



**LEGEND**

Mine Structure (1953)

Tailings/Waste Rock (Pre Cardero)

Waste Rock (DMEA/ Cardero)

Surface Water Sample Location



**2010 SURFACE WATER SAMPLING LOCATIONS**

MT. DIABLO MERCURY MINE  
CONTRA COSTA COUNTY, CALIFORNIA  
(2004 AERIAL)

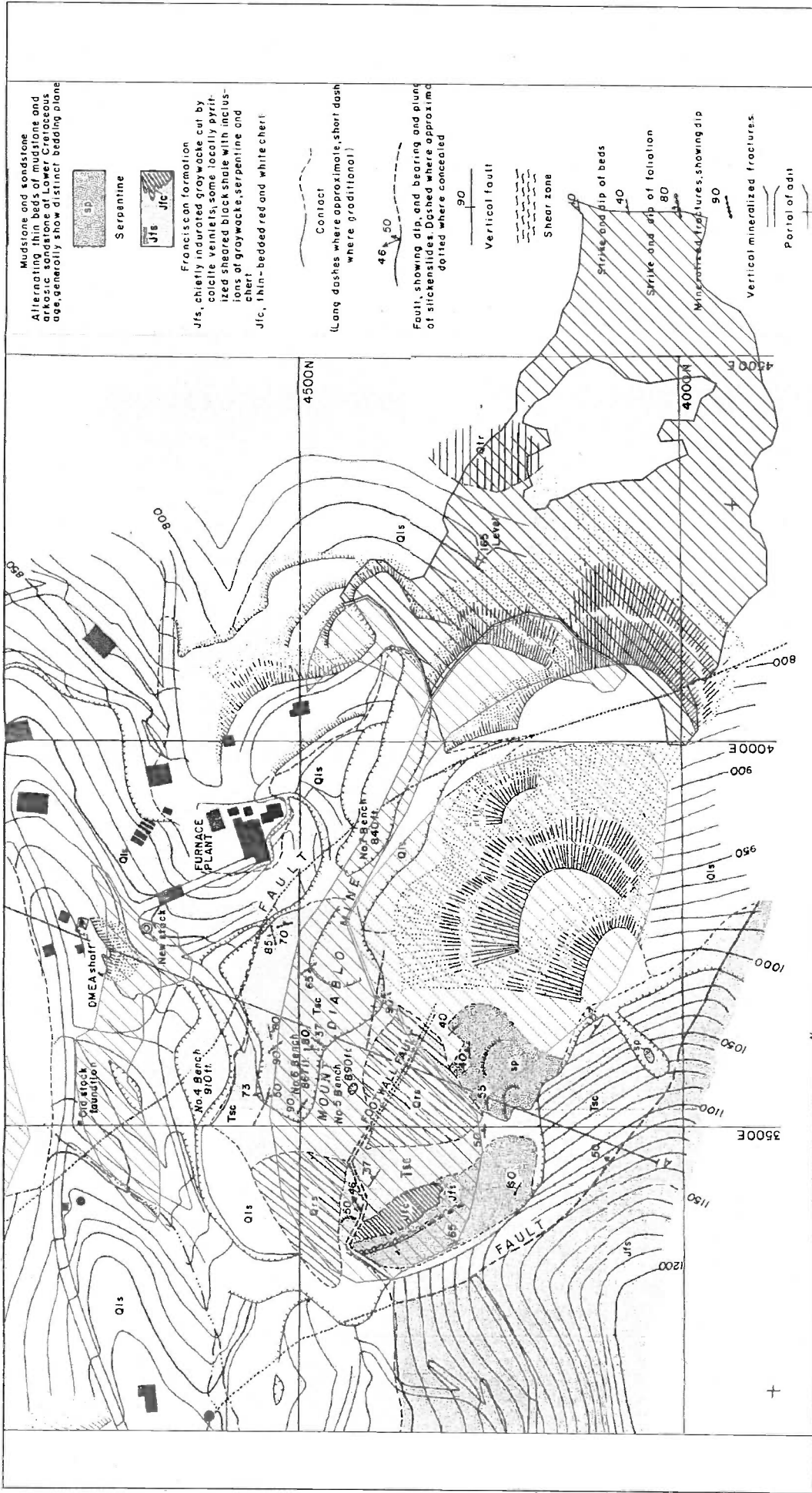
PROJECT NO.	DATE	DRAWN BY:	APP. BY:
01-SUN-060	5/19/10	JP	PH

**SGI**  
SOURCE GROUP, INC.  
3451-C VINCENT ROAD  
PLEASANT HILL, CA 94523

**FIGURE 3-1**



<p><b>LEGEND</b></p> <ul style="list-style-type: none"> <li> Bradley Tailings Piles</li> <li> Capped Areas</li> <li> Calcine Tailings Piles</li> <li> Waste/Quarry Rock</li> <li> Ponds</li> </ul>	<p><b>THE SOURCE GROUP, INC.</b>          3451C VINCENT ROAD          PLEASANT HILL, CA 94523</p>	<p>SCALE</p> <p>0 150 300          SCALE IN FEET</p> <p>FILE NAME          Mine Features Map.dwg</p>	<p>DATE 4/14/09</p> <p>DR. BY JP</p> <p>APP. BY PH</p>	<p>PROJECT NO. 01-SUN-050</p> <p>FIGURE NO. 4-1</p>
<p>MAPPED MINE WASTE MATERIALS</p>		<p>MT. DIABLO MERCURY MINE          CONTRA COSTA COUNTY, CALIFORNIA          (2004 AERIAL)</p>		



Mudstone and sandstone  
Alternating thin beds of mudstone and sandstone, generally show distinct bedding plane



Serpentine



Jfs

Franciscan formation  
Jfs, chiefly indurated graywacke cut by calcite veins, some locally pyritized sheared black shale with inclusions of graywacke, serpentine and chert  
Jfc, thin-bedded red and white chert

Contact  
(Long dashes where approximate, short dash where gradational)

Fault, showing dip, and bearing and plunge of slickensides. Dashed where approximately dotted where concealed

Vertical fault

Shear zone

Strike and dip of beds

Strike and dip of foliation

Mineralized fractures, showing dip

Vertical mineralized fractures

Portal of adit

LEGEND

- Bradley Tailings Piles
- Capped Areas
- Calcine Tailings Piles
- Waste/Quarry Rock
- Ponds



3451C VINCENT ROAD  
PLEASANT HILL, CA 94523

SCALE



0 125 250  
SCALE IN FEET

FILE NAME

Mine Features Map.dwg

DATE

4/14/09

DR. BY

JP

APP. BY

PH

PROJECT NO.

01-SUN-050





FIGURE NO.

4-2

MAPPED MINE WASTE WITH USGS  
FEATURES OVERLAY

MT. DIABLO MERCURY MINE  
CONTRA COSTA COUNTY, CALIFORNIA  
(1952 AERIAL)



<p><b>LEGEND</b></p> <ul style="list-style-type: none"> <li> Mine Structure</li> <li> Spring</li> <li> Pond (2004 Configuration)</li> <li> Surface Flow</li> </ul>	<p><b>THE SOURCE GROUP, INC.</b>  <small>environmental</small>      3451C VINCENT ROAD      PLEASANT HILL, CA 94523</p>	<p>SCALE</p> <p>0 200 400      SCALE IN FEET</p>	<p>FILE NAME      Mine Features Map.dwg</p>	<p>DATE 5/3/09 DR. BY JP APP. BY PH</p>	<p>PROJECT NO. 01-SUN-050</p>	<p>FIGURE NO. 4-3</p>
<p><b>SITE DRAINAGE AND SURFACE FLOW INTERPRETATION</b></p>	<p>MT. DIABLO MERCURY MINE          CONTRA COSTA COUNTY, CALIFORNIA          (2004 AERIAL)</p>					

**LEGEND**

Mine Structure (1953)

Tailings/Waste Rock (Pre Cardero)

Waste Rock (DMEC/ Cardero)

Surface Water Sample Location

Hg Mercury

<0.20 Analyte not detected at or above the laboratory reporting limit of 0.20 µg/L

**NOTE**

All concentrations reported in micrograms per liter (µg/L)

**2010 SURFACE WATER SAMPLING RESULTS, MERCURY AND pH**

MT. DIABLO MERCURY MINE  
CONTRA COSTA COUNTY, CALIFORNIA  
(2004 AERIAL)

PROJECT NO.	DATE	DRAWN BY:	APP. BY:
01-SUN-050	5/19/10	JP	PH

**SGI THE SOURCE GROUP, INC.**  
ENVIRONMENTAL  
3451-C VINCENT ROAD  
PLEASANT HILL, CA 94523

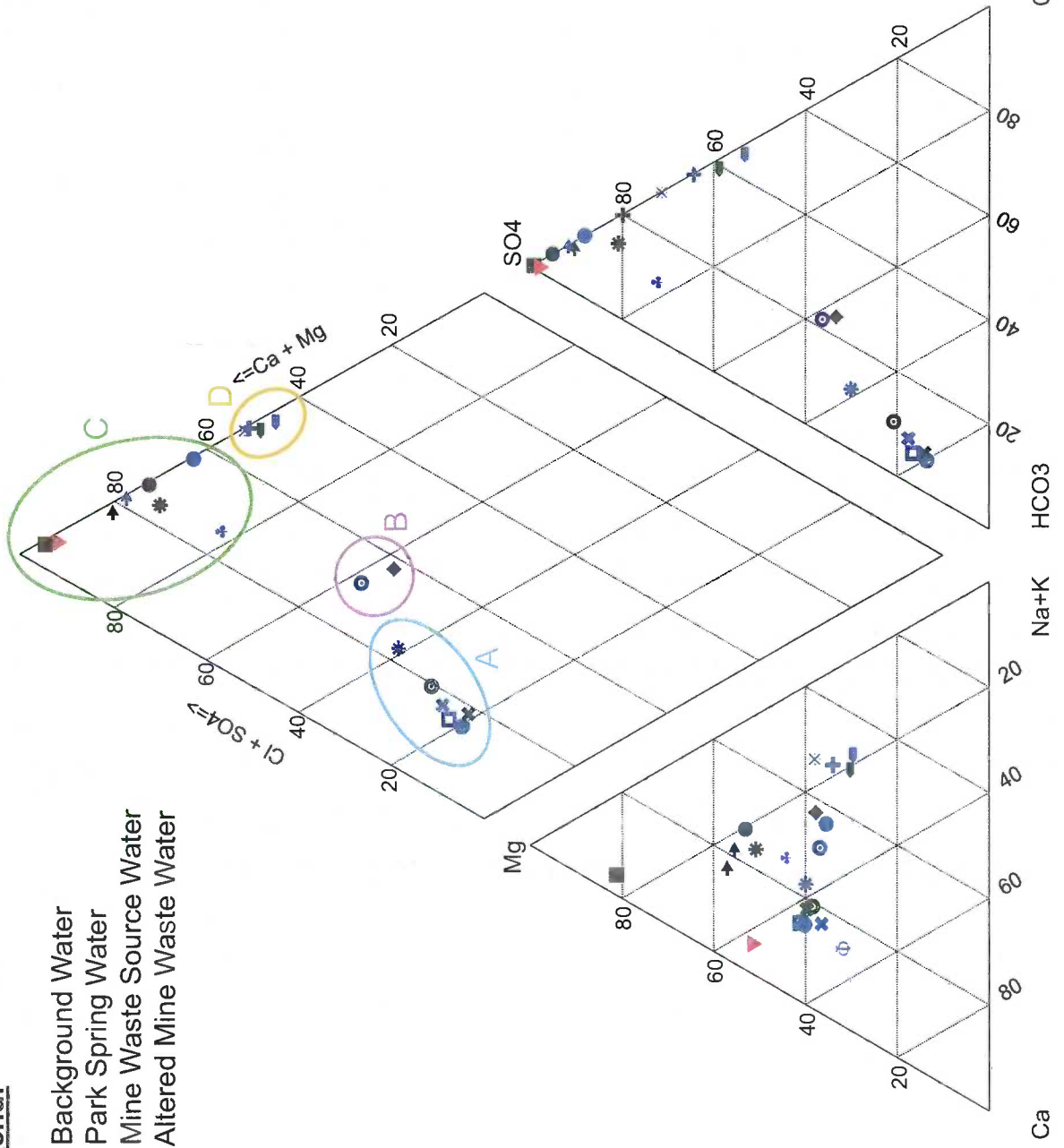
**FIGURE 4-4**



**Figure 4-5**  
**2010 Surface Water Data Piper Diagram**

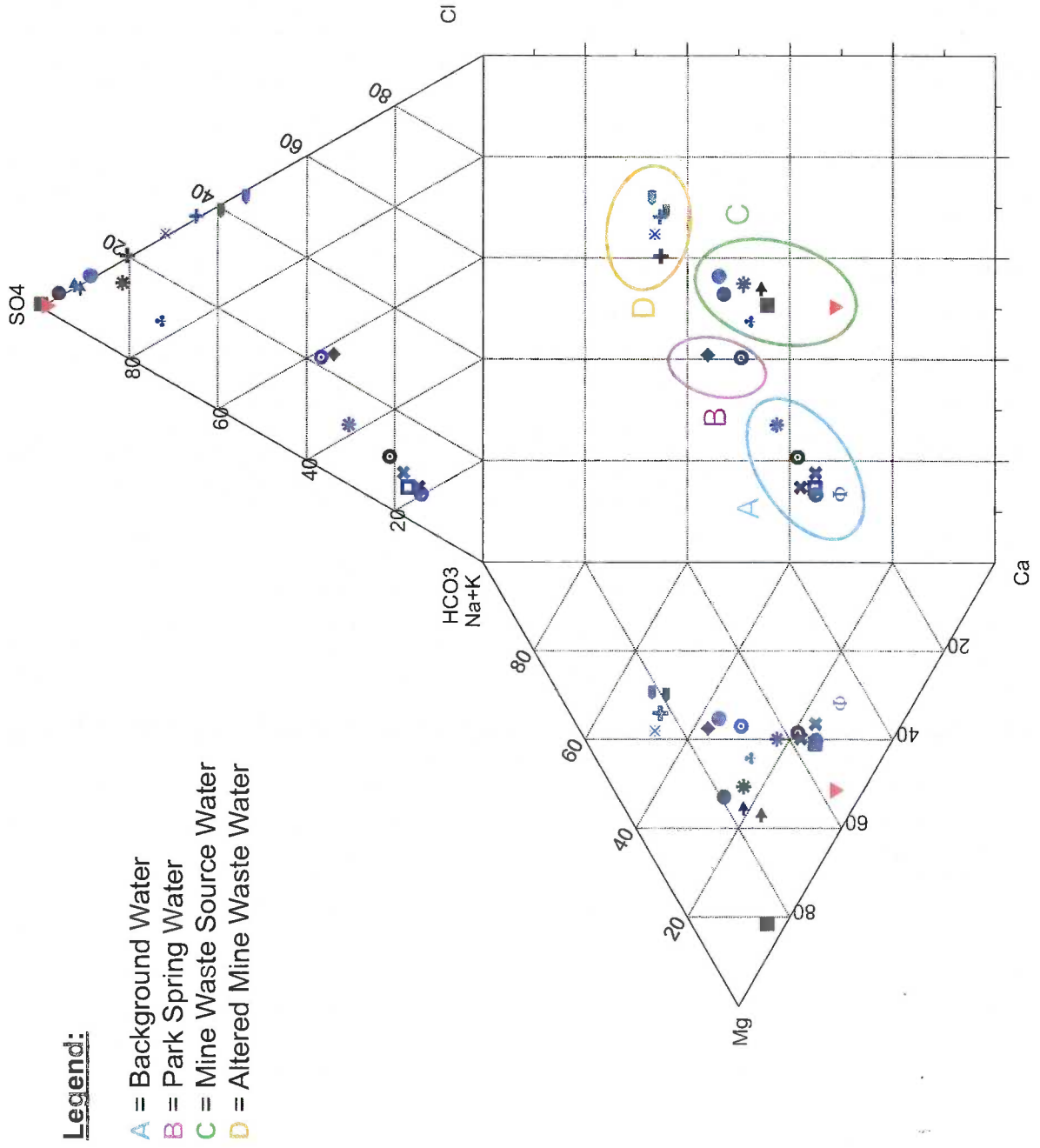
**Legend:**

- A** = Background Water
- B** = Park Spring Water
- C** = Mine Waste Source Water
- D** = Altered Mine Waste Water

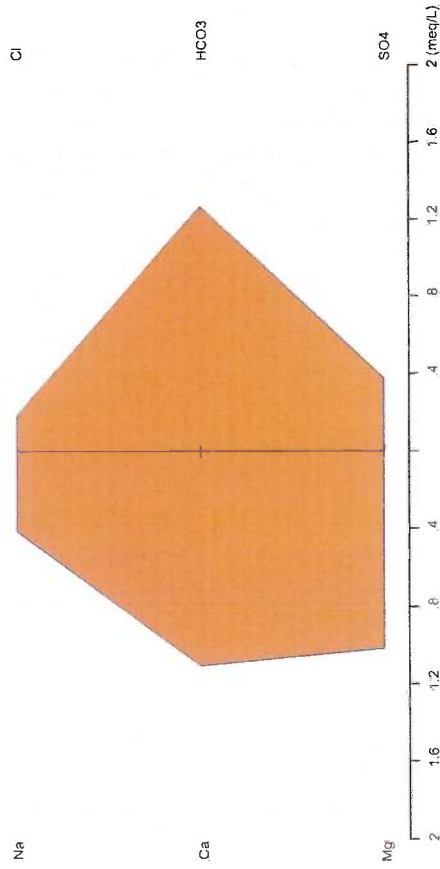


▼	SW-01
◆	SW-10
●	SW-02
■	SW-03
◆	SW-04
◀	SW-05
▶	SW-06
⊙	SW-07
⊗	SW-08
⊕	SW-09
⊕	SW-11 (5/27/10)
⊙	SW-12 (5/27/10)
□	SW-13 (5/27/10)
⊕	SW-14 (5/27/10)
⊗	SW-15 (5/27/10)
⊕	SW-16 (5/27/10)
●	SW-02 (5/27/10)
◆	SW-05 (5/27/10)
▶	SW-06 (5/27/10)
⊙	SW-07 (5/27/10)
⊗	SW-08 (5/27/10)
⊕	SW-09 (5/27/10)
◆	SW-10 (5/27/10)

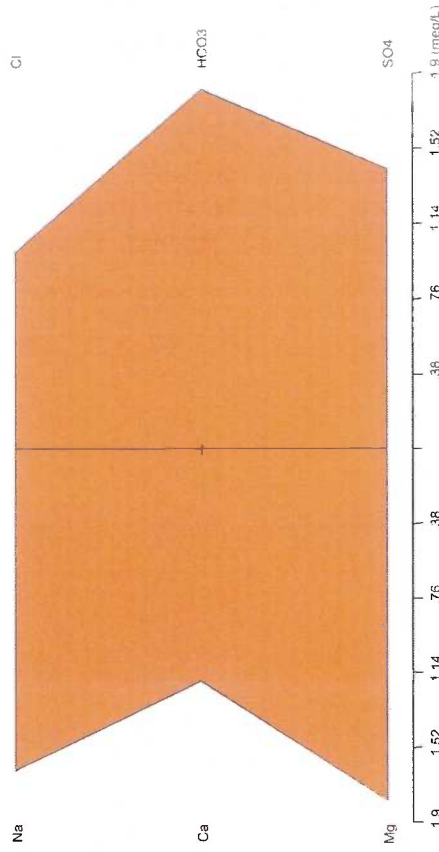
**Figure 4-6**  
**2010 Surface Water Data Durov Diagram**



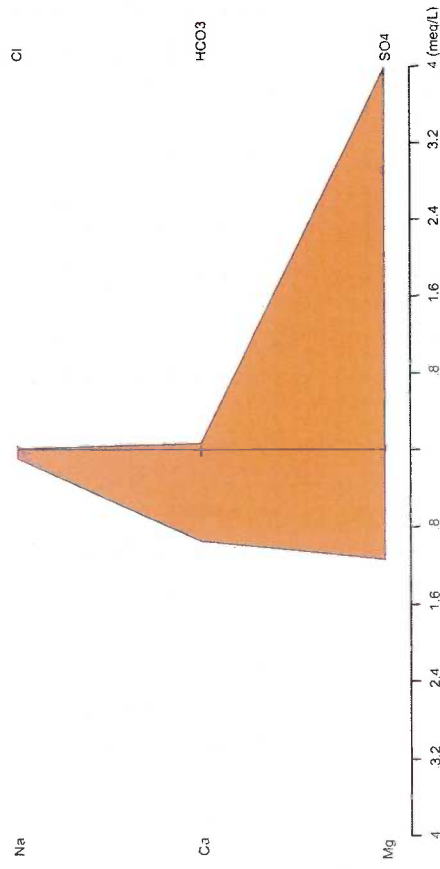
### Background Water



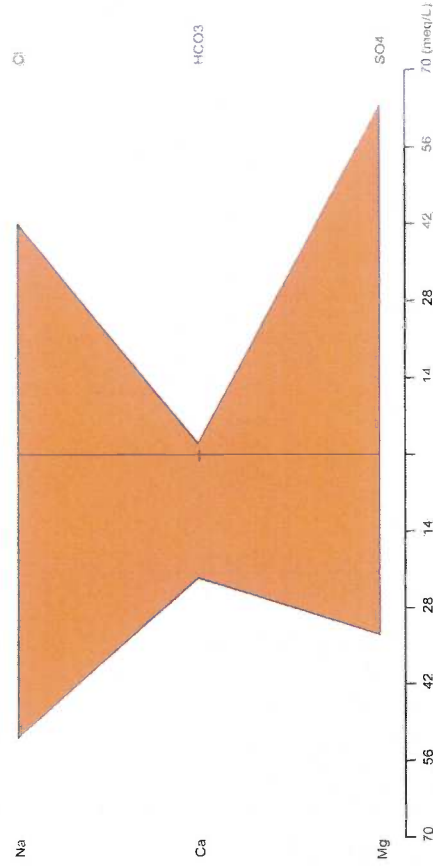
### Park Spring Water



### Mine Waste Source Water



### Altered Mine Waste Water



Mount Diablo Mercury Mine  
Contra Costa County, California

FILE NAME  
Figure 4-7 - Characteristic Stiff Diagrams.cdr



### Characteristic Stiff Diagrams

DATE  
7/29/10

DR. BY  
TC

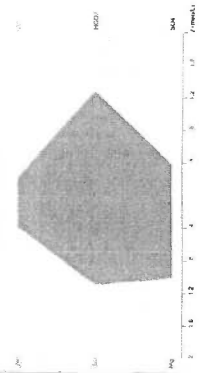
APP. BY  
JP

PROJECT NO.  
01-SUN-050



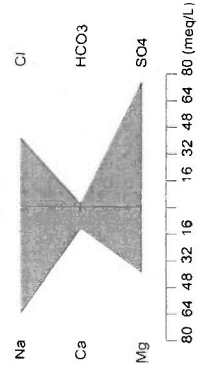
SW-07 - DUNN CREEK

April 2010

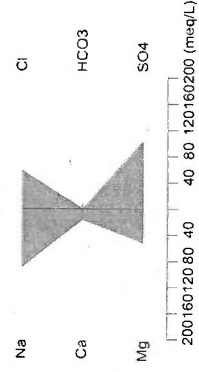


SW-07 - HISTORICAL DATA

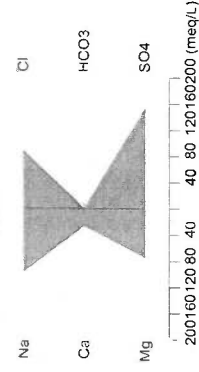
1975



1978

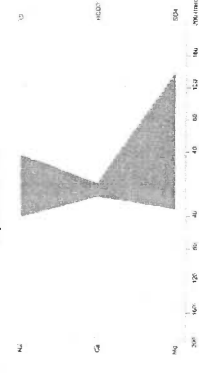


1984



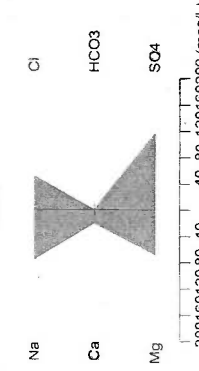
SW-09 - LOWER POND

April 2010

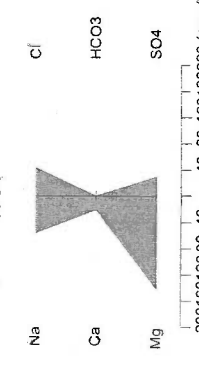


SW-09 - HISTORICAL DATA

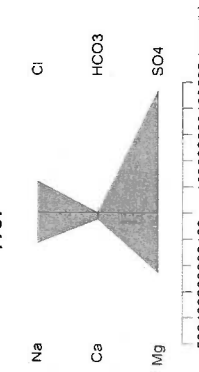
1978



1984

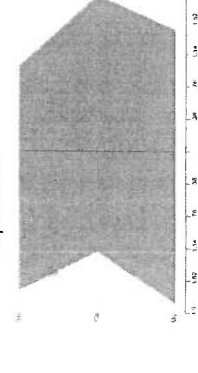


1987



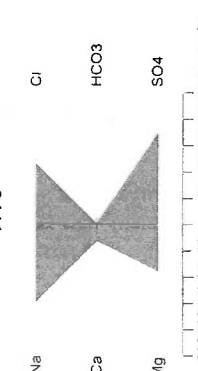
SW-04 - PARK SPRING

April 2010

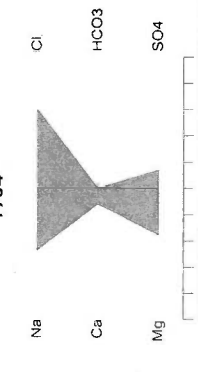


SW-04 - HISTORICAL DATA

1978



1984



LEGEND



Mount Diablo Mercury Mine  
Contra Costa County, California

Comparison of Historical Data  
Stiff Diagrams

PROJECT NO	DATE	DRAWN BY:	APP BY:
01-SUN-050	7/29/10	TC	JP

**SGI** THE SOURCE GROUP, INC.  
3451-C VINCENT ROAD  
PLEASANT HILL, CA 94523



# TABLES

TABLES

Table 2-1  
 Production Statistics  
 Mount Diablo Mercury Mine  
 Contra Costa County, California

PRODUCTION STATISTICS- MOUNT DIABLO MINE "MILL WORKINGS"						
Operator	Date	Cubic Yards of Ore Milled	Waste rock from tunnels, crosscuts, raises, shafts and stopes (cubic yards)	Dewater volume (acre-feet)	Mercury Produced, flasks	
Welch	1863	shaft and placer	NA	none	NA	
Unknown	1875-1877	NA	NA	NA	1000	
Mt. Diablo Quicksilver MC, operator Ericson leased to Bradley MC	1930-1936	NA	NA	NA	739	
leased Ronnie B. Smith	1936-1951	78,188 <sup>(1)</sup>	24,815 <sup>(2)</sup>	161 <sup>(3)</sup>	10,455	
DMEA and Smith	Sept 1951 - June 1953	920 <sup>(4)</sup>	NA	NA	125 <sup>(5)</sup>	
DMEA, Johnson and Jonas	June 1953 - Jan 1954	none	630 <sup>(6)</sup>	minor	none	
leased to Cordero MC	Jan 1954 - Feb 1955	none	67 <sup>(7)</sup>	NA	none	
leased to Nevada Scheelite Company	Feb 1955 - Dec 1956	none	1,228 <sup>(8)</sup>	19.5 <sup>(9)</sup>	none	
Total Cubic Yards of Material Taken Out	1956	none	none	minor	none	
			105,848 <sup>(10)</sup>			

**Notes:**

- <sup>(1)</sup> Table 4, Ross 1958, reported 126,664 tons of ore milled. Converted here to cubic yards above based on conversion of 1.62 tons per cubic yard (cy)
- <sup>(2)</sup> Total length of workings 4,570 ft (Pampeyan 1963, p 25) x 5 feet x 7 feet x bulking factor plus 20% = 7,108 cy less (2) and (3). Included 550 ft of shafts and raises (935 cy) and stopes of 19,000 cy ( Pampeyan, Plate 5).
- <sup>(3)</sup> Estimate 10 gpm for 10 years.
- <sup>(4)</sup> Used the ratio of ore milled to flasks produced for Bradley to estimate the amount of ore milled by Smith.
- <sup>(5)</sup> DMEA internal memo dated 2/4/57 ref doc no. 2:88/384
- <sup>(6)</sup> 300-ft DMEA shaft 4.5 ft x 8.5 ft (Ross 1958) plus 77 ft of tunnel at 5 ft x 7 ft on the 360 level w/ bulking factor of 20%
- <sup>(7)</sup> 43 ft of tunnel on the 360 level x 5 feet x 7 feet w/ bulking factor of 20%
- <sup>(8)</sup> 790 ft of crosscuts and drifts on the 360 level (Pampeyan, and Sheahan 1957) x 5 feet x 7 feet w/ bulking factor of 20%.
- <sup>(9)</sup> Best guess; 90 gpm for 27 days to dewater the mine (ref: DMEA payment records to Smith for same) and 200 days at 10 gpm.
- <sup>(10)</sup> Sum of Ore Milled and Waste Rock

Table 2-2  
 Summary of 1995 Mercury Data Collected by Slotton  
 Mount Diablo Mercury Mine  
 Contra Costa County, California

Site	Flow (cfs)	Aqueous Total Mercury		Suspended Solids	
		Raw ( $\mu\text{g/L}$ )	Filtered ( $\mu\text{g/L}$ )	All (TSS) (mg/L)	Solids Hg (dry ppm)
Upper Dunn Creek	5.20	0.0036	0.00273	1.50	0.60
Upper Horse Creek	0.08	0.0255	0.016	1.10	8.64
"My" Creek	2.10	0.381	0.0284	10.90	32.41
OreHouse Spring	0.01	1.94	0.071	11.40	164.00
Trickle coming from tailings	0.03	58.4	54.1	77.20	56.37
South Pond outlet	0.05	59.1	59.1	26.10	0.00
Horse Creek at tailings	0.32	25	21.9	104.00	29.80
Dunn Creek below mine confluence	7.80	0.949	0.226	13.50	53.60

**Notes:**

Data from study and report by Slotton et.al. (2006).  
 cfs = cubic feet per second.  
 $\mu\text{g/L}$  = micrograms per liter.  
 mg/L = milligrams per liter.  
 ppm = parts per million.

**Table 4-1**  
**2010 Surface Water Sample Location Key**  
 Mount Diablo Mercury Mine  
 Contra Costa County, California

Type	Samples	Location Description
Background	SW-12	Watershed runoff upstream of My creek
Background	SW-16	Far up-gradient Dunn Creek
Springs	SW-4	Park spring
	SW-14	Ore House spring
Adit Spring	SW-1	Emanation point - April sampling
	SW-15	Emanation point - May sampling
My Creek Runoff	SW-11	My creek upstream of Northern waste dump
	SW-13	My creek downstream of Northern waste dump
Mid- Dunn Creek	SW-8	Dunn Creek upstream of ponds after confluenced with My Creek
Ponds	SW-6	Upper pond
	SW-9	Lower pond
	SW-10	Middle pond
Mine Water Runoff	SW-2	Overland flow in Bradley waste rock
	SW-3	Overland flow in Bradley waste rock
	SW-5	Overland flow just above lower pond
Downstream	SW-7	Below confluence of all wastes

Table 4-2  
 Summary of Chemical Analysis Results  
 2010 Surface Water Sampling  
 Mount Diablo Mercury Mine  
 Contra Costa County, California

Parameter	Unit	Date	Water Quality Criteria*											Sample Location											Downstream Dunn Creek SW-07
			Freshwater			Human Health for Consumption of Organism Only		Background		Springs			My Creek Runoff		Mid-Dunn Creek		Ponds			Mine Water Runoff					
			0.81	0.05	0.051	Water + Organism	Organism	My Creek SW-12	Dunn Creek SW-16	Park SW-04	Ore House SW-14	Adit SW-15	Pond SW-11	Weir SW-13	SW-08	Upper SW-06	1 SW-09	Middle SW-10	SW-02	SW-03	SW-05				
Mercury <sub>Total</sub> (Hg)	µg/L	4/12/2010	0.81	0.05	0.051	-	-	0.45	-	2.2	-	-	-	-	-	0.6	32	18	179	74	7.9	0.74			
Mercury <sub>Dissolved</sub> (Hg)	µg/L	4/12/2010	0.77	0.05	0.051	-	-	0.33	1.3	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	22	88	161	-	66	0.64			
Methyl Mercury	ng/L	4/12/2010	3 <sup>b</sup>	0.3 mg/kg (fish tissue)	0.3 mg/kg (fish tissue)	-	-	0.328	<0.20	0.081	<0.20	<0.20	<0.20	<0.20	<0.20	0.389	0.950	0.480	0.976	0.388	1.04	0.736			
pH	su	4/12/2010	6.5 - 9.0	5.0 - 9.0	-	0.104	0.0766	1.16	1.16	4.86	0.504	0.439	0.705	0.233	0.657	0.726	2.84	3.29	2.84	3.29	1.47	1.47			
Alkalinity, Bicarbonate	mg/L	4/12/2010	-	-	-	8.20	7.75	5.94	5.94	4.36	8.27	8.37	7.91	4.46	4.52	7.41	3.13	7.16	2.23	2.23	7.16	7.79			
Alkalinity, Carbonate (CO3)	mg/L	4/12/2010	-	-	-	223	139	111	40	<5.0	227	229	189	<5.0	<5.0	12	<5.0	<5.0	<5.0	<5.0	127	77			
Alkalinity, Total as CaCO3	mg/L	4/12/2010	20	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	248	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0			
Fluoride	mg/L	4/12/2010	-	-	-	223	139	111	40	<5.0	227	229	189	<5.0	<5.0	12	<5.0	<5.0	<5.0	<5.0	127	77			
Dissolved Organic Carbon	mg/L	4/12/2010	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.39	<0.10	0.12	0.39	1.2	<0.50	<0.10			
Specific Conductivity	µmhos/cm	4/12/2010	-	-	-	2.6	4.2	3.7	3.7	11	2.4	2.6	4.1	6.1	2.7	4.8	4.9	7.6	4.9	7.6	2.8	8.3			
Solids, Total Dissolved (TDS)	mg/L	4/12/2010	250	-	-	494	335	291	414	11,400	494	526	414	2,430	9,810	711	3,860	9,710	16,000	16,000	9,880	465			
Turbidity	NTU	4/12/2010	-	-	-	1.5	4.6	4.9	5.6	13	2.7	3.0	2.7	1.0	1.9	125	7.7	84	7.7	84	127	178			
Hardness, Total as CaCO3	mg/L	4/12/2010	-	-	-	223	153	25	141	3,230	231	240	185	1,140	3,010	290	1,000	2,010	3,820	3,820	2,810	106			
Silica, Dissolved (SiO2)	mg/L	4/12/2010	-	-	-	17	17	25	32	8.8	17	17	14	55	35	29	64	80	64	80	25	43			
Chloride (Cl)	mg/L	4/12/2010	230	-	-	-	-	35	35	1.1	10	10	11	102	1,750	19	163	54	163	54	27	13			
Bromide (Br)	mg/L	4/12/2010	-	-	-	10	6.2	<0.20	15	<0.20	<0.20	<0.20	<0.20	<0.20	4.6	<0.20	0.54	<0.40	<0.40	<0.40	8.7	6.5			
Nitrogen, Nitrate (NO3)	mg/L	4/12/2010	-	10	-	<0.10	0.23	0.56	<0.10	<0.10	<0.20	<0.20	0.18	0.48	1.8	<0.10	1.6	<0.20	<0.20	<0.20	8.7	<0.20			
Sulfate (SO4)	mg/L	4/12/2010	-	-	-	<0.10	0.23	68	<0.10	191	<0.10	<0.10	<0.10	<0.10	1.8	<0.10	1.3	<0.10	1.3	6	4.2	<0.10			
Antimony (Sb)	µg/L	4/12/2010	-	5.6	640	30	19	<10	136	5,340	31	39	32	1,610	4,310	101	3,450	13,400	13,400	3,840	123	18			
Arsenic (As)	µg/L	4/12/2010	150	0.018	0.14	<10	<10	<10	<10	62	<10	10	<10	<10	<10	<10	22	112	112	112	12	<10			
Beryllium (Be)	µg/L	4/12/2010	-	-	-	<10	<10	<5.0	<10	182	<10	<10	<10	<10	<10	24	530	530	530	530	<10	<10			
Boron (B)	µg/L	4/12/2010	-	-	-	<5.0	<5.0	<5.0	<5.0	5.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8.3	<5.0	<5.0	<5.0	<5.0			
Cadmium (Cd)	µg/L	4/12/2010	0.25	-	-	941	171	761	761	98,900	971	953	486	8,660	86,800	1,920	18,000	13,900	2,660	2,660	96,700	304			
Calcium (Ca)	µg/L	4/12/2010	-	-	-	<2.0	<2.0	<2.0	<2.0	18,700	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0			
						47,100	38,200	23,600	22,800	357,000	48,900	49,700	41,400	133,000	1,000,000	20,200	130,000	124,000	130,000	124,000	549,000	52,100			

Table 4-2  
 Summary of Chemical Analyses Results  
 2010 Surface Water Sampling  
 Mount Diablo Mercury Mine  
 Contra Costa County, California

Parameter	Unit	Date	Water Quality Criteria <sup>a</sup>										Human Health for Consumption of Water + Organism Only					
			Freshwater		Background		Springs		Sample Location		Ponds			Mine Water Runoff		Downstream		
			My Creek SW-12	Dunn Creek SW-16	Park SW-04	Ore House SW-14	Adit SW-01	SW-15	My Creek Runoff Pond SW-11	Weir SW-13	Mid-Dunn Creek SW-08	Upper SW-06		SW-09	Middle SW-10		SW-02	SW-03
Chromium (Cr)	µg/L	4/12/2010	74	<5.0	18	<5.0	12	<5.0	240	<5.0	31	53	26	25	770	2,790	11	22
Copper (Cu)	µg/L	4/12/2010	1300	<5.0	6.9	<5.0	12	<5.0	240	<5.0	34	33	50	16	235	632	22	23
Iron (Fe)	µg/L	5/27/2010	1000	<5.0	5.1	<5.0	101	<5.0	101	<5.0	34	34	43	<5.0	94	632	28	<5.0
Lead (Pb)	µg/L	4/12/2010	2.5	<5.0	2,260	<5.0	2,140	<5.0	411,000	<5.0	732	272	13,400	9,830	392,000	1,600,000	16,300	13,200
Magnesium (Mg)	µg/L	4/12/2010	2.5	<5.0	2,260	<5.0	<5.0	<5.0	411,000	<5.0	732	272	13,400	9,830	392,000	1,600,000	16,300	13,200
Magnesium (Mg)	µg/L	5/27/2010	2.5	<5.0	2,260	<5.0	<5.0	<5.0	411,000	<5.0	732	272	13,400	9,830	392,000	1,600,000	16,300	13,200
Magnesium (Mg)	µg/L	4/12/2010	2.5	<5.0	2,260	<5.0	<5.0	<5.0	411,000	<5.0	732	272	13,400	9,830	392,000	1,600,000	16,300	13,200
Manganese (Mn)	µg/L	4/12/2010	100	<5.0	80	<5.0	584	<5.0	587,000	<5.0	26,900	26,900	26,900	36,500	136,000	546,000	36,700	36,700
Nickel (Ni)	µg/L	4/12/2010	610	<5.0	165	<5.0	1,320	<5.0	16,000	<5.0	12	5.8	7.1	6.23	3,410	6,240	381	381
Potassium (K)	µg/L	4/12/2010	4200	<5.0	4,120	<5.0	1,850	<5.0	53,300	<5.0	808	898	47,000	2,120	14,500	68,300	3,140	3,140
Selenium (Se)	µg/L	4/12/2010	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Silicon (Si)	µg/L	4/12/2010	11,800	<5.0	11,800	<5.0	4,120	<5.0	38,500	<5.0	7,790	7,720	13,100	13,500	29,900	37,300	11,800	19,900
Silver (Ag)	µg/L	4/12/2010	8,130	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Sodium (Na)	µg/L	4/12/2010	17,400	<5.0	37,600	<5.0	1,670	<5.0	1,290,000	<5.0	18,000	18,200	16,100	19,200	186,000	34,600	1,190,000	9,320
Thallium (Tl)	µg/L	4/12/2010	0.24	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zinc (Zn)	µg/L	4/12/2010	7400	<5.0	<5.0	<5.0	28	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zinc (Zn)	µg/L	5/27/2010	120	<5.0	<5.0	<5.0	14	<5.0	1,180	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Zinc (Zn)	µg/L	5/27/2010	120	<5.0	<5.0	<5.0	14	<5.0	1,180	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Notes:  
 Italic font indicates value is above the water quality criteria for human health for consumption of water + organism or "organism only".  
 Bold and font indicates value is above the water quality criteria for freshwater.  
 µg/L = microgram per liter.  
 µmol/cm = micromhos per centimeter.  
 su = standard units  
 NTU = nephelometric turbidity unit.  
 mg/L = milligram per liter.  
 a. Values represent the lesser of the water quality criteria available from CRWOCB (2008b) and USEPA (2009).  
 b. Value from CRWOCB - San Francisco Bay water quality criteria for methyl mercury in freshwater (CRWOCB, 2008a). Values were not available from CRWOCB (2008b) and USEPA (2009).  
 References:  
 CRWOCB, 2008a. Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater. Interim Final. May.  
 CRWOCB, 2008b. Central Valley Regional Water Quality Control Board. A Compilation of Water Quality Goals. July.  
 USEPA, 2009. National Recommended Water Quality Criteria. Office of Water. Office of Science and Technology.



Table 4-3  
 Summary of Field Parameters  
 2010 Surface Water Sampling  
 Mount Diablo Mercury Mine  
 Contra Costa County, California

Sample Location	Sample ID	Date	Time	Temperature (°C)	pH (su)	Dissolved Oxygen (mg/L)	Electrical Conductivity (µS/cm)	Oxidation Reduction Potential (mV)
Background	MTD-SW-12/2	5/27/2010	9:20	NA	NA	NA	NA	NA
	MTD-SW-16/2	5/27/2010	12:45	12.83	7.3	10	335	226
Springs	MTD-SW-04/2	5/27/2010	12:15	NA	NA	NA	NA	NA
	MTD-SW-14/2	5/27/2010	10:05	14.5	5.22	9.5	437	228.1
Adit Spring	MTD-SW-15/2	5/27/2010	11:15	13.5	3.59	9.5	3702	400
My Creek Runoff	MTD-SW-11/2	5/27/2010	9:20	12.75	7.61	18.7	505	265.7
	MTD-SW-13/2	5/27/2010	9:30	12.12	7.7	16	550	261.3
Mid-Dunn Creek	MTD-SW-08/2	5/27/2010	13:00	14.34	7.6	9.15	334	216
Ponds	MTD-SW-06/2	5/27/2010	10:50	15.71	3.99	9.5	2477	307.2
	MTD-SW-09/2	5/27/2010	13:15	16.43	4.09	6.0	9892	289
	MTD-SW-10/2	5/27/2010	13:50	16.08	6.58	6.2	767	56.2
Mine Water Runoff	MTD-SW-02/2	5/27/2010	12:00	NA	NA	NA	NA	NA
	MTD-SW-05/2	5/27/2010	13:10	22	7.02	6.5	13410	-46
Downstream	MTD-SW-07/2	5/27/2010	13:30	NA	NA	NA	NA	NA

Notes:  
 °C = degrees Celsius.  
 su = standard unit.  
 mg/L = milligram per liter.  
 µS/cm = microSiemen per centimeter.  
 mV = millivolt.

**Table 4-4**  
**Select Historical Data Matched to Current Sample Collection Location**  
 Mount Diablo Mercury Mine  
 Contra Costa County, California

Constituent	Units	Date	Ref #	SW-04-EQ	SW-05-EQ	SW-07-EQ	SW-08-EQ	SW-09-EQ	SW-14-EQ	
Total Mercury (Hg)	µg/L	Sep-70	125-26			50				
		Jan-75	125-1, 125-26			72	1.6			
		Apr-75	125-1			4.2				
		Jul-78	125-1, 125-26			4	2	1.8		
		Oct-84	125-1, 125-26	10		7		152		
		Mar-87	125-1					33		
		Mar-87	125-26					84		
		Jul-87	125-26					17		
		Oct-87	125-26	<0.2	120					
		Mar-88	125-26		170			<1.0	110	
		Apr-89	125-26		190			2		
		May-89	125-26							13
		pH	su	Sep-70	125-26			--		
Jan-75	125-1, 125-26					7.2	8.1			
Apr-75	125-1					7.2				
Jul-78	125-1, 125-26					6.9	8.3	6.7		
Oct-84	125-1, 125-26			7.7		7.0		2.7		
Mar-87	125-1							2.9		
Mar-87	125-26							--		
Jul-87	125-26							2.4		
Oct-87	125-26			7.7	2.5					
Mar-88	125-26				2.2					
Apr-89	125-26				2.3			8.6	3.1	
May-89	125-26							5.0		3.0

**Notes:**  
 (a) pH was analyzed past the 15min hold time.

**Table 4-5**  
**Summary Comparison of Surface Water Data**  
 Mount Diablo Mercury Mine  
 Contra Costa County, California

Historical Data from RWQCB Files		UCD Slotton Study		Sunoco-SGI	
Year	(µg/L)	Year	(µg/L)	Year	(µg/L)
<b>OREHOUSE SPRING (SW-14)</b>					
1989	13	1995	1.944	2010	1.3
<b>TAILINGS RUNOFF ABOVE LOWER POND (SW-05)</b>					
1987	120	1995	58	2010	7.9 - 66
1988	170				
1989	190				
<b>DUNN CREEK DOWNSTREAM OF LOWER POND (SW-07)</b>					
1970	50	1995	0.949	2010	0.64 - 0.74
1975	72				
1978	4				
1984	7				
<b>DUNN CREEK UPSTREAM OF LOWER POND (SW-08)</b>					
1975	1.6	1995	0.004 - 0.381	2010	<0.20 - 0.6
1978	2				
1988	<1.0				
1989	2				
<b>LOWER POND OUTLET (SW-09)</b>					
1978	1.8	1995	59.1	2010	88 - 94
1984	152				
1987	84				
1988	110				
<b>PARK SPRING (HORSE CREEK) UPHILL FROM MINE TAILINGS (SW-04)</b>					
1984	10	1995	0.026	2010	0.45
1987	<0.200				

# APPENDIX A

**APPENDIX A**

**SUMMARY OF HISTORIC WATER QUALITY DATA WITH LOCATION KEY MAP AND NOTES**









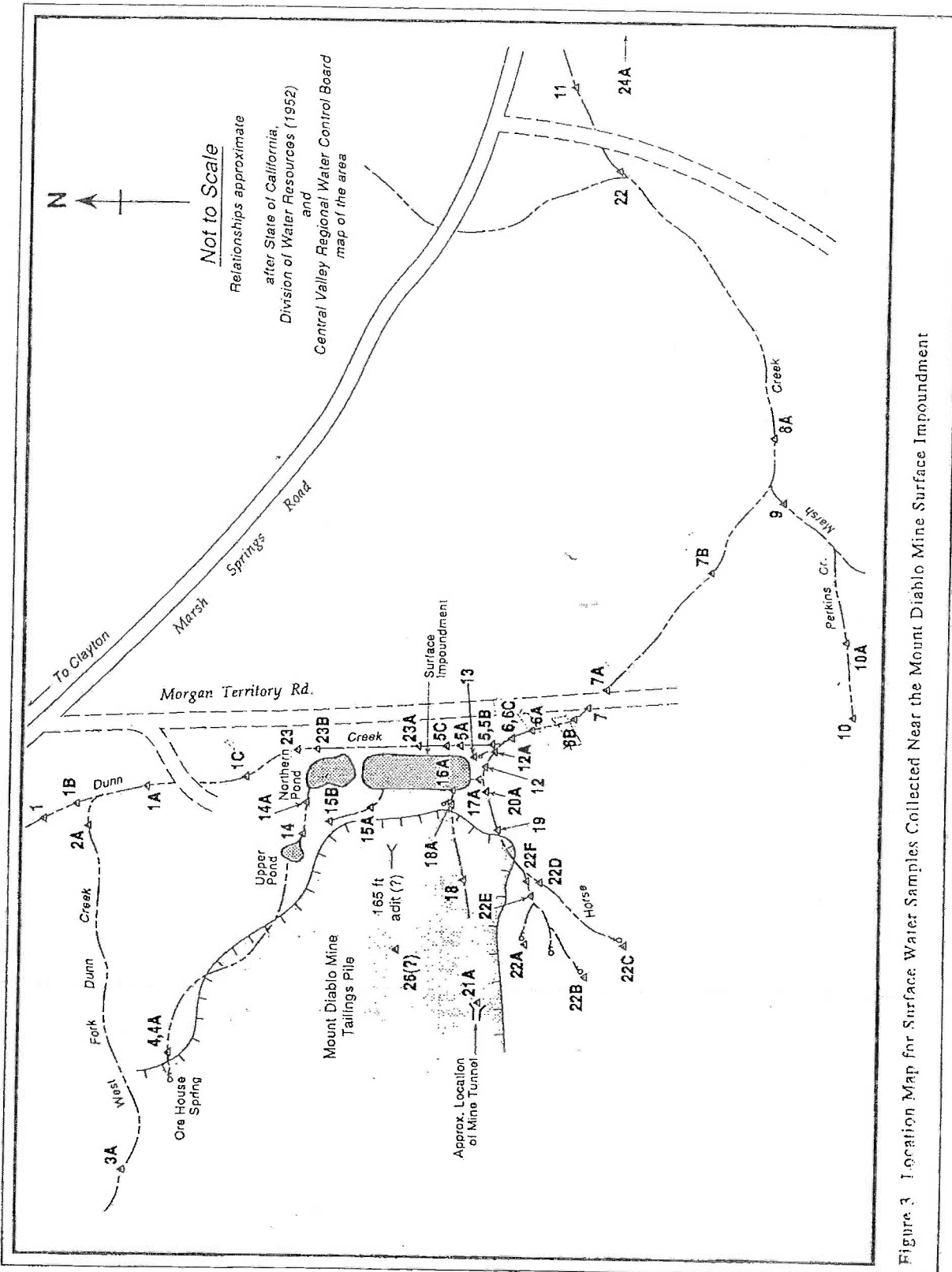


Figure 3. Location Map for Surface Water Samples Collected Near the Mount Diablo Mine Surface Impoundment

- A Dunn Creek upstr. of pond at Morgan Terr. Rd. + Marsh Cr. Rd.
- B Dunn Creek upstr. of pond outlet
- C Dunn Creek downstr. of pond outlet, after confluence w/ Horse Cr.
- CL <sup>+ Soil</sup> Dunn Creek downstr. of pond at Morgan Terr. Rd.
- D Dunn Creek downstr. of pond at Morgan Terr. Rd.
- E Horse Creek upstream of pond outlet
- F Perkins Creek above ~~mouth~~ confl. w/ Marsh Cr.
- G Curry Creek above ~~the~~ confl. w/ Marsh Cr.

- H Marsh Creek upstr. of Dunn Cr. (@ Morgan Terr. Rd.)
- J Marsh Creek downstr. of pond @ Prison Farm
- me. K Marsh Creek downstr. of pond below Hog Creek (5 mi. below mine)
- L Marsh Creek downstr. of pond @ gaging sta. above Marsh Cr. reservoir (10 mi. below mine)
- I Marsh Creek below confl. w/ Dunn Cr. - downstr. of pond
- H Marsh Creek above Perkins Canyon - upstr. of pond
- ↳ H Marsh Creek above confl. w/ Dunn Cr. - upstr. of pond

- M Drainage from mine for tailings on Wessman property
- N Drainage from ponded area north of tailings
- P Springs on State Park Land
- Q Alkali spring below + east of pond / dam

- R Mine pond - water
- Mine pond - sludge

- S Zuur well
- T Prison Farm well
- U Marsh Cr. Springs Resort well

# **APPENDIX B**

**APPENDIX B**

**SELECTED SITE PHOTOGRAPHS**

**REFERENCED SAMPLE LOCATIONS PHOTOGRAPHS**

**Client Name:** Sunoco, Inc.

**Photo Date:** April and May 2010

**Project:** Sunoco Mt. Diablo, ACP



**Photograph B-1:** Capped area located at the top area of the Bradley tailings piles and waste rock.



**Photograph B-2:** Capped area overlying the historic collapsed main mine workings area.

**Client Name:** Sunoco, Inc.

**Photo Date:** April and May 2010

**Project:** Sunoco Mt. Diablo, ACP



**Photograph B-3:** Captured surface water flow directed into upper pond (sample location SW-06).



**Photograph B-4:** Park Spring (sample location SW-04).

**Client Name:** Sunoco, Inc.

**Photo Date:** April and May 2010

**Project:** Sunoco Mt. Diablo, ACP



**Photograph B-5:** Ore House spring (sample location SW-14).



**Photograph B-6:** Storm water from upper mine working routed around the lower pond (right) via Dunn Creek (left).



**GENERAL SAMPLE LOCATIONS AND SITE PHOTOGRAPHS**

Client Name: Sunoco, Inc.

Photo Date: April and May 2010

Project: Sunoco Mt. Diablo, ACP



**Photograph B-7:** *My Creek retention pond (sample location SW-11).*



**Photograph B-8:** *Lower pond looking up toward Bradley tailing piles.*

**Client Name:** Sunoco, Inc.

**Photo Date:** April and May 2010

**Project:** Sunoco Mt. Diablo, ACP



**Photograph B-9:** *Runoff from upper Bradley mine tailings (sample location SW-02).*



**Photograph B-10:** *Runoff from upper Bradley tailing piles (sample location SW-02).*

Client Name: Sunoco, Inc.

Photo Date: April and May 2010

Project: Sunoco Mt. Diablo, ACP



*Photograph B-11: Upper Bradley tailing piles*



*Photograph B-12: Upper Bradley tailing piles*

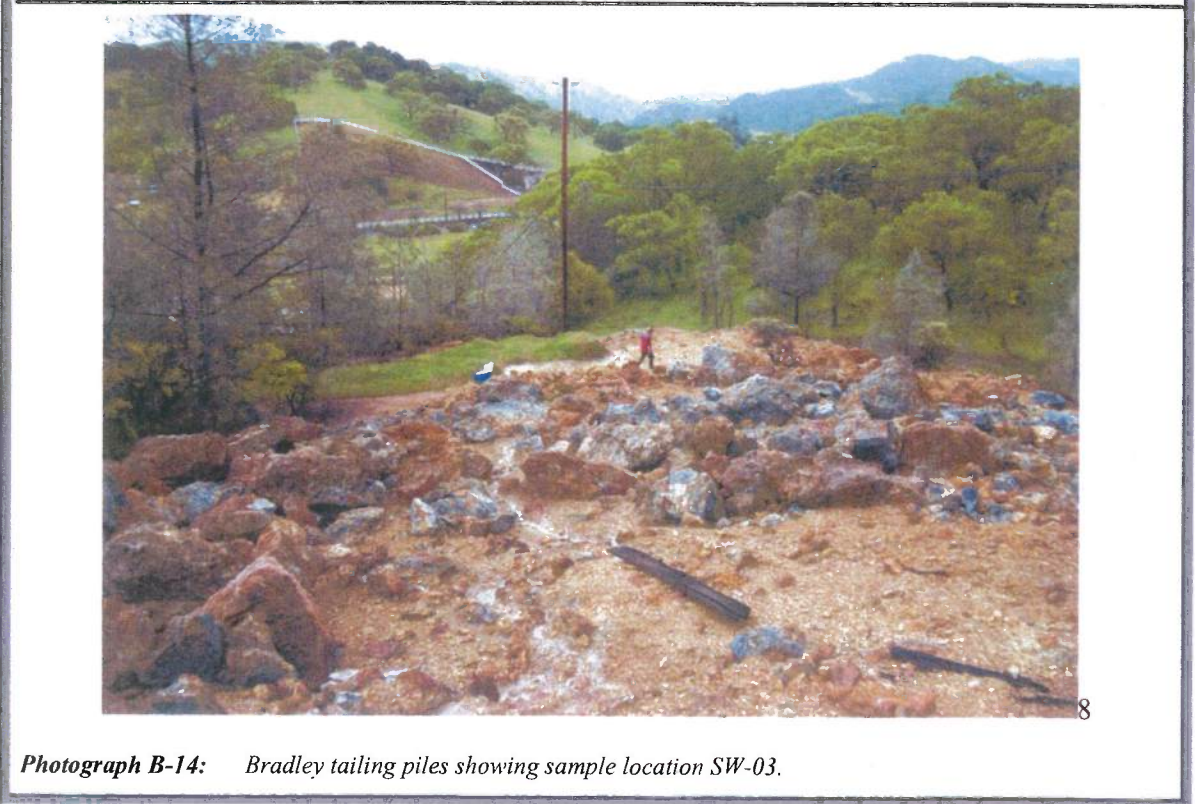
Client Name: Sunoco, Inc.

Photo Date: April and May 2010

Project: Sunoco Mt. Diablo, ACP



**Photograph B-13:** *Sample location SW-01.*



**Photograph B-14:** *Bradley tailing piles showing sample location SW-03.*

Client Name: Sunoco, Inc.

Photo Date: April and May 2010

Project: Sunoco Mt. Diablo, ACP



**Photograph B-15:** *Runoff from vicinity of former 165-ft adit opening (sample location SW-01).*



**Photograph B-16:** *Upper pond (sample location SW-6).*

Client Name: Sunoco, Inc.

Photo Date: April and May 2010

Project: Sunoco Mt. Diablo, ACP



**Photograph B-17:** *Looking upstream from My Creek (sample location SW-12).*



**Photograph B-18:** *Middle pond looking to lower pond.*

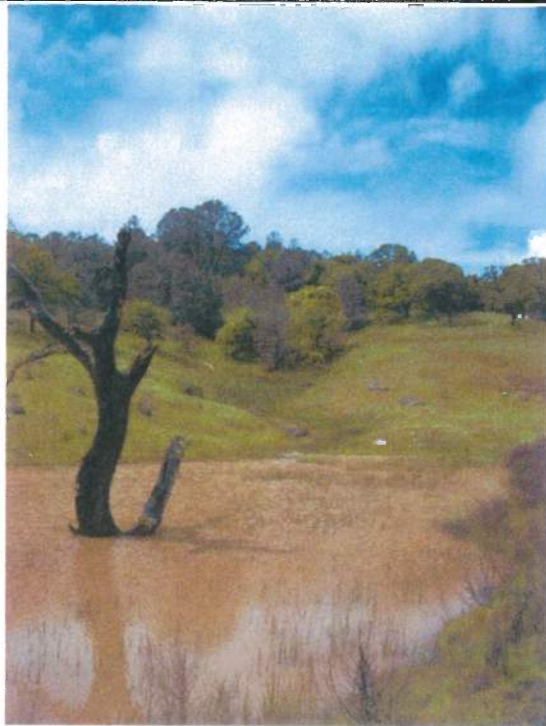
**Client Name:** Sunoco, Inc.

**Photo Date:** April and May 2010

**Project:** Sunoco Mt. Diablo, ACP



**Photograph B-19:** *Dunn Creek and middle pond outlet.*



**Photograph B-20:** *Middle pond looking toward upper pond.*



**Client Name:** Sunoco, Inc.

**Photo Date:** April and May 2010

**Project:** Sunoco Mt. Diablo, ACP



**Photograph B-21:** *Dunn Creek showing out flow from middle pond.*

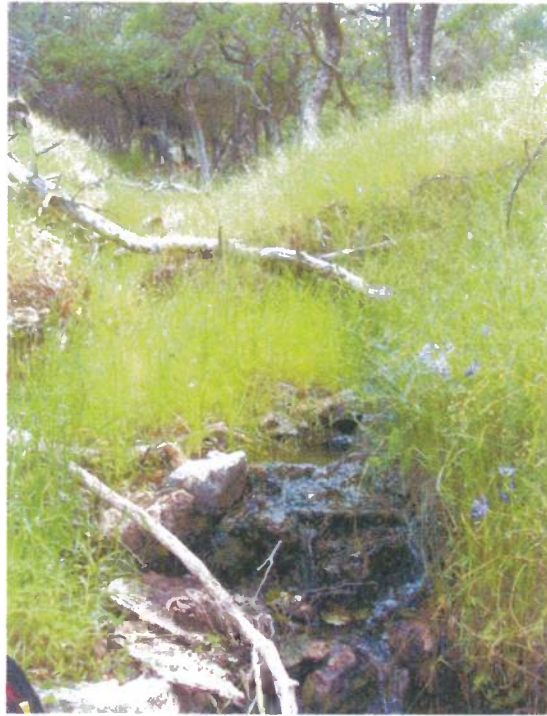


**Photograph B-22:** *Outflow from middle pond to Dunn Creek (sample location SW-10).*

Client Name: Sunoco, Inc.

Photo Date: April and May 2010

Project: Sunoco Mt. Diablo, ACP



**Photograph B-23:** *My Creek upstream of northern waste dump area (sample location SW-12).*



**Photograph B-24:** *Surface water drainage from upper mine working area.*

Client Name: Sunoco, Inc.

Photo Date: April and May 2010

Project: Sunoco Mt. Diablo, ACP



*Photograph B-25: Surface water drainage from upper mine working area.*



*Photograph B-26: Calcine tailings above upper pond area. Drains to upper pond.*

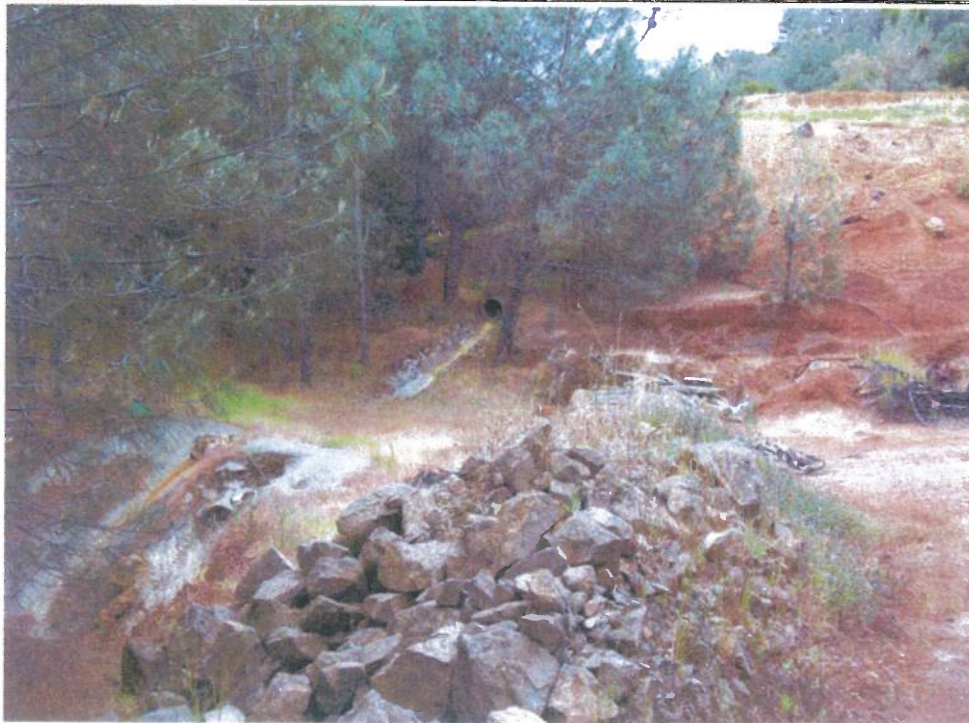
**Client Name:** Sunoco, Inc.

**Photo Date:** April and May 2010

**Project:** Sunoco Mt. Diablo, ACP



**Photograph B-27:** *Drainage under road toward upper pond.*



**Photograph B-28:** *Surface water drainage from upper mine working area.*

**Client Name:** Sunoco, Inc.

**Photo Date:** April and May 2010

**Project:** Sunoco Mt. Diablo, ACP



**Photograph B-29:** *Mining debris in northern waste dump above My Creek.*



**Photograph B-30:** *Mining debris in northern waste dump above My Creek.*