

# CO-OP MINING COMPANY

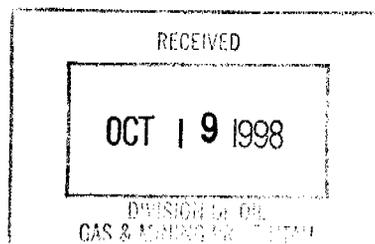
P.O. Box 1245  
Huntington, Utah 84528



Office (435) 687-2450  
FAX (435) 687-5238

October 19, 1998

Peter Hess  
Utah Division of Oil, Gas & Mining  
C.E.U. Box 169, 451 East 400 North  
Price, Utah 84501-2699



Mr. Hess,

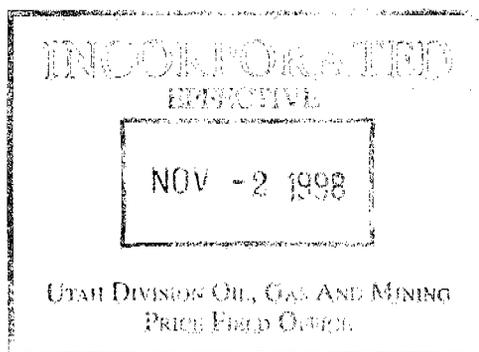
Re: Hiawatha Seam Mining Sequence and Timing, Co-Op Mining Company, Bear Canyon Mine, ACT/015/025-98B, Emery County, Utah

Enclosed are seven copies of page 3-107. This page was inadvertently omitted from the September 23 submittal.

As a follow-up to our phone conversation, the temporary seals will be constructed of 8" solid cement blocks. No groundwater monitoring or water treatment activities are currently being performed in Hiawatha Seam.

*Plastered*

If you have any questions, please call me at (435) 687-2450.



Enclosure(s)  
CR/jj

Thank You,

Charles Reynolds,  
Environmental Coordinator



# CO-OP MINING COMPANY

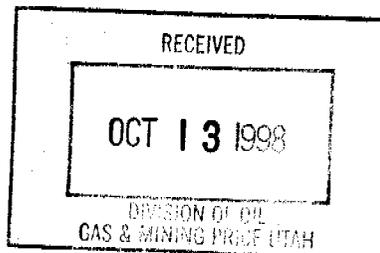
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Office (435) 687-2450  
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September 23, 1998

Peter Hess  
Utah Division of Oil, Gas & Mining  
C.E.U. Box 169, 451 East 400 North  
Price, Utah 84501-2699



Mr. Hess,

Re: Hiawatha Seam Mining Sequence and Timing, Co-Op Mining Company, Bear Canyon Mine, ACT/015/025-98B, Emery County, Utah

This submittal is in response to the deficiency letter dated August 14, 1998.

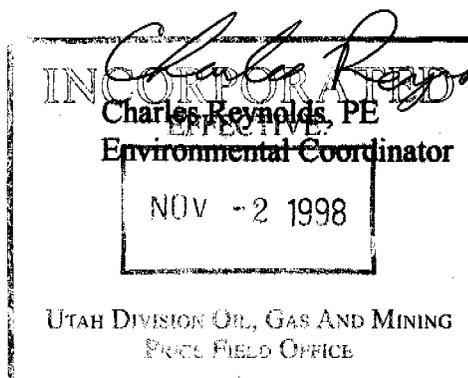
In response to the deficiency outlined in the first paragraph, page 3-2 has been revised to address R645-301-515.311 and 312. R645-301-515.320 does not apply in this case, since there will not be a cessation of mining activities within the permit.

The second paragraph discussed approval from the MSHA office in accordance with 30 CFR 75.1711. This regulation also refers to a cessation of mining activities for an entire mine. The Hiawatha Seam workings are an extension of the Bear Canyon No. 1 Mine, which includes all workings within the Blind Canyon Seam also. MSHA does not require prior approval to seal a section of the mine, but does require the sealed workings to be shown on the ventilation map following the sealing of the section (30 CFR 75.372(a)(2)). Following sealing activities, an updated ventilation map will be submitted to MSHA as required.

If you have any questions, please call me at (435) 687-2450.

Thank You,

Enclosure(s)



# APPLICATION FOR PERMIT PROCESSING

Permit Change <input checked="" type="checkbox"/>	New Permit <input type="checkbox"/>	Renewal <input type="checkbox"/>	Transfer <input type="checkbox"/>	Exploration <input type="checkbox"/>	Bond Release <input type="checkbox"/>	Permit Number: ACT/015/025
Title of Proposal: Hiawatha Seam Mining Sequence and Timing						Mine: BEAR CANYON MINE
						Permittee: CO-OP MINING COMPANY

Description, include reason for application and timing required to implement: *Future Program indicate mining in this seam will not take place for several years. Co-op intends to temporarily seal this section of the mine.*

**Instructions:** If you answer yes to any of the first 8 questions (gray), submit the application to the Salt Lake Office. Otherwise, you may submit it to your reclamation specialist.

<input type="checkbox"/> No	1. Change in the size of the Permit Area? _____ acres Disturbed Area? _____ acres <input type="checkbox"/> increase <input type="checkbox"/> decrease.
<input type="checkbox"/> No	2. Is the application submitted as a result of a Division Order? DO #
<input type="checkbox"/> No	3. Does application include operations outside a previously identified Cumulative Hydrologic Impact Area?
<input type="checkbox"/> No	4. Does application include operations in hydrologic basins other than as currently approved?
<input type="checkbox"/> No	5. Does application result from cancellation, reduction or increase of insurance or reclamation bond?
<input type="checkbox"/> No	6. Does the application require or include public notice/publication?
<input type="checkbox"/> No	7. Does the application require or include ownership, control, right-of-entry, or compliance information?
<input type="checkbox"/> No	8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
<input type="checkbox"/> No	9. Is the application submitted as a result of a Violation? NOV #
<input type="checkbox"/> No	10. Is the application submitted as a result of other laws or regulations or policies? Explain:
<input type="checkbox"/> No	11. Does the application affect the surface landowner or change the post mining land use?
<input checked="" type="checkbox"/> Yes	12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2?)
<input type="checkbox"/> No	13. Does the application require or include collection and reporting of any baseline information?
<input type="checkbox"/> No	14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
<input type="checkbox"/> No	15. Does application require or include soil removal, storage or placement?
<input type="checkbox"/> No	16. Does the application require or include vegetation monitoring, removal or revegetation activities?
<input type="checkbox"/> No	17. Does the application require or include construction, modification, or removal of surface facilities?
<input type="checkbox"/> No	18. Does the application require or include water monitoring, sediment or drainage control measures?
<input checked="" type="checkbox"/> Yes	19. Does the application require or include certified designs, maps, or calculations?
<input type="checkbox"/> No	20. Does the application require or include subsidence control or monitoring?
<input checked="" type="checkbox"/> Yes	21. Have reclamation costs for bonding been provided for?
<input type="checkbox"/> No	22. Does application involve a perennial stream, a stream buffer zone or discharges to a stream?
<input type="checkbox"/> No	23. Does the application affect permits issued by other agencies or permits issued to other entities?

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NOV - 2 1998

DIVISION OF OIL, GAS AND MINING

SALT LAKE FIELD OFFICE

Attach 7 complete copies of the application.

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

*Wendell River Res. Agent 10/1/98*  
 Signed - Name - Position - Date

Subscribed and sworn to before me this 1 day of October, 19 98

*Lademo Stone*  
 Notary Public

My Commission Expires: July 10 Utah, 19 2001  
 Attest: STATE OF \_\_\_\_\_ COUNTY OF Emery



Received by Oil, Gas & Mining

ASSIGNED TRACKING NUMBER



C/015/025  
pg 2

EVENT VIOLATIONS INSPECTORS STATEMENT

Company/Mine Co-Op Mining Company /Bear Canyon Mine NOV # 2001-43-1-1  
Permit # C/015/025 Violation # 1 of 1

**A. SERIOUSNESS**

1. What type of event is applicable to the regulation cited? Refer to the DOGM reference list of events below and remember that the event is NOT the same as the violation. Mark and explain each event.

- a. Activity outside the approved permit area.
- b. Injury to the public (public safety).
- c. Damage to property.
- d. Conducting activities without appropriate approvals.
- e. Environmental harm.
- f. Water pollution.
- g. Loss of reclamation/revegetation potential.
- h. Reduced establishment, diverse and effective vegetative cover.
- i. No event occurred as a result of the violation.
- j. Other.

Explanation:

Sediment control structures - straw bales - were not adequately maintained and sediment was carried outside the permit area by runoff.

2. Has the event occurred? Yes X No    

Explanation:

Sediment had accumulated to the top of the straw bales at the permit area - disturbed area boundary, along the toe of the outslope at the ballfield topsoil pile. The bales were no longer able to trap sediment in water flowing off the permit area, and some sediment had been carried beyond the permit boundary.

3. Did any damage occur as a result of the violation?  
    No.  
X Yes:

Explanation:

Sediment was carried outside the permit area. Damage to vegetation and soil did not appear severe or permanent. There was no evidence that the sediment reached Bear Canyon Creek. If the violation had not been discovered, runoff would have continued to deposit sediment outside the permit area, and it is possible that sediment could have reached Bear Canyon Creek, either because of a large precipitation event or simply from cumulative impacts from lesser events.

**C. GOOD FAITH**

1. In order to receive good faith for compliance with an NOV or CO, the violation must have been abated before the abatement deadline. If you think this applies, describe how rapid compliance was achieved (give dates) and describe the measures the operator took to comply as rapidly as possible.

The operator has 30 days to abate, and the next inspection has not been done yet.

2. Explain whether or not the operator had the necessary resources on site to achieve compliance.

Yes: hand tools or small power equipment are sufficient to maintain the straw-bale sediment control structures

3. Was the submission of plans prior to physical activity required by this NOV/CO?  
Yes  No  If yes, explain.

James D. SMITH  
Authorized Representative

[Signature]  
Signature

21 Mar '01  
Date

#### 7.1.5.2 Quality

No significant degradation of water quality due to mining in the permit expansion area is expected. The coal seams encountered in the present mine permit area are essentially dry; these conditions are expected to persist into the permit expansion area. Mine sumps are thus the source of possible contamination.

Water quality data of the sump waters to date, presented in Tables 7.1-1, 7.1-2 and 7.1-3, are of overall high quality. Unused sump waters will eventually seep downward through fractures into the Star Point sandstone (permeability estimated at .0001 cm/sec., exclusive of shaley units) and easterly to be eventually intercepted by the Bear Springs fault, where no detectable impact is expected on the waters transmitted by that feature.

Waters intercepted by the fault in the portal sump area and East Bleeders, if not discharged, will eventually seep downward along joints or back into the fault at lower elevations and eventually into the Bear Springs fault with no detectable impact expected on the water transmitted by the Bear Springs fault.

#### 7.1.6 Mitigation and Control Plans

No treatment of groundwater occurrence or other control measures in the present mine have been required. Interference of the groundwater regime has consisted of interception of local perched zones within the Blackhawk formation, recently, two fault related flows have; significantly diminished recharge to the sump near the mine portal.

No treatment of groundwater occurrence or other control measures, with one possible exception, are expected to be required for the permit area. The exception consists of the water occurrences in the East Bleeders. Future occurrences of water along this trend are problematical; future interception of this zone may be dry, produce water but dry up the two areas now producing water, or be diminished due to lower fault displacement to the north. The fault may become non-existent to the north or trend east off the property. Appropriate steps will be taken, as required, as more information is obtained on these occurrences as mining progresses. See discussion on mine dewatering in Section 7.1.4.3.

At this time, no impact on the groundwater supply (depletion), quality or other interference has occurred in the permit area. No groundwater rights have been affected to date or are expected to be affected by mining in the permit area.

### 7.1.7 Groundwater Monitoring Plan

Monitoring activities are designed to determine water levels, discharge and water quality fluctuations in relevant aquifers or groundwater occurrences in the mine area. Data will be collected from mine roof seeps and sumps, by drill holes within the mine, observation wells and springs. The objectives will be to identify potential impacts during and after mining and, provide continuing data on the areas aquifer characteristics and groundwater occurrences.

Springs below the mine will be sampled to determine discharge and water quality parameters and their possible variation with time. These springs include Bear Springs, COP Development Springs, Huntington Spring overflow and Birch Springs (Plate 7-1). Periodic checks will be made of the mine area to determine any impact not currently expressed at the surface. This data will be used to estimate seasonal fluctuations, aquifer re-charge and consistent long-term changes and to confirm the formation contributing to spring flow. Data from mine sumps will be used to assess leakage rates and possible contamination.

Groundwater monitoring will follow the ground water sampling guidelines as shown in Table 7.1-6 using the water quality parameter list in Table 7.1-7. This will include completion of Baseline parameter measurements on existing sources and on any new

sources encountered until there is data to meet the two yr, four samples per annum requirement. New significant occurrences within the present permit area will be promptly included in the sampling program, as specified by state requirements.

Existing monitoring stations are shown on Plate 7-4 and listed below.

1. Under Ground Seep*	-	SBC-1
2. Portal Well**	-	SBC-2
3. Creek Well	-	SBC-3
4. Huntington Spring	-	SBC-4
5. Birch Spring	-	SBC-5
6. COP Development Spring	-	SBC-6
7. Sump #3***	-	SBC-9
8. Sump #4****	-	SBC-10

- \* SBC-1 dried up in early 1988, and monitoring was discontinued.
- \*\* SBC-2 dry from 1987. Caved in, lost (2) quarters and relocated in 1991.
- \*\*\* Sump #1 (SBC-7) and #2 (SBC-8) dried up and discontinued in 1990.
- \*\*\*\* Sump #4 (SBC-10) flow first measured Dec. 1991. Monitoring initiated Jan 1992. In July, 1995, retreat mining progressed passed this sump, making it inaccessible. Monitoring was discontinued in August, 1995.

The sampling matrix for each of the existing monitoring stations during the operational phase of mining is included in Table 7.1-8.

Temporary Drill Hole Seals. Within 30 days of completion, drill holes utilized for groundwater monitoring will be sealed in a nonpermanent fashion by installing PVC surface casing with a threaded cap for access.

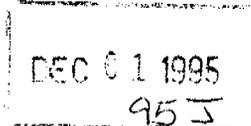


Table 7.1-6 Ground Water Sampling

	Baseline Monitoring	Operational Monitoring	Postmining Monitoring
Type of Sampling site	Springs, In-Mine Flows, Boreholes, Observation Wells.	Springs, In-Mine Flows, Boreholes, Observation Wells.	Springs, Observation Wells, Mine discharge points.
Field Measurements and Parameters (Table 7.1-7)	Water levels and/or flow and water quality	Water levels and/or flow and water quality	Water levels and/or flow and water quality
Sample Frequency Each site	<u>Quarterly</u> Adequate to describe seasonal variation.  Monthly recommended for more accurate description of seasonal variation.	<u>Quarterly</u> samples springs and wells;  In-mine flows <u>at initial interception, quarterly after 1st 30 days until diminished.</u>  From sumps and/or mine discharge points <u>quarterly or as required by UPDES.</u>	<u>Quarterly</u> based on potential impact;  or <u>once per annum</u> (spring sampling at low flow).
Sampling Duration	<u>Two</u> years (one complete year of data before submission of PAP).	<u>Every</u> year until two years after surface reclamation activities have ceased.	Until termination of bonding.
Type of Data Collected and Reported	Wells and Boreholes: Water quality, water level of flow logs, collar elevation; ground elevations; screened interval; formation where completed; depth.  Springs: Water quality, location, and flow.	Wells and boreholes: Water quality, water level or flow.  Springs: Flow and water quality with one sample taken at low flow.	Wells and Boreholes: Water quality, water level or flow.  Springs: Flow, water quality with one sample taken at low flow.  <u>Phase I:</u> Whether pollution of surface and subsurface water is occurring, the probability of future occurrence, and estimated cost of abatement.  <u>Phase II:</u> After revegetation has been established and contributing suspended solids to streamflow or runoff outside the permit area is not excess of the requirements set by UCA 40-10-17(j) of the Act and by R645-301-751.  <u>Phase III:</u> Until reclamation requirements of the Act and the permit are fully met.
Comments	Springs and seeps should be measured from source at high and low flow periods.	During the year preceding repermitting. Springs, one water quality sample at low flow for baseline parameters. Other sites, one sample for baseline parameter.	

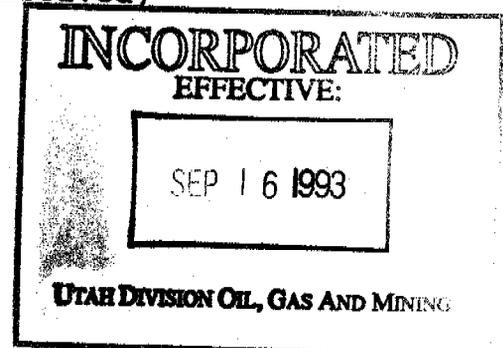
Table 7.1-7 Ground Water Quality Parameter List

Field Measurements:

- \* - Water Levels or Flow
- \* - pH
- \* - Specific Conductivity (umhos/cm)
- \* - Temperature (CO)

Laboratory Measurements: (mg/l) (Major, minor ions and trace elements are to be analyzed in dissolved form only.)

- \* - Total Dissolved Solids
- \* - Total Hardness (as CaCO<sub>3</sub>)
- Aluminum (Al)
- Arsenic (As)
- Boron (B)
- \* - Carbonate (CO<sub>3</sub><sup>-2</sup>)
- \* - Bicarbonate (HCO<sub>3</sub><sup>-</sup>)
- Cadmium (Cd)
- \* - Calcium (Ca)
- \* - Chloride (Cl<sup>-</sup>)
- Copper (Cu)
- \* - Iron (Fe) (Total and Dissolved)
- Lead (Pb)
- \* - Magnesium (Mg)
- \* - Manganese (Mn) (Total and Dissolved)
- Molybdenum (Mo)
- Nitrogen: Ammonia (NH<sub>3</sub>)
- Nitrite (NO<sub>2</sub>)
- Nitrate (NO<sub>3</sub><sup>-</sup>)
- \* - Potassium (K)
- Phosphate (PO<sub>4</sub><sup>-3</sup>)
- Selenium (Se)
- \* - Sodium (Na)
- \* - Specific Conductivity (umhos/cm)
- \* - Sulfate (SO<sub>4</sub><sup>-2</sup>)
- Zinc (Zn)



Sampling Period:

- Baseline
- \*Operational, Postmining

Table 7.1-8 Water Monitoring Matrix

Operational Phase of Mining

Location	Jan	Feb	Mar	Apr	May	June	July	Aug(3)	Sept	Oct	Nov	Dec
Upper Bear Creek BC-1		oper.			oper.	field	field	oper.	field	oper.		
Lower Bear Creek BC-2		oper.			oper.	field	field	oper.	field	oper.		
Rt Fork Bear Cr. BC-3		oper.			oper.	field	field	oper.	field	oper.		
Creek Well SBC-3		oper.			oper.			oper.		oper.		
Huntington Spr. (4) SBC-4		oper.			oper.			oper.		oper.		
Birch Spring (4) SBC-5		oper.			oper.			oper.		oper.		
Co-Op Dev Spring SBC-6		oper.			oper.			oper.		oper.		
1st N. Bleeder #42 SBC-9		oper.			oper.			oper.		oper.		
2nd W Mon. Well DH-1A		oper.			oper.			oper.		oper.		
3rd W Mon. Well DH-2		oper.			oper.			oper.		oper.		
3rd W bldr Well DH-4		oper.			oper.			oper.		oper.		

- Notes:
1. See Tables 7.1-7 and 7.2-5 for listing of water quality monitoring parameters.
  2. oper. = operational  
base. = baseline
  3. Baseline parameters taken in August of year 5 prior to each permit renewal.
  4. SBC-4 and SBC-5 shall also be tested for oil and grease.

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95J

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Annual Report. An Annual Hydrologic Monitoring Report summarizing all data collected for the water yr (October through October) will be submitted to DOGM by March of the following calendar yr.

Quarterly Data Submission. All water monitoring data will be submitted to DOGM on a quarterly basis within 90 days or less of quarterly sampling collection.

DH-1A, DH-2, DH-3. Three observation wells, DH-1A, DH-2, DH-3, were installed in 1992 (Plate 7-4). These wells are for the collection of piezometric surface and water quality data from the Spring Canyon tongue of the Star Point Sandstone, and are located such as to determine the extent or occurrence of groundwater within the depths of potential impact of the mining activities on the groundwater regime. Construction and Development of these wells are discussed in Appendix 7-N. In 1993 DH-3 is to be abandoned and will be replaced by DH-4, shown on Plate 7-4.

Groundwater encountered in these wells will be sampled as specified above along with the other locations and used to correlate with the water quality data from Bear Springs, COP Development Springs, Huntington Spring, and Birch Springs to provide a check on estimates of groundwater contamination. These springs were selected since their flow is the sole use of groundwater to be possibly affected by mining activities in the permit area. Discussion of initial data gathered in 1992 from the wells is found in Appendix 7-J (PHC) and Appendix 7-N.

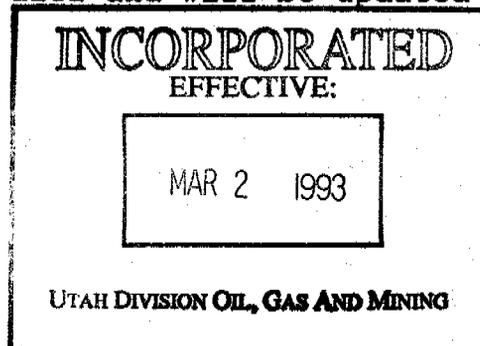
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**EFFECTIVE**  
**NOV 26 1993**  
**UTAH DIVISION OIL, GAS AND MINING**

**U-024316**

The description of U-024316 includes E $\frac{1}{2}$ , NW $\frac{1}{2}$  sect. 14, W $\frac{1}{2}$  sect. 13, T.16S., R.7E. The total area is 400 acres.

A total of four measurable seeps and springs were located in and around the lease area. These are FBC-1, FBC-2, FBC-3, and FBC-12. FBC-2 and FBC-3 flow out of the North Horn formation. FBC-12 flows from the Upper Blackhawk formation. FBC-1, FBC-2, and FBC-3 were found in McCadden Hollow. FBC-1, the McCadden Hollow Creek, is a stream which is fed from the springs above it. Since the springs are to be sampled, it is proposed to measure flow only for this site. Due to the small flow of FBC-3, sampling is not proposed at this site.

Table 7M-4 summarizes the monitoring which is proposed for U-24316. Table 7M-8 shows the baseline data and will be updated as new baseline samples are taken.



**U-024318**

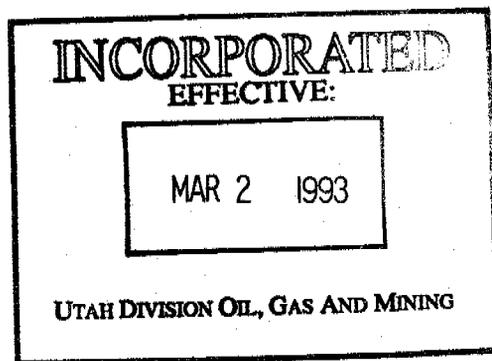
This lease includes the E $\frac{1}{2}$  of the NW $\frac{1}{2}$ , Section 26, T.16 S., R.7 E. The total area of the lease is 80 acres. This lease area is outside of the Manti-Lasal National Forest boundaries.

The only spring near this lease is Birch Springs (SBC-5, Table 7.1-9). Baseline samples were taken in 1987 and 1992. Baseline samples will also be taken in 1993. Monitoring of SBC-5 is shown in Table 7.1-9. Possible impacts to Birch Springs are discussed in Appendix 7-J and Appendix 7-N.

**U-46484**

This lease includes Section 10, except the SW $\frac{1}{4}$ SW $\frac{1}{4}$ , all of Section 11, and the W $\frac{1}{2}$  of Section 12, T.16 S., R.7 E. The total area of the lease is 1,400 acres.

A total of eight measurable sites were located and sampled in and around U-46484. These are designated on Plate 7-4 as FBC-4, FBC-5, FBC-6, FBC-7, FBC-8, FBC-9, FBC-10 and FBC-11. The springs are primarily located within the North Horn and Price River formations.



FBC-5 and FBC-7 are troughs located in the McCadden Hollow and upper Trail Canyon areas, respectively. FBC-4 is a spring located above the fenceline in McCadden Hollow. The source of FBC-6 comes from a total of seven springs on the side slope of the left fork of McCadden Hollow. In a discussion with Dennis Kelley of the U.S. Forest Service, Co-Op was asked to monitor both the spring with the largest flow (FBC-6A) and the point where all seven flows come together (FBC-6) to compare baseline parameters. If the parameters appear to be similar after two years of Baseline samples, Co-Op will then monitor FBC-6 only for operational parameters until mining is complete in the area. FBC-8 and FBC-9 are springs located in the upper Trail Canyon area. FBC-10 is Trail Creek. Since the springs draining into the area are being monitored, flow only is proposed for FBC-10. FBC-11 is located in Huntington Canyon below Tie Fork Canyon.

Baseline sampling began in October, 1992. Table 7M-8 shows the baseline data and will be updated as new baseline samples are taken.

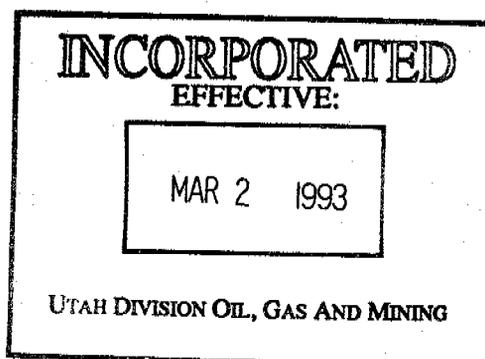


Table 7M-4 Proposed Monitoring Points

<u>Monitor Point</u>	<u>Monitor Parameters</u>
FBC-1	Flow
FBC-2	Baseline
FBC-4	Baseline
FBC-5	Baseline
FBC-6	Baseline
FBC-6A	Baseline
FBC-7	Baseline
FBC-8	Baseline
FBC-9	Baseline
FBC-10	Baseline
FBC-11	Flow
FBC-12	Baseline
WHR-1	Baseline
WHR-2	Baseline
WHR-3	Baseline
WHR-4	Baseline
WHR-5	Baseline
WHR-6	Baseline

Baseline samples will also be taken one year prior to start of mining on additional Federal Leases.

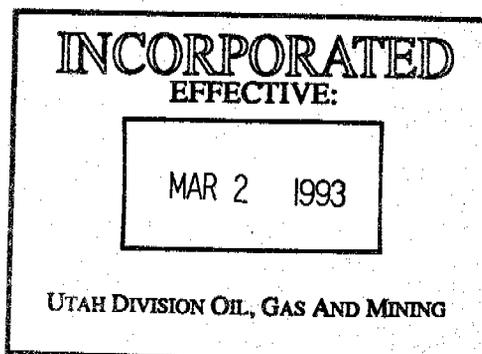


Table 7M-8 Spring Survey Baseline Data

WATER MONITORING REPORT

Property: Co-op  
 Station: FBC-1  
 Location: McCadden Hollow Drainage  
 Type: Stream

Field Measurements	Date Sampled	
	07/31/91	10/04/92
Sampled by:	E.I.S.	M.E.C.
Flow (gpm)	1.5	Dry
pH	7.9	n/a
Sp. Cond. (ohms)	800	n/a
Temp (C)	n/r	n/a

Lab Measurements		
Analyzed by:	IML	N/A
TDS (mg/L)	468	
Hardness (CaCO3)	445	
Aluminum (Al)	0.2	
Arsenic (As)	0.0	
Barium (Ba)	0.18	
Boron (B)	0.0	
Carbonate (CO3)	0.0	
Bicarbonate (HCO3)	464	
Cadmium (Cd)	0.0	
Calcium (Ca)	85.9	
Chloride (Cl)	15.3	
Chromium (Cr)	0.0	
Copper (Cu)	0.0	
Fluoride (F)	0.34	
Iron (Fe)	0.44	
Lead (Pb)	0.0	
Magnesium (Mg)	56.1	
Manganese (Mn)	0.15	
Mercury (Hg)	0.0	
Molybdenum (Mo)	0.0	
Nickel (Ni)	0.0	
Nitrogen (NH3)	0.07	
Nitrite (NO2)	0.0	
Nitrate (NO3)	0.0	
Potassium (K)	1.53	
Phosphate (PO4)	0.0	
Selenium (Se)	0.0	
Sodium (Na)	13.8	
Sulfate (SO4)	72.8	
Sulfide (S)	0.0	
Zinc (Z)	0.0	
Anions	9.56	
Cations	9.54	
Anion/Cation Balance	0.12%	

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EFFECTIVE:

MAR 2 1993

UTAH DIVISION OF OIL, GAS AND MINING

Table 7M-8 Spring Survey Baseline Data (con't)

WATER MONITORING REPORT

Property: Co-op  
 Station: FBC-2  
 Location: McCadden Hollow Spring  
 Type: Spring

Field Measurements	Date Sampled	
	08/01/91	10/04/92
Sampled by:	E.I.S.	M.E.C.
Flow (gpm)	12	Dry
pH	8.05	n/a
Sp. Cond. (ohms)	550	n/a
Temp (C)	n/r	n/a

Lab Measurements		
Analyzed by:	IML	N/A
TDS (mg/L)	352	
Hardness (CaCO3)	305	
Aluminum (Al)	10.4	
Arsenic (As)	0.00	
Barium (Ba)	0.69	
Boron (B)	0.00	
Carbonate (CO3)	0.00	
Bicarbonate (HCO3)	379	
Cadmium (Cd)	0.00	
Calcium (Ca)	77.8	
Chloride (Cl)	2.33	
Chromium (Cr)	0.00	
Copper (Cu)	0.02	
Fluoride (F)	0.33	
Iron (Fe)	7.60	
Lead (Pb)	0.00	
Magnesium (Mg)	26.9	
Manganese (Mn)	0.26	
Mercury (Hg)	0.00	
Molybdenum (Mo)	0.00	
Nickel (Ni)	0.01	
Nitrogen (NH3)	0.07	
Nitrite (NO2)	0.00	
Nitrate (NO3)	0.00	
Potassium (K)	0.89	
Phosphate (PO4)	0.00	
Selenium (Se)	0.00	
Sodium (Na)	4.90	
Sulfate (SO4)	5.76	
Sulfide (S)	0.00	
Zinc (Z)	0.03	
Anions	6.40	
Cations	6.33	
Anion/Cation Balance	0.58%	

INCORPORATED  
EFFECTIVE:  
MAR 2 1993  
UTAH DIVISION OIL, GAS AND MINING

Table 7M-8 Spring Survey Baseline Data (con't)

WATER MONITORING REPORT

Property: Co-op  
 Station: FBC-3  
 Location: McCadden Hollow Spring  
 Type: Spring

Field Measurements	Date Sampled	
	08/01/91	10/04/92
Sampled by:	E.I.S.	M.E.C.
Flow (gpm)	1.5	Dry
pH	8.00	n/a
Sp. Cond. (ohms)	450	n/a
Temp (C)	n/r	n/a

Lab Measurements		
Analyzed by:	IML	N/A
TDS (mg/L)	274	
Hardness (CaCO3)	258	
Aluminum (Al)	0.20	
Arsenic (As)	0.00	
Barium (Ba)	0.20	
Boron (B)	0.00	
Carbonate (CO3)	0.00	
Bicarbonate (HCO3)	307	
Cadmium (Cd)	0.00	
Calcium (Ca)	72.4	
Chloride (Cl)	2.43	
Chromium (Cr)	0.00	
Copper (Cu)	0.03	
Fluoride (F)	0.20	
Iron (Fe)	0.22	
Lead (Pb)	0.00	
Magnesium (Mg)	18.8	
Manganese (Mn)	0.00	
Mercury (Hg)	0.00	
Molybdenum (Mo)	0.00	
Nickel (Ni)	0.01	
Nitrogen (NH3)	0.05	
Nitrite (NO2)	0.00	
Nitrate (NO3)	0.38	
Potassium (K)	0.84	
Phosphate (PO4)	0.00	
Selenium (Se)	0.00	
Sodium (Na)	3.50	
Sulfate (SO4)	12.3	
Sulfide (S)	0.00	
Zinc (Z)	0.01	
Anions	5.40	
Cations	5.34	
Anion/Cation Balance	0.53%	

**INCORPORATED**  
EFFECTIVE:

MAR 2 1993

UTAH DIVISION OIL, GAS AND MINING

Table 7M-8 Spring Survey Baseline Data (con't)

WATER MONITORING REPORT

Property: Co-op  
 Station: FBC-4  
 Location: McCadden Hollow Spring  
 Type: Spring

Field Measurements	Date Sampled	
	08/01/91	10/13/92
Sampled by:	E.I.S.	M.E.C.
Flow (gpm)	8.7	0.5
pH	7.5	7.26
Sp. Cond. (ohms)	500	642
Temp (C)	n/r	8.44

Lab Measurements		
Analyzed by:	IML	CT&E
TDS (mg/L)	396	318
Hardness (CaCO3)	326	342
Aluminum (Al)	6.70	0.00
Arsenic (As)	0.008	0.00
Barium (Ba)	0.49	0.06
Boron (B)	0.07	0.02
Carbonate (CO3)	0.00	0.00
Bicarbonate (HCO3)	391	314
Cadmium (Cd)	0.00	0.23
Calcium (Ca)	86.3	66.1
Chloride (Cl)	5.27	10.0
Chromium (Cr)	0.00	0.07
Copper (Cu)	0.02	0.011
Fluoride (F)	0.25	0.03
Iron (Fe)	9.51	0.00
Lead (Pb)	0.00	0.12
Magnesium (Mg)	27.0	42.9
Manganese (Mn)	0.51	0.00
Mercury (Hg)	0.00	0.00
Molybdenum (Mo)	0.00	0.00
Nickel (Ni)	0.11	0.08
Nitrogen (NH3)	0.28	0.02
Nitrite (NO2)	0.00	0.00
Nitrate (NO3)	0.00	0.43
Potassium (K)	3.40	0.27
Phosphate (PO4)	1.20	0.00
Selenium (Se)	0.00	0.00
Sodium (Na)	4.60	6.83
Sulfate (SO4)	8.64	90.0
Sulfide (S)	0.00	0.80
Zinc (Z)	0.05	0.00
Anions	6.74	7.20
Cations	6.81	7.12
Anion/Cation Balance	0.51%	0.49%

**INCORPORATED**  
EFFECTIVE.

MAR 2 1993

UTAH DIVISION OIL, GAS AND MINING

Table 7M-8 Spring Survey Baseline Data (con't)

WATER MONITORING REPORT

Property: Co-op  
 Station: FBC-12  
 Location: Head of Bear Creek  
 Type: Spring

Field Measurements	Date Sampled	(BC-1)
	08/08/91	08/08/91
Sampled by:	E.I.S.	E.I.S.
Flow (gpm)	7.8	30
pH	8.2	7.9
Sp. Cond. (ohms)	2000	580
Temp (C)	n/r	9

Lab Measurements		
Analyzed by:	IML	IML
TDS (mg/L)	1640	404
Hardness (CaCO3)	1180	457
Aluminum (Al)	0.20	
Arsenic (As)	0.00	
Barium (Ba)	0.10	
Boron (B)	0.37	
Carbonate (CO3)	0.00	0.00
Bicarbonate (HCO3)	322	329
Cadmium (Cd)	0.00	
Calcium (Ca)	148	62.9
Chloride (Cl)	9.43	5.17
Chromium (Cr)	0.00	
Copper (Cu)	0.00	
Fluoride (F)	0.64	0.38
Iron (Fe)	0.38	5.63
Lead (Pb)	0.00	
Magnesium (Mg)	198	72.9
Manganese (Mn)	0.00	
Mercury (Hg)	0.00	
Molybdenum (Mo)	0.00	
Nickel (Ni)	0.09	
Nitrogen (NH3)	0.05	
Nitrite (NO2)	0.00	
Nitrate (NO3)	0.27	
Potassium (K)	24.5	5.32
Phosphate (PO4)	0.00	
Selenium (Se)	0.032	
Sodium (Na)	29.2	10.1
Sulfate (SO4)	993	218
Sulfide (S)	0.00	
Zinc (Z)	0.00	
Anions	26.2	10.1
Cations	25.5	9.71
Anion/Cation Balance	1.40%	1.92%

**INCORPORATED**  
**EFFECTIVE:**

MAR 2 1993

UTAH DIVISION OIL, GAS AND MINING



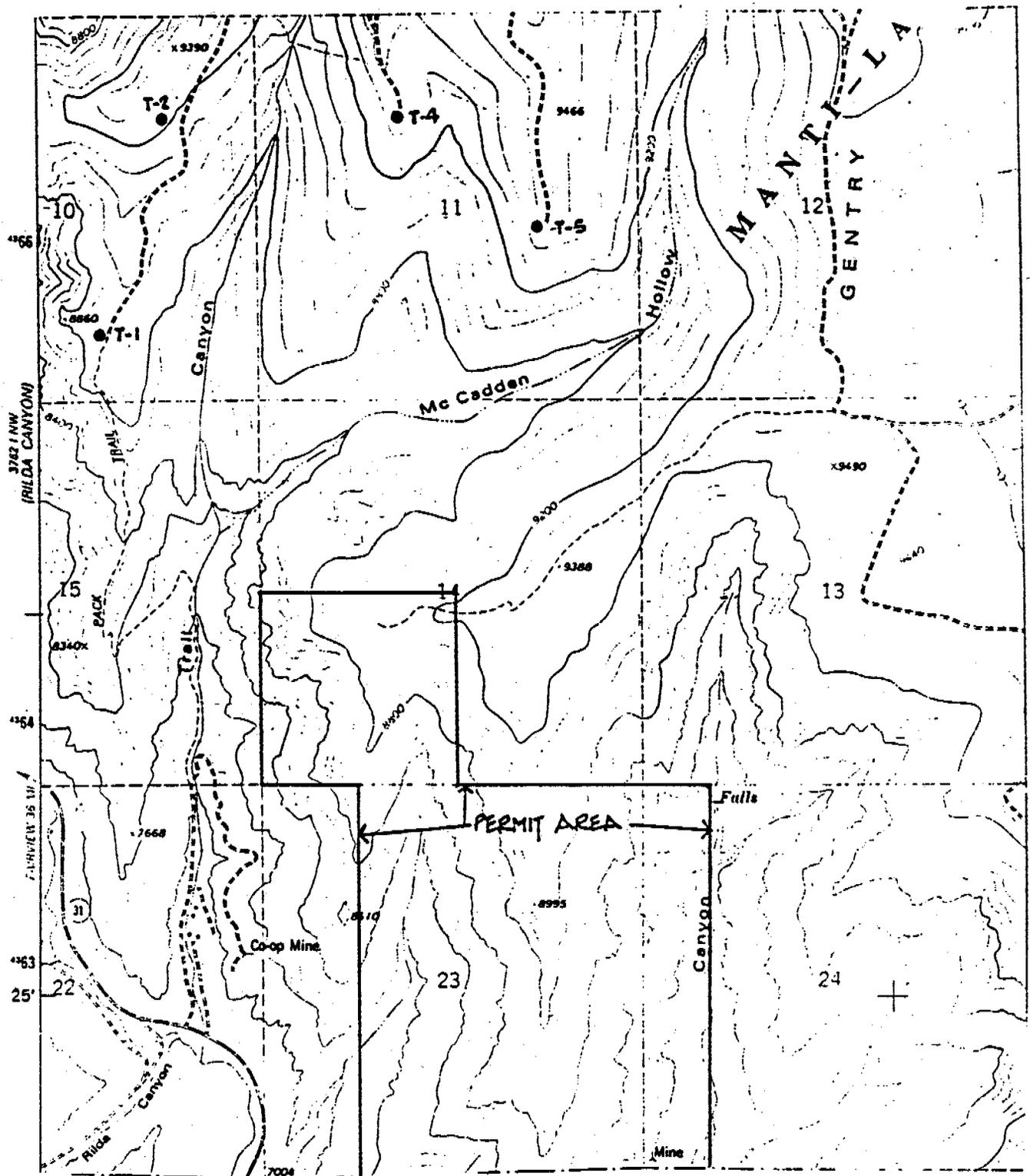


Figure 7A-15 Location Map, Nevada Power & Light Co.,  
Holes No. T-1, T-2, T-4 and T-5



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

Norman H. Bangerter  
Governor  
Dec C. Hansen  
Executive Director  
Dianne R. Nielson, Ph.D.  
Division Director

355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203  
801-538-5340

December 5, 1989

TO: Tom Munson, Reclamation Hydrologist

FROM: Daron Haddock, Reclamation Specialist *DGH*

RE: Possible Explanation for Increased Flow at Birch Spring

During July, August, and September of 1989, the Bear Canyon Mine pulled pillars in the second north section. This area is approximately one-half mile north of Birch Springs. (see shaded area on topographic map)

An east-west cross section along axis A-A' was plotted and shows the Co-Op fault just west of the pillared area. The Co-Op fault is thought to intercept Birch Spring.

Subsidence would have occurred above the pillared area. (Bill Malencik reported seeing surface cracks on the bench area.) Compression would occur at the pillared location and tension would occur around the area adjacent. Tension cracks or fractures would be created which might intercept the Co-Op fault. These fractures could then act as a conduit to drain the overlying Blackhawk and Castle Gate formations into the Co-Op fault and eventually to surface at Birch Spring. Increase in flow at Birch Spring was first noticed the middle of October which falls within expected subsidence time frames.

#### RECOMMENDATIONS:

Any springs located in the Blackhawk or Castle Gate formations above the mine should be monitored. Decrease in flow would be expected.

DH/lap



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

Norman H. Bangerter  
Governor  
Dee C. Hansen  
Executive Director  
Dianne R. Nielson, Ph.D.  
Division Director

355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203  
801-538-5340

November 1, 1989

TO: Rick Smith, Permit Supervisor  
FROM: Bill Malencik, Reclamation Specialist *WJM*  
RE: Birch Spring Citizen Complaint

## SYNOPSIS

North Emery Water Users Association through their President, Mr. Menco Copinga expressed their concern to the Division both verbally and in writing about the water quality in Birch Spring. The reason the Division was contacted related to the possibility the Birch Springs water problem was associated with coal mining either at Bear Canyon an active mine and/or Trail Canyon an inactive mine. Both mines are controlled by the Co-Op Mining Co., Huntington, Utah.

## ANALYSIS

### I Birch Springs & Contiguous Area

In accordance with your telephone call, I made a field examination of Birch Spring and surrounding area on Oct. 25, 1989. Menco Copinga, Jack Stoyanoff, and Scott Allred accompanied me. They represented the water district. The spring was improved in 1984 and again in 1986. At the time the spring was redeveloped, I was advised that no water flowed over the ground surface.

The following observations were made on 10/25/89:

- (1) Volume of water at the spring box out flow pipe was measured at about 150 gpm. This is a three fold increase over the normal flow. Furthermore, this did not include surface flow that was being collected and discharged in a ditch and measured on 11/3/89 at 80gpm. This represents a five fold total increase since the middle of October 1989. They advised me that their other spring sources have experienced a decreased flow this year, suspectedly attributable to drought conditions in 1989.
- (2) A significant amount of water is coming out of rock fractures on the cliffs. The height from ground level at the primary source is about five feet. Four seeps, three secondary and one primary source were observed. The primary and secondary sources had running water. The primary source together with some secondary sources are flowing over a solid and verticle rock formation and thence over the surface to a drainage channel. Previously the spring surface or the ground surface above the collection was dry. Some water from the new primary source appears to be percolating between the rock/soil interface.
- (3) Even though the spring collection area has been fenced, deer dropings were observed within the fenced water collection area. Also, bats and birds have and are currently inhabiting the cliff area above the seeps. These conditions may add to, or be the direct cause of some water quality problems.

(4) Water samples were taken at the sand stone cliff (primary new source) and the spring outlet pipe on 10/25/89. The results are as follows:

	Disolved Solids	Suspended Solids
Cliff	600 mg/l	1.0< mg/l
Spring Outlet	706 mg/l	7.0 mgl.

Oil and grease samples were taken on 11/2/89 and we are awaiting results.

(5) A general surface reconnaissance of the surface area NE of Birch Springs was also made by all parties noted above. No evidence of mine water surface discharge was detected. Our observations were made primarily in the NW1/4, Sec. 26, S1/2SW1/4, Sec. 23, TWP 16S, R11W, all lying NE of Birch Spring. Some fractures, though to be the result of subsidence were noted on the ridge between the Birch Springs drainage and the Trail Canyon drainage. The fractures appeared above the level of the upper coal seam that was mined in the Trail Canyon Mine which is the same seam mined at Bear Canyon. The subsidence is associated with the Bear Canyon Mine and does not constitute a hazard. We could see no evidence of water associated with these fractures.

## II Bear Canyon Mine

On Oct. 30, 1989 Bill Warmack, the undersigned, and Kenney DeFae made a tour of the Bear Canyon Mine. Possible mine water source areas were observed which included:

1st South seals - pillared area

2nd North seals - pillared area in 1985

(contiguous area had been pillared the last three months)

Breakout - Portal 4/21/86

Water sump areas

In the first three areas, no signs of mine water or unusual dampness were observed. Nor did we see any evidence of mine water discharge.

### III Trail Canyon

The Trail Canyon Mine operated until 1981 on lands and minerals owned by COOP Development Company. The mine is currently under first phase of reclamation. All portals have been sealed and the disturbed mine area is being graded, seeded and runoff control measures are currently being installed.

Two spring/water seeps have been historically observed in connection with routine inspections of the Trail Mountain Mine. Based on visual observations, the water quantity has remained constant.

Trail Canyon mine map shows two faults that run in a northerly/southerly direction. The easterly fault appears to have a sizeable displacement since mining terminated at the fault line and the fault appears to line up with Birch Springs. These major faults continue and are shown on the Cyprus Plateau and the Deer Creek Mines.

### NORTH EMERY WATER USERS ASSOCIATION

The aforementioned private water association serves culinary water to 400 connections and about 1500 people in rural Emery County, Utah. Before the recent event they were experiencing a severe water shortage. The situation discussed herein has made the water shortage more acute besides adding a water quality problem. The quality problems have been temporarily solved by not utilizing Birch Springs.

The water association detected the problem on October 17, 1989 after numerous complaints from users. The Division was notified by letter of October 19, 1989 signed by Menco Copinga, President, Board of Directors.

## CONCLUSIONS

The following conclusions have been made on the basis of the preliminary information:

(1) Based on the facts gathered to date by the Water Association and our investigations, I believe we do not have sufficient evidence to make a charge that the culinary water problems in part or in whole may be attributable to the Co-Op Mines. There are two broad assumptions at this time ie (a) It's mine related and (b) It's not mine related. Assuming it's mine related, two (2) current options come to mind:

### OPTION I

The pillars were pulled the last three (3) months in an area about 1/4 mile from Birch Springs in the 2nd north area of the mine. This is a recent change, however, the dip, 2.5%, is to the east, and is directly away from Birch Spring.

Nevertheless, because of the recent activity, it must be considered as a possible option.

### OPTION II

The mine water buildup in the Trail Canyon mine, inactive since 1981, may have accumulated next to the fault and followed the fault zone to Birch Springs. The dip is toward the fault. However, is it a reasonable solution that the water could accumulate for eight (8) years before a mine water discharge is detected in a spring? The southerly workings nearest Birch Spring is about 1/2 mile north of Birch Springs.

At this time no information is currently available on nonmining possibilities. If the problem is mine related Co-Op Mining Co. obligations are outlined in Appendix I attached nexto.

## RECOMMENDATIONS

1. The Division notify responsible entities concerned with or who may share in the problem and/or its solution.

2. The Division seek assistance from other State and Federal Agencies who have responsibilities and/or special expertise in ground water hydrology and geology.

3. An interagency task force approach be used to further identify the problem and solutions with a DOGM management person heading the team.

The above recommendations are postured around the facts that the Water Association must by public notice notify parties of the culinary water problem. Because of numerous circumstances, many affected people will jump to the conclusion that the problem is mine related. Furthermore, such matters were previously discussed with Emery County officials as related to the Trail Mountain community and water/sanitation problems.

The mining community also would look to a rapid solution in order to minimize rumors. Therefore, getting information to those concerned is a first step. The taskforce or the Divisions approach would be the second step. In the interest of good working relations and absent no other plausible explanation, perhaps Co-Op would temporarily provide an alternate source of water. This could be done by purchasing water from another entity without admitting to anything. Since this problem is directly experienced by a large number of people that are turning water taps, the association has first come to the Division for a solution. To date we have acted timely and prudently; however, they will expect more definite answers on a rapid timeframe and if not delivered, they may seek the assistance of others.

BJM/lap

Enclosures - See Appendices

Appendix I

Excerpts Trail Cyn. Mine Plan

Appendix II

Water Association Letter To DOGM Of 10/19/89

Appendix III

Trail Cyn. & Bear Canyon Mine Map & Sketch

Appendix IV

New Water Breakouts & Spring Water Collection System

Appendix V

Water Association Water Analysis

Appendix VI

DOGM Water Analysis

Excerpts - Trail Cyn MRP

State and federal regulations (30 CFR 817.45 and UMC 817.54) require that an alternate water supply be provided to replace any water supplies in the area, Co-Op will provide this alternate supply if needed. Several alternate sources of supply exist:

1. Water from springs could be piped to the affected site.
2. Water rights could be purchased for springs damaged by Co-Op, or alternate water shares could be substituted.
3. A well could be drilled at the affected site to provide an alternate supply. (Since artisan conditions do not exist).
4. Water produced in the mine could be piped to the affected site.
5. Water shares presently owned could be transferred.

**NORTH EMERY  
WATER USERS ASSOCIATION****RECEIVED**  
OCT 23 1989DIVISION OF  
OIL, GAS & MININGBox 418  
Elmo, Utah 84521  
Telephone (801) 653-2649

October 19, 1989

Lowell P. Braxton, Administrator  
Division of Oil, Gas and Mining  
Mineral Resource Development  
and Reclamation Program  
355 West North Temple  
III Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

Dear Mr. Braxton:

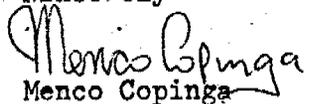
As discussed in our telephone conversation of October 19, 1989, we are very concerned about changes in our BIRCH SPRING. Tuesday, October 17, after complaints to our office about dirty water by some of our water users, Jack Stoyanoff, System Operator discovered dirty water from the Birch Spring.

The Spring flow has trippled and the water is full of sand and sediment. Water is running from the face of the cliff and over the ground surface. We have turned the Spring flow out of the water system.

This is a dry year and it is extremely important that we can use this water source.

The CO-OP MINE is located just above this Spring. We are concerned that mining activities may have caused these changes.

Sincerely



Menco Copinga  
President  
Board of Directors

Appendix  
III

Trail Cyn Mine  
Map Fault

TRAIL CYN MINE

EASTERLY FAULT

BEAR CYN MINE

31

22 22

E  
600

Rilda

85  
2nd NORTH

1st SOUTH

PILLARED

Birch  
Spring

UPPER  
MADE-FANCES

Picnic  
Area

26

Bear

Bear Canyon/Trail Canyon  
Mine Map  
&  
Sketch Map.

WML  
11/3/89



# COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300



Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:  
P.O. BOX 1020, HUNTINGTON, UT 84528  
TELEPHONE: (801) 653-2311

October 27, 1989

Job No.: 59 10090  
Date Rec'd: October 19, 1989  
Date Sampled: October 18, 1989  
Sampled By: North Emery Water Users Assoc.

Sample ID: Emery Water Users Assoc.

BIRCH SPRINGS  
Temperature 11 degrees C.  
Rec'd 0930 hr.  
Sampled 1730 hr.

### FIELD MEASUREMENTS

pH 7.09  
Conductivity 1400  
Flow 150 gpm

NORTH EMERY WATER USERS ASSOC.  
P.O. 418  
Elmo UT 84521  
Ben Grimes

### WATER ANALYSIS

Boron	0.22	mg/l	Phosphorus, Ortho	0.28	mg/l
Iron	1.32	mg/l	Phosphorus, Total	0.40	mg/l
Iron, Dissolved	0.31	mg/l	Solids, Dissolved	674.0	mg/l
Magnesium	65.90	mg/l	Solids, Settleable	479.0	mg/l
Nickel	0.02<	mg/l	Zinc	0.00<	mg/l
Oil and Grease	3.4	mg/l			

ANALYST: *D. Tyson*

Respectfully submitted,  
COMMERCIAL TESTING & ENGINEERING CO.

*David Wood*

Manager, Huntington Laboratory



CERTIFICATE OF ANALYSIS

STANDARD LABORATORIES, INC.

P.O. Box 1140, Huntington, Utah 84528 801-653-2314

FOR

North Emery County  
Water Users Association  
P.O. Box 419  
Elmo, Utah 84521

Lab No 1778

Date Rec 04-30-81

Date Sampled 04-29-81

Sample ID

Gate Springs

pH \_\_\_\_\_ Units

Alkalinity, Total \_\_\_\_\_ mg/l CaCO<sub>3</sub>

Alkalinity, Bicarbonate \_\_\_\_\_ mg/l CaCO<sub>3</sub>

Calcium \_\_\_\_\_ mg/l

Chloride \_\_\_\_\_ mg/l

Conductivity \_\_\_\_\_  $\mu$ mhos/cm

Dissolved Oxygen \_\_\_\_\_ mg/l

Hardness \_\_\_\_\_ mg/l CaCO<sub>3</sub>

Magnesium \_\_\_\_\_ mg/l

Nitrogen, Nitrate \_\_\_\_\_ mg/l

Phosphorus, Total \_\_\_\_\_ mg/l

Phosphorus, Ortho \_\_\_\_\_ mg/l

Potassium \_\_\_\_\_ mg/l

Sodium \_\_\_\_\_ mg/l

Solids, Total Dissolved \_\_\_\_\_ mg/l

Solids, Total Suspended \_\_\_\_\_ mg/l

Sulfate \_\_\_\_\_ mg/l

Arsenic \_\_\_\_\_ mg/l

Beryllium \_\_\_\_\_ mg/l

Boron \_\_\_\_\_ mg/l

Cadmium \_\_\_\_\_ mg/l

Chromium \_\_\_\_\_ mg/l

Copper \_\_\_\_\_ mg/l

Iron, Total 0.40 mg/l

Lead \_\_\_\_\_ mg/l

Manganese \_\_\_\_\_ mg/l

Mercury \_\_\_\_\_  $\mu$ g/l

Nickel \_\_\_\_\_ mg/l

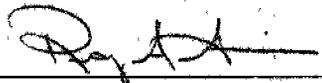
Selenium \_\_\_\_\_ mg/l

Zinc \_\_\_\_\_ mg/l

Iron, Dissolved 0.20 mg/l

Coliform, Total 2 MPN/100ml

Coliform, Fecal 2 MPN/100ml

Respectfully submitted 



Appendix VI

RECEIVED



# COMMERCIAL TESTING & ENGINEERING CO. OCT 31 1989

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300

DIVISION OF OIL  
GAS & MINING  
STATE OF UTAH

SINCE 1908

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:  
P.O. BOX 1020, HUNTINGTON, UT 84528  
TELEPHONE: (801) 653-2311

October 27, 1989

Job No.: 59 10104

Sample ID: STATE OF UTAH NATURAL RESOURCE

Date Rec'd: October 25, 1989

BIRCH SPRINGS FAULT AREA

Date Sampled: October 25, 1989

Photo #1

Sampled By: STATE OF UTAH NATURAL RESOURCE

Upper

Rec'd 1245 hr.

Sampled 1000 hr.

STATE OF UTAH NATURAL RESOURCE  
BOX 169  
451 EAST 400 NORTH  
PRICE UT 84501

-----  
WATER ANALYSIS

Solids, Dissolved 600.0 mg/l      Solids, Suspended 1.0 mg/l

ANALYST: D. Tyson

Respectfully submitted,  
COMMERCIAL TESTING & ENGINEERING CO.

*[Signature]*  
Manager, Huntington Laboratory

Original Copy Watermarked  
For Your Protection

OVER 40 BRANCH LABORATORIES STRATEGICALLY LOCATED IN PRINCIPAL COAL MINING AREAS,  
TIDEWATER AND GREAT LAKES PORTS, AND RIVER LOADING FACILITIES



SINCE 1908

# COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:  
P.O. BOX 1020, HUNTINGTON, UT 84528  
TELEPHONE: (801) 653-2311

October 27, 1989

Job No.: 59 10105

Sample ID: STATE OF UTAH NATURAL RESOURCE

Date Rec'd: October 25, 1989

BIRCH SPRINGS BOX

Date Sampled: October 25, 1989

Rec'd 1245 hr.

Sampled 1000 hr.

Sampled By: STATE OF UTAH NATURAL RESOURCE

STATE OF UTAH NATURAL RESOURCE  
BOX 169  
451 EAST 400 NORTH  
PRICE UT 84501

---

## WATER ANALYSIS

Solids, Dissolved 706.0 mg/l      Solids, Suspended 7.0 mg/l

ANALYST: D. Tyson

Respectfully submitted,  
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Huntington Laboratory

Original Copy Watermarked  
For Your Protection

OVER 40 BRANCH LABORATORIES STRATEGICALLY LOCATED IN PRINCIPAL COAL MINING AREAS,  
TIDEWATER AND GREAT LAKES PORTS, AND RIVER LOADING FACILITIES

6 East Main  
Price, Utah 84501

SOUTHEASTERN UTAH DISTRICT HEALTH DEPARTMENT  
WATER SAMPLE FOR BACTERIOLOGIC EXAMINATION

P.O. Box 800  
Price, Utah 84501

10/81

SAMPLER: COMPLETE THE FOLLOWING - USE BALL POINT - PRESS HARD

Water System No. 018101017 Sample Collected (Check one)  1. Public Water Supply Community or Non-community  2. Private (Well, Spring, etc.)  3. Swimming Pool  4. Stream

Water System Name: North Emery Water Users Ass'n. County Emery

Exact Description of Sampling Point: Birch Spring Huntington Canyon

Sample Collected By: Jack J. Stoyanoff Date 9/4/86 Time (24-hr. Clock) 12:30

Is Sample chlorinated:  Yes  No Residual \_\_\_\_\_ PPM

This Sample is a:  1. Routine Sample  2. Plate Count  3. MPN  4. MPN Fecal

5. 10 ml. Portions  6. Fecal 10 ml. Portions

2. Check Sample  3. Replacement for indeterminate sample Lab No. \_\_\_\_\_ Date \_\_\_\_\_

4. Investigative Sample (Not to be included on official record) Lab No. \_\_\_\_\_ Date \_\_\_\_\_

Remarks: RAW WATER

SEND NAME NEWDA  
REPORT ADDRESS BOX 418  
TO: CITY/STATE ELMO UTAH TELEPHONE NO. 653-2649  
ZIP CODE 84521

6 East Main  
Price, Utah 84501

SOUTHEASTERN UTAH DISTRICT HEALTH DEPARTMENT  
WATER SAMPLE FOR BACTERIOLOGIC EXAMINATION

P.O. Box 800  
Price, Utah 84501

10/81

SAMPLER: COMPLETE THE FOLLOWING - USE BALL POINT - PRESS HARD

Water System No. 018101017 Sample Collected (Check one)  1. Public Water Supply Community or Non-community  2. Private (Well, Spring, etc.)  3. Swimming Pool  4. Stream

Water System Name: North Emery Water Users Ass'n. County Emery

Exact Description of Sampling Point: Birch Spring

Sample Collected By: Jack J. Stoyanoff Date \_\_\_\_\_ Time (24-hr. Clock) \_\_\_\_\_

Is Sample chlorinated:  Yes  No Residual \_\_\_\_\_ PPM

This Sample is a:  1. Routine Sample  2. Plate Count  3. MPN  4. MPN Fecal

5. 10 ml. Portions  6. Fecal 10 ml. Portions

2. Check Sample  3. Replacement for indeterminate sample Lab No. \_\_\_\_\_ Date \_\_\_\_\_

4. Investigative Sample (Not to be included on official record) Lab No. \_\_\_\_\_ Date \_\_\_\_\_

Remarks:

SEND NAME NEWDA  
REPORT ADDRESS BOX 418  
TO: CITY/STATE ELMO UTAH TELEPHONE NO. 653-2649  
ZIP CODE 84521

FOR LABORATORY USE ONLY

Lab No. 018101017 Date Received 9-4-86 Date Reported 10-5-86

INTERPRETATION OF ANALYSIS

- A. Satisfactory as to bacteria count
- B. Unsatisfactory
- C. Unsatisfactory: Must take at least two consecutive daily check samples from same sampling point one day apart. Check box entitled "Check Sample on new form and indicate lab. no. and date of original sample."
- D. Indeterminate: Coliform count could not be determined due to the presence of other miscellaneous bacteria. Submit new sample and check box entitled "Replacement for indeterminate Sample" and indicate lab. no. and date of original sample.

SAMPLE NOT ANALYZED - SUBMIT NEW SAMPLE BECAUSE:

- E. Excessive time elapsed (Must arrive at lab. within 30 hours after collection).
- F. Considered too old when no date is given.
- G. Bottle broken in transit.
- H. Lab. error
- I. Excessive chlorine content
- J. Other \_\_\_\_\_

RESULTS OF ANALYSIS

Membrane Filter: 100 ml. Sample, \_\_\_\_\_ Colonies, \_\_\_\_\_ Coliforms per 100 ml. Note: "TNTC" means "too numerous to count."

MPN Coliforms per 100 ml: \_\_\_\_\_ MPN Fecal Coliforms per 100 ml: \_\_\_\_\_

Plate Count \_\_\_\_\_ per ml. Analyst: J. Stoyanoff

Approved By: \_\_\_\_\_

FOR LABORATORY USE ONLY

Lab No. 018101017 Date Received 12-2-86 Date Reported 12-3-86

INTERPRETATION OF ANALYSIS

- A. Satisfactory as to bacteria count
- B. Unsatisfactory
- C. Unsatisfactory: Must take at least two consecutive daily check samples from same sampling point one day apart. Check box entitled "Check Sample on new form and indicate lab. no. and date of original sample."
- D. Indeterminate: Coliform count could not be determined due to the presence of other miscellaneous bacteria. Submit new sample and check box entitled "Replacement for indeterminate Sample" and indicate lab. no. and date of original sample.

SAMPLE NOT ANALYZED - SUBMIT NEW SAMPLE BECAUSE:

- E. Excessive time elapsed (Must arrive at lab. within 30 hours after collection).
- F. Considered too old when no date is given.
- G. Bottle broken in transit.
- H. Lab. error
- I. Excessive chlorine content
- J. Other \_\_\_\_\_

RESULTS OF ANALYSIS

Membrane Filter: 100 ml. Sample, \_\_\_\_\_ Colonies, \_\_\_\_\_ Coliforms per 100 ml. Note: "TNTC" means "too numerous to count."

MPN Coliforms per 100 ml: \_\_\_\_\_ MPN Fecal Coliforms per 100 ml: \_\_\_\_\_

Plate Count \_\_\_\_\_ per ml. Analyst: J. Stoyanoff

Approved By: \_\_\_\_\_

SAMPLER: COMPLETE THE FOLLOWING - USE BALL POINT - PRESS HARD

Water System No. \_\_\_\_\_  
 Sample Collected (Check one)  1. Public Water Supply Community or Non-community  
 2. Private (Well, Spring, etc.)  3. Swimming Pool  4. Stream

Water System Name: North Fremont Water Treatment Plant Wasatch County Fremont

Exact Description of Sampling Point: Branch Springs Day Water PPM Date \_\_\_\_\_ Time (24-hr. Clock) \_\_\_\_\_

Sample Collected By: W. J. Stoyanoff Date \_\_\_\_\_

Is Sample chlorinated:  Yes  No Residual Day Water PPM Date \_\_\_\_\_

This Sample is a:  1. Routine Sample  2. Plate Count  3. MPN  4. MPN Fecal  
 2. Check Sample  5. 10 ml. Portions  6. Fecal 10 ml. Portions

3. Replacement for indeterminate Sample Lab No. \_\_\_\_\_ Date \_\_\_\_\_

4. Investigative Sample (Not to be included on official record) Lab No. \_\_\_\_\_ Date \_\_\_\_\_

Remarks: \_\_\_\_\_

SEND NAME NEWVA  
 REPORT ADDRESS Box 418  
 TO: CITY/STATE Price, Utah  
 ZIP CODE 84521 TELEPHONE NO. 653-2649

6 East Main  
 Price, Utah 84501  
 SOUTHEASTERN UTAH DISTRICT HEALTH DEPARTMENT  
 WATER SAMPLE FOR BACTERIOLOGIC EXAMINATION  
 P.O. Box 800  
 Price, Utah 84501  
 10/81

SAMPLER: COMPLETE THE FOLLOWING - USE BALL POINT - PRESS HARD

Water System No. \_\_\_\_\_  
 Sample Collected (Check one)  1. Public Water Supply Community or Non-community  
 2. Private (Well, Spring, etc.)  3. Swimming Pool  4. Stream

Water System Name: North Fremont Water Treatment Plant Wasatch County Fremont

Exact Description of Sampling Point: Birch Springs Day Water Date \_\_\_\_\_ Time (24-hr. Clock) \_\_\_\_\_

Sample Collected By: Jack J. Stoyanoff Date \_\_\_\_\_

Is Sample chlorinated:  Yes  No Residual PPM 8/1/86 8:15

This Sample is a:  1. Routine Sample  2. Plate Count  3. MPN  4. MPN Fecal  
 2. Check Sample  5. 10 ml. Portions  6. Fecal 10 ml. Portions

3. Replacement for indeterminate Sample Lab No. \_\_\_\_\_ Date \_\_\_\_\_

4. Investigative Sample (Not to be included on official record) Lab No. \_\_\_\_\_ Date \_\_\_\_\_

Remarks: \_\_\_\_\_

SEND NAME NEWVA  
 REPORT ADDRESS Box 418  
 TO: CITY/STATE Price, Utah  
 ZIP CODE 84521 TELEPHONE NO. 653-2649

FOR LABORATORY USE ONLY  
 Lab No. 801370 Date Received 11/18/81 Date Reported \_\_\_\_\_  
 INTERPRETATION OF ANALYSIS

A. Satisfactory as to bacteria count

B. Unsatisfactory

C. Unsatisfactory. Must take at least two consecutive daily check samples from same sampling point one day apart. Check box entitled "Check Sample" on new form and indicate lab. no. and date of original sample.

D. Indeterminate. Coliform count could not be determined due to the presence of other miscellaneous bacteria. Submit new sample and check box entitled "Replacement for Indeterminate Sample" and indicate lab. no. and date of original sample.

SAMPLE NOT ANALYZED - SUBMIT NEW SAMPLE BECAUSE:

E. Excessive time elapsed (Must arrive at lab. within 30 hours after collection).

F. Considered too old when no date is given.

G. Bottle broken in transit.  H. Lab. error.

I. Excessive chlorine content.  J. Other \_\_\_\_\_

RESULTS OF ANALYSIS  
 Membrane Filter: 100 ml. Sample, 18 Colonies, 0 Coliforms per 100 ml.  
 Note: "TNTC" means "too numerous to count."  
 MPN Coliforms per 100 ml. \_\_\_\_\_ MPN Fecal Coliforms per 100 ml. \_\_\_\_\_  
 Plate Count \_\_\_\_\_ per ml. Analyt: \_\_\_\_\_

Approved By: \_\_\_\_\_

FOR LABORATORY USE ONLY  
 Lab No. 801370 Date Received 8-1-86 Date Reported 8-2-86  
 INTERPRETATION OF ANALYSIS

A. Satisfactory as to bacteria count

B. Unsatisfactory

C. Unsatisfactory. Must take at least two consecutive daily check samples from same sampling point one day apart. Check box entitled "Check Sample" on new form and indicate lab. no. and date of original sample.

D. Indeterminate. Coliform count could not be determined due to the presence of other miscellaneous bacteria. Submit new sample and check box entitled "Replacement for Indeterminate Sample" and indicate lab. no. and date of original sample.

SAMPLE NOT ANALYZED - SUBMIT NEW SAMPLE BECAUSE:

E. Excessive time elapsed (Must arrive at lab. within 30 hours after collection).

F. Considered too old when no date is given.

G. Bottle broken in transit.  H. Lab. error.

I. Excessive chlorine content.  J. Other \_\_\_\_\_

RESULTS OF ANALYSIS  
 Membrane Filter: 100 ml. Sample, 0 Colonies, 0 Coliforms per 100 ml.  
 Note: "TNTC" means "too numerous to count."  
 MPN Coliforms per 100 ml. \_\_\_\_\_ MPN Fecal Coliforms per 100 ml. \_\_\_\_\_  
 Plate Count \_\_\_\_\_ per ml. Analyt: Stoy

Approved By: \_\_\_\_\_

SOUTHEASTERN UTAH DISTRICT HEALTH DEPARTMENT  
WATER SAMPLE FOR BACTERIOLOGIC EXAMINATION

SAMPLER: COMPLETE THE FOLLOWING - USE BALL POINT - PRESS HARD

Water System No. 080107 Sample Collected From:  1. Public Water Supply Community or Non-community one)  2. Private (Well, Spring, etc.)  3. Swimming Pool  4. Stream

Water System Name: North Emery Water Users Assn County: Emery  
Exact Description of Sampling Point: Birch Spring Stream

Sample Collected By: Jack J. Stoyanoff Date (24-hr. Clock) 10/26/89 10:30  
Is Sample chlorinated:  Yes  No Residual: \_\_\_\_\_ PPM \_\_\_\_\_

This Sample is a:  1. Routine Sample  2. Plate Count  3. MPN  4. MPN Fecal  
 2. Check Sample  5. 10 ml. Portions  6. Fecal 10 ml. Portions

3. Replacement for Indeterminate Sample Lab No. \_\_\_\_\_ Date \_\_\_\_\_  
 4. Investigative Sample (Not to be included on official record) Lab No. \_\_\_\_\_ Date \_\_\_\_\_

SEND NAME NMVA  
REPORT ADDRESS BOX 4-18  
TO: CITY/STATE ELMO, UTAH  
ZIP CODE 84521 TELEPHONE NO. 653-2649

Remarks: RAW WATER  
CON 2.00  
RAW 3.00

SOUTHEASTERN UTAH DISTRICT HEALTH DEPARTMENT  
WATER SAMPLE FOR BACTERIOLOGIC EXAMINATION

SAMPLER: COMPLETE THE FOLLOWING - USE BALL POINT - PRESS HARD

Water System No. 080107 Sample Collected From:  1. Public Water Supply Community or Non-community one)  2. Private (Well, Spring, etc.)  3. Swimming Pool  4. Stream

Water System Name: North Emery Water Users Assn County: Emery  
Exact Description of Sampling Point: Birch Spring Stream

Sample Collected By: Jack J. Stoyanoff Date (24-hr. Clock) 10/26/89 10:30  
Is Sample chlorinated:  Yes  No Residual: \_\_\_\_\_ PPM \_\_\_\_\_

This Sample is a:  1. Routine Sample  2. Plate Count  3. MPN  4. MPN Fecal  
 2. Check Sample  5. 10 ml. Portions  6. Fecal 10 ml. Portions

3. Replacement for Indeterminate Sample Lab No. \_\_\_\_\_ Date \_\_\_\_\_  
 4. Investigative Sample (Not to be included on official record) Lab No. \_\_\_\_\_ Date \_\_\_\_\_

SEND NAME NMVA  
REPORT ADDRESS BOX 4-18  
TO: CITY/STATE ELMO, UTAH  
ZIP CODE 84521 TELEPHONE NO. 653-2649

Remarks: RAW WATER  
CON 2.00  
RAW 3.00

FOR LABORATORY USE ONLY  
Lab No. 1558 Date Received 10-26-89 Date Reported 10-30-89  
INTERPRETATION OF ANALYSIS

A. Satisfactory as to bacteria count  
 B. Unsatisfactory  
Unsatisfactory: Must take at least two consecutive daily check samples from same sampling point one day apart. Check box entitled "Check Sample" on new form and indicate lab. no. and date of original sample.  
 C. Indeterminate: Coliform count could not be determined due to the presence of other miscellaneous bacteria. Submit new sample and check box entitled "Replacement for Indeterminate Sample" and indicate lab. no. and date of original sample.

SAMPLE NOT ANALYZED -  
 SUBMIT NEW SAMPLE BECAUSE:  
 E. Excessive time elapsed. Must arrive at lab. within 30 hours after collection.  
 F. Considered too old when no date is given.  
 G. Bottle broken in transit  H. Lab error  
 I. Excessive chlorine content  J. Other \_\_\_\_\_

RESULTS OF ANALYSIS  
Membrane Filter: \_\_\_\_\_ ml. Sample \_\_\_\_\_ Colonies \_\_\_\_\_ Coliforms per 100 ml. Note: "TNTC" means "too numerous to count"  
MPN Conformers per 100 ml. 2.2 MPN Fecal Coliforms per 100 ml. \_\_\_\_\_  
Plate Count \_\_\_\_\_ per ml. Analysis: SMYERS

FOR LABORATORY USE ONLY  
Lab No. 1557 Date Received 10-26-89 Date Reported 10-30-89  
INTERPRETATION OF ANALYSIS

A. Satisfactory as to bacteria count  
 B. Unsatisfactory  
Unsatisfactory: Must take at least two consecutive daily check samples from same sampling point one day apart. Check box entitled "Check Sample" on new form and indicate lab. no. and date of original sample.  
 C. Indeterminate: Coliform count could not be determined due to the presence of other miscellaneous bacteria. Submit new sample and check box entitled "Replacement for Indeterminate Sample" and indicate lab. no. and date of original sample.

SAMPLE NOT ANALYZED -  
 SUBMIT NEW SAMPLE BECAUSE:  
 E. Excessive time elapsed. Must arrive at lab. within 30 hours after collection.  
 F. Considered too old when no date is given.  
 G. Bottle broken in transit  H. Lab error  
 I. Excessive chlorine content  J. Other \_\_\_\_\_

RESULTS OF ANALYSIS  
Membrane Filter: \_\_\_\_\_ ml. Sample \_\_\_\_\_ Colonies \_\_\_\_\_ Coliforms per 100 ml. Note: "TNTC" means "too numerous to count"  
MPN Conformers per 100 ml. 5.1 MPN Fecal Coliforms per 100 ml. \_\_\_\_\_  
Plate Count \_\_\_\_\_ per ml. Analysis: SMYERS

# NORTH EMERY WATER USERS ASSOC.

## BIRCH SPRINGS - QUALITY & FLOW DATA

1/3

	1-12-78	10-2-86	10-19-89
TOTAL SUSPENDED SOLIDS		< 3.0 mg/l	
TOTAL DISSOLVED SOLIDS	340 mg/l	388 mg/l	
SPECIFIC CONDUCTANCE	525 umhos/cm	693 umhos/cm	1400 (FIELD)
PH	7.5	7.4	7.09 (FIELD)
TEMPERATURE			11°C (FIELD)
TOTAL ALK AS CaCO <sub>3</sub>	258 mg/l	314 mg/l	
TOTAL HARDNESS AS CaCO <sub>3</sub>	328 mg/l	366 mg/l	
TURBIDITY AS NTU	3.1	0.2	
FLOW		70 GPM	150 GPM

COLIFORMS	4-29-81	8-1-86	12-2-86
	< 2 TOTAL	-0-	-0-
	< 2 FECAL		

CATIONS

1-12-78

10-2-86

AMONIA		0.1 mg/l
ARSENIC	0.0	< 0.5 ug/l
BARIUM	120.0 ug/l	< 0.05 mg/l
BORON	40.0 ug/l	
CADMIUM	0.0	< 1.0 ug/l
CALCIUM	60.0 mg/l	70.0 mg/l
CHROMIUM	0.0	< 5.0 ug/l
CITROMIUM, Hex as Cr	0.0	< 5.0 ug/l
COPPER	5.0 ug/l	< 20.0 ug/l
IRON	290.0 ug/l	0.03 mg/l
IRON-TOTAL	0.30 mg/l	
LEAD	0.0	< 5.0 ug/l
MAGNESIUM	43.0 mg/l	46.0 mg/l
MANGANESE	22.0 ug/l	< 10.0 ug/l
MERCURY		< 0.6 ug/l
NICKEL	0.0	
POTASSIUM	3.0 mg/l	2.0 mg/l
SELENIUM	0.0	0.5 ug/l
SILVER	0.0	< 2.0 ug/l
SODIUM	6.0 mg/l	6.0 mg/l
ZINC	10.0 ug/l	< 10.0 ug/l

TOTAL 124