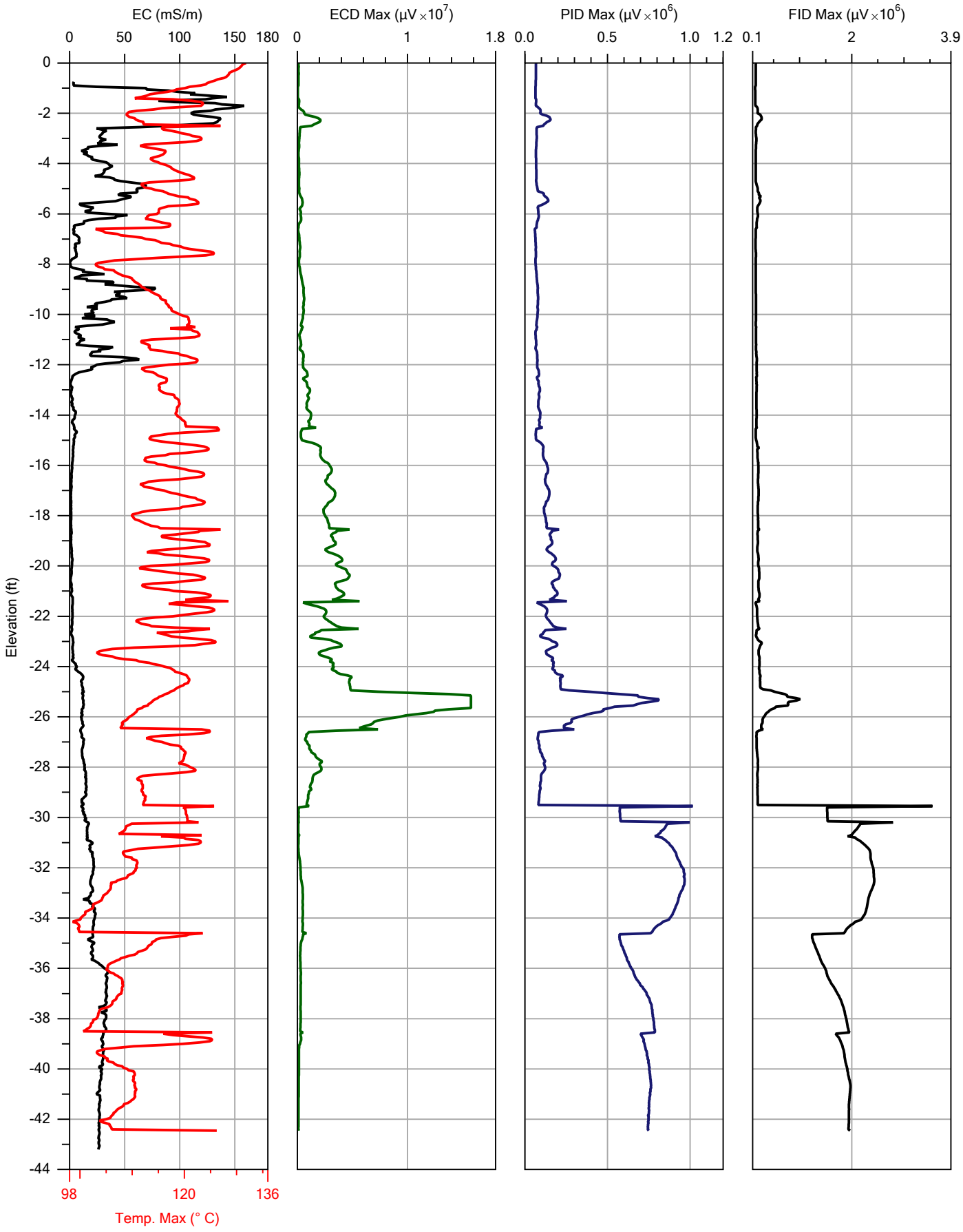
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

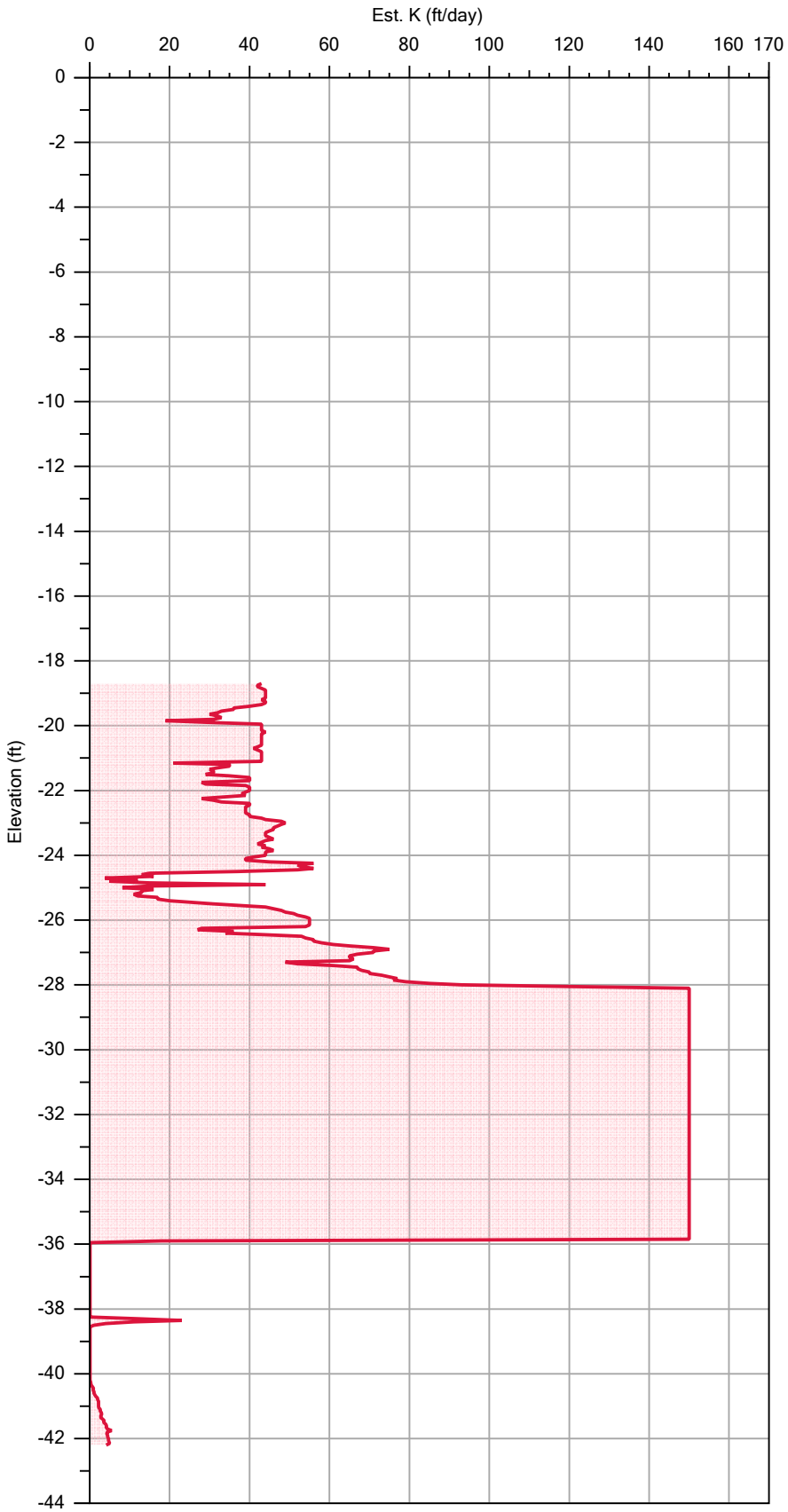
FILENAME: MIP-39.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.9 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 12:18:52

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



Company: SER90	Operator: Sammy		File: MIP-40.MHP
			Date: 7/11/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location:



			File: MIP-40.MHP
Company: SER90		Operator: Sammy	Date: 7/11/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	306.0	5.5	PASS

MIP-40.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-40.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.1 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 13:32:24

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 11 2014 13:35:44

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.539	0.0	93.350
TOP with FLOW>0	14.157	324.0	97.610
BOTTOM with FLOW=0	13.298	0.0	91.690
BOTTOM with FLOW>0	13.909	322.1	95.900

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 11 2014 13:39:03

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 42.45 ft (12.939 m)
LOG END TIME: Fri Jul 11 2014 14:38:59

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-40.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.1 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 15:01:23

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 11 2014 15:04:42

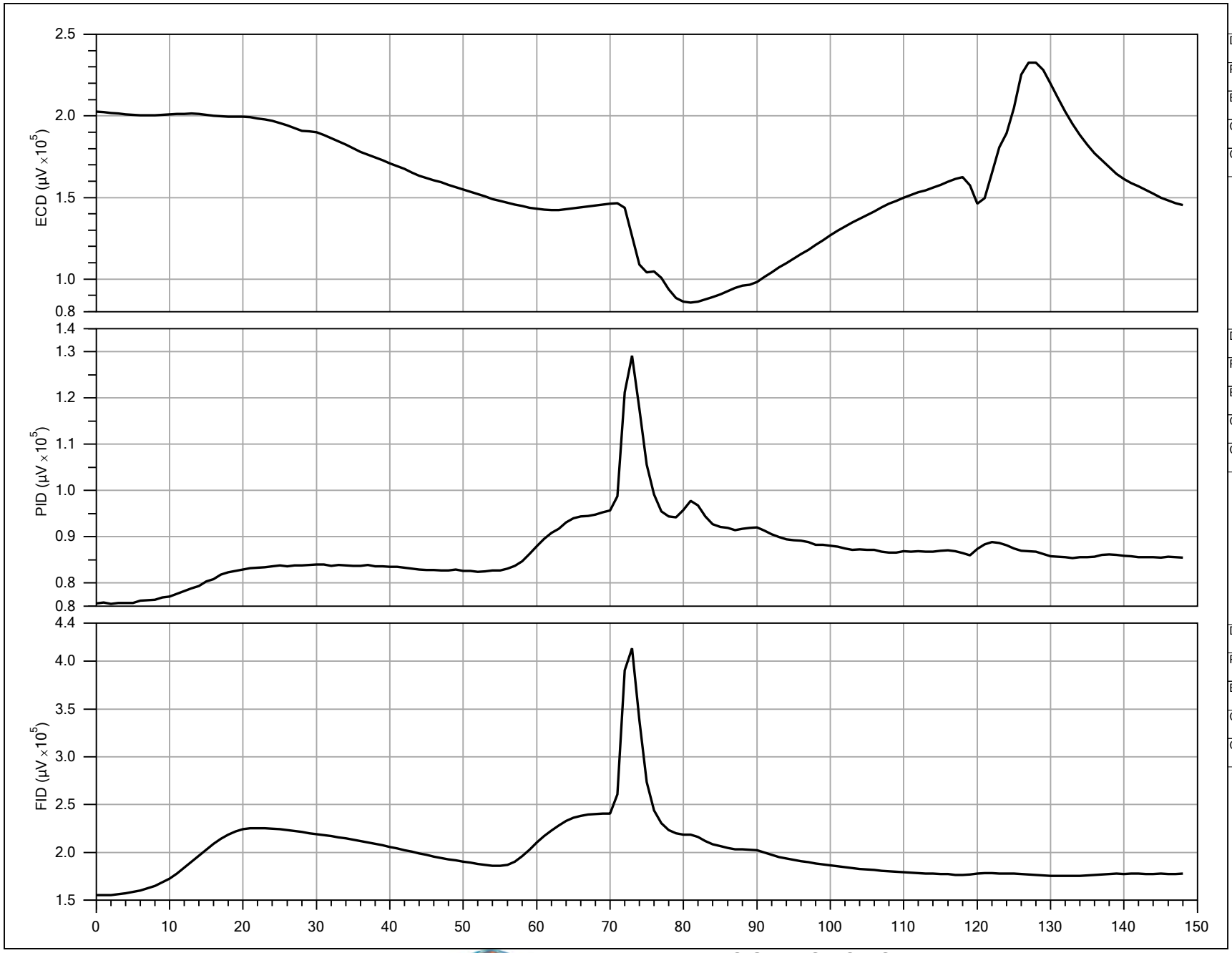
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.495	0.0	93.050
TOP with FLOW>0	14.314	355.8	98.690
BOTTOM with FLOW=0	13.260	0.0	91.420
BOTTOM with FLOW>0	14.078	353.2	97.060

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.1	PASS
High	290.0	303.1	4.5	PASS



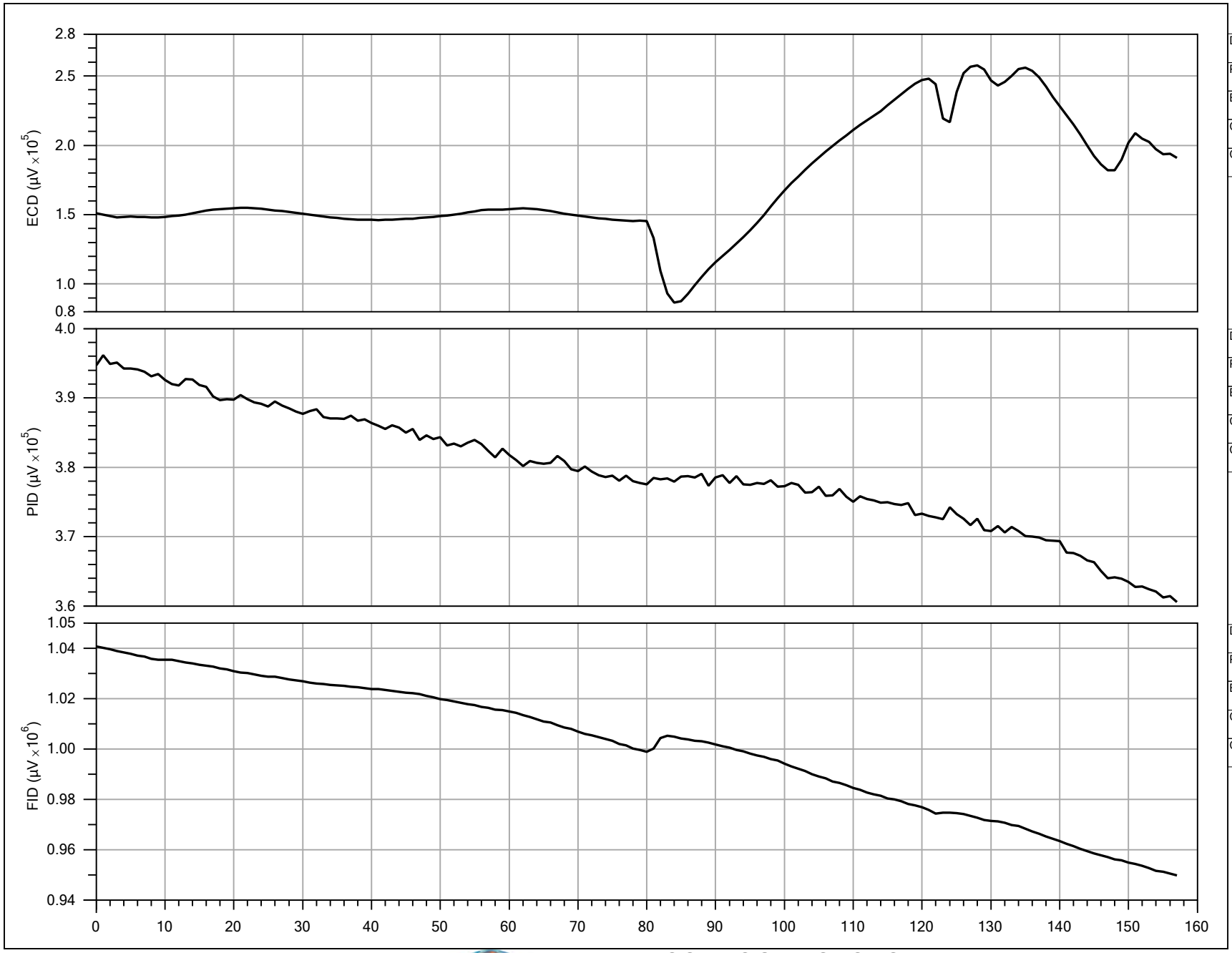
Detector:
ECD
Peak Response:
232719 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
129124 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
413343 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-40.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/11/2014



Detector:
ECD
Peak Response:
257538 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
396184 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
1040673 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-40.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/11/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-40.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.1 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 13:32:24

RESPONSE TEST ATTENUATION CHANGES

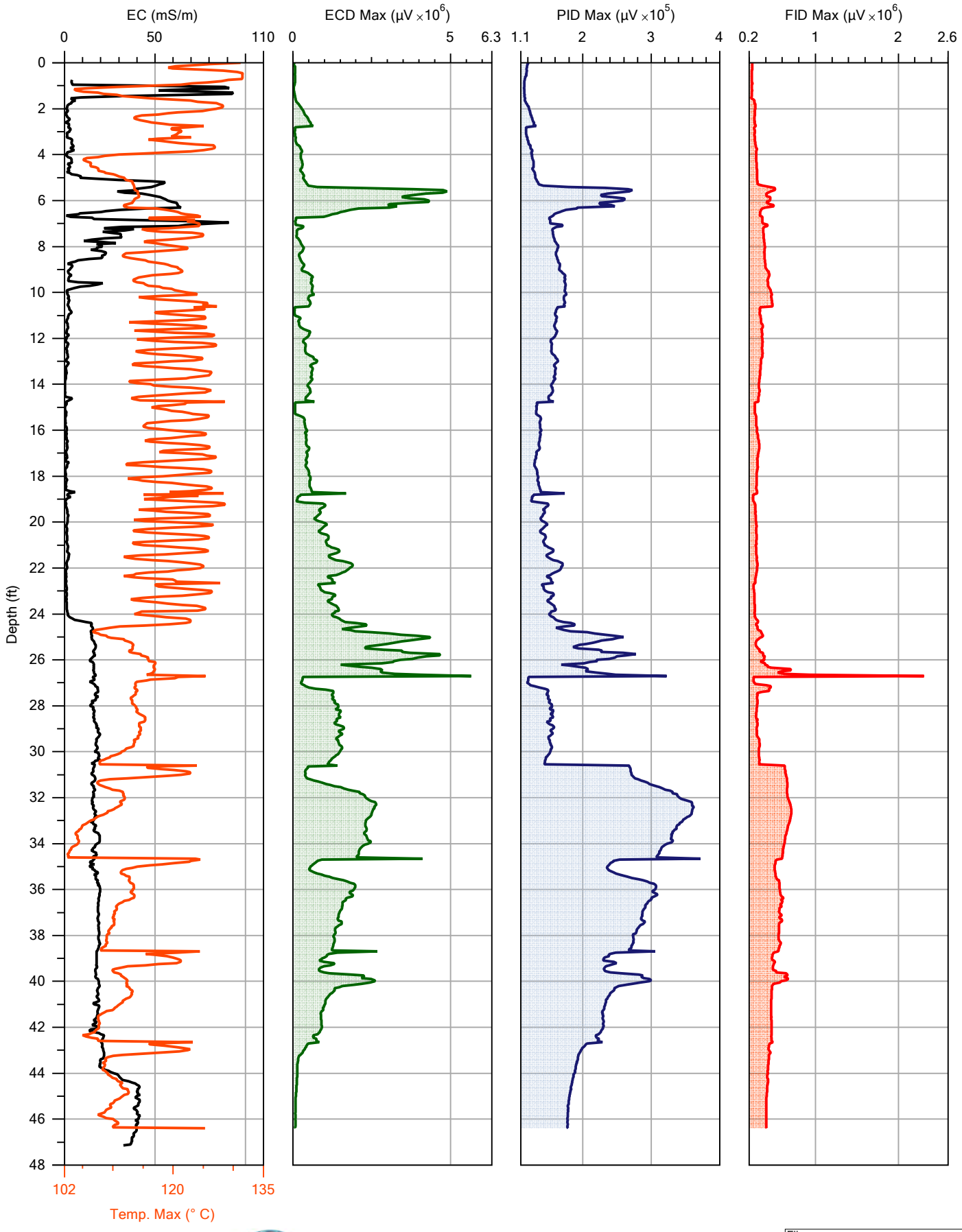
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

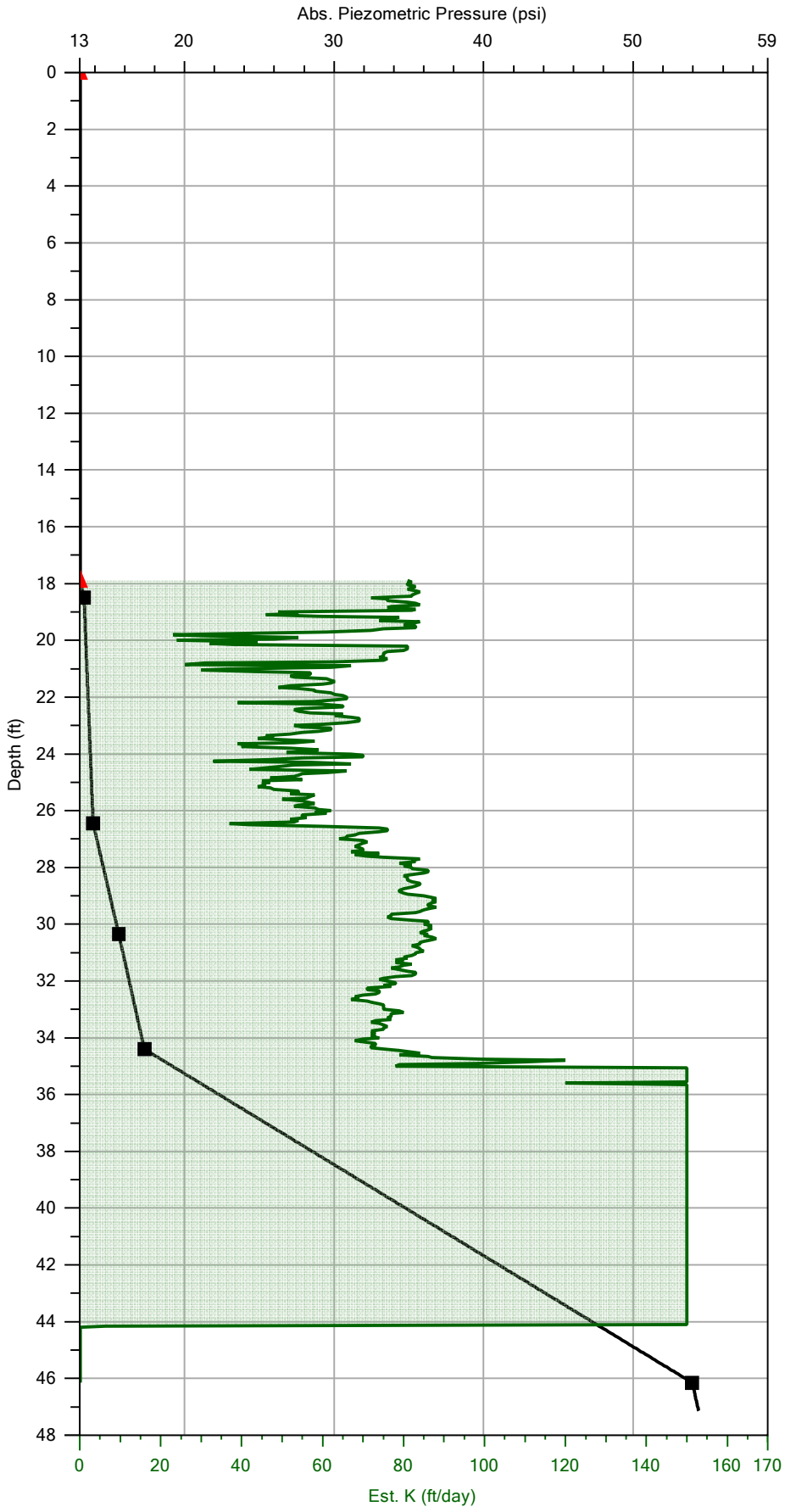
FILENAME: MIP-40.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.1 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 15:01:23

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-41.MHP
Company: SER90	Operator: Sammy		Date: 7/11/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location:



		File: MIP-41.MHP
Company: SER90	Operator: Sammy	Date: 7/11/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.3	7.9	PASS
High	290.0	305.3	5.3	PASS

MIP-41.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-41.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.7 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 15:12:09

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 11 2014 15:15:26

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.479	0.0	92.940
TOP with FLOW>0	14.090	301.1	97.150
BOTTOM with FLOW=0	13.239	0.0	91.280
BOTTOM with FLOW>0	13.862	292.9	95.580

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 11 2014 15:17:51

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.15	0.046	16	1	1	1
0.55	0.168	16	1	1	1

LOG END DEPTH: 46.40 ft (14.143 m)
LOG END TIME: Fri Jul 11 2014 16:56:43

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-41.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 35.9 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 17:20:25

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 11 2014 17:24:19

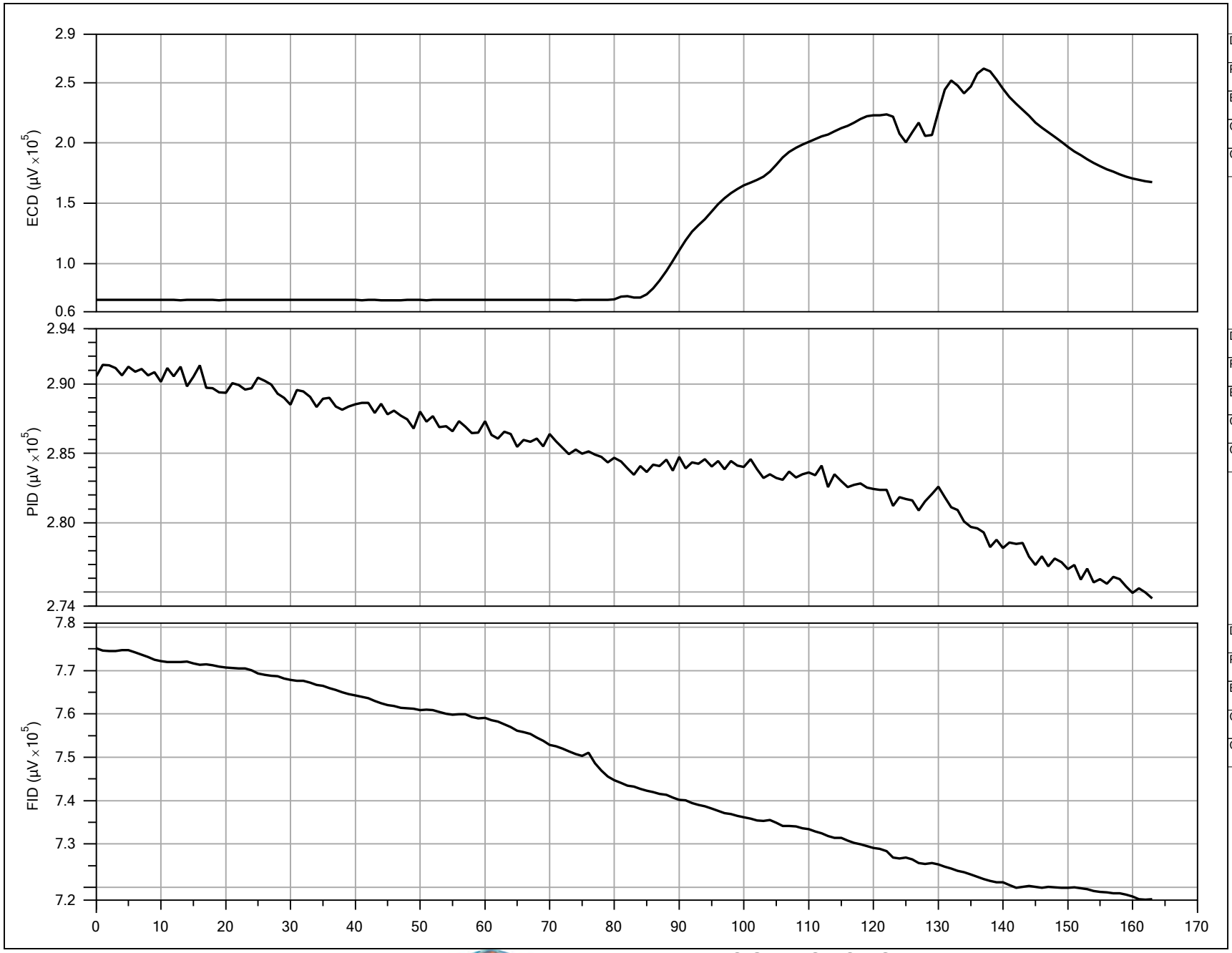
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.362	0.0	92.130
TOP with FLOW>0	14.347	351.3	98.920
BOTTOM with FLOW=0	13.153	0.0	90.690
BOTTOM with FLOW>0	14.105	350.3	97.250

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.2	PASS
High	290.0	305.4	5.3	PASS



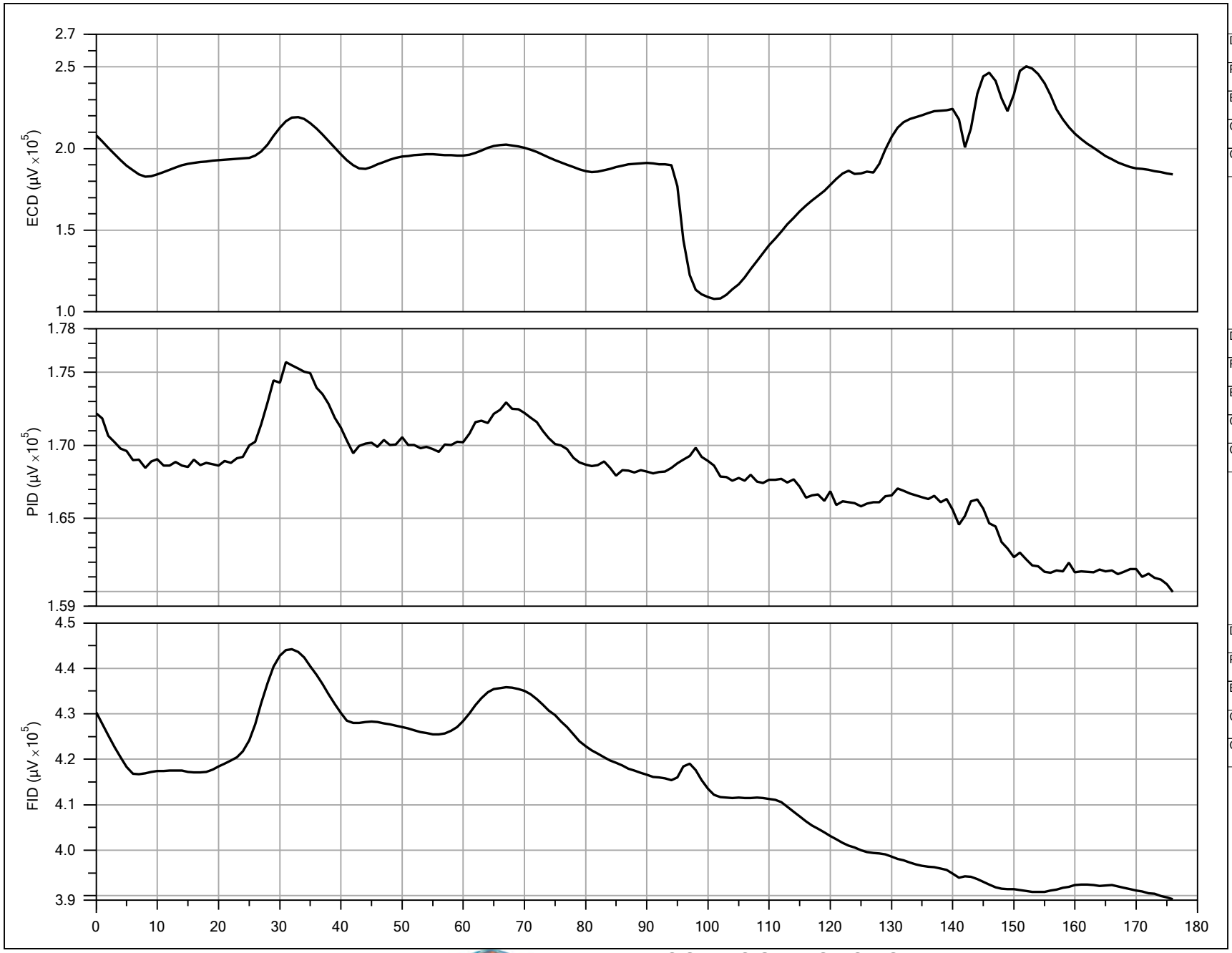
Detector:
ECD
Peak Response:
261582 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
291375 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
775102 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-41.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/11/2014



Detector:
ECD
Peak Response:
250298 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
175710 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
444235 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-41.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/11/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-41.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.7 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 15:12:09

RESPONSE TEST ATTENUATION CHANGES

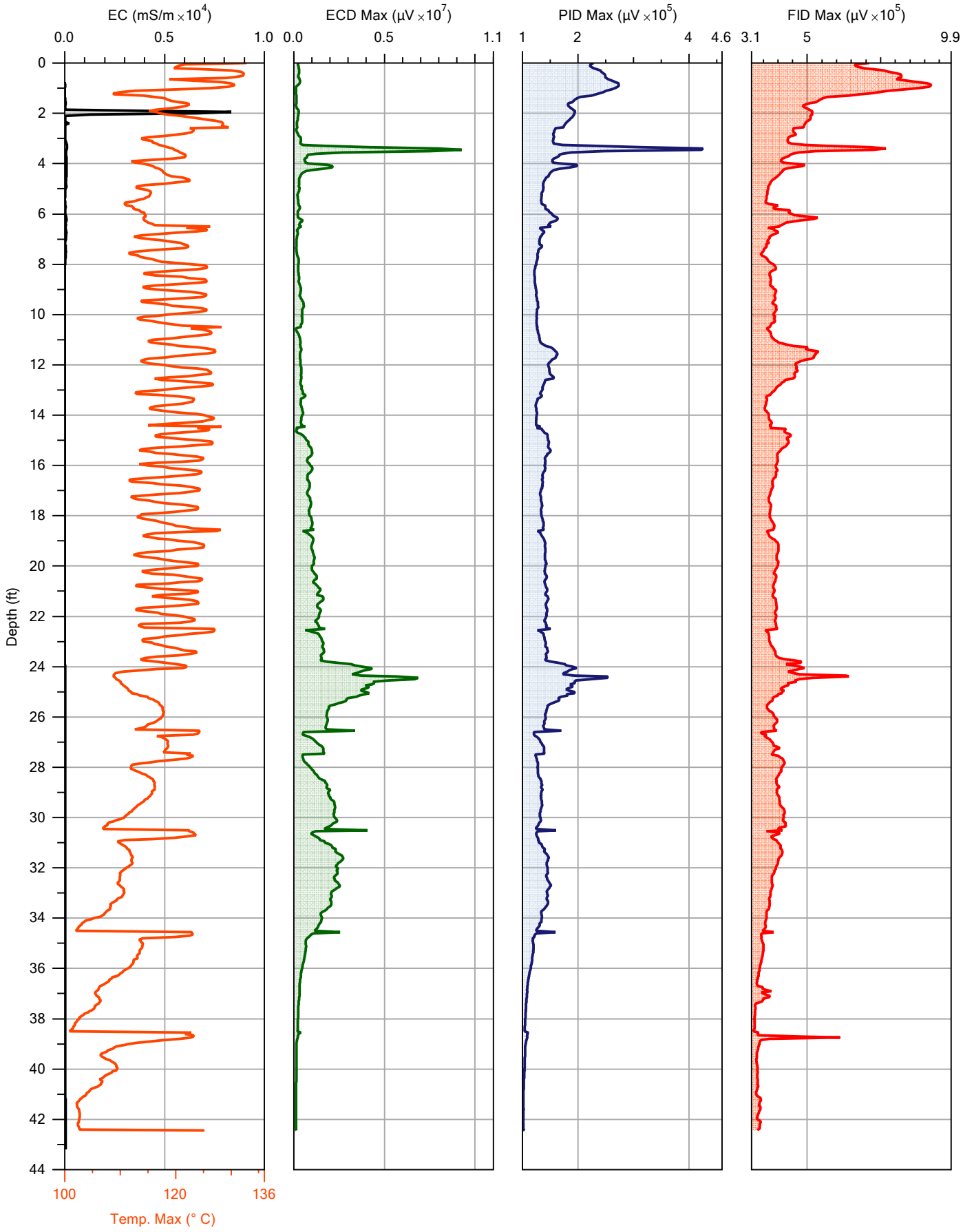
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

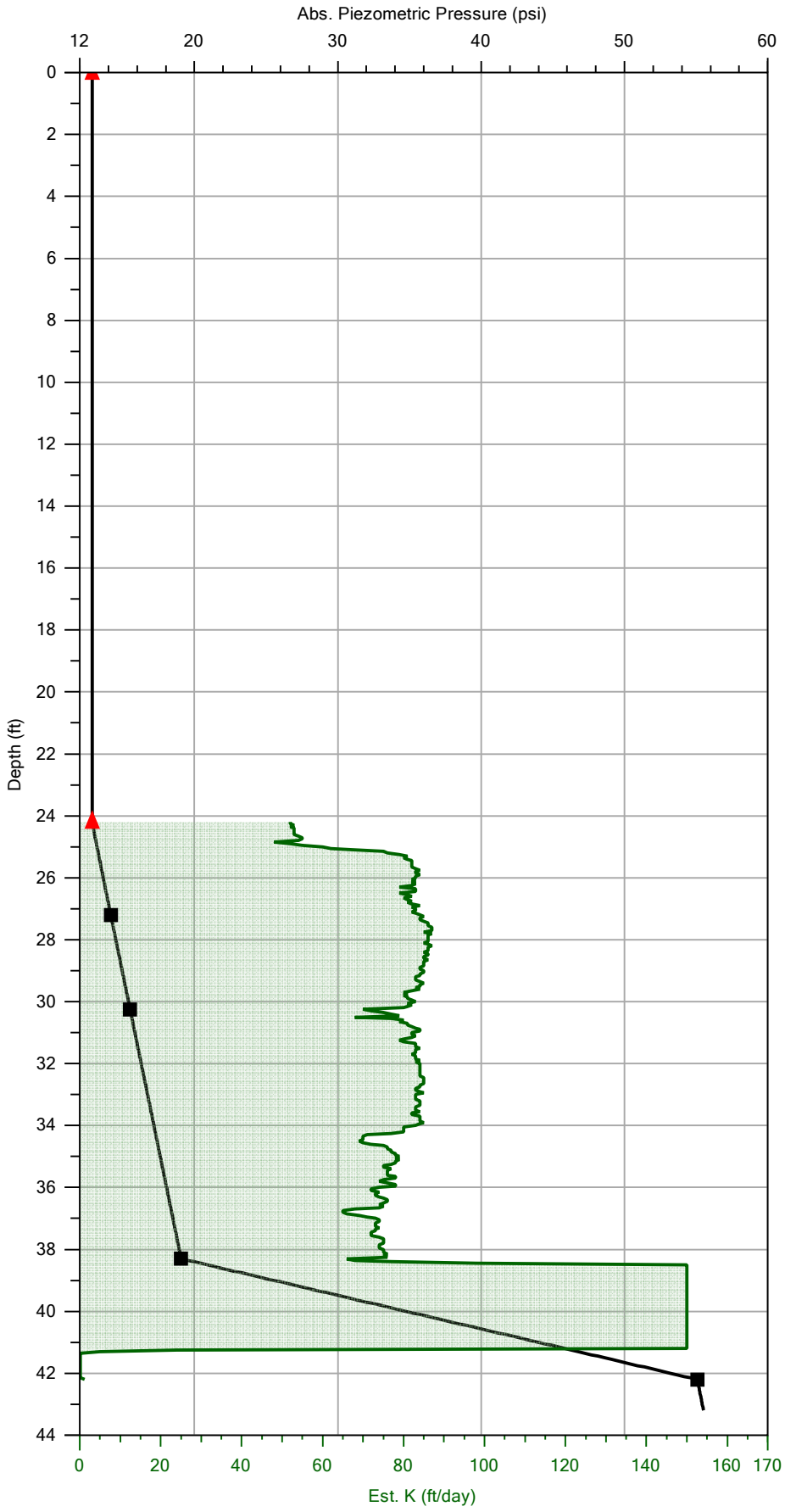
FILENAME: MIP-41.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 35.9 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 17:20:25

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-42.MHP
Company: SER90		Operator: Sammy	Date: 7/14/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:



			File: MIP-42.MHP
Company: SER90		Operator: Sammy	Date: 7/14/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	304.9	5.1	PASS

MIP-42.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-42.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.8 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 08:46:31

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Mon Jul 14 2014 08:49:55

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.223	0.0	91.170
TOP with FLOW>0	14.135	330.3	97.460
BOTTOM with FLOW=0	12.995	0.0	89.590
BOTTOM with FLOW>0	13.786	319.5	95.050

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Mon Jul 14 2014 08:51:52

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 42.45 ft (12.939 m)
LOG END TIME: Mon Jul 14 2014 09:54:58

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-42.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.4 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 10:26:37

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Jul 14 2014 10:30:03

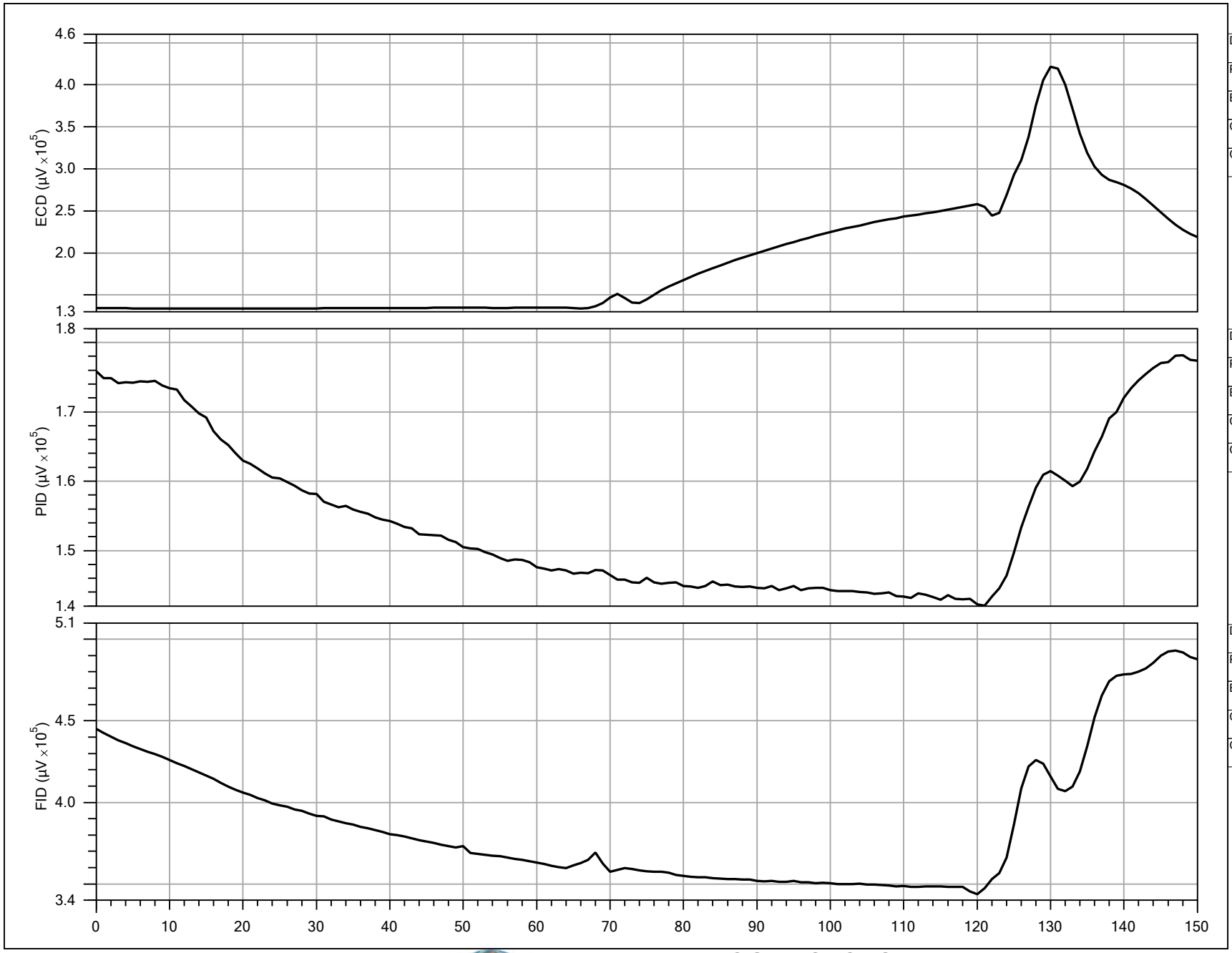
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.282	0.0	91.580
TOP with FLOW>0	13.961	312.5	96.260
BOTTOM with FLOW=0	13.065	0.0	90.080
BOTTOM with FLOW>0	13.665	311.1	94.220

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.4	PASS
High	290.0	303.9	4.8	PASS



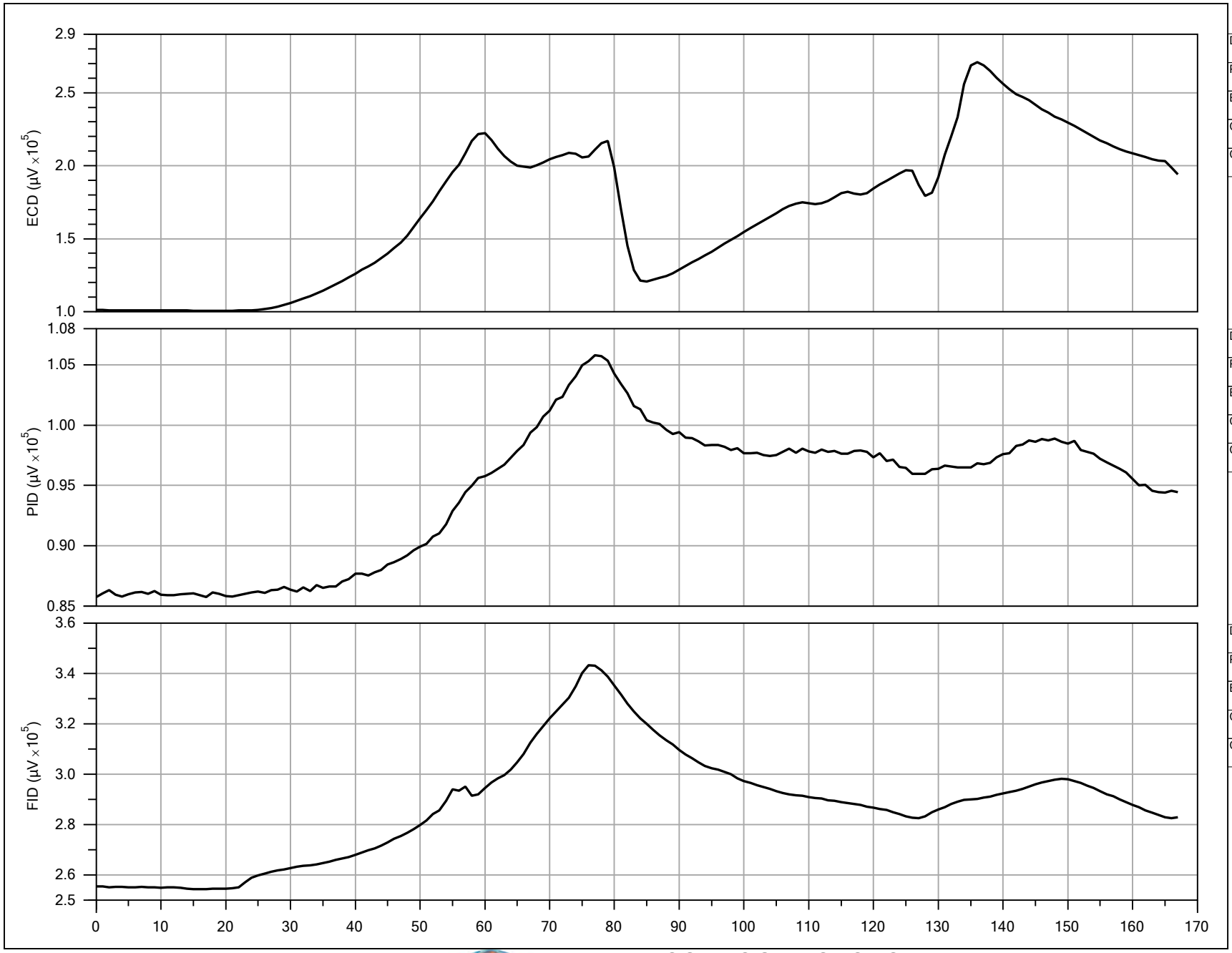
Detector:
ECD
Peak Response:
421567 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
178190 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
492988 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-42.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/14/2014



Detector:
ECD
Peak Response:
270852 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
105777 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
343173 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-42.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/14/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-42.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.8 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 08:46:31

RESPONSE TEST ATTENUATION CHANGES

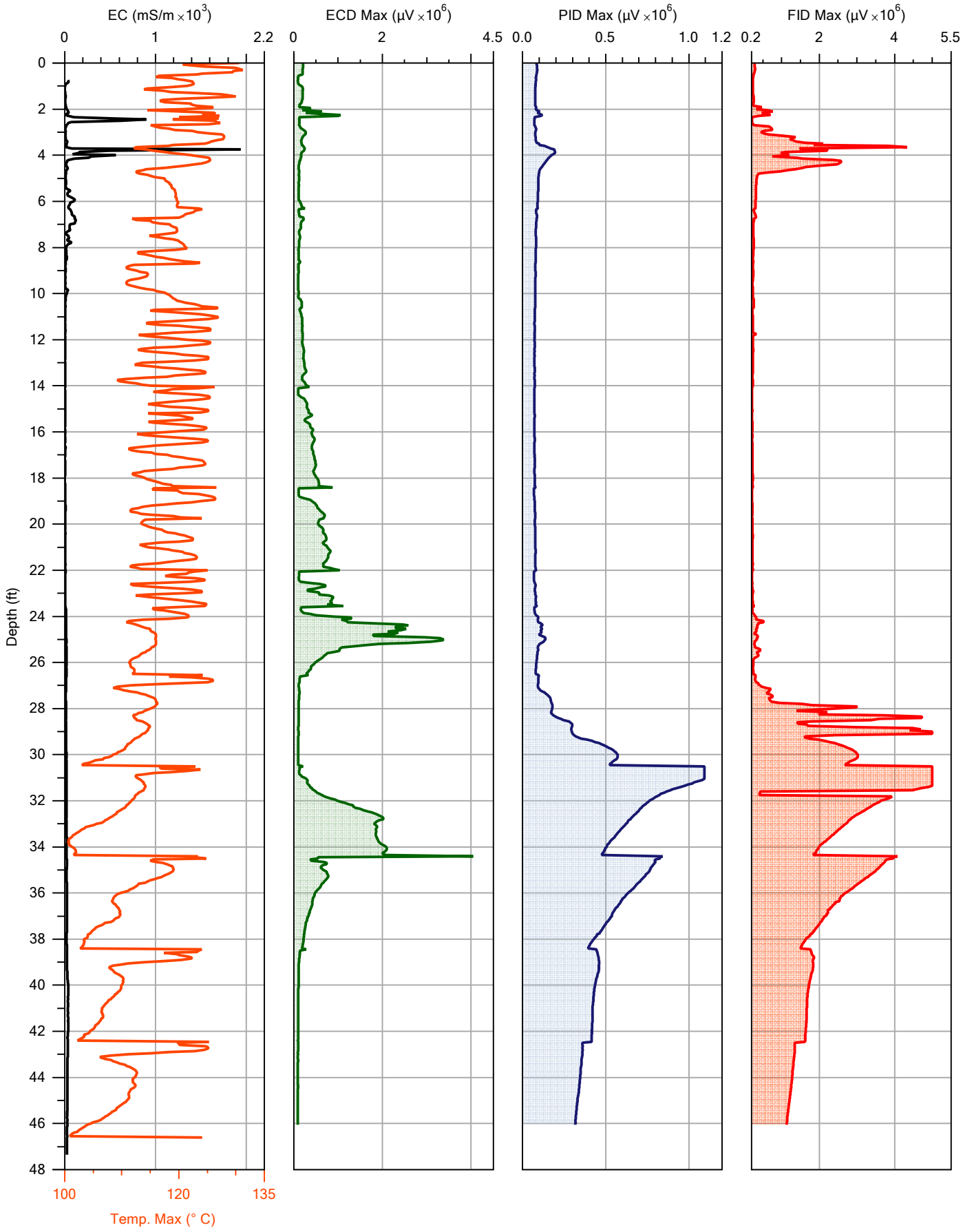
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

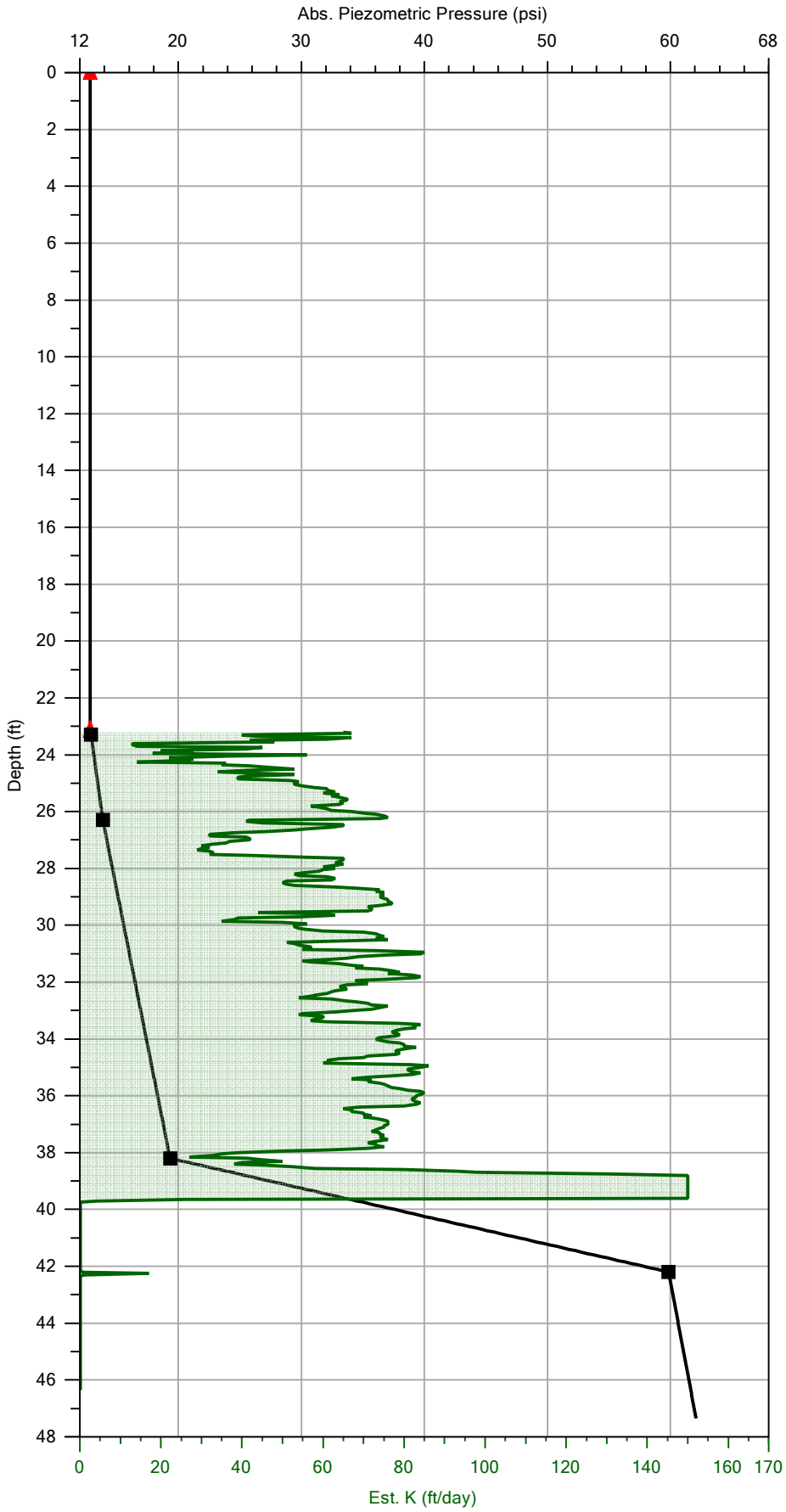
FILENAME: MIP-42.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.4 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 10:26:37

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-43.MHP
Company: SER90		Operator: Sammy	Date: 7/14/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:



			File: MIP-43.MHP
Company: SER90		Operator: Sammy	Date: 7/14/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.3	PASS
High	290.0	305.2	5.2	PASS

MIP-43.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-43.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.0 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 11:53:10

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Mon Jul 14 2014 11:55:36

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.258	0.0	91.410
TOP with FLOW>0	13.560	205.2	93.490
BOTTOM with FLOW=0	13.023	0.0	89.790
BOTTOM with FLOW>0	13.332	204.3	91.920

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Mon Jul 14 2014 11:57:35

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
31.80	9.693	16	1	10	1

LOG END DEPTH: 46.60 ft (14.204 m)
LOG END TIME: Mon Jul 14 2014 13:04:47

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-43.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.0 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 13:31:23

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Jul 14 2014 13:34:49

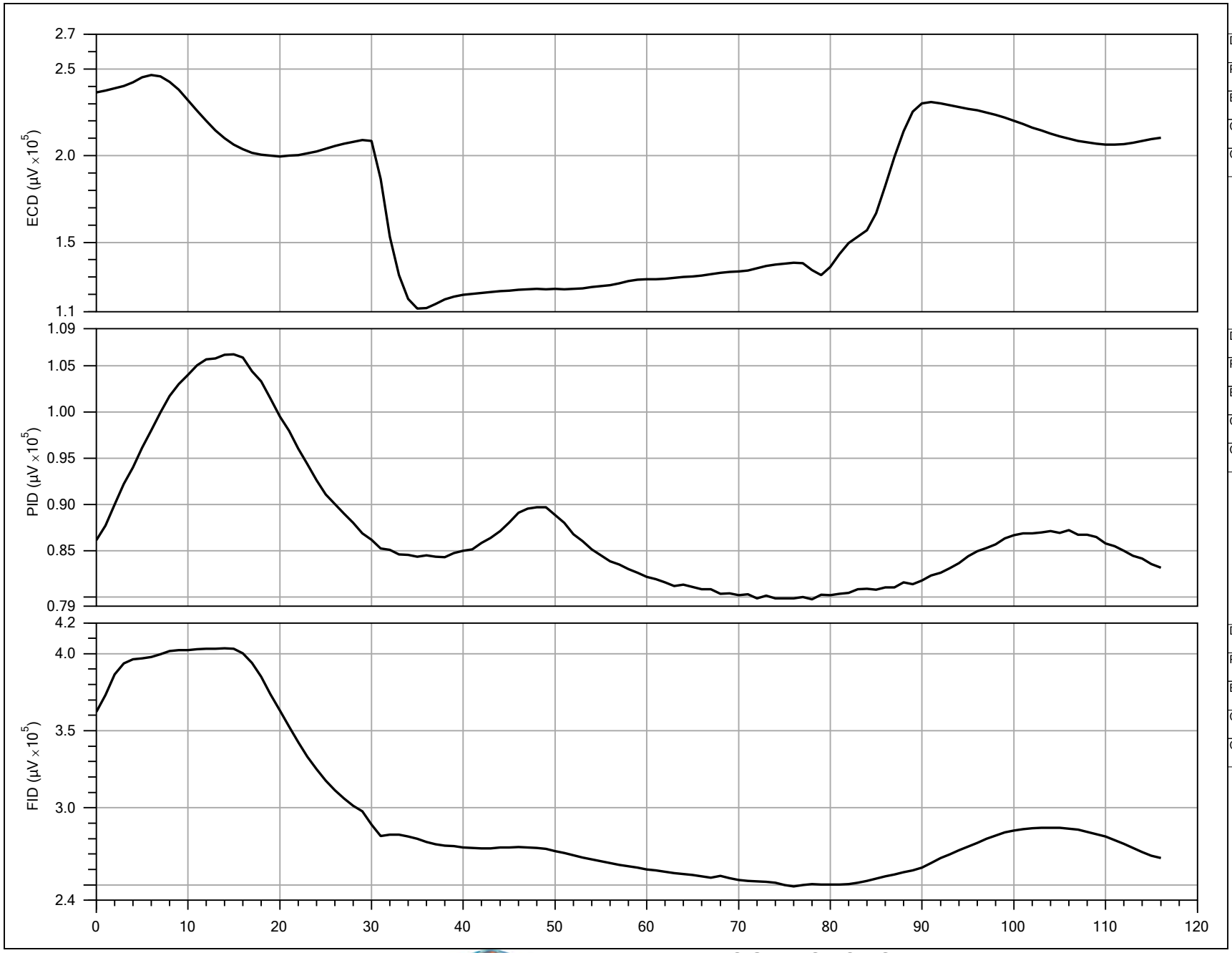
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.245	0.0	91.320
TOP with FLOW>0	13.613	205.4	93.860
BOTTOM with FLOW=0	13.020	0.0	89.770
BOTTOM with FLOW>0	13.406	208.6	92.430

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	304.9	5.1	PASS



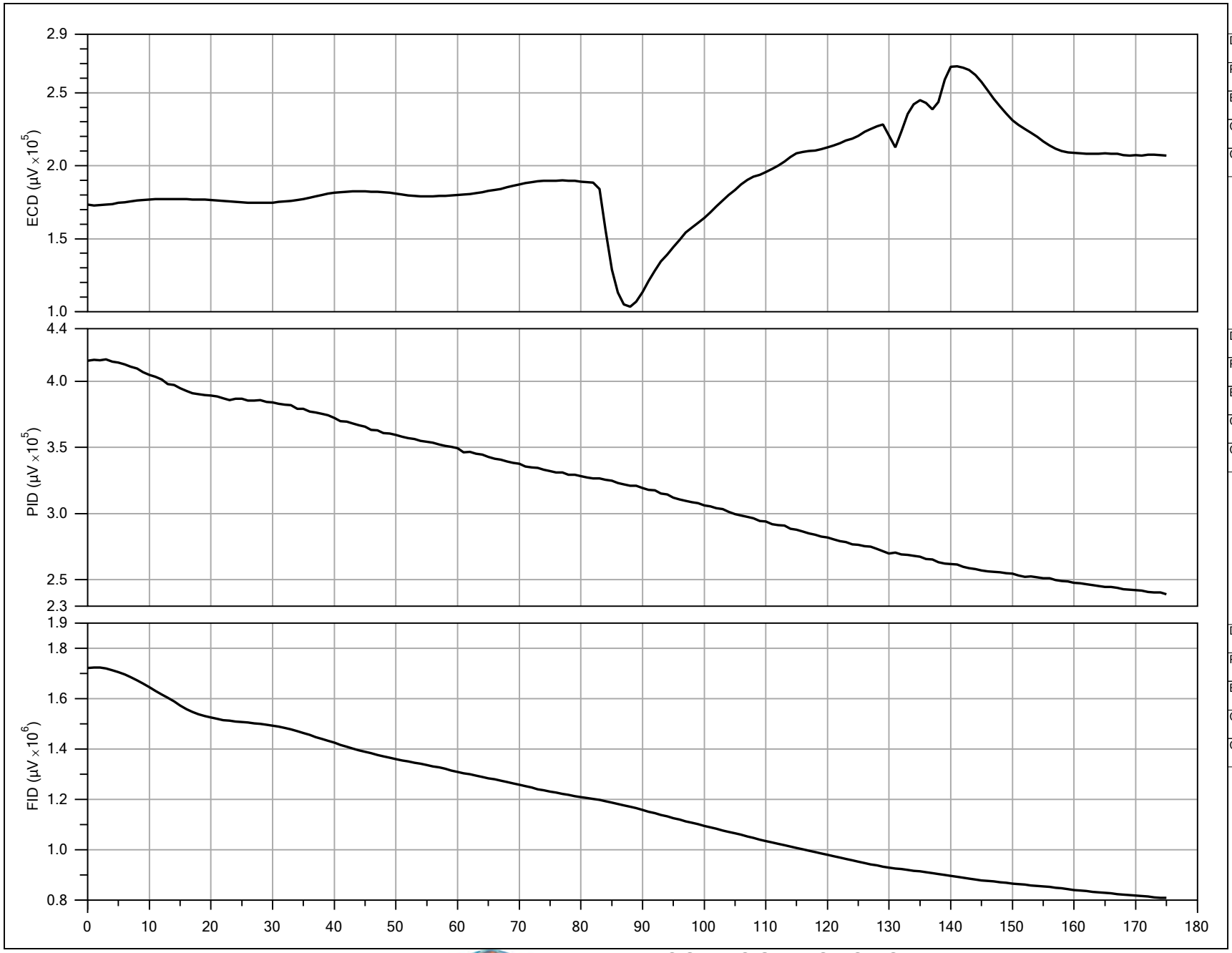
Detector:
ECD
Peak Response:
246612 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
106197 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
403516 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-43.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/14/2014



Detector:
ECD
Peak Response:
268006 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
416692 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
1723624 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-43.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/14/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-43.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.0 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 11:53:10

RESPONSE TEST ATTENUATION CHANGES

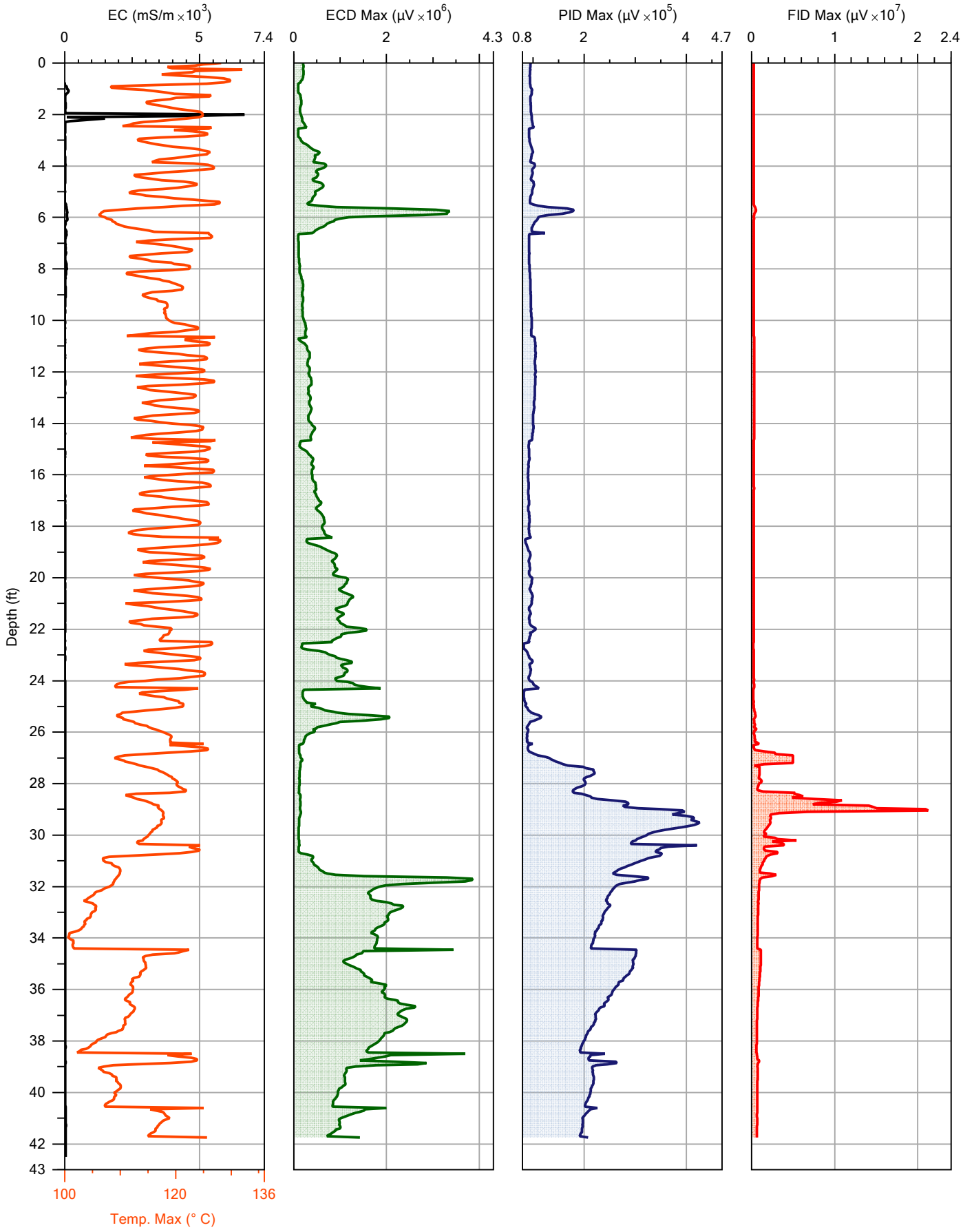
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

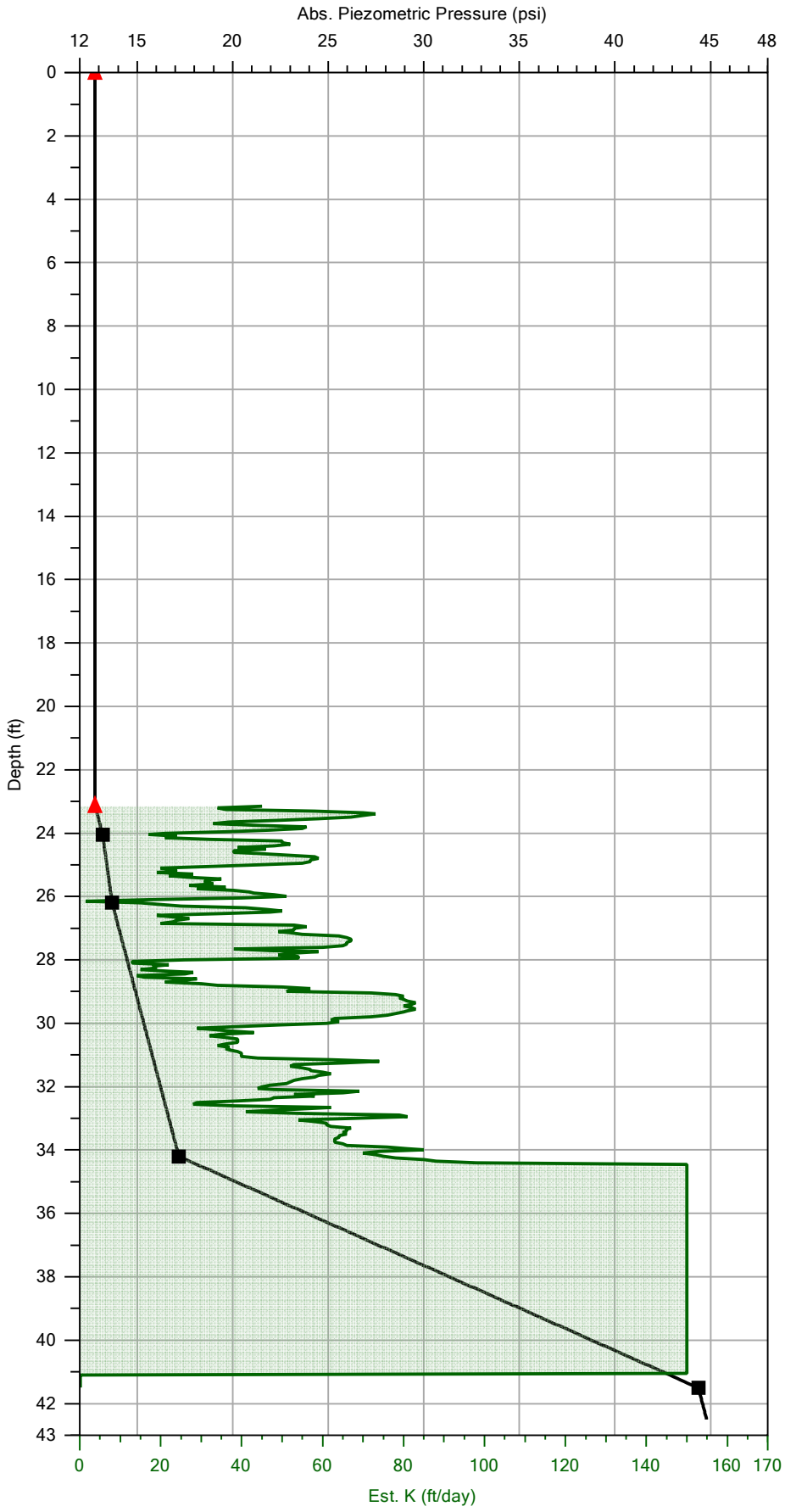
FILENAME: MIP-43.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.0 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 13:31:23

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-44.MHP
Company: SER90		Operator: Sammy	Date: 7/14/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:



			File: MIP-44.MHP
Company: SER90		Operator: Sammy	Date: 7/14/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.1	5.5	PASS
High	290.0	303.7	4.7	PASS

MIP-44.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-44.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.3 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 14:48:24

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Mon Jul 14 2014 14:51:34

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.220	0.0	91.150
TOP with FLOW>0	13.612	214.6	93.850
BOTTOM with FLOW=0	13.013	0.0	89.720
BOTTOM with FLOW>0	13.419	210.3	92.520

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Mon Jul 14 2014 14:53:59

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
13.00	3.962	16	1	1	1
27.35	8.336	16	1	10	1

LOG END DEPTH: 41.75 ft (12.725 m)
LOG END TIME: Mon Jul 14 2014 15:58:22

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-44.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.2 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 16:24:20

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Jul 14 2014 16:27:28

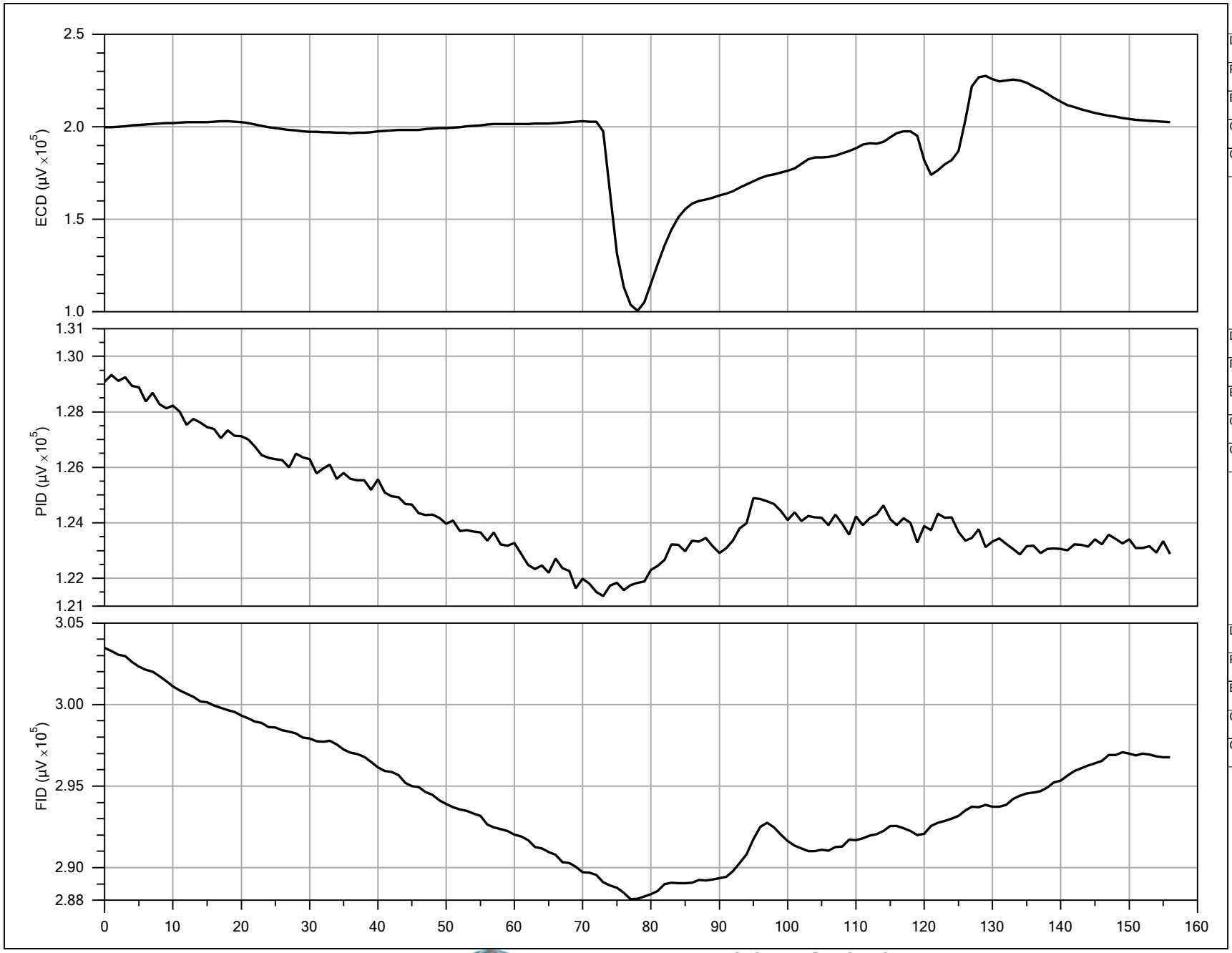
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.188	0.0	90.930
TOP with FLOW>0	13.575	208.1	93.600
BOTTOM with FLOW=0	12.984	0.0	89.520
BOTTOM with FLOW>0	13.325	208.8	91.870

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.8	PASS
High	290.0	304.9	5.1	PASS



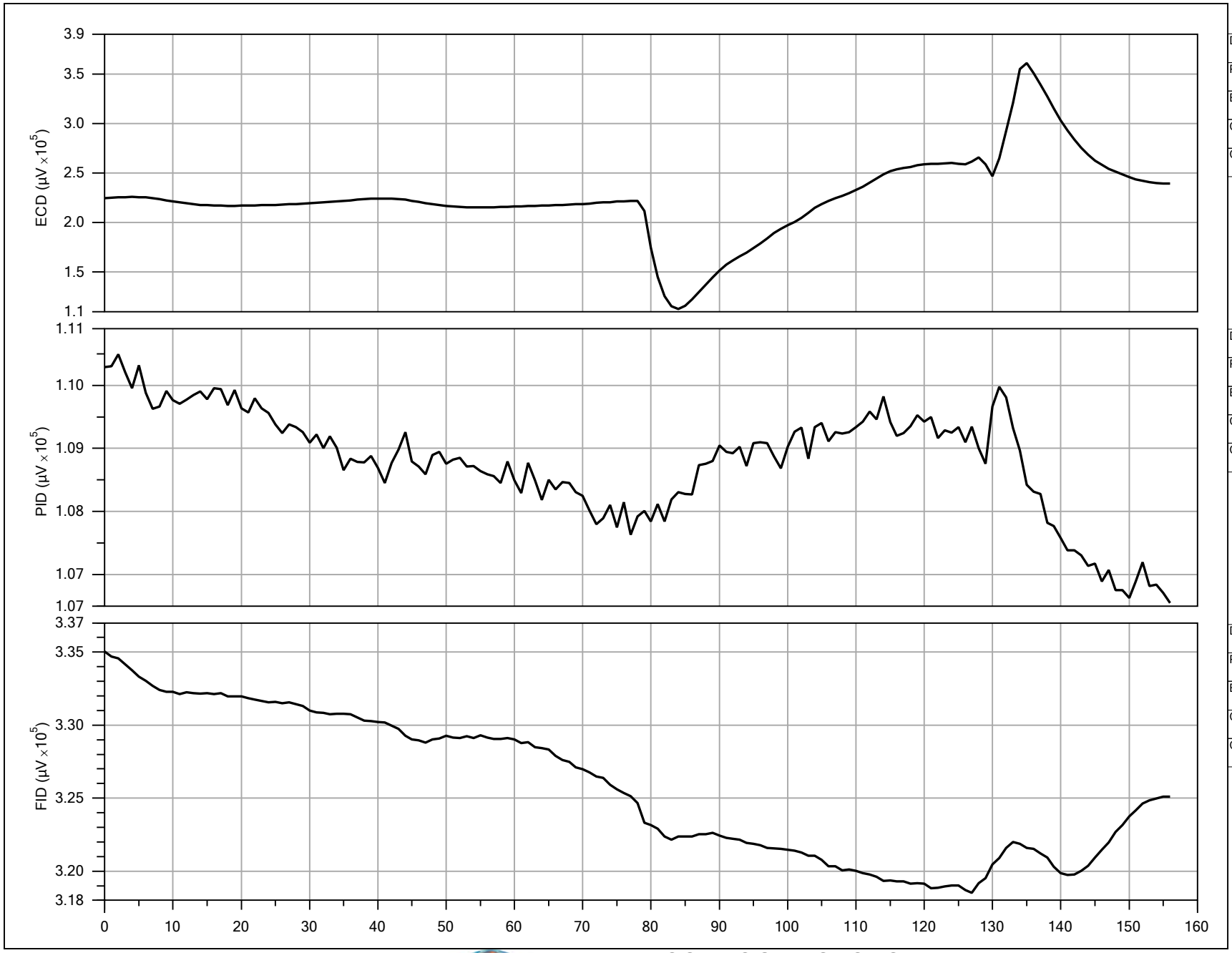
Detector:
ECD
Peak Response:
227462 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
129322 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
303461 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-44.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/14/2014



Detector:
ECD
Peak Response:
360866 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
110492 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
335025 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-44.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/14/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-44.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.3 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 14:48:24

RESPONSE TEST ATTENUATION CHANGES

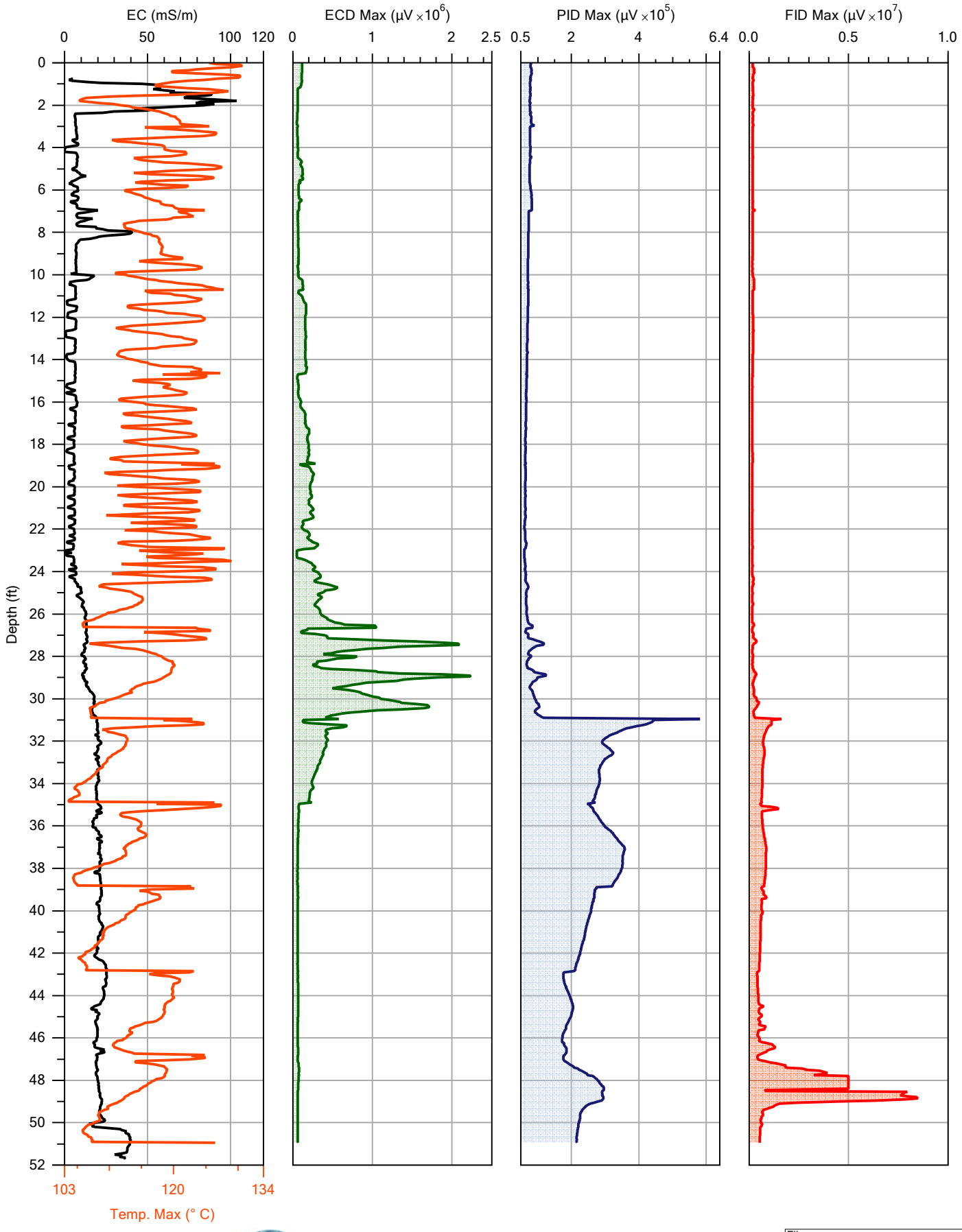
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

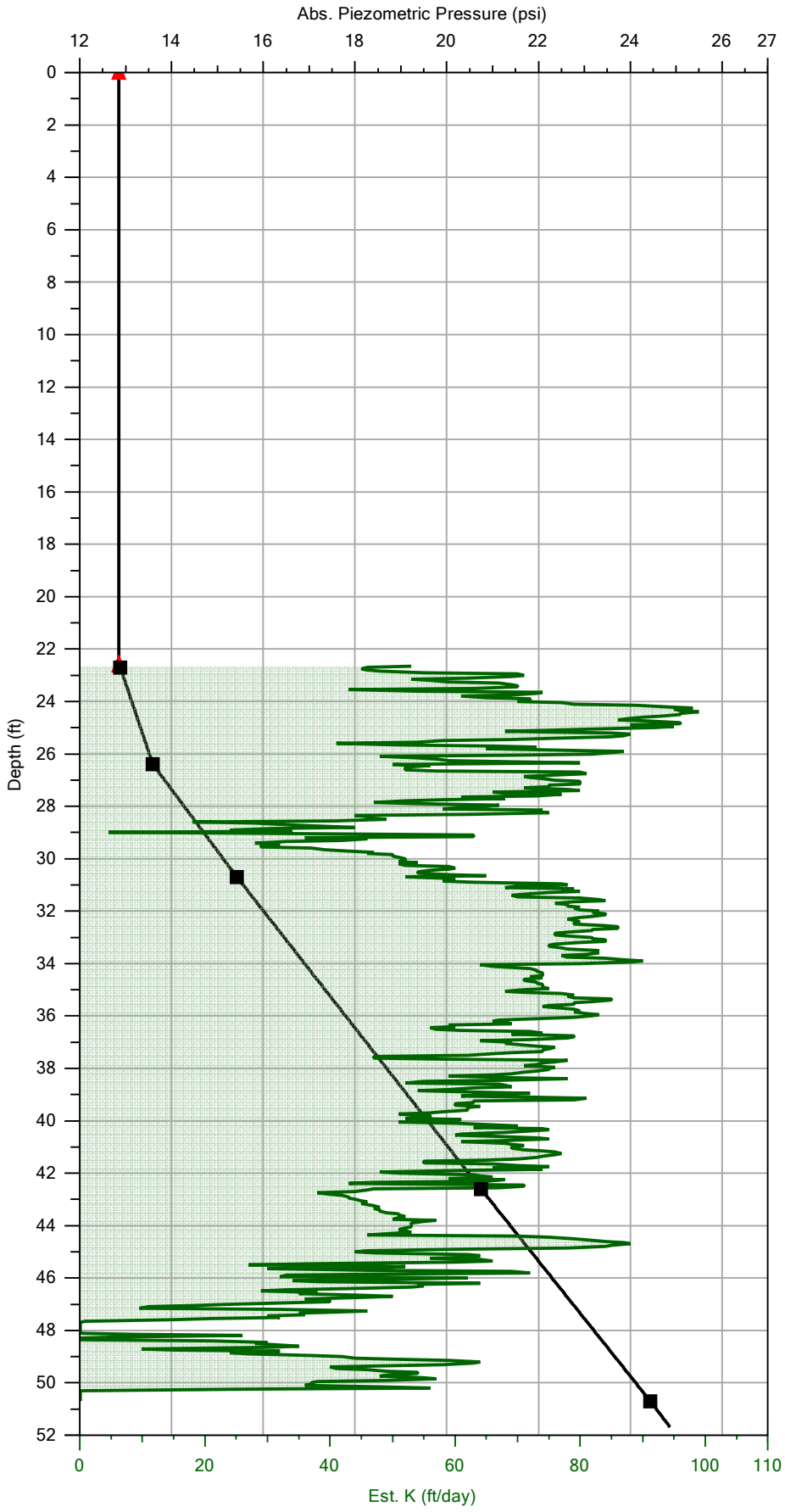
FILENAME: MIP-44.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.2 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 16:24:20

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-45.MHP
Company: SER90		Operator: Sammy	Date: 7/15/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:



			File: MIP-45.MHP
Company: SER90		Operator: Sammy	Date: 7/15/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.1	5.6	PASS
High	290.0	304.6	5.0	PASS

MIP-45.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-45.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 07:59:29

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 15 2014 08:02:17

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.277	0.0	91.540
TOP with FLOW>0	13.636	213.0	94.020
BOTTOM with FLOW=0	13.051	0.0	89.990
BOTTOM with FLOW>0	13.447	212.2	92.720

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Tue Jul 15 2014 08:07:50

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
48.55	14.798	16	1	10	1

LOG END DEPTH: 50.95 ft (15.530 m)
LOG END TIME: Tue Jul 15 2014 09:32:52

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-45.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.1 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 09:56:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 15 2014 10:00:19

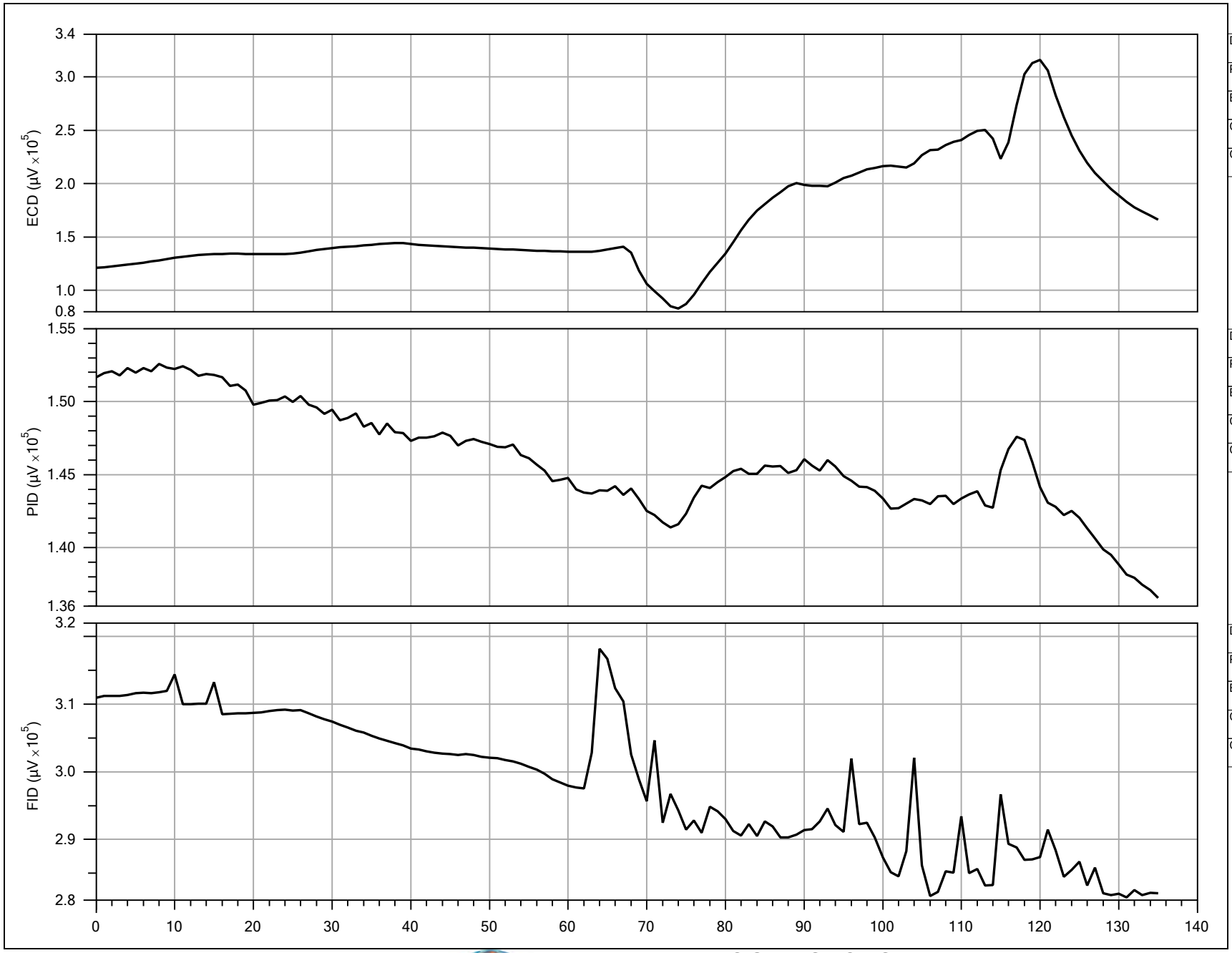
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.217	0.0	91.130
TOP with FLOW>0	13.634	207.3	94.000
BOTTOM with FLOW=0	12.998	0.0	89.620
BOTTOM with FLOW>0	13.425	207.7	92.560

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.2	PASS
High	290.0	305.0	5.2	PASS



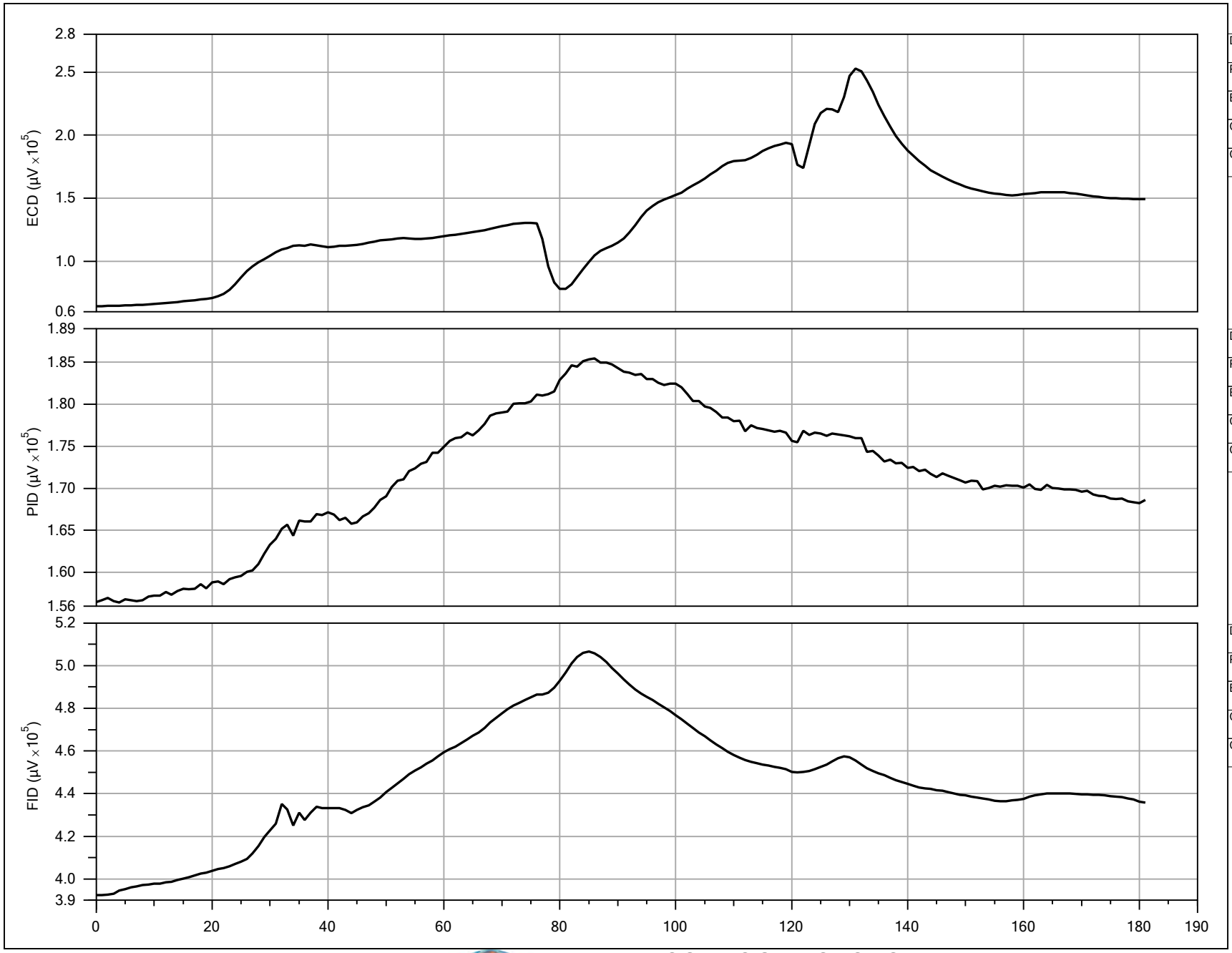
Detector:
ECD
Peak Response:
316118 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
152577 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
318148 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-45.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/15/2014



Detector:
ECD
Peak Response:
252792 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
185461 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
506508 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-45.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/15/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-45.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 07:59:29

RESPONSE TEST ATTENUATION CHANGES

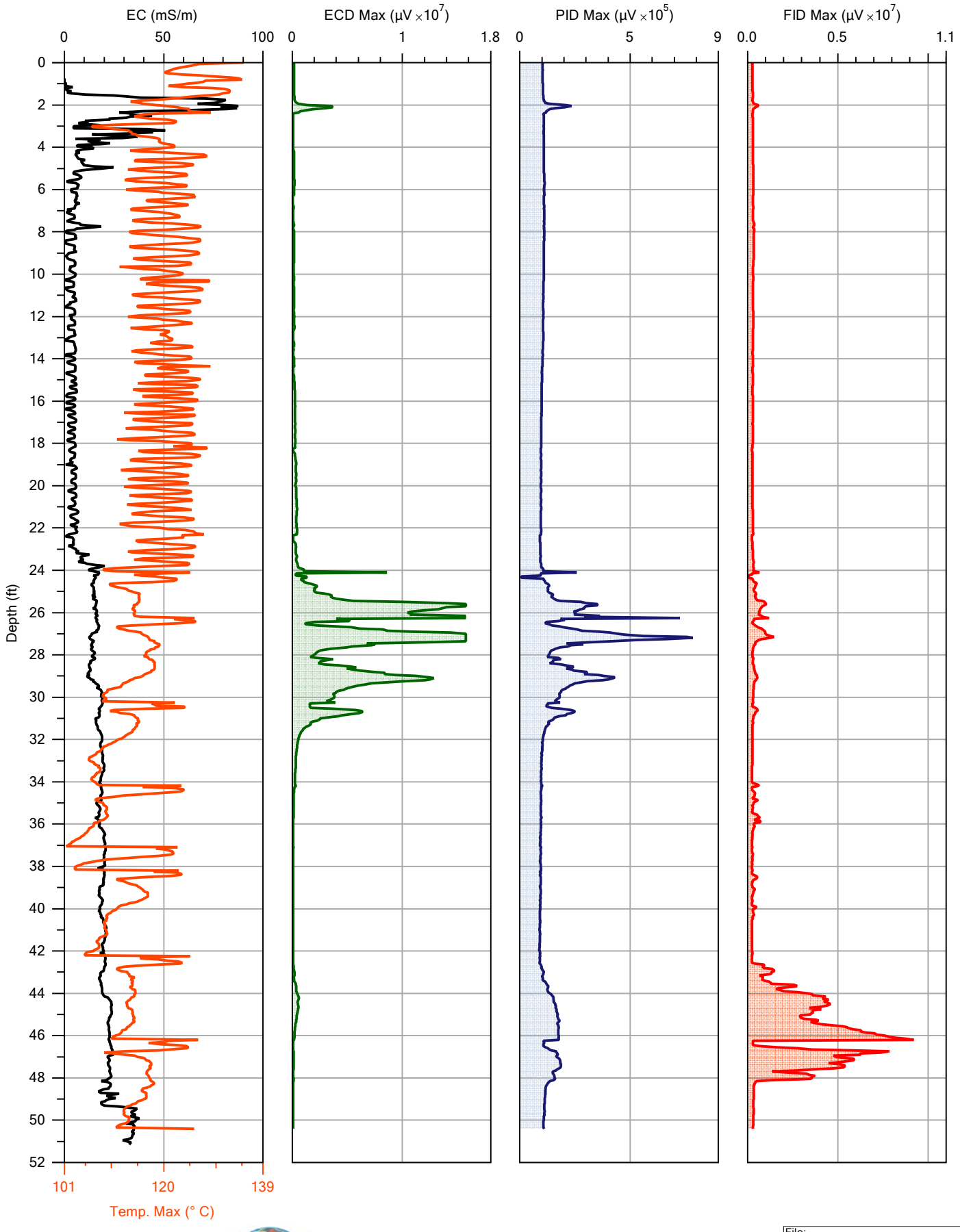
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

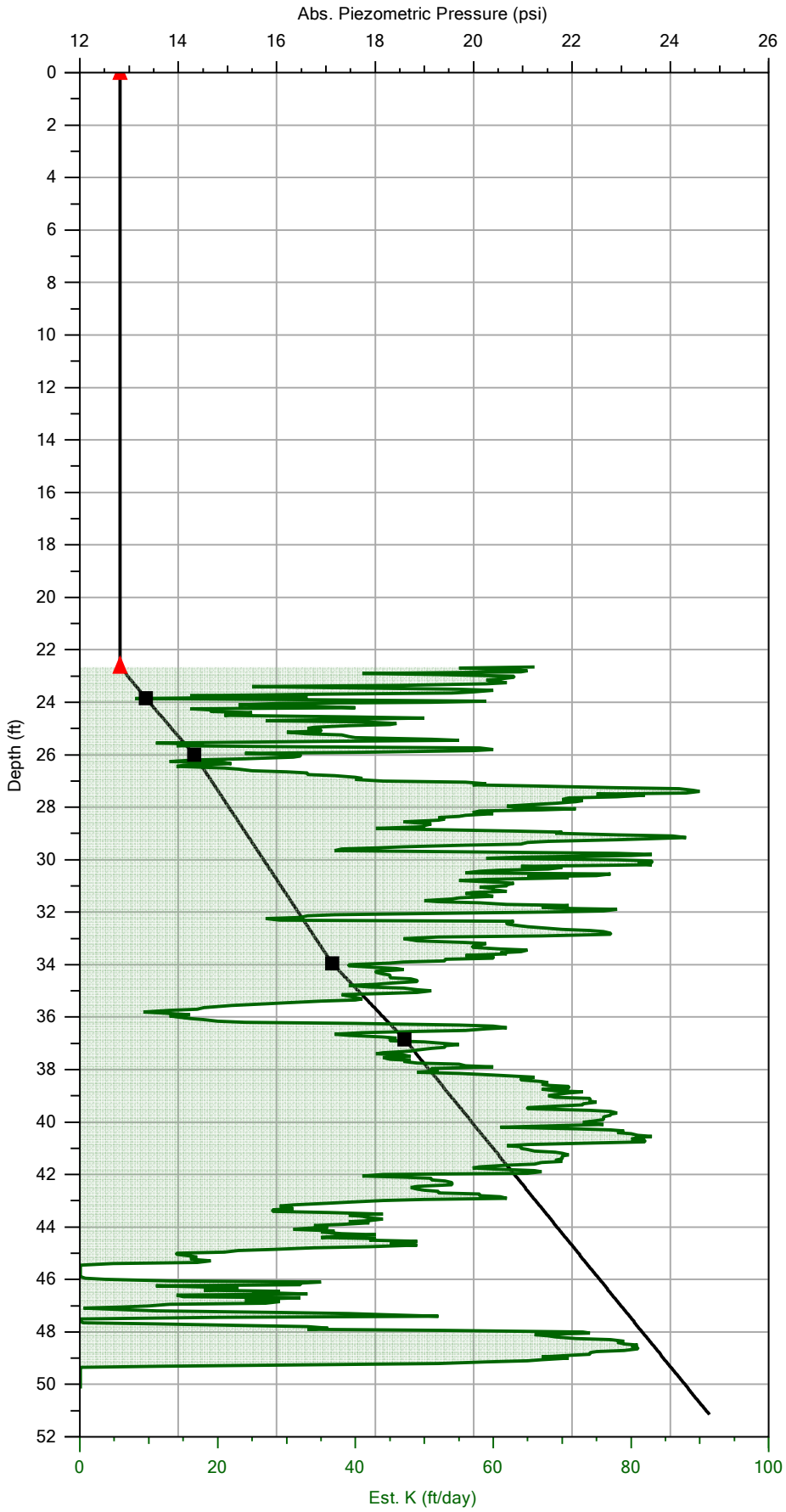
FILENAME: MIP-45.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.1 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 09:56:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-46.MHP
Company: SER90		Operator: Sammy	Date: 7/15/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:



			File: MIP-46.MHP
Company: SER90		Operator: Sammy	Date: 7/15/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.4	PASS
High	290.0	304.8	5.1	PASS

MIP-46.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-46.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.1 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 10:03:55

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 15 2014 10:07:06

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.191	0.0	90.950
TOP with FLOW>0	13.618	205.9	93.900
BOTTOM with FLOW=0	12.952	0.0	89.300
BOTTOM with FLOW>0	13.363	206.4	92.140

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (179.2 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (68.4 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jul 15 2014 10:09:01

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
24.40	7.437	16	16	10	1

LOG END DEPTH: 50.40 ft (15.362 m)
LOG END TIME: Tue Jul 15 2014 12:18:11

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-46.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.5 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 12:44:15

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 15 2014 12:47:39

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.248	0.0	91.340
TOP with FLOW>0	13.798	244.3	95.130
BOTTOM with FLOW=0	13.034	0.0	89.870
BOTTOM with FLOW>0	13.604	244.6	93.790

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	304.9	5.1	PASS

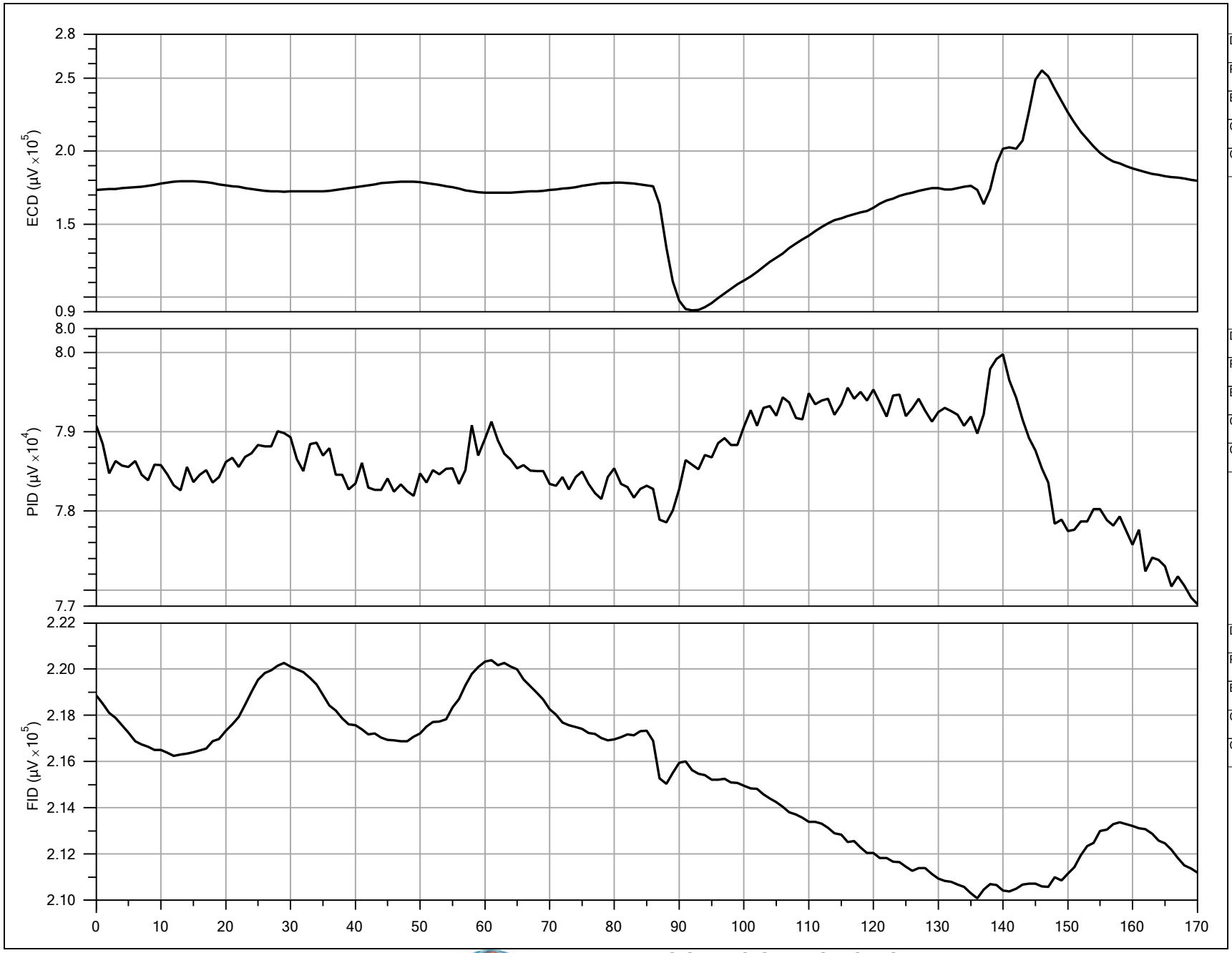
Detector:
ECD
Peak Response:
251717 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
149976 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
395978 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-46.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/15/2014



Detector:
ECD
Peak Response:
255348 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
79974 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
220382 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-46.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/15/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-46.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.1 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 10:03:55

RESPONSE TEST ATTENUATION CHANGES

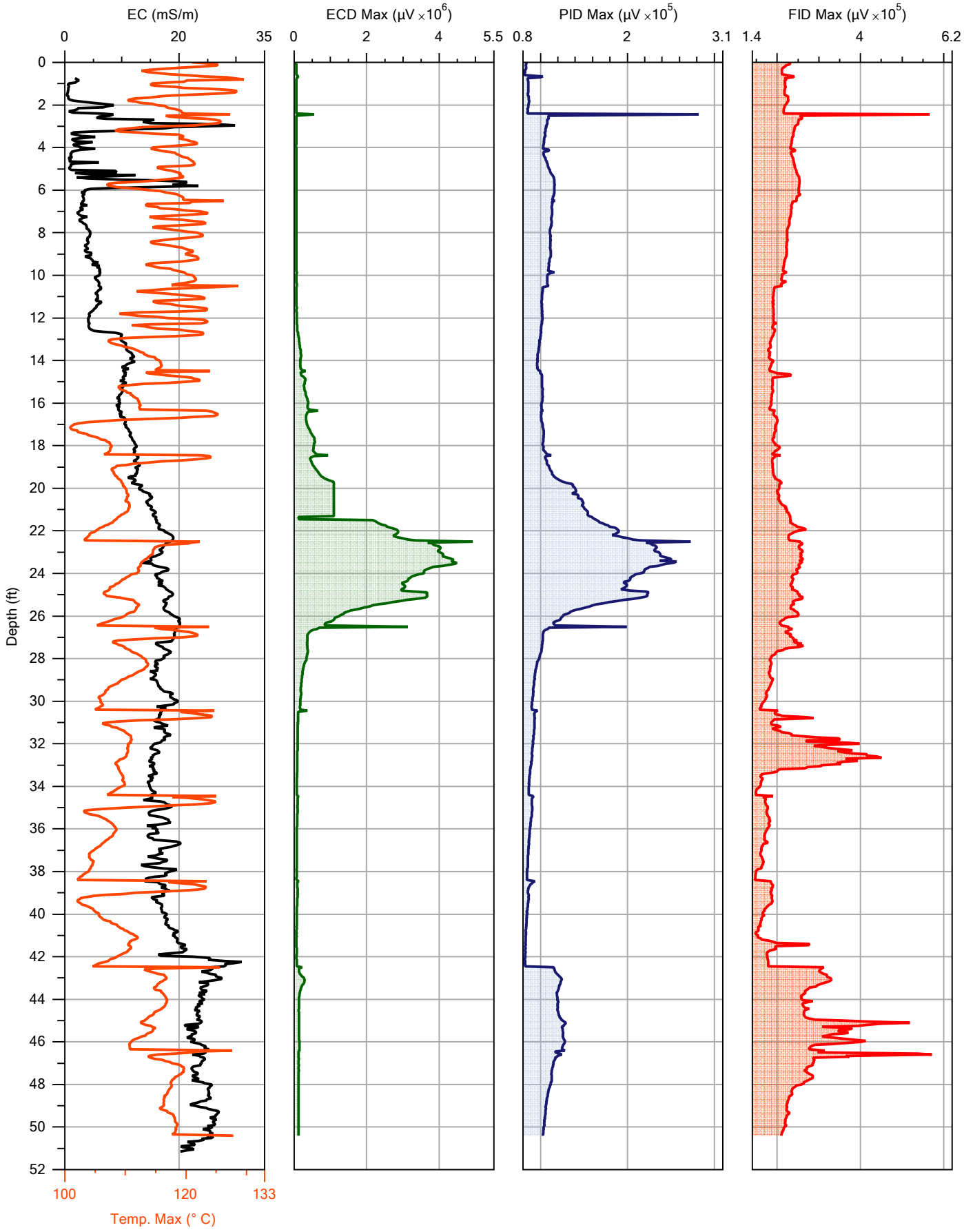
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

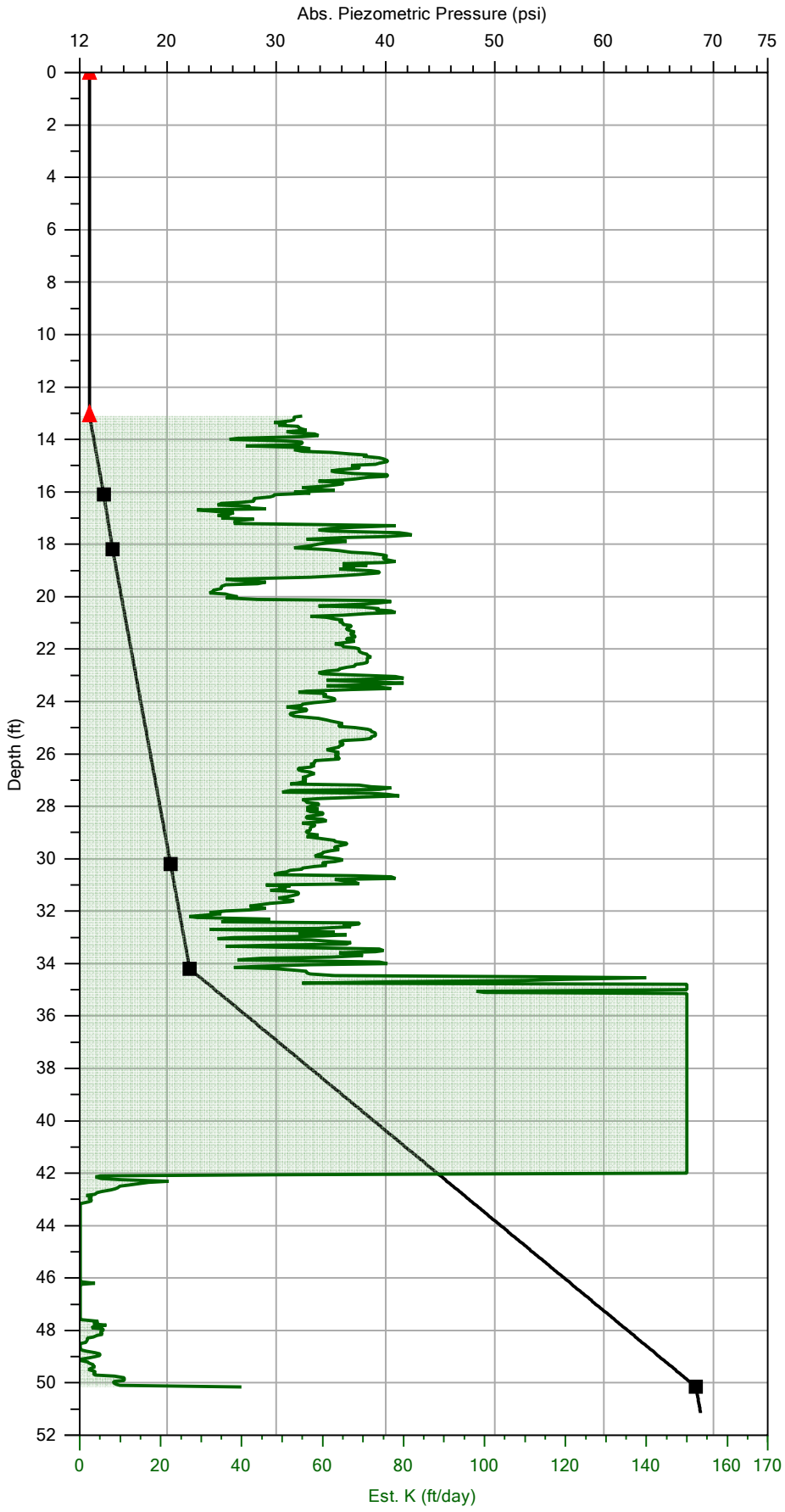
FILENAME: MIP-46.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.5 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 12:44:15

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-47.MHP
Company: SER90		Operator: Sammy	Date: 7/15/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 41″ N, 83° 56′ 29″ W



		File: MIP-47.MHP
Company: SER90	Operator: Sammy	Date: 7/15/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 41″ N, 83° 56′ 29″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.6	PASS
High	290.0	302.7	4.4	PASS

MIP-47.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-47.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.1 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 15:14:42

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 85 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 15 2014 15:20:55

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.273	0.0	91.510
TOP with FLOW>0	13.797	254.4	95.130
BOTTOM with FLOW=0	13.057	0.0	90.030
BOTTOM with FLOW>0	13.670	250.5	94.250

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Tue Jul 15 2014 15:23:43

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
21.50	6.553	16	1	1	1

LOG END DEPTH: 50.40 ft (15.362 m)
LOG END TIME: Tue Jul 15 2014 16:39:00

LATITUDE: 41.994733508
LONGITUDE: -83.941264747
ELEVATION: 207.823 METERS 681.83 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-47.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 17:05:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 15 2014 17:07:32

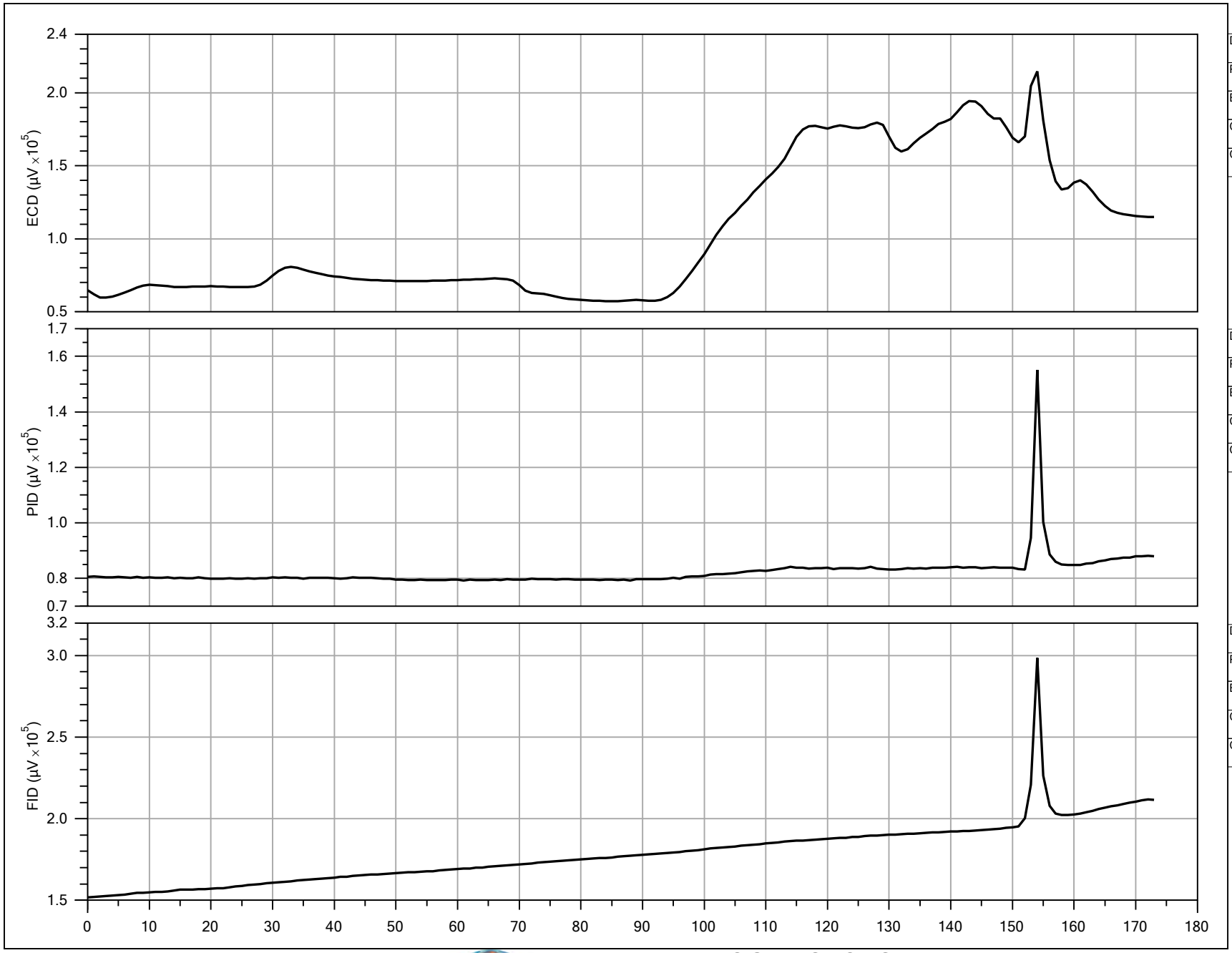
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.284	0.0	91.590
TOP with FLOW>0	13.740	251.0	94.730
BOTTOM with FLOW=0	13.051	0.0	89.980
BOTTOM with FLOW>0	13.533	254.2	93.300

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.2	PASS
High	290.0	306.2	5.6	PASS



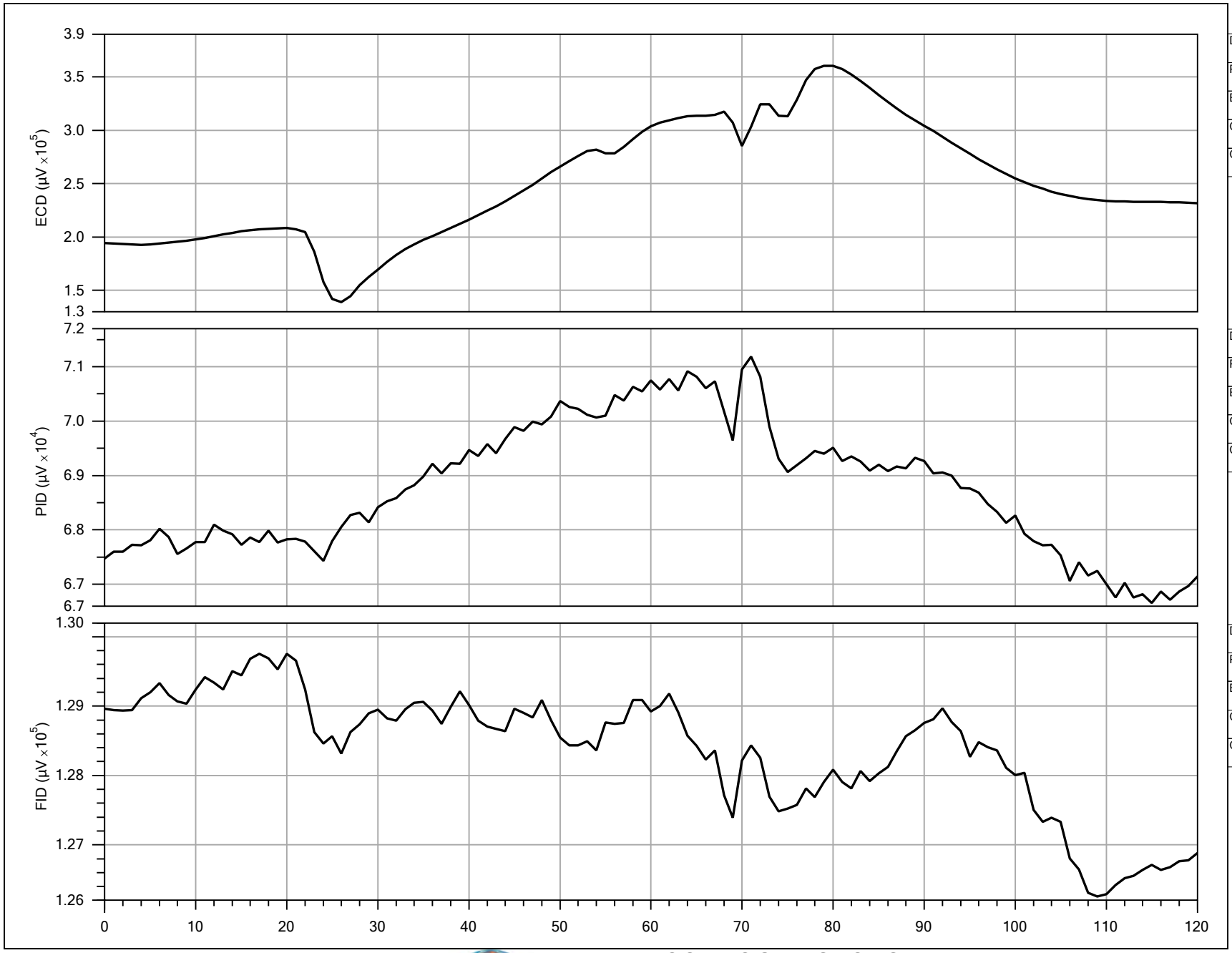
Detector:
ECD
Peak Response:
214545 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
155148 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
298410 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-47.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/15/2014



Detector:
ECD
Peak Response:
360462 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
71184 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
129757 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-47.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/15/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-47.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.1 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 15:14:42

RESPONSE TEST ATTENUATION CHANGES

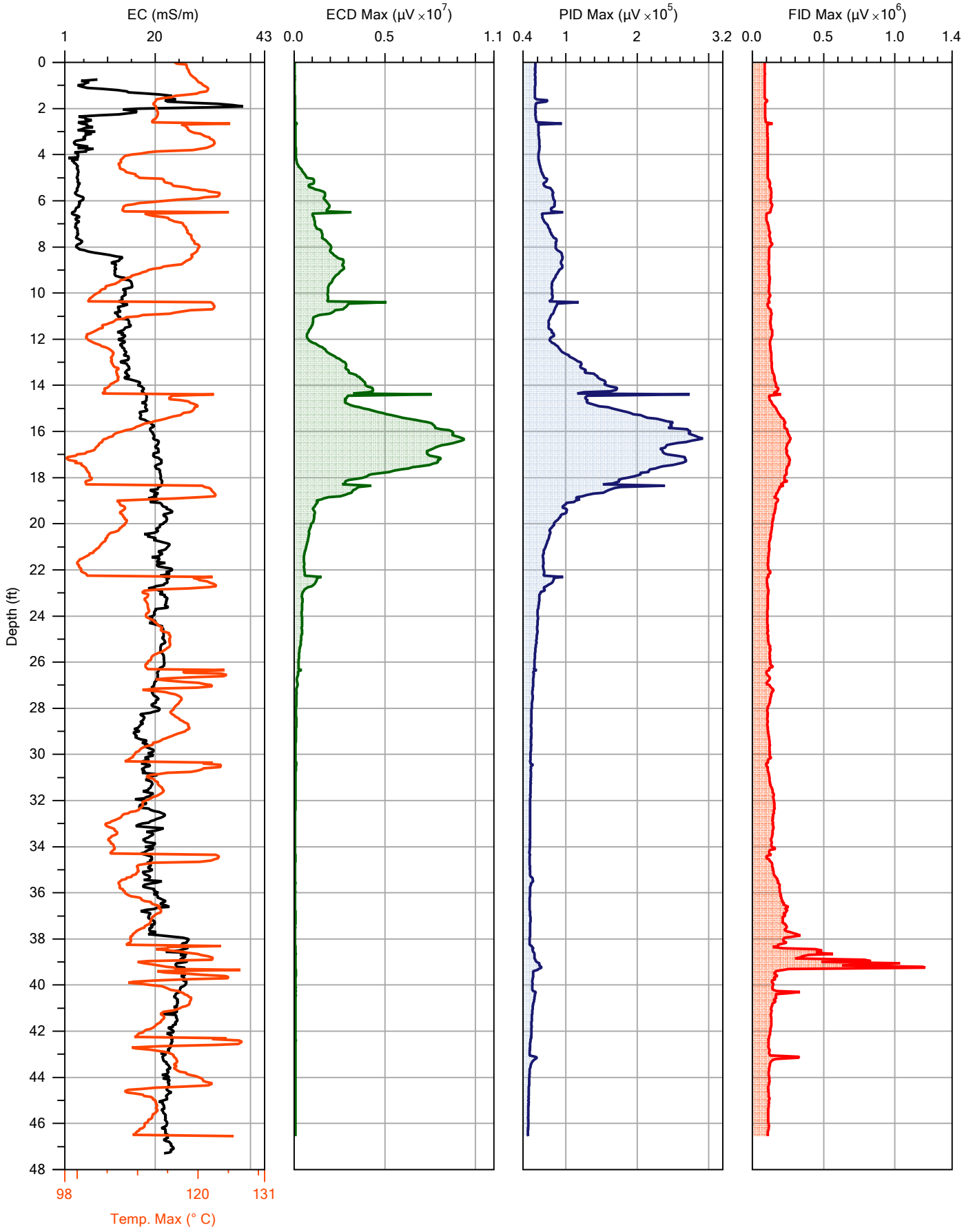
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

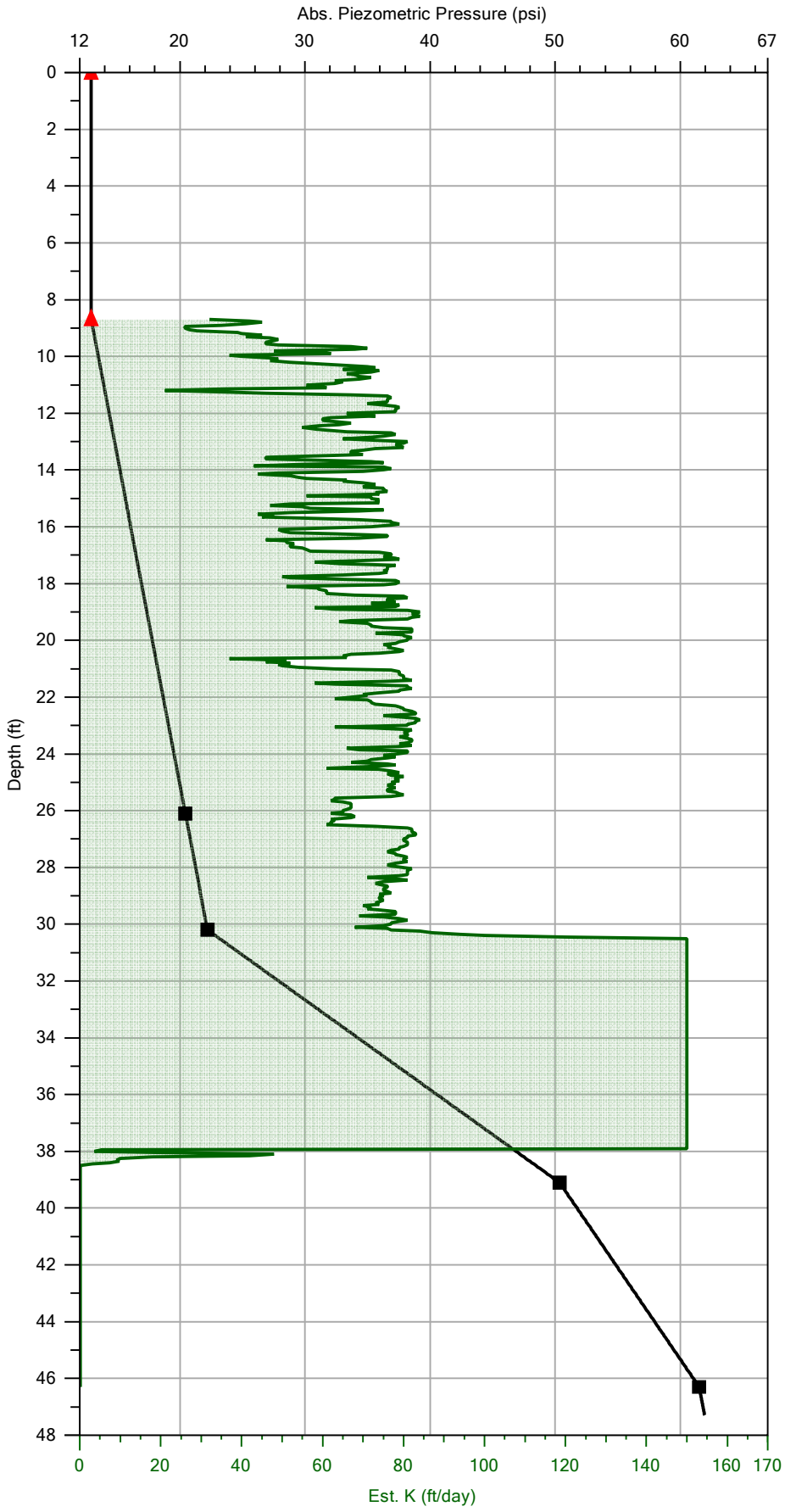
FILENAME: MIP-47.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 17:05:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-48.MHP
Company: SER90	Operator: Sammy		Date: 7/15/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location: 41° 59′ 42″ N, 83° 56′ 27″ W



			File: MIP-48.MHP
Company: SER90		Operator: Sammy	Date: 7/15/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 42″ N, 83° 56′ 27″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.2	PASS
High	290.0	305.1	5.2	PASS

MIP-48.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-48.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 17:15:01

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 15 2014 17:18:48

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.279	0.0	91.560
TOP with FLOW>0	13.759	249.4	94.870
BOTTOM with FLOW=0	13.050	0.0	89.970
BOTTOM with FLOW>0	13.536	244.3	93.330

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291

Temperature out of range (185.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (54.2 deg C) at 0.00 ft (0.000 m)

Temperature out of range (41.8 deg C) at 0.00 ft (0.000 m)

Temperature out of range (37.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (35.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (34.3 deg C) at 0.00 ft (0.000 m)

Temperature out of range (32.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (32.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (32.2 deg C) at 0.00 ft (0.000 m)

Temperature out of range (31.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (31.3 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jul 15 2014 17:21:36

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 46.55 ft (14.188 m)
LOG END TIME: Tue Jul 15 2014 19:05:48

LATITUDE: 41.994986475
LONGITUDE: -83.940747106
ELEVATION: 204.998 METERS 672.57 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-48.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 19:26:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 15 2014 19:29:29

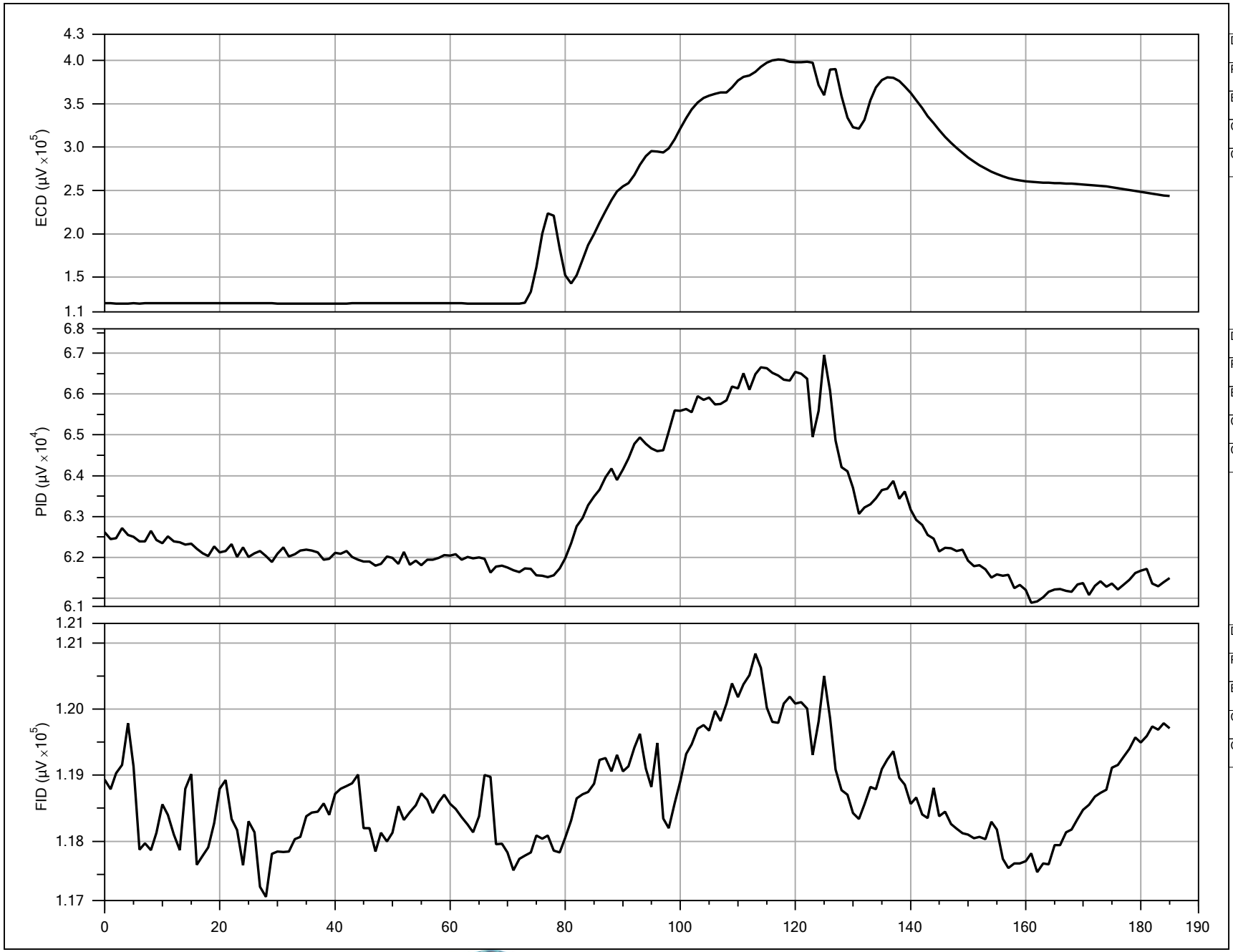
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.334	0.0	91.930
TOP with FLOW>0	13.833	248.7	95.370
BOTTOM with FLOW=0	13.117	0.0	90.440
BOTTOM with FLOW>0	13.733	250.7	94.680

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.4	9.9	PASS
High	290.0	307.4	6.0	PASS



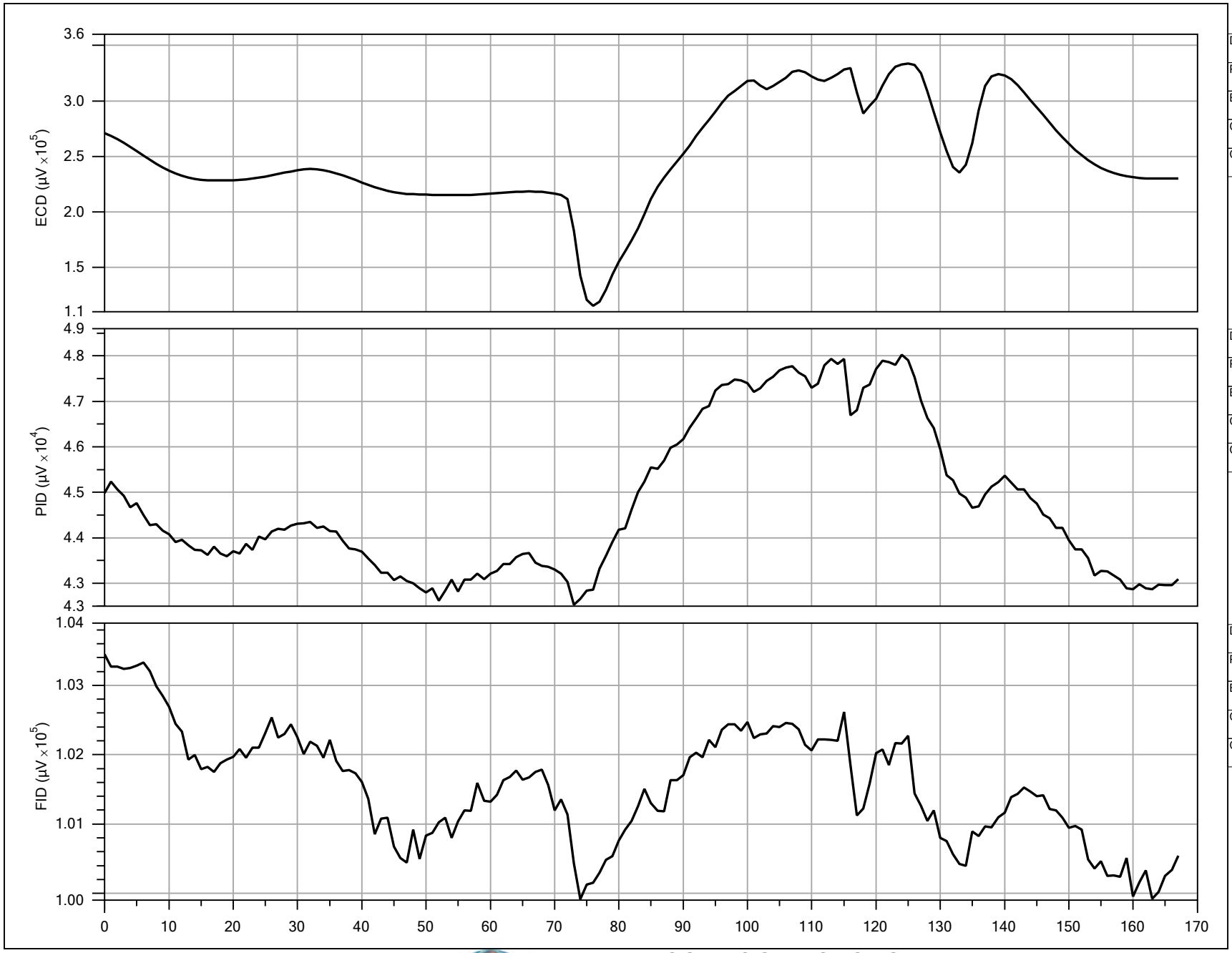
Detector:
ECD
Peak Response:
401173 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
66958 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
120838 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-48.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/15/2014



Detector:
ECD
Peak Response:
333834 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
48029 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
103450 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-48.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/15/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-48.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 17:15:01

RESPONSE TEST ATTENUATION CHANGES

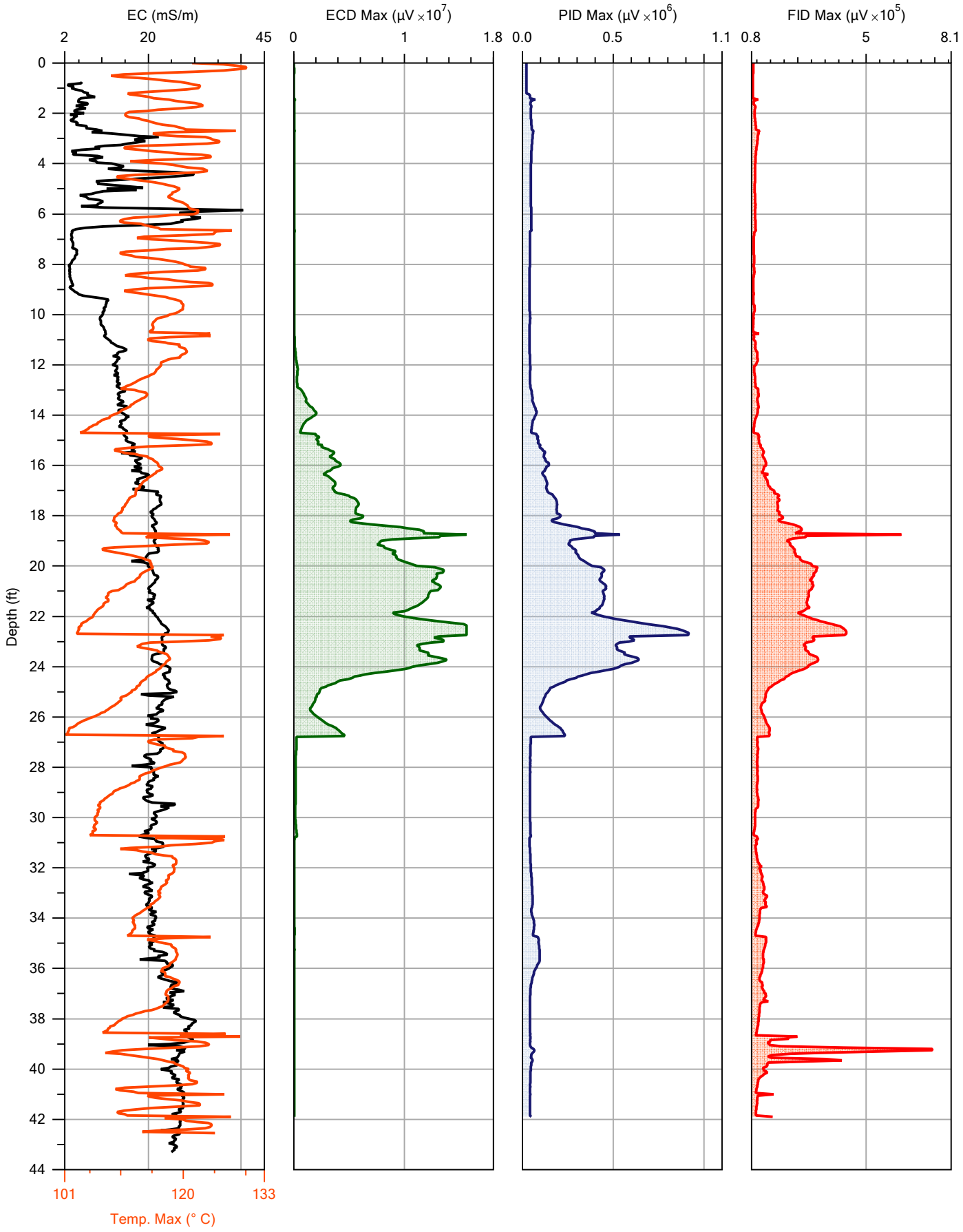
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

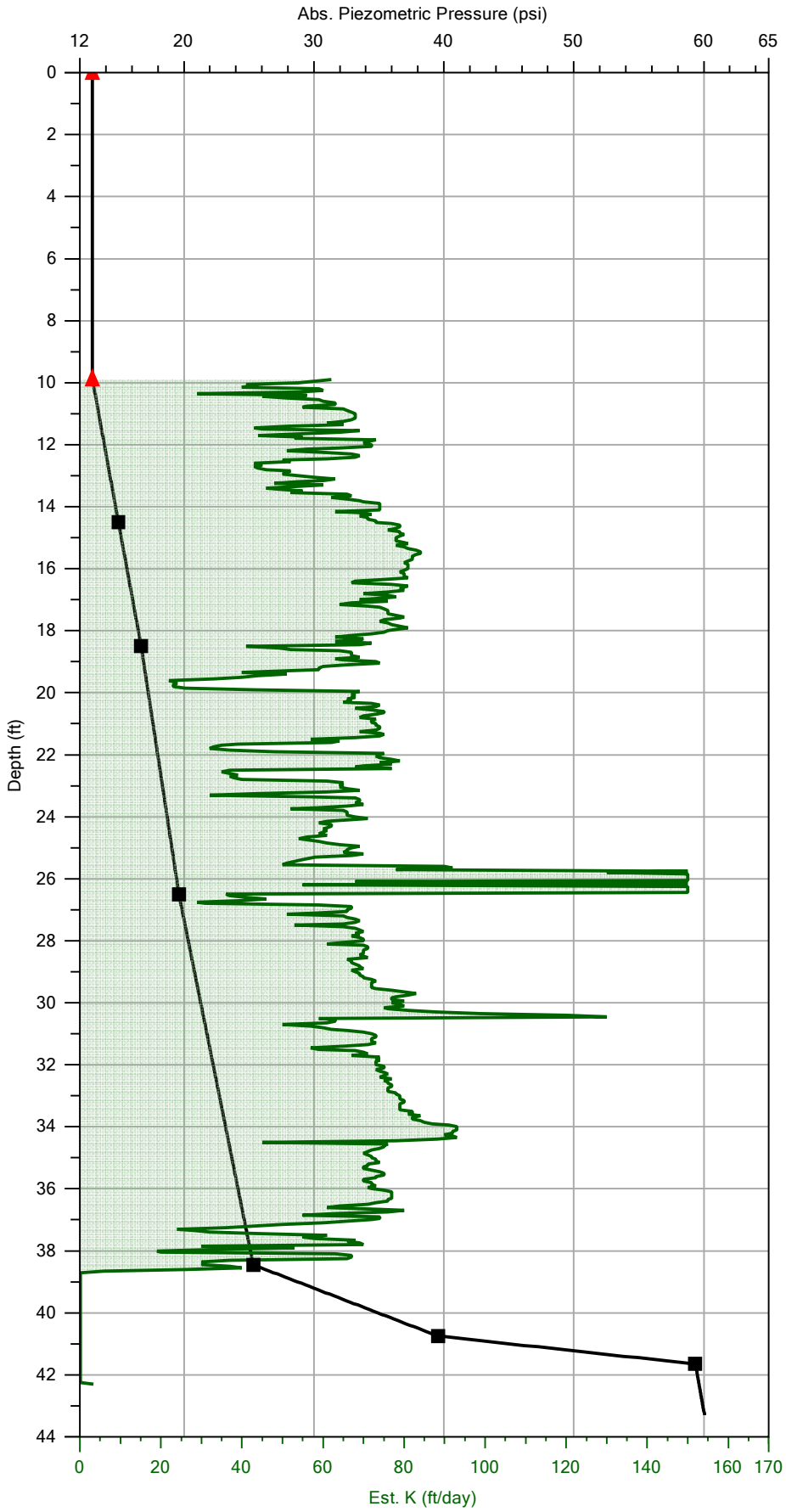
FILENAME: MIP-48.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 19:26:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-49.MHP
Company: SER90		Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 43″ N, 83° 56′ 27″ W



		File: MIP-49.MHP
Company: SER90	Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 43″ N, 83° 56′ 27″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.4	9.8	PASS
High	290.0	304.9	5.1	PASS

MIP-49.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-49.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 47.8 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 08:33:12

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 110 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 16 2014 08:37:34

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.333	0.0	91.930
TOP with FLOW>0	14.004	273.8	96.550
BOTTOM with FLOW=0	13.121	0.0	90.470
BOTTOM with FLOW>0	13.767	266.8	94.920

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Wed Jul 16 2014 08:39:46

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 42.55 ft (12.969 m)
LOG END TIME: Wed Jul 16 2014 09:57:26

LATITUDE: 41.995276589
LONGITUDE: -83.940754003
ELEVATION: 206.961 METERS 679.01 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-49.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.7 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 10:21:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 16 2014 10:24:21

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.402	0.0	92.400
TOP with FLOW>0	14.015	255.6	96.630
BOTTOM with FLOW=0	13.170	0.0	90.800
BOTTOM with FLOW>0	13.803	255.7	95.170

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

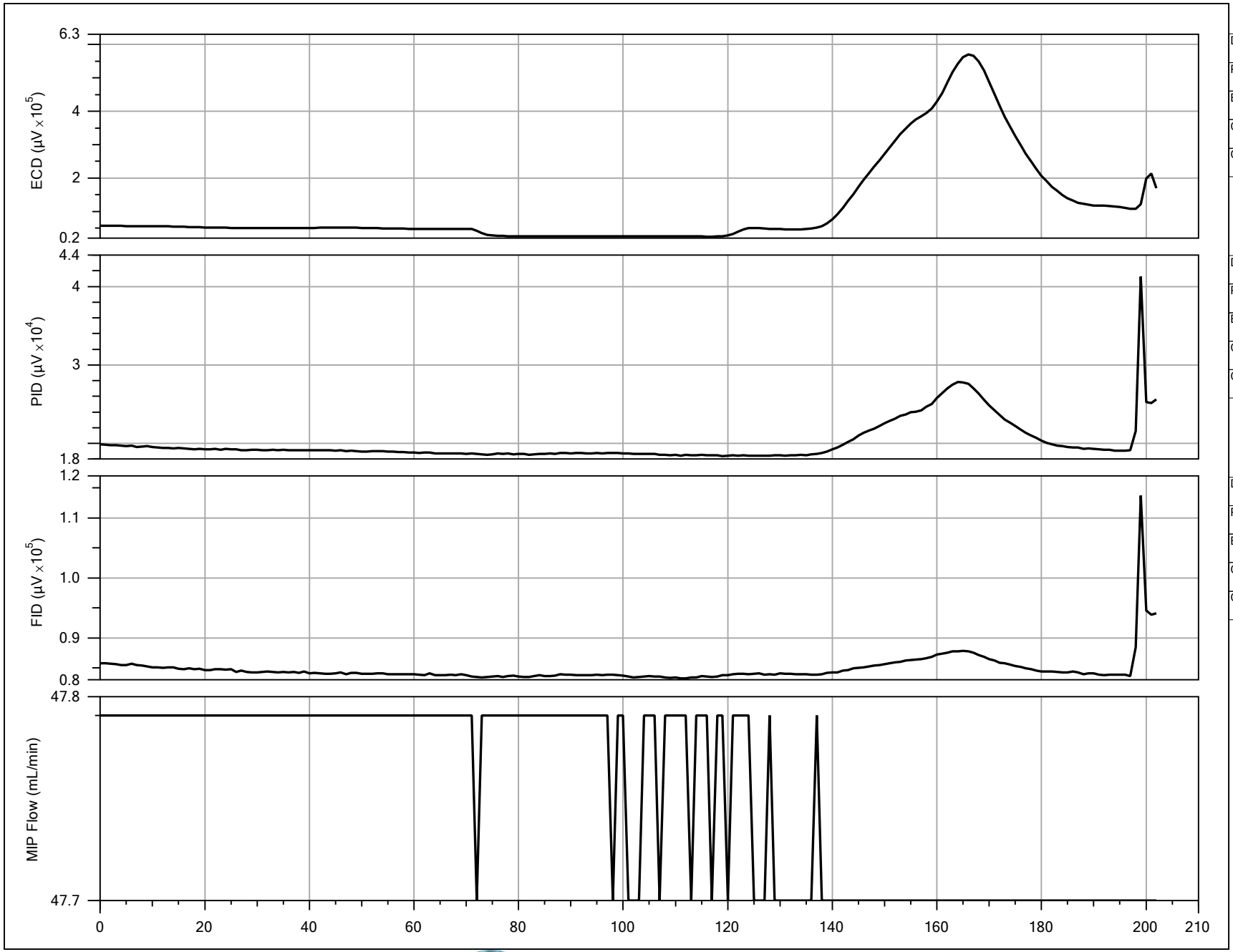
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.3	9.7	PASS
High	290.0	304.6	5.1	PASS

********** USER NOTES **********

Staff at 1.4 meters



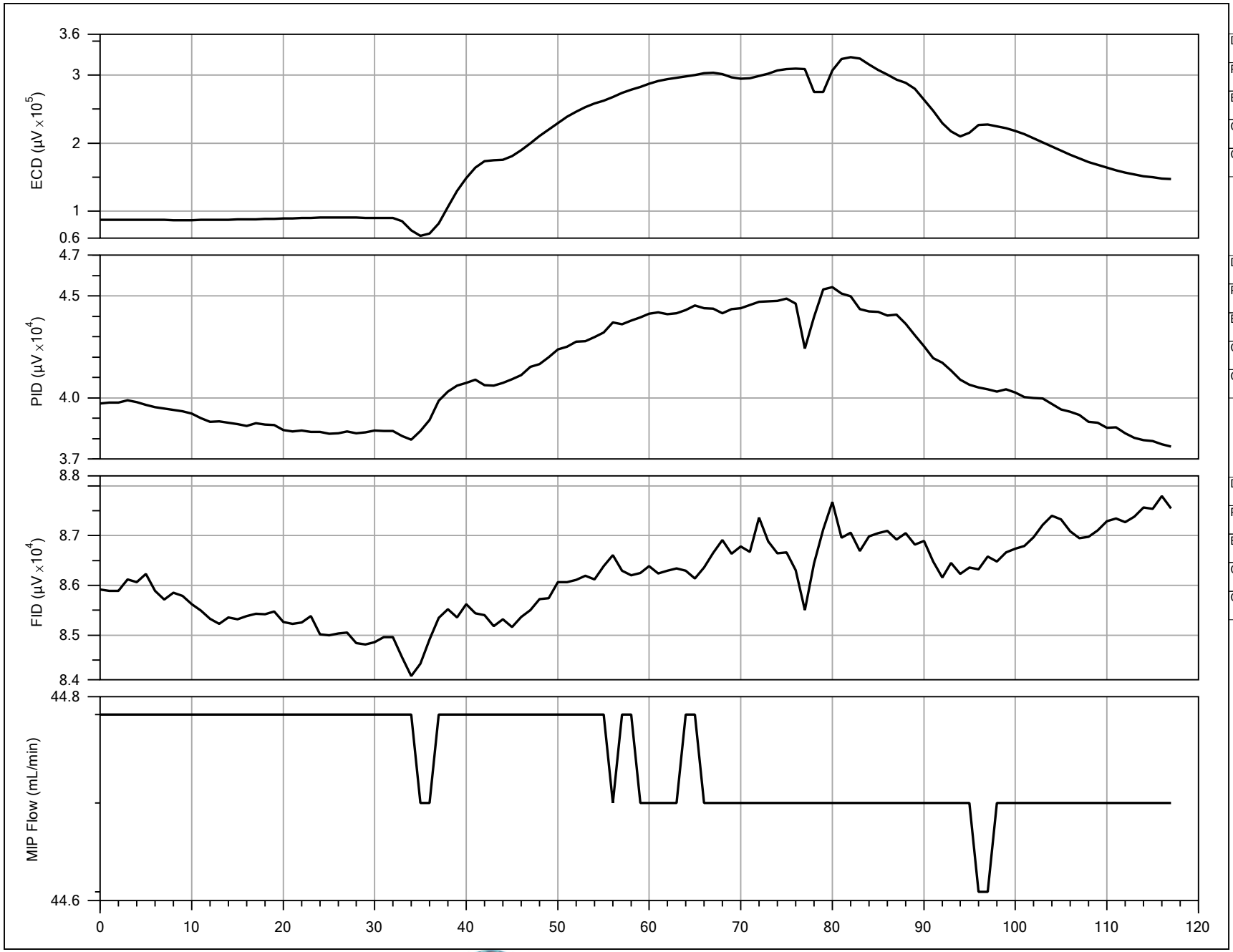
Detector:
ECD
Peak Response:
569941 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
41276 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
113758 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-49.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/16/2014



Detector:
ECD
Peak Response:
326418 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
45427 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
87794 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-49.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/16/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-49.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 47.8 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 08:33:12

RESPONSE TEST ATTENUATION CHANGES

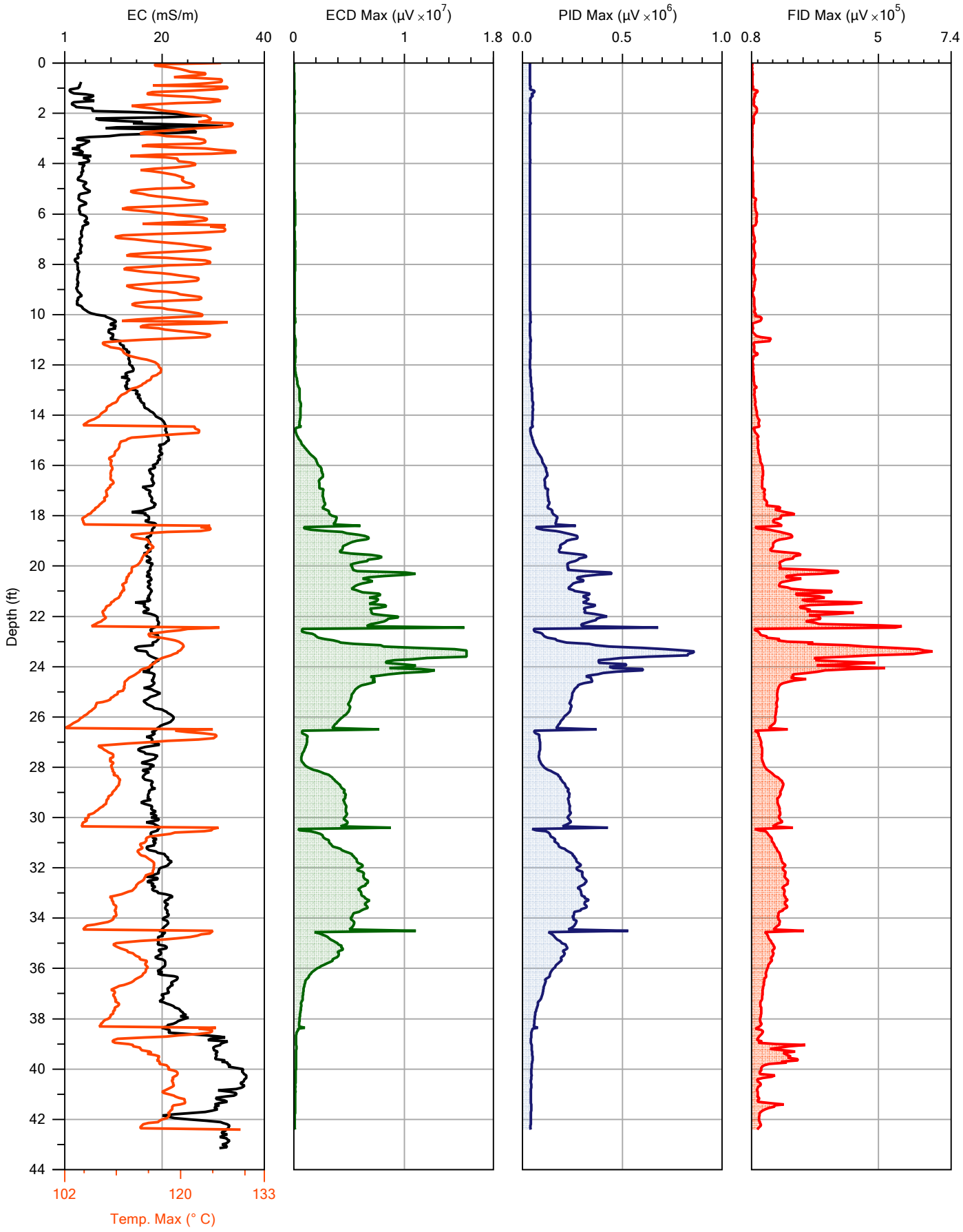
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

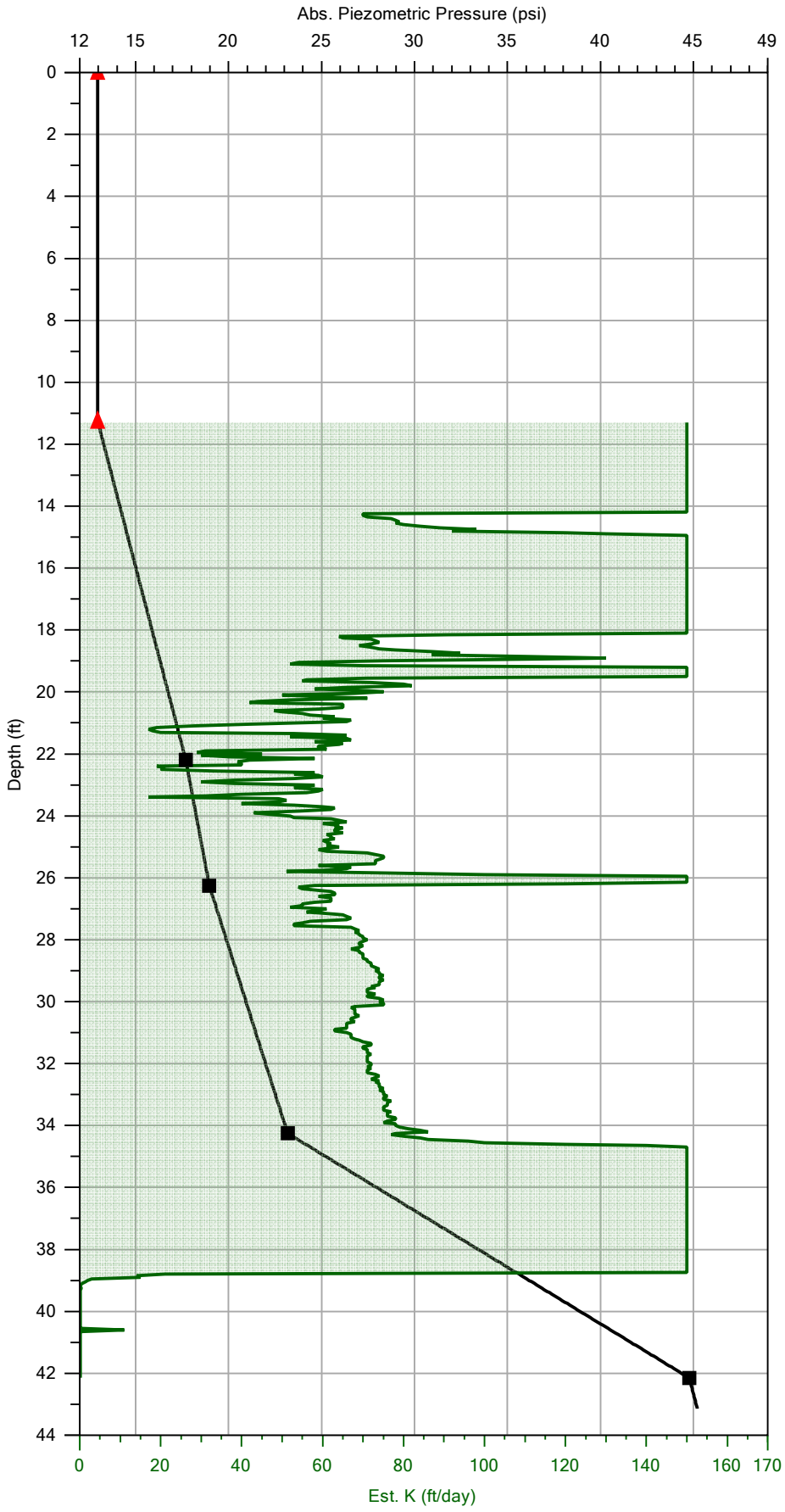
FILENAME: MIP-49.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.7 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 10:21:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-50.MHP
Company: SER90		Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 27″ W



			File: MIP-50.MHP
Company: SER90		Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 27″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	55.7	1.3	PASS
High	290.0	306.9	5.8	PASS

MIP-50.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-50.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.8 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 10:34:52

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 16 2014 10:42:14

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.411	0.0	92.460
TOP with FLOW>0	14.015	261.6	96.630
BOTTOM with FLOW=0	13.181	0.0	90.880
BOTTOM with FLOW>0	13.786	262.5	95.050

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Wed Jul 16 2014 10:44:18

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
11.25	3.429	16	1	1	1

LOG END DEPTH: 42.40 ft (12.924 m)
LOG END TIME: Wed Jul 16 2014 12:00:47

LATITUDE: 41.995526603
LONGITUDE: -83.940769358
ELEVATION: 205.718 METERS 674.93 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-50.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.6 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 12:23:22

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 16 2014 12:27:38

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.331	0.0	91.910
TOP with FLOW>0	14.106	260.5	97.260
BOTTOM with FLOW=0	13.130	0.0	90.530
BOTTOM with FLOW>0	13.861	265.4	95.570

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

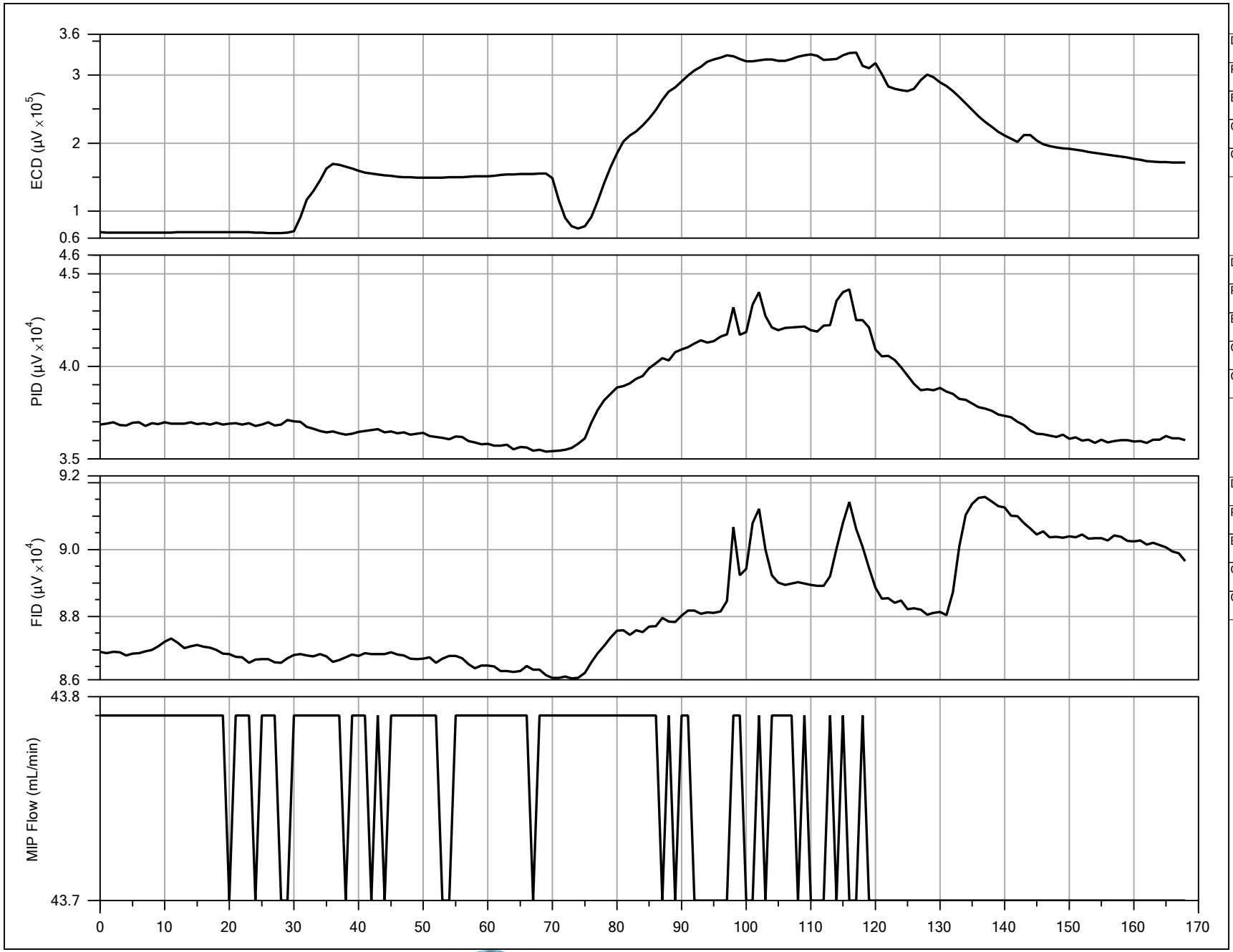
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	51.0	7.3	PASS
High	290.0	305.6	5.4	PASS

********** USER NOTES **********

Staff is 1.4 meters



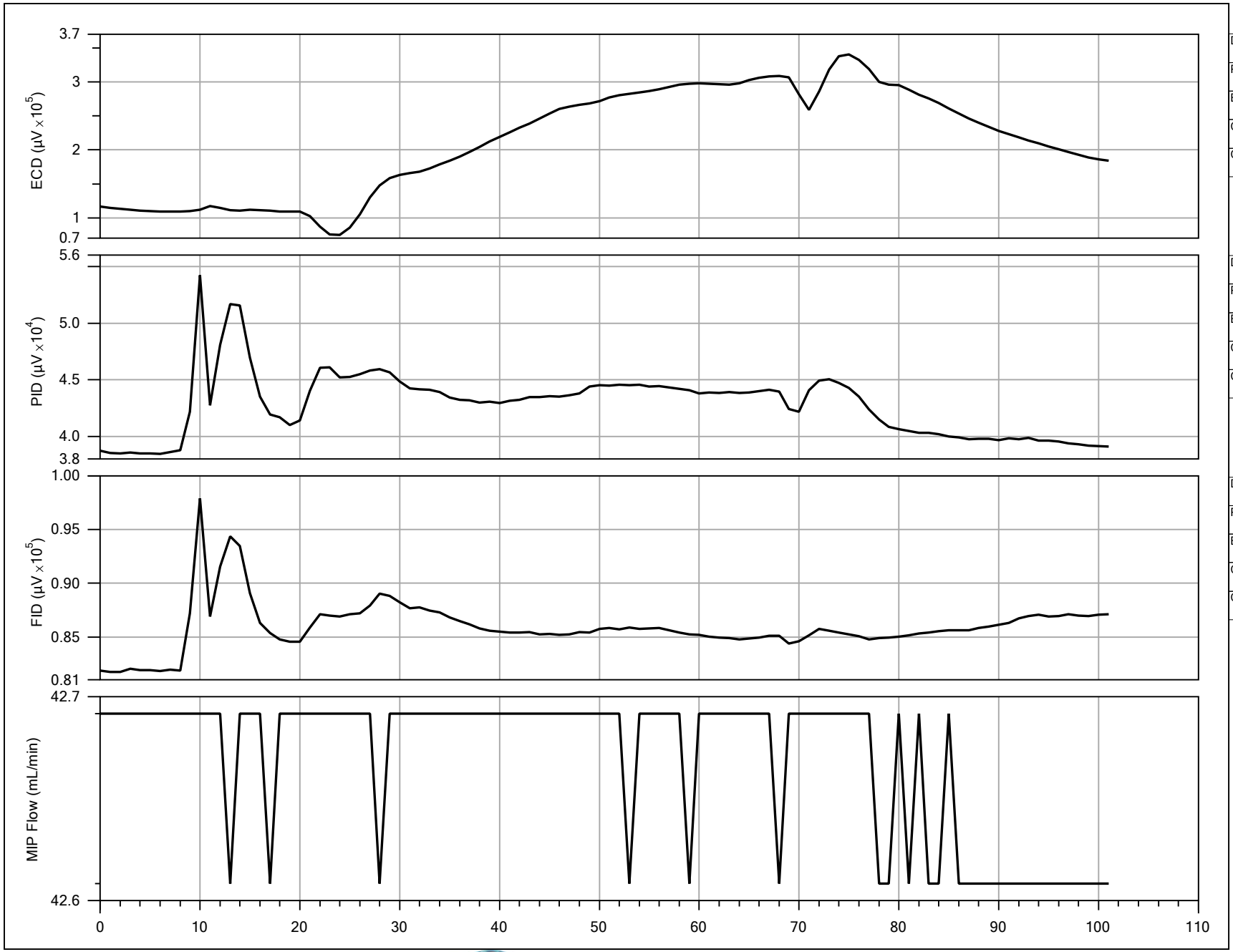
Detector:
ECD
Peak Response:
332987 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
44145 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
91578 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-50.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/16/2014



Detector:
ECD
Peak Response:
340602 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
54224 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
97911 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-50.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/16/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-50.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.8 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 10:34:52

RESPONSE TEST ATTENUATION CHANGES

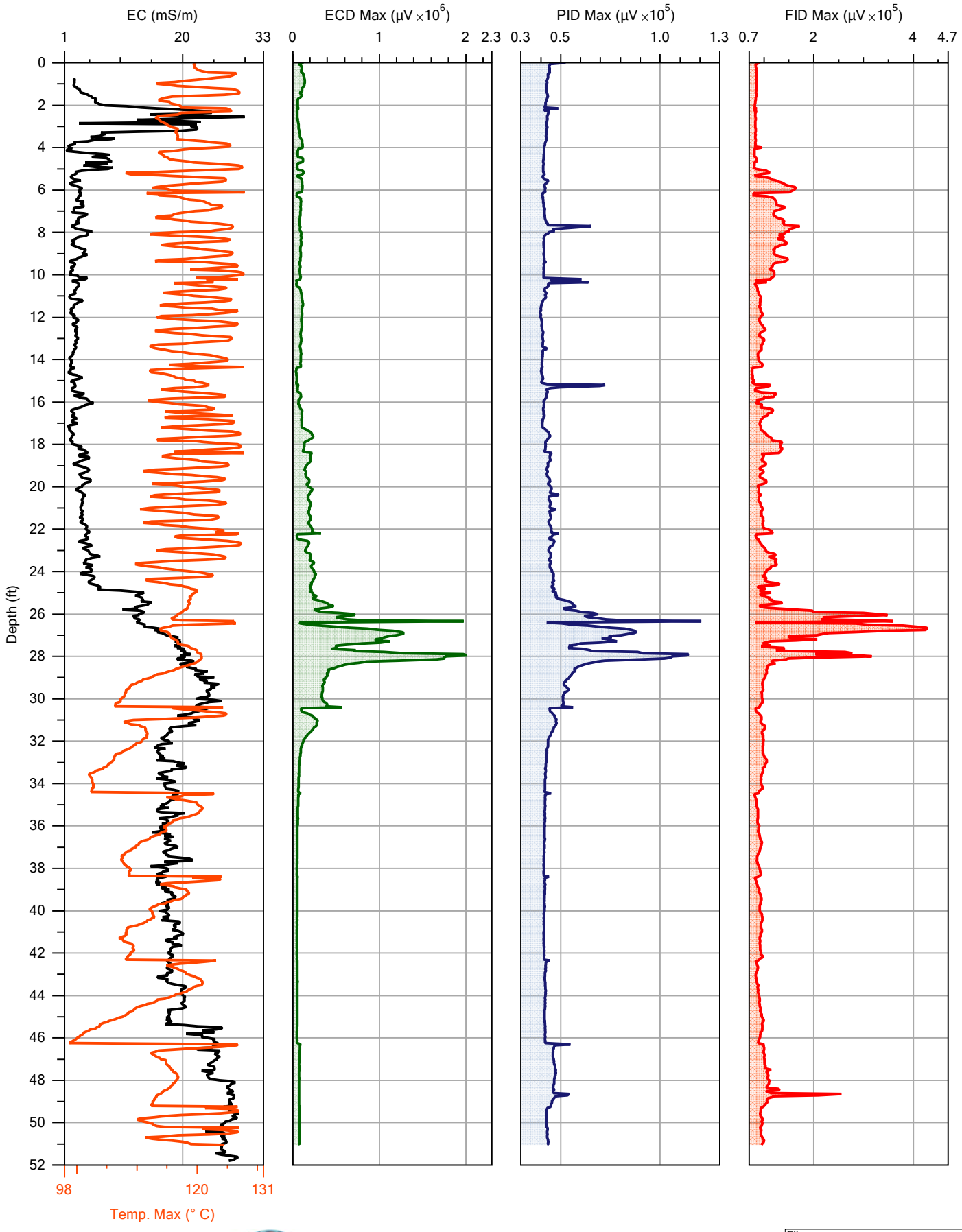
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

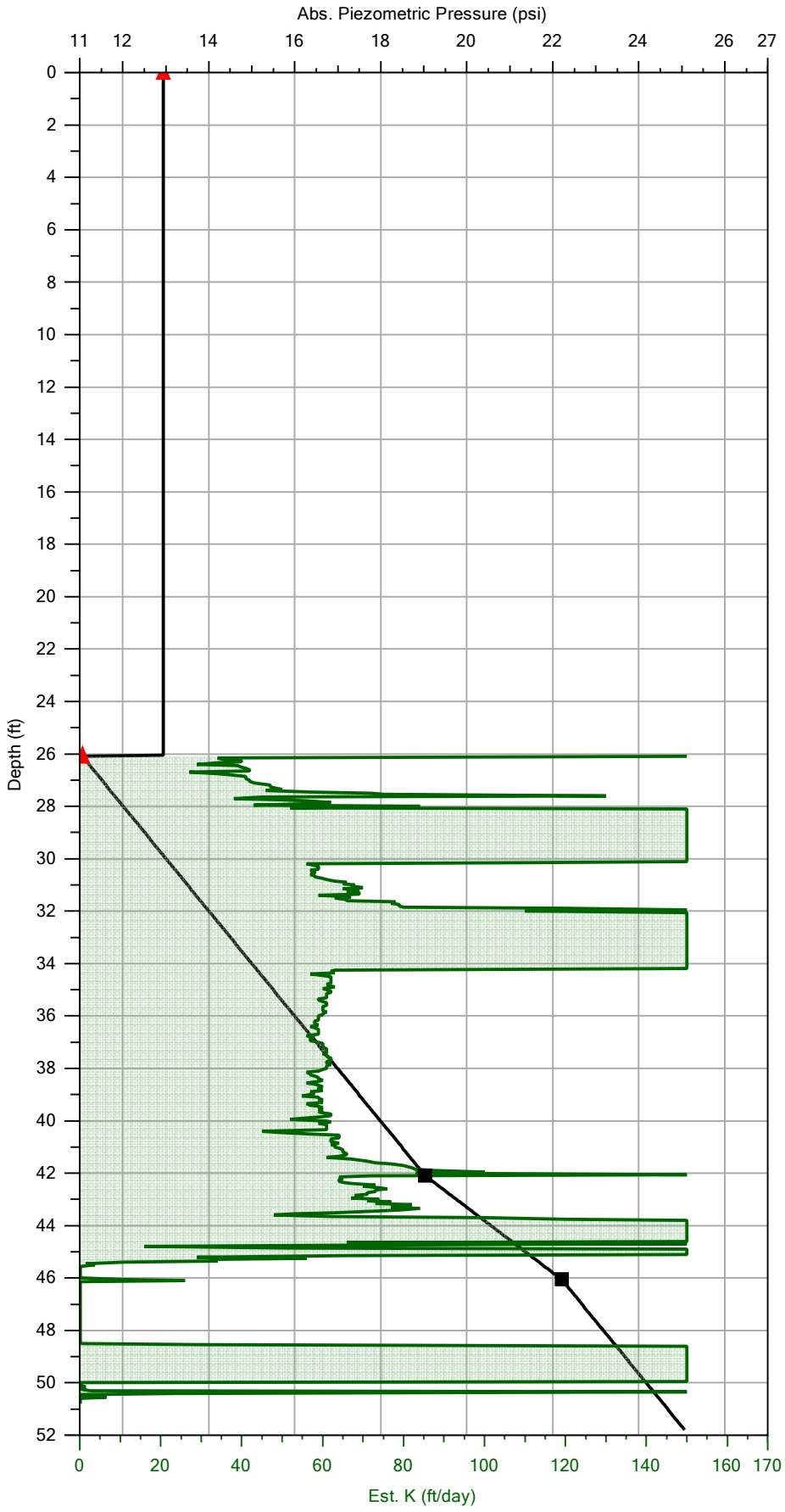
FILENAME: MIP-50.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.6 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 12:23:22

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-51.MHP
Company: SER90		Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 45″ N, 83° 56′ 41″ W



		File: MIP-51.MHP
Company: SER90	Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 45″ N, 83° 56′ 41″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.7	5.0	PASS
High	290.0	304.5	5.0	PASS

MIP-51.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-51.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.6 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 12:34:02

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 16 2014 12:36:31

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.342	0.0	91.990
TOP with FLOW>0	14.097	263.6	97.200
BOTTOM with FLOW=0	13.126	0.0	90.500
BOTTOM with FLOW>0	13.875	267.1	95.670

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Wed Jul 16 2014 12:39:08

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.15	0.655	16	1	1	1

LOG END DEPTH: 51.05 ft (15.560 m)
LOG END TIME: Wed Jul 16 2014 15:00:49

LATITUDE: 41.995767258
LONGITUDE: -83.944642431
ELEVATION: 210.458 METERS 690.48 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-51.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.4 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 15:30:29

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 16 2014 15:33:15

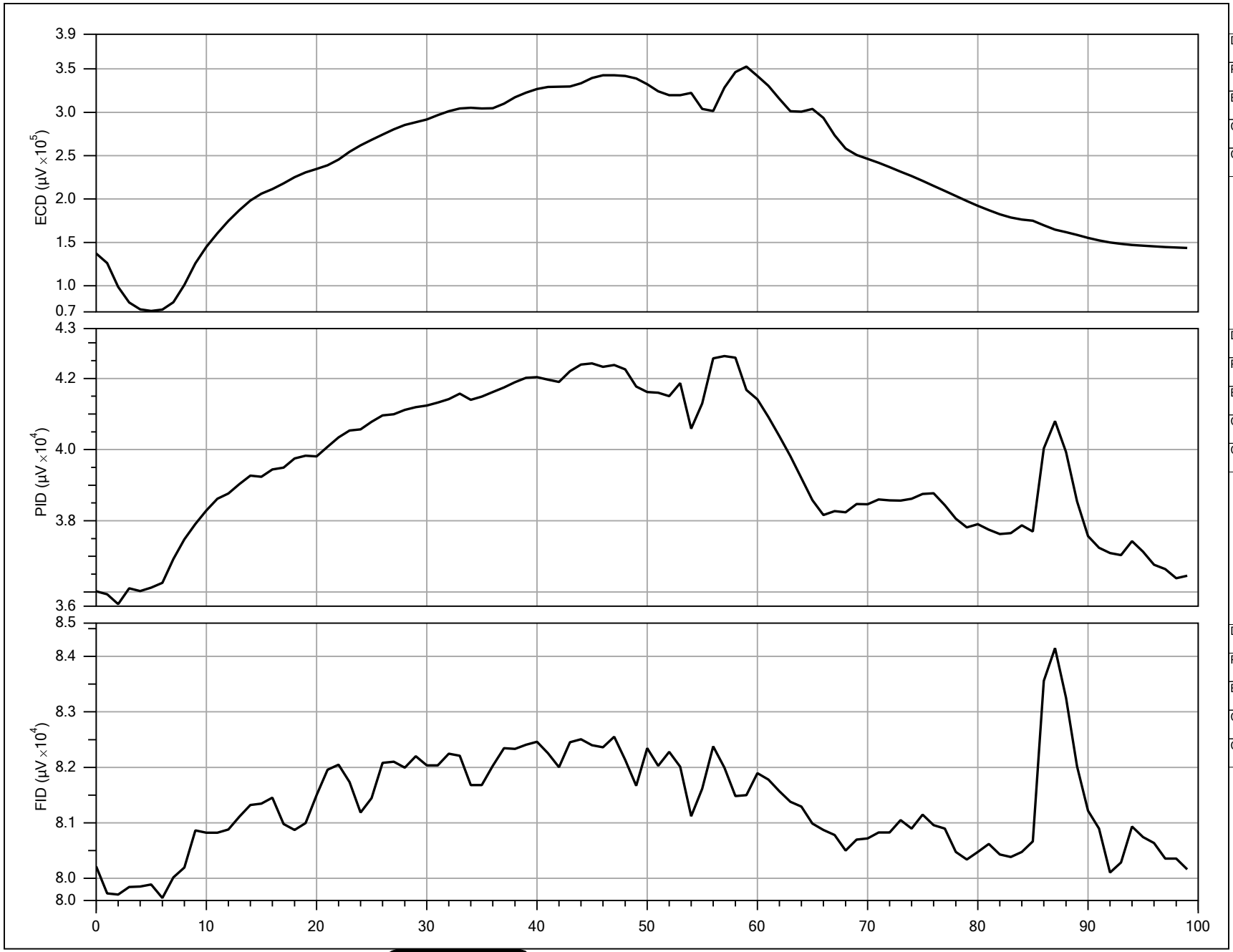
POST-LOG HPT REFERENCE TESTS BYPASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.7	3.0	PASS
High	290.0	302.9	4.5	PASS

********** USER NOTES **********

Staff is at 1.45 meters



Detector:
ECD
Peak Response:
352626 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
42627 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
84147 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

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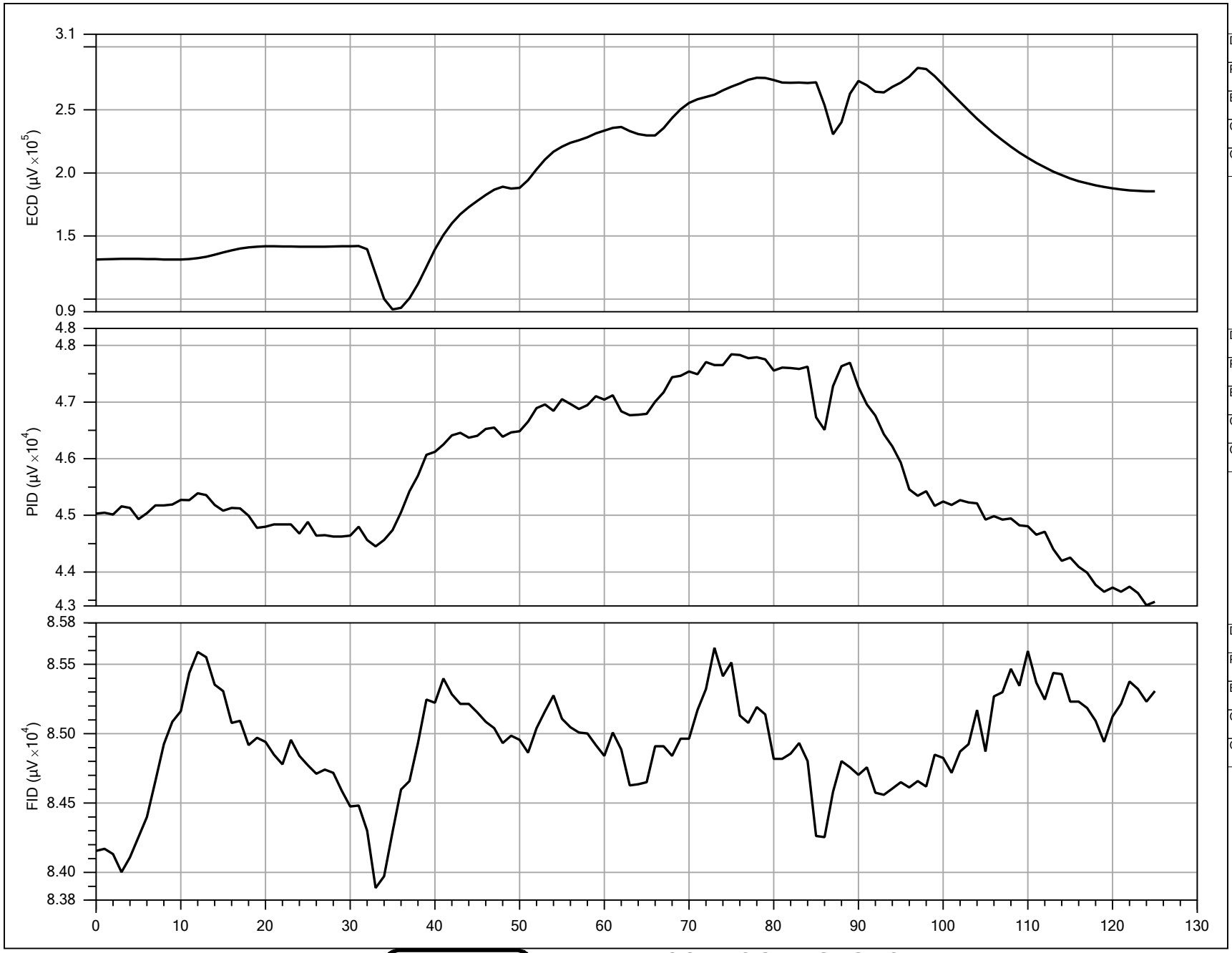
PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-51.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/16/2014



Detector:
ECD
Peak Response:
283212 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
47845 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
85620 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

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POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-51.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/16/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-51.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.6 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 12:34:02

RESPONSE TEST ATTENUATION CHANGES

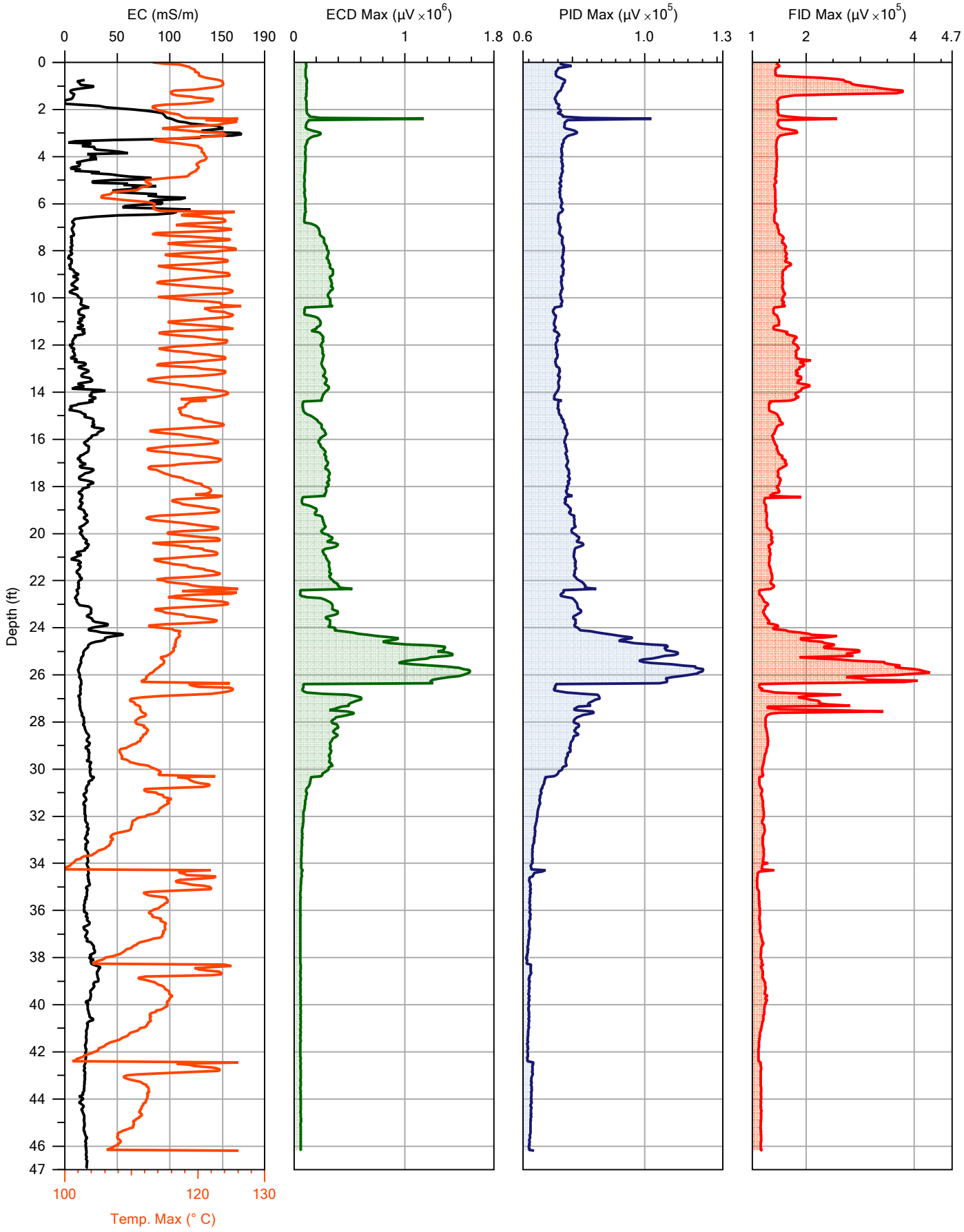
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

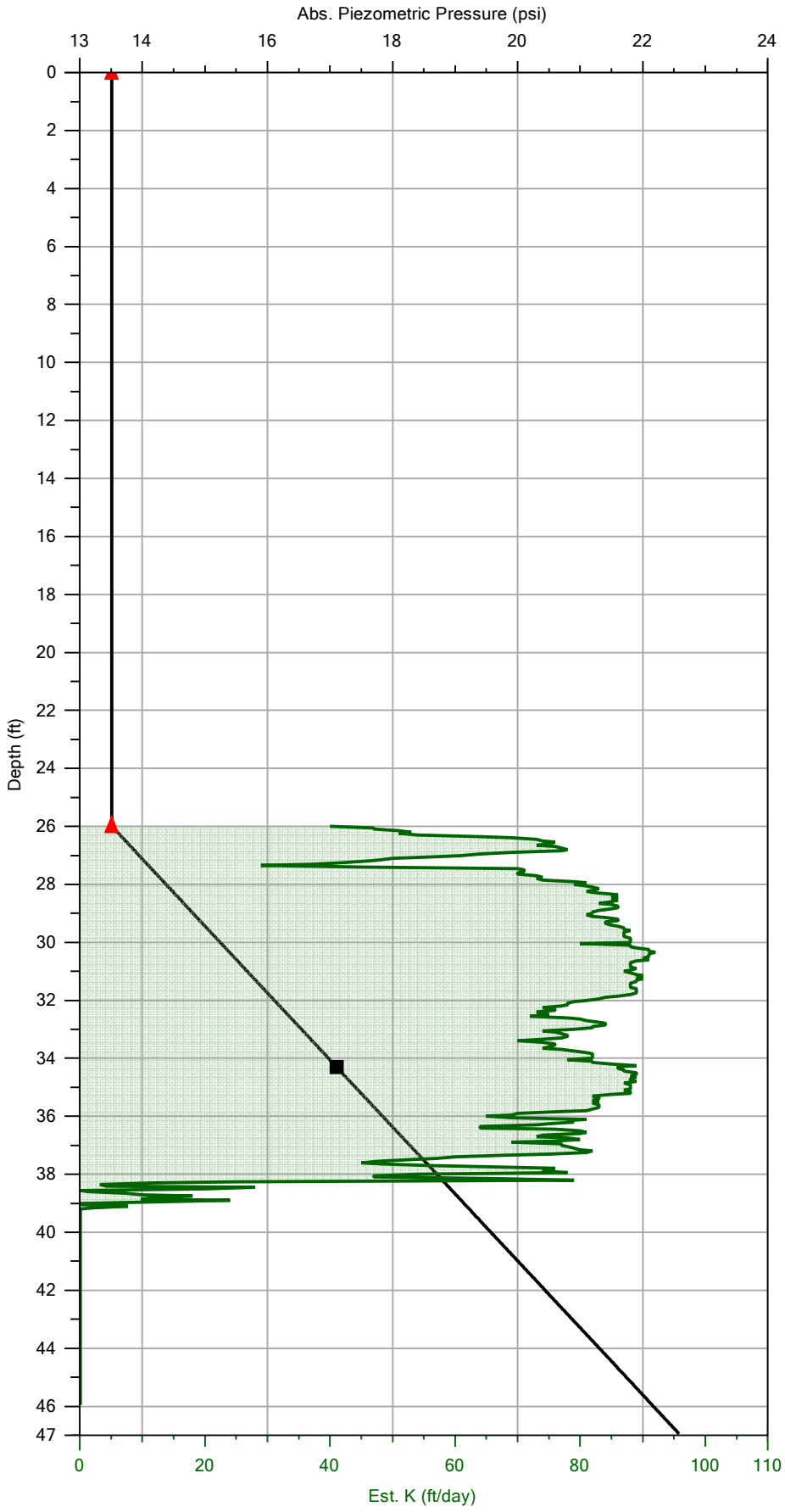
FILENAME: MIP-51.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.4 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 15:30:29

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-52.MHP
Company: SER90		Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 46″ N, 83° 56′ 40″ W



			File: MIP-52.MHP
Company: SER90		Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 46″ N, 83° 56′ 40″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.2	PASS
High	290.0	302.5	4.3	PASS

MIP-52.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-52.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.4 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 16:44:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 16 2014 16:49:09

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	14.489	0.0	99.900
TOP with FLOW>0	15.070	278.2	103.910
BOTTOM with FLOW=0	14.258	0.0	98.300
BOTTOM with FLOW>0	14.857	276.6	102.440

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Wed Jul 16 2014 16:51:25

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
3.15	0.960	16	1	1	1

LOG END DEPTH: 46.20 ft (14.082 m)
LOG END TIME: Wed Jul 16 2014 18:09:09

LATITUDE: 41.996026289
LONGITUDE: -83.944399217
ELEVATION: 210.201 METERS 689.64 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-52.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.0 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 18:31:53

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 16 2014 18:35:10

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.326	0.0	91.880
TOP with FLOW>0	13.834	263.5	95.380
BOTTOM with FLOW=0	13.097	0.0	90.300
BOTTOM with FLOW>0	13.649	273.1	94.100

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

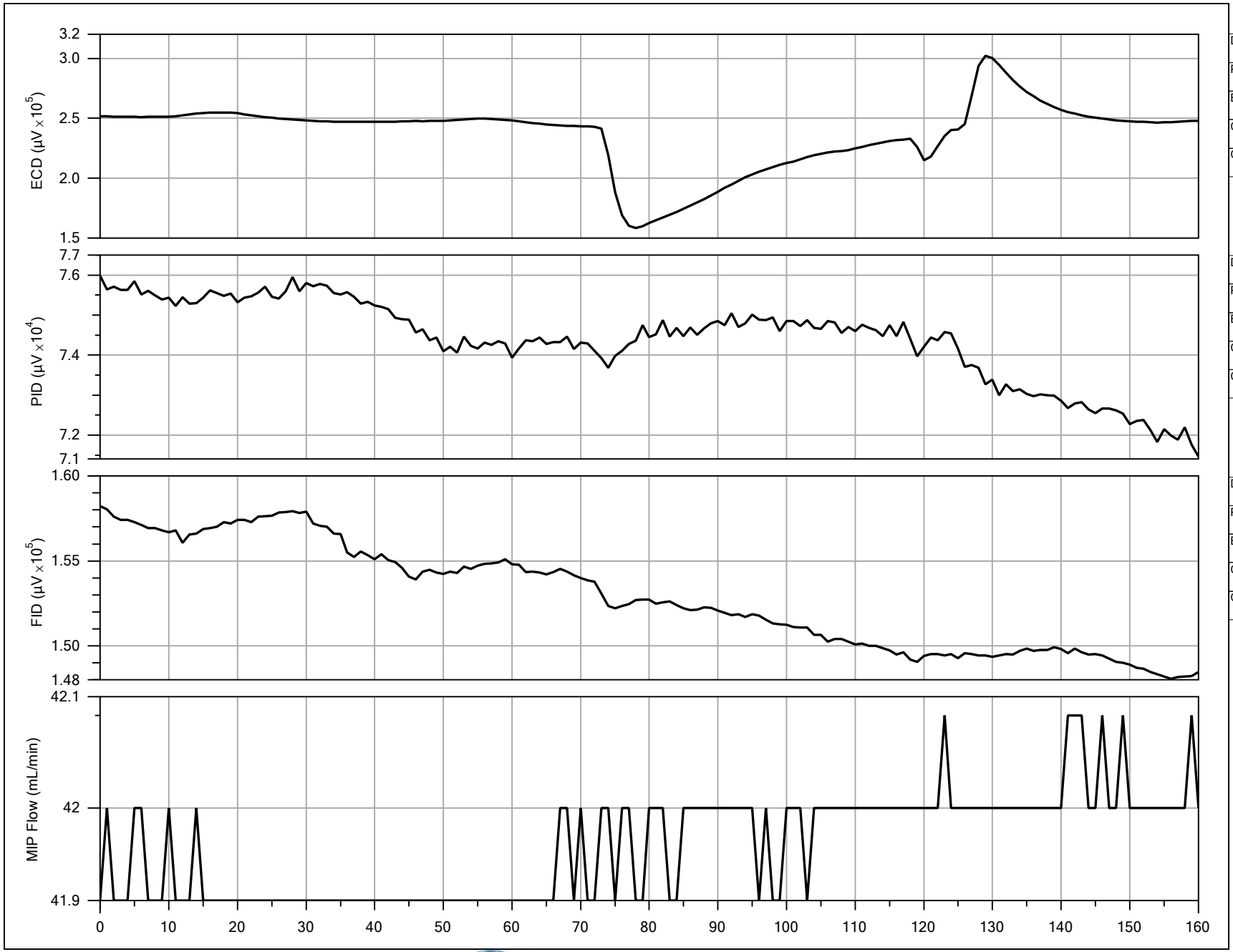
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.5	PASS
High	290.0	302.9	4.5	PASS

********** USER NOTES **********

Staff is at 1.45m



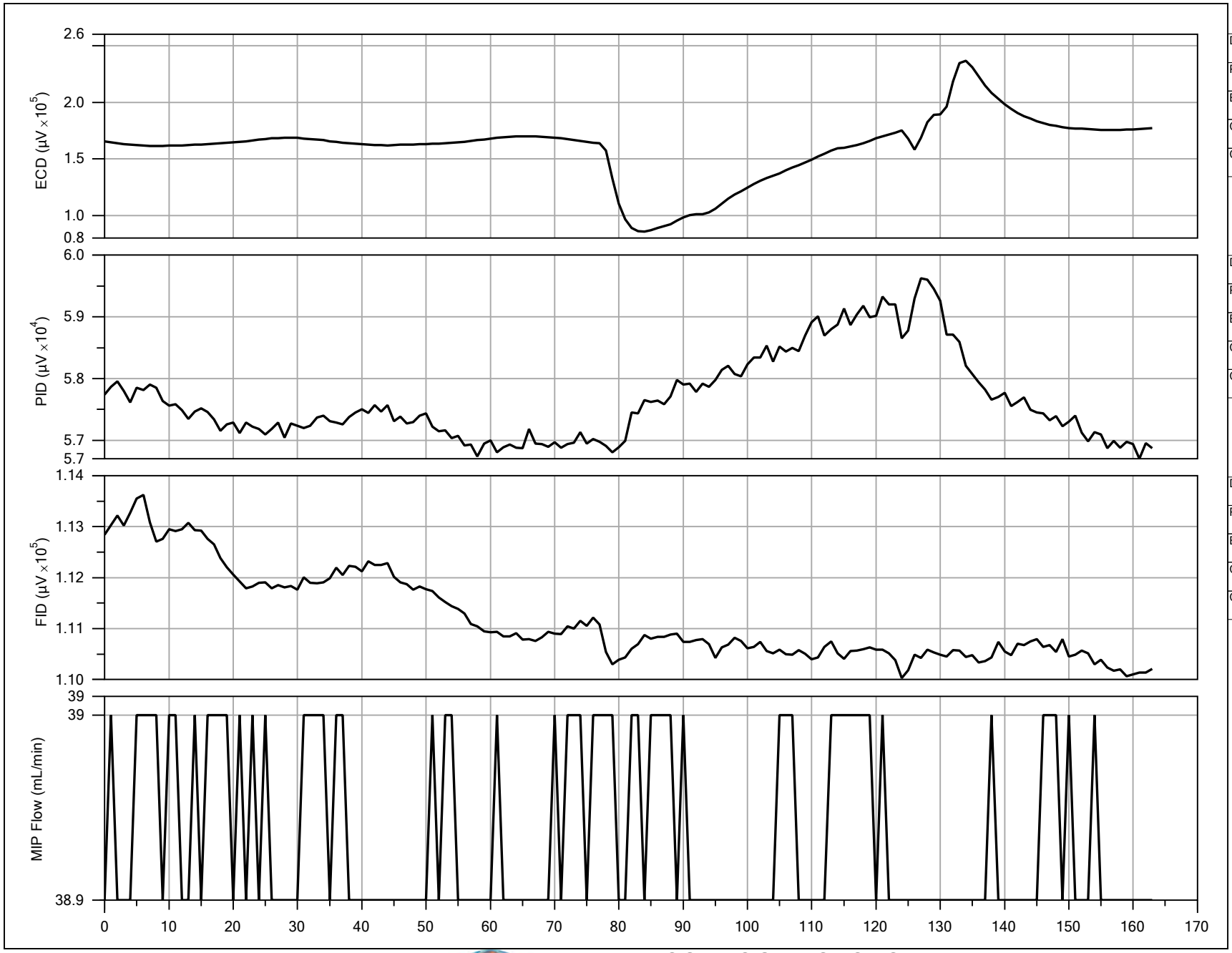
Detector:
ECD
Peak Response:
301927 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
75983 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
158238 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-52.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/16/2014



Detector:
ECD
Peak Response:
236579 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
59626 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
113628 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-52.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/16/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-52.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.4 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 16:44:46

RESPONSE TEST ATTENUATION CHANGES

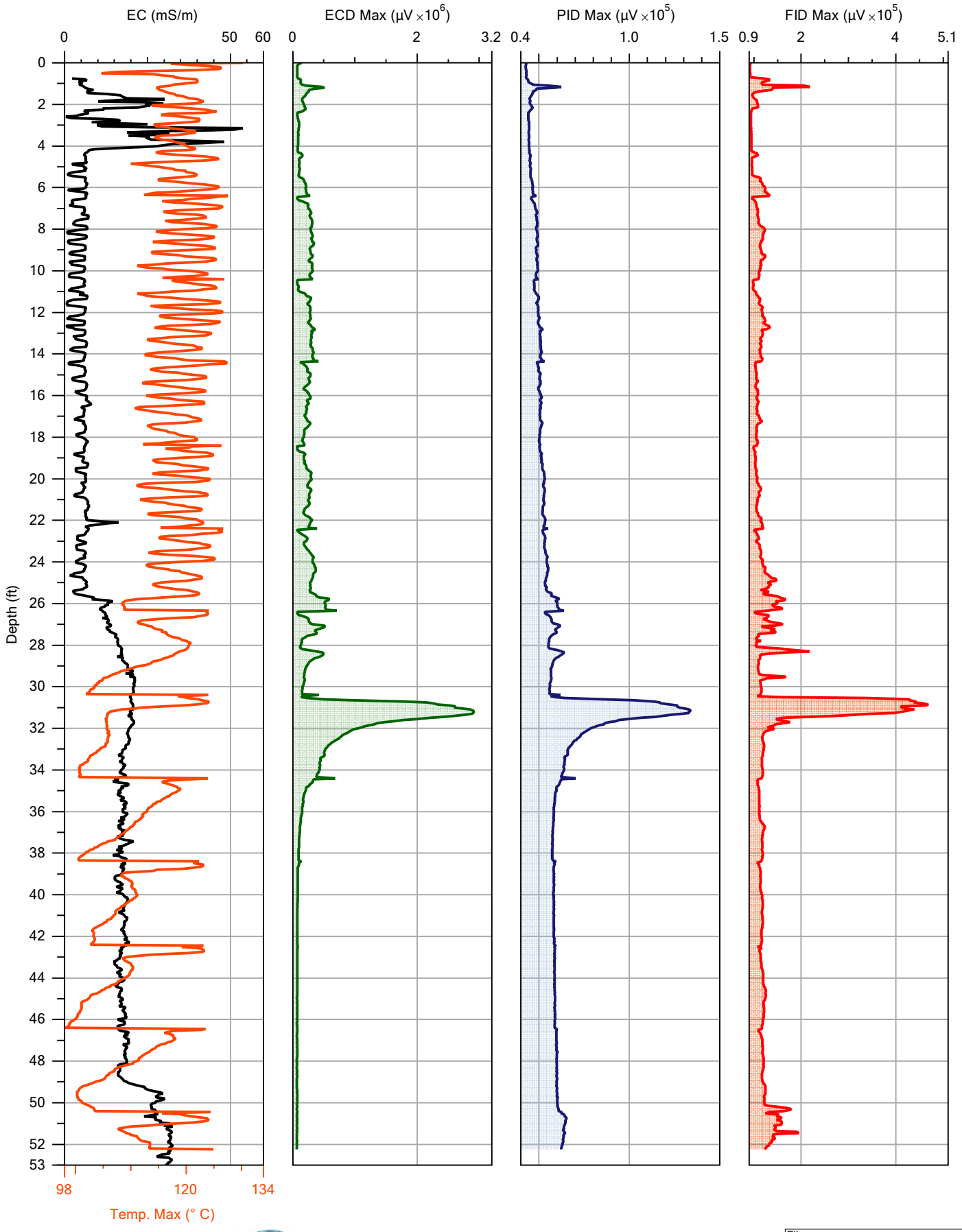
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

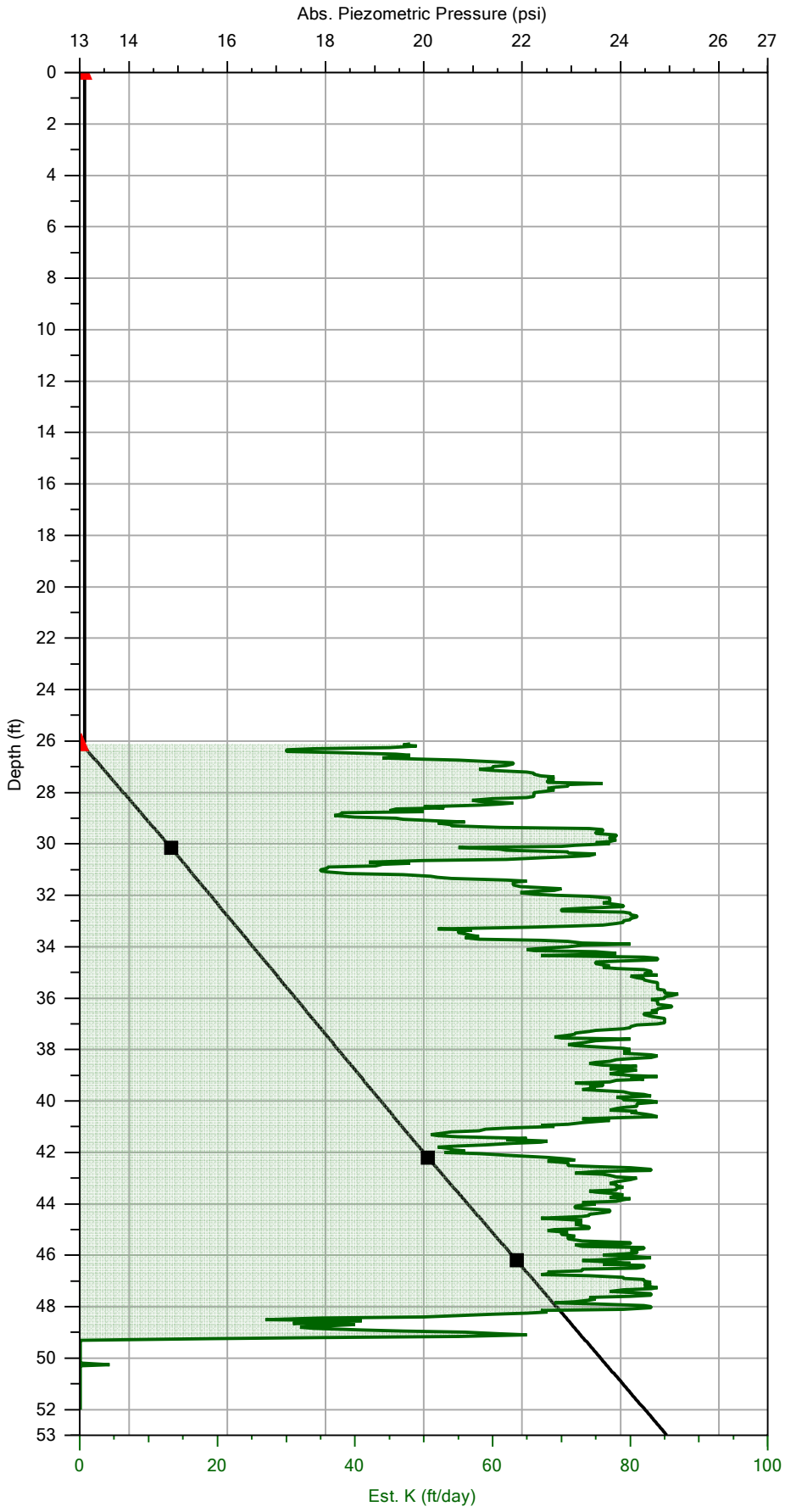
FILENAME: MIP-52.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.0 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 18:31:53

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-53.MHP
Company: SER90		Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 40″ W



			File: MIP-53.MHP
Company: SER90		Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 40″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.1	5.6	PASS
High	290.0	303.1	4.5	PASS

MIP-53.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-53.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.5 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 08:36:18

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 17 2014 08:39:28

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.553	0.0	93.440
TOP with FLOW>0	14.131	257.6	97.430
BOTTOM with FLOW=0	13.351	0.0	92.050
BOTTOM with FLOW>0	13.929	257.2	96.040

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Thu Jul 17 2014 08:44:30

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 52.25 ft (15.926 m)
LOG END TIME: Thu Jul 17 2014 10:01:24

LATITUDE: 41.995486119
LONGITUDE: -83.944438878
ELEVATION: 211.081 METERS 692.52 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-53.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 10:30:44

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 17 2014 10:34:02

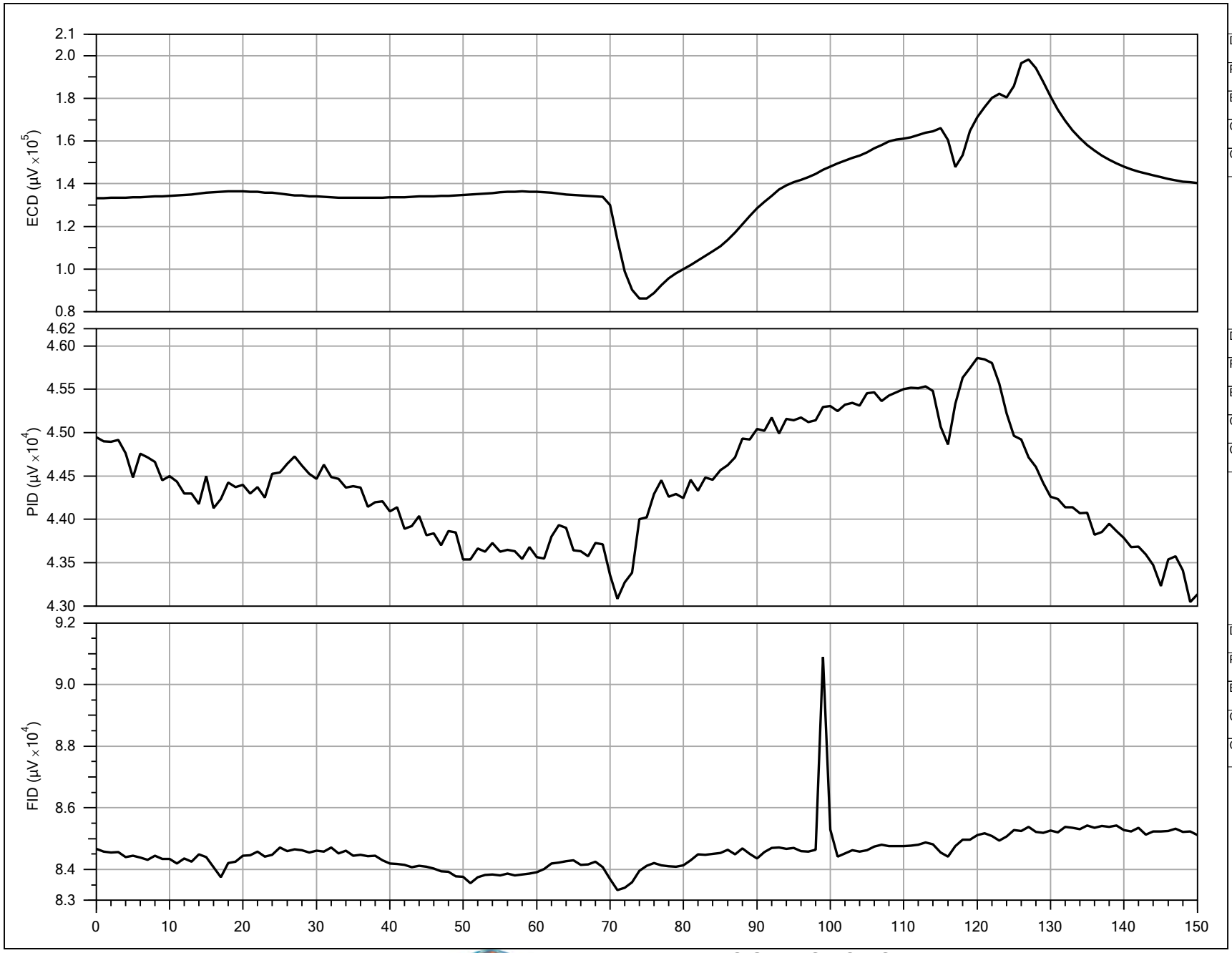
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.439	0.0	92.660
TOP with FLOW>0	13.968	263.6	96.310
BOTTOM with FLOW=0	13.221	0.0	91.150
BOTTOM with FLOW>0	13.743	263.4	94.760

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.2	PASS
High	290.0	302.8	4.4	PASS



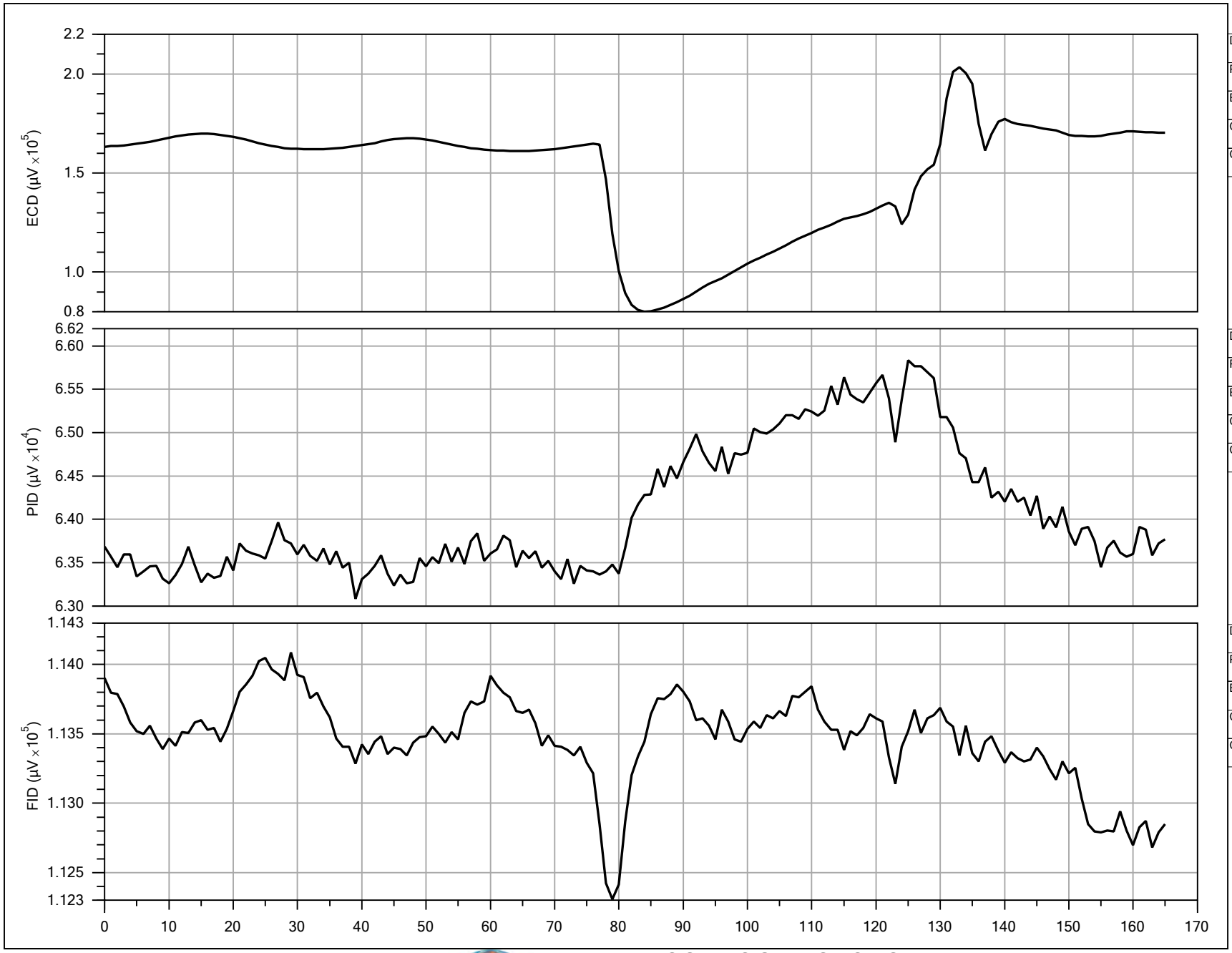
Detector:
ECD
Peak Response:
198271 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
45862 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
90892 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-53.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/17/2014



Detector:
ECD
Peak Response:
203307 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
65836 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
114086 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-53.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/17/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-53.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.5 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 08:36:18

RESPONSE TEST ATTENUATION CHANGES

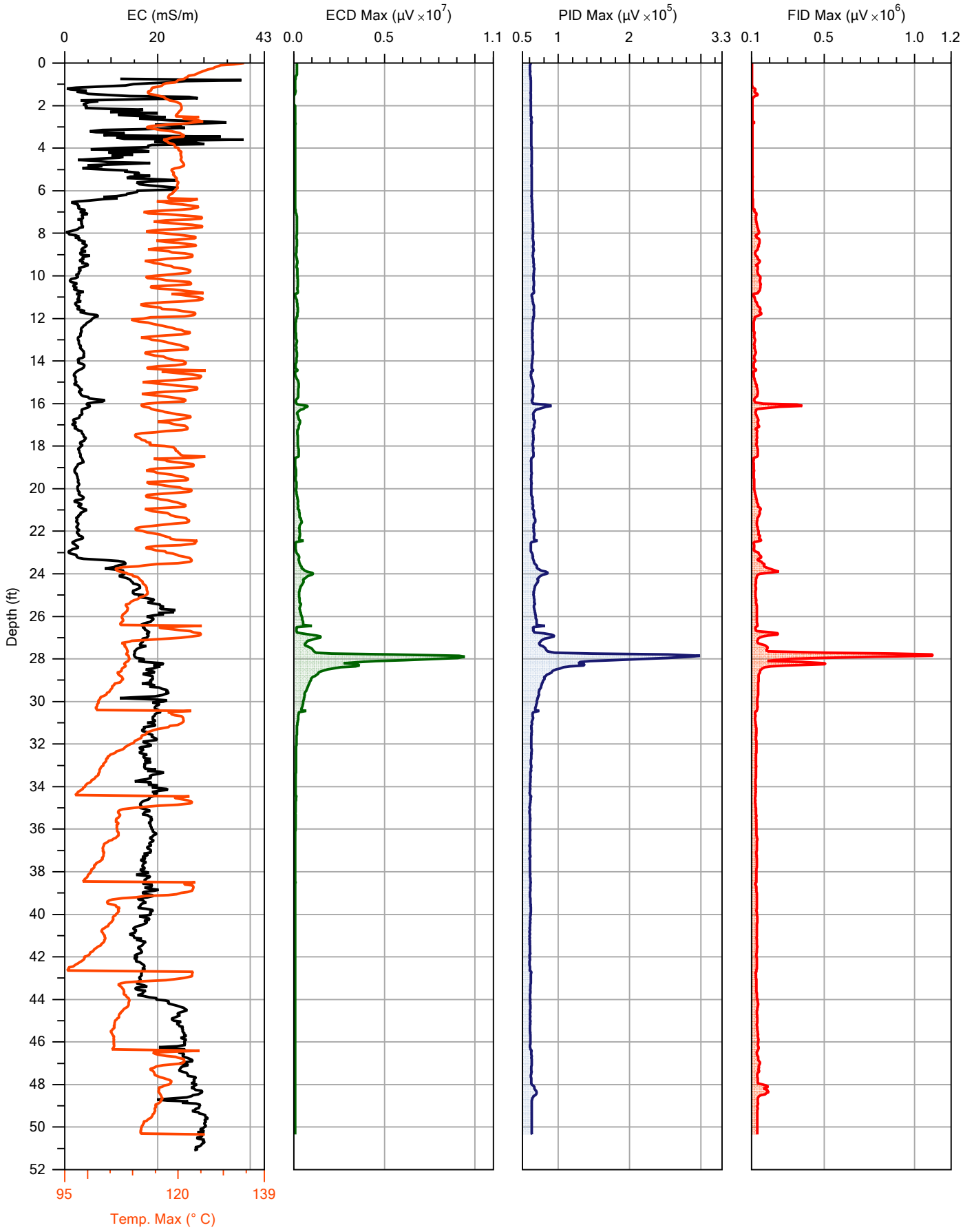
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

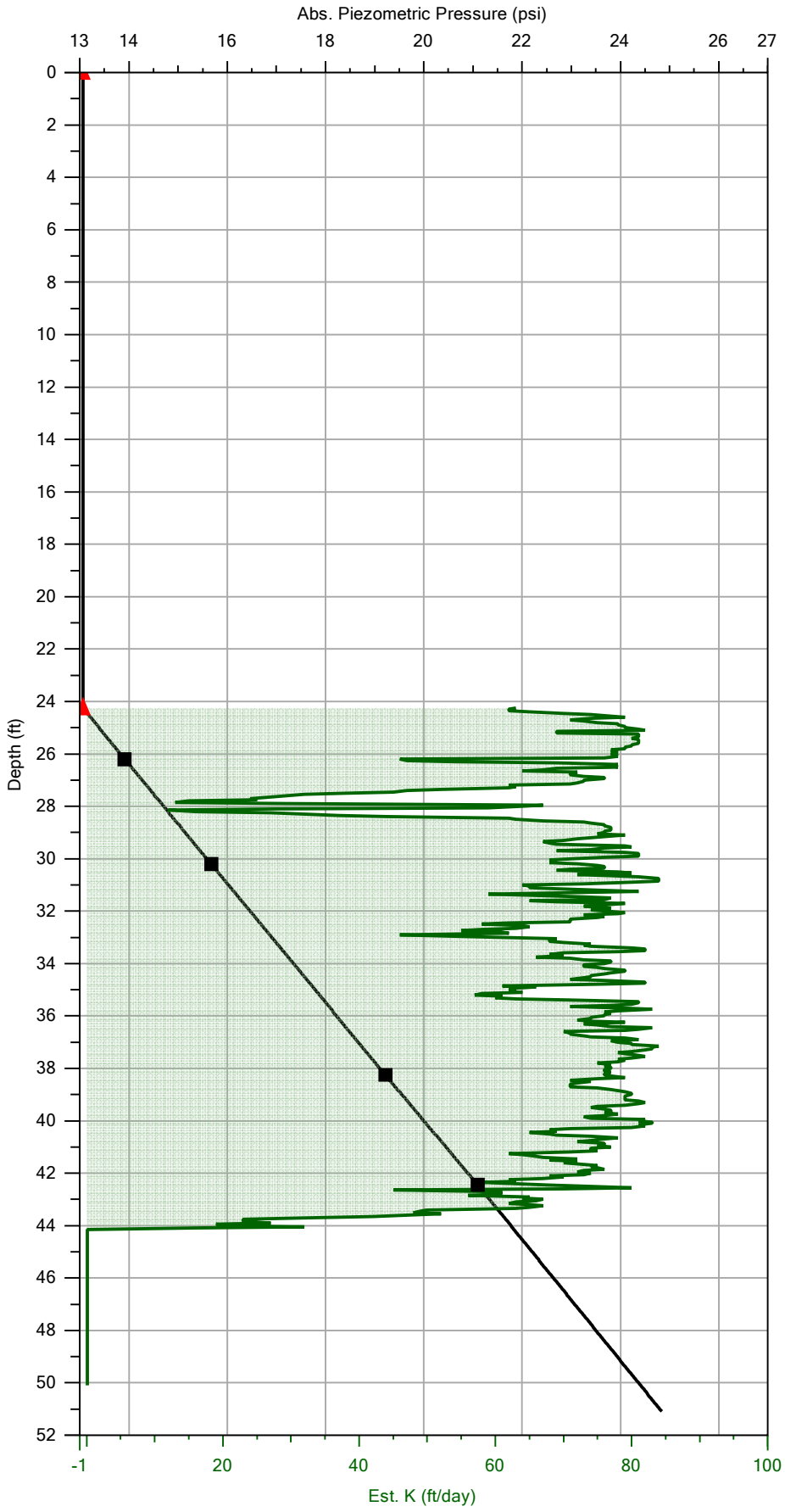
FILENAME: MIP-53.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 10:30:44

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-54.MHP
Company: SER90		Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 45″ N, 83° 56′ 38″ W



			File: MIP-54.MHP
Company: SER90		Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 45″ N, 83° 56′ 38″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.9	7.1	PASS
High	290.0	300.6	3.6	PASS

MIP-54.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-54.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 10:39:47

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 17 2014 10:43:35

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.466	0.0	92.840
TOP with FLOW>0	13.988	265.4	96.440
BOTTOM with FLOW=0	13.239	0.0	91.280
BOTTOM with FLOW>0	13.760	267.7	94.870

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (183.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (60.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (46.7 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Thu Jul 17 2014 10:45:18

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.00	0.610	16	1	1	1
6.55	1.996	16	1	1	1

LOG END DEPTH: 50.35 ft (15.347 m)
LOG END TIME: Thu Jul 17 2014 12:22:58

LATITUDE: 41.995760097
LONGITUDE: -83.943996875
ELEVATION: 210.341 METERS 690.10 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-54.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 12:51:01

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 17 2014 12:54:12

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.468	0.0	92.860
TOP with FLOW>0	13.936	278.8	96.080
BOTTOM with FLOW=0	13.229	0.0	91.210
BOTTOM with FLOW>0	13.717	277.6	94.570

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

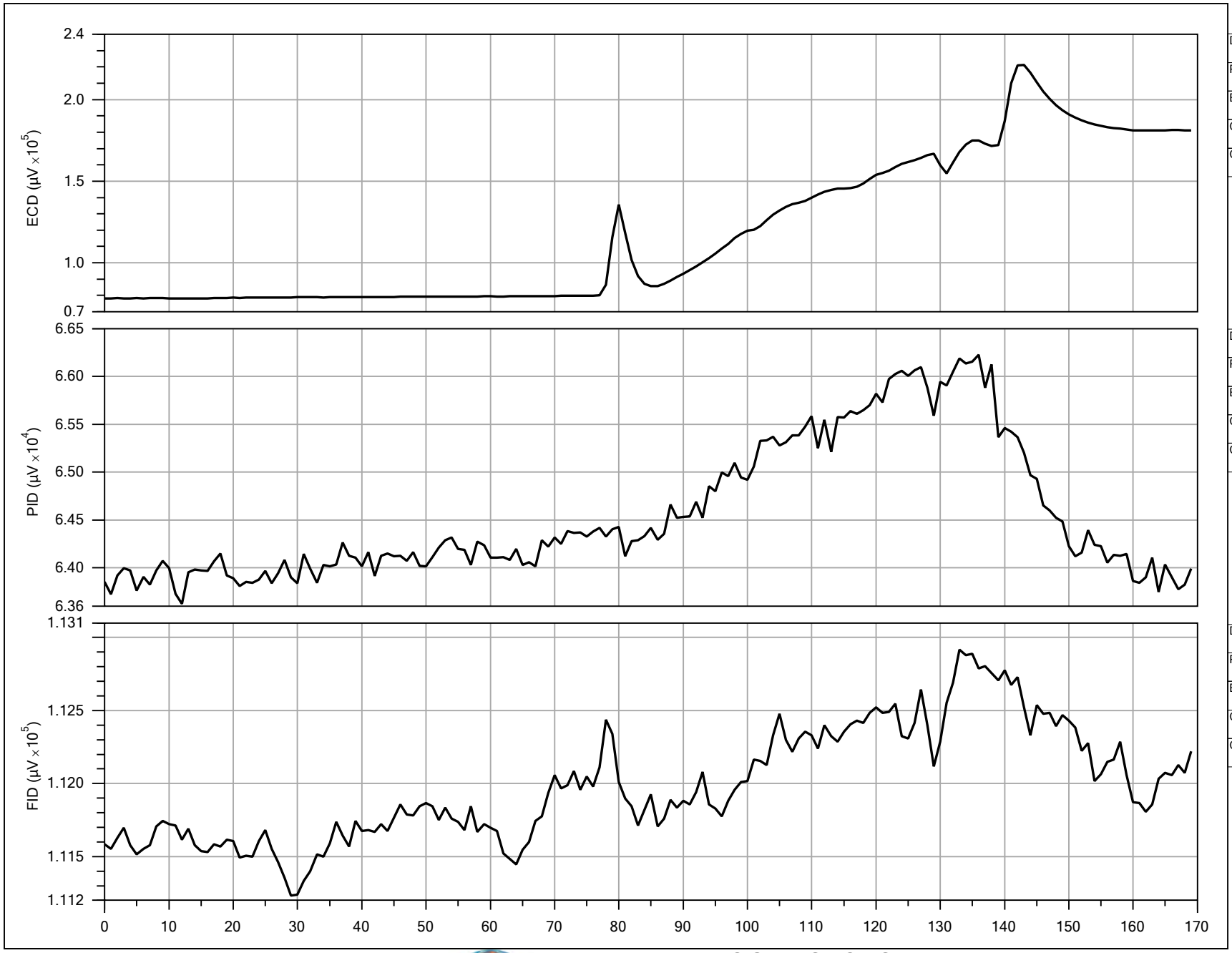
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.1	5.7	PASS
High	290.0	300.2	3.5	PASS

********** USER NOTES **********

Staff is at 1.45 meters



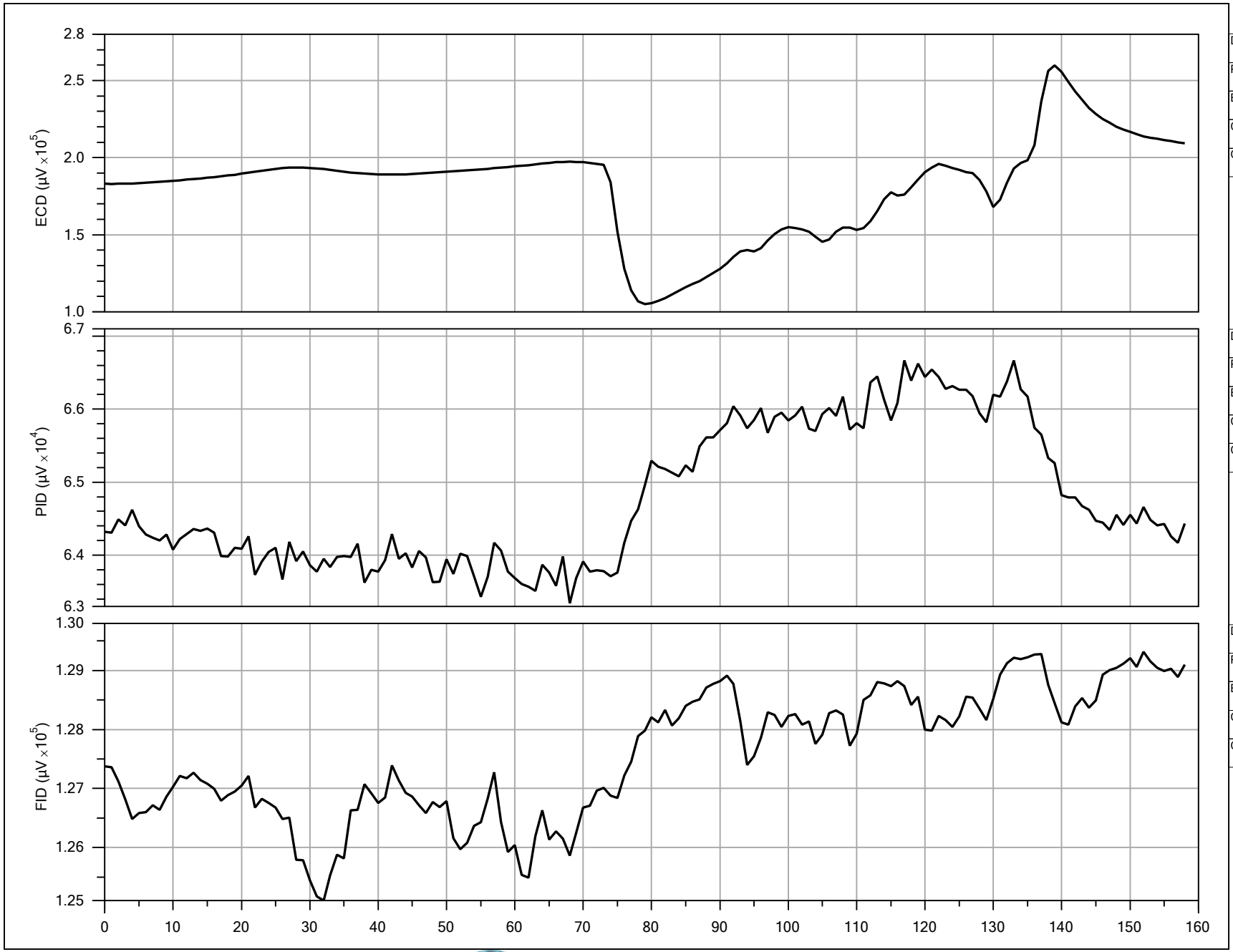
Detector:
ECD
Peak Response:
221343 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
66225 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
112918 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-54.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/17/2014



Detector:
ECD
Peak Response:
259789 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
66668 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
129315 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-54.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/17/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-54.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 10:39:47

RESPONSE TEST ATTENUATION CHANGES

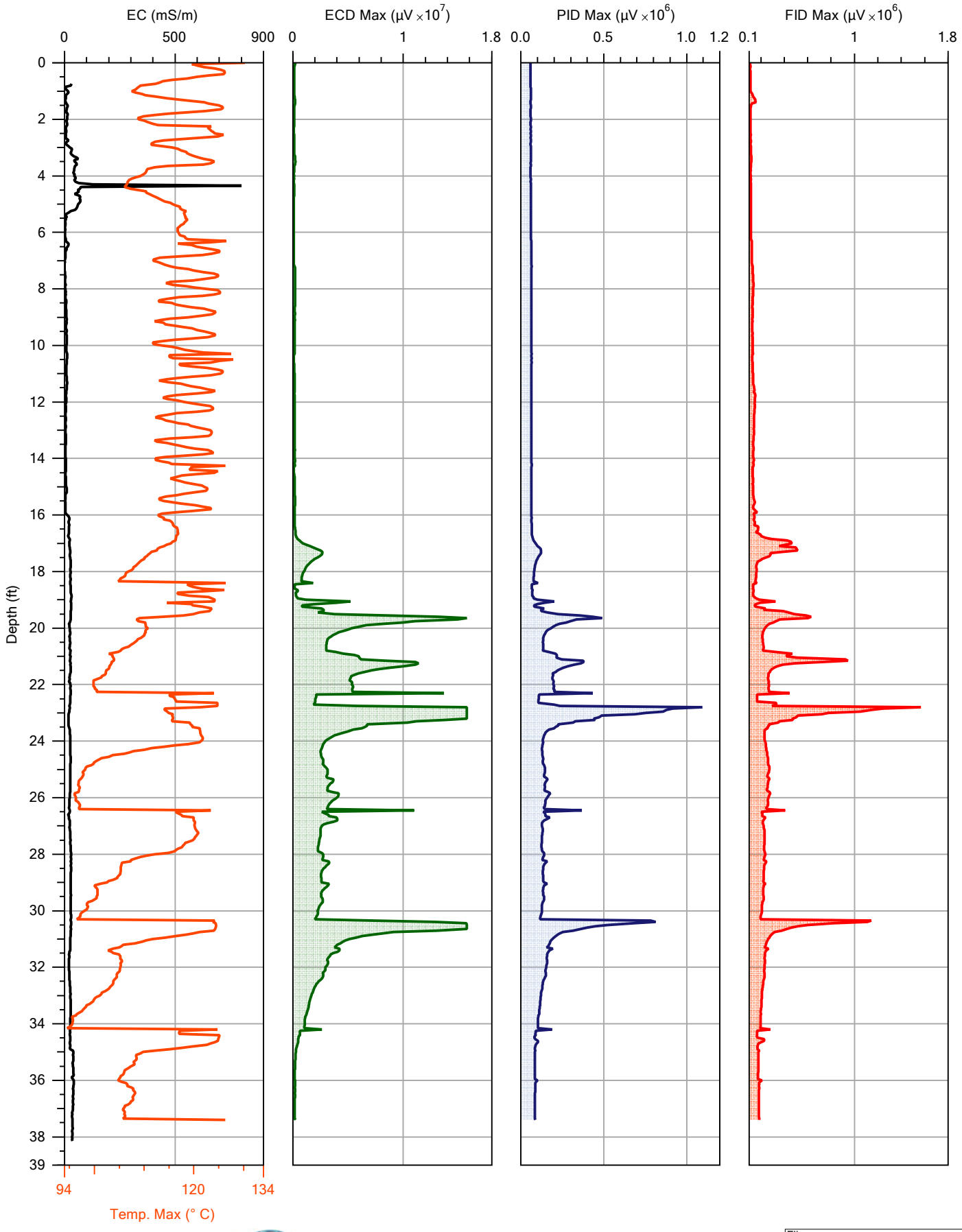
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

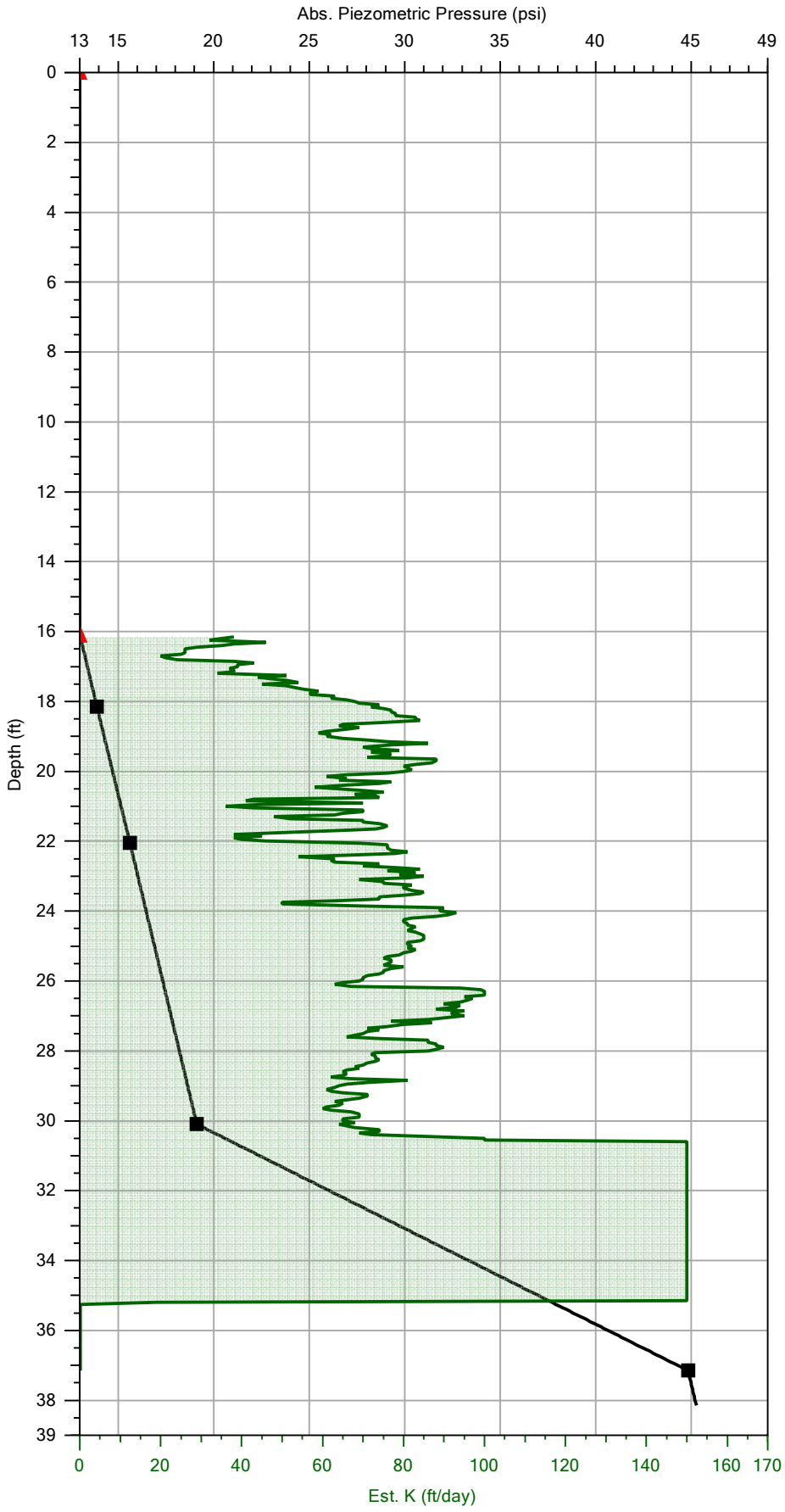
FILENAME: MIP-54.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 12:51:01

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-55.MHP
Company: SER90		Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 30″ W



		File: MIP-55.MHP
Company: SER90	Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 30″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.2	2.2	PASS
High	290.0	301.0	3.8	PASS

MIP-55.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-55.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.5 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 12:59:43

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 17 2014 13:01:43

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.423	0.0	92.550
TOP with FLOW>0	13.946	276.4	96.150
BOTTOM with FLOW=0	13.199	0.0	91.010
BOTTOM with FLOW>0	13.727	276.2	94.640

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (175.4 deg C) at 0.00 ft (0.000 m)

Temperature out of range (51.4 deg C) at 0.00 ft (0.000 m)

Temperature out of range (47.4 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Thu Jul 17 2014 13:03:59

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 37.40 ft (11.400 m)
LOG END TIME: Thu Jul 17 2014 15:24:17

LATITUDE: 41.998948194
LONGITUDE: -83.941756369
ELEVATION: 209.041 METERS 685.83 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-55.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 15:44:37

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 17 2014 15:47:23

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.396	0.0	92.360
TOP with FLOW>0	13.933	275.3	96.070
BOTTOM with FLOW=0	13.166	0.0	90.780
BOTTOM with FLOW>0	13.718	273.6	94.580

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

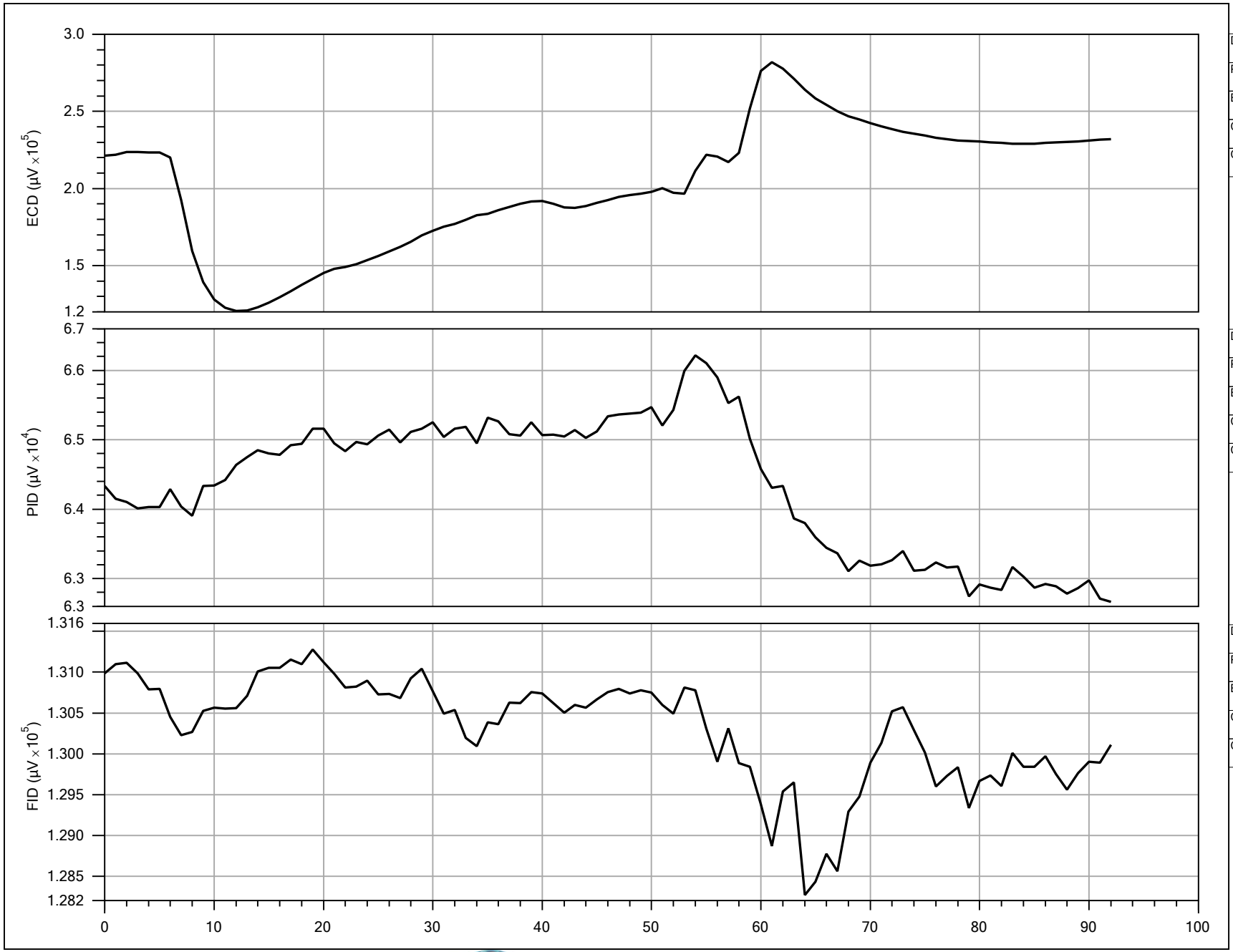
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.1	PASS
High	290.0	301.3	3.9	PASS

********** USER NOTES **********

Staff is at 1.45 m



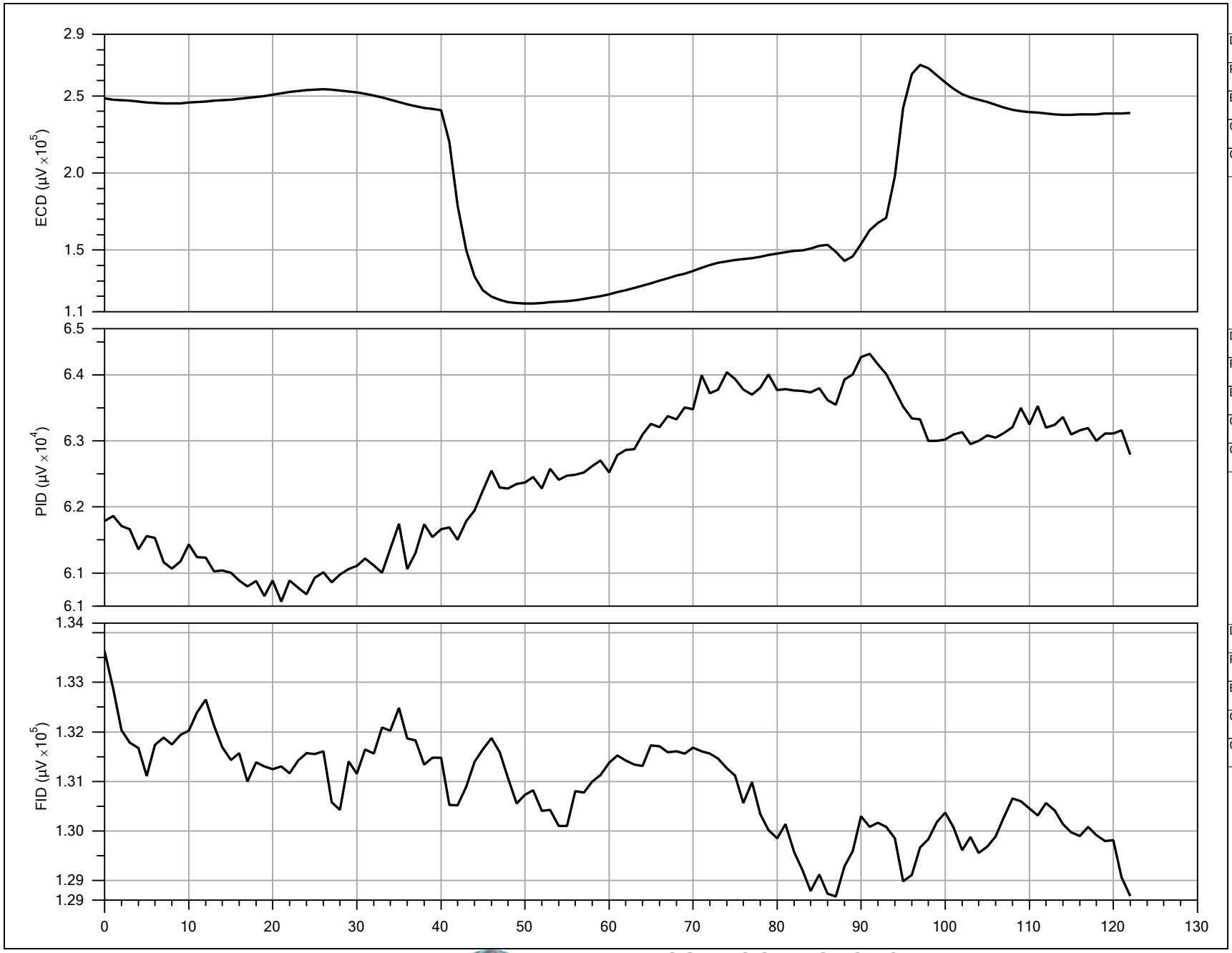
Detector:
ECD
Peak Response:
281800 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
66218 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
131275 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-55.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/17/2014



Detector:
ECD
Peak Response:
270127 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
64318 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
133633 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-55.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/17/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-55.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.5 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 12:59:43

RESPONSE TEST ATTENUATION CHANGES

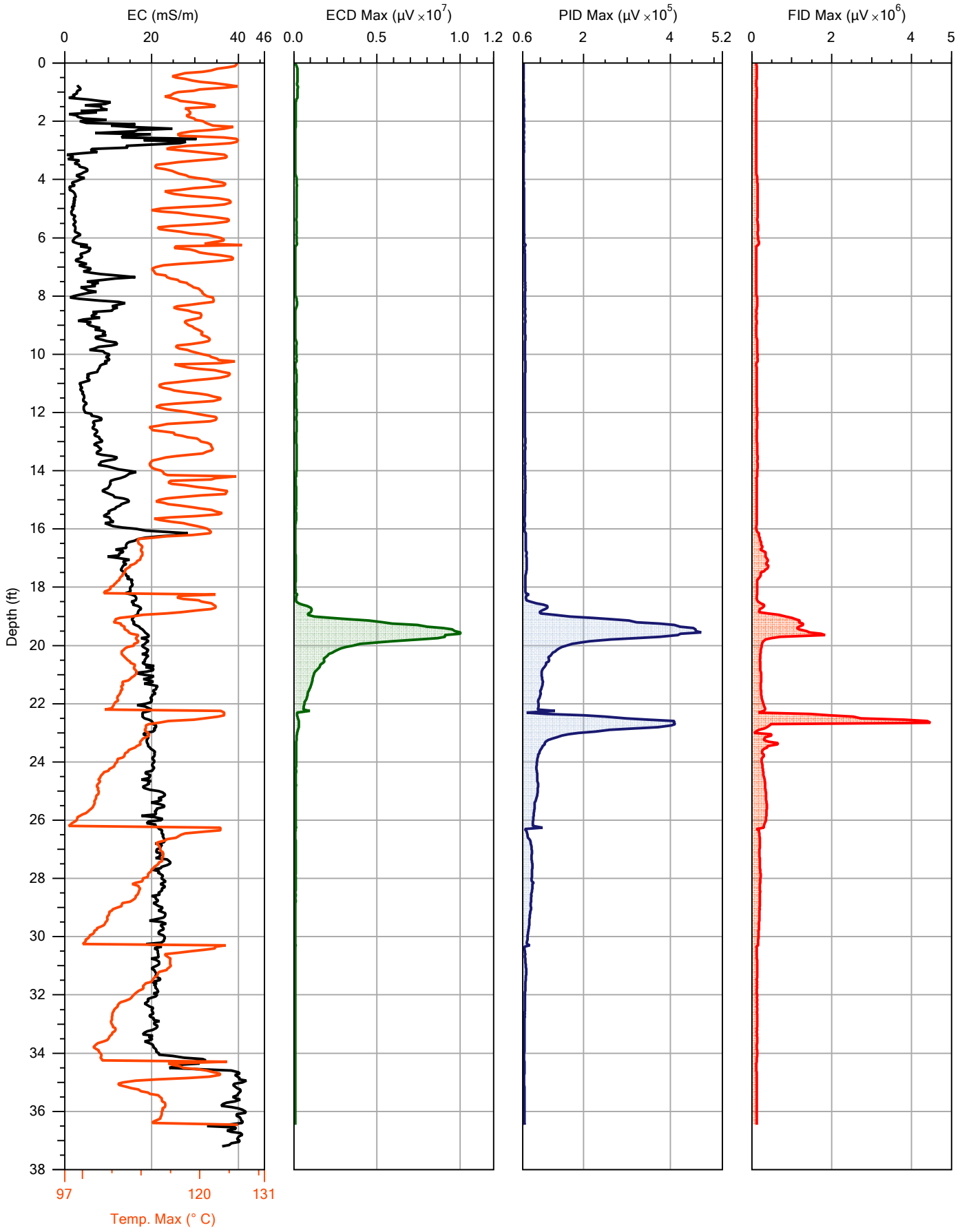
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

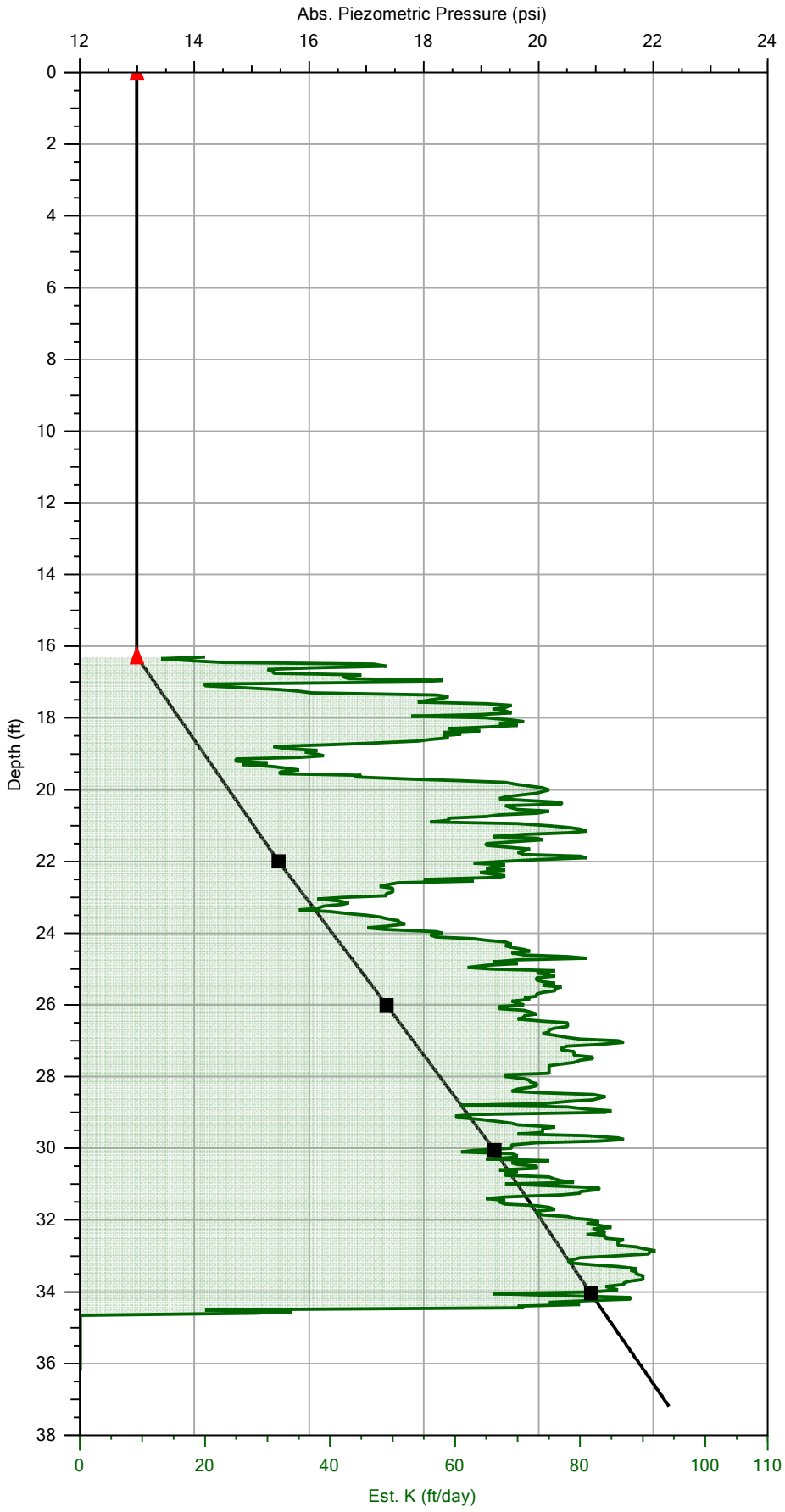
FILENAME: MIP-55.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 15:44:37

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-56.MHP
Company: SER90		Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 54″ N, 83° 56′ 30″ W



			File: MIP-56.MHP
Company: SER90		Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 54″ N, 83° 56′ 30″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.3	4.1	PASS
High	290.0	291.0	0.3	PASS

MIP-56.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-56.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 16:00:09

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 78 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 17 2014 16:03:32

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.357	0.0	92.090
TOP with FLOW>0	14.067	287.6	96.990
BOTTOM with FLOW=0	13.128	0.0	90.520
BOTTOM with FLOW>0	13.921	293.5	95.980

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (231.1 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (55.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (43.3 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Thu Jul 17 2014 16:05:52

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.05	0.015	16	1	1	1
23.05	7.026	16	1	10	1

LOG END DEPTH: 36.45 ft (11.110 m)
LOG END TIME: Thu Jul 17 2014 17:34:28

LATITUDE: 41.998343197
LONGITUDE: -83.941721425
ELEVATION: 209.103 METERS 686.03 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-56.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.5 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 17:58:12

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 17 2014 18:02:42

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.439	0.0	92.660

TOP with FLOW>0	14.113	272.8	97.310
BOTTOM with FLOW=0	13.198	0.0	91.000
BOTTOM with FLOW>0	13.898	277.1	95.820

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

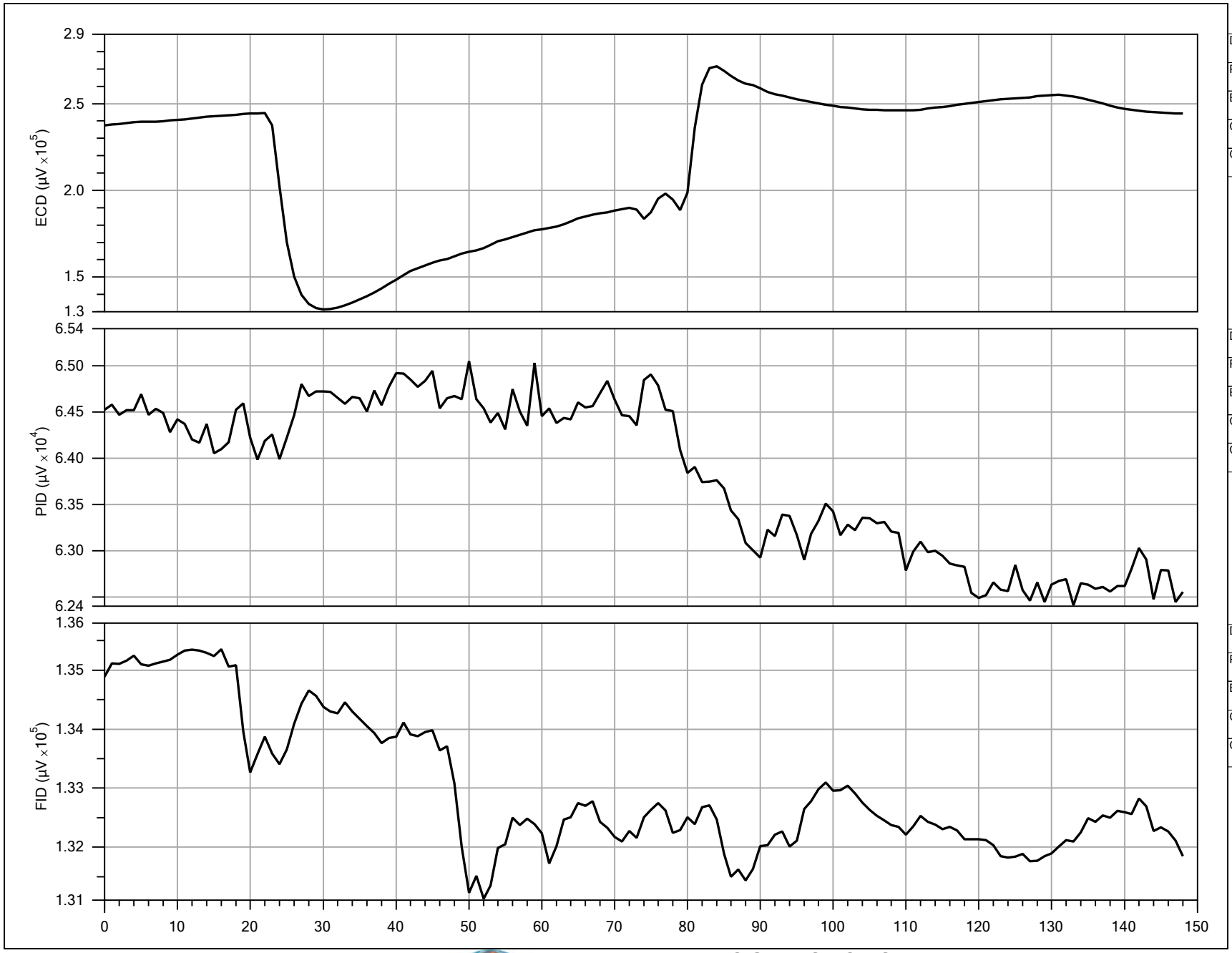
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.0	3.7	PASS
High	290.0	297.8	2.7	PASS

********** USER NOTES **********

Staff is at 1.45m



Detector:
ECD
Peak Response:
271660 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
65050 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
135357 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-56.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/17/2014

Detector:
ECD
Peak Response:
226791 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
59824 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
105899 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-56.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/17/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-56.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 16:00:09

RESPONSE TEST ATTENUATION CHANGES

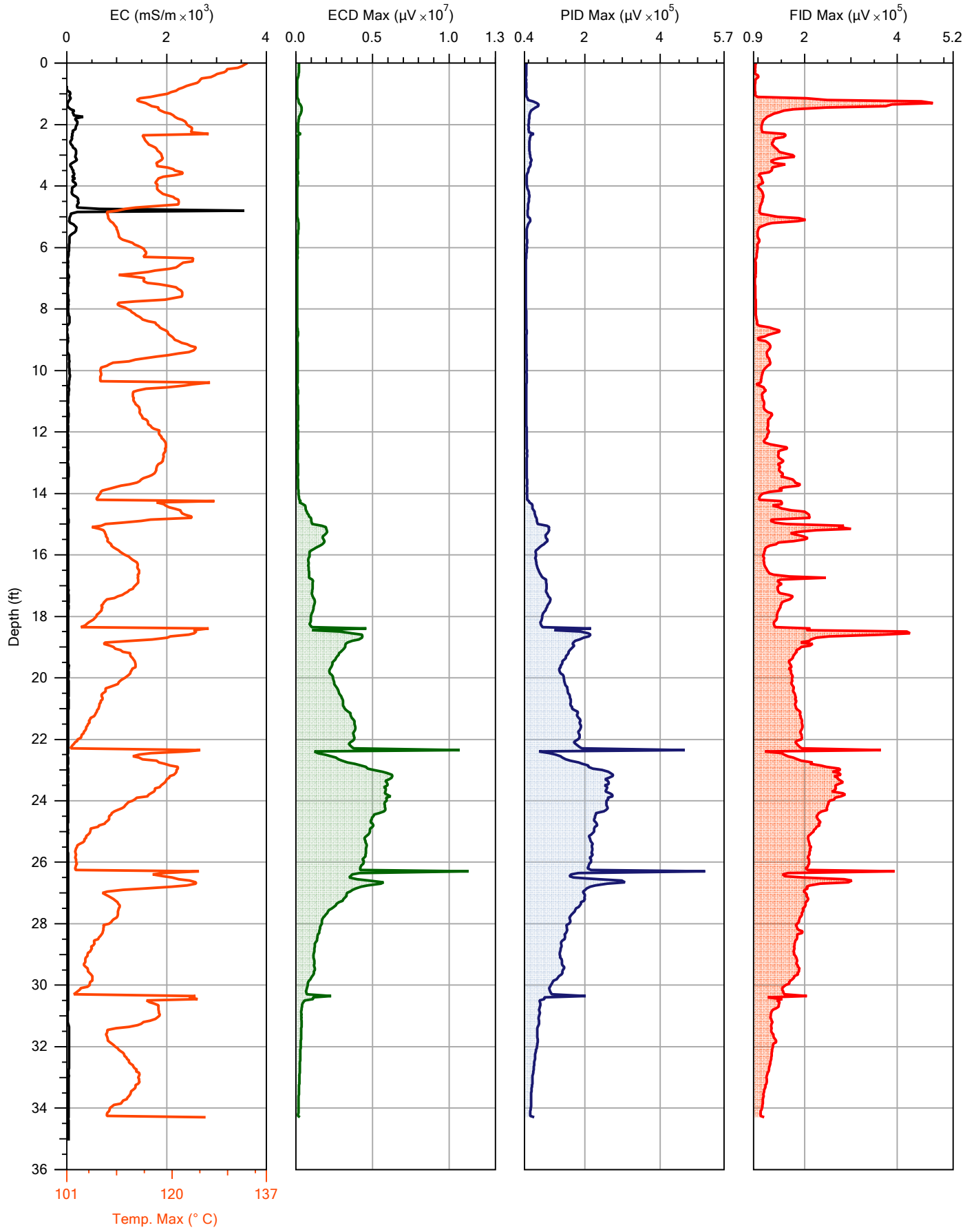
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

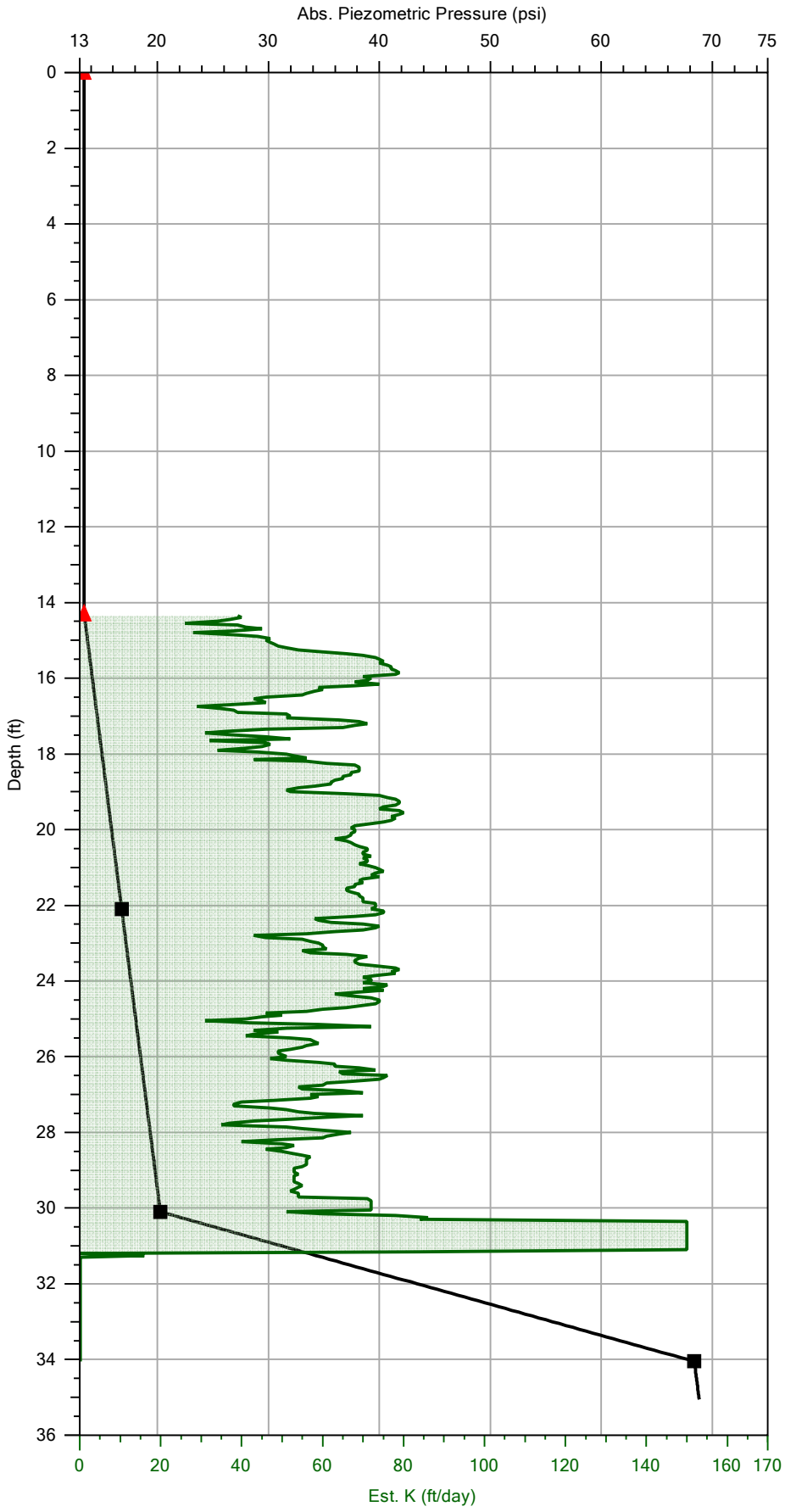
FILENAME: MIP-56.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.5 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 17:58:12

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-57.MHP
Company: SER90	Operator: Sammy		Date: 7/18/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location: 41° 59′ 56″ N, 83° 56′ 29″ W



		File: MIP-57.MHP
Company: SER90	Operator: Sammy	Date: 7/18/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 29″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.0	5.4	PASS
High	290.0	299.2	3.2	PASS

MIP-57.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-57.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 50.1 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 08:48:08

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 18 2014 08:51:20

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	14.125	0.0	97.390
TOP with FLOW>0	14.801	319.7	102.050
BOTTOM with FLOW=0	13.912	0.0	95.920
BOTTOM with FLOW>0	14.683	346.5	101.230

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 18 2014 08:53:44

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 34.30 ft (10.455 m)
LOG END TIME: Fri Jul 18 2014 09:39:03

LATITUDE: 41.998946339
LONGITUDE: -83.941289403
ELEVATION: 209.022 METERS 685.77 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-57.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.8 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 10:00:28

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 18 2014 10:03:36

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.483	0.0	92.960
TOP with FLOW>0	14.145	273.5	97.530
BOTTOM with FLOW=0	13.268	0.0	91.480
BOTTOM with FLOW>0	13.924	273.9	96.000

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

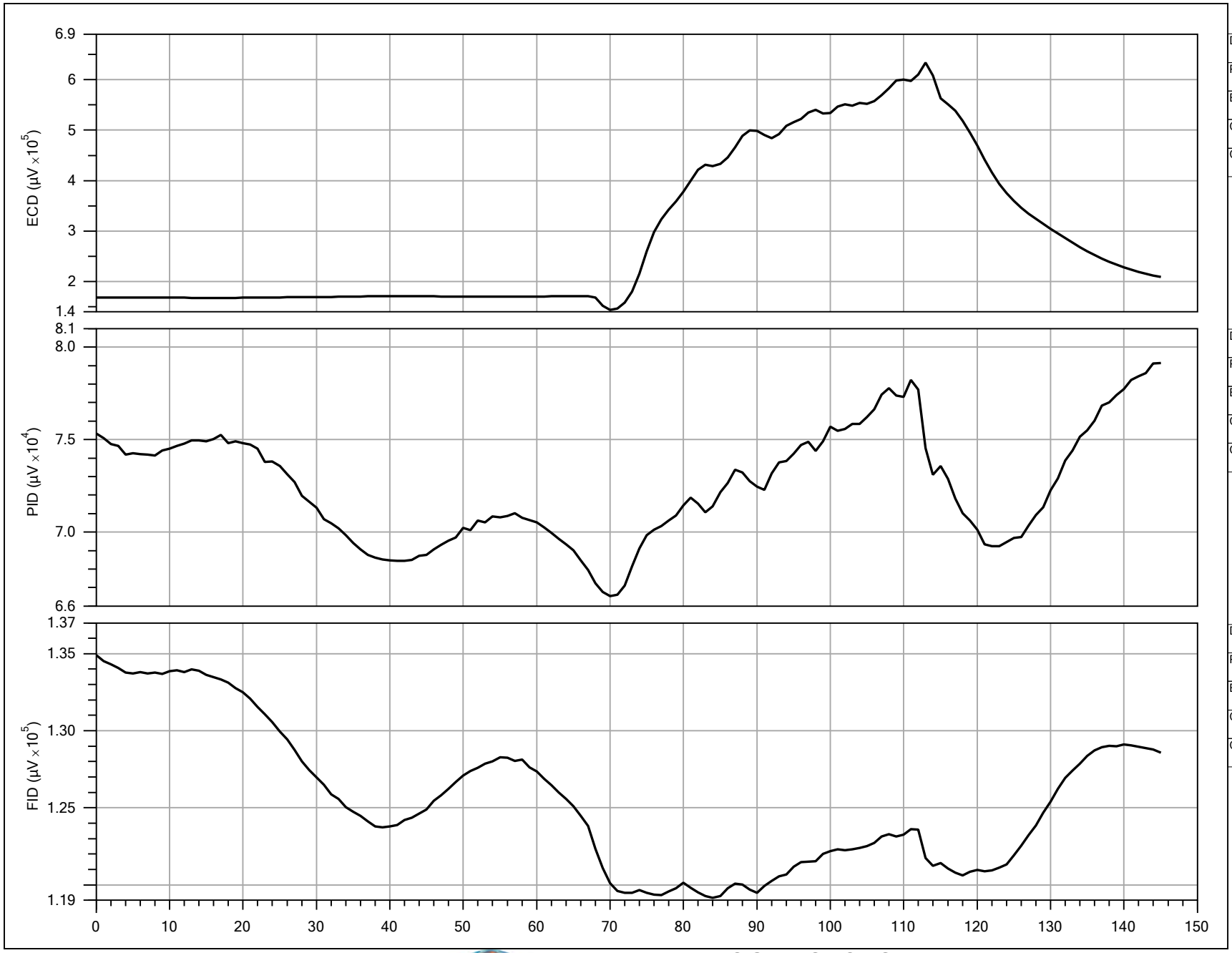
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.8	PASS
High	290.0	302.5	4.3	PASS

********** USER NOTES **********

Please note: a new MIP membrane was installed at this boring. Consult the Pre and Post standard tests for adequate analyis.



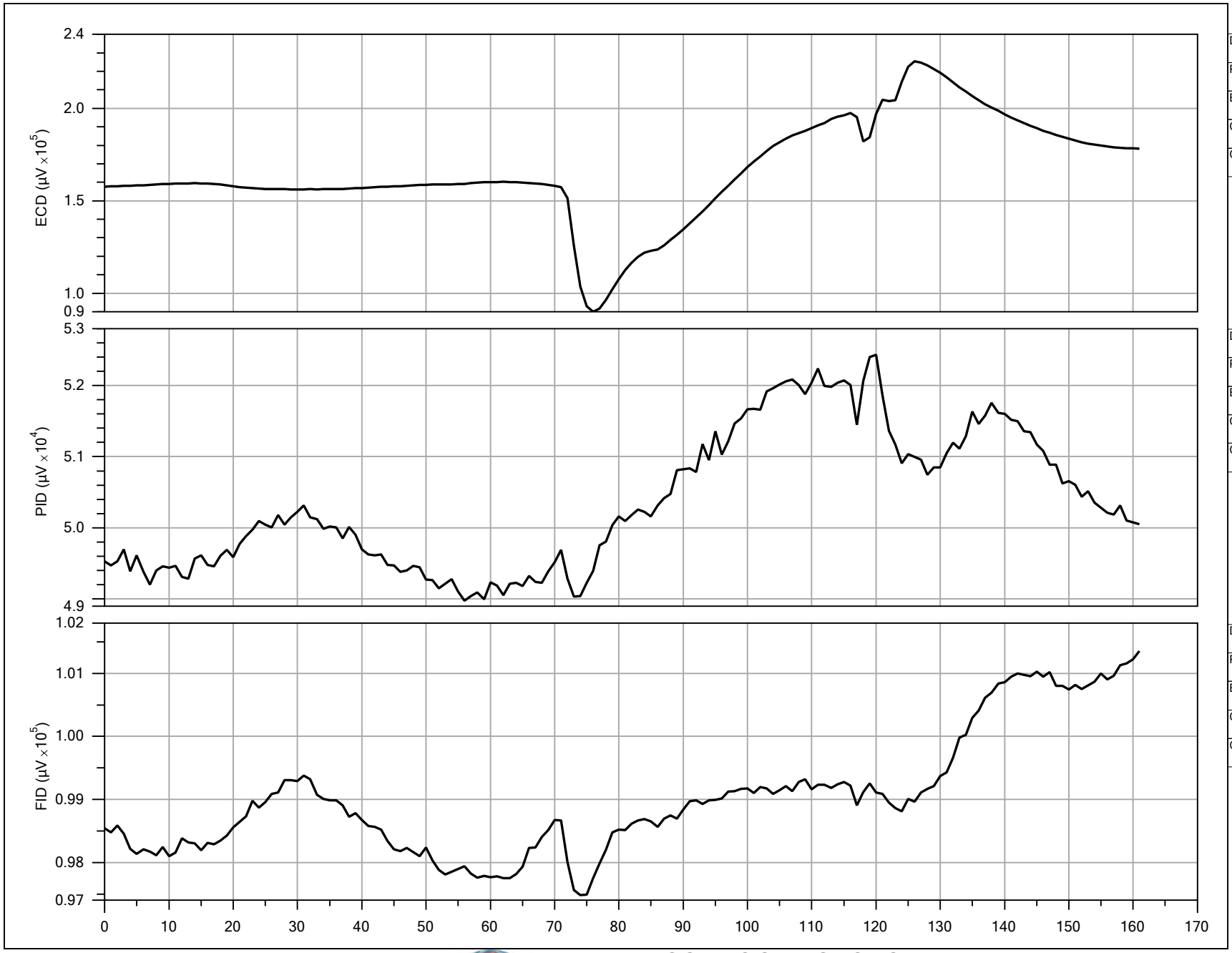
Detector:
ECD
Peak Response:
634037 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
79138 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
134915 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-57.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/18/2014



Detector:
ECD
Peak Response:
225341 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
52431 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
101350 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-57.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/18/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-57.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 50.1 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 08:48:08

RESPONSE TEST ATTENUATION CHANGES

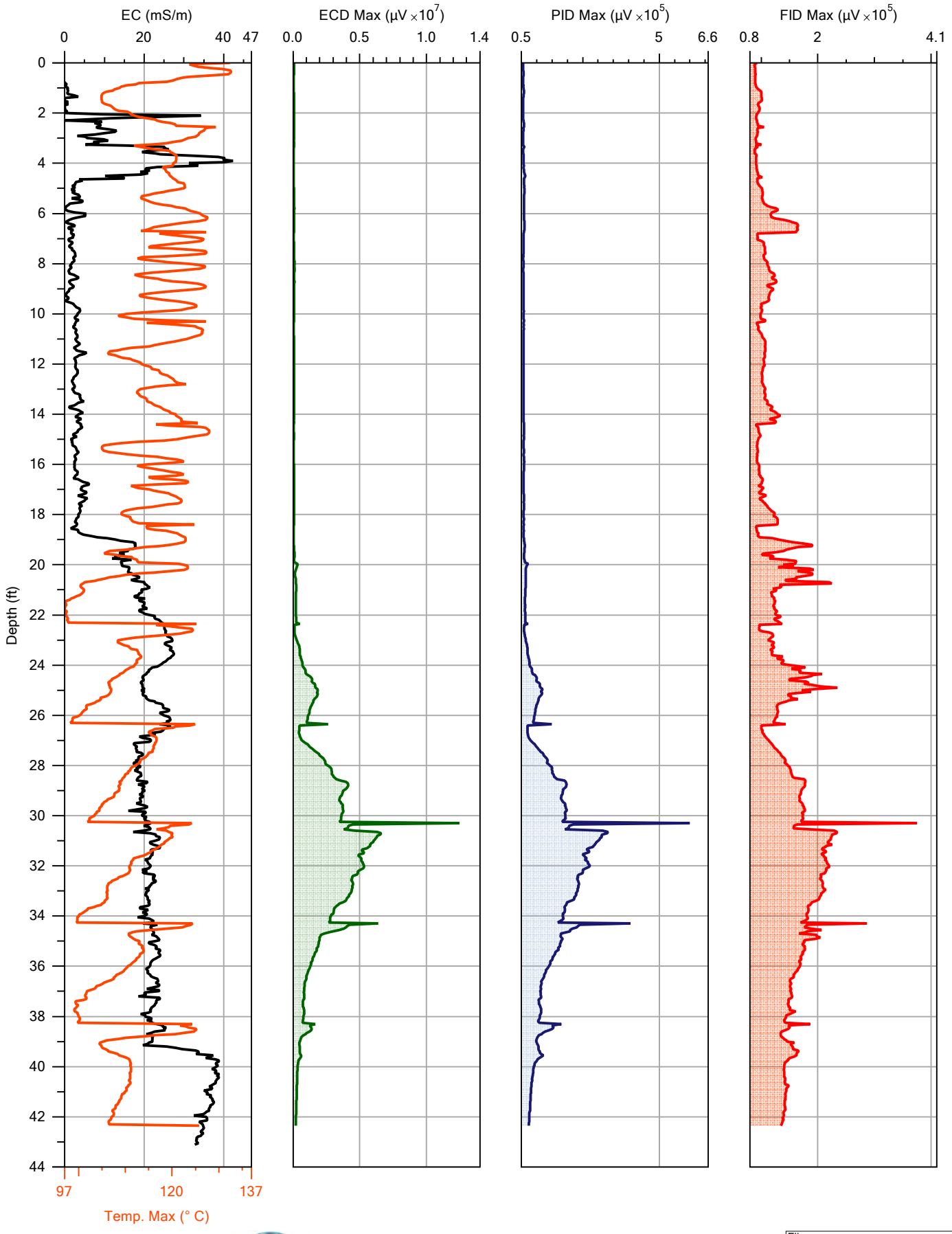
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

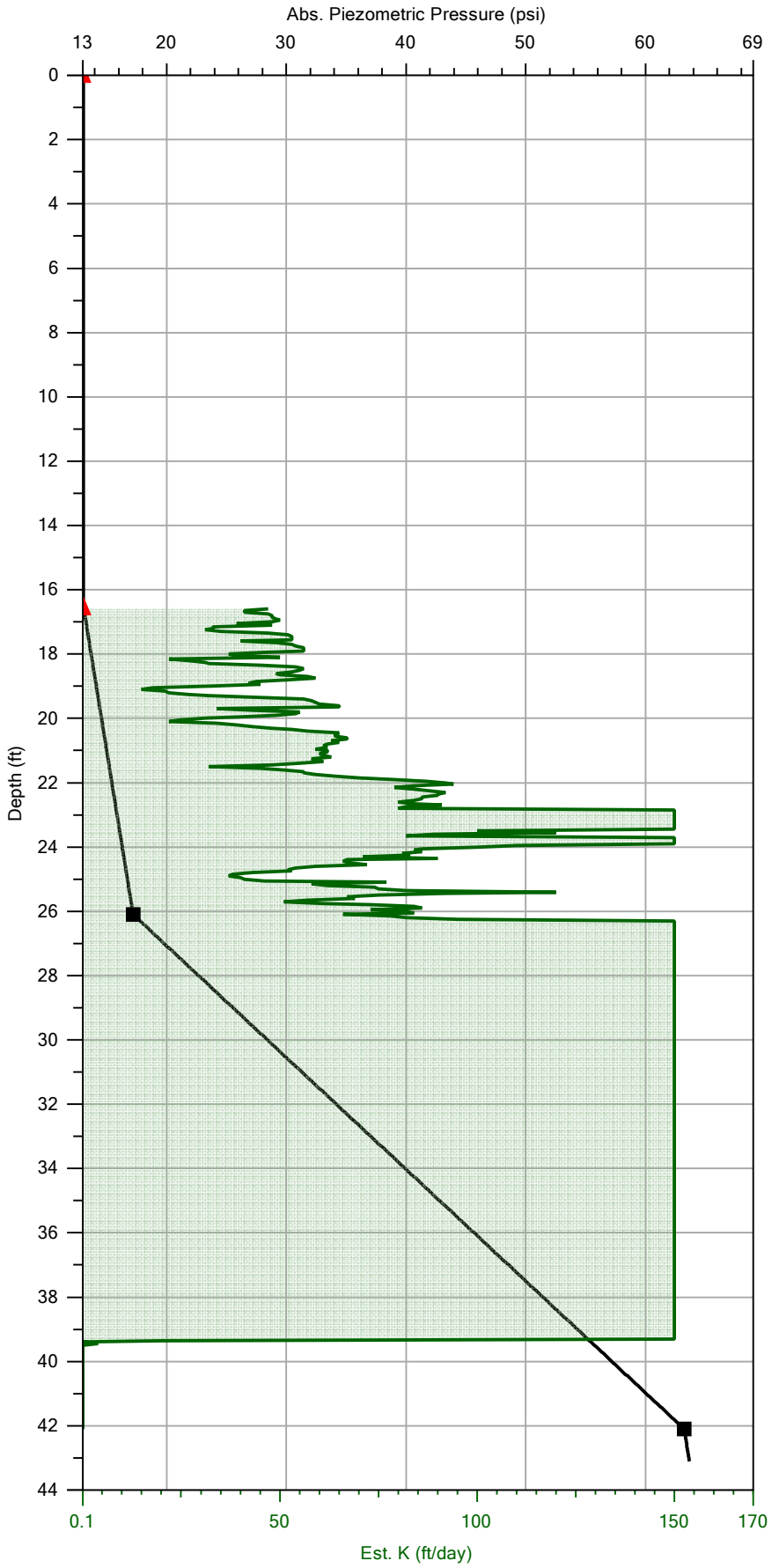
FILENAME: MIP-57.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.8 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 10:00:28

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-58.MHP
Company: SER90		Operator: Sammy	Date: 7/18/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 32″ W



			File: MIP-58.MHP
Company: SER90		Operator: Sammy	Date: 7/18/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 32″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.6	PASS
High	290.0	302.1	4.2	PASS

MIP-58.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-58.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.8 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 10:13:06

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 18 2014 10:15:16

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.471	0.0	92.880
TOP with FLOW>0	14.173	276.5	97.720
BOTTOM with FLOW=0	13.252	0.0	91.370
BOTTOM with FLOW>0	14.037	284.6	96.780

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (185.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (62.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (45.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (44.4 deg C) at 0.00 ft (0.000 m)

Temperature out of range (43.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (42.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (42.1 deg C) at 0.00 ft (0.000 m)

Temperature out of range (41.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (40.9 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Fri Jul 18 2014 10:17:33

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 42.35 ft (12.908 m)
LOG END TIME: Fri Jul 18 2014 12:01:27

LATITUDE: 41.998972569
LONGITUDE: -83.942270269
ELEVATION: 208.711 METERS 684.75 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-58.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.0 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 12:25:29

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 18 2014 12:28:15

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.459	0.0	92.800
TOP with FLOW>0	14.146	299.3	97.530
BOTTOM with FLOW=0	13.224	0.0	91.170
BOTTOM with FLOW>0	13.932	302.7	96.060

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

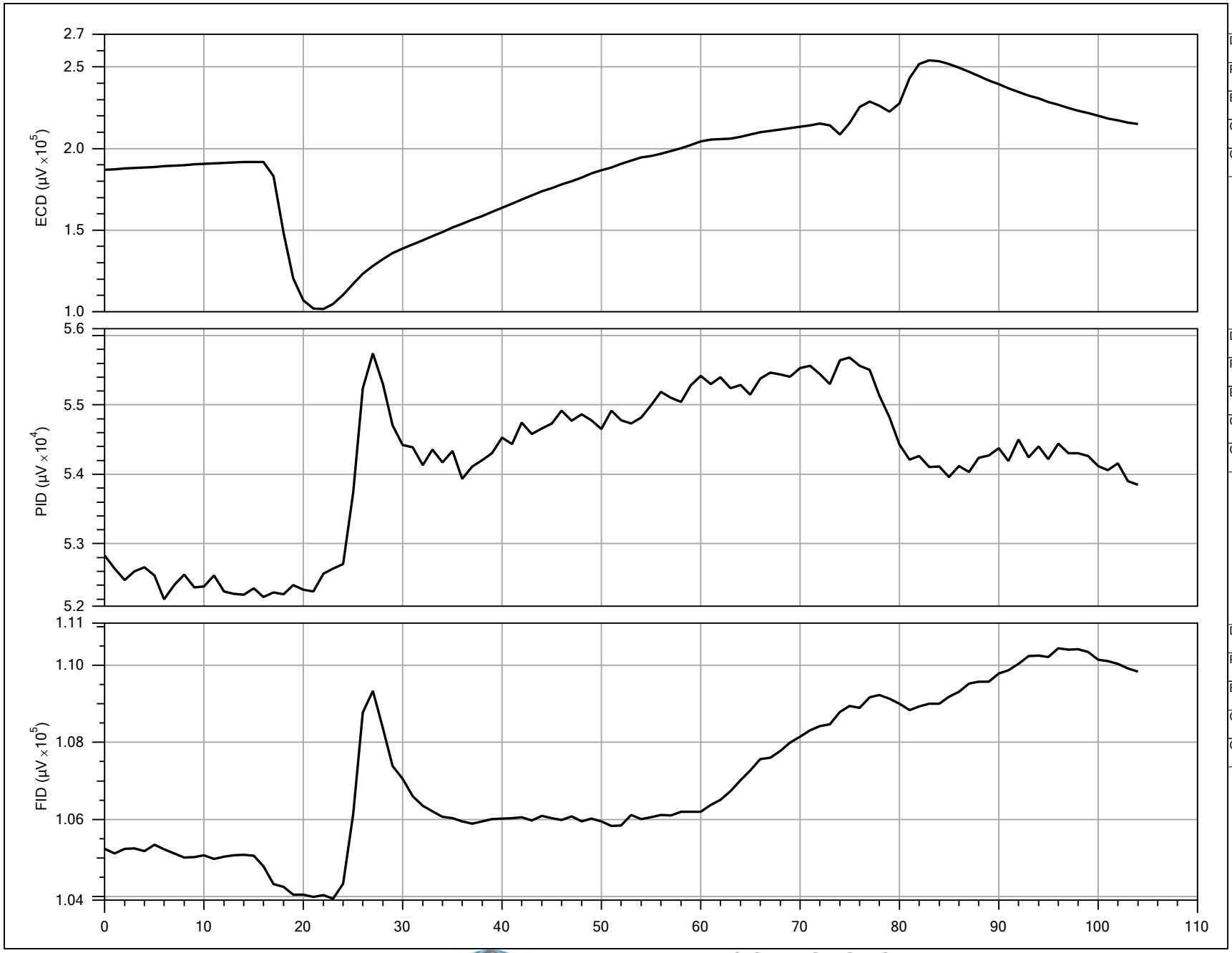
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.0	5.4	PASS
High	290.0	303.1	4.5	PASS

********** USER NOTES **********

Staff is at 1.45m



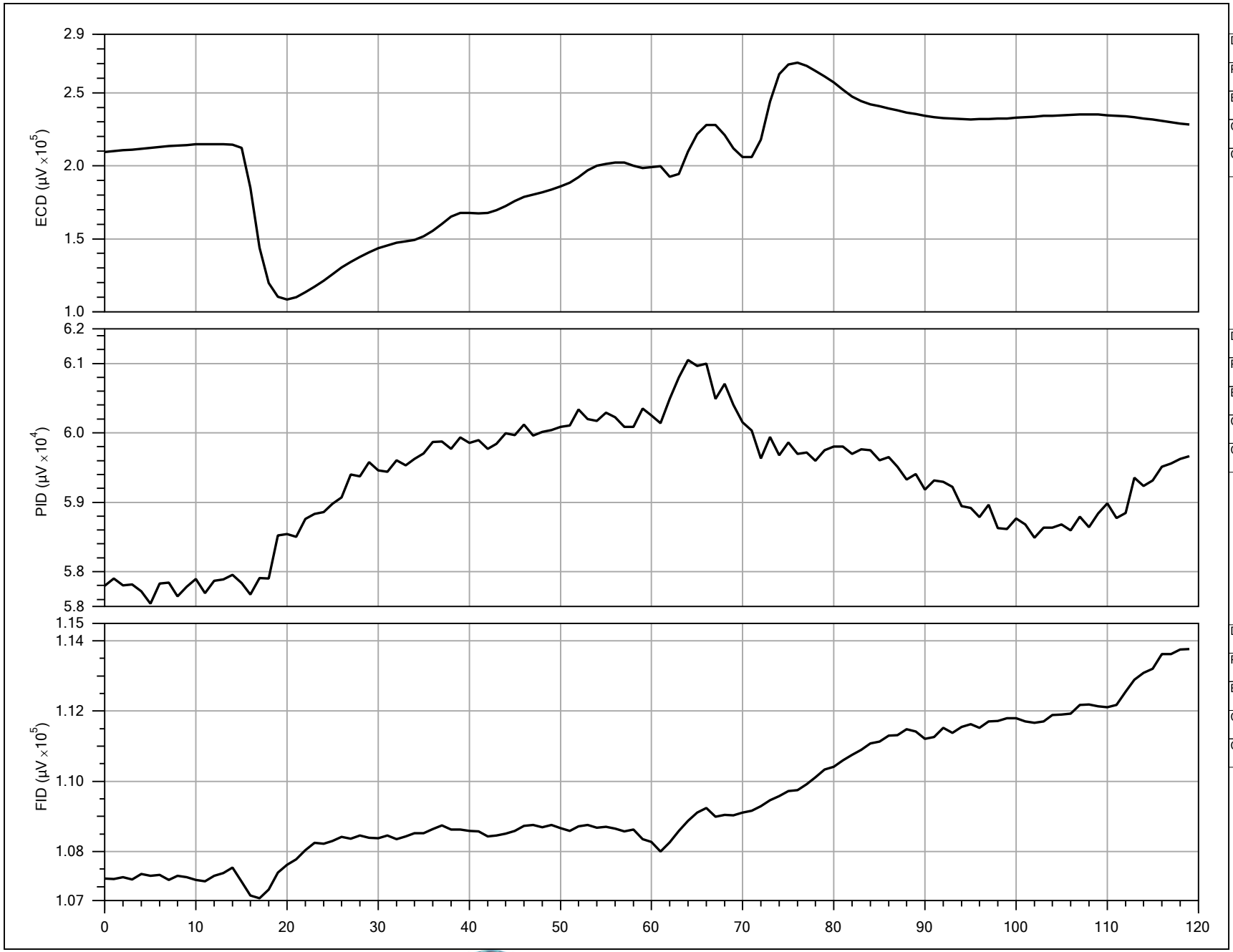
Detector:
ECD
Peak Response:
254044 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
55742 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
110439 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-58.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/18/2014



Detector:
ECD
Peak Response:
270470 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
61052 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
113758 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-58.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/18/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-58.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.8 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 10:13:06

RESPONSE TEST ATTENUATION CHANGES

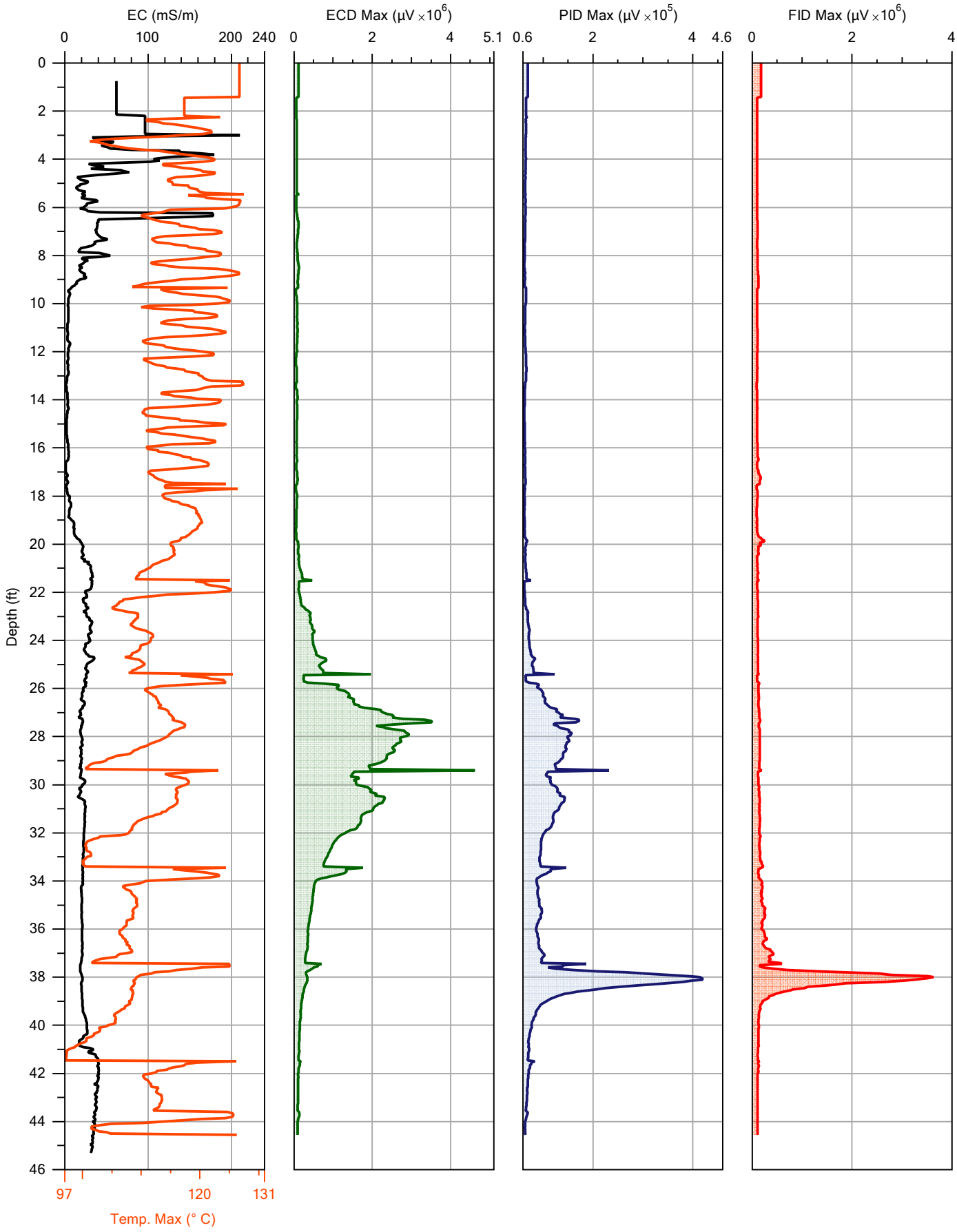
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

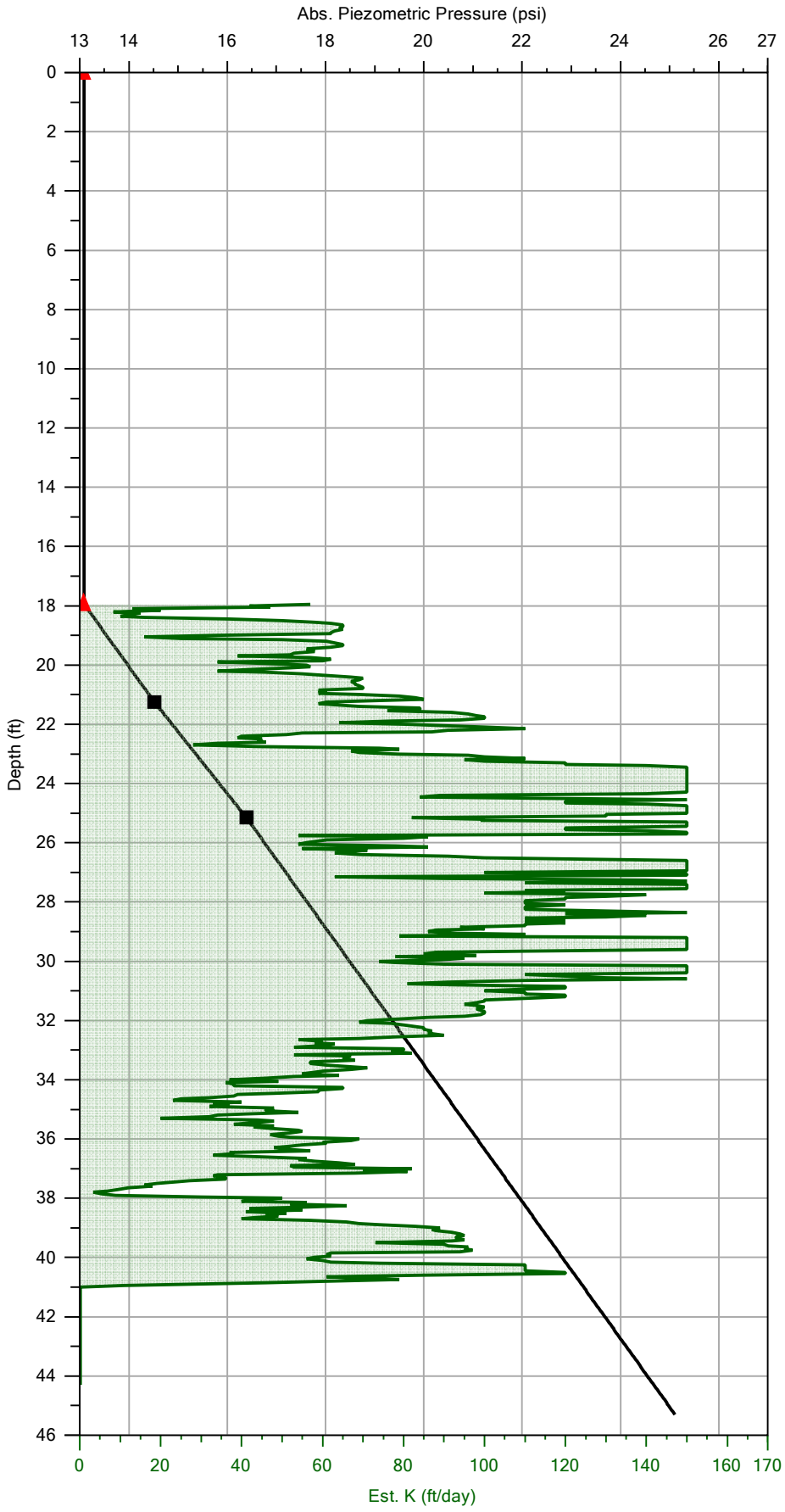
FILENAME: MIP-58.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.0 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 12:25:29

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-59.MHP
Company: SER90		Operator: Sammy	Date: 7/18/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 34″ W



			File: MIP-59.MHP
Company: SER90		Operator: Sammy	Date: 7/18/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 34″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	303.2	4.5	PASS

MIP-59.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-59.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.6 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 12:31:54

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 18 2014 12:35:55

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.455	0.0	92.770
TOP with FLOW>0	14.173	304.2	97.720
BOTTOM with FLOW=0	13.231	0.0	91.230
BOTTOM with FLOW>0	13.951	307.4	96.190

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (79.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (187.3 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (66.2 deg C) at 0.00 ft (0.000 m)

Temperature out of range (46.5 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Fri Jul 18 2014 12:37:55

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
17.70	5.395	16	1	1	1
26.85	8.184	16	1	1	1

LOG END DEPTH: 44.55 ft (13.579 m)
LOG END TIME: Fri Jul 18 2014 14:12:34

LATITUDE: 41.998956064
LONGITUDE: -83.942838561
ELEVATION: 208.927 METERS 685.46 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-59.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 14:44:06

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 18 2014 14:47:59

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.510	0.0	93.150
TOP with FLOW>0	14.147	300.4	97.540
BOTTOM with FLOW=0	13.312	0.0	91.780
BOTTOM with FLOW>0	13.973	297.7	96.340

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

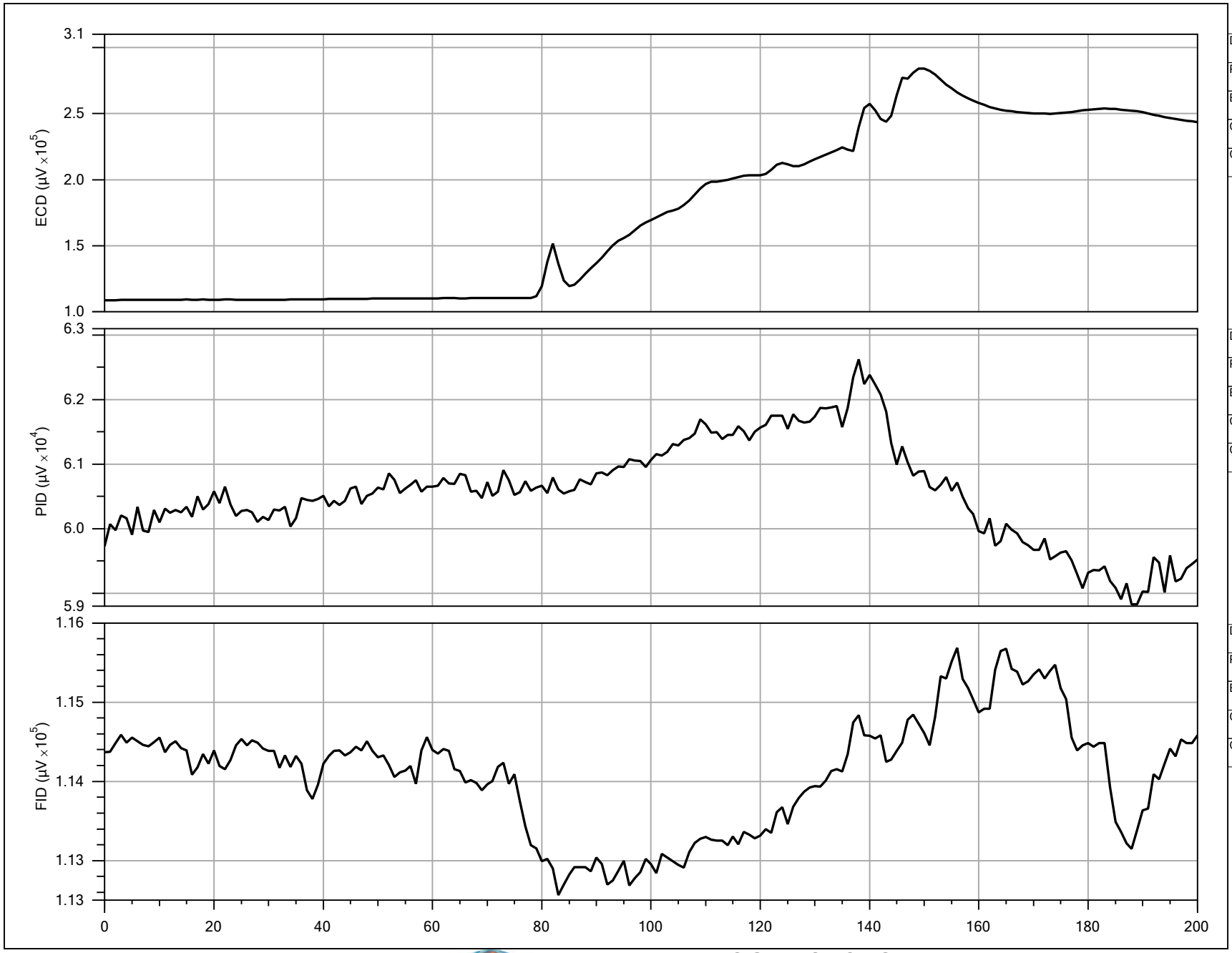
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.9	5.2	PASS
High	290.0	304.9	5.1	PASS

********** USER NOTES **********

Staff is at 1.45m



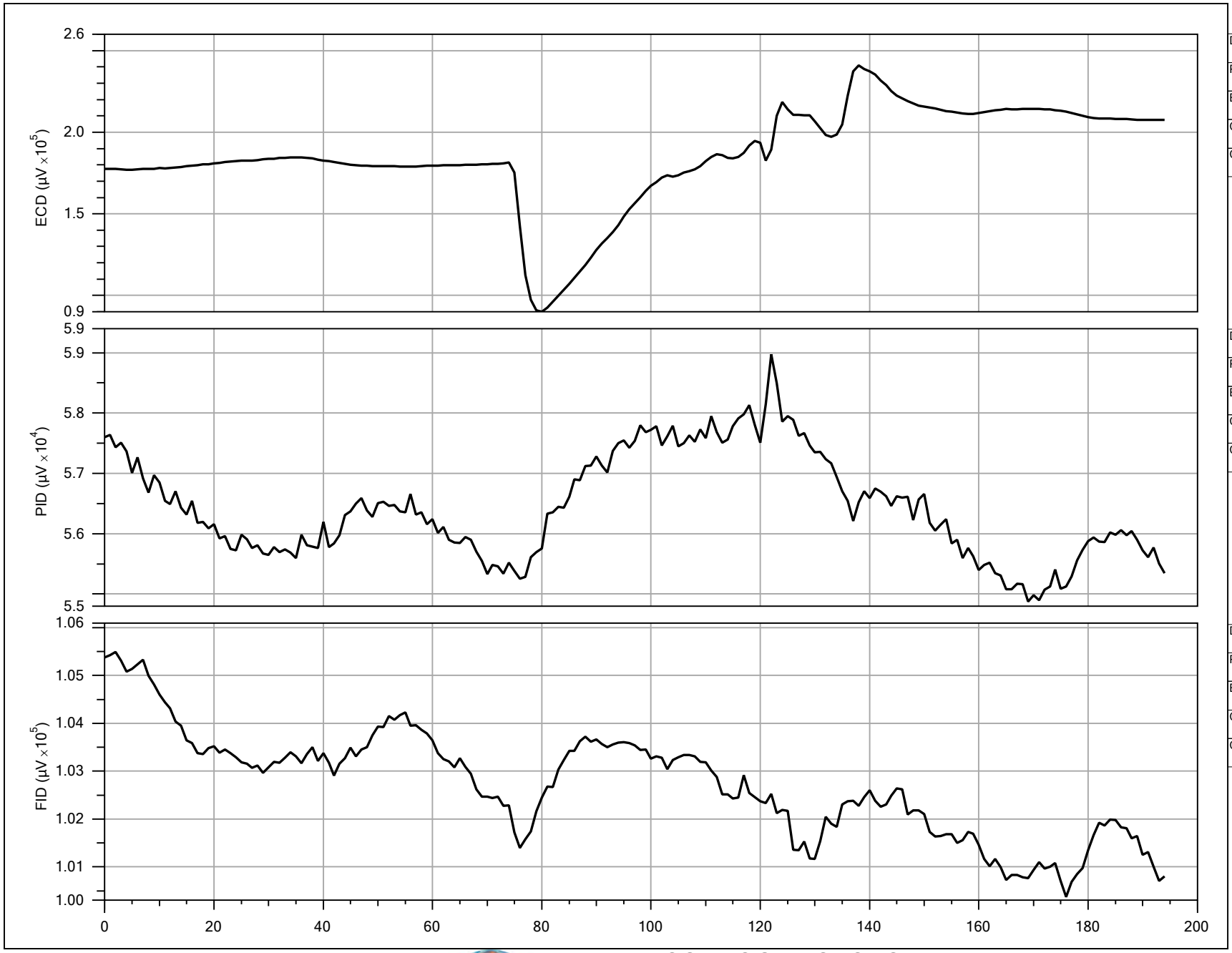
Detector:
ECD
Peak Response:
284158 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
62624 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
115688 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-59.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/18/2014



Detector:
ECD
Peak Response:
240921 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
58977 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
105495 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-59.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/18/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-59.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.6 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 12:31:54

RESPONSE TEST ATTENUATION CHANGES

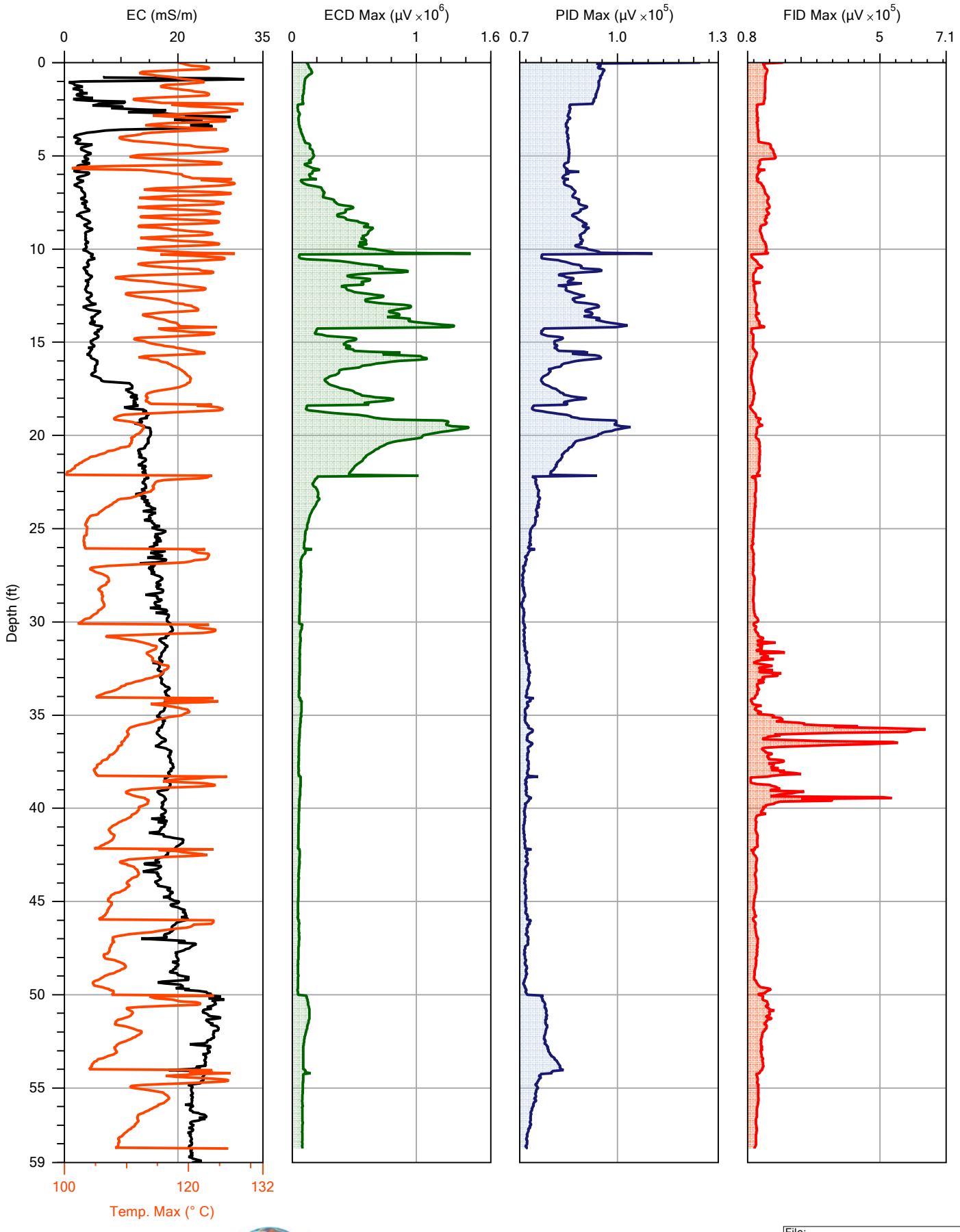
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

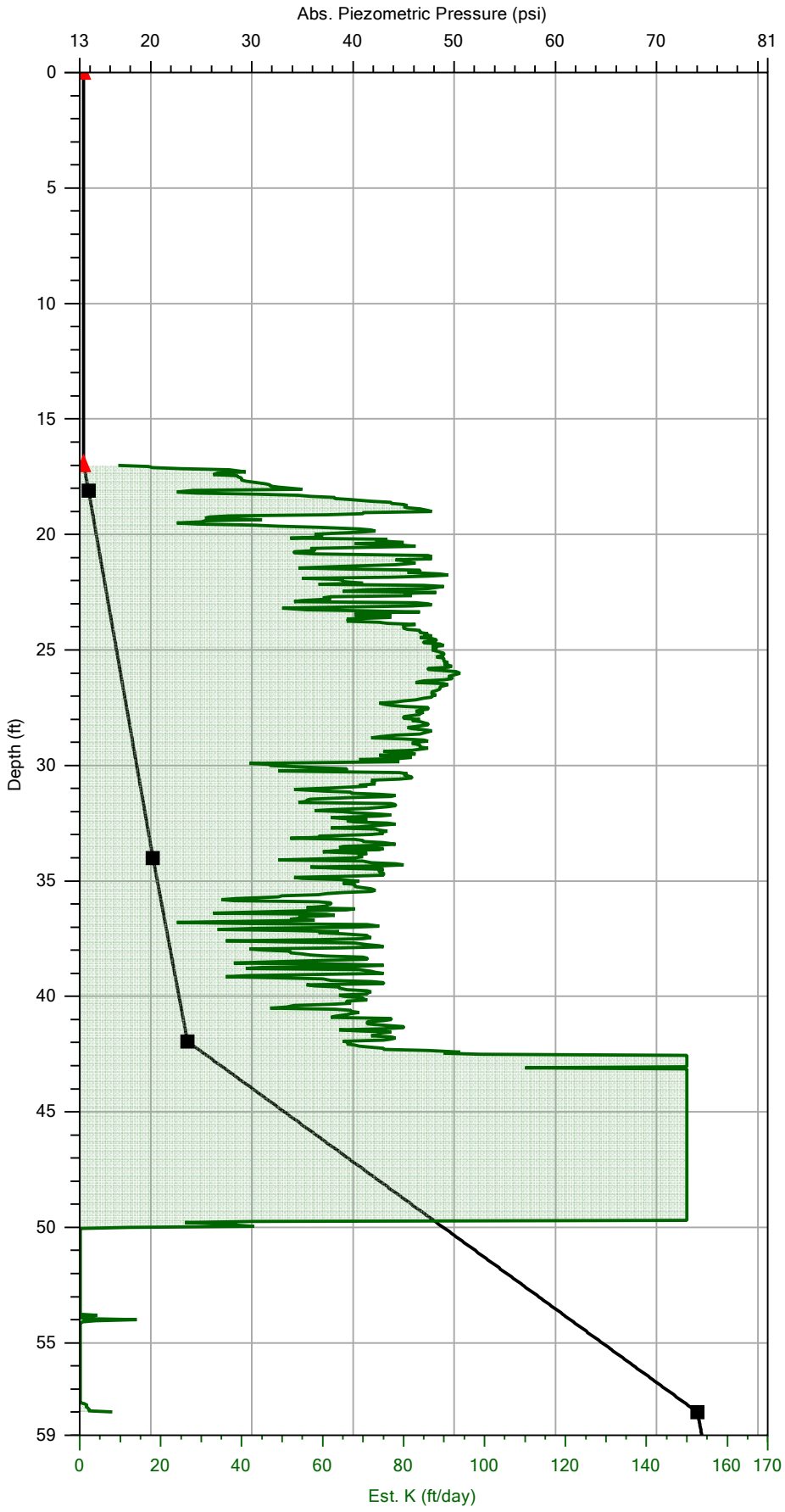
FILENAME: MIP-59.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 14:44:06

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-60.MHP
Company: SER90		Operator: Sammy	Date: 7/21/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 39″ N, 83° 56′ 32″ W



			File: MIP-60.MHP
Company: SER90		Operator: Sammy	Date: 7/21/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 39″ N, 83° 56′ 32″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.4	8.1	PASS
High	290.0	287.5	0.9	PASS

MIP-60.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-60.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.7 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 12:05:34

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Mon Jul 21 2014 12:09:28

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.660	0.0	94.190
TOP with FLOW>0	14.327	339.3	98.780
BOTTOM with FLOW=0	13.446	0.0	92.700
BOTTOM with FLOW>0	14.182	345.2	97.780

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Mon Jul 21 2014 12:11:24

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 58.25 ft (17.755 m)
LOG END TIME: Mon Jul 21 2014 13:46:27

LATITUDE: 41.994197469
LONGITUDE: -83.942261053
ELEVATION: 209.861 METERS 688.52 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-60.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.2 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 14:25:25

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Jul 21 2014 14:29:09

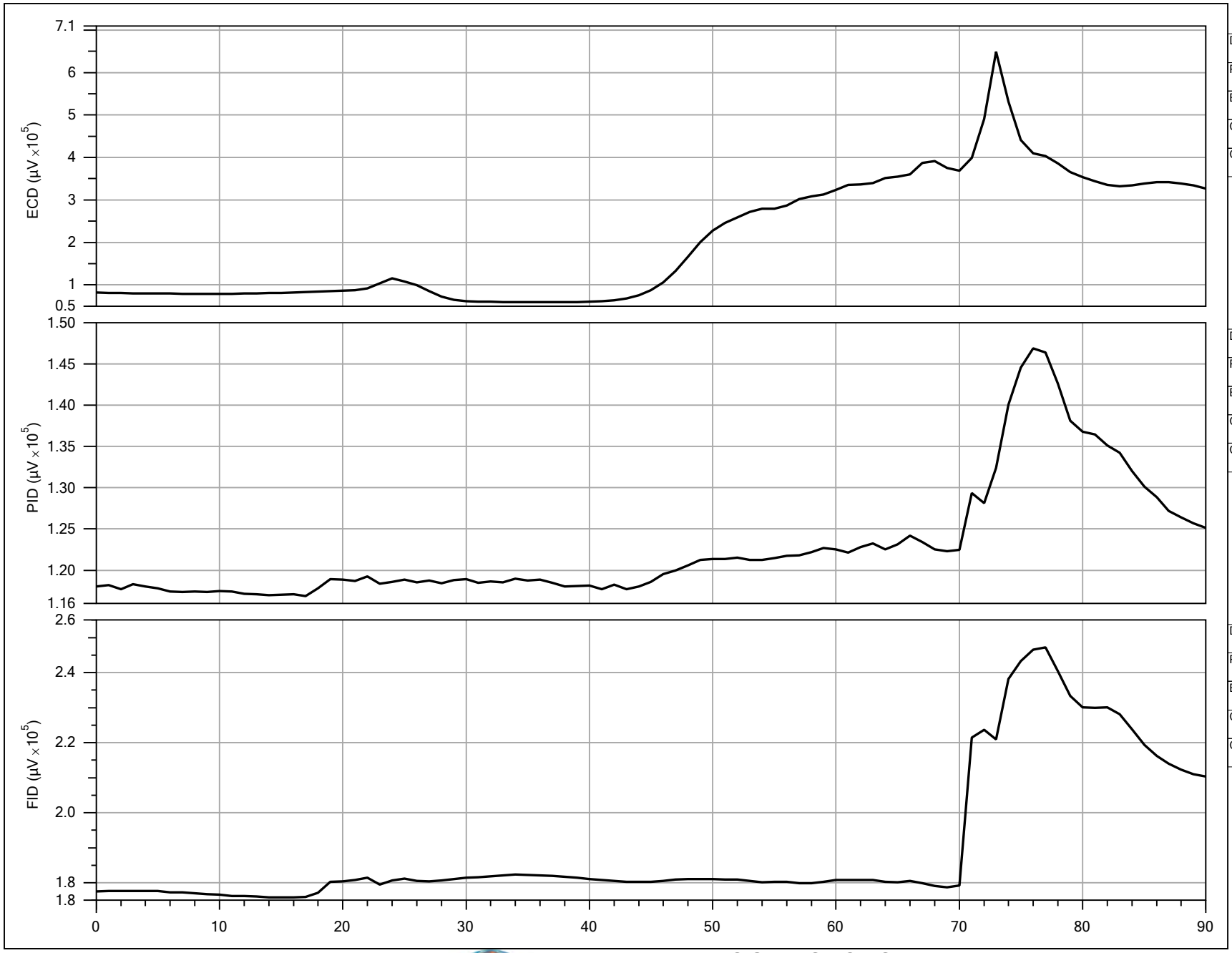
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.916	0.0	95.950
TOP with FLOW>0	14.657	348.6	101.060
BOTTOM with FLOW=0	13.684	0.0	94.350
BOTTOM with FLOW>0	14.427	348.5	99.470

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.5	8.2	PASS
High	290.0	304.5	5.0	PASS



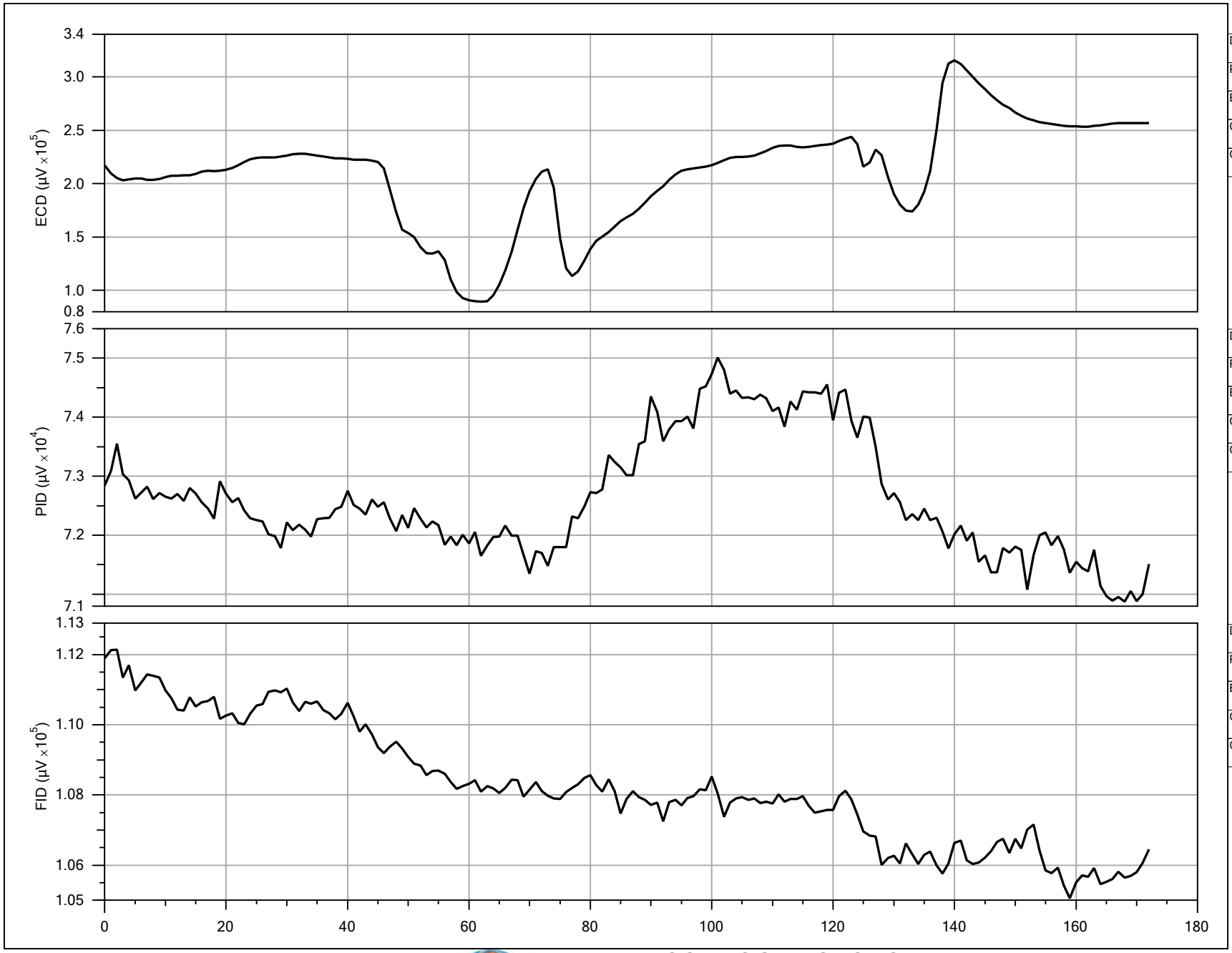
Detector:
ECD
Peak Response:
648778 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
146908 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
247139 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-60.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/21/2014



Detector:
ECD
Peak Response:
315615 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
75007 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
112133 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-60.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/21/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-60.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.7 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 12:05:34

RESPONSE TEST ATTENUATION CHANGES

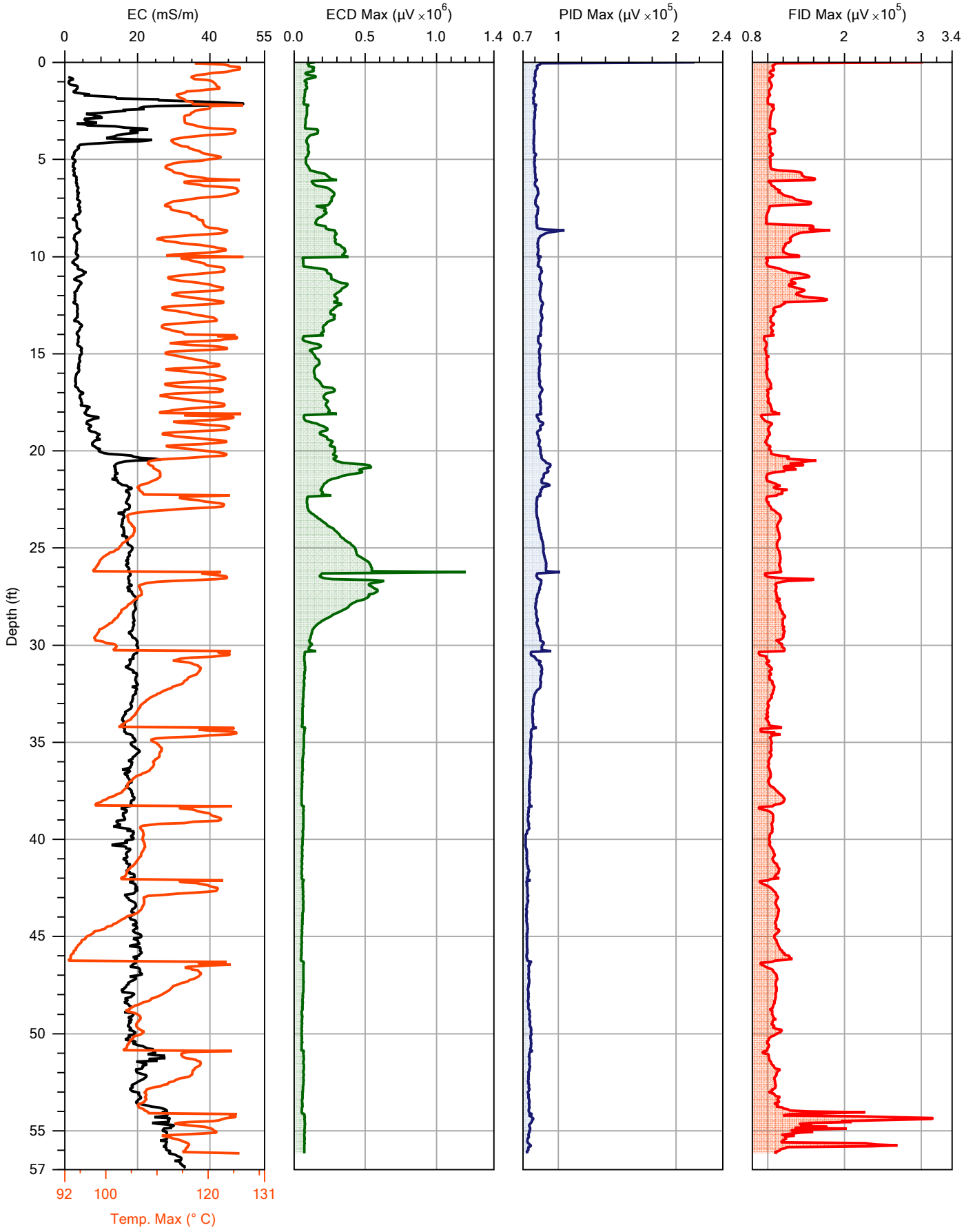
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

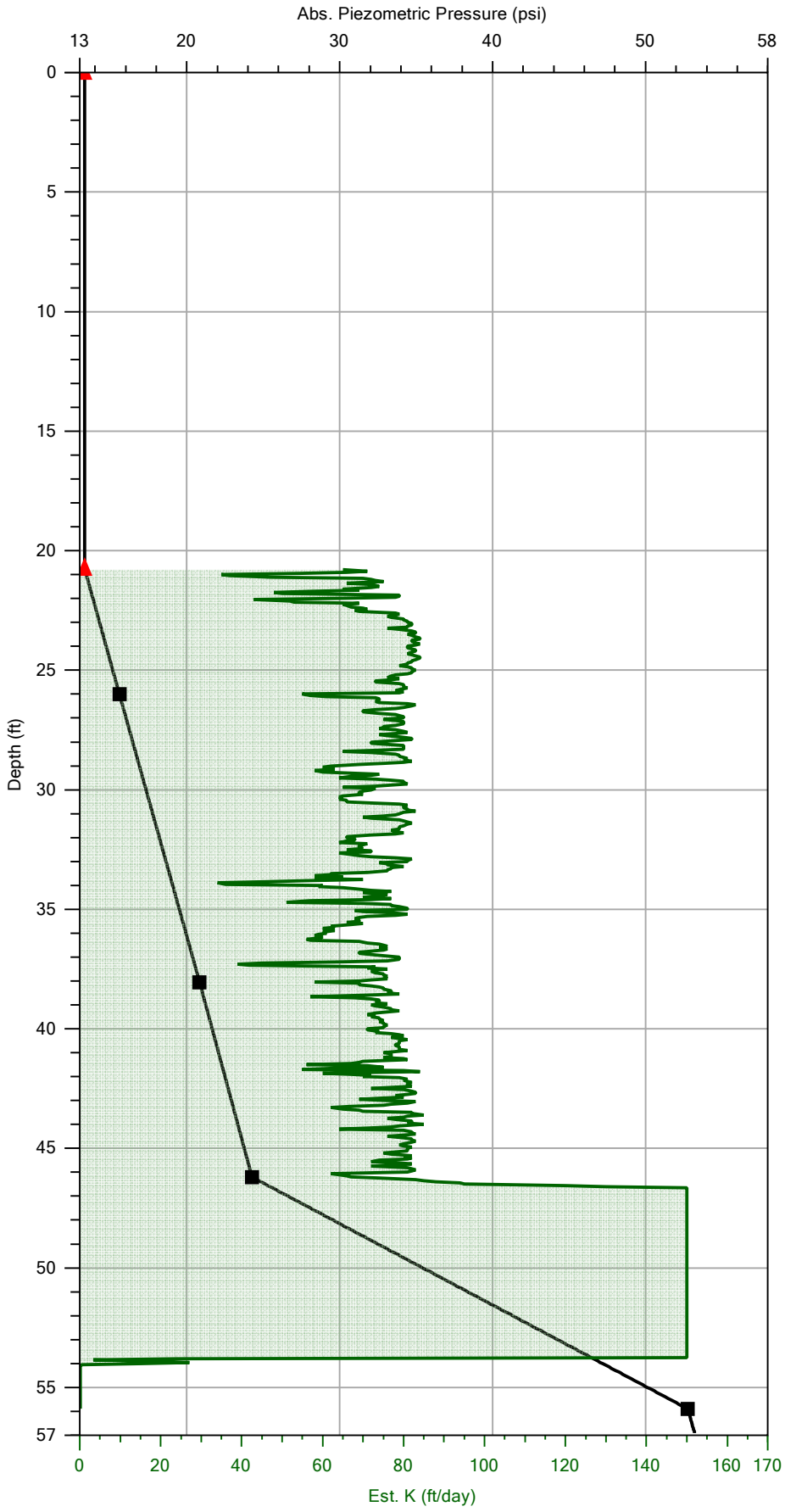
FILENAME: MIP-60.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.2 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 14:25:25

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-61.MHP
Company: SER90	Operator: Sammy		Date: 7/21/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location: 41° 59′ 39″ N, 83° 56′ 34″ W



		File: MIP-61.MHP
Company: SER90	Operator: Sammy	Date: 7/21/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 39″ N, 83° 56′ 34″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.3	9.7	PASS
High	290.0	301.3	3.9	PASS

MIP-61.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-61.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.2 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 14:36:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Mon Jul 21 2014 14:39:11

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.773	0.0	94.960
TOP with FLOW>0	14.551	351.8	100.320
BOTTOM with FLOW=0	13.556	0.0	93.470
BOTTOM with FLOW>0	14.274	354.1	98.420

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Mon Jul 21 2014 14:41:09

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 56.15 ft (17.115 m)
LOG END TIME: Mon Jul 21 2014 16:20:28

LATITUDE: 41.994235728
LONGITUDE: -83.942817892
ELEVATION: 209.107 METERS 686.05 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-61.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.2 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 17:07:35

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Jul 21 2014 17:09:27

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.667	0.0	94.230
TOP with FLOW>0	14.407	352.3	99.330
BOTTOM with FLOW=0	13.431	0.0	92.610
BOTTOM with FLOW>0	14.195	349.5	97.870

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

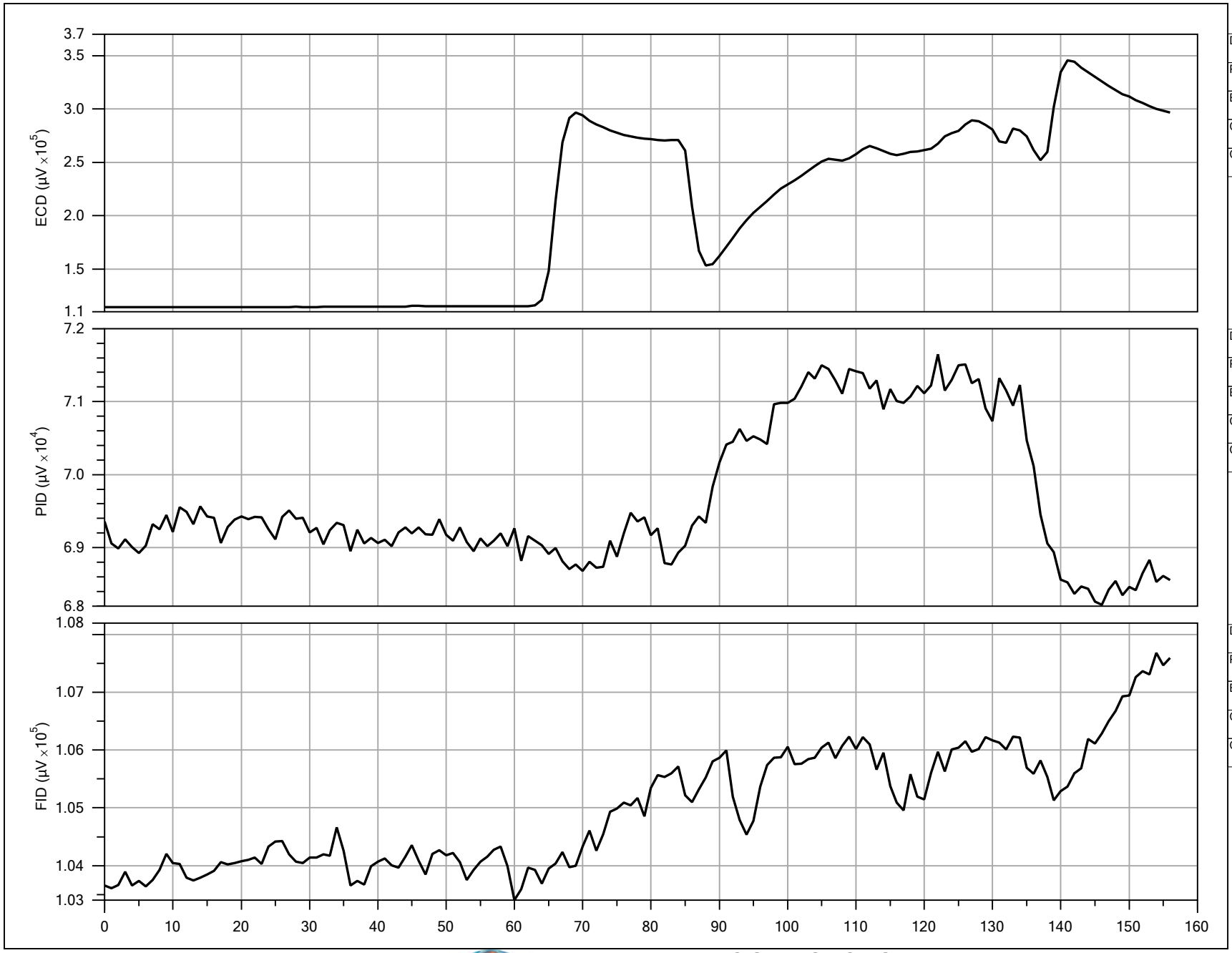
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.2	9.5	PASS
High	290.0	303.0	4.5	PASS

********** USER NOTES **********

Staff is at 1.45m



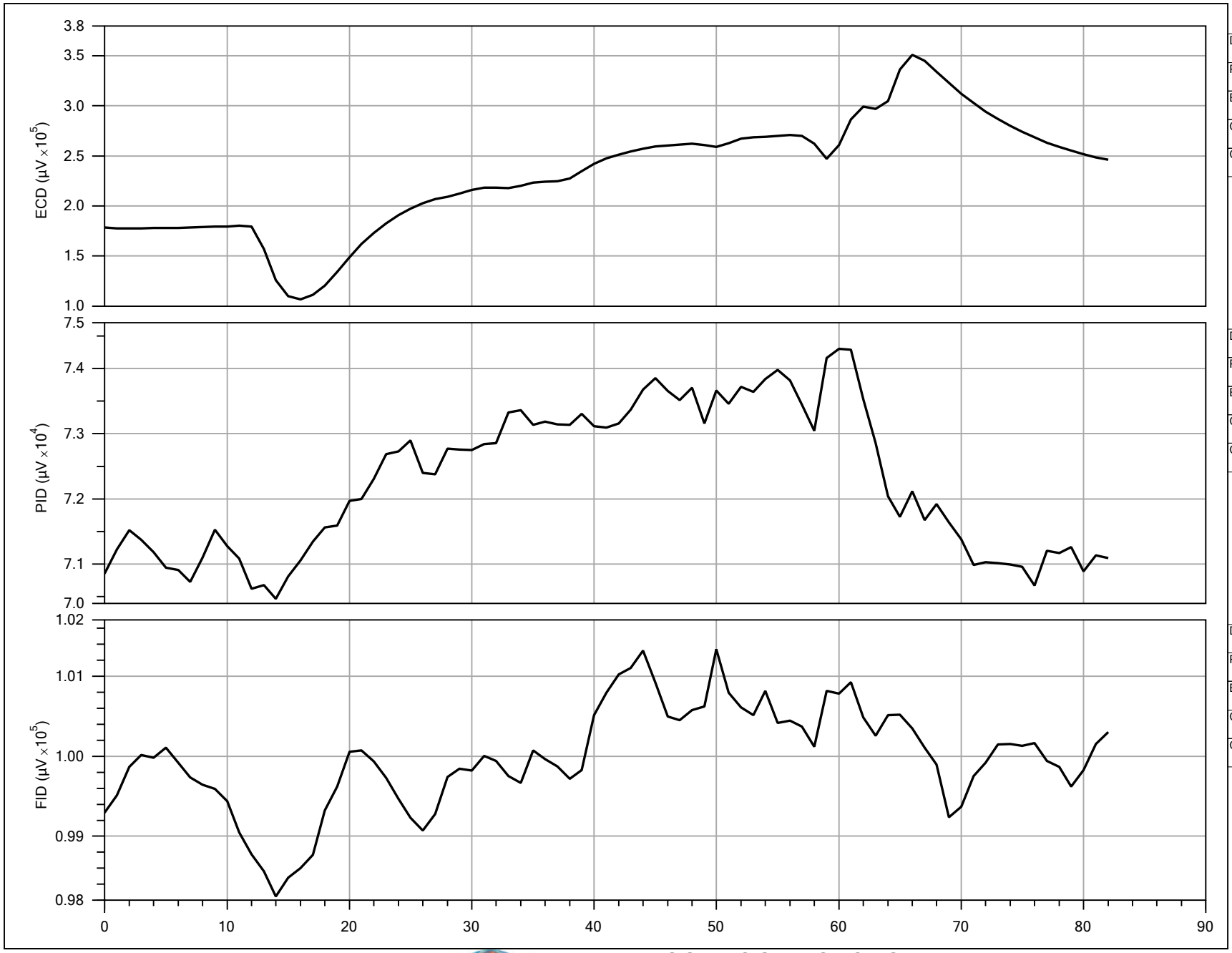
Detector:
ECD
Peak Response:
345782 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
71650 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
107685 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-61.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/21/2014



Detector:
ECD
Peak Response:
350803 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
74305 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
101337 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-61.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/21/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-61.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.2 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 14:36:04

RESPONSE TEST ATTENUATION CHANGES

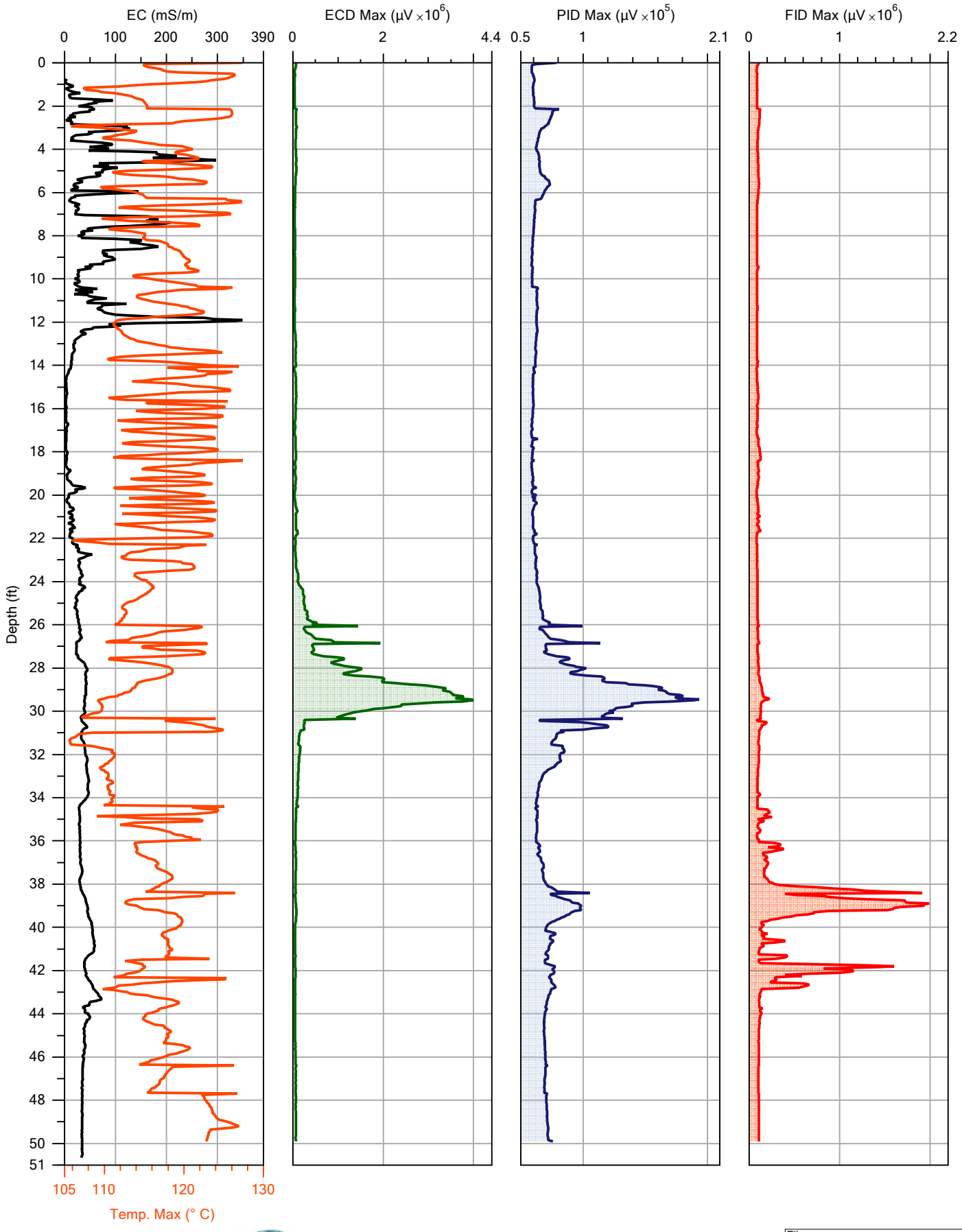
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

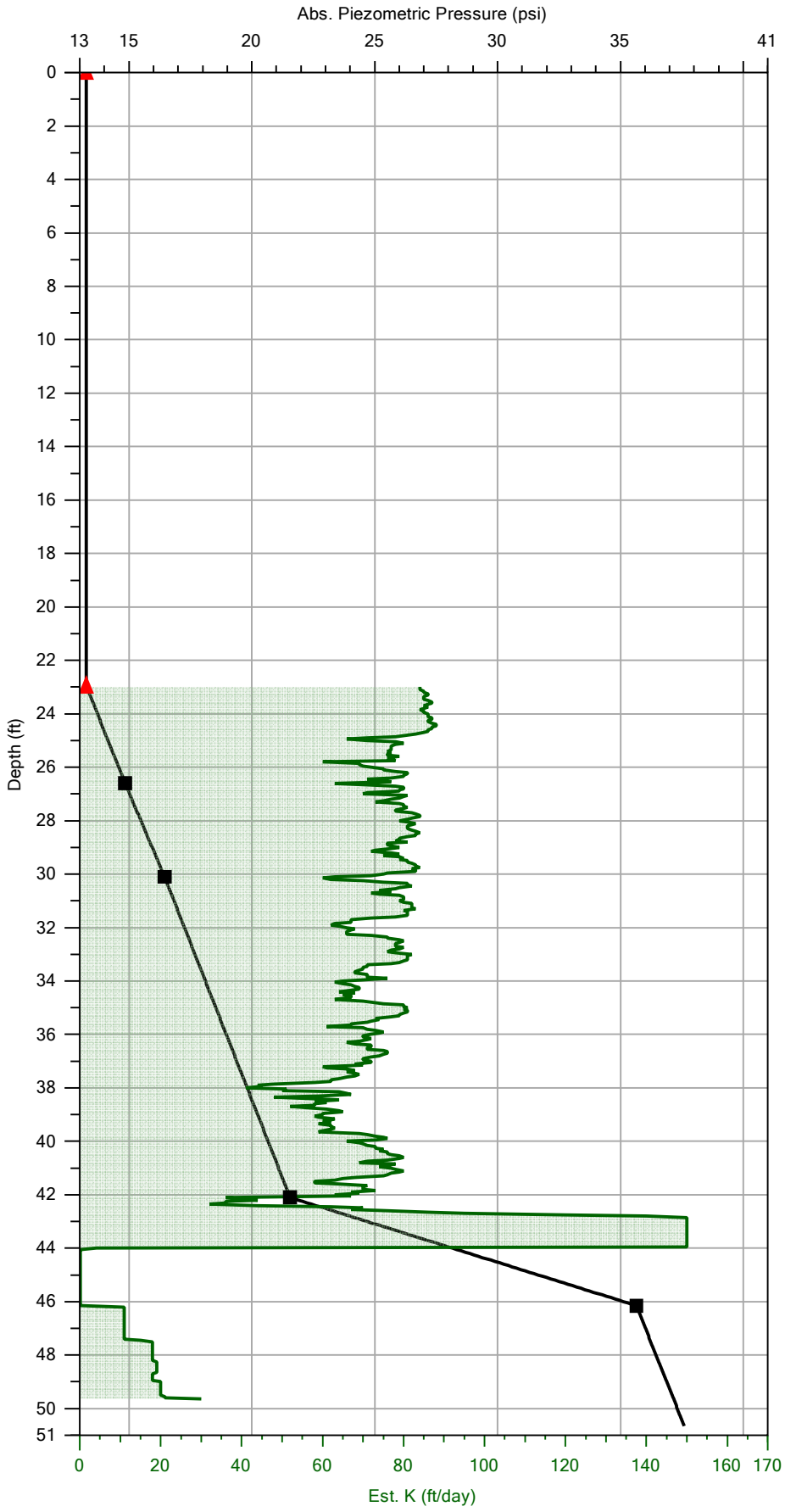
FILENAME: MIP-61.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.2 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 17:07:35

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-62.MHP
Company: SER90		Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 36″ W



			File: MIP-62.MHP
Company: SER90		Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 36″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.9	5.2	PASS
High	290.0	305.2	5.2	PASS

MIP-62.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-62.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.5 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 08:40:20

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 22 2014 08:41:45

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.661	0.0	94.190
TOP with FLOW>0	14.493	385.4	99.930
BOTTOM with FLOW=0	13.420	0.0	92.530
BOTTOM with FLOW>0	14.199	373.2	97.900

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Tue Jul 22 2014 08:44:14

Temperature out of range (79.8 deg C) at 49.90 ft (15.210 m)

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 49.90 ft (15.210 m)
LOG END TIME: Tue Jul 22 2014 10:11:21

LATITUDE: 41.998935228
LONGITUDE: -83.943376636
ELEVATION: 209.861 METERS 688.52 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-62.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 10:32:17

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 22 2014 10:36:11

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.683	0.0	94.340
TOP with FLOW>0	14.427	364.1	99.470
BOTTOM with FLOW=0	13.454	0.0	92.770
BOTTOM with FLOW>0	14.182	365.2	97.780

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

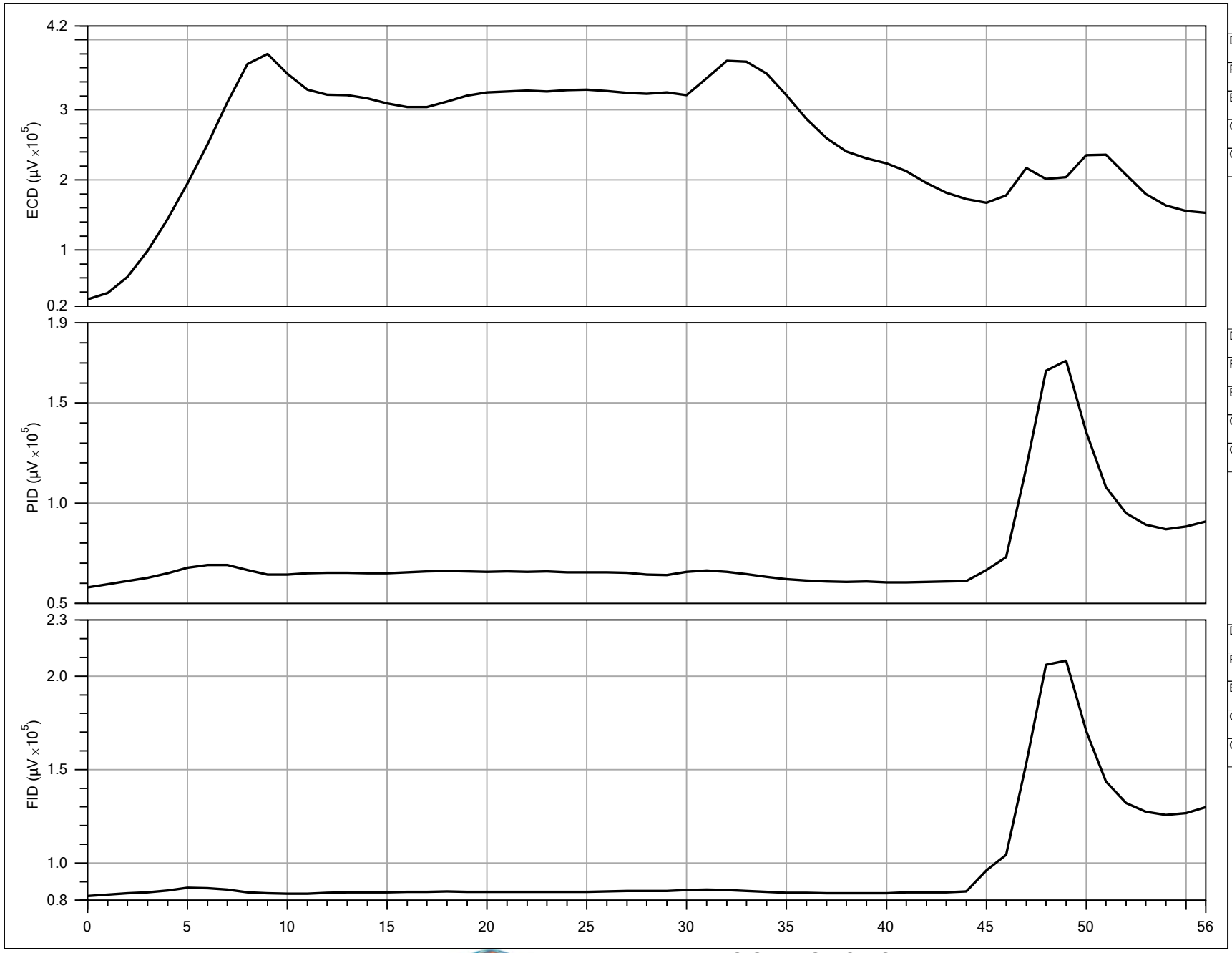
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.9	8.8	PASS
High	290.0	304.2	4.9	PASS

********** USER NOTES **********

Staff is at 1.45m



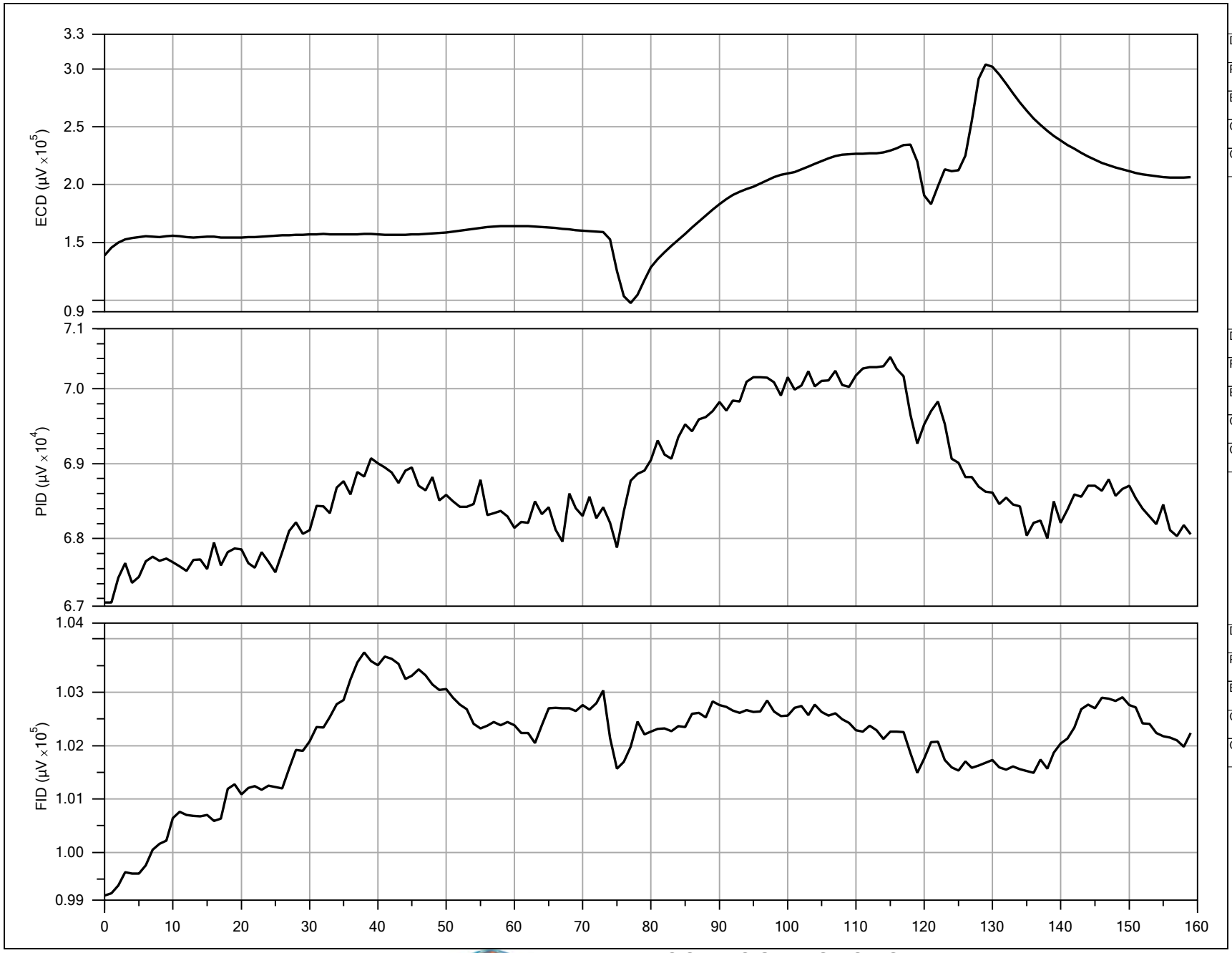
Detector:
ECD
Peak Response:
379505 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
171224 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
208289 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-62.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/22/2014



Detector:
ECD
Peak Response:
304109 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
70421 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
103748 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-62.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/22/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-62.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.5 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 08:40:20

RESPONSE TEST ATTENUATION CHANGES

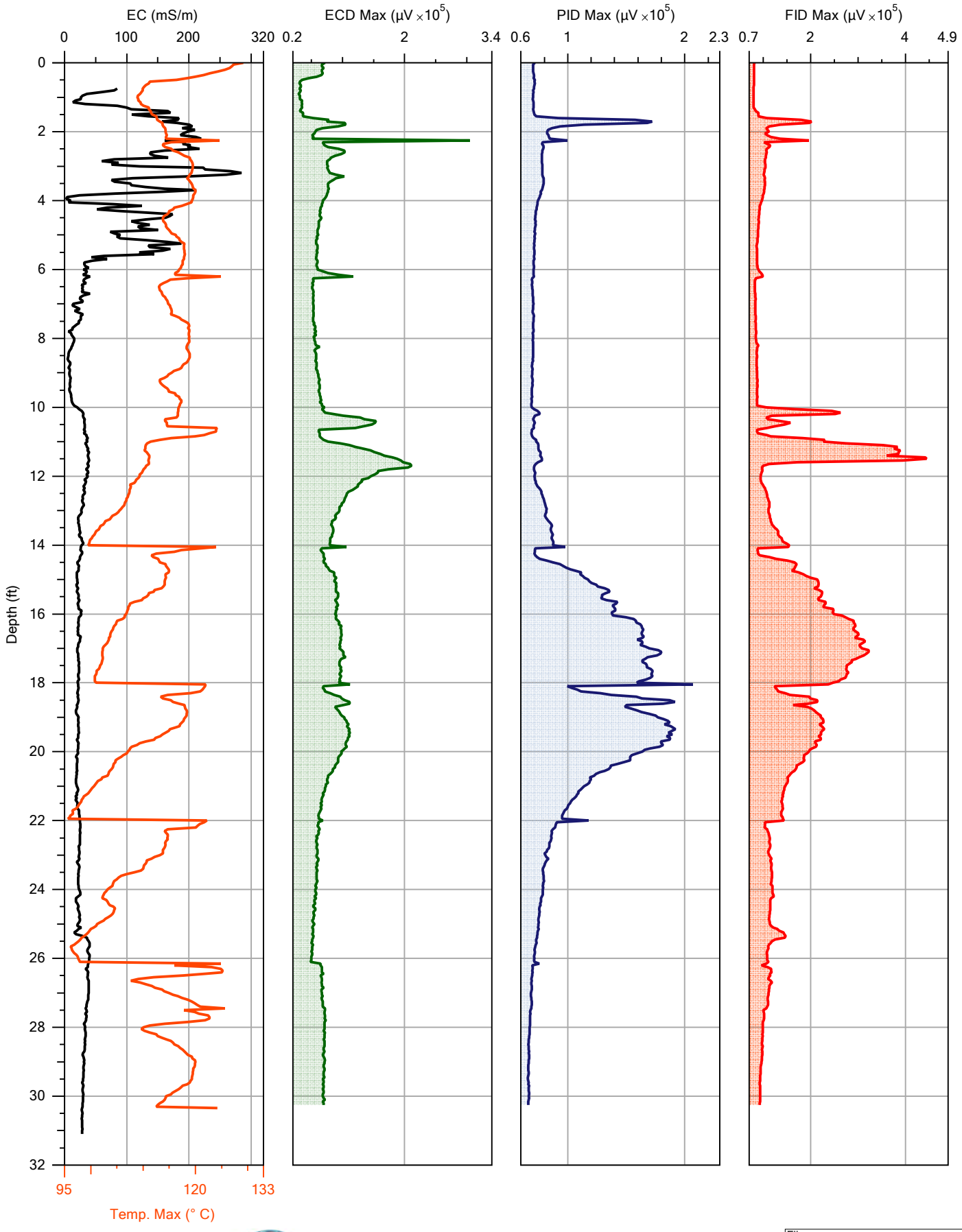
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

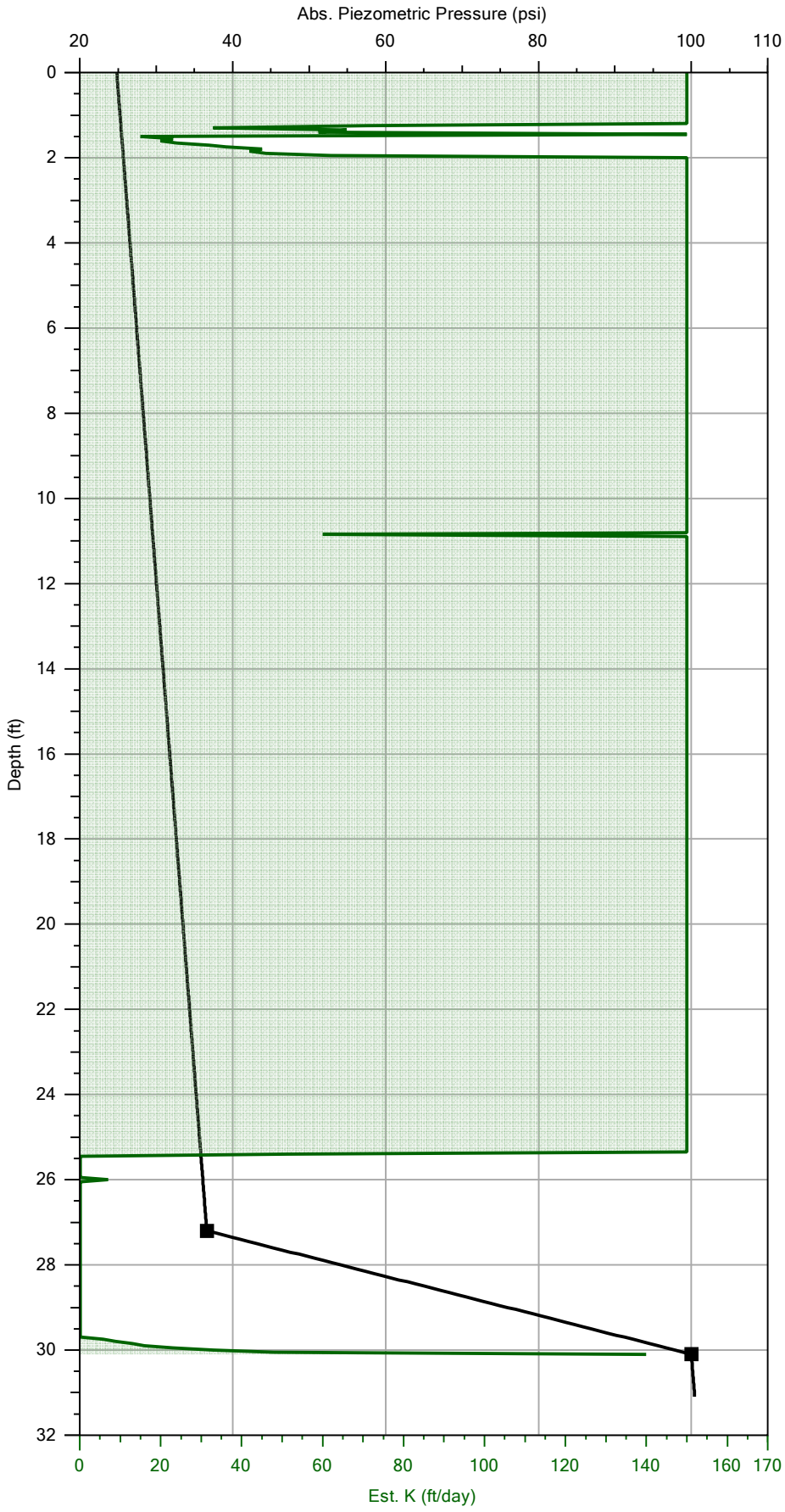
FILENAME: MIP-62.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 10:32:17

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-63.MHP
Company: SER90		Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 27″ W



			File: MIP-63.MHP
Company: SER90		Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 27″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.3	9.6	PASS
High	290.0	305.3	5.3	PASS

MIP-63.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-63.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 10:44:54

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 22 2014 10:47:08

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.650	0.0	94.110
TOP with FLOW>0	14.403	362.0	99.310
BOTTOM with FLOW=0	13.432	0.0	92.610
BOTTOM with FLOW>0	14.201	363.6	97.910

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291

Temperature out of range (79.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (65.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (62.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (58.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (53.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jul 22 2014 10:50:00

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 30.35 ft (9.251 m)
LOG END TIME: Tue Jul 22 2014 12:09:37

LATITUDE: 41.998983831
LONGITUDE: -83.940712547
ELEVATION: 205.649 METERS 674.70 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-63.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 35.1 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 12:29:41

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 22 2014 12:32:44

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.911	0.0	95.910
TOP with FLOW>0	14.375	311.2	99.110
BOTTOM with FLOW=0	13.685	0.0	94.350
BOTTOM with FLOW>0	14.150	311.9	97.560

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%

ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

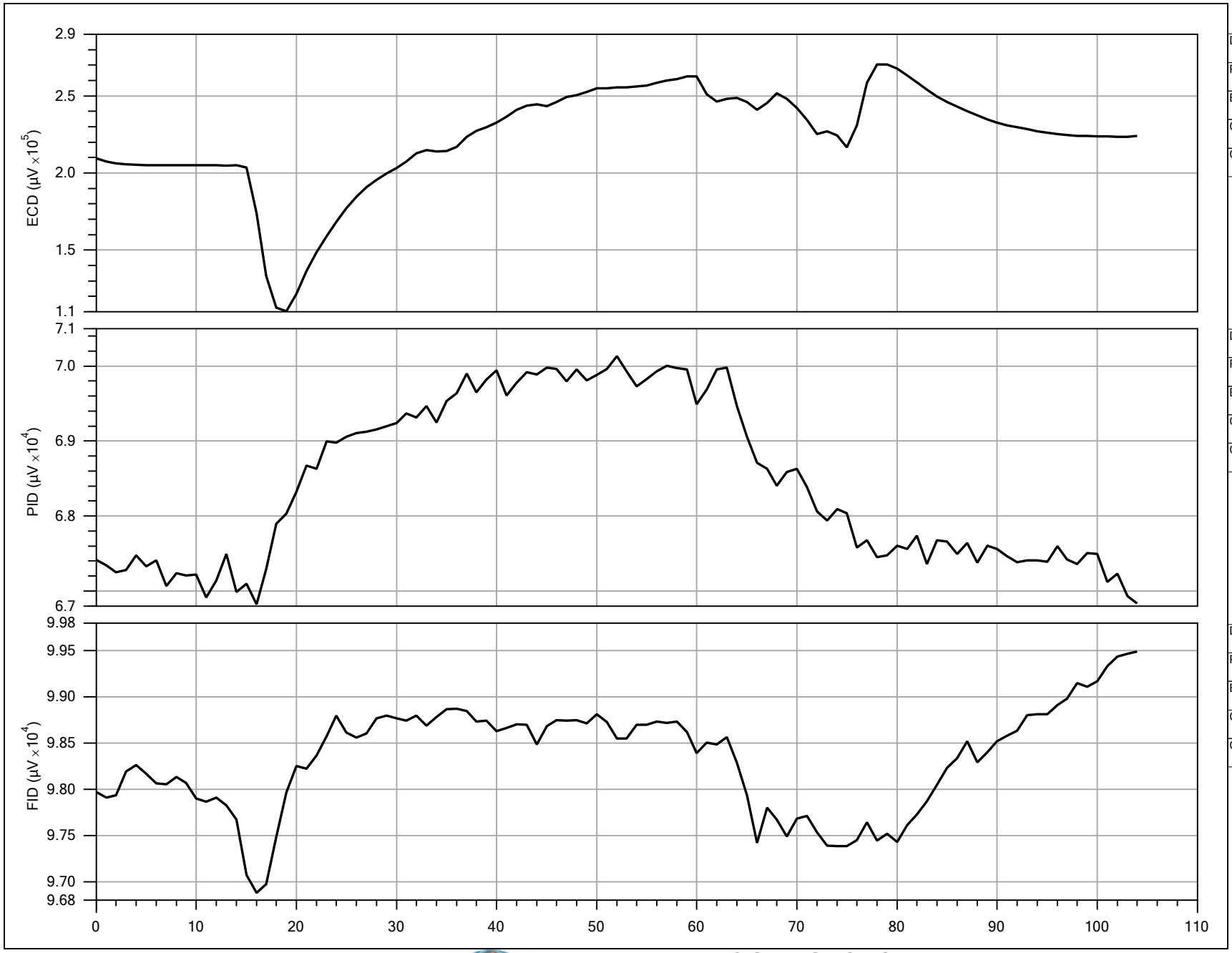
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.1	9.3	PASS
High	290.0	305.3	5.3	PASS

********** USER NOTES **********

Staff is at 1.45m.



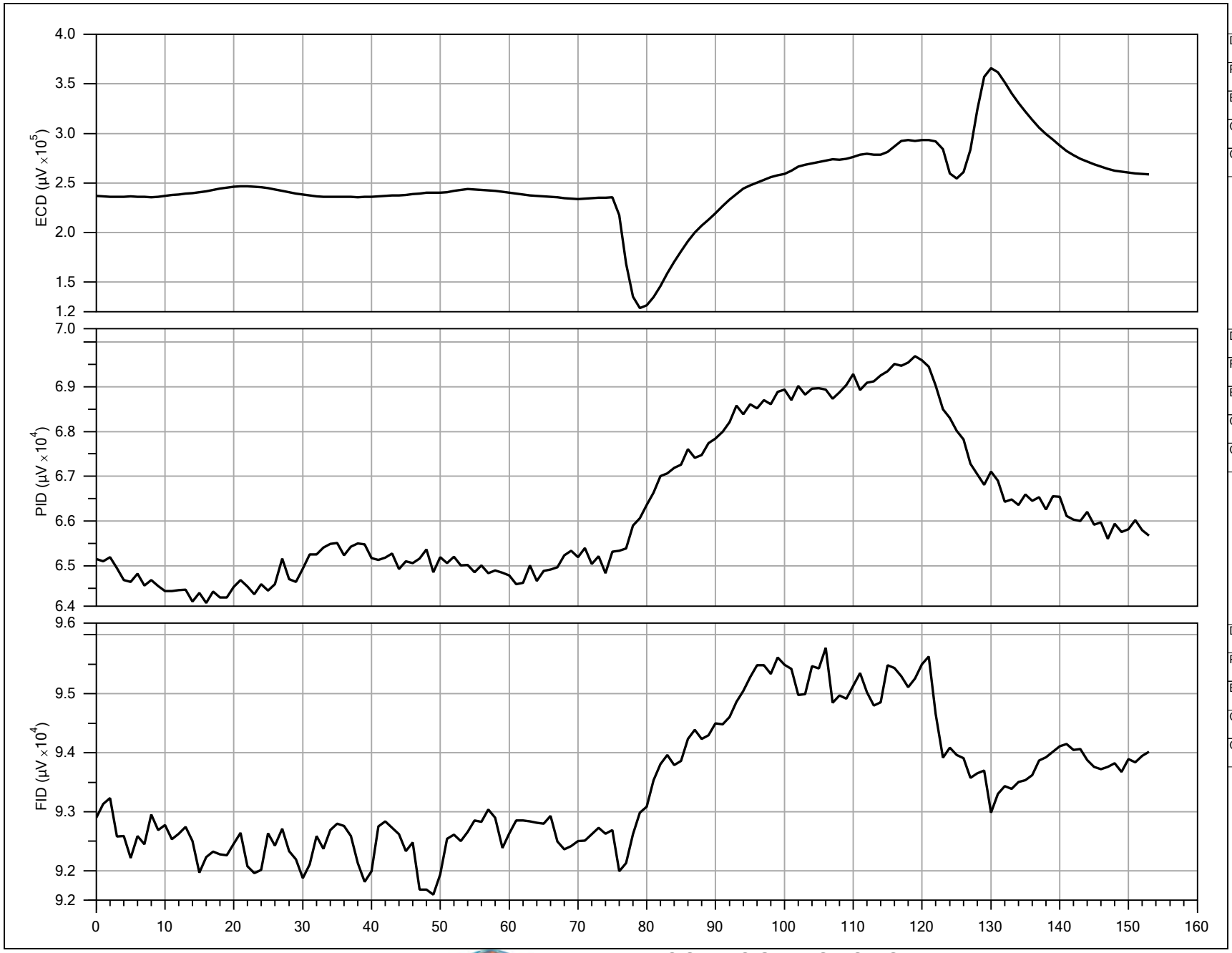
Detector:
ECD
Peak Response:
270455 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
70132 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
99490 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-63.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/22/2014



Detector:
ECD
Peak Response:
365795 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
69681 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
95775 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-63.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/22/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-63.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 10:44:54

RESPONSE TEST ATTENUATION CHANGES

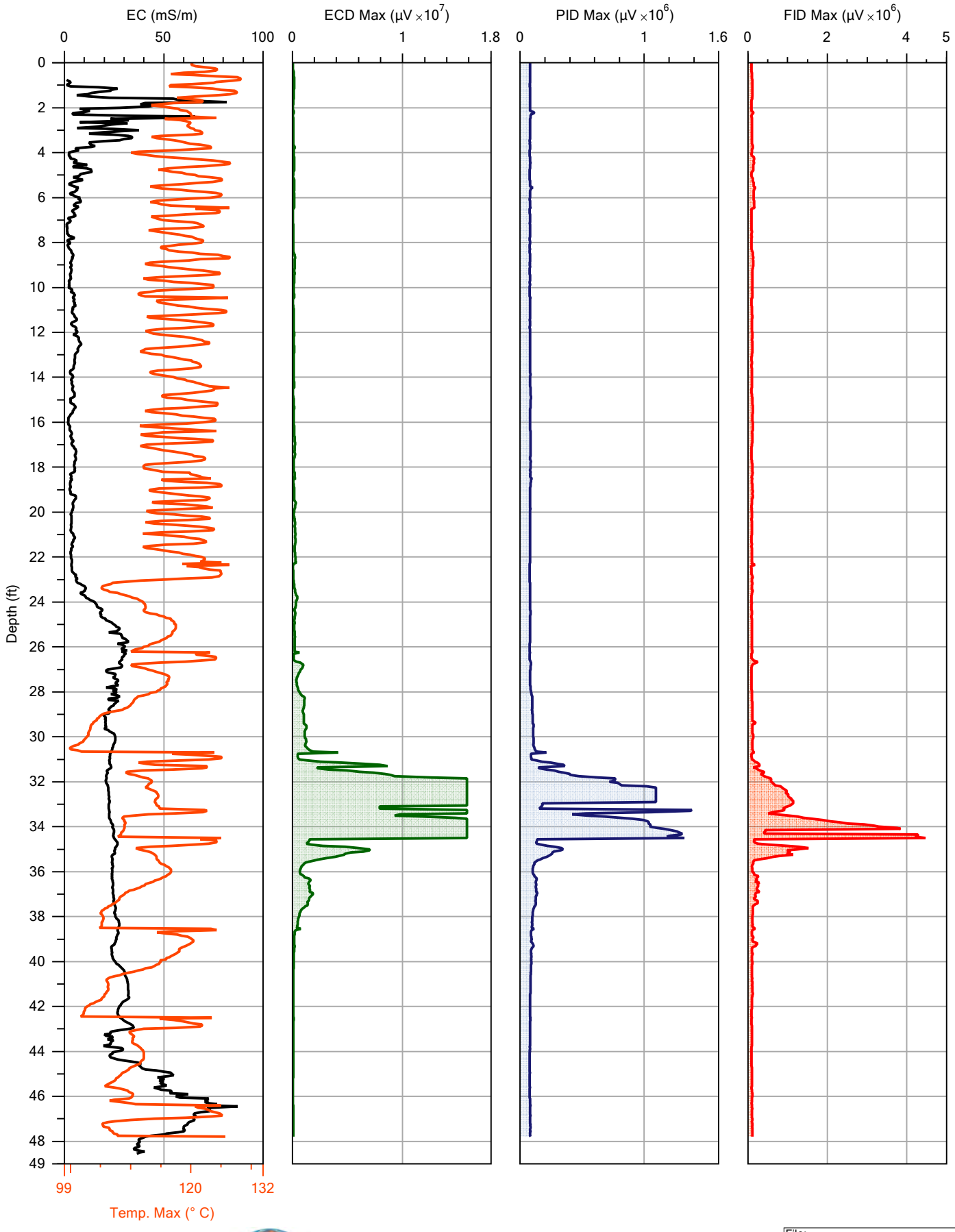
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

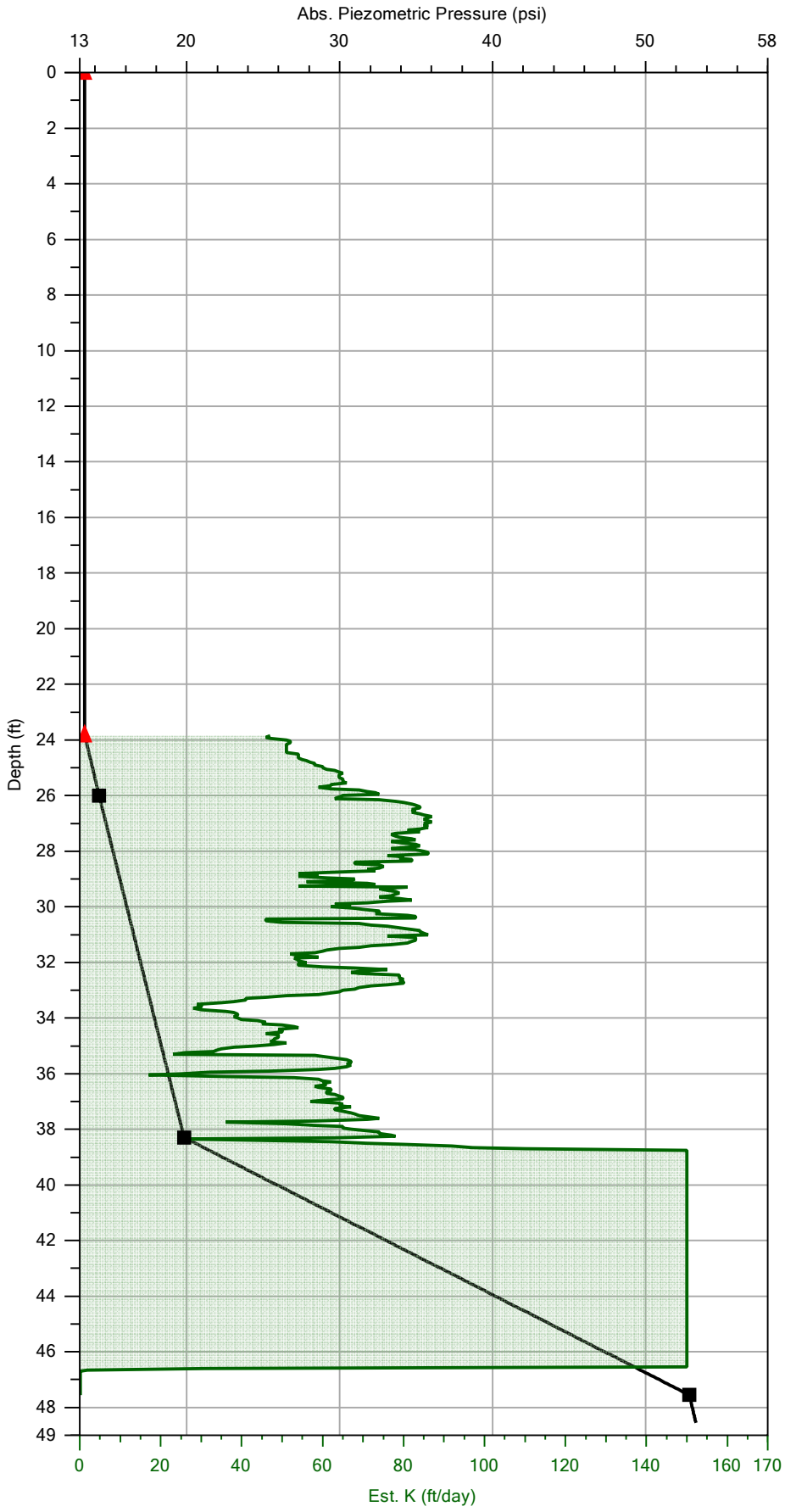
FILENAME: MIP-63.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 35.1 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 12:29:41

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-64.MHP
Company: SER90		Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 38″ W



			File: MIP-64.MHP
Company: SER90		Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 38″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.1	9.3	PASS
High	290.0	304.9	5.1	PASS

MIP-64.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-64.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 34.6 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 12:39:10

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 22 2014 12:42:22

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.782	0.0	95.030
TOP with FLOW>0	14.225	315.5	98.080
BOTTOM with FLOW=0	13.558	0.0	93.480
BOTTOM with FLOW>0	14.014	313.4	96.620

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291

Temperature out of range (79.8 deg C) at 0.00 ft (0.000 m)

Temperature out of range (65.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (61.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (57.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (55.1 deg C) at 0.00 ft (0.000 m)

Temperature out of range (51.2 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jul 22 2014 12:44:16

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
33.05	10.074	8	1	1	1
33.25	10.135	16	8	1	1
34.35	10.470	16	8	10	1
34.50	10.516	16	8	10	1

LOG END DEPTH: 47.80 ft (14.569 m)
LOG END TIME: Tue Jul 22 2014 14:34:50

LATITUDE: 41.998924250
LONGITUDE: -83.943802531
ELEVATION: 212.178 METERS 696.12 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-64.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 36 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 15:04:23

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 22 2014 15:07:56

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)

TOP with FLOW=0	13.675	0.0	94.290
TOP with FLOW>0	14.228	310.3	98.100
BOTTOM with FLOW=0	13.469	0.0	92.870
BOTTOM with FLOW>0	14.024	309.6	96.690

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

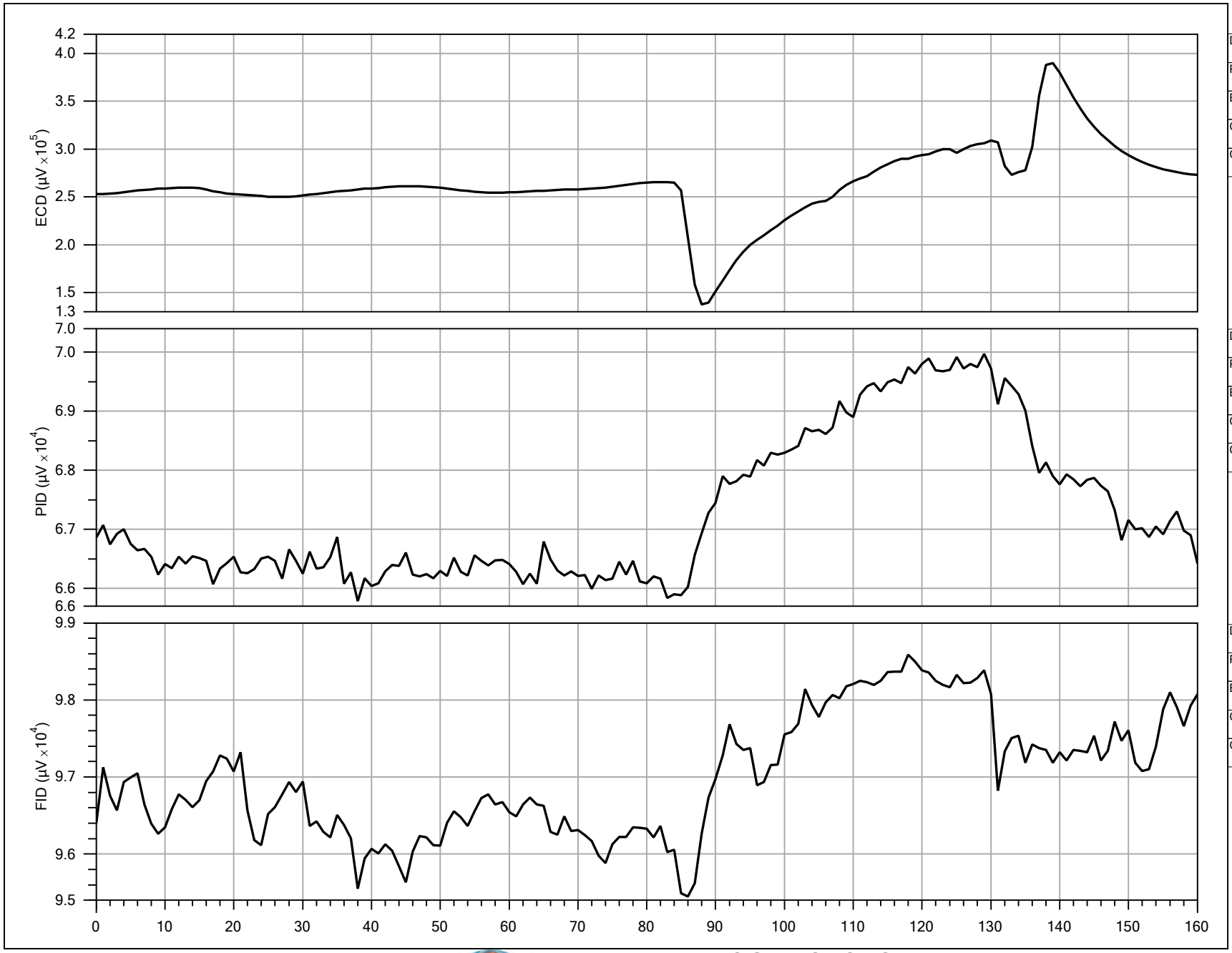
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.8	8.8	PASS
High	290.0	304.3	4.9	PASS

********** USER NOTES **********

Staff at 1.45m



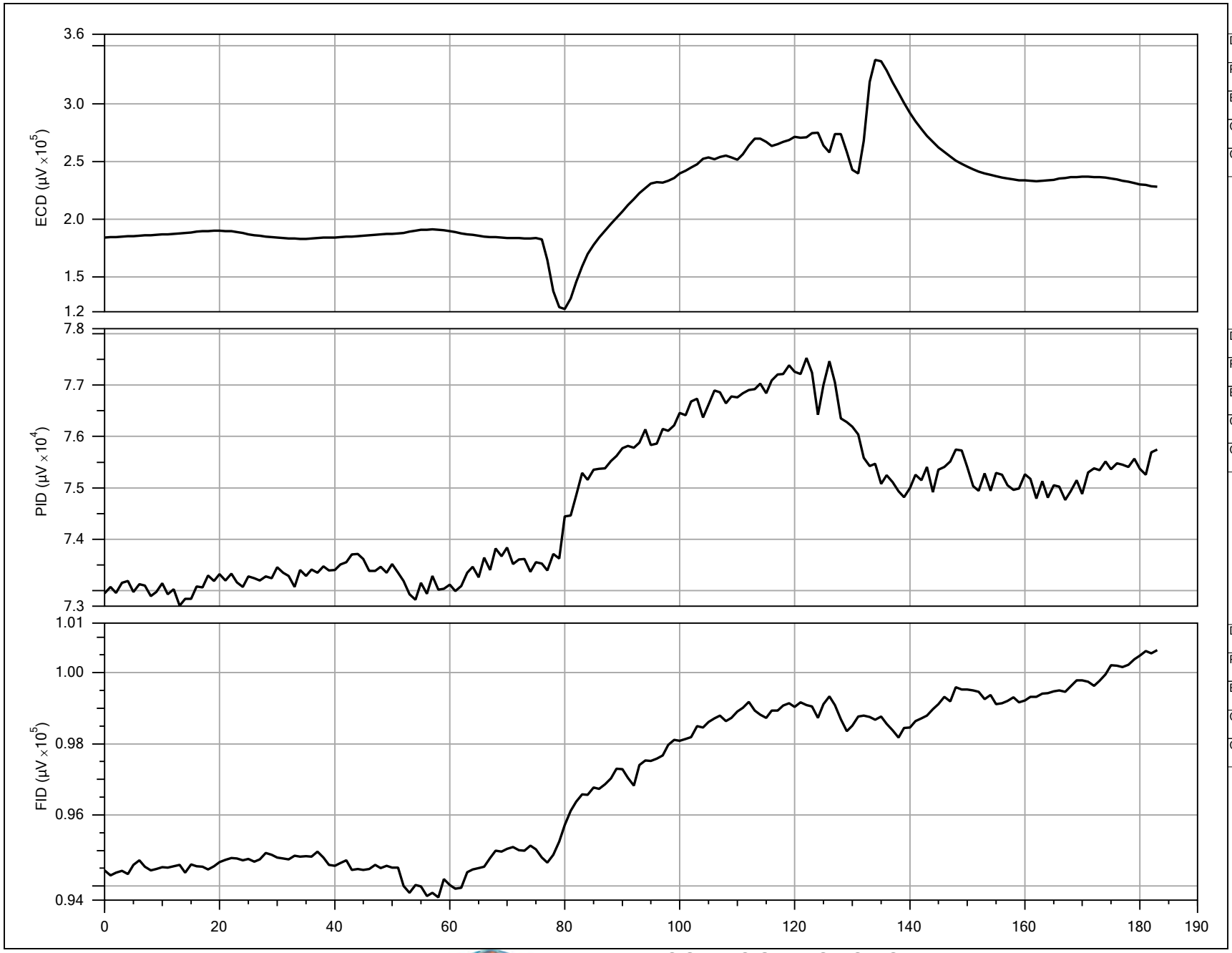
Detector:
ECD
Peak Response:
389866 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
69971 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
98590 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-64.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/22/2014



Detector:
ECD
Peak Response:
337809 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
77532 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
100635 μV
Baseline:
0 μV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-64.POST.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/22/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-64.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 34.6 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 12:39:10

RESPONSE TEST ATTENUATION CHANGES

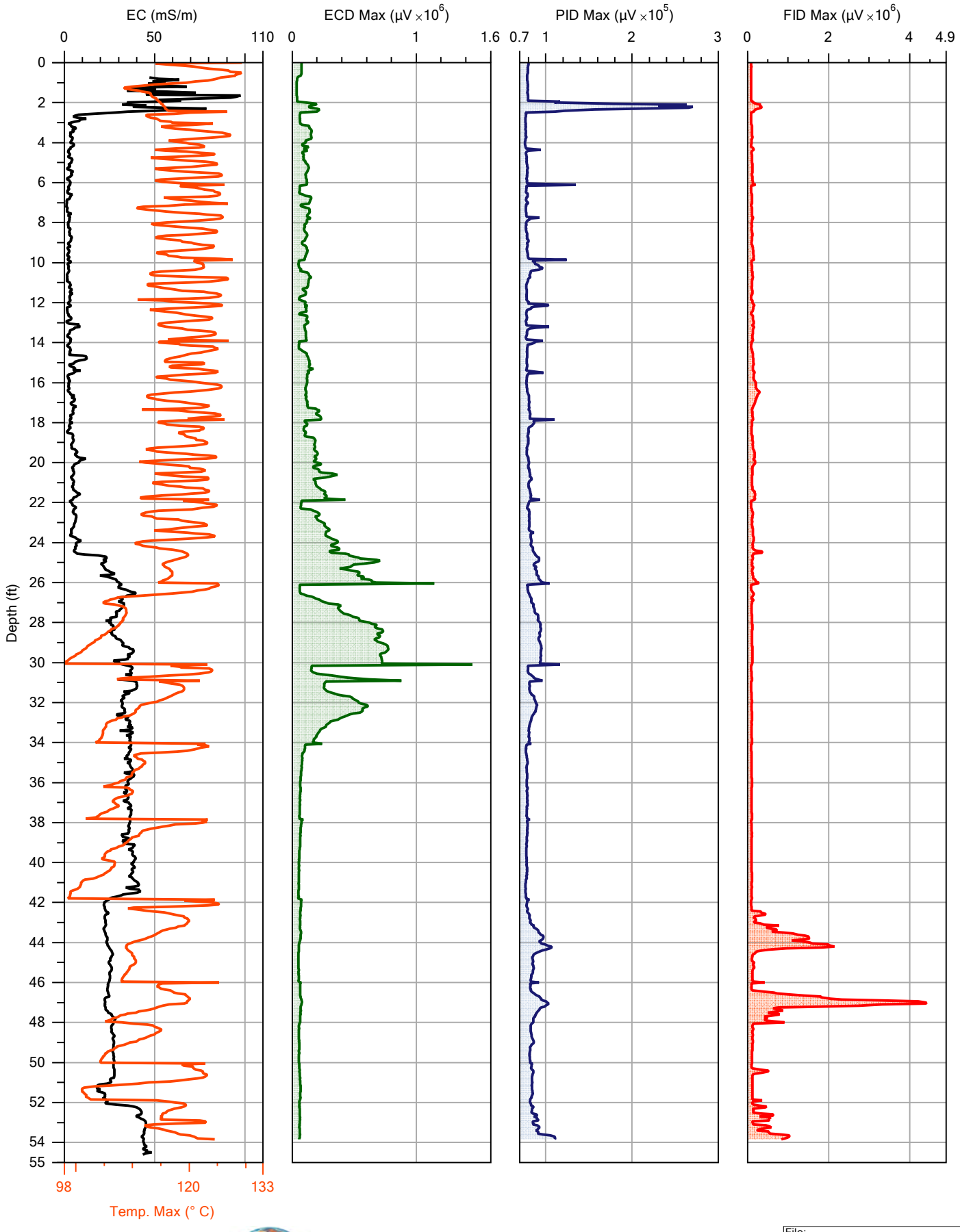
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

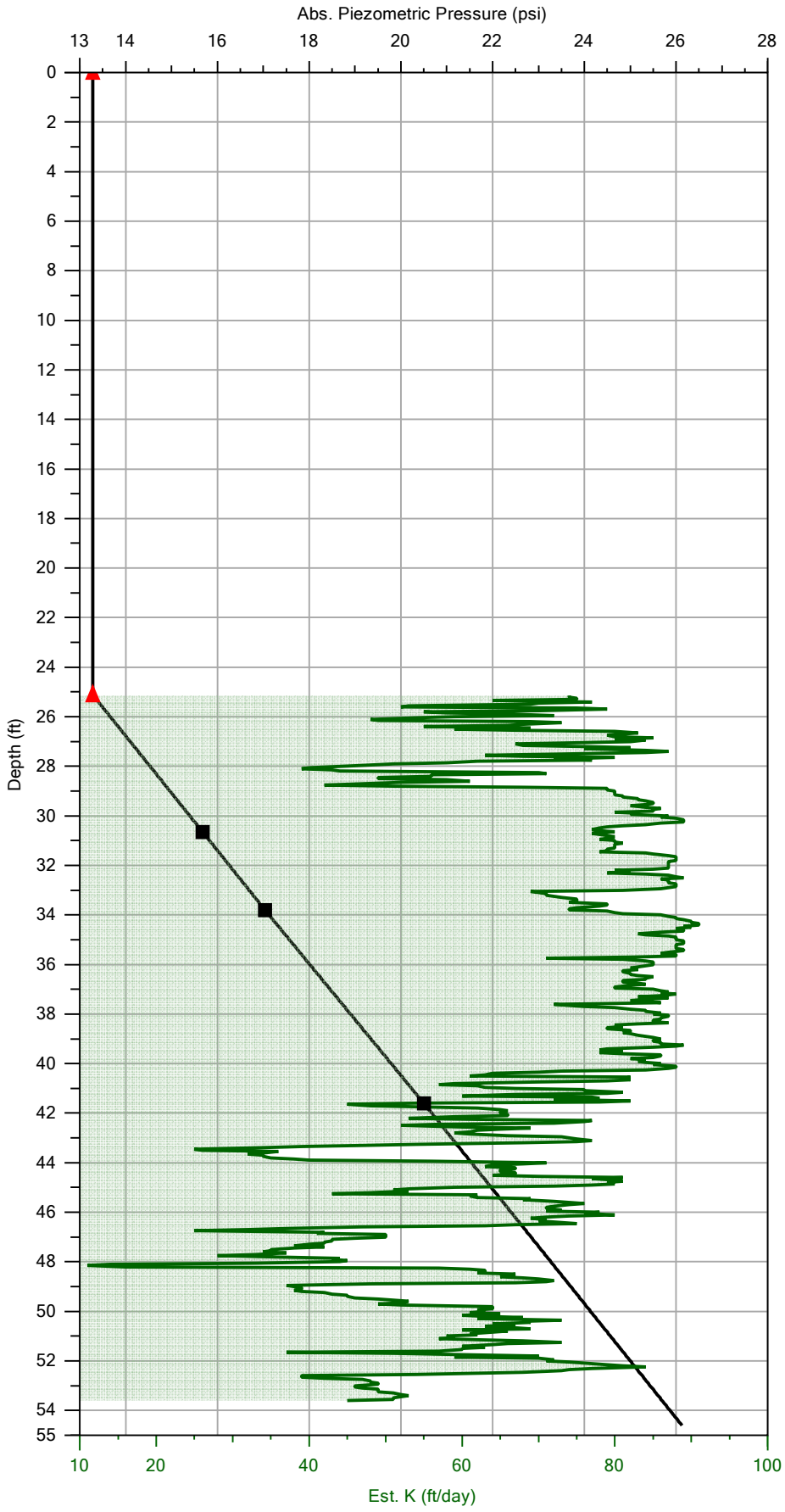
FILENAME: MIP-64.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 36 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 15:04:23

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-65.MHP
Company: SER90		Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 40″ W



			File: MIP-65.MHP
Company: SER90		Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 40″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.4	9.9	PASS
High	290.0	304.9	5.2	PASS

MIP-65.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-65.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 36 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 15:26:50

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 22 2014 15:29:52

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.686	0.0	94.360
TOP with FLOW>0	14.167	331.2	97.680
BOTTOM with FLOW=0	13.446	0.0	92.710
BOTTOM with FLOW>0	13.980	326.7	96.390

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291

Temperature out of range (79.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (64.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jul 22 2014 15:31:39

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.45	0.747	16	1	1	1

LOG END DEPTH: 53.85 ft (16.413 m)
LOG END TIME: Tue Jul 22 2014 17:28:18

LATITUDE: 41.998929958
LONGITUDE: -83.944349656
ELEVATION: 212.947 METERS 698.65 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST BYPASSED

POST-LOG HPT REFERENCE TEST VALUES

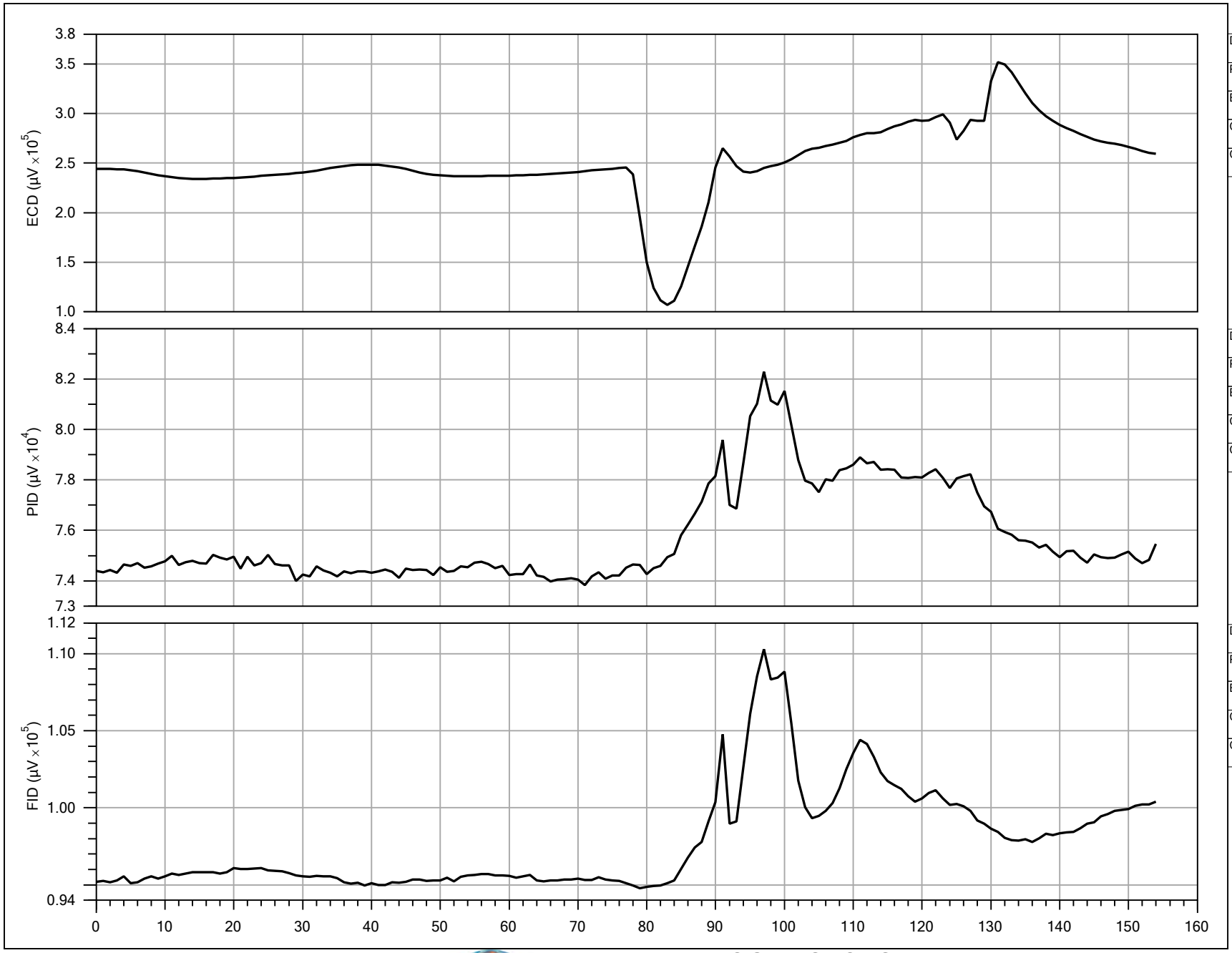
POST TEST TIME: Tue Jul 22 2014 18:14:06

POST-LOG HPT REFERENCE TESTS BYPASSED

EC POST-LOG TESTS BYPASSED

********** USER NOTES **********

No Post standard due to loss of probe at 55 ft. BGS loding in dry hard clay following logging shut down.



Detector:
ECD
Peak Response:
352077 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
82286 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
110294 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

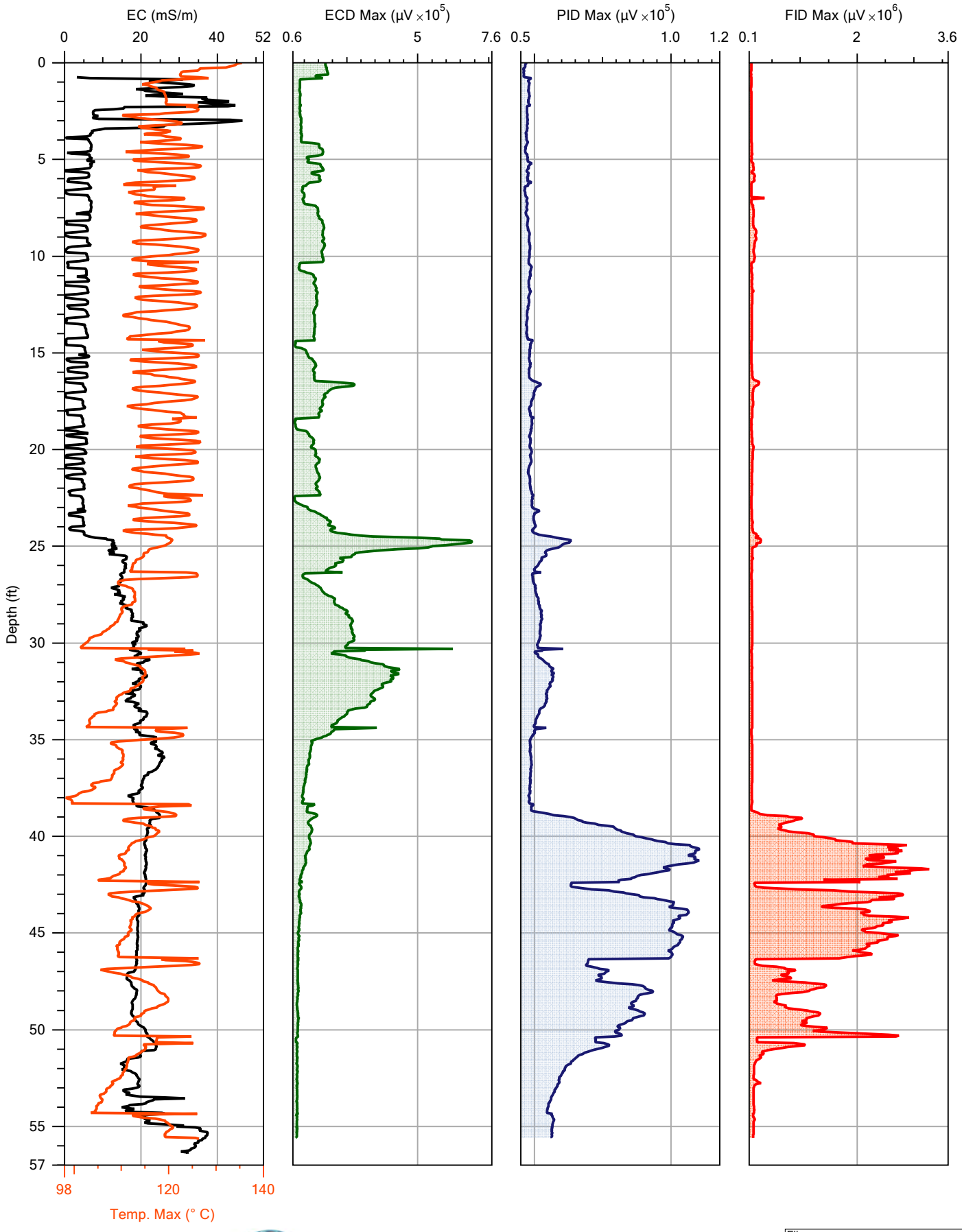
Company:	Operator:	File:
SER90	Sammy	MIP-65.PRE.TIM
Project ID:	**Client:**	**Date:**
TPC-2014-RI	TRC Solutions	7/22/2014

MIP PRE-LOG RESPONSE TEST

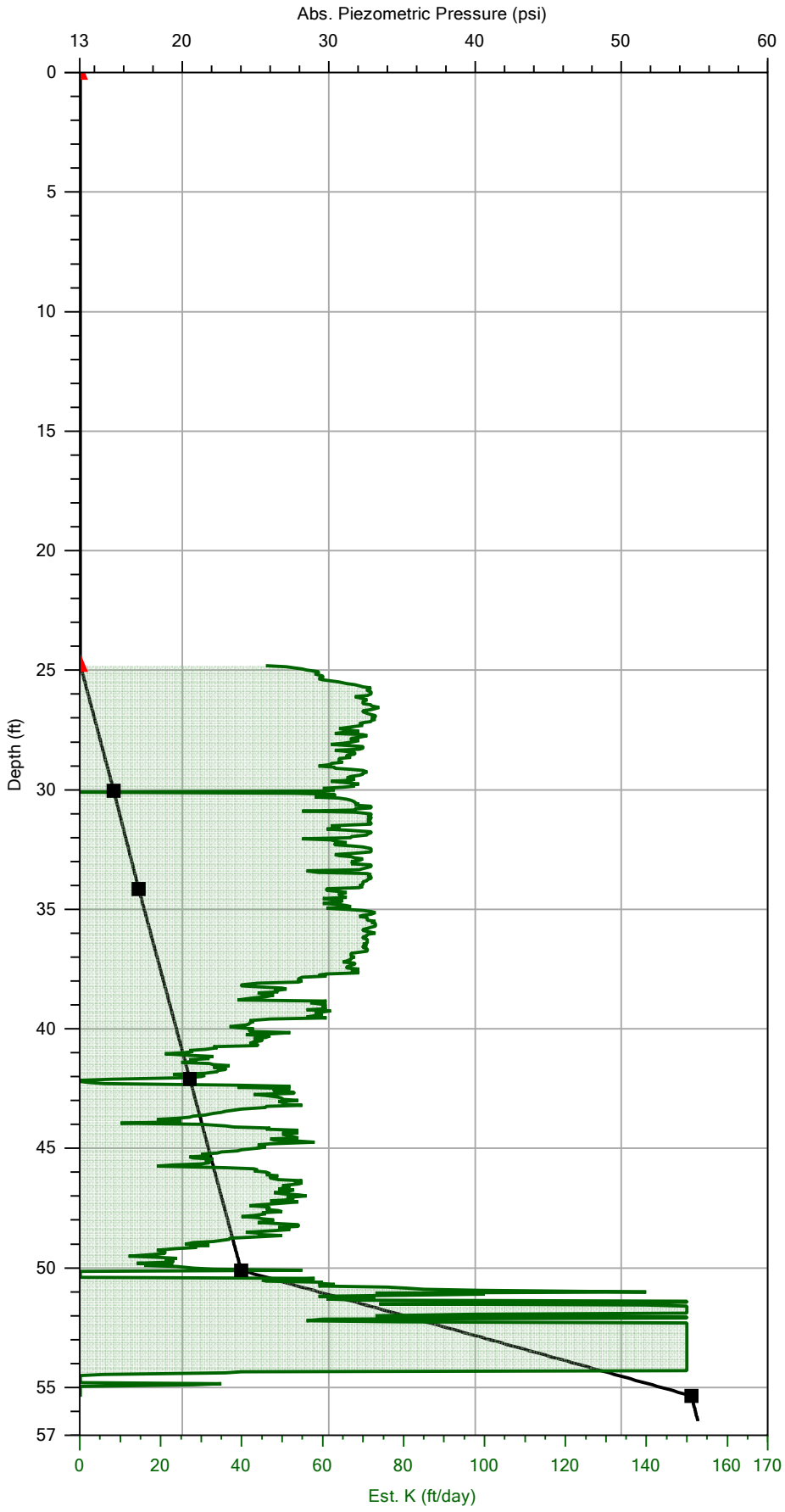
FILENAME: MIP-65.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 36 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 15:26:50

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-66.MHP
Company: SER90	Operator: Sammy		Date: 7/23/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location:



			File: MIP-66.MHP
Company: SER90		Operator: Sammy	Date: 7/23/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.7	PASS
High	290.0	304.9	5.1	PASS

MIP-66.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-66.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.2 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 11:41:20

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 23 2014 11:44:26

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.455	0.0	92.770
TOP with FLOW>0	14.394	306.1	99.250
BOTTOM with FLOW=0	13.254	0.0	91.390
BOTTOM with FLOW>0	14.250	304.7	98.250

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2124A,0.0000,0.0000,8.0000e-7,-6.0000e-5,1.0239,-3.7418
LOG START TIME: Wed Jul 23 2014 11:48:29

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.20	0.671	16	1	1	1
6.45	1.966	16	1	1	1

LOG END DEPTH: 55.65 ft (16.962 m)
LOG END TIME: Wed Jul 23 2014 13:19:04

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-66.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.2 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 13:52:05

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 23 2014 13:55:13

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.412	0.0	92.470
TOP with FLOW>0	14.607	316.0	100.710
BOTTOM with FLOW=0	13.175	0.0	90.840
BOTTOM with FLOW>0	14.356	312.8	98.980

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

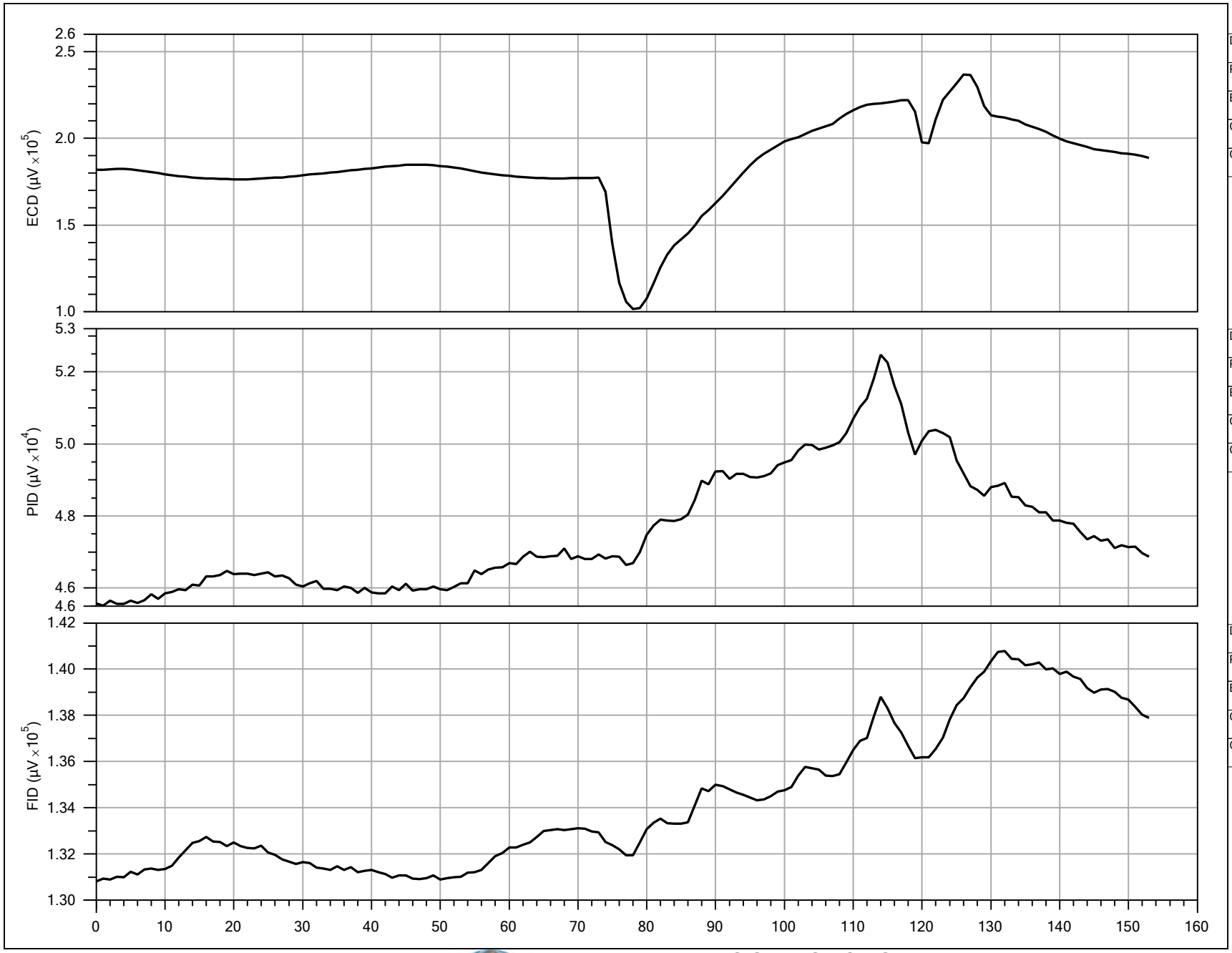
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	303.3	4.6	PASS

********** USER NOTES **********

6-in concrete



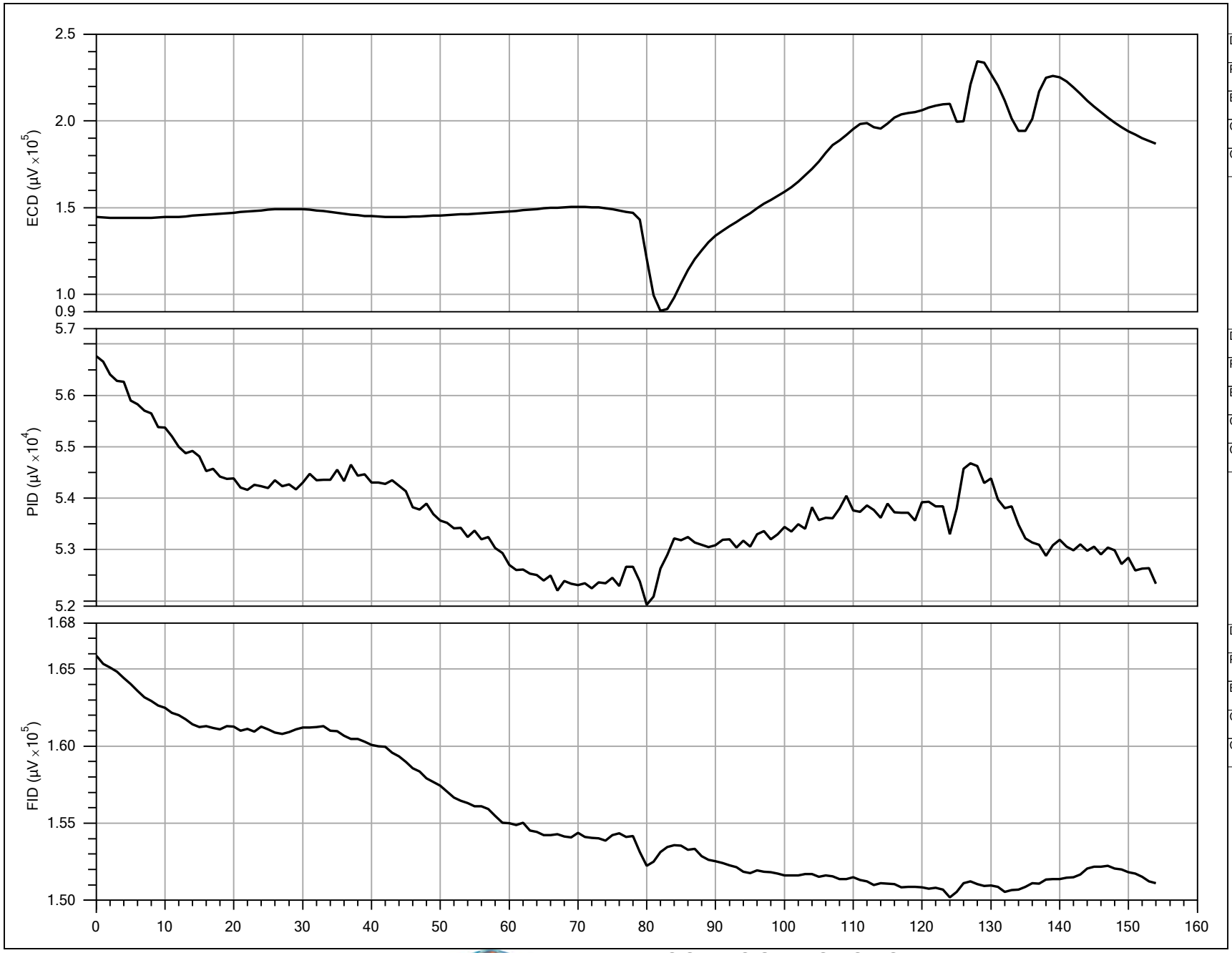
Detector:
ECD
Peak Response:
236785 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
52469 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
140790 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-66.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/23/2014



Detector:
ECD
Peak Response:
234581 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
56764 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
165868 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-66.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/23/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-66.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.2 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 11:41:20

RESPONSE TEST ATTENUATION CHANGES

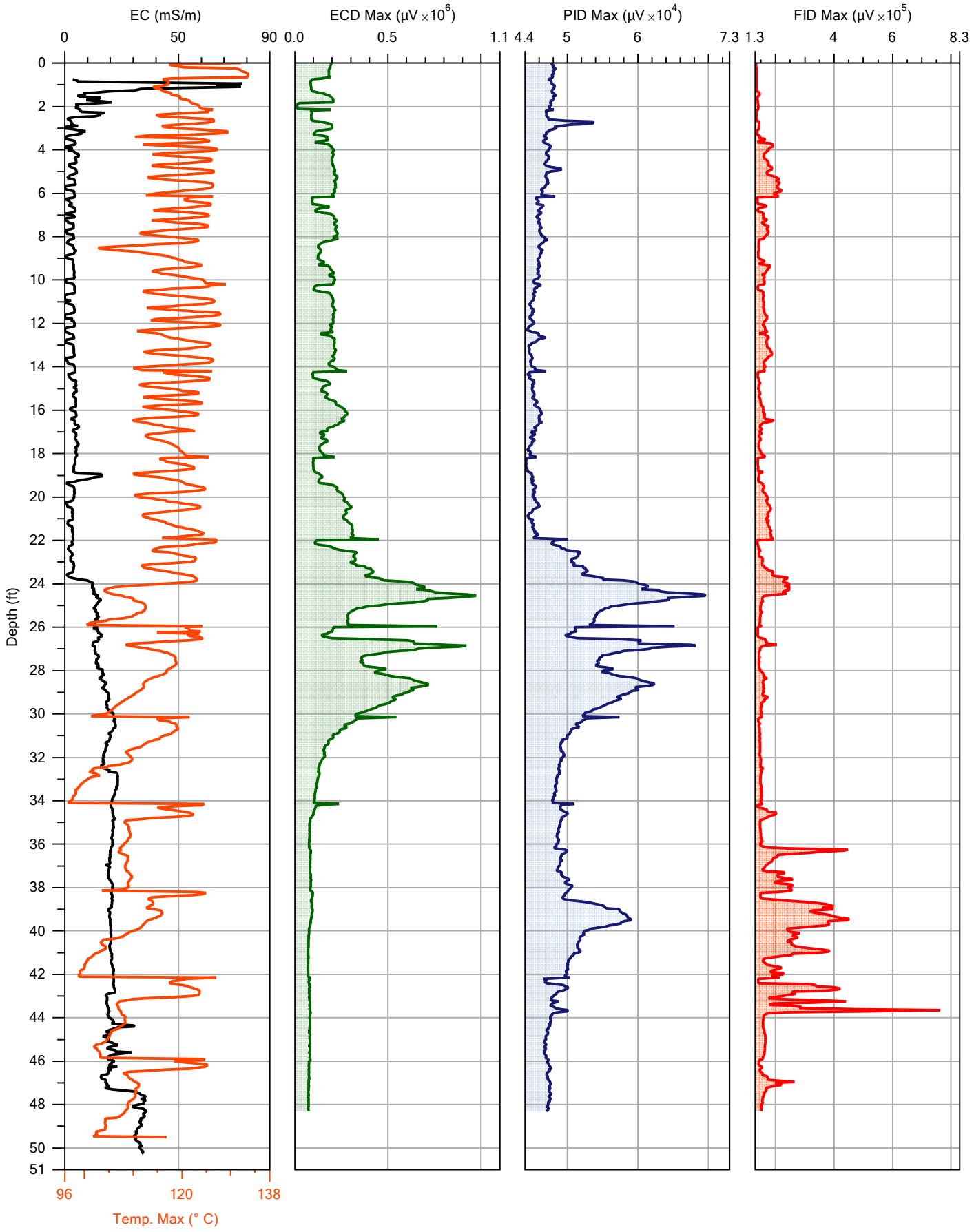
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

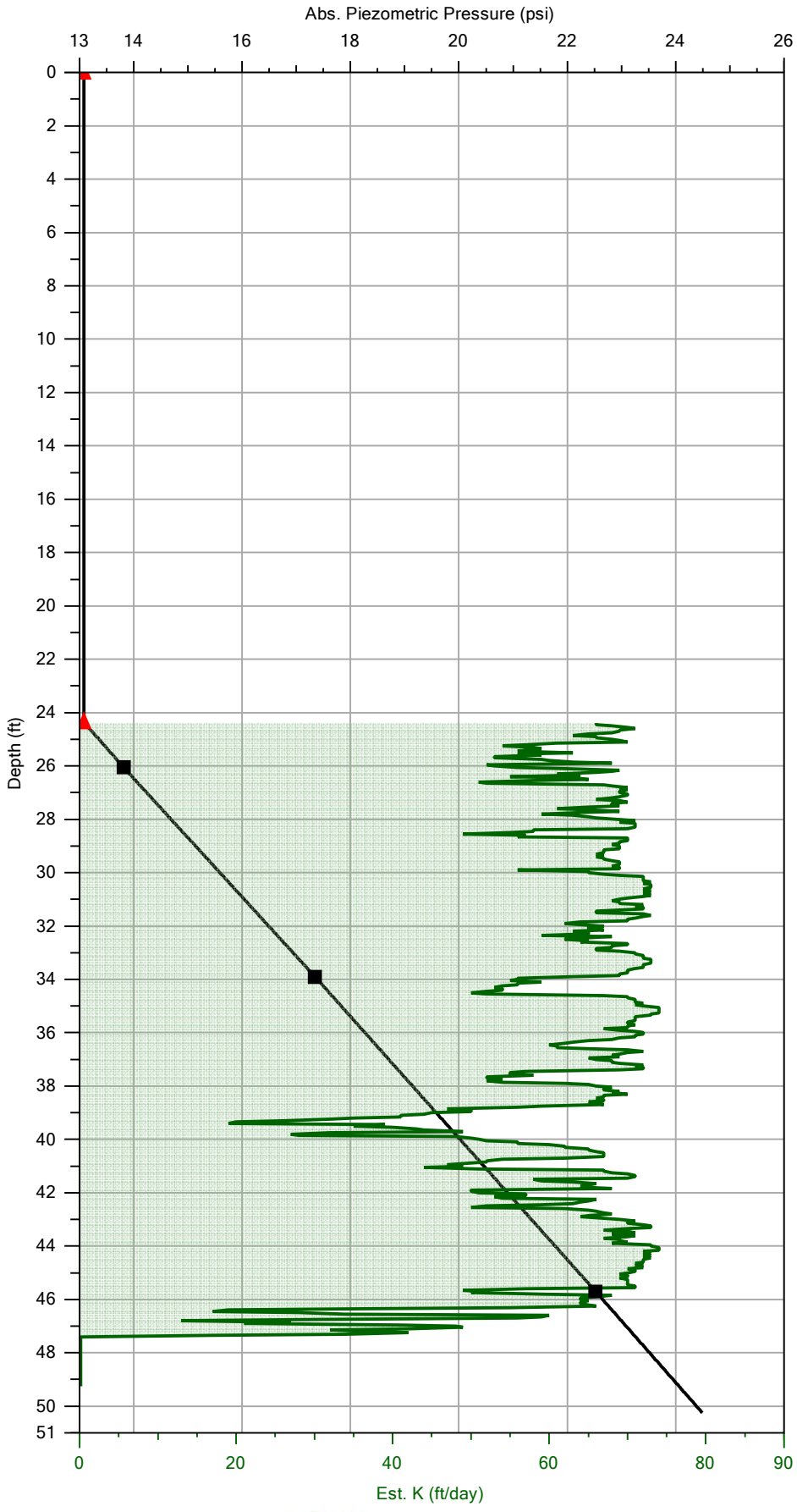
FILENAME: MIP-66.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.2 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 13:52:05

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-67.MHP
Company: SER90		Operator: Sammy	Date: 7/23/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:



			File: MIP-67.MHP
Company: SER90		Operator: Sammy	Date: 7/23/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	303.5	4.6	PASS

MIP-67.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-67.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.8 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 15:06:10

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 23 2014 15:09:17

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.492	0.0	93.020
TOP with FLOW>0	14.523	327.4	100.130
BOTTOM with FLOW=0	13.267	0.0	91.470
BOTTOM with FLOW>0	14.312	322.4	98.680

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2124A,0.0000,0.0000,8.0000e-7,-6.0000e-5,1.0239,-3.7418
LOG START TIME: Wed Jul 23 2014 15:11:55

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.15	0.655	16	1	1	1

LOG END DEPTH: 49.50 ft (15.088 m)
LOG END TIME: Wed Jul 23 2014 16:41:55

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-67.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39/2 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 17:11:26

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 23 2014 17:14:24

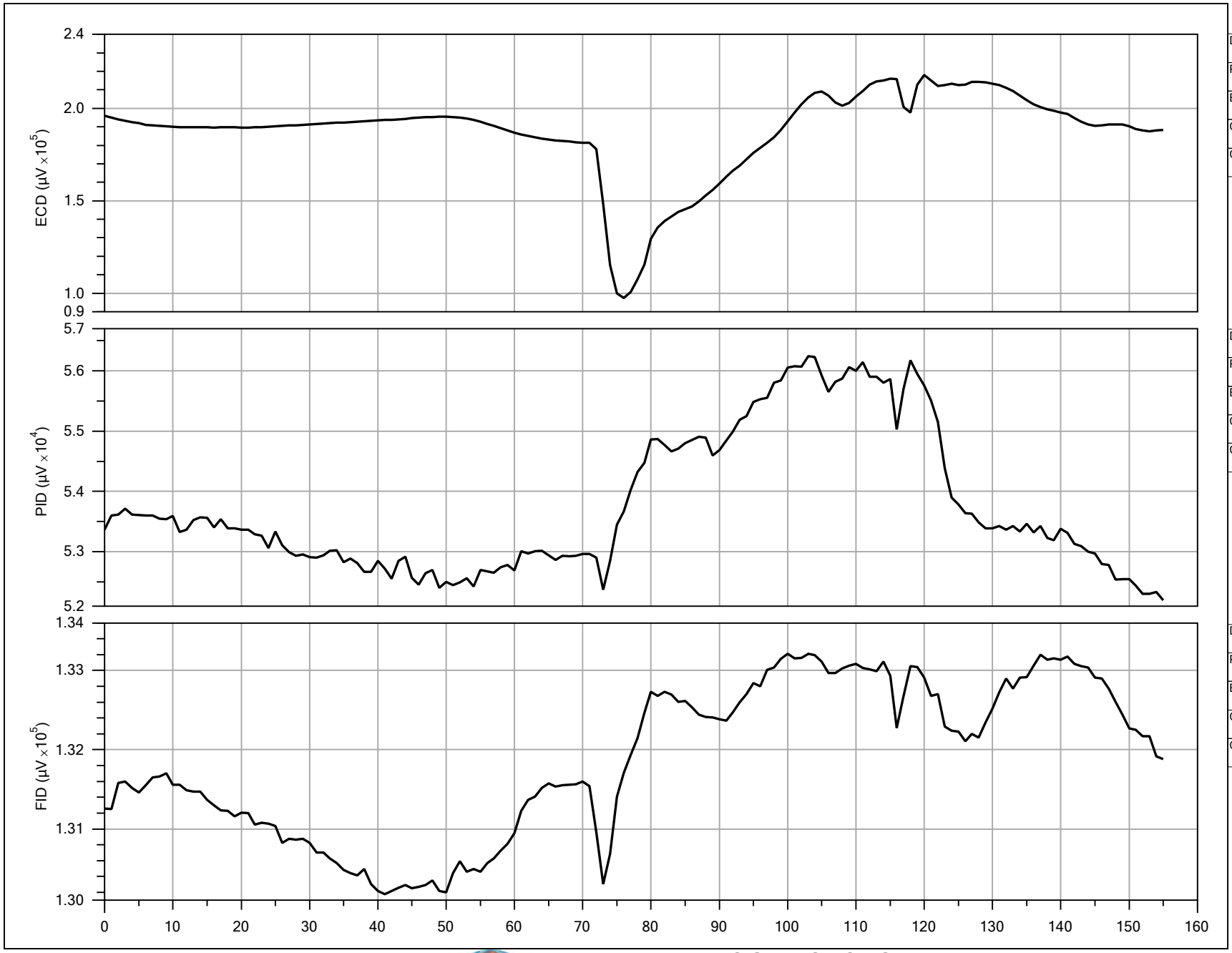
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.467	0.0	92.850
TOP with FLOW>0	14.537	332.0	100.230
BOTTOM with FLOW=0	13.246	0.0	91.330
BOTTOM with FLOW>0	14.283	326.9	98.480

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	5.9	PASS
High	290.0	303.5	4.7	PASS



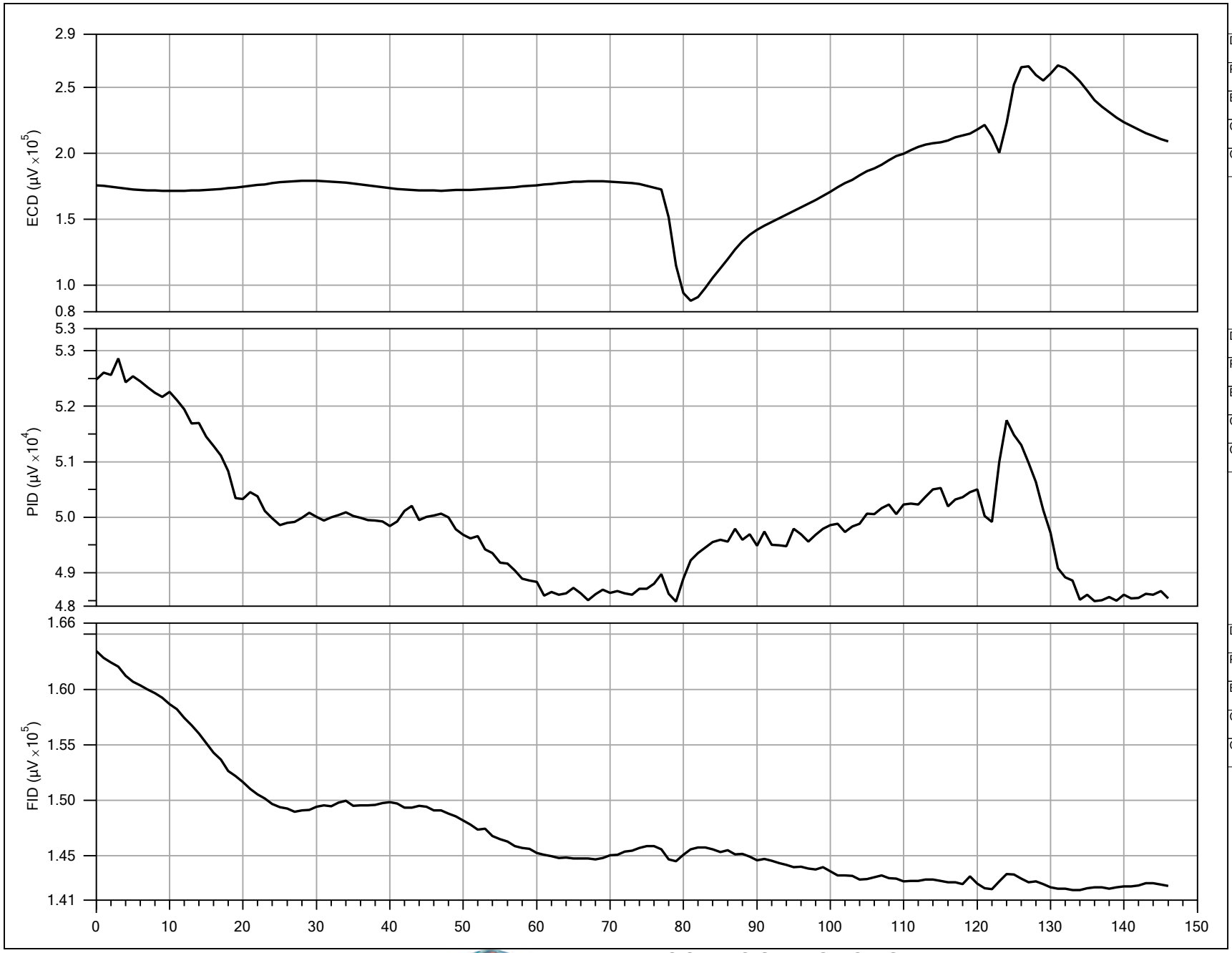
Detector:
ECD
Peak Response:
217948 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
56246 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
133213 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-67.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/23/2014



Detector:
ECD
Peak Response:
266587 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
52866 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
163465 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-67.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/23/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-67.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.8 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 15:06:10

RESPONSE TEST ATTENUATION CHANGES

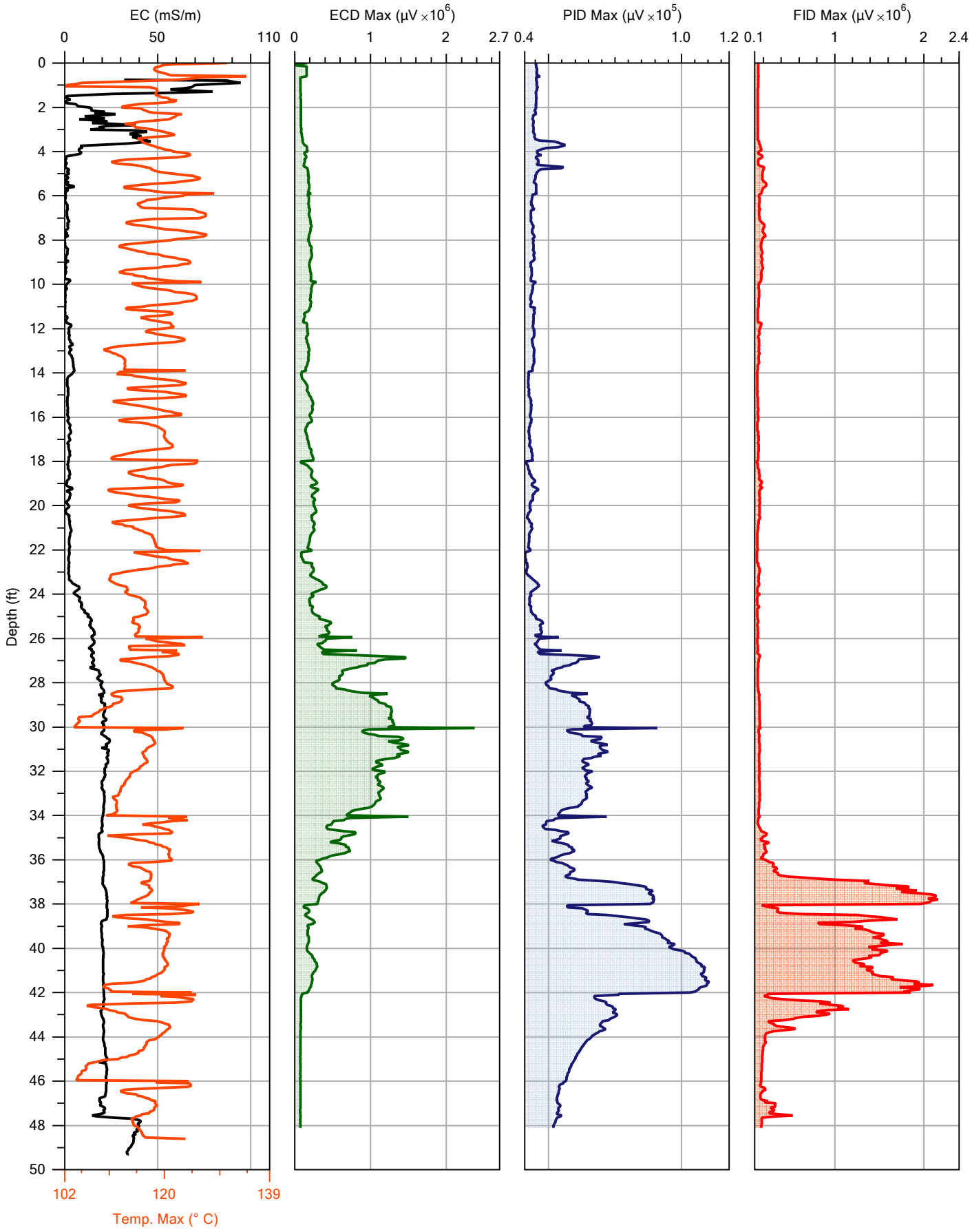
TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

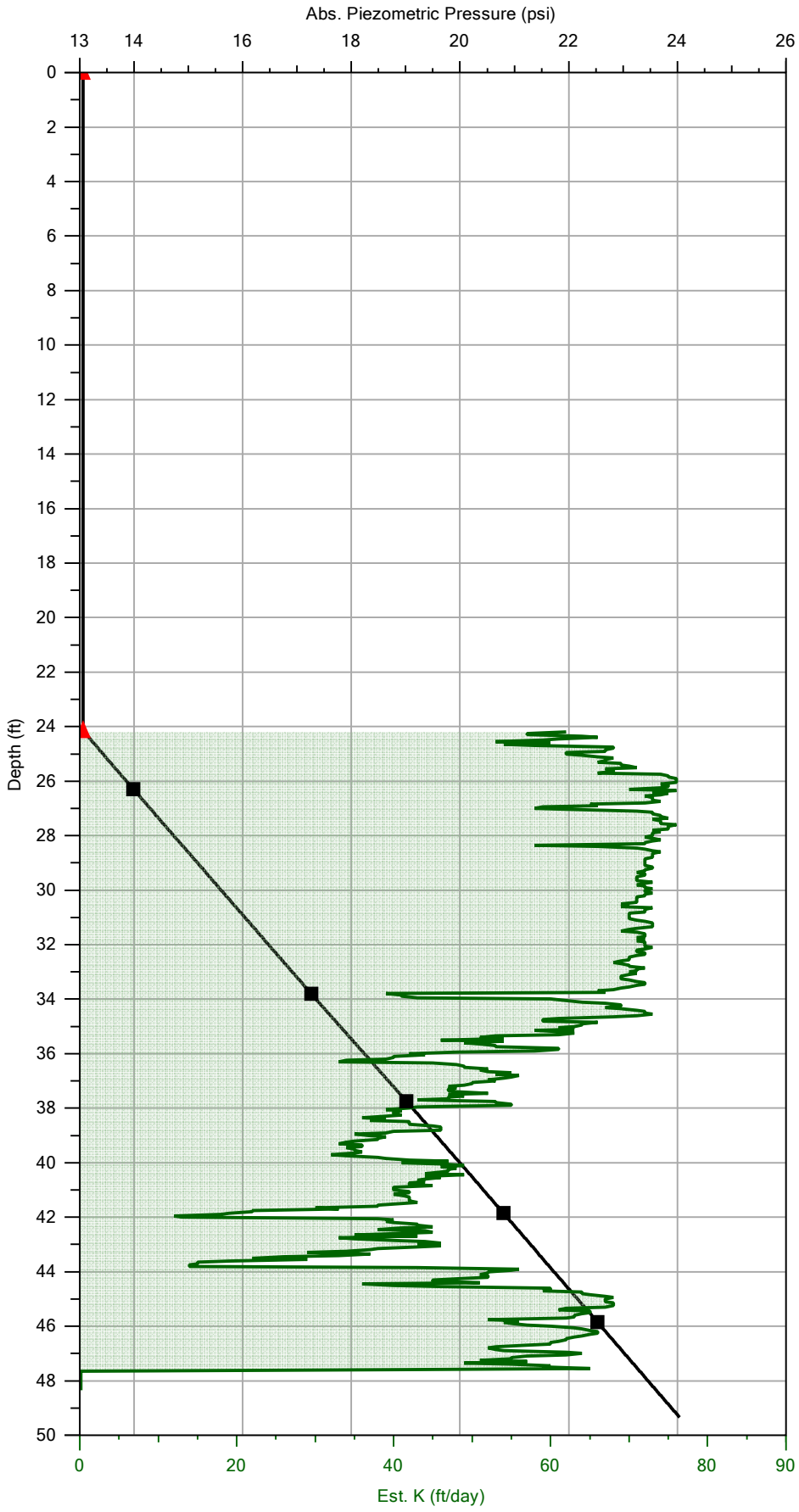
FILENAME: MIP-67.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39/2 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 17:11:26

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1



			File: MIP-68.MHP
Company: SER90	Operator: Sammy		Date: 7/24/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location:



			File: MIP-68.MHP
Company: SER90		Operator: Sammy	Date: 7/24/2014
Project ID: TPC-2014-RI		Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.2	7.6	PASS
High	290.0	300.2	3.5	PASS

MIP-68.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-68.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.0 mL/min
RESPONSE TEST START TIME: Thu Jul 24 2014 08:04:47

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 24 2014 08:07:57

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.463	0.0	92.820
TOP with FLOW>0	14.417	374.6	99.400
BOTTOM with FLOW=0	13.238	0.0	91.270
BOTTOM with FLOW>0	14.052	364.2	96.890

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2124A,0.0000,0.0000,8.0000e-7,-6.0000e-5,1.0239,-3.7418
LOG START TIME: Thu Jul 24 2014 08:11:04

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.15	0.046	16	1	1	1

LOG END DEPTH: 48.60 ft (14.813 m)
LOG END TIME: Thu Jul 24 2014 09:35:06

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-68.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.8 mL/min
RESPONSE TEST START TIME: Thu Jul 24 2014 10:23:39

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 24 2014 10:26:40

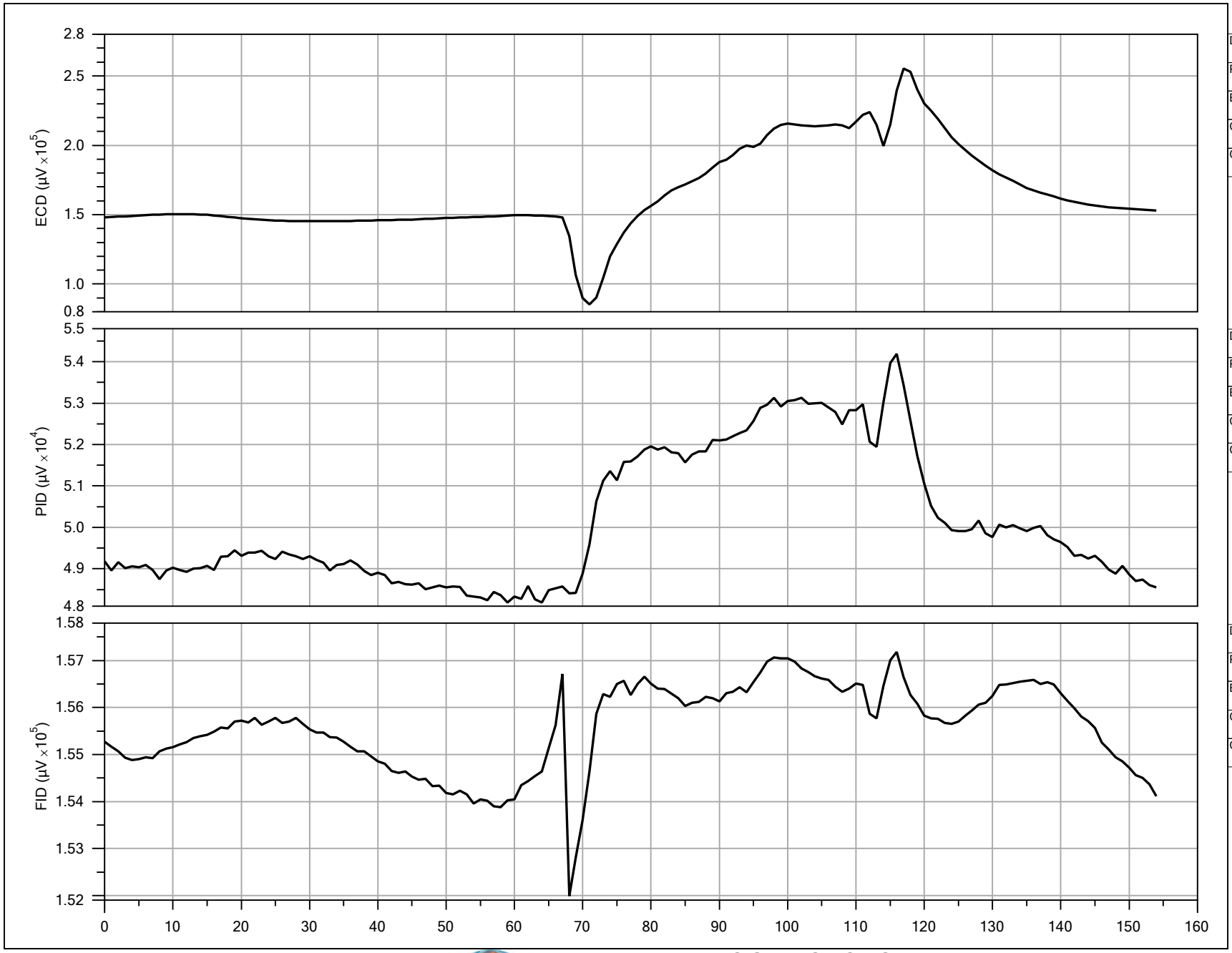
TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.465	0.0	92.840
TOP with FLOW>0	14.663	341.6	101.100
BOTTOM with FLOW=0	13.242	0.0	91.300
BOTTOM with FLOW>0	14.378	339.5	99.140

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	303.7	4.7	PASS



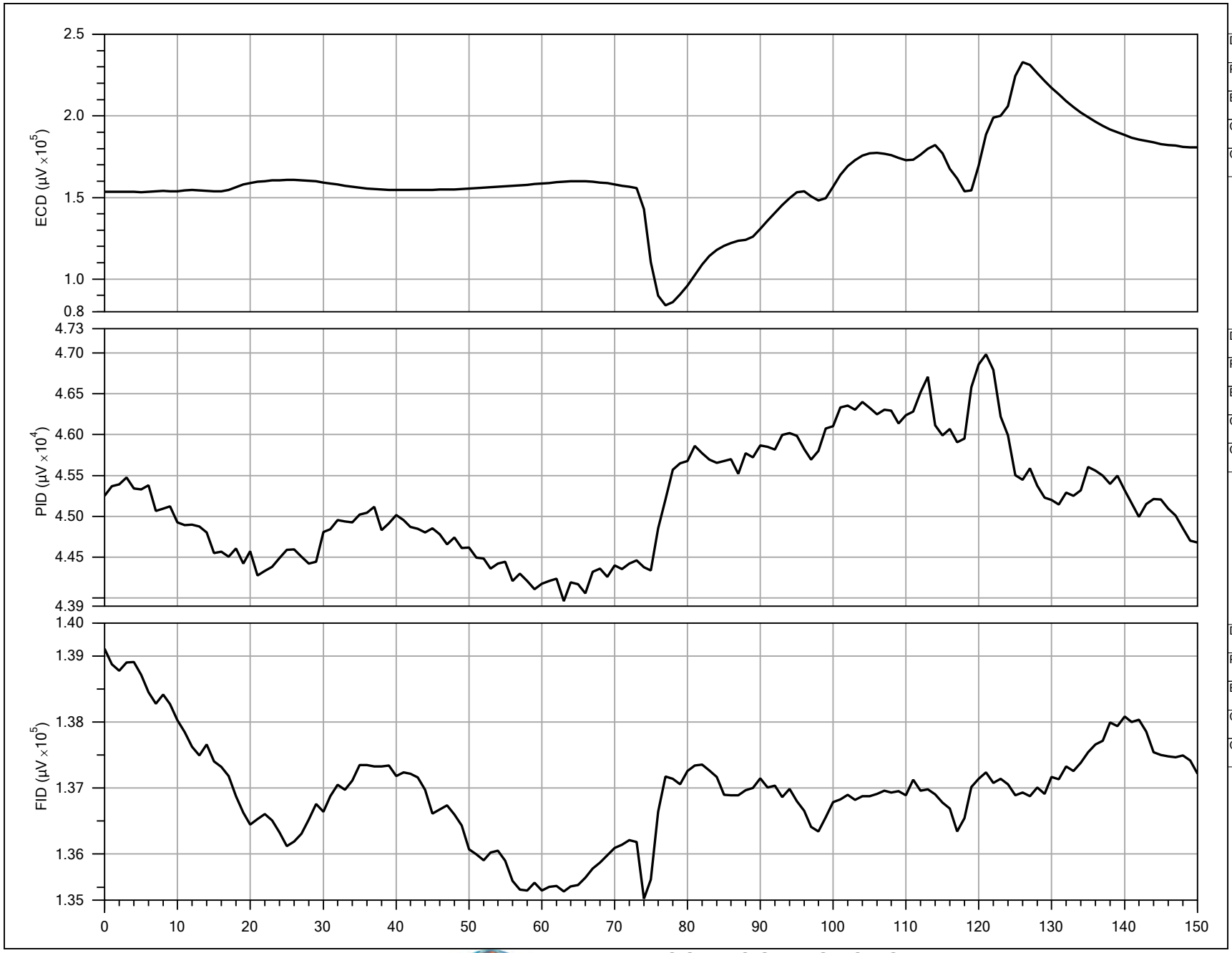
Detector:
ECD
Peak Response:
255280 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
54186 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
157186 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

PRE-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-68.PRE.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/24/2014



Detector:
ECD
Peak Response:
232925 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
PID
Peak Response:
46983 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

Detector:
FID
Peak Response:
139111 µV
Baseline:
0 µV
Compound:
TCE
Concentration:
1.0 ppm

POST-LOG RESPONSE

Company:	Operator:	File:
SER90	Sammy	MIP-68.POST.TIM
Project ID:	Client:	Date:
TPC-2014-RI	TRC Solutions	7/24/2014

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-68.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.0 mL/min
RESPONSE TEST START TIME: Thu Jul 24 2014 08:04:47

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

MIP POST-LOG RESPONSE TEST

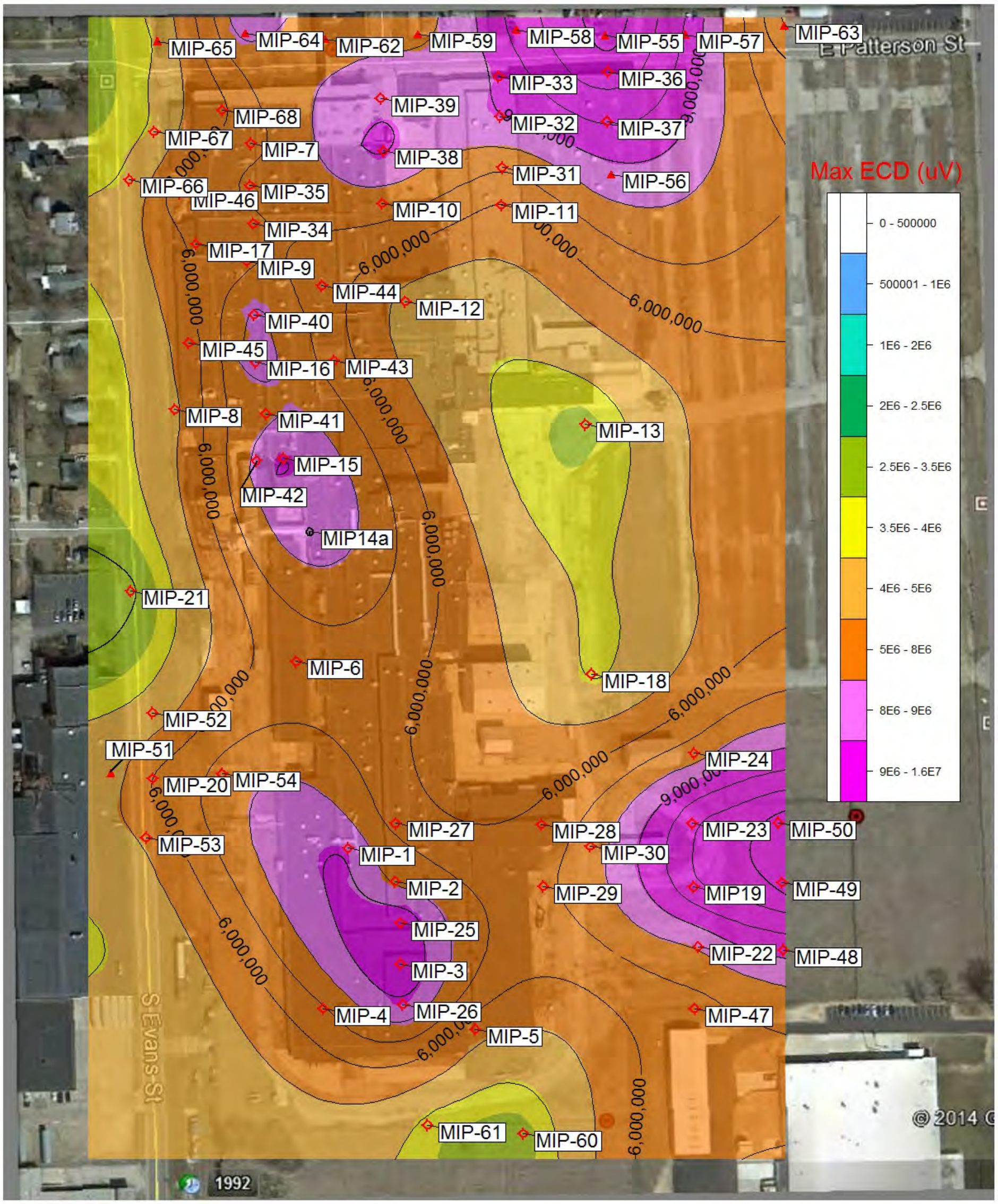
FILENAME: MIP-68.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.8 mL/min
RESPONSE TEST START TIME: Thu Jul 24 2014 10:23:39

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Attachment C

Simulated MIP Data



MIP-10 MIP Boring Location. For Total Depth, Refer to Attachment B

Max ECD Response Distribution
Contour Interval = 1E+06 uV

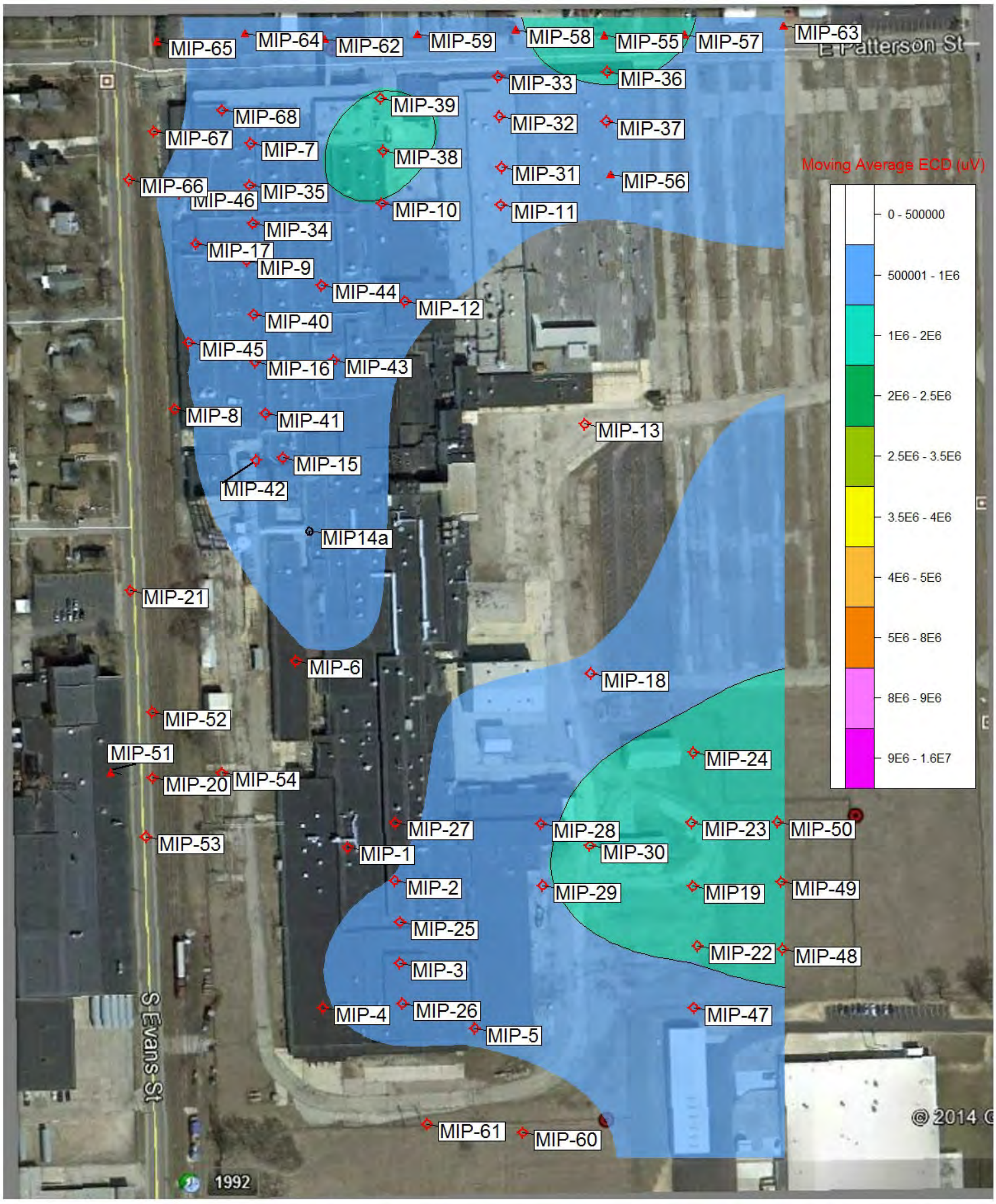
0.0 150.0 ft

PROJECT: **Former Tecumseh Products Company** Tecumseh, Michigan			PROJECT #: SER #: 1998-17-518
Title: **ECD Max Response Map**			Number: **C - 1**
Date: 01/15/2015	Drawn By: L. Doan	Reviewed By: S. Sirhan	File #: SE-075-0306

SER90, Inc.
2101 Lincolnway East
Mishawaka, IN 46544

Revisions

No.	Date	By	
I	1/15/15	S.S.	MIP-14a Data
II			
III			
IV			



MIP-10 MIP Boring Location. For Total Depth, Refer to Attachment B

Average ECD Response Distribution
Contour Interval = 1E+06 uV

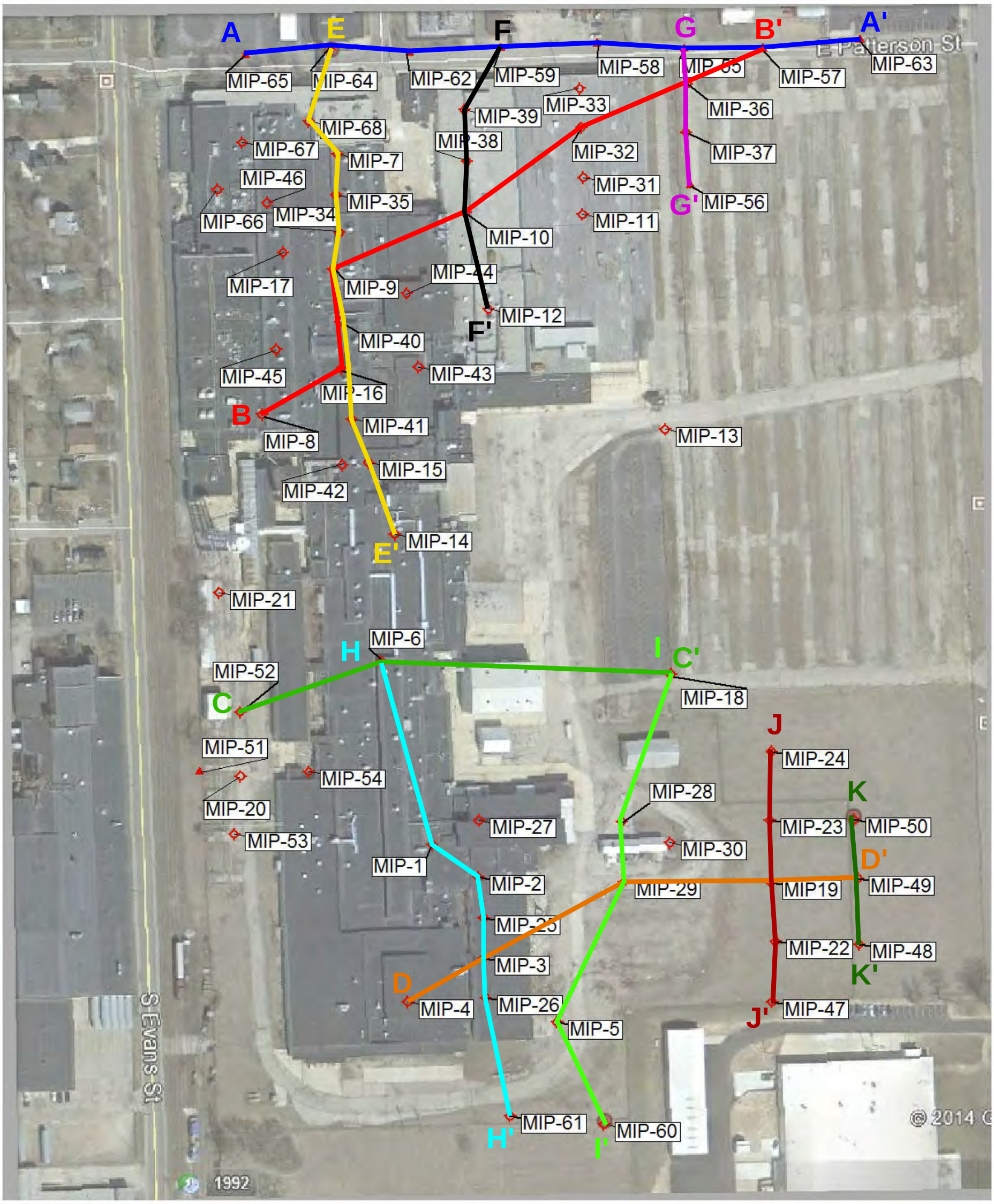
0.0 150.0 ft

PROJECT: **Former Tecumseh Products Company** Tecumseh, Michigan			PROJECT #: SER #: 1998-17-518
Title: **ECD Moving Average Map**			Number: **C - 2**
Date: 01/15/2015	Drawn By: L. Doan	Reviewed By: S. Sirhan	File #: SE-075-0306

SER[90], Inc.
2101 Lincolnway East
Mishawaka, IN 46544

Revisions

No.	Date	By	
I	1/15/15	S.S.	MIP-14a Data
II			
III			
IV			



0.0 250.0 ft

MIP-10 MIP Boring Location. For Total Depth, Refer to Attachment B

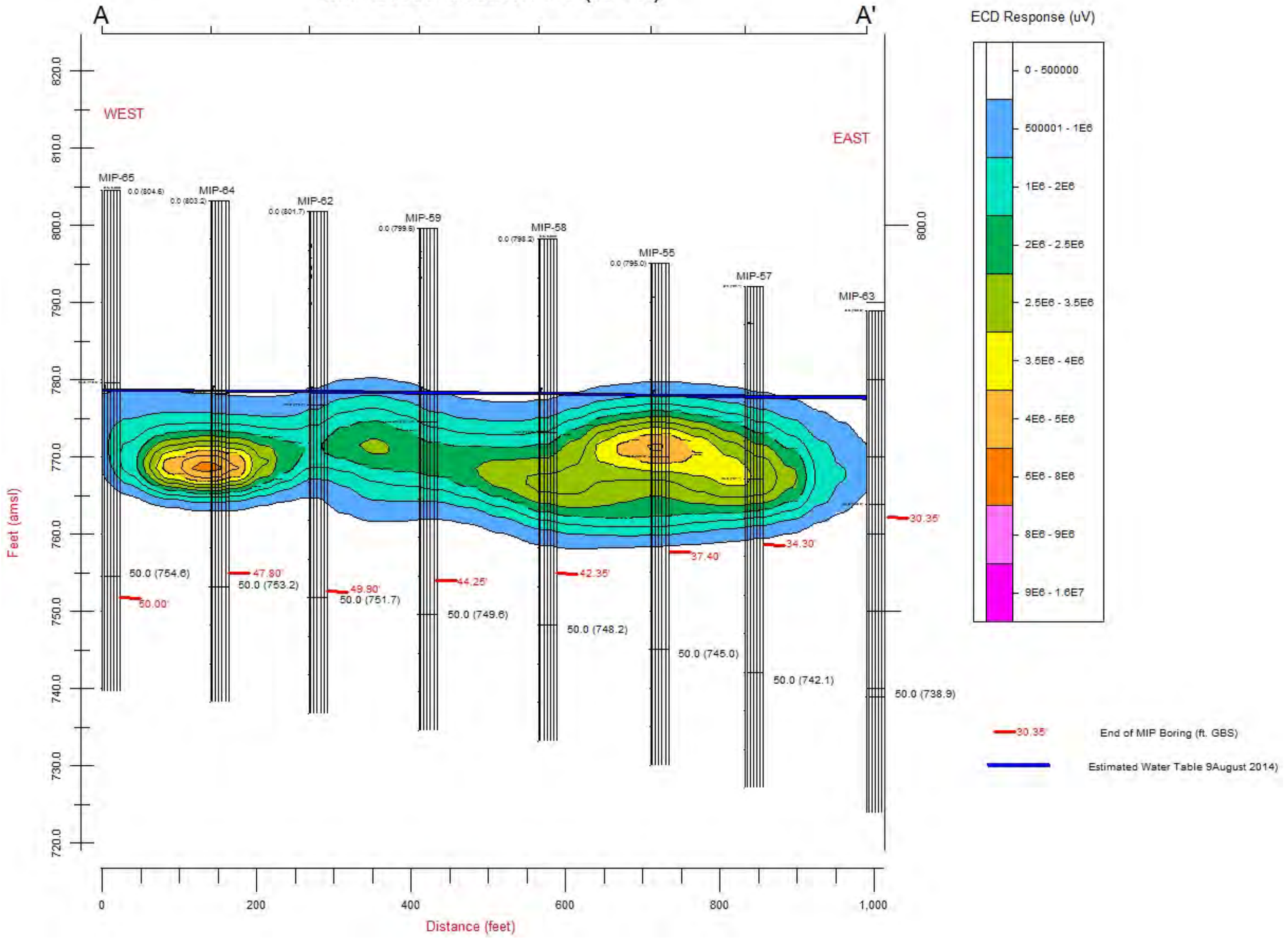
K K' MIP Cross Section Strike Line. See Attachment C.

PROJECT: **Former Tecumseh Products Company** Tecumseh, Michigan			PROJECT #: SER #: 1998-17-518
Title: **Cross-section Index Map**			Number: **C - 3**
Date: 10/22/2014	Drawn By: L. Doan	Reviewed By: S. Sirhan	File #: SE-075-0306

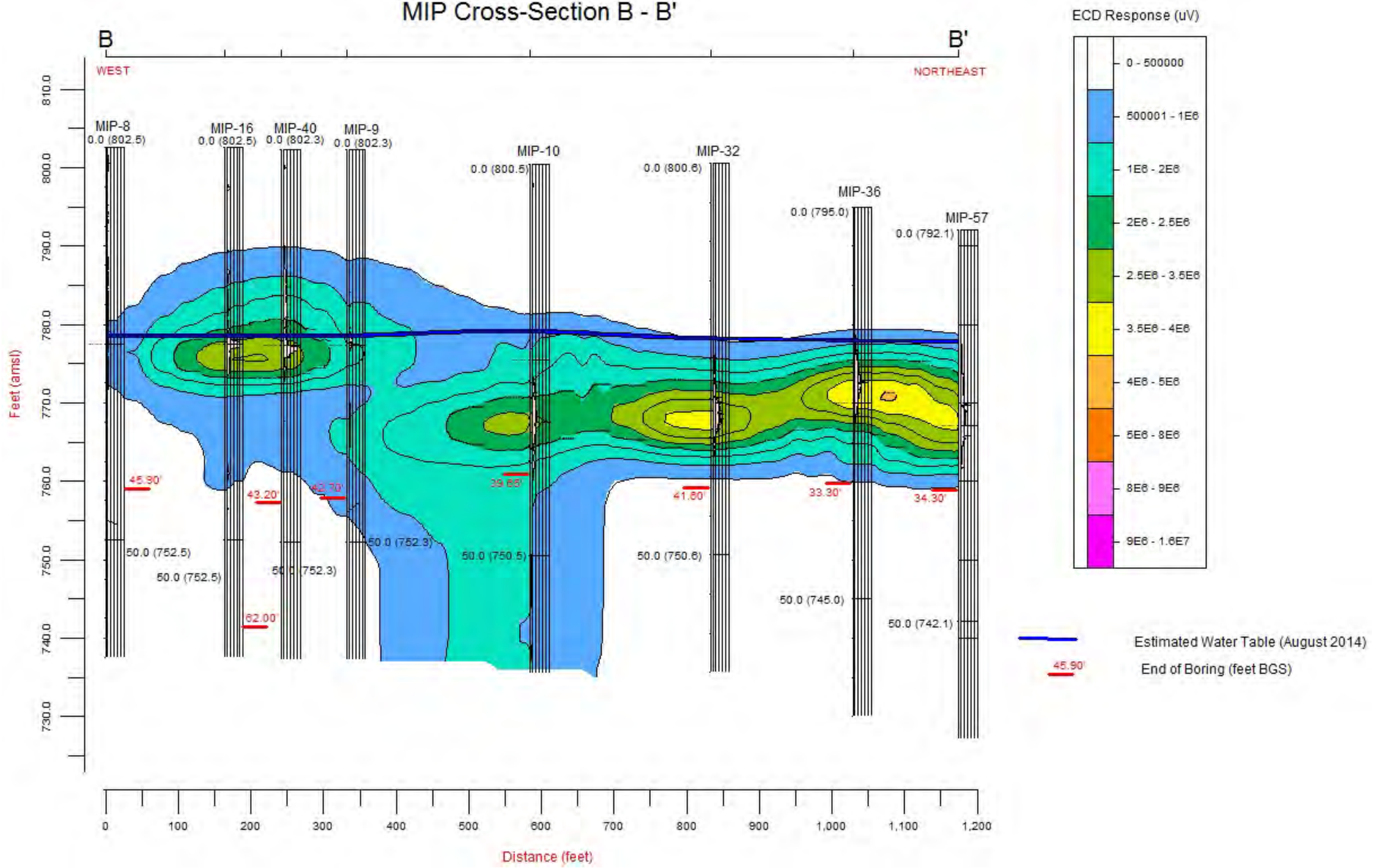
SER90, Inc.
2101 Lincolnway East
Mishawaka, IN 46544

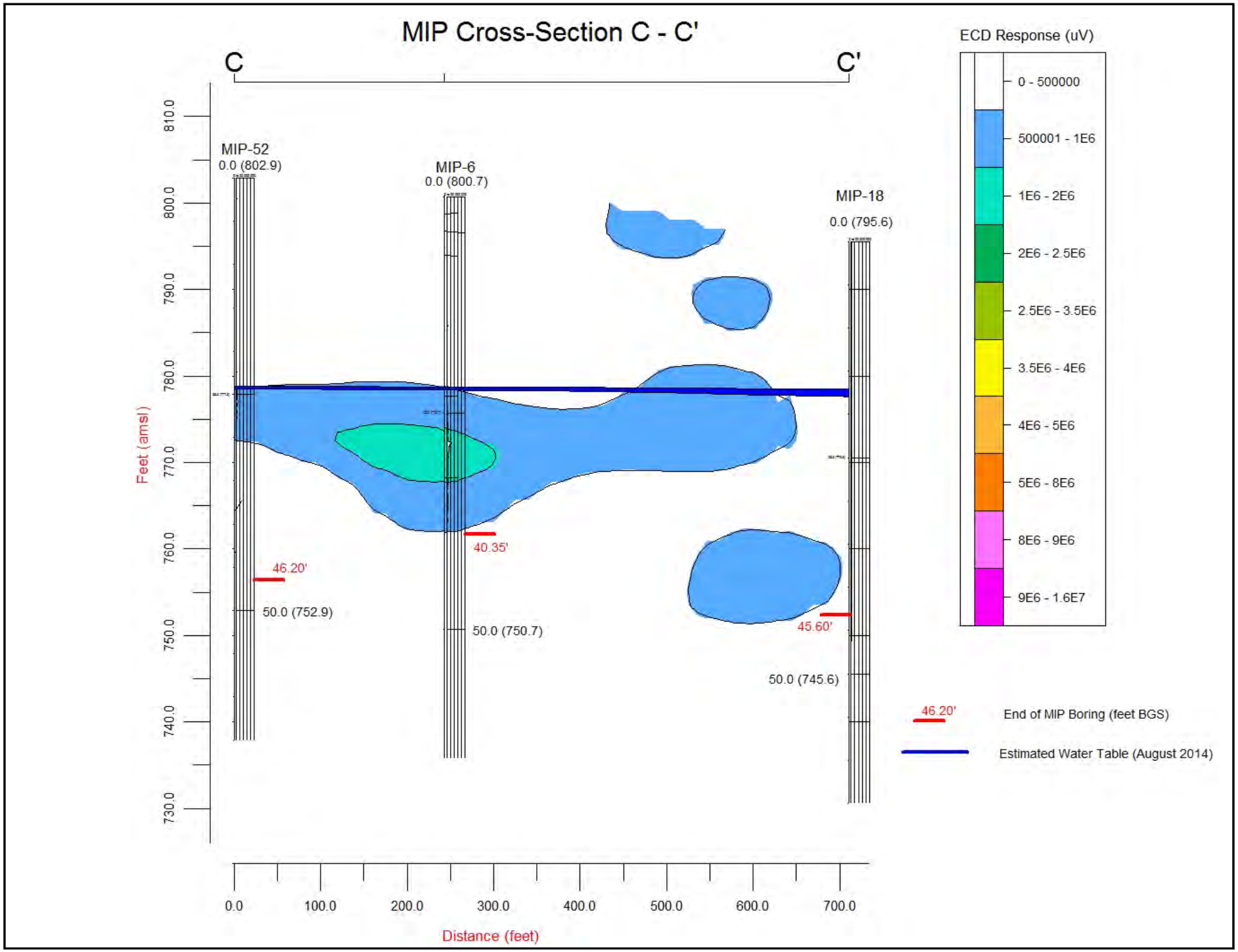
Revisions			
No.	Date	By	
I			
II			
III			
IV			

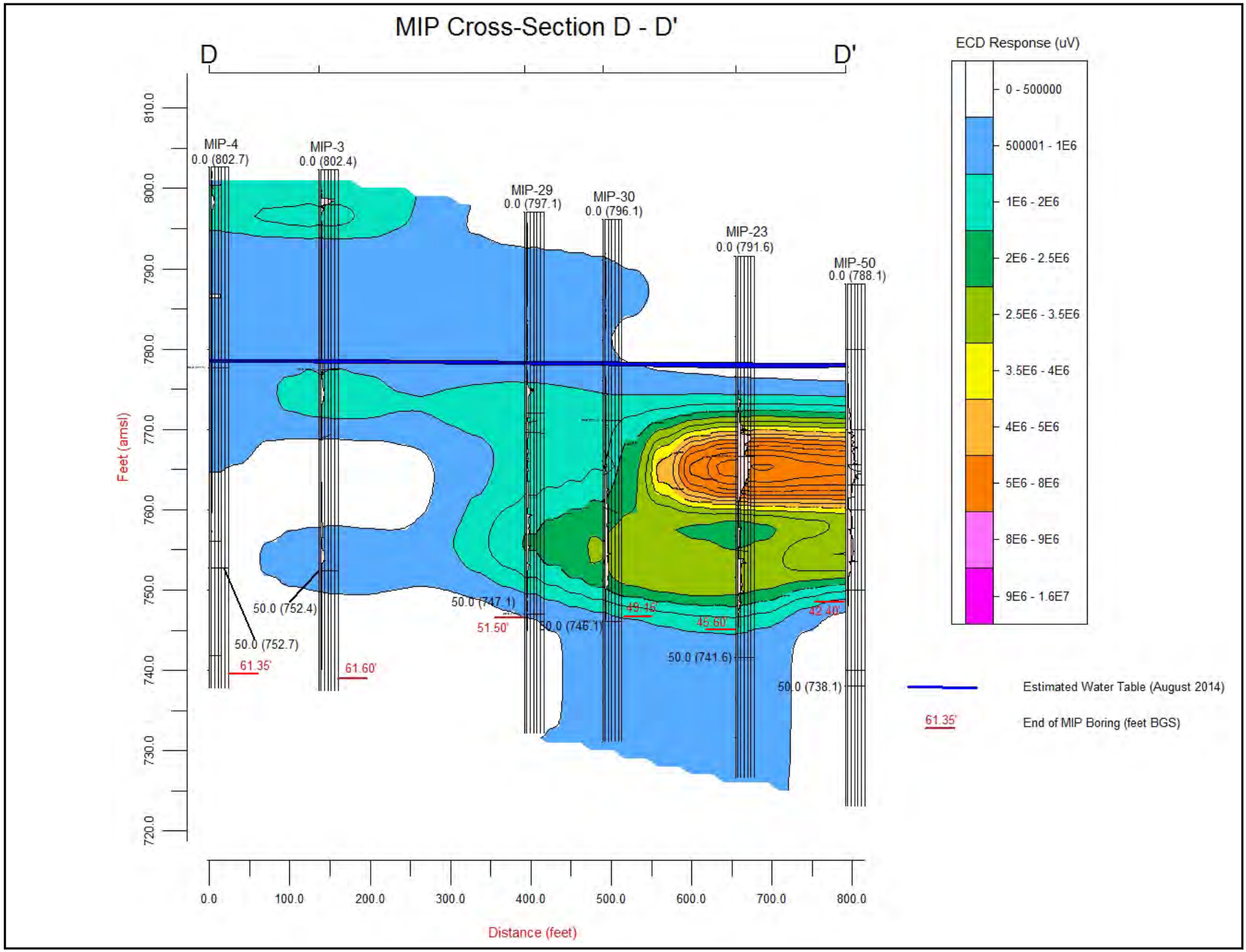
MIP Cross-Section A-A' (W - E)



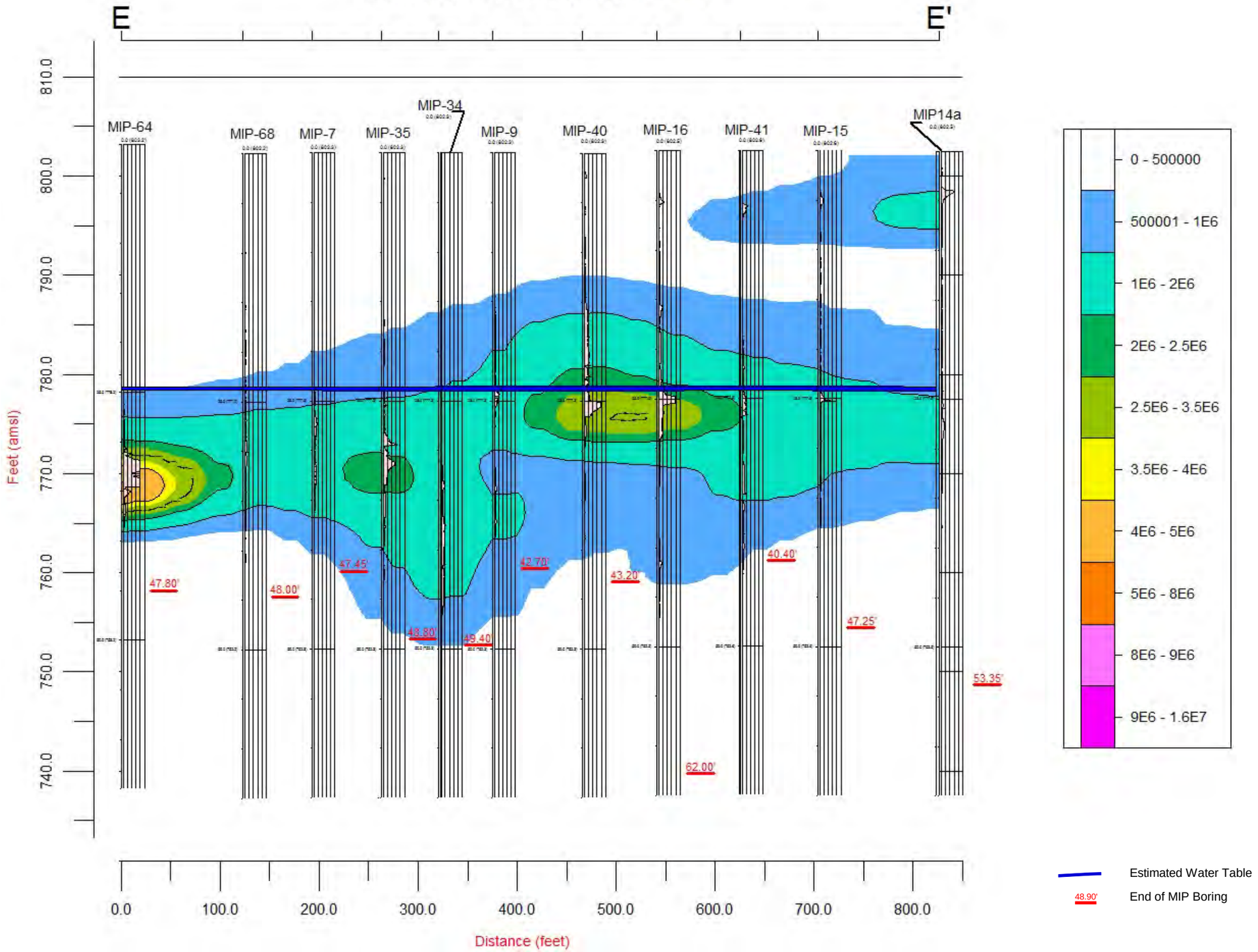
MIP Cross-Section B - B'

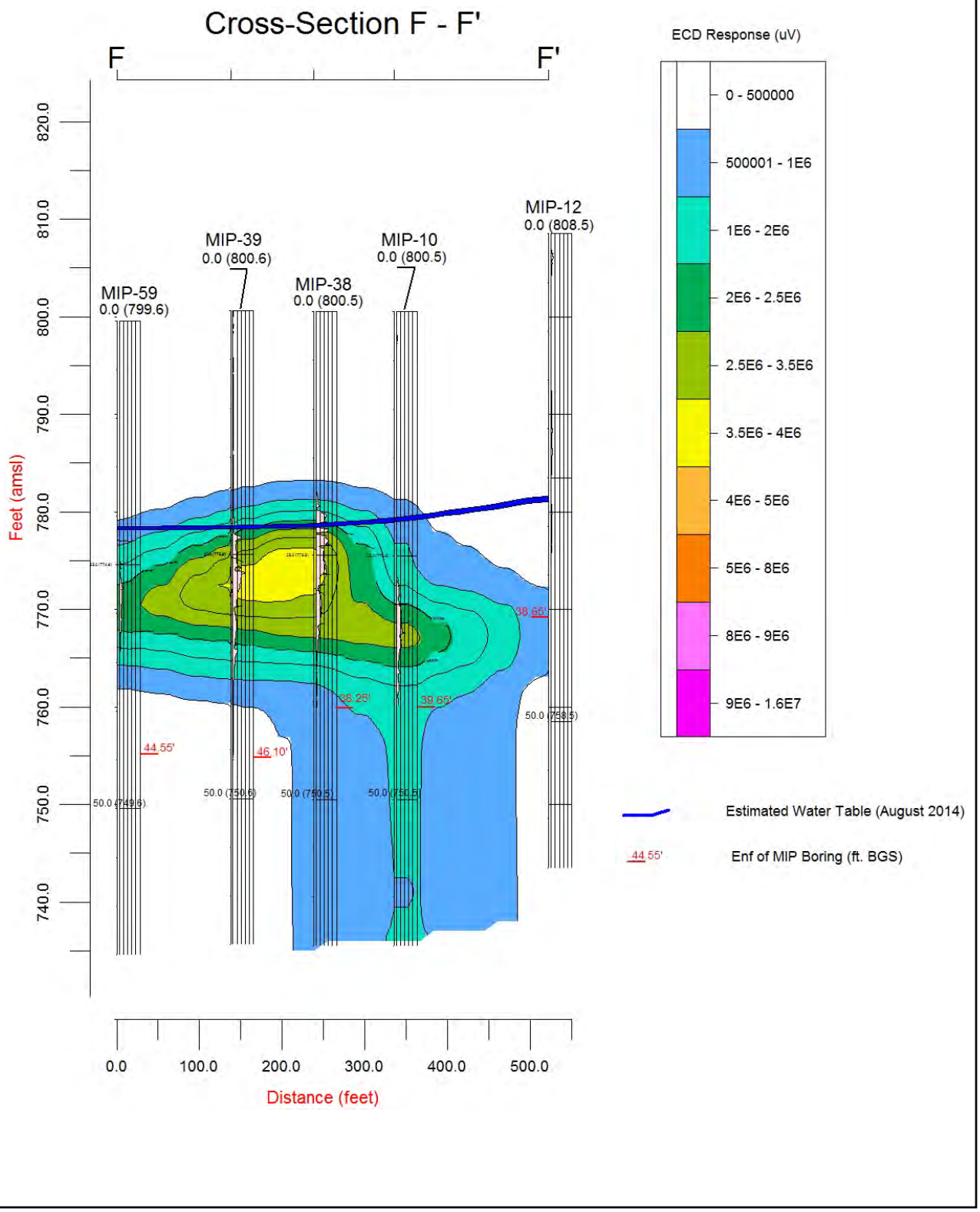



MIP Cross-Section C - C'
C
C'
MIP-52
0.0 (802.9)
MIP-6
0.0 (800.7)
MIP-18
0.0 (795.6)
46.20'
50.0 (752.9)
40.35'
50.0 (750.7)
45.60'
50.0 (745.6)
Feet (amsl)
810.0
800.0
790.0
780.0
770.0
760.0
750.0
740.0
730.0
0.0
100.0
200.0
300.0
400.0
500.0
600.0
700.0
Distance (feet)
ECD Response (uV)
0 - 500000
500001 - 1E6
1E6 - 2E6
2E6 - 2.5E6
2.5E6 - 3.5E6
3.5E6 - 4E6
4E6 - 5E6
5E6 - 8E6
8E6 - 9E6
9E6 - 1.6E7
46.20'
End of MIP Boring (feet BGS)
Estimated Water Table (August 2014)

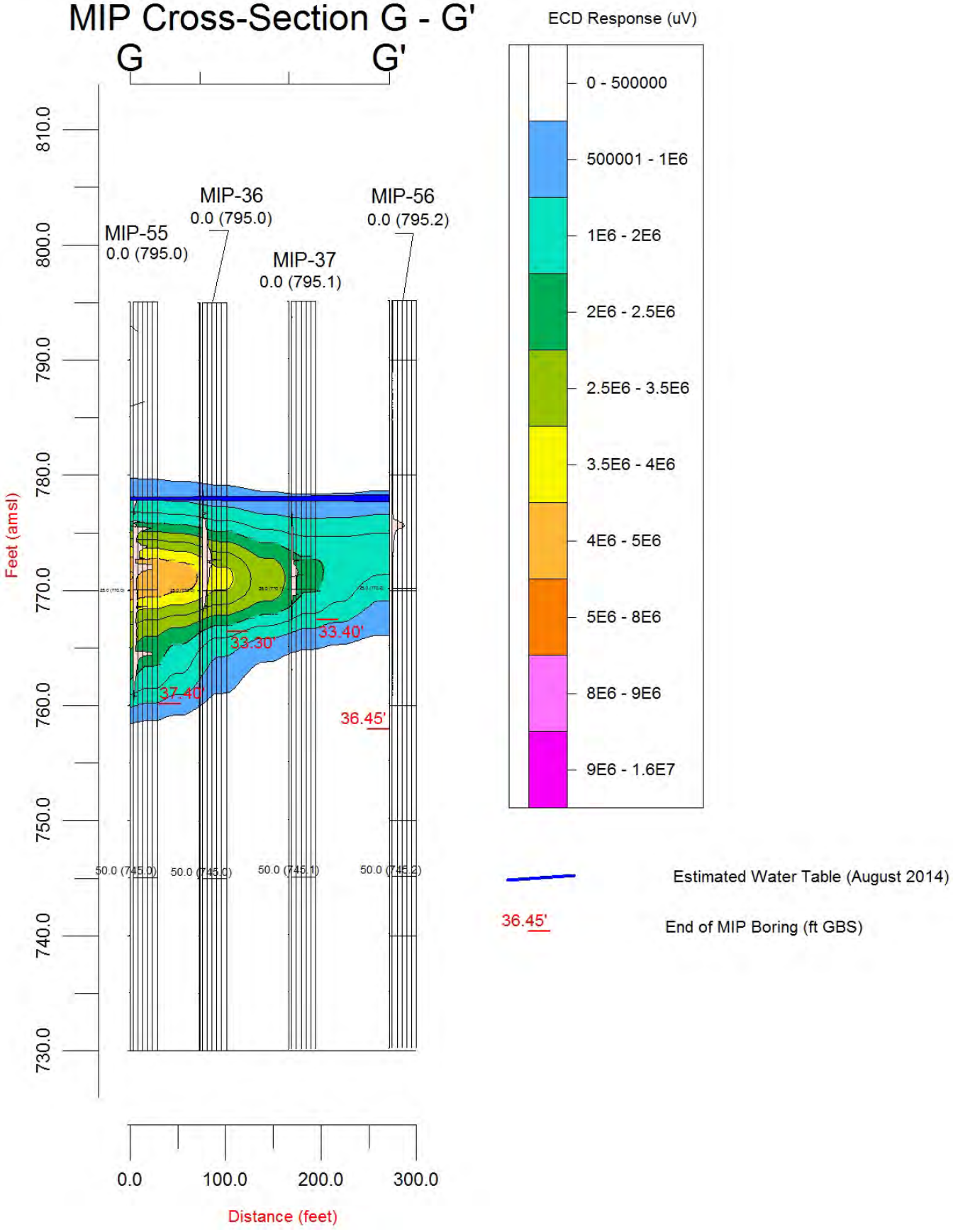

MIP Cross-Section D - D'
D
D'
ECD Response (uV)
0 - 500000
500001 - 1E6
1E6 - 2E6
2E6 - 2.5E6
2.5E6 - 3.5E6
3.5E6 - 4E6
4E6 - 5E6
5E6 - 8E6
8E6 - 9E6
9E6 - 1.6E7
MIP-4
0.0 (802.7)
MIP-3
0.0 (802.4)
MIP-29
0.0 (797.1)
MIP-30
0.0 (796.1)
MIP-23
0.0 (791.6)
MIP-50
0.0 (788.1)
50.0 (752.4)
50.0 (752.7)
61.35'
61.60'
50.0 (747.1)
51.50'
50.0 (746.1)
49.15'
45.60'
42.40'
50.0 (741.6)
50.0 (738.1)
Feet (amsl)
810.0
800.0
790.0
780.0
770.0
760.0
750.0
740.0
730.0
720.0
0.0
100.0
200.0
300.0
400.0
500.0
600.0
700.0
800.0
Distance (feet)
Estimated Water Table (August 2014)
61.35'
End of MIP Boring (feet BGS)

Cross-Section E-E'

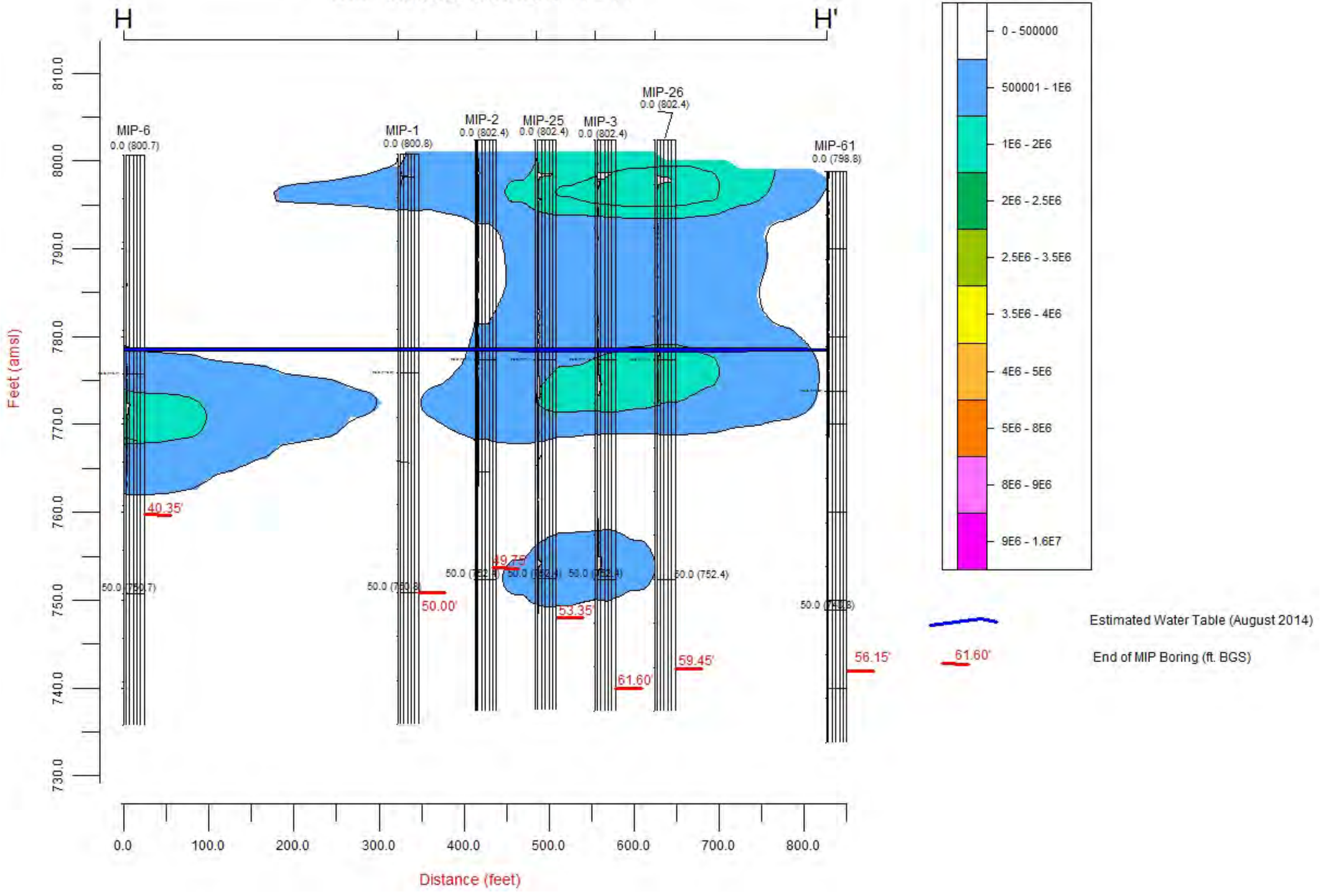


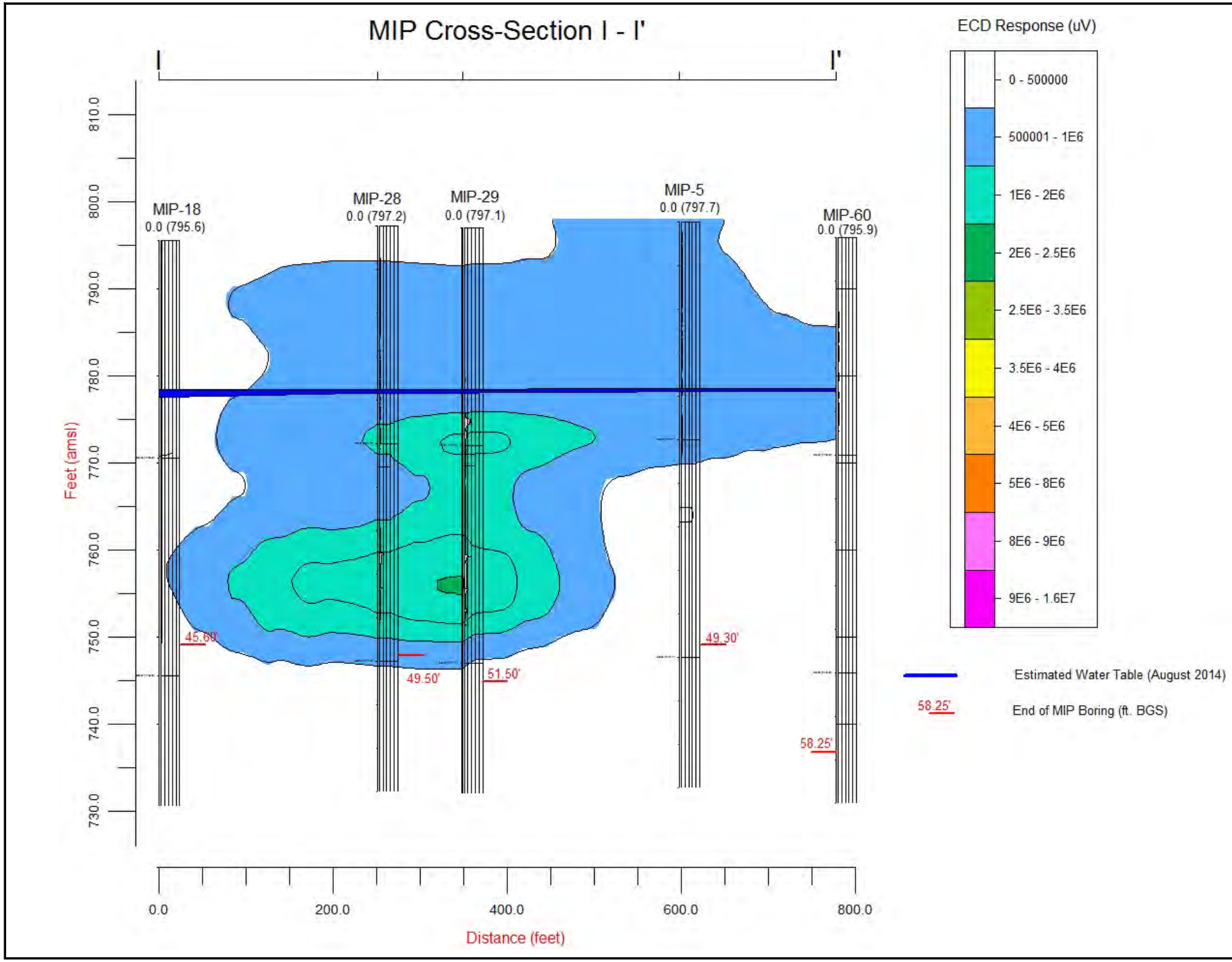

Cross-Section F - F'
F
F'
MIP-59
0.0 (799.6)
MIP-39
0.0 (800.6)
MIP-38
0.0 (800.5)
MIP-10
0.0 (800.5)
MIP-12
0.0 (808.5)
820.0
810.0
800.0
790.0
780.0
770.0
760.0
750.0
740.0
Feet (amsl)
44.55'
46.10'
38.65'
39.65'
50.0 (749.6)
50.0 (750.6)
50.0 (750.5)
50.0 (760.5)
50.0 (758.5)
0.0
100.0
200.0
300.0
400.0
500.0
Distance (feet)
ECD Response (uV)
0 - 500000
500001 - 1E6
1E6 - 2E6
2E6 - 2.5E6
2.5E6 - 3.5E6
3.5E6 - 4E6
4E6 - 5E6
5E6 - 8E6
8E6 - 9E6
9E6 - 1.6E7
Estimated Water Table (August 2014)
44.55'
Enf of MIP Boring (ft. BGS)

MIP Cross-Section G - G'



MIP Cross-Section H - H'




MIP Cross-Section I - I'
I
I'
ECD Response (uV)
0 - 500000
500001 - 1E6
1E6 - 2E6
2E6 - 2.5E6
2.5E6 - 3.5E6
3.5E6 - 4E6
4E6 - 5E6
5E6 - 8E6
8E6 - 9E6
9E6 - 1.6E7
MIP-18
0.0 (795.6)
MIP-28
0.0 (797.2)
MIP-29
0.0 (797.1)
MIP-5
0.0 (797.7)
MIP-60
0.0 (795.9)
45.60'
49.50'
51.50'
49.30'
58.25'
Feet (amsl)
810.0
800.0
790.0
780.0
770.0
760.0
750.0
740.0
730.0
0.0
200.0
400.0
600.0
800.0
Distance (feet)
Estimated Water Table (August 2014)
58.25'
End of MIP Boring (ft. BGS)

Appendix B
Soil Boring Logs

SOIL BORING LOG

BORING NO. MIP-SB-01

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
TPC: Source Investigation	6/19/14	6/19/14	220003.0000.0000

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
SER 90	Direct Push	800.8	---	51.0	3

Boring Location: ~ 165 feet N of MW-34D, ~ 155 feet E of W edge of central slab.

N: 180841.30 E: 13238459.60

Personnel
Logged By - C. Scieszka
Driller - S. Sirhan

Drilling Equipment: Geoprobe 6620DT

Civil Town/City/or Village:	County:	State:
Tecumseh	Lenawee	MI

Water Level Observations:
While Drilling: Date/Time 6/19/14 00:00 ▽ Depth (ft bgs) 24.0
After Drilling: Date/Time 6/23/14 12:05 ▼ Depth (ft bgs) 22.42

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	PID (PPM)	COMMENTS
			0	**CONCRETE**				
1 GP	75		2	**FILL** mostly fine to coarse sand, little fine to coarse gravel, few silt, trace brick, dark yellowish brown (10YR 3/6), no odor, dry, dense.			86.5	Soil sample collected: (1-2') at 0910.
				Change to mostly coarse sand, little fine to medium sand, few fine to coarse gravel at 3.5 feet.			2.7	Redrilled first push 6/23/14 and collected soil sample: (2.25-2.75') at 1125.
			4				9.5	Soil sample collected: (3-4') at 0915.
2 GP	75			**WELL GRADED SAND** mostly medium to coarse sand, few fine to coarse gravel, trace silt, dark yellowish brown (10YR 3/6), no odor, moist, loose.			1.5	Soil sample collected: (4-5') at 0930.
			6				<1.0	
					SW		3.6	Soil sample collected: (6-8') at 0935.
			8				5.3	
							9.4	Soil sample collected: (8-9') at 1000.
3 GP	75		10	**POORLY GRADED GRAVEL** mostly fine gravel, few medium to coarse sand, trace silt, dark yellowish brown (10YR 3/6), no odor, moist, medium dense.	GP		2.7	
				WELL GRADED SAND mostly medium to coarse sand, few fine gravel, trace silt, yellowish brown (10YR 5/4), no odor, moist, loose.			3.1	
			12	Change to trace coarse gravel at 12.0 feet.			<1.0	
4 GP	75						2.8	Soil sample collected: (11-12') at 1005.
			14				<1.0	Soil sample collected: (12-13') at 1025.
							<1.0	
			16	Change to trace fine gravel at 16.0 feet.	SW		1.8	Soil sample collected: (14-15') at 1030.
5 GP	60						1.5	
			18				<1.0	Soil sample collected: (16-18') at 1045.
							<1.0	
			20				<1.0	Soil sample collected: (18-20') at 1050.
							<1.0	
6 GP	60		22	▼ Change to wet at 22.0 feet.			<1.0	Soil sample collected: (20-22') at 1135.
							<1.0	
							<1.0	Soil sample collected: (22-24') at 1140.

SOIL BORING WELL CONSTRUCTION LOG 220003_2014 RI.GPJ TRC_CORP.GDT 220003.0000.0000 12/31/14

Signature: [signature]

Firm: TRC Solutions

Fax

Checked By: S. Metz

SOIL BORING LOG

BORING NO. MIP-SB-01

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	PID (PPM)	COMMENTS
			24	▽ Change to saturated at 24.0 feet.			<1.0	Groundwater sample collected: (22-25') 6/23/14 at 1250.
							<1.0	
7 GP	50		26				<1.0	
							<1.0	
			28	Change to mostly coarse sand, some medium sand, few fine to coarse gravel, dark grayish brown (10YR 4/2) at 28.0 feet.			<1.0	Groundwater sample collected: (25-28') 6/23/14 at 1141.
8 GP	50		30		SW		<1.0	Groundwater sample collected: (28-31') 6/23/14 at 1035.
							<1.0	
			32				<1.0	
9 GP	25		34				<1.0	Groundwater sample collected: (31-34') 6/23/14 at 0938.
							<1.0	
			36	**POORLY GRADED SAND** mostly medium sand, trace fine to coarse gravel, no silt, dark gray (10YR 4/1), no odor, saturated, loose.			<1.0	Groundwater sample collected: (34-37') 6/23/14 at 1422.
10 GP	60		38				<1.0	
							<1.0	
			40	Change to mostly fine to medium sand at 40.0 feet.			<1.0	Groundwater sample collected: (37.5-40.5') 6/23/14 at 1253.
11 GP	20		42		SP		<1.0	Groundwater sample collected: (41-44') 6/23/14 at 1146.
			44				<1.0	
12 GP	40		46				<1.0	Groundwater sample collected: (44-47') 6/23/14 at 0944.
				LEAN CLAY WITH SAND mostly clay, some silt and fine sand, trace coarse sand, trace fine gravel, medium plasticity, dark gray (10YR 4/1), wet, very stiff. Very thin water bearing veins of silt and fine sand present throughout.			<1.0	Soil sample collected: (47-48') at 1620.
			48				<1.0	
13 GP	100				CL		<1.0	Soil sample collected: (49-49.5') at 1655.
			50	Sand and gravel lens at 49.5 feet.			<1.0	
				End of boring at 51.0 feet below ground surface.				
			52					

SOIL BORING WELL CONSTRUCTION LOG 220003_2014 RI.GPJ TRC_CORP.GDT 220003.0000.0000 12/31/14

SOIL BORING LOG

BORING NO. MIP-SB-03

Facility/Project Name:	Date Drilling Started:	Date Drilling Completed:	Project Number:
TPC: Source Investigation	6/20/14	6/20/14	220003.0000.0000

Drilling Firm:	Drilling Method:	Surface Elev. (ft)	TOC Elevation (ft)	Total Depth (ft bgs)	Borehole Dia. (in)
SER 90	Direct Push	802.4	---	48.0	3

Boring Location: 135 feet N of S edge of SE slab, 22 feet E of W edge of SE slab.	Personnel	Drilling Equipment:
N: 180658.40 E: 13238542.00	Logged By - C. Scieszka Driller - S. Sirhan	Geoprobe 6620DT

Civil Town/City/or Village:	County:	State:	Water Level Observations:			
Tecumseh	Lenawee	MI	While Drilling:	Date/Time 6/20/14 00:00	▽ Depth (ft bgs)	24.0
			After Drilling:	Date/Time 6/24/14 07:10	▼ Depth (ft bgs)	25.05

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	PID (PPM)	COMMENTS
			0	**CONCRETE**		///	<1.0	Soil sample collected: (0-2') at 0950.
1 GP	80		2	**POORLY GRADED SAND** mostly fine sand, trace silt, yellowish brown (10YR 5/6), no odor, dry, loose.	SP		<1.0	
							<1.0	Soil sample collected: (2-3') at 0955.
			4	**FILL** mostly fine to coarse sand, some fine gravel, few clay, very dark brown (10YR 2/2), no odor, dry, loose. Trace metal fragments present.			<1.0	
2 GP	80		6	**LEAN CLAY WITH SAND** mostly clay, some fine to coarse sand, few fine to coarse gravel, trace silt, low plasticity, dark yellowish brown (10YR 4/6), no odor, moist, stiff.	CL		2.5	Soil sample collected: (4-5') at 1010.
							7.3	Soil sample collected: (5-6') at 1015.
				CLAYEY SAND WITH GRAVEL mostly fine to coarse sand, some clay, little fine to coarse gravel, dark yellowish brown (10YR 4/6), no odor, moist, medium dense.	SW-SC		1.0	
			8				1.7	Soil sample collected: (7-8') at 1035.
3 GP	75		10	**WELL GRADED SAND** mostly medium to coarse sand, few fine to coarse gravel, yellowish brown (10YR 5/6), no odor, dry, loose.	SW		8.5	Soil sample collected: (8-9') at 1040.
							22.3	
							17.8	Soil sample collected: (10-12') at 1050.
			12				6.4	
4 GP	75		14	**POORLY GRADED SAND** mostly medium sand, trace fine to coarse sand, yellowish brown (10YR 5/6), no odor, dry, loose.			44.4	Soil sample collected: (12-13') at 1100.
							38.1	
							65.1	Soil sample collected: (14-15') at 1105.
			16				14.7	
5 GP	75		18		SP		7.0	
							8.9	Soil sample collected: (17-18') at 1120.
							7.3	
				Change to moist at 19.0 feet.			9.9	Soil sample collected: (19-20') at 1125.
			20				69.4	Soil sample collected: (20-21') at 1155.
6 GP	70		22				53.9	
							61.0	

SOIL BORING WELL CONSTRUCTION LOG 220003_2014 RI.GPJ TRC_CORP.GDT 220003.0000.0000 12/31/14

Signature: [signature]

Firm: TRC Environmental Corporation
1540 Eisenhower Place Ann Arbor, Michigan

734.971.7080
Fax 734.971.9022

Checked By: S. Metz

SOIL BORING LOG

TRC

BORING NO. MIP-SB-03

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	PID (PPM)	COMMENTS
			24	▽ Change to wet at 23.75 feet. Change to very dark gray (10YR 3/1), saturated at 24.0 feet. ▼			84.7	Soil sample collected: (24-28') at 1300.
7 GP	10		26				<1.0	Groundwater sample collected: (24-27') 6/24/14 at 0740.
			28	Change to dark gray (10YR 4/1) at 28.0 feet.				Soil sample collected: (28-32') at 1355.
8 GP	5		30		SP		<1.0	Groundwater sample collected: (26.5-29.5') 6/23/14 at 1707.
			32	Change to few fine gravel at 32.0 feet.			<1.0	Groundwater sample collected: (29-32') 6/23/14 at 1618.
9 GP	40		34				<1.0 <1.0 <1.0	Groundwater sample collected: (31.5-34.5') 6/23/14 at 1508.
			36	Change to mostly medium to coarse sand at 36.0 feet.			<1.0	Groundwater sample collected: (34.5-37.5') 6/24/14 at 1047.
10 GP	50		38	**WELL GRADED SAND WITH GRAVEL** mostly medium to coarse sand, little fine to coarse gravel, dark gray (10YR 4/1), no odor, saturated, loose.	SW		<1.0 <1.0	Groundwater sample collected: (37.5-40.5') 6/24/14 at 0939.
			40	**POORLY GRADED SAND** mostly medium to coarse sand, few fine gravel, dark gray (10YR 4/1), no odor, saturated, loose.			<1.0 <1.0	
11 GP	60		42		SP		<1.0 <1.0	Groundwater sample collected: (40.5-43.5') 6/24/14 at 0737.
			44				6.2	
12 GP	60		46				9.5	Groundwater sample collected: (43.5-46.5') 6/23/14 at 1524.
				LEAN CLAY WITH SAND mostly clay, little silt, little fine sand, trace fine to coarse gravel, low plasticity, dark gray (10YR 4/1), no odor, moist, stiff.	CL		1.6 <1.0	Soil sample collected: (47-48') at 1620.
			48	End of boring at 48.0 feet below ground surface.				
			50					
			52					

SOIL BORING WELL CONSTRUCTION LOG 220003_2014 RI.GPJ TRC_CORP.GDT 220003.0000.0000 12/31/14

Appendix C
Analytical Laboratory Reports

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

June 30, 2014

Stacy Metz
TRC Solutions
3754 Ranchero Drive
Ann Harbor, MI 48108

RE: TRC Tecumseh RI - Tecumseh, MI

Enclosed are the analytical results for the samples received by the laboratory on 06/21/2014.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser For Nick Nigro

President

Certification List			Expires
ILEPA	Illinois Secondary NELAP Accreditation	003174	04/30/2015
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2015
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2015
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2015
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2014

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MIP-SB-01 (1-2')	A142525-01	Soil	06/19/2014	06/21/2014
MIP-SB-01 (3-4')	A142525-02	Soil	06/19/2014	06/21/2014
MIP-SB-01 (4-5')	A142525-03	Soil	06/19/2014	06/21/2014
MIP-SB-01 (6-8')	A142525-04	Soil	06/19/2014	06/21/2014
MIP-SB-01 (8-9')	A142525-05	Soil	06/19/2014	06/21/2014
MIP-SB-01 (11-12')	A142525-06	Soil	06/19/2014	06/21/2014
MIP-SB-01 (12-13')	A142525-07	Soil	06/19/2014	06/21/2014
MIP-SB-01 (14-15')	A142525-08	Soil	06/19/2014	06/21/2014
MIP-SB-01 (16-18')	A142525-09	Soil	06/19/2014	06/21/2014
DUP-01	A142525-10	Soil	06/19/2014	06/21/2014
MIP-SB-01 (18-20')	A142525-11	Soil	06/19/2014	06/21/2014
MIP-SB-01 (20-22')	A142525-12	Soil	06/19/2014	06/21/2014

CASE NARRATIVE

Sample Receipt Information:
18 samples were received on 6/21/2014. Samples were received at 0.8 degrees Celsius.

The 4 ounce amber glass container for sample A142525-11 was received with potential ice melt water contamination.

Please see the chain of custody (COC) document at the end of this report for additional information.

Continuing Calibration Verification (CCV):
The LC footnote on samples A142525-01 and A142525-03 through A142525-10 states that there was a low CCV recovery for chloroethane. The lower control limit is 70% and the recovery was 64.4%.

The HC footnote on samples A142525-03 through A142525-11 states that there was a high CCV recovery for trichloroethene. The upper control limit is 130% and the recovery was 131%.

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
608.221.4889 Fax

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (1-2')

A142525-01 (Soil)

Date Sampled
06/19/2014 09:10

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406044**			
Diesel Range Organics	**1400000**	40000	ug/kg dry	1	06/23/2014	06/24/2014 19:02	EPA 8015B	
Surrogate: n-Triacontane		*83.1 %*		*60-140*	*06/23/2014*	*06/24/2014 19:02*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406041**			
Acetone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Benzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
2-Butanone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
1,1-Dichloroethane	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
1,2-Dichloroethane	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
trans-1,2-Dichloroethene	**180**	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
cis-1,2-Dichloroethene	**2800**	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
1,1-Dichloroethene	**34**	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Ethylbenzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Tetrachloroethene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Toluene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
1,1,1-Trichloroethane	**330**	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
1,1,2-Trichloroethane	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Trichloroethene	**92000**	3000	ug/kg dry	100	06/23/2014	06/26/2014 16:22	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
1,2,4-Trimethylbenzene	**32**	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Vinyl chloride	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
m,p-Xylene	ND	60	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
o-Xylene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Xylenes, total	ND	90	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Gasoline Range Organics	**79000**	3000	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
n-Butyl Benzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
sec-Butyl Benzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Carbon disulfide	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Chloroethane	ND	300	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	LC
Chloroform	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Dichlorodifluoromethane	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Isopropylbenzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
p-Isopropyltoluene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Naphthalene	ND	300	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
n-Propyl Benzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Trichlorofluoromethane	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 18:02	EPA 8260B	
Surrogate: Dibromofluoromethane		*101 %*		*84.7-120*	*06/23/2014*	*06/23/2014 18:02*	*EPA 8260B*	
Surrogate: Toluene-d8		*100 %*		*90.5-108*	*06/23/2014*	*06/23/2014 18:02*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*109 %*		*88.3-113*	*06/23/2014*	*06/23/2014 18:02*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (1-2')

A142525-01 (Soil)

Date Sampled
06/19/2014 09:10

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
ECCS								
Classical Chemistry Parameters					**Preparation Batch: A406045**			
% Solids	**89.6**	0.00	% by Weight	1	06/23/2014	06/24/2014 09:27	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (3-4')

A142525-02 (Soil)

Date Sampled
06/19/2014 09:15

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406044**			
Diesel Range Organics	**100000**	40000	ug/kg dry	1	06/23/2014	06/24/2014 19:32	EPA 8015B	
Surrogate: n-Triacontane		*95.5 %*	*60-140*		*06/23/2014*	*06/24/2014 19:32*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406041**			
Acetone	ND	13000	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Benzene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
2-Butanone	ND	13000	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
1,1-Dichloroethane	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
1,2-Dichloroethane	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
trans-1,2-Dichloroethene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
cis-1,2-Dichloroethene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
1,1-Dichloroethene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Ethylbenzene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Tetrachloroethene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Toluene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
1,1,1-Trichloroethane	**350**	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	D
1,1,2-Trichloroethane	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Trichloroethene	**2100**	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
1,2,4-Trimethylbenzene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Vinyl chloride	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
m,p-Xylene	ND	660	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
o-Xylene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Xylenes, total	ND	990	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Gasoline Range Organics	ND	33000	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
n-Butyl Benzene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
sec-Butyl Benzene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Carbon disulfide	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Chloroethane	ND	3300	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Chloroform	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Dichlorodifluoromethane	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Isopropylbenzene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
p-Isopropyltoluene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Naphthalene	ND	3300	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
n-Propyl Benzene	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Trichlorofluoromethane	ND	330	ug/kg dry	10	06/23/2014	06/26/2014 15:53	EPA 8260B	
Surrogate: Dibromofluoromethane		*104 %*	*84.7-120*		*06/23/2014*	*06/26/2014 15:53*	*EPA 8260B*	
Surrogate: Toluene-d8		*98.6 %*	*90.5-108*		*06/23/2014*	*06/26/2014 15:53*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*97.2 %*	*88.3-113*		*06/23/2014*	*06/26/2014 15:53*	*EPA 8260B*	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (3-4')

A142525-02 (Soil)

Date Sampled
06/19/2014 09:15

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A406045**			
% Solids	**79.9**	0.00	% by Weight	1	06/23/2014	06/24/2014 09:27	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (4-5')

A142525-03 (Soil)

Date Sampled
06/19/2014 09:30

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406044**			
Diesel Range Organics	ND	40000	ug/kg dry	1	06/23/2014	06/24/2014 16:34	EPA 8015B	
Surrogate: n-Triacontane		*91.9 %*		*60-140*	*06/23/2014*	*06/24/2014 16:34*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406041**			
Acetone	ND	1300	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Benzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
2-Butanone	ND	1300	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
1,1-Dichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
1,2-Dichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
trans-1,2-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
cis-1,2-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
1,1-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Ethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Tetrachloroethene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Toluene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
1,1,1-Trichloroethane	**300**	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
1,1,2-Trichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Trichloroethene	**2400**	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	HC
1,3,5-Trimethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
1,2,4-Trimethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Vinyl chloride	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
m,p-Xylene	ND	65	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
o-Xylene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Xylenes, total	ND	97	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Gasoline Range Organics	**3700**	3200	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
n-Butyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
sec-Butyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Carbon disulfide	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Chloroethane	ND	320	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	LC
Chloroform	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Dichlorodifluoromethane	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Isopropylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
p-Isopropyltoluene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Naphthalene	ND	320	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
n-Propyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Trichlorofluoromethane	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 19:39	EPA 8260B	
Surrogate: Dibromofluoromethane		*103 %*		*84.7-120*	*06/23/2014*	*06/23/2014 19:39*	*EPA 8260B*	
Surrogate: Toluene-d8		*96.4 %*		*90.5-108*	*06/23/2014*	*06/23/2014 19:39*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*94.4 %*		*88.3-113*	*06/23/2014*	*06/23/2014 19:39*	*EPA 8260B*	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (4-5')

A142525-03 (Soil)

Date Sampled
06/19/2014 09:30

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
ECCS								
Classical Chemistry Parameters					**Preparation Batch: A406045**			
% Solids	**95.5**	0.00	% by Weight	1	06/23/2014	06/24/2014 09:27	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
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Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (6-8')

A142525-04 (Soil)

Date Sampled
06/19/2014 09:35

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406044**			
Diesel Range Organics	ND	40000	ug/kg dry	1	06/23/2014	06/24/2014 17:04	EPA 8015B	
Surrogate: n-Triacontane		*90.3 %*		*60-140*	*06/23/2014*	*06/24/2014 17:04*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406041**			
Acetone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Benzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
2-Butanone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
1,1-Dichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
1,2-Dichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
trans-1,2-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
cis-1,2-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
1,1-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Ethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Tetrachloroethene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Toluene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
1,1,1-Trichloroethane	**120**	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
1,1,2-Trichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Trichloroethene	**670**	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	HC
1,3,5-Trimethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
1,2,4-Trimethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Vinyl chloride	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
m,p-Xylene	ND	62	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
o-Xylene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Xylenes, total	ND	93	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Gasoline Range Organics	ND	3100	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
n-Butyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
sec-Butyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Carbon disulfide	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Chloroethane	ND	310	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	LC
Chloroform	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Dichlorodifluoromethane	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Isopropylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
p-Isopropyltoluene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Naphthalene	ND	310	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
n-Propyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Trichlorofluoromethane	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 20:25	EPA 8260B	
Surrogate: Dibromofluoromethane		*103 %*		*84.7-120*	*06/23/2014*	*06/23/2014 20:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*97.2 %*		*90.5-108*	*06/23/2014*	*06/23/2014 20:25*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*94.0 %*		*88.3-113*	*06/23/2014*	*06/23/2014 20:25*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (6-8')

A142525-04 (Soil)

Date Sampled
06/19/2014 09:35

ECCS

Classical Chemistry Parameters — **Preparation Batch: A406045**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
% Solids	**95.8**	0.00	% by Weight	1	06/23/2014	06/24/2014 09:27	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
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Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (8-9')

A142525-05 (Soil)

Date Sampled
06/19/2014 10:00

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406041**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Benzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
2-Butanone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
1,1-Dichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
1,2-Dichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
trans-1,2-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
cis-1,2-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
1,1-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Ethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Tetrachloroethene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Toluene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
1,1,1-Trichloroethane	**840**	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
1,1,2-Trichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Trichloroethene	**2800**	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	HC
1,3,5-Trimethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
1,2,4-Trimethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Vinyl chloride	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
m,p-Xylene	ND	58	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
o-Xylene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Xylenes, total	ND	87	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Gasoline Range Organics	**4600**	2900	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
n-Butyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
sec-Butyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Carbon disulfide	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Chloroethane	ND	290	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	LC
Chloroform	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Dichlorodifluoromethane	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Isopropylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
p-Isopropyltoluene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Naphthalene	ND	290	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
n-Propyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Trichlorofluoromethane	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 21:30	EPA 8260B	
Surrogate: Dibromofluoromethane		*99.4 %*	*84.7-120*		*06/23/2014*	*06/23/2014 21:30*	*EPA 8260B*	
Surrogate: Toluene-d8		*97.8 %*	*90.5-108*		*06/23/2014*	*06/23/2014 21:30*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*98.8 %*	*88.3-113*		*06/23/2014*	*06/23/2014 21:30*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
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Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (8-9')

A142525-05 (Soil)

Date Sampled
06/19/2014 10:00

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**97.4**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (11-12')

A142525-06 (Soil)

Date Sampled
06/19/2014 10:05

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406041**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Benzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
2-Butanone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
1,1-Dichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
1,2-Dichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
trans-1,2-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
cis-1,2-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
1,1-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Ethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Tetrachloroethene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Toluene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
1,1,1-Trichloroethane	**390**	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
1,1,2-Trichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Trichloroethene	**1200**	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	HC
1,3,5-Trimethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
1,2,4-Trimethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Vinyl chloride	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
m,p-Xylene	ND	61	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
o-Xylene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Xylenes, total	ND	92	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Gasoline Range Organics	ND	3100	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
n-Butyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
sec-Butyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Carbon disulfide	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Chloroethane	ND	310	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	LC
Chloroform	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Dichlorodifluoromethane	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Isopropylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
p-Isopropyltoluene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Naphthalene	ND	310	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
n-Propyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Trichlorofluoromethane	ND	31	ug/kg dry	1	06/23/2014	06/23/2014 22:23	EPA 8260B	
Surrogate: Dibromofluoromethane		*103 %*		*84.7-120*	*06/23/2014*	*06/23/2014 22:23*	*EPA 8260B*	
Surrogate: Toluene-d8		*96.0 %*		*90.5-108*	*06/23/2014*	*06/23/2014 22:23*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*95.6 %*		*88.3-113*	*06/23/2014*	*06/23/2014 22:23*	*EPA 8260B*	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (11-12')

A142525-06 (Soil)

Date Sampled
06/19/2014 10:05

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**95.7**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (12-13')

A142525-07 (Soil)

Date Sampled
06/19/2014 10:25

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406041**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	1300	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Benzene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
2-Butanone	ND	1300	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
1,1-Dichloroethane	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
1,2-Dichloroethane	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
trans-1,2-Dichloroethene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
cis-1,2-Dichloroethene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
1,1-Dichloroethene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Ethylbenzene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Tetrachloroethene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Toluene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
1,1,1-Trichloroethane	**670**	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
1,1,2-Trichloroethane	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Trichloroethene	**2000**	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	HC
1,3,5-Trimethylbenzene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
1,2,4-Trimethylbenzene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Vinyl chloride	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
m,p-Xylene	ND	67	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
o-Xylene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Xylenes, total	ND	100	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Gasoline Range Organics	**4000**	3400	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
n-Butyl Benzene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
sec-Butyl Benzene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Carbon disulfide	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Chloroethane	ND	340	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	LC
Chloroform	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Dichlorodifluoromethane	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Isopropylbenzene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
p-Isopropyltoluene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Naphthalene	ND	340	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
n-Propyl Benzene	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Trichlorofluoromethane	ND	34	ug/kg dry	1	06/23/2014	06/23/2014 23:07	EPA 8260B	
Surrogate: Dibromofluoromethane		*108 %*		*84.7-120*	*06/23/2014*	*06/23/2014 23:07*	*EPA 8260B*	
Surrogate: Toluene-d8		*95.4 %*		*90.5-108*	*06/23/2014*	*06/23/2014 23:07*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*97.0 %*		*88.3-113*	*06/23/2014*	*06/23/2014 23:07*	*EPA 8260B*	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (12-13')

A142525-07 (Soil)

Date Sampled
06/19/2014 10:25

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**94.0**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (14-15')

A142525-08 (Soil)

Date Sampled
06/19/2014 10:30

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406041**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Benzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
2-Butanone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
1,1-Dichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
1,2-Dichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
trans-1,2-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
cis-1,2-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
1,1-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Ethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Tetrachloroethene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Toluene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
1,1,1-Trichloroethane	**710**	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
1,1,2-Trichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Trichloroethene	**2100**	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	HC
1,3,5-Trimethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
1,2,4-Trimethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Vinyl chloride	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
m,p-Xylene	ND	58	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
o-Xylene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Xylenes, total	ND	87	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Gasoline Range Organics	**3500**	2900	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
n-Butyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
sec-Butyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Carbon disulfide	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Chloroethane	ND	290	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	LC
Chloroform	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Dichlorodifluoromethane	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Isopropylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
p-Isopropyltoluene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Naphthalene	ND	290	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
n-Propyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Trichlorofluoromethane	ND	29	ug/kg dry	1	06/23/2014	06/23/2014 23:52	EPA 8260B	
Surrogate: Dibromofluoromethane		*113 %*		*84.7-120*	*06/23/2014*	*06/23/2014 23:52*	*EPA 8260B*	
Surrogate: Toluene-d8		*95.4 %*		*90.5-108*	*06/23/2014*	*06/23/2014 23:52*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*96.8 %*		*88.3-113*	*06/23/2014*	*06/23/2014 23:52*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (14-15')

A142525-08 (Soil)

Date Sampled
06/19/2014 10:30

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**95.3**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (16-18')

A142525-09 (Soil)

Date Sampled
06/19/2014 10:45

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406041**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	1400	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Benzene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
2-Butanone	ND	1400	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
1,1-Dichloroethane	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
1,2-Dichloroethane	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
trans-1,2-Dichloroethene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
cis-1,2-Dichloroethene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
1,1-Dichloroethene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Ethylbenzene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Tetrachloroethene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Toluene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
1,1,1-Trichloroethane	**450**	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
1,1,2-Trichloroethane	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Trichloroethene	**1500**	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	HC
1,3,5-Trimethylbenzene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
1,2,4-Trimethylbenzene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Vinyl chloride	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
m,p-Xylene	ND	68	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
o-Xylene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Xylenes, total	ND	100	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Gasoline Range Organics	ND	3400	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
n-Butyl Benzene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
sec-Butyl Benzene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Carbon disulfide	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Chloroethane	ND	340	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	LC
Chloroform	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Dichlorodifluoromethane	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Isopropylbenzene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
p-Isopropyltoluene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Naphthalene	ND	340	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
n-Propyl Benzene	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Trichlorofluoromethane	ND	34	ug/kg dry	1	06/23/2014	06/24/2014 00:36	EPA 8260B	
Surrogate: Dibromofluoromethane		*109 %*		*84.7-120*	*06/23/2014*	*06/24/2014 00:36*	*EPA 8260B*	
Surrogate: Toluene-d8		*97.4 %*		*90.5-108*	*06/23/2014*	*06/24/2014 00:36*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*97.8 %*		*88.3-113*	*06/23/2014*	*06/24/2014 00:36*	*EPA 8260B*	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (16-18')

A142525-09 (Soil)

Date Sampled
06/19/2014 10:45

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
ECCS								
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**93.2**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

DUP-01

A142525-10 (Soil)

Date Sampled
06/19/2014 00:00

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406044**			
Diesel Range Organics	ND	40000	ug/kg dry	1	06/23/2014	06/24/2014 17:33	EPA 8015B	
Surrogate: n-Triacontane		*90.9 %*		*60-140*	*06/23/2014*	*06/24/2014 17:33*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406041**			
Acetone	ND	1300	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
2-Butanone	ND	1300	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
1,1-Dichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
1,2-Dichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
trans-1,2-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
cis-1,2-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
1,1-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Ethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Tetrachloroethene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Toluene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
1,1,1-Trichloroethane	**670**	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
1,1,2-Trichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Trichloroethene	**2100**	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	HC
1,3,5-Trimethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
1,2,4-Trimethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Vinyl chloride	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
m,p-Xylene	ND	64	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
o-Xylene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Xylenes, total	ND	96	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Gasoline Range Organics	**3300**	3200	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
n-Butyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
sec-Butyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Carbon disulfide	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Chloroethane	ND	320	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	LC
Chloroform	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Dichlorodifluoromethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Isopropylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
p-Isopropyltoluene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Naphthalene	ND	320	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
n-Propyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Trichlorofluoromethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 01:20	EPA 8260B	
Surrogate: Dibromofluoromethane		*111 %*		*84.7-120*	*06/23/2014*	*06/24/2014 01:20*	*EPA 8260B*	
Surrogate: Toluene-d8		*96.8 %*		*90.5-108*	*06/23/2014*	*06/24/2014 01:20*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*95.2 %*		*88.3-113*	*06/23/2014*	*06/24/2014 01:20*	*EPA 8260B*	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

DUP-01

A142525-10 (Soil)

Date Sampled
06/19/2014 00:00

ECCS

Classical Chemistry Parameters — **Preparation Batch: A406045**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
% Solids	**95.4**	0.00	% by Weight	1	06/23/2014	06/24/2014 09:27	SM 2540B	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (18-20')

A142525-11 (Soil)

Date Sampled
06/19/2014 10:50

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406041**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	1200	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Benzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
2-Butanone	ND	1200	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
1,1-Dichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
1,2-Dichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
trans-1,2-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
cis-1,2-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
1,1-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Ethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Tetrachloroethene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Toluene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
1,1,1-Trichloroethane	**680**	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
1,1,2-Trichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Trichloroethene	**2200**	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	HC
1,3,5-Trimethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
1,2,4-Trimethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Vinyl chloride	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
m,p-Xylene	ND	62	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
o-Xylene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Xylenes, total	ND	92	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Gasoline Range Organics	**3500**	3100	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
n-Butyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
sec-Butyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Carbon disulfide	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Chloroethane	ND	310	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Chloroform	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Dichlorodifluoromethane	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Isopropylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
p-Isopropyltoluene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Naphthalene	ND	310	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
n-Propyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Trichlorofluoromethane	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 04:16	EPA 8260B	
Surrogate: Dibromofluoromethane		*110 %*		*84.7-120*	*06/23/2014*	*06/24/2014 04:16*	*EPA 8260B*	
Surrogate: Toluene-d8		*97.4 %*		*90.5-108*	*06/23/2014*	*06/24/2014 04:16*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*94.6 %*		*88.3-113*	*06/23/2014*	*06/24/2014 04:16*	*EPA 8260B*	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (18-20')

A142525-11 (Soil)

Date Sampled
06/19/2014 10:50

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**85.8**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (20-22')

A142525-12 (Soil)

Date Sampled
06/19/2014 11:35

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406042**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	1200	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Benzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
2-Butanone	ND	1200	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
1,1-Dichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
1,2-Dichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
trans-1,2-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
cis-1,2-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
1,1-Dichloroethene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Ethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Tetrachloroethene	**34**	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Toluene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
1,1,1-Trichloroethane	**1100**	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
1,1,2-Trichloroethane	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Trichloroethene	**3100**	310	ug/kg dry	10	06/23/2014	06/26/2014 17:21	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
1,2,4-Trimethylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Vinyl chloride	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
m,p-Xylene	ND	62	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
o-Xylene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Xylenes, total	ND	94	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Gasoline Range Organics	**5300**	3100	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
n-Butyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
sec-Butyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Carbon disulfide	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Chloroethane	ND	310	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Chloroform	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Dichlorodifluoromethane	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Isopropylbenzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
p-Isopropyltoluene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Naphthalene	ND	310	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
n-Propyl Benzene	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Trichlorofluoromethane	ND	31	ug/kg dry	1	06/23/2014	06/24/2014 03:54	EPA 8260B	
Surrogate: Dibromofluoromethane		*109 %*		*84.7-120*	*06/23/2014*	*06/24/2014 03:54*	*EPA 8260B*	
Surrogate: Toluene-d8		*97.4 %*		*90.5-108*	*06/23/2014*	*06/24/2014 03:54*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*93.0 %*		*88.3-113*	*06/23/2014*	*06/24/2014 03:54*	*EPA 8260B*	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (20-22')

A142525-12 (Soil)

Date Sampled
06/19/2014 11:35

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**95.1**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

Hydrocarbons by GC-FID - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406044 - EPA 3570										
Blank (A406044-BLK1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 16:04						
Diesel Range Organics	ND	40000	ug/kg wet							
Surrogate: n-Triacontane	*93400*		*ug/kg wet*	*100000*		*93.4*	*60-140*			
LCS (A406044-BS1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 15:05						
Diesel Range Organics	844000	40000	ug/kg wet	1000000		84.4	70-130			
Surrogate: n-Triacontane	*81000*		*ug/kg wet*	*100000*		*81.0*	*60-140*			
Matrix Spike (A406044-MS1)		**Source: A142525-03**		Prepared: 06/23/2014 Analyzed: 06/24/2014 18:03						
Diesel Range Organics	876000	40000	ug/kg dry	1048000	ND	83.6	60-140			
Surrogate: n-Triacontane	*93300*		*ug/kg dry*	*104800*		*89.1*	*60-140*			
Matrix Spike Dup (A406044-MSD1)		**Source: A142525-03**		Prepared: 06/23/2014 Analyzed: 06/24/2014 18:33						
Diesel Range Organics	863000	40000	ug/kg dry	1048000	ND	82.4	60-140	1.52	30	
Surrogate: n-Triacontane	*96700*		*ug/kg dry*	*104800*		*92.3*	*60-140*			

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406041 - EPA 5030B										
Blank (A406041-BLK1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 10:12						
Acetone	ND	1000	ug/kg wet							
Benzene	ND	25	ug/kg wet							
2-Butanone	ND	1000	ug/kg wet							
1,1-Dichloroethane	ND	25	ug/kg wet							
1,2-Dichloroethane	ND	25	ug/kg wet							
trans-1,2-Dichloroethene	ND	25	ug/kg wet							
cis-1,2-Dichloroethene	ND	25	ug/kg wet							
1,1-Dichloroethene	ND	25	ug/kg wet							
Ethylbenzene	ND	25	ug/kg wet							
Tetrachloroethene	ND	25	ug/kg wet							
Toluene	ND	25	ug/kg wet							
1,1,1-Trichloroethane	ND	25	ug/kg wet							
1,1,2-Trichloroethane	ND	25	ug/kg wet							
Trichloroethene	ND	25	ug/kg wet							
1,3,5-Trimethylbenzene	ND	25	ug/kg wet							
1,2,4-Trimethylbenzene	ND	25	ug/kg wet							
Vinyl chloride	ND	25	ug/kg wet							
m,p-Xylene	ND	50	ug/kg wet							
o-Xylene	ND	25	ug/kg wet							
Xylenes, total	ND	75	ug/kg wet							
Gasoline Range Organics	ND	2500	ug/kg wet							
n-Butyl Benzene	ND	25	ug/kg wet							
sec-Butyl Benzene	ND	25	ug/kg wet							
Carbon disulfide	ND	25	ug/kg wet							
Chloroethane	ND	250	ug/kg wet							
Chloroform	ND	25	ug/kg wet							
Dichlorodifluoromethane	ND	25	ug/kg wet							
Isopropylbenzene	ND	25	ug/kg wet							
p-Isopropyltoluene	ND	25	ug/kg wet							
Naphthalene	ND	250	ug/kg wet							
n-Propyl Benzene	ND	25	ug/kg wet							
Trichlorofluoromethane	ND	25	ug/kg wet							
Surrogate: Dibromofluoromethane	*5.56*		*ug/L*	*5.000*		*111*	*84.7-120*			
Surrogate: Toluene-d8	*4.85*		*ug/L*	*5.000*		*97.0*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*4.89*		*ug/L*	*5.000*		*97.8*	*88.3-113*			
LCS (A406041-BS1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 10:56						
Acetone	54.1		ug/L	50.00		108	42.3-174			
Benzene	5.35		ug/L	5.000		107	80.5-123			
2-Butanone	55.7		ug/L	50.00		111	51.2-152			
1,1-Dichloroethane	5.26		ug/L	5.000		105	80.9-127			
1,2-Dichloroethane	5.71		ug/L	5.000		114	72.8-138			
trans-1,2-Dichloroethene	5.19		ug/L	5.000		104	71.3-128			
cis-1,2-Dichloroethene	5.23		ug/L	5.000		105	81.9-121			

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406041 - EPA 5030B										
LCS (A406041-BS1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 10:56						
1,1-Dichloroethene	5.10		ug/L	5.000		102	66.8-129			
Ethylbenzene	5.02		ug/L	5.000		100	89.9-113			
Tetrachloroethene	5.01		ug/L	5.000		100	85.1-116			
Toluene	4.99		ug/L	5.000		99.8	78.8-117			
1,1,1-Trichloroethane	5.49		ug/L	5.000		110	82.3-123			
1,1,2-Trichloroethane	5.47		ug/L	5.000		109	74.9-130			
Trichloroethene	5.27		ug/L	5.000		105	83.1-118			
1,3,5-Trimethylbenzene	5.09		ug/L	5.000		102	85.2-120			
1,2,4-Trimethylbenzene	4.66		ug/L	5.000		93.2	86.8-118			
Vinyl chloride	5.37		ug/L	5.000		107	60.9-137			
m,p-Xylene	10.2		ug/L	10.00		102	90.1-114			
o-Xylene	5.17		ug/L	5.000		103	85.8-113			
n-Butyl Benzene	4.99		ug/L	5.000		99.8	88.2-119			
sec-Butyl Benzene	4.93		ug/L	5.000		98.6	89.9-118			
Carbon disulfide	5.17		ug/L	5.000		103	72.2-127			
Chloroethane	5.08		ug/L	5.000		102	14.6-199			
Chloroform	5.31		ug/L	5.000		106	77.9-125			
Dichlorodifluoromethane	6.60		ug/L	5.000		132	67.8-137			
Isopropylbenzene	5.13		ug/L	5.000		103	92.8-112			
p-Isopropyltoluene	5.09		ug/L	5.000		102	89.8-118			
Naphthalene	4.74		ug/L	5.000		94.8	72.9-122			
n-Propyl Benzene	4.87		ug/L	5.000		97.4	87.3-119			
Trichlorofluoromethane	5.85		ug/L	5.000		117	40.3-174			
Surrogate: Dibromofluoromethane	*5.42*		*ug/L*	*5.000*		*108*	*84.7-120*			
Surrogate: Toluene-d8	*5.02*		*ug/L*	*5.000*		*100*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*5.10*		*ug/L*	*5.000*		*102*	*88.3-113*			
LCS (A406041-BS2)				Prepared: 06/23/2014 Analyzed: 06/24/2014 11:42						
Gasoline Range Organics	485		ug/L	500.0		97.0	70-130			
Surrogate: Toluene-d8	*4.70*		*ug/L*	*5.000*		*94.0*	*90.5-108*			
Matrix Spike (A406041-MS1)	**Source: A142525-03**			Prepared: 06/23/2014 Analyzed: 06/24/2014 18:25						
Acetone	60.9		ug/L	50.00	ND	122	37.5-179			
Benzene	5.11		ug/L	5.000	ND	102	77-128			
2-Butanone	60.7		ug/L	50.00	ND	121	54.7-159			
1,1-Dichloroethane	5.05		ug/L	5.000	ND	101	77.3-131			
1,2-Dichloroethane	5.44		ug/L	5.000	ND	109	73.7-139			
trans-1,2-Dichloroethene	5.04		ug/L	5.000	ND	101	68.9-132			
cis-1,2-Dichloroethene	5.10		ug/L	5.000	0.309	95.8	80-124			
1,1-Dichloroethene	5.02		ug/L	5.000	ND	100	60.7-145			
Ethylbenzene	5.05		ug/L	5.000	ND	101	85.7-117			
Tetrachloroethene	5.34		ug/L	5.000	ND	107	80.7-123			
Toluene	5.09		ug/L	5.000	ND	102	72.1-124			
1,1,1-Trichloroethane	12.0		ug/L	5.000	5.78	124	80.2-124			

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Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406041 - EPA 5030B										
Matrix Spike (A406041-MS1)	**Source: A142525-03**			Prepared: 06/23/2014 Analyzed: 06/24/2014 18:25						
1,1,2-Trichloroethane	5.78		ug/L	5.000	ND	116	73.9-137			
Trichloroethene	30.1		ug/L	5.000	45.2	NR	81.5-119			M1
1,3,5-Trimethylbenzene	5.04		ug/L	5.000	ND	101	82-122			
1,2,4-Trimethylbenzene	4.79		ug/L	5.000	ND	95.8	80.4-122			
Vinyl chloride	5.10		ug/L	5.000	ND	102	75.5-134			
m,p-Xylene	10.1		ug/L	10.00	ND	101	87.9-115			
o-Xylene	5.04		ug/L	5.000	ND	101	82.9-116			
n-Butyl Benzene	5.20		ug/L	5.000	ND	104	87.5-118			
sec-Butyl Benzene	4.94		ug/L	5.000	ND	98.8	85.3-121			
Carbon disulfide	5.26		ug/L	5.000	ND	105	69.4-131			
Chloroethane	3.43		ug/L	5.000	ND	68.6	25.1-230			
Chloroform	5.12		ug/L	5.000	ND	102	76.4-128			
Dichlorodifluoromethane	5.60		ug/L	5.000	ND	112	69.4-138			
Isopropylbenzene	5.08		ug/L	5.000	ND	102	90.3-116			
p-Isopropyltoluene	5.09		ug/L	5.000	ND	102	82-126			
Naphthalene	5.20		ug/L	5.000	ND	104	66.1-137			
n-Propyl Benzene	4.92		ug/L	5.000	ND	98.4	85.2-121			
Trichlorofluoromethane	4.78		ug/L	5.000	ND	95.6	17-192			
Surrogate: Dibromofluoromethane	*5.19*		*ug/L*	*5.000*		*104*	*84.7-120*			
Surrogate: Toluene-d8	*5.20*		*ug/L*	*5.000*		*104*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*5.23*		*ug/L*	*5.000*		*105*	*88.3-113*			
Matrix Spike (A406041-MS2)	**Source: A142525-03**			Prepared: 06/23/2014 Analyzed: 06/25/2014 07:41						
Gasoline Range Organics	545		ug/L	500.0	71.0	94.8	70-130			
Surrogate: Toluene-d8	*4.93*		*ug/L*	*5.000*		*98.6*	*90.5-108*			
Matrix Spike Dup (A406041-MSD1)	**Source: A142525-03**			Prepared: 06/23/2014 Analyzed: 06/25/2014 06:57						
Acetone	59.3		ug/L	50.00	ND	119	37.5-179	2.61	20	
Benzene	5.32		ug/L	5.000	ND	106	77-128	4.03	20	
2-Butanone	52.8		ug/L	50.00	ND	106	54.7-159	13.9	20	
1,1-Dichloroethane	5.34		ug/L	5.000	ND	107	77.3-131	5.58	20	
1,2-Dichloroethane	5.50		ug/L	5.000	ND	110	73.7-139	1.10	20	
trans-1,2-Dichloroethene	5.20		ug/L	5.000	ND	104	68.9-132	3.12	20	
cis-1,2-Dichloroethene	5.41		ug/L	5.000	0.309	102	80-124	6.27	20	
1,1-Dichloroethene	5.22		ug/L	5.000	ND	104	60.7-145	3.91	20	
Ethylbenzene	4.75		ug/L	5.000	ND	95.0	85.7-117	6.12	20	
Tetrachloroethene	4.87		ug/L	5.000	ND	97.4	80.7-123	9.21	20	
Toluene	4.96		ug/L	5.000	ND	99.2	72.1-124	2.59	20	
1,1,1-Trichloroethane	12.3		ug/L	5.000	5.78	130	80.2-124	4.88	20	M
1,1,2-Trichloroethane	5.22		ug/L	5.000	ND	104	73.9-137	10.2	20	
Trichloroethene	29.1		ug/L	5.000	45.2	NR	81.5-119	NR	20	M1
1,3,5-Trimethylbenzene	5.12		ug/L	5.000	ND	102	82-122	1.57	20	
1,2,4-Trimethylbenzene	4.83		ug/L	5.000	ND	96.6	80.4-122	0.832	20	
Vinyl chloride	5.89		ug/L	5.000	ND	118	75.5-134	14.4	20	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406041 - EPA 5030B										
Matrix Spike Dup (A406041-MSD1)	**Source: A142525-03**			Prepared: 06/23/2014 Analyzed: 06/25/2014 06:57						
m,p-Xylene	9.45		ug/L	10.00	ND	94.5	87.9-115	6.75	20	
o-Xylene	4.81		ug/L	5.000	ND	96.2	82.9-116	4.67	20	
n-Butyl Benzene	5.15		ug/L	5.000	ND	103	87.5-118	0.966	20	
sec-Butyl Benzene	5.02		ug/L	5.000	ND	100	85.3-121	1.61	20	
Carbon disulfide	5.24		ug/L	5.000	ND	105	69.4-131	0.381	20	
Chloroethane	6.62		ug/L	5.000	ND	132	25.1-230	63.5	20	X
Chloroform	5.39		ug/L	5.000	ND	108	76.4-128	5.14	20	
Dichlorodifluoromethane	5.82		ug/L	5.000	ND	116	69.4-138	3.85	20	
Isopropylbenzene	4.71		ug/L	5.000	ND	94.2	90.3-116	7.56	20	
p-Isopropyltoluene	5.15		ug/L	5.000	ND	103	82-126	1.17	20	
Naphthalene	4.78		ug/L	5.000	ND	95.6	66.1-137	8.42	20	
n-Propyl Benzene	5.02		ug/L	5.000	ND	100	85.2-121	2.01	20	
Trichlorofluoromethane	6.46		ug/L	5.000	ND	129	17-192	29.9	20	X
Surrogate: Dibromofluoromethane	*5.28*		*ug/L*	*5.000*		*106*	*84.7-120*			
Surrogate: Toluene-d8	*4.99*		*ug/L*	*5.000*		*99.8*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*4.88*		*ug/L*	*5.000*		*97.6*	*88.3-113*			
Matrix Spike Dup (A406041-MSD2)	**Source: A142525-03**			Prepared: 06/23/2014 Analyzed: 06/25/2014 08:25						
Gasoline Range Organics	529		ug/L	500.0	71.0	91.5	70-130	3.50	20	
Surrogate: Toluene-d8	*4.91*		*ug/L*	*5.000*		*98.2*	*90.5-108*			
Batch A406042 - EPA 5030B										
Blank (A406042-BLK1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 17:35						
Acetone	ND	1000	ug/kg wet							
Benzene	ND	25	ug/kg wet							
2-Butanone	ND	1000	ug/kg wet							
1,1-Dichloroethane	ND	25	ug/kg wet							
1,2-Dichloroethane	ND	25	ug/kg wet							
trans-1,2-Dichloroethene	ND	25	ug/kg wet							
cis-1,2-Dichloroethene	ND	25	ug/kg wet							
1,1-Dichloroethene	ND	25	ug/kg wet							
Ethylbenzene	ND	25	ug/kg wet							
Tetrachloroethene	ND	25	ug/kg wet							
Toluene	ND	25	ug/kg wet							
1,1,1-Trichloroethane	ND	25	ug/kg wet							
1,1,2-Trichloroethane	ND	25	ug/kg wet							
Trichloroethene	ND	25	ug/kg wet							
1,3,5-Trimethylbenzene	ND	25	ug/kg wet							
1,2,4-Trimethylbenzene	ND	25	ug/kg wet							
Vinyl chloride	ND	25	ug/kg wet							
m,p-Xylene	ND	50	ug/kg wet							
o-Xylene	ND	25	ug/kg wet							
Xylenes, total	ND	75	ug/kg wet							

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406042 - EPA 5030B										
Blank (A406042-BLK1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 17:35						
Gasoline Range Organics	ND	2500	ug/kg wet							
n-Butyl Benzene	ND	25	ug/kg wet							
sec-Butyl Benzene	ND	25	ug/kg wet							
Carbon disulfide	ND	25	ug/kg wet							
Chloroethane	ND	250	ug/kg wet							
Chloroform	ND	25	ug/kg wet							
Dichlorodifluoromethane	ND	25	ug/kg wet							
Isopropylbenzene	ND	25	ug/kg wet							
p-Isopropyltoluene	ND	25	ug/kg wet							
Naphthalene	ND	250	ug/kg wet							
n-Propyl Benzene	ND	25	ug/kg wet							
Trichlorofluoromethane	ND	25	ug/kg wet							
Surrogate: Dibromofluoromethane	*5.45*		*ug/L*	*5.000*		*109*	*84.7-120*			
Surrogate: Toluene-d8	*5.11*		*ug/L*	*5.000*		*102*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*4.90*		*ug/L*	*5.000*		*98.0*	*88.3-113*			
LCS (A406042-BS1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 10:34						
Acetone	60.6		ug/L	50.00		121	42.3-174			
Benzene	5.82		ug/L	5.000		116	80.5-123			
2-Butanone	56.1		ug/L	50.00		112	51.2-152			
1,1-Dichloroethane	6.31		ug/L	5.000		126	80.9-127			
1,2-Dichloroethane	6.22		ug/L	5.000		124	72.8-138			
trans-1,2-Dichloroethene	5.74		ug/L	5.000		115	71.3-128			
cis-1,2-Dichloroethene	5.84		ug/L	5.000		117	81.9-121			
1,1-Dichloroethene	5.93		ug/L	5.000		119	66.8-129			
Ethylbenzene	5.01		ug/L	5.000		100	89.9-113			
Tetrachloroethene	5.07		ug/L	5.000		101	85.1-116			
Toluene	5.07		ug/L	5.000		101	78.8-117			
1,1,1-Trichloroethane	6.14		ug/L	5.000		123	82.3-123			
1,1,2-Trichloroethane	5.57		ug/L	5.000		111	74.9-130			
Trichloroethene	7.20		ug/L	5.000		144	83.1-118			
1,3,5-Trimethylbenzene	4.59		ug/L	5.000		91.8	85.2-120			
1,2,4-Trimethylbenzene	4.50		ug/L	5.000		90.0	86.8-118			
Vinyl chloride	5.61		ug/L	5.000		112	60.9-137			
m,p-Xylene	9.86		ug/L	10.00		98.6	90.1-114			
o-Xylene	5.04		ug/L	5.000		101	85.8-113			
n-Butyl Benzene	4.48		ug/L	5.000		89.6	88.2-119			
sec-Butyl Benzene	4.87		ug/L	5.000		97.4	89.9-118			
Carbon disulfide	5.32		ug/L	5.000		106	72.2-127			
Chloroethane	10.1		ug/L	5.000		201	14.6-199			
Chloroform	6.09		ug/L	5.000		122	77.9-125			
Dichlorodifluoromethane	6.33		ug/L	5.000		127	67.8-137			
Isopropylbenzene	4.99		ug/L	5.000		99.8	92.8-112			
p-Isopropyltoluene	4.63		ug/L	5.000		92.6	89.8-118			

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Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406042 - EPA 5030B										
LCS (A406042-BS1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 10:34						
Naphthalene	4.31		ug/L	5.000		86.2	72.9-122			
n-Propyl Benzene	4.75		ug/L	5.000		95.0	87.3-119			
Trichlorofluoromethane	7.89		ug/L	5.000		158	40.3-174			
Surrogate: Dibromofluoromethane	*5.85*		*ug/L*	*5.000*		*117*	*84.7-120*			
Surrogate: Toluene-d8	*5.33*		*ug/L*	*5.000*		*107*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*4.93*		*ug/L*	*5.000*		*98.6*	*88.3-113*			
LCS (A406042-BS2)				Prepared: 06/23/2014 Analyzed: 06/24/2014 11:18						
Gasoline Range Organics	478		ug/L	500.0		95.5	70-130			
Surrogate: Toluene-d8	*4.79*		*ug/L*	*5.000*		*95.8*	*90.5-108*			
Matrix Spike (A406042-MS1)		**Source: A142526-03**		Prepared: 06/23/2014 Analyzed: 06/24/2014 18:47						
Acetone	56.8		ug/L	50.00	ND	114	37.5-179			
Benzene	5.27		ug/L	5.000	ND	105	77-128			
2-Butanone	52.1		ug/L	50.00	ND	104	54.7-159			
1,1-Dichloroethane	5.75		ug/L	5.000	ND	115	77.3-131			
1,2-Dichloroethane	5.23		ug/L	5.000	ND	105	73.7-139			
trans-1,2-Dichloroethene	5.34		ug/L	5.000	ND	107	68.9-132			
cis-1,2-Dichloroethene	5.45		ug/L	5.000	ND	109	80-124			
1,1-Dichloroethene	5.73		ug/L	5.000	ND	115	60.7-145			
Ethylbenzene	5.08		ug/L	5.000	ND	102	85.7-117			
Tetrachloroethene	5.43		ug/L	5.000	0.183	105	80.7-123			
Toluene	5.01		ug/L	5.000	ND	100	72.1-124			
1,1,1-Trichloroethane	10.5		ug/L	5.000	7.35	63.0	80.2-124			M
1,1,2-Trichloroethane	5.35		ug/L	5.000	ND	107	73.9-137			
Trichloroethene	42.9		ug/L	5.000	27.2	314	81.5-119			M
1,3,5-Trimethylbenzene	4.57		ug/L	5.000	ND	91.4	82-122			
1,2,4-Trimethylbenzene	4.40		ug/L	5.000	ND	88.0	80.4-122			
Vinyl chloride	5.40		ug/L	5.000	ND	108	75.5-134			
m,p-Xylene	9.90		ug/L	10.00	ND	99.0	87.9-115			
o-Xylene	5.02		ug/L	5.000	ND	100	82.9-116			
n-Butyl Benzene	4.70		ug/L	5.000	ND	94.0	87.5-118			
sec-Butyl Benzene	4.95		ug/L	5.000	ND	99.0	85.3-121			
Carbon disulfide	5.39		ug/L	5.000	ND	108	69.4-131			
Chloroethane	7.08		ug/L	5.000	ND	142	25.1-230			
Chloroform	5.42		ug/L	5.000	ND	108	76.4-128			
Dichlorodifluoromethane	5.75		ug/L	5.000	ND	115	69.4-138			
Isopropylbenzene	5.19		ug/L	5.000	ND	104	90.3-116			
p-Isopropyltoluene	4.75		ug/L	5.000	ND	95.0	82-126			
Naphthalene	4.36		ug/L	5.000	ND	87.2	66.1-137			
n-Propyl Benzene	4.88		ug/L	5.000	ND	97.6	85.2-121			
Trichlorofluoromethane	7.64		ug/L	5.000	ND	153	17-192			
Surrogate: Dibromofluoromethane	*5.36*		*ug/L*	*5.000*		*107*	*84.7-120*			
Surrogate: Toluene-d8	*5.38*		*ug/L*	*5.000*		*108*	*90.5-108*			

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406042 - EPA 5030B										
Matrix Spike (A406042-MS1)	**Source: A142526-03**			Prepared: 06/23/2014 Analyzed: 06/24/2014 18:47						
Surrogate: 4-Bromofluorobenzene	*5.04*		*ug/L*	*5.000*		*101*	*88.3-113*			
Matrix Spike (A406042-MS2)	**Source: A142526-03**			Prepared: 06/23/2014 Analyzed: 06/25/2014 08:03						
Gasoline Range Organics	547		ug/L	500.0	43.2	101	70-130			
Surrogate: Toluene-d8	*4.95*		*ug/L*	*5.000*		*99.0*	*90.5-108*			
Matrix Spike Dup (A406042-MSD1)	**Source: A142526-03**			Prepared: 06/23/2014 Analyzed: 06/25/2014 07:19						
Acetone	53.9		ug/L	50.00	ND	108	37.5-179	5.28	20	
Benzene	5.29		ug/L	5.000	ND	106	77-128	0.379	20	
2-Butanone	50.0		ug/L	50.00	ND	100	54.7-159	3.96	20	
1,1-Dichloroethane	5.70		ug/L	5.000	ND	114	77.3-131	0.873	20	
1,2-Dichloroethane	5.31		ug/L	5.000	ND	106	73.7-139	1.52	20	
trans-1,2-Dichloroethene	5.43		ug/L	5.000	ND	109	68.9-132	1.67	20	
cis-1,2-Dichloroethene	5.55		ug/L	5.000	ND	111	80-124	1.82	20	
1,1-Dichloroethene	5.66		ug/L	5.000	ND	113	60.7-145	1.23	20	
Ethylbenzene	4.73		ug/L	5.000	ND	94.6	85.7-117	7.14	20	
Tetrachloroethene	5.31		ug/L	5.000	0.183	103	80.7-123	2.31	20	
Toluene	4.69		ug/L	5.000	ND	93.8	72.1-124	6.60	20	
1,1,1-Trichloroethane	10.3		ug/L	5.000	7.35	59.8	80.2-124	5.21	20	M
1,1,2-Trichloroethane	5.46		ug/L	5.000	ND	109	73.9-137	2.04	20	
Trichloroethene	41.8		ug/L	5.000	27.2	292	81.5-119	7.13	20	M
1,3,5-Trimethylbenzene	4.40		ug/L	5.000	ND	88.0	82-122	3.79	20	
1,2,4-Trimethylbenzene	4.32		ug/L	5.000	ND	86.4	80.4-122	1.83	20	
Vinyl chloride	5.97		ug/L	5.000	ND	119	75.5-134	10.0	20	
m,p-Xylene	8.41		ug/L	10.00	ND	84.1	87.9-115	16.3	20	M
o-Xylene	4.31		ug/L	5.000	ND	86.2	82.9-116	15.2	20	
n-Butyl Benzene	4.91		ug/L	5.000	ND	98.2	87.5-118	4.37	20	
sec-Butyl Benzene	5.01		ug/L	5.000	ND	100	85.3-121	1.20	20	
Carbon disulfide	5.11		ug/L	5.000	ND	102	69.4-131	5.33	20	
Chloroethane	7.59		ug/L	5.000	ND	152	25.1-230	6.95	20	
Chloroform	5.43		ug/L	5.000	ND	109	76.4-128	0.184	20	
Dichlorodifluoromethane	5.90		ug/L	5.000	ND	118	69.4-138	2.58	20	
Isopropylbenzene	4.69		ug/L	5.000	ND	93.8	90.3-116	10.1	20	
p-Isopropyltoluene	4.91		ug/L	5.000	ND	98.2	82-126	3.31	20	
Naphthalene	4.59		ug/L	5.000	ND	91.8	66.1-137	5.14	20	
n-Propyl Benzene	4.96		ug/L	5.000	ND	99.2	85.2-121	1.63	20	
Trichlorofluoromethane	7.62		ug/L	5.000	ND	152	17-192	0.262	20	
Surrogate: Dibromofluoromethane	*5.31*		*ug/L*	*5.000*		*106*	*84.7-120*			
Surrogate: Toluene-d8	*5.12*		*ug/L*	*5.000*		*102*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*4.92*		*ug/L*	*5.000*		*98.4*	*88.3-113*			
Matrix Spike Dup (A406042-MSD2)	**Source: A142526-03**			Prepared: 06/23/2014 Analyzed: 06/25/2014 08:47						
Gasoline Range Organics	529		ug/L	500.0	43.2	97.2	70-130	3.54	20	
Surrogate: Toluene-d8	*4.95*		*ug/L*	*5.000*		*99.0*	*90.5-108*			

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Classical Chemistry Parameters - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406045 - % Solids										
Duplicate (A406045-DUP1)		**Source: A142525-01**		Prepared: 06/23/2014 Analyzed: 06/24/2014 09:27						
% Solids	89.6	0.00	% by Weight		89.6			0.00767	20	
Batch A406051 - % Solids										
Duplicate (A406051-DUP1)		**Source: A142525-05**		Prepared: 06/24/2014 Analyzed: 06/25/2014 07:20						
% Solids	97.5	0.00	% by Weight		97.4			0.102	20	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
M1	Spike recoveries were not evaluated because of elevated levels of the spiked analyte in the parent sample.
M	The matrix spike and/or matrix spike duplicate recovery was outside of the laboratory control limits.
LC	Resuts may be biased low because of low continuing calibration verification (CCV).
HC	Results may be biased high because of high continuing calibration verification (CCV).
D	Data reported from a dilution
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Environmental Chemistry Consulting Services, Inc.
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608-221-8700 (phone)
608-221-4889 (fax)

CHAIN OF CUSTODY

Lab Work Order #: A142525

Project Number: 220003.07220.07000
Project Name: TRC Tecumseh RT
Project Location: Tecumseh MI
Turn Around (circle one): Normal (Rush)
If Rush, Report Due Date: Check w/ S. Metz.
Sampled By (Print): JOHN BRAUN

Analyses Requested / Preservation Codes: F = VOC's/GRO; A = DRO/TOTAL SOLIDS

Mail Report To: Stacy Metz
Company: TRC
Address: 1540 Eisenhower Pl
Ann Arbor MI 48108
E-mail Address: smetz@trcsolutions.com
Invoice To: TRC
Company: See Above
Address:

Sample Description	Collection Date	Collection Time	Matrix	Total # of Containers	F	A	Comments	Lab ID	Lab Receipt Time
MIP-SB-01 (JB) (1-2')	6/19	0910	S	2	✓	✓		01	
MIP-SB-01 (JB) (3-4')		0915	S	2	✓	✓		02	
MIP-SB-01 (JB) (4-5')		0930	S	2	✓	✓		03	
MIP-SB-01 (6-8')		0935	S	2	✓	✓		04	
MIP-SB-01 (JB) (8-9')	-	1000	S	2	✓	✓	HOLD DRO	05	
MIP-SB-01 (JB) (11-12')	-	1005	S	2	✓	✓	HOLD DRO	06	
MIP-SB-01 (JB) (12-13')	-	1025	S	2	✓	✓	HOLD DRO	07	
MIP-SB-01 (JB) (14-15')		1030	S	2	✓	✓	HOLD DRO	08	
MIP-SB-01 (16-18')		1045	S	2	✓	✓	HOLD DRO	09	
DUP-01	6/19	—	S	2	✓	✓		10	

Preservation Codes: A=None B=HCL C=H_2SO_4 D=HNO_3 E=EnCore F=Methanol G=NaOH O=Other (Indicate)

Relinquished By: [signature] Date: 6/20/14 Time: 1740 — Received By: Fedex Date: 6/20/14 Time: 1740

Relinquished By: Date: Time: — Received By: [signature] Date: 6/21/14 Time: 0915

Matrix Codes: A=Air S=Soil W=Water O=Other

Custody Seal: Present/(Absent) Intact/Not Intact Seal #'s

Shipped Via: FEDEX

Receipt Temp: 0.8°C IR 1304928913 Temp Blank (Y) N Exp. 08-09-15

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Madison, WI 53718
608-221-8700 (phone)
608-221-4889 (fax)

CHAIN OF CUSTODY

Lab Work Order #: A142525

Project Number: 220003.0000.0000
Project Name: TRC Tecumseh RT
Project Location: Tecumseh, MI
Turn Around (circle one): Normal (Rush)
If Rush, Report Due Date: Check w/ S. Metz
Sampled By (Print): John Bacon

Analyses Requested / Preservation Codes: F, A

Mail Report To: Stacy Metz
Company: TRC
Address: 1540 Eisenhower Place Ann Arbor MI 48108
E-mail Address: smetz@trcsolutions.com
Invoice To: TRC
Company: see Above
Address:

Sample Description	Collection Date	Collection Time	Matrix	Total # of Containers	VOC's/GRO	DRO, Total Solids					Comments	Lab ID	Lab Receipt Time
MIP-SB-01 (18-20')	6/19	1050	S	2	✓	✓		*	Potential ice melt contamination		HOLD DRO	11	
MIP-SB-01 (20-22')		1135	S	2	✓	✓				J	HOLD DRO	12	
MIP-SB-01 (22-24')		1140	S	2	✓	✓					HOLD ALL → CALL STACY METZ	13	
MIP-SB-01 (27-28')		1245	S	2	✓	✓					HOLD ALL	14	
MIP-SB-01 (28-29')		1310	S	2	✓	✓					HOLD ALL	15	
MIP-SB-01 (47-48')		1620	S	2	✓	✓					HOLD ALL	16	
MIP-SB-01 (49-~~50~~ 49.5')		1655	S	2	✓	✓					HOLD ALL	17	
MIP-SB-01 (49.5-50')		1657	S	2	✓	✓					HOLD ALL	18	

Preservation Codes
A=None B=HCL C=H_2SO_4
D=HNO_3 E=EnCore F=Methanol
G=NaOH O=Other (Indicate)

Matrix Codes
A=Air S=Soil W=Water O=Other

		Date	Time		Date	Time
Relinquished By:		6/20/14	1740	Received By: Fedex	6/20/14	1740
Relinquished By:				Received By:	6/21/14	0915

Custody Seal: Present/(Absent) Intact/Not Intact Seal #'s
Shipped Via: FedEx
Receipt Temp 2.8°C
Temp Blank (Y) N

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Rev. 11/08

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July 01, 2014

Stacy Metz
TRC Solutions
3754 Ranchero Drive
Ann Harbor, MI 48108

RE: TRC Tecumseh RI - Tecumseh, MI

Enclosed are the revised analytical results for the samples received by the laboratory on 06/21/2014.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser For Nick Nigro
President

Certification List			Expires
ILEPA	Illinois Secondary NELAP Accreditation	003174	04/30/2015
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2015
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2015
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2015
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2014

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MIP-SB-03 (0-2')	A142526-01	Soil	06/20/2014	06/21/2014
MIP-SB-03 (2-3')	A142526-02	Soil	06/20/2014	06/21/2014
MIP-SB-03 (4-5')	A142526-03	Soil	06/20/2014	06/21/2014
MIP-SB-03 (5-6')	A142526-04	Soil	06/20/2014	06/21/2014
MIP-SB-03 (7-8')	A142526-05	Soil	06/20/2014	06/21/2014
MIP-SB-03 (8-9')	A142526-06	Soil	06/20/2014	06/21/2014
MIP-SB-03 (10-12')	A142526-07	Soil	06/20/2014	06/21/2014
MIP-SB-03 (12-13')	A142526-08	Soil	06/20/2014	06/21/2014
MIP-SB-03 (14-15')	A142526-09	Soil	06/20/2014	06/21/2014
DUP-02	A142526-10	Soil	06/20/2014	06/21/2014
MIP-SB-03 (17-18')	A142526-11	Soil	06/20/2014	06/21/2014
MIP-SB-03 (19-20')	A142526-12	Soil	06/20/2014	06/21/2014
MIP-SB-03 (20-21')	A142526-13	Soil	06/20/2014	06/21/2014

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

CASE NARRATIVE

Sample Receipt Information:
19 samples were received on 6/21/2014. Samples were received at 2.1 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Continuing Calibration Verification (CCV):
CCV indicates a potential high bias for chloroethane and trichlorofluoromethane for samples A142526-01 through A142526-13. Samples were less than the reporting limit for these analytes so no further action is required.

Laboratory Control Samples (LCS):
The E1 footnote on samples A142526-01 through A142526-13 indicates that there were quality control sample exceedances for trichloroethene. The LCS recovery was above acceptable limits. Please see the quality control section of the report for more information.

The LCS recovery also indicates a potential high bias for chloroethane for samples A142526-01 through A142526-13. Samples were less than the reporting limit for this analyte so no further action is required.

Reason for Revised Report

This report was revised to include the following case narrative comment. This report should replace A142526 FINAL 06 30 2014 1428.

Additional Comments:
Although a TPH GRO number was quantified and reported for multiple samples, the sample chromatogram patterns are not indicative of gasoline.

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (0-2')

A142526-01 (Soil)

Date Sampled
06/20/2014 09:50

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406042**			
Acetone	ND	1300	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Benzene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
2-Butanone	ND	1300	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
1,1-Dichloroethane	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
1,2-Dichloroethane	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
trans-1,2-Dichloroethene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
cis-1,2-Dichloroethene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
1,1-Dichloroethene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Ethylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Tetrachloroethene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Toluene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
1,1,1-Trichloroethane	**47**	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
1,1,2-Trichloroethane	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Trichloroethene	**360**	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	E1
1,3,5-Trimethylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
1,2,4-Trimethylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Vinyl chloride	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
m,p-Xylene	ND	67	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
o-Xylene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Xylenes, total	ND	100	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Gasoline Range Organics	ND	3300	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
n-Butyl Benzene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
sec-Butyl Benzene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Carbon disulfide	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Chloroethane	ND	330	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Chloroform	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Dichlorodifluoromethane	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Isopropylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
p-Isopropyltoluene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Naphthalene	ND	330	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
n-Propyl Benzene	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Trichlorofluoromethane	ND	33	ug/kg dry	1	06/23/2014	06/23/2014 18:25	EPA 8260B	
Surrogate: Dibromofluoromethane		*107 %*	*84.7-120*		*06/23/2014*	*06/23/2014 18:25*	*EPA 8260B*	
Surrogate: Toluene-d8		*99.2 %*	*90.5-108*		*06/23/2014*	*06/23/2014 18:25*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*97.4 %*	*88.3-113*		*06/23/2014*	*06/23/2014 18:25*	*EPA 8260B*	
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**95.0**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (2-3')

A142526-02 (Soil)

Date Sampled
06/20/2014 09:55

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406044**			
Diesel Range Organics	**40000**	40000	ug/kg dry	1	06/23/2014	06/24/2014 20:31	EPA 8015B	
Surrogate: n-Triacontane		*101 %*	*60-140*		*06/23/2014*	*06/24/2014 20:31*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406042**			
Acetone	ND	1600	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Benzene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
2-Butanone	ND	1600	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
1,1-Dichloroethane	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
1,2-Dichloroethane	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
trans-1,2-Dichloroethene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
cis-1,2-Dichloroethene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
1,1-Dichloroethene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Ethylbenzene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Tetrachloroethene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Toluene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
1,1,1-Trichloroethane	**420**	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
1,1,2-Trichloroethane	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Trichloroethene	**2500**	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	E1
1,3,5-Trimethylbenzene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
1,2,4-Trimethylbenzene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Vinyl chloride	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
m,p-Xylene	ND	78	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
o-Xylene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Xylenes, total	ND	120	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Gasoline Range Organics	ND	3900	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
n-Butyl Benzene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
sec-Butyl Benzene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Carbon disulfide	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Chloroethane	ND	390	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Chloroform	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Dichlorodifluoromethane	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Isopropylbenzene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
p-Isopropyltoluene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Naphthalene	ND	390	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
n-Propyl Benzene	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Trichlorofluoromethane	ND	39	ug/kg dry	1	06/23/2014	06/23/2014 19:16	EPA 8260B	
Surrogate: Dibromofluoromethane		*103 %*	*84.7-120*		*06/23/2014*	*06/23/2014 19:16*	*EPA 8260B*	
Surrogate: Toluene-d8		*98.8 %*	*90.5-108*		*06/23/2014*	*06/23/2014 19:16*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*98.8 %*	*88.3-113*		*06/23/2014*	*06/23/2014 19:16*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (2-3')

A142526-02 (Soil)

Date Sampled
06/20/2014 09:55

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
ECCS								
Classical Chemistry Parameters					**Preparation Batch: A406045**			
% Solids	**85.6**	0.00	% by Weight	1	06/23/2014	06/24/2014 09:27	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (4-5')

A142526-03 (Soil)

Date Sampled
06/20/2014 10:10

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID						**Preparation Batch: A406044**		
Diesel Range Organics	ND	40000	ug/kg dry	1	06/23/2014	06/24/2014 21:00	EPA 8015B	
Surrogate: n-Triacontane		*94.9 %*	*60-140*		*06/23/2014*	*06/24/2014 21:00*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap						**Preparation Batch: A406042**		
Acetone	ND	1300	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Benzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
2-Butanone	ND	1300	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
1,1-Dichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
1,2-Dichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
trans-1,2-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
cis-1,2-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
1,1-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Ethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Tetrachloroethene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Toluene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
1,1,1-Trichloroethane	**440**	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
1,1,2-Trichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Trichloroethene	**1600**	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	E1
1,3,5-Trimethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
1,2,4-Trimethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Vinyl chloride	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
m,p-Xylene	ND	64	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
o-Xylene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Xylenes, total	ND	96	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Gasoline Range Organics	ND	3200	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
n-Butyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
sec-Butyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Carbon disulfide	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Chloroethane	ND	320	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Chloroform	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Dichlorodifluoromethane	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Isopropylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
p-Isopropyltoluene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Naphthalene	ND	320	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
n-Propyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Trichlorofluoromethane	ND	32	ug/kg dry	1	06/23/2014	06/23/2014 20:01	EPA 8260B	
Surrogate: Dibromofluoromethane		*104 %*	*84.7-120*		*06/23/2014*	*06/23/2014 20:01*	*EPA 8260B*	
Surrogate: Toluene-d8		*99.6 %*	*90.5-108*		*06/23/2014*	*06/23/2014 20:01*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*96.0 %*	*88.3-113*		*06/23/2014*	*06/23/2014 20:01*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (4-5')

A142526-03 (Soil)

Date Sampled
06/20/2014 10:10

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters						**Preparation Batch: A406045**		
% Solids	**84.4**	0.00	% by Weight	1	06/23/2014	06/24/2014 09:27	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (5-6')

A142526-04 (Soil)

Date Sampled
06/20/2014 10:15

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID						**Preparation Batch: A406044**		
Diesel Range Organics	ND	40000	ug/kg dry	1	06/23/2014	06/24/2014 21:29	EPA 8015B	
Surrogate: n-Triacontane		*95.3 %*	*60-140*		*06/23/2014*	*06/24/2014 21:29*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap						**Preparation Batch: A406042**		
Acetone	ND	12000	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Benzene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
2-Butanone	ND	12000	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
1,1-Dichloroethane	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
1,2-Dichloroethane	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
trans-1,2-Dichloroethene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
cis-1,2-Dichloroethene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
1,1-Dichloroethene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Ethylbenzene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Tetrachloroethene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Toluene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
1,1,1-Trichloroethane	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
1,1,2-Trichloroethane	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Trichloroethene	**840**	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	E1, D
1,3,5-Trimethylbenzene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
1,2,4-Trimethylbenzene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Vinyl chloride	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
m,p-Xylene	ND	610	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
o-Xylene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Xylenes, total	ND	910	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Gasoline Range Organics	ND	30000	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
n-Butyl Benzene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
sec-Butyl Benzene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Carbon disulfide	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Chloroethane	ND	3000	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Chloroform	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Dichlorodifluoromethane	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Isopropylbenzene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
p-Isopropyltoluene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Naphthalene	ND	3000	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
n-Propyl Benzene	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Trichlorofluoromethane	ND	300	ug/kg dry	10	06/23/2014	06/26/2014 17:51	EPA 8260B	
Surrogate: Dibromofluoromethane		*104 %*	*84.7-120*		*06/23/2014*	*06/26/2014 17:51*	*EPA 8260B*	
Surrogate: Toluene-d8		*99.0 %*	*90.5-108*		*06/23/2014*	*06/26/2014 17:51*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*101 %*	*88.3-113*		*06/23/2014*	*06/26/2014 17:51*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (5-6')

A142526-04 (Soil)

Date Sampled
06/20/2014 10:15

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters						**Preparation Batch: A406045**		
% Solids	**85.0**	0.00	% by Weight	1	06/23/2014	06/24/2014 09:27	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (7-8')

A142526-05 (Soil)

Date Sampled
06/20/2014 10:35

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406044**			
Diesel Range Organics	**54000**	40000	ug/kg dry	1	06/23/2014	06/24/2014 21:59	EPA 8015B	
Surrogate: n-Triacontane		*75.9 %*	*60-140*		*06/23/2014*	*06/24/2014 21:59*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406042**			
Acetone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Benzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
2-Butanone	ND	1200	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
1,1-Dichloroethane	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
1,2-Dichloroethane	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
trans-1,2-Dichloroethene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
cis-1,2-Dichloroethene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
1,1-Dichloroethene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Ethylbenzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Tetrachloroethene	**43**	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Toluene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
1,1,1-Trichloroethane	**1700**	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
1,1,2-Trichloroethane	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Trichloroethene	**8400**	300	ug/kg dry	10	06/23/2014	06/26/2014 18:20	EPA 8260B	E1, D
1,3,5-Trimethylbenzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
1,2,4-Trimethylbenzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Vinyl chloride	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
m,p-Xylene	ND	60	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
o-Xylene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Xylenes, total	ND	90	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Gasoline Range Organics	**9500**	3000	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
n-Butyl Benzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
sec-Butyl Benzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Carbon disulfide	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Chloroethane	ND	300	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Chloroform	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Dichlorodifluoromethane	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Isopropylbenzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
p-Isopropyltoluene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Naphthalene	ND	300	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
n-Propyl Benzene	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Trichlorofluoromethane	ND	30	ug/kg dry	1	06/23/2014	06/23/2014 21:52	EPA 8260B	
Surrogate: Dibromofluoromethane		*105 %*	*84.7-120*		*06/23/2014*	*06/23/2014 21:52*	*EPA 8260B*	
Surrogate: Toluene-d8		*98.2 %*	*90.5-108*		*06/23/2014*	*06/23/2014 21:52*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*96.6 %*	*88.3-113*		*06/23/2014*	*06/23/2014 21:52*	*EPA 8260B*	

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (7-8')

A142526-05 (Soil)

Date Sampled
06/20/2014 10:35

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters						**Preparation Batch: A406045**		
% Solids	**89.9**	0.00	% by Weight	1	06/23/2014	06/24/2014 09:27	SM 2540B	

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (8-9')

A142526-06 (Soil)

Date Sampled
06/20/2014 10:40

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406042**			
Acetone	ND	1200	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Benzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
2-Butanone	ND	1200	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
1,1-Dichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
1,2-Dichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
trans-1,2-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
cis-1,2-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
1,1-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Ethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Tetrachloroethene	**38**	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Toluene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
1,1,1-Trichloroethane	**1500**	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
1,1,2-Trichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Trichloroethene	**7300**	290	ug/kg dry	10	06/23/2014	06/26/2014 18:50	EPA 8260B	E1, D
1,3,5-Trimethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
1,2,4-Trimethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Vinyl chloride	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
m,p-Xylene	ND	58	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
o-Xylene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Xylenes, total	ND	88	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Gasoline Range Organics	**8500**	2900	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
n-Butyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
sec-Butyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Carbon disulfide	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Chloroethane	ND	290	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Chloroform	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Dichlorodifluoromethane	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Isopropylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
p-Isopropyltoluene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Naphthalene	ND	290	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
n-Propyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Trichlorofluoromethane	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 15:43	EPA 8260B	
Surrogate: Dibromofluoromethane		*99.2 %*	*84.7-120*		*06/23/2014*	*06/24/2014 15:43*	*EPA 8260B*	
Surrogate: Toluene-d8		*98.8 %*	*90.5-108*		*06/23/2014*	*06/24/2014 15:43*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*101 %*	*88.3-113*		*06/23/2014*	*06/24/2014 15:43*	*EPA 8260B*	
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**96.8**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (10-12')

A142526-07 (Soil)

Date Sampled
06/20/2014 10:50

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406042**			
Acetone	ND	1300	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Benzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
2-Butanone	ND	1300	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
1,1-Dichloroethane	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
1,2-Dichloroethane	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
trans-1,2-Dichloroethene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
cis-1,2-Dichloroethene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
1,1-Dichloroethene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Ethylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Tetrachloroethene	**47**	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Toluene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
1,1,1-Trichloroethane	**2000**	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
1,1,2-Trichloroethane	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Trichloroethene	**9400**	330	ug/kg dry	10	06/23/2014	06/26/2014 19:19	EPA 8260B	E1, D
1,3,5-Trimethylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
1,2,4-Trimethylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Vinyl chloride	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
m,p-Xylene	ND	66	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
o-Xylene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Xylenes, total	ND	98	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Gasoline Range Organics	**11000**	3300	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
n-Butyl Benzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
sec-Butyl Benzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Carbon disulfide	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Chloroethane	ND	330	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Chloroform	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Dichlorodifluoromethane	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Isopropylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
p-Isopropyltoluene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Naphthalene	ND	330	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
n-Propyl Benzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Trichlorofluoromethane	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 16:27	EPA 8260B	
Surrogate: Dibromofluoromethane		*108 %*	*84.7-120*		*06/23/2014*	*06/24/2014 16:27*	*EPA 8260B*	
Surrogate: Toluene-d8		*99.2 %*	*90.5-108*		*06/23/2014*	*06/24/2014 16:27*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*99.0 %*	*88.3-113*		*06/23/2014*	*06/24/2014 16:27*	*EPA 8260B*	
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**96.7**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (12-13')

A142526-08 (Soil)

Date Sampled
06/20/2014 11:00

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406042**			
Acetone	ND	1300	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
2-Butanone	ND	1300	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
1,1-Dichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
1,2-Dichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
trans-1,2-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
cis-1,2-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
1,1-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Ethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Tetrachloroethene	**34**	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Toluene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
1,1,1-Trichloroethane	**1300**	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
1,1,2-Trichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Trichloroethene	**6100**	320	ug/kg dry	10	06/23/2014	06/26/2014 19:49	EPA 8260B	E1, D
1,3,5-Trimethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
1,2,4-Trimethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Vinyl chloride	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
m,p-Xylene	ND	65	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
o-Xylene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Xylenes, total	ND	97	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Gasoline Range Organics	**7500**	3200	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
n-Butyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
sec-Butyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Carbon disulfide	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Chloroethane	ND	320	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Chloroform	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Dichlorodifluoromethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Isopropylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
p-Isopropyltoluene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Naphthalene	ND	320	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
n-Propyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Trichlorofluoromethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 17:13	EPA 8260B	
Surrogate: Dibromofluoromethane		*105 %*	*84.7-120*		*06/23/2014*	*06/24/2014 17:13*	*EPA 8260B*	
Surrogate: Toluene-d8		*99.2 %*	*90.5-108*		*06/23/2014*	*06/24/2014 17:13*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*98.6 %*	*88.3-113*		*06/23/2014*	*06/24/2014 17:13*	*EPA 8260B*	
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**97.7**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (14-15')

A142526-09 (Soil)

Date Sampled
06/20/2014 11:05

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406042**			
Acetone	ND	1300	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
2-Butanone	ND	1300	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
1,1-Dichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
1,2-Dichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
trans-1,2-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
cis-1,2-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
1,1-Dichloroethene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Ethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Tetrachloroethene	**56**	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Toluene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
1,1,1-Trichloroethane	**2100**	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
1,1,2-Trichloroethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Trichloroethene	**9300**	320	ug/kg dry	10	06/23/2014	06/26/2014 21:17	EPA 8260B	E1, D
1,3,5-Trimethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
1,2,4-Trimethylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Vinyl chloride	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
m,p-Xylene	ND	64	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
o-Xylene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Xylenes, total	ND	96	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Gasoline Range Organics	**11000**	3200	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
n-Butyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
sec-Butyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Carbon disulfide	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Chloroethane	ND	320	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Chloroform	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Dichlorodifluoromethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Isopropylbenzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
p-Isopropyltoluene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Naphthalene	ND	320	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
n-Propyl Benzene	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Trichlorofluoromethane	ND	32	ug/kg dry	1	06/23/2014	06/24/2014 16:50	EPA 8260B	
Surrogate: Dibromofluoromethane		*106 %*	*84.7-120*		*06/23/2014*	*06/24/2014 16:50*	*EPA 8260B*	
Surrogate: Toluene-d8		*98.6 %*	*90.5-108*		*06/23/2014*	*06/24/2014 16:50*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*101 %*	*88.3-113*		*06/23/2014*	*06/24/2014 16:50*	*EPA 8260B*	
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**97.9**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

DUP-02

A142526-10 (Soil)

Date Sampled
06/20/2014 00:00

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406044**			
Diesel Range Organics	ND	40000	ug/kg dry	1	06/23/2014	06/24/2014 22:28	EPA 8015B	
Surrogate: n-Triacontane		*94.2 %*	*60-140*		*06/23/2014*	*06/24/2014 22:28*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406042**			
Acetone	ND	1100	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Benzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
2-Butanone	ND	1100	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
1,1-Dichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
1,2-Dichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
trans-1,2-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
cis-1,2-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
1,1-Dichloroethene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Ethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Tetrachloroethene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Toluene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
1,1,1-Trichloroethane	**260**	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
1,1,2-Trichloroethane	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Trichloroethene	**1900**	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	E1
1,3,5-Trimethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
1,2,4-Trimethylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Vinyl chloride	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
m,p-Xylene	ND	57	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
o-Xylene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Xylenes, total	ND	86	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Gasoline Range Organics	**3000**	2900	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
n-Butyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
sec-Butyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Carbon disulfide	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Chloroethane	ND	290	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Chloroform	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Dichlorodifluoromethane	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Isopropylbenzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
p-Isopropyltoluene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Naphthalene	ND	290	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
n-Propyl Benzene	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Trichlorofluoromethane	ND	29	ug/kg dry	1	06/23/2014	06/24/2014 16:05	EPA 8260B	
Surrogate: Dibromofluoromethane		*106 %*	*84.7-120*		*06/23/2014*	*06/24/2014 16:05*	*EPA 8260B*	
Surrogate: Toluene-d8		*98.4 %*	*90.5-108*		*06/23/2014*	*06/24/2014 16:05*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*96.0 %*	*88.3-113*		*06/23/2014*	*06/24/2014 16:05*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

DUP-02

A142526-10 (Soil)

Date Sampled
06/20/2014 00:00

ECCS

Classical Chemistry Parameters — **Preparation Batch: A406045**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
% Solids	**85.0**	0.00	% by Weight	1	06/23/2014	06/24/2014 09:27	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (17-18')

A142526-11 (Soil)

Date Sampled
06/20/2014 11:20

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406042**			
Acetone	ND	1800	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Benzene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
2-Butanone	ND	1800	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
1,1-Dichloroethane	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
1,2-Dichloroethane	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
trans-1,2-Dichloroethene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
cis-1,2-Dichloroethene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
1,1-Dichloroethene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Ethylbenzene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Tetrachloroethene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Toluene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
1,1,1-Trichloroethane	**590**	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
1,1,2-Trichloroethane	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Trichloroethene	**2900**	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	E1
1,3,5-Trimethylbenzene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
1,2,4-Trimethylbenzene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Vinyl chloride	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
m,p-Xylene	ND	89	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
o-Xylene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Xylenes, total	ND	130	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Gasoline Range Organics	**4900**	4400	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
n-Butyl Benzene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
sec-Butyl Benzene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Carbon disulfide	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Chloroethane	ND	440	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Chloroform	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Dichlorodifluoromethane	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Isopropylbenzene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
p-Isopropyltoluene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Naphthalene	ND	440	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
n-Propyl Benzene	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Trichlorofluoromethane	ND	44	ug/kg dry	1	06/23/2014	06/24/2014 03:10	EPA 8260B	
Surrogate: Dibromofluoromethane		*109 %*	*84.7-120*		*06/23/2014*	*06/24/2014 03:10*	*EPA 8260B*	
Surrogate: Toluene-d8		*99.8 %*	*90.5-108*		*06/23/2014*	*06/24/2014 03:10*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*95.2 %*	*88.3-113*		*06/23/2014*	*06/24/2014 03:10*	*EPA 8260B*	
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**97.8**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (19-20')

A142526-12 (Soil)

Date Sampled
06/20/2014 11:25

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406042**			
Acetone	ND	1300	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Benzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
2-Butanone	ND	1300	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
1,1-Dichloroethane	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
1,2-Dichloroethane	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
trans-1,2-Dichloroethene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
cis-1,2-Dichloroethene	**42**	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
1,1-Dichloroethene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Ethylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Tetrachloroethene	**110**	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Toluene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
1,1,1-Trichloroethane	**3500**	650	ug/kg dry	20	06/23/2014	06/26/2014 21:47	EPA 8260B	D
1,1,2-Trichloroethane	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Trichloroethene	**16000**	650	ug/kg dry	20	06/23/2014	06/26/2014 21:47	EPA 8260B	E1, D
1,3,5-Trimethylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
1,2,4-Trimethylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Vinyl chloride	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
m,p-Xylene	ND	65	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
o-Xylene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Xylenes, total	ND	98	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Gasoline Range Organics	**18000**	3300	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
n-Butyl Benzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
sec-Butyl Benzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Carbon disulfide	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Chloroethane	ND	330	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Chloroform	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Dichlorodifluoromethane	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Isopropylbenzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
p-Isopropyltoluene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Naphthalene	ND	330	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
n-Propyl Benzene	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Trichlorofluoromethane	ND	33	ug/kg dry	1	06/23/2014	06/24/2014 04:38	EPA 8260B	
Surrogate: Dibromofluoromethane		*126 %*	*84.7-120*		*06/23/2014*	*06/24/2014 04:38*	*EPA 8260B*	*S*
Surrogate: Toluene-d8		*96.2 %*	*90.5-108*		*06/23/2014*	*06/24/2014 04:38*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*97.6 %*	*88.3-113*		*06/23/2014*	*06/24/2014 04:38*	*EPA 8260B*	
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**96.9**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (20-21')

A142526-13 (Soil)

Date Sampled
06/20/2014 11:55

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406042**			
Acetone	ND	1400	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Benzene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
2-Butanone	ND	1400	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
1,1-Dichloroethane	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
1,2-Dichloroethane	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
trans-1,2-Dichloroethene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
cis-1,2-Dichloroethene	**46**	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
1,1-Dichloroethene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Ethylbenzene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Tetrachloroethene	**150**	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Toluene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
1,1,1-Trichloroethane	**4400**	700	ug/kg dry	20	06/23/2014	06/26/2014 22:16	EPA 8260B	D
1,1,2-Trichloroethane	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Trichloroethene	**20000**	700	ug/kg dry	20	06/23/2014	06/26/2014 22:16	EPA 8260B	E1, D
1,3,5-Trimethylbenzene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
1,2,4-Trimethylbenzene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Vinyl chloride	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
m,p-Xylene	ND	70	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
o-Xylene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Xylenes, total	ND	110	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Gasoline Range Organics	**24000**	3500	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
n-Butyl Benzene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
sec-Butyl Benzene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Carbon disulfide	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Chloroethane	ND	350	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Chloroform	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Dichlorodifluoromethane	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Isopropylbenzene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
p-Isopropyltoluene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Naphthalene	ND	350	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
n-Propyl Benzene	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Trichlorofluoromethane	ND	35	ug/kg dry	1	06/23/2014	06/24/2014 09:06	EPA 8260B	
Surrogate: Dibromofluoromethane		*109 %*	*84.7-120*		*06/23/2014*	*06/24/2014 09:06*	*EPA 8260B*	
Surrogate: Toluene-d8		*96.8 %*	*90.5-108*		*06/23/2014*	*06/24/2014 09:06*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*96.0 %*	*88.3-113*		*06/23/2014*	*06/24/2014 09:06*	*EPA 8260B*	
Classical Chemistry Parameters					**Preparation Batch: A406051**			
% Solids	**95.7**	0.00	% by Weight	1	06/24/2014	06/25/2014 07:20	SM 2540B	

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Hydrocarbons by GC-FID - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406044 - EPA 3570										
Blank (A406044-BLK1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 16:04						
Diesel Range Organics	ND	40000	ug/kg wet							
Surrogate: n-Triacontane	*93400*		*ug/kg wet*	*100000*		*93.4*	*60-140*			
LCS (A406044-BS1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 15:05						
Diesel Range Organics	844000	40000	ug/kg wet	1000000		84.4	70-130			
Surrogate: n-Triacontane	*81000*		*ug/kg wet*	*100000*		*81.0*	*60-140*			
Matrix Spike (A406044-MS1)	**Source: A142525-03**			Prepared: 06/23/2014 Analyzed: 06/24/2014 18:03						
Diesel Range Organics	876000	40000	ug/kg dry	1048000	ND	83.6	60-140			
Surrogate: n-Triacontane	*93300*		*ug/kg dry*	*104800*		*89.1*	*60-140*			
Matrix Spike Dup (A406044-MSD1)	**Source: A142525-03**			Prepared: 06/23/2014 Analyzed: 06/24/2014 18:33						
Diesel Range Organics	863000	40000	ug/kg dry	1048000	ND	82.4	60-140	1.52	30	
Surrogate: n-Triacontane	*96700*		*ug/kg dry*	*104800*		*92.3*	*60-140*			

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406042 - EPA 5030B										
Blank (A406042-BLK1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 17:35						
Acetone	ND	1000	ug/kg wet							
Benzene	ND	25	ug/kg wet							
2-Butanone	ND	1000	ug/kg wet							
1,1-Dichloroethane	ND	25	ug/kg wet							
1,2-Dichloroethane	ND	25	ug/kg wet							
trans-1,2-Dichloroethene	ND	25	ug/kg wet							
cis-1,2-Dichloroethene	ND	25	ug/kg wet							
1,1-Dichloroethene	ND	25	ug/kg wet							
Ethylbenzene	ND	25	ug/kg wet							
Tetrachloroethene	ND	25	ug/kg wet							
Toluene	ND	25	ug/kg wet							
1,1,1-Trichloroethane	ND	25	ug/kg wet							
1,1,2-Trichloroethane	ND	25	ug/kg wet							
Trichloroethene	ND	25	ug/kg wet							
1,3,5-Trimethylbenzene	ND	25	ug/kg wet							
1,2,4-Trimethylbenzene	ND	25	ug/kg wet							
Vinyl chloride	ND	25	ug/kg wet							
m,p-Xylene	ND	50	ug/kg wet							
o-Xylene	ND	25	ug/kg wet							
Xylenes, total	ND	75	ug/kg wet							
Gasoline Range Organics	ND	2500	ug/kg wet							
n-Butyl Benzene	ND	25	ug/kg wet							
sec-Butyl Benzene	ND	25	ug/kg wet							
Carbon disulfide	ND	25	ug/kg wet							
Chloroethane	ND	250	ug/kg wet							
Chloroform	ND	25	ug/kg wet							
Dichlorodifluoromethane	ND	25	ug/kg wet							
Isopropylbenzene	ND	25	ug/kg wet							
p-Isopropyltoluene	ND	25	ug/kg wet							
Naphthalene	ND	250	ug/kg wet							
n-Propyl Benzene	ND	25	ug/kg wet							
Trichlorofluoromethane	ND	25	ug/kg wet							
Surrogate: Dibromofluoromethane	*5.45*		*ug/L*	*5.000*		*109*	*84.7-120*			
Surrogate: Toluene-d8	*5.11*		*ug/L*	*5.000*		*102*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*4.90*		*ug/L*	*5.000*		*98.0*	*88.3-113*			
LCS (A406042-BS1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 10:34						
Acetone	60.6		ug/L	50.00		121	42.3-174			
Benzene	5.82		ug/L	5.000		116	80.5-123			
2-Butanone	56.1		ug/L	50.00		112	51.2-152			
1,1-Dichloroethane	6.31		ug/L	5.000		126	80.9-127			
1,2-Dichloroethane	6.22		ug/L	5.000		124	72.8-138			
trans-1,2-Dichloroethene	5.74		ug/L	5.000		115	71.3-128			
cis-1,2-Dichloroethene	5.84		ug/L	5.000		117	81.9-121			

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406042 - EPA 5030B										
LCS (A406042-BS1)				Prepared: 06/23/2014 Analyzed: 06/24/2014 10:34						
1,1-Dichloroethene	5.93		ug/L	5.000		119	66.8-129			
Ethylbenzene	5.01		ug/L	5.000		100	89.9-113			
Tetrachloroethene	5.07		ug/L	5.000		101	85.1-116			
Toluene	5.07		ug/L	5.000		101	78.8-117			
1,1,1-Trichloroethane	6.14		ug/L	5.000		123	82.3-123			
1,1,2-Trichloroethane	5.57		ug/L	5.000		111	74.9-130			
Trichloroethene	7.20		ug/L	5.000		144	83.1-118			
1,3,5-Trimethylbenzene	4.59		ug/L	5.000		91.8	85.2-120			
1,2,4-Trimethylbenzene	4.50		ug/L	5.000		90.0	86.8-118			
Vinyl chloride	5.61		ug/L	5.000		112	60.9-137			
m,p-Xylene	9.86		ug/L	10.00		98.6	90.1-114			
o-Xylene	5.04		ug/L	5.000		101	85.8-113			
n-Butyl Benzene	4.48		ug/L	5.000		89.6	88.2-119			
sec-Butyl Benzene	4.87		ug/L	5.000		97.4	89.9-118			
Carbon disulfide	5.32		ug/L	5.000		106	72.2-127			
Chloroethane	10.1		ug/L	5.000		201	14.6-199			
Chloroform	6.09		ug/L	5.000		122	77.9-125			
Dichlorodifluoromethane	6.33		ug/L	5.000		127	67.8-137			
Isopropylbenzene	4.99		ug/L	5.000		99.8	92.8-112			
p-Isopropyltoluene	4.63		ug/L	5.000		92.6	89.8-118			
Naphthalene	4.31		ug/L	5.000		86.2	72.9-122			
n-Propyl Benzene	4.75		ug/L	5.000		95.0	87.3-119			
Trichlorofluoromethane	7.89		ug/L	5.000		158	40.3-174			
Surrogate: Dibromofluoromethane	*5.85*		*ug/L*	*5.000*		*117*	*84.7-120*			
Surrogate: Toluene-d8	*5.33*		*ug/L*	*5.000*		*107*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*4.93*		*ug/L*	*5.000*		*98.6*	*88.3-113*			
LCS (A406042-BS2)				Prepared: 06/23/2014 Analyzed: 06/24/2014 11:18						
Gasoline Range Organics	478		ug/L	500.0		95.5	70-130			
Surrogate: Toluene-d8	*4.79*		*ug/L*	*5.000*		*95.8*	*90.5-108*			
Matrix Spike (A406042-MS1)	**Source: A142526-03**			Prepared: 06/23/2014 Analyzed: 06/24/2014 18:47						
Acetone	56.8		ug/L	50.00	ND	114	37.5-179			
Benzene	5.27		ug/L	5.000	ND	105	77-128			
2-Butanone	52.1		ug/L	50.00	ND	104	54.7-159			
1,1-Dichloroethane	5.75		ug/L	5.000	ND	115	77.3-131			
1,2-Dichloroethane	5.23		ug/L	5.000	ND	105	73.7-139			
trans-1,2-Dichloroethene	5.34		ug/L	5.000	ND	107	68.9-132			
cis-1,2-Dichloroethene	5.45		ug/L	5.000	ND	109	80-124			
1,1-Dichloroethene	5.73		ug/L	5.000	ND	115	60.7-145			
Ethylbenzene	5.08		ug/L	5.000	ND	102	85.7-117			
Tetrachloroethene	5.43		ug/L	5.000	0.183	105	80.7-123			
Toluene	5.01		ug/L	5.000	ND	100	72.1-124			
1,1,1-Trichloroethane	10.5		ug/L	5.000	7.35	63.0	80.2-124			M

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406042 - EPA 5030B										
Matrix Spike (A406042-MS1)	**Source: A142526-03**		Prepared: 06/23/2014	Analyzed: 06/24/2014 18:47						
1,1,2-Trichloroethane	5.35		ug/L	5.000	ND	107	73.9-137			
Trichloroethene	42.9		ug/L	5.000	27.2	314	81.5-119			M
1,3,5-Trimethylbenzene	4.57		ug/L	5.000	ND	91.4	82-122			
1,2,4-Trimethylbenzene	4.40		ug/L	5.000	ND	88.0	80.4-122			
Vinyl chloride	5.40		ug/L	5.000	ND	108	75.5-134			
m,p-Xylene	9.90		ug/L	10.00	ND	99.0	87.9-115			
o-Xylene	5.02		ug/L	5.000	ND	100	82.9-116			
n-Butyl Benzene	4.70		ug/L	5.000	ND	94.0	87.5-118			
sec-Butyl Benzene	4.95		ug/L	5.000	ND	99.0	85.3-121			
Carbon disulfide	5.39		ug/L	5.000	ND	108	69.4-131			
Chloroethane	7.08		ug/L	5.000	ND	142	25.1-230			
Chloroform	5.42		ug/L	5.000	ND	108	76.4-128			
Dichlorodifluoromethane	5.75		ug/L	5.000	ND	115	69.4-138			
Isopropylbenzene	5.19		ug/L	5.000	ND	104	90.3-116			
p-Isopropyltoluene	4.75		ug/L	5.000	ND	95.0	82-126			
Naphthalene	4.36		ug/L	5.000	ND	87.2	66.1-137			
n-Propyl Benzene	4.88		ug/L	5.000	ND	97.6	85.2-121			
Trichlorofluoromethane	7.64		ug/L	5.000	ND	153	17-192			
Surrogate: Dibromofluoromethane	*5.36*		*ug/L*	*5.000*		*107*	*84.7-120*			
Surrogate: Toluene-d8	*5.38*		*ug/L*	*5.000*		*108*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*5.04*		*ug/L*	*5.000*		*101*	*88.3-113*			
Matrix Spike (A406042-MS2)	**Source: A142526-03**		Prepared: 06/23/2014	Analyzed: 06/25/2014 08:03						
Gasoline Range Organics	547		ug/L	500.0	43.2	101	70-130			
Surrogate: Toluene-d8	*4.95*		*ug/L*	*5.000*		*99.0*	*90.5-108*			
Matrix Spike Dup (A406042-MSD1)	**Source: A142526-03**		Prepared: 06/23/2014	Analyzed: 06/25/2014 07:19						
Acetone	53.9		ug/L	50.00	ND	108	37.5-179	5.28	20	
Benzene	5.29		ug/L	5.000	ND	106	77-128	0.379	20	
2-Butanone	50.0		ug/L	50.00	ND	100	54.7-159	3.96	20	
1,1-Dichloroethane	5.70		ug/L	5.000	ND	114	77.3-131	0.873	20	
1,2-Dichloroethane	5.31		ug/L	5.000	ND	106	73.7-139	1.52	20	
trans-1,2-Dichloroethene	5.43		ug/L	5.000	ND	109	68.9-132	1.67	20	
cis-1,2-Dichloroethene	5.55		ug/L	5.000	ND	111	80-124	1.82	20	
1,1-Dichloroethene	5.66		ug/L	5.000	ND	113	60.7-145	1.23	20	
Ethylbenzene	4.73		ug/L	5.000	ND	94.6	85.7-117	7.14	20	
Tetrachloroethene	5.31		ug/L	5.000	0.183	103	80.7-123	2.31	20	
Toluene	4.69		ug/L	5.000	ND	93.8	72.1-124	6.60	20	
1,1,1-Trichloroethane	10.3		ug/L	5.000	7.35	59.8	80.2-124	5.21	20	M
1,1,2-Trichloroethane	5.46		ug/L	5.000	ND	109	73.9-137	2.04	20	
Trichloroethene	41.8		ug/L	5.000	27.2	292	81.5-119	7.13	20	M
1,3,5-Trimethylbenzene	4.40		ug/L	5.000	ND	88.0	82-122	3.79	20	
1,2,4-Trimethylbenzene	4.32		ug/L	5.000	ND	86.4	80.4-122	1.83	20	
Vinyl chloride	5.97		ug/L	5.000	ND	119	75.5-134	10.0	20	

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406042 - EPA 5030B										
Matrix Spike Dup (A406042-MSD1)	**Source: A142526-03**		Prepared: 06/23/2014 Analyzed: 06/25/2014 07:19							
m,p-Xylene	8.41		ug/L	10.00	ND	84.1	87.9-115	16.3	20	M
o-Xylene	4.31		ug/L	5.000	ND	86.2	82.9-116	15.2	20	
n-Butyl Benzene	4.91		ug/L	5.000	ND	98.2	87.5-118	4.37	20	
sec-Butyl Benzene	5.01		ug/L	5.000	ND	100	85.3-121	1.20	20	
Carbon disulfide	5.11		ug/L	5.000	ND	102	69.4-131	5.33	20	
Chloroethane	7.59		ug/L	5.000	ND	152	25.1-230	6.95	20	
Chloroform	5.43		ug/L	5.000	ND	109	76.4-128	0.184	20	
Dichlorodifluoromethane	5.90		ug/L	5.000	ND	118	69.4-138	2.58	20	
Isopropylbenzene	4.69		ug/L	5.000	ND	93.8	90.3-116	10.1	20	
p-Isopropyltoluene	4.91		ug/L	5.000	ND	98.2	82-126	3.31	20	
Naphthalene	4.59		ug/L	5.000	ND	91.8	66.1-137	5.14	20	
n-Propyl Benzene	4.96		ug/L	5.000	ND	99.2	85.2-121	1.63	20	
Trichlorofluoromethane	7.62		ug/L	5.000	ND	152	17-192	0.262	20	
Surrogate: Dibromofluoromethane	*5.31*		*ug/L*	*5.000*		*106*	*84.7-120*			
Surrogate: Toluene-d8	*5.12*		*ug/L*	*5.000*		*102*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*4.92*		*ug/L*	*5.000*		*98.4*	*88.3-113*			
Matrix Spike Dup (A406042-MSD2)	**Source: A142526-03**		Prepared: 06/23/2014 Analyzed: 06/25/2014 08:47							
Gasoline Range Organics	529		ug/L	500.0	43.2	97.2	70-130	3.54	20	
Surrogate: Toluene-d8	*4.95*		*ug/L*	*5.000*		*99.0*	*90.5-108*			

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Classical Chemistry Parameters - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406045 - % Solids										
Duplicate (A406045-DUP1)	**Source: A142525-01**		Prepared: 06/23/2014	Analyzed: 06/24/2014 09:27						
% Solids	89.6	0.00	% by Weight		89.6			0.00767	20	
Batch A406051 - % Solids										
Duplicate (A406051-DUP1)	**Source: A142525-05**		Prepared: 06/24/2014	Analyzed: 06/25/2014 07:20						
% Solids	97.5	0.00	% by Weight		97.4			0.102	20	

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Revised Report

TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Notes and Definitions

S	Surrogate recovery was outside of laboratory control limits due to an apparent matrix effect.
M	The matrix spike and/or matrix spike duplicate recovery was outside of the laboratory control limits.
E1	Estimated value because of quality control sample exceedances.
D	Data reported from a dilution
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Environmental Chemistry Consulting Services, Inc.
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Madison, WI 53718
608-221-8700 (phone)
608-221-4889 (fax)

CHAIN OF CUSTODY

Lab Work Order #: A142526

Project Number: 220003.0000.0000
Project Name: TPC - RI investigation
Project Location: Tecumseh, MI
Turn Around (circle one): Normal (Rush)
If Rush, Report Due Date: check w/ S. Metz
Sampled By (Print): John Bacon

Analyses Requested / Preservation Codes: F, A

Mail Report To: Stacy Metz
Company: TRC
Address: 1540 Eisenhower Place, Ann Arbor, MI 48108
E-mail Address: smetz@trcsolutions.com
Invoice To: TRC
Company: see above
Address:

Sample Description	Collection Date	Collection Time	Matrix	Total # of Containers	VOC's/GRO	DRO, Total Colors					Comments	Lab ID	Lab Receipt Time
MIP-SB-03 (0-2')	6/20	0950	S	2	✓	✓					HOLD DRO	01	
MIP-SB-03 (2-3')	6/20	0955	S	2	✓	✓						02	
MIP-SB-03 (4-5')		1010	S	2	✓	✓						03	
MIP-SB-03 (5-6')		1015	S	2	✓	✓						04	
MIP-SB-03 (7-8')		1035	S	2	✓	✓						05	
MIP-SB-03 (8-9')		1040	S	2	✓	✓					HOLD DRO	06	
MIP-SB-03 (10-12')		1050	S	2	✓	✓					HOLD DRO	07	
MIP-SB-03 (12-13')		1100	S	2	✓	✓					HOLD DRO	08	
MIP-SB-03 (14-15')		1105	S	2	✓	✓					HOLD DRO	09	
DUP-02	6/20	—	S	2	✓	✓						10	

Preservation Codes: A=None B=HCL C=H_2SO_4 D=HNO_3 E=EnCore F=Methanol G=NaOH O=Other (Indicate)

Matrix Codes: A=Air S=Soil W=Water O=Other

	Relinquished By:	Date:	Time:	Received By:	Date:	Time:
	[signature]	6/20/14	1740	Fedex	6/20/14	1740
	Relinquished By:	Date:	Time:	Received By:	Date:	Time:
				[signature]	6-21-14	0915

Custody Seal: Present/(Absent) Intact/Not Intact Seal #'s
Shipped Via: FedEx
Receipt Temp: 2.1°C SI N13049203
Temp Blank (Y) N Exp. 08-09-15

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608-221-4889 (fax)

CHAIN OF CUSTODY

Page ____ of ____

Lab Work Order #: A142526

Project Number: 220003.0000.0000
Project Name: TPC RI Investigation
Project Location: Tecumseh MI
Turn Around (circle one): Normal (Rush)
If Rush, Report Due Date: Check w/ S. Metz
Sampled By (Print): John Bauer

Mail Report To: Stacy Metz
Company: TRC
Address: 1540 Eisenhower Pl
Ann Arbor MI 48108
E-mail Address: smetz@trcsolutions.com
Invoice To: See Above
Company:
Address:

Sample Description	Collection Date	Collection Time	Matrix	Total # of Containers	VOC's/GRO	DRO, Tot. Solids	Comments	Lab ID	Lab Receipt Time
MIP-SB-03 (17-18')	6/20/14	1120	S	2	✓	✓	HOLD DRO	11	
MIP-SB-03 (19-20')		1125	S	2	✓	✓	HOLD DRO	12	
MIP-SB-03 (20-21')		1155	S	2	✓	✓	HOLD DRO	13	
MIP-SB-03 (23-24')		1200	S	2	✓	✓	HOLD ALL - CALL STACY METZ 14		
MIP-SB-03 (24-28')		1300	S	2	✓	✓	"	15	
MIP-SB-03 (28-32') JTB		~~1355~~ 1355 JTB	S	2	✓	✓	"	16	
MIP-SB-03 (32-33')		1435	S	2	✓	✓	"	17	
MIP-SB-03 (46-46.5')		1615	S	2	✓	✓	"	18	
MIP-SB-03 (47-48')		1620	S	2	✓	✓	"	19	

Preservation Codes
A=None B=HCL C=H_2SO_4
D=HNO_3 E=EnCore F=Methanol
G=NaOH O=Other (Indicate)

Matrix Codes
A=Air S=Soil W=Water O=Other

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
[signature]	6/20/14	1740	Fedex	6/20/14	1740
Relinquished By:	Date:	Time:	Received By: [signature]	Date: 6/21/14	Time: 0945

Custody Seal: (Present/Absent) Intact/Not Intact Seal #'s
Shipped Via: FedEx
Receipt Temp: 2.1 °C
Temp Blank (Y) N

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July 09, 2014

Stacy Metz
TRC Solutions
3754 Ranchero Drive
Ann Harbor, MI 48108

RE: TRC Tecumseh RI - Tecumseh, MI

Enclosed are the analytical results for the samples received by the laboratory on 07/02/2014.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser For Nick Nigro

President

Certification List			Expires
ILEPA	Illinois Secondary NELAP Accreditation	003174	04/30/2015
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2015
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2015
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2015
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2014

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MIP-SB-01 (22-24')	A142715-01	Soil	06/19/2014	06/21/2014
MIP-SB-01 (47-48')	A142715-02	Soil	06/19/2014	06/21/2014
MIP-SB-01 (49-49.5')	A142715-03	Soil	06/19/2014	06/21/2014
MIP-SB-03 (24-28')	A142715-04	Soil	06/20/2014	06/21/2014
MIP-SB-03 (28-32')	A142715-05	Soil	06/20/2014	06/21/2014
MIP-SB-03 (47-48')	A142715-06	Soil	06/20/2014	06/21/2014

CASE NARRATIVE

Sample Receipt Information:
Samples released from hold on July 2, 2014 at 13:23 by client via email.

Continuing Calibration Verification (CCV):
CCV indicates a potential high bias for chloroethane and trichlorofluoromethane for samples A142715-01 through A142715-06. Samples were less than the reporting limit for these analytes so no further action is required.

Laboratory Control Samples (LCS):
The LCS indicates a potential high bias for trichlorofluoromethane for samples A142715-01 through A142715-06. Samples were less than the reporting limit for this analyte so no further action is required.

Additional Comments:
A TPH GRO number was quantified and reported for samples A142715-01 through A142715-05, however the sample chromatogram patterns are not indicative of gasoline for sample A142715-01.

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (22-24')

A142715-01 (Soil)

Date Sampled
06/19/2014 11:40

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A407006**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	2900	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Benzene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
2-Butanone	ND	2900	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
1,1-Dichloroethane	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
1,2-Dichloroethane	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
trans-1,2-Dichloroethene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
cis-1,2-Dichloroethene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
1,1-Dichloroethene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Ethylbenzene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Tetrachloroethene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Toluene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
1,1,1-Trichloroethane	**2400**	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	D
1,1,2-Trichloroethane	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Trichloroethene	**4100**	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
1,2,4-Trimethylbenzene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Vinyl chloride	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
m,p-Xylene	ND	140	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
o-Xylene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Xylenes, total	ND	210	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Gasoline Range Organics	**8200**	7100	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	D
n-Butyl Benzene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
sec-Butyl Benzene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Carbon disulfide	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Chloroethane	ND	710	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Chloroform	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Dichlorodifluoromethane	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Isopropylbenzene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
p-Isopropyltoluene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Naphthalene	ND	710	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
n-Propyl Benzene	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Trichlorofluoromethane	ND	71	ug/kg dry	2	07/03/2014	07/03/2014 23:26	EPA 8260B	
Surrogate: Dibromofluoromethane		*106 %*		*84.7-120*	*07/03/2014*	*07/03/2014 23:26*	*EPA 8260B*	
Surrogate: Toluene-d8		*98.4 %*		*90.5-108*	*07/03/2014*	*07/03/2014 23:26*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*97.6 %*		*88.3-113*	*07/03/2014*	*07/03/2014 23:26*	*EPA 8260B*	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (22-24')

A142715-01 (Soil)

Date Sampled
06/19/2014 11:40

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A407020**			
% Solids	**83.5**	0.00	% by Weight	1	07/07/2014	07/08/2014 09:00	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (47-48')

A142715-02 (Soil)

Date Sampled
06/19/2014 16:20

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A407006**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	890	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Benzene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
2-Butanone	ND	890	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
1,1-Dichloroethane	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
1,2-Dichloroethane	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
trans-1,2-Dichloroethene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
cis-1,2-Dichloroethene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
1,1-Dichloroethene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Ethylbenzene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Tetrachloroethene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Toluene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
1,1,1-Trichloroethane	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
1,1,2-Trichloroethane	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Trichloroethene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
1,3,5-Trimethylbenzene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
1,2,4-Trimethylbenzene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Vinyl chloride	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
m,p-Xylene	ND	44	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
o-Xylene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Xylenes, total	ND	67	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Gasoline Range Organics	**5100**	2200	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
n-Butyl Benzene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
sec-Butyl Benzene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Carbon disulfide	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Chloroethane	ND	220	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Chloroform	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Dichlorodifluoromethane	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Isopropylbenzene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
p-Isopropyltoluene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Naphthalene	ND	220	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
n-Propyl Benzene	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Trichlorofluoromethane	ND	22	ug/kg dry	1	07/03/2014	07/03/2014 23:48	EPA 8260B	
Surrogate: Dibromofluoromethane		*119 %*		*84.7-120*	*07/03/2014*	*07/03/2014 23:48*	*EPA 8260B*	
Surrogate: Toluene-d8		*97.4 %*		*90.5-108*	*07/03/2014*	*07/03/2014 23:48*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*108 %*		*88.3-113*	*07/03/2014*	*07/03/2014 23:48*	*EPA 8260B*	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (47-48')

A142715-02 (Soil)

Date Sampled
06/19/2014 16:20

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A407020**			
% Solids	**88.8**	0.00	% by Weight	1	07/07/2014	07/08/2014 09:00	SM 2540B	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (49-49.5')

A142715-03 (Soil)

Date Sampled
06/19/2014 16:55

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A407006**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	1100	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Benzene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
2-Butanone	ND	1100	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
1,1-Dichloroethane	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
1,2-Dichloroethane	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
trans-1,2-Dichloroethene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
cis-1,2-Dichloroethene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
1,1-Dichloroethene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Ethylbenzene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Tetrachloroethene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Toluene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
1,1,1-Trichloroethane	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
1,1,2-Trichloroethane	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Trichloroethene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
1,3,5-Trimethylbenzene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
1,2,4-Trimethylbenzene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Vinyl chloride	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
m,p-Xylene	ND	53	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
o-Xylene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Xylenes, total	ND	79	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Gasoline Range Organics	**12000**	2600	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
n-Butyl Benzene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
sec-Butyl Benzene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Carbon disulfide	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Chloroethane	ND	260	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Chloroform	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Dichlorodifluoromethane	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Isopropylbenzene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
p-Isopropyltoluene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Naphthalene	ND	260	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
n-Propyl Benzene	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Trichlorofluoromethane	ND	26	ug/kg dry	1	07/03/2014	07/04/2014 00:09	EPA 8260B	
Surrogate: Dibromofluoromethane		*108 %*		*84.7-120*	*07/03/2014*	*07/04/2014 00:09*	*EPA 8260B*	
Surrogate: Toluene-d8		*96.4 %*		*90.5-108*	*07/03/2014*	*07/04/2014 00:09*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*108 %*		*88.3-113*	*07/03/2014*	*07/04/2014 00:09*	*EPA 8260B*	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (49-49.5')

A142715-03 (Soil)

Date Sampled
06/19/2014 16:55

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A407020**			
% Solids	**89.2**	0.00	% by Weight	1	07/07/2014	07/08/2014 09:00	SM 2540B	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (24-28')

A142715-04 (Soil)

Date Sampled
06/20/2014 13:00

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A407006**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	13000	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Benzene	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
2-Butanone	ND	13000	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
1,1-Dichloroethane	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
1,2-Dichloroethane	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
trans-1,2-Dichloroethene	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
cis-1,2-Dichloroethene	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
1,1-Dichloroethene	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Ethylbenzene	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Tetrachloroethene	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Toluene	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
1,1,1-Trichloroethane	**1200**	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	D
1,1,2-Trichloroethane	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Trichloroethene	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
1,3,5-Trimethylbenzene	**2200**	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	D
1,2,4-Trimethylbenzene	**33000**	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	D
Vinyl chloride	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
m,p-Xylene	ND	670	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
o-Xylene	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Xylenes, total	ND	1000	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Gasoline Range Organics	**230000**	34000	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	D
n-Butyl Benzene	**2700**	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	D
sec-Butyl Benzene	**4000**	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	D
Carbon disulfide	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Chloroethane	ND	3400	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Chloroform	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Dichlorodifluoromethane	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Isopropylbenzene	**3100**	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	D
p-Isopropyltoluene	**9100**	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	D
Naphthalene	ND	3400	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
n-Propyl Benzene	**8300**	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	D
Trichlorofluoromethane	ND	340	ug/kg dry	10	07/03/2014	07/04/2014 00:31	EPA 8260B	
Surrogate: Dibromofluoromethane		*102 %*	*84.7-120*		*07/03/2014*	*07/04/2014 00:31*	*EPA 8260B*	
Surrogate: Toluene-d8		*96.0 %*	*90.5-108*		*07/03/2014*	*07/04/2014 00:31*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*103 %*	*88.3-113*		*07/03/2014*	*07/04/2014 00:31*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (24-28')

A142715-04 (Soil)

Date Sampled
06/20/2014 13:00

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A407020**			
% Solids	**82.1**	0.00	% by Weight	1	07/07/2014	07/08/2014 09:00	SM 2540B	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (28-32')

A142715-05 (Soil)

Date Sampled
06/20/2014 13:55

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A407006**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	1300	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Benzene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
2-Butanone	ND	1300	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
1,1-Dichloroethane	**50**	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
1,2-Dichloroethane	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
trans-1,2-Dichloroethene	**80**	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
cis-1,2-Dichloroethene	**3200**	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
1,1-Dichloroethene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Ethylbenzene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Tetrachloroethene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Toluene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
1,1,1-Trichloroethane	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
1,1,2-Trichloroethane	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Trichloroethene	**610**	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
1,3,5-Trimethylbenzene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
1,2,4-Trimethylbenzene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Vinyl chloride	**86**	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
m,p-Xylene	ND	63	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
o-Xylene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Xylenes, total	ND	95	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Gasoline Range Organics	**7900**	3200	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
n-Butyl Benzene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
sec-Butyl Benzene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Carbon disulfide	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Chloroethane	ND	320	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Chloroform	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Dichlorodifluoromethane	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Isopropylbenzene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
p-Isopropyltoluene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Naphthalene	ND	320	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
n-Propyl Benzene	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Trichlorofluoromethane	ND	32	ug/kg dry	1	07/03/2014	07/04/2014 00:53	EPA 8260B	
Surrogate: Dibromofluoromethane		*106 %*		*84.7-120*	*07/03/2014*	*07/04/2014 00:53*	*EPA 8260B*	
Surrogate: Toluene-d8		*97.2 %*		*90.5-108*	*07/03/2014*	*07/04/2014 00:53*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*101 %*		*88.3-113*	*07/03/2014*	*07/04/2014 00:53*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (28-32')

A142715-05 (Soil)

Date Sampled
06/20/2014 13:55

ECCS

Classical Chemistry Parameters — **Preparation Batch: A407020**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
% Solids	**80.2**	0.00	% by Weight	1	07/07/2014	07/08/2014 09:00	SM 2540B	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (47-48')

A142715-06 (Soil)

Date Sampled
06/20/2014 16:20

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A407006**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	100000	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Benzene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
2-Butanone	ND	100000	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
1,1-Dichloroethane	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
1,2-Dichloroethane	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
trans-1,2-Dichloroethene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
cis-1,2-Dichloroethene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
1,1-Dichloroethene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Ethylbenzene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Tetrachloroethene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Toluene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
1,1,1-Trichloroethane	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
1,1,2-Trichloroethane	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Trichloroethene	**52000**	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
1,2,4-Trimethylbenzene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Vinyl chloride	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
m,p-Xylene	ND	5100	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
o-Xylene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Xylenes, total	ND	7700	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Gasoline Range Organics	ND	260000	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
n-Butyl Benzene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
sec-Butyl Benzene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Carbon disulfide	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Chloroethane	ND	26000	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Chloroform	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Dichlorodifluoromethane	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Isopropylbenzene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
p-Isopropyltoluene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Naphthalene	ND	26000	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
n-Propyl Benzene	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Trichlorofluoromethane	ND	2600	ug/kg dry	100	07/03/2014	07/04/2014 01:14	EPA 8260B	
Surrogate: Dibromofluoromethane		*100 %*		*84.7-120*	*07/03/2014*	*07/04/2014 01:14*	*EPA 8260B*	
Surrogate: Toluene-d8		*95.0 %*		*90.5-108*	*07/03/2014*	*07/04/2014 01:14*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*98.8 %*		*88.3-113*	*07/03/2014*	*07/04/2014 01:14*	*EPA 8260B*	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (47-48')

A142715-06 (Soil)

Date Sampled
06/20/2014 16:20

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A407020**			
% Solids	**88.5**	0.00	% by Weight	1	07/07/2014	07/08/2014 09:00	SM 2540B	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A407006 - EPA 5030B										
Blank (A407006-BLK1)				Prepared: 07/03/2014 Analyzed: 07/03/2014 22:43						
Acetone	ND	1000	ug/kg wet							
Benzene	ND	25	ug/kg wet							
2-Butanone	ND	1000	ug/kg wet							
1,1-Dichloroethane	ND	25	ug/kg wet							
1,2-Dichloroethane	ND	25	ug/kg wet							
trans-1,2-Dichloroethene	ND	25	ug/kg wet							
cis-1,2-Dichloroethene	ND	25	ug/kg wet							
1,1-Dichloroethene	ND	25	ug/kg wet							
Ethylbenzene	ND	25	ug/kg wet							
Tetrachloroethene	ND	25	ug/kg wet							
Toluene	ND	25	ug/kg wet							
1,1,1-Trichloroethane	ND	25	ug/kg wet							
1,1,2-Trichloroethane	ND	25	ug/kg wet							
Trichloroethene	ND	25	ug/kg wet							
1,3,5-Trimethylbenzene	ND	25	ug/kg wet							
1,2,4-Trimethylbenzene	ND	25	ug/kg wet							
Vinyl chloride	ND	25	ug/kg wet							
m,p-Xylene	ND	50	ug/kg wet							
o-Xylene	ND	25	ug/kg wet							
Xylenes, total	ND	75	ug/kg wet							
Gasoline Range Organics	ND	2500	ug/kg wet							
n-Butyl Benzene	ND	25	ug/kg wet							
sec-Butyl Benzene	ND	25	ug/kg wet							
Carbon disulfide	ND	25	ug/kg wet							
Chloroethane	ND	250	ug/kg wet							
Chloroform	ND	25	ug/kg wet							
Dichlorodifluoromethane	ND	25	ug/kg wet							
Isopropylbenzene	ND	25	ug/kg wet							
p-Isopropyltoluene	ND	25	ug/kg wet							
Naphthalene	ND	250	ug/kg wet							
n-Propyl Benzene	ND	25	ug/kg wet							
Trichlorofluoromethane	ND	25	ug/kg wet							
Surrogate: Dibromofluoromethane	*5.13*		*ug/L*	*5.000*		*103*	*84.7-120*			
Surrogate: Toluene-d8	*4.94*		*ug/L*	*5.000*		*98.8*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*4.78*		*ug/L*	*5.000*		*95.6*	*88.3-113*			
LCS (A407006-BS1)				Prepared: 07/03/2014 Analyzed: 07/03/2014 22:21						
Acetone	45.1		ug/L	50.00		90.1	42.3-174			
Benzene	5.11		ug/L	5.000		102	80.5-123			
2-Butanone	44.8		ug/L	50.00		89.5	51.2-152			
1,1-Dichloroethane	5.03		ug/L	5.000		101	80.9-127			
1,2-Dichloroethane	5.13		ug/L	5.000		103	72.8-138			
trans-1,2-Dichloroethene	5.09		ug/L	5.000		102	71.3-128			
cis-1,2-Dichloroethene	5.08		ug/L	5.000		102	81.9-121			

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A407006 - EPA 5030B										
LCS (A407006-BS1)				Prepared: 07/03/2014 Analyzed: 07/03/2014 22:21						
1,1-Dichloroethene	4.82		ug/L	5.000		96.4	66.8-129			
Ethylbenzene	4.88		ug/L	5.000		97.6	89.9-113			
Tetrachloroethene	4.96		ug/L	5.000		99.2	85.1-116			
Toluene	4.82		ug/L	5.000		96.4	78.8-117			
1,1,1-Trichloroethane	5.27		ug/L	5.000		105	82.3-123			
1,1,2-Trichloroethane	4.96		ug/L	5.000		99.2	74.9-130			
Trichloroethene	5.02		ug/L	5.000		100	83.1-118			
1,3,5-Trimethylbenzene	5.07		ug/L	5.000		101	85.2-120			
1,2,4-Trimethylbenzene	4.85		ug/L	5.000		97.0	86.8-118			
Vinyl chloride	5.17		ug/L	5.000		103	60.9-137			
m,p-Xylene	9.55		ug/L	10.00		95.5	90.1-114			
o-Xylene	4.85		ug/L	5.000		97.0	85.8-113			
n-Butyl Benzene	5.18		ug/L	5.000		104	88.2-119			
sec-Butyl Benzene	5.07		ug/L	5.000		101	89.9-118			
Carbon disulfide	4.89		ug/L	5.000		97.8	72.2-127			
Chloroethane	5.24		ug/L	5.000		105	14.6-199			
Chloroform	5.11		ug/L	5.000		102	77.9-125			
Dichlorodifluoromethane	5.48		ug/L	5.000		110	67.8-137			
Isopropylbenzene	4.87		ug/L	5.000		97.4	92.8-112			
p-Isopropyltoluene	5.13		ug/L	5.000		103	89.8-118			
Naphthalene	4.30		ug/L	5.000		86.0	72.9-122			
n-Propyl Benzene	4.89		ug/L	5.000		97.8	87.3-119			
Trichlorofluoromethane	8.86		ug/L	5.000		177	40.3-174			
Surrogate: Dibromofluoromethane	*5.11*		*ug/L*	*5.000*		*102*	*84.7-120*			
Surrogate: Toluene-d8	*5.00*		*ug/L*	*5.000*		*100*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*4.91*		*ug/L*	*5.000*		*98.2*	*88.3-113*			
LCS (A407006-BS2)				Prepared: 07/03/2014 Analyzed: 07/03/2014 23:04						
Gasoline Range Organics	496		ug/L	500.0		99.2	70-130			
Surrogate: Toluene-d8	*4.98*		*ug/L*	*5.000*		*99.6*	*90.5-108*			
Matrix Spike (A407006-MS1)	**Source: A142715-05**			Prepared: 07/03/2014 Analyzed: 07/04/2014 01:36						
Acetone	47.2		ug/L	50.00	ND	94.4	37.5-179			
Benzene	5.18		ug/L	5.000	ND	104	77-128			
2-Butanone	49.3		ug/L	50.00	ND	98.5	54.7-159			
1,1-Dichloroethane	6.61		ug/L	5.000	0.790	116	77.3-131			
1,2-Dichloroethane	5.63		ug/L	5.000	0.280	107	73.7-139			
trans-1,2-Dichloroethene	6.50		ug/L	5.000	1.26	105	68.9-132			
cis-1,2-Dichloroethene	58.1		ug/L	5.000	49.8	165	80-124			M1, E
1,1-Dichloroethene	5.49		ug/L	5.000	ND	110	60.7-145			
Ethylbenzene	4.82		ug/L	5.000	ND	96.4	85.7-117			
Tetrachloroethene	4.98		ug/L	5.000	ND	99.6	80.7-123			
Toluene	4.54		ug/L	5.000	ND	90.8	72.1-124			
1,1,1-Trichloroethane	5.66		ug/L	5.000	ND	113	80.2-124			

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A407006 - EPA 5030B										
Matrix Spike (A407006-MS1)	**Source: A142715-05**			Prepared: 07/03/2014 Analyzed: 07/04/2014 01:36						
1,1,2-Trichloroethane	4.62		ug/L	5.000	ND	92.4	73.9-137			
Trichloroethene	14.5		ug/L	5.000	9.58	97.8	81.5-119			
1,3,5-Trimethylbenzene	4.86		ug/L	5.000	ND	97.2	82-122			
1,2,4-Trimethylbenzene	4.75		ug/L	5.000	0.370	87.6	80.4-122			
Vinyl chloride	6.41		ug/L	5.000	1.36	101	75.5-134			
m,p-Xylene	9.30		ug/L	10.00	ND	93.0	87.9-115			
o-Xylene	4.80		ug/L	5.000	ND	96.0	82.9-116			
n-Butyl Benzene	4.95		ug/L	5.000	ND	99.0	87.5-118			
sec-Butyl Benzene	4.92		ug/L	5.000	ND	98.4	85.3-121			
Carbon disulfide	4.83		ug/L	5.000	ND	96.6	69.4-131			
Chloroethane	10.4		ug/L	5.000	ND	208	25.1-230			
Chloroform	5.56		ug/L	5.000	ND	111	76.4-128			
Dichlorodifluoromethane	5.07		ug/L	5.000	ND	101	69.4-138			
Isopropylbenzene	4.97		ug/L	5.000	ND	99.4	90.3-116			
p-Isopropyltoluene	5.06		ug/L	5.000	0.270	95.8	82-126			
Naphthalene	4.05		ug/L	5.000	ND	81.0	66.1-137			
n-Propyl Benzene	4.83		ug/L	5.000	0.100	94.6	85.2-121			
Trichlorofluoromethane	7.53		ug/L	5.000	ND	151	17-192			
Surrogate: Dibromofluoromethane	*5.62*		*ug/L*	*5.000*		*112*	*84.7-120*			
Surrogate: Toluene-d8	*4.97*		*ug/L*	*5.000*		*99.4*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*5.12*		*ug/L*	*5.000*		*102*	*88.3-113*			
Matrix Spike (A407006-MS2)	**Source: A142715-05**			Prepared: 07/03/2014 Analyzed: 07/04/2014 02:19						
Gasoline Range Organics	605		ug/L	500.0	125	96.0	70-130			
Surrogate: Toluene-d8	*4.93*		*ug/L*	*5.000*		*98.6*	*90.5-108*			
Matrix Spike Dup (A407006-MSD1)	**Source: A142715-05**			Prepared: 07/03/2014 Analyzed: 07/04/2014 01:57						
Acetone	49.6		ug/L	50.00	ND	99.1	37.5-179	4.92	20	
Benzene	5.33		ug/L	5.000	ND	107	77-128	2.85	20	
2-Butanone	54.5		ug/L	50.00	ND	109	54.7-159	10.1	20	
1,1-Dichloroethane	5.93		ug/L	5.000	0.790	103	77.3-131	12.4	20	
1,2-Dichloroethane	5.94		ug/L	5.000	0.280	113	73.7-139	5.63	20	
trans-1,2-Dichloroethene	6.20		ug/L	5.000	1.26	98.8	68.9-132	5.89	20	
cis-1,2-Dichloroethene	54.7		ug/L	5.000	49.8	98.0	80-124	50.7	20	M1, E
1,1-Dichloroethene	4.90		ug/L	5.000	ND	98.0	60.7-145	11.4	20	
Ethylbenzene	4.96		ug/L	5.000	ND	99.2	85.7-117	2.86	20	
Tetrachloroethene	4.91		ug/L	5.000	ND	98.2	80.7-123	1.42	20	
Toluene	4.92		ug/L	5.000	ND	98.4	72.1-124	8.03	20	
1,1,1-Trichloroethane	5.46		ug/L	5.000	ND	109	80.2-124	3.60	20	
1,1,2-Trichloroethane	5.17		ug/L	5.000	ND	103	73.9-137	11.2	20	
Trichloroethene	14.0		ug/L	5.000	9.58	88.2	81.5-119	10.3	20	
1,3,5-Trimethylbenzene	5.31		ug/L	5.000	ND	106	82-122	8.85	20	
1,2,4-Trimethylbenzene	5.15		ug/L	5.000	0.370	95.6	80.4-122	8.73	20	
Vinyl chloride	6.14		ug/L	5.000	1.36	95.6	75.5-134	5.49	20	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A407006 - EPA 5030B										
Matrix Spike Dup (A407006-MSD1)	**Source: A142715-05**			Prepared: 07/03/2014 Analyzed: 07/04/2014 01:57						
m,p-Xylene	9.73		ug/L	10.00	ND	97.3	87.9-115	4.52	20	
o-Xylene	5.00		ug/L	5.000	ND	100	82.9-116	4.08	20	
n-Butyl Benzene	5.18		ug/L	5.000	ND	104	87.5-118	4.54	20	
sec-Butyl Benzene	5.05		ug/L	5.000	ND	101	85.3-121	2.61	20	
Carbon disulfide	4.96		ug/L	5.000	ND	99.2	69.4-131	2.66	20	
Chloroethane	7.18		ug/L	5.000	ND	144	25.1-230	36.5	20	X
Chloroform	5.33		ug/L	5.000	ND	107	76.4-128	4.22	20	
Dichlorodifluoromethane	5.73		ug/L	5.000	ND	115	69.4-138	12.2	20	
Isopropylbenzene	5.04		ug/L	5.000	ND	101	90.3-116	1.40	20	
p-Isopropyltoluene	5.37		ug/L	5.000	0.270	102	82-126	6.27	20	
Naphthalene	4.68		ug/L	5.000	ND	93.6	66.1-137	14.4	20	
n-Propyl Benzene	4.95		ug/L	5.000	0.100	97.0	85.2-121	2.51	20	
Trichlorofluoromethane	8.79		ug/L	5.000	ND	176	17-192	15.4	20	
Surrogate: Dibromofluoromethane	*5.27*		*ug/L*	*5.000*		*105*	*84.7-120*			
Surrogate: Toluene-d8	*4.87*		*ug/L*	*5.000*		*97.4*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*5.11*		*ug/L*	*5.000*		*102*	*88.3-113*			
Matrix Spike Dup (A407006-MSD2)	**Source: A142715-05**			Prepared: 07/03/2014 Analyzed: 07/04/2014 02:41						
Gasoline Range Organics	629		ug/L	500.0	125	101	70-130	4.80	20	
Surrogate: Dibromofluoromethane	*4.98*		*ug/L*	*5.000*		*99.6*	*84.7-120*			
Surrogate: Toluene-d8	*4.76*		*ug/L*	*5.000*		*95.2*	*90.5-108*			
Surrogate: 4-Bromofluorobenzene	*5.33*		*ug/L*	*5.000*		*107*	*88.3-113*			

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Classical Chemistry Parameters - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A407020 - % Solids										
Duplicate (A407020-DUP1)		**Source: A142722-30**		Prepared: 07/07/2014 Analyzed: 07/08/2014 09:00						
% Solids	95.7	0.00	% by Weight		95.5			0.139	20	

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

Notes and Definitions

X	Precision for the matrix spike duplicate, laboratory control sample duplicate or lab duplicate was outside of control limits.
M1	Spike recoveries were not evaluated because of elevated levels of the spiked analyte in the parent sample.
E	The concentration indicated is above the instrument calibration range. This value is an estimated concentration.
D	Data reported from a dilution
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

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CHAIN OF CUSTODY

Page ____ of ____

A142715

Lab Work Order #: ~~A142525~~

Project Number: 220003.0000.0000
Project Name: TRC Tecumseh RT
Project Location: Tecumseh, MI
Turn Around (circle one): Normal (Rush)
If Rush, Report Due Date: Check w/ S. Metz
Sampled By (Print): John Bacon

Analyses Requested
Preservation Codes: F, A

Mail Report To: Stacy Metz
Company: TRC
Address: 1540 Eisenhower Place
Ann Arbor MI 48108
E-mail Address: smetz@trcsolutions.com
Invoice To: TRC
Company: See Above
Address:

Sample Description	Collection Date	Collection Time	Matrix	Total # of Containers	VOC's/GRO	DRO/Total Solids					Comments	Lab ID	Lab Receipt Time
MIP-~~SB-01~~ SB-01 (18-20')	6/19	1050	S	2	✓	✓		*	Potential ice melt contamination		HOLD DRO	~~11~~	
MIP-SB-01 (20-22')		1135	S	2	✓	✓				jf	HOLD DRO	~~12~~	
MIP-SB-01 (22-24')		1140	S	2	✓	✓					(1) HOLD ALL -> CHILL STACY METZ	~~13~~ 01	
MIP-SB-01 (27-28')		1245	S	2	✓	✓					HOLD ALL	~~14~~	
MIP-SB-01 (28-29')		1310	S	2	✓	✓					HOLD ALL	~~15~~	
MIP-SB-01 (47-48')		1620	S	2	✓	✓					(1) HOLD ALL	~~16~~ 02	
MIP-SB-01 (49~~-50~~ 49.5')		1655	S	2	✓	✓					(1) HOLD ALL	~~17~~ 03	
MIP-SB-01 (49.5-50')		1657	S	2	✓	✓					HOLD ALL	~~18~~	
											(1) VOC analysis added 07-02-14 jf		

Preservation Codes
A=None B=HCL C=H_2SO_4
D=HNO_3 E=EnCore F=Methanol
G=NaOH O=Other (Indicate)

Matrix Codes
A=Air S=Soil W=Water O=Other

Relinquished By: [signature] Date: 6/20/14 Time: 1740
Relinquished By: Date: Time:

Received By: Fedex Date: 6/20/14 Time: 1740
Received By: [signature] Date: 6/21/14 Time: 0915

Custody Seal: Present/Absent Intact/Not Intact Seal #'s
Shipped Via: Fed Ex

Receipt Temp 0.8°C
Temp Blank (Y) N

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608-221-4889 (fax)

CHAIN OF CUSTODY

A142715

Lab Work Order #: A142526

Project Number: 220003.0000.0000
Project Name: TPC RI Investigation
Project Location: Tecumseh MI
Turn Around (circle one): Normal (Rush)
If Rush, Report Due Date: Check w/ S. Metz
Sampled By (Print): John Baron

Analyses Requested / Preservation Codes

Mail Report To: Stacy Metz
Company: TRC
Address: 1540 Eisenhower Pl
Ann Arbor MI 48108
E-mail Address: smetz@trcsolutions.com
Invoice To: See Above
Company:
Address:

Sample Description	Collection Date	Collection Time	Matrix	Total # of Containers	VOC's/GRO	~~DRO~~, Tot. Solids	Comments	Lab ID	Lab Receipt Time
MIP-SB-03 (17-18')	6/20/14	1120	S	2	✓	✓	HOLD DRO	11	
MIP-SB-03 (19-20')		1125	S	2	✓	✓	HOLD DRO	12	
MIP-SB-03 (20-21')		1155	S	2	✓	✓	HOLD DRO	13	
MIP-SB-03 (23-24')		1200	S	2	✓	✓	HOLD ALL - CALL STACY METZ	14	
MIP-SB-03 (24-25')		1300	S	2	✓	✓	(1) "	15	04
MIP-SB-03 (28-29') JB		~~1355~~ 1335 JB	S	2	✓	✓	(1) "	16	05
MIP-SB-03 (32-33')		1435	S	2	✓	✓	"	17	
MIP-SB-03 (46-46.5')		1615	S	2	✓	✓	"	18	
MIP-SB-03 (47-48')		1620	S	2	✓	✓	(1) "	19	06
							(1) VOC analysis added 07-02-14 JB		

Preservation Codes
A=None B=HCL C=H_2SO_4
D=HNO_3 E=EnCore F=Methanol
G=NaOH O=Other (Indicate)

Matrix Codes
A=Air S=Soil W=Water O=Other

	Relinquished By:	Date:	Time:	Received By:	Date:	Time:
	[signature]	6/20/14	1740	Fedex	6/20/14	1740
	Relinquished By:	Date:	Time:	Received By:	Date:	Time:
				[signature]	6/21/14	0945

Custody Seal: (Present/Absent) Intact/Not Intact Seal #'s
Shipped Via: FedEx
Receipt Temp: 2.1 °C
Temp Blank (Y) N

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July 01, 2014

Stacy Metz
TRC Solutions
3754 Ranchero Drive
Ann Harbor, MI 48108

RE: TRC Tecumseh RI - Tecumseh, MI

Enclosed are the analytical results for the samples received by the laboratory on 06/24/2014.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser For Nick Nigro

President

Certification List			Expires
ILEPA	Illinois Secondary NELAP Accreditation	003174	04/30/2015
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2015
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2015
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2015
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2014

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MIP-SB-01 (44-47')	A142601-01	Water	06/23/2014	06/24/2014
MIP-SB-01 (31-34')	A142601-02	Water	06/23/2014	06/24/2014
MIP-SB-01 (28-31')	A142601-03	Water	06/23/2014	06/24/2014
MIP-SB-01 (2.25-2.75')	A142601-04	Soil	06/23/2014	06/24/2014
MIP-SB-01 (25-28')	A142601-05	Water	06/23/2014	06/24/2014
MIP-SB-01 (41-44')	A142601-06	Water	06/23/2014	06/24/2014
MIP-SB-01 (37.5-40.5')	A142601-07	Water	06/23/2014	06/24/2014
MIP-SB-01 (22-25')	A142601-08	Water	06/23/2014	06/24/2014
MIP-SB-01 (34-37')	A142601-09	Water	06/23/2014	06/24/2014
MIP-SB-03 (31.5-34.5')	A142601-10	Water	06/23/2014	06/24/2014
MIP-SB-03 (43.5-46.5')	A142601-11	Water	06/23/2014	06/24/2014
MIP-SB-03 (29-32')	A142601-12	Water	06/23/2014	06/24/2014
MIP-SB-03 (26.5-29.5')	A142601-13	Water	06/23/2014	06/24/2014

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

CASE NARRATIVE

Sample Receipt Information:
13 samples were received on 6/24/2014. Samples were received at 0.9 degrees Celsius.

Sample A142601-01 sample bottle preserved with 1:1 hydrochloric acid was received with a pH of approximately 4. 1:1 hydrochloric acid was added resulting in a pH of less than 2. Client was notified.

Samples A142601-07 and A142601-10 had discrepancies between the sample description and/or collection time on the chain of custody versus the sample containers. The correct descriptions and times were confirmed with the client.

Sample A142601-08 had two VOA vials with air bubbles less than 6mm.

Please see the chain of custody (COC) document at the end of this report for additional information.

Continuing Calibration Verification (CCV):
CCV indicates a potential high bias for chloroethane and trichlorofluoromethane for samples A142601-01 through A142601-13. Samples were less than the reporting limit for these analytes so no further action is required.

Laboratory Control Samples (LCS):
The LCS indicates a potential high bias for chloroethane and trichlorofluoromethane for samples A142601-01 through A142601-13. Samples were less than the reporting limit for these analytes so no further action is required.

Additional Comments:
Although a TPH GRO number was quantified and reported for multiple samples, the sample chromatogram patterns are not indicative of gasoline.

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (44-47')

A142601-01 (Water)

Date Sampled
06/23/2014 09:44

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406054**			
Diesel Range Organics	ND	1000	ug/L	1	06/25/2014	06/25/2014 20:06	EPA 8015B	
Surrogate: n-Triacontane		*89.1 %*		*60-140*	*06/25/2014*	*06/25/2014 20:06*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406056**			
Acetone	ND	20	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
1,1-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
1,2-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
cis-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
1,1-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
1,1,1-Trichloroethane	**1.8**	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Trichloroethene	**3.9**	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Vinyl chloride	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Gasoline Range Organics	ND	50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:24	EPA 8260B	
Surrogate: Dibromofluoromethane		*104 %*		*82.2-117*	*06/25/2014*	*06/25/2014 17:24*	*EPA 8260B*	
Surrogate: Toluene-d8		*95.8 %*		*82.6-111*	*06/25/2014*	*06/25/2014 17:24*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*96.6 %*		*88.4-108*	*06/25/2014*	*06/25/2014 17:24*	*EPA 8260B*	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (31-34')

A142601-02 (Water)

Date Sampled
06/23/2014 09:38

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406056**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	20	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
1,1-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
1,2-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
cis-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
1,1-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
1,1,1-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Trichloroethene	**2.3**	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Vinyl chloride	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Gasoline Range Organics	ND	50	ug/L	1	06/25/2014	06/26/2014 09:54	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 17:53	EPA 8260B	
Surrogate: Dibromofluoromethane		*108 %*		*82.2-117*	*06/25/2014*	*06/25/2014 17:53*	*EPA 8260B*	
Surrogate: Toluene-d8		*96.2 %*		*82.6-111*	*06/25/2014*	*06/25/2014 17:53*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*97.4 %*		*88.4-108*	*06/25/2014*	*06/25/2014 17:53*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (28-31')

A142601-03 (Water)

Date Sampled
06/23/2014 10:35

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406054**			
Diesel Range Organics	ND	1000	ug/L	1	06/25/2014	06/25/2014 20:36	EPA 8015B	
Surrogate: n-Triacontane		*98.7 %*		*60-140*	*06/25/2014*	*06/25/2014 20:36*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406056**			
Acetone	ND	20	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
1,1-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
1,2-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
cis-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
1,1-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
1,1,1-Trichloroethane	**3.2**	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Trichloroethene	**26**	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Vinyl chloride	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Gasoline Range Organics	**54**	50	ug/L	1	06/25/2014	06/26/2014 10:23	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 18:23	EPA 8260B	
Surrogate: Dibromofluoromethane		*104 %*		*82.2-117*	*06/25/2014*	*06/25/2014 18:23*	*EPA 8260B*	
Surrogate: Toluene-d8		*95.4 %*		*82.6-111*	*06/25/2014*	*06/25/2014 18:23*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*98.8 %*		*88.4-108*	*06/25/2014*	*06/25/2014 18:23*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (2.25-2.75')

A142601-04 (Soil)

Date Sampled
06/23/2014 11:25

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406055**			
Diesel Range Organics	**40000**	40000	ug/kg dry	1	06/25/2014	06/25/2014 13:02	EPA 8015B	
Surrogate: n-Triacontane		*90.0 %*		*60-140*	*06/25/2014*	*06/25/2014 13:02*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406066**			
Acetone	ND	1000	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Benzene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
2-Butanone	ND	1000	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
1,1-Dichloroethane	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
1,2-Dichloroethane	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
trans-1,2-Dichloroethene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
cis-1,2-Dichloroethene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
1,1-Dichloroethene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Ethylbenzene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Tetrachloroethene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Toluene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
1,1,1-Trichloroethane	**110**	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
1,1,2-Trichloroethane	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Trichloroethene	**630**	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
1,3,5-Trimethylbenzene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
1,2,4-Trimethylbenzene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Vinyl chloride	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
m,p-Xylene	ND	50	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
o-Xylene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Xylenes, total	ND	75	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Gasoline Range Organics	ND	2500	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
n-Butyl Benzene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
sec-Butyl Benzene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Carbon disulfide	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Chloroethane	ND	250	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Chloroform	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Dichlorodifluoromethane	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Isopropylbenzene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
p-Isopropyltoluene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Naphthalene	ND	250	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
n-Propyl Benzene	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Trichlorofluoromethane	ND	25	ug/kg dry	1	06/25/2014	06/25/2014 18:52	EPA 8260B	
Surrogate: Dibromofluoromethane		*108 %*		*84.7-120*	*06/25/2014*	*06/25/2014 18:52*	*EPA 8260B*	
Surrogate: Toluene-d8		*93.8 %*		*90.5-108*	*06/25/2014*	*06/25/2014 18:52*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*95.8 %*		*88.3-113*	*06/25/2014*	*06/25/2014 18:52*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (2.25-2.75')

A142601-04 (Soil)

Date Sampled
06/23/2014 11:25

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Classical Chemistry Parameters					**Preparation Batch: A406053**			
% Solids	**88.2**	0.00	% by Weight	1	06/25/2014	06/26/2014 10:45	SM 2540B	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (25-28')

A142601-05 (Water)

Date Sampled
06/23/2014 11:41

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406054**			
Diesel Range Organics	ND	1000	ug/L	1	06/25/2014	06/25/2014 21:05	EPA 8015B	
Surrogate: n-Triacontane		*94.8 %*		*60-140*	*06/25/2014*	*06/25/2014 21:05*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406056**			
Acetone	ND	200	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Benzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
2-Butanone	ND	200	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
1,1-Dichloroethane	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
1,2-Dichloroethane	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
trans-1,2-Dichloroethene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
cis-1,2-Dichloroethene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
1,1-Dichloroethene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Ethylbenzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Tetrachloroethene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Toluene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
1,1,1-Trichloroethane	**240**	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	D
1,1,2-Trichloroethane	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Trichloroethene	**220**	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
1,2,4-Trimethylbenzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Vinyl chloride	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
m,p-Xylene	ND	10	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
o-Xylene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Xylenes, total	ND	15	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Gasoline Range Organics	**590**	500	ug/L	10	06/25/2014	06/26/2014 11:22	EPA 8260B	D
n-Butyl Benzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
sec-Butyl Benzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Carbon disulfide	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Chloroethane	ND	50	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Chloroform	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Dichlorodifluoromethane	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Isopropylbenzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
p-Isopropyltoluene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Naphthalene	ND	50	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
n-Propyl Benzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Trichlorofluoromethane	ND	5.0	ug/L	10	06/25/2014	06/25/2014 19:21	EPA 8260B	
Surrogate: Dibromofluoromethane		*109 %*		*82.2-117*	*06/25/2014*	*06/25/2014 19:21*	*EPA 8260B*	
Surrogate: Toluene-d8		*97.6 %*		*82.6-111*	*06/25/2014*	*06/25/2014 19:21*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*96.8 %*		*88.4-108*	*06/25/2014*	*06/25/2014 19:21*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (41-44')

A142601-06 (Water)

Date Sampled
06/23/2014 11:46

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406056**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	20	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
1,1-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
1,2-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
cis-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
1,1-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
1,1,1-Trichloroethane	**0.76**	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Trichloroethene	**1.6**	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Vinyl chloride	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Gasoline Range Organics	ND	50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 19:50	EPA 8260B	
Surrogate: Dibromofluoromethane		*113 %*		*82.2-117*	*06/25/2014*	*06/25/2014 19:50*	*EPA 8260B*	
Surrogate: Toluene-d8		*95.4 %*		*82.6-111*	*06/25/2014*	*06/25/2014 19:50*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*100 %*		*88.4-108*	*06/25/2014*	*06/25/2014 19:50*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (37.5-40.5')

A142601-07 (Water)

Date Sampled
06/23/2014 12:53

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406056**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	20	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
1,1-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
1,2-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
cis-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
1,1-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
1,1,1-Trichloroethane	**0.63**	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Trichloroethene	**1.0**	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Vinyl chloride	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Gasoline Range Organics	ND	50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:19	EPA 8260B	
Surrogate: Dibromofluoromethane		*106 %*		*82.2-117*	*06/25/2014*	*06/25/2014 20:19*	*EPA 8260B*	
Surrogate: Toluene-d8		*96.8 %*		*82.6-111*	*06/25/2014*	*06/25/2014 20:19*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*98.2 %*		*88.4-108*	*06/25/2014*	*06/25/2014 20:19*	*EPA 8260B*	

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TRC Solutions
3754 Ranchero Drive
Ann Harbor MI, 48108

Project: TRC Tecumseh RI - Tecumseh, MI
Project Number: 220003.0000.0000
Project Manager: Stacy Metz

MIP-SB-01 (22-25')

A142601-08 (Water)

Date Sampled
06/23/2014 12:50

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406054**			
Diesel Range Organics	ND	1000	ug/L	1	06/25/2014	06/25/2014 22:03	EPA 8015B	
Surrogate: n-Triacontane		*102 %*		*60-140*	*06/25/2014*	*06/25/2014 22:03*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406056**			
Acetone	ND	20	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
1,1-Dichloroethane	**1.9**	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
1,2-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
cis-1,2-Dichloroethene	**0.67**	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
1,1-Dichloroethene	**3.0**	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
1,1,1-Trichloroethane	**430**	50	ug/L	100	06/25/2014	06/25/2014 13:12	EPA 8260B	D
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Trichloroethene	**210**	50	ug/L	100	06/25/2014	06/25/2014 13:12	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Vinyl chloride	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Gasoline Range Organics	**490**	50	ug/L	1	06/25/2014	06/25/2014 13:12	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 20:49	EPA 8260B	
Surrogate: Dibromofluoromethane		*109 %*		*82.2-117*	*06/25/2014*	*06/25/2014 20:49*	*EPA 8260B*	
Surrogate: Toluene-d8		*93.4 %*		*82.6-111*	*06/25/2014*	*06/25/2014 20:49*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*102 %*		*88.4-108*	*06/25/2014*	*06/25/2014 20:49*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-01 (34-37')

A142601-09 (Water)

Date Sampled
06/23/2014 14:22

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406056**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	20	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
1,1-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
1,2-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
trans-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
cis-1,2-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
1,1-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
1,1,1-Trichloroethane	**0.84**	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Trichloroethene	**1.5**	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Vinyl chloride	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Gasoline Range Organics	ND	50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:18	EPA 8260B	
Surrogate: Dibromofluoromethane		*108 %*		*82.2-117*	*06/25/2014*	*06/25/2014 21:18*	*EPA 8260B*	
Surrogate: Toluene-d8		*95.2 %*		*82.6-111*	*06/25/2014*	*06/25/2014 21:18*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*96.4 %*		*88.4-108*	*06/25/2014*	*06/25/2014 21:18*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (31.5-34.5')

A142601-10 (Water)

Date Sampled
06/23/2014 15:24

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406054**			
Diesel Range Organics	ND	1000	ug/L	1	06/25/2014	06/25/2014 22:32	EPA 8015B	
Surrogate: n-Triacontane		*103 %*		*60-140*	*06/25/2014*	*06/25/2014 22:32*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406056**			
Acetone	ND	20	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
1,1-Dichloroethane	**6.5**	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
1,2-Dichloroethane	**0.80**	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
trans-1,2-Dichloroethene	**7.7**	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
cis-1,2-Dichloroethene	**210**	50	ug/L	100	06/25/2014	06/25/2014 14:41	EPA 8260B	D
1,1-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
1,1,1-Trichloroethane	**0.54**	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Trichloroethene	**11**	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Vinyl chloride	**27**	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Gasoline Range Organics	**180**	50	ug/L	1	06/25/2014	06/25/2014 14:41	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/25/2014 21:47	EPA 8260B	
Surrogate: Dibromofluoromethane		*109 %*		*82.2-117*	*06/25/2014*	*06/25/2014 21:47*	*EPA 8260B*	
Surrogate: Toluene-d8		*94.4 %*		*82.6-111*	*06/25/2014*	*06/25/2014 21:47*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*96.4 %*		*88.4-108*	*06/25/2014*	*06/25/2014 21:47*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (43.5-46.5')

A142601-11 (Water)

Date Sampled
06/23/2014 15:24

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406054**			
Diesel Range Organics	ND	1000	ug/L	1	06/25/2014	06/25/2014 23:01	EPA 8015B	
Surrogate: n-Triacontane		*99.0 %*		*60-140*	*06/25/2014*	*06/25/2014 23:01*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406056**			
Acetone	ND	200	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Benzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
2-Butanone	ND	200	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
1,1-Dichloroethane	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
1,2-Dichloroethane	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
trans-1,2-Dichloroethene	**6.0**	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	D
cis-1,2-Dichloroethene	**230**	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	D
1,1-Dichloroethene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Ethylbenzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Tetrachloroethene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Toluene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
1,1,1-Trichloroethane	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
1,1,2-Trichloroethane	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Trichloroethene	**260**	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
1,2,4-Trimethylbenzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Vinyl chloride	**46**	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	D
m,p-Xylene	ND	10	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
o-Xylene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Xylenes, total	ND	15	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Gasoline Range Organics	**650**	500	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	D
n-Butyl Benzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
sec-Butyl Benzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Carbon disulfide	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Chloroethane	ND	50	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Chloroform	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Dichlorodifluoromethane	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Isopropylbenzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
p-Isopropyltoluene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Naphthalene	ND	50	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
n-Propyl Benzene	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Trichlorofluoromethane	ND	5.0	ug/L	10	06/25/2014	06/25/2014 23:14	EPA 8260B	
Surrogate: Dibromofluoromethane		*111 %*		*82.2-117*	*06/25/2014*	*06/25/2014 23:14*	*EPA 8260B*	
Surrogate: Toluene-d8		*94.0 %*		*82.6-111*	*06/25/2014*	*06/25/2014 23:14*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*95.6 %*		*88.4-108*	*06/25/2014*	*06/25/2014 23:14*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (29-32')

A142601-12 (Water)

Date Sampled
06/23/2014 16:18

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
ECCS								
Hydrocarbons by GC-FID					**Preparation Batch: A406054**			
Diesel Range Organics	ND	1000	ug/L	1	06/25/2014	06/26/2014 10:17	EPA 8015B	
Surrogate: n-Triacontane		*91.0 %*		*60-140*	*06/25/2014*	*06/26/2014 10:17*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406056**			
Acetone	ND	20	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
1,1-Dichloroethane	**7.7**	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
1,2-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
trans-1,2-Dichloroethene	**4.2**	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
cis-1,2-Dichloroethene	**120**	5.0	ug/L	10	06/25/2014	06/26/2014 08:56	EPA 8260B	D
1,1-Dichloroethene	**1.8**	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
1,1,1-Trichloroethane	**7.6**	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Trichloroethene	**5.4**	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
1,2,4-Trimethylbenzene	**2.6**	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Vinyl chloride	**74**	5.0	ug/L	10	06/25/2014	06/26/2014 08:56	EPA 8260B	D
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Gasoline Range Organics	**160**	50	ug/L	1	06/25/2014	06/26/2014 08:56	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:12	EPA 8260B	
Surrogate: Dibromofluoromethane		*112 %*		*82.2-117*	*06/25/2014*	*06/26/2014 00:12*	*EPA 8260B*	
Surrogate: Toluene-d8		*91.2 %*		*82.6-111*	*06/25/2014*	*06/26/2014 00:12*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*99.6 %*		*88.4-108*	*06/25/2014*	*06/26/2014 00:12*	*EPA 8260B*	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (26.5-29.5')

A142601-13 (Water)

Date Sampled
06/23/2014 17:07

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406054**			
Diesel Range Organics	ND	1000	ug/L	1	06/25/2014	06/25/2014 23:59	EPA 8015B	
Surrogate: n-Triacontane		*92.5 %*		*60-140*	*06/25/2014*	*06/25/2014 23:59*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406056**			
Acetone	ND	400	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Benzene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
2-Butanone	ND	400	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
1,1-Dichloroethane	**43**	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	D
1,2-Dichloroethane	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
trans-1,2-Dichloroethene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
cis-1,2-Dichloroethene	**72**	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	D
1,1-Dichloroethene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Ethylbenzene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Tetrachloroethene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Toluene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
1,1,1-Trichloroethane	**620**	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	D
1,1,2-Trichloroethane	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Trichloroethene	**430**	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
1,2,4-Trimethylbenzene	**44**	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	D
Vinyl chloride	**140**	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	D
m,p-Xylene	ND	20	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
o-Xylene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Xylenes, total	ND	30	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Gasoline Range Organics	**1500**	1000	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	D
n-Butyl Benzene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
sec-Butyl Benzene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Carbon disulfide	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Chloroethane	ND	100	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Chloroform	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Dichlorodifluoromethane	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Isopropylbenzene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
p-Isopropyltoluene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Naphthalene	ND	100	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
n-Propyl Benzene	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Trichlorofluoromethane	ND	10	ug/L	20	06/25/2014	06/25/2014 23:43	EPA 8260B	
Surrogate: Dibromofluoromethane		*109 %*		*82.2-117*	*06/25/2014*	*06/25/2014 23:43*	*EPA 8260B*	
Surrogate: Toluene-d8		*97.0 %*		*82.6-111*	*06/25/2014*	*06/25/2014 23:43*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*97.4 %*		*88.4-108*	*06/25/2014*	*06/25/2014 23:43*	*EPA 8260B*	

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3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Hydrocarbons by GC-FID - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406054 - EPA 3511										
Blank (A406054-BLK1)				Prepared: 06/25/2014 Analyzed: 06/25/2014 17:10						
Diesel Range Organics	ND	1000	ug/L							
Surrogate: n-Triacontane	*556*		*ug/L*	*625.0*		*89.0*	*60-140*			
LCS (A406054-BS1)				Prepared: 06/25/2014 Analyzed: 06/25/2014 17:40						
Diesel Range Organics	6510	1000	ug/L	6250		104	70-130			
Surrogate: n-Triacontane	*557*		*ug/L*	*625.0*		*89.1*	*60-140*			
LCS Dup (A406054-BSD1)				Prepared: 06/25/2014 Analyzed: 06/25/2014 19:37						
Diesel Range Organics	6730	1000	ug/L	6250		108	70-130	3.21	20	
Surrogate: n-Triacontane	*588*		*ug/L*	*625.0*		*94.1*	*60-140*			
Batch A406055 - EPA 3570										
Blank (A406055-BLK1)				Prepared: 06/25/2014 Analyzed: 06/25/2014 12:33						
Diesel Range Organics	ND	40000	ug/kg wet							
Surrogate: n-Triacontane	*91800*		*ug/kg wet*	*100000*		*91.8*	*60-140*			
LCS (A406055-BS1)				Prepared: 06/25/2014 Analyzed: 06/25/2014 12:03						
Diesel Range Organics	835000	40000	ug/kg wet	1000000		83.5	70-130			
Surrogate: n-Triacontane	*92000*		*ug/kg wet*	*100000*		*92.0*	*60-140*			
Matrix Spike (A406055-MS1)	**Source: A142601-04**			Prepared: 06/25/2014 Analyzed: 06/25/2014 13:31						
Diesel Range Organics	937000	40000	ug/kg dry	1134000	40000	79.1	60-140			
Surrogate: n-Triacontane	*105000*		*ug/kg dry*	*113400*		*92.9*	*60-140*			
Matrix Spike Dup (A406055-MSD1)	**Source: A142601-04**			Prepared: 06/25/2014 Analyzed: 06/25/2014 14:00						
Diesel Range Organics	908000	40000	ug/kg dry	1134000	40000	76.5	60-140	3.26	30	
Surrogate: n-Triacontane	*98300*		*ug/kg dry*	*113400*		*86.7*	*60-140*			

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406056 - EPA 5030B										
Blank (A406056-BLK1)				Prepared: 06/25/2014 Analyzed: 06/26/2014 12:50						
Acetone	ND	20	ug/L							
Benzene	ND	0.50	ug/L							
2-Butanone	ND	20	ug/L							
1,1-Dichloroethane	ND	0.50	ug/L							
1,2-Dichloroethane	ND	0.50	ug/L							
trans-1,2-Dichloroethene	ND	0.50	ug/L							
cis-1,2-Dichloroethene	ND	0.50	ug/L							
1,1-Dichloroethene	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	ug/L							
Tetrachloroethene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
1,1,1-Trichloroethane	ND	0.50	ug/L							
1,1,2-Trichloroethane	ND	0.50	ug/L							
Trichloroethene	ND	0.50	ug/L							
1,3,5-Trimethylbenzene	ND	0.50	ug/L							
1,2,4-Trimethylbenzene	ND	0.50	ug/L							
Vinyl chloride	ND	0.50	ug/L							
m,p-Xylene	ND	1.0	ug/L							
o-Xylene	ND	0.50	ug/L							
Xylenes, total	ND	1.5	ug/L							
Gasoline Range Organics	ND	50	ug/L							
n-Butyl Benzene	ND	0.50	ug/L							
sec-Butyl Benzene	ND	0.50	ug/L							
Carbon disulfide	ND	0.50	ug/L							
Chloroethane	ND	5.0	ug/L							
Chloroform	ND	0.50	ug/L							
Dichlorodifluoromethane	ND	0.50	ug/L							
Isopropylbenzene	ND	0.50	ug/L							
p-Isopropyltoluene	ND	0.50	ug/L							
Naphthalene	ND	5.0	ug/L							
n-Propyl Benzene	ND	0.50	ug/L							
Trichlorofluoromethane	ND	0.50	ug/L							
Surrogate: Dibromofluoromethane	*5.33*		*ug/L*	*5.000*		*107*	*82.2-117*			
Surrogate: Toluene-d8	*4.88*		*ug/L*	*5.000*		*97.6*	*82.6-111*			
Surrogate: 4-Bromofluorobenzene	*4.85*		*ug/L*	*5.000*		*97.0*	*88.4-108*			
LCS (A406056-BS1)				Prepared: 06/25/2014 Analyzed: 06/26/2014 13:19						
Acetone	50.5		ug/L	50.00		101	64.6-147			
Benzene	5.23		ug/L	5.000		105	85.1-123			
2-Butanone	47.0		ug/L	50.00		93.9	71.4-131			
1,1-Dichloroethane	5.69		ug/L	5.000		114	83.7-131			
1,2-Dichloroethane	5.40		ug/L	5.000		108	82.4-129			
trans-1,2-Dichloroethene	5.26		ug/L	5.000		105	83.2-123			
cis-1,2-Dichloroethene	5.23		ug/L	5.000		105	83.1-125			

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Project: TRC Tecumseh RI - Tecumseh, MI
Project Number: 220003.0000.0000
Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406056 - EPA 5030B										
LCS (A406056-BS1)				Prepared: 06/25/2014 Analyzed: 06/26/2014 13:19						
1,1-Dichloroethene	5.65		ug/L	5.000		113	73.9-127			
Ethylbenzene	5.02		ug/L	5.000		100	85.8-124			
Tetrachloroethene	5.16		ug/L	5.000		103	76.3-123			
Toluene	4.98		ug/L	5.000		99.6	80.1-115			
1,1,1-Trichloroethane	5.68		ug/L	5.000		114	88.5-122			
1,1,2-Trichloroethane	4.99		ug/L	5.000		99.8	72.2-132			
Trichloroethene	5.47		ug/L	5.000		109	83.6-124			
1,3,5-Trimethylbenzene	5.02		ug/L	5.000		100	80.9-126			
1,2,4-Trimethylbenzene	4.81		ug/L	5.000		96.2	80.3-124			
Vinyl chloride	5.55		ug/L	5.000		111	77.7-128			
m,p-Xylene	9.91		ug/L	10.00		99.1	85.4-118			
o-Xylene	5.03		ug/L	5.000		101	83.3-117			
n-Butyl Benzene	5.20		ug/L	5.000		104	79.5-133			
sec-Butyl Benzene	5.30		ug/L	5.000		106	80.2-128			
Carbon disulfide	5.20		ug/L	5.000		104	74.4-128			
Chloroethane	8.56		ug/L	5.000		171	38.2-167			
Chloroform	5.32		ug/L	5.000		106	80.9-127			
Dichlorodifluoromethane	6.11		ug/L	5.000		122	74.1-129			
Isopropylbenzene	5.14		ug/L	5.000		103	84.3-125			
p-Isopropyltoluene	5.24		ug/L	5.000		105	82.1-126			
Naphthalene	4.34		ug/L	5.000		86.8	66.2-119			
n-Propyl Benzene	5.16		ug/L	5.000		103	82.4-127			
Trichlorofluoromethane	7.58		ug/L	5.000		152	77.1-137			
Surrogate: Dibromofluoromethane	*5.36*		*ug/L*	*5.000*		*107*	*82.2-117*			
Surrogate: Toluene-d8	*5.20*		*ug/L*	*5.000*		*104*	*82.6-111*			
Surrogate: 4-Bromofluorobenzene	*5.02*		*ug/L*	*5.000*		*100*	*88.4-108*			
LCS (A406056-BS2)				Prepared: 06/25/2014 Analyzed: 06/26/2014 14:48						
Gasoline Range Organics	491		ug/L	500.0		98.2	70-130			
Surrogate: Toluene-d8	*4.92*		*ug/L*	*5.000*		*98.4*	*82.6-111*			
Matrix Spike (A406056-MS1)		**Source: A142601-01**		Prepared: 06/25/2014 Analyzed: 06/26/2014 03:07						
Acetone	45.4		ug/L	50.00	ND	90.8	36.4-159			
Benzene	5.13		ug/L	5.000	ND	103	79-128			
2-Butanone	43.0		ug/L	50.00	ND	86.0	58.8-141			
1,1-Dichloroethane	5.97		ug/L	5.000	ND	119	76.5-139			
1,2-Dichloroethane	5.14		ug/L	5.000	ND	103	63-155			
trans-1,2-Dichloroethene	4.91		ug/L	5.000	ND	98.2	69.8-140			
cis-1,2-Dichloroethene	5.51		ug/L	5.000	ND	110	73.6-134			
1,1-Dichloroethene	5.37		ug/L	5.000	ND	107	66.6-141			
Ethylbenzene	4.91		ug/L	5.000	ND	98.2	88-123			
Tetrachloroethene	5.02		ug/L	5.000	ND	100	71.7-123			
Toluene	4.73		ug/L	5.000	0.200	90.6	73-121			
1,1,1-Trichloroethane	7.26		ug/L	5.000	1.77	110	63.3-152			

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Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406056 - EPA 5030B										
Matrix Spike (A406056-MS1)	**Source: A142601-01**			Prepared: 06/25/2014 Analyzed: 06/26/2014 03:07						
1,1,2-Trichloroethane	4.56		ug/L	5.000	ND	91.2	78.3-128			
Trichloroethene	8.74		ug/L	5.000	3.86	97.6	76.3-129			
1,3,5-Trimethylbenzene	4.62		ug/L	5.000	ND	92.4	85.2-122			
1,2,4-Trimethylbenzene	4.55		ug/L	5.000	ND	91.0	81-123			
Vinyl chloride	5.41		ug/L	5.000	ND	108	72.9-137			
m,p-Xylene	9.57		ug/L	10.00	ND	95.7	88.3-114			
o-Xylene	4.89		ug/L	5.000	ND	97.8	84-115			
n-Butyl Benzene	4.94		ug/L	5.000	ND	98.8	82.9-129			
sec-Butyl Benzene	5.05		ug/L	5.000	ND	101	87.9-121			
Carbon disulfide	4.16		ug/L	5.000	ND	83.2	70.9-136			
Chloroethane	10.1		ug/L	5.000	ND	202	52.8-164			M
Chloroform	5.53		ug/L	5.000	ND	111	70.6-142			
Dichlorodifluoromethane	5.44		ug/L	5.000	ND	109	28.3-181			
Isopropylbenzene	5.00		ug/L	5.000	ND	100	86.7-124			
p-Isopropyltoluene	4.89		ug/L	5.000	ND	97.8	82.3-124			
Naphthalene	3.84		ug/L	5.000	ND	76.8	47.5-124			
n-Propyl Benzene	4.94		ug/L	5.000	ND	98.8	86.7-125			
Trichlorofluoromethane	8.07		ug/L	5.000	ND	161	69.4-148			M
Surrogate: Dibromofluoromethane	*5.63*		*ug/L*	*5.000*		*113*	*82.2-117*			
Surrogate: Toluene-d8	*4.95*		*ug/L*	*5.000*		*99.0*	*82.6-111*			
Surrogate: 4-Bromofluorobenzene	*5.13*		*ug/L*	*5.000*		*103*	*88.4-108*			
Matrix Spike (A406056-MS2)	**Source: A142601-06**			Prepared: 06/25/2014 Analyzed: 06/26/2014 11:51						
Gasoline Range Organics	517		ug/L	500.0	37.8	95.8	70-130			
Surrogate: Toluene-d8	*4.98*		*ug/L*	*5.000*		*99.6*	*82.6-111*			
Matrix Spike Dup (A406056-MSD1)	**Source: A142601-01**			Prepared: 06/25/2014 Analyzed: 06/26/2014 03:36						
Acetone	54.7		ug/L	50.00	ND	109	36.4-159	18.6	20	
Benzene	5.69		ug/L	5.000	ND	114	79-128	10.4	20	
2-Butanone	49.8		ug/L	50.00	ND	99.7	58.8-141	14.7	20	
1,1-Dichloroethane	6.57		ug/L	5.000	ND	131	76.5-139	9.57	20	
1,2-Dichloroethane	5.76		ug/L	5.000	ND	115	63-155	11.4	20	
trans-1,2-Dichloroethene	5.52		ug/L	5.000	ND	110	69.8-140	11.7	20	
cis-1,2-Dichloroethene	5.70		ug/L	5.000	ND	114	73.6-134	3.39	20	
1,1-Dichloroethene	5.80		ug/L	5.000	ND	116	66.6-141	7.70	20	
Ethylbenzene	5.09		ug/L	5.000	ND	102	88-123	3.60	20	
Tetrachloroethene	5.16		ug/L	5.000	ND	103	71.7-123	2.75	20	
Toluene	4.99		ug/L	5.000	0.200	95.8	73-121	5.58	20	
1,1,1-Trichloroethane	8.17		ug/L	5.000	1.77	128	63.3-152	15.3	20	
1,1,2-Trichloroethane	5.24		ug/L	5.000	ND	105	78.3-128	13.9	20	
Trichloroethene	9.53		ug/L	5.000	3.86	113	76.3-129	15.0	20	
1,3,5-Trimethylbenzene	4.83		ug/L	5.000	ND	96.6	85.2-122	4.44	20	
1,2,4-Trimethylbenzene	4.72		ug/L	5.000	ND	94.4	81-123	3.67	20	
Vinyl chloride	5.45		ug/L	5.000	ND	109	72.9-137	0.737	20	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406056 - EPA 5030B										
Matrix Spike Dup (A406056-MSD1)	**Source: A142601-01**			Prepared: 06/25/2014 Analyzed: 06/26/2014 03:36						
m,p-Xylene	9.90		ug/L	10.00	ND	99.0	88.3-114	3.39	20	
o-Xylene	5.03		ug/L	5.000	ND	101	84-115	2.82	20	
n-Butyl Benzene	5.05		ug/L	5.000	ND	101	82.9-129	2.20	20	
sec-Butyl Benzene	5.21		ug/L	5.000	ND	104	87.9-121	3.12	20	
Carbon disulfide	4.52		ug/L	5.000	ND	90.4	70.9-136	8.29	20	
Chloroethane	11.0		ug/L	5.000	ND	220	52.8-164	8.91	20	M
Chloroform	6.24		ug/L	5.000	ND	125	70.6-142	12.1	20	
Dichlorodifluoromethane	5.93		ug/L	5.000	ND	119	28.3-181	8.62	20	
Isopropylbenzene	5.14		ug/L	5.000	ND	103	86.7-124	2.76	20	
p-Isopropyltoluene	5.06		ug/L	5.000	ND	101	82.3-124	3.42	20	
Naphthalene	4.20		ug/L	5.000	ND	84.0	47.5-124	8.96	20	
n-Propyl Benzene	5.13		ug/L	5.000	ND	103	86.7-125	3.77	20	
Trichlorofluoromethane	8.64		ug/L	5.000	ND	173	69.4-148	6.82	20	M
Surrogate: Dibromofluoromethane	*5.83*		*ug/L*	*5.000*		*117*	*82.2-117*			
Surrogate: Toluene-d8	*4.95*		*ug/L*	*5.000*		*99.0*	*82.6-111*			
Surrogate: 4-Bromofluorobenzene	*5.20*		*ug/L*	*5.000*		*104*	*88.4-108*			
Matrix Spike Dup (A406056-MSD2)	**Source: A142601-06**			Prepared: 06/25/2014 Analyzed: 06/26/2014 12:20						
Gasoline Range Organics	522		ug/L	500.0	37.8	96.8	70-130	1.00	20	
Surrogate: Toluene-d8	*4.93*		*ug/L*	*5.000*		*98.6*	*82.6-111*			

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Classical Chemistry Parameters - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406053 - % Solids										
Duplicate (A406053-DUP1)		**Source: A142601-04**		Prepared: 06/25/2014 Analyzed: 06/26/2014 10:45						
% Solids	86.9	0.00	% by Weight		88.2			1.47	20	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Notes and Definitions

M	The matrix spike and/or matrix spike duplicate recovery was outside of the laboratory control limits.
D	Data reported from a dilution
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Environmental Chemistry Consulting Services, Inc.
2525 Advance Road
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608-221-8700 (phone)
608-221-4889 (fax)

CHAIN OF CUSTODY

Lab Work Order #: A142601

Project Number: 220003
Project Name: TPC - MIP Investigation
Project Location: Tecumseh, MI
Turn Around (circle one): Normal (Rush)
If Rush, Report Due Date:
Sampled By (Print):

Analyses Requested / Preservation Codes

Mail Report To: Stacy Metz
Company: TRC
Address: 1540 Eisenhower Place Ann Arbor MI 48108
E-mail Address:
Invoice To:
Company: SAME
Address:

Sample Description	Collection Date	Collection Time	Matrix	Total # of Containers	B VOC & GRO TPH	A DRO TPH (s.l.)	B DETPH	F VOC & GRO TPH	Comments	Lab ID	Lab Receipt Time
MIP-SB-01 (44-47')	6/23/14	0944	GW	4	✓		✓		pH≥4, HCl added to <2 jc 06-24-14	01	
MIP-SB-01 (31-34')	6/23/14	0936	GW	4	✓				HOLD DRO	02	
MIP-SB01 (28-31)	6/23/14	1031	GW	4	✓		✓			03	
MIP-SB-01 (2.25-2.75)	6/23/14	1125	S	2	~~✓~~ seal	✓		✓		04	
MIP-SB01 - (25-28)	6/23/14	1141	GW	4	✓		✓	✓		05	
MIP-SB01 (41+044)	6/23/14	1146	GW	4	✓				HOLD DRO	06	
MIP-SB-01 (37.5-40.5)	6/23/14	1253	GW	4	✓				HOLD DRO time on bottles 12:50 jc 06-24-14	07	
MIP SB01 (22-25)	6/23/14	1248	GW	4	✓		✓	✓	Two VOA vials have air bubbles <6mm jc 06-24-14	08	
MIP SB01 (34-37)	6/23/14	1422	GW	4	✓				HOLD DRO	09	
MIP SB-03 (31.5-34.5)	6/23/14	1508	GW	4	✓	✓			labeled 31-34 with time 15:24 jc 06-24-14	10	

Preservation Codes: A=None B=HCL C=H_2SO_4 D=HNO_3 E=EnCore F=Methanol G=NaOH O=Other (Indicate)
Matrix Codes: A=Air S=Soil W=Water O=Other

Relinquished By: Date: 6/23/14 Time: 1830
Relinquished By: Date: Time:
Received By: Date: 06-24-14 Time: 1000
Received By: Date: Time:

Custody Seal: Present/Absent Intact/Not Intact Seal #'s
Shipped Via: Fed Ex
Receipt Temp: 0.9°C S/N 130492013
Temp Blank Y (N) Exp: 08-09-15

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608-221-4889 (fax)

CHAIN OF CUSTODY

Lab Work Order #: A142601

Project Number: 220003
Project Name: TPC - MIP investigation
Project Location: Tecumseh MI
Turn Around (circle one): Normal Rush
If Rush, Report Due Date:
Sampled By (Print):

Analyses Requested / Preservation Codes: B B

Mail Report To: Stacy Mutz
Company: TPC
Address: 1540 Eisenhower Place Ann Arbor MI 48108
E-mail Address:
Invoice To: SAME
Company:
Address:

Sample Description	Collection Date	Collection Time	Matrix	Total # of Containers	Vox + Gro TPH	Dro TPH # Dro TPH	Comments	Lab ID	Lab Receipt Time
MIPSB-03 (43.5 46.6)	6/23/14	1524	Gw	4	✓	✓		11	
MIPSB-03 (29 - 32)	6/23/14	1618	Gw	4	✓	✓		12	
MIPSB-03 (26.5 29.5)	6/23/14	1707	Gw	4	✓	✓		13	

Preservation Codes
A=None B=HCL C=H_2SO_4
D=HNO_3 E=EnCore F=Methanol
G=NaOH O=Other (Indicate)

Matrix Codes
A=Air S=Soil W=Water O=Other

Relinquished By: [signature] Date: 6/23/14 Time: 1830
Relinquished By: Date: Time:

Received By: [signature] Date: 6/24/14 Time: 1000
Received By: Date: Time:

Custody Seal: Present/Absent Intact/Not Intact Seal #'s
Shipped Via: Fed Ex

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Temp Blank Y (N)

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July 01, 2014

Stacy Metz
TRC Solutions
3754 Ranchero Drive
Ann Harbor, MI 48108

RE: TRC Tecumseh RI - Tecumseh, MI

Enclosed are the analytical results for the samples received by the laboratory on 06/25/2014.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. These results are in compliance with the 2009 NELAC Standards and the appropriate agencies listed below, unless otherwise noted in the case narrative. This analytical report should be reproduced in its entirety.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jessica Esser For Nick Nigro

President

Certification List			Expires
ILEPA	Illinois Secondary NELAP Accreditation	003174	04/30/2015
KDHE	Kansas Secondary NELAP Accreditation	E-10384	04/30/2015
LELAP	Louisiana Primary NELAP Accreditation	04165	06/30/2015
NJDEP	New Jersey Secondary NELAP Accreditation	WI004	06/30/2015
WDNR	Wisconsin Certification under NR 149	113289110	08/31/2014

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MIP-SB-03 (40.5-43.5')	A142614-01	Water	06/24/2014	06/24/2014
DUP-03	A142614-02	Water	06/24/2014	06/24/2014
MIP-SB-03 (24-27')	A142614-03	Water	06/24/2014	06/24/2014
MIP-SB-03 (37.5-40.5')	A142614-04	Water	06/24/2014	06/24/2014
MIP-SB-03 (34.5-37.5')	A142614-05	Water	06/24/2014	06/24/2014

CASE NARRATIVE

Sample Receipt Information:
5 samples were received on 6/25/2014. Samples were received at 0.5 degrees Celsius. Samples were received in acceptable condition.

Please see the chain of custody (COC) document at the end of this report for additional information.

Continuing Calibration Verification (CCV):
CCV indicates a potential high bias for chloroethane and trichlorofluoromethane for samples A142614-01 through A142614-05. Samples were less than the reporting limit for these analytes so no further action is required.

Laboratory Control Samples (LCS):
The LCS indicates a potential high bias for chloroethane and trichlorofluoromethane for samples A142614-01 through A142614-05. Samples were less than the reporting limit for these analytes so no further action is required.

Additional Comments:
Although a TPH GRO number was quantified and reported for multiple samples, the sample chromatogram patterns are not indicative of gasoline.

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (40.5-43.5')

A142614-01 (Water)

Date Sampled
06/24/2014 07:37

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406054**			
Diesel Range Organics	ND	1000	ug/L	1	06/25/2014	06/26/2014 00:28	EPA 8015B	
Surrogate: n-Triacontane		*97.7 %*		*60-140*	*06/25/2014*	*06/26/2014 00:28*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406056**			
Acetone	ND	20	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
1,1-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
1,2-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
trans-1,2-Dichloroethene	**4.4**	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
cis-1,2-Dichloroethene	**79**	5.0	ug/L	10	06/25/2014	06/26/2014 09:25	EPA 8260B	D
1,1-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
1,1,1-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Trichloroethene	**140**	5.0	ug/L	10	06/25/2014	06/26/2014 09:25	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Vinyl chloride	**7.4**	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Gasoline Range Organics	**240**	50	ug/L	1	06/25/2014	06/26/2014 09:25	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 00:42	EPA 8260B	
Surrogate: Dibromofluoromethane		*112 %*		*82.2-117*	*06/25/2014*	*06/26/2014 00:42*	*EPA 8260B*	
Surrogate: Toluene-d8		*95.6 %*		*82.6-111*	*06/25/2014*	*06/26/2014 00:42*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*98.6 %*		*88.4-108*	*06/25/2014*	*06/26/2014 00:42*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

DUP-03

A142614-02 (Water)

Date Sampled
06/24/2014 00:00

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406054**			
Diesel Range Organics	ND	1000	ug/L	1	06/25/2014	06/26/2014 00:57	EPA 8015B	
Surrogate: n-Triacontane		*97.9 %*		*60-140*	*06/25/2014*	*06/26/2014 00:57*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406056**			
Acetone	ND	20	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
1,1-Dichloroethane	**4.9**	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
1,2-Dichloroethane	**0.63**	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
trans-1,2-Dichloroethene	**1.2**	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
cis-1,2-Dichloroethene	**24**	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
1,1-Dichloroethene	**2.9**	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Tetrachloroethene	**3.4**	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
1,1,1-Trichloroethane	**780**	50	ug/L	100	06/25/2014	06/26/2014 09:54	EPA 8260B	D
1,1,2-Trichloroethane	**3.0**	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Trichloroethene	**1000**	50	ug/L	100	06/25/2014	06/26/2014 09:54	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
1,2,4-Trimethylbenzene	**0.80**	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Vinyl chloride	**5.1**	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Gasoline Range Organics	**1400**	50	ug/L	1	06/25/2014	06/26/2014 09:54	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:11	EPA 8260B	
Surrogate: Dibromofluoromethane		*110 %*		*82.2-117*	*06/25/2014*	*06/26/2014 01:11*	*EPA 8260B*	
Surrogate: Toluene-d8		*94.4 %*		*82.6-111*	*06/25/2014*	*06/26/2014 01:11*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*97.0 %*		*88.4-108*	*06/25/2014*	*06/26/2014 01:11*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (24-27')

A142614-03 (Water)

Date Sampled
06/24/2014 07:40

ECCS

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Hydrocarbons by GC-FID					**Preparation Batch: A406054**			
Diesel Range Organics	ND	1000	ug/L	1	06/25/2014	06/26/2014 09:48	EPA 8015B	
Surrogate: n-Triacontane		*96.3 %*		*60-140*	*06/25/2014*	*06/26/2014 09:48*	*EPA 8015B*	
Volatile Organic Compounds by Method 8260 - Purge and Trap					**Preparation Batch: A406056**			
Acetone	ND	20	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
1,1-Dichloroethane	**5.0**	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
1,2-Dichloroethane	**0.67**	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
trans-1,2-Dichloroethene	**1.2**	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
cis-1,2-Dichloroethene	**24**	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
1,1-Dichloroethene	**2.8**	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Tetrachloroethene	**3.4**	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
1,1,1-Trichloroethane	**740**	50	ug/L	100	06/25/2014	06/26/2014 10:23	EPA 8260B	D
1,1,2-Trichloroethane	**3.0**	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Trichloroethene	**1000**	50	ug/L	100	06/25/2014	06/26/2014 10:23	EPA 8260B	D
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
1,2,4-Trimethylbenzene	**0.82**	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Vinyl chloride	**5.1**	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Gasoline Range Organics	**1400**	50	ug/L	1	06/25/2014	06/26/2014 10:23	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 01:40	EPA 8260B	
Surrogate: Dibromofluoromethane		*109 %*		*82.2-117*	*06/25/2014*	*06/26/2014 01:40*	*EPA 8260B*	
Surrogate: Toluene-d8		*94.8 %*		*82.6-111*	*06/25/2014*	*06/26/2014 01:40*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*97.4 %*		*88.4-108*	*06/25/2014*	*06/26/2014 01:40*	*EPA 8260B*	

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TRC Solutions
3754 Ranchero Drive
Ann Harbor MI, 48108

Project: TRC Tecumseh RI - Tecumseh, MI
Project Number: 220003.0000.0000
Project Manager: Stacy Metz

MIP-SB-03 (37.5-40.5')

A142614-04 (Water)

Date Sampled
06/24/2014 09:39

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406056**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	20	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
1,1-Dichloroethane	**4.2**	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
1,2-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
trans-1,2-Dichloroethene	**3.8**	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
cis-1,2-Dichloroethene	**110**	5.0	ug/L	10	06/25/2014	06/26/2014 10:53	EPA 8260B	D
1,1-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
1,1,1-Trichloroethane	**0.63**	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Trichloroethene	**24**	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Vinyl chloride	**5.4**	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Gasoline Range Organics	**140**	50	ug/L	1	06/25/2014	06/26/2014 10:53	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:09	EPA 8260B	
Surrogate: Dibromofluoromethane		*110 %*		*82.2-117*	*06/25/2014*	*06/26/2014 02:09*	*EPA 8260B*	
Surrogate: Toluene-d8		*93.6 %*		*82.6-111*	*06/25/2014*	*06/26/2014 02:09*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*96.6 %*		*88.4-108*	*06/25/2014*	*06/26/2014 02:09*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

MIP-SB-03 (34.5-37.5')

Date Sampled
06/24/2014 10:47

A142614-05 (Water)

ECCS

Volatile Organic Compounds by Method 8260 - Purge and Trap — **Preparation Batch: A406056**

Analyte	Result	Reporting Limit	Units	Dilution	Prepared	Analyzed	Method	Qualifiers
Acetone	ND	20	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
2-Butanone	ND	20	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
1,1-Dichloroethane	**2.7**	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
1,2-Dichloroethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
trans-1,2-Dichloroethene	**3.8**	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
cis-1,2-Dichloroethene	**150**	5.0	ug/L	10	06/25/2014	06/26/2014 11:22	EPA 8260B	D
1,1-Dichloroethene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Ethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Tetrachloroethene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Toluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
1,1,1-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
1,1,2-Trichloroethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Trichloroethene	**6.1**	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
1,3,5-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
1,2,4-Trimethylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Vinyl chloride	**26**	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
m,p-Xylene	ND	1.0	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
o-Xylene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Xylenes, total	ND	1.5	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Gasoline Range Organics	**150**	50	ug/L	1	06/25/2014	06/26/2014 11:22	EPA 8260B	
n-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
sec-Butyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Carbon disulfide	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Chloroethane	ND	5.0	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Chloroform	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Dichlorodifluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Isopropylbenzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
p-Isopropyltoluene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Naphthalene	ND	5.0	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
n-Propyl Benzene	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Trichlorofluoromethane	ND	0.50	ug/L	1	06/25/2014	06/26/2014 02:38	EPA 8260B	
Surrogate: Dibromofluoromethane		*112 %*		*82.2-117*	*06/25/2014*	*06/26/2014 02:38*	*EPA 8260B*	
Surrogate: Toluene-d8		*92.2 %*		*82.6-111*	*06/25/2014*	*06/26/2014 02:38*	*EPA 8260B*	
Surrogate: 4-Bromofluorobenzene		*96.2 %*		*88.4-108*	*06/25/2014*	*06/26/2014 02:38*	*EPA 8260B*	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Hydrocarbons by GC-FID - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406054 - EPA 3511										
Blank (A406054-BLK1)				Prepared: 06/25/2014 Analyzed: 06/25/2014 17:10						
Diesel Range Organics	ND	1000	ug/L							
Surrogate: n-Triacontane	*556*		*ug/L*	*625.0*		*89.0*	*60-140*			
LCS (A406054-BS1)				Prepared: 06/25/2014 Analyzed: 06/25/2014 17:40						
Diesel Range Organics	6510	1000	ug/L	6250		104	70-130			
Surrogate: n-Triacontane	*557*		*ug/L*	*625.0*		*89.1*	*60-140*			
LCS Dup (A406054-BSD1)				Prepared: 06/25/2014 Analyzed: 06/25/2014 19:37						
Diesel Range Organics	6730	1000	ug/L	6250		108	70-130	3.21	20	
Surrogate: n-Triacontane	*588*		*ug/L*	*625.0*		*94.1*	*60-140*			

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406056 - EPA 5030B										
Blank (A406056-BLK1)				Prepared: 06/25/2014 Analyzed: 06/26/2014 12:50						
Acetone	ND	20	ug/L							
Benzene	ND	0.50	ug/L							
2-Butanone	ND	20	ug/L							
1,1-Dichloroethane	ND	0.50	ug/L							
1,2-Dichloroethane	ND	0.50	ug/L							
trans-1,2-Dichloroethene	ND	0.50	ug/L							
cis-1,2-Dichloroethene	ND	0.50	ug/L							
1,1-Dichloroethene	ND	0.50	ug/L							
Ethylbenzene	ND	0.50	ug/L							
Tetrachloroethene	ND	0.50	ug/L							
Toluene	ND	0.50	ug/L							
1,1,1-Trichloroethane	ND	0.50	ug/L							
1,1,2-Trichloroethane	ND	0.50	ug/L							
Trichloroethene	ND	0.50	ug/L							
1,3,5-Trimethylbenzene	ND	0.50	ug/L							
1,2,4-Trimethylbenzene	ND	0.50	ug/L							
Vinyl chloride	ND	0.50	ug/L							
m,p-Xylene	ND	1.0	ug/L							
o-Xylene	ND	0.50	ug/L							
Xylenes, total	ND	1.5	ug/L							
Gasoline Range Organics	ND	50	ug/L							
n-Butyl Benzene	ND	0.50	ug/L							
sec-Butyl Benzene	ND	0.50	ug/L							
Carbon disulfide	ND	0.50	ug/L							
Chloroethane	ND	5.0	ug/L							
Chloroform	ND	0.50	ug/L							
Dichlorodifluoromethane	ND	0.50	ug/L							
Isopropylbenzene	ND	0.50	ug/L							
p-Isopropyltoluene	ND	0.50	ug/L							
Naphthalene	ND	5.0	ug/L							
n-Propyl Benzene	ND	0.50	ug/L							
Trichlorofluoromethane	ND	0.50	ug/L							
Surrogate: Dibromofluoromethane	*5.33*		*ug/L*	*5.000*		*107*	*82.2-117*			
Surrogate: Toluene-d8	*4.88*		*ug/L*	*5.000*		*97.6*	*82.6-111*			
Surrogate: 4-Bromofluorobenzene	*4.85*		*ug/L*	*5.000*		*97.0*	*88.4-108*			
LCS (A406056-BS1)				Prepared: 06/25/2014 Analyzed: 06/26/2014 13:19						
Acetone	50.5		ug/L	50.00		101	64.6-147			
Benzene	5.23		ug/L	5.000		105	85.1-123			
2-Butanone	47.0		ug/L	50.00		93.9	71.4-131			
1,1-Dichloroethane	5.69		ug/L	5.000		114	83.7-131			
1,2-Dichloroethane	5.40		ug/L	5.000		108	82.4-129			
trans-1,2-Dichloroethene	5.26		ug/L	5.000		105	83.2-123			
cis-1,2-Dichloroethene	5.23		ug/L	5.000		105	83.1-125			

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406056 - EPA 5030B										
LCS (A406056-BS1)				Prepared: 06/25/2014 Analyzed: 06/26/2014 13:19						
1,1-Dichloroethene	5.65		ug/L	5.000		113	73.9-127			
Ethylbenzene	5.02		ug/L	5.000		100	85.8-124			
Tetrachloroethene	5.16		ug/L	5.000		103	76.3-123			
Toluene	4.98		ug/L	5.000		99.6	80.1-115			
1,1,1-Trichloroethane	5.68		ug/L	5.000		114	88.5-122			
1,1,2-Trichloroethane	4.99		ug/L	5.000		99.8	72.2-132			
Trichloroethene	5.47		ug/L	5.000		109	83.6-124			
1,3,5-Trimethylbenzene	5.02		ug/L	5.000		100	80.9-126			
1,2,4-Trimethylbenzene	4.81		ug/L	5.000		96.2	80.3-124			
Vinyl chloride	5.55		ug/L	5.000		111	77.7-128			
m,p-Xylene	9.91		ug/L	10.00		99.1	85.4-118			
o-Xylene	5.03		ug/L	5.000		101	83.3-117			
n-Butyl Benzene	5.20		ug/L	5.000		104	79.5-133			
sec-Butyl Benzene	5.30		ug/L	5.000		106	80.2-128			
Carbon disulfide	5.20		ug/L	5.000		104	74.4-128			
Chloroethane	8.56		ug/L	5.000		171	38.2-167			
Chloroform	5.32		ug/L	5.000		106	80.9-127			
Dichlorodifluoromethane	6.11		ug/L	5.000		122	74.1-129			
Isopropylbenzene	5.14		ug/L	5.000		103	84.3-125			
p-Isopropyltoluene	5.24		ug/L	5.000		105	82.1-126			
Naphthalene	4.34		ug/L	5.000		86.8	66.2-119			
n-Propyl Benzene	5.16		ug/L	5.000		103	82.4-127			
Trichlorofluoromethane	7.58		ug/L	5.000		152	77.1-137			
Surrogate: Dibromofluoromethane	*5.36*		*ug/L*	*5.000*		*107*	*82.2-117*			
Surrogate: Toluene-d8	*5.20*		*ug/L*	*5.000*		*104*	*82.6-111*			
Surrogate: 4-Bromofluorobenzene	*5.02*		*ug/L*	*5.000*		*100*	*88.4-108*			
LCS (A406056-BS2)				Prepared: 06/25/2014 Analyzed: 06/26/2014 14:48						
Gasoline Range Organics	491		ug/L	500.0		98.2	70-130			
Surrogate: Toluene-d8	*4.92*		*ug/L*	*5.000*		*98.4*	*82.6-111*			
Matrix Spike (A406056-MS1)		**Source: A142601-01**		Prepared: 06/25/2014 Analyzed: 06/26/2014 03:07						
Acetone	45.4		ug/L	50.00	ND	90.8	36.4-159			
Benzene	5.13		ug/L	5.000	ND	103	79-128			
2-Butanone	43.0		ug/L	50.00	ND	86.0	58.8-141			
1,1-Dichloroethane	5.97		ug/L	5.000	ND	119	76.5-139			
1,2-Dichloroethane	5.14		ug/L	5.000	ND	103	63-155			
trans-1,2-Dichloroethene	4.91		ug/L	5.000	ND	98.2	69.8-140			
cis-1,2-Dichloroethene	5.51		ug/L	5.000	ND	110	73.6-134			
1,1-Dichloroethene	5.37		ug/L	5.000	ND	107	66.6-141			
Ethylbenzene	4.91		ug/L	5.000	ND	98.2	88-123			
Tetrachloroethene	5.02		ug/L	5.000	ND	100	71.7-123			
Toluene	4.73		ug/L	5.000	0.200	90.6	73-121			
1,1,1-Trichloroethane	7.26		ug/L	5.000	1.77	110	63.3-152			

2525 Advance Road
Madison, WI 53718
608.221.8700 Phone
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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406056 - EPA 5030B										
Matrix Spike (A406056-MS1)	**Source: A142601-01**			Prepared: 06/25/2014 Analyzed: 06/26/2014 03:07						
1,1,2-Trichloroethane	4.56		ug/L	5.000	ND	91.2	78.3-128			
Trichloroethene	8.74		ug/L	5.000	3.86	97.6	76.3-129			
1,3,5-Trimethylbenzene	4.62		ug/L	5.000	ND	92.4	85.2-122			
1,2,4-Trimethylbenzene	4.55		ug/L	5.000	ND	91.0	81-123			
Vinyl chloride	5.41		ug/L	5.000	ND	108	72.9-137			
m,p-Xylene	9.57		ug/L	10.00	ND	95.7	88.3-114			
o-Xylene	4.89		ug/L	5.000	ND	97.8	84-115			
n-Butyl Benzene	4.94		ug/L	5.000	ND	98.8	82.9-129			
sec-Butyl Benzene	5.05		ug/L	5.000	ND	101	87.9-121			
Carbon disulfide	4.16		ug/L	5.000	ND	83.2	70.9-136			
Chloroethane	10.1		ug/L	5.000	ND	202	52.8-164			M
Chloroform	5.53		ug/L	5.000	ND	111	70.6-142			
Dichlorodifluoromethane	5.44		ug/L	5.000	ND	109	28.3-181			
Isopropylbenzene	5.00		ug/L	5.000	ND	100	86.7-124			
p-Isopropyltoluene	4.89		ug/L	5.000	ND	97.8	82.3-124			
Naphthalene	3.84		ug/L	5.000	ND	76.8	47.5-124			
n-Propyl Benzene	4.94		ug/L	5.000	ND	98.8	86.7-125			
Trichlorofluoromethane	8.07		ug/L	5.000	ND	161	69.4-148			M
Surrogate: Dibromofluoromethane	*5.63*		*ug/L*	*5.000*		*113*	*82.2-117*			
Surrogate: Toluene-d8	*4.95*		*ug/L*	*5.000*		*99.0*	*82.6-111*			
Surrogate: 4-Bromofluorobenzene	*5.13*		*ug/L*	*5.000*		*103*	*88.4-108*			
Matrix Spike (A406056-MS2)	**Source: A142601-06**			Prepared: 06/25/2014 Analyzed: 06/26/2014 11:51						
Gasoline Range Organics	517		ug/L	500.0	37.8	95.8	70-130			
Surrogate: Toluene-d8	*4.98*		*ug/L*	*5.000*		*99.6*	*82.6-111*			
Matrix Spike Dup (A406056-MSD1)	**Source: A142601-01**			Prepared: 06/25/2014 Analyzed: 06/26/2014 03:36						
Acetone	54.7		ug/L	50.00	ND	109	36.4-159	18.6	20	
Benzene	5.69		ug/L	5.000	ND	114	79-128	10.4	20	
2-Butanone	49.8		ug/L	50.00	ND	99.7	58.8-141	14.7	20	
1,1-Dichloroethane	6.57		ug/L	5.000	ND	131	76.5-139	9.57	20	
1,2-Dichloroethane	5.76		ug/L	5.000	ND	115	63-155	11.4	20	
trans-1,2-Dichloroethene	5.52		ug/L	5.000	ND	110	69.8-140	11.7	20	
cis-1,2-Dichloroethene	5.70		ug/L	5.000	ND	114	73.6-134	3.39	20	
1,1-Dichloroethene	5.80		ug/L	5.000	ND	116	66.6-141	7.70	20	
Ethylbenzene	5.09		ug/L	5.000	ND	102	88-123	3.60	20	
Tetrachloroethene	5.16		ug/L	5.000	ND	103	71.7-123	2.75	20	
Toluene	4.99		ug/L	5.000	0.200	95.8	73-121	5.58	20	
1,1,1-Trichloroethane	8.17		ug/L	5.000	1.77	128	63.3-152	15.3	20	
1,1,2-Trichloroethane	5.24		ug/L	5.000	ND	105	78.3-128	13.9	20	
Trichloroethene	9.53		ug/L	5.000	3.86	113	76.3-129	15.0	20	
1,3,5-Trimethylbenzene	4.83		ug/L	5.000	ND	96.6	85.2-122	4.44	20	
1,2,4-Trimethylbenzene	4.72		ug/L	5.000	ND	94.4	81-123	3.67	20	
Vinyl chloride	5.45		ug/L	5.000	ND	109	72.9-137	0.737	20	

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Volatile Organic Compounds by Method 8260 - Purge and Trap - Quality Control

ECCS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A406056 - EPA 5030B										
Matrix Spike Dup (A406056-MSD1)	**Source: A142601-01**			Prepared: 06/25/2014 Analyzed: 06/26/2014 03:36						
m,p-Xylene	9.90		ug/L	10.00	ND	99.0	88.3-114	3.39	20	
o-Xylene	5.03		ug/L	5.000	ND	101	84-115	2.82	20	
n-Butyl Benzene	5.05		ug/L	5.000	ND	101	82.9-129	2.20	20	
sec-Butyl Benzene	5.21		ug/L	5.000	ND	104	87.9-121	3.12	20	
Carbon disulfide	4.52		ug/L	5.000	ND	90.4	70.9-136	8.29	20	
Chloroethane	11.0		ug/L	5.000	ND	220	52.8-164	8.91	20	M
Chloroform	6.24		ug/L	5.000	ND	125	70.6-142	12.1	20	
Dichlorodifluoromethane	5.93		ug/L	5.000	ND	119	28.3-181	8.62	20	
Isopropylbenzene	5.14		ug/L	5.000	ND	103	86.7-124	2.76	20	
p-Isopropyltoluene	5.06		ug/L	5.000	ND	101	82.3-124	3.42	20	
Naphthalene	4.20		ug/L	5.000	ND	84.0	47.5-124	8.96	20	
n-Propyl Benzene	5.13		ug/L	5.000	ND	103	86.7-125	3.77	20	
Trichlorofluoromethane	8.64		ug/L	5.000	ND	173	69.4-148	6.82	20	M
Surrogate: Dibromofluoromethane	*5.83*		*ug/L*	*5.000*		*117*	*82.2-117*			
Surrogate: Toluene-d8	*4.95*		*ug/L*	*5.000*		*99.0*	*82.6-111*			
Surrogate: 4-Bromofluorobenzene	*5.20*		*ug/L*	*5.000*		*104*	*88.4-108*			
Matrix Spike Dup (A406056-MSD2)	**Source: A142601-06**			Prepared: 06/25/2014 Analyzed: 06/26/2014 12:20						
Gasoline Range Organics	522		ug/L	500.0	37.8	96.8	70-130	1.00	20	
Surrogate: Toluene-d8	*4.93*		*ug/L*	*5.000*		*98.6*	*82.6-111*			

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TRC Solutions	Project: TRC Tecumseh RI - Tecumseh, MI
3754 Ranchero Drive	Project Number: 220003.0000.0000
Ann Harbor MI, 48108	Project Manager: Stacy Metz

Notes and Definitions

M	The matrix spike and/or matrix spike duplicate recovery was outside of the laboratory control limits.
D	Data reported from a dilution
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. If the word 'dry' does not appear after the units, results are reported on an as-is basis.
RPD	Relative Percent Difference

Environmental Chemistry Consulting Services, Inc.
2525 Advance Road
Madison, WI 53718
608-221-8700 (phone)
608-221-4889 (fax)

CHAIN OF CUSTODY

Lab Work Order #: A142614

Project Number: 220003
Project Name: TRC MIP Investigation
Project Location: Tecumseh MI
Turn Around (circle one): Normal (Rush)
If Rush, Report Due Date:
Sampled By (Print): Jaul & Jass

Analyses Requested
Preservation Codes

Mail Report To: Stacy Metz
Company: TRC
Address: 1540 Eisenhower Place Ann Arbor MI 48108
E-mail Address:
Invoice To: Same
Company:
Address:

Sample Description	Collection Date	Collection Time	Matrix	Total # of Containers	VOC GRO TPH	DRO					Comments	Lab ID	Lab Receipt Time
MIP-SB03-(40.5-43.5)	6/24/14	0937	Sw	4	+	+						01	
Dup #03	6/24/14	—	Sw	4	+	+						02	
MIP SB-03(24-27)	6/24/14	0740	Sw	4	+	+						03	
MIP SB-03(37.5-40.5)	6/24/14	0939	Sw	4	+						hold DRO	04	
MIP SB-03(34.5-37.5)	6/24/14	1047	Sw	4	+						hold DRO	05	

Preservation Codes
A=None B=HCL C=H_2SO_4
D=HNO_3 E=EnCore F=Methanol
G=NaOH O=Other (Indicate)

Relinquished By: [signature] Date: 6/24/14 Time: 1240
Relinquished By: Date: Time:

Received By: [signature] Date: 6/25/14 Time: 1000
Received By: Date: Time:

Matrix Codes
A=Air S=Soil W=Water O=Other

Custody Seal: Present/Absent Intact/Not Intact Seal #'s
Shipped Via:

Receipt Temp: 0.5°C S/N 130492013
Temp Blank Y (N) Exp. 08-09-15

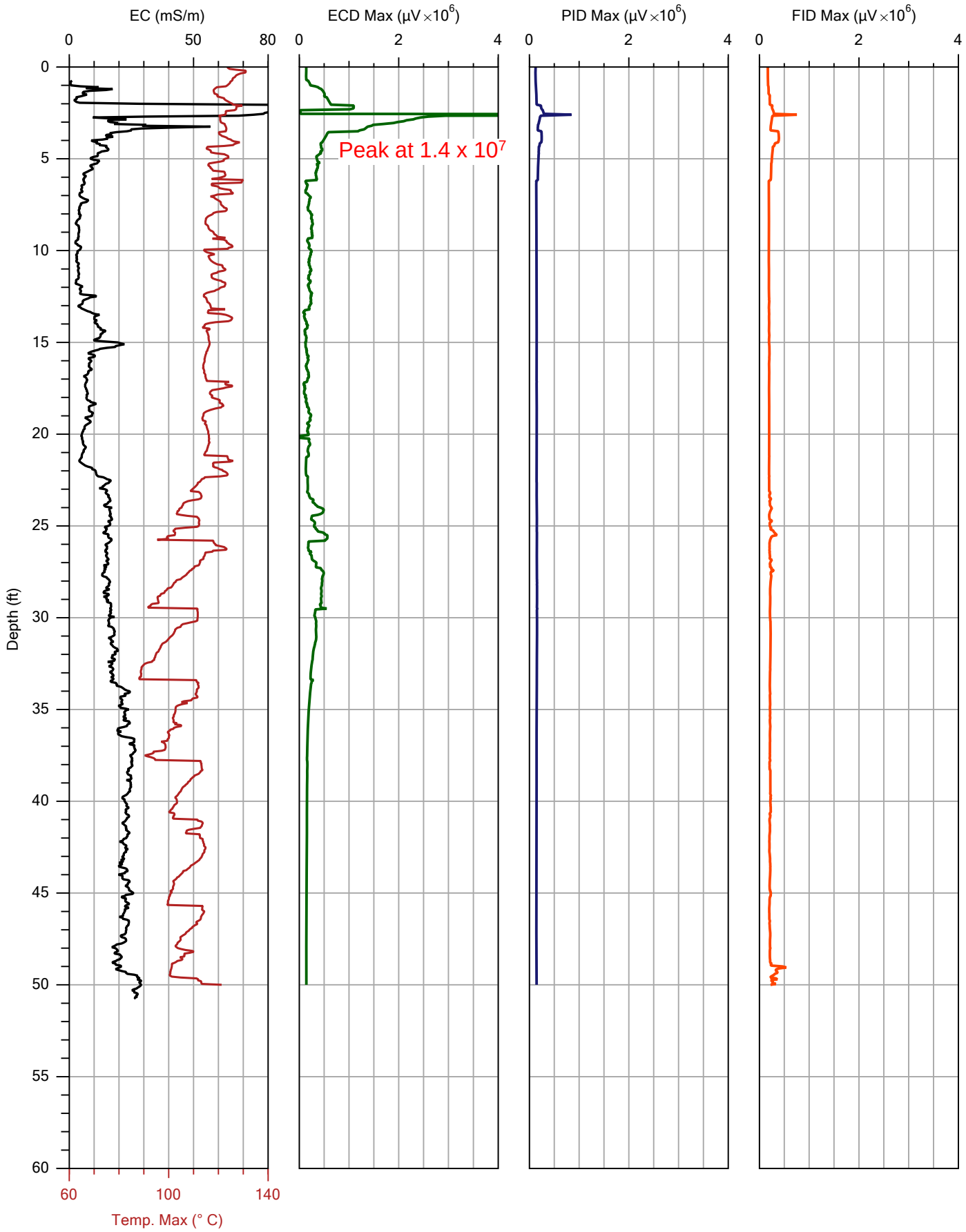
Download this form at www.eccsmobilelab.com.

WHITE - REPORT COPY YELLOW - LABORATORY COPY PINK - SAMPLER/SUBMITTER

Rev. 11/08

Appendix D
Normalized MIP Investigation Data

MIP-01



Direct Image® By Geoprobe Systems®

		File: MIP-01.MIP
Company: SER90	Operator: Sammy Sirhan	Date: 6/17/2014
Project ID: TPC-14-RI Investigation	Client: TRC	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.5	PASS
High	290.0	280.4	3.3	PASS

MIP-01.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy Sirhan
PROJECT ID: TPC-14-RI Investigation
CLIENT: TRC
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-01.pre.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 47 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 09:26:19

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 56 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jun 17 2014 09:32:38

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.60	0.792	128	1	1	1
3.50	1.067	128	1	1	1
20.05	6.111	1	1	1	1
20.60	6.279	1	1	1	1

LOG END DEPTH: 50.00 ft (15.240 m)
LOG END TIME: Tue Jun 17 2014 10:59:40

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-01.post.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 39.2 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 11:30:49

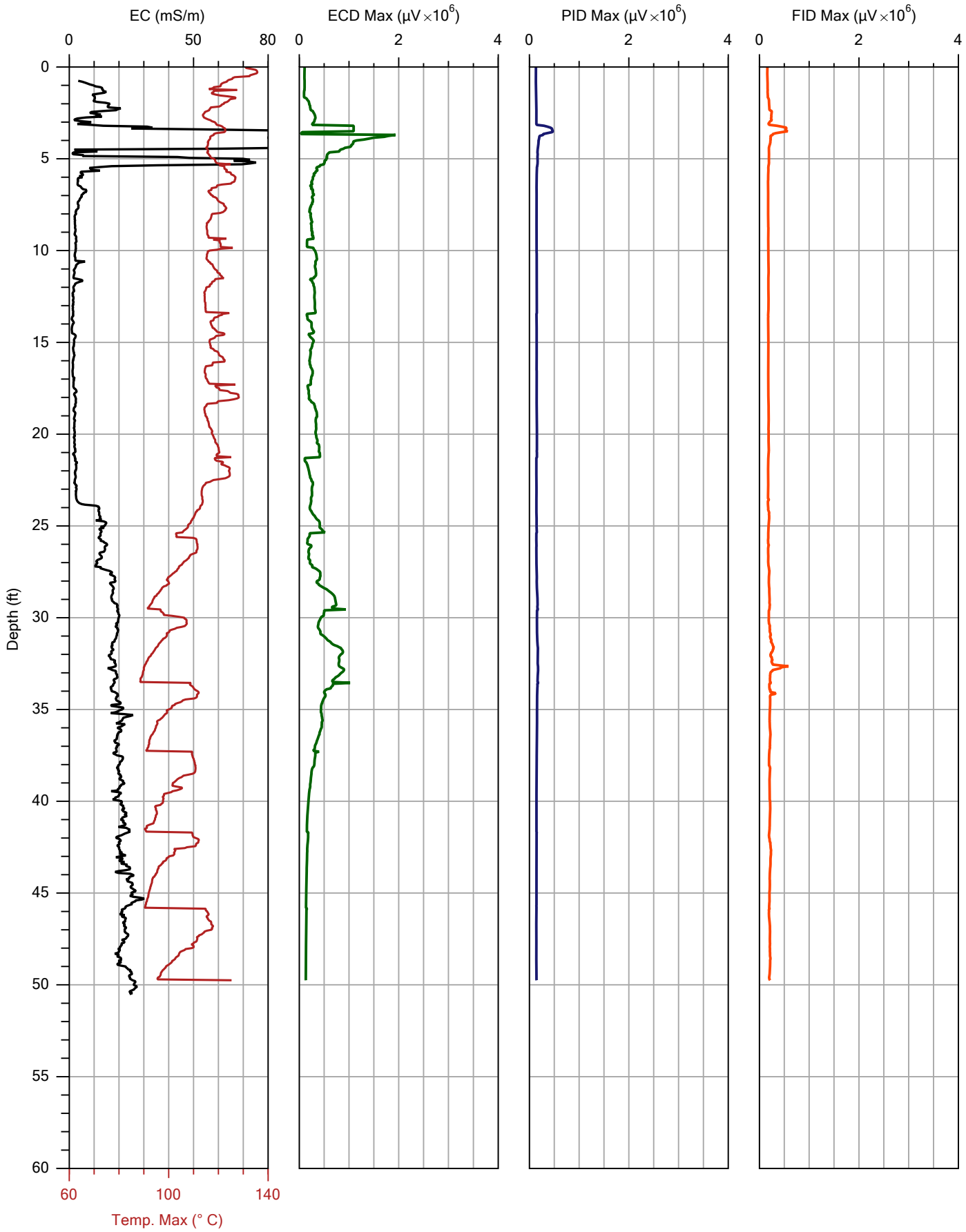
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.2	7.6	PASS
High	290.0	290.9	0.3	PASS

MIP-02



Direct Image® By Geoprobe Systems®

		File: MIP-02.MIP
Company: SER90	Operator: Sammy Sirhan	Date: 6/17/2014
Project ID: TPC-14-RI Investigation	Client: TRC	Location: 41° 59′ 43″ N, 83° 56′ 35″ E

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	289.6	0.1	PASS

MIP-02.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy Sirhan
PROJECT ID: TPC-14-RI Investigation
CLIENT: TRC
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-02.pre.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 42.5 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 12:21:57

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 56 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jun 17 2014 12:27:15

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.70	1.128	128	1	1	1
9.35	2.850	1	1	1	1

LOG END DEPTH: 49.75 ft (15.164 m)
LOG END TIME: Tue Jun 17 2014 13:37:50

LATITUDE: 41.995280950
LONGITUDE: 83.942994564
ELEVATION: 221.224 METERS 725.80 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-02.post.tim
COMPOUND: PCE
CONCENTRATION: 1.0 ppm
FLOW: 38.5 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 14:21:03

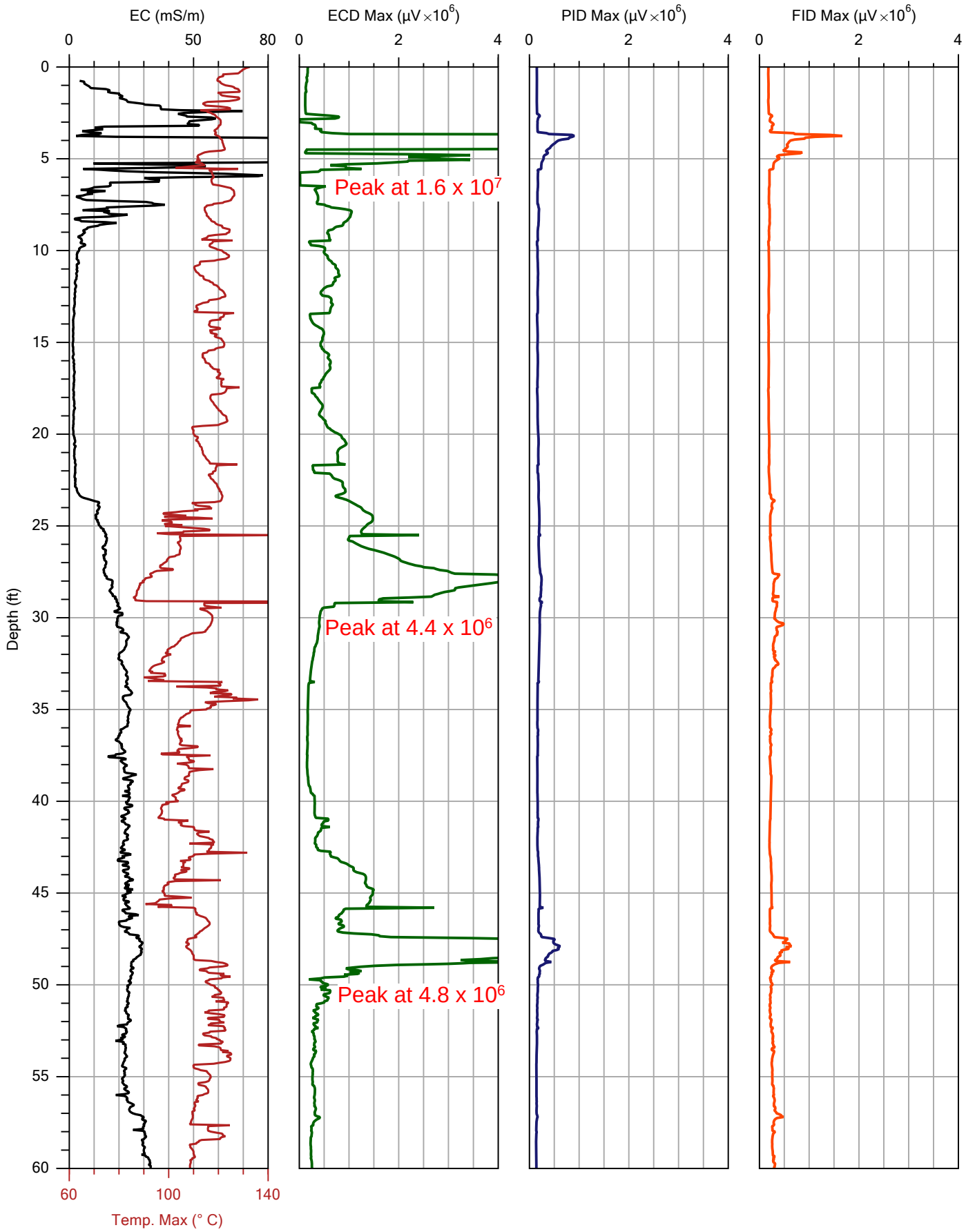
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
12	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	290.5	0.2	PASS

MIP-03



Direct Image® By Geoprobe Systems®

		File: MIP-03.MIP
Company: SER90	Operator: S. Sirhan	Date: 6/17/2014
Project ID: TPC-14-RI	Client: TRC Solutions	Location: 41° 59′ 42″ N, 83° 56′ 35″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.9	PASS
High	290.0	281.5	2.9	PASS

MIP-03.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-03.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 15:45:10

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 56 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jun 17 2014 15:49:02

Temperature out of range (199.9 deg C) at 29.15 ft (8.885 m)

Temperature out of range (61.1 deg C) at 33.20 ft (10.119 m)

Temperature out of range (78.0 deg C) at 45.80 ft (13.960 m)

MIP Pressure out of range (11.5 psi / 79 kPa) at 53.80 ft (16.398 m)

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.05	0.930	128	1	1	1
4.75	1.448	4096	1	1	1

5.55	1.692	128	1	1	1
5.70	1.737	4	1	1	1
6.55	1.996	4	1	1	1
41.40	12.619	4	1	1	1
48.40	14.752	128	1	1	1
48.65	14.829	512	1	1	1
50.25	15.316	16	1	1	1

LOG END DEPTH: 61.60 ft (18.776 m)
LOG END TIME: Tue Jun 17 2014 17:46:40

LATITUDE: 41.994934192
LONGITUDE: -83.942970531
ELEVATION: 210.291 METERS 689.93 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-03.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.4 mL/min
RESPONSE TEST START TIME: Tue Jun 17 2014 18:26:16

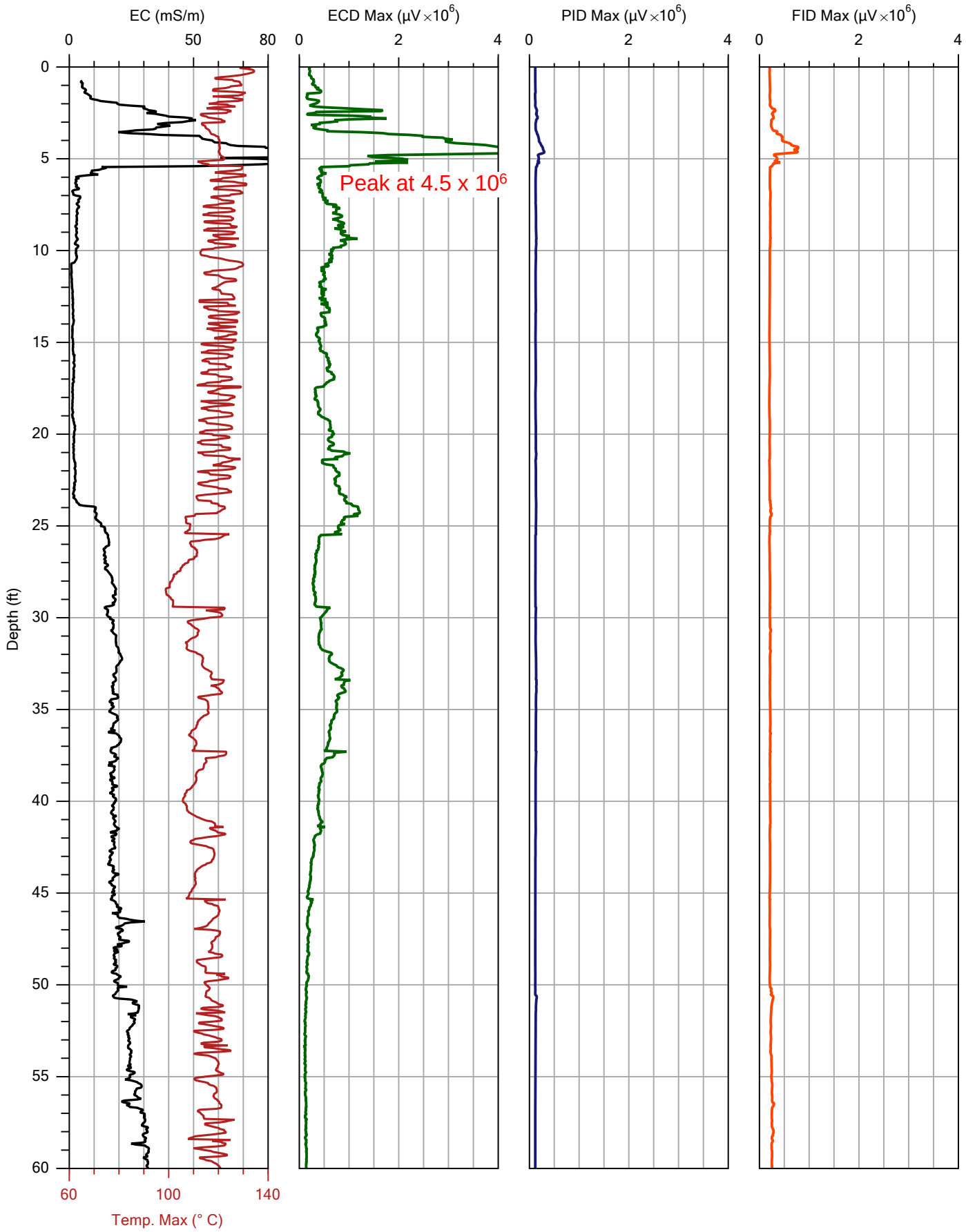
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	16	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.5	PASS
High	290.0	291.4	0.5	PASS

MIP-04



Direct Image® By Geoprobe Systems®

		File: MIP-04A.MIP
Company: SER90	Operator: S. Sirhan	Date: 6/18/2014
Project ID: TCP-14-RI	Client: TRC Solutions	Location: 41° 59′ 41″ N, 83° 56′ 36″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	292.2	0.8	PASS

MIP-04A.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TCP-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-04A.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.8 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 11:17:45

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
28	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jun 18 2014 11:21:17

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	128	1	1	1
2.65	0.808	512	1	1	1
13.35	4.069	128	1	1	1

LOG END DEPTH: 61.35 ft (18.699 m)
LOG END TIME: Wed Jun 18 2014 12:47:21

LATITUDE: 41.994729736
LONGITUDE: -83.943397897
ELEVATION: 210.320 METERS 690.03 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-04A.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.7 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 13:12:33

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

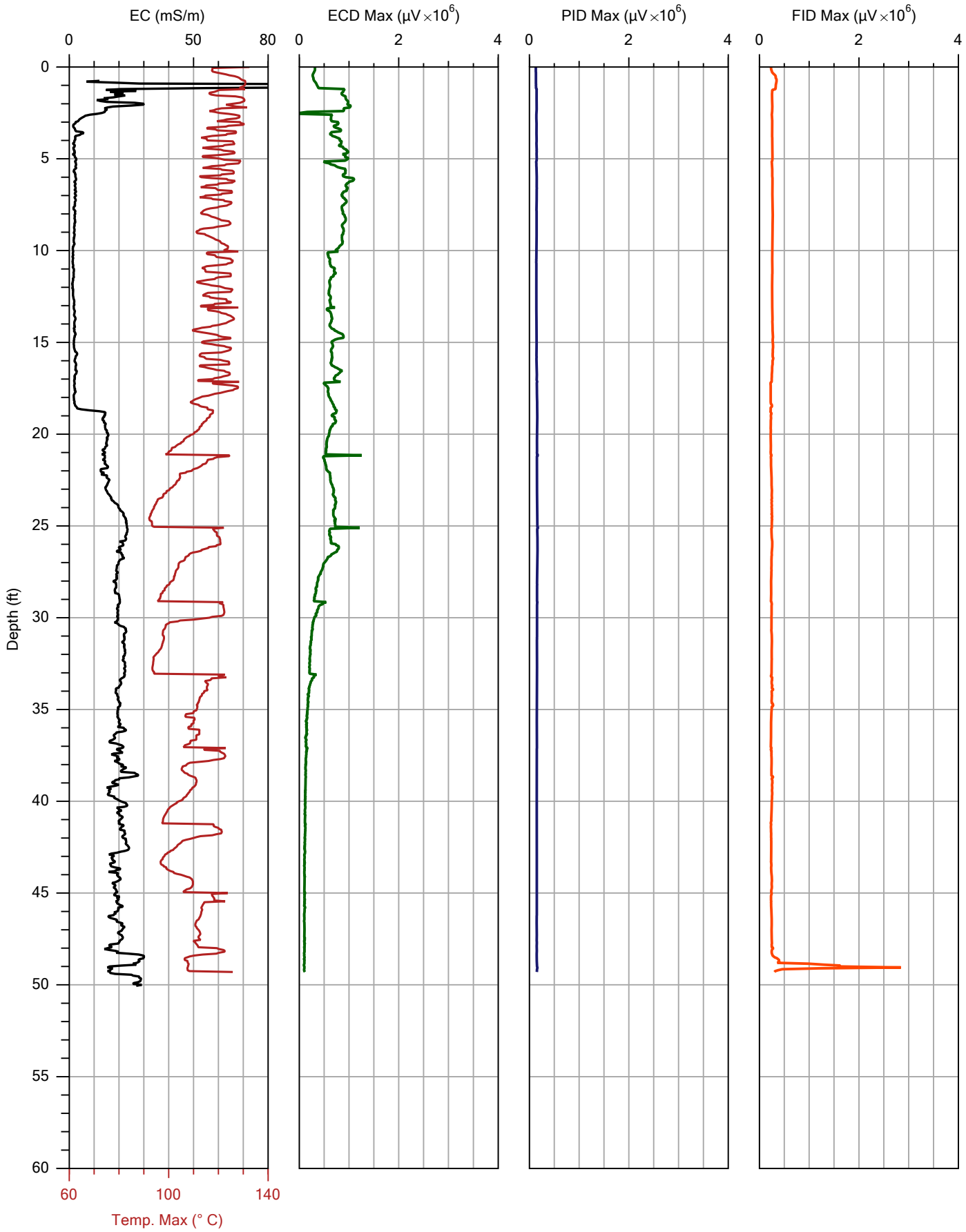
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	292.9	1.0	PASS

********** USER NOTES **********

This is a replacement of MIP-04. Original MIP-04 was terminated at 27.5 ft BGS due to erratic probe temperature. All data for MIP-04 is valid up to 27 ft BGS.

MIP-05



Direct Image® By Geoprobe Systems®

		File: MIP-05.MIP
Company: SER90	Operator: S. Sirhan	Date: 6/18/2014
Project ID: TCP-14-RI	Client: TRC Solutions	Location: 41° 59′ 41″ N, 83° 56′ 33″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.5	PASS
High	290.0	290.0	0.0	PASS

MIP-05.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TCP-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-05.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.2 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 13:46:48

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Wed Jun 18 2014 13:50:30

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.60	0.792	64	1	1	1
12.95	3.947	64	1	1	1
25.10	7.650	64	1	1	1

LOG END DEPTH: 49.30 ft (15.027 m)
LOG END TIME: Wed Jun 18 2014 15:09:00

LATITUDE: 41.994651028
LONGITUDE: -83.942535419
ELEVATION: 208.612 METERS 684.42 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-05.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.3 mL/min
RESPONSE TEST START TIME: Wed Jun 18 2014 15:24:22

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

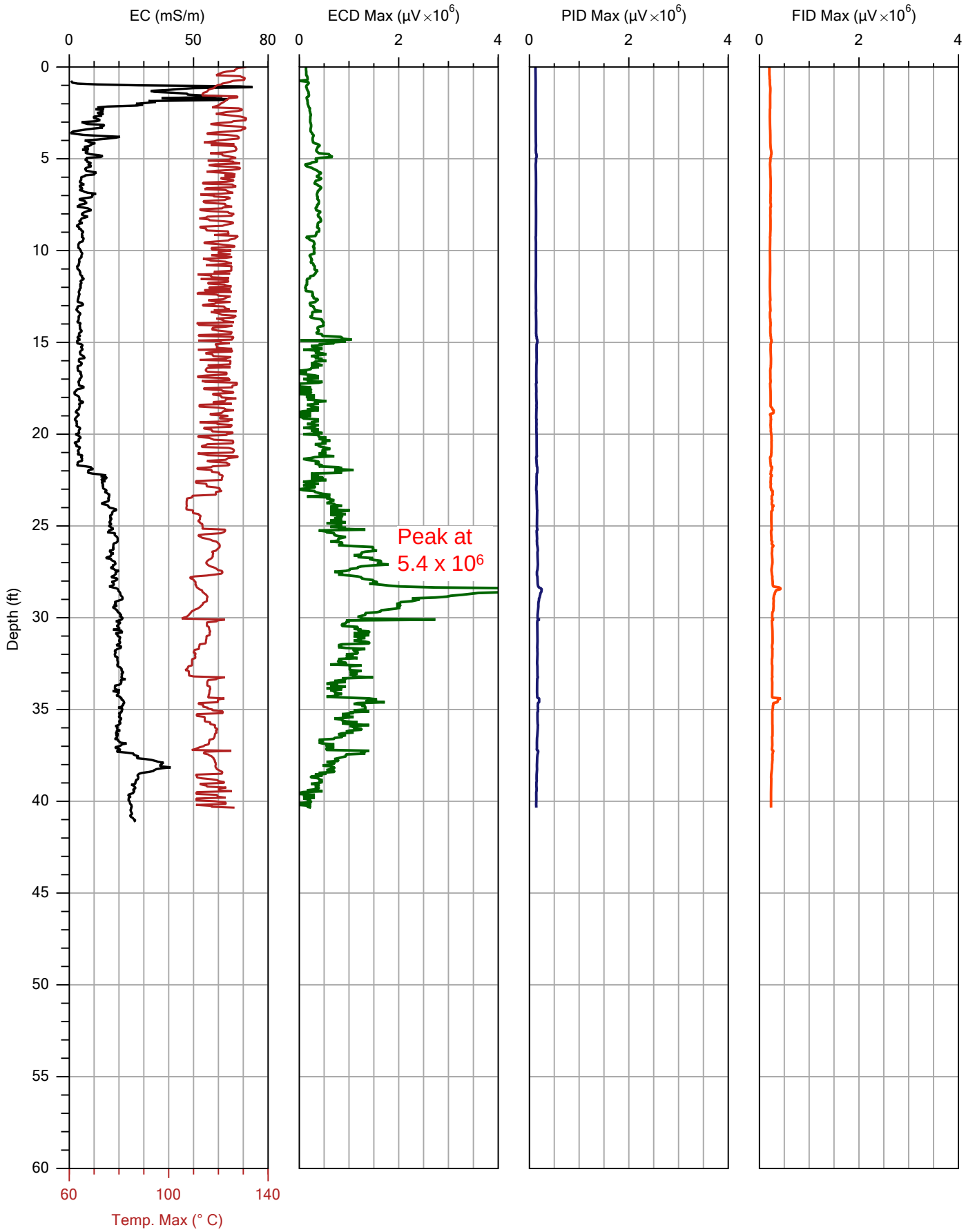
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.5	PASS
High	290.0	292.9	1.0	PASS

********** USER NOTES **********

Broing was terminated at 50 ft BGS due to storm with lightening. However, lower fine formation was captured.

MIP-06



Direct Image® By Geoprobe Systems®

		File: MIP-06.MIP
Company: SER90	Operator: Sammy	Date: 6/23/2014
Project ID: TPC-IR-14	Client: TRC Solution	Location: 41° 59′ 46″ N, 83° 56′ 37″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.4	PASS
High	290.0	289.1	0.3	PASS

MIP-06.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-IR-14
CLIENT: TRC Solution
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-06.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.2 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 11:54:21

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
21	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (79.9 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Mon Jun 23 2014 11:57:46

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.80	0.244	32	1	1	1
5.80	1.768	32	1	1	1
14.95	4.557	1024	1	1	1

LOG END DEPTH: 40.35 ft (12.299 m)
LOG END TIME: Mon Jun 23 2014 13:23:32

LATITUDE: 41.996245503
LONGITUDE: -83.943564278
ELEVATION: 211.044 METERS 692.40 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-06.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.8 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 13:47:38

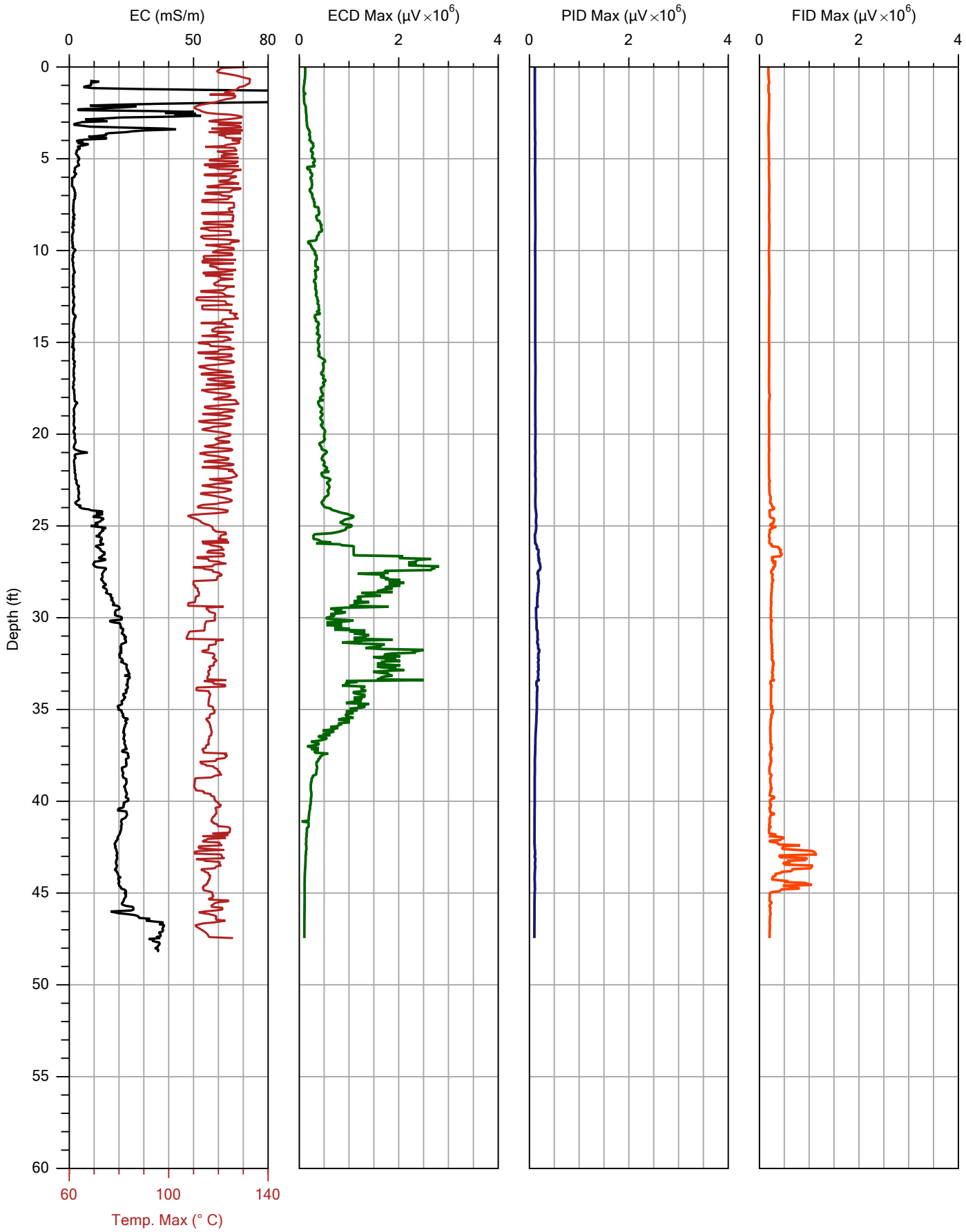
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
19	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.9	9.0	PASS
High	290.0	291.2	0.4	PASS

MIP-07



Direct Image® By Geoprobe Systems®

		File: MIP-07.MIP
Company: SER90	Operator: Sammy	Date: 6/23/2014
Project ID: TPC-IR-14	Client: TRC Solution	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.0	9.2	PASS
High	290.0	289.6	0.1	PASS

MIP-07.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-IR-14
CLIENT: TRC Solution
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-07.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.8 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 15:10:18

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Mon Jun 23 2014 15:13:33

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.90	1.189	1	1	1	1
26.65	8.123	16	1	1	1
26.95	8.214	1024	1	1	1
37.40	11.400	4	1	1	1
41.05	12.512	1	1	1	1

LOG END DEPTH: 47.45 ft (14.463 m)
LOG END TIME: Mon Jun 23 2014 16:49:15

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-07.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.1 mL/min
RESPONSE TEST START TIME: Mon Jun 23 2014 17:10:46

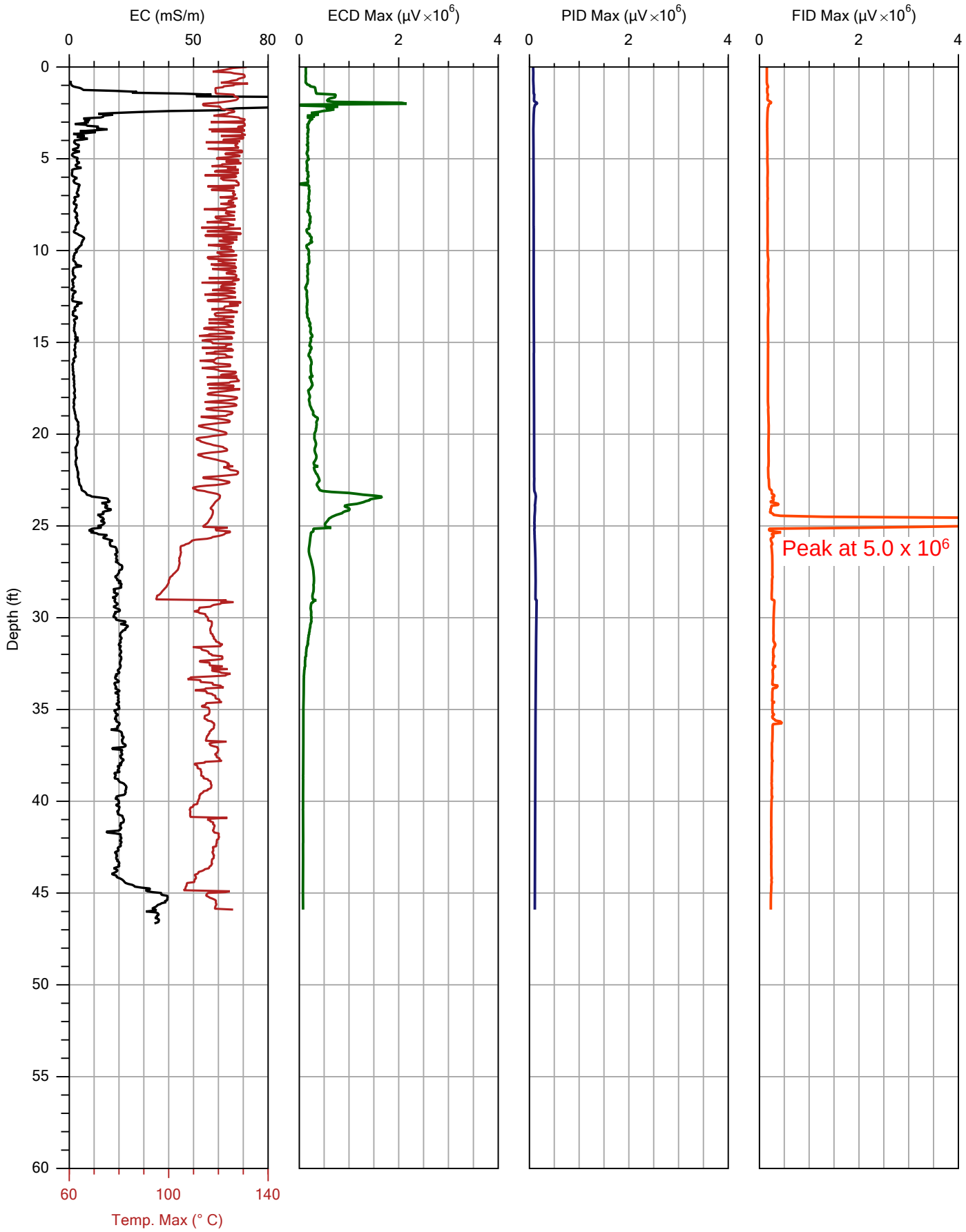
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
43	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.6	8.4	PASS
High	290.0	293.3	1.1	PASS

MIP-08



Direct Image® By Geoprobe Systems®

		File: MIP-08.MIP
Company: SER90	Operator: Sammy	Date: 6/24/2014
Project ID: TPC-14 RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	55.7	1.2	PASS
High	290.0	277.7	4.2	PASS

MIP-08.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-14 RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-08.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 49.9 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 09:29:10

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
34	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jun 24 2014 09:32:13

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.50	0.457	16	1	1	1
2.15	0.655	1024	1	1	1
2.75	0.838	64	1	1	1
6.30	1.920	8	1	1	1
9.80	2.987	8	1	1	1

LOG END DEPTH: 45.90 ft (13.990 m)
LOG END TIME: Tue Jun 24 2014 11:16:34

LATITUDE: 0.000000000
LONGITUDE: 0.000000000

ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-08.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 49.9 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 11:43:26

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	8	1	1	1

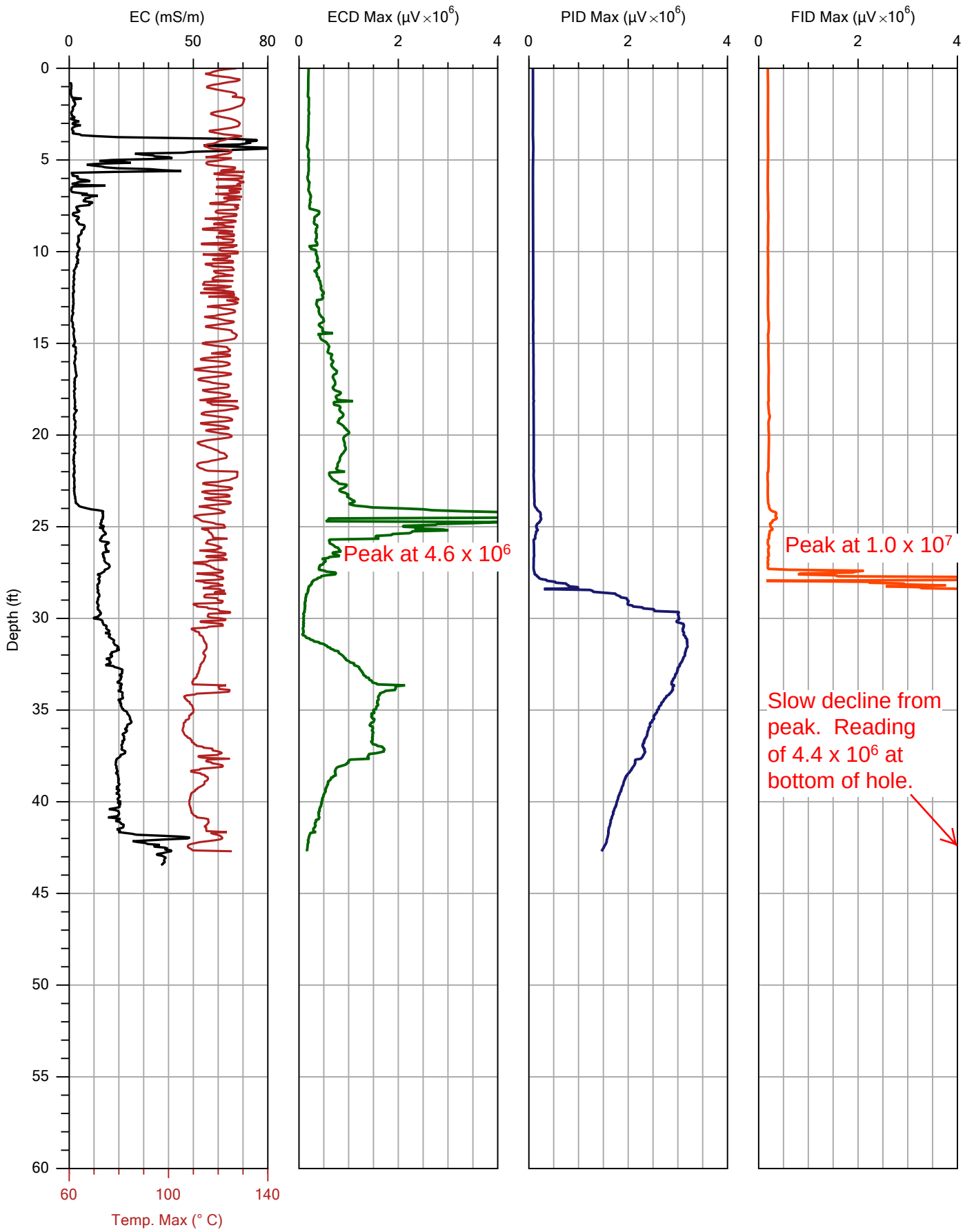
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.0	9.1	PASS
High	290.0	294.5	1.5	PASS

********** USER NOTES **********

The concrete is 20 to 24 inch. Logging started at floor surface for consistency.

MIP-09



Direct Image® By Geoprobe Systems®

		File: MIP-09.MIP
Company: SER90	Operator: Sammy	Date: 6/24/2014
Project ID: TPC-14 RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.6	8.4	PASS
High	290.0	293.2	1.1	PASS

MIP-09.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-14 RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-09.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.7 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 11:48:57

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	8	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (62.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (35.3 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jun 24 2014 11:52:51

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	8	1	1	1
0.60	0.183	8	1	1	1
24.75	7.544	64	1	1	1
28.00	8.534	64	1	10	1
28.45	8.672	64	4	10	1
29.05	8.854	64	4	10	1

LOG END DEPTH: 42.70 ft (13.015 m)
LOG END TIME: Tue Jun 24 2014 13:42:13

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-09.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.7 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 14:48:08

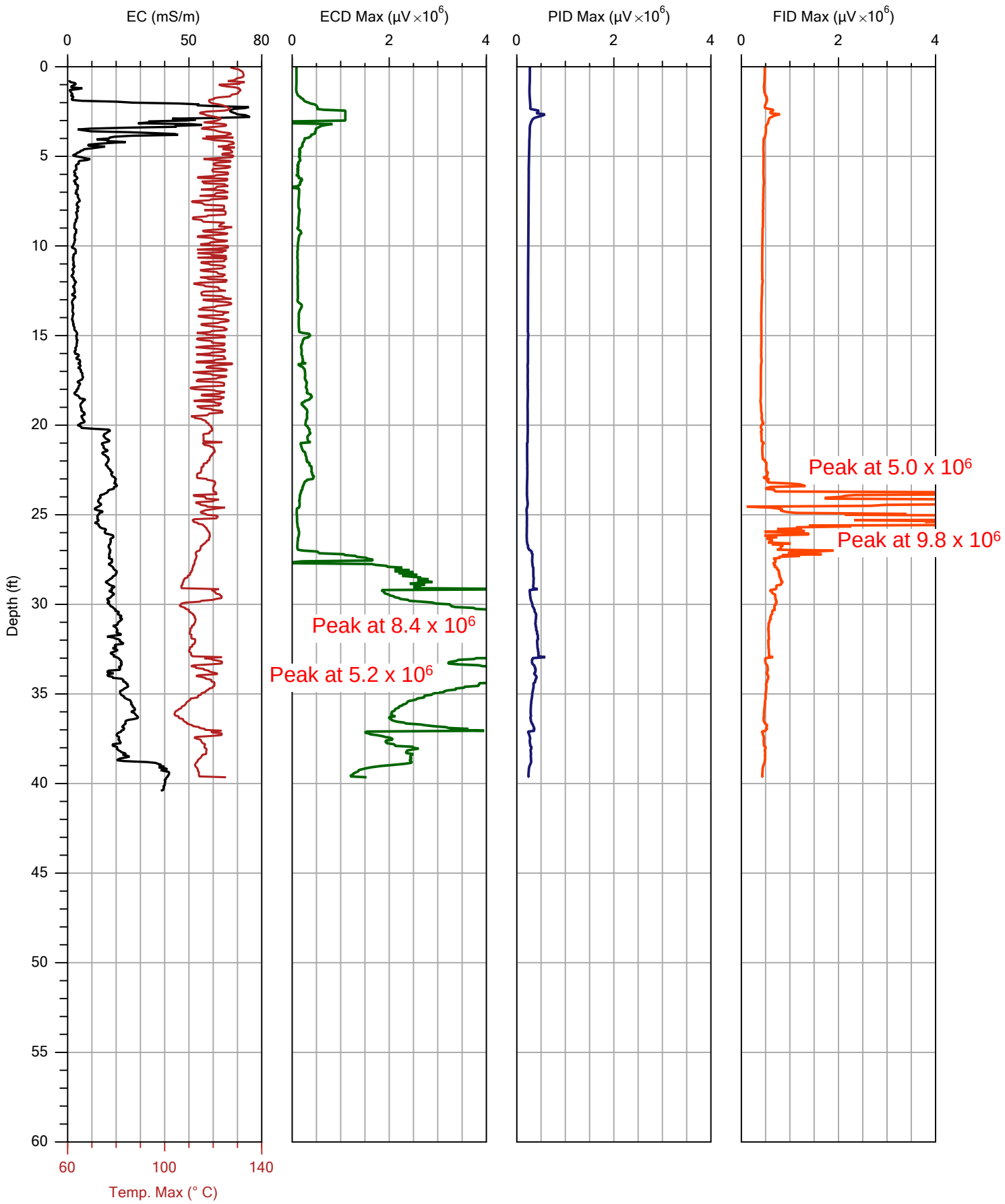
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.9	8.9	PASS
High	290.0	294.4	1.5	PASS

MIP-10



Direct Image® By Geoprobe Systems®

		File: MIP-10.MIP
Company: SER90	Operator: Sammy	Date: 6/24/2014
Project ID: TPC-14 RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.0	9.1	PASS
High	290.0	294.2	1.4	PASS

MIP-10.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-14 RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-10.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.7 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 15:39:36

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
18	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jun 24 2014 15:42:47

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.20	0.975	128	1	1	1
6.65	2.027	8	1	1	1
24.60	7.498	8	1	10	1
27.00	8.230	8	1	10	1
27.75	8.458	1024	1	10	1
29.15	8.885	128	1	10	1
37.05	11.293	128	1	10	1

LOG END DEPTH: 39.65 ft (12.085 m)
LOG END TIME: Tue Jun 24 2014 16:48:30

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET

GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-10.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.5 mL/min
RESPONSE TEST START TIME: Tue Jun 24 2014 17:14:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

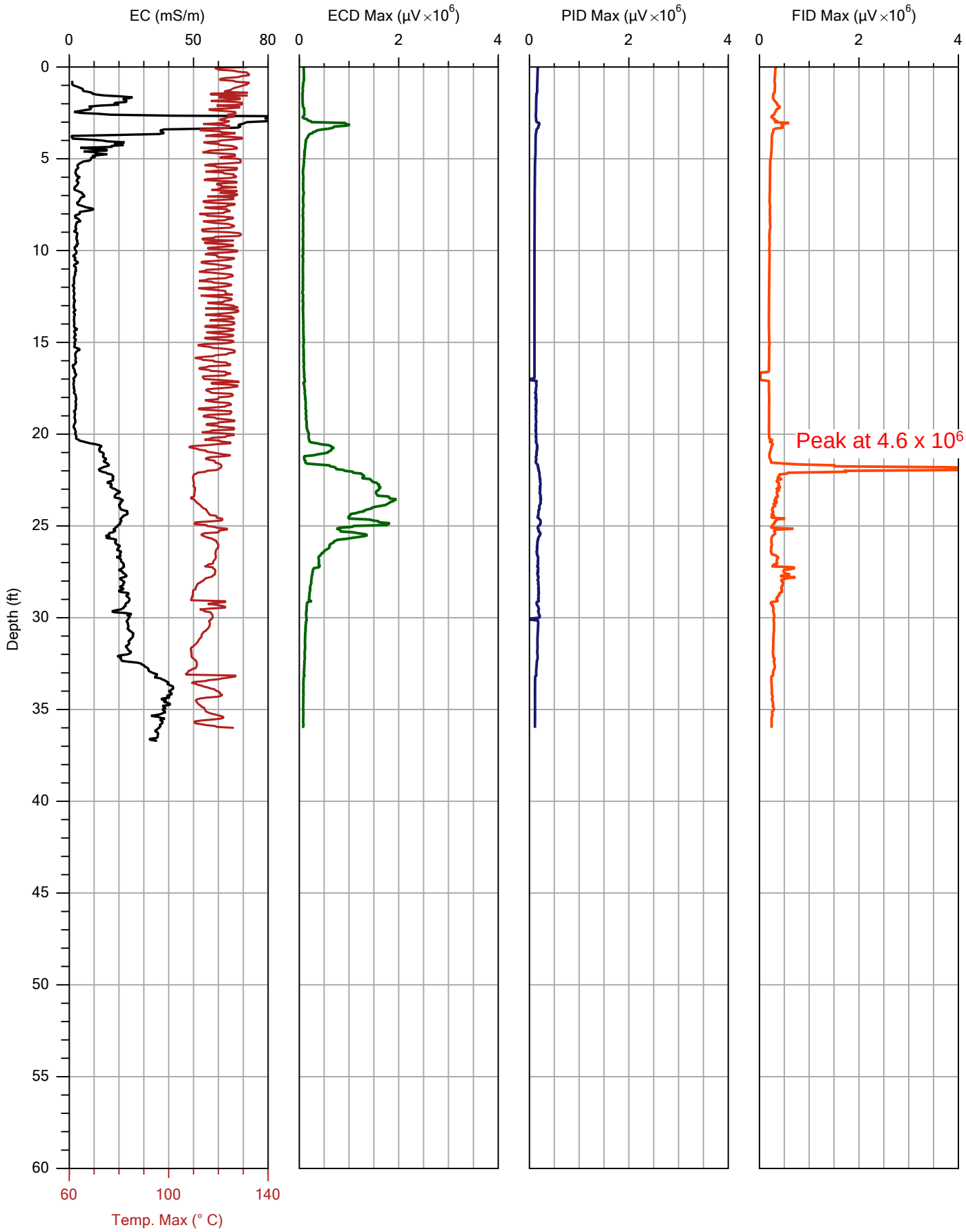
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.0	9.1	PASS
High	290.0	292.4	0.8	PASS

********** USER NOTES **********

Cocrete was 24 in very tough.

MIP-11



Direct Image® By Geoprobe Systems®

		File: MIP-11.MIP
Company: SER90	Operator: S. Sirhan	Date: 6/25/2014
Project ID: TPC-14-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.1	9.2	PASS
High	290.0	293.4	1.2	PASS

MIP-11.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-11.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 50.1 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 08:46:43

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jun 25 2014 08:49:26

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	32	1	1	1
2.80	0.853	32	1	1	1
17.10	5.212	32	64	10	1
17.15	5.227	32	64	10	1
22.45	6.843	32	64	10	1
30.05	9.159	32	2	10	1

LOG END DEPTH: 36.00 ft (10.973 m)
LOG END TIME: Wed Jun 25 2014 09:49:39

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-11.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.1 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 10:07:19

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

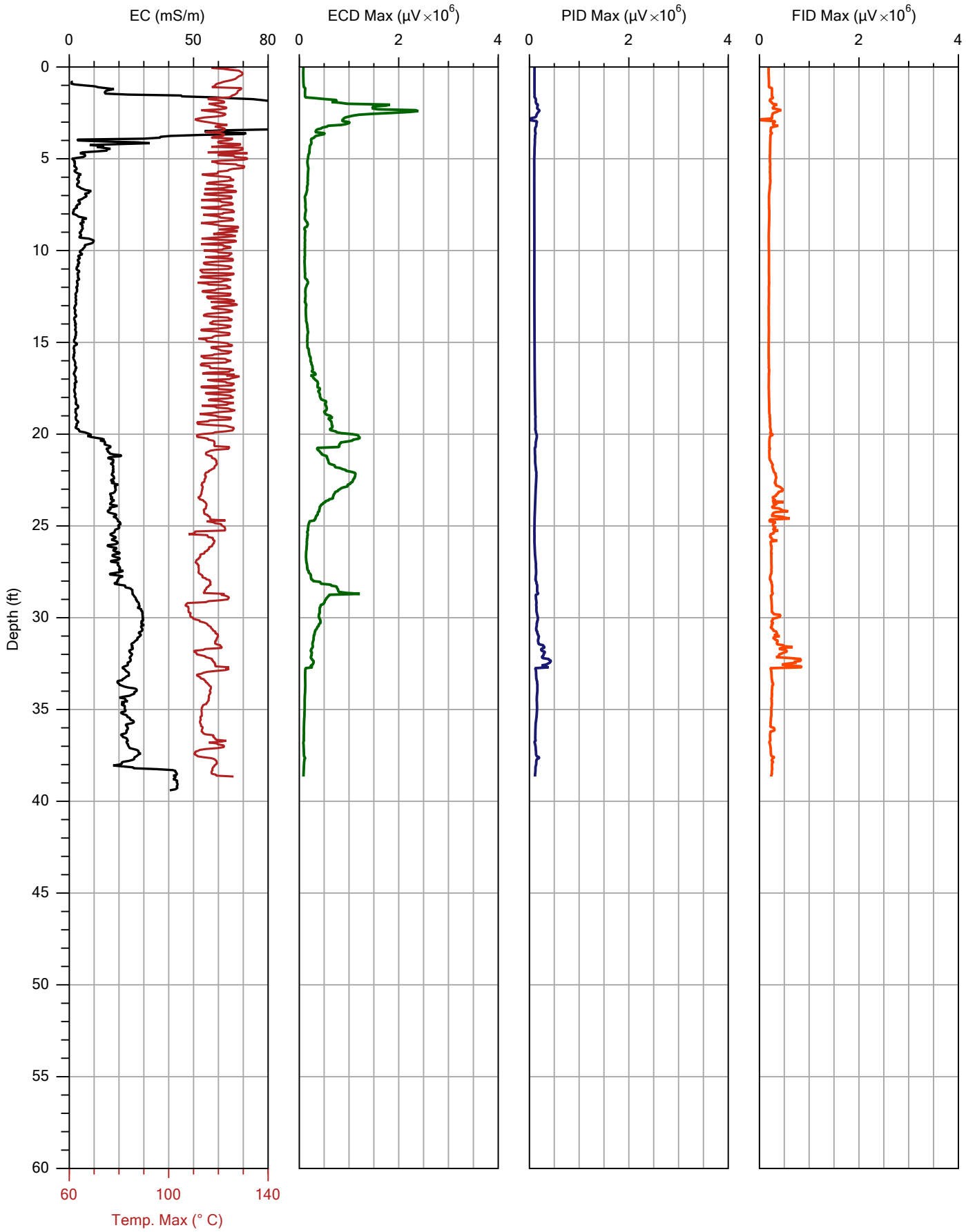
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.2	9.4	PASS
High	290.0	293.4	1.2	PASS

********** USER NOTES **********

24 in concrete

MIP-12



Direct Image® By Geoprobe Systems®

		File: MIP-12.MIP
Company: SER90	Operator: S. Sirhan	Date: 6/25/2014
Project ID: TPC-14-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.1	9.3	PASS
High	290.0	294.1	1.4	PASS

MIP-12.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-12.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.9 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 10:11:32

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (60.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (31.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (30.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (29.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (28.2 deg C) at 0.00 ft (0.000 m)

Temperature out of range (27.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (24.6 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Wed Jun 25 2014 10:15:13

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.15	0.351	8	1	1	1
2.95	0.899	8	8	10	1
4.35	1.326	8	2	10	1
5.50	1.676	8	2	10	1
20.70	6.309	8	2	10	1
32.70	9.967	8	2	10	1

LOG END DEPTH: 38.65 ft (11.781 m)
LOG END TIME: Wed Jun 25 2014 12:34:12

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-12.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.9 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 12:50:45

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

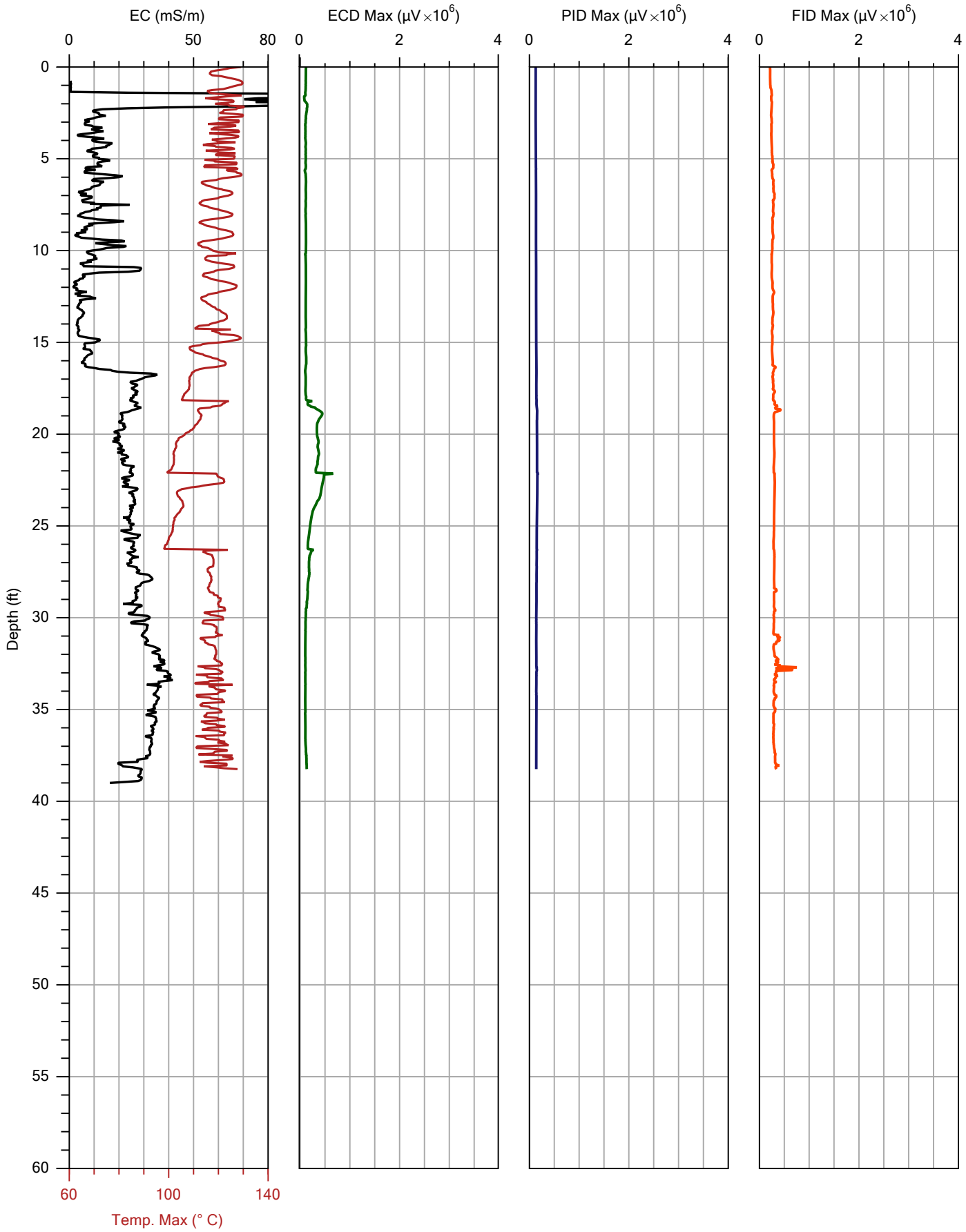
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.1	9.2	PASS
High	290.0	294.3	1.5	PASS

********** USER NOTES **********

Please note 30 in of fresh concrete

MIP-13



Direct Image® By Geoprobe Systems®

		File: MIP-13.MIP
Company: SER90	Operator: S. Sirhan	Date: 6/25/2014
Project ID: TPC-14-RI	Client: TRC Solutions	Location: 41° 59′ 50″ N, 83° 56′ 31″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.1	2.0	PASS
High	290.0	294.1	1.4	PASS

MIP-13.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-13.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.9 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 12:57:37

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (30.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (29.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (29.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (29.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (32.1 deg C) at 0.00 ft (0.000 m)

Temperature out of range (32.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (33.3 deg C) at 0.00 ft (0.000 m)

Temperature out of range (33.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (33.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (34.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Wed Jun 25 2014 13:00:21

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	8	2	1	1

LOG END DEPTH: 38.25 ft (11.659 m)
LOG END TIME: Wed Jun 25 2014 16:03:51

LATITUDE: 41.997260861
LONGITUDE: -83.941868989
ELEVATION: 209.599 METERS 687.66 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-13.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.6 mL/min
RESPONSE TEST START TIME: Wed Jun 25 2014 16:20:24

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

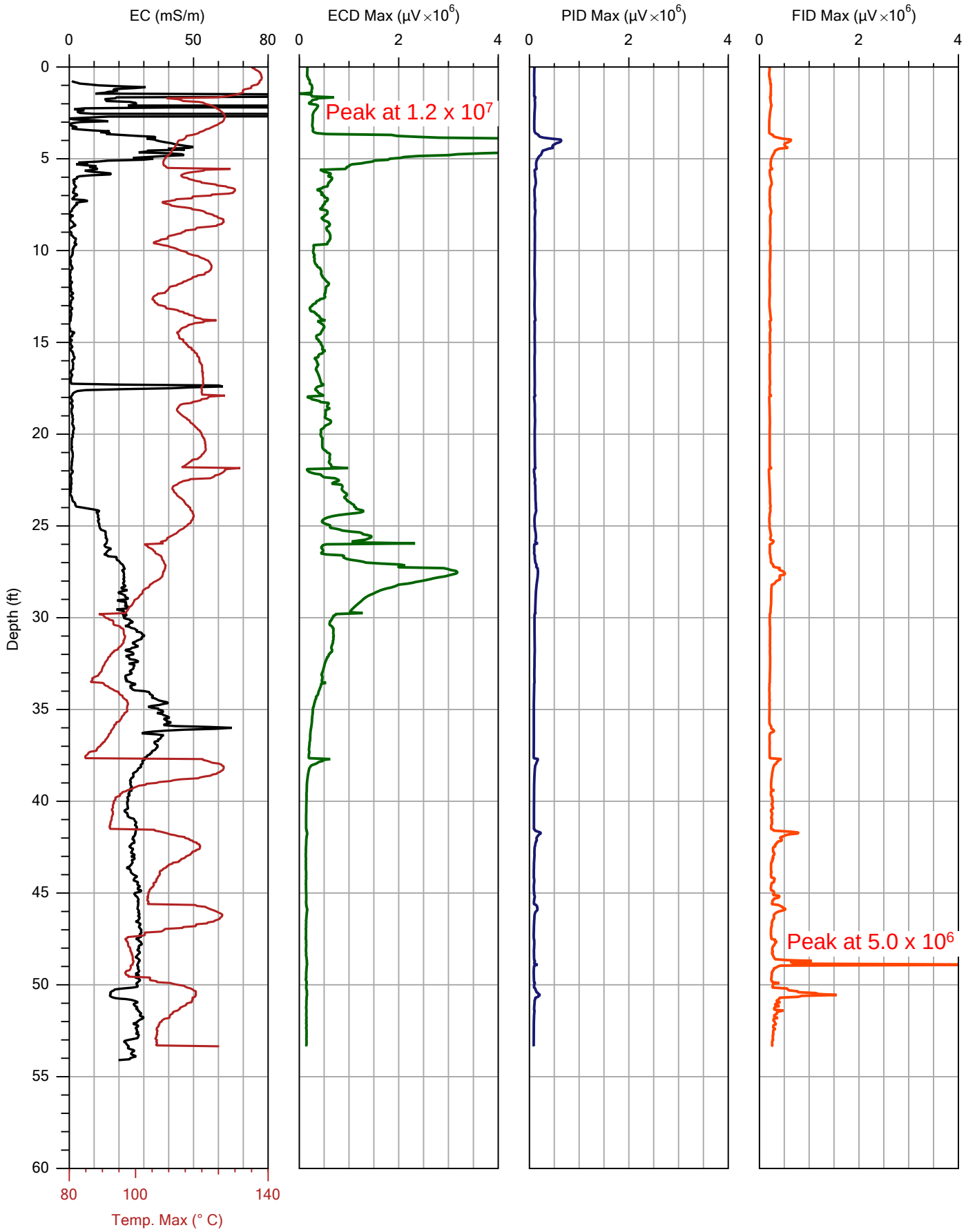
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.4	9.9	PASS
High	290.0	292.0	0.7	PASS

********** USER NOTES **********

Asphalt thickness is 6 in

MIP-14



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: Sammy Sirhan	File: MIP-14A.MIP
Project ID: TPC-14RI	Client: TRC Solutions	Date: 6/26/2014
		Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.7	3.1	PASS
High	290.0	279.1	3.8	PASS

MIP-14A.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy Sirhan
PROJECT ID: TPC-14RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-14A.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.2 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 10:56:40

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
24	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jun 26 2014 10:59:55

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.50	0.457	16	1	1	1

LOG END DEPTH: 53.35 ft (16.261 m)
LOG END TIME: Thu Jun 26 2014 12:18:10

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-14A.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.2 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 12:44:38

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

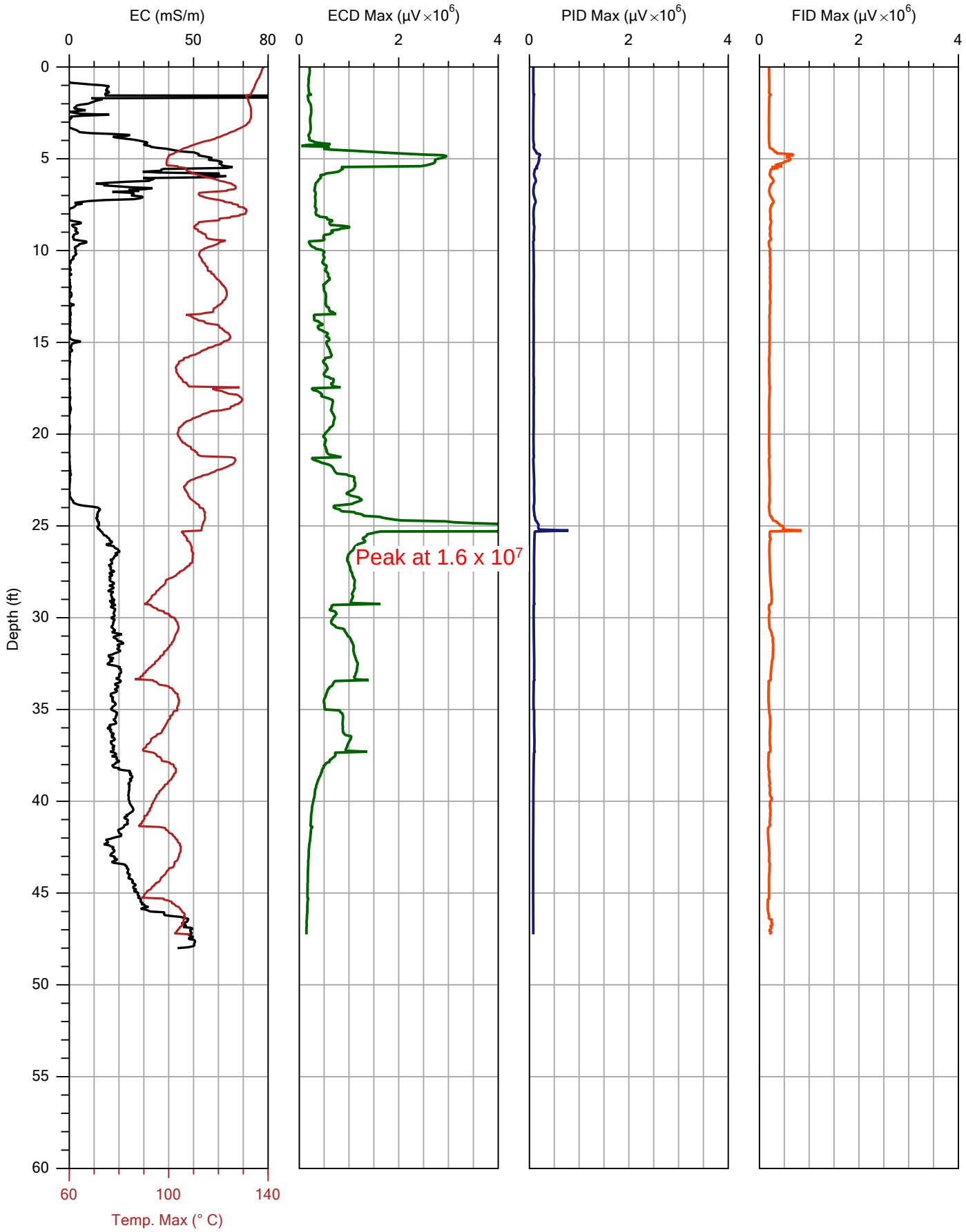
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.1	3.8	PASS
High	290.0	290.0	0.0	PASS

********** USER NOTES **********

Please note very conductive object 2.5 ft. BGS. Please note large gravel (EC = 0 - 1 mS/m) started at 8 ft. and continued to 24 ft. BGS with a thinn clay seam at ~17 (thickness ~4 inches)

MIP-15



Direct Image® By Geoprobe Systems®

		File: MIP-15.MIP
Company: SER90	Operator: Sammy Sirhan	Date: 6/26/2014
Project ID: TPC-14RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	54.7	0.5	PASS
High	290.0	289.2	0.3	PASS

MIP-15.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy Sirhan
PROJECT ID: TPC-14RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-15.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.4 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 13:55:50

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
1:21	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jun 26 2014 13:59:32

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
4.35	1.326	16	1	1	1
8.20	2.499	16	1	1	1

LOG END DEPTH: 47.25 ft (14.402 m)
LOG END TIME: Thu Jun 26 2014 15:02:43

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-15.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.4 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 15:24:22

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

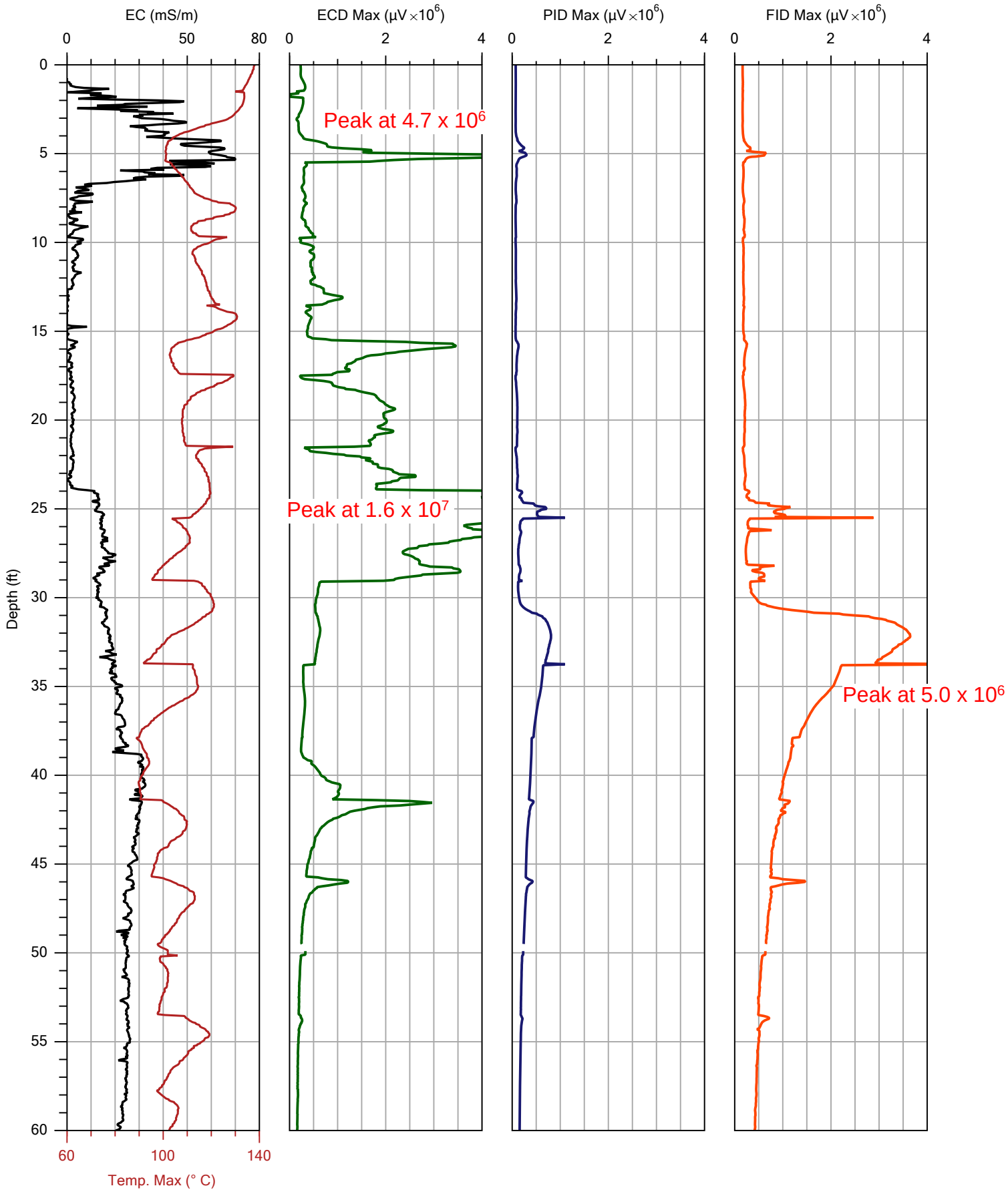
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.1	3.8	PASS
High	290.0	291.2	0.4	PASS

********** USER NOTES **********

Please refer to notes from MIP-14A in reference to gravel layer starting at 8 ft. BGS.
Same shallow conductive object was enountered in this boring.

MIP-16



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: Sammy Sirhan	File: MIP-16.MIP
Project ID: TPC-14RI	Client: TRC Solutions	Date: 6/26/2014
		Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.7	3.1	PASS
High	290.0	289.7	0.1	PASS

MIP-16.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy Sirhan
PROJECT ID: TPC-14RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-16.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.4 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 16:07:09

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jun 26 2014 16:10:57

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.85	0.564	16	1	1	1
52.05	15.865	16	1	1	1

LOG END DEPTH: 62.00 ft (18.898 m)
LOG END TIME: Thu Jun 26 2014 17:29:17

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-16.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38 mL/min
RESPONSE TEST START TIME: Thu Jun 26 2014 17:54:42

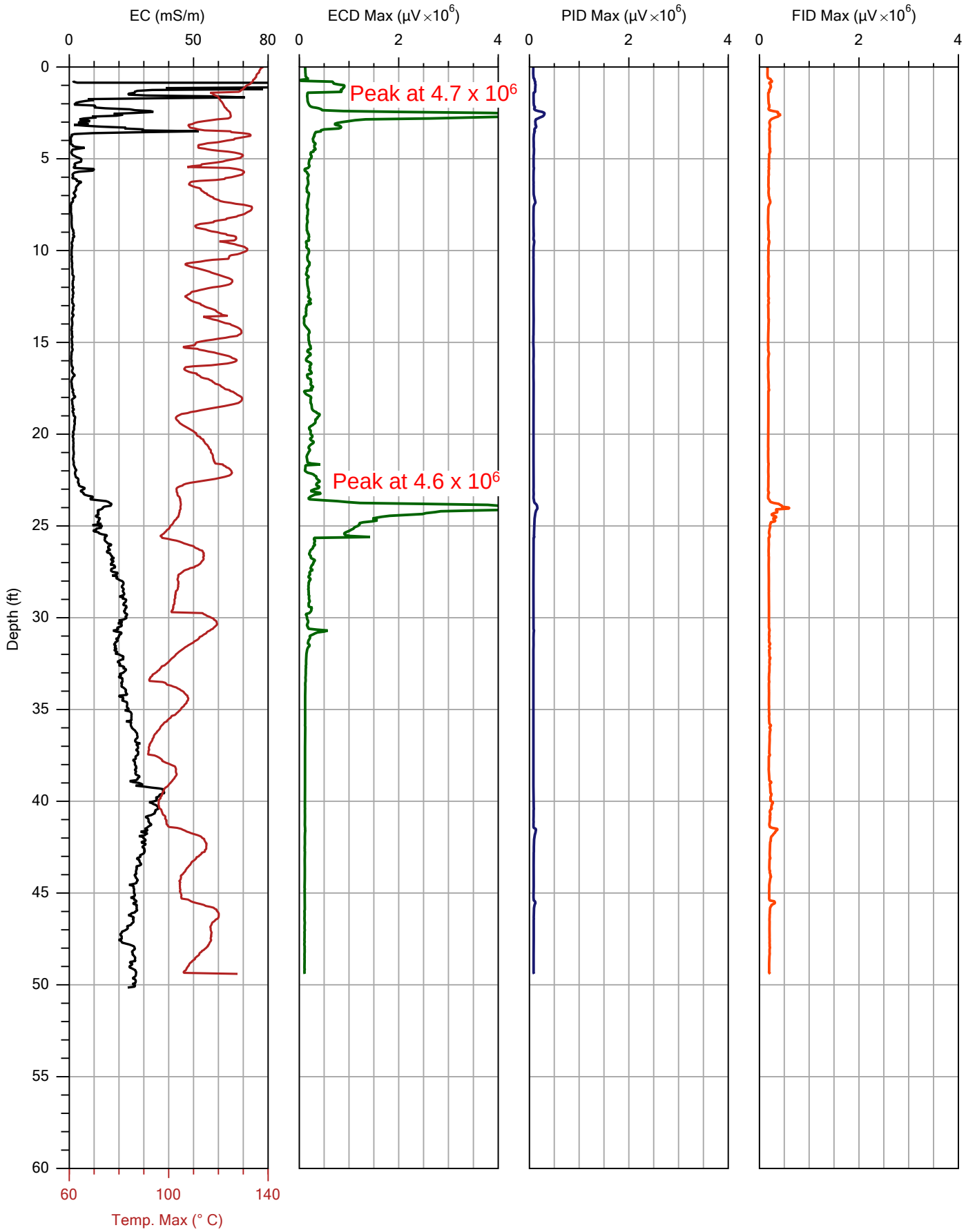
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.5	2.8	PASS
High	290.0	291.5	0.5	PASS

MIP-17



Direct Image® By Geoprobe Systems®

		File: MIP-17.MIP
Company: SER90	Operator: S.Sirhan	Date: 6/27/2014
Project ID: TPC-14RI	Client: TRC Solution	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.0	3.6	PASS
High	290.0	291.4	0.5	PASS

MIP-17.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-14RI
CLIENT: TRC Solution
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-17.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Fri Jun 27 2014 11:12:00

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Fri Jun 27 2014 11:25:25

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.80	0.244	16	1	1	1

LOG END DEPTH: 49.40 ft (15.057 m)
LOG END TIME: Fri Jun 27 2014 13:03:01

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-17.post.tim

COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Fri Jun 27 2014 13:39:05

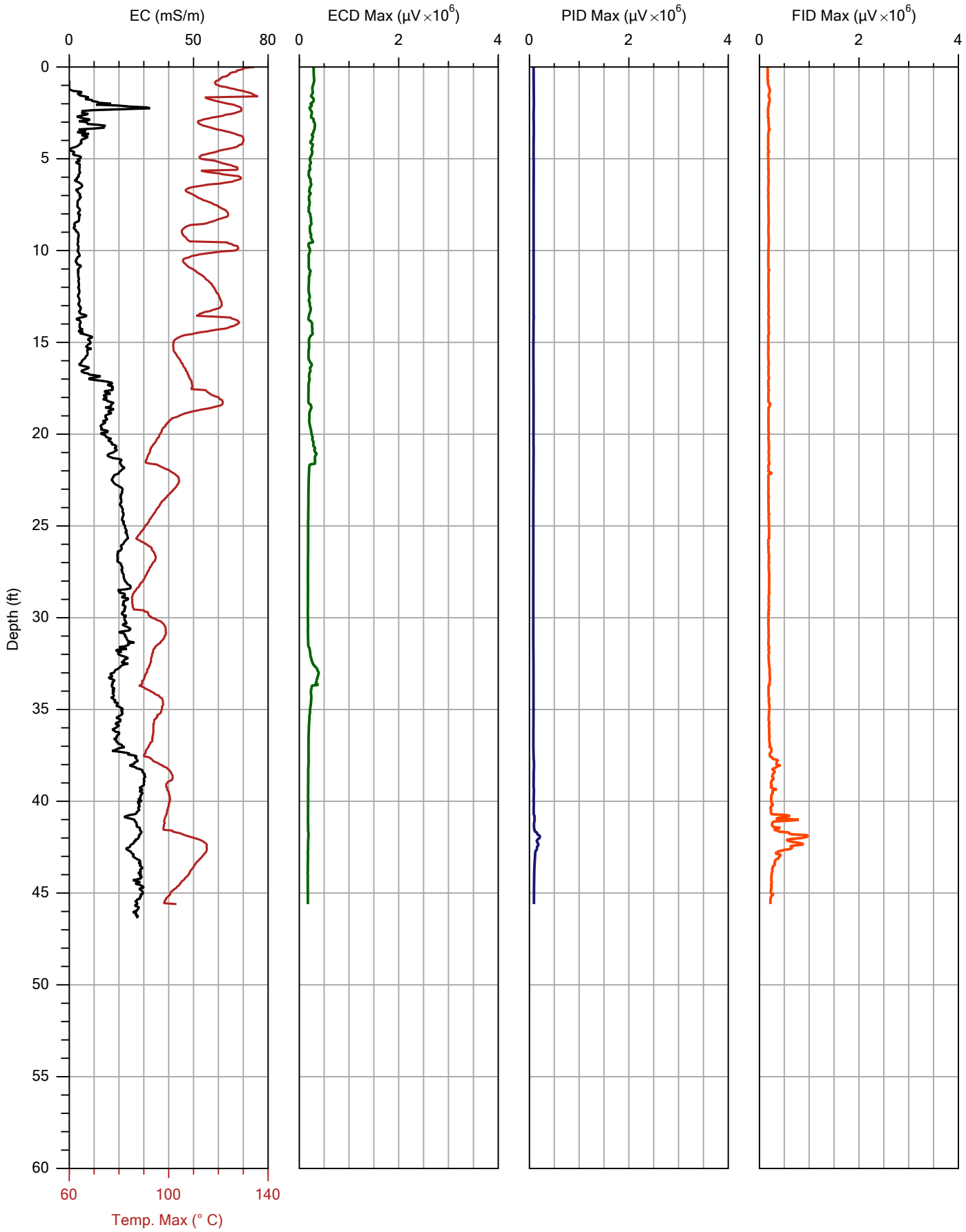
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.4	4.5	PASS
High	290.0	288.3	0.6	PASS

MIP-18



Direct Image® By Geoprobe Systems®

		File: MIP-18.MIP
Company: SER90	Operator: S. Sirhan	Date: 6/30/2014
Project ID: TPC-14-RI	Client: TRC Solutions	Location: 41° 59′ 46″ N, 83° 56′ 31″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	54.9	0.2	PASS
High	290.0	287.8	0.7	PASS

MIP-18.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-18.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.3 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 09:55:11

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Mon Jun 30 2014 09:59:37

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.30	0.091	16	1	1	1

LOG END DEPTH: 45.60 ft (13.899 m)
LOG END TIME: Mon Jun 30 2014 11:12:07

LATITUDE: 41.996183514
LONGITUDE: -83.941853806
ELEVATION: 209.354 METERS 686.86 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-18.post.tim

COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.0 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 11:31:35

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

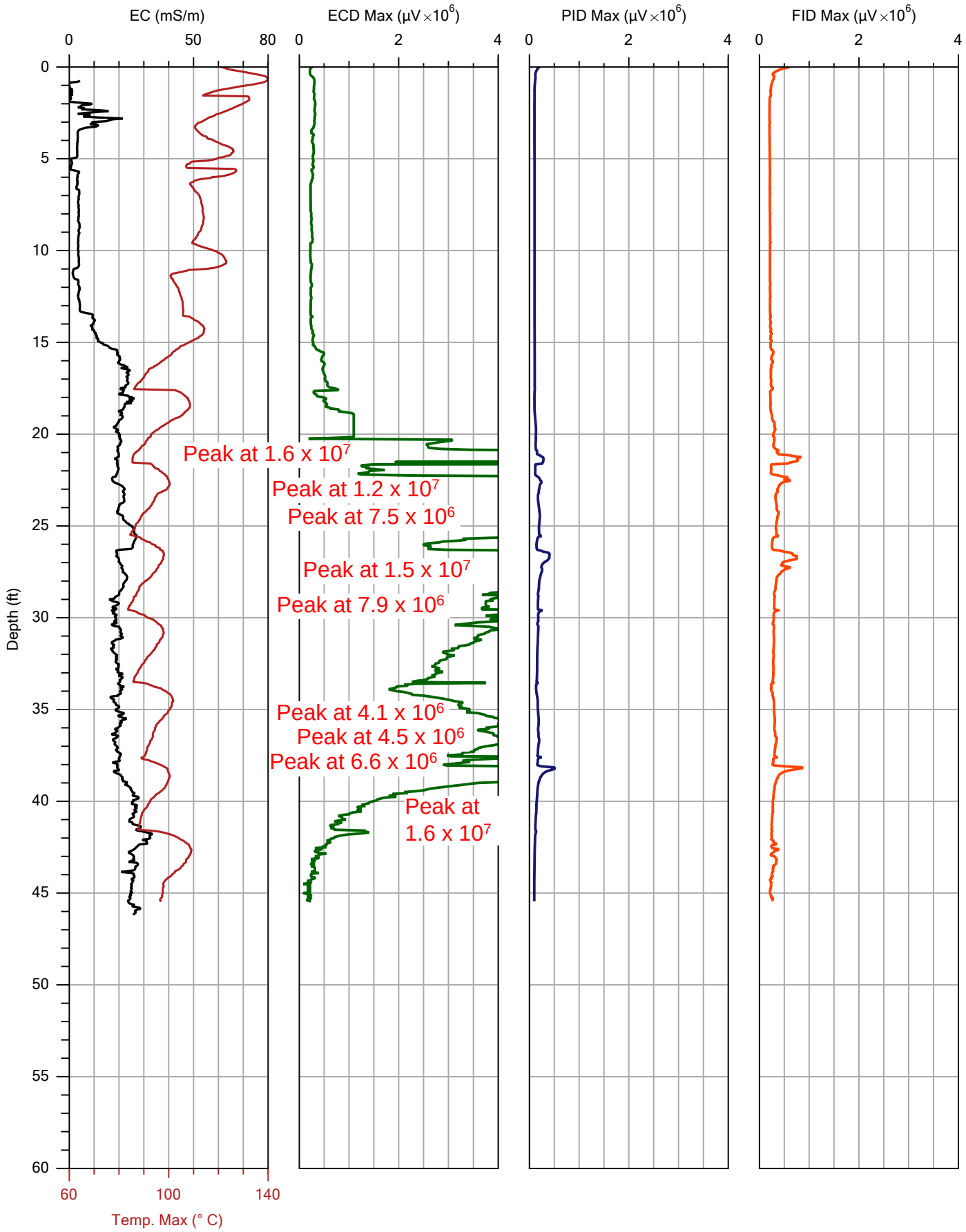
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.9	3.5	PASS
High	290.0	290.9	0.3	PASS

********** USER NOTES **********

Please see atatched pics for location

MIP-19



Direct Image® By Geoprobe Systems®

		File: MIP19.MIP
Company: SER90	Operator: S. Sirhan	Date: 6/30/2014
Project ID: TPC-14-RI	Client: TRC Solutions	Location: 41° 59′ 43″ N, 83° 56′ 29″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.8	3.3	PASS
High	290.0	289.9	0.0	PASS

MIP19.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP19.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.9 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 11:48:54

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (205.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (57.3 deg C) at 0.00 ft (0.000 m)

Temperature out of range (40.5 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Mon Jun 30 2014 11:52:48

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
20.30	6.187	16	1	1	1
21.05	6.416	128	1	1	1
21.60	6.584	1024	1	1	1

LOG END DEPTH: 45.45 ft (13.853 m)
LOG END TIME: Mon Jun 30 2014 14:03:56

LATITUDE: 41.995261747
LONGITUDE: -83.941266094
ELEVATION: 208.368 METERS 683.62 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP19.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 14:23:58

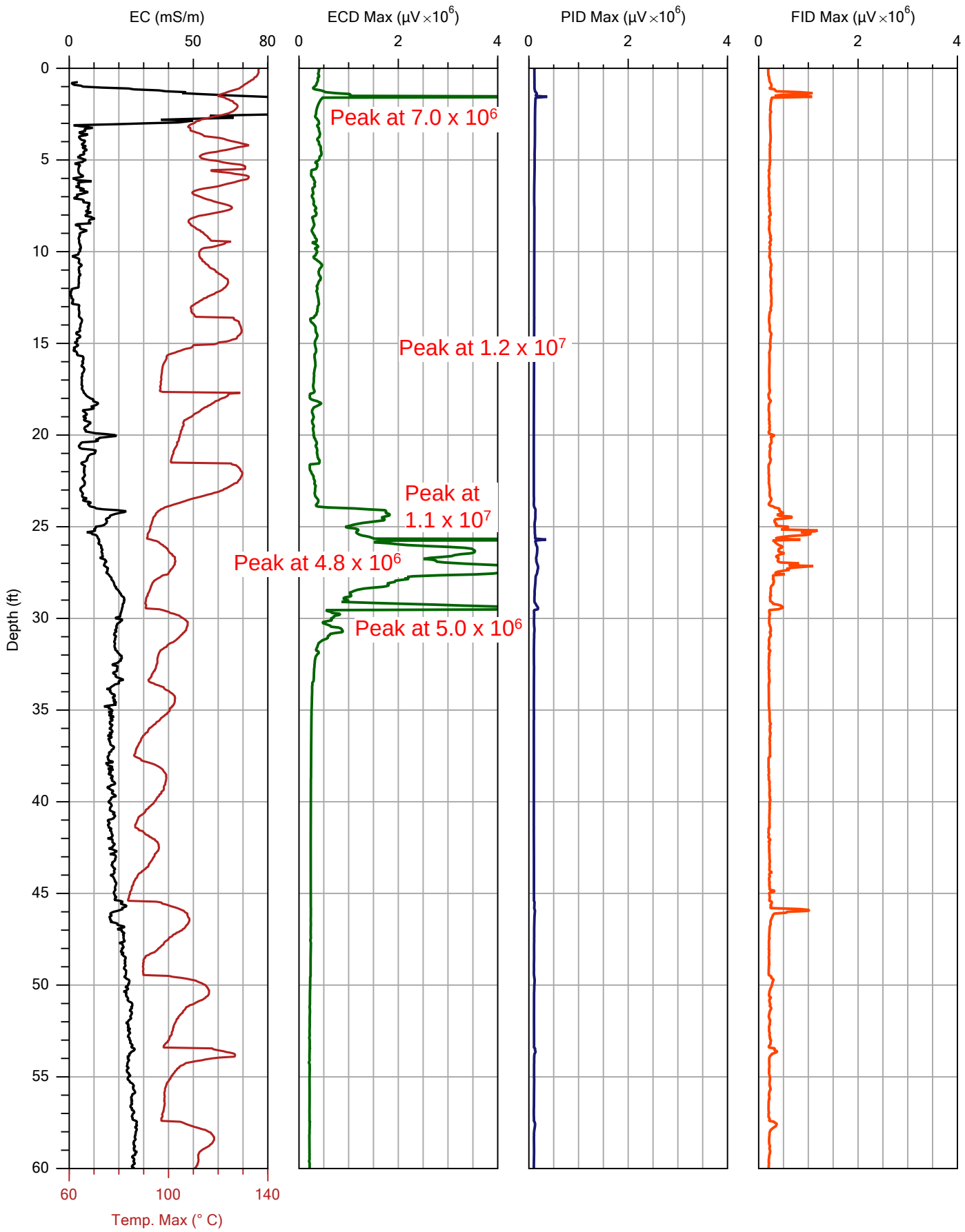
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.2	4.0	PASS
High	290.0	289.4	0.2	PASS

MIP-20



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: S. Sirhan	File: MIP-20.MIP
Project ID: TPC-14-RI	Client: TRC Solutions	Date: 6/30/2014
		Location: 41° 59′ 45″ N, 83° 56′ 40″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.7	3.0	PASS
High	290.0	289.6	0.2	PASS

MIP-20.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-14-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-20.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.6 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 14:34:43

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA

Temperature out of range (181.3 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (72.2 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Mon Jun 30 2014 14:37:34

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 61.45 ft (18.730 m)
LOG END TIME: Mon Jun 30 2014 16:46:24

LATITUDE: 41.995741311
LONGITUDE: -83.944401158
ELEVATION: 211.315 METERS 693.29 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-20.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.1 mL/min
RESPONSE TEST START TIME: Mon Jun 30 2014 17:12:41

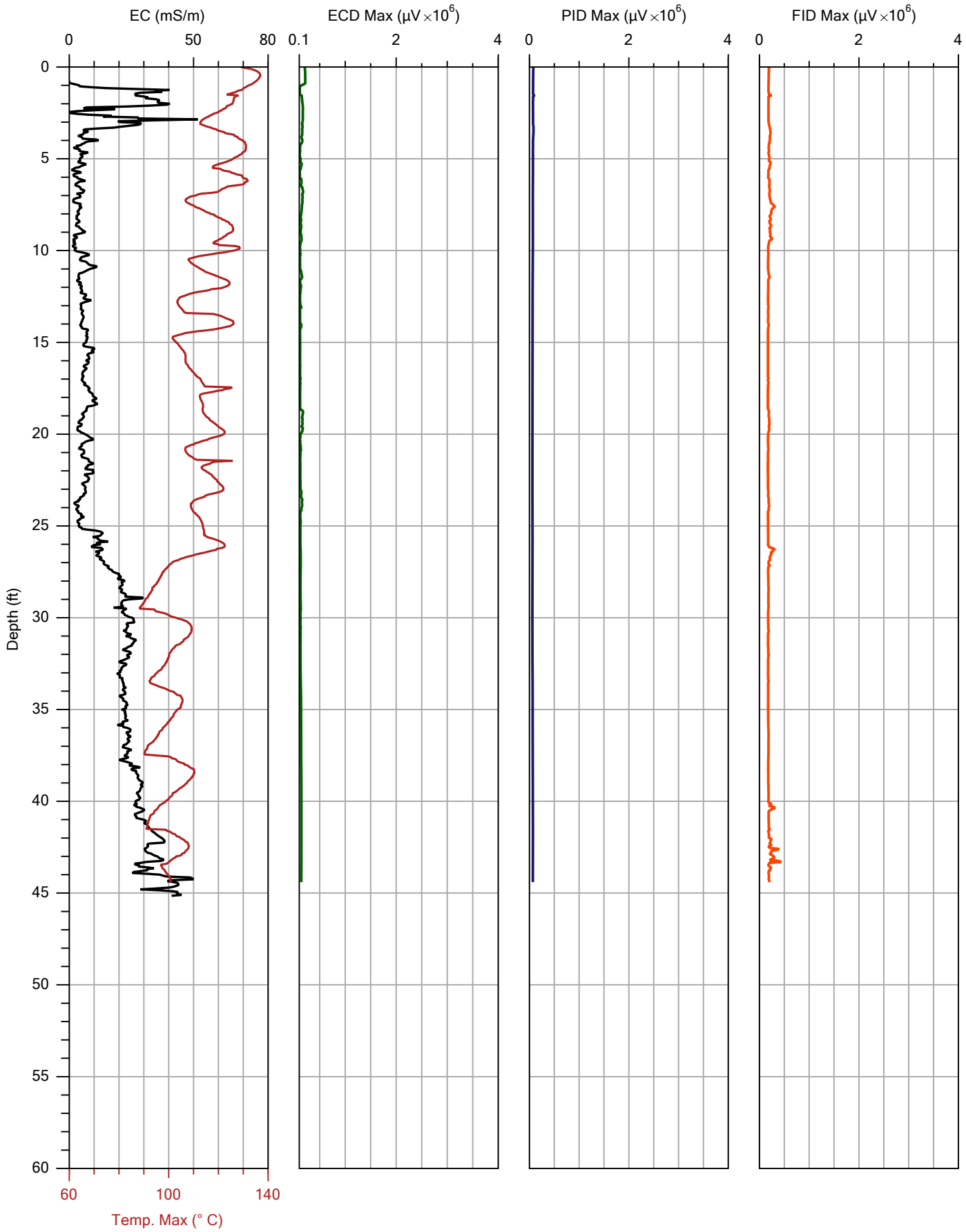
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.4	2.6	PASS
High	290.0	290.9	0.3	PASS

MIP-21



Direct Image® By Geoprobe Systems®

		File: MIP-21.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/1/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 48″ N, 83° 56′ 40″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.8	3.3	PASS
High	290.0	291.3	0.5	PASS

MIP-21.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-21.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.9 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 08:48:27

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jul 1 2014 08:51:52

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.05	0.015	16	1	1	1
0.15	0.046	16	1	1	1

LOG END DEPTH: 44.40 ft (13.533 m)
LOG END TIME: Tue Jul 1 2014 10:07:14

LATITUDE: 41.996553736
LONGITUDE: -83.944521625
ELEVATION: 216.297 METERS 709.64 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-21.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.2 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 10:28:49

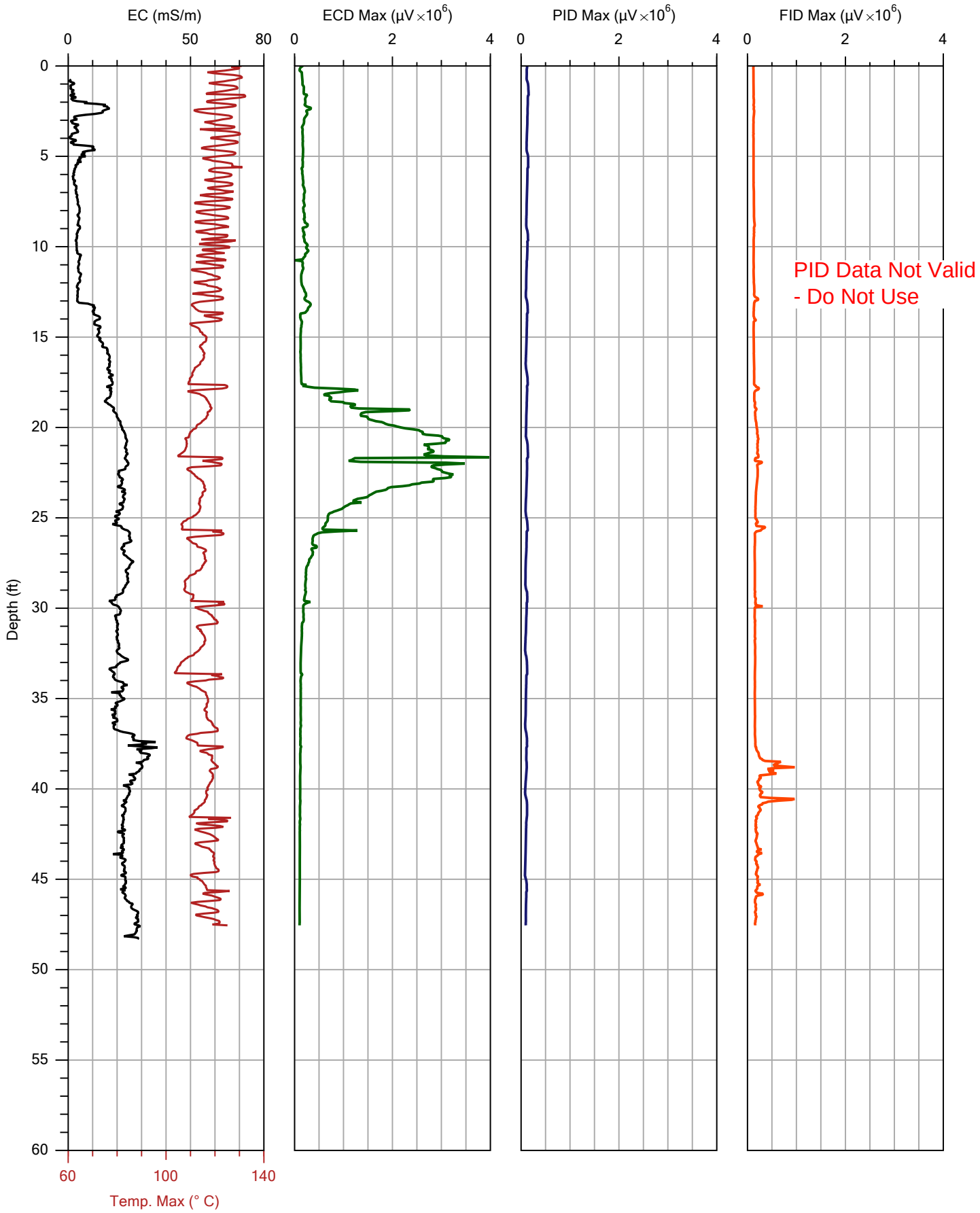
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.9	3.5	PASS
High	290.0	290.6	0.2	PASS

MIP-22



Direct Image® By Geoprobe Systems®

		File: MIP-22.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/1/2014
Project ID: TPC-2014RI	Client: TRC Solutions	Location: 41° 59′ 42″ N, 83° 56′ 28″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	279.5	3.6	PASS

MIP-22.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-22.pre.tim
COMPOUND: TCE
CONCENTRATION: 1,0 ppm
FLOW: 45.5 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 12:59:45

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jul 1 2014 13:03:33

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
10.80	3.292	16	1	1	1

LOG END DEPTH: 47.55 ft (14.493 m)
LOG END TIME: Tue Jul 1 2014 14:15:01

LATITUDE: 41.994987000
LONGITUDE: -83.941227075
ELEVATION: 207.916 METERS 682.14 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-22.post.tim

COMPOUND: TCE & Benzene
CONCENTRATION: 1,0 & 1.0 ppm
FLOW: 39.5 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 14:35:41

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

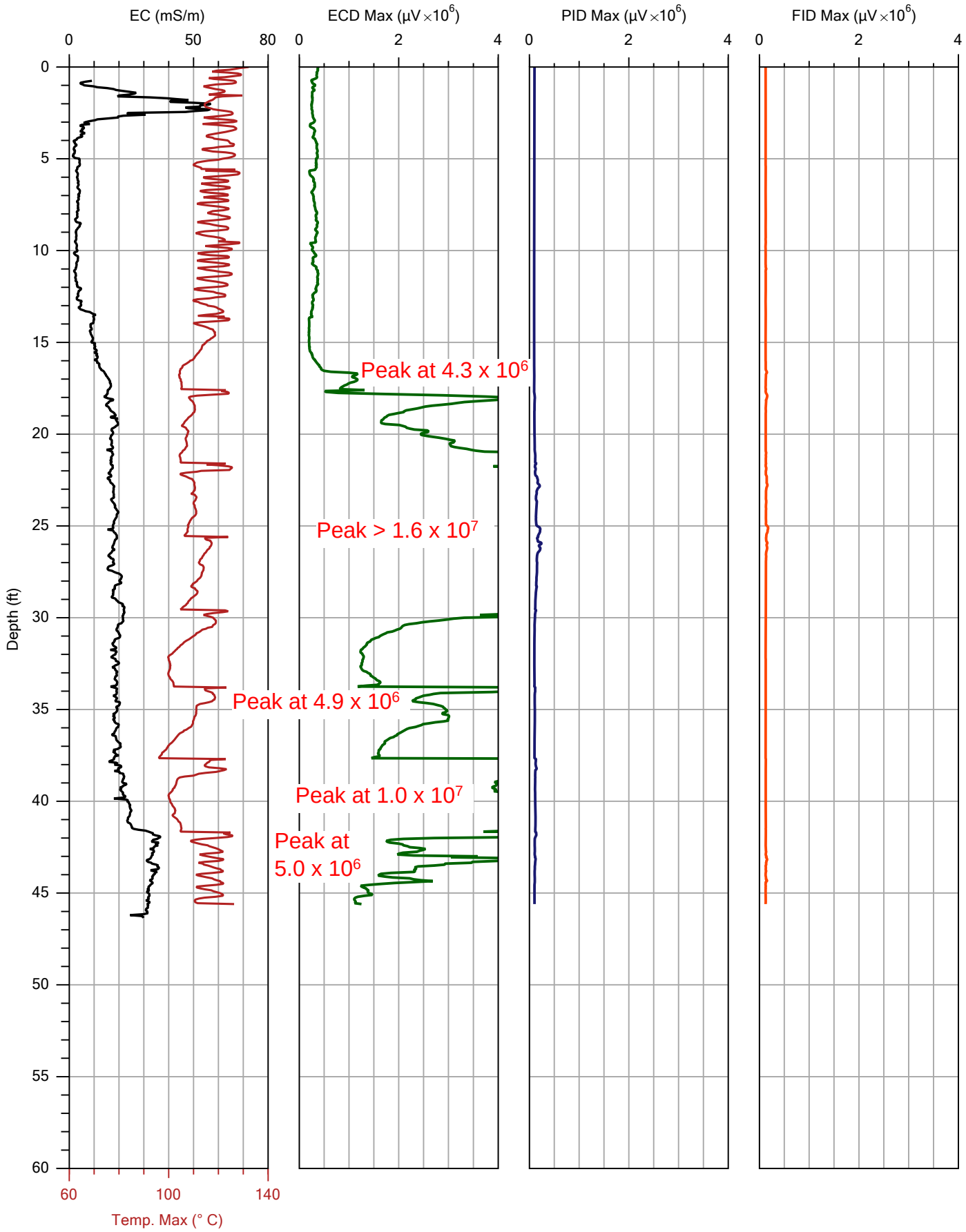
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	292.6	0.9	PASS

********** USER NOTES **********

PID lamp was erratic, discovered that Detector plug at GC was loose. Post Standard was conducted using TCE and Benzene both at 1.0 ppm to ensure proper lamp operation with benzene response.

MIP-23



Direct Image® By Geoprobe Systems®

		File: MIP-23.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/1/2014
Project ID: TPC-2014RI	Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 29″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.9	PASS
High	290.0	289.1	0.3	PASS

MIP-23.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-23.pre.tim
COMPOUND: TCE
CONCENTRATION: 1,0 ppm
FLOW: 36.5 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 16:35:14

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jul 1 2014 16:38:09

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	64	1	1	1

LOG END DEPTH: 45.60 ft (13.899 m)
LOG END TIME: Tue Jul 1 2014 17:37:01

LATITUDE: 41.995536514
LONGITUDE: -83.941271200
ELEVATION: 206.973 METERS 679.05 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-23.post.tim
COMPOUND: TCE & Benzene

CONCENTRATION: 1,0 & 1.0 ppm
FLOW: 35.8 mL/min
RESPONSE TEST START TIME: Tue Jul 1 2014 18:00:50

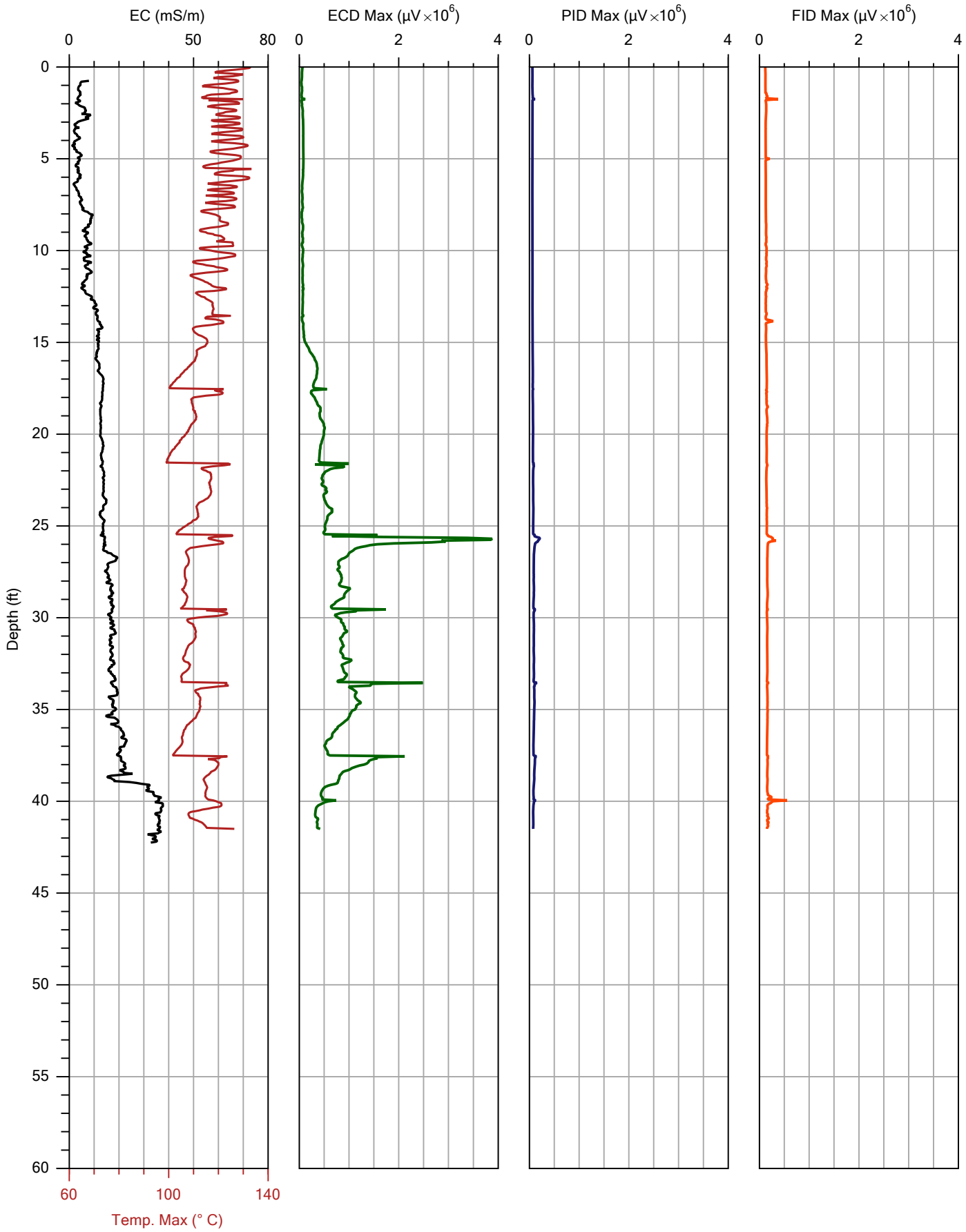
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.5	PASS
High	290.0	291.5	0.5	PASS

MIP-24



Direct Image® By Geoprobe Systems®

		File: MIP-24.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/2/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 45″ N, 83° 56′ 29″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.7	PASS
High	290.0	293.2	1.1	PASS

MIP-24.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-24.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.2 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 08:25:36

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 2 2014 08:28:43

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.75	0.533	8	1	1	1

LOG END DEPTH: 41.50 ft (12.649 m)
LOG END TIME: Wed Jul 2 2014 09:36:17

LATITUDE: 41.995824114
LONGITUDE: -83.941260847
ELEVATION: 207.490 METERS 680.74 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-24.post.tim

COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 09:52:27

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

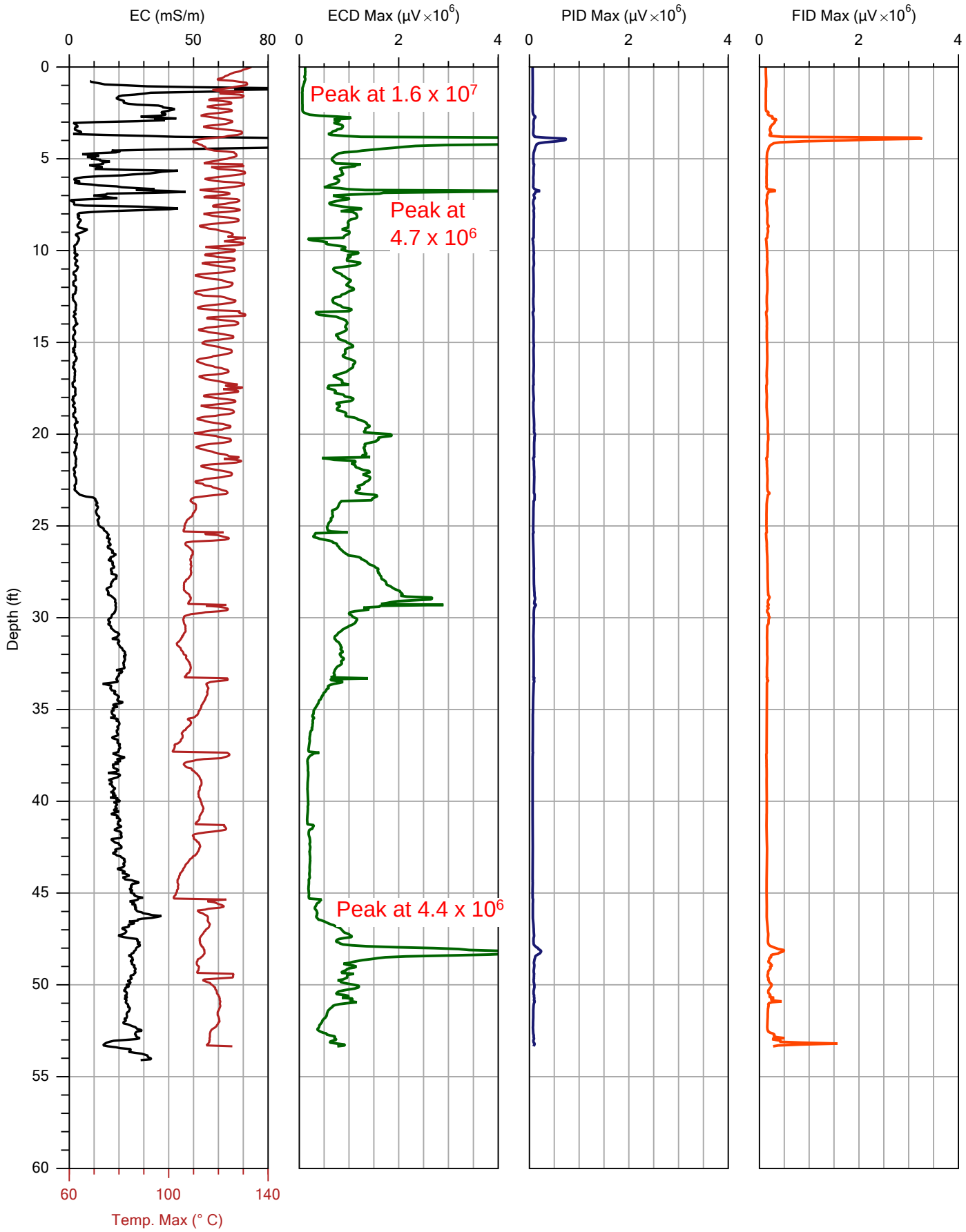
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.7	PASS
High	290.0	293.1	1.1	PASS

********** USER NOTES **********

All detectors are working properly with low baseline. N2 was ran through trunkline for the past 12 hours.

MIP-25



Direct Image® By Geoprobe Systems®

		File: MIP-25.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/2/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 42″ N, 83° 56′ 35″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.4	PASS
High	290.0	293.4	1.2	PASS

MIP-25.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-25.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 10:02:48

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 2 2014 10:05:35

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 53.35 ft (16.261 m)
LOG END TIME: Wed Jul 2 2014 12:03:48

LATITUDE: 41.995110875
LONGITUDE: -83.942966736
ELEVATION: 210.238 METERS 689.76 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-25.post.tim
COMPOUND: TCE

CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 12:31:15

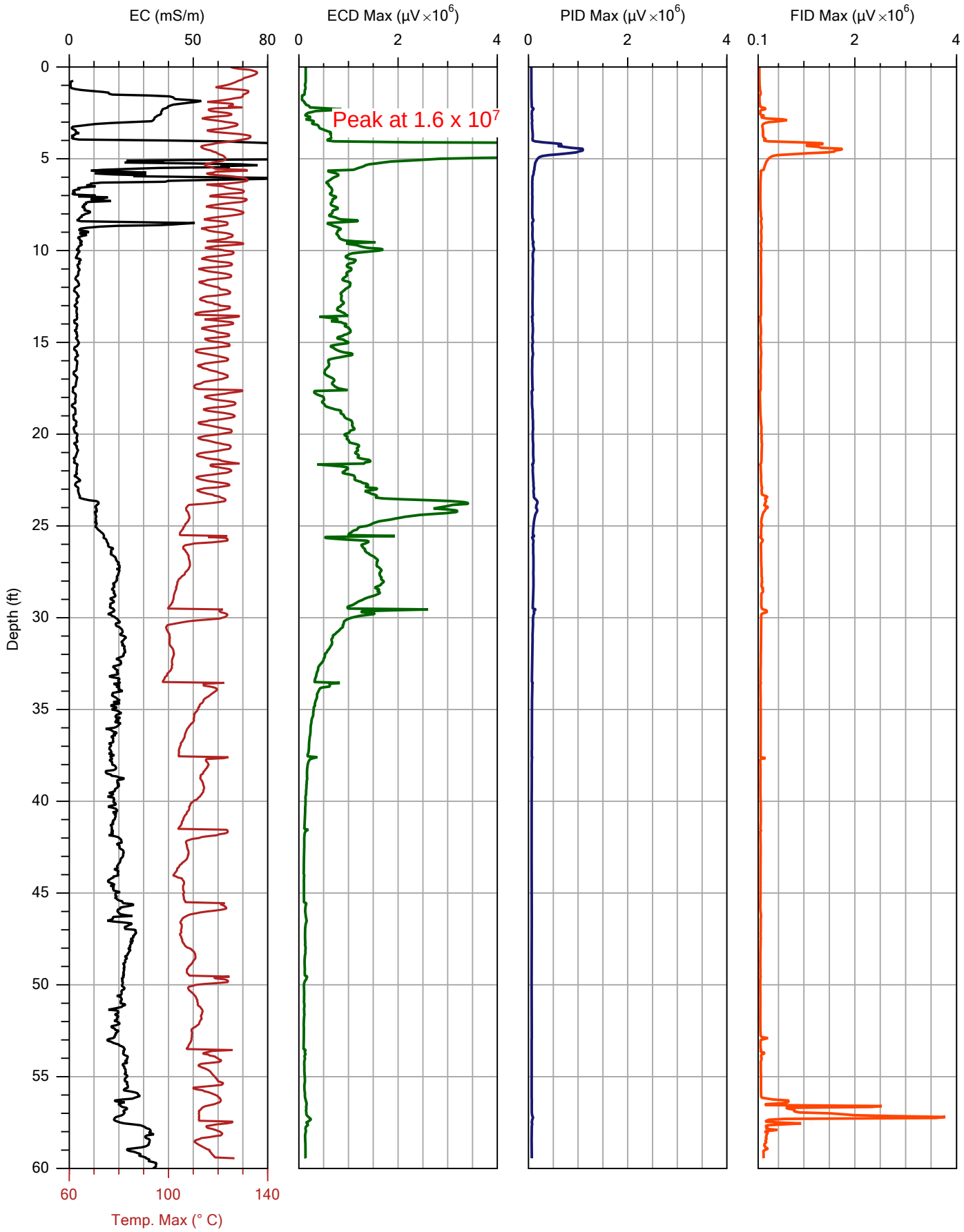
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.3	PASS
High	290.0	292.4	0.8	PASS

MIP-26



Direct Image® By Geoprobe Systems®

		File: MIP-26.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/2/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 41″ N, 83° 56′ 35″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.9	7.0	PASS
High	290.0	292.6	0.9	PASS

MIP-26.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-26.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.3 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 13:14:56

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 2 2014 13:19:42

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.50	0.457	16	1	1	1

LOG END DEPTH: 59.45 ft (18.120 m)
LOG END TIME: Wed Jul 2 2014 14:35:27

LATITUDE: 41.994758714
LONGITUDE: -83.942956097
ELEVATION: 210.052 METERS 689.15 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-26.post.tim

COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.6 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 15:06:38

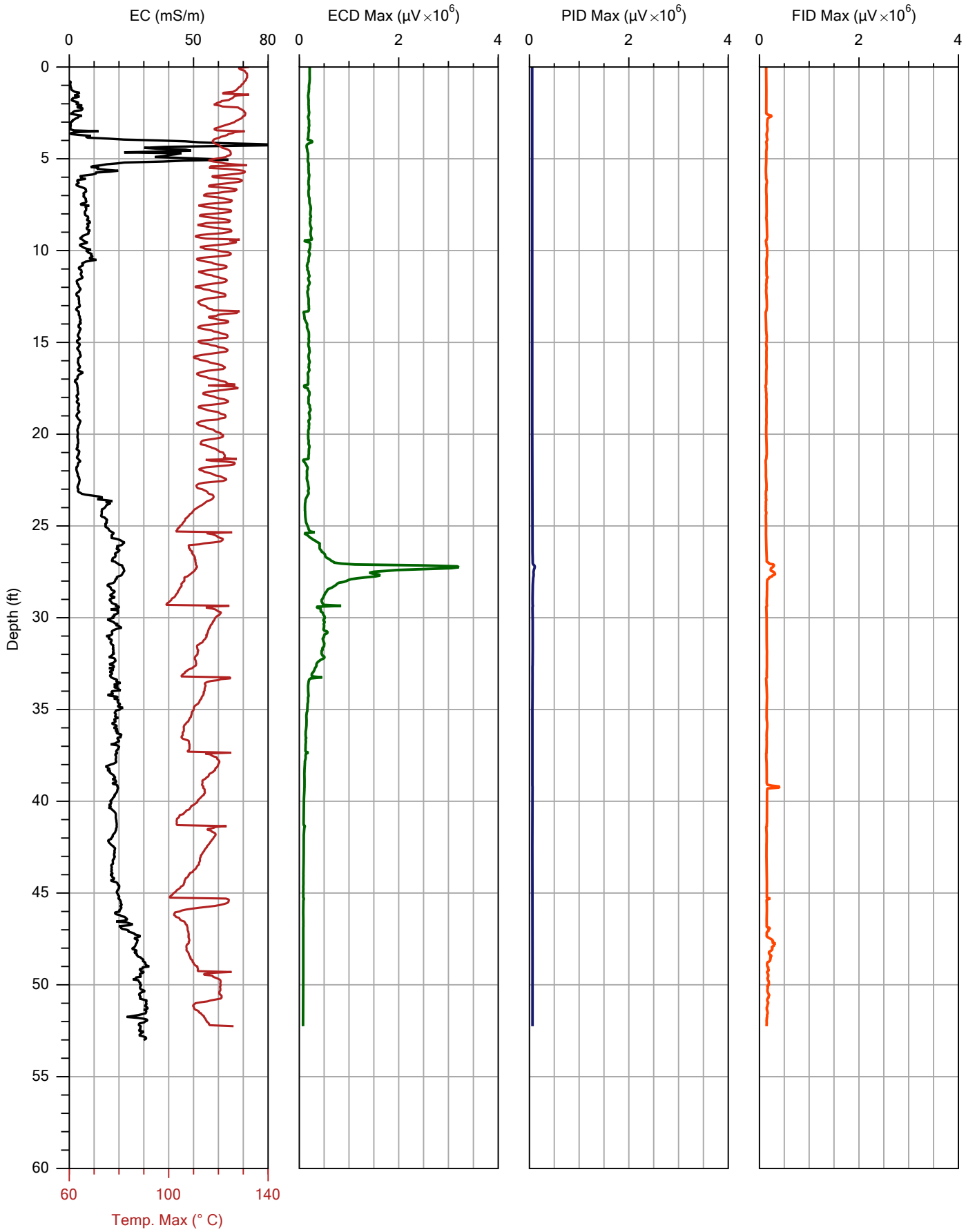
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.8	6.9	PASS
High	290.0	279.8	3.5	PASS

MIP-27



Direct Image® By Geoprobe Systems®

		File: MIP-27.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/2/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 35″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.8	PASS
High	290.0	289.6	0.1	PASS

MIP-27.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-27.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.9 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 15:18:53

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 2 2014 15:22:13

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
10.40	3.170	16	1	1	1

LOG END DEPTH: 52.25 ft (15.926 m)
LOG END TIME: Wed Jul 2 2014 16:43:42

LATITUDE: 41.995542639
LONGITUDE: -83.942991942
ELEVATION: 211.021 METERS 692.33 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-27.post.tim

COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.3 mL/min
RESPONSE TEST START TIME: Wed Jul 2 2014 17:05:59

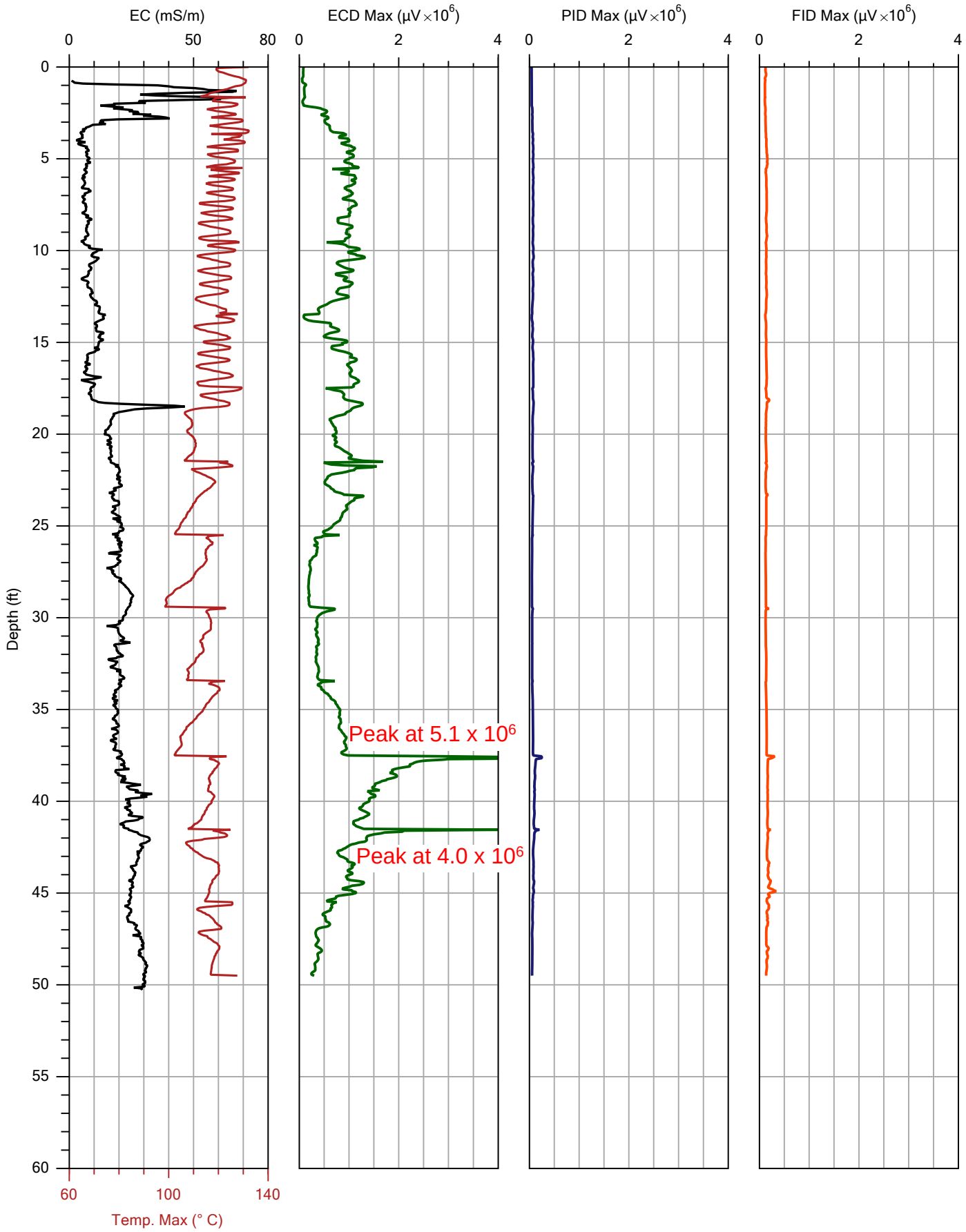
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.8	PASS
High	290.0	291.9	0.7	PASS

MIP-28



Direct Image® By Geoprobe Systems®

		File: MIP-28.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/3/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 32″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.5	PASS
High	290.0	292.8	1.0	PASS

MIP-28.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-28.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 49.9 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 08:20:39

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jul 3 2014 08:23:29

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.65	0.503	16	1	1	1

LOG END DEPTH: 49.50 ft (15.088 m)
LOG END TIME: Thu Jul 3 2014 09:29:43

LATITUDE: 41.995532928
LONGITUDE: -83.942146150
ELEVATION: 210.217 METERS 689.69 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-28.post.tim

COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.3 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 09:49:04

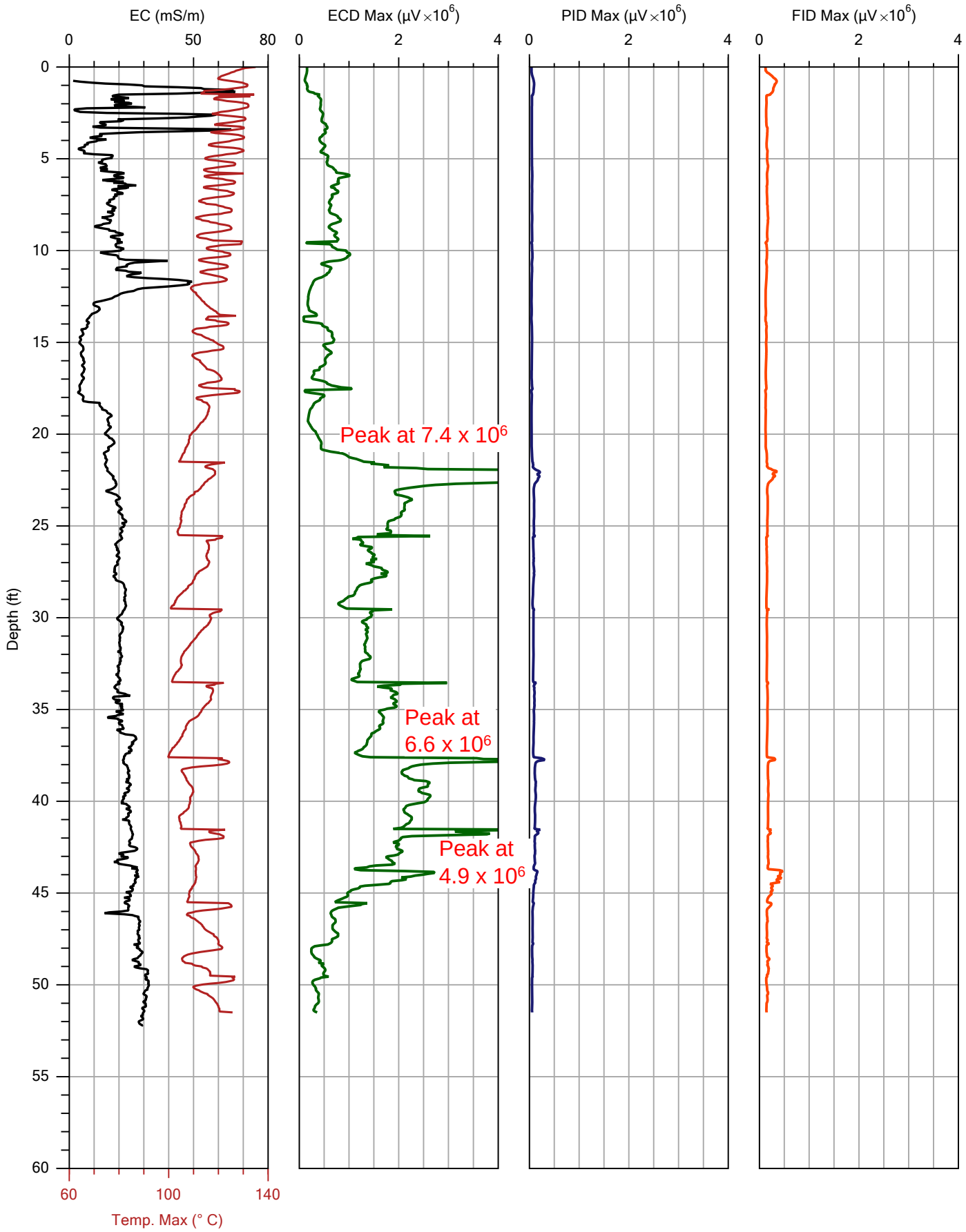
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.5	PASS
High	290.0	294.7	1.6	PASS

MIP-29



Direct Image® By Geoprobe Systems®

		File: MIP-29.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/3/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 43″ N, 83° 56′ 32″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.8	7.0	PASS
High	290.0	292.8	1.0	PASS

MIP-29.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-29.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.0 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 10:07:27

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jul 3 2014 10:10:50

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.50	0.457	16	1	1	1
6.05	1.844	16	1	1	1

LOG END DEPTH: 51.50 ft (15.697 m)
LOG END TIME: Thu Jul 3 2014 11:36:54

LATITUDE: 41.995266056
LONGITUDE: -83.942138097
ELEVATION: 208.487 METERS 684.01 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-29.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.2 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 12:02:52

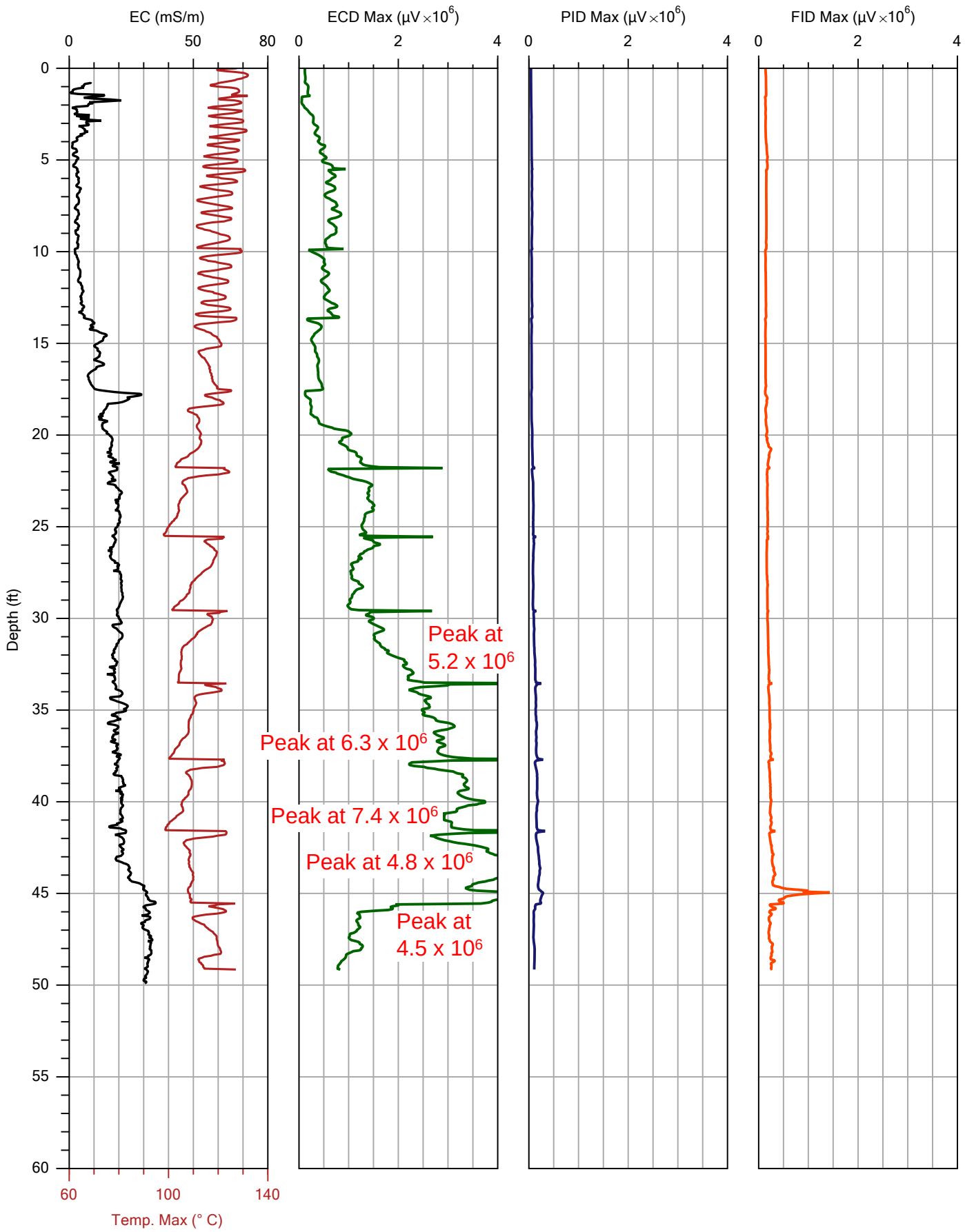
RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.2	9.5	PASS
High	290.0	294.6	1.6	PASS

MIP-30



Direct Image® By Geoprobe Systems®

		File: MIP-30.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/3/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 31″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.1	7.5	PASS
High	290.0	293.7	1.3	PASS

MIP-30.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-30.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 47.3 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 12:33:36

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1
2:39	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Thu Jul 3 2014 12:37:16

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
2.10	0.640	16	1	1	1

LOG END DEPTH: 49.15 ft (14.981 m)
LOG END TIME: Thu Jul 3 2014 14:04:28

LATITUDE: 41.995439047
LONGITUDE: -83.941864750
ELEVATION: 208.281 METERS 683.34 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-30.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 47.3 mL/min
RESPONSE TEST START TIME: Thu Jul 3 2014 14:31:50

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

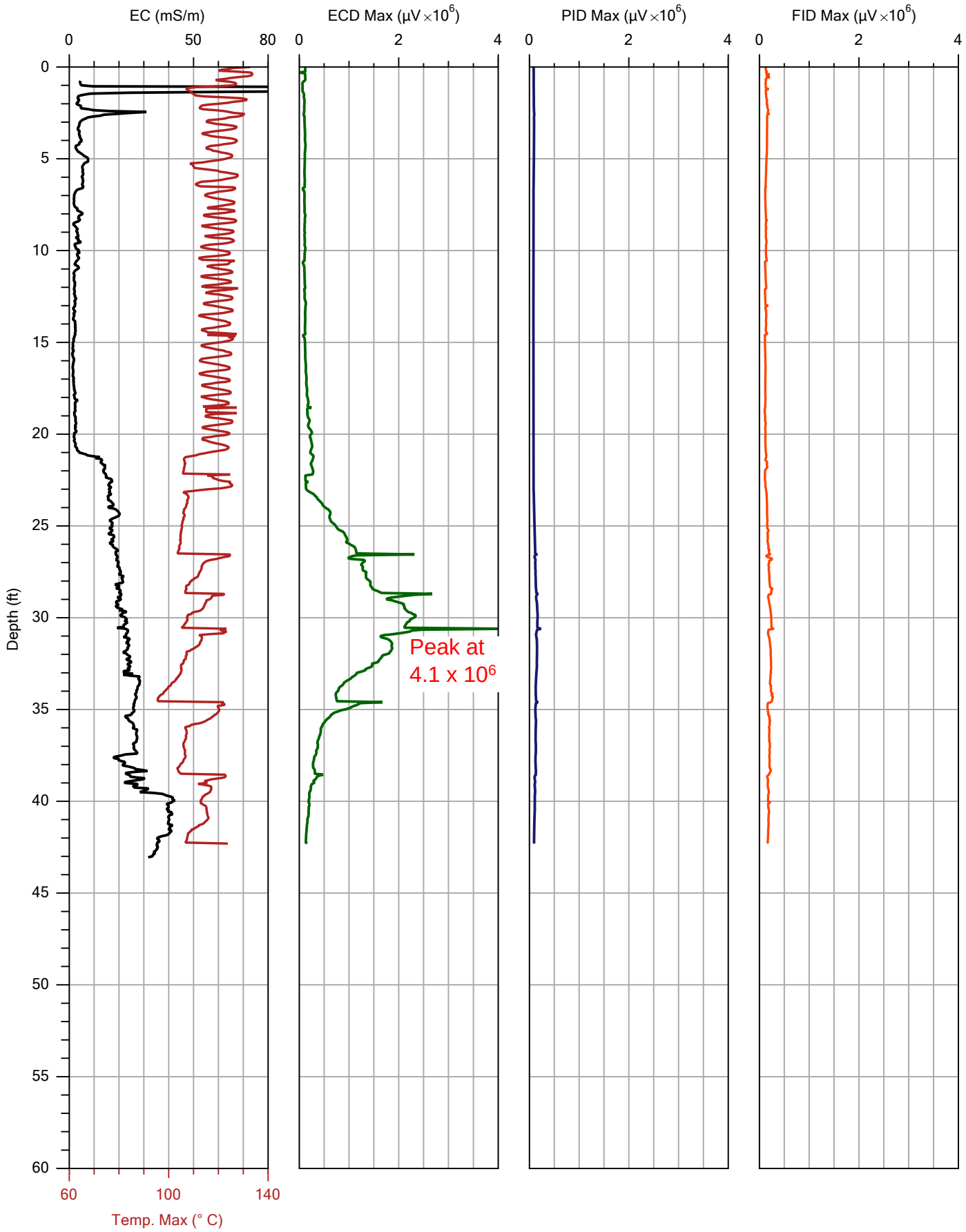
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.2	7.6	PASS
High	290.0	293.4	1.2	PASS

********** USER NOTES **********

Please note that the membrane was changed at this boring. Therefore, for data analysis please consider the Post Standard. The Pre-Standard is somewhat lower due to new membrane fabric.

MIP-31



Direct Image® By Geoprobe Systems®

		File: MIHPT-31.MHP
Company: SER90	Operator: S.sirhan	Date: 7/8/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.2	PASS
High	290.0	297.0	2.4	PASS

MIHPT-31.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIHPT-31.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.8 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 09:23:22

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 8 2014 09:29:49

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.195	0.0	90.970
TOP with FLOW>0	13.915	302.4	95.940
BOTTOM with FLOW=0	12.958	0.0	89.340
BOTTOM with FLOW>0	13.735	302.6	94.700

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Tue Jul 8 2014 09:37:19

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.35	0.107	16	1	1	1

LOG END DEPTH: 42.30 ft (12.893 m)
LOG END TIME: Tue Jul 8 2014 10:49:37

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIHPT-31.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.5 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 11:16:48

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 8 2014 11:20:01

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.145	0.0	90.630
TOP with FLOW>0	13.788	309.2	95.060
BOTTOM with FLOW=0	12.920	0.0	89.080
BOTTOM with FLOW>0	13.599	306.0	93.760

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

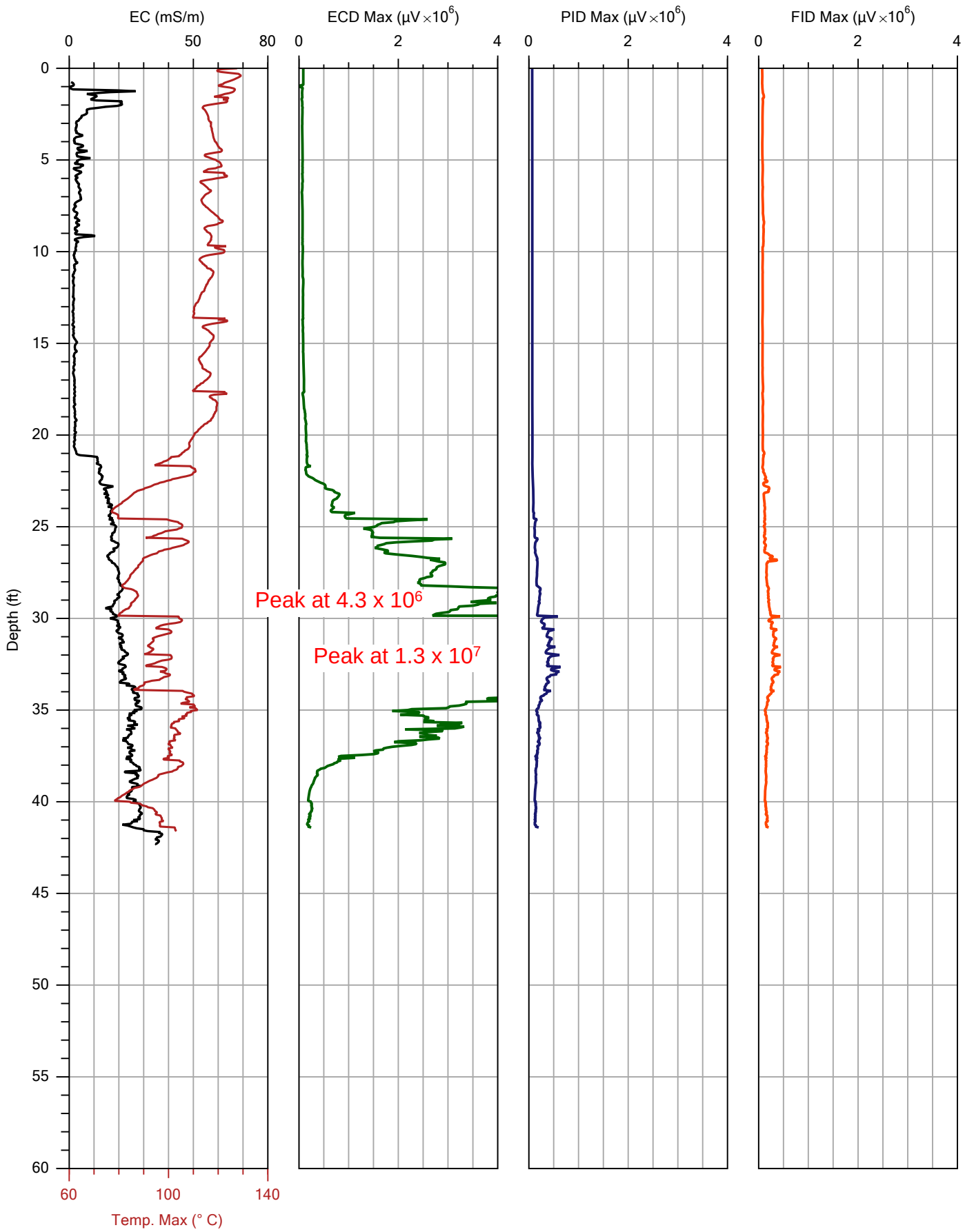
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.2	PASS
High	290.0	303.5	4.7	PASS

********** USER NOTES **********

Concrete is 18-inches.

MIP-32



Direct Image® By Geoprobe Systems®

		File: MIP-32.MIP
Company: SER90	Operator: S.Sirhan	Date: 7/8/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	293.8	1.3	PASS

MIP-32.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-32.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 16:07:30

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Tue Jul 8 2014 16:11:04

Temperature out of range (79.9 deg C) at 23.80 ft (7.254 m)

Temperature out of range (79.9 deg C) at 29.80 ft (9.083 m)

Temperature out of range (79.9 deg C) at 39.75 ft (12.116 m)

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.05	0.320	16	1	1	1

LOG END DEPTH: 41.60 ft (12.680 m)
LOG END TIME: Tue Jul 8 2014 18:00:36

LATITUDE: 0.000000000

LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-32.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.7 mL/min
RESPONSE TEST START TIME: Tue Jul 8 2014 18:22:36

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

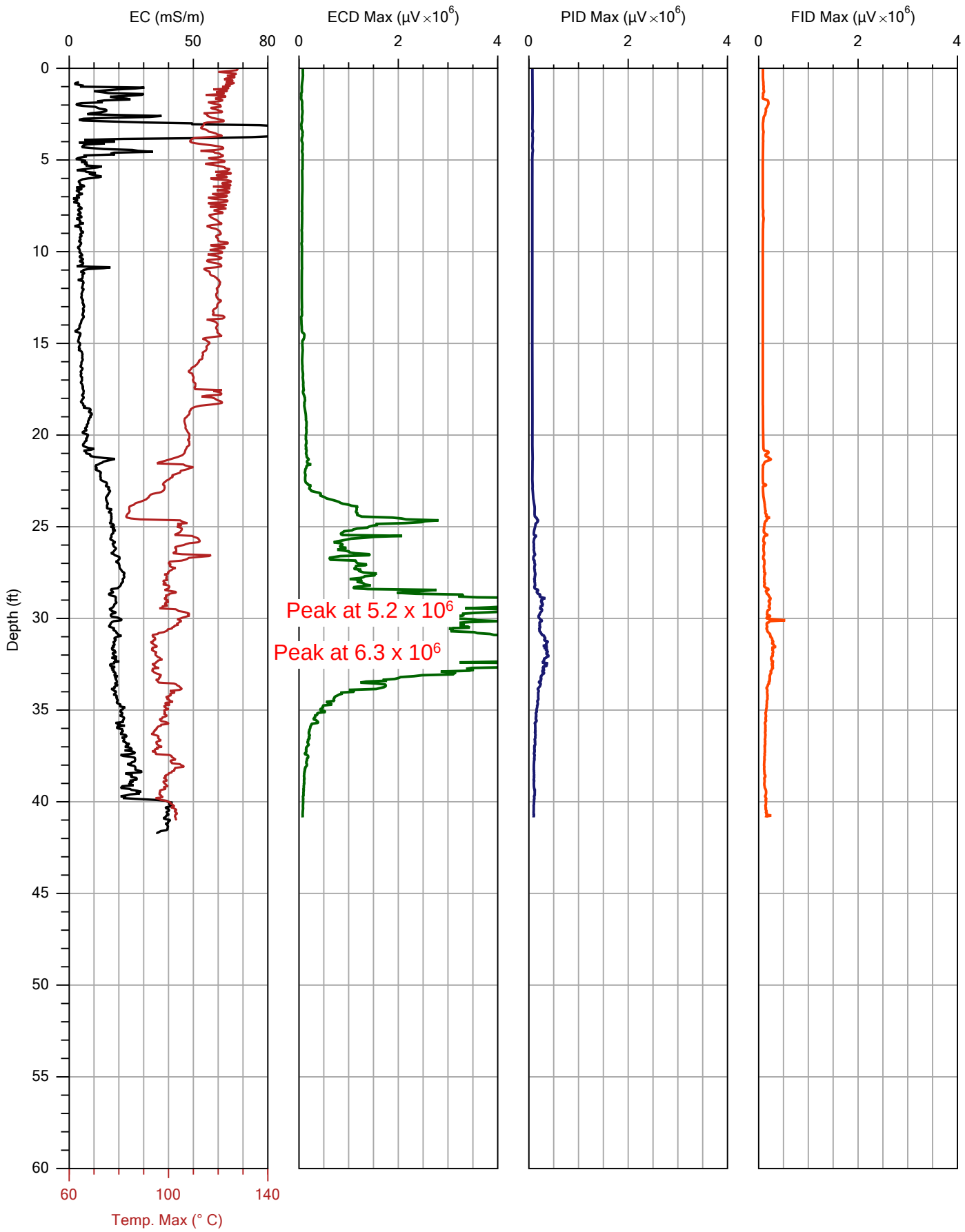
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.3	7.8	PASS
High	290.0	293.2	1.1	PASS

********** USER NOTES **********

This boring replaces MIHPT-32, and MIHPT-32A. Reffusal was encountered at 6 ft BGS, restarted boring ~ 3 ft East of original client's pick.

MIP-33



Direct Image® By Geoprobe Systems®

		File: MIP-33.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/9/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.3	PASS
High	290.0	293.7	1.3	PASS

MIP-33.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-33.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 45.8 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 09:37:47

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 51 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 9 2014 09:41:21

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.30	1.006	16	1	1	1

LOG END DEPTH: 41.00 ft (12.497 m)
LOG END TIME: Wed Jul 9 2014 12:09:40

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-33.post.tim

COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 45.8 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 12:26:42

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

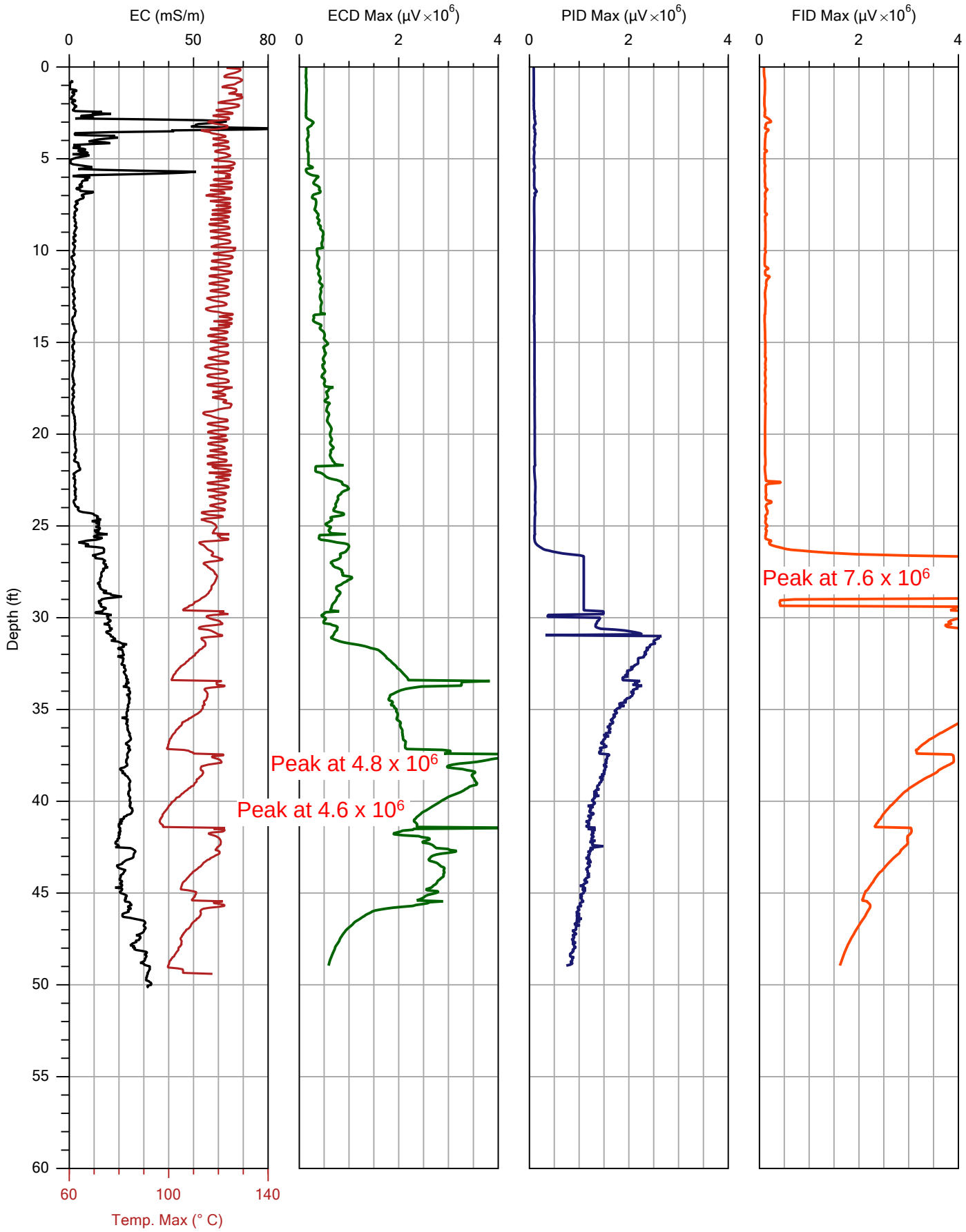
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.3	7.7	PASS
High	290.0	293.7	1.3	PASS

********** USER NOTES **********

Concrete 18 inch.

MIP-34



Direct Image® By Geoprobe Systems®

		File: MIP-34.MIP
Company: SER90	Operator: S.Sirhan	Date: 7/9/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	291.5	0.5	PASS

MIP-34.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-34.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.2 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 13:50:06

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 9 2014 13:52:57

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
29.40	8.961	16	1	10	1
29.65	9.037	16	16	10	1
30.00	9.144	16	64	10	1
30.20	9.205	16	64	10	1
31.00	9.449	16	512	10	1
31.70	9.662	16	512	10	1

LOG END DEPTH: 49.40 ft (15.057 m)
LOG END TIME: Wed Jul 9 2014 15:23:24

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-34.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.2 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 15:44:24

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

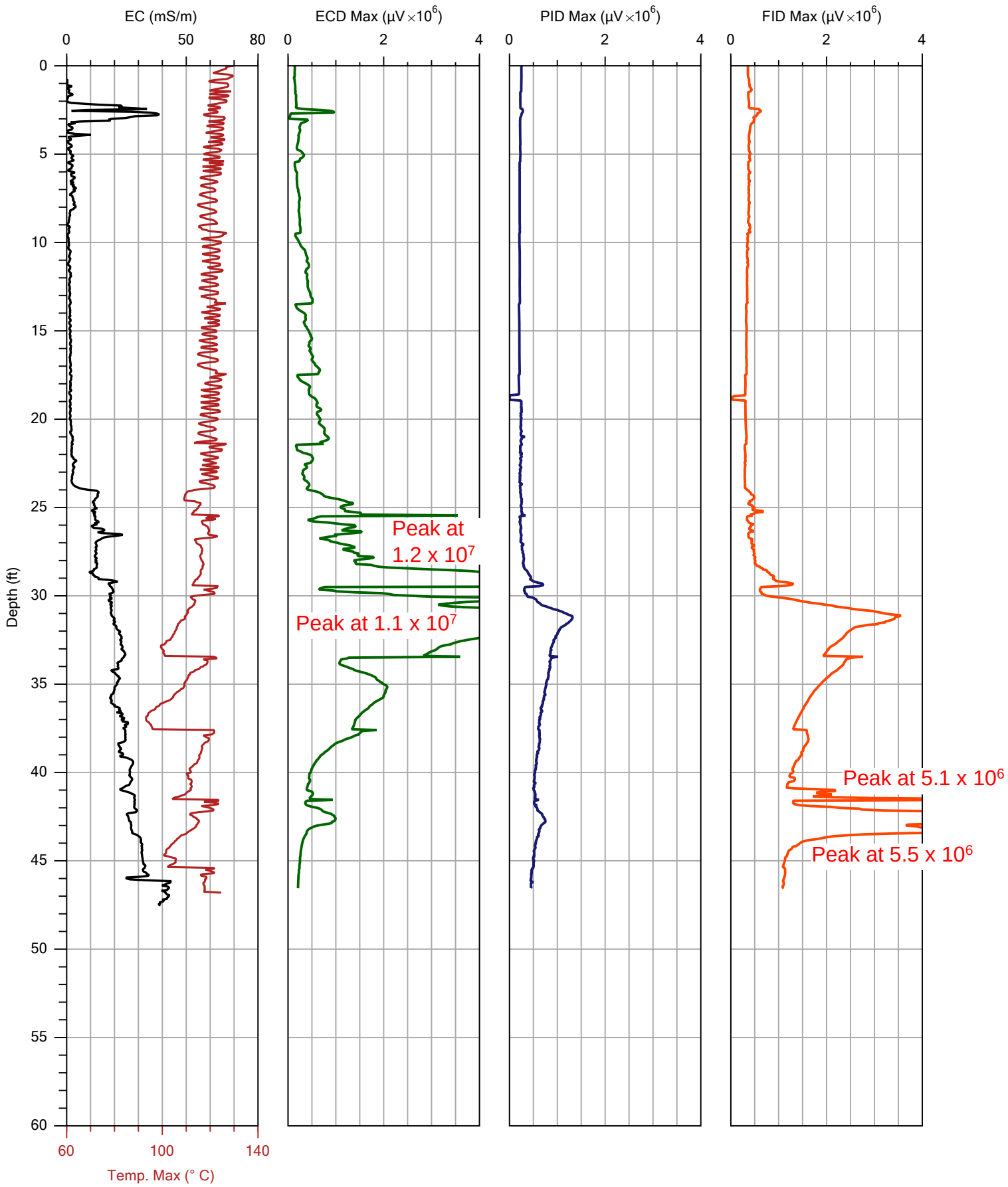
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.8	PASS
High	290.0	292.9	1.0	PASS

********** USER NOTES **********

18 inch concrete

MIP-35



Direct Image® By Geoprobe Systems®

		File: MIP-35.MIP
Company: SER90	Operator: S.Sirhan	Date: 7/9/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.4	PASS
High	290.0	269.5	7.1	PASS

MIP-35.zip

SITE INFORMATION -- DIRECT IMAGE MIP PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MP6520 MIP Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-35.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 15:53:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 52 sec
Gas Used: nitrogen
DETECTOR NAME: ECD PID FID NA
LOG START TIME: Wed Jul 9 2014 15:56:37

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
3.05	0.930	16	1	1	1
3.20	0.975	16	1	1	1
18.95	5.776	16	128	10	1
19.30	5.883	16	128	10	1
24.45	7.452	16	128	10	1

LOG END DEPTH: 46.80 ft (14.265 m)
LOG END TIME: Wed Jul 9 2014 17:37:10

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-35.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Wed Jul 9 2014 18:00:29

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

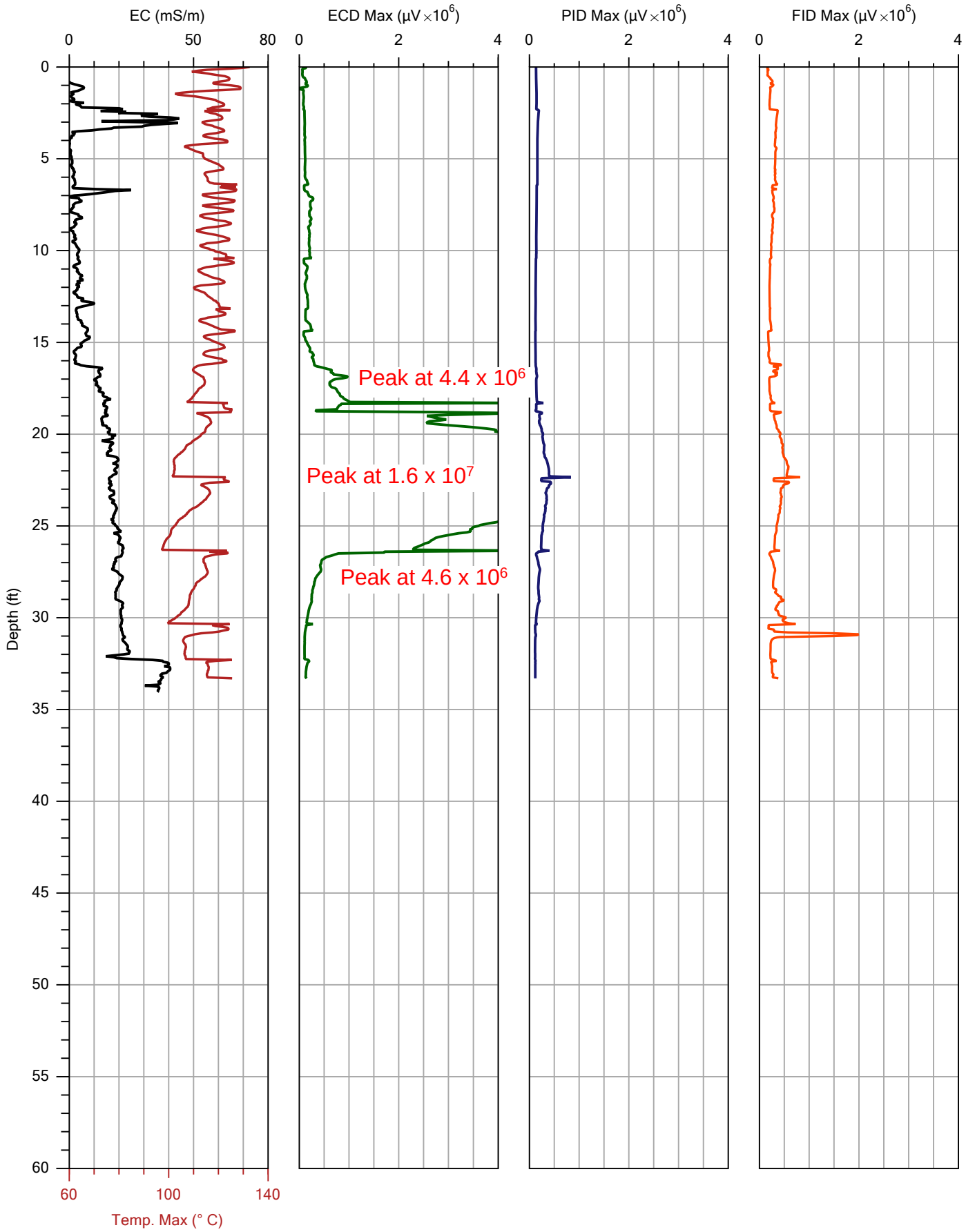
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.7	PASS
High	290.0	292.9	1.0	PASS

********** USER NOTES **********

18 in concrete

MIP-36



Direct Image® By Geoprobe Systems®

		File: MIP-36.MHP
Company: SER90	Operator: S. Sirhan	Date: 7/10/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 30″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.9	5.3	PASS
High	290.0	301.3	3.9	PASS

MIP-36.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-36.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.7 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 13:22:54

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 10 2014 13:24:57

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.462	0.0	92.810
TOP with FLOW>0	13.917	315.0	95.950
BOTTOM with FLOW=0	13.235	0.0	91.250
BOTTOM with FLOW>0	13.675	312.4	94.290

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Thu Jul 10 2014 13:30:00

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
1.25	0.381	16	1	1	1

LOG END DEPTH: 33.30 ft (10.150 m)
LOG END TIME: Thu Jul 10 2014 14:34:37

LATITUDE: 41.998787908
LONGITUDE: -83.941738825
ELEVATION: 210.309 METERS 689.99 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-36.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.1 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 14:55:03

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 10 2014 14:57:36

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.451	0.0	92.740
TOP with FLOW>0	13.805	310.6	95.180
BOTTOM with FLOW=0	13.215	0.0	91.120
BOTTOM with FLOW>0	13.639	314.7	94.040

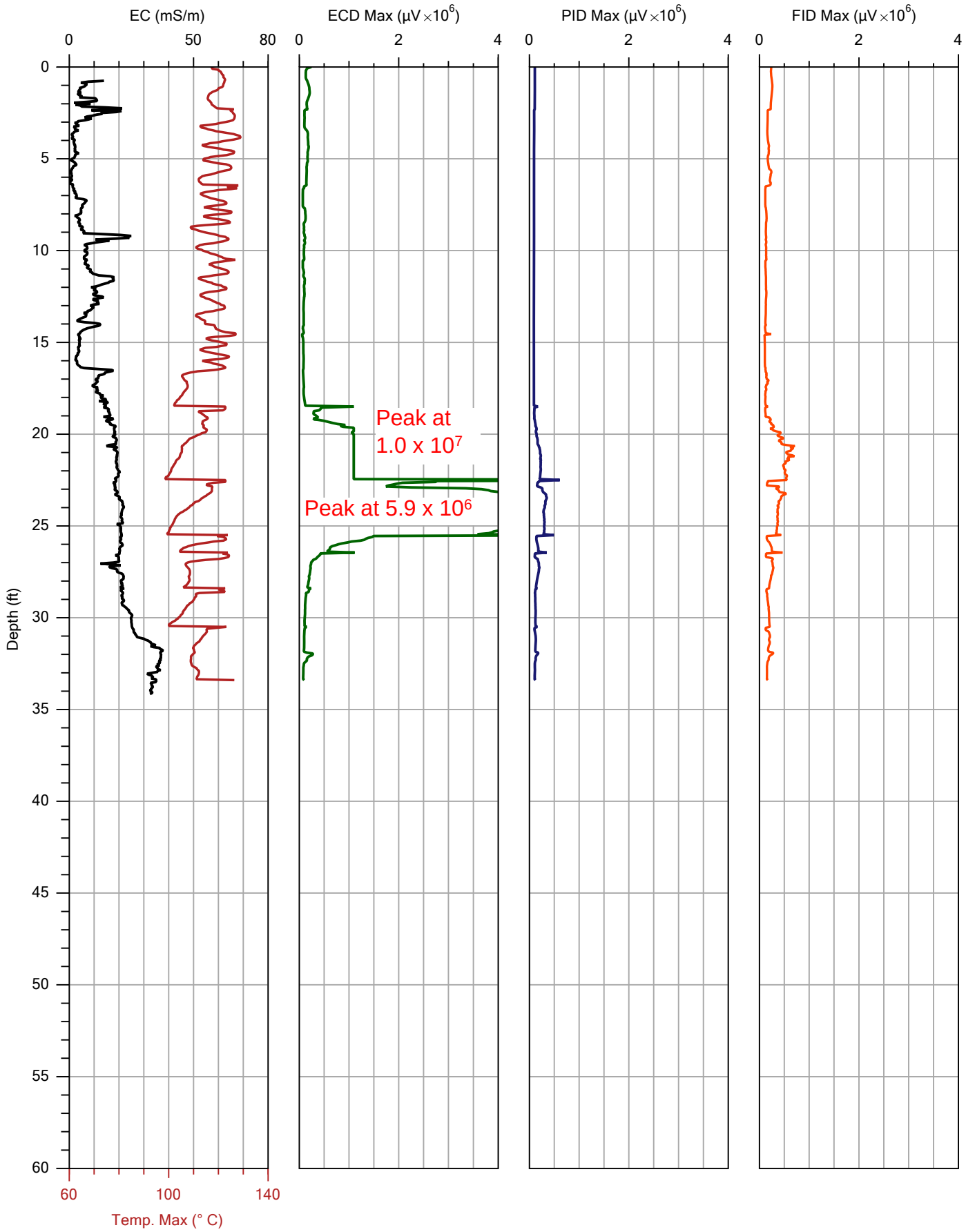
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.7	PASS
High	290.0	302.3	4.2	PASS

MIP-37



Direct Image® By Geoprobe Systems®

		File: MIP-37.MHP
Company: SER90	Operator: S. Sirhan	Date: 7/10/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 54″ N, 83° 56′ 30″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	62.0	12.7	FAIL
High	290.0	307.3	6.0	PASS

Pre-Log EC Troubleshooting Tests

Test	Value	P/F
Instrument Calibration Tests		
10 Ohms:	9.9 Ohms	PASS
100 Ohms:	99.2 Ohms	PASS
1000 Ohms:	949.1 Ohms	PASS

MIP-37.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S. Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-37.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.1 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 15:21:00

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 10 2014 15:27:48

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.364	0.0	92.140

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW>0	13.813	314.3	95.240
BOTTOM with FLOW=0	13.148	0.0	90.650
BOTTOM with FLOW>0	13.587	317.6	93.680

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Thu Jul 10 2014 15:29:27

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
6.60	2.012	1	1	1	1
22.50	6.858	16	1	1	1

LOG END DEPTH: 33.40 ft (10.180 m)
LOG END TIME: Thu Jul 10 2014 16:23:21

LATITUDE: 41.998403297
LONGITUDE: -83.941736381
ELEVATION: 210.254 METERS 689.81 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-37.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.5 mL/min
RESPONSE TEST START TIME: Thu Jul 10 2014 16:39:44

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 10 2014 16:43:23

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.422	0.0	92.540
TOP with FLOW>0	13.805	323.5	95.180
BOTTOM with FLOW=0	13.224	0.0	91.180
BOTTOM with FLOW>0	13.598	323.1	93.750

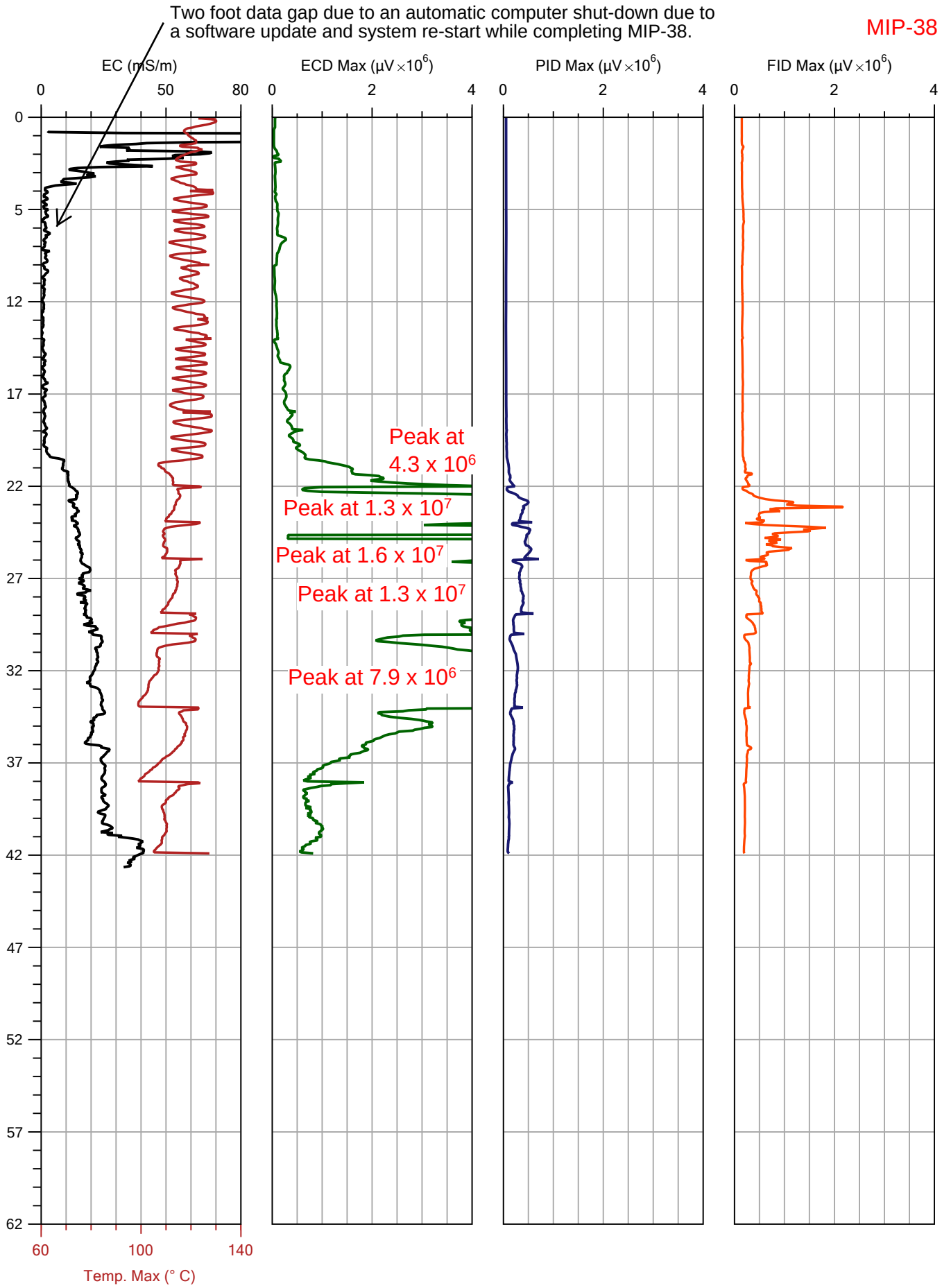
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.3	PASS
High	290.0	304.8	5.1	PASS

MIP-38



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: S.Sirhan	File: MIP-38FINAL.MHP
Project ID: TPC-2014-IR	Client: TRC Solutions	Date: 7/11/2014
		Location:

MERGED LOG FILE -- MIP-38Final.nfo
File 1: MIP-38
File 2: MIP-38-lower

----------FIRST LOG----------

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	303.3	4.6	PASS

MIP-38.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S, Sirhan
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-38.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.3 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 08:12:53

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 11 2014 08:15:57

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.552	0.0	93.440
TOP with FLOW>0	14.143	306.4	97.510
BOTTOM with FLOW=0	13.354	0.0	92.070
BOTTOM with FLOW>0	13.978	303.5	96.370

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%

ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 11 2014 08:19:33

----------SECOND LOG----------

EC PRE-LOG TESTS BYPASSED

MIP-38-lower.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-2014-IR
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST BYPASSED

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 11 2014 08:45:32

PRE-LOG HPT REFERENCE TESTS BYPASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 11 2014 08:45:39

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
21.25	6.477	512	1	1	1

LOG END DEPTH: 38.25 ft (11.659 m)
LOG END TIME: Fri Jul 11 2014 09:40:55

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-38-lower.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.9 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 10:03:39

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 11 2014 10:07:01

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.595	0.0	93.730
TOP with FLOW>0	13.887	239.2	95.740
BOTTOM with FLOW=0	13.369	0.0	92.180
BOTTOM with FLOW>0	13.699	242.2	94.450

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

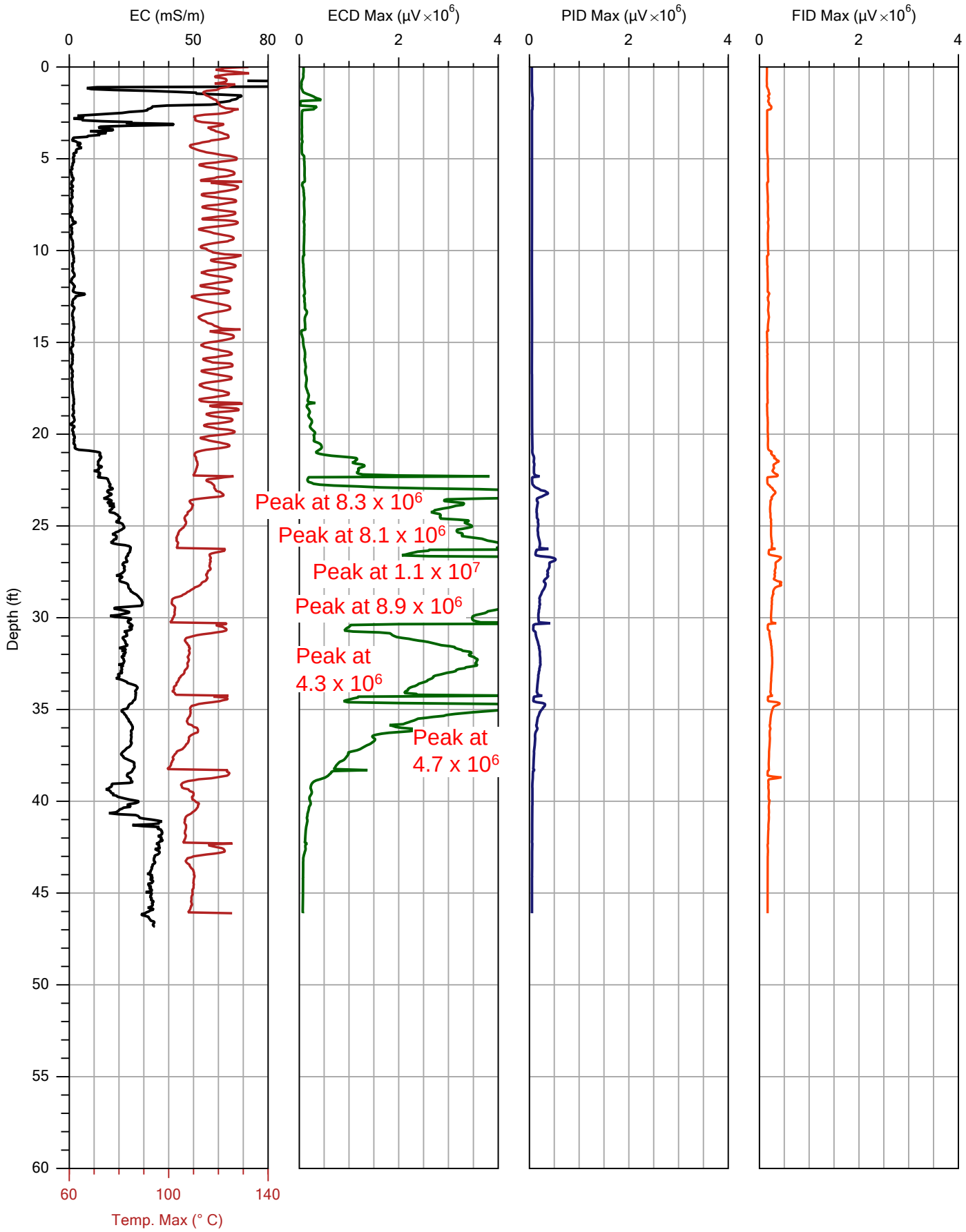
Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.9	PASS
High	290.0	304.5	5.0	PASS

The computer shut-down due to a software update while completing MIP-38. Total depth prior to shut down was 6 feet.

SER90 created two logs - MIP-38 and MIP-38 Lower - that were spliced together into the MIP-38Final data file.

TRC verified the assigned depths on the final log by comparing the depth to groundwater (as indicated by temperature and EC data) at MIP-39 (20 ft bgs) and MIP-10 (21 ft bgs). These data indicate that there is a data gap between the two logs. Consequently the depths assigned to the spliced data were re-assigned manually. At depth greater than 6 ft bgs, the assigned depths should be considered approximate.

MIP-39



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: S.Sirhan	File: MIP-39.MHP
Project ID: TPC-2014-IR	Client: TRC Solutions	Date: 7/11/2014
		Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.9	PASS
High	290.0	303.7	4.7	PASS

MIP-39.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: S.Sirhan
PROJECT ID: TPC-2014-IR
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-39.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.9 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 10:10:22

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 69 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 11 2014 10:13:48

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.547	0.0	93.410
TOP with FLOW>0	13.904	243.5	95.870
BOTTOM with FLOW=0	13.335	0.0	91.940
BOTTOM with FLOW>0	13.689	242.4	94.380

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 11 2014 10:16:08

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.95	0.290	1	1	1	1
2.15	0.655	16	1	1	1

LOG END DEPTH: 46.10 ft (14.051 m)
LOG END TIME: Fri Jul 11 2014 11:55:35

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-39.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.9 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 12:18:52

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 11 2014 12:22:13

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.545	0.0	93.390
TOP with FLOW>0	14.018	281.2	96.650
BOTTOM with FLOW=0	13.342	0.0	91.990
BOTTOM with FLOW>0	13.766	270.7	94.910

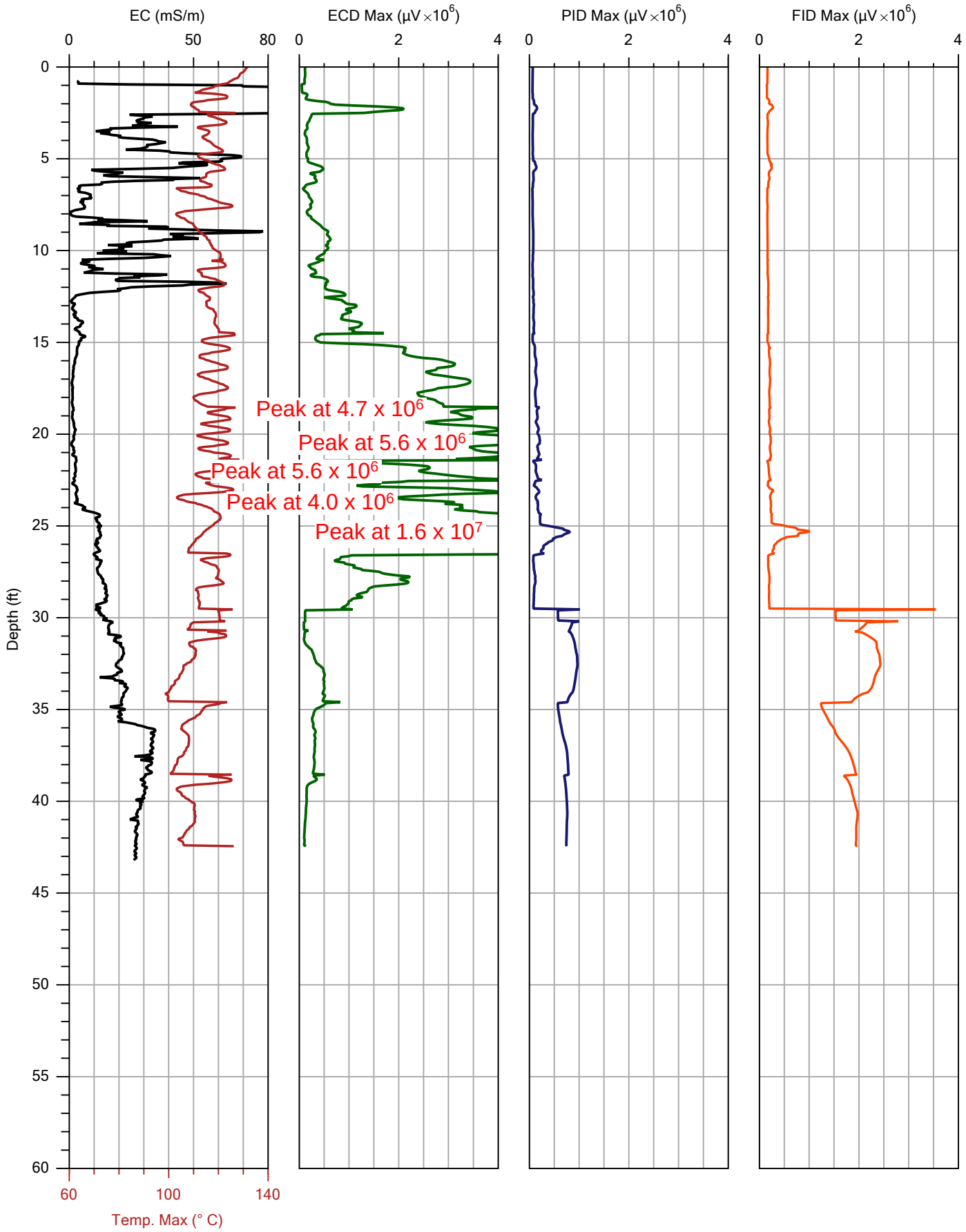
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	305.9	5.5	PASS

MIP-40



Direct Image® By Geoprobe Systems®

		File: MIP-40.MHP
Company: SER90	Operator: Sammy	Date: 7/11/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	306.0	5.5	PASS

MIP-40.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-40.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.1 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 13:32:24

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 11 2014 13:35:44

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.539	0.0	93.350
TOP with FLOW>0	14.157	324.0	97.610
BOTTOM with FLOW=0	13.298	0.0	91.690
BOTTOM with FLOW>0	13.909	322.1	95.900

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 11 2014 13:39:03

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 42.45 ft (12.939 m)
LOG END TIME: Fri Jul 11 2014 14:38:59

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-40.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.1 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 15:01:23

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 11 2014 15:04:42

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.495	0.0	93.050
TOP with FLOW>0	14.314	355.8	98.690
BOTTOM with FLOW=0	13.260	0.0	91.420
BOTTOM with FLOW>0	14.078	353.2	97.060

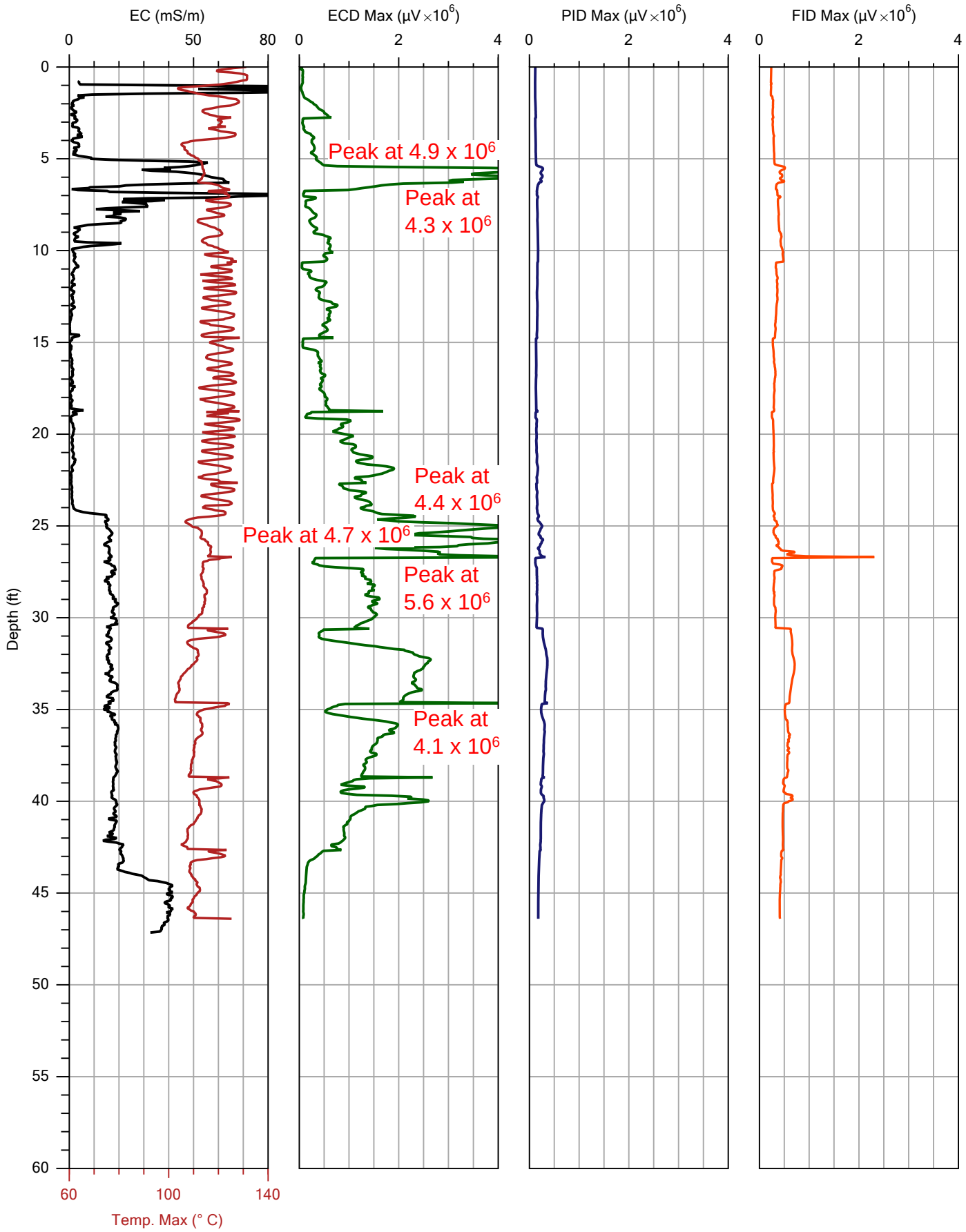
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.1	PASS
High	290.0	303.1	4.5	PASS

MIP-41



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: Sammy	File: MIP-41.MHP
Project ID: TPC-2014-RI	Client: TRC Solutions	Date: 7/11/2014
		Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.3	7.9	PASS
High	290.0	305.3	5.3	PASS

MIP-41.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-41.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.7 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 15:12:09

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 11 2014 15:15:26

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.479	0.0	92.940
TOP with FLOW>0	14.090	301.1	97.150
BOTTOM with FLOW=0	13.239	0.0	91.280
BOTTOM with FLOW>0	13.862	292.9	95.580

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 11 2014 15:17:51

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.15	0.046	16	1	1	1
0.55	0.168	16	1	1	1

LOG END DEPTH: 46.40 ft (14.143 m)
LOG END TIME: Fri Jul 11 2014 16:56:43

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-41.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 35.9 mL/min
RESPONSE TEST START TIME: Fri Jul 11 2014 17:20:25

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 11 2014 17:24:19

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.362	0.0	92.130
TOP with FLOW>0	14.347	351.3	98.920
BOTTOM with FLOW=0	13.153	0.0	90.690
BOTTOM with FLOW>0	14.105	350.3	97.250

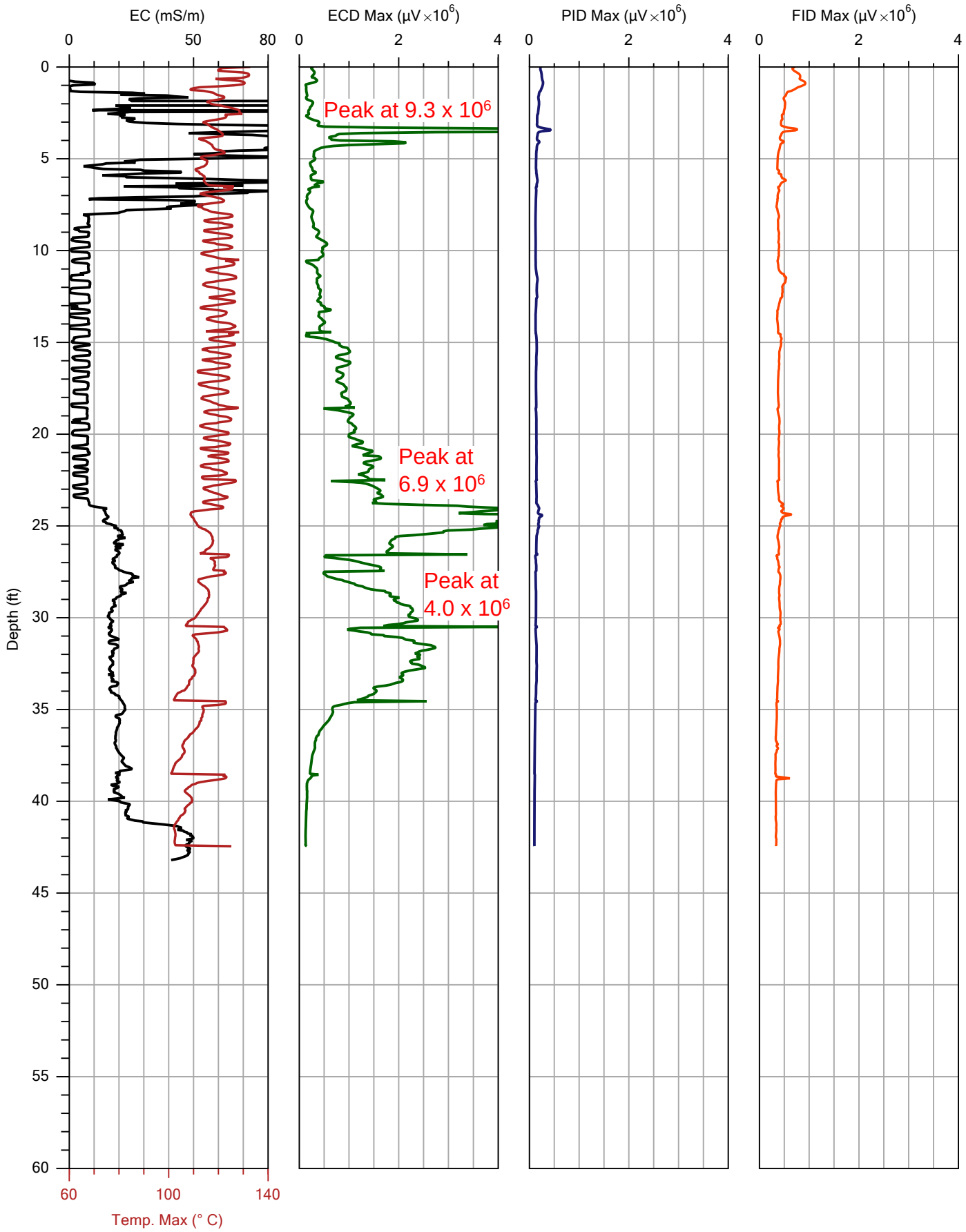
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.2	PASS
High	290.0	305.4	5.3	PASS

MIP-42



Direct Image® By Geoprobe Systems®

		File: MIP-42.MHP
Company: SER90	Operator: Sammy	Date: 7/14/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	304.9	5.1	PASS

MIP-42.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-42.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.8 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 08:46:31

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Mon Jul 14 2014 08:49:55

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.223	0.0	91.170
TOP with FLOW>0	14.135	330.3	97.460
BOTTOM with FLOW=0	12.995	0.0	89.590
BOTTOM with FLOW>0	13.786	319.5	95.050

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Mon Jul 14 2014 08:51:52

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 42.45 ft (12.939 m)
LOG END TIME: Mon Jul 14 2014 09:54:58

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-42.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.4 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 10:26:37

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Jul 14 2014 10:30:03

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.282	0.0	91.580
TOP with FLOW>0	13.961	312.5	96.260
BOTTOM with FLOW=0	13.065	0.0	90.080
BOTTOM with FLOW>0	13.665	311.1	94.220

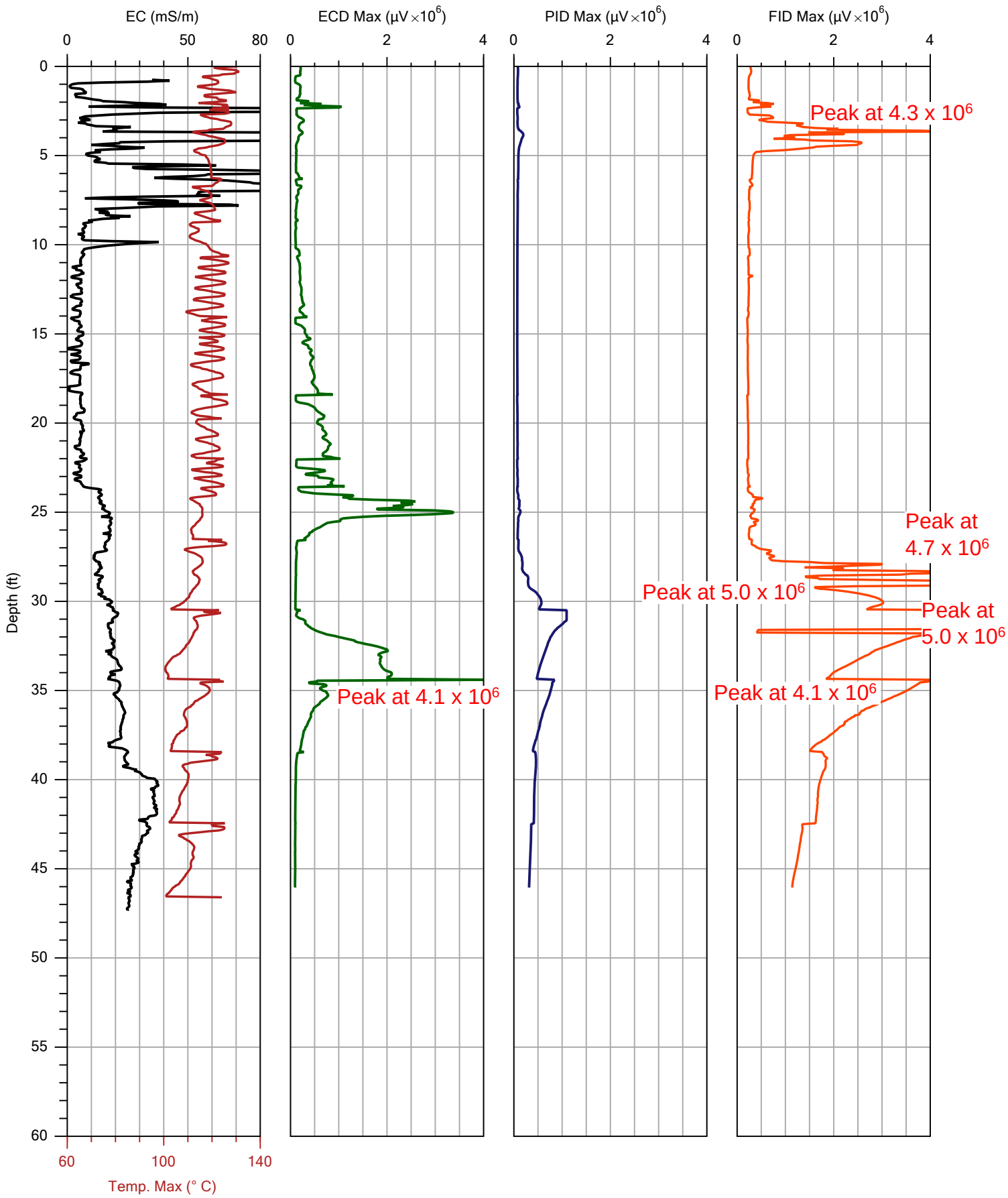
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.4	PASS
High	290.0	303.9	4.8	PASS

MIP-43



Direct Image® By Geoprobe Systems®

		File: MIP-43.MHP
Company: SER90	Operator: Sammy	Date: 7/14/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.3	PASS
High	290.0	305.2	5.2	PASS

MIP-43.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-43.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.0 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 11:53:10

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Mon Jul 14 2014 11:55:36

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.258	0.0	91.410
TOP with FLOW>0	13.560	205.2	93.490
BOTTOM with FLOW=0	13.023	0.0	89.790
BOTTOM with FLOW>0	13.332	204.3	91.920

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Mon Jul 14 2014 11:57:35

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
31.80	9.693	16	1	10	1

LOG END DEPTH: 46.60 ft (14.204 m)
LOG END TIME: Mon Jul 14 2014 13:04:47

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-43.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.0 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 13:31:23

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Jul 14 2014 13:34:49

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.245	0.0	91.320
TOP with FLOW>0	13.613	205.4	93.860
BOTTOM with FLOW=0	13.020	0.0	89.770
BOTTOM with FLOW>0	13.406	208.6	92.430

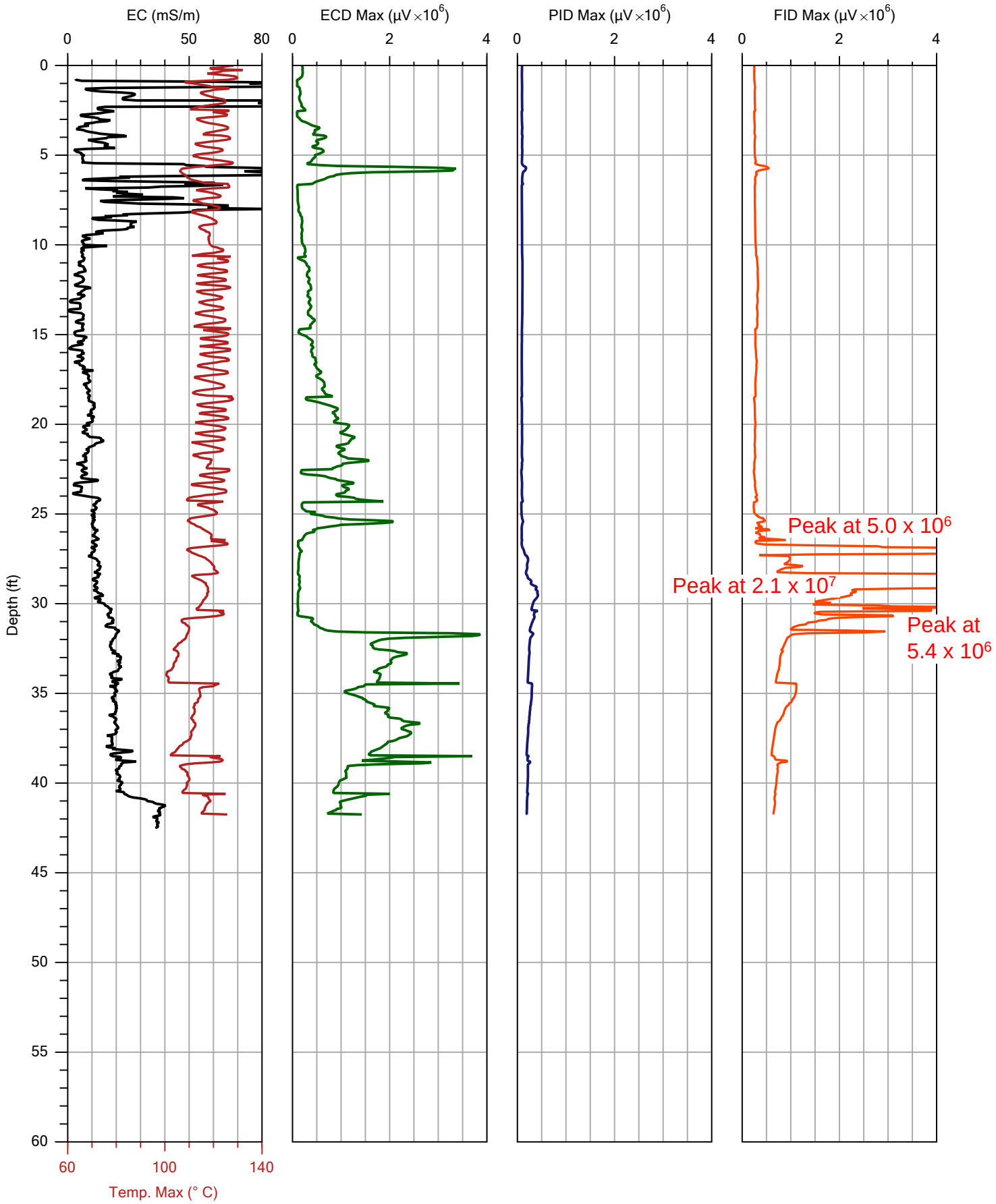
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	304.9	5.1	PASS

MIP-44



		File: MIP-44.MHP
Company: SER90	Operator: Sammy	Date: 7/14/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.1	5.5	PASS
High	290.0	303.7	4.7	PASS

MIP-44.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-44.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.3 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 14:48:24

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Mon Jul 14 2014 14:51:34

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.220	0.0	91.150
TOP with FLOW>0	13.612	214.6	93.850
BOTTOM with FLOW=0	13.013	0.0	89.720
BOTTOM with FLOW>0	13.419	210.3	92.520

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Mon Jul 14 2014 14:53:59

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
13.00	3.962	16	1	1	1
27.35	8.336	16	1	10	1

LOG END DEPTH: 41.75 ft (12.725 m)
LOG END TIME: Mon Jul 14 2014 15:58:22

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-44.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.2 mL/min
RESPONSE TEST START TIME: Mon Jul 14 2014 16:24:20

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Jul 14 2014 16:27:28

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.188	0.0	90.930
TOP with FLOW>0	13.575	208.1	93.600
BOTTOM with FLOW=0	12.984	0.0	89.520
BOTTOM with FLOW>0	13.325	208.8	91.870

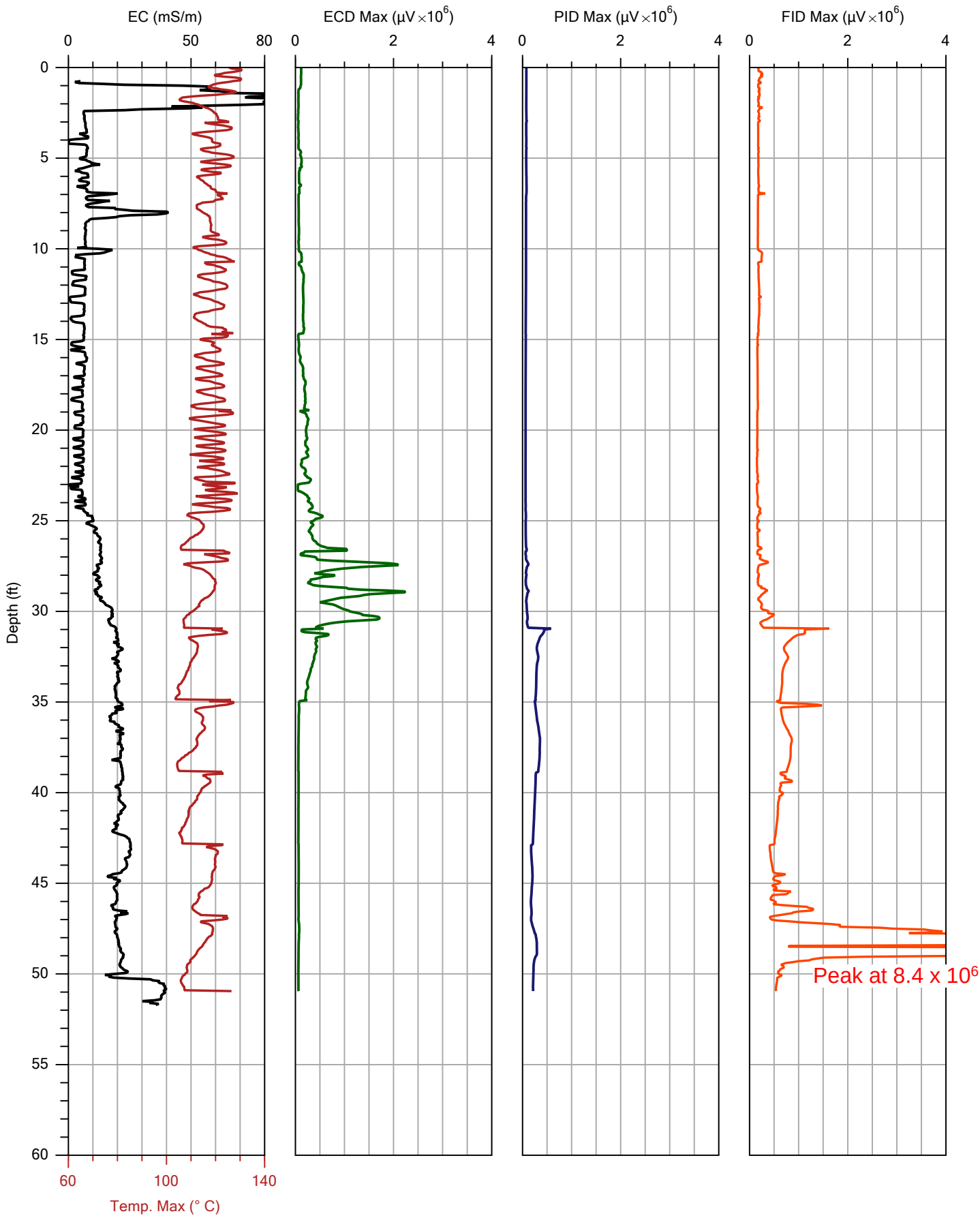
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.8	PASS
High	290.0	304.9	5.1	PASS

MIP-45



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: Sammy	File: MIP-45.MHP
		Date: 7/15/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.1	5.6	PASS
High	290.0	304.6	5.0	PASS

MIP-45.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-45.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 07:59:29

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 15 2014 08:02:17

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.277	0.0	91.540
TOP with FLOW>0	13.636	213.0	94.020
BOTTOM with FLOW=0	13.051	0.0	89.990
BOTTOM with FLOW>0	13.447	212.2	92.720

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Tue Jul 15 2014 08:07:50

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
48.55	14.798	16	1	10	1

LOG END DEPTH: 50.95 ft (15.530 m)
LOG END TIME: Tue Jul 15 2014 09:32:52

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-45.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.1 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 09:56:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 15 2014 10:00:19

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.217	0.0	91.130
TOP with FLOW>0	13.634	207.3	94.000
BOTTOM with FLOW=0	12.998	0.0	89.620
BOTTOM with FLOW>0	13.425	207.7	92.560

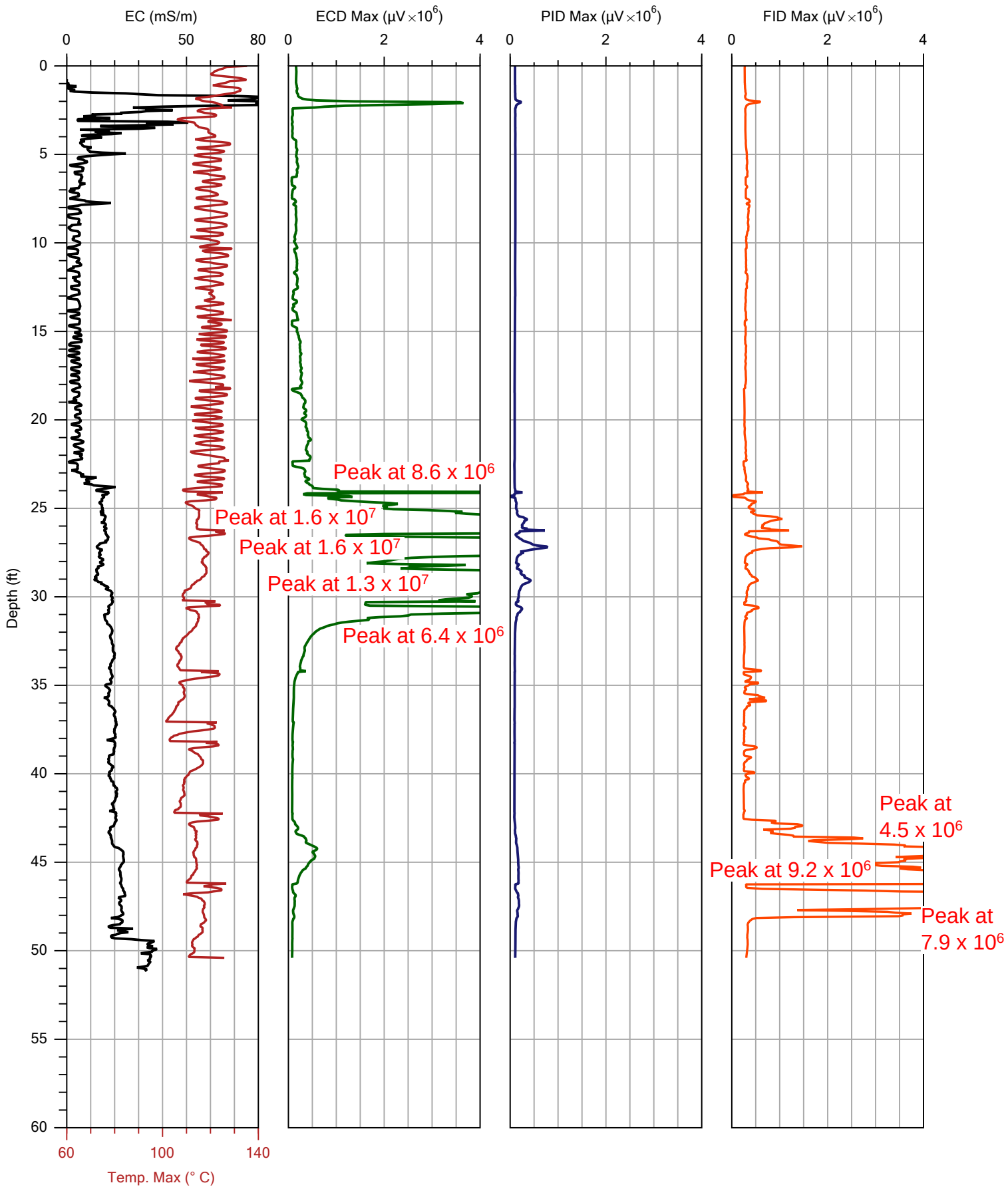
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.2	PASS
High	290.0	305.0	5.2	PASS

MIP-46



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: Sammy	File: MIP-46.MHP
Project ID: TPC-2014-RI	Client: TRC Solutions	Date: 7/15/2014
		Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.5	6.4	PASS
High	290.0	304.8	5.1	PASS

MIP-46.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-46.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.1 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 10:03:55

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 15 2014 10:07:06

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.191	0.0	90.950
TOP with FLOW>0	13.618	205.9	93.900
BOTTOM with FLOW=0	12.952	0.0	89.300
BOTTOM with FLOW>0	13.363	206.4	92.140

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (179.2 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (68.4 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jul 15 2014 10:09:01

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
24.40	7.437	16	16	10	1

LOG END DEPTH: 50.40 ft (15.362 m)
LOG END TIME: Tue Jul 15 2014 12:18:11

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-46.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.5 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 12:44:15

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 15 2014 12:47:39

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.248	0.0	91.340
TOP with FLOW>0	13.798	244.3	95.130
BOTTOM with FLOW=0	13.034	0.0	89.870
BOTTOM with FLOW>0	13.604	244.6	93.790

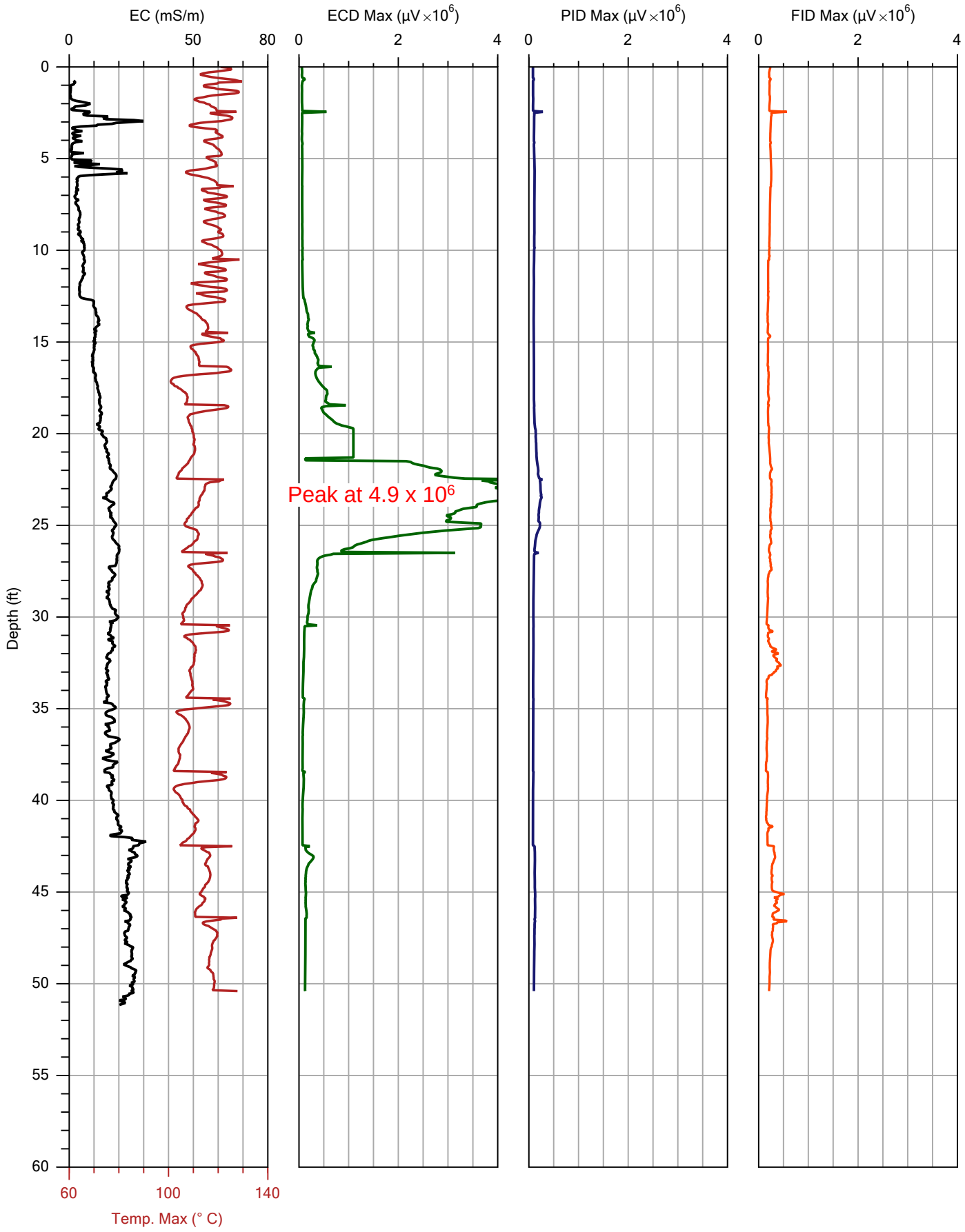
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	304.9	5.1	PASS

MIP-47



Direct Image® By Geoprobe Systems®

		File: MIP-47.MHP
Company: SER90	Operator: Sammy	Date: 7/15/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 41″ N, 83° 56′ 29″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.6	PASS
High	290.0	302.7	4.4	PASS

MIP-47.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-47.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.1 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 15:14:42

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 85 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 15 2014 15:20:55

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.273	0.0	91.510
TOP with FLOW>0	13.797	254.4	95.130
BOTTOM with FLOW=0	13.057	0.0	90.030
BOTTOM with FLOW>0	13.670	250.5	94.250

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Tue Jul 15 2014 15:23:43

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
21.50	6.553	16	1	1	1

LOG END DEPTH: 50.40 ft (15.362 m)
LOG END TIME: Tue Jul 15 2014 16:39:00

LATITUDE: 41.994733508
LONGITUDE: -83.941264747
ELEVATION: 207.823 METERS 681.83 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-47.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 17:05:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 15 2014 17:07:32

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.284	0.0	91.590
TOP with FLOW>0	13.740	251.0	94.730
BOTTOM with FLOW=0	13.051	0.0	89.980
BOTTOM with FLOW>0	13.533	254.2	93.300

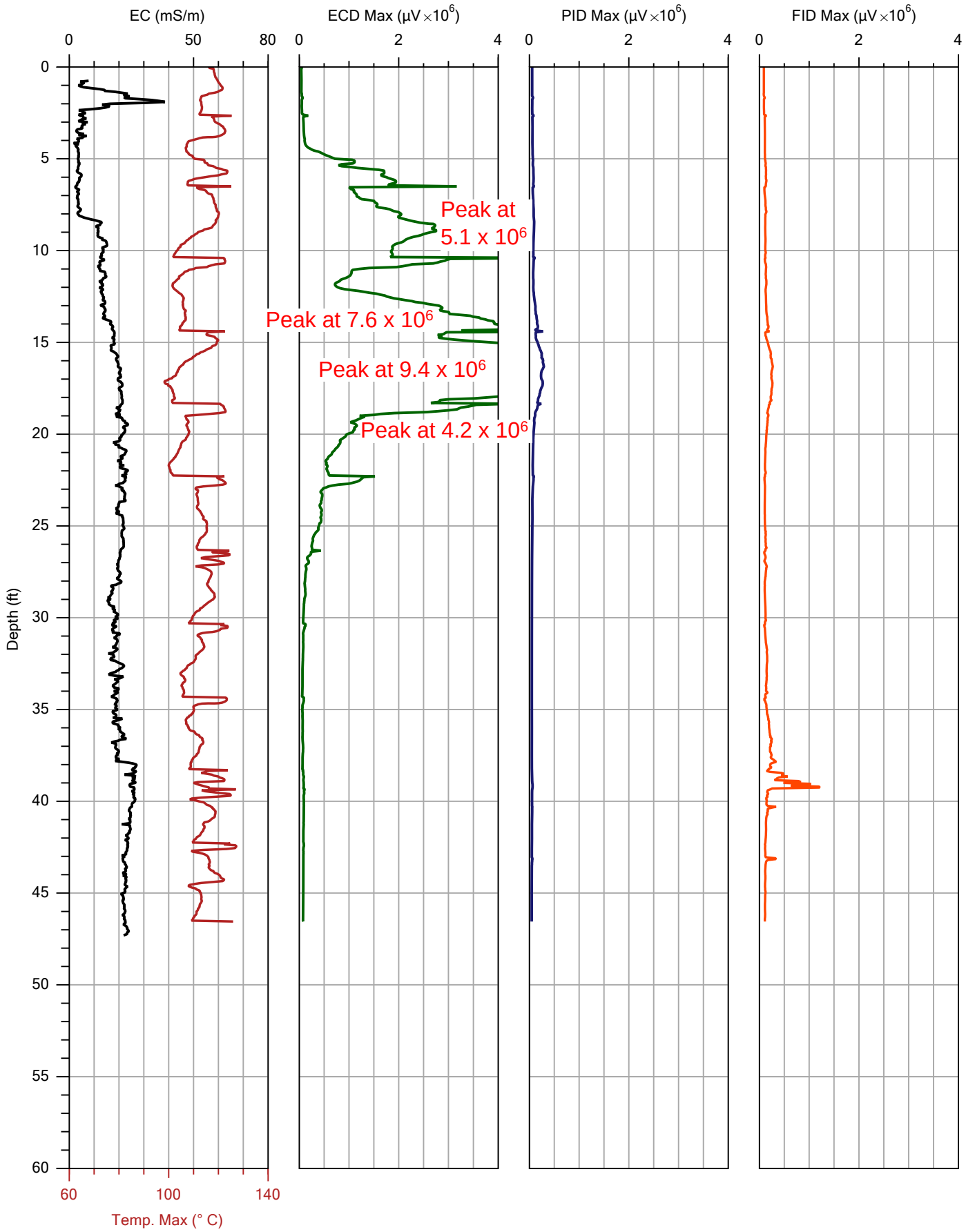
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.2	PASS
High	290.0	306.2	5.6	PASS

MIP-48



Direct Image® By Geoprobe Systems®

		File: MIP-48.MHP
Company: SER90	Operator: Sammy	Date: 7/15/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 42″ N, 83° 56′ 27″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.2	PASS
High	290.0	305.1	5.2	PASS

MIP-48.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-48.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 17:15:01

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 15 2014 17:18:48

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.279	0.0	91.560
TOP with FLOW>0	13.759	249.4	94.870
BOTTOM with FLOW=0	13.050	0.0	89.970
BOTTOM with FLOW>0	13.536	244.3	93.330

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291

Temperature out of range (185.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (54.2 deg C) at 0.00 ft (0.000 m)

Temperature out of range (41.8 deg C) at 0.00 ft (0.000 m)

Temperature out of range (37.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (35.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (34.3 deg C) at 0.00 ft (0.000 m)

Temperature out of range (32.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (32.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (32.2 deg C) at 0.00 ft (0.000 m)

Temperature out of range (31.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (31.3 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jul 15 2014 17:21:36

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 46.55 ft (14.188 m)
LOG END TIME: Tue Jul 15 2014 19:05:48

LATITUDE: 41.994986475
LONGITUDE: -83.940747106
ELEVATION: 204.998 METERS 672.57 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-48.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.9 mL/min
RESPONSE TEST START TIME: Tue Jul 15 2014 19:26:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 15 2014 19:29:29

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.334	0.0	91.930
TOP with FLOW>0	13.833	248.7	95.370
BOTTOM with FLOW=0	13.117	0.0	90.440
BOTTOM with FLOW>0	13.733	250.7	94.680

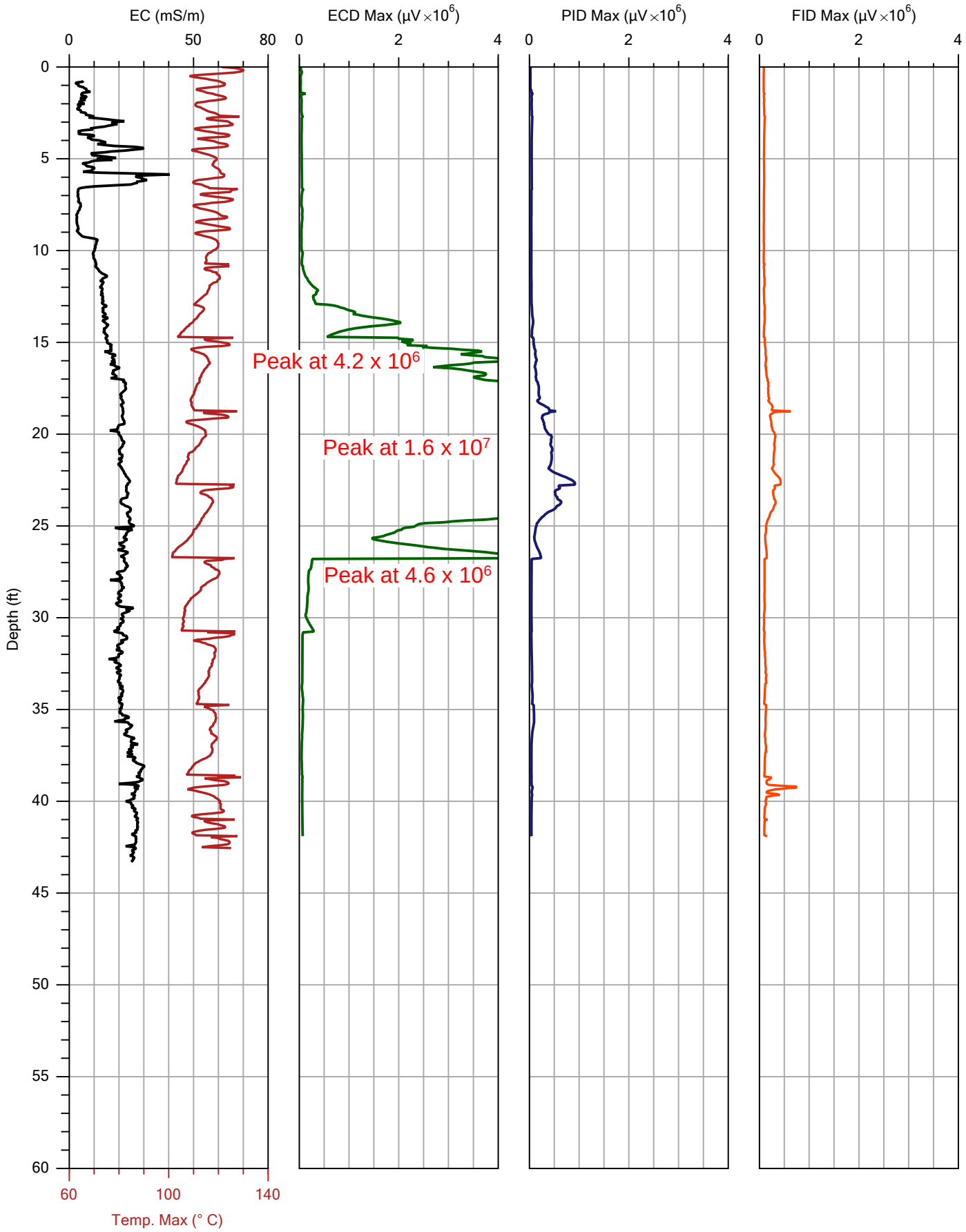
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.4	9.9	PASS
High	290.0	307.4	6.0	PASS

MIP-49



Direct Image® By Geoprobe Systems®

		File: MIP-49.MHP
Company: SER90	Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 43″ N, 83° 56′ 27″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.4	9.8	PASS
High	290.0	304.9	5.1	PASS

MIP-49.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-49.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 47.8 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 08:33:12

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 110 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 16 2014 08:37:34

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.333	0.0	91.930
TOP with FLOW>0	14.004	273.8	96.550
BOTTOM with FLOW=0	13.121	0.0	90.470
BOTTOM with FLOW>0	13.767	266.8	94.920

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Wed Jul 16 2014 08:39:46

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 42.55 ft (12.969 m)
LOG END TIME: Wed Jul 16 2014 09:57:26

LATITUDE: 41.995276589
LONGITUDE: -83.940754003
ELEVATION: 206.961 METERS 679.01 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-49.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.7 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 10:21:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 16 2014 10:24:21

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.402	0.0	92.400
TOP with FLOW>0	14.015	255.6	96.630
BOTTOM with FLOW=0	13.170	0.0	90.800
BOTTOM with FLOW>0	13.803	255.7	95.170

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

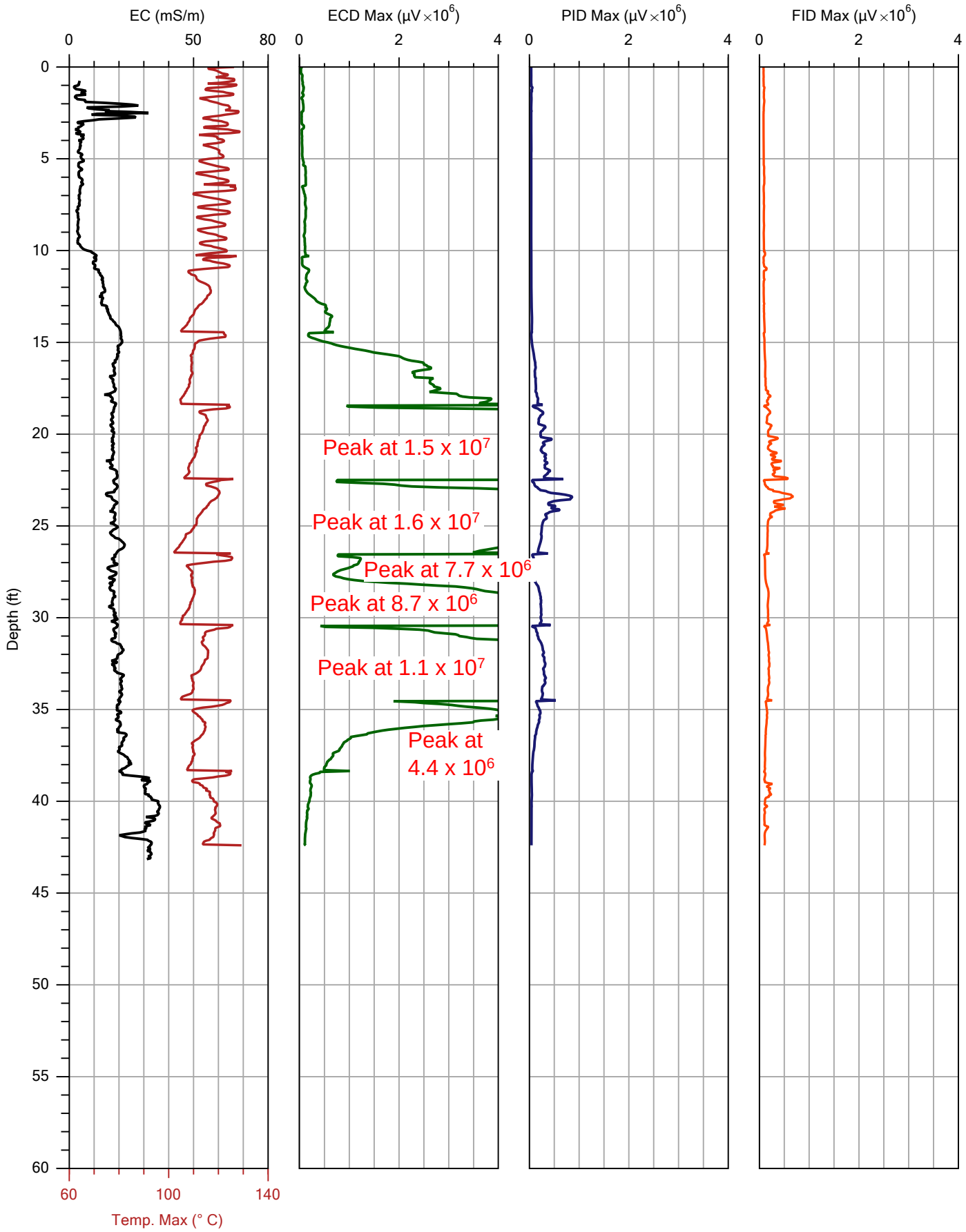
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.3	9.7	PASS
High	290.0	304.6	5.1	PASS

********** USER NOTES **********

Staff at 1.4 meters

MIP-50



Direct Image® By Geoprobe Systems®

		File: MIP-50.MHP
Company: SER90	Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 27″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	55.7	1.3	PASS
High	290.0	306.9	5.8	PASS

MIP-50.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-50.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.8 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 10:34:52

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 16 2014 10:42:14

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.411	0.0	92.460
TOP with FLOW>0	14.015	261.6	96.630
BOTTOM with FLOW=0	13.181	0.0	90.880
BOTTOM with FLOW>0	13.786	262.5	95.050

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Wed Jul 16 2014 10:44:18

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
11.25	3.429	16	1	1	1

LOG END DEPTH: 42.40 ft (12.924 m)
LOG END TIME: Wed Jul 16 2014 12:00:47

LATITUDE: 41.995526603
LONGITUDE: -83.940769358
ELEVATION: 205.718 METERS 674.93 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-50.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.6 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 12:23:22

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 16 2014 12:27:38

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.331	0.0	91.910
TOP with FLOW>0	14.106	260.5	97.260
BOTTOM with FLOW=0	13.130	0.0	90.530
BOTTOM with FLOW>0	13.861	265.4	95.570

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

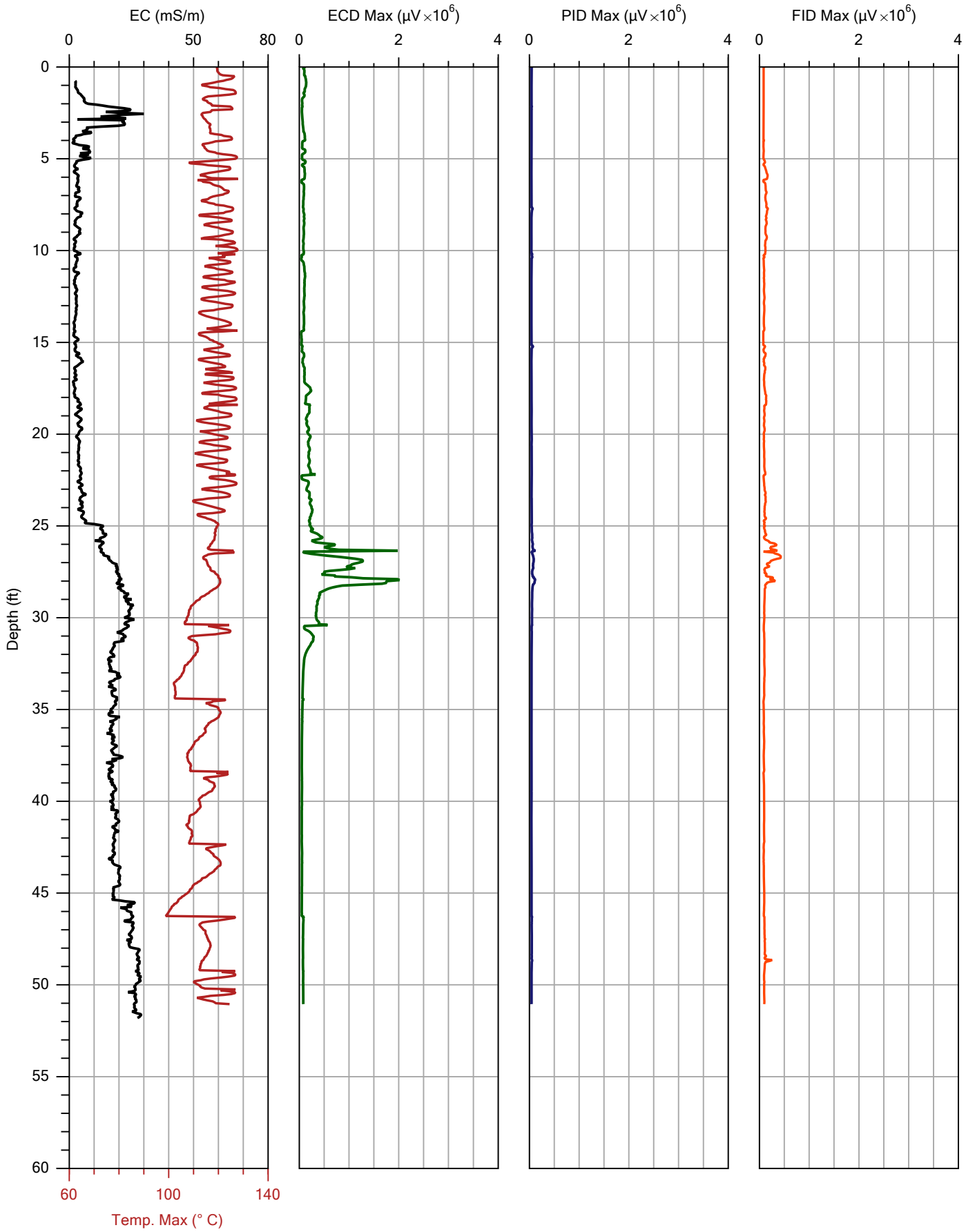
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	51.0	7.3	PASS
High	290.0	305.6	5.4	PASS

********** USER NOTES **********

Staff is 1.4 meters

MIP-51



Direct Image® By Geoprobe Systems®

		File: MIP-51.MHP
Company: SER90	Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 45″ N, 83° 56′ 41″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.7	5.0	PASS
High	290.0	304.5	5.0	PASS

MIP-51.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-51.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.6 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 12:34:02

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 16 2014 12:36:31

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.342	0.0	91.990
TOP with FLOW>0	14.097	263.6	97.200
BOTTOM with FLOW=0	13.126	0.0	90.500
BOTTOM with FLOW>0	13.875	267.1	95.670

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291

Temperature out of range (80.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Wed Jul 16 2014 12:39:08

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.15	0.655	16	1	1	1

LOG END DEPTH: 51.05 ft (15.560 m)
LOG END TIME: Wed Jul 16 2014 15:00:49

LATITUDE: 41.995767258
LONGITUDE: -83.944642431
ELEVATION: 210.458 METERS 690.48 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-51.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.4 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 15:30:29

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 16 2014 15:33:15

POST-LOG HPT REFERENCE TESTS BYPASSED

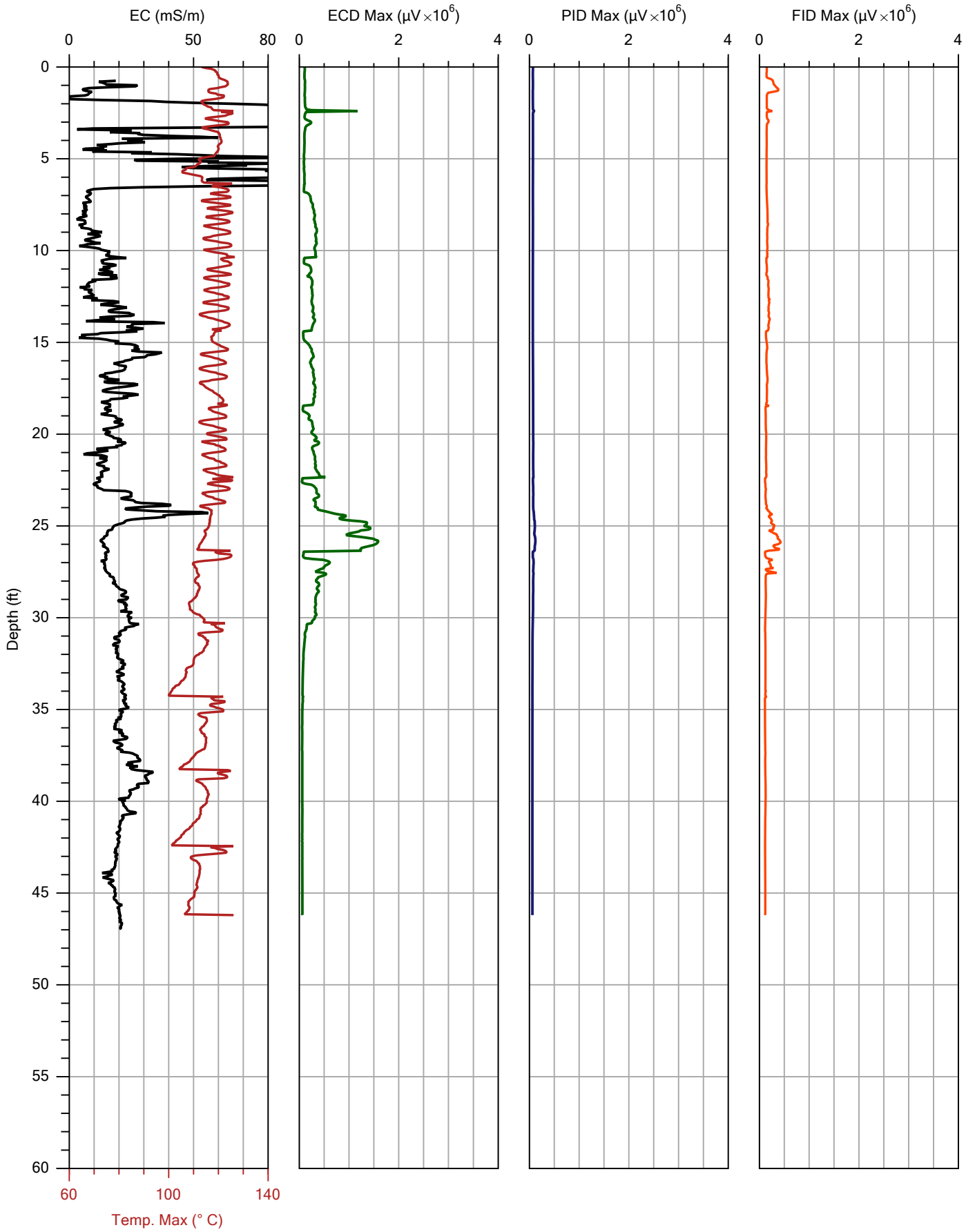
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.7	3.0	PASS
High	290.0	302.9	4.5	PASS

********** USER NOTES **********

Staff is at 1.45 meters

MIP-52



Direct Image® By Geoprobe Systems®

		File: MIP-52.MHP
Company: SER90	Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 46″ N, 83° 56′ 40″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.0	7.2	PASS
High	290.0	302.5	4.3	PASS

MIP-52.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-52.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.4 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 16:44:46

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 16 2014 16:49:09

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	14.489	0.0	99.900
TOP with FLOW>0	15.070	278.2	103.910
BOTTOM with FLOW=0	14.258	0.0	98.300
BOTTOM with FLOW>0	14.857	276.6	102.440

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Wed Jul 16 2014 16:51:25

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
3.15	0.960	16	1	1	1

LOG END DEPTH: 46.20 ft (14.082 m)
LOG END TIME: Wed Jul 16 2014 18:09:09

LATITUDE: 41.996026289
LONGITUDE: -83.944399217
ELEVATION: 210.201 METERS 689.64 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-52.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.0 mL/min
RESPONSE TEST START TIME: Wed Jul 16 2014 18:31:53

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 16 2014 18:35:10

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.326	0.0	91.880
TOP with FLOW>0	13.834	263.5	95.380
BOTTOM with FLOW=0	13.097	0.0	90.300
BOTTOM with FLOW>0	13.649	273.1	94.100

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

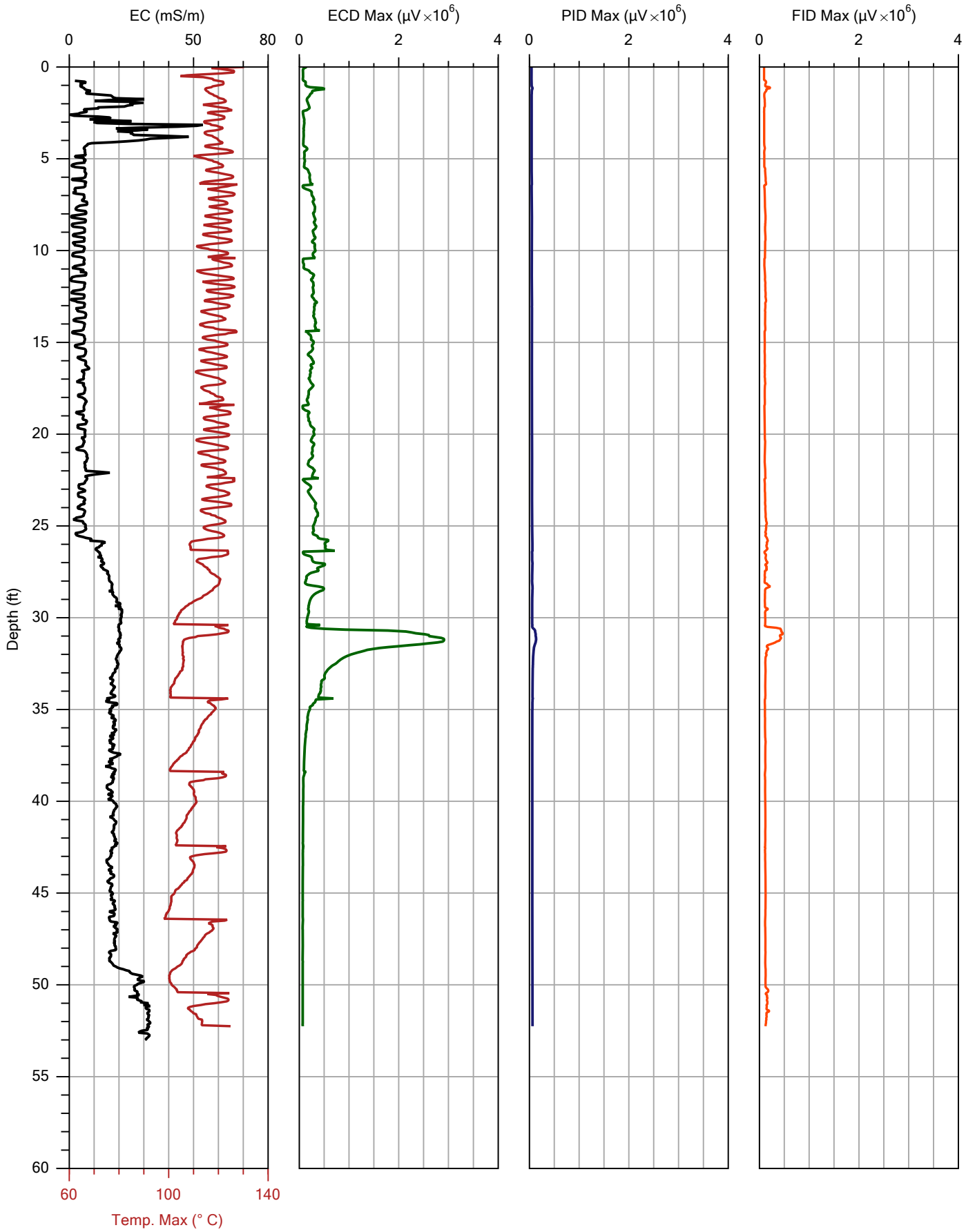
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.5	PASS
High	290.0	302.9	4.5	PASS

********** USER NOTES **********

Staff is at 1.45m

MIP-53



Direct Image® By Geoprobe Systems®

		File: MIP-53.MHP
Company: SER90	Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 40″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.1	5.6	PASS
High	290.0	303.1	4.5	PASS

MIP-53.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-53.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 46.5 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 08:36:18

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 17 2014 08:39:28

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.553	0.0	93.440
TOP with FLOW>0	14.131	257.6	97.430
BOTTOM with FLOW=0	13.351	0.0	92.050
BOTTOM with FLOW>0	13.929	257.2	96.040

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Thu Jul 17 2014 08:44:30

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 52.25 ft (15.926 m)
LOG END TIME: Thu Jul 17 2014 10:01:24

LATITUDE: 41.995486119
LONGITUDE: -83.944438878
ELEVATION: 211.081 METERS 692.52 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-53.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 10:30:44

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 17 2014 10:34:02

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.439	0.0	92.660
TOP with FLOW>0	13.968	263.6	96.310
BOTTOM with FLOW=0	13.221	0.0	91.150
BOTTOM with FLOW>0	13.743	263.4	94.760

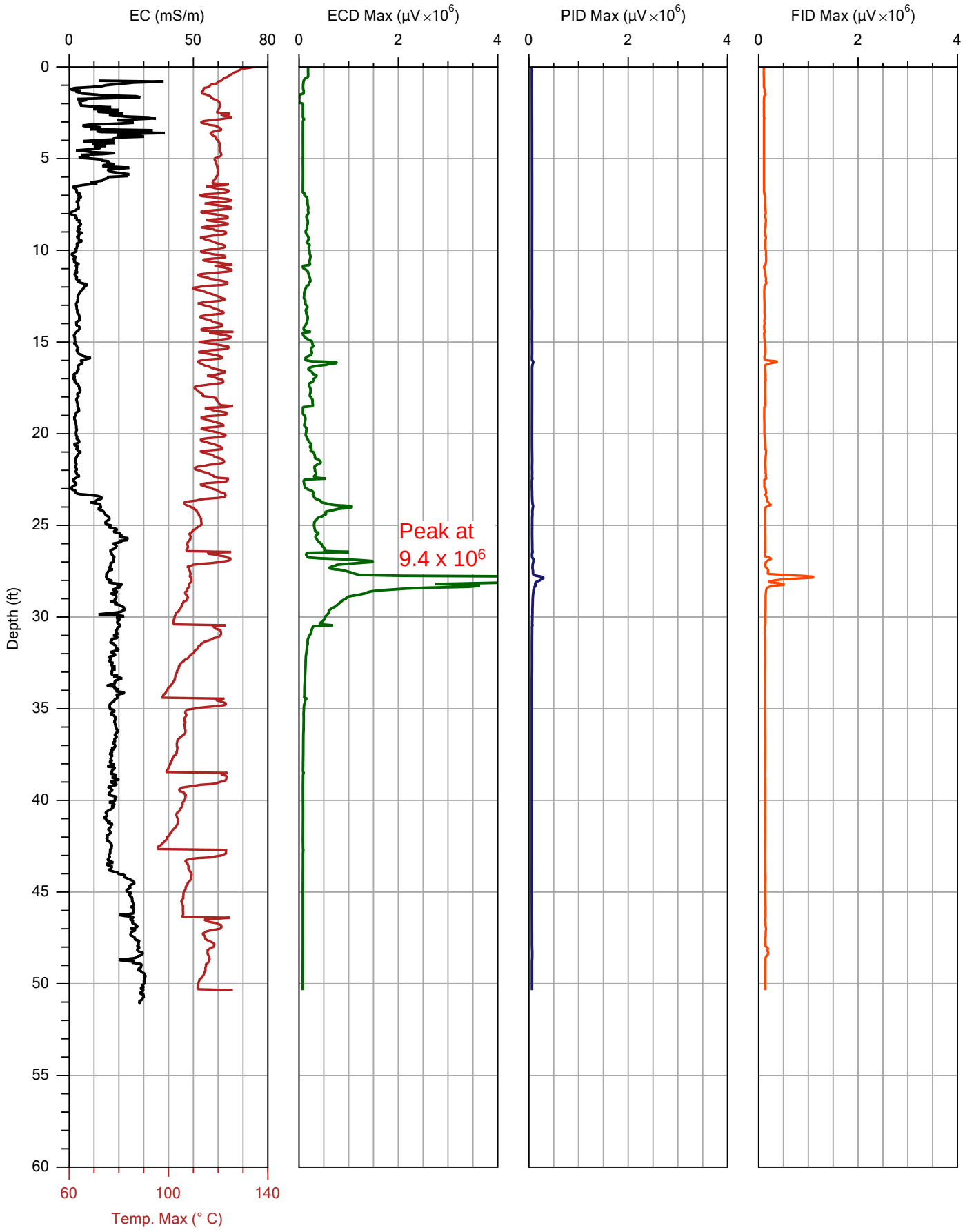
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.2	PASS
High	290.0	302.8	4.4	PASS

MIP-54



Direct Image® By Geoprobe Systems®

		File: MIP-54.MHP
Company: SER90	Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 45″ N, 83° 56′ 38″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.9	7.1	PASS
High	290.0	300.6	3.6	PASS

MIP-54.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-54.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 10:39:47

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 17 2014 10:43:35

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.466	0.0	92.840
TOP with FLOW>0	13.988	265.4	96.440
BOTTOM with FLOW=0	13.239	0.0	91.280
BOTTOM with FLOW>0	13.760	267.7	94.870

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (183.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (60.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (46.7 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Thu Jul 17 2014 10:45:18

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.00	0.610	16	1	1	1
6.55	1.996	16	1	1	1

LOG END DEPTH: 50.35 ft (15.347 m)
LOG END TIME: Thu Jul 17 2014 12:22:58

LATITUDE: 41.995760097
LONGITUDE: -83.943996875
ELEVATION: 210.341 METERS 690.10 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-54.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 12:51:01

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 17 2014 12:54:12

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.468	0.0	92.860
TOP with FLOW>0	13.936	278.8	96.080
BOTTOM with FLOW=0	13.229	0.0	91.210
BOTTOM with FLOW>0	13.717	277.6	94.570

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

TRANSDUCER TEST PASSED

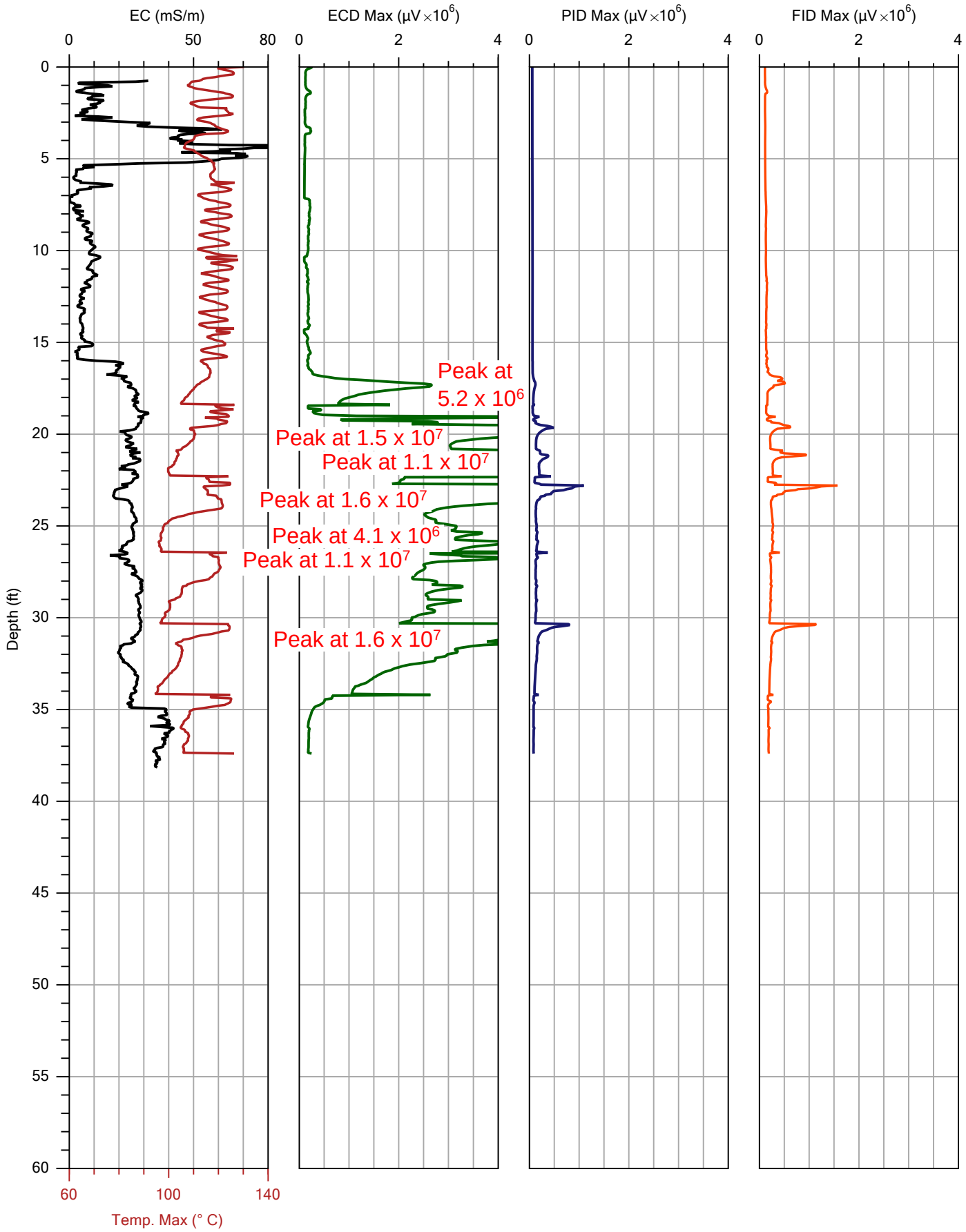
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.1	5.7	PASS
High	290.0	300.2	3.5	PASS

********** USER NOTES **********

Staff is at 1.45 meters

MIP-55



Direct Image® By Geoprobe Systems®

		File: MIP-55.MHP
Company: SER90	Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 30″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	56.2	2.2	PASS
High	290.0	301.0	3.8	PASS

MIP-55.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-55.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.5 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 12:59:43

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 17 2014 13:01:43

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.423	0.0	92.550
TOP with FLOW>0	13.946	276.4	96.150
BOTTOM with FLOW=0	13.199	0.0	91.010
BOTTOM with FLOW>0	13.727	276.2	94.640

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (175.4 deg C) at 0.00 ft (0.000 m)

Temperature out of range (51.4 deg C) at 0.00 ft (0.000 m)

Temperature out of range (47.4 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Thu Jul 17 2014 13:03:59

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 37.40 ft (11.400 m)
LOG END TIME: Thu Jul 17 2014 15:24:17

LATITUDE: 41.998948194
LONGITUDE: -83.941756369
ELEVATION: 209.041 METERS 685.83 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-55.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 15:44:37

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 17 2014 15:47:23

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.396	0.0	92.360
TOP with FLOW>0	13.933	275.3	96.070
BOTTOM with FLOW=0	13.166	0.0	90.780
BOTTOM with FLOW>0	13.718	273.6	94.580

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

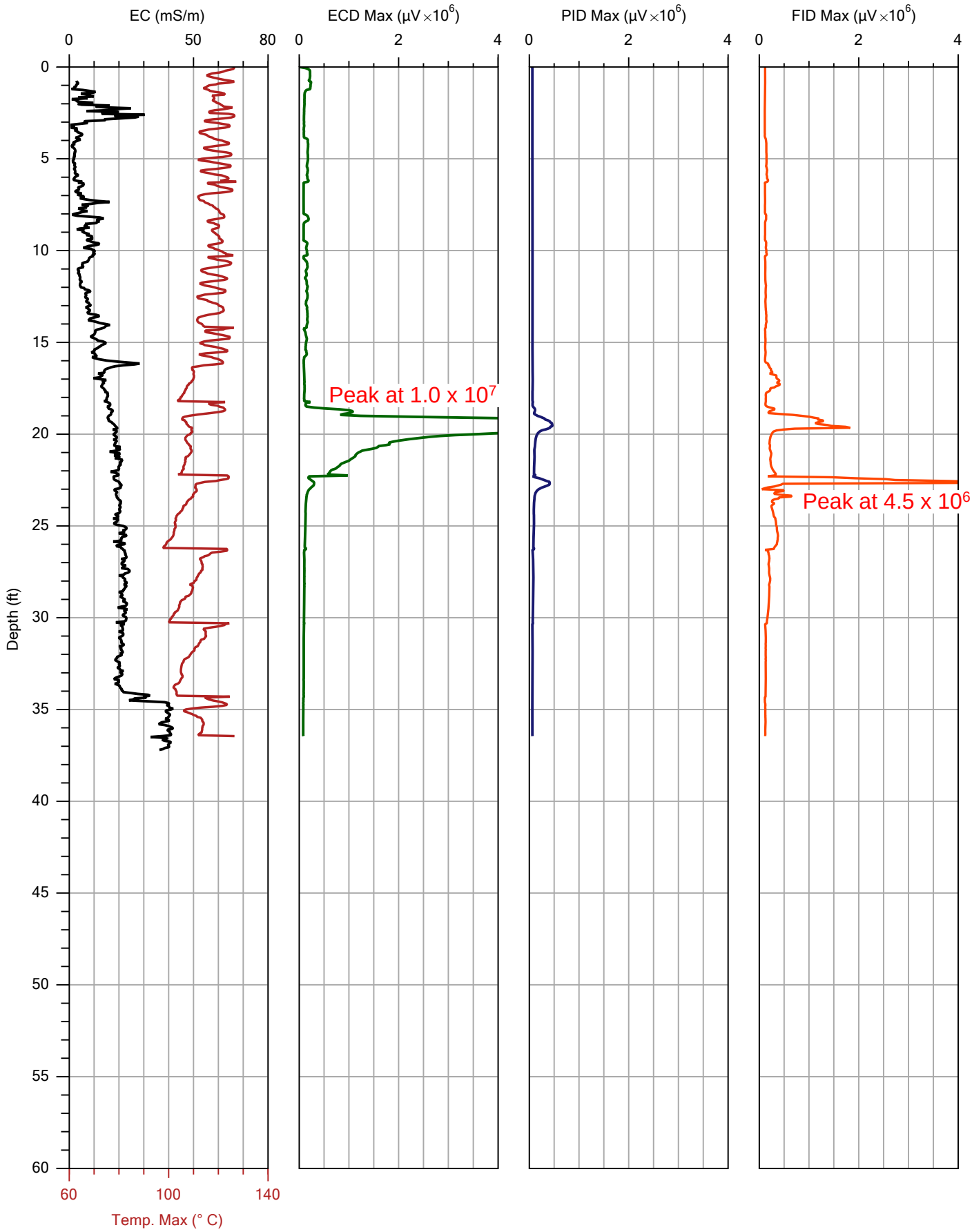
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.1	PASS
High	290.0	301.3	3.9	PASS

********** USER NOTES **********

Staff is at 1.45 m

MIP-56



Direct Image® By Geoprobe Systems®

		File: MIP-56.MHP
Company: SER90	Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 54″ N, 83° 56′ 30″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.3	4.1	PASS
High	290.0	291.0	0.3	PASS

MIP-56.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-56.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39.3 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 16:00:09

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 78 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 17 2014 16:03:32

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.357	0.0	92.090
TOP with FLOW>0	14.067	287.6	96.990
BOTTOM with FLOW=0	13.128	0.0	90.520
BOTTOM with FLOW>0	13.921	293.5	95.980

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (231.1 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (55.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (43.3 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Thu Jul 17 2014 16:05:52

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.05	0.015	16	1	1	1
23.05	7.026	16	1	10	1

LOG END DEPTH: 36.45 ft (11.110 m)
LOG END TIME: Thu Jul 17 2014 17:34:28

LATITUDE: 41.998343197
LONGITUDE: -83.941721425
ELEVATION: 209.103 METERS 686.03 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-56.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.5 mL/min
RESPONSE TEST START TIME: Thu Jul 17 2014 17:58:12

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 17 2014 18:02:42

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.439	0.0	92.660

TOP with FLOW>0	14.113	272.8	97.310
BOTTOM with FLOW=0	13.198	0.0	91.000
BOTTOM with FLOW>0	13.898	277.1	95.820

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

TRANSDUCER TEST PASSED

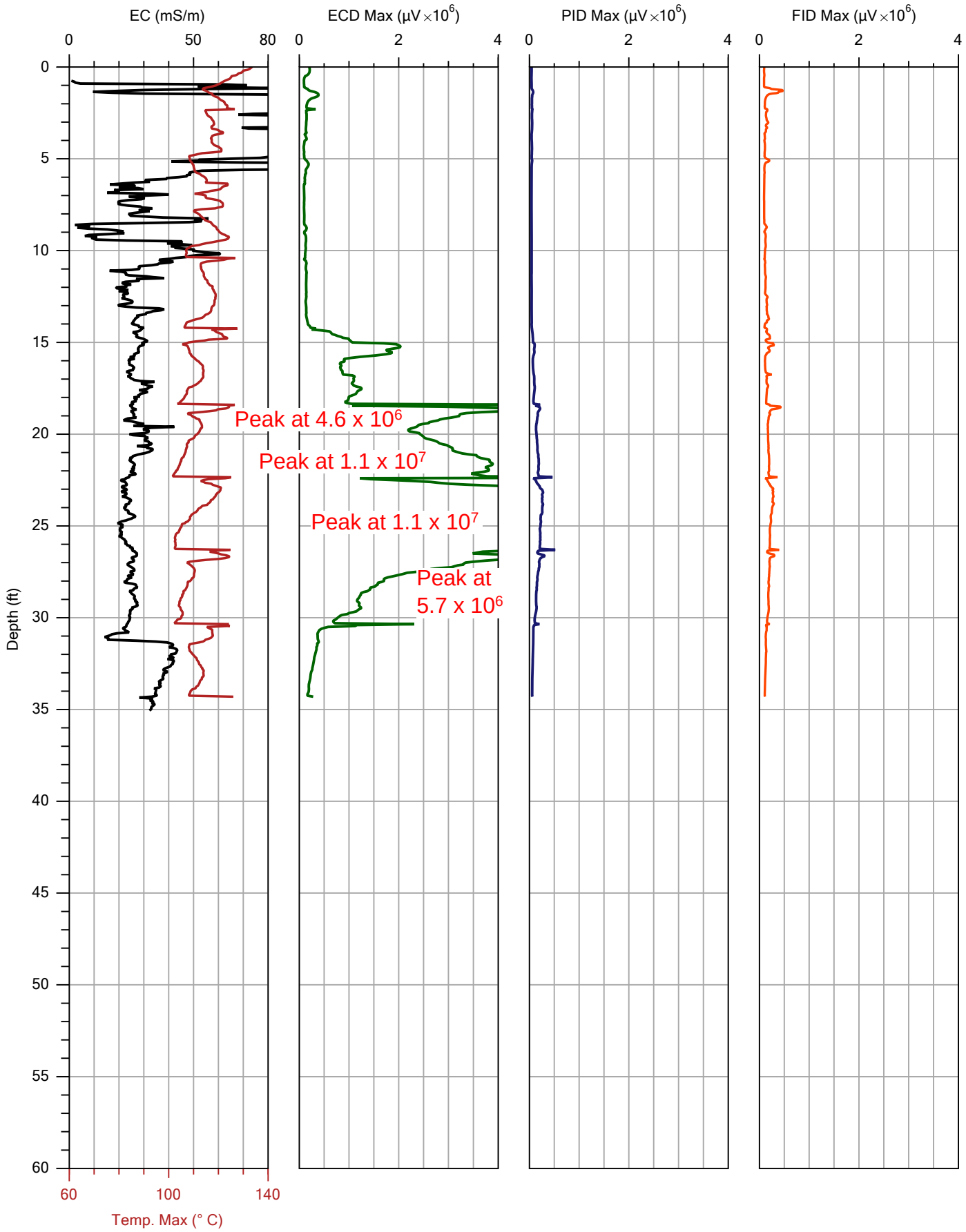
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.0	3.7	PASS
High	290.0	297.8	2.7	PASS

********** USER NOTES **********

Staff is at 1.45m

MIP-57



Direct Image® By Geoprobe Systems®

		File: MIP-57.MHP
Company: SER90	Operator: Sammy	Date: 7/18/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 29″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.0	5.4	PASS
High	290.0	299.2	3.2	PASS

MIP-57.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-57.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 50.1 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 08:48:08

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 18 2014 08:51:20

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	14.125	0.0	97.390
TOP with FLOW>0	14.801	319.7	102.050
BOTTOM with FLOW=0	13.912	0.0	95.920
BOTTOM with FLOW>0	14.683	346.5	101.230

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454
LOG START TIME: Fri Jul 18 2014 08:53:44

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 34.30 ft (10.455 m)
LOG END TIME: Fri Jul 18 2014 09:39:03

LATITUDE: 41.998946339
LONGITUDE: -83.941289403
ELEVATION: 209.022 METERS 685.77 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-57.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.8 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 10:00:28

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 18 2014 10:03:36

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.483	0.0	92.960
TOP with FLOW>0	14.145	273.5	97.530
BOTTOM with FLOW=0	13.268	0.0	91.480
BOTTOM with FLOW>0	13.924	273.9	96.000

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

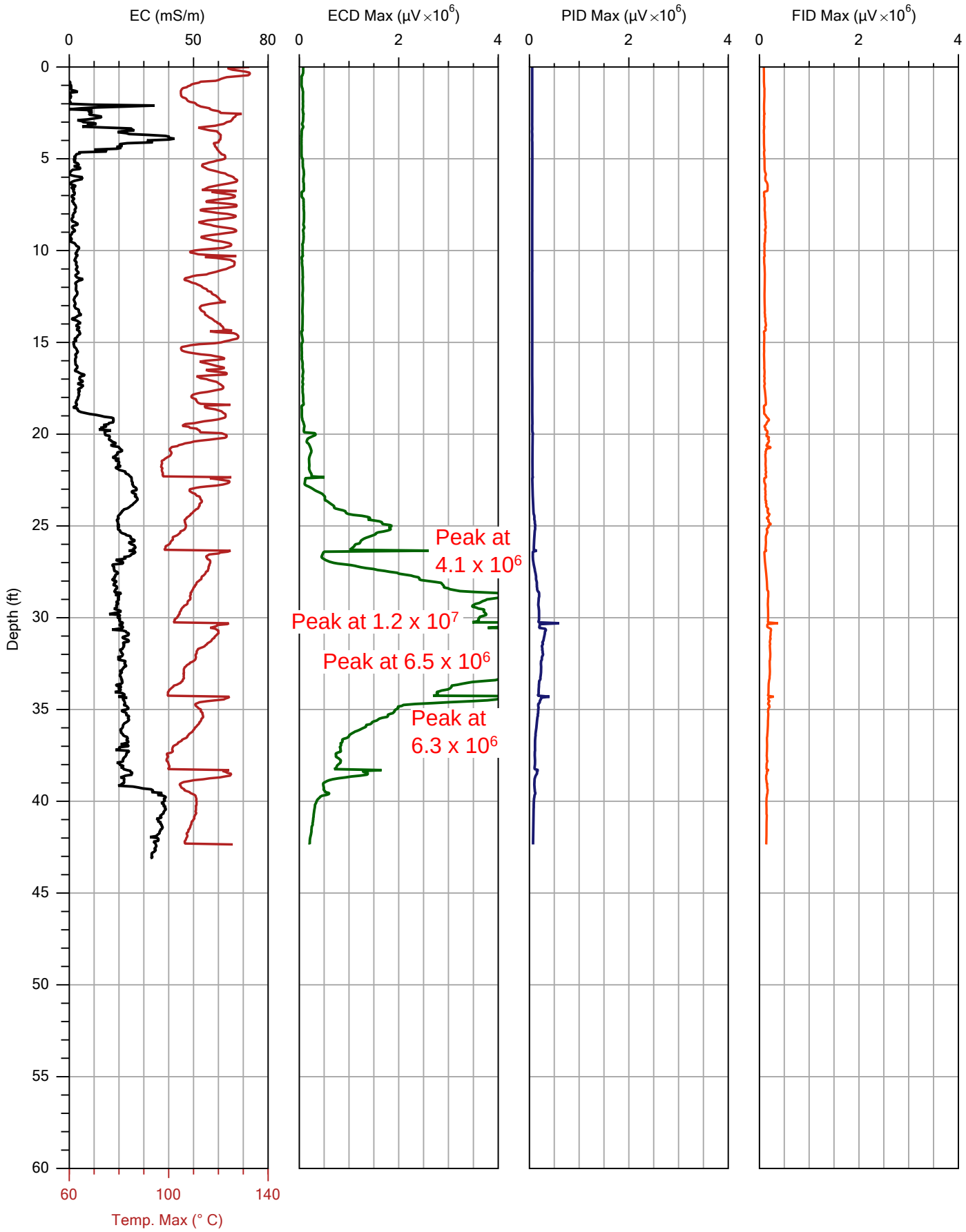
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.2	5.8	PASS
High	290.0	302.5	4.3	PASS

********** USER NOTES **********

Please note: a new MIP membrane was installed at this boring. Consult the Pre and Post standard tests for adequate analyis.

MIP-58



Direct Image® By Geoprobe Systems®

		File: MIP-58.MHP
Company: SER90	Operator: Sammy	Date: 7/18/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 32″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.6	PASS
High	290.0	302.1	4.2	PASS

MIP-58.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-58.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.8 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 10:13:06

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 18 2014 10:15:16

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.471	0.0	92.880
TOP with FLOW>0	14.173	276.5	97.720
BOTTOM with FLOW=0	13.252	0.0	91.370
BOTTOM with FLOW>0	14.037	284.6	96.780

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (185.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (62.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (45.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (44.4 deg C) at 0.00 ft (0.000 m)

Temperature out of range (43.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (42.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (42.1 deg C) at 0.00 ft (0.000 m)

Temperature out of range (41.5 deg C) at 0.00 ft (0.000 m)

Temperature out of range (40.9 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Fri Jul 18 2014 10:17:33

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 42.35 ft (12.908 m)
LOG END TIME: Fri Jul 18 2014 12:01:27

LATITUDE: 41.998972569
LONGITUDE: -83.942270269
ELEVATION: 208.711 METERS 684.75 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-58.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.0 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 12:25:29

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 18 2014 12:28:15

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.459	0.0	92.800
TOP with FLOW>0	14.146	299.3	97.530
BOTTOM with FLOW=0	13.224	0.0	91.170
BOTTOM with FLOW>0	13.932	302.7	96.060

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

TRANSDUCER TEST PASSED

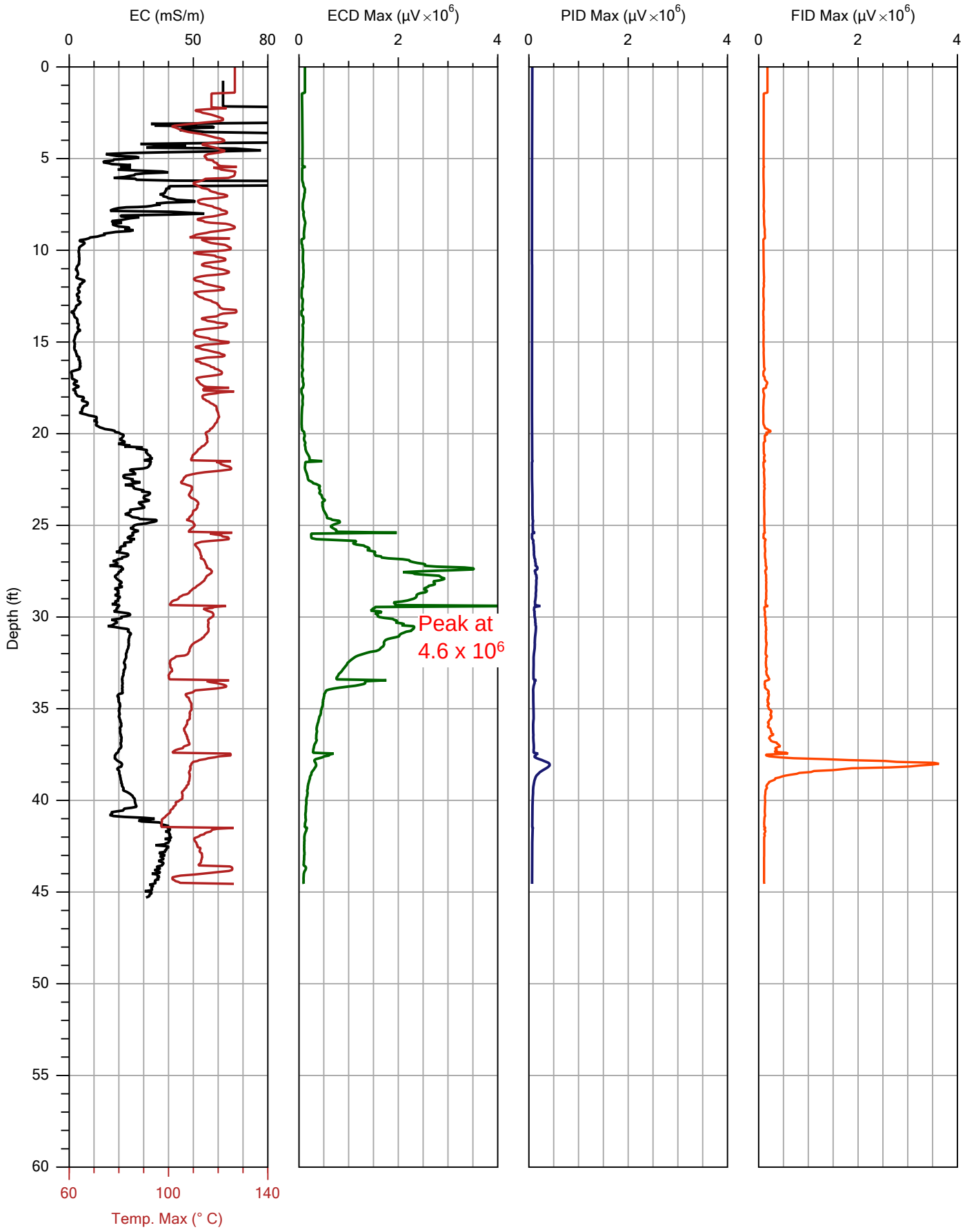
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.0	5.4	PASS
High	290.0	303.1	4.5	PASS

********** USER NOTES **********

Staff is at 1.45m

MIP-59



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: Sammy	File: MIP-59.MHP
Project ID: TPC-2014-RI	Client: TRC Solutions	Date: 7/18/2014
		Location: 41° 59′ 56″ N, 83° 56′ 34″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	303.2	4.5	PASS

MIP-59.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-59.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.6 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 12:31:54

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 72 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Fri Jul 18 2014 12:35:55

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.455	0.0	92.770
TOP with FLOW>0	14.173	304.2	97.720
BOTTOM with FLOW=0	13.231	0.0	91.230
BOTTOM with FLOW>0	13.951	307.4	96.190

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20170A,0.0000,0.0000,9.0000e-7,-6.0000e-5,1.0266,-3.8454

Temperature out of range (79.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (187.3 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (250.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (66.2 deg C) at 0.00 ft (0.000 m)

Temperature out of range (46.5 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Fri Jul 18 2014 12:37:55

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
17.70	5.395	16	1	1	1
26.85	8.184	16	1	1	1

LOG END DEPTH: 44.55 ft (13.579 m)
LOG END TIME: Fri Jul 18 2014 14:12:34

LATITUDE: 41.998956064
LONGITUDE: -83.942838561
ELEVATION: 208.927 METERS 685.46 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-59.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 40.9 mL/min
RESPONSE TEST START TIME: Fri Jul 18 2014 14:44:06

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Fri Jul 18 2014 14:47:59

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.510	0.0	93.150
TOP with FLOW>0	14.147	300.4	97.540
BOTTOM with FLOW=0	13.312	0.0	91.780
BOTTOM with FLOW>0	13.973	297.7	96.340

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

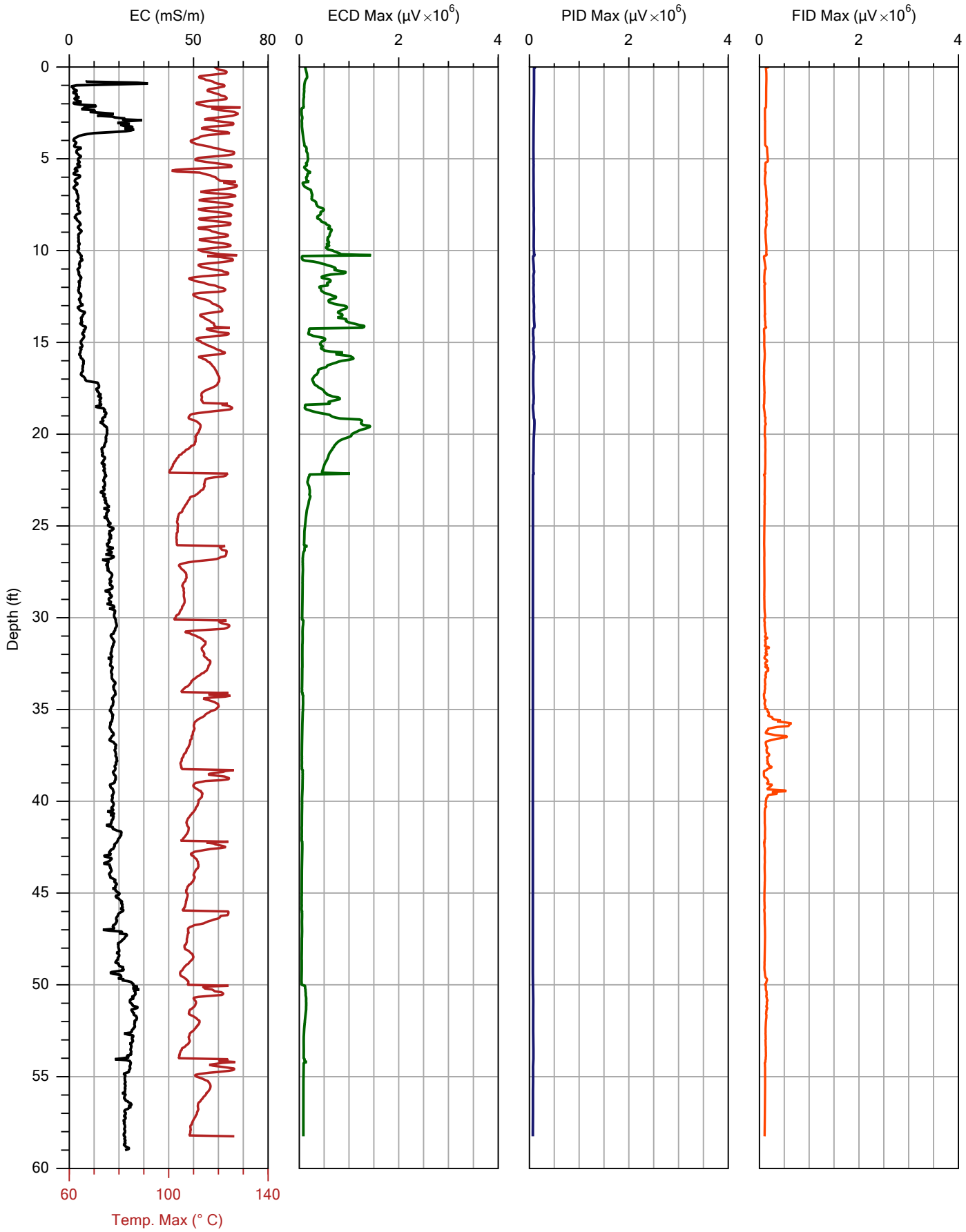
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.9	5.2	PASS
High	290.0	304.9	5.1	PASS

********** USER NOTES **********

Staff is at 1.45m

MIP-60



Direct Image® By Geoprobe Systems®

		File: MIP-60.MHP
Company: SER90	Operator: Sammy	Date: 7/21/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 39″ N, 83° 56′ 32″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.4	8.1	PASS
High	290.0	287.5	0.9	PASS

MIP-60.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-60.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.7 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 12:05:34

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Mon Jul 21 2014 12:09:28

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.660	0.0	94.190
TOP with FLOW>0	14.327	339.3	98.780
BOTTOM with FLOW=0	13.446	0.0	92.700
BOTTOM with FLOW>0	14.182	345.2	97.780

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Mon Jul 21 2014 12:11:24

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 58.25 ft (17.755 m)
LOG END TIME: Mon Jul 21 2014 13:46:27

LATITUDE: 41.994197469
LONGITUDE: -83.942261053
ELEVATION: 209.861 METERS 688.52 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-60.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.2 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 14:25:25

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Jul 21 2014 14:29:09

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.916	0.0	95.950
TOP with FLOW>0	14.657	348.6	101.060
BOTTOM with FLOW=0	13.684	0.0	94.350
BOTTOM with FLOW>0	14.427	348.5	99.470

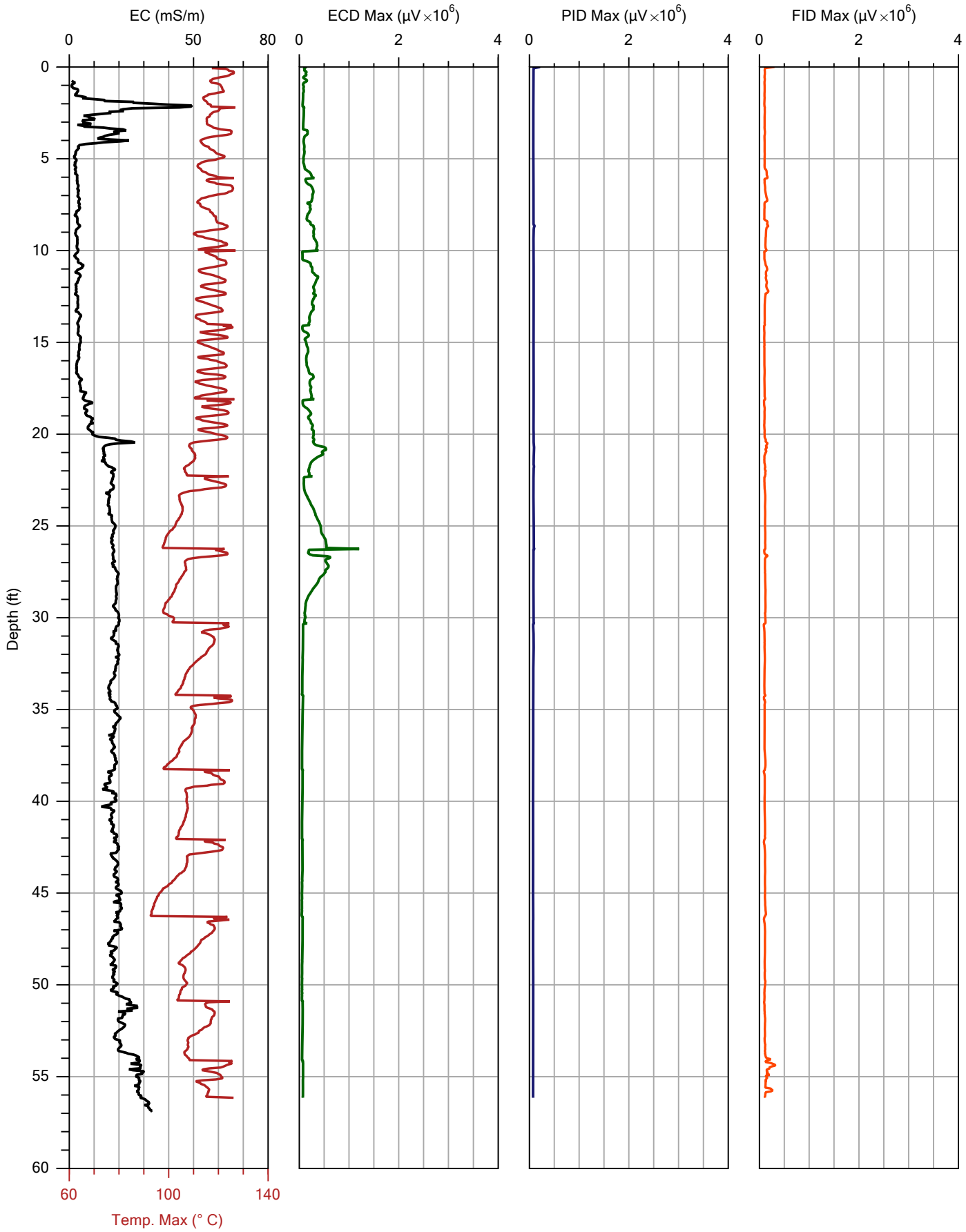
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.5	8.2	PASS
High	290.0	304.5	5.0	PASS

MIP-61



Direct Image® By Geoprobe Systems®

		File: MIP-61.MHP
Company: SER90	Operator: Sammy	Date: 7/21/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 39″ N, 83° 56′ 34″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.3	9.7	PASS
High	290.0	301.3	3.9	PASS

MIP-61.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-61.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.2 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 14:36:04

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Mon Jul 21 2014 14:39:11

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.773	0.0	94.960
TOP with FLOW>0	14.551	351.8	100.320
BOTTOM with FLOW=0	13.556	0.0	93.470
BOTTOM with FLOW>0	14.274	354.1	98.420

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Mon Jul 21 2014 14:41:09

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 56.15 ft (17.115 m)
LOG END TIME: Mon Jul 21 2014 16:20:28

LATITUDE: 41.994235728
LONGITUDE: -83.942817892
ELEVATION: 209.107 METERS 686.05 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-61.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 37.2 mL/min
RESPONSE TEST START TIME: Mon Jul 21 2014 17:07:35

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Mon Jul 21 2014 17:09:27

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.667	0.0	94.230
TOP with FLOW>0	14.407	352.3	99.330
BOTTOM with FLOW=0	13.431	0.0	92.610
BOTTOM with FLOW>0	14.195	349.5	97.870

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

TRANSDUCER TEST PASSED

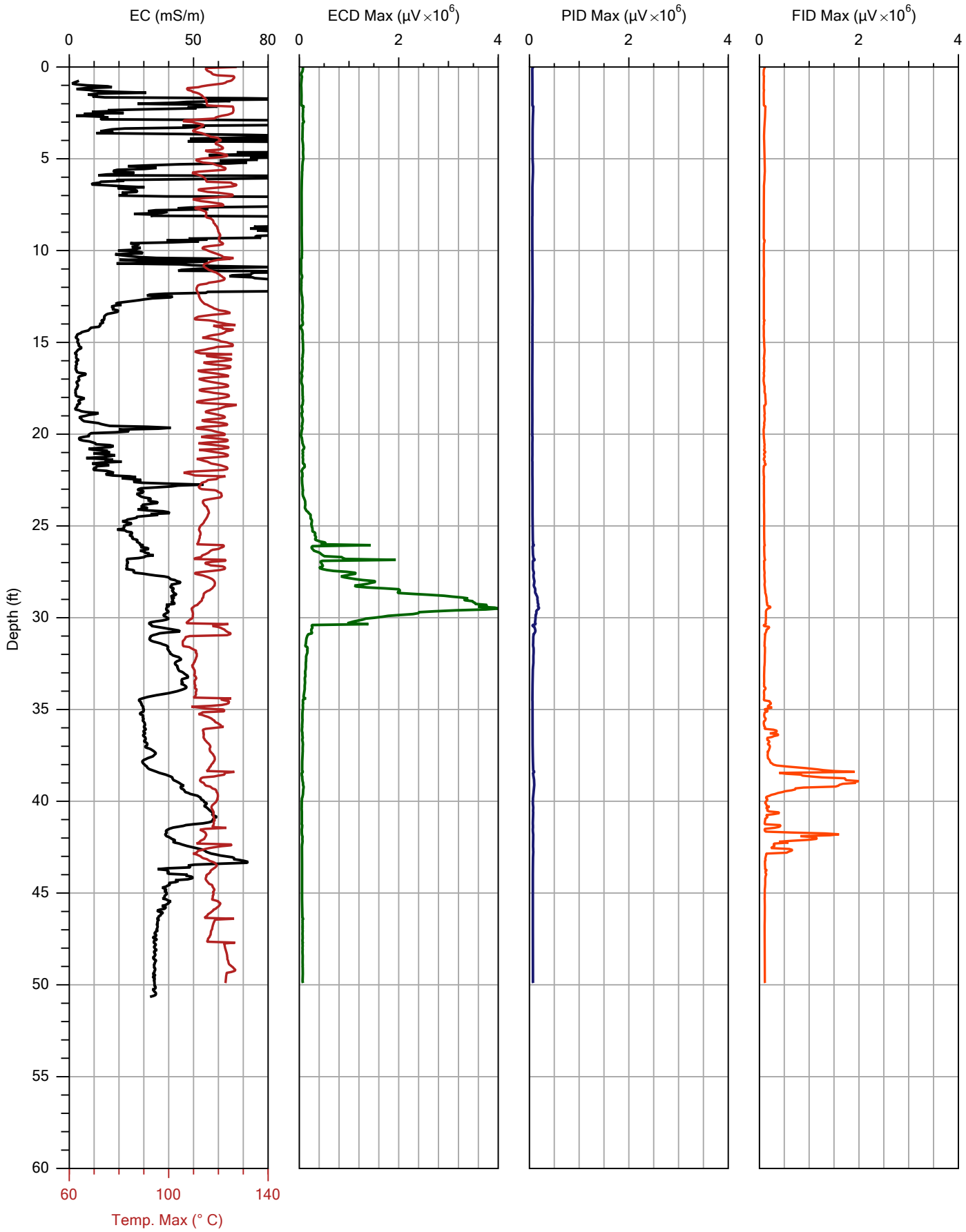
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.2	9.5	PASS
High	290.0	303.0	4.5	PASS

********** USER NOTES **********

Staff is at 1.45m

MIP-62



Direct Image® By Geoprobe Systems®

		File: MIP-62.MHP
Company: SER90	Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 36″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	57.9	5.2	PASS
High	290.0	305.2	5.2	PASS

MIP-62.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-62.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 43.5 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 08:40:20

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 22 2014 08:41:45

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.661	0.0	94.190
TOP with FLOW>0	14.493	385.4	99.930
BOTTOM with FLOW=0	13.420	0.0	92.530
BOTTOM with FLOW>0	14.199	373.2	97.900

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291
LOG START TIME: Tue Jul 22 2014 08:44:14

Temperature out of range (79.8 deg C) at 49.90 ft (15.210 m)

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 49.90 ft (15.210 m)
LOG END TIME: Tue Jul 22 2014 10:11:21

LATITUDE: 41.998935228
LONGITUDE: -83.943376636
ELEVATION: 209.861 METERS 688.52 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-62.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 10:32:17

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 22 2014 10:36:11

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.683	0.0	94.340
TOP with FLOW>0	14.427	364.1	99.470
BOTTOM with FLOW=0	13.454	0.0	92.770
BOTTOM with FLOW>0	14.182	365.2	97.780

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

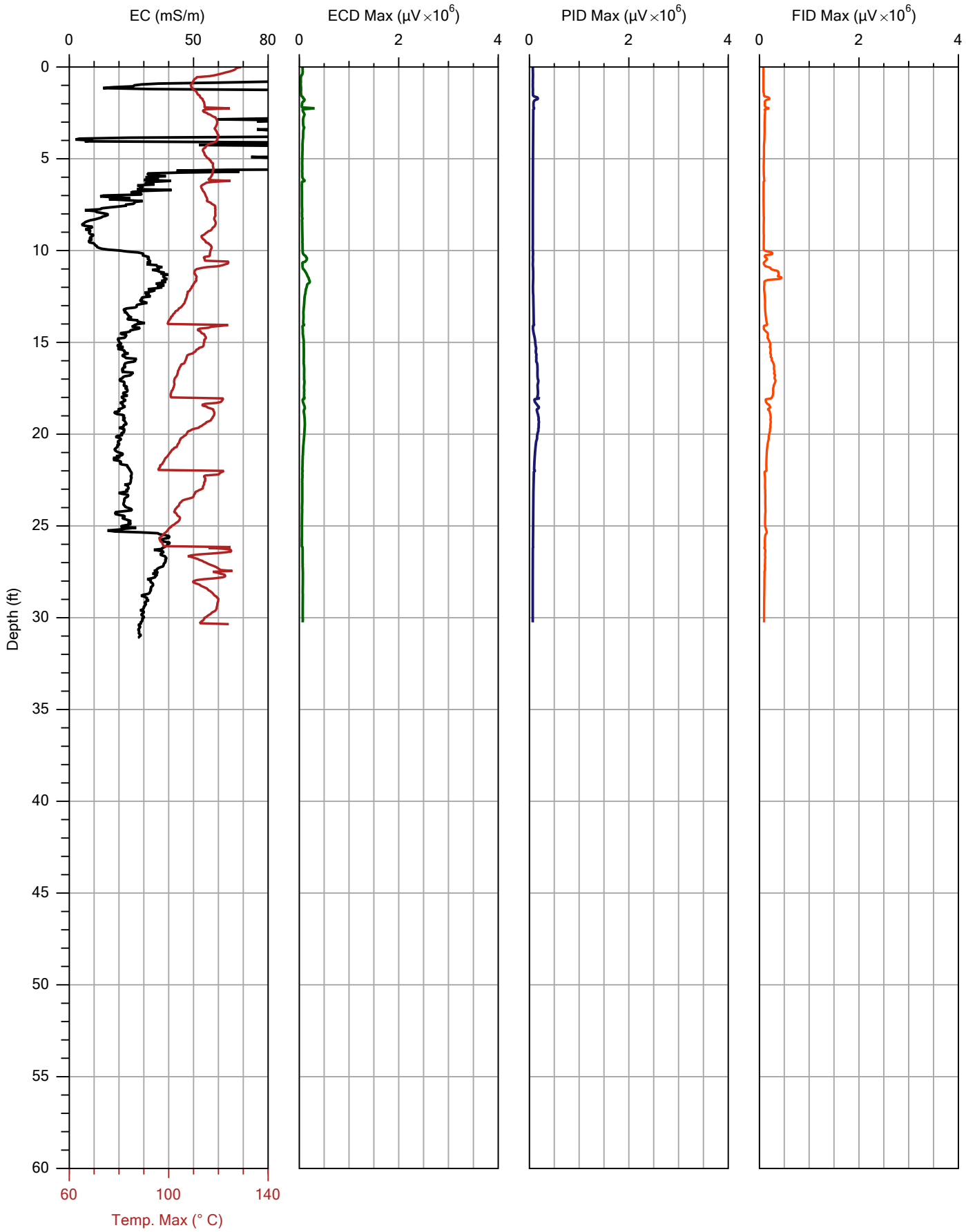
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.9	8.8	PASS
High	290.0	304.2	4.9	PASS

********** USER NOTES **********

Staff is at 1.45m

MIP-63



Direct Image® By Geoprobe Systems®

		File: MIP-63.MHP
Company: SER90	Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 27″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.3	9.6	PASS
High	290.0	305.3	5.3	PASS

MIP-63.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-63.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 38.1 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 10:44:54

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 22 2014 10:47:08

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.650	0.0	94.110
TOP with FLOW>0	14.403	362.0	99.310
BOTTOM with FLOW=0	13.432	0.0	92.610
BOTTOM with FLOW>0	14.201	363.6	97.910

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291

Temperature out of range (79.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (65.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (62.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (58.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (53.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jul 22 2014 10:50:00

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1

LOG END DEPTH: 30.35 ft (9.251 m)
LOG END TIME: Tue Jul 22 2014 12:09:37

LATITUDE: 41.998983831
LONGITUDE: -83.940712547
ELEVATION: 205.649 METERS 674.70 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-63.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 35.1 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 12:29:41

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 22 2014 12:32:44

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.911	0.0	95.910
TOP with FLOW>0	14.375	311.2	99.110
BOTTOM with FLOW=0	13.685	0.0	94.350
BOTTOM with FLOW>0	14.150	311.9	97.560

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%

ACTUAL FLOW=0 HPT DIFF.: 0.23 psi (1.6 kPa)

TRANSDUCER TEST PASSED

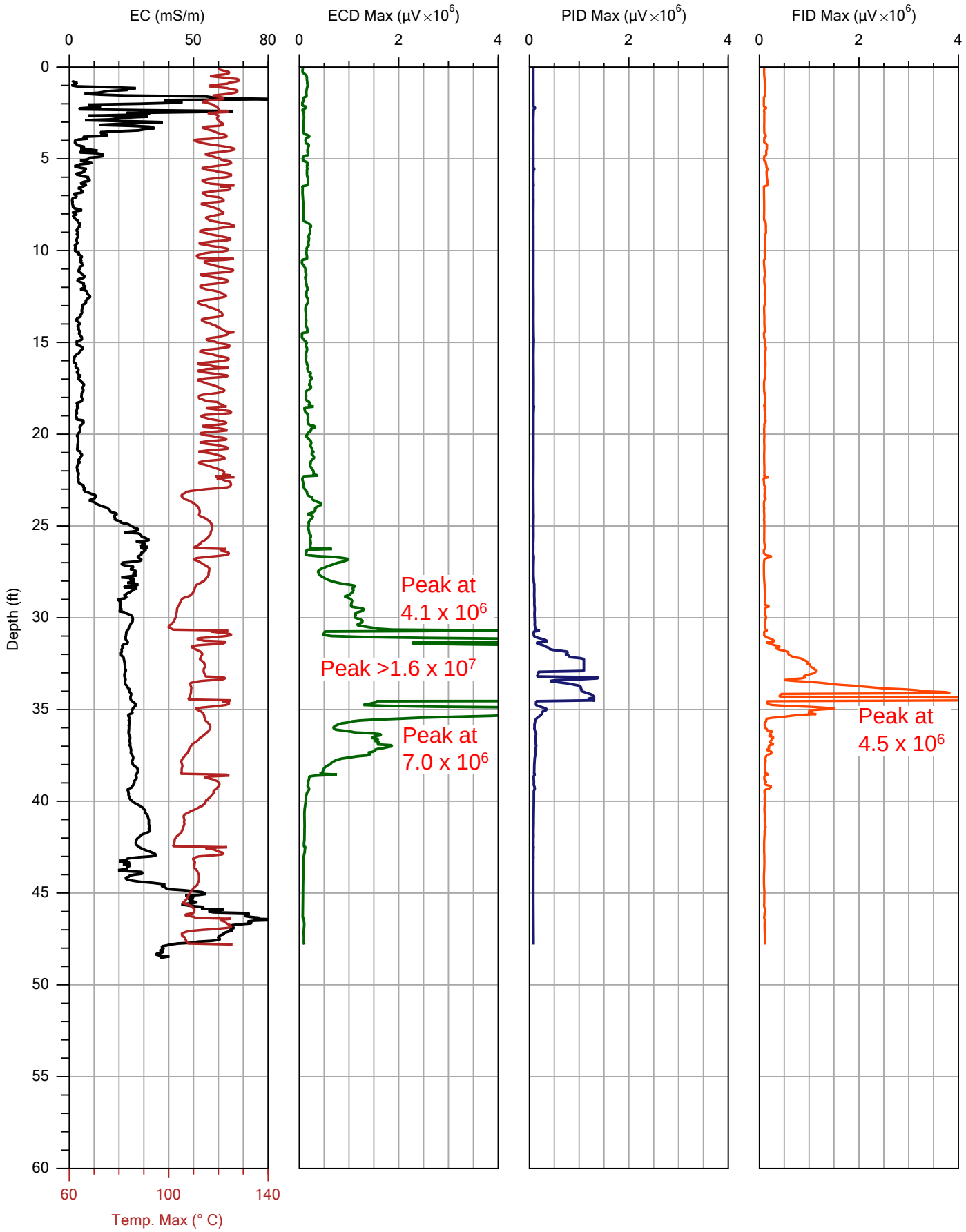
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.1	9.3	PASS
High	290.0	305.3	5.3	PASS

********** USER NOTES **********

Staff is at 1.45m.

MIP-64



Direct Image® By Geoprobe Systems®

		File: MIP-64.MHP
Company: SER90	Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 38″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.1	9.3	PASS
High	290.0	304.9	5.1	PASS

MIP-64.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-64.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 34.6 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 12:39:10

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 22 2014 12:42:22

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.782	0.0	95.030
TOP with FLOW>0	14.225	315.5	98.080
BOTTOM with FLOW=0	13.558	0.0	93.480
BOTTOM with FLOW>0	14.014	313.4	96.620

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291

Temperature out of range (79.8 deg C) at 0.00 ft (0.000 m)

Temperature out of range (65.7 deg C) at 0.00 ft (0.000 m)

Temperature out of range (61.0 deg C) at 0.00 ft (0.000 m)

Temperature out of range (57.6 deg C) at 0.00 ft (0.000 m)

Temperature out of range (55.1 deg C) at 0.00 ft (0.000 m)

Temperature out of range (51.2 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jul 22 2014 12:44:16

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	16	1	1	1
33.05	10.074	8	1	1	1
33.25	10.135	16	8	1	1
34.35	10.470	16	8	10	1
34.50	10.516	16	8	10	1

LOG END DEPTH: 47.80 ft (14.569 m)
LOG END TIME: Tue Jul 22 2014 14:34:50

LATITUDE: 41.998924250
LONGITUDE: -83.943802531
ELEVATION: 212.178 METERS 696.12 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-64.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 36 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 15:04:23

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 22 2014 15:07:56

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)

TOP with FLOW=0	13.675	0.0	94.290
TOP with FLOW>0	14.228	310.3	98.100
BOTTOM with FLOW=0	13.469	0.0	92.870
BOTTOM with FLOW>0	14.024	309.6	96.690

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)

TRANSDUCER TEST PASSED

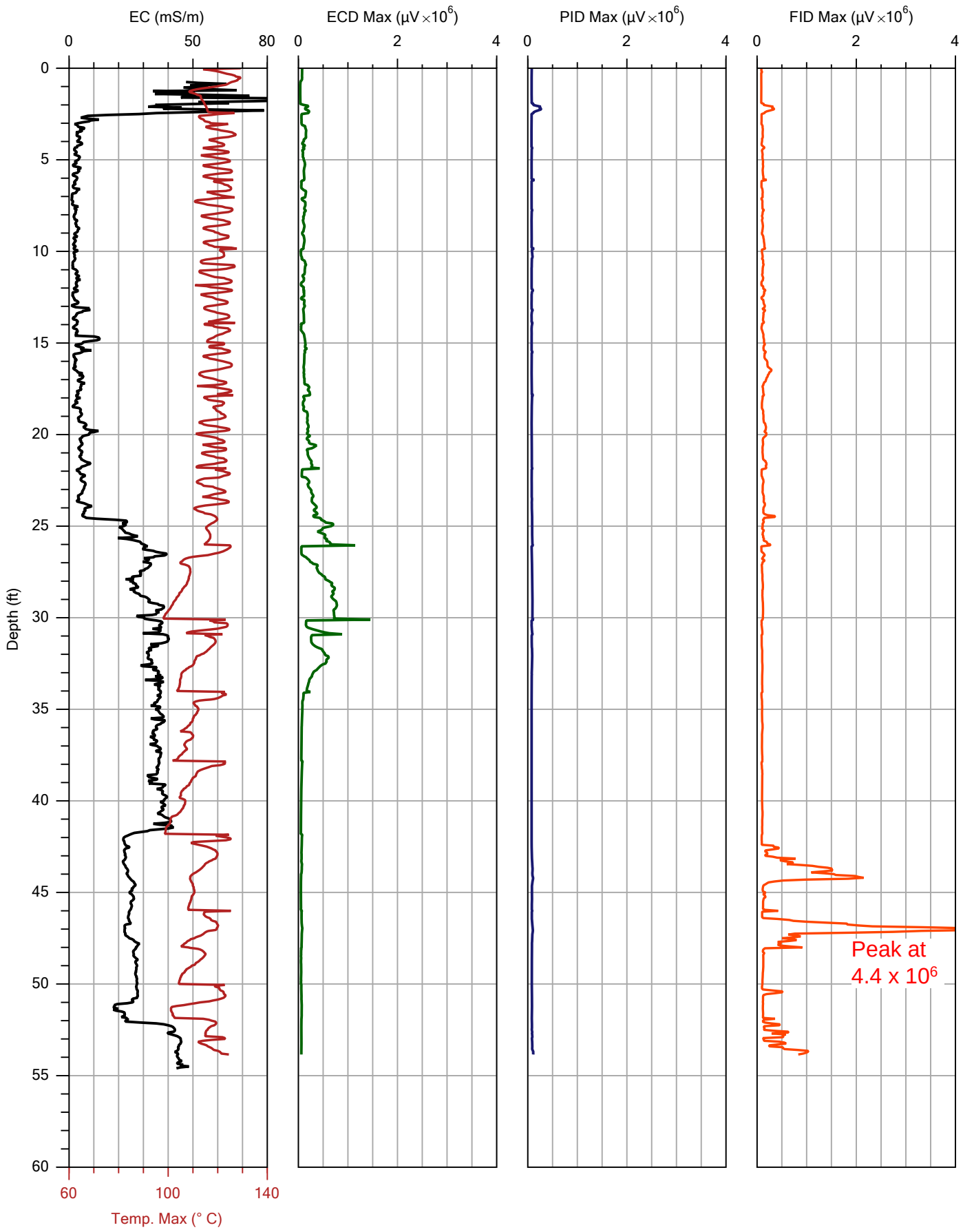
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.8	8.8	PASS
High	290.0	304.3	4.9	PASS

********** USER NOTES **********

Staff at 1.45m

MIP-65



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: Sammy	File: MIP-65.MHP
Project ID: TPC-2014-RI	Client: TRC Solutions	Date: 7/22/2014
		Location: 41° 59′ 56″ N, 83° 56′ 40″ W

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	60.4	9.9	PASS
High	290.0	304.9	5.2	PASS

MIP-65.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-65.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 36 mL/min
RESPONSE TEST START TIME: Tue Jul 22 2014 15:26:50

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Tue Jul 22 2014 15:29:52

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.686	0.0	94.360
TOP with FLOW>0	14.167	331.2	97.680
BOTTOM with FLOW=0	13.446	0.0	92.710
BOTTOM with FLOW>0	13.980	326.7	96.390

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.7 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD20189A,0.0000,0.0000,7.0000e-7,-4.0000e-5,1.0245,-3.6291

Temperature out of range (79.9 deg C) at 0.00 ft (0.000 m)

Temperature out of range (64.0 deg C) at 0.00 ft (0.000 m)

LOG START TIME: Tue Jul 22 2014 15:31:39

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.45	0.747	16	1	1	1

LOG END DEPTH: 53.85 ft (16.413 m)
LOG END TIME: Tue Jul 22 2014 17:28:18

LATITUDE: 41.998929958
LONGITUDE: -83.944349656
ELEVATION: 212.947 METERS 698.65 FEET
GPS Quality: Manual

MIP POST-LOG RESPONSE TEST BYPASSED

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Tue Jul 22 2014 18:14:06

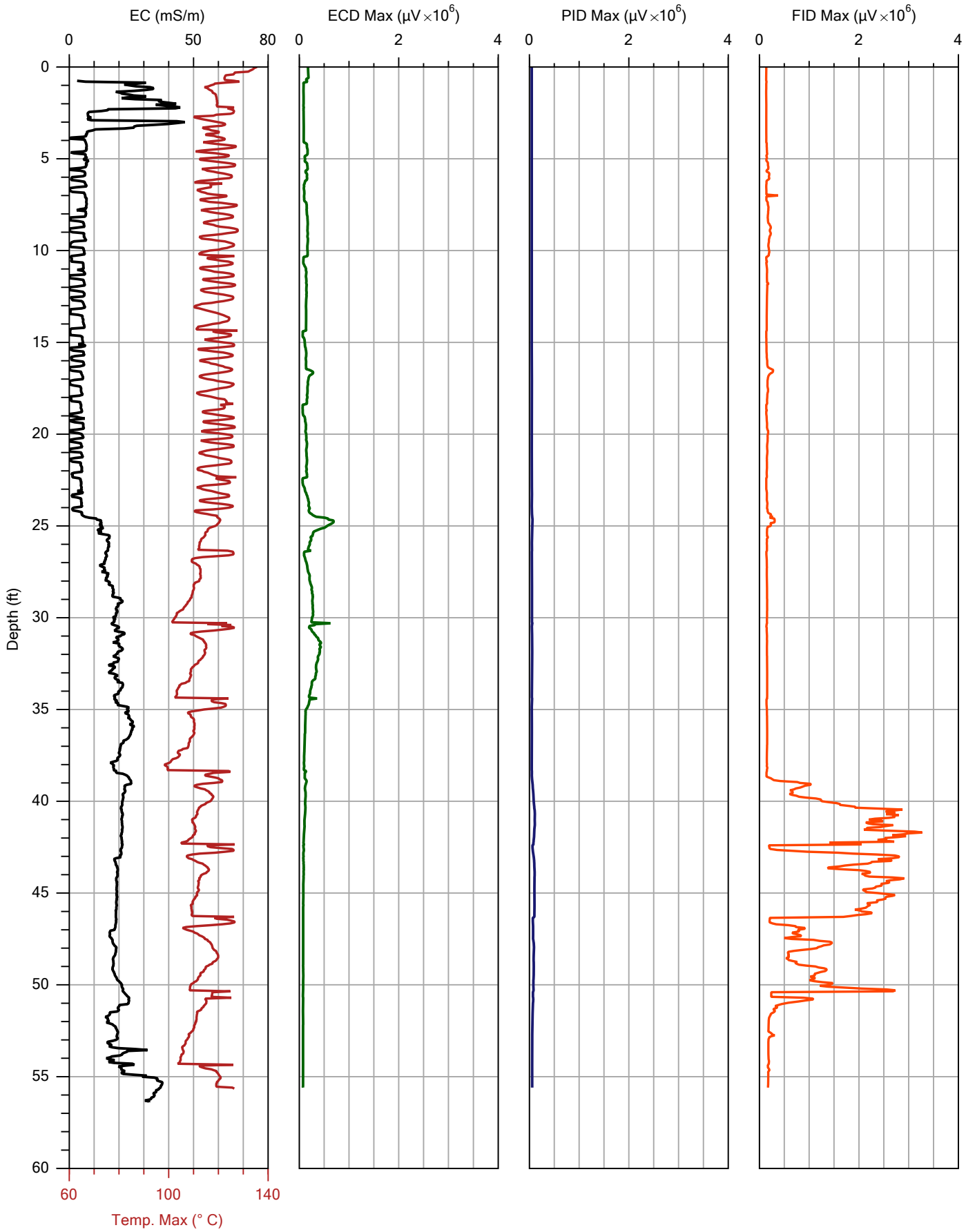
POST-LOG HPT REFERENCE TESTS BYPASSED

EC POST-LOG TESTS BYPASSED

********** USER NOTES **********

No Post standard due to loss of probe at 55 ft. BGS loding in dry hard clay following logging shut down.

MIP-66



Direct Image® By Geoprobe Systems®

		File: MIP-66.MHP
Company: SER90	Operator: Sammy	Date: 7/23/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.7	6.7	PASS
High	290.0	304.9	5.1	PASS

MIP-66.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-66.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.2 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 11:41:20

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 23 2014 11:44:26

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.455	0.0	92.770
TOP with FLOW>0	14.394	306.1	99.250
BOTTOM with FLOW=0	13.254	0.0	91.390
BOTTOM with FLOW>0	14.250	304.7	98.250

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.20 psi (1.4 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2124A,0.0000,0.0000,8.0000e-7,-6.0000e-5,1.0239,-3.7418
LOG START TIME: Wed Jul 23 2014 11:48:29

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.20	0.671	16	1	1	1
6.45	1.966	16	1	1	1

LOG END DEPTH: 55.65 ft (16.962 m)
LOG END TIME: Wed Jul 23 2014 13:19:04

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-66.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 44.2 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 13:52:05

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 23 2014 13:55:13

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.412	0.0	92.470
TOP with FLOW>0	14.607	316.0	100.710
BOTTOM with FLOW=0	13.175	0.0	90.840
BOTTOM with FLOW>0	14.356	312.8	98.980

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.24 psi (1.6 kPa)

TRANSDUCER TEST PASSED

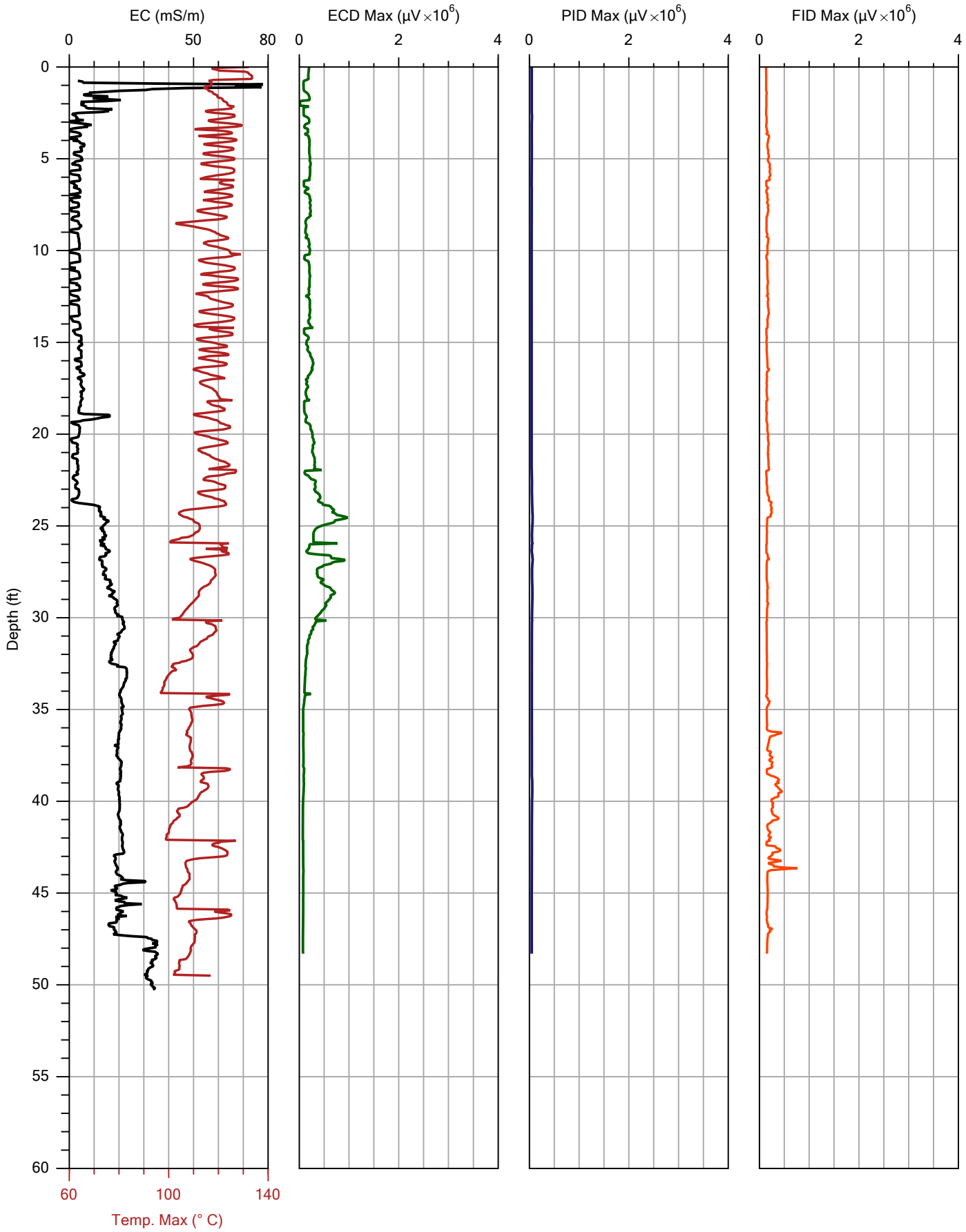
Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	6.0	PASS
High	290.0	303.3	4.6	PASS

********** USER NOTES **********

6-in concrete

MIP-67



Direct Image® By Geoprobe Systems®

		File: MIP-67.MHP
Company: SER90	Operator: Sammy	Date: 7/23/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.4	6.1	PASS
High	290.0	303.5	4.6	PASS

MIP-67.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-67.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 42.8 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 15:06:10

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Wed Jul 23 2014 15:09:17

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.492	0.0	93.020
TOP with FLOW>0	14.523	327.4	100.130
BOTTOM with FLOW=0	13.267	0.0	91.470
BOTTOM with FLOW>0	14.312	322.4	98.680

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.6 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2124A,0.0000,0.0000,8.0000e-7,-6.0000e-5,1.0239,-3.7418
LOG START TIME: Wed Jul 23 2014 15:11:55

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
2.15	0.655	16	1	1	1

LOG END DEPTH: 49.50 ft (15.088 m)
LOG END TIME: Wed Jul 23 2014 16:41:55

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-67.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 39/2 mL/min
RESPONSE TEST START TIME: Wed Jul 23 2014 17:11:26

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Wed Jul 23 2014 17:14:24

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.467	0.0	92.850
TOP with FLOW>0	14.537	332.0	100.230
BOTTOM with FLOW=0	13.246	0.0	91.330
BOTTOM with FLOW>0	14.283	326.9	98.480

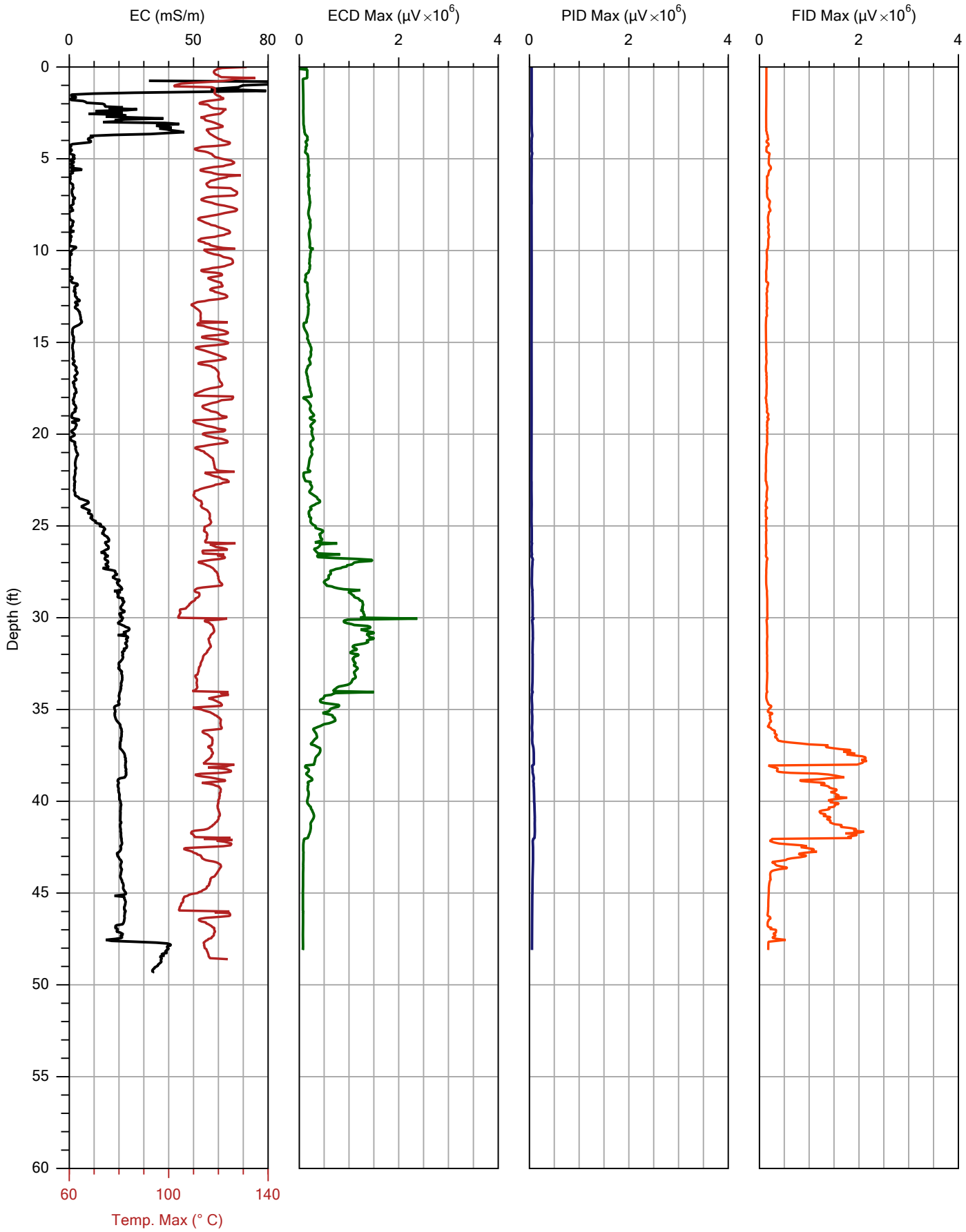
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.3	5.9	PASS
High	290.0	303.5	4.7	PASS

MIP-68



Direct Image® By Geoprobe Systems®

		File: MIP-68.MHP
Company: SER90	Operator: Sammy	Date: 7/24/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	59.2	7.6	PASS
High	290.0	300.2	3.5	PASS

MIP-68.zip

SITE INFORMATION -- DIRECT IMAGE MIP+HPT PROBE

Geoprobe DI Acquisition Software for Windows
Version: 1.6 Build: 14122

COMPANY: SER90
OPERATOR: Sammy
PROJECT ID: TPC-2014-RI
CLIENT: TRC Solutions
UNITS: ENGLISH
PROBE AND ARRAY: MH6530/6532 MiHPT Probe with Top Dipole
100 INCH STRING POT USED
ROD LENGTH: 4 feet

MIP PRE-LOG RESPONSE TEST

FILENAME: MIP-68.pre.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 48.0 mL/min
RESPONSE TEST START TIME: Thu Jul 24 2014 08:04:47

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

TRIP TIME: 73 sec
Gas Used: nitrogen

PRE-LOG HPT REFERENCE TEST VALUES

PRE TEST TIME: Thu Jul 24 2014 08:07:57

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.463	0.0	92.820
TOP with FLOW>0	14.417	374.6	99.400
BOTTOM with FLOW=0	13.238	0.0	91.270
BOTTOM with FLOW>0	14.052	364.2	96.890

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
  ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

TRANSDUCER TEST PASSED

DETECTOR NAME: ECD PID FID NA
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD2124A,0.0000,0.0000,8.0000e-7,-6.0000e-5,1.0239,-3.7418
LOG START TIME: Thu Jul 24 2014 08:11:04

ATTENUATION CHANGES

DEPTH (ft)	DEPTH (m)	DET1	DET2	DET3	DET4
0.00	0.000	1	1	1	1
0.15	0.046	16	1	1	1

LOG END DEPTH: 48.60 ft (14.813 m)
LOG END TIME: Thu Jul 24 2014 09:35:06

LATITUDE: 0.000000000
LONGITUDE: 0.000000000
ELEVATION: 0.000 METERS 0.00 FEET
GPS Quality: None

MIP POST-LOG RESPONSE TEST

FILENAME: MIP-68.post.tim
COMPOUND: TCE
CONCENTRATION: 1.0 ppm
FLOW: 41.8 mL/min
RESPONSE TEST START TIME: Thu Jul 24 2014 10:23:39

RESPONSE TEST ATTENUATION CHANGES

TIME	DET1	DET2	DET3	DET4
0	1	1	1	1

POST-LOG HPT REFERENCE TEST VALUES

POST TEST TIME: Thu Jul 24 2014 10:26:40

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	13.465	0.0	92.840
TOP with FLOW>0	14.663	341.6	101.100
BOTTOM with FLOW=0	13.242	0.0	91.300
BOTTOM with FLOW>0	14.378	339.5	99.140

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa)

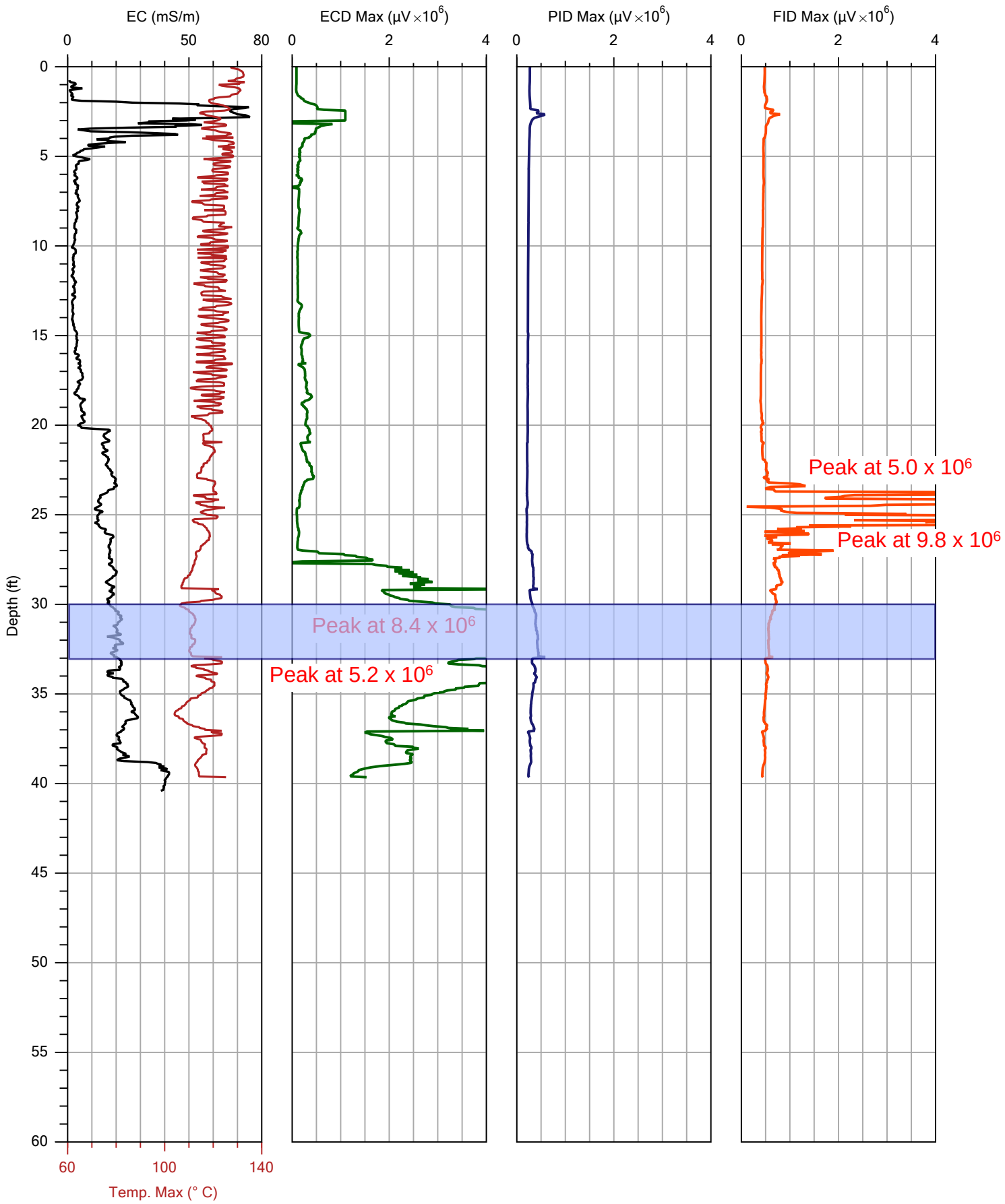
TRANSDUCER TEST PASSED

Post-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Low	55.0	58.6	6.6	PASS
High	290.0	303.7	4.7	PASS

Appendix E
MIP Logs with Confirmation Sample Locations

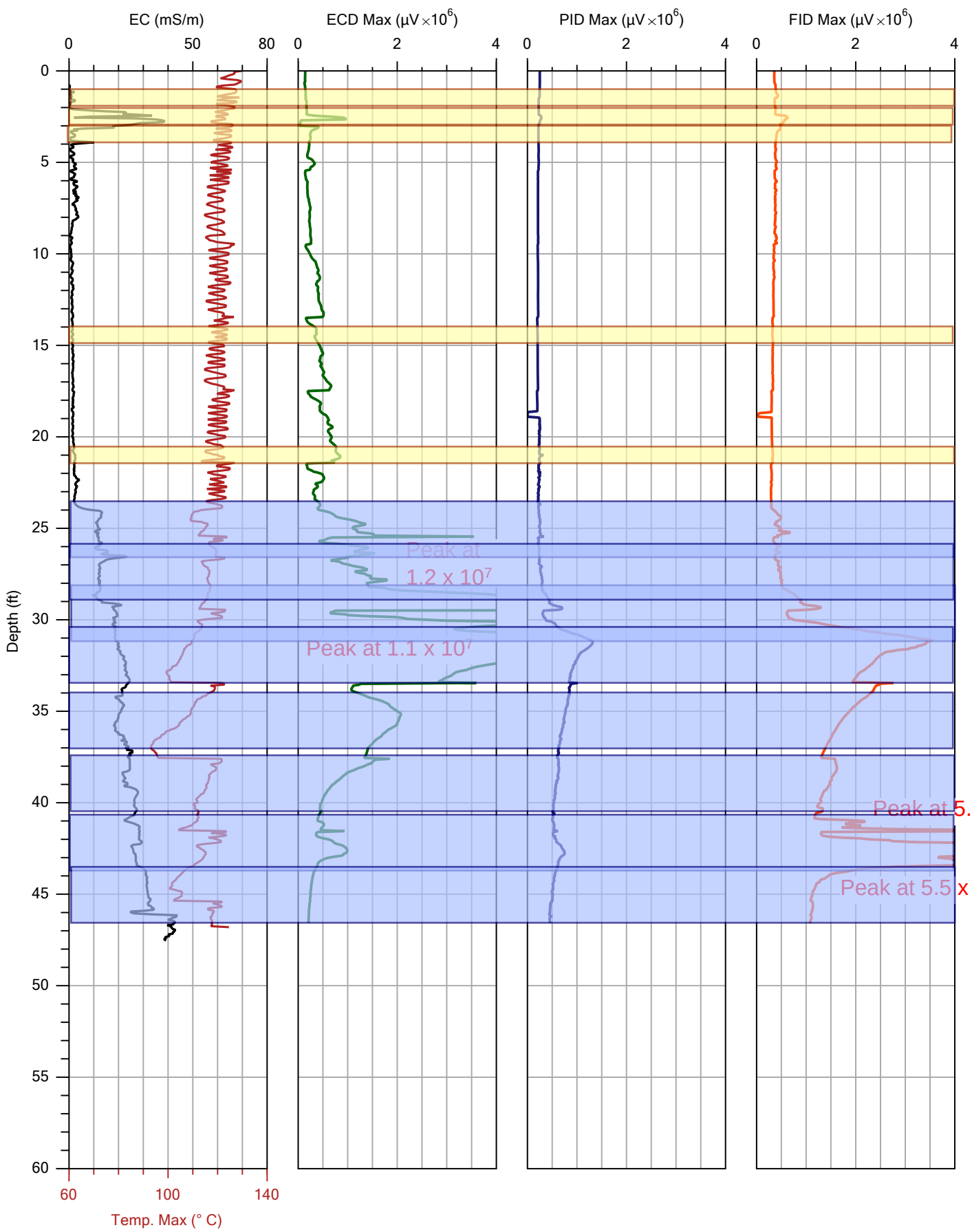
MIP-10



Direct Image® By Geoprobe Systems®

		File: MIP-10.MIP
Company: SER90	Operator: Sammy	Date: 6/24/2014
Project ID: TPC-14 RI	Client: TRC Solutions	Location:

MIP-35

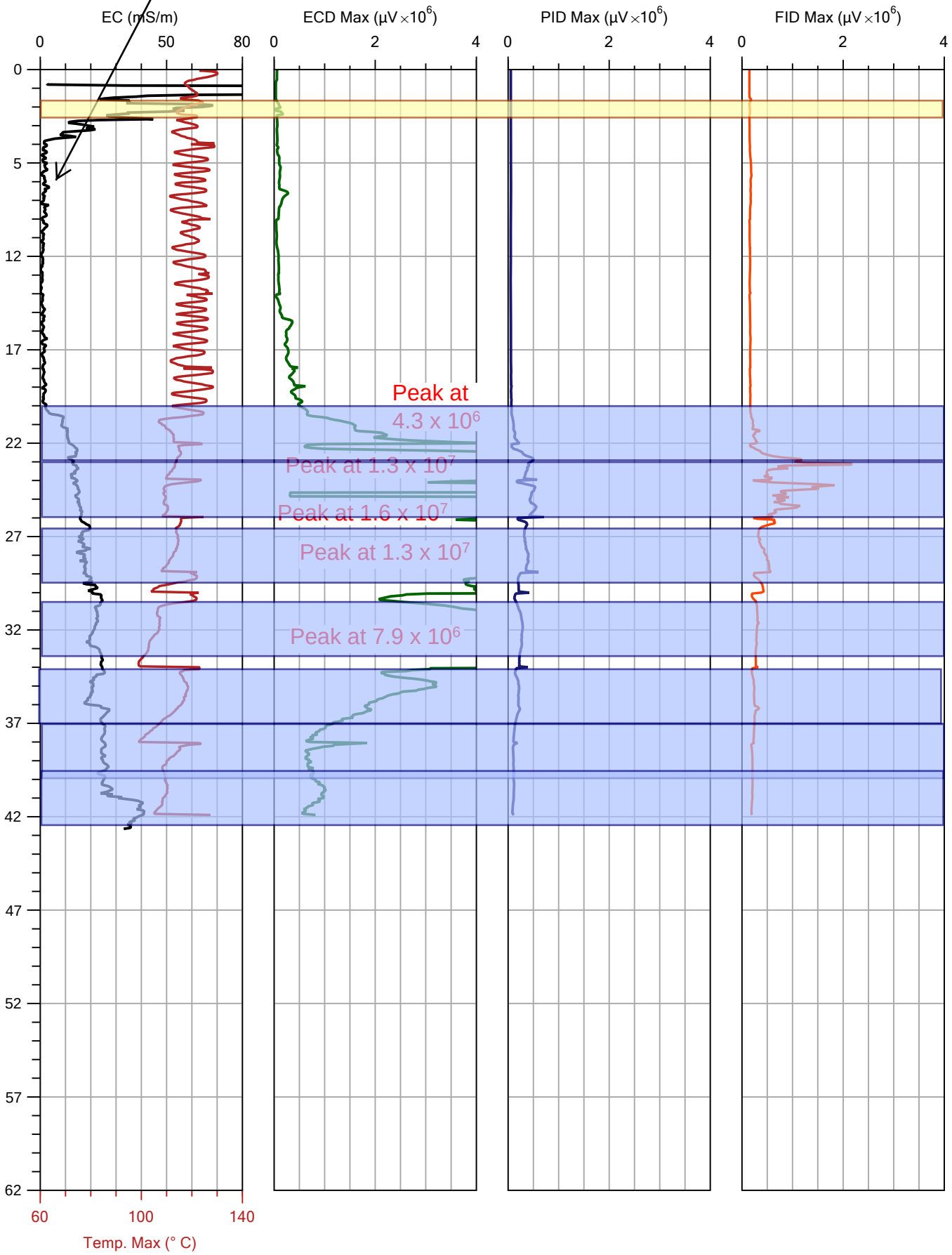


Direct Image® By Geoprobe Systems®

		File: MIP-35.MIP
Company: SER90	Operator: S.Sirhan	Date: 7/9/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

MIP-38

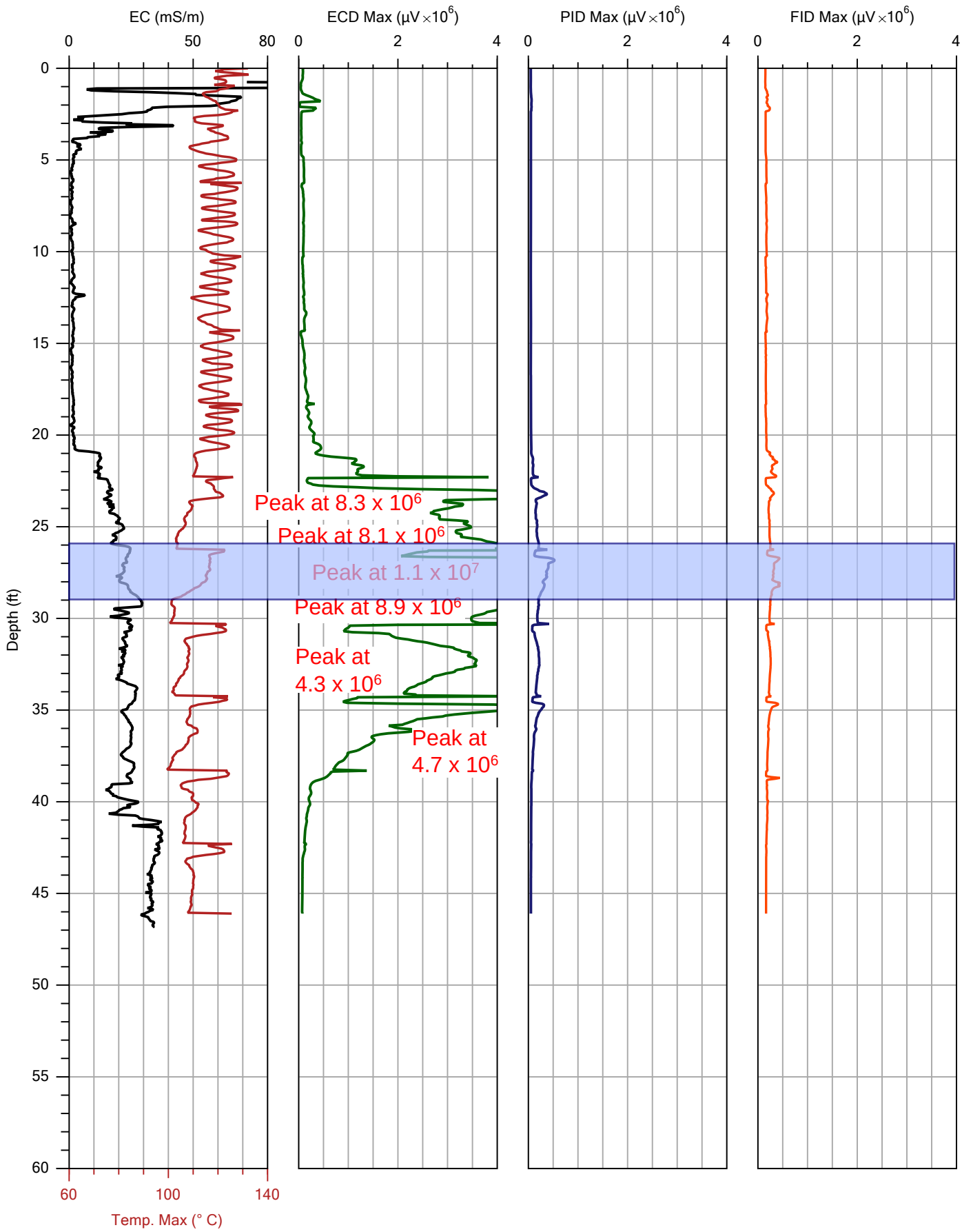
Two foot data gap due to an automatic computer shut-down due to a software update and system re-start while completing MIP-38.



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: S.Sirhan	File: MIP-38FINAL.MHP
Project ID: TPC-2014-IR	Client: TRC Solutions	Date: 7/11/2014
		Location:

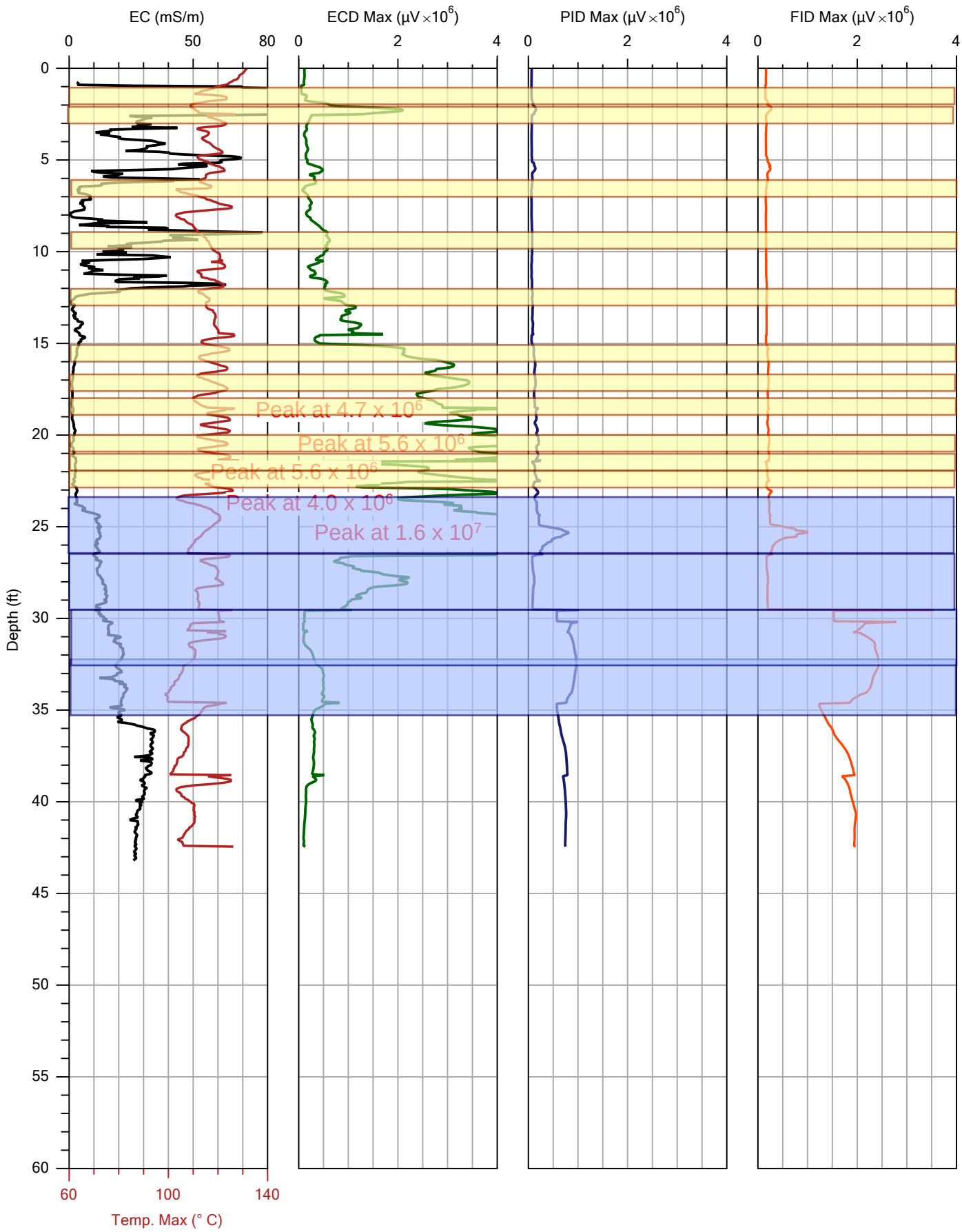
MIP-39



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: S.Sirhan	File: MIP-39.MHP
Project ID: TPC-2014-IR	Client: TRC Solutions	Date: 7/11/2014
		Location:

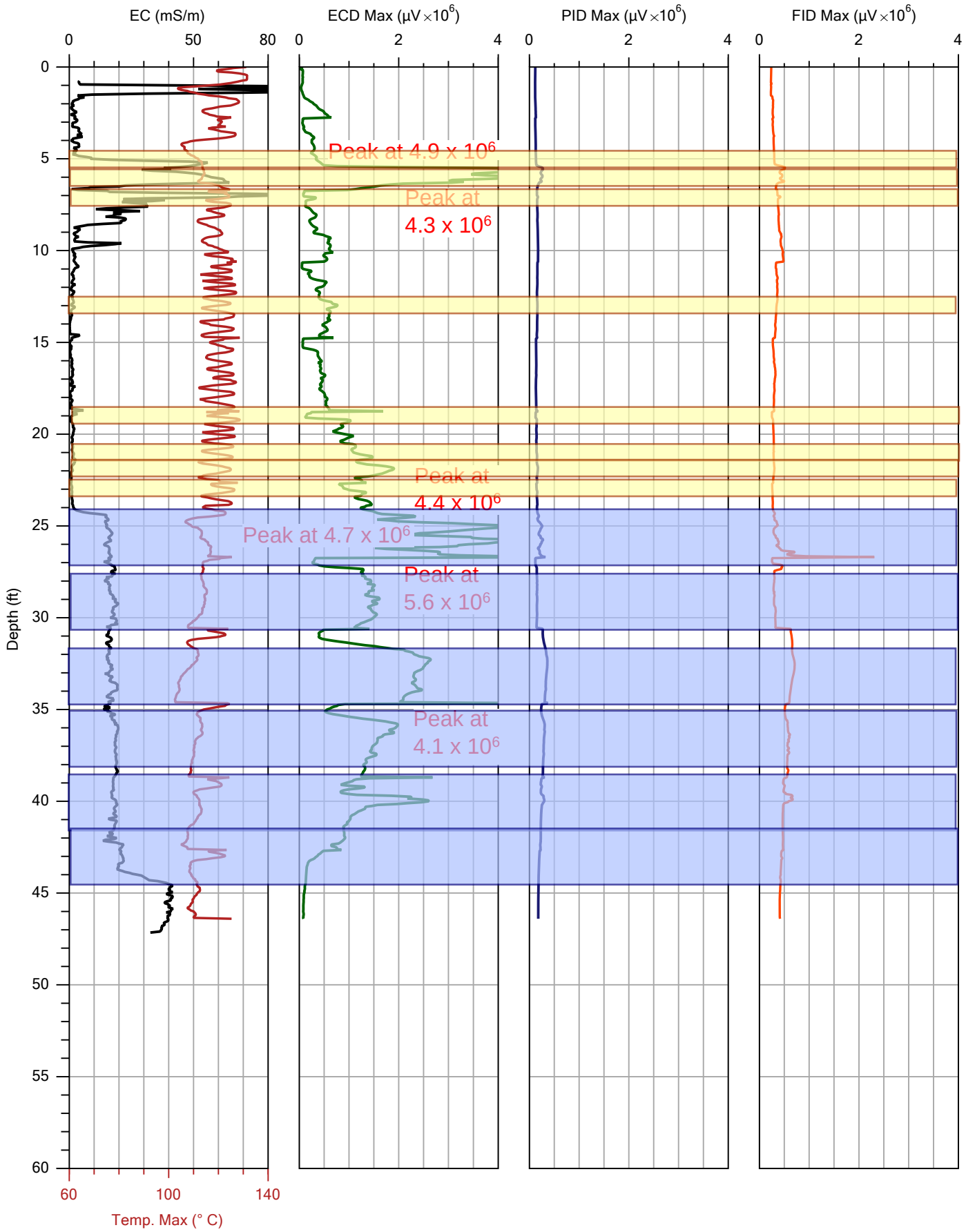
MIP-40



Direct Image® By Geoprobe Systems®

		File: MIP-40.MHP
Company: SER90	Operator: Sammy	Date: 7/11/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

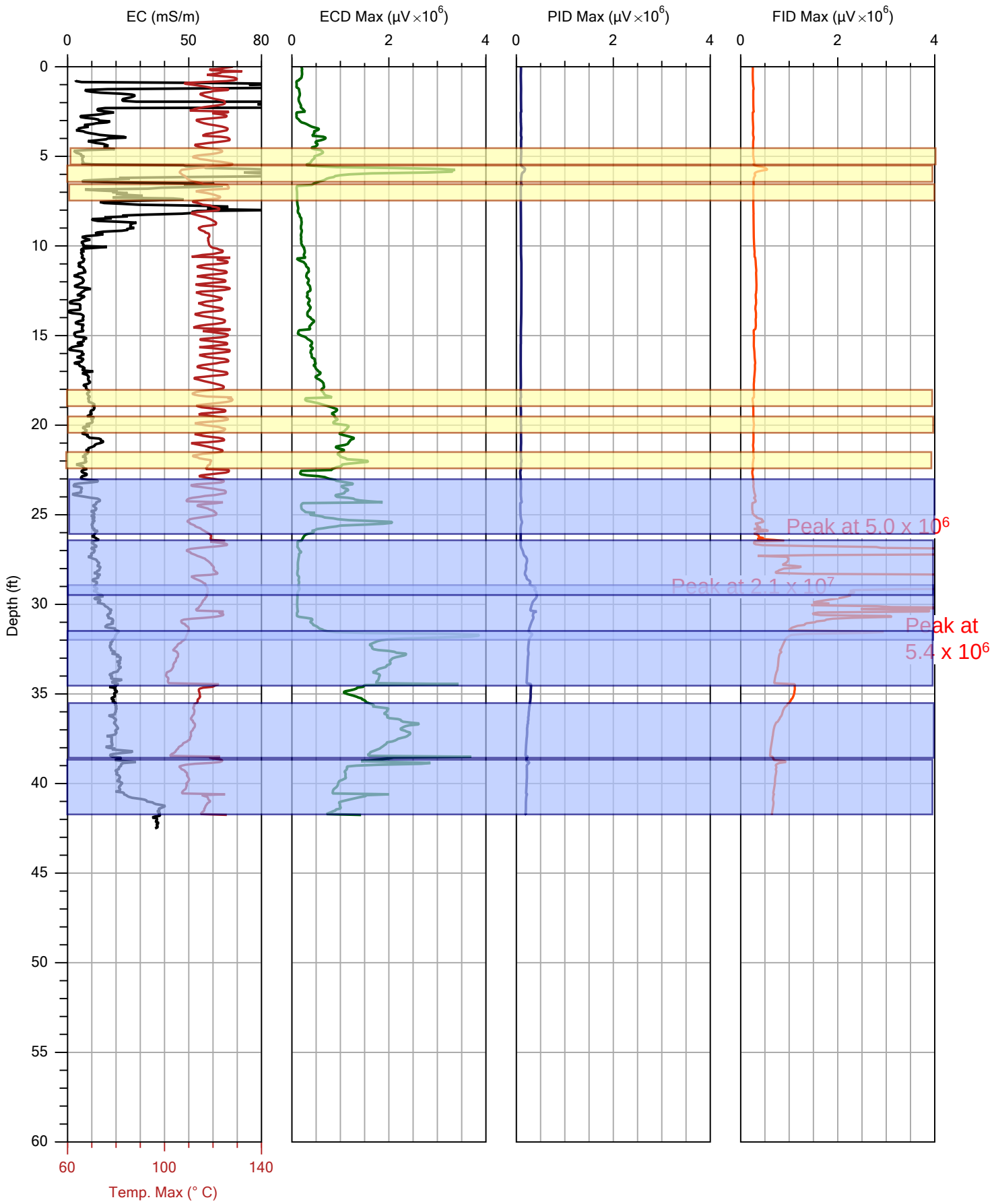
MIP-41



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: Sammy	File: MIP-41.MHP
Project ID: TPC-2014-RI	Client: TRC Solutions	Date: 7/11/2014
		Location:

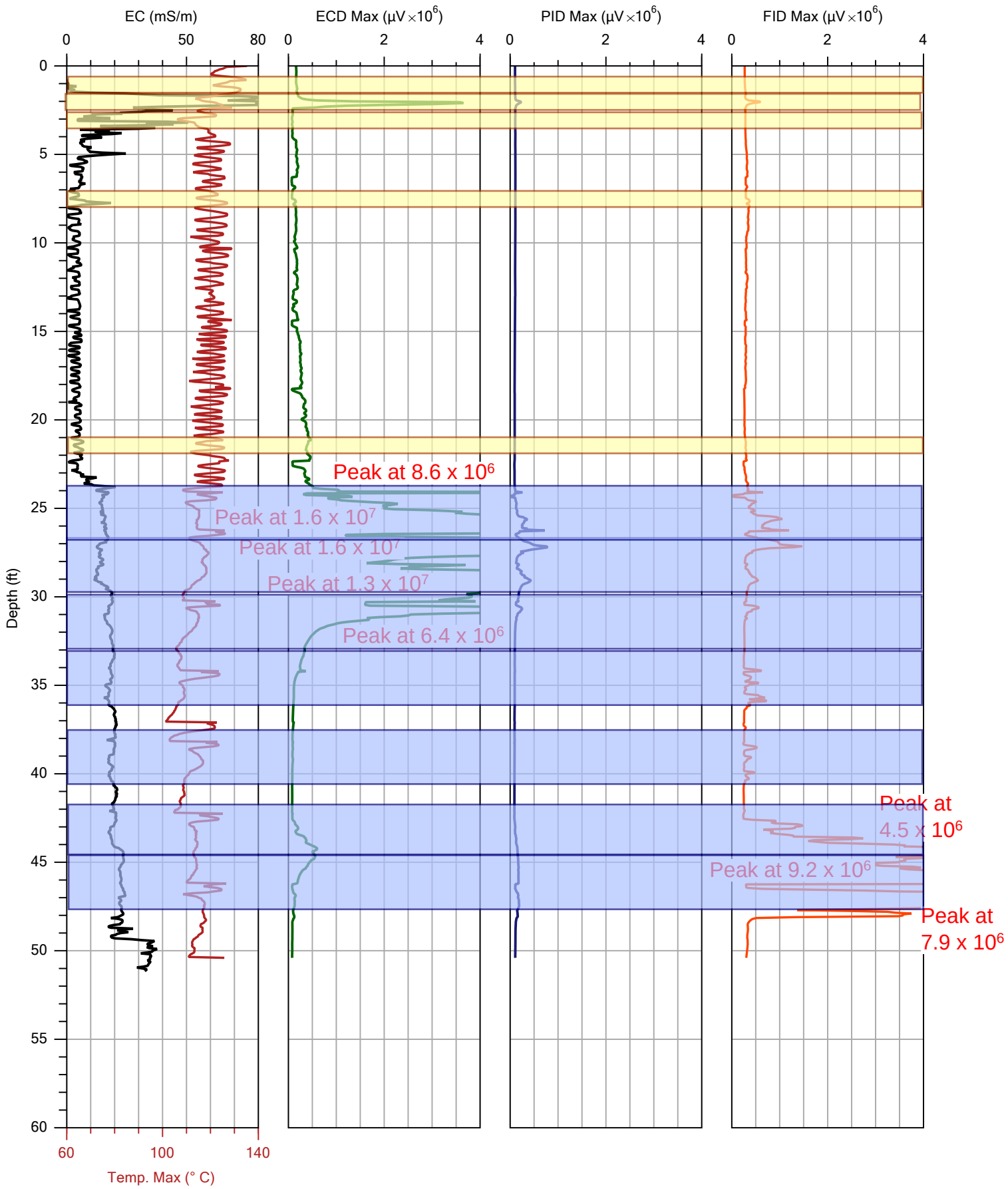
MIP-44



Direct Image® By Geoprobe Systems®

		File: MIP-44.MHP
Company: SER90	Operator: Sammy	Date: 7/14/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

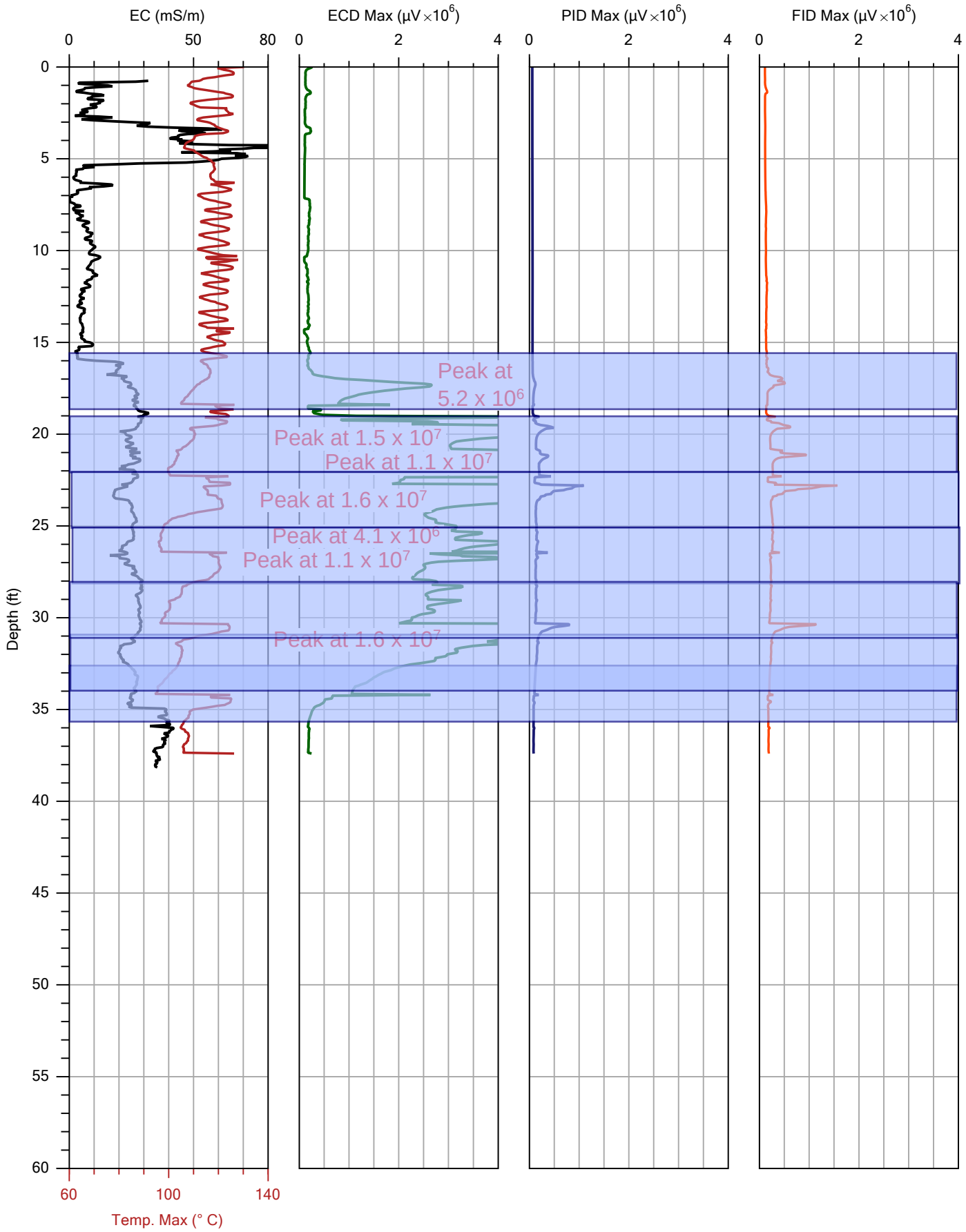
MIP-46



Direct Image® By Geoprobe Systems®

		File: MIP-46.MHP
Company: SER90	Operator: Sammy	Date: 7/15/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location:

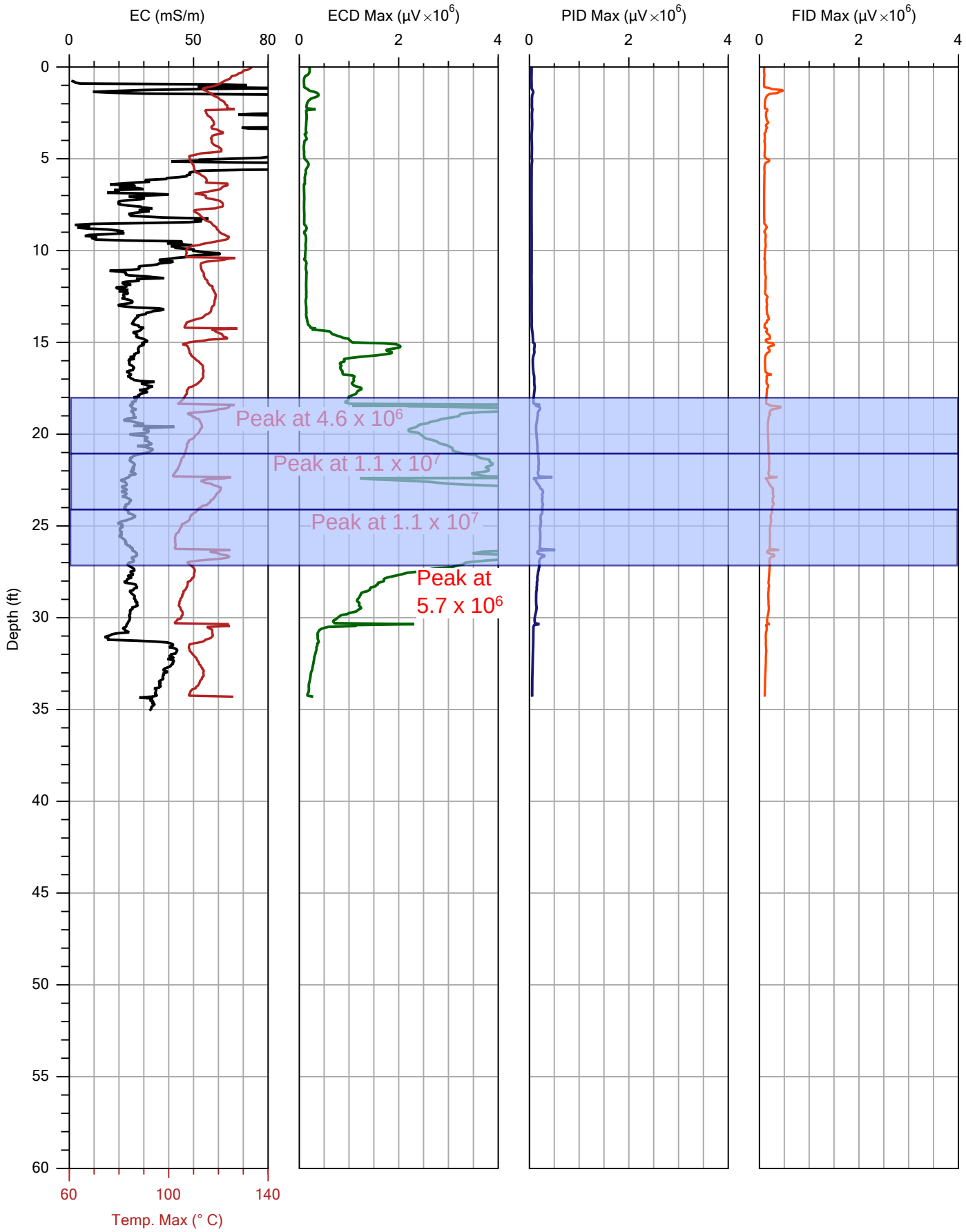
MIP-55



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: Sammy	File: MIP-55.MHP
Project ID: TPC-2014-RI	Client: TRC Solutions	Date: 7/17/2014
		Location: 41° 59′ 56″ N, 83° 56′ 30″ W

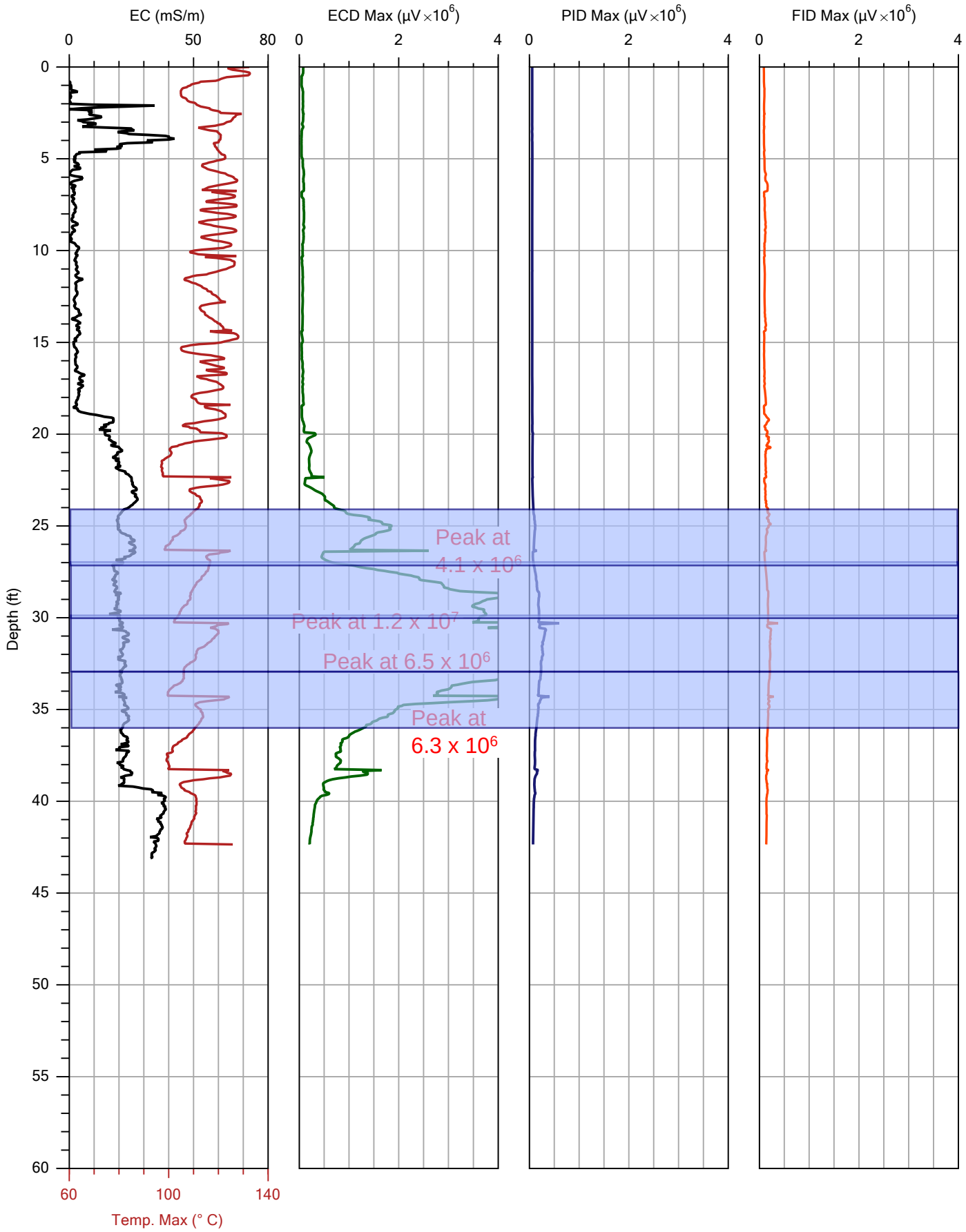
MIP-57



Direct Image® By Geoprobe Systems®

		File: MIP-57.MHP
Company: SER90	Operator: Sammy	Date: 7/18/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 29″ W

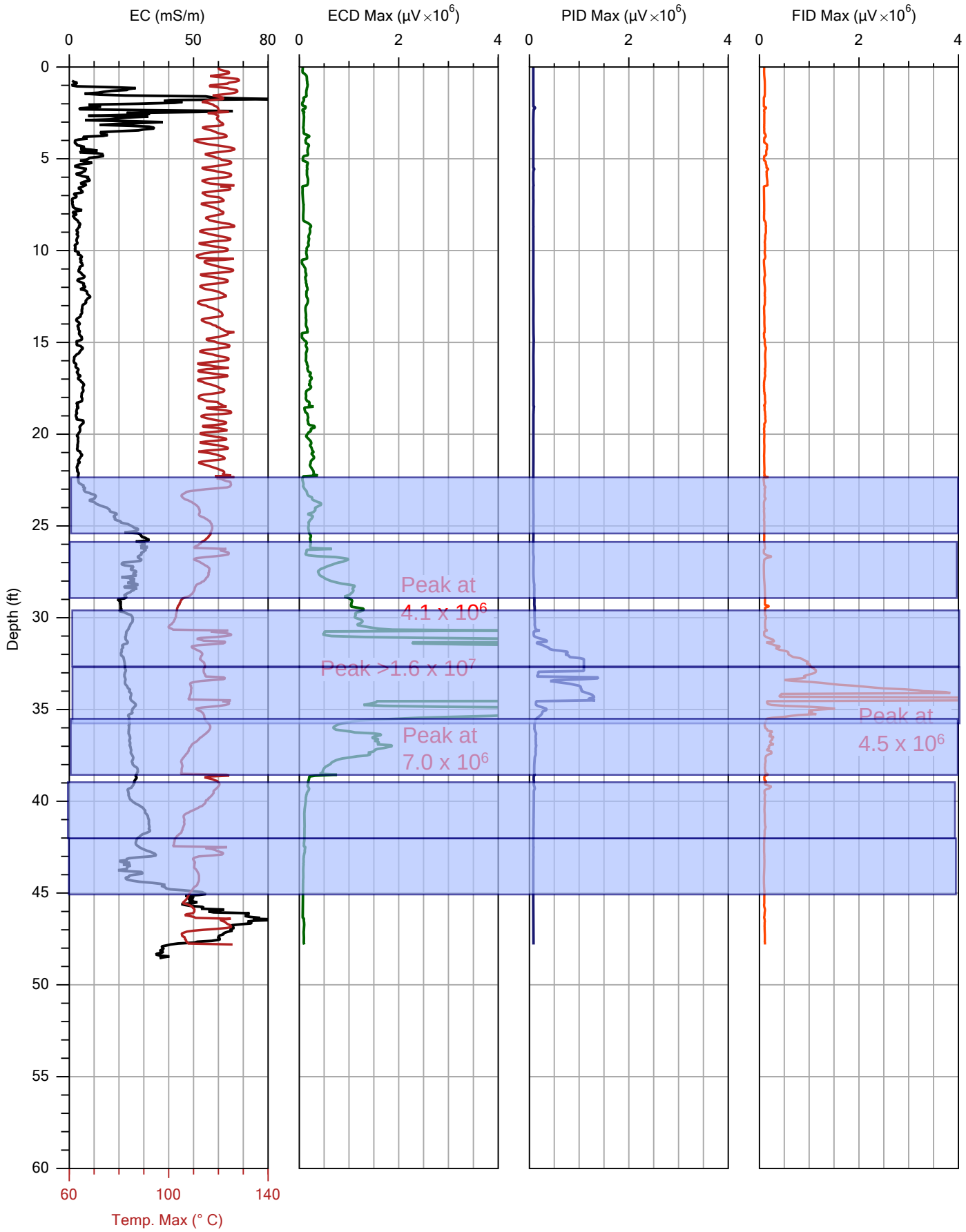
MIP-58



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: Sammy	File: MIP-58.MHP
Project ID: TPC-2014-RI	Client: TRC Solutions	Date: 7/18/2014
		Location: 41° 59′ 56″ N, 83° 56′ 32″ W

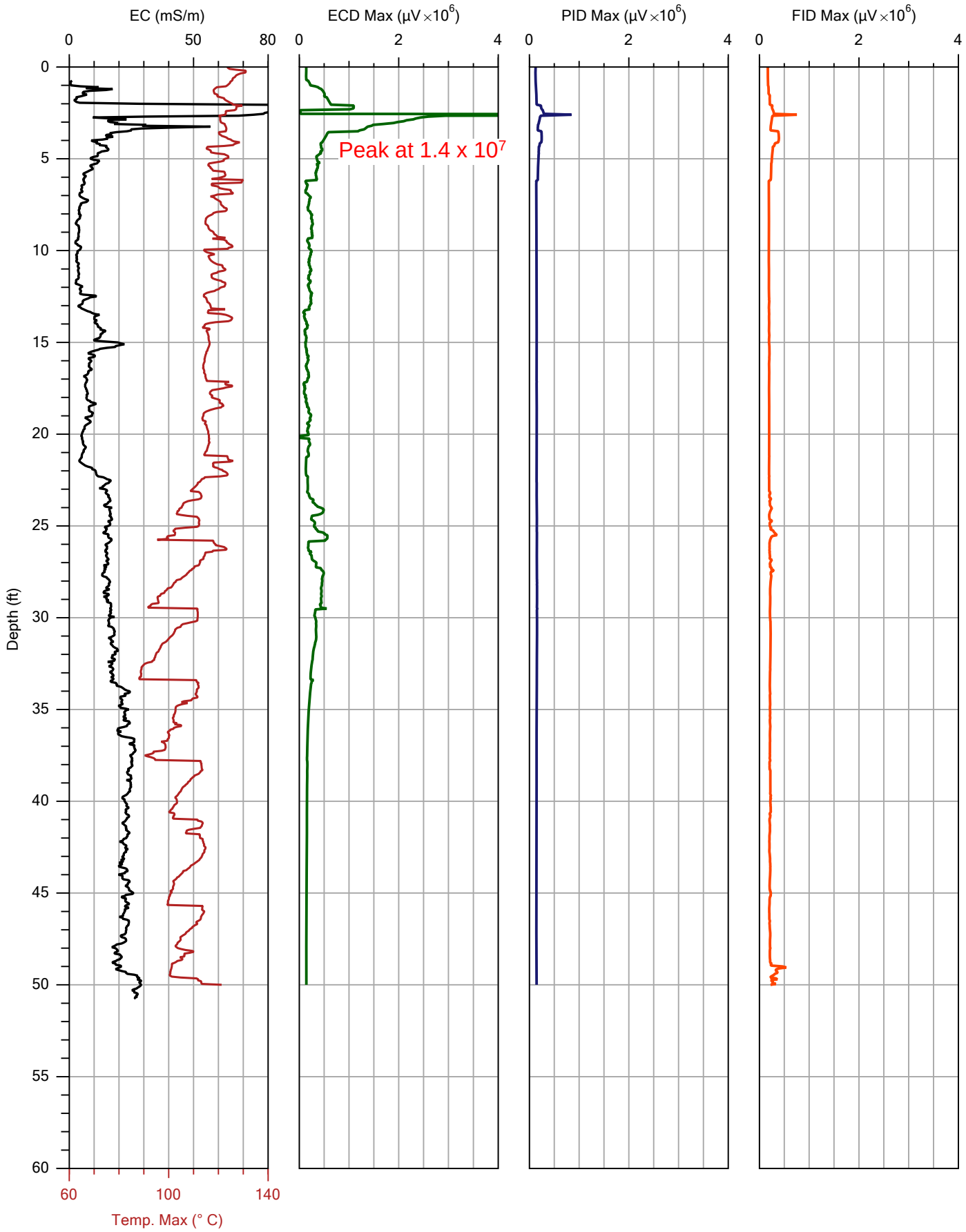
MIP-64



Direct Image® By Geoprobe Systems®

		File: MIP-64.MHP
Company: SER90	Operator: Sammy	Date: 7/22/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 56″ N, 83° 56′ 38″ W

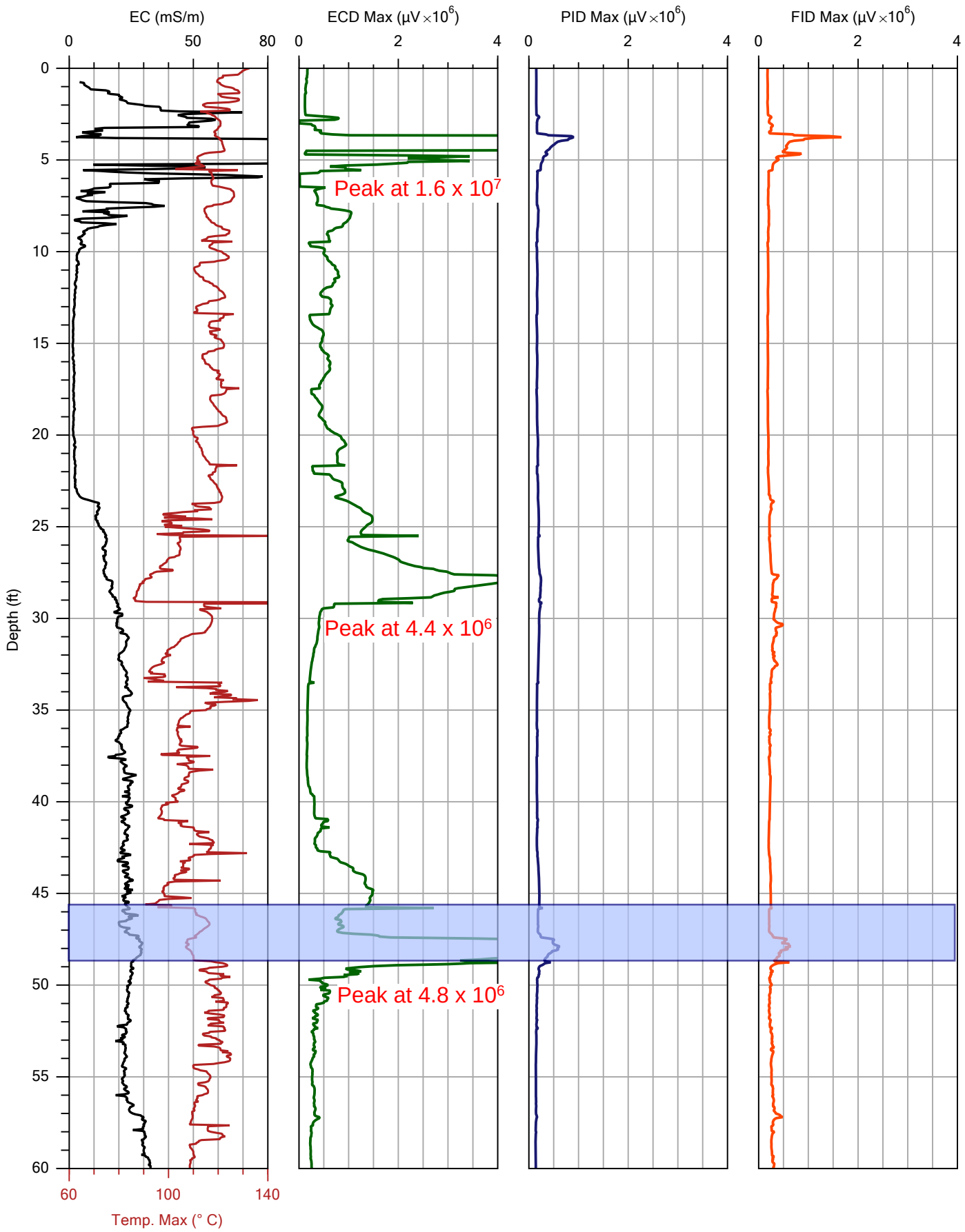
MIP-01



Direct Image® By Geoprobe Systems®

		File: MIP-01.MIP
Company: SER90	Operator: Sammy Sirhan	Date: 6/17/2014
Project ID: TPC-14-RI Investigation	Client: TRC	Location:

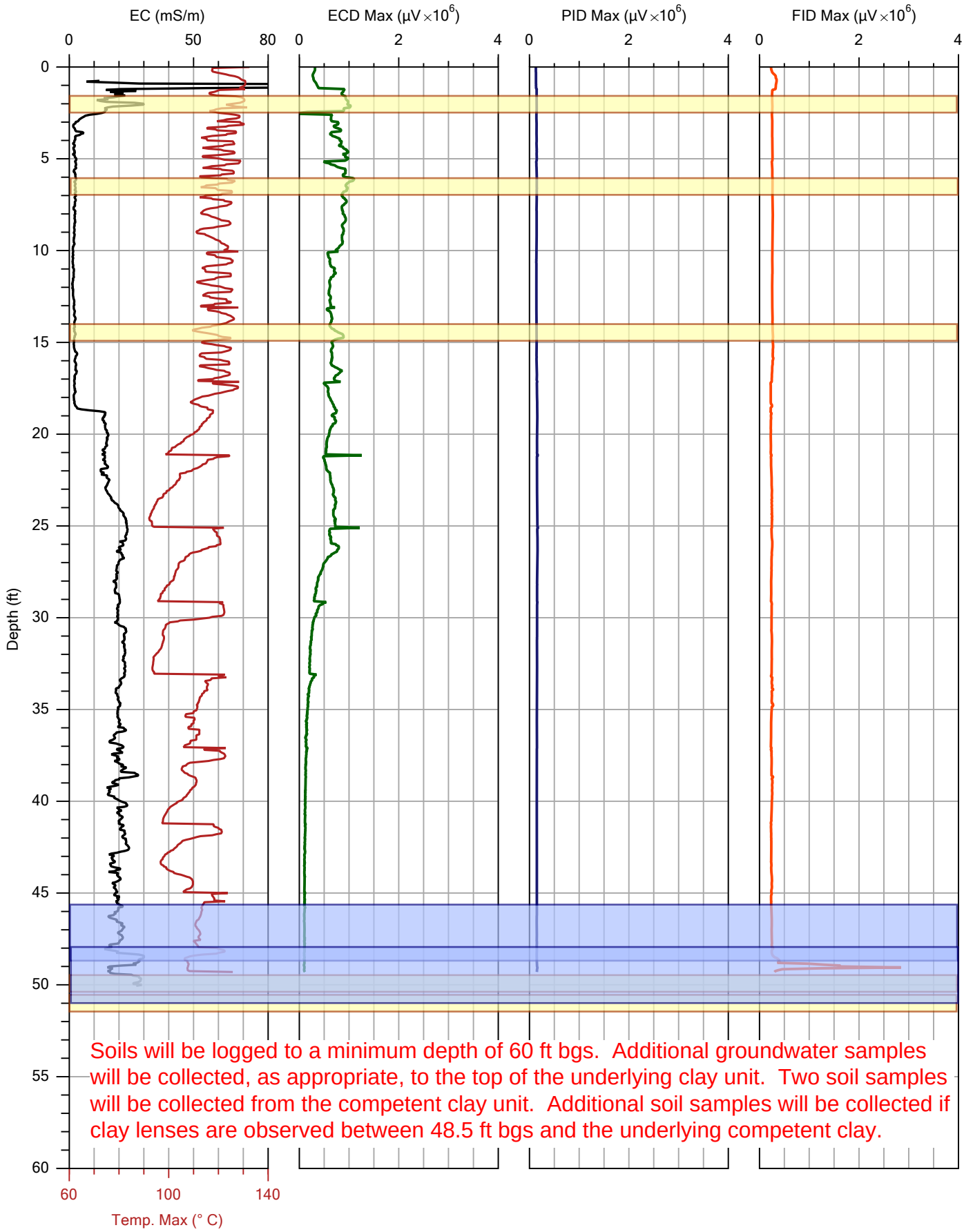
MIP-03



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: S. Sirhan	File: MIP-03.MIP
Project ID: TPC-14-RI	Client: TRC Solutions	Date: 6/17/2014
		Location: 41° 59′ 42″ N, 83° 56′ 35″ W

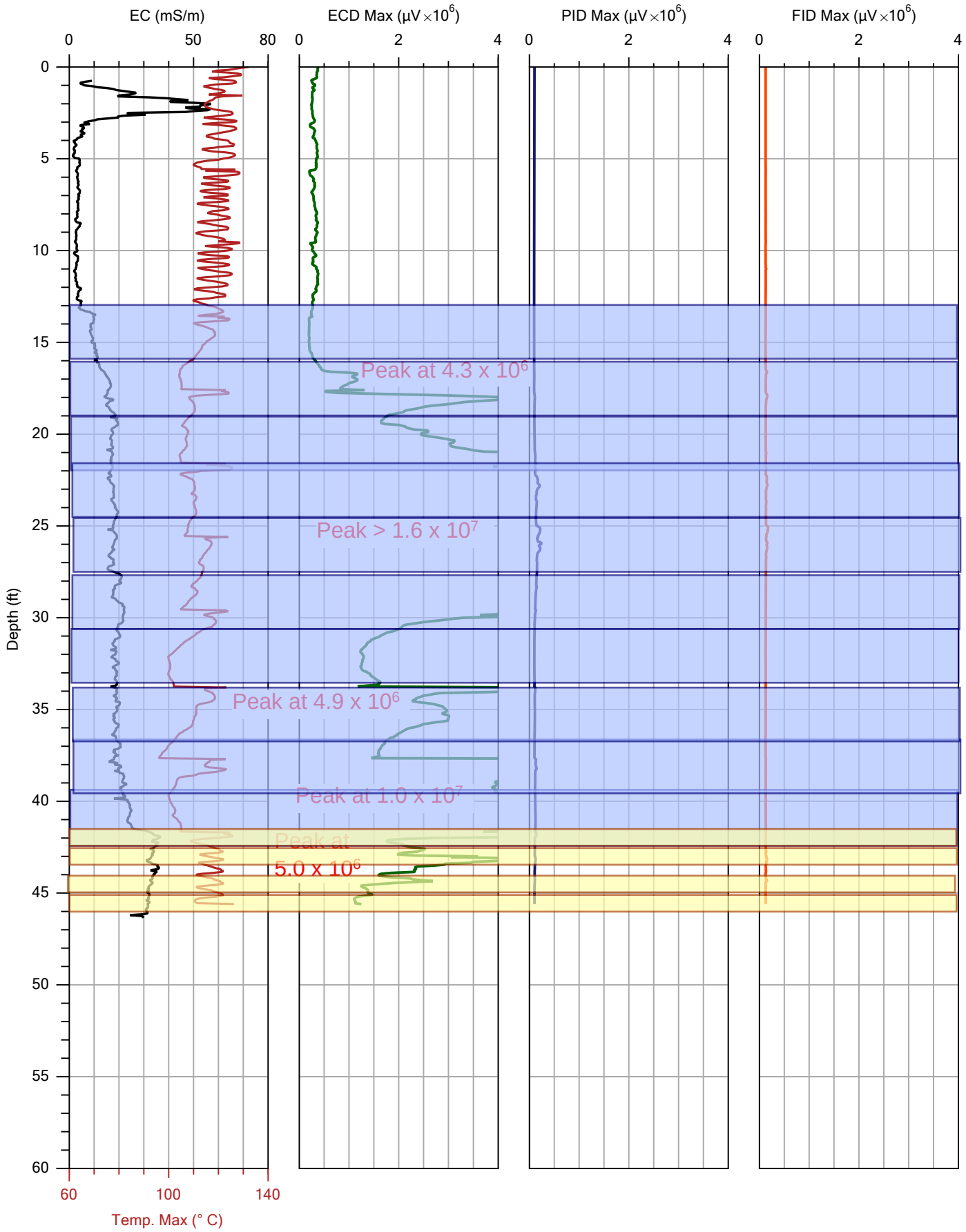
MIP-05



Direct Image® By Geoprobe Systems®

		File: MIP-05.MIP
Company: SER90	Operator: S. Sirhan	Date: 6/18/2014
Project ID: TCP-14-RI	Client: TRC Solutions	Location: 41° 59′ 41″ N, 83° 56′ 33″ W

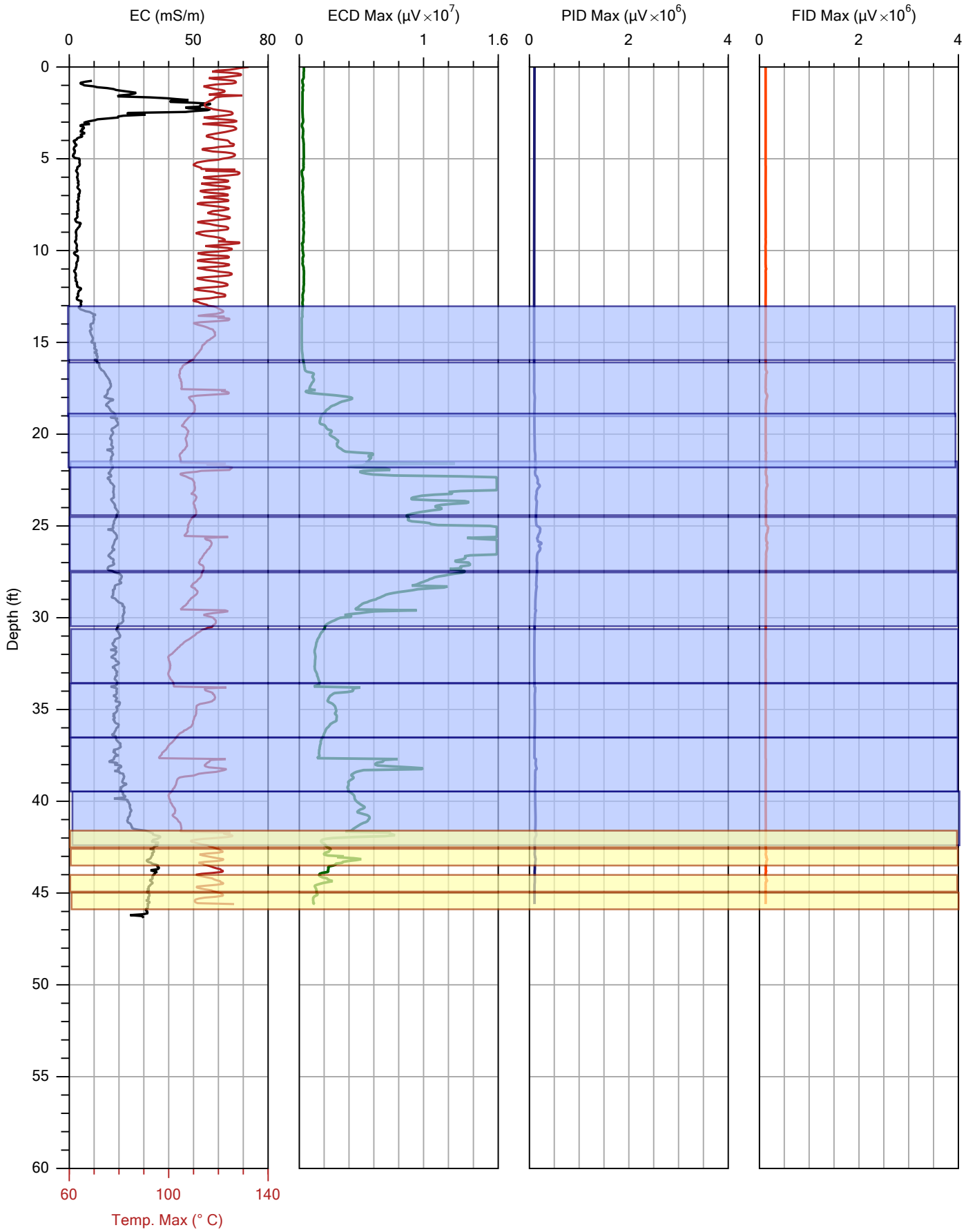
MIP-23



Direct Image® By Geoprobe Systems®

		File: MIP-23.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/1/2014
Project ID: TPC-2014RI	Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 29″ W

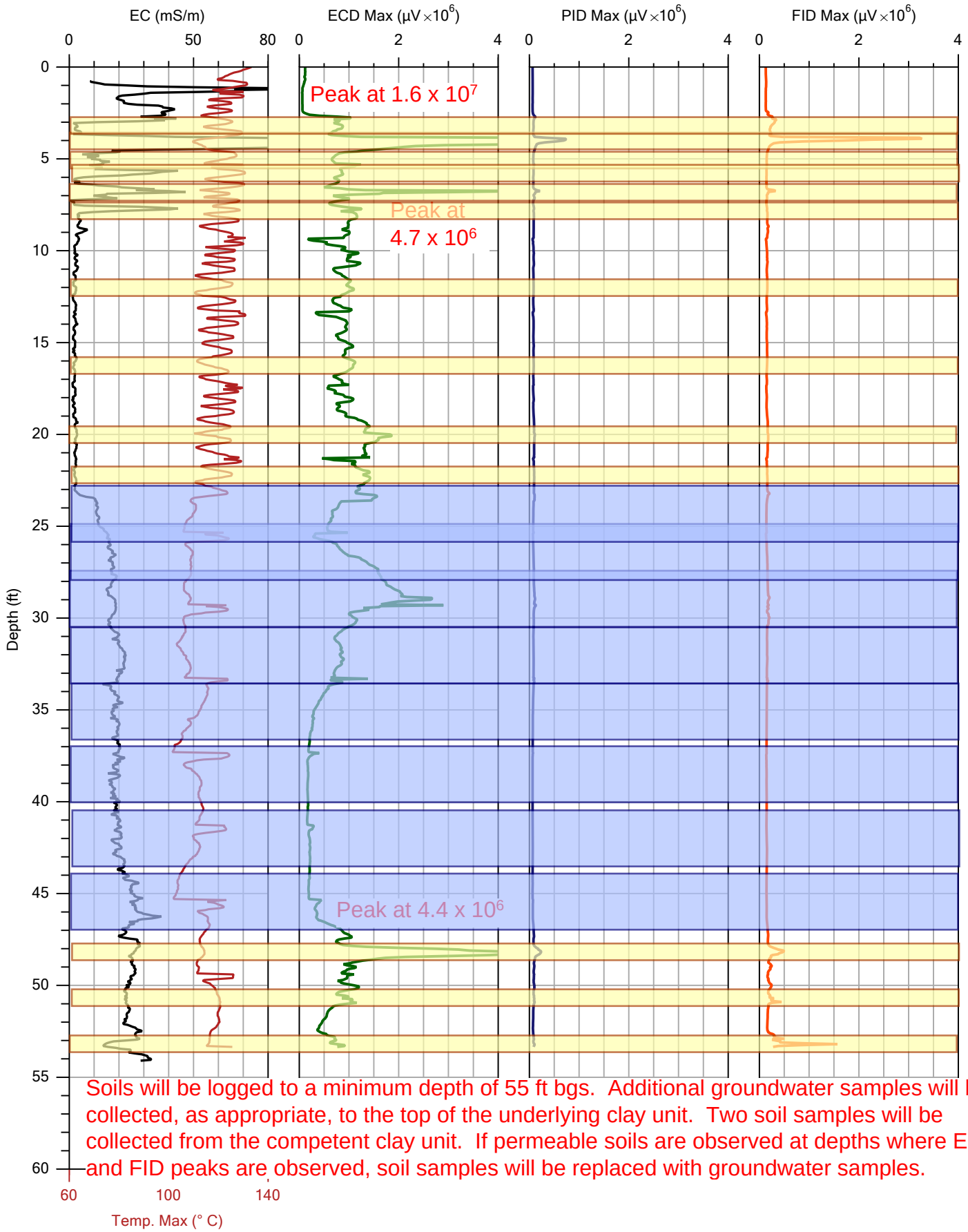
MIP-23



Direct Image® By Geoprobe Systems®

		File: MIP-23.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/1/2014
Project ID: TPC-2014RI	Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 29″ W

MIP-25

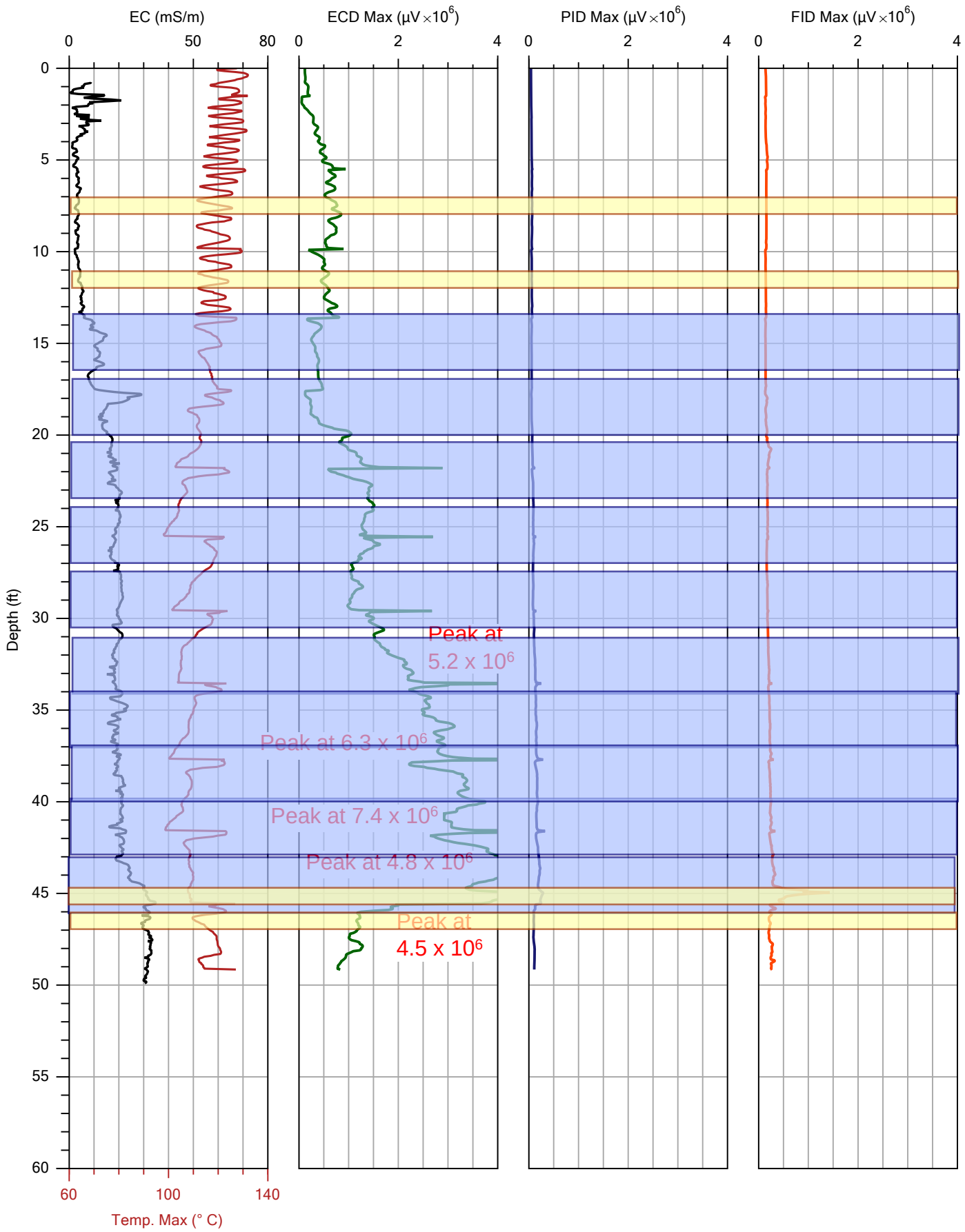


Soils will be logged to a minimum depth of 55 ft bgs. Additional groundwater samples will be collected, as appropriate, to the top of the underlying clay unit. Two soil samples will be collected from the competent clay unit. If permeable soils are observed at depths where ECD and FID peaks are observed, soil samples will be replaced with groundwater samples.

Direct Image® By Geoprobe Systems®

		File: MIP-25.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/2/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 42″ N, 83° 56′ 35″ W

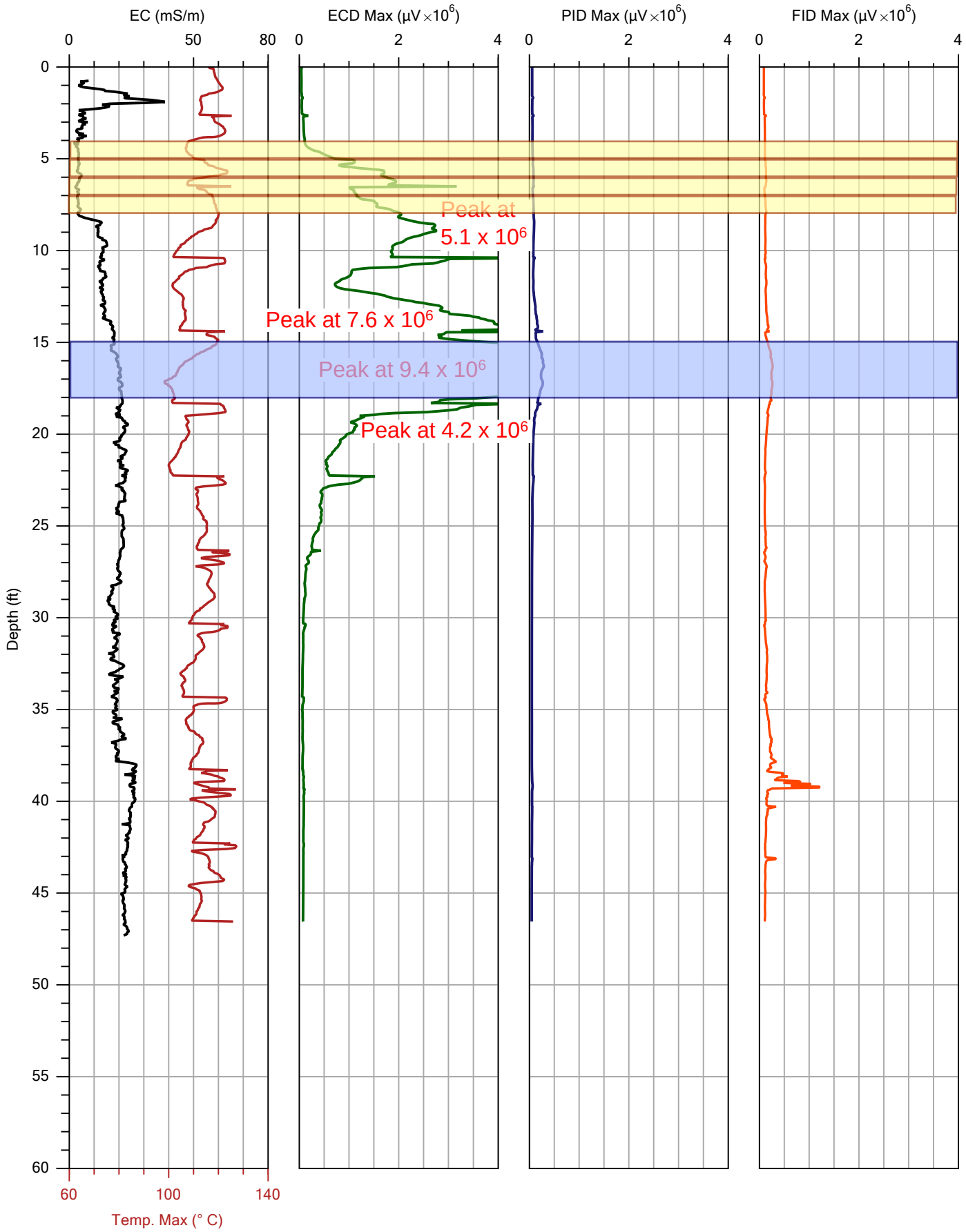
MIP-30



Direct Image® By Geoprobe Systems®

		File: MIP-30.MIP
Company: SER90	Operator: S. Sirhan	Date: 7/3/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 31″ W

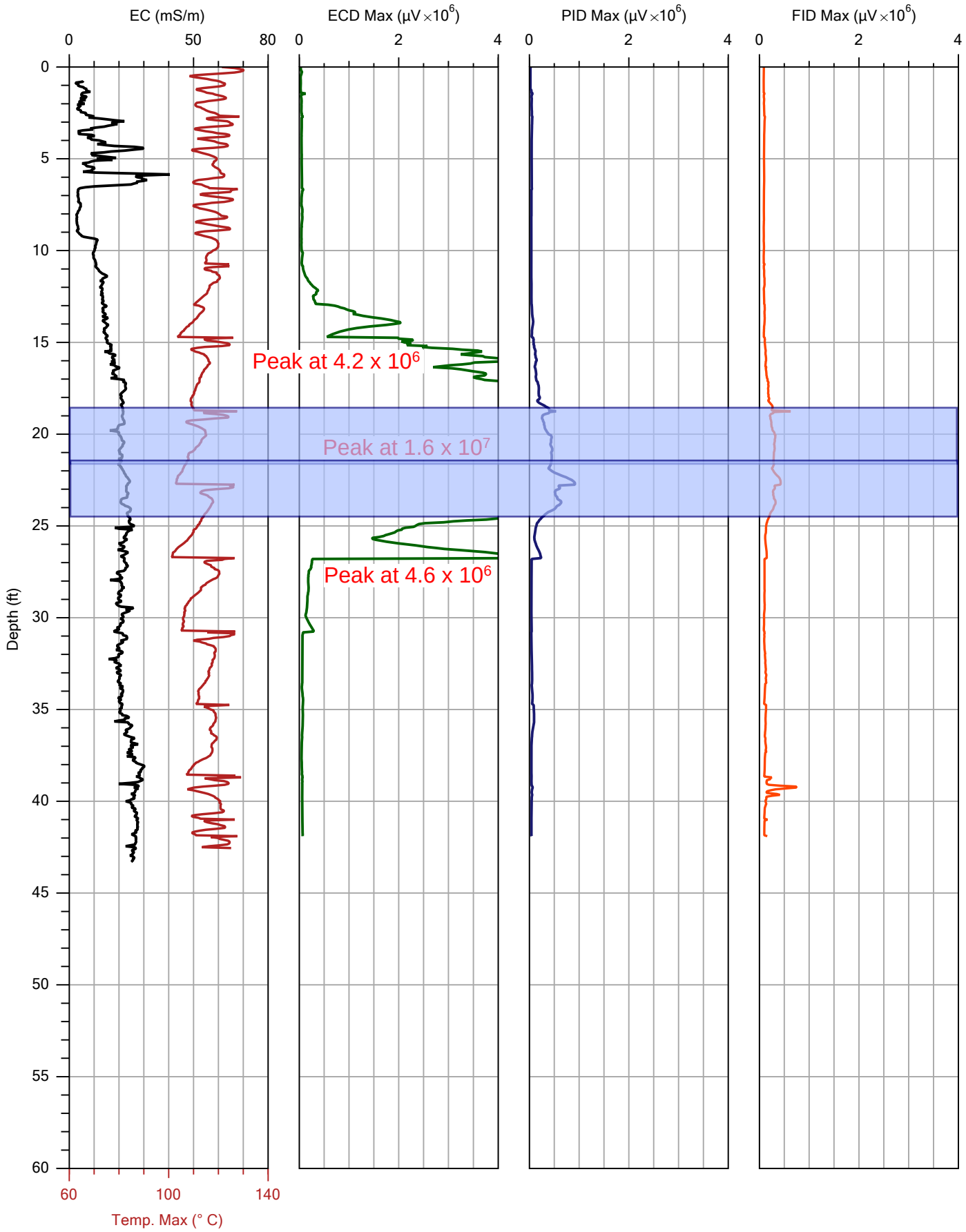
MIP-48



Direct Image® By Geoprobe Systems®

		File: MIP-48.MHP
Company: SER90	Operator: Sammy	Date: 7/15/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 42″ N, 83° 56′ 27″ W

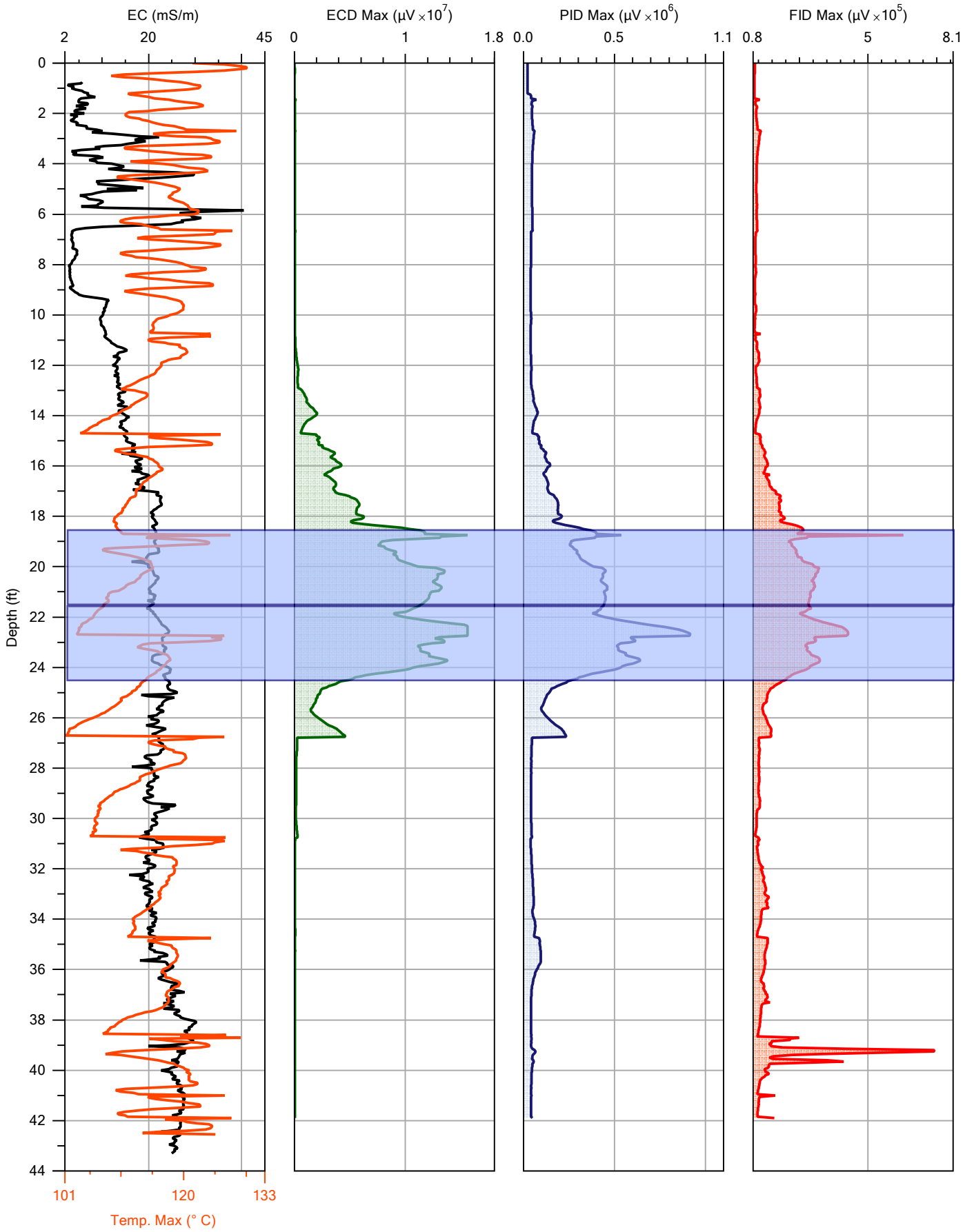
MIP-49



Direct Image® By Geoprobe Systems®

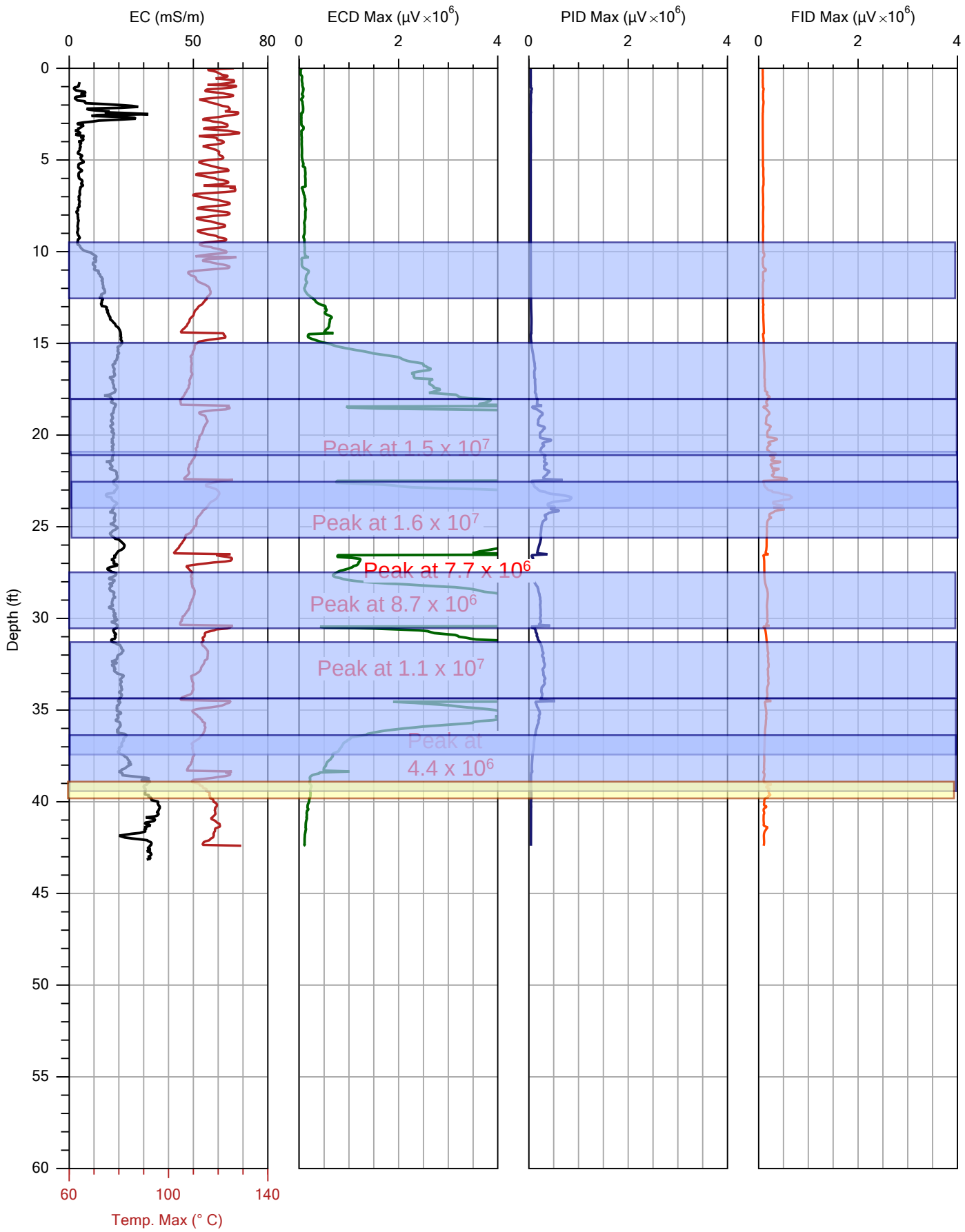
		File: MIP-49.MHP
Company: SER90	Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 43″ N, 83° 56′ 27″ W

MIP-49



			File: MIP-49.MHP
Company: SER90	Operator: Sammy		Date: 7/16/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location: 41° 59′ 43″ N, 83° 56′ 27″ W

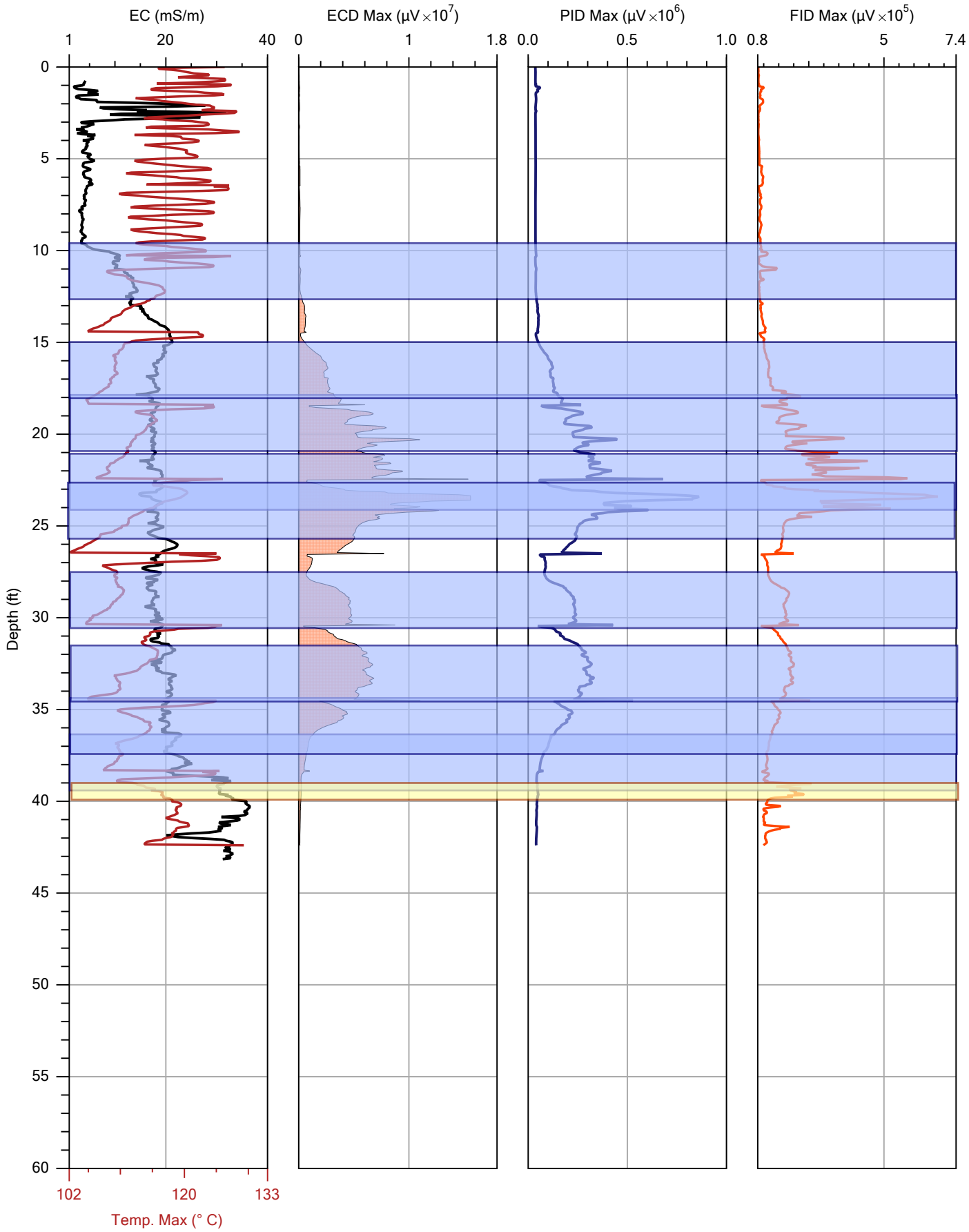
MIP-50



Direct Image® By Geoprobe Systems®

		File: MIP-50.MHP
Company: SER90	Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 27″ W

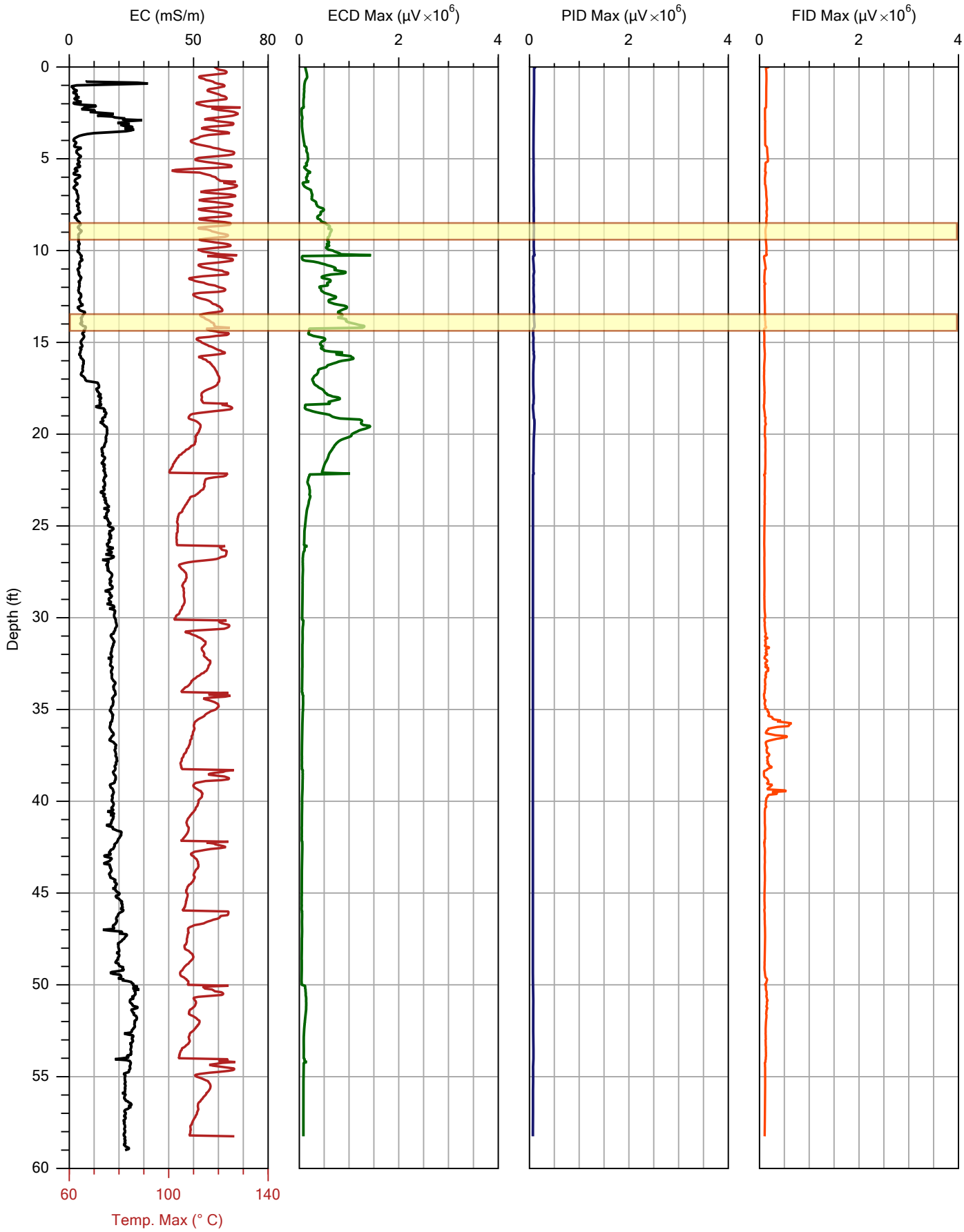
MIP-50



Direct Image® By Geoprobe Systems®

		File: MIP-50.MHP
Company: SER90	Operator: Sammy	Date: 7/16/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 44″ N, 83° 56′ 27″ W

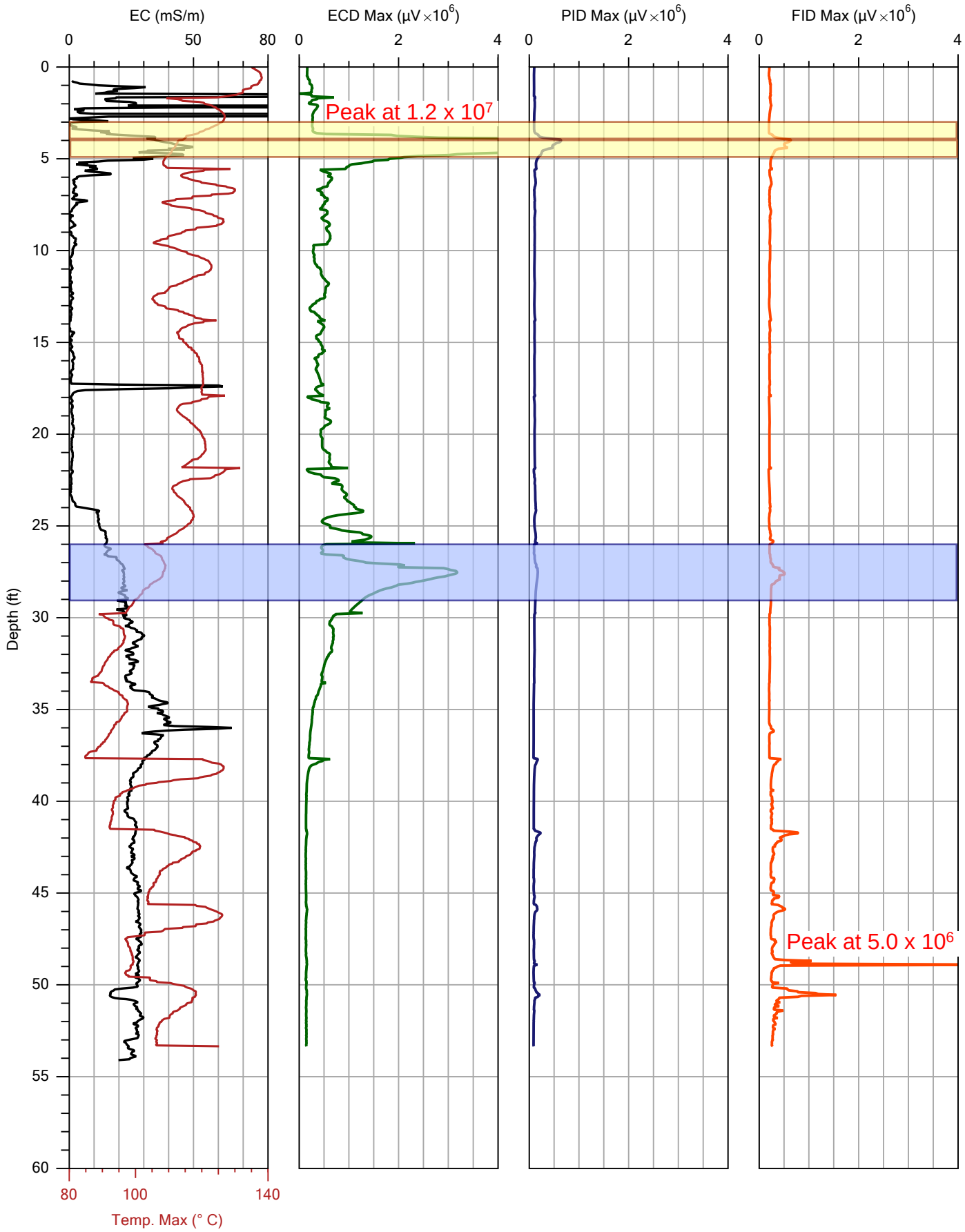
MIP-60



Direct Image® By Geoprobe Systems®

Company: SER90	Operator: Sammy		File: MIP-60.MHP
			Date: 7/21/2014
Project ID: TPC-2014-RI	Client: TRC Solutions		Location: 41° 59′ 39″ N, 83° 56′ 32″ W

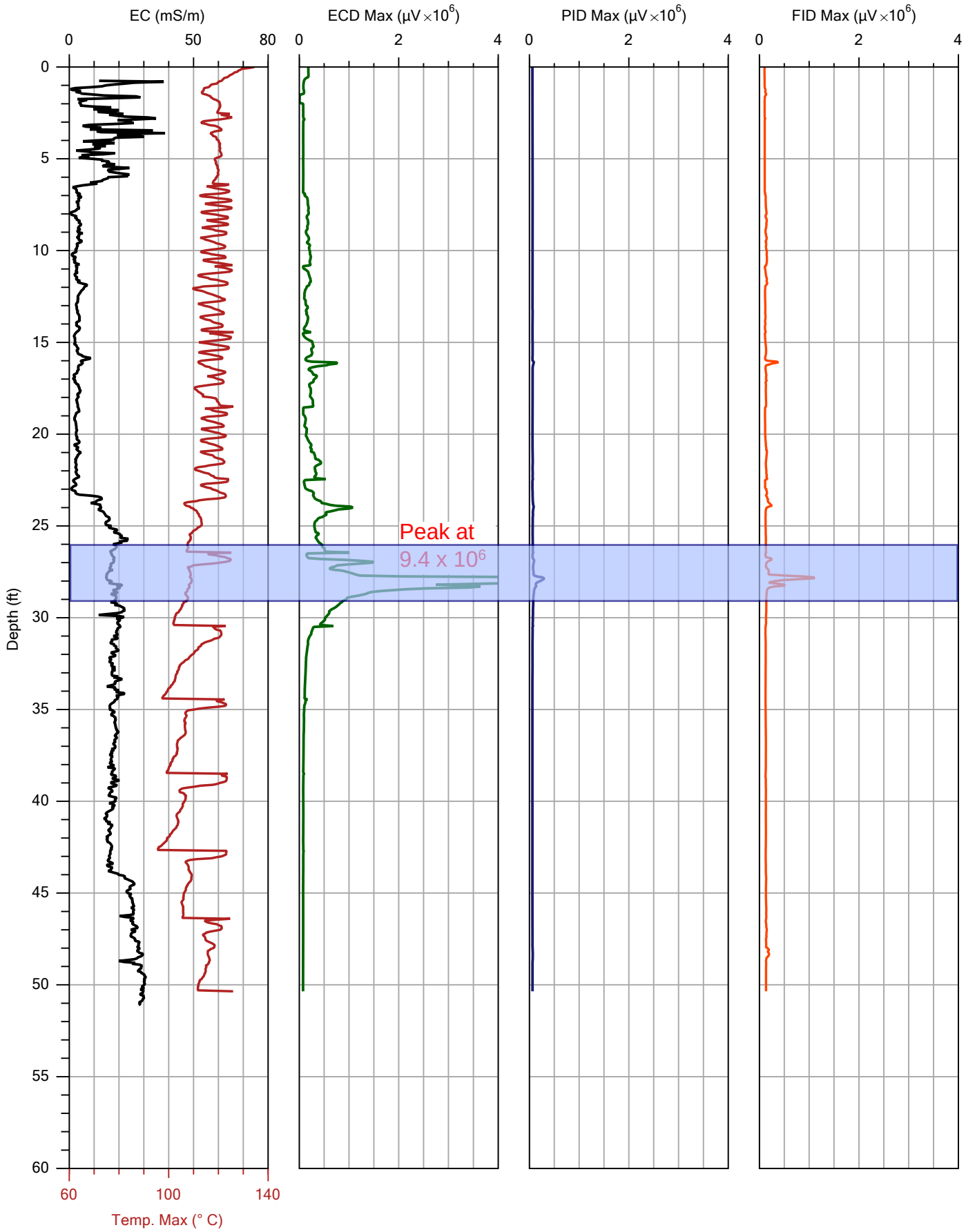
MIP-14



Direct Image® By Geoprobe Systems®

		File: MIP-14A.MIP
Company: SER90	Operator: Sammy Sirhan	Date: 6/26/2014
Project ID: TPC-14RI	Client: TRC Solutions	Location:

MIP-54



Direct Image® By Geoprobe Systems®

		File: MIP-54.MHP
Company: SER90	Operator: Sammy	Date: 7/17/2014
Project ID: TPC-2014-RI	Client: TRC Solutions	Location: 41° 59′ 45″ N, 83° 56′ 38″ W