



Countywide Recycling & Disposal Facility

Remediation Unit

**Monthly Progress Report
Of
Operations, Monitoring & Maintenance Activities**

April 2011

Prepared By:

Countywide Recycling & Disposal Facility

Remediation Unit

3619 Gracemont Street S.W.,

East Sparta, Ohio

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Introduction

This document provides a monthly report of activities conducted in April 2011, as required by the Operations, Monitoring, and Maintenance (OM&M) Plan. The OM&M plan was developed for the facility and adopted by the Ohio Environmental Protection Agency (OEPA) on September 30, 2009. The primary objectives of the monitoring portion of this plan are as follows:

1. Monitor status/progression of the reaction.
2. Monitor characteristics of leachate and gas.
3. Track settlement and slope movement/stability of waste mass and perimeter berms.
4. Monitor exposure conditions for engineered components.
5. Determine when conditions are suitable for composite capping.
6. Assess conditions requiring notification, repair, further evaluation or corrective action.
7. Provide a summary of monitoring and data collection, relevant activities conducted since the prior report, trigger events, and conditions which may require additional non-routine activities or investigation.

The OM&M Plan requires inspections, routine maintenance, and other activities that are not required to be presented in this submission. These activities are documented as required, and records are retained in the OM&M Managers office.

1. Monthly Summary Narrative

During the month of April, all daily, weekly, and monthly tasks were completed as required. These tasks included regular monitoring, inspections, and maintenance.

Also during April, installation of the toe drain as part of the South Slope Relocation project and replacement of the toe drain outside the project area continued. The existing toe drain is being replaced with an upgraded design to optimize liquid and gas collection at the toe of slope. Temporary cap replacement also occurred during April. Significant delays of the project were experienced related to inclement weather.

2. New Construction

No new construction is currently required or planned.

3. Major Non-Routine Maintenance, Repairs or Events

Routine maintenance and repairs of the temporary cap, leachate, and gas systems were completed during the month of April. During the last week of April, high winds caused uplift of temporary cap in the bowl area, resulting in damage to gas system components. These components were repaired as soon as winds would allow the next day. The south toe drain replacement also occurred, as was discussed in Section 1.

4. New Trigger Events

Settlement

Areas of 2% or greater annualized settlement are depicted on the monthly settlement survey maps. Per the OM&M Plan, an exceedance of this settlement rate should only be considered a trigger if it occurs in a location where it had not been exceeded in the previous event. The majority, if not all,

of the areas exceeding the settlement rate in April have exceeded the trigger in prior months. As can be seen on the settlement maps, the south slope excavation and relocation areas were excluded due to construction activity in those areas. Countywide intends to exclude these areas until the project is complete to ensure safety of personnel.

Areas along the toe of the waste mass have consistently shown false triggers due to the accuracy limits of the survey equipment and thickness of waste mass. These instances have been discussed on an ongoing basis during Team Countywide meetings. Upon extensive review and discussion, it has been mutually agreed upon that these values do not represent cause for immediate concern. Pin and plate monitoring along the toe of slope and near the waste limits supports that there is limited settlement/movement in these areas.

The settlement data across the facility was evaluated and is within the ranges and trends observed in prior months. The rate of settlement per day appears to be within typical ranges and trends, though generally, total settlement is decreasing over time.

There does not appear to be any anomalies or significant excursions outside the trends within the settlement data set. The settlement data and pin and plate data do not suggest that the settlement observed should cause concern from a slope stability or engineering control integrity standpoint.

Pin/Plate Monitoring

As defined by the OM&M Plan, a vertical trigger for pin and plate movement consists of a change of 0.05 feet or greater from the original elevation, which was measured in October 2009. During the month of April, monitoring pins IP-B1 and IP-C1 exceeded the vertical trigger. During the April Team Countywide Meeting, Countywide received verbal authorization from the OEPA to adjust the baseline elevation for pin IP-B1.

Republic believes that the movement associated with these pins is not associated with slope instability, but rather is indicative of progressive frost heave. Elevation changes for these pins do not appear to represent a deviation from prior trends that would indicate slope instability. Based upon the analysis of data, which is fully presented in Attachment 4, Countywide does not believe that these triggers should prompt any additional measures beyond the requirements of the OM&M Plan and ongoing activities. Additionally, Countywide has recommended that the baseline elevation for these pins be adjusted to eliminate false triggers.

5. Investigation Results from Previous Trigger Events

It was agreed upon between Republic and the Agencies that the values resulting in triggers during the March 2011 monitoring period were consistent with ranges and trends previously reflected, and represent no significant anomalies when compared to prior ongoing trends. The analysis of these triggers did not prompt any additional measures beyond the requirements of the OM&M Plan and ongoing activities.

6. Trend Graphs and Drawings

The graphs, tables, and figures required by the OM&M Plan are included in the attachments to this report. Due to the vast number of these and the detail that they provide, a full written summary is not provided in this document. The data will be discussed in depth at the Team Countywide Meeting. The April monitoring data is generally within the ranges and trending of that observed in prior months.

7. Review of Potential Need to Extend Temporary FML Cap

Currently, the Remediation Unit consists of approximately 18 acres which do not have a temporary cap. Volume 1, Section 7.1 of the OM&M Plan details conditions which would initiate an assessment which could require installation of temporary cap in this area. Such conditions include;

- Uncontrollable odor or fugitive emissions,
- Unusual settlement (Incremental settlement greater than 2% per year),
- Atypical or uncontrollable leachate outbreaks,
- Methane/carbon dioxide ratio less than 1.0,
- Maximum wellhead temperatures greater than 150°F,
- Maximum carbon monoxide greater than 100 ppmv.

At this time, the conditions observed in this area supplemented by the data collected during monitoring and inspections do not indicate the need for expansion of the temporary cap.

8. Petitions to Perform Work

The monitoring and inspections conducted during the operating period do not indicate the need for additional work which would require approval. As such, there are no petitions to perform such work at this time.

9. Proposed OM&M Plan Revisions

During the March Team Countywide Meeting, Republic recommended that dioxin/furan analysis of leachate be terminated. Matrix interference resulting in high practical quantitation limits (PQL's) has been an inherent, consistent issue when analyzing leachate for these parameters with this analysis. It should be noted that there are no triggers or reporting requirements for these results per the OM&M plan, and that leachate analytical results are historically below PQL's. Additionally, dioxin/furan analysis was discontinued for landfill gas in November 2010.

As such, Republic has recommended that dioxin and furan analysis in leachate be discontinued. Analysis for all other parameters in leachate as required by OM&M Plan would continue.

10. Odor Summary/Complaints

During the month of April, a total of three odor complaints were received by Republic Services.



5/18/11

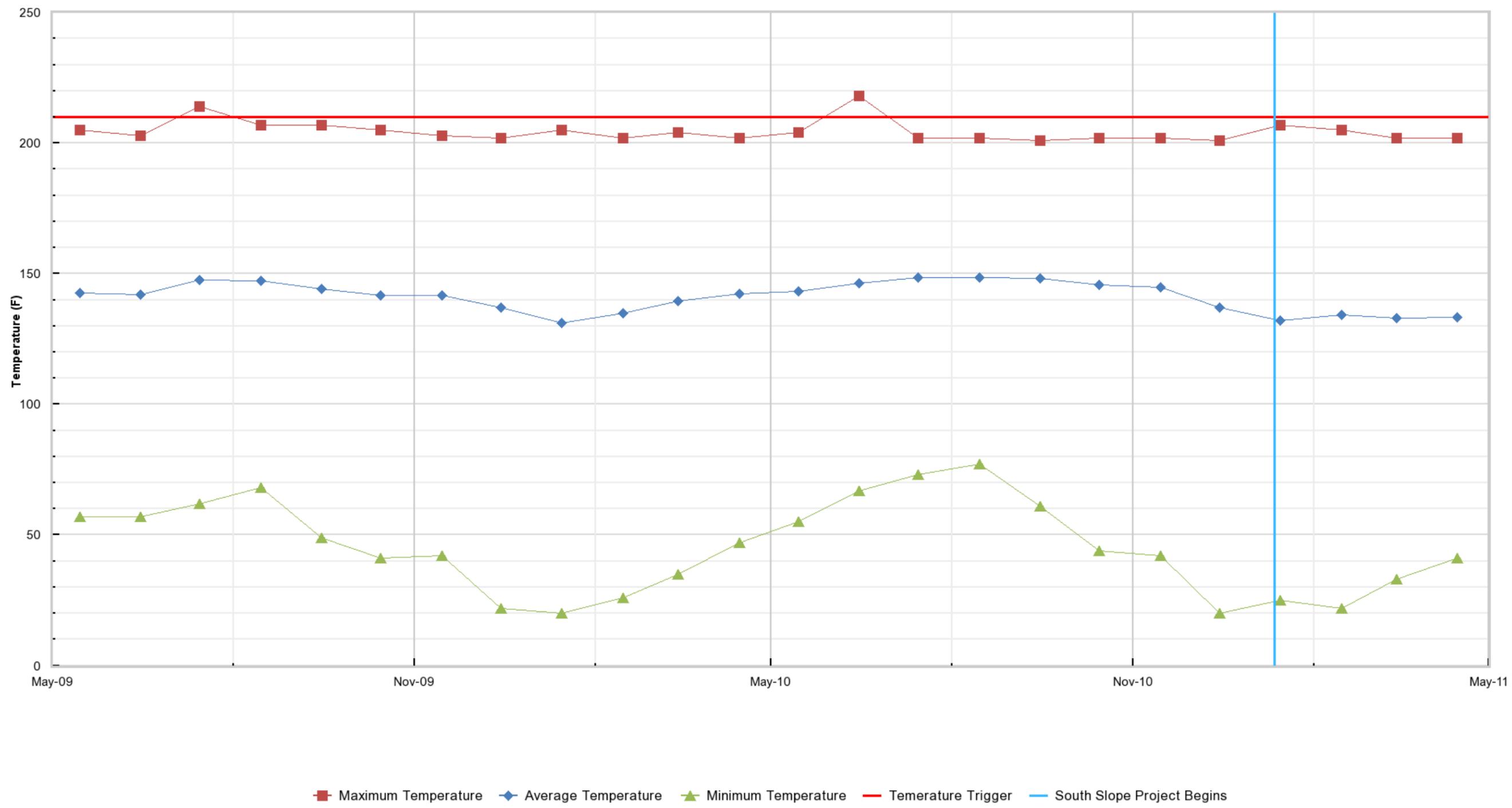
Michael Darnell
OM&M Manager

Date

Attachment 1

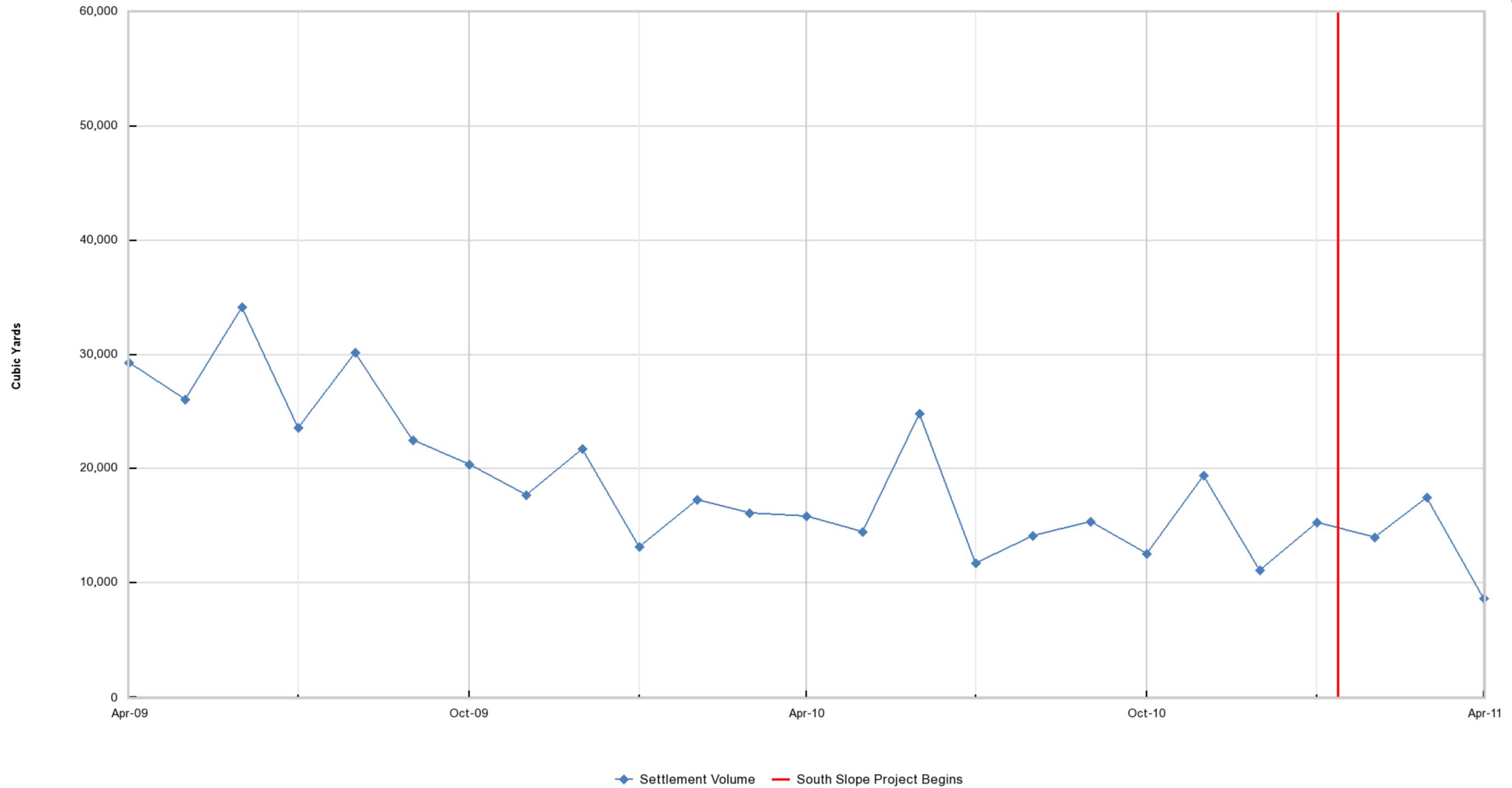
Graphs

Graph 1 Wellhead Temperature



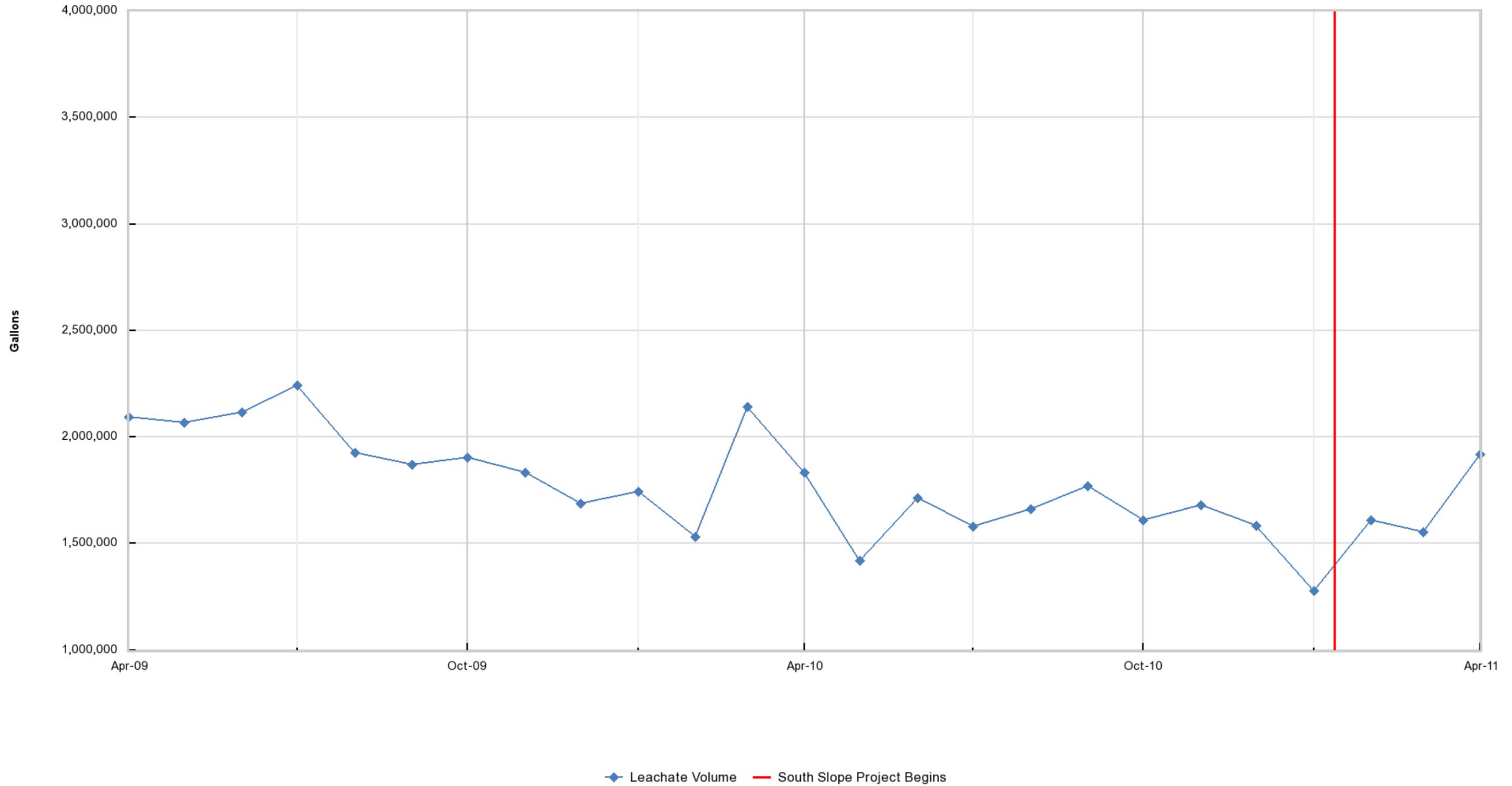
1. Maximum temperature depicted for June 2010 represents a single occurrence of a wellhead temperature over 210 degrees at a single well, caused by wellhead pressure. It does not represent a sustained temperature. Upon vacuum adjustment at the well, temperature returned to normal trend, below 210 degrees .

Graph 2 Settlement Volume



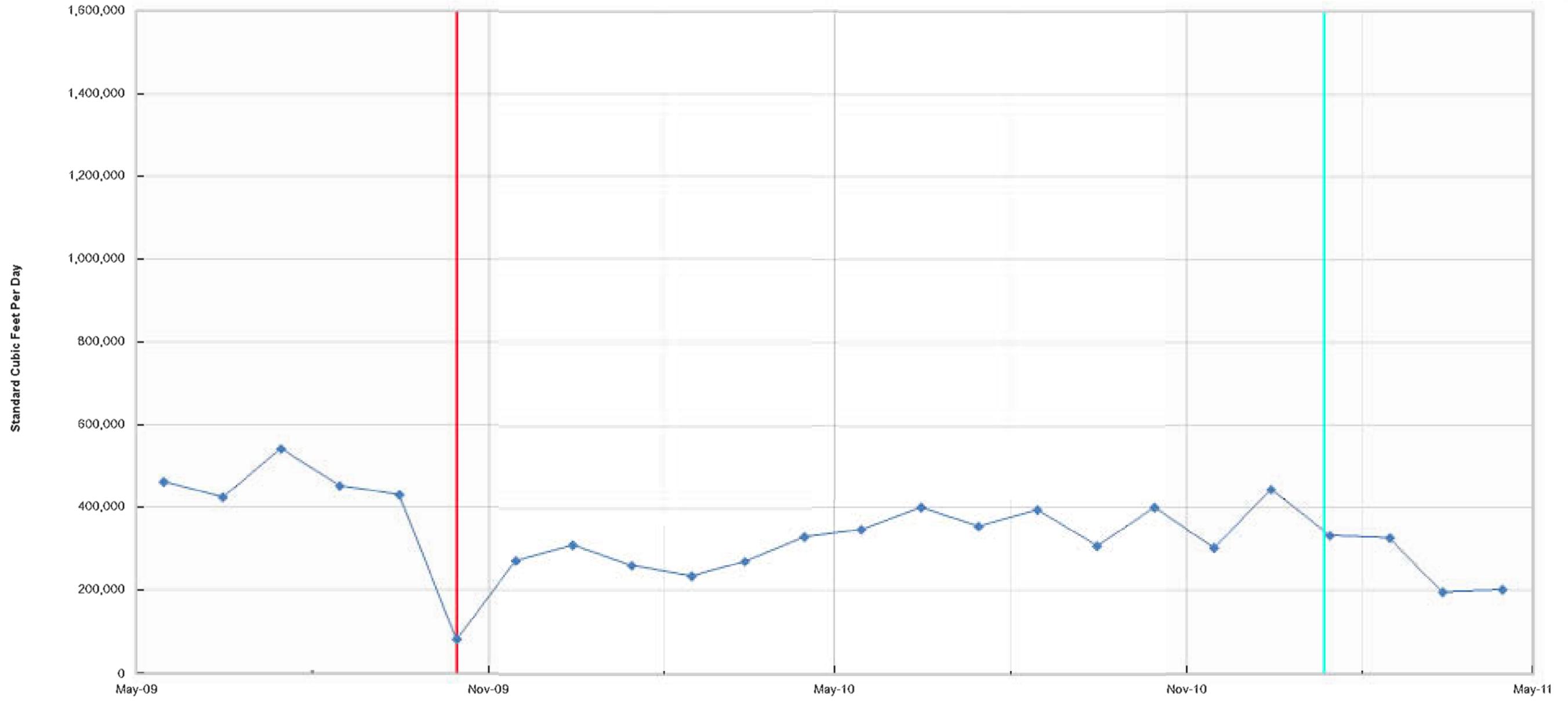
1. Information presented prior to October 2009 was compiled from data prepared and presented by SCS Engineers for Countywide Recycling and Disposal Facility.
2. Data presented on monthly basis.
3. Settlement volume reported prior to the 4th quarter of 2009 is for a limited area of the 88-acre reaction area.
4. The south slope project excavation and relocation areas were excluded from settlement monitoring during the months of January through April 2011.

Graph 3 Leachate Volume



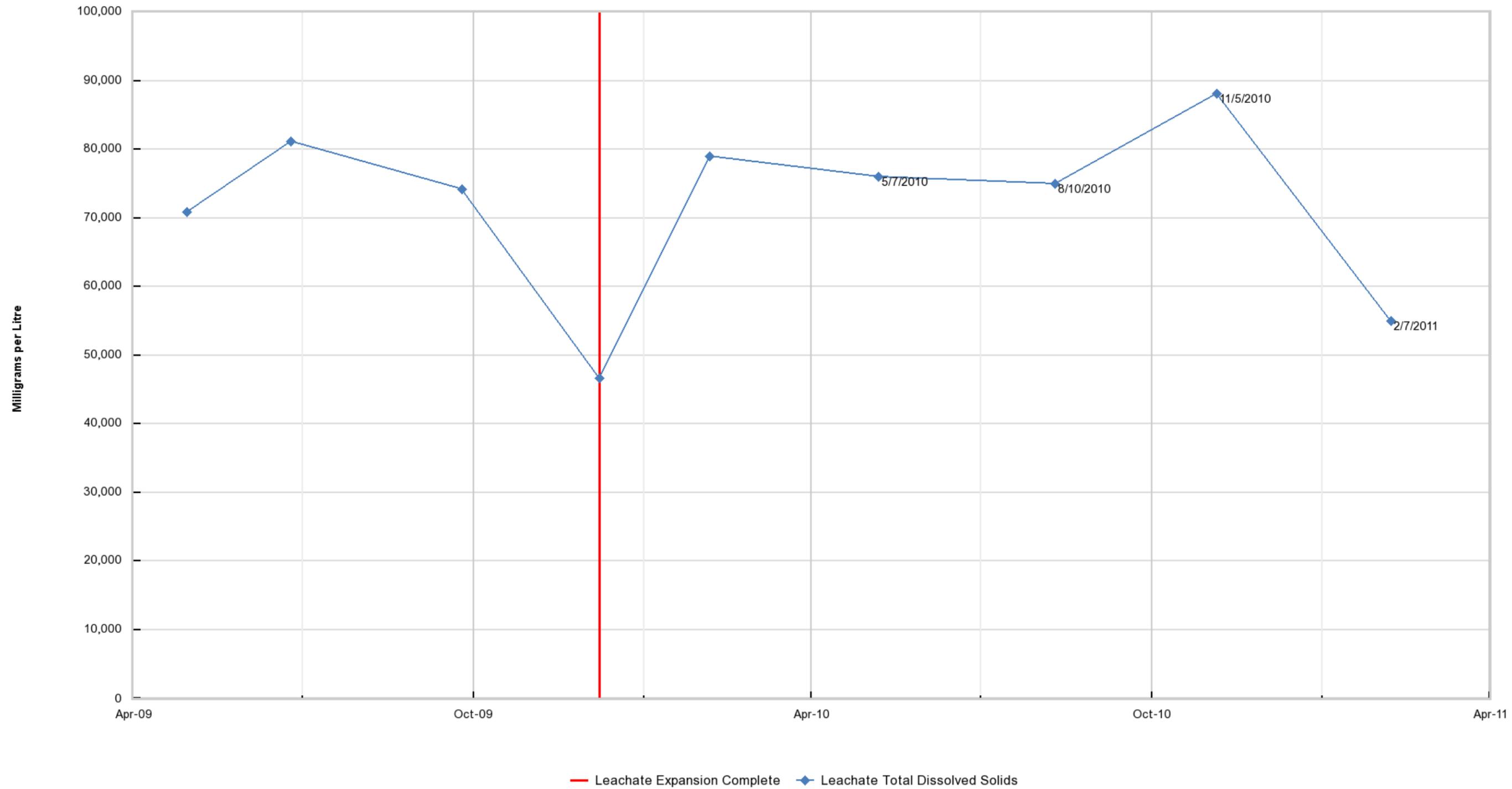
1. A freeboard of approximately 6 feet, approximately 90,000-gallons, is typically maintained at the 500,000-gallon tank. This freeboard volume was removed in July for tank cleaning and inspection. As such, the July 2010 leachate volume is elevated due to removal of this liquid.
2. Leachate generated from the Remediation Unit was stored in the same storage tank as that generated from the Operational Unit during the period July 19, 2010 through August 9, 2010 due to cleaning and maintenance to the Remediation storage tank. As such, the volume of leachate generated from the Remediation Unit was estimated for that period based upon typical daily averages.
3. The “Valley” represented in January 2011 was due to leachate volume generated in January but hauled out in February. Accordingly, this resulted in a “peak” in February 2011.
4. The increase in volume observed in April 2011 is related to significant precipitation through the month. This resulted in an influx of surface water into the leachate collection system due to exposed areas as part of the South slope Project.

Graph 4 Hydrogen Volume



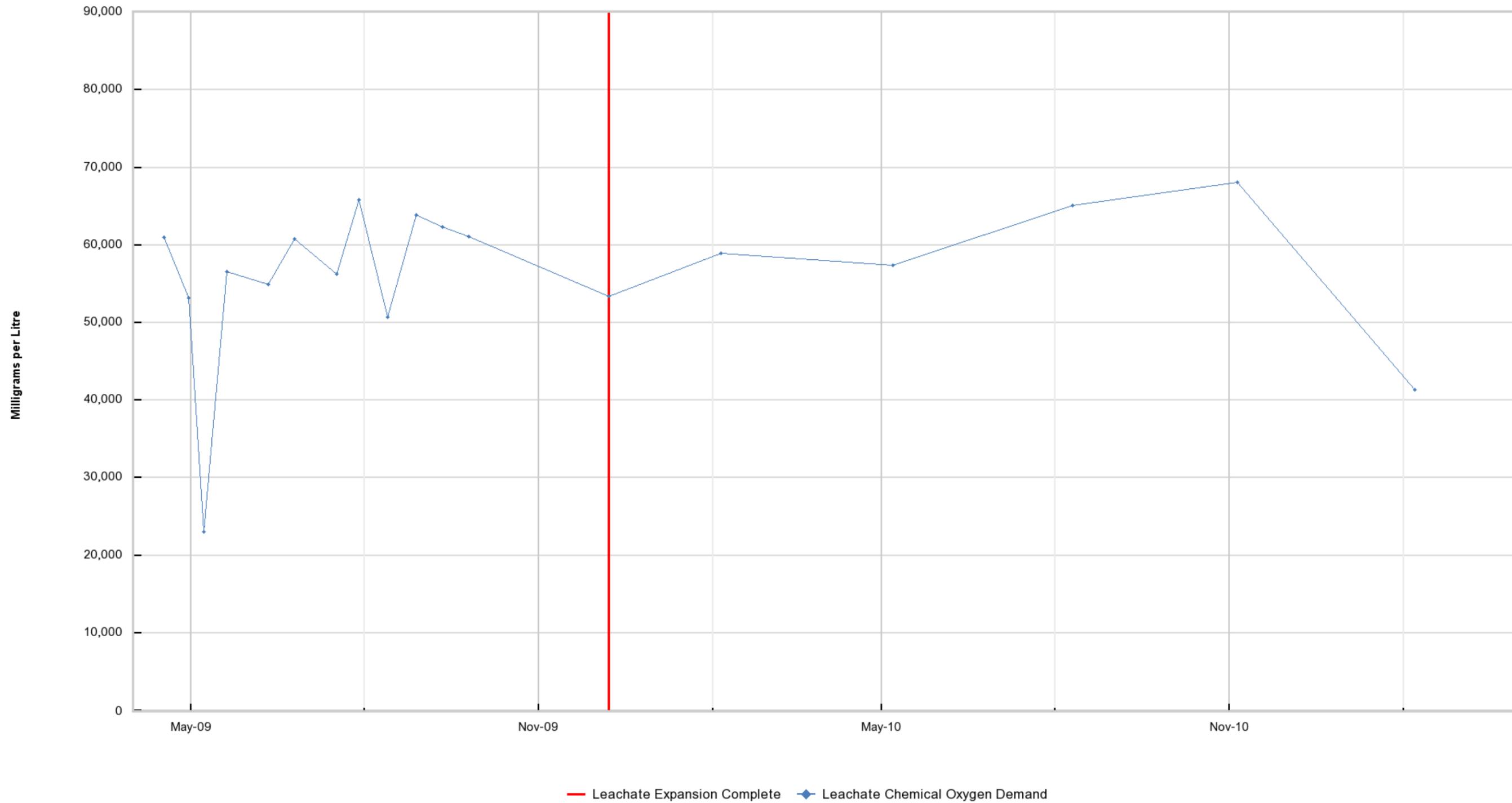
— GCCS Expansion Complete ◆ Hydrogen Volume — South Slope Project Begins

Graph 5 Leachate Total Dissolved Solids



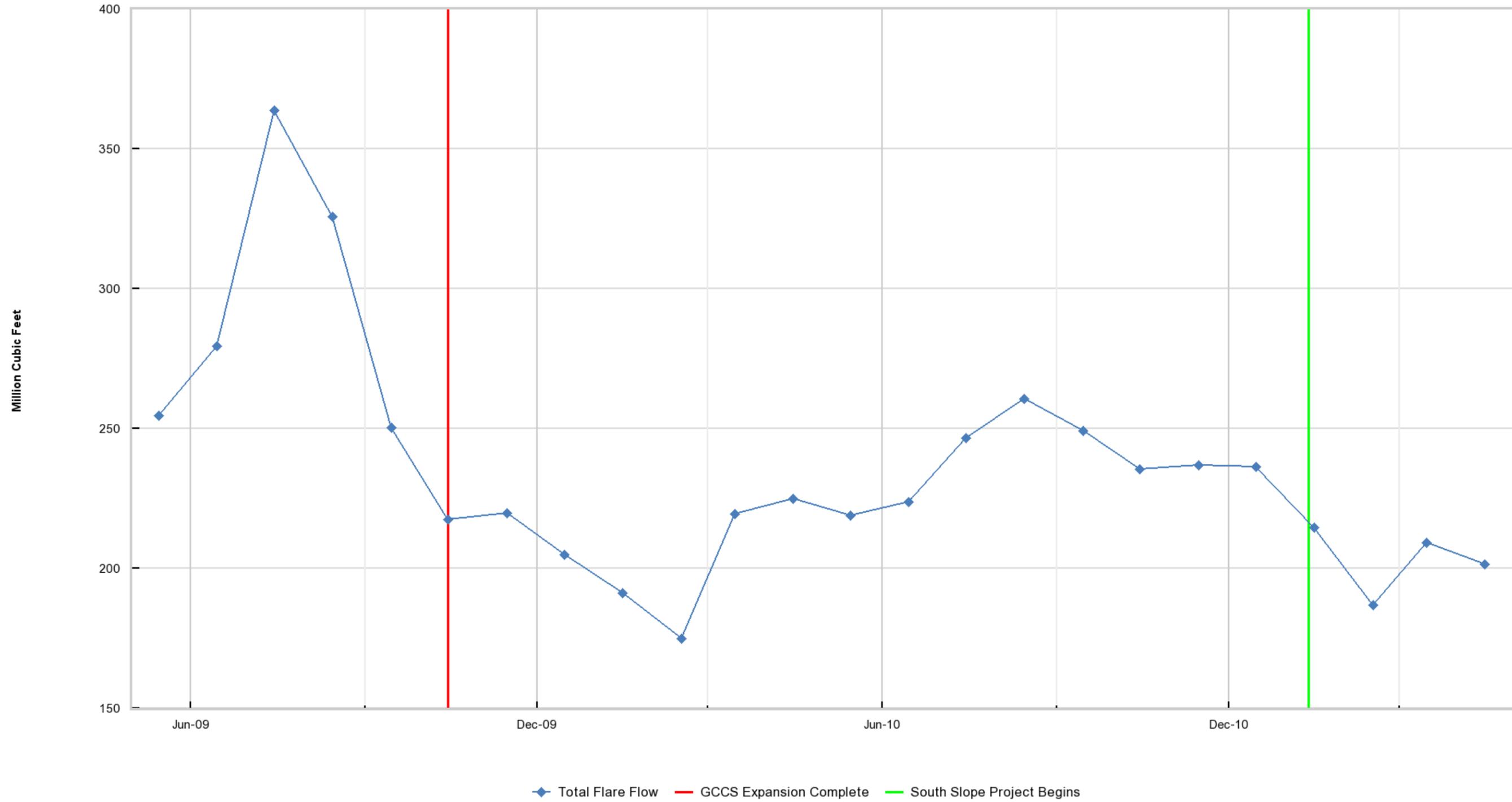
- 1. Information presented prior to October 2009 was compiled from data prepared and presented by AECOM for Countywide Recycling and Disposal Facility.
- 2. Data shown prior to October 2009 are flow-weighted averages of data from the East, North and South leachate collection tanks. Data from December 2009 is from combined Tank East 500.
- 3. Data shown prior to October 2009 comprises data from the leachate collection system only, and excludes certain leachate toe drains, sumps and gas collection wells.
- 4. Data labels beginning in October 2009 indicate date of quarterly analytical sampling.

Graph 6 Leachate Chemical Oxygen Demand



1. Information presented prior to October 2009 was compiled from data prepared and presented by AECOM for Countywide Recycling and Disposal Facility.
2. Data shown prior to October 2009 are flow-weighted averages of data from the East, North and South leachate collection tanks. Data from December 2009 is from combined Tank East 500.
3. Data shown prior to October 2009 comprises data from the leachate collection system only, and excludes certain leachate toe drains, sumps and gas collection wells.
4. Data labels beginning in October 2009 indicate date of quarterly analytical sampling.

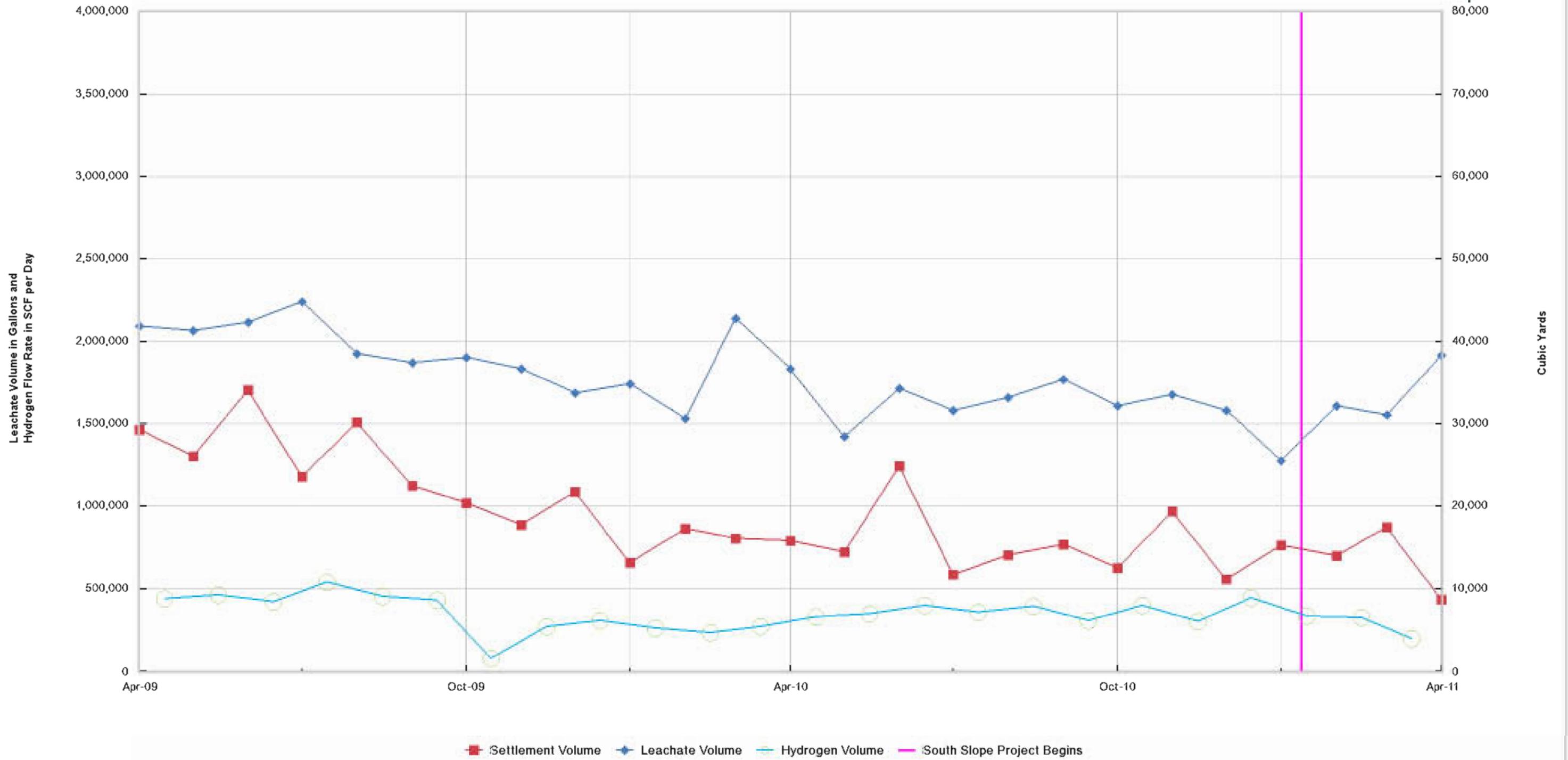
Graph 7 Total Flare Flow



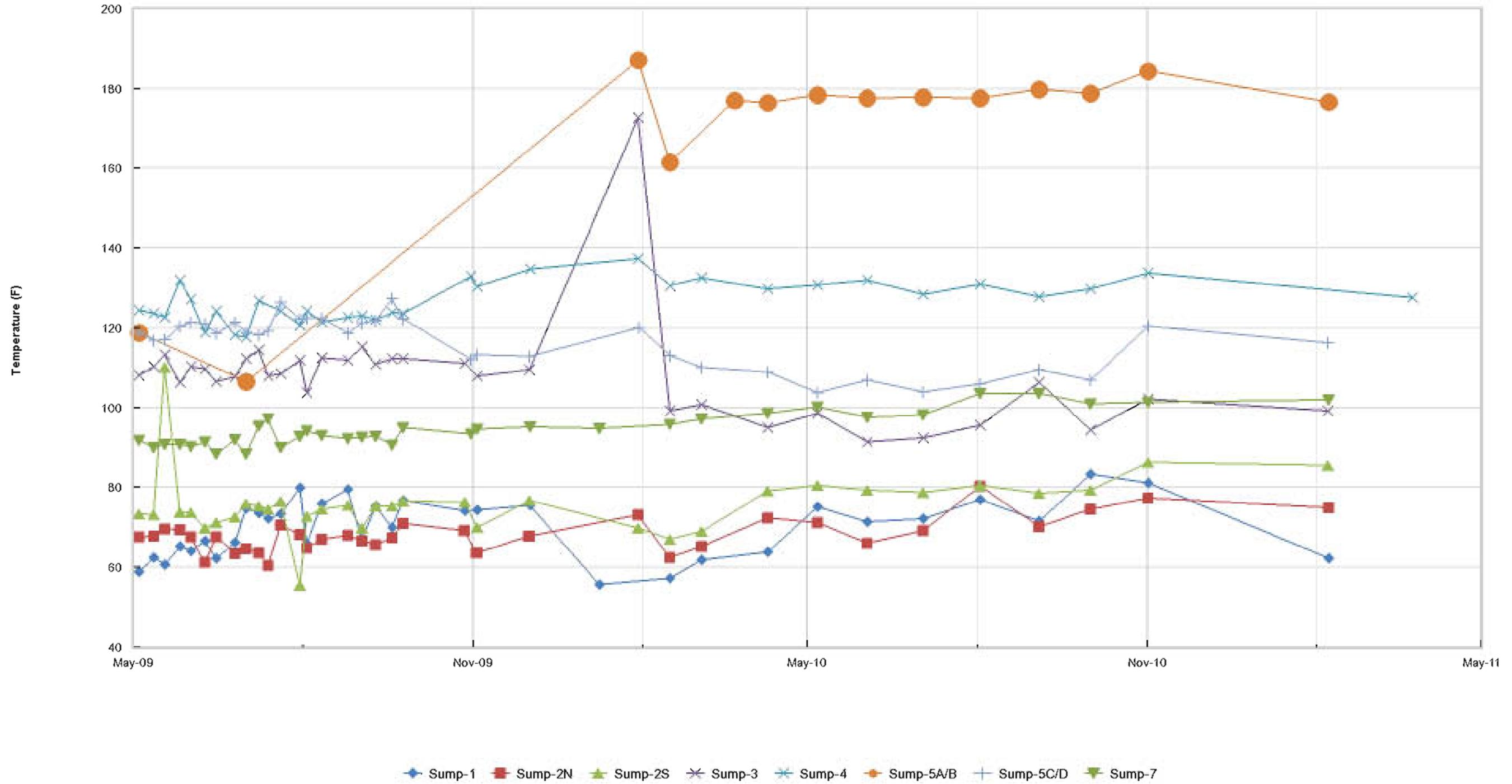
1. Increased flare flow in August 2010 is at least partially due to recalibration of flow meters during the reporting period.

Graph 8 Combined Leachate, Hydrogen and Settlement Volume

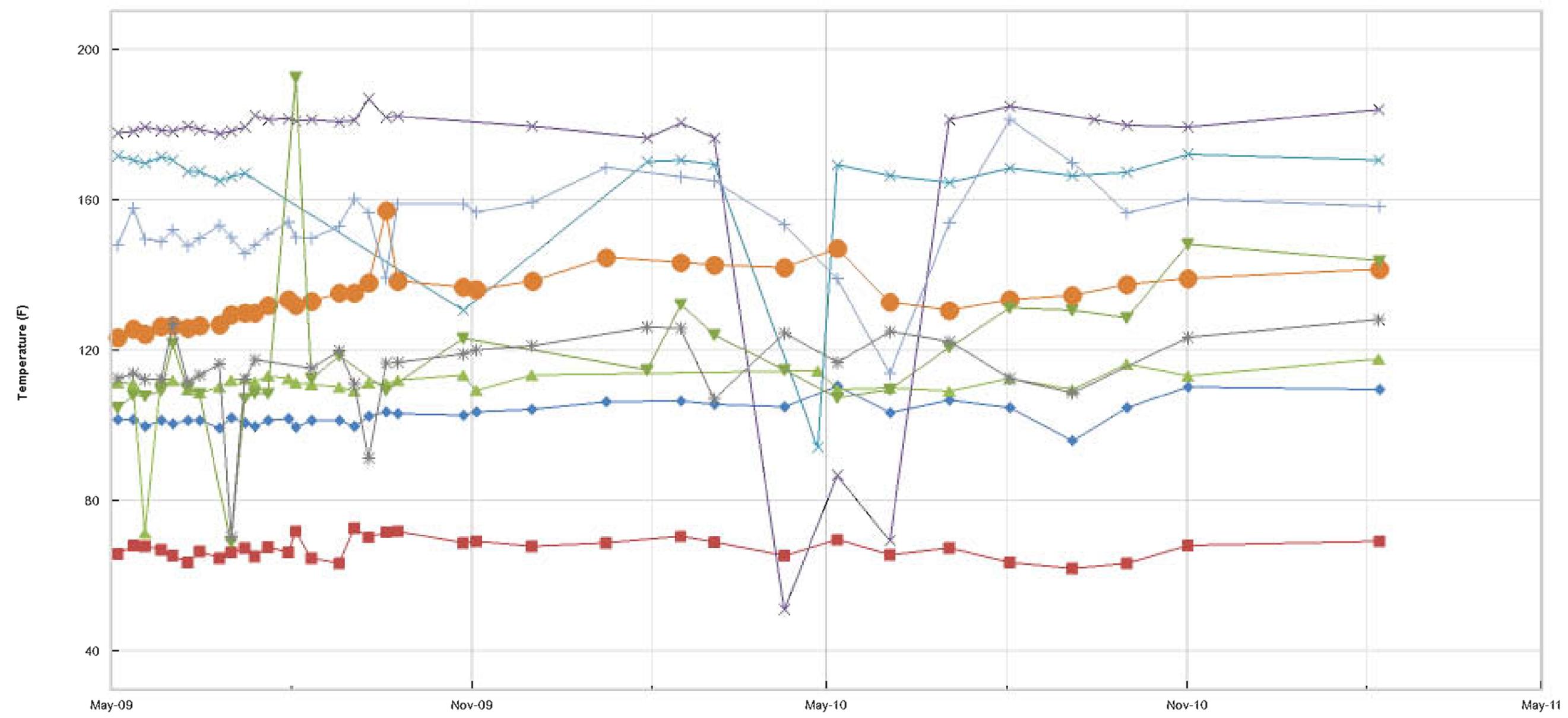
SANBORN HEAD



Graph 9 Leachate Sump Temperature



Graph 10 Leachate Cleanout Temperature



◆ Line-1C ■ Line-1D ▲ Line-2C * Line-3B * Line-3C ● Line-4C + Line-4E ▼ Line-5A/B * Line-6B

Attachment 3

Figures

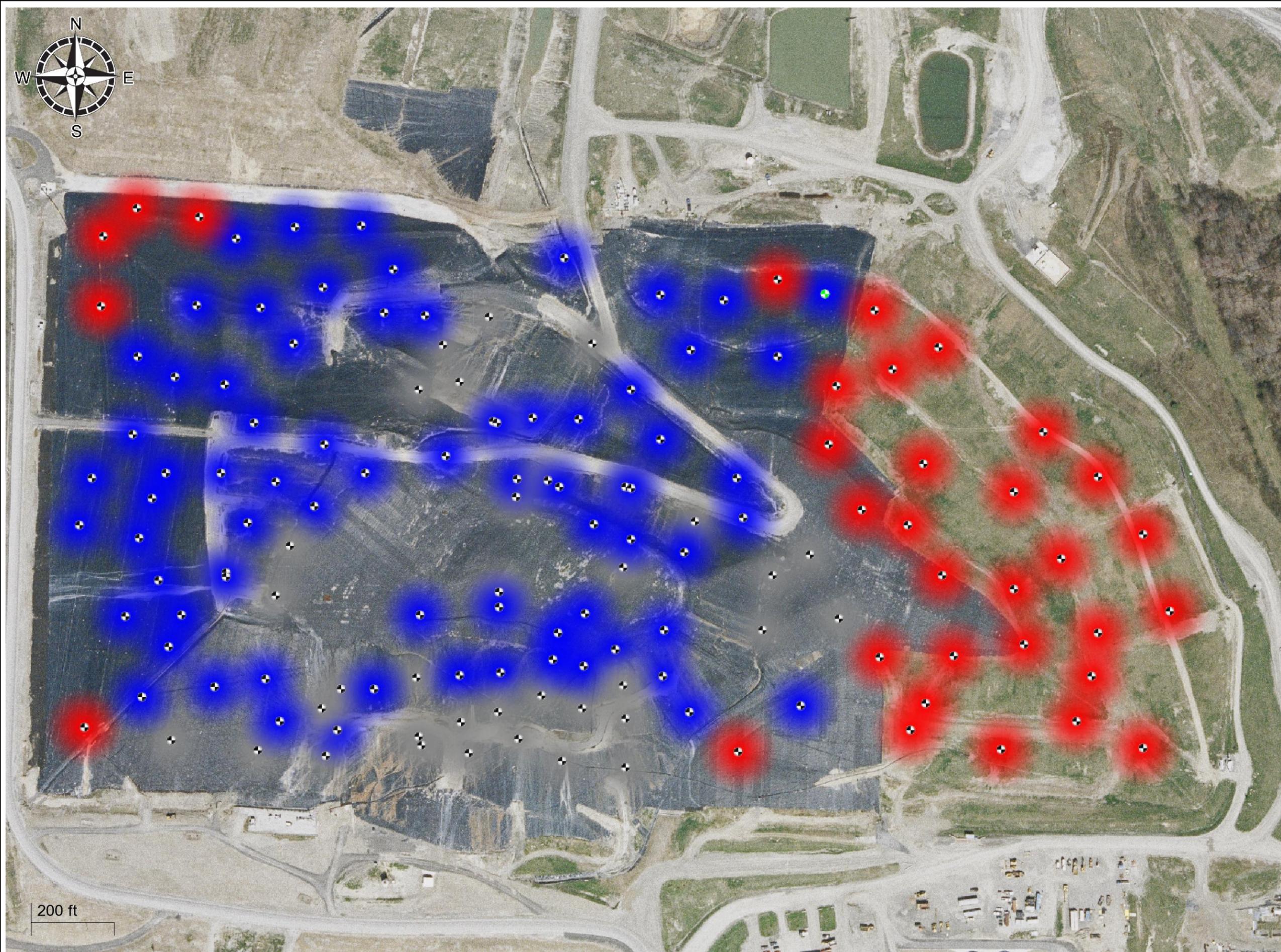


Figure 1
Average Methane to Carbon Dioxide Ratio
 Countywide Recycling and Disposal Facility
 3619 Gracemont St. S.W.
 East Sparta, Ohio

Operation, Monitoring and Maintenance (OM&M) Plan
 Monthly Report

Color Legend

- < 1
- > 1
- No Data Available

Symbol Legend

- Gas Well
(Red symbol denotes rise in value category from previous reporting period.)
(Green symbol denotes decrease in value category from previous reporting period.)

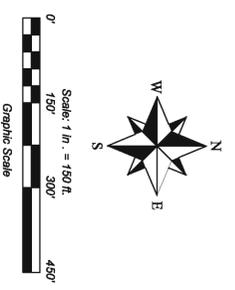
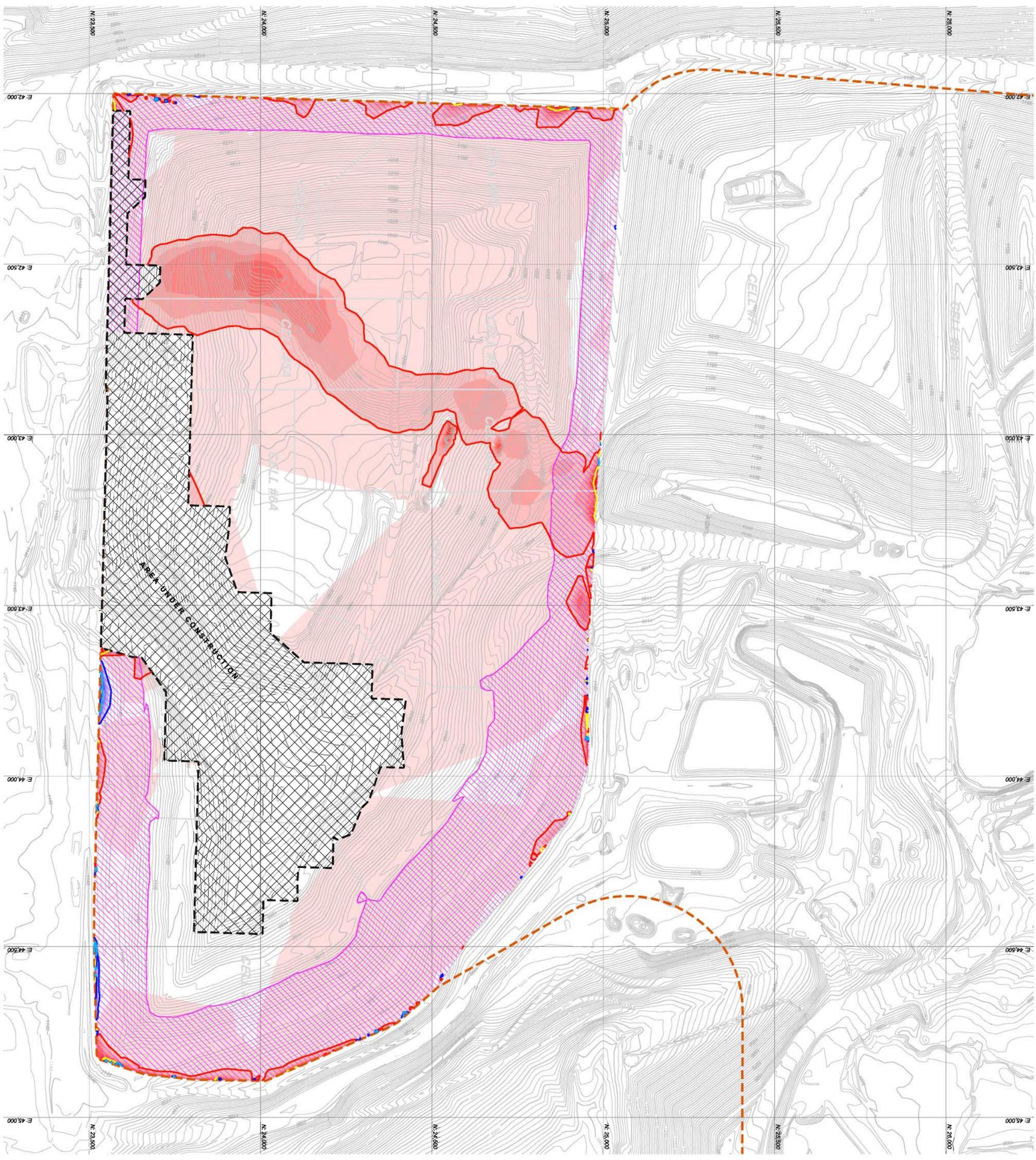
A radius influence of 100 feet is assumed at each device.

Reporting Period: April, 2011

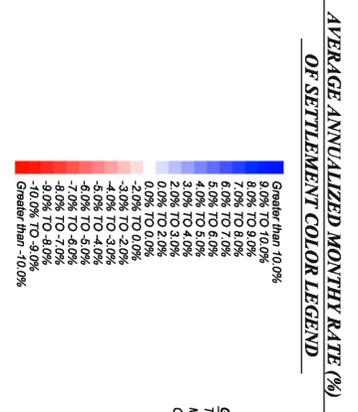
Map Generated On: 05/09/2011



200 ft



- LEGEND:**
- 1:20 — EXISTING CONTOUR (AERIAL MAPPING 4/12/10), CTR INT. = 2' (SHOWN FOR REFERENCE ONLY)
 - — — — — % RATE OF SETTLEMENT LIMIT
 - — — — — >10% RATE OF SETTLEMENT LIMIT
 - — — — — 2% RATE OF RISE IN ELEVATION
 - — — — — >10% RATE OF RISE IN ELEVATION
 - — — — — ≤ 80% OF WASTE DEPTH



GENERAL NOTE:
THIS MAP REPRESENTS THE AVERAGE ANNUALIZED MONTHLY SETTLEMENT FOR THE TIME PERIOD FROM OCTOBER 2010 THRU APRIL 2011.

2A

COUNTYWIDE RDF

PROJECT: 88 Ac. REMEDIATION UNIT

SHEET TITLE: AVERAGE ANNUALIZED MONTHLY SETTLEMENT (OCTOBER 2010 - APRIL 2011)

Diversified Engineering Inc.
CONSULTING ENGINEERS & SURVEYORS

225 FAIR AVENUE, N.E.
NEW PHILADELPHIA, OH 44663

Phone: (330) 364-1631
Fax: (330) 364-4031
e-mail: dol@div-eng.com

ISSUE DATE	04/29/11	SCALE	1" = 150'	CTR INT.	2'	
SURVEYED BY	MO/AG	CHECKED BY	CCV			
DRAWN BY	BWS	APPROVED BY	CRB			
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY



Figure 3
Average Wellhead
Temperature
Countywide Recycling
and Disposal Facility
3619 Gracemont St. S.W.
East Sparta, Ohio

Operat on, Monitoring and Maintenance (OM&M) Plan
Monthly Report

Color Legend (deg F)

- < 131
- 131 < 150
- 150 < 180
- 180 < 210
- > 210

No Data Available

Symbol Legend

 Gas Well

*(Red symbol denotes rise
in value category from
previous reporting period.)*

*(Green symbol denotes de-
crease in value category
from
previous reporting period.)*

200 ft

A radius influence of 100 feet
is assumed at each device.

Reporting Period: April, 2011

Map Generated On: 05/09/2011



SANBORN HEAD
LANDFILL GAS MANAGEMENT SUITE™



Figure 4 Carbon Monoxide Distribution

Countywide Recycling
and Disposal Facility
3619 Gracemont St. S.W.
East Sparta, Ohio

Operation, Monitoring and Maintenance (OM&M) Plan
Monthly Report

Color Legend (deg F)

- < 100
- 100 < 500
- 500 < 1000
- 1000 < 2000
- > 2000
- No Data Available

Symbol Legend

- + Gas Well
- (Red symbol denotes rise in value category from previous reporting period.)*
- (Green symbol denotes decrease in value category from previous reporting period.)*

A radius influence of 100 feet is assumed at each device.

Reporting Period: August, 2010

Map Generated On: 05/09/2011



SANBORN HEAD
LANDFILL GAS MANAGEMENT SUITE™

200 ft

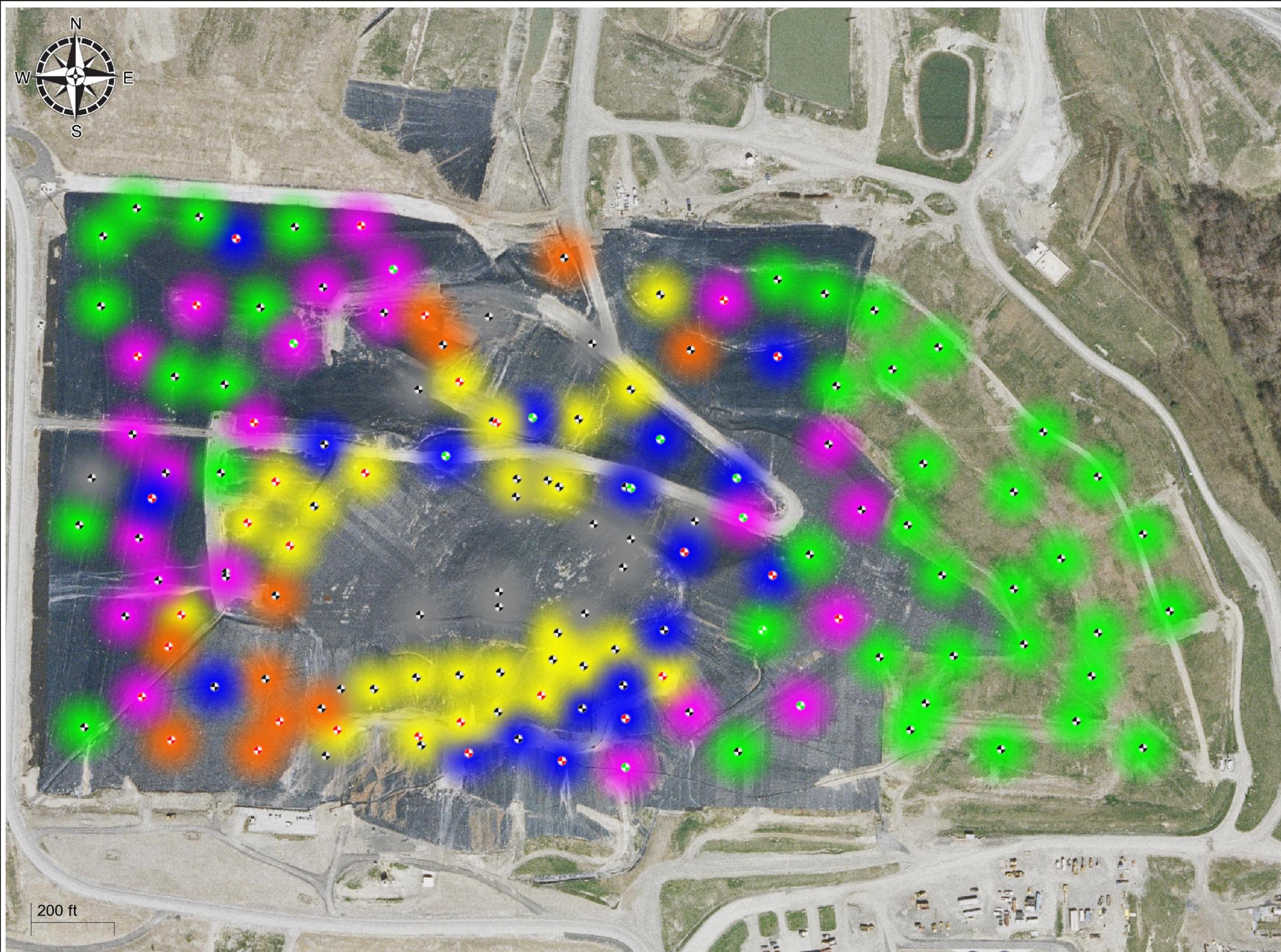
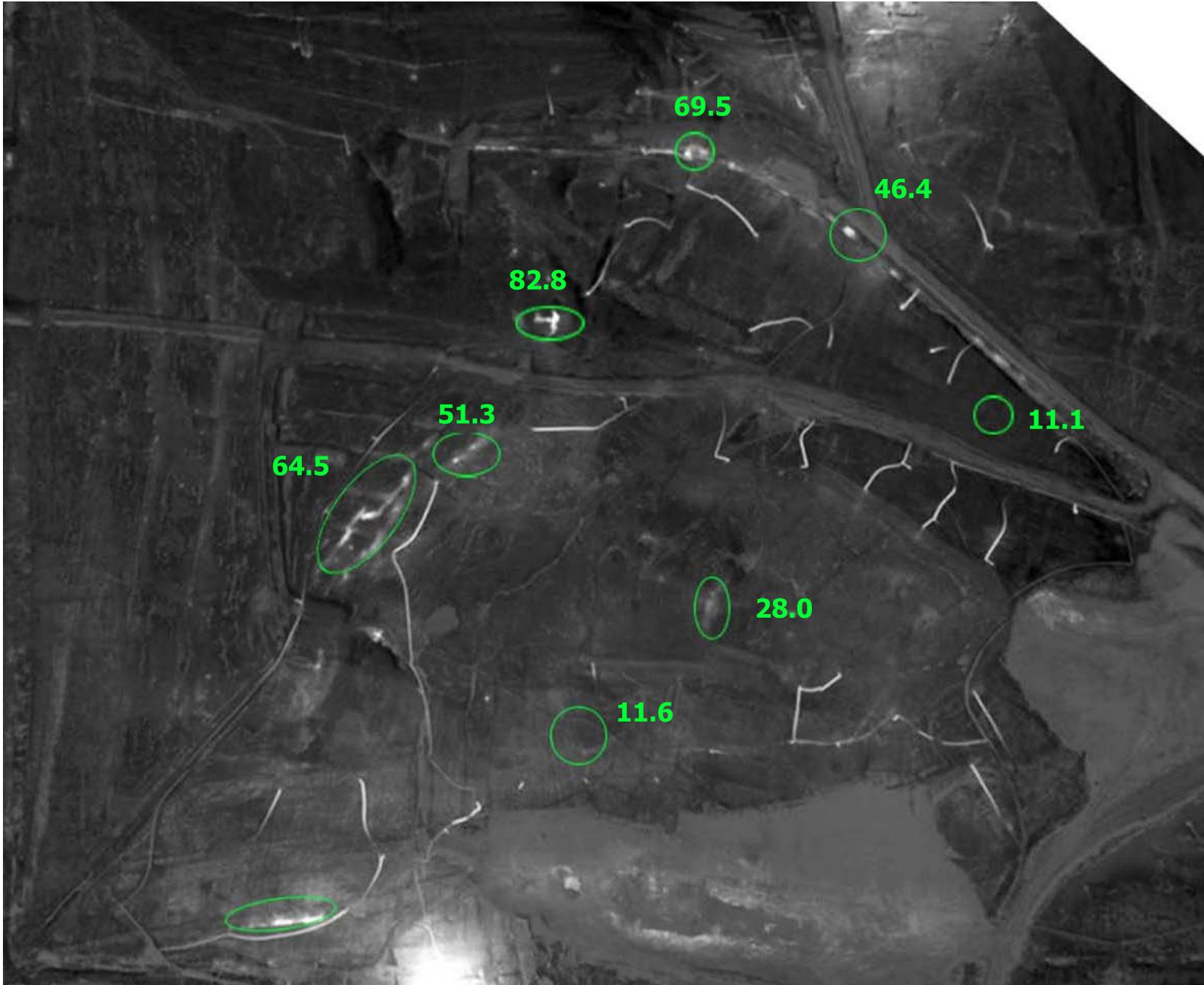


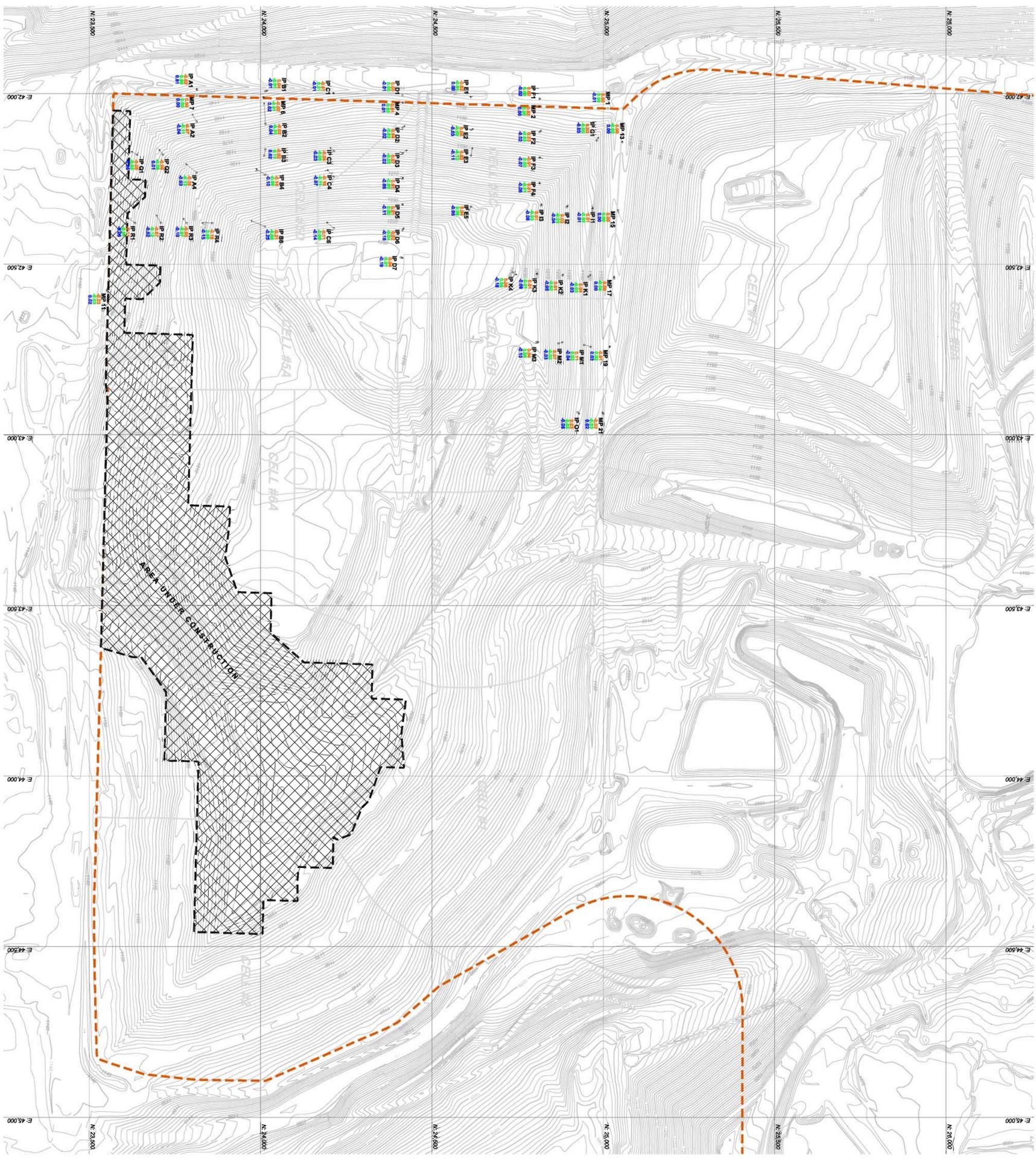
Figure 5. Aerial Photograph



Composite Image by

Figure 5a. Detailed Aerial Photograph



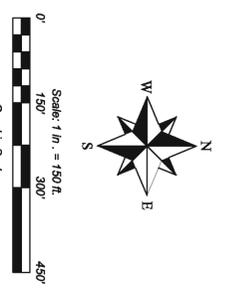


LEGEND:
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 (SHOWN FOR REFERENCE ONLY)

VECTOR LABELING CONVENTION:



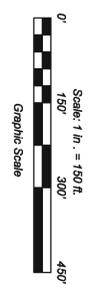
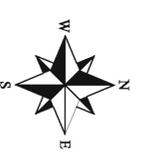
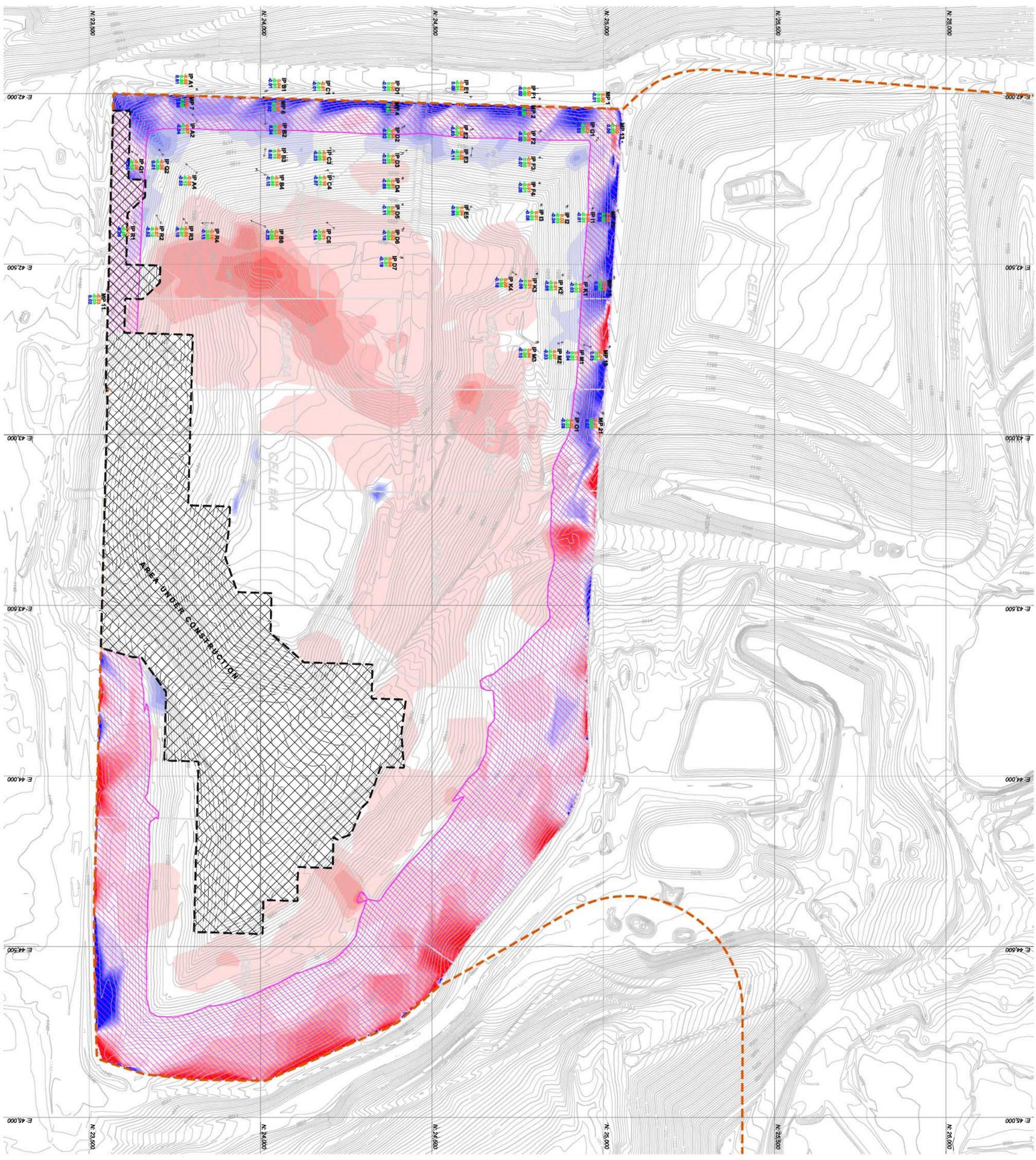
- GENERAL NOTES:**
- 1.) SLOPE PIN MOVEMENT VECTORS WERE PROVIDED BY P.J. CAREY & ASSOCIATES, P.C.
 - 2.) VECTORS DEMONSTRATE THE HORIZONTAL MOVEMENT BETWEEN THE DATES OF 03/22/11 & 04/18/11.



ISSUE DATE	04/29/11	SCALE	1" = 150'	CTR INT.	2'	
SURVEYED BY	MO/AG	CHECKED BY	CCV			
DRAWN BY	BWS	APPROVED BY	CRB			
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

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 Fax: (330) 364-1634
 e-mail: dol@div-eng.com

COUNTYWIDE RDF
 PROJECT: 88 Ac. REMEDIATION UNIT
 SHEET TITLE: SLOPE PIN MOVEMENT VECTORS (APRIL 2011)



LEGEND:
 -1:20- EXISTING CONTOUR (AERIAL MAPPING 4/12/10), CTR INT. = 2'
 (SHOWN FOR REFERENCE ONLY)
 ≤ 60ft OF WASTE DEPTH

ANNUALIZED RATE (%) OF SETTLEMENT

COLOR LEGEND

Greater than 10.0%
8.0% TO 9.0%
7.0% TO 8.0%
6.0% TO 7.0%
5.0% TO 6.0%
4.0% TO 5.0%
3.0% TO 4.0%
2.0% TO 3.0%
0.0% TO 2.0%
0.0% TO 0.0%
-1.0% TO -2.0%
-2.0% TO -3.0%
-3.0% TO -4.0%
-4.0% TO -5.0%
-5.0% TO -6.0%
-6.0% TO -7.0%
-7.0% TO -8.0%
-8.0% TO -9.0%
-9.0% TO -10.0%
Greater than -10.0%

VECTOR LABELING CONVENTION:

 **IP S2**
 CHANGE IN NORTHING (ft)
 CHANGE IN EASTING (ft)
 CHANGE IN ELEVATION (ft)

GENERAL NOTES:
 1.) SLOPE PIN MOVEMENT VECTORS WERE PROVIDED BY P.J. CAREY & ASSOCIATES, P.C.
 2.) VECTORS DEMONSTRATE THE HORIZONTAL MOVEMENT BETWEEN THE DATES OF 03/22/11 & 04/18/11.

ISSUE DATE	04/29/11	SCALE	1" = 150'	CTR INT.	2'	
SURVEYED BY	MO/AG	CHECKED BY	CCV			
DRAWN BY	BWS	APPROVED BY	CRB			
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

Diversified Engineering Inc.
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 Fax: (330) 364-1632
 e-mail: dol@div-eng.com

COUNTYWIDE RDF

PROJECT: **88 Ac. REMEDIATION UNIT**

SHEET TITLE: **INCREMENTAL SETTLEMENT MAP w/ SLOPE PIN MOVEMENT VECTORS (APRIL 2011)**

Attachment 2

Tables

Parameter Name	Value	Qualifi	Units	Detection Lin	Units
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	<	100	U	ug/L	100 ug/L
1,1,1-Trichloroethane	<	100	U	ug/L	100 ug/L
1,1,2,2-Tetrachloroethane	<	100	U	ug/L	100 ug/L
1,1,2-Trichloroethane	<	100	U	ug/L	100 ug/L
1,1-Dichloroethane	<	100	U	ug/L	100 ug/L
1,1-Dichloroethene	<	100	U	ug/L	100 ug/L
1,2,3-Trichloropropane	<	100	U	ug/L	100 ug/L
1,2-Dibromo-3-chloropropane (DBCP)	<	200	U	ug/L	200 ug/L
1,2-Dibromoethane (EDB)	<	100	U	ug/L	100 ug/L
1,2-Dichloroethane	<	100	U	ug/L	100 ug/L
1,2-Dichloropropane	<	100	U	ug/L	100 ug/L
2-Hexanone	<	1000	U	ug/L	1000 ug/L
4-Methyl-2-pentanone (MIBK)		1900		ug/L	1000 ug/L
Acetone		34000	E	ug/L	1000 ug/L
Acrylonitrile	<	2000	U	ug/L	2000 ug/L
Benzene		400		ug/L	100 ug/L
Bromochloromethane	<	100	U	ug/L	100 ug/L
Bromodichloromethane	<	100	U	ug/L	100 ug/L
Bromoform	<	100	U	ug/L	100 ug/L
Carbon disulfide	<	100	U	ug/L	100 ug/L
Carbon tetrachloride	<	100	U	ug/L	100 ug/L
Chlorobenzene	<	100	U	ug/L	100 ug/L
Chloroethane	<	100	U	ug/L	100 ug/L
Chloroform	<	100	U	ug/L	100 ug/L
cis-1,2-Dichloroethene	<	100	U	ug/L	100 ug/L
cis-1,3-Dichloropropene	<	100	U	ug/L	100 ug/L
Dibromochloromethane	<	100	U	ug/L	100 ug/L
Ethylbenzene		160		ug/L	100 ug/L
Methyl bromide	<	100	U	ug/L	100 ug/L
Methyl chloride	<	100	U	ug/L	100 ug/L
Methylene bromide	<	100	U	ug/L	100 ug/L
Methylene chloride	<	100	U	ug/L	100 ug/L
Methyl ethyl ketone		35000	E	ug/L	1000 ug/L
Methyl iodide	<	100	U	ug/L	100 ug/L
o-Dichlorobenzene	<	100	U	ug/L	100 ug/L
p-Dichlorobenzene		150		ug/L	100 ug/L
Styrene		34	J	ug/L	100 ug/L
Tetrachloroethene	<	100	U	ug/L	100 ug/L
Toluene		220		ug/L	100 ug/L
trans-1,2-Dichloroethene	<	100	U	ug/L	100 ug/L
trans-1,3-Dichloropropene	<	100	U	ug/L	100 ug/L
trans-1,4-Dichloro-2-butene	<	100	U	ug/L	100 ug/L
Trichloroethene		42	J	ug/L	100 ug/L
Trichlorofluoromethane	<	100	U	ug/L	100 ug/L
Vinyl acetate	<	200	U	ug/L	200 ug/L
Vinyl chloride	<	100	U	ug/L	100 ug/L
Xylenes (total)		540		ug/L	200 ug/L

Table 1. Leachate Constituent Summary

Dioxins/Furans

1,2,3,4,6,7,8-HpCDD	260 BJ	pg/L	480 pg/L
1,2,3,4,6,7,8-HpCDF	27 QBJ	pg/L	480 pg/L
1,2,3,4,7,8,9-HpCDF	< 480 U	pg/L	480 pg/L
1,2,3,4,7,8-HxCDD	< 480 U	pg/L	480 pg/L
1,2,3,4,7,8-HxCDF	< 480 U	pg/L	480 pg/L
1,2,3,6,7,8-HxCDD	< 480 U	pg/L	480 pg/L
1,2,3,6,7,8-HxCDF	< 480 U	pg/L	480 pg/L
1,2,3,7,8,9-HxCDD	< 480 U	pg/L	480 pg/L
1,2,3,7,8,9-HxCDF	< 480 U	pg/L	480 pg/L
1,2,3,7,8-PeCDD	< 480 U	pg/L	480 pg/L
1,2,3,7,8-PeCDF	< 480 U	pg/L	480 pg/L
2,3,4,6,7,8-HxCDF	< 480 U	pg/L	480 pg/L
2,3,4,7,8-PeCDF	< 480 U	pg/L	480 pg/L
2,3,7,8-TCDD	< 95 U	pg/L	95 pg/L
2,3,7,8-TCDF	< 95 U	pg/L	95 pg/L
OCDD	3300 B	pg/L	950 pg/L
OCDF	120 QBJ	pg/L	950 pg/L
Total HpCDD	520 JB	pg/L	480 pg/L
Total HpCDF	95 QJB	pg/L	480 pg/L
Total HxCDD	200 QJ	pg/L	480 pg/L
Total HxCDF	< 480 U	pg/L	480 pg/L
Total PeCDD	35 QJ	pg/L	480 pg/L
Total PeCDF	< 480 U	pg/L	480 pg/L
Total TCDD	120 QJ	pg/L	95 pg/L
Total TCDF	120 QJ	pg/L	95 pg/L

Metals

Aluminum	< 20000 UG	ug/L	20000 ug/L
Antimony	< 1000 UG	ug/L	1000 ug/L
Arsenic	624	ug/L	500 ug/L
Barium	1160	ug/L	1000 ug/L
Beryllium	< 300 UG	ug/L	300 ug/L
Cadmium	< 200 UG	ug/L	200 ug/L
Calcium	1800000	ug/L	100000 ug/L
Chromium	< 500 UG	ug/L	500 ug/L
Cobalt	< 500 UG	ug/L	500 ug/L
Copper	< 500 UG	ug/L	500 ug/L
Iron	539000	ug/L	10000 ug/L
Lead	< 300 UG	ug/L	300 ug/L
Magnesium	558000	ug/L	100000 ug/L
Manganese	37200	ug/L	500 ug/L
Nickel	< 1000 UG	ug/L	1000 ug/L
Selenium	< 500 UG	ug/L	500 ug/L
Silver	< 300 UG	ug/L	300 ug/L
Sodium	8840000	ug/L	100000 ug/L
Thallium	< 1000 UG	ug/L	1000 ug/L
Vanadium	< 700 UG	ug/L	700 ug/L
Zinc	7690	ug/L	2000 ug/L

Table 1. Leachate Constituent Summary

Field Parameters

Field pH	6.5	s.u.	0 s.u.
Field Temperature	13	F	0 F
Specific Conductance	83000	umhos/cr	100 umhos/cm

General Chemistry

Ammonia	5670 D	mg/l	500 mg/l
Chemical Oxygen Demand (COD)	41400	mg/L	2000 mg/L
Chloride	16500	mg/L	1000 mg/L
Fluoride	< 1000 UG	mg/L	1000 mg/L
Sulfate	< 1000 UG	mg/L	1000 mg/L
Total Alkalinity	6740	mg/L	500 mg/L
Total Dissolved Solids	55000	mg/L	1000 mg/L
Turbidity	760	NTU	50 NTU

Notes:

1. Results shown are reported for sample collected from the East 500 Leachate Tank on February 7, 2011 and were submitted to Test America Laboratories for analysis.

2. Laboratory Qualifiers:

- G The reporting limit is elevated due to matrix interference.
- J Amount reported is less than reportable limit
- a Spike analyte recovery is outside control limits
- D Dilution and reporting limit raised.☐
- U Non detect
- Q Estimated maximum concentration
- B Method Blank Contamination
- NC The recovery and/or RPD (relevant percent distance) were not calculated
- MSB The recovery and RPD may be outside control limits because the sample amount was greater than 4X the spike amount.

Table 2. Liquid Levels and Percent Perforations Exposed

Well ID	B1R	B2R	C1R(2)	C2R	D1	D2R	E1	E2R	F1-M	F2	I1R	J1R	K1R	N1R	PW-0041R(2)	PW-101	PW-102	PW-103R
Total Constructed Casing Length (ft)	36	79	48	124	58	124	71	124	61	69	121	122	56	122	81	78	78	106
Total Constructed Perforated Pipe Length (ft)	16	54	23	99	36	99	45	99	39	44	96	97	31	97	55	60	60	81
February, 2011																		
Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2/28	N/A	N/A	2/28	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depth To Fluid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	56.2	N/A	N/A	21.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Measured Depth To Bottom (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	110.4	N/A	N/A	88.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potential Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	85.4	N/A	N/A	63.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Actual Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	95.2	N/A	N/A	58.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A
March, 2011																		
Date	N/A	N/A	3/15	3/15	N/A	3/14	N/A	3/14	3/14	3/14	3/15	3/14	3/14	N/A	N/A	3/15	N/A	3/14
Depth To Fluid (ft)	N/A	N/A	24.6	39.1	N/A	52.7	N/A	56	23.1	31.1	32.5	50.5	19.9	N/A	N/A	45.5	N/A	55.2
Measured Depth To Bottom (ft)	N/A	N/A	43.6	115.9	N/A	52.7	N/A	110.8	47.3	59.7	84.2	117.7	50.8	N/A	N/A	77.2	N/A	100.6
Potential Exposed Perforations	N/A	N/A	18.6	90.9	N/A	27.7	N/A	85.8	25.3	34.7	59.2	92.7	25.8	N/A	N/A	59.2	N/A	75.6
Actual Exposed Perforations	N/A	N/A	35.3	106.4	N/A	14.7	N/A	96	30.7	47.1	51.9	112.5	42.3	N/A	N/A	76.2	N/A	93.9
April, 2011																		
Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4/29	N/A	N/A	4/29	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depth To Fluid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	56.2	N/A	N/A	20.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Measured Depth To Bottom (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	110.4	N/A	N/A	58.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potential Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	85.4	N/A	N/A	33.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Actual Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	95.2	N/A	N/A	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well ID	PW-104	PW-105	PW-106R	PW-107	PW-108R	PW-109	PW-110	PW-111	PW-112	PW-113	PW-114	PW-115R	PW-117R	PW-118R	PW-119R	PW-120	PW-121R(2)	PW-122R
Total Constructed Casing Length (ft)	78	63	69	64	60	35	29	60	75	75	75	83	105	89	72	78	36	43
Total Constructed Perforated Pipe Length (ft)	60	60	45	45	26	19	13	44	59	60	60	60	80	64	50	60	19	25
February, 2011																		
Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depth To Fluid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Measured Depth To Bottom (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potential Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Actual Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
March, 2011																		
Date	N/A	3/15	3/15	3/5	3/15	3/5	3/5	3/5	3/5	3/5	N/A	3/15	3/15	N/A	3/15	N/A	N/A	N/A
Depth To Fluid (ft)	N/A	34.9	55.4	57.4	47.3	28.4	21.9	63.9	73.9	72.4	N/A	25	35.3	N/A	61.3	N/A	N/A	N/A
Measured Depth To Bottom (ft)	N/A	34.9	62.9	60.8	47.5	36.9	31.5	64.2	79.6	77.4	N/A	76.9	35.3	N/A	64.2	N/A	N/A	N/A
Potential Exposed Perforations	N/A	31.9	38.9	41.8	13.5	20.9	15.5	48.2	63.6	62.4	N/A	53.9	10.3	N/A	42.2	N/A	N/A	N/A
Actual Exposed Perforations	N/A	18.6	54.4	56.5	24.7	36.9	31.5	64.2	79.6	77.4	N/A	69.1	4.5	N/A	54.2	N/A	N/A	N/A
April, 2011																		
Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depth To Fluid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Measured Depth To Bottom (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potential Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Actual Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 2. Liquid Levels and Percent Perforations Exposed

Well ID	PW-123	PW-124	PW-125	PW-127	PW-128	PW-129	PW-130	PW-131R	PW-132R	PW-141R	PW-142R	PW-144	PW-145	PW-146	PW-147R	PW-148	PW-149	PW-14R(3)	
Total Constructed Casing Length (ft)	78	63	75	75	119.7	121	121	81	62	104	81	102	120	120	81	53	51	44	
Total Constructed Perforated Pipe Length (ft)	60	45	60	60	103	103	103	58	40	80	58	82	100	100	58	33	31	21	
February, 2011																			
Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2/28	N/A	N/A								
Depth To Fluid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	28.4	N/A	N/A								
Measured Depth To Bottom (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	44.9	N/A	N/A								
Potential Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	24.9	N/A	N/A								
Actual Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	33.9	N/A	N/A								
March, 2011																			
Date	N/A	N/A	3/15	3/15	3/15	3/14	3/14	N/A	3/15	3/15	3/15	N/A	3/15	3/15	N/A	3/15	N/A	N/A	
Depth To Fluid (ft)	N/A	N/A	39.8	57	58.6	58.2	60.7	N/A	35.2	48.9	75.4	N/A	52.8	53.8	N/A	28	N/A	N/A	
Measured Depth To Bottom (ft)	N/A	N/A	67.6	66.6	89.9	108.6	109.4	N/A	42.3	94.6	75.4	N/A	113.3	101.3	N/A	44.9	N/A	N/A	
Potential Exposed Perforations	N/A	N/A	52.6	51.6	73.2	90.6	91.4	N/A	20.3	70.6	52.4	N/A	93.3	81.3	N/A	24.9	N/A	N/A	
Actual Exposed Perforations	N/A	N/A	59.3	57.3	63.9	95.5	97.1	N/A	21.5	83.5	68.1	N/A	105.7	82.4	N/A	33.9	N/A	N/A	
April, 2011																			
Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4/29	N/A	N/A								
Depth To Fluid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	28.4	N/A	N/A								
Measured Depth To Bottom (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	44.9	N/A	N/A								
Potential Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	24.9	N/A	N/A								
Actual Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	33.9	N/A	N/A								
Well ID	PW-150	PW-151	PW-152	PW-153	PW-154	PW-155	PW-156	PW-157	PW-158R	PW-159	PW-160	PW-161	PW-162	PW-163R	PW-164	PW-165	PW-166	PW-167R	
Total Constructed Casing Length (ft)	50	43	42	52	42	40	112	112	104	119	119	117	102	100	119	119	119	81	
Total Constructed Perforated Pipe Length (ft)	30	23	22	32	22	22	89	89	80	97	97	95	80	75	97	97	95	58	
February, 2011																			
Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2/28							
Depth To Fluid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	34.5							
Measured Depth To Bottom (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	41.9							
Potential Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18.9							
Actual Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.7							
March, 2011																			
Date	3/15	N/A	N/A	3/15	N/A	N/A	3/15	3/15	3/15	3/14	3/14	3/14	3/14	3/14	3/14	3/14	3/14	3/15	N/A
Depth To Fluid (ft)	34.9	N/A	N/A	44.7	N/A	N/A	69.3	48	48.9	50.4	60.4	43.7	47.4	43	42.8	53.1	52.3	N/A	
Measured Depth To Bottom (ft)	45.4	N/A	N/A	44.7	N/A	N/A	104.3	48	101.3	113.4	111.8	113.9	92.5	90.9	110.6	115.4	92.7	N/A	
Potential Exposed Perforations	25.4	N/A	N/A	24.7	N/A	N/A	81.3	25	77.3	91.4	89.8	91.9	70.5	65.9	88.6	93.4	68.7	N/A	
Actual Exposed Perforations	38.4	N/A	N/A	34.5	N/A	N/A	95.3	13.5	97.9	106.9	103.5	110.2	81.5	79.9	101	111.1	67	N/A	
April, 2011																			
Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A							
Depth To Fluid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A							
Measured Depth To Bottom (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A							
Potential Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A							
Actual Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A							

Table 2. Liquid Levels and Percent Perforations Exposed

Well ID	PW-168(M)	PW-169	PW-170	PW-171	PW-172	PW-173	PW-174	PW-175	PW-176	PW-177	PW-178	PW-179	PW-180	PW-181	PW-182	PW-307	PW-358	PW-361
Total Constructed Casing Length (ft)	94	85	41	47	117	114	105	81	77	44	34	61	93	85	42	62	62	104
Total Constructed Perforated Pipe Length (ft)	68	15	18	22	92	90	80	58	55	24	14	36	68	60	17	42	38	80
February, 2011																		
Date	N/A	N/A	N/A	N/A	N/A	N/A	2/28	2/28	N/A	N/A	N/A	N/A	N/A	2/28	N/A	N/A	2/28	N/A
Depth To Fluid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	21.4	36.8	N/A	N/A	N/A	N/A	N/A	65.7	N/A	N/A	25.7	N/A
Measured Depth To Bottom (ft)	N/A	N/A	N/A	N/A	N/A	N/A	99.7	55.8	N/A	N/A	N/A	N/A	N/A	75	N/A	N/A	64.1	N/A
Potential Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	74.7	32.8	N/A	N/A	N/A	N/A	N/A	50	N/A	N/A	40.1	N/A
Actual Exposed Perforations	N/A	N/A	N/A	N/A	N/A	N/A	93.1	31.6	N/A	N/A	N/A	N/A	N/A	62.5	N/A	N/A	64.1	N/A
March, 2011																		
Date	3/5	3/5	3/14	3/14	3/14	3/14	3/15	N/A	3/15	3/5	3/5	3/5	N/A	3/15	3/15	3/14	3/14	3/14
Depth To Fluid (ft)	N/A	54.2	27.6	39.9	39	43.2	19.7	N/A	42.1	35.4	31.5	38	N/A	25.7	22	30.5	28.8	61.1
Measured Depth To Bottom (ft)	N/A	55.8	43	45.3	114.3	106.8	99.5	N/A	62.3	42.5	32.2	59.7	N/A	74.7	42.3	56.6	63.8	102.1
Potential Exposed Perforations	N/A	0	20	20.3	89.3	82.8	74.5	N/A	40.3	22.5	12.2	34.7	N/A	49.7	17.3	36.6	39.8	78.1
Actual Exposed Perforations	N/A	0	43	41.8	110.9	98.3	92.7	N/A	45.6	39.8	28.1	57.5	N/A	61.9	42.3	49.3	63.8	99.7
April, 2011																		
Date	N/A	N/A	N/A	4/29	N/A	N/A	4/29	N/A	N/A	N/A	N/A	N/A	N/A	4/29	N/A	N/A	4/29	N/A
Depth To Fluid (ft)	N/A	N/A	N/A	35.6	N/A	N/A	20.1	N/A	N/A	N/A	N/A	N/A	N/A	51.7	N/A	N/A	40.7	N/A
Measured Depth To Bottom (ft)	N/A	N/A	N/A	45.2	N/A	N/A	94.1	N/A	N/A	N/A	N/A	N/A	N/A	87.8	N/A	N/A	63.5	N/A
Potential Exposed Perforations	N/A	N/A	N/A	20.2	N/A	N/A	69.1	N/A	N/A	N/A	N/A	N/A	N/A	62.8	N/A	N/A	39.5	N/A
Actual Exposed Perforations	N/A	N/A	N/A	41.5	N/A	N/A	81.3	N/A	N/A	N/A	N/A	N/A	N/A	87.8	N/A	N/A	63.5	N/A
Well ID	PW-362B	PW-363	PW-364	PW-366	PW-367	PW-368	PW-369	PW-43R(2)	PW-56R(2)	PW-57R	PW-61R(2)	PW-62R(2)	PW-A1R(2)	Q1R	S1R	T1R	U1R	W-10
Total Constructed Casing Length (ft)	79	82	82	39	53	47	38	103	103	85	67	91	61.5	64	125	123	113	100
Total Constructed Perforated Pipe Length (ft)	53	58	58	25	39	33	24	84	84	67	42	73	38	30	100	100	88	85
February, 2011																		
Date	2/28	2/28	2/28	N/A	2/28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depth To Fluid (ft)	58.8	37.1	34.7	N/A	22.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Measured Depth To Bottom (ft)	77.7	80.3	79.6	N/A	51.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potential Exposed Perforations	51.7	56.3	55.6	N/A	37.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Actual Exposed Perforations	75.8	77.9	76.3	N/A	49.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
March, 2011																		
Date	3/14	3/14	3/14	3/14	3/14	3/14	3/14	3/15	3/15	3/15	N/A	3/15	N/A	3/15	3/15	3/15	3/14	3/5
Depth To Fluid (ft)	56.7	41.9	35.3	19.9	21.9	25.2	27.5	53.2	55.3	27.5	N/A	41.5	N/A	45.2	44.9	56.4	44.8	29.4
Measured Depth To Bottom (ft)	77.1	80	79	38.8	51.4	49.1	38.7	81.9	90.8	76.2	N/A	41.5	N/A	47.9	111.5	119.7	108.6	88.4
Potential Exposed Perforations	51.1	56	55	24.8	37.4	35.1	24.7	62.9	71.8	58.2	N/A	23.5	N/A	13.9	86.5	96.7	83.6	73.4
Actual Exposed Perforations	74.3	77.2	74.9	38.5	49.3	49.1	38.7	61.3	77.6	66.2	N/A	13.4	N/A	22.2	96.4	115.7	103.2	76.3
April, 2011																		
Date	4/29	4/29	4/29	N/A	4/29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depth To Fluid (ft)	55.9	42.5	36.1	N/A	22.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Measured Depth To Bottom (ft)	76.8	79.7	78.7	N/A	51.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potential Exposed Perforations	50.8	55.7	54.7	N/A	37.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Actual Exposed Perforations	73.6	76.5	74.2	N/A	48.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 2. Liquid Levels and Percent Perforations Exposed

Well ID	W-11	W-12R	W-13R	W-1R	W1R(2)	W-2R(M)	W-3	W-31R	W-32R	W-33	W-34	W-35	W-36	W-37	W-38	W-39	W-4	W-42R(2)
Total Constructed Casing Lngth (ft)	51	44	44	47	82	85	33	92	54	56	81	68	70	83	83	85	37	100
Total Constructed Perforated Pipe Length (ft)	94	21	21	20	48	65	12	72	29	34	43	46	35	62	57	62	16	75
February, 2011																		
Date	N/A	N/A	N/A	2/28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depth To Fluid (ft)	N/A	N/A	N/A	19.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Measured Depth To Bottom (ft)	N/A	N/A	N/A	41.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potential Exposed Perforations	N/A	N/A	N/A	14.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Actual Exposed Perforations	N/A	N/A	N/A	30.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
March, 2011																		
Date	3/5	3/5	3/5	3/14	3/15	3/5	3/5	3/5	3/5	3/5	3/5	3/5	3/5	3/5	3/5	3/5	3/5	3/15
Depth To Fluid (ft)	33	36.4	32.8	20.3	39.8	35.9	30.6	55.4	43.4	39.8	50.7	45.6	45.4	42.1	41.2	55.2	30.2	78
Measured Depth To Bottom (ft)	39.2	41.2	42.3	41.7	66.1	81	32.4	91	52.4	53.4	73.2	46	68.3	67.9	67.2	72.1	36.1	78.1
Potential Exposed Perforations	82.2	18.2	19.3	14.7	32.1	61	11.4	71	27.4	31.4	35.2	24	33.3	46.9	41.2	49.1	15.1	53.1
Actual Exposed Perforations	34.3	35.7	38.9	30.6	44.2	76	30.8	89.7	49.5	49.3	59.9	24	65	51.4	48.6	57.1	34.1	55.3
April, 2011																		
Date	N/A	N/A	N/A	4/29	4/29	N/A	N/A	4/29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depth To Fluid (ft)	N/A	N/A	N/A	33.6	40.6	N/A	N/A	74.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Measured Depth To Bottom (ft)	N/A	N/A	N/A	41.9	60.9	N/A	N/A	91.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potential Exposed Perforations	N/A	N/A	N/A	14.9	26.9	N/A	N/A	71.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Actual Exposed Perforations	N/A	N/A	N/A	31.2	34.1	N/A	N/A	90.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Well ID	W-5	W-56R(3)	W-58R	W-59	W-60	W-68	W-69R	W-7	W-8	W-9	D1R	PW-104R	PW-102R	E1R	PW-175R	PW-167R2	PW-131R2	PW-123R
Total Constructed Casing Lngth (ft)	35	89	83	108	109	79	58	38	34	40	40	44	44	35	54	42	70	48
Total Constructed Perforated Pipe Length (ft)	13	64	58	71	79	44	33	14	15	18	23	42	27	18	37	25	48	31
February, 2011																		
Date	N/A	2/28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depth To Fluid (ft)	N/A	34.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Measured Depth To Bottom (ft)	N/A	82.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Potential Exposed Perforations	N/A	57.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Actual Exposed Perforations	N/A	73.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
March, 2011																		
Date	3/5	3/15	3/5	3/5	3/5	3/5	3/5	3/5	3/5	3/5	3/15	3/14	3/15	3/15	3/15	3/15	N/A	3/15
Depth To Fluid (ft)	32.4	35	72.1	73.2	N/A	50.3	39.8	30.9	23.9	32.9	16.4	20.3	22.1	19.1	36.6	24.1	N/A	37.4
Measured Depth To Bottom (ft)	34.1	82.9	81.7		N/A	59.4	45.7	31.1	32.8	37.5	37.7	45	48.6	35.5	55.8	41.5	N/A	45.7
Potential Exposed Perforations	12.1	57.9	56.7	0	N/A	24.4	20.7	7.1	13.8	15.5	20.7	43	31.6	18.5	38.8	24.5	N/A	28.7
Actual Exposed Perforations	31.7	75	79.9	0	N/A	32.9	28.7	15.8	30.2	32.3	33.9	45	48.6	35.5	55.8	40.7	N/A	42.3
April, 2011																		
Date	N/A	4/29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4/29	N/A	N/A	4/29	4/29	4/29	4/29	N/A
Depth To Fluid (ft)	N/A	44.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16.2	N/A	N/A	19	37.1	26.9	31.3	N/A
Measured Depth To Bottom (ft)	N/A	82.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	37.5	N/A	N/A	35.3	55.8	40.1	60.7	N/A
Potential Exposed Perforations	N/A	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20.5	N/A	N/A	18.3	38.8	23.1	38.7	N/A
Actual Exposed Perforations	N/A	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	33.4	N/A	N/A	35.3	55.8	37.1	48.9	N/A

Table 2. Liquid Levels and Percent Perforations Exposed

Based upon discussions during the Team Countywide meeting on April 28, 2010, the table was revised to reflect potential exposed perforations (feet of constructed perforations above measured depth to bottom) and actual exposed perforations (potential exposed perforations minus measured thickness of liquid).

Table 3: West Slope Piezometer Readings

Installation Information		WBPZ-1 upper		WBPZ-1 lower		WBPZ-2 upper		WBPZ-3 upper		WBPZ-3 lower	
		Piezometer I.D.	1124.3	1124.3	1124.3	1135.8	1145.7	1145.7	1145.7	1145.7	1145.7
		Ground Elevation	1124.3	1124.3	1124.3	1135.8	1145.7	1145.7	1145.7	1145.7	1145.7
		Depth to Transducer	74.5	102.0	102.0	85.5	59.5	59.5	59.5	84.5	84.5
		Elevation of Transducer	1049.8	1022.3	1022.3	1050.3	1086.2	1086.2	1086.2	1061.2	1061.2
		Total Head (ft)	Pore Pressure (ft H ₂ O)	Total Head (ft)	Pore Pressure (ft H ₂ O)	Total Head (ft)	Pore Pressure (ft H ₂ O)	Total Head (ft)	Pore Pressure (ft H ₂ O)	Total Head (ft)	Pore Pressure (ft H ₂ O)
"Apparent" Piezometric Surface (see Note 1)	10/16/2009	1050.1	0.34	< 1022.3	-0.01	< 1050.3	-0.05	< 1086.2	-0.24	1062.7	1.50
	11/2/2009	1050.0	0.17	< 1022.3	-0.45	< 1050.3	-0.21	< 1086.2	-0.42	1061.4	0.17
	12/1/2009	1050.2	0.39	< 1022.3	-0.49	< 1050.3	-0.27	< 1086.2	-0.52	1061.3	0.08
	1/6/2010	1049.8	0.00	< 1022.3	-0.65	< 1050.3	-0.42	< 1086.2	-0.65	< 1061.2	-0.36
	2/1/2010	< 1049.8	-0.04	< 1022.3	-0.70	< 1050.3	-0.48	< 1086.2	-0.70	< 1061.2	-0.67
	3/4/2010	1049.9	0.14	< 1022.3	-0.51	< 1050.3	-0.31	< 1086.2	-0.54	< 1061.2	-0.49
	4/8/2010	1050.1	0.33	< 1022.3	-0.35	< 1050.3	-0.14	< 1086.2	-0.35	< 1061.2	-0.39
	5/6/2010	< 1049.8	-0.15	< 1022.3	-0.80	< 1050.3	-0.62	< 1086.2	-0.81	< 1061.2	-0.75
	6/2/2010	1049.9	0.07	< 1022.3	-0.54	< 1050.3	-0.35	< 1086.2	-0.63	< 1061.2	-0.60
	7/2/2010	< 1049.8	-0.05	< 1022.3	-0.77	< 1050.3	-0.57	< 1086.2	-0.73	< 1061.2	-0.67
	8/2/2010	< 1049.8	-0.04	< 1022.3	-0.75	< 1050.3	-0.57	< 1086.2	-0.71	< 1061.2	-0.65
	9/2/2010	< 1049.8	-0.04	< 1022.3	-0.75	< 1050.3	-0.57	< 1086.2	-0.72	< 1061.2	-0.67
	10/1/2010	< 1049.8	-0.13	< 1022.3	-0.82	< 1050.3	-0.67	< 1086.2	-0.78	< 1061.2	-0.67
	11/1/2010	< 1049.8	-0.16	< 1022.3	-0.9	< 1050.3	-0.69	< 1086.2	-0.82	< 1061.2	-0.7
	12/2/2010	< 1049.8	-0.24	< 1022.3	-0.90	< 1050.3	-0.82	< 1086.2	-0.94	< 1061.2	-0.74
	1/1/2011	1049.9	0.08	< 1022.3	-0.65	< 1050.3	-0.49	< 1086.2	-0.61	< 1061.2	-0.60
	2/3/2011	< 1049.8	-0.38	< 1022.3	-1.02	< 1050.3	-0.96	< 1086.2	-1.09	< 1061.2	-0.08
3/1/2011	< 1049.8	-0.45	< 1022.3	-1.04	< 1050.3	-1.01	< 1086.2	-1.13	< 1061.2	-0.81	
4/4/2011	1049.9	0.14	< 1022.3	-0.056	< 1050.3	-0.42	< 1086.2	-0.54	< 1061.2	-0.54	
5/2/2011	< 1049.8	-0.07	< 1022.3	-0.72	< 1050.3	-0.65	< 1086.2	-0.75	< 1061.2	-0.59	
Trigger Elevations (see Note 2)	For F.S. < 1.5	Note 3		1048.0		1081.0		Note 3		1095.0	
	For F.S. < 1.2	Note 3		1102.0		1120.0		Note 3		1116.0	

Notes:

1. The piezometric surface is present at, or below, the elevation provided in ft.-MSL. The number in parentheses represents the water column pressure exerted on the transducer--a zero or negative pressure indicates non-saturated conditions causing soil suction
2. If the apparent piezometric surface rises above this elevation, the trigger has occurred
3. This is a redundant installation that can be used in event of failure of the corresponding lower transducer.

Attachment 4
Pin and Plate Evaluation

May 2, 2011

Mr. Michael Darnell
Division Manager
Republic Services
Countywide RDF
3619 Gracemont Street, SW
East Sparta, Ohio 44626

RE: Evaluation of Pin Movements
Countywide Slopes
March Period (3/22/11 – 4-18/11)

Dear Mike,

We have reviewed the pin survey data from the West and North Slopes at Countywide. The surveys during the April monitoring period 3/22/11 – 4/18/11) by Diversified Engineering, Inc. (DEI) were performed using optical survey methods for all pins (as of 10/5/2010).

The survey data has been presented in accordance with Section 6.5.4 of the Operation, Maintenance and Monitoring Plan, creating Figures 11 through 16 only for those points exceeding the trigger levels, as requested by Jerry Parker of the OH EPA. In addition, two vector plot maps that depict the horizontal pin movements for the monitoring period and since the onset of monitoring (October 6, 2009) are attached. Two tables which show the horizontal rate of movement for the monitoring period and elevation motion since the original monitoring survey (October 6, 2009) are attached after the aforementioned figures. Please note the at the reference elevation for pin IP-E1, IP-F1, MP-4 and MP-5 have been adjusted, as per the agreement with OH EPA. The baseline elevation of IP-F1 was re-established at the beginning of May 2010, MP-4 and MP-5 were re-established on November 30, 2010 and IP-E1 was re-established on February 22, 2011. This is noted on the vector plot depicting movements since the beginning of the monitoring and in the Change of Elevation table.

A review of the data shows:

- No pins exceeded the trigger rate of 0.05 ft per day of horizontal movement during the monitoring period.
- Monitoring pins IP-B1 and C-1 exceeded the vertical trigger of more than 0.05 ft of upward motion since inception of monitoring for the readings taken 4/5/2011 only.

In accordance with the OH EPA, the change of northing, easting and elevation plots versus time are attached of pin movement for B and C lines which includes the pins exceeding

the vertical trigger. As can be seen on as can be seen on the attached pin figures and profiles, there is no indication of any instability associated with the exceedences.

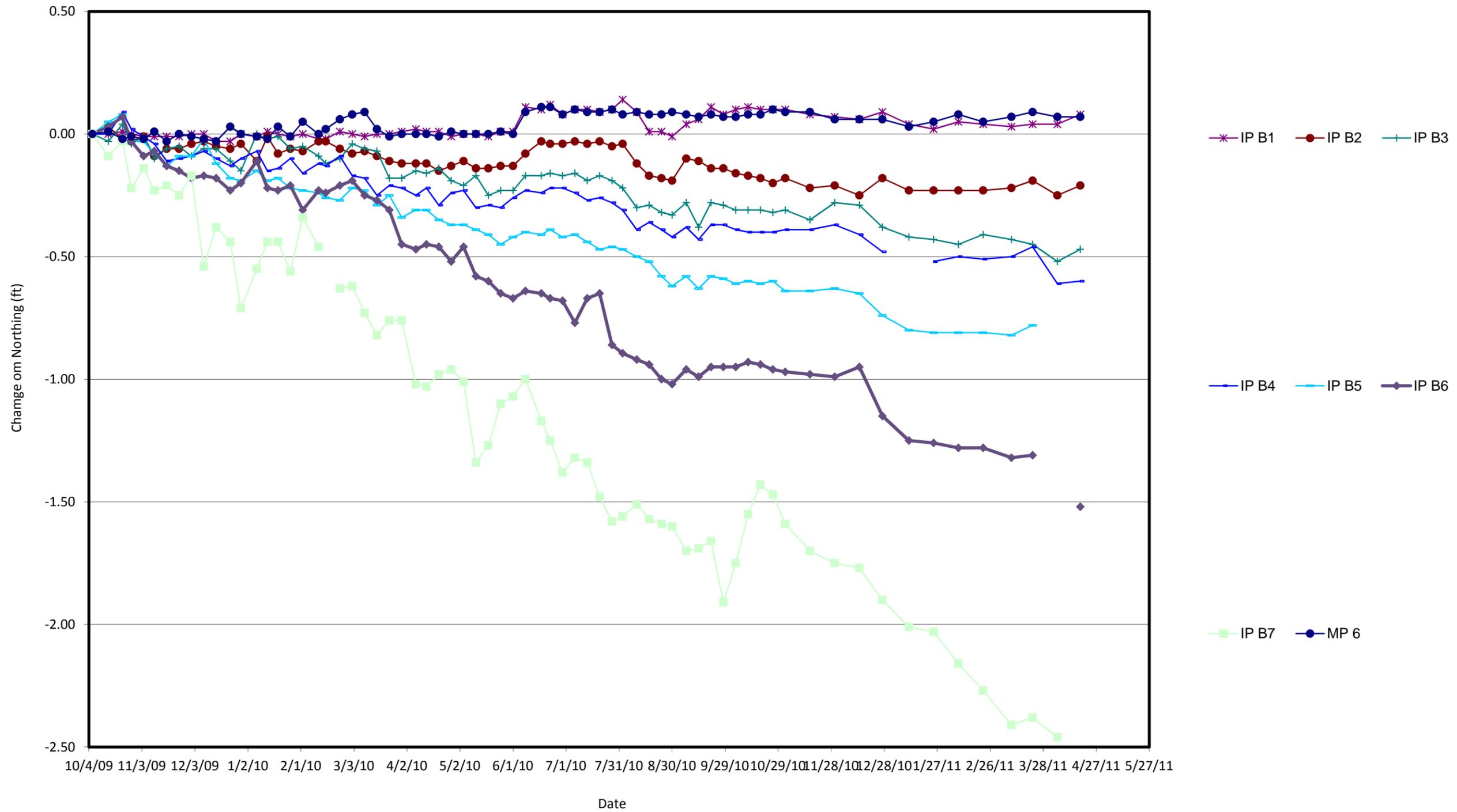
Based on the review of the data, no signs of instability are indicated. I hope this information is helpful to you. Please call if there are any questions.

Sincerely,

A handwritten signature in blue ink that reads "Peter J. Carey". The signature is written in a cursive style with a large initial "P".

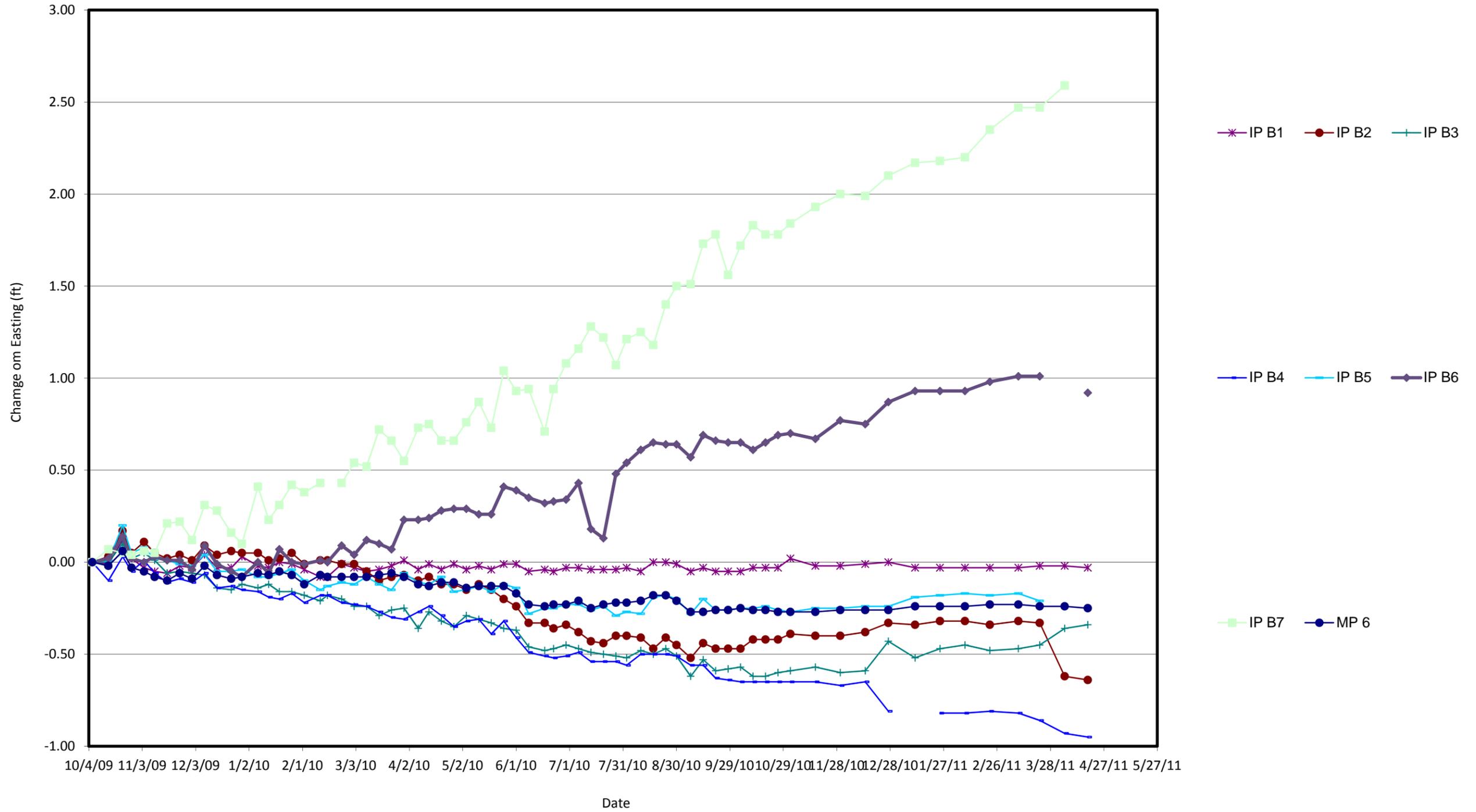
Peter J. Carey, PE
President

Graph 14 - West Slope Pin Movement
 For Pins that Exceeded a Trigger During Reporting Month
 Northing Change



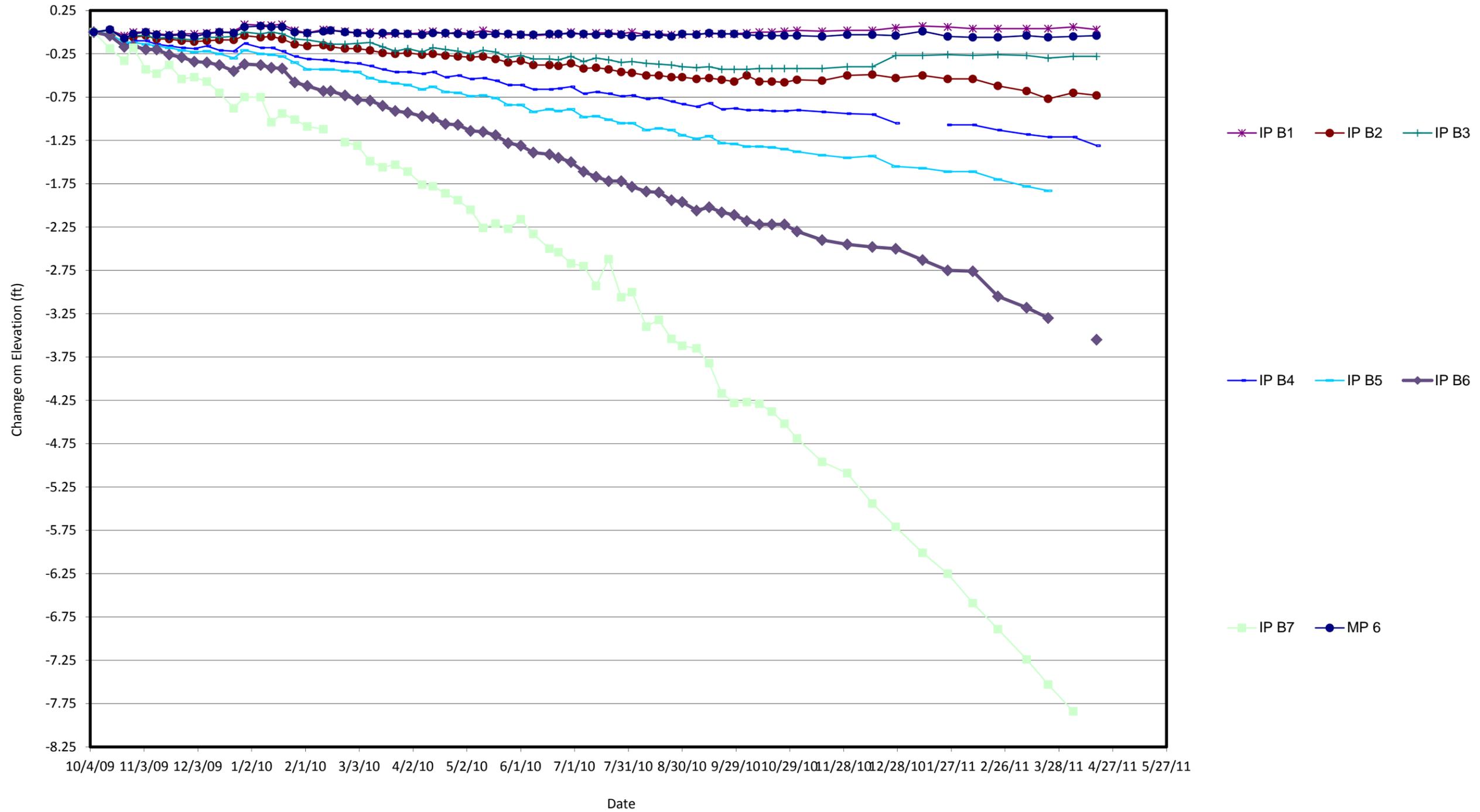
1. Data compiled by PJ Carey Associates, PC.
 2. Survey provided by DEI beginning on October 5, 2009.

Graph 15 - West Slope Pin Movement
 For Pins that Exceeded a Trigger During Reporting Month
 Easting Change



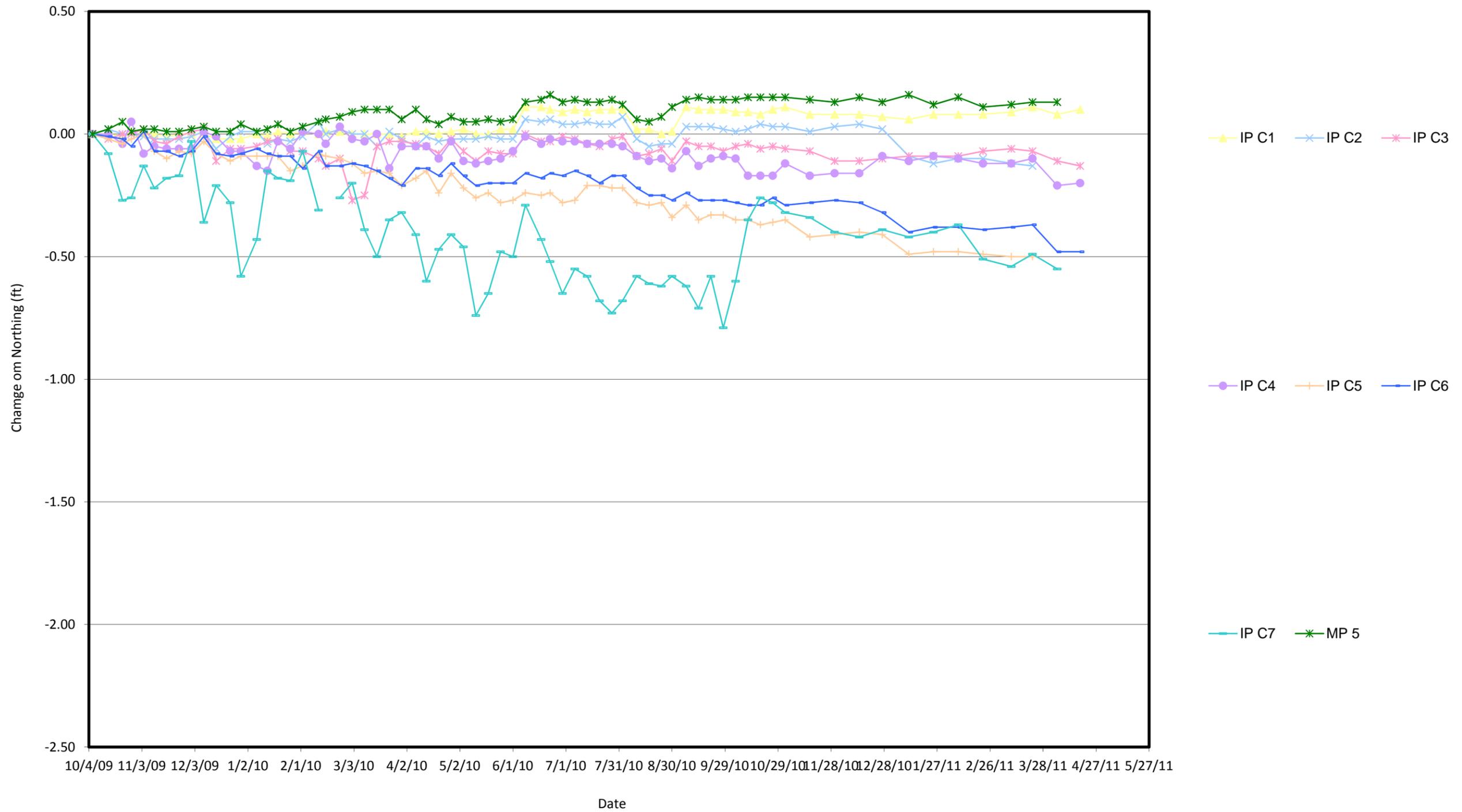
1. Data compiled by PJ Carey Associates, PC.
 2. Survey provided by DEI beginning on October 5, 2009.

Graph 16 - West Slope Pin Movement
 For Pins that Exceeded a Trigger During Reporting Month
 Elevation Change



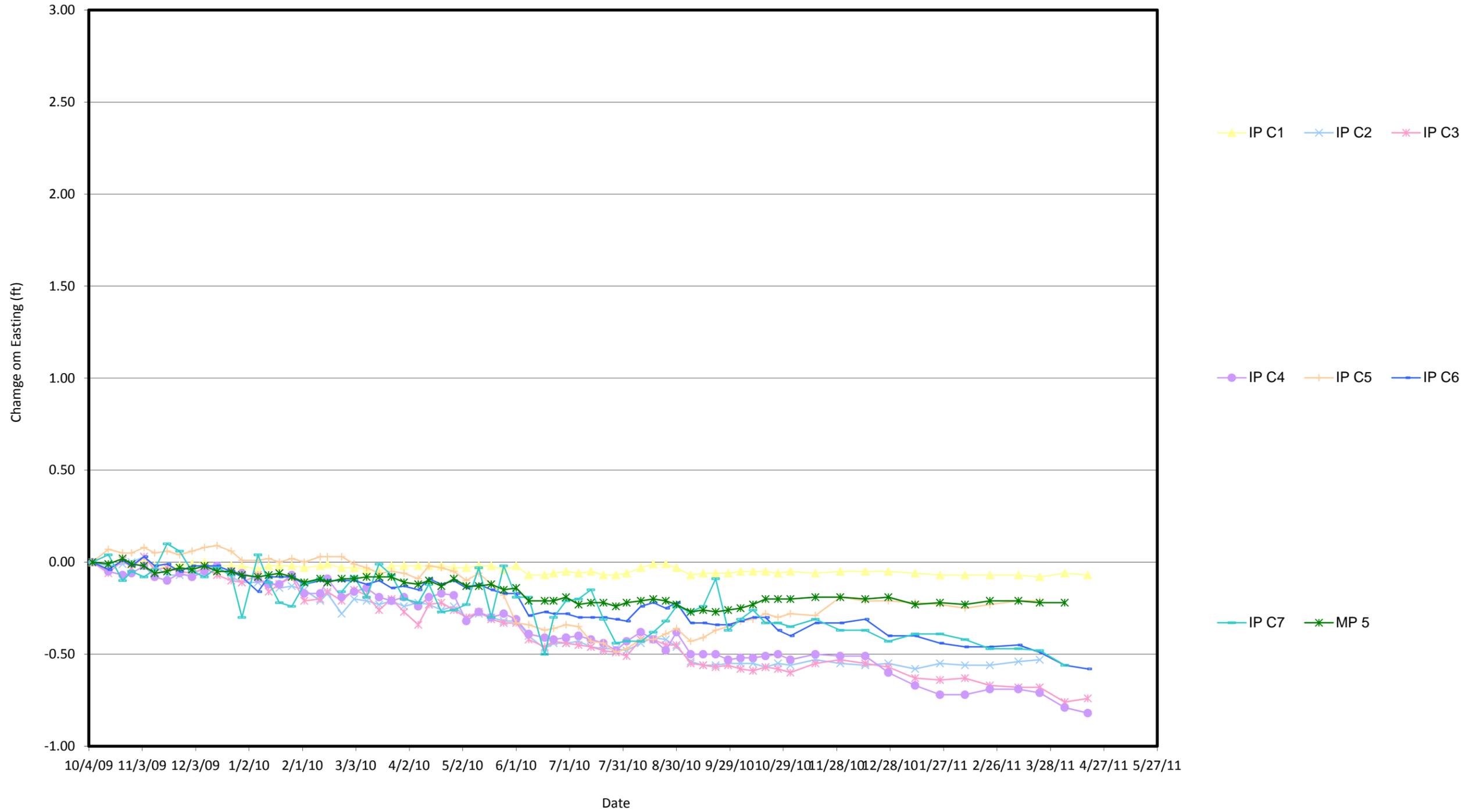
1. Data compiled by PJ Carey Associates, PC.
 2. Survey provided by DEI beginning on October 5, 2009.

Graph 14 - West Slope Pin Movement
 For Pins that Exceeded a Trigger During Reporting Month
 Northing Change



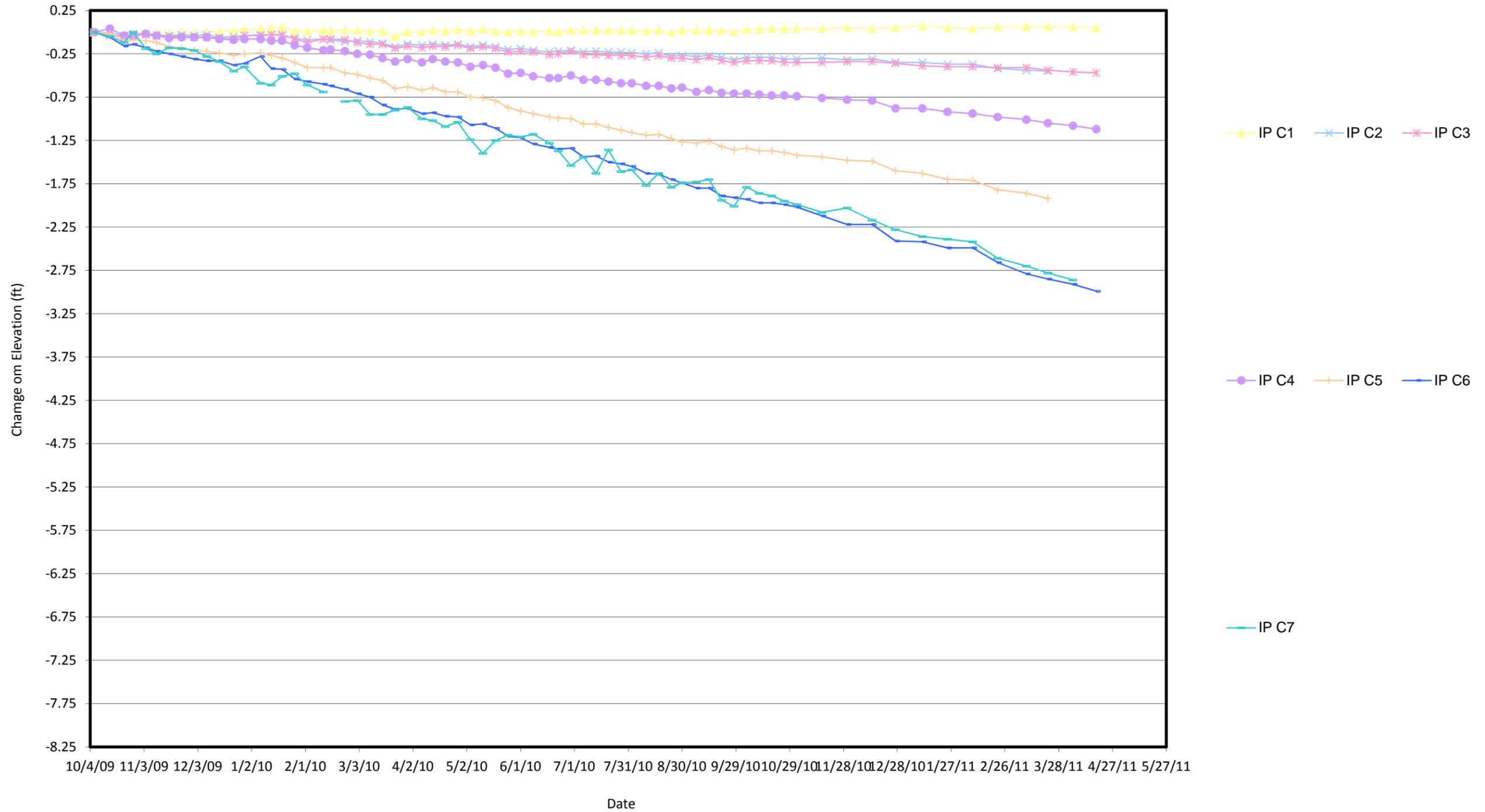
1. Data compiled by PJ Carey Associates, PC.
 2. Survey provided by DEI beginning on October 5, 2009.

Graph 15 - West Slope Pin Movement
 For Pins that Exceeded a Trigger During Reporting Month
 Easting Change



1. Data compiled by PJ Carey Associates, PC.
 2. Survey provided by DEI beginning on October 5, 2009.

Graph 16 - West Slope Pin Movement
 For Pins that Exceeded a Trigger During Reporting Month
 Elevation Change



1. Data compiled by PJ Carey Associates, PC.
 2. Survey provided by DEI beginning on October 5, 2009.

HORIZONTAL RATE OF MOVEMENT (FT/DAY)

CALCULATED BASED ON PREVIOUS READING AT EACH POINT

ID	4/5/11	4/18/11
IP G1	0.0032	0.0011
IP I1	0.0000	0.0017
IP I2	0.0016	0.0011
IP I3	0.0016	0.00077
IP K1	0.0029	0.0024
IP K2	0.0029	0.0015
IP K3	0.0020	0.0011
IP K4	0.0051	0.0024
IP M1	0.0093	0.0017
IP M2	0.0052	0.0031
IP M3	0.0030	0.0024
IP O1		0.0016
IP O2		
MP 13	0.0029	0.0017
MP 15	0.0016	0.0017
MP 17	0.0014	0.0015
MP 19	0.0014	0.00077
MP 21	0.0023	0.00077
IP R1	0.0077	0.0059
IP R2	0.0093	0.00077
IP R3	0.0089	0.0047
IP R4	0.011	0.0073
IP S1		
IP S2		
IP S3		
IP S4		
IP S5		
IP T1		
IP T2		
IP T3		
IP T4		
IP T5		
IP T6		
IP U1		
IP U2		
IP U3		
IP U4		
IP U5		
IP U6		
IP V1		
IP V2		
IP V3		
IP V4		
IP V5		
IP V6		
IP W1		
IP W2		
IP W3		
IP W4		
IP W5		
IP W6		

HORIZONTAL RATE OF MOVEMENT (FT/DAY)

CALCULATED BASED ON PREVIOUS READING AT EACH POINT

ID	4/5/11	4/18/11
MP 10		
MP 11	0.0016	0.0017
MP 12		
IP A1	0.00071	0.0017
IP A2	0.0070	0.0028
IP A3		
IP A4	0.015	0.0011
IP B1	0.0000	0.0032
IP B2	0.021	0.0034
IP B3	0.0081	0.0041
IP B4	0.012	0.0017
IP B5		
IP B6		0.0085
IP B7*	0.01	
IP C1	0.0026	0.0017
IP C2		
IP C3	0.0064	0.0022
IP C4	0.0097	0.0024
IP C5		
IP C6	0.0093	0.0015
IP C7*	0.007	
IP D1	0.0016	0.0017
IP D2	0.0036	0.0011
IP D3	0.0052	0.0023
IP D4	0.0029	0.00077
IP D5	0.0000	0.00077
IP D6	0.0032	0.0000
IP D7*	0.004	0.001
IP E1	0.0000	0.0017
IP E2		
IP E3	0.0010	0.010
IP E4		
IP E5	0.0056	0.00077
IP F1	0.0000	0.0015
IP F2	0.0026	0.00077
IP F3	0.0016	0.0011
IP F4	0.0000	0.0011
IP Q1	0.0074	0.0000
IP Q2	0.0070	0.0077
MP 1	0.0016	0.0017
MP 2	0.0029	0.0017
MP 3		
MP 4	0.0032	0.0017
MP 5	0.0000	
MP 6	0.0014	0.00077
MP 7	0.00071	0.00077
MP 8		
MP 9		

Notes:

1. Data compiled by PJ Carey & Associates, PC.
2. Survey provided by DEI beginning on October 6, 2009.
3. Highlighted regions indicate pins which the horizontal rate of movement exceed the trigger value of 0.05 ft/day.
4. All pins are surveyed using optical methods except pins B7, C7, & D7, which were surveyed using GPS up until October 5, 2010. Since October 5, 2010 all pins are surveyed using optical methods.
5. Values reported are limited to their respective significant digit.

**CHANGE IN ELEVATION (FT)
CALCULATED BASED ON ORIGINAL SURVEY DATE OF 10-06-09**

ID	4/5/11	4/18/11
IP G1	-0.96	-0.99
IP I1	-0.24	-0.25
IP I2	-0.36	-0.39
IP I3	-1.49	-1.54
IP K1	-0.04	-0.05
IP K2	-0.44	-0.48
IP K3	-1.83	-1.92
IP K4	-3.63	-3.74
IP M1	-0.04	-0.07
IP M2	-0.66	-0.73
IP M3	-1.83	-1.91
IP O1		-0.33
IP O2		
MP 13	0.00	0.00
MP 15	-0.03	-0.01
MP 17	0.01	0.02
MP 19	0.00	0.01
MP 21	0.00	0.00
IP R1	-0.38	-0.44
IP R2	-0.48	-0.51
IP R3	-1.28	-1.33
IP R4	-2.12	-2.20
IP S1		
IP S2		
IP S3		
IP S4		
IP S5		
IP T1		
IP T2		
IP T3		
IP T4		
IP T5		
IP T6		
IP U1		
IP U2		
IP U3		
IP U4		
IP U5		
IP U6		
IP V1		
IP V2		
IP V3		
IP V4		
IP V5		
IP V6		
IP W1		
IP W2		
IP W3		
IP W4		
IP W5		
IP W6		

1. Data compiled by PJ Carey Associates, PC.
2. Survey provided by DEI beginning on October 6, 2009.
3. Highlighted regions indicate points which there was a positive change greater than 0.05 ft in elevation since October 6, 2009.

**CHANGE IN ELEVATION (FT)
CALCULATED BASED ON ORIGINAL SURVEY DATE OF 10-06-09**

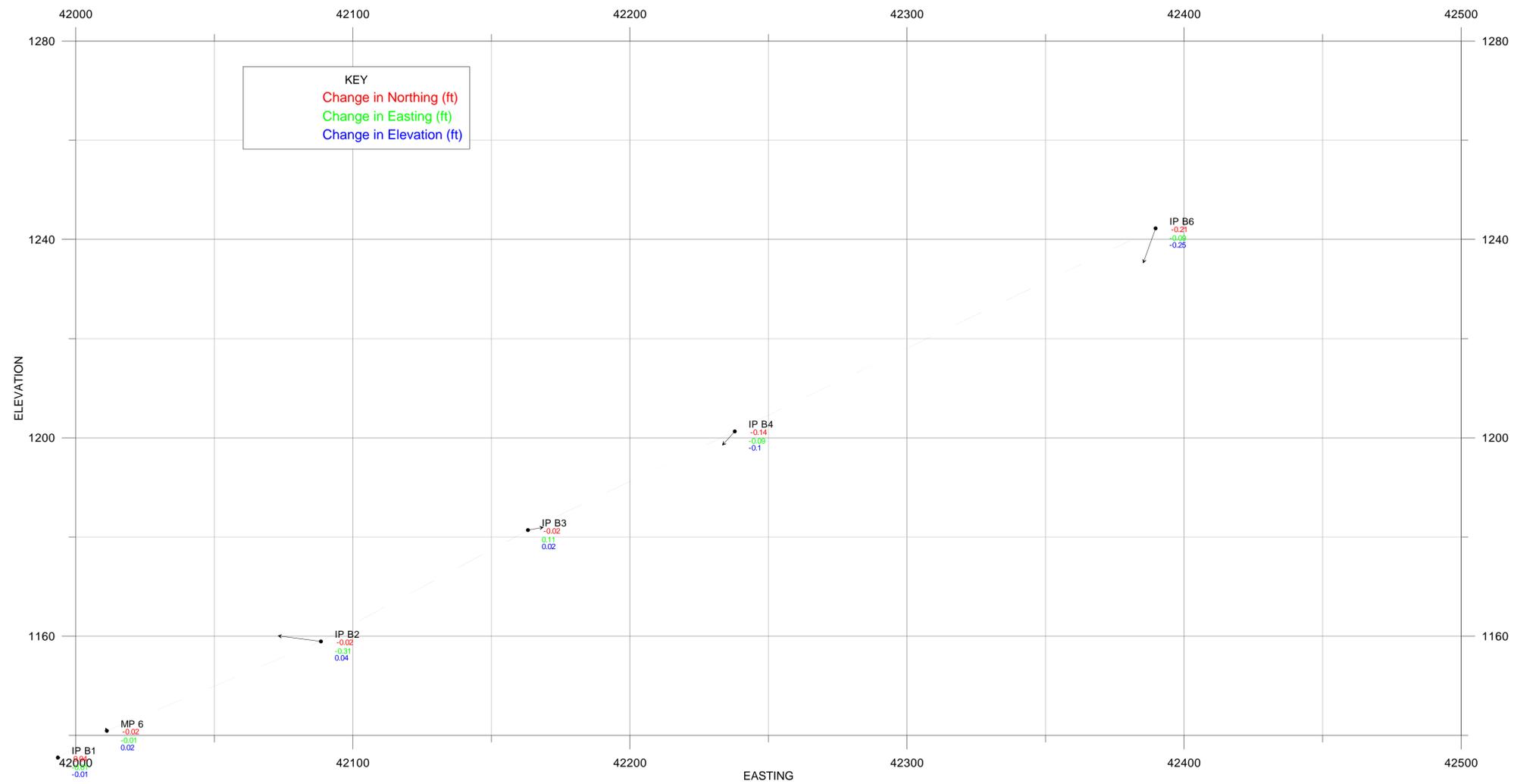
ID	4/5/11	4/18/11
MP 10		
MP 11	0.05	0.05
MP 12		
IP A1	0.05	0.03
IP A2	-0.42	-0.46
IP A3		
IP A4	-0.92	-0.95
IP B1	0.06	0.03
IP B2	-0.70	-0.73
IP B3	-0.28	-0.28
IP B4	-1.21	-1.31
IP B5		
IP B6		-3.55
IP B7	-7.84	
IP C1	0.06	0.05
IP C2		
IP C3	-0.46	-0.47
IP C4	-1.08	-1.12
IP C5		
IP C6	-2.91	-2.99
IP C7	-2.86	
IP D1	-0.03	-0.04
IP D2	-0.63	-0.65
IP D3	-0.48	-0.50
IP D4	-1.26	-1.30
IP D5	-1.61	-1.69
IP D6	-2.60	-2.68
IP D7	-2.64	-2.77
IP E1***	0.00	0.00
IP E2	-1.03	-1.04
IP E3	-0.60	-0.67
IP E4		
IP E5	-1.63	-1.66
IP F1 *	0.03	0.02
IP F2	-1.01	-1.02
IP F3	-1.02	-1.07
IP F4	-1.37	-1.40
IP Q1	-0.61	-0.66
IP Q2	-0.97	-0.96
MP 1	-0.03	-0.03
MP 2	0.01	0.01
MP 3		
MP 4**	0.01	0.01
MP 5**	0.00	
MP 6	-0.05	-0.04
MP 7	-0.09	-0.09
MP 8		
MP 9		

* On May 10, 2010, Ohio EPA approved an increase the baseline elevation of Iron Pin F1 from the original elevation of 1141.06', established on October 6, 2009, to 1141.15' due to the effects of frost heave.

** On November 22, 2010, Ohio EPA approved an increase the baseline elevation of monitoring points MP-4 and MP-5 from the original elevation of 1154.82' and 1152.34', established on October 6, 2009, to 1154.88' and 1152.39', surveyed on November 30, 2010, respectively.

***The Ohio EPA approved an increase of the baseline elevation of monitoring point IP E1 from the original elevation of 1143.41', established on October 6, 2009 to 1143.52', surveyed on February 22, 2011.

1. Data compiled by PJ Carey Associates, PC.
2. Survey provided by DEI beginning on October 6, 2009.
3. Highlighted regions indicate points which there was a positive change greater than 0.05 ft in elevation since October 6, 2009.

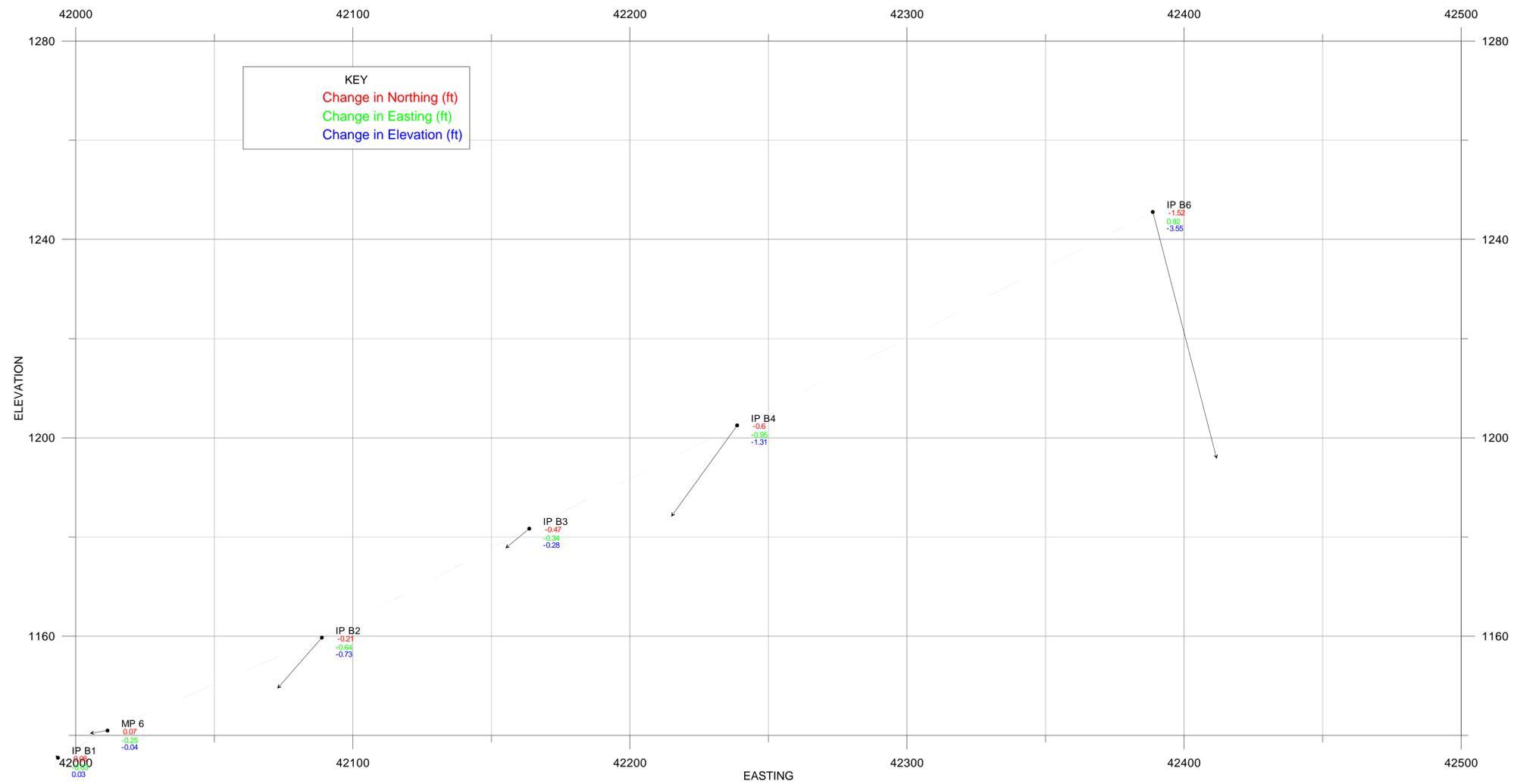


NOTES:

1. PROFILE IS APPROXIMATED USING POINTS SHOWN AS PROVIDED BY DIVERSIFIED ENGINEERING INC.

2. HORIZONTAL MOVEMENT VECTORS ARE PLOTTED TO A 1 INCH = 0.5 FEET SCALE. 

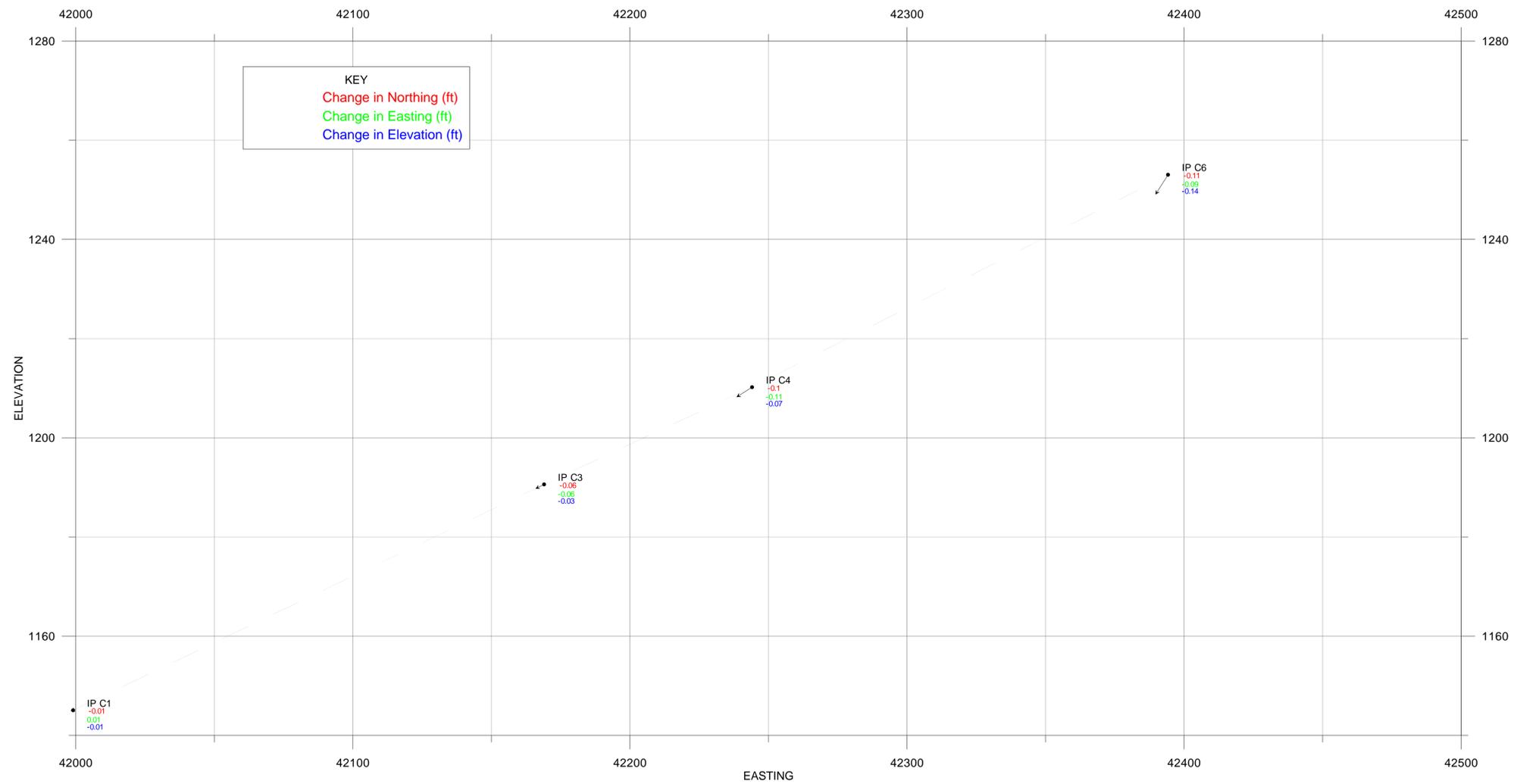
PROFILE MOVEMENT FOR ROW 'B'
BETWEEN 3/22/2011 & 4/18/2011



NOTES:

1. PROFILE IS APPROXIMATED USING POINTS SHOWN AS PROVIDED BY DIVERSIFIED ENGINEERING INC.
2. HORIZONTAL MOVEMENT VECTORS ARE PLOTTED TO A 1 INCH = 1 FOOT SCALE. 

PROFILE MOVEMENT FOR ROW 'B'
BETWEEN 10/06/2009 & 4/18/2011

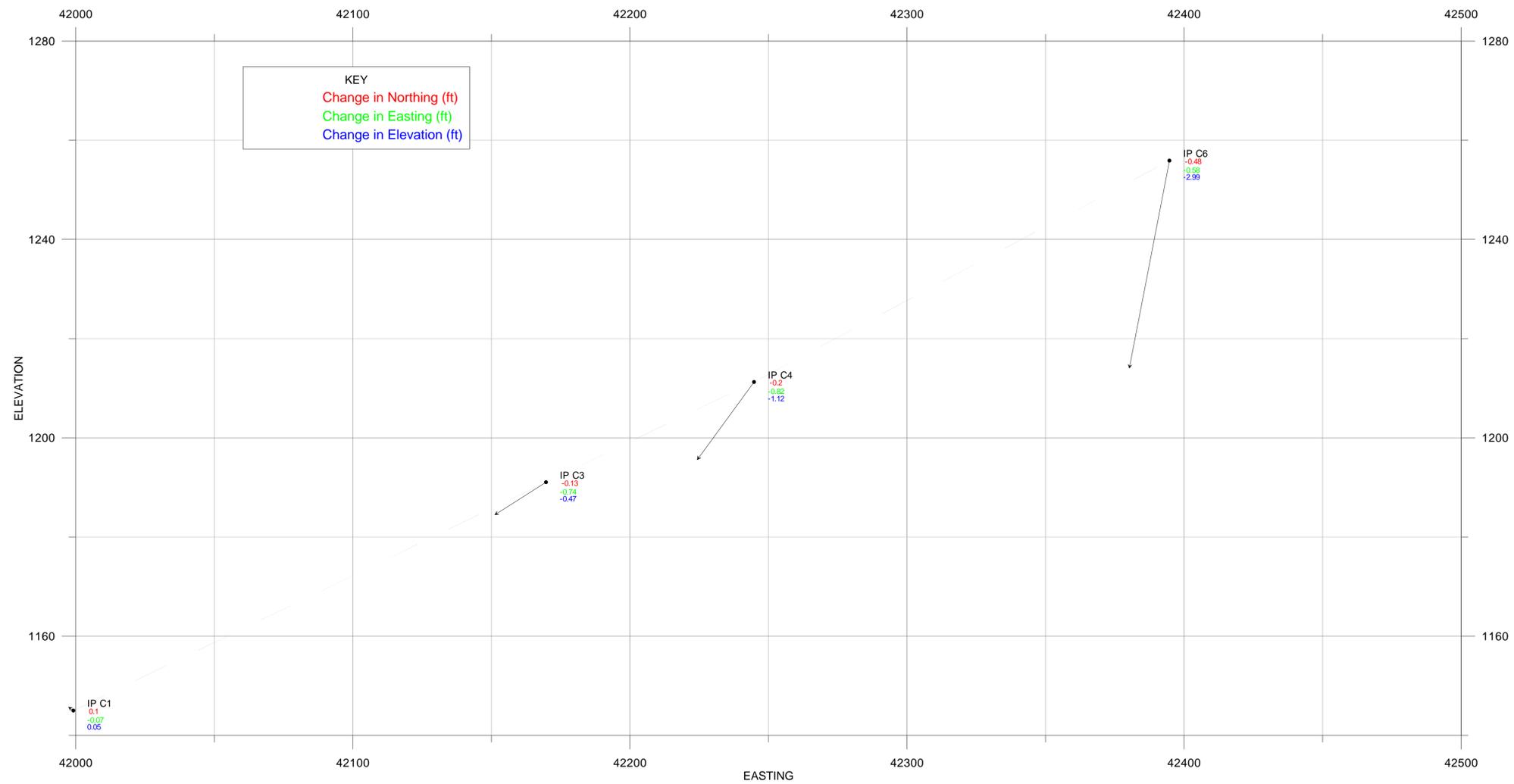


NOTES:

1. PROFILE IS APPROXIMATED USING POINTS SHOWN AS PROVIDED BY DIVERSIFIED ENGINEERING INC.

2. HORIZONTAL MOVEMENT VECTORS ARE PLOTTED TO A 1 INCH = 0.5 FEET SCALE.  0.5 FEET

PROFILE MOVEMENT FOR ROW 'C'
BETWEEN 3/22/2011 & 4/18/2011

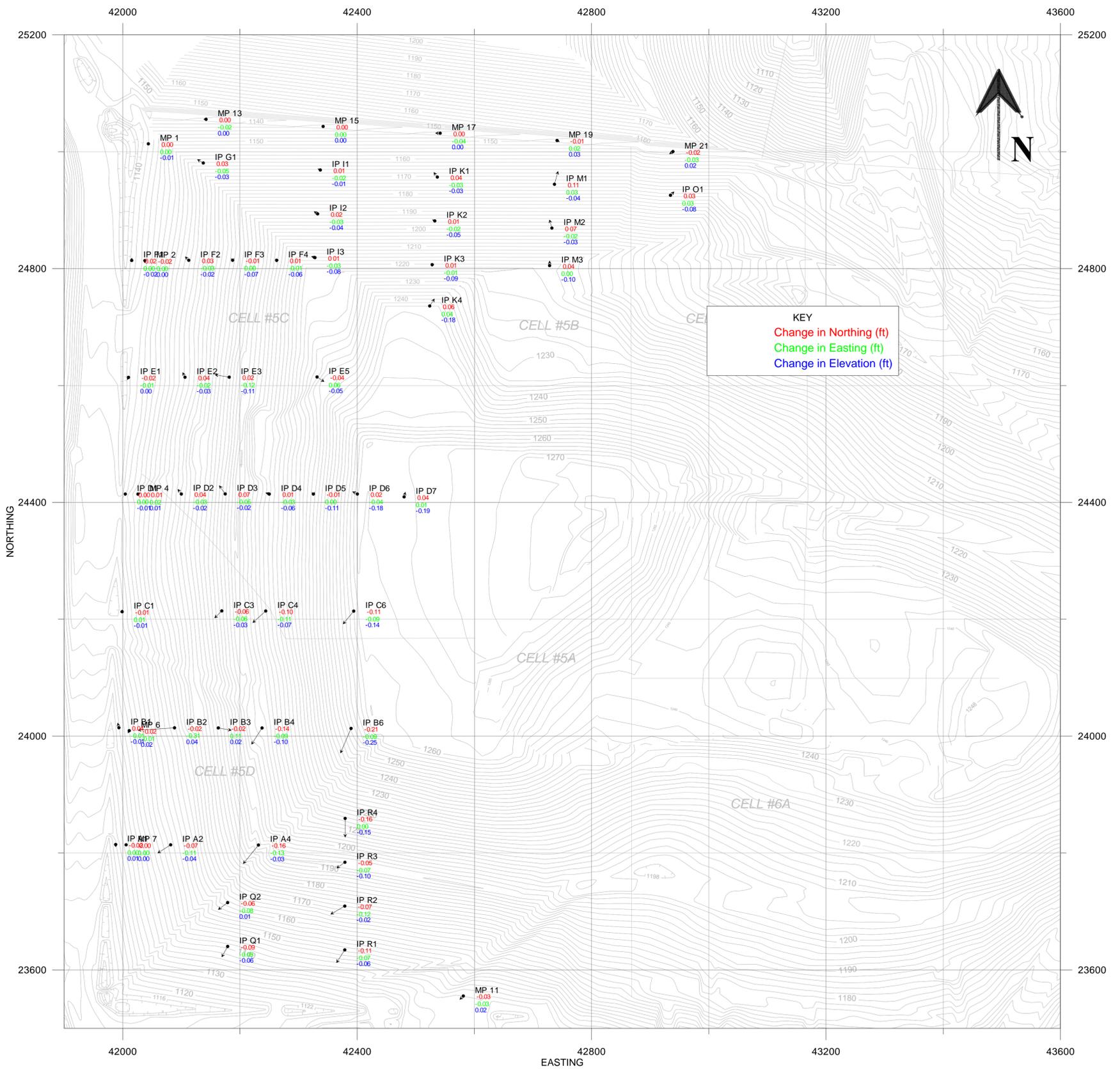


NOTES:

1. PROFILE IS APPROXIMATED USING POINTS SHOWN AS PROVIDED BY DIVERSIFIED ENGINEERING INC.

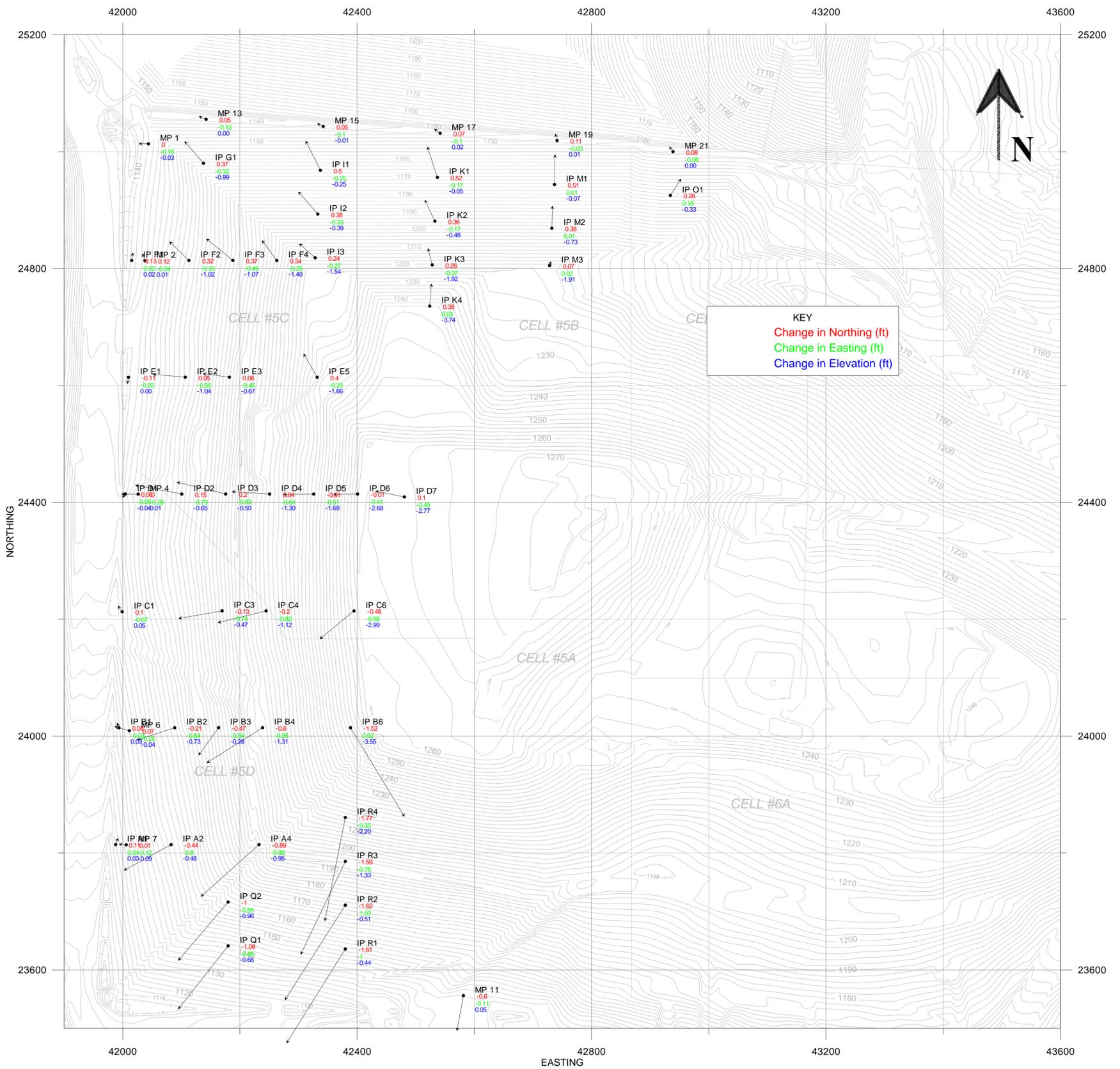
2. HORIZONTAL MOVEMENT VECTORS ARE PLOTTED TO A 1 INCH = 1 FOOT SCALE. 

PROFILE MOVEMENT FOR ROW 'C'
BETWEEN 10/06/2009 & 4/18/2011



NOTE:

1. TOPOGRAPHY PROVIDED BY DIVERSIFIED ENGINEERING INC AS PART OF THE "88 REMEDIATION UNIT SLOPE PINS AND MONITORING PLATES LOCATION" PROJECT, DRAWING DATED 7/21/2009.
2. HORIZONTAL MOVEMENT VECTORS ARE PLOTTED TO A 1 INCH = 0.5 FEET SCALE. 
3. HORIZONTAL MOVEMENT TRIGGER WAS NOT EXCEEDED DURING REPORTING PERIOD.
4. VERTICAL MOVEMENT TRIGGER WAS EXCEEDED AT IP B1 AND C1 DURING THE REPORTING PERIOD.



NOTE:

1. TOPOGRAPHY PROVIDED BY DIVERSIFIED ENGINEERING INC AS PART OF THE "88 REMEDIATION UNIT SLOPE PINS AND MONITORING PLATES LOCATION" PROJECT, DRAWING DATED 7/21/2009.
2. HORIZONTAL MOVEMENT VECTORS ARE PLOTTED TO A 1 INCH = 1 FOOT SCALE.

1 FOOT
3. ON MAY 10, 2010, OHIO EPA APPROVED AN INCREASE OF THE BASELINE ELEVATION OF IRON PIN F1 FROM THE ORIGINAL ELEVATION OF 1141.06', ESTABLISHED ON OCTOBER 6, 2009, TO 1141.15' DUE TO THE EFFECTS OF FROST HEAVE.
4. ON NOVEMBER 22, 2010, OHIO EPA APPROVED AN INCREASE THE BASELINE ELEVATION OF MONITORING POINTS MP-4 AND MP-5 FROM THE ORIGINAL ELEVATION OF 1154.82' AND 1152.34', ESTABLISHED ON OCTOBER 6, 2009, TO 1154.88' AND 1152.39', SURVEYED ON NOVEMBER 30, 2010, RESPECTIVELY.
5. THE OHIO EPA APPROVED AN INCREASE OF THE BASELINE ELEVATION OF MONITORING POINT IP E1 FROM THE ORIGINAL ELEVATION OF 1143.41', ESTABLISHED ON OCTOBER 6, 2009 TO 1143.52', SURVEYED ON FEBRUARY 22, 2011.
6. VERTICAL MOVEMENT TRIGGER WAS EXCEEDED AT IP B1 AND C1 DURING MONITORING PERIOD.