0019

K INCOMING C/007/0041

From: "Michael Hansen" <Mhansen@rbgengineering.com>
To: <James_Kohler@blm.gov>, <Jeff_McKenzie@blm.gov>, <Stan_Perkes@blm.gov>, ...
Date: 6/18/2007 7:53 AM
Subject: Grassy Trail Dam update for 6/11/07
Attachments: GTdam 6_11_07.pdf; GT6_11_07.pdf

here is an update for Grassy Trail Dam as of 6/11/07.

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RB&G ENGINEERING
Grassy Trail Dam, Seismic Summary for June 11, 2007.

For the period between May 12 and June 11, 2007 no MIS (Mining Induced Seismicity) earthquakes were recorded within the area near panel #7 (nearest the Dam) by the UUSS. No MIS events were recorded on the Dam, however the instruments memory was full on May 19 due to non-seismic events. One MIS event was recorded on the Hillside instruments on May 20 at 3:22 AM. This event generated a PGA of 0.0199 but was not reported by the UUSS as an earthquake.

No significant movement has been detected in inclinometers 2 thur 4. It should be noted that I-2 located on the dam continues to show a very slight but gradual movement during the past few months.

During the site visit the reservoir was full with a very slight flow over the top of the spillway. OB-1 well continues to show erratic reading. No unexpected changes in piezometer readings were observed in the other piezometers during the past month. It should be noted that there was clear seepage coming from the Toe Drain. Last year while the level of the reservoir was lower we did not see any flow from the toe drain. This increased flow may be due to the higher water level in the reservoir. No cracks or signs of movement were noted on the dam or abutments above the dam during the past month.

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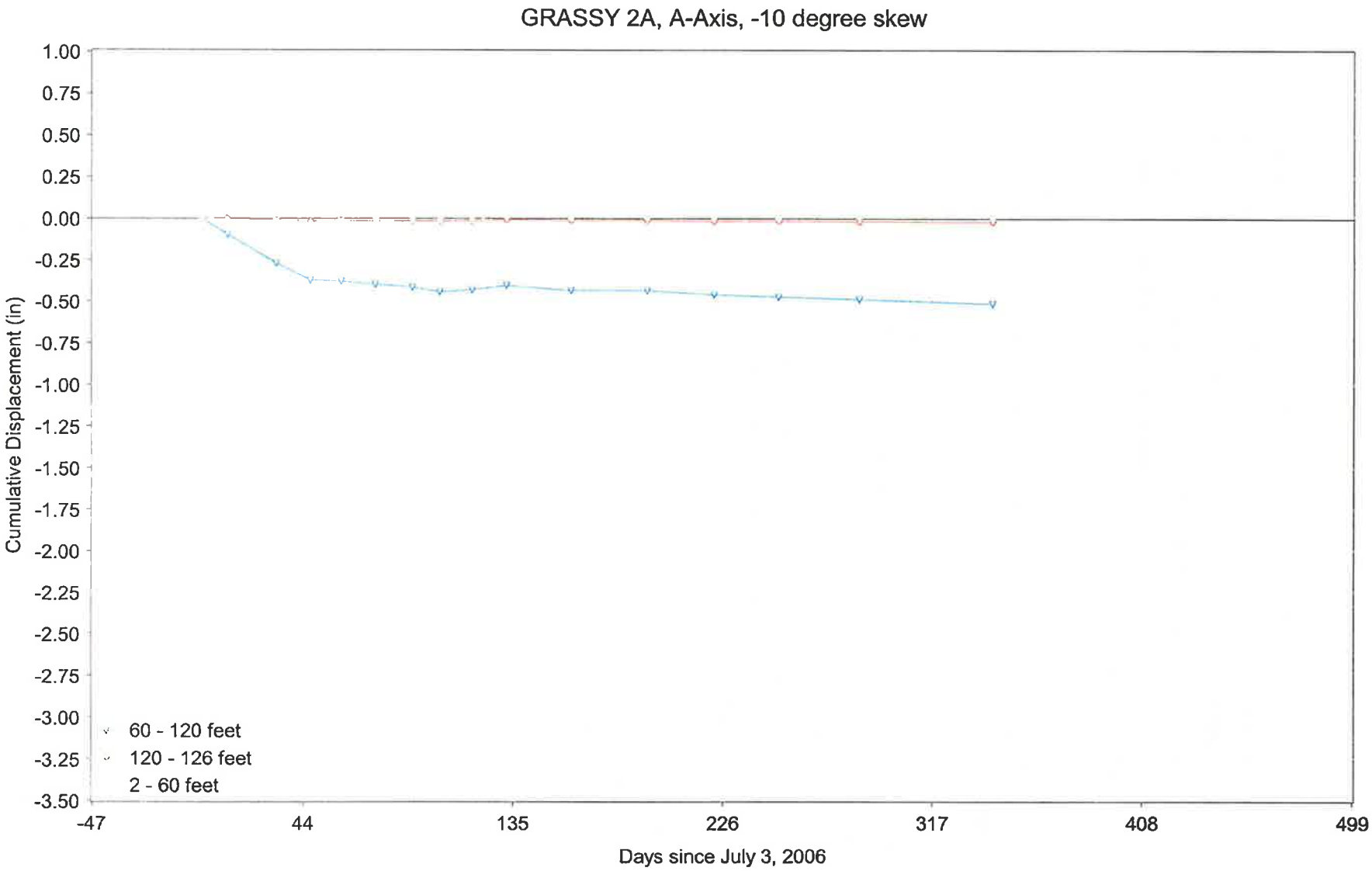
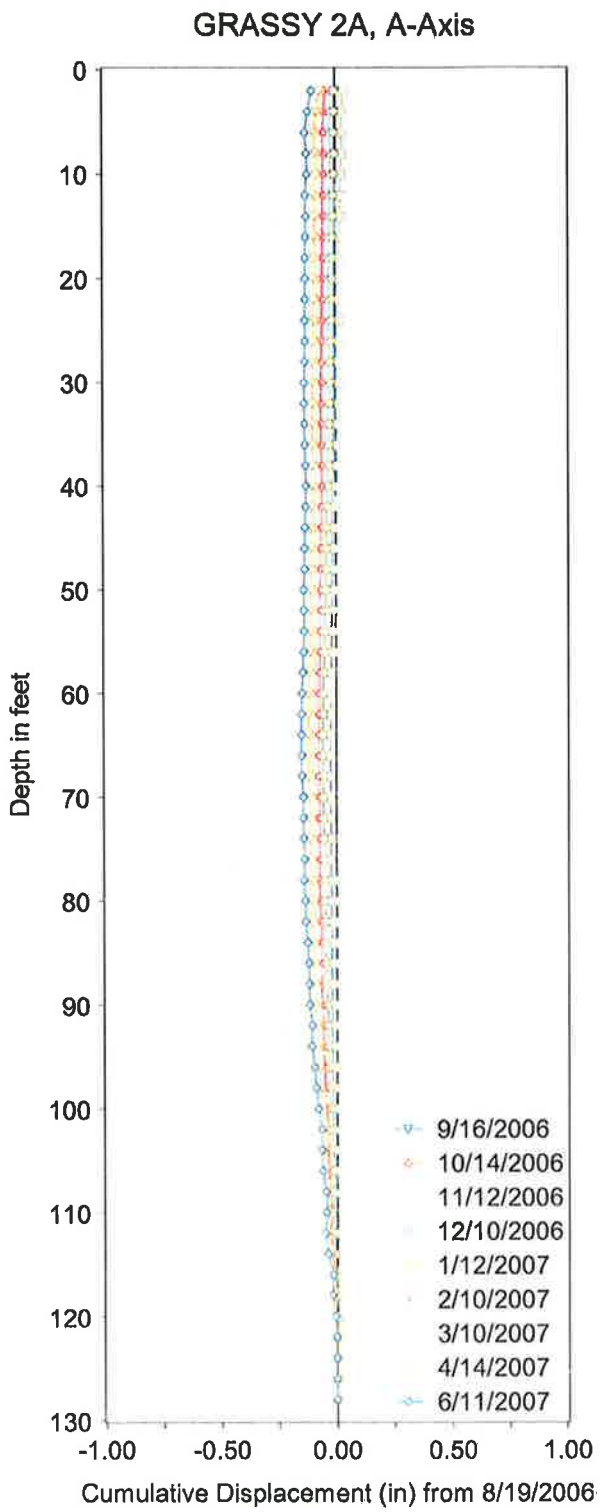
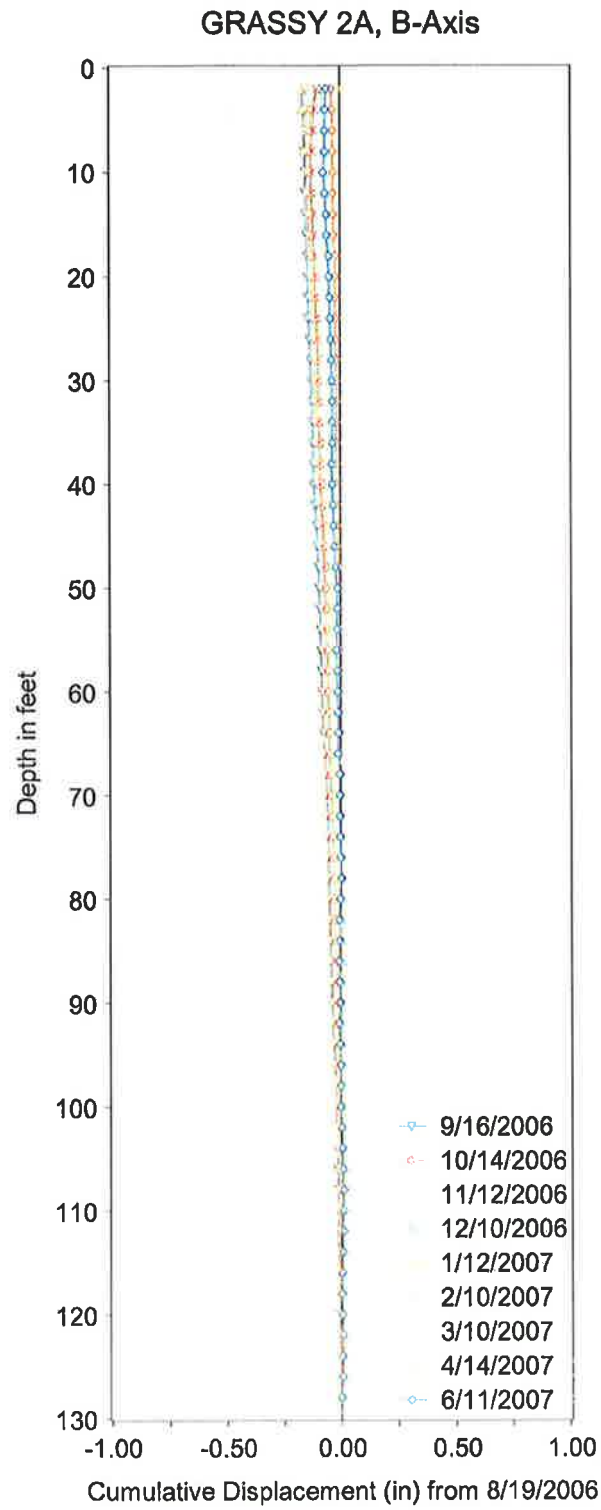
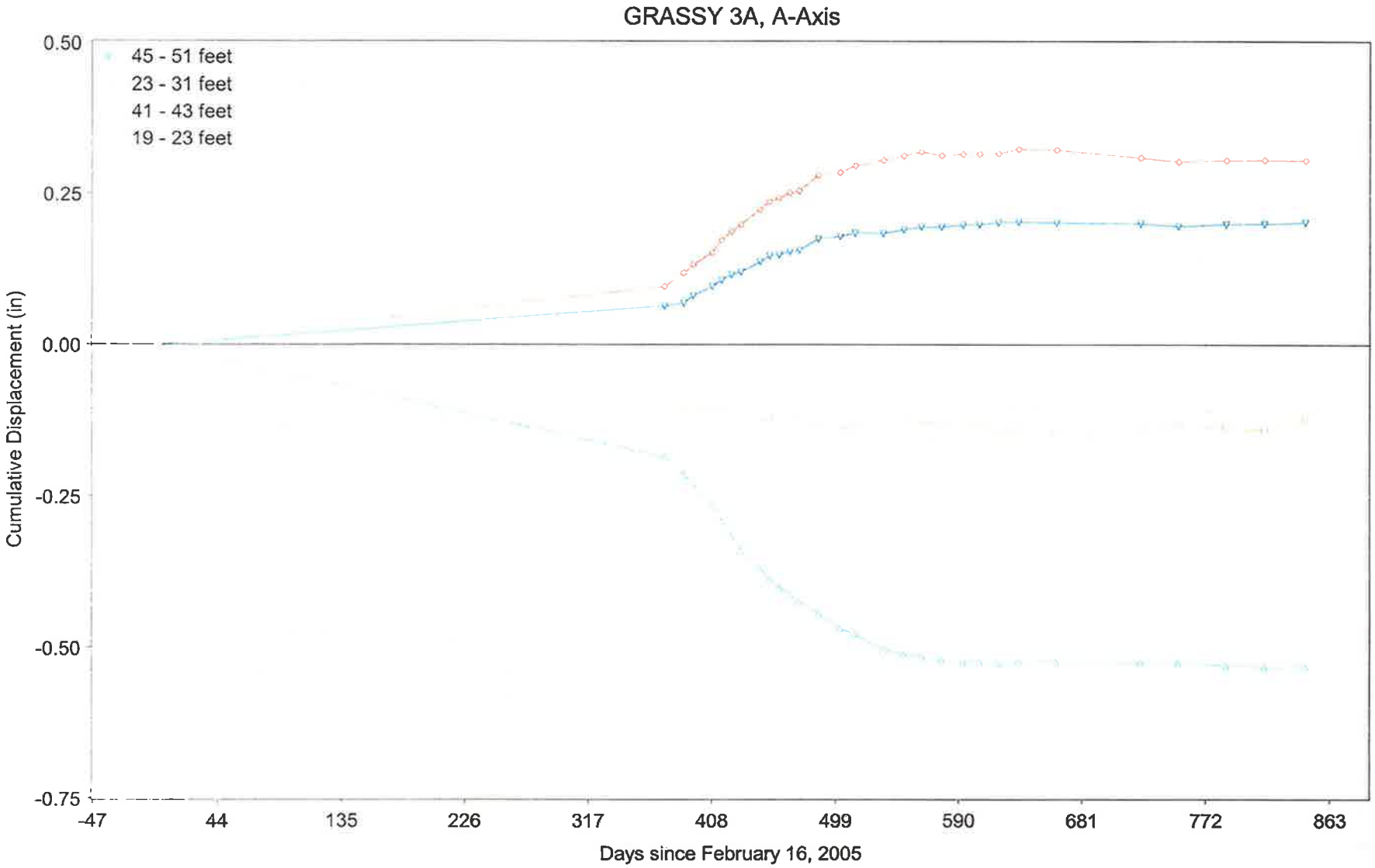
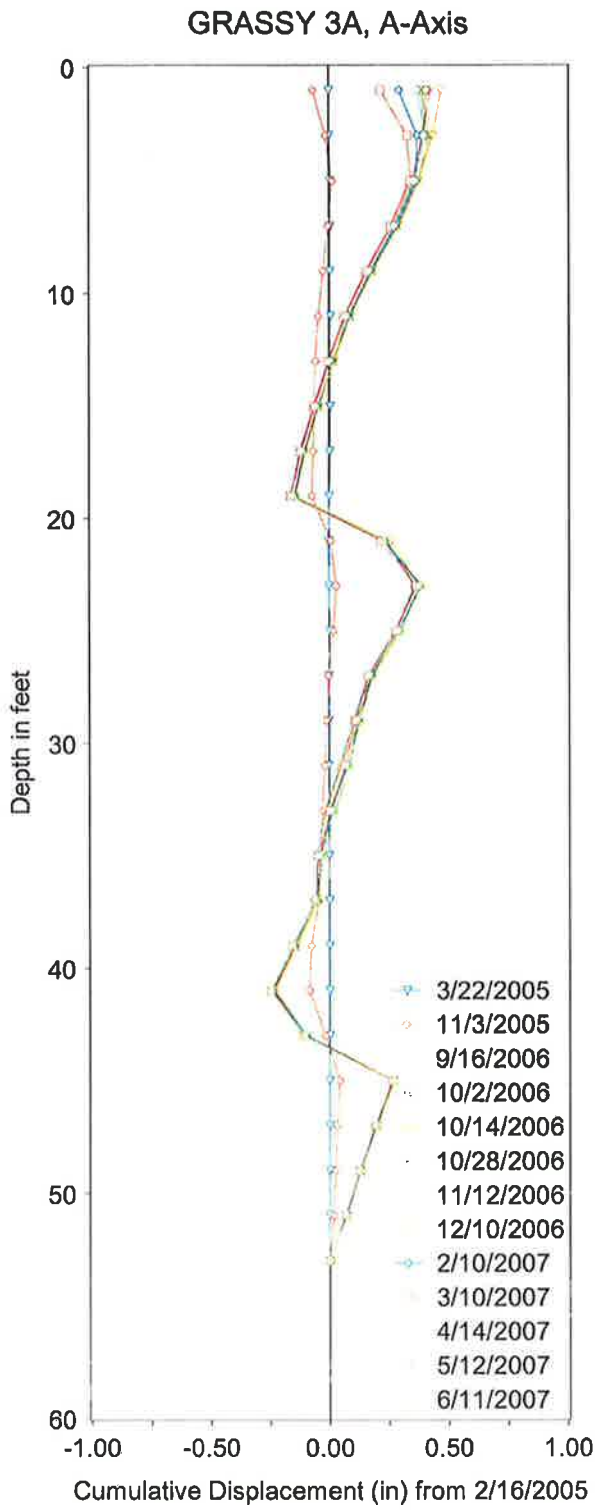
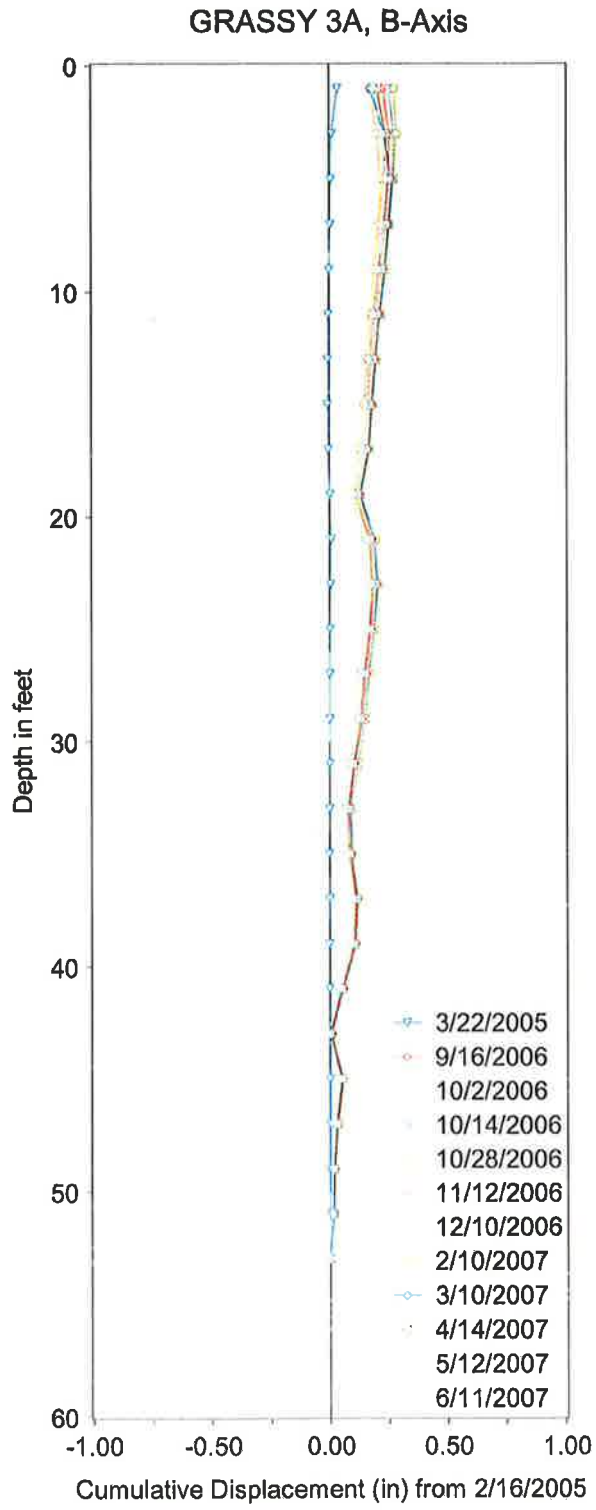

GRASSY 2A, A-Axis, -10 degree skew
Cumulative Displacement (in)
1.00
0.75
0.50
0.25
0.00
-0.25
-0.50
-0.75
-1.00
-1.25
-1.50
-1.75
-2.00
-2.25
-2.50
-2.75
-3.00
-3.25
-3.50
60 - 120 feet
120 - 126 feet
2 - 60 feet
-47
44
135
226
317
408
499
Days since July 3, 2006


GRASSY 2A, A-Axis
Depth in feet
0
10
20
30
40
50
60
70
80
90
100
110
120
130
-1.00
-0.50
0.00
0.50
1.00
Cumulative Displacement (in) from 8/19/2006
9/16/2006
10/14/2006
11/12/2006
12/10/2006
1/12/2007
2/10/2007
3/10/2007
4/14/2007
6/11/2007

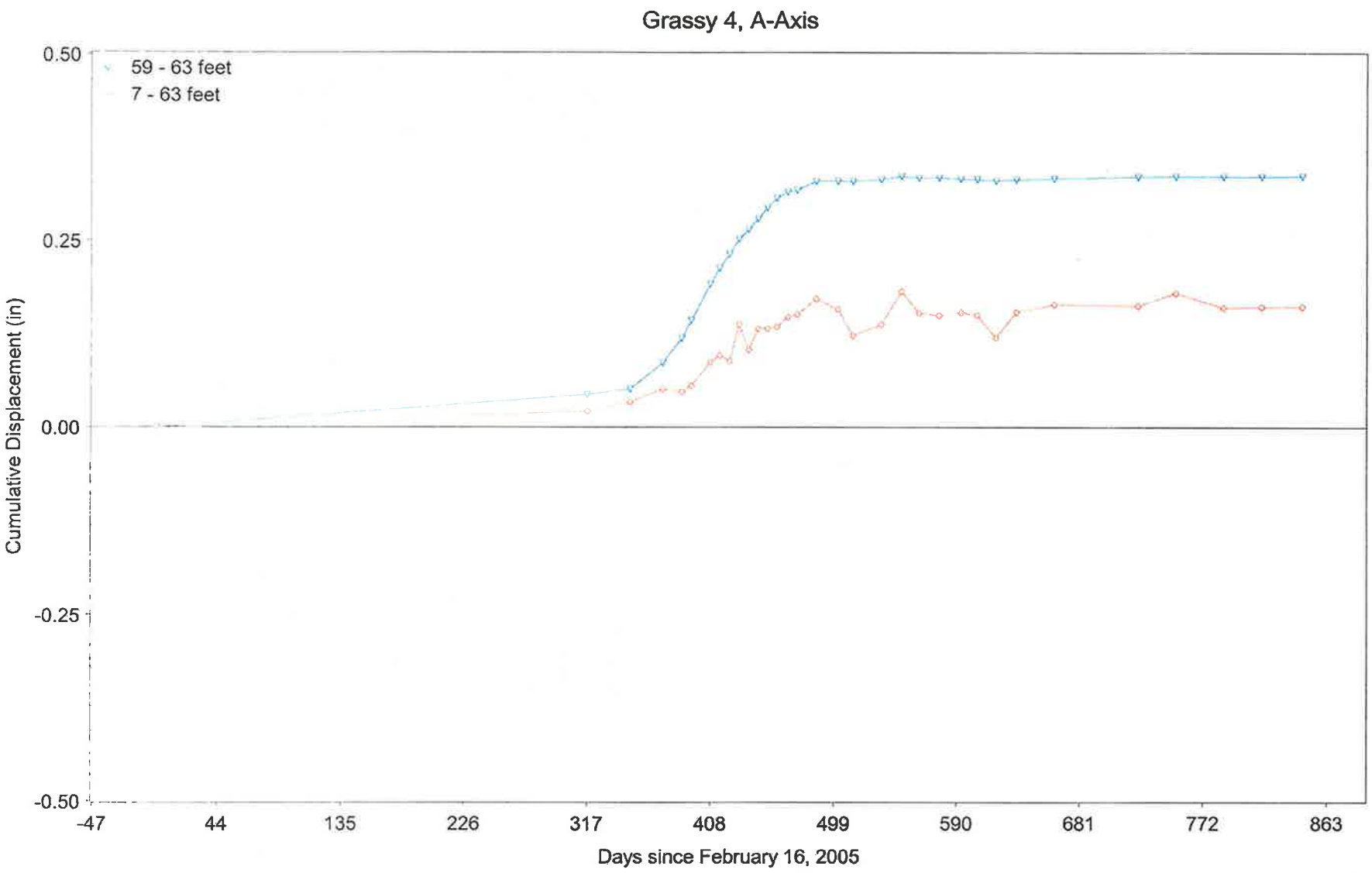

GRASSY 2A, B-Axis
Depth in feet
0
10
20
30
40
50
60
70
80
90
100
110
120
130
-1.00
-0.50
0.00
0.50
1.00
Cumulative Displacement (in) from 8/19/2006
9/16/2006
10/14/2006
11/12/2006
12/10/2006
1/12/2007
2/10/2007
3/10/2007
4/14/2007
6/11/2007

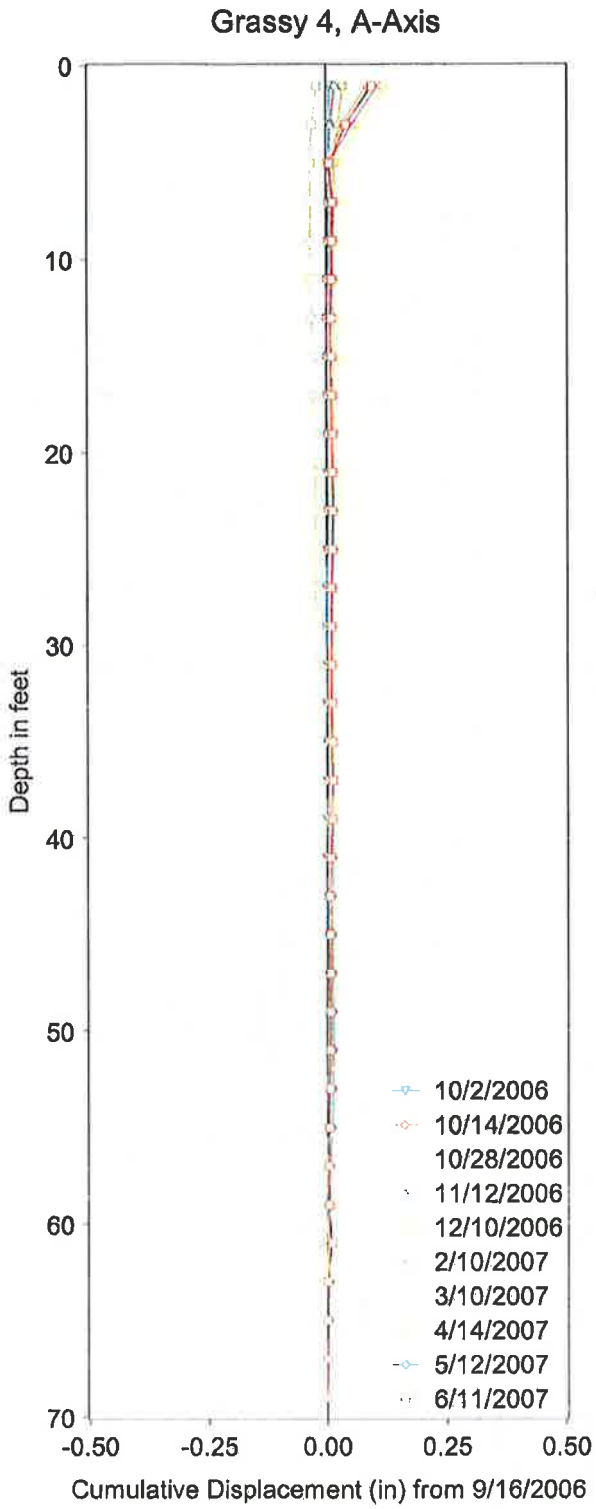

GRASSY 3A, A-Axis
45 - 51 feet
23 - 31 feet
41 - 43 feet
19 - 23 feet
0.50
0.25
0.00
-0.25
-0.50
-0.75
Cumulative Displacement (in)
-47
44
135
226
317
408
499
590
681
772
863
Days since February 16, 2005

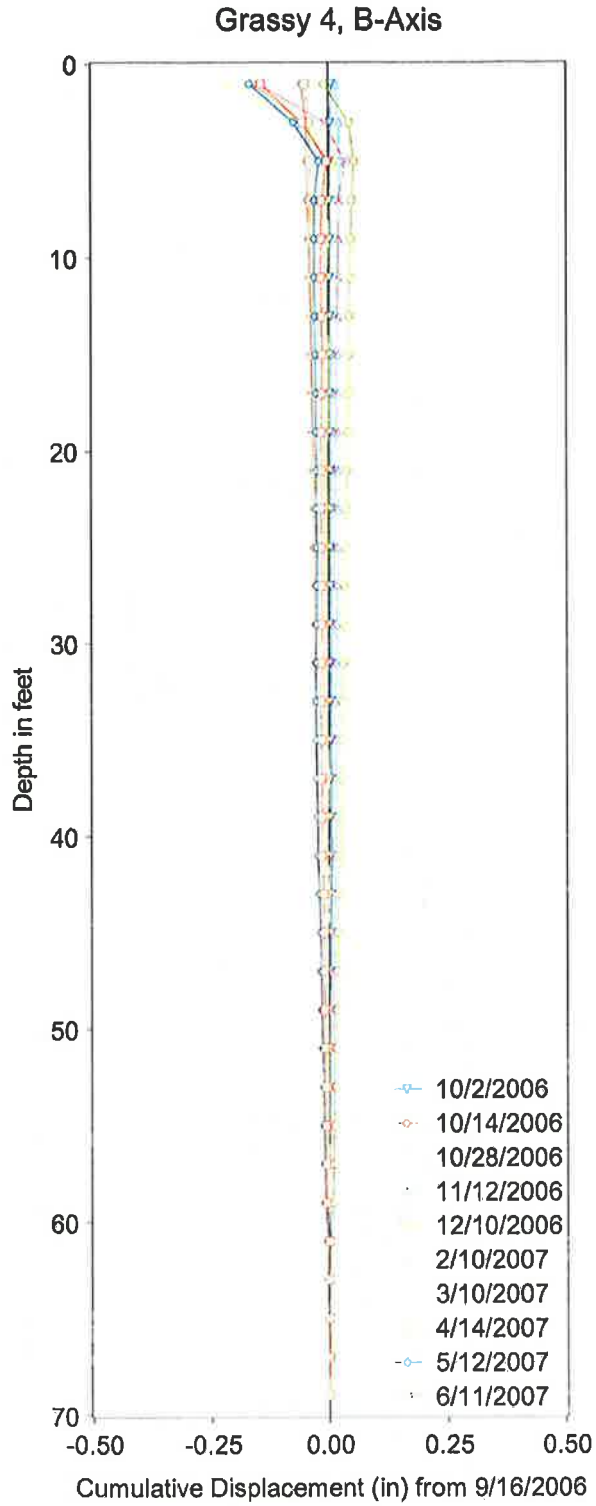




-30 degree skew


Grassy 4, A-Axis
59 - 63 feet
7 - 63 feet
0.50
0.25
0.00
-0.25
-0.50
Cumulative Displacement (in)
-47
44
135
226
317
408
499
590
681
772
863
Days since February 16, 2005


Grassy 4, A-Axis
Depth in feet
0
10
20
30
40
50
60
70
-0.50
-0.25
0.00
0.25
0.50
Cumulative Displacement (in) from 9/16/2006
10/2/2006
10/14/2006
10/28/2006
11/12/2006
12/10/2006
2/10/2007
3/10/2007
4/14/2007
5/12/2007
6/11/2007


Grassy 4, B-Axis
Depth in feet
0
10
20
30
40
50
60
70
-0.50
-0.25
0.00
0.25
0.50
Cumulative Displacement (in) from 9/16/2006
10/2/2006
10/14/2006
10/28/2006
11/12/2006
12/10/2006
2/10/2007
3/10/2007
4/14/2007
5/12/2007
6/11/2007

GRASSY TRAIL DAM PIEZOMETER & OBSERVATION WELL READINGS

TAKE READINGS AT RIM ELEV.			05-2		79-4	98-3		05-4		79-3	05-3A	05-3		06-1		98-2	98-4	98-6
			5+62		5+15	4+14		~4+14		3+63	2+77	2+71						
Dam Crest Elev		7600.0	PIEZ.	PIEZ.	O.W.	PIEZ.		PIEZ.		O.W.	PIEZ	PIEZ	PIEZ	PIEZ	PIEZ	PIEZ	PIEZ	PIEZ
Spillway Elev.		7592.5	8	9	1	2.0	3	13	14	4	10	11	12	15	16	5	6	7
Rim Elev. (ft)			7601.5		7601.8	7601.7		7558.9	7558.9	7601.7	7601.8	7601.7	7601.7	7601.50	7601.50	7528.8	7512.0	7519.5
Tip Elev. (ft		(actual)	7554.5	7535.1	7491.8	7525.4	7491.0	7521.0	7499.5	7491.7	7550.8	7572.0	7529.5	7566.00	7501.50	7501.5	7479.5	7493.0
Piezometer Location:			CREST	CREST	CREST	CREST	CREST	D.S. SLOPE	D.S. SLOPE	CREST	CREST	CREST	CREST	CREST	CREST	TOE	TOE	TOE
			EMBANK.	FOUND.	EMBANK/FOUND	EMBANK.	FOUND	EMBANK.	FOUND.	EMBANK/FOUND	EMBANK.	EMBANK.	FOUND	FOUND.	BEDROCK	FOUND.	FOUND.	FOUND
Date	Initials	Reservoir Elevation	45.75' (47')	65' (66.4')	110'	76.2' (76.3')	110.7'	36.5' (37.9')	58.8' (59.4')	110'	49.5' (51')	28.5' (29.7')	84.0' (72.2')	34.00 35.50	98.50 100.00	27.3'	32.5'	26.5'
6/1/06	LW	-25.5"	23.5	27.9	23.8	54.2	96.3	34.9	54.3		31.2	20.9	62.8			22.0	9.1	14.1
6/8/06	GK	-27.7"	23.7	27.4	24.4	54.1	96.4	34.7	54.4		31.0	20.7	62.8			22.1	9.4	13.3
6/15/06	LW	-15"	23.0	27.5	24.2	54.0	96.0	34.5	54.4		30.6	20.4	62.8			21.3	8.5	14.0
6/21/06	LW	-13"	23.1	27.7	24.3	54.2	96.0	35.2	54.0		30.7	20.5	62.8			21.2	8.9	13.9
6/29/06	LW	-13"	23.0	27.6	24.2	54.2	96.1	35.0	54.2		30.6	20.4	62.9			21.5	9.3	14.1
7/7/06	LW	-14"	22.8	27.4	22.9	54.2	96.0	35.3	54.1		30.4	20.2	62.9			21.5	9.2	14.0
7/13/06	LW	-12"	22.8	27.4	23.0	54.2	96.2	35.4	54.3		30.5	20.1	62.9			21.6	9.4	14.1
7/20/06	LW	-14"	23.0	27.4	23.3	54.2	96.2	35.5	54.3		30.5	20.1	62.9			21.8	9.6	14.2
7/27/06	LW	-16.75"	23.4	27.2	24.4	54.1	96.5	35.4	54.5		30.5	20	63			22.2	9.8	14.4
8/3/06	LW	-19.5"	23.8	27.3	26.9	54.1	96.7	35.5	54.7		30.5	20	63			22.4	9.9	14.5
8/11/06	GK	-21"	23.9	27.4	27.6	54.1	96.7	35.5	54.8		30.7	20.1	63.0			22.8	10	14.6
8/17/06	LW	-24"	23.8	27.5	25.6	54.1	96.9	35.5	54.8		30.8	20.1	63.0			22.8	10.2	14.8
8/24/06	LW	-28"	23.7	27.6	23.6	54.1	97.0	35.5	54.8		30.8	20.1	63.0			23.1	10.4	14.9
8/31/06	LW	-29"	23.8	27.6	24.6	54.0	97.2	35.4	55.2		30.9	20.2	63.1			23.5	10.5	14.9
9/7/06	LW	-34"	23.9	27.6	24	54.1	97.3	36.4	55.4		31.0	20.3	63.1			23.5	10.7	15.1
9/14/06	LW	-36"	23.8	27.7	23.8	54.1	97.4	36.4	55.3		30.9	20.1	63.1			23.7	10.9	15.2
9/21/06	LW	-43"	24.4	27.9	24.3	54.1	97.1	35.4	55.1		31.6	20.7	63.1			23.4	10.1	14.9
9/29/06	LW	-50"	24.5	27.9	24.4	54.1	97.2	35.4	55.2		31.6	20.7	63.1			23.6	10.1	15
10/5/06	GK	-55"	24.6	27.9	24.6	54.1	97.2	35.5	55.1		31.9	20.9	63.1			23.6	10.2	14.5
10/12/06	LW	-50"	24.6	27.9	24.4	53.9	96.8	35.4	55.1		31.8	21.0	63.2			23.5	9.9	14.4
10/20/06	LW	-59"	24.4	28.1	24.7	53.8	97.1	35.1	55.2		32.0	21.1	63.2			23.8	9.9	14.7
10/26/06	LW	-60"	25.1	28.1	25.1	53.8	97.3	na	na		32.1	21.2	63.3			24.1	10.1	15
11/2/06	LW	-76"	25.8	28.4	25.7	53.9	97.7	35.1	55.9		32.5	21.4	63.3			25.3	11.1	15.2
11/9/06	LW	-70	25.5	28.2	25.4	53.8	98.4	34.8	56.7		32.3	21.3	63.3			25.9	12.1	16
11/16/06	LW	-65	25.6	28.6	25.6	53.9	98.9	35.1	57.1		32.6	21.7	63.3			25	12.4	16.3
11/22/06	LW	-62	25.6	28.8	25.6	54.0	99.1	35.2	57.2		32.7	22.0	63.3			26.1	12.6	16.4
11/30/06	LW	-55	25.6	28.9	25.8	53.9	99.2	na	na		32.7	22.0	63.3	23.65	74.72	26	12.8	16.5
12/7/06	LW	-54	25.4	29.2	25.5	54.1	99.2	35.5	57.3		32.7	22.3	63.4	20.6	74.7	25.9	12.6	16.4
12/14/06	LW	-53	25.3	29.1	25.4	54.0	98.6	35.4	56.7	nm	32.5	22.1	63.4	20.5	74.3	25.2	11.3	15.9
12/21/06	LW	-71	25.8	28.9	25.8	53.8	98.2	35.3	56.2		32.9	22	63.4	21.1	74.7	25.1	10.8	15.6
12/28/06	LW	-72	25.8	28.7	25.8	53.6	98.2	35.2	56.2		32.9	21.9	63.4	21.4	74.9	25.5	11	15.8
1/4/07	LW	-73	26	28.9	26.3	53.8	98.4	35.6	56.5		33.4	22.2	63.4	21.6	75	25.9	11.2	16
1/11/07	LW	-76.5	26	28.8	26.6	53.8	98.5	35.6	56.6		33.6	22.2	63.5	21.7	75	26.3	11.2	16.1
1/18/07	LW	-76.5	26.6	29.5	27.3	54.0	98	35.5	57		34.5	22.4	63.5	21.8	75.3	26.3	11.7	16.3
1/25/07	LW	-76.5	26.5	29.5	27.4	54.2	98	35.6	57		34.5	22.8	63.5	21.8	75.2	26.3	11.6	16.3
2/1/07	LW	-76.5	26.6	29.4	27.4	53.7	99.1	35.6	57		35.1	22.8	63.5	21.9	75.3	26.3	12	16.4
2/8/07	LW	-77	26.5	29.7	27.7	54.0	99.2	35.6	57.4		35	23.2	63.6	21.9	75.3	26.3	12.1	16.5
2/15/07	LW	-78	26.7	29.8	27.8	53.9	99.3	35.7	57.4		35.1	23.3	63.6	21.9	75.3	26.3	12	16.5
2/22/07	LW	-76	26.5	29.8	27.6	53.9	99.3	35.6	57.4		35	23.3	63.6	21.7	75.3	26.3	12.1	16.5
3/1/07	LW	-71	26.3	29.6	26.9	53.8	99.8	35.6	57.4		35	23.3	63.6	21.5	75.3	26.3	12	16.5
3/8/07	LW	-66.5	26.2	29.9	27.1	54.0	99.9	35.5	58		35	23.4	63.6	21.2	75.2	26.3	12.5	16.9
3/15/07	LW	-59.5	25.8	30	26.1	54.1	99.6	35.7	57.8		34.9	23.4	63.6	20.7	74.7	26.3	13	16.8
3/23/07	LW	-49	25.4	29.8	26.4	54.0	99.1	35.6	57.2		34.5	23.2	63.4	20	74.4	25.4	12.4	16.4
3/30/07	LW	-34	24.9	29.8	27.4	54.0	99.2	35.6	57		34.1	23	63.2	20	74.2	25.3	12	16.1
4/5/07	CV	-28	24.65	29.7	27.6	54.1	97.65	35.7	55.6		33.8	22.8	63.7	18.6	73.8	22.4	11.3	15.6
4/12/07	CV	-8	23.6	29	26.9	54.3	96.3	35.3	54.3		32.9	22	63.7	18	73.1	20.7	9.5	14.6
4/19/07	CV	-5	23.6	29.3	26.9	54.4	96.2	35.6	54.3		33	22.7	63.7	18	73.1	21.3	9.3	14.6
5/3/07	CV	1	24	29.6	27	54.8	96.6	35.6	54.8		33.2	22.6	64.2	18.3	73.1	21.4	9.7	14.8
5/24/07	CV	2	24.4	28.6	39.5	54.2	95.5	35	55		33.4	23	64.5	18	72.5	21.0	9	14.8
6/14/07	CV	1	25	29	40.3	54.6	95.8	35.3	55.2		33	23.4	64.3	18.3	72.5	21.4	9.5	14.9

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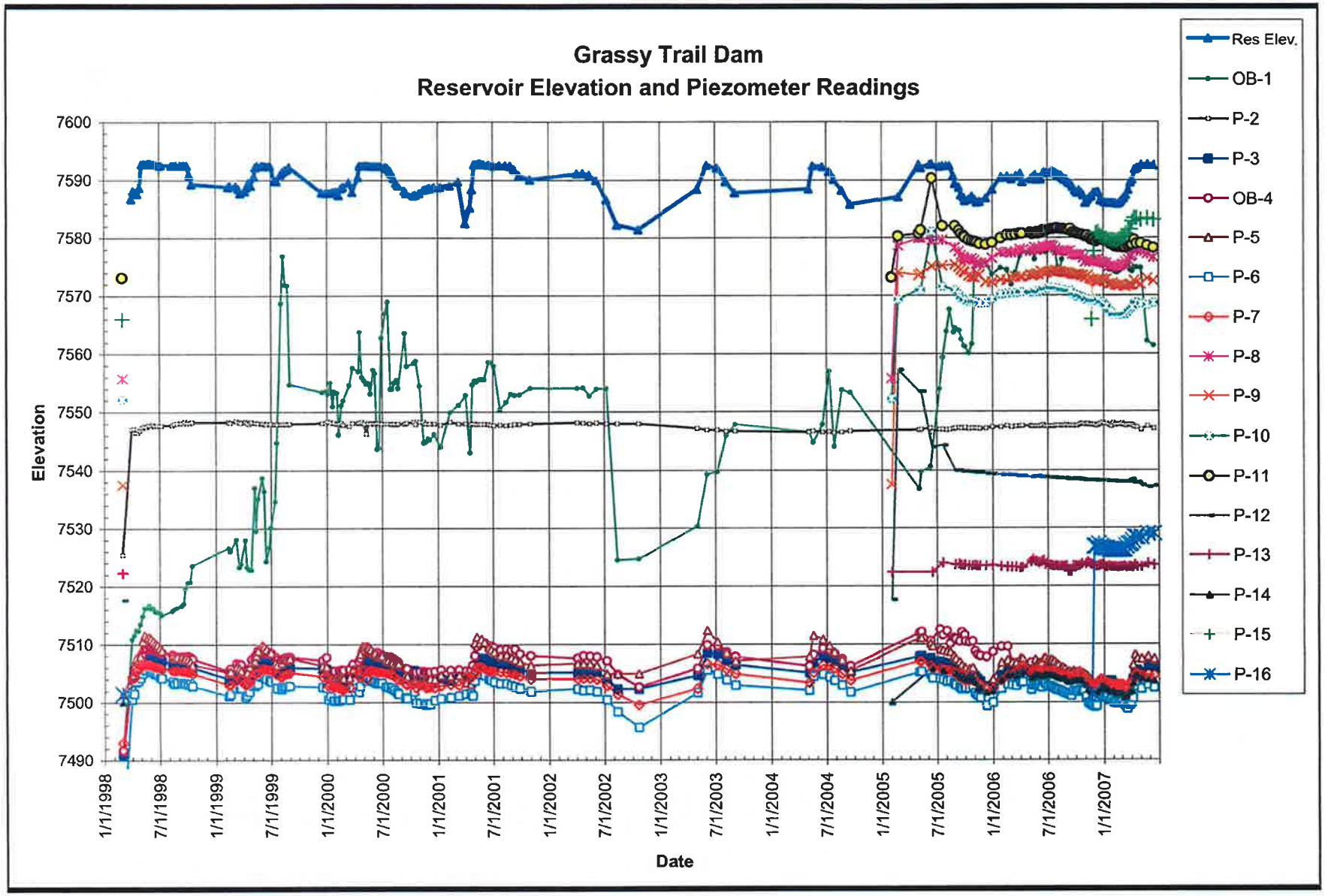
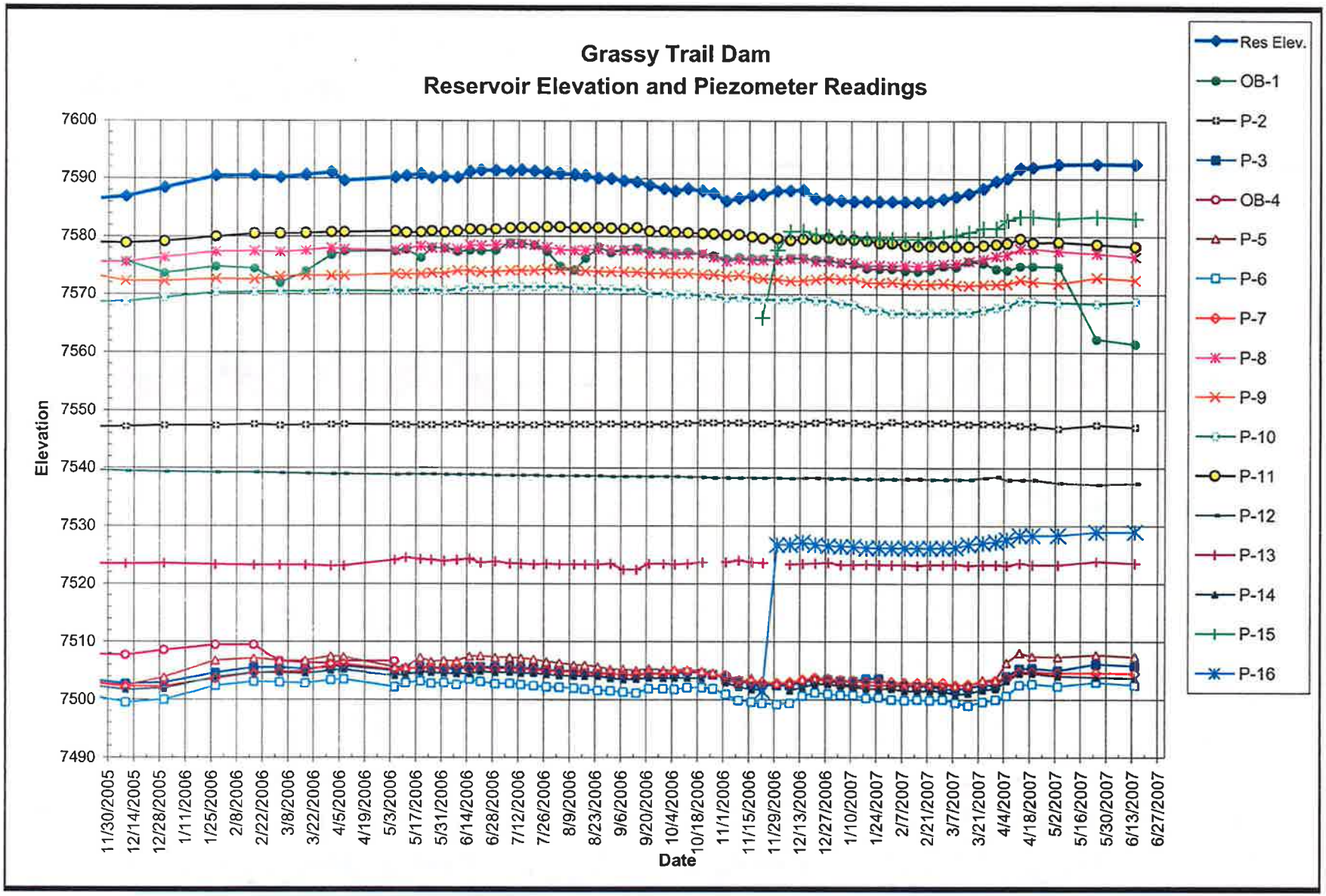


RB&G ENGINEERING INC.
Provo, Utah

Figure Reservoir Elevation and Piezometer Readings
March 1998 to June 14, 2007

Grassy Trail Dam and Reservoir



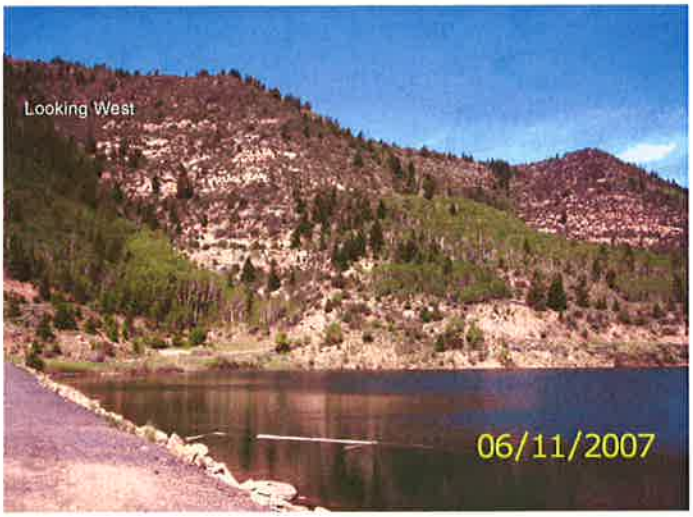
RB&G ENGINEERING INC.
Provo, Utah

Figure Reservoir Elevation and Piezometer Readings
November 2005 to June 14, 2007

Grassy Trail Dam and Reservoir

GRASSY TRAIL DAM SEEPAGE READINGS

Dam Crest Elev(ft)		7600.0									
Spillway Elev. (ft)		7592.5									
		Seep Location:	Seep 1: Toe Drain			Seep 2: Left Abutment (East Seep)		Seep 3: Right Abutment (West Seep)			
Date	Initials	Reservoir Elev.	Reservoir Characteristics	GAL/MIN	Water Characteristics	GAL/MIN	Water Characteristics	GAL/MIN	Water Characteristics	Weather Conditions	Temperature (F)
8/19/06	MNH	7590.4		dry		16.7	Clear	0.45	Clear	Sunny	82
8/25/06	MNH	7590.2		1.1	muddy storm run off	15.8	Clear	0.77	Clear	heavy rain/hail	52
9/1/06	MNH	7590.1		dry		15.0	Clear	0.44	Clear	Sunny	83
9/8/06	MNH	7589.6		dry		15.0	Clear	0.44	Clear	Rain	65
9/16/06	MNH	7589.5		dry		15.0	Clear	0.44	Clear	P Cldy trace snow	45
9/22/06	MNH	7588.9		wet, no flow	Clear	15.0	Clear	0.42	Clear	P Cldy to snowy	48 drop to 37
10/2/06	MNH	7587.9		dry		14.0	Clear	0.42	Clear	Overcast/PC	61
10/7/06	MNH	7588.1		5.5	Clear, Storm runoff	15.0	Clear	0.41	Clear	PC	47
10/14/06	MNH	7588.2		0.1	Clear, Storm runoff	13.6	Clear	0.39	Clear	Rain	50
10/22/06	MNH	7587.8	Trace ice	wet drip	Clear, runoff	13.2	Clear	0.36	Clear	clear	22 (8:00AM)
10/28/06	MNH	7586.9		dry		12.5	Clear	0.37	Clear	Sunny	56
11/4/06	MNH	7586.2		dry		11.5	Clear	0.38	Clear	PC trace snow	47
11/12/06	MNH	7586.9		dry		11.7	Clear	Ice		Sunny	31 to 35
11/17/06	MNH	7587.1		dry		11.6	Clear	0.26	Partially frozen	Sunny	45
11/27/06	MNH	7587.7	Trace ice	dry		12.5	Clear	Ice	frozen	Snow/windy	29
12/10/06	MNH	7588.0	Frozen	dry		12.8	Clear	Ice	frozen	Snow/windy	32
1/4/07	LW	7586.3	Frozen	dry		11.5	Clear	Ice	frozen		
1/11/07	LW	7586.1	Frozen	dry		10.7	Clear	Ice	frozen		
2/8/07	LW	7586.1	Frozen	dry		10.7	Clear	Ice	frozen		
3/8/07	LW	7587.0	Frozen	dry		10.7	Clear	Ice	frozen		
4/12&14/07	CV/MH	7591.8	open	0.83	clear	21.4	Clear	0.44	Clear		
5/12/07	MH	7592.6	open	0.83	clear	21.4	Clear	0.44	Clear	Sunny	70's
6/11/07	MH	7592.51	open	1.67	clear	20.0	Clear	0.44	Clear	windy	70's


Looking West
06/11/2007

Looking West
06/11/2007

Looking West
06/11/2007

Looking East
06/11/2007

Looking East
06/11/2007

Looking East
06/11/2007

West Abutment
06/11/2007

Down stream face
06/11/2007

East Abutment
06/11/2007

06/11/2007