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gk Incoming C/007/0041

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To: <Gregg_Hudson@blm.gov>, <James_Kohler@blm.gov>, <Jeff_McKenzie@blm.gov>,...
Date: 4/18/2008 10:13 AM
Subject: Grassy Trail Dam Monitoring Update 4/16/08
Attachments: GTSeis4_16_08.pdf

Attached is our seismic and inclinometer update for April 2008

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Grassy Trail Dam, Seismic Summary for April 16, 2008.

For the period between February 20, 2008 and, April 16, 2008 the UUSS has documented 41 events near the West Ridge Mine area with magnitudes ranging between 0.6 to 2.0 with an average of 1.35. These events are being reported from a distance of about 1 to 1.75 miles west of the dam. During this time one MIS event was recorded on both the Dam or Hillside instruments on April 15. While this event showed as a spike on the UUSS Seismogram, at this time it has not been document as an event by the UUSS. For this event the Hillside recorded a PPV of 1.08mm/s (0.043in/s) the Dam recoded 0.852mm/s (0.034in/s), while both recorded a PGA of 0.0256g.

Inclinometers I-2 showed just over 0.25 inches of movement toward the south (downstream) along the B axis in February. A reading on March 7 showed a slight back to the north movement. The current reading on April 16, 2008 continues to show a gradual back to the north movement. Inclinometer I-4 is still damaged and has been flooded with seepage from a nearby spring, and is currently below about 1.5 feet of water and silt. The hillside to the west of I-4 where the road was widened in the Fall of 2007 is showing significant signs of surficial movement as the slope adjusts and moves down into the widened road cut. Now that the snow is melting and there is access to the dam we would like East Carbon City to help repair the cover for I-4 and direct the spring water away from it so we can start reading it again. No evidence of deep seated ground movement was observed.

During this site visit no other signs of avalanches or landslide movement were seen on the hillsides above the reservoir or on the dam.

The ice in the reservoir was 10.5 feet below the top of the spillway (lowest reservoir elevation based on our records since October 2002 (-11.0 ft)). The toe drain was wet but not flowing and seepage from the left abutment was clear and flowing at 7.1 gpm. It should be noted that this is the lowest flow I have observed from the left abutment drain during the past few years. Also the hillside above the drain, which is typically wet, was dry during this visit. These changes are likely due to the low level of water in the reservoir.

Piezometer "P-14" is located on downstream slope with the tip in the Foundation at an elevation of ~4500 ft. Since January 2008 this Piezometer has been showing levels which are below the recorded tip elevation. The actual depth of P-14 should be rechecked on our next site visit.

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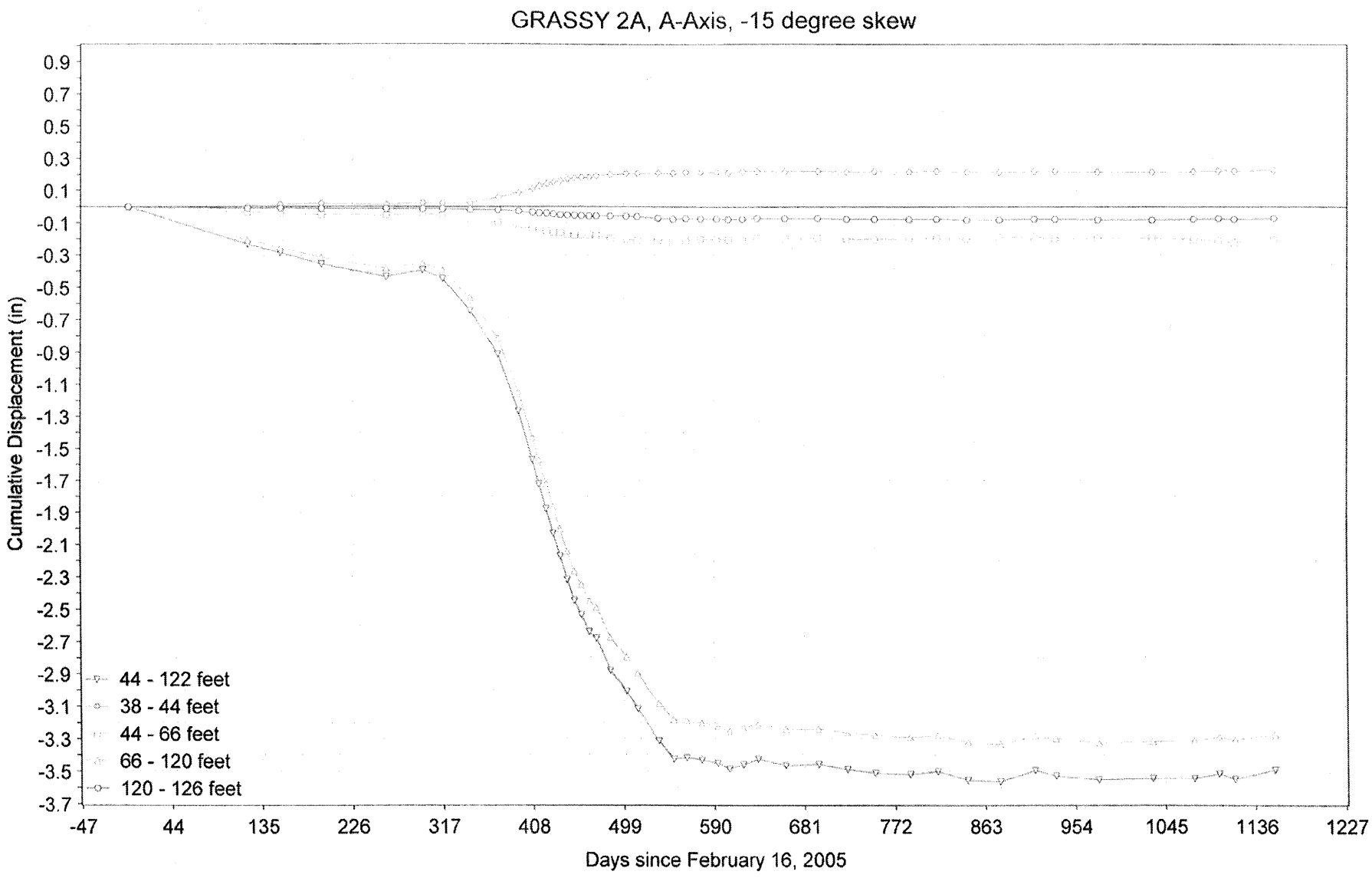
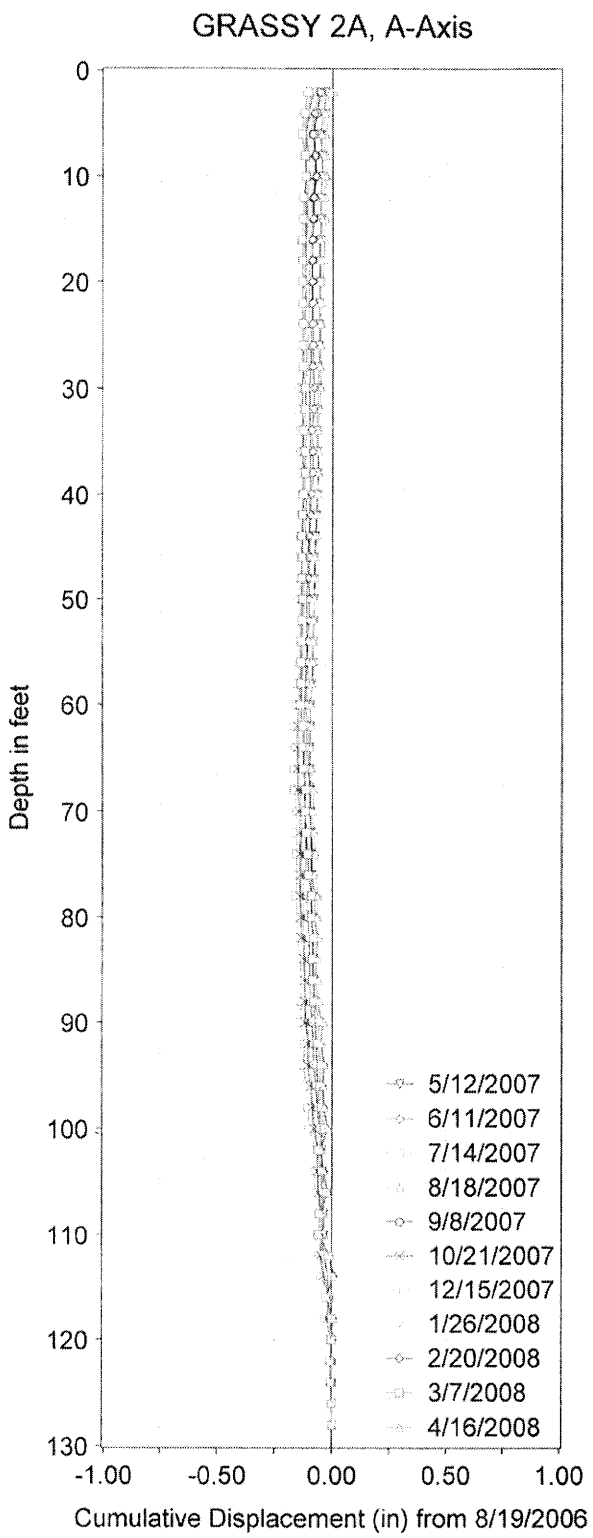
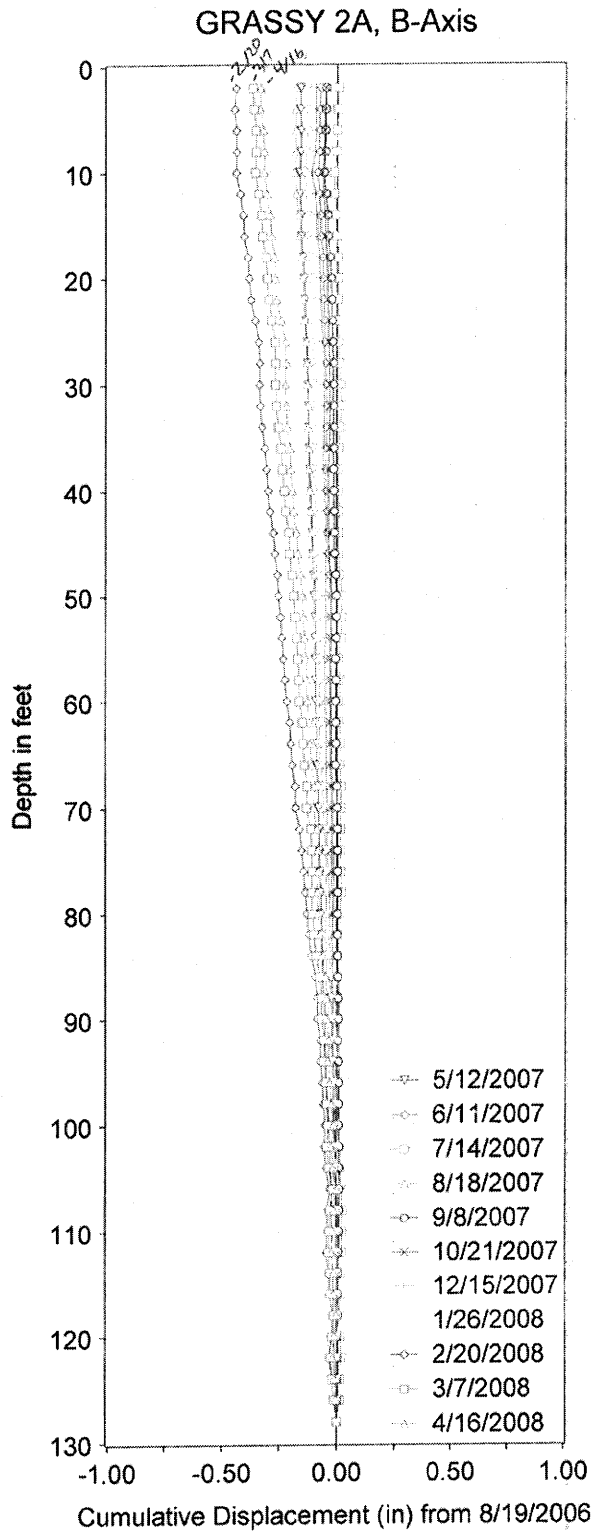
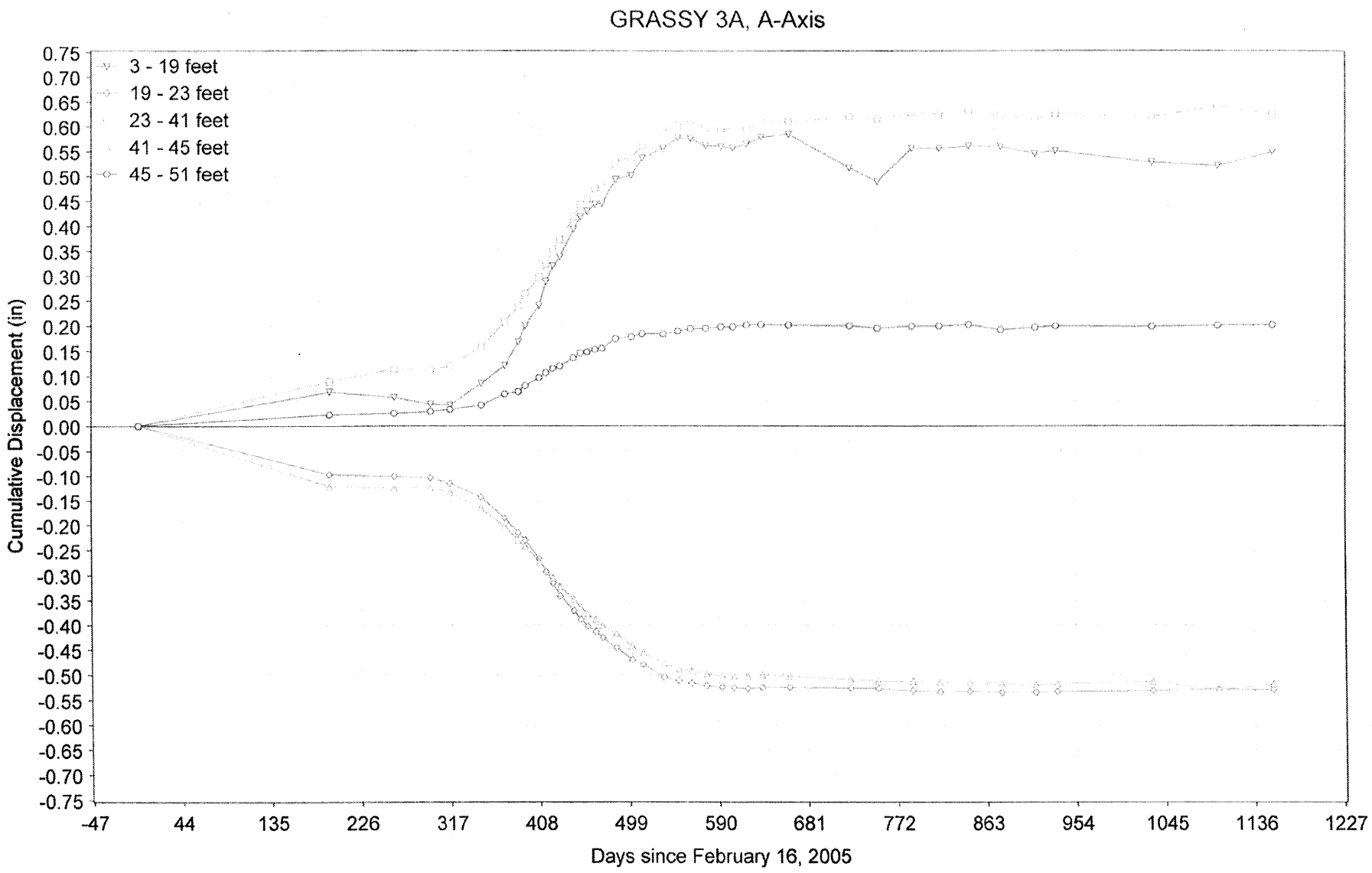


Inclinometer I-2 Located on Dam 4/17/08 with -15 degree skew

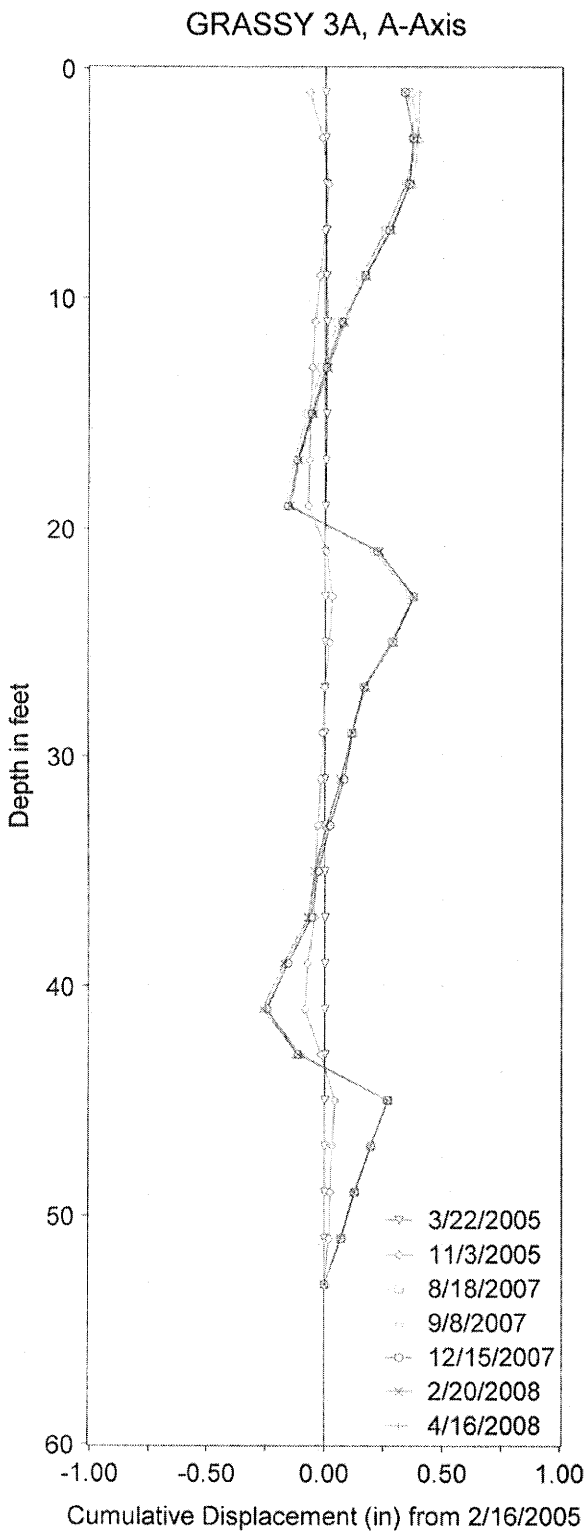


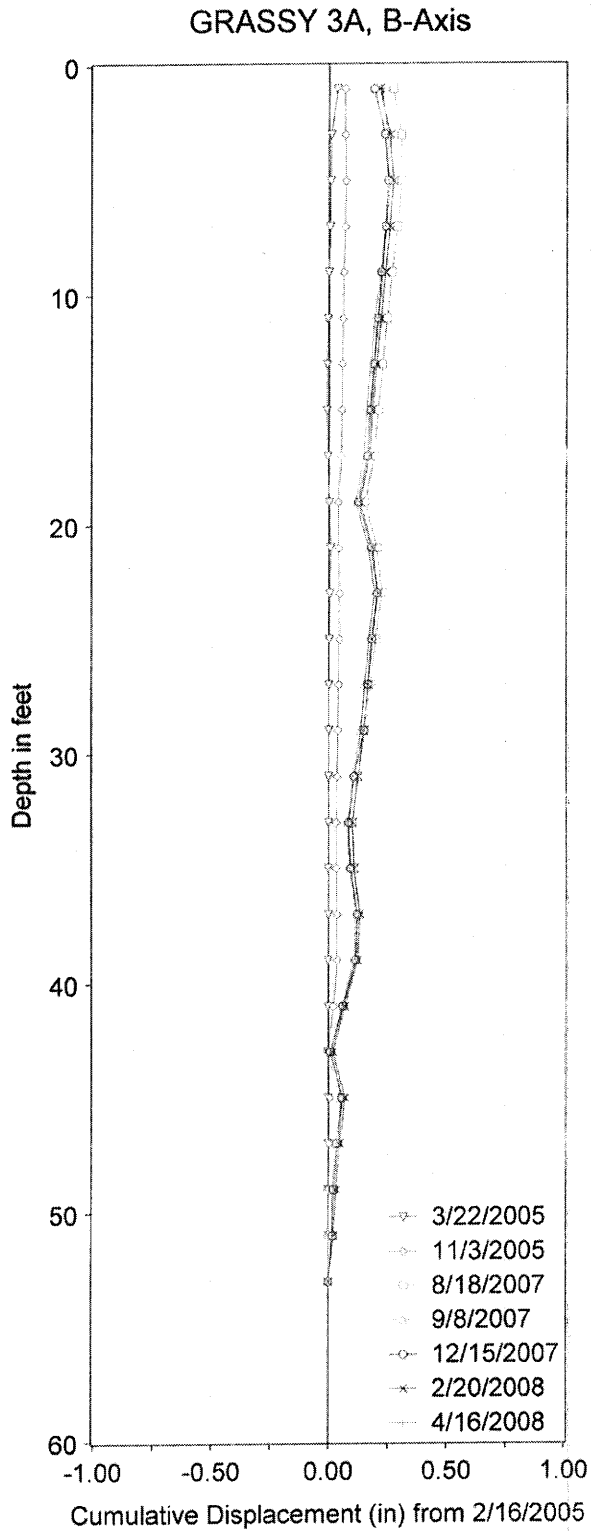


-15 dergree skew

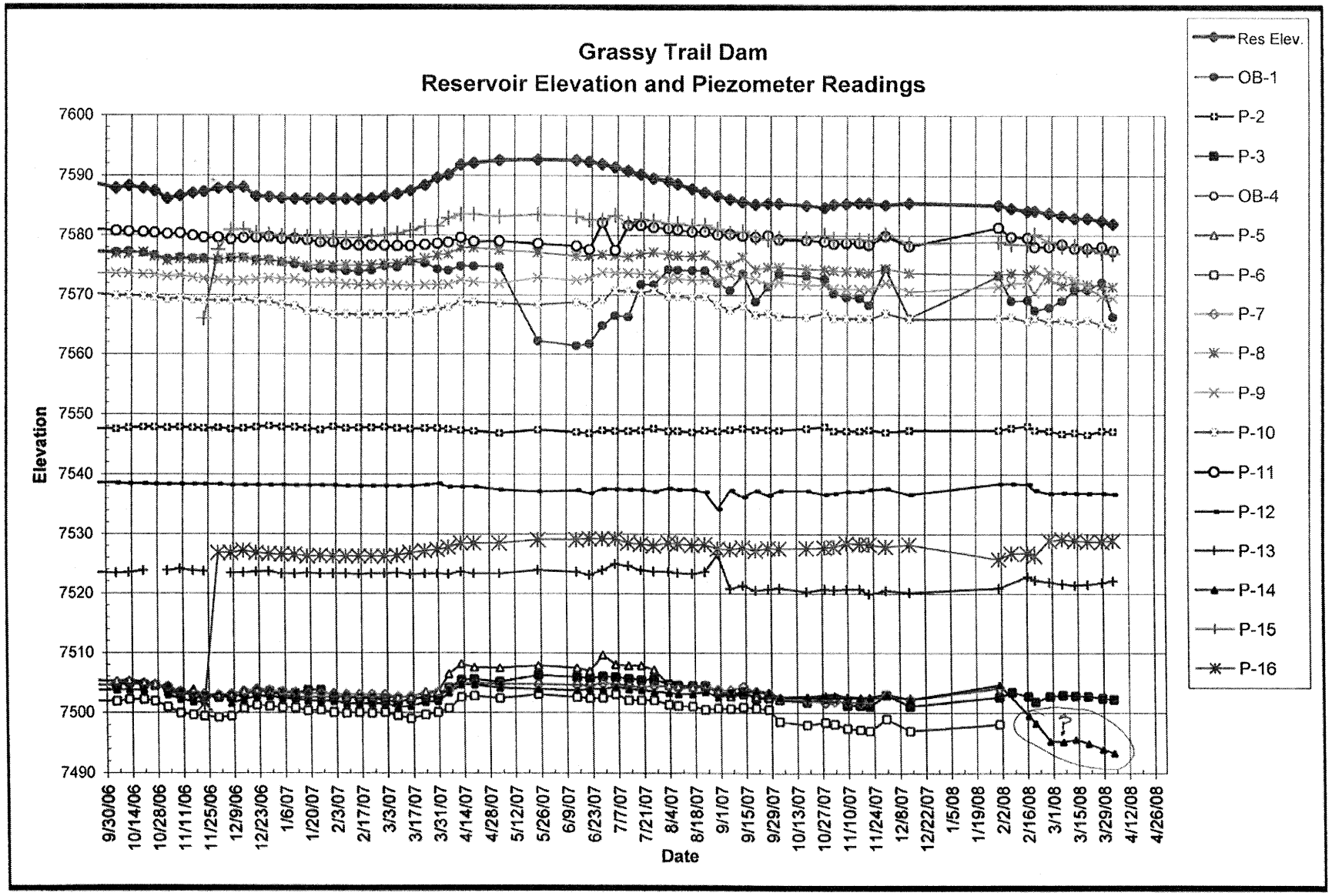

GRASSY 3A, A-Axis
3 - 19 feet
19 - 23 feet
23 - 41 feet
41 - 45 feet
45 - 51 feet
Cumulative Displacement (in)
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
-0.25
-0.30
-0.35
-0.40
-0.45
-0.50
-0.55
-0.60
-0.65
-0.70
-0.75
-47
44
135
226
317
408
499
590
681
772
863
954
1045
1136
1227
Days since February 16, 2005

I-3 4/16/08





-30 degree skew



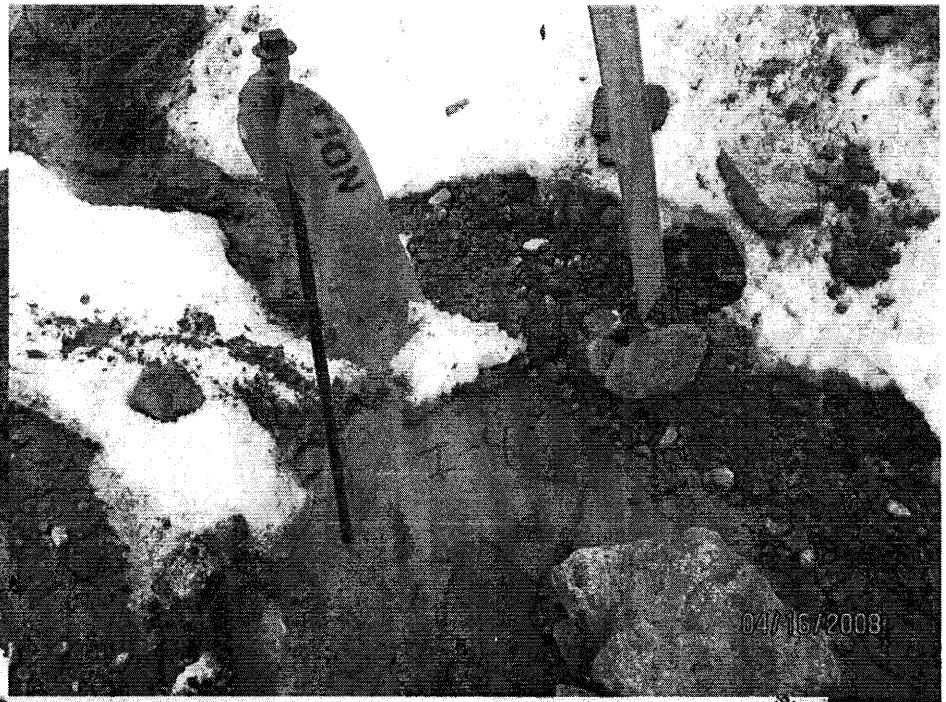
RB&G ENGINEERING INC.
Provo, Utah

Figure Reservoir Elevation and Piezometer Readings
September 30, 2006 to April 3, 2008

Grassy Trail Dam and Reservoir

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	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)		7564.5	7535.1	7491.8	7526.4	7491.0	7521.0	7499.5	7491.7	7550.8	7572.0	7529.6	7566.00	7501.50	7501.6	7479.5	7493.0
Piezometer Location:			CREST EMBANK.	CREST FOUND.	CREST EMBANK/FOUND	CREST EMBANK.	CREST FOUND.	D.S. SLOPE EMBANK.	D.S. SLOPE FOUND.	CREST EMBANK/FOUND	CREST EMBANK.	CREST EMBANK.	CREST FOUND.	CREST FOUND.	CREST BEDROCK	TOE FOUND.	TOE FOUND.	TOE FOUND.
Date	Initials	Reservoir Elevation	45.75' (47')	65' (66.4')	110'	76.2' (76.3')	110.7'	36.5' (37.9')	58.6' (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'
12/28/2006	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
1/4/2007	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
1/11/2007	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
1/18/2007	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
1/25/2007	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
2/1/2007	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
2/8/2007	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
2/15/2007	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
2/22/2007	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
3/1/2007	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
3/8/2007	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
3/15/2007	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
3/23/2007	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
3/30/2007	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
4/5/2007	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
4/12/2007	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
4/19/2007	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
5/3/2007	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
5/24/2007	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
6/14/2007	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
6/21/2007	CV	-2	25	28.7	40	54.8	96	35.8	55		33.5	24	64.8	18.9	72.3	21.9	9.7	15
6/28/2007	CV	-7	24.7	27.7	36.9	54.3	95.7	35	55		32.5	19.5	64.1	18.9	72.3	19.2	9.6	14.6
7/5/2007	CV	-13	24.9	27.8	35.2	54.4	95.8	34	54.6		31	24.1	64.1	18.1	72.3	20.8	9	14.8
7/12/2007	CV	-20	25.1	27.8	35.4	54.4	96.1	34.3	55		31.1	20	64.2	19.5	73	21.0	10	15
7/19/2007	CV	-27.5	24.6	27.9	29.9	54.3	96.3	35	55.1		31.3	20	64.2	18.8	73.2	21.0	10	15.3
7/26/2007	CV	-35.5	24.3	28	30	54.0	96.2	35.2	55.4		31	20.3	64.5	19	73.5	21.7	10	15
8/3/2007	CV	-40	24.8	28.9	27.4	54.4	97				32	20.5	64	19.5	73	24.3	10.7	15.1
8/8/2007	CV	-46.5	24.9	28.7	27.5	54.4	97.2	35.5	55.8		32	20.7	64.2	19.5	73.2	24.5	10.9	15.4
8/16/2007	CV	-56	25	29	27.6	54.6	97.3	35.6	55.8		32.2	21	64.2	19.8	73.4	24.6	11	15.3
8/23/2007	CV	-63	24.8	28.9	27.6	54.3	97.3	35.3	55.4		32	21	64.6	19.7	73.3	24.6	11.5	15
8/30/2007	CV	-69.5	26.4	29.1	29.7	54.4	98.3	32.3	56.3		33.4	21.5	67.4	20.4	74.0	25.3	11.3	15.7
9/6/2007	CV	-76.5	26.5	28.1	30.9	54.2	98.6	38.1	55.7		34.3	21.4	64.3	21.1	74.1	26.1	11.4	15.8
9/13/2007	CV	-82	25.1	28.4	28.1	54.0	98.3	37.6	55.5		33.6	21.7	65.4	20.8	73.8	25.7	11.1	15.2
9/20/2007	CV	-87	27.2	28.8	32.8	54.2	99.4	38.4	55.2		35.1	21.9	64.4	21.7	74.3	26.2	11.3	16
9/27/2007	CV	-85	26.8	29.8	30.3	54.2	99.3	38.2	55.6		34.9	21.6	65.1	22.1	73.9	26.4	11.5	16.3
10/3/2007	CV	-85	26.8	29.3	28.2	54.3	99.6	38	56.3		35.3	22.3	64.4	21.8	74.0	26.4	13.5	17.1
10/18/2007	CV	-89	27.1	29.8	28.5	54.0	100	38.6	56.2		35.5	22.4	64.4	21.9	73.9	26.4	14	17.4
10/28/2007	CV	-93	27.2	29.8	29	53.7	99.3	38.2	56		34.8	22.6	65	21.4	73.8	26.4	13.6	17.8
11/2/2007	CV	-87	27.4	30.4	31.4	54.4	99.3	38.3	56		35.7	23	64.8	22.0	73.7	26.4	13.9	17.6
11/9/2007	CV	-85.5	27.5	30.5	32.1	54.4	100.5	38.2	56.2		35.7	22.9	64.5	22.0	73.1	26.4	14.6	17.7
11/16/2007	D?	-84	27.6	30.5	32.2	54.4	100.5	38.2	56.4		35.7	22.9	64.5	22.1	73.2	26.4	14.8	17.8
11/21/2007	CV	-84	27.8	30.6	33.4	54.2	100.6	39	56.3		35.8	23.2	64.2	22.3	73.3	26.4	15	17.3
11/30/2007	CV	-88	27	29.4	27.3	54.6	98.8	38.4	55.8		34.8	21.7	64	21.3	73.7		13	16.5
12/13/2007	CV	-84	27.8	30.9	35.6	54.3	100.6	38.7	56.7		35.8	23.4	65	22.7	73.3	26.4	15	17.3
1/31/2008	CV	-89	28.1	30.1	28.5	54.3	99.1	38	54.3		35.7	20.3	63.2	22.5	75.8		13.9	15.4
2/7/2008	CV	-95	27.9	29.6	32.7	53.9	98.3	36.4	59.3		35.5	21.9	63.2	22.9	74.8			
2/16/2008	CV	-100	28	29.4	32.6	53.6	99	36.1	59.3		36.2	22	63.3	23.0	74.8			
2/20/2008	CV	-100	27.2	31.1	34.3	54.3	99.9	36.7	60.5		35.6	23.5	64.3	21.3	75.2			
2/28/2008	CV	-105	28.8	27.6	33.8	54.4	99	37	63.5		36.3	23.5	64.8	22.5	72.6			
3/6/2008	CV	-110	29.9	28.1	32.7	54.9	98.8	37.3	63.6		36	23.1	64.7	23.2	72.4			
3/13/2008	CV	-115	29.5	28.8	30.9	54.7	98.9	37.5	63.2		36.5	23.8	64.8	23.2	72.6			
3/20/2008	CV	-115	29.7	30.2	30.8	55.0	99	37.4	63.8		36	23.8	64.8	23.8	72.8			
3/28/2008	CV	-120	29.9	31.7	29.6	54.4	99.3	37.1	64.9		36.8	23.5	64.8	24.3	72.8			
4/3/2008	CV	-126	30.1	32	35.4	54.5	99.5	36.8	65.5		37.3	24.2	64.9	24.5	72.6			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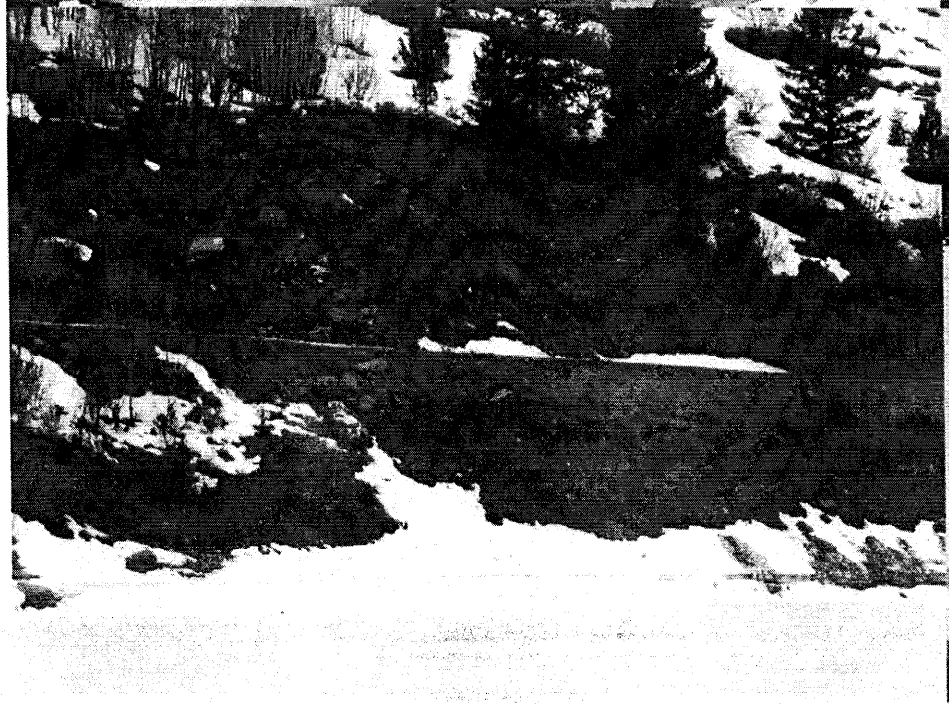

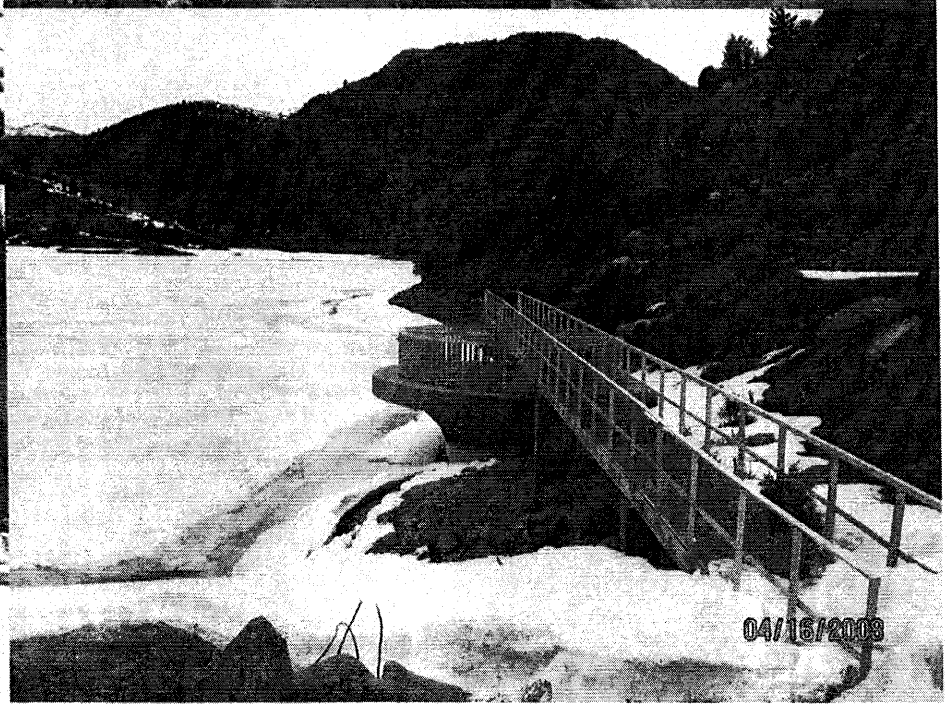
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