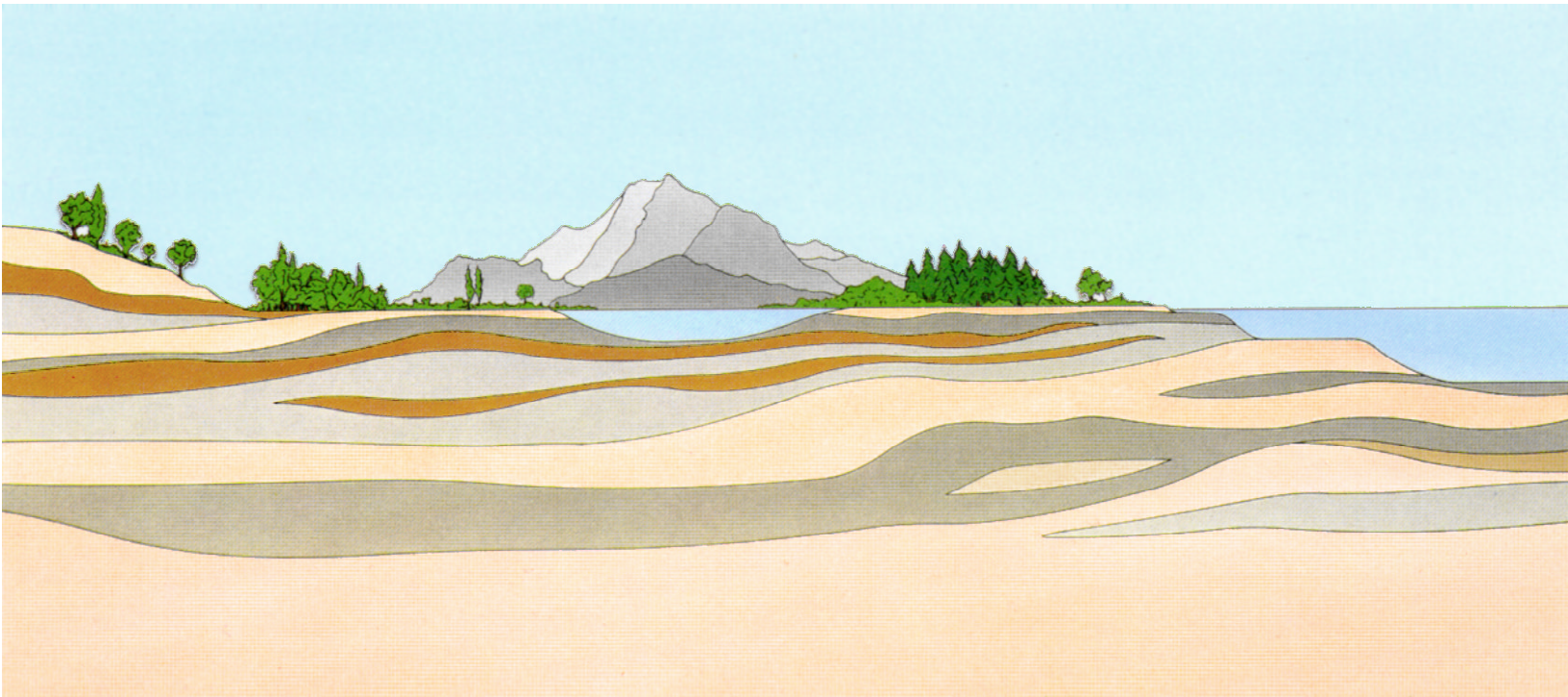
FUGRO CONSULTANTS, INC.

ANNUAL REPORT
JULY 2009 THROUGH JUNE 2010
BIG ROCK MESA LANDSLIDE
ASSESSMENT DISTRICT
MALIBU, CALIFORNIA

Prepared for:
City of Malibu

May 2011
Fugro Job No. 04.B3399006



FUGRO CONSULTANTS, INC.

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May 25, 2011
Project No. 04.B3399006

City of Malibu
23815 Stuart Ranch Road
Malibu, California 90265

Attention: Mr. Rob Duboux

Subject: Annual Report, July 2009 through June 2010, Big Rock Mesa Landslide Assessment District, Malibu, California

Dear Mr. Duboux:

Fugro is pleased to present the annual report for the Big Rock Mesa Landslide Assessment District (Assessment District). This report summarizes the monitoring and maintenance activities completed during the period of July 2009 through June 2010. Beginning on July 1, 2004, the City of Malibu contracted with Fugro for monitoring, maintenance, and reporting of the Assessment District activities.

Fugro appreciates this opportunity to serve the City of Malibu and the District homeowners. Please contact us at our office if you have any questions regarding this report.

Sincerely,

FUGRO CONSULTANTS, INC.

Alexis Spencer, E.I.T.
Project Engineer

Christopher W. Dean
Senior Engineering Geologist

REGISTERED GEOLOGIST
CHRISTOPHER W. DEAN
No. EG 1751
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Copies Submitted: (1) Addressee and Pdf on CD
(1) City of Malibu - Geology & Soils Staff

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1.0 INTRODUCTION

1.1 AUTHORIZATION

Fugro performed monitoring and maintenance work and prepared this data report in accordance with our contract with the City of Malibu (City), commencing July 2006, and consistent with the cost estimate documents, "Exhibit A - FY 2009 through 2010 Maintenance Cost Estimate," presented in the Annual Assessment Report (Taussig, 2009).

1.2 BACKGROUND

The Big Rock Mesa Landslide Assessment District (Assessment District) was established in 1989 by the County of Los Angeles (County) following the activation of the Big Rock Mesa landslide in 1983. The Assessment District provides permanent funding to maintain and monitor dewatering facilities with the purpose of reducing landslide movements. The County administered the Assessment District until 1991 when the City incorporated. Since then, the City has administered the Assessment District, utilizing consultants to maintain and monitor the district facilities.

1.3 SCOPE OF WORK

This annual report summarizes the monitoring and maintenance of the geotechnical instrumentation and dewatering facilities for the period between July 1, 2009, and June 30, 2010 (hereinafter, the "monitoring period"). Fugro completed monitoring and maintenance activities summarized in this report.

Data collected during this monitoring period included the following:

- Annual Rainfall data from a local rain gauge at Big Rock Mesa, operated by the County;
- Monthly groundwater level measurements from 29 standpipes and 16 pneumatic piezometers;
- Twice-monthly dewatering production readings from 23 dewatering wells;
- Monthly dewatering production readings from 36 horizontal drains (hydraugers);
- Quarterly ground deformation readings from 18 slope inclinometers (geotechnical instrumentation);
- Twice yearly ground deformation readings from 10 slope inclinometers;
- Monthly readings of water usage data from the Mesa's master flow meter; and
- Quarterly water-quality sampling and analysis for National Pollution Discharge Elimination System (NPDES) compliance.

The operating condition of the instrumentation and dewatering facilities was checked during each field monitoring/observation event and by evaluating preliminary data in the office as they were received. Maintenance was performed as needed based upon the field observations and preliminary data evaluation.

The scope of services includes monitoring and maintenance of the Assessment District facilities and annual reporting. The services provided on an annual basis for the Assessment District do not include an evaluation of the stability of the landslide.

1.4 REPORT ORGANIZATION

This report summarizes the monitoring data collected during the monitoring period and presents conclusions regarding the annual monitoring results. The location of the Assessment District is illustrated on Plate 1 - Site Location Map. Locations of the geotechnical instrumentation and dewatering facilities are shown on Plate 2 - Assessment District Map. Tabulated and graphic summaries of monitoring data are presented in Appendices A through E.

1.5 REPORT AVAILABILITY

The annual Assessment District reports are available for review at Malibu City Hall and the Malibu Library. Reports may also be viewed on the City's website at http://www.ci.malibu.ca.us.

2.0 MONITORING

2.1 RAINFALL DATA

Rainfall totals were tabulated based on recorded values from the Los Angeles County Rainfall Station 1239 - located at Big Rock Mesa. A combination graph of historical and annual cumulative monthly rainfall totals is shown on Plate 3 - Rainfall Graph.

Rainfall data indicate that approximately 17.97 inches of precipitation fell during the monitoring period from July 2009 through June 2010. The average rainfall total from 1968 to 2010 in the Malibu area for the period July through June is approximately 16.05 inches.

Rainfall data is usually analyzed in terms of the annual "rain season" that covers the time period October 1 through September 30. Rainfall for October 1, 2009, through June 30, 2010, was approximately 17.97 inches. This is approximately 69 percent of the average rainfall total of 16.8 inches for the rain seasons of 1968 through 2010.

2.2 MASTER WATER METER

Water usage data are collected by performing monthly readings at the master water meter near the intersection of Rockport Way and Big Rock Drive. This meter measures all imported water supplied to the Big Rock Mesa area by Los Angeles County Waterworks District 29. Processed readings are shown as a plot of flow rate versus time on Plate 4. Analysis of the data indicates the following:

- The recorded water usage rates are cyclic throughout the monitoring year reflecting higher levels of usage during the summer months.
- As illustrated on Plate 4, there has been a general increasing trend in water usage since about 1995. Average water usage during the 2008 through 2009 monitoring year, approximately 158,100 gallons per day (gpd), is approximately 0.2 percent less than the 2009 through 2010 monitoring year average of 200,600 gpd.
- The trend of increased water consumption since about 1995 was interrupted with the reduced landscape irrigation during the extended high rainfall period in the 2004 through 2005 monitoring year and again in the spring of 2006 and 2008. Decrease in water consumption has continued since the winter of 2008 and continues to decrease with above average rainfall.

2.3 GROUNDWATER MONITORING

The groundwater monitoring data collected during this monitoring period are summarized in Appendix A. Groundwater levels fluctuate throughout the year, and from year to year, in response to natural and man-made influences. The primary natural influence is varying precipitation. Man-made influences include:

- Percolation from septic systems;
- Percolation from irrigation;
- Alterations to surface drainage by grading, landscaping, storm drains, and rain gutters;
- Inadvertent water discharges from leaking utilities (water, irrigation, sewer, storm drain) and swimming pools; and
- Dewatering activities including pumping dewatering wells and hydraugers.

Groundwater levels were typically measured in monitoring wells and pneumatic piezometers on a monthly basis. Monitoring data and graphs illustrating groundwater levels recorded in monitoring wells and pneumatic piezometers for the six physiographic regions of the Big Rock Mesa landslide are presented in Appendix A. Contour maps representing annual average groundwater elevations for 2009 through 2010 are shown on Plate 5. Also indicated on Plate 5 are peak groundwater levels for each standpipe location.

Typically, groundwater levels rise relatively quickly following significant rainfall and gradually lower after the wet season ends. Groundwater levels recorded in the Assessment District typically peak around late March to mid April and gradually decline through late September to November.

The groundwater data were analyzed by evaluating changes that occurred during the monitoring period as well as changes in groundwater levels compared to historical averages (1984 through 2010). To analyze trends in seasonal groundwater fluctuations, the average

(mean) annual and highest annual recorded groundwater elevation for each piezometer were calculated (Appendix A) and summarize on the following table:

Table 1. Summary of Average Groundwater Elevations by Area

	No. of Wells w/ High* Groundwater	Total No. of Wells	Area Average Groundwater Elevation (ft)	Change vs. Prior (Area Average) (ft)	Average Peak Groundwater Elevation (ft)	Change vs. Prior (Area Average) (ft)
PCH Region	2	8	8.4	+0.2	9.5	+0.5
Bluff Region	2	4	67.7	+0.9	69.6	+1.6
Eastern Mesa	0	4	89.5	-1.6	91.7	-2.4
Central Mesa	4	8	198.5	+6.3	205.1	+6.6
Western Extension	4	4	393.9	+0.7	402.9	+3.5
Headscarp Region	1	1	551.2	-0.2	552.2	-0.4

*Wells are reported with "High" groundwater when either the Mean or Peak groundwater elevation was greater than one foot higher than the mean of the long-term average elevations (See Appendix A for data).

A summary graph of normalized peak groundwater elevations of each of the six regions in Big Rock Mesa is presented on Plate 6. The graph on Plate 6 shows average annual peak groundwater levels in the 2009 through 2010 monitoring year and are generally higher than the years preceding the winter of 2004 through 2005 rains (last significant rainfall), but are generally decreasing from the previous monitoring period.

2.3.1 Pacific Coast Highway (PCH) Region

The PCH Region parallels the coastal highway at the base of the bluff, including the area between the bluff and the Pacific Ocean. The PCH Region includes the southern boundary of the 1983 landslide. The Shoreline fault and landslide rupture surface define both a zone of weakness and a groundwater barrier, extending approximately along the same alignment as the highway.

Groundwater in most of the PCH Region was close to or below average levels during the monitoring period. As noted in previous monitoring reports, standpipe SP-30 continues to show rising groundwater levels since the 1998 monitoring year.

2.3.2 Bluff Region

Along the Bluff Region, where intense ground cracking was observed during the 1983 landslide, the subsurface materials generally have a relatively high secondary permeability due to this level of fracturing.

Groundwater in the Bluff Region was somewhat higher than average during this monitoring period. SP-32 and SP-34 have increased since the previous monitoring period and SP-34 was showing a generally increasing trend until after dewatering well FW-2 was installed during February 2010, when water levels dramatically decreased.

2.3.3 Eastern Mesa Region

The Eastern Mesa Region lies between the Bluff and Big Rock Mesa Drive east of the Piedra Chica cul-de-sac. Groundwater within this area occurs within low permeability deposits of the Sespe Formation. The levels were all lower than average during this monitoring period and were generally decreasing during the monitoring period, except for PC-1, which showed an increase in levels compared to the previous monitoring period.

2.3.4 Central Mesa Region

The Central Mesa Region lies between the Bluff and Big Rock Mesa Drive and to the west of the Piedra Chica cul-de-sac. Groundwater within this area generally occurs within moderately permeable landslide deposits derived from the Topanga Formation. The levels were somewhat higher than long-term average during this monitoring period for SP-9A, SP-16, SP-16A, and SP-24.

2.3.5 Western Extension Region

The Western Extension Region encompasses approximately 79 acres, from PCH on the south to the upper ridgeline on the north, immediately west of the 1983 Big Rock Mesa landslide area. Groundwater levels in this area remained significantly higher than average this monitoring period as they have been since the 2004 through 2005 rains, and slightly increasing from the previous monitoring period. The groundwater level at SP-23 has showed an increasing trend since the 2003 through 2004 monitoring period. Overall, water levels in the Western Extension are still high compared to average historical levels (1984 through 2010).

2.3.6 Headscarp Region

The ground surface elevation in the Headscarp Region is higher than other regions in Big Rock Mesa, and groundwater is relatively deep. The average groundwater elevation in SP-26 is higher than the historical average (1986 through 2010) but is approximately 0.2 feet lower than the previous monitoring period.

2.4 DEWATERING WELL PRODUCTION

The total production rate for all dewatering wells from 1984 through June 2010 is depicted on Plate 4. Dewatering well production rates for individual wells are presented on Plates B-1 through B-4 (Appendix B).

The average total well production rate for the monitoring period was approximately 47,867 gpd. This is approximately 10 percent less than the previous year's monitoring period value of 47,867 gpd, and below historical average production.

2.5 HYDRAUGER PRODUCTION

The total production rate for all hydraugers from 1993 through June 2010 is depicted on Plate 4. Additional data regarding hydraugers and production rates are presented in Appendix C, Plates C-1 through C-4.

The average hydrauger production rate over the monitoring period was approximately 18,360 gpd. This represents a 25 percent decrease in production relative to the previous monitoring period. Hydraugers produced below historical average volumes of water throughout the monitoring period. Because hydraugers rely on gravity and water pressure (related to elevating groundwater table) for water production, generally hydraugers produce lower volumes during lower rainfall periods.

2.6 SLOPE INCLINOMETERS

Fugro monitored 18 slope inclinometers on a quarterly basis and 10 additional inclinometers on a semi-annual basis to measure subsurface ground deformation through June 2010.

Slope inclinometer measurement plots are presented in Appendix E. Two slope inclinometer plots are prepared for most inclinometer installations. The first data plot for each slope inclinometer presents readings recorded during the monitoring period. The date of the baseline reading is generally the last reading of the previous monitoring period (May or June 2009) and is indicated on each plot. The second data plot has a baseline reading from May or June 2005 to show historical readings since the movement indicated in the 2004 through 2005 monitoring year.

Interpretation of inclinometer data shows no interpreted measurable ground movement in the 27 inclinometers during the 2009 through 2010 monitoring period with the exception of SP-15, which showed a change of approximately 0.2 inches near the ground surface. SP-27A shows some change, but the potential movement magnitude and orientation is not clear and is within the reliable accuracy of the instrument.

A brief summary of each region is presented below and is summarized on Plate D-1. It is important to keep in mind the high sensitivity of the inclinomenter probes and the magnitude of the interpreted movements when reviewing the inclinometer data presented in this report. Plate D-1 notes the depths at which movement has been interpreted in the past, as well as whether the inclinometer penetrates the basal rupture surface. Shallower depths of interpreted movement above the base of the Big Rock Mesa Landslide have also been noted.

- **PCH Region.** The PCH Region extends along PCH in proximity of the southern boundary of the 1983 landslide. SP-15 showed a change of approximately 0.2 inches in the upper 10 feet. SP-27A shows some change at approximately 26 to 30 feet in depth, though it is within the reliable accuracy of the instrument.
- **Bluff Region.** The Bluff Region extends along the top of the slope immediately to the north of the PCH Region where intense ground cracking was observed during the

1983 landslide. No noticeable changes within the three inclinometers in the Bluff Region were observed.

- **Eastern Mesa Region.** The Eastern Mesa Region extends west to the ends of Inland Lane and Piedra Chica cul-de-sac. This area is bordered to the north by Big Rock Drive and to the south by the Bluff Region. No distinct offsets within the four inclinometers in the Eastern Mesa Region were observed.
- **Central Mesa Region.** The Central Mesa Region is located between the Bluff and Big Rock Mesa Drive and to the west of the Piedra Chica cul-de-sac. No distinct offsets within the four inclinometers in the Central Mesa Region were observed.
- **Western Extension Region.** The Western Extension Area encompasses approximately 79 acres, from PCH on the south to the upper ridgeline on the north, immediately west of the 1983 Big Rock Mesa landslide area. No distinct offsets within the four inclinometers in the Western Extension Region were observed.
- **Headscarp Region.** The Headscarp Region borders the Central Mesa Region to the north. No distinct offsets were observed in this inclinometer. Typically within the Assessment District SP-26, the only inclinometer in this region is first to move and the last to cease movement in response to heavy rainfall. Past movement has occurred along the identified slide plane between 700 and 720 feet elevation and at shallow depths at elevation 26 to 34 feet reflecting a smaller "headscarp" landslide.

3.0 WATER QUALITY MONITORING

3.1 REGIONAL BOARD REQUIREMENTS

Water quality monitoring was completed in general compliance with the NPDES permit, as required by the California Regional Water Quality Control Board (RWQCB).

On March 2, 2004, the RWQCB issued a new NPDES permit (CAG994004, CI-6896). On October 3, 2008, Order No. R4-2008-0032 superseded Order No. R4-2003-0111 and provided revised sampling and analysis requirements. New sampling requirements include quarterly sampling for sulfides and phenols and eliminated sampling for residual chlorine. Quarterly sampling was increased to monthly for turbidity, total suspended solids, Biochemical Oxygen Demand, settleable solids, and oil and grease.

Fugro completed quarterly sampling under the revised permit. The data collected and reports submitted are presented in Appendix E.

Water produced by dewatering wells and hydraugers is discharged to one of several storm-drain conveyance lines. Usually, several wells and hydraugers discharge to each storm-drain line. Other sources of water are also collected by the storm-drain system including stormwater runoff (during and following precipitation), irrigation runoff, domestic use surface runoff from car washing and hosing off of driveways, illicit discharges, groundwater seepage, and possibly other unidentified sources.

Prior to 2004, samples were collected from storm drains outlets. In November 2004, sampling locations were changed prior to fourth quarter collection of the 2004 monitoring year because the samples collected from storm drains represent discharge from uncontrolled sources in addition to dewatering discharge. The samples are currently collected directly from the dewatering system discharge lines (wells and hydraugers). This change in sampling methodology should be noted when comparing recent water quality data to data collected before the 2004 through 2005 monitoring period.

In July 2009, samples collected from dewatering well BYA-1 showed high levels for Settleable Solids, Total Suspended Solids and Turbidity. The levels were above the monthly average effluent limit. However, the dewatering well accounts for less than 10% of the port discharge; further, another sample taken from this Port, at W-8, was below monthly average effluent limits or not detected for the three constituents and also accounted for 45% of dewatering production. Therefore, Port 4 was in compliance.

3.2 WATER-QUALITY RESULTS

Results of water quality sampling and analyses are presented in Appendix E. Water quality monitoring, conducted in general conformance with the requirements of the RWQCB NPDES Permit, indicate that discharges from the dewatering wells and hydraugers generally meet discharge requirements; however, they have been periodically out of compliance for pH, residual chlorine (no longer tested), acute toxicity and settleable solids.

4.0 CAPITAL IMPROVEMENTS

4.1 DEWATERING WELLS

A replacement dewatering well, FW-2, was installed on Roca Chica during the 2009-2010 monitoring period. Drilling of the well took place from October 12, 2009 through October 22, 2009. Trenching for the discharge and electrical lines occurred during the month of November 2009. Electrical was connected and the well began discharging in February of 2010.

The well diagram and well report from the subcontractor, Consolidated Testing Laboratories, Inc. is included in Appendix F.

4.2 HYDRAUGER IMPROVEMENTS

No hydraugers were installed during the monitoring period.

5.0 FACILITY MAINTENANCE

5.1 FACILITY MAINTENANCE

The operating status of each dewatering well and hydrauger was checked monthly. When necessary, repair work was scheduled and undertaken as expeditiously as reasonable - typically within a matter of a few hours to a few days of identifying a problem. Generally, repairs

and maintenance consisted of well pump and electrical repairs. These repairs are summarized on the following table:

Table 2. Maintenance Activities

Date	Facility	Work Performed
July 3, 2009	W-13	New pump, cable
July 23, 2009	BYA-4, W-13	Repairs to electric connection for BYA-4; W-13 new pump provided
September 9, 2009	HD-10, HD-11	Repairs to leaking hydraugers
October 12-22, 2009	FW-2	Drilling of replacement dewatering well
November 2009	FW-2	Trenching for electrical and discharge lines, performed by Burns Pacific, for replacement dewatering well
December 1, 2009	W-16	New pump saver
February 4, 2010	FW-2	Connect electrical to dewatering well
February 3, 2010	BYA-7	New pump, pipe
July 23, 2010	BYA-11	New pump, motor, pipe

6.0 SUMMARY AND CONCLUSIONS

6.1 ANNUAL SUMMARY

- Groundwater levels in the Big Rock Mesa landslide are the primary factor controlling the stability of the landslide mass. Rises in groundwater levels tend to destabilize the landslide. Previous episodes of movement of the landslide have been directly related to high groundwater levels. Therefore, controlling the long-term average and peak groundwater levels in the landslide mass is the primary means available to reduce future movements of the landslide. The primary factors influencing recharge of groundwater to the landslide are: 1) septic discharge, 2) rainfall, 3) irrigation, and 4) water line and pool leakage.
- Monitoring data related to rainfall and imported water usage indicate the following:
    - Recorded rainfall of 17.97 inches in the rainy season of the monitoring period was above the historical average rainfall from 1969 through 2010 for the Malibu area.
    - Use of imported water decreased approximately 0.2 percent from the previous monitoring year and 35 percent above the average usage in 1984.
- Groundwater levels in 29 monitoring wells were measured regularly during the monitoring period. Significantly high groundwater levels were recorded in 13 of the 29 piezometers.

- The overall dewatering rate for the dewatering wells and hydraugers was approximately 66,228 gpd for this monitoring period, which is approximately 5 percent below last year's average and below the average production rate since 2004.
- Interpretation of inclinometer data show no measurable ground movement in the 28 inclinometers throughout Big Rock Mesa during the 2009 through 2010 monitoring year, with the exception of SP-15 (change of approximately 0.2 inches).
- Water quality monitoring, conducted in general conformance with the requirements of the RWQCB NPDES Permit, indicate that discharges from the dewatering wells and hydraugers were generally in compliance with discharge permit limits.
- Routine maintenance was conducted throughout the year on the dewatering wells and hydraugers. Ongoing maintenance and repair work is essential to maintaining the capacity of the dewatering system. No unusual maintenance issues were encountered.

6.2 CONCLUDING COMMENTS

- It is important to recognize that the dewatering facilities installed over the preceding decades are aging and require increasing maintenance and regular replacement. The anticipated lifespan of an average hydrauger is measured in years, not decades. Dewatering wells may last from a few years to several decades.

  In order to maintain peak efficiency of the horizontal drains and wells, cleaning and re-development of the dewatering system should be conducted on a regular basis.

- Water conservation throughout the Big Rock Mesa area is essential to reduce groundwater recharge. As previously stated, rainfall and imported (household) water usage are the primary sources of groundwater recharge and, therefore, the primary factors controlling the movement of the landslide. Because seasonal rainfall is beyond the control of homeowners and the City, water conservation is the most critical remaining means of controlling groundwater recharge on the Mesa.
- The geology throughout the Assessment District is not uniform and can change from location to another. Areas of low permeability, such as in the Eastern Mesa Region, can limit the dewatering production of individual facilities.

7.0 REFERENCES

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PLATES

BASE MAP SOURCE: USGS 1:100,000-scale Metric Topographic Map of Los Angeles, California (1979).

NORTH
0 4000 8000
FEET

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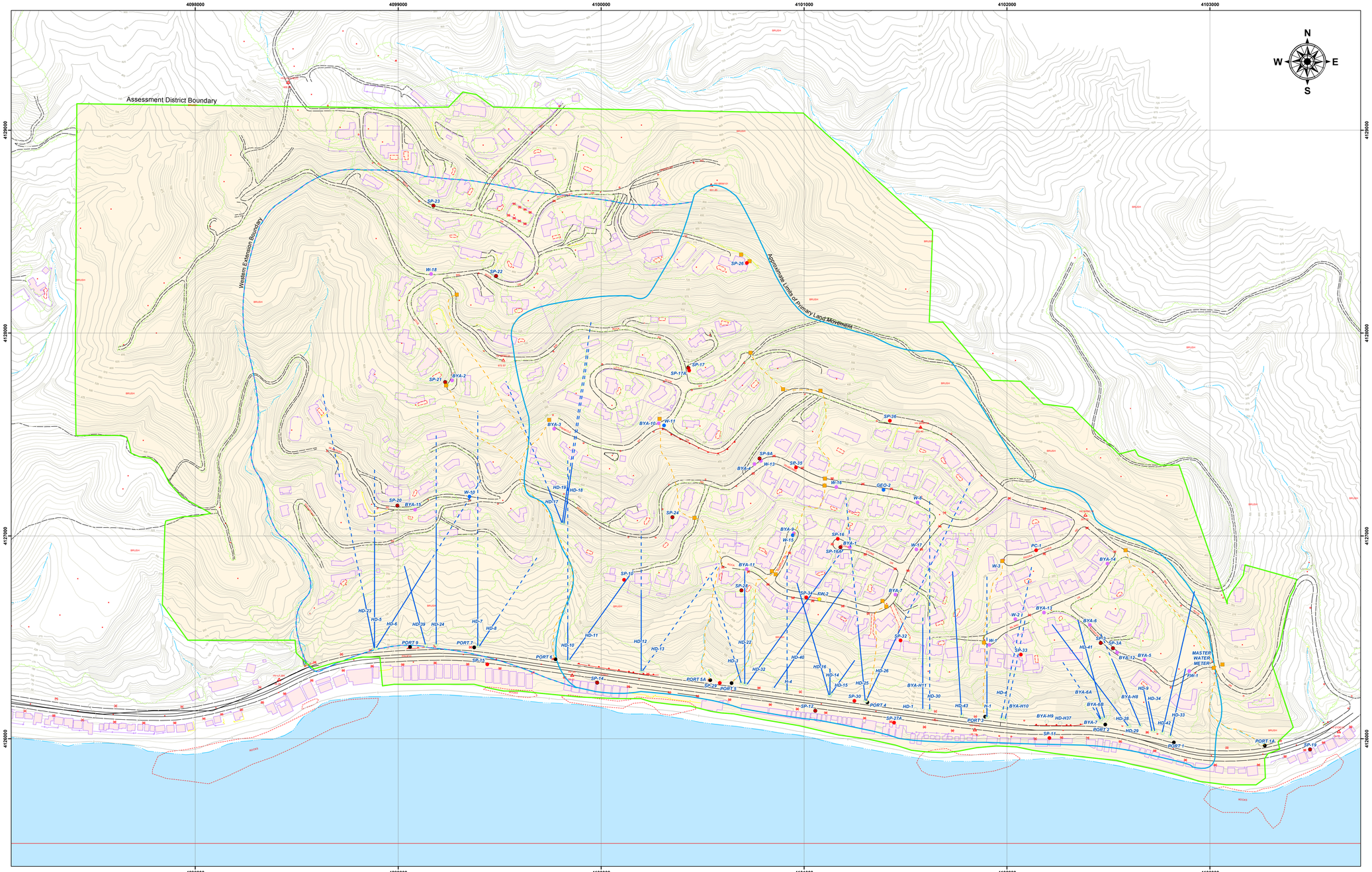
SITE LOCATION MAP

Big Rock Mesa Landslide Assessment District
Malibu, California



BIG ROCK MESA LANDSLIDE ASSESSMENT DISTRICT MALIBU, CALIFORNIA

ASSESSMENT DISTRICT MAP

April 2011

FUGRO CONSULTANTS, INC.
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LEGEND

- Active Dewatering Well
- GPS Monument
- Destroyed Hydrauger
- Nonproducing Hydrauger
- Producing Hydrauger
- Slope Inclinometer Does penetrate rupture surface.
- Slope Inclinometer Does not penetrate rupture surface.
- Standpipe
- Storm Drain Outfall
- Storm Drain Catch Basin
- Coordinate Grid: California State Plane, Zone 7, NAD 27, Feet
- Big Rock Mesa Landslide District Boundary
- Storm Drain
- Hydrauger

HORIZONTAL SCALE: 1:2,400

200 100 0 200 Feet

REVISIONS

No.	DATE	DESCRIPTION	BY		No.	DATE	DESCRIPTION	BY
1	08/11/04	GPS Field Results	KRS		4	04/22/11	Update Wells	CBD
2	08/18/04	GPS Field Results	KRS					
3	09/19/06	Hydraugers	CAB					

DATE:	WORK ORDER:		PLATE NO.:
04/22/2011	04.B33990006		2
DRAWN BY:	CHECKED BY:	APPROVED BY:	
CBD	AS	SM	

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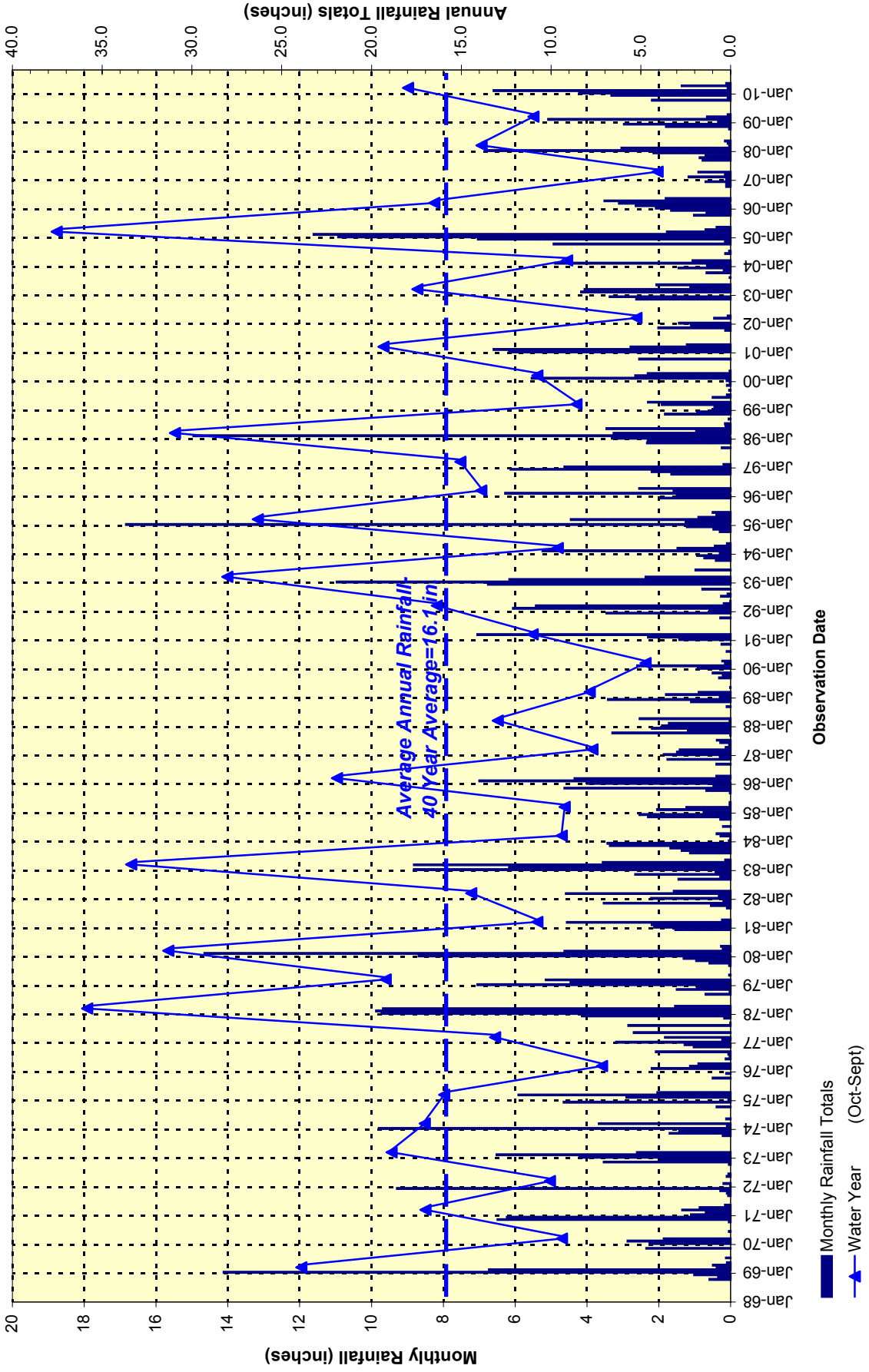
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30.0
25.0
20.0
15.0
10.0
5.0
0.0
Average Annual Rainfall-
40 Year Average=16.1in
Observation Date
Jan-10
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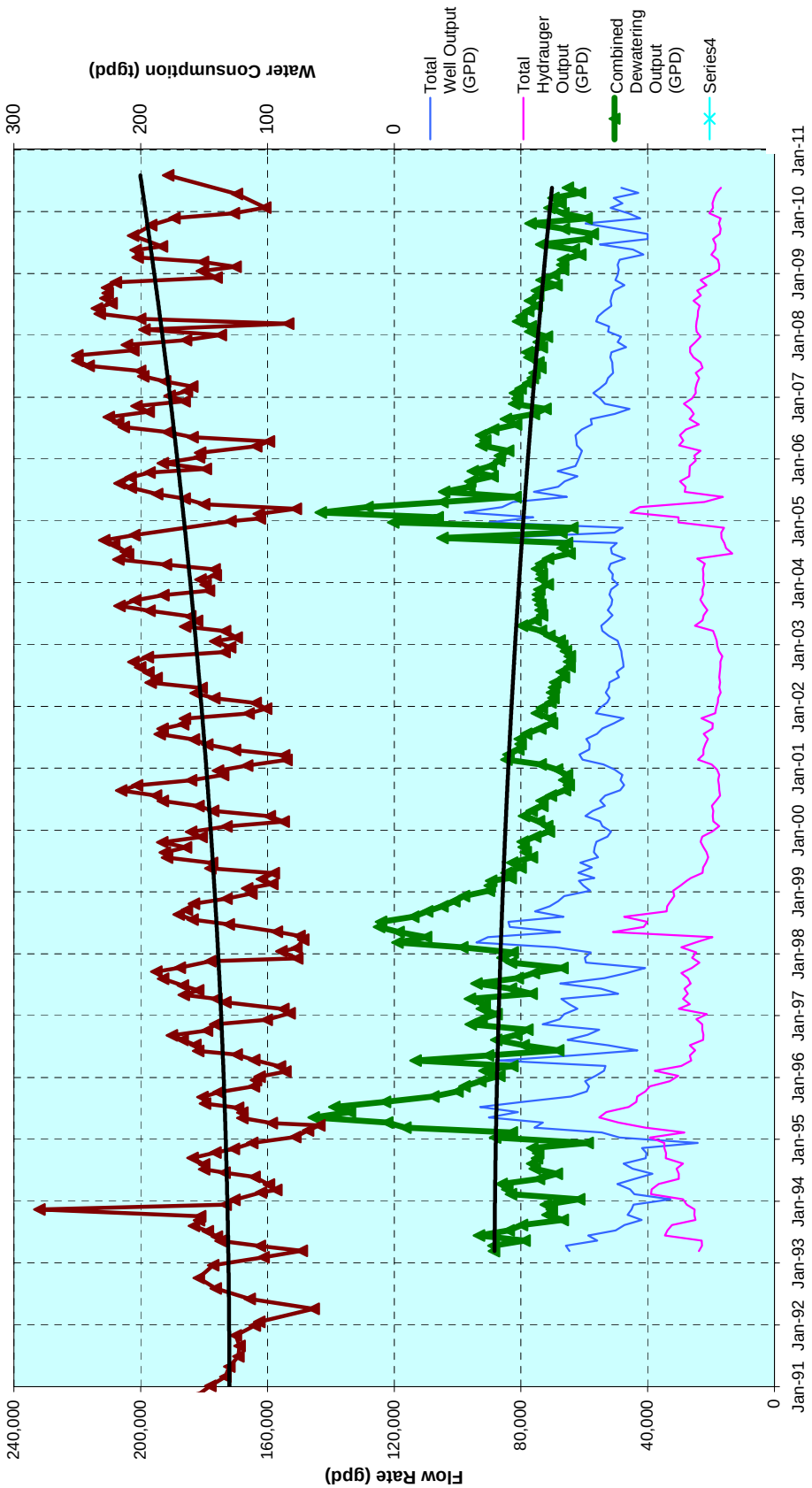
Jan-75
Jan-74
Jan-73
Jan-72
Jan-71
Jan-70
Jan-69
Jan-68
Monthly Rainfall Totals
Water Year (Oct-Sept)
Monthly Rainfall (inches)
20
18
16
14
12
10
8
6
4
2
0

PLATE 3



Total Dewatering Rate vs. Total Water Consumption
All Wells
All Hydraugers
Wells & Hydraugers (Combined)
Total Water Consumption

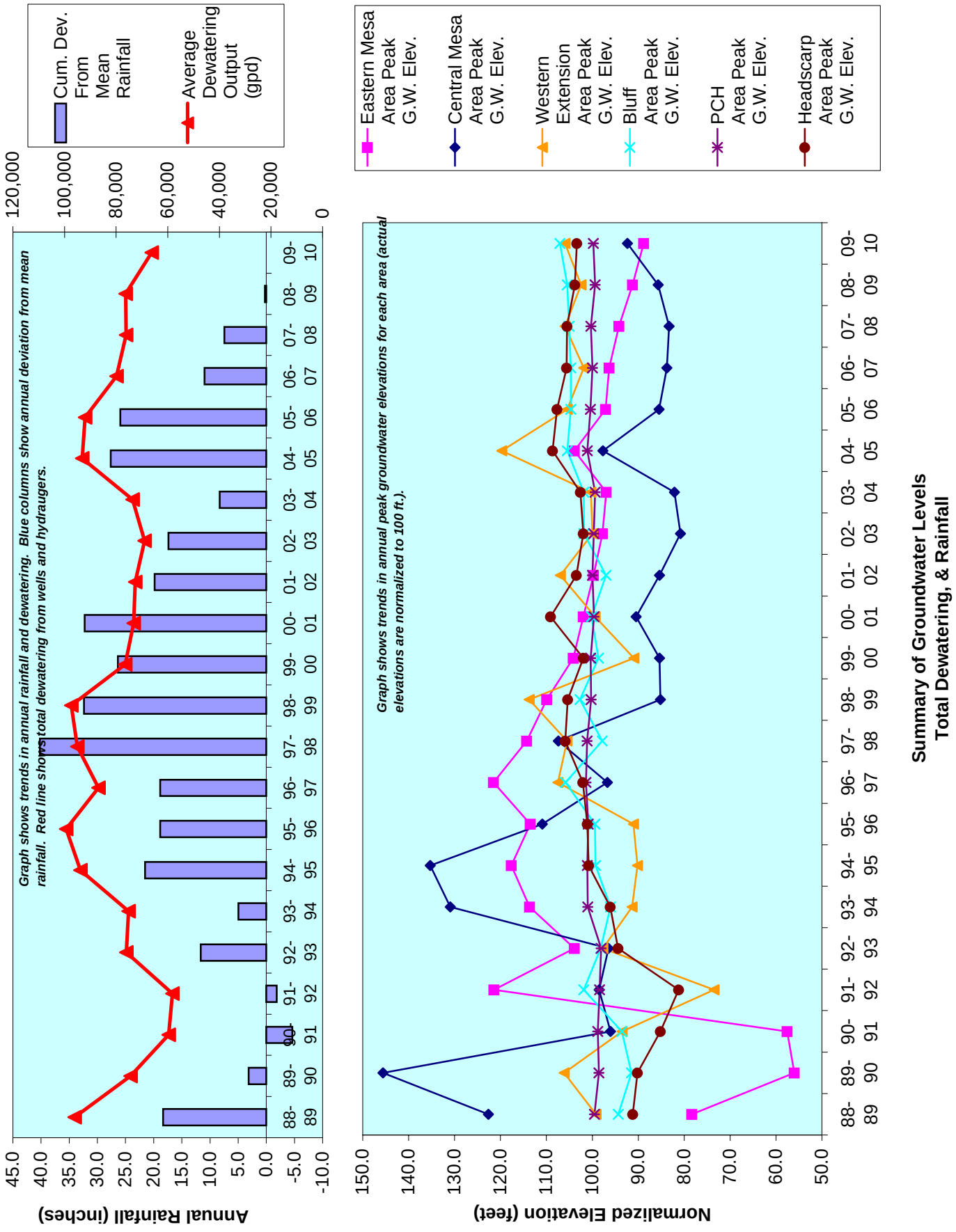
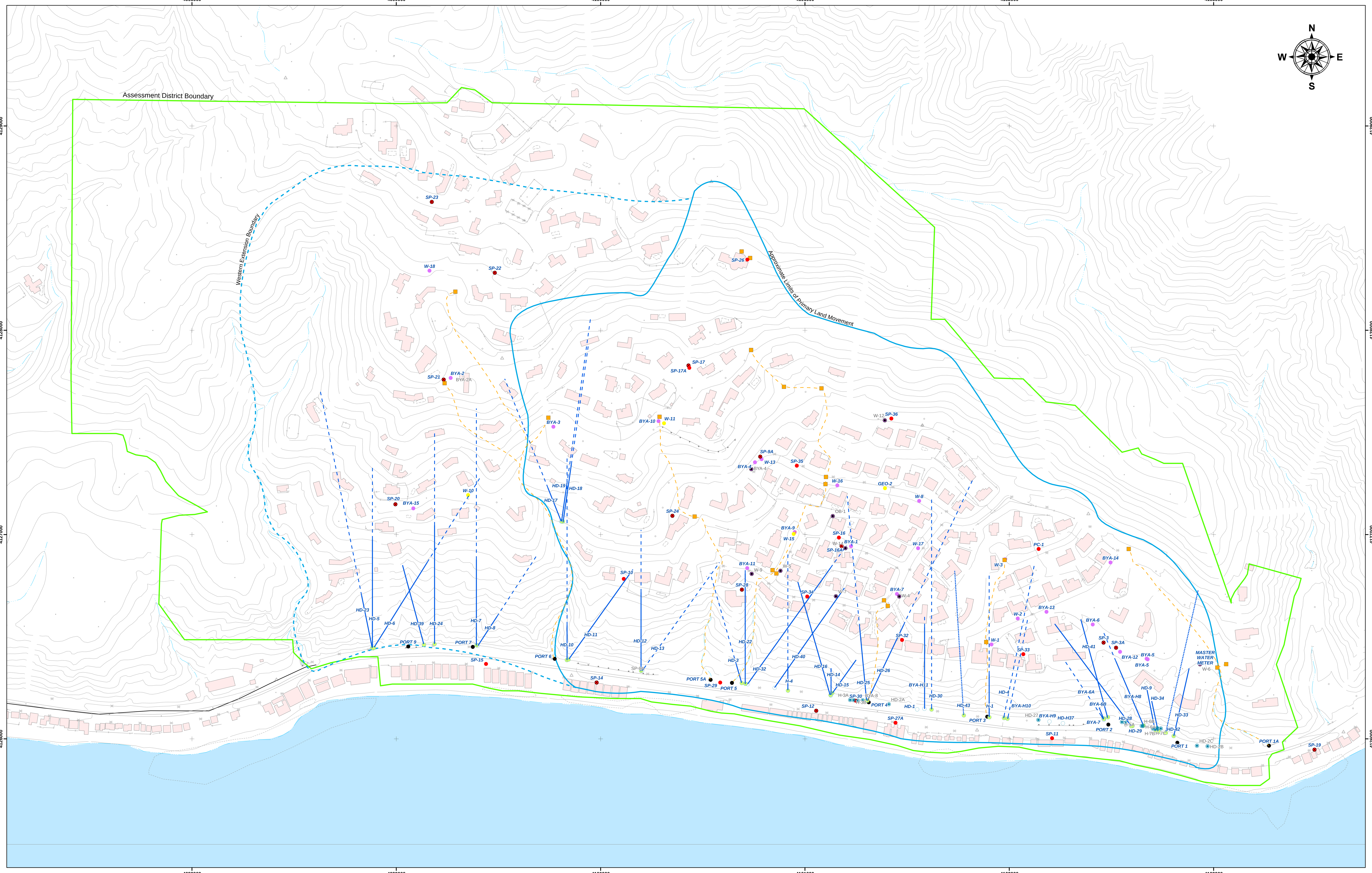

Cum. Dev. From Mean Rainfall
Average Dewatering Output (gpd)
Graph shows trends in annual rainfall and dewatering. Blue columns show annual deviation from mean rainfall. Red line shows total dewatering from wells and hydraugers.
Annual Rainfall (inches)
Eastern Mesa Area Peak G.W. Elev.
Central Mesa Area Peak G.W. Elev.
Western Extension Area Peak G.W. Elev.
Bluff Area Peak G.W. Elev.
PCH Area Peak G.W. Elev.
Headscarp Area Peak G.W. Elev.
Graph shows trends in annual peak groundwater elevations for each area (actual elevations are normalized to 100 ft.).
Normalized Elevation (feet)
Summary of Groundwater Levels
Total Dewatering, & Rainfall

PLATE 6



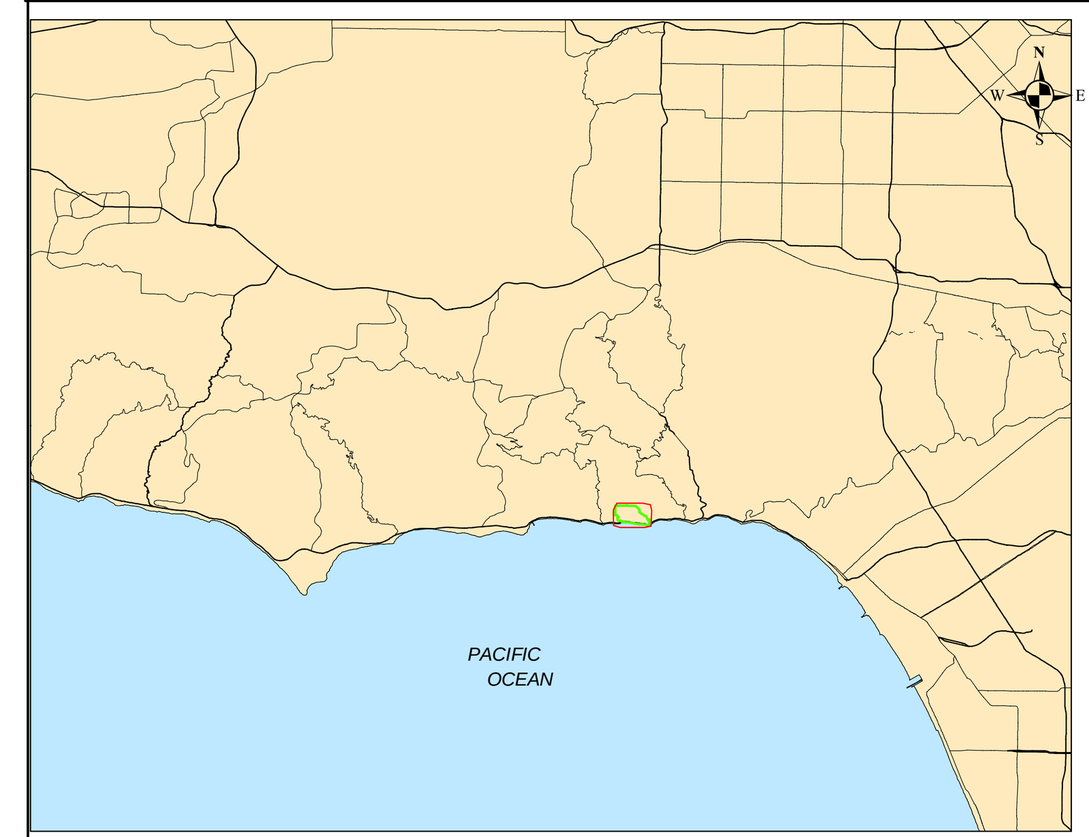
BIG ROCK MESA LANDSLIDE ASSESSMENT DISTRICT MALIBU, CALIFORNIA

ASSESSMENT DISTRICT MAP

February 2007

Plate 7

FUGRO WEST, INC.
4820 McGrath St., Suite 100, Ventura, California 93003
Tel: (805) 650-7000, Fax: (805) 650-7010



LEGEND

Current Facilities

- Active Dewatering Well
- Slope Inclinometer Does not penetrate rupture surface.
- Slope Inclinometer Does penetrate rupture surface.
- Standpipe
- GPS Monument
- Producing Hydrauger
- Nonproducing Hydrauger
- Storm Drain Outfall
- Destroyed Hydrauger
- Storm Drain Catch Basin
- Coordinate Grid: California State Plane, Zone 7, NAD 27, Feet

- Big Rock Mesa Landslide District Boundary
- Storm Drain
- Hydrauger
- Building

Inactive Facilities

- Dewatering Well
- Slope Inclinometer Does not penetrate rupture surface.
- Slope Inclinometer Does penetrate rupture surface.
- Standpipe
- GPS Monument
- Producing Hydrauger
- Nonproducing Hydrauger
- Storm Drain Outfall
- Destroyed Hydrauger
- Storm Drain Catch Basin

HORIZONTAL SCALE: 1:2,400

200 100 0 200 Feet

REVISIONS

No.	DATE	DESCRIPTION	BY
1	08/11/04	GPS Field Results	KRS
2	08/18/04	GPS Field Results	KRS
3	09/19/06	Hydraugers	CAB

DATE:	WORK ORDER:		PLATE NO.:
8/14/2007	3399.006		7
DRAWN BY:	CHECKED BY:	APPROVED BY:	
CBD	AS	SM	

APPENDIX A
GROUNDWATER LEVEL DATA

Big Rock Mesa: Piezometer Information					
Piezometer ID	**Surface Elev. (ft)**	**Tip No.**	**TIP DEPTH (ft.)**	**INSTALL BY**	**STATUS**
W-10	432	230	230	BYA	Functioning
W-11	507	214	214	BYA	Functioning
W-15	295	164	164	BYA	Functioning
PC-1	250	TIP-1 TIP-2 TIP-3 TIP-4 TIP-5	120 90 70 40 20	BYA	Functioning Functioning Functioning Functioning Malfunctioning
SP-5A	NA	TIP-1 TIP-2 TIP-3	NA	BYA	Non-functioning - Covered by asphalt pavement
SP-8A	NA	TIP-1 TIP-2 TIP-3	NA	BYA	Non-functioning - Covered by landslide
SP-17A	540	TIP-1 TIP-2 TIP-3 TIP-4 TIP-5	Unknown Unknown Unknown Unknown Unknown	BYA	Functioning, results questionable, data not presented
SP-34	270	TIP-1 TIP-2 TIP-3 TIP-4	381 282 182 82	BYA	Functioning
SP-35	345	TIP-1 TIP-2 TIP-3 TIP-4	393 293 193 98	BYA	Functioning Functioning Functioning Malfunctioning
SP-36	380	TIP-1 TIP-2 TIP-3	255 195 95	BYA	Functioning
BYA-2A	665	TIP-1 TIP-2 TIP-3	Unknown Unknown Unknown	BYA	Functioning
BYA-3A	NA	TIP-1 TIP-2 TIP-3 TIP-4	NA	BYA	Malfunctioning
BYA-4A	NA	TIP-1 TIP-2 TIP-3 TIP-4 TIP-5 TIP-6	NA	BYA	Malfunctioning
BYA-5A	NA	TIP-1 TIP-2 TIP-3 TIP-4	NA	BYA	Malfunctioning Malfunctioning Malfunctioning Functioning
GEO-2 (OB-2)	305	TIP-1 TIP-2 TIP-3	NA	GS	Malfunctioning Functioning (Black Tip) Functioning (Clear Tip)
GEO-1	NA	TIP-1 TIP-2 TIP-3	NA	GS	Restricted Access (possibly malfunctioning)

NOTE: ADDITIONAL DATA FOR STANDPIPE PIEZOMETERS IS PRESENTED IN APPENDIX D, PLATE D-1

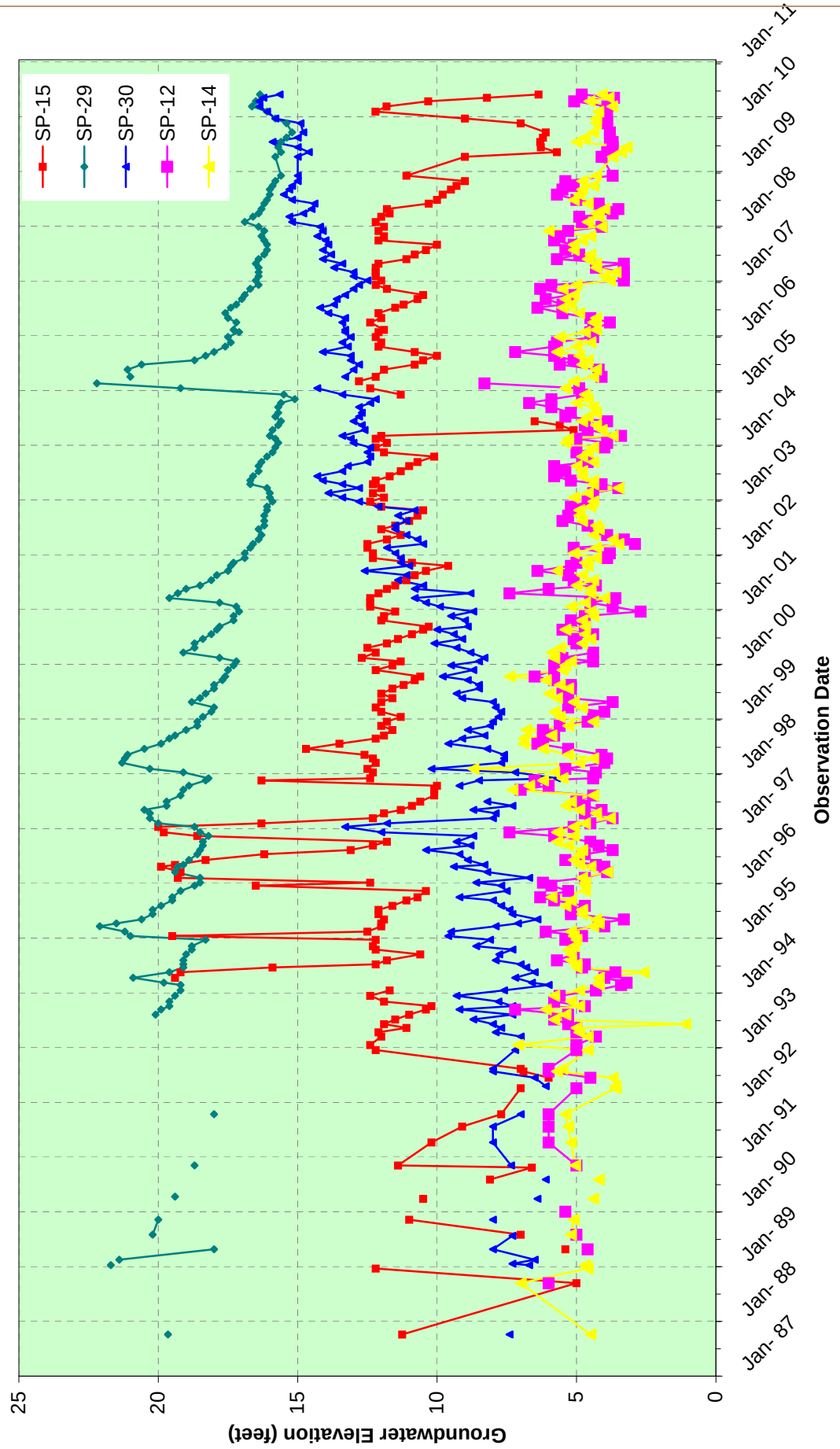
Groundwater Elevation Data Analysis

Piezometer I.D.		1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-2009	**2009-2010**	Highest Recorded	Mean '91 - '10	Stand Dev.	09-10 vs 97-98	09-10 vs 08-09	09-10 vs mean
PCH REGION																																		
SP-11	Mean El.						5.7	5.3	4.7	4.5	5.7	5.7	5.5	5.8	5.5	5.8	6.3	5.5	4.8	5.4	5.4	5.2	5.3	5.1	5.4	4.9	4.6	5.1	Sep-01	*5.3*	*0.4*	*-0.7*	*0.5*	*-0.2*
	Highest El.						6.4	5.8	5.5	5.0	6.0	7.4	6.9	7.5	6.7	7.3	8.1	6.5	5.5	8.3	7.0	5.7	5.8	5.9	7.6	5.9	5.2	5.6	8.3	*6.5*	*1.0*	*-1.7*	*0.4*	*-0.9*
SP-12	Mean El.						4.6	5.4	5.5	5.4	5.2	4.8	4.9	5.1	4.8	5.0	5.3	5.3	4.7	4.5	4.8	4.6	5.5	5.2	4.9	4.8	4.7	4.0	Feb-05	*4.9*	*0.4*	*-1.0*	*-0.6*	*-0.9*
	Highest El.						4.6	5.4	6.0	6.0	6.0	7.2	6.1	6.3	7.4	7.0	6.4	6.5	7.4	6.4	6.4	6.4	8.3	7.2	6.4	5.8	5.7	5.1	8.30	*6.5*	*0.7*	*-1.9*	*-0.6*	*-1.4*
SP-14	Mean El.					4.5	4.7	4.4	4.8	4.3	4.8	4.9	4.9	4.9	5.0	5.9	5.8	5.6	4.7	4.5	4.6	4.6	4.7	4.8	4.7	4.7	4.3	4.3	Feb-98	*4.8*	*0.5*	*-1.6*	*0.0*	*-0.5*
	Highest El.					4.5	4.7	4.4	5.2	5.4	7.1	6.1	5.3	5.9	5.7	8.7	6.9	7.4	5.4	5.7	5.1	5.4	5.4	5.7	5.5	6.0	5.1	5.0	8.7	*5.9*	*1.0*	*-3.7*	*-0.1*	*-0.9*
SP-15	Mean El.					11.3	8.8	10.5	9.1	7.5	10.7	13.4	12.6	15.1	14.5	12.2	12.0	11.7	11.6	11.5	11.7	10.0	11.9	11.6	11.6	11.4	8.9	8.4	Jan-97	*11.5*	*1.9*	*-3.8*	*-0.5*	*-3.1*
	Highest El.					11.3	12.2	10.5	11.4	9.1	12.4	19.4	19.5	19.9	20.0	16.3	13.5	12.7	12.4	12.5	12.4	12.2	12.8	12.4	12.2	12.2	11.1	12.2	20.0	*14.0*	*3.3*	*-4.1*	*1.1*	*-1.7*
SP-19	Mean El.							3.6	3.6	3.1	4.5	4.4	4.7	4.6	4.3	4.4	4.5	3.8	3.4	3.7	3.5	3.4	3.9	3.6	3.6	3.5	3.1	3.6	Mar-95	*3.9*	*0.5*	*-0.7*	*0.6*	*-0.2*
	Highest El.							4.1	4.0	3.4	5.0	5.0	5.9	5.4	4.9	5.2	5.0	4.5	3.9	4.3	4.1	4.0	4.2	4.5	4.4	4.1	3.6	4.6	5.9	*4.5*	*0.6*	*-0.6*	*1.0*	*0.1*
SP-27A	Mean El.						7.1	9.1	8.8	8.7	9.3	9.4	9.7	9.5	9.5	9.7	9.6	10.1	9.2	9.0	9.5	9.3	10.2	9.7	9.5	10.0	9.5	10.0	Ap-00/Fe-08	*9.6*	*0.4*	*0.3*	*0.5*	*0.4*
	Highest El.						7.1	10.1	9.2	10.2	10.0	10.2	10.8	10.3	10.4	10.7	10.4	13.7	9.6	9.7	9.9	9.8	13.5	12.5	10.2	13.7	10.1	10.6	13.7	*10.9*	*1.4*	*-0.1*	*0.5*	*-0.3*
SP-29	Mean El.					19.7	20.4	19.4	18.7	18.0		19.7	20.0	19.2	19.2	19.7	18.8	18.0	18.1	17.0	16.2	16.0	18.0	17.7	16.7	16.3	15.8	15.9	Feb-05	*17.8*	*1.4*	*-3.8*	*0.1*	*-1.9*
	Highest El.					19.7	21.7	19.4	18.7	18.0		20.9	22.1	20.2	20.5	21.3	19.9	19.1	19.6	18.1	16.7	16.4	22.2	18.7	17.4	16.9	16.1	16.6	22.2	*18.9*	*2.0*	*-4.7*	*0.5*	*-2.3*
SP-30	Mean El.					7.4	7.1	6.4	7.2	6.9	7.7	7.3	7.9	8.1	9.6	8.0	8.5	9.0	9.7	11.3	12.6	12.9	13.0	13.4	13.4	14.4	15.1	15.7	Mar-10	*10.8*	*2.9*	*7.7*	*0.6*	*5.0*
	Highest El.					7.4	8.0	6.4	8.0	8.0	8.0	9.3	9.6	9.4	13.3	10.2	9.6	10.1	10.8	12.6	14.3	13.4	14.3	14.1	14.2	15.3	15.5	16.4	16.4	*12.0*	*2.7*	*6.2*	*0.9*	*4.4*
Area Average	Mean El.					10.7	8.3	8.0	7.8	7.3	6.8	8.7	8.8	9.1	9.1	8.8	8.8	8.6	8.3	8.4	8.5	8.2	9.1	8.9	8.7	8.7	8.2	8.4		*8.5*	*0.6*	*-0.5*	*0.1*	*-0.1*
	Highest El.					10.7	9.2	8.3	8.5	8.1	7.8	10.7	10.8	10.6	11.1	10.8	10.0	10.1	9.3	9.7	9.5	9.2	10.8	10.1	9.7	10.0	9.1	9.5		*9.8*	*0.9*	*-1.3*	*0.5*	*-0.3*
Change vs Prior	Mean El.						-2.4	-0.3	-0.2	-0.5	-0.4	1.8	0.1	0.3	0.0	-0.2	0.0	-0.2	-0.3	0.1	0.2	-0.3	0.8	-0.2	-0.2	0.0	-0.5	0.1						
	Highest El.						-1.5	-1.0	0.2	-0.4	-0.4	2.9	0.1	-0.2	0.5	-0.3	-0.9	0.1	-0.7	0.4	-0.2	-0.3	1.7	-0.7	-0.4	0.3	-0.9	0.5						
BLUFF REGION																																		
SP-10	Mean El.	144.7	76.0	50.0	50.5	49.2	47.4	45.9	48.8	55.3	44.6	42.9	41.6	42.0	41.6	41.3	42.4	42.8	42.9	43.3	43.7	44.3	45.5	45.2	45.2	44.8	43.7	44.0	Dec-83	*44.0*	*3.0*	*2.7*	*0.2*	*-0.1*
	Highest El.	174.2	130.0	50.0	50.5	50.0	52.0	46.0	55.5	74.0	45.9	44.4	42.2	42.6	41.9	41.6	44.8	43.4	43.3	43.6	44.1	44.4	47.2	45.4	45.4	45.2	44.9	44.6	174.2	*45.7*	*7.0*	*3.0*	*-0.3*	*-1.1*
SP-28	Mean El.						36.4	33.7	37.5	33.7	33.6	33.7	33.0	32.7	32.2	31.9	32.6	33.2	33.1	33.0	32.9	32.9	34.9	34.7	33.3	33.1	32.8	33.1	Sep-88	*33.2*	*0.7*	*1.2*	*0.3*	*-0.1*
	Highest El.						40.5	33.8	40.0	36.0	35.2	35.2	33.1	33.1	32.4	32.2	34.9	33.6	33.2	33.3	33.0	32.9	36.1	36.0	33.6	33.1	33.1	33.4	40.5	*33.9*	*1.3*	*1.2*	*0.3*	*-0.5*
SP-32	Mean El.						75.3	79.1	72.6	76.1	90.1	85.9	92.5	92.5	94.9	76.5	84.2	79.7	88.2	70.1	89.9	91.1	99.9	100.2	102.3	102.4	104.4	105.1	Apr-96	*90.8*	*10.3*	*28.6*	*0.7*	*14.3*
	Highest El.						78.2	82.3	72.8	83.2	101.0	96.2	110.2	110.2	130.9	107.4	95.3	88.4	97.0	83.6	106.0	105.8	106.7	105.9	105.9	105.8	105.8	105.8	130.9	*102.7*	*10.8*	*-1.6*	*0.0*	*3.1*
SP-34	Mean El.																74.4	77.6	76.2	76.4	73.5	73.8	80.0	79.7	82.8	84.5	86.0	88.6	Apr-09	*79.5*	*5.0*	*88.6*	*2.6*	*9.1*
	Highest El.																85.9	79.5	77.3	77.7	74.4	74.5	82.1	81.4	83.8	86.1	88.0	94.5	88.0	*82.1*	*5.9*	*94.5*	*6.5*	*12.4*
Area Average	Mean El.	144.7	76.0	50.0	50.5	49.2	53.0	52.9	53.0	55.0	56.1	54.2	55.7	55.7	56.2	49.9	58.4	58.3	60.1	55.7	60.0	60.5	65.1	64.9	65.9	66.2	66.7	67.7		*59.6*	*5.1*	*17.8*	*0.9*	*8.1*
	Highest El.	174.2	130.0	50.0	50.5	50.0	56.9	54.0	56.1	64.4	60.7	58.6	61.8	62.0	68.4	60.4	65.2	61.2	62.7	59.6	64.4	64.4	68.0	67.2	67.2	67.6	68.0	69.6		*64.3*	*3.4*	*9.2*	*1.6*	*5.3*
Change vs Prior	Mean El.		-68.7	-26.0	0.5	-1.3	3.8	-0.2	0.1	2.0	1.1	-1.9	1.5	0.1	0.5	-6.3	8.5	-0.1	1.8	-4.4	4.3	0.5	4.6	-0.1	0.9	0.3	0.5	0.9						
	Highest El.		-44.2	-80.0	0.5	-0.5	6.9	-2.9	2.1	8.3	-3.7	-2.1	3.2	0.1	6.4	-8.0	4.8	-4.0	1.5	-3.2	4.8	0.0	3.6	-0.8	0.0	0.4	0.4	1.6						
HEADSCARP REGION																																		
SP-26	Mean El.				541.9	540.2	538.9	535.8	532.4	527.0	532.6	543.6	543.3	547.8	547.1	549.9	551.9	549.8	550.7	550.6	549.1	550.7	553.1	554.7	553.8	552.9	551.4	551.2	Apr-01	*547.9*	*7.1*	*1.3*	*-0.2*	*3.2*
	Highest El.				542.0	540.2	540.0	539.0	534.0	530.0	543.2	544.9	549.6	549.9	550.9	554.7	554.2	550.8	557.9	552.3	550.8	551.4	557.5	556.5	554.4	554.3	552.6	552.2	557.9	*551.0*	*6.3*	*-2.5*	*-0.4*	*1.3*
Change vs Prior	Mean El.		0.0	0.0	541.9	-1.6	-1.4	-3.1	-3.3	-5.4	5.6	11.0	-0.3	4.4	-0.7	2.8	2.1	-2.1	0.9	-0.1	-1.5	1.6	2.5	1.5	-0.9	-0.9	-1.5	-0.2						
	Highest El.		0.0	0.0	542.0	-1.8	-0.2	-1.0	-5.0	-4.0	13.2	1.7	4.7	0.3	1.0	3.8	-0.5	-3.4	7.1	-5.6	-1.5	0.6	6.1	-1.0	-2.1	-0.1	-1.7	-0.4						
CENTRAL MESA																																		
SP-9A	Mean El.	254.7	232.0	232.0	227.5	236.3	222.2	220.0	233.3	215.1	221.9	226.8	220.8	222.0	222.0	224.6	226.8	226.4	228.0	229.3	229.5	230.0	229.7	229.9	228.3	227.5	227.1	227.7	Dec-83	*226.0*	*3.9*	*3.1*	*0.7*	*1.8*
	Highest El.	270.0	232.0	232.0	232.0	236.3	224.0	222.2	235.2	222.9	228.5	228.5	225.5	223.8	223.7	231.1	229.0	226.9	231.0	230.6	232.3	231.5	232.5	231.9	229.7	229.7	228.4	229.2	270.0	*228.8*	*3.0*	*-1.9*	*0.8*	*0.4*
SP-16	Mean El.	226.5	195.4	174.3	171.9	171.5	161.8	113.0	86.5	95.7				68.2	47.9	48.0	46.5	48.4	53.1	47.9	46.0	46.6	87.0	51.6	50.1	50.1	53.7	107.8	Mar-84	*59.3*	*19.7*	*59.8*	*54.1*	*48.5*
	Highest El.	226.5	214.7	180.3	174.2	177.1	182.5	147.8	89.5	121.0				117.8	61.3	66.5	53.5	78.7	89.7	64.4	46.6	49.2	124.0	57.7	50.9	61.8	79.4	121.3	226.5	*77.7*	*28.3*	*54.8*	*41.9*	*43.5*
SP-16A	Mean El.					181.2	153.3	122.0	108.4	108.3	122.2	125.7	147.9	127.6	113.4	126.0	126.8	149.2	180.8	146.0	105.0	133.0	185.1	182.1	180.1	165.8	173.7	166.3	Jan-05	*145.5*	*27.1*	*40.3*	*-7.4*	*20.8*
	Highest El.					181.2	180.3	148.8	124.5	124.5	184.5	169.1	186.3	182.3	154.9	185.5	182.4	189.4	184.5	183.9	170.0	183.0	196.2	183.8	182.8	184.4	181.8	183.1	196.2	*178.5*	*15.7*	*-2.4*	*1.3*	*4.6*
SP-17	Mean El.	406.0	401.8	395.3	399.1	398.3	393.3	392.0	385.1	382.7		385.5	390.1	389.3	388.3	393.6	390.0	385.6	389.1	386.9	387.9	388.6	393.8	393.6	391.9	388.4	386.8	386.1	Jan-84	*388.8*	*3.1*	*-7.5*	*-0.7*	*-2.7*
	Highest El.	410.0	403.0	395.3	400.1	400.0	401.0	394.1	386.0	383.2		389.8	404.3	396.5	396.5	408.8	395.5	386.9	399.2	389.1	396.4	392.0	406.5	398.1	401.5	392.5	394.8	397.0	410.0	*396.0*	*6.7*	*-11.8*	*2.2*	*0.9*
SP-17A	Mean El.						360.1	377.4	376.6	374.5	379.2	379.8	377.8	379.3	377.2	379.1	379.1	375.3	376.6	375.6	374.9	376.0	378.0	379.4	378.4	375.3	374.2	372.8	Feb-94	*377.0*	*2.1*	*-6.3*	*-1.4*	*-4.2*
	Highest El.						372.4	378.5	377.7	375.7	385.0	389.8	384.4	381.6	380.5	386.7	382.9	376.4	381.1	377.3	376.5	377.2	385.2	383.4	380.7	376.3	376.3	373.7	389.8	*380.6*	*4.4*	*-13.0*	*-2.6*	*-6.8*
SP-24	Mean El.	195.3	102.1	49.0	49.2		49.0		35.1	38.6	38.5	38.9	37.2	39.0	39.1	40.0	41.6	41.4	41.7	42.3	41.4	43.3	46.3	47.6	46.1	45.3	45.6	47.0	Mar-84	*42.2*	*3.3*	*7.0*	*1.5*	*4.9*
	Highest El.	220.6	170.0	50.0	52.0		52.0		39.6	40.0	38.9	41.0	39.6	39.6	39.8	42.0	43.3	42.2	43.0	43.7	41.8	44.0	51.0	50.2	48.2	46.0	46.0	49.0	220.6	*43.6*	*3.8*	*7.0*	*3.0*	*5.4*
SP-35	Mean El.																92.2	88.3	93.6	97.4	90.5	89.4	90.8	88.2	86.8	85.9	86.0	89.4	Apr-01	*89.9*	*3.4*		*3.4*	*-0.5*
	Highest El.																101.3	91.0	104.0	102.9	92.7	90.6	95.2	89.0	87.2	86.4	90.2	95.8	104.0	*93.9*	*6.1*		*5.6*	*1.9*
SP-36	Mean El.																193.3	193.0	192.8	192.3	191.4	191.0	191.4	191.3	191.0	190.7	190.1	190.4	Mar-99	*191.6*	*1.0*		*0.4*	*-1.1*
	Highest El.																195.2	193.4	193.0	192.7	191.9	191.2	192.2	191.8	191.3	190.9	190.5	191.4	195.2	*192.1*	*1.3*		*0.9*	*-0.7*
Area Average	Mean El.	270.6	232.8	212.6	211.9	246.8	223.3	244.9	204.1	202.5	190.4	231.3	234.7	204.2	198.0	201.9	187.0	188.4	194.5	189.7	183.3	187.2	200.3	195.4	194.1	191.1	192.1	198.4		*198.1*	*13.6*	*-3.4*	*6.3*	*0.3*
	Highest El.	281.8	254.9	214.4	214.6	248.7	235.4	258.3	208.8	211.2	209.2	243.6	248.0	223.6	209.5	220.1	197.9	198.1	203.2	198.1	193.5	194.8	210.4	198.2	196.5	196.0	198.4	205.1		*208.2*	*15.7*	*-15.0*	*6.6*	*-3.1*
Change vs Prior	Mean El.		-37.8	-20.2	-0.7	34.9	-23.5	21.6	-40.8	-1.7	-12.0	40.9	3.4	-30.5	-6.2	3.9	-14.8	1.4	6.0	-4.7	-6.4	3.9	13.0	-4.8	-1.4	-3.0	1.0	6.3						
	Highest El.		-26.9	-40.5	0.2	34.1	-13.3	22.9	-49.5	2.5	-2.0	34.4	4.4	-24.4	-14.2	10.7	-22.2	0.2	5.1	-5.1	-4.6	1.3	15.5	-12.1	-1.7	-0.5	2.4	6.6						
WESTERN EXTENSION																																		
SP-20	Mean El.	317.0	254.6	220.5	213.3	194.5	217.5	186.2	198.8	160.3	184.9	175.1	149.8	155.0	162.1	165.5	231.8	196.9	204.6	195.8	186.4	183.1	219.7	228.8	230.9	237.6	221.0	215.9	Feb-84	*195.0*	*28.8*	*50.5*	*-5.0*	*20.9*
	Highest El.	350.0	277.0	224.0	216.7	194.5	231.0	214.5	202.4	165.5	233.0	223.3	159.4	158.6	211.6	224.7	290.1	202.4	221.4	247.1	187.6	196.3	248.2	234.7	235.8	245.6	237.3	234.4	350.0	*218.8*	*33.9*	*9.7*	*-2.9*	*15.6*
SP-21	Mean El.		436.7	407.0		404.0	403.1	402.2	390.5	351.1	353.5	356.0	369.8	368.9	368.7	372.4	374.6	379.5	388.5	387.7	379.4	378.6	390.4	394.0	391.2	388.1	383.9	385.8	Apr-94	*376.9*	*13.0*	*13.5*	*2.0*	*8.9*
	Highest El.		450.9	407.0		405.0	407.0	410.4	399.1	358.9	361.2	358.0	393.9	374.3	377.1	396.4	379.3	389.6	401.2	393.0	385.5	381.9	408.9	403.3	396.4	393.2	387.5	392.5	450.9	*385.9*	*14.7*	*-3.9*	*5.0*	*6.6*
SP-22	Mean El.		461.1	450.5	451.9	447.5	450.5	451.4	451.0	454.3	457.5	455.3	463.9	462.1	468.9	466.0	468.6	468.8	469.2	470.8	473.0	471.2	471.9	470.2	469.9	469.1	467.9	470.0	Dec-96	*466.8*	*5.6*	*4.1*	*2.1*	*3.3*
	Highest El.		493.5	450.5	454.1	450.9	455.7	451.4	451.3	468.0	471.3	464.5	477.0	469.6	501.5	470.4	470.7	471.0	474.2	471.1	476.6	475.1	475.1	471.0	470.9	470.9	469.7	470.9	501.5	*473.1*	*7.5*	*0.5*	*1.2*	*-2.3*
SP-23	Mean El.					514.2	491.0	499.2	495.6	486.0	496.6	500.8	508.6	511.6	501.5	500.4	486.7	478.0	473.9	476.2	488.9	486.1	496.1	490.7	489.8	494.1	499.8	503.6	Feb-96	*493.1*	*10.5*	*3.2*	*3.8*	*10.5*
	Highest El.					514.2	491.0	536.0	509.1	489.4	513.1	507.3	518.2	549.6	527.6	518.4	502.7	488.7	488.6	504.5	538.1	535.7	534.6	500.5	492.0	502.0	503.1	514.0	549.6	*512.0*	*18.2*	*-4.4*	*10.9*	*2.0*
Area Average	Mean El.	317.0	384.2	359.3	332.6	390.0	390.5	384.7	384.0	362.9	373.1	371.8	373.0	374.4	375.3	376.1	390.4	380.8	384.0	382.6	381.9	379.9	394.5	395.9	395.5	397.2	393.1	393.9		*383.0*	*10.2*	*17.8*	*0.7*	*10.9*
	Highest El.	350.0	407.1	360.5	335.4	391.2	396.2	403.1	390.5	370.5	394.7	388.3	387.1	388.0	404.5	402.5	410.7	387.9	396.4	403.9	397.0	397.3	416.7	402.4	398.8	402.9	399.4	402.9		*397.5*	*10.2*	*0.5*	*3.5*	*5.5*
Change vs Prior	Mean El.		67.2	-24.8	-26.7	57.4	0.5	-5.8	-0.8	-21.0	10.2	-1.4	1.2	1.4	0.9	0.8	14.4	-9.6	3.2	-1.4	-0.7	-2.2	14.8	1.4	-0.5	1.7	-4.1	0.7						
	Highest El.		57.1	-46.6	-25.1	55.8	5.0	6.9	-12.6	-20.0	24.2	-6.4	-1.1	0.9	16.4	-2.0	8.2	-22.8	8.4	7.6	-7.0	0.3	19.4	-14.3	-3.6	4.1	-3.5	3.5						
EASTERN MESA																																		
PC-1	Mean El.											148.0	142.4	148.1	139.4	138.4	136.6	137.6	138.4	138.3	139.1	140.2	141.9	139.8	136.2	136.7	138.9	Dec-96	*140.0*	*3.6*	*-0.5*	*2.2*	*-1.1*
	Highest El.											148.2	145.2	190.0	153.5	138.9	137.5	138.8	138.9	139.2	139.6	142.4	142.5	141.5	137.2	138.1	140.4	190.0	*144.5*	*12.9*	*-13.1*	*2.3*	*-4.1*
SP-3	Mean El.	125.5	119.8	118.5	121.3	122.0	118.3			117.7		119.7	120.6	121.6	118.7	119.2	119.1	117.9	118.0	117.1	111.4	111.7	109.0	116.2	115.4	110.3	94.0	87.0	Nov-83	*113.6*	*9.2*	*-32.2*	*-7.0*	*-26.6*
	Highest El.	126.1	120.0	118.5	121.5	125.9	120.0			118.4		120.7	124.6	123.7	120.7	120.6	120.2	118.4	118.4	118.5	114.8	114.9	117.9	117.1	116.9	115.5	100.6	91.7	126.1	*116.3*	*8.0*	*-28.9*	*-8.9*	*-24.6*
SP-3A	Mean El.		105.0	74.0	79.5	75.7	79.2	80.5	82.5	89.5	86.3	88.6	87.6	99.1	94.1	96.1	96.8	79.2	77.0	75.1	72.3	62.5	67.8	68.7	68.5	67.1	65.7	64.7	Apr-85	*79.3*	*12.4*	*-31.4*	*-1.0*	*-14.6*
	Highest El.		105.0	74.0	81.4	78.4	80.0	81.0	85.4	99.0	90.5	94.0	100.3	101.2	95.6	103.6	101.4	83.0	82.2	76.1	74.1	72.0	93.5	70.2	69.7	68.2	66.7	66.8	105.0	*84.6*	*13.7*	*-36.8*	*0.1*	*-17.8*
SP-33	Mean El.						151.6	149.0	148.3	144.4	118.7	126.5	100.2	93.8	89.2	88.7	87.1	84.4	78.2	75.7	73.8	72.1	71.2	69.5	68.1	66.8	67.9	67.4	May-92	*86.5*	*22.1*	*-21.3*	*-0.5*	*-19.1*
	Highest El.						156.7	149.8	148.5	155.5	123.1	134.9	109.0	95.4	91.3	90.9	90.7	89.2	79.9	77.0	74.5	72.9	73.5	70.1	68.7	67.5	70.9	67.9	156.7	*89.6*	*24.8*	*-23.0*	*-3.0*	*-21.7*
Area Average	Mean El.	125.5	112.4	96.3	100.4	98.8	116.3	114.8	115.4	117.2	102.5	111.6	114.1	114.2	112.6	110.8	110.3	104.6	102.7	101.6	98.9	96.4	97.1	99.1	98.0	95.1	91.1	89.5		*103.5*	*8.3*	*-21.3*	*-1.6*	*-14.0*
	Highest El.	126.1	112.5	96.3	101.5	102.2	118.9	115.4	117.0	124.3	106.8	116.5	120.5	116.4	124.4	117.2	112.8	107.0	104.8	102.6	100.7	99.9	106.8	100.0	99.2	97.1	94.1	91.7		*107.5*	*10.1*	*-25.5*	*-2.4*	*-15.8*
Change vs Prior	Mean El.		-13.1	-16.1	4.1	-1.6	17.5	-1.6	0.6	1.8	-14.7	9.1	2.5	0.1	-1.6	-1.7	-0.5	-5.8	-1.8	-1.2	-2.6	-2.6	0.7	2.0	-1.1	-2.9	-4.0	-1.6						
	Highest El.		-13.6	-16.3	5.2	0.7	16.8	-3.5	1.6	7.3	-17.5	9.7	4.0	-4.1	8.0	-7.2	-4.4	-5.8	-2.2	-2.2	-2.0	-0.8	7.0	-6.9	-0.8	-2.1	-3.0	-2.4						

GROUNDWATER ELEVATION DATA ANALYSIS

Piezometer Not Installed

No Data Recorded



Groundwater Hydrographs
PCH Region - West

PLATE A-3a

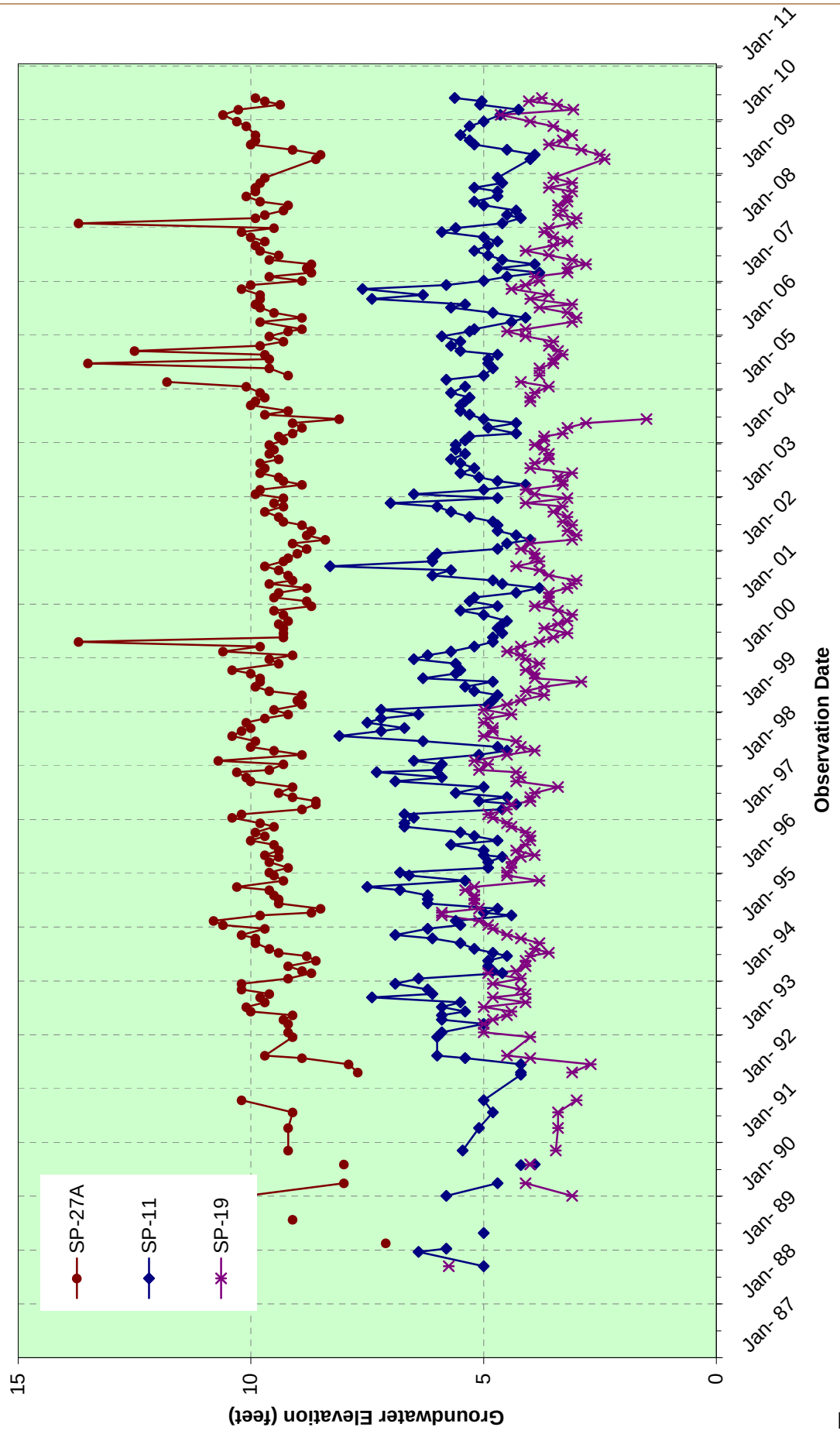
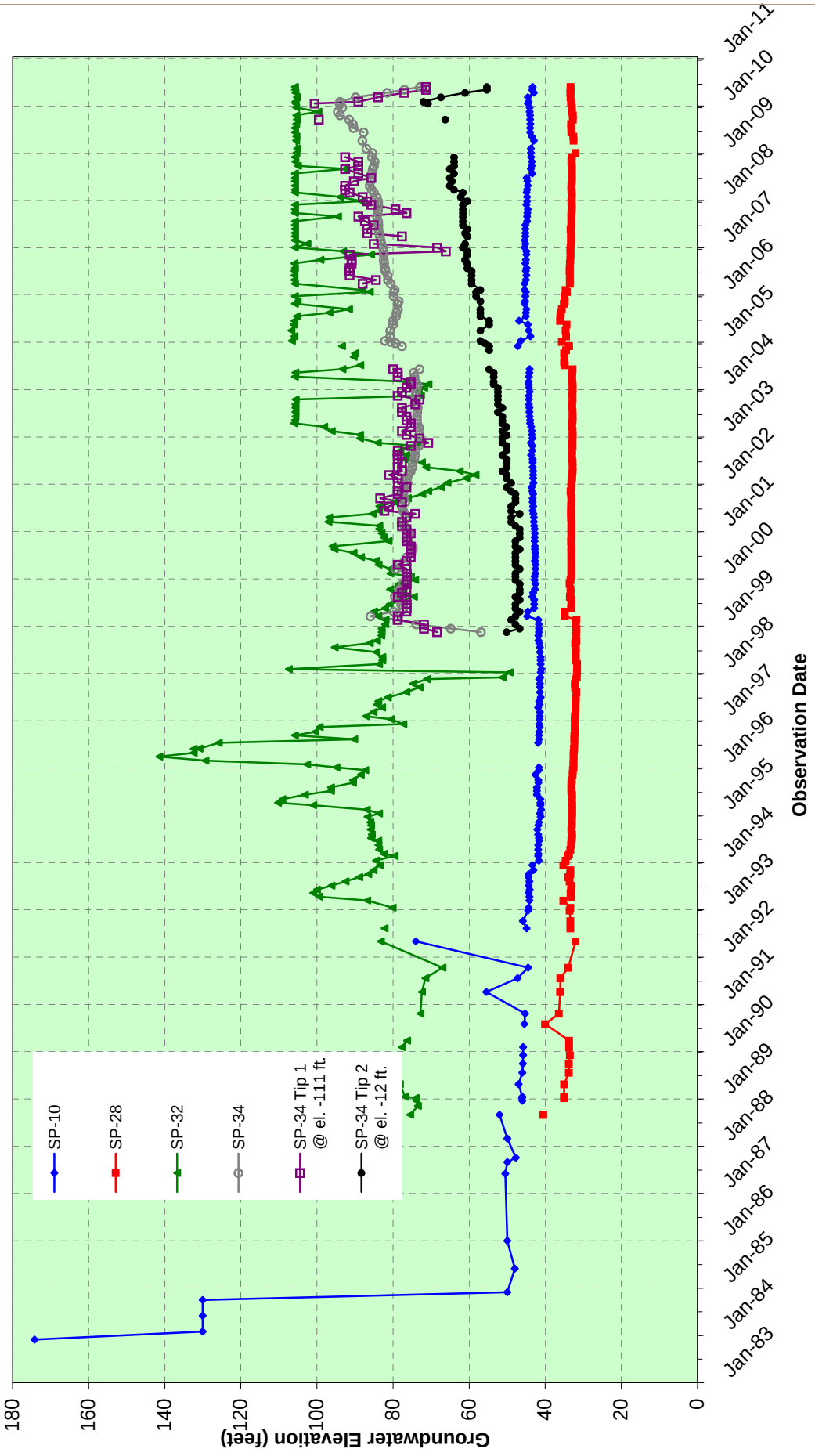
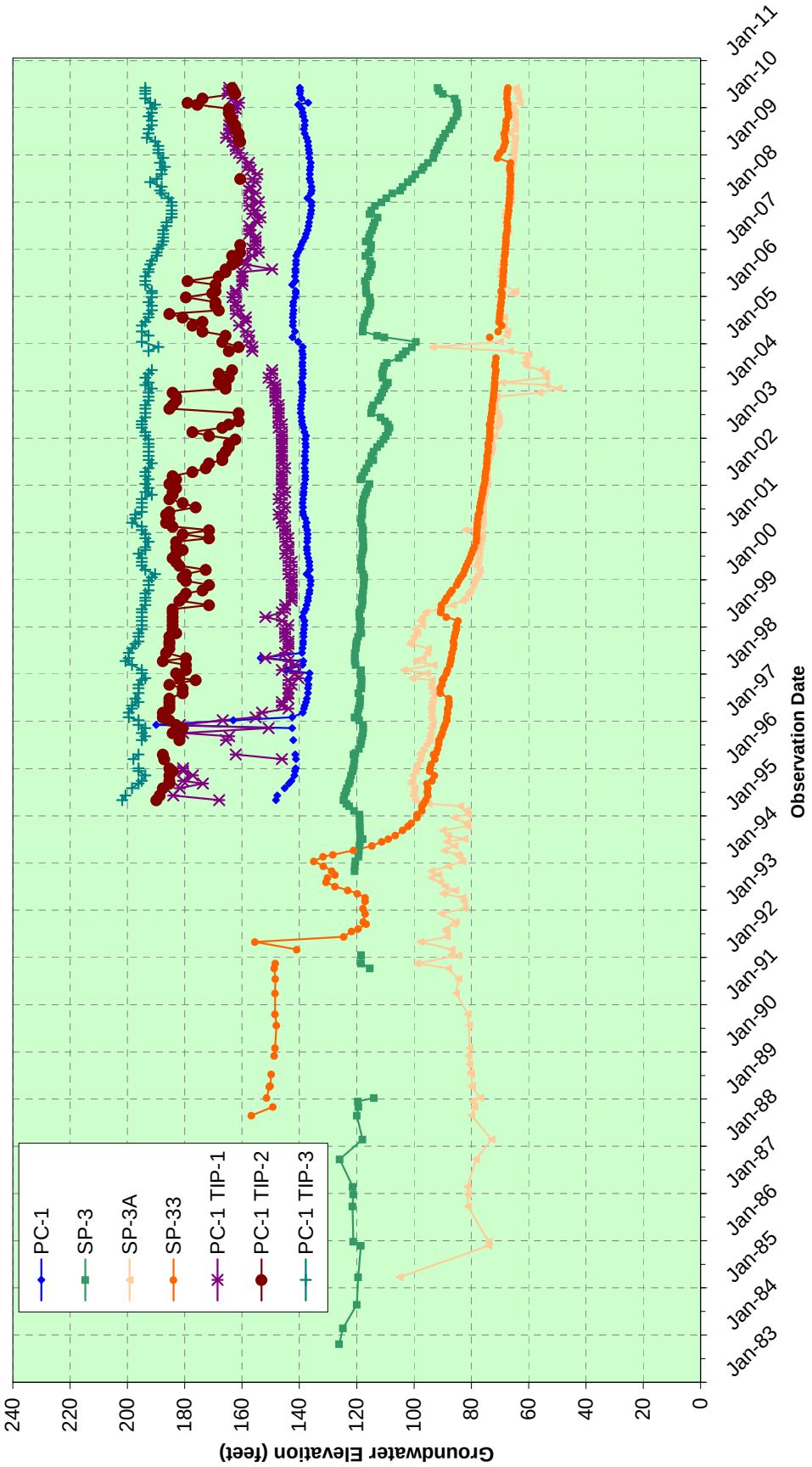

Groundwater Hydrographs
PCH Region - East
Observation Date
Groundwater Elevation (feet)
SP-27A
SP-11
SP-19
15
10
5
0
Jan- 11
Jan- 10
Jan- 09
Jan- 08
Jan- 07
Jan- 06
Jan- 05
Jan- 04
Jan- 03
Jan- 02
Jan- 01
Jan- 00
Jan- 99
Jan- 98
Jan- 97
Jan- 96
Jan- 95
Jan- 94
Jan- 93
Jan- 92
Jan- 91
Jan- 90
Jan- 89
Jan- 88
Jan- 87

PLATE A-3b



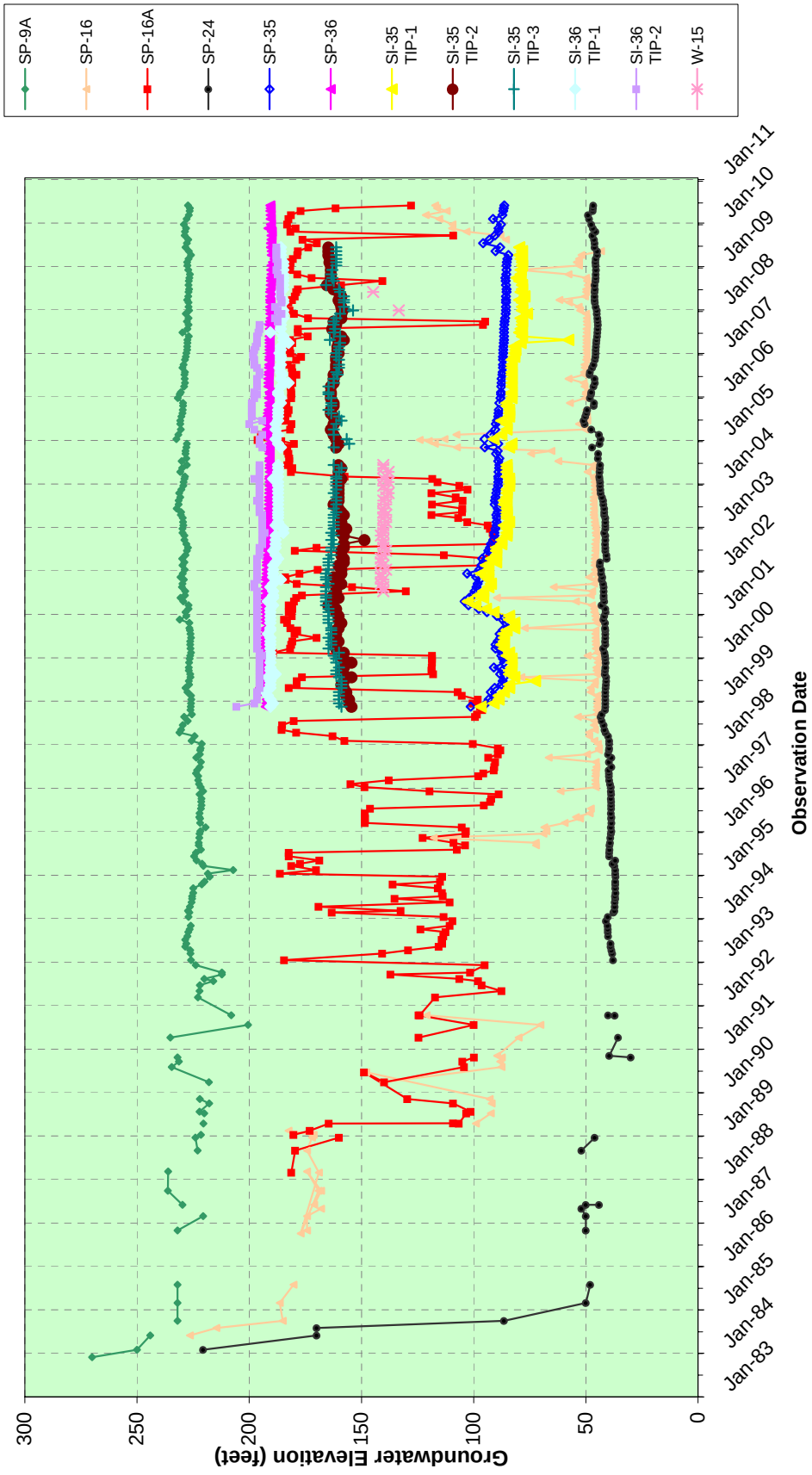
Groundwater Hydrographs
Bluff Region

PLATE A-4



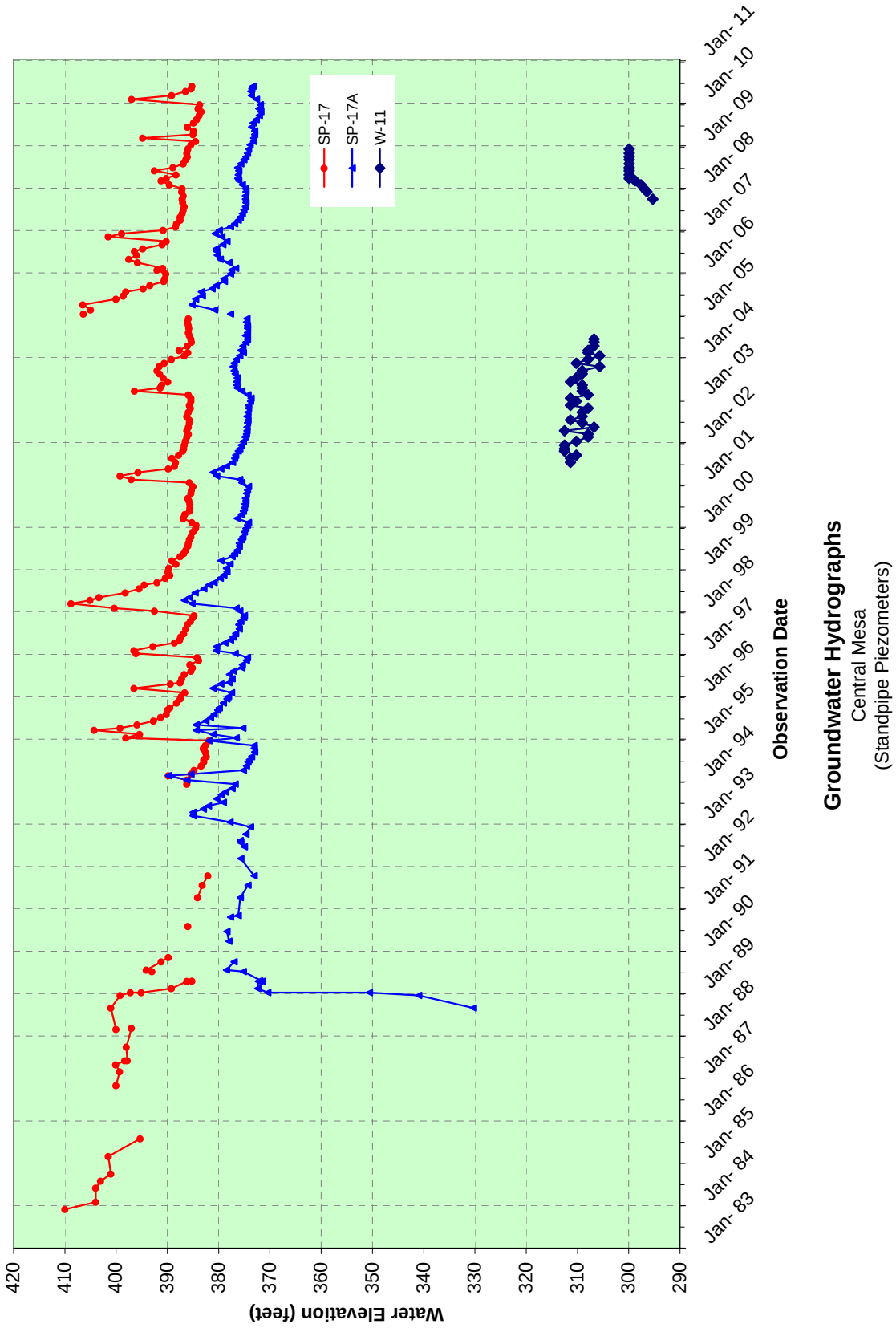
Groundwater Hydrographs
Eastern Mesa

PLATE A-5



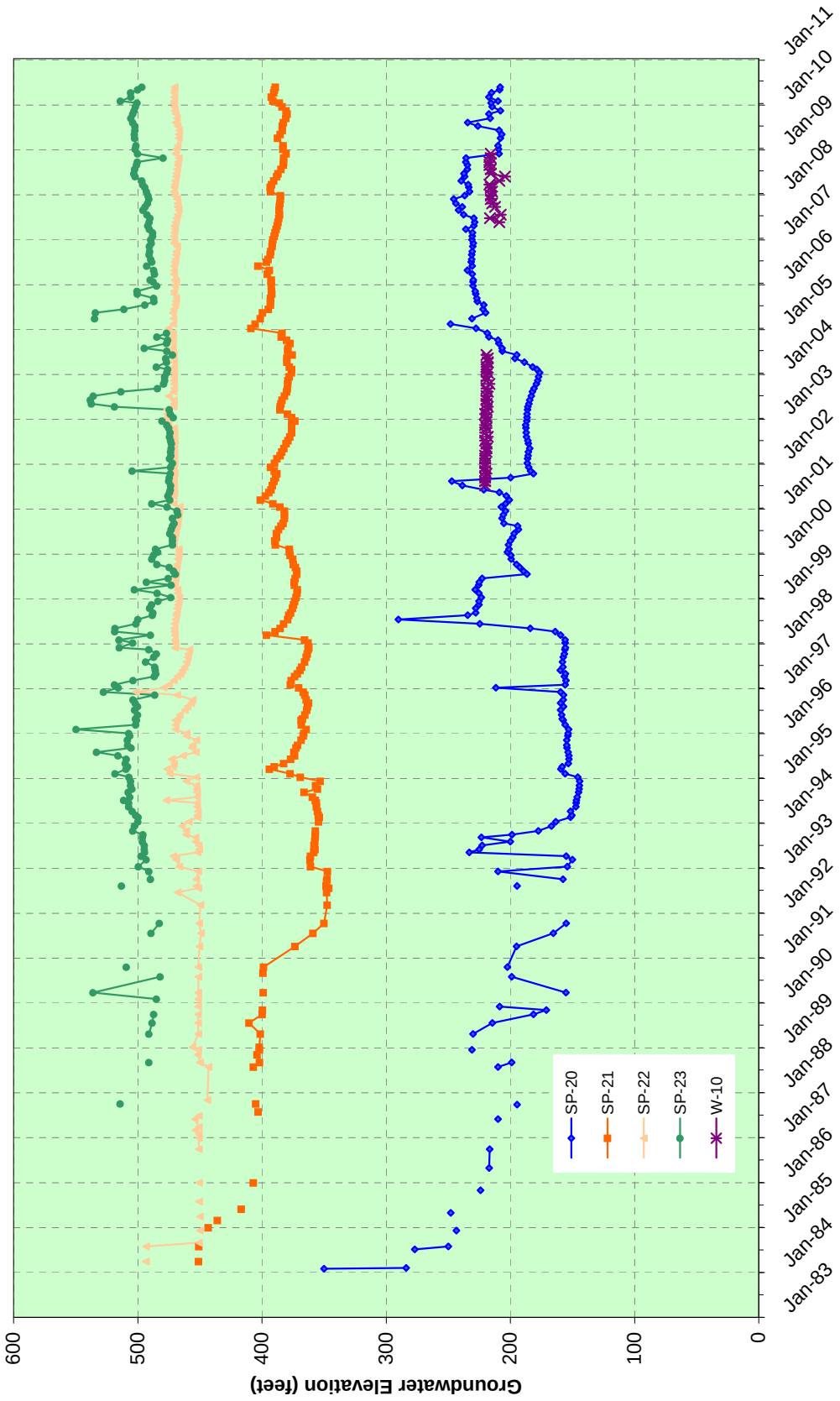
Groundwater Hydrographs
Central Mesa
(Standpipe Piezometers)

PLATE A-6a



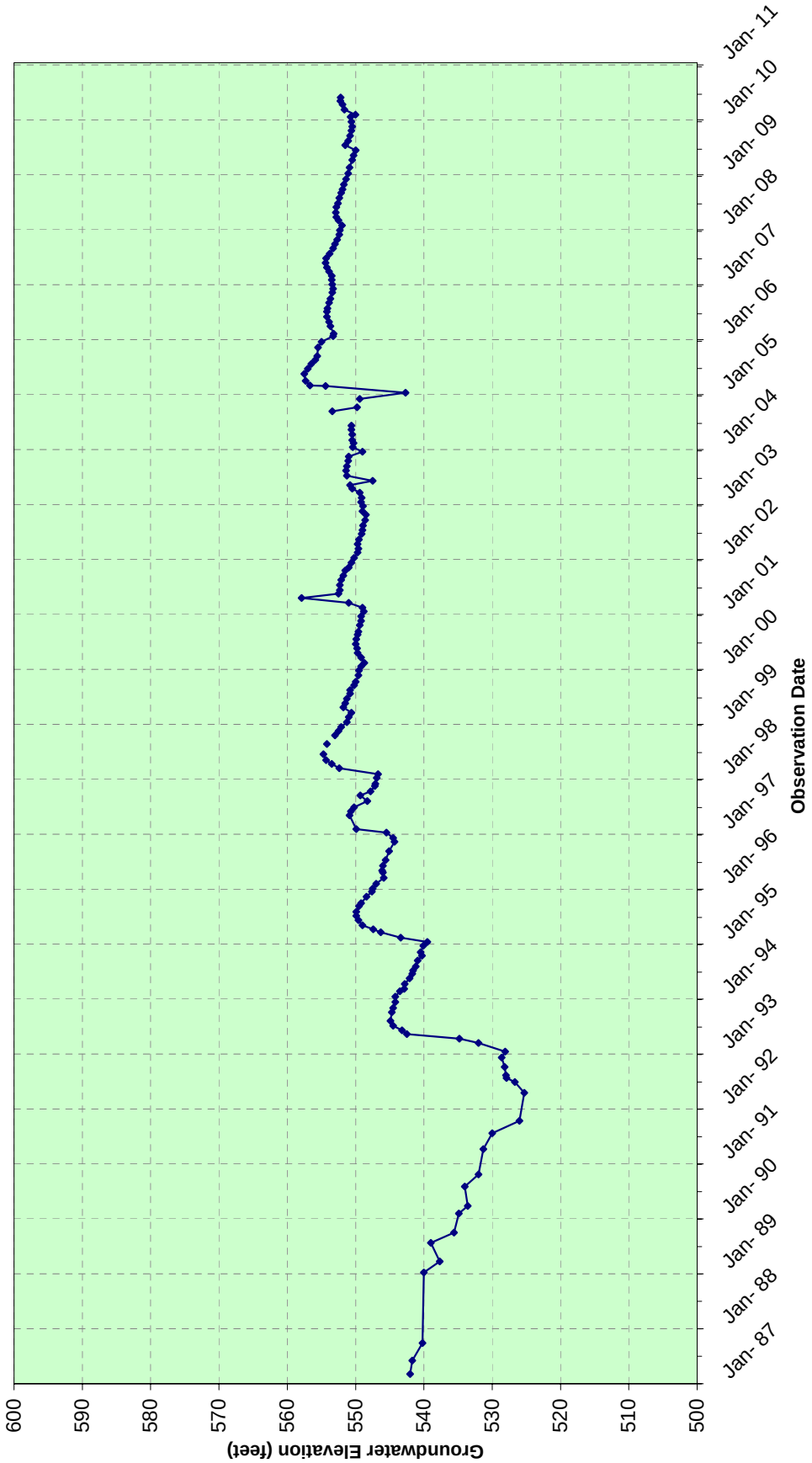
Groundwater Hydrographs
Central Mesa
(Standpipe Piezometers)

PLATE A-6b



Groundwater Hydrographs
Western Extension
(Standpipe Piezometers)

PLATE A-7



Groundwater Hydrographs
HeadScarp Region
SP-26

PLATE A-8

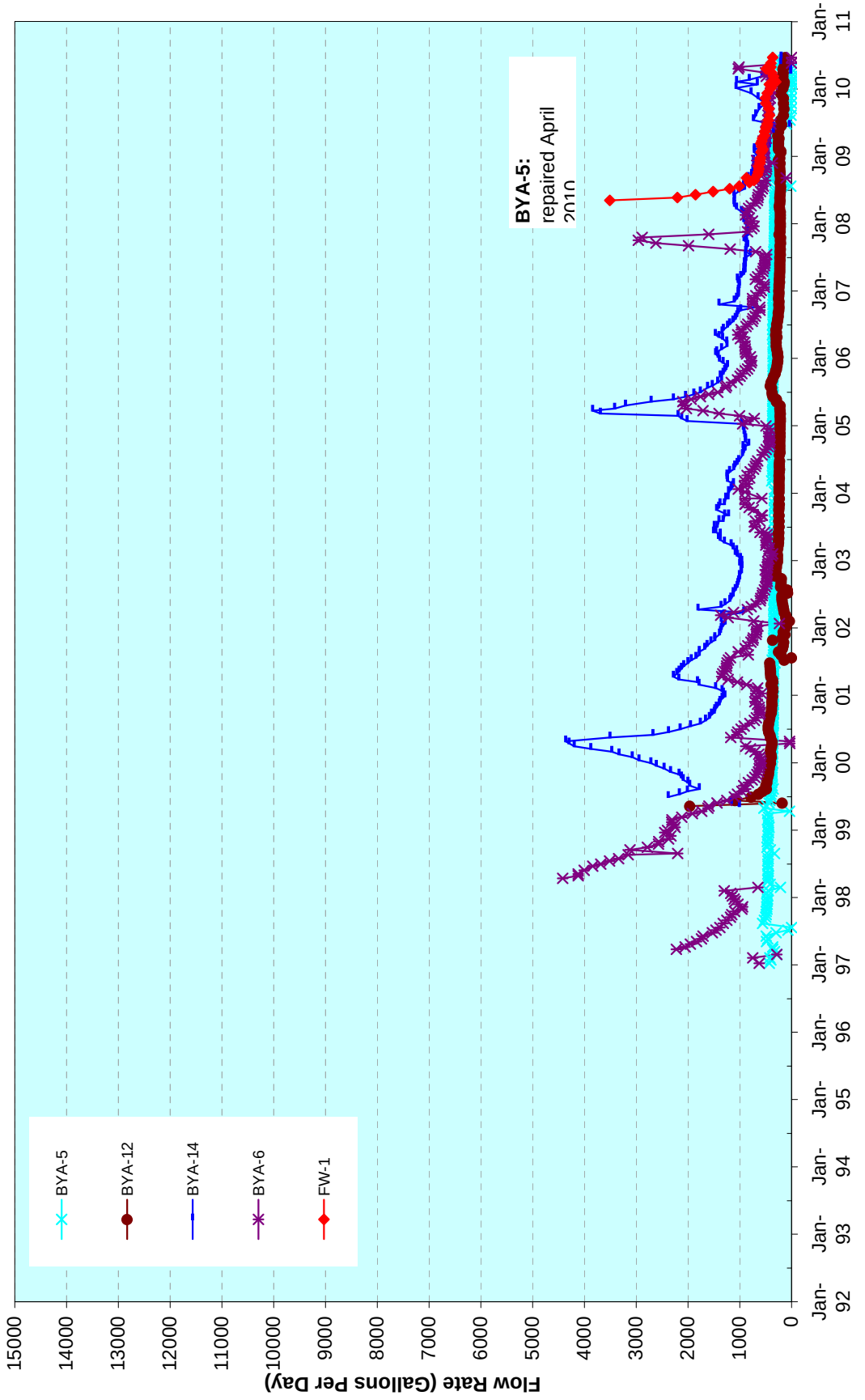
APPENDIX B
DEWATERING WELL DATA

Big Rock Mesa: Dewatering Well Information								
Well I.D.	TOP ELEV. (ft.)	BOTTOM ELEV. (ft.)	PUMP ELEV. (ft.)	PUMP SIZE (HP)	2009-10 PUMPING RATE (GPD)	% of TOTAL PRODUCTION	Rank	COMMENT
W-1	210.5	-30	14.5	1.5	933	2%	14	
W-2	219	41	44	1.5	2,403	5%	8	
W-3	243.5	65.5	70.5	3/4	266	1%	21	
W-4	248	-10	N/A	N/A	0	0%	25	Casing Perforations closed due to siltation
W-5	280	252	N/A	N/A	0	0%	25	Capped 4/4/84
W-6	174	80	N/A	N/A	0	0%	25	Static water level at bottom of casing
W-7	257	171	N/A	N/A	0	0%	25	Static water level at bottom of casing
W-8	287	93	98	1	7,366	15%	1	
W-9	282	87	N/A	N/A	0	0%	25	Static water level at bottom of casing
W-10	432	192	194	3/4	0	0%	25	Static water level
W-11	507	285	292	3/4	0	0%	25	
W-12	375	195	N/A	N/A	0	0%	25	Casing sheared at static water level
W-13	361	184	193	1	1,196	2%	10	
W-14	283	131	N/A	N/A	0	0%	25	Static water level at bottom of casing
W-15	295	121	130	3/4	0	0%	25	Static water level at bottom of casing
W-16	325	107	113	3/4	5,183	10%	4	
W-17	270	41	50	3/4	2,690	5%	6	
W-18	750	179	225	3	7,008	14%	2	
BYA-1	281	-162	-128	3	823	2%	16	
BYA-2	665	215	242	1.5	643	1%	17	
BYA-3	510	-40	29	3	2,220	4%	9	
BYA-4	372	-68	-28	1.5	6,605	13%	3	
BYA-5	189	-231	-211	1.5	56	0%	23	
BYA-6	220	-280	-275	0.75	451	1%	19	
BYA-7	280	-120	-115	0.75	1,152	2%	11	
BYA-9	295	-105	-100	7.5(5)	4,163	8%	5	
BYA-10	510	210	215	1	860	2%	15	
BYA-11	275	-125	-120	0.75	1,071	2%	12	
BYA-12	207	-140	-137	0.5	158	0%	22	Installed 4/99
BYA-13	329	-14	-18	0.5	1,046	2%	13	Installed 4/99
BYA-14	340	38	40	0.5	539	1%	18	Installed 4/99
BYA-15					4	0%	24	
FW-1					416	1%	20	Installed 5/08
FW-2	270	-130			2,585	5%	7	Installed 2/10

2009-10 Pumping Rate is the Average Rate of the Monitoring period:(July 08 - June 09)

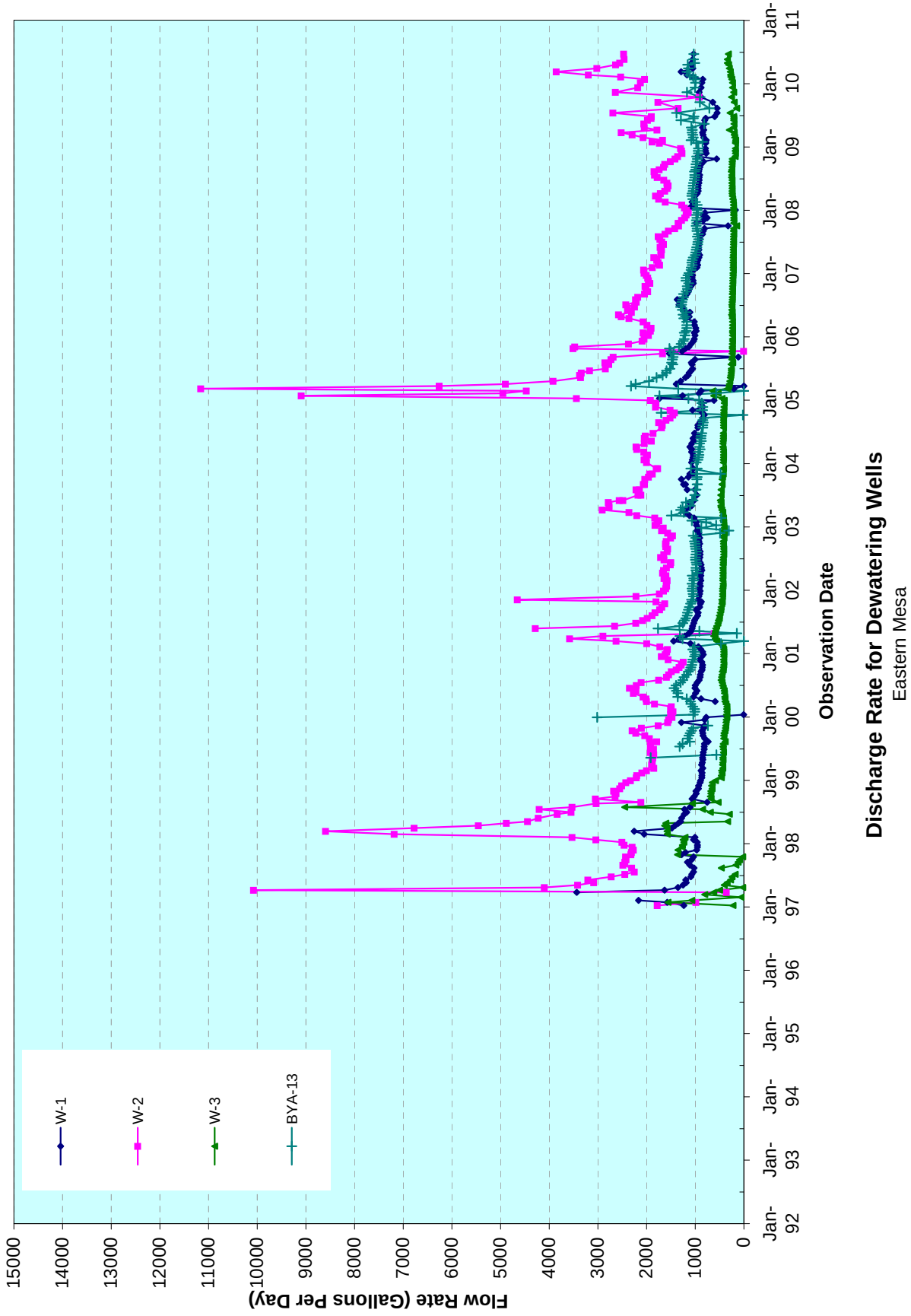
SUMMARY OF DEWATERING WELL INFORMATION
Annual Report, July 2009 through June 2010
Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE B-1



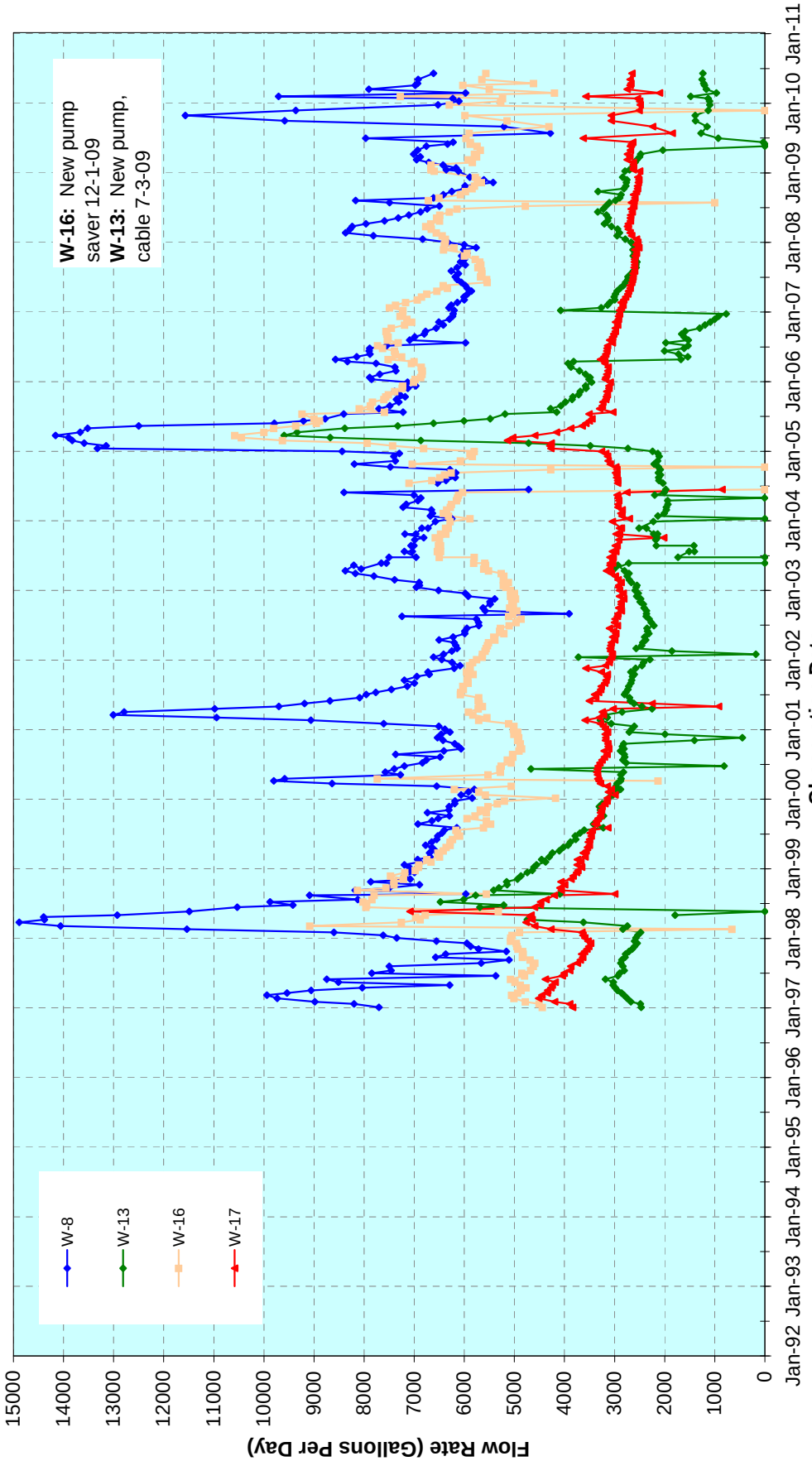
Discharge Rate for Dewatering Wells
Eastern Mesa

PLATE B-2a



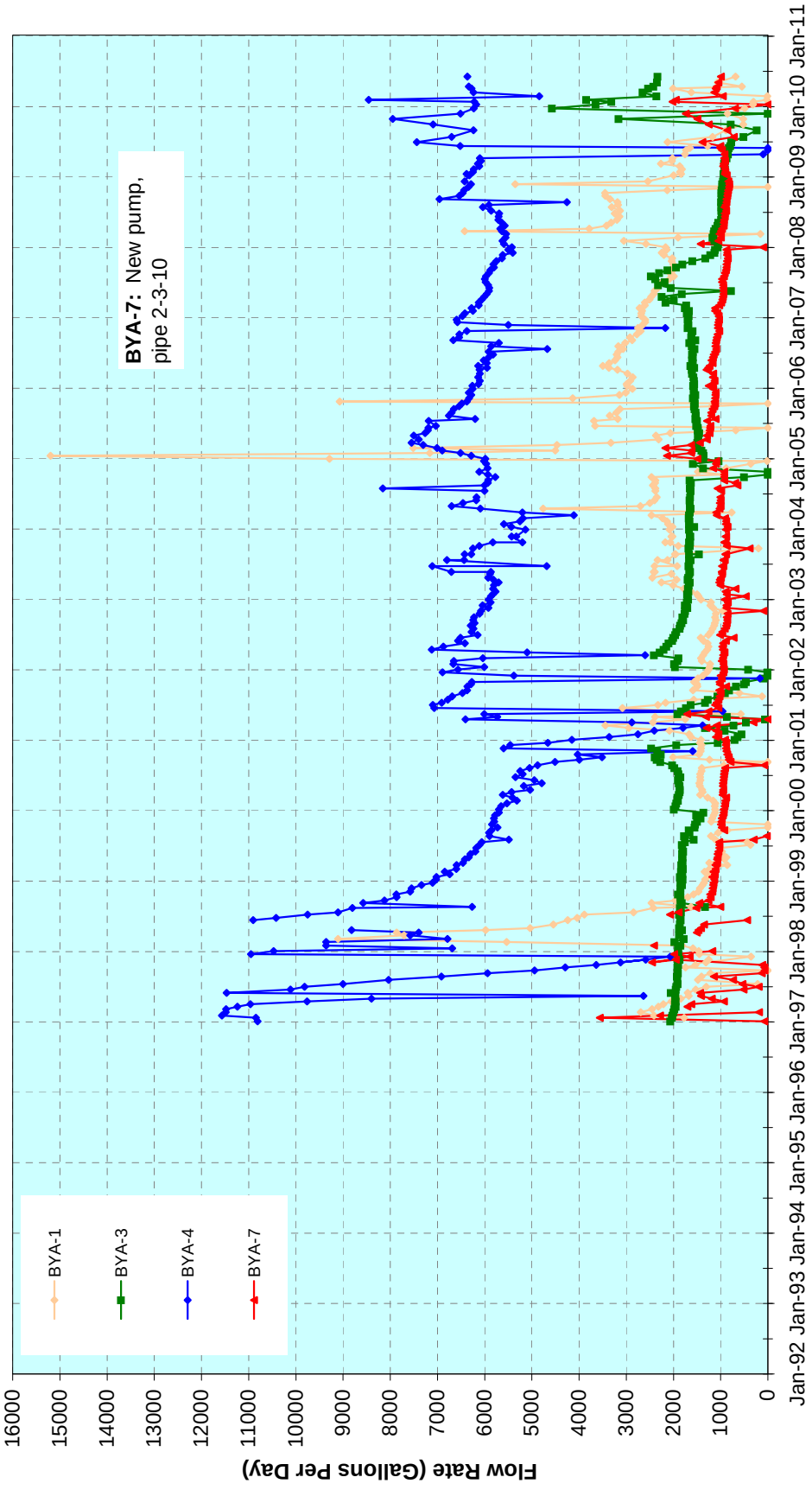
Discharge Rate for Dewatering Wells
Eastern Mesa

PLATE B-2b



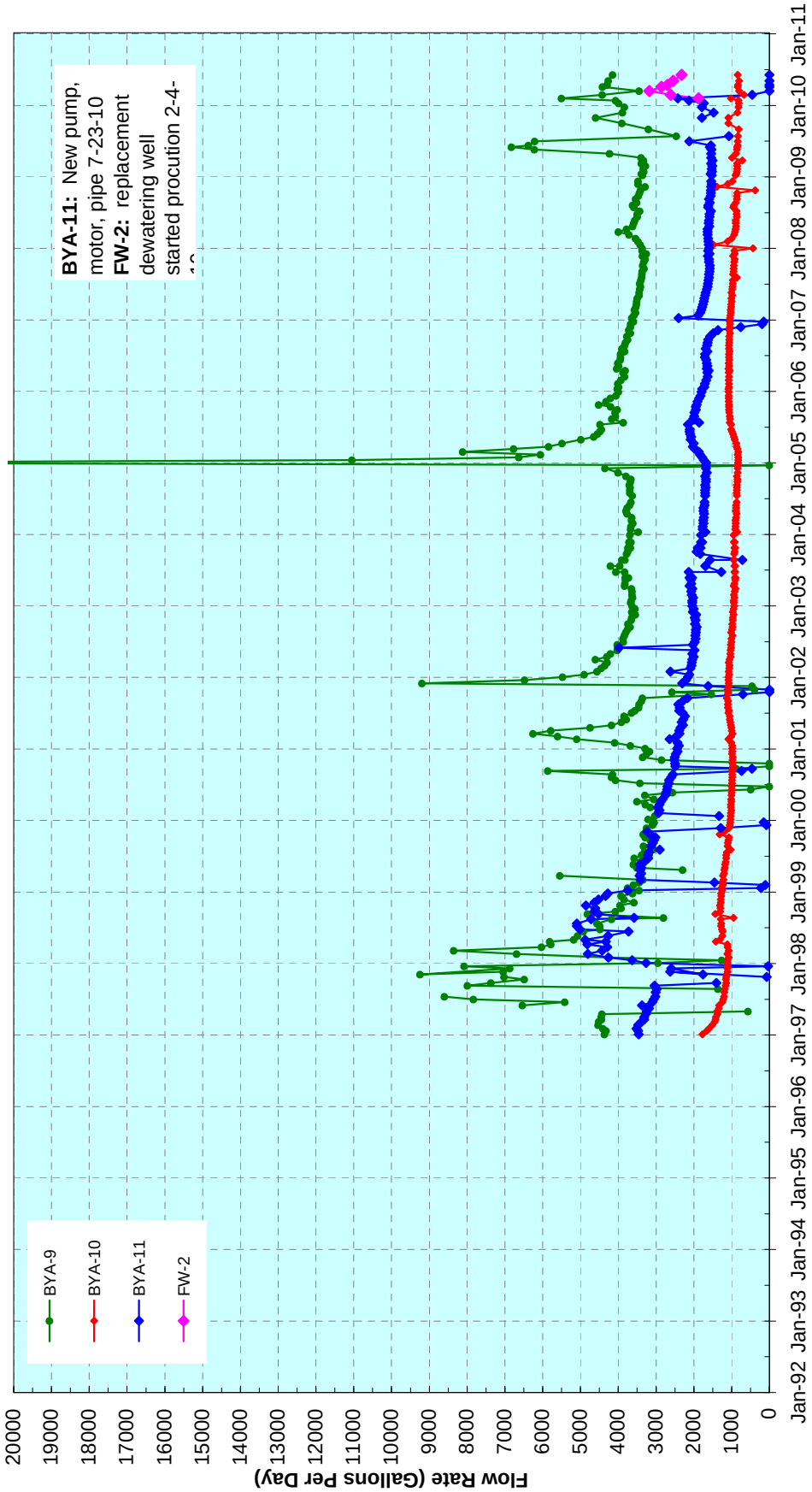
Discharge Rate for Dewatering Wells
Central Mesa Region

PLATE B-3a



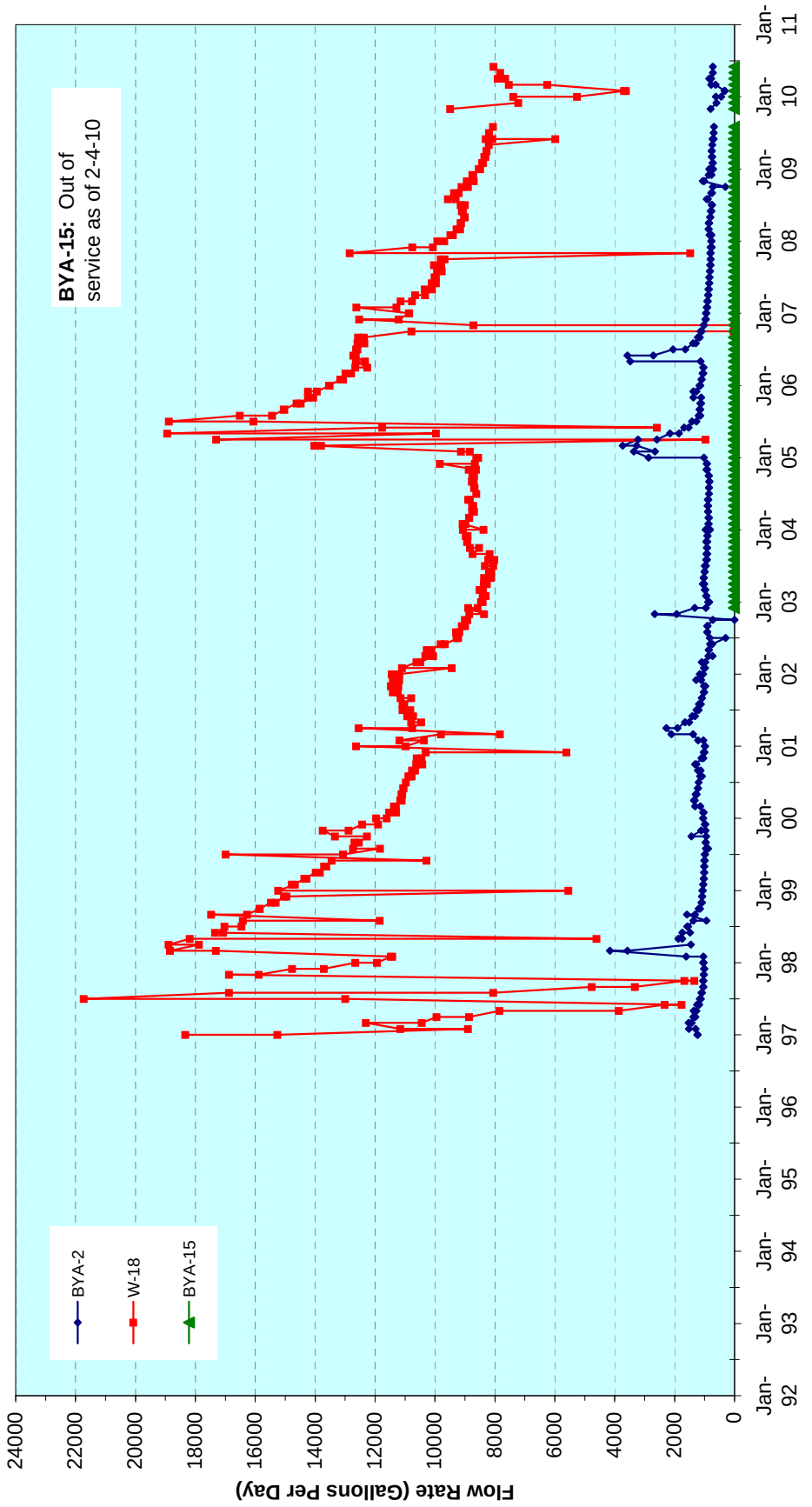
Discharge Rate for Dewatering Wells
Central Mesa Region

PLATE B-3b



Discharge Rate for Dewatering Wells
Central Mesa Region

PLATE B-3c



Discharge Rate for Dewatering Wells
Western Extension

PLATE B-4

APPENDIX C
HYDRAUGER DATA

Big Rock Mesa: Hydrauger Data							
HYDRAUGER ID	INSTALLED LENGTH (ft.)	OPEN LENGTH (ft.)**	Orientation/ Slope	2009-2010 Average Flow (GPD)	% OF TOTAL PRODUCTION	Rank	INSTALLED BY
H-1	700	210*	S115W / 3	9	0.1%	25	MT
H-2	Unknown	0	-	0	--	33	MT
H-3a	Unknown	0	-	0	--	33	MT
H-3b	Unknown	0	-	0	--	33	MT
H-3c	Unknown	0	-	0	--	33	MT
H-4	680	115*	-	27	0.1%	23	MT
H-5a	Unknown	0	-	0	--	33	MT
H-5b	Unknown	0	-	0	--	33	MT
H-6a	100	96	-	0	--	33	CT
H-6b	100	96	-	0	--	33	CT
H-7a	100	100	-	0	--	33	CT
H-7b	100	96	-	0	--	33	CT
H-7c	50	0	-	0	--	33	CT
H-8	Unknown	0	-	0	--	33	CT
HD-1	350	340*	-	0	--	33	D.E.
HD-2a	70	33	-	0	--	33	D.E.
HD-2b	Unknown	0	-	0	--	33	D.E.
HD-2c	460	0	-	0	--	33	D.E.
HD-3	560	90*	-	0	0.0%	32	D.E.
HD-4	760	10	-	325	1.8%	15	D.E.
HD-5	890	530*	-	839	4.6%	9	D.E.
HD-6	980	490*	-	792	4.3%	10	D.E.
HD-7	1160	420*	-	156	0.9%	18	D.E.
HD-8	530	170*	-	0	--	33	D.E.
HD-9	205	205*	-	905	4.9%	7	D.E.
HD-10	990	170*	-	516	2.8%	13	D.E.
HD-11	540	540*	-	224	1.2%	17	D.E.
HD-12	690	385*	-	2433	13.3%	3	D.E.
HD-13	650	14	-	0	--	33	D.E.
HD-14	130	130*	-	0	--	33	D.E.
HD-15	200	200*	-	867	4.7%	8	D.E.
HD-16	575	575*	-	49	0.3%	22	D.E.
HD-17	750	176	-	0	--	33	D.E.
HD-18	870	285	-	1	0.0%	29	D.E.
HD-19	1000	182	-	0	--	33	D.E.
HD-20	1000	446	-	0	--	33	D.E.
HD-21	1560	147	-	0	--	33	D.E.
HD-22	568	540*	-	1897	10.3%	4	D.E.
HD-23	1280	260*	-	2463	13.4%	2	D.E.
HD-24	1030	580*	-	508	2.8%	14	D.E.
HD-25	1005	360*	-	115	0.6%	19	D.E.
HD-26	1200	410*	S37W / 1	558	3.0%	11	D.E.
HD-27	700	327	-	0	--	33	D.E.
HD-28	1420	595*	-	3	0.0%	27	D.E.
HD-29	1150	450*	-	79	0.4%	20	D.E.
HD-30	1040	10*	S13W / 7	2589	14.1%	1	D.E.
HD-31	140	113	-	0	--	33	D.E.
HD-32	835	700*	-	4	0.0%	26	D.E.
HD-33	340	340	S23W / 5	10	0.1%	24	BYA
HD-34	150	150	S40W / 10	75	0.4%	21	BYA
HD-35	40	40	-	0	--	33	BYA
HD-36	150	150	-	0	--	33	BYA
HD-37	430	50	-	0	--	33	BYA
HD-38A	140	140	S23W / 5	0	--	33	BYA
HD-38B	140	140	S18W / 6	0	--	33	BYA
HD-39	400	400	S15E / 5	0	--	33	BYA
HD-40	595	595	S25W / 6	0	--	33	BYA
HD-41	500	500	S18E / 3	314	1.7%	16	BYA
BYA-6a	350	20*	-	0	--	33	BYA
BYA-6b	60	60	-	1	0.0%	31	BYA
BYA-7	400	375*	-	1	0.0%	29	BYA
BYA-H8	500	345*	-	3	0.0%	28	BYA
BYA-H9	550	550*	-	0	--	33	BYA
BYA-H10	500	10*	-	1029	5.6%	5	BYA
BYA-H11	450	400*	S7E / 3	0	--	33	BYA
HD-42	700	700		1023	5.6%	6	FWI
HD-43	700	700		534	2.9%	12	FWI

** Open Length is Measured on 10-1997 by BYA*

Installed by: MT = Moore & Taber; CT = Caltrans; D.E. = D.A. Evans; BYA = Bing Yen & Associates; FWI = Fugro West, Inc.

SUMMARY OF HYDRAUGERS
Annual Report, July 2009 through June 2010
Big Rock Mesa Landslide Assessment District
Malibu, California

PLATE C-1

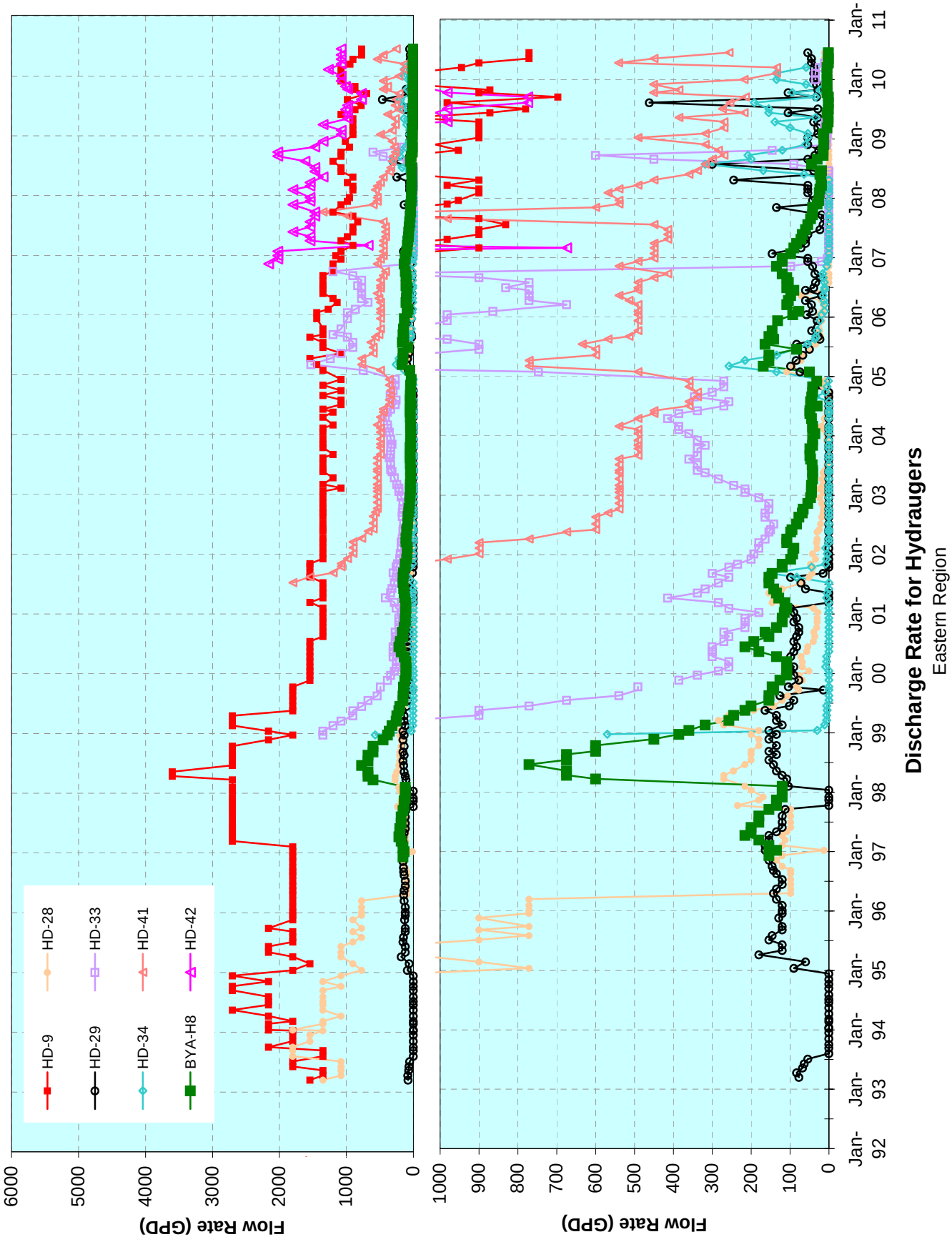

Discharge Rate for Hydraugers
Eastern Region
Flow Rate (GPD)
Flow Rate (GPD)
HD-9
HD-28
HD-29
HD-33
HD-34
HD-41
BYA-H8
HD-42
0
1000
2000
3000
4000
5000
6000
100
200
300
400
500
600
700
800
900
1000
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11

PLATE C-2a

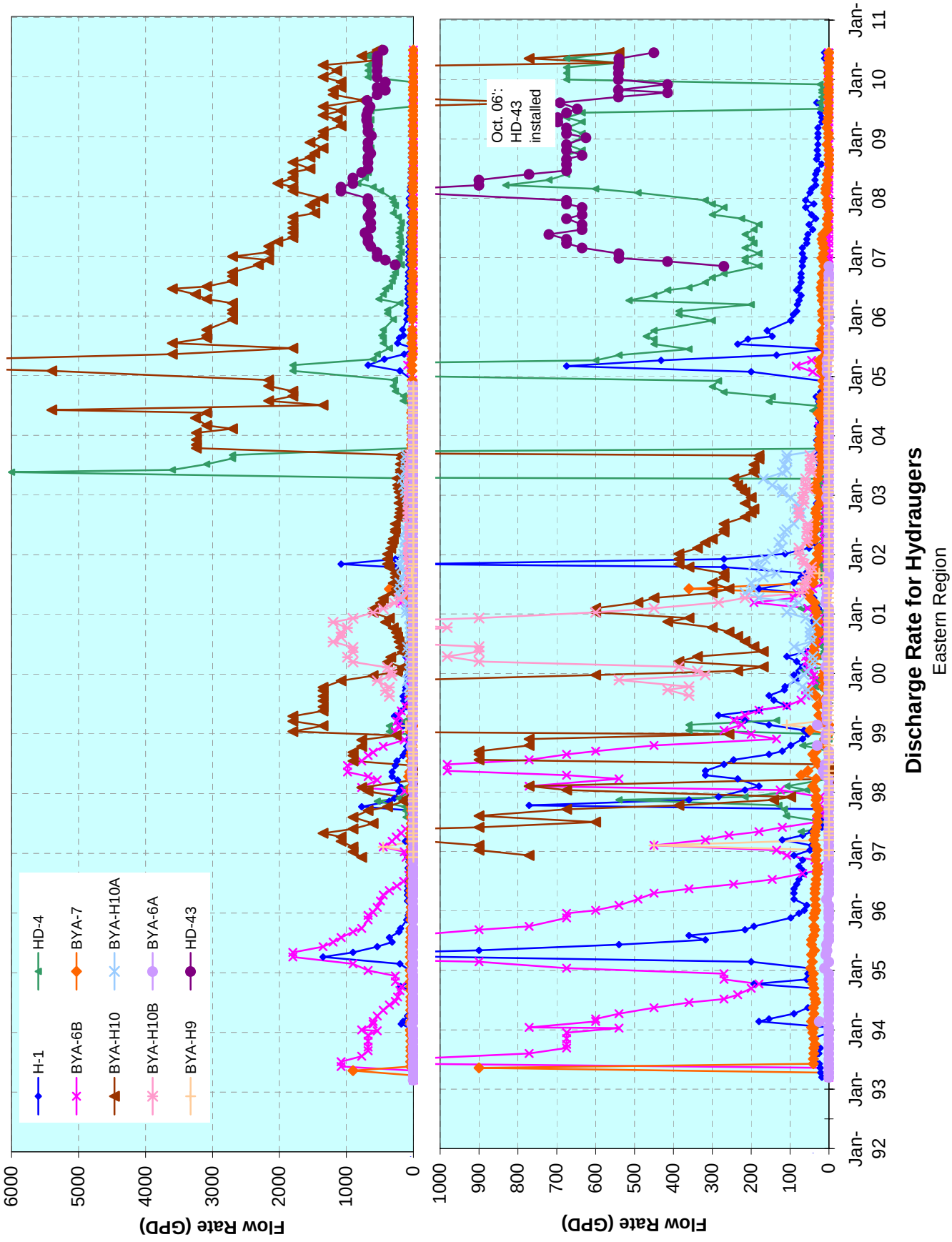

Discharge Rate for Hydraugers
Eastern Region
Flow Rate (GPD)
Flow Rate (GPD)
Oct. 06':
HD-43
installed
H-1
HD-4
BYA-6B
BYA-7
BYA-H10
BYA-H10A
BYA-H10B
BYA-6A
BYA-H9
HD-43
0
1000
2000
3000
4000
5000
6000
0
100
200
300
400
500
600
700
800
900
1000
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11

PLATE C-2b

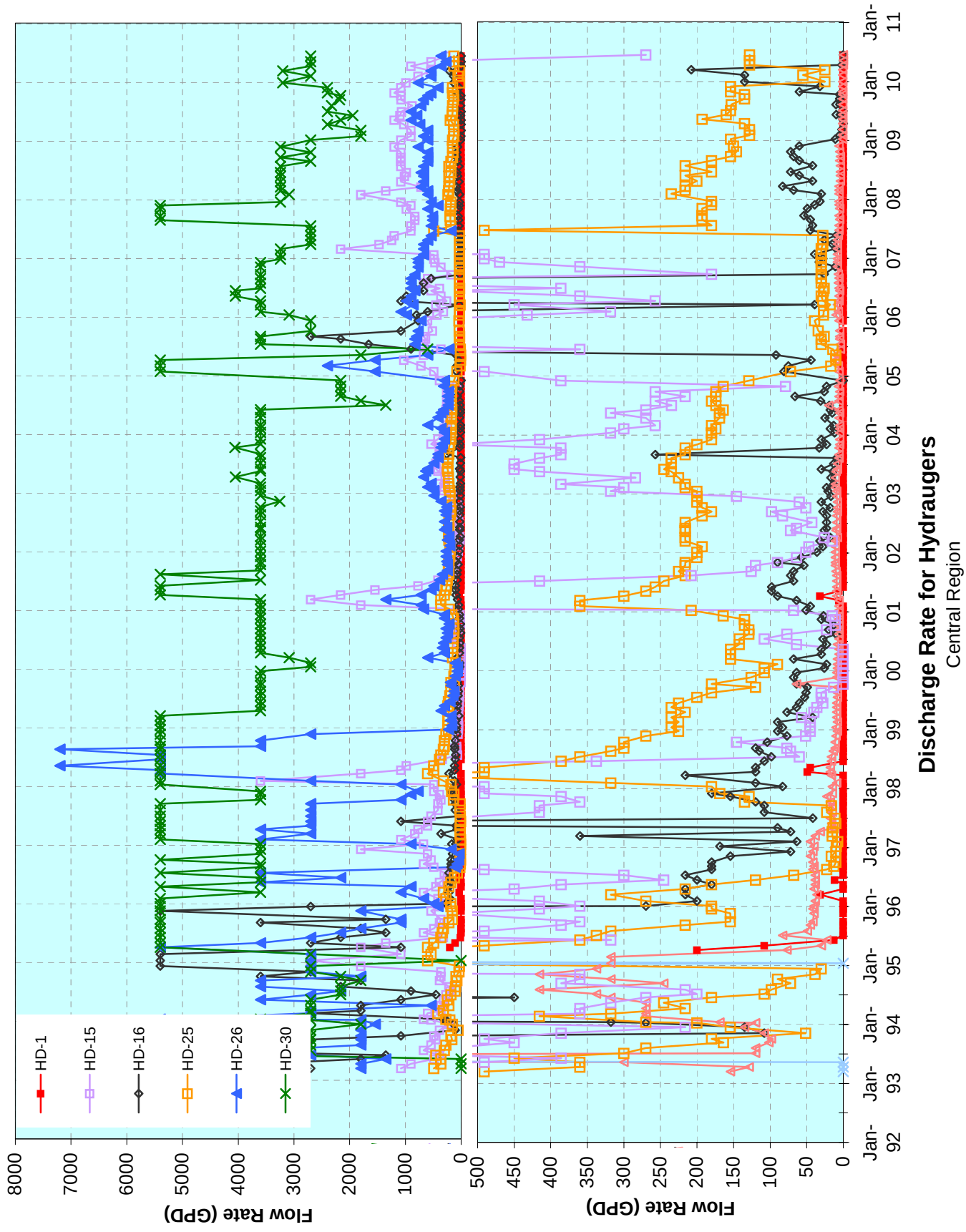

Discharge Rate for Hydraugers
Central Region
Flow Rate (GPD)
Flow Rate (GPD)
HD-1
HD-15
HD-16
HD-25
HD-26
HD-30
8000
7000
6000
5000
4000
3000
2000
1000
0
500
450
400
350
300
250
200
150
100
50
0
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11

PLATE C-3a

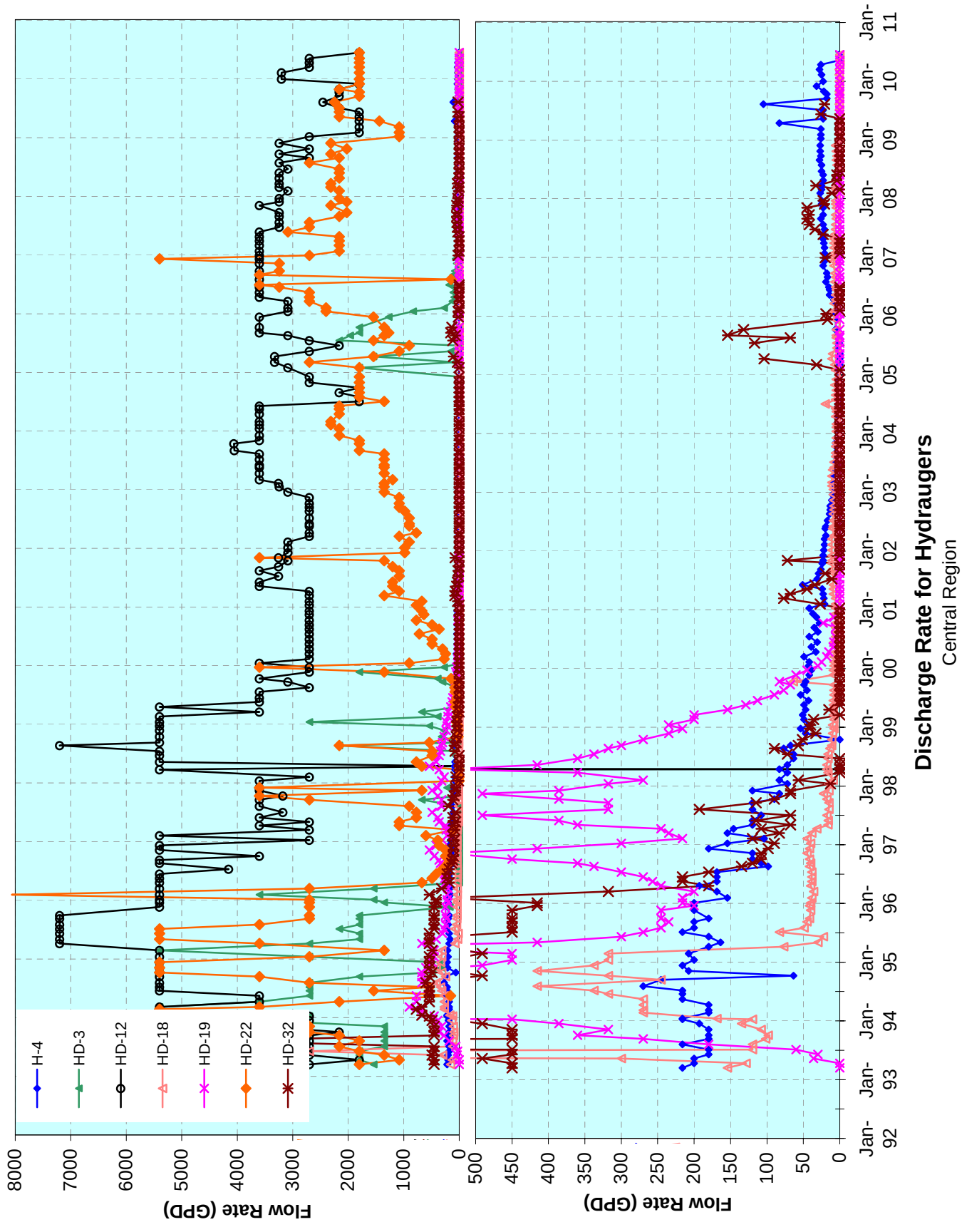
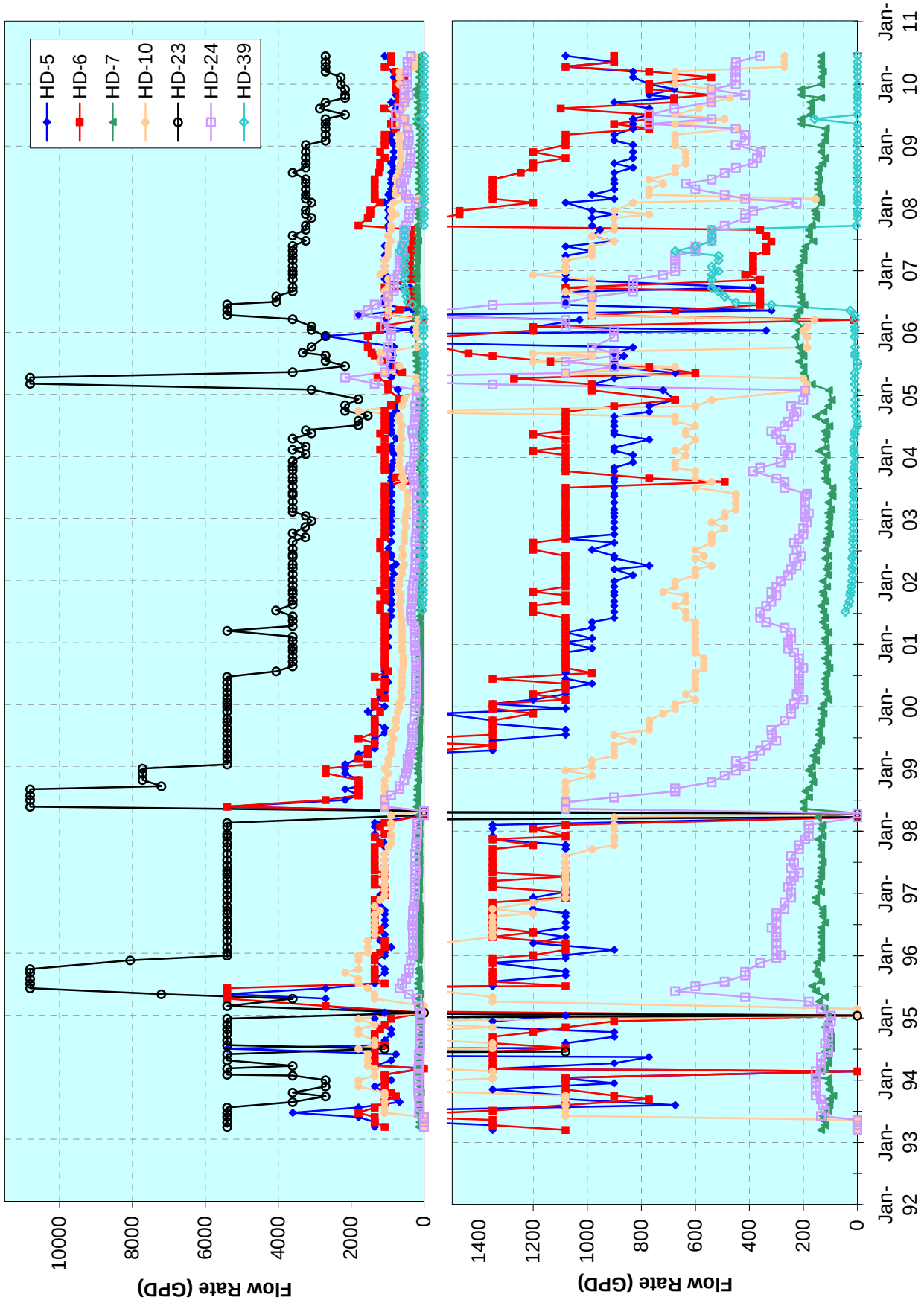

Discharge Rate for Hydraugers
Central Region
Flow Rate (GPD)
Flow Rate (GPD)
H-4
HD-3
HD-12
HD-18
HD-19
HD-22
HD-32
8000
7000
6000
5000
4000
3000
2000
1000
0
500
450
400
350
300
250
200
150
100
50
0
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11

PLATE C-3b



Discharge Rate for Hydraugers
Western Extension

PLATE C-4

APPENDIX D
SLOPE INCLINOMETER PLOT/DATA

Big Rock Mesa: Slope Inclinometer Interpretation Summary

	PCH																		BLUFF			EAST						CENTRAL										WESTERN				HEAD	
	SP-1	SP-11	SP-12	SP-14	SP-15	SP-19	SP-27A	SP-29	SP-30	SP-2	SP-5	SP-5A	SP-6	SP-7	SP-8	SP-8A	SP-31	SP-37	SP-10	SP-28	SP-32	PC-1	SP-3	SP-3A	SP-33	BYA-5A	SP-18	SP-9A	SP-16A	SP-17	SP-17A	SP-24	SP-34	SP-35	SP-36	SP-4	SP-16	SP-20	SP-21	SP-22	SP-23	SP-26	SP-38
Installation Details																																											
Surface Elev.	NA	27	26	25	20	25	29	27	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	295	270	233	250	212	203	318	NA	NA	365	285	540	540	370	270	345	380	NA	285	430	660	780	860	745	NA
Original Depth (ft)	43	59	95	32	88	95	100	140	155	32	98	146	102	Unknown	Unknown	106	140	336	330	365	360	160	240	295	375	300	78	378	390	192	325	390	360	360	200	245	380	330	380	335	390	350	Unknown
Measured Depth (ft)	N/A	56	38	30	80	82	92	138	126	N/A	N/A	146	N/A	N/A	N/A	106	N/A	N/A	332	250	350	158	132	244	374	186	N/A	298	392	190	238	384	380	394	254	96	240	322	280	330	396	342	N/A
Casing Diameter	NA	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	NA	NA	2.75	NA	NA	NA	2.75	NA	NA	2.75	2.75	2.75	2.75	2.75	2.75	2.75	NA	NA	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	NA	NA	3.5	2.75	2.75	3.5	3.5	NA
Casing Type		Sl/cc	Alum/cc	Sl/cc	Alum/cc	Alum/cc	Alum/cc	Sl	Sl										Alum/cc	Alum	lum/cc/mo	Sl/1.5"	Alum/cc	Alum/cc	lum/cc/mod			Alum	Alum/cc	Sl/cc	Sl	Alum	Sl	Sl	Sl			Alum/3.5"/(	Alum/cc	Alum	Alum/3.5"	Alum/3.5"		
Perforated interval	NA	-31 to -26	-14 to -9	-5 to 0	-62 to -57	-57 to -52	-65 to -60	-111 to -106	-99 to -94	NA	NA	bottom	NA	NA	NA	bottom	NA	NA	-37 to -32	-88 to -83	-121 to -116	92 to 97	80 to 85	-43 to -38	-56 to -51	na	na	65 to 70	-107 to -102	348 to 353	302 to 307	NA	-112 to -107	-51 to -46	126 to 131	NA	45 to 50	104 to 204	380 to 385	448 to 453	462 to 562	NA	NA
Backfill	NA	Sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	Grout	NA	NA	NA	Grout	NA	NA	NA	NA	NA	Grout	Sand	Sand	NA	NA	NA	NA	NA	NA	Grout	NA	Grout	Grout	Grout	NA	NA	Filter	NA	NA	NA	Sand	NA
Installed By	KB	EVANS	EVANS	EVANS	EVANS	EVANS	EVANS	EVANS	EVANS	KB	CT	BYA	CT	CT	CT	BYA	EVANS	CT	EVANS	EVANS	EVANS	BYA	EVANS	EVANS	EVANS	BYA	LS	EVANS	EVANS	EVANS	BYA	CONV	BYA	BYA	BYA	EVANS	EVANS	CONV	EVANS	CONV	CONV	CONV	EVANS
Reading Interval	N.R.	Quart	Quart	Quart	Semi.	Semi.	Quart	Quart	Quart	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	Dest.	Dest.	Quart	N.R.	Quart	Quart	Semi.	Quart	Quart	Dest.	Dest.	Semi.	Semi.	Quart	Quart	Semi.	Quart	Quart	Quart	N.R.	N.R.	Semi.	Semi.	Semi.	Semi.	Quart	Dest.
Date 1st Base Reading	10/31/83	9/13/88	9/13/88	9/13/88	3/10/88	9/3/89	12/10/87	10/19/88											11/5/87	9/8/88	9/7/88	6/8/95	9/7/88		6/3/87			3/10/88	3/10/88		2/10/89	9/8/88	2/19/99	11/24/98	11/20/98	######		11/5/87	7/2/87	7/2/87	9/8/88	9/13/88	
Displacement Depth		0 to 25	23, 43		58	60	25-30	48-54	39										>330	245	162,250	143, 50	2, 170, 2	247, 200	210, 50			305	380	184	196						251					45	
A+ axis direction	NA	34	44	35	20	30	350	64	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	39	204	18	190	32	60	20	NA	NA	340	330	10	60	326	210	184	164	NA	NA	1	300	345	5	45	NA
Region	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	PCH	BLUFF	BLUFF	BLUFF	EAST	EAST	EAST	EAST	EAST	EAST	CENT.	CENT.	CENT.	CENT.	CENT.	CENT.	CENT.	CENT.	CENT.	CENT.	WEST.	WEST.	WEST.	WEST.	HEAD	HEAD
Basal Surf. Penetrated		YES	NO	NO	NO	NO	YES	YES	YES										NO	NO	YES	YES	NO	NO	YES			NO	NO	NO	YES	YES	YES	YES				NO	NO	NO	NO	YES	
Interpretation Movement (inches)																																											
2009-2010	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	<0.05	NA
2008-2009	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2007-2008	NA	--	--	--	--	--	0.05	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2006-2007	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2005-2006	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	NA	--	--	--	--	--	NA	NA	--	--	--	0.1	--	--	--	--	NA	NA	--	--	--	--	0.22	NA
2004-2005	NA	0.09	0.03	--	0.03	0.01	0.04	0.04	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	0.05	0.02	--	--	0.10	0.06	NA	NA	?	0.06	0.09	0.09	0.15	--	--	--	NA	NA	--	--	--	--	0.35	NA
2003-2004	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2002-2003	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2001-2002	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	--	NA
2000-2001	NA	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	-0.02-0.04	--	--	--	--	~0.05*	NA	NA	--	--	--	0.02-0.04*	--	--	--	--	NA	NA	--	--	--	--	0.2	NA
1999-2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	--	NA	NA
1998-1999	NA	~0.1	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	<0.5	--	--	--	NA	NA	--	--	--	--	--	--	--	--	NA	NA	--	--	--	--	1.9	NA
1997-1998	NA	0.3	--	--	--	--	0.08	0.04	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	0.08	--	0.02	0.08	NA	NA	--	--	--	0.03	--				NA	NA	--	--	--	--	1	NA
1996-1997	NA	<0.1	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	<0.1	--	0.5	--	NA	NA	--	--	--	--	--				NA	NA	--	--	--	--	0.7	NA
1995-1996	NA	0.08	<0.1	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	0.07	--	--	--	NA	NA	--	--	--	0.04	--				NA	NA	--	--	--	--	3.5	NA
1994-1995	NA	0.1	0.08	--	--	--	0.15	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--	0.04, 0.05	--	--	0.1, 0.2	NA	NA	--	--	--	--	--				NA	NA	--	--	--	--	5	NA
1993-1994	NA									NA	NA	NA	NA	NA	NA	NA	NA	NA								NA	NA									NA	NA						NA
1/1993-7/1993	NA	0.08	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--		--	0.2	--	NA	NA	--	--	--	--	--				NA	NA	--	--	--	--	1.1	NA
7/1992-12/1992	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA				NA	NA	NA	NA	NA	NA	NA	NA
1988-1991	NA	0.2	0.05	--	0.08	--	0.15	0.1	0.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--	--		--	0.3	0.05	NA	NA	--	--	--	0.1				NA	NA	--	--	--	--	0.3	NA
1983-1984	2.28	3.4					1.4																8.4							4.8					4.7							

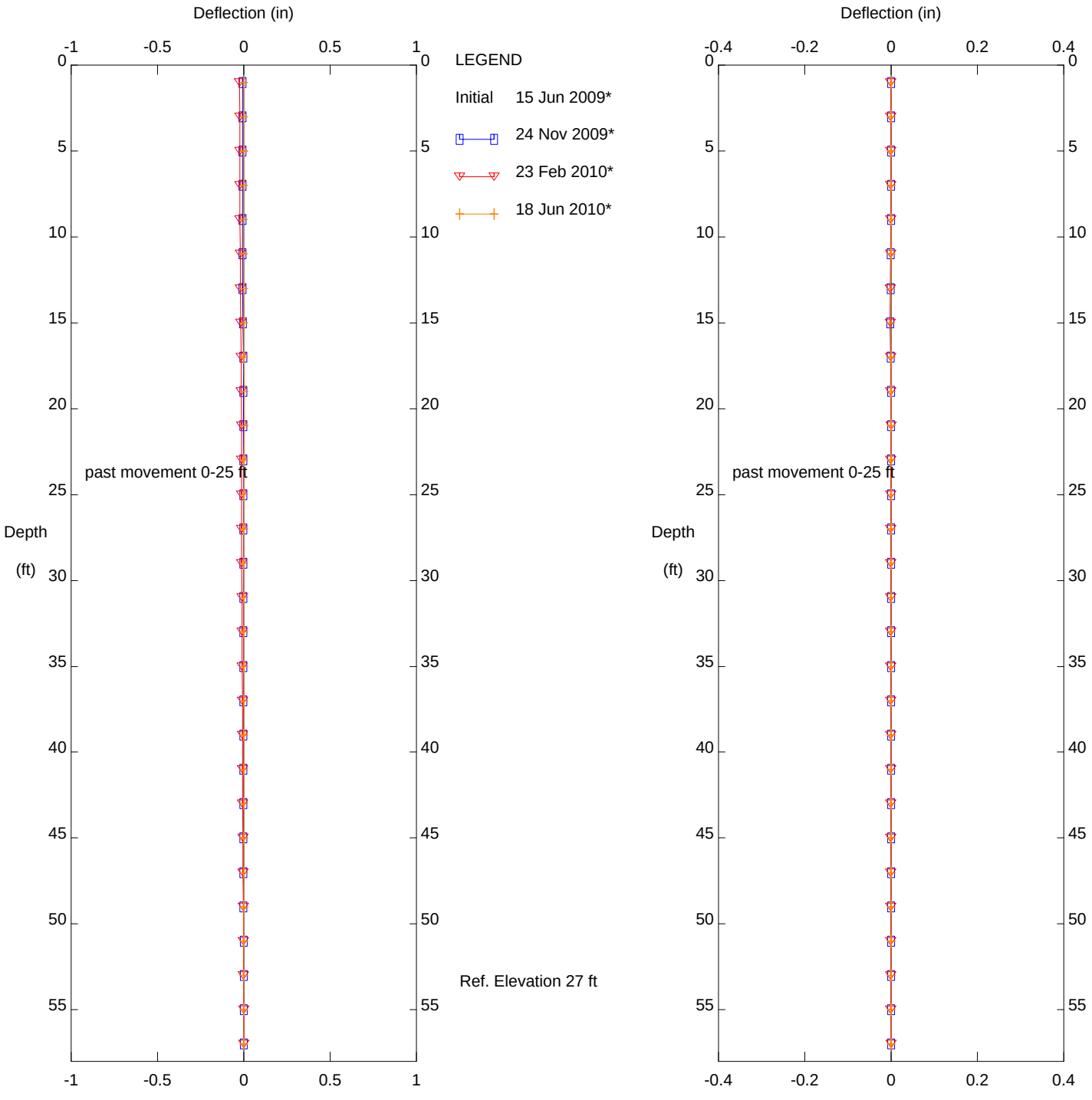
N.R. Not Read
Semi Semi-Annually
Dest. Destroyed
Quart Quarterly

-- No quanitifiable measurement
NA Data not available

Installation Designations:
KB Kovacs-Byer, Inc.
EVANS D.A. Evans
CT Caltrans
CONV Converse Consultants
GS GeoSoils
BYA Bing Yen & Associates
LS Lockwood-Singh

-- Shaded Blue to indicate inclinometer does NOT penetrate the basal rupture
-- Shaded yellow to indicated inclinometer does penetrate basal rupture

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

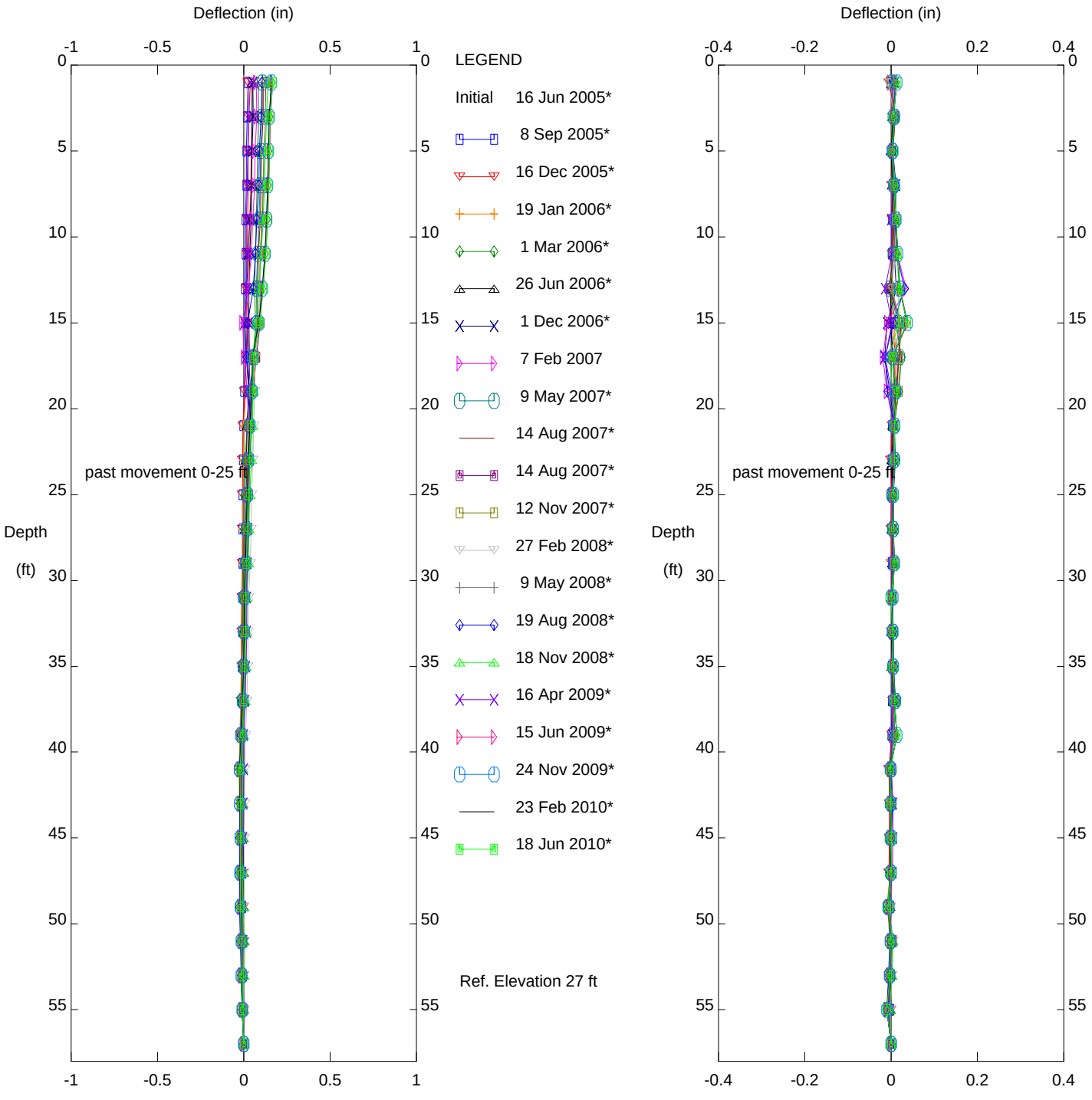
Direction A

BRM, Inclinometer SP-11

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

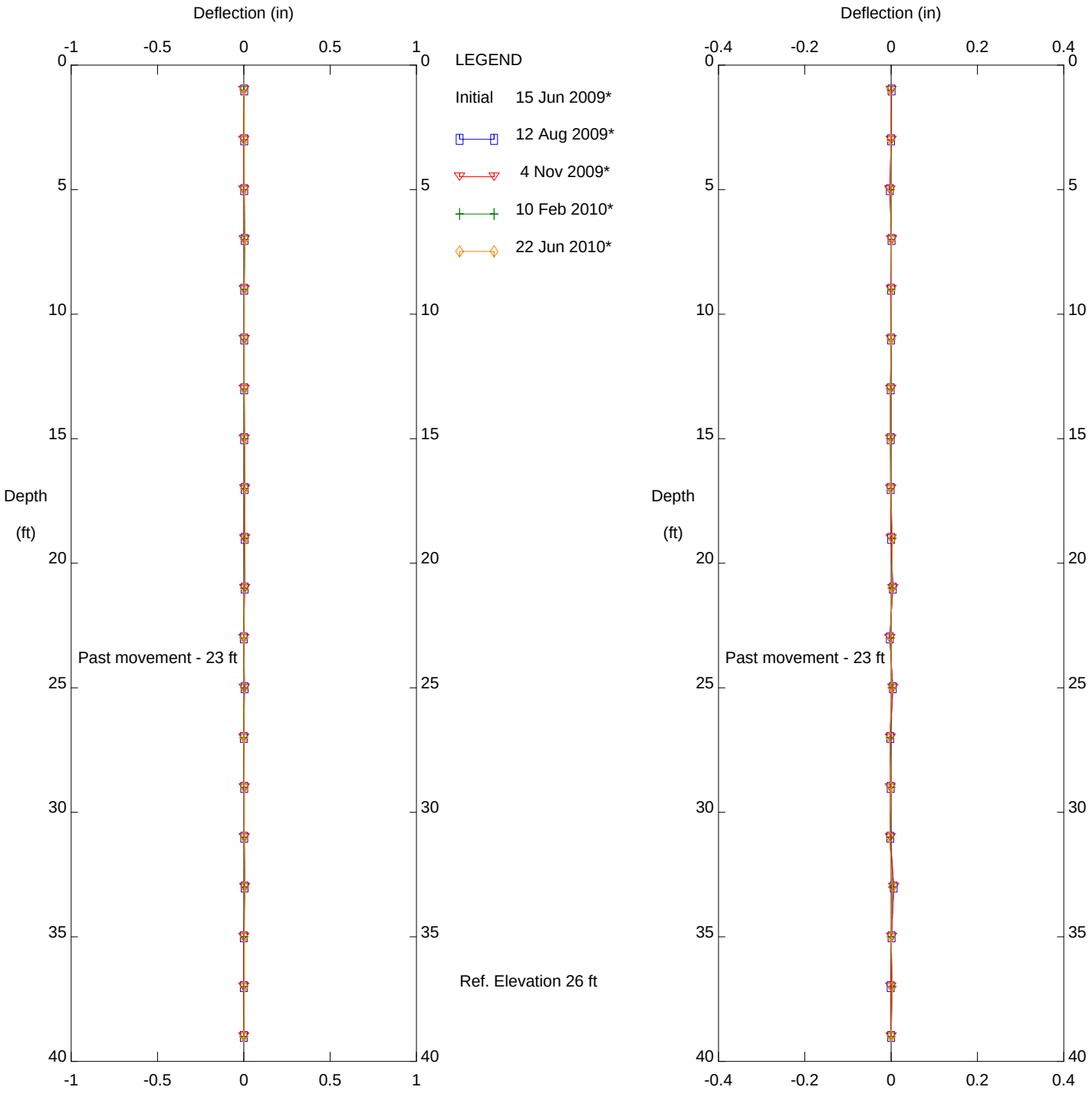
Direction A

BRM, Inclinometer SP-11

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

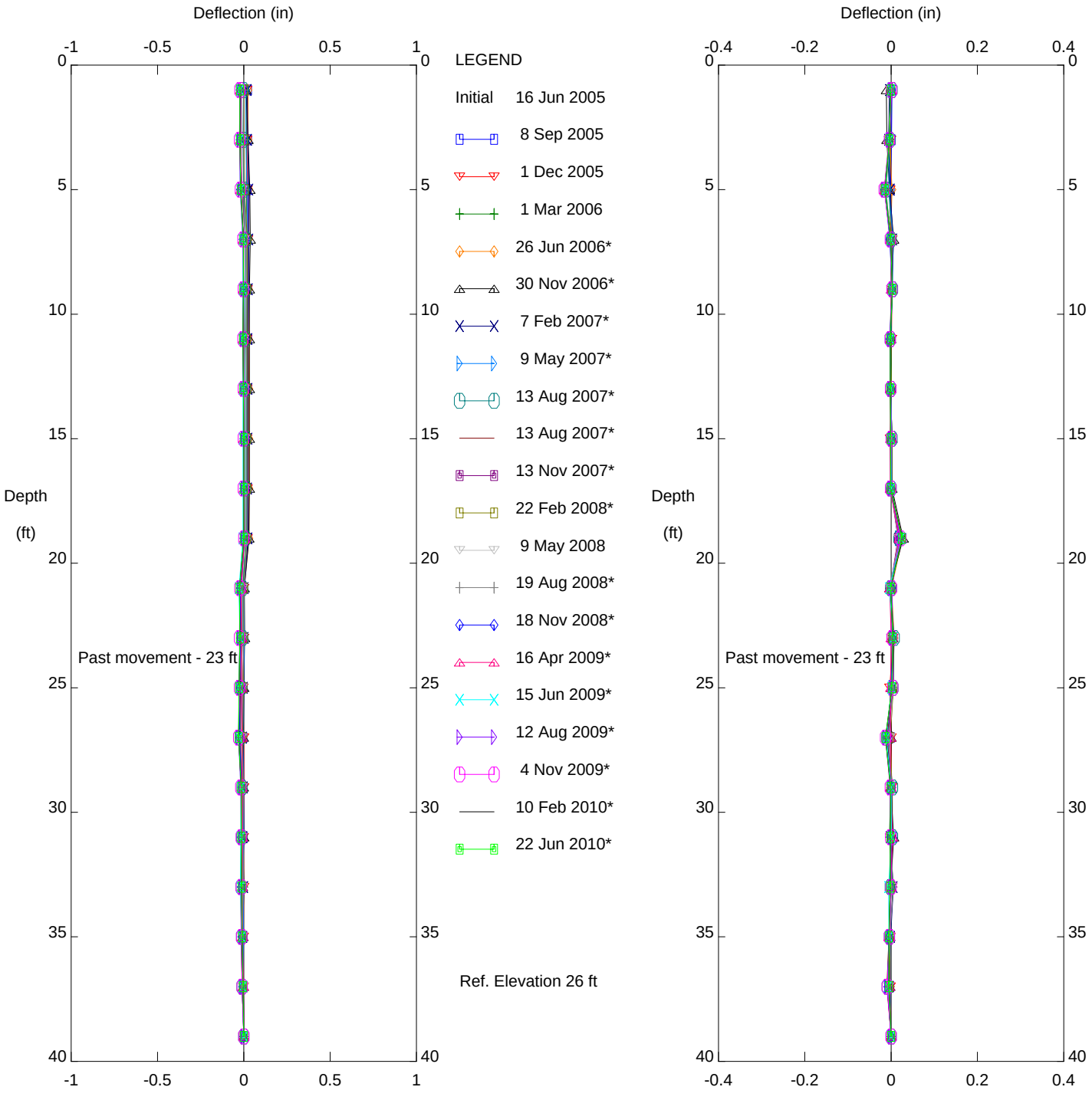
Direction A

BRM, Inclinometer SP-12

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

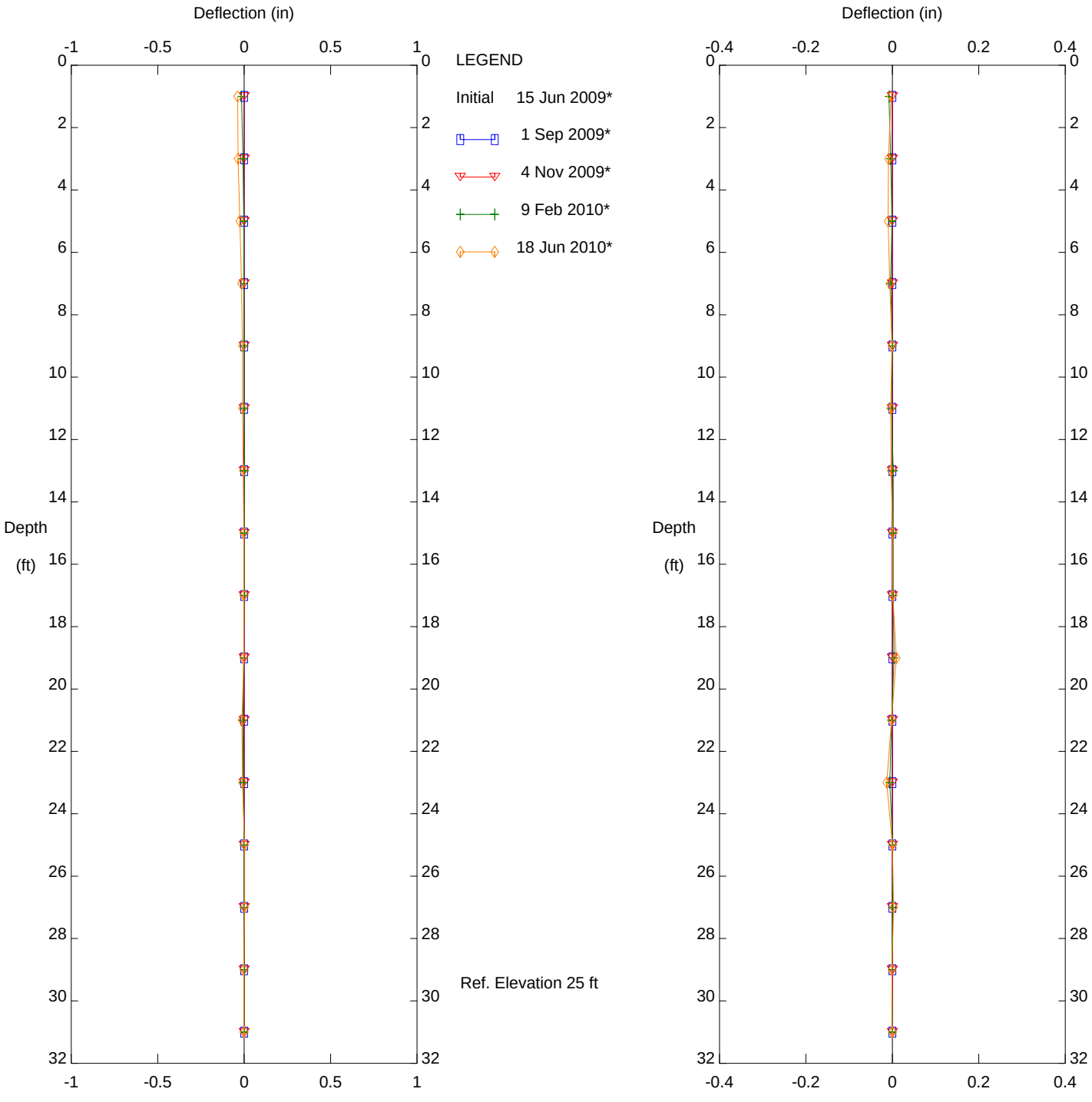
Direction A

BRM, Inclinometer SP-12

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

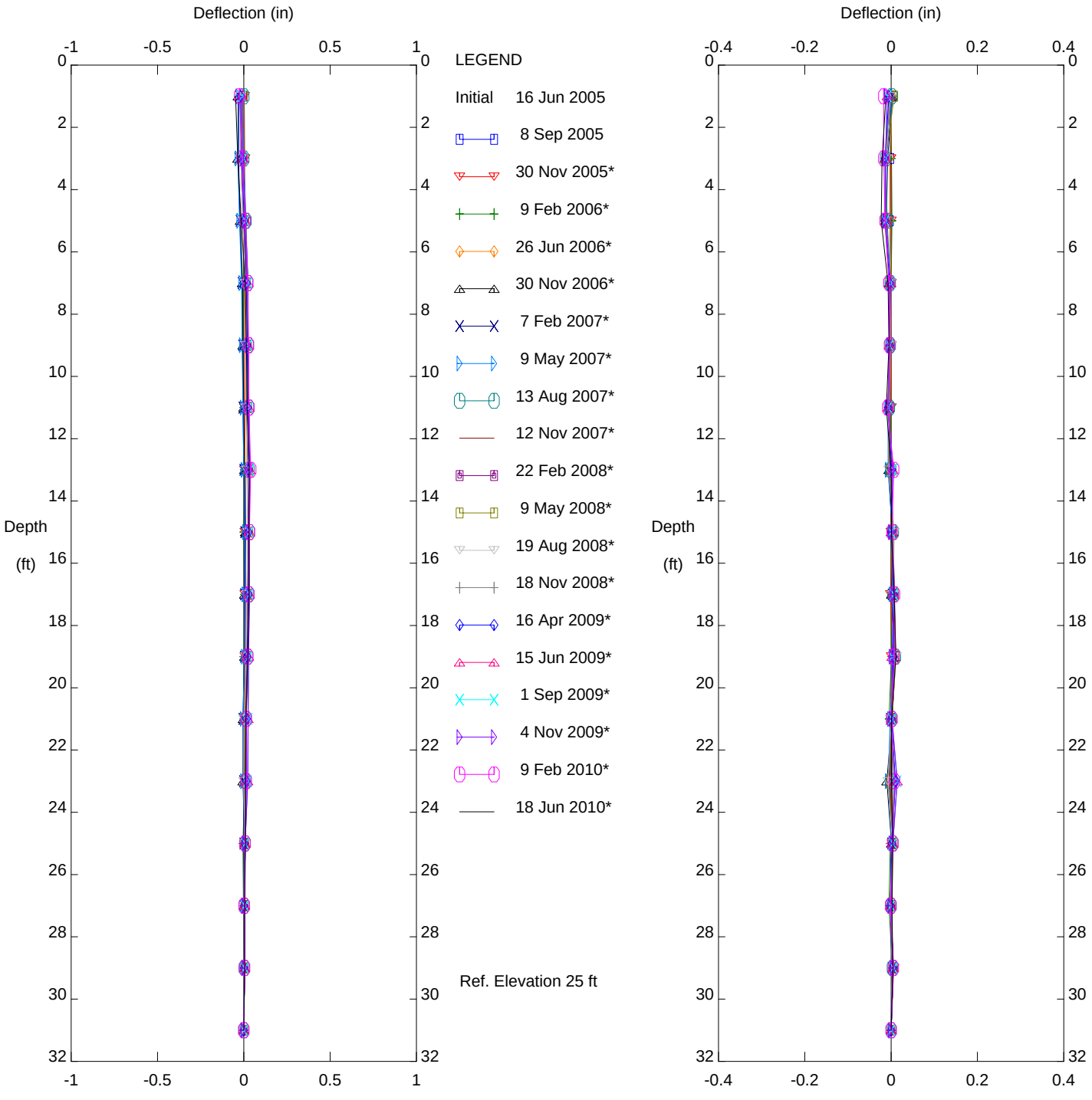
Direction A

BRM, Inclinometer SP14

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

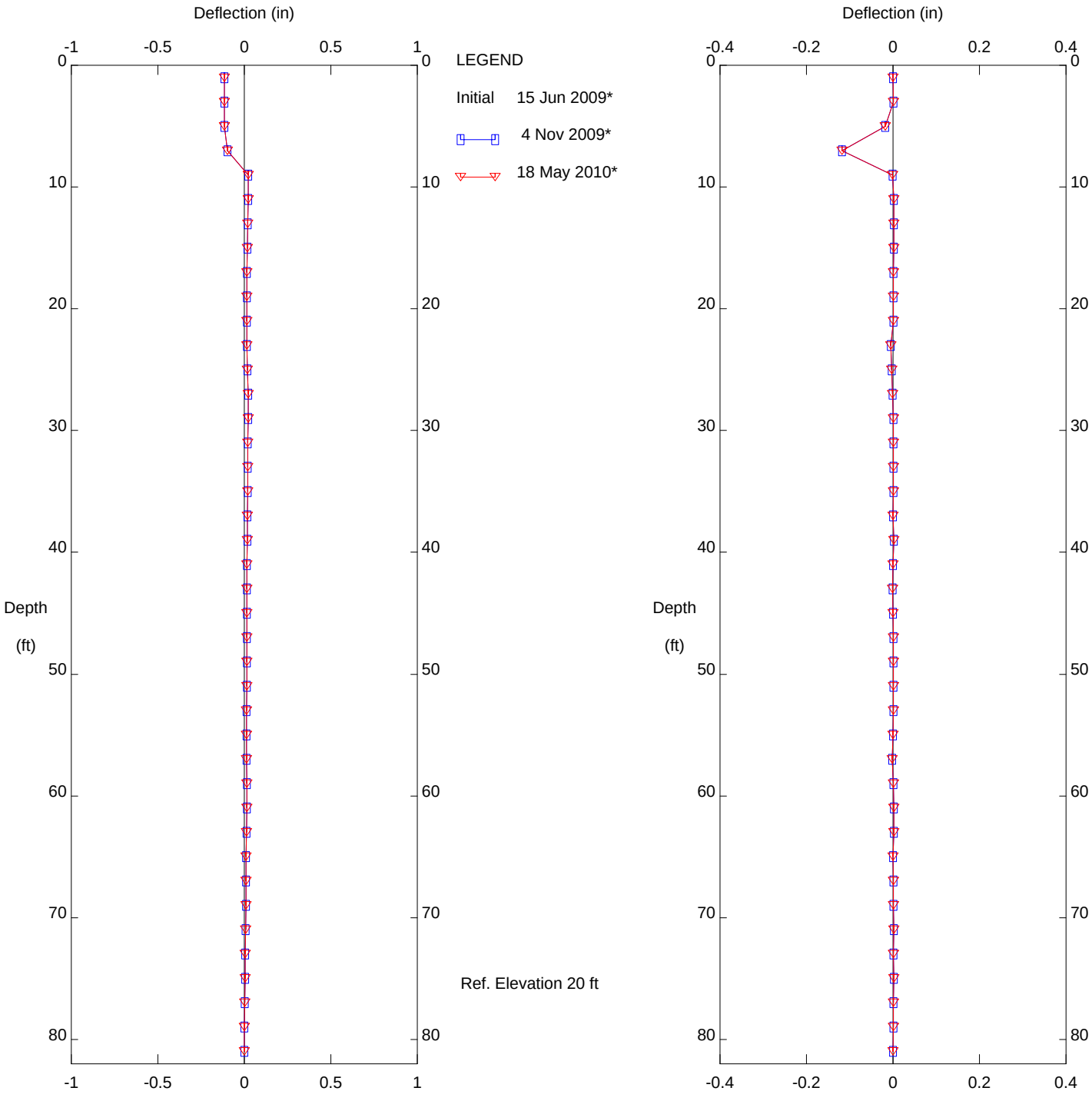
Direction A

BRM, Inclinometer SP14

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA

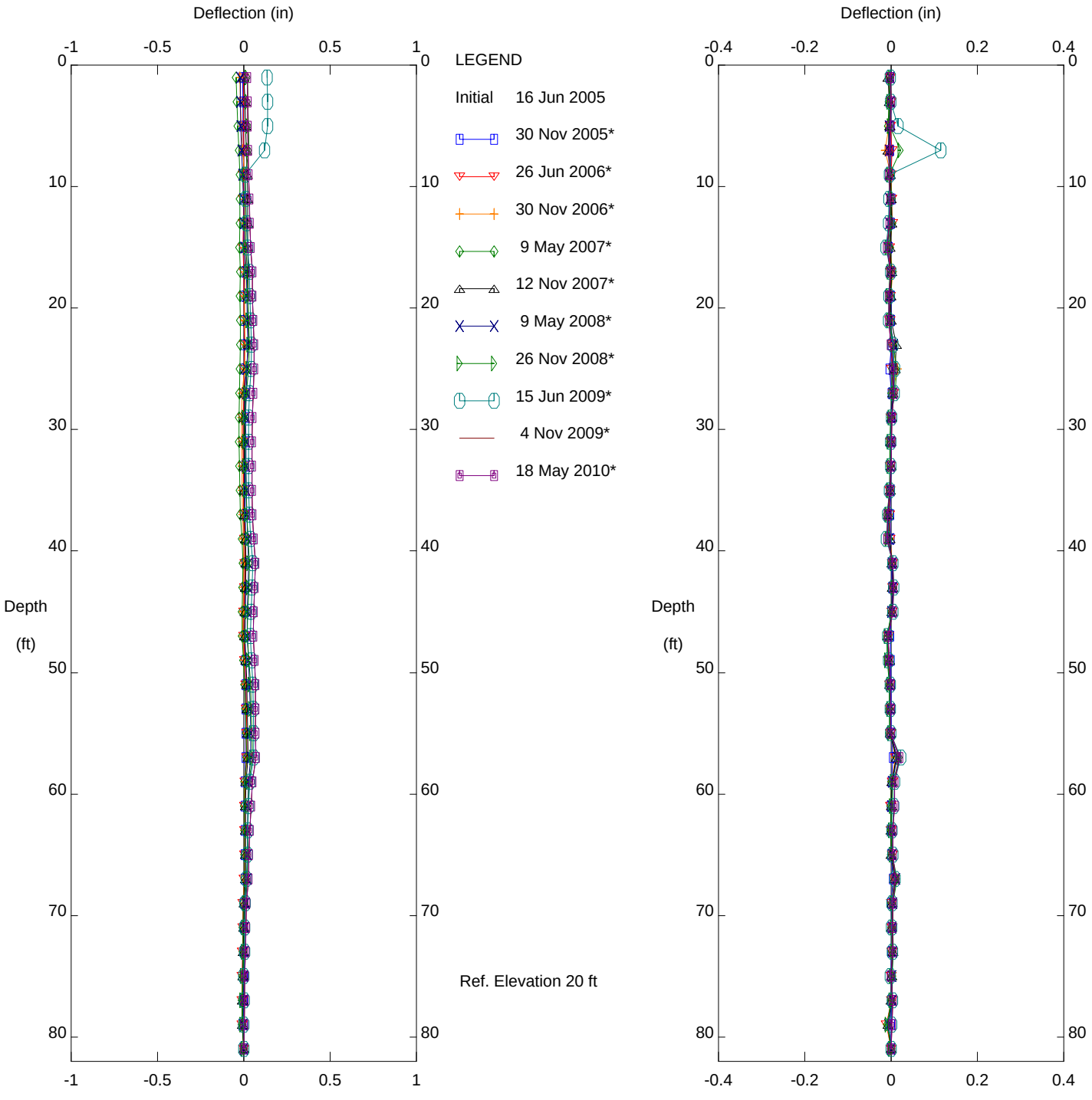


BRM, Inclinometer SP15

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

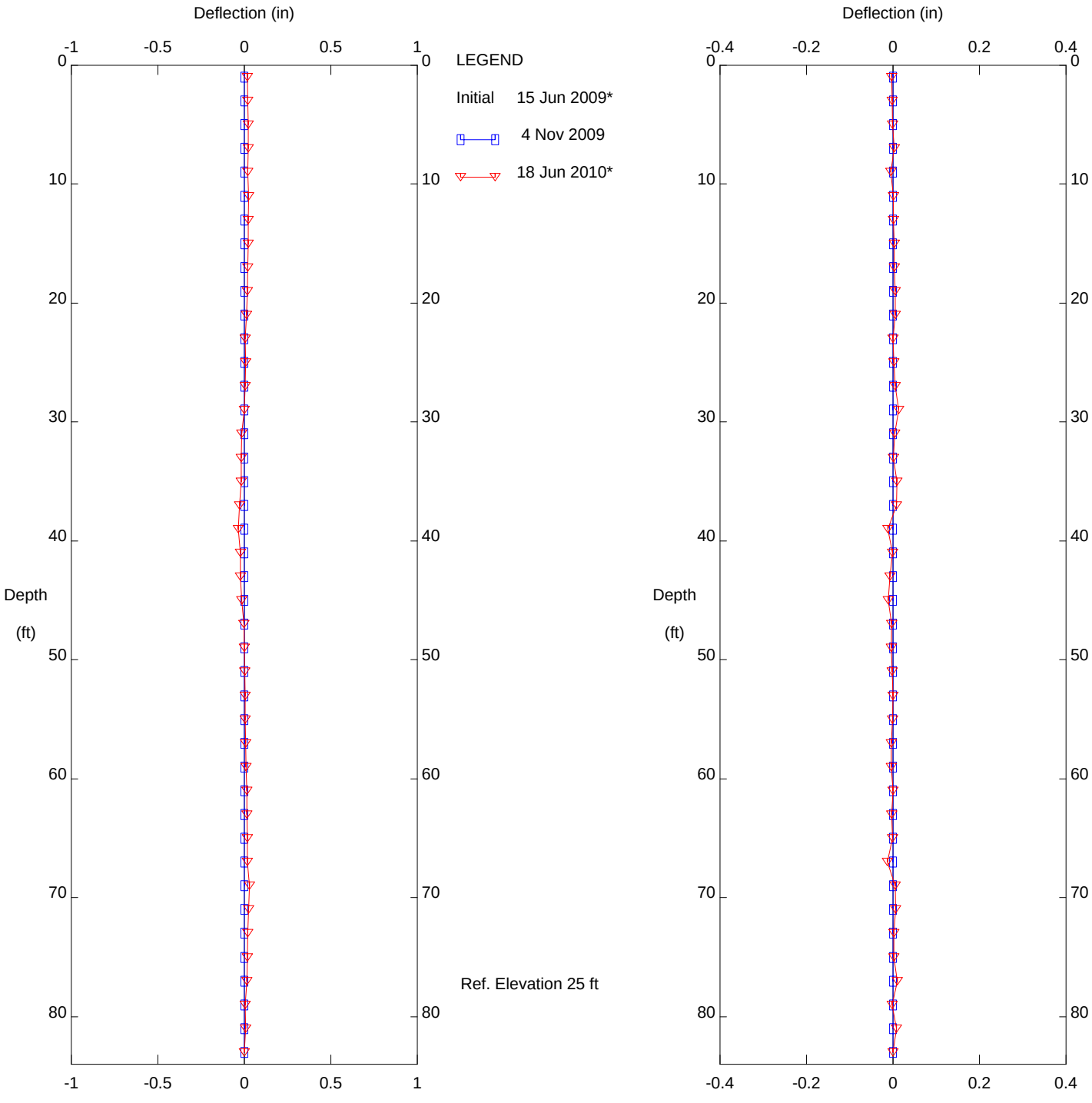
Direction A

BRM, Inclinometer SP15

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA

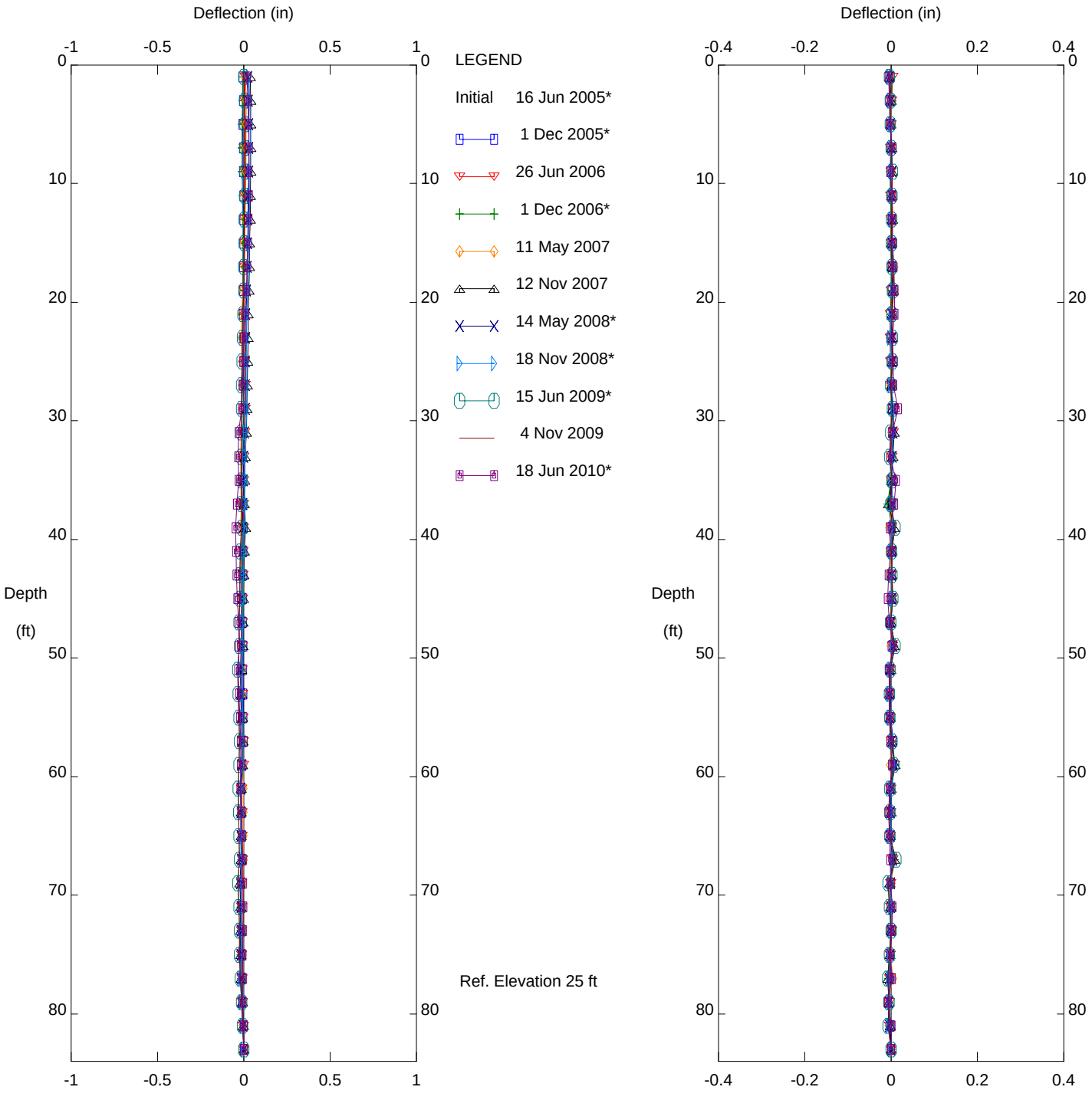


BRM, Inclinometer SP19

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

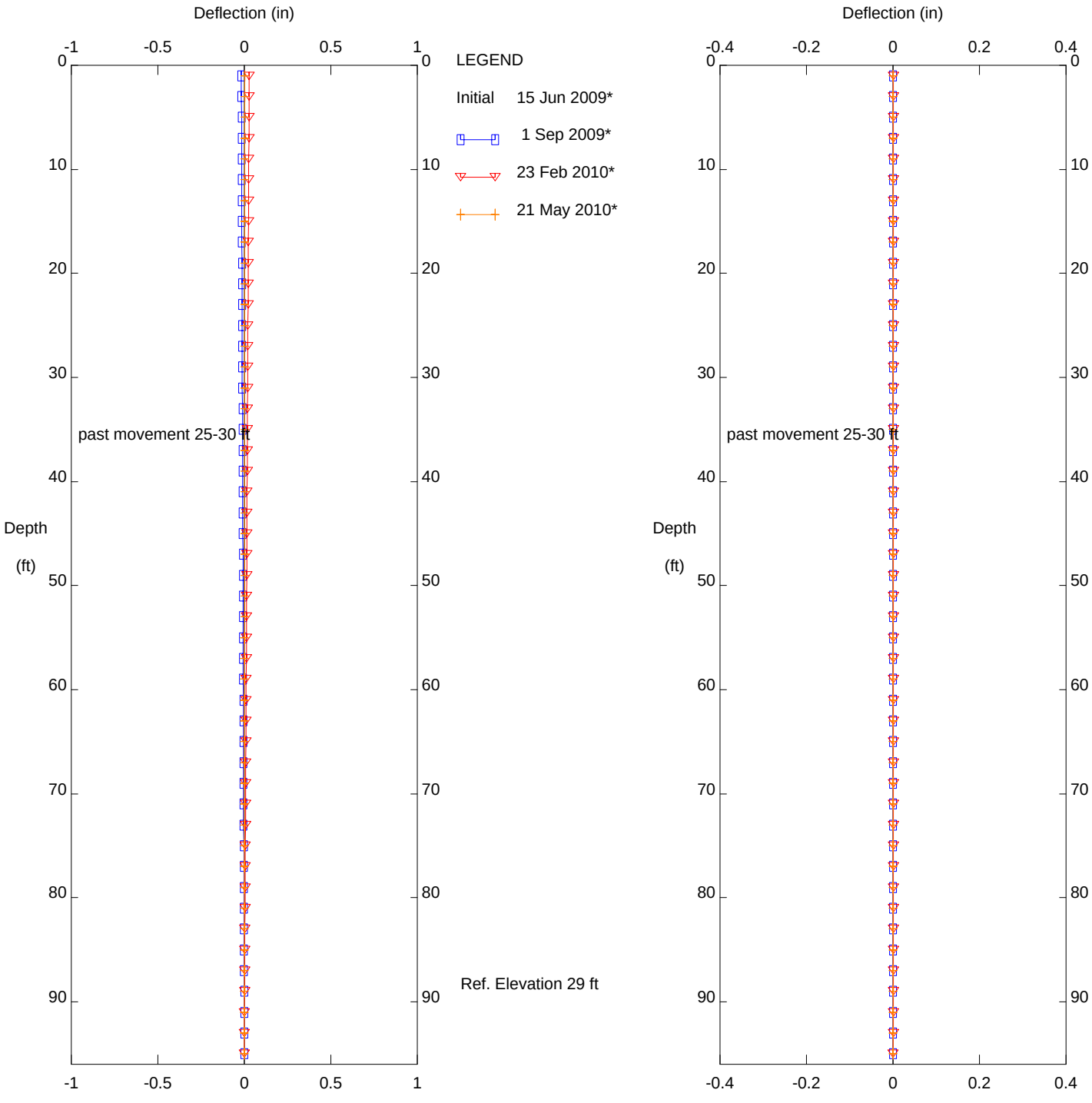
Direction A

BRM, Inclinometer SP19

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

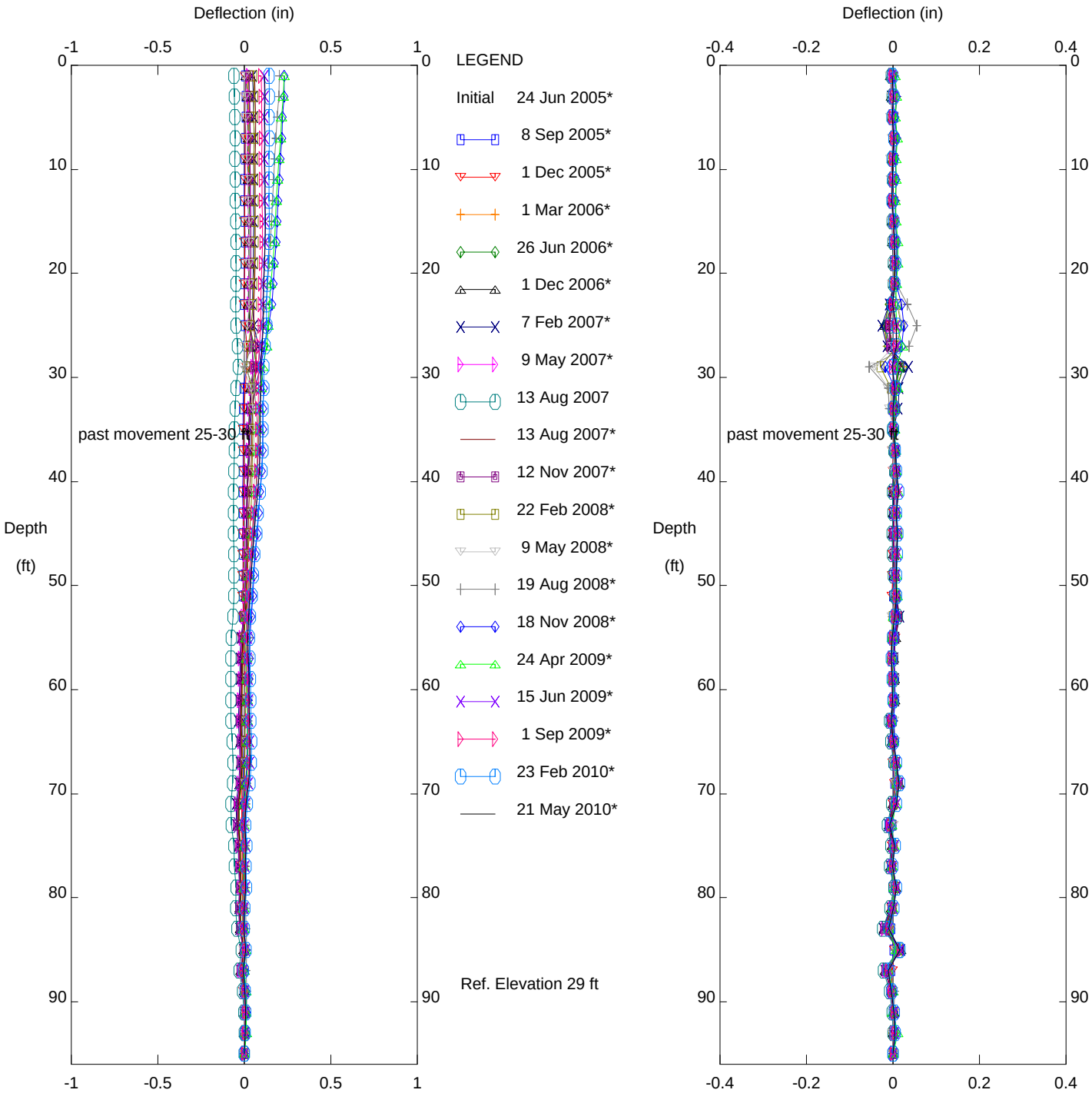
Direction A

BRM, Inclinometer SP27A

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

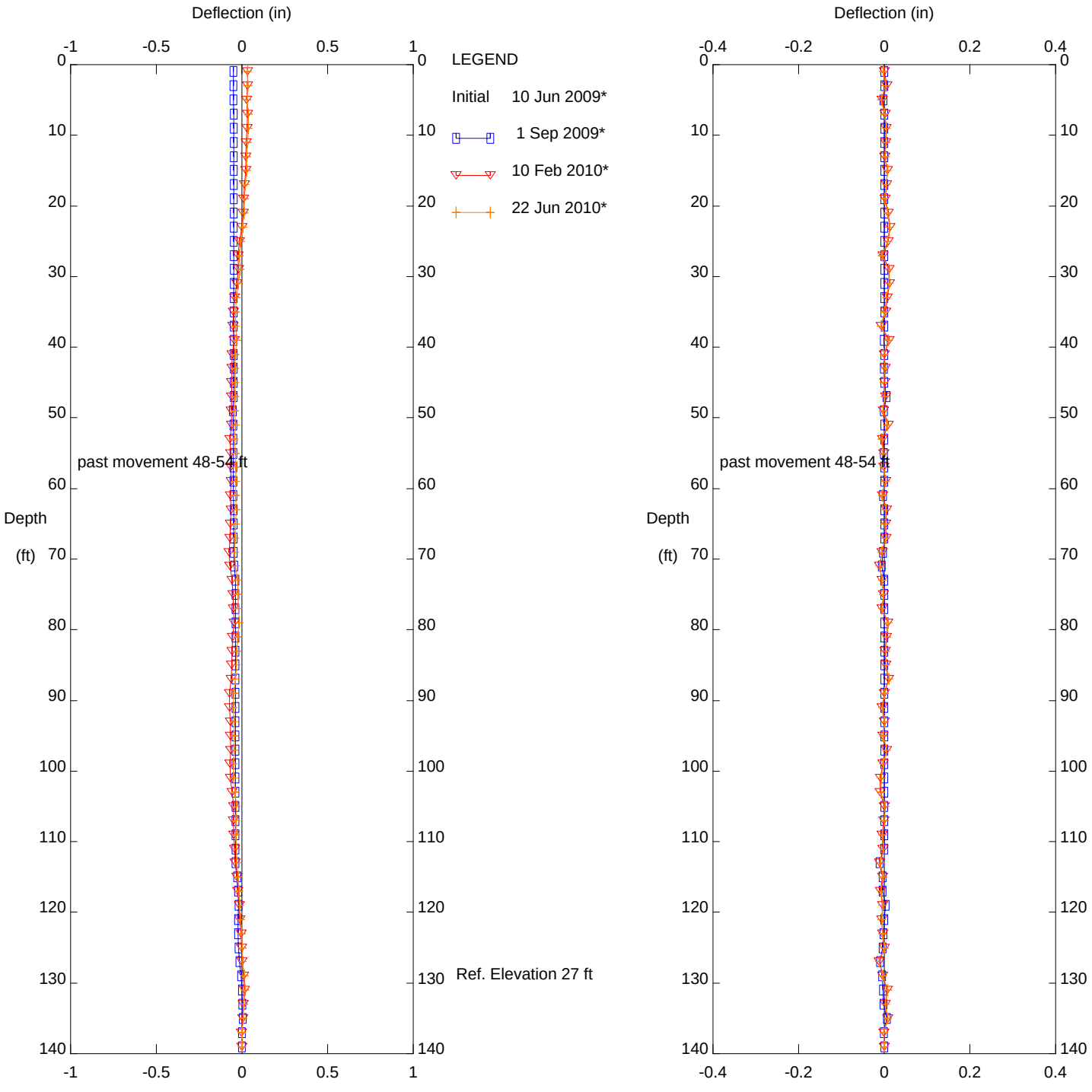
Direction A

BRM, Inclinometer SP27A

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

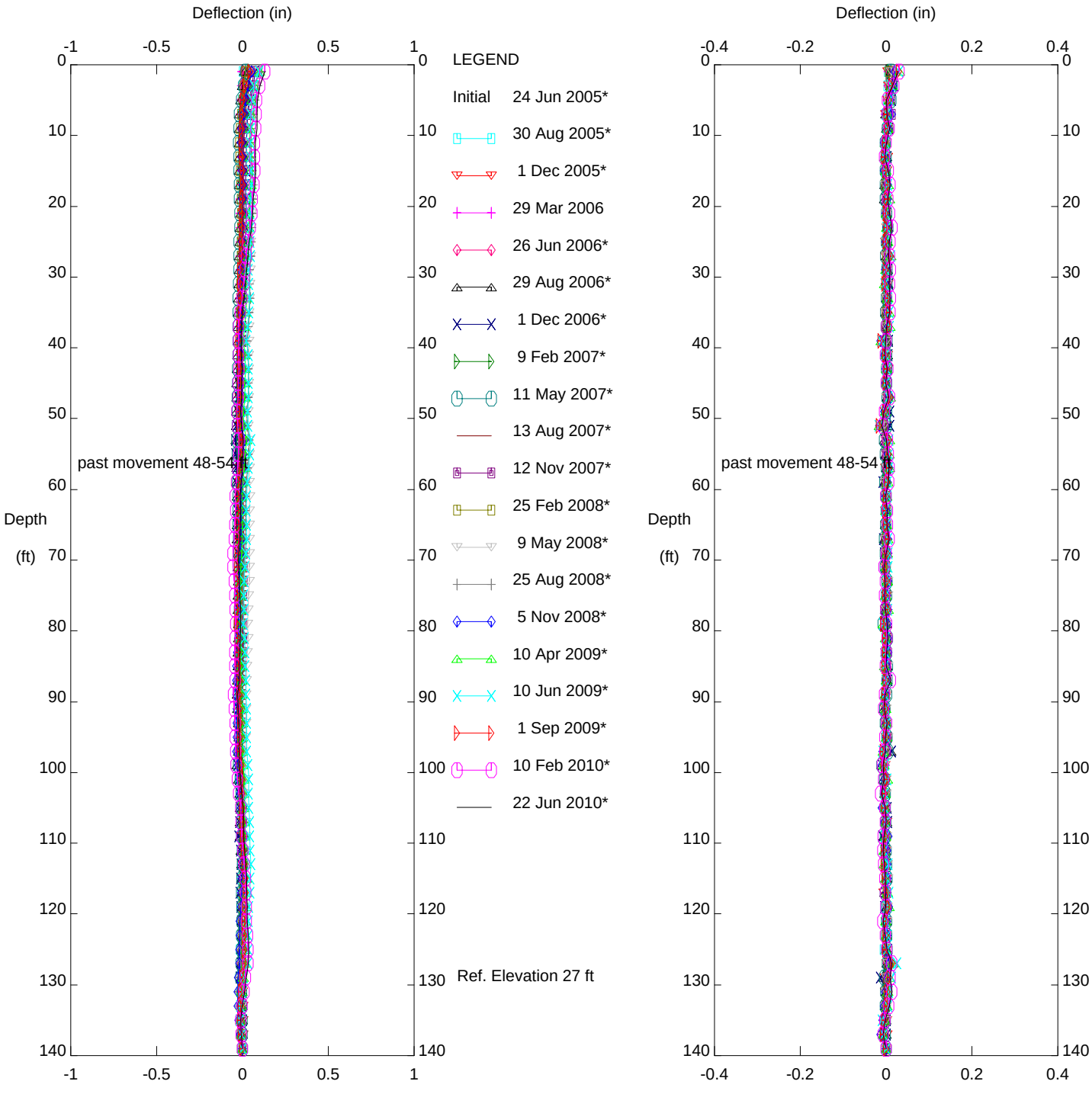
Direction A

BRM, Inclinometer SP29

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

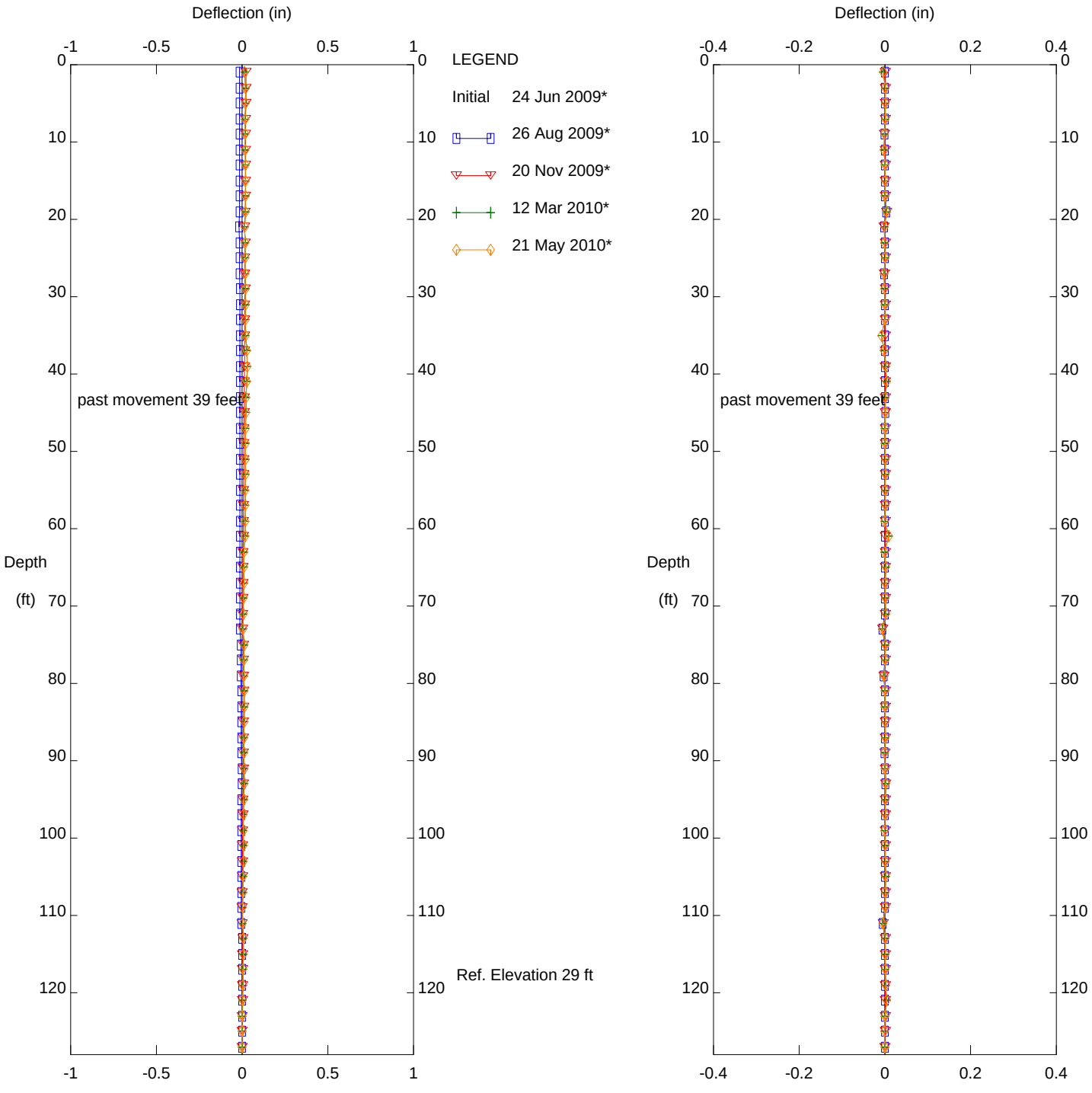
Direction A

BRM, Inclinometer SP29

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

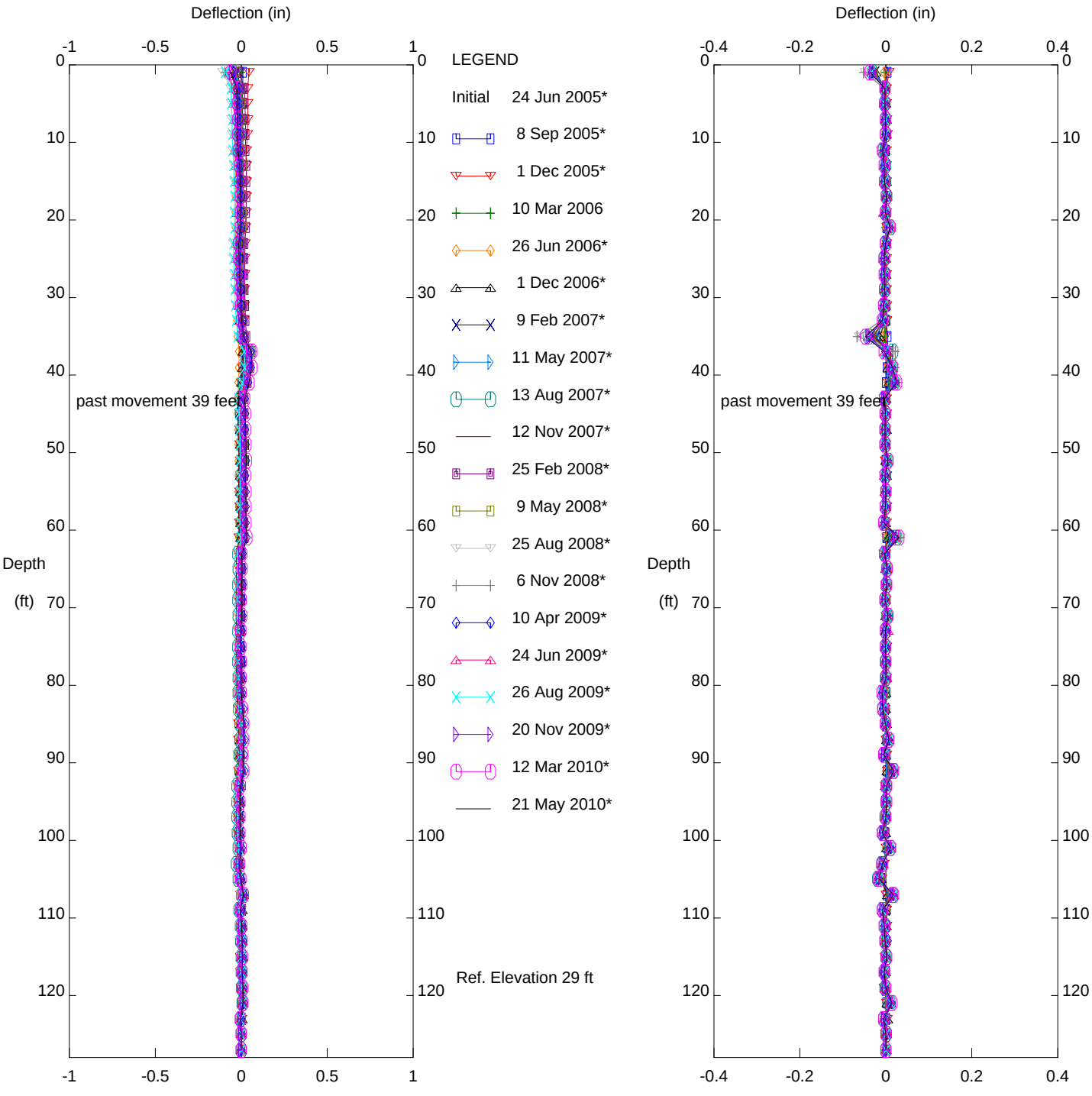
Direction A

BRM, Inclinometer SP30

PCH REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BRM, Inclinometer SP30

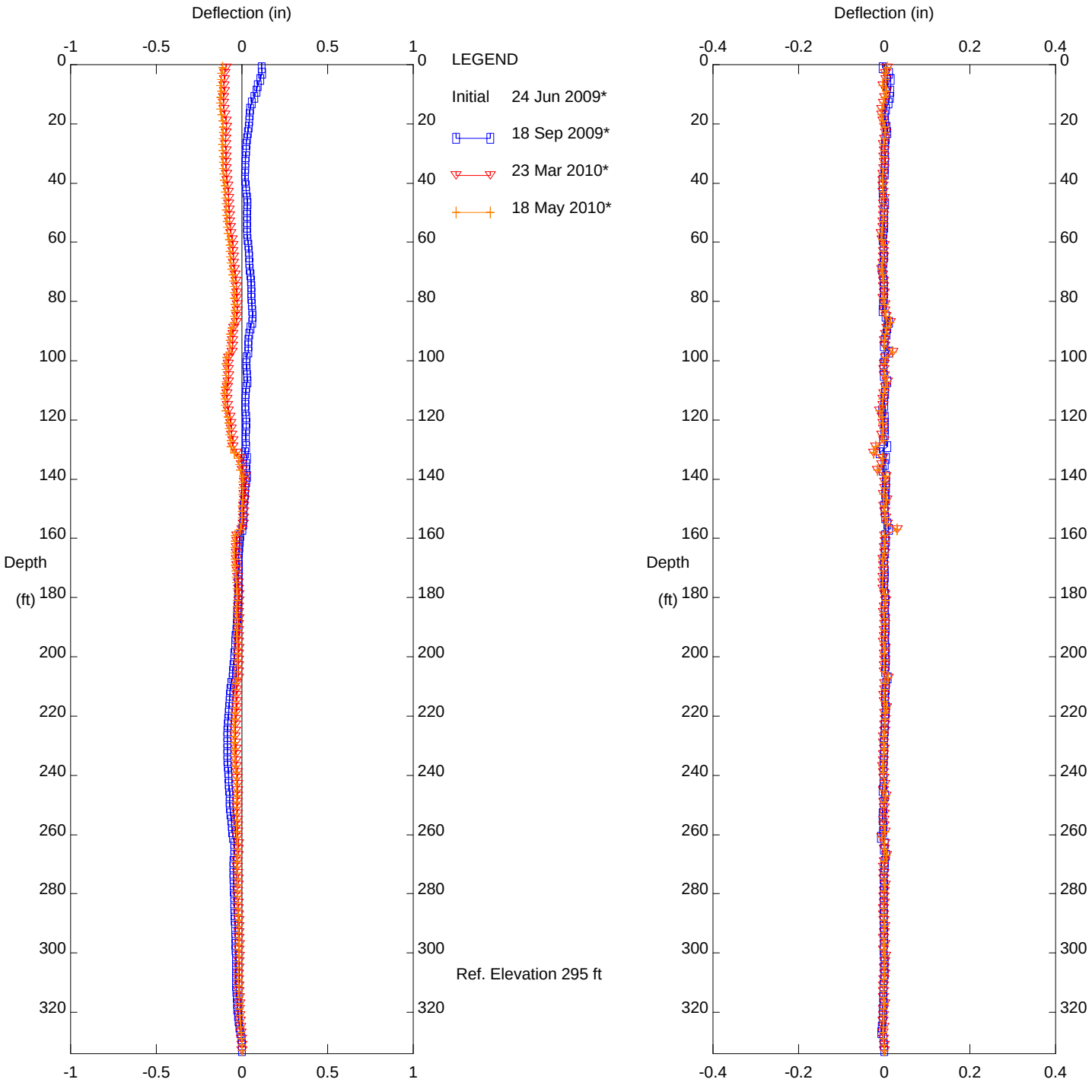
PCH REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP30.gtl

PLATE D-9b

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

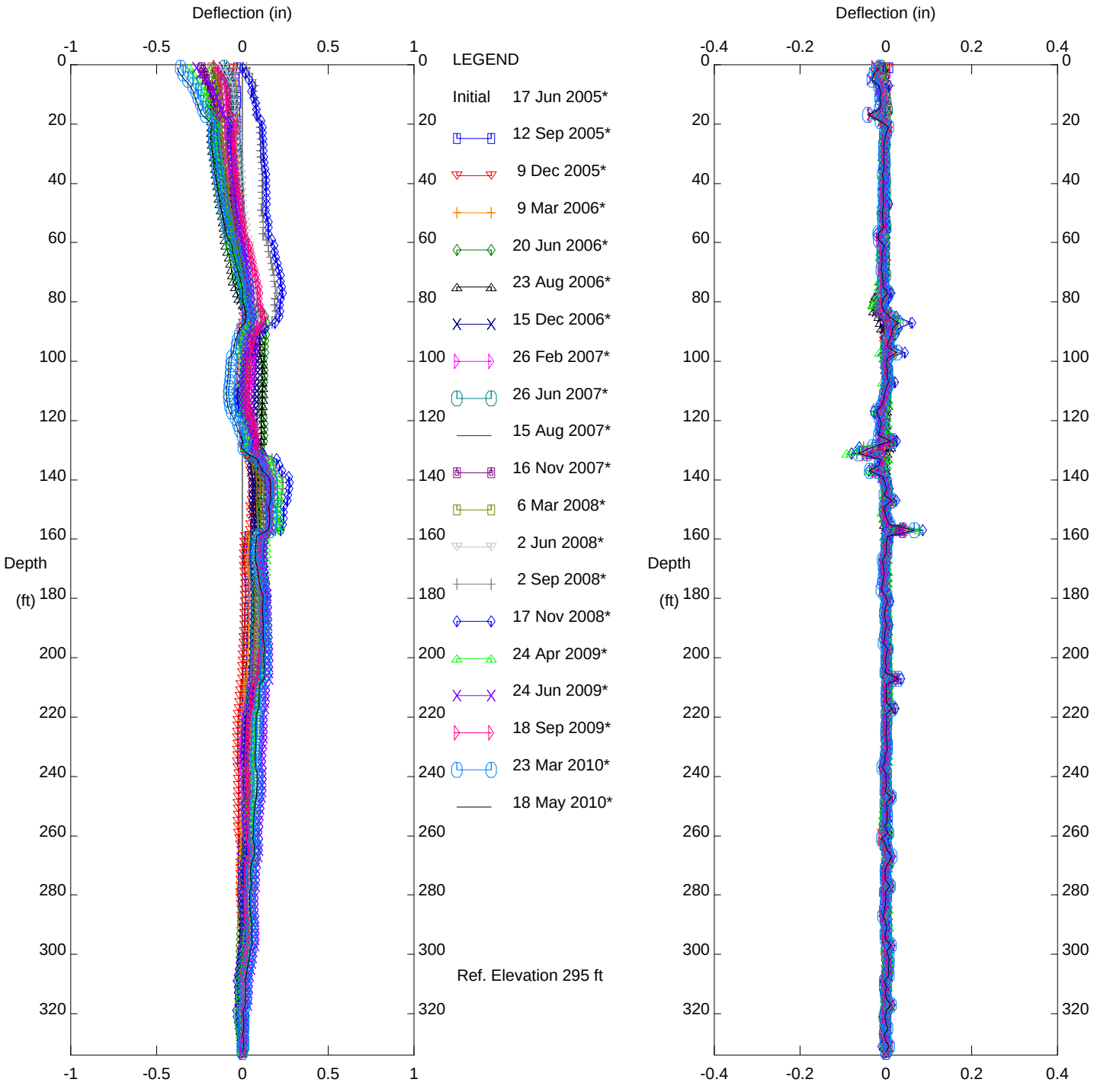
Direction A

BRM, Inclinometer SP-10

BLUFF REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

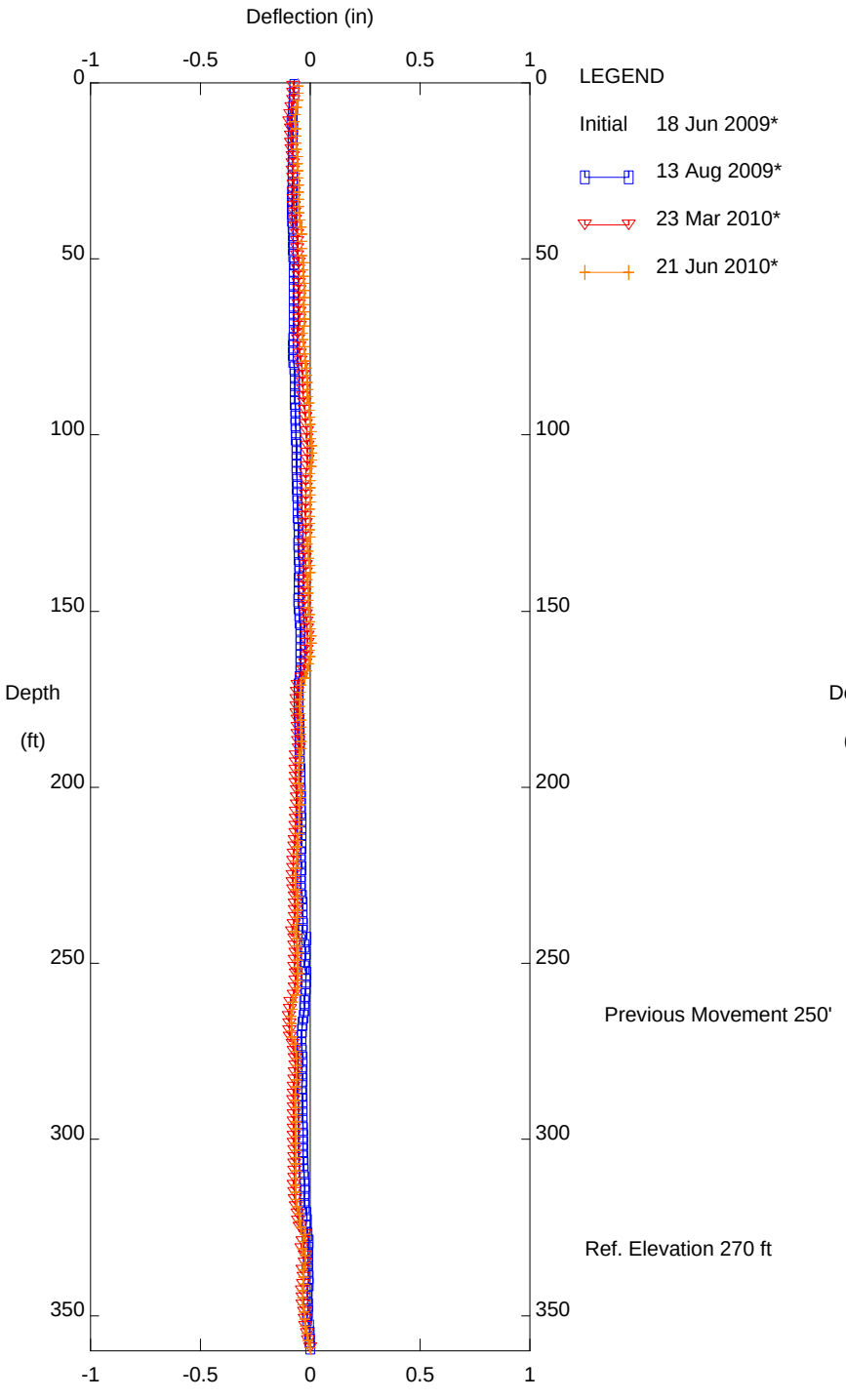
Direction A

BRM, Inclinometer SP-10

BLUFF REGION

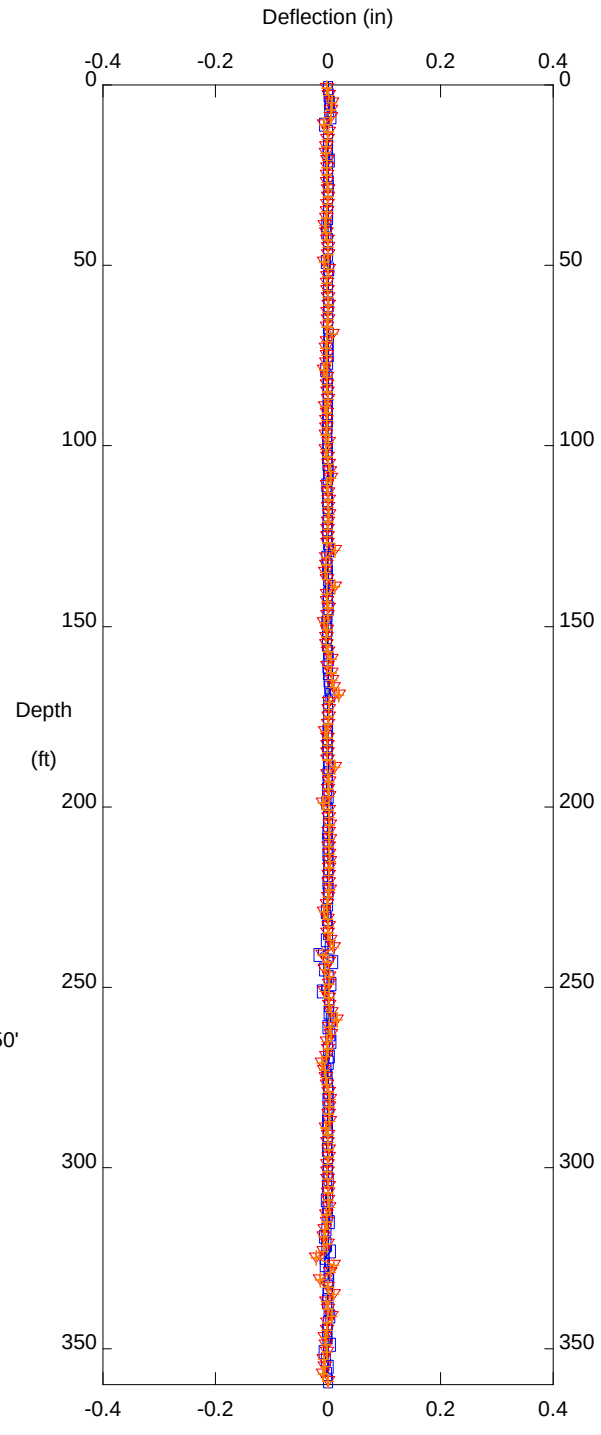
Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A



Incremental Deflection

Direction A

BRM, Inclinometer SP28

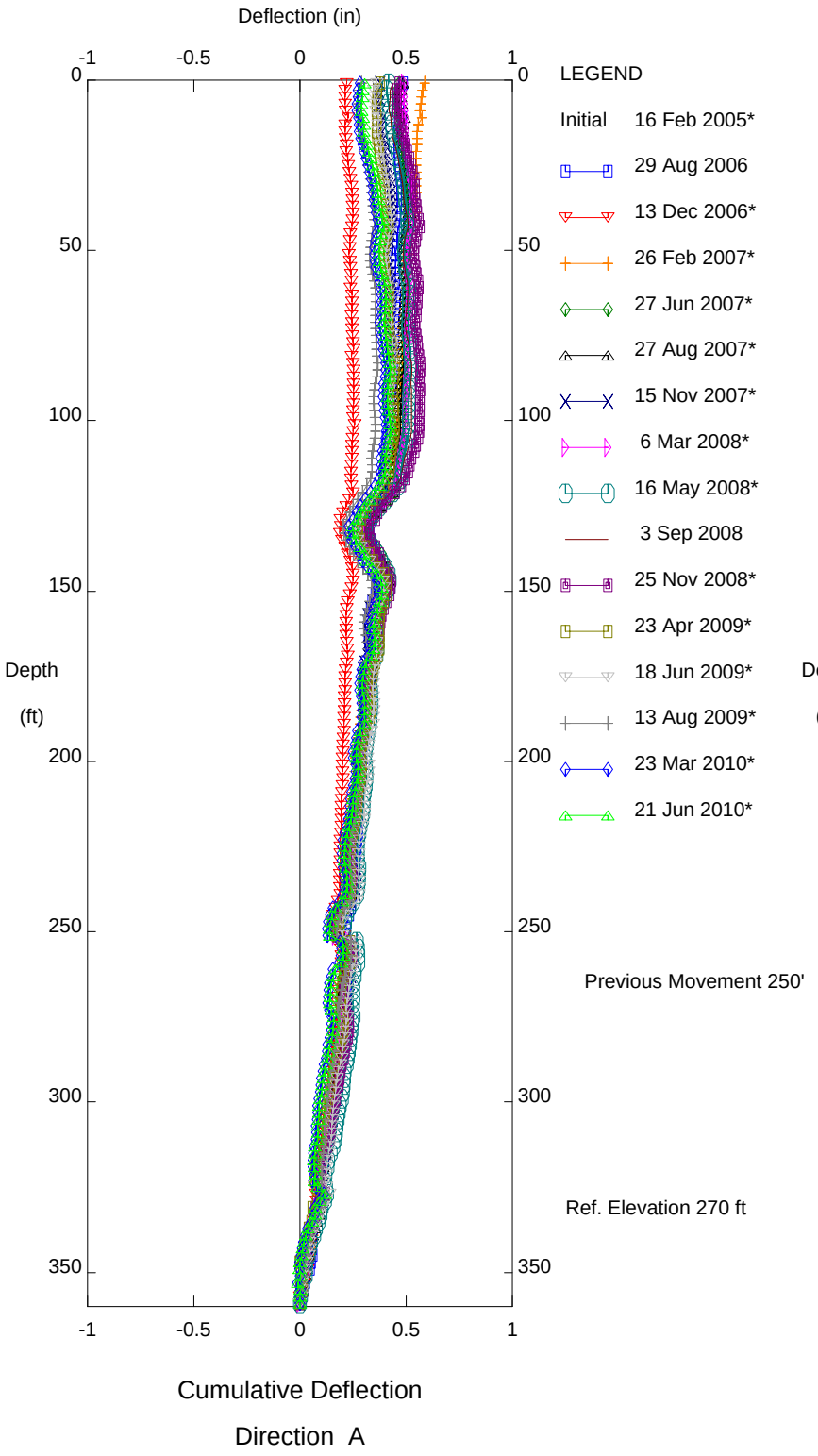
BLUFF REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP28.gtl

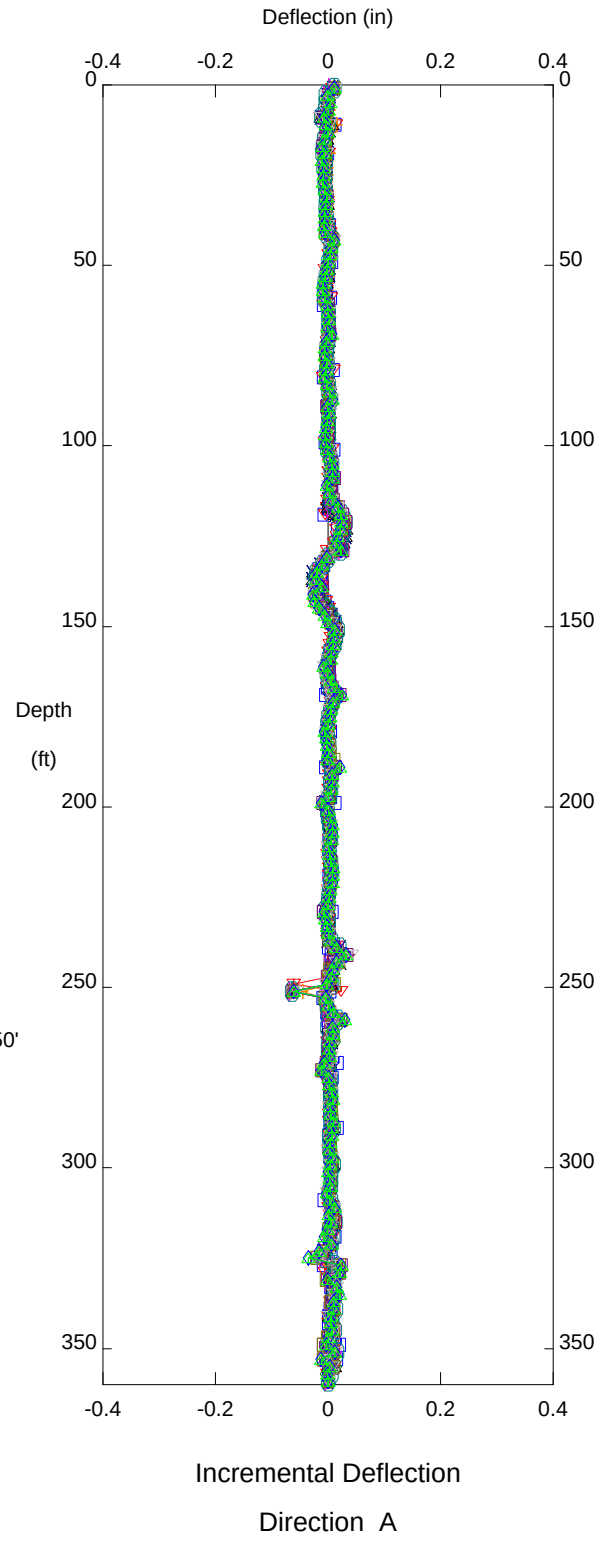
PLATE D-11a

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A



Incremental Deflection

Direction A

BRM, Inclinometer SP28

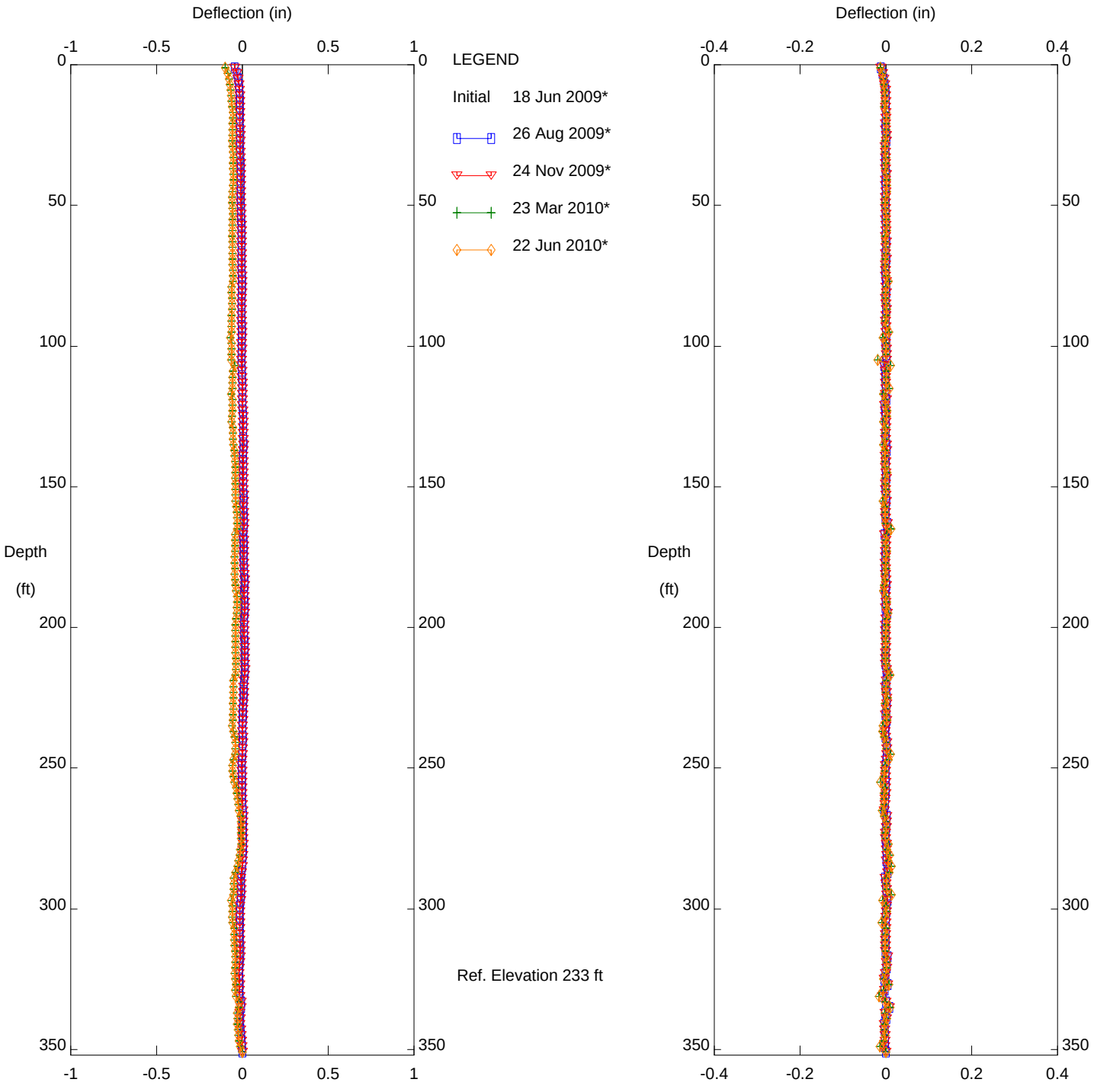
BLUFF REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP28.gtl

PLATE D-11b

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BRM, Inclinometer SP32

BLUFF REGION

Sets marked * include zero shift and/or rotation corrections.

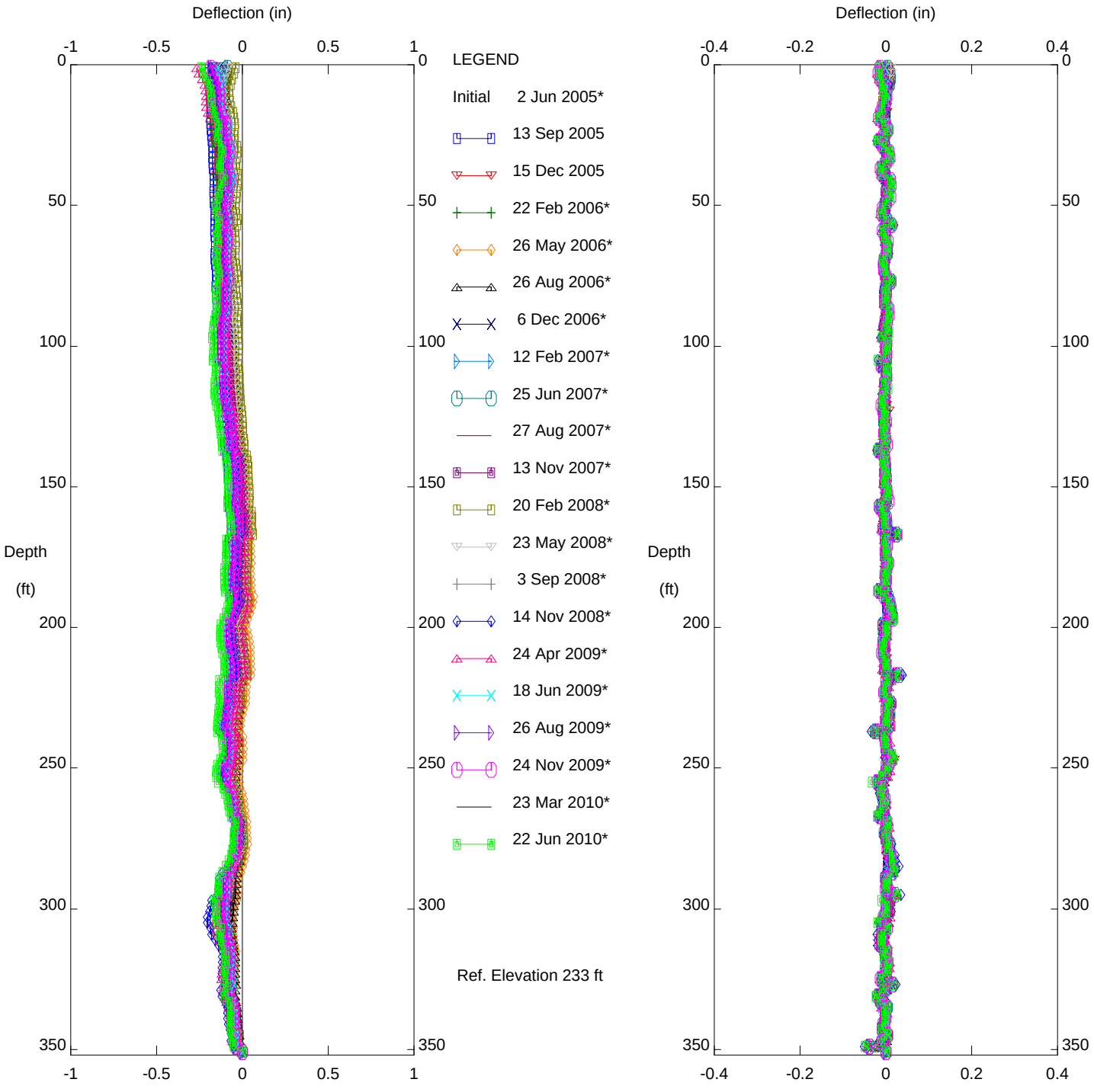
E:\Malibu AD\Big Rock Mesa\SI Data\SP32.gtl

PLATE D-12a

past movement 250 feet

past movement 250 feet

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BRM, Inclinometer SP32

BLUFF REGION

Sets marked * include zero shift and/or rotation corrections.

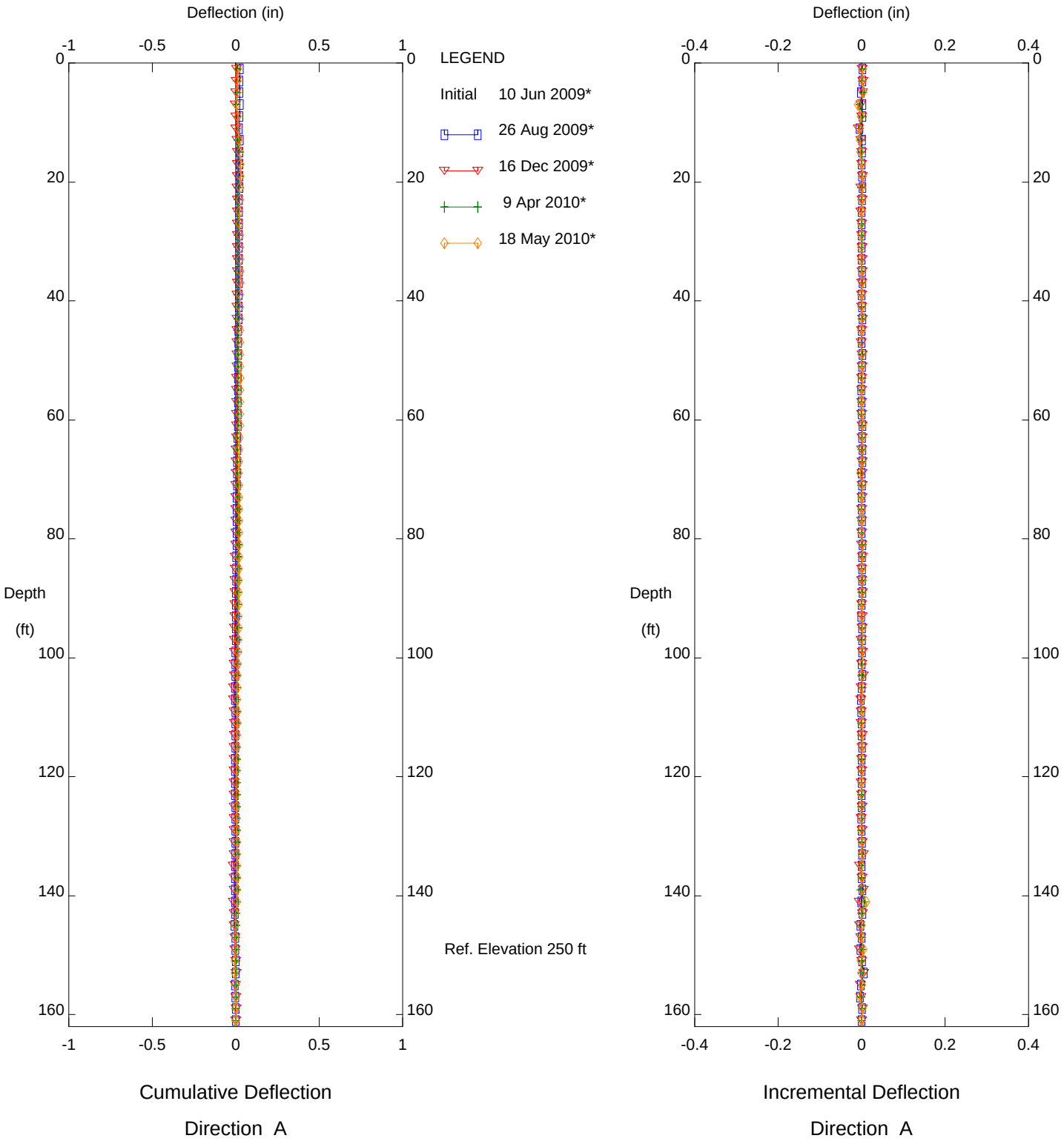
E:\Malibu AD\Big Rock Mesa\SI Data\SP32.gtl

PLATE D-12b

past movement 250 feet

past movement 250 feet

Fugro West, Inc. - Ventura, CA



BIG ROCK MESA, Inclinometer PC-1

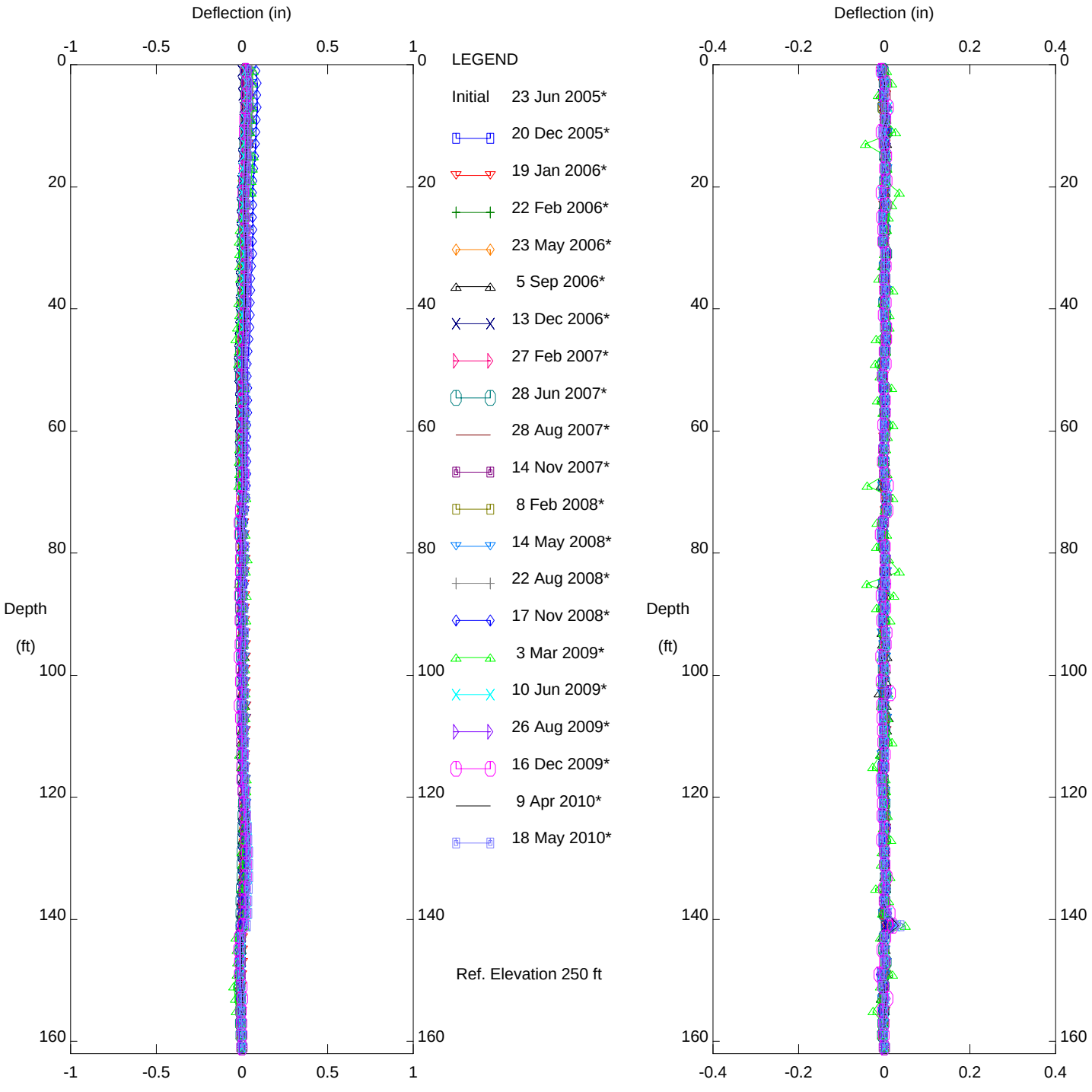
EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\PC-1.gtl

PLATE D-13a

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

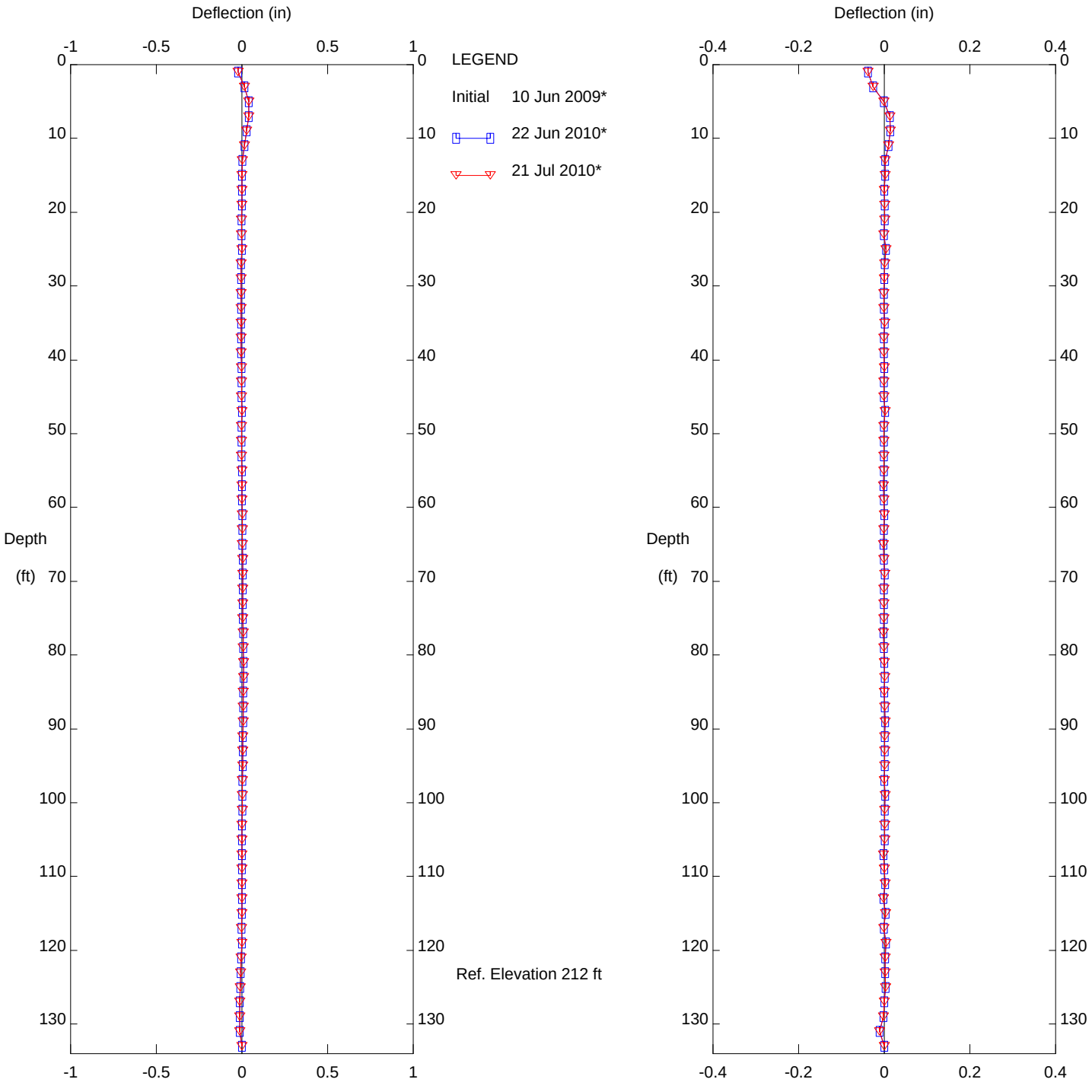
Direction A

BIG ROCK MESA, Inclinometer PC-1

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

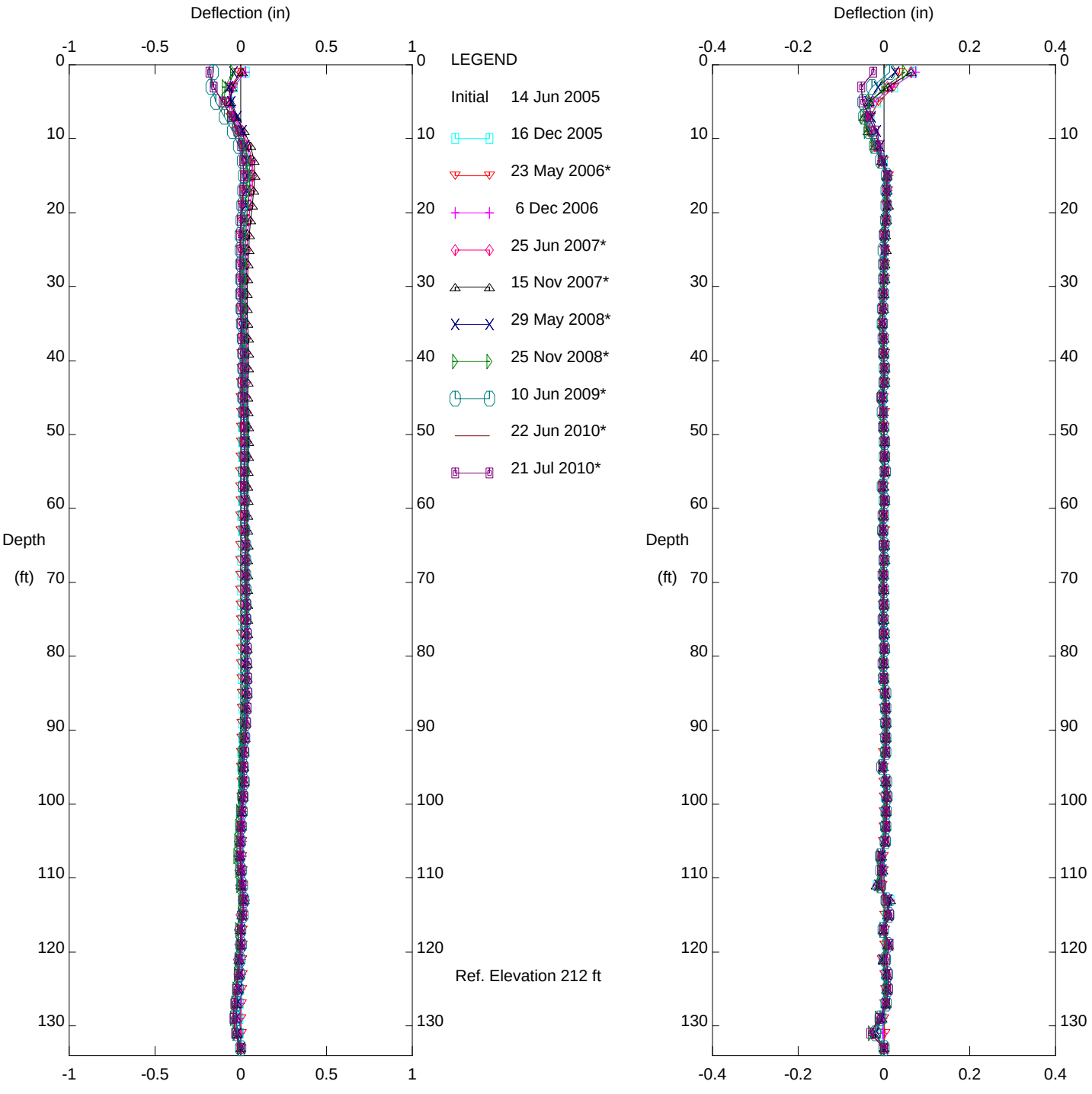
Direction A

BRM, Inclinometer SP3

East Region

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

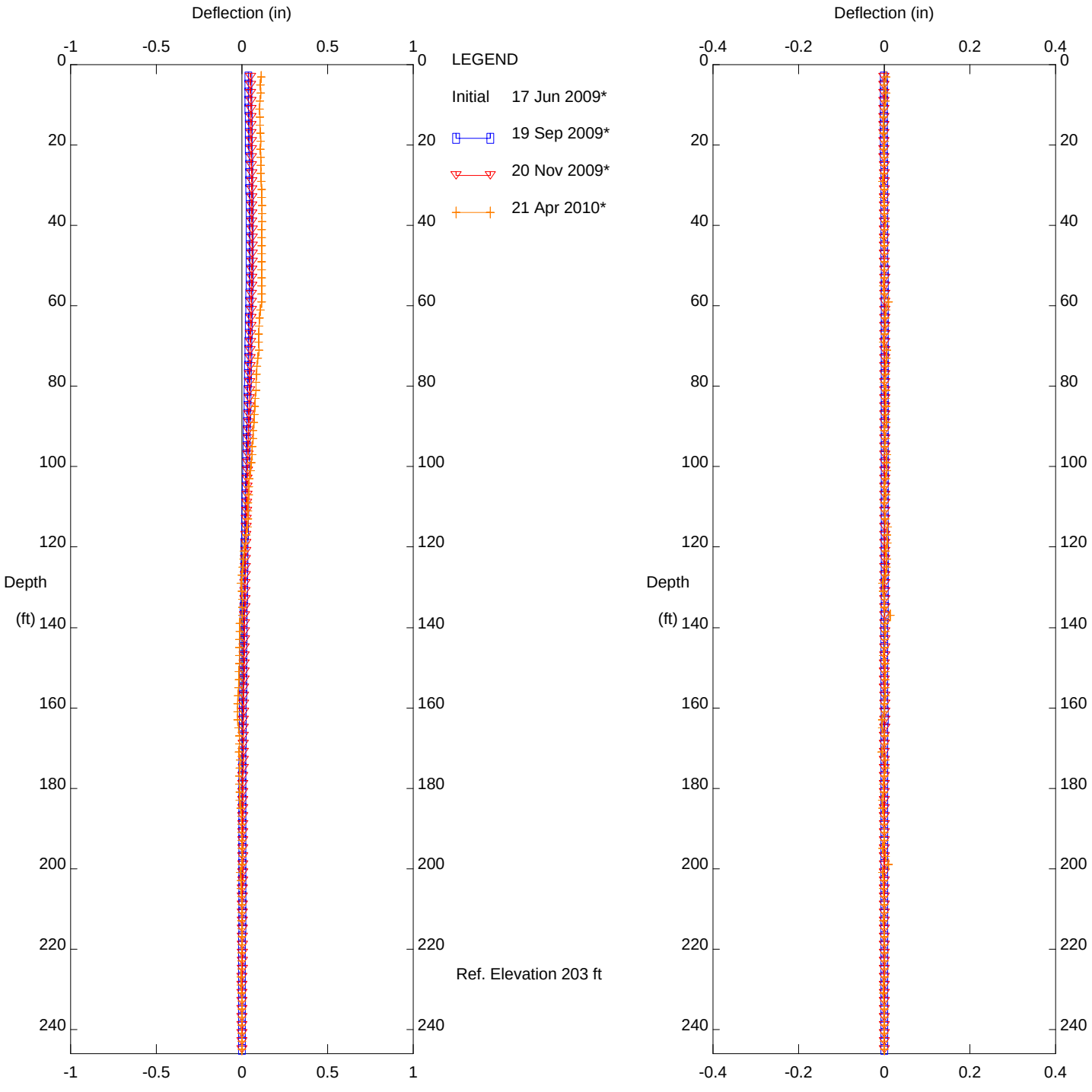
Direction A

BRM, Inclinometer SP3

East Region

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

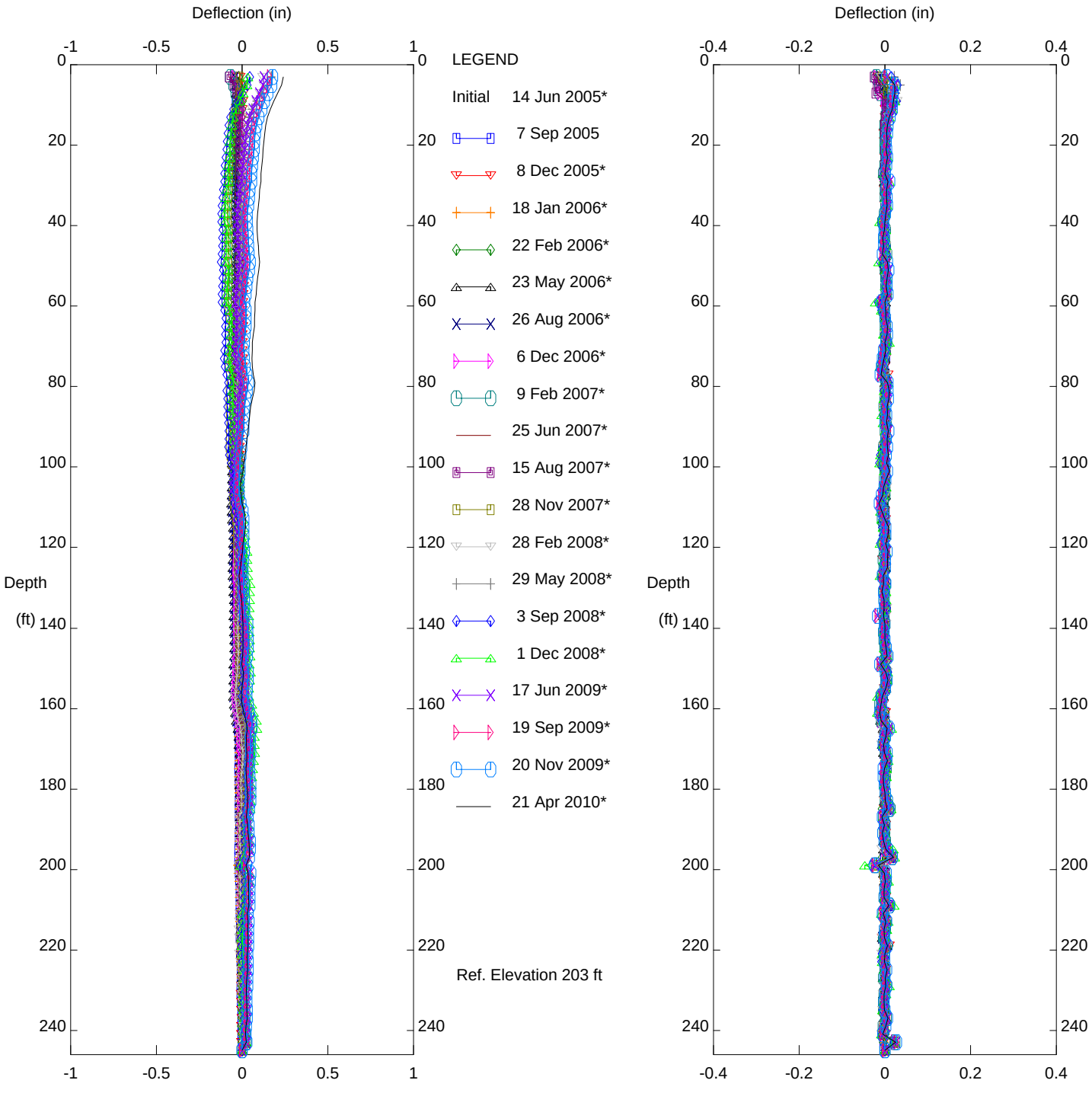
Direction A

BRM, Inclinometer SP3A

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

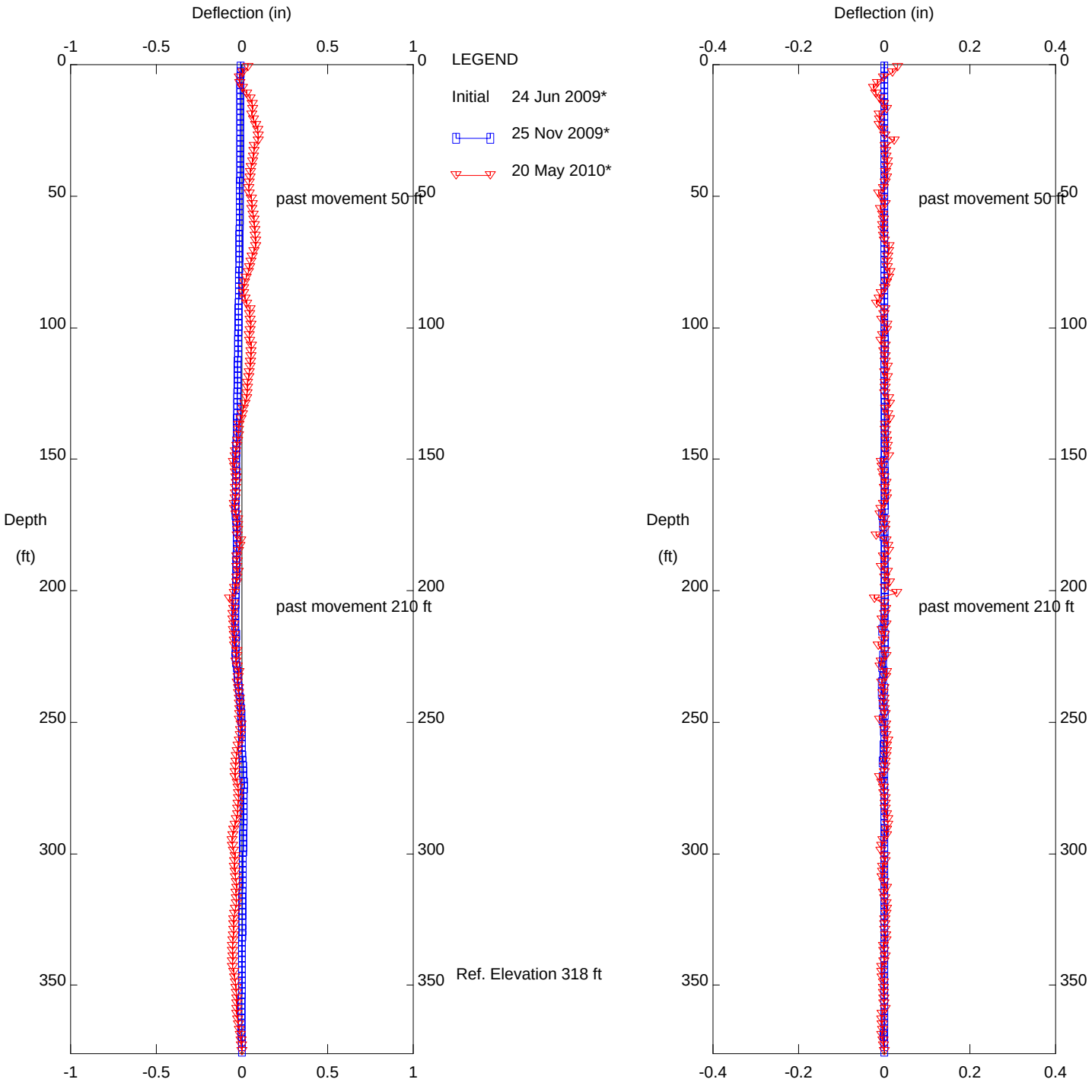
Direction A

BRM, Inclinometer SP3A

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

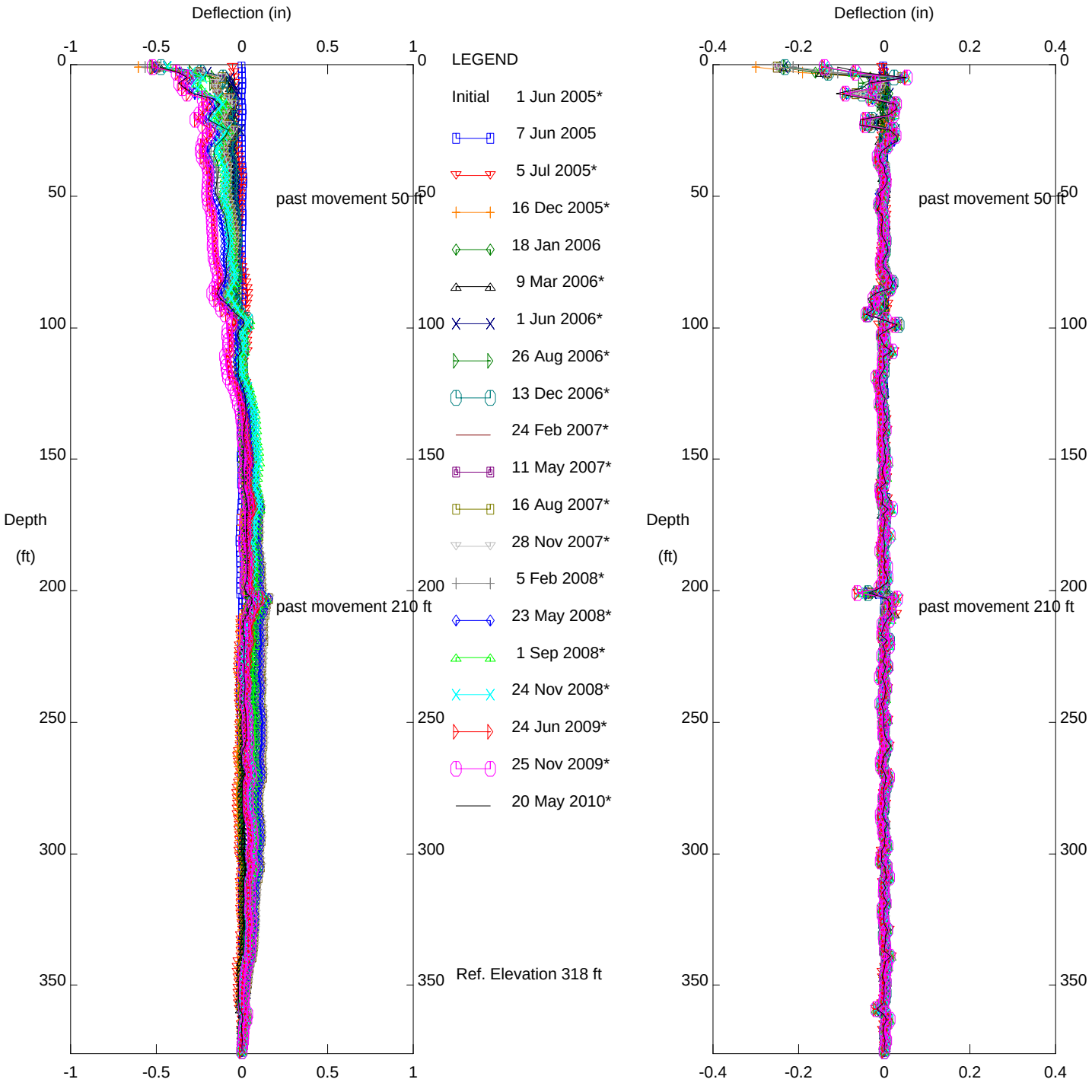
Direction A

BRM, Inclinometer SP33

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

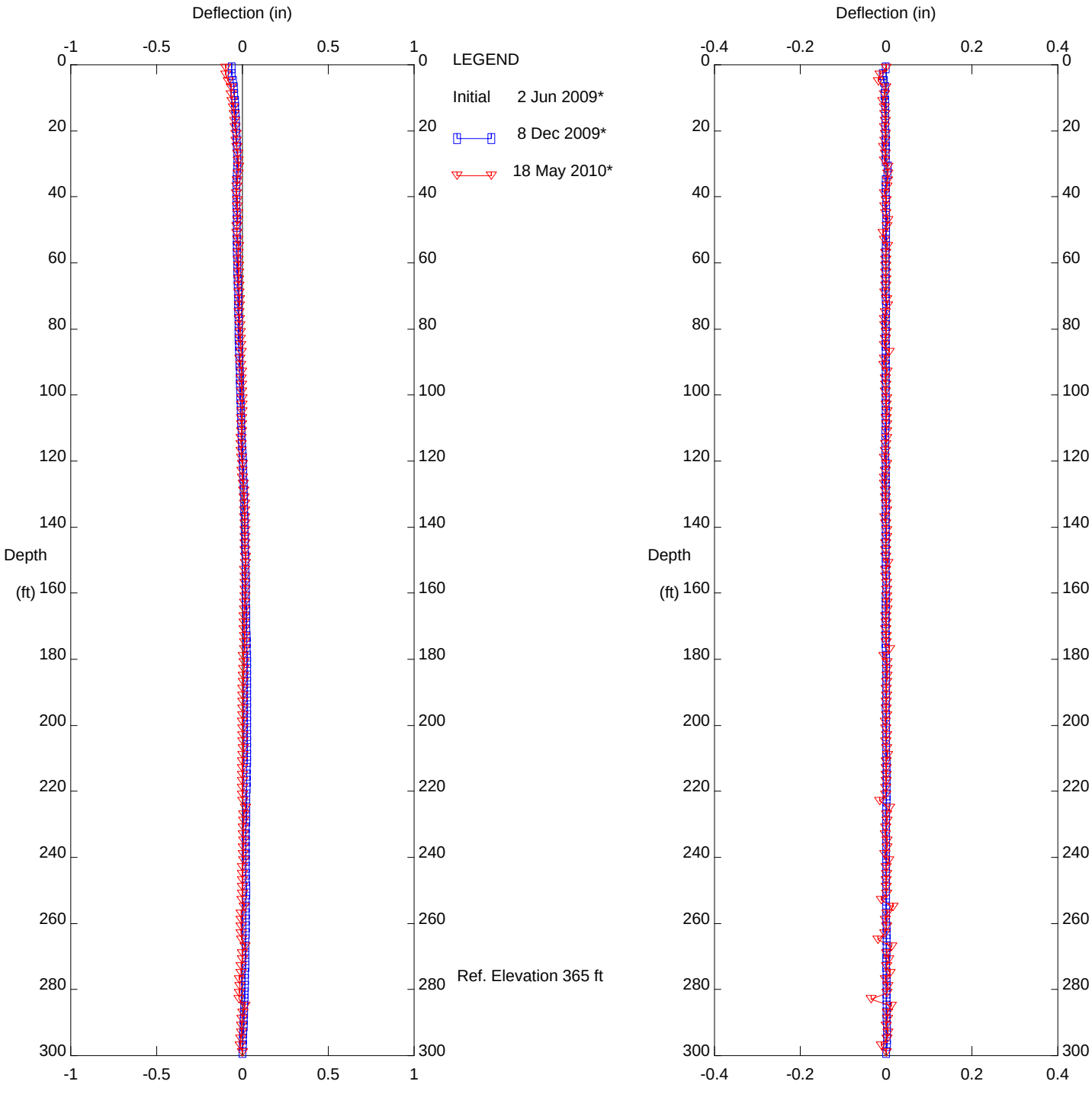
Direction A

BRM, Inclinometer SP33

EASTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

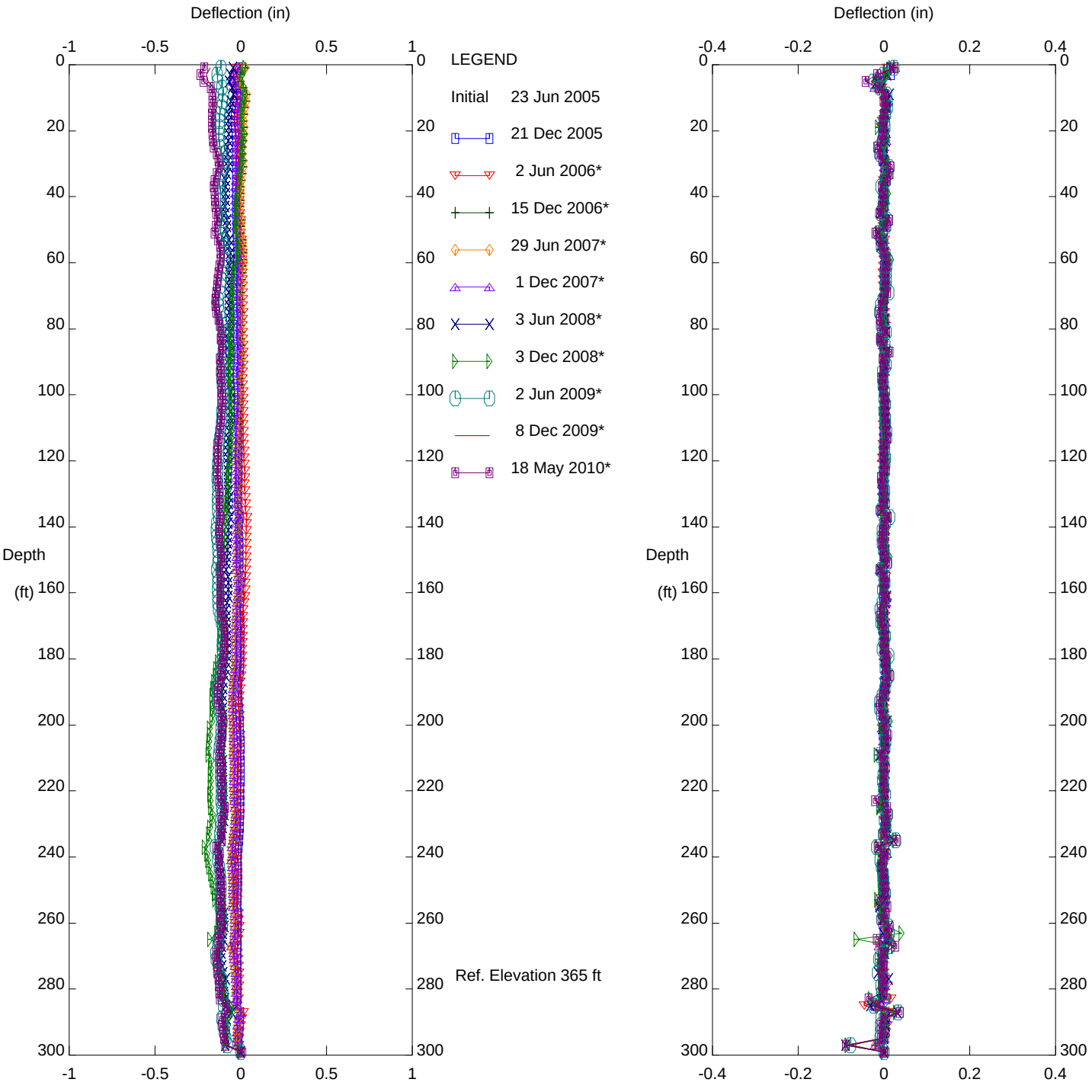
Direction A

BRM, Inclinometer SP9A

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

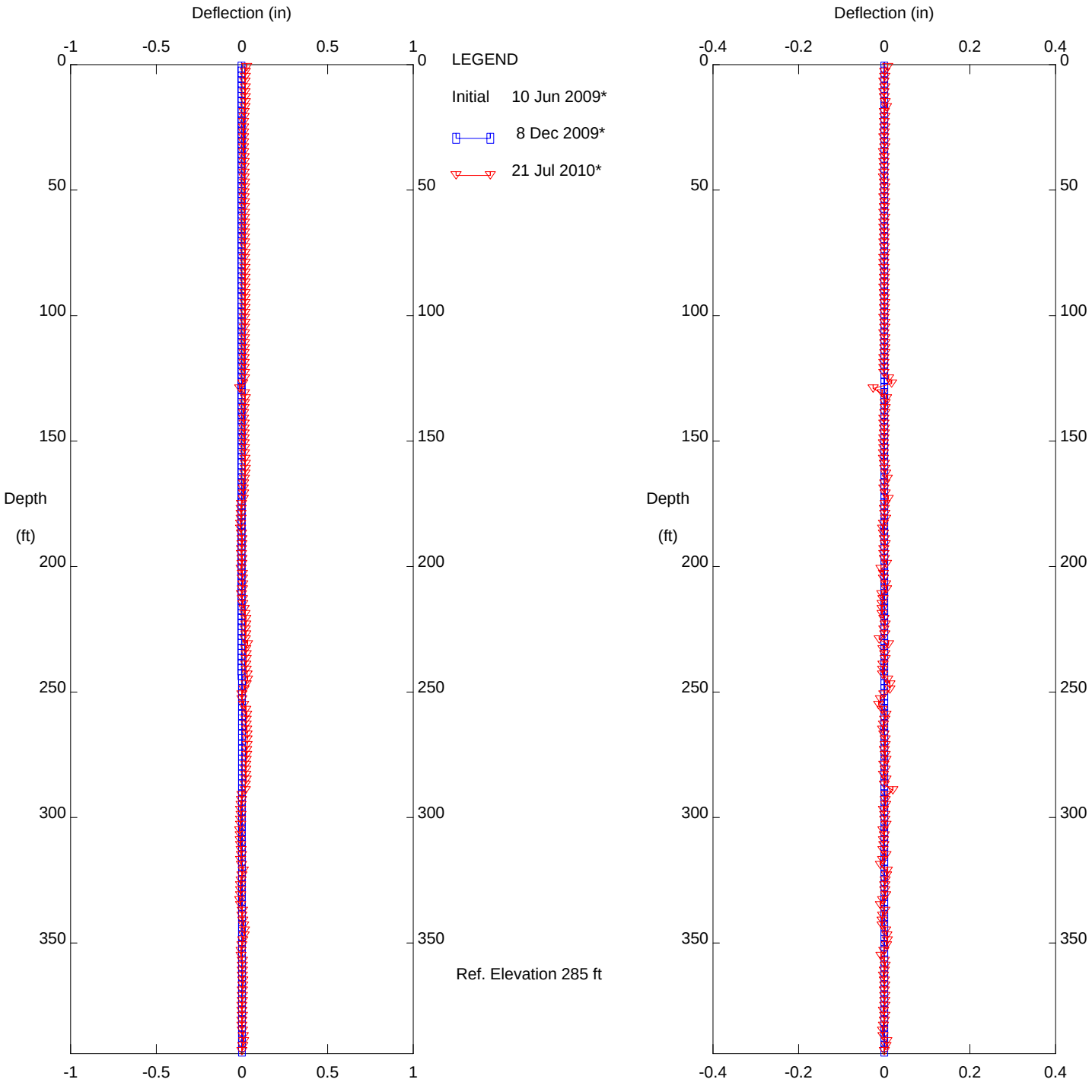
Direction A

BRM, Inclinometer SP9A

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

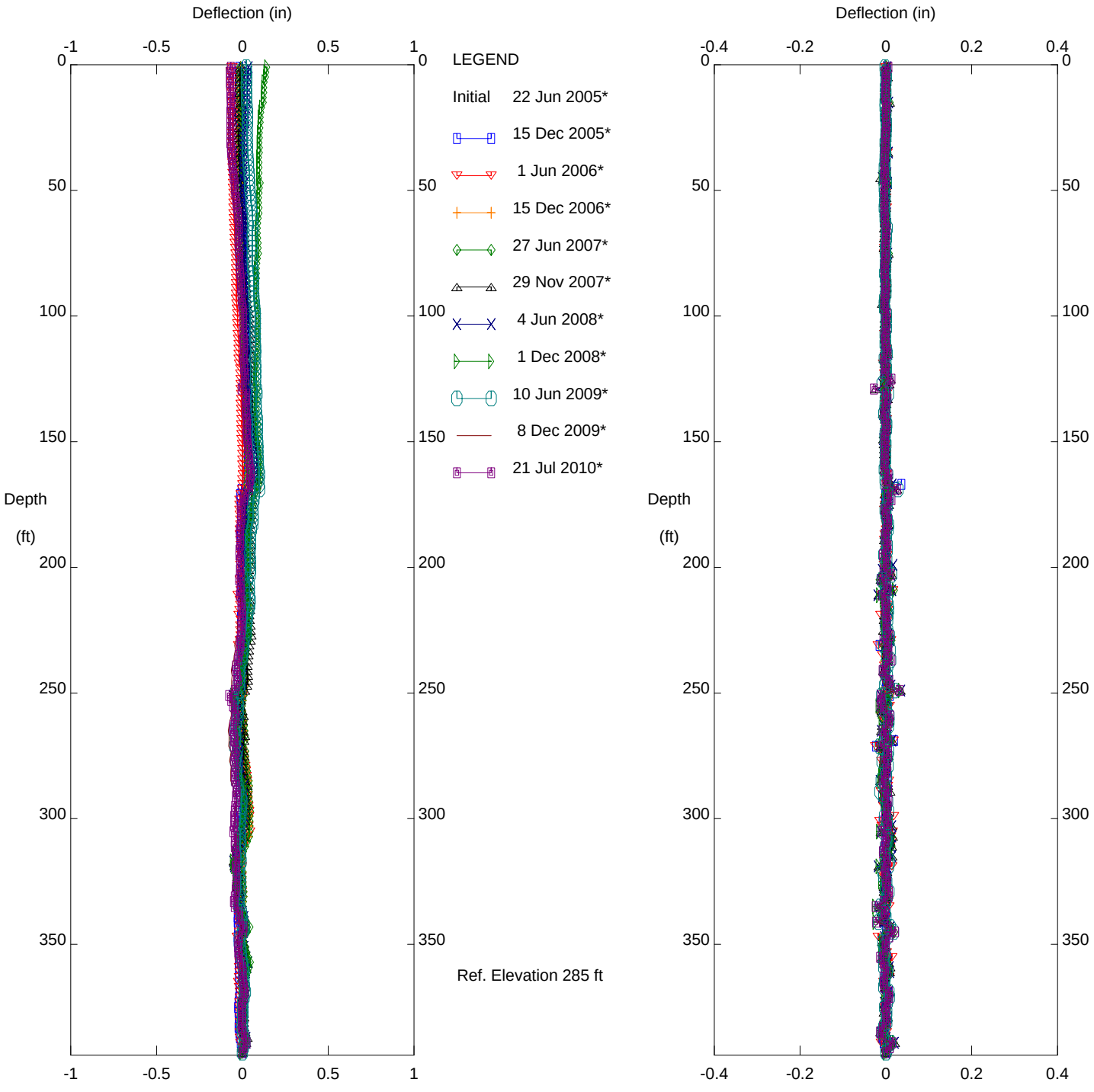
Direction A

BRM, Inclinometer SP16A

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

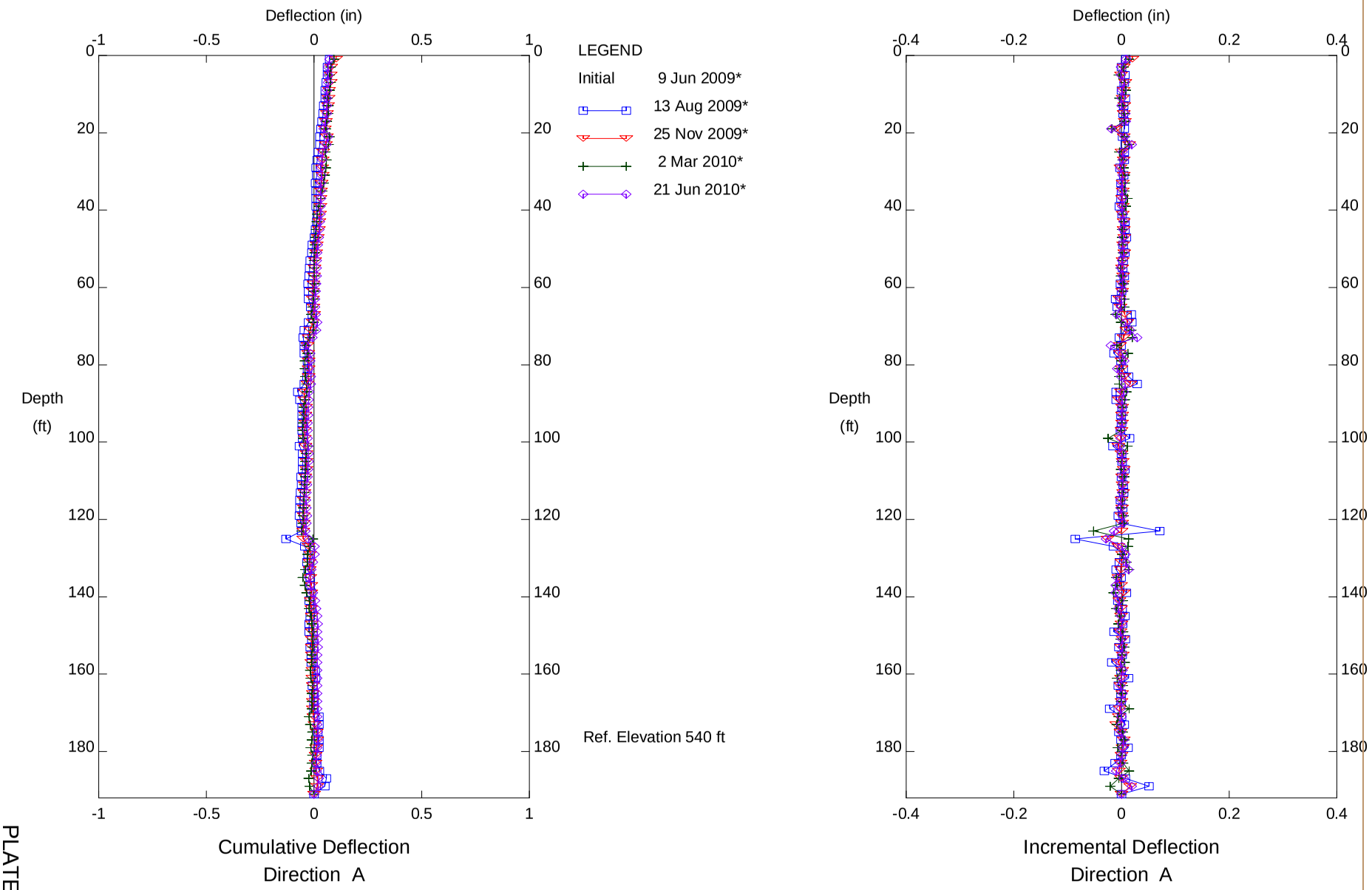
Direction A

BRM, Inclinometer SP16A

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Big Rock Mesa Landslide Assessment District, City of Malibu
Project No. 3399.006

PLATE D-19a

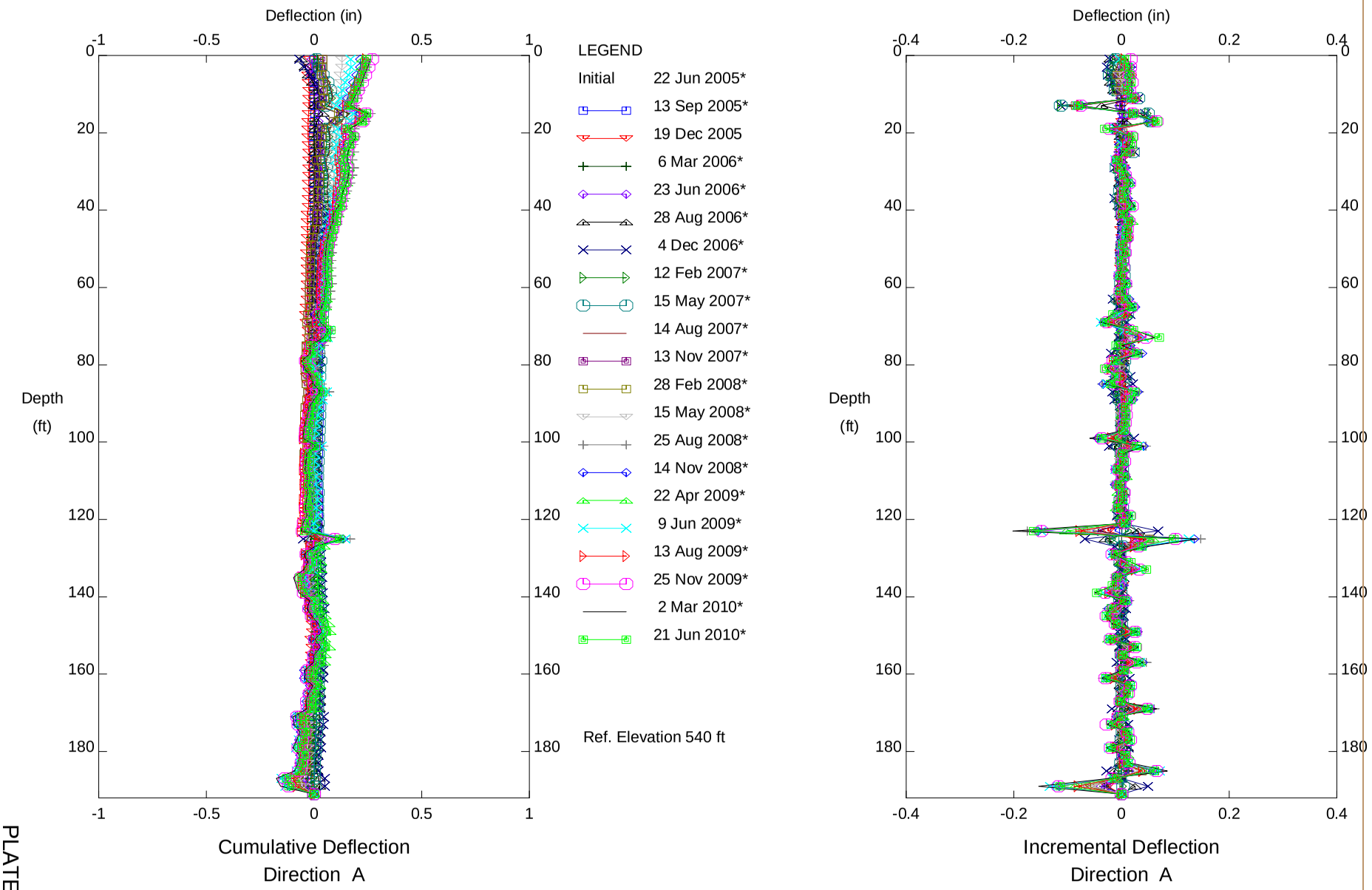
BRM, Inclinometer SP17

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP17.gtl

Fugro West, Inc. - Ventura, CA



Big Rock Mesa Landslide Assessment District, City of Malibu
Project No. 3399.006

PLATE D-19b

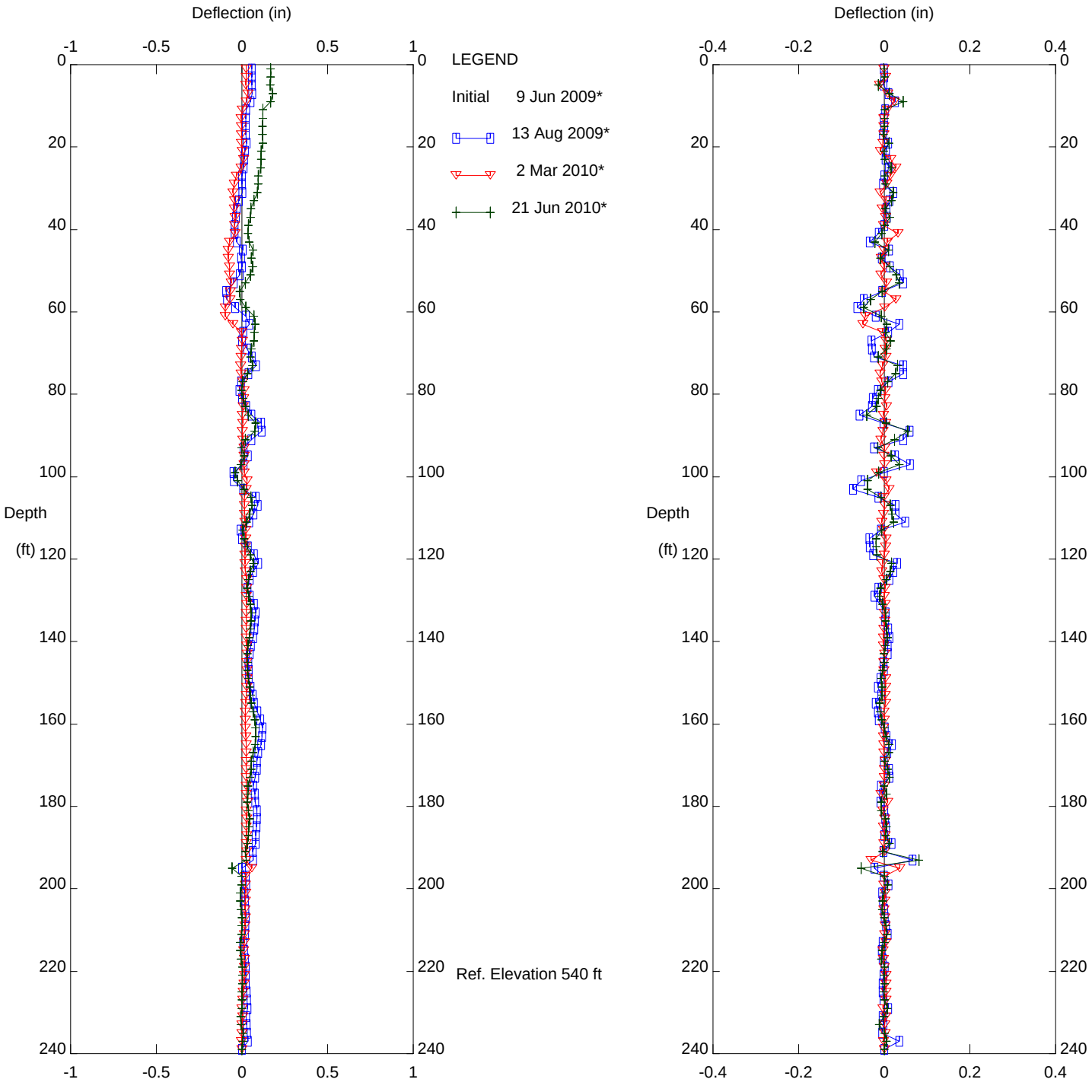
BRM, Inclinometer SP17

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP17.gtl

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BRM, Inclinometer SP17A

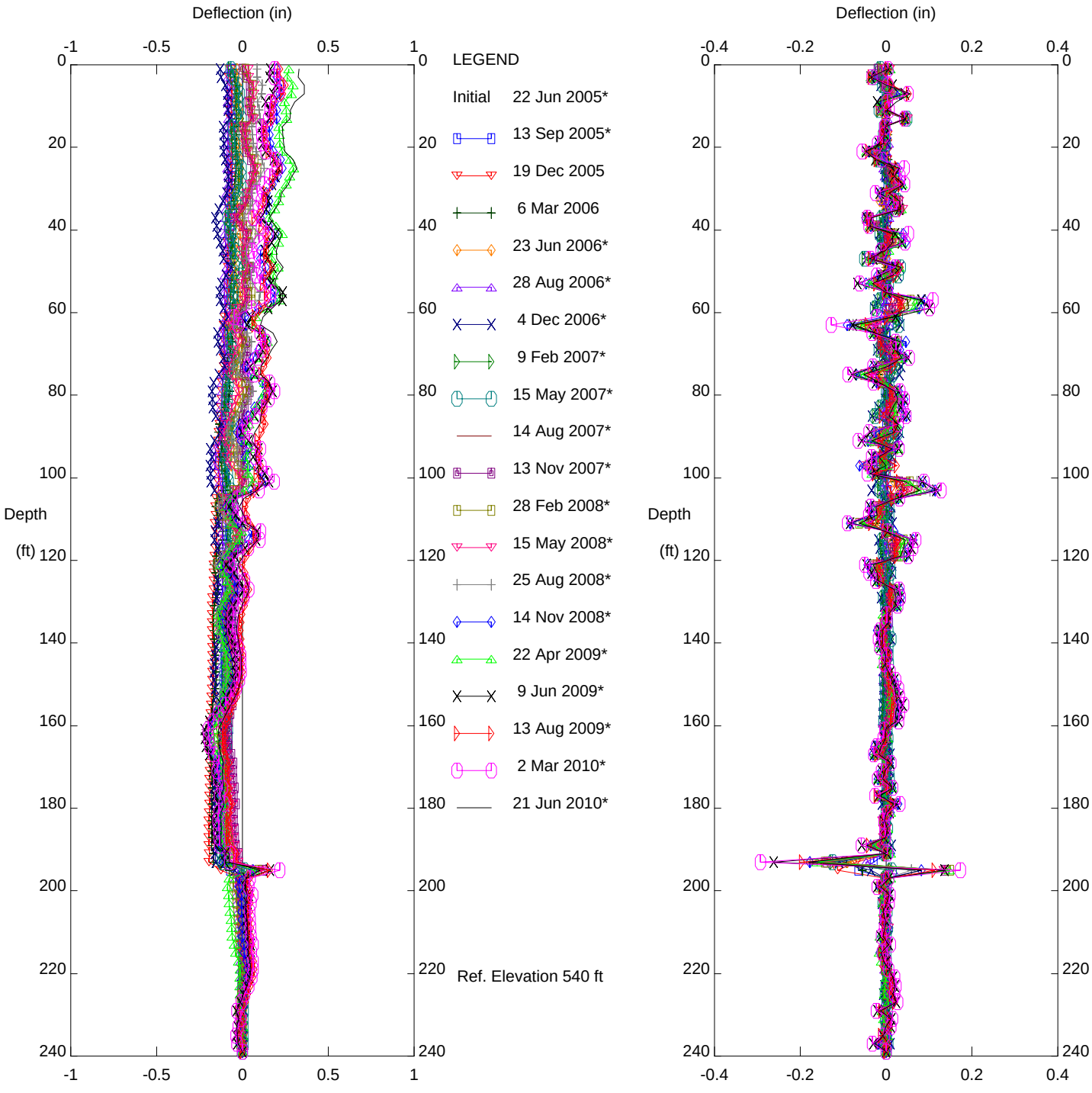
CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP17A.gtl

PLATE D-20a

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

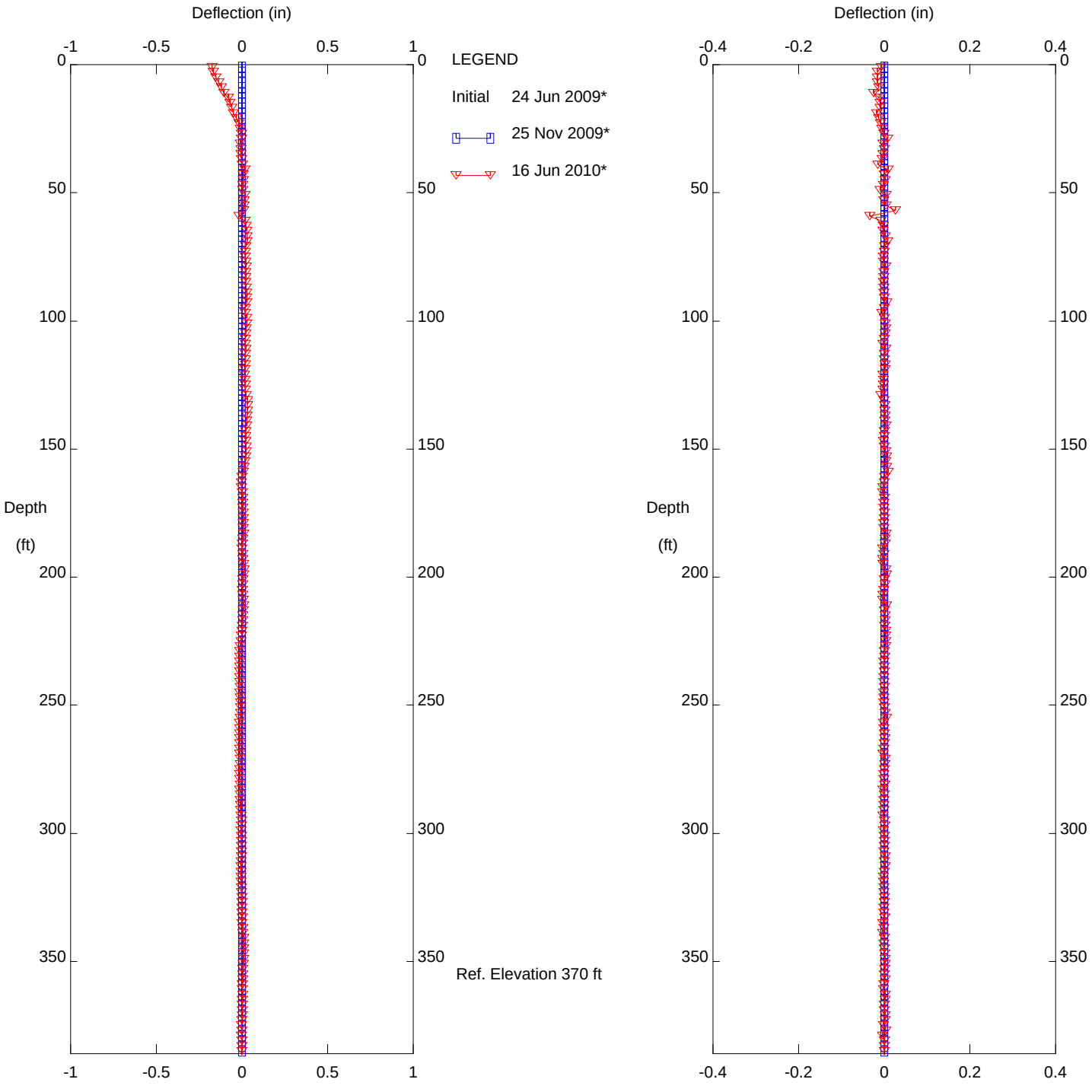
Direction A

BRM, Inclinometer SP17A

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BRM, Inclinometer SP24

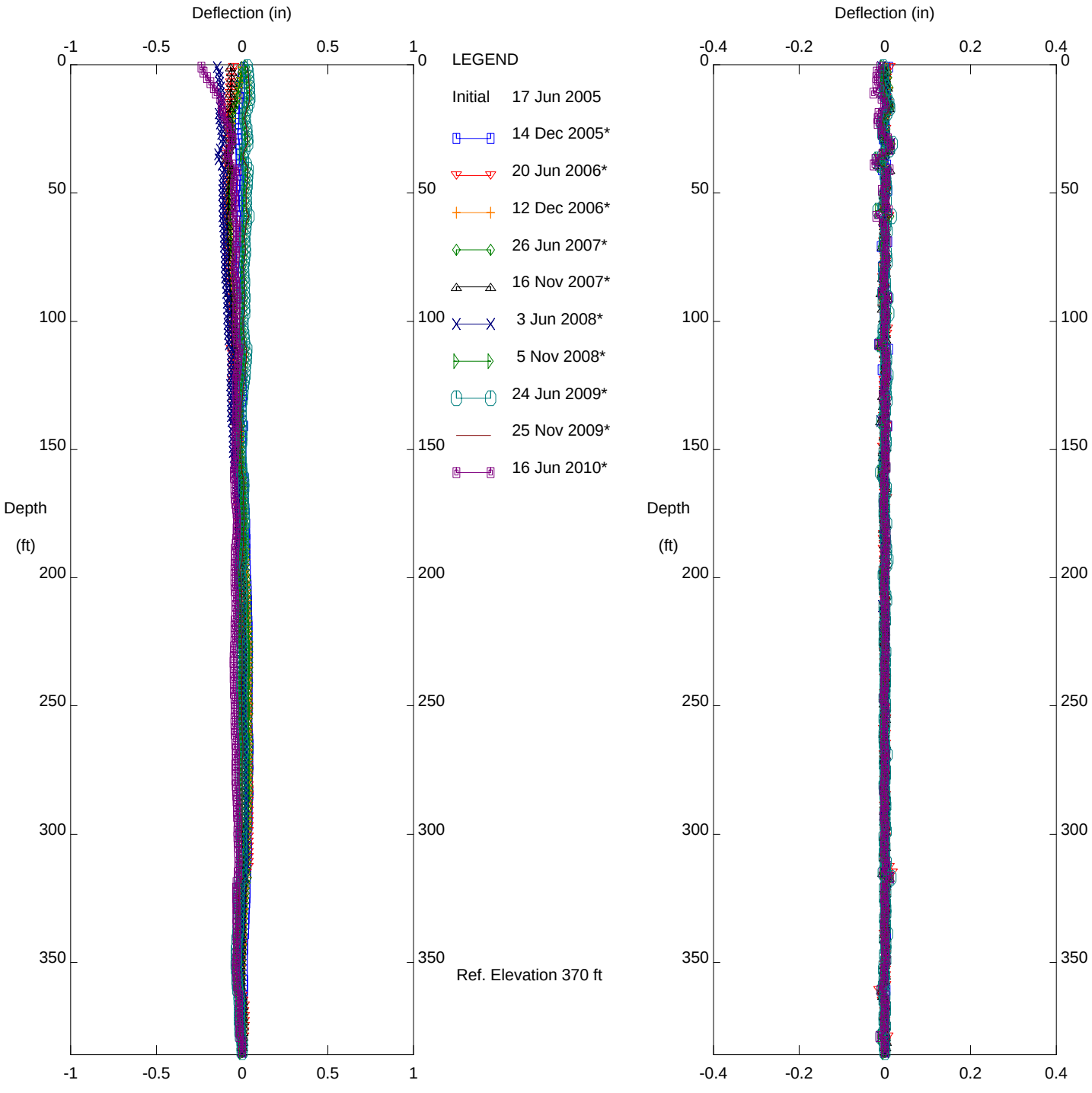
CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP24.gtl

PLATE D-21a

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

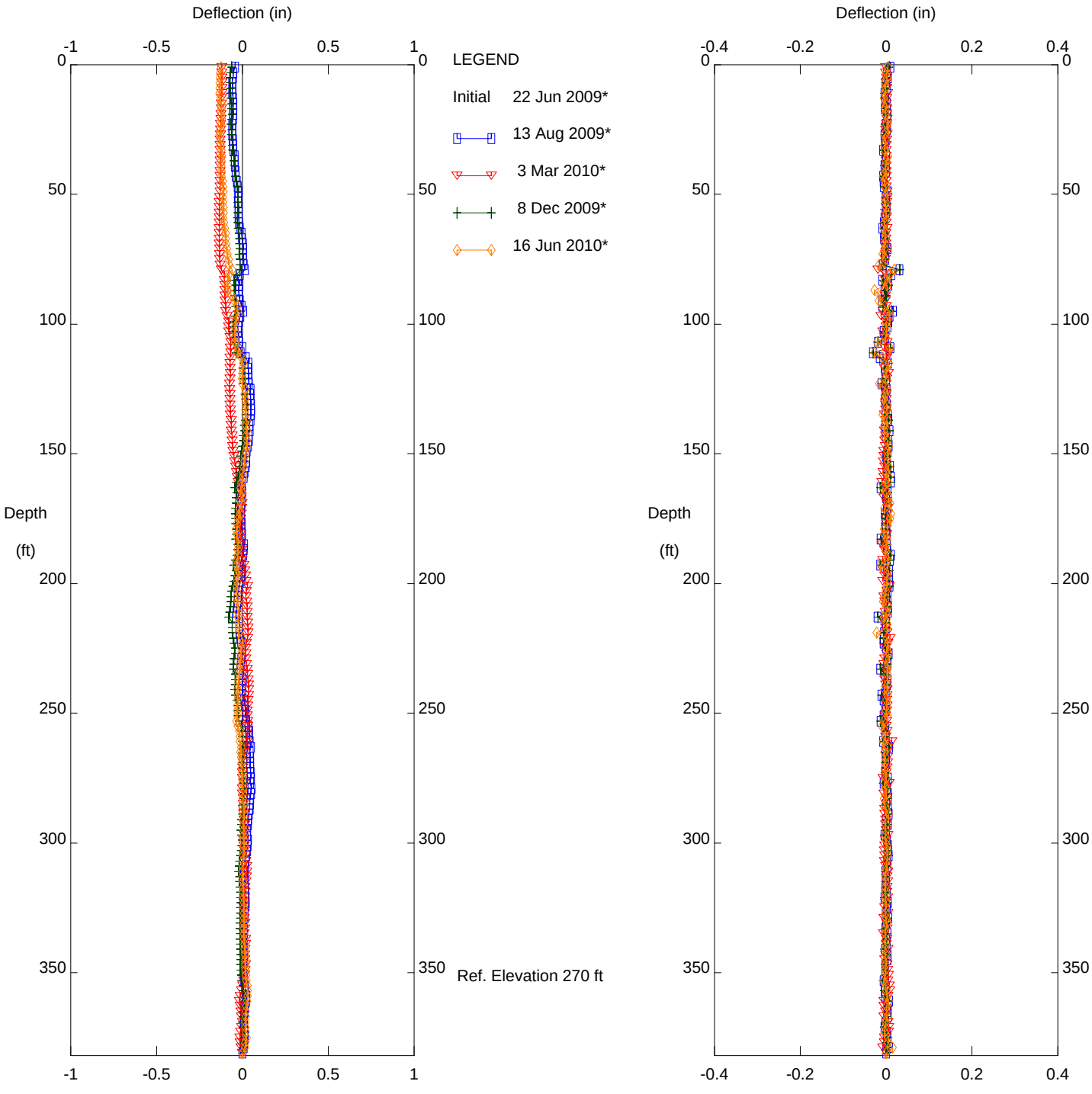
Direction A

BRM, Inclinometer SP24

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

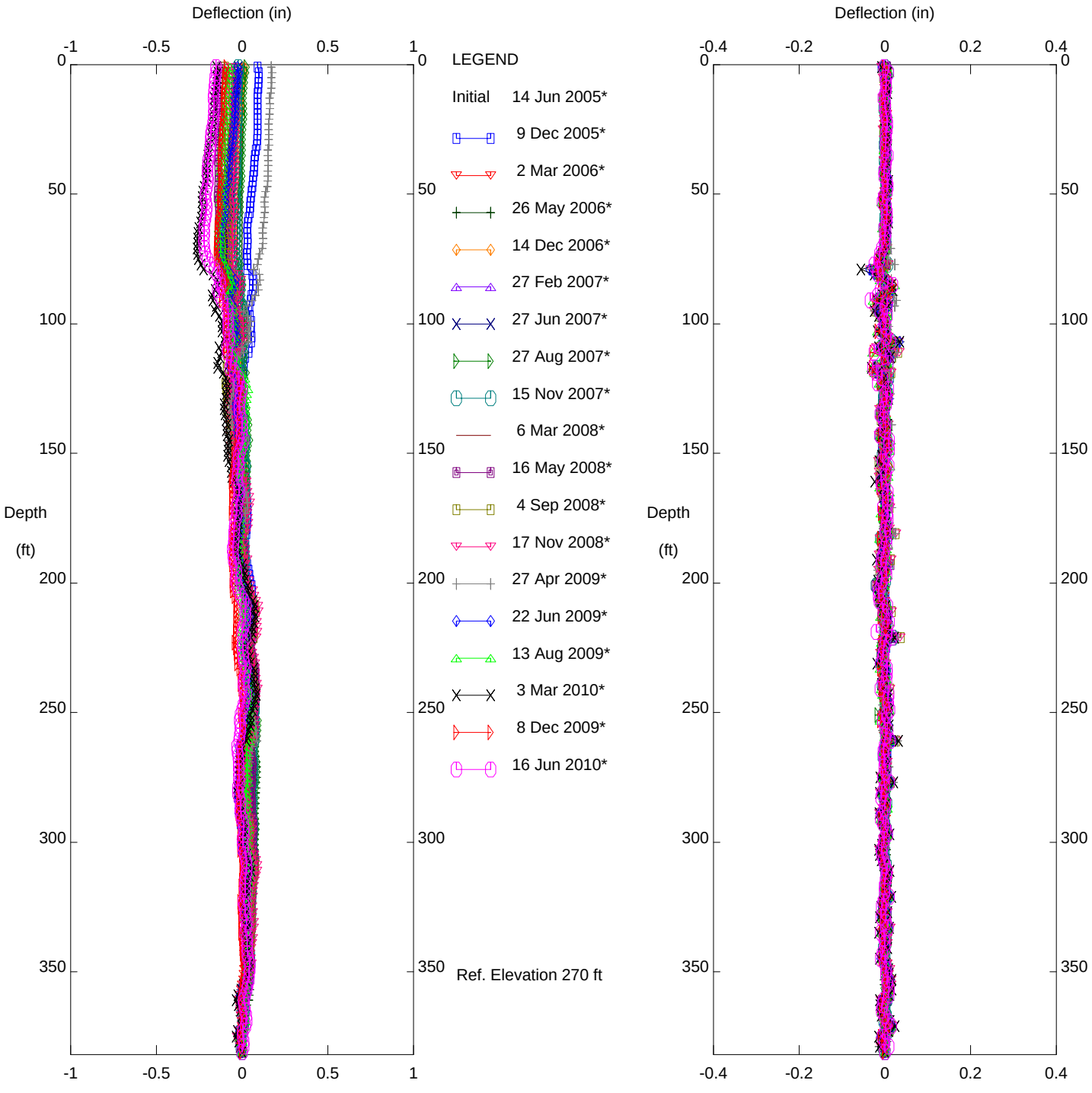
Direction A

BRM, Inclinometer SP34

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BRM, Inclinometer SP34

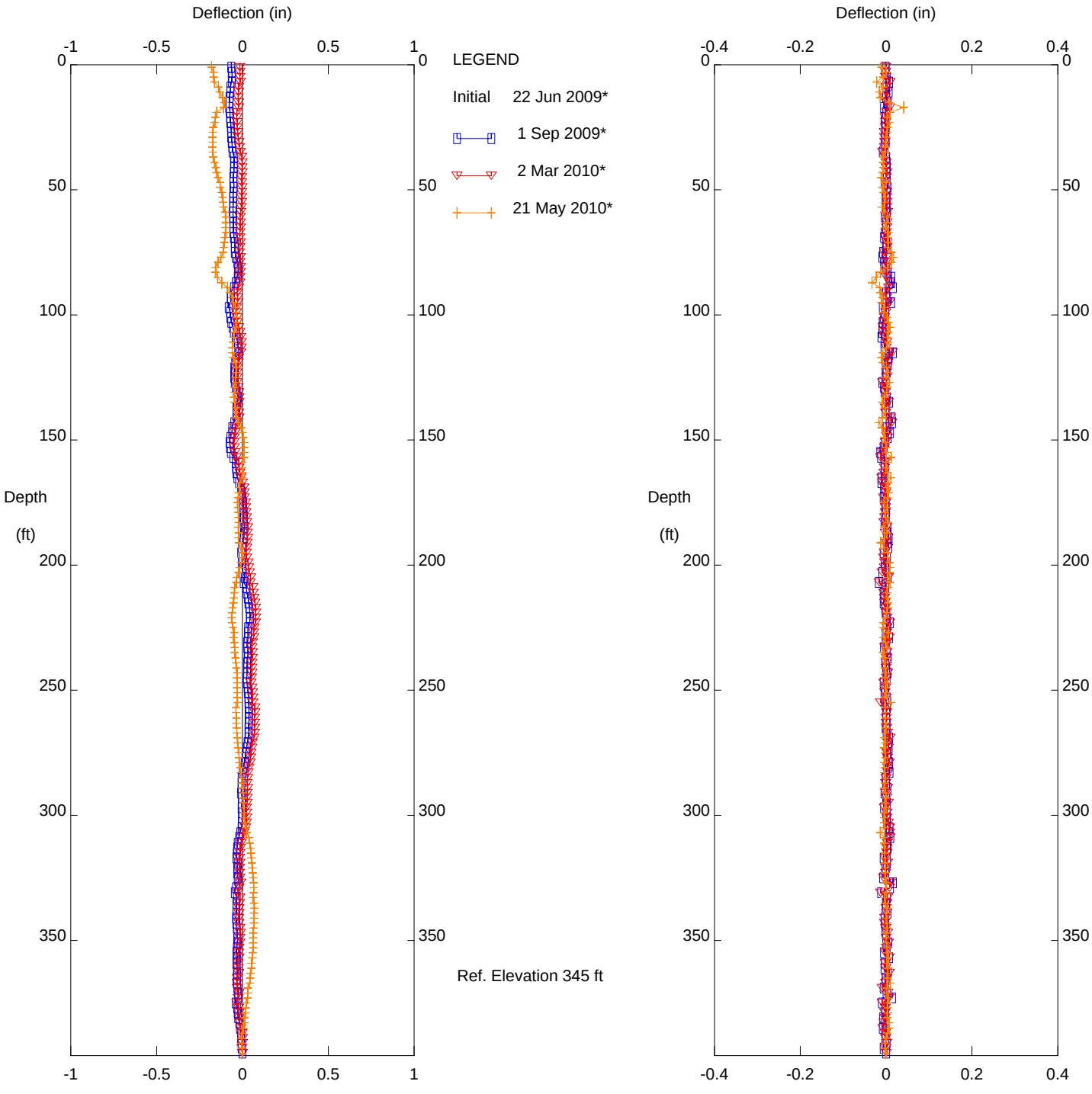
CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP34.gtl

PLATE D-22b

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BRM, Inclinometer SP35

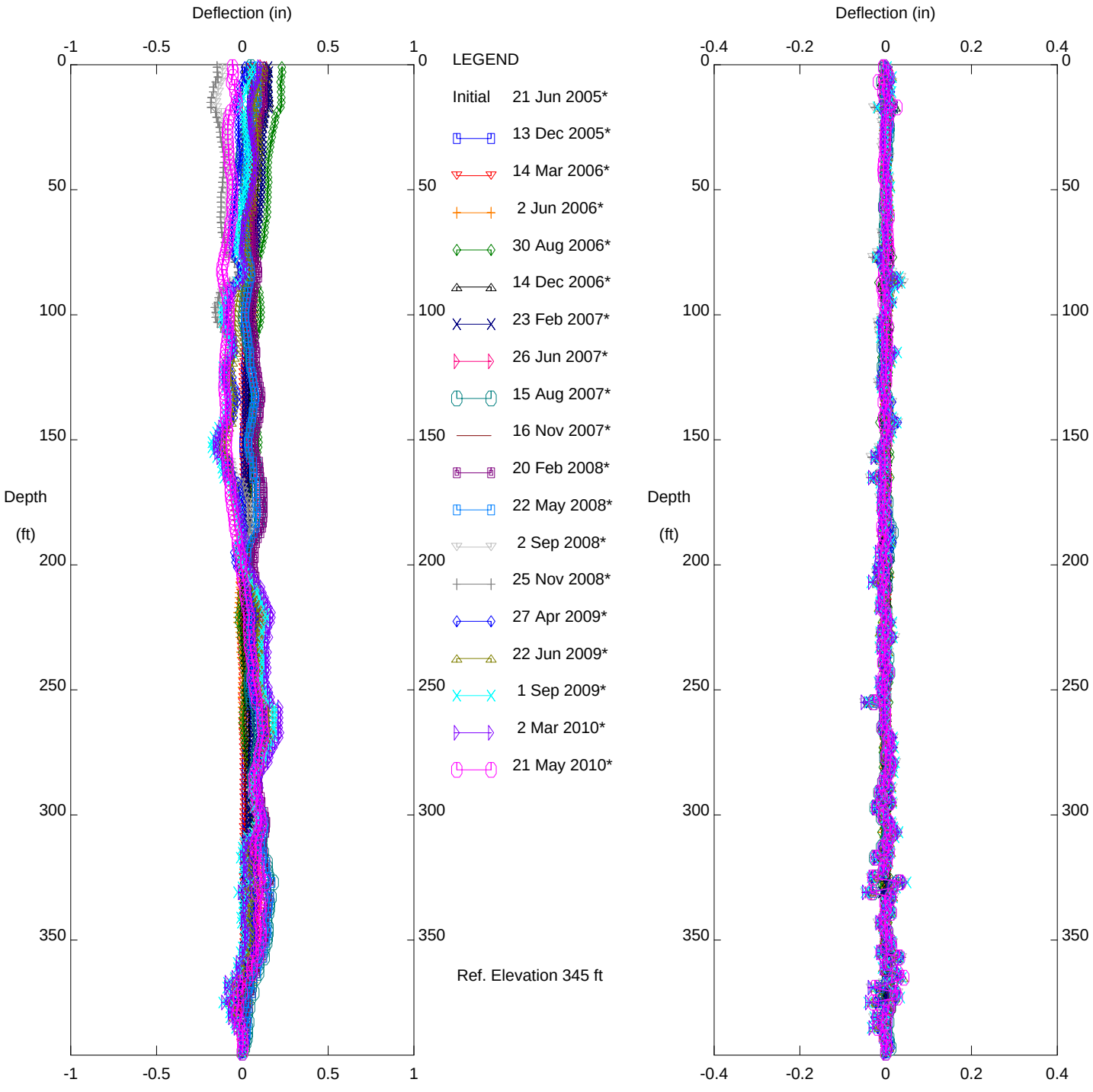
CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP35.gtl

PLATE D-23a

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

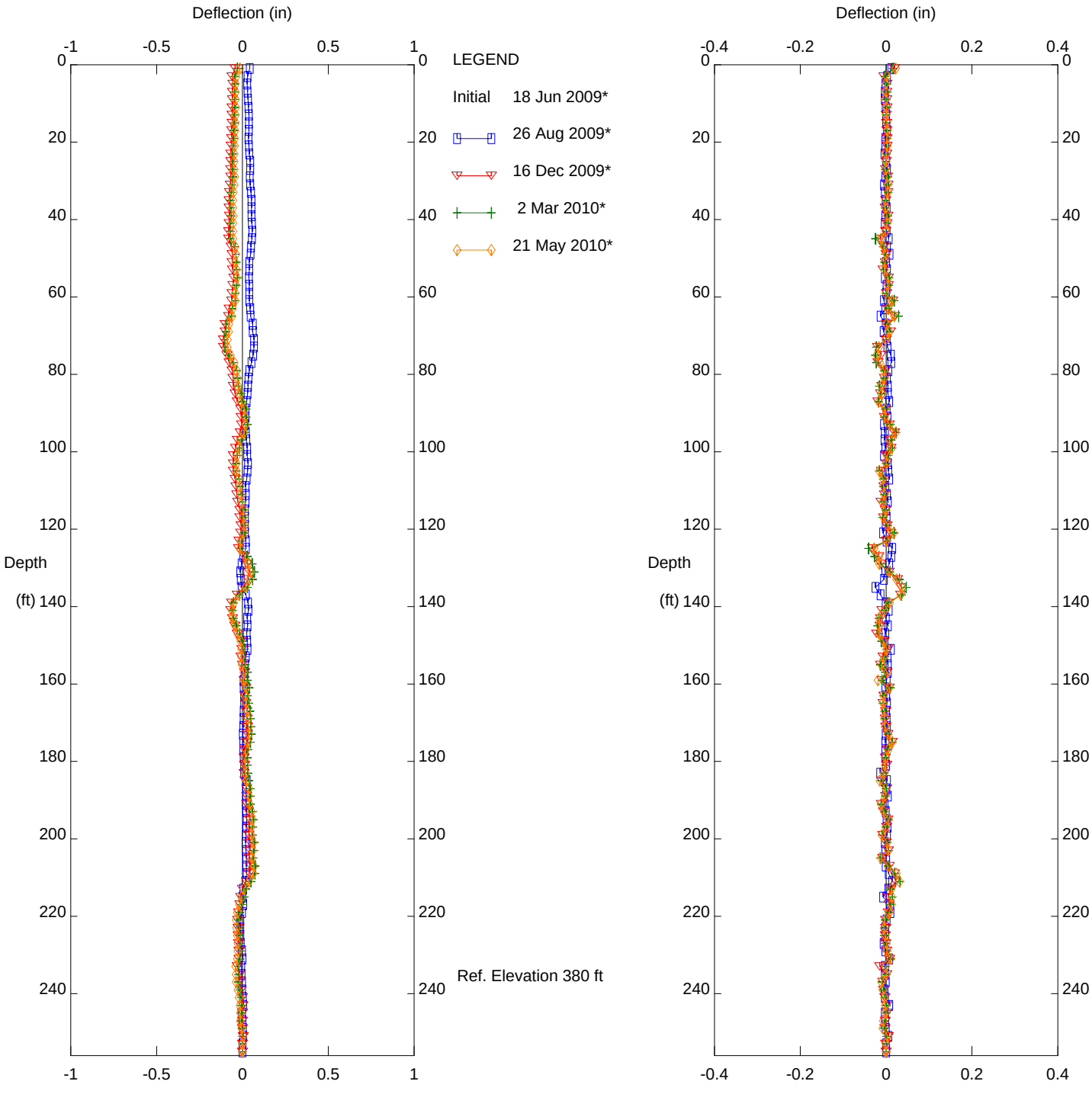
Direction A

BRM, Inclinometer SP35

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

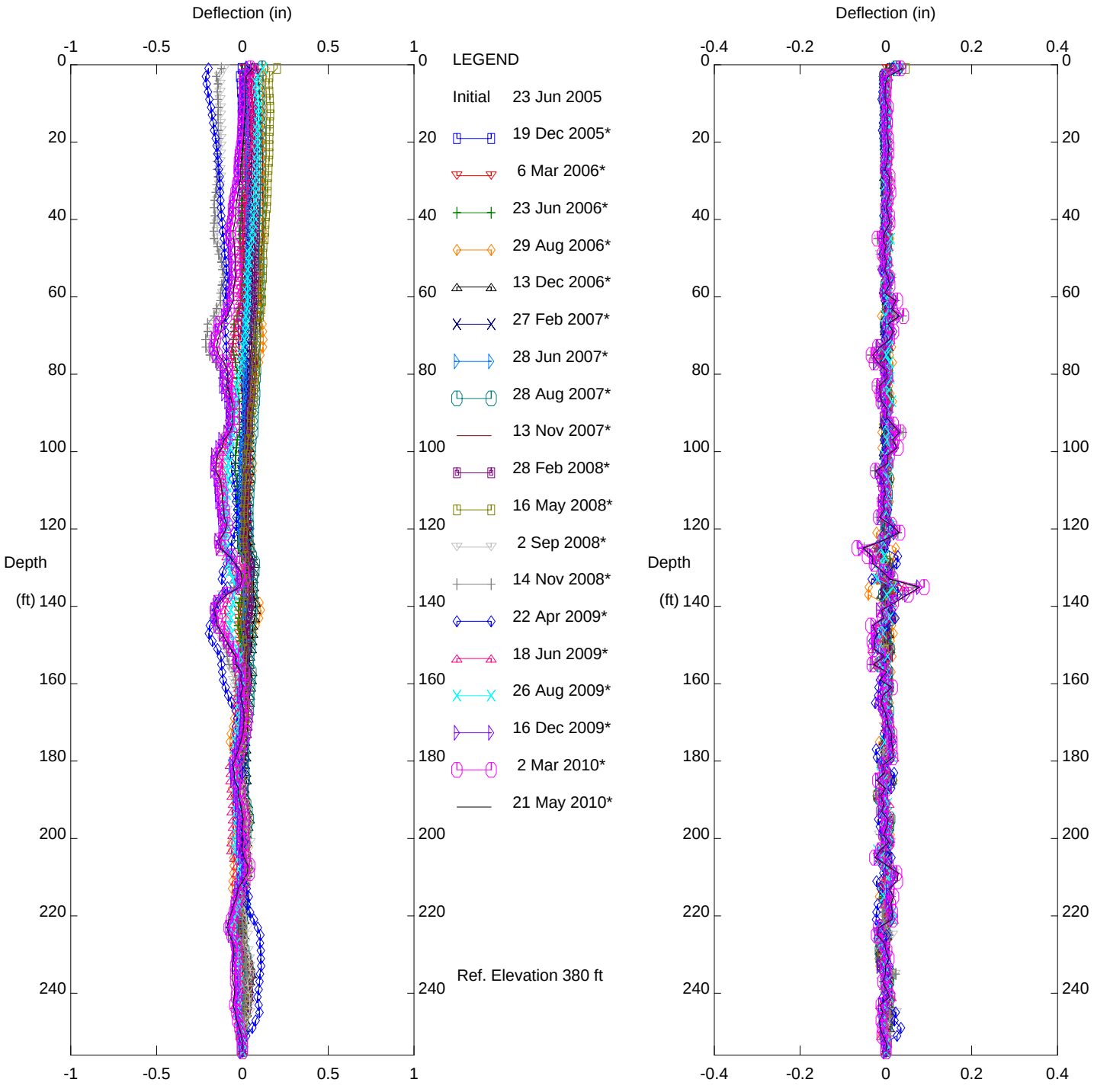
Direction A

BRM, Inclinometer SP36

CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BRM, Inclinometer SP36

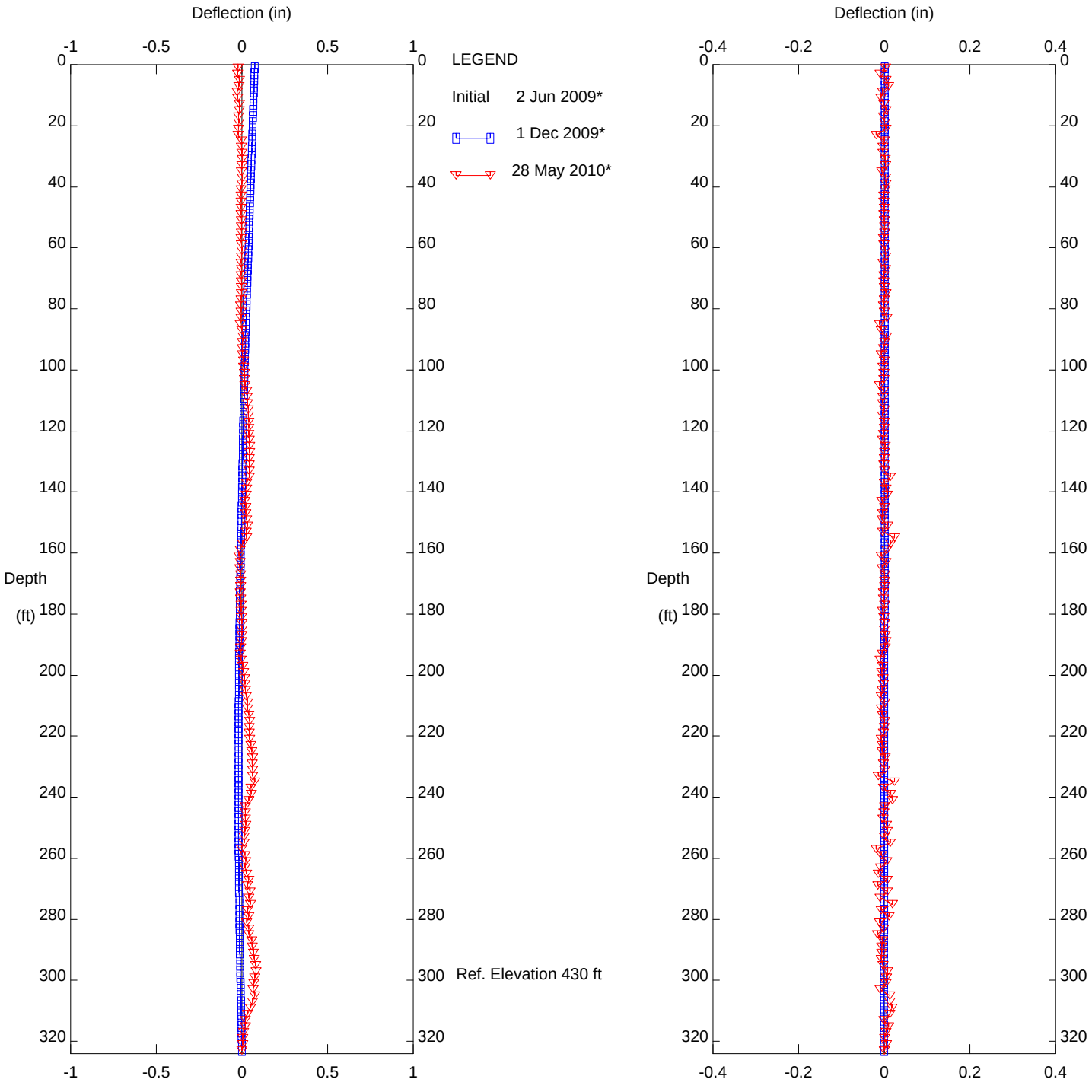
CENTRAL REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP36.gtl

PLATE D-24b

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

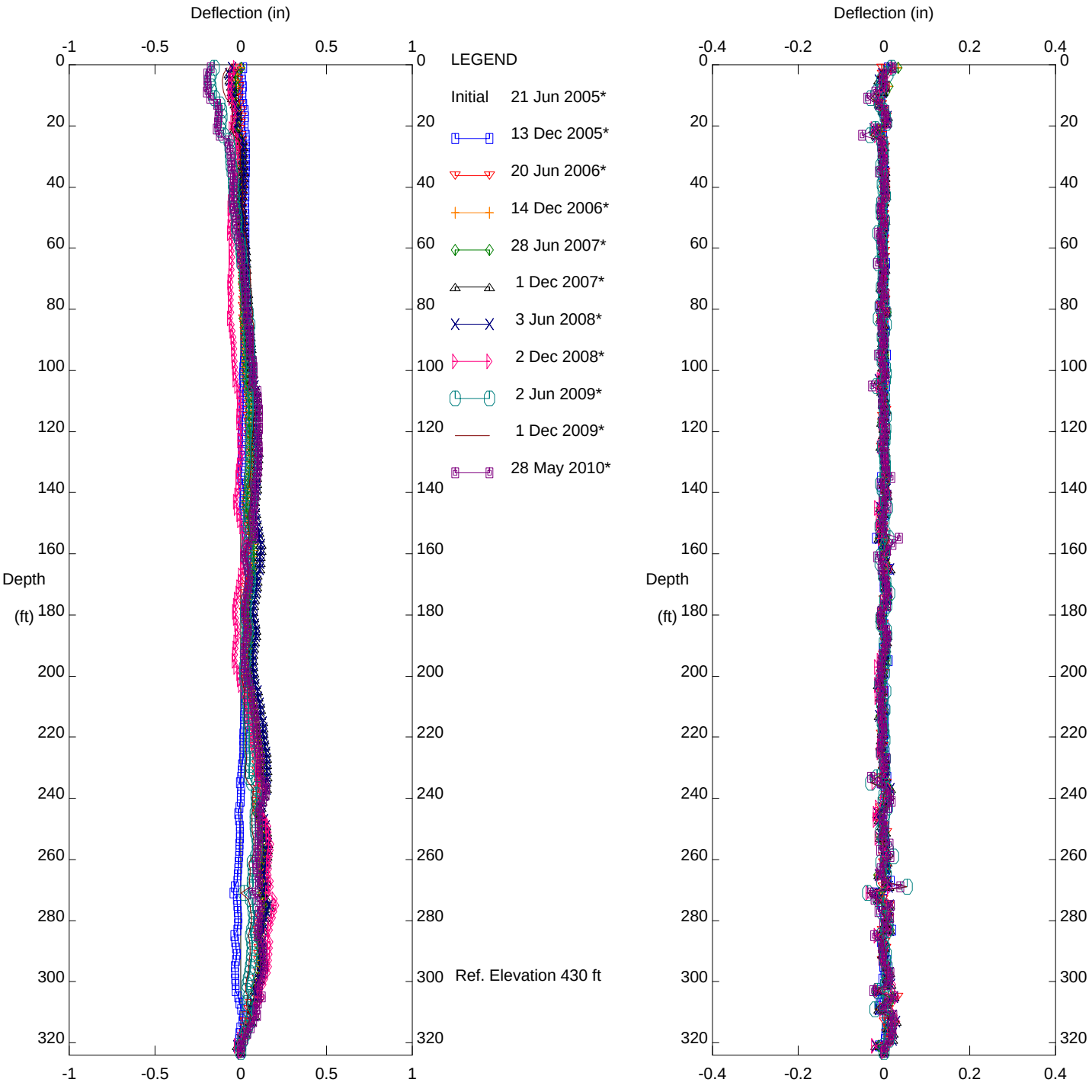
Direction A

BRM, Inclinometer SP20

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

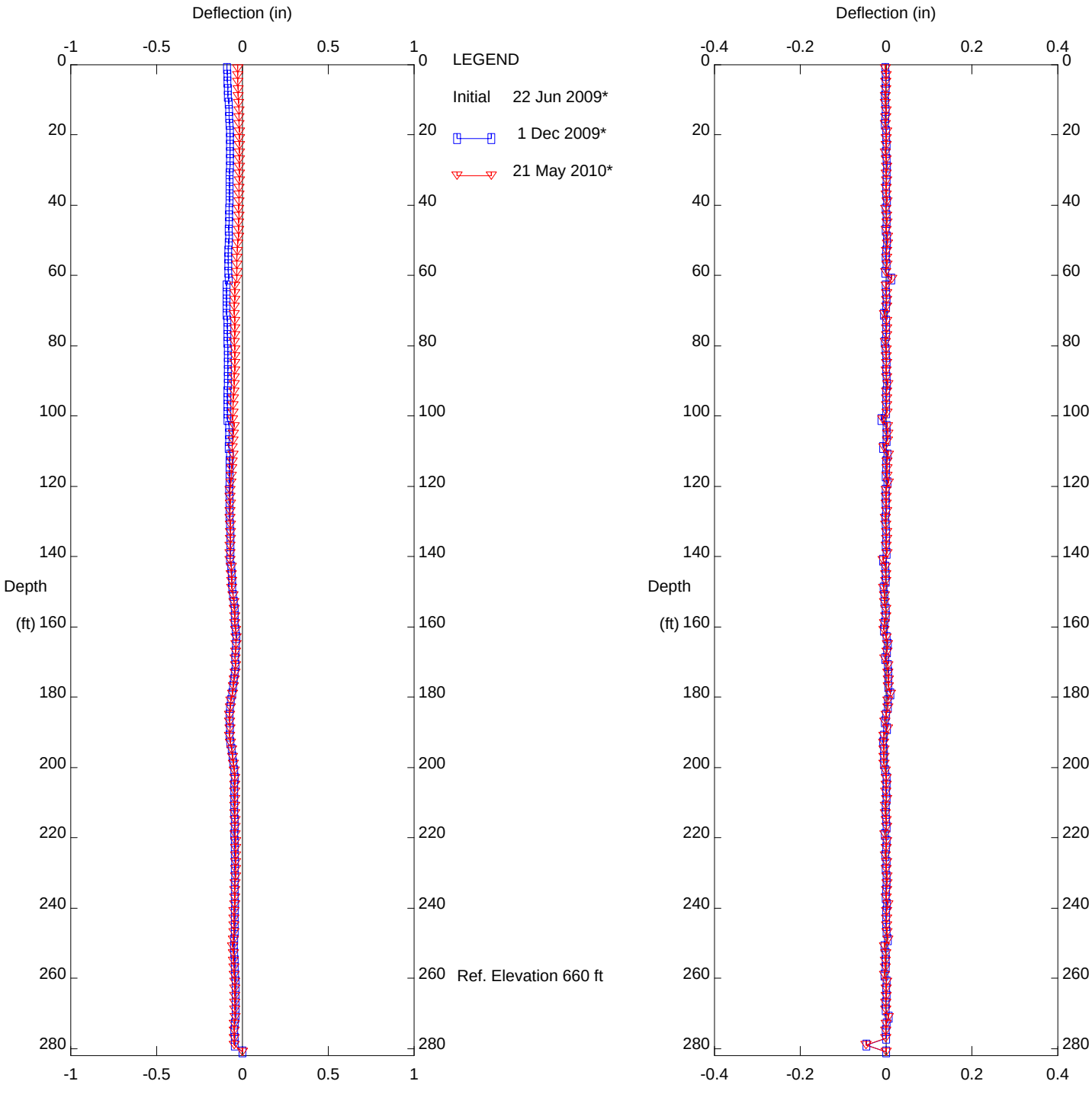
Direction A

BRM, Inclinometer SP20

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

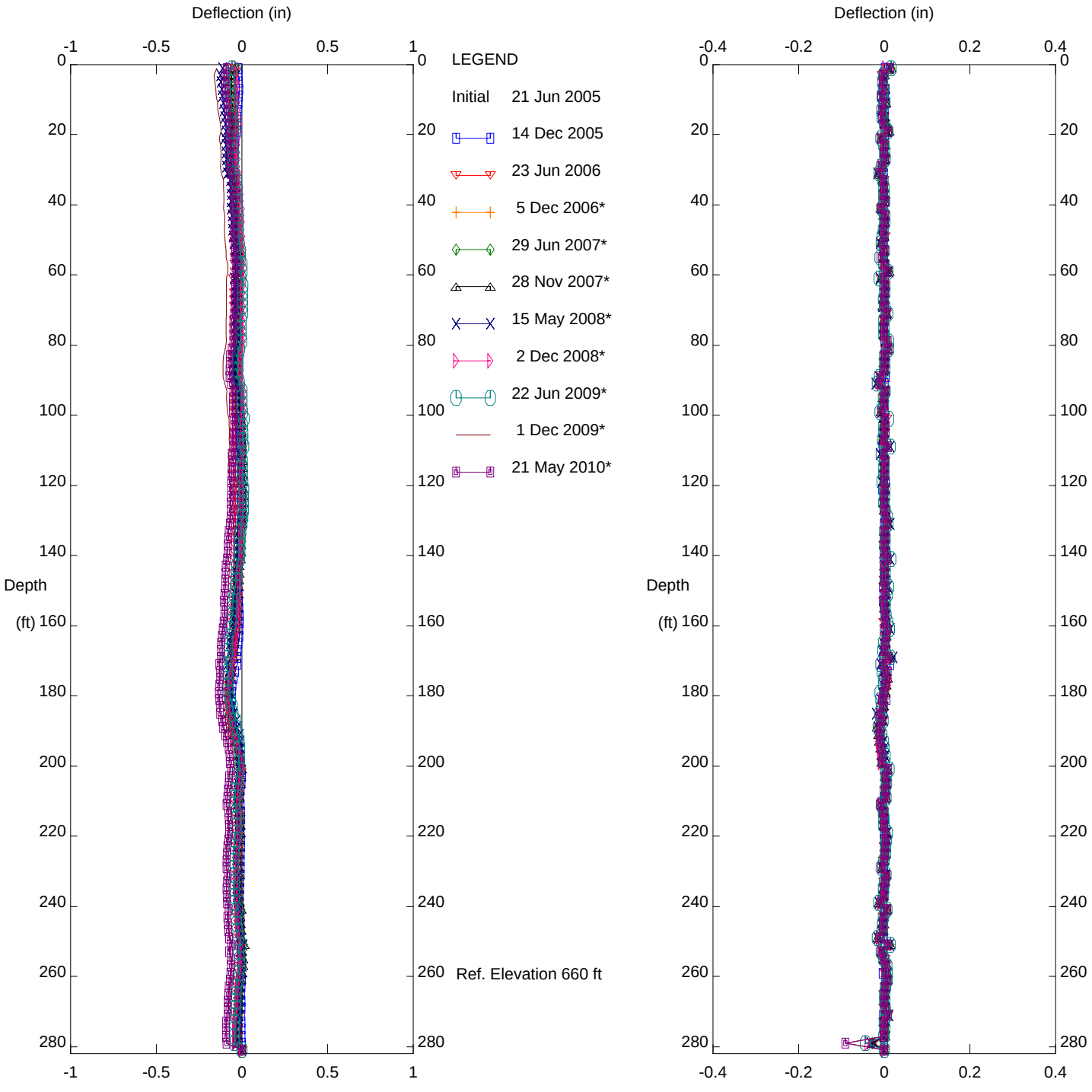
Direction A

BRM, Inclinometer SP21

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

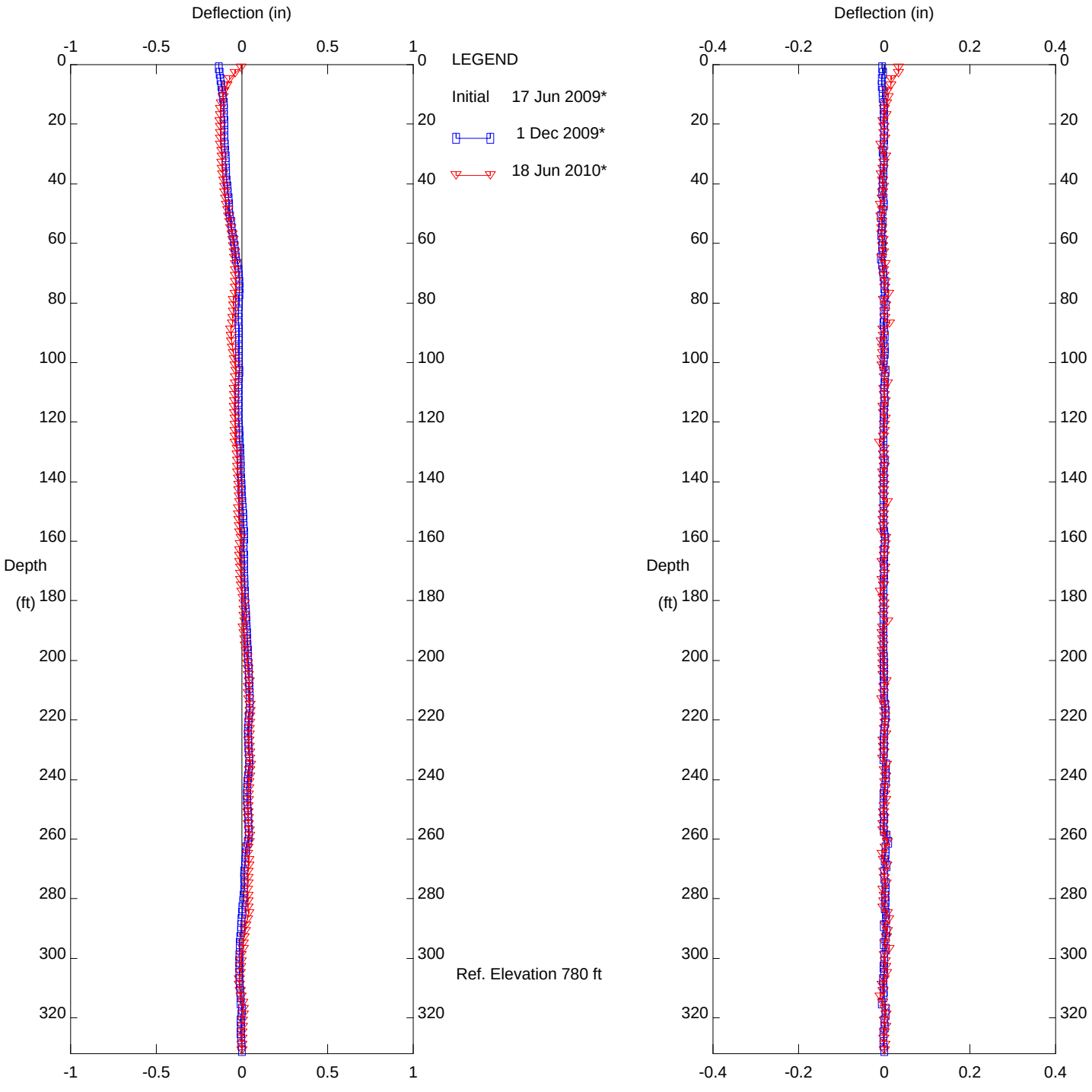
Direction A

BRM, Inclinometer SP21

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

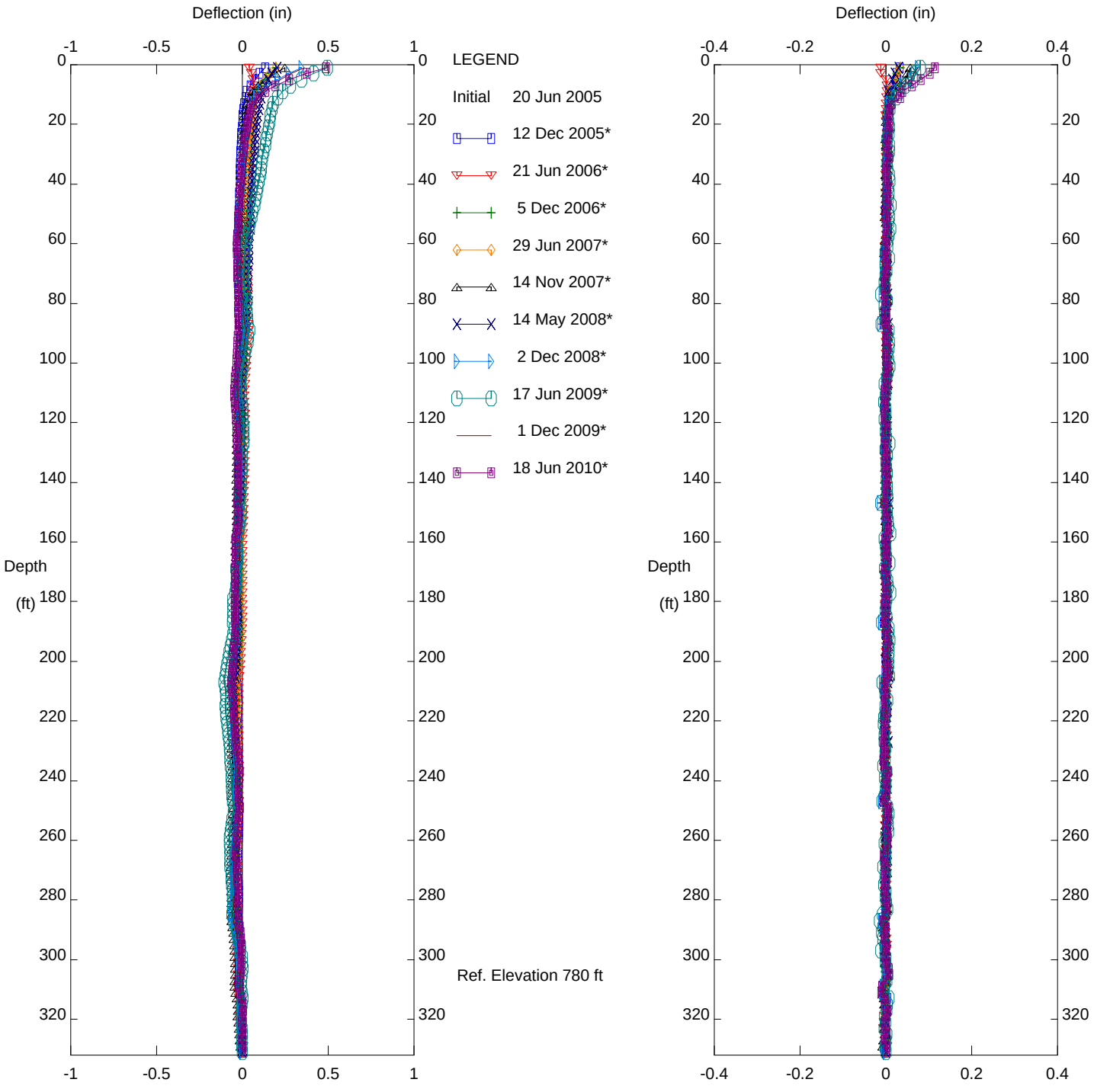
Direction A

BRM, Inclinometer SP22

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

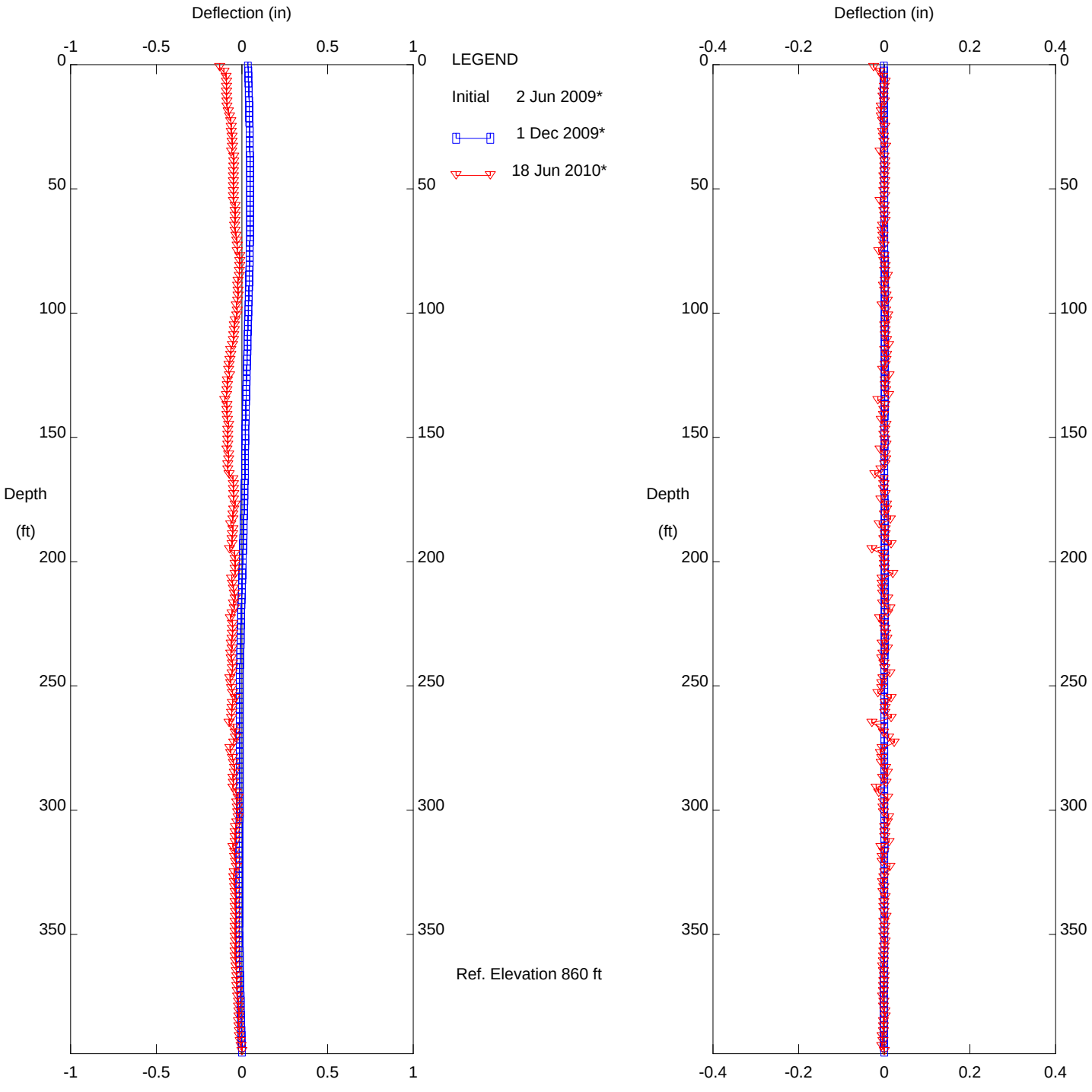
Direction A

BRM, Inclinometer SP22

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

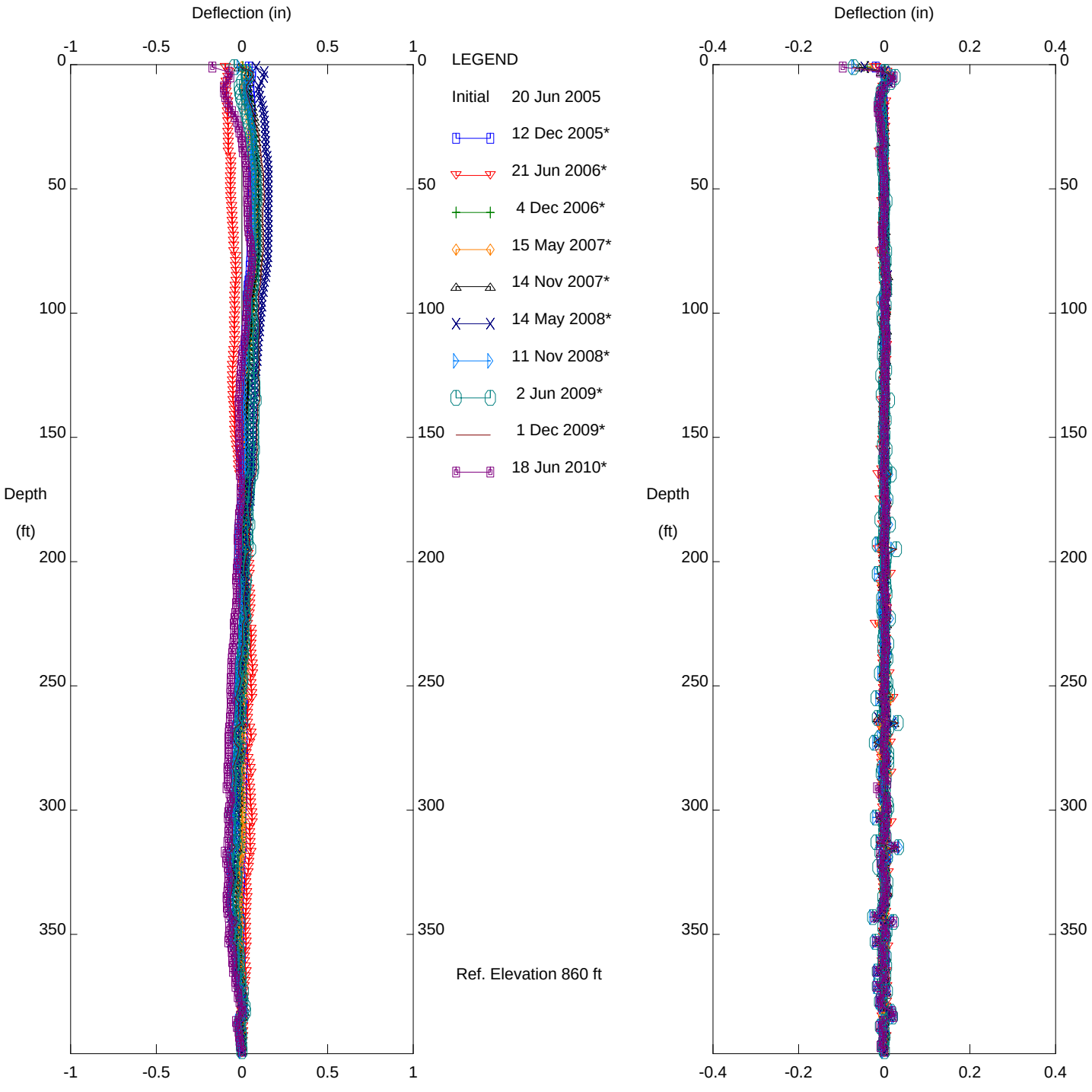
Direction A

BRM, Inclinometer SP23

WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BRM, Inclinometer SP23

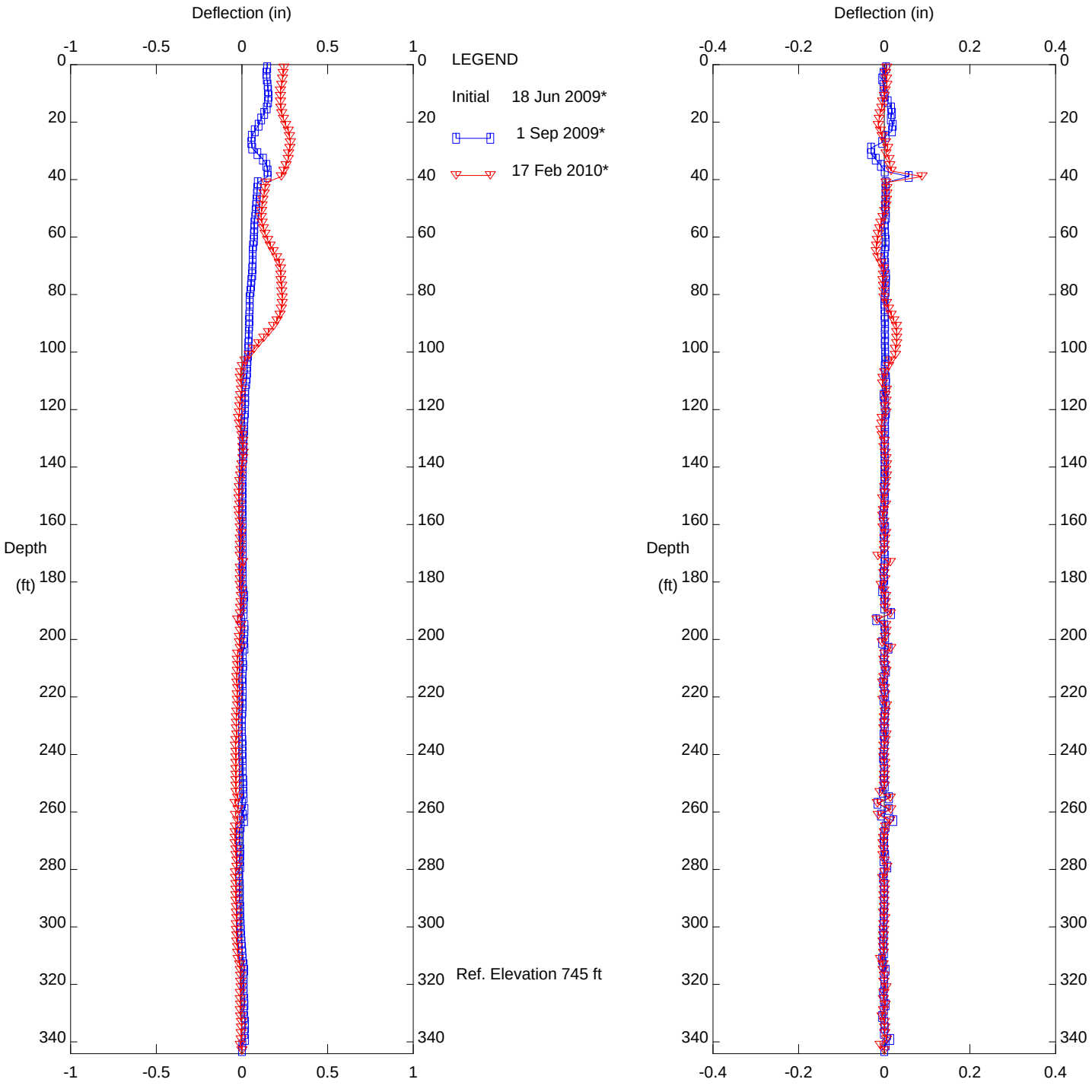
WESTERN REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP23.gtl

PLATE D-28b

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

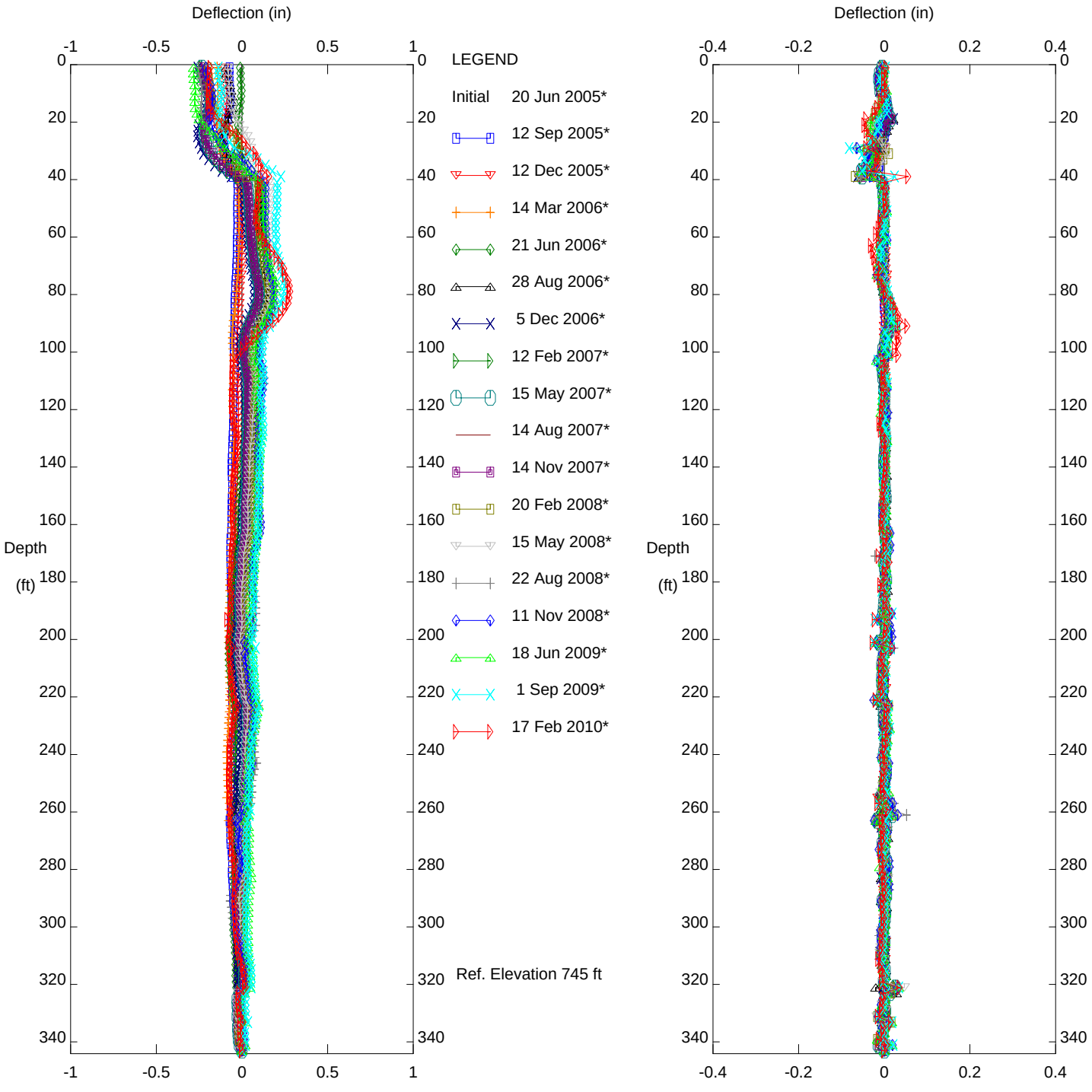
Direction A

BRM, Inclinometer SP26

HEADSCARP REGION

Sets marked * include zero shift and/or rotation corrections.

Fugro West, Inc. - Ventura, CA



Cumulative Deflection

Direction A

Incremental Deflection

Direction A

BRM, Inclinometer SP26

HEADSCARP REGION

Sets marked * include zero shift and/or rotation corrections.

E:\Malibu AD\Big Rock Mesa\SI Data\SP26.gtl

PLATE D-29b

APPENDIX E
WATER QUALITY TESTING

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
PORT 1													
06/30/10	HD-42	7.2	71.1	ND	--	ND	BQL	--	--		ND	BQL	--
05/25/10	HD-42	7.1	70.3	0.86	ND	ND	BQL	ND	ND		ND	0.32	--
04/29/10	HD-42	7.2	69.3	0.44	--	ND	BQL	--	--		ND	0.20	--
03/30/10	BYA-6	7.1	71.1	0.42	--	ND	BQL	--	--		2.40	0.41	--
02/24/10	BYA-6	7.9	69.3	ND	ND	2.7	BQL	ND	ND		ND	0.19	--
01/26/10	BYA-6	7.0	71.1	ND	--	ND	BQL	--	--		ND	BQL	--
09/30/09	HD-34	7.3	74.8	ND	--	ND	BQL	--	--		ND	0.40	--
08/19/09	HD-34	7.1	72.1	0.68	ND	ND	BQL	ND	ND		ND	0.60	--
07/22/09	HD-34	7.3	73.0	0.43	--	ND	BQL	--	--		4.40	0.80	--
06/18/09	BYA-5	7.0	77.9	0.42	--	ND	BQL	--	--		ND	0.57	--
06/18/09	HD-42	7.0	70.7	0.52	--	ND	BQL	--	--		ND	0.59	--
05/26/09	BYA-5	7.0	73.6	2.40	ND	ND	BQL	ND	0.010		2.00	1.50	--
05/20/09	HD-42	6.9	70.5	2.00	ND	ND	BQL	ND	0.006		ND	1.40	--
04/30/09	BYA-5	6.9	74.5	ND	--	ND	BQL	--	--		ND	2.20	--
04/29/09	HD-42	7.2	70.5	ND	--	1.6	BQL	--	--		ND	1.20	--
09/10/08	BYA-6	6.8	71.8	--	--	--	--			--	--	--	--
08/26/08	BYA-6	6.8	71.8	BQL	BQL	BQL	0.10			BQL	28.00	1.90	--
07/03/08	BYA-6	6.6	73.0	--	--	--	--			--	--	--	--
06/10/08	HD-42	6.9	68.7	--	--	--	--			--	--	--	--
05/19/08	HD-42	7.0	70.5	BQL	BQL	BQL	BQL			BQL	BQL	1.50	--
04/04/08	HD-42	6.8	68.5	--	--	--	--			--	--	--	--
03/12/08	BYA-12	7.4	71.1	--	--	--	--			--	--	--	--
02/21/08	BYA-12	7.6	70.9	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
01/03/08	BYA-12	7.2	69.3	--	--	--	--			--	--	--	--
06/05/07	HD-42	6.8	70.0	--	--	--	--			--	--	--	--
05/16/07	HD-42	6.9	69.6	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
03/15/07	BYA-6	6.5	69.8	--	--	--	--			--	--	--	--
02/28/07	BYA-6	6.8	68.7	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
01/11/07	BYA-6	7.0	70.9	--	--	--	--			--	--	--	--
12/21/06	HD-33	7.6	69.1	--	--	--	--			--	--	--	--
12/21/06	BYA-5	7.7	72.9	--	--	--	--			--	--	--	--
11/28/06	HD-33	7.6	72.9	BQL	BQL	BQL	BQL			BQL	BQL	0.10	95
11/28/06	BYA-5	6.7	72.3	BQL	BQL	BQL	BQL			BQL	12.00	6.40	95
10/20/06	HD-33	7.7	72.1	--	--	--	--			--	--	--	--
10/20/06	BYA-5	8.1	74.1	--	--	--	--			--	--	--	--
12/22/05	BYA-12	7.3	66.2	--	--	--	--			--	--	--	--
12/22/05	HD-33	7.3	69.6	--	--	--	--			--	--	--	--
11/28/05	BYA-12	7.8	71.1	BQL	BQL	6.5	BQL			BQL	BQL	0.36	100
11/28/05	HD-33	7.0	71.1	BQL	0.13	11.0	BQL			BQL	BQL	0.22	95
10/20/05	BYA-12	7.3	66.2	--	--	--	--			--	--	--	--
10/20/05	HD-33	7.3	69.6	--	--	--	--			--	--	--	--
09/01/05	BYA-6B	7.7	76.5	--	--	--	--			--	--	--	--
08/24/05	BYA-6B	7.7	75.6	BQL	BQL	BQL	BQL			BQL	BQL	0.80	--
07/29/05	BYA-6B	7.6	74.8	--	--	--	--			--	--	--	--
03/21/05	BYA-6	7.1	70.2	--	--	--	--			--	--	--	--
02/28/05	BYA-6	7.1	68.2	BQL	BQL	BQL	BQL			BQL	BQL	0.11	--
01/27/05	BYA-6	7.1	65.7	--	--	--	--			--	--	--	--
12/17/04	HD-33	7.5	69.8	--	--	--	--			--	--	--	--
11/17/04	HD-33	7.5	--	BQL	BQL	3.9	BQL			BQL	BQL	0.10	100
10/21/04	HD-33	7.9	72.5	--	--	--	--			--	--	--	--
09/21/04		7.3	80.1	--	--	--	--			--	--	--	--
08/25/04		7.1	78.1	BQL	BQL	BQL	BQL			BQL	BQL	0.43	--
07/30/04		7.0	77.0	--	--	--	--			--	--	--	--

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
06/30/04		8.0	73.9	--	--	--	--			--	--	--	--
05/27/04		7.5	72.0	BQL	BQL	BQL	BQL			BQL	BQL	BQL	--
PORT 1A													
06/30/10	FW-1	7.2	71.8	0.90	--	ND	BQL	--	--		ND	BQL	--
05/25/10	FW-1	7.1	72.5	ND	ND	ND	BQL	ND	ND		ND	0.11	--
04/29/10	FW-1	7.1	68.7	ND	--	ND	BQL	--	--		1.60	0.16	--
12/16/09	BYA-14	7.1	70.9	0.75	--	ND	BQL	--	--		ND	0.41	--
11/18/09	BYA-14	6.9	70.3	ND	ND	ND	BQL	ND	ND		ND	0.18	100
10/29/09	BYA-14	6.9	71.8	0.53	--	ND	BQL				ND	0.42	--
12/17/08	BYA-14	6.8	66.9	BQL	--	BQL	BQL	--	--		6.00	4.50	--
11/19/08	BYA-14	6.9	73.4	BQL	BQL	BQL	BQL	BQL	BQL		1.20	0.75	95
10/06/08	BYA-14	6.9	73.2	--	--	--	--			--	--	--	--
09/10/08	FW-1	7.3	76.8	--	--	--	--			--	--	--	--
08/26/08	FW-1	7.5	81.5	BQL	BQL	BQL	BQL			BQL	BQL	0.50	--
07/03/08	FW-1	7.5	73.8	--	--	--	--			--	--	--	--
12/11/07	BYA-14	6.7	69.6	--	--	--	--			--	--	--	--
11/26/07	BYA-14	7.2	71.4	BQL	BQL	BQL	BQL			BQL	BQL	1.30	100
10/05/07	BYA-14	6.8	73.0	--	--	--	--			--	--	--	--
12/21/06	BYA-14	7.0	69.1	--	--	--	--			--	--	--	--
11/28/06	BYA-14	6.8	72.3	BQL	BQL	BQL	BQL			BQL	BQL	0.10	100
10/20/06	BYA-14	7.6	79.2	--	--	--	--			--	--	--	--
12/17/04	BYA-14	7.1	70.2	--	--	--	--			--	--	--	--
11/17/04	BYA-14	7.1	--	BQL	BQL	BQL	BQL			BQL	BQL	0.25	100
10/21/04	BYA-14	7.2	71.1	--	--	--	--			--	--	--	--
09/21/04		7.6	79.0	--	--	--	--			--	--	--	--
08/25/04		8.2	75.9	BQL	BQL	BQL	BQL			BQL	BQL	0.16	--
07/30/04		8.0	75.0	--	--	--	--			--	--	--	--
06/30/04		**9.0**	70.0	--	--	--	--			--	--	--	--
05/27/04		8.2	66.0	BQL	BQL	BQL	BQL			BQL	10.00	0.30	--
PORT 2													
12/16/09	HD-41	7.0	69.4	0.67	--	ND	BQL	--	--		ND	BQL	--
11/18/09	HD-41	6.7	70.0	ND	ND	ND	BQL	ND	ND		ND	0.11	95
10/27/09	HD-41	7.2	71.8	ND	--	ND	BQL	--	--		ND	0.53	--
06/18/09	HD-9	7.0	71.2	0.48	--	ND	BQL	--	--		ND	0.84	
05/20/09	HD-9	7.2	71.2	ND	ND	ND	BQL	ND	0.005		2.00	2.10	
04/29/09	HD-9	7.3	72.0	ND	--	ND	BQL	--	--		4.00	6.40	
06/10/08	HD-41	6.7	68.5	--	--	--	--			--	--	--	--
06/10/08	HD-29	7.3	69.1	--	--	--	--			--	--	--	--
05/19/08	HD-41	7.0	70.5	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
05/19/08	HD-29	7.4	72.3	BQL	BQL	BQL	BQL			BQL	BQL	23.00	--
04/04/08	HD-41	6.7	68.5	--	--	--	--			--	--	--	--
04/04/08	HD-29	7.0	68.7	--	--	--	--			--	--	--	--
09/11/07	BYA-H8	7.0	74.5	--	--	--	--			--	--	--	--
08/22/07	BYA-H8	7.5	74.3	BQL	BQL	BQL	BQL			BQL	BQL	0.30	--
07/06/07	BYA-H8	7.0	74.5	--	--	--	--			--	--	--	--
03/15/07	HD-9	6.8	69.4	--	--	--	--			--	--	--	--
02/28/07	HD-9	7.2	69.8	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
01/11/07	HD-9	7.4	69.3	--	--	--	--			--	--	--	--
09/20/06	HD-41	7.4	71.1	--	--	--	--			--	--	--	--
08/24/06	HD-41	7.0	70.2	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
07/25/06	HD-41	7.3	70.0	--	--	--	--			--	--	--	--
06/22/06	BYA-7	7.5	76.1	--	--	--	--			--	--	--	--
05/18/06	BYA-7	7.6	65.8	BQL	BQL	BQL	BQL			BQL	BQL	0.70	--

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
04/25/06	HD-41	7.3	68.5	--	--	--	--			--	--	--	--
03/16/06	HD-9	7.4	70.0	--	--	--	--			--	--	--	--
02/21/06	HD-9	7.3	70.2	BQL	BQL	BQL	BQL			BQL	BQL	0.25	--
01/27/06	HD-9	7.4	69.8	--	--	--	--			--	--	--	--
09/01/05	BYA-H8	7.7	73.2	--	--	--	--			--	--	--	--
08/24/05	BYA-H8	7.9	74.1	BQL	BQL	1.1	BQL			BQL	BQL	0.90	--
07/29/05	BYA-H8	**9.0**	74.1	--	--	--	--			--	--	--	--
06/29/05	HD-41	7.1	69.1	--	--	--	--			--	--	--	--
05/17/05	HD-41	7.1	69.8	BQL	BQL	BQL	BQL			BQL	10.00	0.80	--
04/19/05	HD-41	7.2	69.4	--	--	--	--			--	--	--	--
03/21/05	HD-9	7.5	70.3	--	--	--	--			--	--	--	--
02/28/05	HD-9	7.4	70.3	BQL	BQL	BQL	BQL			BQL	BQL	0.56	--
01/27/05	HD-9	7.5	69.4	--	--	--	--			--	--	--	--
12/17/04	W-17	7.5	70.9	--	--	--	--			--	--	--	--
11/17/04	W-17	7.2	--	BQL	BQL	BQL	BQL			BQL	BQL	BQL	100
10/21/04	HD-9	7.5	72.3	--	--	--	--			--	--	--	--
09/21/04		7.5	75.9	--	--	--	--			--	--	--	--
08/25/04		7.3	75.9	BQL	BQL	BQL	BQL			BQL	BQL	0.14	--
07/30/04		8.0	71.1	--	--	--	--			--	--	--	--
06/30/04		**9.0**	72.0	--	--	--	--			--	--	--	--
05/27/04		7.3	69.1	BQL	BQL	BQL	BQL			BQL	BQL	BQL	--
PORT 3													
06/30/10	BYA-H10	7.1	70.5	0.74	--	ND	BQL	--	--		ND	BQL	--
05/25/10	BYA-H10	7.3	71.1	1.10	ND	ND	BQL	ND	ND		9.20	13.30	--
04/29/10	BYA-H10	7.3	71.4	0.94	--	ND	BQL	--	--		ND	0.34	--
03/30/10	BYA-13	7.2	69.4	ND	--	ND	BQL	--	--		ND	BQL	--
03/30/10	HD-30	7.4	71.6	ND	--	ND	BQL	--	--		ND	BQL	--
02/24/10	BYA-13	6.6	70.3	ND	ND	3.0	BQL	ND	ND		ND	0.13	--
02/24/10	HD-30	6.9	69.3	ND	ND	4.5	BQL	ND	ND		ND	0.19	--
01/26/10	BYA-13	6.9	70.0	ND	--	ND	BQL	--	--		ND	0.12	--
01/26/10	HD-30	7.1	73.0	ND	--	ND	BQL	--	--		ND	BQL	--
12/16/09	BYA-H-10	7.2	71.1	0.67		ND	BQL	--	--		5.60	2.60	--
12/16/09	W-2	6.9	70.3	1.30	--	ND	BQL	--	--		ND	0.60	--
11/18/09	BYA-H-10	7.5	70.5	ND	ND	ND	BQL	ND	ND		ND	0.18	100
11/18/09	W-2	6.6	69.6	ND	ND	ND	BQL	ND	ND		ND	BQL	95
10/27/09	BYA-H-10	7.2	71.1	ND	--	ND	BQL	--	--		1.2	0.53	--
10/27/09	W-2	6.9	70.3	ND	--	ND	BQL	--	--		ND	0.60	--
09/30/09	HD-30	7.2	72.1	0.70	--	ND	BQL	--	--		ND	0.50	--
08/19/09	HD-30	7.3	70.9	0.56	ND	ND	BQL	ND	ND		ND	0.50	--
07/22/09	HD-30	7.2	72.3	ND	--	ND	BQL	--	--		ND	0.40	--
06/18/09	BYA-H10	7.0	71.8	0.54	--	ND	BQL	--	--		ND	0.47	--
05/26/09	BYA-H10	7.2	72.0	ND	ND	ND	BQL	ND	0.010		3.60	1.50	--
04/29/09	BYA-H10	7.3	72.5	ND	--	ND	BQL	--	--		3.60	2.50	--
04/30/09	W-2	--	--	--	--	--	--	--	--		--	--	95
03/24/09	W-1	7.1	73.6	0.68	--	ND	BQL	--	--		ND	1.20	--
03/26/09	W-2	--	--	--	--	--	--	--	--		--	--	100
03/24/09	HD-30	7.2	71.8	0.55	--	ND	BQL	--	--		ND	0.80	--
02/25/09	W-1	**6.3**	72.9	0.86	0.07	1.4	BQL	ND	ND		ND	1.20	--
02/25/09	W-2	--	--	--	--	--	--	--	--		--	--	100
02/25/09	HD-30	6.8	72.5	ND	0.04	ND	BQL	ND	ND		ND	0.62	--
01/30/09	W-1	6.9	72.0	ND	--	ND	BQL	--	--		ND	0.75	--
01/30/09	W-2	--	--	--	--	--	--	--	--		--	--	**70**
01/29/09	HD-30	7.1	72.1	ND	--	ND	BQL	--	--		ND	0.51	--
12/29/08	W-2	--	--	--	--	--	--	--	--		--	--	95

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
12/17/08	W-2	6.6	68.0	BQL	--	BQL	BQL	--	--		BQL	2.40	
12/17/08	BYA-H10	6.9	67.5	BQL	--	BQL	BQL	--	--		BQL	2.40	--
11/19/08	W-2	6.7	70.0	BQL	BQL	BQL	BQL	BQL	BQL		1.20	5.00	85
11/19/08	BYA-H10	7.1	71.2	BQL	BQL	BQL	BQL	BQL	BQL		1.20	0.50	100
10/06/08	W-2	6.7	70.3	--	--	--	--			--	--	--	--
10/06/08	BYA-H10	7.0	71.8	--	--	--	--			--	--	--	--
09/10/08	BYA-13	6.6	73.0	--	--	--	--			--	--	--	--
09/10/08	HD-4	6.9	73.2	--	--	--	--			--	--	--	--
09/10/08	HD-30	6.9	71.6	--	--	--	--			--	--	--	--
08/26/08	BYA-13	6.7	72.3	BQL	BQL	BQL	BQL			BQL	15.00	2.40	--
08/26/08	HD-4	7.2	72.1	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
08/26/08	HD-30	7.2	72.1	BQL	BQL	BQL	BQL			BQL	BQL	0.10	--
07/03/08	BYA-13	6.6	73.0	--	--	--	--			--	--	--	--
07/03/08	HD-4	6.9	73.6	--	--	--	--			--	--	--	--
07/03/08	HD-30	6.9	72.5	--	--	--	--			--	--	--	--
06/10/08	BYA-H10	7.0	71.4	--	--	--	--			--	--	--	--
06/10/08	W-3	6.8	69.6	--	--	--	--			--	--	--	--
05/19/08	BYA-H10	7.2	72.0	BQL	BQL	BQL	BQL			BQL	BQL	0.30	--
05/19/08	W-3	6.9	71.2	BQL	BQL	BQL	BQL			BQL	BQL	0.50	--
04/04/08	BYA-H10	6.9	70.2	--	--	--	--			--	--	--	--
04/04/08	W-3	6.6	70.2	--	--	--	--			--	--	--	--
03/12/08	HD-30	7.1	70.5	--	--	--	--			--	--	--	--
02/21/08	HD-30	7.4	70.3	BQL	BQL	BQL	BQL			BQL	BQL	0.10	--
01/03/08	HD-30	6.9	68.5	--	--	--	--			--	--	--	--
12/11/07	W-2	6.5	68.7	--	--	--	--			--	--	--	--
12/11/07	BYA-H10	6.7	69.8	--	--	--	--			--	--	--	--
11/26/07	W-2	7.1	69.6	BQL	BQL	BQL	BQL			BQL	BQL	0.50	100
11/26/07	BYA-H10	7.6	71.1	BQL	BQL	BQL	BQL			BQL	BQL	0.20	100
10/05/07	W-2	6.6	69.8	--	--	--	--			--	--	--	--
10/05/07	BYA-H10	6.8	70.9	--	--	--	--			--	--	--	--
09/27/07	W-2	--	--	--	--	--	--			--	BQL	--	--
09/27/07	W-3	--	--	--	--	--	--			--	BQL	--	--
09/25/07	BYA-13	--	--	--	--	--	--			--	BQL	--	--
09/24/07	HD-30	--	--	--	--	--	--			--	BQL	--	--
09/24/07	HD-43	--	--	--	--	--	--			--	BQL	--	--
09/24/07	HD-4	--	--	--	--	--	--			--	BQL	--	--
09/24/07	H-1	--	--	--	--	--	--			--	BQL	--	--
09/24/07	BYA-H10	--	--	--	--	--	--			--	BQL	--	--
08/22/07	HD-30	7.2	72.7	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
08/22/07	W-1	--	--	--	--	--	--			**0.20**	--	--	--
08/22/07	W-2	--	--	--	--	--	--			**0.35**	--	--	--
08/22/07	W-3	--	--	--	--	--	--			**0.50**	--	--	--
08/22/07	BYA-13	--	--	--	--	--	--			BQL	--	--	--
08/22/07	HD-43	--	--	--	--	--	--			BQL	--	--	--
08/22/07	HD-4	--	--	--	--	--	--			BQL	--	--	--
08/22/07	BYA-H10	--	--	--	--	--	--			BQL	--	--	--
07/16/07	W-1	--	--	--	--	--	--			BQL	--	--	--
07/06/07	HD-30	6.8	72.5	--	--	--	--			--	--	--	--
06/25/07	W-1	--	--	--	--	--	--			BQL	--	--	--
06/05/07	BYAH-10	6.9	70.7	--	--	--	--			--	--	--	--
06/05/07	W-1	6.6	70.9	--	--	--	--			--	--	--	--
05/16/07	HD-43	7.7	72.3	BQL	BQL	BQL	BQL			BQL	BQL	0.15	--
05/16/07	BYAH-10	7.1	70.5	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
05/16/07	W-1	6.8	69.8	BQL	BQL	BQL	BQL			**0.40**	BQL	2.10	

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Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
04/12/07	HD-4	7.4	71.1	--	--	--	--			--	--	--	--
04/12/07	BYAH-10	6.9	70.5	--	--	--	--			--	--	--	--
04/12/07	W-1	6.5	69.3	--	--	--	--			--	--	--	--
03/15/07	BYA-13	**6.4**	70.7	--	--	--	--			--	--	--	--
03/15/07	HD-30	7.0	69.6	--	--	--	--			--	--	--	--
02/28/07	BYA-13	6.8	69.6	BQL	BQL	BQL	BQL			BQL	BQL	0.60	--
02/28/07	HD-30	7.4	70.0	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
01/11/07	BYA-13	6.8	69.3	--	--	--	--			--	--	--	--
01/11/07	HD-30	7.5	68.5	--	--	--	--			--	--	--	--
12/21/06	W-2	6.7	68.5	--	--	--	--			--	--	--	--
12/01/06	H-1	--	--	--	--	--	--			--	--	0.37	--
11/28/06	W-2	6.6	70.5	BQL	BQL	BQL	BQL			BQL	BQL	0.10	95
11/22/06	Port 3	--	--	--	--	--	--			--	--	0.31	--
11/22/06	H-1	--	--	--	--	--	--			--	--	2.40	--
11/10/06	H-1	--	--	--	--	--	--			--	--	**57.00**	--
11/03/06	H-1	--	--	--	--	--	--			--	--	**55.00**	--
10/20/06	W-2	8.0	71.8	--	--	--	--			--	--	--	--
09/20/06	W-1	8.3	72.0	--	--	--	--			--	--	--	--
09/20/06	BYA-H10	7.8	71.8	--	--	--	--			--	--	--	--
09/20/06	H-1	7.7	74.7	--	--	--	--			--	--	--	--
08/24/06	W-1	7.1	71.8	BQL	BQL	BQL	BQL			BQL	7.20	4.90	--
08/24/06	BYA-H10	7.4	73.2	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
08/24/06	H-1	7.5	74.5	BQL	BQL	BQL	BQL			BQL	BQL	**60.00**	--
07/25/06	W-1	7.3	75.2	--	--	--	--			--	--	--	--
07/25/06	BYA-H10	7.6	72.5	--	--	--	--			--	--	--	--
07/25/06	H-1	7.6	73.4	--	--	--	--			--	--	--	--
06/22/06	HD-30	7.4	70.5	--	--	--	--			--	--	--	--
05/18/06	HD-30	7.4	72.0	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
04/25/06	H-1	7.6	67.5	--	--	--	--			--	--	--	--
04/25/06	BYA-H10	7.6	70.3	--	--	--	--			--	--	--	--
04/25/06	W-1	7.3	70.5	--	--	--	--			--	--	--	--
03/16/06	HD-30	7.5	70.5	--	--	--	--			--	--	--	--
03/16/06	W-3	7.4	69.3	--	--	--	--			--	--	--	--
02/21/06	HD-30	7.3	70.5	BQL	BQL	BQL	BQL			BQL	BQL	0.30	--
02/21/06	W-3	7.0	71.8	BQL	BQL	BQL	BQL			BQL	BQL	0.95	--
01/27/06	HD-30	7.4	70.2	--	--	--	--			--	--	--	--
01/27/06	W-3	7.4	69.3	--	--	--	--			--	--	--	--
12/22/05	W-2	7.0	70.2	--	--	--	--			--	--	--	--
12/22/05	BYA-H10	7.5	70.3	--	--	--	--			--	--	--	--
11/28/05	W-2	6.7	73.4	BQL	BQL	3.5	BQL			BQL	BQL	0.21	100
11/28/05	BYA-H10	7.1	71.6	BQL	BQL	5.1	BQL			BQL	BQL	0.24	100
10/20/05	W-1	7.0	71.8	--	--	--	--			--	--	--	--
10/20/05	BYA-H10	7.3	70.2	--	--	--	--			--	--	--	--
09/01/05	BYA-H10	7.2	71.1	--	--	--	--			--	--	--	--
09/01/05	HD-30	7.1	71.1	--	--	--	--			--	--	--	--
09/01/05	HD-4	7.3	72.0	--	--	--	--			--	--	--	--
08/24/05	BYA-H10	7.5	71.6	BQL	BQL	BQL	BQL			BQL	BQL	0.50	--
08/24/05	HD-30	7.3	71.6	BQL	BQL	1.7	BQL			BQL	BQL	1.00	--
08/24/05	HD-4	7.6	72.7	BQL	BQL	BQL	BQL			BQL	BQL	0.60	--
07/29/05	BYA-H10	7.5	71.8	--	--	--	--			--	--	--	--
07/29/05	HD-30	7.3	71.8	--	--	--	--			--	--	--	--
07/29/05	HD-4	8.4	81.1	--	--	--	--			--	--	--	--
06/29/05	BYA-H10	7.5	71.1	--	--	--	--			--	--	--	--
06/29/05	W-1	7.4	73.8	--	--	--	--			--	--	--	--

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	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
05/17/05	BYA-H10	7.4	71.4	BQL	BQL	BQL	BQL			BQL	BQL	0.30	--
05/17/05	HD-4	7.2	69.3	BQL	BQL	1.1	BQL			BQL	BQL	0.20	--
04/19/05	BYAH-10	7.5	70.9	--	--	--	--			--	--	--	--
04/19/05	W-1	7.2	74.3	--	--	--	--			--	--	--	--
03/21/05	BYA-13	8.3	66.6	--	--	--	--			--	--	--	--
03/21/05	HD-30	7.3	70.7	--	--	--	--			--	--	--	--
02/28/05	BYA-13	8.2	67.1	BQL	BQL	BQL	BQL			BQL	BQL	0.33	--
02/28/05	H-1	7.3	70.5	BQL	BQL	BQL	BQL			BQL	BQL	3.20	--
01/27/05	BYA-13	7.3	67.8	--	--	--	--			--	--	--	--
01/27/05	HD-30	7.5	70.2	--	--	--	--			--	--	--	--
12/17/04	W-2	7.6	68.2	--	--	--	--			--	--	--	--
11/17/04	BYA-H10	7.4	--	BQL	BQL	BQL	BQL			BQL	BQL	BQL	100
10/21/04	HD-30	7.7	72.7	--	--	--	--			--	--	--	--
09/21/04		8.2	77.0		--	--	--			--	--	--	--
08/25/04		8.2	75.9	BQL	BQL	BQL	BQL			BQL	6.00	4.20	--
07/30/04		8.0	79.0	--	--	--	--			--	--	--	--
06/30/04		**9.0**	71.1	--	--	--	--			--	--	--	--
05/27/04		7.5	70.0	BQL	0.20	BQL	BQL			BQL	10.00	0.70	--
PORT 4													
06/30/10	HD-26	7.3	69.6	ND	--	ND	BQL	--	--		ND	BQL	--
06/30/10	FW-2	7.3	73.6	ND	--	ND	BQL	--	--		ND	0.29	--
05/25/10	HD-26	7.2	71.2	ND	ND	ND	BQL	ND	ND		9.20	13.30	--
05/25/10	FW-2	6.9	71.8	1.40	ND	ND	BQL	ND	ND		2.00	0.75	--
04/29/10	HD-26	7.2	70.3	ND	--	ND	BQL	--	--		ND	BQL	--
04/29/10	FW-2	7.3	71.8	0.65	--	ND	BQL	--	--		2.80	4.50	--
03/30/10	W-8	7.0	71.6	1.30	--	ND	BQL	--	--		ND	0.48	--
03/30/10	HD-15	7.2	70.7	1.80	--	ND	BQL	--	--		2.00	0.43	--
02/24/10	W-17	7.3	70.2	ND	ND	1.6	BQL	ND	ND		ND	BQL	--
02/24/10	HD-15	7.2	71.1	0.85	ND	2.5	BQL	ND	ND		1.20	0.81	--
01/26/10	W-8	7.0	70.0	ND	--	ND	BQL	--	--		ND	0.23	--
01/26/10	HD-15	7.1	71.1	1.70	--	ND	BQL	--	--		2.40	1.60	--
09/30/09	BYA-1	7.1	73.9	0.70	--	ND	BQL	--	--		1.40	0.60	--
09/30/09	W-8	6.9	71.8	0.81	--	ND	BQL	--	--		ND	0.40	--
08/19/09	BYA-1	7.2	76.1	ND	ND	ND	BQL	ND	ND		ND	0.50	--
08/19/09	W-8	6.9	71.6	0.47	ND	ND	BQL	ND	ND		ND	0.60	--
07/22/09	BYA-1	7.0	73.6	ND	--	ND	**0.15**	--	--		30.00	**53.00**	--
07/22/09	W-8	6.8	72.5	0.91	--	ND	BQL	--	--		ND	0.40	--
06/18/09	W-17	7.0	72.0	0.42	--	ND	BQL	--	--		ND	0.62	--
05/26/09	W-17	7.2	72.0	ND	ND	ND	BQL	ND	0.010		ND	1.40	--
04/29/09	W-17	7.2	72.0	0.40		1.4	BQL	--	--		ND	1.40	--
03/24/09	HD-15	7.0	73.0	1.50	--	ND	BQL	--	--		1.60	2.10	--
03/24/09	W-8	6.9	72.9	0.52	--	ND	BQL	--	--		ND	1.10	--
02/25/09	HD-15	**6.4**	73.6	1.20	0.03	1.3	BQL	ND	ND		ND	0.66	--
02/25/09	W-8	**6.3**	72.3	0.73	0.11	1.2	BQL	ND	ND		ND	0.64	--
01/29/09	HD-15	6.9	73.2	ND	--	ND	BQL	--	--		2.00	2.20	--
01/30/09	W-8	6.7	71.8	11.00	--	ND	BQL	--	--		ND	0.48	--
12/17/08	BYA-7	7.2	67.5	BQL	--	BQL	BQL	--	--		2.00	21.00	--
12/17/08	HD-26	6.9	68.7	BQL	--	BQL	BQL	--	--		BQL	0.70	--
11/19/08	BYA-7	7.3	70.5	BQL	BQL	BQL	BQL	BQL	BQL		2.40	7.20	100
11/19/08	HD-26	7.0	71.4	BQL	BQL	BQL	BQL	BQL	BQL		2.00	0.50	95
10/06/08	BYA-7	7.2	71.6	--	--	--	--			--	--	--	--
10/06/08	HD-26	6.9	72.3	--	--	--	--			--	--	--	--
09/10/08	BYA-1	6.6	75.4	--	--	--	--			--	--	--	--
08/26/08	BYA-1	6.7	72.1	BQL	BQL	BQL	BQL			BQL	BQL	4.00	--
07/03/08	BYA-1	6.6	76.6	--	--	--	--			--	--	--	--
06/10/08	W-17	6.9	72.0	--	--	--	--			--	--	--	--
05/19/08	W-17	7.1	72.5	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
04/04/08	W-17	6.9	72.0	--	--	--	--			--	--	--	--
03/12/08	HD-16	7.1	71.1	--	--	--	--			--	--	--	--
03/12/08	W-8	6.5	70.7	--	--	--	--			--	--	--	--
02/21/08	HD-16	7.3	67.3	BQL	BQL	BQL	BQL			BQL	BQL	3.00	--
02/21/08	W-8	6.7	70.5	BQL	BQL	BQL	BQL			BQL	BQL	0.30	--
01/03/08	HD-16	7.0	66.6	--	--	--	--			--	--	--	--
01/03/08	W-8	6.5	68.9	--	--	--	--			--	--	--	--
09/11/07	W-8	6.6	71.5	--	--	--	--			--	--	--	--
09/11/07	BYA-1	6.6	73.6	--	--	--	--			--	--	--	--
08/22/07	W-8	6.8	72.0	BQL	BQL	BQL	BQL			BQL	BQL	0.30	--
08/22/07	BYA-1	6.8	72.5	BQL	BQL	BQL	BQL			BQL	BQL	6.30	--
07/06/07	W-8	6.6	71.4	--	--	--	--			--	--	--	--
07/06/07	BYA-1	6.6	72.3	--	--	--	--			--	--	--	--
06/05/07	BYA-7	6.9	70.0	--	--	--	--			--	--	--	--
05/16/07	BYA-7	7.1	69.8	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
04/12/07	BYA-7	7.0	71.1	--	--	--	--			--	--	--	--
03/15/07	W-8	**6.4**	71.1	--	--	--	--			--	--	--	--
03/15/07	HD-15	6.6	71.2	--	--	--	--			--	--	--	--
02/28/07	W-8	6.7	69.4	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
02/28/07	HD-15	6.9	71.8	BQL	BQL	BQL	BQL			BQL	BQL	3.80	--
01/11/07	W-8	6.8	71.1	--	--	--	--			--	--	--	--
01/11/07	HD-15	7.1	69.8	--	--	--	--			--	--	--	--
12/21/06	W-17	7.1	70.2	--	--	--	--			--	--	--	--
11/28/06	W-17	6.9	72.0	BQL	BQL	BQL	BQL			BQL	BQL	0.30	100
10/20/06	W-17	7.4	72.3	--	--	--	--			--	--	--	--
09/20/06	HD-26	7.9	72.1	--	--	--	--			--	--	--	--
08/24/06	HD-26	7.1	72.7	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
07/25/06	HD-26	7.5	72.3	--	--	--	--			--	--	--	--
06/22/06	BYA-1	7.0	76.6	--	--	--	--			--	--	--	--
06/22/06	W-8	7.1	73.0	--	--	--	--			--	--	--	--
05/18/06	BYA-1	7.1	70.3	BQL	BQL	BQL	BQL			BQL	BQL	8.50	--
05/18/06	W-8	7.2	70.0	BQL	BQL	BQL	BQL			BQL	BQL	0.69	--
04/25/06	HD-26	7.5	70.3	--	--	--	--			--	--	--	--
03/16/06	HD-15	7.4	71.6	--	--	--	--			--	--	--	--
03/16/06	W-8	7.1	70.5	--	--	--	--			--	--	--	--
02/21/06	HD-15	7.2	70.9	BQL	BQL	BQL	BQL			BQL	BQL	1.30	--
02/21/06	W-8	7.3	69.8	BQL	BQL	BQL	BQL			BQL	BQL	0.45	--
01/27/06	HD-15	7.3	71.4	--	--	--	--			--	--	--	--
01/27/06	W-8	7.0	71.2	--	--	--	--			--	--	--	--
12/22/05	W-17	7.4	70.7	--	--	--	--			--	--	--	--
11/28/05	W-17	7.0	71.1	BQL	BQL	6.8	BQL			BQL	BQL	0.26	100
10/20/05	W-17	7.3	70.2	--	--	--	--			--	--	--	--
09/01/05	W-8	6.6	71.8	--	--	--	--			--	--	--	--
09/01/05	HD-16	7.3	71.4	--	--	--	--			--	--	--	--
08/24/05	W-8	7.2	73.0	BQL	BQL	1.5	BQL			BQL	BQL	0.60	--
08/24/05	HD-16	7.5	72.1	BQL	BQL	1.2	BQL			BQL	BQL	3.00	--
07/29/05	W-8	6.9	72.7	--	--	--	--			--	--	--	--
07/29/05	HD-16	7.6	71.8	--	--	--	--			--	--	--	--
06/29/05	BYA-1	7.6	74.3	--	--	--	--			--	--	--	--
05/17/05	BYA-1	6.8	73.0	BQL	BQL	BQL	BQL			BQL	BQL	0.80	--
04/19/05	BYA-1	7.2	72.0	--	--	--	--			--	--	--	--
03/21/05	W-8	7.1	71.4	--	--	--	--			--	--	--	--
03/21/05	HD-15	7.2	71.8	--	--	--	--			--	--	--	--
02/28/05	W-8	7.1	70.9	BQL	BQL	BQL	BQL			BQL	BQL	0.34	--
02/28/05	HD-15	7.1	71.1	BQL	BQL	1.1	BQL			BQL	BQL	2.10	--
01/27/05	W-8	7.1	70.2	--	--	--	--			--	--	--	--
01/27/05	HD-15	7.3	70.9	--	--	--	--			--	--	--	--

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
12/17/04	HD-25	7.4	70.2	--	--	--	--			--	--	--	--
11/17/04	HD-25	7.5	--	BQL	BQL	BQL	BQL			BQL	BQL	n.d	95
10/21/04	HD-15	7.5	73.6	--	--	--	--			--	--	--	--
09/21/04		8.2	77.0	--	--	--	--			--	--	--	--
08/26/04		8.0	78.1	BQL	0.21	2.0	BQL			BQL	31.00	7.10	--
07/30/04		9.0	79.0	--	--	--	--			--	--	--	--
06/30/04		9.0	73.9	--	--	--	--			--	--	--	--
05/27/04		8.1	73.0	BQL	BQL	BQL	BQL			BQL	BQL	1.00	--
PORT 5													
06/30/10	W-16	7.0	72.5	ND	--	ND	BQL	--	--		ND	0.14	--
06/30/10	HD-22	7.2	68.5	0.50	--	ND	BQL	--	--		4.00	6.90	--
05/25/10	W-16	6.8	72.3	0.88	ND	ND	BQL	ND	ND		ND	0.13	--
05/25/10	HD-22	7.2	72.9	0.75	ND	ND	BQL	ND	ND		4.40	4.70	--
04/29/10	W-16	7.0	72.9	0.78	--	ND	BQL	--	--		ND	0.15	--
04/29/10	HD-22	7.5	71.4	1.20	--	ND	BQL	--	--		4.00	5.90	--
03/30/10	BYA-4	7.1	74.3	0.50	--	ND	BQL	--	--		ND	0.38	--
03/30/10	W-13	7.1	72.5	ND	--	ND	BQL	--	--		ND	BQL	--
02/24/10	BYA-4	7.0	72.1	ND	ND	2.3	BQL	ND	ND		ND	0.26	--
02/24/10	W-13	7.3	70.3	ND	ND	ND	BQL	ND	ND		ND	BQL	--
01/26/10	BYA-4	**7.1**	72.0	ND	--	ND	BQL	--	--		ND	0.31	--
01/26/10	W-13	**7.0**	69.4	ND	--	ND	BQL	--	--		ND	0.19	--
12/16/09	W-16	6.9	72.5	0.84	--	ND	BQL	--	--		ND	0.13	--
12/16/09	BYA-9	7.0	72.7	0.52	--	1.0	BQL	--	--		ND	0.34	--
11/18/09	BYA-4	6.7	71.8	ND	ND	ND	BQL	ND	ND		ND	0.32	95
11/18/09	BYA-9	7.1	72.3	ND	ND	ND	BQL	ND	ND		ND	BQL	100
10/29/09	W-16	6.9	72.3	0.47	--	ND	BQL	--	--		ND	0.70	--
10/29/09	BYA-9	7.1	72.9	ND	--	ND	BQL	--	--		ND	0.61	--
09/30/09	BYA-11	7.3	74.3	ND	--	ND	BQL	--	--		2.80	3.50	--
09/30/09	BYA-4	6.9	74.3	ND	--	ND	BQL	--	--		ND	0.50	--
08/19/09	BYA-11	7.1	70.2	ND	ND	ND	BQL	ND	ND		3.60	6.20	--
08/19/09	BYA-4	6.9	73.9	ND	ND	ND	BQL	ND	ND		ND	0.50	--
07/23/09	BYA-11	6.9	72.9	ND	--	ND	BQL	--	--		4.00	4.20	--
07/22/09	BYA-4	6.9	74.7	ND	--	ND	BQL	--	--		ND	0.40	--
06/18/09	HD-22	7.1	71.2	ND	--	ND	BQL	--	--		2.00	2.70	--
06/18/09	W-16	6.9	73.0	ND	--	ND	BQL	--	--		ND	0.62	--
05/26/09	HD-22	7.3	71.8	ND	ND	ND	BQL	ND	0.010		0.52	0.69	--
05/20/09	W-16	7.0	74.5	ND	ND	ND	BQL	ND	ND		ND	1.40	--
04/29/09	HD-22	7.4	71.6	ND	--	ND	BQL	--	--		4.80	8.40	--
04/29/09	W-16	6.8	72.5	ND	--	ND	BQL	--	--		ND	1.50	--
04/30/09	BYA-9	--	--	--	--	--	--	--	--		--	--	100
03/26/09	BYA-9	--	--	--	--	--	--	--	--		--	--	100
03/26/09	W-13	6.9	72.1	1.10	--	ND	BQL	--	--		3.00	0.81	--
03/24/09	BYA-4	6.8	71.8	0.70	--	ND	BQL	--	--		2.00	1.20	--
03/26/09	W-16	--	--	--	--	--	BQL	--	--		--	--	--
03/24/09	HD-22	7.1	71.1	ND	--	ND	BQL	--	--		3.60	10.00	--
02/25/09	BYA-9	--	--	--	--	--	--	--	--		--	--	100
02/25/09	W-13	**6.2**	70.2	ND	0.04	1.1	BQL	ND	ND		ND	0.65	--
02/25/09	BYA-4	**6.4**	71.4	0.56	ND	ND	BQL	ND	ND		1.60	0.74	--
02/25/09	W-16	--	--	--	--	--	--	--	--		--	--	--
02/25/09	HD-22	6.6	72.0	0.59	0.04	ND	BQL	ND	ND		2.40	6.30	--
01/30/09	BYA-9	--	--	--	--	--	--	--	--		--	--	**85**
01/29/09	W-13	6.7	70.9	ND	--	ND	BQL	--	--		ND	0.68	--
01/29/09	BYA-4	6.9	72.5	ND	--	ND	BQL	--	--		ND	0.70	--
01/30/09	W-16	--	--	--	--	--	--	--	--		--	--	--

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Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
01/29/09	HD-22	6.9	71.8	0.57	--	ND	**0.20**	--	--		11.00	21.00	--
12/29/08	W-16	--	--	--	--	--	--	--	--		--	--	100
12/17/08	W-16	6.6	69.1	BQL	--	BQL	BQL	--	--		BQL	1.10	--
12/17/08	BYA-9	6.6	67.5	BQL	--	BQL	BQL	--	--		BQL	0.80	--
11/19/08	W-16	7.1	70.2	0.42	BQL	BQL	BQL	BQL	BQL		2.00	0.50	90
11/19/08	BYA-9	6.6	72.7	BQL	BQL	BQL	BQL	BQL	BQL		2.40	1.60	75
10/06/08	W-16	6.8	72.5	--	--	--	--			--	--	--	--
10/06/08	BYA-9	6.7	73.6	--	--	--	--			--	--	--	--
09/10/08	BYA-4	6.8	73.8	--	--	--	--			--	--	--	--
09/10/08	BYA-11	7.1	74.1	--	--	--	--			--	--	--	--
08/26/08	BYA-4	6.8	72.5	BQL	BQL	BQL	BQL			BQL	BQL	2.20	--
08/26/08	BYA-11	7.3	72.5	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
07/03/08	BYA-4	6.7	74.5	--	--	--	--			--	--	--	--
07/03/08	BYA-11	7.0	79.7	--	--	--	--			--	--	--	--
06/10/08	W-16	6.6	74.1	--	--	--	--			--	--	--	--
05/19/08	W-16	6.8	74.1	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
04/04/08	W-16	6.6	73.0	--	--	--	--			--	--	--	--
03/12/08	W-13	6.5	70.7	--	--	--	--			--	--	--	--
03/12/08	BYA-4	6.7	73.2	--	--	--	--			--	--	--	--
03/12/08	HD-22	7.0	71.4	--	--	--	--			--	--	--	--
02/21/08	W-13	6.7	70.0	BQL	BQL	BQL	BQL			BQL	BQL	0.10	--
02/21/08	BYA-4	7.0	70.9	BQL	BQL	BQL	BQL			BQL	BQL	0.30	--
02/21/08	HD-22	7.2	69.3	BQL	BQL	BQL	BQL			BQL	BQL	3.40	--
01/03/08	W-13	6.5	69.8	--	--	--	--			--	--	--	--
01/03/08	BYA-4	6.7	71.4	--	--	--	--			--	--	--	--
01/03/08	HD-22	6.9	67.6	--	--	--	--			--	--	--	--
12/11/07	W-16	6.6	70.9	--	--	--	--			--	--	--	--
12/11/07	BYA-9	6.5	71.6	--	--	--	--			--	--	--	--
12/11/07	HD-32	6.8	71.2	--	--	--	--			--	--	--	--
11/26/07	W-16	7.1	71.1	BQL	BQL	BQL	BQL			BQL	BQL	0.20	100
11/26/07	BYA-9	6.9	72.9	BQL	BQL	BQL	BQL			BQL	BQL	0.60	100
11/26/07	HD-32	7.8	75.6	BQL	BQL	BQL	BQL			BQL	BQL	0.20	100
10/05/07	W-16	6.6	72.9	--	--	--	--			--	--	--	--
10/05/07	BYA-9	6.5	72.3	--	--	--	--			--	--	--	--
10/05/07	HD-32	7.0	74.5	--	--	--	--			--	--	--	--
09/11/07	BYA-4	6.7	74.3	--	--	--	--			--	--	--	--
09/11/07	BYA-11	6.9	73.8	--	--	--	--			--	--	--	--
08/22/07	BYA-4	6.9	73.0	BQL	BQL	BQL	BQL			BQL	BQL	3.00	--
08/22/07	BYA-11	7.3	73.2	BQL	BQL	BQL	BQL			BQL	BQL	0.24	--
08/22/07	W-16	--	--	--	--	--	BQL			BQL	--	--	--
08/22/07	W-13	--	--	--	--	--	BQL			BQL	--	--	--
08/22/07	BYA-9	--	--	--	--	--	BQL			BQL	--	--	--
08/22/07	HD-22	--	--	--	--	--	BQL			BQL	--	--	--
07/27/07	HD-22	--	--	--	--	--	BQL			--	--	--	--
07/16/07	W-16	--	--	--	--	--	--			BQL	--	--	--
07/16/07	HD-22	--	--	--	--	--	BQL			--	--	--	--
07/12/07	HD-22	--	--	--	--	--	BQL			--	--	--	--
07/06/07	BYA-4	6.7	72.1	--	--	--	--			--	--	--	--
07/06/07	BYA-11	6.9	74.3	--	--	--	--			--	--	--	--
06/25/07	HD-22	--	--	--	--	--	BQL			--	--	--	--
06/25/07	W-16	--	--	--	--	--	--			BQL	--	--	--
06/05/07	W-16	6.6	73.0	--	--	--	--			--	--	--	--
05/16/07	W-16	6.7	72.0	BQL	BQL	BQL	BQL			**0.15**	BQL	0.20	--
05/02/07	HD-22	--	--	--	--	--	0.10			--	--	--	--

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
04/12/07	HD-22	--	--	--	--	--	**0.40**			--	--	--	--
04/12/07	W-16	6.5	72.9	--	--	--	--			--	--	--	--
03/15/07	W-13	**6.4**	69.3	--	--	--	--			--	--	--	--
03/15/07	BYA-4	6.5	71.8	--	--	--	--			--	--	--	--
03/15/07	HD-22	6.9	70.7	--	--	--	--			--	--	--	--
02/28/07	W-13	6.6	70.3	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
02/28/07	BYA-4	7.0	71.6	BQL	BQL	BQL	BQL			BQL	BQL	2.30	--
02/28/07	HD-22	7.1	70.3	BQL	BQL	BQL	**0.50**			BQL	11.00	10.00	--
01/11/07	W-13	6.7	68.5	--	--	--	--			--	--	--	--
01/11/07	BYA-4	6.9	70.9	--	--	--	--			--	--	--	--
01/11/07	HD-22	7.4	68.5	--	--	--	--			--	--	--	--
12/21/06	W-16	6.8	71.1	--	--	--	--			--	--	--	--
12/21/06	BYA-9	6.7	70.9	--	--	--	--			--	--	--	--
11/28/06	W-16	6.6	71.6	BQL	BQL	BQL	BQL			BQL	BQL	0.40	100
11/28/06	BYA-9	6.5	72.7	BQL	BQL	BQL	BQL			BQL	BQL	0.60	100
10/20/06	W-16	7.3	73.0	--	--	--	--			--	--	--	--
10/20/06	BYA-9	7.1	72.3	--	--	--	--			--	--	--	--
09/20/06	W-16	8.3	73.0	--	--	--	--			--	--	--	--
08/24/06	W-16	6.9	74.3	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
07/25/06	W-16	7.2	74.1	--	--	--	--			--	--	--	--
06/22/06	BYA-11	7.6	73.4	--	--	--	--			--	--	--	--
06/22/06	BYA-4	7.4	75.7	--	--	--	--			--	--	--	--
05/18/06	BYA-11	7.4	71.1	BQL	BQL	BQL	BQL			BQL	BQL	1.50	--
05/18/06	BYA-4	7.2	70.2	BQL	BQL	BQL	BQL			BQL	BQL	0.80	--
04/25/06	W-16	7.3	70.9	--	--	--	--			--	--	--	--
03/16/06	HD-22	7.4	70.2	--	--	--	--			--	--	--	--
03/16/06	W-13	7.3	70.5	--	--	--	--			--	--	--	--
03/16/06	BYA-4	7.3	72.5	--	--	--	--			--	--	--	--
02/21/06	HD-22	7.3	70.0	BQL	BQL	BQL	BQL			BQL	BQL	4.00	--
02/21/06	W-13	6.9	70.5	BQL	BQL	BQL	BQL			BQL	BQL	0.25	--
02/21/06	BYA-4	7.0	72.1	BQL	BQL	BQL	BQL			BQL	BQL	0.80	--
01/27/06	HD-22	7.3	69.4	--	--	--	--			--	--	--	--
01/27/06	W-13	7.2	70.7	--	--	--	--			--	--	--	--
01/27/06	BYA-4	7.3	73.4	--	--	--	--			--	--	--	--
12/22/05	W-16	7.2	71.6	--	--	--	--			--	--	--	--
12/22/05	BYA-9	7.0	72.7	--	--	--	--			--	--	--	--
11/28/05	W-16	6.8	72.1	BQL	BQL	3.2	BQL			BQL	BQL	0.32	90
11/28/05	BYA-9	7.3	72.3	BQL	BQL	4.9	BQL			BQL	BQL	0.28	100
10/20/05	W-16	6.8	72.1	--	--	--	--			--	--	--	--
10/20/05	BYA-9	6.8	72.5	--	--	--	--			--	--	--	--
09/01/05	BYA-4	7.0	74.1	--	--	--	--			--	--	--	--
08/24/05	BYA-4	7.1	72.0	BQL	BQL	BQL	BQL			BQL	BQL	0.70	--
07/29/05	BYA-4	7.5	73.8	--	--	--	--			--	--	--	--
06/29/05	W-16	7.1	73.0	--	--	--	--			--	--	--	--
06/29/05	BYA-11	7.8	75.7	--	--	--	--			--	--	--	--
05/17/05	W-16	6.6	72.7	BQL	BQL	BQL	BQL			BQL	BQL	0.10	--
05/17/05	BYA-11	7.1	73.4	BQL	0.13	1.7	BQL			BQL	BQL	0.60	--
04/19/05	W-16	7.0	72.5	--	--	--	--			--	--	--	--
04/19/05	BYA-11	7.4	73.0	--	--	--	--			--	--	--	--
03/21/05	W-13	7.2	72.1	--	--	--	--			--	--	--	--
03/21/05	BYA-4	7.1	71.1	--	--	--	--			--	--	--	--
03/21/05	HD-22	7.4	70.5	--	--	--	--			--	--	--	--
02/28/05	BYA-4	7.1	71.4	BQL	BQL	BQL	BQL			BQL	BQL	0.37	--
02/28/05	W-13	7.1	70.3	BQL	BQL	BQL	BQL			BQL	BQL	0.16	--

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
02/28/05	HD-22	7.3	70.5	BQL	BQL	BQL	BQL			BQL	BQL	0.72	--
01/27/05	BYA-4	7.2	71.1	--	--	--	--			--	--	--	--
01/27/05	W-13	7.1	70.0	--	--	--	--			--	--	--	--
01/27/05	HD-22	7.5	69.4	--	--	--	--			--	--	--	--
12/17/04	W-16	7.3	69.4	--	--	--	--			--	--	--	--
11/17/04	W-16	7.0	--	BQL	BQL	3.1	BQL			BQL	BQL	0.22	100
11/03/04	W-16	--	--	--	--	--	--			BQL	--	--	--
10/21/04	HD-22	7.5	72.0	--	--	--	--			--	--	--	--
09/29/04	W-16	--	--	--	--	--	--			BQL	--	--	--
09/21/04		7.4	75.0	--	--	--	--			--	--	--	--
08/26/04		7.2	75.9	BQL	BQL	BQL	BQL			**0.25**	BQL	2.70	--
07/30/04		7.0	78.1	--	--	--	--			--	--	--	--
06/30/04		9.0	73.0	--	--	--	--			--	--	--	--
05/27/04		7.7	70.0	BQL	BQL	BQL	BQL			BQL	10.00	0.70	--
PORT 5A													
12/16/09	BYA-10	7.4	70.7	0.63	--	ND	BQL	--	--		6.40	9.10	--
11/18/09	BYA-10	7.0	70.5	0.93	ND	ND	BQL	ND	ND		ND	BQL	100
10/29/09	BYA-10	7.1	71.4	ND	--	ND	BQL	--	--		ND	0.50	--
12/11/07	BYA-10	6.7	69.8	--	--	--	--			--	--	--	--
11/26/07	BYA-10	7.4	71.2	BQL	BQL	BQL	BQL			BQL	BQL	0.20	95
10/05/07	BYA-10	6.7	69.8	--	--	--	--			--	--	--	--
06/22/06	BYA-10	7.5	73.6	--	--	--	--			--	--	--	--
05/18/06	BYA-10	7.3	72.1	BQL	BQL	BQL	BQL			BQL	BQL	0.70	--
09/01/05	BYA-10	7.1	73.0	--	--	--	--			--	--	--	--
08/24/05	BYA-10	7.2	73.0	BQL	BQL	2.8	BQL			BQL	BQL	0.60	--
07/29/05	BYA-10	7.5	74.3	--	--	--	--			--	--	--	--
12/17/04	BYA-11	7.5	71.1	--	--	--	--			--	--	--	--
11/17/04	BYA-9	6.9	--	BQL	BQL	3.8	BQL			BQL	BQL	3.00	100
11/03/04	BYA-10	--	--	--	--	--	--			BQL	--	--	--
10/21/04	BYA-10	7.5	73.9	--	--	--	--			--	--	--	--
09/29/04	BYA-10	--	--	--	--	--	--			BQL	--	--	--
09/21/04		7.4	75.9	--	--	--	--			--	--	--	--
08/26/04		7.2	78.1	BQL	BQL	BQL	BQL			**0.25**	BQL	0.10	--
07/30/04		7.0	80.1	--	--	--	--			--	--	--	--
06/30/04		8.0	73.9	--	--	--	--			--	--	--	--
05/27/04		7.5	73.9	BQL	BQL	BQL	BQL			BQL	BQL	BQL	--
PORT 6													
06/30/10	W-18	7.2	72.9	1.50	--	ND	BQL	--	--		4.00	5.40	--
05/25/10	W-18	7.3	71.4	0.82	ND	ND	BQL	ND	ND		ND	0.12	--
04/29/10	W-18	7.2	73.0	0.97	--	ND	BQL	--	--		7.20	12.00	--
03/30/10	BYA-3	7.3	70.3	0.76	--	ND	BQL	--	--		ND	0.11	--
03/30/10	HD-12	7.2	71.4	1.10	--	ND	BQL	--	--		1.60	0.24	--
02/24/10	BYA-3	7.3	72.9	ND	ND	1.0	BQL	ND	ND		ND	0.12	--
02/24/10	HD-12	7.1	69.6	ND	ND	1.0	BQL	ND	ND		ND	0.25	--
01/26/10	BYA-3	7.4	73.0	0.68	--	ND	BQL	--	--		2.00	0.57	--
01/26/10	HD-12	7.3	70.5	1.30	--	ND	BQL	--	--		ND	0.14	--
12/16/09	W-18	7.2	73.2	0.82	--	ND	BQL	--	--		ND	1.80	--
12/16/09	HD-11	7.2	70.0	ND	--	BQL	ND	--	--		ND	0.84	--
11/18/09	W-18	6.9	72.1	ND	ND	ND	BQL	ND	ND		1.2	1.90	100
11/18/09	HD-11	7.0	69.8	ND	ND	ND	BQL	ND	ND		ND	BQL	100
10/27/09	W-18	7.1	73.9	ND	--	ND	BQL	--	--		2.0	2.80	--
10/27/09	HD-11	7.1	71.1	ND	--	ND	BQL	--	--		ND	0.57	--
09/30/09	BYA-2	7.1	74.1	ND	--	ND	BQL	--	--		2.00	0.90	--
09/30/09	HD-12	7.1	74.1	0.42	--	ND	BQL	--	--		ND	0.40	--

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
09/30/09	HD-10	7.1	73.4	ND	--	ND	BQL	--	--		ND	0.40	--
08/19/09	BYA-2	7.1	73.8	ND	ND	ND	BQL	ND	ND		1.20	2.80	--
08/19/09	HD-12	7.1	72.1	1.60	ND	ND	BQL	ND	ND		ND	0.60	--
08/19/09	HD-10	7.2	70.9	0.56	ND	ND	BQL	ND	ND		ND	0.50	--
07/22/09	BYA-2	7.1	73.2	ND	--	ND	BQL	--	--		2.80	0.80	--
07/22/09	HD-12	7.1	73.0	1.70	--	ND	BQL	--	--		1.20	0.50	--
07/22/09	HD-10	7.1	72.1	ND	--	ND	BQL	--	--		ND	0.40	--
06/18/09	W-18	6.9	74.3	0.50	--	ND	BQL	--	--		ND	1.40	--
05/20/09	W-18	6.9	73.6	0.65	ND	ND	BQL	ND	0.006		4.80	6.60	--
04/29/09	W-18	7.1	73.9	0.51	--	ND	BQL	--	--		2.00	3.40	90
03/24/09	HD-12	7.1	72.3	0.86	--	ND	BQL	--	--		1.20	0.85	--
03/24/09	BYA-3	6.9	79.0	0.44	--	ND	BQL	--	--		2.40	2.20	--
03/26/09	W-18	--	--	--	--	--	--	--	--		--	--	100
02/25/09	HD-12	**6.3**	71.8	0.69	0.04	ND	BQL	ND	ND		ND	0.61	--
02/25/09	BYA-3	6.6	80.4	0.59	0.04	1.2	BQL	ND	ND		ND	0.68	--
02/25/09	W-18	--	--	--	--	--	--	--	--		--	--	100
01/29/09	HD-12	7.0	72.5	0.52	--	ND	BQL	--	--		ND	0.45	--
01/29/09	BYA-3	6.9	81.3	0.67	--	ND	BQL	--	--		ND	0.67	--
01/30/09	W-18	--	--	--	--	--	--	--	--		--	--	**85**
12/29/08	W-18	--	--	--	--	--	--	--	--		--	--	100
06/10/08	HD-11	7.3	71.8	--	--	--	--			--	--	--	--
06/10/08	W-18	6.8	74.8	--	--	--	--			--	--	--	--
05/19/08	HD-11	7.6	73.0	BQL	BQL	BQL	BQL			BQL	BQL	0.80	--
05/19/08	W-18	7.0	74.3	BQL	BQL	BQL	BQL			BQL	BQL	1.60	--
04/04/08	HD-11	7.4	68.9	--	--	--	--			--	--	--	--
04/04/08	W-18	6.8	73.2	--	--	--	--			--	--	--	--
03/12/08	HD-12	6.9	71.4	--	--	--	--			--	--	--	--
03/12/08	BYA-3	7.0	82.0	--	--	--	--			--	--	--	--
02/21/08	HD-12	7.1	70.3	BQL	BQL	BQL	BQL			BQL	BQL	0.10	--
02/21/08	BYA-3	7.2	78.1	BQL	BQL	BQL	BQL			BQL	8.00	0.30	--
01/03/08	HD-12	6.8	70.2	--	--	--	--			--	--	--	--
01/03/08	BYA-3	6.8	81.9	--	--	--	--			--	--	--	--
12/11/07	W-18	6.7	70.7	--	--	--	--			--	--	--	--
12/11/07	HD-10	7.0	68.5	--	--	--	--			--	--	--	--
11/26/07	W-18	7.4	72.9	BQL	BQL	BQL	BQL			BQL	BQL	2.50	95
11/26/07	HD-10	7.7	69.8	BQL	BQL	BQL	BQL			BQL	BQL	0.20	100
10/05/07	W-18	6.8	72.5	--	--	--	--			--	--	--	--
10/05/07	HD-10	6.8	70.2	--	--	--	--			--	--	--	--
09/11/07	BYA-2	6.6	72.7	--	--	--	--			--	--	--	--
09/11/07	BYA-15	7.1	69.4	--	--	--	--			--	--	--	--
09/11/07	HD-12	6.8	72.9	--	--	--	--			--	--	--	--
08/22/07	BYA-2	6.7	73.4	BQL	BQL	BQL	BQL			BQL	BQL	0.80	--
08/22/07	BYA-15	7.4	69.1	BQL	BQL	BQL	BQL			BQL	5.20	4.00	--
08/22/07	HD-12	7.2	74.1	BQL	BQL	BQL	BQL			BQL	BQL	0.19	--
07/06/07	BYA-2	6.7	72.9	--	--	--	--			--	--	--	--
07/06/07	BYA-15	6.5	74.1	--	--	--	--			--	--	--	--
07/06/07	HD-12	6.8	73.6	--	--	--	--			--	--	--	--
06/05/07	W-18	6.6	73.2	--	--	--	--			--	--	--	--
06/05/07	HD-11	7.4	69.6	--	--	--	--			--	--	--	--
06/05/07	HD-43	7.4	71.1	--	--	--	--			--	--	--	--
05/16/07	W-18	6.9	72.0	BQL	BQL	BQL	BQL			BQL	BQL	1.50	--
05/16/07	HD-11	7.4	70.9	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
05/16/07	HD-43	7.7	72.3	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
04/12/07	W-18	6.7	73.8	--	--	--	--			--	--	--	--

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
04/12/07	HD-11	7.2	71.6	--	--	--	--			--	--	--	--
04/12/07	HD-12	6.8	72.0	--	--	--	--			--	--	--	--
03/15/07	BYA-3	6.7	70.5	--	--	--	--			--	--	--	--
02/28/07	BYA-3	7.1	71.2	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
01/11/07	BYA-3	6.7	70.5	--	--	--	--			--	--	--	--
12/21/06	W-18	7.0	72.1	--	--	--	--			--	--	--	--
12/21/06	HD-12	7.1	70.5	--	--	--	--			--	--	--	--
11/28/06	W-18	6.9	73.9	BQL	BQL	BQL	BQL			BQL	9.00	15.00	100
11/28/06	HD-12	7.0	72.3	BQL	BQL	BQL	BQL			BQL	BQL	0.10	100
10/20/06	W-18	7.3	72.9	--	--	--	--			--	--	--	--
10/20/06	HD-12	8.0	73.9	--	--	--	--			--	--	--	--
09/20/06	W-18	8.2	74.8	--	--	--	--			--	--	--	--
09/20/06	HD-12	8.0	72.5	--	--	--	--			--	--	--	--
08/24/06	W-18	7.0	74.7	BQL	BQL	BQL	BQL			BQL	BQL	4.40	--
08/24/06	HD-12	7.2	75.4	BQL	BQL	BQL	BQL			BQL	BQL	0.40	--
07/25/06	W-18	7.4	77.5	--	--	--	--			--	--	--	--
07/25/06	HD-12	7.7	74.3	--	--	--	--			--	--	--	--
06/22/06	HD-10	7.6	72.3	--	--	--	--			--	--	--	--
06/22/06	BYA-2	7.2	75.0	--	--	--	--			--	--	--	--
05/18/06	HD-10	7.3	69.8	BQL	BQL	BQL	BQL			BQL	BQL	0.30	--
05/18/06	BYA-2	7.0	71.8	5.30	BQL	BQL	BQL			BQL	8.00	6.70	--
04/25/06	HD-12	7.5	72.0	--	--	--	--			--	--	--	--
04/25/06	W-18	7.5	73.6	--	--	--	--			--	--	--	--
03/16/06	BYA-3	7.4	75.4	--	--	--	--			--	--	--	--
02/21/06	BYA-3	7.3	73.2	BQL	BQL	BQL	BQL			BQL	BQL	0.30	--
01/27/06	BYA-3	7.4	73.6	--	--	--	--			--	--	--	--
12/22/05	W-18	7.3	73.8	--	--	--	--			--	--	--	--
12/22/05	HD-12	7.3	70.3	--	--	--	--			--	--	--	--
11/28/05	W-18	7.1	72.7	BQL	BQL	4.1	BQL			BQL	BQL	0.66	95
11/28/05	HD-12	7.0	73.0	BQL	BQL	6.1	BQL			BQL	BQL	0.32	100
10/20/05	W-18	7.0	73.9	--	--	--	--			--	--	--	--
10/20/05	HD-12	7.1	70.9	--	--	--	--			--	--	--	--
09/01/05	BYA-2	6.9	72.9	--	--	--	--			--	--	--	--
08/24/05	BYA-2	7.0	72.9	BQL	BQL	BQL	BQL			BQL	BQL	0.19	--
07/29/05	BYA-2	7.0	73.9	--	--	--	--			--	--	--	--
06/29/05	HD-12	7.3	73.0	--	--	--	--			--	--	--	--
06/29/05	W-18	7.3	74.5	--	--	--	--			--	--	--	--
05/17/05	HD-12	7.6	72.9	BQL	BQL	1.2	BQL			BQL	BQL	0.30	--
05/17/05	BYA-2	7.3	72.7	BQL	BQL	BQL	BQL			BQL	BQL	2.10	--
04/19/05	HD-12	7.3	72.1	--	--	--	--			--	--	--	--
04/19/05	W-18	7.3	73.8	--	--	--	--			--	--	--	--
03/21/05	BYA-3	7.4	73.6	--	--	--	--			--	--	--	--
02/28/05	BYA-3	7.6	70.9	BQL	BQL	BQL	BQL			BQL	BQL	0.19	--
01/27/05	BYA-3	7.5	67.1	--	--	--	--			--	--	--	--
12/17/04	W-18	7.3	70.2	--	--	--	--			--	--	--	--
11/17/04	W-18	7.0	--	BQL	BQL	BQL	BQL			BQL	6.00	8.10	95
11/03/04	W-18	--	--	--	--	--	--			BQL	--	--	--
10/21/04	W-18	7.0	74.8	--	--	--	--			--	--	--	--
09/29/04	W-18	--	--	--	--	--	--			BQL	--	--	--
09/21/04		8.5	73.9	--	--	--	--			--	--	--	--
08/26/04		8.3	77.0	BQL	BQL	BQL	BQL			**0.30**	7.00	0.26	--
07/30/04		8.0	81.0	--	--	--	--			--	--	--	--
06/30/04		8.0	71.1	--	--	--	--			--	--	--	--

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
05/27/04		7.7	71.1	BQL	BQL	BQL	BQL			BQL	BQL	BQL	--
PORT 7													
06/30/10	HD-7	7.2	70.2	1.20		ND	BQL	--	--		2.40	4.40	--
05/25/10	HD-7	7.2	72.5	0.85	ND	ND	BQL	ND	ND		ND	BQL	--
04/29/10	HD-7	7.3	70.5	1.80		ND	BQL	--	--		44.00	11.00	--
12/11/07	HD-7	7.5	69.4	--	--	--	--			--	--	--	--
11/26/07	HD-7	8.2	72.1	BQL	BQL	BQL	BQL			BQL	BQL	0.30	95
10/05/07	HD-7	7.1	71.8	--	--	--	--			--	--	--	--
06/29/05	HD-7	7.7	72.3	--	--	--	--			--	--	--	--
05/17/05	HD-7	7.6	71.6	BQL	0.09	BQL	BQL			BQL	BQL	0.10	--
04/19/05	HD-7	7.8	70.7	--	--	--	--			--	--	--	--
12/17/04	HD-12	7.3	70.9	--	--	--	--			--	--	--	--
11/17/04	HD-12	7.2	--	BQL	BQL	1.1	BQL			BQL	BQL	BQL	95
10/21/04	HD-7	7.9	72.5	--	--	--	--			--	--	--	--
09/21/04		8.1	78.1	--	--	--	--			--	--	--	--
08/25/04		7.8	77.0	BQL	BQL	BQL	BQL			BQL	BQL	0.17	--
07/30/04		8.0	84.0	--	--	--	--			--	--	--	--
06/30/04		8.0	73.9	--	--	--	--			--	--	--	--
05/27/04		8.0	72.0	BQL	BQL	BQL	BQL			BQL	BQL	BQL	--
PORT 8													
Discharge to port 8 diverted to port 9.													
PORT 9													
06/30/10	HD-23	7.2	70.2	1.20	--	ND	BQL	--	--		2.40	4.40	--
05/25/10	HD-23	7.2	72.5	0.85	ND	ND	BQL	ND	ND		ND	BQL	--
04/29/10	HD-23	7.3	70.5	1.80	--	ND	BQL	--	--		44.00	11.00	--
03/31/10	HD-6	7.3	71.8	ND	--	ND	BQL	--	--		ND	ND	--
02/24/10	HD-6	7.3	68.2	ND	ND	1.90	BQL	ND	ND		ND	0.14	--
01/26/10	HD-6	7.4	66.7	ND	--	ND	BQL	--	--		ND	0.13	--
12/16.09	HD-23	7.3	70.5	ND	--	ND	BQL	--	--		ND	0.12	--
11/18/09	HD-23	7.0	69.6	ND	ND	ND	BQL	ND	ND		ND	BQL	100
10/27/09	HD-23	7.0	72.5	ND	--	ND	BQL	--	--		ND	0.50	--
09/30/09	HD-24	7.2	73.6	ND	--	ND	BQL	--	--		ND	0.30	--
08/19/09	HD-24	7.9	73.6	0.84	ND	ND	BQL	ND	ND		ND	0.50	--
07/22/09	HD-24	7.2	72.9	0.62	--	ND	BQL	--	--		ND	0.40	--
06/18/09	HD-5	7.1	72.1	0.57	--	ND	BQL	--	--		ND	0.67	--
06/18/09	HD-23	7.1	72.1	0.60	--	ND	BQL	--	--		ND	0.66	--
05/26/09	HD-5	7.3	72.9	2.50	ND	ND	BQL	ND	0.010		2.80	1.30	--
05/26/09	HD-23	7.2	72.3	0.43	ND	ND	BQL	ND	ND		3.20	1.50	--
04/30/09	HD-5	7.2	72.3	ND	--	ND	BQL	--	--		ND	1.30	--
04/30/09	HD-23	7.2	72.5	ND	--	ND	BQL	--	--		ND	1.20	--
03/24/09	HD-6	7.0	70.2	0.67	--	ND	BQL	--	--		1.60	1.10	--
02/25/09	HD-6	6.6	71.2	ND	ND	ND	BQL	ND	ND		1.60	0.73	--
01/29/09	HD-6	7.0	71.4	ND	--	ND	BQL	--	--		ND	0.47	--
06/10/08	HD-23	7.0	71.2	--	--	--	--			--	--	--	--
05/19/08	HD-23	7.2	71.4	2.00	BQL	BQL	BQL			BQL	BQL	0.30	--
04/04/08	HD-23	6.9	70.5	--	--	--	--			--	--	--	--
03/12/08	HD-24	7.4	70.7	--	--	--	--			--	--	--	--
02/21/08	HD-24	7.7	68.9	BQL	BQL	BQL	BQL			BQL	BQL	1.00	--
01/03/08	HD-24	7.3	68.9	--	--	--	--			--	--	--	--
09/20/07	Port 9 east	--	--	--	--	--	BQL			--	--	--	--
09/20/07	port 9 west	--	--	--	--	--	BQL			--	--	--	--
09/11/07	HD-5	7.3	71.6	--	--	--	--			--	--	--	--

TABLE 1 - SUMMARY OF ANALYTICAL DATA

Date Sampled	INORGANIC NON-METALS (Aqueous Matrix)												
	Well/Hydrauger Identification	pH	Temperature	Biochemical Oxygen Demand	Surfactants (MBAS)	Oil & Grease	Settleable Solids	Phenols	Sulfides	Residual Chlorine	Total Suspended Solids	Turbidity	Acute Toxicity
Units:		*pH units*	*^{O}F*	*mg/L*	*mg/L*	*mg/L*	*mL/L*			*mg/L*	*mg/L*	*NTU*	*% Survival*
08/22/07	HD-5	7.8	73.2	2.80	BQL	BQL	**0.20**			BQL	10.00	2.50	--
07/06/07	HD-5	7.3	71.4	--	--	--	--			--	--	--	--
06/05/07	HD-6	6.9	69.6	--	--	--	--			--	--	--	--
06/05/07	HD-23	6.8	70.3	--	--	--	--			--	--	--	--
05/16/07	HD-6	7.1	70.5	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
05/16/07	HD-23	6.9	71.1	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
04/12/07	HD-6	6.9	70.5	--	--	--	--			--	--	--	--
04/12/07	HD-23	6.8	71.2	--	--	--	--			--	--	--	--
12/21/06	HD-23	7.1	66.4	--	--	--	--			--	--	--	--
11/28/06	HD-23	7.0	71.2	BQL	BQL	BQL	BQL			BQL	BQL	0.10	100
10/20/06	HD-23	8.2	71.8	--	--	--	--			--	--	--	--
09/20/06	HD-23	8.1	71.6	--	--	--	--			--	--	--	--
09/20/06	HD-6	7.9	73.0	--	--	--	--			--	--	--	--
08/24/06	HD-23	7.1	73.4	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
08/24/06	HD-6	7.2	72.0	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
07/25/06	HD-23	7.6	72.1	--	--	--	--			--	--	--	--
07/25/06	HD-6	7.6	74.8	--	--	--	--			--	--	--	--
06/22/06	HD-24	7.7	72.1	--	--	--	--			--	--	--	--
05/18/06	HD-24	7.8	69.4	BQL	BQL	BQL	BQL			BQL	9.00	4.00	--
04/25/06	HD-6	7.5	69.8	--	--	--	--			--	--	--	--
04/25/06	HD-23	7.5	70.9	--	--	--	--			--	--	--	--
03/16/06	HD-5	7.5	70.5	--	--	--	--			--	--	--	--
02/21/06	HD-5	7.8	70.2	5.80	BQL	BQL	BQL			BQL	BQL	0.75	--
01/27/06	HD-5	7.5	69.3	--	--	--	--			--	--	--	--
12/22/05	HD-23	7.3	68.7	--	--	--	--			--	--	--	--
11/28/05	HD-23	7.8	73.4	BQL	BQL	5.8	BQL			BQL	BQL	0.52	100
10/20/05	HD-23	7.1	68.7	--	--	--	--			--	--	--	--
06/29/05	HD-23	7.7	73.6	--	--	--	--			--	--	--	--
05/17/05	HD-6	7.1	71.2	BQL	BQL	BQL	BQL			BQL	BQL	0.20	--
04/19/05	HD-23	7.3	70.3	--	--	--	--			--	--	--	--
12/17/04	HD-23	7.3	70.2	--	--	--	--			--	--	--	--
11/17/04	HD-23	7.2	--	BQL	BQL	7.1	BQL			BQL	36.00	2.60	95
10/21/04	HD-24	8.1	73.0	--	--	--	--			--	--	--	--
09/21/04		8.1	77.0	--	--	--	--			--	--	--	--
08/25/04		8.0	79.0	BQL	BQL	BQL	BQL			BQL	BQL	0.16	--
07/30/04		7.0	77.0	--	--	--	--			--	--	--	--
06/30/04		8.0	73.0	--	--	--	--			--	--	--	--
05/27/04		7.7	72.0	BQL	BQL	BQL	BQL			BQL	20.00	0.60	--
Effluent Limit. (Daily Max.)		*6.5-8.5*	*100 F*	*30.00*	*0.50*	*15.0*	*0.30*	*0.100*	*1.00*	*0.10*	*150.00*	*150.00*	*--*
Effluent Limit. (Monthly Avg.)		*6.5-8.5*	*---*	*20.00*	*---*	*10.0*	*0.10*	*---*	*---*	*---*	*50.00*	*50.00*	*--*
Quantification Limit		*See laboratory report for detection limits*											

BQL: below practical quantification limit --: not tested

Prepared For: Fugro West, Inc.
4820 McGrath Street, Suite #100
Ventura, CA 93003-7778

November 6, 2009

ATTENTION: Alexis Spencer

Laboratory No: 092697
Date Received: 29-OCT-09
Project: Big Rock Mesa NPDES
Project No: 3399.006.043

Sampled By: Client
ID: See Below

RESULTS

On October 29, 2009, four (4) samples were received for analysis by Capco Analytical Services, Inc. The samples were identified and assigned the lab numbers listed below. This report consists of 5 pages excluding the cover letter and the Chain of Custody.

SAMPLE DESCRIPTION	CAS LAB NUMBER
W-16 (S)	09269701
BYA-9 (S)	09269702
BYA-10 (SA)	09269703
BYA-14 (IA)	09269704

Alin E. Repede, MS
Director - Analytical Operations

Client: Fugro West, Inc.
CAS LAB NO: 092697
Analyst: GM

Date Sampled: 10/29/09
Date Received: 10/29/09
Date Analyzed: 10/30/09
Sample Matrix: Water

OIL & GREASE ANALYSIS
EPA Method 1664

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09269701	W-16	ND	1	1	5
09269702	BYA-9	ND	1	1	5
09269703	BYA-10	ND	1	1	5
09269704	BYA-14	ND	1	1	5
092697-MB	Method Blank	ND	1	1	5

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092697
Analyst: AN

Date Sampled: 10/29/09
Date Received: 10/29/09
Date Analyzed: 10/30/09
Sample Matrix: Water

SETTLEABLE SOLIDS ANALYSIS
SM 2540 F

CAS Lab #	Sample ID	RESULTS (ml/L)	Dilution Factor	PQL (ml/L)
09269701	W-16	BQL	1	0.1
09269702	BYA-9	BQL	1	0.1
09269703	BYA-10	BQL	1	0.1
09269704	BYA-14	BQL	1	0.1

PQL: Practical Quantitation Limit
BQL: Below Practical Quantitation Limit

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092697
Analyst: AN

Date Sampled: 10/29/09
Date Received: 10/29/09
Date Analyzed: 10/30/09
Sample Matrix: Water

TURBIDITY ANALYSIS
EPA Method 180.1

CAS Lab #	Sample ID	RESULTS (NTU)	Dilution Factor	PQL (NTU)
09269701	W-16	0.70	1	0.1
09269702	BYA-9	0.61	1	0.1
09269703	BYA-10	0.50	1	0.1
09269704	BYA-14	0.42	1	0.1

PQL: Practical Quantitation Limit

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092674
Analyst: AN

Date Sampled: 10/29/09
Date Received: 10/29/09
Date Analyzed: 11/04/09
Sample Matrix: Water

TOTAL SUSPENDED SOLIDS ANALYSIS
SM 2540 D

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09269701	W-16	ND	1	1	5
09269702	BYA-9	ND	1	1	5
09269703	BYA-10	ND	1	1	5
09269704	BYA-14	ND	1	1	5
092697-MB	Method Blank	ND	1	1	5

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092697
Analyst: AN

Date Sampled: 10/29/09
Date Received: 10/29/09
Date Analyzed: 10/30/09
Sample Matrix: Water

BIOCHEMICAL OXYGEN DEMAND ANALYSIS
SM 5210 B

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09269701	W-16	0.47	1	0.4	2
09269702	BYA-9	ND	1	0.4	2
09269703	BYA-10	ND	1	0.4	2
09269704	BYA-14	0.53	1	0.4	2
092697-MB	Method Blank	ND	1	0.4	2

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue
Ventura, CA 93003
(805) 644-1095 Fax 644-9947

CHAIN OF CUSTODY RECORD

REPORT
Company: Fugro West, Inc
Fax: 805 650 7010
Address: 4820 McGrath St. Suite 100, Ventura CA 93001
Phone: 805 650 7000 Contact: Alexis Spencer

BILL TO: P.O.#
Company
Address
Phone Contact

PROJ. NO: 3399.006.03
PROJECT NAME: BIG ROCK MESA NPDES

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

092697

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #/TYPE	ANALYSIS: O&G	BOD	Settl. Solids, TSS, Turb.	REMARKS
	10-29-09	14:00			W-16	/				2/P				T=22.4 pH=6.93
	↓	14:15			B4A-9									22.7 pH=7.10
		14:45			B4A-10									21.9 7.05
		15:00			B4A-14									22.1 6.91

CHECK ONE BOX:
DISPOSE SAMPLES
RETURN SAMPLES

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	10-29-09 15:53				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time		
			10/29/9 1553		

TURN AROUND TIME

24 Hr.		5 Day	
48 Hr.		Standard	X
72 Hr.		Other	

WHITE COPY CANARY COPY PINK COPY

Prepared For: Fugro W est, Inc.
4820 Mc Grath Street, Suite #100
Ventura , CA 93003-7778

November 3, 2009

ATTENTIO—N: Alexis Spencer

Laboratory No: 092674
Date Received: 27-OCT- 09
Project: Big Rock Mesa_ NPDES
Project No: 3399.006.0 43

Sampled By: Client
ID: See Below

RESULTS

On October 27, 2009, six (6) samples were received for analysis by Capco Analytical Serv—ices, Inc. The samples were identified and assigned the lab numbe■rs listed below. This report consists of 5 pages excluding the cover let—ter and the Chain of Custody.

SAMPLE DESCRI—PTION	CAS LAB NUMBER
W-18	09267401
W-2	09267402
BYA-H10	09267403
HD-41	09267404
HD-11	09267405
HD-23	09267406

Alin E. Repede, MS
Director - Analytical Operations

Client: Fugro West, Inc.
CAS LAB NO: 092674
Analyst: AN

Date Sampled: 10/27/09
Date Received: 10/27/09
Date Analyzed: 10/28/09
Sample Matrix: Water

SETTLEABLE SOLIDS ANALYSIS
SM 2540 F

CAS Lab #	Sample ID	RESULTS (ml/L)	Dilution Factor	PQL (ml/L)
09267401	W-18	BQL	1	0.1
09267402	W-2	BQL	1	0.1
09267403	BYA-H10	BQL	1	0.1
09267404	HD-41	BQL	1	0.1
09267405	HD-11	BQL	1	0.1
09267406	HD-23	BQL	1	0.1

PQL: Practical Quantitation Limit
BQL: Below Practical Quantitation Limit

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092674
Analyst: GM

Date Sampled: 10/27/09
Date Received: 10/27/09
Date Analyzed: 10/27/09
Sample Matrix: Water

OIL & GREASE ANALYSIS
EPA Method 1664

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09267401	W-18	ND	1	1	5
09267402	W-2	ND	1	1	5
09267403	BYA-H10	ND	1	1	5
09267404	HD-41	ND	1	1	5
09267405	HD-11	ND	1	1	5
09267406	HD-23	ND	1	1	5
092674-MB	Method Blank	ND	1	1	5

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092674
Analyst: AN

Date Sampled: 10/27/09
Date Received: 10/27/09
Date Analyzed: 10/27/09
Sample Matrix: Water

BIOCHEMICAL OXYGEN DEMAND ANALYSIS
SM 5210 B

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09267401	W-18	ND	1	0.4	2
09267402	W-2	ND	1	0.4	2
09267403	BYA-H10	ND	1	0.4	2
09267404	HD-41	ND	1	0.4	2
09267405	HD-11	ND	1	0.4	2
09267406	HD-23	ND	1	0.4	2
092674-MB	Method Blank	ND	1	0.4	2

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092674
Analyst: AN

Date Sampled: 10/27/09
Date Received: 10/27/09
Date Analyzed: 10/28/09
Sample Matrix: Water

TOTAL SUSPENDED SOLIDS ANALYSIS
SM 2540 D

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09267401	W-18	2.0	1	1	5
09267402	W-2	ND	1	1	5
09267403	BYA-H10	1.2	1	1	5
09267404	HD-41	ND	1	1	5
09267405	HD-11	ND	1	1	5
09267406	HD-23	ND	1	1	5
092674-MB	Method Blank	ND	1	1	5

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092674
Analyst: AN

Date Sampled: 10/27/09
Date Received: 10/27/09
Date Analyzed: 10/28/09
Sample Matrix: Water

TURBIDITY ANALYSIS
EPA Method 180.1

CAS Lab #	Sample ID	RESULTS (NTU)	Dilution Factor	PQL (NTU)
09267401	W-18	2.8	1	0.1
09267402	W-2	0.60	1	0.1
09267403	BYA-H10	0.86	1	0.1
09267404	HD-41	0.53	1	0.1
09267405	HD-11	0.57	1	0.1
09267406	HD-23	0.50	1	0.1

PQL: Practical Quantitation Limit

Principal Analyst

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue
Ventura, CA 93003
(805) 644-1095 Fax 644-9947

CHAIN OF CUSTODY RECORD

REPORT
Fax 805 650 7010
Company Fugro West, Inc
Address 4820 McGrath St Suite 100
Ventura CA 93003
Phone 805 650 7000 Contact Alexis Spener

BILL TO: P.O.#
Company Same
Address
Phone Contact

PROJ. NO 3399.006.043
PROJECT NAME Big Rock Mesa NPDES

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #/TYPE	ANALYSIS: BOD / Turb / TSS / Salt Solids / Oil & Grease	REMARKS
										2/1 P/A		092674
1	10-27-09	09:00			W-18	/					/ / /	pH= 7.11 T= 23.3
2		09:45			W-2						/ / /	6.92 21.3
3		11:30			~~[illegible]~~ B4A-H10						/ / /	7.24 21.7
4		11:15			HD-41						/ / /	7.17 22.1
5		11:45			HD-11						/ / /	7.09 21.7
6		11:50			HD-23						/ / /	7.02 22.5

CHECK ONE BOX:
DISPOSE SAMPLES
RETURN SAMPLES

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	10/27/09 12:40				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time		

TURN AROUND TIME

24 Hr.		5 Day	
48 Hr.		Standard	
72 Hr.		Other	

WHITE COPY CANARY COPY PINK COPY

Prepared For: Fugro West, Inc.
4820 McGrath Street, Suite #100
Ventura, CA 93003-7778

December 16, 2009

ATTENTION: Alexis Spencer

Laboratory No: 092847
Date Received: 18-NOV-09
Project: Big Rock Mesa NPDES
Project No: 3399.006.043

Sampled By: Client
ID: See Below

RESULTS

On November 18, 2009, ten (10) samples were received for analysis by Capco Analytical Services, Inc. The samples were identified and assigned the lab numbers listed below. This report consists of 9 pages excluding the cover letter, Chain of Custody and the Sub-Contractor's Reports.

SAMPLE DESCRIPTION	CAS LAB NUMBER
W-18	09284701
BYA-4	09284702
HD-41	09284703
BYA-H10	09284704
HD-11	09284705
HD-23	09284706
W-2	09284707
BYA-14	09284708
BYA-9	09284709
BYA-10	09284710

Alin E. Repede, MS
Director - Analytical Operations

Client: Fugro West, Inc.
CAS LAB NO: 092847
Analyst: AJ/AN

Date Sampled: 11/18/09
Date Received: 11/18/09
Date Analyzed: 12/01/09
Sample Matrix: Water

TOTAL PHENOL ANALYSIS
EPA METHOD 420.1

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
09284701	W-18	ND	1	0.02	0.1
09284702	BYA-4	ND	1	0.02	0.1
09284703	HD-41	ND	1	0.02	0.1
09284704	BYA-H10	ND	1	0.02	0.1
09284705	HD-11	ND	1	0.02	0.1
09284706	HD-23	ND	1	0.02	0.1
09284707	W-2	ND	1	0.02	0.1
09284708	BYA-14	ND	1	0.02	0.1
09284709	BYA-9	ND	1	0.02	0.1
09284710	BYA-10	ND	1	0.02	0.1
092847-MB	Method Blank	ND	1	0.02	0.1

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092847
Analyst: AN

Date Sampled: 11/18/09
Date Received: 11/18/09
Date Analyzed: 11/30/09
Sample Matrix: Water

TOTAL SULFIDE ANALYSIS
SM 4500-S^{-2}D

CAS LAB #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/L)	PQL (mg/L)
09284701	W-18	ND	1	0.004	0.02
09284702	BYA-4	ND	1	0.004	0.02
09284703	HD-41	ND	1	0.004	0.02
09284704	BYA-H10	ND	1	0.004	0.02
09284705	HD-11	ND	1	0.004	0.02
09284706	HD-23	ND	1	0.004	0.02
09284707	W-2	ND	1	0.004	0.02
09284708	BYA-14	ND	1	0.004	0.02
09284709	BYA-9	ND	1	0.004	0.02
09284710	BYA-10	ND	1	0.004	0.02
092847-MB	Method Blank	ND	1	0.004	0.02

ND: Not Detected
MDL: Method Detection Limit
BQL: Below Practical Quantitation Limit

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092847
Analyst: AN

Date Sampled: 11/18/09
Date Received: 11/18/09
Date Analyzed: 11/19/09
Sample Matrix: Water

BIOCHEMICAL OXYGEN DEMAND ANALYSIS
SM 5210 B

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09284701	W-18	ND	1	0.4	2
09284702	BYA-4	ND	1	0.4	2
09284703	HD-41	ND	1	0.4	2
09284704	BYA-H10	ND	1	0.4	2
09284705	HD-11	ND	1	0.4	2
09284706	HD-23	ND	1	0.4	2
09284707	W-2	ND	1	0.4	2
09284708	BYA-14	ND	1	0.4	2
09284709	BYA-9	ND	1	0.4	2
09284710	BYA-10	0.93	1	0.4	2
092847-MB	Method Blank	ND	1	0.4	2

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092847
Analyst: GM

Date Sampled: 11/18/09
Date Received: 11/18/09
Date Analyzed: 11/18/09
Sample Matrix: Water

pH ANALYSIS
SM 4500-$^{H+}$ B

CAS Lab #	Sample ID	RESULTS (S.U.)
09284701	W-18	6.9
09284702	BYA-4	6.7
09284703	HD-41	6.7
09284704	BYA-H10	7.5
09284705	HD-11	7.0
09284706	HD-23	7.0
09284707	W-2	6.6
09284708	BYA-14	6.9
09284709	BYA-9	7.1
09284710	BYA-10	7.0

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092847
Analyst: AN

Date Sampled: 11/18/09
Date Received: 11/18/09
Date Analyzed: 11/18/09
Sample Matrix: Water

SETTLEABLE SOLIDS ANALYSIS
SM 2540 F

CAS Lab #	Sample ID	RESULTS (ml/L)	Dilution Factor	PQL (ml/L)
09284701	W-18	BQL	1	0.1
09284702	BYA-4	BQL	1	0.1
09284703	HD-41	BQL	1	0.1
09284704	BYA-H10	BQL	1	0.1
09284705	HD-11	BQL	1	0.1
09284706	HD-23	BQL	1	0.1
09284707	W-2	BQL	1	0.1
09284708	BYA-14	BQL	1	0.1
09284709	BYA-9	BQL	1	0.1
09284710	BYA-10	BQL	1	0.1

PQL: Practical Quantitation Limit
BQL: Below Practical Quantitation Limit

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092847
Analyst: AN

Date Sampled: 11/18/09
Date Received: 11/18/09
Date Analyzed: 11/20/09
Sample Matrix: Water

TOTAL SUSPENDED SOLIDS ANALYSIS
SM 2540 D

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09284701	W-18	1.2	1	1	5
09284702	BYA-4	ND	1	1	5
09284703	HD-41	ND	1	1	5
09284704	BYA-H10	ND	1	1	5
09284705	HD-11	ND	1	1	5
09284706	HD-23	ND	1	1	5
09284707	W-2	ND	1	1	5
09284708	BYA-14	ND	1	1	5
09284709	BYA-9	ND	1	1	5
09284710	BYA-10	ND	1	1	5
092847-MB	Method Blank	ND	1	1	5

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092847
Analyst: AN

Date Sampled: 11/18/09
Date Received: 11/18/09
Date Analyzed: 11/18/09
Sample Matrix: Water

TURBIDITY ANALYSIS
EPA Method 180.1

CAS Lab #	Sample ID	RESULTS (NTU)	Dilution Factor	PQL (NTU)
09284701	W-18	1.9	1	0.1
09284702	BYA-4	0.32	1	0.1
09284703	HD-41	0.11	1	0.1
09284704	BYA-H10	0.18	1	0.1
09284705	HD-11	BQL	1	0.1
09284706	HD-23	BQL	1	0.1
09284707	W-2	BQL	1	0.1
09284708	BYA-14	0.18	1	0.1
09284709	BYA-9	BQL	1	0.1
09284710	BYA-10	BQL	1	0.1

PQL: Practical Quantitation Limit

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092847
Analyst: GM

Date Sampled: 11/18/09
Date Received: 11/18/09
Date Analyzed: 11/20/09
Sample Matrix: Water

OIL & GREASE ANALYSIS
EPA Method 1664

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09284701	W-18	ND	1	1	5
09284702	BYA-4	ND	1	1	5
09284703	HD-41	ND	1	1	5
09284704	BYA-H10	ND	1	1	5
09284705	HD-11	ND	1	1	5
09284706	HD-23	ND	1	1	5
09284707	W-2	ND	1	1	5
09284708	BYA-14	ND	1	1	5
09284709	BYA-9	ND	1	1	5
09284710	BYA-10	ND	1	1	5
092847-MB	Method Blank	ND	1	1	5

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 092847
Analyst: GM

Date Sampled: 11/18/09
Date Received: 11/18/09
Date Analyzed: 11/19/09
Sample Matrix: Water

MBAS ANALYSIS
SM 5540 C

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09284701	W-18	ND	1	0.02	0.1
09284702	BYA-4	ND	1	0.02	0.1
09284703	HD-41	ND	1	0.02	0.1
09284704	BYA-H10	ND	1	0.02	0.1
09284705	HD-11	ND	1	0.02	0.1
09284706	HD-23	ND	1	0.02	0.1
09284707	W-2	ND	1	0.02	0.1
09284708	BYA-14	ND	1	0.02	0.1
09284709	BYA-9	ND	1	0.02	0.1
09284710	BYA-10	ND	1	0.02	0.1
092847-MB	Method Blank	ND	1	0.02	0.1

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

AQUATIC
BIOASSAY &
CONSULTING
LABORATORIES, INC.

TOXICITY TESTING • OCEANOGRAPHIC RESEARCH

December 15, 2009

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	092847-01
DATE RECEIVED:	18 Nov - 09
ABC LAB. NO.:	CAP1109.237

W-13

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50 =	100 % Survival in 100% Sample
TU(a) =	0.00

Yours very truly,

Thomas (Tim) Mikel
Laboratory Director

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109237	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-01				

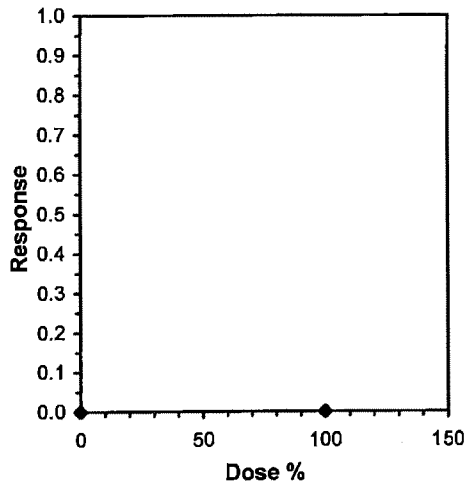
Conc-%	1	2	3	4
N Control	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000		

			Transform: Arcsin Square Root					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
N Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	1.0000	1.0000
100	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	1.0000	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	1	0.713		
Equality of variance cannot be confirmed				

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

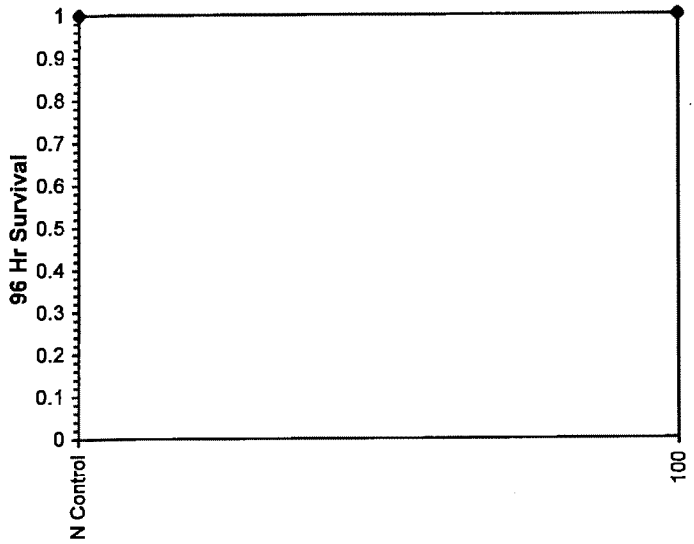


Reviewed by: _____

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109237	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-01				

Dose-Response Plot



ToxCalc v5.0.23

Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109237	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-01				

Auxiliary Data Summary

Conc-%	Parameter	Mean	Min	Max	SD	CV%	N
N Control	Temp C	24.13	24.10	24.20	0.06	1.00	3
100		24.07	24.00	24.20	0.12	1.41	3
N Control	pH	8.30	8.30	8.30	0.00	0.00	3
100		7.57	7.30	7.80	0.25	6.63	3
N Control	DO mg/L	7.20	6.10	7.90	0.96	13.64	3
100		6.50	5.90	7.60	0.95	15.03	3
N Control	Hardness mg/L	97.00	97.00	97.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Alkalinitymg/L	62.00	62.00	62.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Conductivity	357.67	340.00	368.00	15.37	1.10	3
100		2653.00	2571.00	2803.00	130.09	0.43	3

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December 15, 2009

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	092847-02
DATE RECEIVED:	18 Nov - 09
ABC LAB. NO.:	CAP1109.238

B4A-4

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50 =	95 % Survival in 100% Sample
TU(a) =	0.41

Yours very truly,

Thomas (Tim) Mikel
Laboratory Director

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109238	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-02				

Conc-%	1	2	3	4
N Control	1.0000	1.0000	1.0000	1.0000
100	1.0000	0.9000		

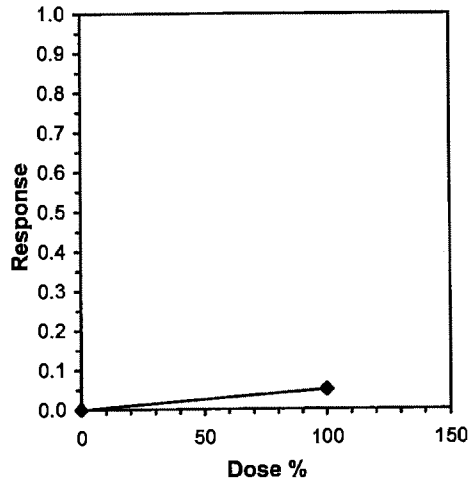
			Transform: Arcsin Square Root					1-Tailed			Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
N Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4				1.0000	1.0000
100	0.9500	0.9500	1.3305	1.2490	1.4120	8.661	2	1.633	2.132	0.1064	0.9500	0.9500

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.82716	0.713	0	2.5
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.04368	0.0448	0.00885	0.00332	0.17781	1, 4
Treatments vs N Control						

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

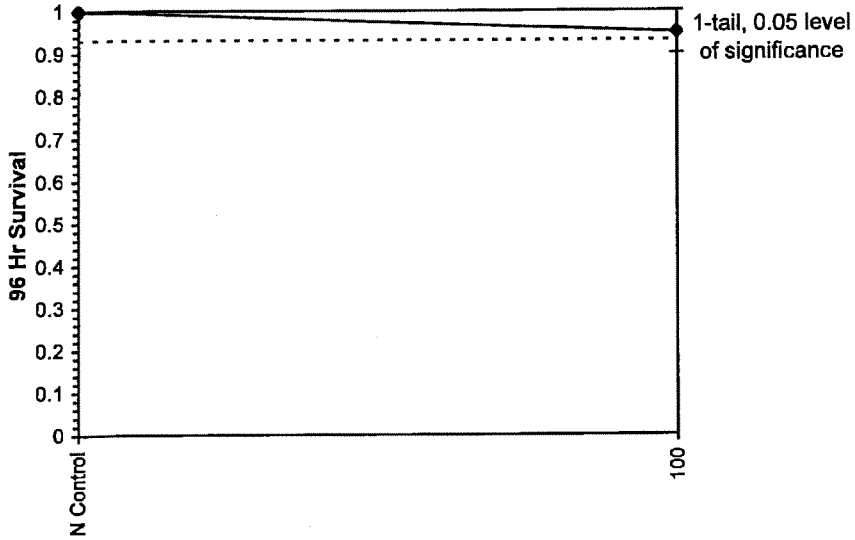


Reviewed by: ✓

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109238	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-02				

Dose-Response Plot



Reviewed by: LC✓

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109238	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-02				

Auxiliary Data Summary

Conc-%	Parameter	Mean	Min	Max	SD	CV%	N
N Control	Temp C	24.07	24.00	24.10	0.06	1.00	3
100		24.13	24.00	24.20	0.12	1.41	3
N Control	pH	8.30	8.30	8.30	0.00	0.00	3
100		7.53	7.20	7.90	0.35	7.87	3
N Control	DO mg/L	7.20	6.10	7.90	0.96	13.64	3
100		7.53	6.00	9.00	1.50	16.26	3
N Control	Hardness mg/L	97.00	97.00	97.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Alkalinitymg/L	62.00	62.00	62.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Conductivity	357.67	340.00	368.00	15.37	1.10	3
100		2430.67	2379.00	2483.00	52.00	0.30	3

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TOXICITY TESTING • OCEANOGRAPHIC RESEARCH

December 15, 2009

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	092847-03
DATE RECEIVED:	18 Nov - 09
ABC LAB. NO.:	CAP1109.239

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50 =	95 % Survival in 100% Sample
TU(a) =	0.41

Yours very truly,

Thomas (Tim) Mikel
Laboratory Director

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109239	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-03				

Conc-%	1	2	3	4
N Control	1.0000	1.0000	1.0000	1.0000
100	0.9000	1.0000		

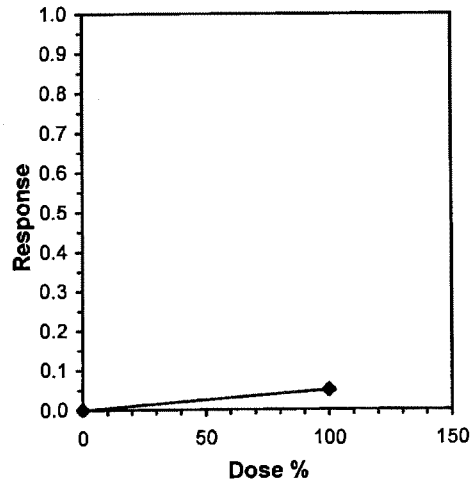
			Transform: Arcsin Square Root					1-Tailed			Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
N Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4				1.0000	1.0000
100	0.9500	0.9500	1.3305	1.2490	1.4120	8.661	2	1.633	2.132	0.1064	0.9500	0.9500

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.82716	0.713	0	2.5
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.04368	0.0448	0.00885	0.00332	0.17781	1, 4
Treatments vs N Control						

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

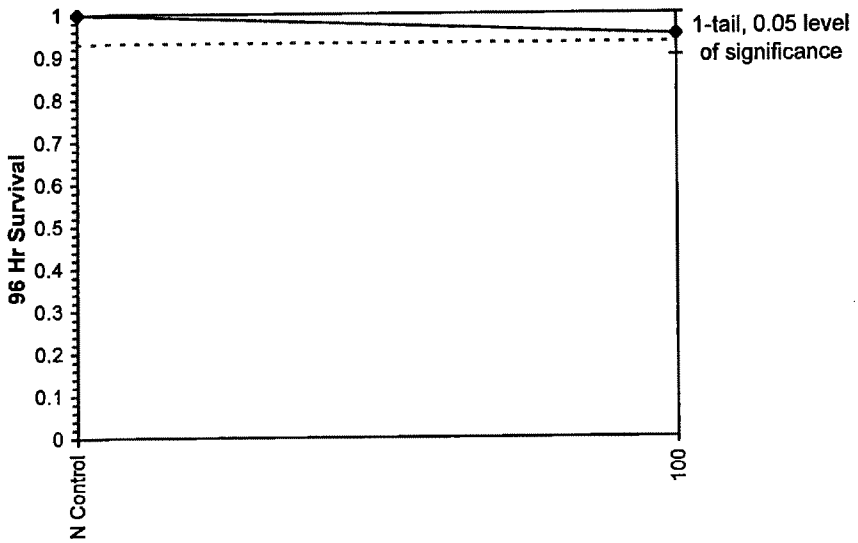


Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109239	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-03				

Dose-Response Plot



Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109239	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-03				

Auxiliary Data Summary

Conc-%	Parameter	Mean	Min	Max	SD	CV%	N
N Control	Temp C	24.17	24.10	24.20	0.06	0.99	3
100		24.00	24.00	24.00	0.00	0.00	3
N Control	pH	8.30	8.30	8.30	0.00	0.00	3
100		7.53	7.20	7.90	0.35	7.87	3
N Control	DO mg/L	7.20	6.10	7.90	0.96	13.64	3
100		6.73	6.00	7.80	0.95	14.44	3
N Control	Hardness mg/L	97.00	97.00	97.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Alkalinitymg/L	62.00	62.00	62.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Conductivity	357.67	340.00	368.00	15.37	1.10	3
100		2505.67	2421.00	2585.00	82.13	0.36	3

AQUATIC BIOASSAY & CONSULTING
LABORATORIES, INC.

TOXICITY TESTING • OCEANOGRAPHIC RESEARCH

December 15, 2009

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	092847-04
DATE RECEIVED:	18 Nov - 09
ABC LAB. NO.:	CAP1109.240

BMI-H10

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50 =	100 % Survival in 100% Sample
TU(a) =	0.00

Yours very truly,

Thomas (Tim) Mikel
Laboratory Director

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109240	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-04				

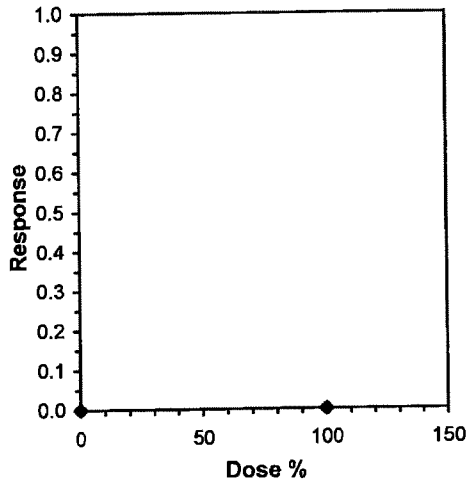
Conc-%	1	2	3	4
N Control	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000		

			Transform: Arcsin Square Root					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
N Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	1.0000	1.0000
100	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	1.0000	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	1	0.713		
Equality of variance cannot be confirmed				

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

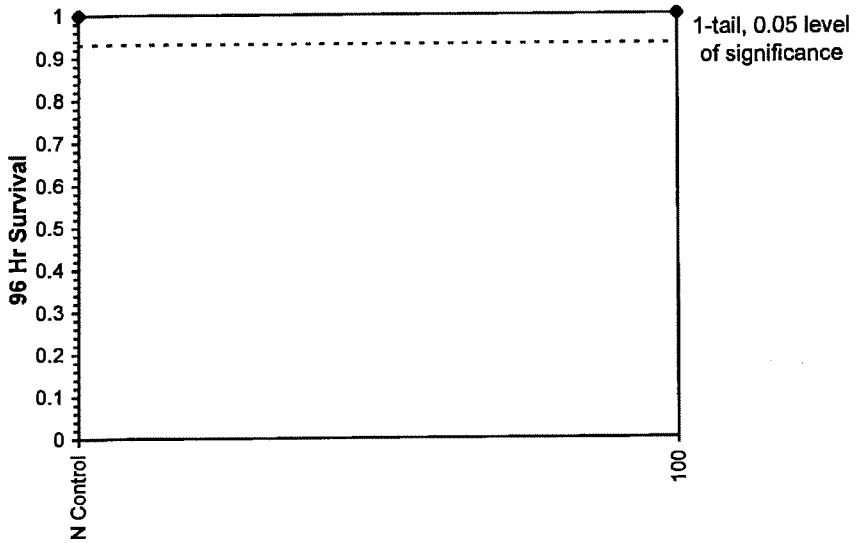


Reviewed by: _____

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109240	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-04				

Dose-Response Plot



Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109240	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-04				

Auxiliary Data Summary

Conc-%	Parameter	Mean	Min	Max	SD	CV%	N
N Control	Temp C	24.07	24.00	24.10	0.06	1.00	3
100		24.03	24.00	24.10	0.06	1.00	3
N Control	pH	8.30	8.30	8.30	0.00	0.00	3
100		7.67	7.40	8.00	0.31	7.21	3
N Control	DO mg/L	7.20	6.10	7.90	0.96	13.64	3
100		6.43	5.70	7.60	1.02	15.71	3
N Control	Hardness mg/L	97.00	97.00	97.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Alkalinitymg/L	62.00	62.00	62.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Conductivity	357.67	340.00	368.00	15.37	1.10	3
100		2162.67	2107.00	2208.00	51.29	0.33	3

AQUATIC
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LABORATORIES, INC.

TOXICITY TESTING • OCEANOGRAPHIC RESEARCH

December 15, 2009

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	092847-05
DATE RECEIVED:	18 Nov - 09
ABC LAB. NO.:	CAP1109.241

HO-11

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50 =	100 % Survival in 100% Sample
TU(a) =	0.00

Yours very truly,

Thomas (Tim) Mikel
Laboratory Director

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109241	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-05				

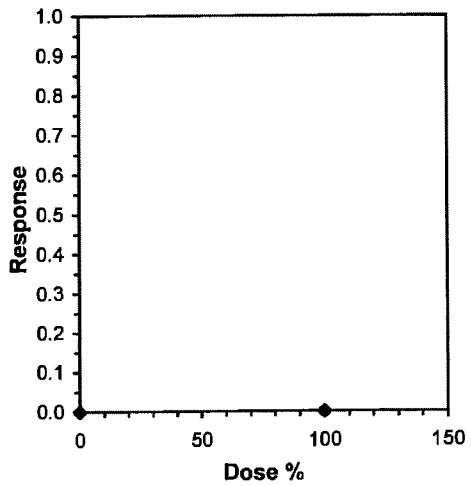
Conc-%	1	2	3	4
N Control	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000		

			Transform: Arcsin Square Root					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
N Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	1.0000	1.0000
100	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	1.0000	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	1	0.713		
Equality of variance cannot be confirmed				

Linear Interpolation (200 Resamples)

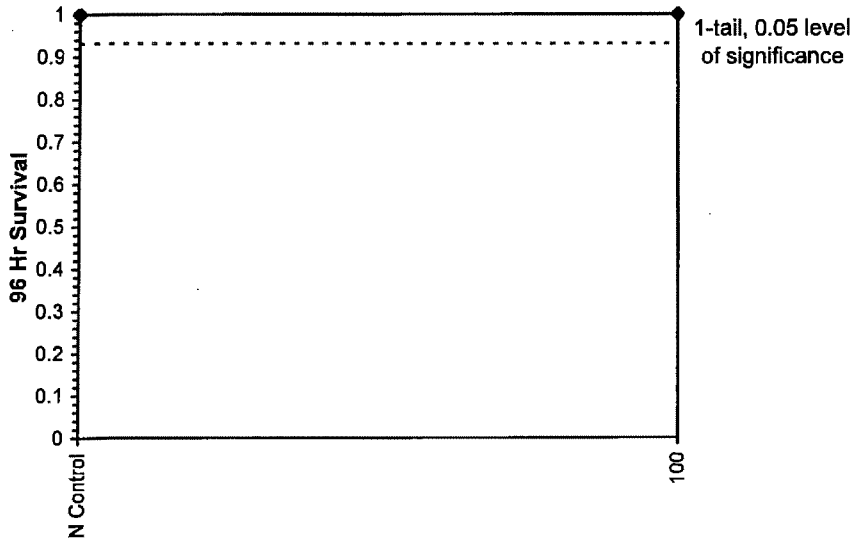
Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival					
Start Date:	11/18/2009	Test ID:	CAP1109241	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-05				

Dose-Response Plot



Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109241	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-05				

Auxiliary Data Summary

Conc-%	Parameter	Mean	Min	Max	SD	CV%	N
N Control	Temp C	24.13	24.10	24.20	0.06	1.00	3
100		24.03	24.00	24.10	0.06	1.00	3
N Control	pH	8.30	8.30	8.30	0.00	0.00	3
100		7.63	7.40	7.90	0.25	6.57	3
N Control	DO mg/L	7.20	6.10	7.90	0.96	13.64	3
100		6.53	5.90	7.70	1.01	15.39	3
N Control	Hardness mg/L	97.00	97.00	97.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Alkalinitymg/L	62.00	62.00	62.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Conductivity	357.67	340.00	368.00	15.37	1.10	3
100		3506.67	3428.00	3605.00	90.12	0.27	3

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December 15, 2009

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1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	092847-06
DATE RECEIVED:	18 Nov - 09
ABC LAB. NO.:	CAP1109.242

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

HD-23

LC50 =	100 % Survival in 100% Sample
TU(a) =	0.00

Yours very truly,

Thomas (Tim) Mikel
Laboratory Director

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109242	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-06				

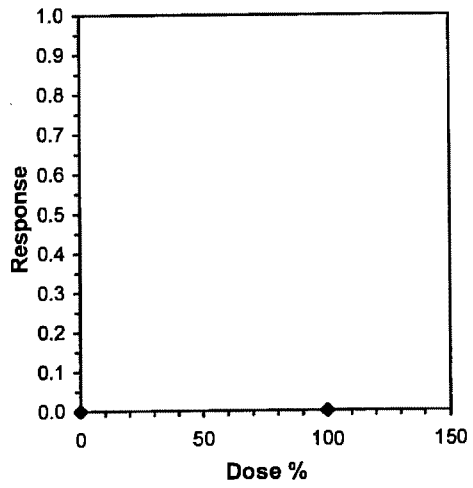
Conc-%	1	2	3	4
N Control	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000		

			Transform: Arcsin Square Root					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
N Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	1.0000	1.0000
100	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	1.0000	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	1	0.713		
Equality of variance cannot be confirmed				

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

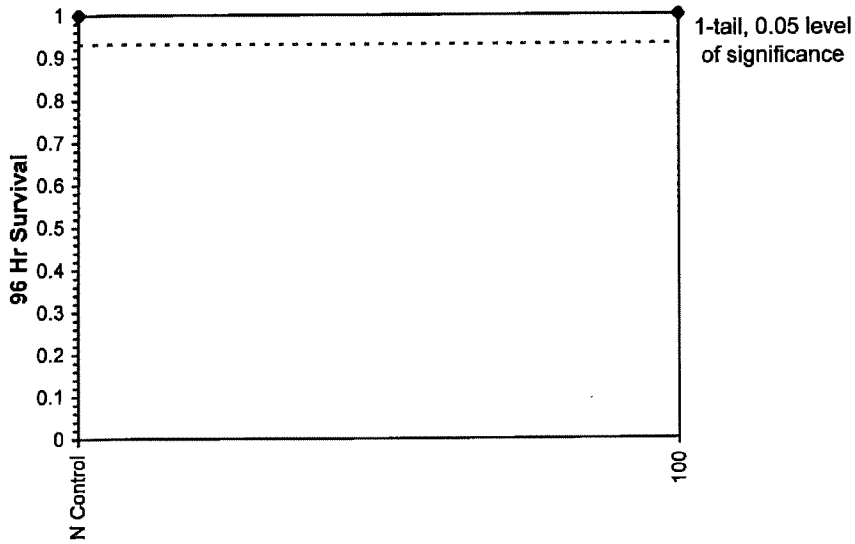


Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109242	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-06				

Dose-Response Plot



Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109242	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-06				

Auxiliary Data Summary

Conc-%	Parameter	Mean	Min	Max	SD	CV%	N
N Control	Temp C	24.13	24.10	24.20	0.06	1.00	3
100		24.07	24.00	24.10	0.06	1.00	3
N Control	pH	8.30	8.30	8.30	0.00	0.00	3
100		7.63	7.50	7.80	0.15	5.12	3
N Control	DO mg/L	7.20	6.10	7.90	0.96	13.64	3
100		6.63	6.00	7.60	0.85	13.90	3
N Control	Hardness mg/L	97.00	97.00	97.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Alkalinitymg/L	62.00	62.00	62.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Conductivity	357.67	340.00	368.00	15.37	1.10	3
100		3382.33	3302.00	3487.00	94.87	0.29	3

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December 15, 2009

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CLIENT:	CAPCO Analytical
SAMPLE I.D.:	092847-07
DATE RECEIVED:	18 Nov - 09
ABC LAB. NO.:	CAP1109.243

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50 =	95 % Survival in 100% Sample
TU(a) =	0.41

W-2

Yours very truly,

Thomas (Tim) Mikel
Laboratory Director

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109243	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-07				

Conc-%	1	2	3	4
N Control	1.0000	1.0000	1.0000	1.0000
100	1.0000	0.9000		

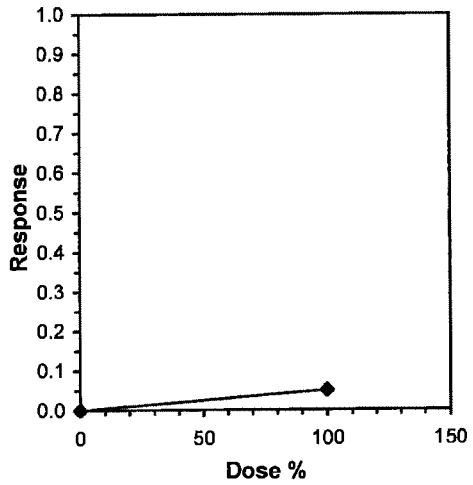
			Transform: Arcsin Square Root					1-Tailed			Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD	Mean	N-Mean
N Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4				1.0000	1.0000
100	0.9500	0.9500	1.3305	1.2490	1.4120	8.661	2	1.633	2.132	0.1064	0.9500	0.9500

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.82716	0.713	0	2.5
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	MSDu	MSDp	MSB	MSE	F-Prob	df
Homoscedastic t Test indicates no significant differences	0.04368	0.0448	0.00885	0.00332	0.17781	1, 4
Treatments vs N Control						

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



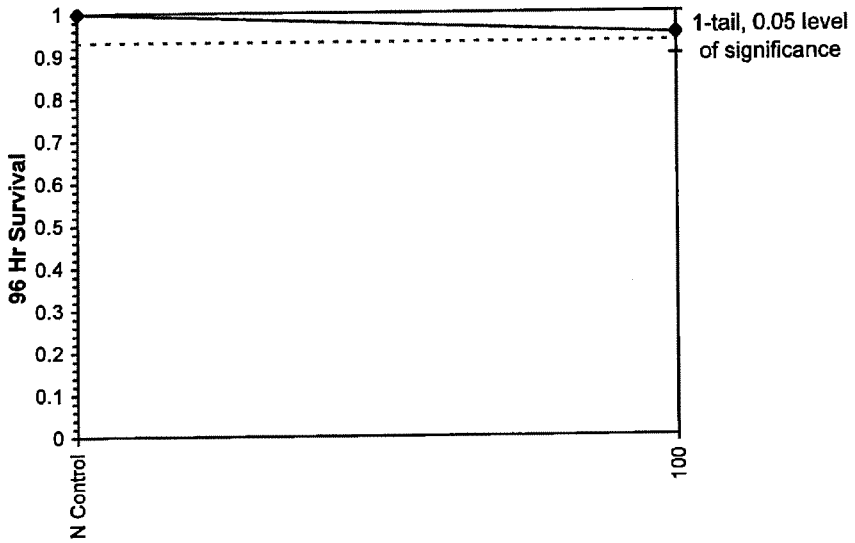
ToxCalc v5.0.23

Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109243	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-07				

Dose-Response Plot



Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109243	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-07				

Auxiliary Data Summary

Conc-%	Parameter	Mean	Min	Max	SD	CV%	N
N Control	Temp C	24.13	24.10	24.20	0.06	1.00	3
100		24.13	24.10	24.20	0.06	1.00	3
N Control	pH	8.30	8.30	8.30	0.00	0.00	3
100		7.47	7.20	7.90	0.38	8.24	3
N Control	DO mg/L	7.20	6.10	7.90	0.96	13.64	3
100		6.27	5.30	7.50	1.12	16.92	3
N Control	Hardness mg/L	97.00	97.00	97.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Alkalinitymg/L	62.00	62.00	62.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Conductivity	357.67	340.00	368.00	15.37	1.10	3
100		2290.67	2257.00	2357.00	57.45	0.33	3

AQUATIC
BIOASSAY &
CONSULTING
LABORATORIES, INC.

TOXICITY TESTING • OCEANOGRAPHIC RESEARCH

December 15, 2009

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	092847-08
DATE RECEIVED:	18 Nov - 09
ABC LAB. NO.:	CAP1109.244

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50 =	100 % Survival in 100% Sample
TU(a) =	0.00

B41-14

Yours very truly,

Thomas (Tim) Mikel
Laboratory Director

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109244	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-08				

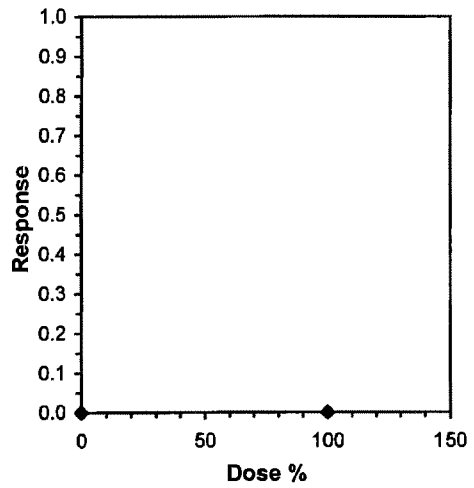
Conc-%	1	2	3	4
N Control	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000		

			Transform: Arcsin Square Root					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
N Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	1.0000	1.0000
100	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	1.0000	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	1	0.713		
Equality of variance cannot be confirmed				

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

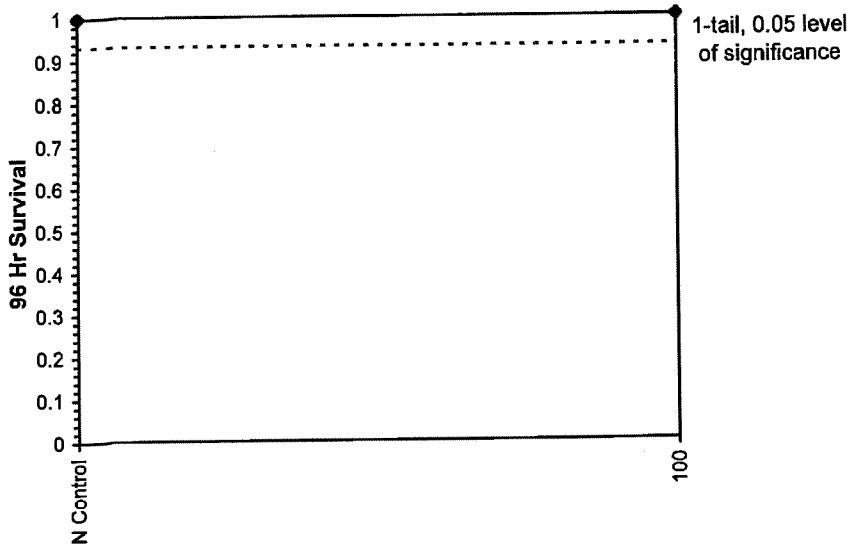


Reviewed by: _____

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109244	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-08				

Dose-Response Plot



Reviewed by: _____

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109244	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-08				

Auxiliary Data Summary

Conc-%	Parameter	Mean	Min	Max	SD	CV%	N
N Control	Temp C	24.13	24.10	24.20	0.06	1.00	3
100		24.10	24.00	24.20	0.10	1.31	3
N Control	pH	8.30	8.30	8.30	0.00	0.00	3
100		7.57	7.30	7.90	0.31	7.30	3
N Control	DO mg/L	7.20	6.10	7.90	0.96	13.64	3
100		6.43	5.70	7.60	1.02	15.71	3
N Control	Hardness mg/L	97.00	97.00	97.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Alkalinitymg/L	62.00	62.00	62.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Conductivity	357.67	340.00	368.00	15.37	1.10	3
100		3362.67	3247.00	3455.00	105.94	0.31	3

AQUATIC
BIOASSAY &
CONSULTING
LABORATORIES, INC.

TOXICITY TESTING • OCEANOGRAPHIC RESEARCH

December 15, 2009

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	092847-09
DATE RECEIVED:	18 Nov - 09
ABC LAB. NO.:	CAP1109.245

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50 =	100 % Survival in 100% Sample
TU(a) =	0.00

Yours very truly,

D4A-9

Thomas (Tim) Mikel
Laboratory Director

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109245	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-09				

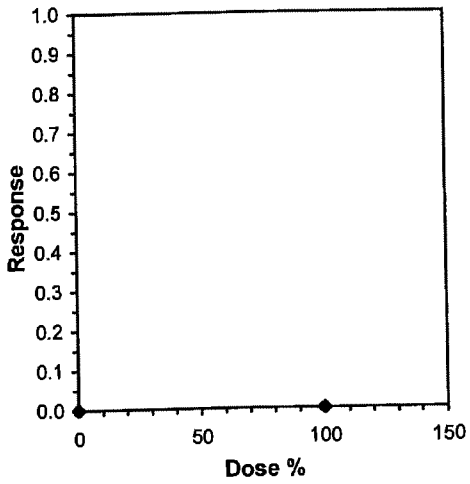
Conc-%	1	2	3	4
N Control	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000		

			Transform: Arcsin Square Root					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
N Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	1.0000	1.0000
100	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	1.0000	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	1	0.713		
Equality of variance cannot be confirmed				

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

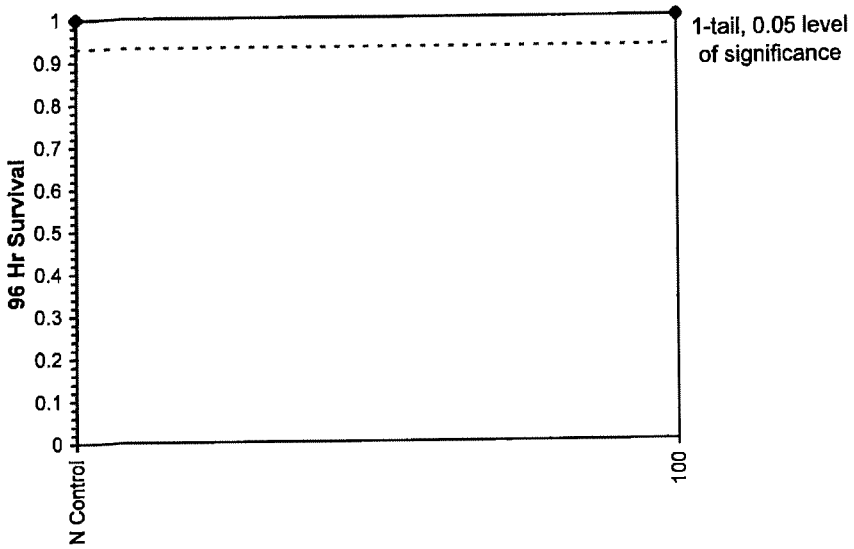


Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109245	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-09				

Dose-Response Plot



Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109245	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-09				

Auxiliary Data Summary

Conc-%	Parameter	Mean	Min	Max	SD	CV%	N
N Control	Temp C	24.13	24.10	24.20	0.06	1.00	3
100		24.07	24.00	24.10	0.06	1.00	3
N Control	pH	8.30	8.30	8.30	0.00	0.00	3
100		7.67	7.50	7.80	0.15	5.10	3
N Control	DO mg/L	7.20	6.10	7.90	0.96	13.64	3
100		6.83	5.80	7.80	1.00	14.65	3
N Control	Hardness mg/L	97.00	97.00	97.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Alkalinitymg/L	62.00	62.00	62.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Conductivity	357.67	340.00	368.00	15.37	1.10	3
100		2367.33	2358.00	2385.00	15.31	0.17	3

AQUATIC BIOASSAY & CONSULTING
LABORATORIES, INC.

TOXICITY TESTING • OCEANOGRAPHIC RESEARCH

December 15, 2009

Ms. Rosa Hernandez
CAPCO Analytical
1536 Eastman Ave., Suite B
Ventura, CA 93003

Dear Ms. Hernandez:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA-821-R-02-012.* Results were as follows:

CLIENT:	CAPCO Analytical
SAMPLE I.D.:	092847-10
DATE RECEIVED:	18 Nov - 09
ABC LAB. NO.:	CAP1109.246

96 HOUR ACUTE FATHEAD MINNOW SURVIVAL BIOASSAY

LC50 =	100 % Survival in 100% Sample
TU(a) =	0.00

Yours very truly,

BLH-10

Thomas (Tim) Mikel
Laboratory Director

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109246	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-10				

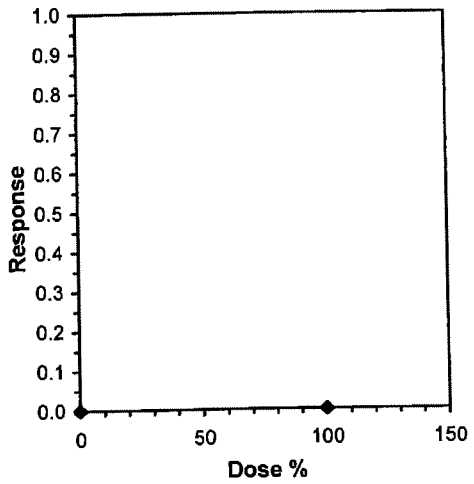
Conc-%	1	2	3	4
N Control	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000		

			Transform: Arcsin Square Root					Isotonic	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Mean	N-Mean
N Control	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	4	1.0000	1.0000
100	1.0000	1.0000	1.4120	1.4120	1.4120	0.000	2	1.0000	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	1	0.713		
Equality of variance cannot be confirmed				

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

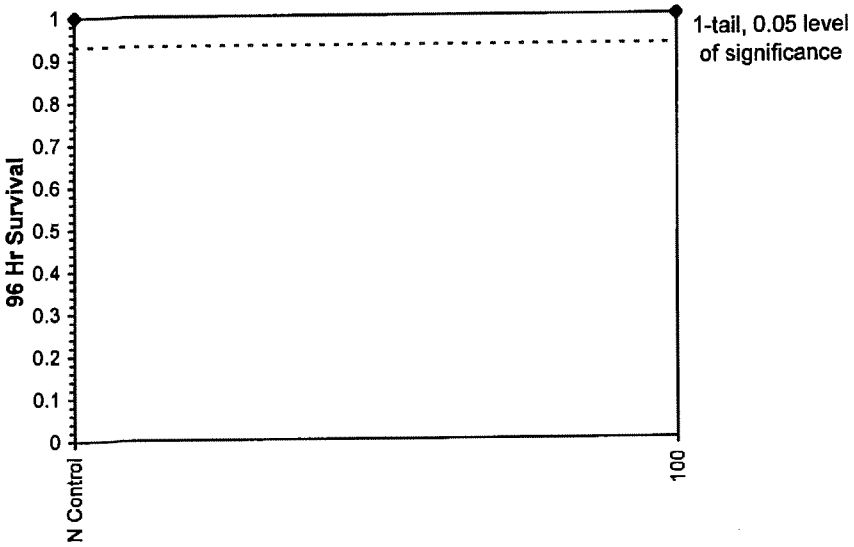


Reviewed by: _____

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109246	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-10				

Dose-Response Plot



Reviewed by:

Larval Fish Growth and Survival Test-96 Hr Survival

Start Date:	11/18/2009	Test ID:	CAP1109246	Sample ID:	CA000000
End Date:	11/22/2009	Lab ID:	CAABC	Sample Type:	EFF1-POTW
Sample Date:	11/18/2009	Protocol:	EPA-821-R-02-012	Test Species:	PP-Pimephales promelas
Comments:	#092847-10				

Auxiliary Data Summary

Conc-%	Parameter	Mean	Min	Max	SD	CV%	N
N Control	Temp C	24.13	24.10	24.20	0.06	1.00	3
100		24.07	24.00	24.10	0.06	1.00	3
N Control	pH	8.30	8.30	8.30	0.00	0.00	3
100		7.70	7.40	7.90	0.26	6.68	3
N Control	DO mg/L	7.20	6.10	7.90	0.96	13.64	3
100		6.37	5.30	7.80	1.29	17.84	3
N Control	Hardness mg/L	97.00	97.00	97.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Alkalinitymg/L	62.00	62.00	62.00	0.00	0.00	3
100		250.00	250.00	250.00	0.00	0.00	3
N Control	Conductivity	357.67	340.00	368.00	15.37	1.10	3
100		3238.33	3161.00	3306.00	72.98	0.26	3

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue
Ventura, CA 93003
(805) 644-1095 Fax 644-9947

CHAIN OF CUSTODY RECORD

REPORT
Company Fugro West Inc Fax 805 650 7010
Address 4820 McGrath St Suite 100
Ventura 93003
Phone 805 650 7000 Contact Alicia Spencer

BILL TO: P.O.#
Company Same
Address
Phone Contact

PROJ. NO: 339.006.043
PROJECT NAME: BIG ROCK MESA NPDES

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

092847

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE DESCRIPTION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #/TYPE	ANALYSIS: Phenols	Sulfides	BOD's	MBAS	Turb, Settl. Solids, TSS, pH	Acute Toxicity	Oil & Grease	REMARKS
1	11-18-09	09:30			W-18					3/V, 1/P/G								
2		10:15			BYA-4													
3		10:50			HD-41													
4		11:15			BYA-H10													
5		11:55			HD-11													
6		12:15			HD-23													
7		12:45			W-2													
8		12:50			BYA-14													
9		13:00			BYA-9													
10		14:00			BYA-10													

CHECK ONE BOX:
DISPOSE SAMPLES
RETURN SAMPLES

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time		
	11/18/09 15:00		11/18/9 3:00		

TURN AROUND TIME

24 Hr.		5 Day	
48 Hr.		Standard	
72 Hr.		Other	

WHITE COPY CANARY COPY PINK COPY

Prepared For: Fugro West, Inc.
4820 McGrath Street, Suite #100
Ventura, CA 93003-7778

December 23, 2009

ATTENTION: Alexis Spencer

Laboratory No: 093095
Date Received: 16-DEC-09
Project: Big Rock Mesa NPDES
Project No: 3399.006.043

Sampled By: Client
ID: See Below

RESULTS

On December 16, 2009, ten (10) samples were received for analysis by Capco Analytical Services, Inc. The samples were identified and assigned the lab numbers listed below. This report consists of 5 pages excluding the cover letter and the Chain of Custody.

SAMPLE DESCRIPTION	CAS LAB NUMBER
W-18	09309501
W-16	09309502
W-2	09309503
BYA-14	09309504
HD-41	09309505
BYA-H10	09309506
HD-11	09309507
HD-23	09309508
BYA-9	09309509
BYA-10	09309510

Alin E. Repede, MS
Director - Analytical Operations

Client: Fugro West, Inc.
CAS LAB NO: 093095
Analyst: AN

Date Sampled: 12/16/09
Date Received: 12/16/09
Date Analyzed: 12/17/09
Sample Matrix: Water

BIOCHEMICAL OXYGEN DEMAND ANALYSIS
SM 5210 B

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09309501	W-18	0.82	1	0.4	2
09309502	W-16	0.84	1	0.4	2
09309503	W-2	1.3	1	0.4	2
09309504	BYA-14	0.75	1	0.4	2
09309505	HD-41	0.67	1	0.4	2
09309506	BYA-H10	0.67	1	0.4	2
09309507	HD-11	ND	1	0.4	2
09309508	HD-23	ND	1	0.4	2
09309509	BYA-9	0.52	1	0.4	2
09309510	BYA-10	0.63	1	0.4	2
093095-MB	Method Blank	ND	1	0.4	2

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 093095
Analyst: AN

Date Sampled: 12/16/09
Date Received: 12/16/09
Date Analyzed: 12/17/09
Sample Matrix: Water

SETTLEABLE SOLIDS ANALYSIS
SM 2540 F

CAS Lab #	Sample ID	RESULTS (ml/L)	Dilution Factor	PQL (ml/L)
09309501	W-18	BQL	1	0.1
09309502	W-16	BQL	1	0.1
09309503	W-2	BQL	1	0.1
09309504	BYA-14	BQL	1	0.1
09309505	HD-41	BQL	1	0.1
09309506	BYA-H10	BQL	1	0.1
09309507	HD-11	BQL	1	0.1
09309508	HD-23	BQL	1	0.1
09309509	BYA-9	BQL	1	0.1
09309510	BYA-10	BQL	1	0.1
093095-MB	Method Blank	BQL	1	0.1

PQL: Practical Quantitation Limit
BQL: Below Practical Quantitation Limit

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 093095
Analyst: AN

Date Sampled: 12/16/09
Date Received: 12/16/09
Date Analyzed: 12/17/09
Sample Matrix: Water

TURBIDITY ANALYSIS
EPA Method 180.1

CAS Lab #	Sample ID	RESULTS (NTU)	Dilution Factor	PQL (NTU)
09309501	W-18	1.8	1	0.1
09309502	W-16	0.13	1	0.1
09309503	W-2	0.60	1	0.1
09309504	BYA-14	0.41	1	0.1
09309505	HD-41	BQL	1	0.1
09309506	BYA-H10	2.6	1	0.1
09309507	HD-11	0.84	1	0.1
09309508	HD-23	0.12	1	0.1
09309509	BYA-9	0.34	1	0.1
09309510	BYA-10	9.1	1	0.1

PQL: Practical Quantitation Limit

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 093095
Analyst: GM

Date Sampled: 12/16/09
Date Received: 12/16/09
Date Analyzed: 12/21/09
Sample Matrix: Water

OIL & GREASE ANALYSIS
EPA Method 1664

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09309501	W-18	ND	1	1	5
09309502	W-16	ND	1	1	5
09309503	W-2	ND	1	1	5
09309504	BYA-14	ND	1	1	5
09309505	HD-41	ND	1	1	5
09309506	BYA-H10	ND	1	1	5
09309507	HD-11	ND	1	1	5
09309508	HD-23	ND	1	1	5
09309509	BYA-9	1.0	1	1	5
09309510	BYA-10	ND	1	1	5
093095-MB	Method Blank	ND	1	1	5

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

Client: Fugro West, Inc.
CAS LAB NO: 093095
Analyst: AN

Date Sampled: 12/16/09
Date Received: 12/16/09
Date Analyzed: 12/21/09
Sample Matrix: Water

TOTAL SUSPENDED SOLIDS ANALYSIS
SM 2540 D

CAS Lab #	Sample ID	RESULTS (mg/L)	Dilution Factor	MDL (mg/l)	PQL (mg/L)
09309501	W-18	ND	1	1	5
09309502	W-16	ND	1	1	5
09309503	W-2	ND	1	1	5
09309504	BYA-14	ND	1	1	5
09309505	HD-41	ND	1	1	5
09309506	BYA-H10	5.6	1	1	5
09309507	HD-11	ND	1	1	5
09309508	HD-23	ND	1	1	5
09309509	BYA-9	ND	1	1	5
09309510	BYA-10	6.4	1	1	5
093095-MB	Method Blank	ND	1	1	5

MDL: Method Detection Limit
PQL: Practical Quantitation Limit
ND: Not Detected

Principal Analyst

CAPCO ANALYTICAL SERVICES

1536 Eastman Avenue, Suite B
Ventura, CA 93003
(805) 644-1095 Fax 644-9947
www.capcoenv.com

CHAIN OF CUSTODY RECORD

REPORT
Fax 805 650 7010
Company Fugro
Address 4820 McGrath St Suite 100
Ventura 93003 Email aspencer@fugro.com
Phone 805-650-7000 Contact Alexis Spencer

BILL TO: **P.O.#**
Company Same
Address
Phone Contact

PROJ. NO 339006043
PROJECT NAME BIG ROCK MESA NODES

SAMPLERS: (Signature)

CONTAINER TYPES
A = AMBER B = BRASS G = GLASS
P = PLASTIC V = VOA VIAL O = OTHER

093095

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	COMP	GRAB	SAMPLE IDENTIFICATION	MATRIX: WATER	SOIL	SLUDGE	OTHER	CONTAINER #/TYPE	ANALYSIS: BOD	Oil & Grease	15 Title 22 Metals	REMARKS
1	12-16-09	11:15			W-18					2/1 P/A				pH=7.16 T=22.9
2	12-16-09	11:35			W-16									6.94 22.5
3		12:00			W-2									6.91 21.3
4		11:50			B4A-14									7.06 21.6
5		12:20			HD-41									7.02 20.8
6		12:30			B4A-HD									7.19 21.7
7		12:40			HD-11									7.20 21.1
8		12:50			HD-23									7.28 21.4 21.4
9		14:00			B4A-9									6.96 22.6
10		15:20			B4A-10									7.36 21.5

The undersigned hereby acknowledges having received a copy of the Fee Schedule/General Information and Conditions, the provisions of which are a part of this agreement.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	12/16/09 16:30	UPS
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	12-16-9 16:20	

TURN AROUND TIME
STANDARD ☒ OTHER ____
24 HOURS ☐ ____
48 HOURS ☐ ____
72 HOURS ☐ ____

CHECK ONE BOX:
DISPOSE SAMPLES ☐
RETURN SAMPLES ☐

WHITE COPY ____ CANARY COPY ____ PINK COPY ____

APPENDIX F
REPLACEMENT DEWATERING WELL

APPENDIX F - CAPITAL IMPROVEMENT PROJECTS

INTRODUCTION

This appendix documents the drilling, installation, and development of a replacement dewatering well on the Central Mesa area of the Big Rock Mesa Landslide Assessment District (District) in Malibu, California. Well drilling was performed by Hansen Well Service, of Ojai, California between Thursday, January 10 and Tuesday, February 5, 2008 under contract with Fugro West. The well, named FW-1, replaces the non-operational W-6 installed in 1983. The pilot hole for the well was drilled was drilled with the air-circulation method. The pilot hole was reamed with the mud-rotary method. The well site is located south of a vacant lot at 20121 Rockport Way west of the intersection of Big Rock Drive, approximately 31 feet west of W-6. A map of the location of well FW-1 is presented as Plate 1 - Assessment District Map.

WELL DRILLING

Between Thursday, January 10 and Friday, January 11, Hansen Well Service (Hansen) drilled a 14-inch diameter hole with the air rotary method for the installation of a 12-inch diameter PVC conductor casing to a depth of 17 feet. A concrete seal, mixed at the site, was emplaced around the casing to 17 feet. On Friday, January 11 and Monday, January 14, Hansen drilled a 6-inch pilot bit to the planned-total depth of 400 feet. A geophysical log of the test hole was performed immediately upon completion of the pilot hole. The geophysical methods performed included short- and long-normal resistivities, point resistivity, and spontaneous potential. A copy of the geophysical log is appended. The electric logging tools reached a depth of only 290 feet, due to the dislodgement of a rock that occluded the hole. The results of the geophysical logs indicated that the water level was present at a depth of 120 feet below ground and a water-bearing coarse portion of the Sespe Formation was present at depths between about 250 and 280 feet. Sand and gravel was also present between 135 and 170 feet. Based on the geophysical log and review of the cuttings, we decided to complete the well with perforations, as planned, placed between 60 and 400 feet.

On Thursday, January 17, Hansen attempted to ream the hole to 12-inches in diameter, however, was not able achieve circulation and remove cuttings from the hole. Therefore, we approved of Hansen's decision to switch to a mud-rotary drilling system for the reaming of the pilot hole. On Monday, January 21, Hansen drilled a 12-inch diameter hole to 200 feet with the mud-rotary method but was unable to achieve circulation. On Tuesday, January 22, Hansen installed a 10-inch diameter conductor casing to 140 feet. A concrete seal was emplaced between the ground surface and 140 feet. On Thursday, January 24; Friday, January, 25; and Tuesday, January 29, Hansen reamed the hole to 420 feet. Immediately completion of reaming, the 6-inch diameter well casing was installed within the open hole to a total depth of 398 feet. Perforations were placed between depths of approximately 73 and 393 feet. Note that the perforations between 73 and 140 feet are located adjacent the deep 10-inch conductor because the perforated casing was delivered prior to the decision to install the deep conductor casing. Gravel pack was installed within the annulus to a depth of 55 feet on Tuesday, January 29 and Wednesday, January 30. A diagram of the completed well is presented as Plate F-1 - Well Completion Diagram.

Initial development of the new well was performed on Thursday, January 31 and Friday, February 2 by bailing and open-ended airlifting operations. Bailing operations were performed to

remove accumulated sediments from the bottom of the well. After the well was bailed, airlifting was performed to further remove fine-grained sediments within the surrounding gravel pack and formation. The surface annular seal was installed from 55 feet up to the ground surface following completion of airlifting operations. Additional bailing operations were performed for approximately 3 hours on Thursday, February 7 to remove approximately 8 feet of sediment that had accumulated at the bottom of the well.

PUMPING TESTS

Following initial development, a test pump was installed to a depth of approximately 380 feet. The static water level prior to pumping was 125.9 feet below the top of the casing (BTOC). On Friday, February 8 between 8:24 am and 3:00 pm, the pump was operated at rates between about 3.5 gpm and 35 gpm. The higher pumping rates were not sustainable, but performed to rapidly drawdown water within the well to aid development. When operated at pumping rates over about 3.5 gpm, the water level in the well would decline; when pumped at less than about 3.5 gpm, the water level would rise. When the well pump was switched off, the recovery water levels were recorded. Based on the rate of water level rise, the rate of recharge to the well was approximately 4.5 gpm. The recharge rate during pump testing was likely between 3.5 and 4.5 gpm. Hydrographs of the pumping test water level data is presented as Plate F-2 - FW-1 Water Level Hydrograph.

Recovery data was recorded for 2.7 days after the pump was switched off. After 24-hours following the end of pumping, the water level recovered to 137.8 feet BTOC, or within 11.9 feet of the pre-test static water level. After 48 hours, the water level recovered to 133.1 feet BTOC, or 7.2 feet below the static water level. Recovery water levels are presented as Plate F-3 - FW-1 Recovery Water Level Hydrograph.

PERMANENT PUMP INSTALLATION

Based on the results of the pumping tests we decided to install a one horsepower pump within the well. The pump consisted of a Grudfos 4" Standard 3,450 rpm pump model number 5S10-22 capable of producing approximately 4.4 gpm from a depth of 380 feet. When pumped from a shallower depth of 300 feet, the pump is designed to produce approximately 6.2 gpm. A copy of the pump performance curve is appended.

A 2-inch diameter PVC discharge pipe was installed and buried to the stormdrain located east of the well. The electrical wiring was installed within the same trench adjacent the discharge pipe and connected to a new electrical panel installed east of the well, north of the intersections of Big Rock Way and Rockport Drive. A Gould's Pumpsaver model number 111 control box was installed within the electrical panel. The control box was initially programmed to switch off the pump when the pumping level dropped below a pre-set level and operate the pump after a set delay. Currently, the pump is producing approximately 1,000 gallons per day, although this will likely decrease as the landslide is dewatered. The assigned pumping duration and the cut-off pumping water level will be adjusted regularly in response to variations in recharge to the well.