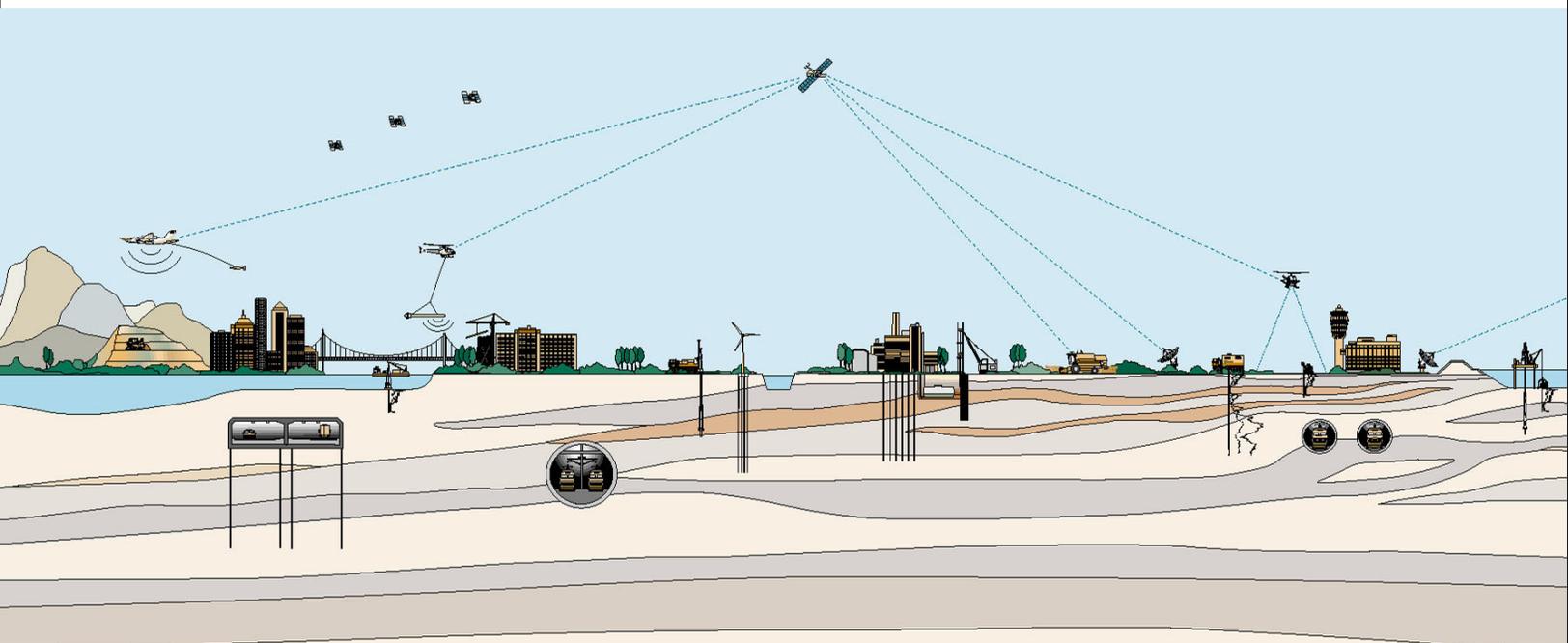

FUGRO CONSULTANTS, INC.



**ANNUAL REPORT
JULY 2013 THROUGH JUNE 2014
CALLE DEL BARCO
LANDSLIDE ASSESSMENT DISTRICT
MALIBU, CALIFORNIA**

Prepared for:
CITY OF MALIBU

April 2015
Fugro Project No. 04.62140605





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April 20, 2015
Project No. 04.62140605

City of Malibu
23825 Stuart Ranch Road
Malibu, California 90265

Attention: Mr. Rob Duboux

Subject: Annual Report, July 2013 through June 2014, Calle del Barco Landslide Assessment District, Malibu, California

Dear Mr. Duboux:

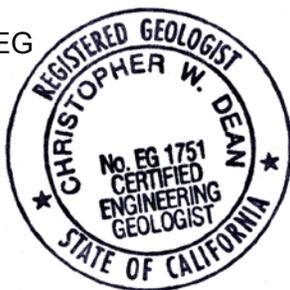
Fugro is pleased to present this annual report for the Calle del Barco Landslide Assessment District. This report summarizes the monitoring and maintenance activities completed during the period of July 2013 through June 2014.

Fugro appreciates this opportunity to be of service to the City of Malibu and the District homeowners. Please contact Chris Dean at (310) 456-2489, x306 or Todd Curtis at (310) 456-2489, x307 if you have any questions regarding this report.

Sincerely,

FUGRO CONSULTANTS, INC.

Christopher Dean, CEG
Associate Geologist/
Program Manager



Todd Curtis, P.E.
Senior Staff Engineer/Project Manager



Reviewed by:

Thomas F. Blake, G.E., C.E.G.



Copies Submitted: (1) Addressee and PDF
(2) City of Malibu- Geotechnical staff and PDF



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1.0 INTRODUCTION

1.1 AUTHORIZATION

Fugro prepared this data report in accordance with our contract with the City of Malibu (City) and consistent with the cost estimate document "Exhibit A - FY 2013-2014 Maintenance Cost Estimate" presented in the Annual Assessment Report (Taussig, 2013).

1.2 BACKGROUND

The Calle del Barco Landslide Assessment District (Assessment District) was established in 1986 by the County of Los Angeles (County) following the activation of a landslide between Rambla Orienta and Calle del Barco in 1978. The Assessment District provides permanent funding to maintain and monitor dewatering facilities with the purpose of stabilizing the landslide. The County administered the Assessment District until 1991 when the City of Malibu incorporated. The Assessment District was reauthorized in May 1998 under Resolution No. 98-033. 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, 2013, and June 30, 2014 (hereinafter, the 'monitoring period').

Data collected during this monitoring period included the following:

- Annual rainfall data from a local rain gauge operated by the County of Los Angeles, Department of Public Works - Water Resources Division;
- Monthly groundwater level measurements from 9 standpipes and 19 pneumatic piezometers;
- Monthly dewatering production readings from 11 dewatering wells;
- Monthly dewatering production readings from 17 horizontal drains;
- Quarterly ground deformation measurements from 12 slope inclinometers; and
- Periodic maintenance of dewatering and monitoring facilities.

The operating condition of the instrumentation and dewatering facilities was checked at each field monitoring/observation location 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, and correspondence from concerned homeowners and tenants.



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

1.4 REPORT ORGANIZATION

This report summarizes the monitoring data collected during the current 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 are shown on Plate 2 - Assessment District Map. Tabulated and graphic summaries of monitoring data are presented in Appendices A through C as indicated in the table of contents.

1.5 REPORT AVAILABILITY

The annual Assessment District reports are available for review at Malibu City Hall. Reports may also be viewed on the City's website at <http://www.malibucity.org>.

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 graph of historical monthly rainfall and average annual rainfall is shown on Plate 3, Rainfall Graph.

Rainfall data indicate that approximately 5.17 inches of precipitation fell during the monitoring period from July 2013 through June 2014. The average annual rainfall from 1968 to 2013 in the Malibu area for the monitoring period July through June is approximately 16.0 inches.

Rainfall data are usually analyzed in terms of the annual "rain season" that covers the time period October 1 through September 30. Rainfall for October 1, 2013, through June 30, 2014, was approximately 5.13 inches. This is approximately 32 percent of the average annual rainfall of 16.0 inches for the rain seasons of 1968 through 2013.

2.2 GROUNDWATER MONITORING

The groundwater level data collected during the current 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:

- Infiltration from septic systems;
- Infiltration from irrigation;

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

Typically, groundwater levels rise relatively quickly following significant rainfall and gradually lower after a wet season ends. Groundwater levels measured in standpipe piezometers (wells) and pneumatic piezometers are depicted in Appendix A. Groundwater levels recorded in the Assessment District typically peak around late-March to mid-April and gradually decline from late September through November.

A summary graph of mean high groundwater elevations for the District is presented on Plate 5. Plate 5 also shows the average dewatering output (gpd) and the yearly magnitude of deviation from the mean annual rainfall. The average annual rainfall used for the chart was computed using all of the data from 1988 through the present. This graph illustrates that since 2010-2011, annual rainfall has been generally decreasing. During the same period, the average dewatering output has been decreasing.

2.2.1 Standpipe Piezometers

Nine standpipe piezometers (SI-4, SI-5, SI-7, SI-8, SI-9, SI-13, SI-14, SI-15, and SI-16) were measured over the monitoring period. The locations of the standpipe piezometers are depicted on Plate 2 - Assessment District Map, and groundwater elevation data are presented in Appendix A.

2.2.2 Pneumatic Piezometers

Each of the inclinometers installed within the Assessment District after 1996 were outfitted with two to four pneumatic piezometer sensors. Twenty-two sensors were measured regularly over the monitoring period. Each sensor records groundwater elevations by measuring differential air pressure between the instrument sensor and groundwater surface across a flexible bladder. Differential pressure is converted into inches of water head and represented as a relative groundwater level. The locations of the piezometers are shown on Plate 2 and groundwater elevation data is presented in Appendix A.

2.2.3 Groundwater Level Discussion

The groundwater data were reviewed by evaluating changes that occurred during the current monitoring period as well as changes in groundwater levels over extended periods. To analyze trends in seasonal groundwater fluctuations, the average (mean) annual and highest annual recorded groundwater elevation for each piezometer were calculated (Appendix A, Plate A-2).



Groundwater levels in individual piezometers were generally the same or slightly higher relative to the previous year. The annual average and peak groundwater elevations were slightly higher than the prior year averages in the Rambla Vista and Calle del Barco areas. Average and peak groundwater levels in the Rambla Pacifico area were slightly below the prior year averages (see Table 1 below). Groundwater levels in SI-11 returned to pre 2012-2013 monitoring year levels during the latter months of the current monitoring period (see Plate A-4). Overall, groundwater levels continue to show a general decline from the record rainfall of the 2004 to 2005 monitoring period. The average and highest annual groundwater levels are indicated in the following table:

Table 1. Summary of Average Groundwater Elevations by Area

Location	Average Groundwater Elevation 2013-2014	Change from Prior Year Average	Peak Groundwater Elevation 2013-2014	Change from Prior Year Peak
Rambla Orienta/ Rambla Vista	166.3	+1.4	168.4	+1.9
Calle Del Barco	253.3	+2.5	254.5	+2.3
Rambla Pacifico	350.3	-0.1	351.2	-0.3

Note: All Units are in feet.

2.3 DEWATERING PRODUCTION

Dewatering production data are provided in Appendix B, with dewatering well and hydrauger information presented on Plate B-1. A summary of the dewatering output based upon groundwater levels and rainfall is depicted on Plate 5.

2.3.1 Dewatering Well Production

A graph of the production rate for all dewatering wells is presented on Plate 4. Graphs showing production rates of individual wells are provided in Appendix B. Production data for the dewatering wells indicates the following:

- The average total well production rate for this monitoring period was approximately 560 gallons per day (gpd). That represents a decrease of about 27 percent from the previous monitoring period of 766 gpd.

2.3.2 Hydrauger Production

A graph of the production rate for all hydraugers is presented on Plate 4. Graphs of individual production rates for all hydraugers are included in Appendix B. Data for the hydraugers indicates the following:

- The average production rate for all hydraugers over the monitoring period is approximately 153 gpd. This represents an decrease of approximately 17 percent from the average production rate of 185 gpd for the previous monitoring period.

2.3.3 Total Dewatering Production

A combined graph of the total dewatering rate for all dewatering wells and hydraugers is presented on Plate 4. Total dewatering production data for the hydraugers and wells indicates the following:

The average total dewatering rate during the monitoring period was approximately 713 gpd. This represents a 21 percent decrease in the average rate relative to the 901 gpd average recorded during the previous monitoring period

2.4 SLOPE INCLINOMETER MEASUREMENTS

Fugro monitored 12 slope inclinometers on a quarterly basis to check for subsurface ground deformation. Plots of slope inclinometer measurements (four plots for each monitored slope inclinometer) are presented in Appendix C. The first plot, for each inclinometer, shows the cumulative deflection and incremental deflection for the A-direction and the second plot shows the cumulative deflection and incremental deflection for the B-direction. Those two plots show approximately one curve per year from about 2006 through the current monitoring year. The third and fourth plots show displacement versus time for the same period, but all of the readings are included on those plots.

When reviewing and interpreting the slope inclinometer data plots, instrument limitations and movement history should be considered. Individual plots have been reviewed and interpreted with regard to movement along identified slide planes. Interpreted movement along the identified slide planes is summarized on Plate C-1 in Appendix C. Some slope inclinometer plots show minor amounts of displacement measured at the ground surface during the 2013 through 2014 monitoring period. Measurement along identified slide planes during the 2013 through 2014 monitoring period is less than 0.1 inch.

Inclinometer SI-9 exhibits a pattern of movement measured at the ground surface at a rate of between 0.1 and 0.2 inch/year since 2005, resulting in approximately 1 inch of cumulative displacement since the 2004-05 monitoring period. Movement of the inclinometer appears to be both translational at specific depths between 30 and 55 feet and rotational about a hinge point at about 55 feet below the ground surface.

Inclinometer SI-16 exhibits a pattern of movement measured at the ground surface at an average rate of up about 0.08 inches/year since 2005, resulting in approximately 0.5 inches of cumulative displacement at the ground surface since the 2004-05 monitoring period. Movement of the inclinometer appears to be both translational at specific depths between 0 to 10 feet and between 40 and 85 feet and rotational about a hinge point at about 50 feet below the ground surface. This is similar to the movement observed in inclinometer SI-9 located in close proximity to SI-16.



Although the movement observed in inclinometers SI-9 and SI-16 has not produced observed distress in pavements or other development of which Fugro is aware, the movement is nevertheless quantifiable and can be defined by a clear trend.

3.0 FACILITY MAINTENANCE

3.1 MAINTENANCE SUMMARY

The operating status of each dewatering well and hydrauger was checked monthly. When necessary, repair work would be scheduled and undertaken as expeditiously as possible, typically within a matter of a few hours or days. Generally, repairs and maintenance consisted of brush and debris clearance for well and hydrauger locations for the 2013 through 2014 monitoring year.

3.2 CAPITAL IMPROVEMENT PROJECTS

No capital improvements were performed during the monitoring period.

4.0 SUMMARY AND CONCLUSIONS

4.1 SUMMARY

The status of the Calle del Barco Landslide Assessment District can be summarized as follows:

- The 2013 through 2014 monitoring year rainfall was below average with 5.17 inches of precipitation. Rainfall during the monitoring period was below the historical average of 16.0 inches per year measured from 1968 through 2012.
- In general, groundwater levels in the assessment district were slightly higher than average for the Rambla Vista/Rambla Orienta and Calle del Barco areas relative to the previous year. Average and peak groundwater levels in the Rambla Pacifico area were slightly below the prior year averages. Groundwater levels generally are continuing to decrease from the levels observed in the record winter of 2004 through 2005.
- In the standpipe piezometers, groundwater levels were generally lower than groundwater levels in monitoring year 1997-1998 when major slope failure occurred.
- Total dewatering production decreased about 21 percent when compared to last year's total production. Well-below average rainfall for the monitoring period, as well as generally static to declining groundwater levels under the District since the last normal rainfall year, contributed to the decreased production.
- Slope inclinometer readings indicate a maximum localized displacement at the ground surface of about 0.7 inch (SI-9) and 0.5 inch (SI-16) located on Calle del



Barco with the majority of inclinometers indicating no significant ground movement since 2006.

- Water conservation is encouraged throughout the Calle Del Barco District to reduce the infiltration of domestic water and the potential for future groundwater level increases. Control of groundwater levels within the landslide area is critical to maintaining its stability.
- Groundwater production from existing dewatering wells and hydraugers should be expected to gradually decline over time as the efficiency of the wells and hydraugers decreases due to mineralization and aging of the facilities.



5.0 REFERENCES

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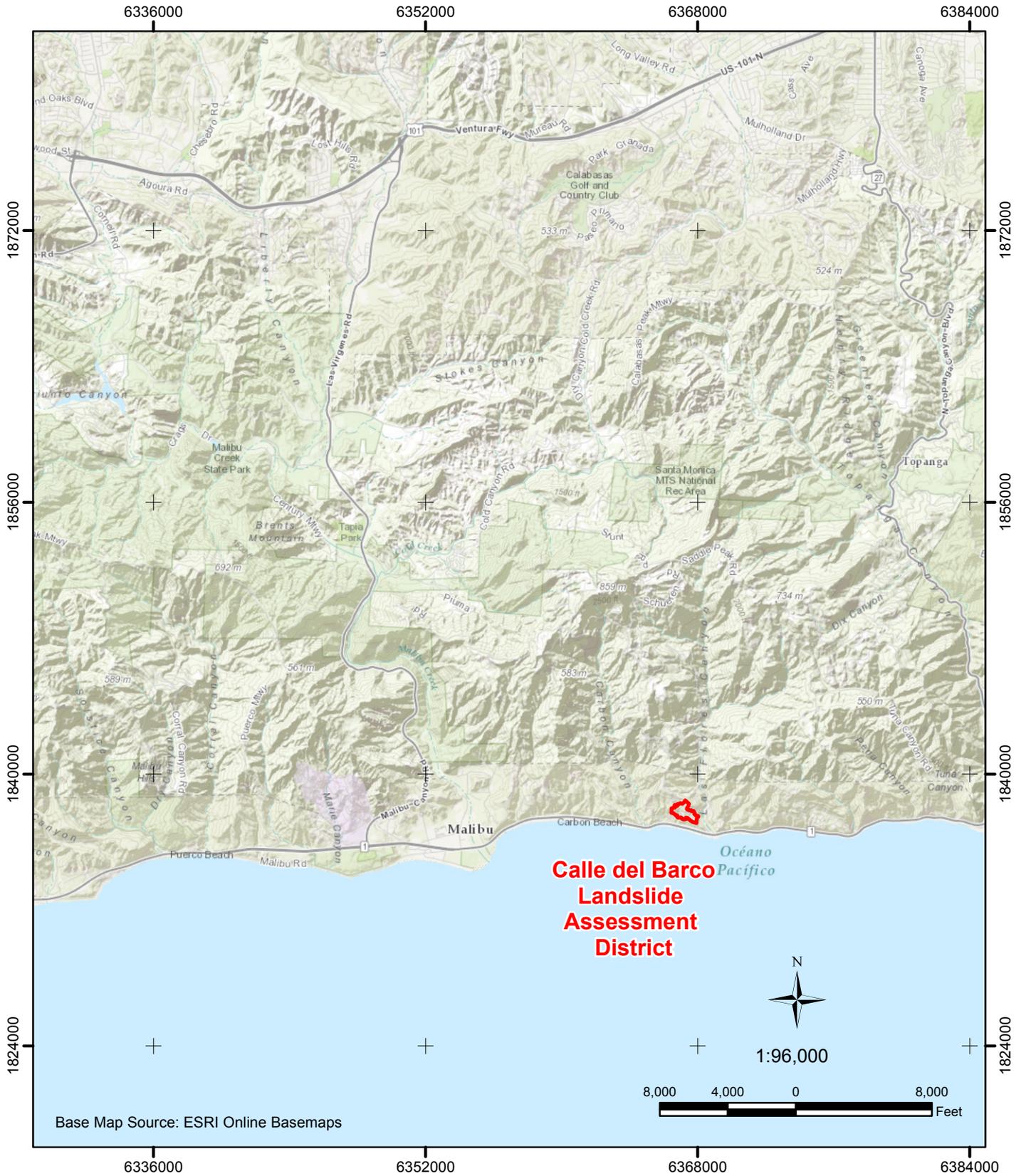
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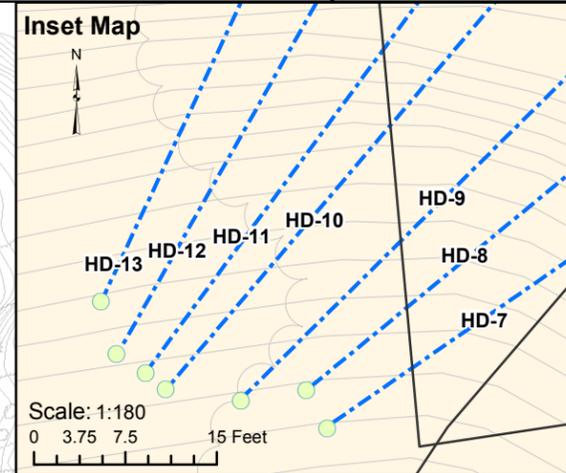
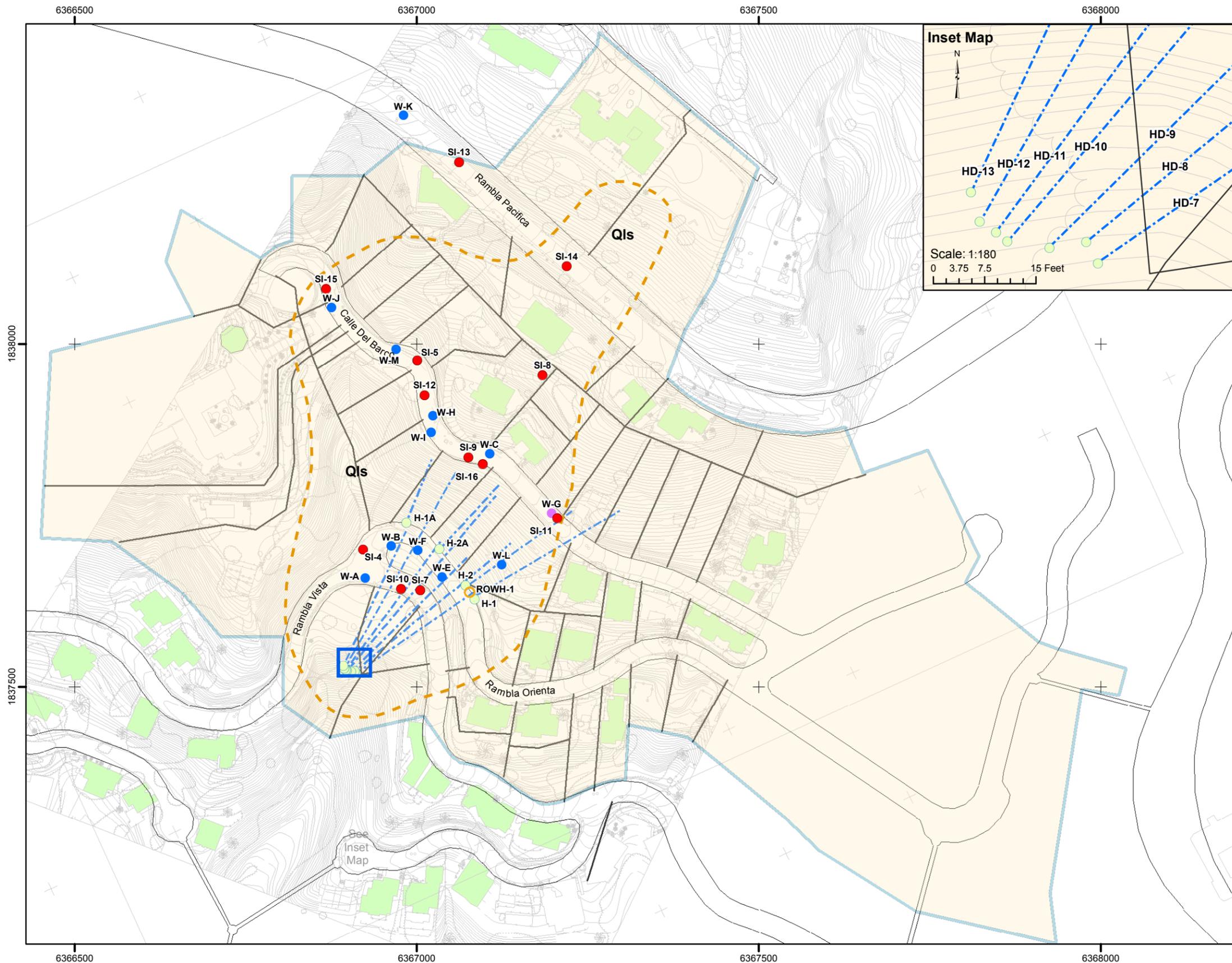
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PLATES



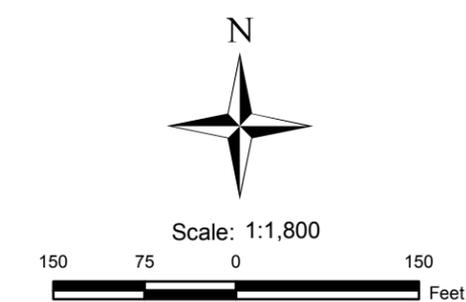
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SITE LOCATION MAP
Calle del Barco Landslide Assessment District
Malibu, California



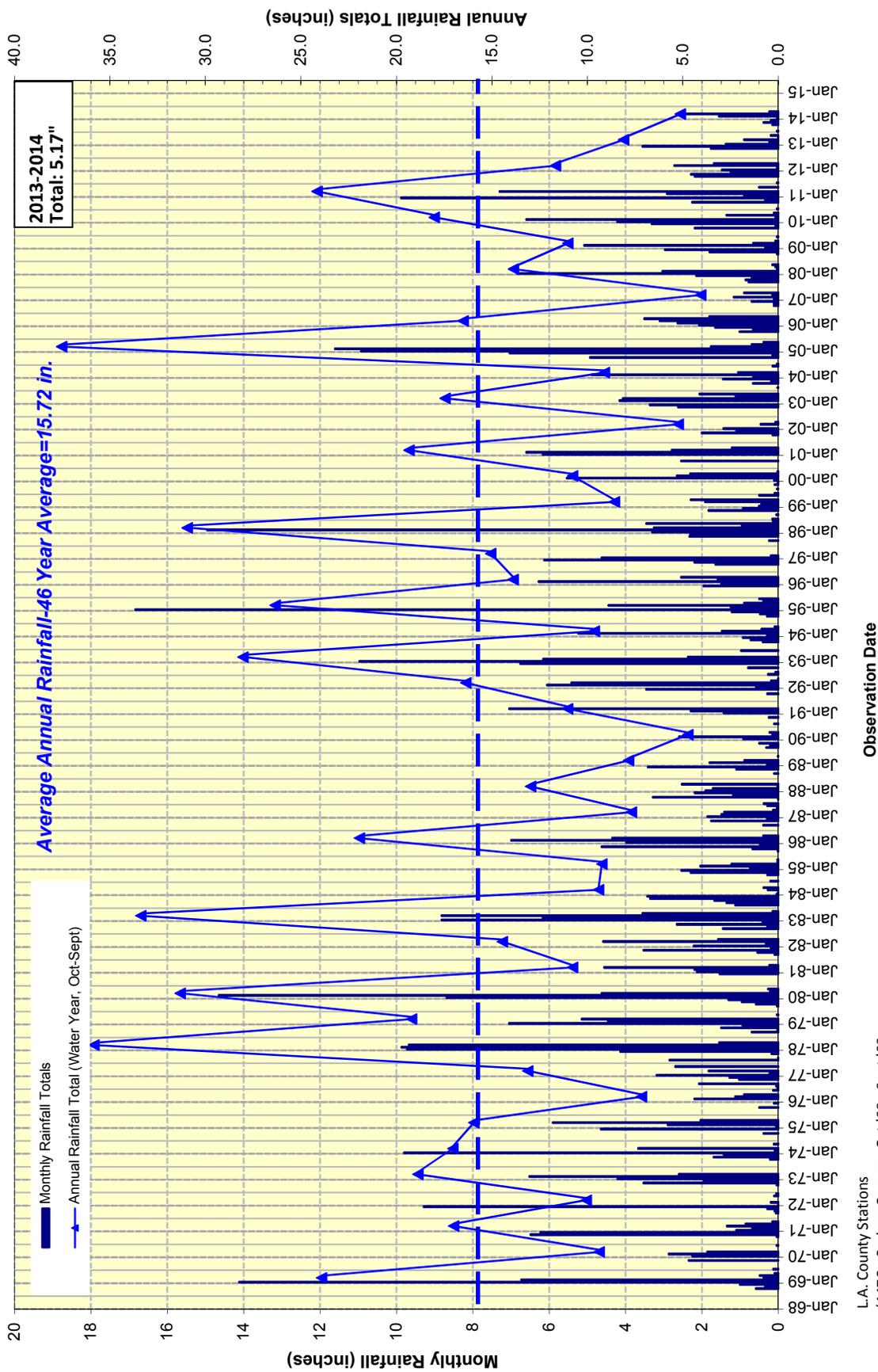
LEGEND

- Active Dewatering Well
- Inactive Dewatering Well
- Slope Inclinometer/Standpipe
- ROWH-1 -Conveyance Line for H-2
- Horizontal Drain (Hydrauger)
- QIs Approximate Limits of Landslide
- Assessment District Boundary
- Extent of Horizontal Drain (Hydrauger) Inset
- +
- Coordinate Grid: California State Plane, Zone 5, NAD 83, Feet



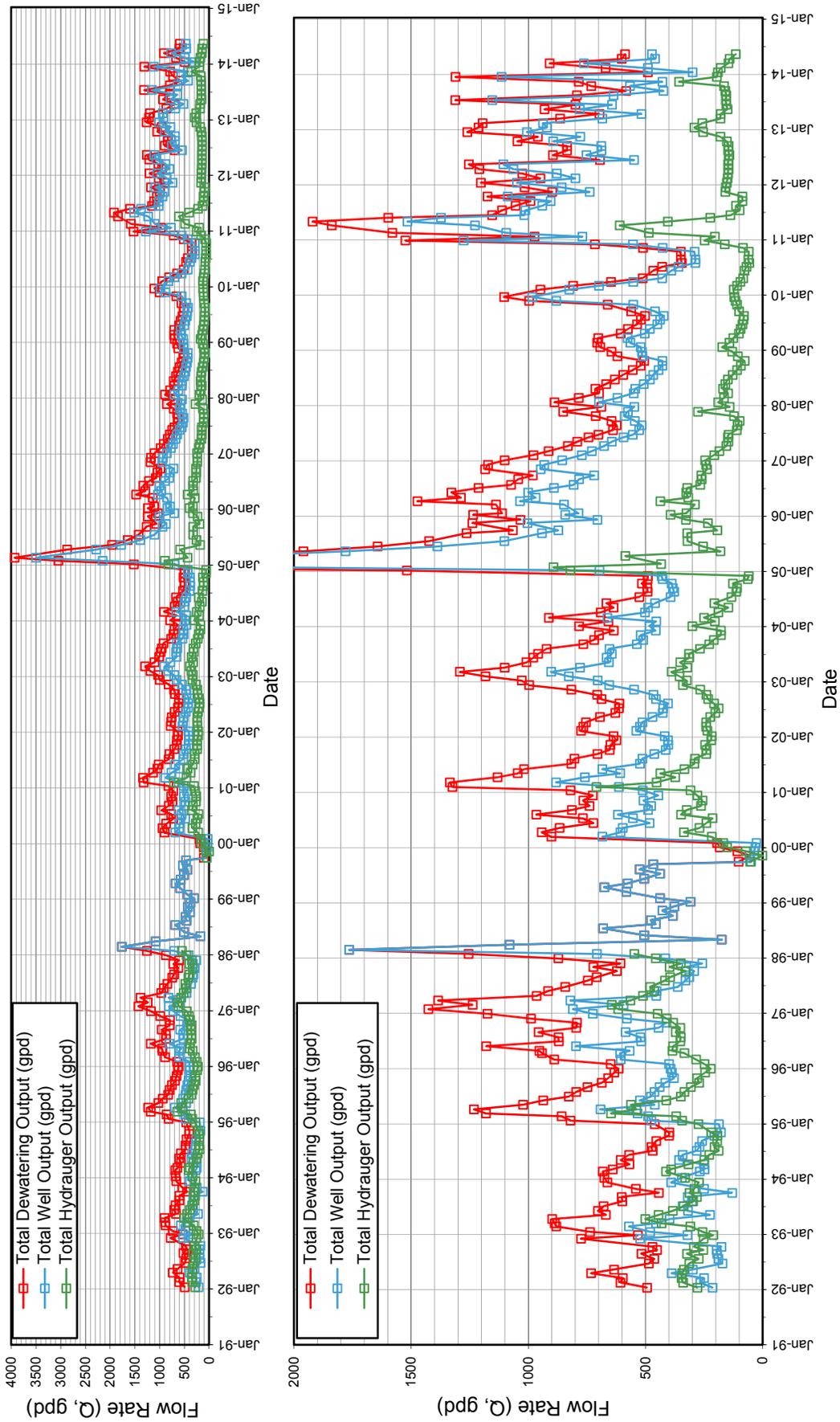
ASSESSMENT DISTRICT MAP
 Calle del Barco Landslide Assessment District
 Malibu, California

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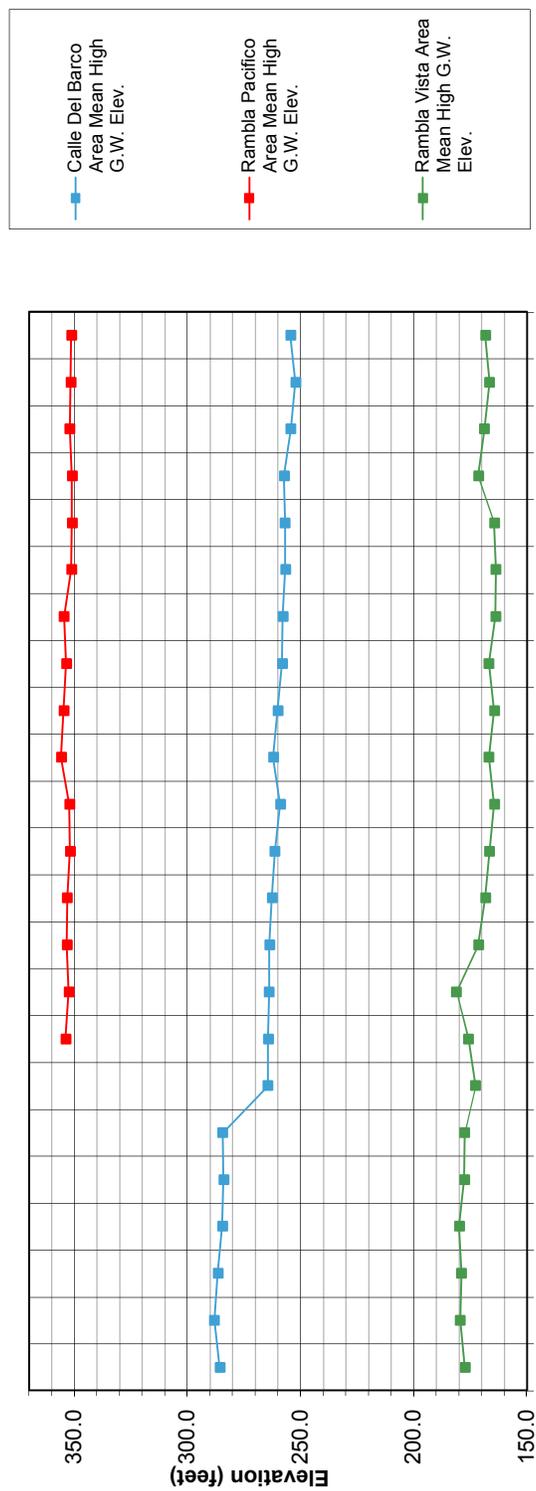
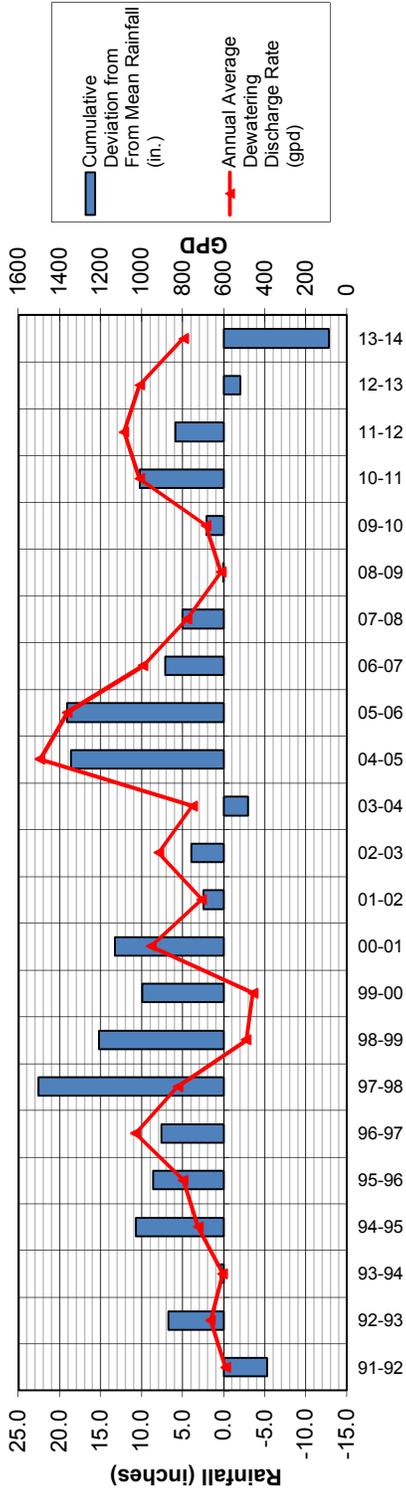


L.A. County Stations
 (447C - Carbon Canyon: Oct '68 - Sept '03
 & 1239 Big Rock Mesa : Oct '03 - present)

RAINFALL GRAPH
 Calle del Barco Landslide Assessment District
 Malibu, California



TOTAL DISCHARGE - WELLS AND HYDRAUGERS
Calle del Barco Landslide Assessment District
Malibu, California



* Graph shows the average of the highest groundwater elevations recorded in each wellpiezometer during the monitoring period.

GROUNDWATER LEVELS, DEWATERING, AND RAINFALL
 Calle del Barco Landslide Assessment District
 Malibu, California

**APPENDIX A
GROUNDWATER DATA**



Standpipe Piezometer Information					
Standpipe ID	Reference Elevation (ft)	Casing Depth (ft)	Perforation Interval	Installed By	Notes
SI-4	207.0	81	Unknown	Unknown	
SI-5	302.0	100	Unknown	Unknown	
SI-7	201.0	106	Unknown	Unknown	
SI-8	352.0	131	Unknown	Unknown	
SI-9	298.0	100	Unknown	Unknown	
SI-13	424.0	82	Unknown	Unknown	
SI-14	408.0	80	Unknown	Unknown	
SI-15	301.0	78	Unknown	Unknown	
SI-16	297.0	90	Unknown	Unknown	

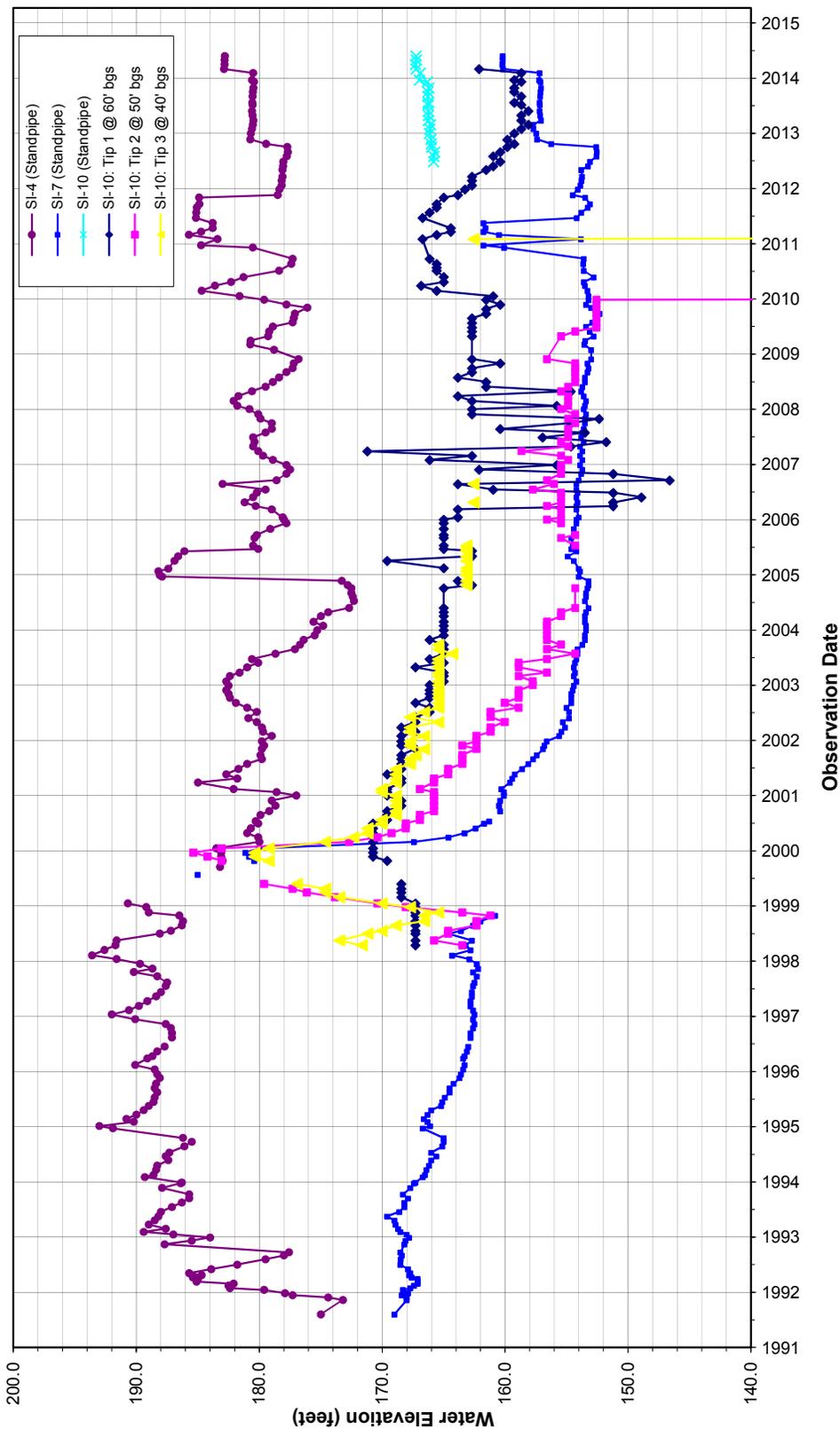
Pneumatic Piezometer Information					
Piezometer ID	Tip No.	Tip depth (ft)	Tip Elev. (ft)	Installed By	Notes
SI-9	1	68	230	BYA	
	2*	38	260	BYA	
SI-10	1	60	142	BYA	
	2*	50	152	BYA	
	3*	40	162	BYA	
	4*	20	182	BYA	
SI-11	1	60	231.5	BYA	
	2	50	241.5	BYA	
	3*	40	251.5	BYA	
	4*	20	271.5	BYA	
SI-12	1	60	241	BYA	
	2	50	251	BYA	
	3	40	261	BYA	
	4	20	281	BYA	GW Below Tip El.
SI-13	1	70	354	BYA	
	2*	50	374	BYA	
SI-14	1	68	340	BYA	
	2*	48	360	BYA	
SI-15	1	66	235	BYA	
	2	36	265	BYA	
SI-16	1	70	227	BYA	
	2*	40	257	BYA	

* - Piezometer not functioning

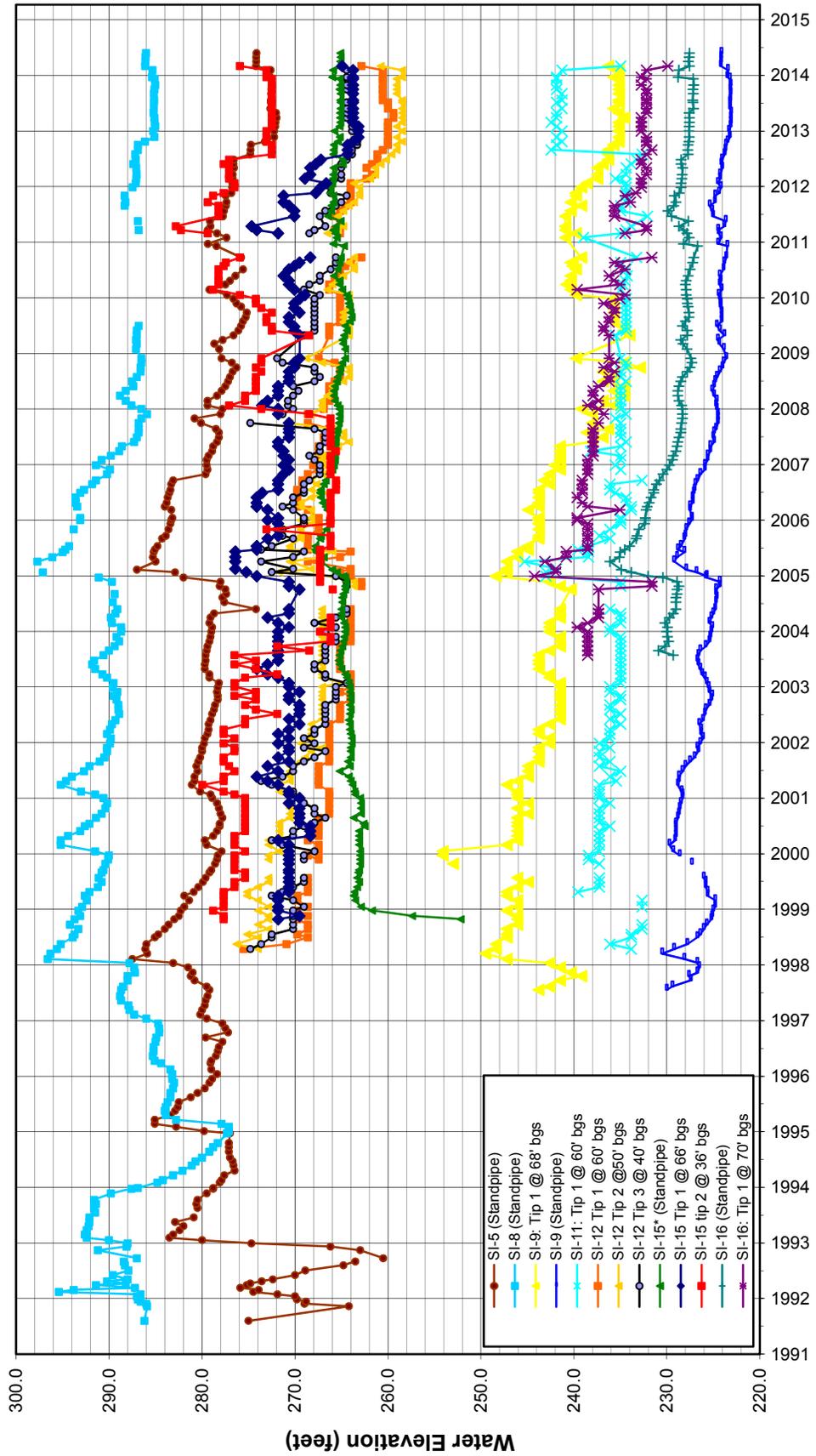
PIEZOMETER INFORMATION
 Calle del Barco Landslide Assessment District
 Malibu, California



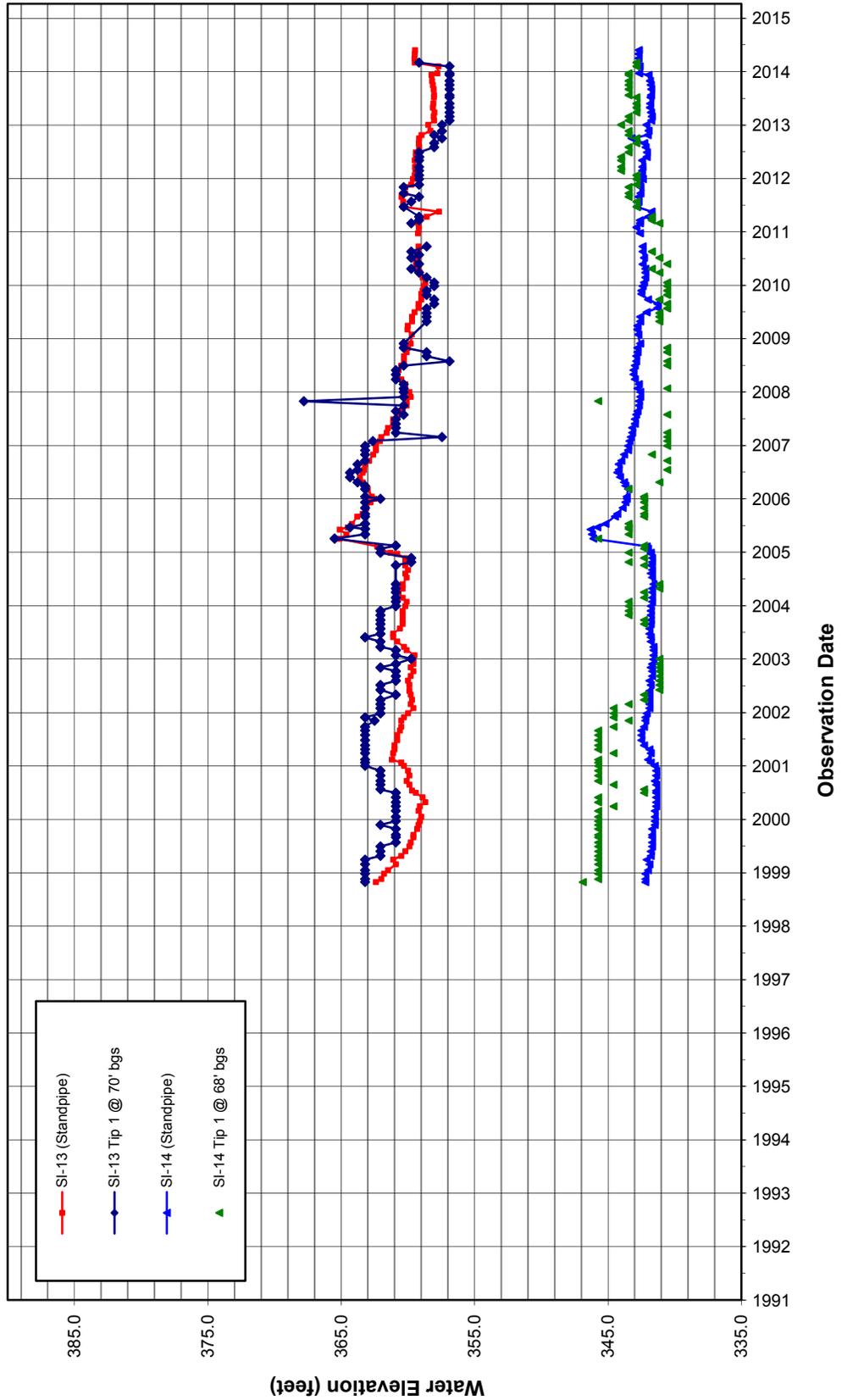
CALLE DEL BARCO - SUMMARY OF GROUNDWATER DATA																																
Piezometer I.D.		91-92*	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00**	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	Highest Ever Recorded	Mean '91 - '14	Stand. Dev.	13-14 vs 97-98	13-14 vs 12-13	13-14 vs Mean		
Rambla Vista																																
SI-4	Mean El.	180.9	184.9	187.3	188.9	188.6	188.8	190.1	187.9	182.0	180.4	180.1	181.8	176.1	180.5	179.6	179.5	180.4	178.7	179.8	182.0	181.1	179.6	181.3	Mar-98	182.6	4.0	-8.8	1.7	-1.3		
	Max El.	185.7	189.4	189.3	193.0	190.1	192.0	193.6	190.7	183.5	185.0	181.7	182.7	180.6	188.2	181.2	183.0	182.1	180.7	184.7	185.7	185.2	180.7	182.9	193.6	185.7	4.2	-10.7	2.1	-2.9		
SI-7	Mean El.	167.8	168.5	167.3	165.8	163.9	162.7	162.8	162.7	173.9	160.3	156.5	154.3	153.6	153.8	154.3	153.9	153.6	153.2	153.1	158.2	153.7	155.7	158.2	Aug-99	159.5	6.2	-4.6	2.4	-1.3		
	Max El.	169.0	169.6	168.6	166.7	165.1	163.0	164.3	164.6	185.0	161.7	158.6	155.0	154.2	154.9	154.6	154.2	153.8	153.6	153.6	161.8	154.5	157.7	160.2	185.0	161.1	7.6	-4.1	2.5	-0.8		
SI-10	Mean El.									167.3	167.7	170.6	169.3	168.1	166.0	165.2	164.5	161.2	158.2	158.5	162.4	163.0	165.5	163.9	Apr-07	164.1	3.9	-8.0	0.0	-4.8		
TIP-1	Max El.									167.3	168.5	170.8	170.8	168.5	167.3	166.2	169.6	165.0	171.2	163.9	163.9	166.8	166.7	161.0	162.1	171.2	166.8	3.0	-5.2	1.2	-4.7	
SI-10	Mean El.									164.7	168.7	177.0	166.2	162.4	158.8	155.9	154.3	155.5	156.0	154.9	154.8	152.6	--	--	Jan-99	160.1	7.2	--	--	--		
TIP-2	Max El.									165.8	179.6	185.4	168.1	164.7	161.2	156.6	154.3	156.6	158.7	155.5	156.6	152.6	--	--	185.4	162.7	10.0	--	--	--		
Area Average	Mean El.	174.4	176.7	177.3	177.4	176.3	175.7	171.2	171.7	175.9	169.0	166.8	165.3	162.7	163.3	162.6	161.9	161.8	162.3	162.1	168.6	166.2	164.9	166.3	.....	168.7	5.8	-4.9	1.4	-2.5	
	Max El.	177.4	179.5	179.0	179.9	177.6	177.5	172.8	175.8	181.2	171.4	168.4	166.6	164.4	166.8	164.4	166.8	163.8	163.7	164.4	171.4	168.8	166.5	168.4	.....	171.1	6.0	-4.3	1.9	-2.7	
Change vs Prior	Mean El.		2.3	0.6	0.0	-1.1	-0.5	-4.5	0.5	4.1	-6.8	-2.2	-1.5	-2.6	0.6	-0.7	-0.7	-0.1	0.4	-0.1	6.4	-2.3	-1.4	1.4	.....						
	Max El.		2.2	-0.6	0.9	-2.3	-0.1	-4.8	3.1	5.3	-9.8	-3.0	-1.8	-2.2	2.4	-2.4	2.4	-3.0	-0.1	0.7	7.0	-2.6	-2.3	1.9	.....						
Calle Del Barco																																
SI-5	Mean El.	271.9	273.5	278.9	280.1	279.9	278.8	282.6	282.6	278.9	279.1	279.9	278.8	278.8	281.2	283.9	280.6	278.7	277.2	276.5	278.1	277.1	273.3	273.1	Mar-98	278.4	3.1	-9.5	-0.2	-5.3		
	Max El.	275.9	283.5	280.9	285.1	282.6	280.2	287.5	285.1	279.9	281.1	280.6	279.7	279.6	287.0	285.1	283.7	280.8	278.7	279.2	279.4	277.8	276.6	274.2	287.5	281.0	3.5	-13.3	-2.4	-6.9		
SI-8	Mean El.	288.6	290.0	287.5	279.8	283.8	286.0	290.7	293.0	291.9	292.2	290.5	289.8	289.6	293.2	289.8	286.9	--	--	285.5	286.8	286.9	--	--	286.1	Apr-05	288.8	3.4	--	--	--	
	Max El.	295.4	292.6	292.1	284.0	285.3	288.7	296.6	294.2	295.2	295.2	292.7	291.8	291.6	297.7	294.7	293.6	288.8	287.5	286.8	286.9	--	--	286.1	297.7	291.3	4.1	--	--	--		
SI-9	Mean El.									228.2	225.6	228.2	228.7	226.8	225.8	225.6	227.7	226.1	224.7	224.2	224.0	224.0	224.6	223.4	223.5	Apr-98	225.7	1.7	-4.6	0.1	-2.2	
	Max El.									230.5	229.7	229.0	228.3	226.6	226.7	229.2	228.8	227.2	225.1	224.8	224.6	224.5	225.4	224.1	224.2	230.5	226.8	2.1	-6.3	0.1	-2.6	
SI-15	Mean El.									261.0	263.1	263.3	264.2	264.3	264.9	265.5	266.9	266.3	265.5	264.9	264.6	265.4	265.4	265.3	Jul-05 & Aug-05	264.8	1.4	--	-0.1	0.5		
	Max El.									263.7	263.3	264.2	265.2	265.2	265.3	267.7	267.8	267.3	265.8	265.5	265.8	265.9	266.4	265.9	266.0	267.8	265.7	1.3	--	0.1	0.3	
SI-16	Mean El.														229.8	231.6	232.7	230.1	228.5	227.9	227.7	228.8	227.6	227.6	Apr-05	229.1	1.8	-0.1	-1.6			
	Max El.														230.9	236.1	234.5	231.7	228.8	228.5	228.3	228.7	229.9	228.8	236.1	230.4	2.7	--	0.3	-1.6		
SI-9	Mean El.									244.1	246.7	248.7	245.9	243.5	242.1	242.3	245.2	244.1	242.0	236.8	235.7	237.6	240.2	239.0	235.5	235.4	Jan-Feb-00	241.4	4.2	-8.7	-0.1	-6.1
TIP-1	Max El.									249.6	247.3	254.2	247.3	245.0	243.8	243.8	248.4	245.0	243.8	239.2	239.8	240.8	240.9	240.9	236.3	236.3	254.2	243.7	4.8	-13.2	0.0	-7.3
SI-9	Mean El.									267.8	263.8	261.2	262.9	261.2	266.5	261.2	261.2	261.2	261.2	261.2	261.2	261.2	261.2	261.2	261.2	261.2	Mar-98	263.9	2.8	--	--	--
TIP-2	Max El.									274.3	266.9	261.2	263.5	261.2	270.4	261.2	261.2	261.2	261.2	261.2	261.2	261.2	261.2	261.2	261.2	261.2	274.3	266.2	5.3	--	--	--
SI-11	Mean El.									235.0	234.4	237.5	236.8	236.3	235.3	235.2	240.0	235.7	235.3	235.0	234.7	234.5	235.0	234.3	240.3	240.9	Apr-05	236.2	2.2	5.9	0.6	4.7
TIP-1	Max El.									236.1	239.6	238.4	237.3	237.3	236.1	236.1	245.3	239.6	238.2	235.5	235.5	235.0	239.0	235.5	242.4	241.9	245.3	238.1	2.9	5.8	-0.6	3.7
SI-11	Mean El.									242.7	243.7	243.8	242.8	242.8	242.7	242.9	242.9	242.7	242.7	242.7	242.7	242.7	242.7	242.7	242.7	242.7	Jan-00	242.7	0.5	-0.3	0.3	-0.4
TIP-2	Max El.									242.7	245.0	246.1	243.8	243.8	242.7	245.0	243.2	243.2	243.2	243.8	242.7	242.1	242.1	242.1	243.2	246.1	243.4	1.1	0.6	1.2	-0.2	
SI-12	Mean El.									273.2	269.1	268.0	266.9	266.4	264.6	264.4	264.6	268.5	268.1	266.9	265.9	265.5	264.7	263.6	260.1	260.7	May-98	265.9	3.1	-12.5	0.6	-5.2
TIP-1	Max El.									275.5	269.8	268.6	267.5	267.5	265.2	265.2	268.6	269.8	268.6	267.5	266.3	265.7	265.7	261.1	262.9	275.5	267.3	3.2	-12.7	1.7	-4.5	
SI-12	Mean El.									275.2	273.9	272.5	270.9	268.7	266.9	267.1	267.1	269.2	266.7	266.7	265.2	264.8	264.6	263.0	258.9	259.0	Jun-98	267.1	4.5	-16.2	0.1	-8.1
TIP-2	Max El.									276.3	275.2	272.9	271.7	270.6	267.1	267.1	271.7	270.6	268.3	270.6	268.8	266.5	266.5	265.4	260.2	260.8	276.3	268.8	4.4	-15.5	0.6	-8.1
SI-12	Mean El.									274.2	270.8	269.8	269.7	268.3	266.4	266.1	268.8	270.7	267.9	268.9	267.9	266.6	265.6	263.9	264.4	Oct-07	268.2	2.6	-9.8	0.5	-3.8	
TIP-3	Max El.									274.8	272.5	273.7	270.2	267.9	267.9	273.7	273.7	269.1	274.8	271.9	269.1	268.5	267.3	264.5	265.0	274.8	270.4	3.3	-9.8	0.6	-5.4	
SI-15	Mean El.									271.2	270.4	270.6	271.1	271.0	271.6	274.0	273.0	271.6	271.6	270.1	270.2	271.3	269.0	264.0	263.9	Mar-05 & Apr-05	270.3	2.7	--	-0.2	-6.4	
TIP-1	Max El.									271.8	271.8	274.1	273.0	274.1	273.0	276.4	274.1	273.5	273.5	270.7	271.2	274.7	271.2	267.2	264.9	276.4	272.2	2.9	-2.3	-7.3		
SI-15	Mean El.									277.7	276.1	276.4	276.8	274.8	268.9	267.1	266.8	266.0	270.8	273.1	275.2	279.1	277.7	273.0	273.0	May-11	273.3	4.2	--	0.0	-0.3	
TIP-2	Max El.																															



GROUNDWATER HYDROGRAPH
Rambla Vista
Calle del Barco Landslide Assessment District
Malibu, California



GROUNDWATER HYDROGRAPH
Calle del Barco
 Calle del Barco Landslide Assessment District
 Malibu, California



GROUNDWATER HYDROGRAPH
Rambla Pacifico
Calle del Barco Landslide Assessment District
Malibu, California

**APPENDIX B
DEWATERING DATA**



Dewatering Well Information							
Well ID	Vault Elevation (ft.)	Bottom Elevation (ft.)	Pump Elevation (ft.)	Pump Size (hp)	2013-2014 Pumping Rate (gpd)	% of Total Well Production	Comment
W-A	196.0	Unknown	45.0	1/2	32	6%	
W-B*	204.0	Unknown	54.0	1/2	2	0%	
W-C	295.0	Unknown	233.0	1/2	35	6%	
W-D*	297.0	Unknown	Unknown	none	0	0%	dry - no pump
W-E	215.0	Unknown	116.5	1/2	7	1%	
W-F	210.0	109.0	112.0	1/2	77	14%	
W-G*	292.0	222.0	223.0	1/3	0	0%	
W-H*	299.5	234.5	242.5	1/3	1	0%	
W-I	298.0	238.0	248.0	1/3	26	5%	
W-J	304.0	244.0	254.0	1/3	254	45%	
W-K	430.0	370.0	380.0	1/3	8	1%	dry
W-L	258.0	189.0	192.5	1/2	46	8%	
W-M	302.0	237.0	Unknown	Unknown	72	13%	

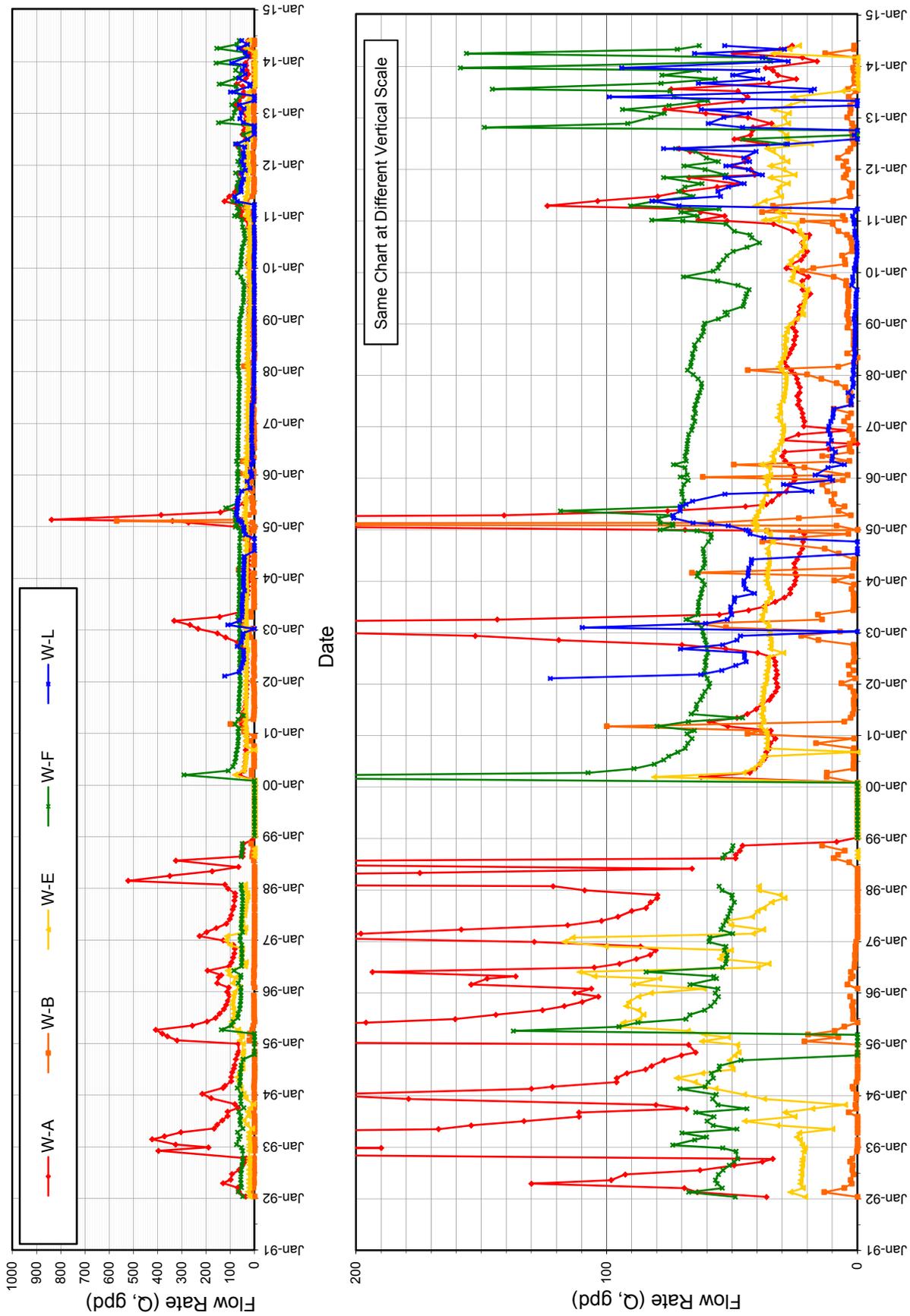
Note: * Non-functioning Dewatering Wells

Hydrauger Information						
Hydrauger ID	Installed Length (ft)	Functional Length (ft)	2013-2014 Flow Rate (gpd)	% of Total Production	Installed By	Comment
HD-1 ²	93	unknown	0	0%	BYA	
HD-2 ²	127	unknown	0	0%	BYA	
HD-3 ²	155	unknown	0	0%	BYA	
HD-4 ²	80	unknown	0	0%	BYA	
HD-5 ²	65	unknown	0	0%	BYA	
HD-6 ²	97	unknown	0	0%	BYA	
HD-7 ²	227	unknown	0	0%	BYA	
HD-8 ²	290	unknown	0	0%	BYA	
HD-9	230	unknown	0	0%	BYA	
HD-10 ²	330	unknown	0	0%	BYA	
HD-11 ²	230	unknown	0	0%	BYA	
HD-12 ²	330	unknown	0	0%	BYA	
HD-13	210	unknown	7	5%	BYA	
H-1	240	unknown	102	67%	LA County	
H-2	180	unknown	0	0%	LA County	No outlet to monitor
ROWH-1	--	unknown	28	18%	BYA	discharge diverted from H-2
H-3 ¹	235	unknown	0	0%	LA County	
H-4 ¹	140	unknown	0	0%	LA County	
H-5 ¹	260	unknown	0	0%	LA County	
H-6 ¹	140	unknown	0	0%	LA County	
H-7 ¹	205	unknown	0	0%	LA County	
H-1A	100	92	1	1%	Fugro	
H-2A	130	125	15	10%	Fugro	

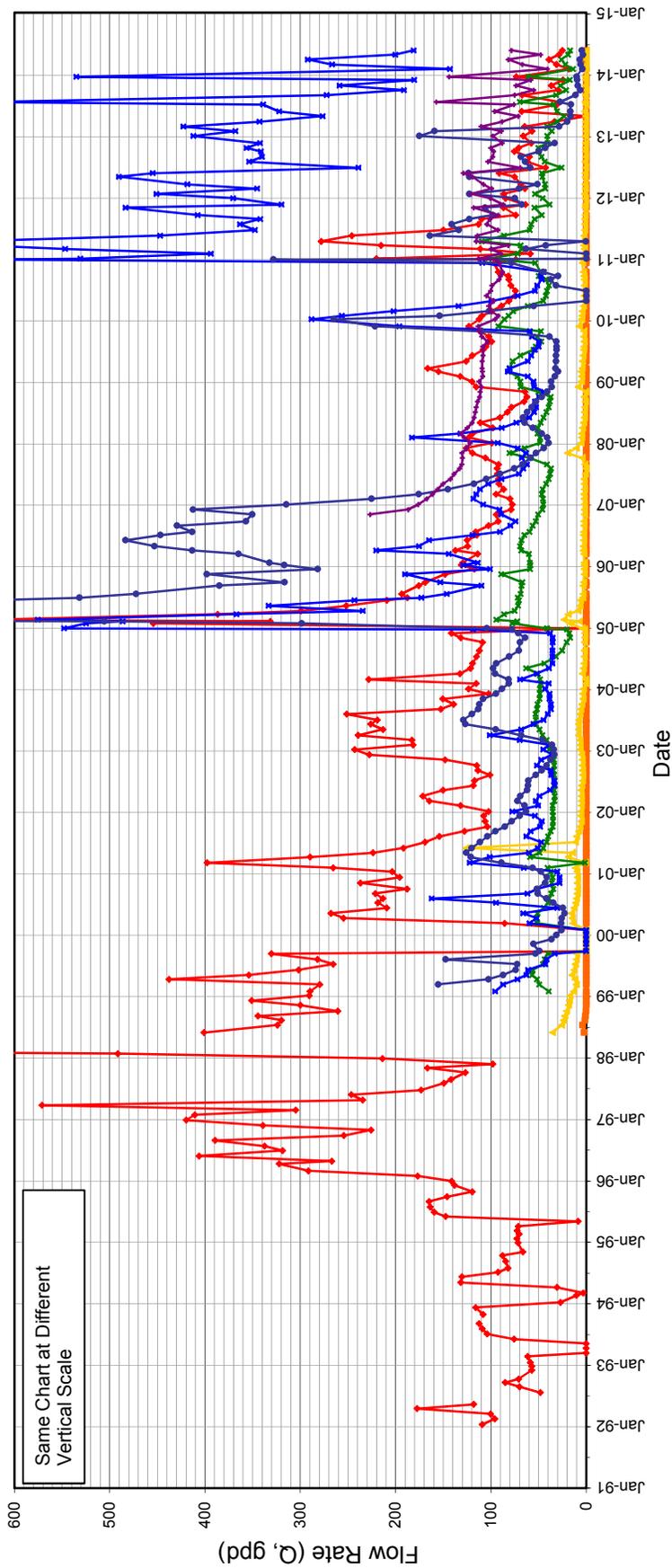
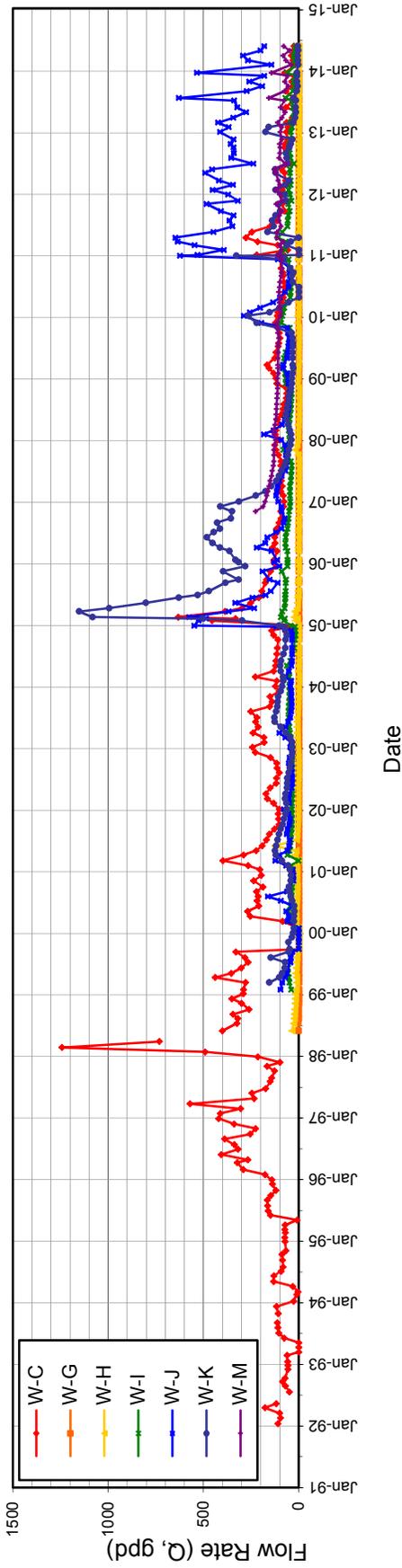
Note: 1 - Destroyed in 1998 Landslide

2 - Non-producing Hydraugers

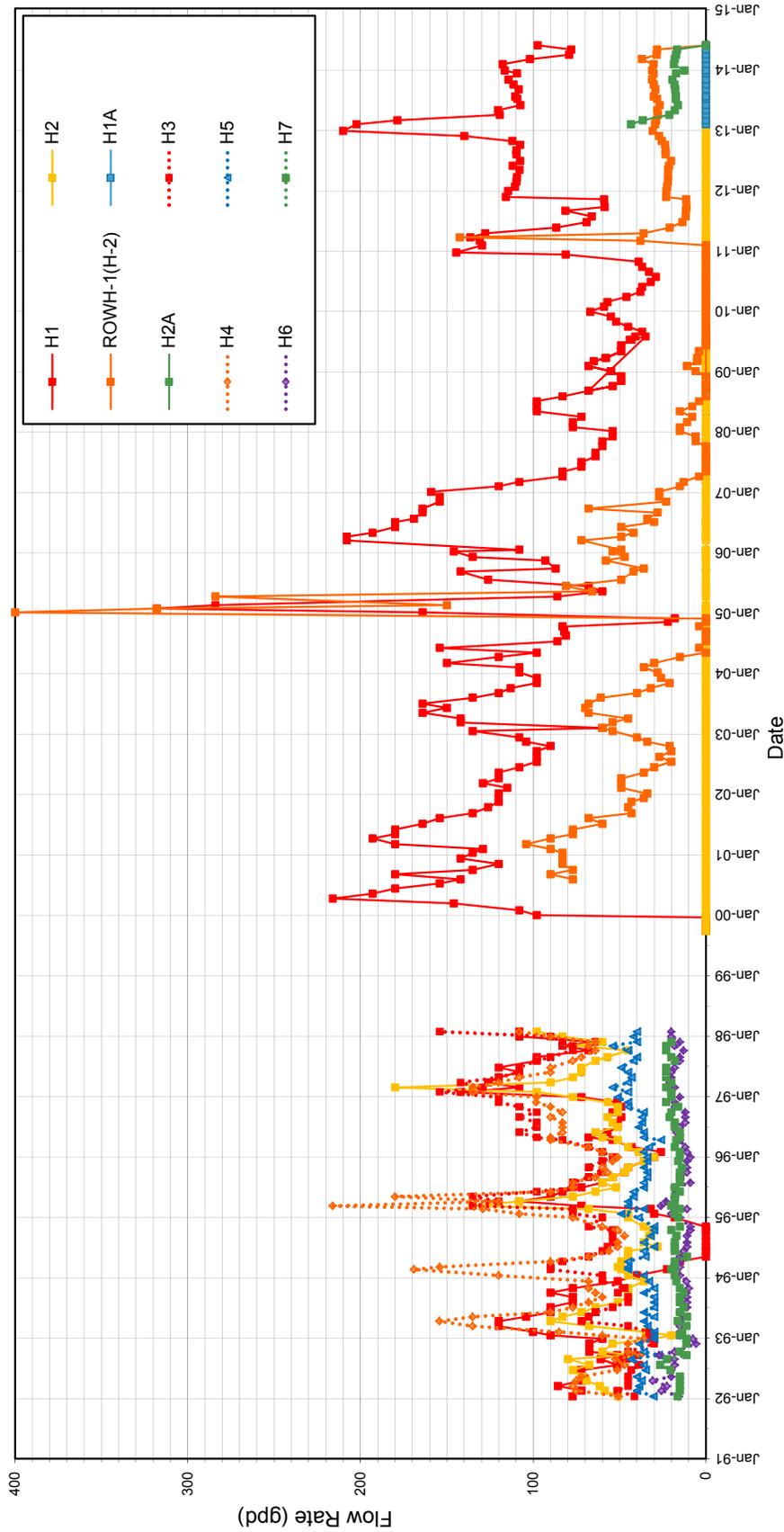
DEWATERING WELL / HYDRAUGER INFORMATION
 Calle del Barco Landslide Assessment District
 Malibu, California



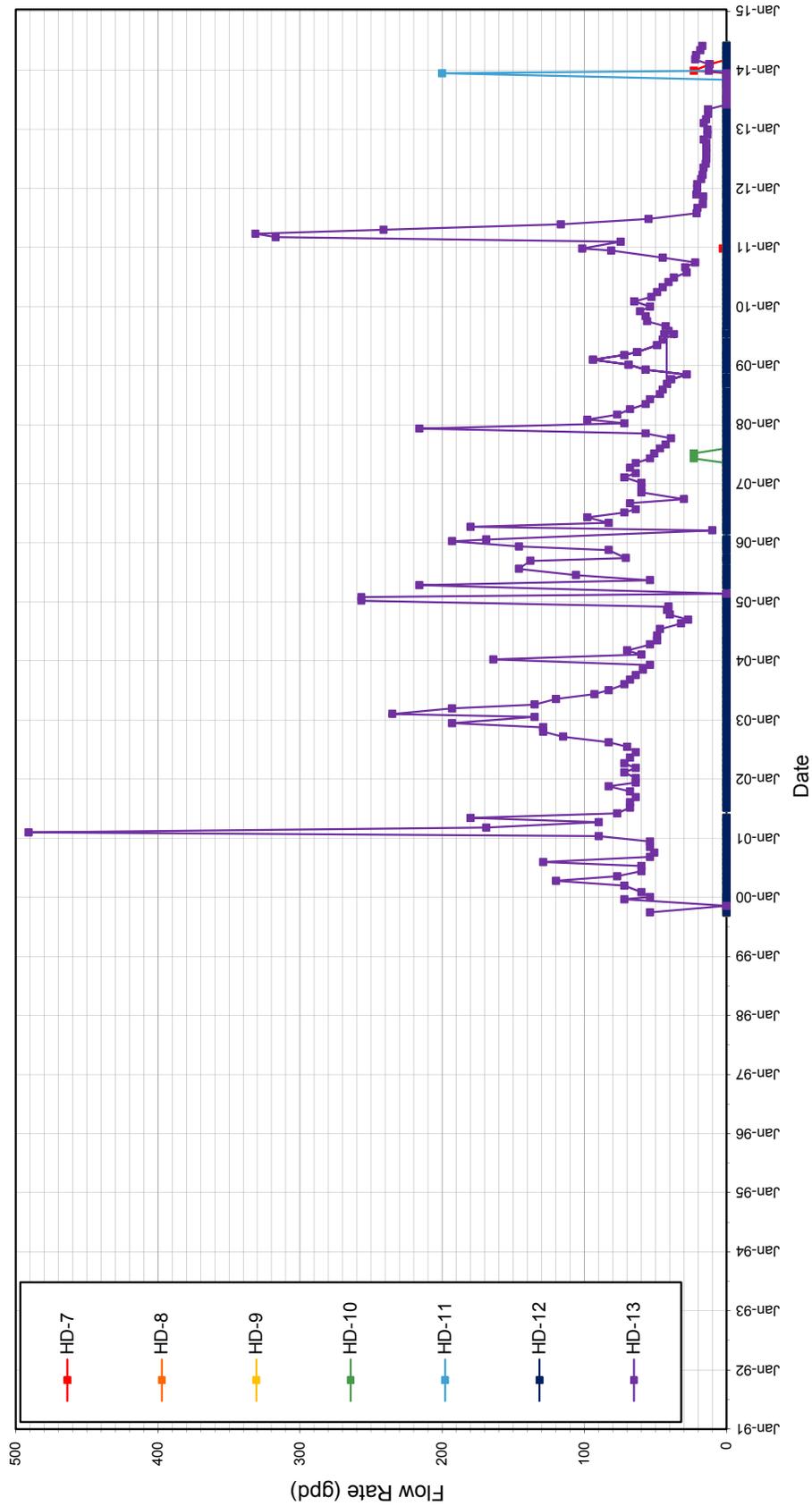
Date
DEWATERING WELL DISCHARGE RATE GRAPH
Rambla Orienta and Slope
Calle del Barco Landslide Assessment District
Malibu, California



DEWATERING WELL DISCHARGE RATE GRAPH
Calle del Barco and Rambla Pacifico
Calle del Barco Landslide Assessment District
Malibu, California



HYDRAUGER DISCHARGE RATE GRAPH
Rambla Orienta
Calle del Barco Landslide Assessment District
Malibu, California



HYDRAUGER DISCHARGE RATE GRAPH
Landslide Toe
Calle del Barco Landslide Assessment District
Malibu, California

APPENDIX C
SLOPE INCLINOMETER DATA



Slope Inclinometer Interpretation Summary																	
	SI-1*	SI-1A	SI-2**	SI-3	SI-4	SI-5	SI-6	SI-7	SI-8	SI-9	SI-10	SI-11	SI-12	SI-13	SI-14	SI-15	SI-16
Installation Details																	
Surface Elev. (ft) 4/00	295.0	297.0	298.0	207.0	206.0	302.0	295.0	200.0	335.0	298.0	202.0	291.5	301.0	405.0	398.0	304.0	295.0
Original DEPTH (ft.)	64.0	NI	NI	NI	76.0	100.0	NI	100.0	130.0	100.0	60.0	60.0	60.0	80.0	78.0	76.0	88.0
Current DEPTH (ft.)	64.0	NI	NI	NI	78.0	96.0	NI	102.0	130.0	96.0	62.0	57.0	56.0	78.0	76.0	72.0	86.0
STATUS	D	D	D	D	F	F	D	F	F	F	F	F	F	F	F	F	F
READING INTERVAL	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly	Qrtly
DATE OF INSTALLATION	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	3/13/98	3/12/98	3/12/98	9/1998	9/1998	9/1998	8/8/03
DATE FIRST BASE READING	NI	NI	NI	NI	NI	NI	NI	NI	NI	12/22/97	3/16/98	3/13/98	3/16/98	10/12/98	10/12/98	10/23/98	8/13/03
DEPTH of MOVEMENT (ft)***	NI	NI	NI	NI	17-22	0-10, 36-38	15.0	40.0	15-17	53.0	35-38	0-55	54	0-30	8.0	0-25, 77	46, 87
A+ Axis orientation	NI	NI	NI	NI	0	38.0	NI	28.0	22.0	212.0	244.0	258.0	238.0	210.0	224.0	190.0	210 est.
Interpretation Movement (inches)																	
2013-2014	NR	NR	NR	NR	<0.1	0.1	NR	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2012-2013	NR	NR	NR	NR	<0.1	0.1	NR	<0.1	<0.1	0.15	0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.2
2011-2012	NR	NR	NR	NR	<0.1	<0.1	NR	<0.1	0.1	0.15	<0.1	0.2	<0.1	<0.1	0.1	0.1	0.35
2010-2011	NR	NR	NR	NR	<0.1	<0.1	NR	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2009-2010	NR	NR	NR	NR	<0.1	<0.1	NR	<0.1	<0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1
2008-2009	NR	NR	NR	NR	<0.1	<0.1	NR	NA	<0.1	0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1
2007-2008	NR	NR	NR	NR	<0.1	<0.1	NR	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
2006-2007	NR	NR	NR	NR	<0.1	<0.1	NR	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.2
2005-2006	NR	NR	NR	NR	<0.1	<0.1	NR	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.15	<0.1	0.1
2004-2005	NR	NR	NR	NR	--	0.45	NR	<0.1	0.1	0.5	--	<0.1	0.11	--	--	--	0.35
2003-2004	NR	NR	NR	NR	--	--	NR	--	--	--	--	--	--	--	--	--	--
2002-2003	NR	NR	NR	NR	--	--	NR	--	--	--	--	--	--	--	--	--	--
2001-2002	NR	NR	NR	NR	--	--	NR	--	--	--	--	--	--	--	--	--	--
2000-2001	NR	NR	NR	NR	--	--	NR	--	--	--	--	--	--	--	--	--	--
1999-2000	NR	NR	NR	NR	--	--	NR	--	--	--	--	--	--	--	--	--	--
1998-1999	NR	NR	NR	NR	--	0.16	NR	0.11	--	2.19	--	--	--	--	--	--	--
1997-1998	NR	NR	NR	NR	0.22	0.4	NR	0.66	0.32	13	0.22	--	--	NR	NR	NR	NR
1996-1997	NR	NR	NR	NR	NA	NA	NR	NA	NA	NR	NR	NR	NR	NR	NR	NR	NR
1995-1996	NR	NR	NR	NR	NA	NA	NR	NA	NA	NR	NR	NR	NR	NR	NR	NR	NR

KEY:

D	Destroyed	--	No clearly defined interpreted movement
F	Functioning	NR	No reading
B	New baseline in 1999	NA	Data not available
NI	No information		
--	Shaded yellow to indicate inclinometer does penetrate basal rupture.		
--	Shaded blue to indicate inclinometer does NOT penetrate basal rupture.		
--	Shaded gray to indicate inclinometer is no longer monitored.		

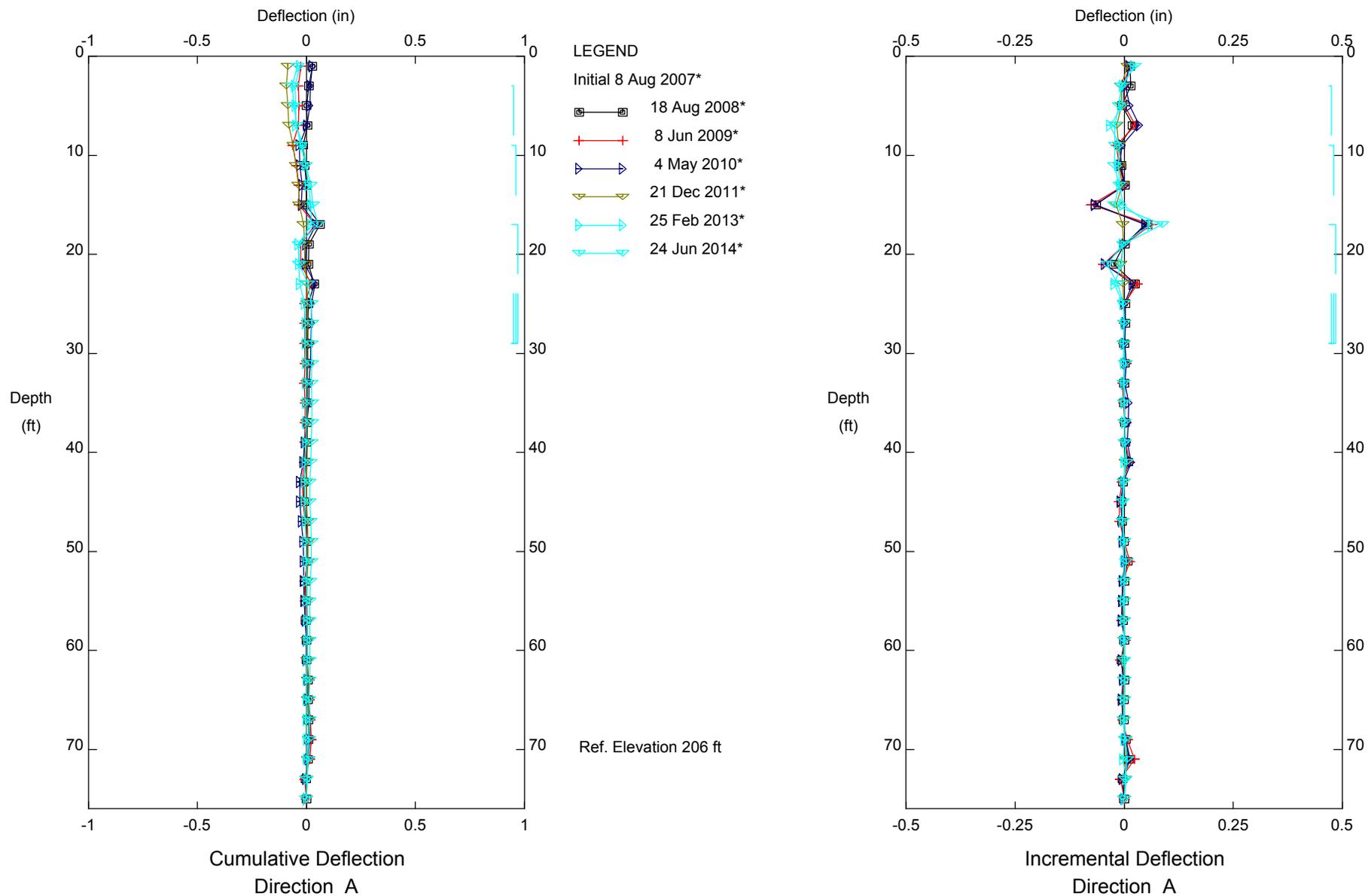
NOTES:

- * Original SI-1 installed in 1978, and was destroyed. SI-65 (installed in 1979) was renamed to SI-1
- ** Original SI-2 installed in 1978, and was destroyed. SI-90 (installed in 1979) was renamed to SI-2
- *** Referenced to current depth of SI (see note below)
- ****SI-4, SI-7, and SI-10 were extended 6 feet upwards during reconstruction of the road in 1999 and interpretations are referenced to their current depth.

SUMMARY OF SLOPE INCLINOMETERS

Calle del Barco Landslide Assessment District
 Malibu, California

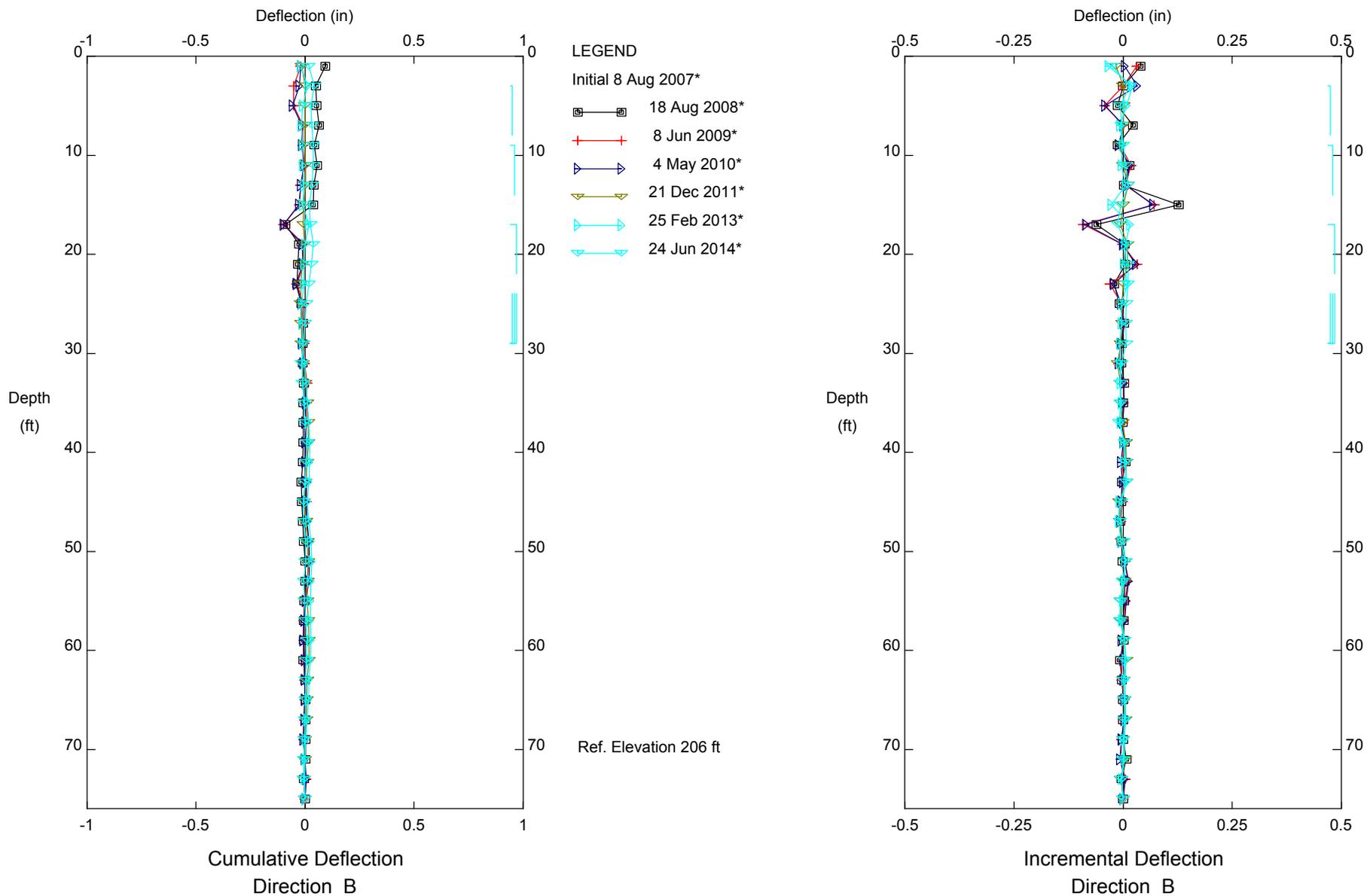
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinator SI-4
 City of Malibu

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

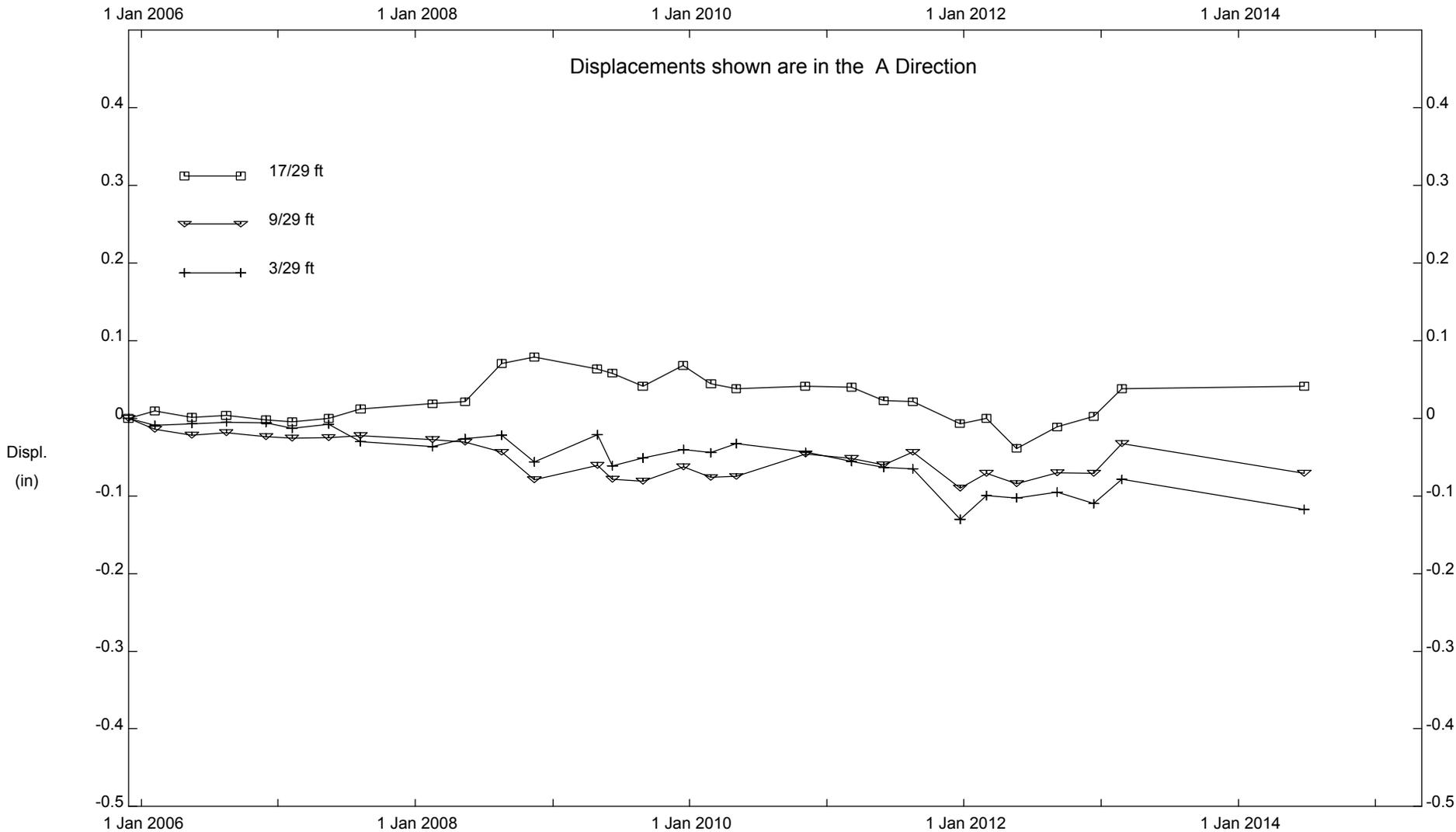
PLATE C-2a



Assessment District 98-2, Inclinometer SI-4
 City of Malibu

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

Fugro Consultants, Inc. - Ventura, CA

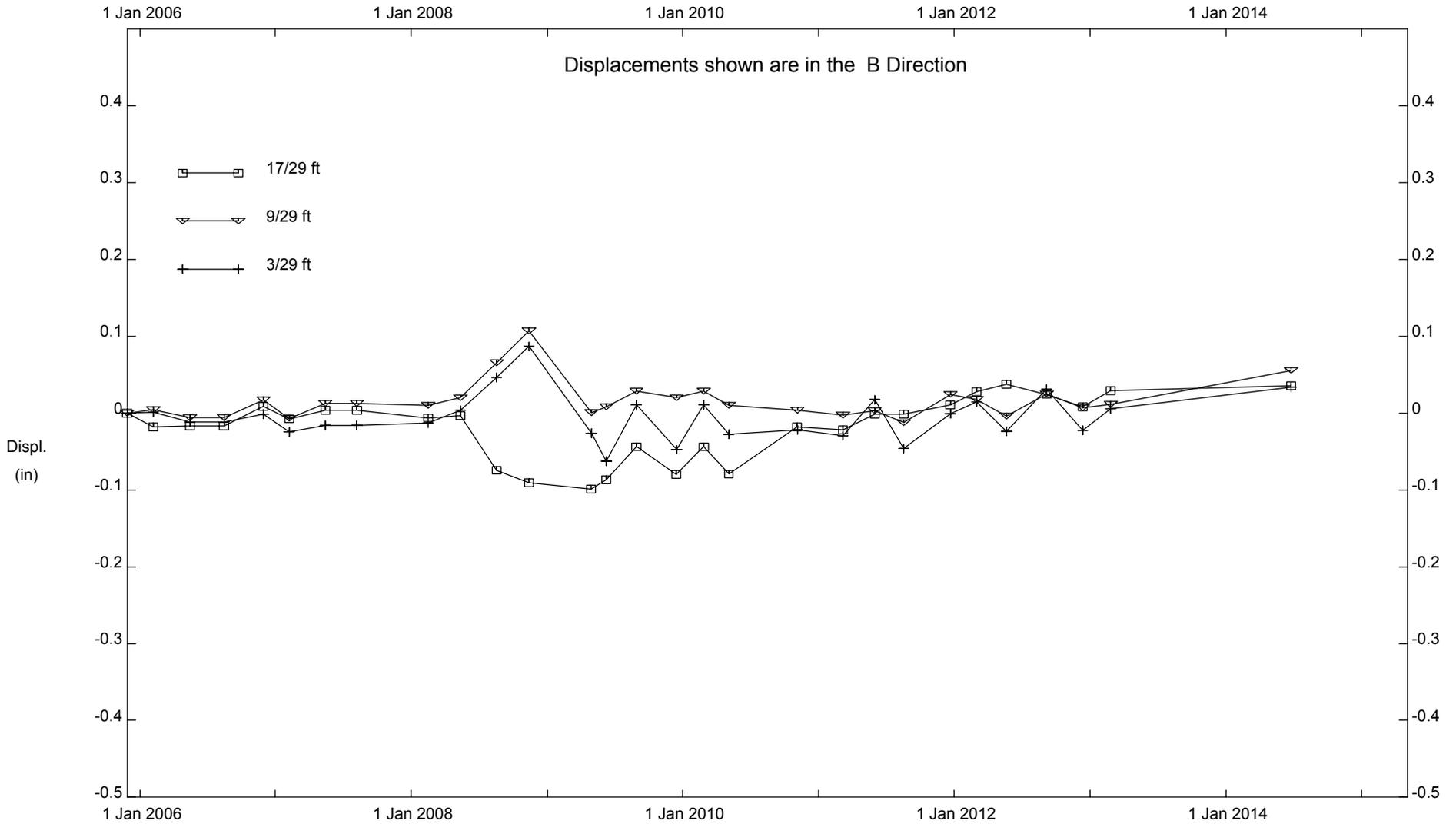


Assessment District 98-2, Inclinator SI-4

City of Malibu

PLATE C-2c

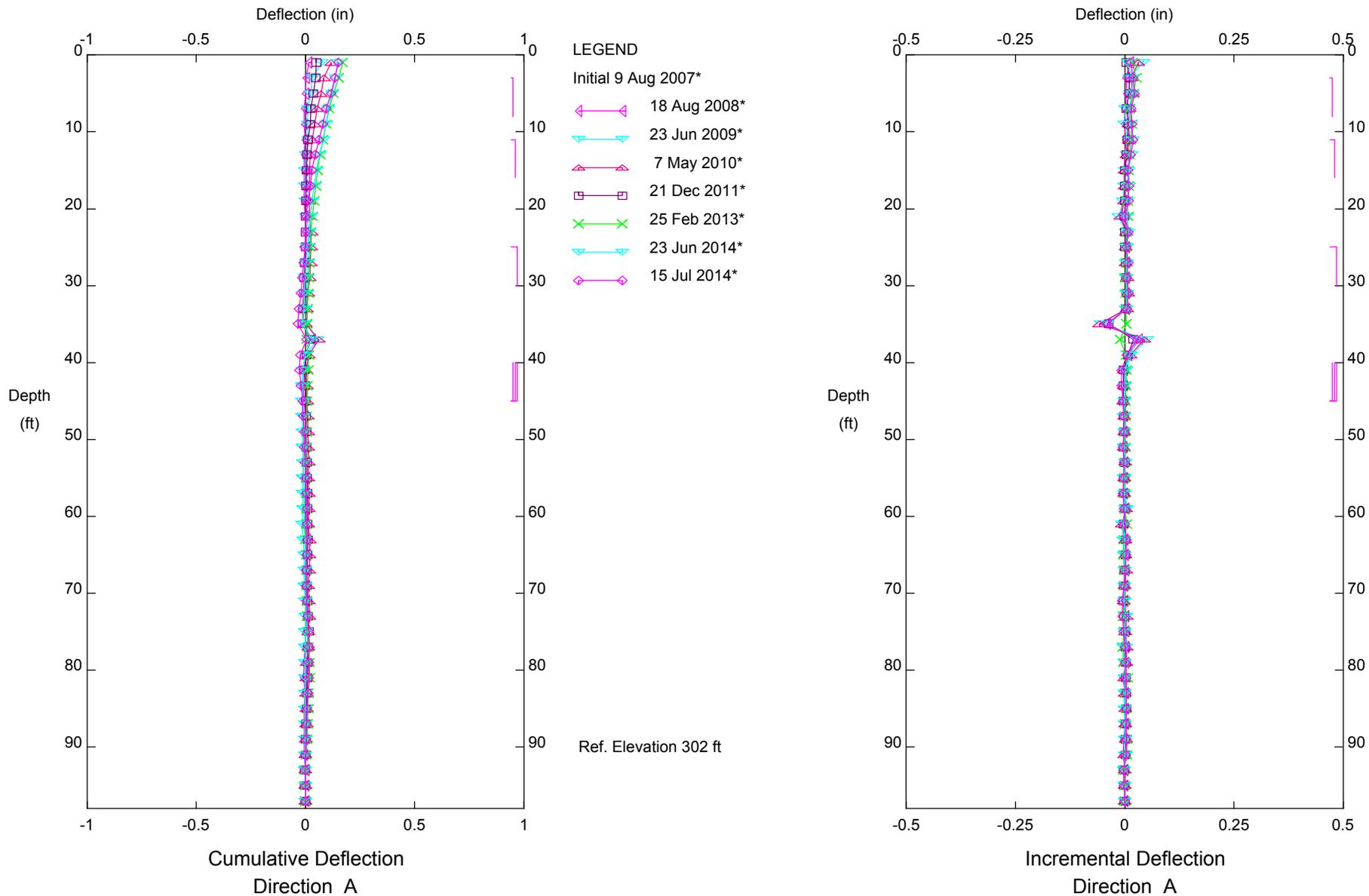
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinator SI-4

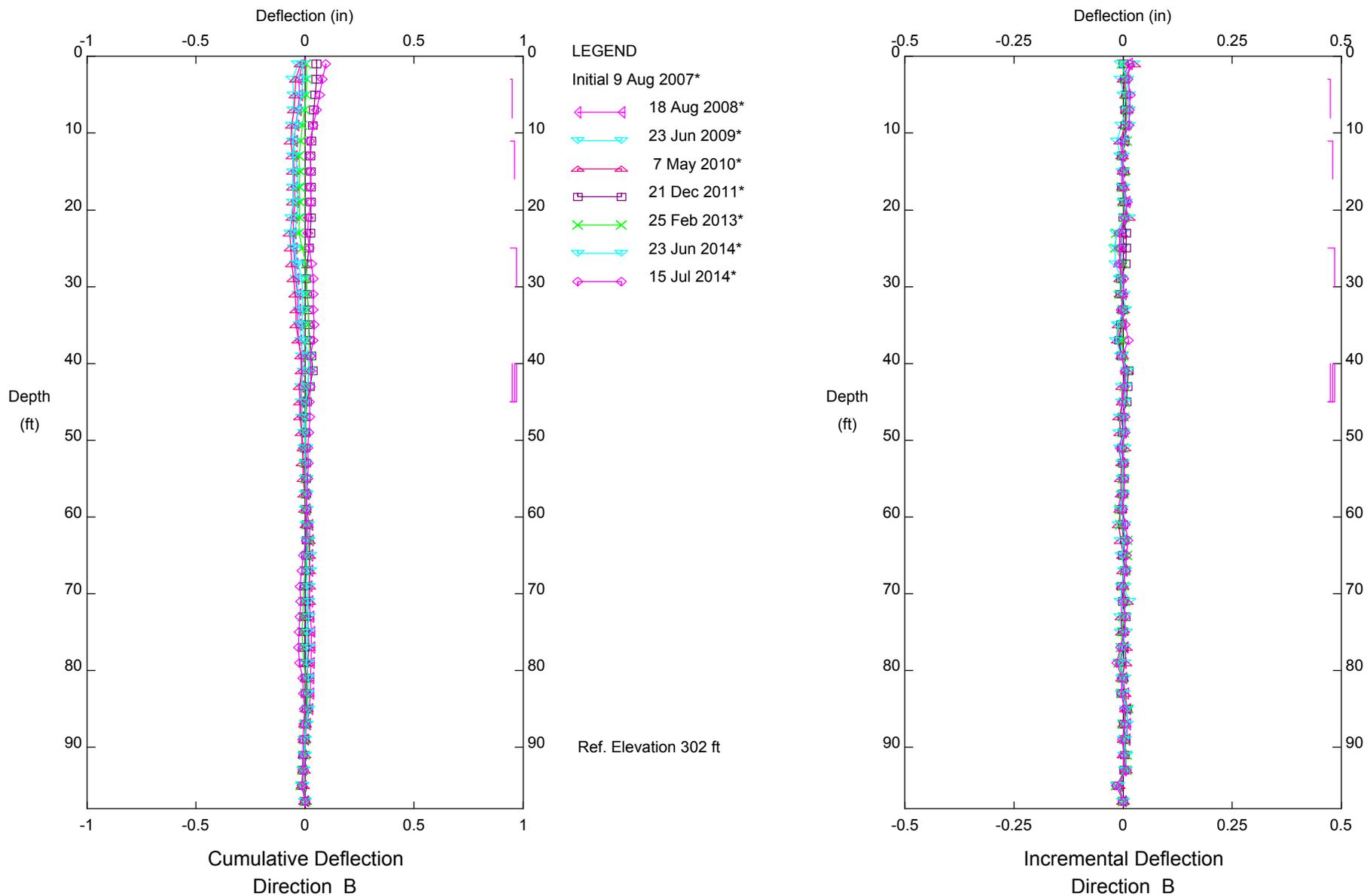
City of Malibu

PLATE C-2d



Assessment District 98-2, Inclinometer SI-5
City of Malibu

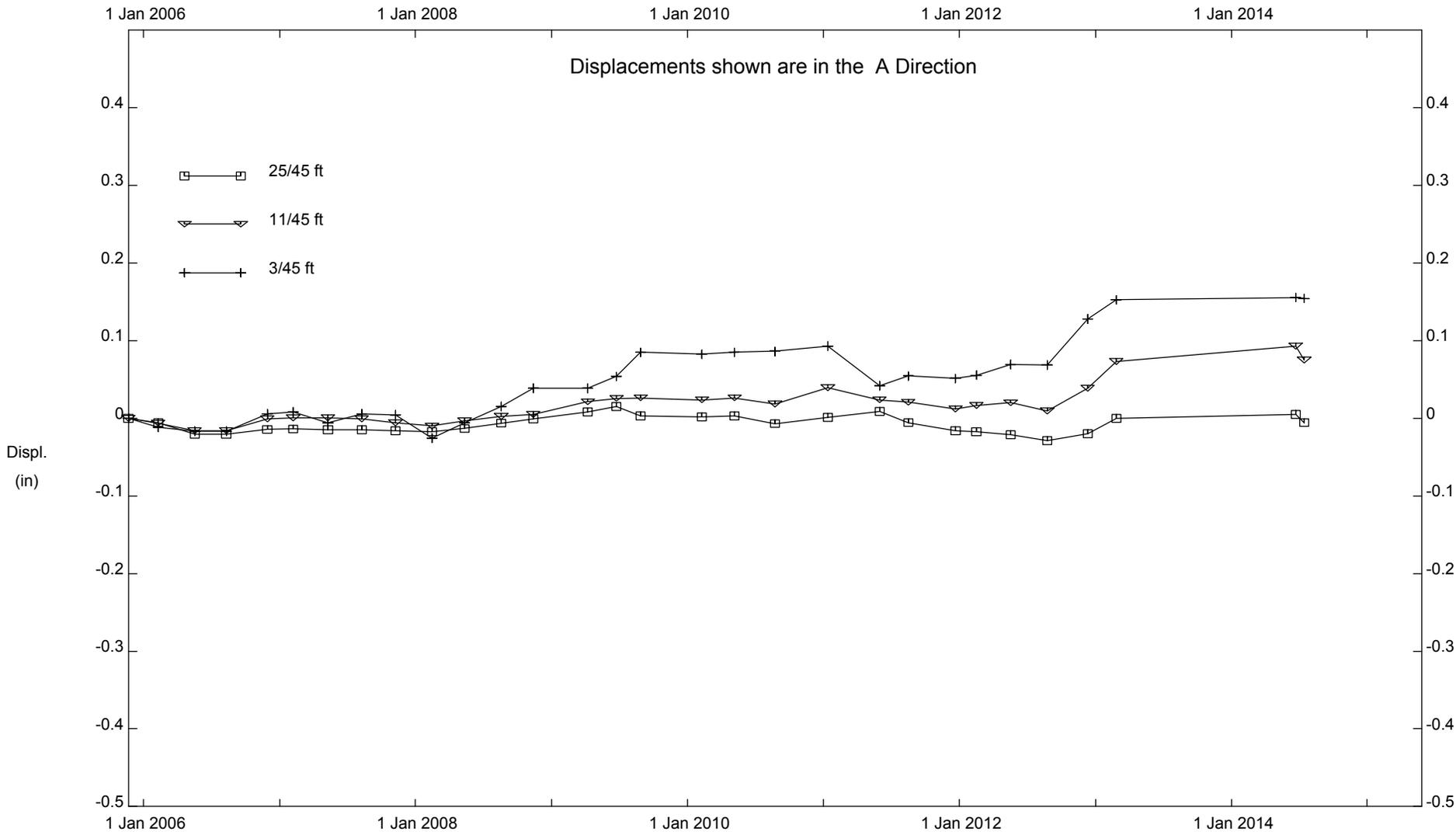
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Assessment District 98-2, Inclinometer SI-5
City of Malibu

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

Fugro Consultants, Inc. - Ventura, CA

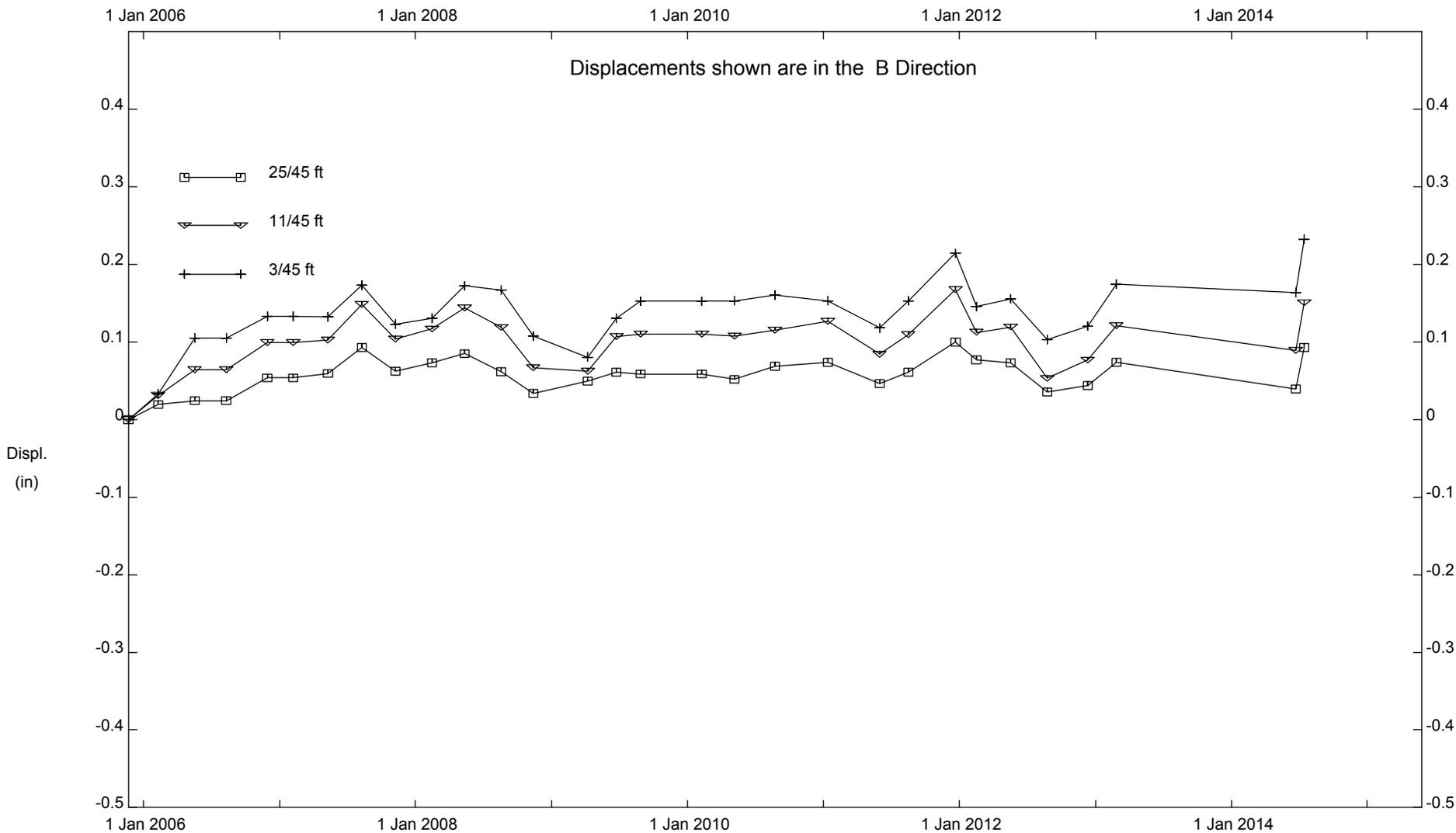


Assessment District 98-2, Inclinometer SI-5

City of Malibu

PLATE C-3c

Fugro Consultants, Inc. - Ventura, CA

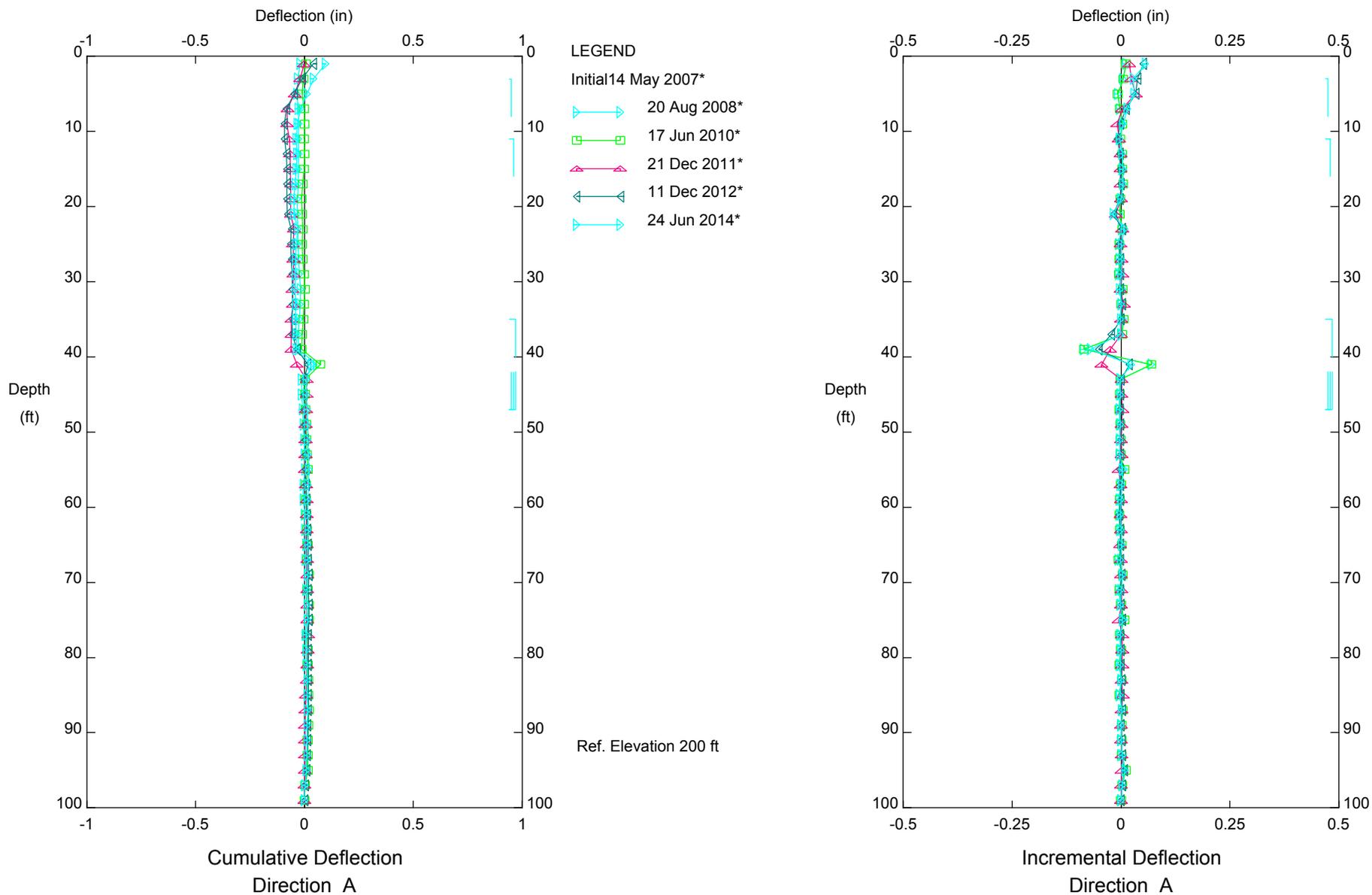


Assessment District 98-2, Inclinator SI-5

City of Malibu

PLATE C-3d

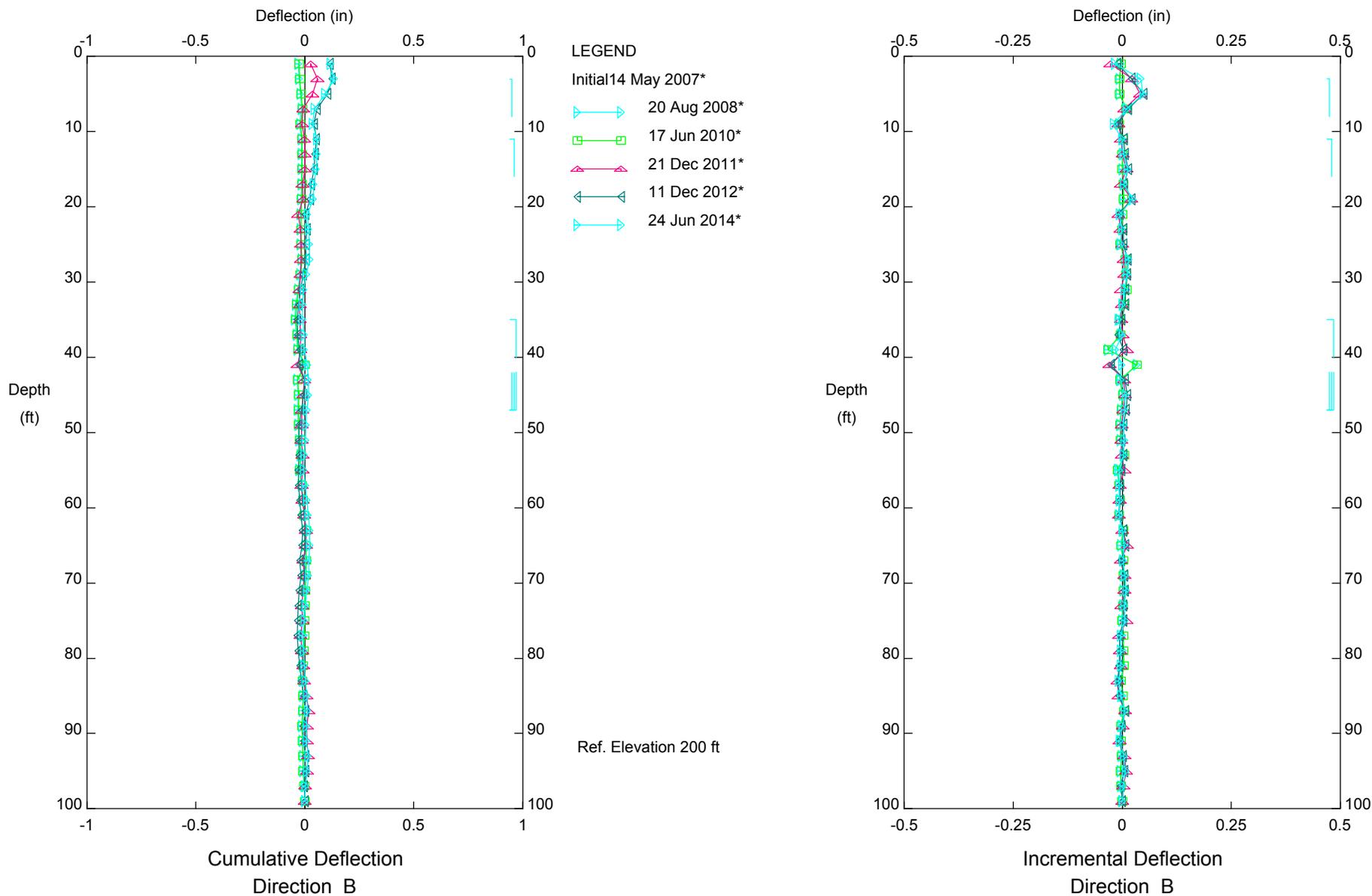
Fugro Consultants, Inc. - Ventura, CA



Calle del Barco, Inclinator SI-7
 City of Malibu

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

PLATE C-4a

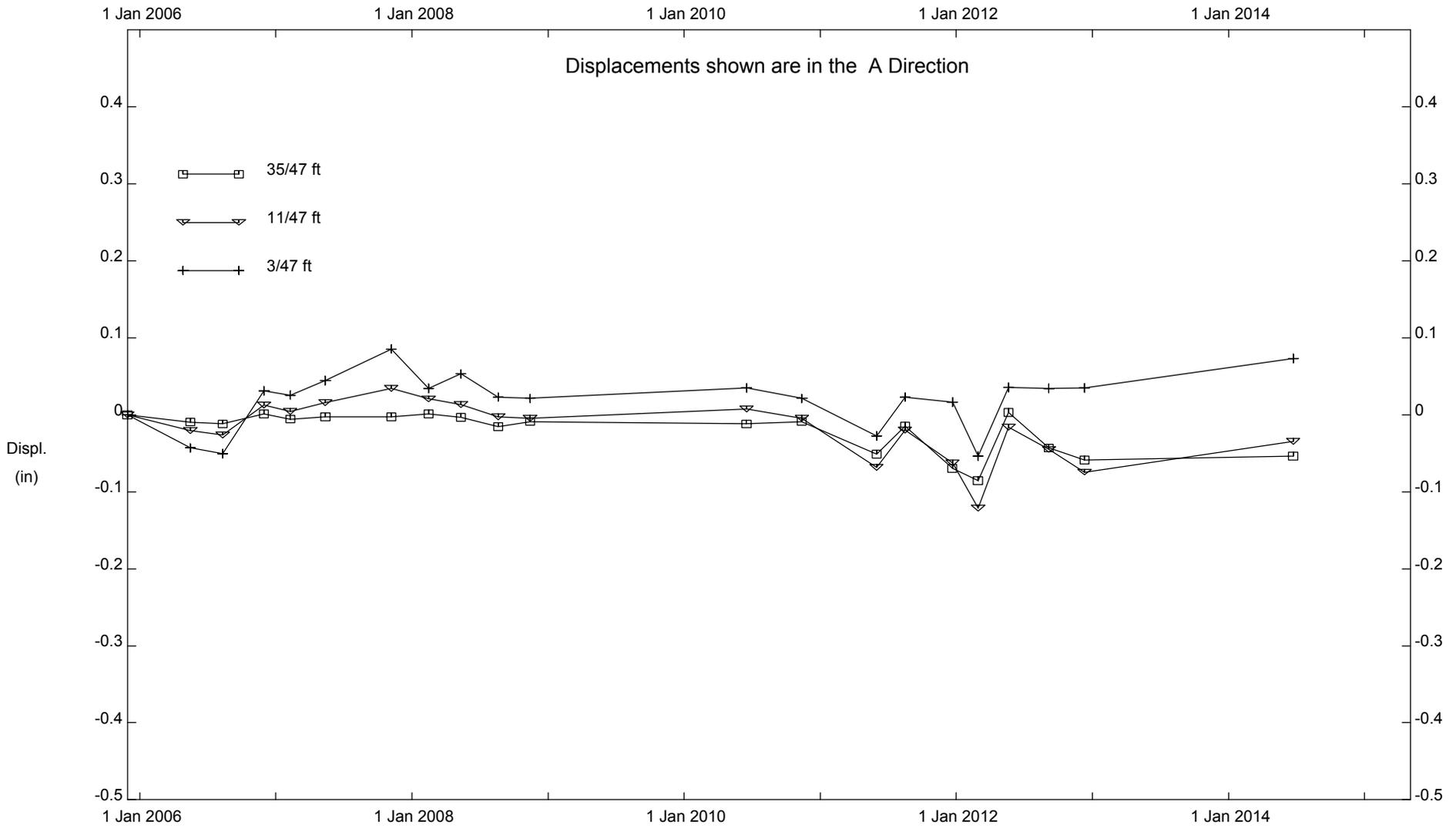


Calle del Barco, Inclinometer SI-7
City of Malibu

PLATE C-4b

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

Fugro Consultants, Inc. - Ventura, CA

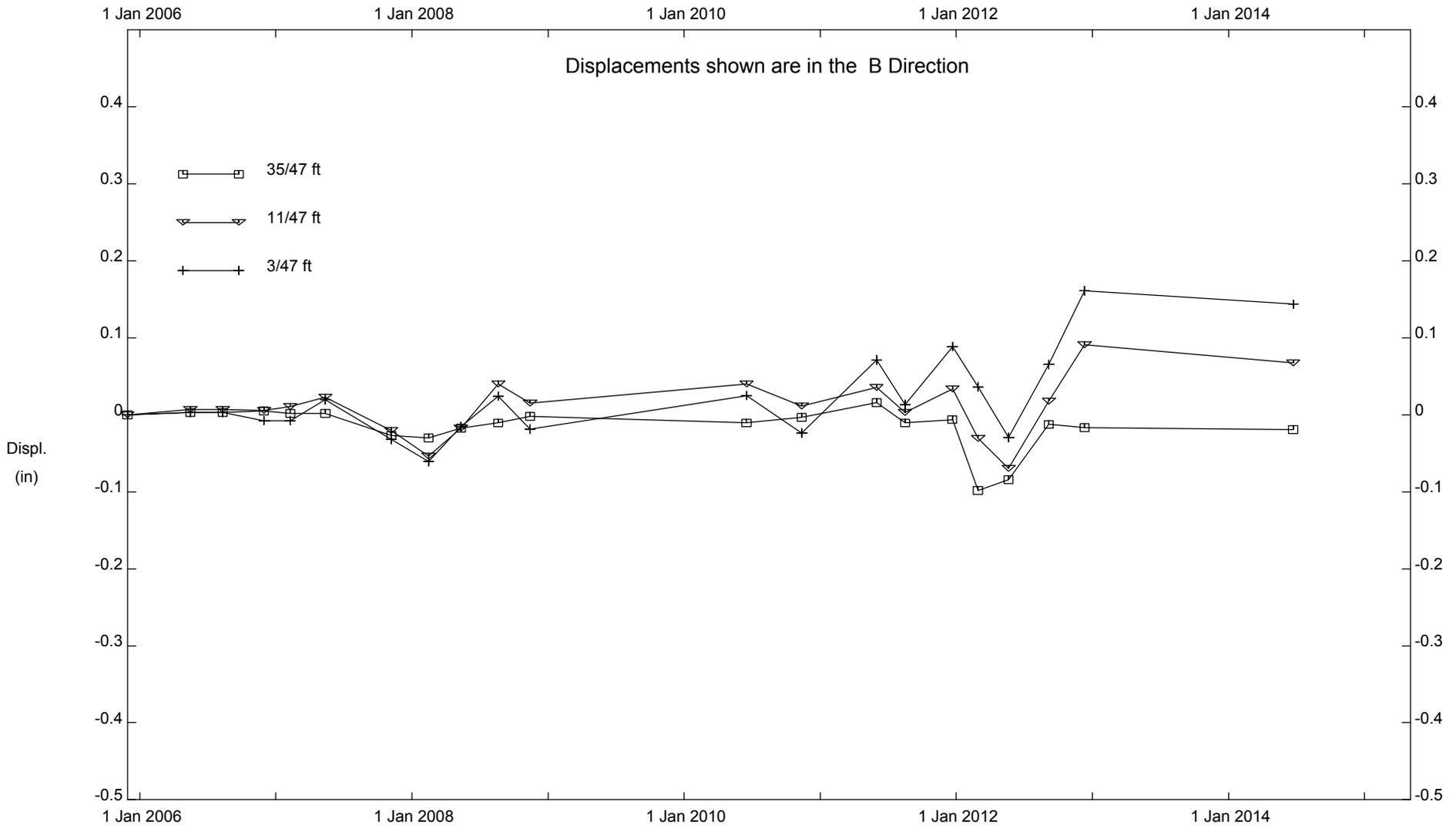


Calle del Barco, Inclinator SI-7

City of Malibu

PLATE 3-4c

Fugro Consultants, Inc. - Ventura, CA

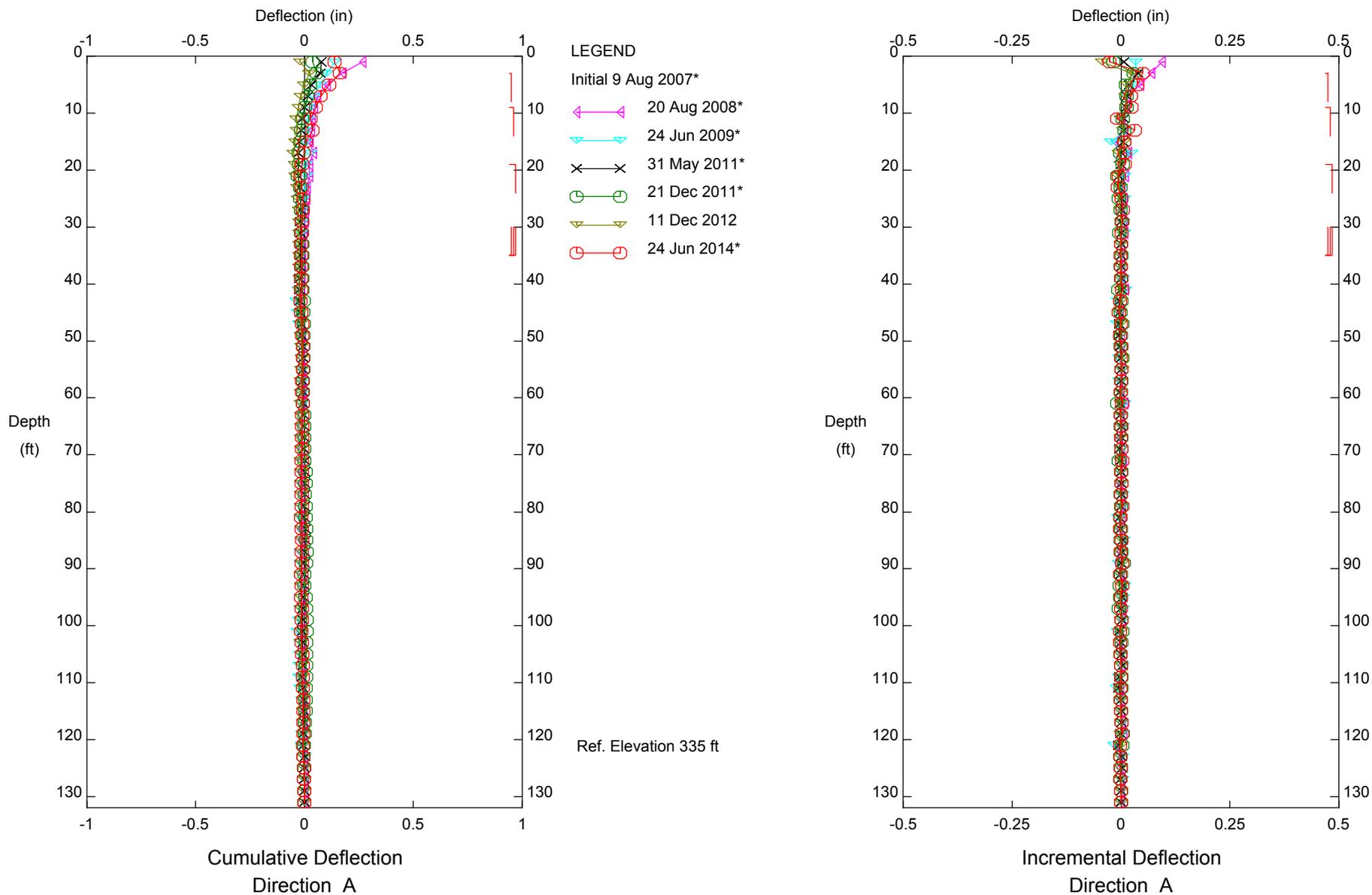


Calle del Barco, Inclinator SI-7

City of Malibu

PLATE C-4d

Fugro Consultants, Inc. - Ventura, CA

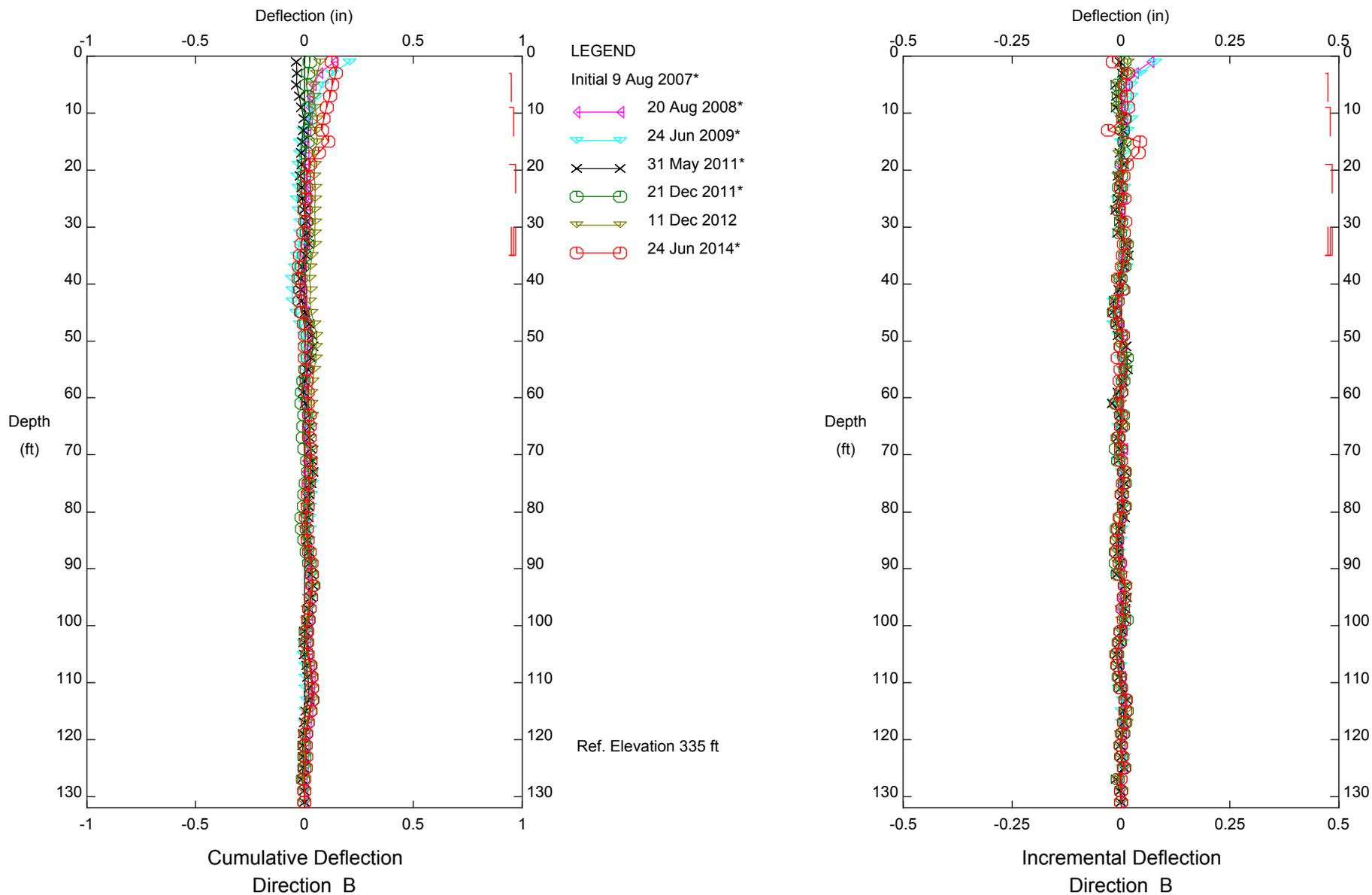


Assessment District 98-2, Inclinometer SI-8
 City of Malibu

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

PLATE C-5a

Fugro Consultants, Inc. - Ventura, CA

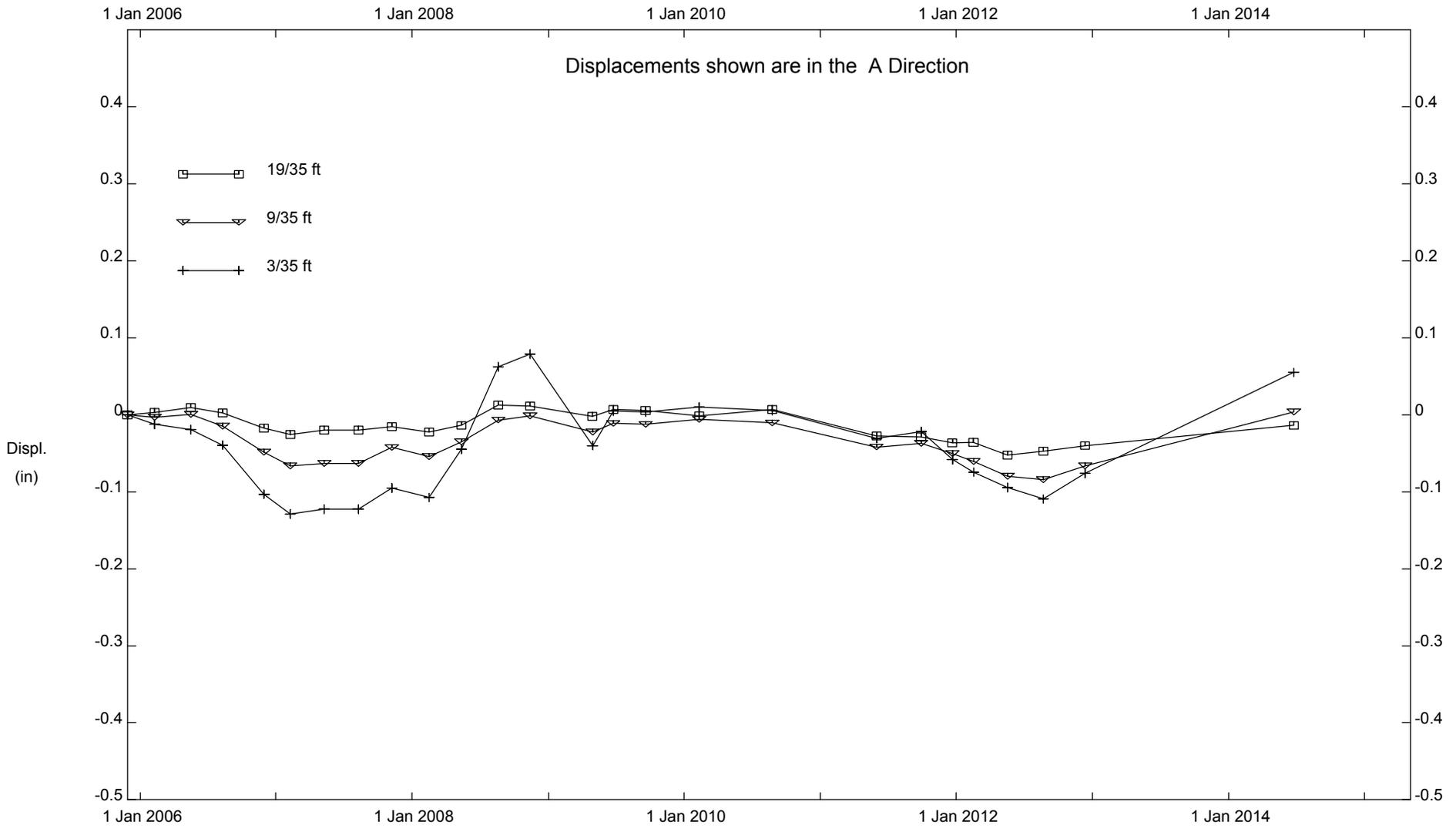


Assessment District 98-2, Inclinometer SI-8
City of Malibu

PLATE C-5b

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

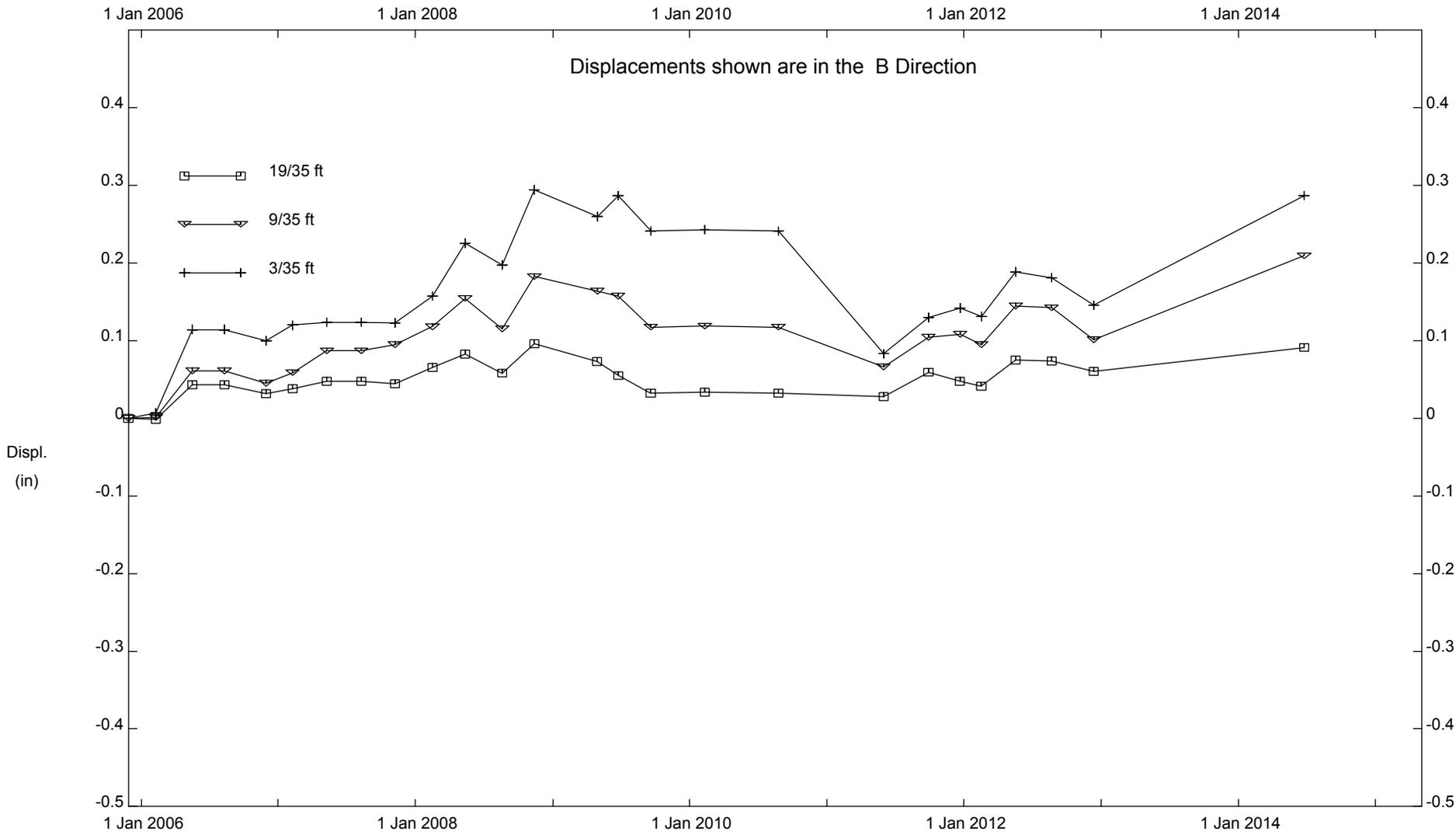
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinometer SI-8

City of Malibu

PLATE C-5c

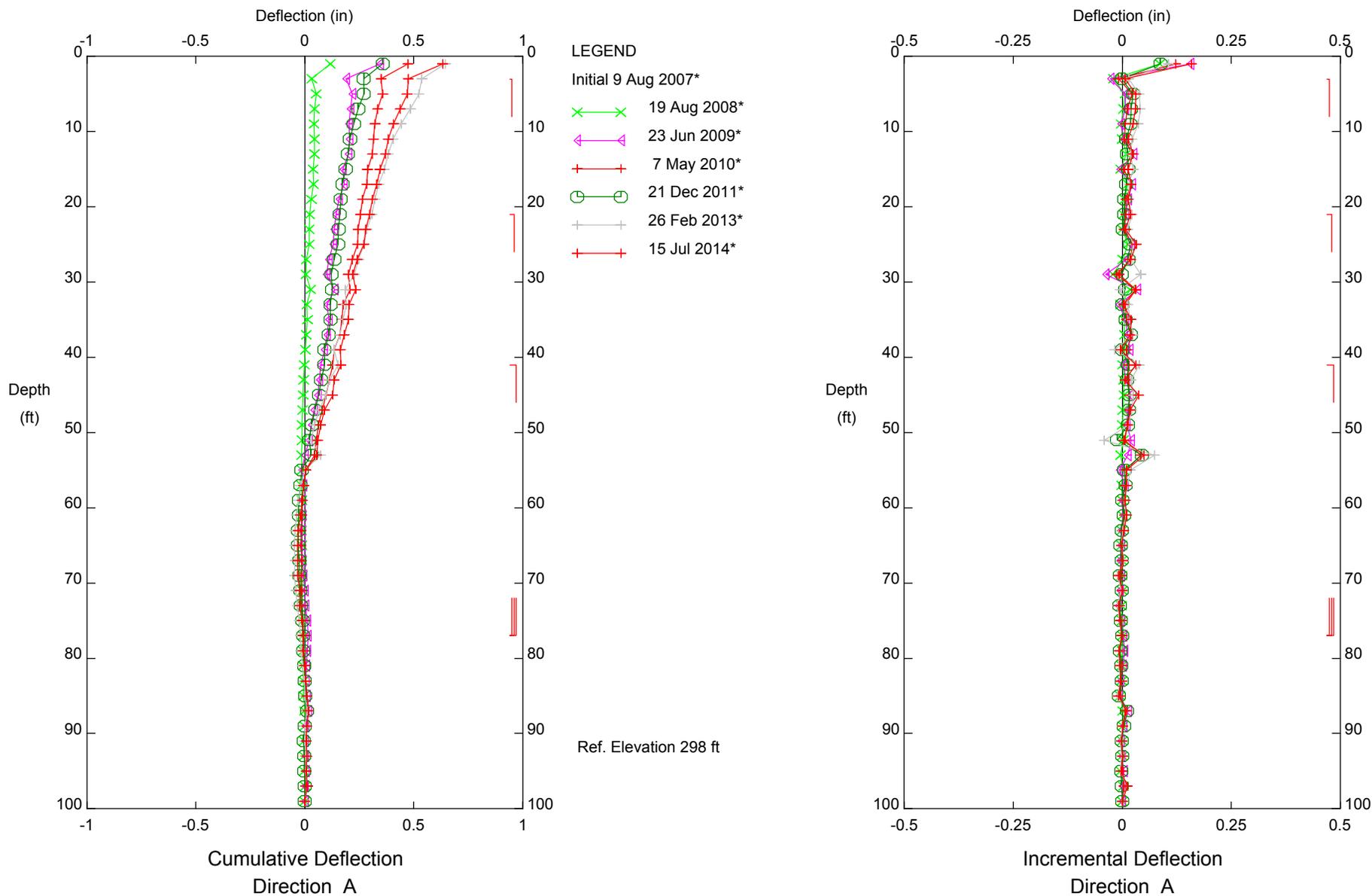


Assessment District 98-2, Inclinator SI-8

City of Malibu

PLATE C-5d

Fugro Consultants, Inc. - Ventura, CA

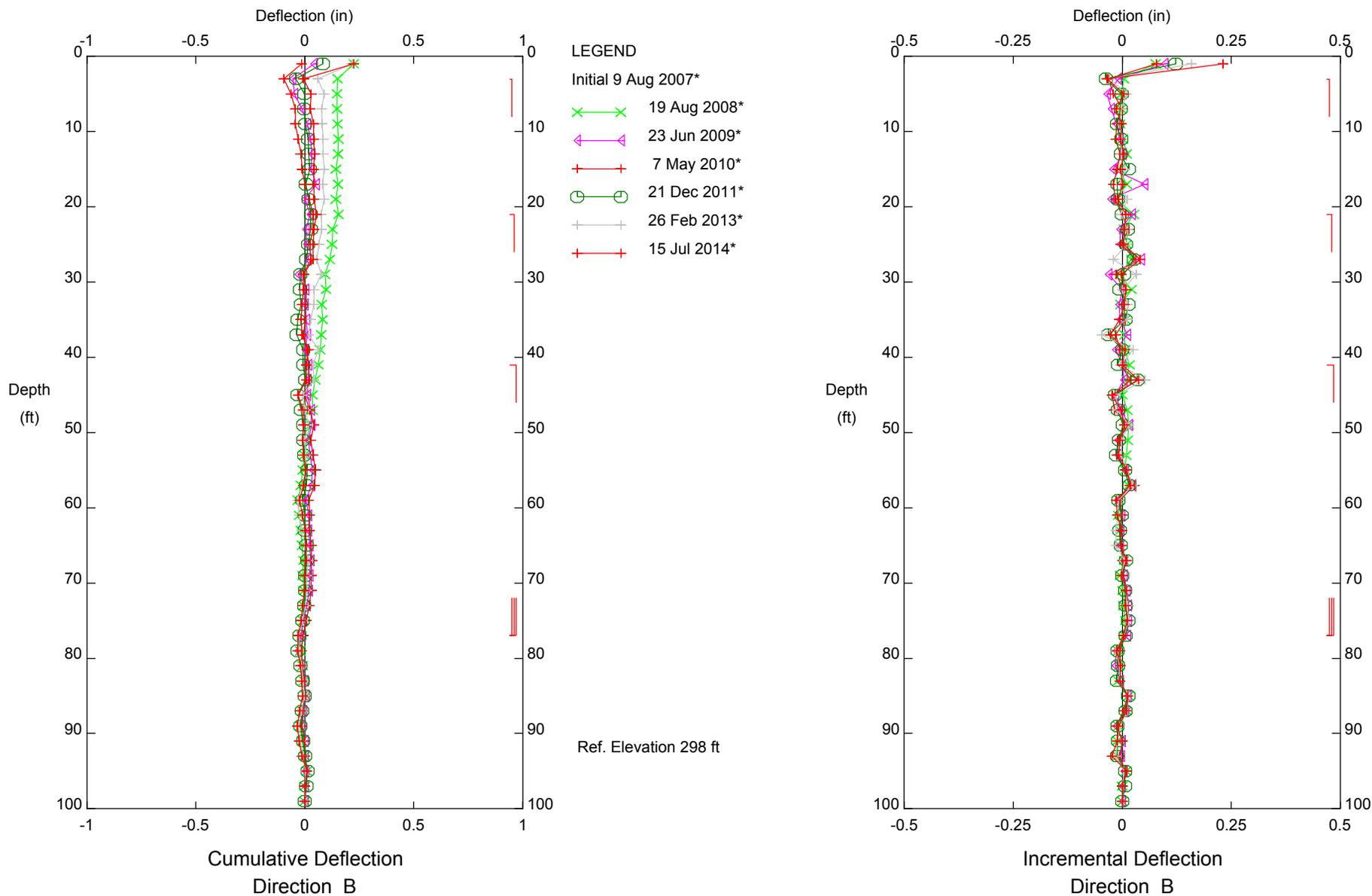


Calle del Barco, Inclinometer SI-9
 City of Malibu

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

PLATE C-6a

Fugro Consultants, Inc. - Ventura, CA

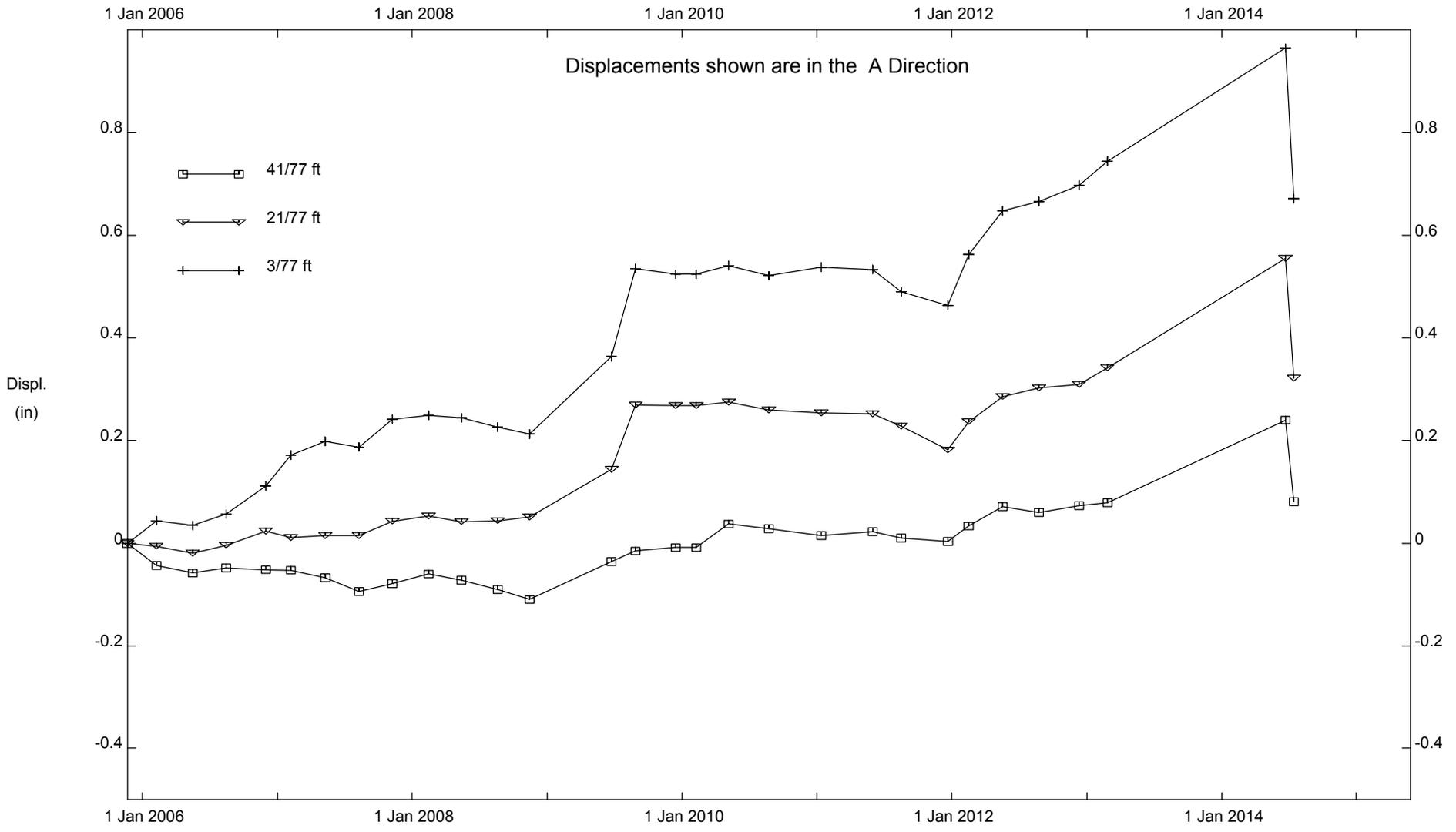


Calle del Barco, Inclinometer SI-9
 City of Malibu

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

PLATE C-6b

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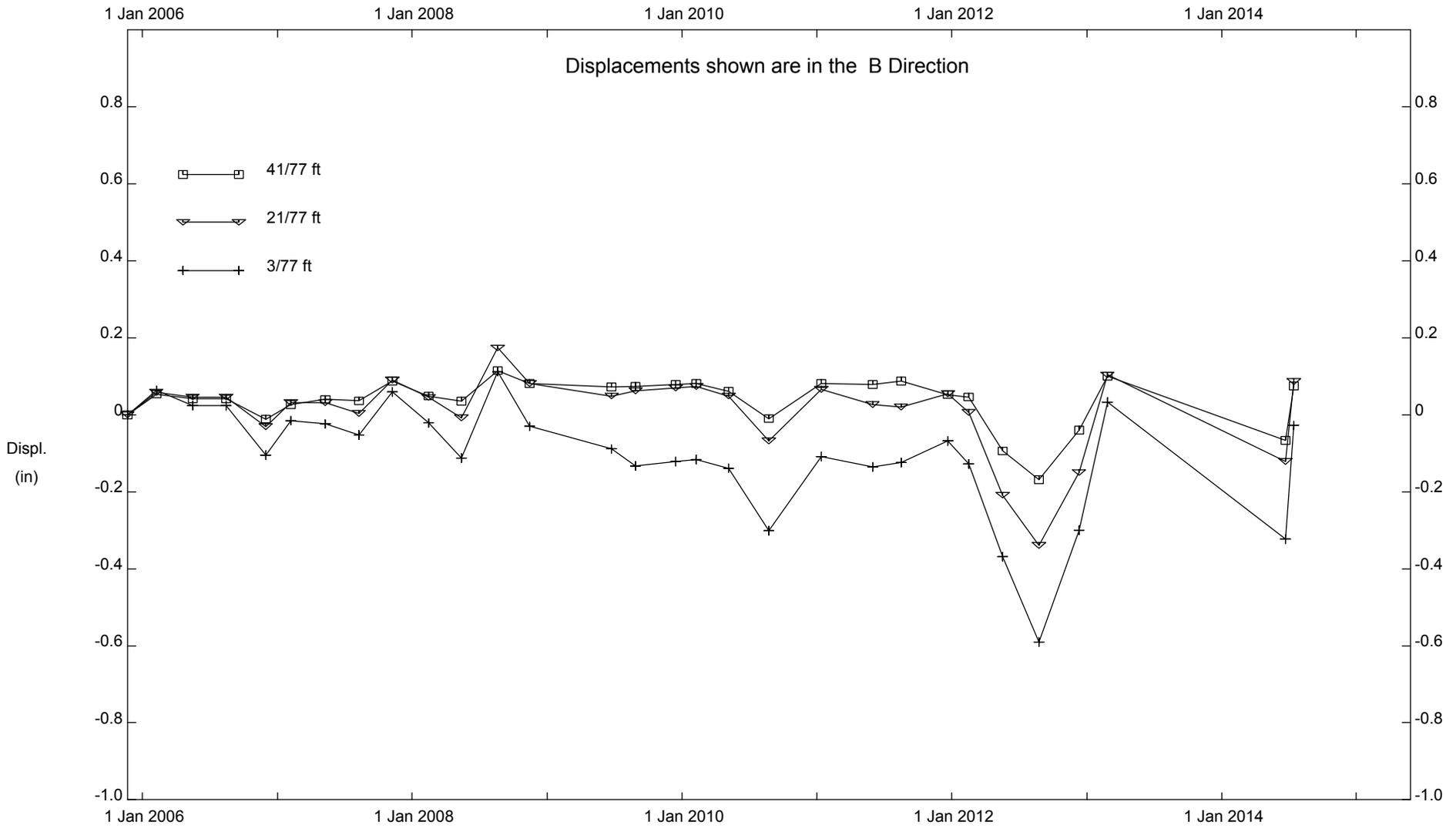


Calle del Barco, Inclinator SI-9

City of Malibu

PLATE C-6c

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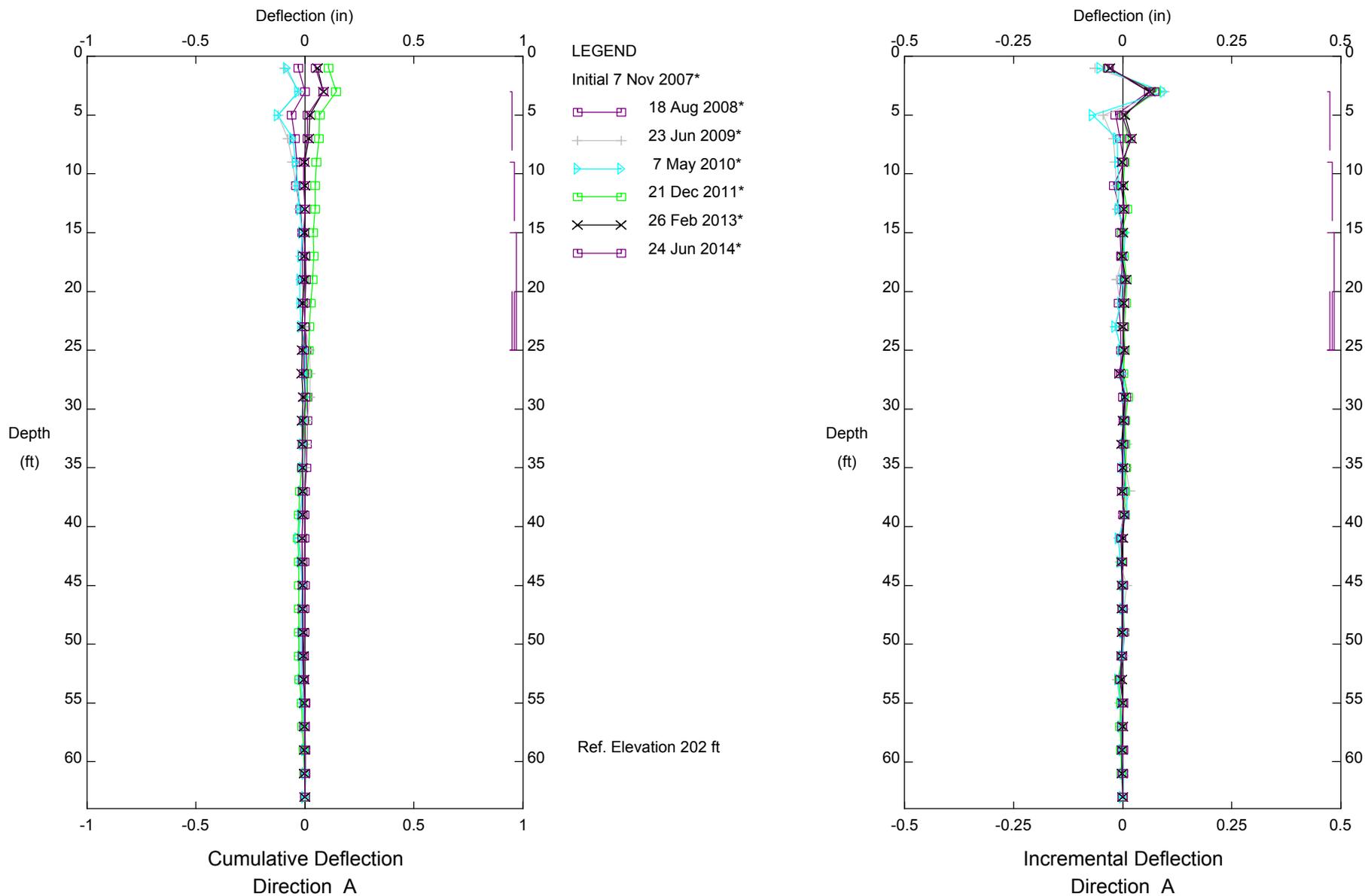


Calle del Barco, Inclinator SI-9

City of Malibu

PLATE C-6d

Fugro Consultants, Inc. - Ventura, CA

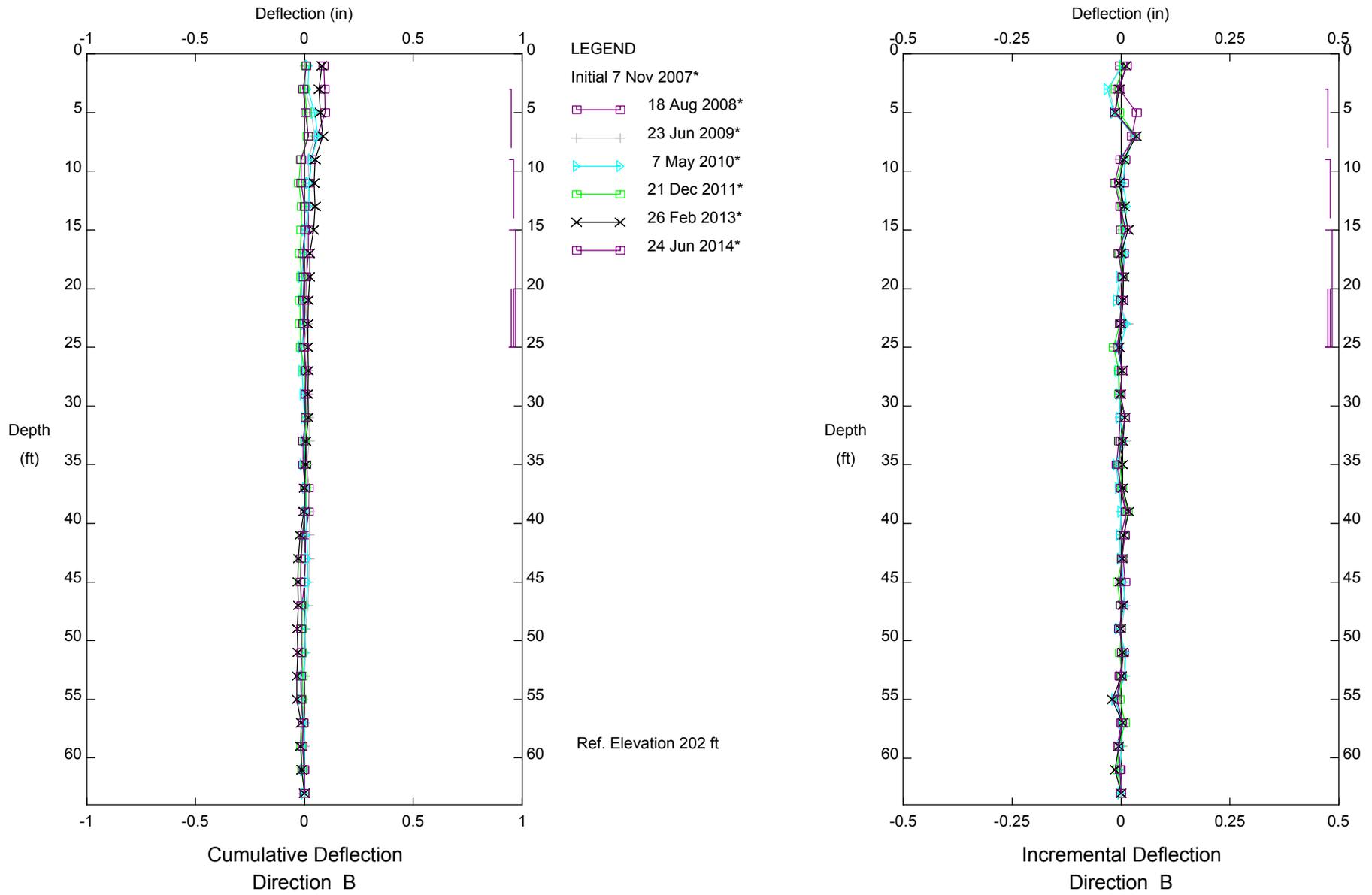


Calle del Barco, Inclinator SI-10
City of Malibu

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

PLATEC-7a

Fugro Consultants, Inc. - Ventura, CA

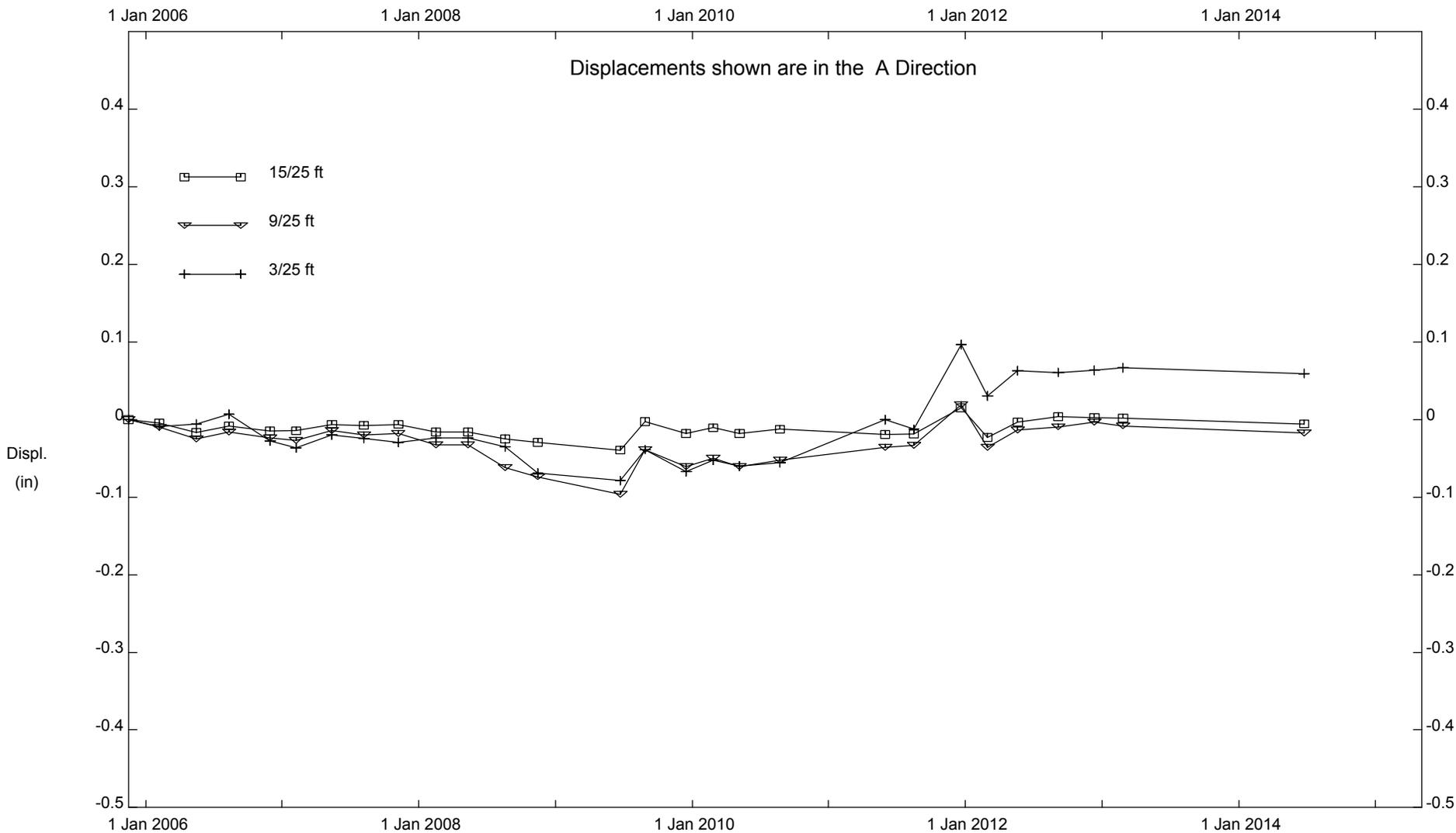


Calle del Barco, Inclinometer SI-10
 City of Malibu

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

PLATE C-7b

Fugro Consultants, Inc. - Ventura, CA

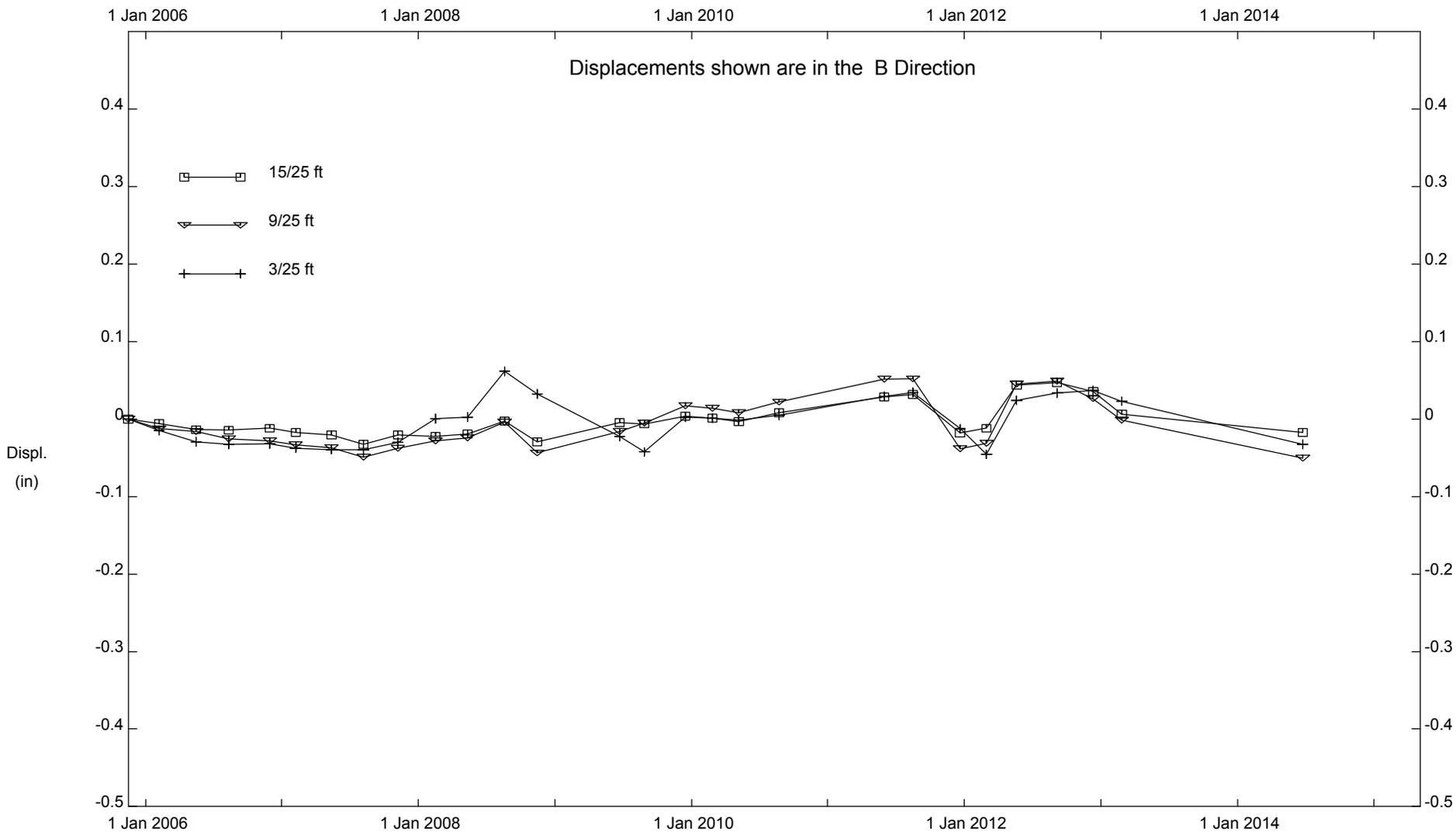


Calle del Barco, Inclinator SI-10

City of Malibu

PLATE C-7c

Fugro Consultants, Inc. - Ventura, CA

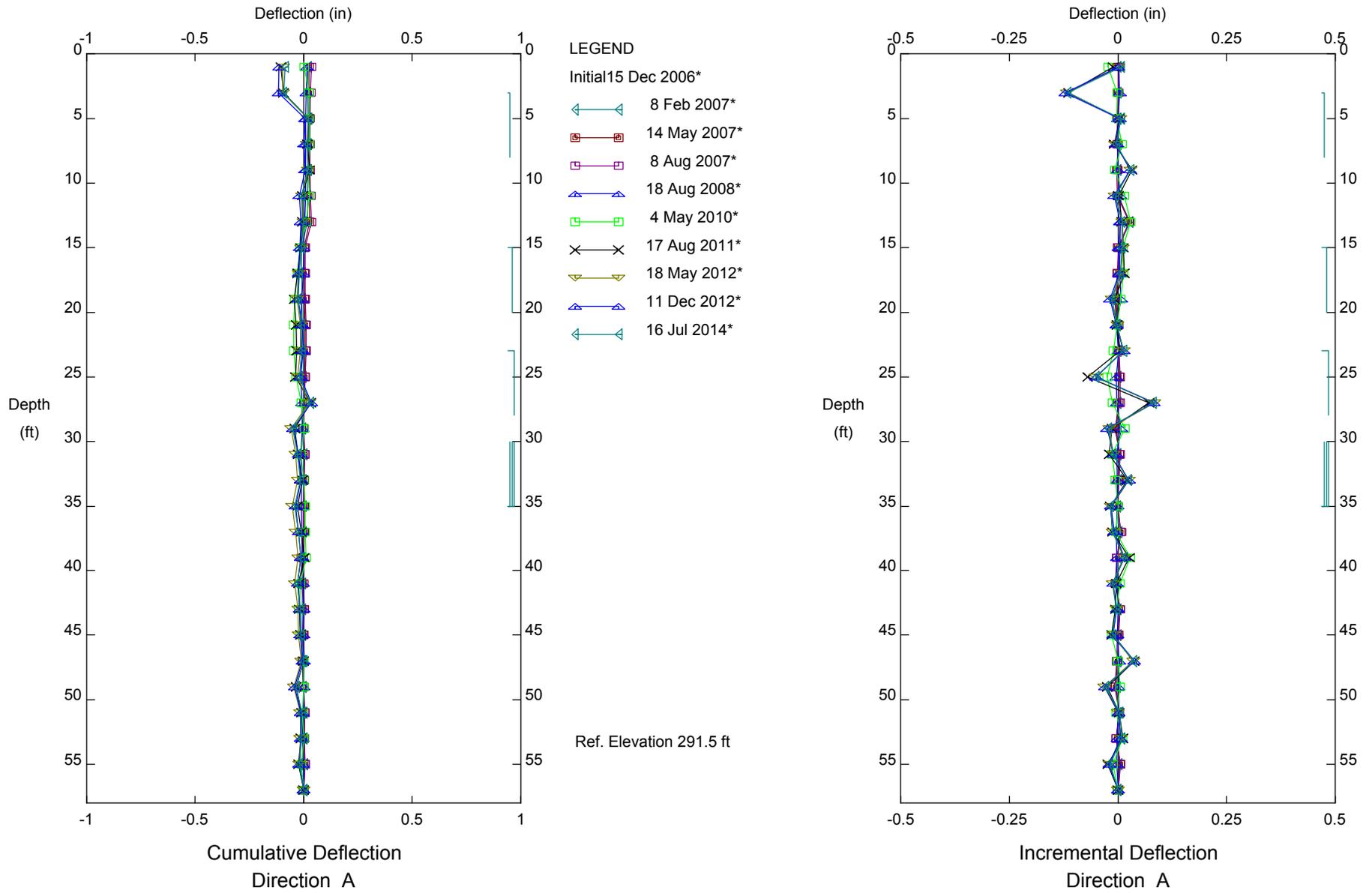


Calle del Barco, Inclinator SI-10

City of Malibu

PLATE C-7d

Fugro Consultants, Inc. - Ventura, CA

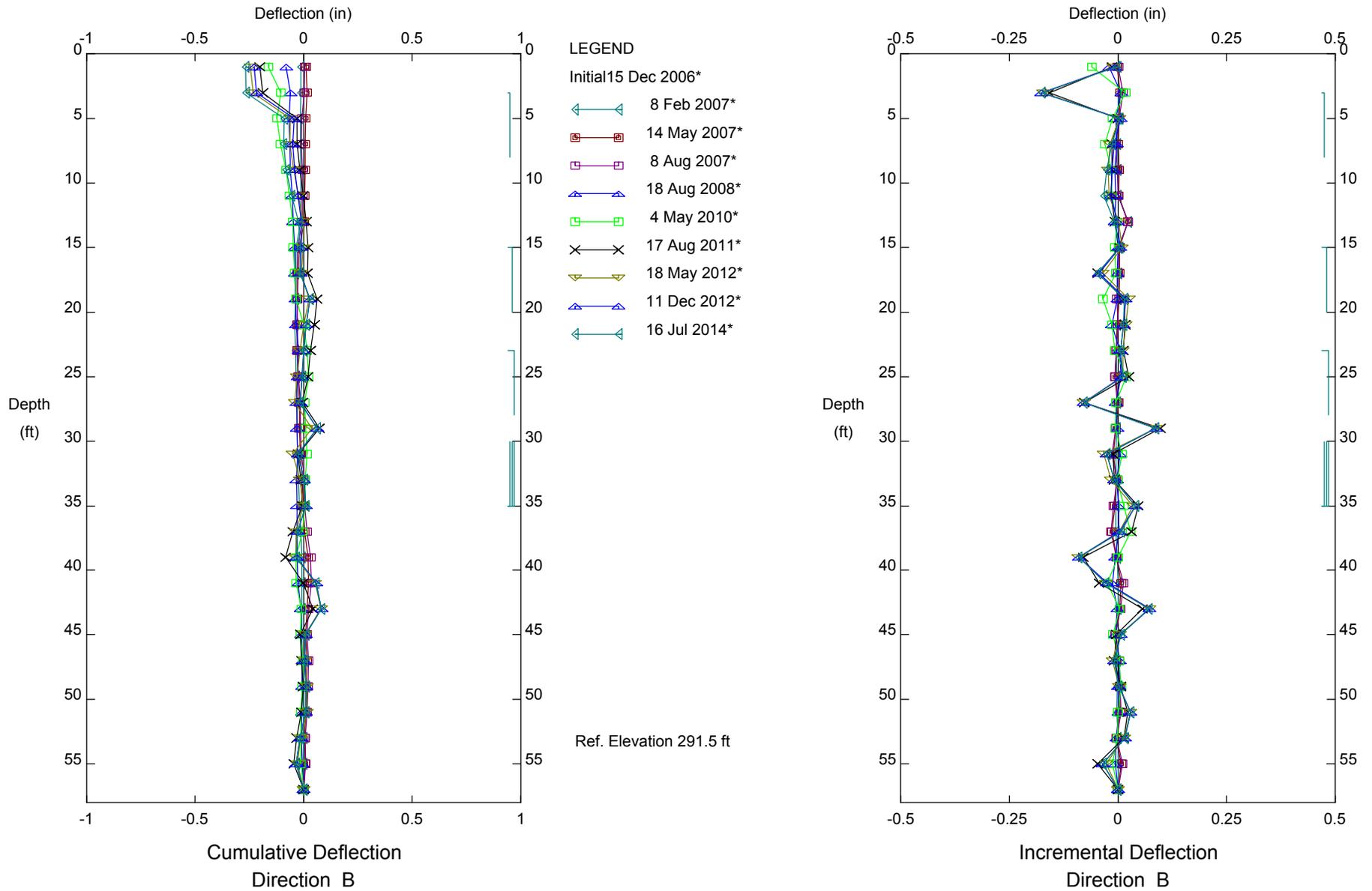


Assessment District 98-2, Inclinometer SI-11
 City of Malibu

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

PLATE C-8a

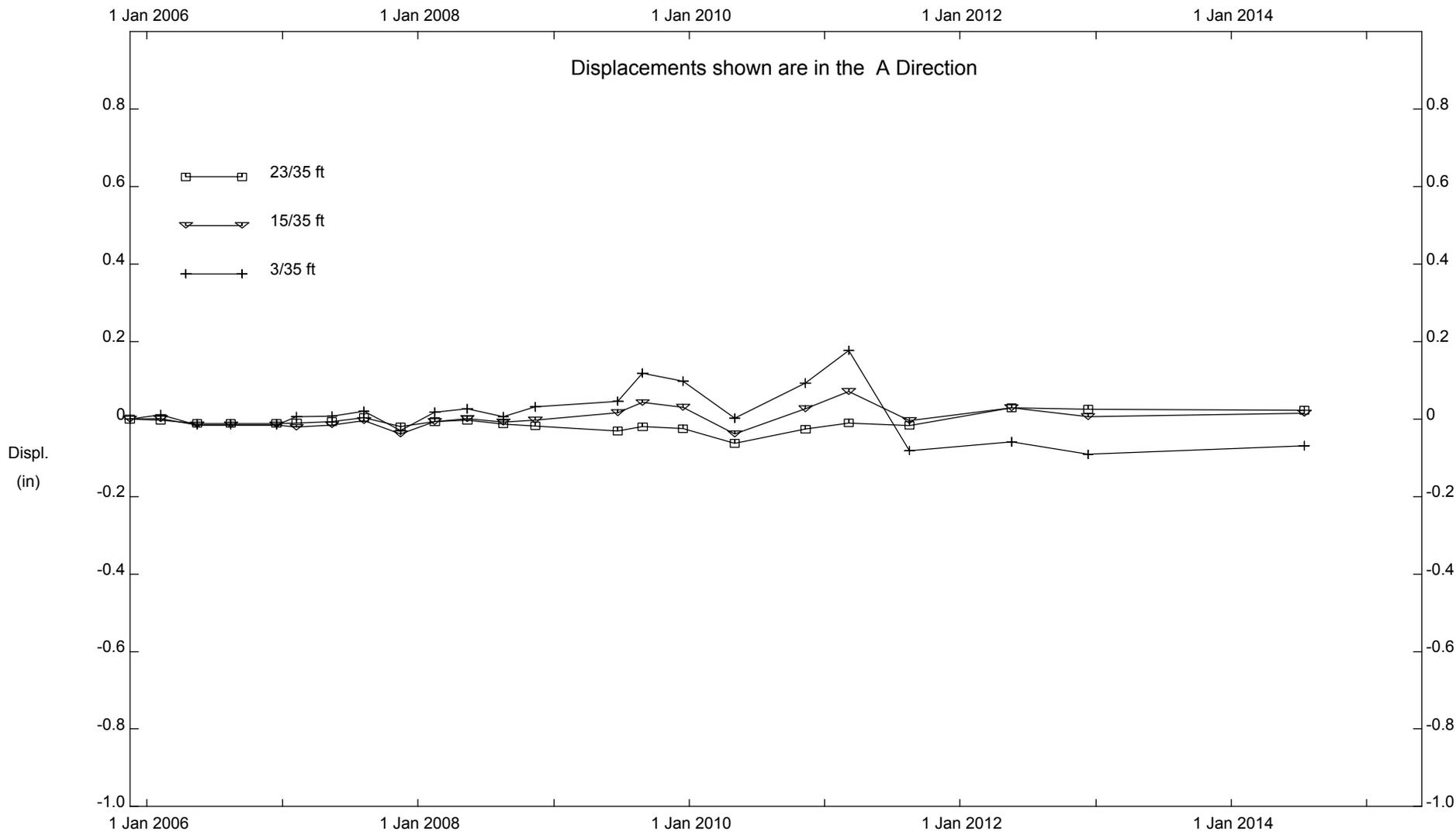
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinometer SI-11
City of Malibu

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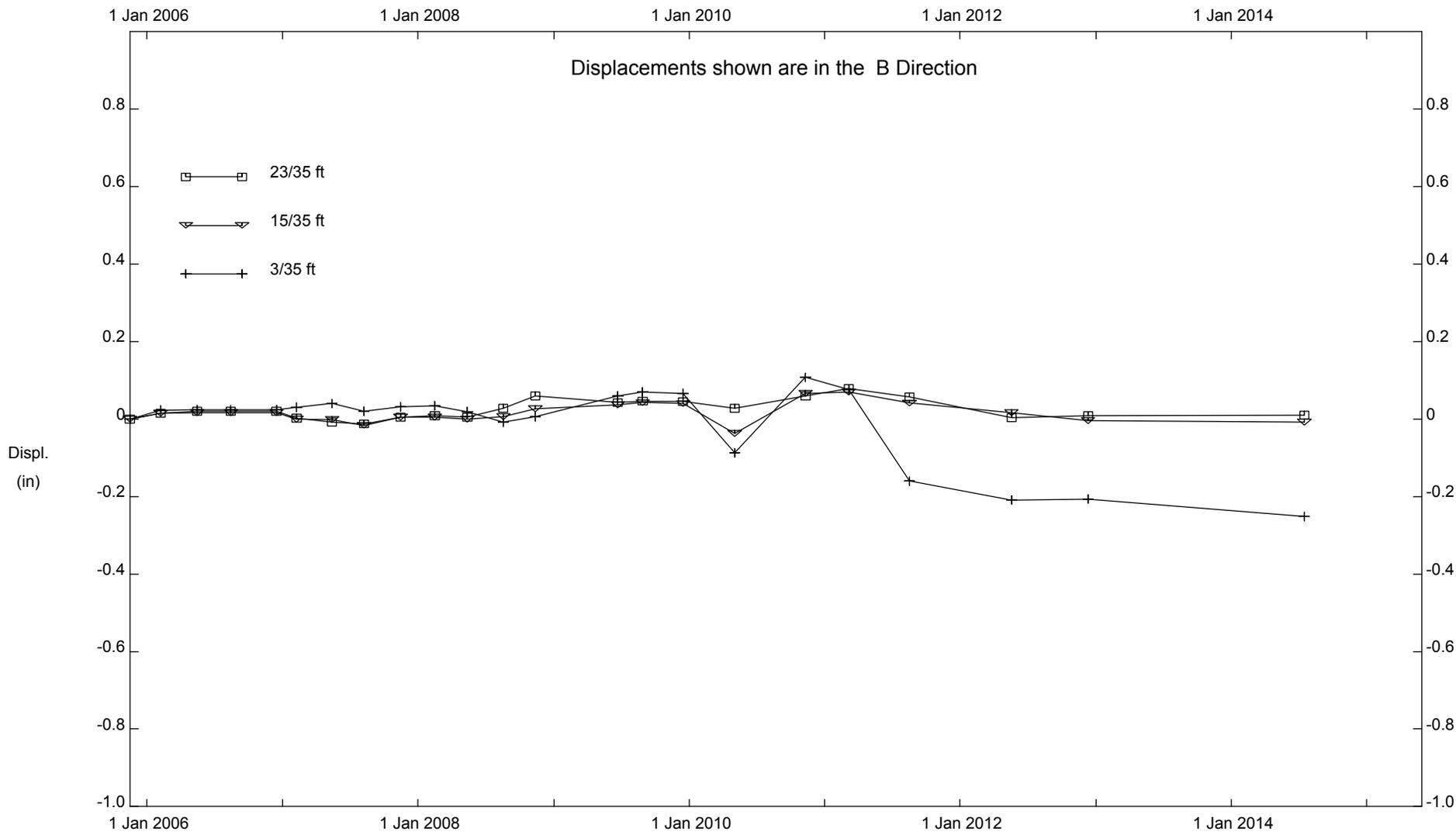


Assessment District 98-2, Inclinometer SI-11

City of Malibu

PLATE C-8c

Fugro Consultants, Inc. - Ventura, CA

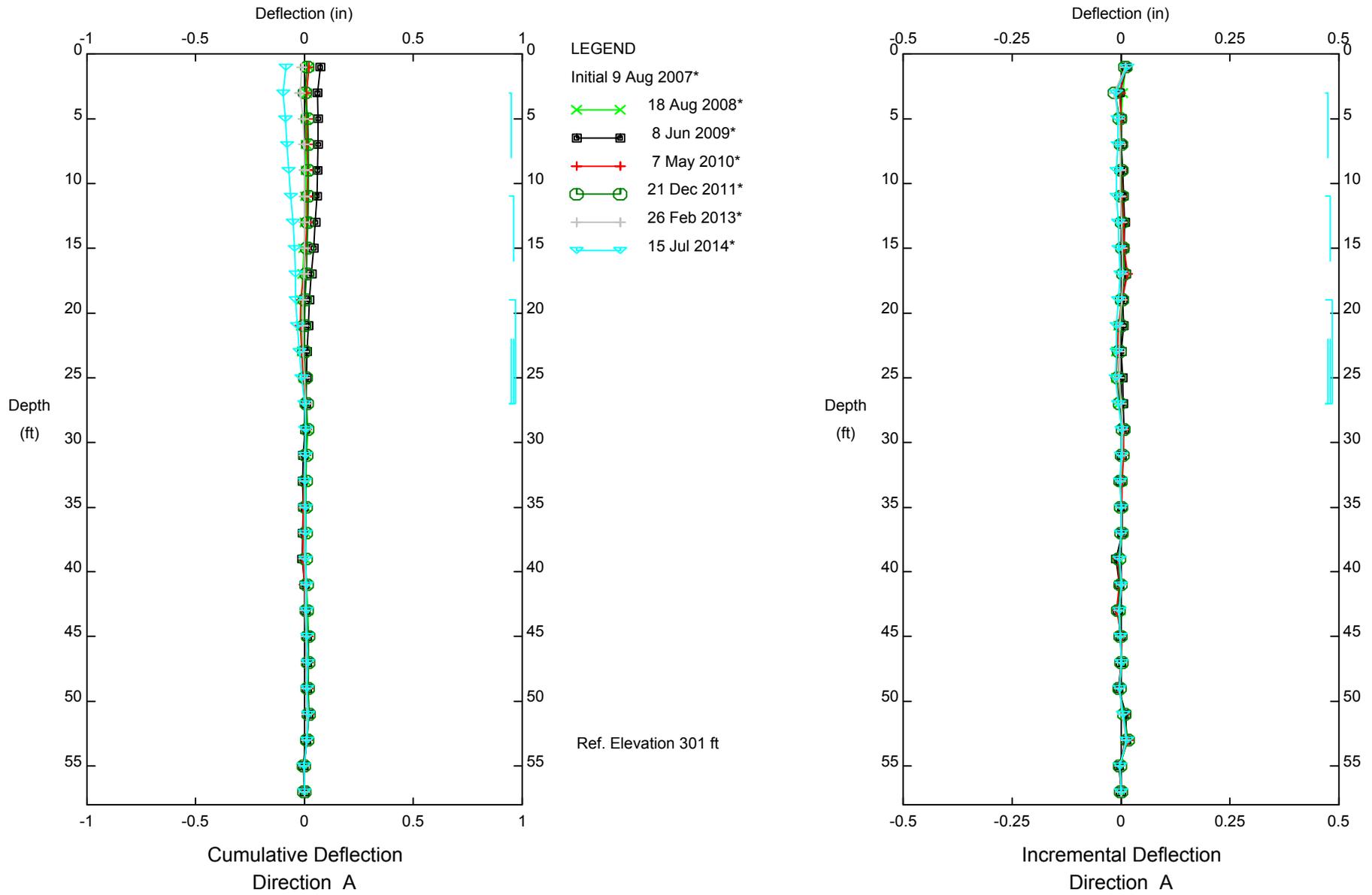


Assessment District 98-2, Inclinometer SI-11

City of Malibu

PLATE C-8d

Fugro Consultants, Inc. - Ventura, CA

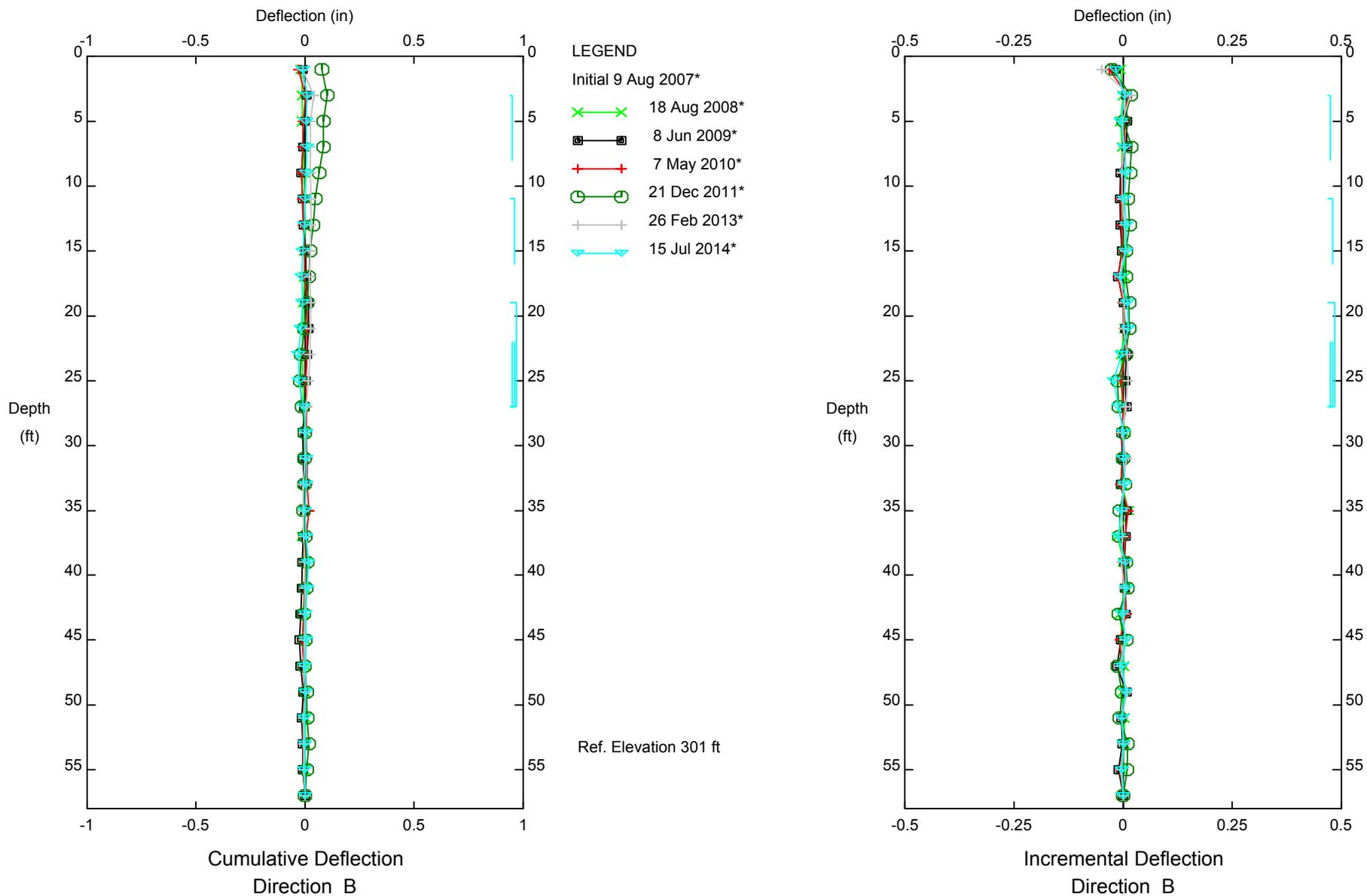


Assessment District 98-2, Inclinometer SI-12
 City of Malibu

PLATE C-9a

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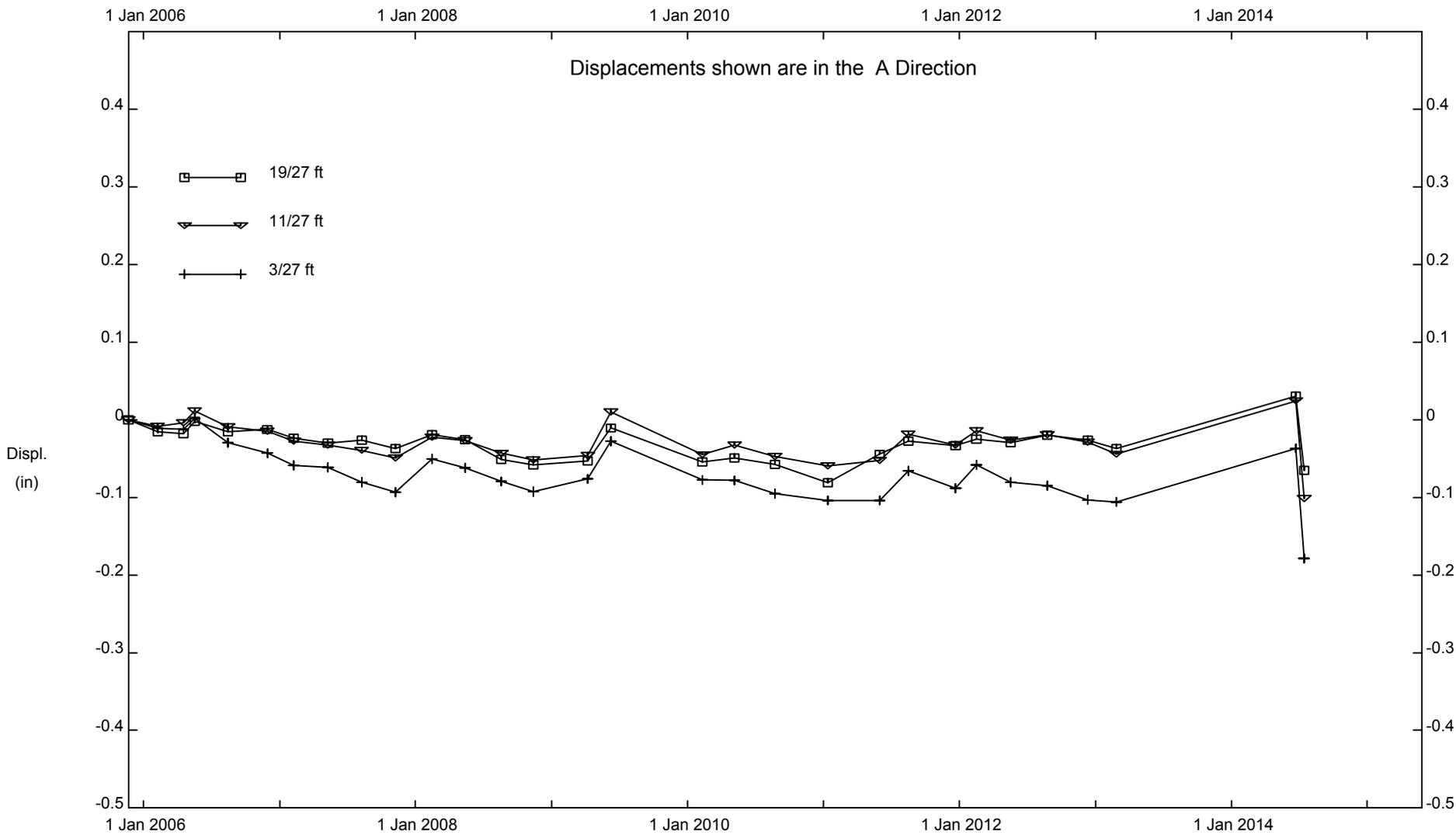
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinometer SI-12
 City of Malibu

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PLATE C-9b

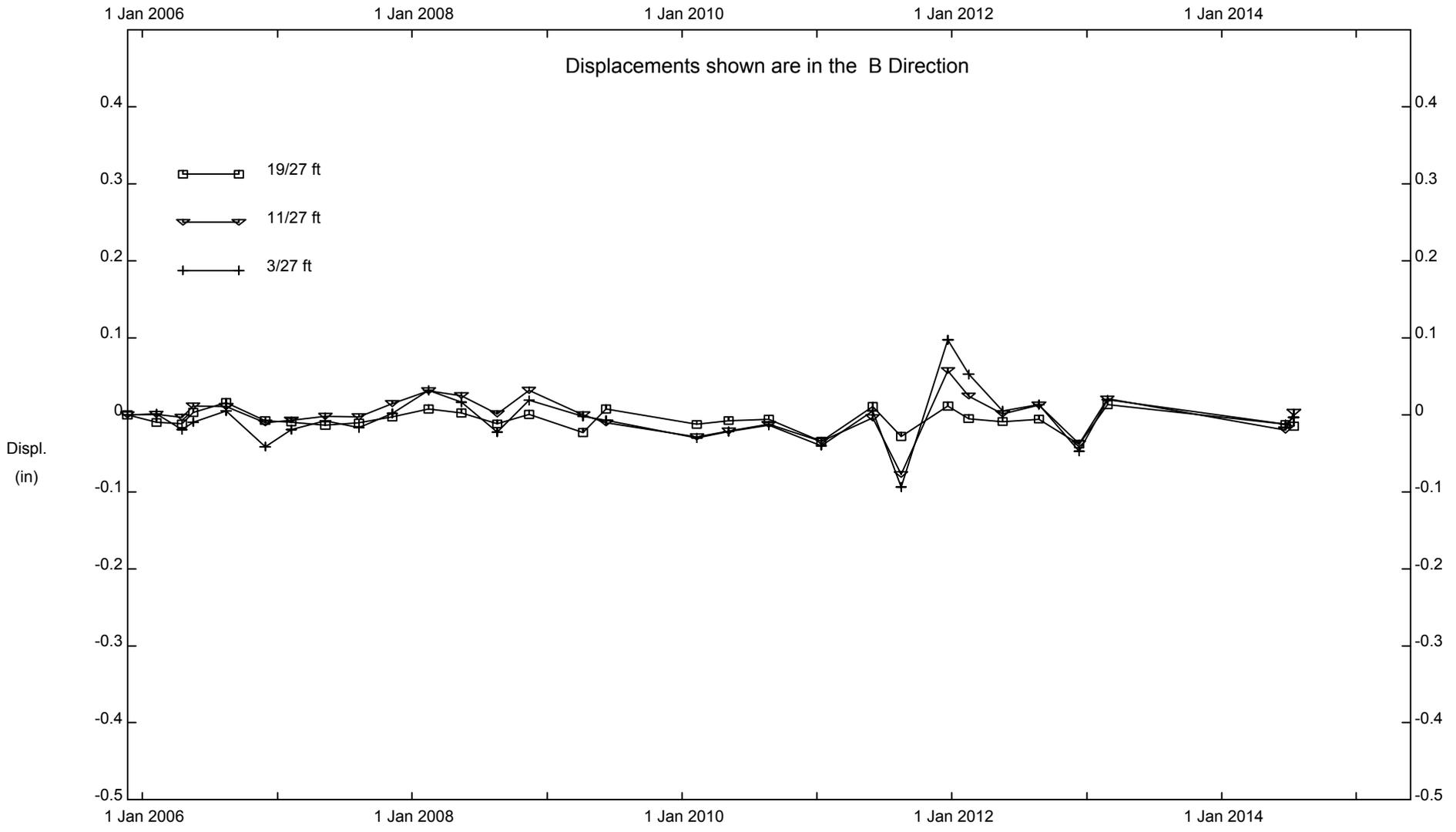


Assessment District 98-2, Inclinometer SI-12

City of Malibu

PLATE C-9c

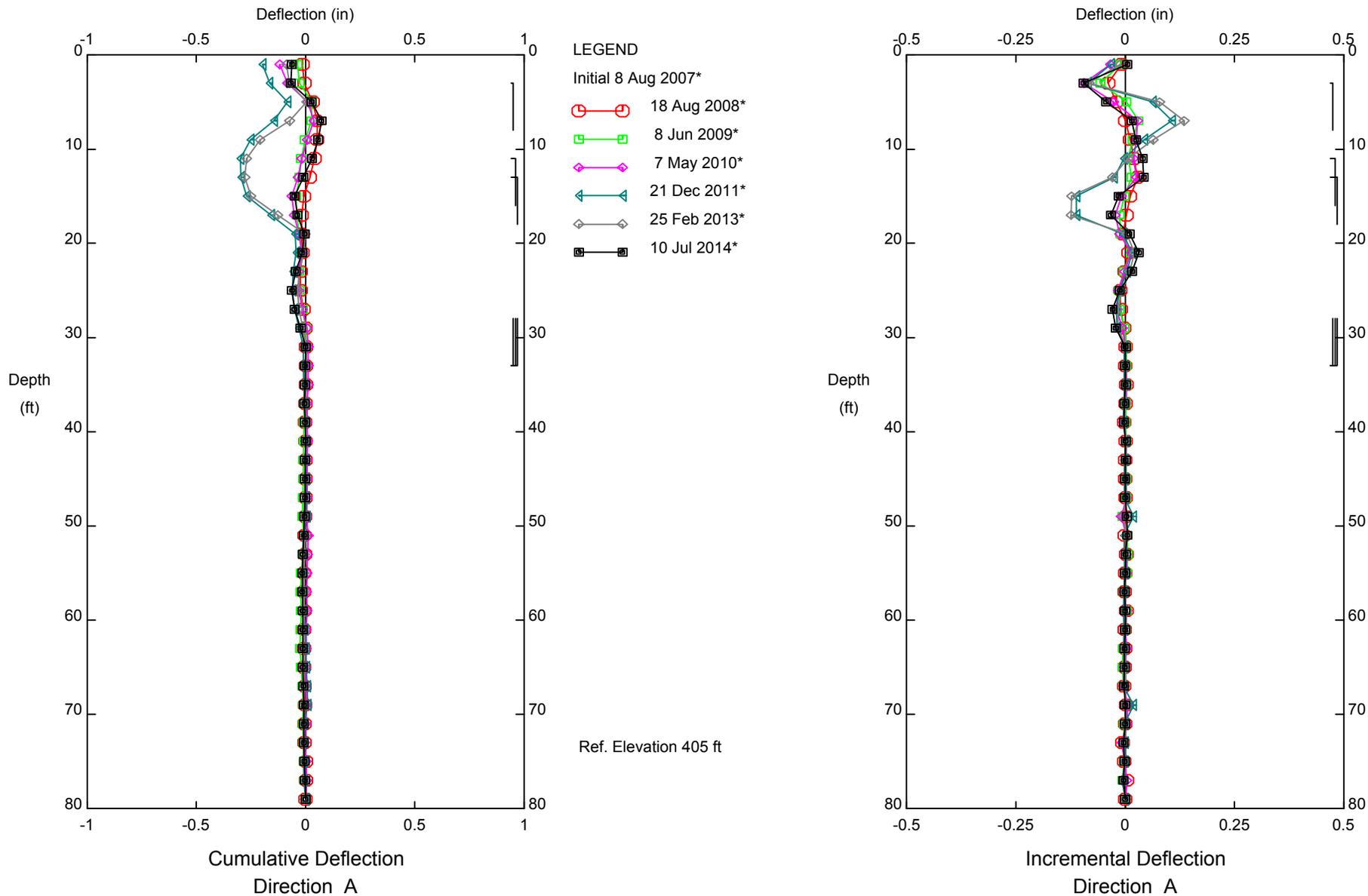
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinometer SI-12

City of Malibu

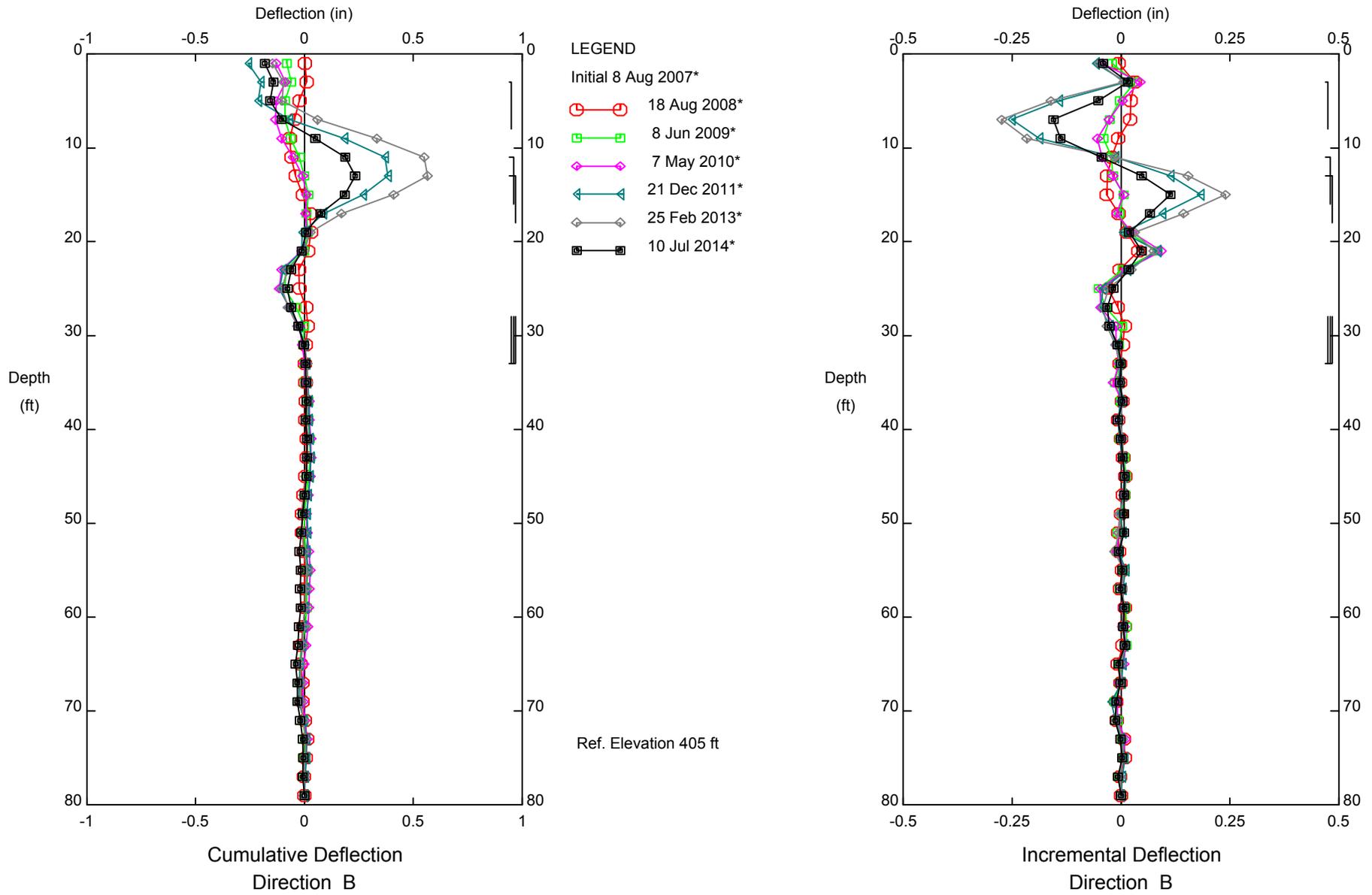
PLATE C-9d



Assessment District 98-2, Inclinometer SI-13
 City of Malibu

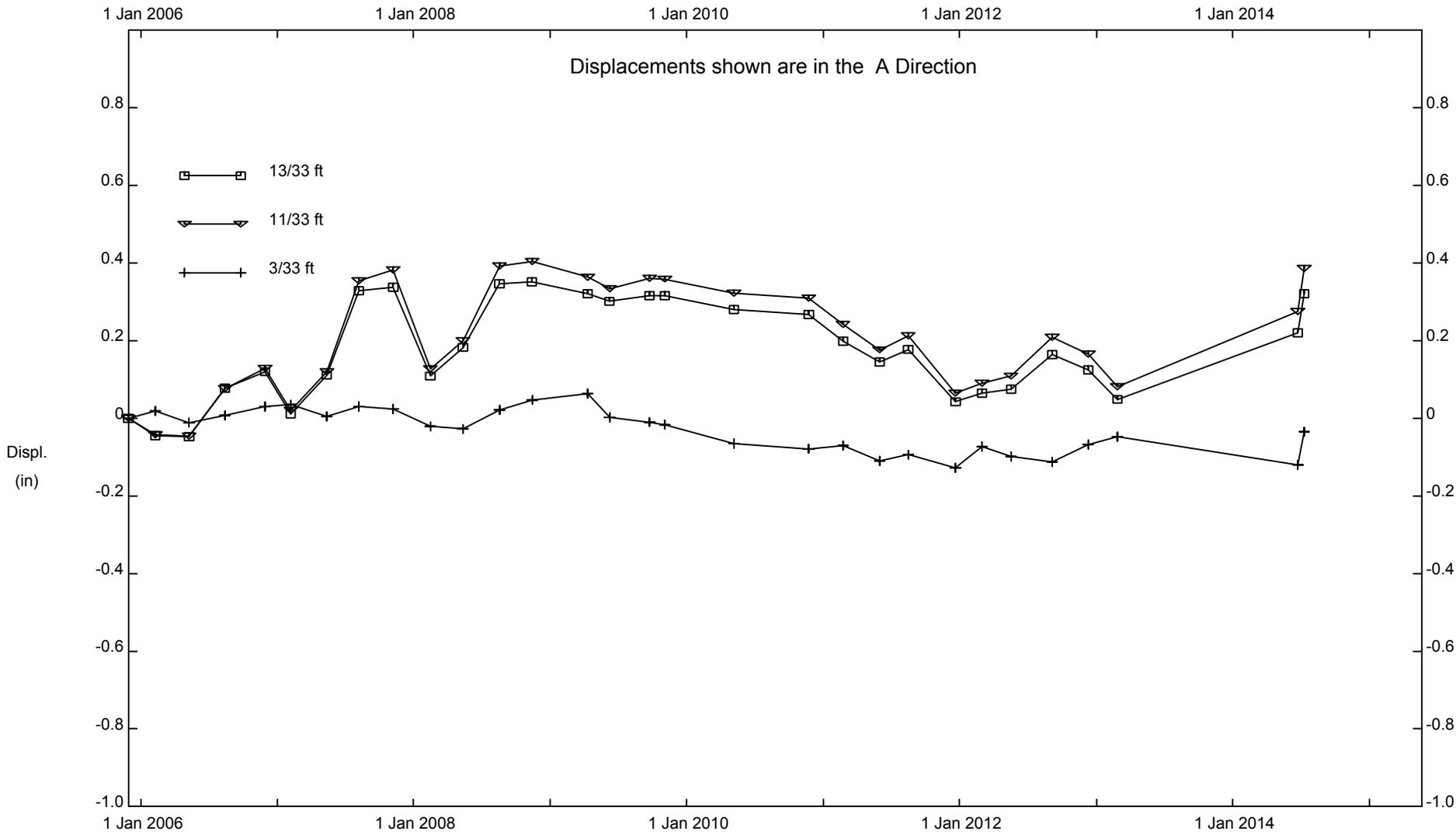
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Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Incliner SI-13
City of Malibu

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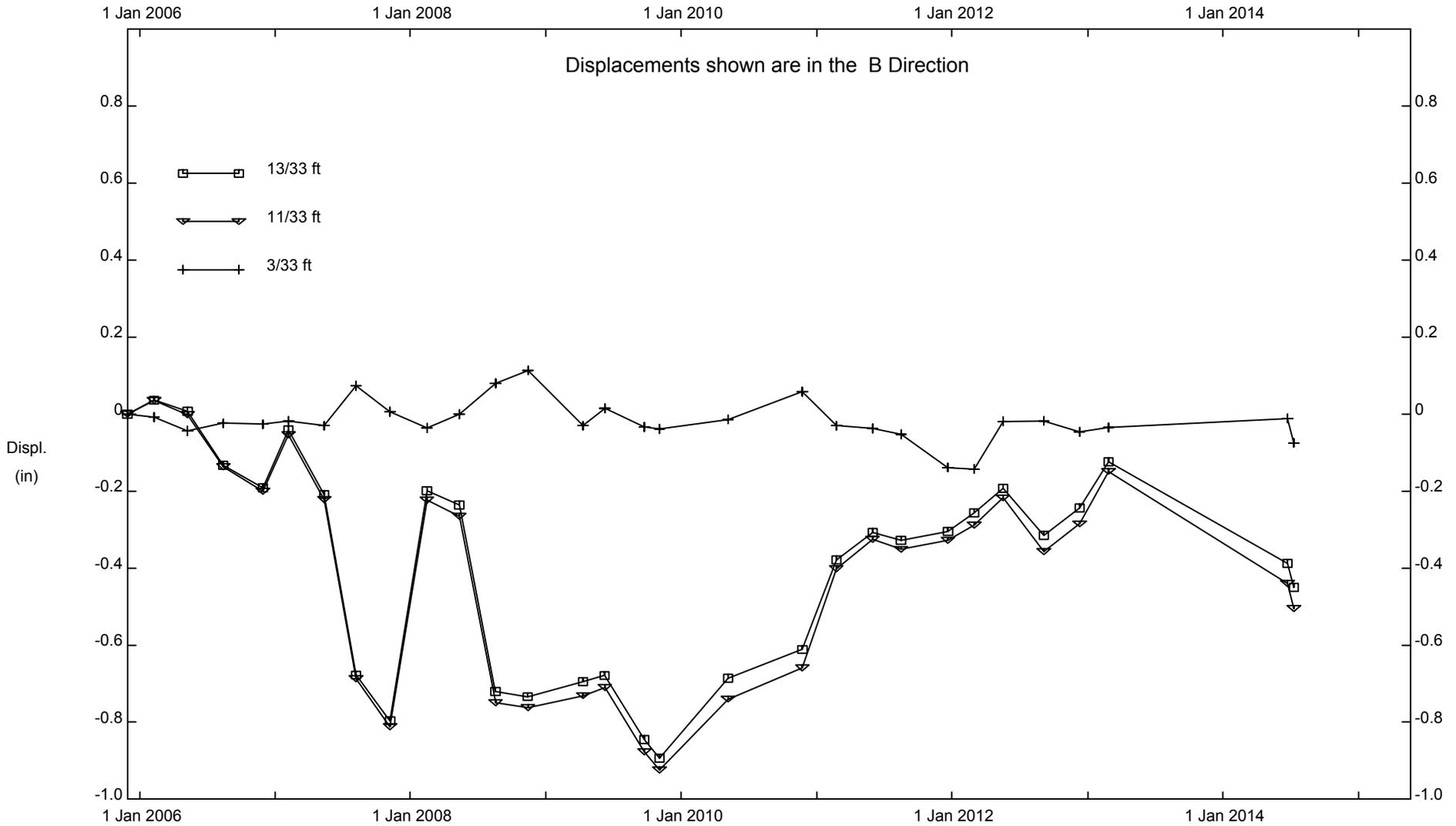


Assessment District 98-2, Inclinator SI-13

City of Malibu

PLATE C-10c

Fugro Consultants, Inc. - Ventura, CA

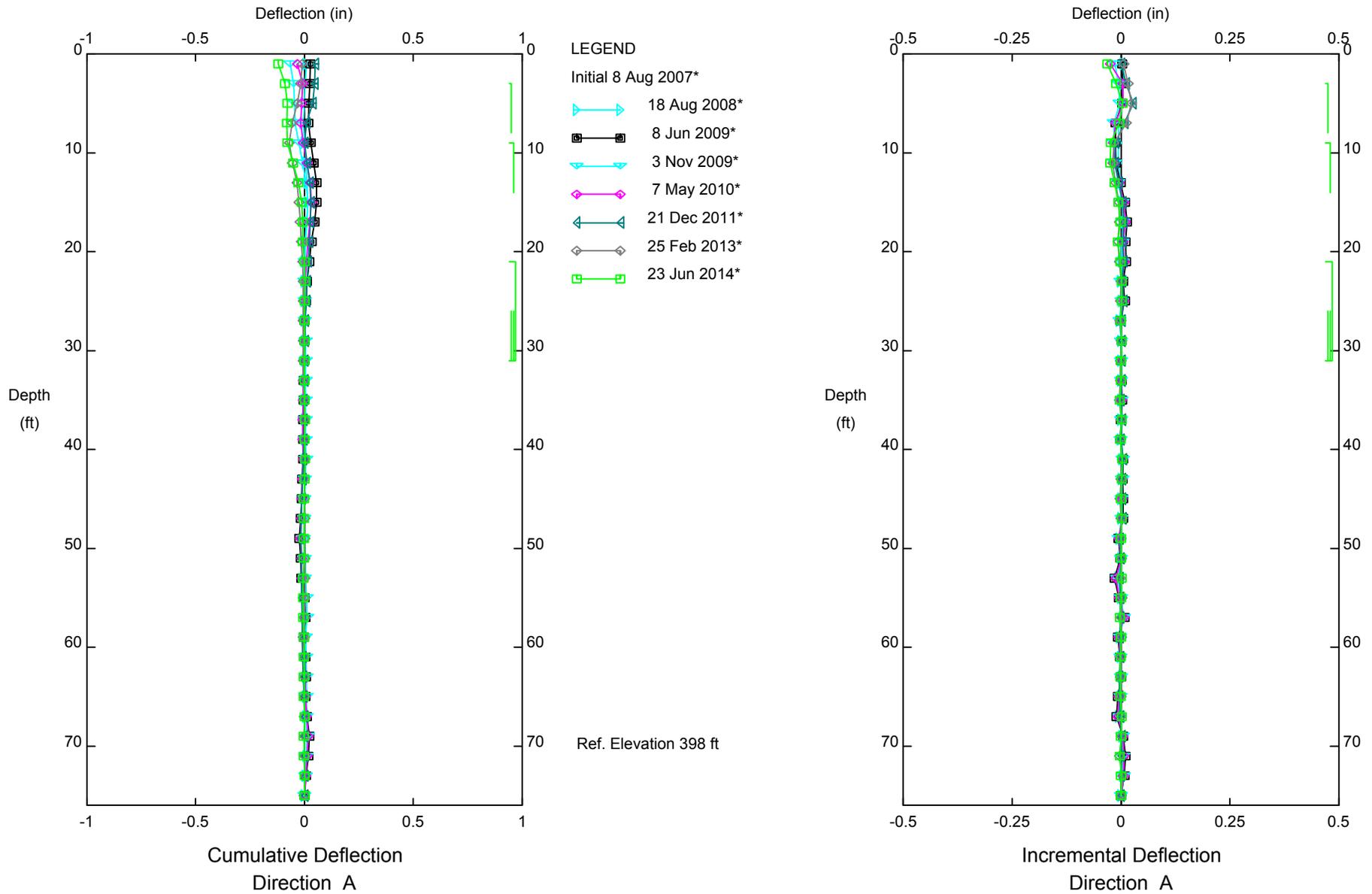


Assessment District 98-2, Inclinator SI-13

City of Malibu

PLATE C-10d

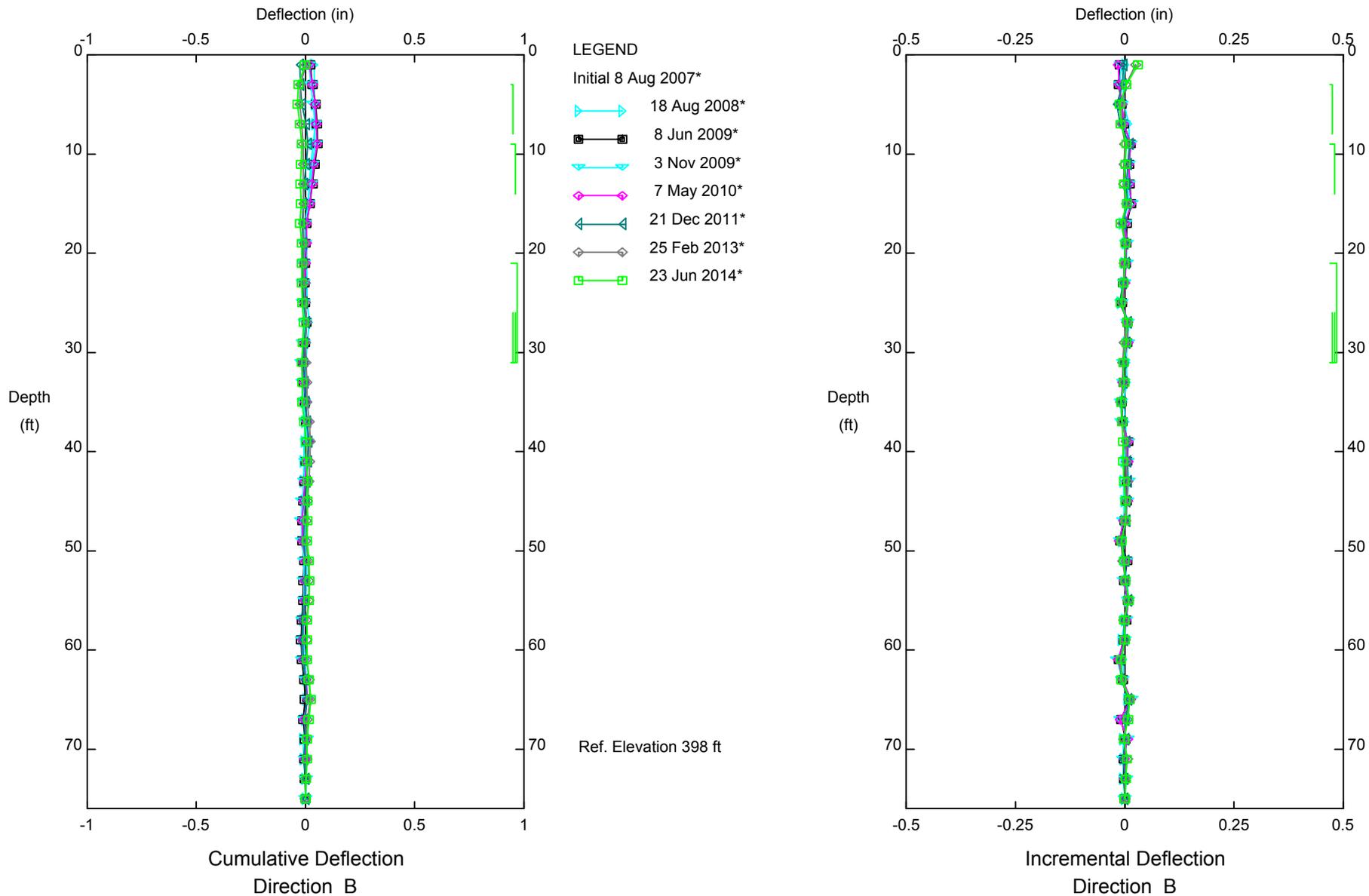
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinometer SI-14
 City of Malibu

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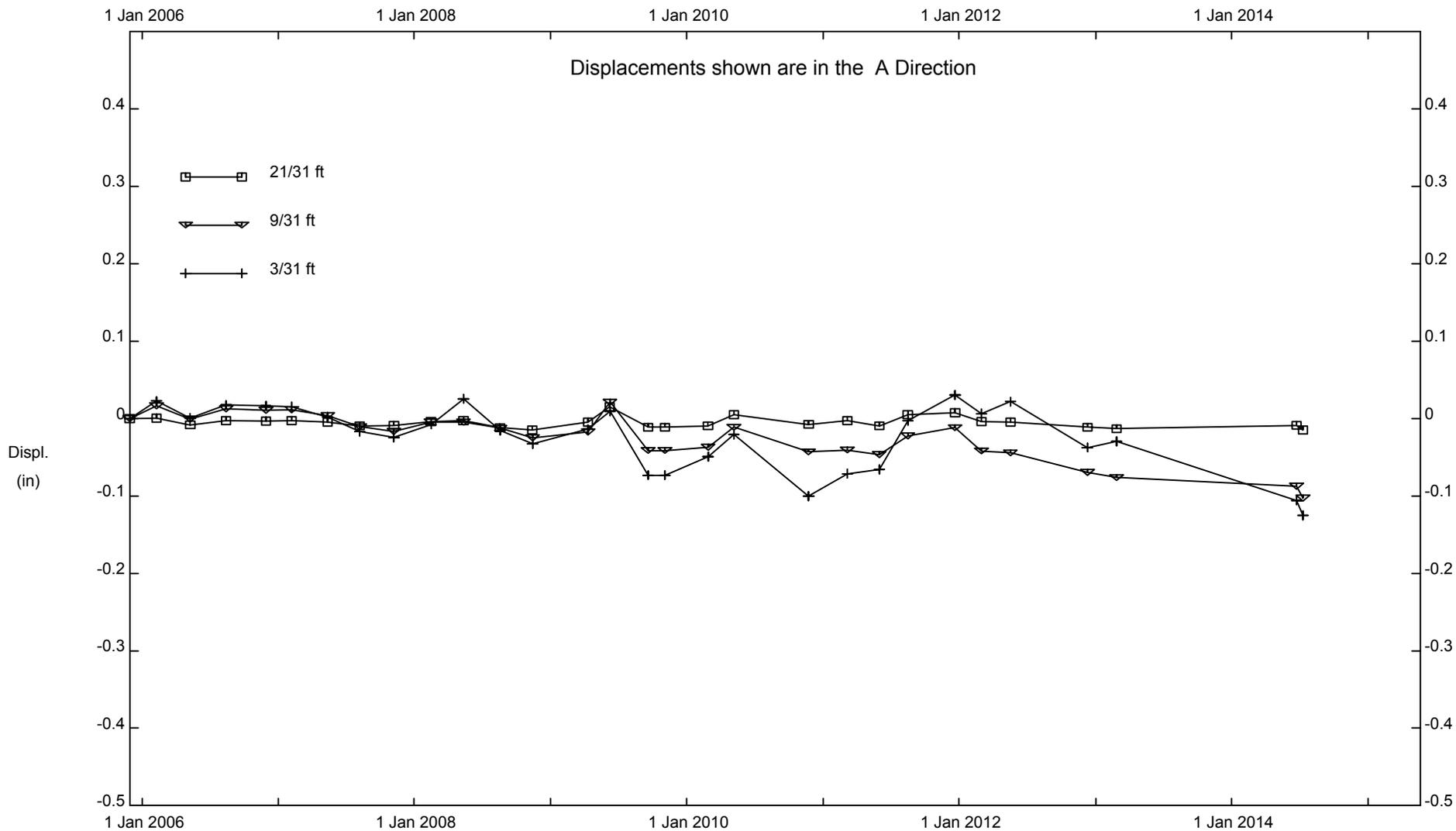
PLATE C-11a



Assessment District 98-2, Inclinometer SI-14
 City of Malibu

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Fugro Consultants, Inc. - Ventura, CA

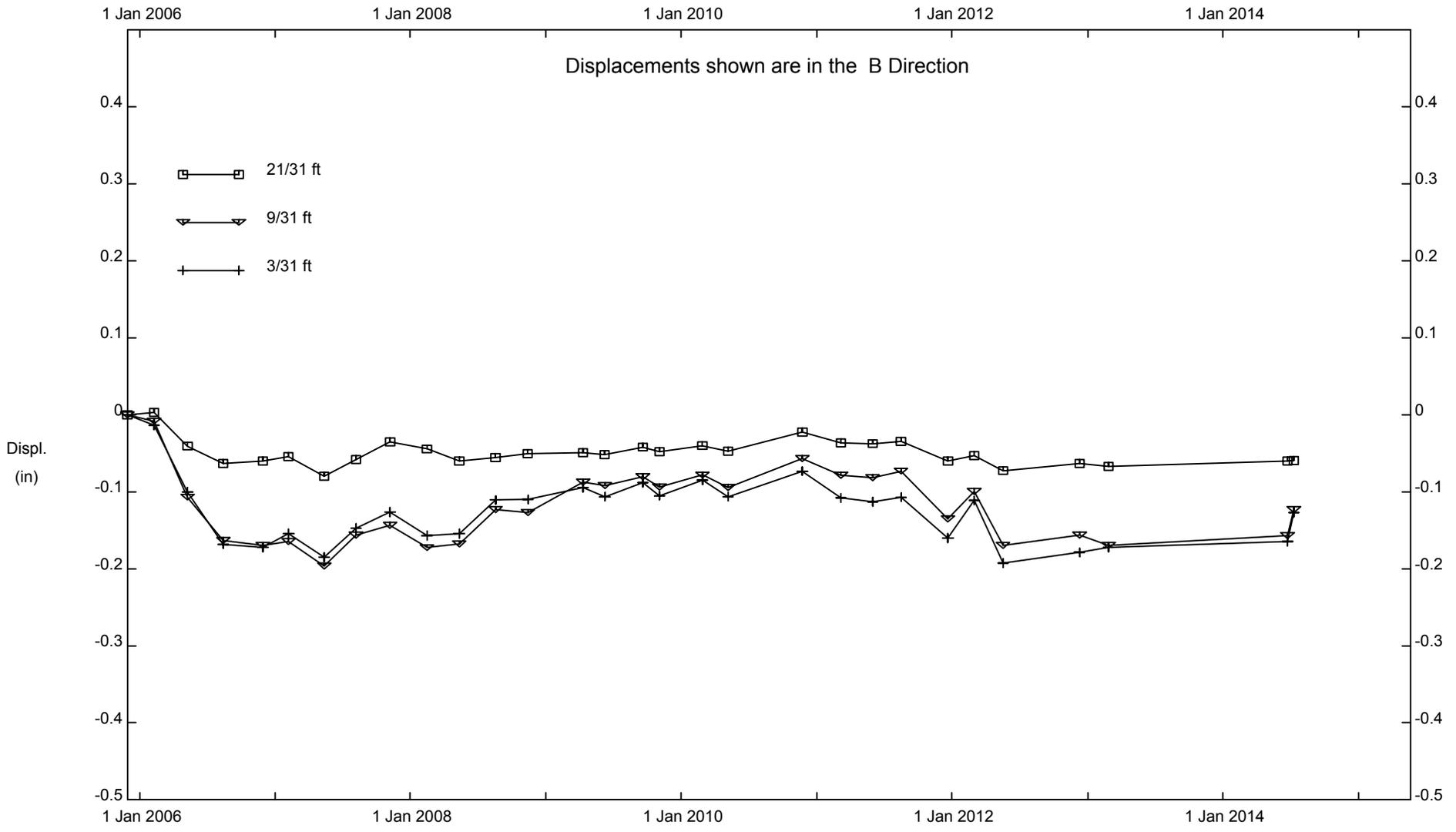


Assessment District 98-2, Inclinator SI-14

City of Malibu

PLATE C-11c

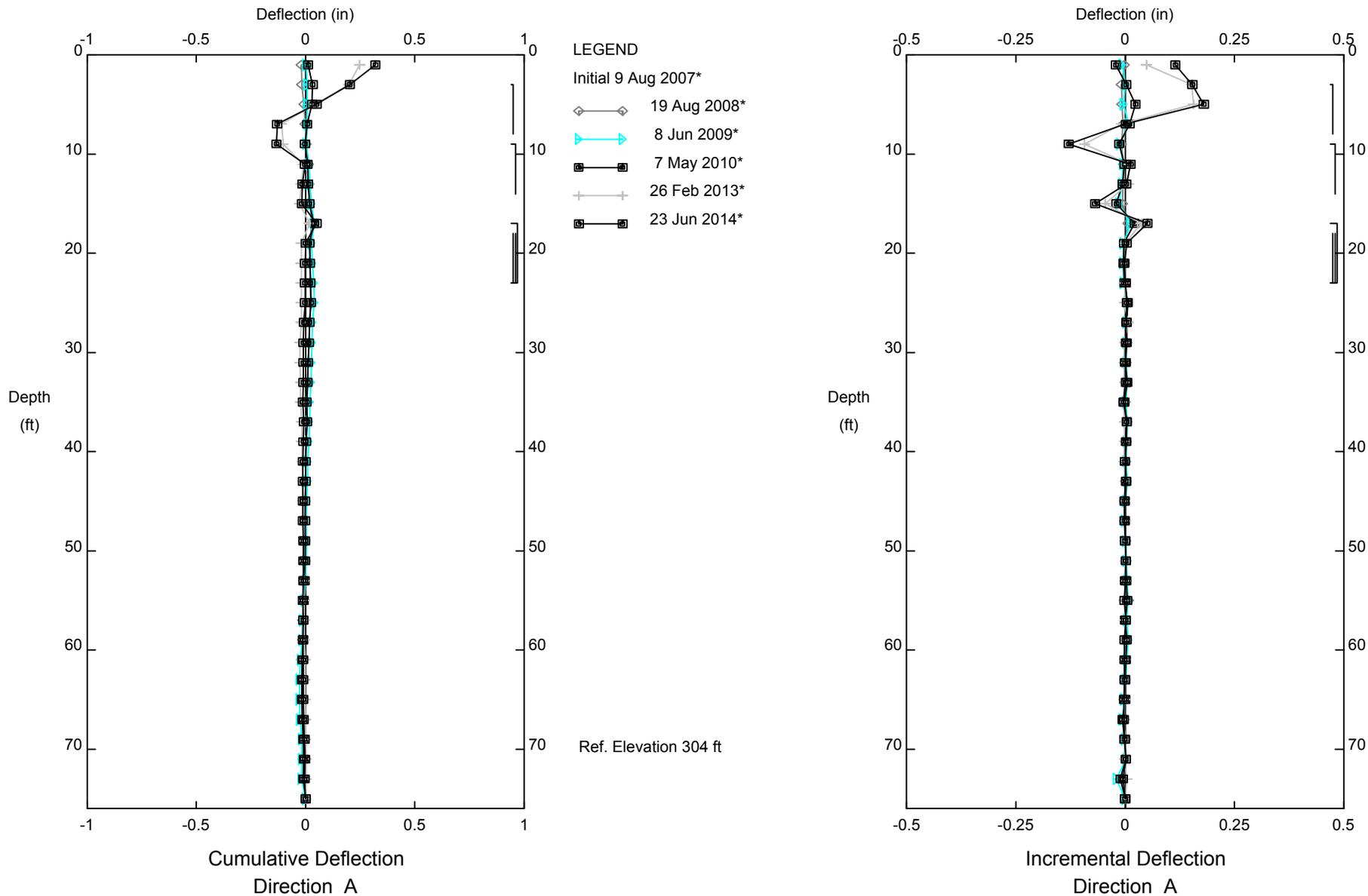
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Assessment District 98-2, Inclinator SI-14

City of Malibu

PLATE C-11d



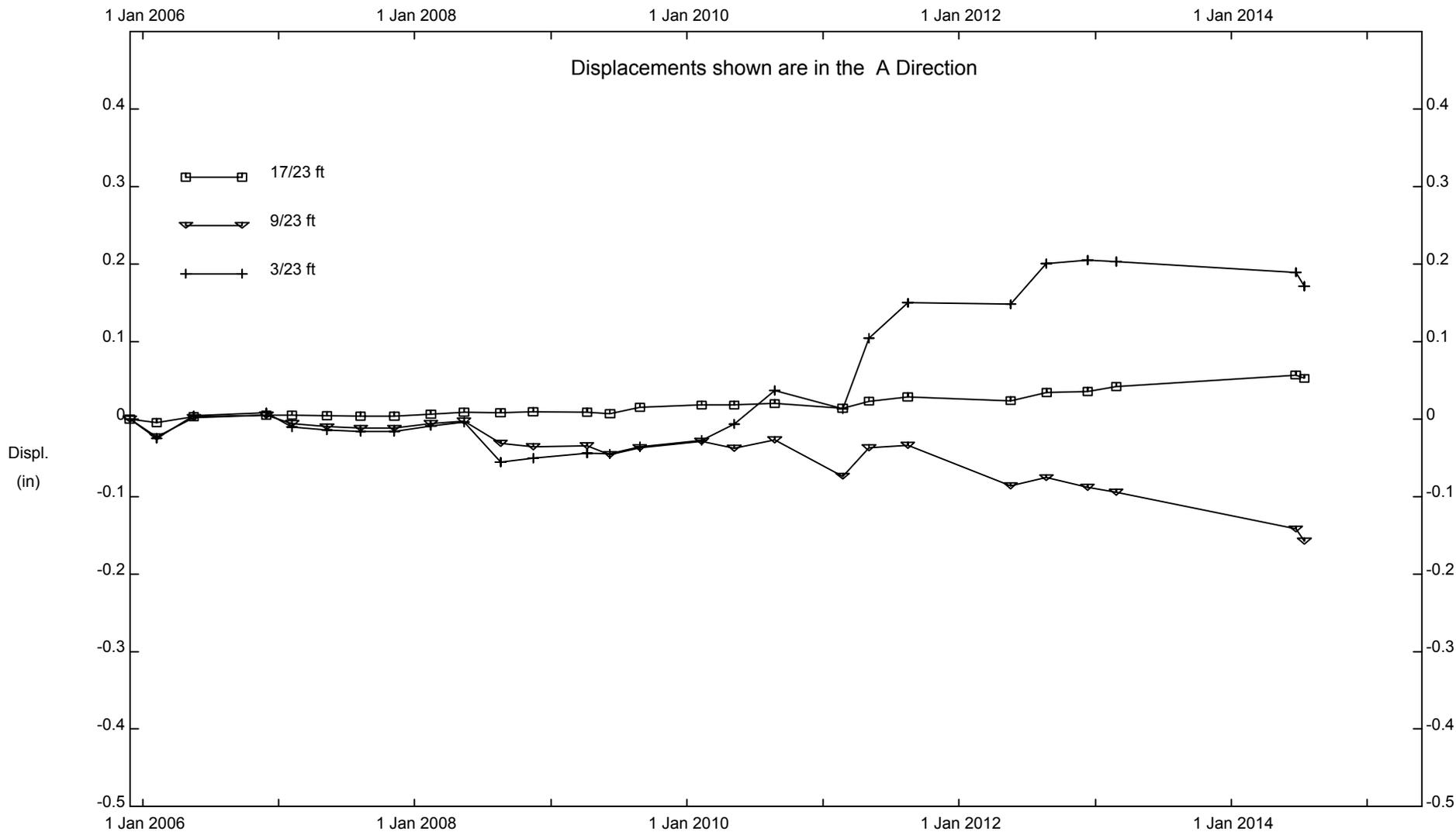
CALLE DEL BARCO, Inclinator SI-15

Depth of readings = 72 ft

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

PLATE C-12a

Fugro Consultants, Inc. - Ventura, CA

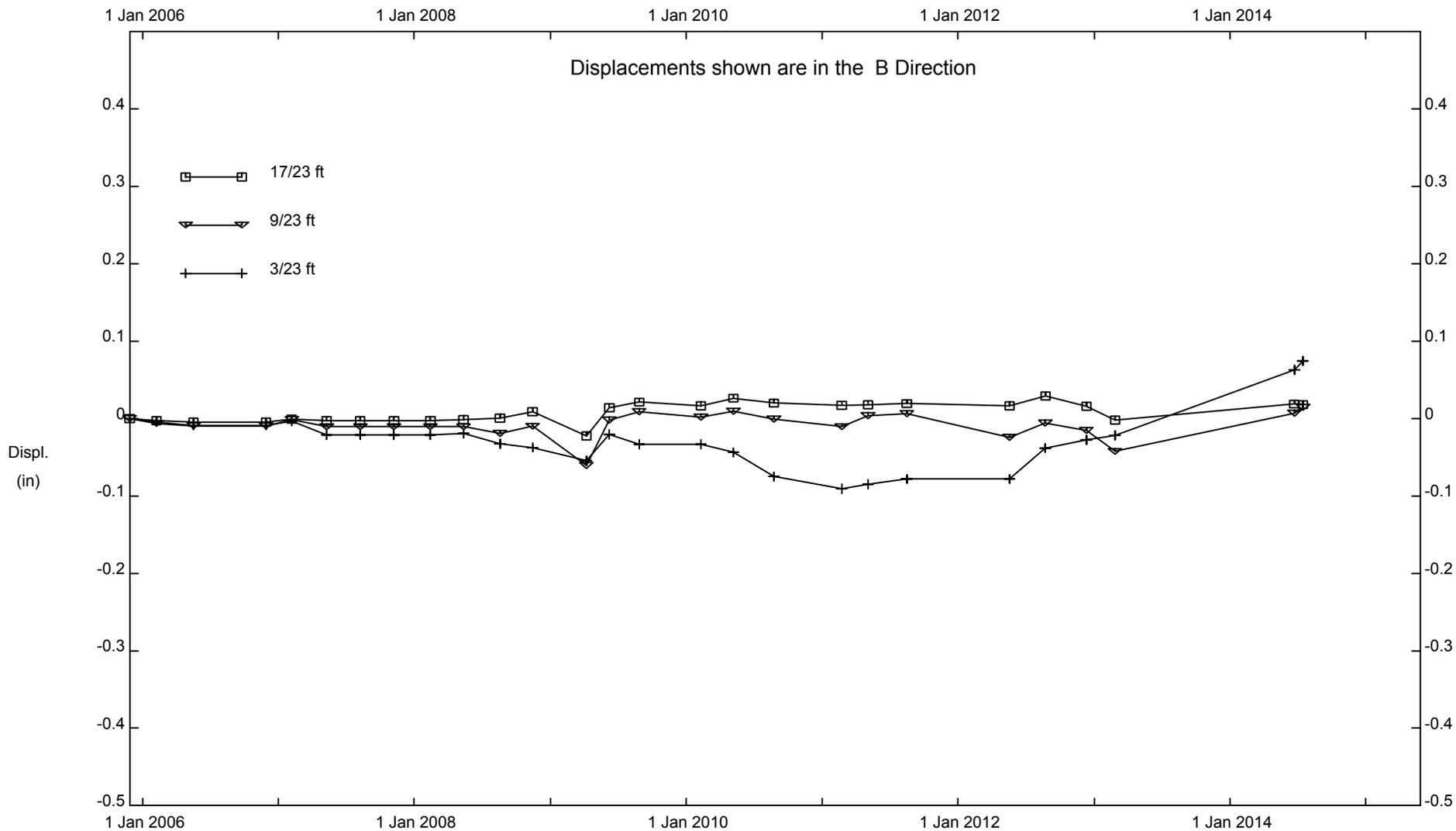


CALLE DEL BARCO, Inclinator SI-15

Depth of readings = 72 ft

PLATE C-12c

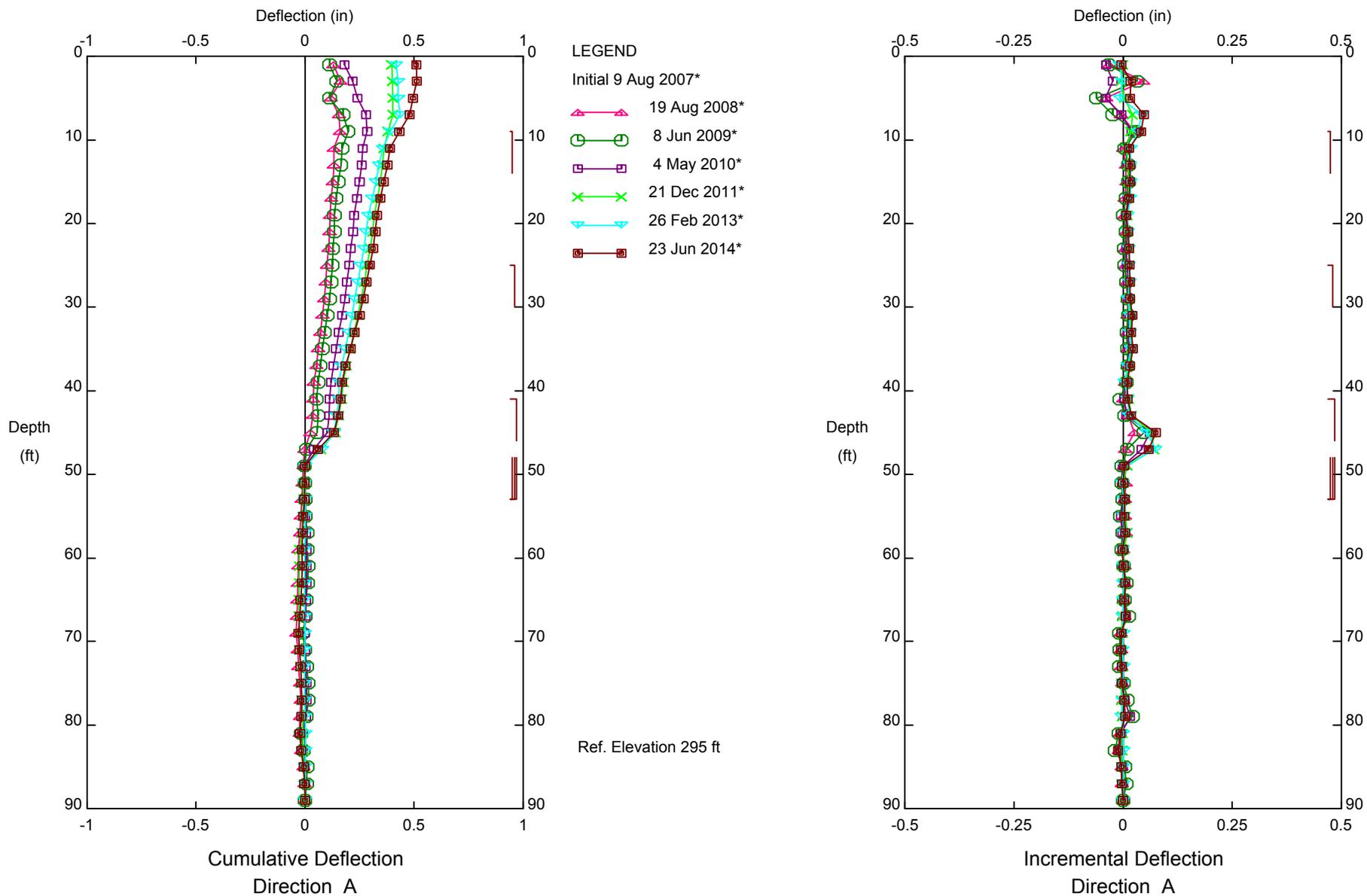
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CALLE DEL BARCO, Inclinator SI-15

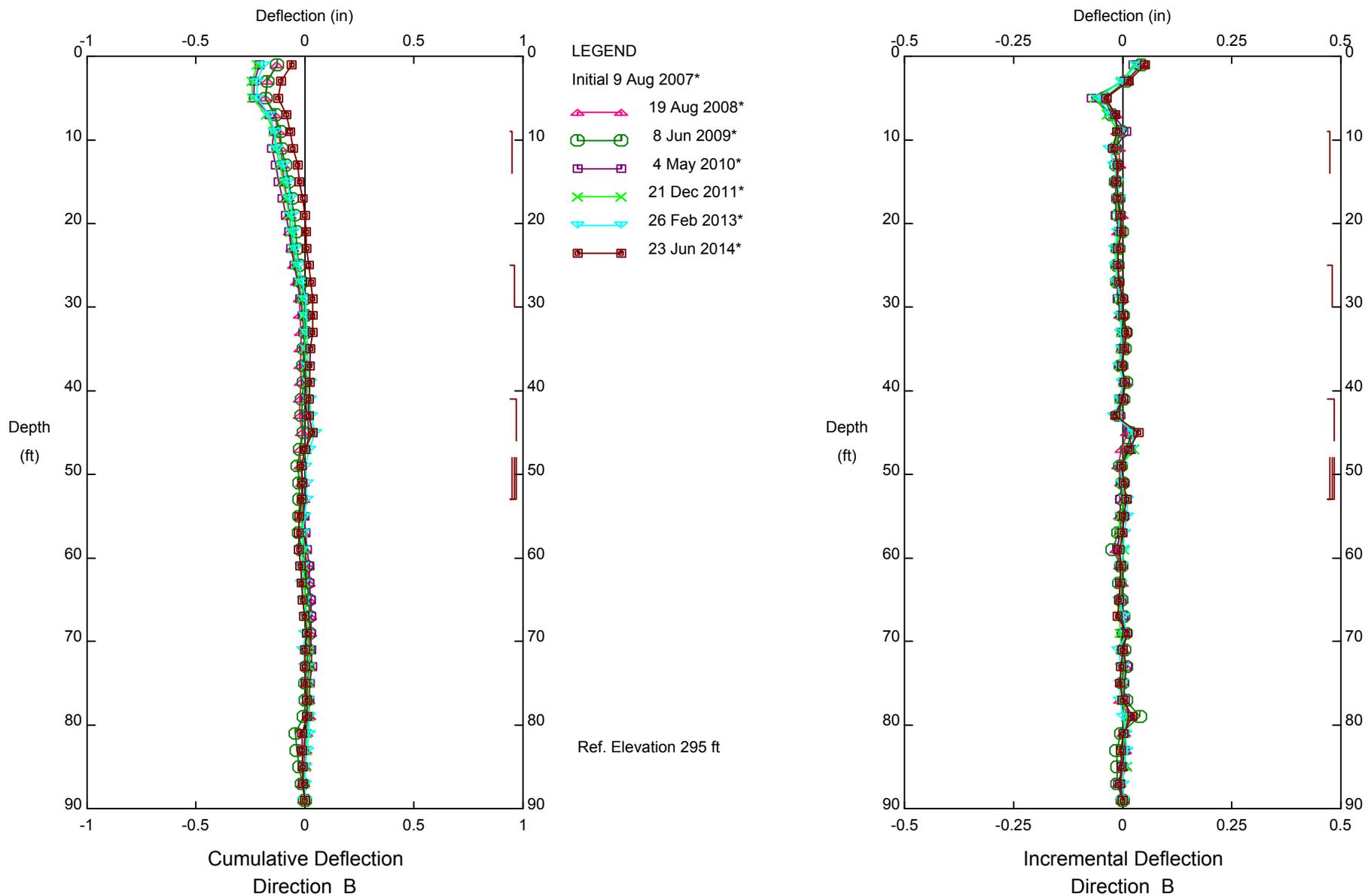
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PLATE C-12d



Assessment District 98-2, Inclinometer SI-16
 City of Malibu

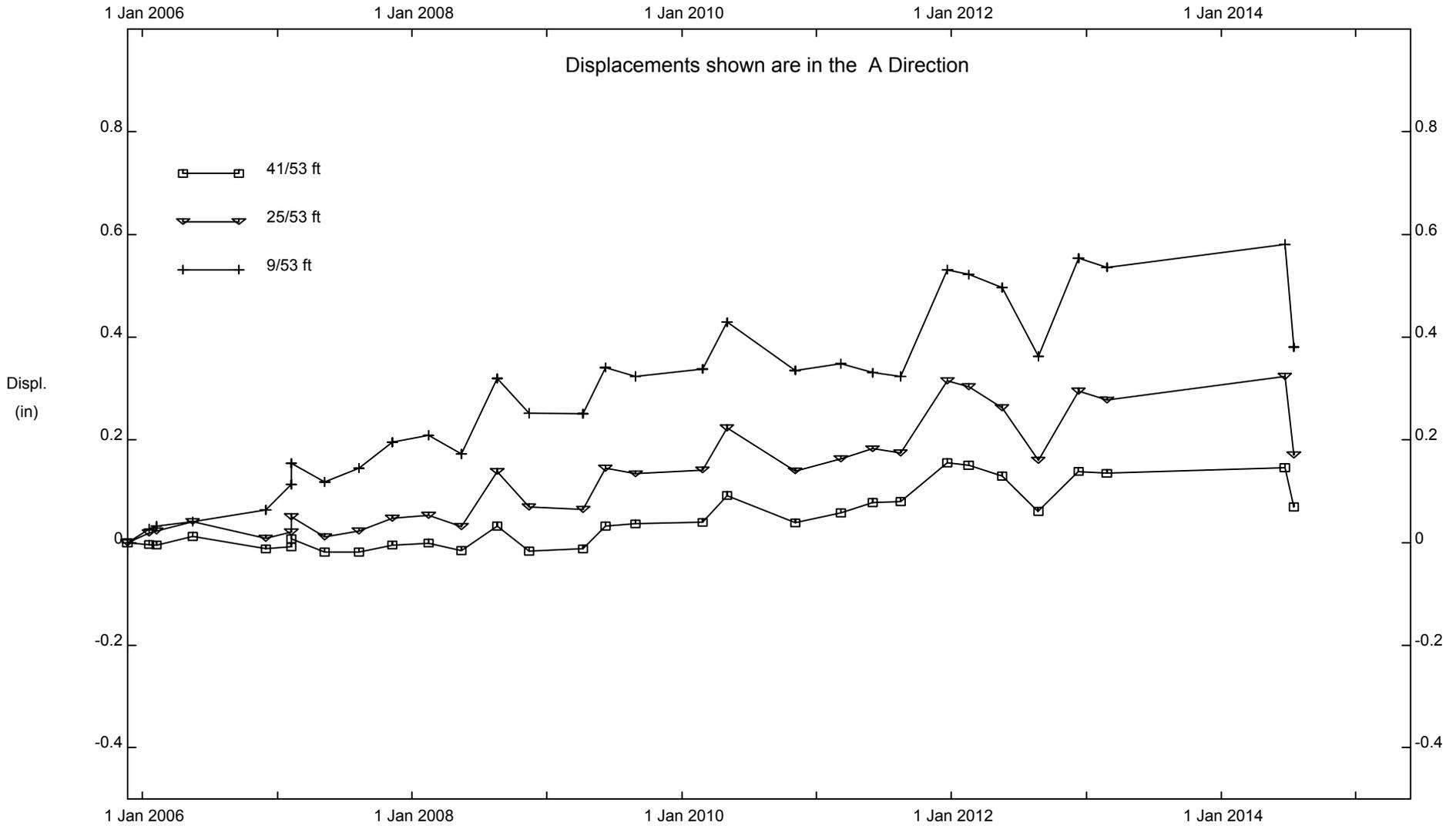
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Assessment District 98-2, Inclinometer SI-16
City of Malibu

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

Fugro Consultants, Inc. - Ventura, CA

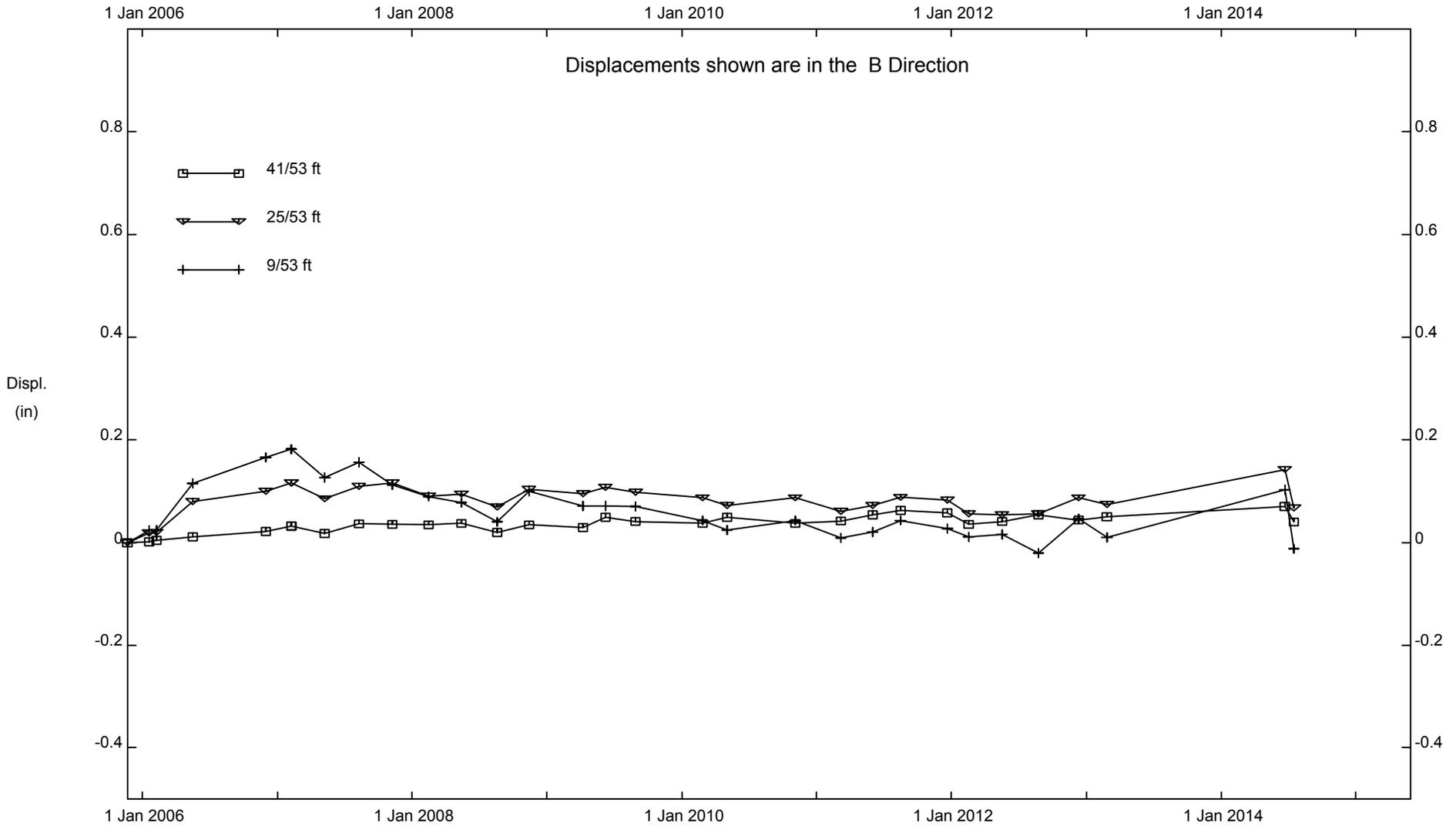


Assessment District 98-2, Inclinator SI-16

City of Malibu

PLATE C-13c

Fugro Consultants, Inc. - Ventura, CA

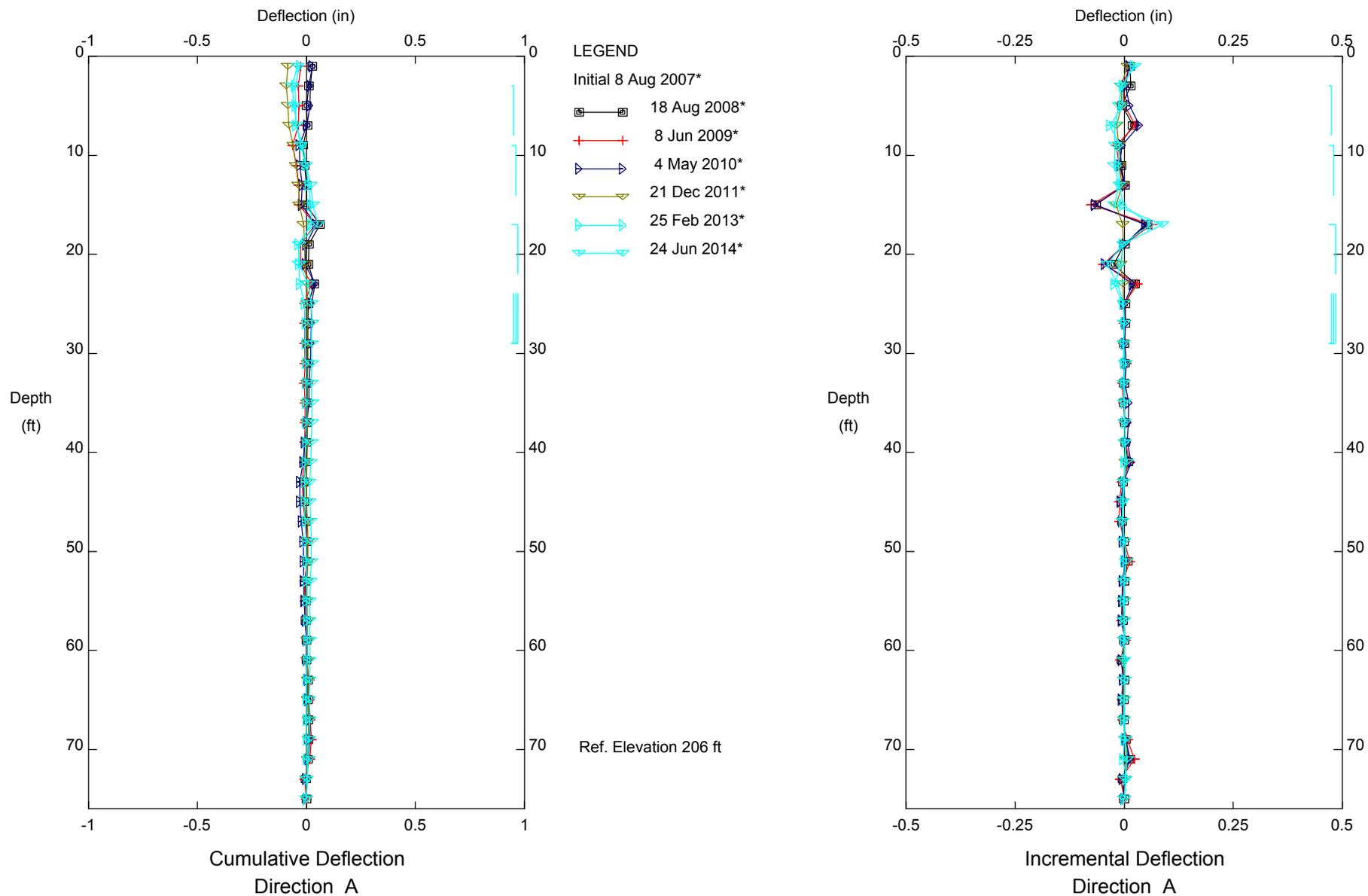


Assessment District 98-2, Inclinator SI-16

City of Malibu

PLATE C-13d

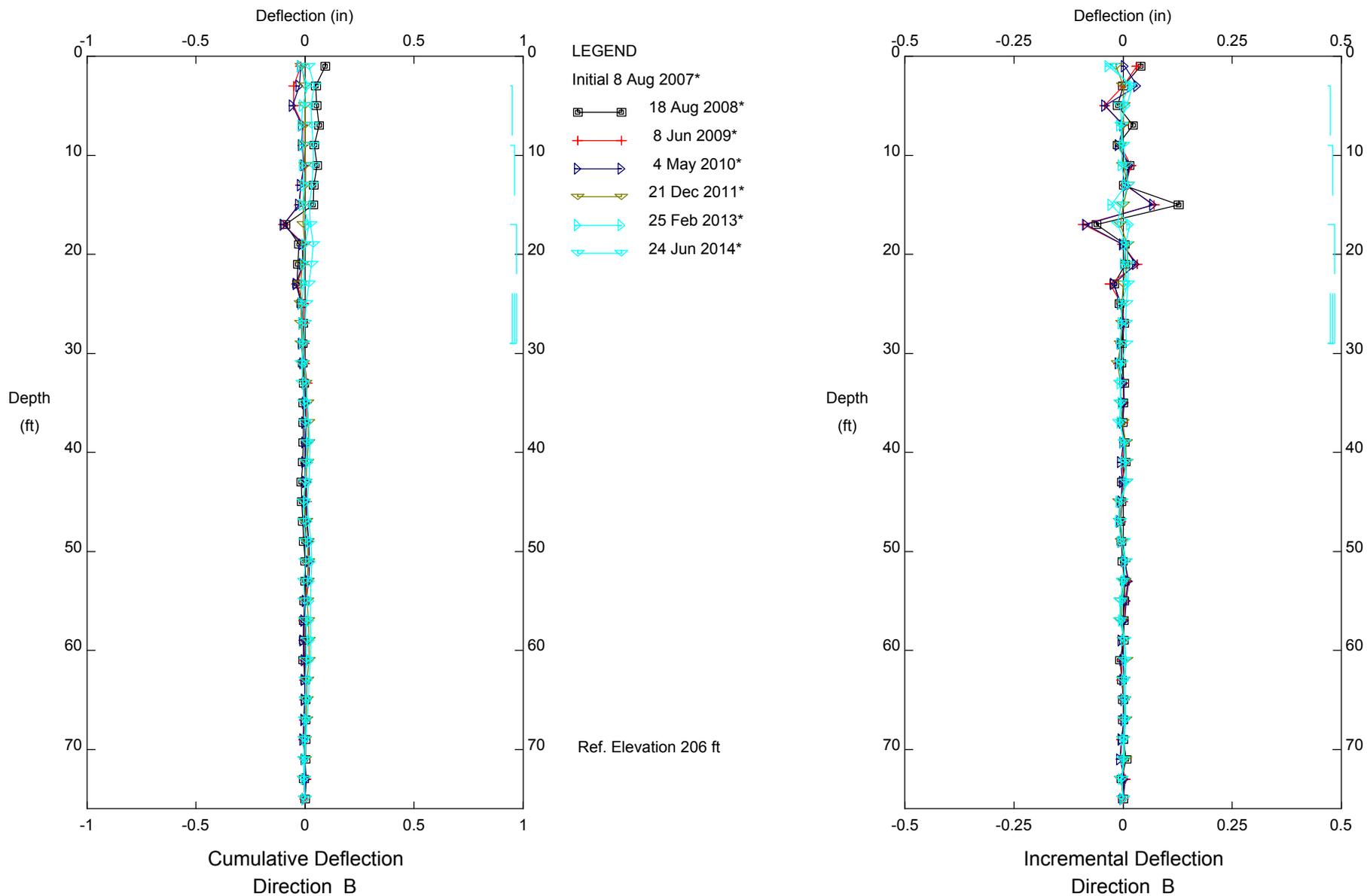
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinator SI-4
 City of Malibu

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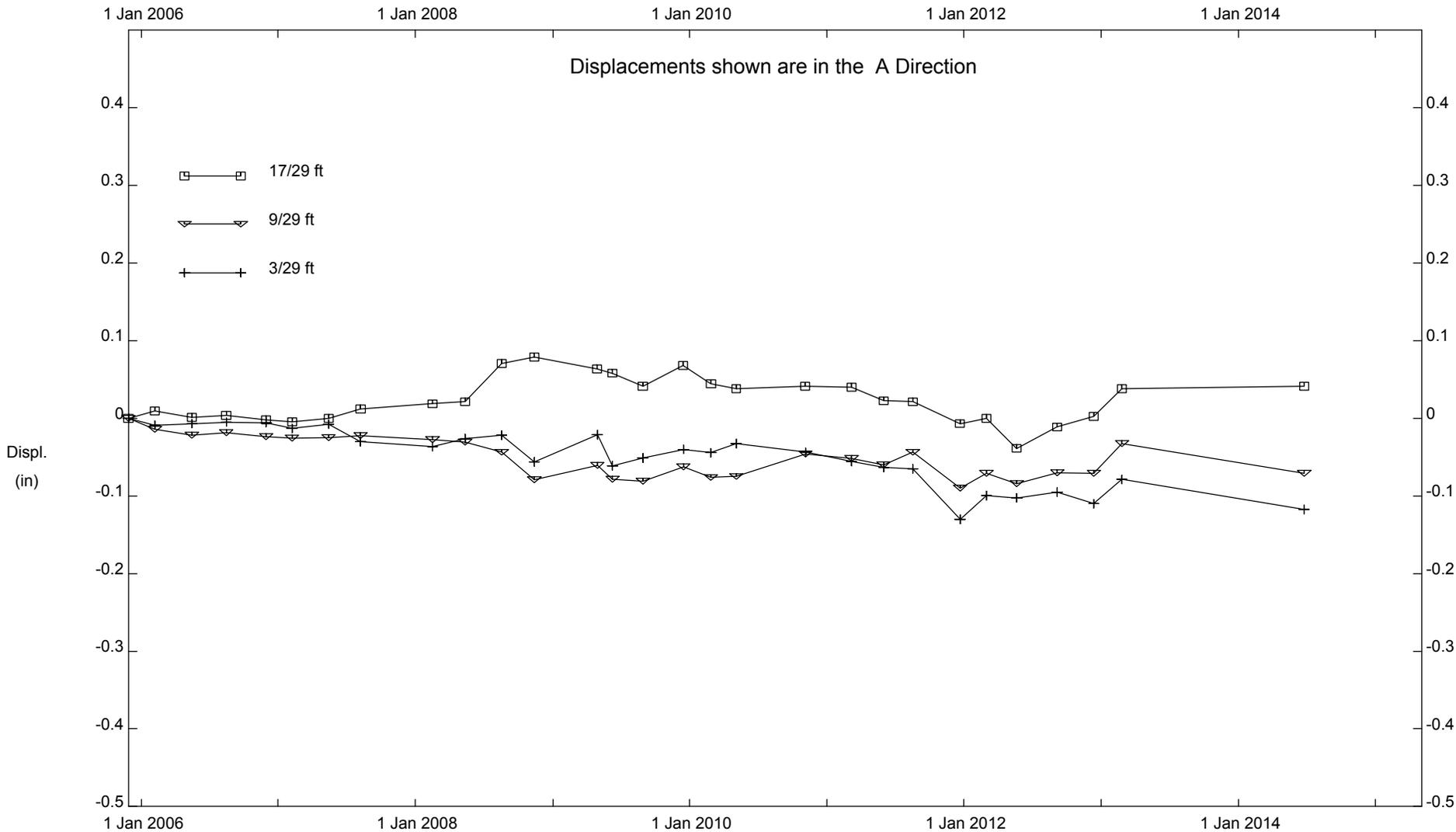
PLATE C-2a



Assessment District 98-2, Inclinometer SI-4
 City of Malibu

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

Fugro Consultants, Inc. - Ventura, CA

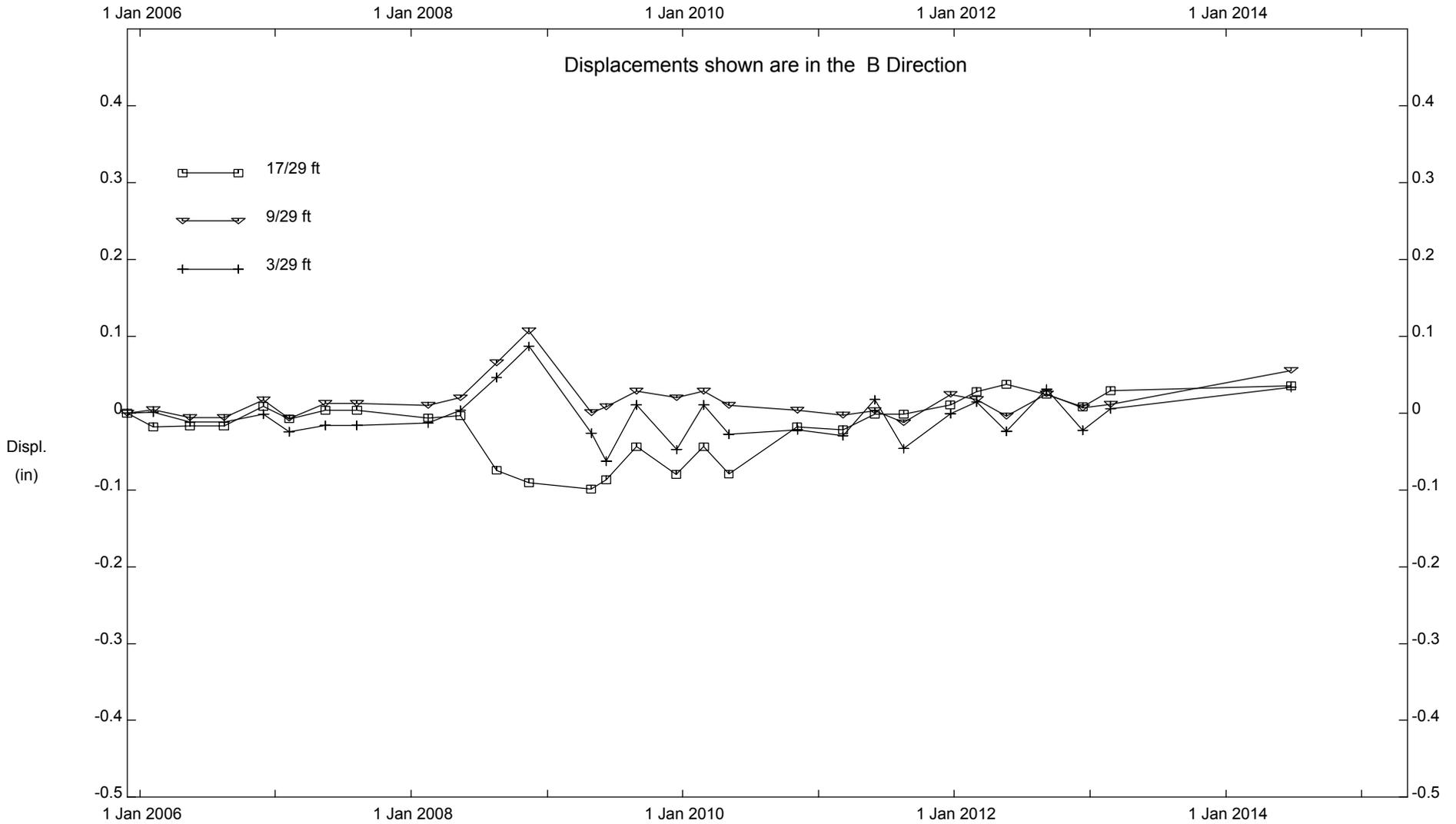


Assessment District 98-2, Inclinator SI-4

City of Malibu

PLATE C-2c

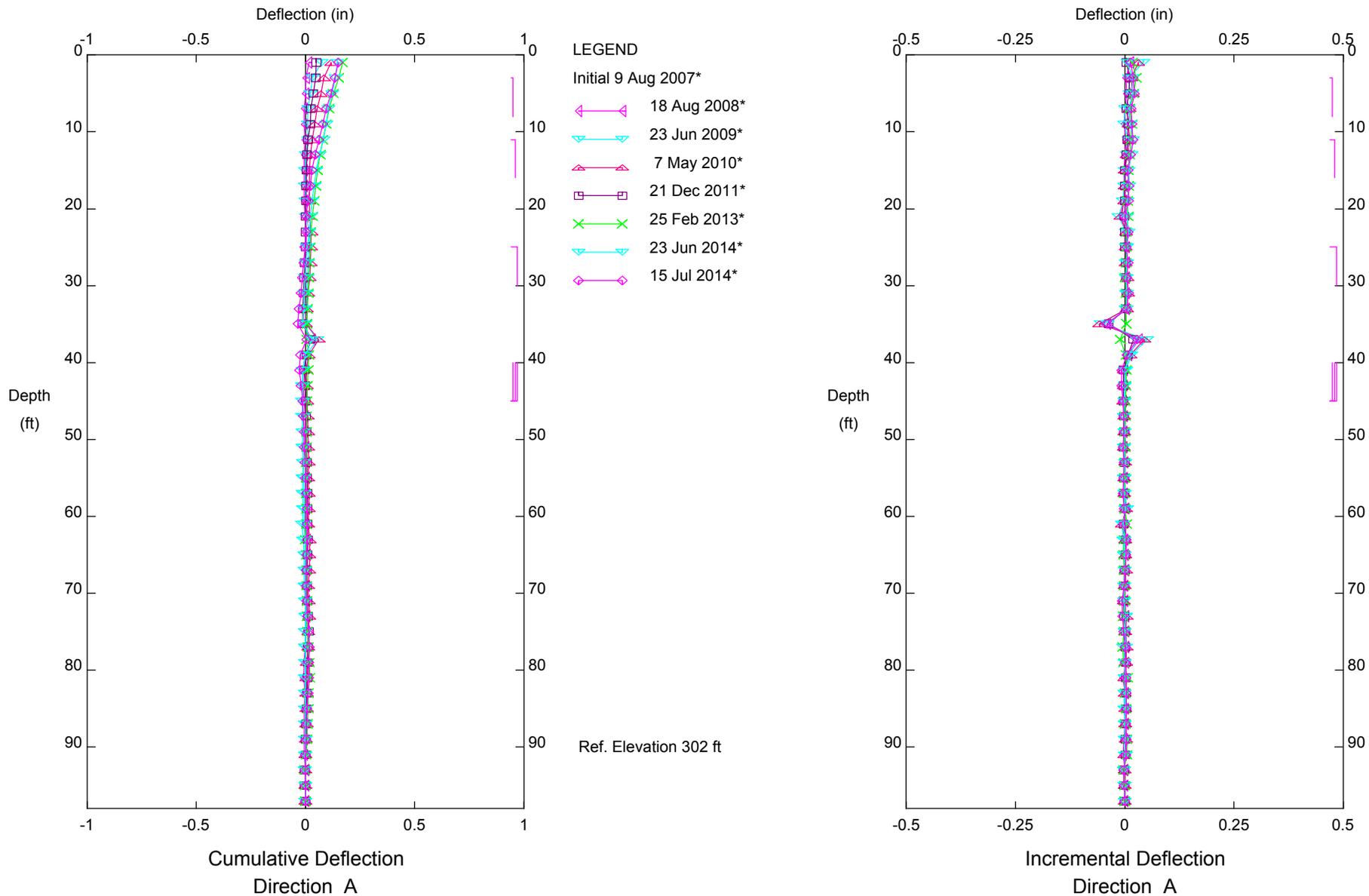
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinator SI-4

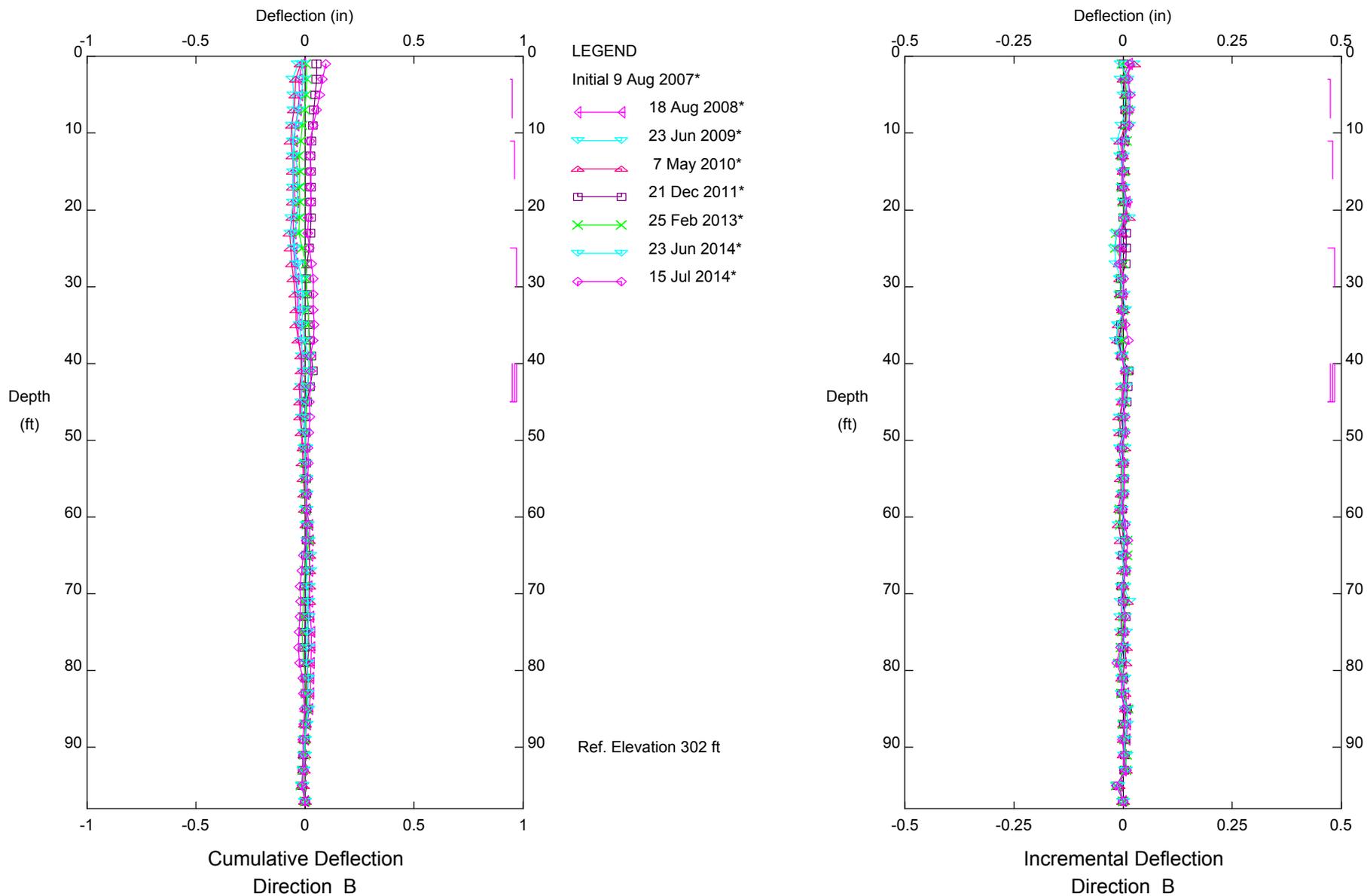
City of Malibu

PLATE C-2d



Assessment District 98-2, Inclinometer SI-5
City of Malibu

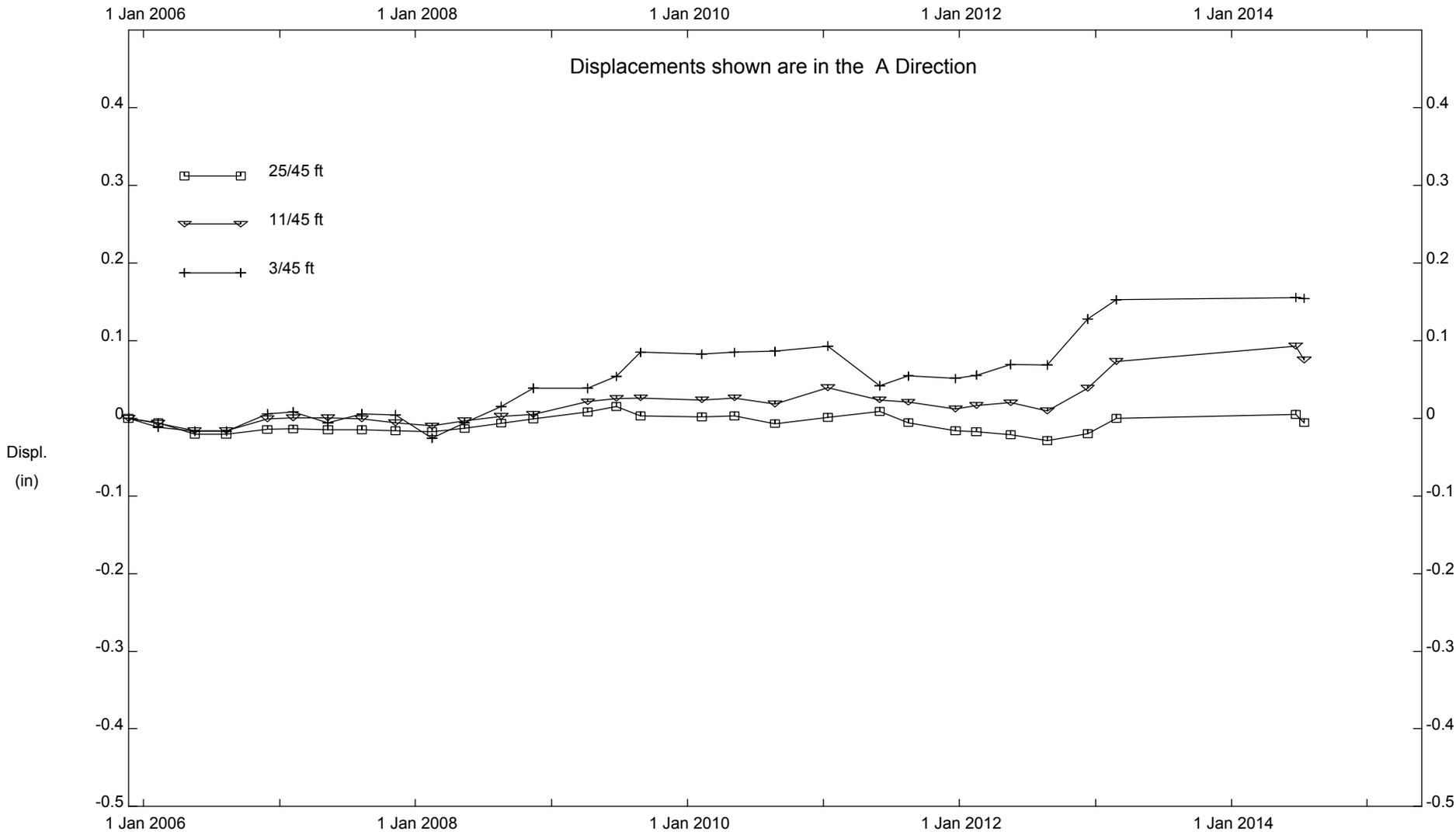
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Assessment District 98-2, Inclinometer SI-5
 City of Malibu

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

Fugro Consultants, Inc. - Ventura, CA

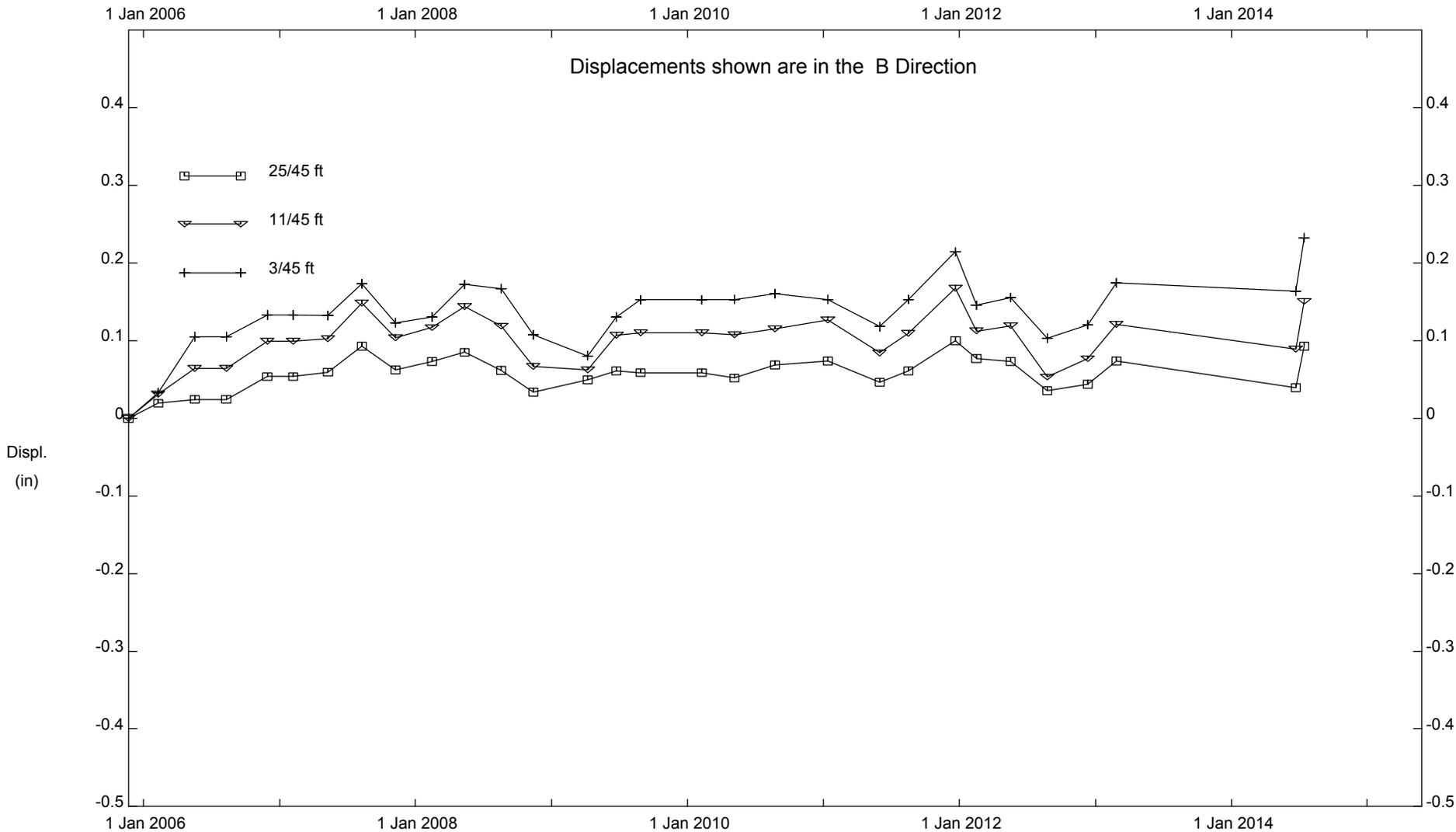


Assessment District 98-2, Inclinometer SI-5

City of Malibu

PLATE C-3c

Fugro Consultants, Inc. - Ventura, CA

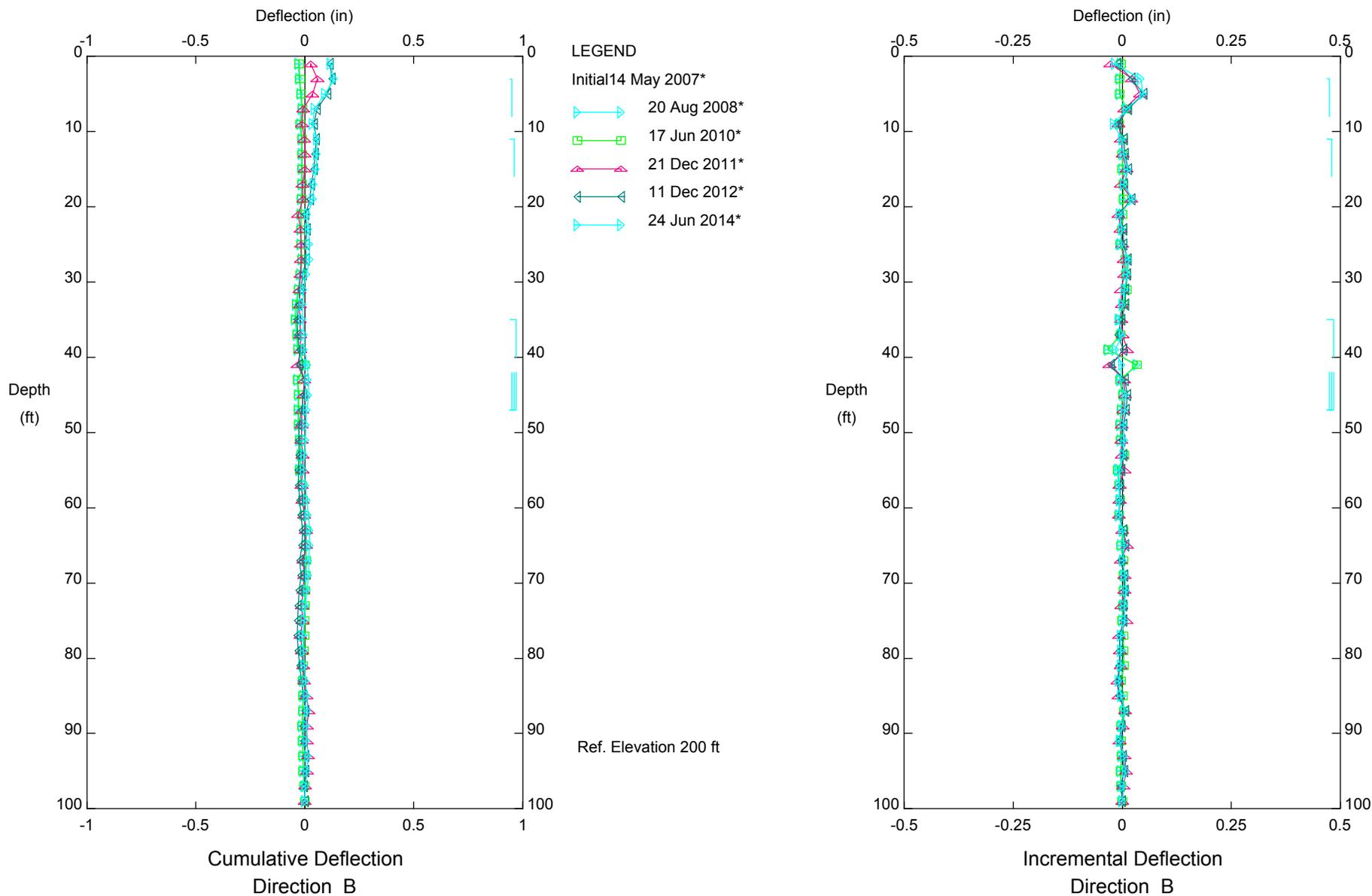


Assessment District 98-2, Inclinator SI-5

City of Malibu

PLATE C-3d

Fugro Consultants, Inc. - Ventura, CA

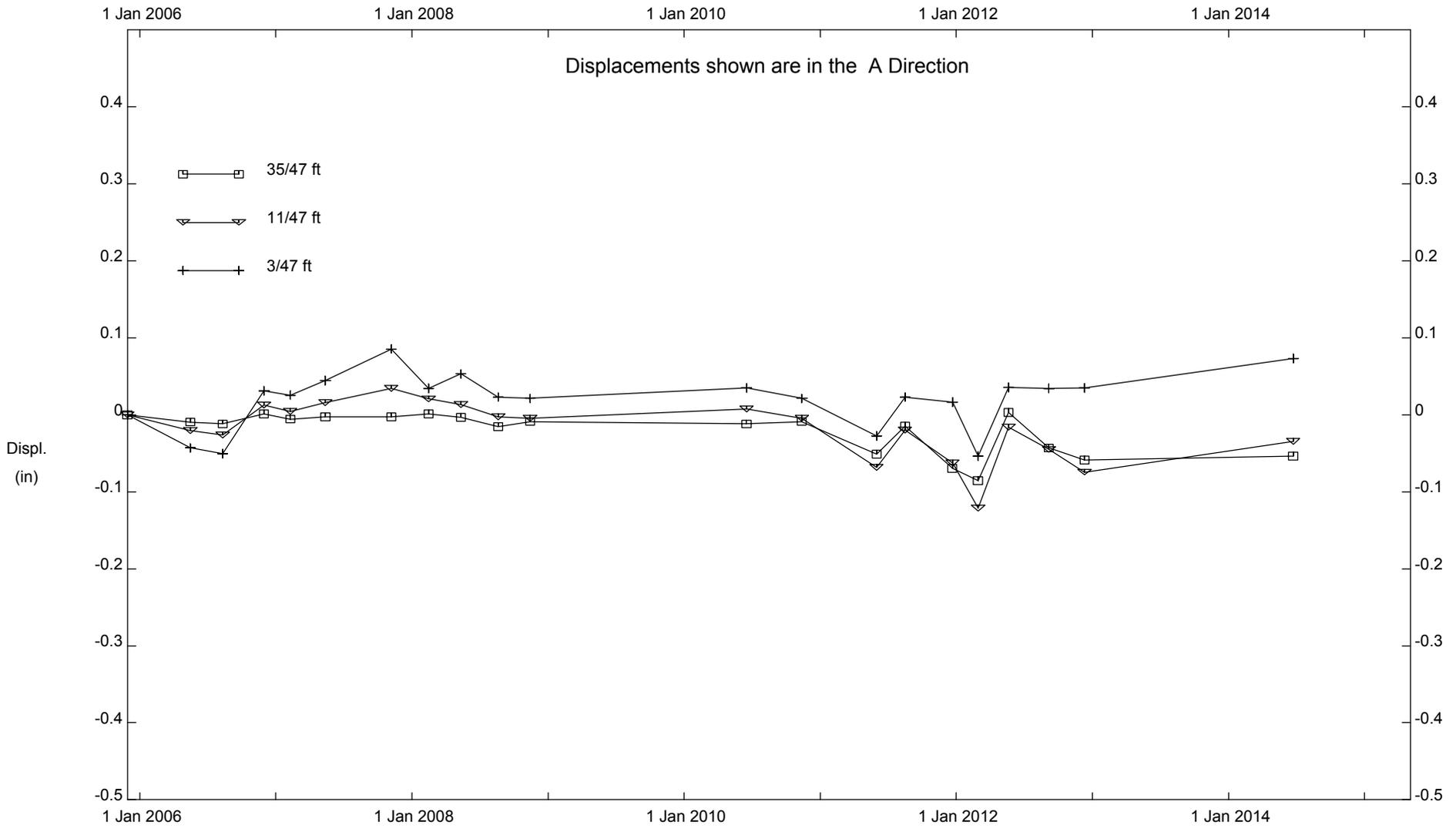


Calle del Barco, Inclinometer SI-7
City of Malibu

PLATE C-4b

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

Fugro Consultants, Inc. - Ventura, CA

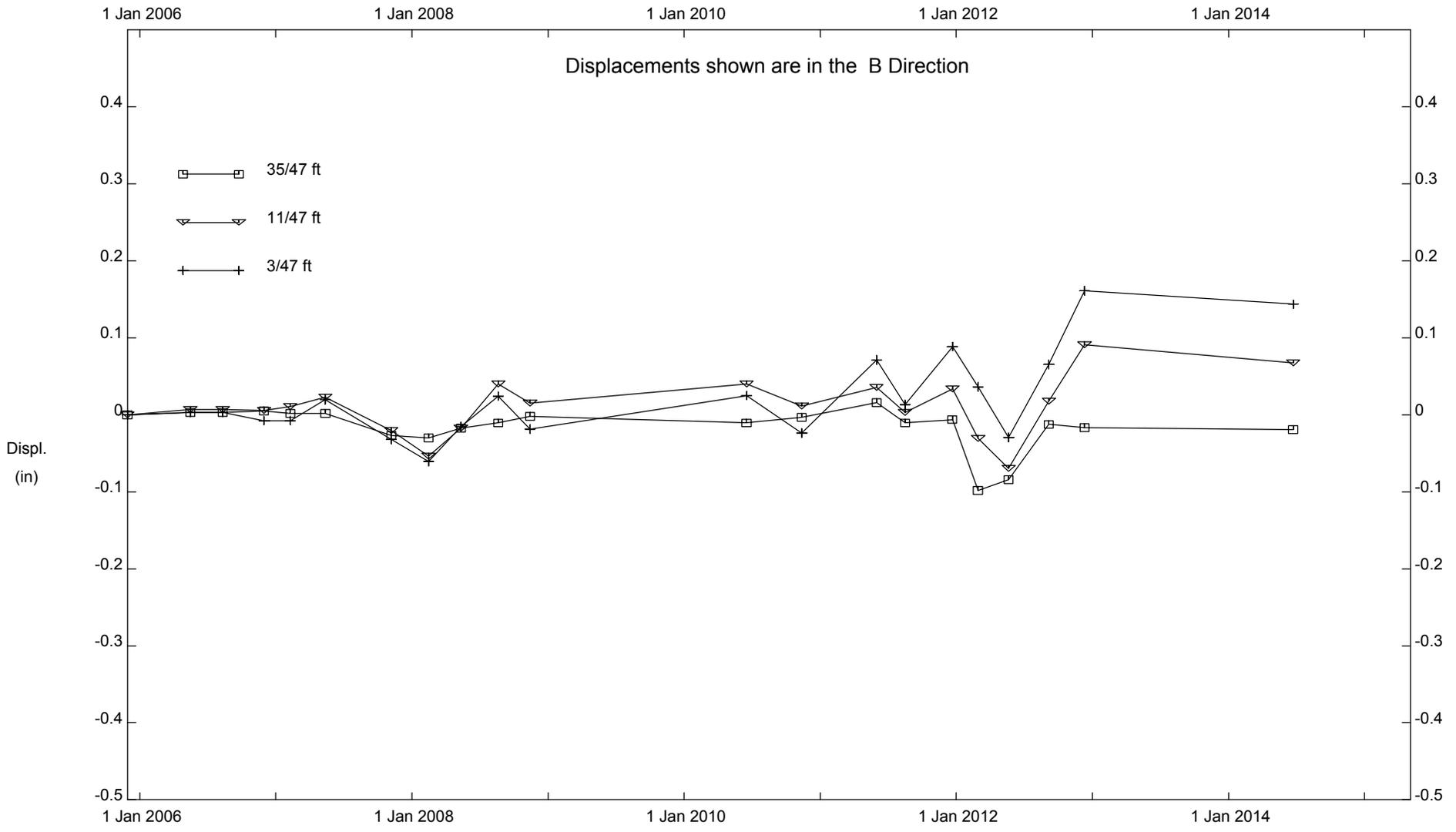


Calle del Barco, Inclinator SI-7

City of Malibu

PLATE 3-4c

Fugro Consultants, Inc. - Ventura, CA

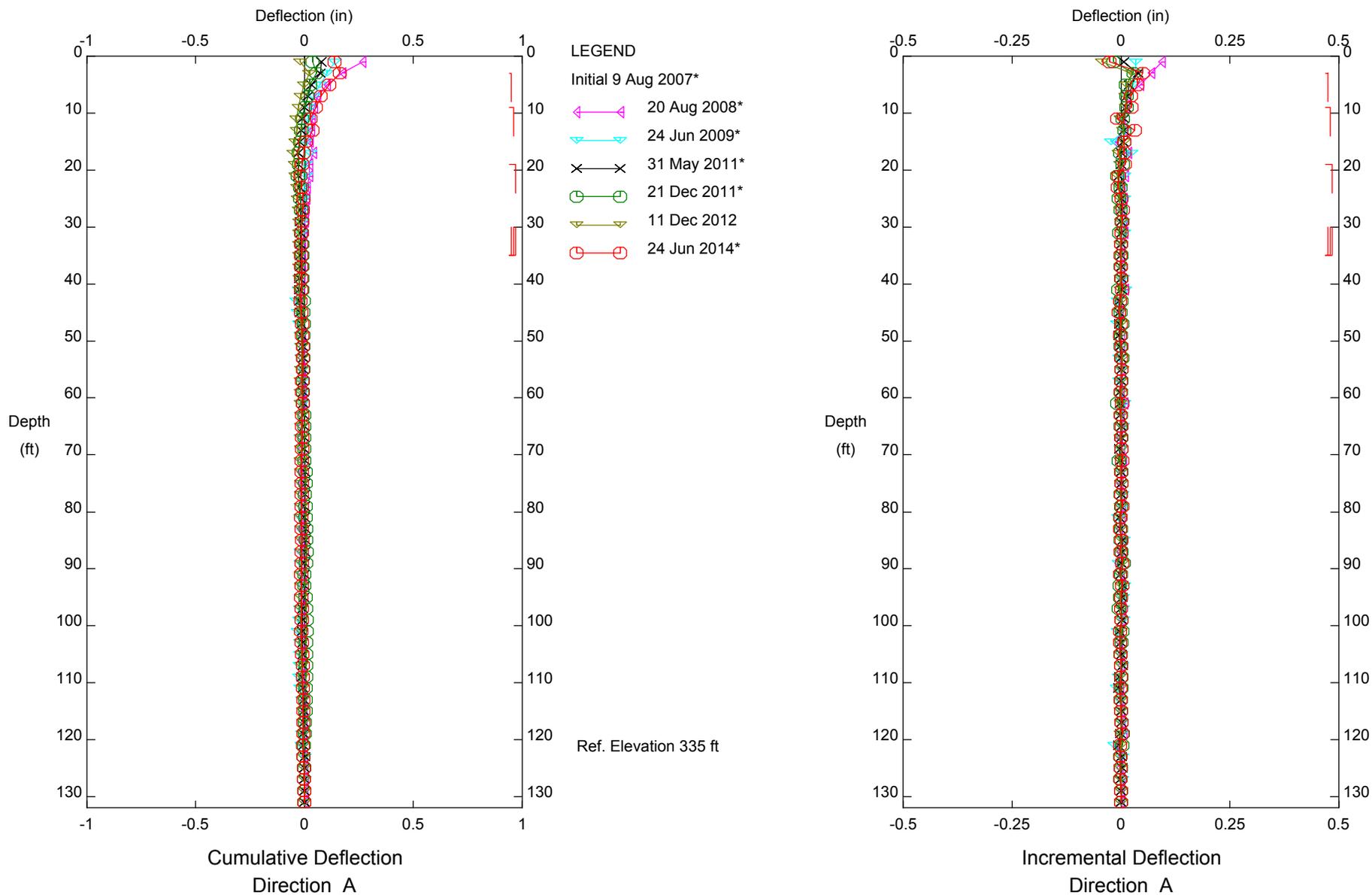


Calle del Barco, Inclinator SI-7

City of Malibu

PLATE C-4d

Fugro Consultants, Inc. - Ventura, CA

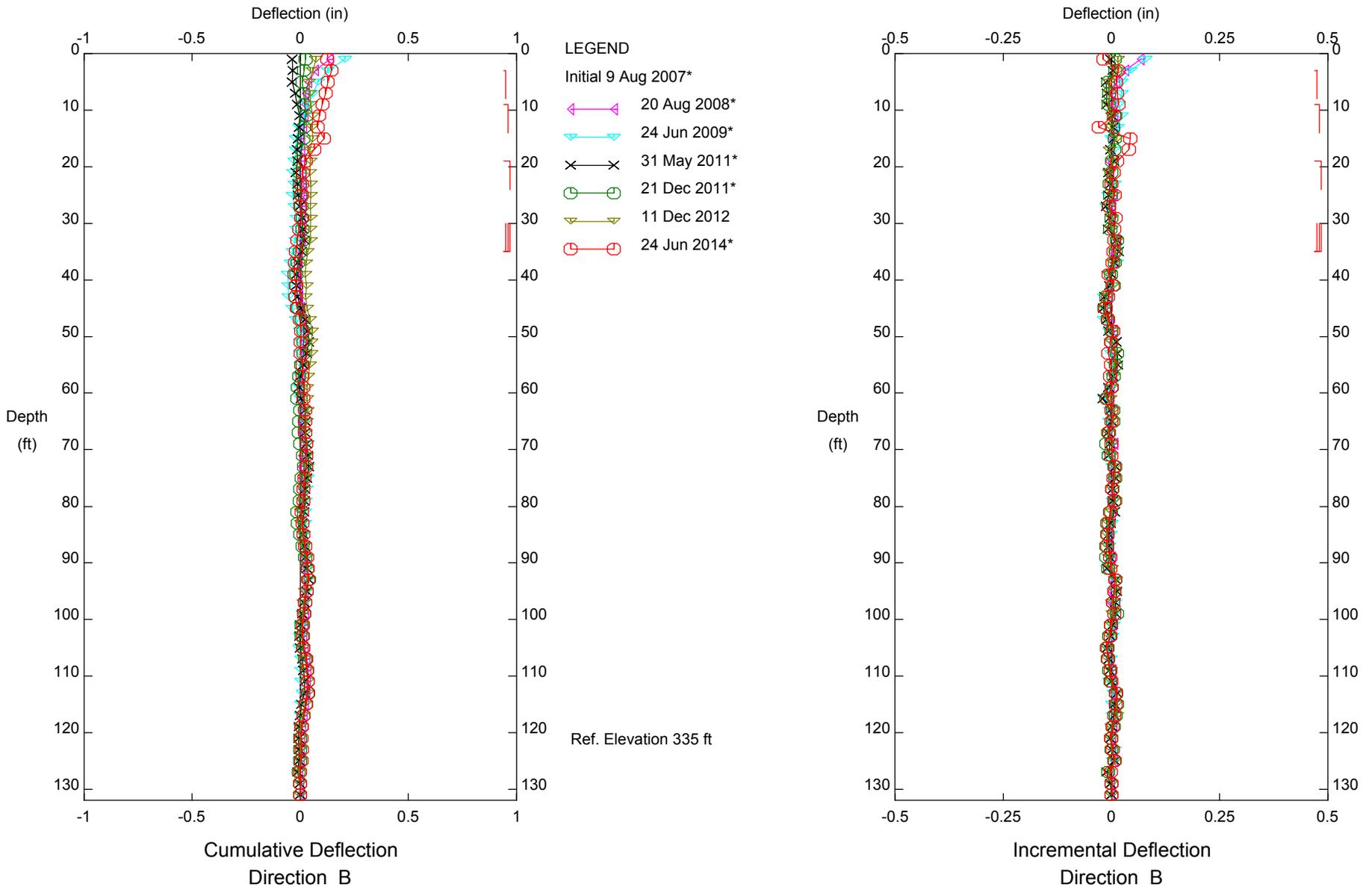


Assessment District 98-2, Inclinometer SI-8
 City of Malibu

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

PLATE C-5a

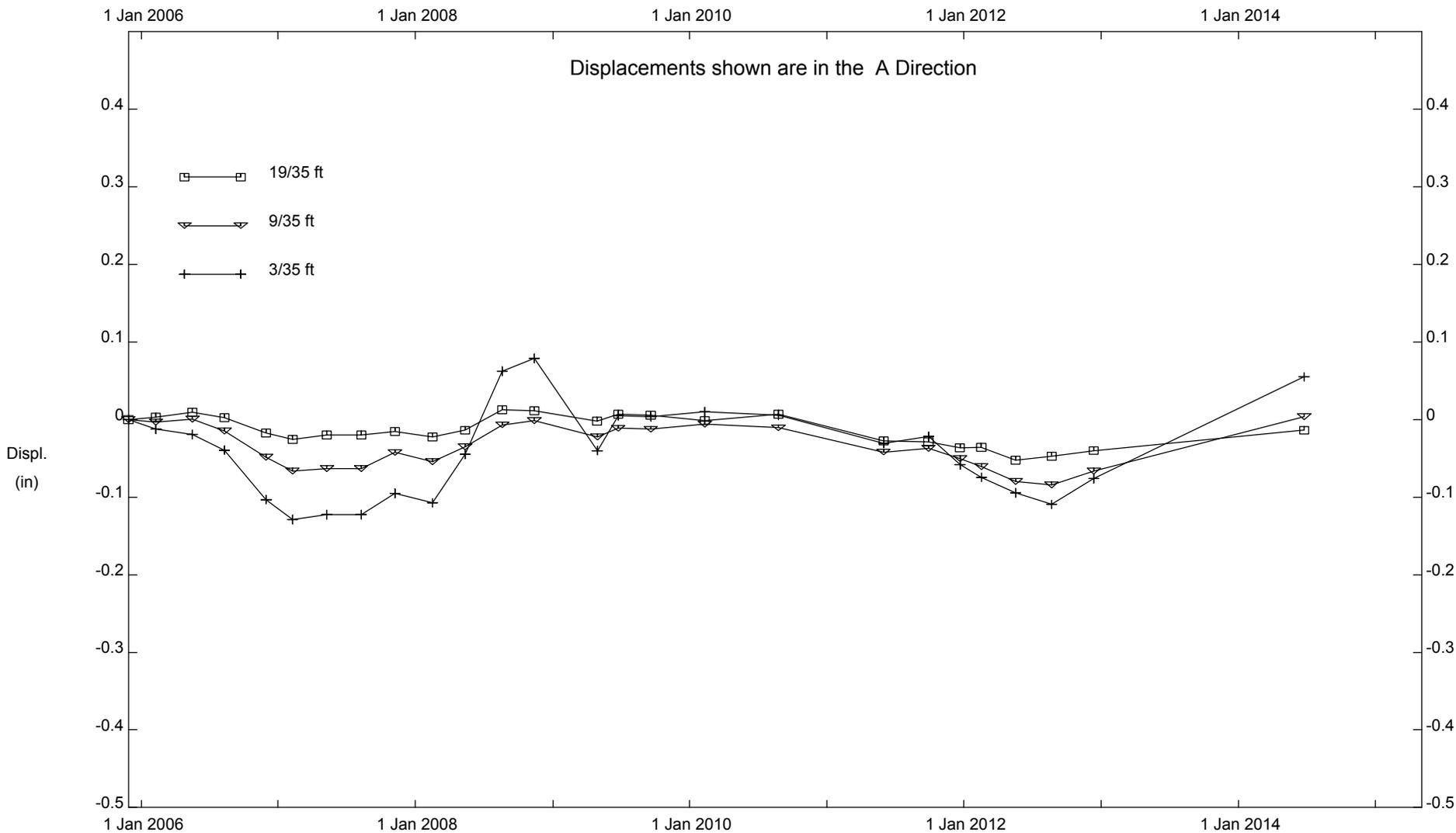
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinometer SI-8
 City of Malibu

PLATE C-5b

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

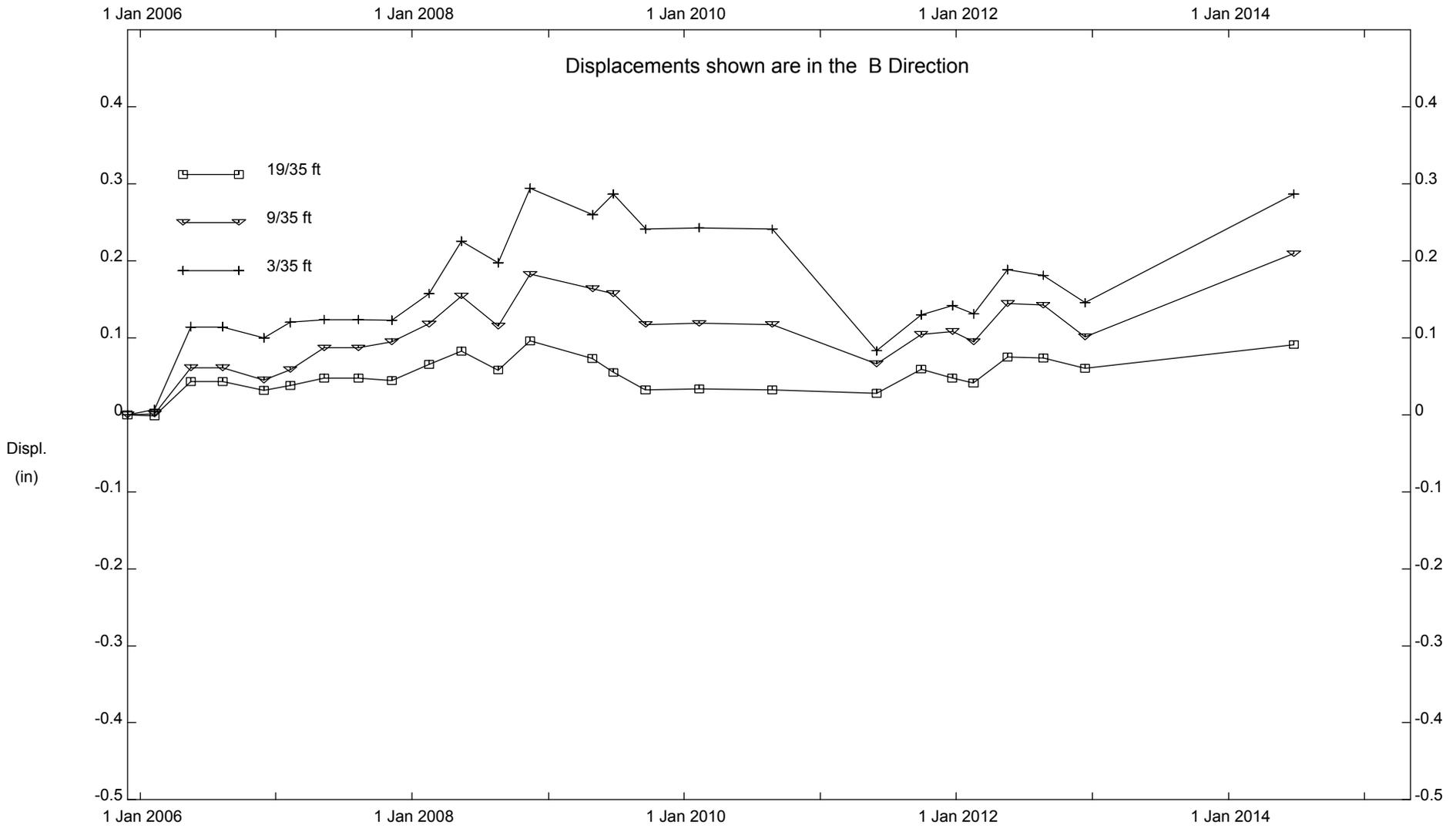


Assessment District 98-2, Inclinometer SI-8

City of Malibu

PLATE C-5c

Fugro Consultants, Inc. - Ventura, CA

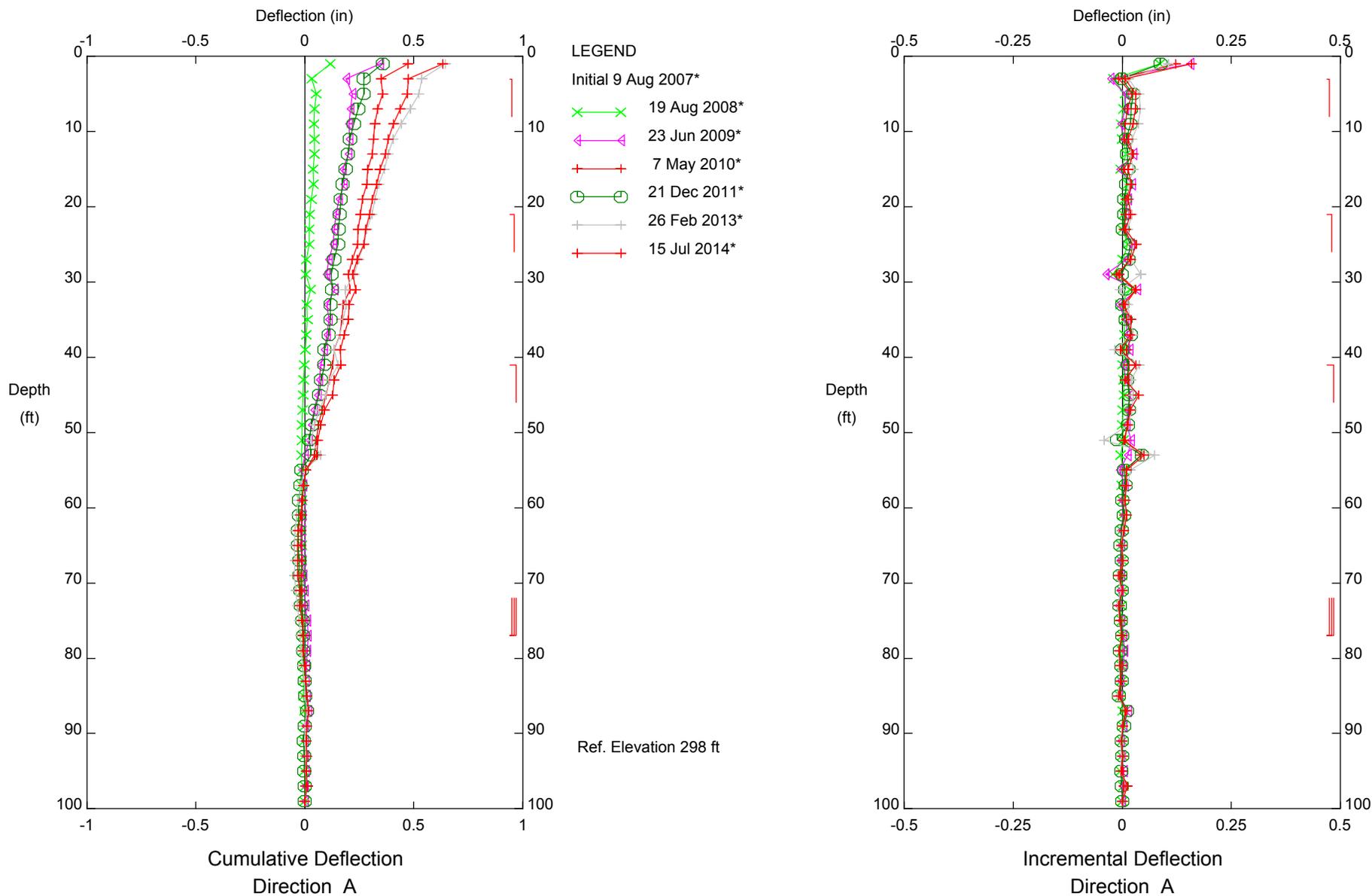


Assessment District 98-2, Inclinator SI-8

City of Malibu

PLATE C-5d

Fugro Consultants, Inc. - Ventura, CA

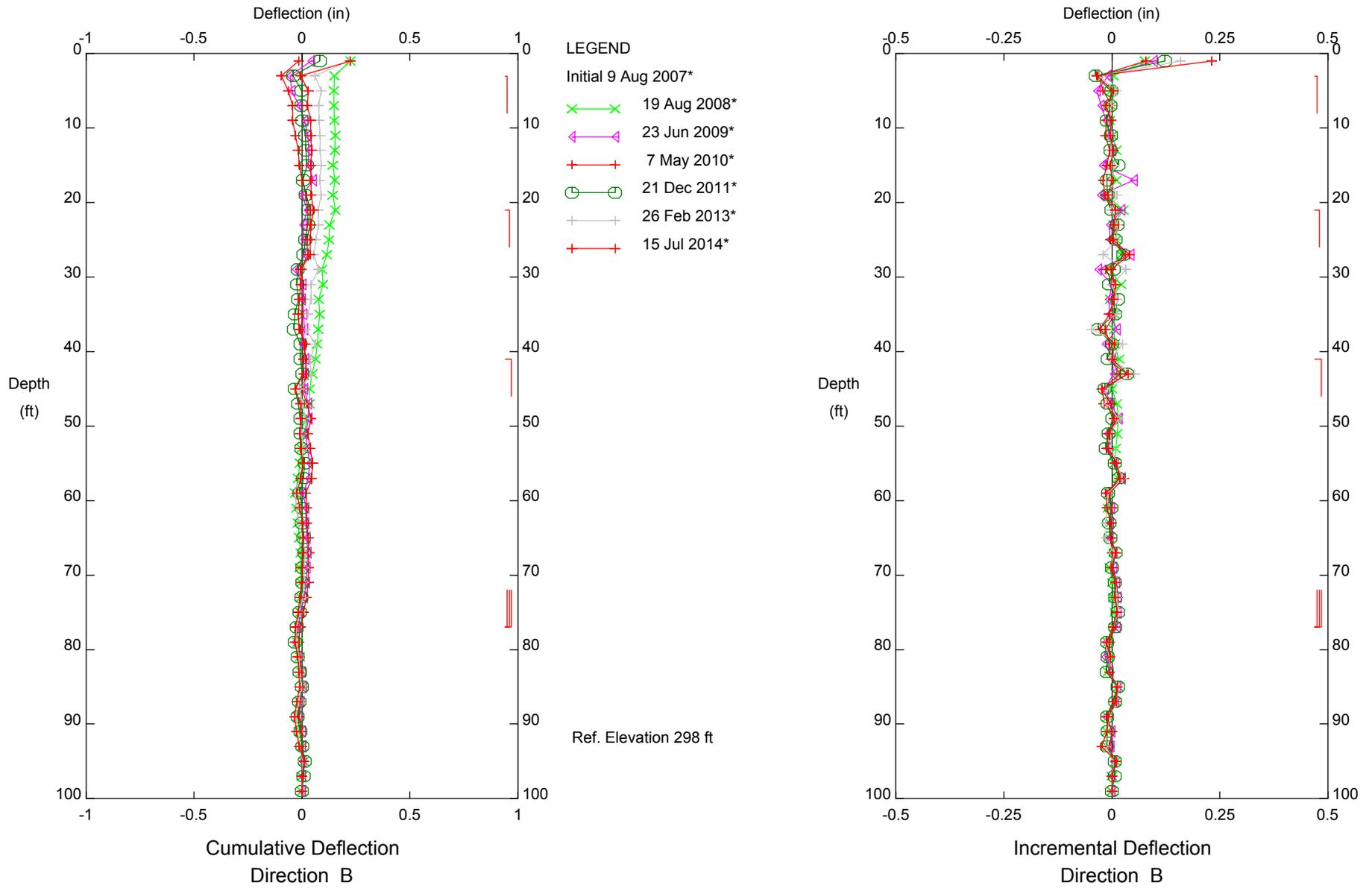


Calle del Barco, Inclinometer SI-9
 City of Malibu

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

PLATE C-6a

Fugro Consultants, Inc. - Ventura, CA

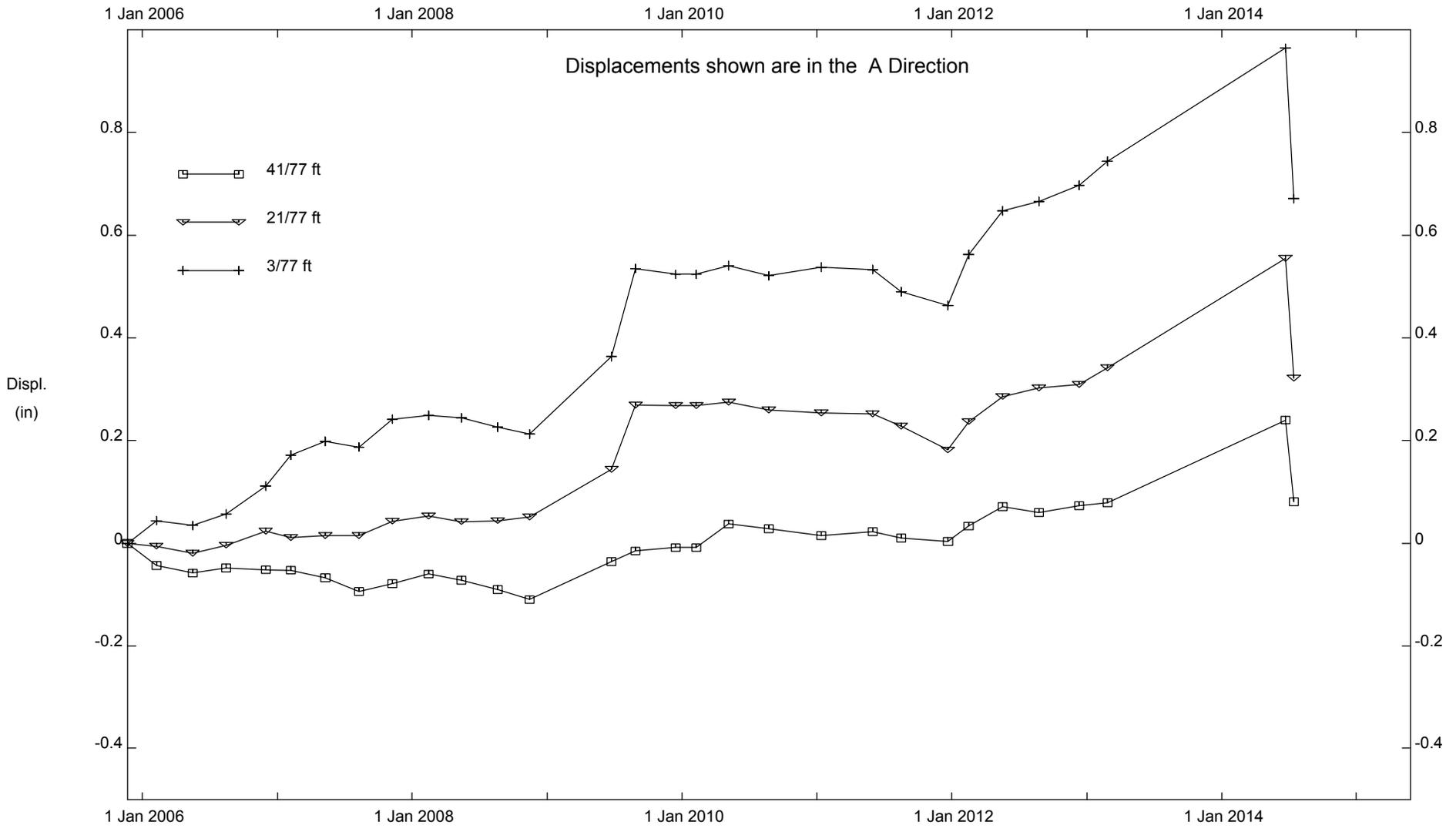


Calle del Barco, Inclinometer SI-9
City of Malibu

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

PLATE C-6b

Fugro Consultants, Inc. - Ventura, CA

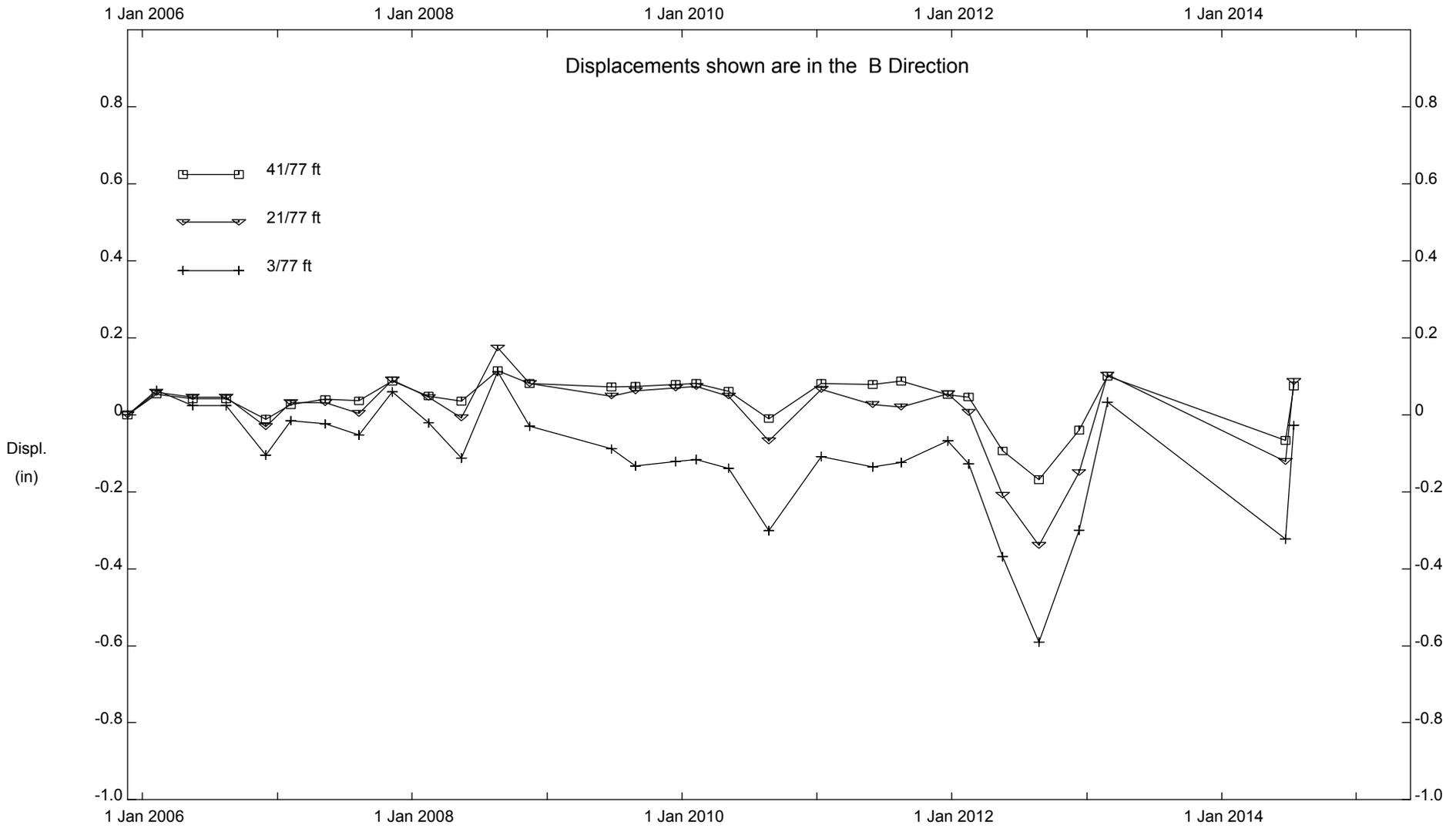


Calle del Barco, Inclinator SI-9

City of Malibu

PLATE C-6c

Fugro Consultants, Inc. - Ventura, CA

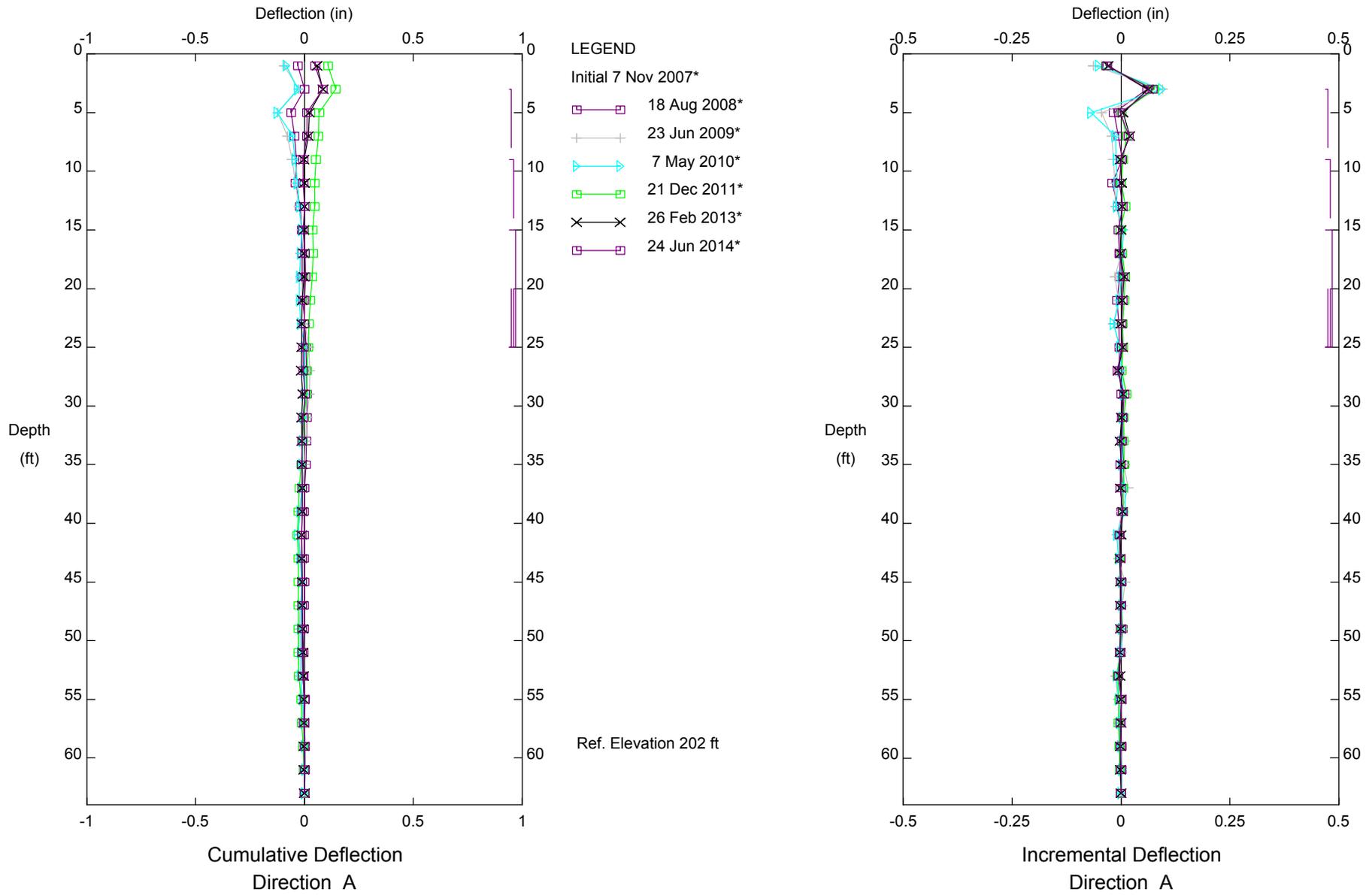


Calle del Barco, Inclinator SI-9

City of Malibu

PLATE C-6d

Fugro Consultants, Inc. - Ventura, CA

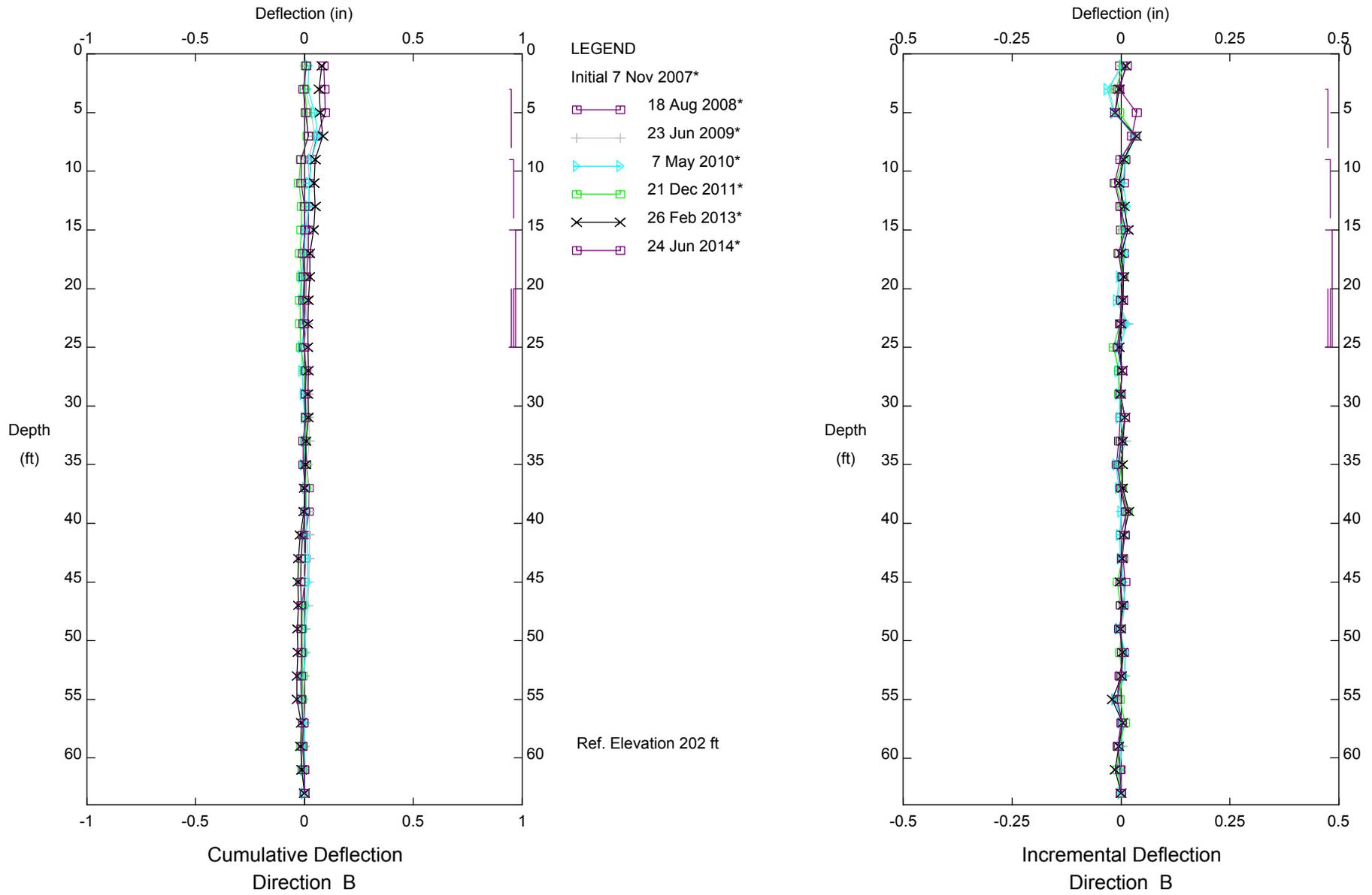


Calle del Barco, Inclinator SI-10
City of Malibu

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

PLATEC-7a

Fugro Consultants, Inc. - Ventura, CA



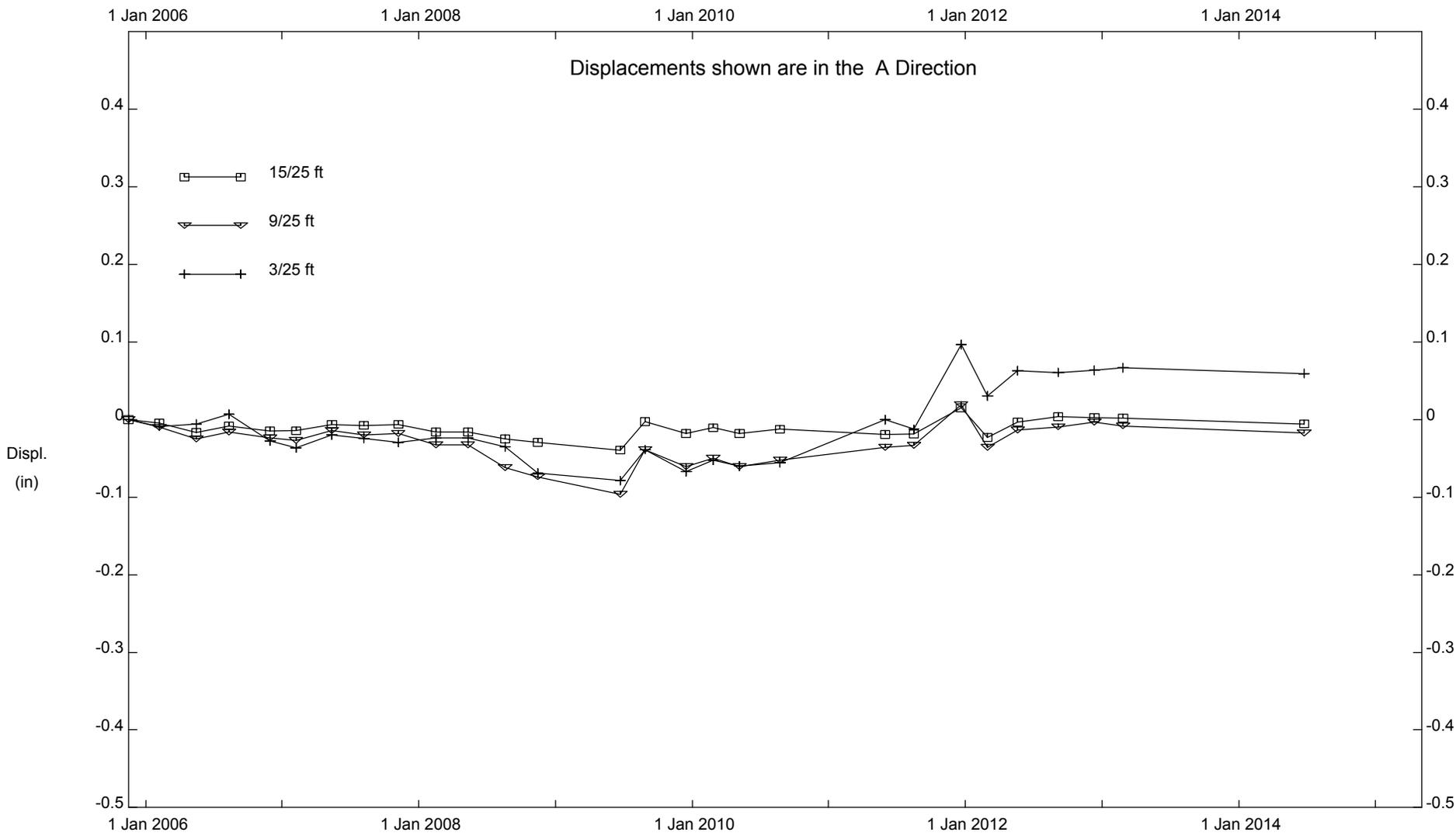
Ref. Elevation 202 ft

Calle del Barco, Inclinometer SI-10
City of Malibu

PLATE C-7b

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

Fugro Consultants, Inc. - Ventura, CA

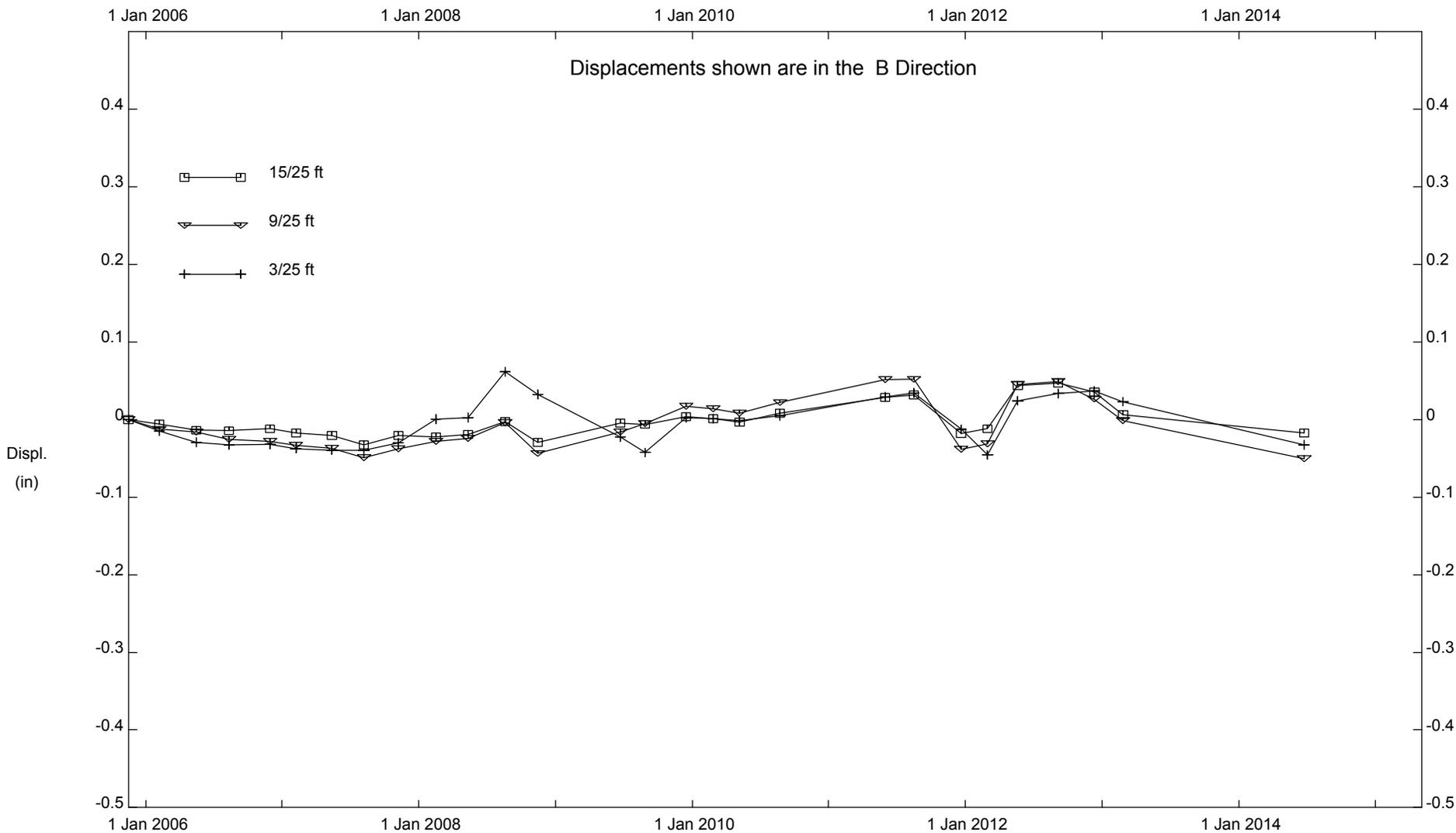


Calle del Barco, Inclinator SI-10

City of Malibu

PLATE C-7c

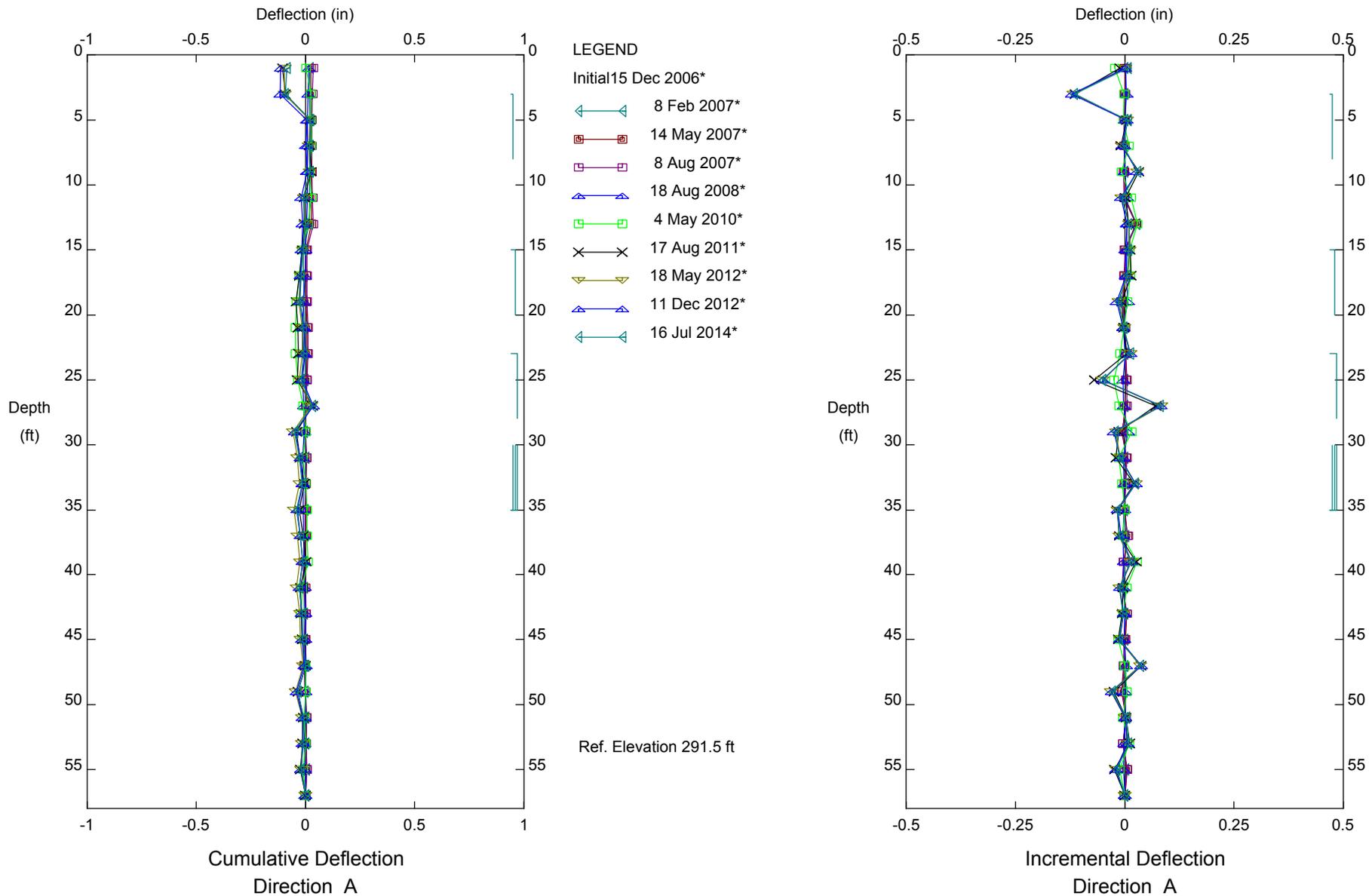
Fugro Consultants, Inc. - Ventura, CA



Calle del Barco, Inclinator SI-10

City of Malibu

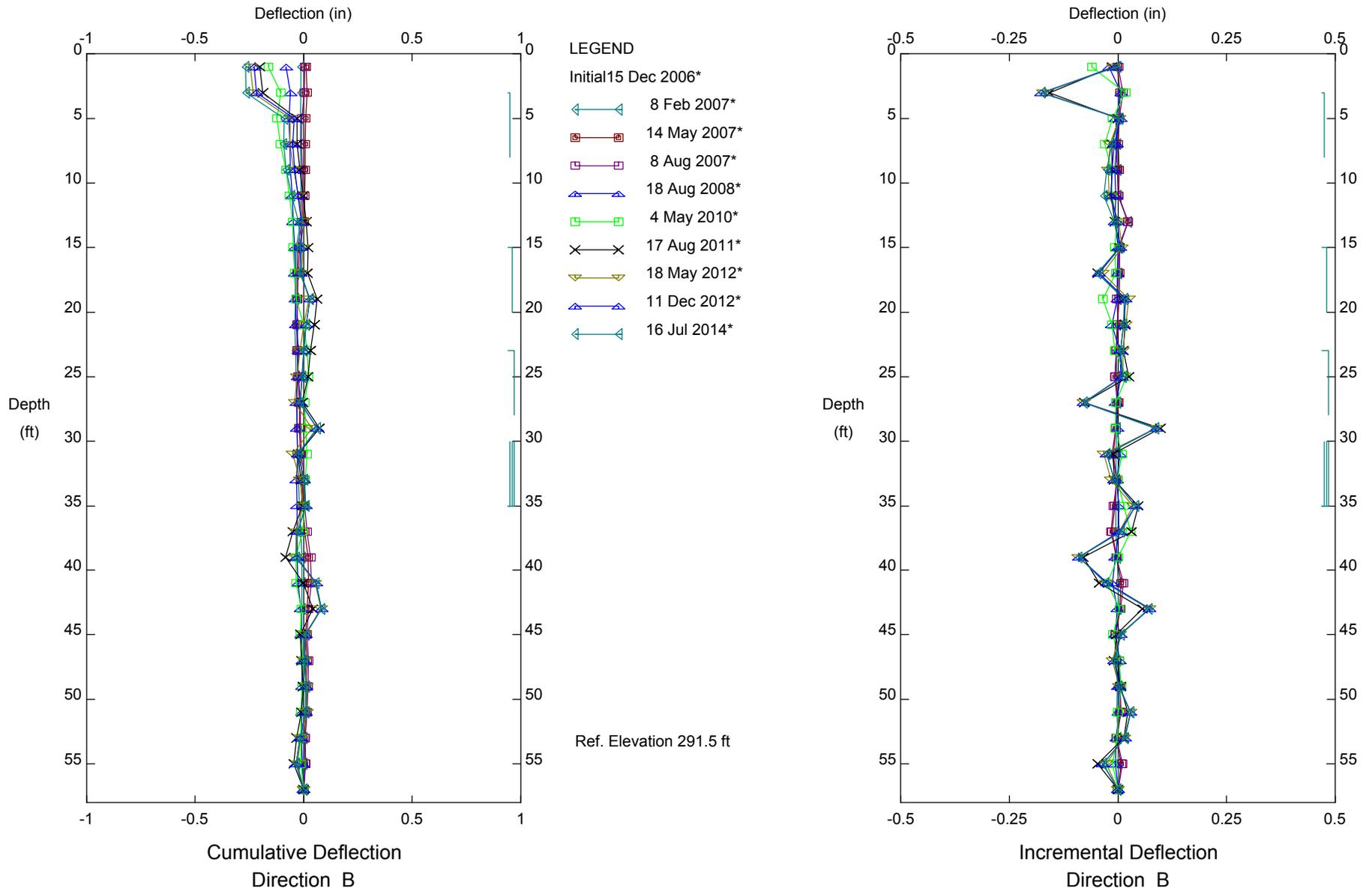
PLATE C-7d



Assessment District 98-2, Inclinometer SI-11
 City of Malibu

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

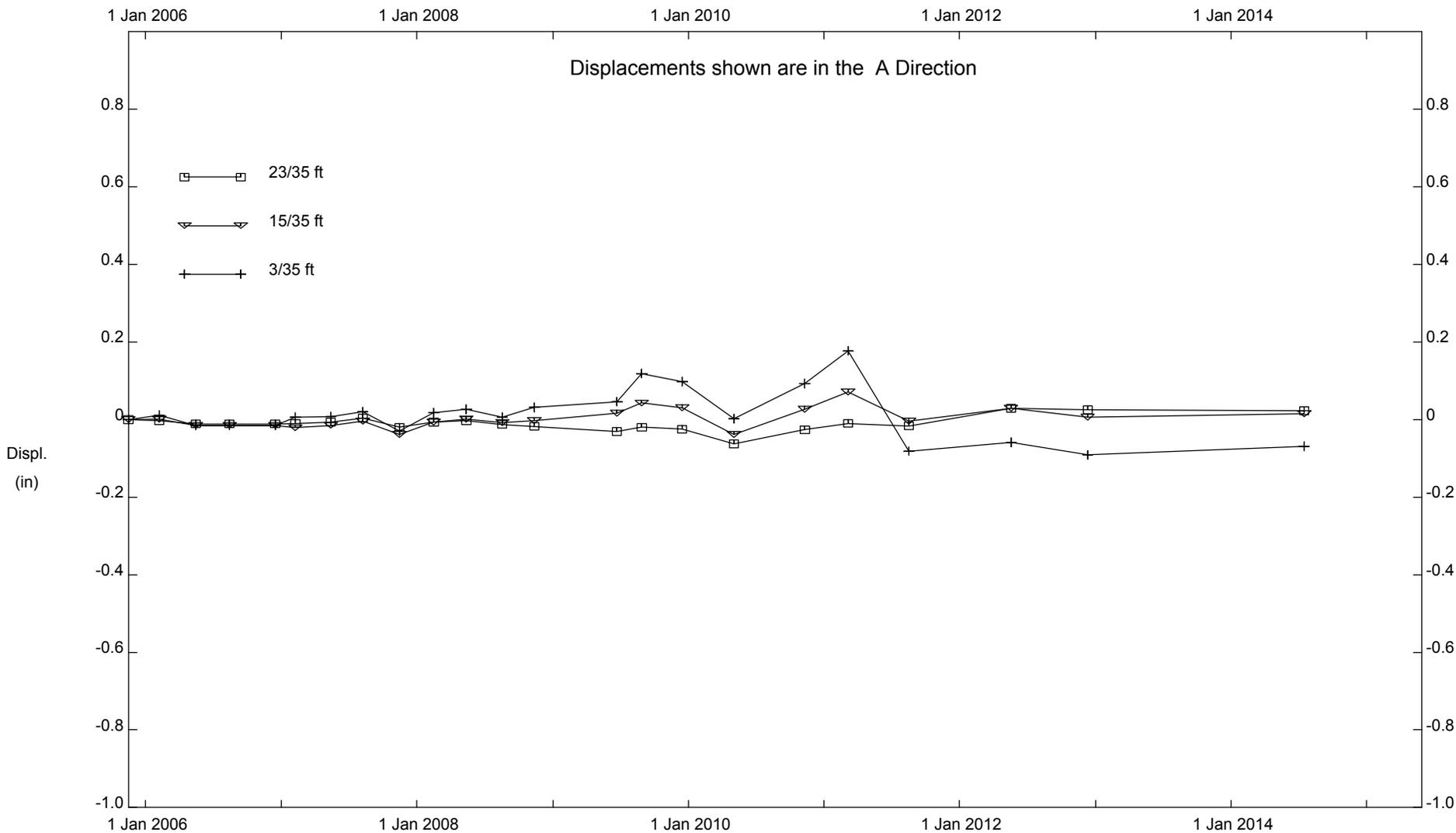
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinometer SI-11
 City of Malibu

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

Fugro Consultants, Inc. - Ventura, CA

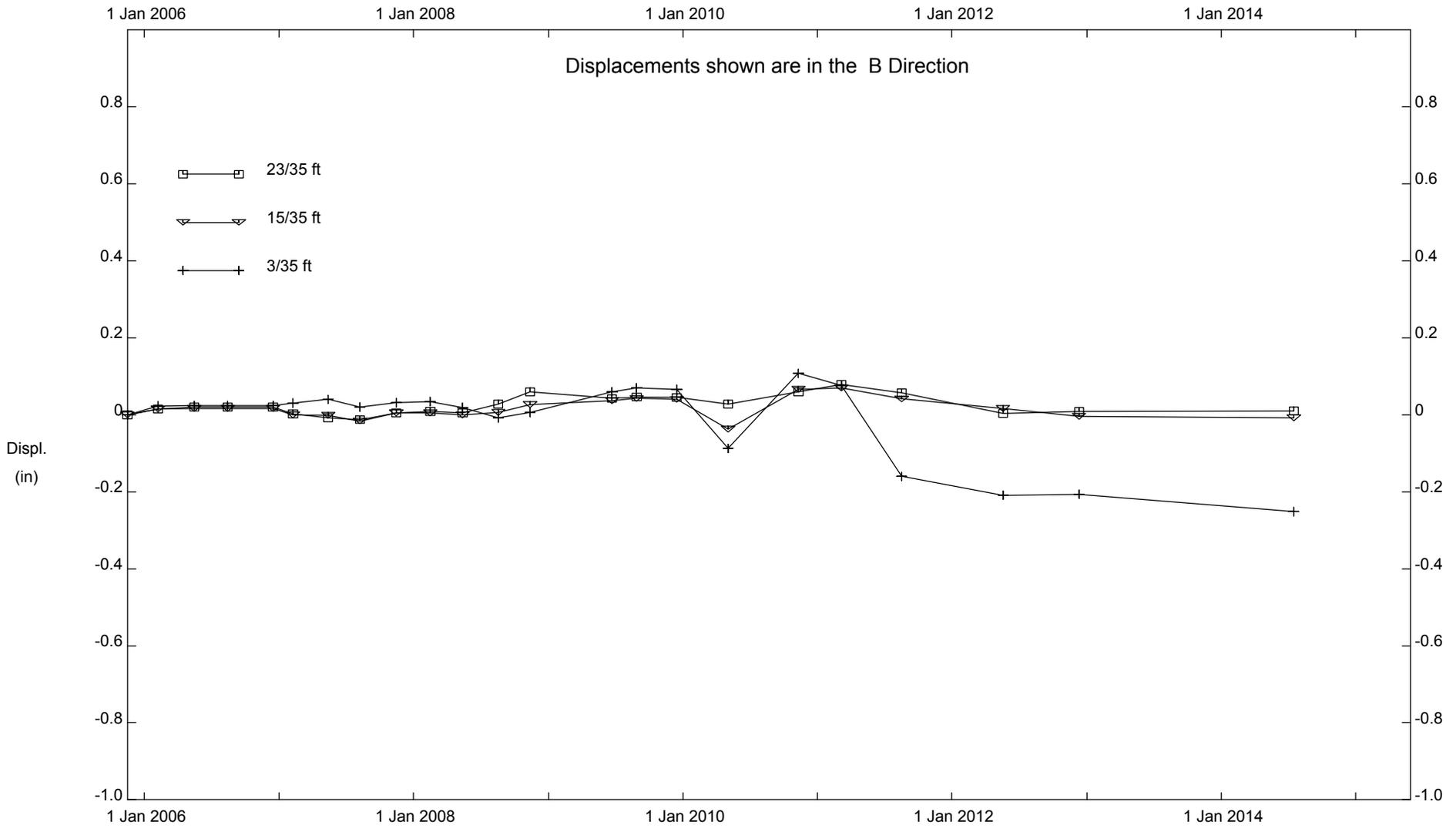


Assessment District 98-2, Inclinometer SI-11

City of Malibu

PLATE C-8c

Fugro Consultants, Inc. - Ventura, CA

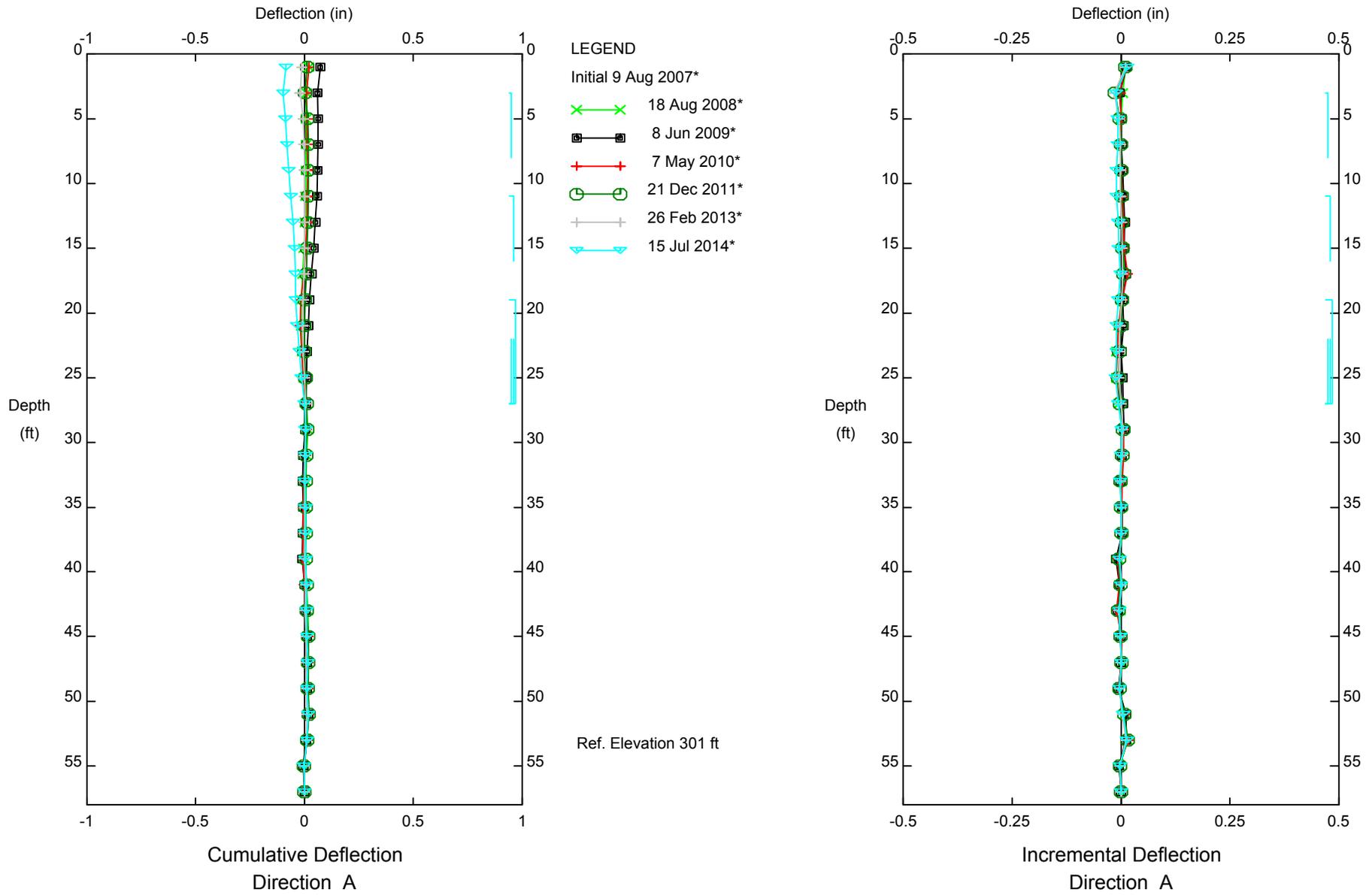


Assessment District 98-2, Inclinator SI-11

City of Malibu

PLATE C-8d

Fugro Consultants, Inc. - Ventura, CA

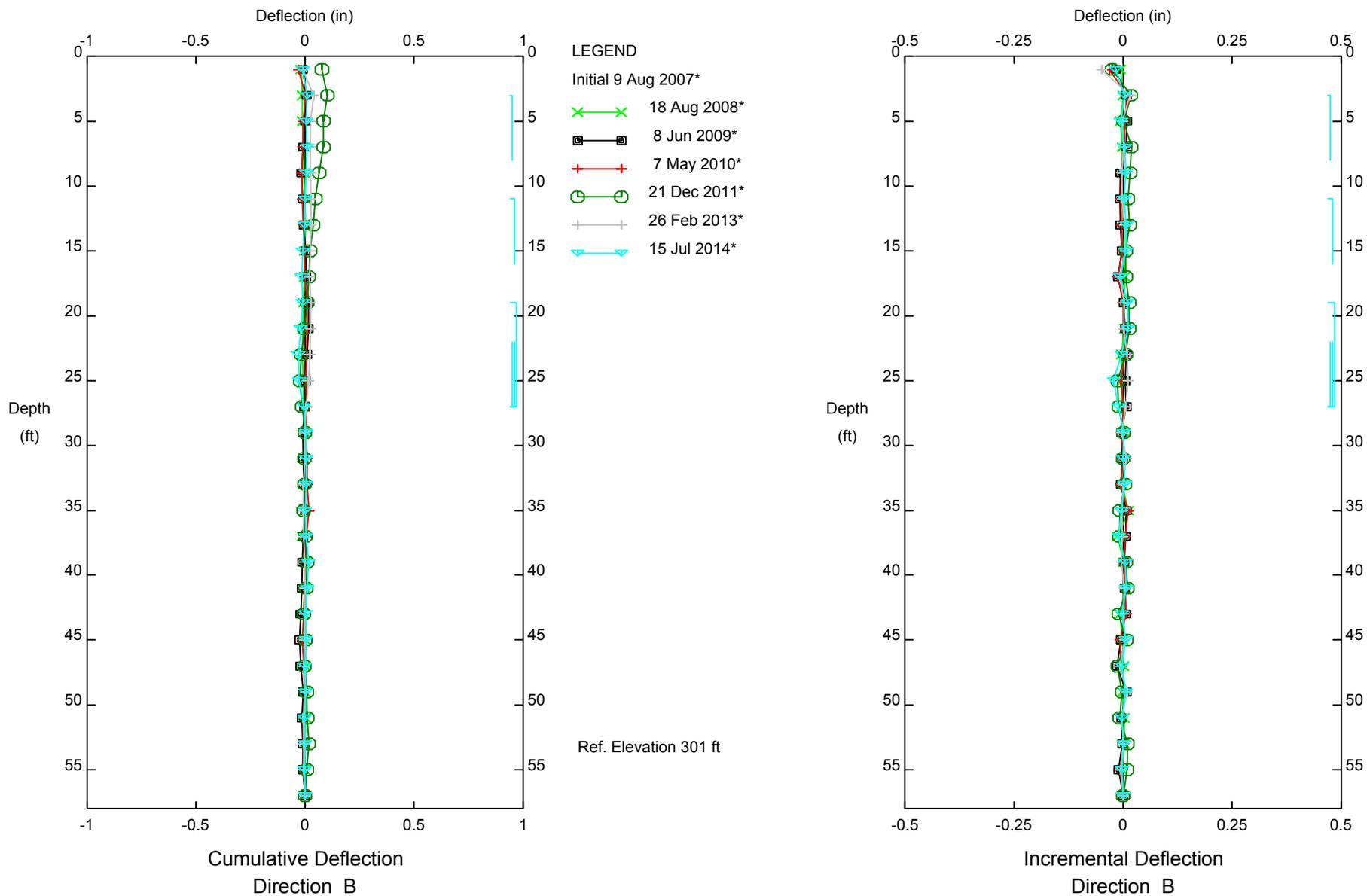


Assessment District 98-2, Inclinometer SI-12
 City of Malibu

PLATE C-9a

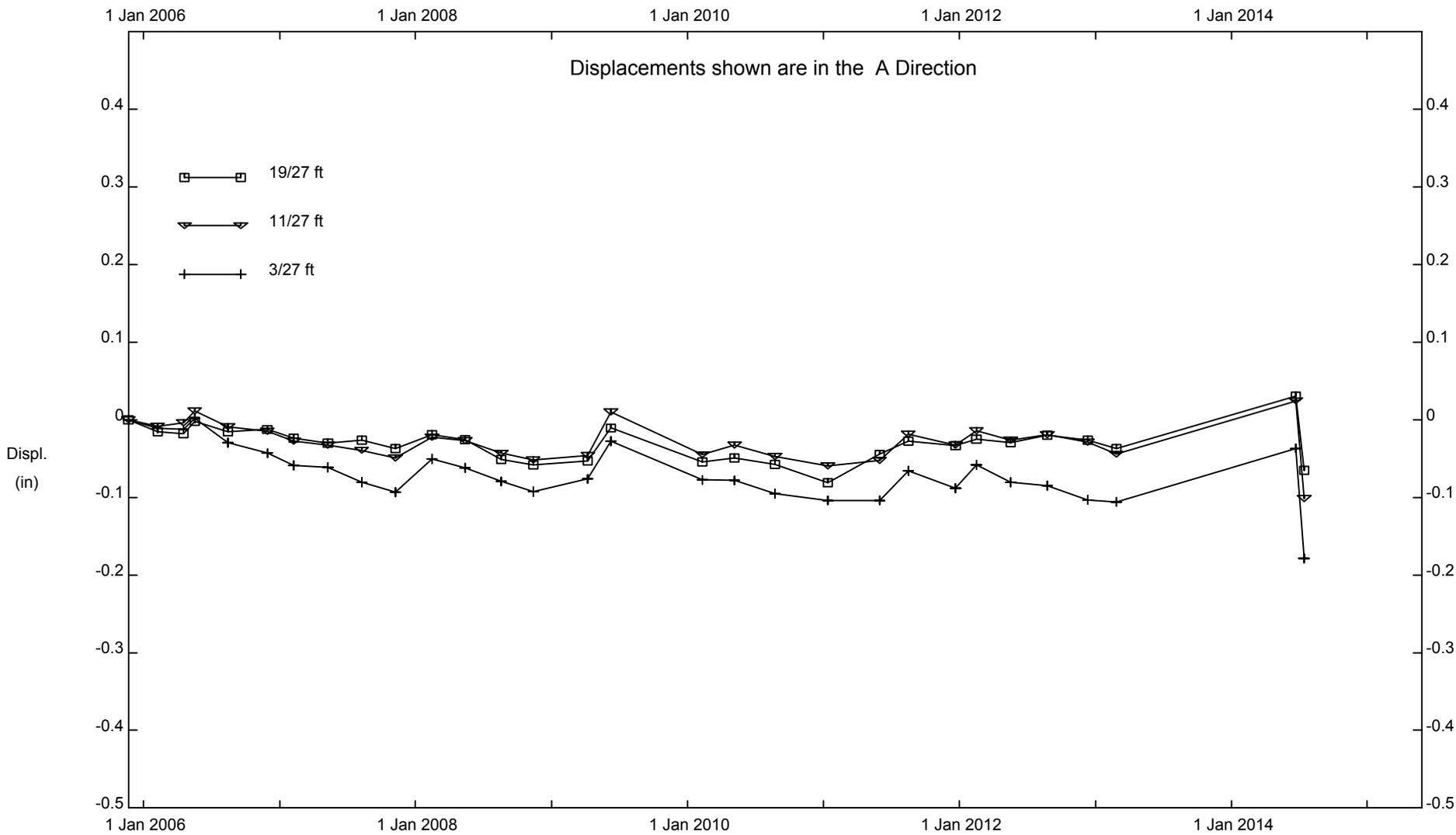
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Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinometer SI-12
City of Malibu

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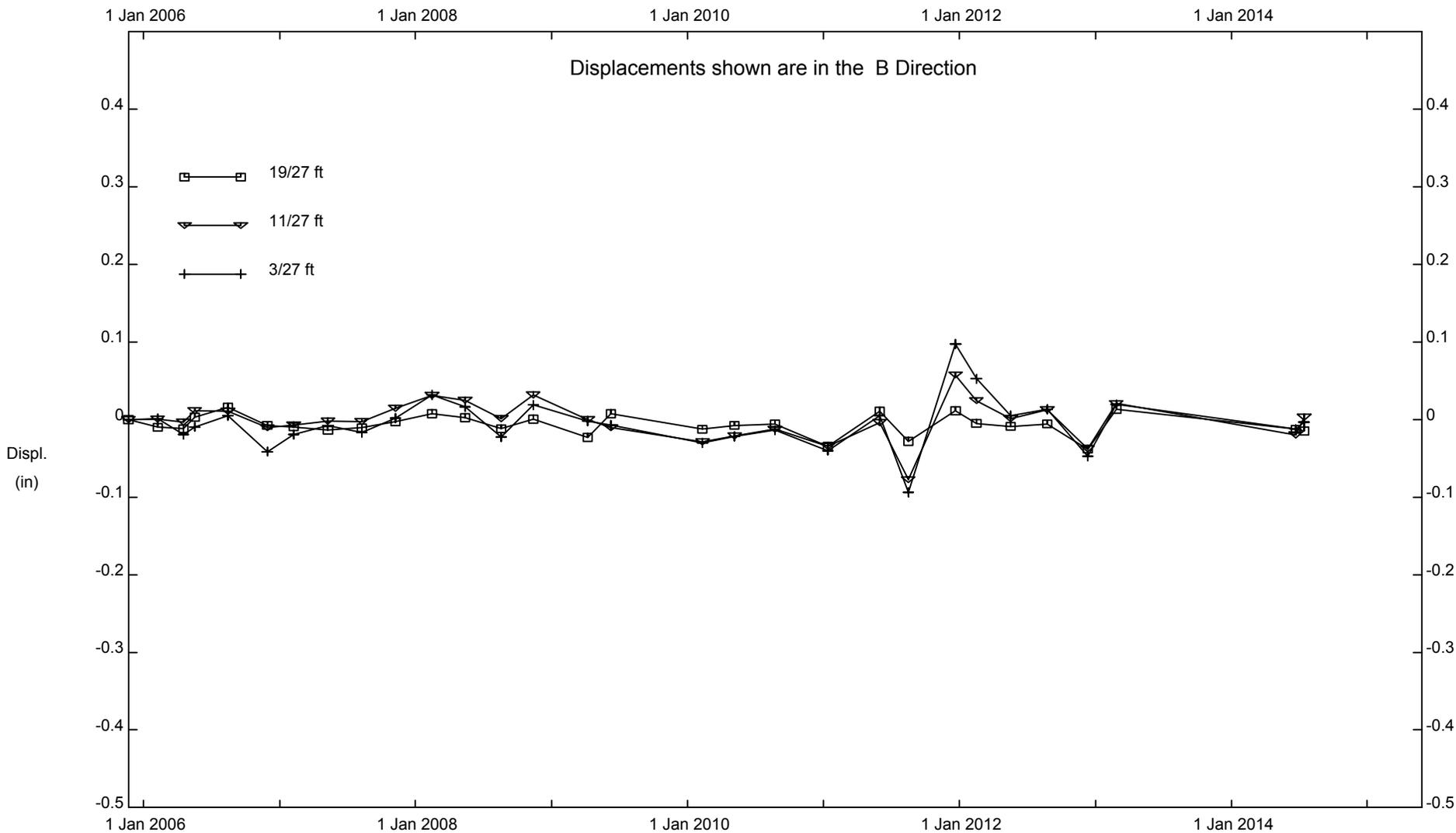


Assessment District 98-2, Inclinometer SI-12

City of Malibu

PLATE C-9c

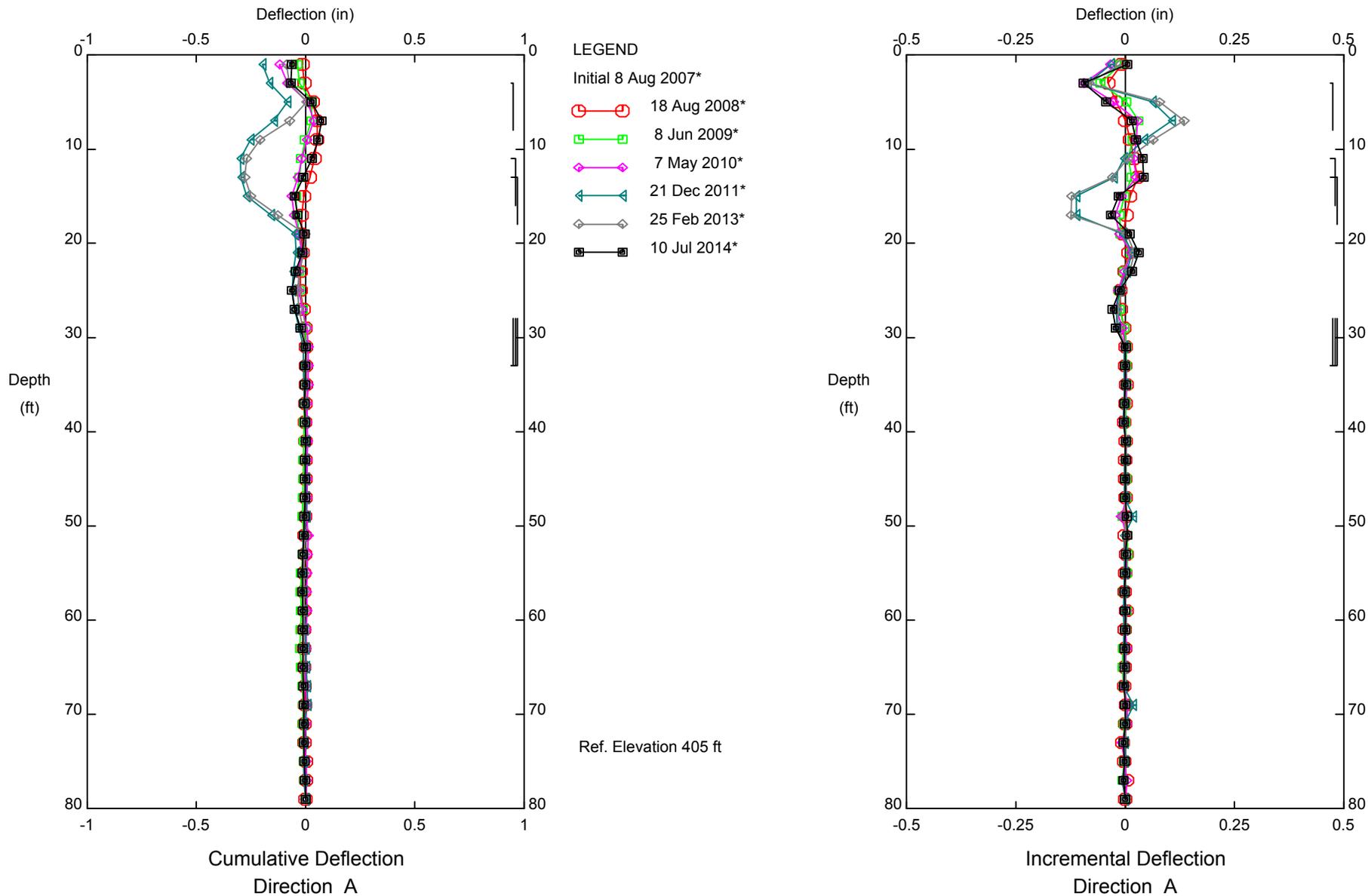
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinometer SI-12

City of Malibu

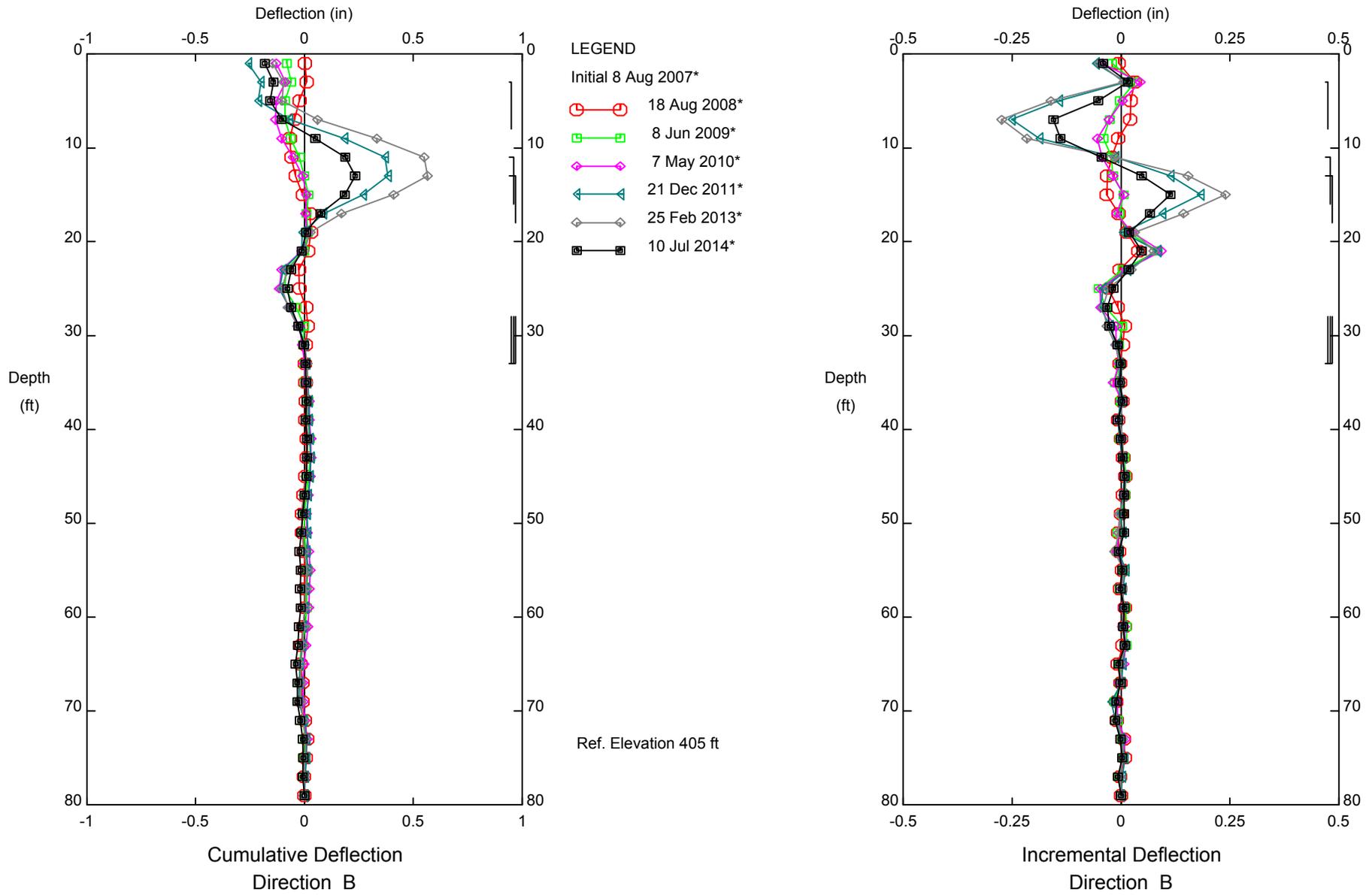
PLATE C-9d



Assessment District 98-2, Inclinometer SI-13
 City of Malibu

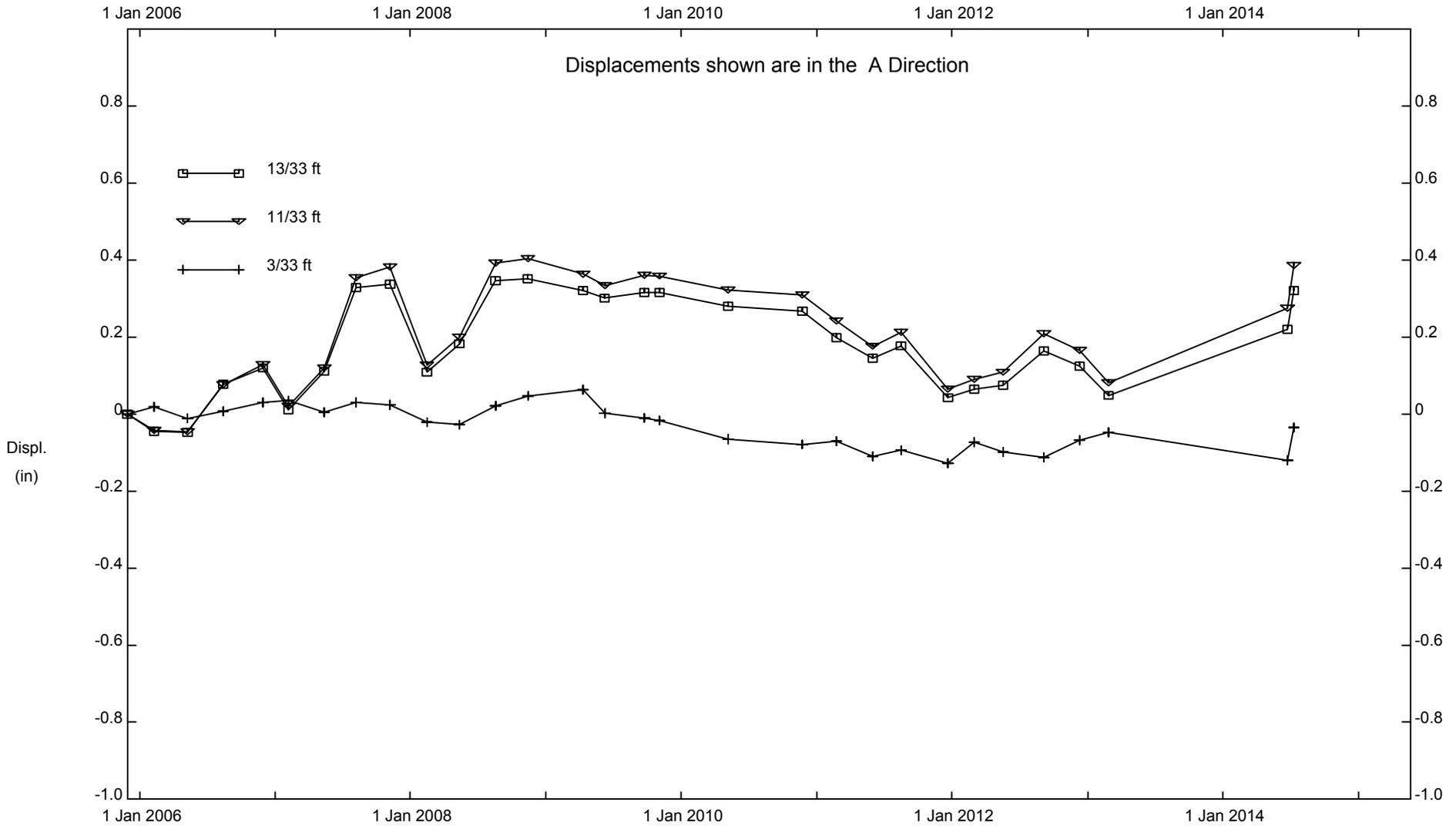
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Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Incliner SI-13
City of Malibu

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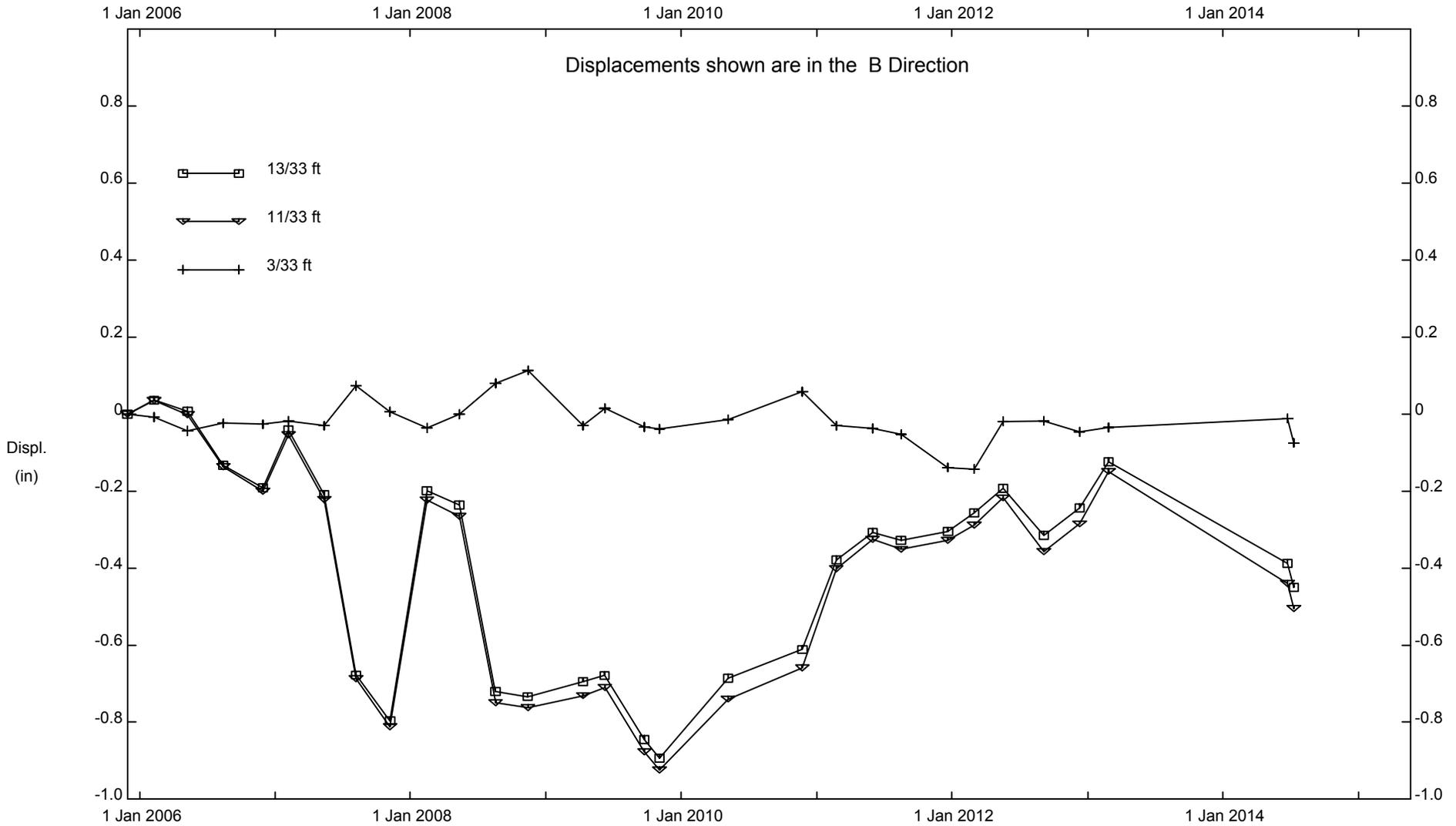


Assessment District 98-2, Inclinator SI-13

City of Malibu

PLATE C-10c

Fugro Consultants, Inc. - Ventura, CA

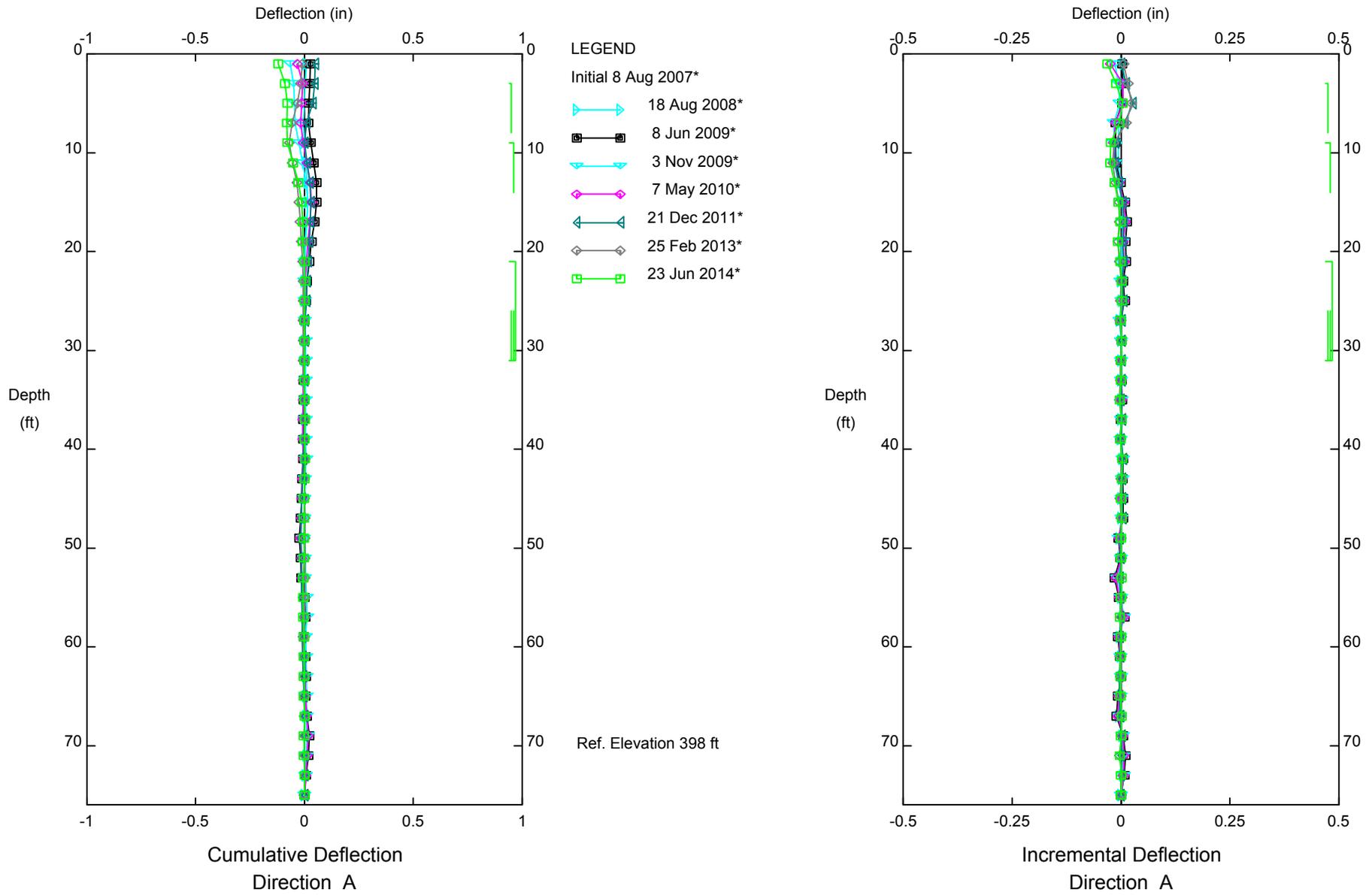


Assessment District 98-2, Inclinator SI-13

City of Malibu

PLATE C-10d

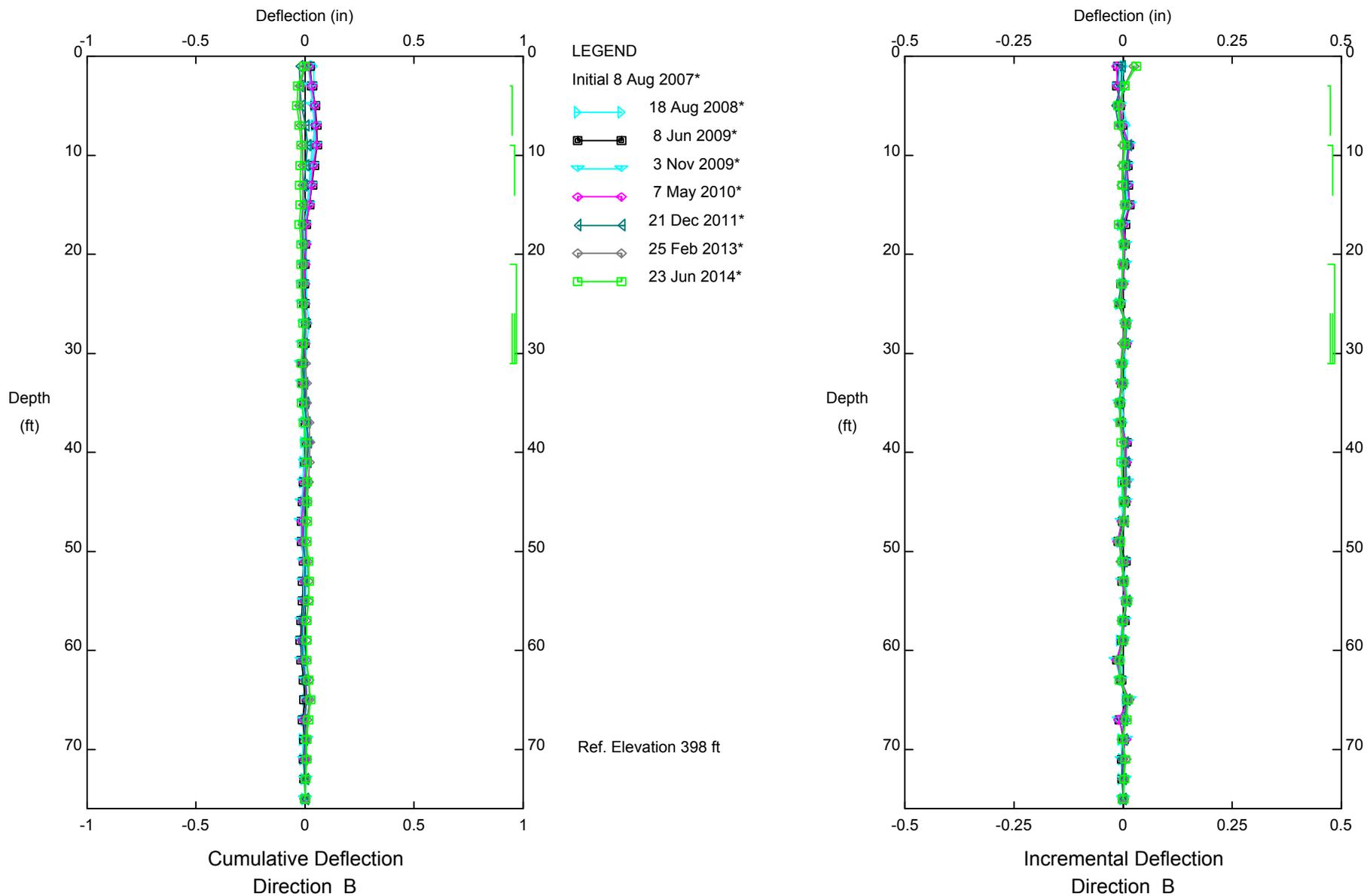
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinometer SI-14
 City of Malibu

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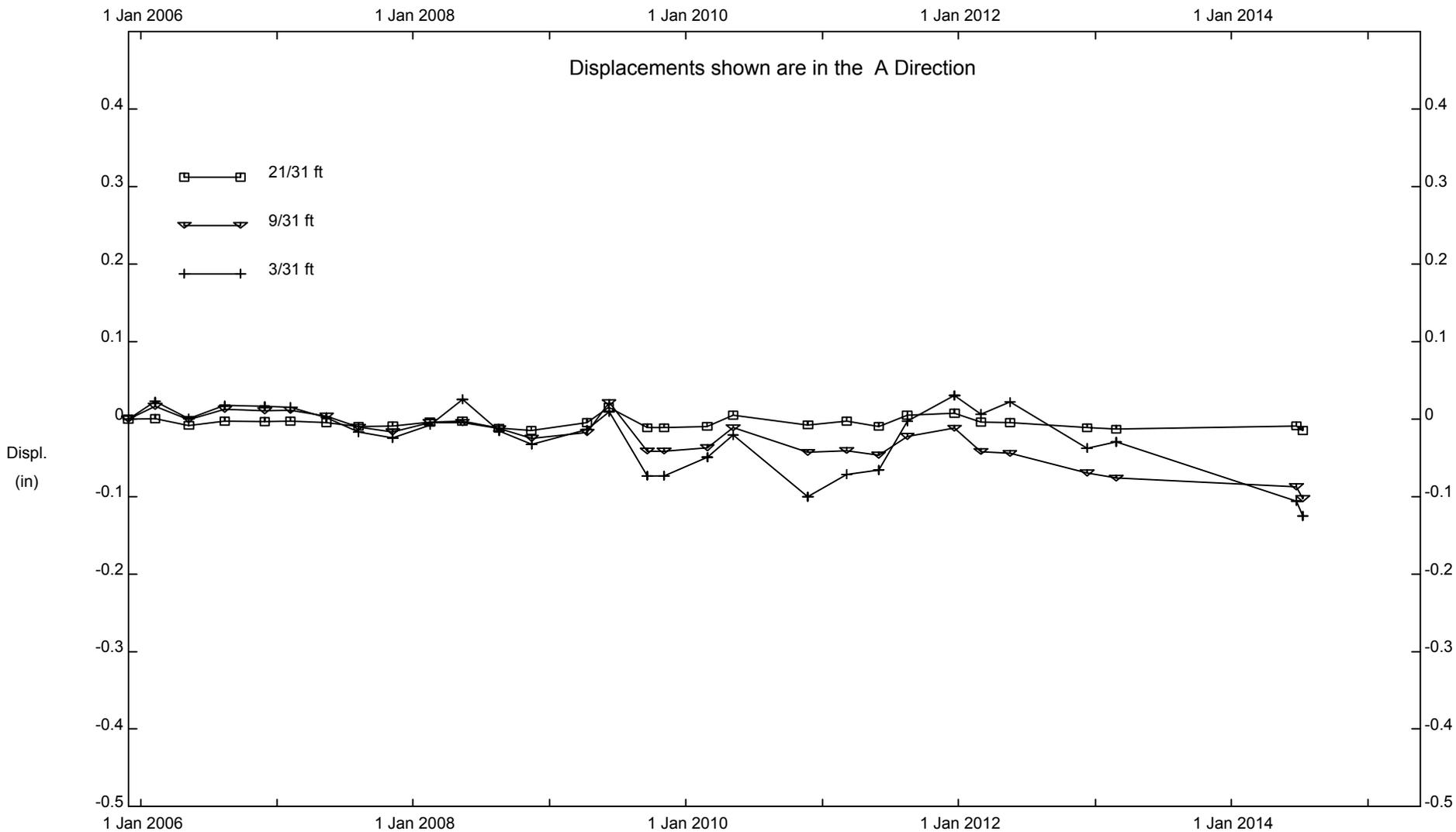
PLATE C-11a



Assessment District 98-2, Inclinometer SI-14
City of Malibu

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

Fugro Consultants, Inc. - Ventura, CA

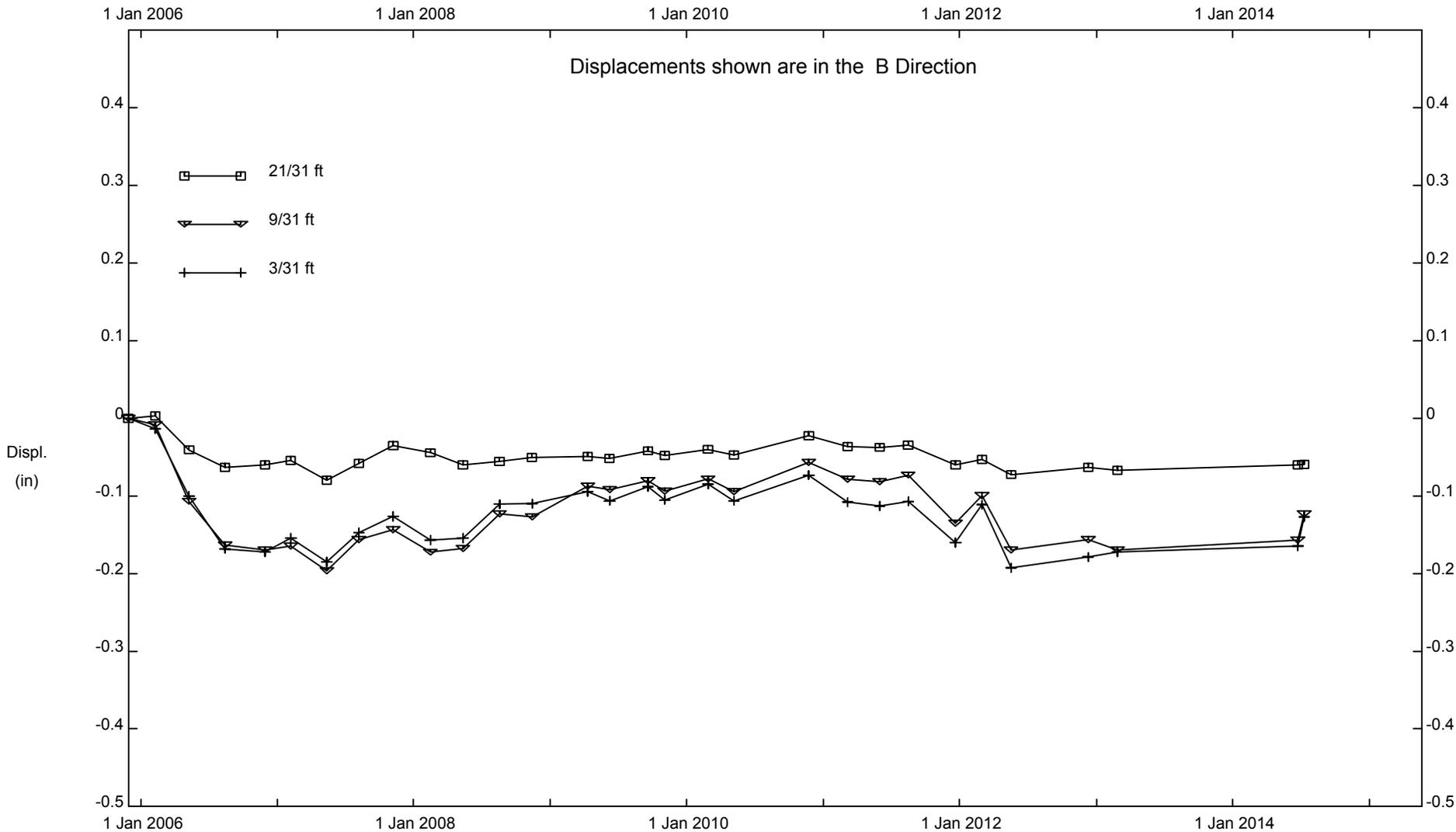


Assessment District 98-2, Inclinator SI-14

City of Malibu

PLATE C-11c

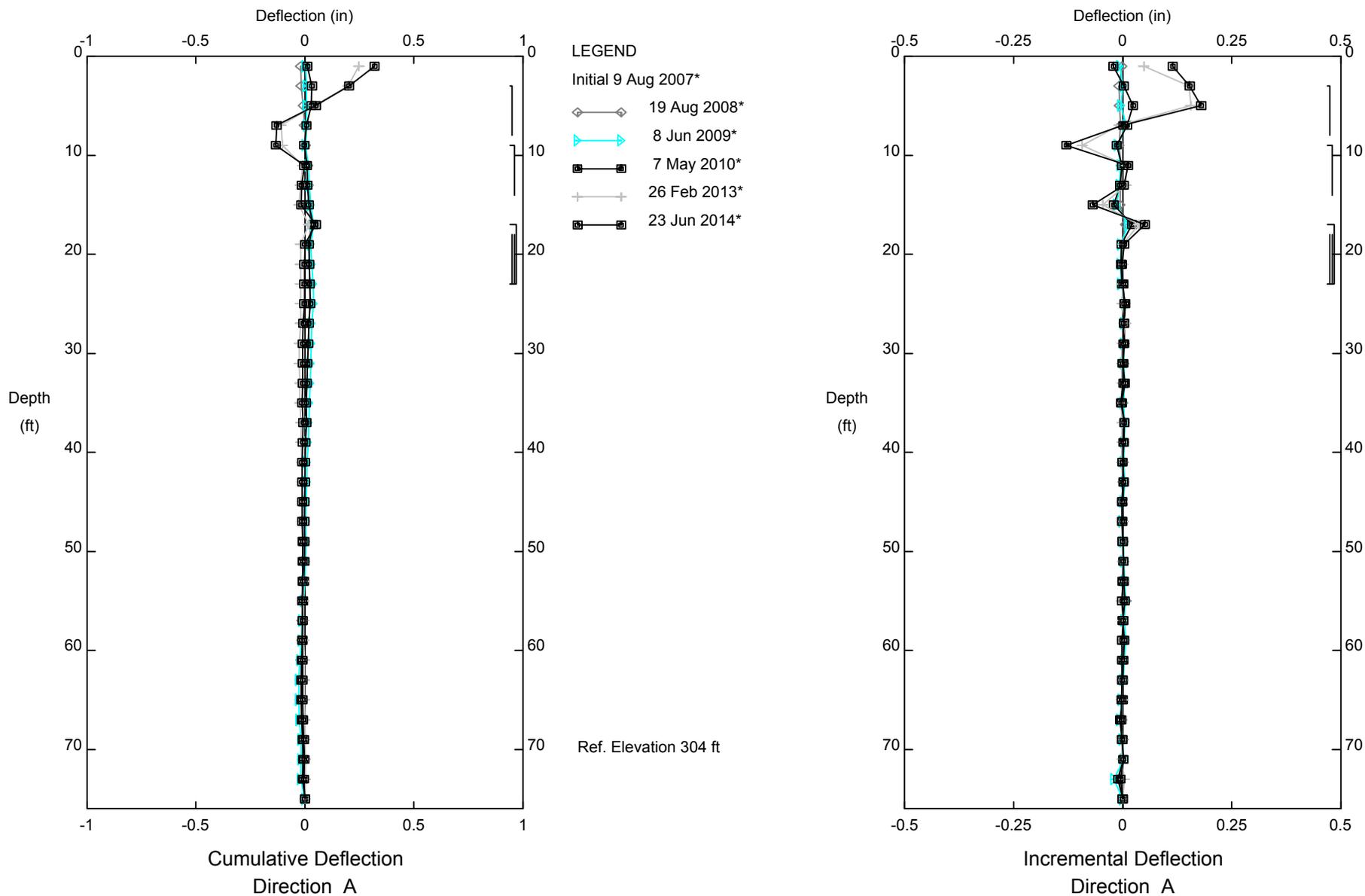
Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinator SI-14

City of Malibu

PLATE C-11d



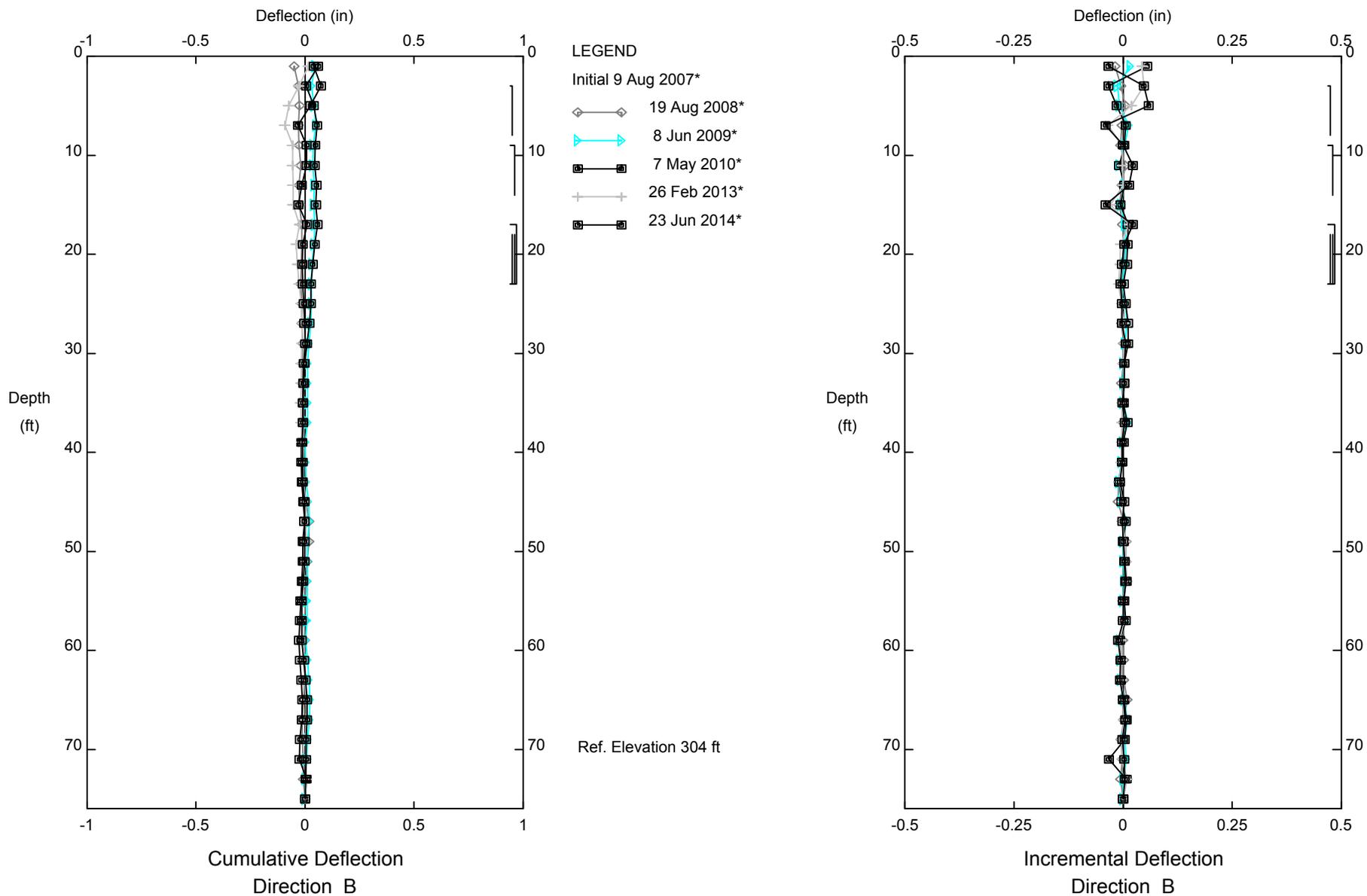
CALLE DEL BARCO, Inclinator SI-15

Depth of readings = 72 ft

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

PLATE C-12a

Fugro Consultants, Inc. - Ventura, CA



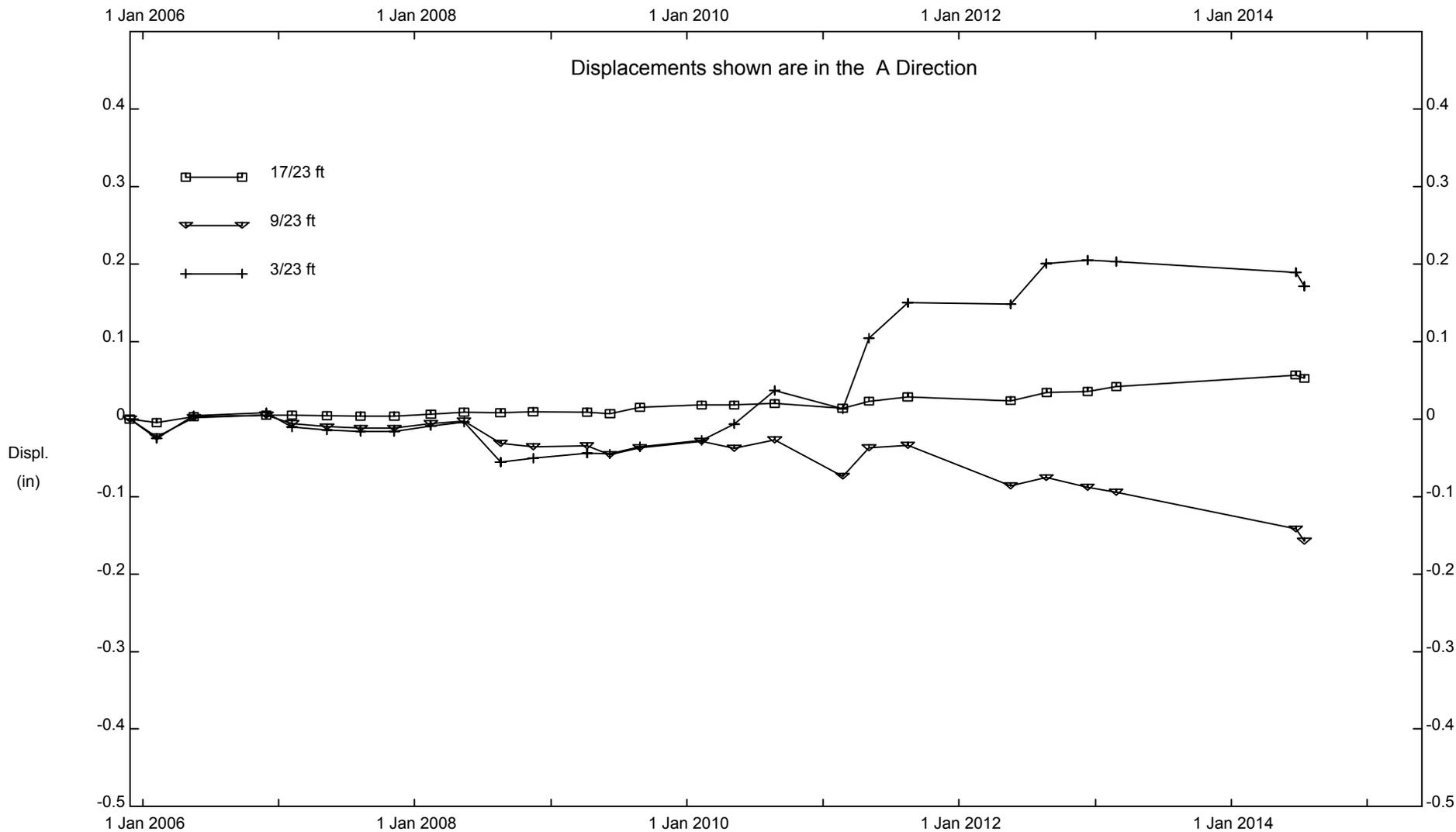
CALLE DEL BARCO, Inclinator SI-15

Depth of readings = 72 ft

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

PLATE C-12b

Fugro Consultants, Inc. - Ventura, CA

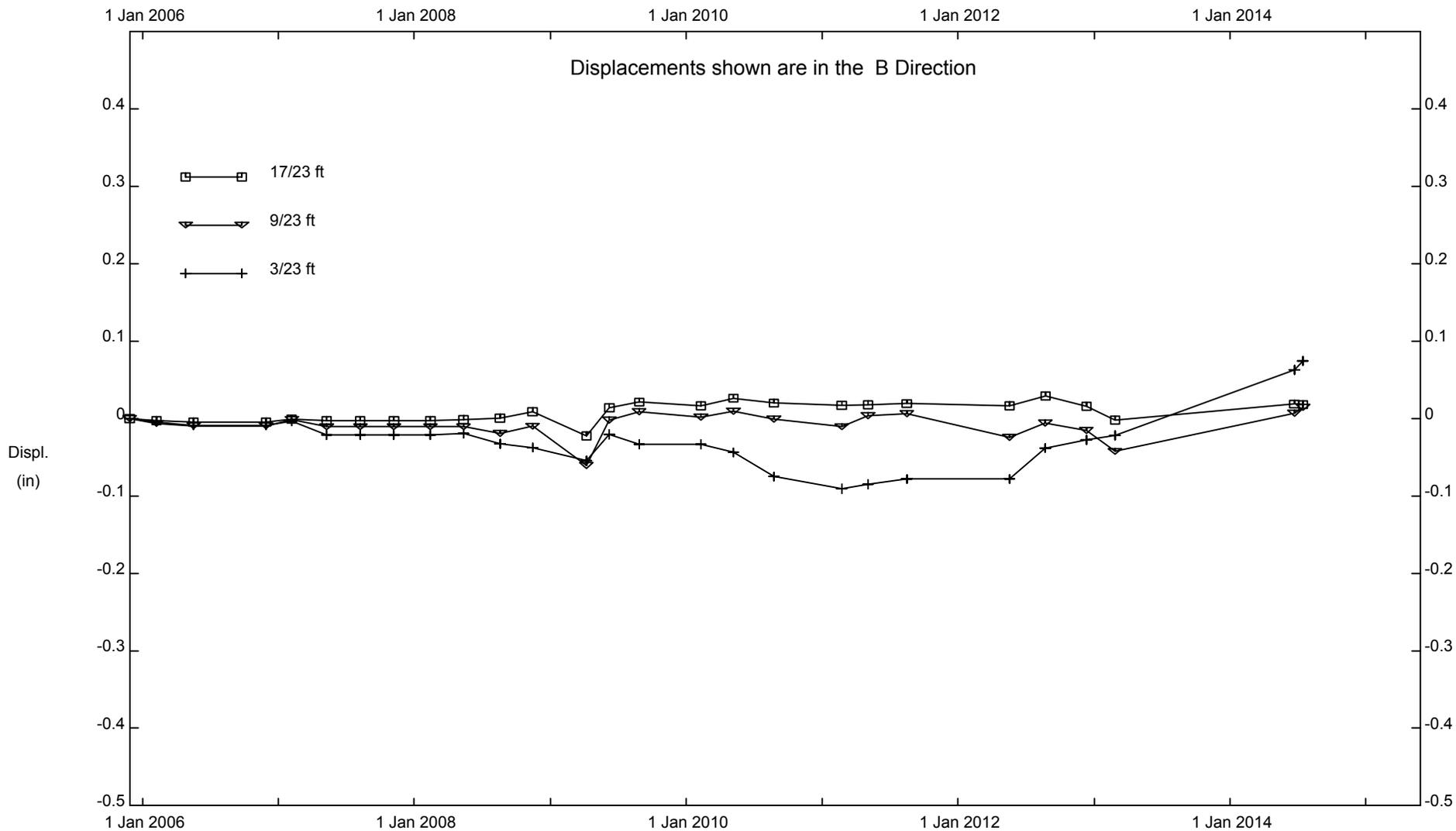


CALLE DEL BARCO, Inclinator SI-15

Depth of readings = 72 ft

PLATE C-12c

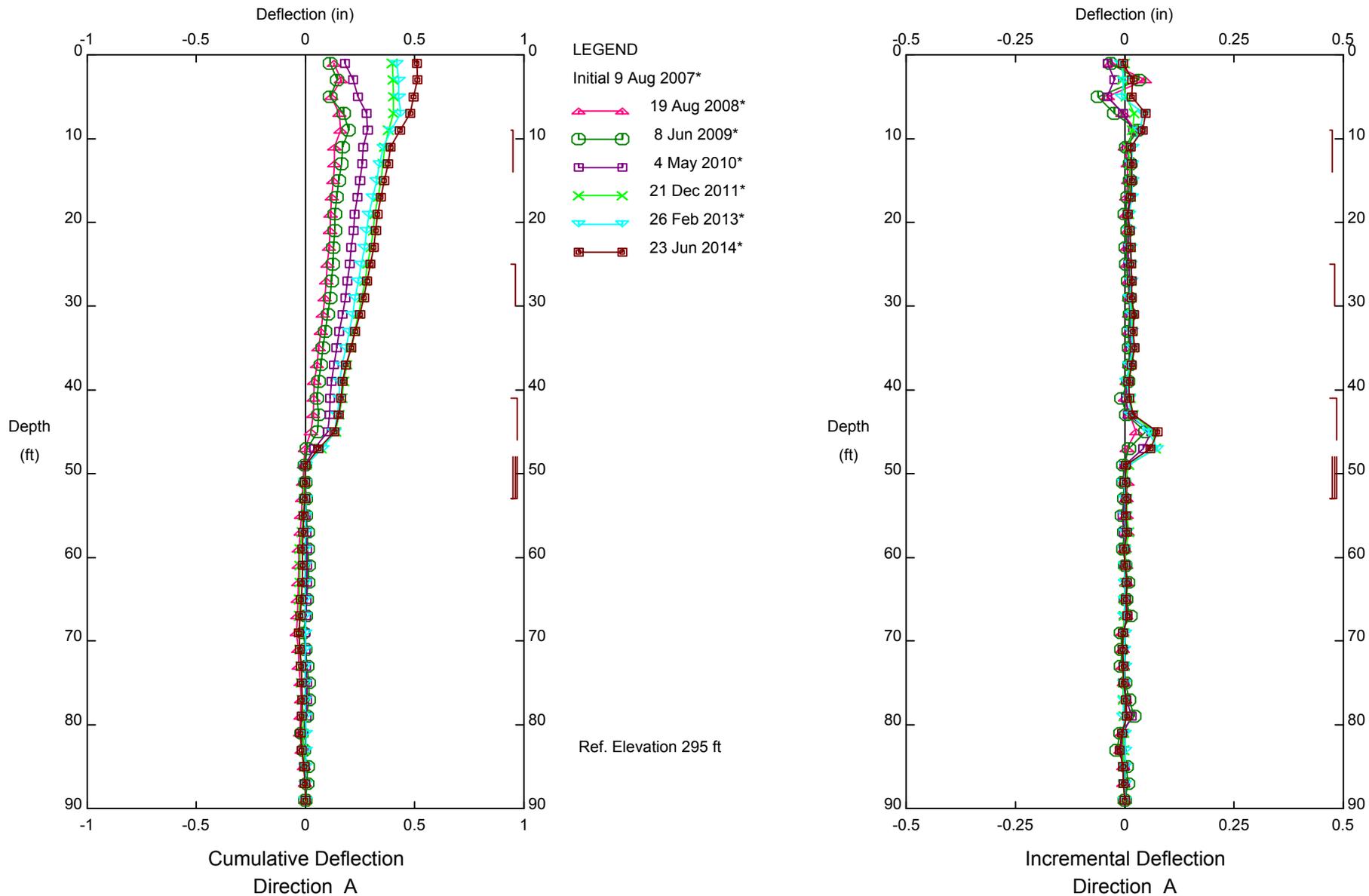
Fugro Consultants, Inc. - Ventura, CA



CALLE DEL BARCO, Inclinator SI-15

Depth of readings = 72 ft

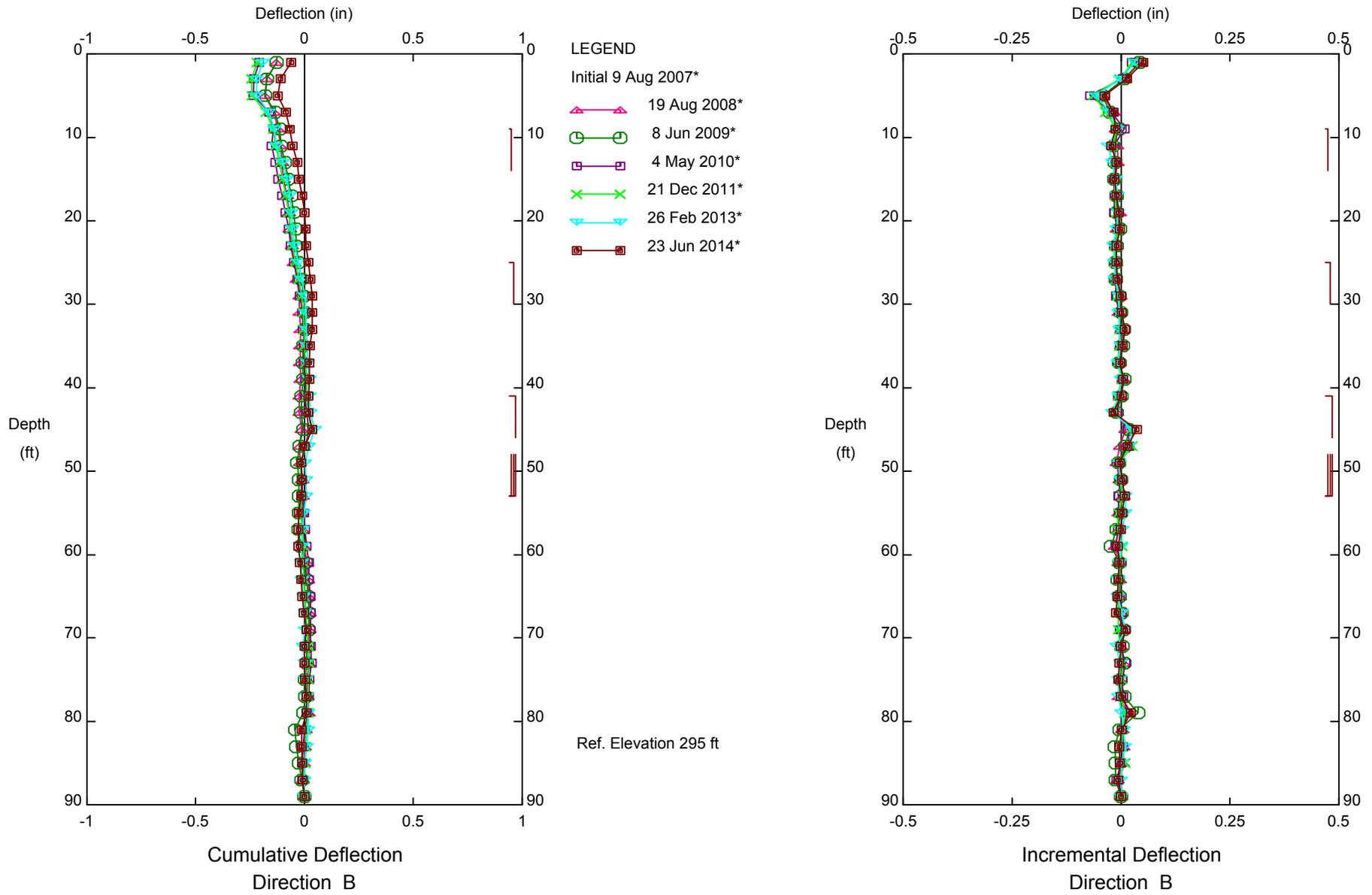
PLATE C-12d



Assessment District 98-2, Inclinometer SI-16
 City of Malibu

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Fugro Consultants, Inc. - Ventura, CA

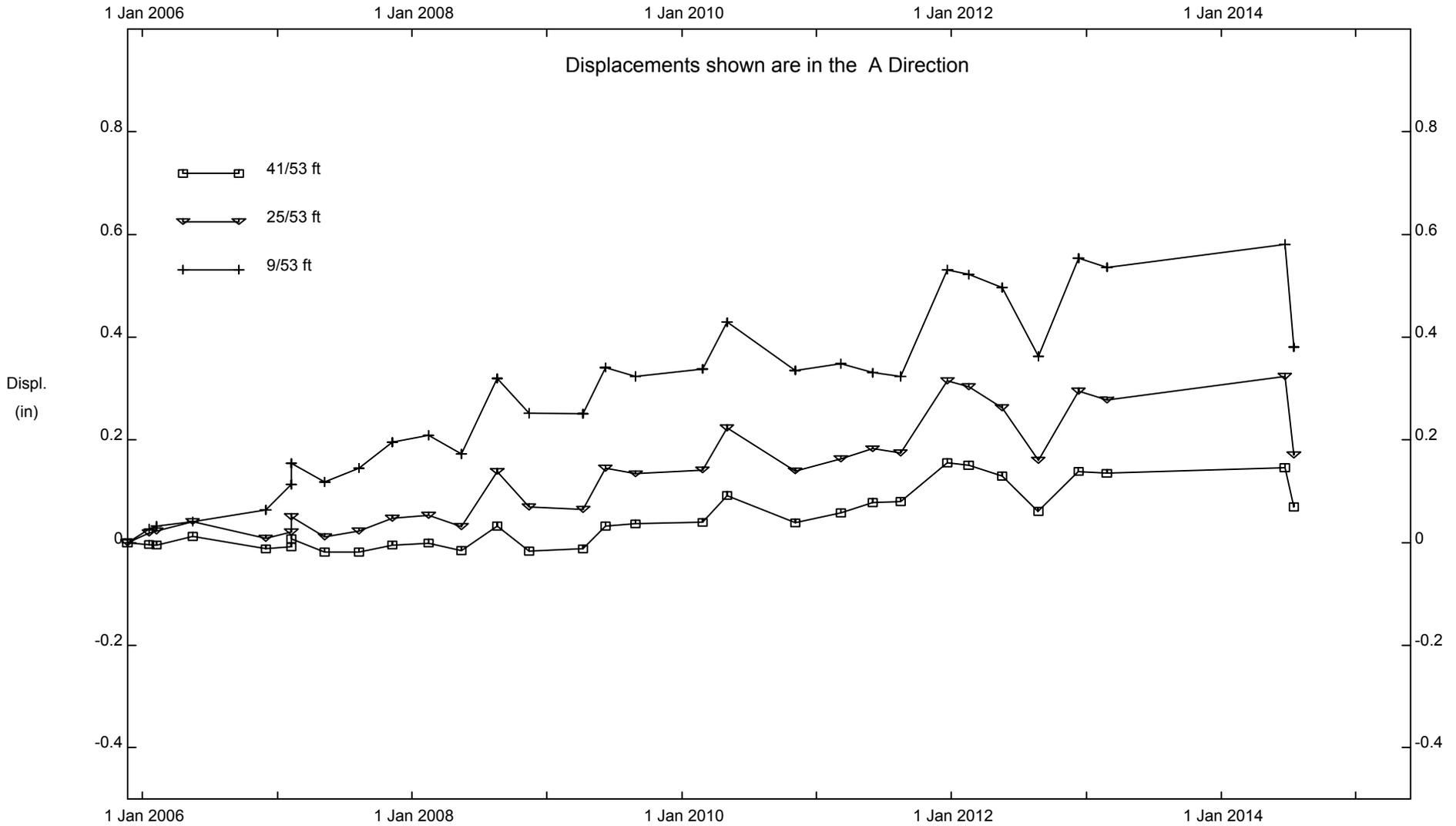


Assessment District 98-2, Inclinometer SI-16
City of Malibu

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

PLATE C-13b

Fugro Consultants, Inc. - Ventura, CA

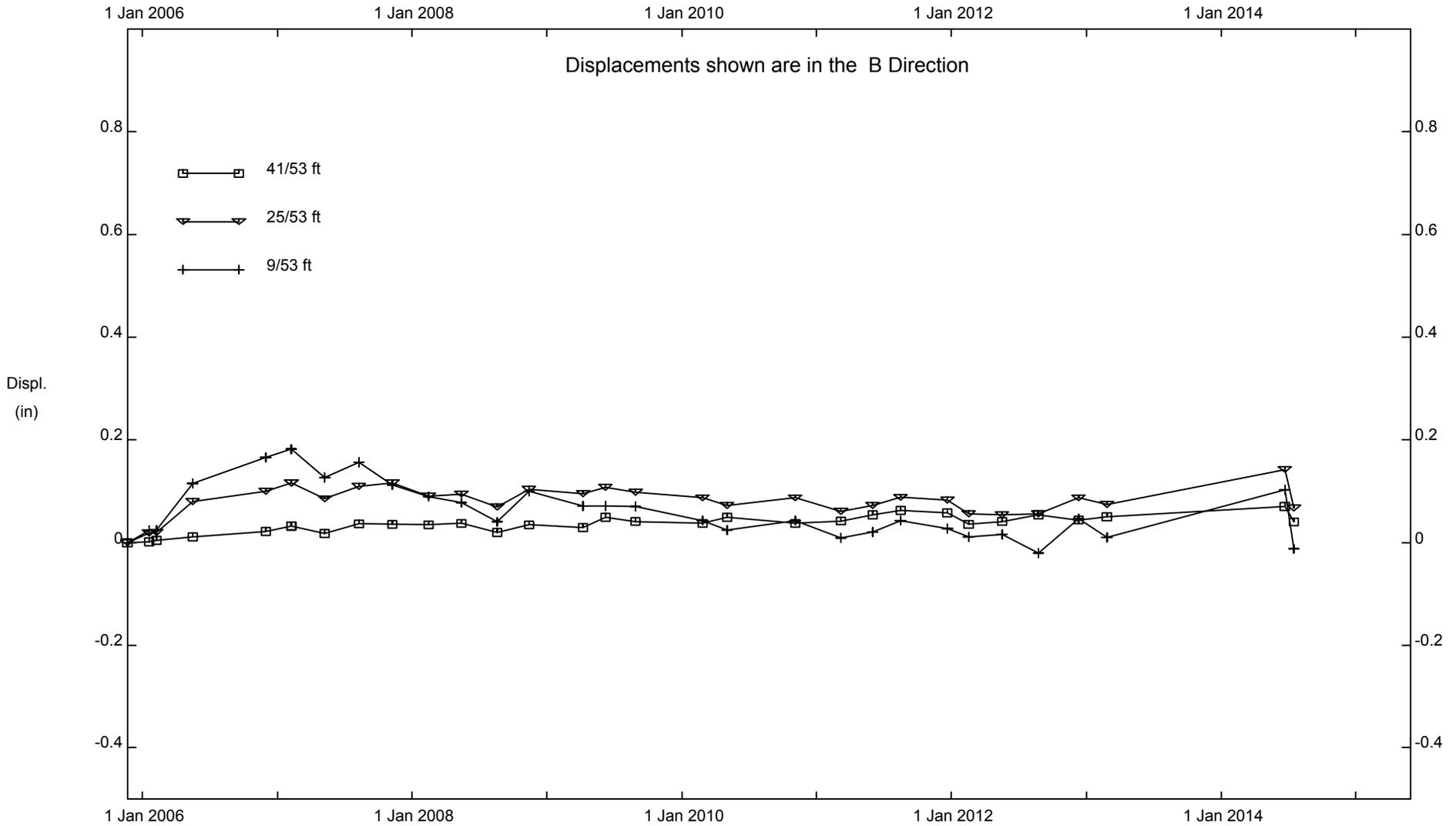


Assessment District 98-2, Inclinator SI-16

City of Malibu

PLATE C-13c

Fugro Consultants, Inc. - Ventura, CA



Assessment District 98-2, Inclinator SI-16

City of Malibu

PLATE C-13d