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CYPRUS PLATEAU MINING CORPORATION
A Cyprus Amax Company

Cyprus Plateau Mining Corporation
Post Office Drawer PMC
Price, Utah 84501
(801) 637-2875

October 17, 1997

ACT/007/006
#3

Ms. Sharon Falvey
Division Hydrologist
Division of Oil, Gas and Mining
1594 West North Temple, Ste 1210
Box 145801
Salt Lake City, Utah 84114-5801

Copy Mary Ann, Ken, Sharon & Dave

Re: Water Monitoring Data Review, Birch Springs, Star Point Mine, Cyprus Plateau Mining Corporation, ACT/007/006, Folder #3, Carbon County, Utah

Dear Ms. Falvey:

Pursuant to the Division's September 25, 1997, letter regarding the aforementioned, I met with Mr. Jack Stoyanoff of the North Emery Water Users on October 6, 1997. We met at the Birch Spring at which time he informed and showed me their method of sampling. His methodology and mine are very similar, with the only two possible exceptions being that I may not have waited long enough for the enclosed water accumulation box to level out whereby the inflow and outflow are equalized, and that I take two to three separate flow measurements instead of five. Mr. Stoyanoff will usually take five-5 gallon readings using a stop watch, where I use my wrist watch, so that he can get an average of the five readings and then compare with North Emery's flow meter located across the highway.

To avoid future discrepancies, I will use North Emery's flow data for my reporting requirements, but will continue to measure flow along with my other field measurements for comparison purposes. The likelihood of North Emery and Cyprus Plateau Mining Corporation (CPMC) taking flow measurements on the same day is very slim, but at least the measurements should be close enough to confirm the flow and trend.

I have enclosed a copy of Figure AA-1A showing the Birch Spring Historic Flow along with the monitoring data. It should be noted that CPMC did not start monitoring Birch Spring until 1993, as presented in CPMC's 1993 Annual Hydrology Monitoring Report, and that all data prior to 1993 was obtained by Mr. Ben Grimes (CPMC's Sr. Staff Project Engineer) from the North Emery Water Users when he was president of the water users.

The flow plot for Birch Spring shows a similar trend to that of the Tie Fork wells (Figure 26-A and Tie Fork Well Flow Chart) through June of 1992. The flows were fairly constant prior to August of 1988, on the order of 85 gpm. In August of 1988, following the earthquake, the flow in the spring increased significantly. Since the increase in flows in August of 1988, the flows in Birch Spring has generally declined, with one fairly significant exception that occurred in October 1989, wherein the flow was nearly triple that of pre-1988 levels for a short four-month period.

The Tie Fork Well Flow Chart and Figure 26-A show the flow pattern prior to mining, during and following the earthquake, during mining beneath Gentry Ridge, and post mining of the Gentry Ridge. Shortly after mining ceased under Gentry Ridge, flows increased and continue to increase at the Tie Fork Well.

As addressed in Star Point's Probable Hydrologic Consequences Determination (PHC) section of its Mining and Reclamation Plan, culinary water supplies potentially located within the flow path of ground waters which could even remotely be potentially impacted by CPMC operations include the Tie Fork Wells. Potential impacts to Birch and Bear Canyon springs are believed to be negligible to nonexistent. A review of geological structure tends to indicate that the Tie Fork wells are located along the eastern boundary fault of the Pleasant Valley Graben, while Birch and Bear Canyon springs are located in general orientation with the western and eastern boundary of the Bear Canyon Graben.

It is believed that the general hydrologic flow paths feeding these water supplies (especially Tie Fork) is fault related and my be from the north through the CPMC permit area. Some of the water is believed to originate from Nuck Woodward Canyon, move southward through the eastern boundary fault of the Pleasant Valley Graben and enter the area of Tie Fork wells. It may also be possible for water to enter the fault in Nuck Woodward Canyon, move southward along the eastern boundary fault of Pleasant Valley Graben, south southeastward across Gentry Ridge toward the western boundary fault of the Bear Canyon Graben, then southward towards Birch and Bear Canyon springs. The complexity and additional length of the later flow path greatly reduces the potential for impact on both Birch and Bear Canyon springs by mining.

Water emanating from Birch and Bear Canyon springs may be from multiple sources including both shallow and deep waters. Deep water following a southerly flow path down adjacent faulting systems would typically change little by the reduction in head at the Star Point Mine. Since water emanates from the spring it can be defined as a discharge control point for water flow within the hydrogeologic system. A reduction in head at the mine would result in a reduction in the slope of the ground water piezometric surface which would pivot around the discharge point. Under these conditions and fault flow, the reduction in head at the Star Point Mine would likely

produce little change in flow at Birch or Bear Canyon springs for that portion of flow which is fault related.

If the springs are in connection with the western boundary fault of the Bear Canyon Graben, the potential for water quality and quantity impacts due to mining conducted beneath Gentry Ridge would be much less (if any at all) than that for the Tie Fork Wells.

Minimal to no impact is anticipated to be found at either of the Birch and Bear Canyon Springs due to mining by CPMC because: 1) the distance between projected mining and the springs is six miles; 2) a reduced water table in the vicinity of the mine will result in only a minimal overall decrease in hydraulic gradient and therefore in total flow to the springs in question; 3) the western boundary fault of the Bear Canyon Graben is a discharging fault and therefore does not naturally receive large volumes of water through the rock structure which will be disturbed by mining; and 4) minimal impacts which could potentially occur would likely be masked by mining impacts which may have historically or may in the future occur from other mine workings found immediately adjacent to the springs. There exists a much higher probability of mining impacts to these springs by local mine disturbance than from regional mine disturbance.

One other potential impact to Birch Spring, non-mining related, is the obstruction of its collection system either by silt or vegetation.

I hope that the information provided within this response adequately addresses the Division's concerns. For additional information regarding Birch Spring, you may want to review the transcripts from the informal conference for Co-op Mining Company's five-year permit renewal of its Bear Canyon Mine, and the Division's subsequent findings.

Sincerely,

Johnny Pappas
Sr. Environmental Engineer

Enclosures

cc: J. Stoyanoff - N. Emery Water Users (w/enclosures)

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Figure AA-1A
Birch Spring Historic Flow

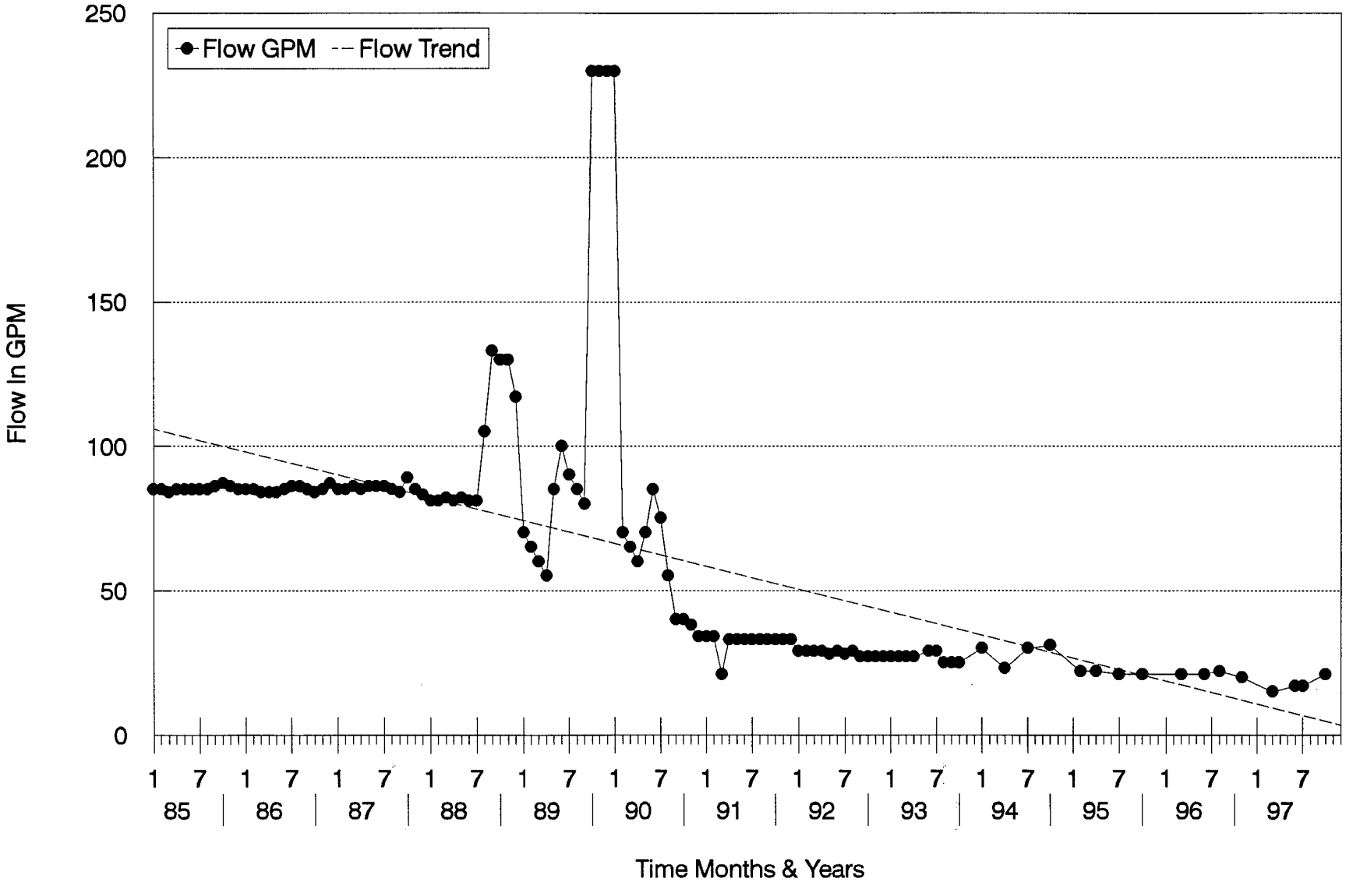


Figure AA-1A
Birch Spring Historic Flow

Date	Flow	Flow Trend
1/85	85	85
2/85	85	85
3/85	84	84
4/85	85	85
5/85	85	85
6/85	85	85
7/85	85	85
8/85	85	85
9/85	86	86
10/85	87	87
11/85	86	86
12/85	85	85
1/86	85	85
2/86	85	85
3/86	84	84
4/86	84	84
5/86	84	84
6/86	85	85
7/86	86	86
8/86	86	86
9/86	85	85
10/86	84	84
11/86	85	85
12/86	87	87
1/87	85	85
2/87	85	85
3/87	86	86
4/87	85	85
5/87	86	86
6/87	86	86
7/87	86	86
8/87	85	85
9/87	84	84
10/87	89	89
11/87	85	85
12/87	83	83
1/88	81	81
2/88	81	81
3/88	82	82
4/88	81	81
5/88	82	82
6/88	81	81
7/88	81	81
8/88	105	105
9/88	133	133
10/88	130	130

11/88	130	130
12/88	117	117
1/89	70	70
2/89	65	65
3/89	60	60
4/89	55	55
5/89	85	85
6/89	100	100
7/89	90	90
8/89	85	85
9/89	80	80
10/89	230	230
11/89	230	230
12/89	230	230
1/90	230	230
2/90	70	70
3/90	65	65
4/90	60	60
5/90	70	70
6/90	85	85
7/90	75	75
8/90	55	55
9/90	40	40
10/90	40	40
11/90	38	38
12/90	34	34
1/91	34	34
2/91	34	34
3/91	21	21
4/91	33	33
5/91	33	33
6/91	33	33
7/91	33	33
8/91	33	33
9/91	33	33
10/91	33	33
11/91	33	33
12/91	33	33
1/92	29	29
2/92	29	29
3/92	29	29
4/92	29	29
5/92	28	28
6/92	29	29
7/92	28	28
8/92	29	29
9/92	27	27
10/92	27	27
11/92	27	27
12/92	27	27
1/93	27	27

2/93	27	27
3/93	27	27
4/93	27	27
5/93		
6/93	29	29
7/93	29	29
8/93	25	25
9/93	25	25
10/93	25	25
11/93		
12/93		
1/94	30	30
2/94		
3/94		
4/94	23	23
5/94		
6/94		
7/94	30	30
8/94		
9/94		
10/94	31	31
11/94		
12/94		
1/95		
2/95	22	22
3/95		
4/95	22	22
5/95		
6/95		
7/95	21	21
8/95		
9/95		
10/95	21	21
11/95		
12/95		
1/96		
2/96		
3/96	21	21
4/96		
5/96		
6/96	21	21
7/96		
8/96	22	22
9/96		
10/96		
11/96	20	20
12/96		
1/97		
2/97		
3/97	15	15
4/97		

5/97		
6/97	17	17
7/97	17	17
8/97		
9/97		
10/97	21	21
11/97		
12/97		

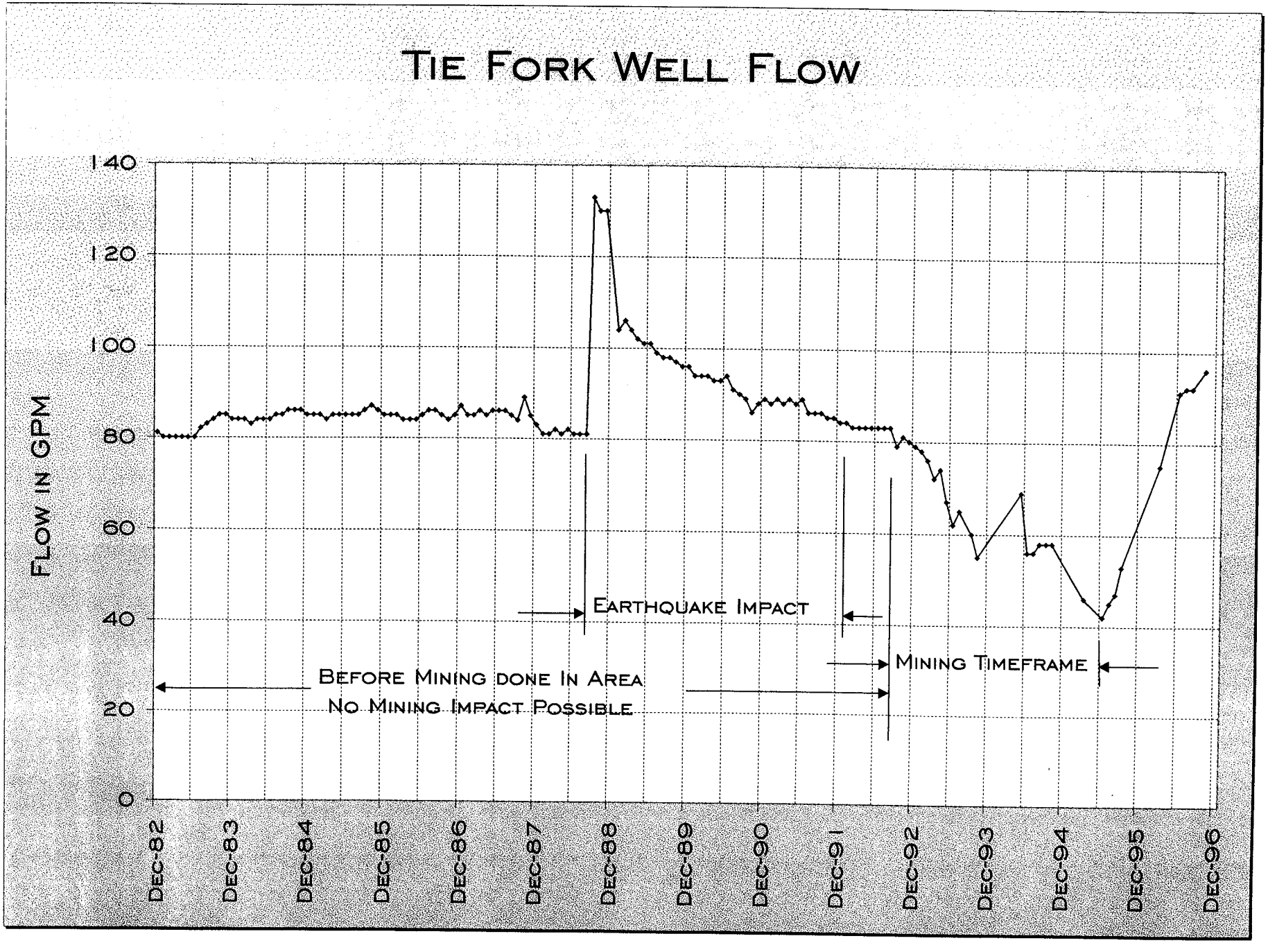
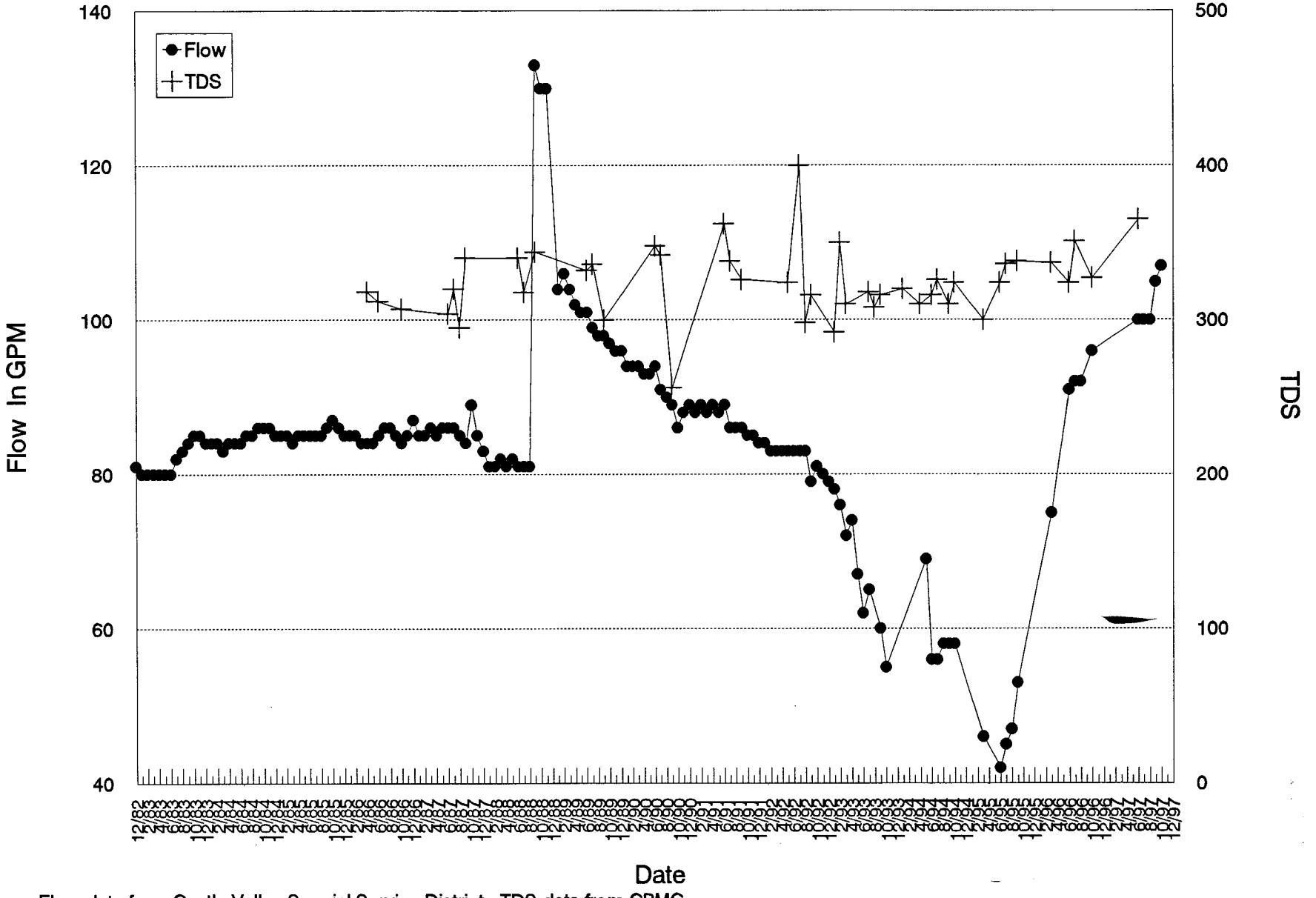

Tie Fork Well Flow
Flow in GPM
140
120
100
80
60
40
20
0
Dec-82
Dec-83
Dec-84
Dec-85
Dec-86
Dec-87
Dec-88
Dec-89
Dec-90
Dec-91
Dec-92
Dec-93
Dec-94
Dec-95
Dec-96
Earthquake Impact
Mining Timeframe
Before Mining done In Area
No Mining Impact Possible

Figure 26-A
86-35-2-3 Historic Flow



Flow data from Castle Valley Special Service District - TDS data from CPMC
Flows from October 93 thru April 94 not used - meter installed wrong.